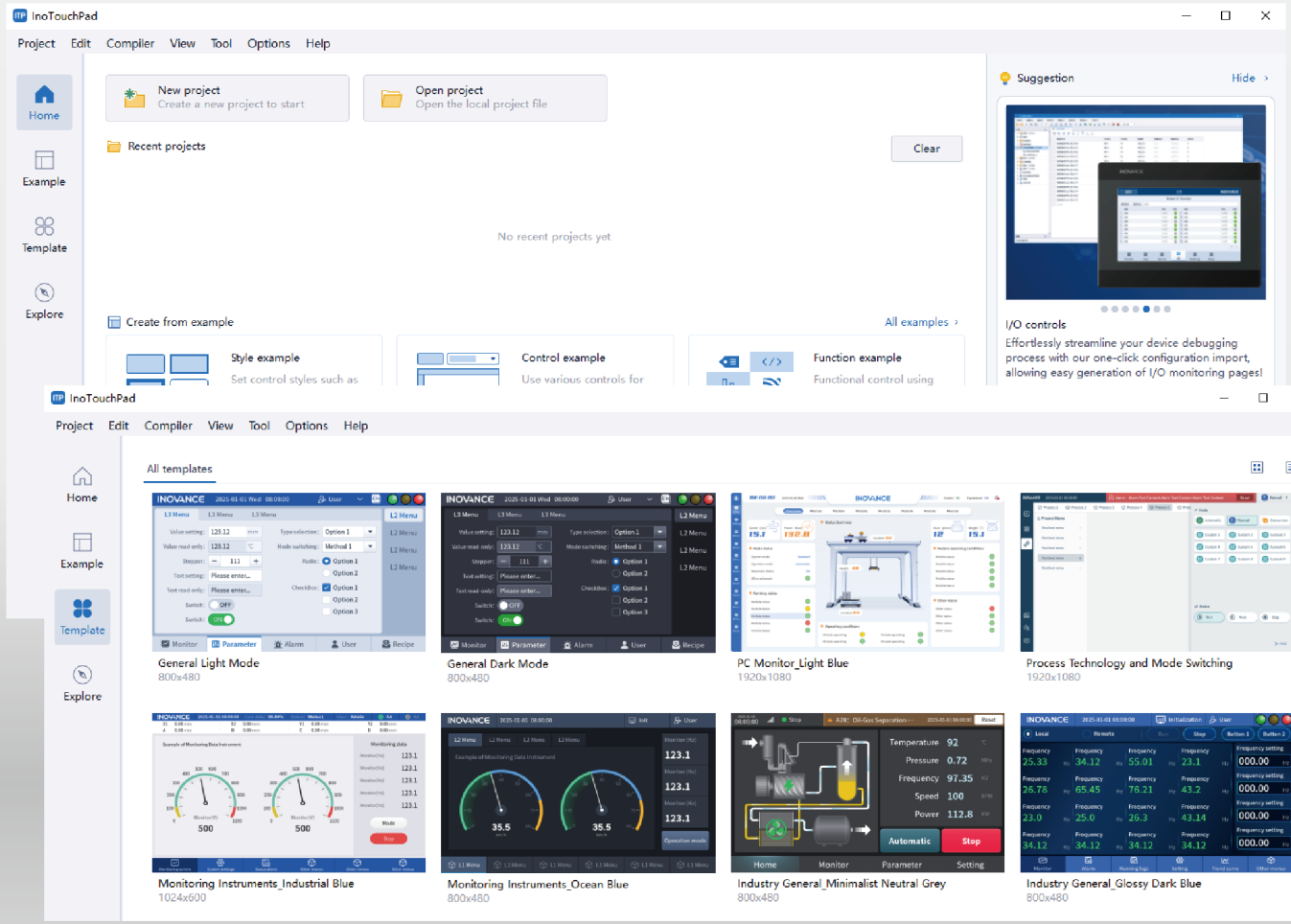
INOVANCE

FORWARD, ALWAYS PROGRESSING



InoTouchPad

Help Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19012790A00

Preface

Introduction

InoTouchPad is an HMI configuration software developed by Inovance, which provides powerful features and user-friendly GUIs.

This guide describes how to use InoTouchPad to configure an HMI project and run the project on a PC or embedded device. This guide assists you in building communication systems, creating new projects, configuring projects, and applying projects to various platforms.

More Documents

Name	Description
IT7000 Series HMI Quick Start	Introduces quick commissioning and quick start for the product.
IT7000 Series HMI Selection	Introduces technical data and dimensions of the product, and specifications and models of optional parts (installation accessories and cables).
IT7150E HMI User Guide	Introduces technical specifications, installation dimensions, installation methods, and power-on commissioning methods of IT7000 series 15-inch products.
IT7100 HMI User Guide	Introduces technical specifications, installation dimensions, installation methods, and power-on commissioning methods of IT7000 series 10.1-inch products.
IT7070 HMI User Guide	Introduces technical specifications, installation dimensions, installation methods, and power-on commissioning methods of IT7000 series 7-inch products.
InoTouchPad Help Guide (this guide)	Introduces the configuration software, installation, quick start, controls, project configuration, features, and applications of InoTouchPad.

Access to the Guide

This guide is not delivered with the product. You can obtain the PDF version in the following ways:

- Do keyword search under Service and Support at http://www.inovance.com.
- Scan the QR code on the product with your mobile phone.
- Scan the QR code below to install the My Inovance app, and search for the file in the app.

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1 New Features

1.1 New Features of V1R6

The functional changes in each version of V1R6 and their corresponding updated sections of the guide are listed in the table below:

Table 1-1-1 Correspondence table of function changes, software versions, and guide sections

Function change	Software version	Release date	Updated section
Supported for ITS7156E device.	SPC1	2025.04	Added support for ITS7156E device model. See the value lookup table of $HMIDeviceType under System Tags.
Supported for selection on label tag import scope.	SPC1	2025.04	Supported for user selection on importing the struct definition of label tags. See 5.2.5.1 Setting a Label Tag.
Enriched the Gallery.	SPC0	2025.03	Added national flag icon. See 6.4.1 System Gallery.
Modified the "Restoring Tags" section.	SPC0	2025.03	For conditions and operations of quickly restoring deleted tags, see 5.3.9 Restoring Tags.
Modified the "Connection Restoration" section.	SPC0	2025.03	For conditions and operations of quickly restoring deleted connections, see 4.2.6 Connection Restoration.
Modified the "MQTT Publish" section.	SPC0	2025.03	In "Cycle check" mode, if any tag value changes during the cycle, the selected tags will be published. For related settings, see MQTT Publish.
Modified the "MQTT Subscription" section.	SPC0	2025.03	Added subscription activation conditions for the subscriber, see MQTT Subscription.
Optimized the Favorite library.	SPC0	2025.03	Added 100+ new combined usability templates, with optimized interaction locations and interfaces. See 7.3.7 Favorites.
Supported for tag filtering operation.	SPC0	2025.03	The tag group page supports data filtering. See 19.1.5 Filter Operation.
Supported for batch tag operations.	SPC0	2025.03	The tag group page supports batch operations. See Batch Operation.
Optimized the tag table interface.	SPC0	2025.03	Optimized the variable table interface style. See 19.1 Table Operations.

Function change	Software version	Release date	Updated section
Expanded the number of text lists.	SPC0	2025.03	The text list capacity has been expanded to 50,000 rows. See 8.2 Text Lists.
Expanded translation text resources.	SPC0	2025.03	Alarm groups, alarm grades, connection names, and control names support internationalization. See 18.3.2 Translation Scopes and Sources.
Defined the index tag control range.	SPC0	2025.03	Optimized the index tag's control scope to limit it within composite objects. See 22.3.1 How to Implement Control-Level Activation for Composite Objects.
Supported for generating structure definition of a structure tag.	SPC0	2025.03	The label tag table now supports the generation of structure tags. See 5. 2.5.1 Setting a Label Tag.

1.2 New Features of V1R5

The functional changes in each version of V1R5 and their corresponding updated sections of the guide are listed in the table below:

Table 1-2-1 Correspondence table of function changes, software versions, and guide sections

Function change	Software version	Release date	Updated section
Embed screens	SPC3	2024.12	Added switching display of multiple embed screens. See Embed Screens.
Buzzer sound settings	SPC3	2024.12	Added buzzer interval sound. See 20.6 Project Settings.
MQTT publish	SPC3	2024.12	Added value change publish. See MQTT Publish.
VNC image quality settings	SPC3	2024.12	New feature. See 20.6 Project Settings.
Label tag replacement	SPC3	2024.12	Optimized feature. See 6.3.2 Using the Screen Objects.
FTP	SPC2	2024.11	New feature. See 21.4.1 FTP Server.
Recipe	SPC2	2024.11	Optimized the selection of "Synchronize Tags" and "Tags offline". See the recipe configuration.
Embed screen	SPC1	2024.09	Added direction control tag in the general properties of embed screen. See 7.3.2.2 Embed Screen.
Find and replace	SPC1	2024.09	Added instructions for batch replacement of label tags. See 6.3.2 Using the Screen Objects.

Function change	Software version	Release date	Updated section
Recipe control	SPC1	2024.09	Added the "Enable Search Function" method, search rules, and instructions for displaying recipe names. For details, see 16.3.13 Recipe.
Recipe function	SPC1	2024.09	Optimizeed NewDataRecord function and added GetDataRecordIdByName function. See 16.3.13 Recipe.
Delete	SPC1	2024.09	Added the Delete function. see 5.2.3 Tag Editor.
Trend	SPC1	2024.09	Added "PauseTrendTag" to the "General" tab. See 7.3.4.9 Trend.
Data record upgrade	SPC1	2024.09	Supported data record upgrade via USB drive. See 23.1.1 Datalog Update.
Connection	SPC1	2024.09	Added "SetHMIStationID". See Connections.
Industrial templates	SPC0	2024.09	Added multiple industrial templates. See 3.1 Interface Introduction.
Gallery update	SPC0	2024.09	Added multiple industrial symbols. See 6.4.1 System Gallery and 6.4.2 My Gallery.
Control panel	SPC0	2024.09	Optimized control panel interface, see 19.3 HMI Control Panel
I/O status monitor	SPC0	2024.09	New feature. See 13 I/O Status Monitor
Firmware update	SPC0	2024.09	Supported update via USB drive. See: • 15.7 Uploading and Downloading a Project, Updating the Firmware, and Transmitting Data in HMI Through a USB Drive • 15.8 Uploading and Downloading a PLC Project, Updating the PLC Firmware, Restoring a PLC Project, and Transmitting PLC Files Through a USB Drive
EIP protocol	SPC0	2024.09	Added Omron EthernetIP Tags protocol and Inovance EthernetIP Tags protocol. See 4.3.1 Supported Protocols and 4.5 Inovance EthernetIP Tags Protocol.
Trend control	SPC0	2024.09	Expanded the number of trend curves to 64. See 7.3.4.9 Trend.
Control classification	SPC0	2024.09	Controls are categorized by function and scenario. See 7.3 Control Classification.

1.3 New Features of V1R4

The V1R4C00SPC74 software version has a variety of new features.

Revision date	Software version/manual version	Description
April 2024	V1R4C00SPC74.A09	Addition • Added the 17.4.15 Calling Functions in a Script section. • Added the 22.7 Inovance Service Hotline section. Change • Modified the content of the added alarm 24 in the System Alarms section. • Modified the maximum number of rows that can be displayed in a table in the 12.3 Creating a Report section. • Optimized the procedure in the "Running Runtime on the PC in Full Screen Mode" section.
March 2024	V1R4C00SPC74.A08	Change • Modified the code format in the Sending and Receiving Digits section. • Modified the code format in the Null section. • Added the "QSS Style Description" in the 18.4 Global Style section. • Modified the 20.6 Project Settings section. ◦ Modified description about "Canceling Record File Check". ◦ Added risks about removing USB drive in the "Displaying the Downloading Page After Mounting SD Car/USB Drive" section. • Added differences between Modbus RTU and Modbus RTU (1 address) in the 4.3.1 Supported Protocols.
February 2024	V1R4C00SPC74.A07	Addition • Added the section 15.8.6 Downloading a Project, Updating the Firmware, and Transmitting Files Through Ethernet Port in AM400, or AM600 Series. • Added the section 15.8.2 Downloading Projects Through Ethernet Port and Serial Port in H3U Series. • Added the section 15.8.3 Downloading Projects Through Ethernet Port in H5U Series. • Added the section 15.8.4 Uploading and Downloading Projects and Updating Firmware Through Ethernet Port in Easy Series.

Revision date	Software version/manual version	Description
		• Added the 21.3 SMTP section. Change • Modified the 3 Quick Start Guide section. • Modified the 16.3.10 Print section.
December 2023	V1R4C00SPC74.A06	Addition • Added the section 22.3.14 How to Synchronize Modification to Tag Name to All Points. • Added the 22.3.15 Supported Fonts section. • Added the Recipe Configuration section. Change • Modified parameter descriptions in the 7.3.4.1 Bar section. • Modified parameter descriptions in the 7.3.4.2 Slider section. • Modified parameter descriptions in the 7.3.4.3 Progress Bar section. • Modified parameter descriptions in the 7.3.4.4 Round Progress Bar section. • Modified parameter descriptions in the 7.3.4.7 Knob section. • Modified parameter descriptions in the 7.3.4.5 Gauge section. • Modified parameter descriptions in the Instrument section. • Modified parameter descriptions in the 3D-Pie Chart section. • Modified parameter descriptions in the 7.3.4.8 Led Light section. • Modified parameter descriptions in the 7.3.2.3 QR Code section. • Modified parameter descriptions in the Barcode section. • Modified real-time reports in the Report View section. • Added $COM*ConnectionStatus, $TCPConnectionStatus, and $NoUserOperationTime in the 5.1.4 System Tags section. • Added the BRIGHTEK WH-P12 printer in the Printer Setting section.
October 2023	V1R4C00SPC74.A05	• Added the 22 FAQ section. • Added the Typical Cases section. • Added the 11.5 Historical Data Storage Position section. • Added the 20.3.2 Usage section. • Added the 20.3.3 Customizing the Unlocking Screen section.

Revision date	Software version/manual version	Description
		• Added the 20.3.4 Triggering Next Installment in Advance section. • Added the 20.3.5 Displaying Remaining Time Before Next Installment section. • Added the 20.3.6 Downloading Multiple Customers section. • Added the 20.5 Settings of External Devices section. • Corrected minor errors.

The V1R4 software version has a variety of new features.

Item	Feature	Position
Screen	Among the "Embed Screen" layout properties, increased the width to two times of the original size and height to four times of the original size.	See 6.2.3 Creating an Embed Screen.
Tag	Added a tag view.	See 5.2.1 Dragging and Dropping Tags.
	Added manual and automatic synchronization features for label tags.	See 4.4 Inovance AC800 Tags Protocol.
Control	Added the proportional movement property to "Animations" of graphic I/O field.	See 7.5.1.9 Proportional Movement.
	Added the "Record search operation" property to the operation record view.	See Operation Record View.
	Added the "Show Time Range" property to the operation record view.	See Operation Record View.
	Added 9 options for "Start Position" in the "Process" property of the "Embed Screen" view.	See 7.3.2.2 Embed Screen.
	Added the "Shift decimal point" property in the "Setting" section for the general properties of the trend view.	See Trend View.
System function	Added the system function "NewDataRecord" to the recipe to create data records.	See 16.3.13 Recipe.
	Added parameters "Export days" and "Retention days" to the function "ExportDataLogsSplitDate".	See Record.
Script	Added the script function "SetMultiTagValue" for quickly writing multiple tags.	See 17.5.2 Calling of System Functions.
Settings of external devices	Added the fingerprint feature.	See 20.5 Settings of External Devices.

Project settings	Added the NTP network time synchronization feature.	See 20.6 Project Settings.
Jump	Added the feature of jumping to the help manual from the control anchor.	See the content of jumping to the manual from the control anchor.
Protocol	Added the Yaskawa network port communication protocol Yaskawa MP3000-Extension.	See 4.3.1 Supported Protocols.
	Added the Inovance AC700-series serial port communication protocol: AM700 Qlink TCP protocol	See 4.3.1 Supported Protocols.
	Added UTF-8 and GB2312 encoding formats for the AC800 communication protocol.	See 4.4 Inovance AC800 Tags Protocol.
Control	Added the feature of importing and exporting combined controls to and from the Favorites folder.	See Favorites Controls.
	Added the whirl control.	See 7.3.4.8 Led Light.
Simulation	Added the unauthorized dongle feature.	See 15.2.3 How to Use an Unauthorized Dongle.
Download	Added the feature of uploading and downloading projects and upgrading the firmware to the Easy series devices.	See Uploading and Downloading a Project, Updating the Firmware, Restoring a Project, and Transmitting Files in PLC Through a USB Drive.
	Added the option "update firmware" to the downloading interface to download the project and firmware together.	See Downloading.
MQTT	Added MQTT features and cases.	See Writing Data to Remote Server and Reading Data from Remote Server.

1.4 New Features of V1R2

The V1R2C00SPC33 software version has a variety of new features.

Revision date	Software version/manual version	Description
March 2023	V1R2C00SPC33.A04	Added new information.
January 2023	V1R2C00SPC33.A03	Added new information.
November 2022	V1R2C00SPC33.A02	Added new information.
August 2021	V1R2C00SPC33.A01	Corrected minor errors.
June 2020	V1R2C00SPC33.A00	First release.

The V1R2 software version has a variety of new features.

Item	Feature
Protocol	• Omron serial port communication protocol is added. • Omron EthernetIP Tags protocol is supported. • Inovance PLC AC800 Tags and OPC UA Tags protocols are added. • The username and password input feature is added to the AC800 Tags protocol. • The Easy series PLC serial port and network port communication protocols are added. • XINJE XD\XL series TCP Ethernet communication protocol is added. • Suhao AC drive serial port communication protocol is added. • The feature of importing XML labels offline by the OPC UA protocol is supported.
Edit	• The "Quick Compiler" option is added. • You can search for control names and tag names in a project. • You can replace tag addresses in batches.
Screen	You can copy full pages between projects or within the same project.
Control	• The bar chart control supports direct movement for offset. • The popup directions of the symbolic IO field menu support up, down, left, and right. • Note: After rotating/tumbling by using the control, the menu popup direction is still down by default. • The symbolic IO field can display different text lists according to tags (dynamic selection of text lists). • The upper and lower limit feature is added for the number IO field control. • The dynamic drawing line control is added. • The "Background hide" property is added to the gauge and instrument controls. • The word space adjustment feature is added to the character IO field control.
Upload/Download	The "Upload User Setting" option is added to the upload window.
Report	• Historical reports can be queried by keyword and date and time. • Historical reports support sum and average calculation for all items. • Data in historical reports can be exported into files.

Alarm	• Historical alarms can be displayed in multiple languages. • An alarm view scrollbar is added.
Recipe	• The data record name of the recipe can be associated with tags to implement the search feature. If the search result is empty, create a data record. If the search result contains a record, update the record. • The data record name of the recipe can be displayed as a tag. You can drag tags from the drop-down list to display the tag name. • The recipe name is fixed on the configuration software, which is hidden on the HMI. You do not need to select it on the HMI. • The maximum number of data records is 1,000 and needs to be changed to 10,000.
Status list	The feature of copying and pasting graphic list elements is added.
System function	• ClickResetedAlarmBuffer is added so that you can click to confirm reset alarms. • ClearResetedAlarmBuffer is added to clear confirmed reset alarms. • SetGlobalSoundControl is added to mute or unmute the global buzzer. • ModbusServerSlaveMonitor is added to monitor the Modbus server communication status. • GetConnectionIpAddress is added to obtain slave IP addresses. • TrendViewQueryTrendByTime is added to query trend records on the trend view by time. • SaveDataRecordAlpha is added to save the current value of the recipe tag as data record Alpha to the storage media of the HMI device. • LoadDataRecordAlpha is added to load the set recipe data record Alpha from the storage media of the HMI device into the recipe tag. • QueryHistoryReport is added to query historical reports.
HMI control panel	• When the HMI project is updated using an USB drive, both the project and firmware can be updated simultaneously. • When the touchscreen starts or restarts, it reads the tag data and then displays the project screen. • The feature of downloading H3U projects by using Ethernet is added.
Print	The feature of printing historical curve trend views is added.
Project settings	• The scanner and card reader drives are supported. • When the simulator is running, the right-click options can be customized. For example, pop up a login window for login permissions. • The "Automatically stop the buzzer when all alarms are cleared" option is added for "Alarm Settings".

Model	• The IT7100E_2E model is added. • Four guaranteed supply models are added, including IT7070S–BG1, IT7070T_AC–BG1, IT7070E–BG1, and IT7100E–BG1.
Protocol	• LG serial communication protocols LG Master-K Direct and LG XBM/XBC/XGK CPU DIRECT are added. • YOKOGAWA network port communication protocol YOKOGAWA FA-M3 TC is added. • Delta AS300 network port communication protocols are added, including RTU, TCP, and ASCLL. • UDIAN serial communication protocols Serial and AIBus are added. • The fx5u binary protocol is added. • Panasonic network port communication protocol FP Ethernet is added. • Hollysys serial communication protocols LE/LM PLC are added. • Yaskawa network port communication protocol Yaskawa MP23XX is added. • IT7000 series and Omron NJ/NX series devices support the label communication protocol EIP. • Omron serial port NTlink protocol is supported.
Report	• Tags are configured to implement the start/stop feature of reports. • When a report reaches the first or last page, the tag value changes. • When the report status is refreshed, a signal is sent to you. You can read and write the signal to refresh tags. • The input character limit and count hint are added for the report switch text. • The goto definition and cross-reference features are added for report association expression tags. • When the denominator of the report association expression is 0 or the parentheses () are empty, an error will be reported.

Alarm	• You can use scripts to view the data a period of time before and after an alarm, which is displayed in a trend chart. • Clicking on an alarm in the alarm view allows you to obtain the alarm information text. • If you select "Sort by total times", alarm information can be sorted by frequency. • The bottom button bar and the right scroll bar can be hidden on the alarm view. • When the alarm view is displayed by day, alarms are controlled by tags. • When "Alarm Mode" is selected, the total number of alarms and the page up/down buttons are provided. • The column for counting alarms is added to the alarm list. • Alarm information text tags are added to the alarm view. • The alarm view allows for custom column sorting.
Printer	Brightek printers are added for software tools.
Screen	• The feature of creating screens in batches is added. • When you click a control on the computer, the detailed view will display overlapping parts of this control. When you click the blank area of a screen, all controls of the screen are displayed.
Control	• The alarm query view control is added to query fault codes for the SV660N series. • Group controls can make multiple copies, supporting ascending addresses. When a group control makes multiple copies and requires ascending addresses, the last tag will be copied in case of insufficient tags. • The flashing frequency setting feature is added for the word status control. • Controls are set according to different protocols in the protocol property box, for example, the maximum read volume and maximum written volume. • The line spacing and word spacing features are added for the text field control. • The progress bar control allows to display floating-point numbers. • The font of the 3D-pie chart can be changed. • Read and write tags for the numeric IO field and character IO field can be separated. • Units are used for the numeric IO field.
Recipe	• The forced save feature is added for recipes. When the feature is applied, recipes are directly saved without confirmation. • The recipe view provides the batch transfer control switch to control batch transfer of recipes. • The batch read/write interface (batch transfer) is added for recipes.

Trend chart	The width of solid lines in the trend view can be changed, up to 4.
Upload/Download	• When "disable upload" is checked, a prompt of unable to upload will appear. • Firmware can be downgraded to an earlier version. • H5U projects can be uploaded and downloaded.
Settings	• Choose "Options" > "Settings". In the "Settings" dialog box that appears, choose "Screen editor" > "Paste options". You can set whether to create a tag upon pasting. • An option is added to skip startup and hold down to enter the control panel. • The background now supports modification and recording of static and dynamic IP addresses, subnet masks, DNS. The control panel can be controlled in the background. • 4.3-inch screens can be rotated. • The time zone feature is added. • The feature of setting the system time through NTP is added.
Figure	• Images can be set to transparent with a specific color. • The minimum width of the image import window can now be adjusted.
System function	• ActivateScreenByNumber is added to switch screens by screen number. • ChangePassword is added to change the password of a specified user. • GetConnectionIpAddress is added to obtain slave IP addresses. • ChangeModbusMode is added to set Modbus master and slave systems. • The SetLanguage parameter is added to select tags, supporting tags of the String type. • Functions such as RecipeViewNewDataRecord are added to increase the results. • ExportDataLogsForRows is added to export data records by row. • ExportAlarmLogsSplitDate is added to export alarm record events by day. • ExportDataLogsSplitDate is added to export operating record events by day. • SetCOMParameters is added to set serial port parameters online, including the baud rate, parity check, and stop bit. • SetIPAddress is added to configure network parameters, such as DHCP, IP, Mask, and DNS. • MaintainFileCount is added to set the maximum number of files in a folder.

Script	• The copyDataLog system/script function can copy data from one data record to another. • Single-use timers can trigger the same function repeatedly, without overwriting time.
Model	• The air compressor model IT7070T-AC is added. • Models IT7043T and IT7043E are supported. • The following IT7000 IoT models are added: IT7070EI_4G, IT7070EI_WIFI, IT7070SI_4G, IT7070SI_WIFI, IT7100EI_4G, and IT7100EI_WIFI. • WPG integrated controller model ITU707E-WPG is added. • Kaishan model ITU7070EI is added.
Edit	• The "Quick Compiler" option is added. • You can search for control names and tag names in a project. • You can replace tag addresses and modify screens in batches.
Screen	You can copy full pages between projects.
Recipe	The data record name of the recipe can be displayed as a tag. You can drag tags from the drop-down list to display the tag name.
Database	Remote databases are introduced and used.

2 Installation and Uninstallation

2.1 Introduction

InoTouchPad is a configuration screen development system for Inovance InoTouch series HMIs. It features an integrated development environment and rich and powerful functions.

The software is suitable for Inovance IT7000 series HMI products, and it can also run independently on a PC as small-scale SCADA software.

Software Source

For the latest version of the programming software InoTouchPad developed by Inovance, contact your HMI supplier or visit our website (http://www.inovance.com).

Computer Configuration Requirements

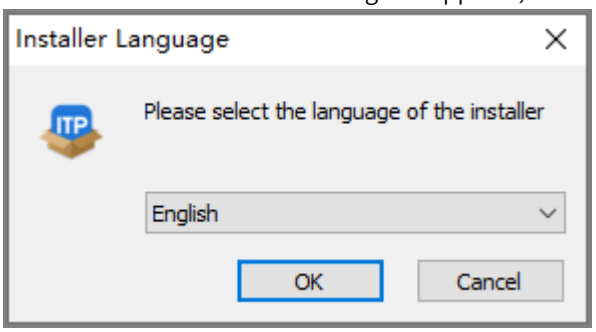
- CPU: Intel or AMD, 2.0 GHz or higher
- Memory: 1 GB or above
- Hard disk: At least 1 GB free space
- Display: Color display with resolution of 1024 x 768 or above
- Communication port: Ethernet port or USB port
- Operating system: Windows 7/Windows 10

2.2 Installation and Uninstallation

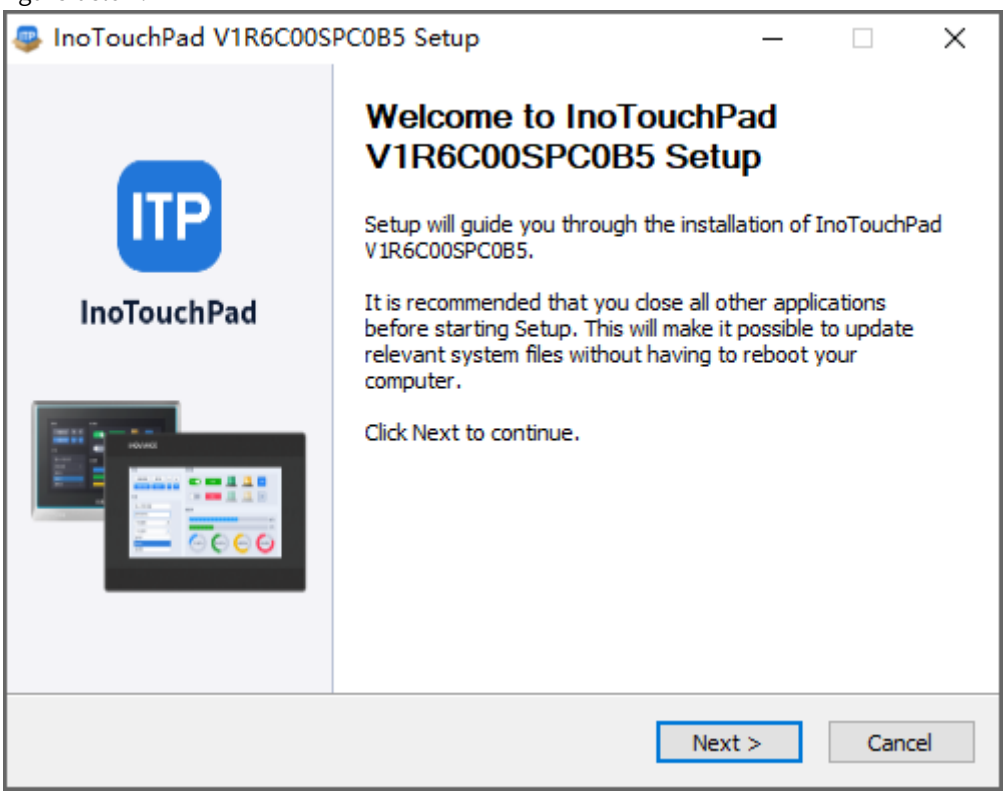
2.2.1 Installing InoTouchPad

The procedure for installing InoTouchPad is as follows:

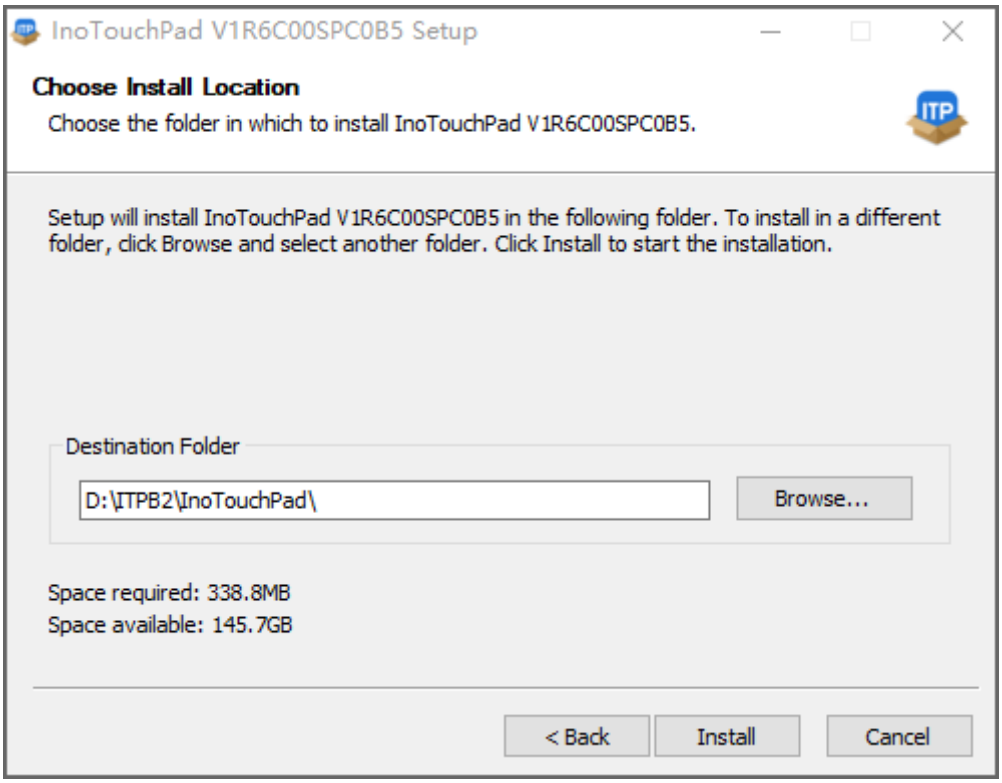
1. Double-click the installer. A dialog box appears, as shown in the figure below.



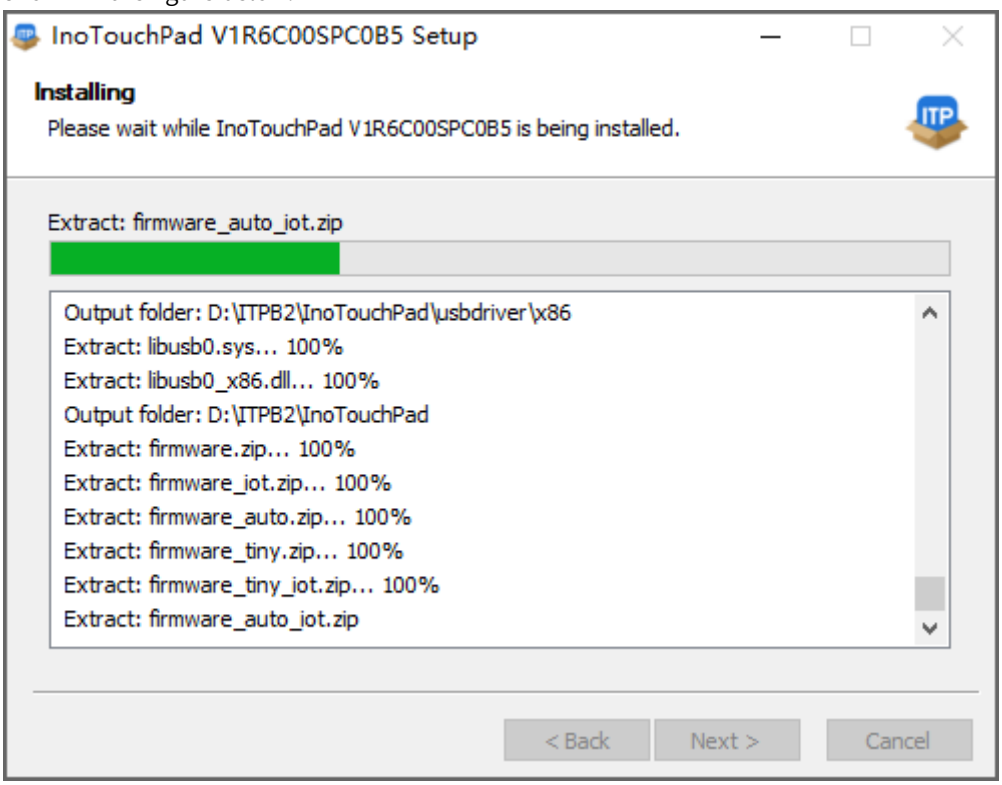
2. Select a language (default as Simplified Chinese) and click "OK". A dialog box appears, as shown in the figure below.



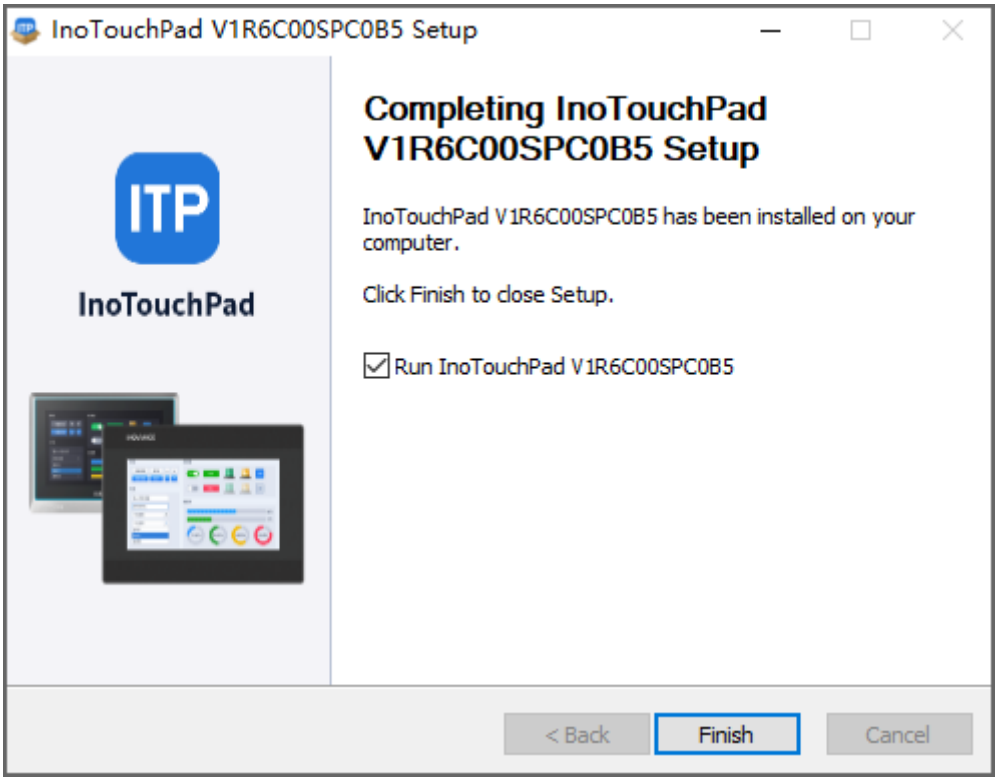
3. Click "Next". The default installation path of InoTouchPad is provided. Change it as needed and click "Install".



4. The progress bar is displayed during installation, which will be fully loaded within about 1 minute, as shown in the figure below.



5. After installation is completed, the window below pops up. If you want to run InoTouchPad immediately after installation, check "Run InoTouchPad XXX" and click "Finish". The installation is completed and the software is started immediately. If it is not checked, the installation is completed and exited.



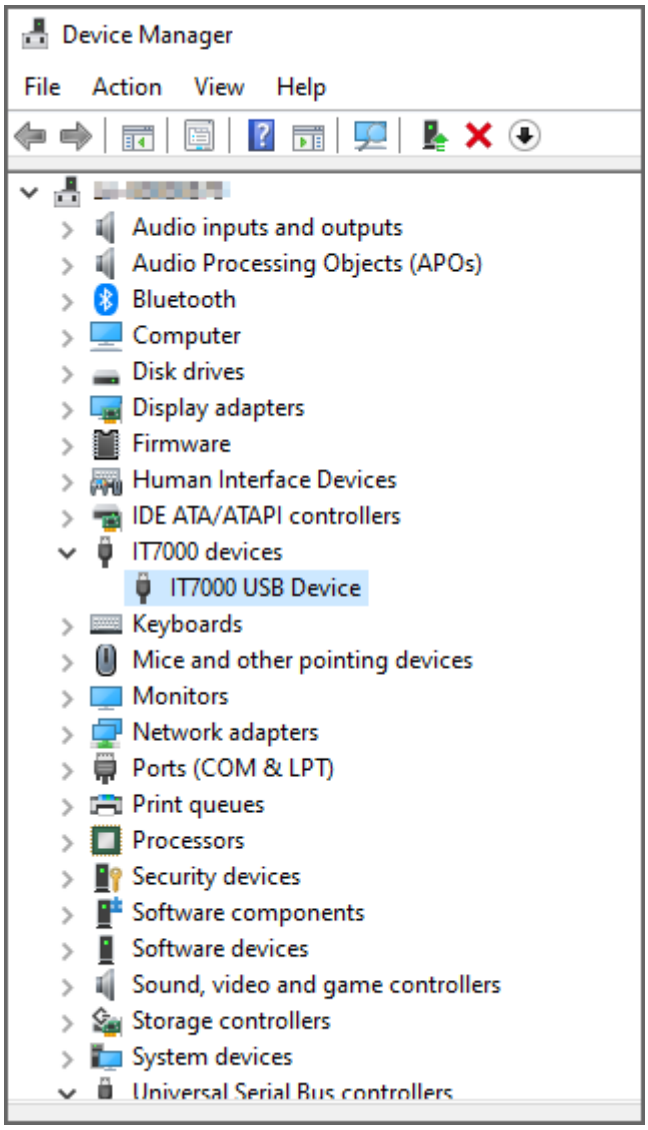
Note

During software installation, if no USB drive is automatically installed, manually install the USB drive. For details, see 2.2.2 Installing the USB Drive Manually.

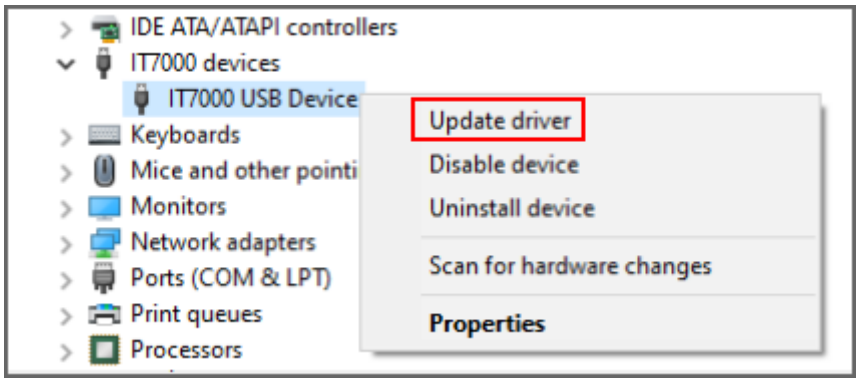
2.2.2 Installing the USB Drive Manually

1. Install the USB drive manually.

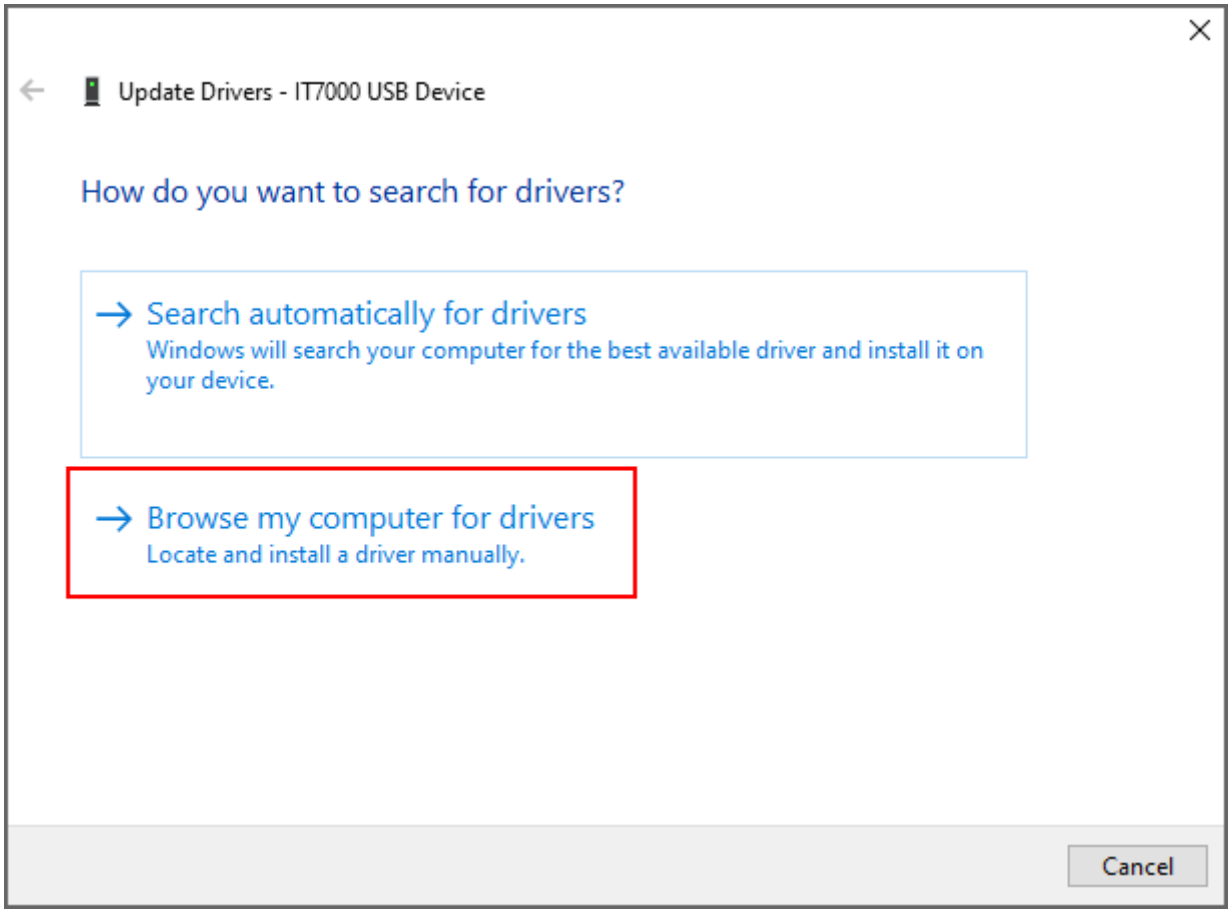
- For Windows 7, choose "Control Panel" > "Computer Management" > "Other devices", and locate the USB device.
- For Windows 10, choose "Control Panel" > "Device Manager" > "Port", and locate the USB device.

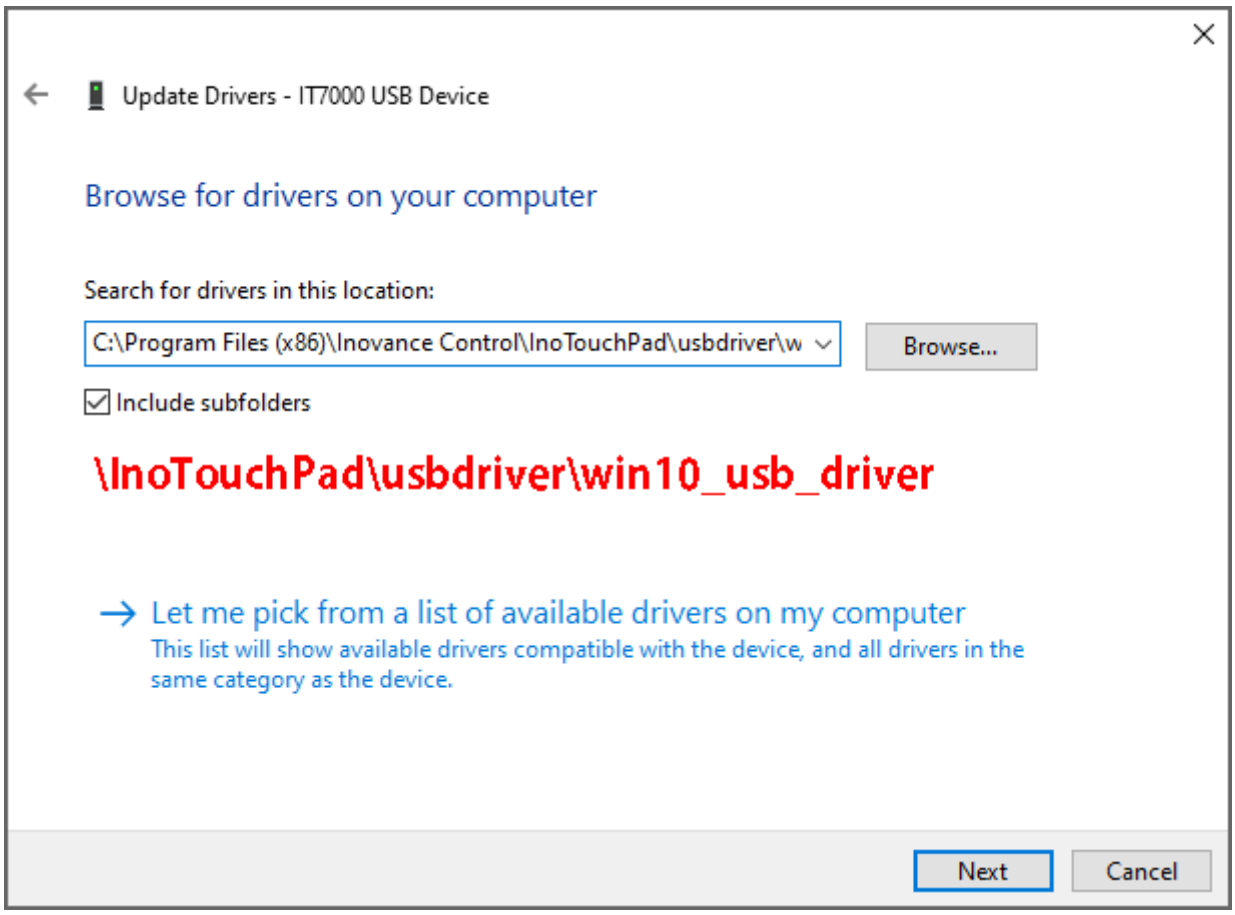


2. Right-click the device and select "Update driver", as shown in the following figure.

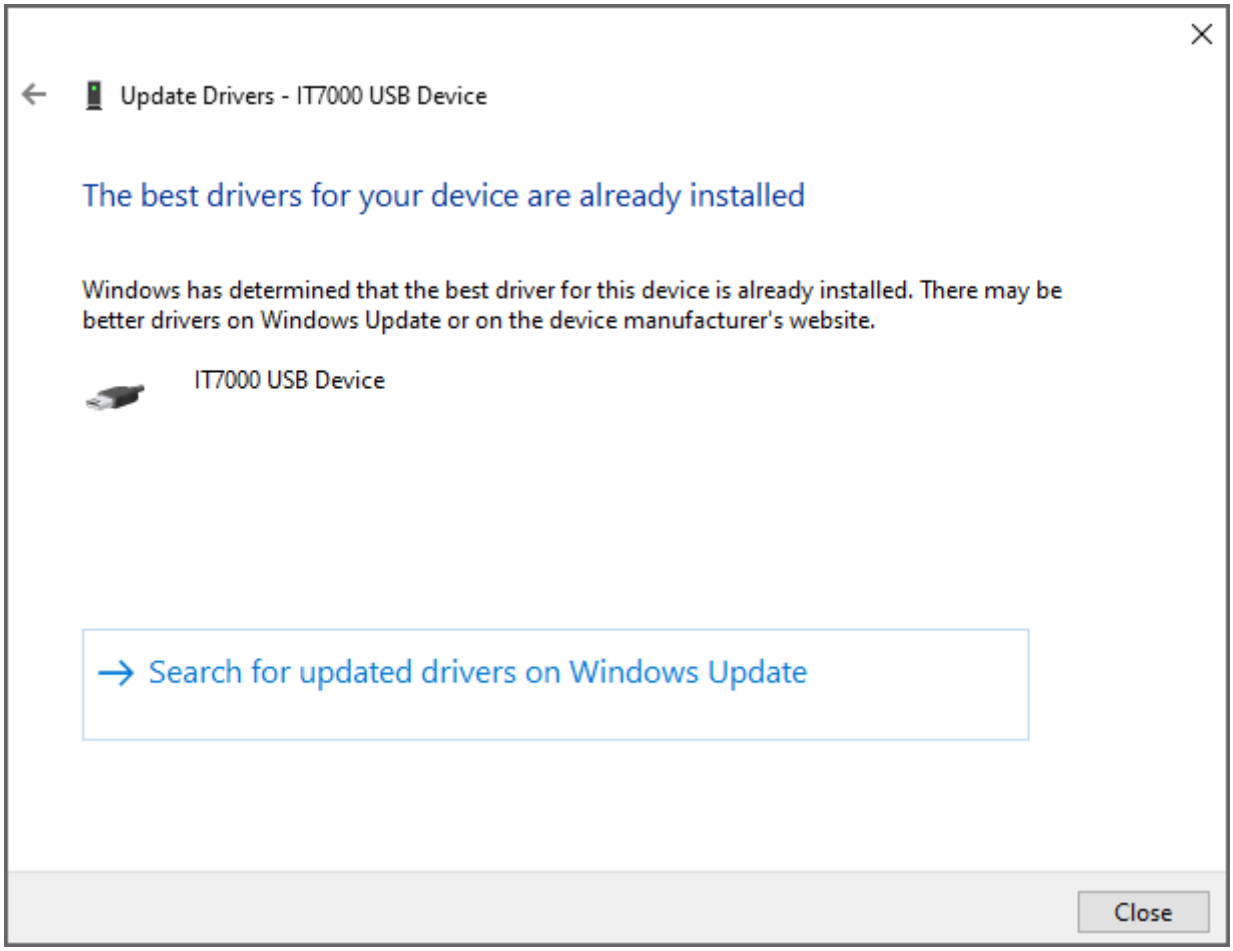


3. Select "Browse my computer for drivers". On the page displayed, input the installation path of InoTouchPad in the path field, and select "Include subfolders", as shown in the following figure.





4. Click "Next". When the driver is installed successfully, the following page is displayed, and then you can click "Close" to finish the installation, as shown in the following figure.

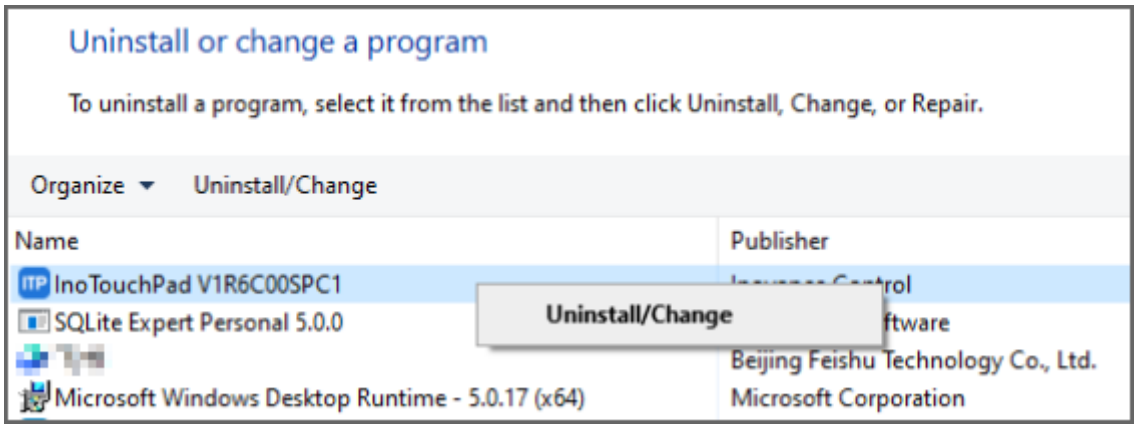


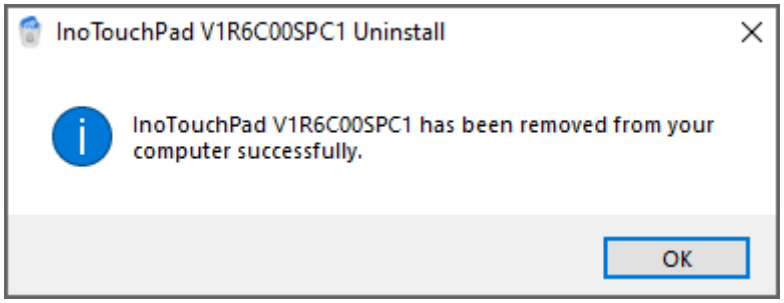
2.2.3 Uninstalling InoTouchPad

You can uninstall InoTouchPad with the control panel or with the uninstaller in the InoTouchPad installation directory.

With the control panel

Choose "Control Panel" > "Programs And Features", locate InoTouchPad, right-click it, select "Uninstall/Change", and confirm to completely remove all its components, as shown in the following figure.





With the uninstaller

Double-click the uninstaller "uninst.exe" in the installation directory to uninstall InoTouchPad.

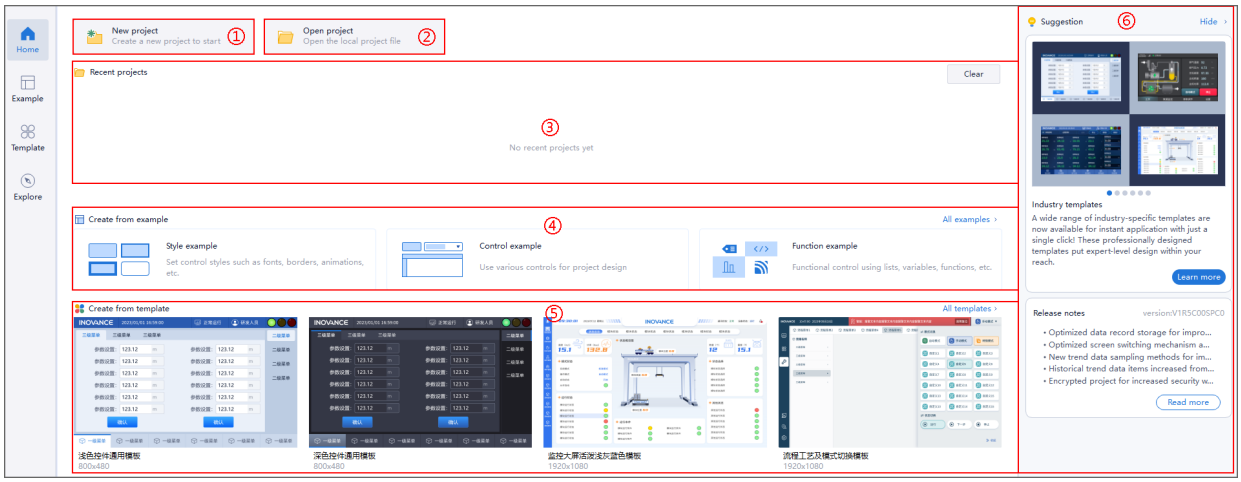
3 Quick Start Guide

3.1 Interface Introduction

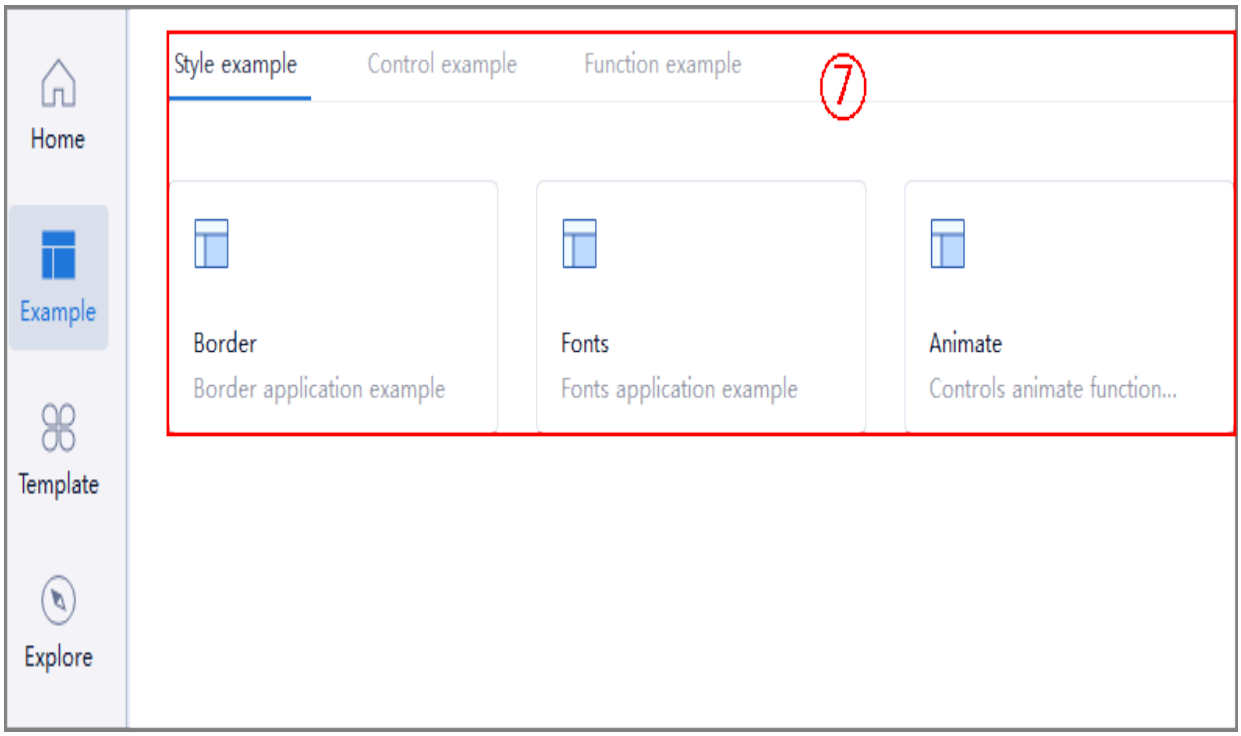
Introduction

When you run the InoTouchPad software for the first time, the "Create Project" dialog box will pop up. You can create a project, open an existing project, or open the sample project to enter the InoTouchPad interface.

Home



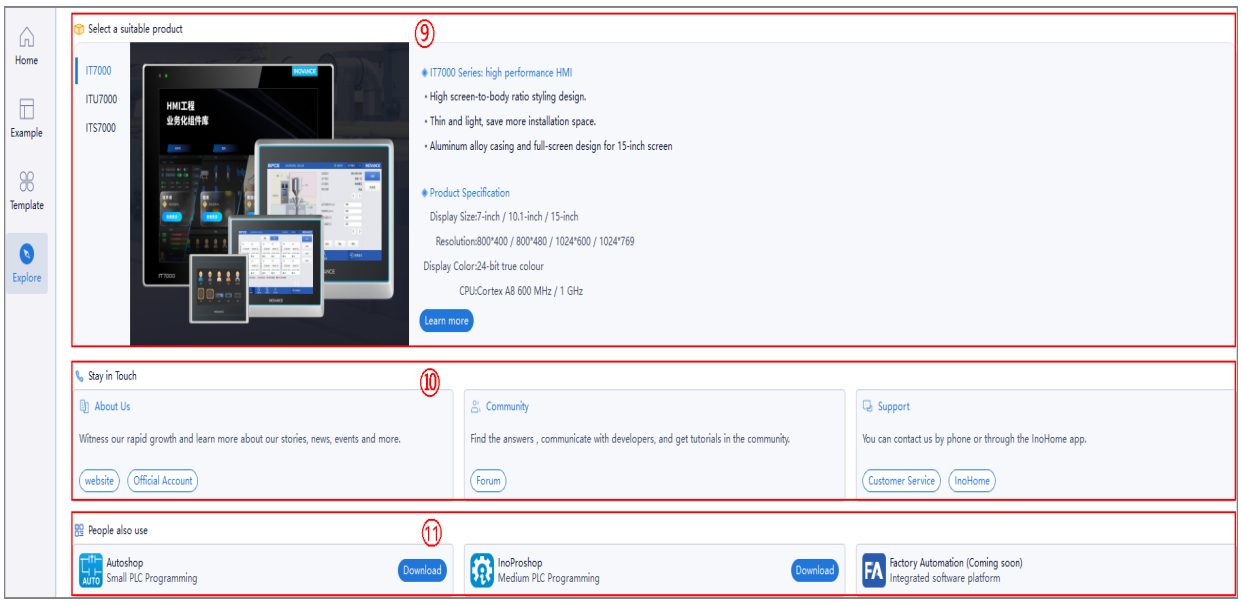
Example



Template



Explore

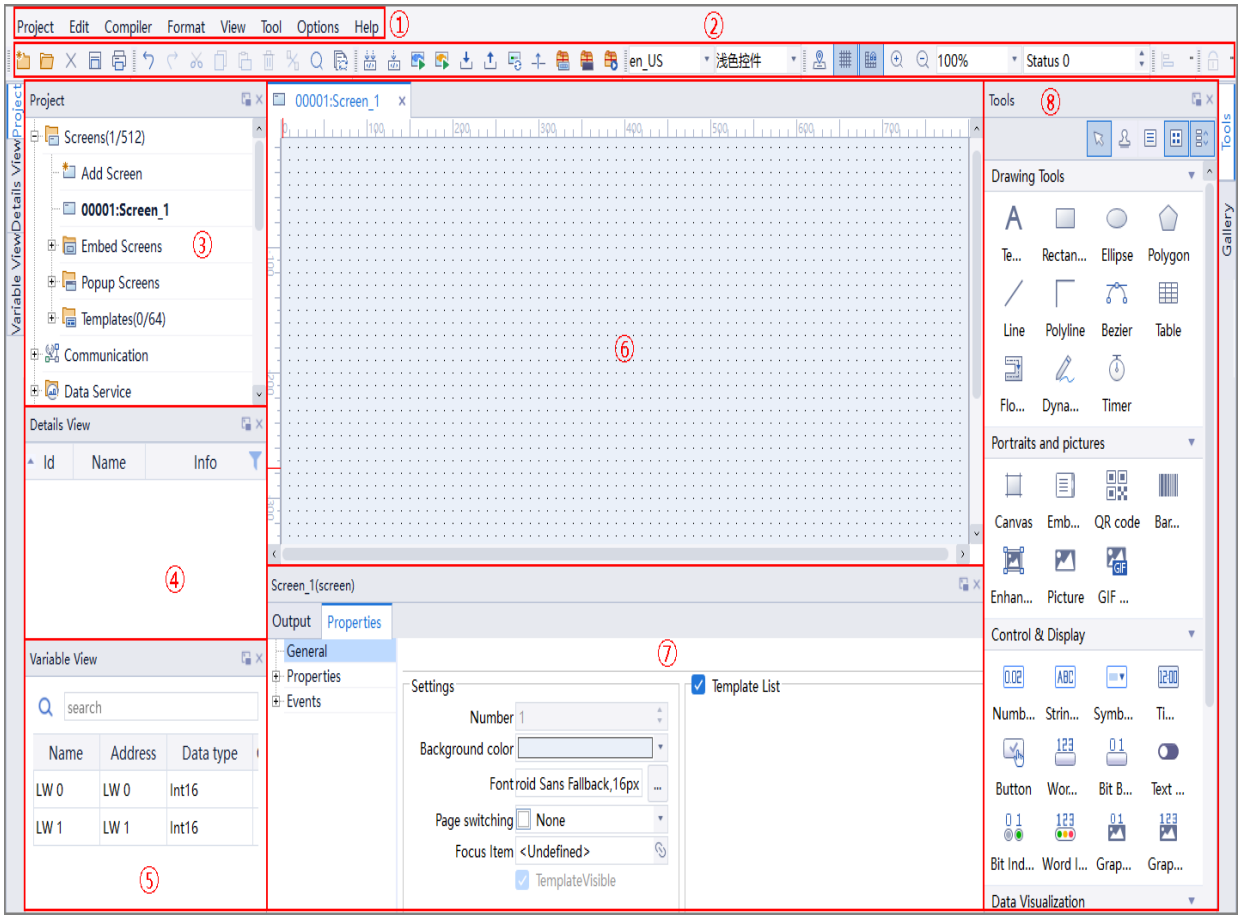


Area		Description
①	New project	-
②	Open project	-
③	Recent projects	-
④	Create from example	Selects a sample to create a project.
⑤	Create from template	Selects a template to create a project.

⑥	Suggestion	Views the highlights and detailed logs of each version.
⑦	Example	Provides style examples, control examples, and feature examples. You can create a project by selecting an example.
⑧	Template	Provides light-colored universal control templates and dark-colored universal control templates. You can create a project by selecting a template.
⑨	Select a suitable product	Learns features and parameters of the IT7000, ITU7000, and ITS7000 series products.
⑩	Stay in Touch	-
⑪	People also use	Software that InoTouchPad users may also use (such as Autoshop and InoProshop). Click "Download" to provide download links for Autoshop and InoProshop software.

Project Interface Introduction

The user interface includes: menu bar, toolbar, "Project" tree view, "Details View", "Variable View", screen editor, right sidebar, "Properties" view and "Output" view, as shown in the following figure:



Area		Description	Note
①	Top menu bar		Menus are separately described in detail.

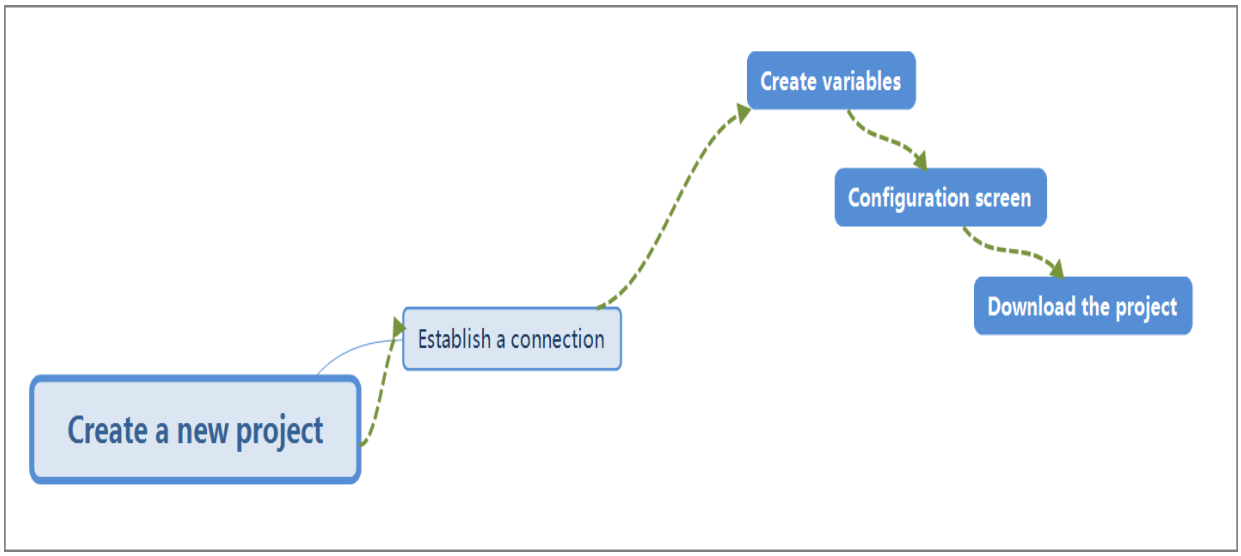
		The framework only provides four types of menus: Edit, View, Options, and Help. Other menus are functional modules.	
②	Top toolbar	The framework only provides three types of toolbars: Project, Edit, and Compile. Other toolbars are functional modules.	Software mainly operates tools.
③	Left-side project tree	The project feature tree includes screens, communication, alarm management, recipes, scripts, and historical data.	-
④	Details View	When a screen object node in the left-side project tree is selected, configured control objects will be listed in this view. If a group of objects are in the screen, you can select any one in the group in "Details View", and then edit properties of that control on the "Properties" tab page. If a tag group node is selected, all tags in the group will be listed in this view, and you can drag tags into the screen from this view.	-
⑤	Variable View	When the tag group in the left-side project tree is selected, all tags in the group will be displayed in "Variable View". You can drag tags into the screen from this view.	-
⑥	Screen editing area	Prompts functional module operations.	-
⑦	"Properties" tab page "Output" tab page	Prompts status. Displays the compilation output.	-
⑧	Right-side toolbar	Provides control lists for screens. Provides function/code template wizards for scripts. Provides protocols for communication.	-

3.2 Guide for Fresh Hands

This document introduces the complete process in the InoTouchPad software, from creating a new project to downloading the project to the HMI, to help users quickly get started with the InoTouchPad software to complete the configuration screen and simulate its effect.

Quickly Configuring a Project

When using the InoTouchPad software for the first time, you can quickly create a new project and download it to the HMI as follows to simulate the project.



- 3.3.1 Creating a Project
- 3.3.2 Creating a Connection
- 3.3.3 Creating a Tag
- 3.3.4 Configuring a Screen
- 3.3.5 Downloading a Project

FAQ and Cases

For details, see 22 FAQ and 23 Cases.

3.3 Quick Start Guide

3.3.1 Creating a Project

When initially configuring a screen, you need to create a project. This section describes how to create a project.

Preconditions

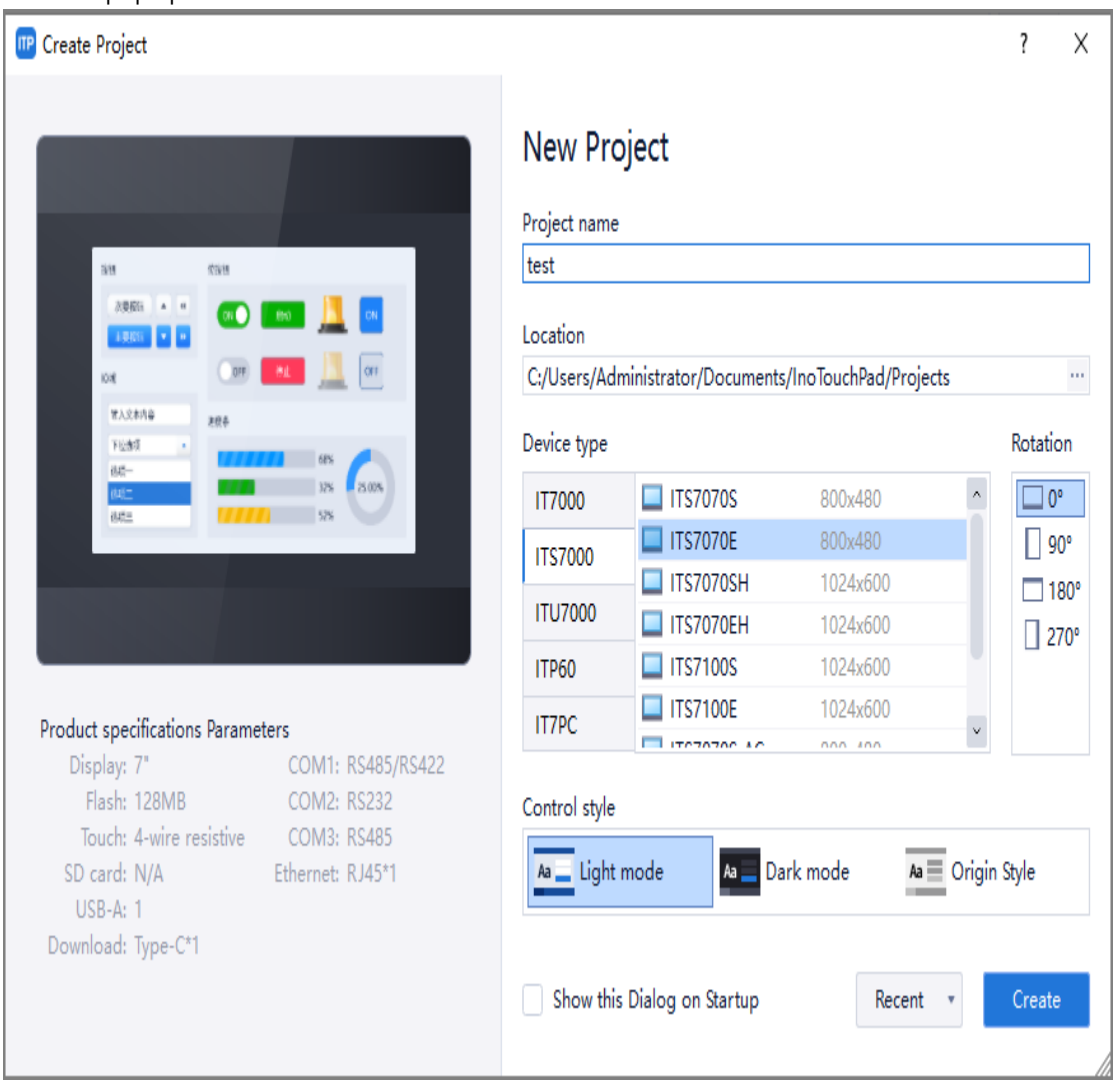
InoTouchPad has been installed.

Operating procedure

1. Start InoTouchPad and click "New Project".
2. In the "New Project" dialog box that pops up, configure parameters and click "Create", as shown in the figure below.
   - "Project name": The name of the project to be created, such as "text".
   - "Location": The directory for storing the project to be created, which can be customized. In general, the default directory is used.
   - "Device type": The type of the used device (HMI model, taking IT7070E as an example).
   - "Control style": The options are "Light mode", "Dark mode", and "Origin Style".

> **Note**
>
> When "Origin Style" is selected, styles of versions earlier than V1R5 are compatible.

- "Show this Dialog on Startup": Indicates whether to pop up the "New Project" dialog box when you start the software. When this option is selected, the dialog box pops up. Otherwise, the dialog box does not pop up.



3.3.2 Creating a Connection

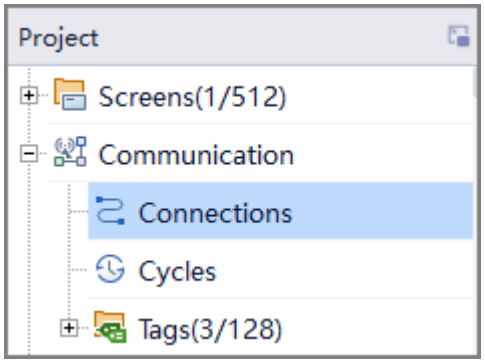
InoTouchPad communicates with the target devices for software and hardware interconnection through a connection. This section describes how to set a connection.

Preconditions

You have created a project by referring to the instructions in the 3.3.1 Creating a Project section.

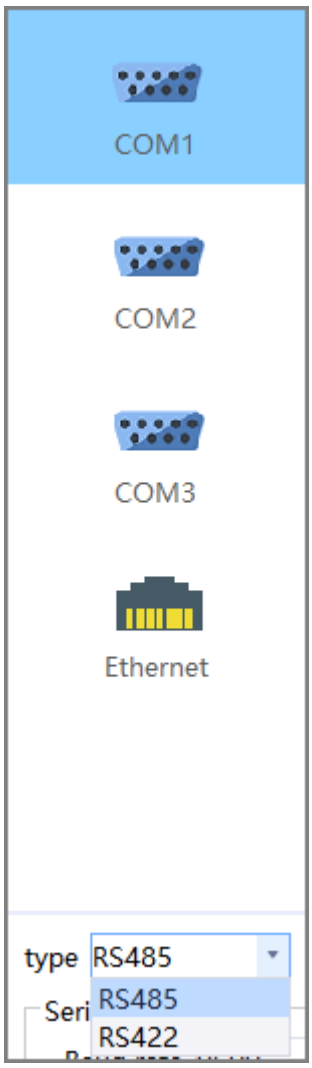
Operating procedure

1. In the "Project" navigation tree on the left, click "Communication" and then double-click "Connections", or right-click "Connections" and then select "Open editor", as shown in the following figure.



2. Select the physical port and type for communication.

Select "COM1" (then this serial port is selected, you can select RS485 or RS422 from the drop-down list of "type"), "COM2", "COM3", or "Ethernet" as needed, as shown in the following figure.



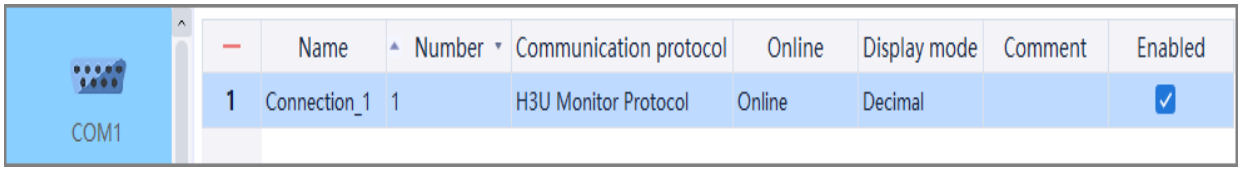
Note

- COM1 can be of RS485 or RS422 type.
- COM2 can only be of RS232 type.
- COM3 can only be of RS485 type.
- When "Ethernet" is selected, the HMI must be in the same LAN segment of the PLC connected.

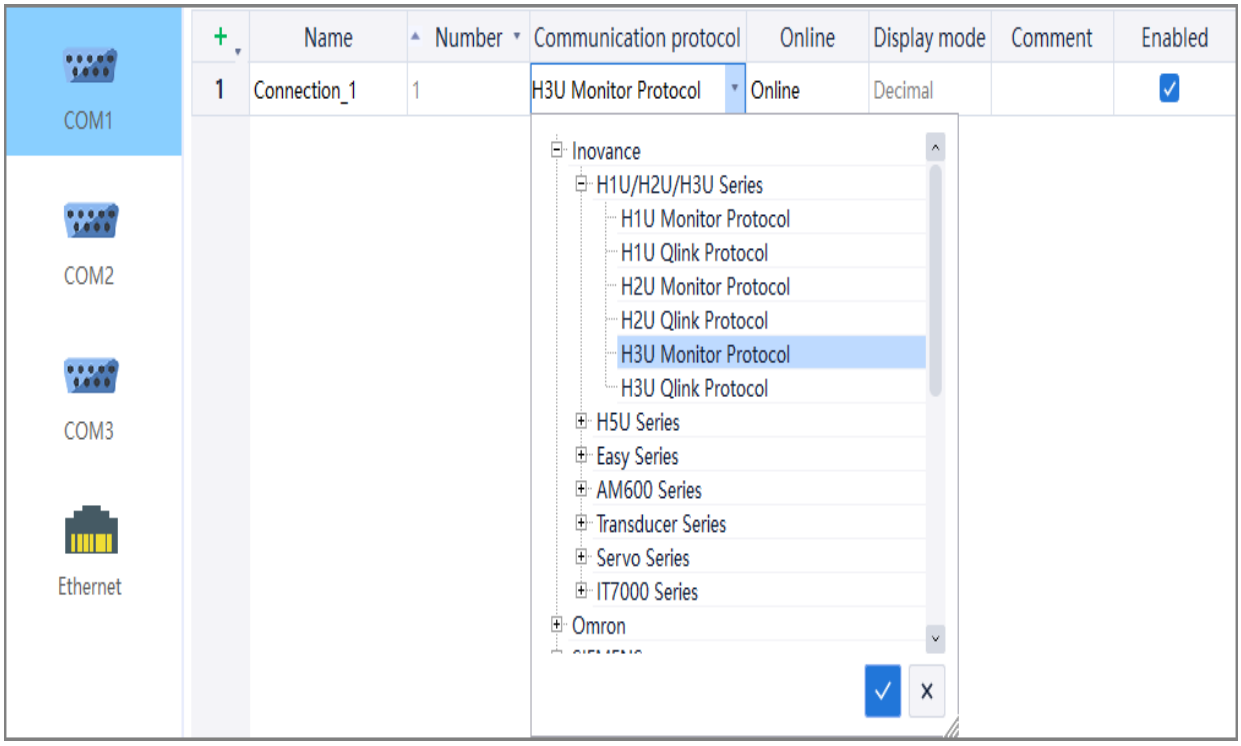
3. Configure the connection.

a. In the connection table, click the + button to add a connection (you can also select the number of the connection you want to delete, and click − to delete the connection), as shown in the following figure.

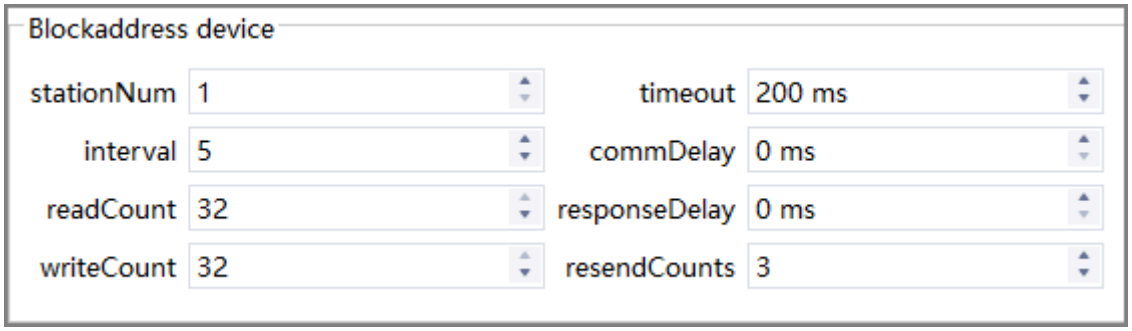




b. In the "Communication protocol" column of the added connection, select a protocol from the drop-down list. For the supported protocols, see 4.3.1 Supported Protocols.



c. Select a connection. In the "Blockaddress device" window, set the parameters of the communication protocol to establish the connection. The following figure shows the effect when all parameters in the "Blockaddress device" window are set to their defaults.



3.3.3 Creating a Tag

External tags created in an HMI project can be transmitted to the PLC, which is convenient for data exchange between them. In the tag module, tags include internal tags, system tags, and external tags.

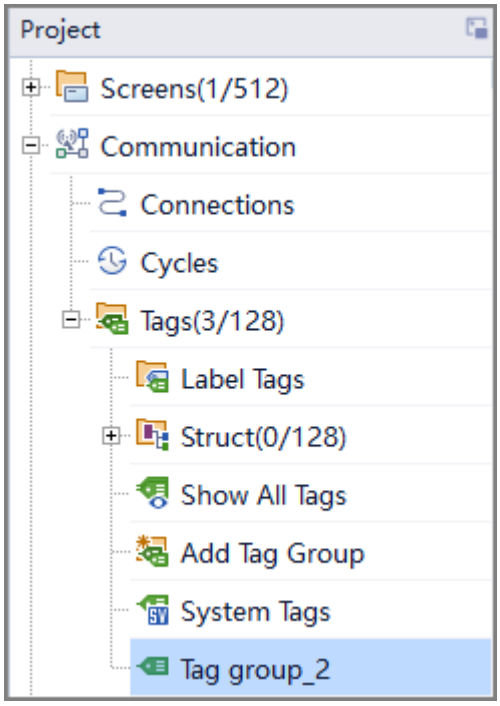
Preconditions

You have created a project by referring to the instructions in the 3.3.1 Creating a Project section.

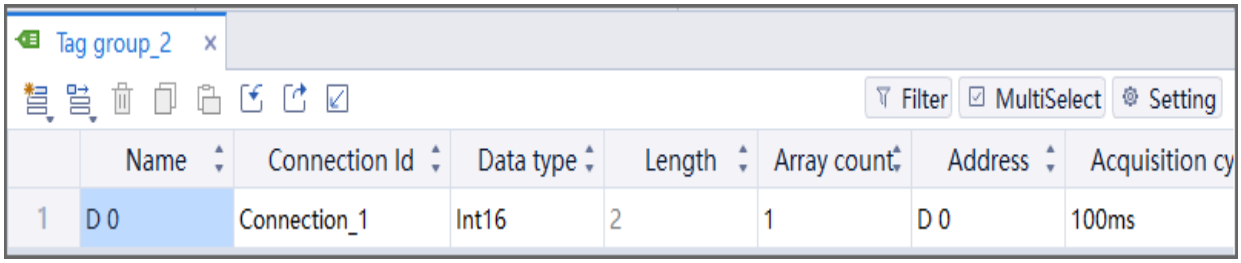
Operating procedure

1. In the "Project' navigation tree on the left, choose "Communication" > "Tags". In the expanded menu, double-click "Tag group_2" (the default created tag group in the system), or right-click "Tag group_2" to open the editor.

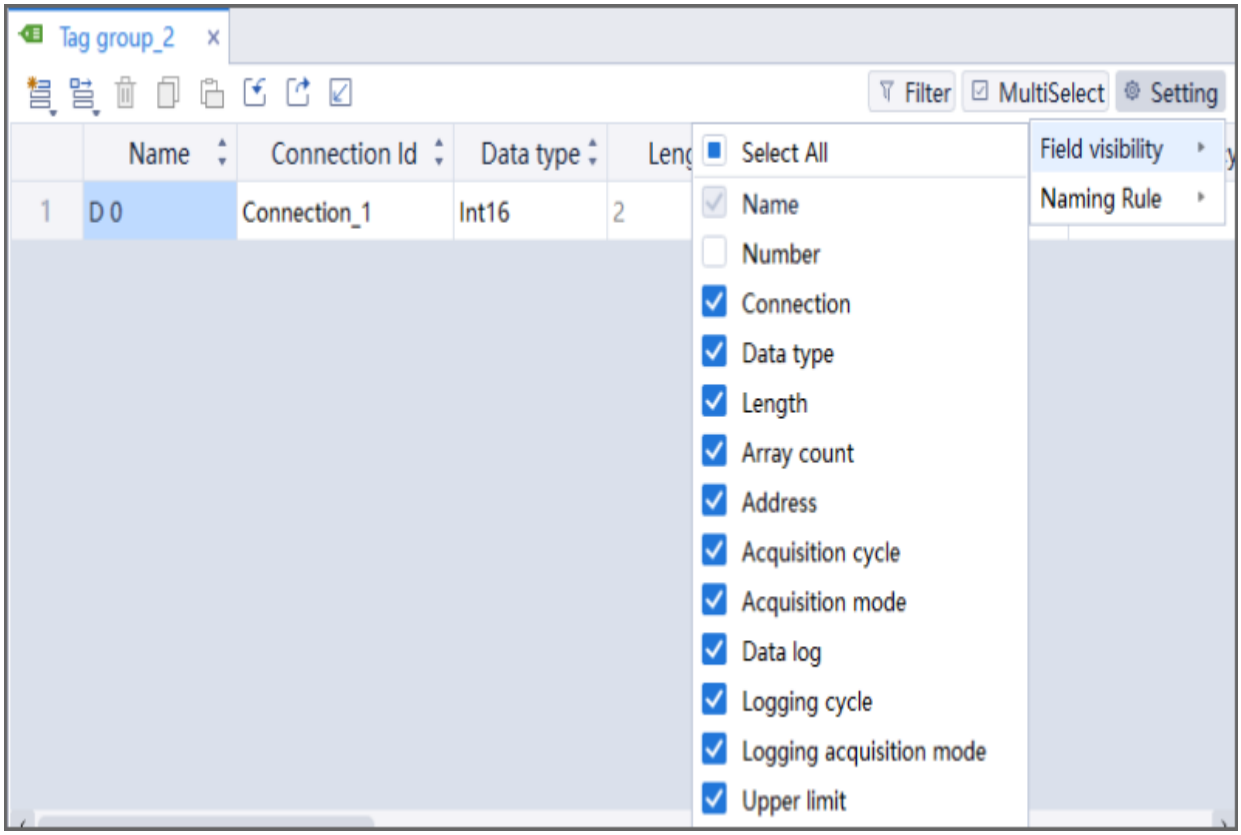
> **Note**
>
> You can also double-click "Add Tag Group" to add a tag group.



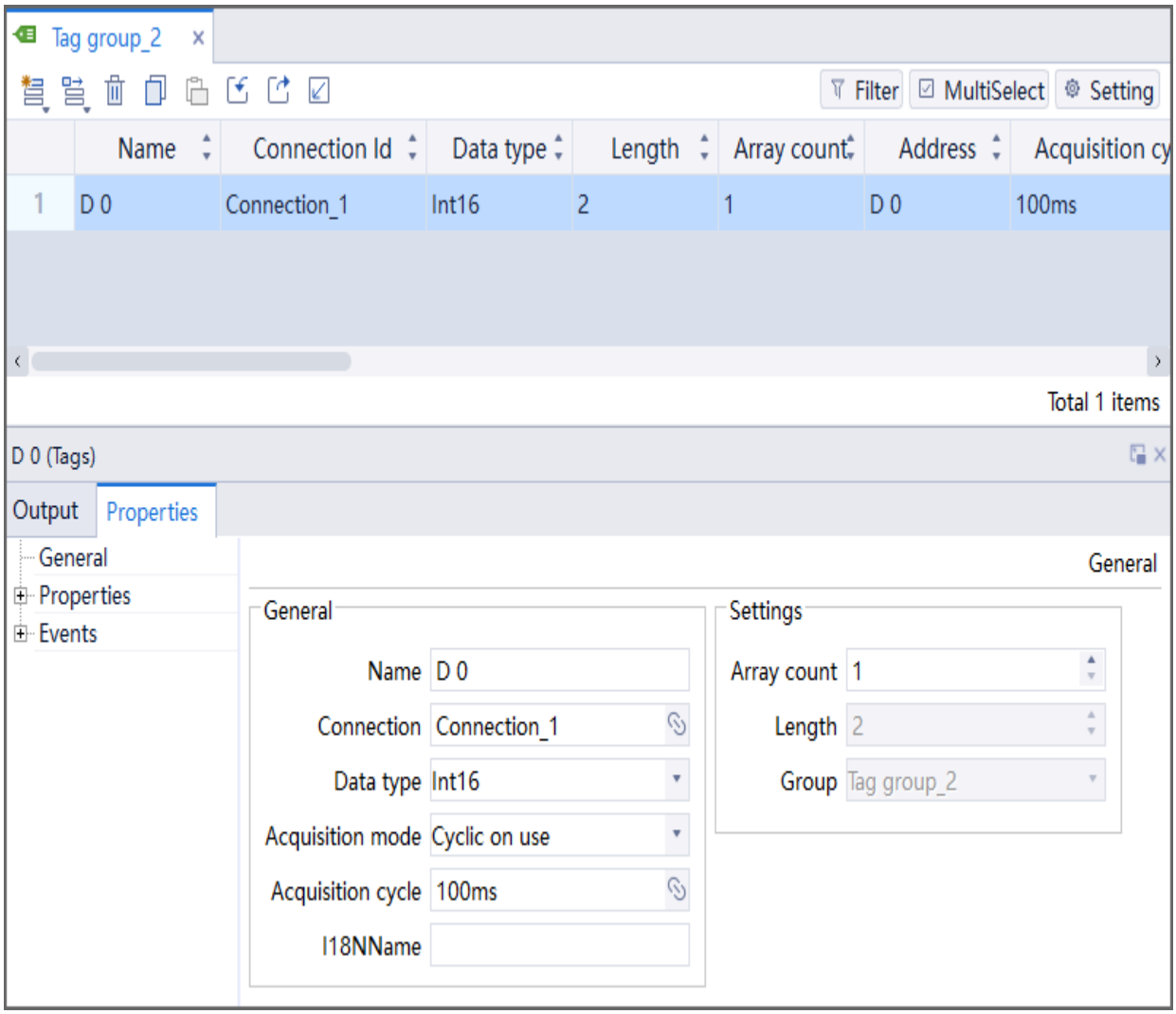
2. In the tag editor, click  to create a tag named "D 0" (the default tag in the system).



3. Click "Settings" > "Field Visibility", select to show or hide specific column properties as needed.



4. Click a tag and modify other properties of the tag on the "Properties" tab page as needed.



3.3.4 Configuring a Screen

The screen is the main element of an HMI project. It enables the interaction between the HMI and the users. This section describes how to configure a screen.

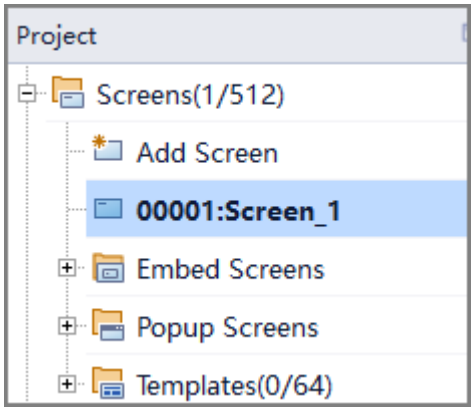
Preconditions

- You have created a project by referring to the instructions in the 3.3.1 Creating a Project section.
- You have created a connection by referring to the instructions in the 3.3.2 Creating a Connection section.
- You have created a tag by referring to the instructions in the 3.3.3 Creating a Tag section.

Operating procedure

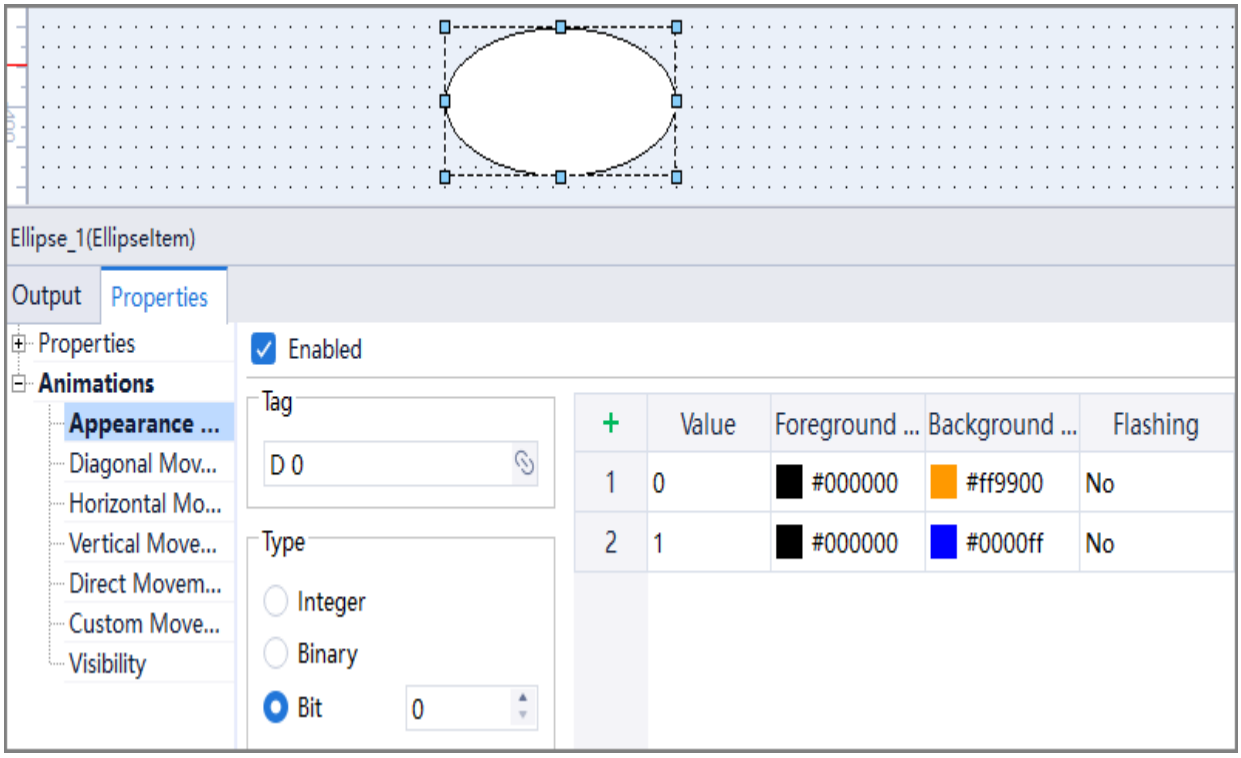
The following example takes indicators and control buttons as an example to describe how to configure a screen.

1. Click "Screens" in the project window on the left, and double-click "00001:Screen_1" (the default created screen in the system) to open the screen.



2. In the "Tools" toolbar on the right, drag the "Ellipse" control to the screen, and select this control. In the "Properties" section, choose "Animations" > "Appearance Change" and select "Enabled".

3. In the "Tag" section, select the tag "D 0" created in the 3.3.3 Creating a Tag section from the drop-down list, and set "Type" to "Bit" and set the bit value to 0. In the table, click  twice to add two statuses. Set the background color of bit 0 of the tag "D 0" to #ffff9900, and that of bit 1 to #0000ffff, as shown in the following figure.



Note

The background colors correspond to different states of the indicator light, which is easy to distinguish. You can set the colors as needed.

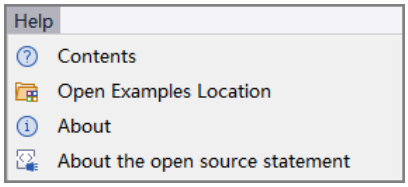
4. In the "Control & Display" toolbar on the right, drag a "button" control to the screen and select the control to control the flashing of the indicator.

- To set the button feature to "Set":
  a. On the "General" tab page of "Properties", enter "Set" as the Text Off text.
  b. On the "Events" tab page, select the button trigger mode ("Click" in this example), click "Edit bits", and associate the system function "SetBitInTag" (set) with the button event.
- To set the button feature to "Reset":
  a. On the "General" tab page of "Properties", enter "Reset" as the Text Off text.
  b. On the "Events" tab page, select the button trigger mode ("Release" in this example), click "Edit bits", and associate the system function "ResetBitInTag" (reset) with the button event.

5. Select the "Button" control. In the "Properties" section, choose "Animations" > "Appearance Change" and select "Enabled". In the "Tag" section, select the tag "D 0" created in the 3.3.3 Creating a Tag section.

Note

Choose "Help" > "Open Examples Location" to find configuration examples and learn how to configure a project and associate it with tags quickly.



3.3.5 Downloading a Project

After configuring a screen and compiling a project, you can download the project to the HMI for commissioning through a USB drive or Ethernet cable. This section describes how to download a project.

Project simulation

If you do not install the HMI software, you can perform offline simulation or online simulation by referring to the section 15.2 Simulation.

Preconditions

- Case 1: Downloading an opened project: You have configured the screen by referring to the section Configuring a Screen.
- Case 2: Downloading a project that is not opened: You have configured the screen by referring to the section Configuring a Screen and packaged the project by referring to the section 15.5.2 Packaging a Project.

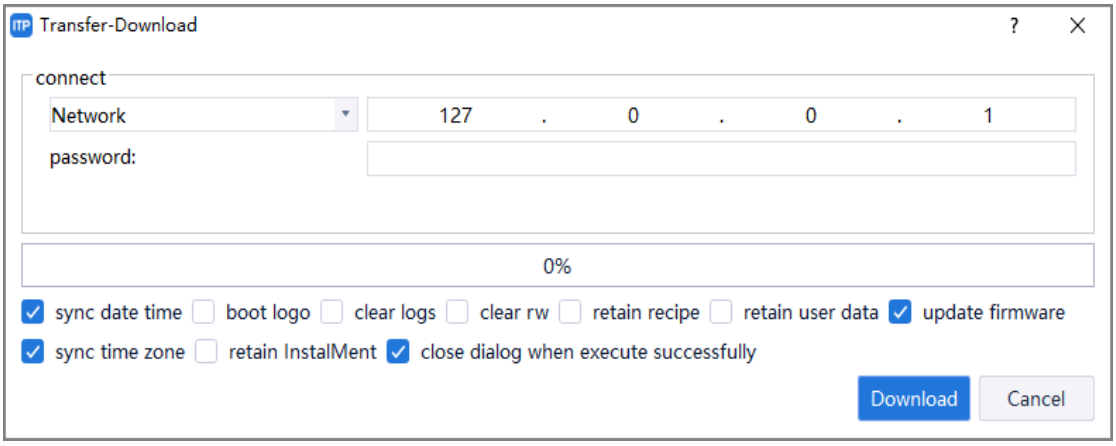
Notes

- When downloading or compiling a project, do not filter folders in the project file directory.
- The size limit of the project file that can be downloaded or compiled varies with the device model. Currently, the size limit is 30 MB for Flash 128 and 60 MB for Flash 256.
- You can cancel the downloading operation during project or firmware downloading.
- When you download a project file of a higher version to an HMI of a lower version, a version mismatch error will be reported.

Operating procedure

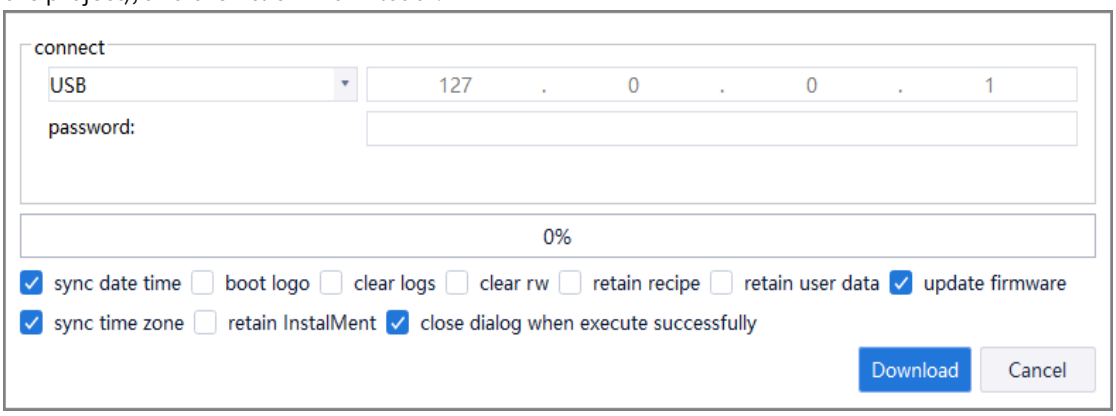
Case 1: Downloading an opened project

1. Choose "Compiler" > "Download" in the menu bar, or click  or press F7. The "Transfer-Download" tab page is displayed:
   - Select "Network" under "connect". Input the IP address of the connected touchscreen, select "update firmware" (update the firmware when downloading the project), and then click "Download".



> **CAUTION**
>
> The default IP address of the IT7000 series HMI is 192.168.1.100.

- Select "USB" under "connect". Select "update firmware" (update the firmware when downloading the project), and then click "Download".

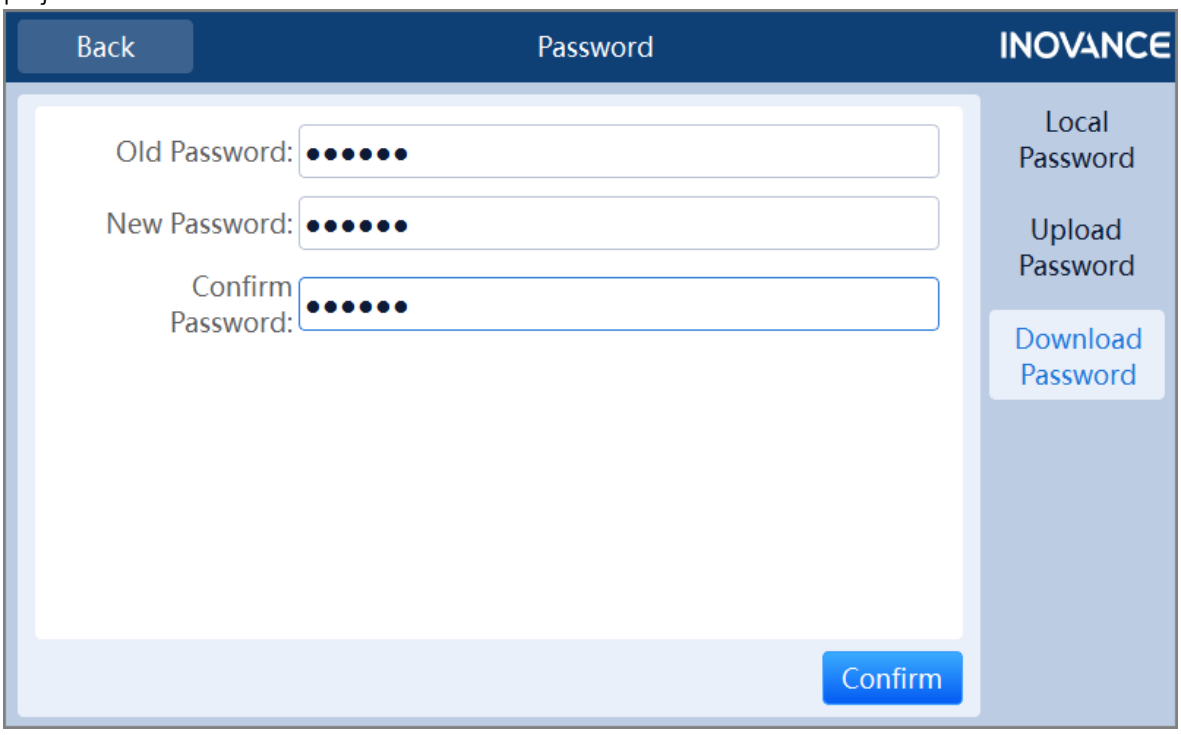


Note

You can also select "sync date time" (synchronize the system time of the current PC to the touchscreen), "boot logo" (apply the user-defined boot logo), "clear logs" (clear data records, alarm records, and operation records), "clear rw" (clear the internal tag data of RW), "retain recipe", "retain user data" (username and password), "update firmware", "sync time zone", "retain installment", and "close dialog when execute successfully".

2. (Optional) Set the download password.

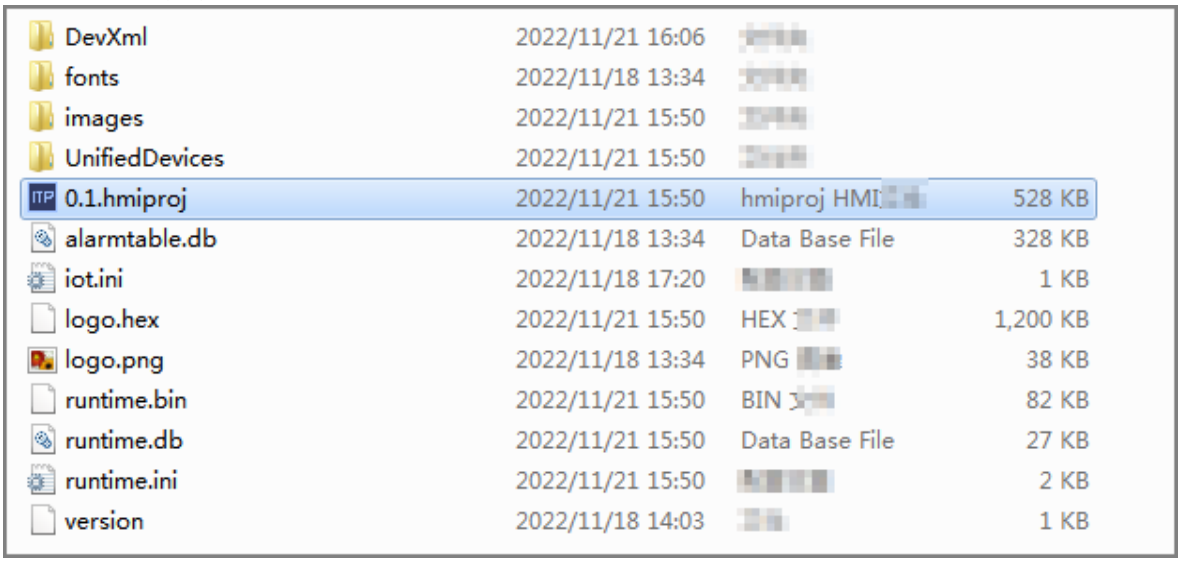
   No password is required for downloading. If you have set a download password on the "Download Password" tab page under "Control Panel" > "System Settings" > "Security and Password" in the HMI, as shown in the following figure, you need to input the download password before you can download the project to the touchscreen.



3. View the size of the downloaded project package or compiled project package.

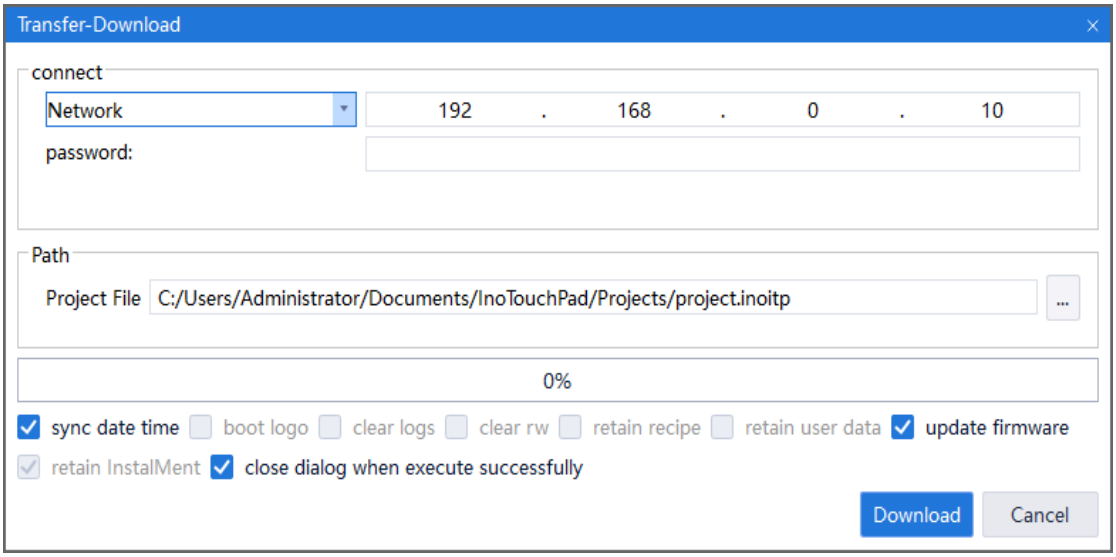
   When downloading the project package and calculating the package size during compilation, the files in the project will be optimized. During downloading or compilation, only the project files are considered, and other files are excluded to ensure the minimal project file size downloaded to the HMI panel, as shown

in the following figure.

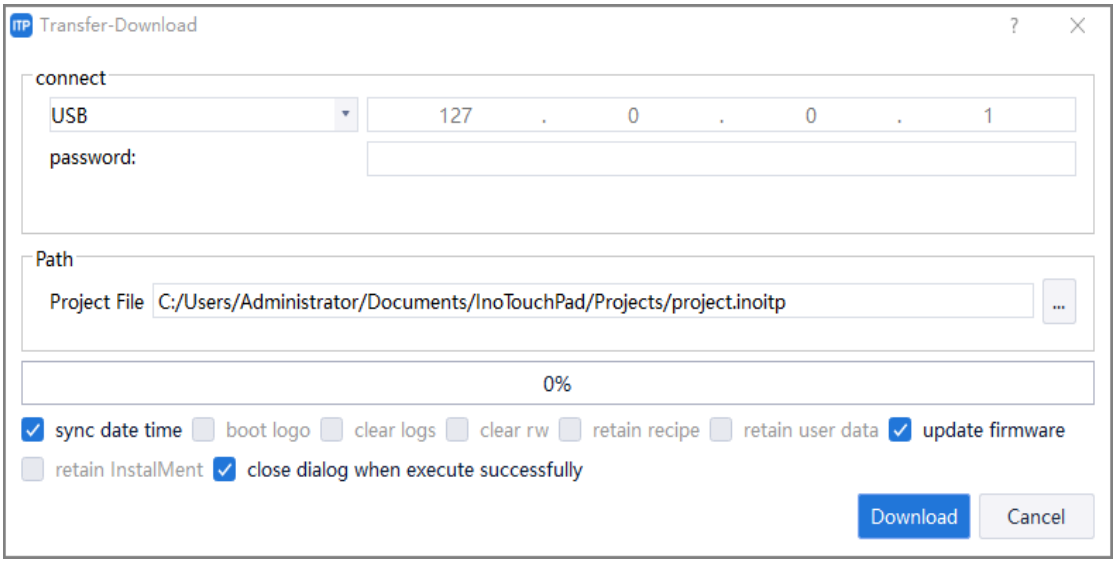


Case 2: Downloading a project that is not opened

1. Choose "Compiler" > "Download" in the menu bar, or click or press F7 to display the "Transfer-Download" tab page.
   - Select "Ethernet" under "connect". Input the IP address of the connected touchscreen, select the path of the packaged project file for "Path", select "update firmware" (update the firmware when downloading the project), and then click "Download".



   - Select "USB" under "connect". Select the path of the packaged project file for "Path", select "update firmware" (update the firmware when downloading the project), and then click "Download".



Note

- Project files suffixed with .inoitp and .zip can be downloaded.
- You can also select "sync date time", "update firmware", and "close dialog when execute successfully". Other options can only be obtained from the selected project file.

2. (Optional) Set the download password. For details, see Download Password.
3. View the size of the downloaded project package or compiled project package. For details, see Viewing Size of Downloaded or Compiled Project Package.

FAQ

When an error occurs during downloading, a prompt is displayed. For details, see FAQs about Project Uploading and Downloading.

4 Communication

4.1 Introduction

4.1.1 Basic Information

Data exchange between devices is called communication. The devices can be networked and interconnected through communication media such as serial communication cables, network cables, and wireless modules.

Communication Devices

A communication device can be connected to a communication network to exchange data. In general, it is call a communication node. In the Inovance InoTouchPad environment, HMI or PLC is considered as a communication node.

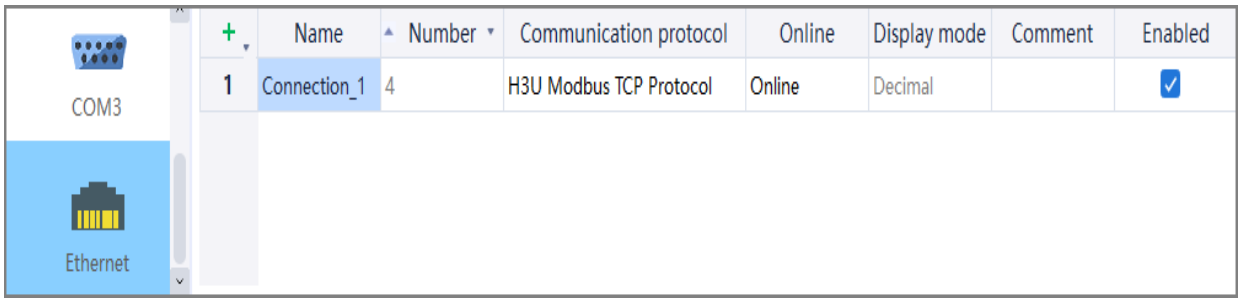
Use of Communication Data

In general, data transmitted between devices can be used to control projects, collect process data, report the status during the process, and record process data.

4.1.2 Communication Principle

InoTouchPad controls communication between HMI and PLC or between HMIs by mapping device register addresses to communication tags through the selected protocol.

For example, in InoTouchPad, go to "Connection", create a connection named "Connection_1", and configure the Inovance H3U Modbus TCP protocol.

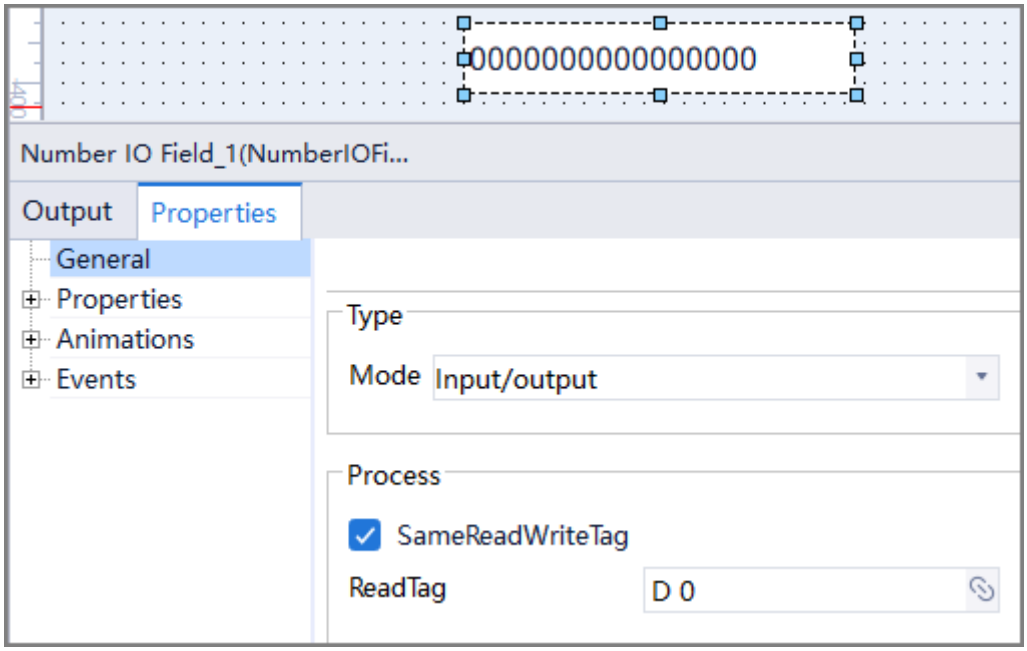


	Name	Number	Communication protocol	Online	Display mode	Comment	Enabled
1	Connection_1	4	H3U Modbus TCP Protocol	Online	Decimal		☑

Then, in "Tag group_2" of "Tag", create a tag, configure the "Connection_1", and map the D0 address of the Inovance H3U register to this tag.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	D 0	1	Connection_1	Int16	2	1	D 0

In the screen, create a numeric I/O field, configure the tag D0, download it to the touchscreen, and connect the device to Inovance H3U. The numeric I/O field can access the value of the Inovance H3U register with the address of D0 through the tag name.



4.1.3 Communication Tag

Communication tags, which are managed in the tag editor, include internal tags and external tags. Internal tags are defined memory images on an HMI, while external tags are defined memory images on a PLC, all of which can be used for communication. During communication, these defined memory images can be read and written by devices. This is usually done in a periodic or event-triggered manner. For details, see 5.3.2 Using Tags for Communication.

After you create an address tag, the HMI can read the value from the address and display the value. You can also write the tag value to the specified address on the HMI.

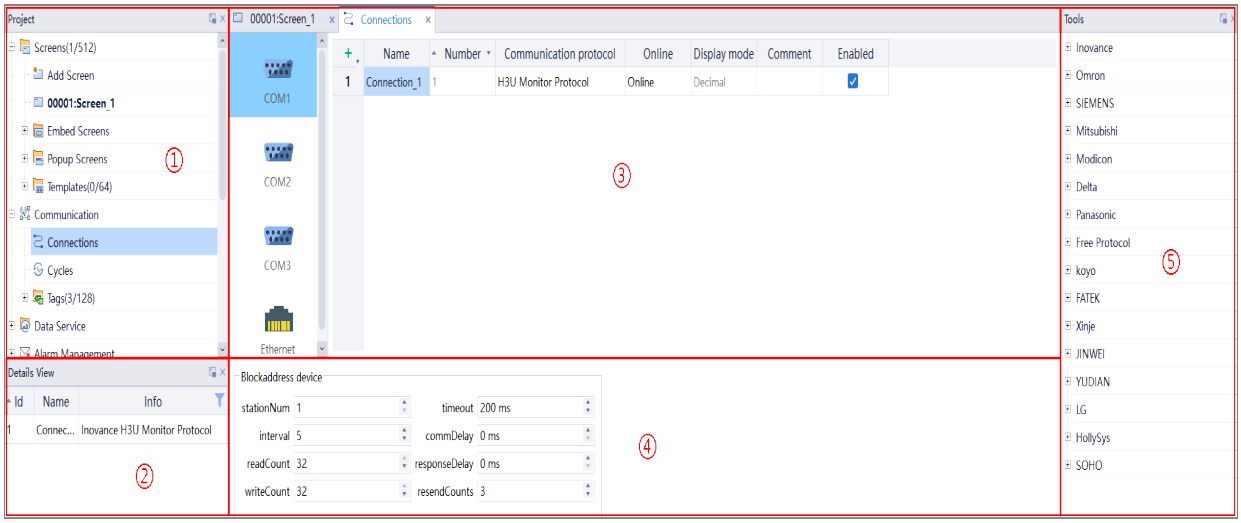
4.1.4 Communication Protocol

Different drivers enable different device connections. You can choose a specific communication interface, configuration, and transmission speed for an individual device. For a list of supported protocols, see 4.3.1 Supported Protocols.

4.2 Basic Settings

4.2.1 Configuring a Connection

The configuration screen of an HMI project is as shown in the following figure.



No.	Name
①	Project view
②	Details View
③	Workspace
④	Parameter setting area
⑤	Tool area

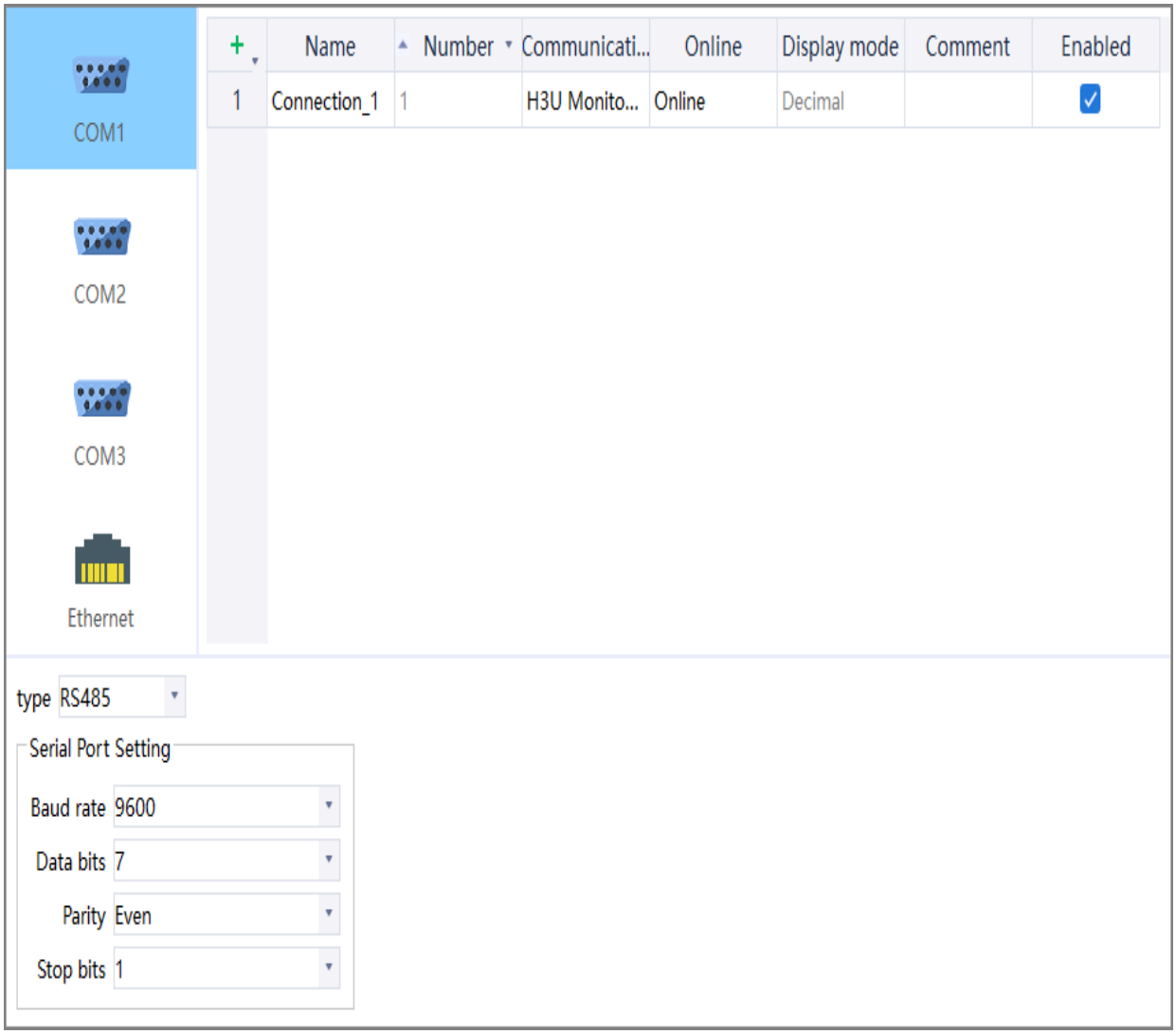
Procedure:

1. In the project view on the left, click "Communication".

2. In the expanded menu, double-click "Connections" to open the connection editor.

3. In the workspace of the connection editor, click the "+" icon to create a connection, and then select "Enabled".

4. You can customize the parameters of the connection device as needed. If you need to set the physical serial port communication terminal, you can click a port to show the serial port settings, as shown in the following figure.



5. In the communication protocol, select the communication protocol driver suitable for your PLC.

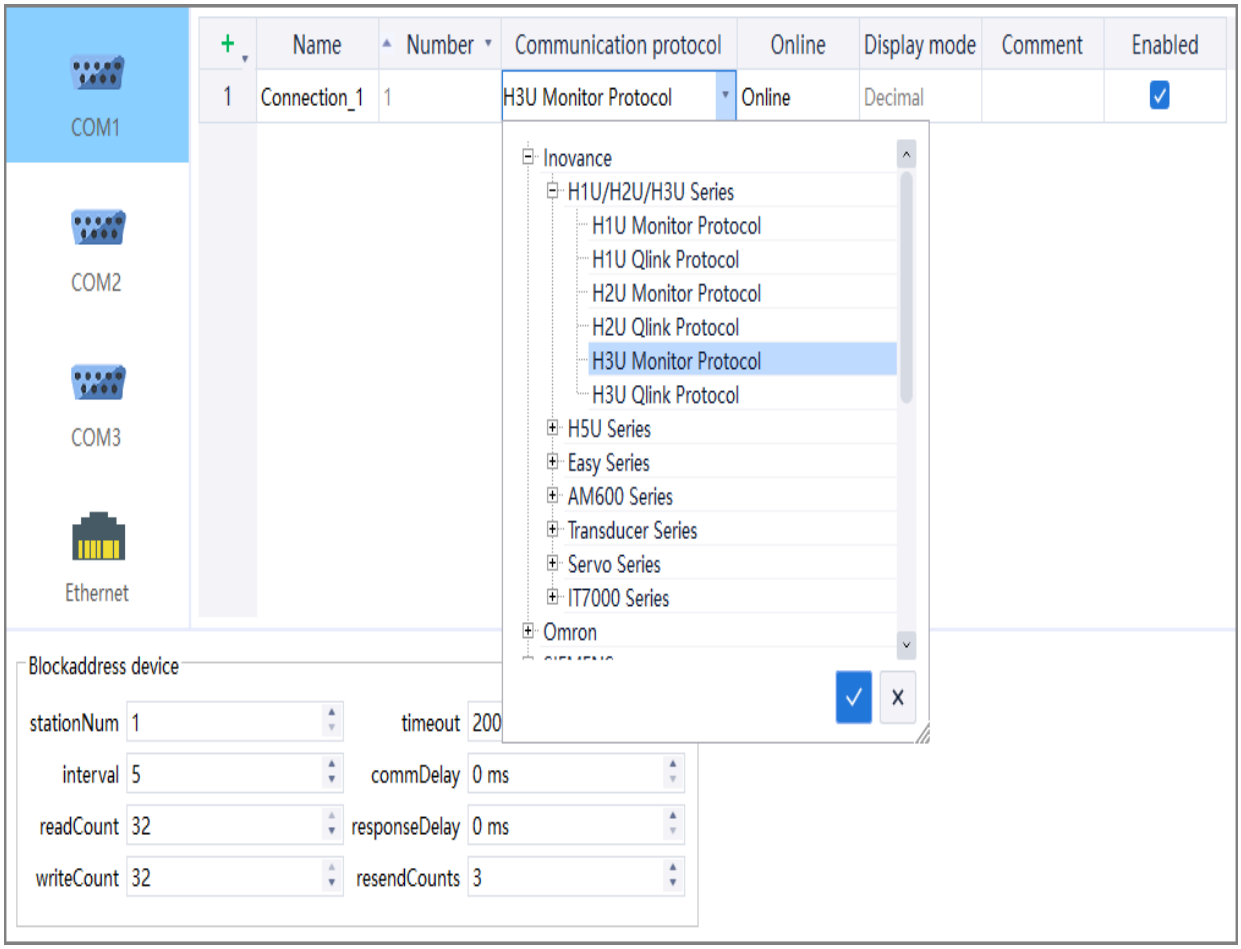
6. Set the parameters for the connection device in the parameter setting area. By default, the communication parameters (timeout time, communication delay, and response delay) are auto-tuned during communication.

7. Save the project to finish the connection configuration.

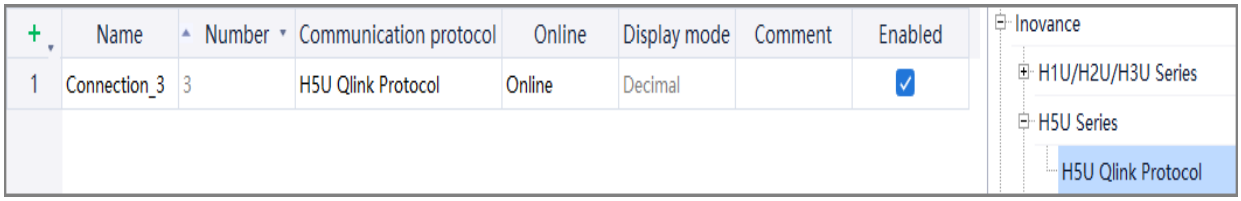
4.2.2 Connection Editor

In the connection editor, you can create and configure connections. With the tabular connection editor, you can set the connection name, communication protocol, default status of the protocol, and comments. After selecting the communication protocol, you can edit the related properties.

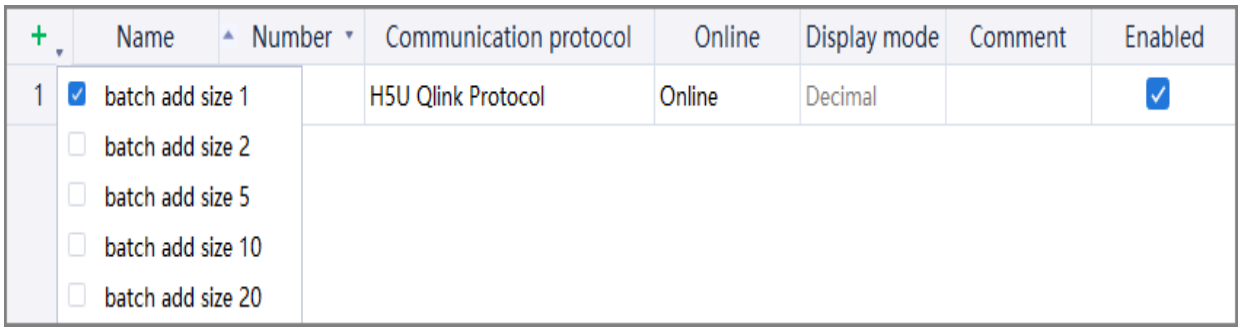
In the connection editor table, click the + icon in the upper-left corner to create a connection, and then select the protocol in the "Communication protocol" column of the table, as shown in the following figure.



You can also directly select the required device protocol from the toolbar on the right, and double-click it to create a connection, as shown in the following figure.



If you want to create multiple connections at one time, you can also click the button in the upper-right corner to select a batch operation from the drop-down list, as shown in the following figure.



Select "Batch add size 5" and then click the button. The result is as follows:

+	Name	Number	Communication protocol	Online	Display mode	Comment	Enabled
1	Connection_3	3	H5U Qlink Protocol	Online	Decimal		☑
2	Connection_4	4	H5U Qlink Protocol	Online	Decimal		☑
3	Connection_5	5	H5U Qlink Protocol	Online	Decimal		☑
4	Connection_6	6	H5U Qlink Protocol	Online	Decimal		☑
5	Connection_7	7	H5U Qlink Protocol	Online	Decimal		☑
6	Connection_8	8	H5U Qlink Protocol	Online	Decimal		☑

4.2.3 Connection Parameters

After the protocol is selected for the connection editor, you can configure connection parameters for the HMI and communication devices.

Supported ports and types

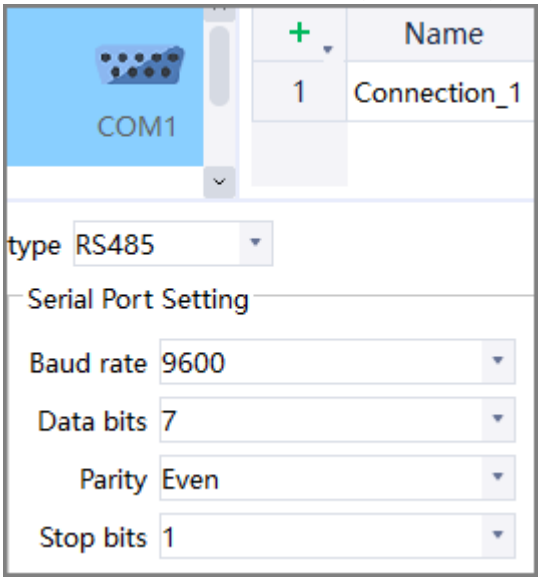
Port	Class	Description
COM1	RS485	Up to 32 protocols (of the same family) can be configured without crossing.
	RS422	Up to 32 protocols (of the same family) can be configured without crossing.
COM2	RS232	Only one protocol can be configured.
COM3	RS485	Up to 32 protocols (of the same family) can be configured without crossing.
Ethernet	Ethernet	All TCP/IP protocols can be configured, requiring the unique IP address and port number.

4.2.4 HMI as a Master

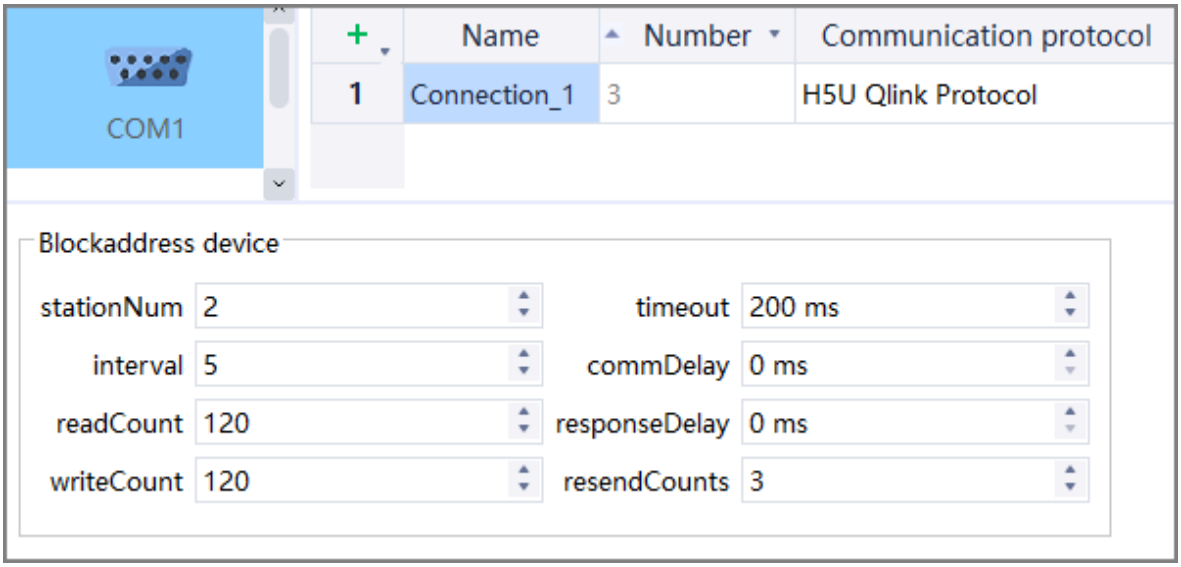
When an HMI device needs to access the values of registers of other devices, use a master protocol (all are master protocols except Modbus Slave and Modbus TCP Slave protocols).

1. For communication through a serial port, you can configure the serial port and communication parameters, as shown in the following figure.

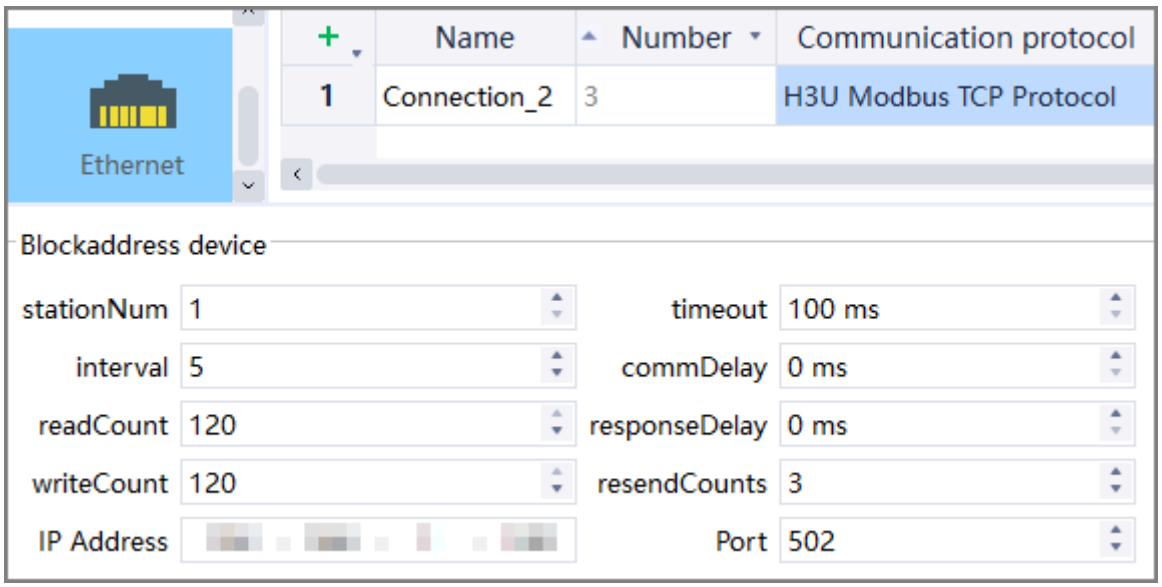
- Click "COM1" to access the configuration page.



- Click "Communication protocol" to access the block device configuration page.



2. If the connection is established via Ethernet for device communication, configure the parameters of the connected devices as shown in the figure below.



Communication parameters are listed in the table from top to bottom and left to right:

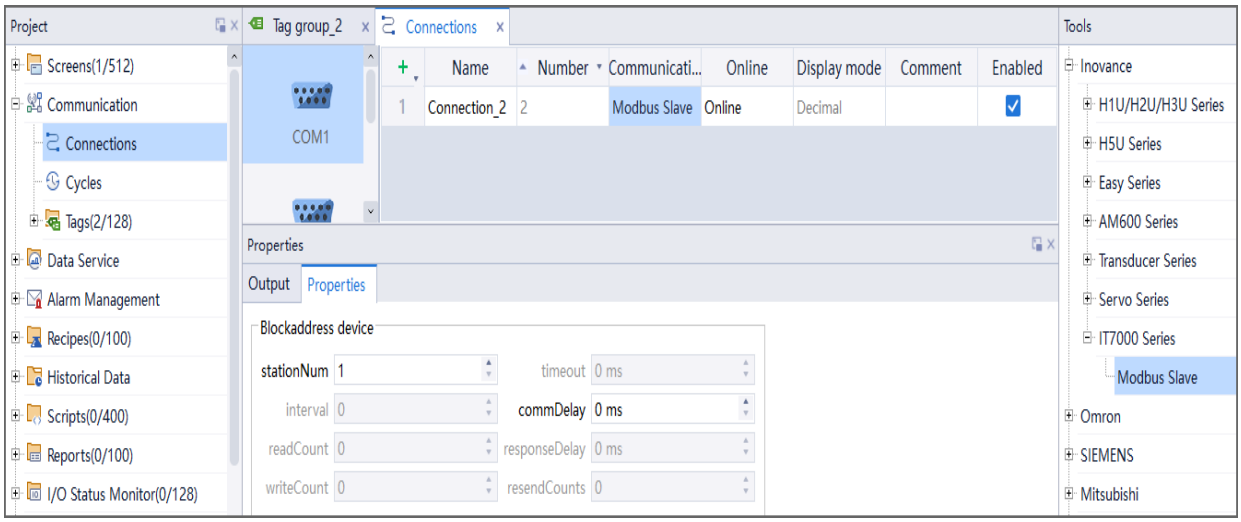
Parameter	Note
stationNum	Unique number of a slave device. The master station communicates with a specific slave device via the station number. Setting range: 1 to 255
interval	Address interval. This parameter refers to the number of idle addresses between adjacent data (addresses). When the number of idle addresses is less than or equal to the setting value, adjacent data will be merged into a single packet for transmission. The number of data packets affects the data transfer rate. More data packets result in a lower transfer rate. Setting range: 0 to 512, where 0 indicates each packet contains only one data. If set to 3, when reading 2 words of data Tag1 and Tag2 from addresses 0x00003 and 0x00006 respectively, with an interval of 1 address (0x00005) between them, which is less than the set interval value 3, the packet merging condition is satisfied. Thus, Tag1 and Tag2 will be combined into a single packet for transmission. 
readCount	Maximum number of registers per data packet. Setting range: 1 to 120 When the HMI communicates with the Easy series PLC via serial port and the screen configuration includes bit button controls, it is recommended to set this parameter to 30 to ensure data transmission stability.
writeCount	Maximum number of registers per data packet. Setting range: 1 to 120
IP Address	Access address for connected objects (Ethernet only).
timeout	The maximum time (in ms) for the master to wait for a response from the slave after sending a command. Setting range: 100 to 25,500
commDelay	Delay time (in ms) before sending each command to prevent excessive speed and avoid communication conflicts or errors. Setting range: 0 to 1000
responseDelay	Wait time (in ms) for response after sending a command before receiving data. Setting range: 0 to 1000
resendCounts	Number of retries for resending commands when PLC response data is abnormal. Setting range: 0 to 10
Port	IP port number (Ethernet only). The port number configuration depends on the device protocol, and the setting range varies for different device protocols. The default port for TCP monitoring protocol (H5U/Easy series) is 12939. The default port for Modbus TCP is 502. The default port for Siemens product related protocols is 102.

> **Note**
>
> One Modbus TCP master can write up to 1024 registers to a Modbus TCP slave in one packet.

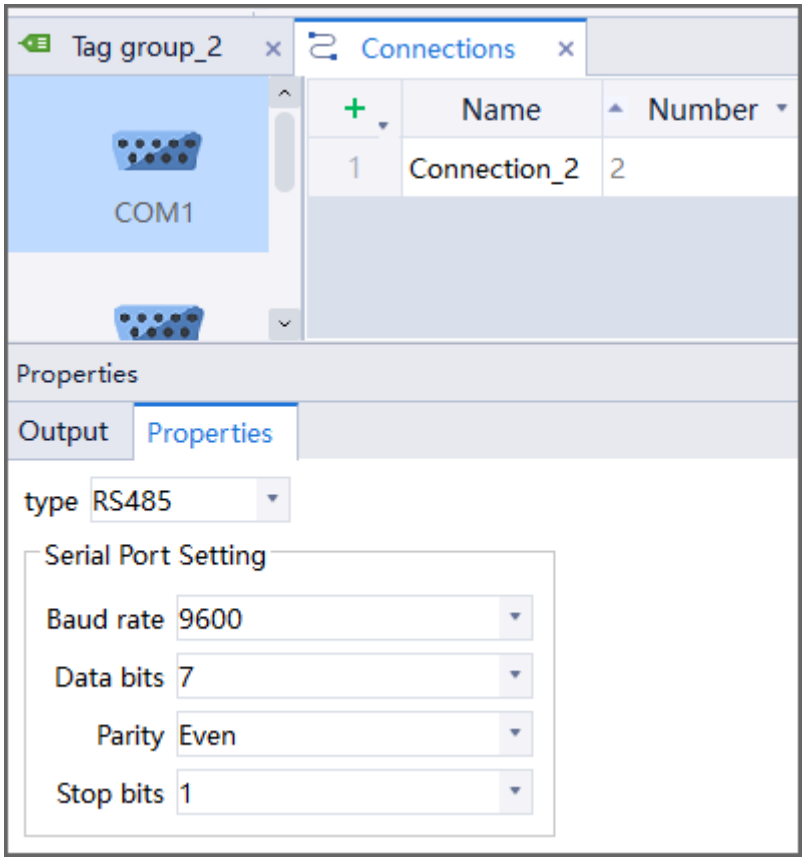
4.2.5 HMI as a Slave

When the internal image address of the HMI needs to be accessed by other devices, use a slave protocol (Modbus Slave and Modbus TCP Slave are both slave protocols).

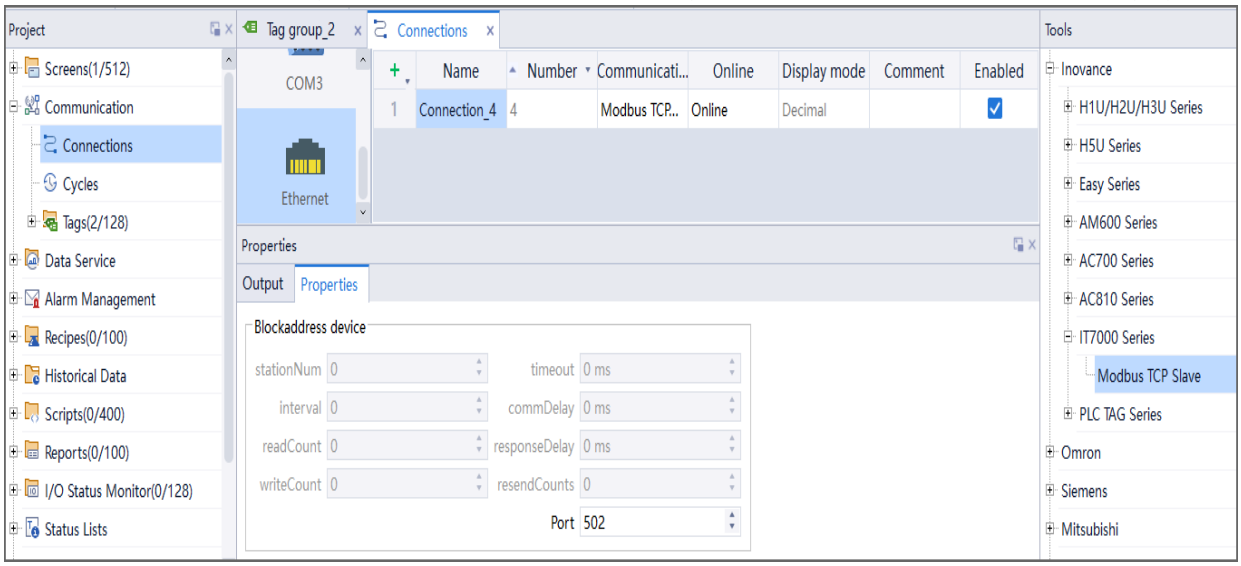
1. If the connection is established via serial port for device communication, configure the serial port and block device parameters as shown in the figure below:



2. Click "COM1" and set the serial port parameters.



3. For communication through Ethernet, use the default settings for the slave, as shown in the following figure.



4.2.6 Connection Restoration

When a connection is accidentally deleted during offline project configuration, recreating a connection with the same name can quick restore its association relationships.

Prerequisites for successful association restoration:

- The connection adopts the absolute address protocol for communication.
- From the moment the original connection is deleted until the restoration operation is performed, the project is either not compiled or the compilation result contains errors.

When the prerequisites are met, if the name, communication interface type (Ethernet or serial port), and communication protocol of the newly added connection are identical to the original connection, the association with tags can be fully recovered. If the communication protocol is changed and does not match the associated tags, the related content will be marked in red and can also be identified through project compilation, making it easy for users to discover and handle.

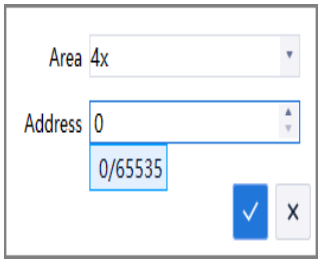
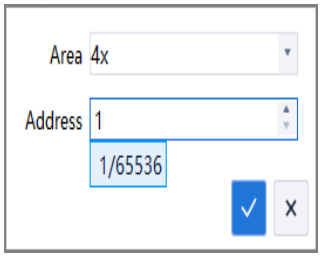
4.3 Supported Protocols

4.3.1 Supported Protocols

Brand	Protocol		Description
Inovance	H1U/H2U/H3U series	H1U monitoring protocol	Monitoring protocol, supporting Inovance H1U equipment
		H1U Qlink protocol	Modbus family protocol, supporting Inovance H1U equipment
		H2U monitoring protocol	Monitoring protocol, supporting Inovance H2U equipment
		H2U Qlink protocol	

			Modbus family protocol, supporting Inovance H2U equipment
		H3U monitoring protocol	Monitoring protocol, supporting Inovance H3U equipment
		H3U Qlink protocol	Modbus family protocol, supporting Inovance H3U equipment
		H3U Qlink TCP protocol	Modbus family protocol, supporting Inovance H3U equipment
		H3U Modbus TCP protocol	Modbus family protocol, supporting Inovance H3U equipment
	H5U series	H5U Qlink TCP protocol	Modbus family protocol, supporting Inovance H5U equipment
	Easy serial port series	Easy protocol	Supporting Inovance Easy series equipment
	Easy Ethernet series	Easy TCP monitoring protocol	Monitoring protocol, supporting Inovance Easy series equipment
	AM600 series	AM600 Modbus protocol	Modbus family protocol, supporting Inovance AM600 equipment
		AM600 Modbus TCP protocol	Modbus family protocol, supporting Inovance AM600 equipment
		AM600 Qlink TCP protocol	Modbus family protocol, supporting Inovance AM600 equipment
	AM700 series	AM700 Qlink TCP protocol	Modbus family protocol, supporting Inovance AM700 equipment
	AC810 series	AC810 Qlink TCP protocol	Modbus family protocol, supporting Inovance AC810 equipment
	AC drive series	MD series AC drive Modbus protocol	Modbus family protocol, supporting Inovance AC drives
	Servo series	IS series servo Modbus protocol	

			Modbus family protocol, supporting Inovance servo equipment
	IT7000 series	Modbus slave	Modbus slave, with Inovance HMI used as the slave device
		Modbus TCP slave	Modbus TCP slave, with Inovance HMI used as the slave device
	Inovance PLC TAG series	AC800 Tags protocol	Tags protocol, supporting Inovance AM300, AM400, AM500, AM600, AC700, and AC800, with Inovance HMI used as the master device
		EthernetIP Tags protocol	Tags protocol, supporting Inovance AM300, AM400, AM500, AM600, AC700, AC800, EVO500 series, H5U full series, and Easy series (Easy523, Easy522, Easy521, and Easy320)
		OPC UA Tags protocol	Inovance HMI used as the client
Omron	Omron serial port series	FINS serial port protocol	FINS protocol, supporting Omron FINS protocol equipment
		Hostlink protocol	-
		Ntlink protocol	-
	Omron Ethernet series	FINS TCP	-
		Omron EthernetIP tags monitoring protocol	High communication speed with compatibility for Omron EthernetIP tags protocol
		Omron EthernetIP Tags protocol	-
Siemens	Siemens Ethernet series	S7-200 SMART (Ethernet) protocol	-
		S7-300 (Ethernet) protocol	-
		S7-1200\1500 (Ethernet) protocol	-
	Siemens serial port series	S7-200 protocol	-
		S7-200 Smart protocol	-

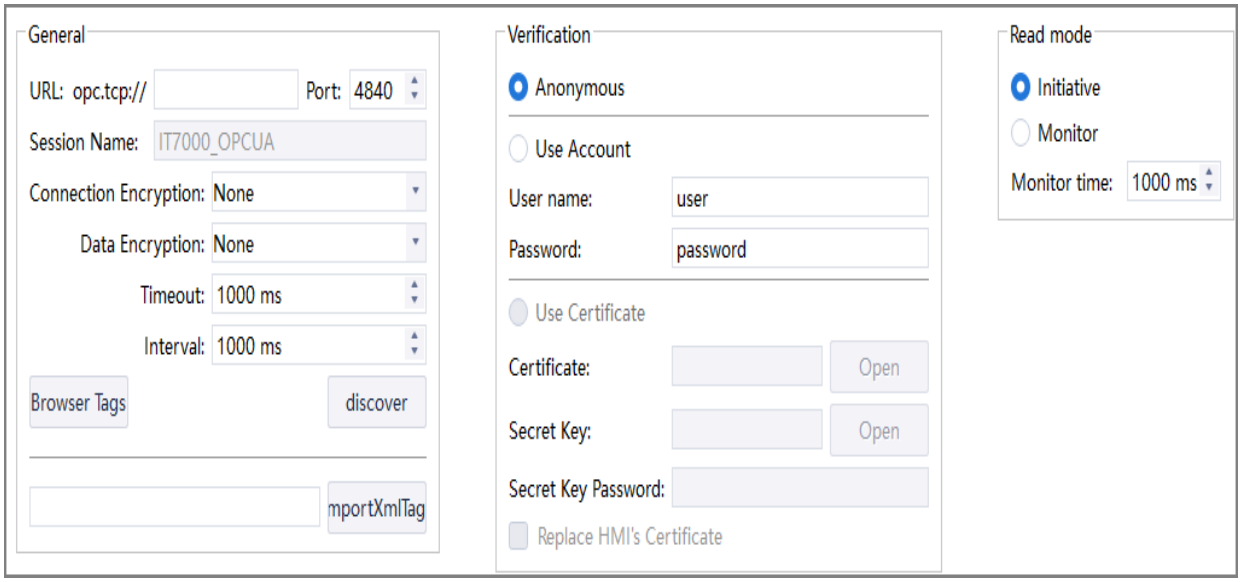
<table>
<tr><td rowspan="8">Mitsubishi</td><td rowspan="4">Mitsubishi Ethernet series</td><td>MelSec-Q\L (Binary) protocol</td><td>-</td></tr>
<tr><td>MelSec-Q\L (ASCII) protocol</td><td>-</td></tr>
<tr><td>FX5U (ASCII) protocol</td><td>-</td></tr>
<tr><td>FX5U (Binary) protocol</td><td>-</td></tr>
<tr><td rowspan="4">Mitsubishi serial port series</td><td>FX0SFX0NFX1SFX1NFX2 protocol</td><td>-</td></tr>
<tr><td>FX2N protocol</td><td>-</td></tr>
<tr><td>FX3U\FX3G protocol</td><td>-</td></tr>
<tr><td>FX5U protocol</td><td>-</td></tr>
<tr><td rowspan="2">Modicon</td><td rowspan="2">Serial Port</td><td>Modbus-RTU protocol</td><td rowspan="2">Modbus family protocol, supporting standard MODBUS protocol equipment
Note
• ModbusRTU protocol register address range: 0 to 65535
 
• ModbusRTU (address 1) protocol register address range: 1 to 65536
  </td></tr>
<tr><td>Modbus-RTU (address 1) protocol</td></tr>
</table>

		Modbus ASCII protocol	
	Ethernet	Modbus TCP protocol	Modbus family protocol, supporting standard MODBUS protocol equipment
		Modbus TCP (address 1) protocol	
Delta	Serial Port	Delta DVP RTU protocol	-
		Delta DVP ASCII protocol	-
		Delta AS300 Modbus-RTU protocol	-
		Delta AS300 Modbus ASCII protocol	-
	Ethernet	Delta AS300 Modbus TCP protocol	-
Panasonic	Panasonic FP protocol		-
	Panasonic FP protocol (Ethernet)		-
Free Protocol	Free protocol		-
	TCP free protocol		-
Koyo	SN series	SN K protocol	
FATEK	FB/FBS series	FATEK FBS protocol	-
XINJE	Serial Port	XC series protocol	-
		XD\XL series protocol	-
	Port	XD\XL series TCP protocol	-
Kingway	Kingway 984 protocol		-
UDIAN	Serial Port	AIBUS protocol	-

LG	LG XBM/XBC protocol		-
	XGK CPU DIRECT protocol		-
Hollysys	Serial Port	LE/LM PLC protocol	-
KEYENCE	Port	KV-L120\700\1000\3000 \5000\7500\Nano protocol	-
Yaskawa	Port	Yaskawa MP23XX protocol	-
		Yaskawa MP3000-Extension protocol	-
YOKOGAWA	Port	YOKOGAWA FA-M3 TCP protocol	-
Suhao	Serial Port	Suhao AC drive protocol	-

4.3.2 OPCUA Protocol

OPC Unified Architecture is a new technology created by OPC Foundation, which is more secure, reliable, and neutral (independent of suppliers), and transmits raw data and preprocessing information from the manufacturing field to the production planning or enterprise resource planning (ERP) system.



1. General settings of OPC UA protocol communication:

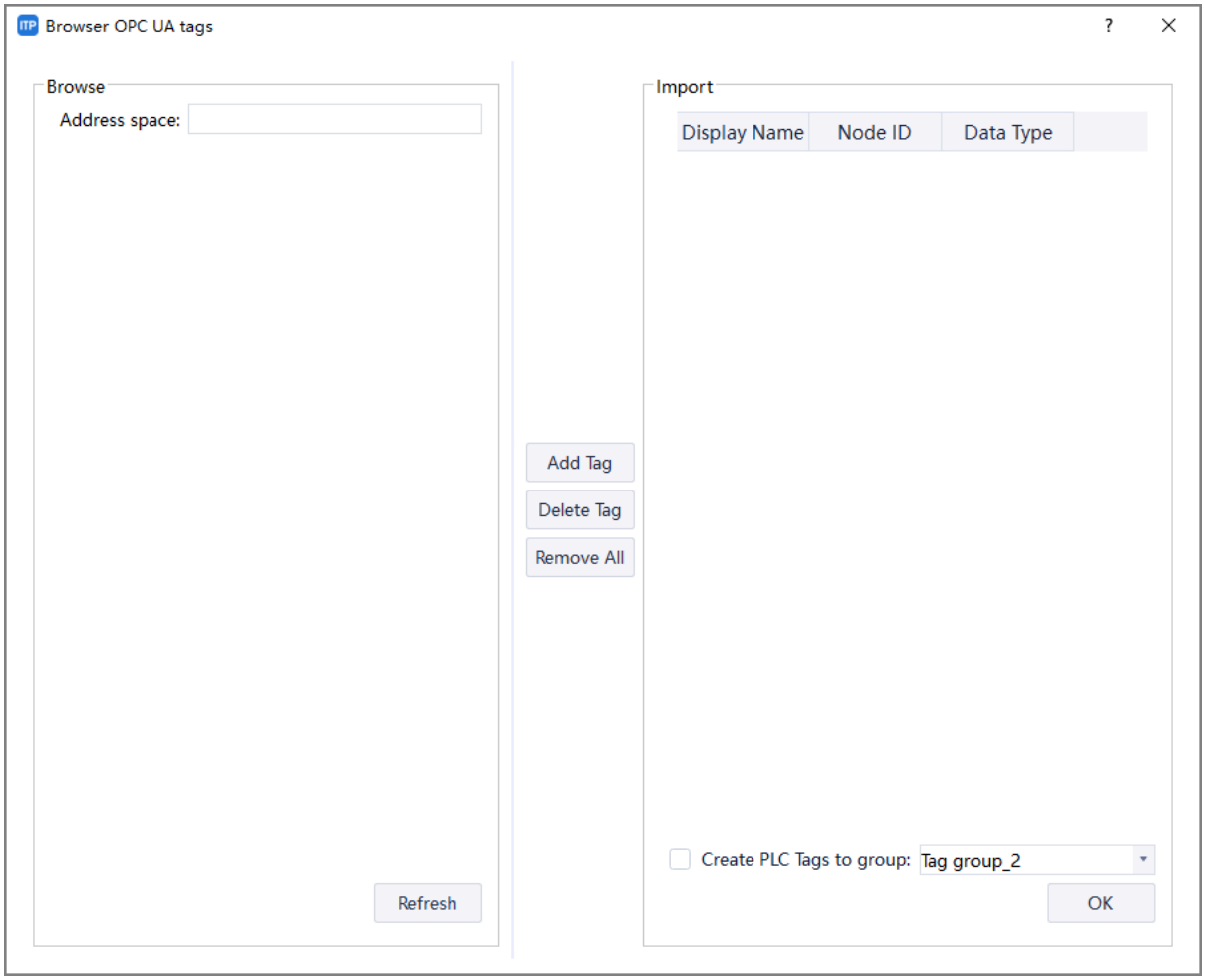
Item			Description	Additional Information
General	Connection	IP address	The address of the OPC server	-
		Port	The port of the OPC server	Default: 4840
		Timeout	The timeout time for connection to the server, which defaults to 1000 ms	In ms
		Interval		In ms

			The communication interval, which defaults to 100 ms	
		Session Name	The name of the session. The session name is automatically generated and not modifiable. It is used by the server to identify the connection of a client.	Ready only
		Connection Encryption	The connection encryption method. Options are None, Basic128Rsa15, Basic256, and Basic256Sha256.	Default: None
		Data Encryption	The data encryption method. Options are None, Sign, and SignAndEncrypt.	Default: None
	Tag	Browser Tags	When you click this button, the label browsing window is displayed, on which you can view the labels on the server.	With the correct IP and port number, you can browse the online server, view and select tags.

2. Connection authentication and read mode setting:

Item			Description	Additional Information
Verification	Authentication Mode	Anonymous	Select this option to use anonymous login.	-
		Use Account	Select this option use the user account.	-
		User name	The user name for login	Valid when "Use Account" is checked.
		Password	The user password	
Read mode	Read mode	Initiative	Reads tags actively.	-
		Monitor	Reads tags through monitoring.	-
		Monitor time	The monitoring time, in ms	This parameter is effectively after you select "Monitor".

3. The following figure shows the label browsing window.



Feature	Description	Remarks
Add Tag	Adds the tags selected from the tag tree on the left to the import table.	-
Delete Tag	Deletes the selected tags in the import table.	-
Remove All	Deletes all the tags in the import table.	-
Create PLC Tags to group	Select this option and select a tag group, and then click "OK" to save the tags in the group to the tag group.	After adding tags to the tag group, you can perform configuration.

4.4 Inovance AC800 Tags Protocol

Introduction

You can use the AC800 Tags protocol to create and use label tags.

Preconditions

1. A project has been created.

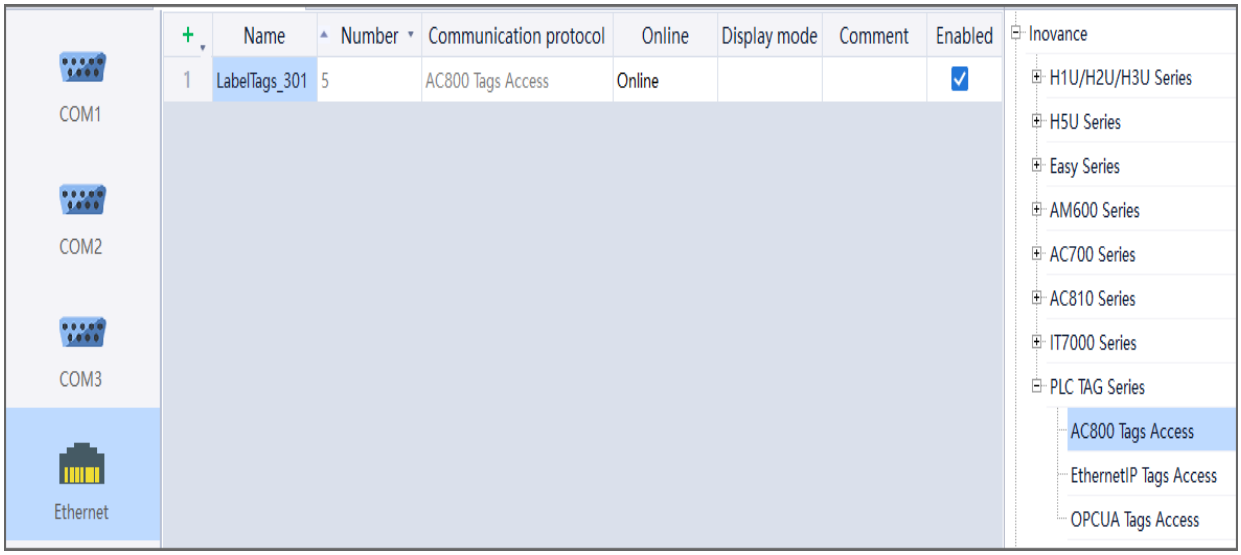
2. The imported label XML file matches the PLC address.

3. The communication between the network port and the touchscreen is normal.

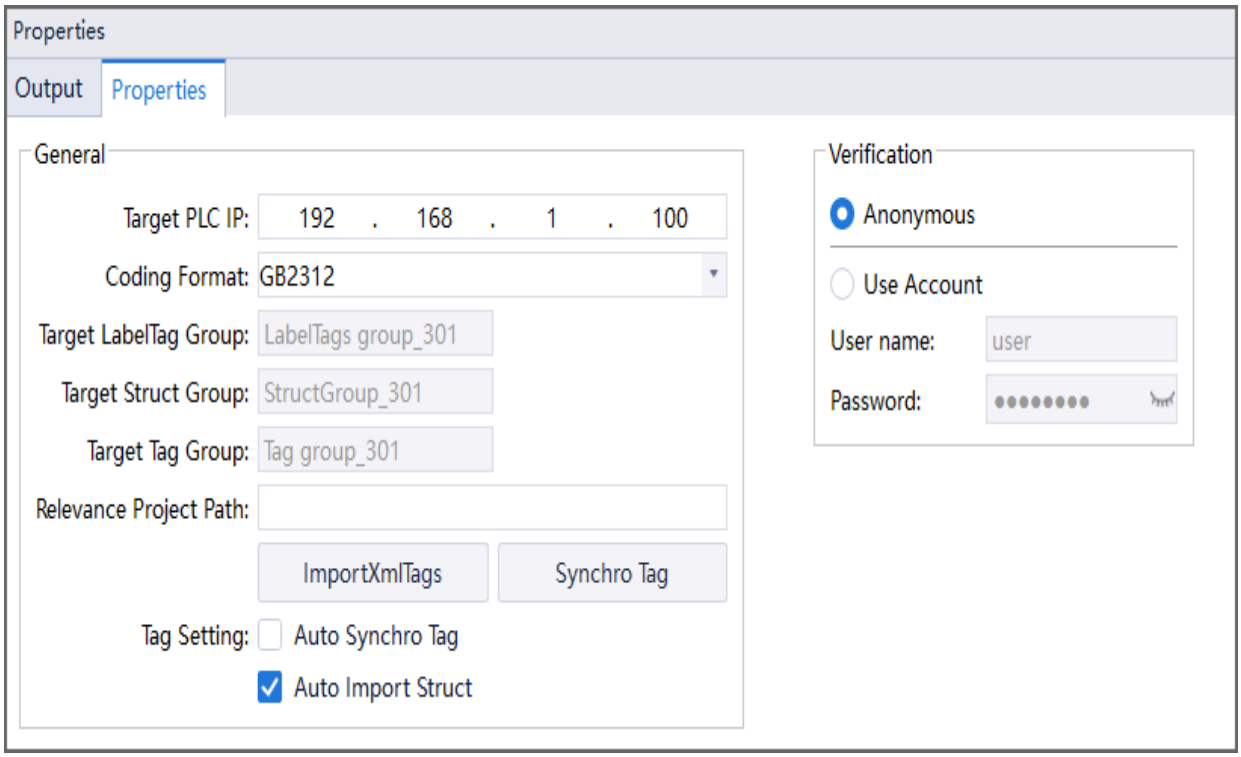
Procedure

1. On the left of the interface, choose "Project" > "Communication" and double-click "Connections". On the page displayed, click "Ethernet".

2. In the "Tools" navigation tree on the right, choose "Inovance" > "PLC TAG Series" > "AC800 Tags Access", and add the "LabelTags_301" tag, as shown in the following figure.



3. Set "Target PLC IP" to the correct communication IP address and set "Coding Format", as shown in the following figure.



Note

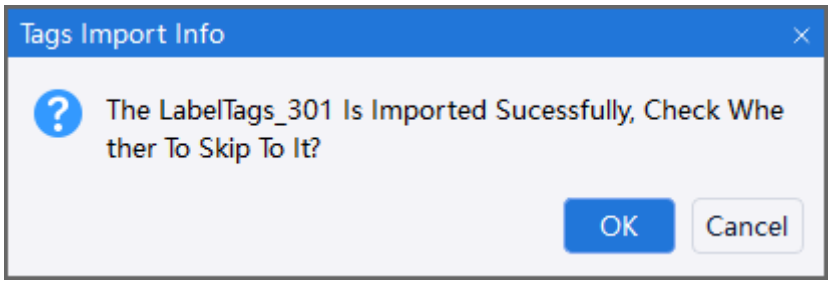
- "Coding Format" can be set to GB2312 and UTF-8. It should match the PLC background code. Otherwise, the communication between PLC and HMI fails.
- "ImportXmlTags": Only the XML files of the AC800 Tags protocol can be imported. Importing files of other tags protocols will fail.

4. For the use of "Target LabelTag Group", see 5.2.5.1 Setting a Label Tag.

5. For the use of "Target Struct Group", see 5.2.5.1 Setting a Label Tag.

6. For the use of "Target Tag Group", see 5.2.5.3 Label Target Tag Group Operations.

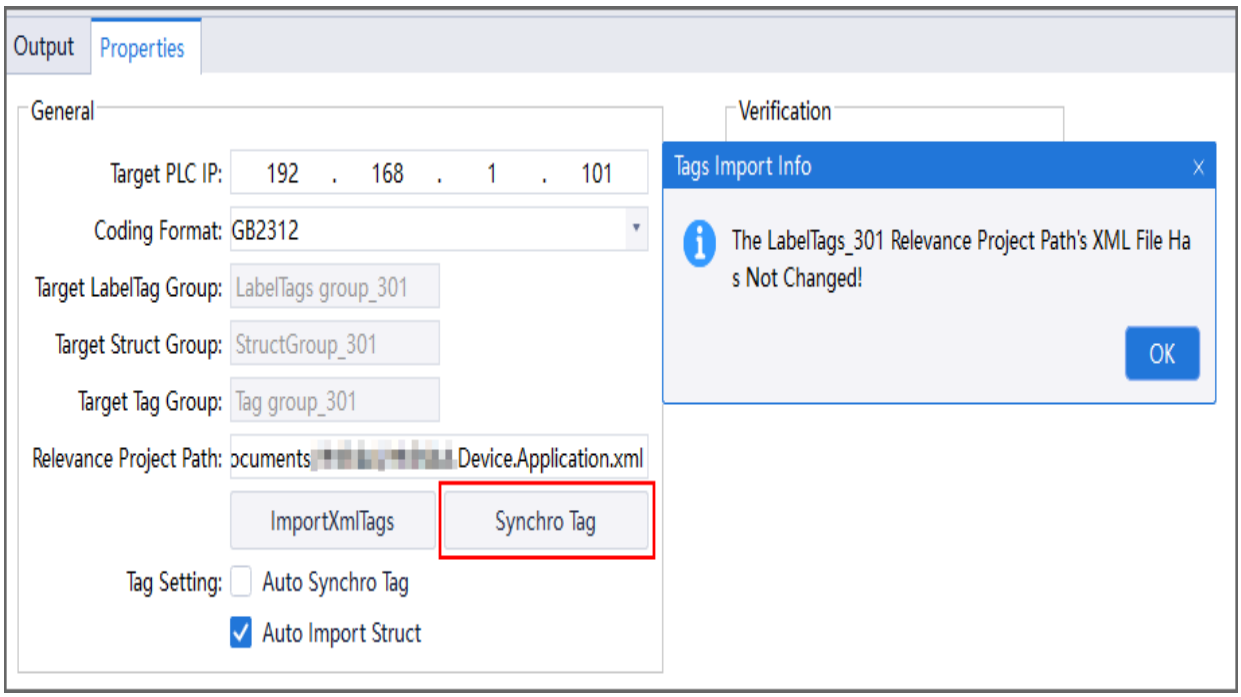
7. Click "ImportXmlTags" to complete the XML import. Upon successful import, a popup window will prompt the user to enter the tag editor interface, as shown in the figure below:



Click "Yes" to enter the tag editor interface; otherwise, close the popup window.

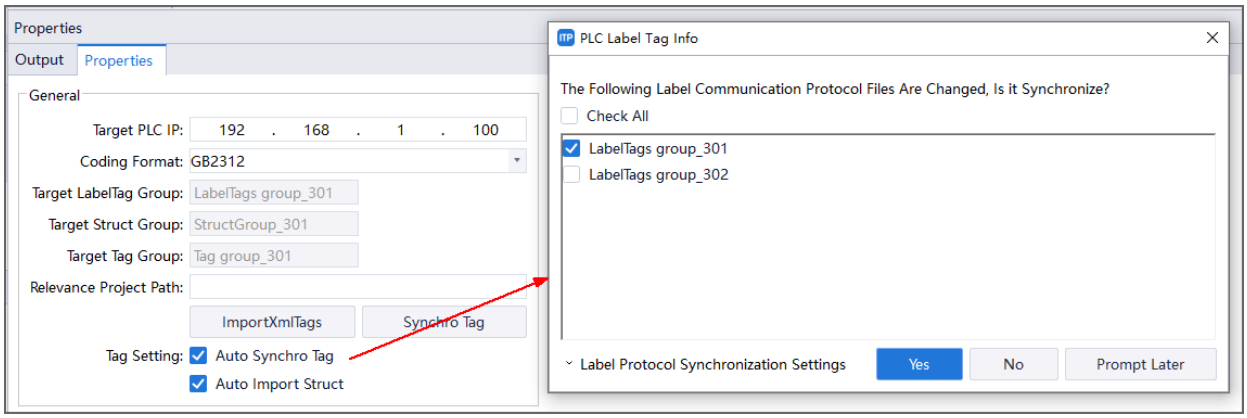
The data type of tags may change before and after import. For type-related information, see Data Type Conversion Mapping Table Before and After Import.

8. To manually synchronize tags, click "Synchro Tag". If the associated project directory content has changed, the tag XML file will be synchronized. Otherwise, a dialog box will pop up indicating that the tag XML in the associated project directory remains unchanged, as shown in the figure below:



9. "Auto Synchro Tag" is not checked by default. If "Auto Synchro Tag" is checked, the specified connection file will be monitored at intervals set in the project configuration. When both the timestamp and content of the tag XML file change, an update dialog will pop up, prompting the user to update the file, as shown in the figure

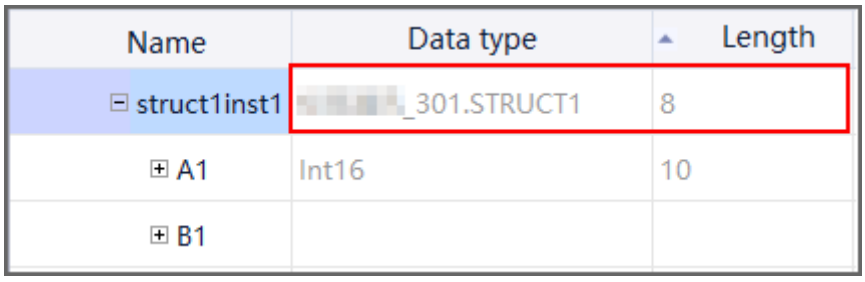
below:



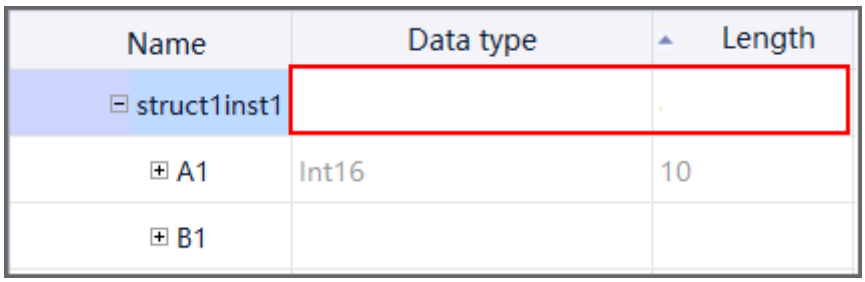
Name	Description
Label Protocol Synchronization Settings	When you click it, a setting window pops up for you to set the monitoring time of the label tag file. The set duration can be synchronized to the project settings page.
Yes	When you click it, tag information will be updated according to the selected label communication tag. If the update is successful, a dialog box pops up, asking whether to access the editing box. Otherwise, a failure dialog box pops up.
No	When you click it, "Auto Synchro Tag" turns to false.
Prompt Later	Click this button to close the current window. Any unsaved changes will prompt at the next scheduled time.

10. The "Auto Import Struct" checkbox determines whether to generate definition information when importing tag structure variables.

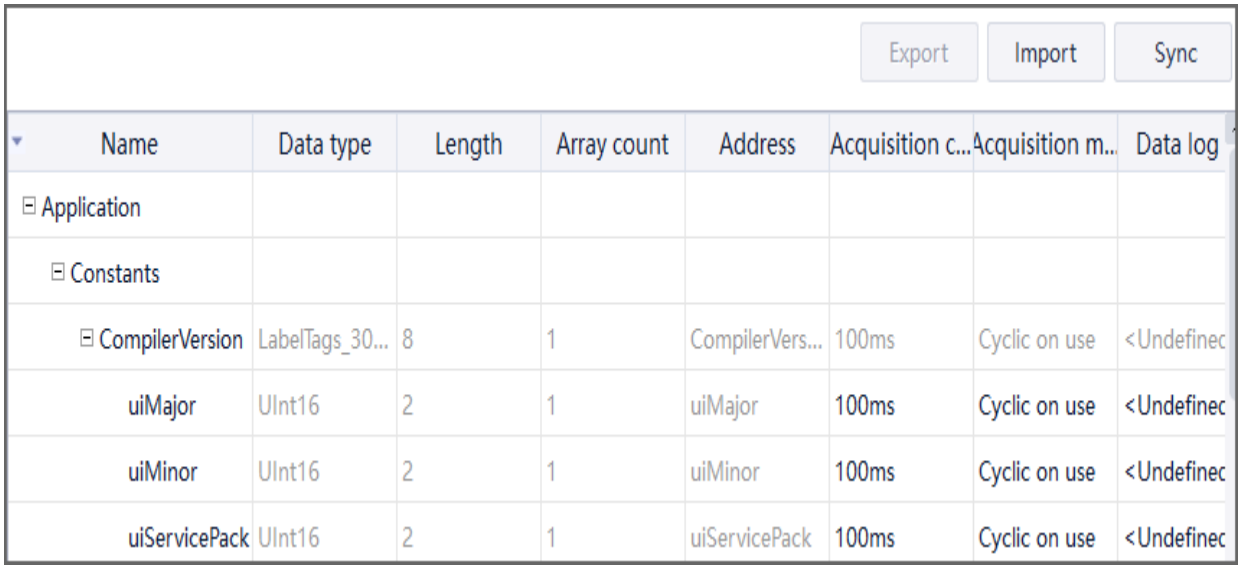
Checked: Generate definition and support the "Generate Tag" command operation.



Unchecked: Does not generate definition, which can reduce import time when importing large numbers of tag structure variables.



11. In the label tag editing box, you can synchronize, and import label XML files, as shown in the figure below.

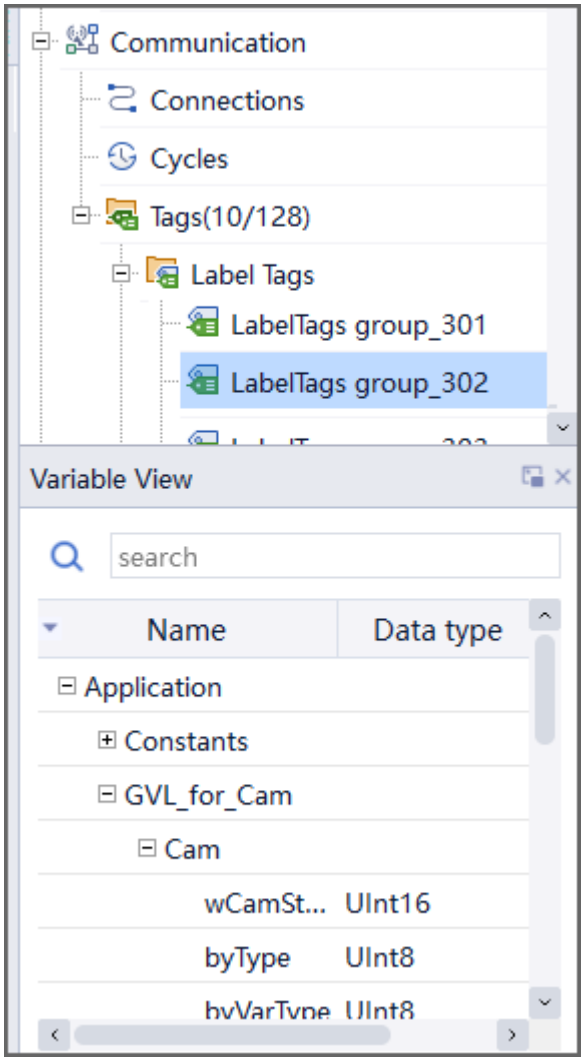


Name	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...	Data log
Application							
Constants							
CompilerVersion	LabelTags_30...	8	1	CompilerVers...	100ms	Cyclic on use	<Undefinec
uiMajor	UInt16	2	1	uiMajor	100ms	Cyclic on use	<Undefinec
uiMinor	UInt16	2	1	uiMinor	100ms	Cyclic on use	<Undefinec
uiServicePack	UInt16	2	1	uiServicePack	100ms	Cyclic on use	<Undefinec

After successful import and synchronization, a dialog box pops up, prompting that the file is imported successfully,

12. Use label tags in the following ways:

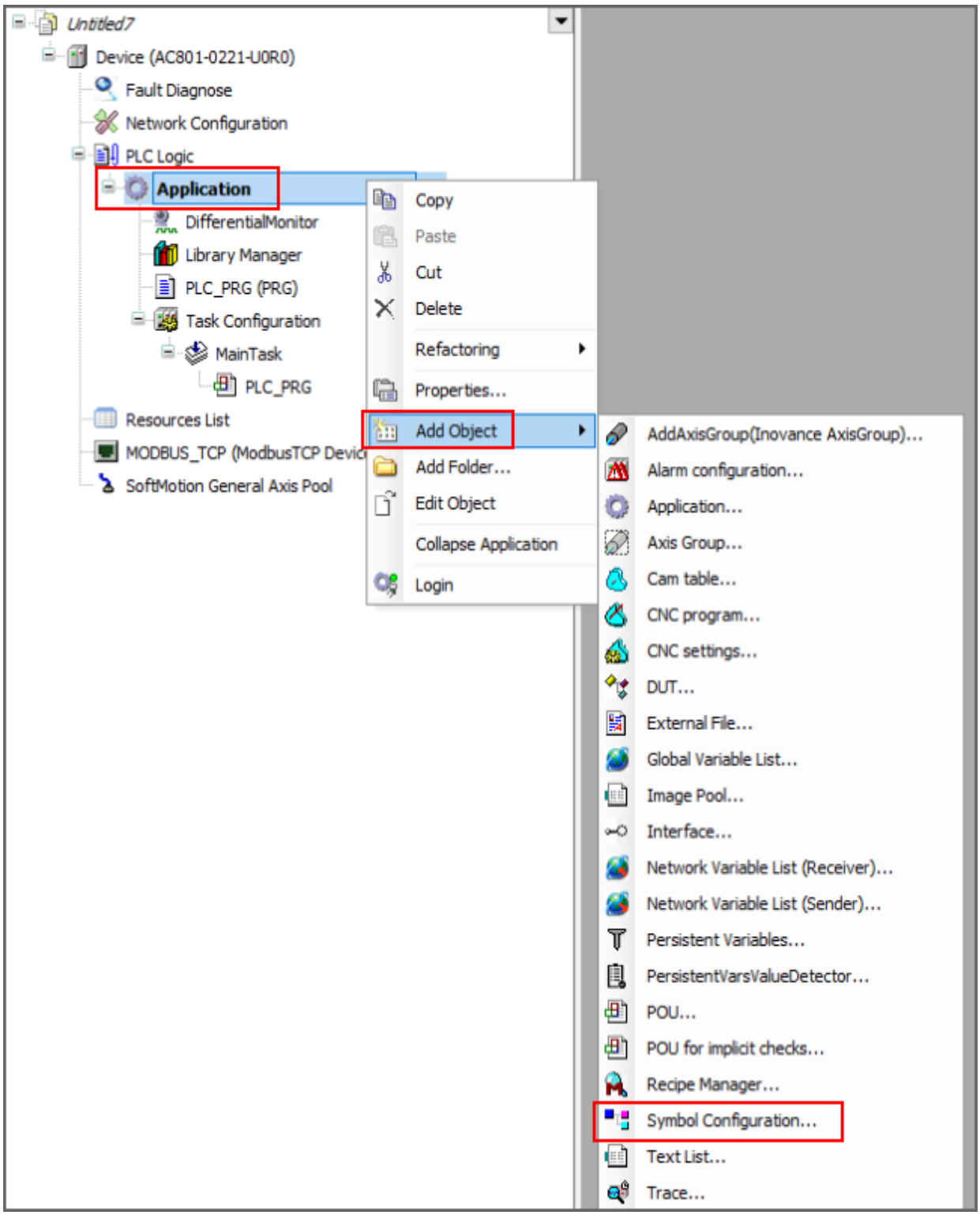
- Click "LabelTags group_302" on the left. Then the label tree structure is displayed in "Variable View". Drag the tag to the page, and configure the tag, as shown in the following figure. Alternatively, you can drag the tag to a configuration target, such as a tag, script, or system function.



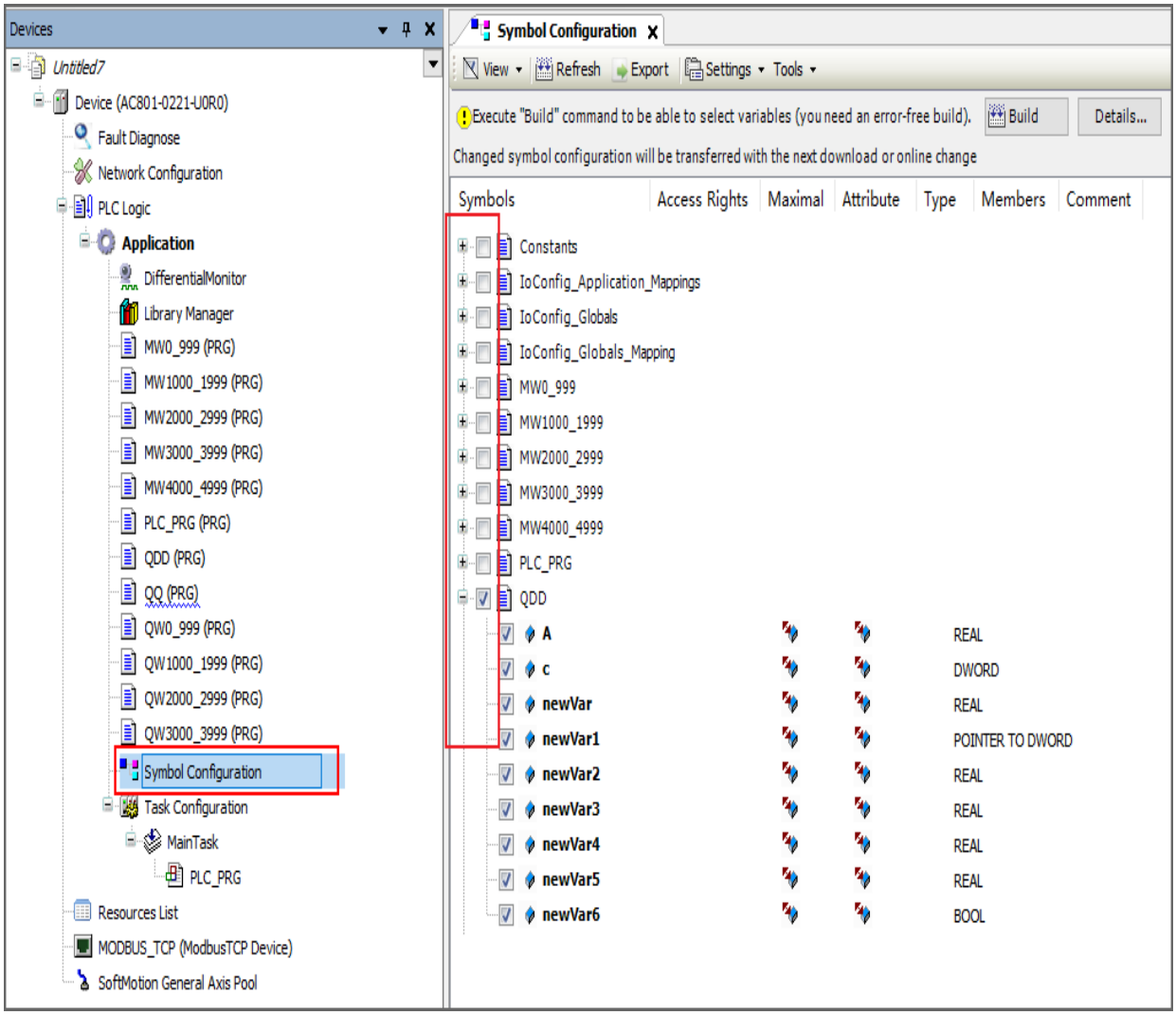
- Enter the full name of the tag, choose "Process" > "Tags", enter the full address of the label in the tag box, and press Enter to configure the tag.

Method of generating an InoProShop label tag XML file:

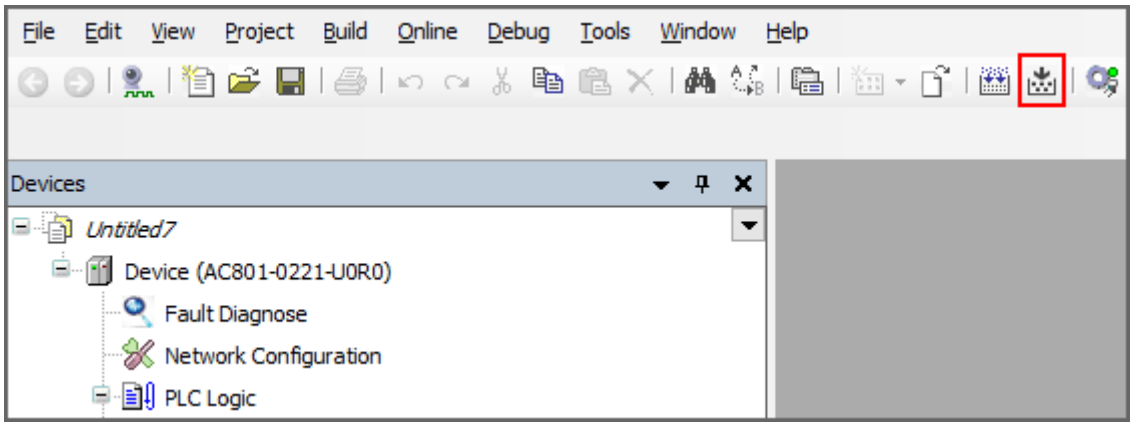
1. Run InoProShop. Start an existing project, right-click "Application", and choose "Add Object" > "Symbol Configuration", as shown in the following figure.

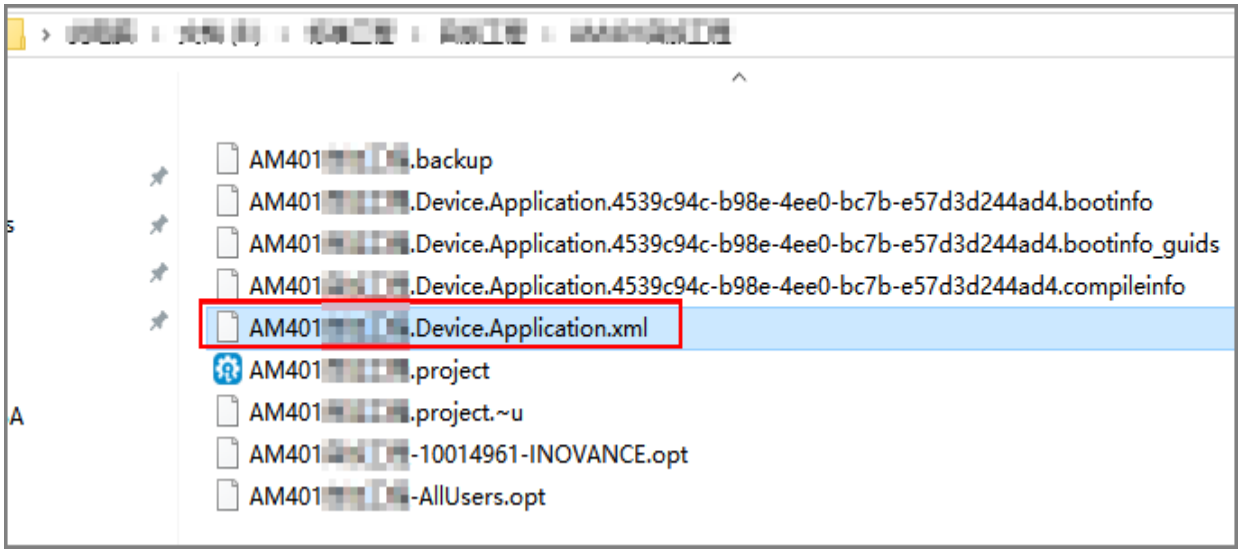


2. Double-click "Symbol Configuration". On the symbol configuration page, select the tag nodes for communication.



3. Compile the project. After the compilation is completed, an XML file will be generated in the project directory. This file is the required label tag XML file.





4.5 Inovance EthernetIP Tags Protocol

Introduction

You can create label tags based on the Inovance EthernetIP Tags protocol to communicate with the PLC.

> **Note**
>
> The EthernetIP Tags protocol supports Inovance AM300, AM400, AM500, AM600, AC700, AC800, EVO500 series, H5U full series, and Easy series (Easy523, Easy522, Easy521, and Easy320).

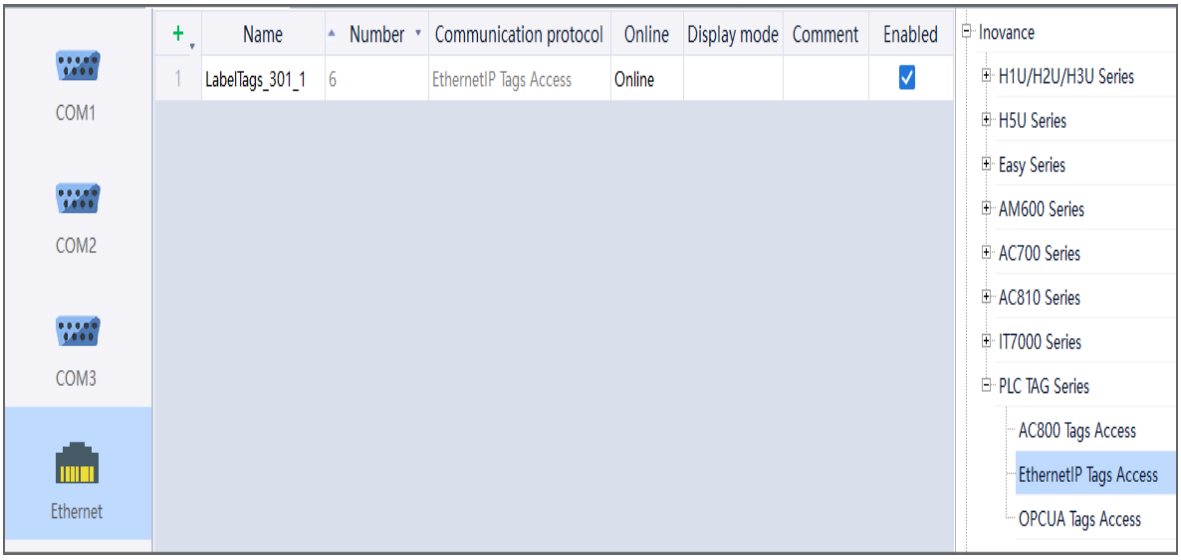
Preconditions

1. A project has been created.
2. The imported label XML file matches the PLC address.
3. The communication between the network port and the touchscreen is normal.

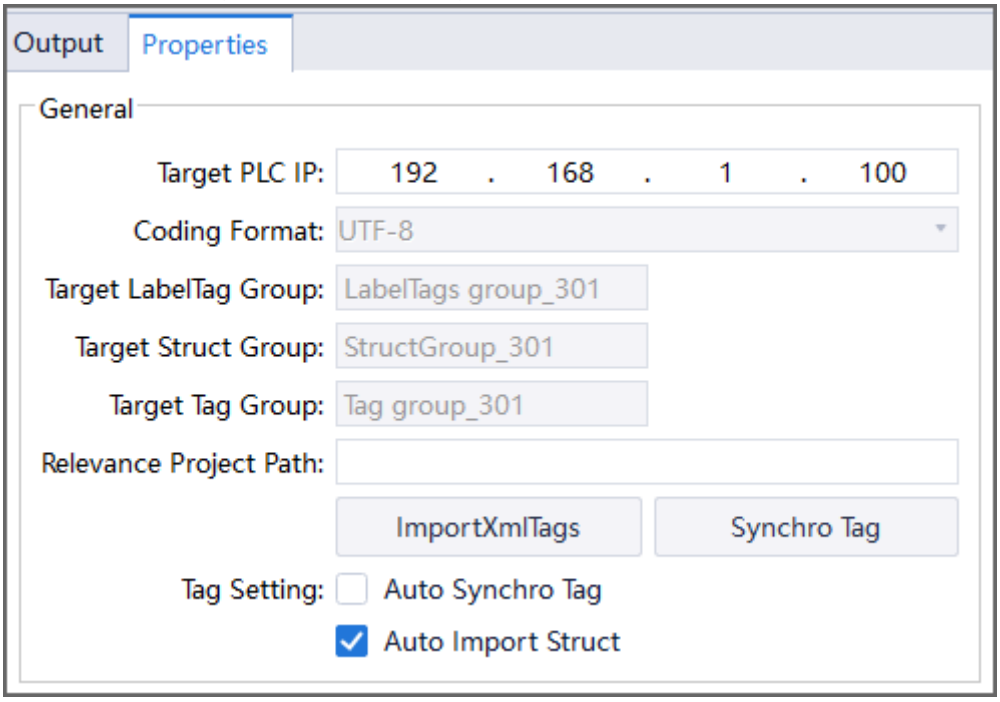
Procedure

1. On the left of the interface, choose "Project" > "Communication" and double-click "Connections". On the page displayed, click "Ethernet".

2. In the "Tools" navigation tree on the right, choose "Inovance" > "PLC TAG Series" > "EthernetIP Tags Access" and click the plus sign to add a protocol, as shown in the figure below.



3. Click "ImportXmlTags", as shown in the figure below.



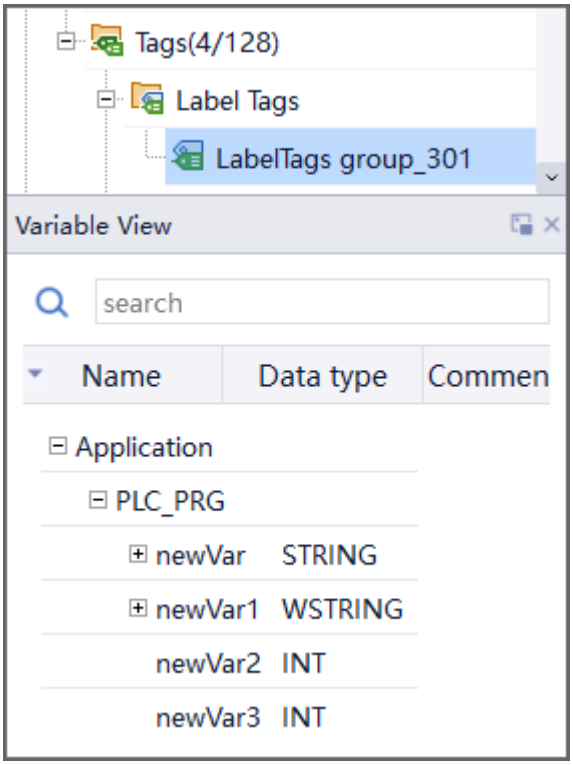
The data type of tags may change before and after import. For type-related information, see Data Type Conversion Mapping Table Before and After Import.

Note

- Inovance label protocol files only of the .xml format can be imported.
- After file import is completed, the window of "The LabelCommunication_301 Is Imported Successfully, Check Whether To Skip To It?" pops up. Click "Yes" to view the imported label tags.

4. Use the label tags (either of the following two methods can be used).

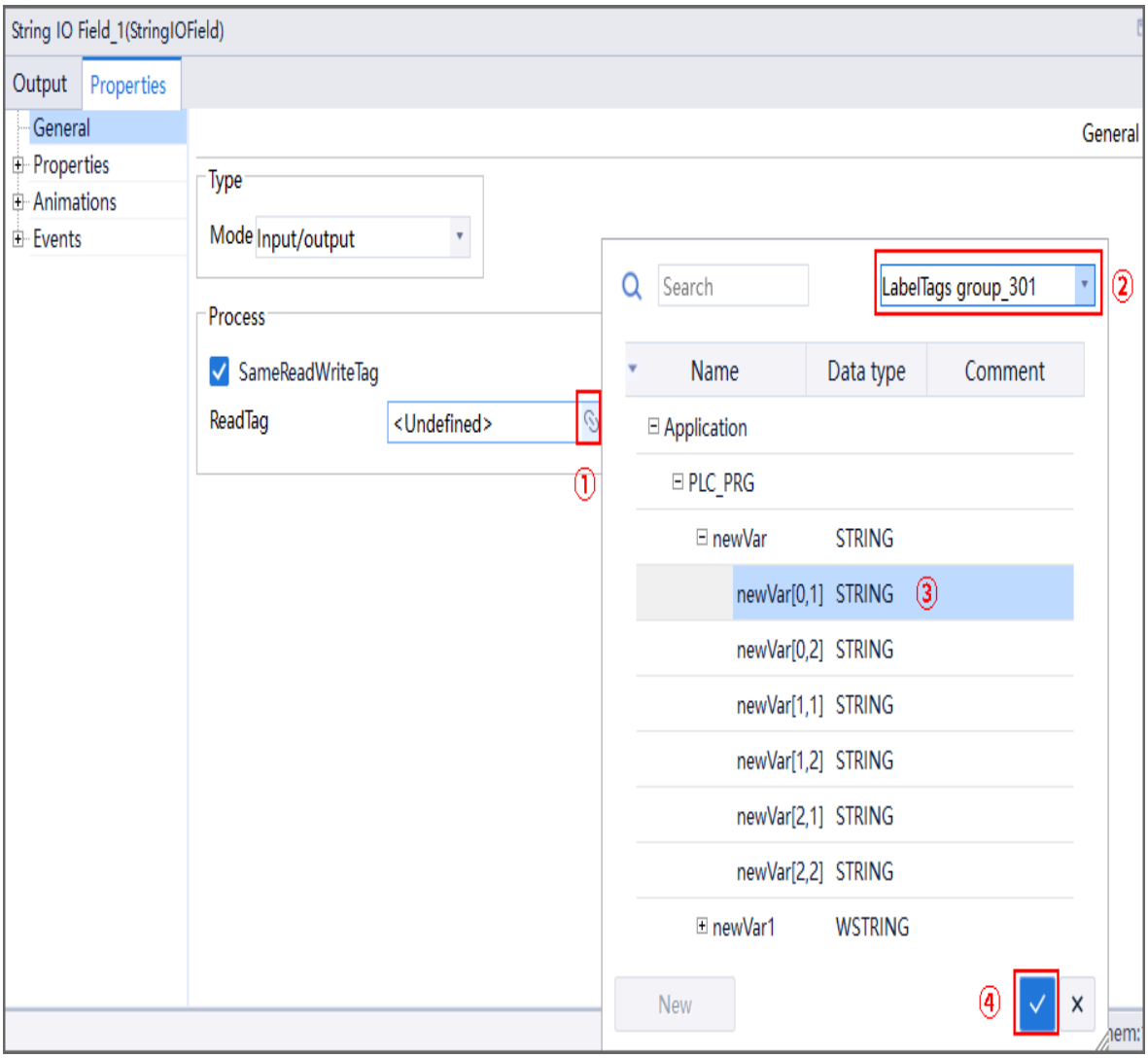
- Method 1: In the navigation tree on the left, choose "Communication" > "Tags" > "Label Tags" and drag "LabelTags group_301". The tag group will be displayed in the label tree structure, as shown in the figure below.



"Variable View" shows the label tree structure. Select the tag to be imported and drag it to the screen to configure the corresponding tag. You can also drag it to the corresponding configuration area, such as the tag tree, script, and system function.

- Method 2: Add an I/O control on the screen and select the control. In "General" properties window, change the value of "ReadTag" under "Process". You can enter the full address of the label in the tag box or select "LabelTags group_301" and the corresponding tag, then click  to configure the tag, as shown in the

figure below.



4.6 Inovance OPCUA Tags Protocol

Introduction

You can create label tags based on the OPCUA Tags protocol to communicate with the PLC.

Preconditions

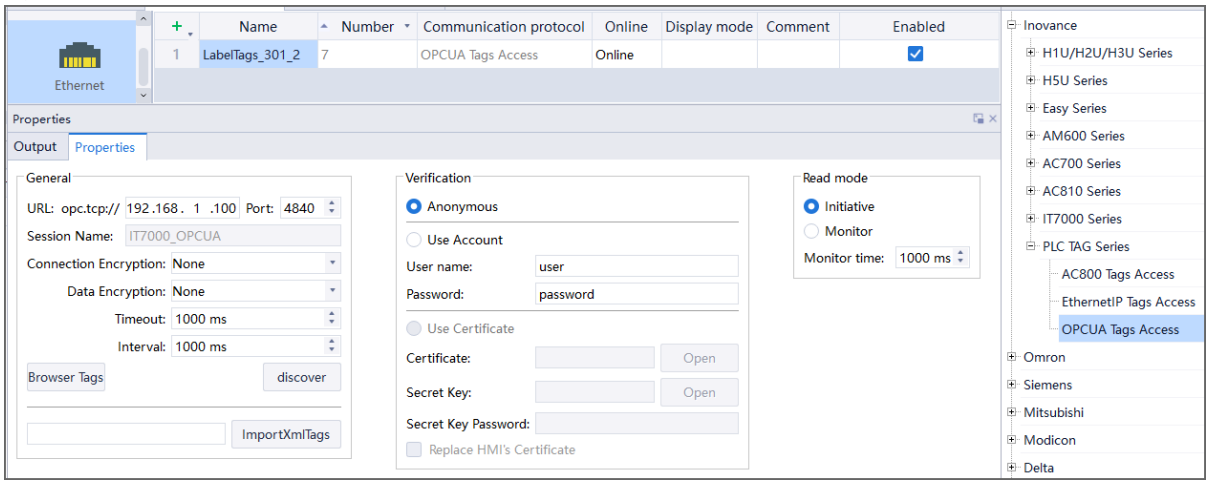
1. A project has been created.
2. The communication between the network port and the touchscreen is normal.

Establishing communication by browsing labels

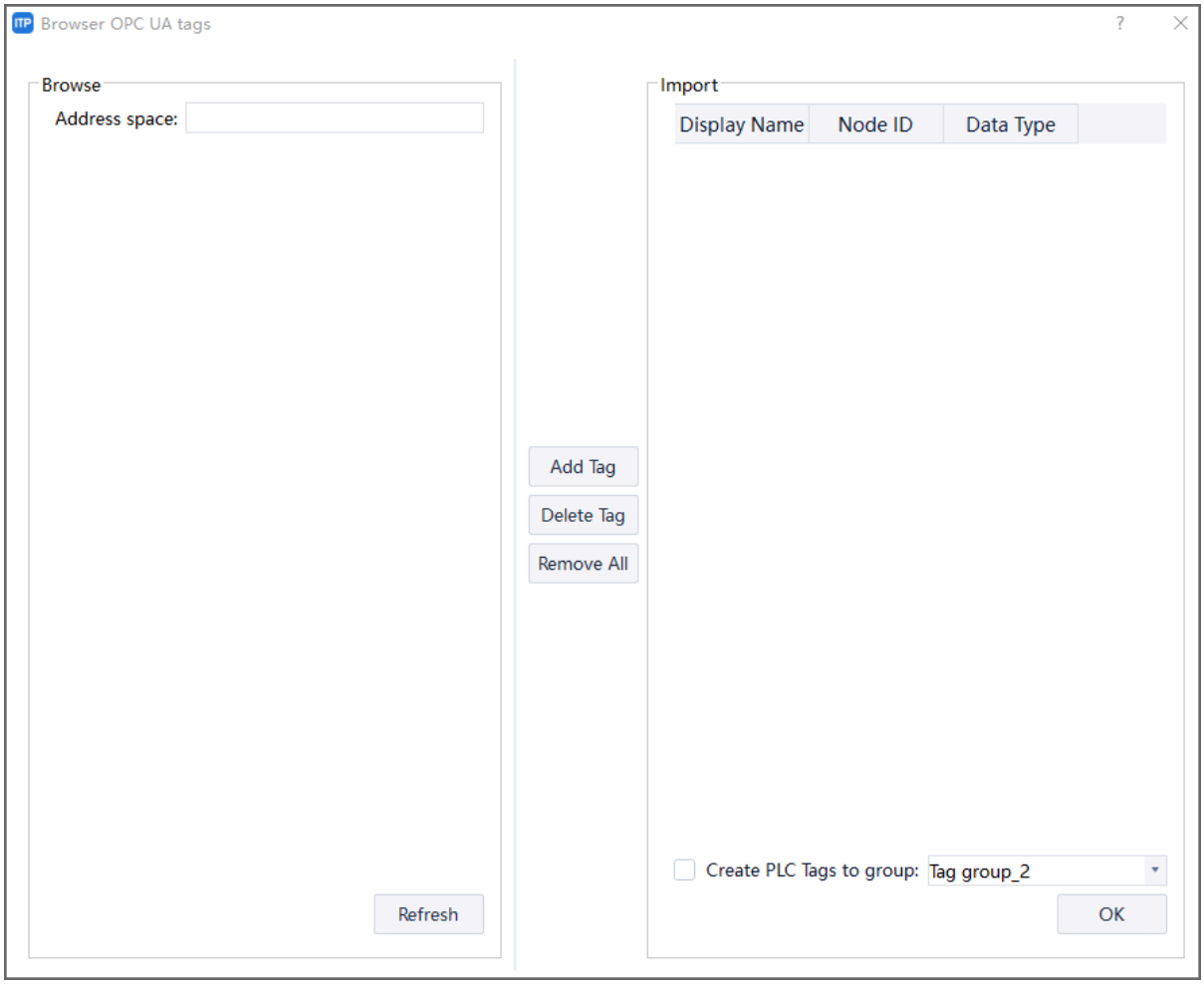
1. On the left of the interface, choose "Project" > "Communication". On the page displayed, double-click "Connections", and select "Ethernet".

2. On the right of the interface, click "Tools". On the page displayed, choose "Inovance" > "PLC TAG Series " > "OPCUA Tags Access", add the "LabelTags_301" tag, and input the correct IP address of the PLC, as shown in the

figure below.



3. Click "Browser Tags" in the lower part of the preceding figure. On the page displayed, locate and select the target tag on the left, and click "Add Tag". After the tag is displayed in the right section, click "OK" ("Create PLC Tags to group" must be selected).

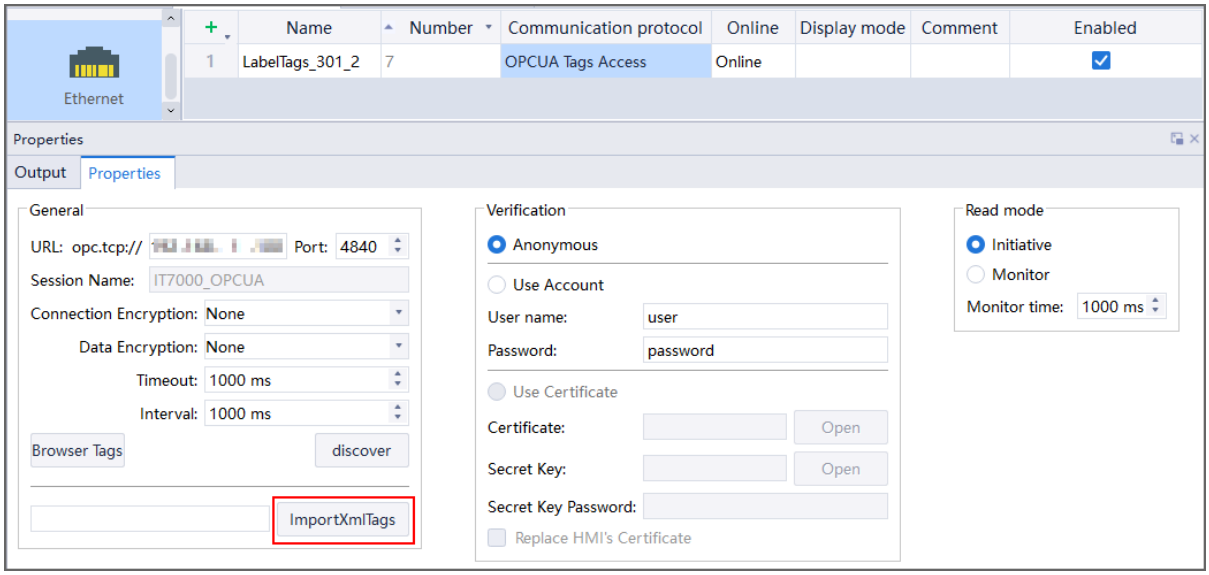


4. On the left of the interface, choose "Tag" > "Tag group_2", and double-click "Tag group_2" to view the added tag, as shown in the figure below.

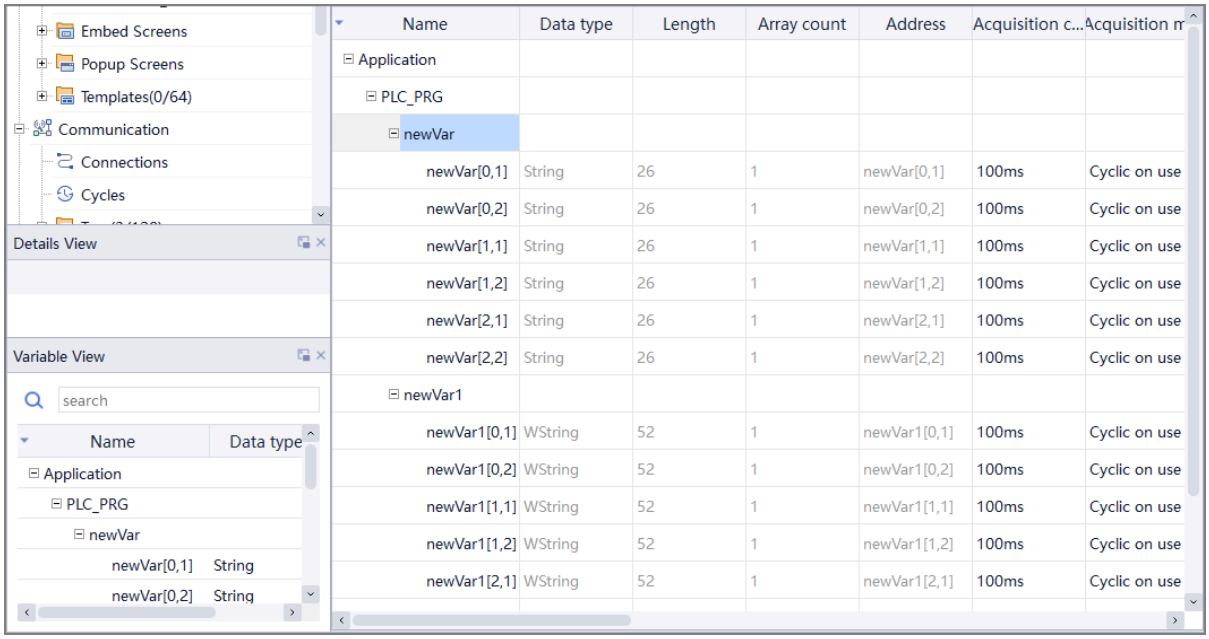
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	NamespaceA...	3	<Internal tag>	String	10	1	LW 0
2	NamespaceA...	4	<Internal tag>	String	10	1	LW 5
3	NamespaceA...	5	<Internal tag>	String	10	1	LW 10

Establishing communication by importing the XML file of the label tag (taking label communication with the WEINVIEW device as an example)

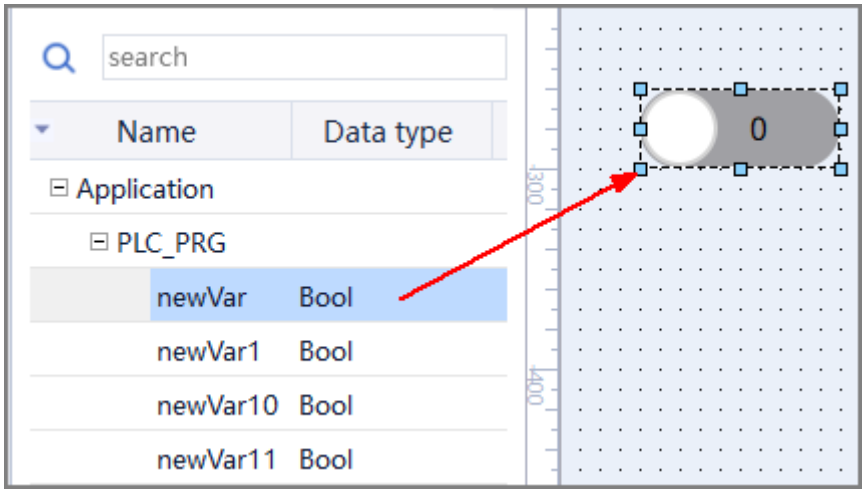
1. Create the OPCUA Tags protocol. On the "General" tab page, click "ImportXmlTags", as shown in the figure below.



2. You can view the imported label tags, as shown in the figure below.



3. Use the label tags to make configuration in the screen to achieve communication with other devices based on the OPCUA protocol, as shown in the figure below.



4.7 Omron EthernetIP Tags Protocol

Introduction

You can create label tags based on the Omron EthernetIP Tags protocol to establish communication with the PLC.

Preconditions

1. A project has been created.

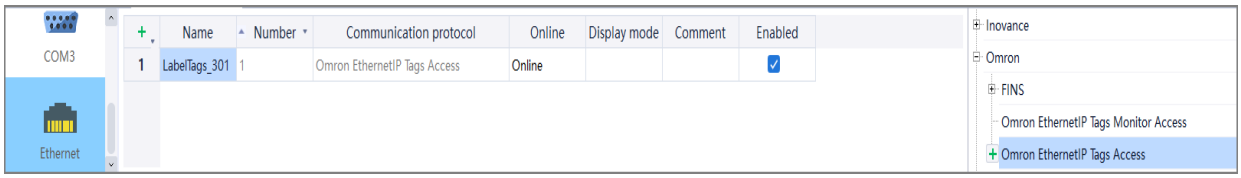
2. The imported label XML file matches the PLC address.

3. The communication between the network port and the touchscreen is normal.

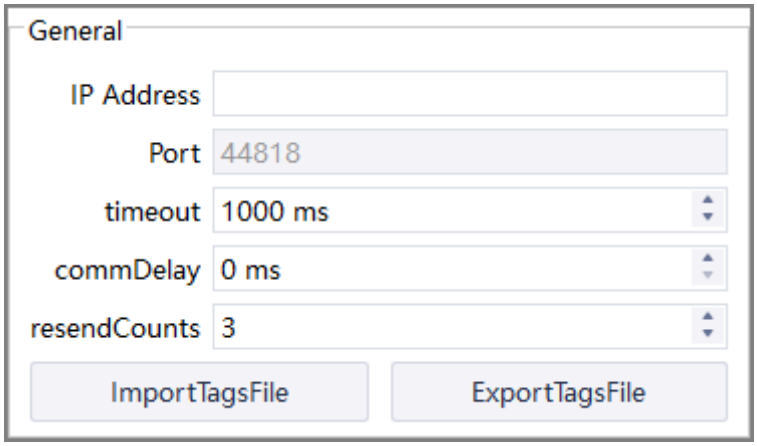
Procedure

1. On the left of the interface, choose "Project" > "Communication" and double-click "Connections". On the page displayed, click "Ethernet".

2. In the "Tools" navigation tree on the right, choose "Omron" > "Omron EthernetIP Tags Access" and click the plus sign to add a protocol, as shown in the figure below.



3. Click "ImportTagsFile", as shown in the figure below.

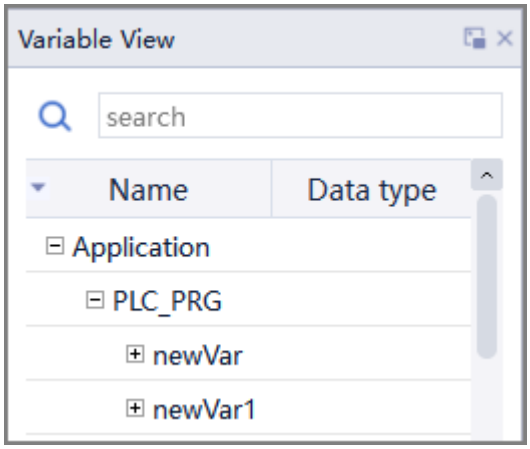


> **Note**
>
> Omron label protocol files of the .txt and .xml formats can be imported, and files of the .xml format can be exported.

4. Use label tags in the following ways:

- In the navigation tree on the left, choose "Communication" > "Tags" > "Label Tags" and drag "LabelTags group_301". The tag group will be displayed in the label tree structure, as shown in the figure below.

> **Note**
>
> You need to create or delete a label protocol on the "Connections" page to create or delete the corresponding label tag group.



As shown in the figure above, "Variable View" shows the label tree structure. Select the tag to be imported and drag it to the screen to configure the corresponding tag. You can also drag it to the corresponding configuration area, such as the tag tree, script, and system function.

- Enter the full name of the tag to add an I/O control on the screen. Click the control, choose "Process" > "Tags", enter the full address of the label in the tag box, and press Enter to configure the tag.

4.8 Omron EthernetIP Tags Monitor Protocol

The Omron EthernetIP Tags Monitor protocol is an upgraded version of the Omron EthernetIP Tags protocol, with key improvements in communication data scale and transmission speed. In project applications, the EthernetIP Tags Monitor protocol is recommended to enhance the response speed of process control.
The usage of the EthernetIP Tags Monitor protocol is the same as that of the EthernetIP Tags protocol. For details, see 4.7 Omron EthernetIP Tags Protocol.

5 Tag

5.1 Introduction

5.1.1 Tag Specifications

When using InoTouchPad to create an HMI project, you can create up to 128 tag groups. The total number of tags stored across multiple tag groups should not exceed 65,535 (excluding system tags).

5.1.2 External Tags

Introduction

External tags are used for communication (data exchange) between components (such as between an HMI and a PLC) during automation.

Working Principle

External tags are images of storage locations defined in PLC. These locations can be accessed by HMI and PLC together (that is, read and write are allowed).

The data types supported by these locations depend on the PLC connected to the HMI. For example, Inovance AC drives support Int16 and UInt16 data types, while Inovance H3U series products support Int16, UInt16, Int32, UInt32, Float, Bool, and String data types.

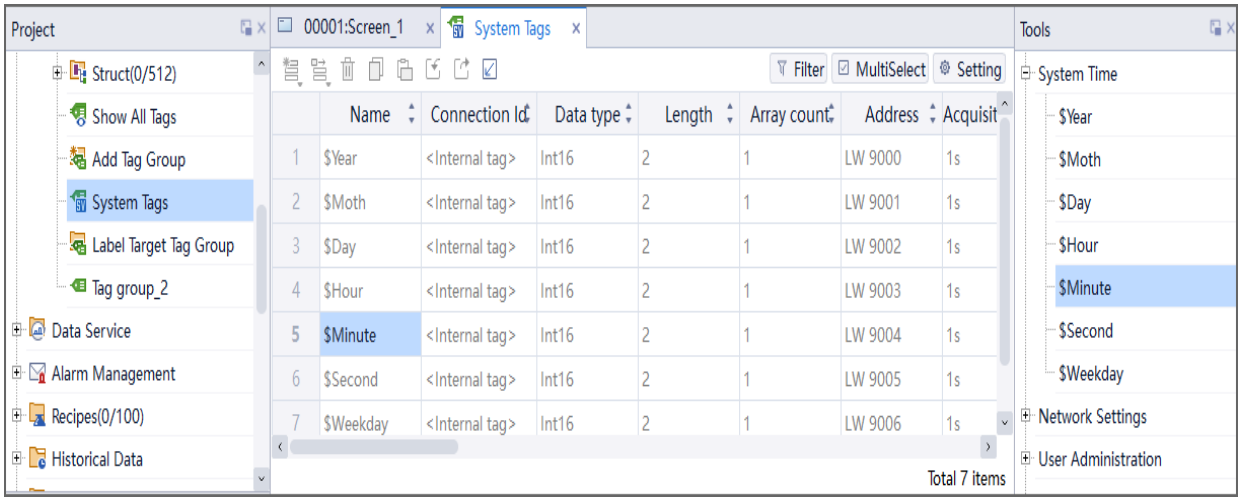
5.1.3 Internal Tags

Tags without connection configuration are called internal tags. They are images of some defined storage locations in the HMI, and can only be accessed by the HMI.

when the HMI is a slave, the storage area in which the internal tags are located can also be accessed by other HMIs: For another HMI device with which it communicates, these internal tags act as external tags.

5.1.4 System Tags

Internal tags ranging from LW 9000 to LW 10051 are used to display some system information, and are called system tags. The addresses occupied by system tags are generally no longer used as ordinary internal tags, and the tags in this area are read-only. Note that when configuring internal tags, do not associate the address area of system tags. If you need to view specific system information, you can add corresponding system tags in the system tag group, as shown in the following figure.



Category	Name	Description	Data type	Address
System Time	$Year	System time: year	Int16	LW 9000
	$Moth	System time: month	Int16	LW 9001
	$Day	System time: day	Int16	LW 9002
	$Hour	System time: hour	Int16	LW 9003
	$Minute	System time: minute	Int16	LW 9004
	$Second	System time: second	Int16	LW 9005
	$Weekday	System time: weekday	Int16	LW 9006
Network Settings	$MACAddress	MAC address of the destination machine	String	LW 9007
	$IPAddress	IP address of the destination machine	String	LW 9019
	$Netmask	Subnet mask of the destination machine	String	LW 9031
	$Gateway	Gateway of the destination machine	String	LW 9043
	$DNS1	Address of the primary DNS server	String	LW 9055
	$DNS2	Address of the secondary DNS server	String	LW 9067
User Administration	$CurrentUserName	Current user name of the runtime	String	LW 9079
	$CurrentUserGroupId	ID of the current user group of the runtime	Int32	LW 9099

	$CurrentUserAuthority	Current user permission value of the runtime **Note** The permission value is calculated based on the group permission selected by the user. The group permissions are indicated by a 32-bit integer, with each bit representing one permission.	Int32	LW 9101
Screens	$CurrentScreenId	ID of the current screen of the runtime	Int16	LW 9103
	$StartScreenId	ID of the start screen of the runtime	Int16	LW 9104
System Info	$HMIDeviceType	For the HMI device type values, see $HMIDeviceType Value Lookup Table.	Int16	LW 9105
	$HMISerialNumber	HMI serial number	String	LW 9106
	$HMIAutorunVersion	HMIAutorun version	String	LW 9126
	$HMIRuntimeVersion	HMIRuntime version	String	LW 9138
	$IOTSDKVersion	IoT SDK version	String	LW 9150
	$ProjectVersion	Project version	String	LW 9162
	$CPUUsage	CPU usage	Int16	LW 9174
	$RTCVoltage	RTC battery voltage (mV)	Int16	LW 10050
	$FlashCapacity	Flash capacity (MB)	Int16	LW 10051
	$MemoryUsage	Memory usage	Int16	LW 9175
	$FlashUsage	Storage usage	Int16	LW 9365
	$NoUserOperationTime	No-operation time of the current device	UInt64	LW 10056
	$Uptime	Operation time	Int32	LW 9176
	$CurrentLanguage	Current language	String	LW 9178

	$ScreenSaverTime	Screensaver time	Int16	LW 9190
	$CloseBacklightTime	Backlight off time	Int16	LW 9191
	$Volume	Volume	Int16	LW 9375
	$Brightness	Backlight brightness	Int16	LW 9192
	$UsbUnmountCount	USB disconnection times	Int16	LW 9193
	$UsbMountCount	USB connection times	Int16	LW 9194
	$SDCardUnmountCount	SD card uninstalling times	Int16	LW 9195
	$SDCardMountCount	SD card loading times	Int16	LW 9196
	$InstalMentLockState	Installment locking status	Int16	LW 9510
	$InstalMentLockRemainTime	Remaining time before the next installment	Int32	LW 9514
	$InstalMentLockTrigger	Trigger the next installment	BOOL	LB 9520
	$NoUserOperationTime	No user operation time	UInt64	LW 10056
Communication	$COM1Mode	COM1 parameter: mode	Int16	LW 9197
	$COM1BaudRate	COM1 parameter: baud rate	Int32	LW 9198
	$COM1DataBits	COM1 parameter: data bit	Int16	LW 9200
	$COM1Parity	COM1 parameter: parity check	Int16	LW 9201
	$COM1StopBits	COM1 parameter: stop bit	Int16	LW 9202
	$COM1ErrorStationId	COM1 parameter: incorrect station number	Int16	LW 9203
	$COM1ErrorCode	COM1 parameter: error code	Int32	LW 9205
	$COM1ErrorCount	COM1 parameter: count of single connection error	Int16	LW 9204
	$COM1ErrorTotal	COM1 parameter: count of total errors	Int32	LW 9207

	$COM1ConnectionStatus	COM1 parameter: status of the first 16 connections of serial port 1	UInt16	LW 10052
	$COM2Mode	COM2 parameter: mode	Int16	LW 9209
	$COM2BaudRate	COM2 parameter: baud rate	Int32	LW 9210
	$COM2DataBits	COM2 parameter: data bit	Int16	LW 9212
	$COM2Parity	COM2 parameter: parity check	Int16	LW 9213
	$COM2StopBits	COM2 parameter: stop bit	Int16	LW 9214
	$COM2ErrorStationId	COM2 parameter: incorrect station number	Int16	LW 9215
	$COM2ErrorCode	COM2 parameter: error code	Int32	LW 9217
	$COM2ErrorCount	COM2 parameter: count of single connection error	Int16	LW 9216
	$COM2ErrorTotal	COM2 parameter: count of total errors	Int32	LW 9219
	$COM2ConnectionStatus	COM2 parameter: status of the first 16 connections of serial port 2	UInt16	LW 10053
	$COM3Mode	COM3 parameter: mode	Int16	LW 9221
	$COM3BaudRate	COM3 parameter: baud rate	Int32	LW 9222
	$COM3DataBits	COM3 parameter: data bit	Int16	LW 9224
	$COM3Parity	COM3 parameter: parity check	Int16	LW 9225
	$COM3StopBits	COM3 parameter: stop bit	Int16	LW 9226
	$COM3ErrorStationId	COM3 parameter: incorrect station number	Int16	LW 9227
	$COM3ErrorCode	COM3 parameter: error code	Int32	LW 9229
	$COM3ErrorCount	COM3 parameter: count of single connection error	Int16	LW 9228
	$COM3ErrorTotal	COM3 parameter: count of total errors	Int32	LW 9231

	$COM3ConnectionStatus	COM3 parameter: status of the first 16 connections of serial port 3	UInt16	LW 10054
	$TCPErrorCode	TCP parameter: error code	Int32	LW 9244
	$TCPErrorCount	TCP parameter: count of single connection error	Int16	LW 9243
	$TCPErrorConnectionId	TCP parameter: incorrect station number	Int16	LW 9242
	$TCPErrorIP	TCP parameter: IP address of the failed device	String	LW 9233
	$TCPErrorPort	TCP parameter: incorrect port number	Int16	LW 9241
	$TCPErrorTotal	TCP parameter: count of total errors	Int32	LW 9246
	$TCPConnectionStatus	Status of the first 16 connections of the network port	UInt16	LW 10055
	$SelfAdaptionOvertime	Self-adaption timeout time	Int16	LW 9500
	$SelfAdaptionIntervalTime	Self-adaption interval	Int16	LW 9501
IOT	$SIMStatus	SIM status	Int16	LW 9300
	$SIMSignal	SIM signal value	Int16	LW 9301
	$IOTLoginStatus	IoT login status	Int16	LW 9302
	$IOTLoginType	IoT login type	Int16	LW 9303
	$IOTLoginTime	IoT login time	String	LW 9304
	$GPS	GPS	String	LW 9314
Index Tag	16Bit	If an ordinary tag is associated with an index tag, the address of the ordinary tag can be offset by modifying the value of the index tag. 128 16-bit index tags are supported.	Int16	LW9600 start address. Index tags are not retentive at power failure.

	32Bit	128 32-bit index tags are supported.	Int32	LW9728 start address. Index tags are not retentive at power failure.

$HMIDeviceType Value Lookup Table

$HMIDevicType Value	Device Model	$HMIDevicType Value	Device Model	$HMIDevicType Value	Device Model	$HMIDevicType Value	Device Model
1	IT7070T	14	IT7070E_IR	104	IT7070EI_WIFI	117	ITS7070E
2	IT7070E	15	IT7070T_AC	105	IT7100EI_4G	118	ITS7070SH
3	IT7100E	16	IT7043E	106	IT7100EI_WIFI	119	ITS7070EH
4	IT7043T	17	SR_070HI	107	ITU7070EI	120	ITS7100S
5	IT7PC	18	SR_100HI	108	ITU7070E	121	ITS7100E
6	IT7070E_IOT	19	IT7070S_AC	109	ITU7070E_WPG	122	ITS7070S_AC
7	IT7070E_IOTWD	51	IT7150P	110	IT7070S_BG1	200	HF01_70E
8	ITP60E	52	ITS7100P	111	IT7070T_AC_BG1	201	EP806
9	AP701	53	ITS7156E	112	IT7070E_BG1	-	-
10	IT7150E	100	IT7070EI_4G_AC	113	IT7100E_BG1	-	
11	IT7070TS	101	IT7070SI_4G	114	IT7100E_2E	-	-
12	IT7100ES	102	IT7070SI_WIFI	115	ITU7070E_SWP	-	-

$HMIDevicetype Value	Device Model	$HMIDevicetype Value	Device Model	$HMIDevicetype Value	Device Model	$HMIDevicetype Value	Device Model
13	AP70X	103	IT7070EI_4G	116	ITS7070S	-	-

5.2 Basic Settings

5.2.1 Dragging and Dropping Tags

During project configuration, you often need to use I/O fields to read and write tag values. You can achieve that through the following steps.

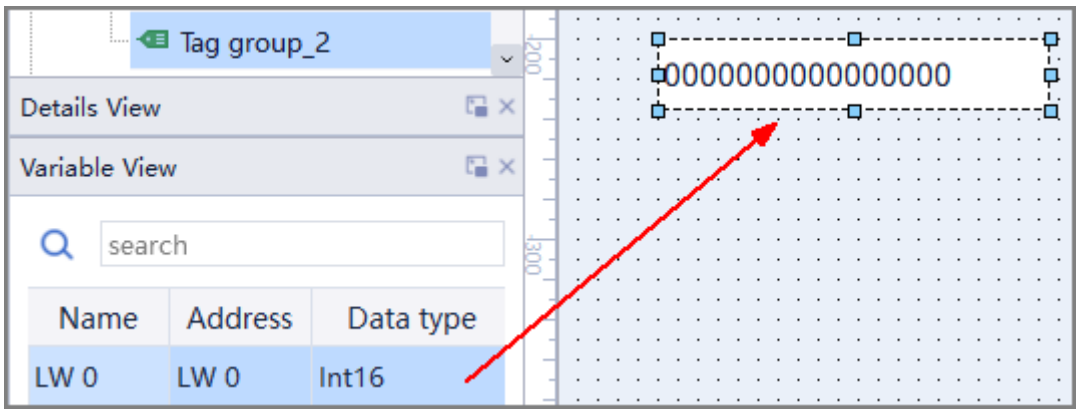
Operating procedure:

Method 1:

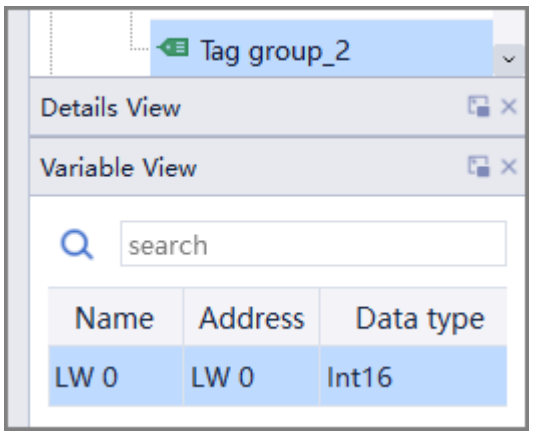
1. Add an I/O field to the current screen.
2. In the properties section of the I/O field, select the specified process tag. Then you can read and write specified project tags with the I/O field.

Method 2:

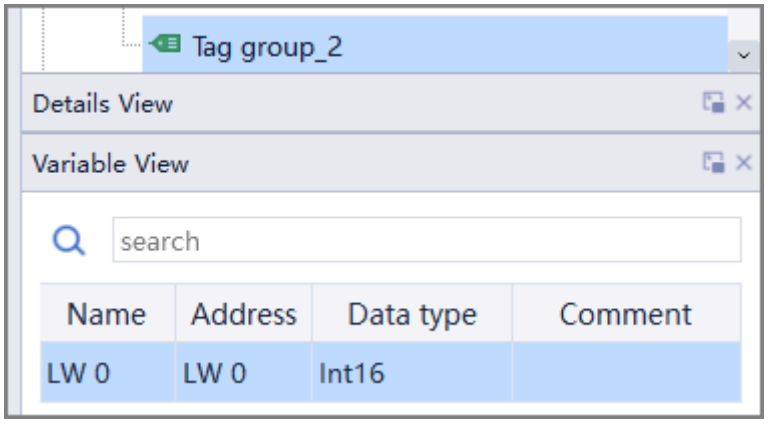
Create a tag. In the "Variable View", select the tag and drag it to the screen to configure the tag in the I/O field, as shown in the following figure.



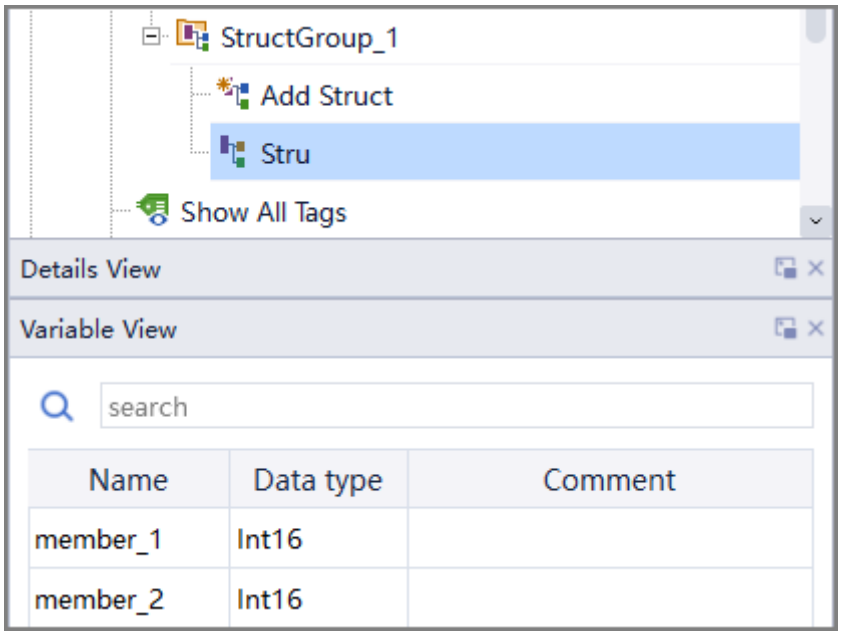
The "Variable View" of "Tag Groups", "System Tags", "Show All Tags", and "Stru" displays the tag name, tag address, and data type columns, as shown in the following figure.



The expanded "Variable View" section displays the tag name, address, data type, and comment, as shown in the following figure.



The "Variable View" of structure tags displays the tag name, data type, and comment, but does not display the address, as shown in the following figure.



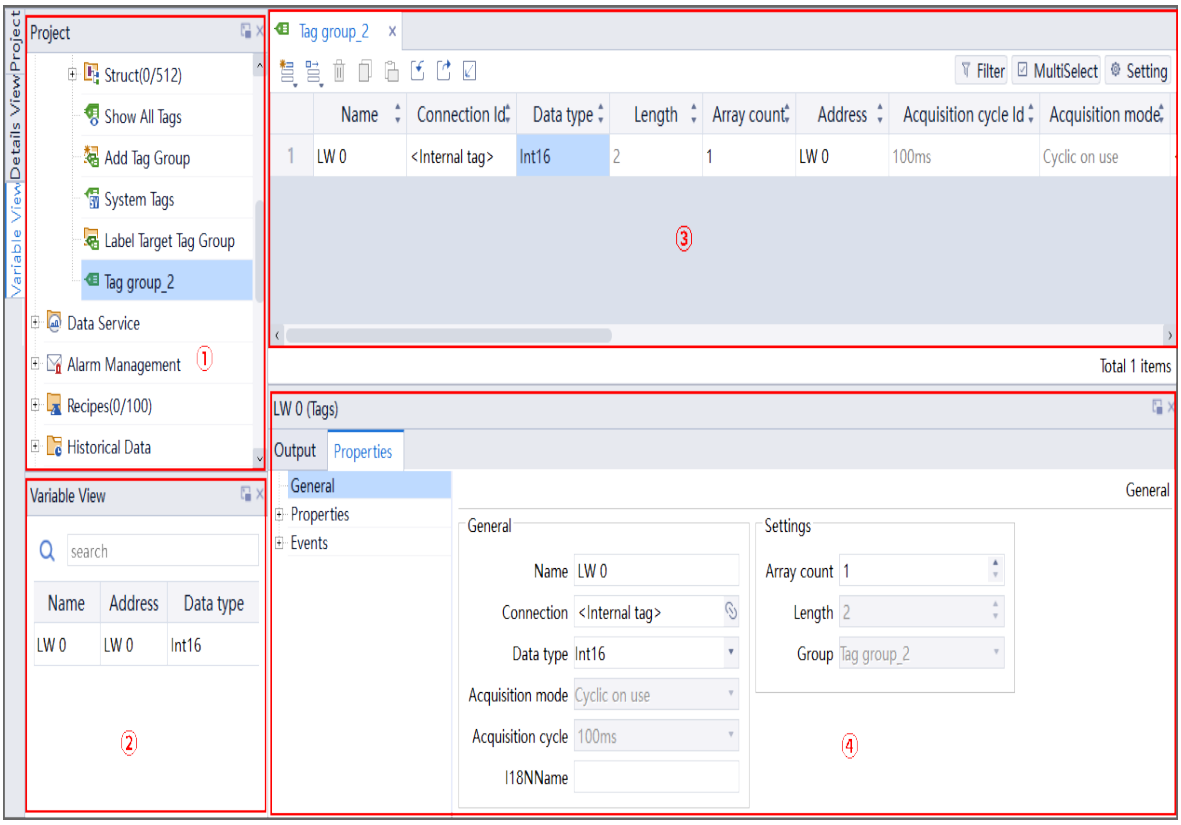
The drop-and-drop feature is supported by tag groups, system tags, label tags, and structure tags, but not supported by array tags.

5.2.2 Configuring Tags

Procedure:

1. In the project view, choose "Communication" > "Tags" > "Tag group_2". Double-click the tag group to open the tag editor (①: project view area; ②: tag view area; ③: tag configuration area; ④: property view area), as shown in the following figure.
2. In the workspace of the tag editor, click  to create a tag.
3. Then you can select the connection and data type and address of the driver of the PLC to be connected. If you want to use internal tags, just select "Internal tag" in the "Connection" field, and then select the data type and address.
4. Other properties of a tag can be set as needed.

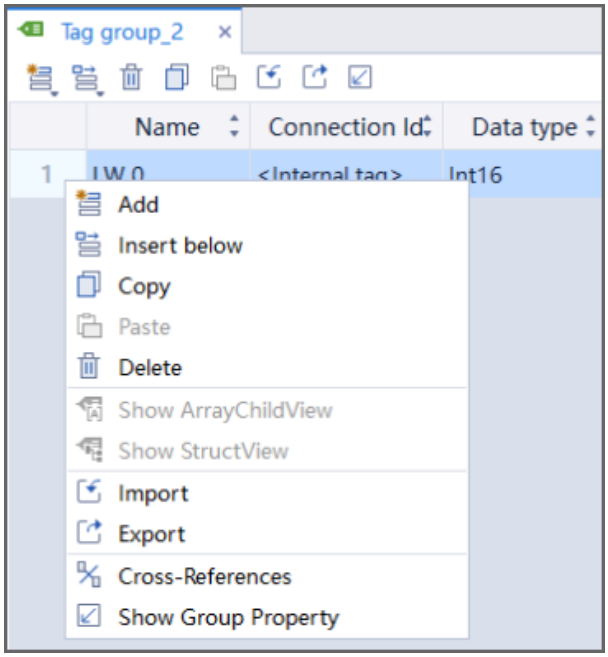
5. Save the project.



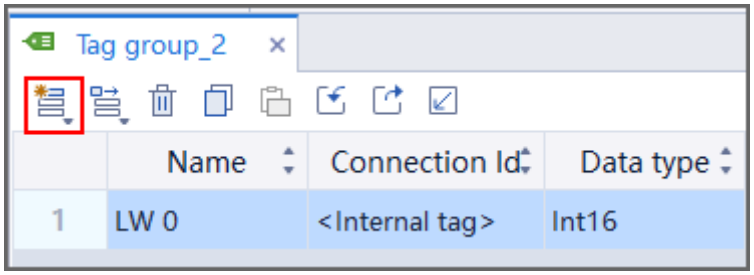
5.2.3 Tag Editor

Creating a Tag

Method 1: Select the tag row in the tag editing area, right-click and select "Add".



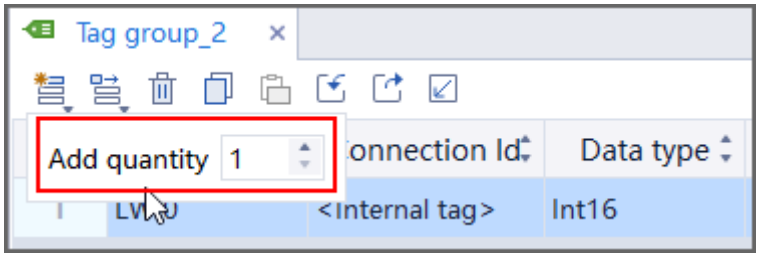
Method 2: Directly click  in the upper left corner to add a tag.



Creating Multiple Tags

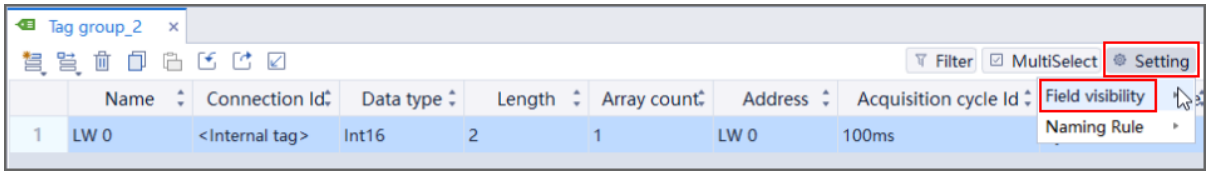
To create multiple tags at once, hover the mouse over the  button to display an input field for the quantity.

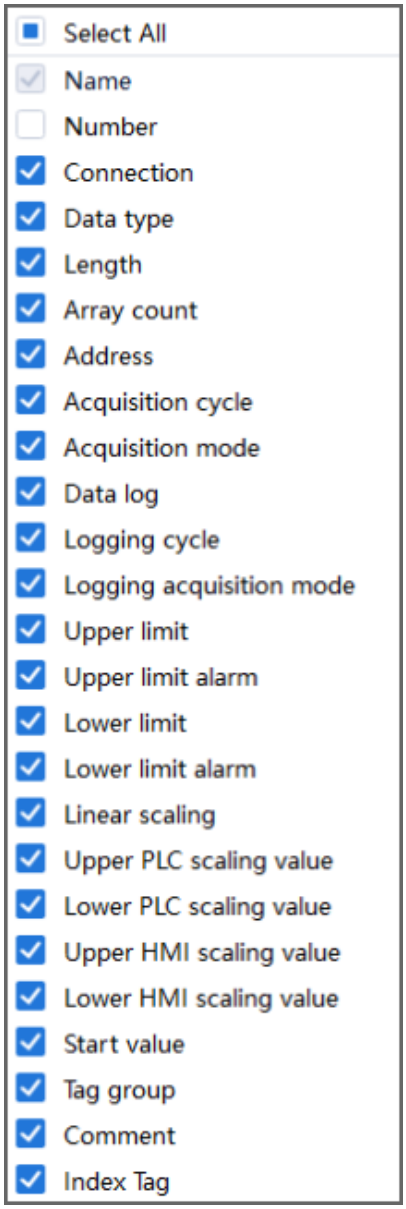
Enter the target number, then click the  button to create the specified number of tags.



Tag Parameters

Right-click the header row in the tag editing area to check or uncheck parameters for visibility. These parameters can be configured in the property area, as shown below.





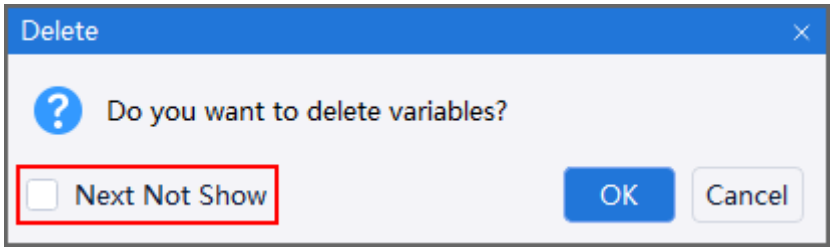
Deleting Tags

Click the tag number to select the tag row, then click the  button to complete deletion.

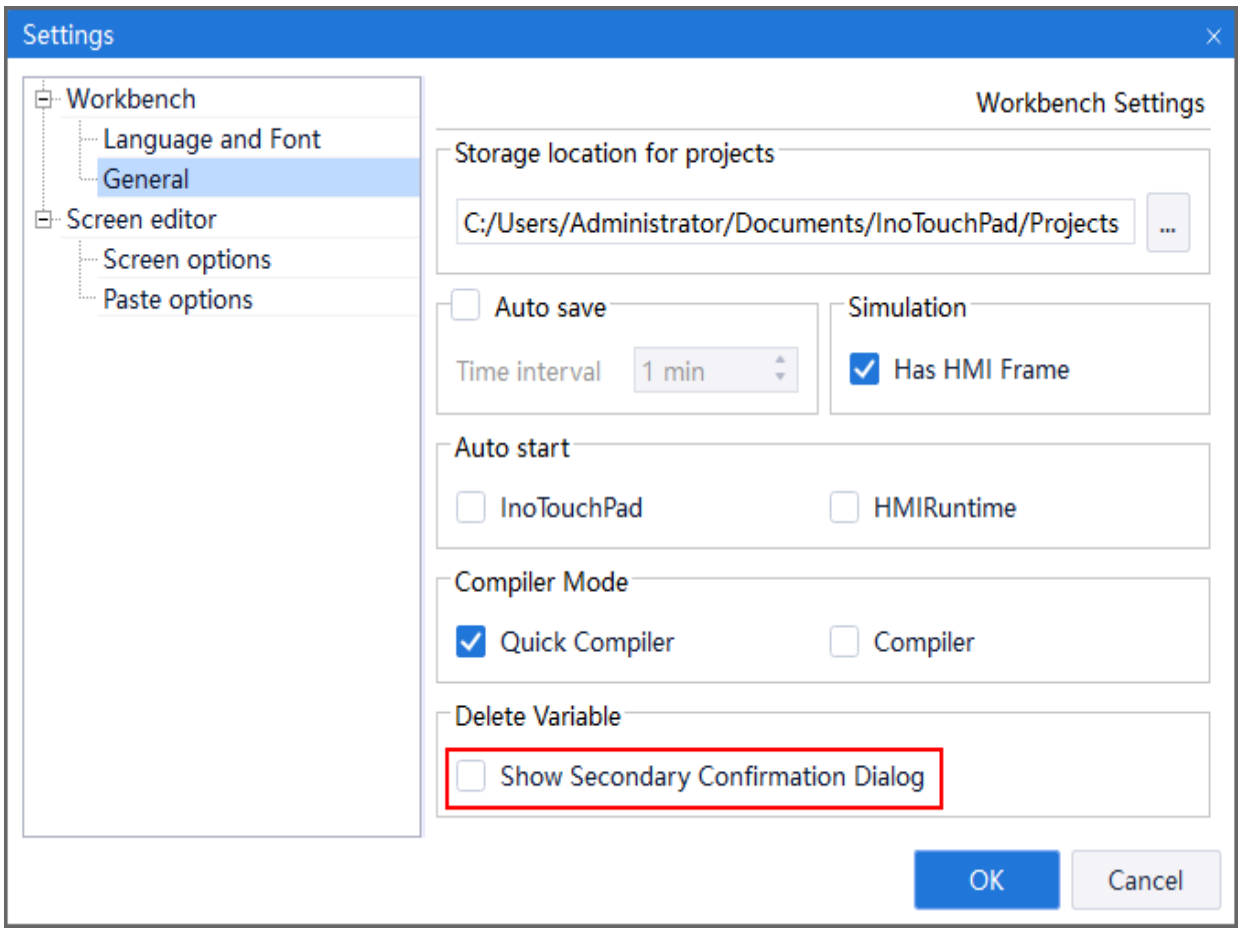
> Note
>
> - A prompt will pop up only when deleting tags in regular tag groups and structure tags.
> - The popup prompt is enabled by default.

Disabling secondary popup prompt for tag deletion

Method 1: When deleting a tag, check "Next Not Show". The system will directly delete the selected tag without prompting upon subsequent deletions, as shown below.

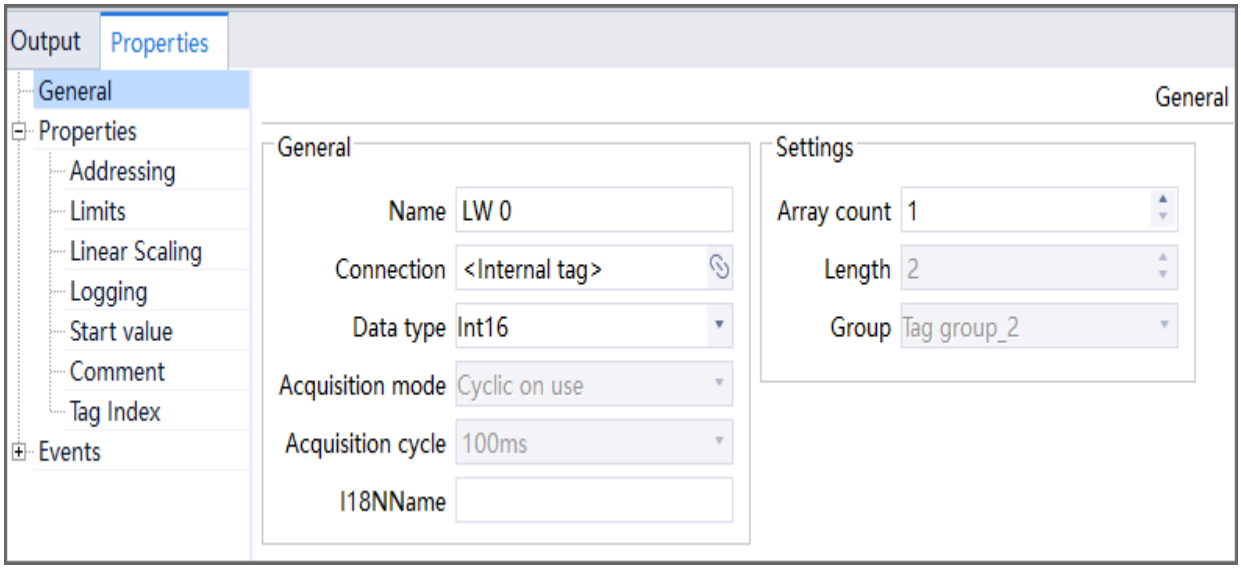


Method 2: Choose "Options" > "Settings", select "General" in the popup window, and uncheck "Show Secondary Confirmation Dialog" as shown below.



5.2.4 Property View of the Tag

The property view of a tag consists of a tree structure on the left and an editing area on the right. After you edit the properties in the editing area, the settings are synchronized to the tag table editor. Similarly, tag property settings made in the tag table editor will also be synchronized to the property editing area, as shown in the following figure.



Category	Name	Description	Note
General	Name	Tag name	Names must be unique and cannot exceed 128 characters in length. When renaming array and structure tags, the time required for the update depends on the scale and complexity of the project, and the update progress will be displayed via a popup dialog.
	Connection	Connection of the tag	Supported tags: internal tags or external tags
			Default: internal tag
	Data type	Data type of the tag	The tag data type is restricted by the connection and will be described separately in the protocol sections.
			Default: Int
	Acquisition mode	Acquisition mode of the tag	Options: On demand, cyclic continuous, and cyclic on use
			On demand: Call the system function "UpdateTag" to update the tag.
			Cyclic continuous: The tag is always refreshed.
			Cyclic on use: The tag is refreshed only when the screen uses the tag.
	Acquisition cycle	Sets how often the tag is acquired.	Default: 100 ms
	I18NName	The internalized name of the tag	During online operation, the trend and operation record controls use internationalized names for all recorded tag identification. The naming rules for internationalized names are the

			same as for tag names. They can be identical to or different from tag names.
Settings	Group	The number of the tag group	Not editable
	Array count	The number of array elements	Enable Edit
			Range: 1 to 2000; Default: 1
	Length	The count of byte * array	Not editable
Addressing	Address	The PLC address and memory address	Based on the tag type
Logging	Data log	Data record of the tag	The default value is null.
	Logging cycle	Sets how often the tag is acquired.	The "Logging cycle" becomes enabled only when "Logging mode" is set to "Cyclic continuous". In the "Logging cycle" options, the minimum valid cycle is 1s. Cycles shorter than 1s are not recognized by the software.
	Logging mode	The recording method of the tag	Options: On change, On demand, and Cyclic continuous
			Default: Cyclic continuous
			On change: The tag is recorded when its value changes.
			On demand: The tag is recorded when the system function "LogTag" is called.
			Cyclic continuous: The tag is recorded at fixed time intervals.
Limits	Upper	The upper limit of the tag	Value range: Constant and tag
			Constant value range: data type range
	Upper alarm	An alarm is triggered when the tag value exceeds the upper limit.	The analog alarm "The value is higher than the upper limit" is generated at the rising edge.
			Value range: Constant and tag
	Lower	The lower limit of the tag	Constant value range: data type range

	Lower alarm	An alarm is triggered when the tag value is below the lower limit.	The analog alarm "The value is below the lower limit" is generated at the falling edge. It is valid only for external tags and invalid for array tags.
Linear Scaling	Linear Scaling	Enables or disables linear scaling.	Values: On and Off Default: Off You can also use InverseLinearScaling/LinearScaling.
	Upper PLC scaling value	The PLC upper limit	Default: 10
	Lower PLC scaling value	The PLC lower limit	Default: 0
	Upper HMI scaling value	The HMI upper limit	Default: 100
	Lower HMI scaling value	The HMI lower limit	Default: 0
Start value	Start value	The start/ default value of the tag	Constant value range: data type range Default: Null
Comment	Comment	Tag comment	Limit: 500 characters
Tag Index	Index tag	The associated index tag	Default: Null

In InoTouchPad, you can configure specific properties for each tag that determine the usage of the tag.

5.2.5 Label Tag

Tag communication serves as a special communication protocol. By utilizing this protocol, tags from the PLC can be imported into the InoTouchPad software in XML file format, enabling data exchange functionality between the two.
Tags used in tag communication are label tags.

The label tag contains the following:

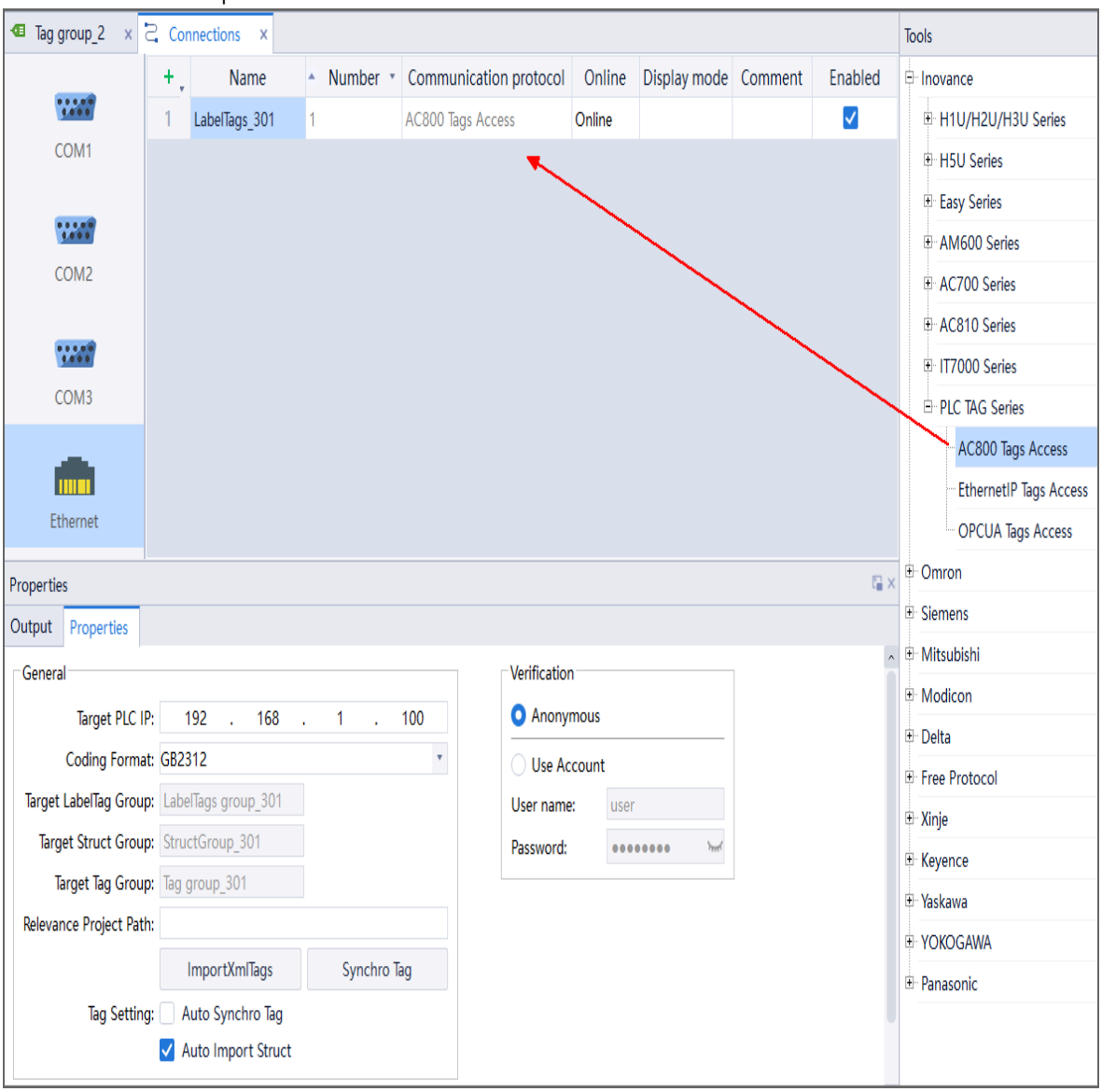
- 5.2.5.1 Setting a Label Tag
- 5.2.5.2 Label Tag Group Operations
- 5.2.5.3 Label Target Tag Group Operations
- 5.2.5.4 Label Tag Data Type Conversion
- 5.2.5.5 Alarm Code

5.2.5.1 Setting a Label Tag

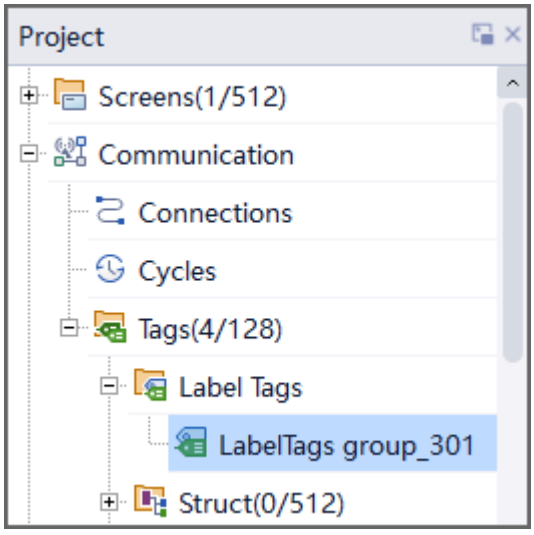
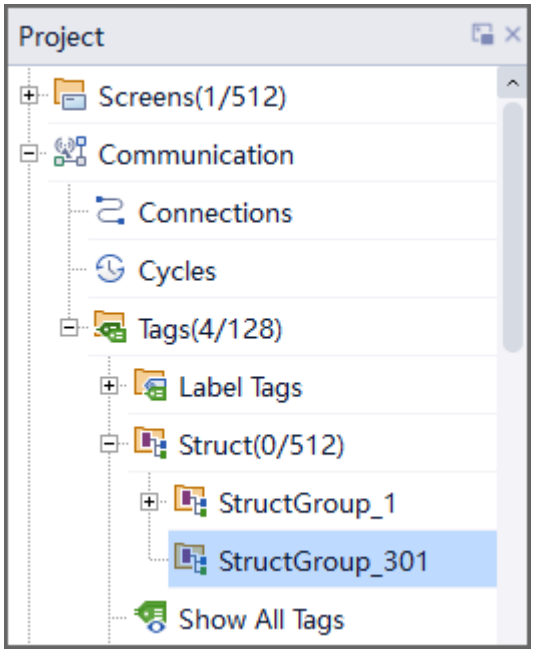
Procedure:

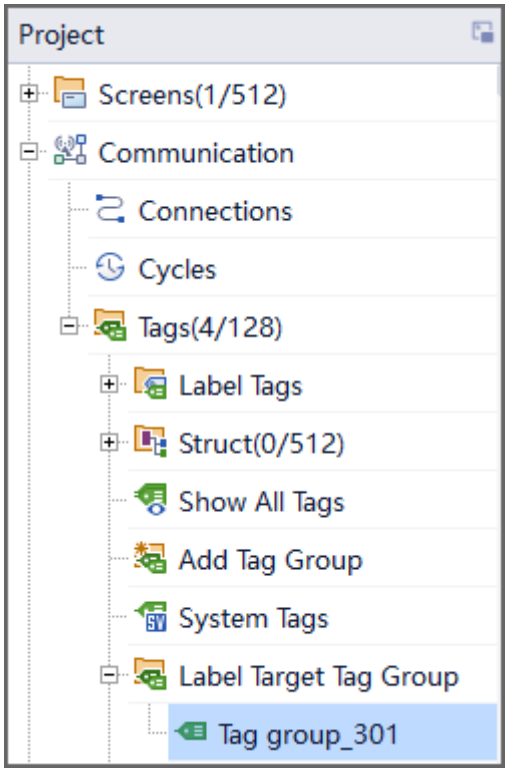
1. Open the "Connection" editing window.
   Double-click the "Connection" node in the "Project" tree to open the editing window.

2. Add tag communication connection.
   First, select the "Ethernet" port as the communication interface, then double-click any node under "Inovance PLC TAG Series" in the "Tools" to complete the connection addition. Here, we use "AC800 Tags Protocol" as an example for illustration.



Category	Parameter	Description
Normal	Target PLC IP	Displays the IP address of the PLC device.
	Coding Format	Supported formats: GB2312 and UTF-8. Follow the program coding format of the PLC device.

Category	Parameter	Description
	Target LabelTag Group	The corresponding node name in the "Project" tree, automatically generated when the current connection is created.  Compliant label tags are displayed collectively in this node after import.
	Target Struct Group	The corresponding node name in the "Project" tree, automatically generated when the current connection is created.  Imported structure tags will be displayed here as child nodes.

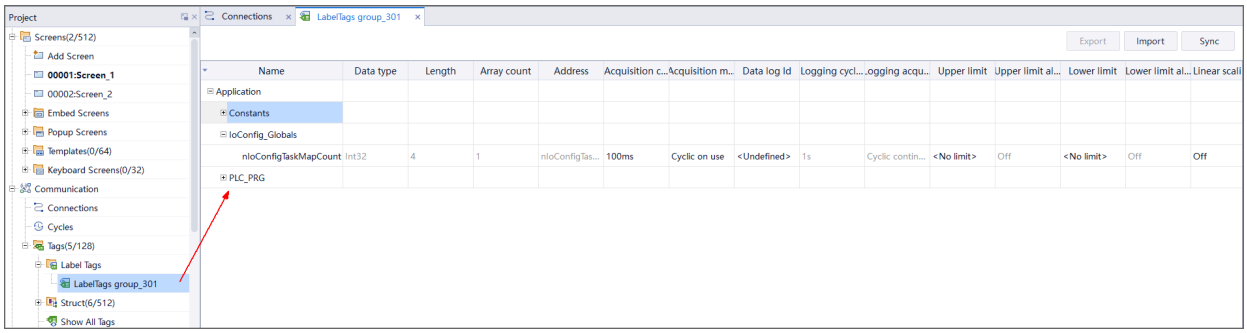
Category	Parameter	Description
	Target Tag Group	The corresponding node name in the "Project" tree, automatically generated when the current connection is created. The initial content is empty.  The name of the structure tag in the label tag group is converted to a name applicable to the InoTouchPad software. The converted tags are managed under this node.
	Relevance Project Path	When using the "ImportXmlTags" button to open a valid XML file, the path is automatically retrieved and associated. The "Synchro Tag" button is used for updating the file content from the retrieved path into the software, eliminating the need for re-import.
	Tag Setting	Auto Synchro Tag: If it is checked, the specified connection file will be monitored at intervals set according to Synchronization Interval. When both the timestamp and content of the tag XML file change, an update prompt will pop up:
		Auto Import Struct: The "Auto Import Struct" checkbox determines whether to generate definition information when importing structure tags. Checked: Generate definition and support the "Generate Tag" command operation. For the "Generate Tag" operation, see 5.2. 5.2 Label Tag Group Operations.

<table>
<tr><th>Category</th><th>Parameter</th><th>Description</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Name</th><th>Data type</th><th>Length</th></tr>
<tr><td>struct1inst1</td><td>LabelTags_301.STRUCT1</td><td>8</td></tr>
<tr><td>A1</td><td>Int16</td><td>10</td></tr>
<tr><td>B1</td><td></td><td></td></tr>
</table>
Unchecked: Does not generate definition, which can reduce import time when importing large numbers of tag structure variables.
<table>
<tr><th>Name</th><th>Data type</th><th>Length</th></tr>
<tr><td>struct1inst1</td><td></td><td></td></tr>
<tr><td>A1</td><td>Int16</td><td>10</td></tr>
<tr><td>B1</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td rowspan="2">Verification</td><td>Anonymous</td><td rowspan="2">Adapt to the connected PLC device and configure according to the encryption information.</td></tr>
<tr><td>Use Account</td></tr>
</table>

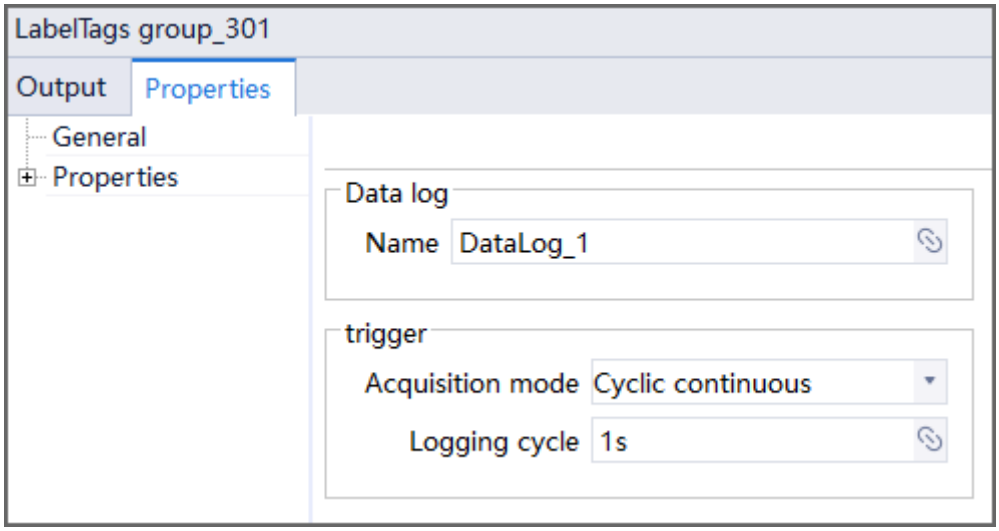
Fill in the parameter items according to the connected PLC device to complete the connection configuration task.

5.2.5.2 Label Tag Group Operations

Each connection of tag communication in the "Project" tree has a corresponding label tag group. Double-click the node to open the tag import information table.



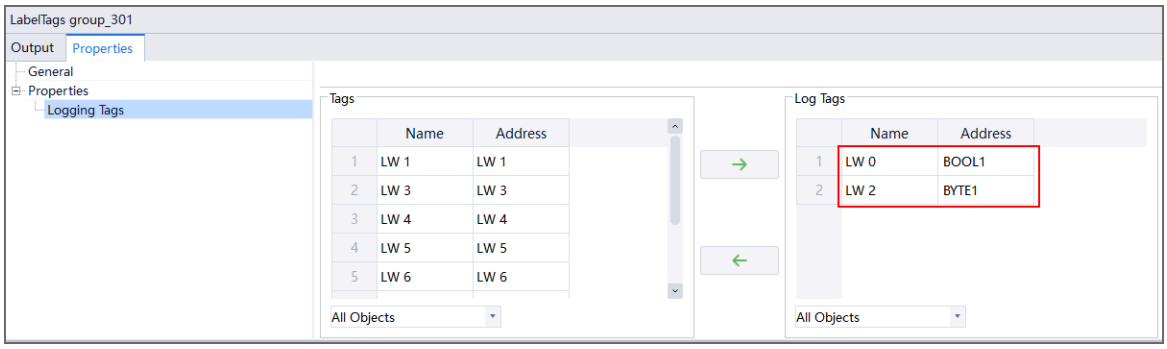
- Show Group Property
  Right-click any tag row and select "Show Group Property" to open the properties window of the current label tag group.



The data logging of label tag groups serve as data sources for historical reports.

Before using the data logs of label tag group, sets the logging rules in the "General" settings, then selects the logging objects in "Properties". Only objects added to the "Logging Tags" area will be logged according to the rules.

For example, BOOL1 and BYTE1 in the following figure will be logged in "DataLog_1".



- Cross-Reference

  This command is applicable for a single tag, including members of array tags.

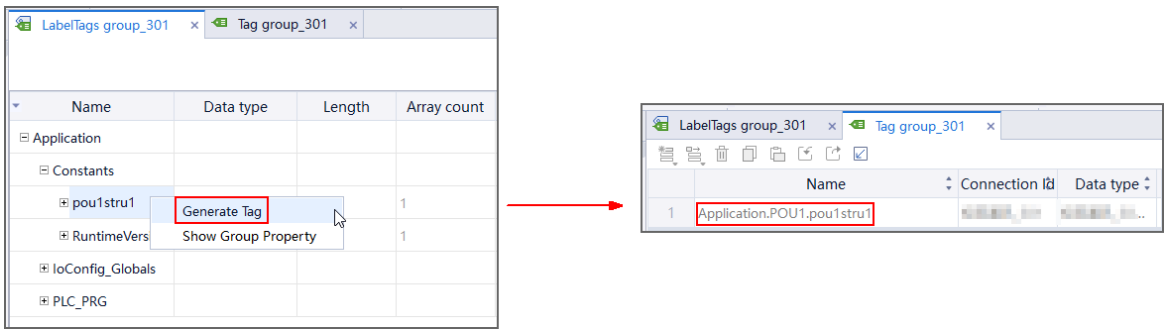
  It is used for quickly viewing all reference locations of the current tags within the project.

- Generate Tag

  This command converts the name of a structure tag to a name applicable to the InoTouchPad software.

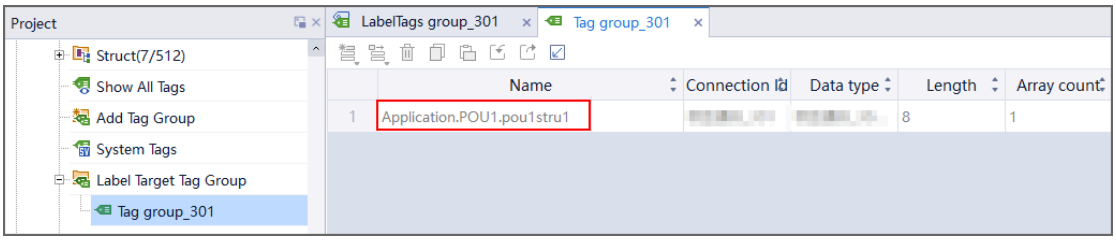
  The converted tag is managed under the "Label Target Tag Group" node.

  It is applicable to structure tags, and be selected from the right-click menu.

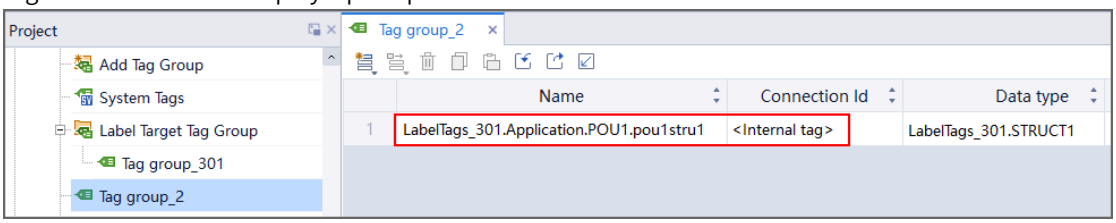


During tag generation, duplicate name checking is performed. The handling method depends on the location of the existing tag:

  - For existing tags in the label target tag group (as shown in the figure below), the software supports tag regeneration and will display a popup prompt.



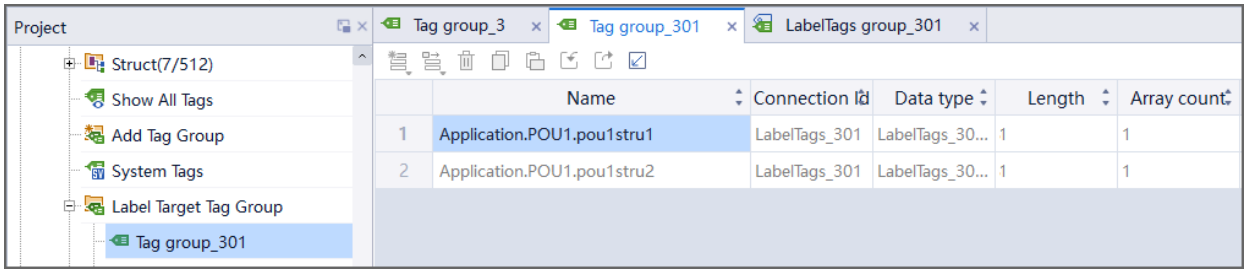
◦ For existing tags in the tag group (as shown in the figure below). The software does not support tag regeneration and will display a prompt in the status bar.



- Parameter Settings for a Single Tag
  In the tag information table, parameter values marked in black are editable, such as acquisition cycle and data log.
  The data logging of a single tag serves as the data source for historical trend.
- Import
  Import PLC XML file.
- Synchronize
  Automatically reads the file content based on the XML file storage path of the current tag group.

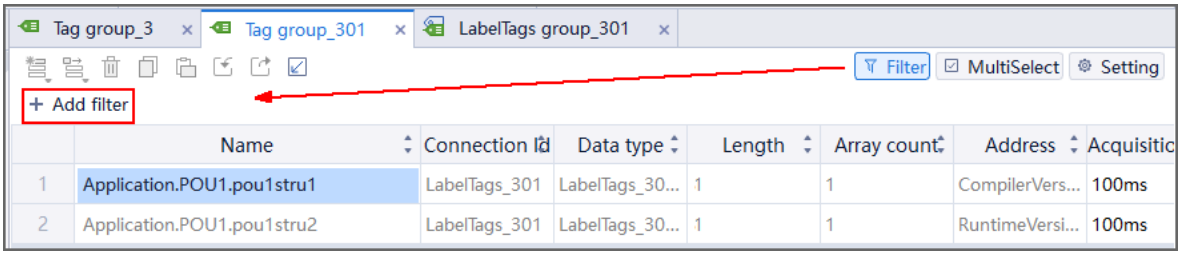
5.2.5.3 Label Target Tag Group Operations

Each connection of tag communication in the "Project" tree has a corresponding label tag group. Double-click the node to open the tag import information table.



- Acquisition mode
  The acquisition mode of structure tags can be modified. Use the "Batch Operation" button to modify multiple tags simultaneously.
- Delete
  Select the target tag and use "Delete" command in the right-click menu or the "Delete" key to delete the tag.
- Structure member
  Select any tag and right-click to open its member list via the context menu command.
- Cross reference
  Use the right-click menu command "Cross Reference" to quickly locate all instances where a structure tag is referenced in the project.

- Show Group Property
  Right-click any tag row and select "Show Group Property" to open the properties window of the current label tag group. For details, see Show Group Property in the label tag group.
- Filter
  Structure tag list supports conditional filtering. Activate the "Filter" button, add filter conditions, and implement information filtering.



5.2.5.4 Label Tag Data Type Conversion

Label tags are imported into InoTouchPad software via XML files, where certain data types may change after import. The table below lists the conversion relationships for common data types before and after import, with pre-import data types sorted alphabetically.

The following table information applies to 4.4 Inovance AC800 Tags Protocol and 4.5 Inovance EthernetIP Tags Protocol.

Table 5-2-5-4-1 Data type conversion relationship table before and after import

Before import	After import	Figure Example
BOOL	BOOL	
BYTE	UInt8	
DINT	UInt32	
DWORD	UInt32	
INT	Int16	
LINT	Int64	
LREAL	Double	
LWORD	UInt64	
REAL	Float	
SINT	Int8	
STRING	String	
USINT	UInt8	
UDINT	UInt32	
UINT	UInt16	

Before import	After import	Figure Example
ULINT	UInt64	
WORD	UInt16	
WSTRING	WString	
Unions	Generate corresponding tree node.	
Array	Generate the corresponding tree node with an array count of 1.	
Custom function block	Generate corresponding tree node.	
Structure	Generate corresponding tree node.	
Enumeration	Convert based on defined basic data types.	

Name	Data type	Length	Array count
Array1			
Array1[3,4]	Bool	1	1
Array1[3,5]	Bool	1	1
Array1[3,6]	Bool	1	1
Array1[4,4]	Bool	1	1

Name	Data type	Length	Array count
struct1inst1	LabelTags_301.STRUCT1	1	1
A1	Bool	1	1
B1	Bool	1	1
C1	Float	4	1
D1	Float	4	1

Related sections:

- 4.4 Inovance AC800 Tags Protocol
- 4.5 Inovance EthernetIP Tags Protocol

5.2.5.5 Alarm Code

After label tags are configured, alarm information will be reported upon exceptions. The following table lists the alarm codes.

Alarm Code	Description
0x10000100	Client communication initialization failed.
0x10000101	Communication is not initialized.
0x10000102	The connection limit is exceeded.

0x10000103	Communication connection failed, generally due to network disconnection.
0x10000104	Communication is disconnected, requiring reconnection.
0x10000105	The gateway is not connected or disconnected, requiring reconnection.
0x10000200	Waiting times out, and the connection may have been disconnected.
0x10000302	The manufacturer of the connected PLC does not match.
0x10000304	The username or password is incorrect.
0x10000501	The registered tag does not match the symbol in the PLC.
0x10000502	The communication client is invalid. Reconnect a client.
0x10000503	Tag definition is invalid. Redefine the tag.
0x10000504	Tags of the referenced type cannot be written.
0x10000505	There are tags without access permissions.
0x10000506	Too many symbol tags are defined.
0x10000507	The definition of a symbol tag has changed, requiring redefinition.
0x10000508	Too much tag value data is written.
0x10000400	The symbol configuration file is not in XML format.
0x10000401	The symbol configuration file does not have a symbol information start identifier.
0x10000402	The symbol configuration file has no header information.
0x10000403	The label handle is invalid.
0x10000410	The symbol configuration data type is incorrect.
0x12000000	The symbol configuration file line is incorrect. The last 24 bits represent the line number of the error.

5.2.6 Setting a Structure Tag

Introduction

IT7000 is designed with structure declaration and instantiation features to allow you bind a structure type to a control group so that all members in the group can be replaced at a time. Besides, structure tags for label communication can be associated with an index, and the sub-index of the first array is offset by default.

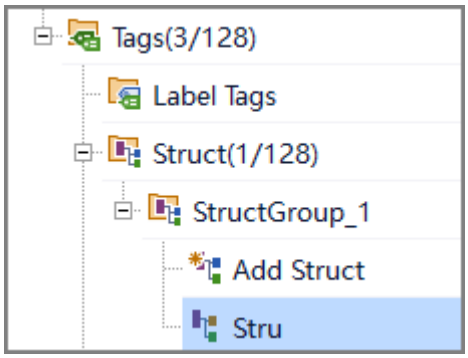
Preconditions

A project has been created.

Procedure

1. Declare the structure.

In the "Project" navigation tree on the left, choose "Communication" > "Tags" > "Struct" > "StructGroup_1" > "Add Struct", as shown in the following figure.



Structure nodes support 512 structure types, with a maximum length of 128 characters for custom structure type names.

You can modify the structure tag member names and data types, as shown in the figure below:

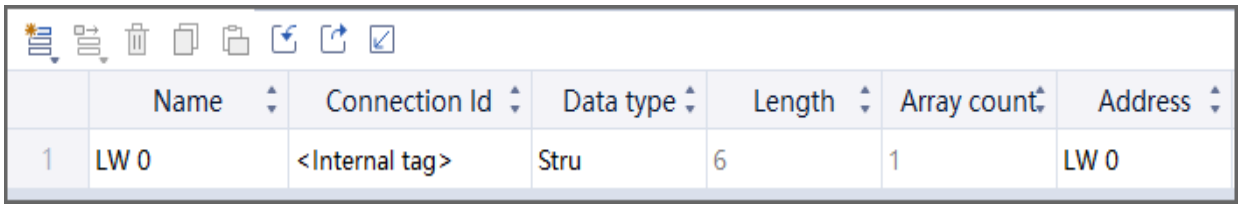
+	Name	Number	Data type	Length	Comment
1	member_1	2	Int16	2	
2	member_2	3	Int16	2	
3	member_3	4	Int16	2	

CAUTION

Note the data type when declaring a member. For example, the internal LW address does not support the type Int8. If any member to be declared is of the Int8 type, the instantiation of internal tag structure in the tag table will fail.

2. Create a structure tag.

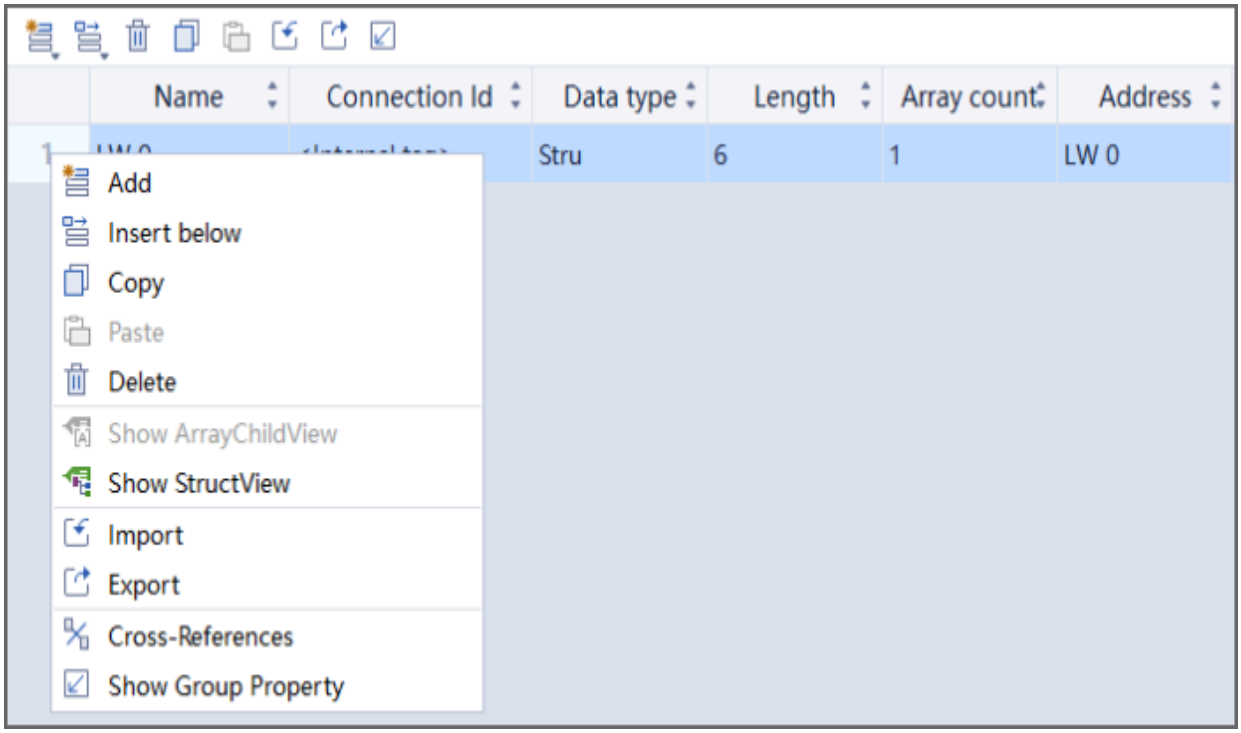
The structure "Stru" declared above is served as a data type and can be selected in the tag table. That is, a structure tag of such type is created, as shown in the following figure.



	Name	Connection Id	Data type	Length	Array count	Address
1	LW 0	<Internal tag>	Stru	6	1	LW 0

a. View the instantiation member.

In the tag group table, select the structure tag by selecting a row, and right-click the tag. In the menu displayed, select "Show StructView" to view the sub-member tag table. You can modify some common properties, as shown in the following figure.



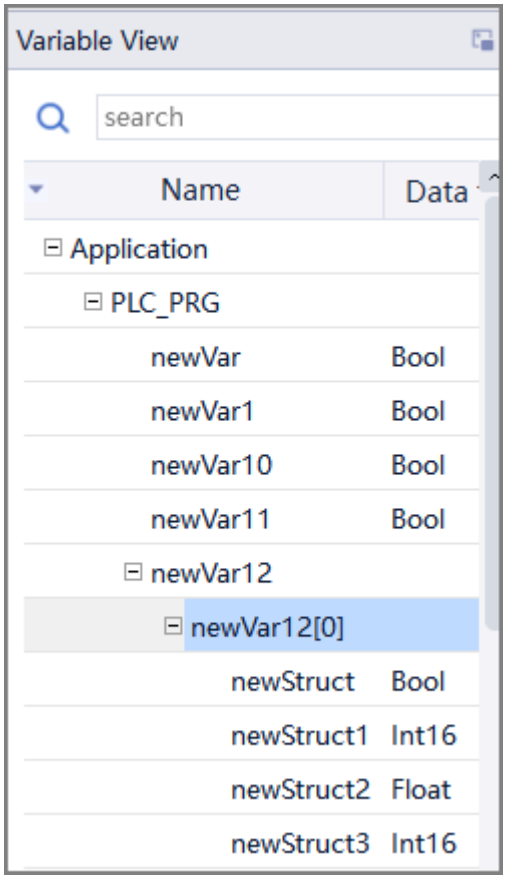
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0.membe...	10	<Internal tag>	Int16	2	1	LW 0
2	LW 0.membe...	11	<Internal tag>	Int16	2	1	LW 1
3	LW 0.membe...	12	<Internal tag>	Int16	2	1	LW 2

b. Enable label communication for the structure tag.

1) You can select label communication for a structure tag in the tag table. The tag name must be the full name for access. If an index tag is associated, the name is offset by the sub-index of the last array by default. Currently, the AC800 label protocol is supported, as shown in the following figure.

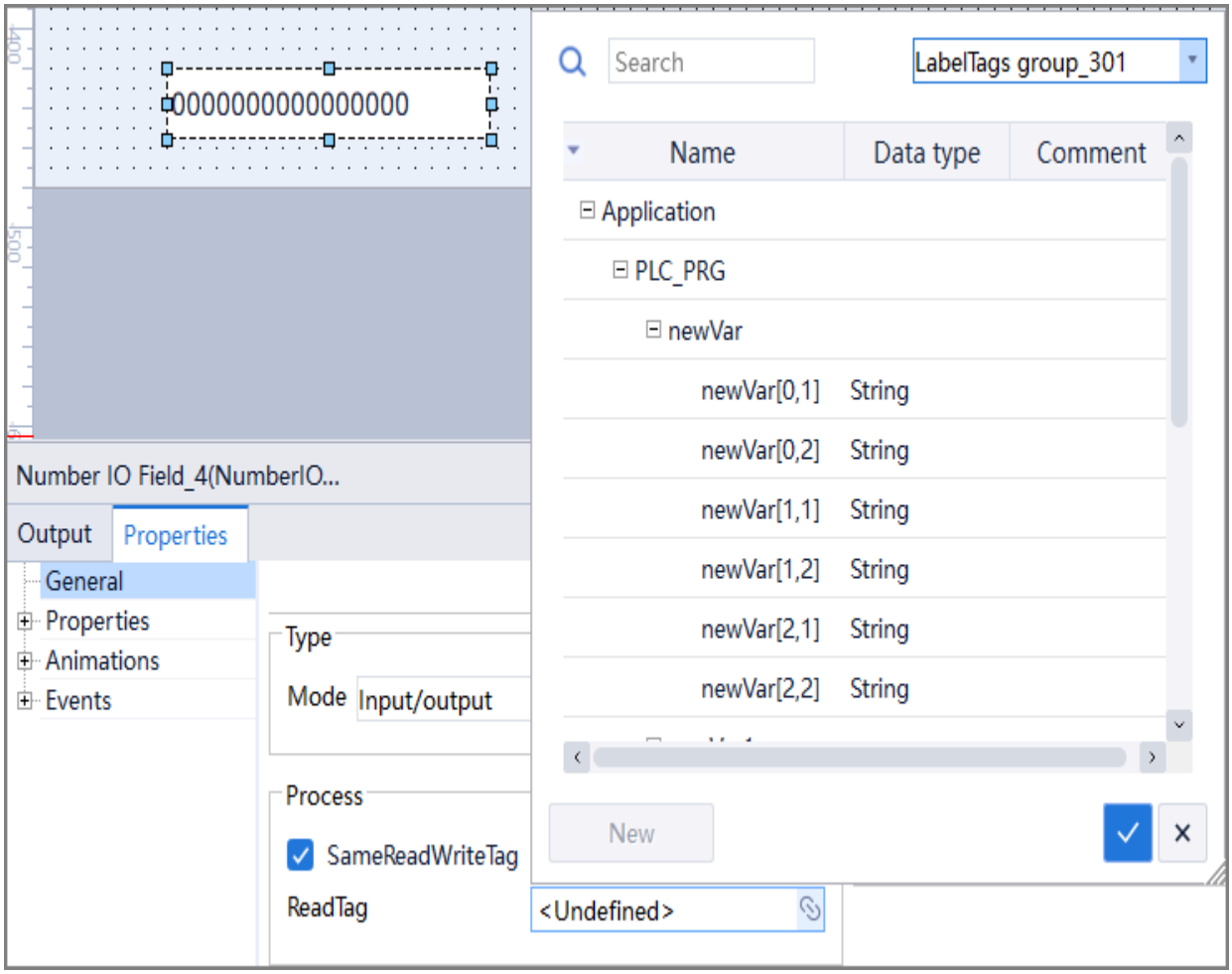
	Name	Number	Connection Id	Data type	Length
1	Application.PLC_PRG.newVar12.newVar12[0]	12	LabelTags_301	Stru	6

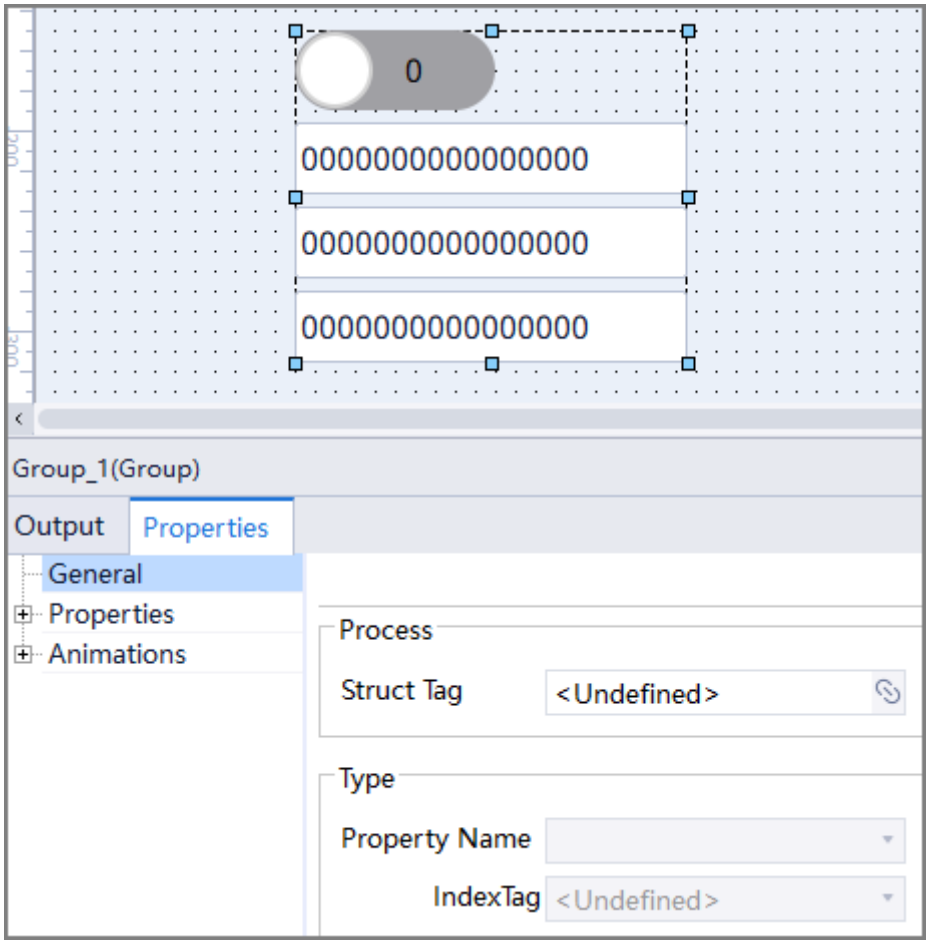
2)To create an instance for the structure tag for label communication, you need to input the full name of the corresponding structure node in the tag name field, or drag the name from the details view on the left to the tag table, as shown in the following figure.



3. Bind a member control.

Use the numeric I/O fields to make a simple combined control. Currently, you can only create an instance for a structure tag temporarily, associate the instance with member tags of sub-controls one by one, and then right-click the instance and select "Group" to group them, as shown in the following figure. In the last step, you can determine the type of the structures of the control. If you switch a structure tag of the specified type, associated tags of the sub-control are also switched.





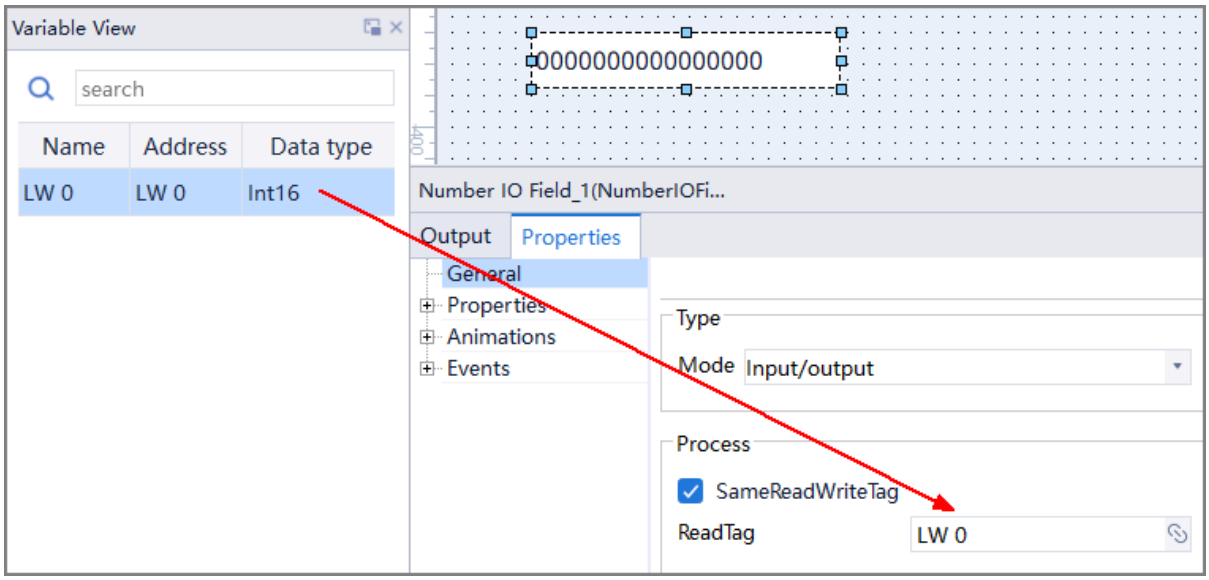
5.3 Editing Tags

5.3.1 Creating a Tag

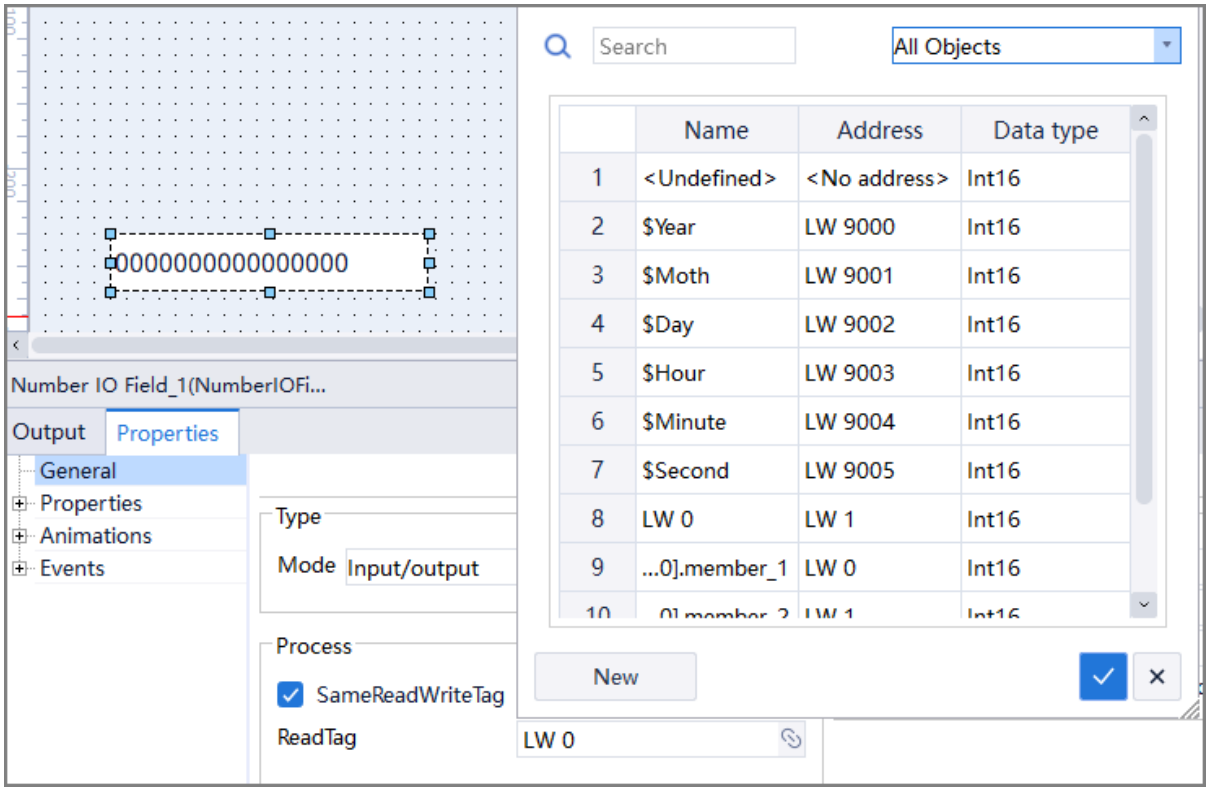
1. Drag a tag group to a screen. Click a tag group. On the "Variable View" tab page, drag the target tag to the screen and the corresponding control is automatically generated.

2. Drag a tag to a drag selection field.

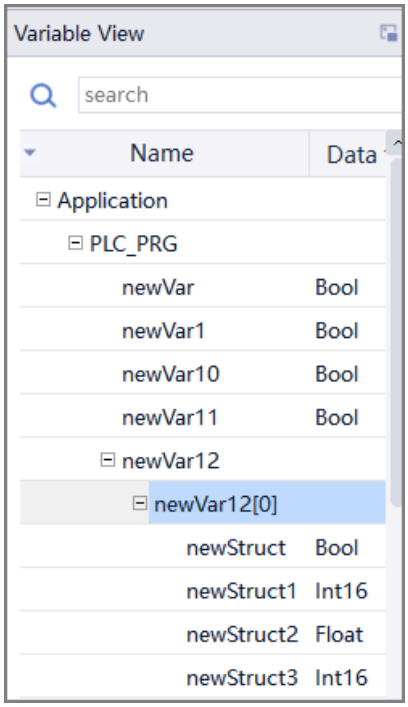
Click the control to be configured, such as "Number IO Field". On the "Variable View" tab page, drag a tag to the drag selection field.



3. In the tag selection field of the control, configure the tag, which is the most commonly used method.



4. In the tag selection field, input the tag name for configuration. Note: The configuration of some special tags may be different. For example, the "Variable View" of label communication is a tree structure, as shown in the following figure.



CAUTION

Label communication allows you to drag and drop tags, but does not support automatically displaying the full tag by the tag name.

5.3.2 Using Tags for Communication

External tags are used for data exchange between the HMI device and PLC. External tags are images of storage locations defined in PLC. In InoTouchPad, to create a tag connected to a PLC, you need to specify the connection to the PLC communication protocol, the tag data type, and the address. The HMI device and the PLC can access the same location.

When the HMI device acts as a slave, internal tags can also be used for communication, which is data exchange between HMI devices. Internal tags are images of storage locations defined in HMI.

In InoTouchPad, to create a tag connected to HMI, you need to create a slave protocol in "Connections", set the other HMI device connected to it as the master, and select the standard Modbus protocol to communicate with this slave HMI device. After the type and address are specified, the address area of the slave HMI internal tags can be accessed. The slave device being read and written is the HMI, and the actual read and write location mapping is as follows.

Slave HMI Device Communication Address	HMI Internal Tag Address
Read/write 0x/1x(0 to 11999)	Read/write LB(0 to 11999)
Read/write 3x/4x/5x(0 to 8999)	Read/write LW(0 to 8999)
Read/write 3x/4x/5x(10000 to 65535)	Read/write RW(0 to 55535)

> **Note**
>
> Since the address range on the Modbus master side is up to 65535, addresses 55536 to 131071 in the HMI device cannot be read or written.

- LB: The bit address, without the retentive at power failure feature
- LW: The word address, without the retentive at power failure feature
- RW: The word address, with the retentive at power failure feature

After you set the acquisition cycle, the HMI can read values of external tags at the specified cycle. As long as a tag is displayed on the screen or recorded, its value will be regularly updated. The time interval for regular updates is determined by the acquisition cycle. Acquisition can be performed by the set acquisition cycle or a customized acquisition cycle.

5.3.3 Modifying Tag Configurations

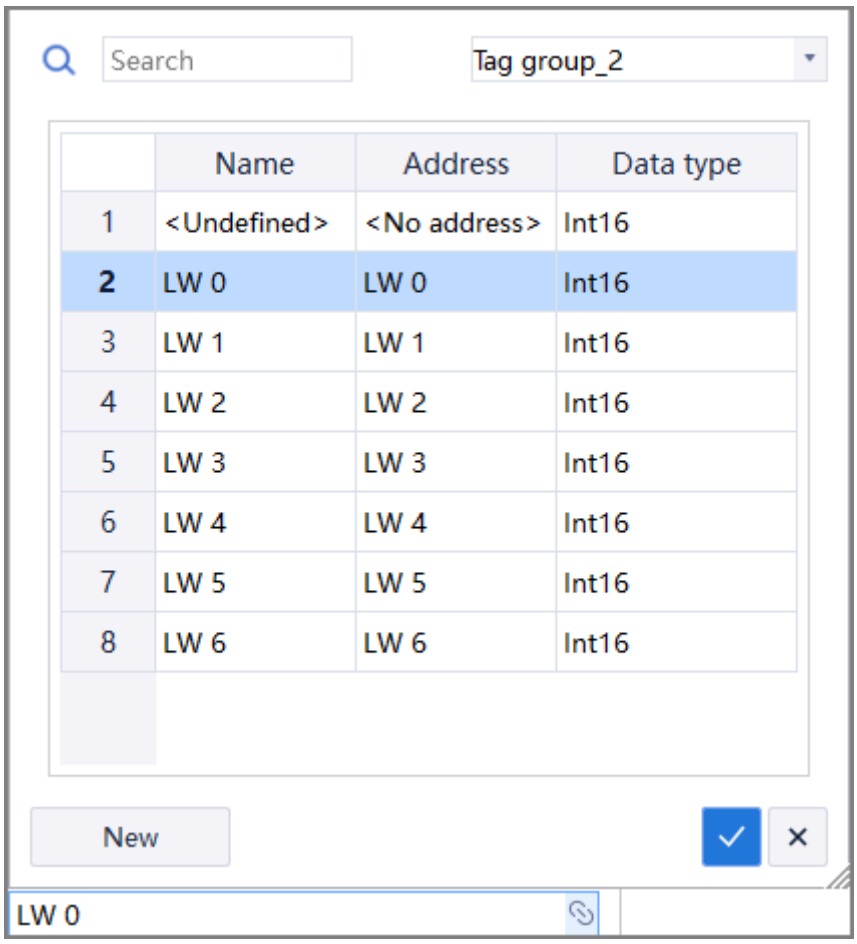
You can modify tag configurations as needed, as shown in the figure below.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	18	<Internal tag>	Int16	2	1	LW 0
2	LW 1	19	<Internal tag>	Int16	2	1	LW 1
3	LW 2	20	<Internal tag>	Int16	2	1	LW 2
4	LW 3	21	<Internal tag>	Int16	2	1	LW 3
5	LW 4	22	<Internal tag>	Int16	2	1	LW 4
6	LW 5	23	<Internal tag>	Int16	2	1	LW 5
7	LW 6	24	<Internal tag>	Int16	2	1	LW 6

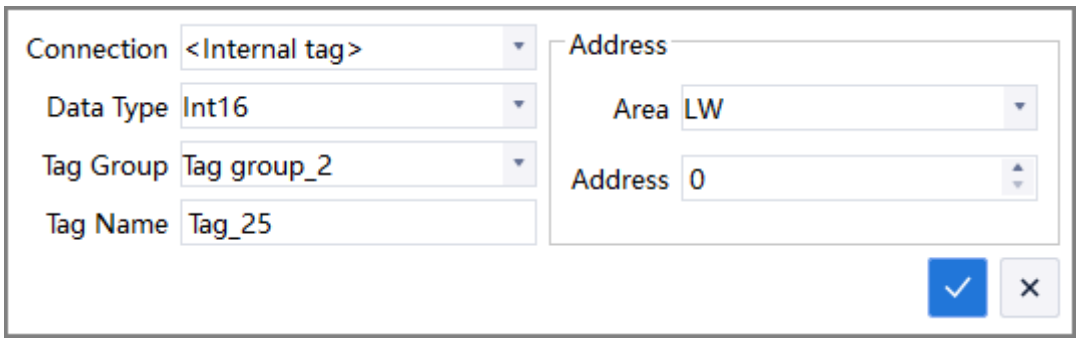
The setting rules for the "Acquisition mode" and "Acquisition cycle" of the label structure member tags:

- "Cyclic on use" mode: The acquisition cycle follows the actually set value.
- Other modes: It automatically switches to "Cyclic on use" mode with a fixed 100 ms acquisition cycle, disregarding the actual set value.

When you need to edit multiple tags, you can use the tag editor for configuration. In the tag editor, you can compare and adjust the properties of multiple tags, or sort tags by property.



To directly create a tag for use, you can click "New Tag" in the object list to open the tag property tab page, as shown in the figure below.



You can directly edit and configure parameters in the tag property box. During the configuration, if any configuration content is not allowed, the content will be highlighted in red. For example, the upper limit value is set less than the lower limit value, as shown in the figure below.

	Name	Number	Connection Id	Data type	Length	Array count	Address	Upper limit	Lower limit
1	LW 0	18	<Internal tag>	Int16	2	1	LW 0	1	100

Note

After the tag name is changed, it will be accordingly updated in other places, except for that in the script.

5.3.4 Setting Values for a Tag

You can set an upper limit and a lower limit to define the value range of a numeric tag. You can set tag limit values or tag start value.

Feature

- Set tag limit values: The tag limit values are only for tags of numeric type (except the BOOL type). Limit values of String and WString types and of DateTime type are invalid and cannot be set. If the process value is above or below the limit range, this can be configured to trigger analog alarm messages or events. When an operator enters a value that exceeds the limit range, the value is rejected and is not saved.
- Set the tag start value: The start value of a tag is the value that will be preset when the runtime starts. A start value can be preset for all data types. Setting the start value can ensure that the tag is in a user-defined state when the project starts.

5.3.5 Updating Tag Values

During runtime, tag values can be updated in the following ways:

- Change tag values in the IO field by operators.
- Use system functions such as SetValue to change tag values.
- Assign values for tags in scripts, for example, SmartTags("D 0") = 1.
- Update tag values by the values collected by communication. External tags are updated depending on collection modes. In "On command" mode, a command triggers a tag update. In "Cyclic on use" mode, as long as the tag is displayed on the current screen, it will be updated after a collection cycle that can be customized. In "Cyclic continuous" mode, a tag will be updated once after a collection cycle no matter whether the tag is displayed on the current screen. Since frequent read operations will increase the communication load, the tag collection mode is defaulted to "Cyclic on use". That is, the tag value is only periodically updated when the tag is displayed and used on the current screen. In general, the "Cyclic continuous" mode is only used for some tags that must be continuously updated.

5.3.6 Linear Conversion on Tags

Introduction

Linear conversion applies to the numerical data type. Linear scaling maps the values of external tags to a value range in an InoTouchPad project.

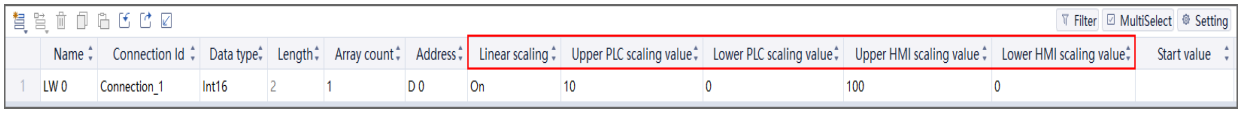
Preconditions

Communication is established.

Procedure

1. In the tag editor, turn on the linear conversion switch for the tag.

2. Set the upper and lower limits of the HMI linear conversion and PLC linear conversion for the tag. The numerical ranges will be linearly mapped to each other.



Example

Create an external tag "Tag_1". Use the Inovance H3U monitoring protocol for the connection of this tag and specify the address to be accessed as D 0. Turn on the linear switch, and set the upper and lower limits to 10 and 0 respectively for the PLC and to 100 and 0 respectively for the HMI.

When an HMI device communicates with H3U, the value will be converted according to the set linear relationship, and then written into the D0 register of H3U. Suppose the "Tag_1" value written on the HMI device is 50. Then the value written into the D0 register of H3U is 5.

Similarly, to read the "Tag_1" value on the HMI device, if the value read from the D0 register of H3U is 8, the actual display value of "Tag_1" on the HMI is 80 after linear conversion.

The above linear conversion maps the numerical range [0, 10] on the PLC to the numerical range [0, 100] on the HMI. You can also use the system functions "LinearScaling()" and "InverseLinearScaling()" for the linear conversion on tags. For details, see 16.3.2 Calculation.

5.3.7 Associating with Index Tags

There are 128 16-bit and 32-bit index tags in the system tags of IT7000. You can access multiple address spaces with one control by associating an index tag.

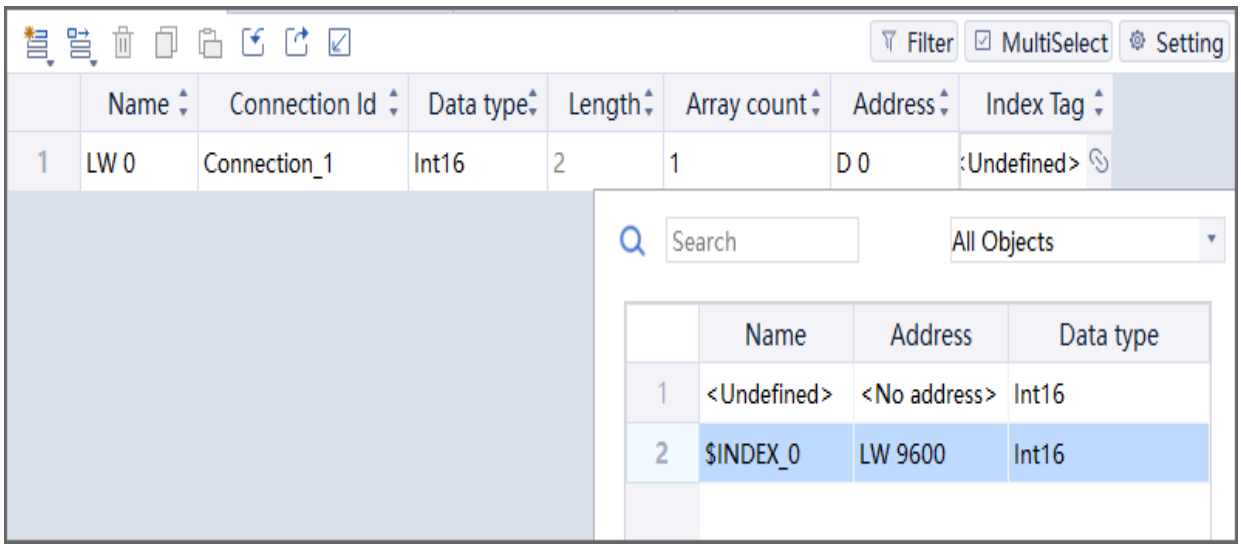
The method of using index tags is as follows:

1. Create an index tag.

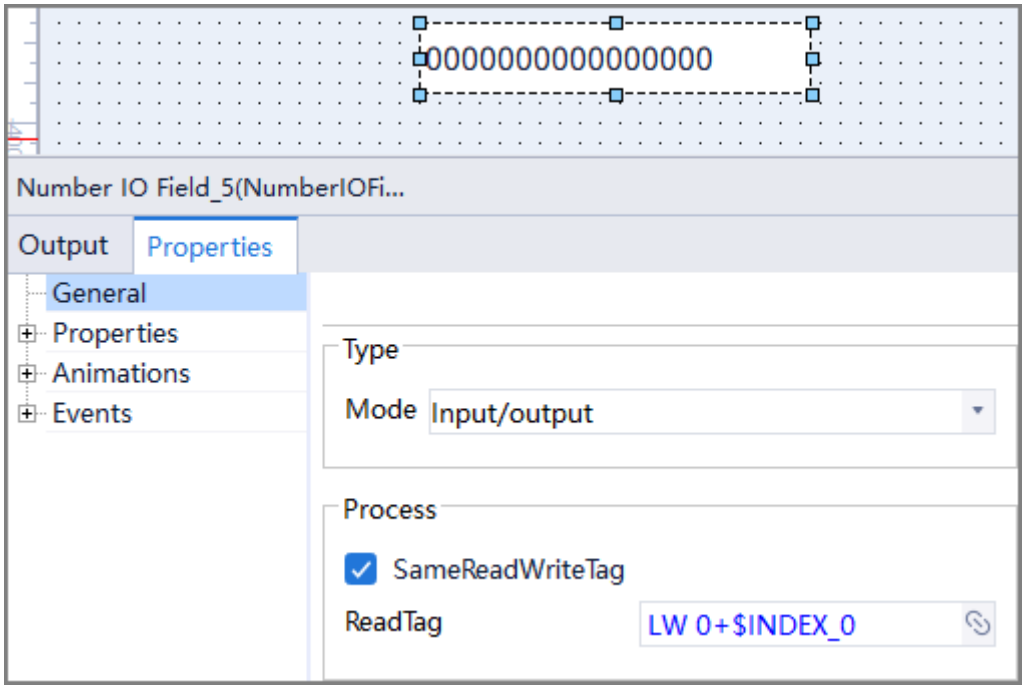
Choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, choose "Tag Index" > "16 Bit" and double-click "$INDEX_0" to create an index tag.

2. Associate with index tags in the following two ways:

a. In the tag editor, select an index tag for association, as shown in the figure below.

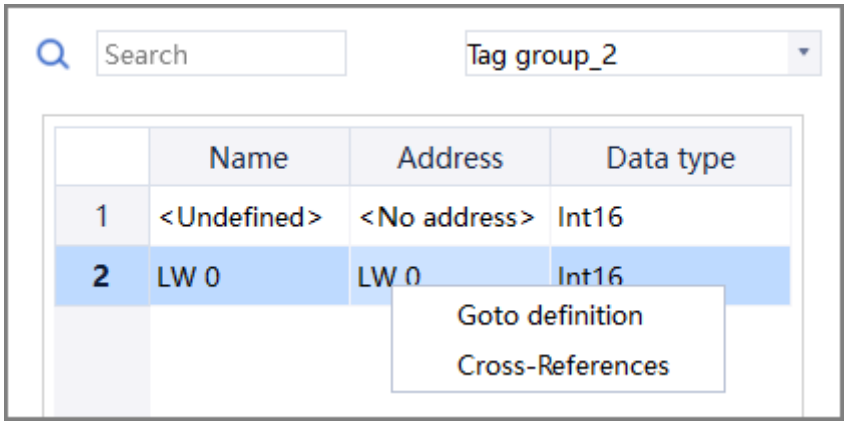


b. Drag a control and enter the index tag in the specified format of "Tag name + $INDEX_Index tag serial number". As shown in the following figure, press Enter after input is completed. The tag "LW0+$INDEX_0" will be created, indicating that LW0 is associated with $INDEX_0.



5.3.8 Searching for Tag Reference

In the text box of the project, you can search for controls and screens by tags, right-click a control, and choose "Goto definition" and "Cross-References".



1. "Goto definition": Returns to the tag group of the tag.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	27	<Internal tag>	Int16	2	1	LW 0

2. "Cross-References": Displays the cross-reference page, listing the tag reference controls or system functions.

Cross-References for LW 0

	Name	Property name	Path	Infotext	Comment
1	Number IO Field_5	Process value	Screens/00001:Screen_1	00001:Screen_1	

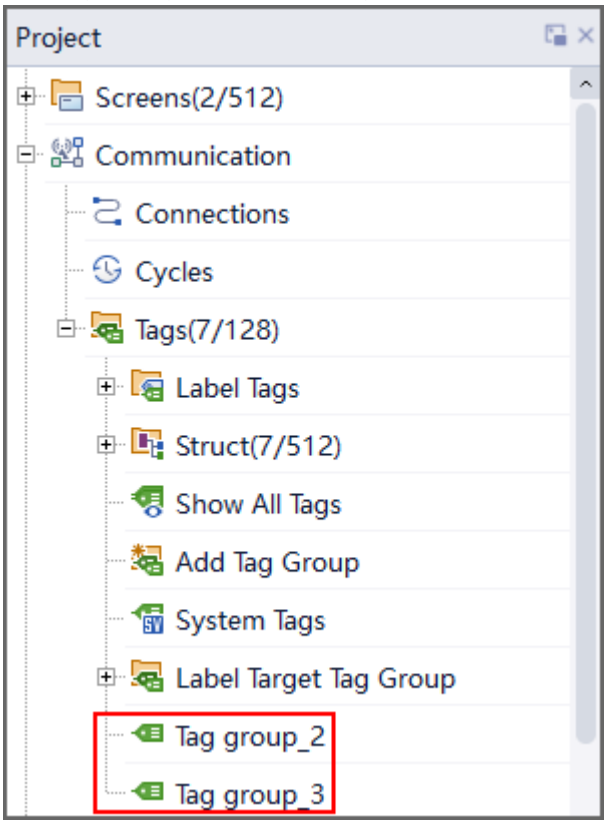
5.3.9 Restoring Tags

If a tag is accidentally deleted during offline configuration, recreating a tag with the same name can quickly restore its reference relationship in screens, scripts, recipes, and reports, ensuring project stability.

Preconditions

Preconditions for successful reference relationship restoration:

- The original tag is an ordinary tag or a label structure tag. Label tag is not supported.



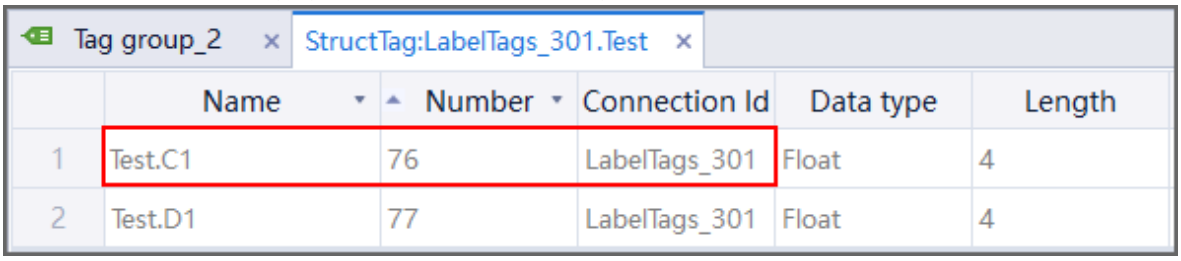
- Compilation failure status is maintained.
  From the moment the original tag is deleted until the restoring operation is performed, the project is either not compiled or the compilation result contains errors.

Requirements for new tag

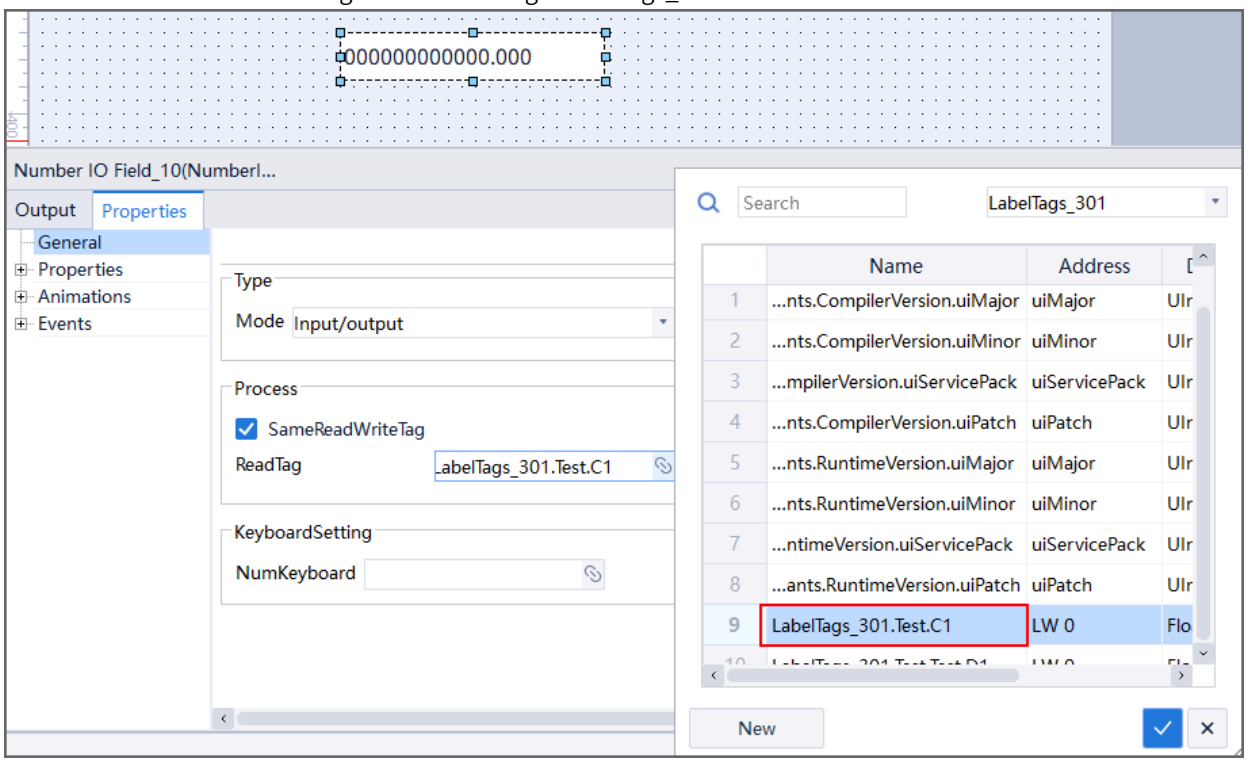
On the basis that the above prerequisites are met, the new tag can be either a newly created tag or derived from renaming an existing tag, but it must comply with the following rules:

- Same type as the original tag
  Tag types include standard types (e.g., Bool, Int16), structures, structure sub-members, arrays, and array elements. For example, if the original tag is a structure tag, the new tag must also be a structure tag.
- Same name as the original tag
  Note that when using label structure tag in a project, the naming format should be "ConnectionName.TagName".

As shown in the following figure, the label structure tag "Test" has a sub-member "Test.C1".



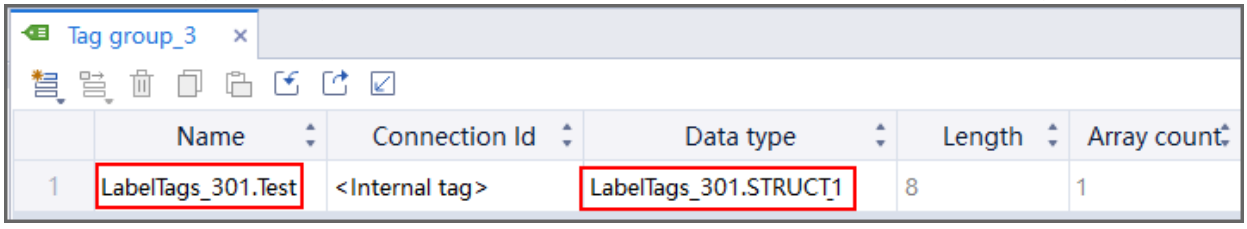
The name used in screen configuration is the tag "LabelTags_301.Test.C1".



Due to the specificity of label structure tag names, there is a possibility of accidental restoration between ordinary tags and label structure tags. Pay attention when naming tags.

For example, the sub-member tag "Test.C1" in the above example uses a name with the connection name prefix during project configuration, i.e., "LabelTags_301.Test.C1".

After deleting the label structure tag "Test", if a new tag is created with the name "LabelTags_301.Test" as shown below, the new tag "LabelTags_301.Test.C1" will inherit all reference relationships from the original tag "Test.C1".



Additionally, the extent to which the new tag restores the original reference relationship also depends on the matching degree of attribute values.

- Matching of data type and connection name
  - Both data type and connection name match
    All reference relationships of the original tag can be fully restored.
  - Data type or connection name mismatch
    Conflicting attribute values in the reference relationship with the original tag will be marked in red and can also be identified through project compilation, making it easy for users to discover and handle.

For example, if the data type of original tag is "Int16" and that of the new tag is "String", the "Number I/O Field" control on the screen that matches the "Int16" data type will not be compatible with the "String" type. This will result in a compilation error, requiring your manual adjustment.

- Matching of array count
  This section focuses on comparing the number of sub-elements in array tags.
  - When the number of sub-elements in the new array is less than or equal to that of the original array, the reference relationships of the original array are restored based on the corresponding sub-element indices.
  - When the number of sub-elements in the new array is more than that of the original array. The surplus elements will not be involved in the restoration.

5.4 Tag Import and Export

5.4.1 Overview

InoTouchPad allows exporting tag tables from one project and then importing them into another project, which can greatly reduce the workload of creating new projects and tags.

5.4.2 Data File Format

Data files used to import or export tags must be *.csv files, and fields in such files must be separated by commas (,).

When tags are exported, tag information is written to a *.csv file. The first 18 lines of text in the exported file are in a fixed format, containing some description information and table headers of tag lists. Following the 18 lines is the exported data in 13 columns of 13 field elements in sequence, including "Name", "Connection Id", "Data type", "Length", "Array count", "Address", "Acquisition cycle", "Acquisition mode", "Upper limit", "Lower limit", "Start value", "Comment", and "Tag group". Fields are separated by commas (,). When a field is not empty, the content in the field is enclosed in double quotes (""). If a field contains double quotes (""), they will be doubled when exported. (Note: The commas (,) used to separate fields and the double quotes ("") used to enclose the field content are both English characters).

When tags are imported, the first 18 lines of imported text are in a fixed format and cannot be added or deleted, and only tag data can be edited. In the import file, each tag occupies one line and contains the following 13 fields, which cannot be added or deleted during import.

Field	Description	Note
Name	Specifies the configured tag name.	If the name is empty, data of this line will be filtered out and will not be imported. If the name matches that in the database of the current project, the imported data will overwrite the tag data and other fields will be imported as new tags.
Connection	Specifies the configured connection.	It can be empty or a connection created in the current project (excluding connections using slave protocols, such as MODBUS Slave

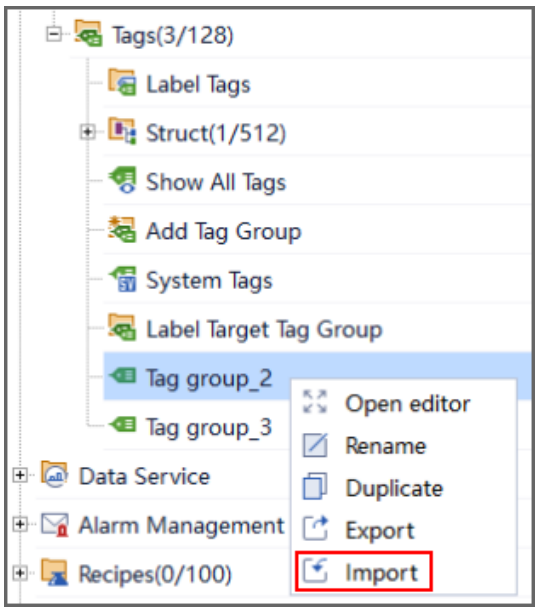
		and MODBUS TCP/IP Slave). If you select a connection that has not been created in the current project, data in this line will be directly filtered out and will not be imported.
Data type	Specifies the data type of a tag.	It cannot be empty.
		When the connection is an internal tag, all types other than those supported by internal tags are invalid and cannot be imported.
		For connections that have been created for the project, data types not supported by the protocol are invalid and cannot be imported. (Note: Strings are case sensitive and strictly match the types in the tag editor. Invalid ones are directly filtered out.)
Length	Specifies the tag length, which is calculated as follows: Length = Value of "Array count" x Length of "Data type".	It cannot be empty.
		"Data type" as a non-string type (not WString or String): If the length does not match the calculation result, the field is invalid.
		"Data type" as WString or String: If the length exceeds the limited range, the field is invalid. Note: The unit is "bit" for BOOL type length and "byte" for other types: UInt UInt16 (length is 2), Int16 (length is 2), UInt32 (length is 4), Int32 (length is 4), Float (length is 4), Double (length is 8), BOOL (length is 1), String (length is 12 to 255), WString (length is 4 to 512), DataTime (length is 8), UIntUInt64 (length is 8), and Int64 (length is 8)
Array count	Defines the number of elements in an array.	It cannot be empty.
		"Data type" as WString or String: If the value is not 1, the value is invalid.
		"Data type" as non-string type (not WString or String): The value range

		is 1 to 2000 (integers). If the value exceeds the range, it is invalid.
Address	Specifies the tag address.	It cannot be empty.
		Addresses that do not comply with the protocol of the connection or the internal tags are invalid, and data in this line will be directly filtered out and will not be imported.
		The format of the address value must be correct. For example, D 0 cannot be D0 (the space in the middle cannot be omitted).
Acquisition cycle	Specifies the acquisition cycle of tags.	It cannot be empty.
		If the cycle is not 1h, 1min, 10s, 5s, 2s, 1s, 500ms, 100ms, or a new cycle in InoTouchPad, it is invalid.
Acquisition mode	Specifies the acquisition mode of tags.	It cannot be empty.
		If the value is not 0, 1, or 2, it is invalid. 0: On demand 1: Cyclic on use 2: Cyclic continuous
Upper limit	The value can only be a number for an object.	When the imported data type is UInt16, Int16, UInt32, Int32, Float, or Double, values exceeding the limit of the type are invalid. This field can be empty, indicating that the default value is not limited.
		If the value is not empty of the BOOL, WString, String, or DataTime type, it is invalid. If a number is imported, the upper limit cannot be less than the lower limit.
		If a non-numerical string such as a valid tag name is imported, the field is invalid. When the value is a tag, the export is empty.
Lower limit	The value can only be a number for an object.	When the imported data type is UInt16, Int16, UInt32, Int32, Float, or Double, values exceeding the limit of the type are invalid. This field can be empty, indicating that the default value is not limited.

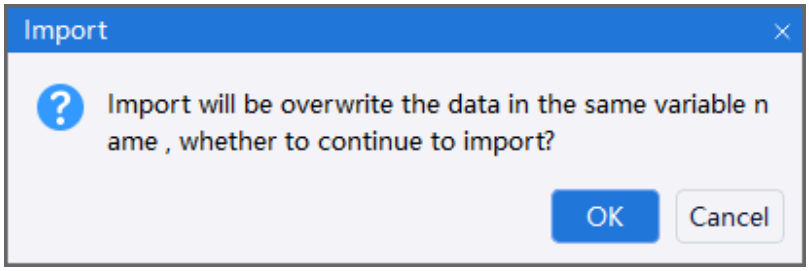
		If the value is not empty of the BOOL, WString, String, or DataTime type, it is invalid.
		If a number is imported, the upper limit cannot be less than the lower limit.
		If a non-numerical string such as a valid tag name is imported, the field is invalid. When the value is a tag, the export is empty.
Comment	Comments specified tags.	No special constraints
Tag group	Specifies the tag group to which the imported tag belongs.	It is effective only when all tags are imported.
Index tag	The associated index tag	It can be <Undefined>. When a tag is associated, the index tag name is displayed.

5.4.3 Importing a Tag

In the "Project" navigation tree on the left, locate any tag group (system tags cannot be imported or exported, but displayed tag groups can), such as "Tag group_2", right-click the tag group, and select "Import" to import the tag group, as shown in the following figure.



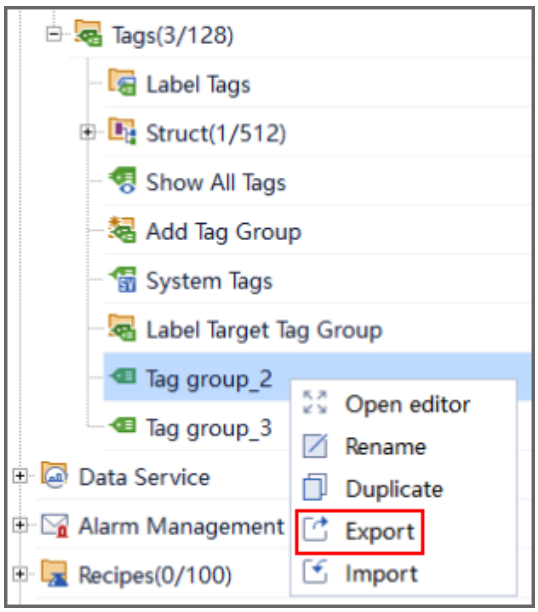
The system prompts "Import will overwrite the data in the same variable name, whether to continue to import?", warning that if a tag name has already existed in the project, it will be overwritten, as shown in the following figure.



Click "OK". In the dialog box displayed, locate the *.csv file to be imported.

5.4.4 Exporting a Tag

In the "Project" navigation tree on the left, locate any tag group (system tags cannot be imported or exported, but displayed tag groups can), such as "Tag group_2", right-click the tag group, and select "Export" to export the tag group, as shown in the following figure.



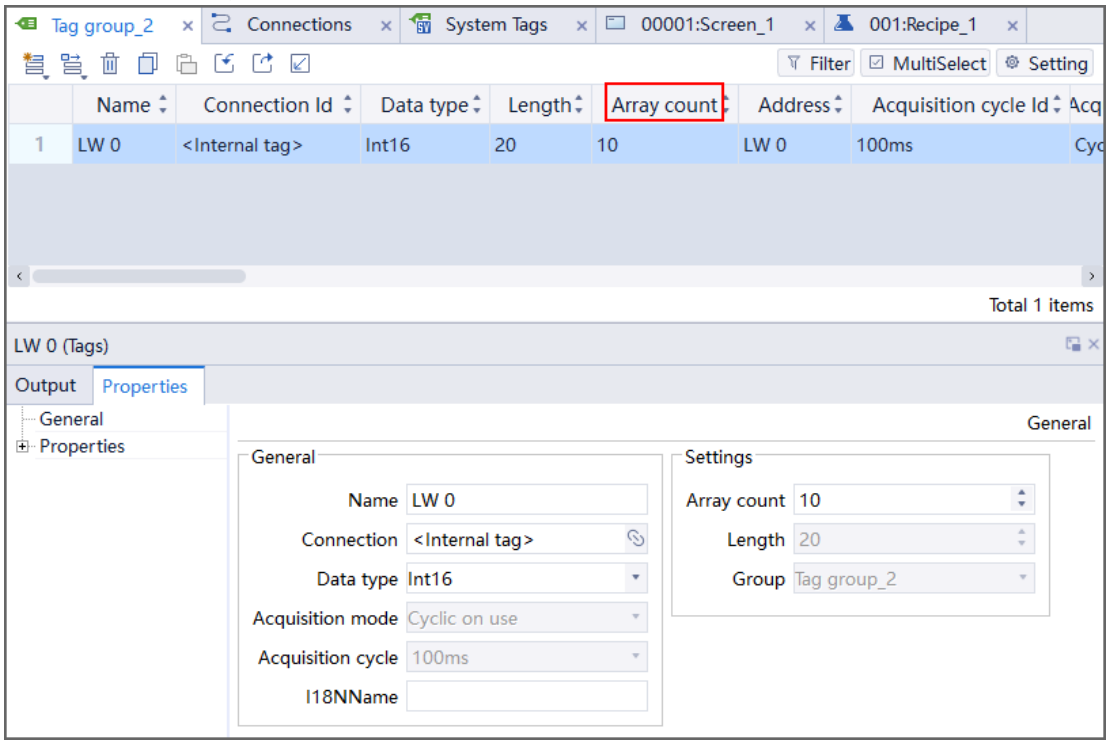
In the dialog box that pops up, set the path and name for the exported CSV file and click "Save". All tags in "Tag group_2" will be exported to the specified *.csv file. You can open the exported file by Excel, and view and edit it.

5.5 Array Tag

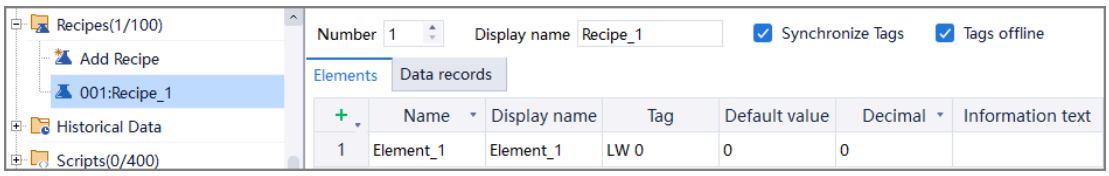
An array tag is a tag whose element count is greater than 1. It takes the specified address as its first address, and the address space is continuous. Each array element has the same data type, that is, the data type specified by the tag.

Multiple array elements with the same properties can be addressed by a single array tag name, and then, in configuration, each array element can be used individually. Array tags are not available everywhere in an InoTouchPad project. The following takes a recipe as an example to describe how to use the arrays:

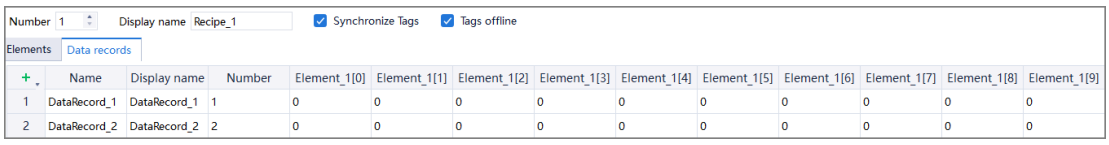
1. Create an array tag.



2. Create a recipe and associate it with the array tag.



3. Add a data record. Then, 10 elements of the array are automatically added to the data record.



5.6 Data Logs

Introduction

"Data Logs" configuration is to record and store the specified tag values stored for data statistics, analysis, and calculation. There are four data recording methods: collection change, value change (not recorded upon boot), on-demand, and cyclic continuous.

- In the collection change mode, the tag value will be recorded once every time it changes.
- In the value change mode (not recorded upon boot), the tag value will be recorded once every time it changes but the value at boot is not recorded.
- In the on-demand mode, the tag value is recorded every time the command (LogTag) is triggered.
- In the cyclic continuous mode, the value is recorded based on the recording period, which is customizable and determines the recording frequency.

Application

The data records that can be configured by tags are created in "Historical Data". For details, see 11.3.1 Editor.

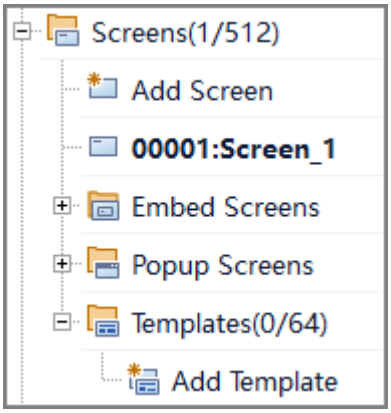
6 Screens

6.1 Introduction

6.1.1 Overview

As the most basic element of configuration, the "Screens" is used to present the content of the configuration. By creating pages, operators can conveniently control and monitor the processes and data of machinery and equipment. Screens include normal screens, embed screens, pop-up screens, and template screens.

- Ordinary screen: a screen displayed on the display
- Popup screen: a screen pops up on the ordinary screen
- Template screen: a screen that can be referenced by the ordinary screen



- Click "Add Screen" to add a normal screen.
- Click "Add Embed Screen" to add an embed screen.
- Click "Add Popup Screen" to add a pop-up screen.
- Click "Add Template" to add a template screen.

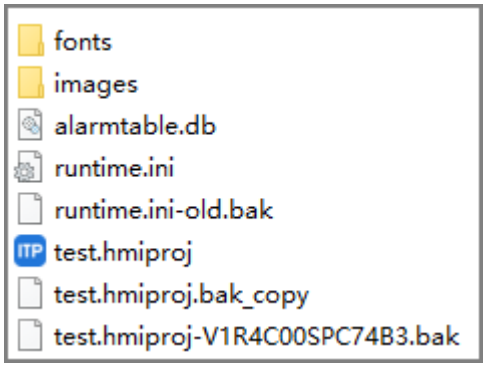
A screen can contain both static and dynamic elements:

- Static elements: Statuses of static elements are not changed at run time, for example, text or graphic objects.
- Dynamic elements: Statuses of dynamic elements are changed according to processes. For example, the current process values can be displayed in the following ways:
  - Display outputs read from PLC memory.
  - Display process values output from HMI device memory in digits, trend charts, and bar graphs.

Note: Input fields on the HMI device can also serve as a type of dynamic elements. Process values and operator input values can be switched between the controller and the HMI device based on tags.

6.1.2 Dragging and Dropping the Screen

To open an existing project, you can directly double-click the "*.hmiproj" project file or locate and open the project in the software tool. You can also drag the project file directly to the software tool to open the project, as shown in the following figure.



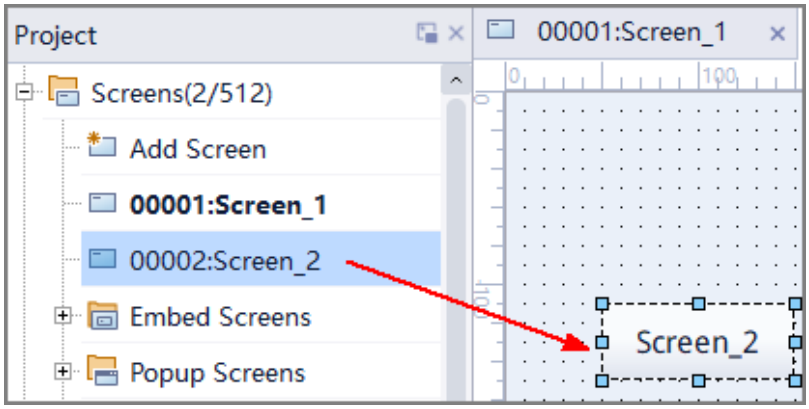
During project configuration, you often need to use a button to jump to a screen by configuring screen system functions, which can be achieved through the following steps:

1. Add a button control to the current screen.

2. Rename the button with the name of the screen that you want to jump to.

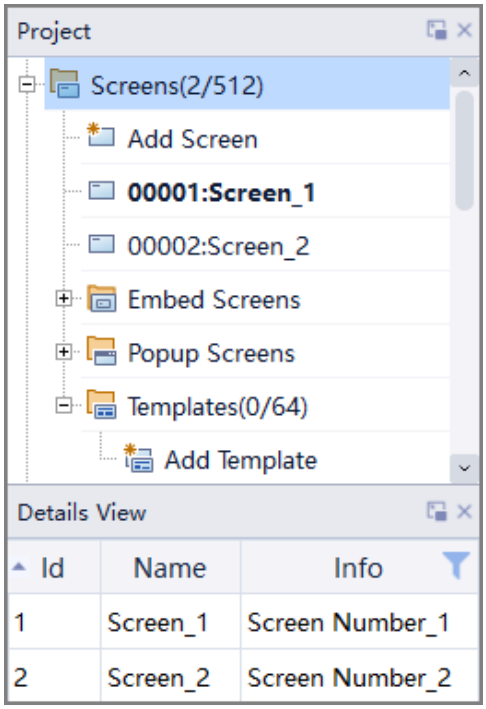
3. Bind the screen jump system function to the button. Then you can jump to the designated screen by clicking the button.

A quick way to achieve this is using the screen drag-and-drop feature, as shown in the following figure.

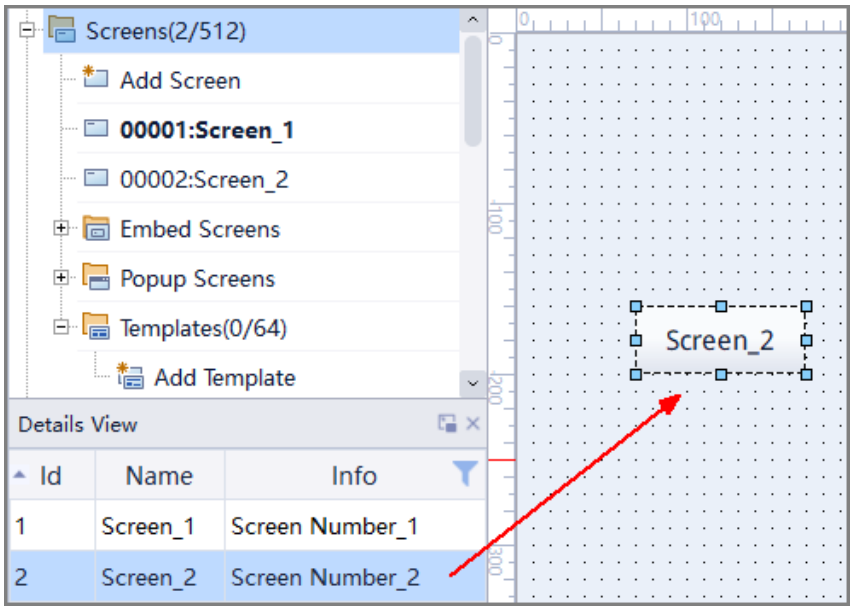


Screens supporting drag-and-drop: Common screens and pop-up screens. You can also drag the screen to be jumped to directly to the screen in the details view. The steps are as follows:

a. In the "Project" navigation tree on the left, locate the root node of the screen module, and select the node. In the details view, all common screens and pop-up screens created are listed, as shown in the following figure.

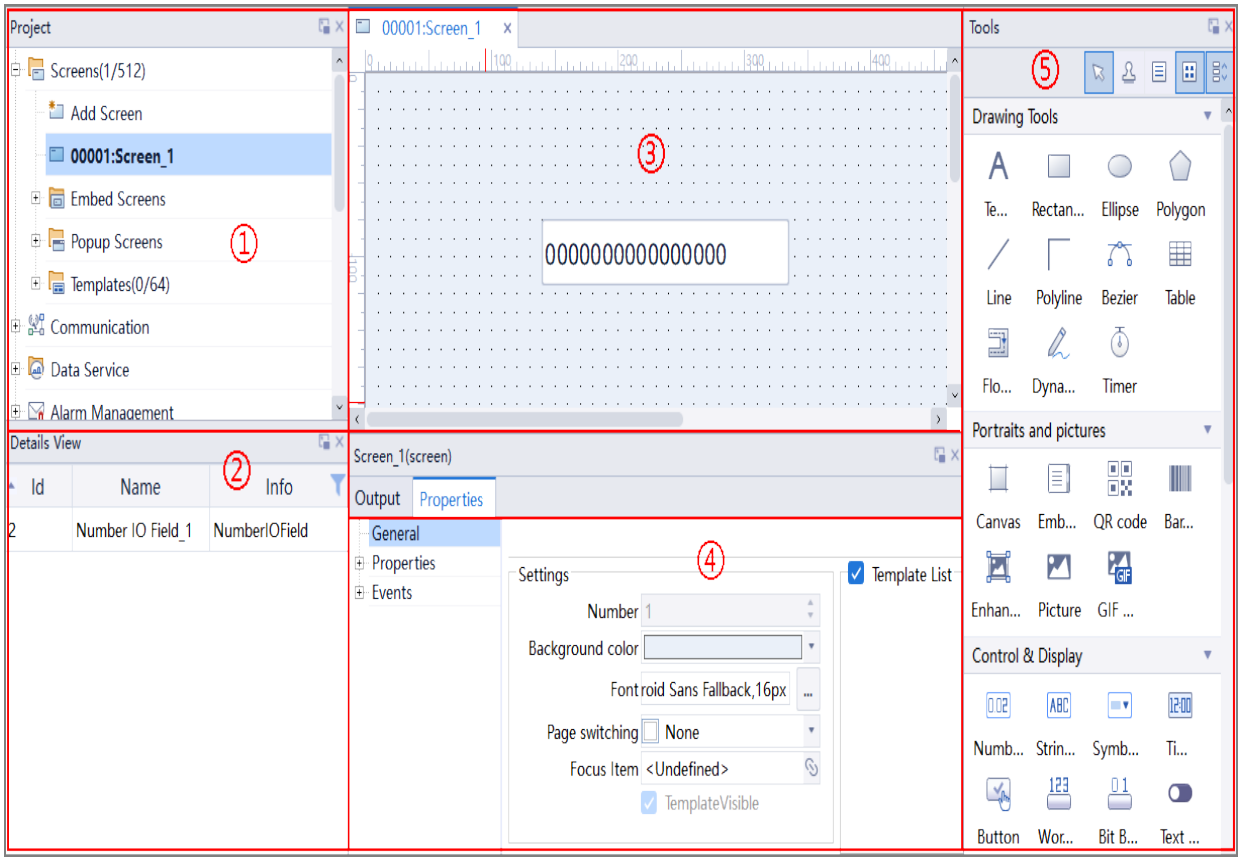


b. In the details view, directly drag the screen you want to jump to into the current screen. The system automatically generates the jump button, and the button is bound to the system function of the target screen, as shown in the following figure.



6.1.3 Screen Editor

When you create a project or open a project, the screen editor is opened by default. You can also double-click "Screen_1" or "Add Screen" in the "Screens" section of the project view to open the screen editor. The opened screen editor is shown in the figure below.



No.	Name	Description
①	Project view	Displays the function modules that can be used in the current project. You can double-click "Project" in the view to edit corresponding features.
②	Details View	Displays the control information in the current screen.
③	Workspace	Users can configure the screen in the workspace.
④	Property view	The content in the property view depends on the object selected in the workspace. • Properties of the selected object can be browsed and edited in the property view. • If no object is selected in the active screen, properties of this screen will be displayed and can be edited in the property view.
⑤	Tool window	The tool window contains simple and complex controls that can be added to the screen, such as the "String IO Field" and "Alarm View" controls. It also includes the graphics and favorites features, all of which can apply the projects in the tool window in page configuration.

6.2 Screen Operations

6.2.1 Creating a Screen

Introduction

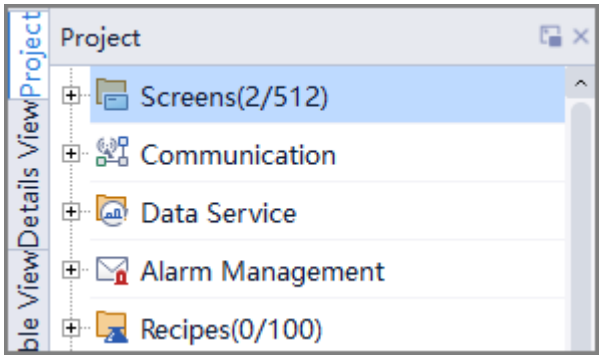
When creating a screen, you can select the corresponding HMI device type and modify objects in the template. You can change the HMI device type in 20.6 Project Settings of the project view. Screen properties are determined by the screen resolution of the selected HMI and available objects.

Preconditions

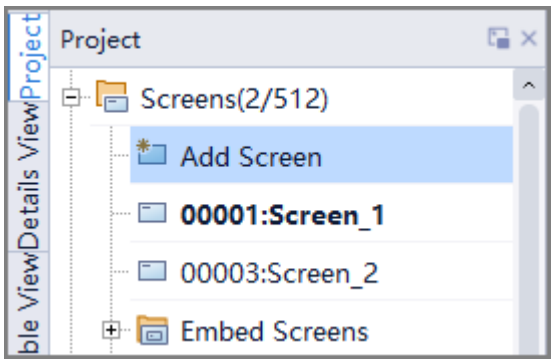
- A project has been created.
- You have accessed "Project" navigation tree on the left.

Procedure

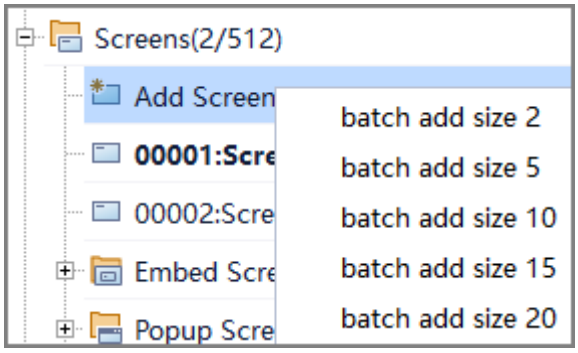
1. In the "Project" navigation tree on the left, click "Screens", as shown in the following figure.



2. Double-click "Add Screen" to create a screen, as shown in the following figure.



3. Right-click "Add Screen" and choose an option to create screens in batches, as shown in the following figure.



6.2.2 Editing a Screen

Introduction

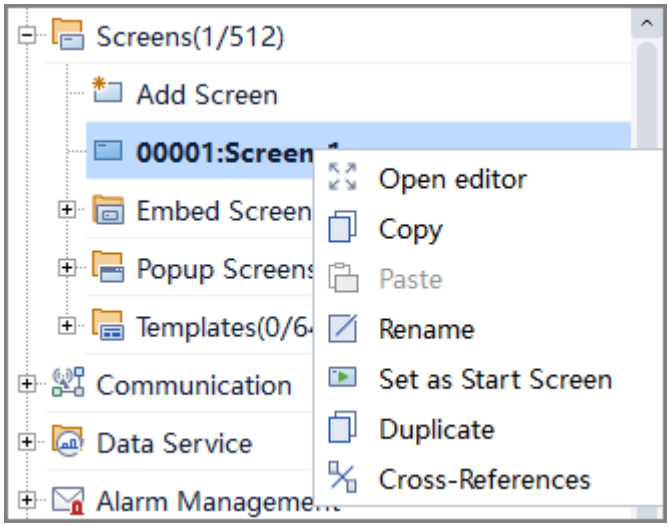
You can rename, copy, and delete a screen in a project and adjust the size of the screen grid.

Preconditions

A project has been created.

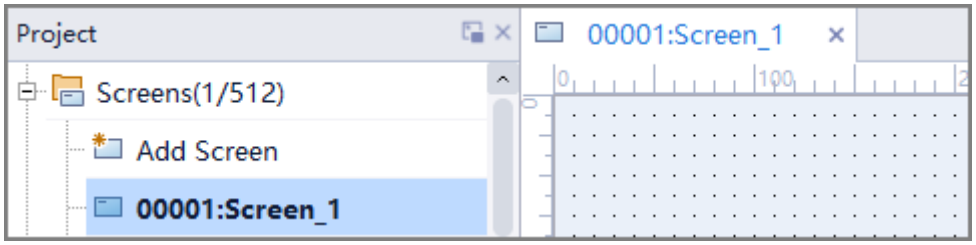
Editing a Screen

Right-click "00001:Screen_1", as shown in the following figure.



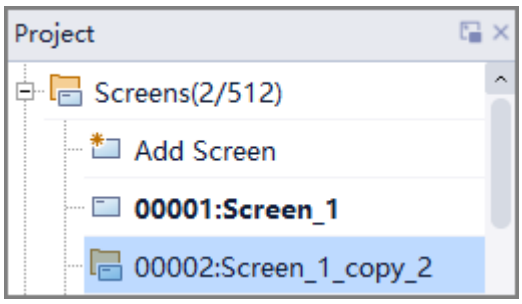
- Open editor

Click "Open editor". The following screen is displayed.



- Copy

Right-click "00001:Screen_1". In the menu displayed, click "Copy". Right-click it again and select "Paste". "00002:Screen_1_copy_2" is displayed, as shown in the following figure.

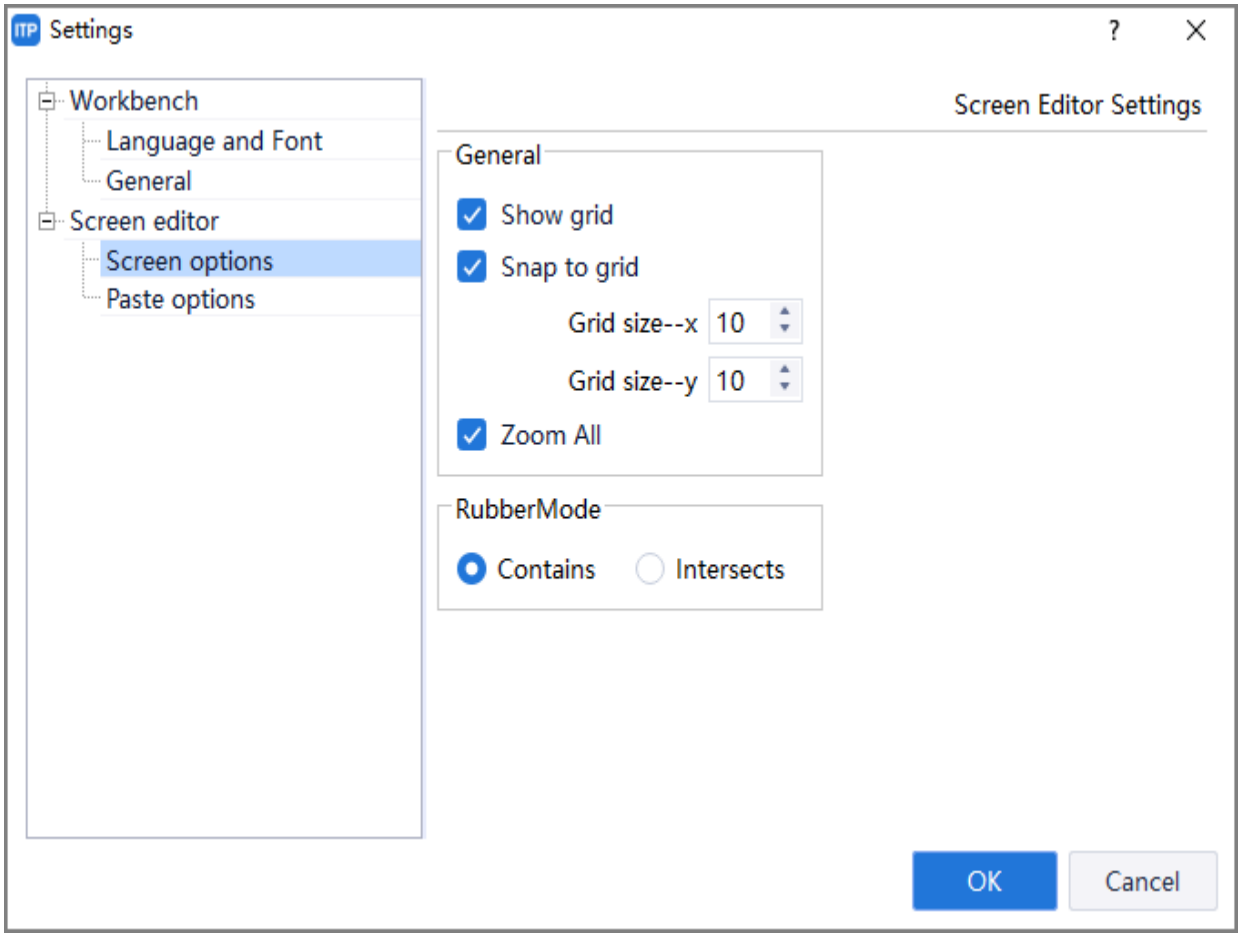


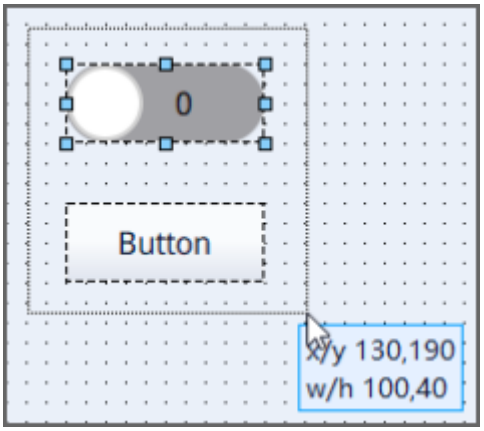
Note: You can copy and paste a screen within the same project or cross projects. The content of the copied screen is the same as that of the original one. Batch copy and paste is not supported.

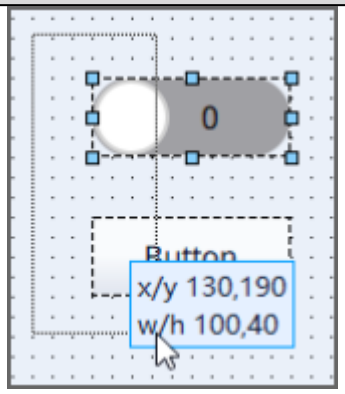
Renaming rule of pasted screen: No matter whether a same screen exists in the original screen, rename the copied screen in the format of "_copy+current screen ID".

Adjusting the screen grid

Choose "Options" > "Settings". In the window displayed, configure the screen editor, as shown in the following figure.



Parameter	Description
Show grid	When this option is checked, grids are displayed in the screen.
Snap to grid	• Grid size--x: Horizontal interval between grids in the screen • Grid size--y: Vertical interval between grids in the screen
Zoom All	• When this option is checked, if you zoom a screen, all other screens are scaled in the same ratio. • When this option is not checked, only the current screen is scaled.
Contains	Drag the mouse to frame-select multiple graphics on the screen. Objects fully enclosed within the selection box are considered selected. 
Intersects	Drag the mouse to frame-select multiple graphics on the screen. Graphics intersecting with the selection box are considered selected.

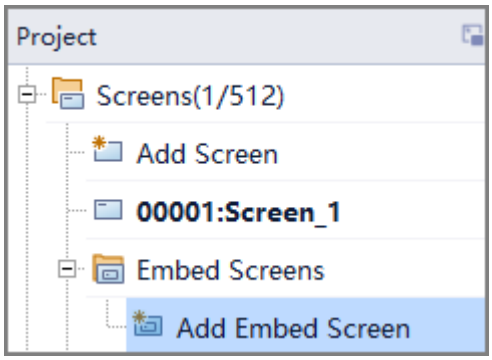
Parameter	Description
	

6.2.3 Creating an Embed Screen

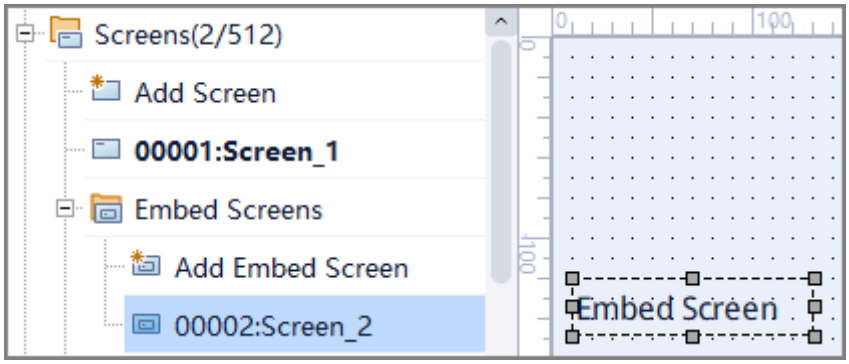
Operating procedure

1. Create an embed screen.

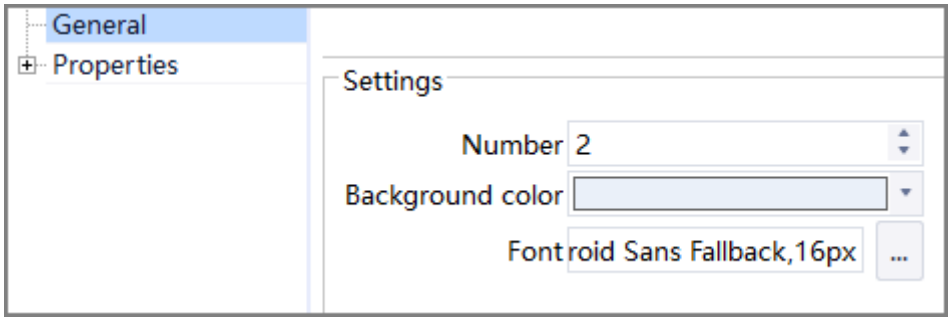
In the project view on the left, choose "Screens" > "Embed Screens", and double-click "Add Embed Screen", as shown in the figure below.



In "Embed Screens", create the "Text Field" control and name it as "Embed Screen", as shown in the figure below.



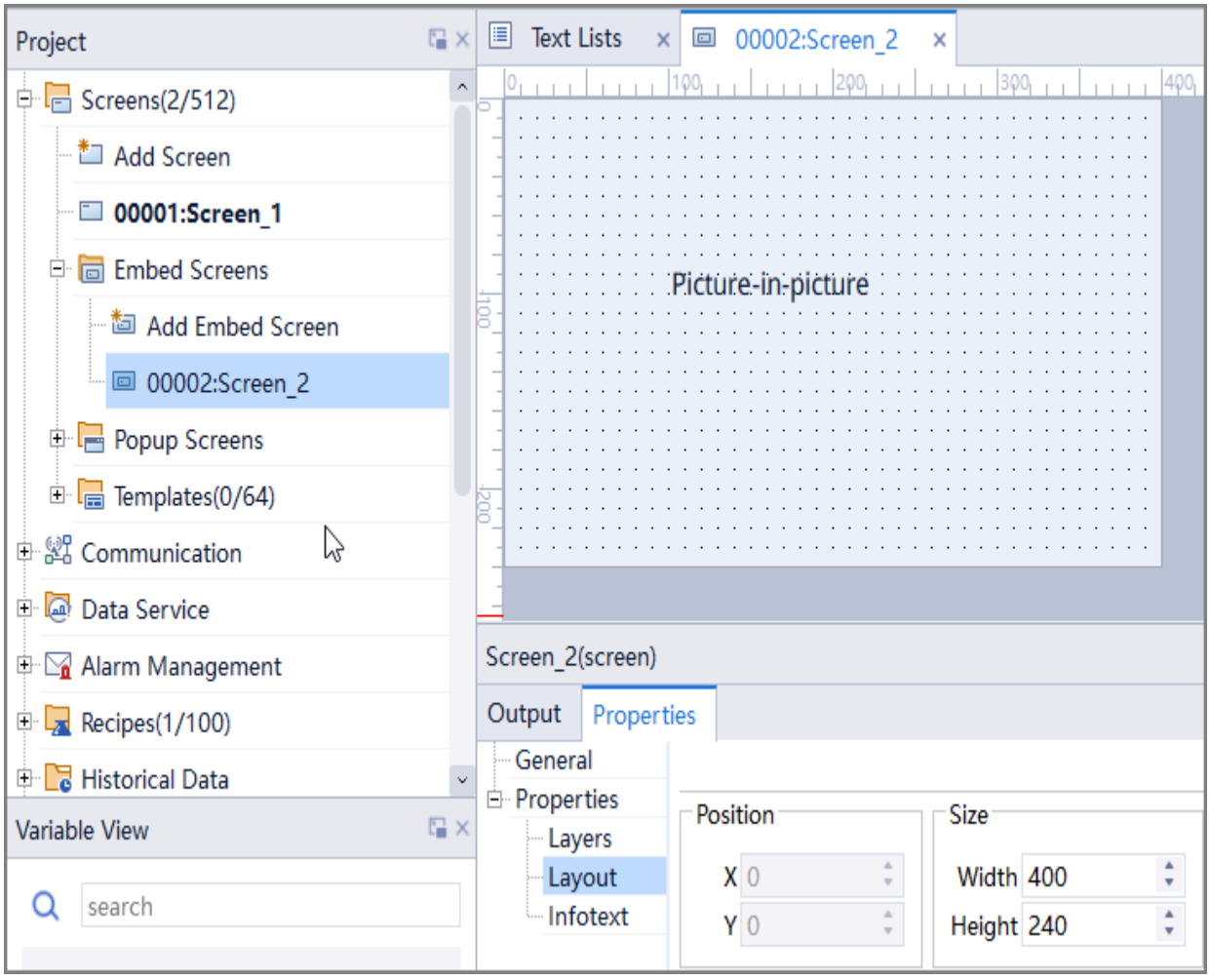
2. Perform general property setting for the embed screen window, as shown in the figure below.



Item		Description
Settings	Number	ID of the window
	Background color	Background color of the window
	Font	Font size in the window

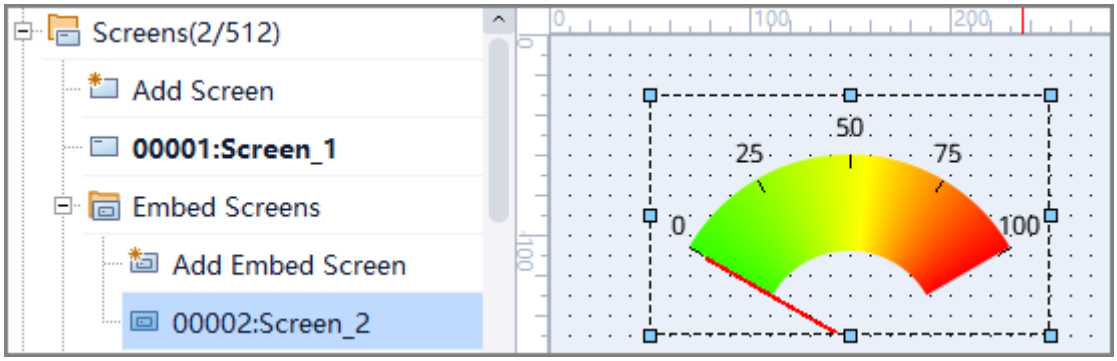
3. Perform property setting for the embed screen window, as shown in the figure below.

The "Size" has upper limit constraints based on the device resolution. The width limit is 2 times the resolution width, and the height limit is 4 times the resolution height. Therefore, for a device resolution of 800 (width) x 480 (height), the maximum width is 800 x 2 = 1600, and the maximum height is 480 x 4 = 1920.

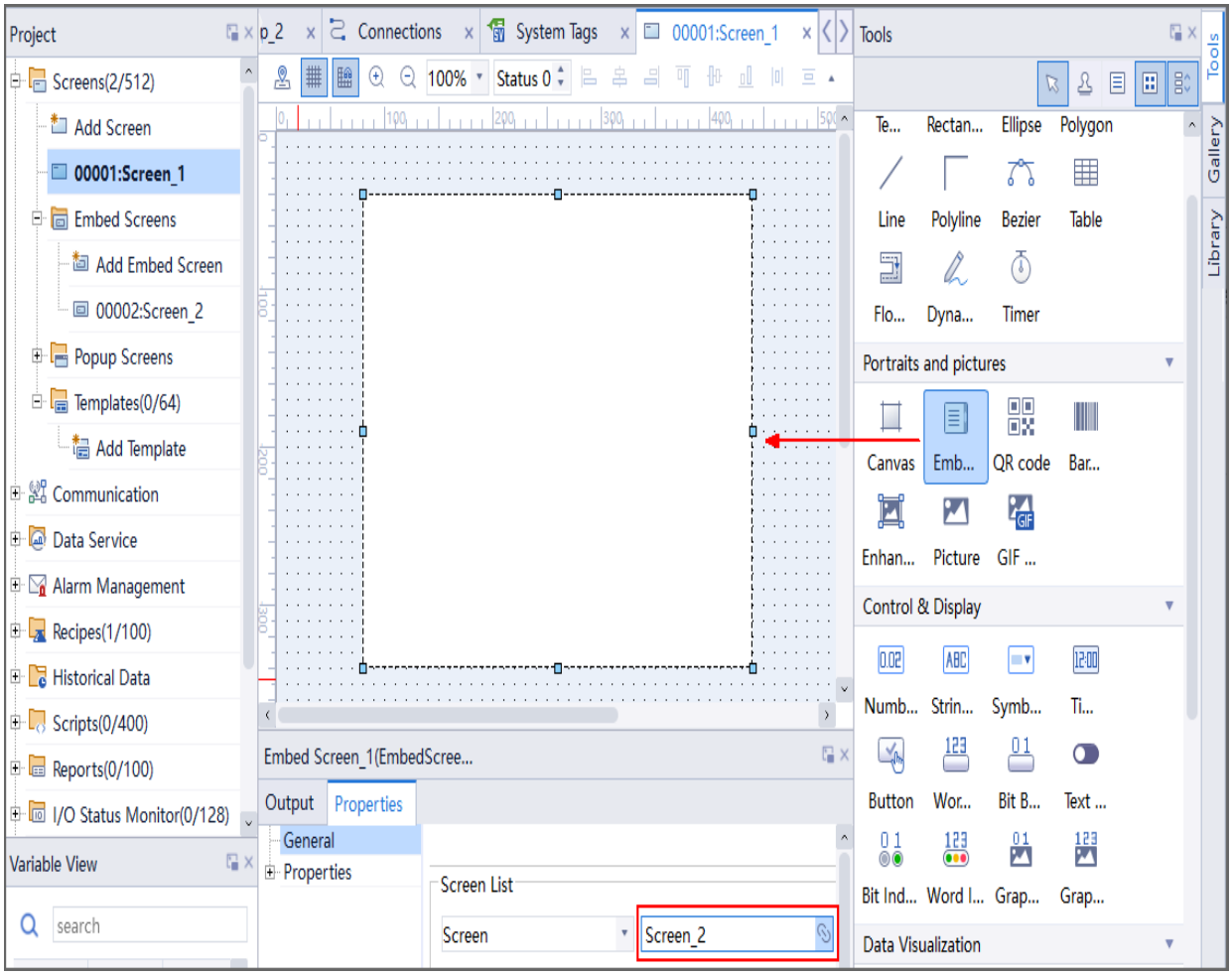


4. Use the embed screen (used with "Embed Screen" control)

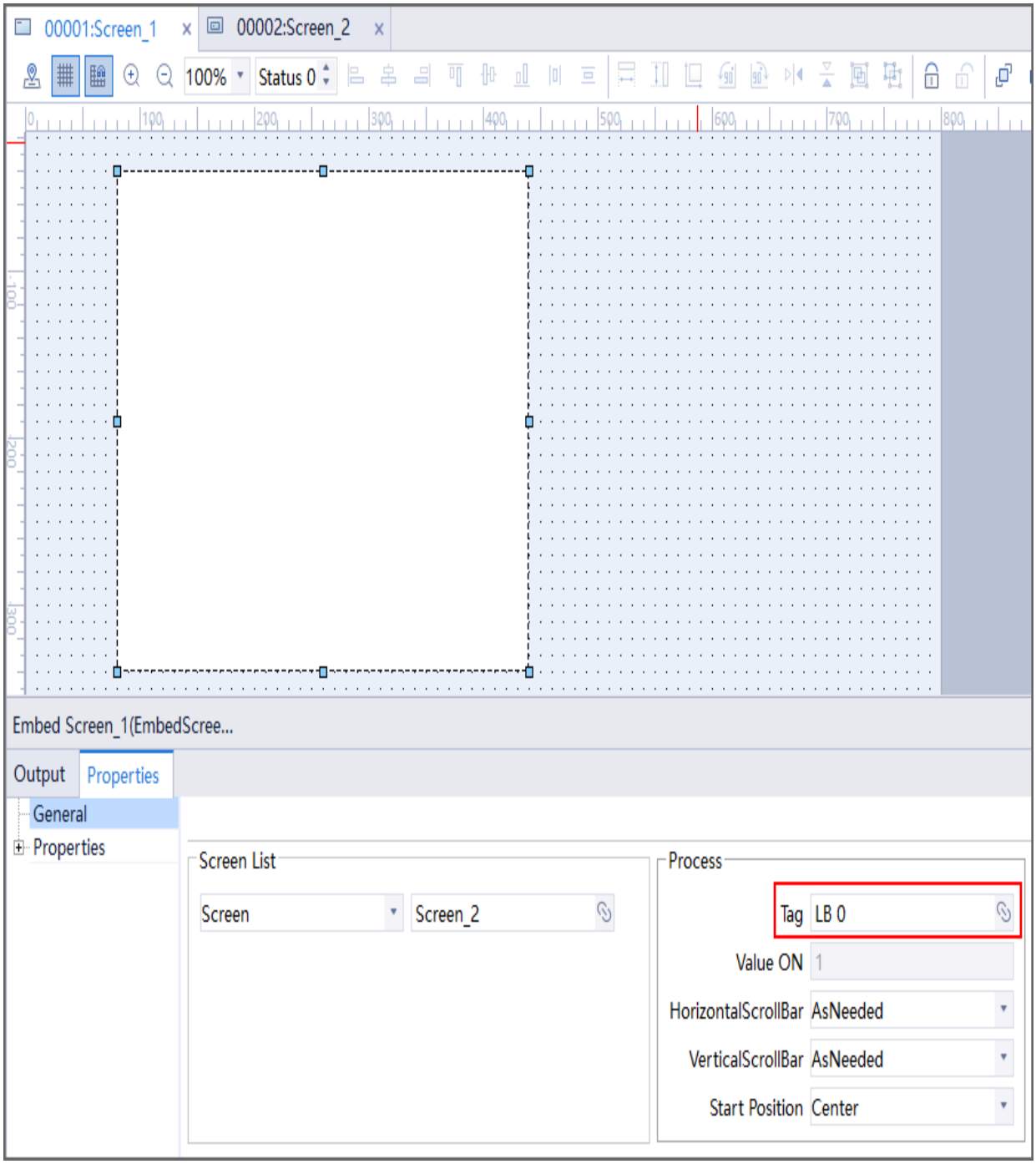
(1) Create an embed screen.



(2) Drag the "Embed Screen" control from "Portraits and pictures" to the page, select the added "Embed Screen" control, and associate the embed screen to be displayed.



Tag in the "Process" properties can control the visibility of the "Embed Screen" control during runtime. When the tag value is 1, the "Embed Screen" control is displayed in the running state. When the tag value is 0, the "Embed Screen" control is hidden in the running state.

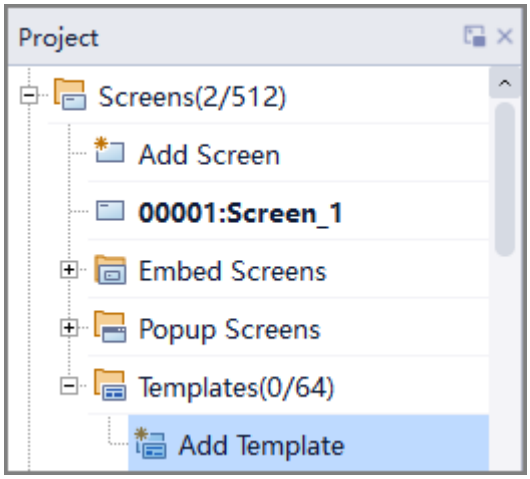


6.2.4 Creating a Template Screen

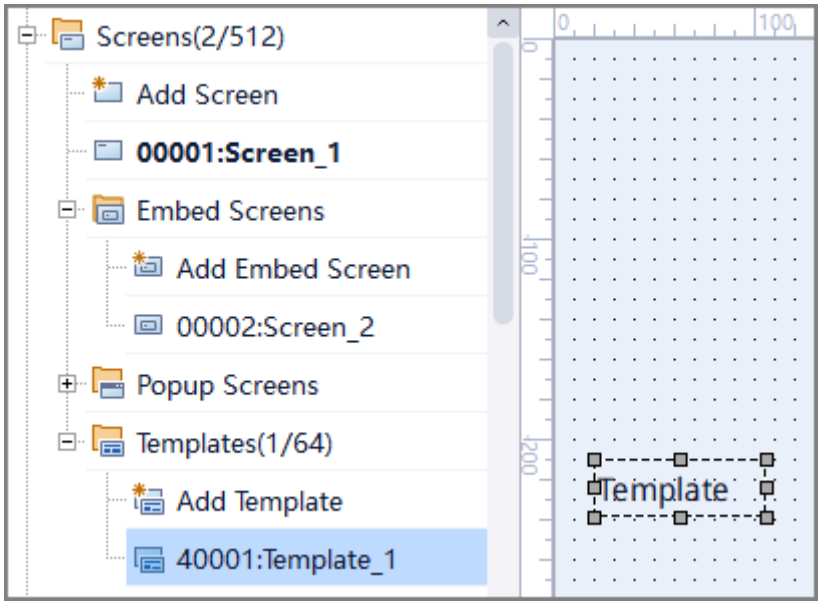
Operating procedure

1. Create a template screen.

a) In the project view on the left, choose "Screens" > "Templates", and double-click "Add Template", as shown in the figure below.

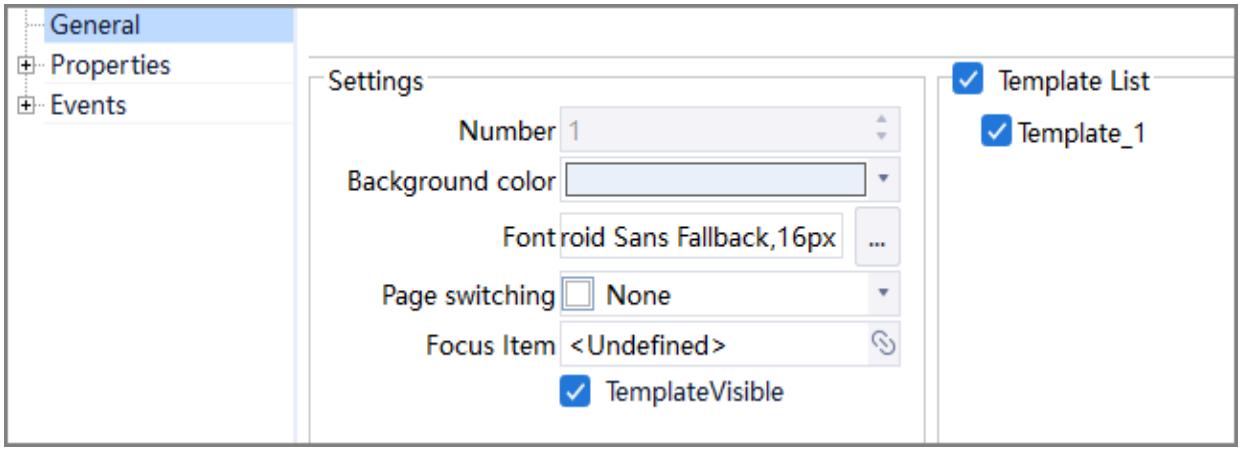


b) In "Templates", create the "Text Field" control and name it as "Template", as shown in the figure below.



2. Use the template screen.

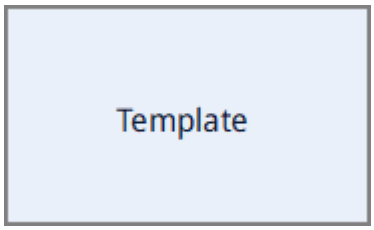
In the project view on the left, choose "Screens" and double-click "Screen_1". On the "Properties" tab page, choose "General" > "Settings" > "Template List" and set the created template screen "Template_1", as shown in the figure below.



Item		Description
Settings	Number	ID of the window
	Background color	Background color of the window

	Font	Font size in the window
	Page switching	Options: None, Slide, Push, Cover, Spread, Spin amplification, and Random
	Focus Item	Configuration of a control on the current screen, with the focus automatically on the configured control at run time on the board
	TemplateVisible	Display of the template screen, checked by default
Template List	Template_1	Checked by default

When you execute offline simulation, the template screen has been successfully called by screen 1, as shown in the figure below.

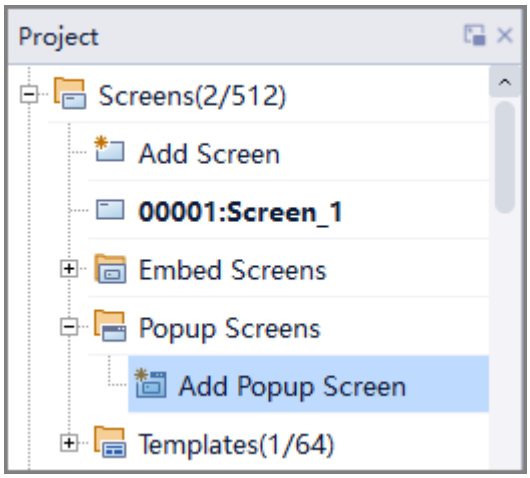


6.2.5 Creating a Pop-up Screen

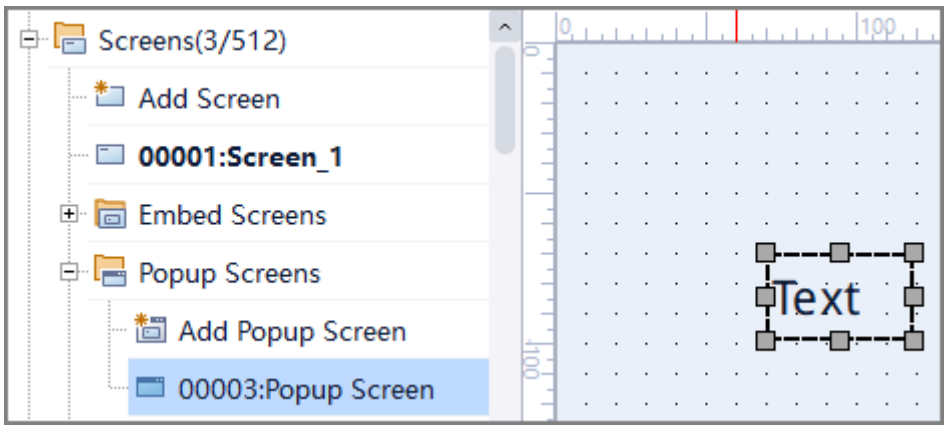
Operating procedure

1. Create a pop-up screen.

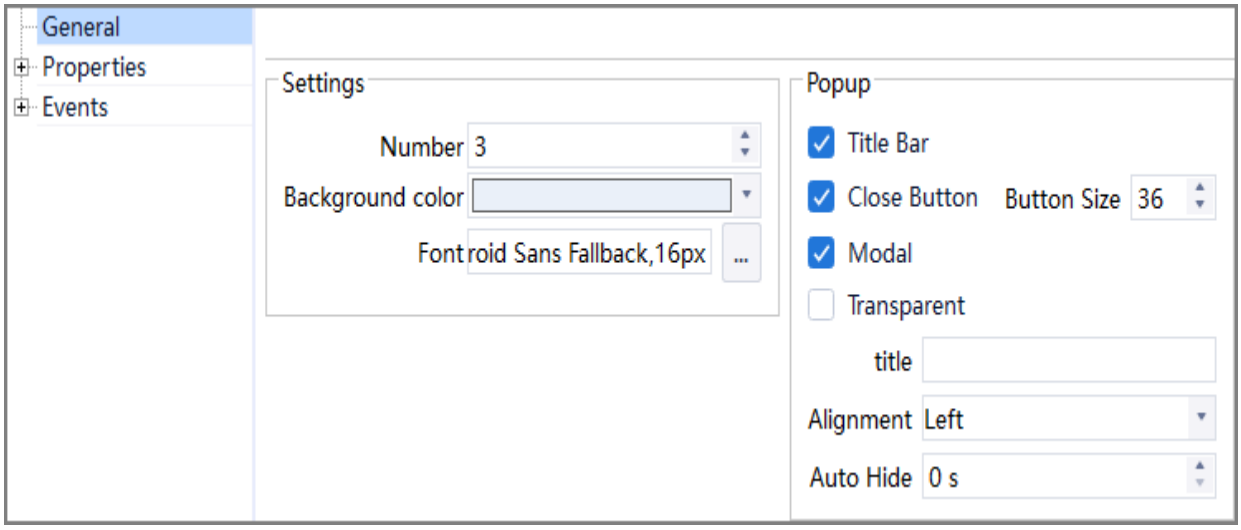
(1) In the project view on the left, choose "Screens" > "Popup Screens", and double-click "Add Popup Screen", as shown in the figure below.



(2) In "Popup Screens", create a text field control and name it as "Popup Screen", as shown in the figure below.



2. Set properties in the pop-up dialog box, as shown in the figure below.



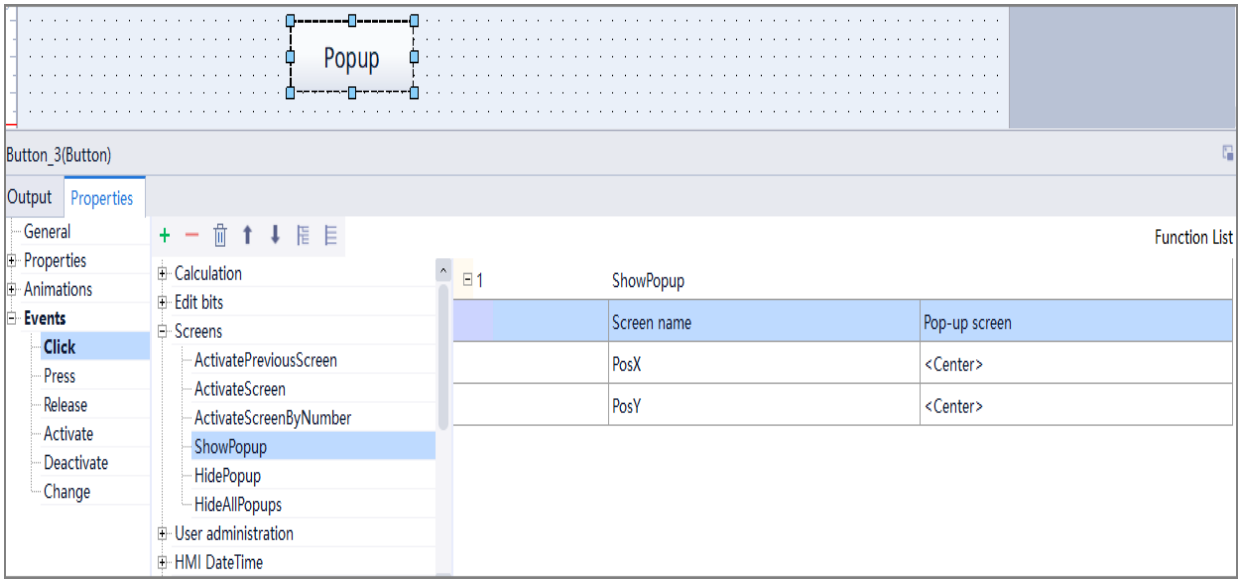
Item		Description
Settings	Number	ID of the pop-up window
	Background color	Background color of the window
	Font	Font size in the window
Popup	Title Bar	Title of the pop-up window
	Close Button	Whether to close the configuration button, which is selected by default
	Modal	Screen blocked and unavailable upon a pop-up window, which is selected by default
	Transparent	Transparency of the pop-up window, which is not selected by default
	Alignment	Options: Left, Center, and Right
	Auto Hide	Number of seconds before the pop-up screen automatically hides

3. Use the pop-up screen.

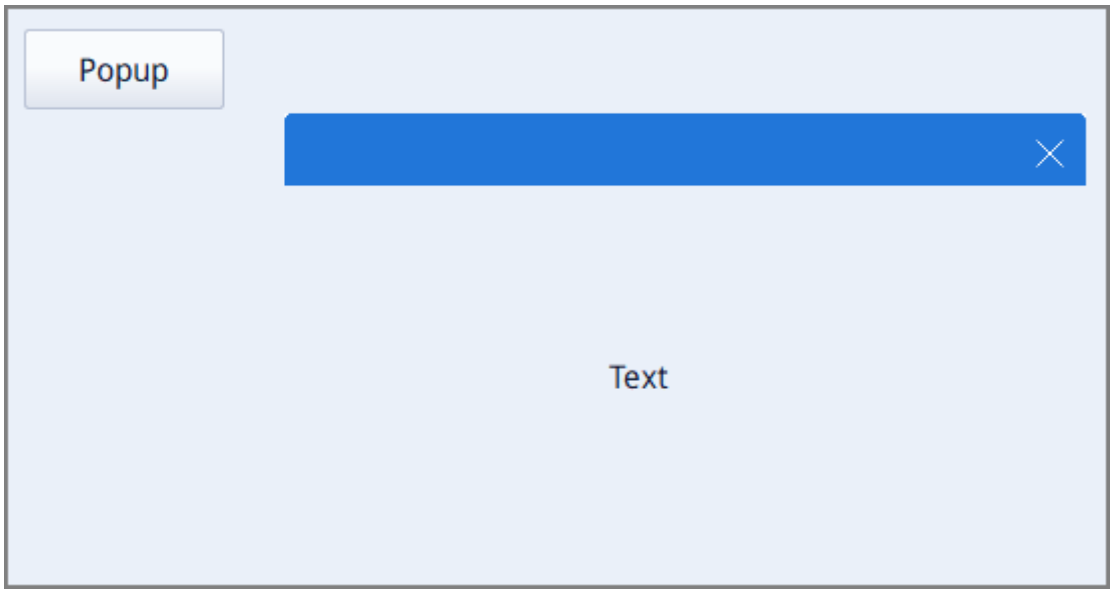
(1) In the project view on the left, choose "Screens", double-click "Screen_1", create a button control, and name it as "Popup".

(2) Click "ShowPopup" at any place where system functions can be configured to use the pop-up page. For example, choose "Events" > "Click" in the "Button" section and configure the pop-up page.

Click the button control. On the "Properties" tab page, choose "Events" > "Click" > "Screens" > "ShowPopup", and use the "Popup" button set above for the pop-up screen.



Start the online simulator and click "Popup". The pop-up screen is successfully displayed, as shown in the figure below.

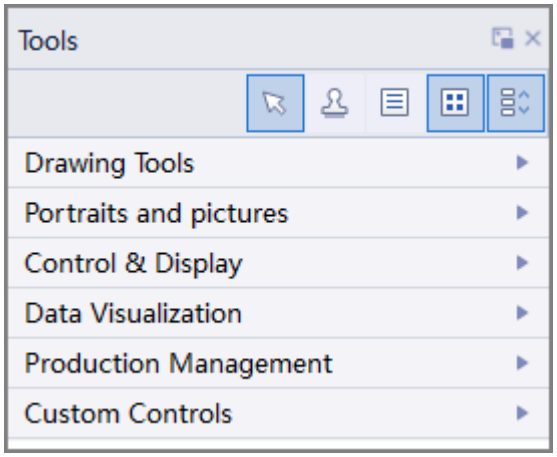


6.3 Using Screen Objects and Screen Object Groups

6.3.1 Overview

Overview

The graphic elements used in the project design process are called "objects". In the "Screens" editor, they are presented in the form of object groups in the "Tools" box, as shown in the figure below.



Drawing Tools

Including "7.3.1.1 Text Field", "7.3.1.2 Rectangle", "7.3.1.3 Ellipse", "7.3.1.4 Polygon", "7.3.1.5 Line", "7.3.1.6 Polyline", "7.3.1.7 Bezier", "7.3.1.8 Table", "7.3.1.9 Flow Block", "7.3.1.10 Dynamic Curve", and "7.3.1.11 Timer"

Portraits and pictures

Including "7.3.2.1 Canvas", "7.3.2.2 Embed Screen", "QR code", "7.3.2.4 Bar Code", "7.3.2.5 Enhanced Picture", "7.3.2.6 Picture", and "7.3.2.7 GIF Display"

Control & Display

Including "Number IO Field", "String IO Field", "Symbolic IO Field", "7.3.3.4 Time Date", "7.3.3.5 Button", "7.3.3.6 Word Button", "7.3.3.7 Bit Button", "7.3.3.8 Text Switch", "7.3.3.9 Bit Indicator", "7.3.3.10 Word Indicator", "7.3.3.11 Graphic Switch", and "7.3.3.12 Graphic IO Field"

Data Visualization

Including "7.3.4.1 Bar", "7.3.4.2 Slider", "7.3.4.3 Progress Bar", "7.3.4.4 Round Progress Bar", "7.3.4.5 Gauge", "7.3.4.6 Meter", "7.3.4.7 Knob", "7.3.4.8 Led Light", "7.3.4.9 Trend", "XY Curve", and "7.3.4.11 3D-Pie"

Production Management

Includes "7.3.5.1 Alarm Record", "7.3.5.2 Alarm Bar", "7.3.5.3 Fault Code Query", "7.3.5.4 Recipe", "7.3.5.5 Operation Record", "7.3.5.6 User Management", "7.3.5.7 Report", "7.3.5.8 Tag Monitor", "7.3.5.9 Data Record", "7.3.5.10 File Browser", "7.3.5.11 Remote DB", and "7.3.5.12 I/O Monitor".

Custom Controls

None

6.3.2 Using the Screen Objects

Introduction

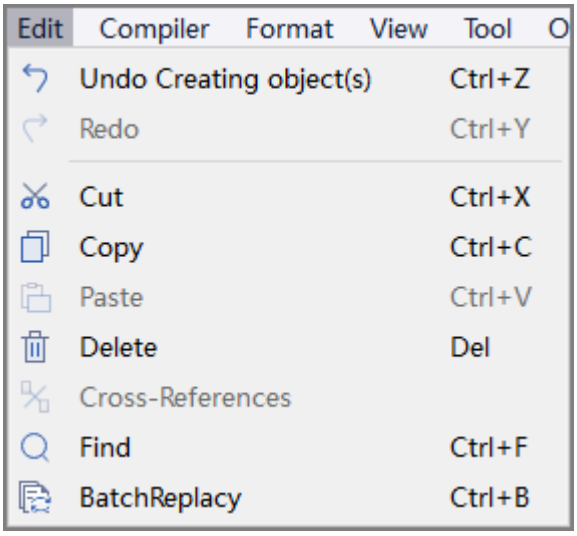
Objects can be edited via Cut (T), Copy (C), Delete (D), Find (F), and batch replace functions.

Condition

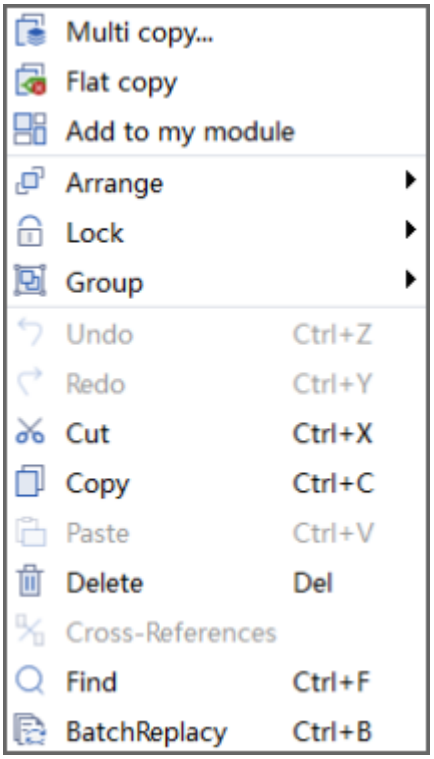
- A project or screen has been created or opened.
- Controls already exist on the screen.

Cut, copy, insert, and delete objects

- Execute commands via the "Edit" menu or keyboard shortcuts, as shown in the figure below.



- Right-click the screen to edit screen objects, as shown in the figure below.

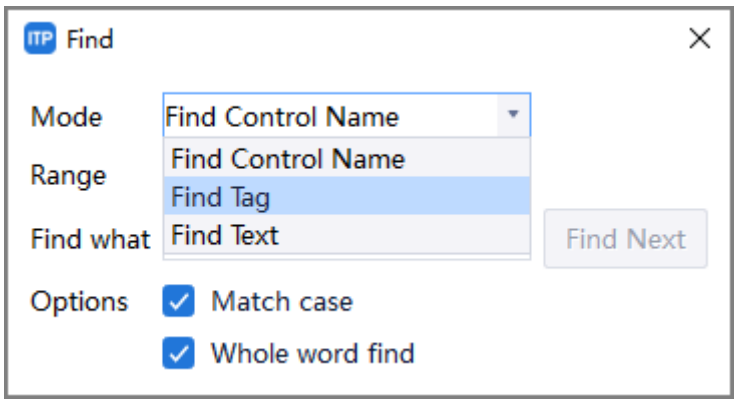


Note

Since the names of all objects in the screens or templates must be unique, if an object is copied to a screen that already contains an object with the same name, the name of the copied object will be automatically modified.

Find

Right-click in the screen and select "Find", or click the Find icon in the menu bar, or use the shortcut "CTRL+F", to open the "Find" window as shown below.



Name	Description
Mode	• Find Control Name: Search for controls by their names, e.g., searching for "Text" returns "Text Field" and "Text Switch". • Find Tag: Search for application locations by tag name and scope to facilitate replacement or renaming. • Find Text: Search for text within a specified range based on keywords, such as connection name, data type, acquisition cycle, acquisition mode, comments, etc.
Range	• Current Page: Search within the scope of the currently active page。 • All Screens: Search within the "Screens" node scope of the "Project" tree. • All Scripts: Search within the "Scripts" node scope of the "Project" tree. • All Tag Tables: Only supports rename operations for tags (excluding label tags), with distinct scopes for search and rename. The search scope is limited to the "Tags" node scope of the project tree, while the rename operation affects the "Tags" node (definition tag) and the "Screens" node (reference tag). • Whole Project: Search within the "Screens" node scope and "Scripts" node scope of the "Project" tree.

Search options support:

Options	Description	Checked	Unchecked
Match case	Find and replace text matching specific capitalization only.	Case-sensitive: For example, "AbCd" and "ABCD" cannot appear simultaneously in search results.	Case-insensitive: For example, both "AbCd" and "ABCD" can appear in the search results.
Whole word find	Find all exact matches.	Find all exact matches: For example, searching for "the" can only return results containing "the".	Find partial match: For example, searching for "the" can return results including "the", "there", and "their".

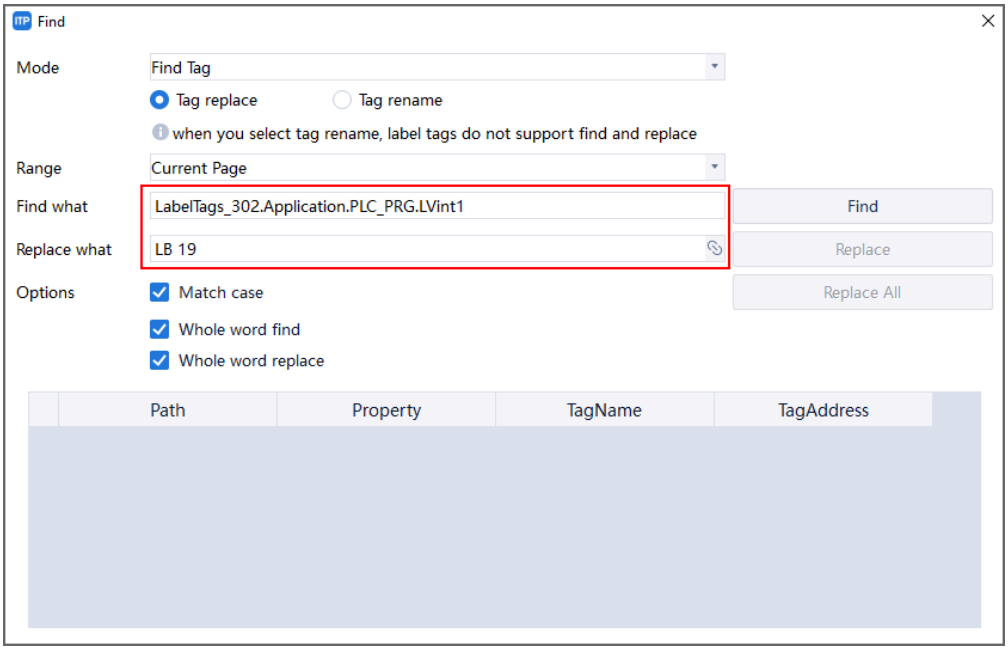
Options	Description	Checked	Unchecked
Whole word replace	Check to completely replace the object with the "Replacement content". Ensure the "replacement content" already exists in the project before replacing.	Whole word replace: For example, replacing "one" with "two" can change all search results like "Someone" and "Everyone" to "two".	Non-whole word replace: For example, replacing "one" with "two" can change search results like "Someone" and "Everyone" to "Sometwo" and "Everytwo" respectively.

Note

- Replacement will overwrite all currently found tags and cannot be undone or rolled back, so proceed with caution.

Replace label tag

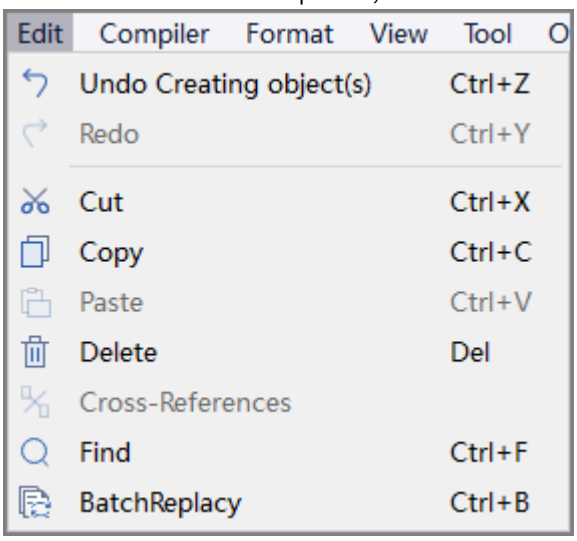
- Label tags do not support renaming.
- Label tags support mutual replacement with standard tags. For example, in the configuration shown below, label tag "LabelTags_302.Application.PLC_PRG.LVint1" can be replaced with tag "LB 19".



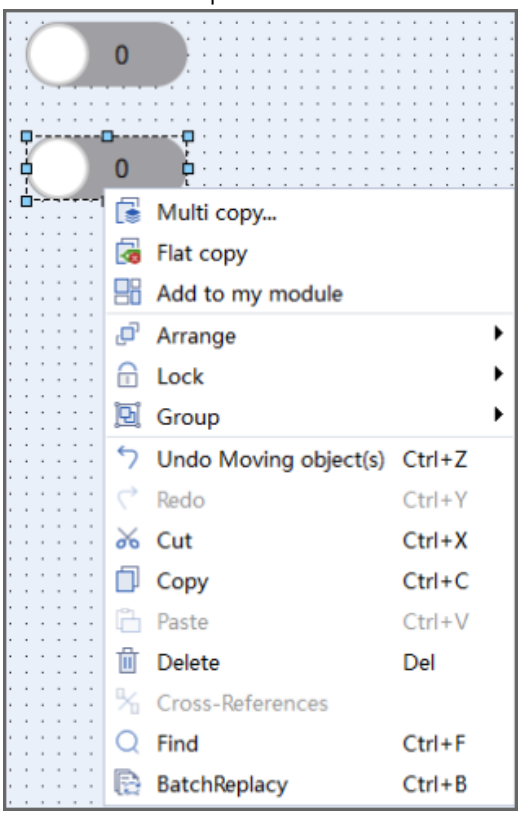
Batch replace

Supports batch replacement of offset addresses for control-associated tags and tag connections on the screen.

1. Select the controls to be replaced, then choose "Edit" > "Batch Replace", as shown in the figure below.

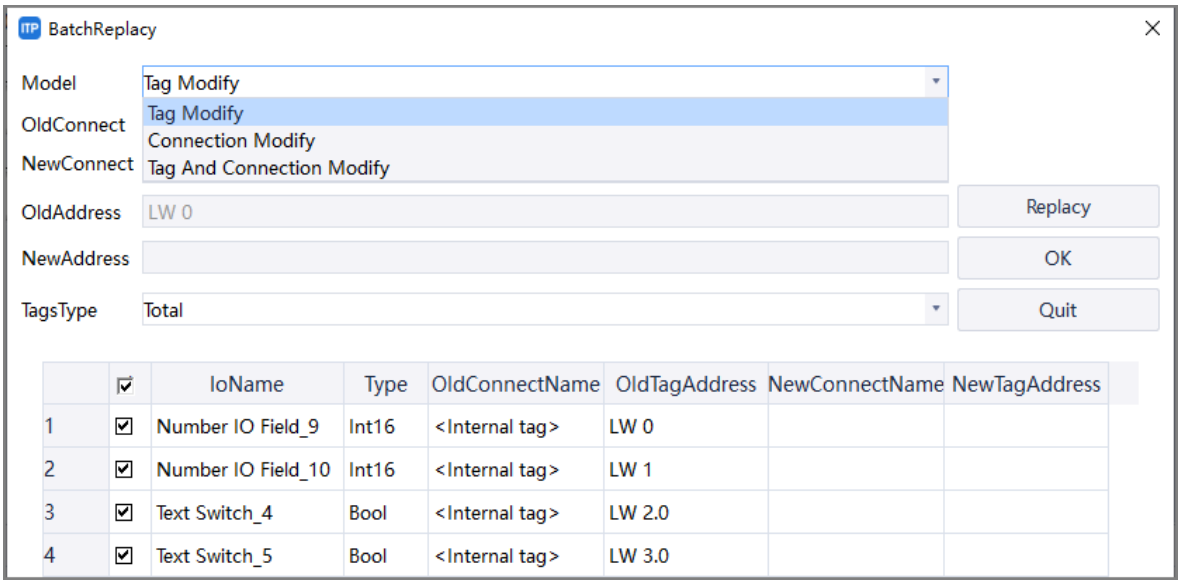


To replace multiple controls, select the controls in the screen, right-click and select "Batch Replace", or click the "Batch Replace" icon button in the menu bar, or use the shortcut "CTRL+B", as shown below.

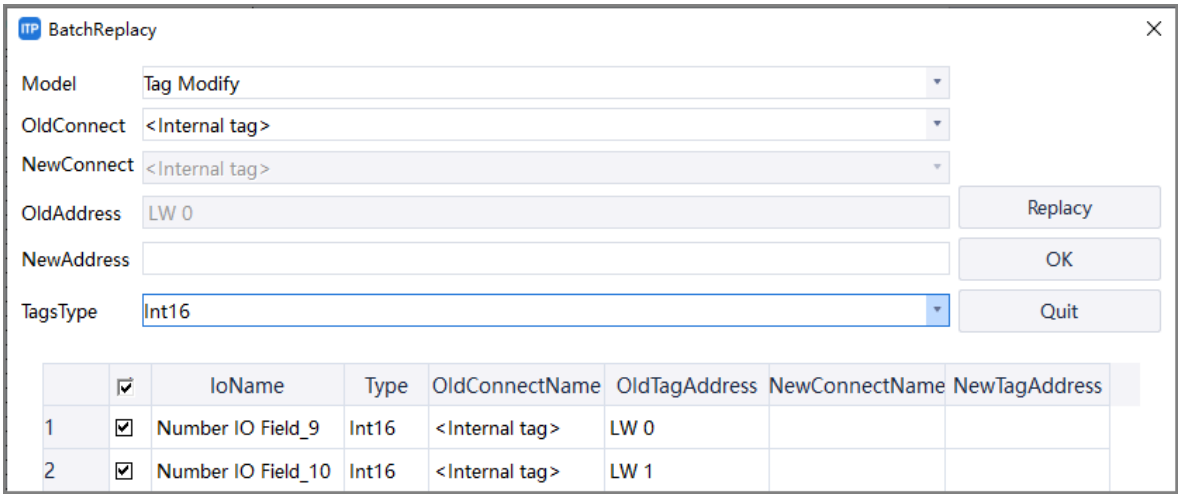


Currently, "Tag Modify", "Connection Modify", and "Tag And Connection Modify" are supported as

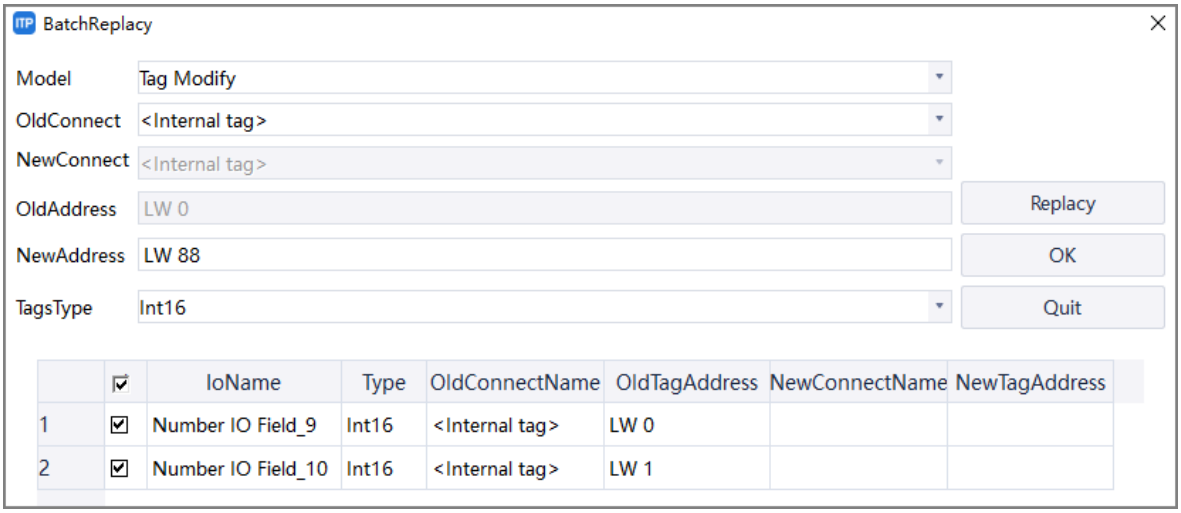
replacement modes.



2. Select tags to be replaced. When you set "Model" to "Tag Modify", tags only of the same type can be replaced in a batch. If you select tags of the same type but set "TagsType" to "Total", the replacement will fail, as shown in the figure below.

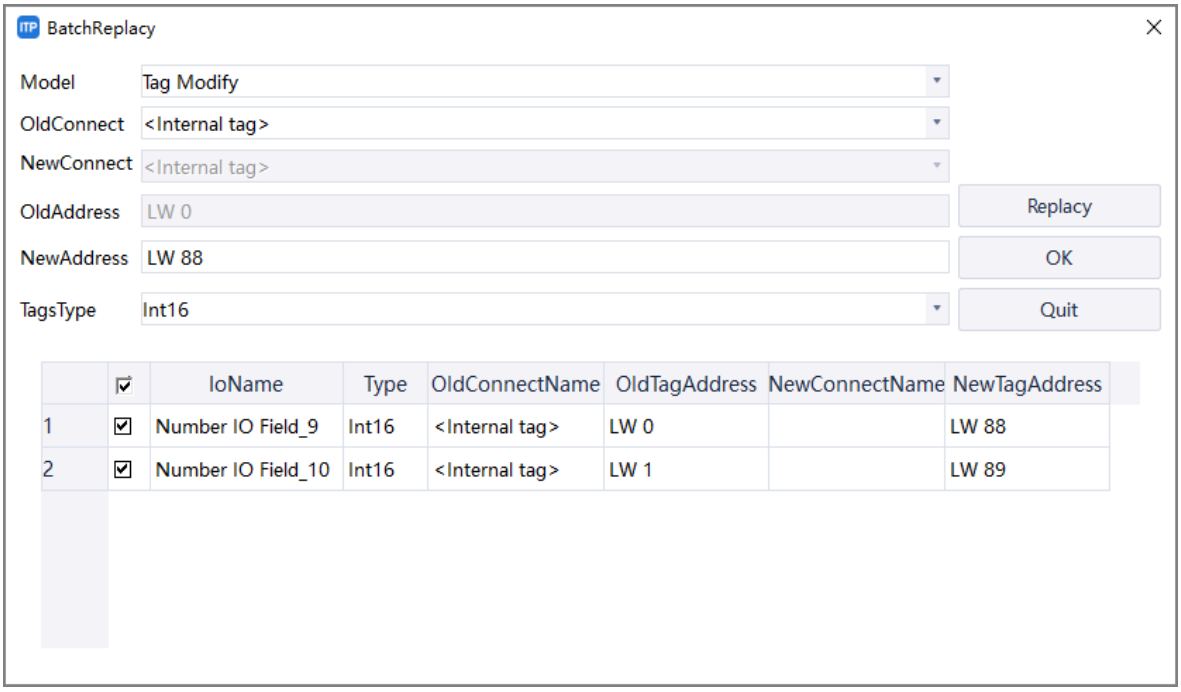


3. Set "Model" to "Tag Modify", "NewAddress" to "LW88", and "TagsType" to "Int16", as shown in the figure below.

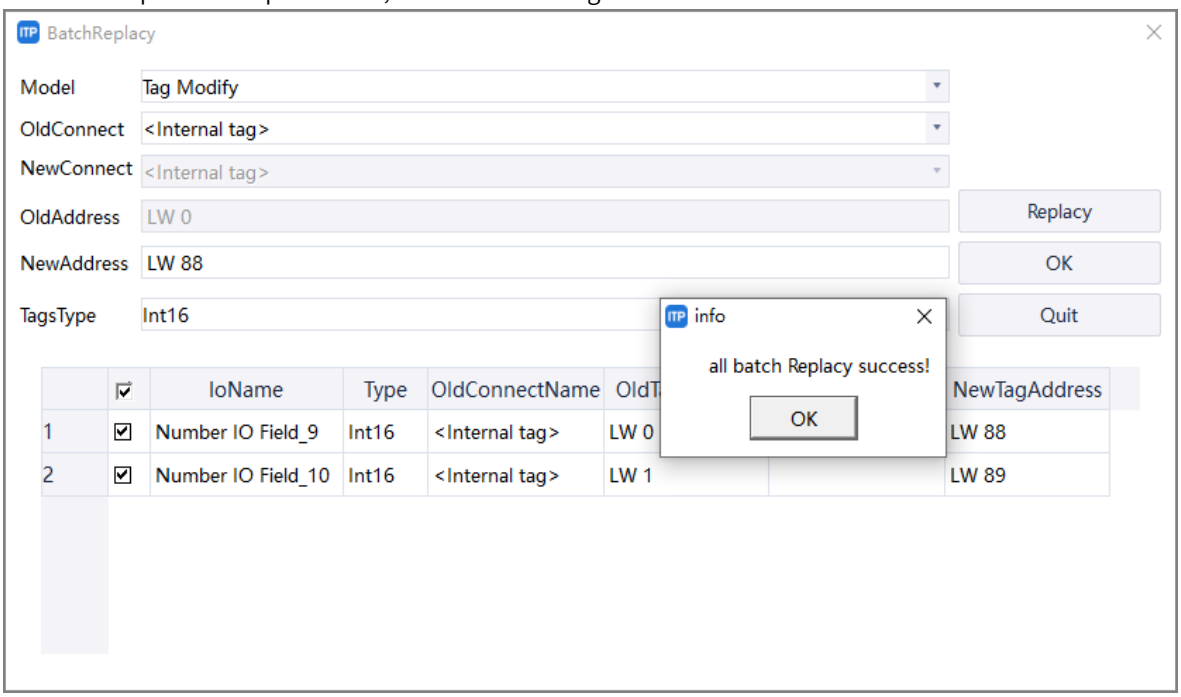


> **Note**
>
> Set "NewAddress" to the new address, which must be in the same format as the original address.

4. Click "Replace". Then you can view the new address in the "NewAddress" column, as shown in the figure below.



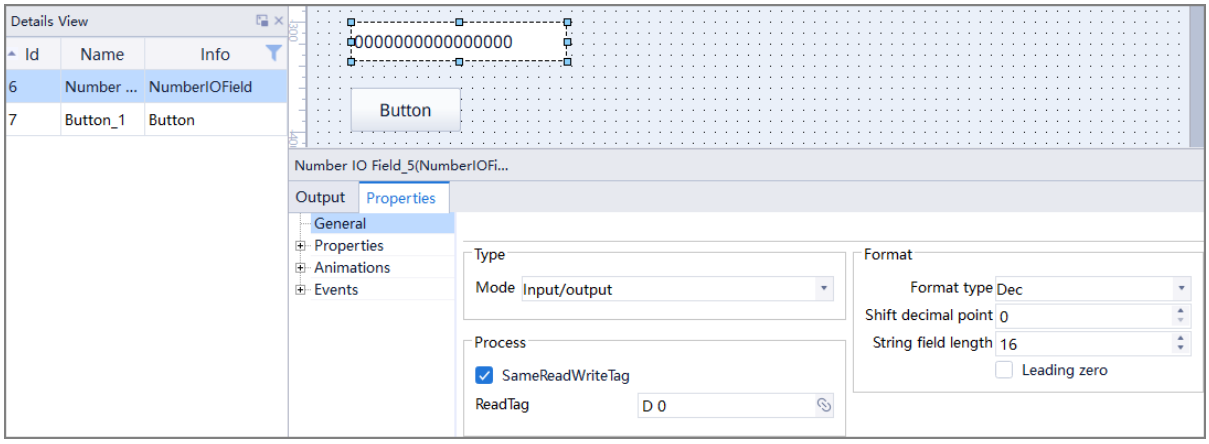
5. Click "OK". If the replacement is successful, the dialog box of "all batch Replace success!" will appear. Click "OK" to complete the replacement, as shown in the figure below.



6. If incorrect controls are replaced, click "Quit" to replace controls again, or modify data in "NewAddress" and click "Replace" again.

Locate an object

Access the screen editor. Right-click and choose "Group". In the "Details View" section, click an entry to select the object in the work area.



Object Movement

Move an object in front of or behind another object.

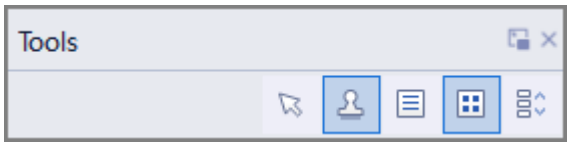
Select an object, right-click on it, and choose "Arrange" and its options to move the object. Or you can click  in the menu bar to move an object.

Rotate an object

In the menu bar, click  to rotate an object.

Stamp

In the "Tools" window, click "Stamp" to insert multiple objects of the same type.



6.3.3 Using the Screen Object Groups

Introduction

You can add two or more objects to a group in the screen and edit objects in the group.

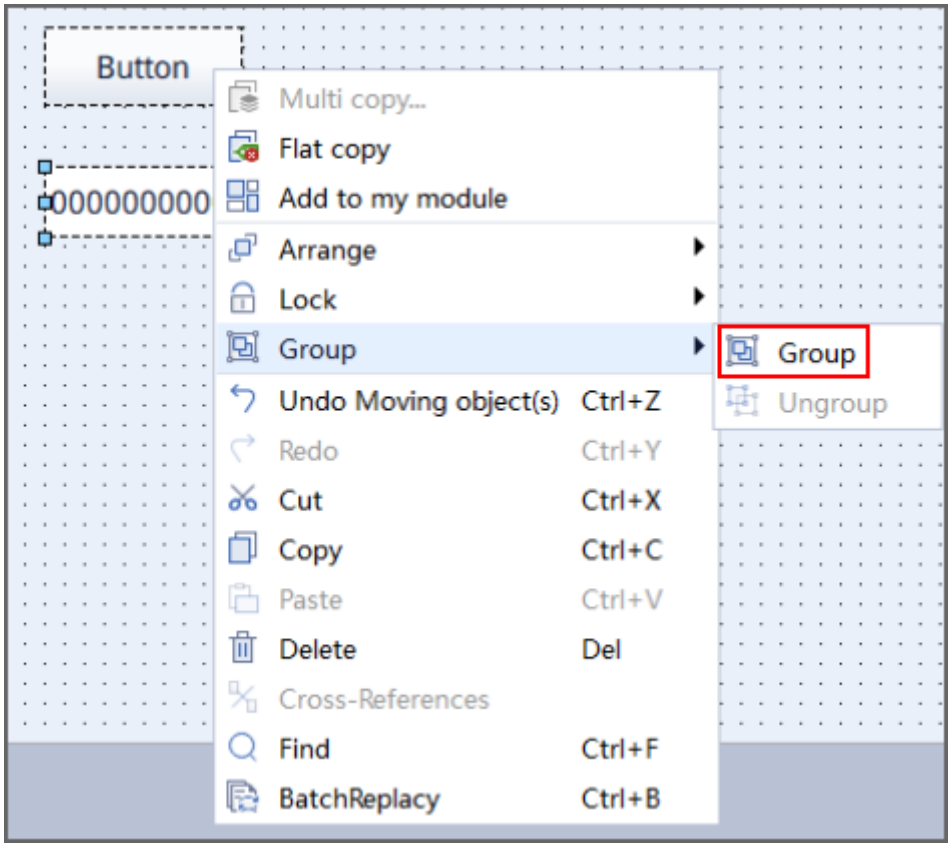
Condition

A screen that has multiple objects is already opened.

Group

1. Select several objects with the mouse or press and hold "Shift" to select several objects you want to add to a group.

2. Right-click them and select "Group", as shown in the following figure.



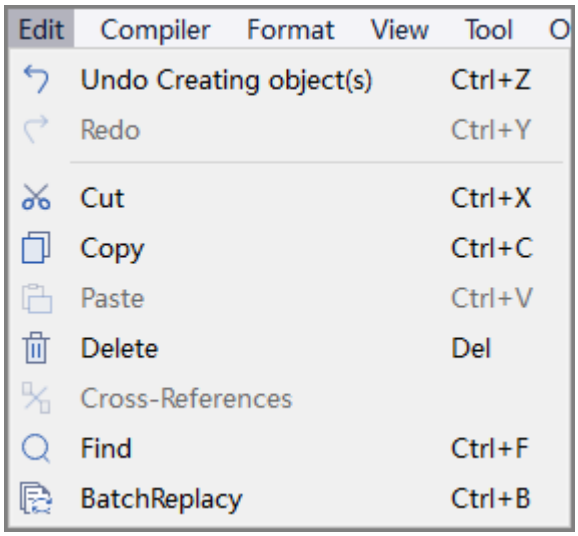
Note:

To remove objects from a group, click "Ungroup".

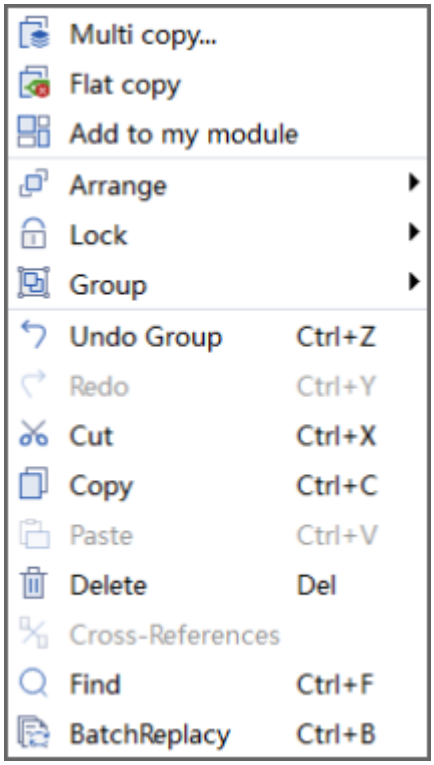
Editing a group

You can cut (T), copy (C), delete (D), find (F), and batch replace (B) objects.

To perform these operations, you can execute commands through the "Edit" menu or shortcut keys, as shown in the following figure.



You can also right-click the screen to edit screen object groups, as shown in the following figure.



Note:

Since the names of all objects in the screens or templates must be unique, if an object is copied to a screen that already contains an object with the same name, the name of the copied object will be automatically modified.

Relocate multiple objects

After selecting multiple objects, you can adjust all objects through the Adjust menu in the menu bar.

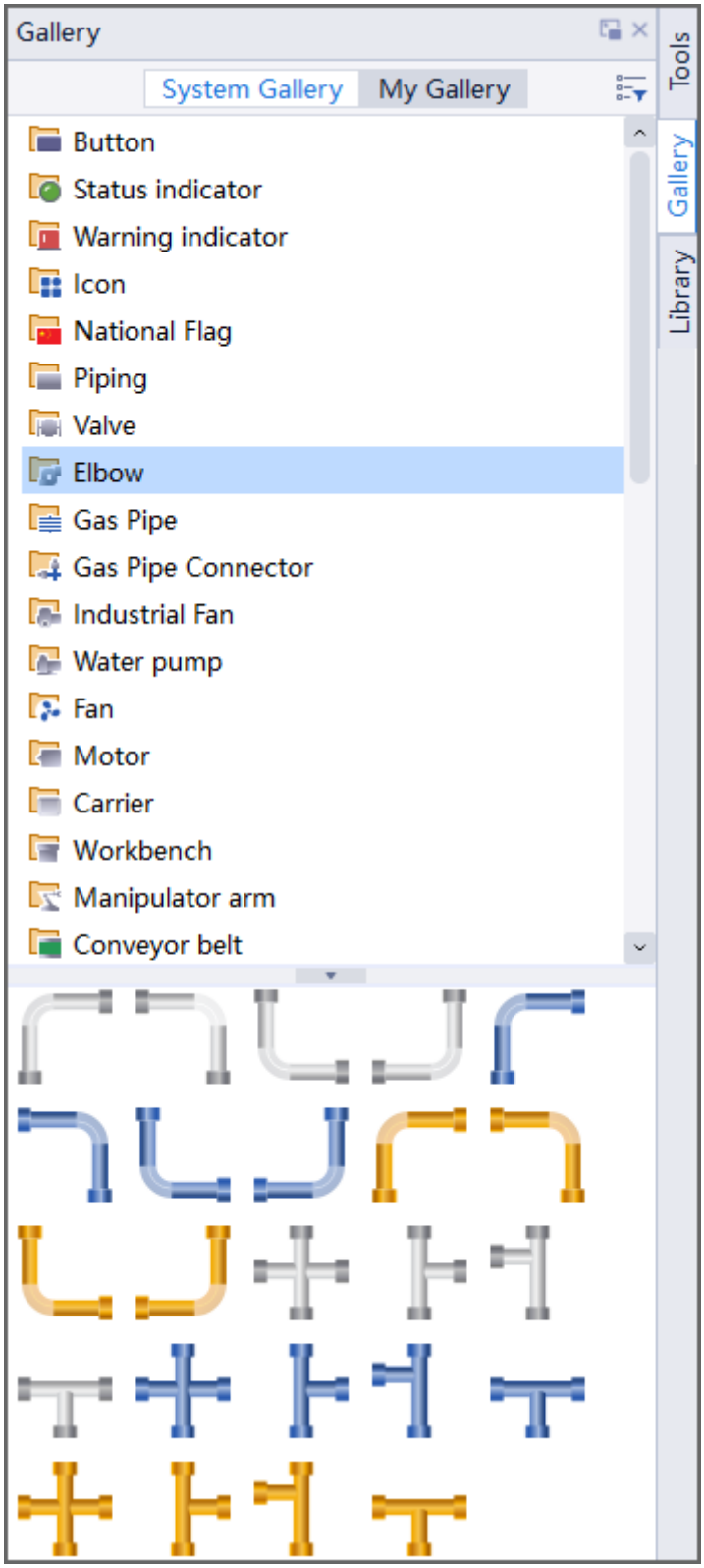


6.4 Gallery

6.4.1 System Gallery

System Gallery: The software collects commonly used and versatile graphics to form a resource library, which contains a rich set of graphic elements to meet various process control application requirements. If the system gallery does not meet your requirements, InoTouchPad software supports custom gallery. For details, see 6.4.2 My Gallery.

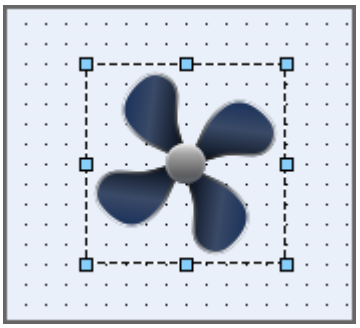
The system gallery is displayed by default on the right side of the software interface, with graphics categorized.



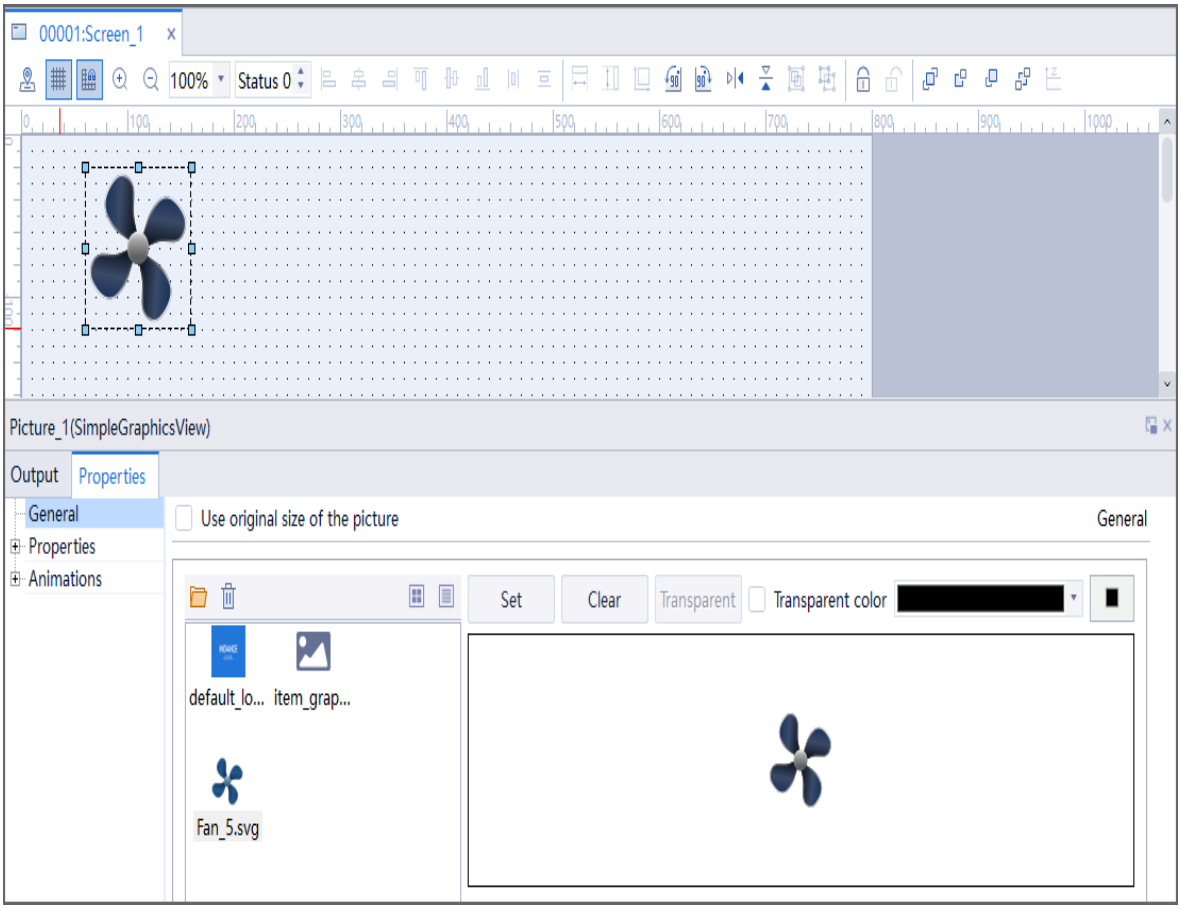
These graphics support configuration of simple dynamic effects during screen setup, such as rotation, blinking, etc. The specific procedure is as follows:

1. Add a screen.
2. Add a system graphic.
   Select the target graphic (e.g., fan) from the system gallery and drag it to the desired position on the

screen.

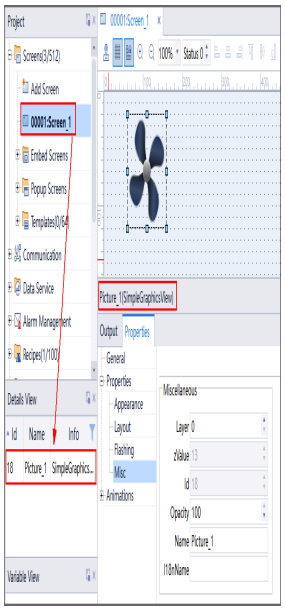


3. Configure the graphic properties.



Category	Parameter	Description
General	Use original size of the picture	Disabled
	Set	When replacing the current graphic appearance with a graphic from the left panel, use this button to update the objects on the screen.
	Clear	Use this button to remove the current graphic from the screen.
	Transparent	

Category		Parameter	Description
			This button is used with transparent colors and is not applicable for some graphics.
			Use this button to set the background color of the current graphic (not applicable to some graphics).
Properties	Appearance	Fill	Use this button to set the background of the graphic area.
	Layout	Position	The position of a graphic on the screen, which is determined by the coordinate values of its top-left corner.
		Size	The placeholder size on the screen.
		Rotate	The tag value corresponds to the rotation angle. When the value increases, it rotates clockwise; when the value decreases, it rotates counterclockwise. It supports tags of types Int16, UInt16, Int32, UInt32, Float, and Double.
	Flashing	Runtime Appearance	Enable/Disable a flashing effect for the graphic during online runtime.
		Process	The tag values control the visibility of the graphic, supporting Bool type tags.
	Misc	Layer	The screen layer in which the object is located, supporting maximum 31 layers.

Category		Parameter	Description
		z Value	The position of the graphic object in the Z axis. A graphic with a larger value covers a graphic with a lower one.
		Id	The ID of the current graphic, which is assigned by the software.
		Opacity	The transparency of the graphic displayed on the screen. Range: 1 to 100. A higher value results in clearer display.
		Name	The name of the graphic in the project, which is synchronized to the display names in the other two locations as shown below: 
		I18NName	Disabled
Animation	Visibility	/	Dynamically control object visibility by modifying tag values. For details, see the 7.5.1.10 Visibility section in the Controls chapter.

4. Save and simulate the project.
   Verify online whether the graphic settings meet the control requirements. If not, return to Step 3 for adjustments until all control requirements are met.

6.4.2 My Gallery

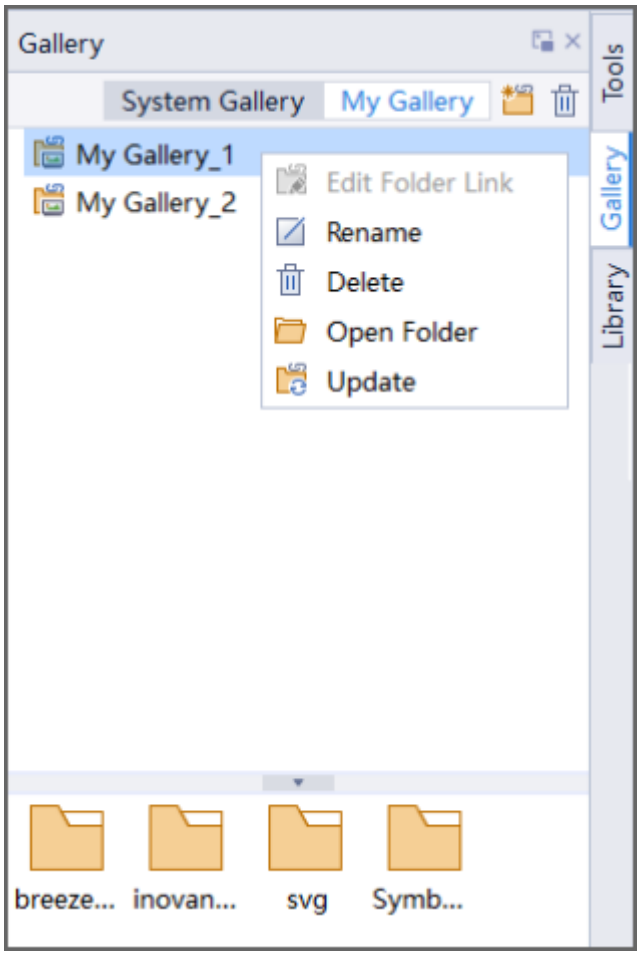
When the graphics in the system gallery do not meet control requirements, you can create your own gallery by importing external graphics into the software. This enriches graphic resources and enhances the intuitiveness and professionalism of process screens.

A project supports two user galleries: one is automatically created upon project initialization and named "My Gallery_1"; the other is created by the user.

See the following section for supported operations and graphic usage instructions of these two user galleries.

Operating User Gallery

The user gallery supports 6 operation commands as shown below. These operation commands are selected and used from the right-click menu of the user gallery.

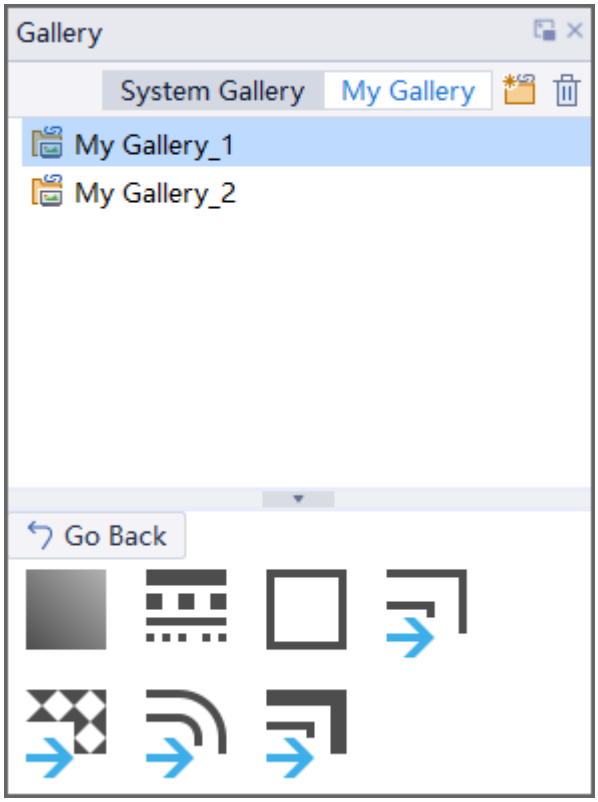


Operation command	Icon	Description
New		Use this button to create a user gallery, which is named "My Library_2" by default.
Edit Folder Link		Custom the path for the user gallery. "My Gallery_1" is not supported for path customization.
Rename		Rename the user gallery.

Operation command	Icon	Description
Delete		Delete the user gallery. "MyGallery_1" cannot be deleted.
Open Folder		Open the folder containing graphic resources.
Update		Refresh the gallery window to display the latest resources.

Using User Graphics

User graphics are stored in the path of user gallery as folders or images, supporting formats including bmp, dib, ico, emf, wmf, gif, tif, jpeg, and jpg.



- Configure in the screen.
  The configuration process and operations in the screen are the same as those for the system gallery and graphics. For details, see 6.4.1 System Gallery.
- Delete from the gallery.
  Deleting user graphics from the gallery is not supported in the software. They can only be deleted from the folder path where the graphics are stored.
  If a graphic has instances used in the project screen, deleting it from the gallery will not affect the performance of the instances.

7 Control

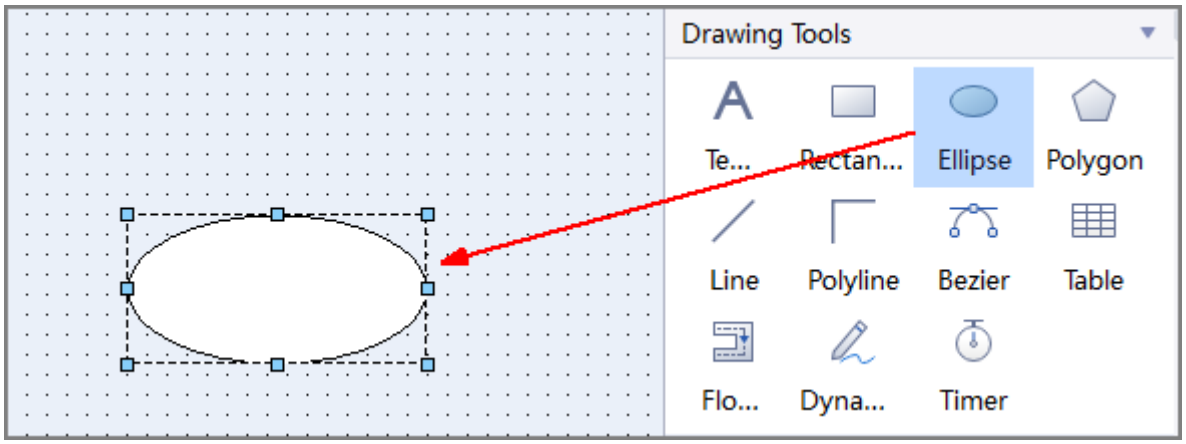
7.1 Introduction

A control is a screen object that implements related features. You can edit control properties to achieve these features. Controls are divided into drawing tools, portraits and screens, control and display, data visualization, production management, and custom controls by features. InoTouchPad built-in libraries of favorites include system libraries and user templates. Controls in the libraries, such as drawing tools, can be dragged to the screen for configuration.

7.2 Dragging and Dropping the Screen

To add a control during project configuration, select a control, click the screen, and add the control to the specified position of the screen.

Alternatively, you can choose "Drawing Tools" > "Ellipse" in the "Tools" navigation tree on the right, and drag a control to the screen, as shown in the figure below.



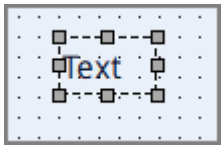
You can drag any control to the screen.

7.3 Control Classification

7.3.1 Drawing Tools

7.3.1.1 Text Field

The text field is a closed object in which you can enter one-line or multi-line styled text. You can define the text font and color as well as the background color and border color of the fill text. You can use it to enter text in any configured language.



> **Note**
>
> The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can enter the text in the label field. the length of the text can be up to 1024 characters, it is restricted by the size of the object.



2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color".
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately

				displays the text color and the background color.
		Fill style	Multiple fill styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	The size is automatically adjusted according to the text content to display it in full.
	Space	Letter Space	Set the space between words in the text.	-
		Line Space	Set the space between lines in the text.	-
Text	Font	Font	Set the font and size of displayed text.	-
	Alignment	Horizontal	Set the text alignment in the horizontal direction. Options: Left, Center, and Right.	-
		Vertical	Set the text alignment in the horizontal direction. Options: Top, Middle, and Bottom.	-
Whirl	Whirl	Speed	Set the text scrolling speed.	In pixels
		Direction	You can set 5 directions: no direction, left to right, right to left, top to bottom, or bottom to top	-
	Process	Tag	Tag to control a process	-
		Value ON	Set the value of the tag that controls a process.	The default value is 1, which cannot be changed.
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a

				process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	Set the value of the tag that controls a process.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Three styles are provided for reference.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located Range: 0 to 31 Default: 0
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100 Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

CAUTION

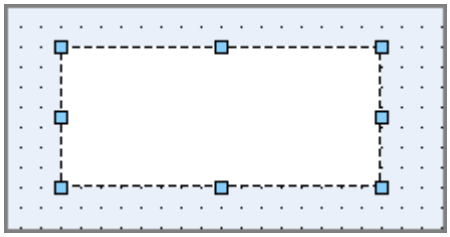
The LED scrolls the text content.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.2 Rectangle

"Rectangle" is a closed object that can be filled with a background color.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Color	Border color	Set the border color of the rectangle.	-
		Fill color	Set the fill color of the rectangle.	-
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
	Border	Width	Set the width of the border line.	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	The default is "Solid".
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Shape	Shape	Shape	You can choose "rect" and "roundRect"	-
	Corner Radius	Percent	Set the curvature percentage of the corner radius.	• When this option is checked, the corner radius is the percentage of half of the corresponding side length. • When it is not checked, half of the input pixel value represents the corner radius.

		Horizontal	The relationship between the horizontal corner radius and half of the horizontal side length	In pixels
		Vertical	The relationship between the vertical corner radius and half of the vertical side length	In pixels
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, this value is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

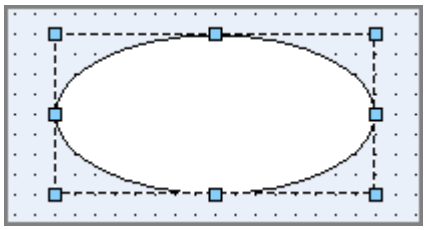
2. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.
Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.
Direct Movement	See 7.5.1.6 Direct Movement.

Custom Movement	See 7.5.1.7 Custom Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.3 Ellipse

"Ellipse" is a closed object that can be filled with a background color.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Border color	Set the border color of the ellipse.	-
		Fill color	Set the fill color of the enclosed ellipse area.	When "Flashing" is enabled, the control alternatively displays the border color and the fill color.
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
	Border	Width	Set the width of the border line.	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	The default is "Solid".
Layout	Position	X	Set the horizontal distance from the corner point of the ellipse to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the corner point of the ellipse to the top edge of the screen.	
	Size	Width	Set the width of the ellipse.	
		Height	Set the height of the ellipse.	
Shape	Shape	Shape	The options are "pie", "arc", and "chord".	The default value is "pie".
		Start	Start	Range: 0° to 360°; Default: 0°
		Span	The angle range of rotation from the starting arc	Range: 0° to 360°; Default: 360°
Flashing		Flashing		

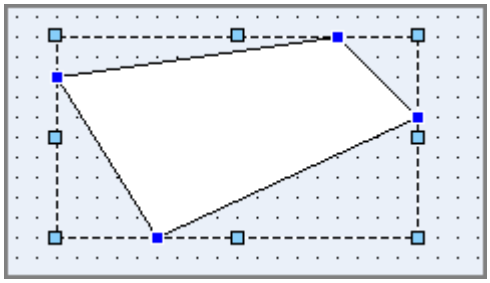
	Runtime Appearance		The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, this value is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

2. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.
Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.
Direct Movement	See 7.5.1.6 Direct Movement.
Custom Movement	See 7.5.1.7 Custom Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.4 Polygon

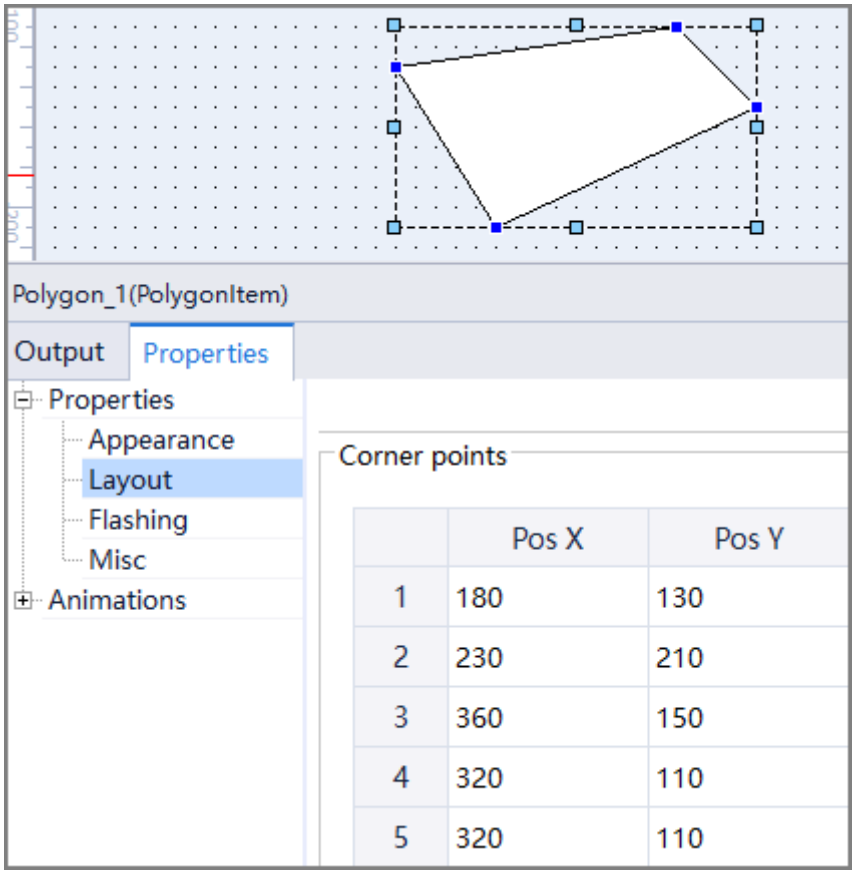
The polygon is a closed object that can be filled with a background color. The control points of the polygon are numbered in the order in which they are created. To create a polygon, click the polygon control under "Drawing Tools". Drag the cross cursor generated on the screen to create a polygon and right-click the cursor to stop drawing. The corner points are blue squares which you can drag to change their position.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Line color	The color of the polygon line	-
		Fill color	Set the fill color of the enclosed shape.	When "Flashing" is enabled, the control alternatively displays the line color and the fill color.
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
	Border	Width	Set the width of the border line.	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	The default is "Solid".
Layout	Corner	X position	Set the horizontal distance from the corner point of the polygon to the left edge of the screen.	In pixels
		Y position	Set the vertical distance from the corner point of the polygon to the top edge of the screen.	In pixels
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, this value is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located Range: 0 to 31 Default: 0
		z Value	z Value	The position of the control in the z axis. A control with a larger

				value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100 Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.



CAUTION

Select the corresponding four points in "Properties" > "Layout" > "Corner points".

2. On the "Animations" tab page of the property view, you can set the following properties.

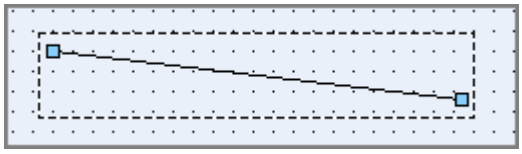
Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.
Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.

Direct Movement	See 7.5.1.6 Direct Movement.
Custom Movement	See 7.5.1.7 Custom Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.5 Line

The line is an open object. The length and slope of a line are defined by the height and width of the rectangle and the construction direction.

There is a blue point at each end of the line. You can drag them to change their position.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Line color	Line color	None
		Fill color	Set the fill color of the line.	When "Flashing" is enabled, the control alternatively displays the line color and the fill color.
	Border	Width	Pen Width	Range: 1 to 30; Default: 1
		Style	Options: Solid, Dash, Dot, DashDot, and DashDotDot	The default value is "Solid".
		Line start	The options are: "Standard" and "Arrow".	The default value is "Standard".
		Line end	The options are: "Standard" and "Arrow".	The default value is "Standard".
		Line end shape	The options are "Square" and "Round".	The default value is "Square".
Layout	Start point	X	Set the horizontal distance from the corner point of the line start point to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the corner point of the line start point to the top edge of the screen.	
	End Point	X	Set the horizontal distance from the corner point of the line end point	

			to the left edge of the screen.	
		Y	Set the vertical distance from the corner point of the line end point to the top edge of the screen.	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, this value is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100
				1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

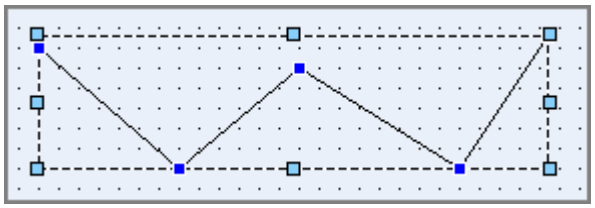
2. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.
Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.

Direct Movement	See 7.5.1.6 Direct Movement.
Custom Movement	See 7.5.1.7 Custom Movement.
Dynamic Movement	See 7.5.1.8 Dynamic Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.6 Polyline

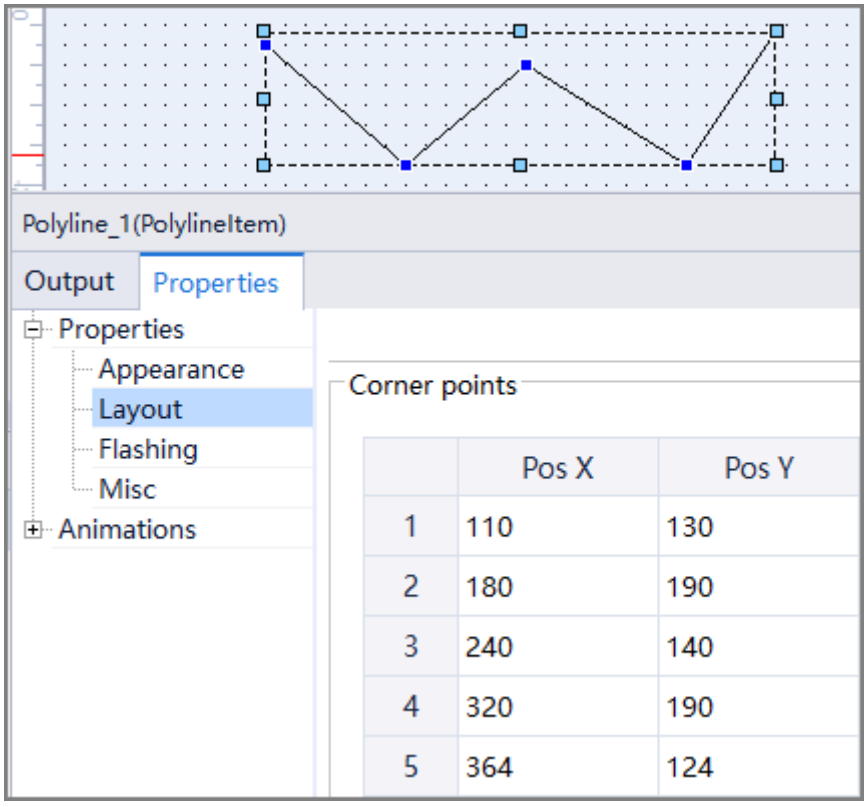
A polyline consists of connected segments and can have indefinite number of control points (numbered in the order in which they were created). The control points are blue squares which can be directly dragged to change their position. The polyline is an open object. Although the start and end points may coincide in the same coordinate, the area enclosed by the line segments cannot be filled.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Line color	The line color of the polyline	-
		Fill color	Border color	When "Flashing" is enabled, the control alternatively displays the line color and the fill color.
	Border	Width	Set the width of the border line.	In pixels
		Style	Options: Solid, Dash, Dot, DashDot, and DashDotDot	The default is "Solid".
Layout	Corner	X position	Set the horizontal distance from the corner point of the polyline to the left edge of the screen.	In pixels
		Y position	Set the vertical distance from the corner point of the polyline to the top edge of the screen.	In pixels
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, this value is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.

Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.



CAUTION

Select the corresponding five points in "Properties" > "Layout" > "Corner points".

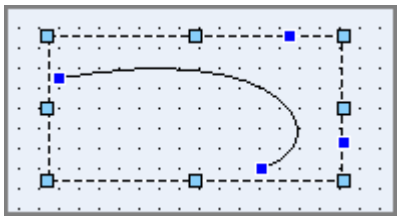
2. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.

Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.
Direct Movement	See 7.5.1.6 Direct Movement.
Custom Movement	See 7.5.1.7 Custom Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.7 Bezier

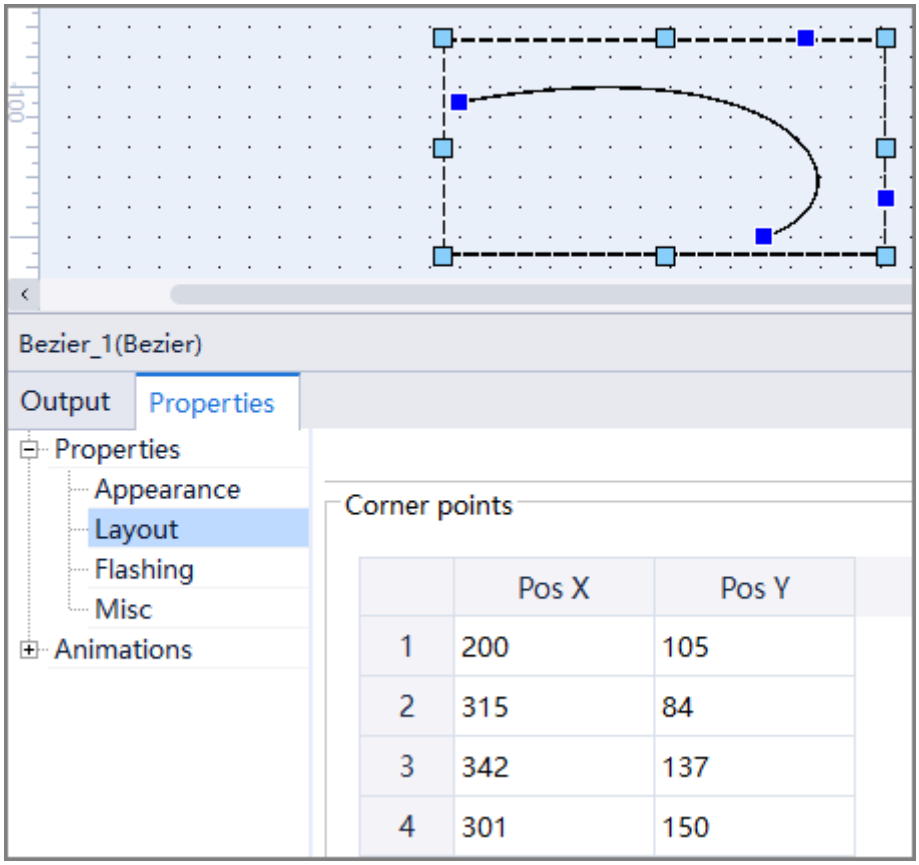
The Bezier curve control displays curves of all types. Each Bezier curve has four corner points and each corner point has a blue point. You can drag the blue point to change their shape. When two points overlap with other two points or share lines with other two points, the shape is a line segment.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Line color	The line color of the Bezier curve	-
		Fill color	The border color of the Bezier curve	When "Flashing" is enabled, the control alternatively displays the line color and the fill color.
	Border	Width	Set the width of the border line.	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	The default is "Solid".
Layout	Corner	X position	The horizontal distance from the Bezier curve corner point to the left edge of the screen	In pixels
		Y position	The vertical distance from the Bezier curve corner point to the top edge of the screen	In pixels
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.

Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.



CAUTION

Select the corresponding four points in "Properties" > "Layout" > "Corner points".

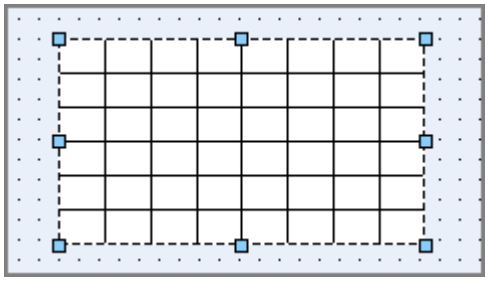
2. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Diagonal Movement	See 7.5.1.3 Diagonal Movement.

Horizontal Movement	See 7.5.1.4 Horizontal Movement.
Vertical Movement	See 7.5.1.5 Vertical Movement.
Direct Movement	See 7.5.1.6 Direct Movement.
Custom Movement	See 7.5.1.7 Custom Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.1.8 Table

The table control displays a table.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Rows	The number of rows in the table	The default value is 6, and the value range is 1 to 100.
	Columns	The number of columns in the table	The default value is 8, and the value range is 1 to 100.

2. On the "Properties" tab page of the property view, you can set the following properties.

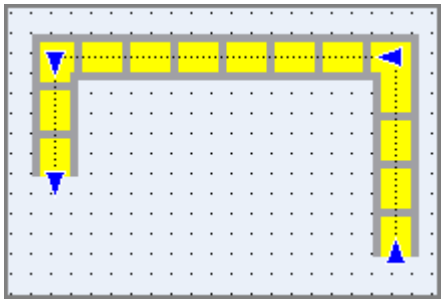
Item			Description	Additional Information
Appearance	colors	Border color	The line color of a table	-
		Fill color	The fill color of a table	-
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
	Border	Width	Set the width of the border line.	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	The default is "Solid".
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels

		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Others	Others	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.1.9 Flow Block

"Flow Block" is used to dynamically display the flow of fluid, with the blue arrow indicating the direction of flow.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Flow	Invert Direction	Enables/disables flow in the reverse direction for the flow block.	When this option is checked, the flow block flows in the reverse direction.
	Dynamic Speed	Enables/disables the flow at dynamic speeds.	• When it is not checked, the flow block flows at a fixed speed specified by "Speed". • When this option is checked, a tag is associated with to control the flow speed in the "Process" section.

2. On the "Properties" tab page of the property view, you can set the following properties.

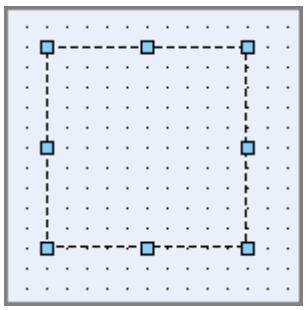
Item			Description	Additional Information
Appearance	Pipe	Background	Display/hide the pipe background.	When this option is checked, the pipe background is displayed.
		Width	Set the width for the pipe background.	-
		Color	Set the color for the pipe background.	Browse colors in the drop-down list.
		Border	Display/hide the pipe borders.	When this option is checked, the pipe borders are displayed.
	Border	Width	Set the width of the pipe borders.	It is set when "Appearance" is set to "Boarder".
		colors	Set the color of the pipe borders.	-
	Slider	Width	Set the width of the pipe scroll bars.	-
		Length	Set the length of the pipe scroll bars.	-
		Interval	Set the pitch of the pipe scroll bars.	-
		Color	Set the color of the pipe scroll bars.	-

Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.1.10 Dynamic Curve

The dynamic drawing feature is used to draw a continuous straight line segment or a combination curve of a straight line segment and an arc. The parameters of the control can be set on the control property tab page. When HMI is running, the values of tags such as line length, line angle, arc length, and angle can be modified within a preset range to dynamically draw the curve.



Feature

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description
Curve Parameters	Curve Type	The options are "Straight Line", "Arc", and "Bi-direction Line".
		Straight Line: You can customize the start point, and adjust the line length and the clockwise angle between the line and the previous line segment within the preset range to

		draw a line segment. You can draw line segments continuously.
		Arc: You can customize the start point, and adjust the arc length and radius within the preset range to draw an arc. You can draw straight lines, arcs, combinations of straight line and arc continuously.
		Bi-direction Line: You can specify the start point as the control center, adjust the line length and the angle between the line and the previous line segment within the preset range to draw a line segment. You can draw two curves on the left and right continuously.
	Type Tag	When this option is checked, you can select a tag, bind the tag to the control curve type, and dynamically set the drawing mode. The valid value range is 0-2. When the value is 0, you can draw a straight line; when the value is 1, you can draw an arc; when the value is 2, you can draw a bi-direction line. Other values are invalid.
	Curve Pos	Set the drawing area of the curve. When "Fixed Start Point" is selected, the curve start point is fixed and the curve cannot be dynamically moved. When "Center Display" is selected, the curve start point dynamically moves until the curve is centered, and the start point setting is invalid.
	Rotation Tag	The bound rotation tag. Based on the value of the bound tag, the curve rotates by a certain angle. All line segments can be rotated.
	Scale	Set the curve scaling ratio within the range of 0.1 to 9.9.
	Show Line Length	When this option is checked, you can set the font size, font color, and display style of the line length.
	Show Border	When this option is checked, the control border is displayed.
Set	Number of lines	Set the total number of line segments to be drawn. Up to 32 line segments can be drawn.
	Current Line	The number of the current line segment, which can be switched
Start point	X coordinate	X coordinate of the start point of the tag
	Y coordinate	Y coordinate of the start point of the tag
Line (1/2)	Line Length/Arc Length	The line length or arc length of the tag

	Line Angle/Radius	The line angle or radius of the tag
Line Length display	Font	The font of the line length
	Font Color	The font color of the line length
	Display Format	The format of the line length. Options are Line size-line length, Line Length, and Line size (Line length).

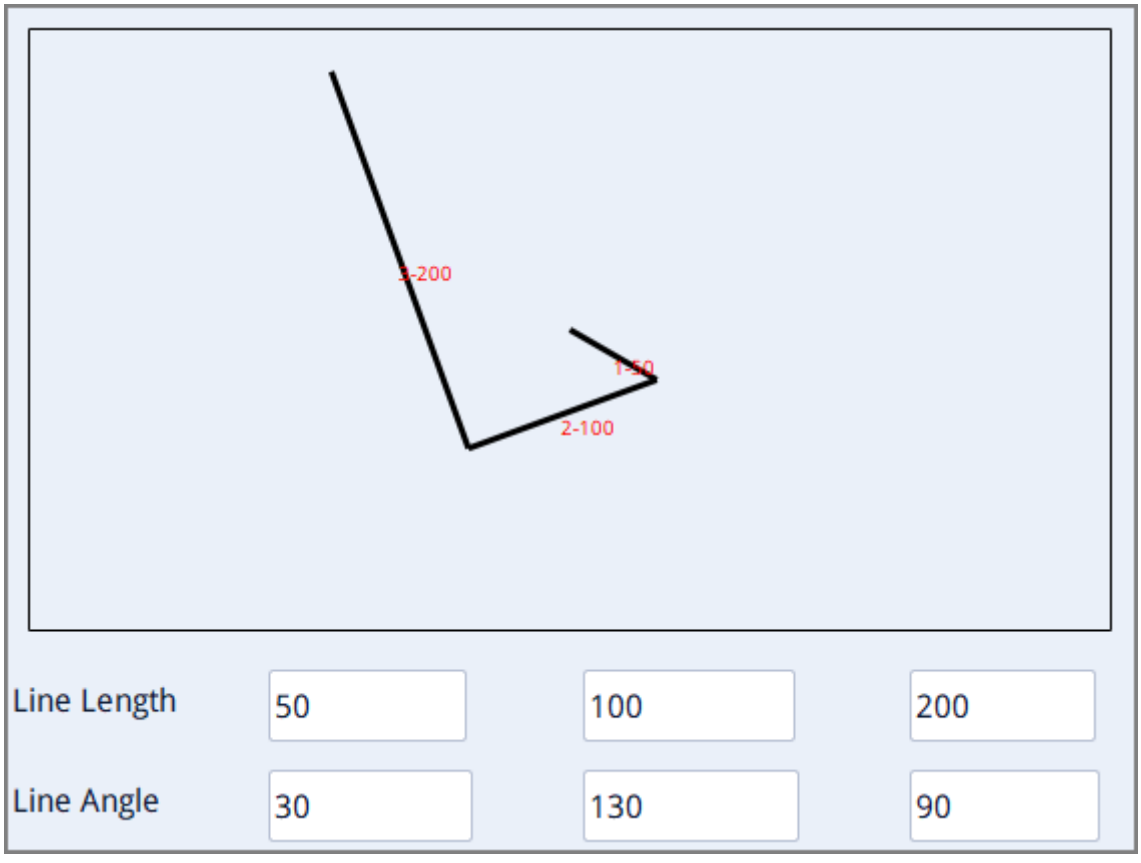
2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Line color	The color of the control line	-
		Fill color	The color of the line border	-
	Border	Width	The width of the object border	In pixels
		Style	The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.

Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

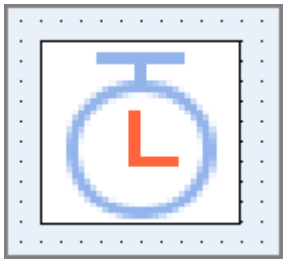
3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

Display effect



7.3.1.11 Timer

The "Timer" control is used to set timed event triggering. Events can be triggered once or cyclically. The configured timer only takes effect on the configuration screen. Only when the configuration timer screen is displayed can it normally trigger events on time. When the configuration timer screen is not displayed, the timer no longer takes effect. Only when returning to the configuration timer screen will it continue to take effect. That is, the timer functions locally on time. To trigger events globally on time, you can set up timed jobs in the scheduler.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Interval	The interval of the timer. The value ranges from 1 to 600, in 100 ms.	-
	Single shot	Check this to enable one-time triggering.	-
Process	Tag	Tag to control a process	-
	Value ON	Starts timing when the tag reaches the set value	The default value is 1, which cannot be changed.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

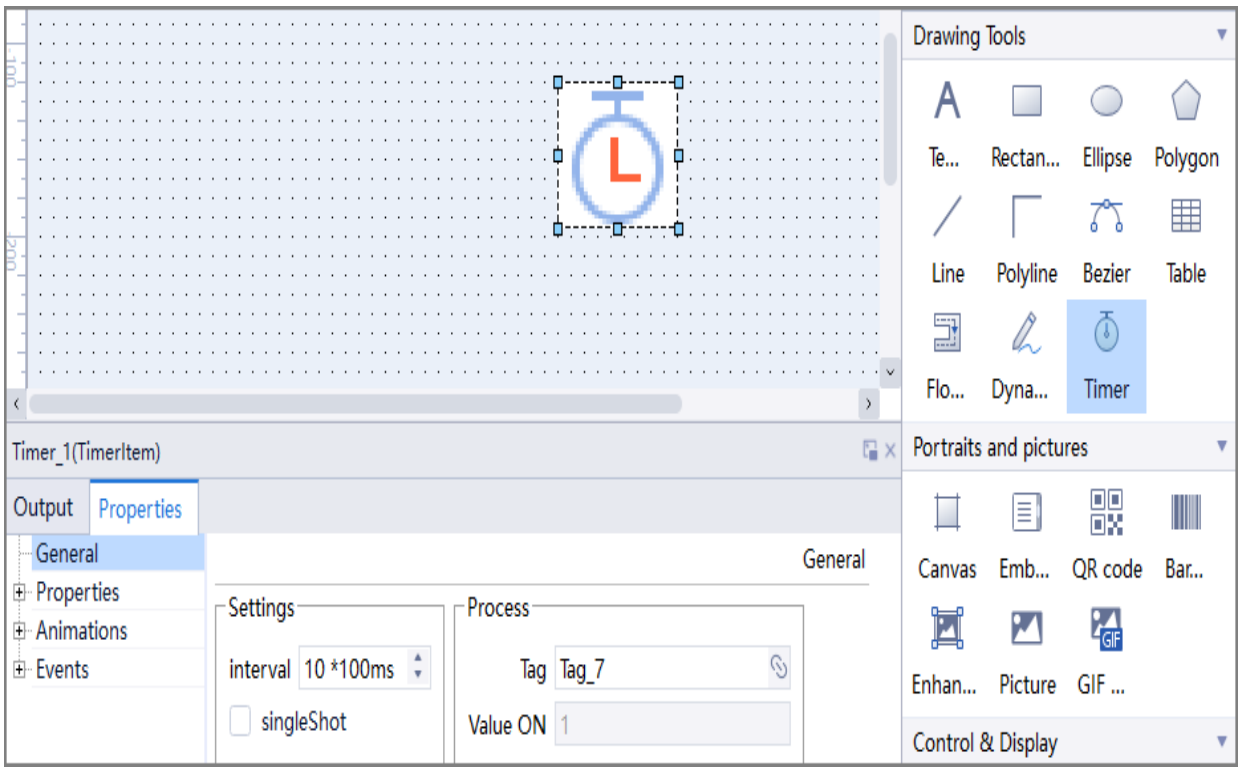
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

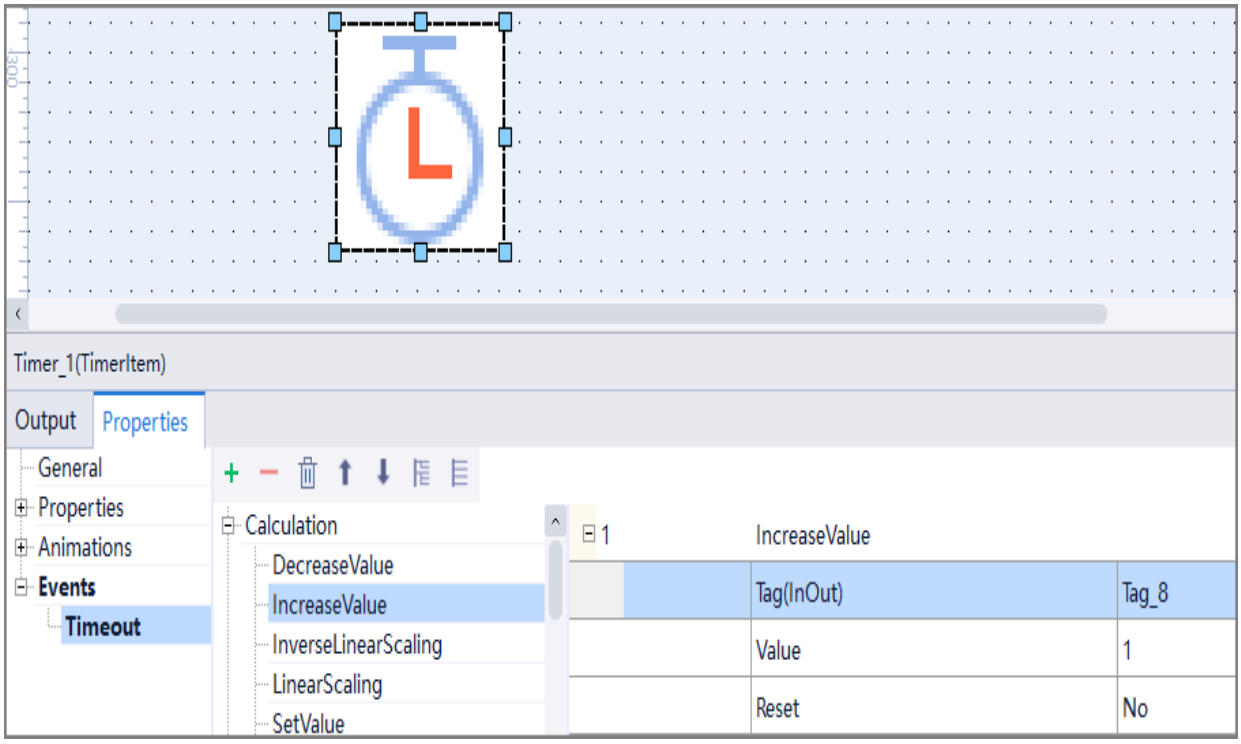
4. On the "Events" tab page of the property view, you can set "Timeout". For details, see 7.5.2 Event.

Example: Executing the Auto Increment Event Cyclically When the Timer Reaches the Limit

1. Drag the timer from the "Drawing Tools" to the screen and associate it with a tag.



2. Add a timeout event and associate it with the IncreaseValue function tag.

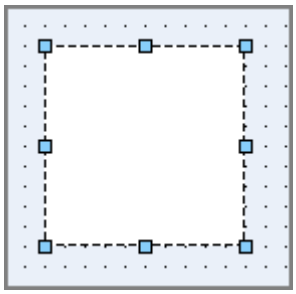


3. Download to the HMI. On the page where the timer is located, when the value of "Tag_8" is 1, the auto increment event is executed. After the current page is exited, the execution stops. When you switch to the page again, the increment event continues to be executed.

7.3.2 Portraits and pictures

7.3.2.1 Canvas

Canvas is used to display graphics drawn with scripts.



1. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	colors	Border color	Set the border color of the canvas.	-
		Fill color	Set the fill color of the canvas.	-
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
	Border	Width	Set the width of the border line.	In pixels
		Style		The default is "Solid".

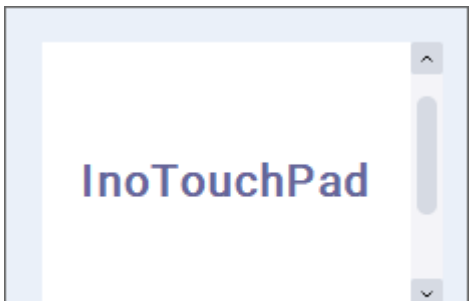
			The options are "Solid", "Dash", "Dot", "DashDot", and "DashDotDot".	
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

2. On the "Events" tab page of the property view, you can set the following properties.

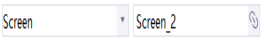
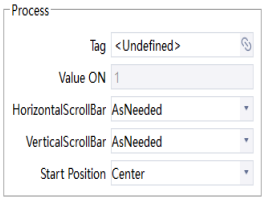
Item	Description
Load	See 7.5.2 Event.
Clear	

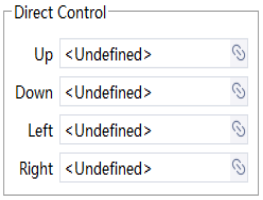
7.3.2.2 Embed Screen

The "Embed Screen" view is an additional screen view displayed in a scene screen, which can be shown or hidden through configuration tags.

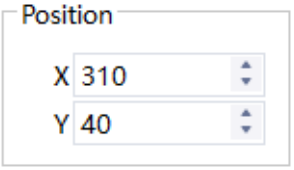
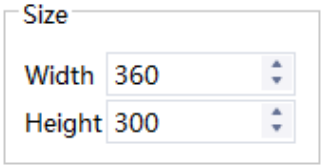


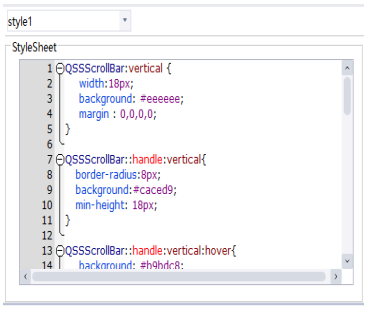
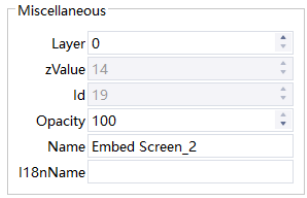
1. On the "General" tab page of the property view, you can set the following properties:

Item		Description	Figure Example
Screen List	The options are "Screen" and "Tag".	Select the associated object of the embed screen. The association methods support both tag and specific screen names. • Tag: This option is suitable for switching display of multiple embed screens. The tag value corresponds to the embed screen ID. Switching between multiple embed screens is achieved by writing different tag values. It supports tags of types Int8, UInt8, Int16, UInt16, Int32, UInt32, Int64, and UInt64. In the "Embed Screen" view, only the currently displayed embed screen maintains normal data communication, while non-displayed ones stop data transmission. • Screen: This option is suitable for displaying a single fixed embed screen. For low-version project upgrades, you need to manually modify to this option.	
Process	Tag	This option controls the visibility of the "Embed Screens" view. It supports tags of types Bool, Int8, UInt8, Int16, UInt16, Int32, UInt32, Int64, and UInt64. Valid variable values are 0 and 1.	
	Value ON	This item is used with "Tag" as a fixed value. When the tag value is 1, it indicates that the "Embed Screen" view is in the display state.	
	HorizontalScrollBar	Set whether to display the scroll bar in the "Embed Screen" view during online runtime.	

Item		Description	Figure Example
	VerticalScrollBar		
	Start Position	The default display area for embed screen content when its frame size exceeds the visible area within the main display.	
Direction Control	Up/Down/Left/Right	These items are alternative to scroll bars. They are associated with the Bool-type tags. When the tag value is 0→1, the embed screen content scrolls in the specified direction to display the remaining interface.	

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Figure Example
Layout	Position	X/Y	In pixels X: The horizontal distance from the origin of the view to the left edge Y: The horizontal distance from the origin of the view to the top edge	
	Size	Width/Height	In pixels	

Item			Description	Figure Example
Style	Style	Style	Set the display style.	
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31; Default: 0.	
		z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.	
		Id	The ID of the current control, which is assigned by the system	
		Opacity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.	
		Name	The name of the current control, which can be customized	
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.	

7.3.2.3 QR Code

The QR code represents a string.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Level	Set the calibration level of the QR code.	-
Process	Tag	Associate the tag required for generating the QR code.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when	

			operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.2.4 Bar Code

The barcode represents a number. A number of black bars and blank spaces with different widths are arranged according to certain coding rules to express a set of graphic identifiers of information.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Code system	Set the encoding method of barcode. Currently, only Code 128 is supported.	-
	Hide text	Display/hide the text content.	When this option is checked, information below the barcode is hidden and can be displayed only when the barcode is scanned.
Process	Tag	Input tag of the barcode information	-

2. On the "Properties" tab page of the property view, you can set the following properties.

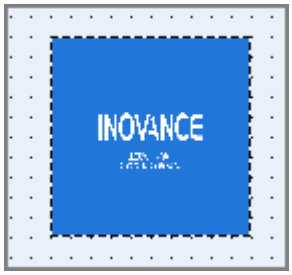
Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.

		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

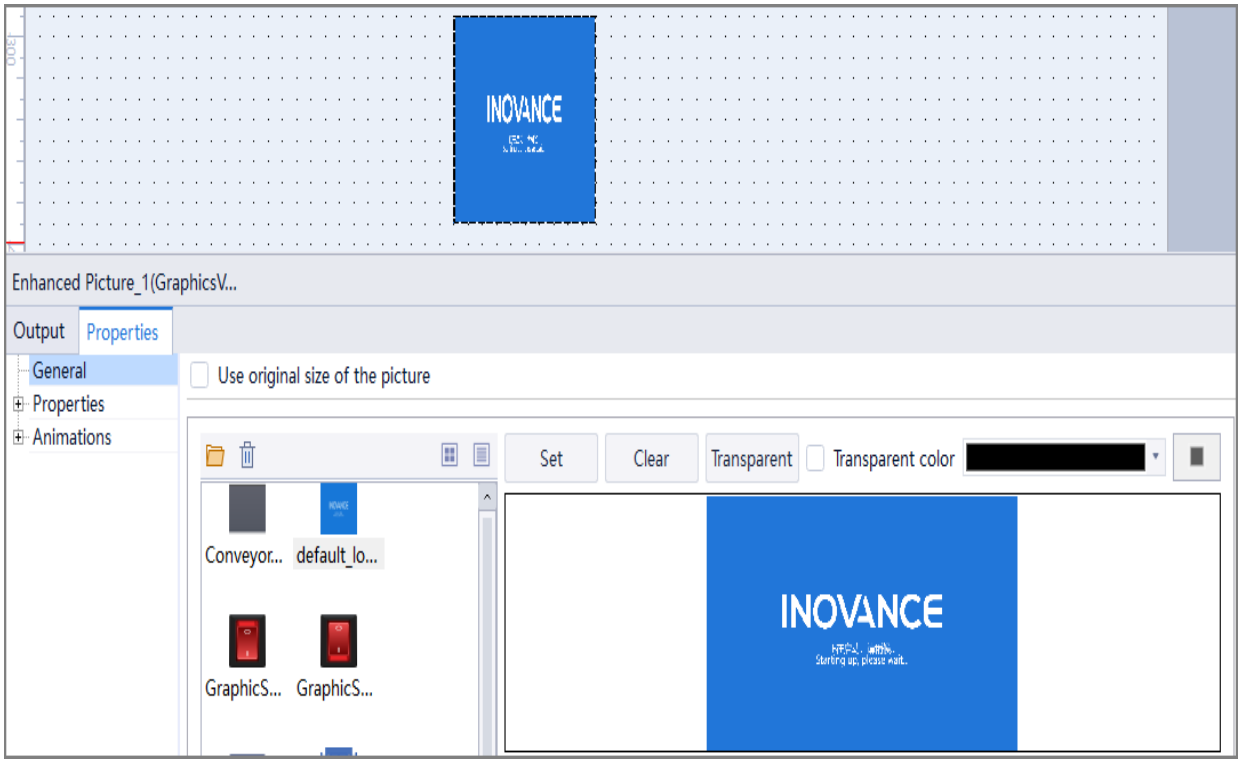
3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.2.5 Enhanced Picture

The enhanced picture is used to display graphics.



1. On the "General" tab page of the property view, you can set the picture to be displayed.



Icon	Description
	Opens the file browser to import pictures.
	Deletes the selected picture.
	Displays the pictures in thumbnails.
	Displays the pictures in a list.
Set	Set the picture to be displayed.
Clear	Clears the displayed picture.
Transparent	Clears the background color of the displayed picture to make the picture transparent.
Transparent color	When this option is checked, you can set the transparent color.
	Set the background color of the current picture.

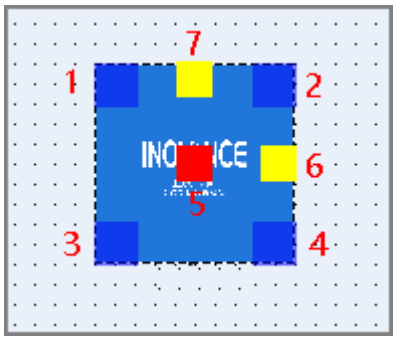
2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Background color	Set the fill color of the rectangle.	-
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner	In pixels

			of the rectangle to the left edge of the screen.	
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

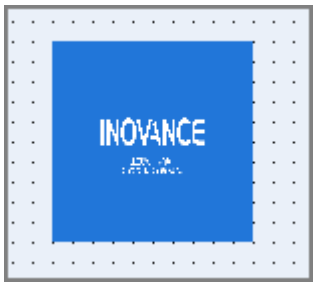
You can also set the enhanced picture by manipulating the following seven points on the enhanced picture with the mouse and keys, as shown in the following figure.



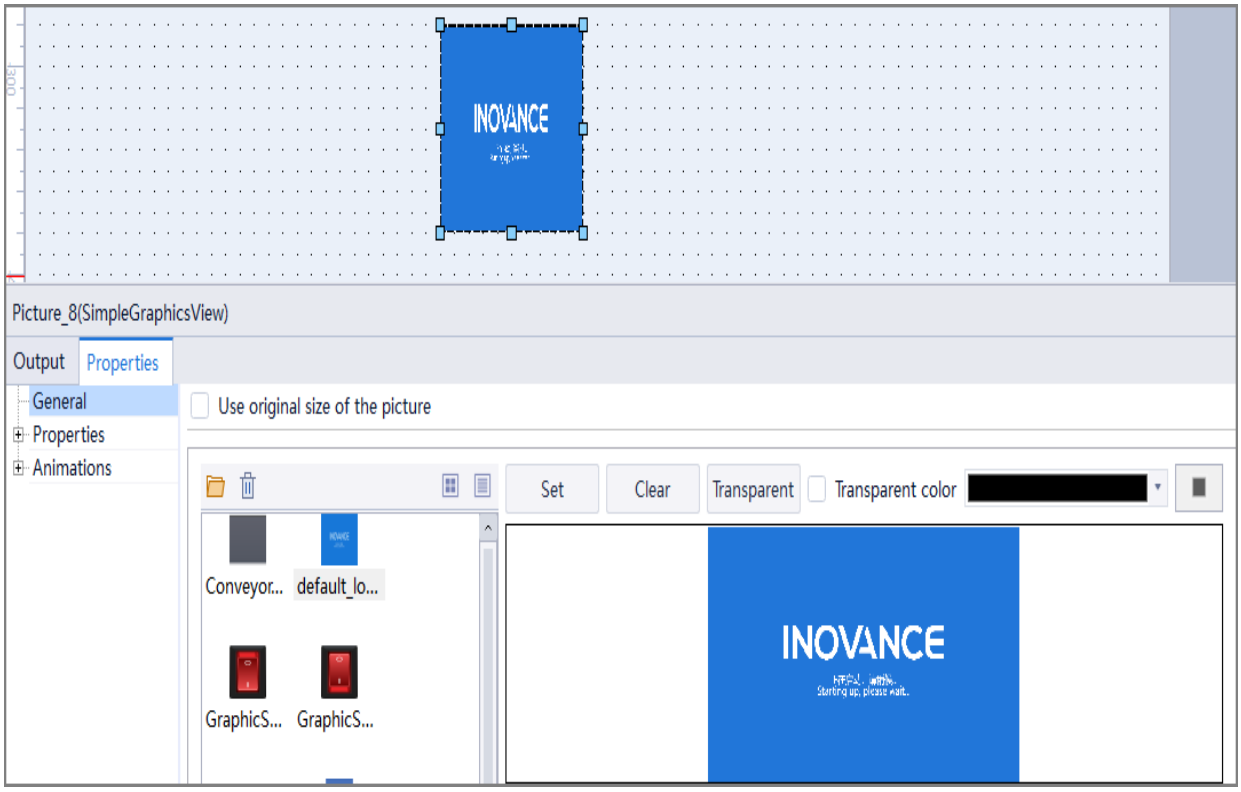
- Point 1: You can drag this point to resize or rotate the screen. Hold down "Shift" while dragging the point 1 to only adjust the size of the enhanced picture, and hold down "Ctrl" while dragging the point 1 to only rotate the enhanced image. Double-click the point 1 to undo the rotation.
- Points 2, 3, and 4 are the same as point 1.
- Point 5: You can drag this point to rotate the screen vertically or horizontally. Double-click this point to undo the rotation.
- Point 6: Click this point to flip the enhanced picture horizontally.
- Point 7: Click this point to flip the enhanced picture vertically.

7.3.2.6 Picture

The "Picture" view is used to display graphics.



1. On the "General" tab page of the property view, you can set the picture to be displayed.



Icon	Description
	Opens the file browser to import pictures.
	Deletes the selected picture.
	Displays the pictures in thumbnails.
	Displays the pictures in a list.
Set	Set the picture to be displayed.
Clear	Clears the displayed picture.
Transparent	Clears the background color of the displayed picture to make the picture transparent.
Transparent color	When this option is checked, you can set the transparent color.
	Set the background color of the current picture.

2. On the "Properties" tab page of the property view, you can set the following properties.

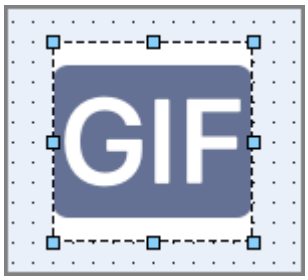
Item			Description	Additional Information
Appearance	Fill	Background color	Set the fill color of the rectangle.	-
		Border style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels

		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
	Rotate	Rotate	Rotates the image by a given angle	Rotate the image by a certain angle based on the value of the bound tag.
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.2.7 GIF Display

The "GIF Display" is used to display GIF image.



1. On the "General" tab page of the property view, you can set the following properties: Select the target GIF file in the GIF section, click "Set" to display the selected GIF image on the control. For details, see related instructions on how to select an image on the "General" tab page in the 7.3.2.5 Enhanced Picture section.

Item		Description	Additional Information
Process	Tag	Tag to control a process	-
	Value ON	Display the image when the tag reaches the set value	The default value is 1, which cannot be changed.
	Picture File	Set the associated string tag to dynamically switch the imported images of the corresponding name.	-
	Velocity	Range: 1 to 100	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Text color	-
		Background color	Set the fill color of the rectangle.	-
		Border style	Provides a variety of fill styles.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer		

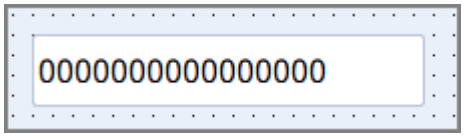
			Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.3 Control & Display

7.3.3.1 Number IO field

The "Numeric I/O Field" control is used to input and display process values.



Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Type	Mode	Three modes are available: • Input: This mode only allows for data writing but not reading on the touchscreen. • Output: This mode only allows for data reading but not writing on the touchscreen. In this	-

		mode, no data can be input for a running control. • Input/output: This mode allows for data writing and reading on the touchscreen.	
Process	SameReadWriteTag	When "SameReadWriteTag" is not checked, read tags and write tags are separated and tags can be selected separately.	-
	ReadTag	Tag used to display the process	-
	WriteTag	Tag used to display the process	It is configured when "SameReadWriteTag" is not checked.
Format	Format type	Displayed format. Options: Bin, Dec, Hex, and BCD	Data is displayed in the selected format. BCD code: This is an 8421 code. For example, the decimal number 65 has a binary display result of 0100 0001, while its BCD display result is 41 (every 4 binary digits represent 1 decimal digit, only converting the binary display to BCD code without performing decimal-to-BCD conversion).
	Shift decimal point	Set the decimal point position. The value ranges from 0 to 14.	The shift range is determined by the length of the string field
	String field length	Displays the length of a string. The value ranges from 1 to 64.	-
	Leading zero	When this option is checked, if the length is insufficient, zeros are filled.	-
Unit	Type	The options are "Unused" and some specific units, indicating that units can be used or not. Available units include: power, time, rate, volume, length, weight, voltage, current, and customize.	-

	Unit	After a unit type is selected, the corresponding unit letter is displayed in "Unit". For example, if you select "Power", the unit is "W" by default.	-
	Custom	Selects "customize" for "Type". For example, enter "°C" in "Customize".	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	

	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	The size is automatically adjusted according to the text content to display it in full.
Text	Font	Font	Set the font and size of displayed text.	-
	Alignment	Horizontal	Set the text alignment in the horizontal direction. Options: Left, Center, and Right.	-
		Vertical	Set the text alignment in the horizontal direction. Options: Top, Middle, and Bottom.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Scaling	Gain	Static	Gain between screen display value and PLC value	Value written to PLC = (Input Value - Offset)/Gain
		Tag	Process tag	The process tag is associated with the gain.
	Offset	Static	Offset between screen display value and PLC value	Value displayed on HMI = (Input Value x Gain) + Offset
		Tag	Process tag	The process tag is associated with the offset.
Limits	Limits	Upper	Set the upper limit of the control constant.	• When the input range exceeds the upper and lower limits of the control, the data does not change. • When the upper and lower limits of a tag conflict with those of the control, the upper and lower limits of the tag prevail.

				• When the tag data changes, the upper and lower limits of the control, or the upper and lower limits set for the tag will change.
		Lower	Set the lower limit of the control constant.	
	colors	Above upper limit color	Set the color displayed when upper limit is exceeded.	-
		Below lower limit color	Set the color displayed when lower limit is exceeded.	-
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Two styles are provided.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-

	Operation	Enabled	Check to enable the input.	Input is allowed only when this item is checked. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		SoftwareInput Enable	Enable/disable the on-screen keyboard.	When this option is checked, the soft keypad is applied at the time you enter the password.
		Password input	Set password entry.	When this option is checked, the input characters are displayed as *.
		Confirm Before Operation	Set whether to pop up a window for an operation.	When this option is checked, ensure the system security first, and then a window pops up if you operate the control.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.

	Action Description	The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default. **Note** When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

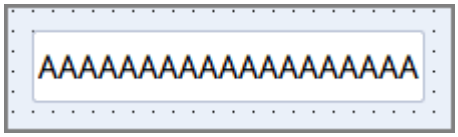
Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Activate	See 7.5.2 Event.
Deactivate	
ReturnPressed	

7.3.3.2 String IO field

The string IO field is used to enter and display process values.



> **Note**
>
> The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Type	Mode	Three modes are available: • Input: This mode only allows for data writing but not reading on the touchscreen. • Output: This mode only allows for data reading but not writing on the touchscreen. In this mode, no data can be input for a running control. • Input/output: This mode allows for data writing and reading on the touchscreen.	-
Process	SameReadWriteTag	When "SameReadWriteTag" is not checked, read tags and write tags are separated and tags can be selected separately.	-
	Read Tag	The tag to display a process	-
	WriteTag	The tag to display a process	It is configured when "SameReadWriteTag" is not checked.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Appearance	Background transparent	• Checked: The control background is transparent. • Unchecked: The control background is	When this option is checked, the control background is always transparent no matter what the style is.

			displayed based on the background color and the fill style.	
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	The size is automatically adjusted according to the text content to display it in full.
	Space	Letter Space	The interval between strings. Range: 0 to 99.	-

Text	Font	Font	Set the font and size of displayed text.	-
	Alignment	Horizontal	Set the text alignment in the horizontal direction. Options: Left, Center, and Right.	-
		Vertical	Set the text alignment in the horizontal direction. Options: Top, Middle, and Bottom.	-
Whirl	Whirl	Speed	Set the text scrolling speed.	-
		Direction	Set the text scrolling direction.	You can set 5 directions: no direction, left to right, right to left, top to bottom, or bottom to top
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Two styles are provided for reference.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable

		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when this item is checked. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		SoftwareInput Enable	Enable/disable the on-screen keyboard.	When this option is checked, the soft keypad is applied at the time you enter the password.
		Password input	Set password entry.	When this option is checked, the input characters are displayed as *.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description"	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action

		cannot be modified. • Custom action description: "Action Description" can be modified.	Description" is displayed in English by default. Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

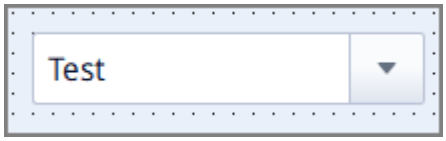
Item	Description
Activate	See 7.5.2 Event.
Deactivate	
ReturnPressed	

7.3.3.3 Symbolic IO field

"Symbolic I/O Field" and the text list are used together.

The text list can be dynamically or statically displayed, with the following features:

- It allows programmers to dynamically modify the symbolic IO field during project production.
- During field commissioning, the display of the symbolic IO field can be configured according to the use in the field. It improves customer development efficiency, reduces development work, and creates template-based projects.



Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Mode	Three modes are available: • Input: This mode only allows for data writing but not reading on the touchscreen. • Output: This mode only allows for data reading but not writing on the touchscreen. In this mode, no data can be input for a running control. • Input/output: This mode allows for data writing and reading on the touchscreen.	-
	Direction	The pop-up direction options: Pop Down, Pop Right, Pop Up, and Pop Left	-
Process	Tag	Tag to control the displayed information	-
	Bit No.	Bit number of the tag	-
Displays	Display mode	The display mode, including Static list and Dynamic list	• If you select "Static list", "Text List" and "Number of visible items" are displayed. • If you select "Dynamic list", you can select a text tag and select different text lists based on values of the text tag.
	Text List	In Static list mode, select the text list linked to the object.	To set the text content of the drop-down menu, see Text List.
	Number of visible items	Number of visible items	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple fill styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Set the font and size of displayed text.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	This setting is only effective when no process tag is selected.

	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Limits	colors	Above upper limit color	Set the color displayed when upper limit is exceeded.	-
		Below lower limit color	Set the color displayed when lower limit is exceeded.	-
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Two default styles are provided
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Runtime Security	Only the users in a user group with the corresponding permission can perform the operation.
	Operation	Enabled	Check to enable the input.	Input is allowed only when enabled. Otherwise, input is disabled.
			Check to control visibility through authorization.	When this option is checked, only authorized

		Visibility controlled by authorization		users can see the object after login.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default.

			Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

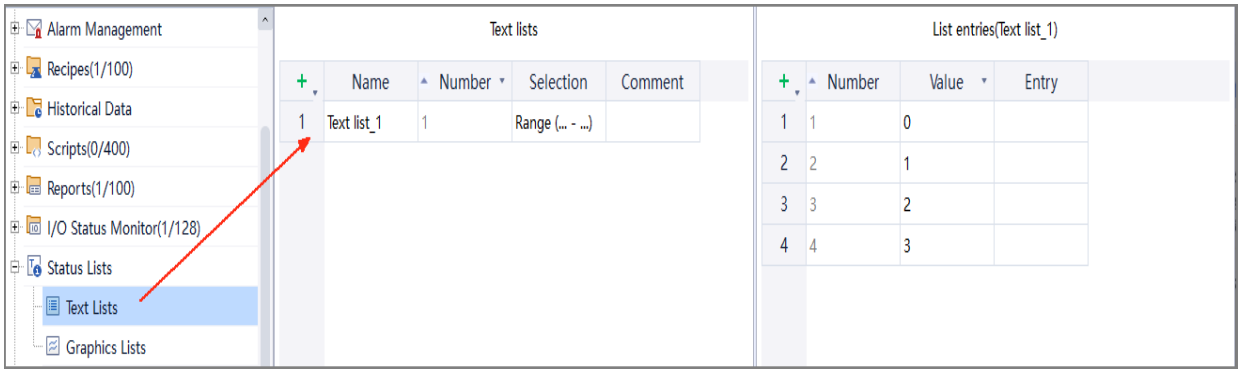
Item	Description
Activate	See 7.5.2 Event.
Deactivate	
Change	

Example: Selecting Text from the Drop-down List to Change the Associated Tag Value in the Running State

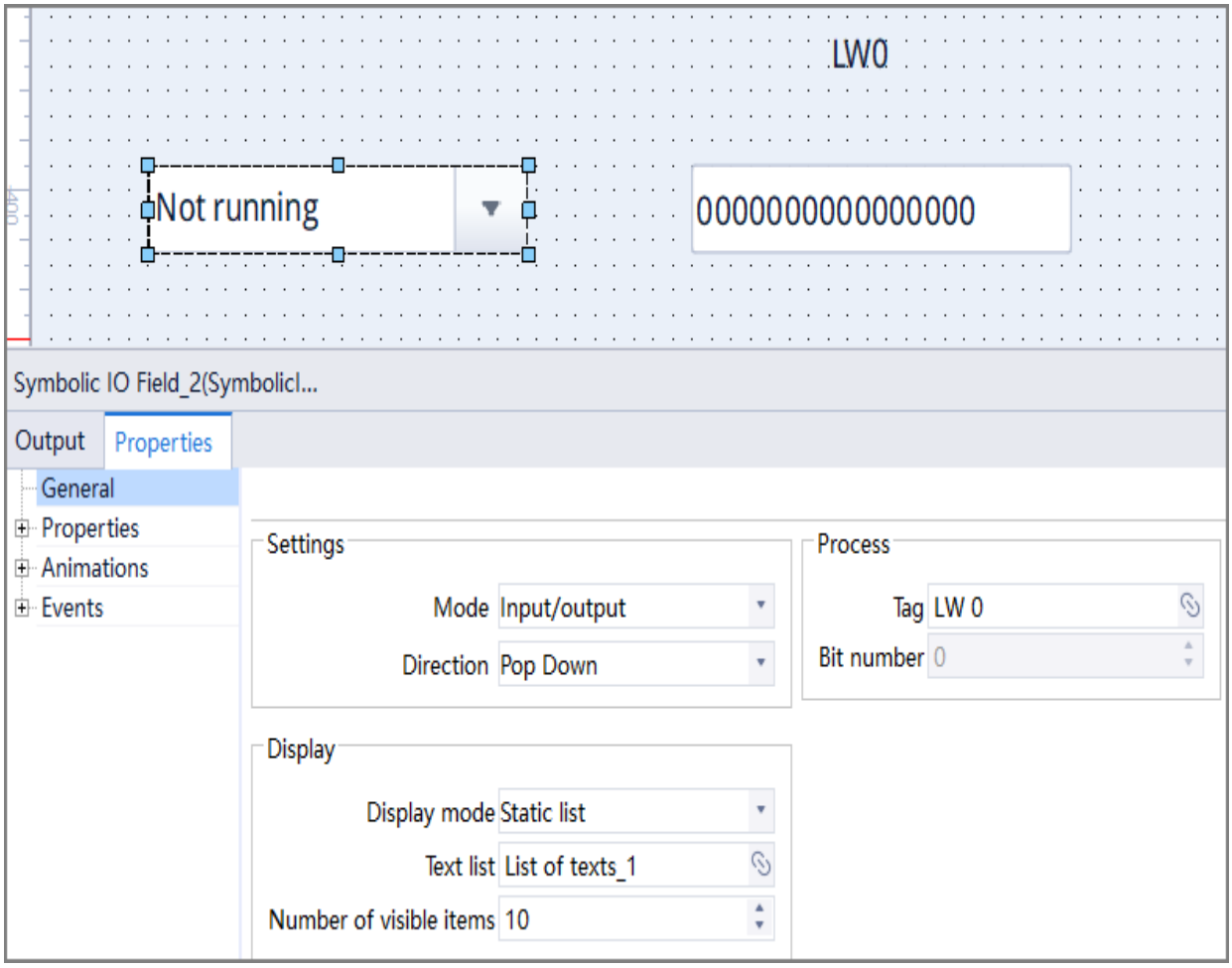
1. Define the tag LW 0.

+	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int32	4	1	LW 0

2. Define the text list.



3. To configure a screen, drag "Symbolic I/O Field" from "Control & Display" to the screen and bind the tag and text list.



4. In the running state, select the corresponding feature from the drop-down list to change the tag value.

When "Not Running" is selected, set bit 0 of LW 0 to 1. Then the value of LW 0 is 1.



When "Standby" is selected, set bit 1 of LW 0 to 1. Then the value of LW 0 is 2.



When "Single-axis joging" is selected, set bit 2 of LW 0 to 1. Then the value of LW 0 is 4.

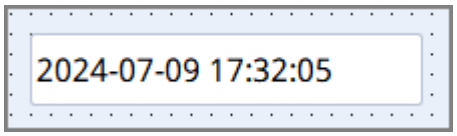


When "Membrane Axis Operation" is selected, set bit 3 of LW 0 to 1. Then the value of LW 0 is 8.



7.3.3.4 Time Date

The "Time Date" field is used to enter and display time and date.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Type	Mode	Output: This mode only allows for data reading but not writing on the touchscreen. In this mode, no data can be input for a running control.	-
Process	Display system time	When this option is checked, the system time is displayed.	-
	Use tag	When this option is checked, the time set in the tag is displayed.	-
	Tag	Associate the tag for the display of the time.	This is only valid when "Use tag" is checked.
Format	Display date	Check this to display date	Select at least one of these three items. You can select "Display weekday" only after you have selected "Display system time".
	Display time	Check this to display time	
	Display weekday	Check this to display the day of the week	

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	-
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	The size is automatically adjusted according to the text content to display it in full.
Text	Font	Font	Set the font and size of displayed text.	-
	Alignment	Horizontal	Set the text alignment in the horizontal direction. Options: Left, Center, and Right.	-
		Vertical	Set the text alignment in the horizontal direction. Options: Top, Middle, and Bottom.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	This setting is only effective when no process tag is selected.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Two styles are provided for reference. For details about the display priority, see the description about the control style priority.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when this item is checked. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		SoftwareInput Enable	Enable/disable the on-screen keyboard.	When this option is checked, the soft keypad is applied at the time you enter the password.
		Password input	Set password entry.	When this option is checked, the input characters are displayed as *.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default.

			Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Activate	See 7.5.2 Event.
Deactivate	
ReturnPressed	

7.3.3.5 Button

The "Button" control is used to execute a command at run time. The button can be displayed as text, a graphic or invisible:



Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Button Mode	Text	Text/Text List	• When you select "Text", you can edit and set "Text OFF/ON". When this option is selected, you can set the text when the button is pressed. When this option is not selected, the text when the button is pressed is the same as the text when the button is not pressed. • When you select "Text List", you can control the display of the specified text in the text list through process tags. For the text in the drop-down list, see Text List.
	Graphic	Graphic/Graphic List	• When you select "Graphic", you can edit and set "Graph OFF/ON". Graphics in the ON state can be selected. • When you select "Graphic List", you can control the display of the specified graphic in the graphic list through process tags. • You can also set the icon text display style, such as "Only Icon", "Text Under Icon", or "Text Beside Icon".
	Invisible	When this option is checked, the button is invisible in the runtime.	-
	Click animation	The animation is scaled when you click this button in run time.	-
	Auto Repeat	When the button is pressed, the event can be repeatedly triggered	-
	Checkable	The effect is always triggered when you click the button at runtime. This option is similar to a check box.	-
	Hold Delay	Triggers the action by a delay.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item	Description	Additional Information

Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Text color	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width		

			Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	When this option is checked, the size is automatically adjusted according to the text content.
Text	Font	Font	Set the font and size of displayed text.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	This setting is only effective when no process tag is selected.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the button display style.	Seven default styles are provided
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable

		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when enabled. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		Confirm Before Operation	Set whether to pop up a window for an operation.	When this option is checked, ensure the system security first, and then a window pops up if you operate the control.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description:	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default.

		"Action Description" can be modified.	Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

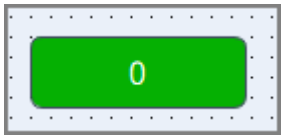
Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Click	See 7.5.2 Event.
Press	
Release	
Activate	
Deactivate	
Change	

7.3.3.6 Word Button

The "Word Button" control is used to display the word status of a tag. Drag the control to the screen:



> **Note**
>
> The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Read	Read Tag	The tag to be read	-
Write	SameReadWriteTag	Checked: The tag to be written is the same as the tag to be read. Unchecked: You need to set the tag to be written.	-
	Mode	Increment	Status independent. The increment can be a constant value or tag value.
		Decrement	Status independent. The decrement can be a constant value or tag value.
		Cycle Increase	Status dependent. The current value is the minimum value of the next status, and the status value is reset to the minimum value after reaching the maximum value. The default status is not involved in the cycle.
		Cycle Decrease	Status dependent. The current value is the maximum value of the next status, and the status value is reset to the minimum value after reaching the minimum value. The default status is not involved in the cycle.
		Status Increase	Status dependent. The current value is the minimum value of the next status, and the status value stops increasing after reaching the maximum value.
		Status Decrease	Status dependent. The current value is the maximum value of the next status, and the status value stops decreasing after reaching the minimum value.
		Custom Value	Writes the custom value.
	Constant	Constant	It is only valid in the "Increase", "Decrease", and "Custom Value"

			modes, and cannot be used with the tag at the same time.
	Tag	Tag	It is only valid in the "Increase", "Decrease", and "Custom Value" modes, and cannot be used with the constant at the same time.
Press	Click animate	The animation is scaled when you click this button in run time.	-
	Auto Repeat	When the button is pressed, the event can be repeatedly triggered	-
	Filter Repeat Msg	When this option is checked, command delay caused by quick click operation is removed.	When "Filter Repeat Msg" is checked, the system immediately responds to key clicking and releasing operations without any delay, but the command may loss. When this option is not checked, the command may be clogged due to quick clicking, and the response continues but may be delayed when the button is released.
	Hold Delay	The operation is triggered with delay.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Status	Status	There are two statuses: Status 0 indicates the status when the value of the bound tag is 0. Status 1 indicates the status when the value of the bound tag is not 0.	-
	Graphic	Set the images to be displayed in different statuses.	-
	Text	Set the texts to be displayed in different statuses.	-
	Text Library	Set different text libraries.	-
	Font	Set the text font and size.	-
	Position	Set the position at which the text is displayed in the control.	-
	Text color	Text color	-

	Background color		Background color of the text	When "Flashing" is enabled, the control alternately displays the text color and the background color.
	Flashing		Enables/disables flashing for a status. Options are: "No", "Text Color Alternate", and "Show Hidden".	-
	Frequency		Set the flashing frequency.	You can set the flashing frequency only when "Text Color Alternate" or "Show Hidden" is selected for the flashing status.
	Preview		Displays the setting effect.	-
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	colors	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	It must be the same as the text color set in the "Status" property and cannot be modified.
		Background color	Set the fill color of the rectangle.	It must be the same as the background color set in the "Status" property and cannot be modified.
		Fill style	Provides a variety of fill styles.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels

		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
StyleSheet	StyleSheet	StyleSheet	Set the button display style.	Seven styles are provided for reference.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	You must check "Enabled" to enable input; otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		Confirm Before Operation	Set whether to pop up a window for an operation.	When this option is checked, ensure the system security first, and then a window pops up if you operate the control.
Operation Record	Enabled		Enables/disables the operation record.	-

	Record Tag	Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description	The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default. Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set "Enable Object" and "Visibility". For details, see the sections Enabling an Object and 7.5.1.10 Visibility.

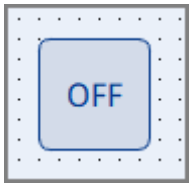
4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Click	See 7.5.2 Event.
Press	
Release	

Activate	
Deactivate	
Change	

7.3.3.7 Bit Button

You can use the bit button to perform bit operation on the bound tag.



Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Read	Read Tag	The tag to be read	-
	Output Reverse	When this option is checked, the read value is reversed; otherwise, the read value is not reversed.	-
Write	SameReadWriteTag	Checked: The tag to be written is the same as the tag to be read. Unchecked: You need to set the tag to be written.	
	Mode	Set	Set the bound tag to 1 when the bit button is released.
		Reset	Set the bound tag to 0 when the bit button is released.
		Invert	Write the inverted value.
		MomentaryON	When the bit button is pressed, set the tag to 1. When the bit button is released, set the tag to 0.
		MomentaryOFF	When the bit button is pressed, set the tag to 0. When the bit button is released, set the tag to 1.
		Change Window	After "Change Window" is selected, select a screen. When the bit button is pressed, the current screen changes to the selected screen.

Press	Click animation	The animation is scaled when you click this button in run time.	-
	Auto Repeat	When the button is pressed, the event can be repeatedly triggered	-
	Filter Repeat Msg	When this option is checked, command delay caused by quick click operation is removed.	When "Filter Repeat Msg" is checked, the system immediately responds to key clicking and releasing operations without any delay, but the command may loss. When this option is not checked, the command may be clogged due to quick clicking, and the response continues but may be delayed when the button is released.
	Hold Delay	The operation is triggered with delay.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Status	Status	There are two statuses: Status 0 indicates the status when the value of the bound tag is 0. Status 1 indicates the status when the value of the bound tag is not 0.	When "Output Reverse" is checked, the status is opposite to the value of the bound tag.
	Graphic	Set the images to be displayed in different statuses.	-
	Text	Set the texts to be displayed in different statuses.	-
	TextLibrary	Set the text library.	-
	Font	Set the text font and size.	-
	Position	Set the position at which the text is displayed in the control.	-
	Text color	Text color	-
	Background color	Background color of the text	When "Flashing" is enabled, the control alternately displays the text color and the background color.
	Flashing	Enables/disables flashing for a status. Options are: "No", "Text Color Alternate", and "Show Hidden".	-

	Frequency		Set the flashing frequency.	You can set the flashing frequency only when "Text Color Alternate" or "Show Hidden" is selected for the flashing status.
	Preview		Displays the setting effect.	-
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	colors	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	It must be the same as the text color set in the "Status" property and cannot be modified.
		Background color	Set the fill color of the rectangle.	It must be the same as the background color set in the "Status" property and cannot be modified.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
StyleSheet	StyleSheet	StyleSheet	Set the button display style.	

				Seven styles are provided for reference.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	You must check "Enabled" to enable input; otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
		Confirm Before Operation	Set whether to pop up a window for an operation.	When this option is checked, ensure the system security first, and then a window pops up if you operate the control.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the

			operation record is enabled.
	Action Description	The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default. Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

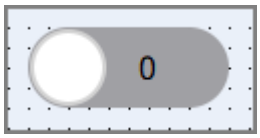
3. On the "Animations" tab page of the property view, you can set "Enable Object" and "Visibility". For details, see the sections Enabling an Object and 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Click	See 7.5.2 Event.
Press	
Release	
Activate	
Deactivate	
Change	

7.3.3.8 Text Switch

The "Text Switch" control is a switch which changes state at runtime. You can visualize the current state of the switch through text.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Text	Text ON	The text displayed when the status is "ON"	-
	Text OFF	The text displayed when the status is "OFF"	-
	Switch	Set whether to display the switch style.	When this option is checked, the switch style is displayed.
	Click animate	Click with a text switch response effect based on delay time	-
	Hold Delay	The operation is triggered with delay.	-
Process	Tag	Tag to control a process	-
	Value ON	When the set tag complies with the set value, the state is 'ON'.	The default value is 1, which cannot be changed.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

		Height	Set the height of the rectangle.	
	Size	Auto-sizing	Check this to enable auto-sizing.	Auto-resizing automatically resizes the control according to the text length
Text	Font	Font	Set the font and size of displayed text.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	When no tag is associated, flash in the mode "None" or "Standard" set. When a tag is associated, flashing is controlled by the tag value. When "Standard" is selected, it flashes in the standard style if the tag value is True and does not flash if the tag value is False. When "None" is selected, it does not flash no matter the tag value is True or False.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Limits	colors	Above upper limit color	Set the color displayed when upper limit is exceeded.	-
		Below lower limit color	Set the color displayed when lower limit is exceeded.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable

		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when enabled. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default.

			Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

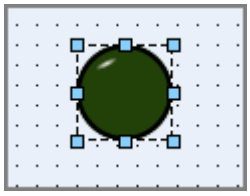
Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

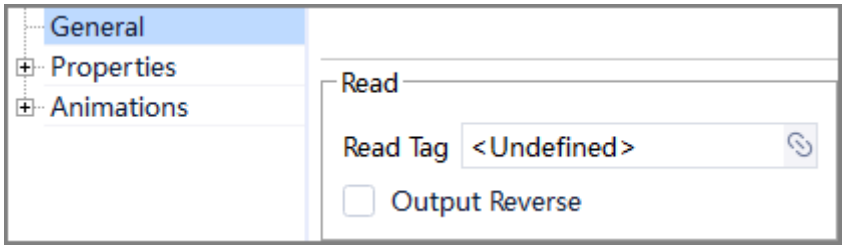
Item	Description
Change	See 7.5.2 Event.
Opening the Program file	
OFF	
Activate	
Deactivate	

7.3.3.9 Bit Indicator

The bit indicator is a control used to display the bit status of a tag. Drag the control to the screen, as shown in the following figure.



1. On the "General" tab page of the property view, you can set the following properties.



Item		Description	Additional Information
Read	Read Tag	The tag to be read	-
	Output Reverse	When this option is checked, the read value is reversed; otherwise, the read value is not reversed.	When the tag value is 0, the text with status 1 is displayed. When the tag value is not 0, the text with status 0 is displayed.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Status	Status	There are two statuses: Status 0 indicates the status when the value of the bound tag is 0. Status 1 indicates the status when the value of the bound tag is not 0.	When "Output Reverse" is checked, the status is opposite to the value of the bound tag.
	Graphic	Set the images to be displayed in different statuses.	-
	Text	Set the texts to be displayed in different statuses.	-
	Text Library	Set the text library.	-
	Font	Set the text font and size.	-
	Position	Set the position at which the text is displayed in the control.	-
	Text color	Text color	-
	Background color	Background color of the text	When "Flashing" is enabled, the control alternately displays the text color and the background color.
	Flashing	Enables/disables flashing for a status. Options are: No, Text Color Alternate, and Show Hidden.	-

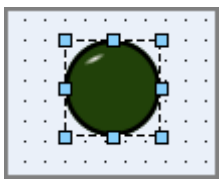
	Frequency		Set the flashing frequency.	You can set the flashing frequency only when "Text Color Alternate" or "Show Hidden" is selected for the flashing status.
	Preview		Displays the setting effect.	-
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	colors	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	It must be the same as the text color set in the "Status" property and cannot be modified.
		Background color	Set the fill color of the rectangle.	It must be the same as the background color set in the "Status" property and cannot be modified.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 0 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	You must check "Enabled" to enable input; otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.

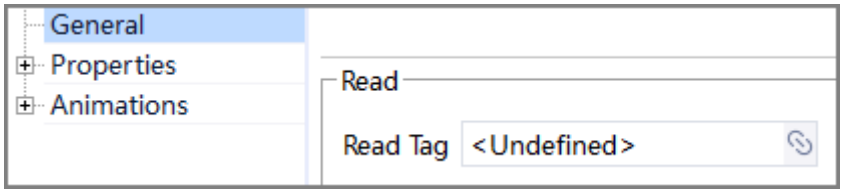
3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.3.10 Word Indicator

The “Word Indicator" control is used to display the word status of a tag. Drag the control to the screen, as shown in the following figure.



1. On the "General" tab page of the property view, you can set drag the tag to control the control display.



2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Status	Status	There are two statuses: Status 0 indicates the status when the value of the bound tag is 0. Status 1 indicates the status when the value of the bound tag is not 0.	-
	Graphic	Set the images to be displayed in different statuses.	-
	Text	Set the texts to be displayed in different statuses.	-
	Text Library	Set the text library.	-
	Font	Set the text font and size.	-
	Position	Set the position at which the text is displayed in the control.	-
	Text color	Text color	-
	Background color	Background color of the text	When "Flashing" is enabled, the control alternately displays the text color and the background color.
	Flashing	Enables/disables flashing for a status. Options are: No, Text Color Alternate, and Show Hidden.	-
	Frequency	Set the flashing frequency.	You can set the flashing frequency only when "Text Color Alternate" or "Show Hidden" is selected for the flashing status.
	Preview	Displays the setting effect.	-
Appearance	Background transparent	• Checked: The control background is transparent.	When this option is checked, the control background is always transparent no matter what the style is.

			• Unchecked: The control background is displayed based on the background color and the fill style.	
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	It must be the same as the text color set in the "Status" property and cannot be modified.
		Background color	Set the fill color of the rectangle.	It must be the same as the background color set in the "Status" property and cannot be modified.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.

		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	You must check "Enabled" to enable input; otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.3.11 Graphic Switch

The "Graphic Switch" control is a switch which changes state at runtime. The current state of the "switch" object can be visualized by graphics.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Graphic	Graphic ON	Graphic displayed when the state is 'ON'	-
	Graphic OFF	Graphic displayed when the state is 'OFF'	-
	Click animation	Click with a graphic switch response effect based on delay time.	-
Process	Tag	Tag to control a process	-
	Value ON		

		When the set tag complies with the set value, the state is 'ON'.	The default value is 1, which cannot be changed.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	

Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	You must check "Enabled" to enable input; otherwise, input is disabled.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.

	Action Description	The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default. Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Appearance Change	See 7.5.1.1 Appearance Change.
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

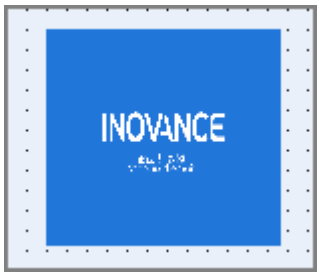
4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Change	See Events.
Opening the Program file	
OFF	

Activate	
Deactivate	

7.3.3.12 Graphic IO Field

The graphic I/O field object can be used to display different graphics based on the tag value in the graphic list.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Settings	Mode	Three modes are available: • Input: This mode only allows for data writing but not reading on the touchscreen. • Output: This mode only allows for data reading but not writing on the touchscreen. In this mode, no data can be input for a running control. • Input/output: This mode allows for data writing and reading on the touchscreen.	-
Process	Tag	The tag for the graphic	-
	Bit No.	Bit number of the process tag	It can be edited only when you select "Bit (0, 1)" in the graphic list. Range: 0 to 15 for Word; 0 to 63 for DWord
Displays	Graphic List	Graphic list	Default is null
	Scroll bar orientation	Scroll bar orientation	Options: Vertical and Horizontal Default: Vertical

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Background color	Background color	-
		Fill style	Fill style	Browse styles in the drop-down list.
Layout	Position	X		

			Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels. Note: The object cannot move out of the screen
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	Assigned by the system
		Opacity	The display clarity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when this item is checked. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.
Operation Record	Enabled		Enables/disables the operation record.	-
	Record Tag		Enables/disables the operation record tag.	• When this option is not defined, the operation record is enabled by default. • When it is set to 0, the operation record is not enabled. • When it is set to a value other than 0, the operation record is enabled.
	Action Description		The action description of an operation • System default description: "Action Description" cannot be modified. • Custom action description: "Action Description" can be modified.	• By default, Simplified Chinese, Traditional Chinese, and English are supported. • When other languages are supported, "Action Description" is displayed in English by default.

				Note When the project is upgraded to V1R5, if "Action Description" in "Operation Record" of the original project is in an international language, "Custom action description" will be displayed in the international language after the project upgrade.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Enable Object	See Enabling an Object.
Proportional Movement	See 7.5.1.9 Proportional Movement.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

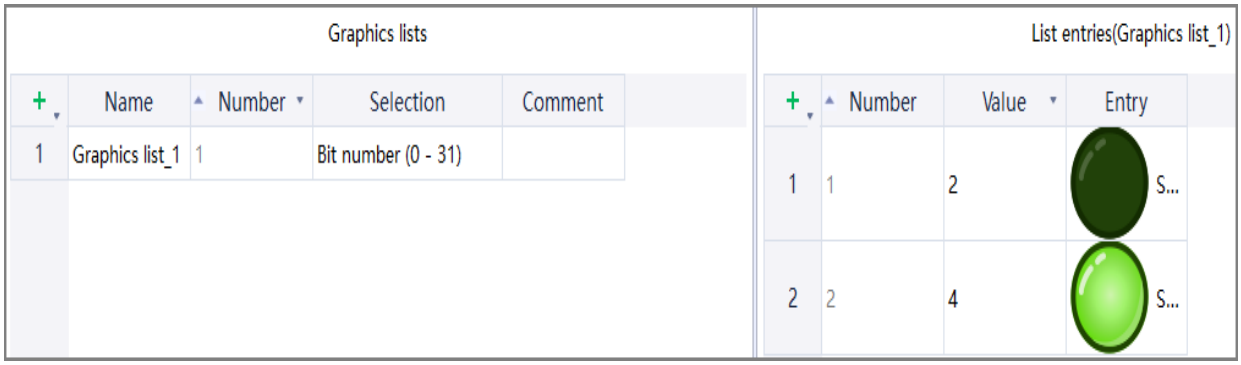
Item	Description
Activate	See 7.5.2 Event.
Deactivate	

Example

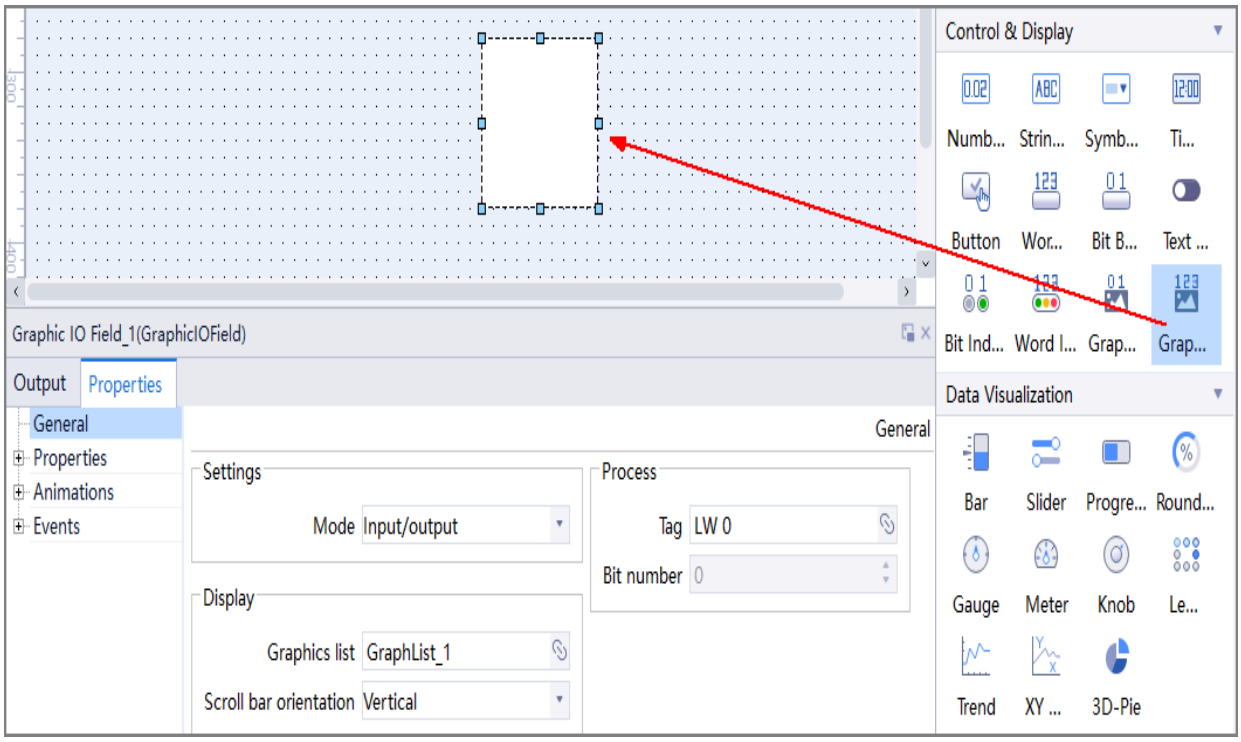
1. Create a tag named LW0.

+	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int32	4	1	LW 0

2. Configure the graphic list and modify the value to bit 2 and bit 4.

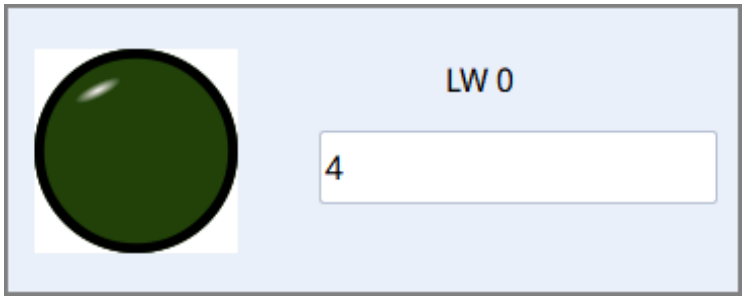


3. Drag a graphic I/O field from the "Control & Display" list and drop it to the screen, and bind the control to the tag and the graphic list.

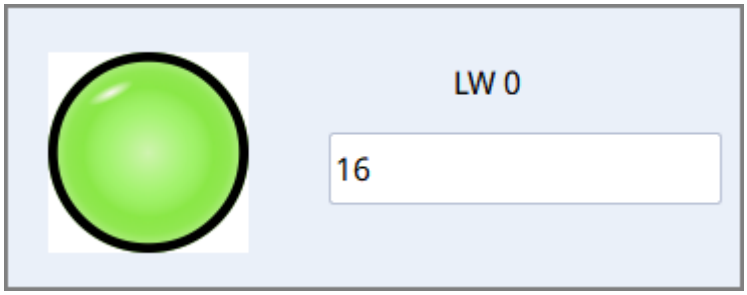


4. Start the online simulator and view the running effect.

When bit 2 of LW0 is 1, the value of LW0 is 4. When you input 4 in the graphic I/O field, the green indicator turns on.



When bit 4 of LW0 is 1, the value of LW0 is 16. When you input 16 in the graphic I/O field, the yellow indicator turns on.



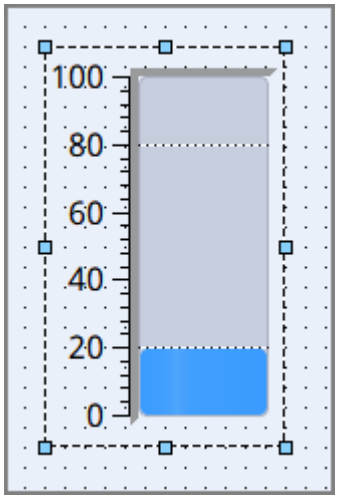
Note

For how to use the graphic list, see the section "Graphic List".

7.3.4 Data Visualization

7.3.4.1 Bar

The "Bar" control is used to monitor process values in a predefined range.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Scale	Max. value	Set the maximum value of the scale.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Min. value	Set the minimal value of the scale.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
Process	Tag	Set the process tag for display.	-
Scale Colors & pos	Enable fill	• Checked: You can customize the bar graph background color and normal value color. • Unchecked: You cannot customize the bar graph	-

		background color and normal color.	
	BarBack color	Set the background color of the bar.	-
	Normal color	Set the color displayed when the process value is within the normal range.	When "Flashing" is enabled, the control alternately displays the bar graph background color and the normal color.
	Scale pos	Set the position of tick marks: none, left, right, top and bottom.	-
	Inverted	When this option is checked, the bar extends in the opposite direction.	-
	Display mark labels	When this option is checked, the scale value is displayed.	When "Scale pos" is set to "No", this item cannot be edited.
Scale	Major Scale Count	Set the number of divisions of the large scale.	
	Minor Scale Count	Set the number of divisions in a large scale division.	
	Decimal Digits	Set the decimal places of the scale values.	

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

		Height	Set the height of the rectangle.	
Text	Font	Font	Text font	The font size is in pixels (px)
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Limits	colors	Above upper limit color	Set the color displayed when upper limit is exceeded.	-
		Below lower limit color	Set the color displayed when lower limit is exceeded.	-
	Set	Display limit lines	Check this to display limit lines	-
		Display limit markers	Check this to display limit markers	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

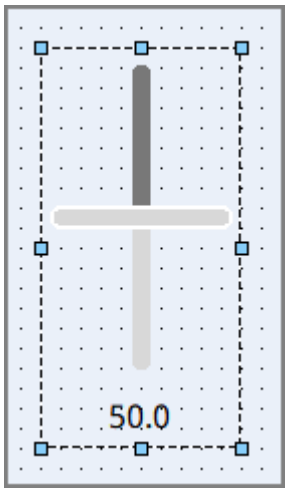
3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description

Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.4.2 Slider

You can use the "Slider" object to monitor and adjust process values within a predefined range.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Scale	Max. value	Set the maximum scale displayed on a slider.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Min. value	Set the minimum scale displayed on a slider.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
Process	Tag	Set the process tag for display.	-
Ticks pos	Direction	Set the slider direction. Options: Vertical and Horizontal.	-
	Ticks pos	Set the position of the tick marks: NoTicks, TicksLeft, TicksRight, and TicksBothSides.	-
Process Value	Display Value	Indicates whether to display a slider value.	-
	Decimal Digits	Displays the decimal digits of a slider value.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
		Fill style		

			Multiple styles are available.	Browse styles in the drop-down list.
	Slider	Slider color	Set the color of the slider thumb.	-
		Border color	Set the border color of the slider thumb.	-
		BarBack color	Set the background color of the slider.	-
		Bar color	Set the color of the slider.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Text font	The font size is in pixels (px).
Limits	colors	Above upper limit color	Set the color displayed when upper limit is exceeded.	-
		Below lower limit color	Set the color displayed when lower limit is exceeded.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	

				Range: 0 to 100; Default: 100. 0 indicates transparent and 100 indicates opaque.
		Name	The name of the current control	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when this item is checked. Otherwise, input is disabled.
		Visibility controlled by authorization performance	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.

3. On the "Animations" tab page of the property view, you can set the following properties.

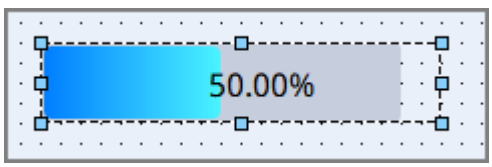
Name	Description
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set the following properties.

Item	Description
Activate	See Events.
Deactivate	
Change	

7.3.4.3 Progress Bar

You can use the "Progress Bar" object to monitor and adjust process values within a predefined range.



1. On the "General" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
General	Scale	Max. value		

			Set the maximum scale of the progress bar.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
		Min. value	Set the minimum scale of the progress bar.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Process	Tag	Associate the tag for the display of the progress bar.	-
	Ticks pos	Text visible	Set whether to display the progress text.	-
		ShowDecimalPoint	Set whether to display the progress text decimal point.	-
		Direction	Set the orientation of the progress bar. The options are "Horizontal" and "Vertical".	-
		Inverted	Set the orientation of the progress bar.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	-
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	

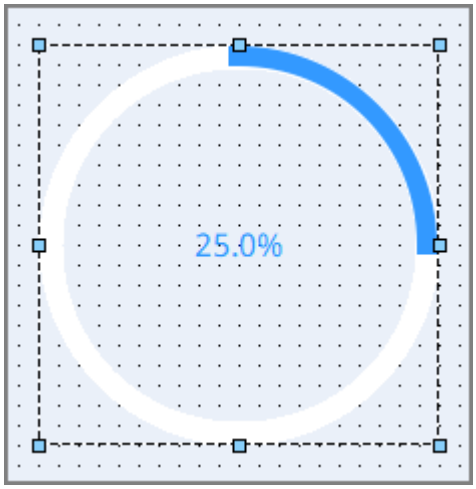
		Height	Set the height of the rectangle.	
StyleSheet	StyleSheet	StyleSheet	Set the display style.	Five styles are provided for reference. For details about the display priority, see the description about the control style priority.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	-
		z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.	-
		Id	The ID of the control, which is assigned by the system	-
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the control, which can be changed.	-
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.4.4 Round Progress Bar

The "Round Progress Bar" is used to display the proportional value of a process.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Scale	Max. value	Set the maximum scale of the round progress bar.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Min. value	Set the minimum scale of the round progress bar.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
Process	Tag	Associate the tag for the display of the round progress bar.	-
Ticks pos	Text visible	Set whether to display the progress value.	When this option is checked, the progress value is displayed.
	CW	Displays the progress clockwise.	• When this option is checked, the progress is displayed clockwise. • When this option is not checked, the progress is displayed counterclockwise.
	ShowDecimalPoint	Set whether to display the decimal point of the progress value.	When this option is checked, the decimal point of the progress value is displayed.
	Outline pen width	The width of the round progress bar.	-
	Data pen width	The width of the progress bar.	-
	Decimal Digits	The number of decimal points of the progress value.	-
	StyleSheet	The display style of the progress value.	Options are "Percent" and "Numerical value".

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	This item is not applicable for the round progress bar.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the	

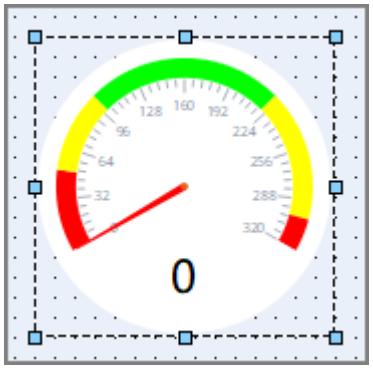
			rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Text font	The font size is in pixels (px).
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 0 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Direct Movement	See 7.5.1.6 Direct Movement.
Visibility	See 7.5.1.10 Visibility.

7.3.4.5 Gauge

The "Gauge" control displays the values of process tags in analog form.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Process	Tag	Associate the tag for the display of the progress bar.	-
Background	Background color	Set the background color.	-
	Background hide	Set whether to hide the gauge background.	When this option is checked, the gauge background is hidden.
Numerical Visibility	Display mark labels	Set whether to display the scale value.	-
	Display current value	Set whether to display the current value.	-
Dial Text	Tag	Set the label values of the gauge.	-
	Unit	Set the unit of the gauge.	-
	Dial Font	Set the font and color of the gauge.	-
	Scale Font	Set the font and color of the scale.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Scale	Start and End	StartAngle	Set the start angle.	-
		StartValue	Set the scale value for the start angle.	-
		EndAngle	Set the end angle.	If the starting and ending angle values are the same, the dial of the gauge will be a full circle.

		StartValue	Set the scale value for the end angle.	-
	Major Scale	Bisection	Set the bisection value of the major scale.	-
		Color	Set the color of the major scale.	-
		Length	Set the length of the major scale.	-
		Width	Set the width of the major scale.	-
	Minor Scale	Bisection	Set the bisection value of the minor scale.	-
		Color	Set the color of the minor scale.	-
		Length	Set the length of the minor scale.	-
		Width	Set the width of the minor scale.	-
	Misc	Scale Radius	Set the scale radius.	-
		Annotation Radius	Set the annotation radius.	-
		Coincident Display	Set the coincident display.	-
		Callout Interval Display	Displays the callout interval or not.	-
Warning Ring	Warning and Error	lowWarning	Set the lower warning limit.	-
		lowError	Set the lower error limit.	-
		highWarning	Set the upper warning limit.	-
		highError	Set the upper error limit.	-
	Color	normalColor	Set the normal color.	-
		warningColor	Set the warning color.	-
		errorColor	Set the error color.	-
	Width	Width at the minimum value	Set the width at the minimum value.	-

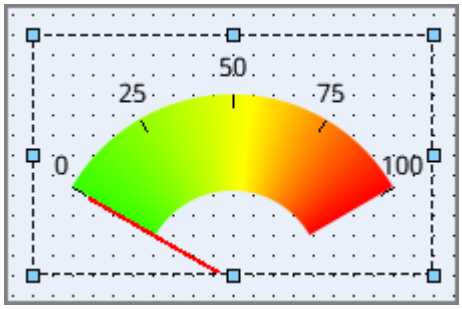
		Width at the maximum value	Set the width at the maximum value.	-
Needle	StyleSheet	Needle color	Set the needle color.	-
		Axis Color	Set the axis color.	-
	Size	Needle Width	Set the needle width.	-
		Needle Long Radius	Set the needle long radius.	-
		Needle Short Radius	Set the needle short radius.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

4. On the "Events" tab page of the property view, you can set "Change". For details, see 7.5.2 Event.

7.3.4.6 Meter

The "Meter" control displays the values of process tags in analog form.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Note
Scale	Max. value	Set the maximum scale displayed on a meter.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Min. value	Set the minimum scale displayed on a meter.	The value can be static or a tag. If you use the tag, the static setting will be disabled.
	Scale Font	Set the font and size of the scale.	-
	Display mark labels	Set whether to display the scale value.	When this option is checked, the scale value is displayed.
colors	Needle color	Set the needle color of the meter.	-
	Axis color	Set the axis color of the meter.	-
	Text	Set the text content of the meter.	-
	Background hide	Set whether to hide the background.	When this option is checked, the background is hidden.
Process	Tag	Associate the tag for the display of the progress bar.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

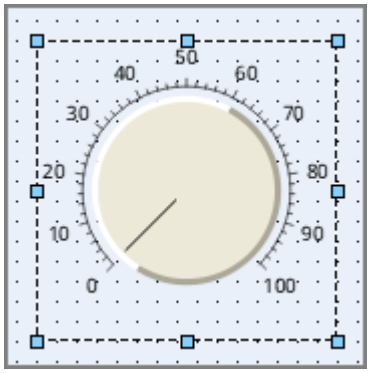
Item			Description	Note
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	

	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Set the font and size of displayed text.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.4.7 Knob

The "Knob" control is used to set process quantity values.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Scale	Max. value	Set the maximum scale displayed on a knob.	-

	Min. value	Set the minimum scale displayed on a knob.	-
Process	Tag	Associate the tag for the display of the progress bar.	-
colors	Needle color	Set the needle color of the knob.	-
	Arc Left Color	Set the color on the left of the knob arc.	-
	Arc Right Color	Set the color on the right of the knob arc.	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Set the font and size of displayed text.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName		

			This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.4.8 Led Light

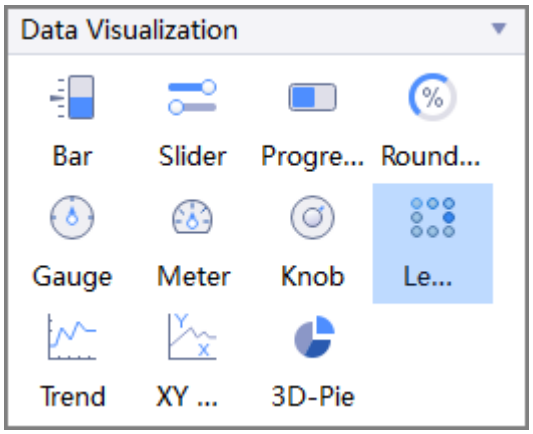
The "Led Light" control is used to display movement of a group of LEDs. The movement action and speed are controlled by registers, and the movement is performed by alternating the colors of On and Off LEDs.

Condition

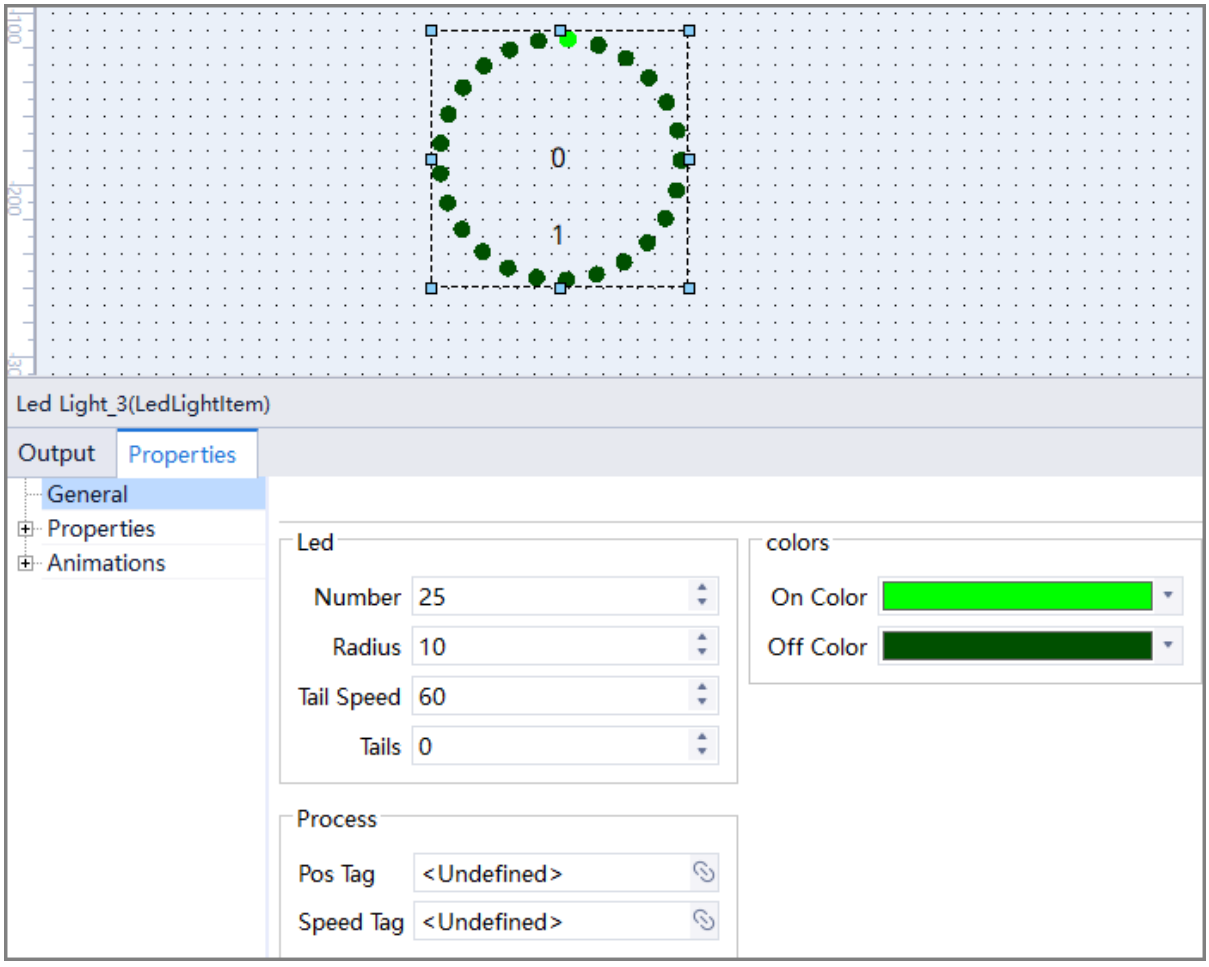
None

Operation

In the "Tools" navigation tree on the right, choose "Data Visualization" > "Led", and drag the control to the screen, as shown in the following figure.



Example



1. On the "General" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
General	Led Light	Quantity	The number of LEDs in a cycle	-
		Radius	The radius of the circle	-
		Tail Speed	After the specified number of circles are reached per minute, the transition zone between On LEDs and Off LEDs gradually changes. The tail speed in the above figure is 60, meaning that the LEDs run more than 60 circles in a minute and the transition zone between On LEDs and Off LEDs gradually changes.	-
		Tails	The number of tails between On LEDs and Off LEDs	-
	Process	Pos Tag	The position of the LED (0° to 360°)	-
		Speed Tag	Range: 1 to 100	-
	colors	On Color	The color of the On LED	-
		Off Color	The color of the Off LED	-

2. On the "Properties" tab page of the property view, you can set the following properties.

Item	Description	Additional Information

Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font		The font and size of displayed text	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located Range: 0 to 31; Default: 0
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100 Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

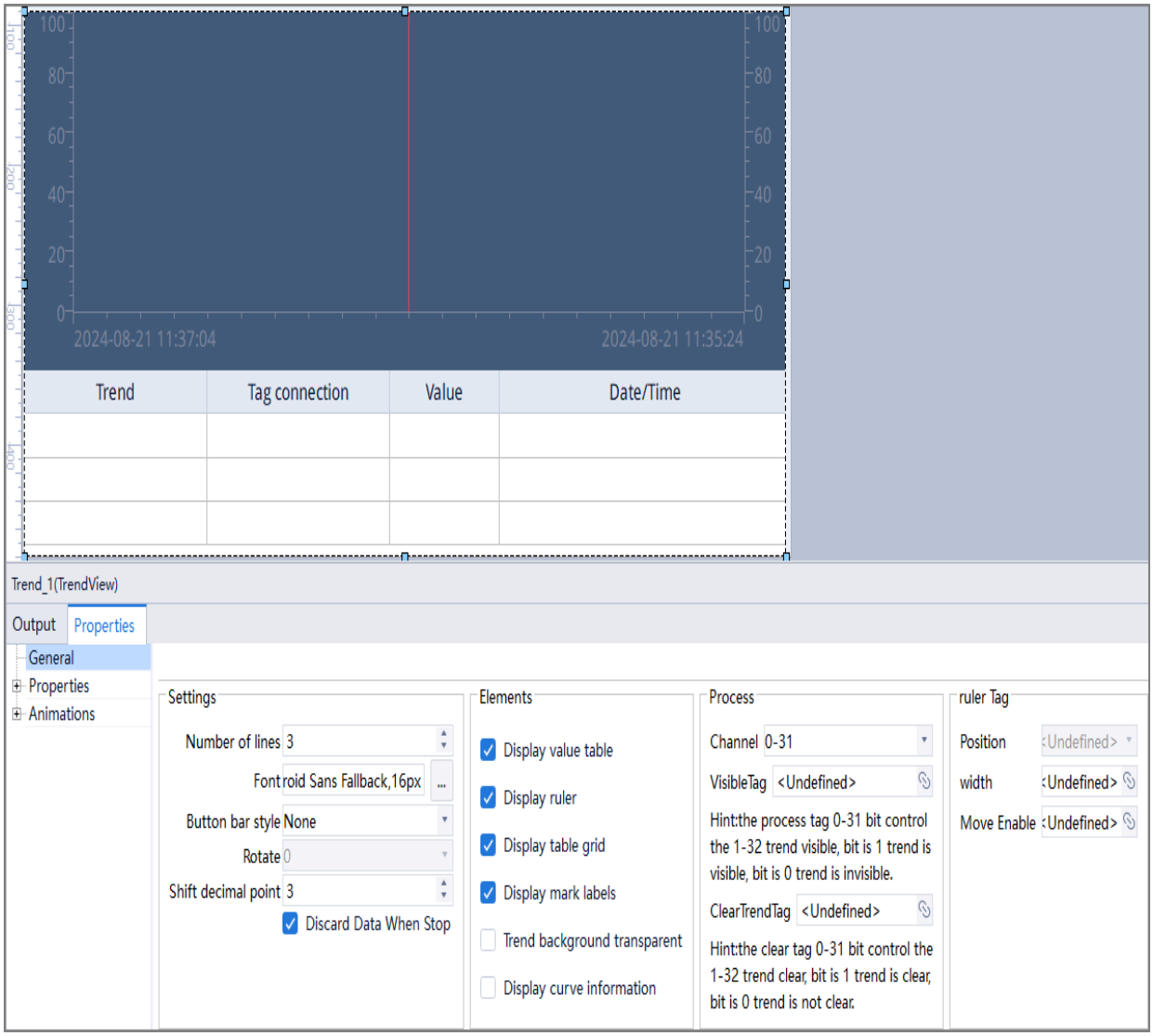
7.3.4.9 Trend

The trend view is a curve management control that displays the data collected in the current process or recorded in the data record in a curve graph.

Configuring a trend view

1. Add a trend view to the screen.

In the "Tools" navigation tree on the right, choose "Data Visualization" > "Trend", and drag the control to "Screen_1".



2. Set properties for the trend view.

The trend view consists of three parts: General, Properties, and Animations. Parameters in "Animations" are common settings. For details, see the 7.5.1 Animation section.

"General" settings

On the "General" tab page of the property view, you can set the following properties.

Item		Description
Settings	Number of lines	Set the number of rows of the value table. It is available only when "Display value table" is checked. Range: 1 to 64
	Font	Set the style and size of the scale text.

	Button bar style	Set whether to display the buttons of the trend curve. • When you select "None", the buttons and slider are not displayed. • When you select "Button", the buttons are displayed. For details, see the "Features of buttons" section. • When you select "Buttons and Slider", the buttons and slider are displayed, and the slider is used to view the trend effect by sliding.
	Rotate	Rotates the trend view control for a certain angle. The control is rotated after you download the project to the target device. When you have selected "Display value table", this setting is unavailable.
	Shift decimal point	When the trend curve is bound with tags of the Float or Double type, this parameter is used to set the number of decimal points to be displayed. The default number is 3. Note: Integer tags are not affected by this property.
	Discard Data When Stop	• Checked: After you click "Stop" in the real-time trend view of the runtime, if the value of the trend tag changes, the change process of the tag value in the stop process will be rendered in the trend control when you click "Start" again. • Unchecked: After you click "Stop" in the real-time trend view of the runtime, if the value of the trend tag changes, the change process of the tag value in the stop process will not be rendered in the trend control when you click "Start" again.
Element	Display value table	Display/hide the trend value table.
	Display ruler	The ruler is a vertical line in the trend view. When the ruler is displayed, the value of the point where the trend curve intersects with the ruler is displayed in the value table, and when the ruler is not displayed, the current value is displayed instead.
	Display table grid	Set whether to display the grid lines of the value table. It is available when "Display value table" is selected.
	Display mark labels	Set whether to display the scale value of the value axis.
	Trend background transparent	Set whether to make the background of the trend chart transparent. The background of the value table is not affected by this property.

	Display curve information	• The ruler can read values of all curves at a time and display the value at the intersection of the ruler and the curve. • The intersection of the ruler and curve is calculated in real time and displayed as a solid dot. • The curve data information is drawn based on the value and color of each trend tag. • The value of the rule on the X axis in the time or point mode is obtained in real time and displayed.
Process	Channel	Controls the display of the trend view.
	VisibleTag	The "VisibleTag" supports the data types of Int (integer) and UInt (unsigned integer). • When "0-31" is selected for "Channel", the "VisibleTag" determines the visibility based on the binary value of the 0 to 31st bits: ◦ When the value of the nth bit is 1, the nth trend view is displayed. ◦ When the value of the nth bit is 0, the nth trend view is not displayed. ◦ If no tag is associated, the 1st to 32nd trend views are displayed. • When "32-63" is selected for "Channel", the "VisibleTag" determines the visibility based on the binary value of the 0 to 31st bits: ◦ When the value of the nth bit is 1, the (32+n)th trend view is displayed. ◦ When the value of the nth bit is 0, the (32+n)th trend view is not displayed. ◦ If no tag is associated, the 33rd to 64th trend views are displayed.
	ClearTrendTag	The "ClearTrendTag" supports the data types of Int (integer) and UInt (unsigned integer). • When "0-31" is selected for "Channel", the "ClearTrendTag" determines the visibility based on the binary value of the 0 to 31st bits: ◦ When the value of the nth bit is 1, the nth trend view is cleared. ◦ When the value of the nth bit is 0, the nth trend view is not cleared.

		◦ If no tag is associated, no trend view is cleared. • When "32-63" is selected for "Channel", the "ClearTrendTag" determines the visibility based on the binary value of the 0 to 31st bits: ◦ When the value of the nth bit is 1, the (32+n)th trend view is cleared. ◦ When the value of the nth bit is 0, the (32+n)th trend view is not cleared. ◦ If no tag is associated, no trend view is cleared.
	PauseTrendTag	Controls the start/stop of the trend by binding a Bool-type tag. A Bool value of 1 indicates pause; a value of 0 indicates start.
Ruler Tag	Position	When the X-axis mode is "Points", the position tag is available and its value is within the scale range of the X axis.
	Width	Set the display width of the ruler by a tag.
	Move Enable	You can use the tag to enable or disable the movement of the ruler, with 1 indicating moving and 0 indicating not moving.

Description of buttons

Control buttons	Feature
	Pause trend updates. You can bind a Bool-type tag to "PauseTrendTag" to control the pause.
	Start trend updates. You can bind a Bool-type tag to "PauseTrendTag" to control the start.
	Control the display of the current trend or the trend upon system boot (determined by the value source of the X axis). • When the data source is from left, click this button to display the current trend. • When the data source is from right, click this button to display the trend upon system boot.
	Control the display of the current trend or the trend upon system boot (determined by the value source of the X axis). • When the data source is from right, click this button to display the current trend. • When the data source is from left, click this button to display the trend upon system boot.
	Move the trend graph to the left half of the display width.

	Move the trend graph to the right half of the display width.
	Zoom in the trend curve.
	Zoom out the trend curve
	Move the ruler to the left
	Move the ruler to the right

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item			Description
Appearance	Fill	Background color	Background color of the view
		Ruler color	Ruler color
		X Axis color	The color of the X axis
		Suspend Tip color	The color of the float prompt box
		colorOpacity	The color opacity (available only for the float prompt box)
	Y axis	Y1 Axis color	The color of the Y1 axis
		Y2 Axis color	The color of the Y2 axis
		Y3 Axis color	The color of the Y3 axis
		Y4 Axis color	The color of the Y4 axis
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.
	Size	Width	Set the width of the rectangle.
		Height	Set the height of the rectangle.

X axis	Set	Mode	• Time: The time interval between every two sampling points. When the "Time" mode is selected, you need to set "Time interval(Sec.)" • Points: In this mode, the configured points are used as coordinates. • Tag/constant: The range scale value of the axis. When this mode is selected, you need to configure "Axis begin", "Axis end", and "Number of points".
		New values from	Set where the data source is from, left or right.
		Time Display Format	Set how the time is displayed on a trend chart. It is available only when the mode is "Time".
		Start Time	Set the time for the sampling start point. It is available only when the mode is "Time".
	Axis scaling	Axis begin	Set the start value of the X axis. It is available only when the mode is "Tag/constant".
		Axis end	Set the value of the end point of the X axis. It is available only when the mode is "Tag/constant".
		Time Interval (Sec.)	Available only for the time mode
		Number of points	Set the number of points on the X axis. It is available only when the mode is "Points" or "Tag/constant".
	Oscilloscope	Oscillograph display	When the control tags of oscilloscope display are not configured, check this to display the trend according to oscilloscope display mode. Available only for the time mode. The source of the new value is fixed to the right. When the first page is displayed, the time axis remains unchanged, and the new values are drawn from left to right in turn. After the new values occupy a full screen, the whole curve moves to the left. Only one of oscilloscope and monitor can be enabled.
		Tag	The control tag for oscilloscope display. The trend is displayed by oscilloscope if the tag value is 1.
		Value ON	The state is ON when the tag reaches the set value.
	Display	Is Display	When this option is checked, after you configure the time tag, you can view the trend at a time point by modifying the time at run time.
		Time Tag	The time tag bound

Left Value Axis	Y1 Scale/Y3 Scale	Axis begin	Set the beginning of the left axis (Y1, Y3), which can be a tag or constant. If the tag value is greater than the setpoint of the axis end, the axis end value will be changed to (tag value + 1) by default.
	Y1 Scale/Y3 Scale	Axis end	Set the end of the left axis (Y1, Y3), which can be a tag or constant. If the tag value is less than the setpoint of the axis beginning, the axis beginning value will be changed to (tag value - 1) by default.
Right Value Axis	Y2 Scale/Y4 Scale	Axis begin	Set the beginning of the right axis (Y2, Y4), which can be a tag or constant. If the tag value is greater than the setpoint of the axis end, the axis end value will be changed to (tag value + 1) by default.
	Y2 Scale/Y4 Scale	Axis end	Set the end of the right axis (Y2, Y4), which can be a tag or constant. If the tag value is less than the setpoint of the axis beginning, the axis beginning value will be changed to (tag value - 1) by default.
Axis	X Axis/Left Y1 axis/Right Y2 axis/Left Y3 axis/Right Y4 axis	Axis label	Check this to display the corresponding axis.
		Incremental	Set the interval between scale marks.
		Mark	Set the number of marks on the axis.
		Mark line	Check this to add mark lines on the axis.
		Lines count	Set the number of mark lines on the corresponding axis. It is available only when "Mark lines" is checked.
Table	Table	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.
		Foreground color	Set the foreground color of the table.
		Background color	Set the background color of the table.
		Header foreground color	Set the foreground color of the table header.
		Header background color	Set the background color of the table header.
		Font	Set the style and size of table text.

Trend		Name	Set the name of the trend curve.
		Display	Set the display style of the curve. Options are "Bars", "Point", "Lines", "Steps", and "XArea".
		Line type	It is available when "Lines" is selected.
		Pen Width	It is available when "Lines" or "Bars" is selected.
		Samples	Set the maximum number of trend curve sampling points. • When the "Trend type" is set to "Buffer bit triggered" and the trend tag is an array tag, the number of sampling points cannot exceed the maximum count of the array tag. If exceeded, the cell will be highlighted in red (indicating configuration error). When the trend tag is a single tag, the number of sampling points can only be set to 1. Any other value will cause the cell to be highlighted in red. • When "Trend Type" is set to "Realtime bit triggered" or "Realtime cyclic triggered", the maximum number of sampling points is 65535. • This parameter is grayed when the "Trend Type" is set to "Log".
		Trend Type	Set the trend type. The options are "Buffer bit triggered", "Realtime bit triggered", "Realtime cyclic triggered “, and "Log".
		Trend Tag	Set the tag associated with the trend. The tag feature depends on the trend type.
		Side	Set which scale, the left or the right, of the Y axis of the trend curve prevails.
		Foreground color	Set the color of the trend curve.
		SamplingAlgorithm	Set the algorithm for drawing the trend chart. It is available when "TrendType" is set to "Log". • Fixed Clearance (default) • Average Sampling • Max. Sampling • Min. Sampling
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	

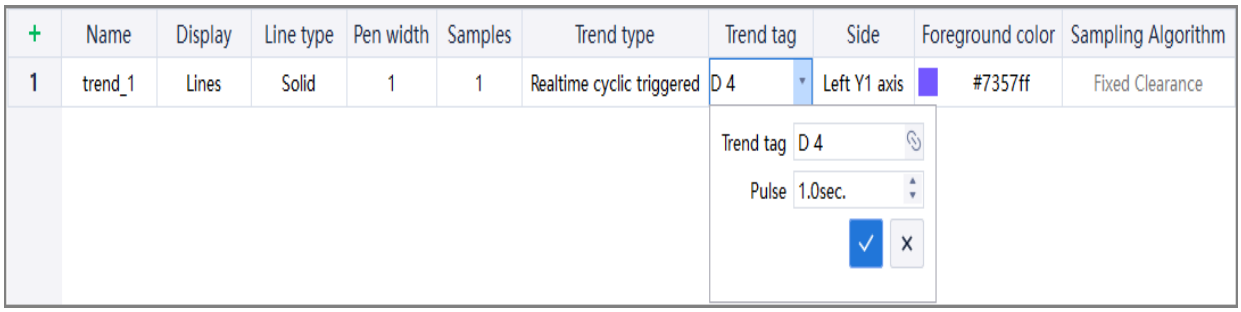
			The ID of the current control, which is assigned by the system
		Opacity	The display clarity. Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the control, which can be customized
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

Description of trend types

1. Realtime cyclic triggered

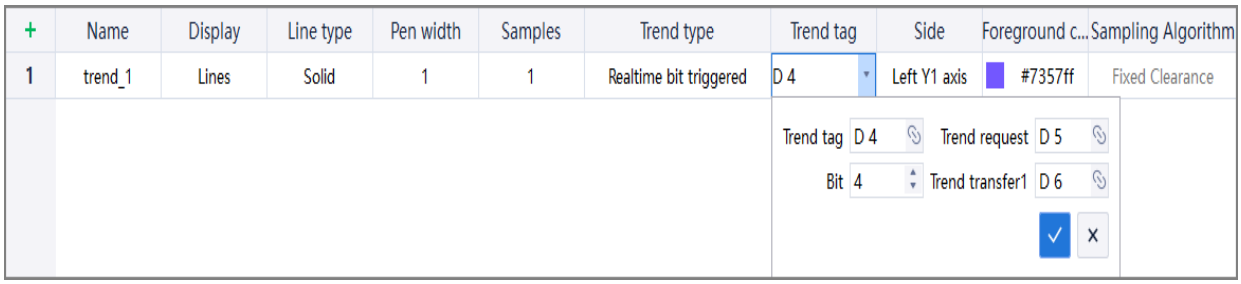


The trend collects the values of the specified tag in a fixed period and displays them in real time.

Trend tag: Specify the tag to be sampled.

Cycle: It determines by the pulse of the trend tag and the minimum unit is 0.1s. The shorter the cycle, the higher the occupancy rate of the CPU. It is not recommended to perform a large number of real-time sampling operations within a short period of time in a project.

2. Realtime bit triggered



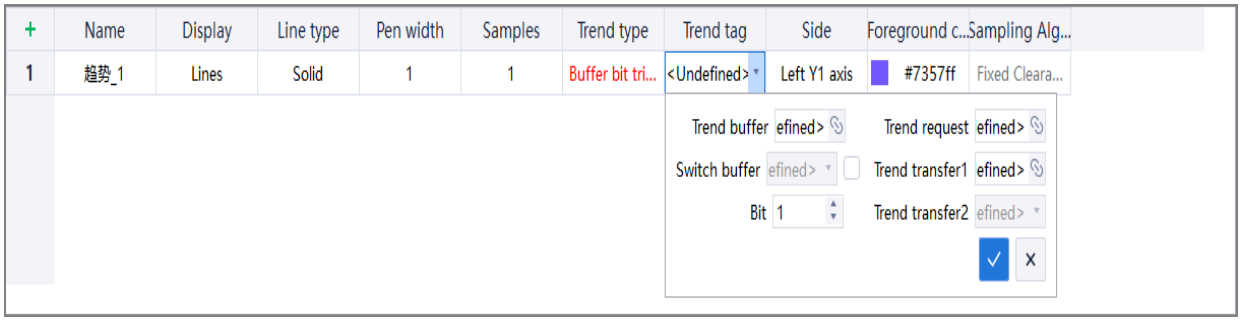
It is available when the mode of the X axis is "Points".

The trend samples the values of the specified trend tag according to the change of the trend transfer tag bit and displays them in real time.

- Trend tag: Specify the tag to be sampled.
- Trend transfer tag: The tag specified in the "Trend transfer1" field. Trend sampling is triggered only when both the highest and trigger bit of the trend transfer tag are 1. After sampling, the highest and trigger bit of the trend transfer tag are set to zero.

- Trend request: An auxiliary tag. When you access the screen containing this trend, the trigger bit is set. When you exit this screen, the trigger bit is reset.
- Bit: The trigger bit of the trend transfer tag and the trigger bit of the trend request tag.

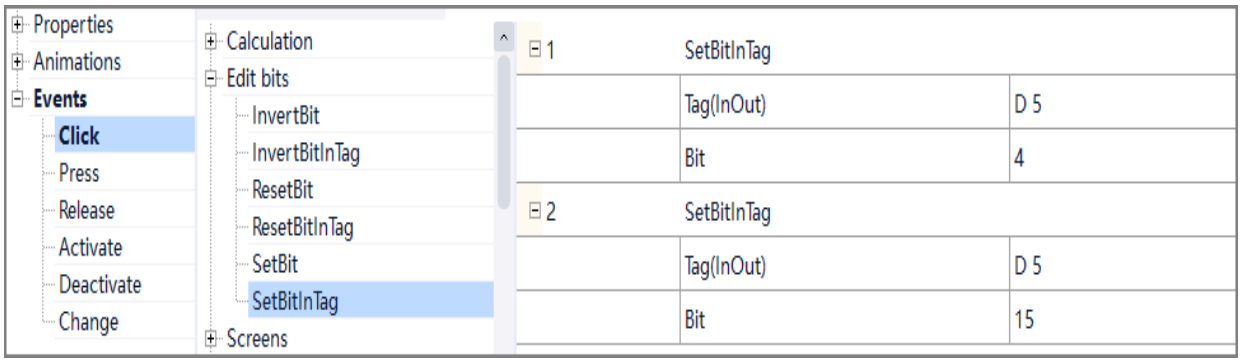
3. Buffer bit triggered



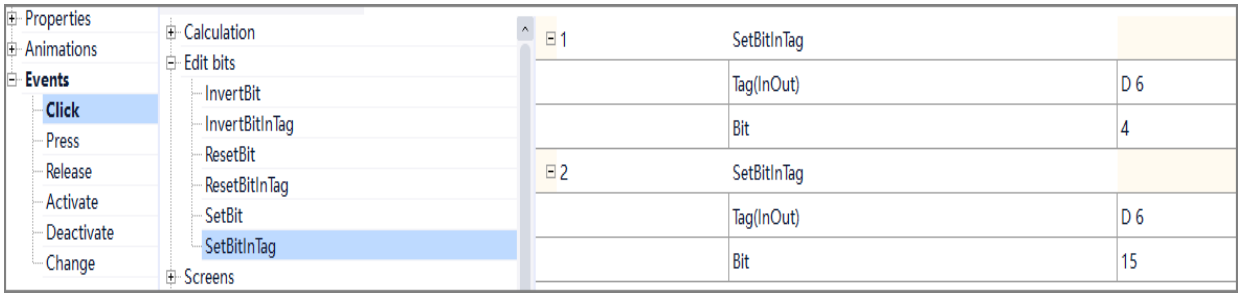
It is available when the mode of the X axis is "Points". The trend samples the values of the specified trend tag array according to the change of the trend transfer tag bit in real time and displays them in a trend curve.

- Trend buffer: Specify the tag to be sampled.
- Trend transfer1: Trend sampling is triggered only when both the highest and trigger bit of the trend transfer tag are 1. After sampling, the highest and trigger bit of the trend transfer tag are set to zero.
- Trend transfer2: Trend sampling is triggered only when both the highest and trigger bit of the trend transfer tag are 1. After sampling, the highest and trigger bit of the trend transfer tag are set to zero.
- Trend request: An auxiliary tag. When you access the screen containing this trend, the trigger bit is set. When you exit this screen, the trigger bit is reset.
- Bit: The trigger bit of the trend transfer tag and the trigger bit of the trend request tag.
- Switch buffer: When this option is checked, data sources are two: tags configured in the trend buffer, and tags configured in switch buffer. "Trend buffer" is used together with "Trend transfer1", while "Switch buffer" is used with "Trend transfer2". At run time, when both the highest bit and trigger bit of "Trend transfer1" are 1, the trend curve data source is "Trend buffer". When both the highest bit and trigger bit of "Trend transfer2" are 1, the trend curve data source is "Switch buffer".

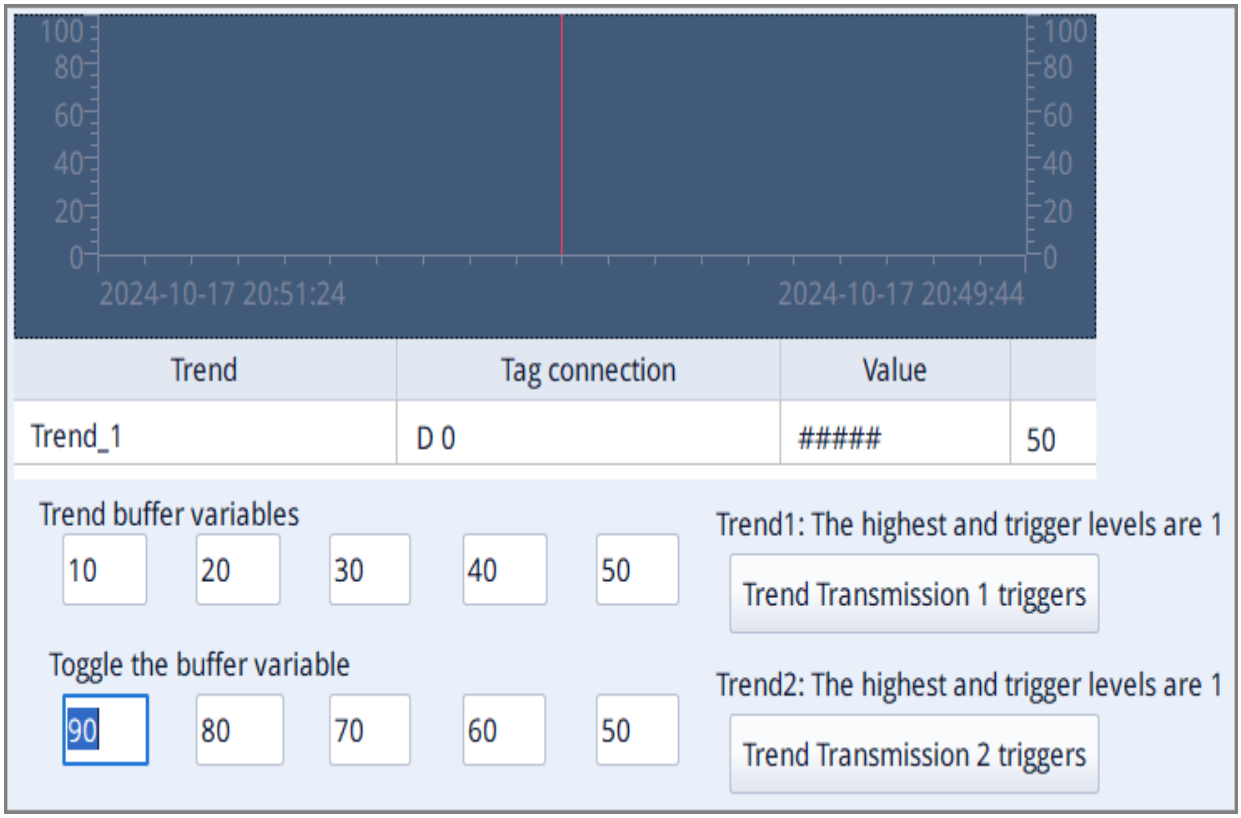
Add the "SetBitInTag" function to the "Trend Transmission 1 triggers" button to set the highest bit and trigger bit of "Trend transfer1" to 1.



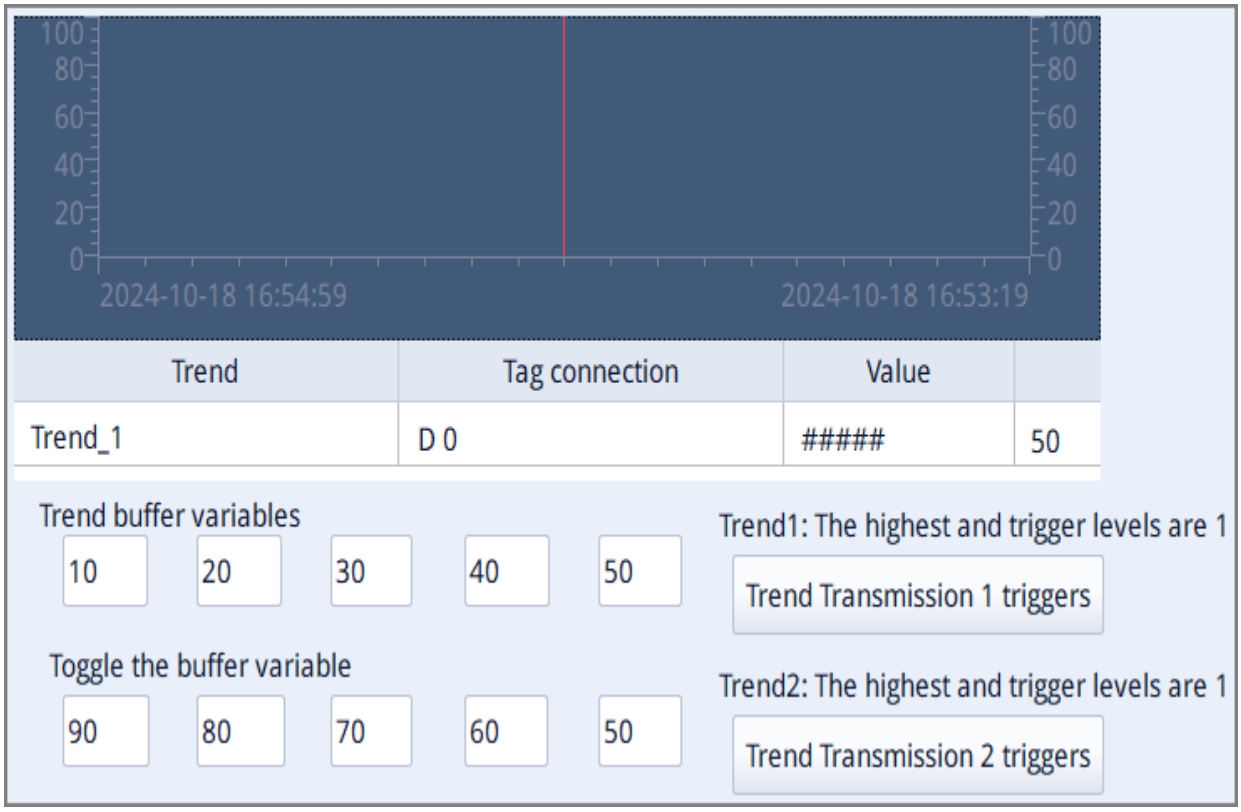
Add the "SetBitInTag" function to the "Trend Transmission 2 triggers" button to set the highest bit and trigger bit of "Trend transfer1" to 2.



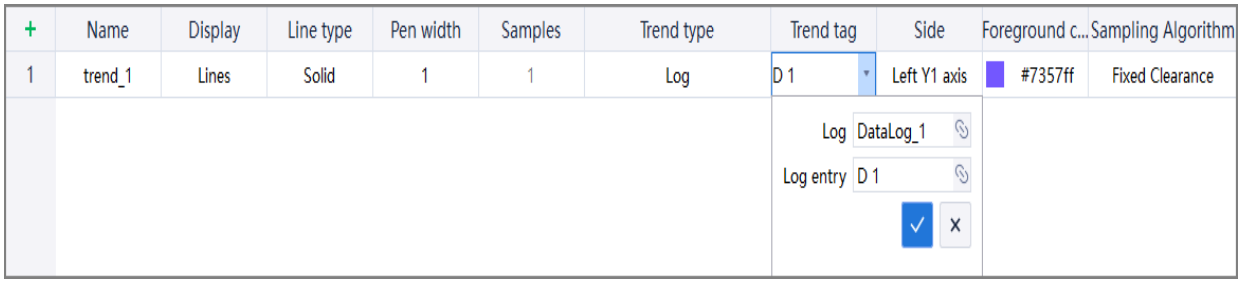
Click "Trend Transmission 1 triggers". Then the trend buffer tag is the data source and the curve is drawn accordingly.



Click "Trend Transmission 2 triggers". Then the switch buffer tag is the data source and the curve is drawn accordingly.



4. Log



It is available when the mode of the X axis is "Time".

The trend is used to display the recorded values of the specified tag in a data record for a certain period of time.

- Log: Selects a data record.
- Log entry: Selects entries from the data record. As shown in the preceding figure, record entries can only be selected from "DataLog_1".

For the usage details of these four trend types, see the sample project "Trend View" that comes with InoTouchPad. You can also choose "Help" > "Open Examples Location" to open the sample project "Trend View".

Setting method:

Introduction

1. Display the collected data by the trend view control in the HMI.

2. Draw a trend view control to display changes of a group of tags.

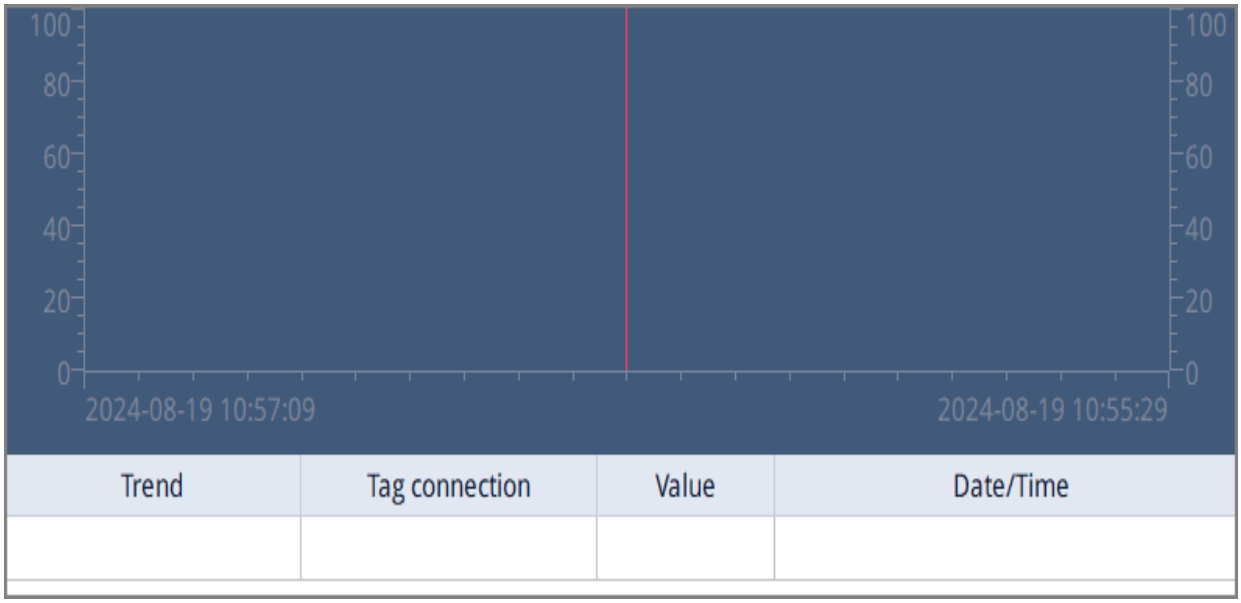
Condition

A project and a screen have been created.

Procedure

1. Draw a trend view control.

In the "Tools" navigation tree on the right, choose "Data Visualization" > "Trend", and drag the control to "Screen_3".



2. Set properties for the trend view.

On the "Properties" tab page, choose "Properties" > "Trend", and click + to configure the trend parameters.

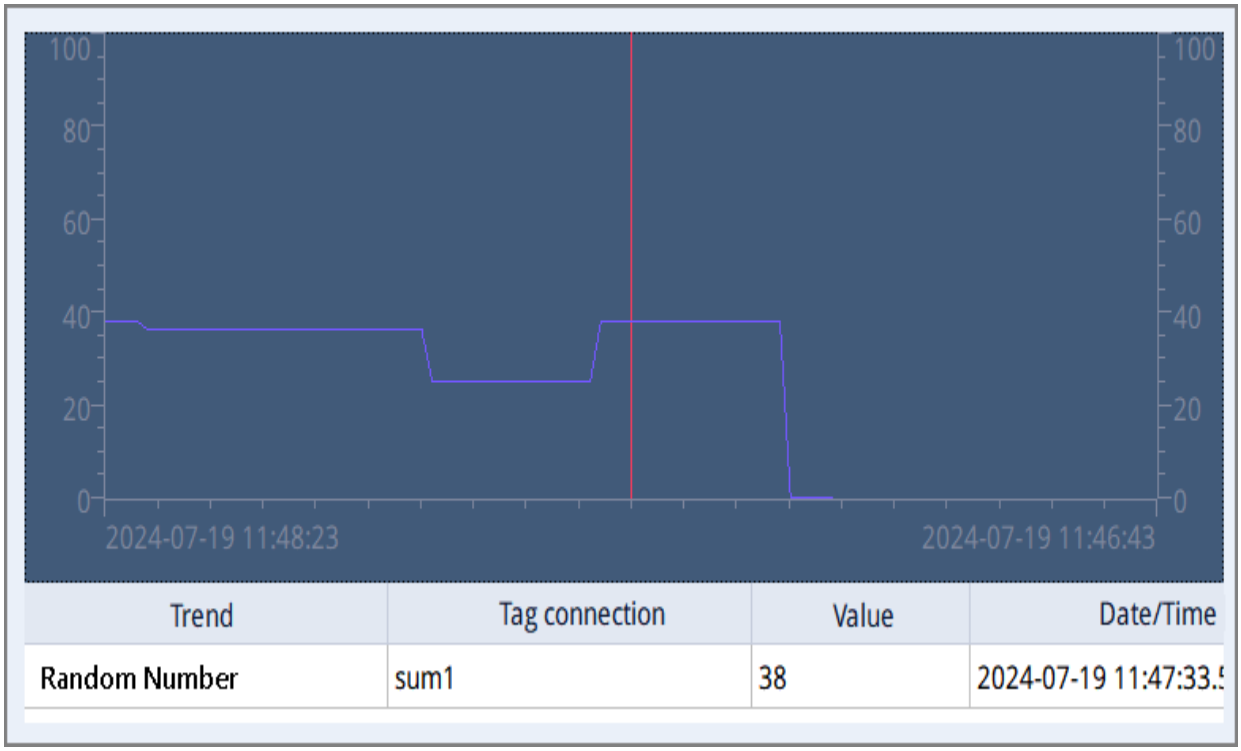
+	Name	Display	Line type	Pen width	Samples	Trend type	Trend tag	Side	Foreground color	Sampling Algorithm
1	random number	Lines	Solid	1	100	Realtime cyclic triggered	sum1	Left Y1 axis	#7357ff	Fixed Clearance

CAUTION

"Trend tag" must be set.

3. Make other settings.

4. Manually input the tag value and check the trend view changes, as shown in the following figure.



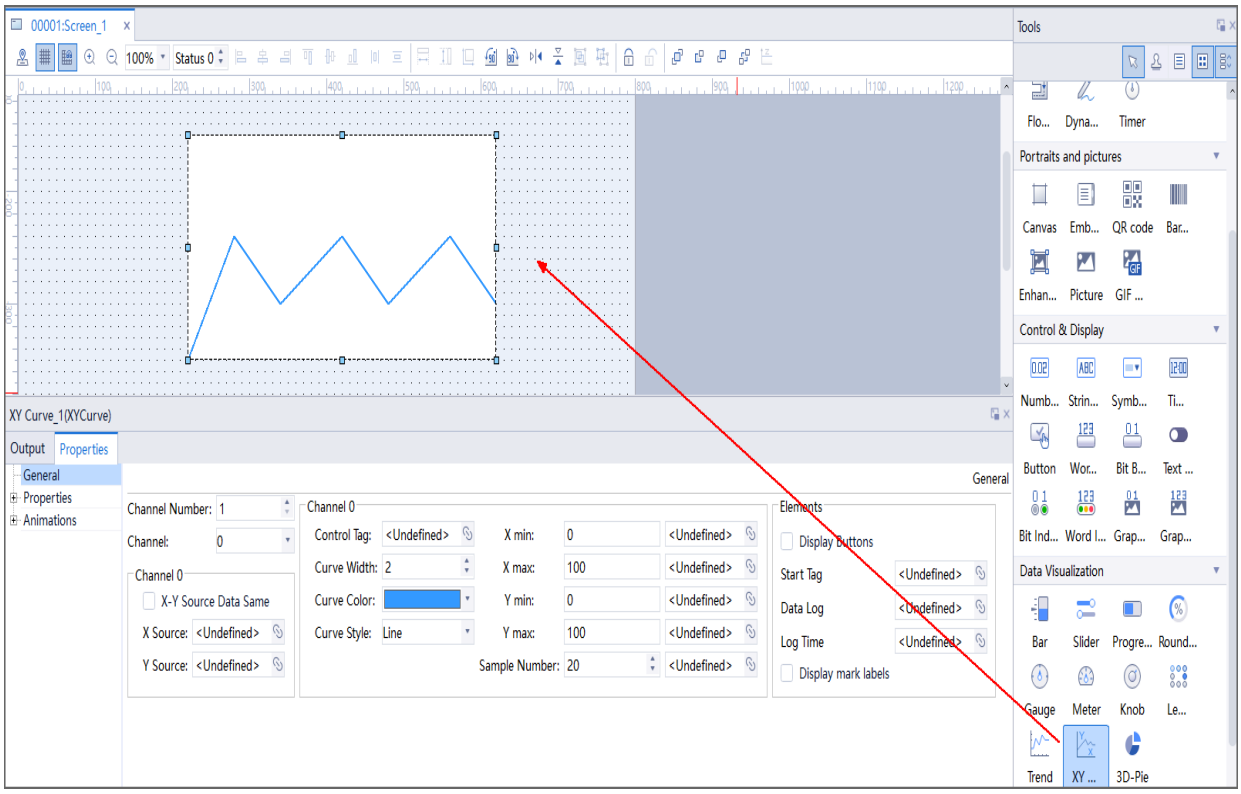
7.3.4.10 XY curve

If you take the data in two groups or a group of continuous registers as coordinates on X and Y axes respectively, the points/graphics formed by these coordinates generate an XY curve, which cannot be edited or zoomed.

Configuring an XY curve

1. Add an XY curve to the screen.

In the "Tools" navigation tree on the right, choose "Data Visualization" > "XY Curve", and drag the curve to the screen.



2. Set the XY curve properties.

The properties of the XY Curve include General, Properties and Animations. Parameters in "Animations" are common settings. For details, see the 7.5.1.10 Visibility section.

"General" settings

On the "General" tab page of the property view, you can set the following properties.

<table>
<tr><th colspan="2">General</th><th>Description</th></tr>
<tr><td colspan="2">Number of Channels</td><td>The number of curves contained in the control. Range: 1 to 15; Default: 1.</td></tr>
<tr><td colspan="2">Channel</td><td>The number of the current curve, which can be switched Default: 0</td></tr>
<tr><td>Channel 0</td><td>X-Y Source Data Same</td><td>• When this option is checked, you only need to configure the data source for the X axis. This option is not selected by default. When the data source is an array tag, the curve value rules are as follows after this option is checked:
<table><tr><td>Point 1</td><td>Point 2</td><td>Point 3</td></tr></table></td></tr>
</table>

		<table><tr><td>X0: array[0] Y0: array[1]</td><td>X1: array[2] Y1: array[3]</td><td>X2: array[4] Y2: array[5]</td></tr></table> • If the specified sampling point number is less than the number of array elements, only the first array elements are sampled.
	X Source	Set the X axis data source of the points on the curve. It can be either a single tag or an array tag, with data types: Int16, UInt16, Int32, UInt32, Float, Double, Int64, and Uint64.
	Y Source	Set the Y axis data source of the points on the curve. It can be either a single tag or an array tag, with data types: Int16, UInt16, Int32, UInt32, Float, Double, Int64, and Uint64.
	Control Tag	Set the curve display control address. When the address value changes to 1, the curve is generated, and when it changes to 2, the curve is cleared. Address types: Int16, UInt16, Int32, UInt32, Int64, and UInt64. When the data source is a single tag, you can configure or not configure this option. When this option is not configured, drawing curve is enabled by default. When the data source is an array, the control tag must be configured. When the tag value is 1, the curve is generated, and when the tag value is 2, the curve is cleared.
	Curve Width	Set the line width of the curve.
	Curve color	Set the line color of the curve.
	Curve Style	Set the style of the curve. Options are "Point", "Line" (default), "Project onto X axis", and "Project onto Y axis".
	X min	Set the lower limit of the X axis. The default value is 0 and the maximum number of bits is 17. It can be a constant or tag. The tag address types are Int16, UInt16, Int32, UInt32, Float, Double, Int64, and UInt64.
	X max	Set the upper limit of the X axis. The default value is 100 and the maximum number of bits is 17. It can be a constant or tag. The tag address types are Int16, UInt16, Int32, UInt32, Float, Double, Int64, Uint64.
	Y min	Set the lower limit of the Y axis. The default value is 0 and the maximum number of bits is 17. It can be a constant or tag. The tag address types are Int16, UInt16, Int32, UInt32, Float, Double, Int64, Uint64.
	Y max	Set the upper limit of the X axis. The default value is 100 and the maximum number of bits is 17. It can be a constant or tag. The tag address types are Int16, UInt16, Int32, UInt32, Float, Double, Int64, Uint64.
	Sample Number	Set the point count of the curve (0-1000). The default value is 20. It can be a constant or tag. The tag address types are Int16, UInt16, Int32, UInt32, Int64, and Uint64.

		In the following description, the sampling point is set to 20: • When the X and Y data sources are different, the sampling points are the data of the 20 groups, that is, 20 points in the X data source and 20 points in the Y data source. • When the X and Y data sources are the same, the sampling points are the data of the 20 groups, that is, 40 points in the X data source.
Element	Display Buttons	When this option is checked, the curve movement icon is displayed. It is available only when the data source is a single tag.
	Start Tag	Control whether the XY curve follows tag values for real-time drawing. Configure this item to enable real-time updates of the curve. When the data source is a single tag, you can also enable real-time curve updates via the "Display Buttons".
	Data Log	Record in which data is stored. This option is available only when the data source is a single tag.
	Log Time	You can page up or down. The XY curve is drawn based on data in a certain period recorded in the data record. This option is available only when the data source is a single tag.
	Display mark labels	When this option is checked, the scales are displayed on the curve.

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

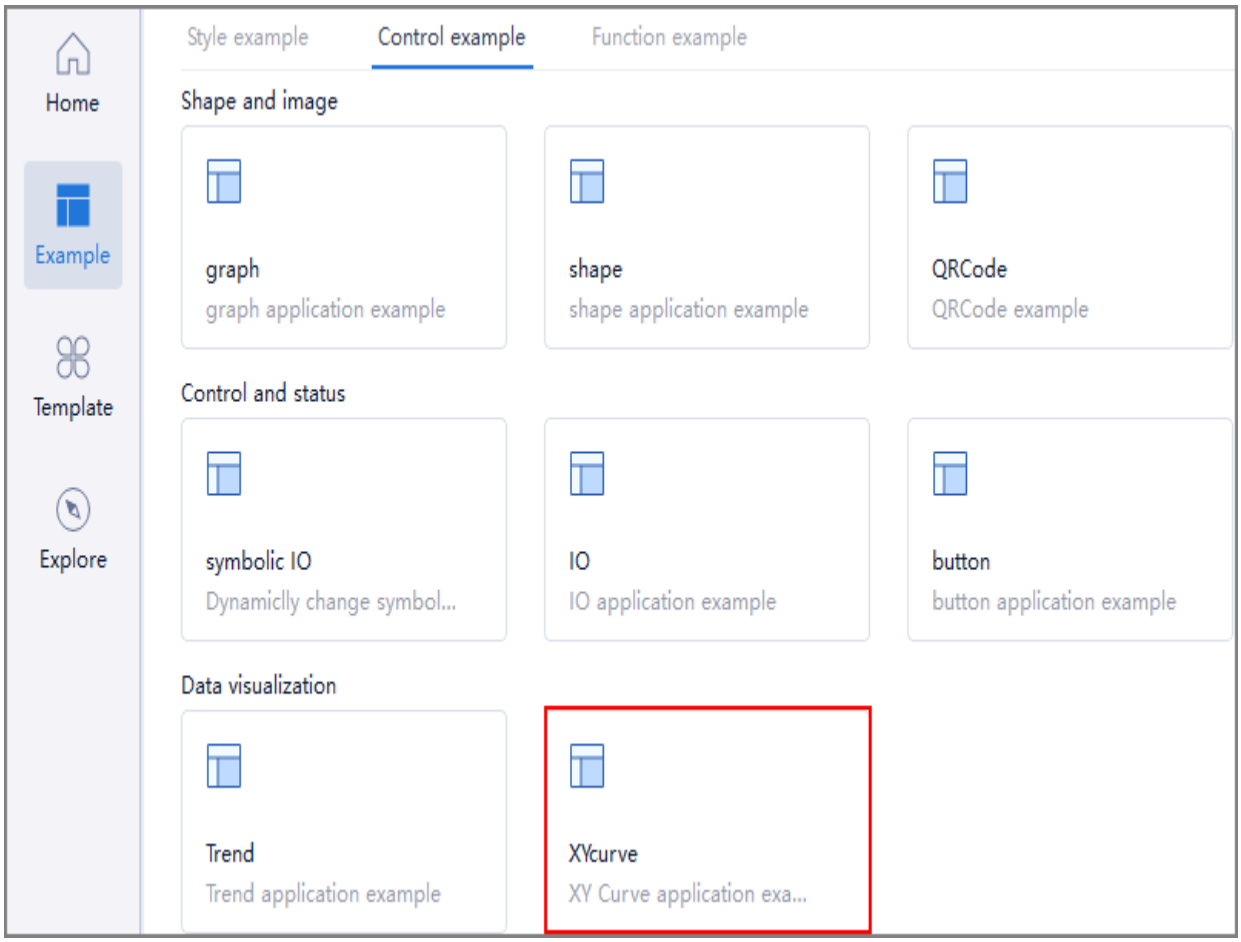
Item			Description
Appearance	Fill	Text color	Text color
		Background color	Background color of the curve
		Fill style	Fill style of the curve background
Guides	X Guides	X Guides	The number of vertical guides on the X axis. Range: 0 to 99; Default: 0.
	Y Guides	Y Guides	The number of vertical guides on the Y axis. Range: 0 to 99; Default: 0.
	Guides Color	Guides Color	Guides Color
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.
	Size	Width	Set the width of the rectangle.

		Height	Set the height of the rectangle.
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control, which is assigned by the system
		Opacity	The display clarity. Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the control, which can be customized
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

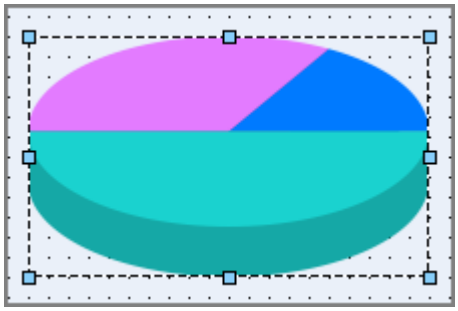
On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

3. For details about the curve usage, see the example project "XY Curve" that comes with InoTouchPad.



7.3.4.11 3D-Pie

The 3D-pie chart is used to display the proportion of multiple process tags.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Data Display	StyleSheet	Set the display style of values.	The options are "None", "Percent", and "Numerical value".
	Channel number	Set the number of channels of the 3D-pie chart.	Range: 2 to 8
Process	Tag	Tag to control a process	Set based on the number of channels.
	Color	Set the color of the channel.	Set based on the number of channels.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Set the font and size of displayed text.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.

		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.5 Production Management

7.3.5.1 Alarm Record

The "Alarm Record" control is used to display alarms that are divided into current alarms, alarm events, and alarm records. These three modes display real-time alarms, short-term historical alarms, and long-term historical alarms.

Description of buttons

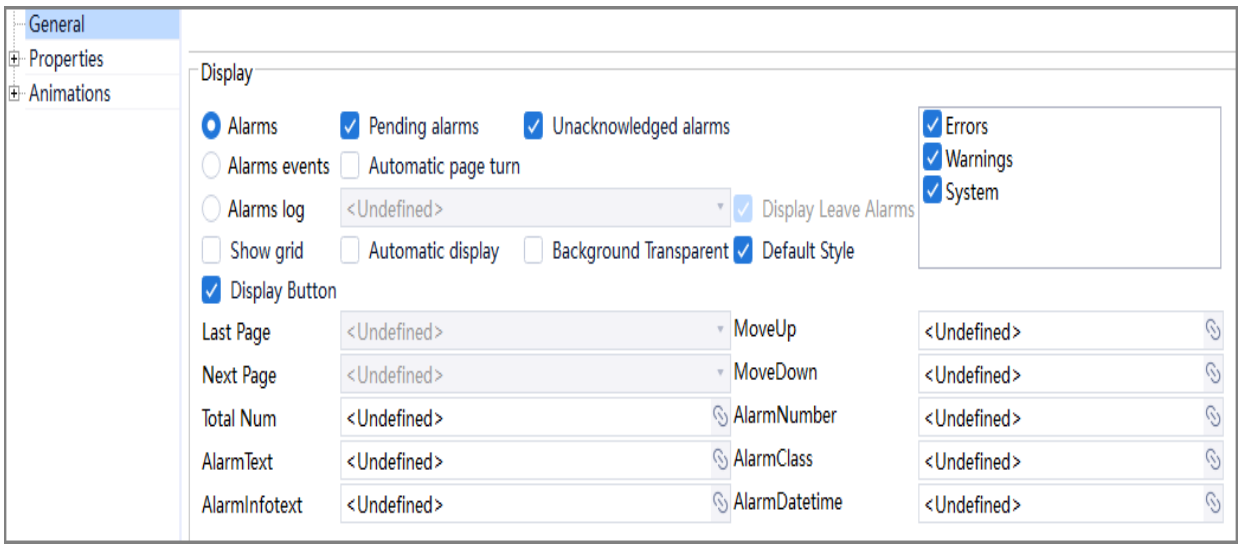
Control buttons	Function
	Move the table to the left. When the displayed content exceeds the length range, you can click this button to move the table left to view the information.
	Page up to view the alarm information in the previous screen.
	View the help information text configured in the alarm.
	Prints the alarm information (only the USB printer is supported).
	Reloads the alarm records by the sorting rule. Example: If the sorting rule is "Newest alarm first", the latest alarm is displayed on the screen when the screen is reloaded.
	It is the "Next Page" or "Next Day" button. When "Display According Day", the button is "Next Day". Note: Up to 256 alarms can be displayed on a page. When the data occupies only one page or data of only one day is available, this button is grayed.
	It is the "Previous Page" or "Previous Day" button. When "Display According Day", the button is "Previous Day".

	Note: Up to 256 alarms can be displayed on a page. When the data occupies only one page or data of only one day is available, this button is grayed.
	Alarm acknowledgment
	Page down to view the alarm information in the next screen.
	Move the table to the right

1. On the "General" tab page of the property view, you can set the following properties.

The "Display" properties in "General" are used to define the type and display mode of all displayed alarms in the alarm record of the runtime.

"Error", "Warning", and "System" are used to set the type of the alarms to be displayed.



The following table describes how the alarm view displays the alarms with different display modes and alarm types.

Item		Description
Alarm	Pending alarms	Displays an activated but not deactivated and acknowledged alarm. Displays activated alarms in all categories, and activated and acknowledged (at the same time) alarms in the error category
	Unacknowledged alarms	Displays activated alarms, and activated and deactivated alarms in the error category
Alarms events		Displays the message events of the selected alarm type, including "activated", "(activated) acknowledged", "(activated) deactivated" (activated before deactivated) "activated and acknowledged" (simultaneously), "(activated and acknowledged) deactivated" (deactivated after activated and acknowledged), and "(activated and deactivated) acknowledged".
Alarm Record		You can only select an alarm record among configured ones.
Show grid		Check this to display grid lines in the view

Display by date	This option is valid only when "Alarms log" is checked. When this option is selected, the alarm information is displayed by date and you can control the display sort by configuring a tag.
Auto Display	This option is valid only when "Alarms log" is not checked. When this option is selected, the alarm view automatically displays the alarms occurred and the alarm view is automatically hidden when no alarm occurs.
Background transparent	Check this to make the background transparent
Display Leave Alarms	This option is valid only when "Alarms log" is checked.
Default Style	Set whether to enable the default style for the selected row of alarm information. When this option is checked, the font of the selected row in the alarm view turns to white. When this option is not checked, the color set in the "Alarm Type" is applied.
Display Button	When this option is checked, the bottom button bar and the right scroll bar are displayed in the alarm view.
Last Page	Displays alarm information of the previous page.
Next Page	Displays alarm information of the next page.
Total Num	Outputs the total number of alarm information to the tag.
AlarmText	Displays the alarm text information to the tag.
AlarmInfotext	Outputs the information text configured in the alarm.
MoveUp	Moves up to the previous alarm information.
MoveDown	Moves down to the next alarm information.
AlarmNumber	Outputs the alarm number to the tag. The alarm number is used to identify the alarm and is unique in the following types.
AlarmClass	Outputs the alarm type to the tag.
AlarmDatetime	Outputs the alarm record time to the tag.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Background color	Set the fill color of the rectangle.	-
		Focus row color	The display color of the selected row of alarm information	-
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels

		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Text font	The vertical order of alarm information display items in the visible columns corresponds to the horizontal order of alarm information display items in the alarm log control. You can change the display order of alarm information in the alarm log control by dragging items within the visible columns.
Columns	Visible columns	Alarm text	Set whether to display the alarm content.	
		Type	Set whether to display the alarm type.	
		Number	Set whether to display the alarm number.	
		Date	Set whether to display the time.	
		Date	Set whether to display the date.	
		State	Set whether to display the state.	
		GR	Set whether to display the alarm group.	
		PLC	Set whether to display the PLC.	
		Alarm Grades	Set whether to display the alarm grade.	
		Total times	Set whether to display the total number of alarms occurred.	
	Column properties	Headings	Set whether to display the heading.	-
		Column ordering	Check this to enable column ordering.	-

		Sort by date/ time possible	Sort the columns by date or by time.	-
		Text across columns	Set whether to display text across columns.	-
		Time in milliseconds	Check this to display the time in milliseconds.	-
	Sort	Oldest alarm first	Displays the oldest alarm first.	-
		Newest alarm first	Displays the most recent alarm first.	-
		Priority alarm first	Displays the alarms by status.	-
		Sort alarm by time	Displays the alarms by time in ascending order.	-
		Sort by total times	Displays the alarms by their number of occurrences.	-
Filter	Setup	Filter alarm group	Filters and displays alarms of an alarm group based on the value of the configured tag.	• This feature is valid only when you select an alarm group in the "Visibility" column in the "Column" section of the "Properties" tab page. • When the "Filter alarm group" is associated with the tag, the initial value of the tag is set to –1, indicating not filtering. • The recommended tag type is Int.
		Filter alarm grade	Filters and displays alarms of a certain grade based on the value of the configured tag.	• This feature is valid only when you select "Alarm Grade" in the "Visibility" column in the "Column" section of the "Properties" tab page. • When the "Filter alarm grade" is associated with the tag, the initial value of the tag is set to –1, indicating not filtering.

				• The recommended tag type is Int.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.	-
	Operation	Enabled	Check to enable the input.	Input is allowed only when enabled. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.	When this option is checked, only authorized users can see the object after login.

3. On the "Animations" tab page of the property view, you can set "Enable Object" and "Visibility". For details, see the sections Enabling an Object and 7.5.1.10 Visibility.

Setting method:

Condition

- A project and a screen have been created.
- The "Alarm Record" control has been added to the screen.

Step

1. Create a communication connection: In the "Project" window, choose "Communication" > "Connection" to create a communication connection with the PLC. In the following example, a connection named "Connection_1" is created for communication with the H5U-series PLC over the H5U Qlink TCP protocol.

	Name	Number	Communication protocol	Online	Display mode	Comment	Enabled
1	Connection_1	1	H5U Qlink TCP Protocol	Online	Decimal		☑

2. Add the alarm data: In the "Project" window on the left, choose "Alarm Management" > "Analog Alarms" and "Alarm Management" > "Discrete Alarms" to add a group of analog alarms and a group of discrete alarms, respectively, and make configurations.

Analog Alarms

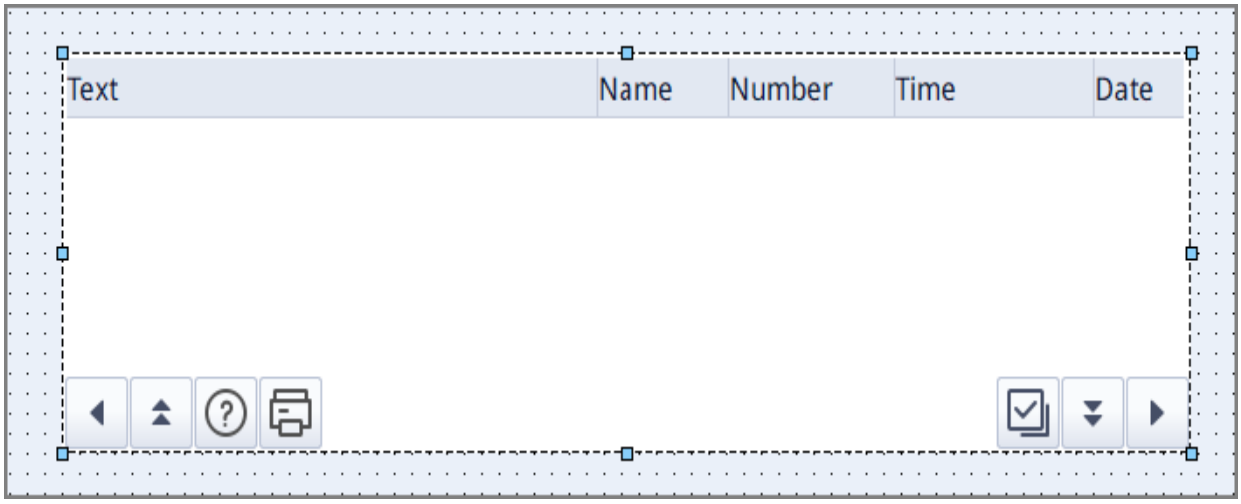
	Text	Text Library	Number	Class	Trigger tag	Trigger mode	Limit
1	analog_1	<Undefined>	1	Errors	D 0	==	10
2	analog_2	<Undefined>	2	Errors	D 0	==	20
3	analog_3	<Undefined>	3	Errors	D 0	==	30

	Text	Text Library	Number	Class	Trigger tag	Trigger bit	Trigger mode
1	discrete_1	<Undefined>	1	Errors	Y 0	0	0->1
2	discrete_2	<Undefined>	2	Errors	Y 1	0	0->1

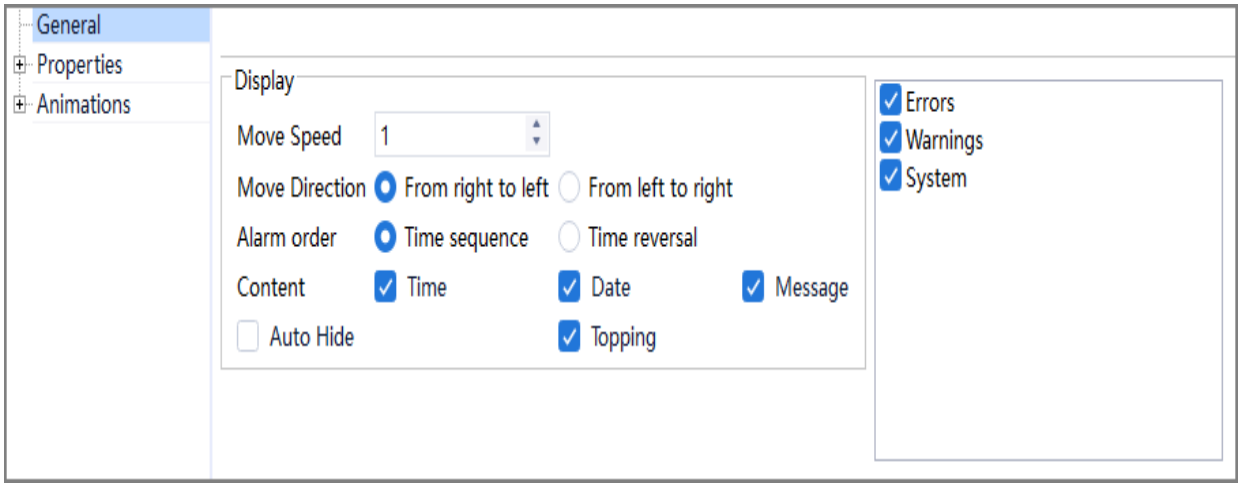
3. The following table lists alarm table headers.

Name	Description
Text	The alarm title to be displayed, which can be customized
Number	The number of the created alarm, which cannot be changed
Trigger tag	The alarm category, which can be customized as needed and divided into "Errors", "Warnings", and "System", corresponding to different alarm information
Trigger mode	The trigger tag of an alarm, which is a tag of the BOOL, Int6, or UInt16 type for a discrete alarm and a tag of the Int16, UInt16/UInt64, Int32, Int64, UInt32, Float, or Double type for an analog alarm
Limits	Set a value based on the trigger mode of an analog alarm.
Info text	Displays details of an alarm.
GR	Divides alarm information into different alarm groups for categorization

4. As shown in the following figure, in the "Tools" navigation tree on the right, choose "Production Management" > "Alarm Record" and "Production Management" > "Alarm Bar", drag the controls to the screen, and make configurations.



5. Set the alarm bar information: Click "Alarm Bar" to display the setting window of this control at the bottom of this view, as shown in the following figure.



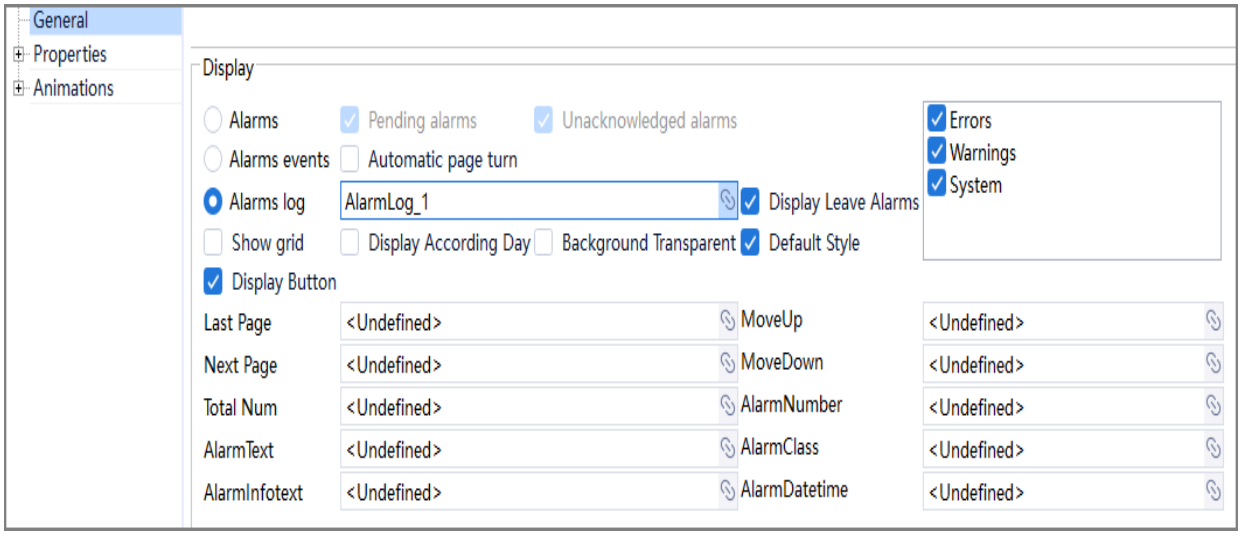
6. To record the alarm information, in the "Project" section on the left in the data view control, choose "Historical Data" > "Alarm Record", and add a group of alarm records to be recorded.

	Name	Number	Num of data records per log	Path	Log alarm text and error location	Logging method	Fill level	Enable logging at runtime start	Response at runtime start	Comment
1	alarmloggings_1	1	500	Local Disk	On	Circular log		On	Append data to existing log	

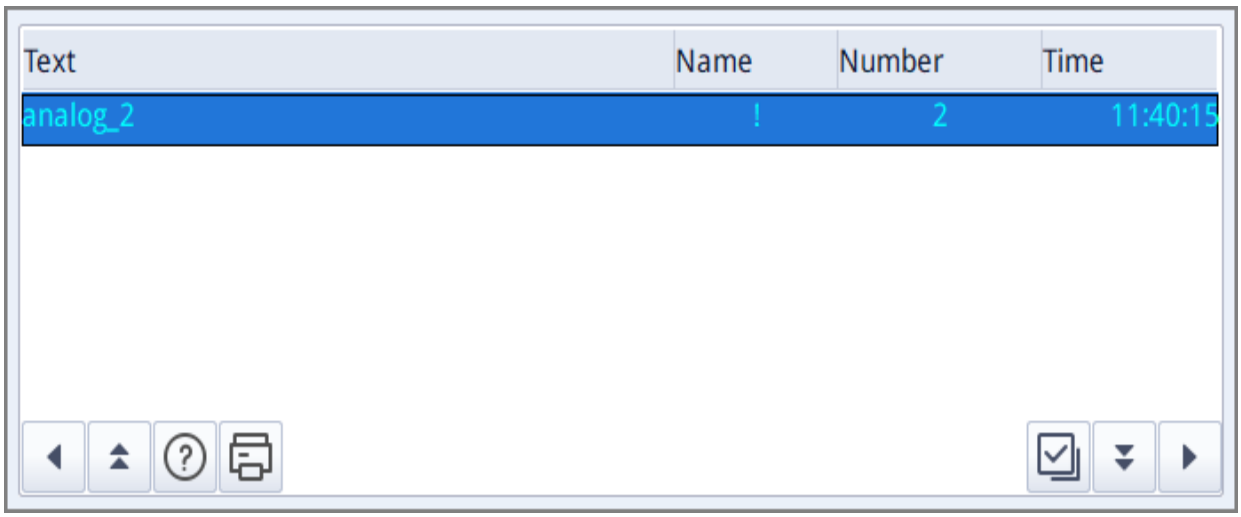
a. In the "Project" section on the left, choose "Alarm Management" > "Settings" > "Alarm Classes", and set the category of alarms to be recorded.

	Name	Display name	Ack	Log	C color	CD color	CA color	CDA color	C text	D text	A text	Number
1	Errors	!	On "activated"	AlarmLog_1	#ff0000	#ff0000	#000000	#000000	C	D	A	1
2	Warnings	#	Off	AlarmLog_2	#ffff00	#ffff00	#000000	#000000	C	D	A	2
3	System	$	Off	<Undefined>	#ff00ff	#000000	#000000	#000000	C	D	A	3

b. In the alarm record control, select the alarm data to be recorded.

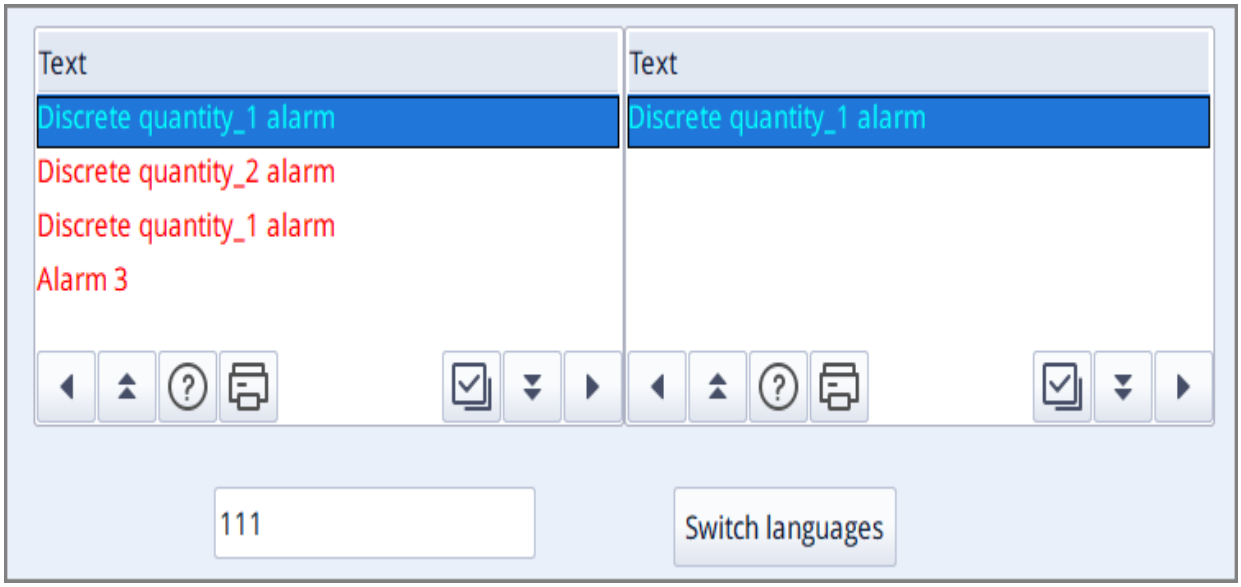


7. Perform offline simulation to trigger an alarm, and the test result is shown in the following figure. When the set value is 10, the current alarm is displayed at the alarm bar in a scrolling manner, and the data record is recorded in the alarm view.

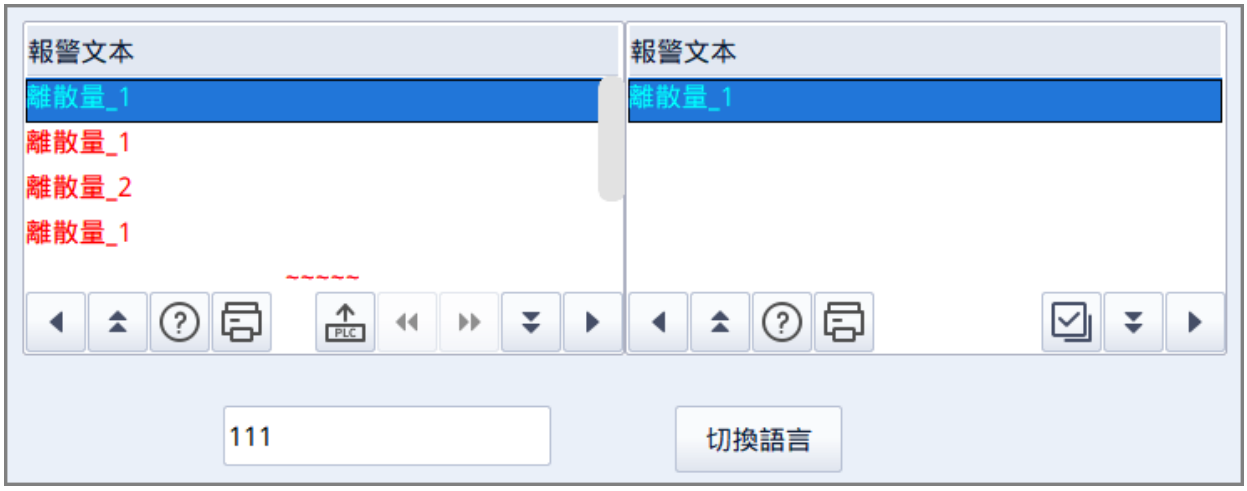


Internationalization of historical alarms

The alarm view supports translating alarm texts. The historical alarms displayed on the left and the real-time alarms are displayed on the right for reference. After an alarm is triggered, the following page is displayed.



Select "Switch Language". The language of the alarm text changes, as shown in the following figure.



Note

- Alarms about the tag that is used for configuring the alarm text cannot be internationalized.
- Historical alarms of earlier versions are supported.

7.3.5.2 Alarm Bar

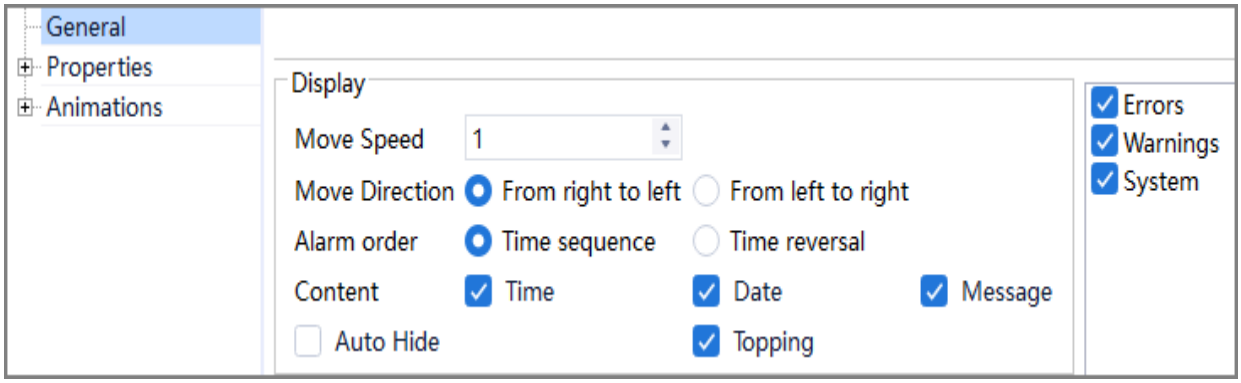
The "Alarm Bar" control is used to display the active alarm.



1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Display	Move Speed	Set the move speed for the alarm bar.	Range: 0 to 25
	Move Direction	Set the move direction for the alarm bar.	• From right to left • From left to right
	Alarm order	Set the display order of alarms.	• Time sequence • Time reversal
	Content	Set the display content of alarms.	Time, date, or message
	Auto Hide	Set whether to hide the alarm bar automatically.	When this option is checked, the alarm bar is hidden automatically.
	Topping	Set whether to top the alarm bar.	When multiple controls overlap each other and the alarm bar is not at the top, you can select "Topping" to top the alarm bar after an alarm occurs.

"Error", "Warning", and "System" in "General" are used to set the type of the alarms to be displayed.



2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Background transparent		• Checked: The control background is transparent. • Unchecked: The control background is displayed based on the background color and the fill style.	When this option is checked, the control background is always transparent no matter what the style is.
	Fill	Enable fill	• Checked: You can customize the control color or style. • Unchecked: You cannot customize the control color or style.	When both "Background Transparent" and "Enable fill" are checked, you can only set "Text color" in the fill box.
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
		Fill style	Multiple styles are available.	Browse styles in the drop-down list.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	

	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
Text	Font	Font	Set the font and size of displayed text.	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	This setting is only effective when no process tag is selected.
	Process	Tag	Process tag	Process tag, flashes when the value is 1
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.5.3 Fault Code Query

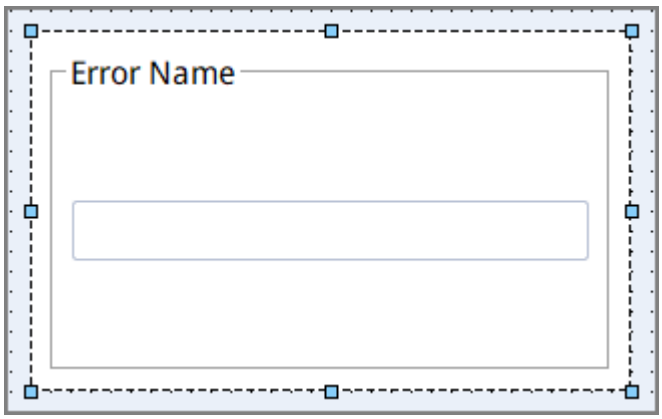
The "Fault Code Query" control is used to query alarm messages of Inovance SV660N series servos and display the alarm messages in a table and a text box.

Feature

- Default mode



- Auto Mode



Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

1. On the "General" tab page of the property view, you can set the following properties.

Item	Description
Tag	Configures the fault code tag which is used to query the fault message in the alarm query view.
Mode	Default Mode: You can manually input the fault code or query the fault code and the fault message is displayed in a table. Auto Mode: You need to configure the fault code tag. When the tag changes, the fault name is automatically displayed.
Device Type	Only the SV660N series devices are supported.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.	-

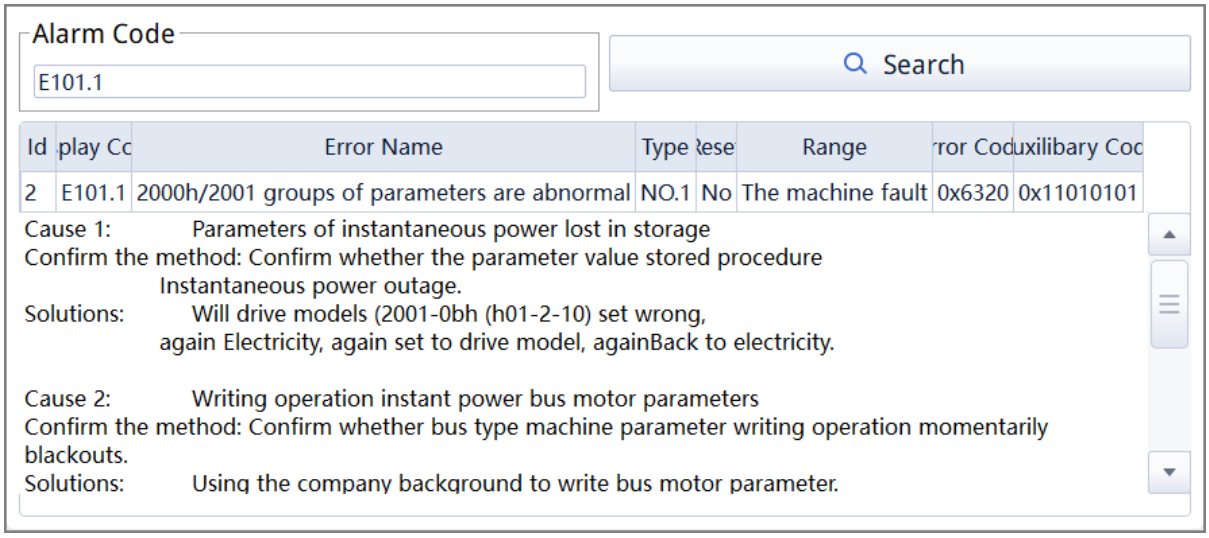
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	In pixels
	Size	Width	Set the width of the rectangle.	In pixels
		Height	Set the height of the rectangle.	In pixels
Text	Font	Font	Text font	-
	Alignment	Horizontal	Aligns the text horizontally. Options are "Left", "Center", and "Right".	-
		Vertical	Aligns the text vertically. Options are "Top", "Middle", and "Bottom".	-
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Tag to control a process	-
		Value ON	The state is ON when the tag reaches the set value	The default value is 1, which cannot be changed.
Table	Enable fill		• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.	-
	Table	Foreground color	Set the color of table text.	-

		Background color	Set the background color of the table.	-
		Header foreground color	Set the color of the table header text.	-
		Header background color	Set the background color of the header.	-
StyleSheet	StyleSheet	StyleSheet	You can customize the style of the object.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

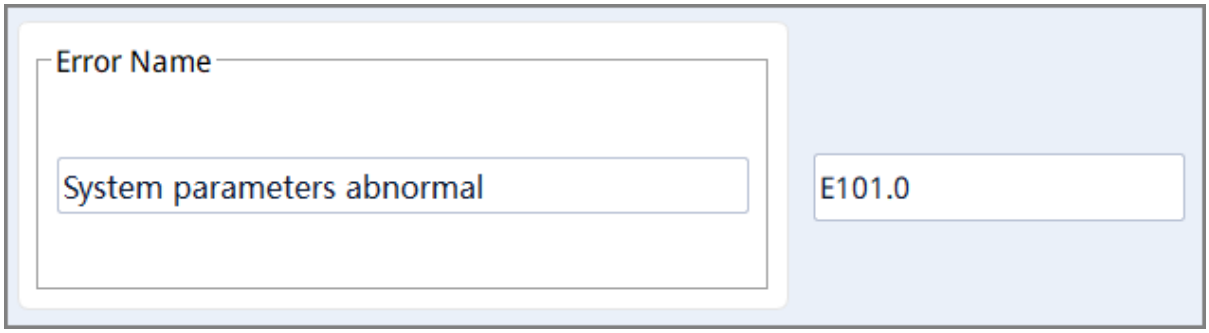
3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

4. View runtime characteristics.

Default Mode



Auto Mode



7.3.5.4 Recipe

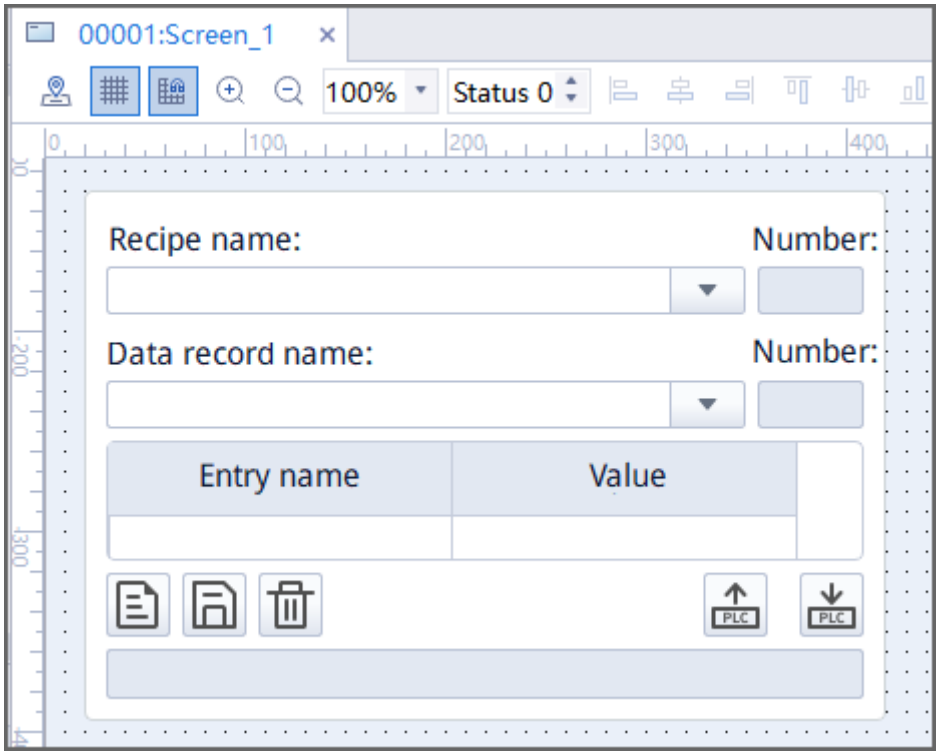
The "Recipe" control is a general-purpose enhanced screen object for displaying, editing and managing recipe data records. It presents data records in tables. In the "Recipe" view, the values displayed and entered can be stored in data records, which exchange data with the PLC through system functions.

Adding Methods

There are two methods to insert a recipe control on the screen:

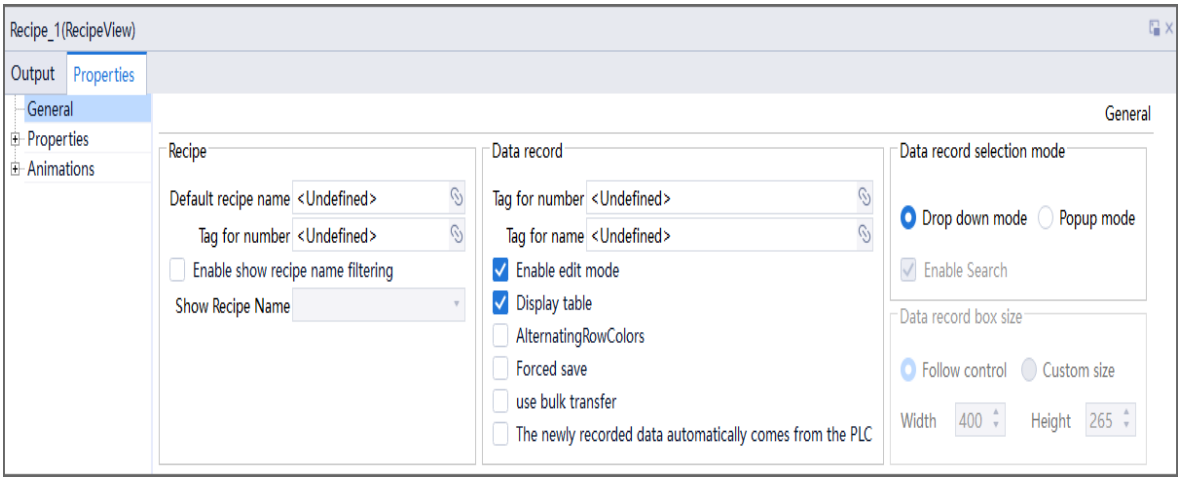
1. Select the object in the "Tools" panel, drag and drop it to the target position on the screen.

2. Select any user recipe in the "Project" tree, drag and drop it to the target position on the screen.

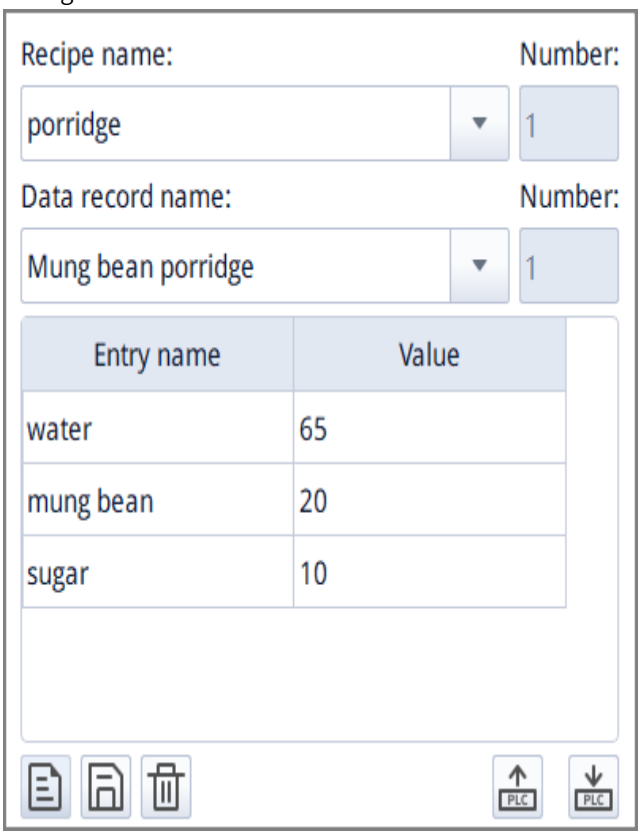


Parameter settings

- General



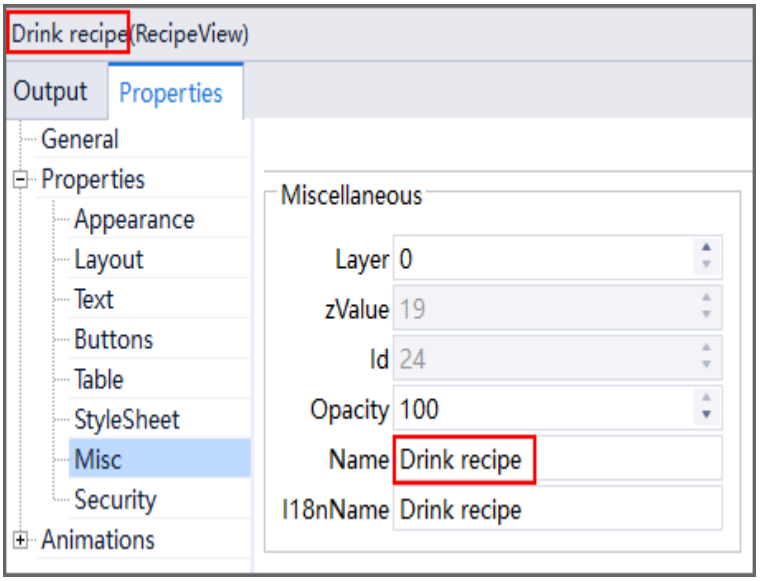
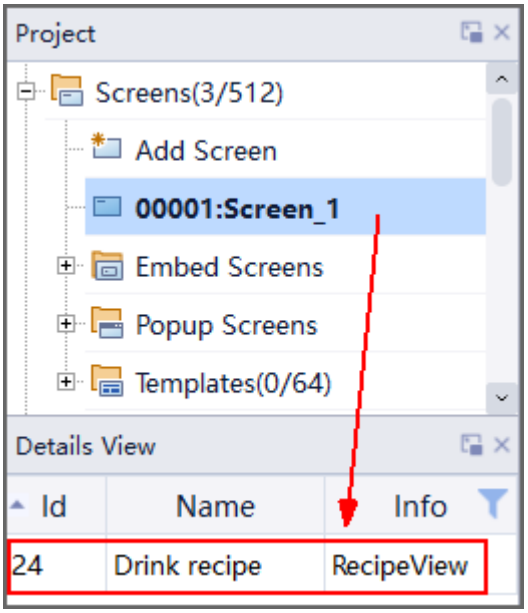
Category	Parameter	Description
Recipe	Default recipe name	Specify the recipe name to be displayed by default when the recipe view is running online. When "Enable show recipe name filtering" is checked, ensure the selected recipe name is within the filter range.
	Tag for number	The recipe number is associated with an integer tag, enabling recipe switching by specifying the tag value. When the tag value does not match a valid number, the recipe view displays blank.
	Enable show recipe name filtering	Set the recipe range for online display in the recipe view. The displayed recipe names support multi-selection.

Category	Parameter	Description
Data Record	Tag for number	The data record number is associated with an integer tag, enabling data record switching by specifying the tag value.
	Tag for name	The data record name is associated with a String type tag, enabling data record switching by specifying the name.
	Enable edit mode	Check the box to allow modifying ingredient values when the recipe view is online.
	Display table	Check the box to display recipe data and data records in table format; otherwise, recipe names will be displayed in text form.
	AlternatingRowColors.	Check the box to display the ingredient row of data record with alternating background colors, as shown in the figure: 
	Forced save	After modifying the ingredient values of the data record, you do not need to save the modification by clicking  button.
	Use bulk transfer	Integrate the data of all ingredients in the data record into a single data packet and transfer it to the PLC for communication.
	The newly recorded data automatically comes from the PLC	For online created data records, check the box to assign ingredient quantities using real-time PLC values;

Category	Parameter	Description
		otherwise, default values from the ingredient list will be used.
	Data record selection mode	Display mode of data record options: Drop down mode: Options are listed in a drop-down menu. Popup mode: Options are listed in a new window. The size of the new window can be set in the "Data record box size" window.
	Data record box size	Follow control: Follow the size of recipe control Custom size: Specify the size.

- Properties

Category	Parameter	Description
Appearance	Fill	Set the fill of text and background.
Layout	Position	The position of a recipe control on the screen, which is determined by the coordinate values of its top-left corner.
	Size	Set the size of a control window.
	Button size	Set the size of command buttons on controls, such as button  .
Text	Font	Set the text font and size.
Buttons	General commands	Select the command object to display on the control.
Table	Table	Table for displaying data records: Foreground color: Text color Background color: Cell fill color
StyleSheet	StyleSheet	Use code programming to configure the visual style of the control, such as font, font size, and background color. You can use the style code template under "Project" > "Resource" > "Global StyleSheet" node.
Misc	Layer	The screen layer in which the object is located, supporting maximum 31 layers.
	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
	Id	The ID of the current control, which is assigned by the software.
	Opacity	The transparency of the control displayed on the screen. Range: 1 to 100. A higher value results in clearer display.

Category	Parameter	Description
	Name	The name of the control in the project, which is synchronized to the display names in the other two locations as shown below:  
	I18NName	This name will be recorded in the operation log when operations, such as creating, deleting, or uploading PLCs are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.
Security	Authorization	Check "Enabled" to grant corresponding usage permissions only when the user login permission level matches the preset permissions; uncheck "Enable" to limit users with corresponding permissions to view-only access. If the authorization is set to "Undefined", all operations are supported when "Enabled" is checked, and view-only is supported when "Enabled" is not checked.
	Enabled	

Category	Parameter	Description
	Visibility controlled by authorization	The enable switch for managing the "Visibility" under the "Animation" node.

- Animation
  Enable Object: Dynamically controls the operability of objects. See Enabling an Object for details.
  Visibility: Dynamically controls object visibility by changing tag values. See 7.5.1.10 Visibility for details.

Online operations

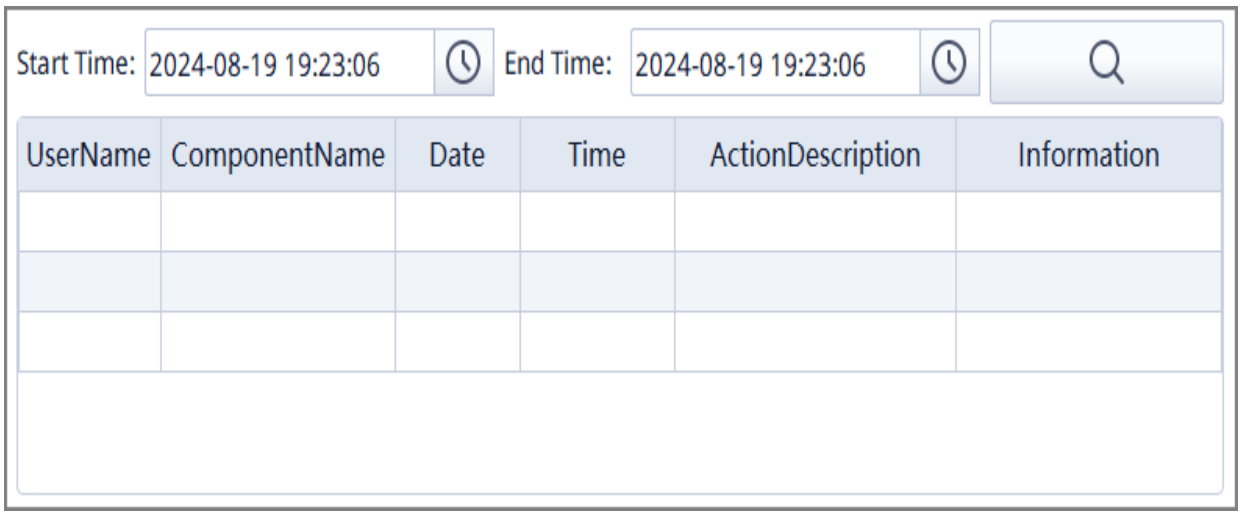
For online operations, see 10.3.1 Online Operations in Recipe View.

7.3.5.5 Operation Record

The "Operations" view is a general-purpose enhanced screen object for displaying data records. It presents operators' operation records in tables. When using this view, choose "HMI Settings" > "Project Settings" > "Operations", and check "Enable OperationRecord".

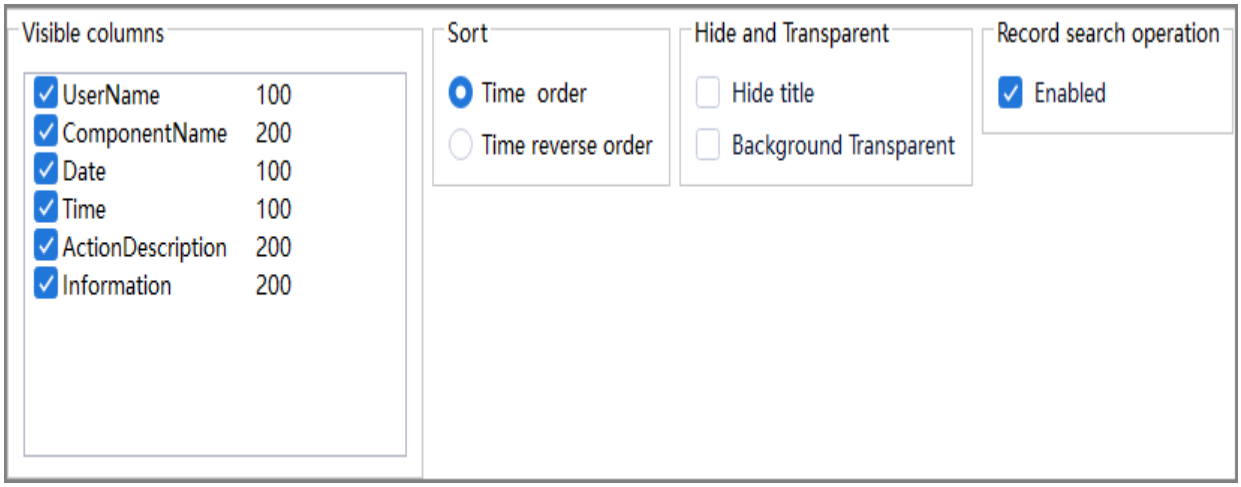
In the "Operations" view, you can search for the operation records of an operator within a time period, as shown in the figure below.

> **Note**
>
> After the firmware is upgraded from V1R4 to V1R5, the language of the operation records logged on the touchscreen remains unchanged, and the subsequent new operation records are displayed in the current language. After the language is changed, the language of the operation records logged on the touchscreen remains unchanged.



"General" settings

The "General" page contains the "Visible columns", "Sort", "Hide and Transparent", and "Record search operation" sections, as shown in the figure below.



Item		Description
Visible columns	UserName	-
	ComponentName	-
	Date	-
	Date	-
	ActionDescription	The action description of an operation, such as "Click"
	Information	The operation result information, such as "The value is changed from 0 to 5"
Sort	Time order	Displays operation records in selected mode, which defaults to "Time order".
	Time reversal	
Hide and Transparent	Hide title	After "Hide title" is checked, the start time and end time are hidden and "Show Time Range" is displayed in the view. If you check the "The day before the current moment", operation records of the previous day of the current time are displayed in the view. If you do not check the "The day before the current moment", the initial record is empty in the view. The actual operations are recorded to the operation record view one by one.
	Background Transparent	After you check "Background Transparent", the view background turns transparent.
Record search operation	Enabled	Checked by default

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item	Description

Layout	Position	X	The horizontal distance, in pixels, from the origin of the "Operations" view to the left edge
		Y	The horizontal distance, in pixels, from the origin of the "Operations" view to the upper edge
	Size	Width	The width of the "Operations" view, in pixels
		Height	The height of the "Operations" view, in pixels
Table	Enable fill		• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.
	Table	Foreground color	Set the color of table text.
		Background color	Set the background color of the table.
		Header foreground color	Set the color of the table header text.
		Header background color	Set the background color of the header.
		Font	Set the style and size of table text.
StyleSheet	StyleSheet	StyleSheet	-
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31. Default: 0
		z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control, which is assigned by the system
		Opacity	Range: 1 to 100; Default: 100 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control, which can be customized
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.
Security	Runtime Security	Authorization	Assign users with permissions.

	Operation	Enabled	Check to enable the input. Input is allowed only when enabled. Otherwise, input is disabled.
		Visibility controlled by authorization	Check to control visibility through authorization.

"Animations" settings

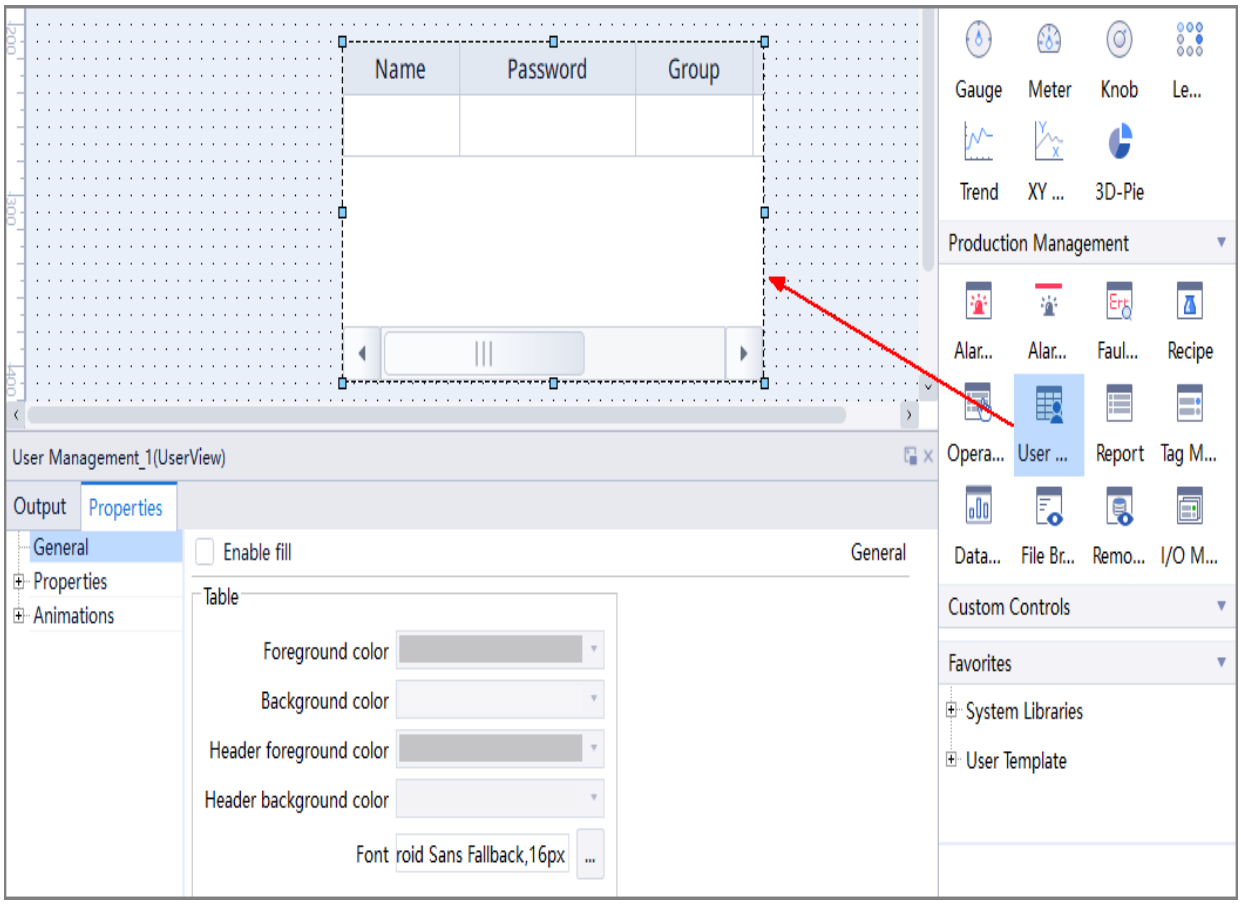
On the "Animations" tab page of the property view, you can set "Enable Object" and "Visibility". For details, see the sections Enabling an Object and 7.5.1.10 Visibility.

7.3.5.6 User Management

The "User Management" view is used to control users in the runtime.

Configuring the "User Management" view

1. Add "User Management" to the screen, as shown in the following figure. In the "Tools' navigation tree on the right, choose "Production Management" > "User Management", and drag the control to the screen.



2. Set properties in the user management view.

The properties of :"User Management" consist of three parts: General, Properties, and Animations. Parameters in "Animations" are common settings. For details, see the 7.5.1 Animation section.

"General" settings

On the "General" tab page of the property view, you can set the following properties.

Item	Description

Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.
Foreground color	Set the table foreground color of the "User Management" view.
Background color	Set the table background color of the "User Management" view.
Header foreground color	Set the table header foreground color of the "User Management" view.
Set the background color of the header	Set the table header background color of the "User Management" view.
Font	Set the style and size of the table content and header text of the user management view.

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.	In pixels
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.	
	Size	Width	Set the width of the rectangle.	
		Height	Set the height of the rectangle.	
StyleSheet	StyleSheet	StyleSheet	Set the display style.	-
Misc	Miscellaneous	Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the Z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

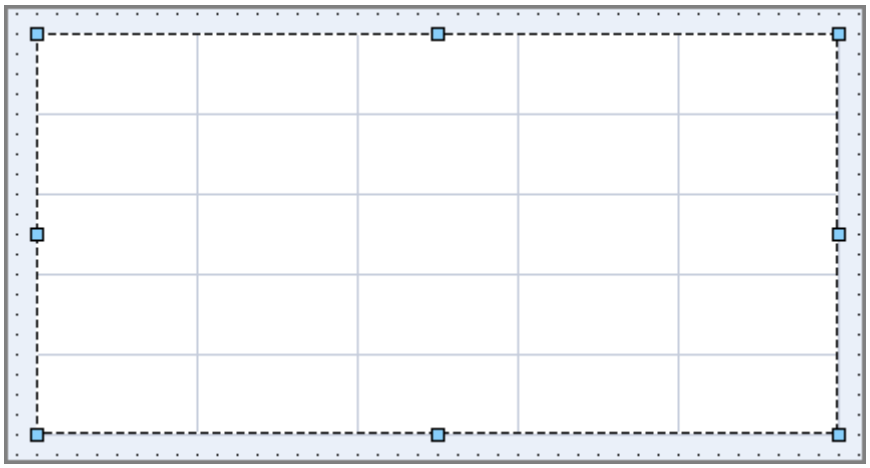
"Animations" settings

On the "Animations" tab page of the property view, you can set the following properties.

Name	Description
Enable Object	See Enabling an Object.
Visibility	See 7.5.1.10 Visibility.

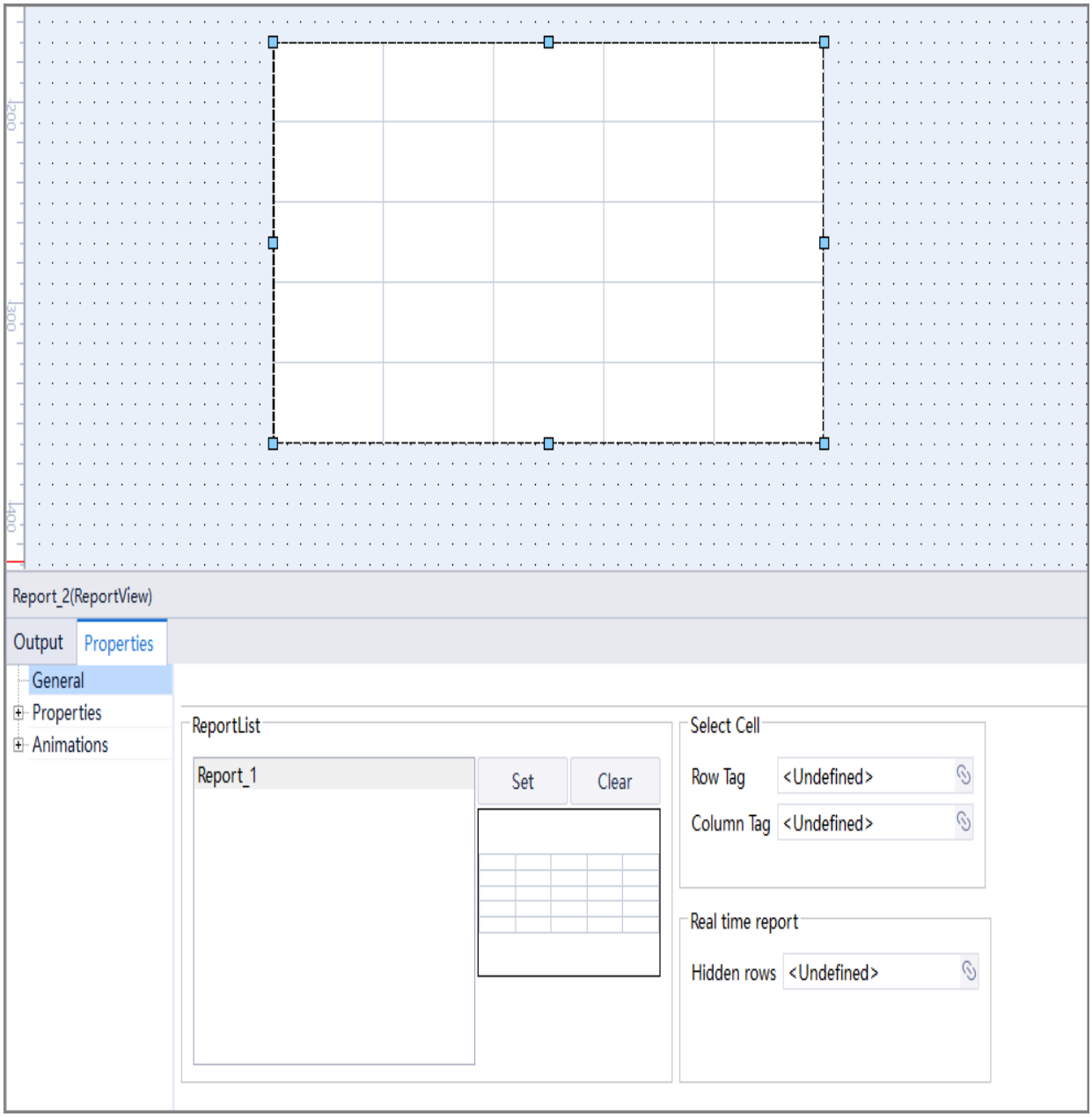
7.3.5.7 Report

The "Report" view is a general-purpose enhanced screen object for displaying and editing reports. It presents report data in tables. In the "Report" view, you can edit and view report data. The following is a report view in the screen.

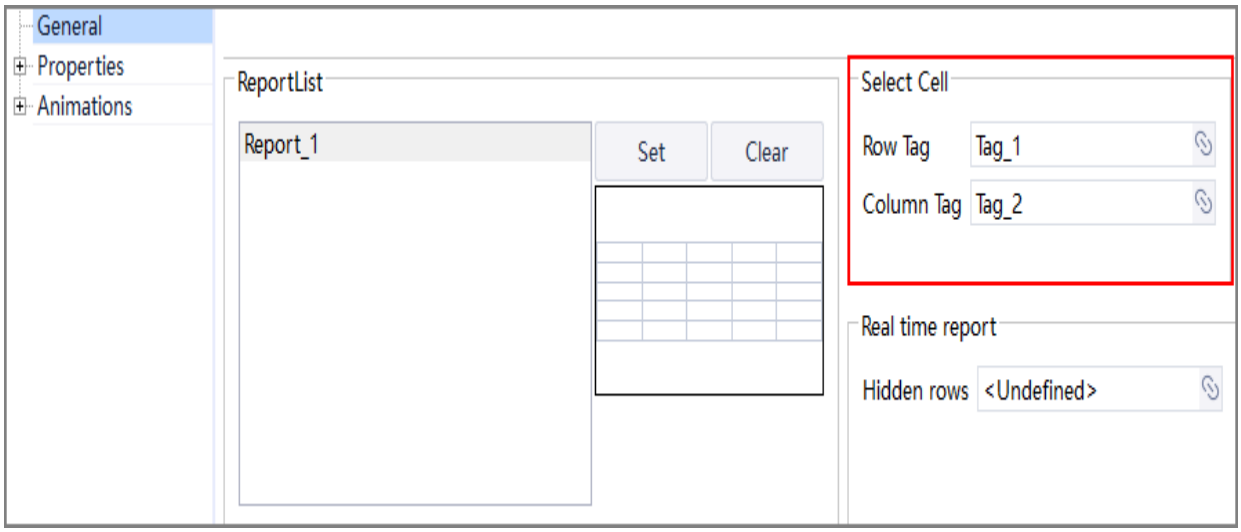


"General" settings

1. ReportList: Lists all the reports created by the user. You can specify the reports to be displayed here, as shown in the following figure.



2. Select Cell: You can select the row tag and column tag, as shown in the following figure.

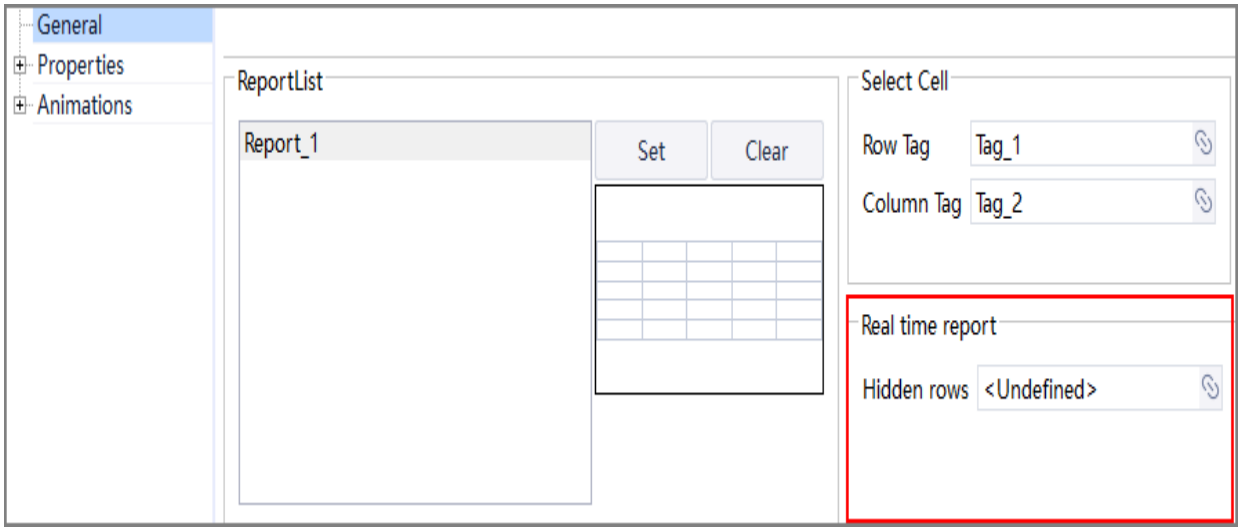


The row tag and column tag can be used to display the index of the selected cell in the report view. In addition, you can control the selected cell by changing the values of row and column tags.

3. Real time report: You can set the number of hidden rows, as shown in the following figure.

Note

The "Hidden rows" parameter indicates the number of rows hidden from the bottom of a real-time report.



"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item			Description
Layout	Position	X	The horizontal distance, in pixels, from the origin of the "Report" view to the left edge
		Y	The horizontal distance, in pixels, from the origin of the "Report" view to the upper edge
	Size	Width	The width of the "Report" view, in pixels
		Height	The Height of the "Report" view, in pixels
Buttons	Size	Width	Set the button size. Range: 10 to 100; Default: 30.
		Height	
	Operation	Last Page	Pages up or down based on the value of the BOOL-type tag associated. The default value is null.
		Next Page	
		Start and Pause	You can start and stop a report by configuring the tag.
	Signal	Home page	When a report reaches the first or last page, the tag value changes.
		End	
		Start and Pause	You can read-write signal enabling tag to control the refreshing of the status and notify the new report status to the user.
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control, which is assigned by the system

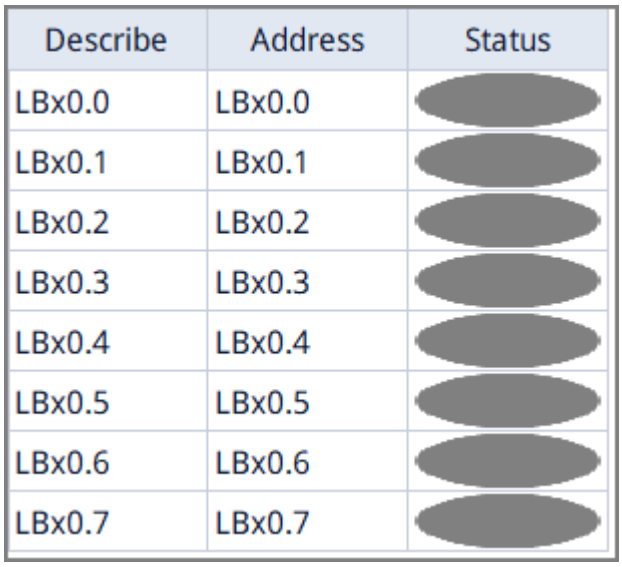
		Opacity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control, which can be customized
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.5.8 Tag Monitor

The "Tag Monitor" view is used to display the change to eight bits of a byte by configuring tags of the Bool type or label communication tags of the Byte type. The control location is shown in the following figure.



Feature

1. On the "General" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Process	Tag	Set the process tag for display.	Tags of the Bool type or label communication tags of the Byte type are supported.

2. On the "Properties" tab page of the property view, you can set the following properties.

Item		Description	Additional Information
Picture	Status	Each bit, 0 and 1, of the tag corresponds to one status.	0: Disabled 1: Enabled
	Graphic	The path of the graphic corresponding to the tag status	Select the graphic by referring to Simple Graphic View.

		Preview	The graphic corresponding to the tag status	0: The picture color is gray by default in this status. 1: The picture color is green by default in this status.
Information		Description	The text description of the tag bit	The text is editable and "..." is displayed for text content exceeding the cell size.
		Address	The address of the tag bit	Naming rule: Tag name+"x"+bit status
		Status	The status picture of the tag bit	-
Layout	Position	X	Set the X coordinate position of the "Tag Monitor" view.	In pixels
		Y	Set the Y coordinate position of the "Tag Monitor" view.	
	Size	Width	Set the width of the "Tag Monitor" view.	
		Height	Set the height of the "Tag Monitor" view.	
Table		Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.	-
		Foreground color	Set the foreground color of the "Tag Monitor" view.	-
		Background color	Set the background color of the "Tag Monitor" view.	-
		Header foreground color	Set the header foreground color of the "Tag Monitor" view.	-
		Set the background color of the header	Set the header background color of the "Tag Monitor" view.	-
		Font	Set the text font style of the "Tag Monitor" view.	-
StyleSheet		StyleSheet	The control style	-
Misc		Layer	Set the layer in which the object is currently located.	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		zValue	zValue	

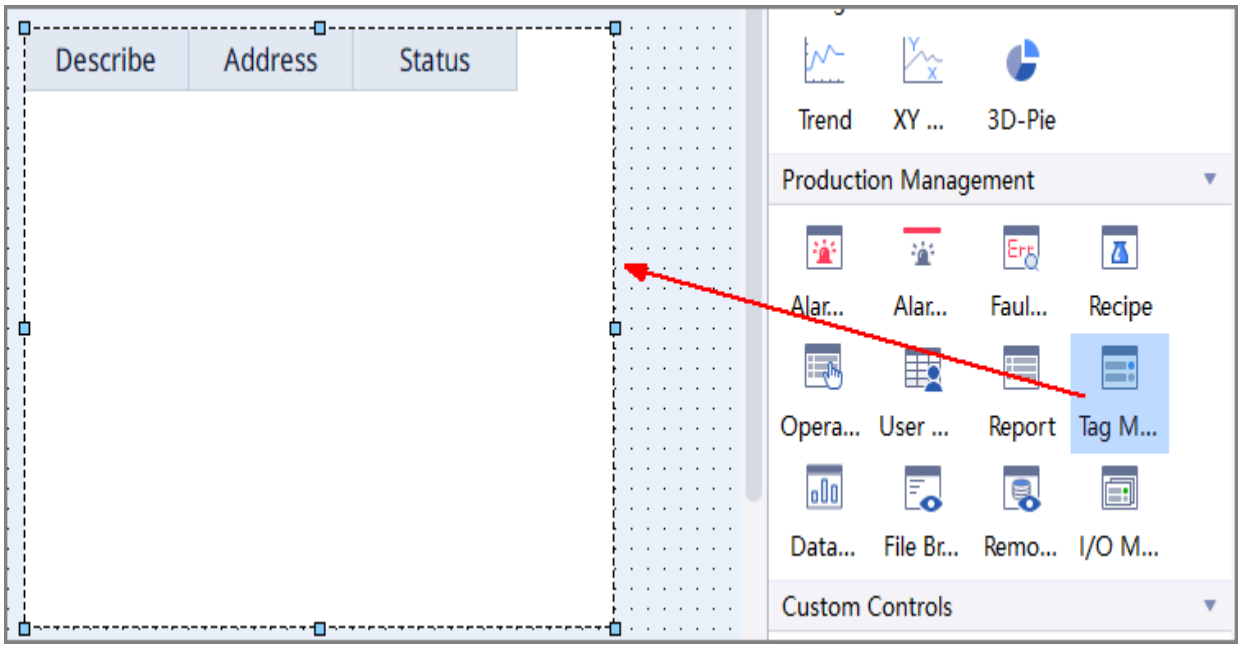
			The position of the control in the z axis. A control with a larger value covers a control with a lower one.
	Id	The ID of the current screen control	The ID is assigned by the system.
	Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
	Name	The name of the control	Customizable
	I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

3. On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

Step

1. Add the "Tag Monitor" view.

In the "Tools" navigation tree on the right, choose "Production Management" > "Tag Monitor", and drag the control to the screen, as shown in the following figure.

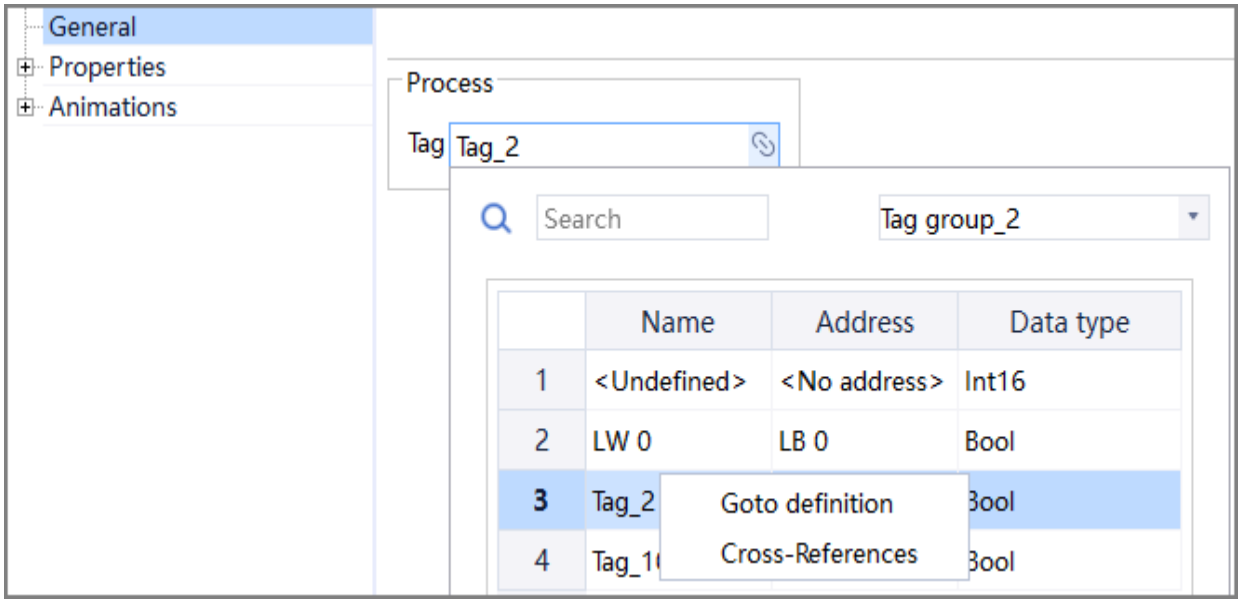


2. Configure the tag.

Method 1: In the project view on the left, choose "Communication" > "Tag" > "Add Tag Group", and create a tag of the Bool type. Choose "General" > "Process" > "Tag", and configure the Bool-type tag created, as shown in the following figure.

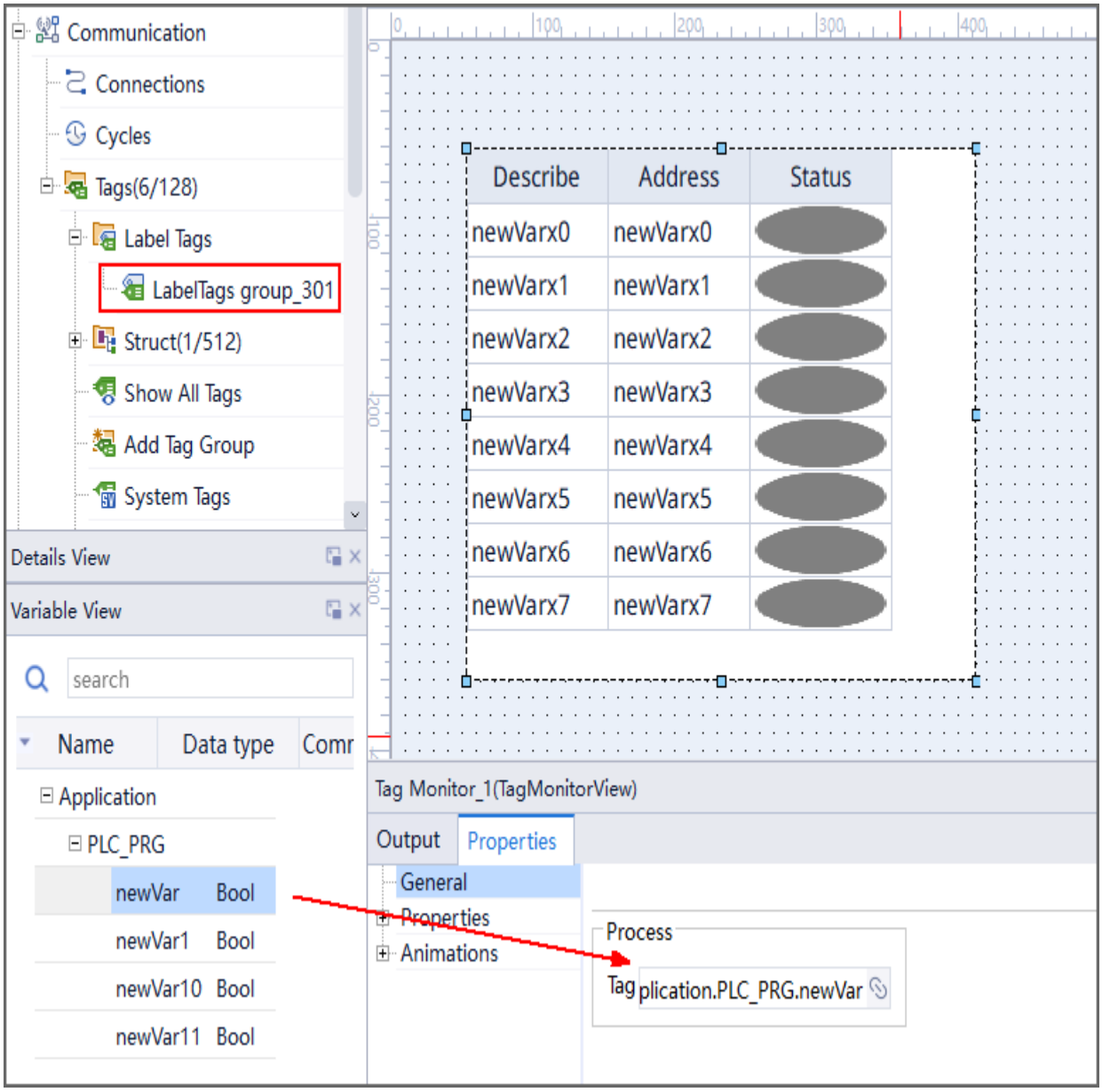
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Bool	1	1	LB 0

Method 2: On the tag monitoring property tab page, choose "General" > "Process" > "Tag", configure the Bool-type tag created, click the "Add" icon to create and configure the tag, as shown in the following figure.



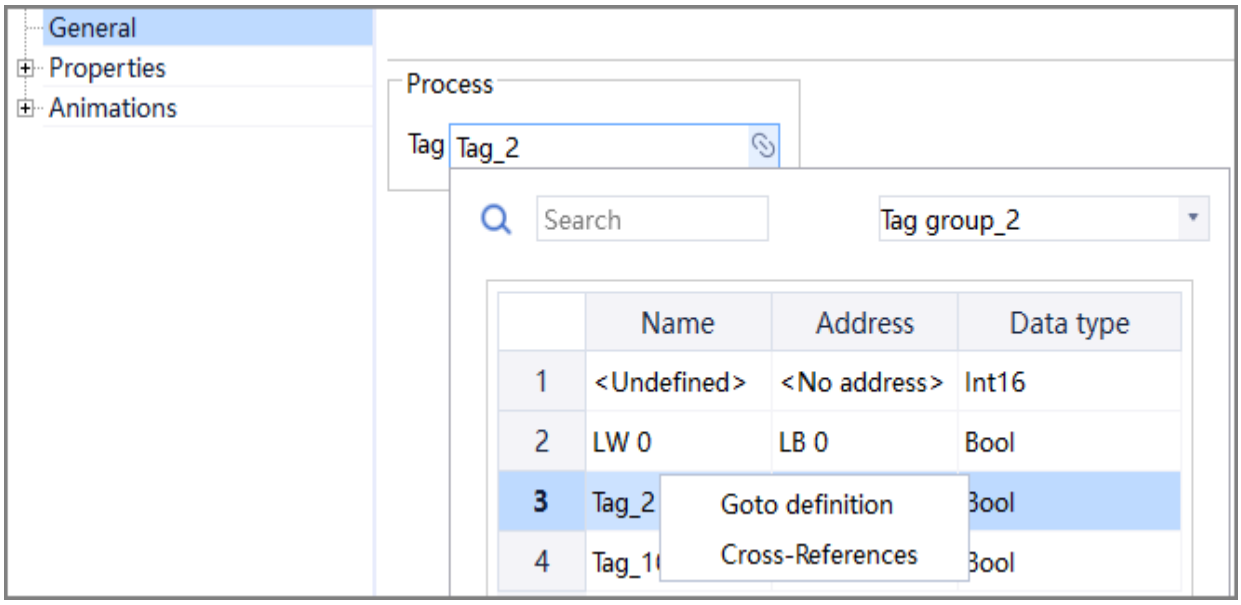
Describe	Address	Status
LWx0.0	LWx0.0	
LWx0.1	LWx0.1	
LWx0.2	LWx0.2	
LWx0.3	LWx0.3	
LWx0.4	LWx0.4	
LWx0.5	LWx0.5	
LWx0.6	LWx0.6	
LWx0.7	LWx0.7	

Method 3: For a label communication tag, you need to create a label communication connection and import the XML file. In the details view, choose "General" > "Process" > "Tag", drag the Byte-type tag to the screen, and make configuration, as shown in the following figure.

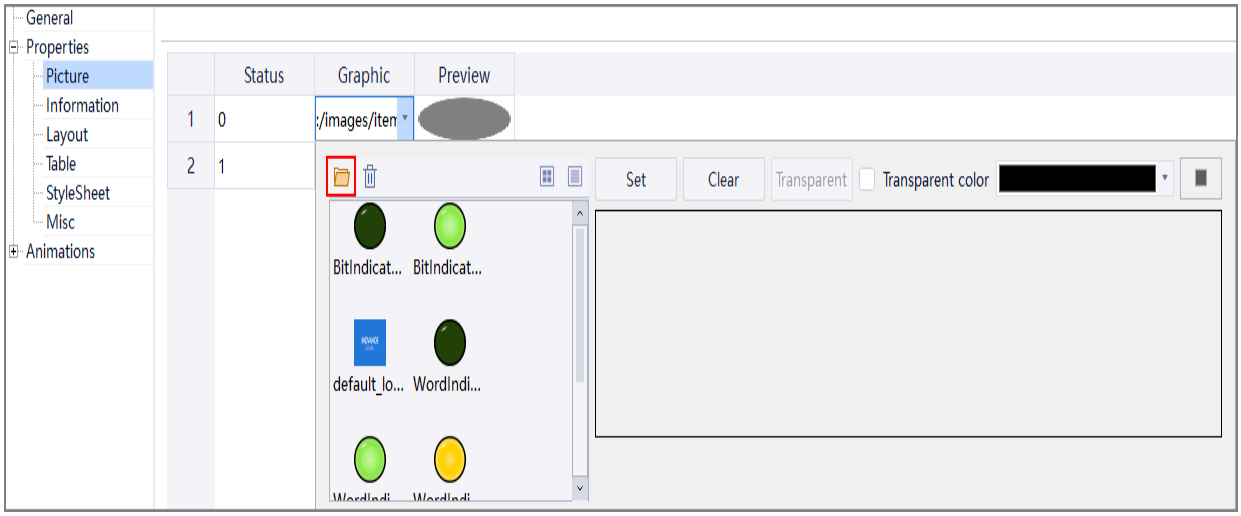


3. Operate the tag monitoring view control on the software.

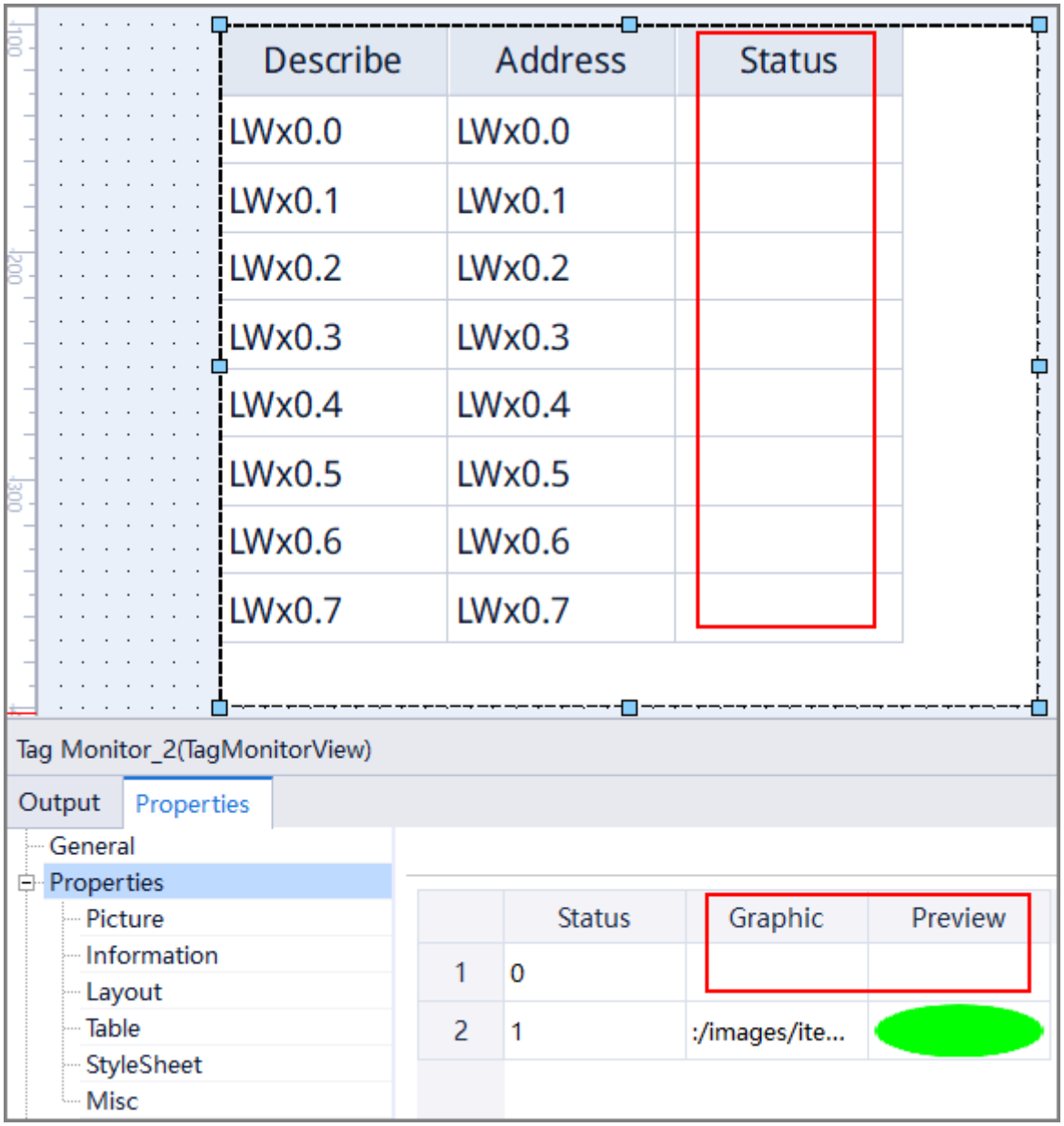
a. Right-click a tag and then select "Goto definition" or "Cross-References".



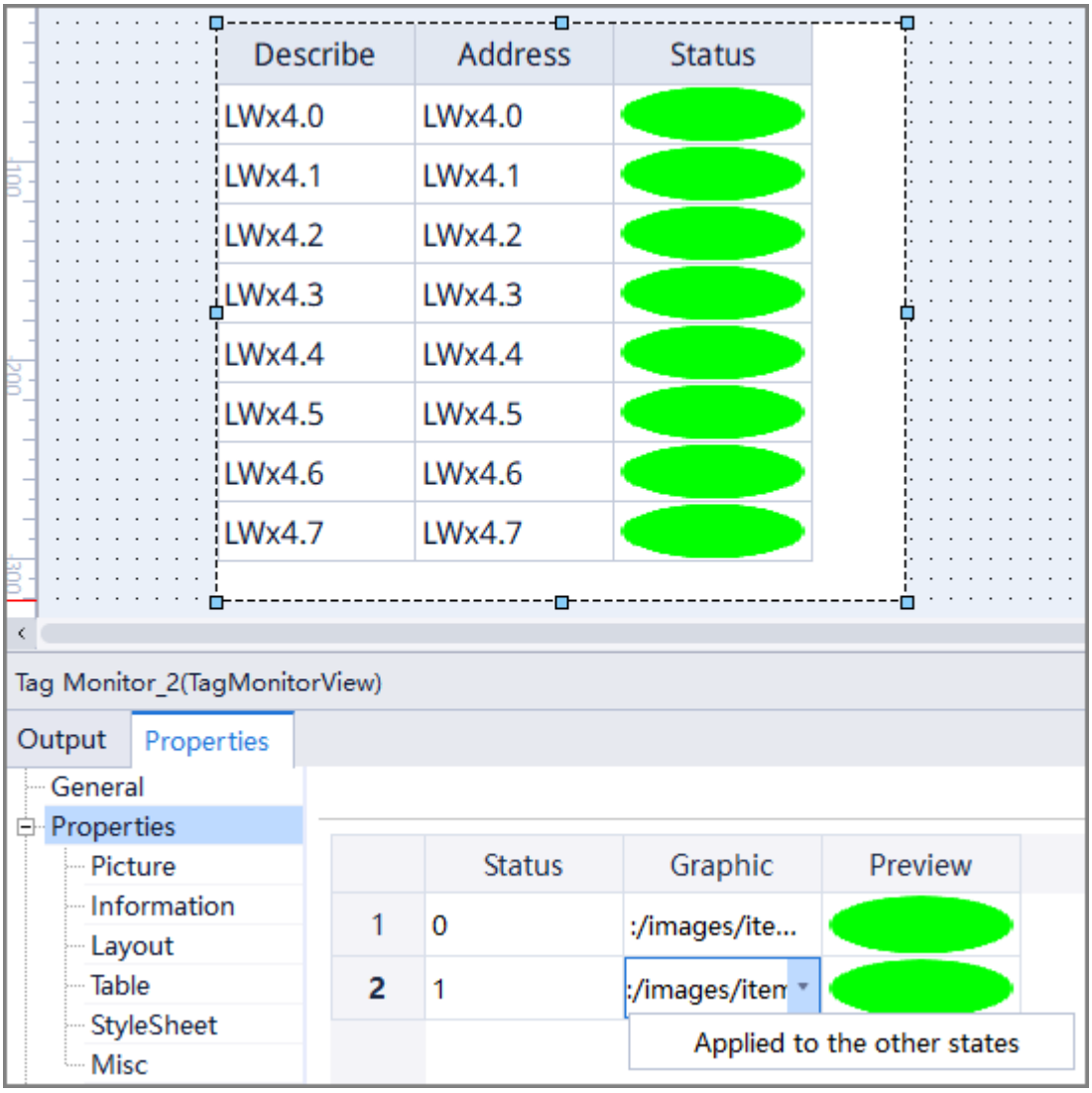
b. On the "Graphic" tab page of "Properties", set the preview graphic.



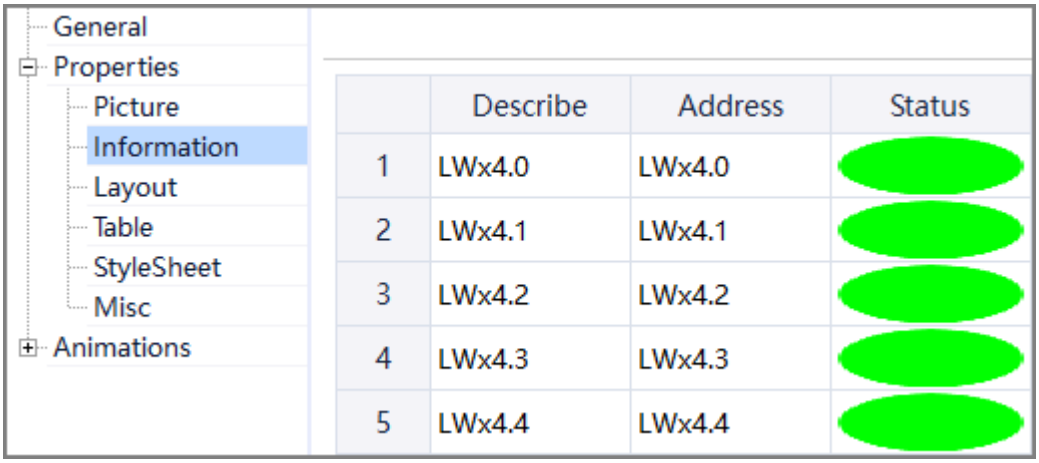
c. On the "Properties" tab page, select a picture in the "Graphic" column, and delete the picture.



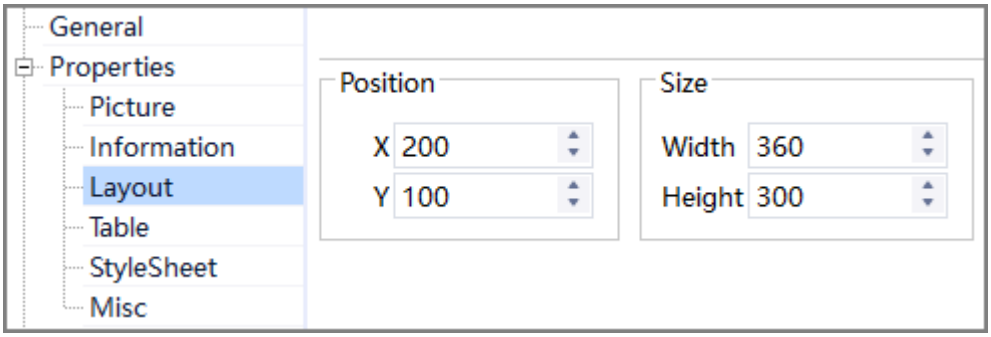
d. On the "Properties" tab page, select a picture in the "Graphic" column, and apply the current status.



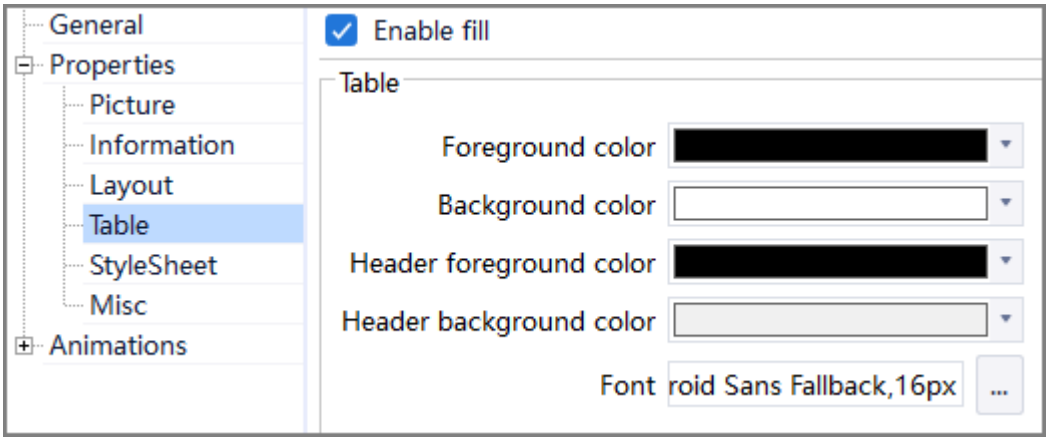
e. On the "Information" tab page of "Properties", edit the description text.



f. On the "Layout" tab page of "Properties", set the layout.

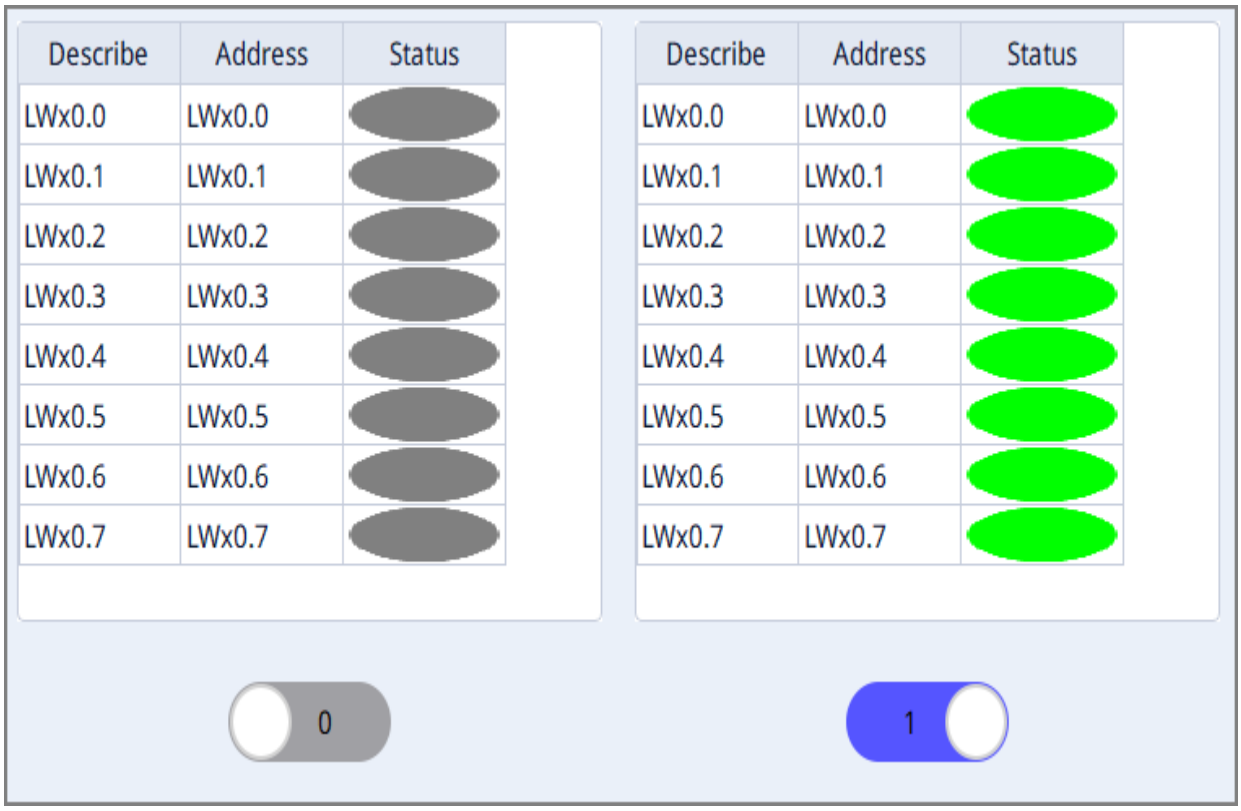


g. On the "Table" tab page of "Properties", set the table style.



4. Tags that can be configured in the tag monitoring view control

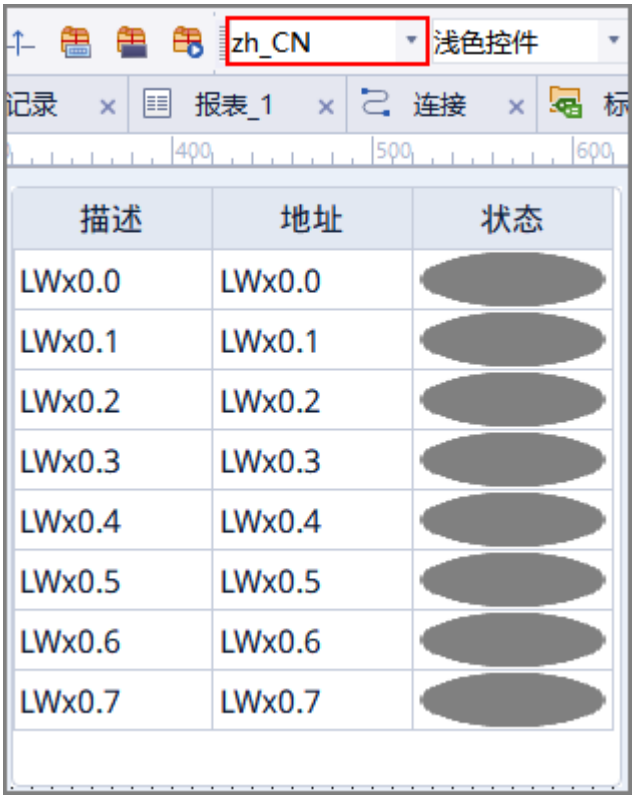
a. Internal tags or PLC tags

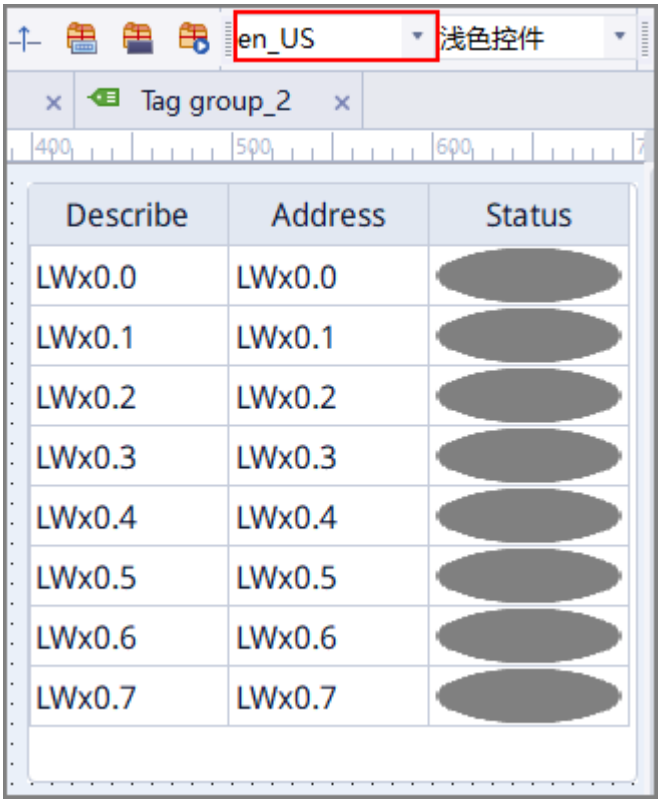


b. Label communication tags

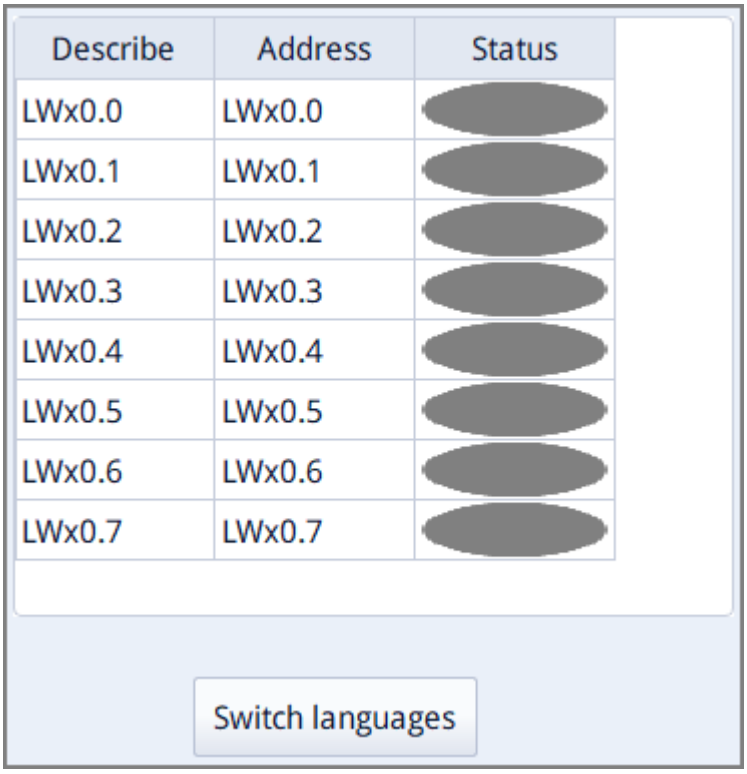
5. Other features

a. Internationalization





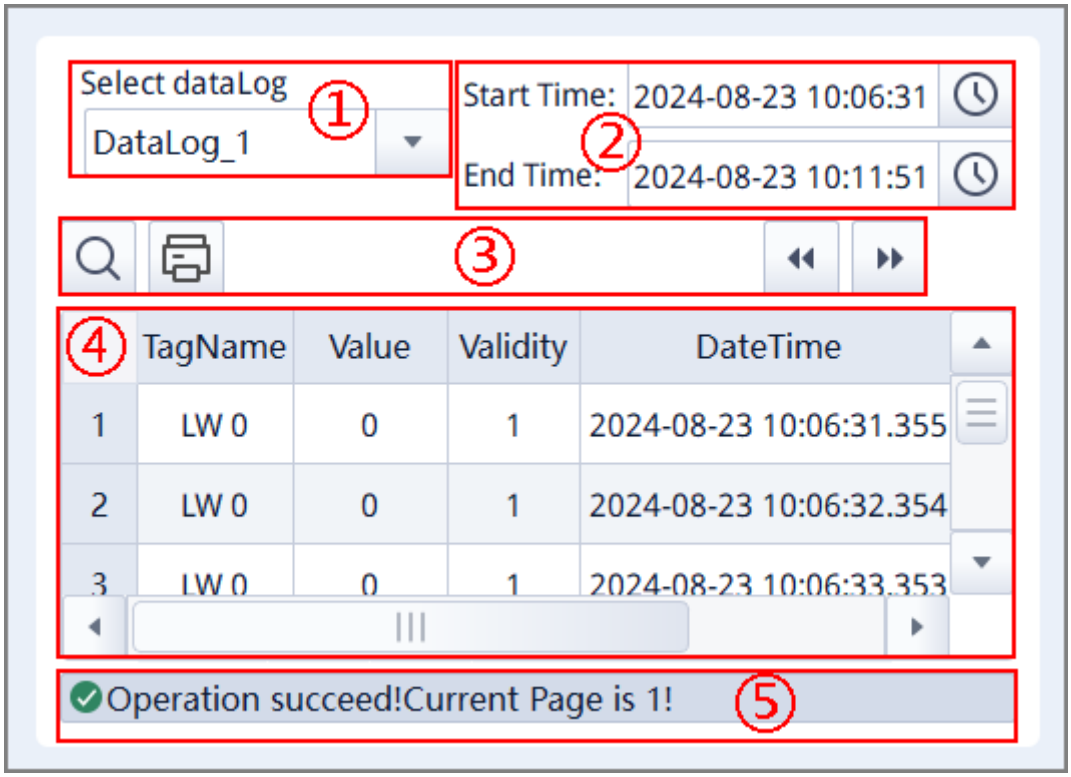
b. System function "setLanguage"



7.3.5.9 Data Record

The "Data Record" view is a general-purpose enhanced screen object for managing data records. It presents data records in tables. In the "Data Record" view, you can search for values of history data.

The "Data Record" view mainly consists of five areas, as shown in the following figure.

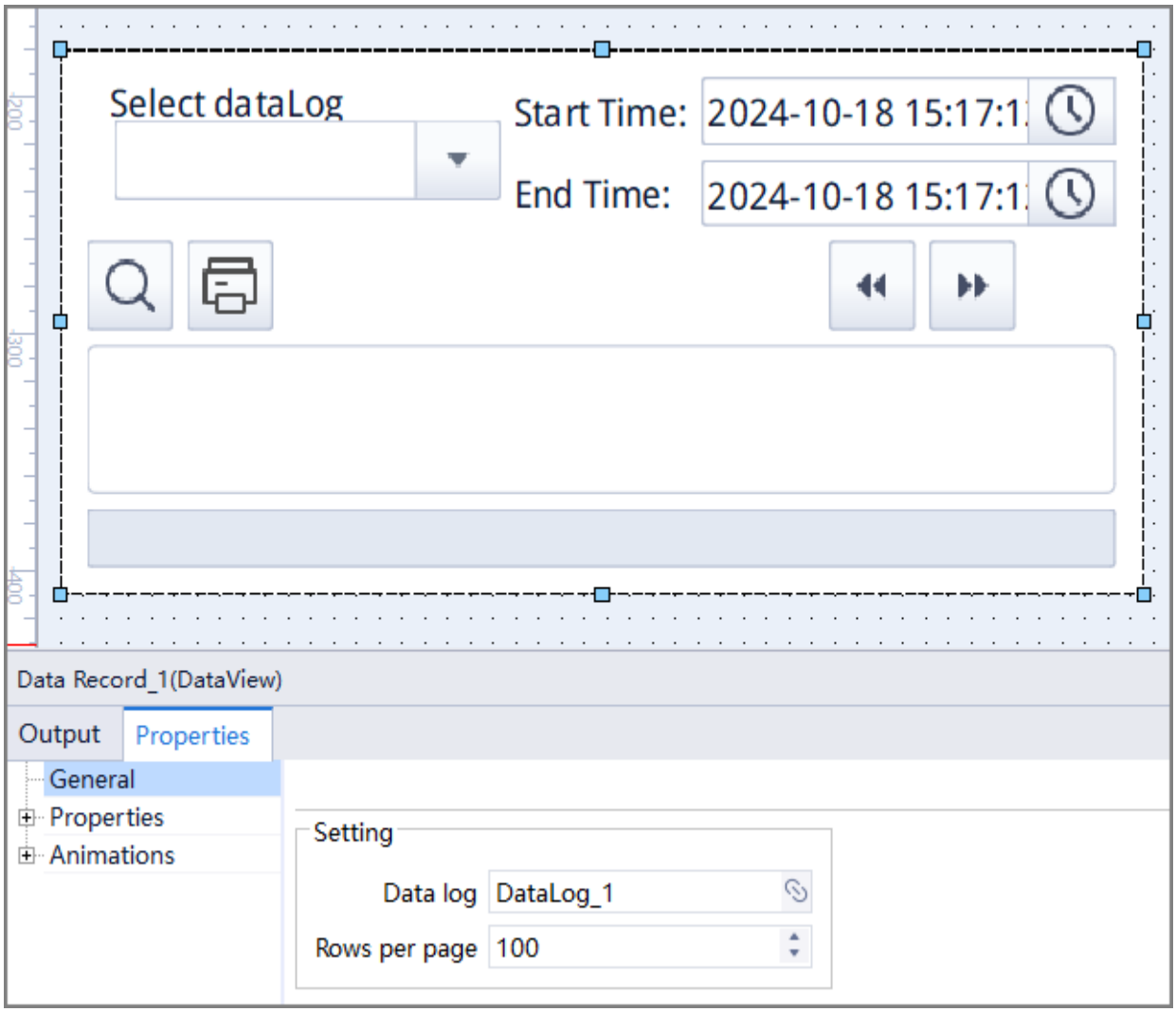


No.	Name
①	Data record list
②	Query time editing area

③	Functional buttons, among which the "Print" button is only available for the USB-based printer.
④	Data record display table
⑤	Operation prompt box

Configuring the "Data Record" view

Select the "Data Record" view in the screen and configure the view on the "Properties" tab page.



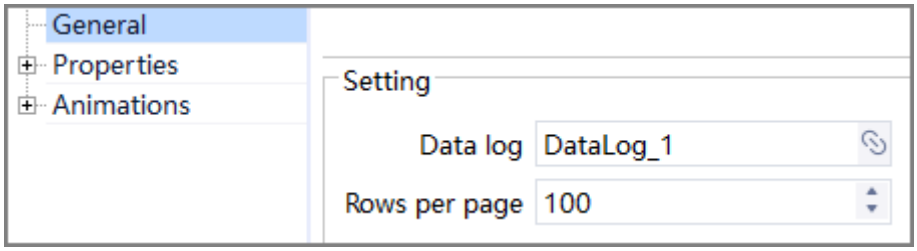
Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

"General" settings

1. Display a specific data record.

In the "General" section, you can specify the name of the data record to be displayed when the runtime starts. After you set a name, the information of this data record is displayed when the runtime starts.



2. Set the maximum number of rows per page of the data record table to be displayed.

Set the number of rows displayed per table page in the data record view as needed. 100 rows are displayed per page by default.

"Properties" settings

Item			Description
Appearance	Fill	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.
		Text color	The fill color of the text in the data record view, excluding the data table area
		Background color	The fill color of the background in the data record view, excluding the data table area
Layout	Position	X	The horizontal distance, in pixels, from the origin of the data record view to the left edge
		Y	The horizontal distance, in pixels, from the origin of the data record view to the top edge
	Size	Width	The width of the data record view, in pixels
		Height	The height of the data record view, in pixels
Text	Font		Defines the style and size of the data record view text font.
Buttons	General commands/menu entries		Includes Search, Update, Print, Last Page, and Next Page
Table	Table	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.
		Foreground color	Set the color of table text.
		Background color	Set the background color of the table.
		Header foreground color	Set the color of the table header text.
		Set the background color of the header.	Set the background color of the header.

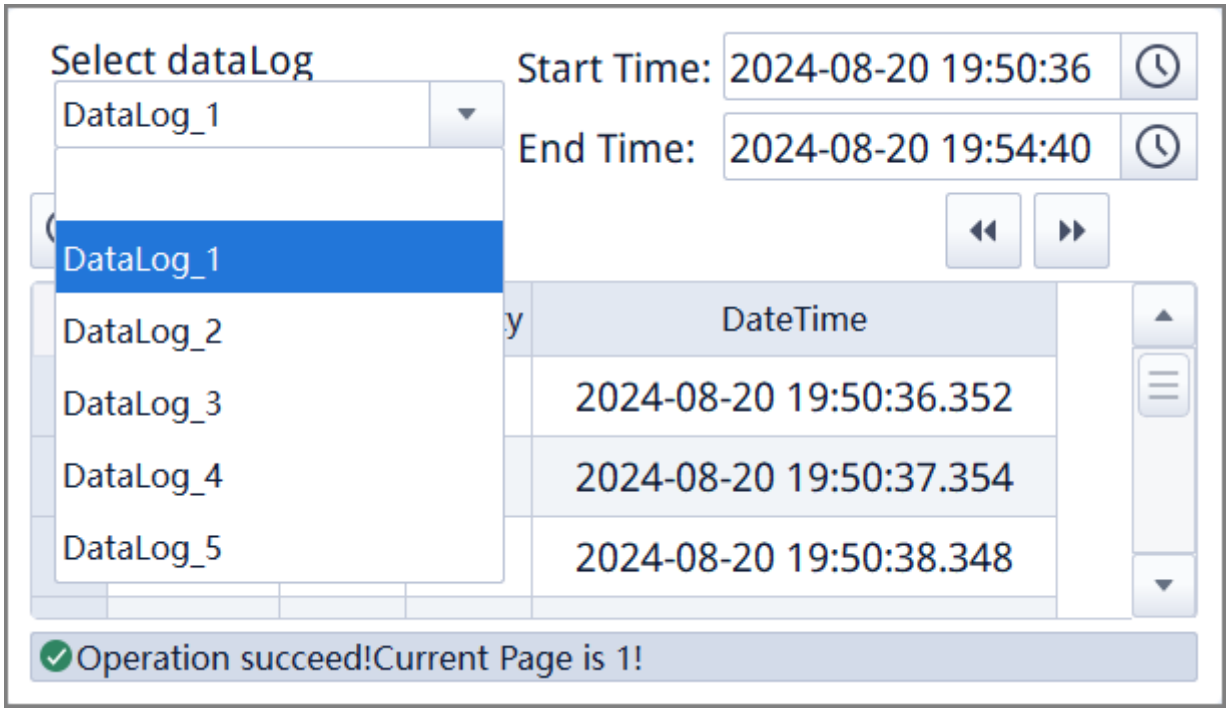
StyleSheet	StyleSheet	StyleSheet	-
Misc	Miscellaneous	Layer	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control, which is assigned by the system
		Opacity	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control, which can be customized
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

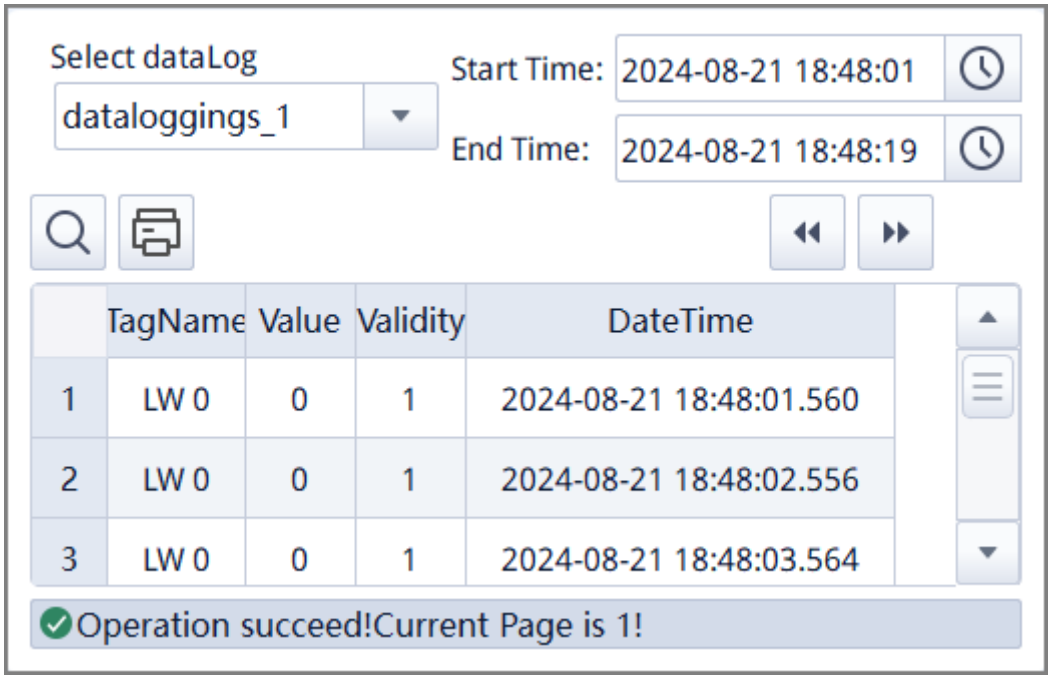
On the "Animations" tab page of the property view, you can set "Enable Object" and "Visibility". For details, see the sections Enabling an Object and 7.5.1.10 Visibility.

Features of the data record view in run time

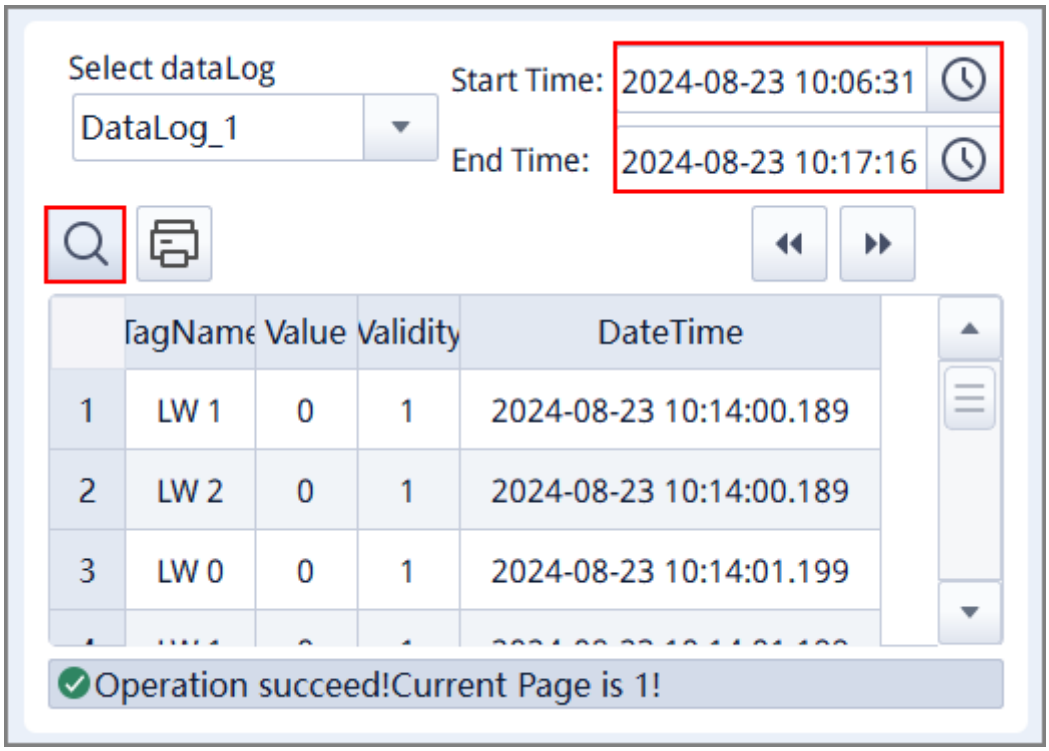
In the runtime, you can view data records through the data record list.



For example, after you select "DataLog_1", all the data recorded in "DataLog_1" is displayed in the table (and the query start time and end time are the time of the first data recorded and the time of the last data recorded, respectively. The start time and end time will be reloaded each time the data is switched). The historical data of the record (the tag name, value, validity, and date and time of the record) will be displayed, as shown in the following figure.

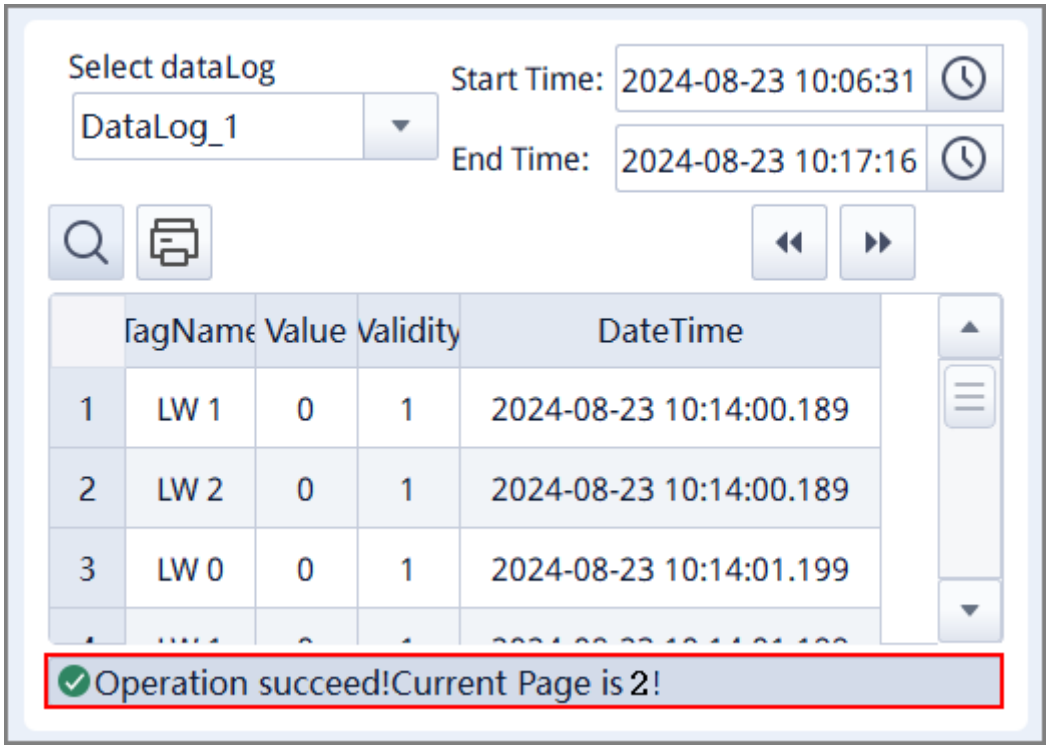


At this time, you can edit the record data of the period to be searched in the query time editing area. For example, if you want to query record data in the interval from 2024-07-11 14:26:11 to 2024-07-12 14:26:11, enter these two time points in the start time and end time fields of the data record view, and then click "Find" to find the records of the required interval, as shown in the following figure.



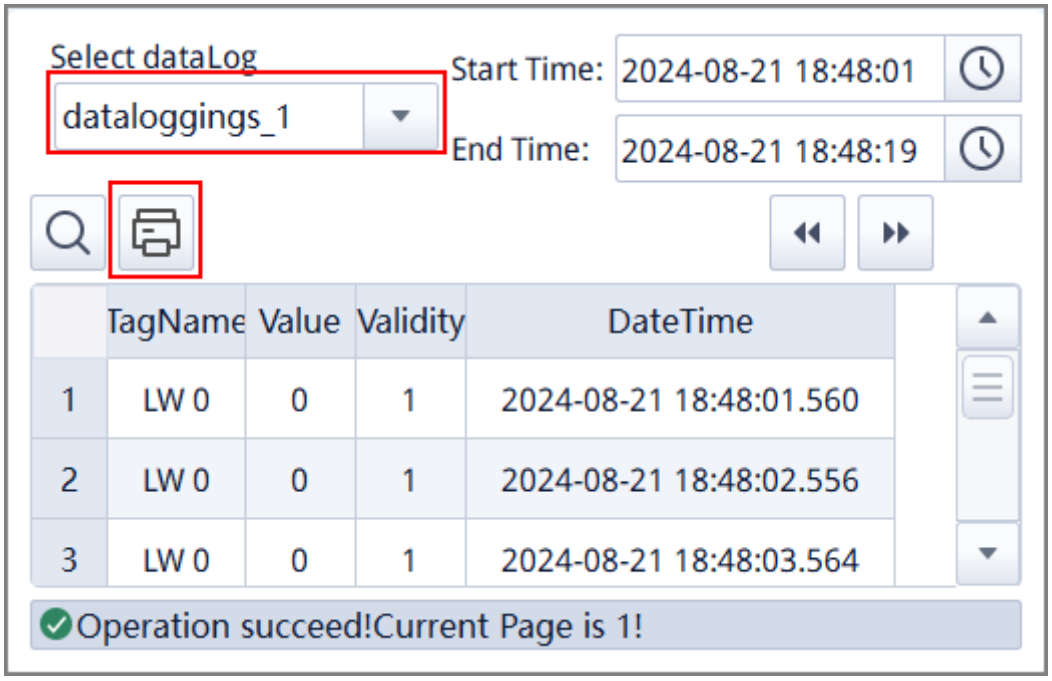
Note:
"Validity" refers to whether the data value of the recorded row is valid. 1 means valid and 0 means invalid. For example, when an external tag is logged and the connection is disconnected, the recorded value is actually valid, while the validity of the recorded value is 0.

You can set the number of rows displayed per page of the data record. When there are a lot of data, you can click the "Page up" and "Page down" buttons to navigate the pages. The message bar displays the operation status and the current page number, as shown in the following figure.



Print (only the USB printer is supported)

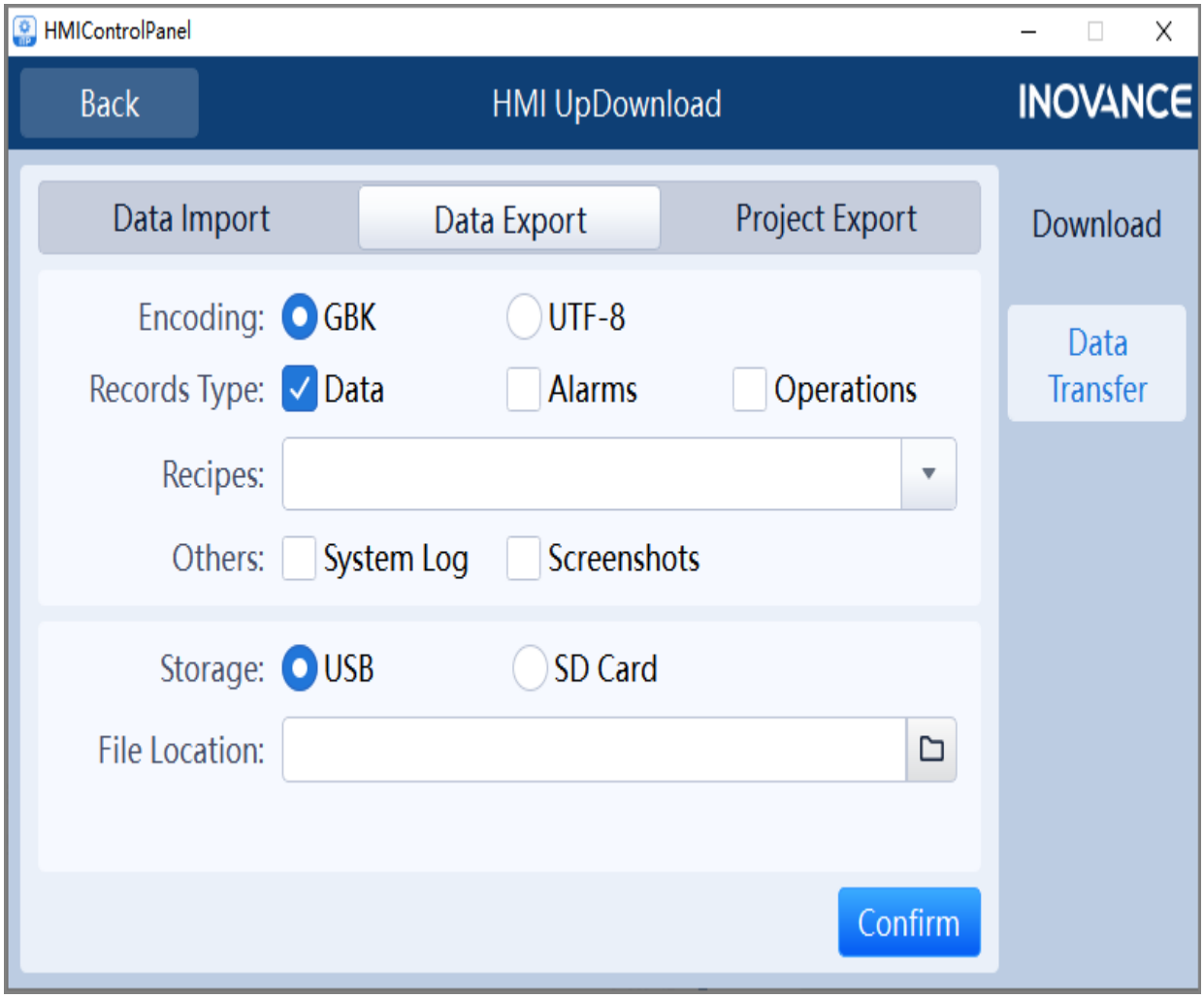
If you need to print s data record, you can select the data record. After the selected data record is displayed, connect the printer, and then click "Print". The data record is printed to an A4 paper, as shown in the following figure.



In the screen, you can use related system functions to manipulate the data records.

Exporting data logs

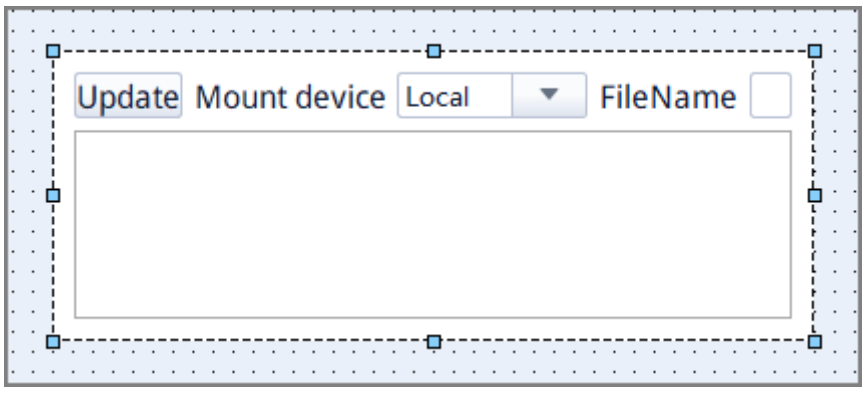
You can also export data records. To export a data record, access the control panel and the "Download" screen, locate the target data record, and specify the path to which you want to export the record (which must be the path of the USB drive or SD card), as shown in the following figure.



During export, all the data records in the project will be exported to the specified path and saved to a *.CSV file. Each data record is saved as a file separately.

7.3.5.10 File Browser

The "File Browser" view is a general-purpose enhanced screen object for displaying files in devices such as USB drive. After configuring the file view, you can insert a USB drive to display the files in the USB drive in this view.



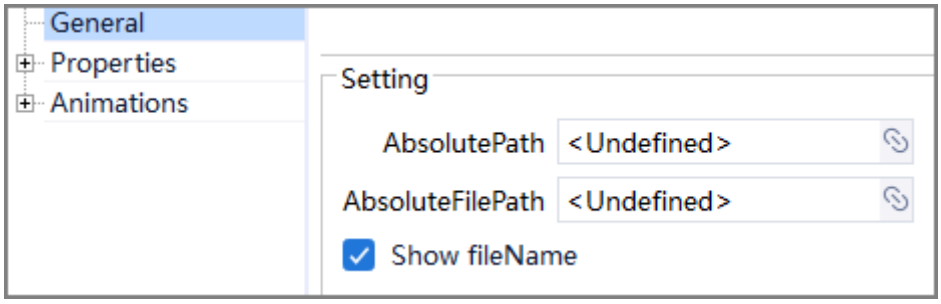
The following describes items on the "File Browser" view.

1. Update: Updates the list after the USB drive changes.
2. Mount device: Sets the device whose files you want to browse.
3. FileName: Displays the name of the file.

> **Note**
>
> The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

"General" settings

See the following figure.



Item		Description
Settings	AbsolutePath	The absolute path of the file after the tag is configured
	AbsoluteFilePath	The path of the file after the tag is configured
	Show fileName	When this option is checked, the file name is displayed.

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.	-
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
Layout	Position	X	The horizontal distance from the origin of the "File Browser" view to the left edge	In pixels
		Y	The horizontal distance from the origin of the "File Browser" view to the top edge	

	Size	Width	The width of the "File Browser" view	
		Height	The height of the "File Browser" view	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	-
Misc	Miscellaneous	Layer	The screen layer in which the object is located	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

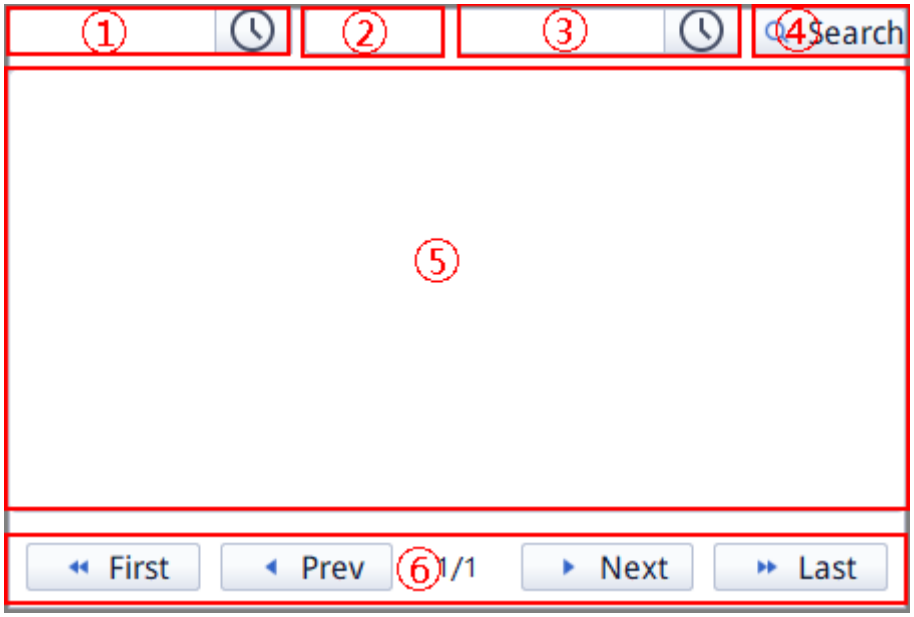
"Animations" settings

On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.5.11 Remote DB

The "Remote DB" view is a general-purpose enhanced screen object for browsing content of a database.

The following is the database browsing page.



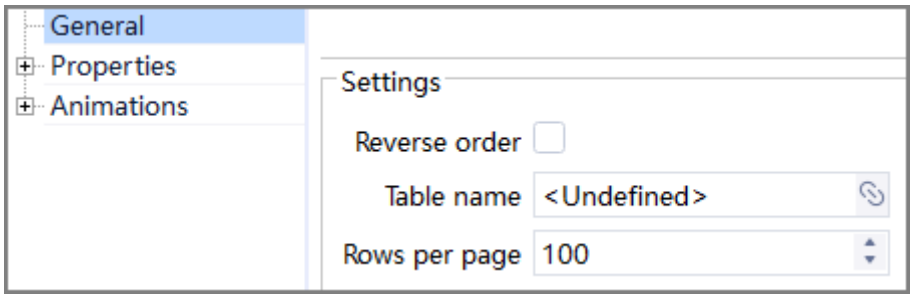
No.	Description
①	The start time of the database to be queried
②	The database header
③	The end time of the database to be queried
④	Button for quick search
⑤	The database content
⑥	Buttons for viewing database content, including "First", "Prev", "Next", and "Last".

Note

The display effect of a control can be configured by using "Global StyleSheet", "Style" of the control (that is, the local style in "Properties" > "StyleSheet"), and "Appearance" in properties. The priority relationship of them is as follows: "StyleSheet" > "Appearance" > "Global StyleSheet".

"General" settings

See the following figure.



Item		Description
Settings	Reverse order	Set whether to display the database content in a reverse order.
	Table name	The database header is displayed after the tag is configured.

	Rows per page	Set the number of data rows displayed per page.

"Properties" settings

On the "Properties" tab page of the property view, you can set the following properties.

Item			Description	Additional Information
Appearance	Fill	Enable fill	• Checked: You can customize the control color. • Unchecked: You cannot customize the control color.	-
		Text color	Set the text display color.	-
		Background color	Set the fill color of the rectangle.	When "Flashing" is enabled, the control alternately displays the text color and the background color.
Layout	Position	X	The horizontal distance from the origin of the database browsing view to the left edge	In pixels
		Y	The horizontal distance from the origin of the database browsing view to the top edge	
	Size	Width	The width of the database browsing view	
		Height	The height of the database browsing view	
Flashing	Runtime Appearance	Flashing	The options are "Standard" and "None".	If no process tag is selected, the flashing property is executed in the set mode. If a process tag is selected, the setting is invalid.
	Process	Tag	Process tag	-
		Value ON	The state is ON when the tag reaches the set value.	The default value is 1, which cannot be changed.
StyleSheet	StyleSheet	StyleSheet	Set the display style.	-
Misc	Miscellaneous	Layer		

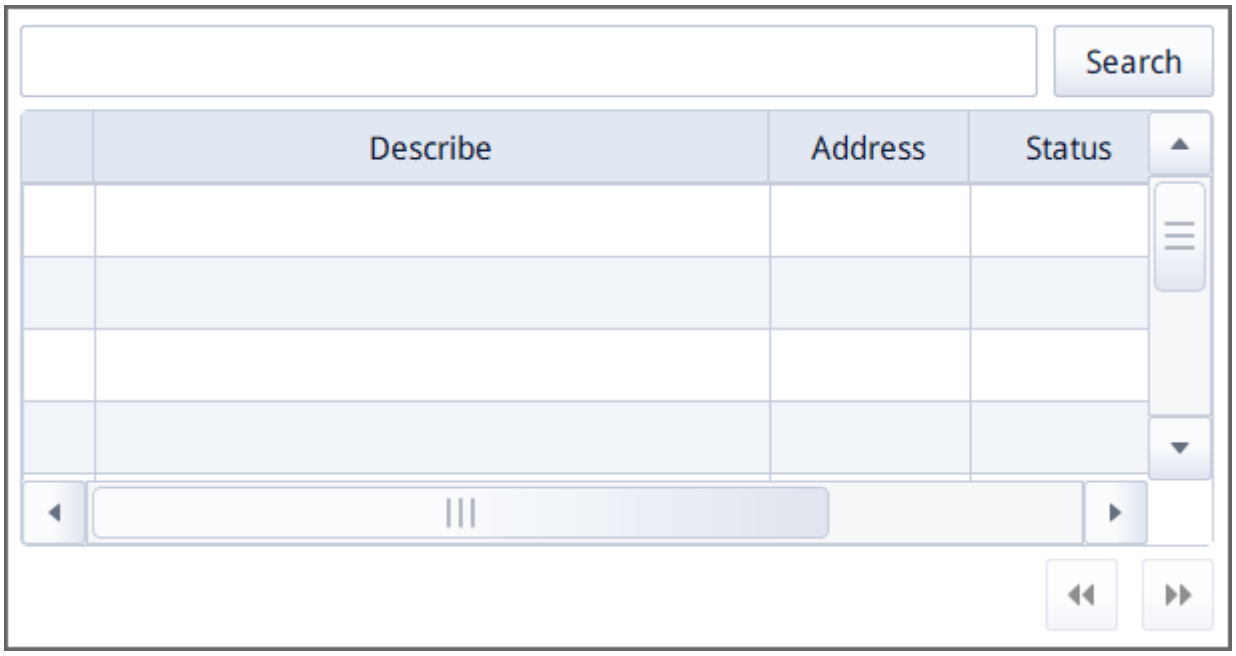
			The screen layer in which the object is located	The screen layer in which the object is located. Range: 0 to 31; Default: 0.
		z Value	z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.	The ID is assigned by the system.
		Opacity	The display clarity.	Range: 1 to 100; Default: 100. 1 indicates transparent and 100 indicates opaque.
		Name	The name of the current control.	Customizable
		I18NName	This name will be recorded in the operation log when operations are performed on the screen.	If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

On the "Animations" tab page of the property view, you can set "Visibility". For details, see the section 7.5.1.10 Visibility.

7.3.5.12 I/O Monitor

The "I/O Monitor" feature lists bit address values of tags in a table, in which you can quickly search for and view the bit address value of a tag. The "I/O Monitor" page is as follows.



"I/O Monitor" features

Feature	Description

Search	Performs fuzzy search based on the description and address.
	Last Page
	Next Page

"I/O Monitor" parameters

Parameter	Description
Describe	Describes the details of the I/O monitoring status.
Address	Address information for monitoring the I/O status.
Status	See the description about "Status" in the Property settings section.

"General" settings

Item		Description
I/O Controls	I/O Status Table	Select an I/O status table.
	Row(s)	Set the number of table rows per page. Range: 1 to 20
	Group(s)	Set the number of table columns. Range: 1 to 2
	Row Height	Set the height of table rows. Range: 10px-100px
Show/Hide (Checked: Show; Unchecked: Hide)	Search Bar	Display/hide the search bar.
	Page turning button	Display/hide the pagination buttons.
	Table name	Display/hide the table header.
Columns • Display/hide the columns. • Click  to sort the table column parameters.	Number	Set the width of the "Id" column.
	Describe	Set the width of the "Description" column.
	Address	Set the width of the "Address" column.
	Status	Set the width of the "Status" column.

"Properties" settings

Item			Description
Layout	Position	X	Set the horizontal distance from the upper left corner of the rectangle to the left edge of the screen.
		Y	Set the vertical distance from the upper left corner of the rectangle to the top edge of the screen.
	Size	Width	Set the width of the rectangle.
		Height	Set the height of the rectangle.

Table	Enable fill		• Checked: The system table style (foreground and background colors of the table and table header) is not applied. • Unchecked: The system table style is applied.
	Table	Foreground color	Set the color of table text.
		Background color	Set the background color of the table.
		Font	The style and size of the table text
		Border Width	Set the width of the table border.
		Border color	Set the color of the table border.
	Table name	Foreground color	Set the color of the table header text.
		Background color	Set the background color of the header.
		Font	Set the style and size of the table header text.
State	State		• 0: The status when the value of the bound tag is 0. • 1: The status when the value of the bound tag is not 0.
	Graphic		Set the images to be displayed in different statuses.
	Text		Set the texts to be displayed in different statuses.
	Text Library		Set the text library.
	Font		Set the text font and size.
	Position		Set the position at which the text is displayed in the control.
	Text color		Text color
	Background color		Background color of the text
	Flashing		Enables/disables flashing for a status. Options are: • No • Text Color Alternate • Show Hidden
	Frequency		Set the flashing frequency.
	Preview		Displays the setting effect.

Others	Others	Layer	Set the layer in which the object is currently located.
		z Value	The position of the control in the z axis. A control with a larger value covers a control with a lower one.
		Id	The ID of the current control.
		Opacity	The display clarity. Range: 1 to 100 • 1 indicates transparent and • 100 indicates opaque.
		Name	The name of the current control.
		I18NName	This name will be recorded in the operation log when operations are performed on the screen. If this field is empty, the value of the "Name" item will be used instead.

"Animations" settings

On the "Properties" tab page, choose "Animations" > "Visibility" to set "Visibility". For details, see the section 7.5.1.10 Visibility.

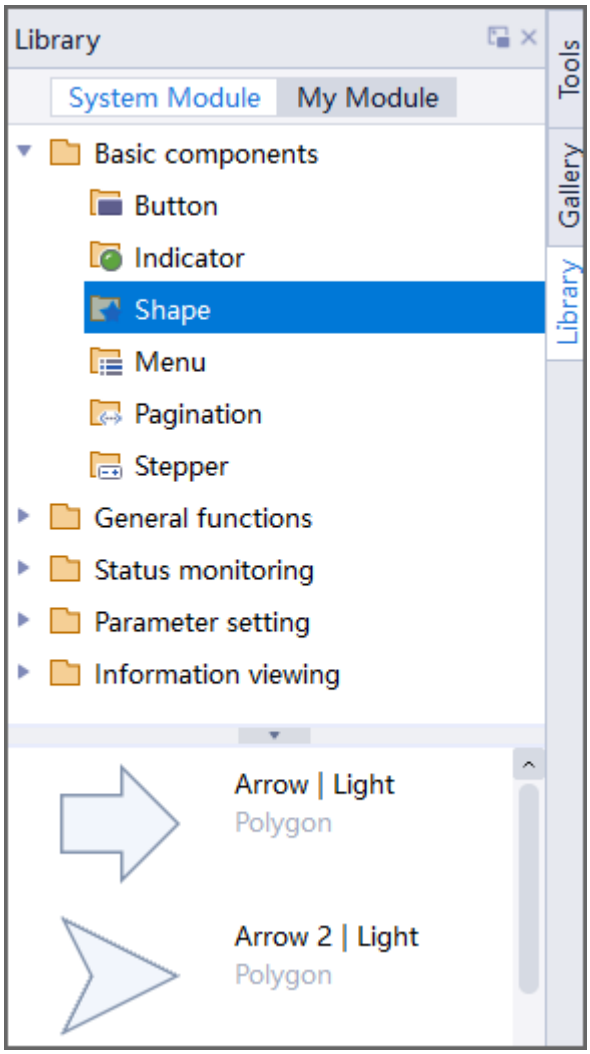
7.3.6 Custom Controls

Controls support plug-ins. If a compiled control program needs to take effect on the touchscreen, the program needs to be further cross-compiled to generate the .so file that the ARM environment can recognize. This file should be stored in the specified directory (plugins\custom) under the project folder, and then downloaded to the touchscreen with the project.

7.3.7 Favorites

7.3.7.1 System Module

The "System Module" are the built-in libraries in InoTouchPad, which can only be used but not edited or modified.



Methods for Adding Controls:

- Drag the target control to the screen, then release the mouse to automatically create a control instance on the screen.
- Double-click the target control, then click on the screen to apply the control to the screen.

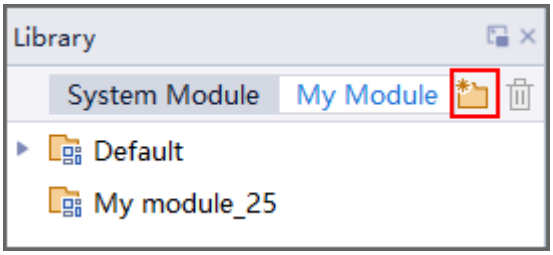
7.3.7.2 My Module

"My Module" is a collection of user-defined controls, which allows users to customize the form of controls and add them to the Favorites folder for use in the next project. The collected controls are available in the user library and support the following functions:

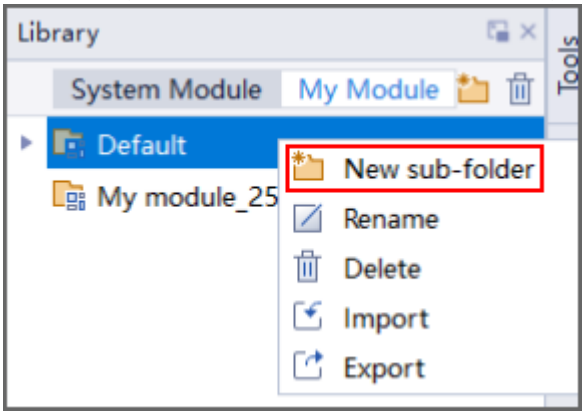
- Batch importing
- Batch exporting
- Batch deleting
- Moving controls by drag-and-drop or the shortcut menu
- Creating groups of up to two levels
- Adding template controls

1. Create a group.

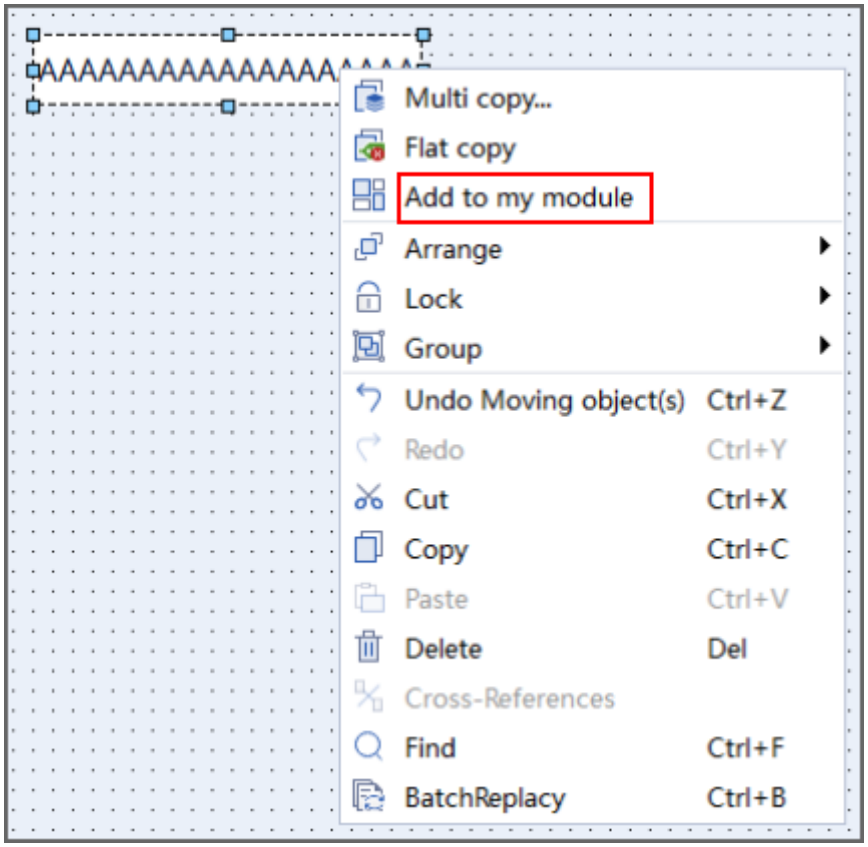
- Add parent node: Select any folder, then click the folder icon in the upper-right corner to add a new parent node.



- Add subnode: Select the target parent node, then choose "New sub-folder" from its right-click menu to add a new group. The operation is shown in the figure below.



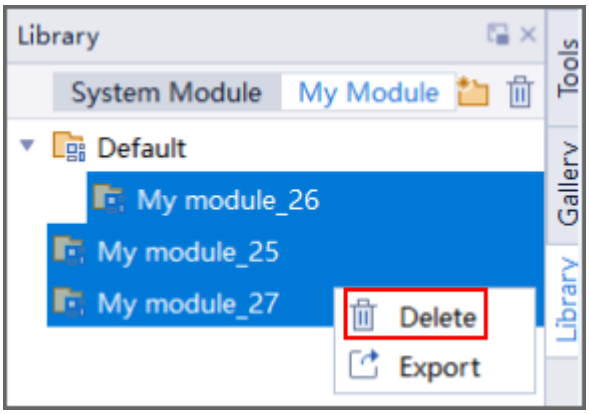
2. Add custom controls as shown in the figure below.



3. Batch delete.

- Batch delete groups
  To delete groups in batch, left-click drag to select multiple groups or hold Ctrl key to select multiple

groups, then execute the delete command or click the delete icon to complete the operation.

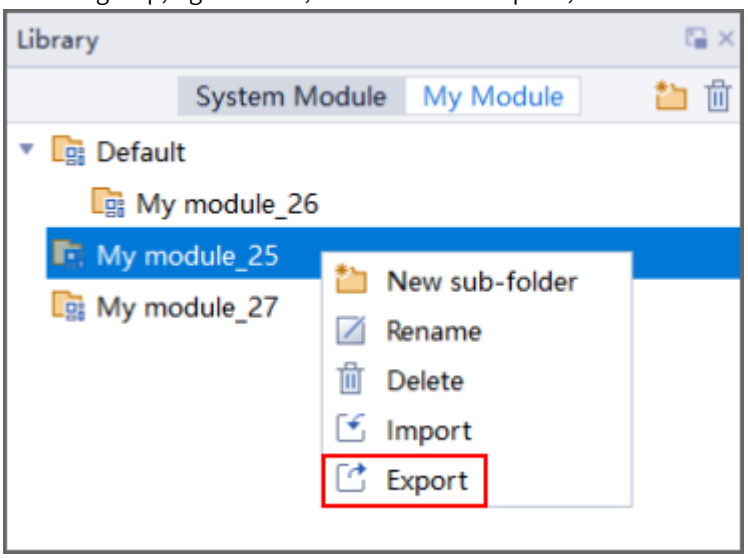


- Batch delete controls
  Only controls in the same group can be batch deleted. To delete controls in batch, hold Ctrl key to select multiple controls, then select the delete command or click the delete icon to complete the operation.

4. Export

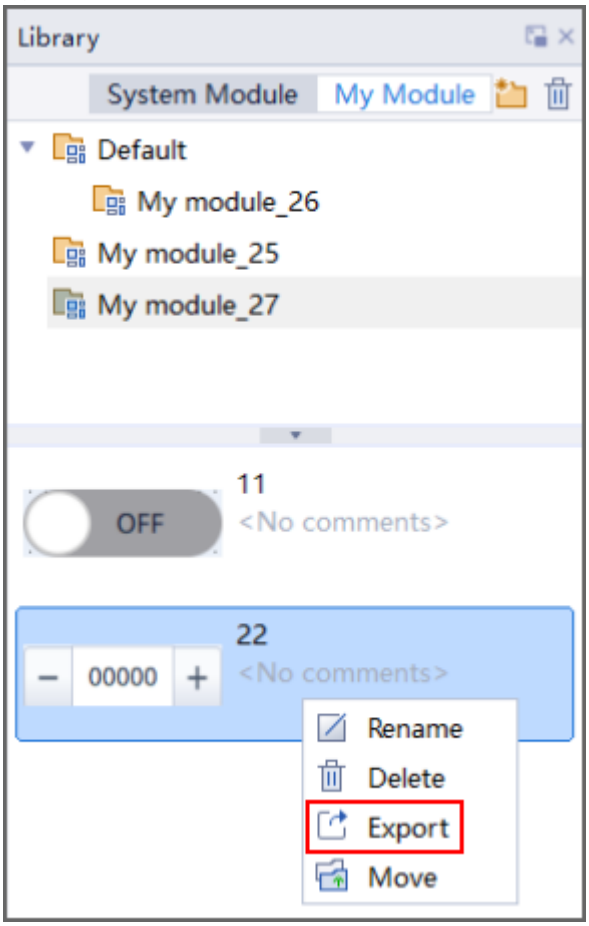
You can select one or more groups or one or more controls in the same group, right-click them, and click "Export" to export them. Click a node in the user template group, right-click it, and then click "Export". Then, all controls in the group are exported.

- Group exporting
  Select a group, right-click it, and then click "Export", as shown in the following figure.



- Control exporting
  Select the target control, right-click it, and click "Export" to export the control, as shown in the following

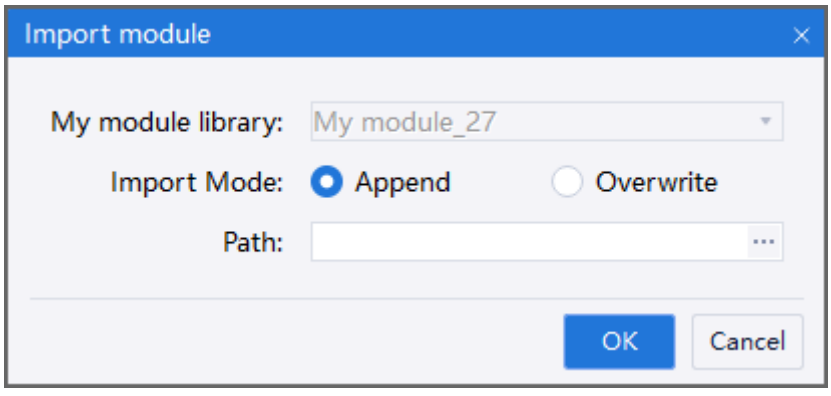
figure.



Select the export path, enter a name for the file, and click "Save". The control is exported to a DB file, as shown in the following figure.

5. Import

You can import to a specified group or import to the root node of "My Module". Append import and overwrite import are supported. Only DB files in the specified format can be imported.

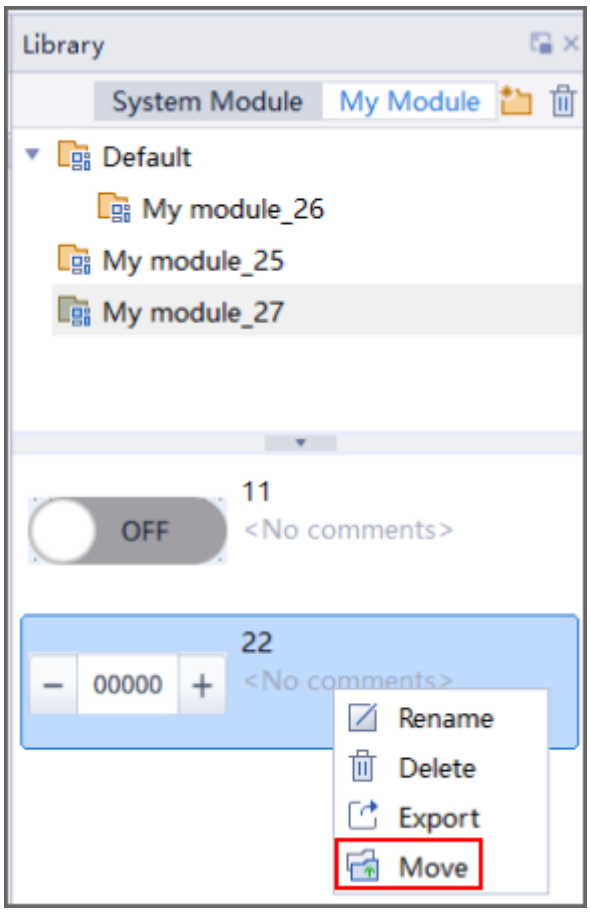


- Append import: In this mode, you can add controls for import and controls already in the group are not cleared.
- Overwrite Import: In this mode, existing controls within the group will be cleared before importing new controls.

6. Move

This feature allows you to move controls from one group to another group. You can right-click controls and click "Move" to move them to the target group or drag controls and then drop them to the target group.

- By "Move" in the shortcut menu: Select one or more controls in a group, right-click them, and then select "Move". In the dialog box displayed, select the target group, and click "OK", as shown in the following figure.



- Drag-and-drop: Drag one or more controls in a group, and then drop them to another group.

7.4 Common Operations for Plug-ins

Menu Bar and Toolbar

The "Format" menu bar of the screen is produced and managed inside the screen module, and the main frame only provides the dock function, as shown in the figure below.



The menu bar is comprised of the following parts.

Properties			Description	Restrictions
Alignment	Horizontal	Top	Aligns the top edges of the object and the reference object.	Select at least two objects.
		Center	Aligns objects horizontally in the center.	
			Aligns objects along the common horizontal central axis in the center.	

		Bottom	Aligns the bottom edges of the object and the reference object.	
	Vertical	Left	Aligns the left edges of the object and the reference object.	
		Middle	Aligns objects vertically in the center.	
			Aligns objects along the vertical central axis in the center.	
		Right	Aligns the right edges of the object and the reference object.	
Distribution	Horizontally Equal		Makes horizontal spacing between controls equal.	Select at least three objects.
	Vertically Equal		Makes vertical spacing between controls equal.	
Size	Same &Width		Adjusts object width based on the reference object.	Select at least two objects and use the finally selected one as the reference object.
	Same &Height		Adjusts object height based on the reference object.	
	Same &Size		Adjusts object width and height based on the reference object.	
Lock	Lock		Disables object movement.	Lock and Unlock are mutually exclusive, one of which is valid. Unlock is valid when an object is locked, and Lock is valid when an object is unlocked.
	Unlock		Enables object movement.	
Arrange	Bring to front		Moves an object to the front layer.	-
	Front by one layer		Moves an object to one layer front.	-
	Back by one layer		Moves an object to one layer back.	-
	Bring to back		Moves an object to the back layer.	-
	Objects zValue equal		Places selected objects to the same layer.	Select at least two objects.
Group	Group		Groups selected objects.	Select at least two objects.
	Ungroup		Ungroups objects.	
Selection	Select all		Selects all controls on the current screen.	Press and hold Shift+left mouse button to select more.
	Select nothing		Deselects all selected controls.	
	Invert selection		Inverts selection.	

Rotate	Left Rotate 90 Angle/ Right Rotate 90 Angle	Rotates selected objects.	This is valid when an object is selected.

- All alignment functions in the toolbar come from the format menu, as shown in the figure below.



- All arrangement functions in the toolbar come from the format menu, as shown in the figure below.



- The toolbar contains the Zoom In and Zoom Out icons, used to zoom in or out the current screen.
- Show grid + Snap to grid: The two features are the same as the setting features in the menu bar options, settings, and screen options.
  Show grid: As the name implies, it displays a grid in the background of the screen. Grid alignment means that when a new object is created or when the mouse moves a control, it must fall on the grid, as shown in the figure below.



- Address Table: The addresses used will be displayed on the control.

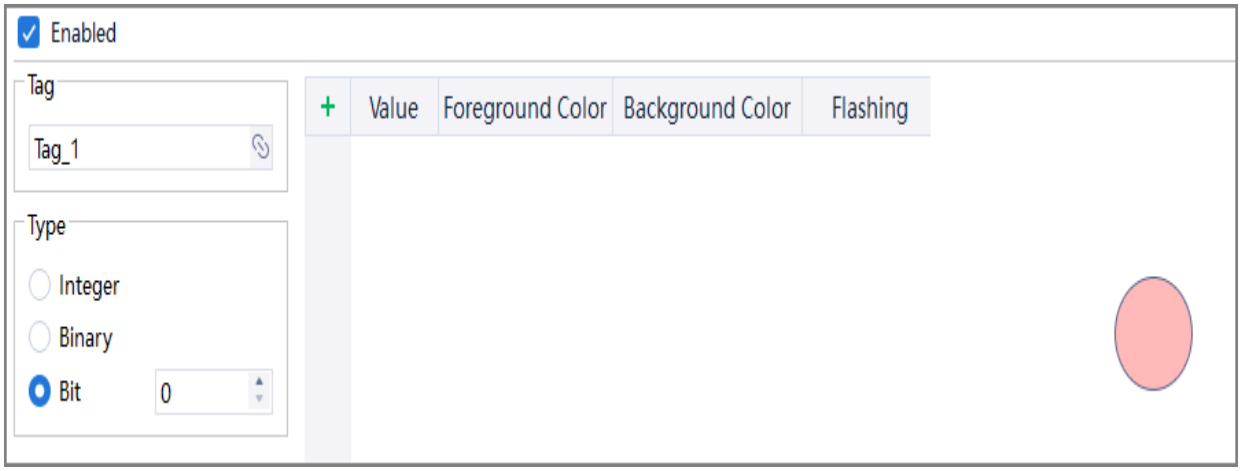
7.5 Control Animation and Event Properties

7.5.1 Animation

7.5.1.1 Appearance Change

You can dynamically control the appearance of objects, including foreground color, background color, and flashing, by changing the value of the tag. If you configure a tag for object appearance, when the tag value is within the configured range, the object is displayed as configured; otherwise, the settings in "Appearance" under "Properties" take effect.

The following is the "Appearance Change" property page of an object.



As shown in the above figure, the configuration consists of:

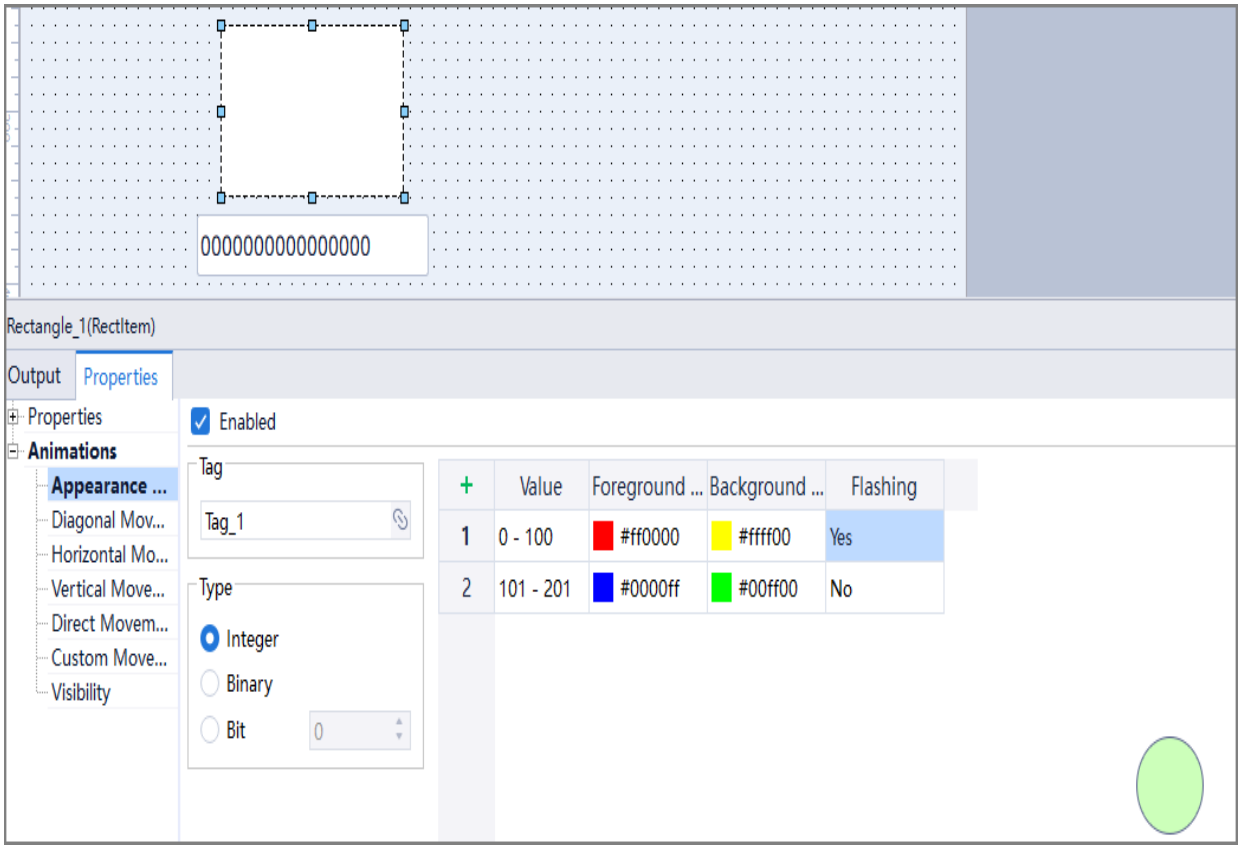
- Enabled: Check this option to enable the appearance change setting.
- Tag: The tag to control the appearance of the object.
- Type: The type of the tag value. Options are "Integer", "Binary", and "Bit". See the following table.

Type	Description
Integer	The appearance of the object is controlled by the value or range of the tag. You can define any number of values or ranges, and each definition represents an appearance. You cannot define duplicate values or ranges.
Binary	Different bits of the tag correspond to different appearances. You can define the number of appearances according to the tag type. For example, a BYTE type tag has 8 bits, which can define 8 appearances. You cannot define duplicate bits.
Bit	The appearance of the object is controlled by a bit in the tag or a bit tag. There are only two appearances, that is, "Bit = 1" and "Bit = 0".

- Value: The value of the tag.
- Foreground Color: The foreground color of the object displayed in the runtime.
- Background Color: The background color of the object displayed in the runtime.

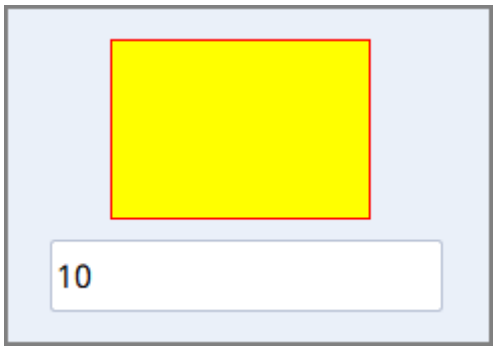
In the following example, the appearance change of a rectangle object is configured.

1. Select the rectangle object, then expand the "Animations" property in its properties view, and select "Appearance Change".
2. Check Enabled.
3. Configure the tag. Click the drop-down list under "Tag" to open the tag list and select the target for which you want to change the appearance. Select the data type of the tag (in this example, Tag_1 is of Int16 type).
4. Configure the type. Choose one of the three types as needed. "Integer" is selected in this example.
5. Click  in the upper-left corner of the table on the right to add the appearance. The table is automatically added with two rows with value of 0-100 and 101-201, respectively. Then, set the foreground color, background color, and flashing properties as needed.
6. Select "Number IO Field", and add the tag to the screen. In the "Process" section of "General", select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
7. The configuration is as follows.

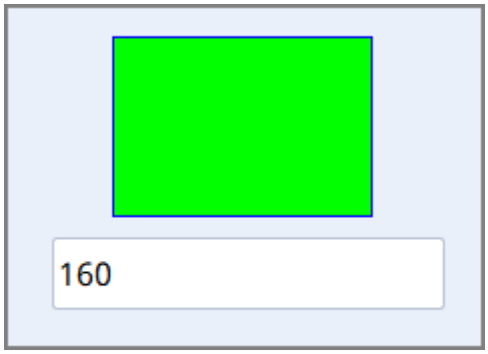


After the simulator is started, the simulation is as follows.

In the "Number IO Field", enter "10", which is within the range of 0 to 100, the rectangle becomes red or yellow and flashes.



In the "Number IO Field", enter "160", which is within the range of 101 to 201, the rectangle becomes green and stops flashing.

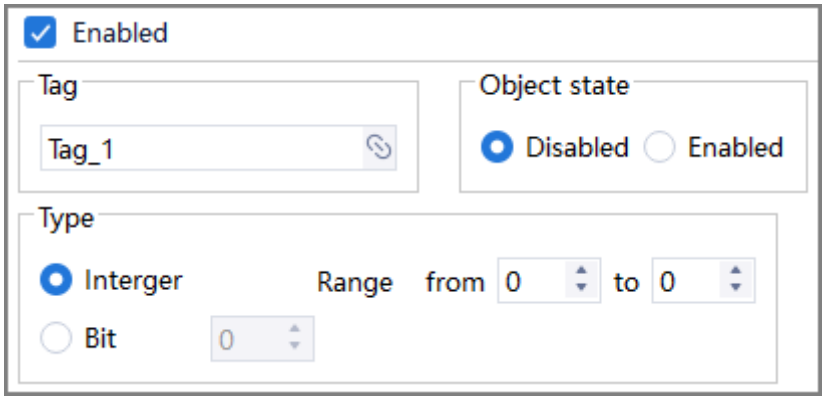


7.5.1.2 Enable Object

You can configure "Enable Object" to dynamically control the object operability (whether an object can be operated or not).

In the runtime, the object becomes enabled/disabled according to the tag value.

The following is the "Enable Object" property page of an object.



As shown in the above figure, the configuration consists of:

- Enabled: Check this option to activate the Enable Object feature.
- Tag: The tag to control the object operability. If a tag has a certain value or its value is within a certain range, the corresponding object will be operated.
- Type: The type of the tag value. Options are "Integer" and "Bit". See the following table.

Type	Description
Integer	If "Enabled" is checked and the tag value is within the configured range, the object is enabled (the focus can be obtained). Otherwise, the object is disabled (no focus can be obtained). The opposite is true when the object state is Disabled.
Bit	If "Enabled" is checked and the tag bit is 1 (regardless of other bit values), the object is enabled (the focus can be obtained). If the tag bit is 0 (regardless of other bit values), the object is disabled (no focus can be obtained). The opposite is true when the object state is Disabled.

- Object state: Determines whether the set object can be operated during the runtime startup.

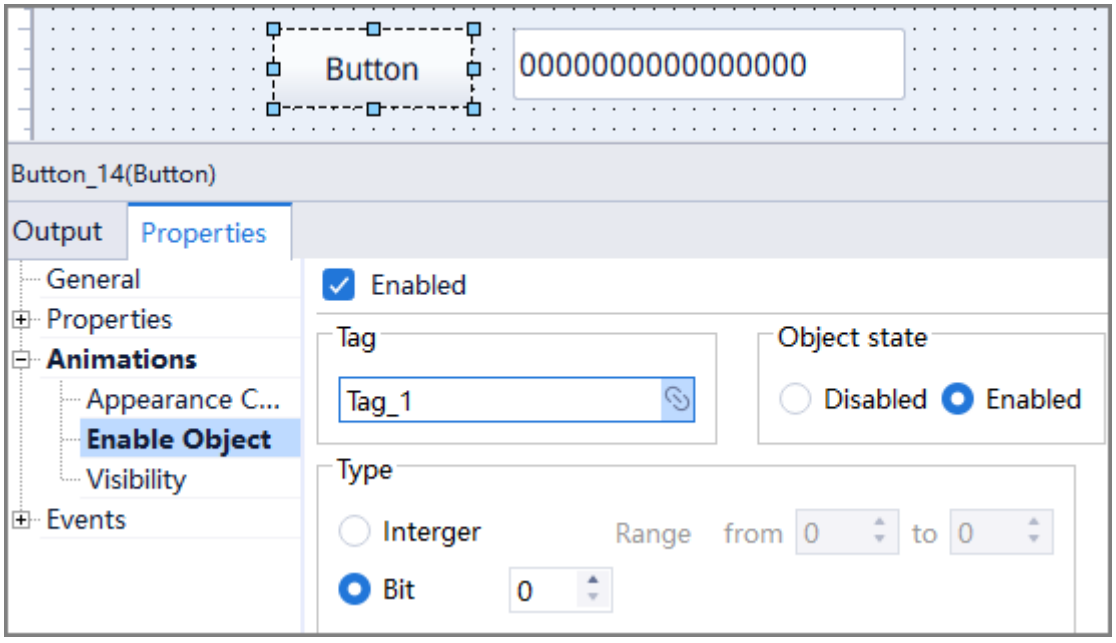
The options are "Disabled" and "Enabled", as listed in the table below.

Operation	Description
Enabled	An object can be operated when its tag value is within the configured range.
Disabled	An object cannot be operated when its tag value is within the configured range.

Example: Configuring "Enable Object" for the button object

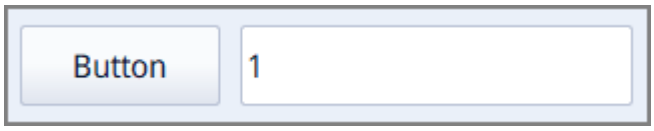
1. Select the button object, and choose "Properties" > "Animations" > "Enable Object".
2. Check "Enabled".
3. Configure the tag. Click the drop-down list under "Tag" to open the tag list and select a tag. Select the data type of the tag (in this example, Tag_1 is of Int16 type).
4. Configure the type. Choose one type as needed. "Bit" is selected in this example.
5. Select a bit in the spin box (such as bit '0').
6. Select "Enabled" in Object State.
7. Select "Number IO Field", and add the tag to the screen. In the "Process" section of "General", select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.

8. The configuration is as follows.



The simulation is as follows:

In "Number IO Field", input 1. Then the button is enabled.



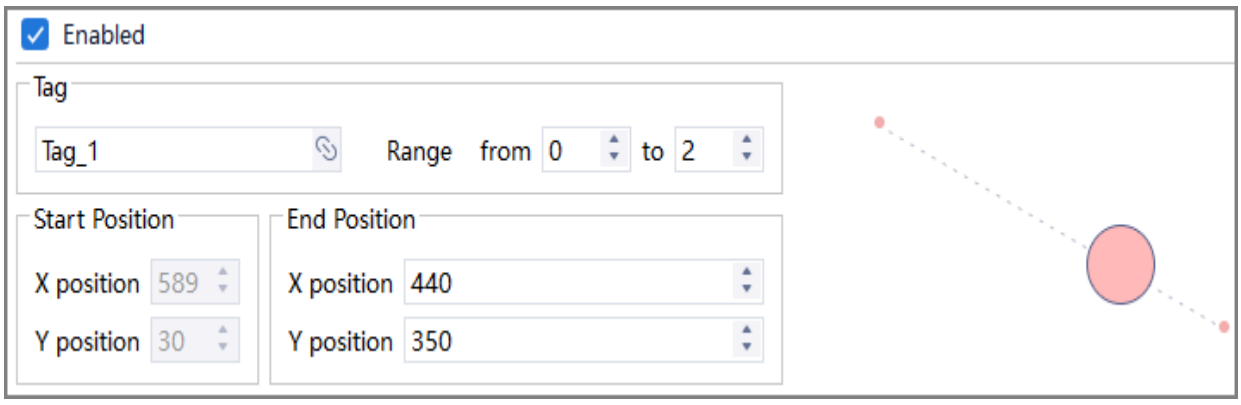
In "Number IO Field", input 0. Then the button is disabled.



7.5.1.3 Diagonal Movement

The dynamic object can be configured to move along a particular path or to move a particular number of pixels relative to the current position. Movement is controlled by a tag. You can move a proportional distance diagonally according to the value range of the tag.

The following is the Diagonal Movement setting page of an object:



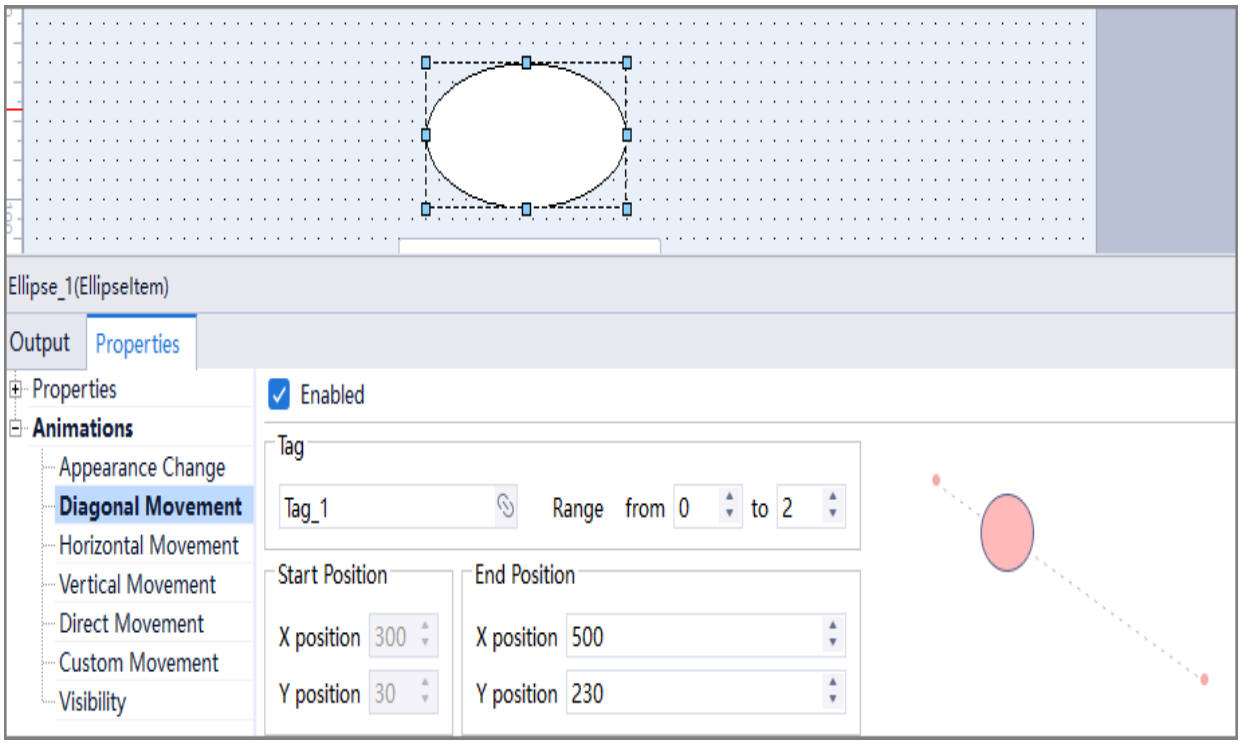
As shown in the above figure, the configuration consists of:

- Enabled: Select this option to move the object between the start position and end position. The object is enabled when the value is within the range.

- Tag: The tag determines the relative position of the object on the path.
- Range: The range of the tag.
- Start Position: The start position of the X and Y axes.
- End Position: The end position of the X and Y axes.

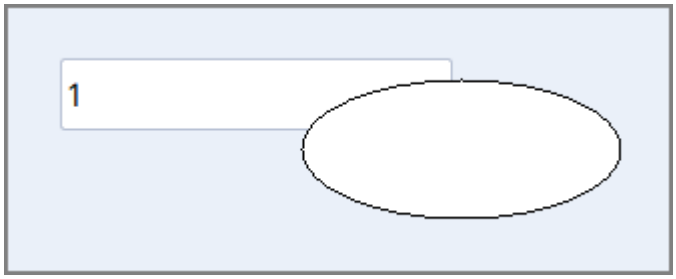
In the following example, the diagonal movement of an ellipse object is configured:

1. Select the ellipse object, then expand the "Animations" property in its properties view, and select "Diagonal Movement".
2. Configure the tag. Click the drop-down list under "Tag" to open the tag list and select a tag. Select the data type of the tag (in this example, Tag_1 is of Int16 type).
3. Configure the "Range", "Start Position", and "End Position".
4. Select "Number IO Field", and add the tag to the screen. In the "Process" section of "General", select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
5. The configuration is as follows.



After the simulator is started, the simulation is as follows.

When you enter "1" in the IO field, the ellipse moves to 1/2 of the diagonal path.



7.5.1.4 Horizontal Movement

The dynamic object can be configured to move along a particular path or to move a particular number of pixels relative to the current position. Movement is controlled by a tag. The object can move a distance horizontally proportional to the value range of the tag.

The following is the Horizontal Movement setting page of an object:



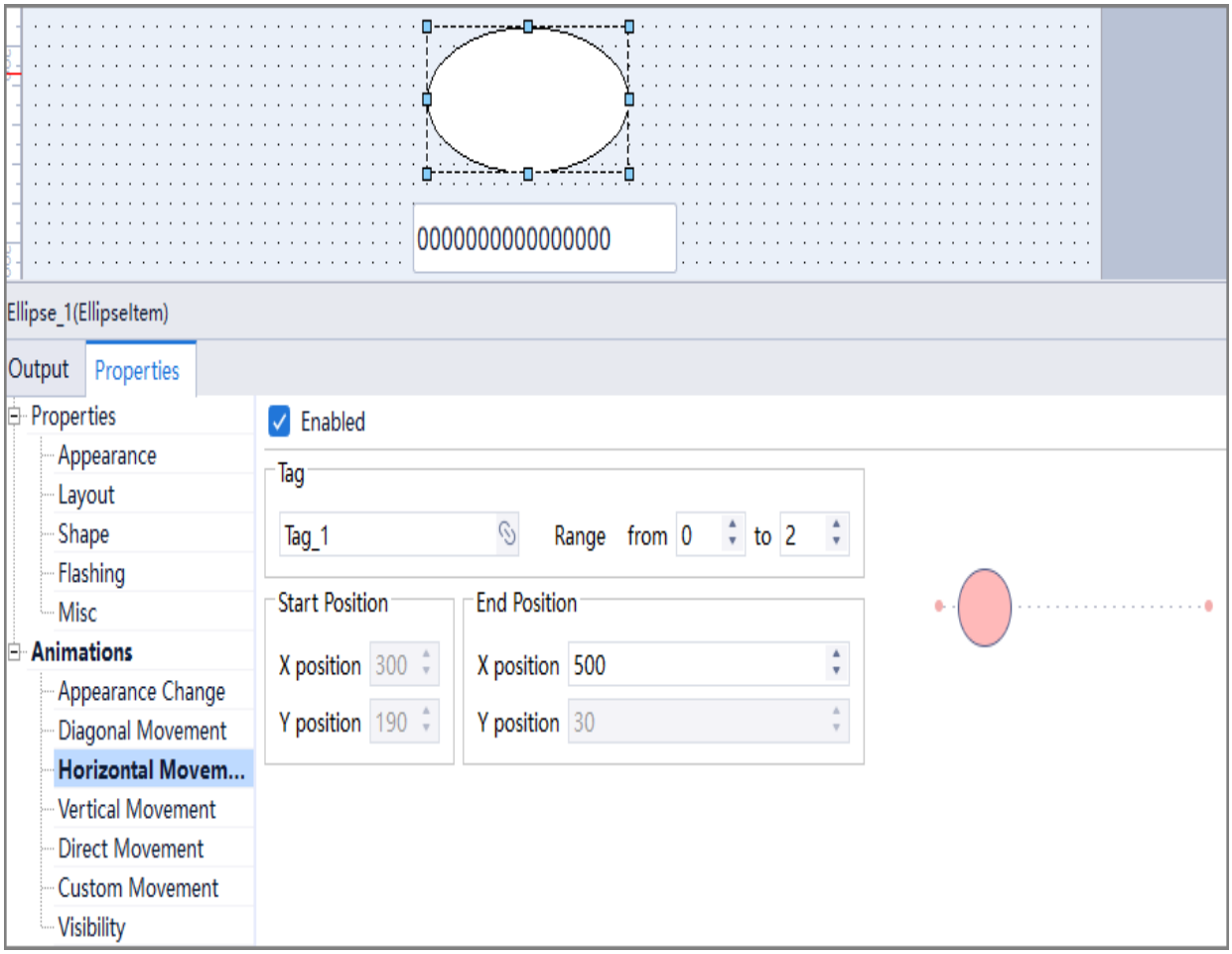
As shown in the above figure, the configuration consists of:

- Enabled: Select this option to move the object between the start position and end position. The object is enabled when the value is within the range.
- Tag: The tag determines the relative position of the object on the path.
- Range: The range of the tag.
- Start Position: The start position of the X and Y axes for the current control object, which cannot be edited.
- End Position: The end position of the X and Y axes for the current control object to move, where the Y axis position cannot be edited. When the difference between the end position and the start position in the X-axis direction is greater than 0, the object moves to the right; when the difference is less than 0, the object moves to the left.

The X-offset for each change by 1 of the tag within the range is equal to (End position of X axis - Start position of X axis)/(Range value 2 - Range value 1). If the tag value is greater than range value 2, the object directly moves to the end position and will not move out of the screen. If the tag value is less than range value 1, the object directly moves to the start position and will not move out of the screen.

In the following example, the horizontal movement of an ellipse object is configured:

1. Select the ellipse object, then expand the "Animations" property in its properties view, and select "Horizontal Movement".
2. Configure the tag. Click the drop-down list under "Tag" to open the tag list and select a tag. Select the data type of the tag (in this example, Tag_1 is of Int16 type).
3. Configure the "Range", "Start Position", and "End Position".
4. Select "Number IO Field", and add the tag to the screen. In the "Process" section of "General", select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
5. The configuration is as follows.



The simulation is as follows:

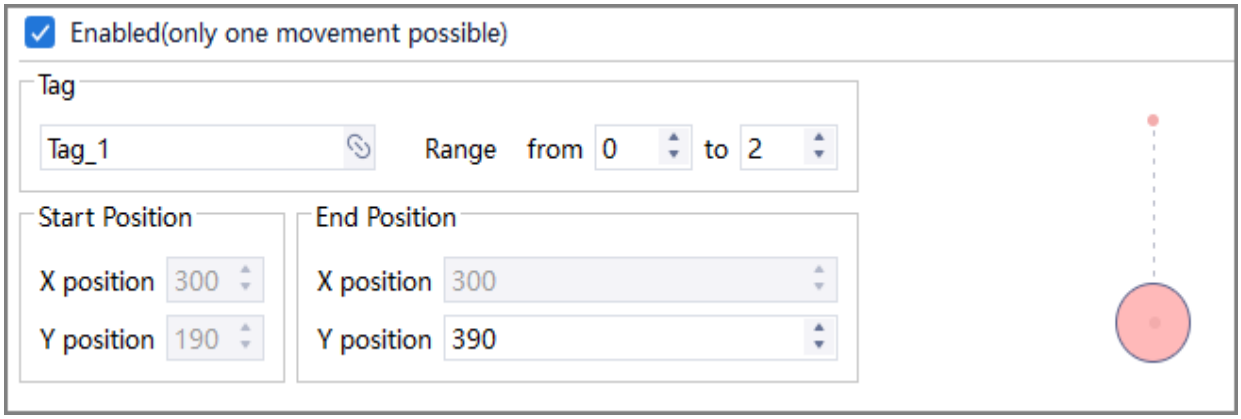
When you input "1" in "Number IO Field", the ellipse moves to the 1/2 part of the horizontal line.



7.5.1.5 Vertical Movement

The dynamic object can be configured to move along a particular path or to move a particular number of pixels relative to the current position. Movement is controlled by a tag. You can move a proportional distance vertically according to the value range of the tag.

The following is the Vertical Movement setting page of an object:



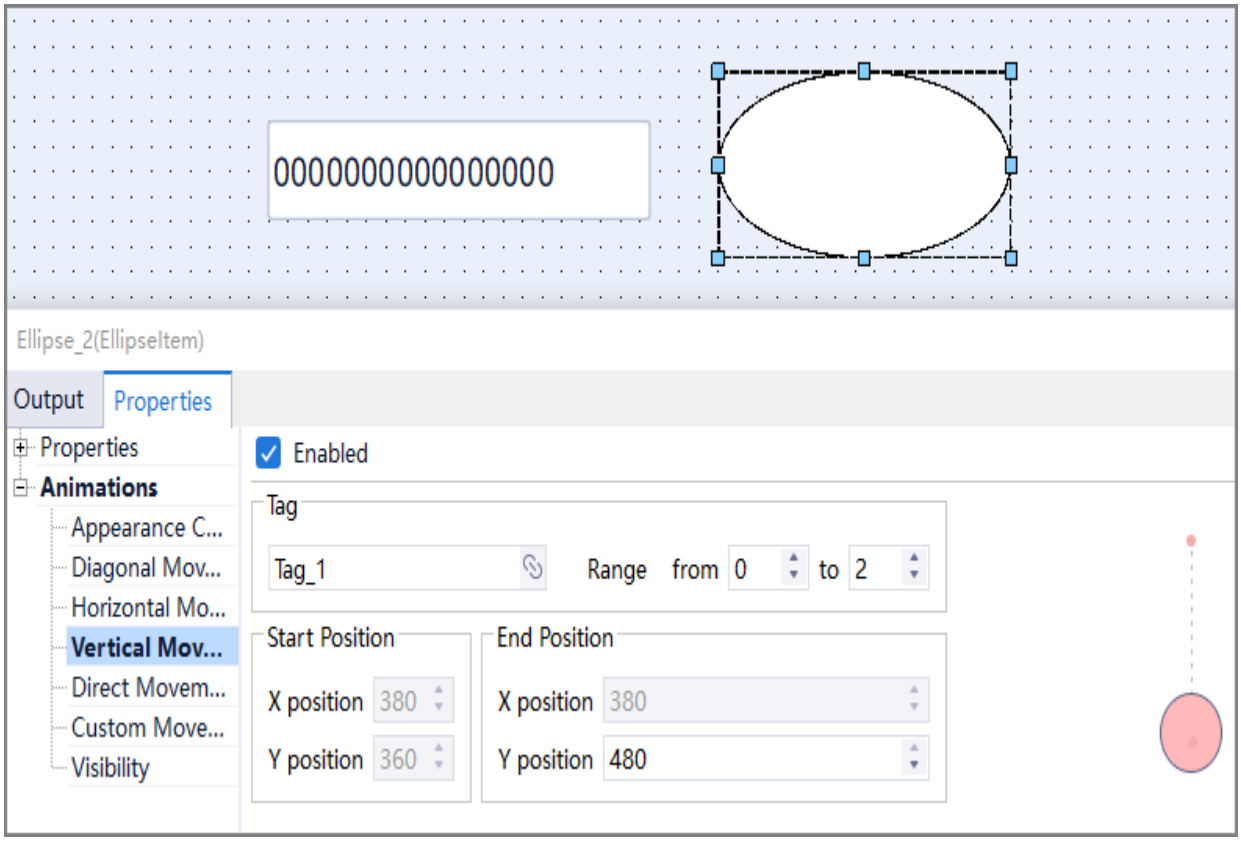
As shown in the above figure, the configuration consists of:

- Enabled: Select this option to move the object between the start position and end position. The object is enabled when the value is within the range.
- Tag: The tag determines the relative position of the object on the path.
- Range: The range of the tag.
- Start Position: The start position of the X and Y axes for the current control object, which cannot be edited.
- End Position: The end position of the X and Y axes for the current control object to move, where the X axis position cannot be edited. If the end Y position is greater than the start Y position, the object moves downwards, and if the end Y position is less than the start Y position, the object moves upwards.

The X-offset for each change by 1 of the tag within the range is equal to (End position of Y axis - Start position of Y axis)/(Range value 2 - Range value 1). If the tag value is greater than range value 2, the object directly moves to the end position and will not move out of the screen. If the tag value is less than range value 1, the object directly moves to the start position and will not move out of the screen.

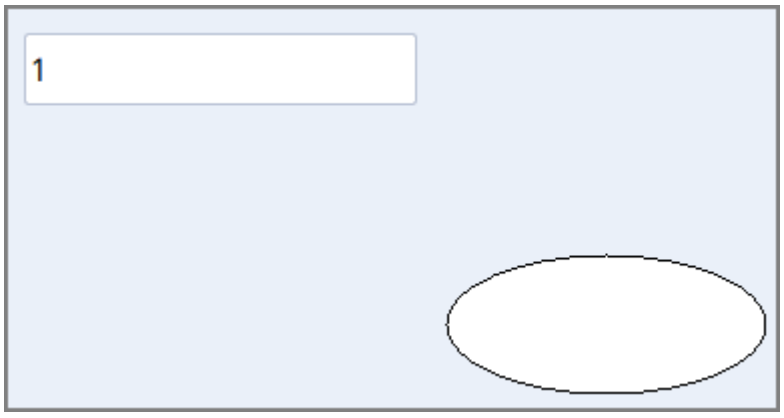
Example: Configuring Vertical Movement of an Ellipse Object

1. Select the ellipse object, then expand the "Animations" property in its properties view, and select "Vertical Movement".
2. Configure the tag. Click the drop-down list under "Tag" to open the tag list and select a tag. Select the data type of the tag (in this example, Tag_1 is of Int16 type).
3. Configure the "Range", "Start Position", and "End Position".
4. Select "Number IO Field", and add the tag to the screen. In the "Process" section of "General", select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
5. The configuration is as follows.



After the simulator is started, the simulation is as follows.

When you input "1" in "Number IO Field", the ellipse moves to the 1/2 part of the horizontal line.



7.5.1.6 Direct Movement

The object moves a number of pixels along the X and Y axes. The amount of movement is defined by the absolute values of two tags.

The following is Direct Movement setting page of an object:

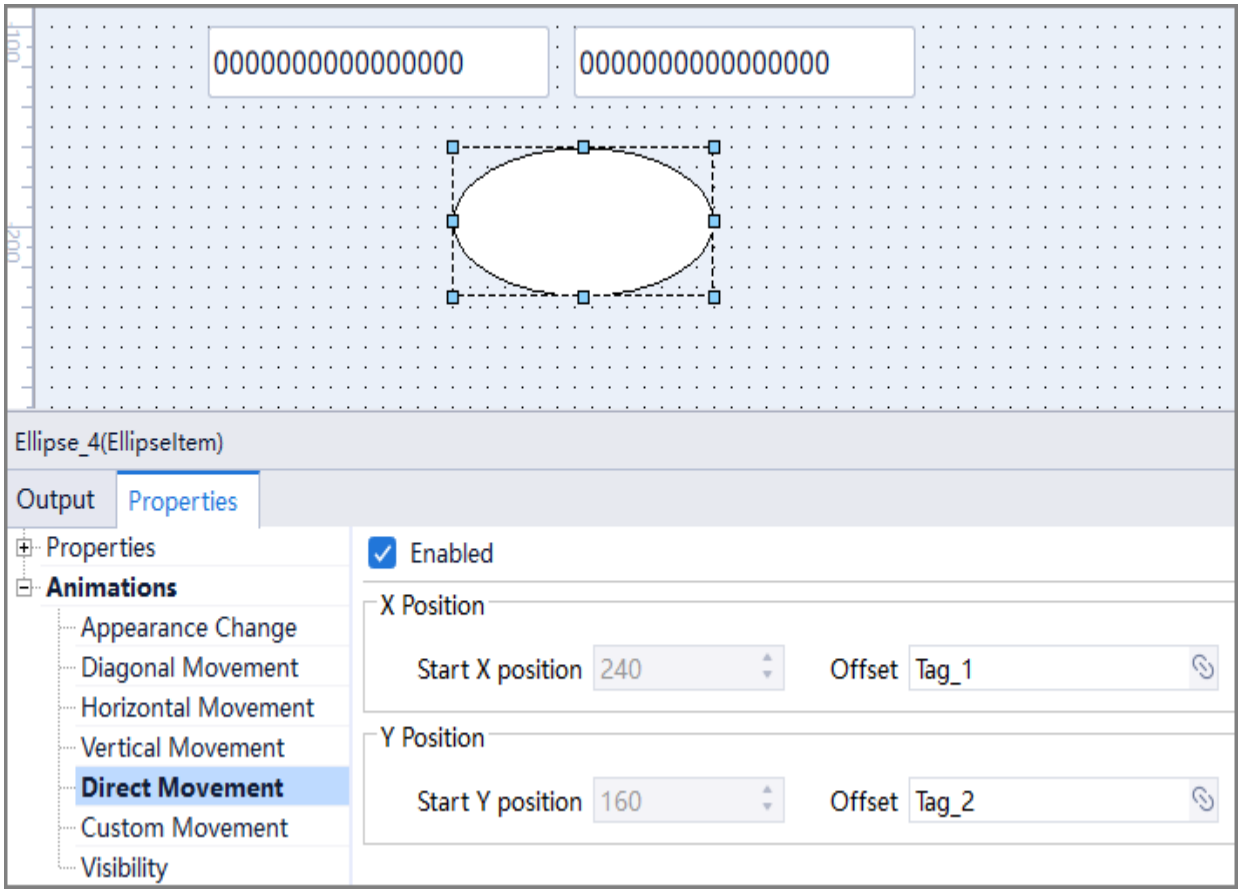


See the following table:

Property Name		Description
Enabled		Enables movement for the object.
X position	Start X position	The start position of the X axis for the control, which cannot be edited
	Offset	The tag that configures the offset of the object on the X axis. If the value increases, the object moves to the right, and if the value decreases, the object moves to the left.
Y position	Start Y position	The start position of the X axis for the control, which cannot be edited
	Offset	The tag that configures the offset of the object on the Y axis. If the value increases, the object moves downwards, and if the value decreases, the object moves upwards.

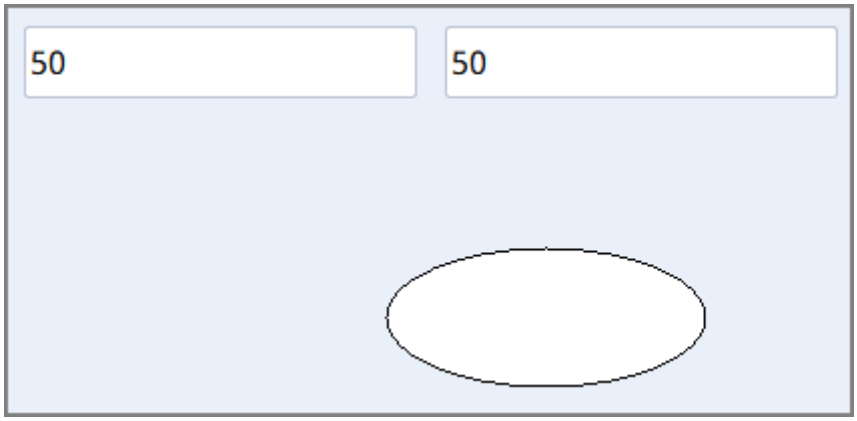
In the following example, the direct movement of an ellipse object is configured:

1. Select the ellipse object, then expand the "Animations" menu in the property view, and select "Direct Movement".
2. Check Enabled.
3. Configure the X-axis offset. Click the drop-down menu of "Offset". In the tag list displayed, select a tag, such as Tag_1, to control the offset.
4. Configure the Y-axis offset. Click the drop-down menu of "Offset". In the tag list displayed, select a tag, such as Tag_2, to control the offset.
5. Select a numeric I/O field object, and add the object to the screen. Repeat the operation to add another numeric I/O field object to the screen.
6. On the "Process" tab page of "General" of the 1st numeric I/O field object, select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
7. On the "Process" tab page of "General" of the 2nd numeric I/O field object, select "SameReadWriteTag", associate the read tag with "Tag_2", and set other properties to their default values.
8. The configuration is as follows.



The simulation is as follows:

When you input 50 and 50 for the two offset tags in the numeric I/O field, the ellipse moves to the specified position.



7.5.1.7 Custom Movement

"Custom movement" indicates that an object moves along custom coordinate points. Custom movement of an object can be defined in tag or time mode. In the tag mode, the object moves according to X and Y coordinates corresponding to the tag values. In the time mode, the object moves for a duration or at intervals. When the object moves for a duration, you can select the shape of its movement curve.

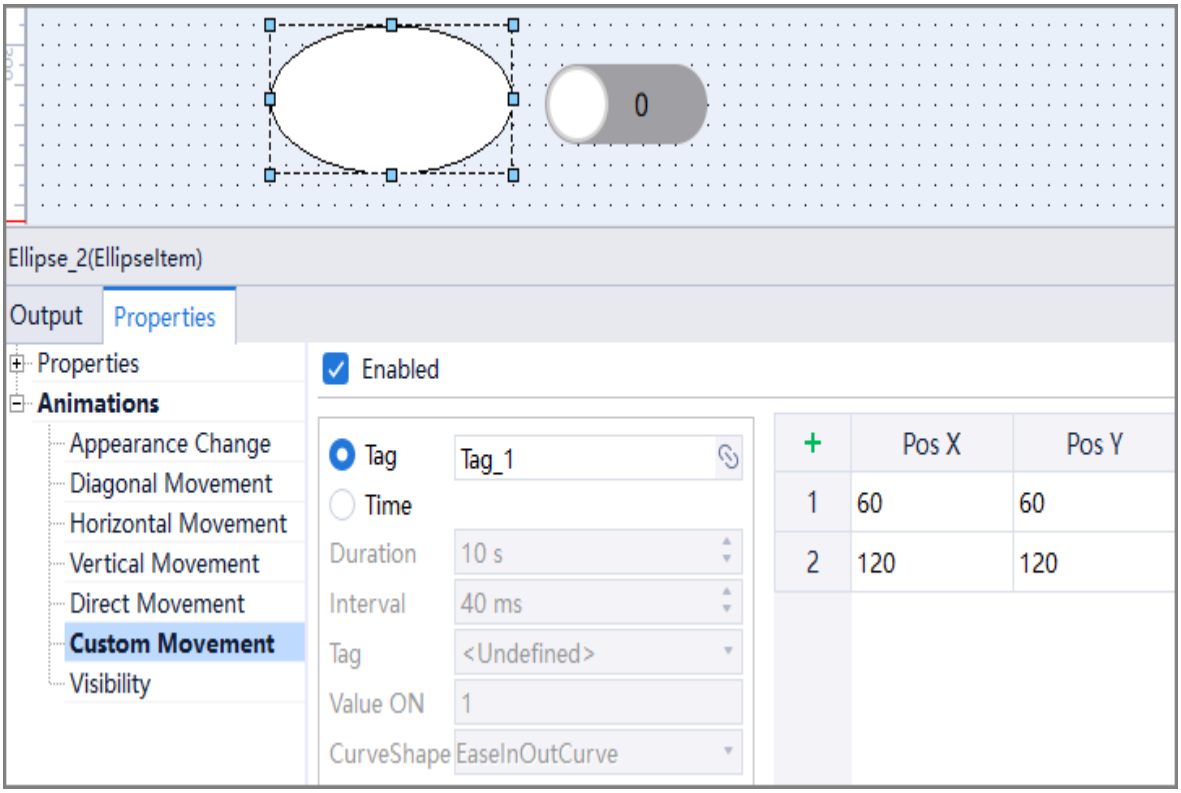
Up to 32 positions can be configured.

Example: Configuring "Custom Movement" for an Ellipse Object

1. Select the ellipse object, then expand the "Animations" property in its properties view, and select "Custom Movement". Set "Tag" to a tag of the Bool type, and "X position" and "Y position" for custom movement.

2. Select the text switch object and add the object to the screen. In the "Process" under the "General" property, set "Tag" to "Tag_1", and set other properties to their default values.

3. The configuration is as follows.

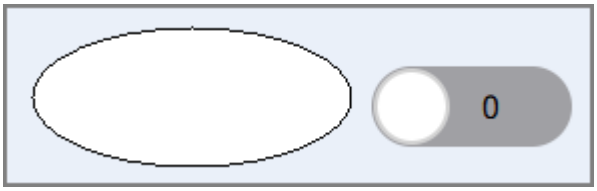


4. After the simulator is started, the simulation is as follows.

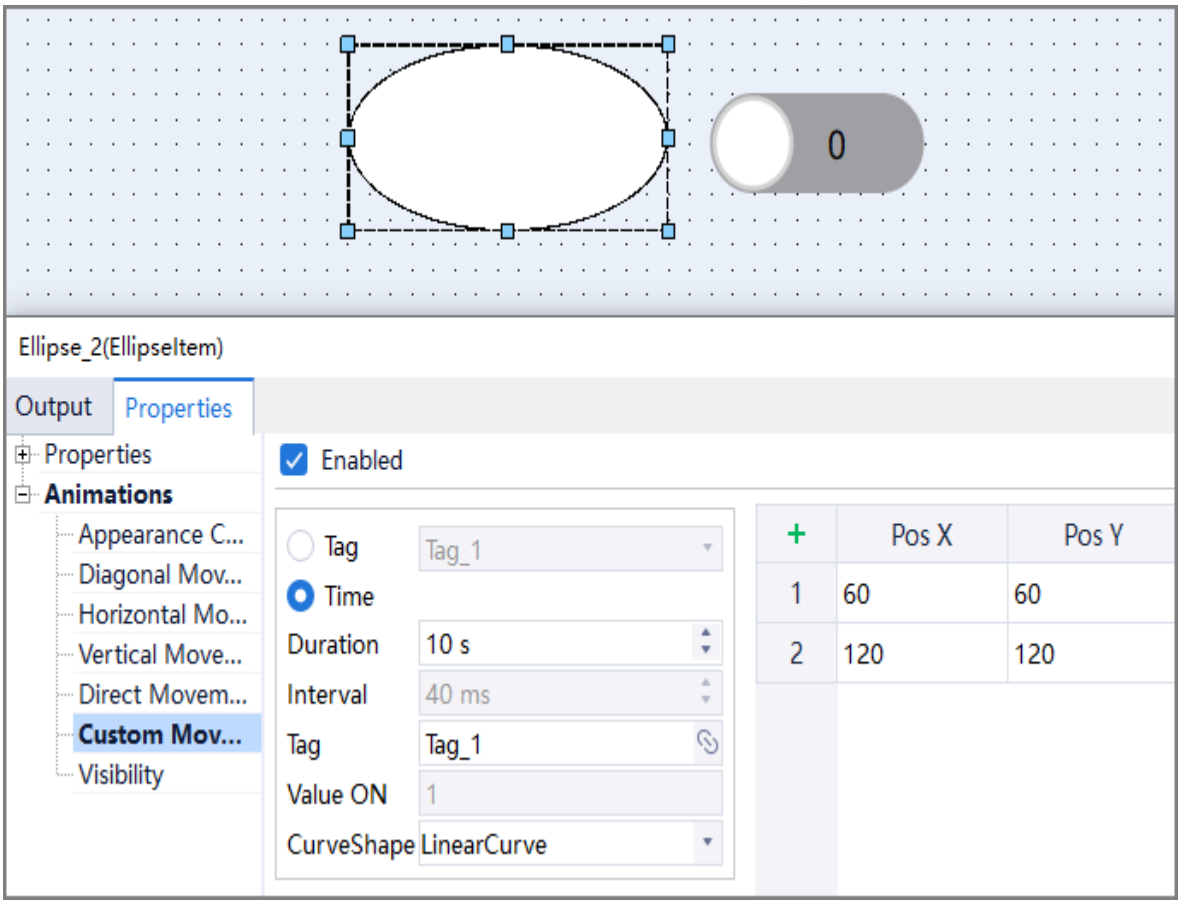
When the text switch is set to 1, the ellipse is displayed at the specified position.



When the text switch is set to 0, the ellipse is displayed at the original position.

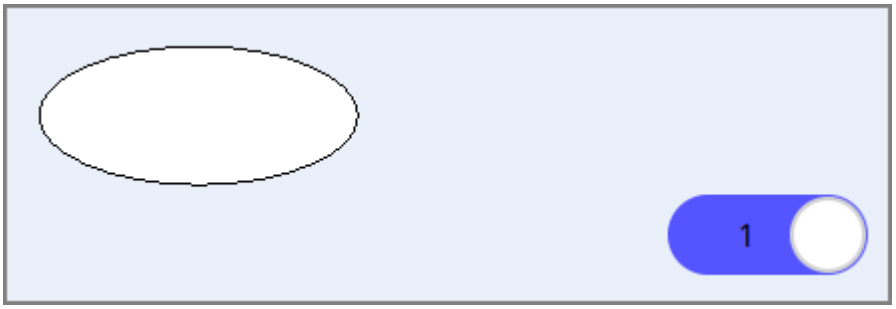


5. Set "Tag", "X position", and "Y position" for custom movement. The configuration is as follows.

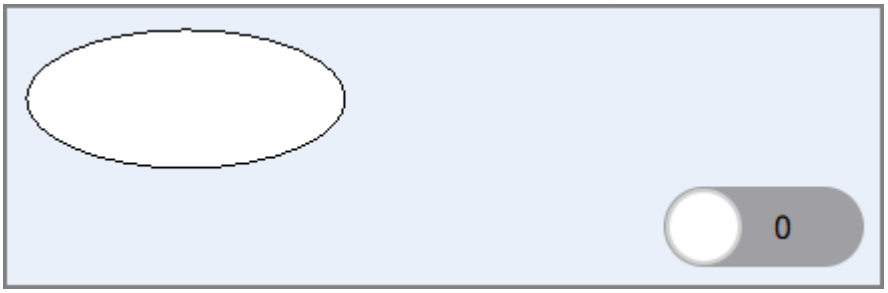


6. After the simulator is started, the simulation is as follows.

When the text switch is set to 1, the ellipse starts to move along the curve at a stable speed.



When the text switch is set to 1, the ellipse stops moving.



In time mode, set "Duration" to 1s to 60s. The following curve types are supported for custom movement.

Curve Type	Description
Ease in curve	The object moves along custom coordinate points in the curve with acceleration.
Ease out curve	The object moves along custom coordinate points in the curve with deceleration.

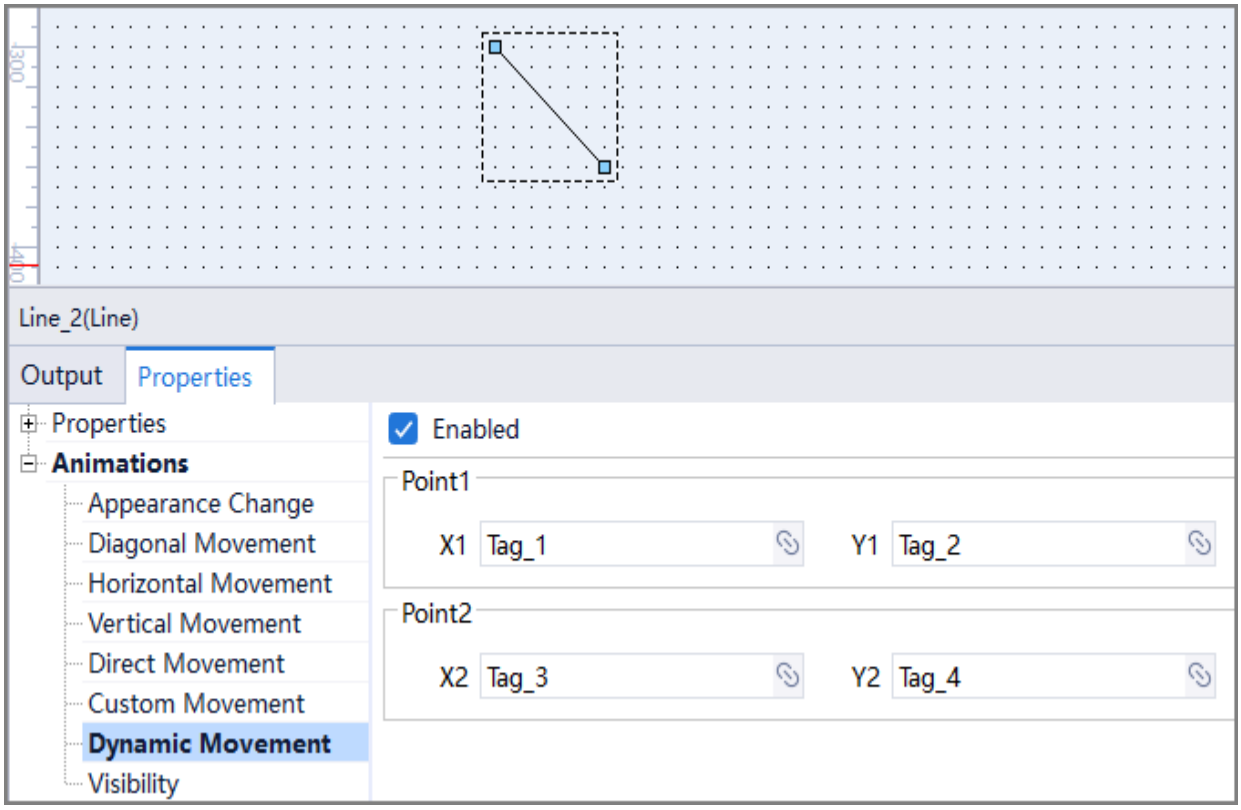
Ease-in-out curve	The object moves along custom coordinate points in the curve with acceleration and then deceleration.
Linear curve	The object moves along custom coordinate points in the curve at a stable speed.
Sin curve	The object moves along custom coordinate points in the sine curve.
Cos curve	The object moves along custom coordinate points in the cosine curve.

7.5.1.8 Dynamic Movement

You can configure the values of tags X1, X2, Y1, and Y2 to control the dynamic position change of a line object. During the moving process, the position of the line can be determined according to the tag values of two points (only applicable to line objects).

Example: Configuring "dynamic movement" for a line

1. Select a line object, expand the "Animations" property in its properties view, click "Dynamic Movement", and select "Enabled".
2. Configure the position tags X1, X2, Y1, and Y2 of the first and second points. After configuration, the effect is shown in the following figure.



CAUTION

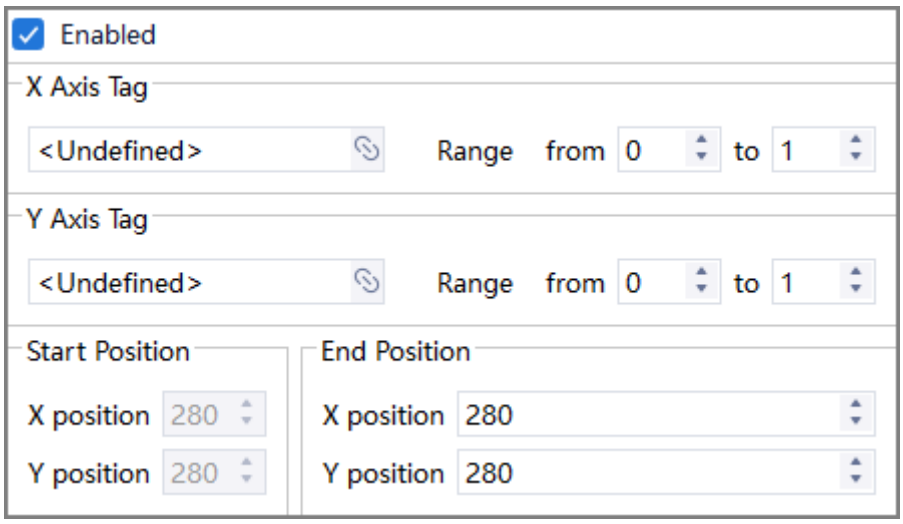
(X1, Y1) is not necessarily the start point of the line, but may be the end point.

7.5.1.9 Proportional Movement

The object can be configured to move along a particular path or to move a particular number of pixels relative to the current position. Movement is controlled by a tag. The object can move a distance vertically and horizontally proportional to the value range of the tag.

Feature

The following is the proportional movement setting page of the graphic I/O field.



Properties	Name	Description
Enabled	Enabled	Select this option to move the object between the start position and the end position. The object is enabled when the value is within the range.
X Axis Tag	X Axis Tag	The relative position on the X axis
	Range	The range of the tag
Y Axis Tag	Y Axis Tag	The relative position on the Y axis
	Range	The range of the tag
Start Position	X position	The start position of the X axis for the current control object, which cannot be edited
	Y position	The start position of the Y axis for the current control object, which cannot be edited
End Position	X position	The end position of the X axis for the current control object, which can be edited
	Y position	The end position of the Y axis for the current control object, which can be edited

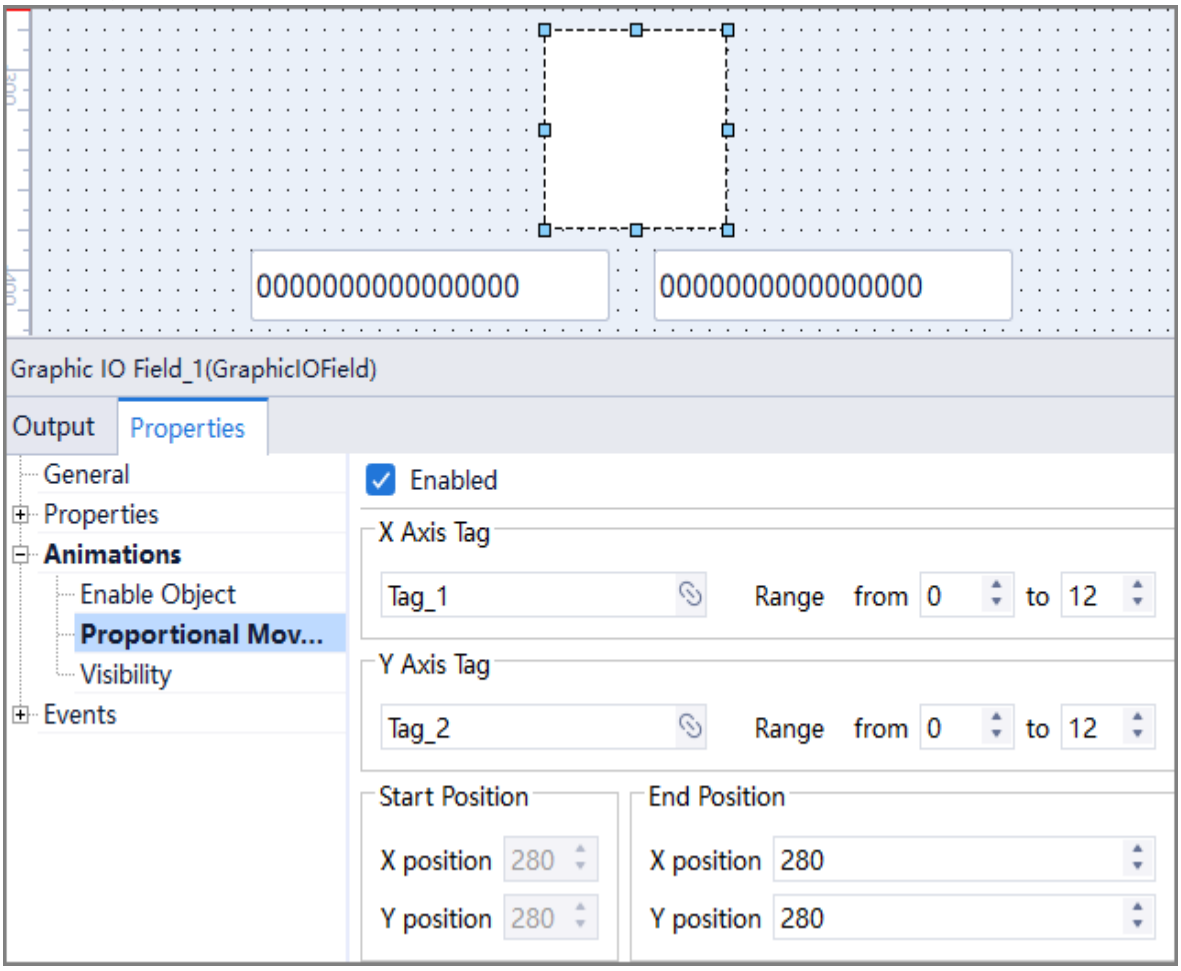
In the following example, the proportional movement of a graphic I/O field object is configured.

1. Select the graphic I/O field object, then expand the "Animations" property in its properties view, and select "Proportional Movement". Set the tags of the X and Y axes and their value ranges.

Associate "Tag_1" with the X axis and "Tag_2" with the Y axis.

1. Select a numeric I/O field object, and add the object to the screen. Repeat the operation to add another numeric I/O field object to the screen.
2. On the "Process" tab page of "General" of the 1st numeric I/O field object, select "SameReadWriteTag", associate the read tag with "Tag_1", and set other properties to their default values.
3. On the "Process" tab page of "General" of the 2nd numeric I/O field object, select "SameReadWriteTag", associate the read tag with "Tag_2", and set other properties to their default values.

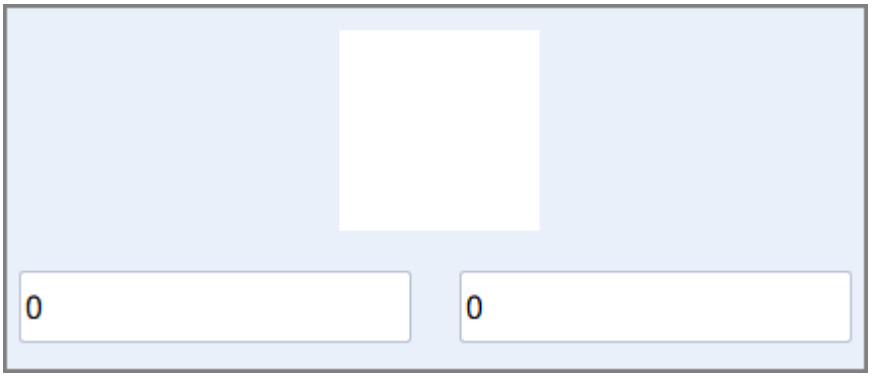
4. The configuration is as follows.



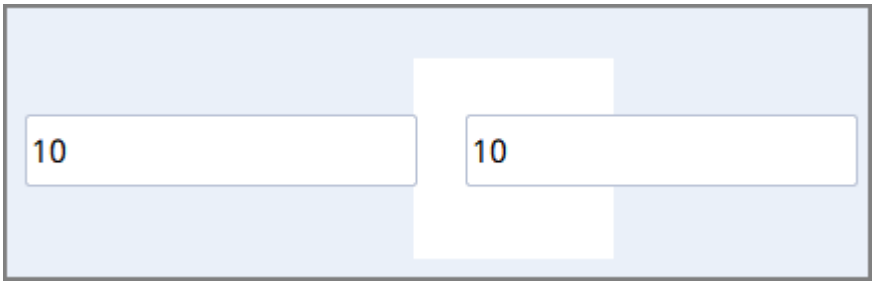
5. Perform the simulation test.

Click to perform simulation offline.

Set the start position of the graphic I/O fields.



In "Number IO Field", input 10 and 10. Then the numeric I/O field moves proportionally.

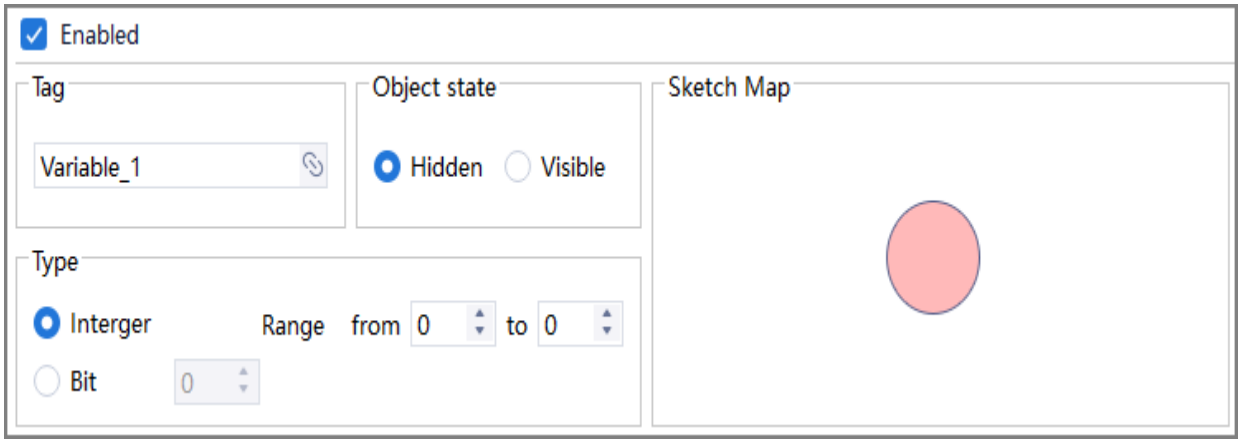


In "Number IO Field", input 0 and 0. Then the numeric I/O field returns to its start position.

7.5.1.10 Visibility

You can dynamically control the visibility of objects by changing the value of the tag, Whether an object is displayed depends on its state and the tag value. The object shows if the tag reaches a specific value or is in a specific range.

The following is the "Visibility" property page of an object.



As shown in the above figure, the configuration consists of:

- Enabled: Check this option to enable the visibility setting.
- Tag: The tag to control the object visibility.
- Object state: The status of an object. Options are "Hidden" and "Visible". When "Visible" is checked, the object is visible when the tag value is within the configuration range. When "Hidden" is checked, the object is not visible when the tag value is within the configuration range.
- Type: The type of the tag value. Options are "Integer" and "Bit" See the following table.

Property Name	Description
Integer	The visibility of the object is controlled by the value or range of the tag. If the object state is Visible, the object is visible when the tag value is in the configured range, and otherwise is hidden. The opposite is true when the object state is Hidden.
Bit	The visibility of the object is controlled by the bits of the tag. If "Visible" is checked and the tag bit is 1 (regardless of other bit values), the object is visible. If the tag bit is 0 (regardless of other bit values), the object is hidden. The opposite is true when the object state is Hidden.

Example: Configuring Visibility of an Ellipse Object

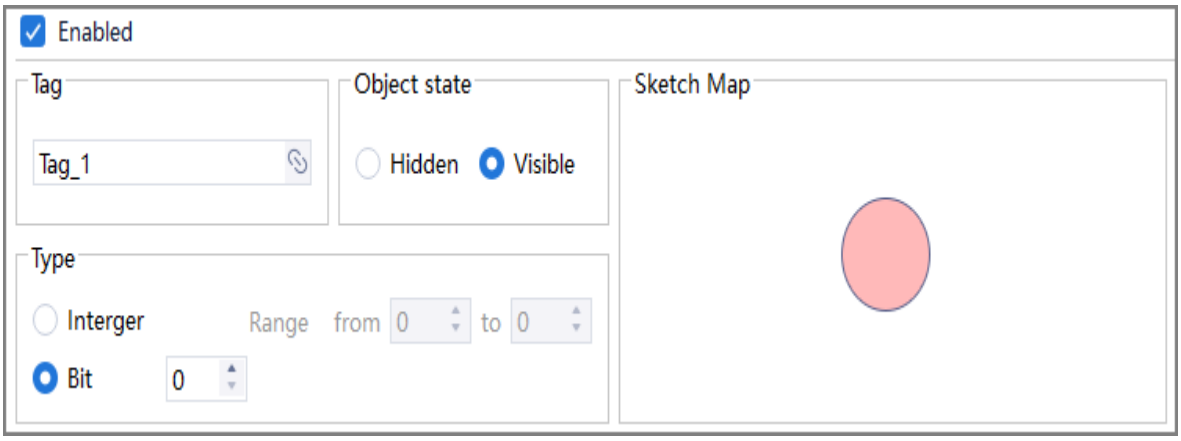
1. Create a tag to control the visibility.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add a tag.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	Tag_1	1	<Internal tag>	Int16	2	1	LW 0

2. Configure the visibility of the ellipse object.

   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Screen_1". Select "Ellipse". On the "Properties" tab page, choose "Animations" > "Visibility". Check "Enabled" and set "Tag" to "Tag_1". Set "Object state" to "Visible". Set "Type" to "Bit"

and set the value to 0.



3. Add a tag to the screen.
   In the "Project" navigation tree on the left, click "Tag group_2". Drag "Tag_1" from "Variable View" to "Screen_1" to control the visibility of the ellipse.

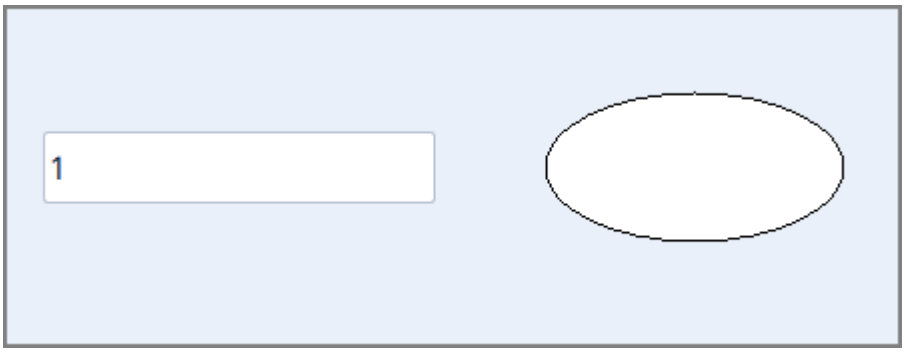
4. (Optional) Configure the visibility of the numeric IO field.

   Select the numeric IO field of "Tag_1". On the "Properties" tab page, choose "Properties" > "Security". If you set "Authorization" to "Administration" in the "Runtime Security" section and check "Visibility controlled by authorization" in the "Operation" section, "Animations" > "Visibility" is invalid and cannot be edited for the numeric IO field.

5. Perform the simulation test.

   Click  to perform simulation offline.

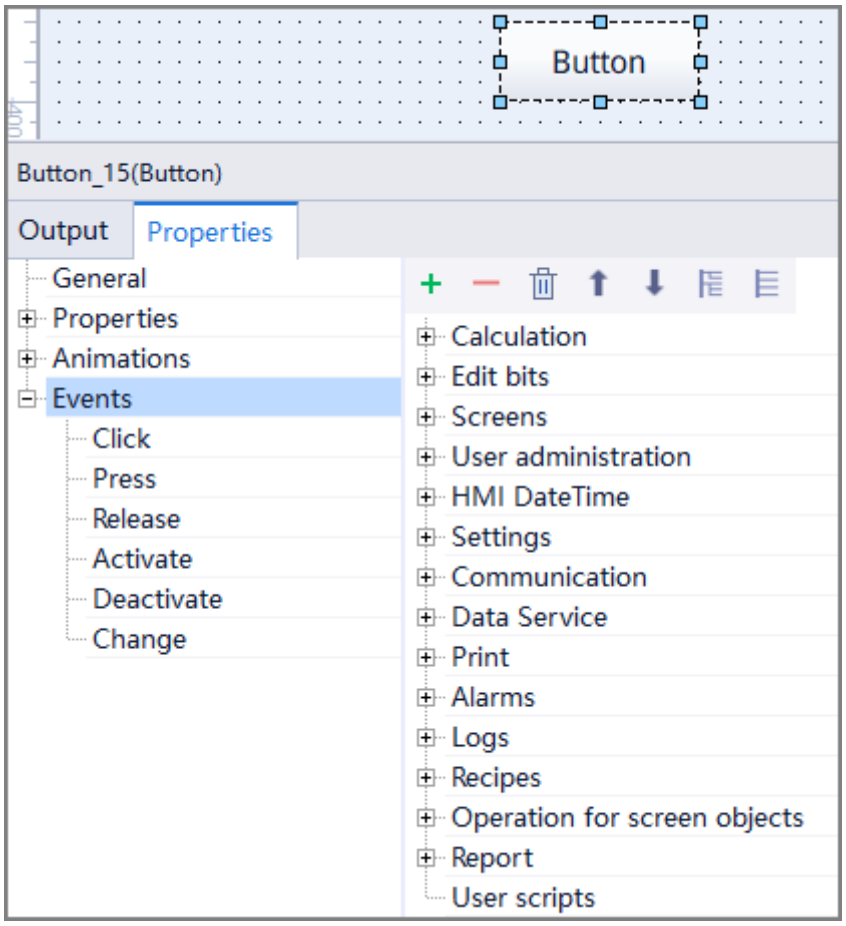




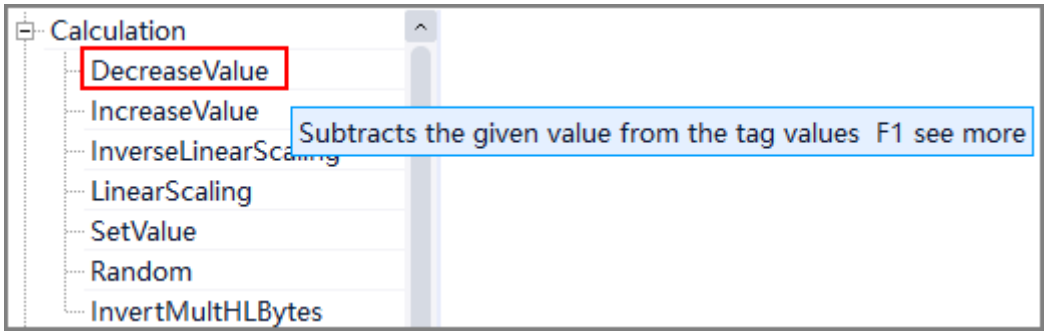
7.5.2 Event

Events are conditions for triggering execution of related tasks. For example, for the click event of a button, you can click the button to trigger execution of tasks (system functions or scripts) assigned to this event. A list of events and related functions, as well as user-created scripts, can be configured in the Properties dialog box. Which events can actually be used depends on the object type.

For example, you can execute six events for a button, including Click, Press, Release, Activate, Deactivate, and Change, as shown in the following figure.



When you select an event, system functions that can be configured are displayed on the right side. When the cursor stays over a function, the help information of the function is displayed, as shown in the following figure.



For information about system functions associated with the events, see section System Functions and Running Scripts.

The following table lists the event details.

Name	Description	Object
Load	Loads a screen or canvas.	• Screens • Canvas
Clear	Clears a screen or canvas.	
Activate	Triggers an analog alarm or a discrete alarm.	• Analog Alarm • Discrete alarm
Deactivate	Clears an alarm.	
Compliance	Acknowledges an alarm.	

ReturnPressed	Completes input in the control.	• Number IO field • String IO field • Date-Time Field
Change	Changes the object status.	• Graphic Switch • Text Switch • Slider • Gauge
OFF	Turns the switch to the OFF position.	• Text Switch • Graphic Switch
Opening the Program file	Turns the switch to the ON position.	
Click	Clicks a button (Both press and release must fall on the button. Otherwise. it is invalid).	Buttons
Press	Presses a button.	Word Button
Release	Releases a button.	Bit Button
Activate	Activates a button.	
Deactivate	Deactivates a button.	
Change	Changes the object status.	
Upper limit	Exceeds the upper limit of a tag.	Non-BOOL tag
Lower limit	Exceeds the lower limit of a tag.	
Change value	Changes the value of a tag, which can be triggered by the PLC or user.	Tag
True	Switches on the value of a BOOL tag.	BOOL tag
False	Switches off the value of a BOOL tag.	
timeout	Time set by the timer control reaches the trigger time.	Timer

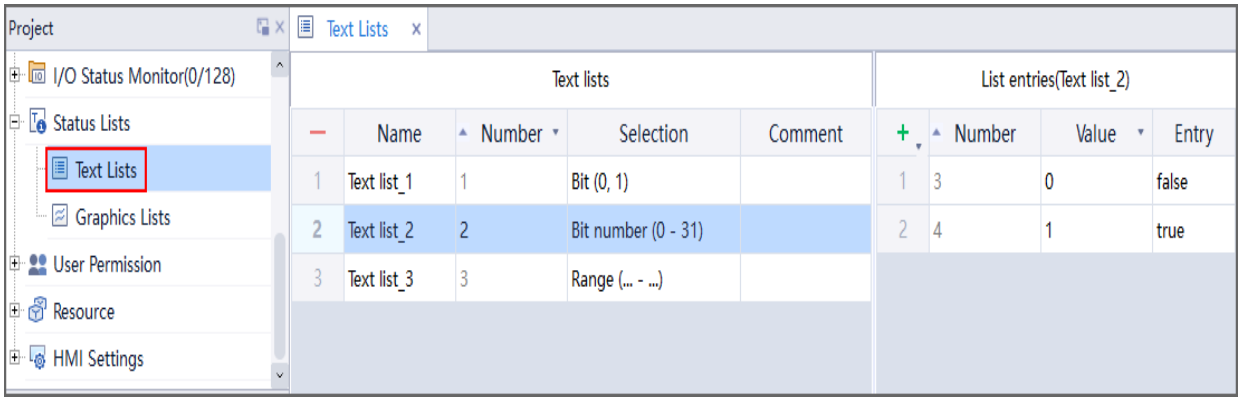
8 Status Lists

8.1 Introduction

"Status Lists" is divided into "Text lists" and "Graphics lists", making higher display and option recognition of controls. For example, display of "Motor Off" or "Motor On" makes a button that controls a motor more easily recognized than "0" or "1". "Status Lists" associates controls with corresponding lists. When a control performs switching and the status changes, the control displays more readable text or graphics if the tag value has been assigned with a specific entry.

8.2 Text Lists

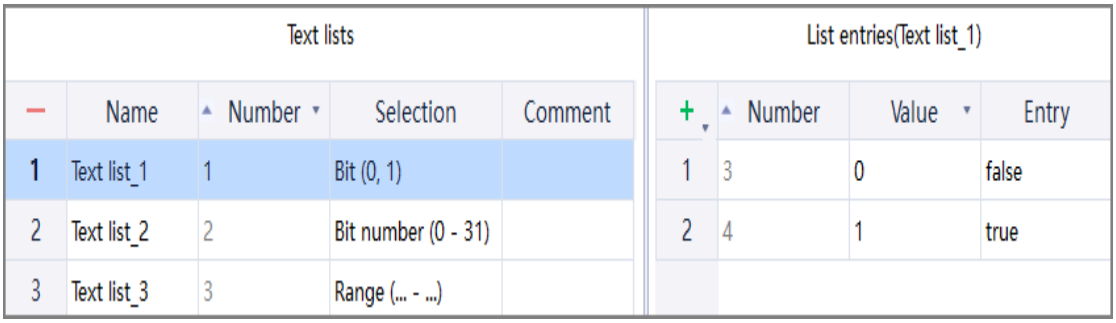
"Text Lists" is typically used to display and select a set of predefined text options. It can be used to display information such as motor names, modes, and statuses. You can quickly switch between different devices or view device information via the text list.



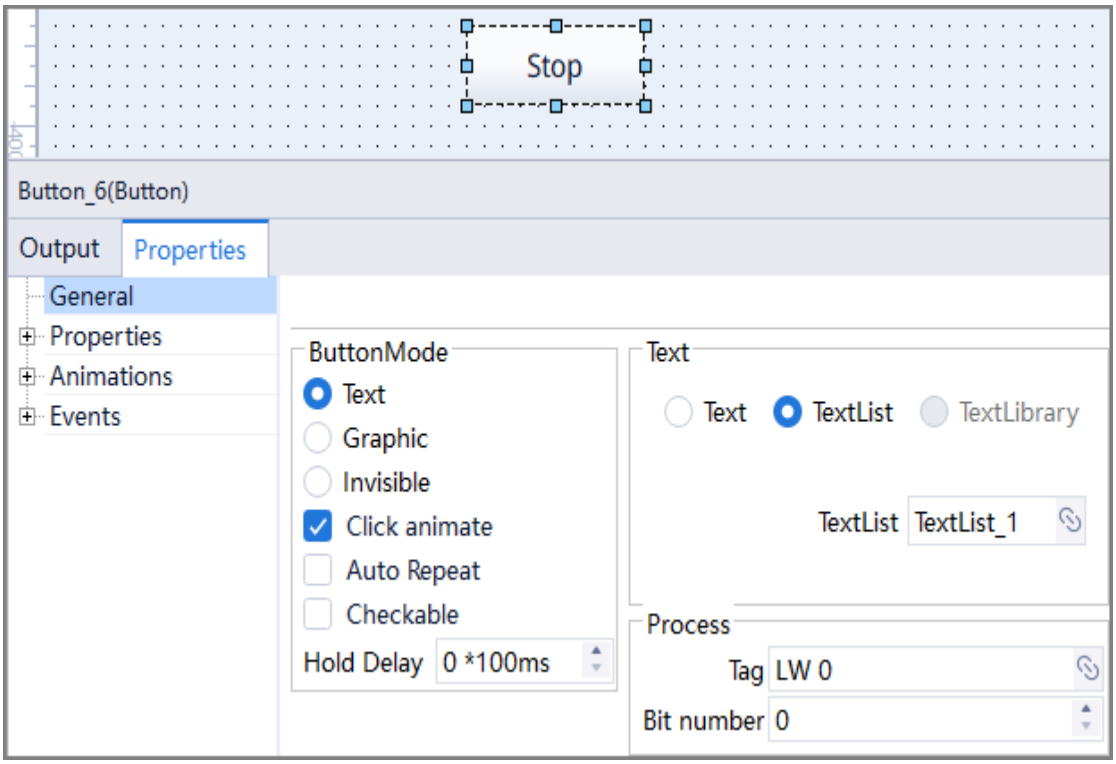
The "Text Lists" supports three modes: bit, bit number, and range. Each mode allows different maximum quantities of definable texts (entries). A single project supports a maximum of 50,000 text list rows and 524,288 text entries.

The text lists are applied to control symbolic IO fields and buttons. Detailed descriptions and configuration examples are as follows:

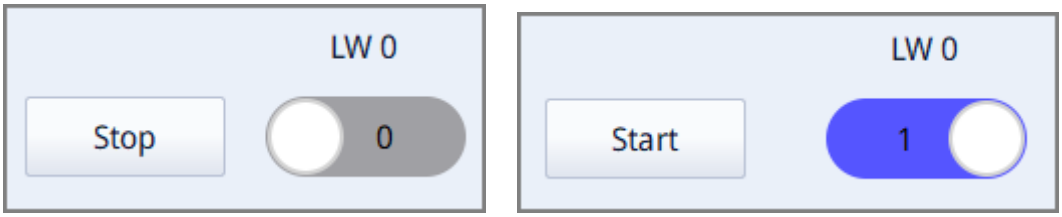
- Bit (0, 1)
  Description: Displays different texts when the tag value is 0 or 1, supporting 2 entries.
  Application example: When LW0 is 1, the button displays "Start"; when LW0 is 0, the button displays "Stop".
  1. Define a BOOL type tag LW0.
  2. Define the text list.



3. Associate the button with the defined tag LW0 and text list.



4. View in runtime.



- Bit (0-31): Use the bits 0 to 31 of the tag, and display entries with a value of 0 when bit 0 is set to 1 and only the bit 0 is 1, and so on. A total of 32 entries are supported.
  Application example: Use the symbolic IO Field as an example to illustrate the configuration and operation process.

  1. Define an Int32 type tag LW0.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	6	<Internal tag>	Int32	4	1	LW 0

  2. Define the text list and select "0-31" for the bit number.

Text lists

	Name	Number	Selection	Cor
1	Text list_1	1	Range (... - ...)	

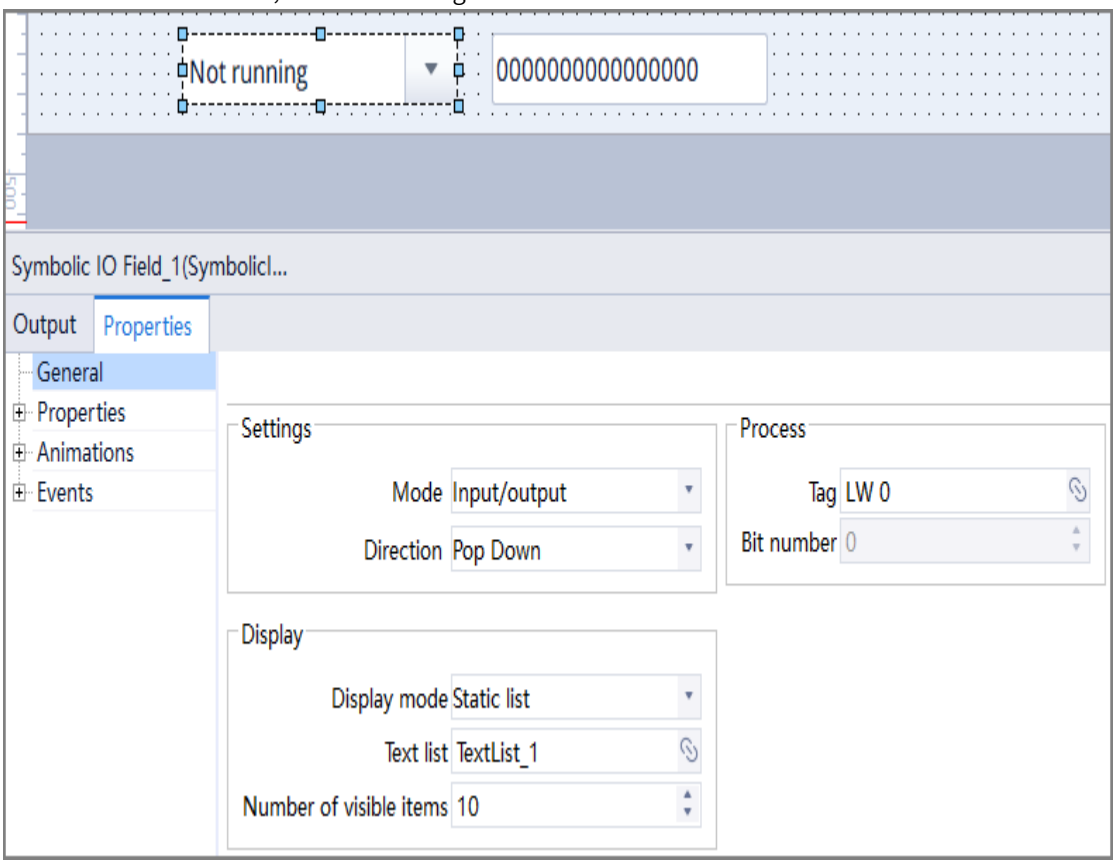
List entries(Text list_1)

	Number	Value	Entry
1	1	0	Not running
2	2	1	Standby
3	3	2	Single-axis jog
4	4	3	Membrane s...

  The values 0, 1, 2, and 3 in the numeric column represent bit 0, bit 1, bit 2, and bit 3 of LW0 in binary, respectively.

3. Configure the number I/O field.

   In the "Tools" navigation tree on the right, choose "Control & Display" > "Number IO Field", and drag the control to the screen, and bind the tag and text list.



4. View in runtime.

   When the value of LW0 is 1 (that is, the 0th bit is TRUE), "Not running" is displayed.



   When the value of LW0 is 2 (that is, the 1st bit is TRUE), "Standby" is displayed.



   When the value of LW0 is 4 (that is, the 2nd bit is TRUE), "Single-axis jogging" is displayed.



   When the value of LW0 is 8 (that is, the 3rd bit is TRUE), "Membrane Axis Operation" is displayed.



- Range (...-...)

  Displays the corresponding entry when the range of tag value falls within the range. A total of 2,048 entries are supported.

Text lists

	Name	Number	Selection	Comment
1	Text list_1	1	Bit (0, 1)	
2	Text list_2	2	Bit number (0 - 31)	
3	Text list_3	3	Range (... - ...)	

List entries(

	Number	Value
1	1	0 - 59
2	2	60 - 79
3	3	80 - 100

The application operation of Range (... - ...) is the same as the other two modes. See the examples above.

8.3 Graphic Lists

Usage

The graphic list can be configured in the graphic I/O field or the button. The configuration procedure is as follows.

1. Set the entries of the graphic list.

Bit (0,1): The red up arrow is displayed when the tag value is 1, and the green up arrow is displayed when the tag value is 0, as shown in the following figure.

Graphics lists

	Name	Number	Selection	Comment
1	Graphics list_1	1	Bit (0, 1)	

List entries(Graphics list_1)

	Number	Value	Entry
1	1	0	A...
2	2	1	A...

Bit number (0-31): When and only when the second bit of the tag is 1, the red button is displayed. When and only when the 15th bit of the tag is 1, the yellow button is displayed, as shown in the following figure.

Graphics lists

	Name	Number	Selection	Commer
1	Graphics list_1	1	Bit number (0 - 31)	

List entries(Graphics list_1)

	Number	Value	Entry
1	1	2	1...
2	2	15	4...

Range (...-...): When the tag value is within the range of 0 to 5, the red button is displayed. When the tag value is within the range of 6 to 11, the yellow button is displayed, as shown in the following figure.

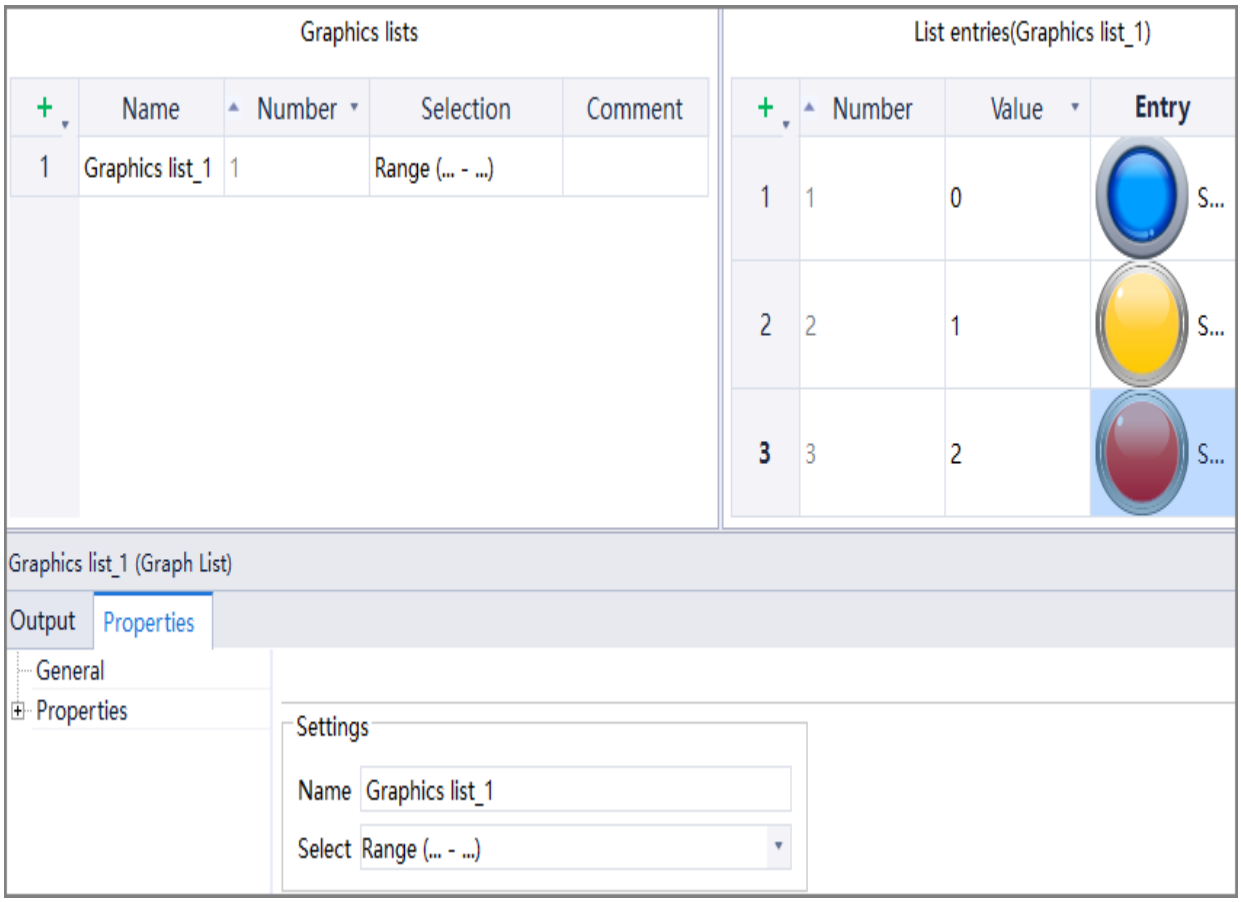


Example: See examples in the section of Graphic I/O Field.

The graphics can be copied and pasted.

Description

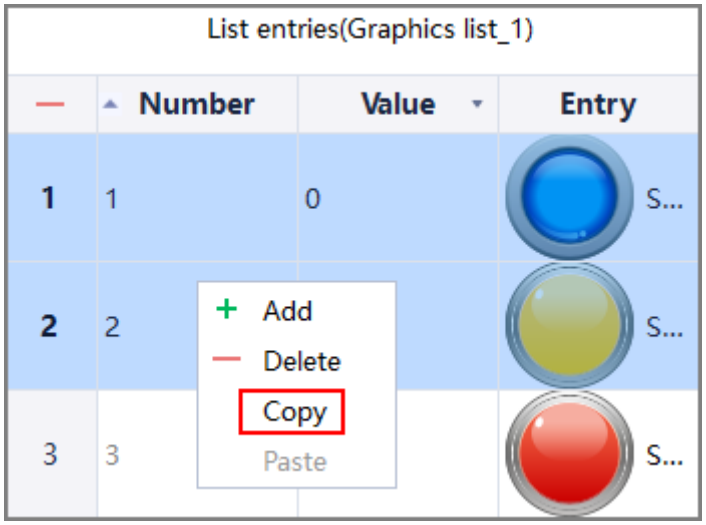
The graphic list can be configured in the graphic I/O field or the button. For the usage of the items selected in the list, see the above text list. In the following figure, the range (...-...) is configured, and you can drag items from the gallery on the right to the table entry.

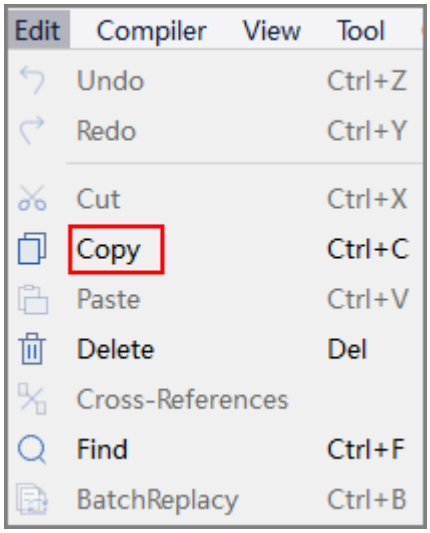


Preconditions: You have created a project and opened the graphic list view.

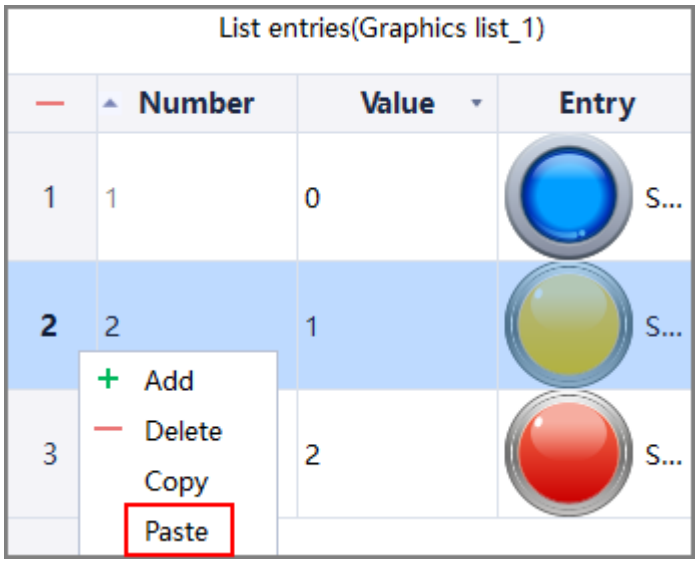
Procedure

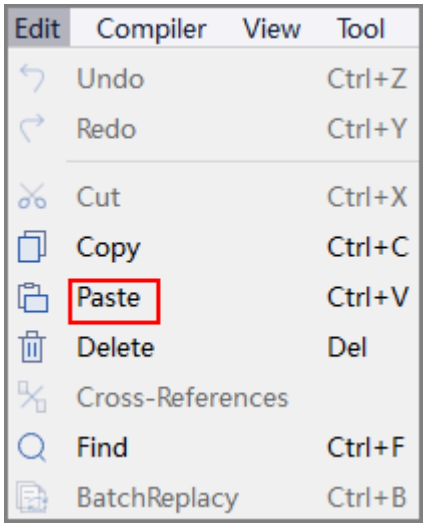
1. Select one or more entries from the list, and right-click them. In the menu displayed, select "Copy" or choose "Edit" > "Copy" (shortcut keys Ctrl+C can be used), as shown in the following figure.





2. When the list entries are activated and copied, right-click them. In the menu displayed, select "Paste" or choose "Edit" > "Paste" (shortcut keys Ctrl+V can be used).




Edit
Compiler
View
Tool
Undo
Ctrl+Z
Redo
Ctrl+Y
Cut
Ctrl+X
Copy
Ctrl+C
Paste
Ctrl+V
Delete
Del
Cross-References
Find
Ctrl+F
BatchReplacy
Ctrl+B

9 Alarm Management

9.1 Introduction

9.1.1 Alarm Visualization

- The custom alarms are used to display the process status on the HMI device or to measure and report the process data received from the PLC.
- System alarms are predefined on these devices to display specific system statuses in the HMI device.
- Both the custom alarms and system alarms can be triggered by an HMI device or a PLC, and can be displayed on the HMI device.

9.1.2 Custom Alarm

Available Alarm Processes

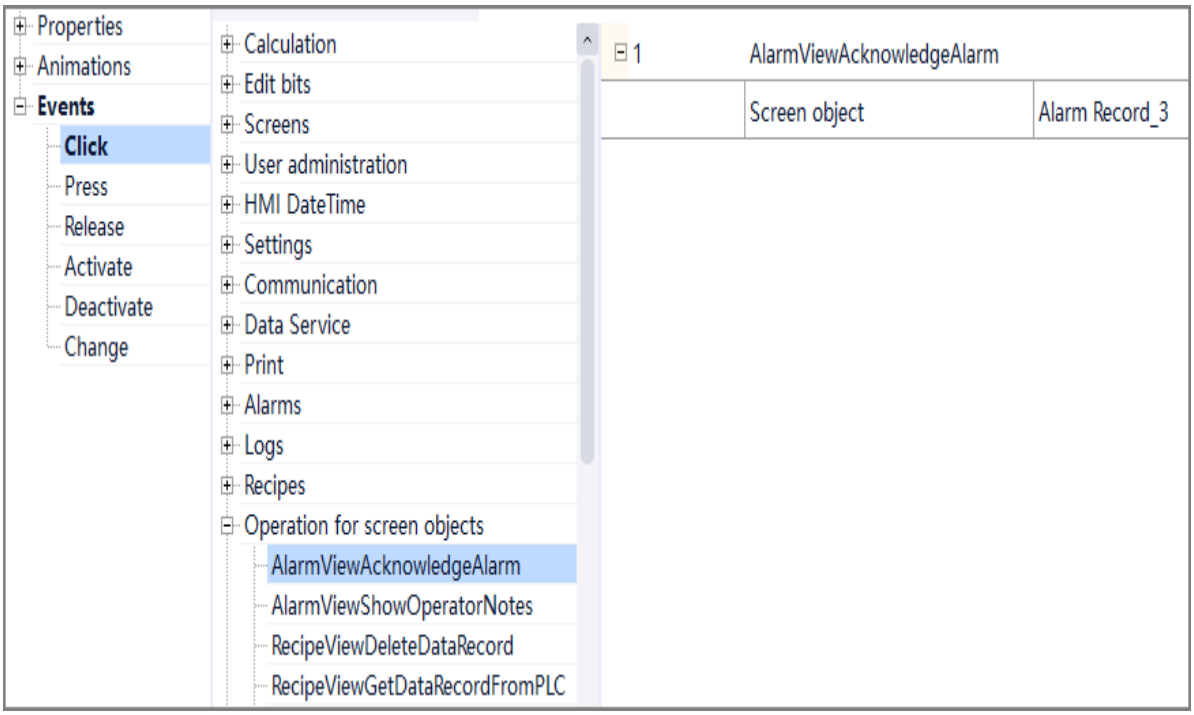
- Analog alarm: If the value of a tag exceeds the limit value, the HMI device triggers an alarm.
- Discrete alarm: If a specified bit in a tag is set, the HMI device triggers an alarm.

Alarm Acknowledgment

The device operator can be required to acknowledge the discrete alarms and analog alarms that indicate key or hazardous operation and process statuses.

Alarm Acknowledgment Method

- Click  in the alarm view for acknowledgment.
- Configure system functions in an event of the screen control, as shown in the figure below.



- Acknowledge discrete alarms by setting a specified bit in a tag.

Alarm class

Alarm classes mainly determine the display method and acknowledgment behavior of alarms on the HMI device.

Predefined system alarm classes:

- "Error": Used for discrete alarms and analog alarms that indicate urgent or dangerous operation and process statuses. These alarms must be acknowledged.
- "Warning": Used for discrete alarms and analog alarms that indicate regular operation statuses, process statuses, and procedural orders. These alarms do not need to be acknowledged.
- "System": Used for system alarms that notify the operator about operation statuses of the HMI device and PLC. The alarm class cannot be used for custom alarms.

9.1.3 System Alarm

System alarms indicate operation statuses of the HMI device and PLC. A system alarm message consists of an alarm number and the alarm text.



System alarms cannot be cleared.

The alarm text accurately describes the alarm cause. The following table lists the alarm causes.

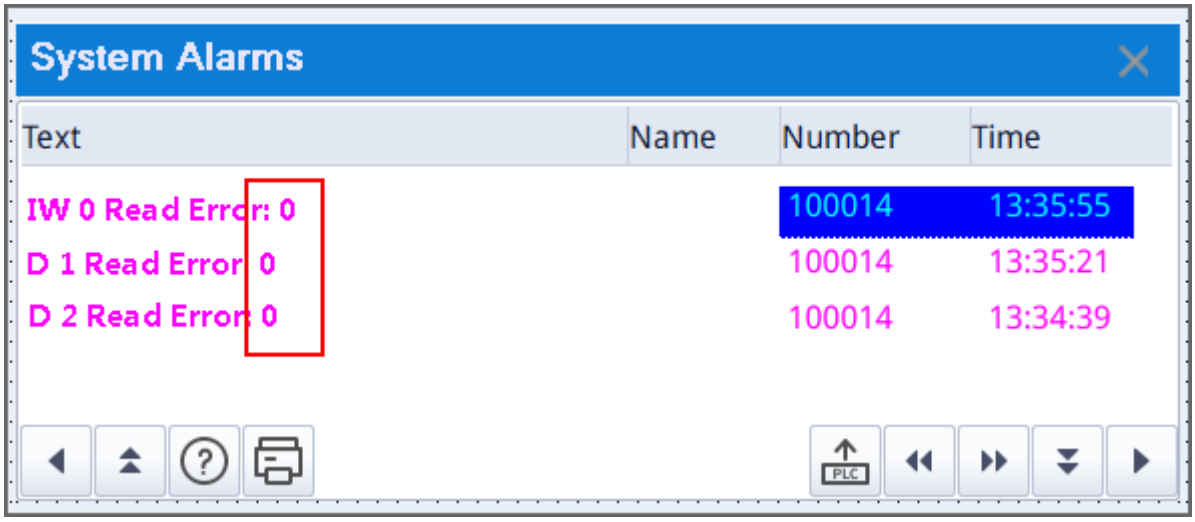
	Text	Alarm classes	Event number	Enabled
1	Log %1 is full.	System	100001	☑
2	Log %1 is %2 percent full.	System	100002	☑
3	Connection failure: %1, station %2.	System	100003	☑
4	Connection successful: %1, station %2.	System	100004	☑
5	Invalid input of date/time.	System	100005	☑
6	Overflow range,the valid range is [%1-%2].	System	100006	☑
7	The Medium of Log is full .	System	100007	☑
8	Tag %1 can not write to PLC.	System	100008	☑
9	Invalid PLC job number: %1.	System	100009	☑
10	No other screens can be selected. No other screens are stored in t...	System	100010	☑
11	SIM status: %1.	System	100011	☑
12	IOT status: %1.	System	100012	☑
13	Connection off line: %1, station %2.	System	100013	☑
14	%1 read error: %2.	System	100014	☑
15	%1 write error: %2.	System	100015	☑
16	SD card has not been detected.	System	100016	☑
17	SD card has been detected.	System	100017	☑
18	SD card has been ejected.	System	100018	☑
19	USB has not been detected.	System	100019	☑
20	USB card has been detected.	System	100020	☑
21	USB has been ejected.	System	100021	☑
22	Connection disabled: %1, station %2.	System	100022	☑
23	Insufficient available memory!	System	100023	☑

The following table lists the trigger conditions of system alarms.

No.	Text	Trigger Condition
1	Log %1 is full.	This alarm is triggered when the size of the stored data records or alarm records exceeds the limit.
2	Log %1 is %2 percent full.	This alarm is triggered when the size of the stored data records or alarm records reaches %2.
3	Connection failure: %1, station %2.	This alarm is triggered when the connection to the station fails.
4	Connection successful: %1, station %2.	This alarm is triggered when the connection to the station is successful.
5	Invalid input of date/time.	/

6	Overflow range, the valid range is [%1-%2].	/
7	The Medium of Log is full.	This alarm is triggered when the storage medium of the data is full.
8	Tag %1 can not write to PLC.	This alarm is triggered when the tag cannot be written to the PLC.
9	Invalid PLC job number: %1.	/
10	No other screens can be selected. No other screens are stored in the buffer.	This alarm is triggered when you call the "ActivatePreviousScreen" function to return to the previous screen but the previous screen is not stored in the buffer.
11	SIM status: %1.	This alarm is triggered when the SIM card status is abnormal.
12	IOT status: %1.	This alarm is triggered when the IoT status is abnormal.
13	Connection off line: %1, station %2.	This alarm is triggered when the station is offline.
14	%1 read error: %2.	This alarm is triggered when a read error occurs.
15	%1 write error: %2.	This alarm is triggered when a write error occurs.
16	SD card has not been detected.	This alarm is triggered when the inserted SD card is not detected.
17	SD card has been detected.	This alarm is triggered when an SD card is inserted.
18	SD card has been ejected.	This alarm is triggered when the SD card is ejected.
19	USB has not been detected.	This alarm is triggered when the inserted USB drive is not detected.
20	USB has been detected.	This alarm is triggered when a USB drive is inserted.
21	USB has been ejected.	This alarm is triggered when the USB drive is ejected.
22	Connection disabled: %1, station 2.	This alarm is triggered when the connection is not enabled.
23	Insufficient available memory!	This alarm is triggered when the available memory is insufficient.
24	Time error, please check the battery	This alarm is triggered when the HMI has installment payment information and the battery is loose or the battery capacity is low. After this alarm is triggered, replace the battery as soon as possible. Before replacing the battery, you can download the project, and select "sync date time" and "retain installment" as a temporary solution for the alarm. **Note** If installment payment is not enabled in the project downloaded to the HMI but the installment payment information of the old project is saved on the HMI, you need to select "sync date time" but deselect "retain installment" in the downloaded new project; otherwise, the alarm "Time error, please check the battery" will be triggered.

The following figure shows the fault codes of system alarms.



Fault Code	Description
0	InitState
1	OperationTimeout
2	ParamError
3	NoConnection
4	Processing

9.1.4 Alarm Display

Alarm Display on HMI Devices

- Alarm view: An alarm view can display multiple alarms at the same time. In an alarm view, you can select one or more alarm categories for display. You can configure multiple alarm views.
- Alarm bar: A configured alarm bar can display all alarms categorized as 'errors'.
- System alarm window: A system alarm window is a default runtime alarm window, specifically for displaying system events.

Alarm Recording

After an alarm category is configured to record alarms, all alarms of this category will be recorded in the specified alarm log.

System Functions for Alarm Editing

System Function	Description
AlarmViewAcknowledgeAlarm	Determines alarms selected in a specified alarm view.
AlarmViewShowOperatorNotes	Displays information text of alarms selected in a specified alarm view.
ClearAlarmBuffer	Deletes alarms from the alarm buffer on HMI devices.
ClearActionedAlarmBuffer	Deletes processed alarms from the alarm buffer on HMI devices.

ShowAlarmView	Displays/Hides the specified alarm view control.
Beep	Beeps.

9.2 Properties and Basic Settings

9.2.1 Alarm Configuration Property

Alarm properties

- Alarm text: The alarm text describes alarms, which supports tag configuration. You can set the alarm text by selecting it from a drop-down list or dragging the tag.
- Alarm number: The alarm number identifies an alarm and is unique in the following types.
- Analog alarm: If the value of a tag exceeds the limit value, the HMI device triggers an alarm.
- Discrete alarm: If a specified bit in a tag is set, the HMI device triggers an alarm.
- System alarm: System alarm indicate operation statuses of the HMI device and PLC. A system alarm consists of an alarm number and alarm text. The alarm text accurately describes the alarm cause.
- Alarm category: It determines whether an alarm needs to be acknowledged, how it is displayed on the HMI device, and whether the corresponding alarm is recorded.
- Trigger tag: An analog alarm is triggered when the tag value reaches the limit.

Optional alarm properties

- Alarm group: Alarms in an alarm group are acknowledged and handled in a unified manner. That is, if an alarm belongs to a certain alarm group, you can acknowledge and handle all alarms in the group by acknowledging one alarm in the group.
- Information text: It indicates additional information of an alarm. The text is not automatically displayed. Instead, you need to select the alarm and click the button in the alarm view control to display the text.

Analog alarm

Parameter	Description
Trigger mode	Five trigger modes are supported, including >, <, ==, >=, and <=. They are used as conditions for comparing the trigger tag value with the limit value.
Limit	The alarm limit is used to compare with the trigger tag value to determine whether to trigger an alarm.
Hysteresis mode	On/Off: Set value for triggering an alarm = Limit value + Hysteresis value. The sign of the hysteresis value is determined by the trigger mode: • If the trigger mode is ">", ">=", or "==", the hysteresis value is positive. • If the trigger mode is "<" or "<=", the hysteresis value is negative.
Hysteresis	Hysteresis value ranges from 0 to 100, used with percentage.
Hysteresis in percent	• When it is set to "On", the value of "Hysteresis" is a percentage. Hysteresis value = Limit value x Hysteresis%. • When it is set to "Off", Hysteresis value = Value of "Hysteresis".

Parameter	Description
Delay	When the condition for triggering an analog alarm is reached, the alarm will be triggered after a specified time. The time unit is 100 (ms). For example, if the set value is 10, the actual delay time is calculated as 10 x 100 ms.

Discrete alarm

- "Trigger bit" specifies the status of a certain bit of the trigger tag as the trigger judgment condition, to determine whether to trigger the alarm. After different trigger modes are selected for the same trigger tag, the trigger bit can be the same.
- Trigger modes include "1→0", "0→1", "==0", and "==1". They are used as conditions for the change of the trigger bit status of the trigger tag.
- "PLC ack tag" and "PLC ack bit": The PLC bit number specifies the *n*th bit of the PLC tag as the acknowledgment bit. You can acknowledge the corresponding alarm by setting the specified bit of the PLC tag. The value of "PLC ack tag" must be the same as the trigger tag of the corresponding alarm, but the bit number is different.
- "HMI ack tag" and "HMI ack bit": The HMI bit number specifies the *n*th bit of the HMI tag as the acknowledgment bit. When an alarm is triggered, the specified bit of the HMI tag is reset. When the corresponding discrete alarm is acknowledged, the specified bit of the HMI tag is set.

Note

"PLC ack tag" and "HMI ack tag" are available only when "Class" is set to "Errors" for a discrete alarm and the discrete alarm trigger tag is configured as an external tag.

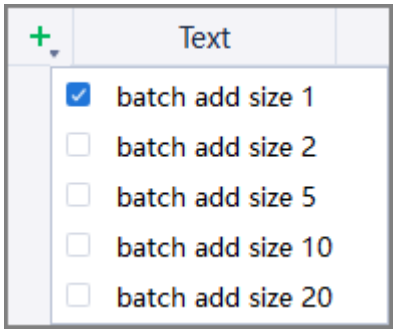
9.2.2 Alarm Configuration Editor

Editor types

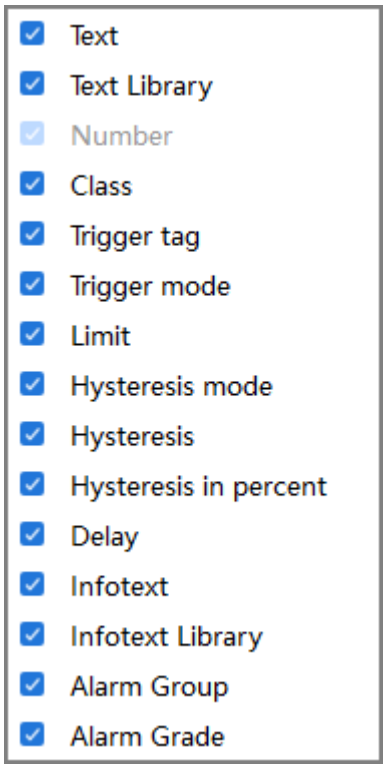
- Discrete alarm editor for creating and modifying discrete alarms
- Analog alarm editor for creating and modifying analog alarms
- System alarm editor for modifying the alarm text of system alarms
- Alarm class editor for creating and changing alarm classes
- Alarm group editor for creating and modifying alarm groups

Use of the editors

- Create an object: Click the icon in the upper-left corner of the table.
- Create objects in batch: Click the inverted triangle under the "New" button. In the dialog box displayed, make settings, and then click "New".



- Delete an object: Click the row header of the alarm to be deleted. The button in the upper-left corner turns to  . Click this button to delete the selected row.
- Hide and display column properties: Right-click the header of a column. In the dialog box displayed, select the columns to be displayed.



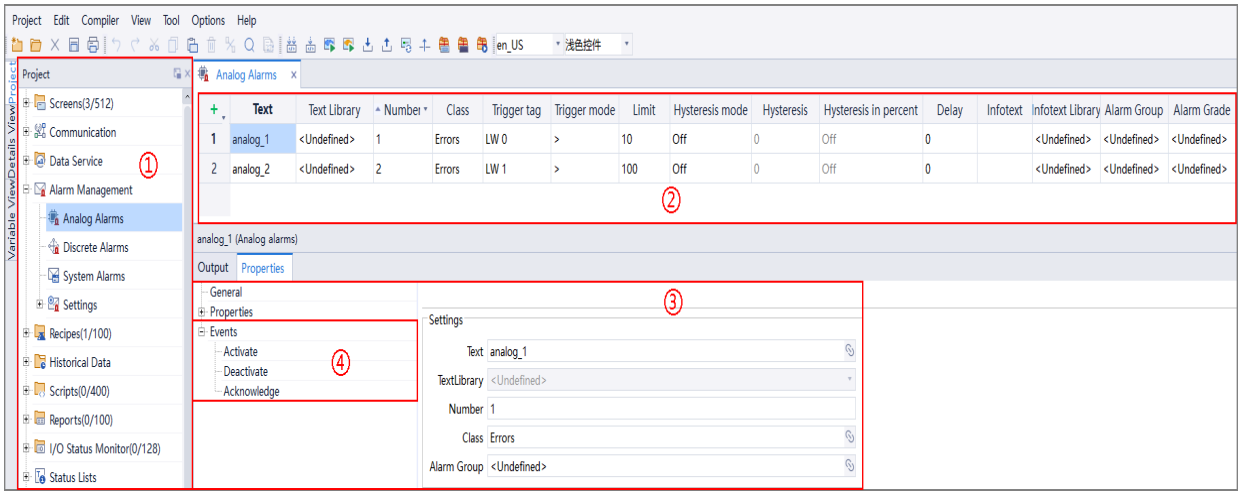
- Sort columns: Click the column header.

9.2.3 Analog Alarm Editor

You can create analog alarms and specify their properties in the analog alarm editor. For property settings, see Alarm Configuration Properties.

Opening the analog alarm editor

Click "Alarm Management" in the project view as shown below, and then double-click "Analog Alarms" to open the editor (①: project view area; ②: table editing area; ③: property view area; and ④: event).



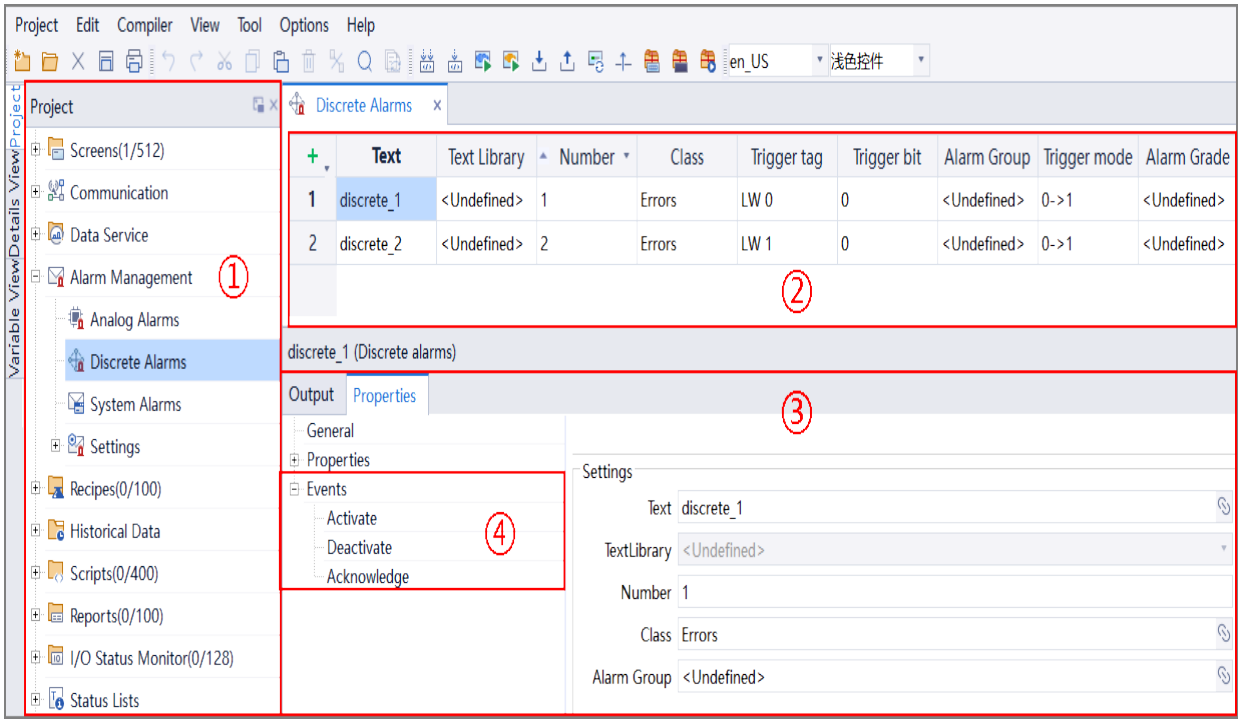
Name	Description
Project view area	-
Table editing area	This area displays all created analog alarms and their property settings in a table. For table editing, see 9.2.2 Alarm Configuration Editor.
Property view area	This area provides the same property setting feature as the table editing area. It also provides event editing.
Event	• Activate: When the alarm occurs, the script function configured in the "Activate" event will be called. • Deactivate: When the alarm is cleared, the script function configured in the "Deactivate" event will be called. • Acknowledge: When the alarm is acknowledged, the script function configured in the "Acknowledge" event will be called.

9.2.4 Discrete Alarm Editor

You can create discrete alarms and specify their properties in the discrete alarm editor. For property settings, see 9.2.1 Alarm Configuration Property.

Opening the discrete alarm editor

Click "Alarm Management" in the project view as shown below, and then double-click "Discrete Alarms" to open the editor (①: project view area; ②: table editing area; ③: property view area; and ④: event).



Name	Description
Project view area	-
Table editing area	This area displays all created discrete alarms and their property settings in a table. For details, see 9.2.1 Alarm Configuration Property.
Property view area	This area provides the same property setting feature as the table editing area. It also provides event editing.
Event	• Activate: When the alarm occurs, the script function configured in the "Activate" event will be called. • Deactivate: When the alarm is cleared, the script function configured in the "Deactivate" event will be called. • Acknowledge: When the alarm is acknowledged, the script function configured in the "Acknowledge" event will be called.

9.2.5 System Alarm Editor

In the system alarm editor, you can only view all defined system alarm messages.

Opening the system alarm editor

Click "Alarm Management" on the left. In the expanded menu, double-click "System Alarms". The system alarm editor is opened on the right (①: project view area; and ②: table editing area), as shown in the following figure.

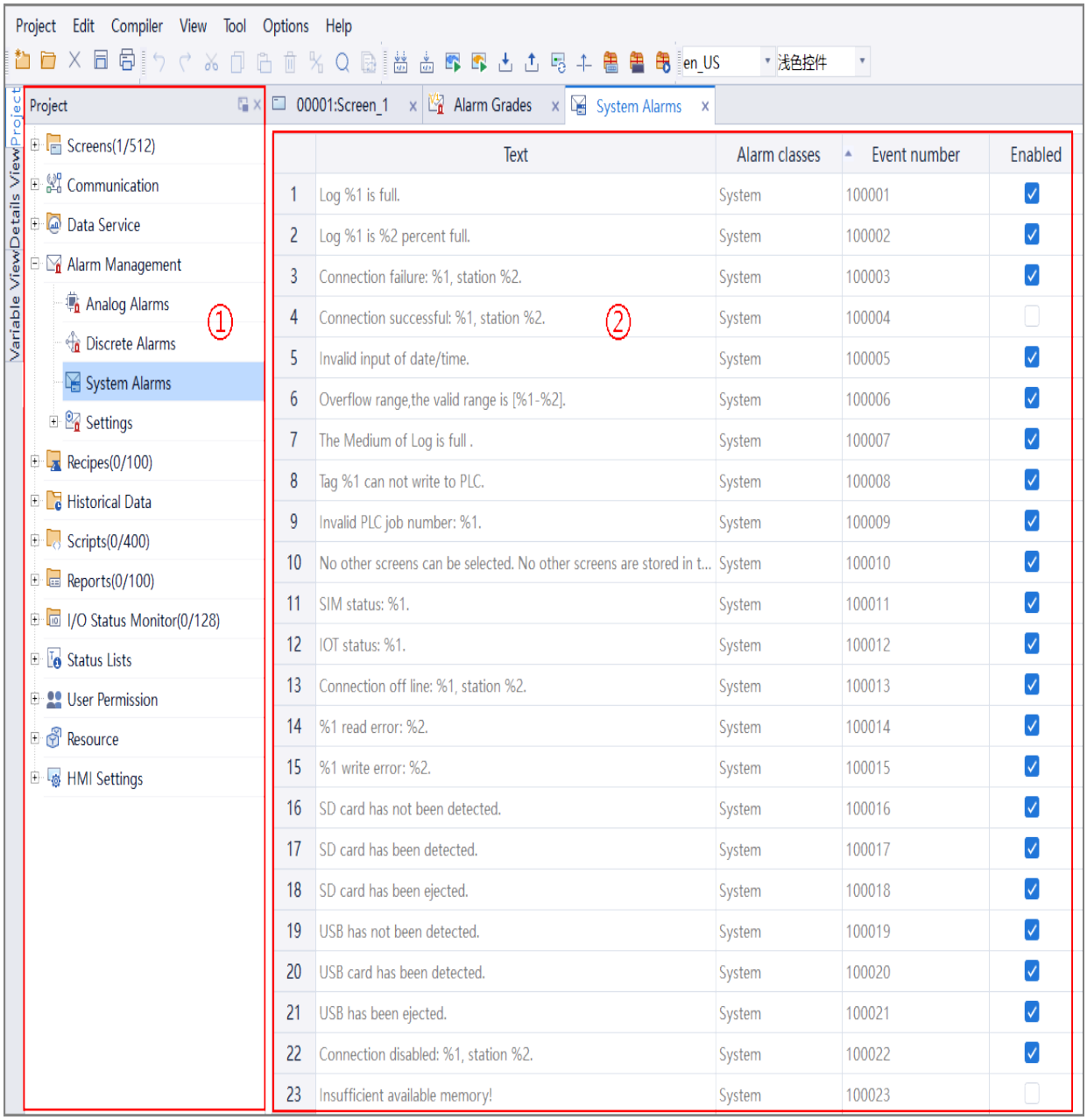


Table editing area

All defined system alarm messages are displayed in this area. You cannot modify the system alarm properties, but you can decide whether to enable this alarm by ticking the check box in the "Enabled" column.

9.2.6 Alarm Class Editor

You can create alarm classes and specify their properties in the alarm class editor. In the project view as shown below, choose "Alarm Management" > "Settings" > "Alarm Classes" to open the alarm class editor (①: project view area; ②: table editing area; and ③: property view area).

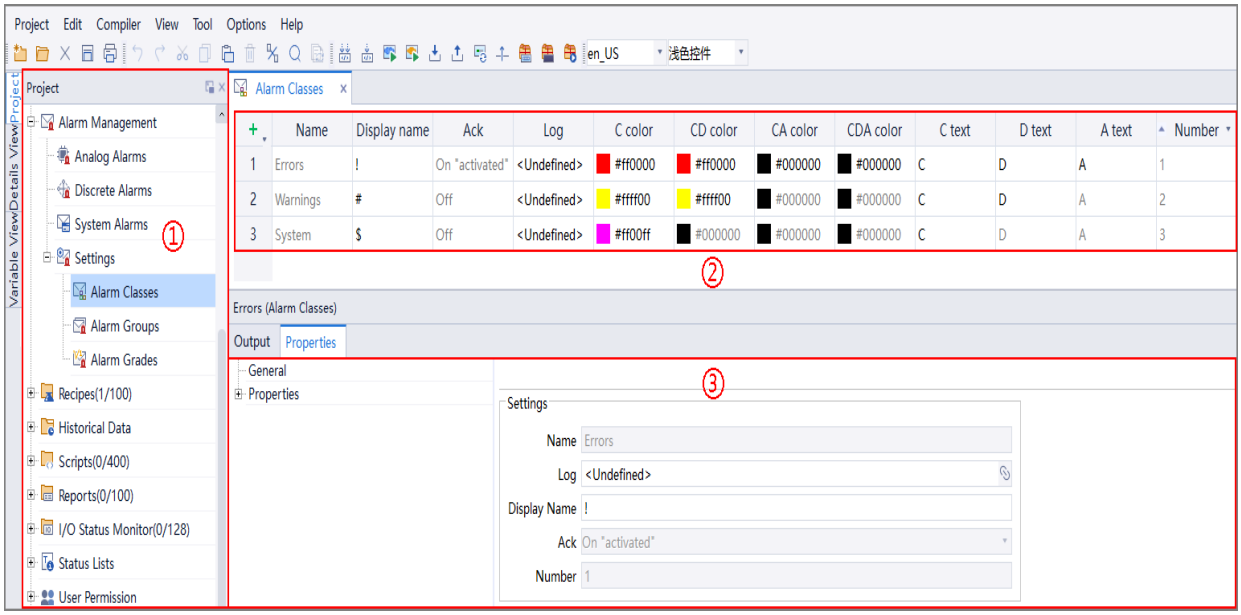


Table editing area

The table editing area displays all created alarm classes and their property settings. You can edit the property in the cell.

Property view area

This area provides the same property setting feature as the table editing area.

Properties

Properties	Description
Name	This name is used to distinguish the alarm class during configuration. The alarm class name must be unique.
Display Name	The mark displayed under "Type" of the alarm view control when the alarm is triggered. Different alarm classes can have the same display name.
Ack	Sets whether the alarm needs to be acknowledged.
Log	Sets the location of alarms and records, and only the records in "Alarm Logs" can be configured.
C color	When the alarm text is displayed in this color, it indicates that the alarm is active.
CD color	When the alarm text is displayed in this color, it indicates that the alarm has occurred and has been eliminated.
CA color	When the alarm text is displayed in this color, it indicates that the alarm has occurred and has been acknowledged.
CDA color	When the alarm text is displayed in this color, it indicates that the alarm has occurred and has been acknowledged and eliminated.
C text	The alarm text displayed after an alarm occurs.
D text:	The alarm text displayed after an alarm is eliminated.
A text	The alarm text displayed after an alarm is acknowledged.

CAUTION

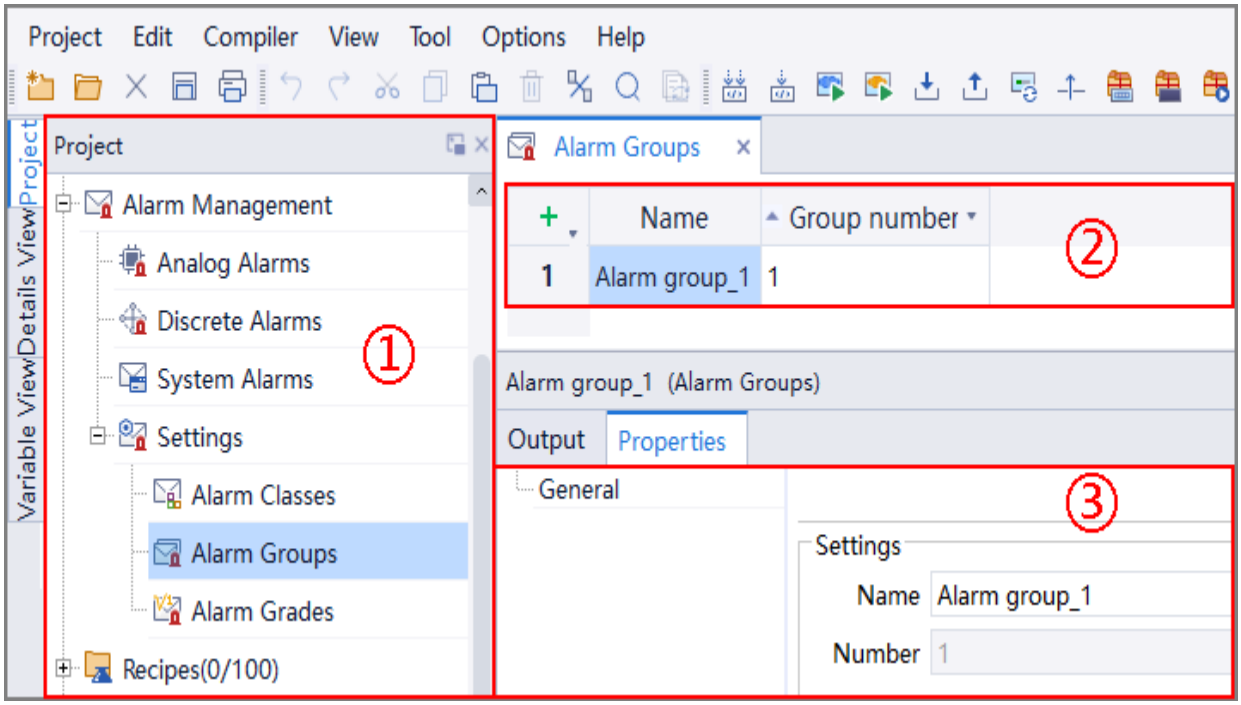
The alarm status text is composed of "C text", "D text" and "A text". When an alarm occurs, the status text of the alarm is displayed as "C", and if the alarm is confirmed, the status text is displayed as "CA".

9.2.7 Alarm Group Editor

In the alarm group editor, you can create alarm groups and specify their properties. Alarm groups are mainly used to classify multiple alarms into one group. In the alarm view, select any alarm in the alarm group to confirm, and all the alarms generated by this group can be confirmed.

Opening the alarm group editor

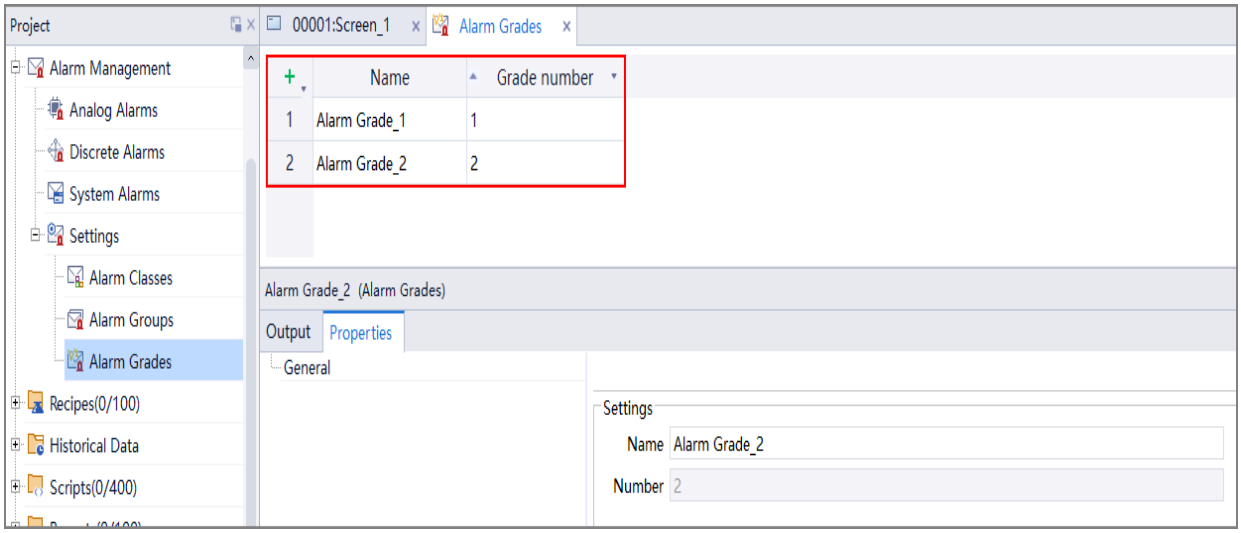
In the project view as shown below, choose "Alarm Management" > "Settings" > "Alarm Groups" to open the alarm group editor (①: project view area; ②: table editing area; and ③: property view area).



Name	Description
Project view area	-
Table editing area	This area displays all created alarm groups and their property settings in a table. You can edit the property in the cell.
Property view area	This area provides the same property setting feature as the table editing area.

9.2.8 Alarm Grade Editor

You can create alarm grades and specify their properties in the alarm grade editor. In the project view as shown in the following figure, choose "Alarm Management" > "Settings" > "Alarm Grades". The alarm grade editor is opened, in which you can create up to 32 alarm grades.



9.3 Alarm Record

9.3.1 Basic Principles of Alarm Record

The alarm record saves information about alarms generated during the project operation for later troubleshooting.

9.3.2 Content of Alarm Record

The alarm to be recorded is assigned to the alarm record by alarm class. When the alarm status changes, the alarm record will hold the following information for the corresponding alarm:

- Alarm text
- Alarm class
- Alarm number
- Alarm date and time
- Alarm status
- Acknowledgment group
- PLC: alarm trigger tag connection name

An alarm record will be generated when an alarm occurs, the alarm is confirmed, and the alarm is eliminated.

9.3.3 Alarm Record Editor

You can create and edit the properties of an alarm record in the alarm record editor. For property details, see 9.3.1 Basic Principles of Alarm Record.

Opening the alarm record editor

In the project view as shown below, choose "Historical Data" > "Alarm Logs" to open the alarm record editor (①: project view area; ②: table editing area; and ③: property view area).

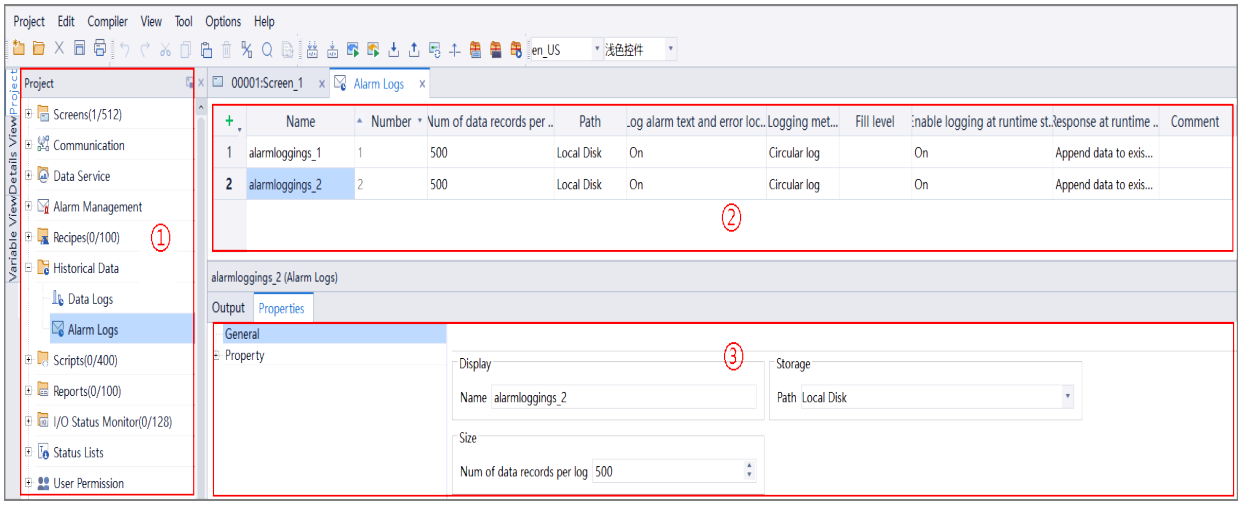
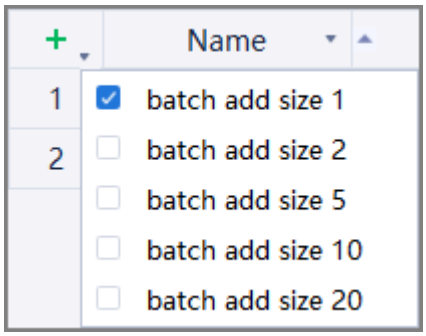
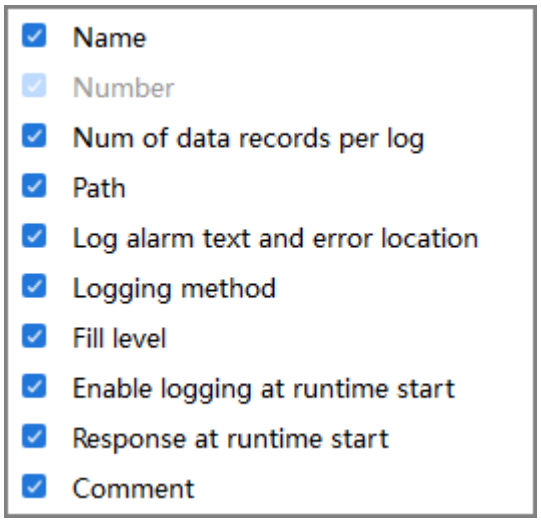


Table editing area

- Create an object: Click the + icon in the upper-left corner of the table.
- Create objects in batch: Click the inverted triangle under the "New" button. In the dialog box displayed, make settings, and then click "New".



- Delete an object: Click the row header of the alarm to be deleted. The button in the upper-left corner turns to . Click this button to delete the selected row.
- Hide and display column properties: Right-click the header of a column. In the dialog box displayed, select the columns to be displayed.



- Sort columns: Click the column header.

Property view area

This area provides the same property setting feature as the table editing area. It also provides event editing.

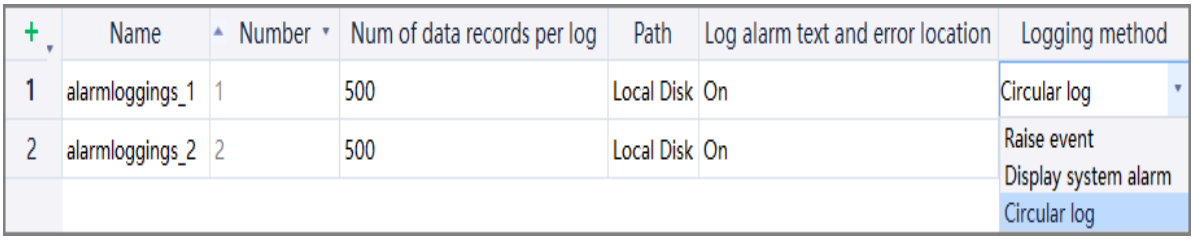
Event description

Overflow event: When the alarm record size exceeds the limit, the script function configured will be triggered. Event items can only be used when you trigger events in the recording method configuration.

9.3.4 Basic Settings of Alarm Record

Property Settings

- Name: Name of an alarm record.
- Num of data records per log: Maximum number of alarms allowed to record in each alarm log.
- Path: HMI, USB drive, or SD card.
- Log alarm text and error location: Whether to save the alarm text and the connection name used by the alarm triggering tag when recording an alarm.
- Logging method
- Circular log: When records are fully filled, the earliest record will be overwritten.
- Raise event: When records are fully filled, a script function configured in the overflow event is triggered.
- Display system alarm: A system alarm is displayed when the number of alarm records reaches a certain percentage of the specified maximum number.
- Fill level: Percentage of the maximum number of alarm records when "Logging method" is set to "Display system alarm". When the alarm record reaches this percentage, a system alarm is generated.



- Enable logging at run time start: Whether to enable the alarm record feature when HMI is started.
- Response at runtime start

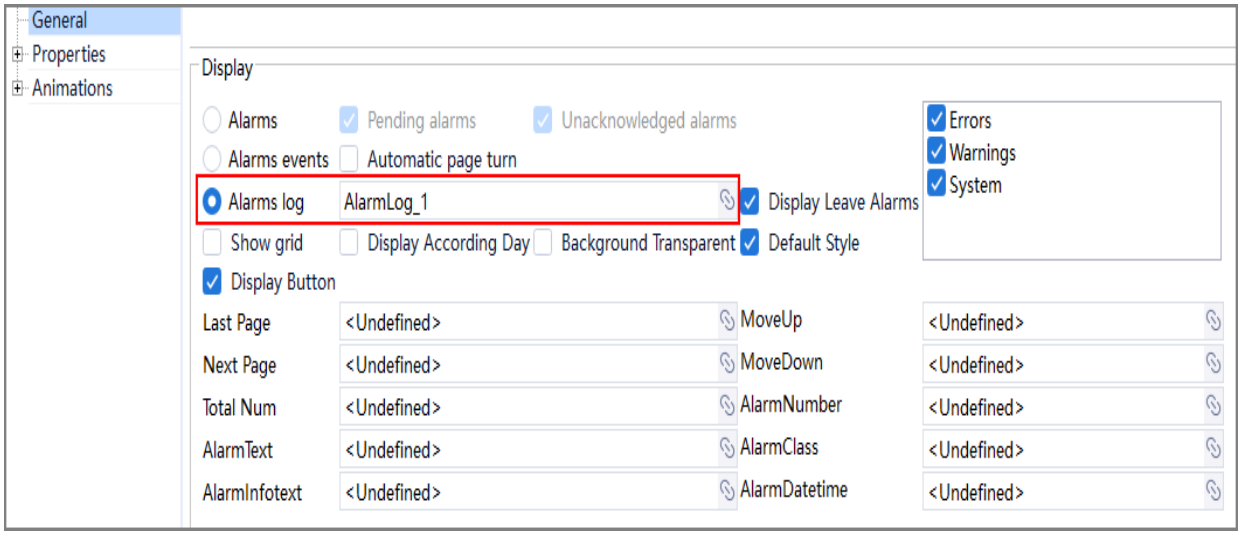
(1) Append data to existing log: The HMI retains previous alarm record entries when it is started.

(2) Reset log: The HMI clears previous alarm record entries when it is started.

- Comment: Description text of the corresponding record.

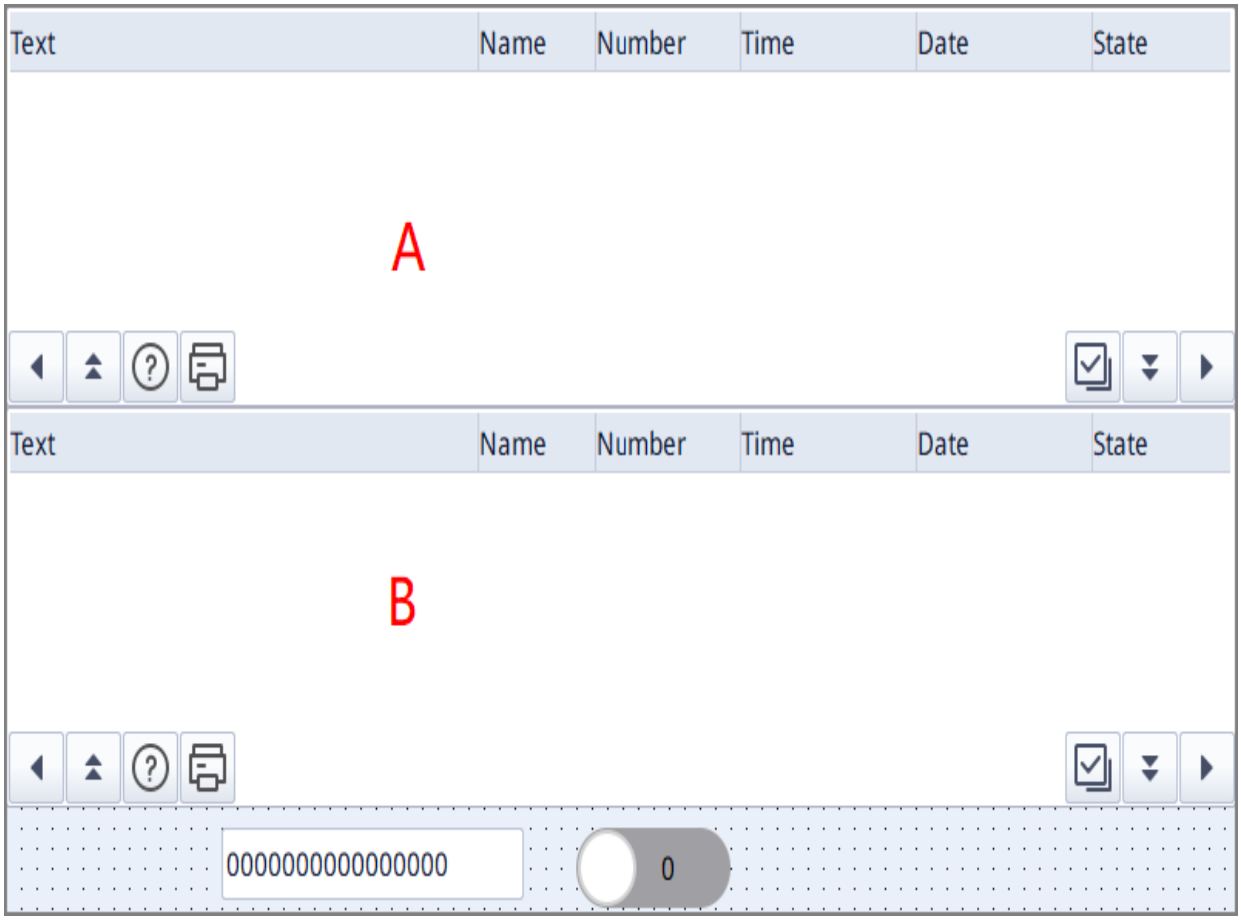
Display of Alarm Records

To display alarm records on the HMI, you need to configure the "Alarm View" control, as shown in the figure below.



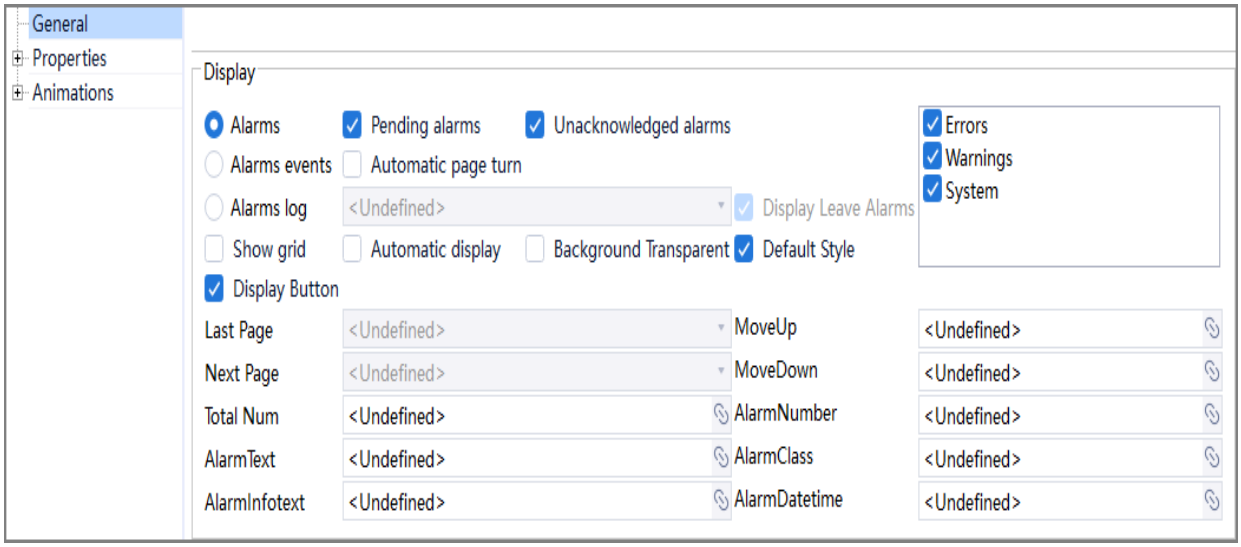
9.4 Alarm Display

Example: After configuring an alarm, add an alarm view control in the screen to display the alarm.

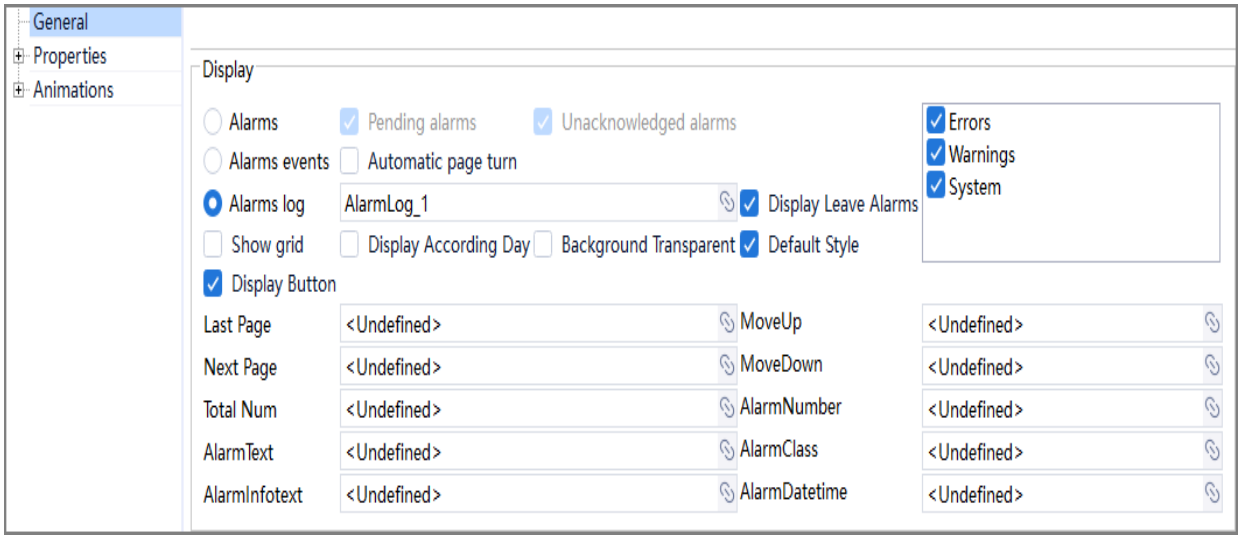


As shown in the figure, add two alarm views A and B.

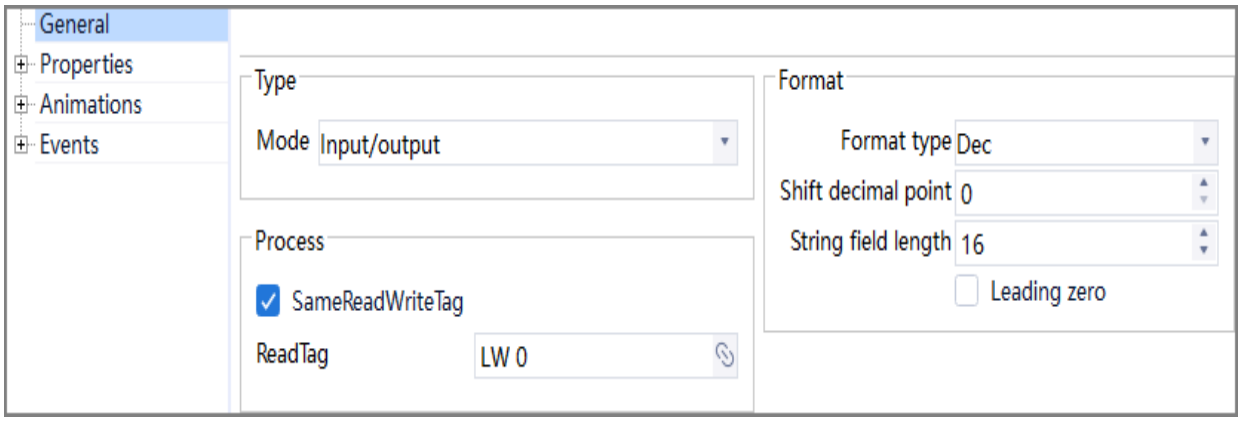
The properties of alarm view A are as follows: display pending and unacknowledged errors, warnings, and system alarms.



The properties of alarm view B are as follows: display errors, warnings, and system alarms in "AlarmLog_1".

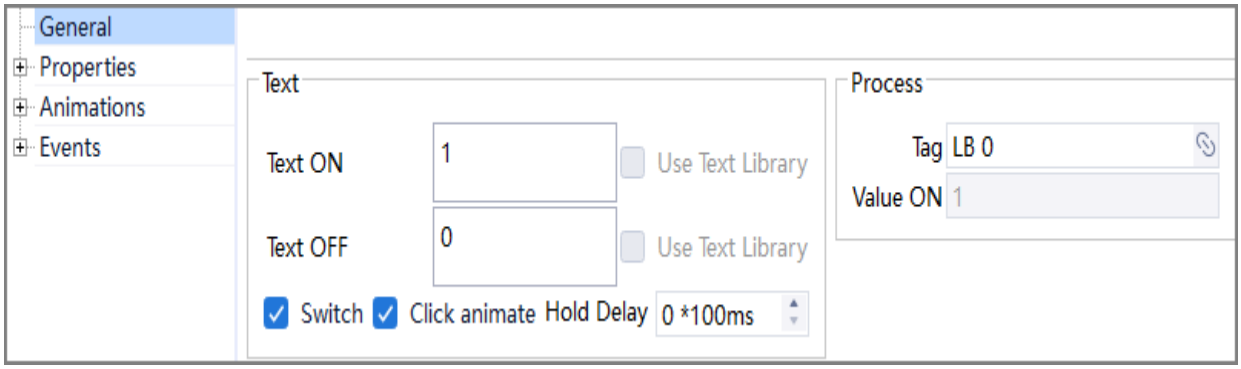


The numeric I/O field process tag is LW 0 and analog alarm is configured:



	Text	Text Library	Number	Class	Trigger tag	Trigger mode	Limit
1	analog_1	<Undefined>	1	Errors	LW0	>	10

The text switch process tag is LB 0:

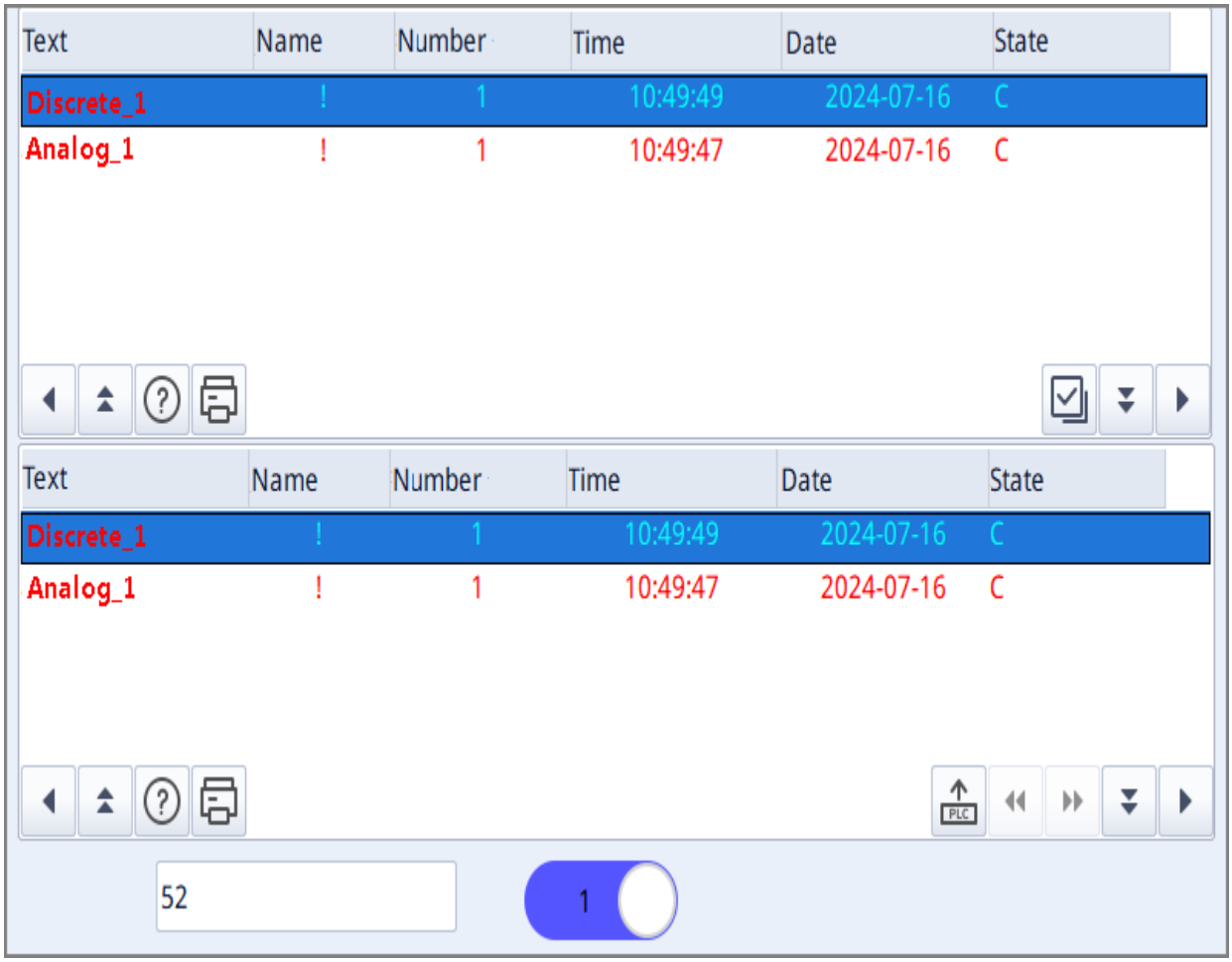


	Text	Text Library	Number	Class	Trigger tag	Trigger bit	Alarm Group	Trigger mode
1	discrete_1	<Undefined>	1	Errors	LB 0	0	Alarm group_1	0->1

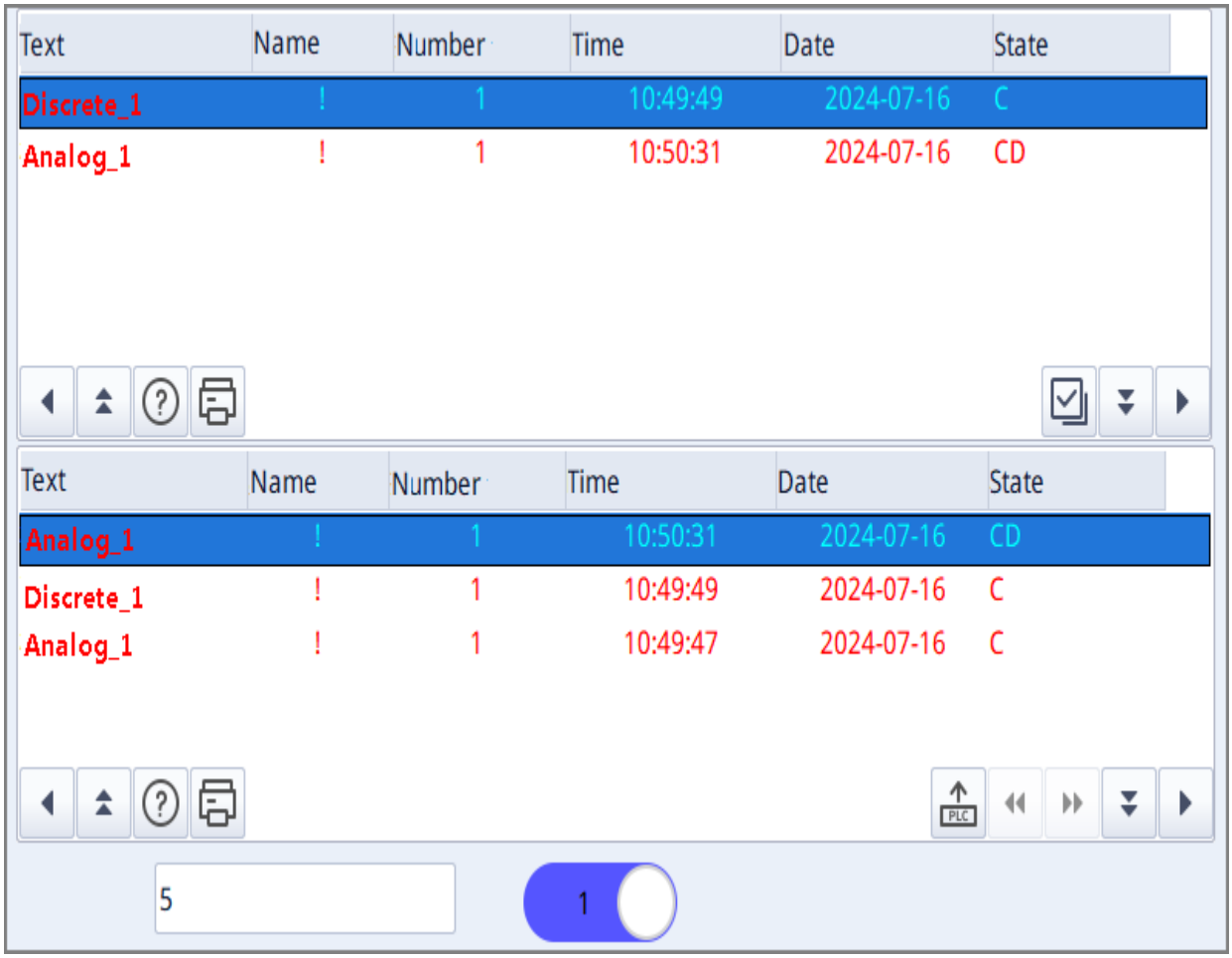
After the configuration is completed, you can download and run the project.

1. Input a value so that LW 0 is greater than 10 to trigger the Analog_1 alarm.

2. Set LB 0 to trigger the discrete_1 alarm. The following alarm message is displayed:



3. Input a value so that LW 0 is less than 10 to clear the alarm. As shown in the following figure, the alarm status of Analog_1 in alarm view A changes to CD, while the status of the new alarm in alarm view B (alarm record) is also CD. The alarm record keeps all the alarm information (the occurrence, acknowledgment, and resolution of the alarm will produce a record).


Text
Name
Number
Time
Date
State
Discrete_1 ! 1 10:49:49 2024-07-16 C
Analog_1 ! 1 10:50:31 2024-07-16 CD
Text
Name
Number
Time
Date
State
Analog_1 ! 1 10:50:31 2024-07-16 CD
Discrete_1 ! 1 10:49:49 2024-07-16 C
Analog_1 ! 1 10:49:47 2024-07-16 C
PLC
5
1

10 Recipe

10.1 Overview

This section introduces the application scenarios of the recipe function and the collaborative workflow between InoTouchPad software and monitoring devices to achieve functional value. See the following for details.

- 10.1.1 Introduction
- 10.1.2 Usage Workflow

10.1.1 Introduction

In the manufacturing field, a recipe refers to the proportional relationship between different raw materials used in the production of a product. A recipe is essentially a set of parameter values that define various variables in the production process.

For example, a beverage factory has a basic ingredient formula when producing drinks. This formula lists all necessary raw materials and their quantities, such as water, sugar, fruit juice concentrate, food flavor, and honey. Additionally, the formula includes a series of optional ingredients and their quantities, such as glucose-fructose syrup and vitamins. These optional raw materials can be flexibly added to the base formula according to market demand and product positioning, enabling the production of various beverages with different flavors and functionalities.

The following table illustrates the types of raw materials and their respective quantities for various beverages. The data in the table is for demonstration purposes only, intended to help users understand the meanings and relationships of terms in the recipe function. These data have not been scientifically validated and should not be considered as the actual composition of real products.

Table 10-1-1-1 Example of beverage recipes

Ingredients	Concentrated and reconstituted juice	Fruit drink	Honey water	Functional beverage
Water	300 g	350 g	360 g	340 g
Sugar	0	80 g	40 g	60 g
Juice concentrate	200 g	50 g	0	30 g
Honey	0	10 g	50 g	0
Food flavor	0	12 mg	15 mg	0
Glucose-fructose syrup	0	8 g	40 g	50 g
Vitamin	0	30 mg	0	80 mg

The InoTouchPad software provides recipe-related editing windows and visualization controls for managing recipes and object configuration within the editing interface. Below are explanations of the terms involved in recipe configuration:

Recipe: A collection of raw materials and their proportions for a specific type of product (e.g., beverages). Products in the same type share the same raw materials but differ in their proportions, with the product (beverage) name used to distinguish between recipes. The above table constitutes a complete recipe.

Ingredients: The raw materials contained in the product, such as the first column in the table above, including

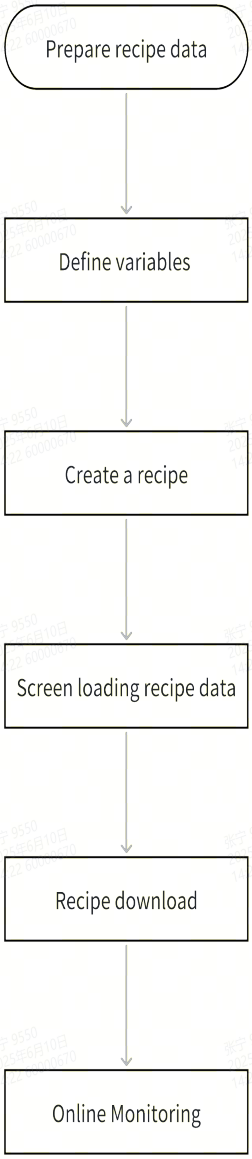
water, sugar, etc.

Data Record: A data member within a recipe, where a single recipe contains multiple data records. These data records have identical structures but different values. Columns 2 to 4 in the above table each represent a data record.

10.1.2 Usage Workflow

In industrial production, effective recipe management and production monitoring are key to ensuring product quality and improving production efficiency. The following is a workflow guide for key activities in recipe management, helping you understand the execution sequence between activities and the primary tasks of each activity.

Table 10-1-2-1 Recipe Usage Workflow

Key Activities	Description
	Define the recipe objectives and requirements, and collect the ingredient list with their quantities.
	Define unique tag identifiers under the "Tags" node in the project tree for each ingredient to store specific information such as name and value. Establish a mapping between ingredient tags and PLC tags. For related information, see the 5.3.1 Creating a Tag section.
	Create a recipe under the "Recipe" node in the project tree, and configure the ingredient and proportion parameters, such as product name and the usage quantity of each ingredient in different products. For details, see the Create New Recipe section.
	Create a screen under the "Screens" node in the project tree, and place the control on the screen to visualize recipe information. For details on using controls, see the Controls section.
	Download the offline recipe data and monitoring interface to the InoTouchPad, establish communication with the PLC, and enable the PLC to receive and execute recipe commands. For download operations, see the Downloading a Project section.

Key Activities	Description
	Monitor recipe data in real-time during production and adjust recipe parameters based on actual conditions to optimize production results. For monitoring operations, see the 10.3 Online Recipe Monitoring section.

10.2 Offline Recipe Management

This section introduces the editing function for recipe data configuration in InoTouchPad software, as follows:

- 10.2.1 Creating a Recipe
- 10.2.2 Deleting a Recipe
- 10.2.3 Modifying a Recipe
- 10.2.4 Exporting a Recipe
- 10.2.5 Importing a Recipe
- Configuring Cross-Device Synchronization Rules for Recipe Data

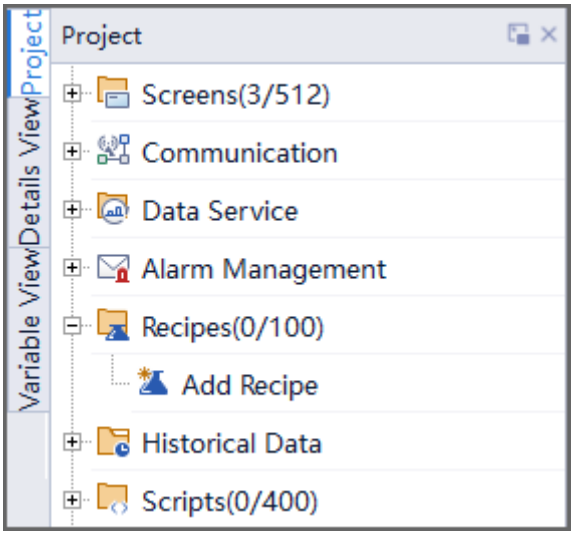
10.2.1 Creating a Recipe

This section introduces the process of creating a complete recipe and its data composition, which is stored in the touchscreen device. The data composition is as follows:

- 10.2.1.1 Creating a Recipe Node
- 10.2.1.2 Adding Ingredient Information
- 10.2.1.3 Adding Data Records

10.2.1.1 Creating a Recipe Node

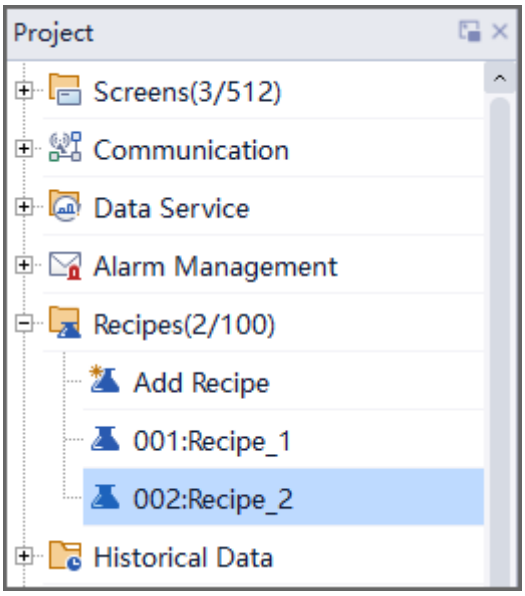
In the InoTouchPad software, recipe management and data configuration are performed under the "Recipes" node in the "Project" tree.



Recipe node in the project tree

1. Add a recipe.
   Double-click the "Add Recipe" node to add a new recipe.
   User-added recipes are displayed as child nodes under the "Recipes" node in the "Project" tree, identified

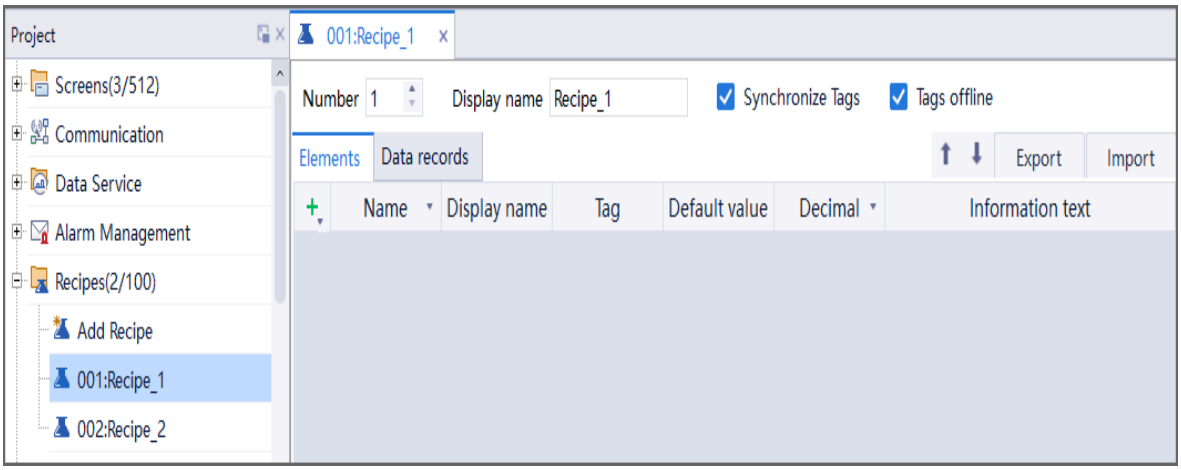
by . The node name consists of the recipe ID and its name, with the default name format being Recipe_n, where n increments starting from 1.
A project supports up to 100 recipes. The figure below shows two user-added recipes with IDs 001 and 002, displayed as child nodes under the "Recipes" node.



User-added recipe node

2. Edit the recipe information.

Double-click any user recipe node to open the editing window.



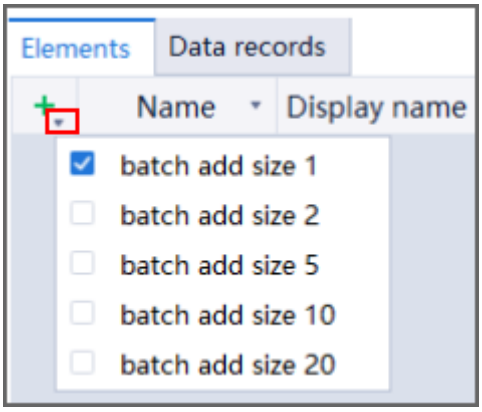
Editing window for Recipe_1

Property	Description
Number	The unique identifier of a recipe in the InoTouchPad software. The recipe control supports retrieving by recipe number in the runtime.
Display name	The recipe name displayed by the recipe control in the runtime. The display name can differ from the current recipe node name. It is recommended to use Chinese, English, numbers, underscores (_), and hyphens (-), with a maximum length of 80 characters. The default name is "Recipe_n", where n represents the sequential number of the currently added recipe. For example, the 5th recipe added will be named "Recipe_5" by default.

10.2.1.2 Adding Ingredient Information

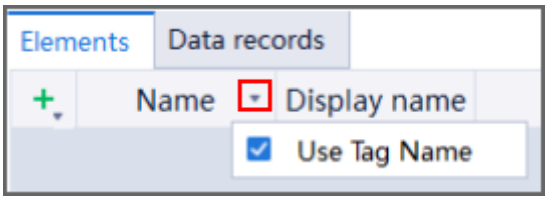
Recipe ingredients refer to the raw materials used in product production. A single project supports up to 32,767 ingredients.

In the "Elements" tab, add individual ingredient by clicking +. For batch addition, select the target quantity in the dropdown menu. The following figure shows the position of opening the dropdown menu.



Drop-down menu icon of batch addition

Adding ingredients also supports dragging tags from the "Tags" view to the ingredients editing area, which automatically creates a new ingredient row. If the "Use Tag Name" option is pre-selected, the created ingredient will be named with the target tag name.



Setting default value for ingredient name

Number 1 Display name Drink recipe Synchronize Tags Tags offline

Elements Data records Export Import

	Name	Display name	Tag	Default value	Decimal	Information text
1	Water	Water	Water	0	0	
2	Sugar	Sugar	Sugar	0	0	
3	Fruit Juice	Fruit Juice	Fruit Juice	0	0	
4	Honey	Honey	Honey	0	1	
5	Flavoring Ag...	Flavoring Ag...	Flavoring Ag...	0	1	mg
6	Corn Syrup	Corn Syrup	Corn Syrup	0	0	
7	Vitamins	Vitamins	Vitamins	0	1	mg

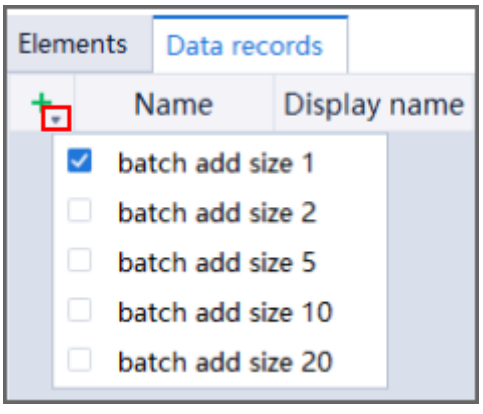
Ingredients Addition Result

Property	Description
Name	As the identifier in the software, the ingredient name should consist of Chinese characters, English letters, numbers, underscores (_), and hyphens (-), with a maximum length of 128 characters. Duplicate names are not allowed within a single recipe. The default name is "Element_n", where n starts from 1 and increments automatically. To ensure unique names within the project, newly added ingredient will be named by either continuing from the current maximum number in the project or filling the smallest available gap. For example, if the current maximum number in the project is "Element_7" and there are no gaps, the next added ingredient will default to "Element_8".
Display name	It is recommended to use Chinese, English, numbers, underscores (_), and hyphens (-) for the name displayed in the recipe control, with a maximum length of 40 characters.
Tag	It supports tags of types Bool, Int16, Int32, UInt16, UInt32, Float, String, Double, and arrays, and maps relationships with M-area or Q-area tags in PLCs.
Default value	When all values of the ingredients in the data record use default settings, the recipe control displays this value in the runtime.
Decimal	It is applicable for tag values of Int16, Int32, Float, and Double types. Float and Double type tag values: Number of decimal places retained to enhance numerical precision. Int16 and Int32 type tag values: Number of decimal places retained for the data record value. For example, if the configured value for data record is 40 and the number of decimal places is set to 1, the data record in the runtime will display as 40.0.
Information text	The recipe description, supporting up to 500 characters.

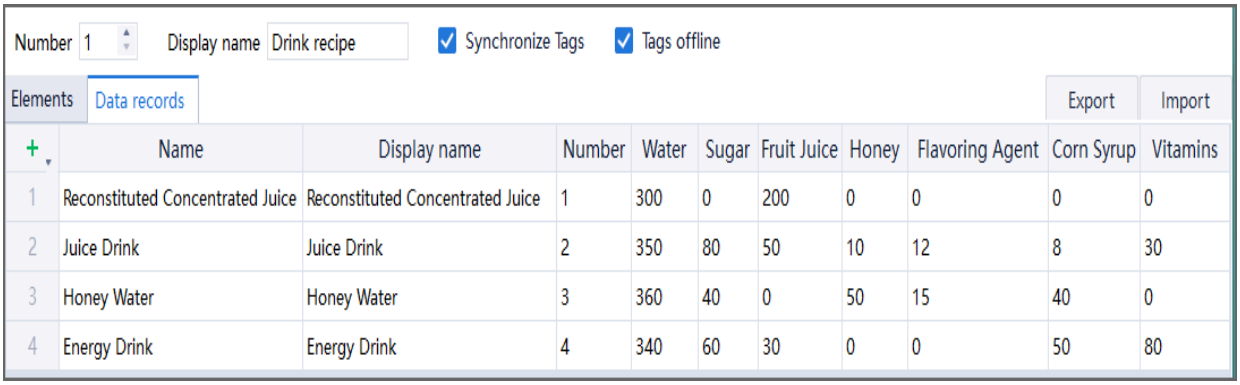
10.2.1.3 Adding Data Records

A data record corresponds to one product, and is used to record the proportion of raw materials. A single recipe can contain up to 10,000 data records.

In the "Data records" tab, add individual data record by clicking +. For batch addition, select the target quantity in the dropdown menu. The following figure shows the position of opening the dropdown menu.

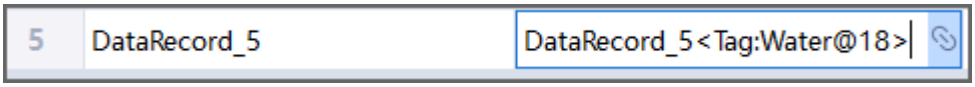


Drop-down menu icon of batch addition



	Name	Display name	Number	Water	Sugar	Fruit Juice	Honey	Flavoring Agent	Corn Syrup	Vitamins
1	Reconstituted Concentrated Juice	Reconstituted Concentrated Juice	1	300	0	200	0	0	0	0
2	Juice Drink	Juice Drink	2	350	80	50	10	12	8	30
3	Honey Water	Honey Water	3	360	40	0	50	15	40	0
4	Energy Drink	Energy Drink	4	340	60	30	0	0	50	80

Data record addition

Property	Description
Name	As the identifier in the software, the data record name should consist of Chinese characters, English letters, numbers, underscores (_), and hyphens (-), with a maximum length of 128 characters. The default name is "DataRecord_n", where n starts from 1 and increments automatically. Duplicate names are not allowed within a single recipe.
Display name	The name is displayed in the recipe control. It is recommended to use Chinese, English, numbers, underscores (_), and hyphens (-), with a maximum length of 40 characters. It supports associating tags, with names composed by multiple tag values and texts. 
Number	Setting range: 1 to 65,535. The recipe control supports retrieving data records by number in the runtime.
Ingredient name	This item records the value of each ingredient in different data records. When associating an array-type tag with the ingredient, the name displays as "Ingredient name [Index]". 

When data record addition is completed, a complete recipe addition is finished.

10.2.2 Deleting a Recipe

The deletion scope of a recipe includes the recipe itself, related ingredients, and data records. The delete operation supports individual deletion and batch deletion. For batch selection, use the "Ctrl"/"Shift" keys.

The delete operation are performed via the right-click menu command or the "Delete" key.

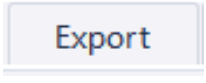
10.2.3 Modifying a Recipe

After a recipe is created, it may need to be modified according to on-site control requirements. Common modification operations include:

- Add a recipe/ingredient/data record
  Add a recipe: Double-click the "Add Recipe" subnode under the "Recipes" node in the "Project" tree to create a new recipe.
  Add an ingredient: Use  to add a ingredient under the "Elements" tab.
  Add a data record: Use  to add a data record under the "Data records" tab.
- Modify the number of the recipe/data record.
  In the runtime of the recipe (control), you can quickly retrieve corresponding information by referencing the number of the recipe and data record.
  The number of the recipe and data record can be customized. The recipe number must be unique within the project, while data record number must be unique within each recipe.
  To modify the number, you can double-click the number cell, enter the new number, and press "Enter" to complete.
- Adjust the ingredient order.
  The initial order of ingredients is based on the sequence of addition. The order can be manually adjusted as follows:
  Move up: Use the  icon button to move the selected ingredient up by one row.
  Move down: Use the  icon button to move the selected ingredient down by one row.
- Modify the ingredient-associated tag.
  For the tag associated to the ingredient, if the tag name or data type is changed in the tag table, it will be automatically synchronized in the recipe without your manual intervention.
  If the modified data type does not meet the requirement of the ingredient, for example, when the data type of a tag changes from "Int16" to "DateTime", the corresponding tag in the "Elements" needs to be manually changed.

10.2.4 Exporting a Recipe

Recipe export refers to saving the ingredient table or data record table information of a specified recipe to a CSV file (.csv). Only one type of information can be exported at a time.

To export the recipe, you can open the editing window of the target recipe, switch to the desired tab, and select the 

button in the upper right corner of the window to export the information from the active tab in the current recipe.

Information	Figure Example	Description
Ingredients		-

Information	Figure Example	Description
	#DON NOT EDIT THIS LINE: Recipe Table version:1 Inovance Recipe Table Name / Display name / Tag / Default val / Decimal / Information text Water / Water / Water / 0 / 0 Sugar / Sugar / Sugar / 0 / 0 Fruit Juice / Fruit Juice / Fruit Juice / 0 / 0 Honey / Honey / Honey / 0 / 1 Flavoring Agent / Flavoring Agent / Flavoring Agent / 0 / 1 / mg Corn Syrup / Corn Syrup / Corn Syrup / 0 / 0 Vitamins / Vitamins / Vitamins / 0 / 1 / mg	
Data records	#Version:0.1 ID:1 Mode:1 DO NOT edit this line! Name / Reconstituted Concentrated Juice / Juice Drink / Honey Water / Energy Drink Water / 300 / 350 / 360 / 340 Sugar / 0 / 80 / 40 / 60 Fruit Juice / 200 / 50 / 0 / 30 Honey / 0 / 10 / 50 / 0 Flavoring Agent / 0 / 12 / 15 / 0 Corn Syrup / 0 / 8 / 40 / 50 Vitamins / 0 / 30 / 0 / 80	Do not edit the ID field in the first line of the exported information, where ID refers to the recipe number. During recipe import operations, this item serves as one of the import checks and will affect the import results. For details, see the "10.2.5 Importing a Recipe" section.

10.2.5 Importing a Recipe

Recipe import refers to import the recipe for reuse and reducing the configuration time.
Recipe data is imported into InoTouchPad software in CSV format.

1. Prepare the file.
   When preparing the content to be imported, it is recommended to first perform an export operation, then supplement new content based on the exported file.
   The key fields in the exported file (highlighted in orange in the figure below) cannot be modified or deleted. Keep these fields unchanged when saving revisions to the exported file to avoid recipe import failures.

A	B	C	D	E	F
#DON NOT EDIT THIS LINE: Recipe Table version:1					
Inovance Recipe Table					
Name	Display name	Tag	Default value	Decimal	Information text
Water	Water	Water	0	0	
Sugar	Sugar	Sugar	0	0	
Fruit Juice	Fruit Juice	Fruit Juice	0	0	
Honey	Honey	Honey	0	1	
Flavoring Agent	Flavoring Agent	Flavoring Agent	0	1	mg
Corn Syrup	Corn Syrup	Corn Syrup	0	0	
Vitamins	Vitamins	Vitamins	0	1	mg

Non-modifiable and non-deletable information identifiers for ingredients

A	B	C	D	E
#Version:0.1 ID:1 Mode:1 DO NOT edit this line!				
Name	Reconstituted Concentrated Juice	Juice Drink	Honey Water	Energy Drink
Water	300	350	360	340
Sugar	0	80	40	60
Fruit Juice	200	50	0	30
Honey	0	10	50	0
Flavoring Agent	0	12	15	0
Corn Syrup	0	8	40	50
Vitamins	0	30	0	80

Non-modifiable and non-deletable information identifiers for data records

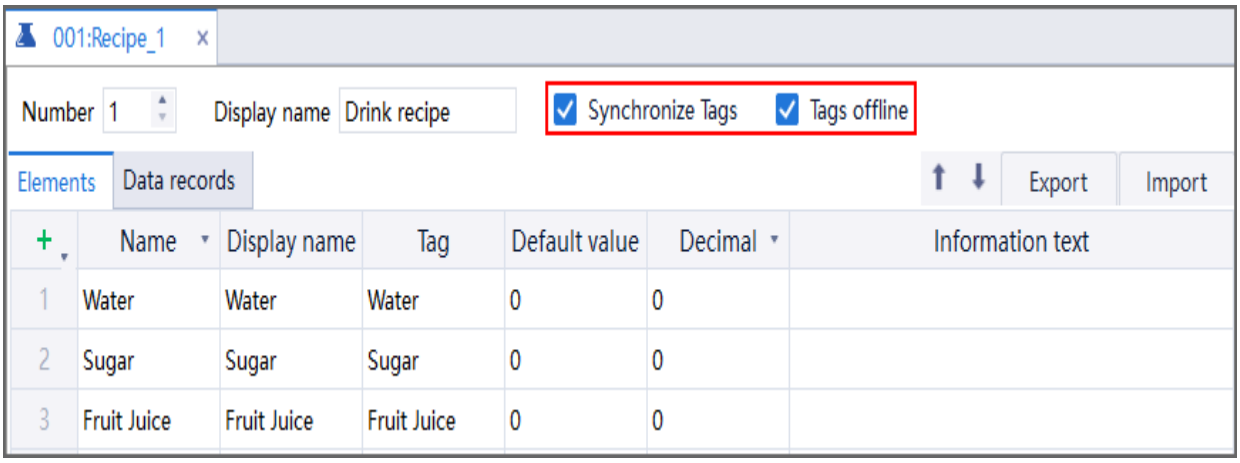
2. Import the recipe.

   Navigate to the "Elements" tab of the target recipe, click the Import button to browser the recipe file and complete the ingredient import.

3. Import the data records.

   First ensure the target recipe number matches the **ID** in the import file, then open the "Data records" tab, click the Import button to browser the import file and complete the data record import.

10.2.6 Data Record Synchronization Rules



Rule configuration page

Synchronize Tags: It sets whether to synchronize the data record element values in the recipe view to the tag element values in the screen.

Unchecked: Synchronization as well as synchronization functions and operations are not enabled.

Checked: Synchronization is enabled, and synchronization data functions (SaveDataRecord, SaveDataRecordAlpha, LoadDataRecord, and LoadDataRecordAlpha) and synchronization operations (the synchronization button and the data record switching feature in the recipe view) are also enabled.

Synchronization mode	Synchronization direction	Trigger method	Notes
Auto synchronization	Data record element value in recipe view -> element tag value in screen	Via switching data records in the recipe view	▪ After successfully creating a new data record on the recipe view control, the interface automatically switches to the newly created data record,

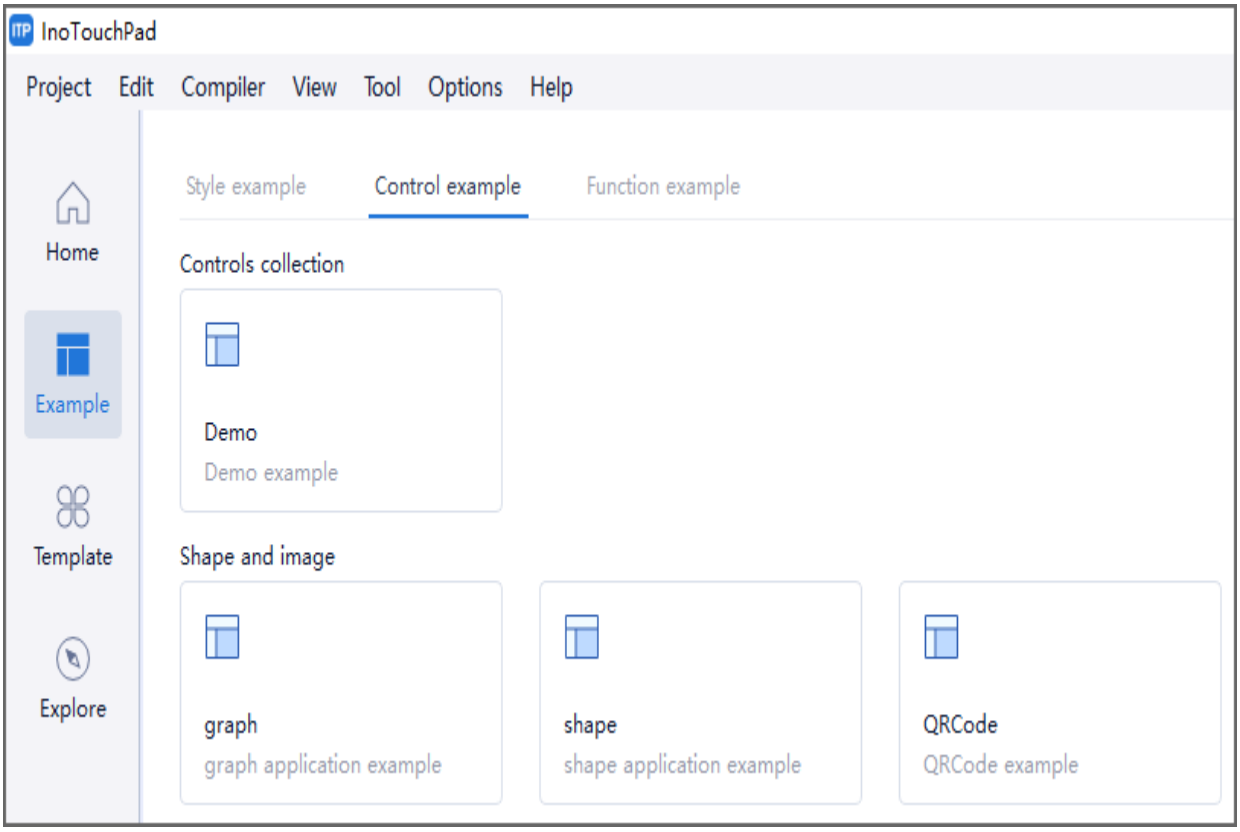
Synchronization mode	Synchronization direction	Trigger method	Notes
			triggering a synchronization action. ▪ After creating a data record using the system function NewDataRecord, synchronization will not be triggered. ▪ Modifying data record values in the recipe view without performing a switch operation will not trigger synchronization.
Synchronization button	Element tag value in screen -> data record element value in recipe view	Via the synchronize button at the bottom of the recipe view	-
Via functions	Data record element value in recipe view -> element tag value in screen	Synchronization via functions: LoadDataRecord LoadDataRecord Alpha	When synchronizing via functions, the data record must have been saved.

Tags offline: When this option is checked, the communication between element tags in the screen and the PLC is interrupted.

- **Scenario 1: Synchronize Tags (×) and Tags offline (×)**
  - After HMI starts and a recipe is selected, default values are not synchronized to the PLC.
  - After the data record is switched, values in the data record are not automatically synchronized to the PLC. To synchronize the data, you need to click "ToPLC" button.
  - When you modify values in a data record in the recipe view and click "ToPLC", values in the PLC change and the numeric I/O field configured outside the recipe view will read the values from the PLC.
  - When you modify the value of the I/O field, the value in the PLC changes immediately but the value in the data record in the recipe view remains unchanged. At this time, the data synchronization button is invalid.
  - When a recipe value in the PLC changes, the I/O field immediately reads the value from the PLC, but the value in the data record in the recipe view remains unchanged. After you click "From PLC" button, the data record value in the recipe view is synchronized to the PLC.
  - LoadDataRecord, LoadDataRecordAlpha, SaveDataRecord, and SaveDataRecordAlpha are invalid.

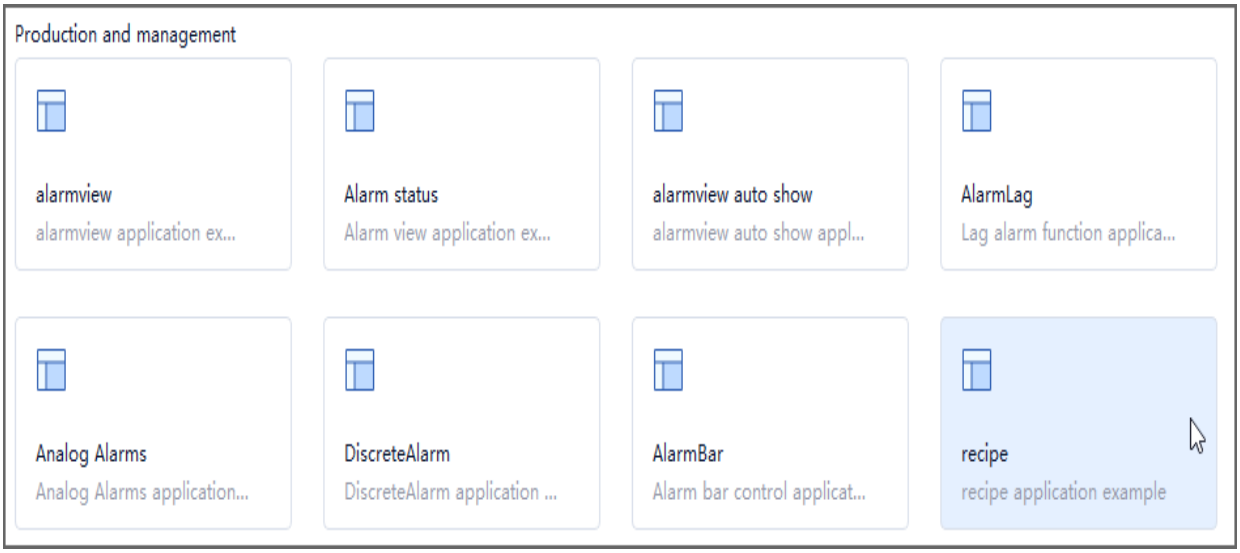
- **Scenario 2: Synchronize Tags (☑) and Tags offline (×)**
  - After HMI starts and a recipe is selected, default values are synchronized to the PLC.
  - When the data record is switched, values in the data record are automatically synchronized to the PLC.
  - When you modify values in a data record in the recipe view and click "ToPLC", values in the PLC change and the numeric I/O field configured outside the recipe view will read the values from the PLC.
  - When you modify the value of the I/O field, the value in the PLC changes immediately but the value in the data record in the recipe view remains unchanged. After you synchronize the data  , the data in the recipe data record is synchronized to the value of the I/O field.
  - When a recipe value in the PLC changes, the I/O field immediately reads the value from the PLC, but the value in the data record in the recipe view remains unchanged. After you click "From PLC"  button, the data record value in the recipe view is synchronized to the PLC.
  - If the element tag in the recipe is an array, the default value is synchronized to all the sub-elements of the array.
  - You can run the "loadDataRecord" function to download the recipe, and the element value on the screen changes.
- **Scenario 3: Synchronize Tags (☑) and Tags offline (☑)**
  - After HMI starts and a recipe is selected, default values are not synchronized to the PLC.
  - After the data record is switched, values in the data record are not automatically synchronized to the PLC. To synchronize the data, you need to click "ToPLC"  button.
  - After the data record is switched, values in the data record are automatically synchronized to the I/O field.
  - When you modify values in a data record in the recipe view and click "ToPLC", values in the PLC change and the numeric I/O field configured outside the recipe view will read the values from the PLC.
  - When the value of the I/O field is modified, the value in the PLC remains unchanged.
  - When a recipe value in the PLC changes, the I/O field does not read the value from the PLC and the value in the data record in the recipe view remains unchanged. After you click "From PLC"  button, the data record value in the recipe view and the value in the I/O field are synchronized with the value in the PLC.

The three scenarios described above are integrated into the InoTouchPad software as sample projects. The location to open the sample projects is shown in the figure below.



Position of opening recipe control examples

"Recipe" application examples are included in the "Production and management" panel.



Recipe application example storage position

10.3 Online Recipe Monitoring

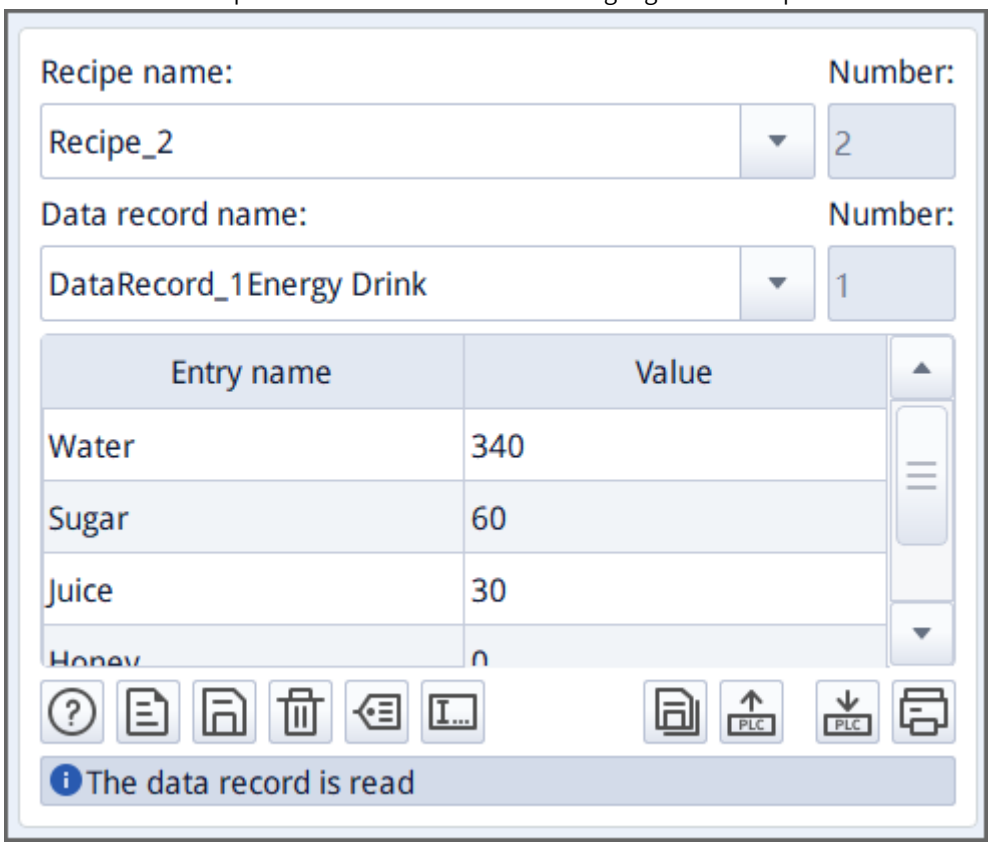
This section introduces the supported operational activities for recipe data during runtime on the monitoring device, as follows:

- 10.3.1 Online Operations in Recipe View
- 10.3.2 Exporting Online Recipe Data

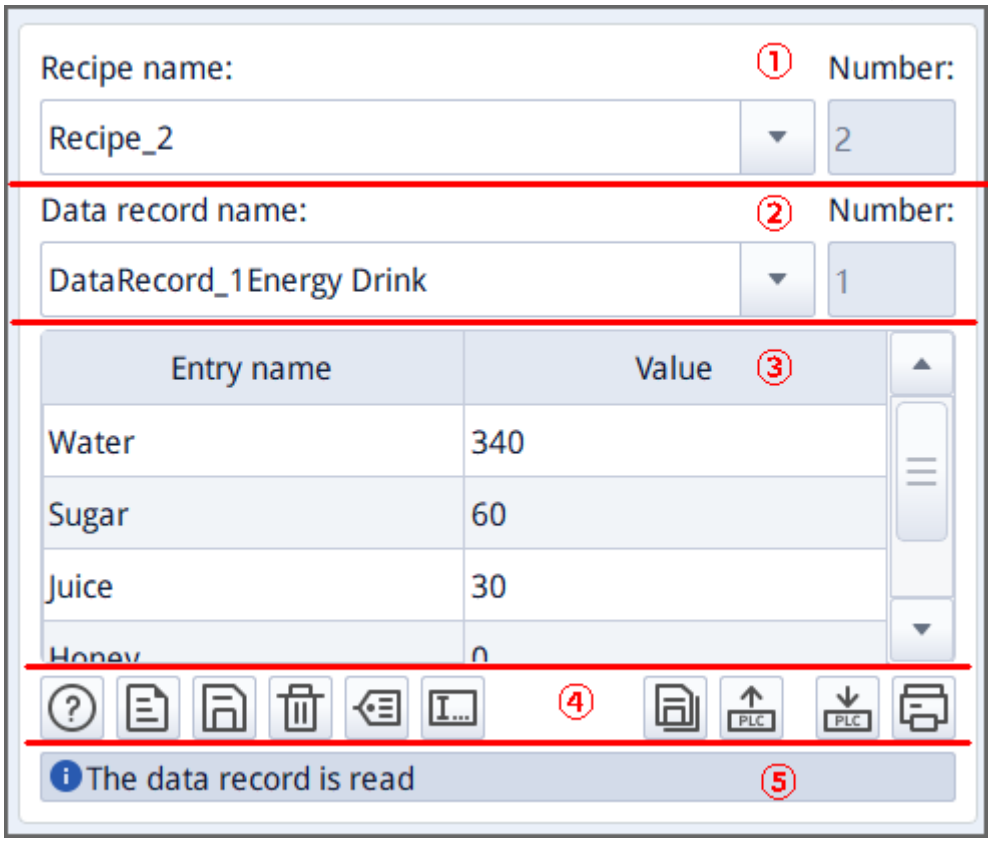
10.3.1 Online Operations in Recipe View

Data records of the recipe are online monitored through the 7.3.5.4 Recipe view.

Below is the online operation interface after associating tags in the recipe view.



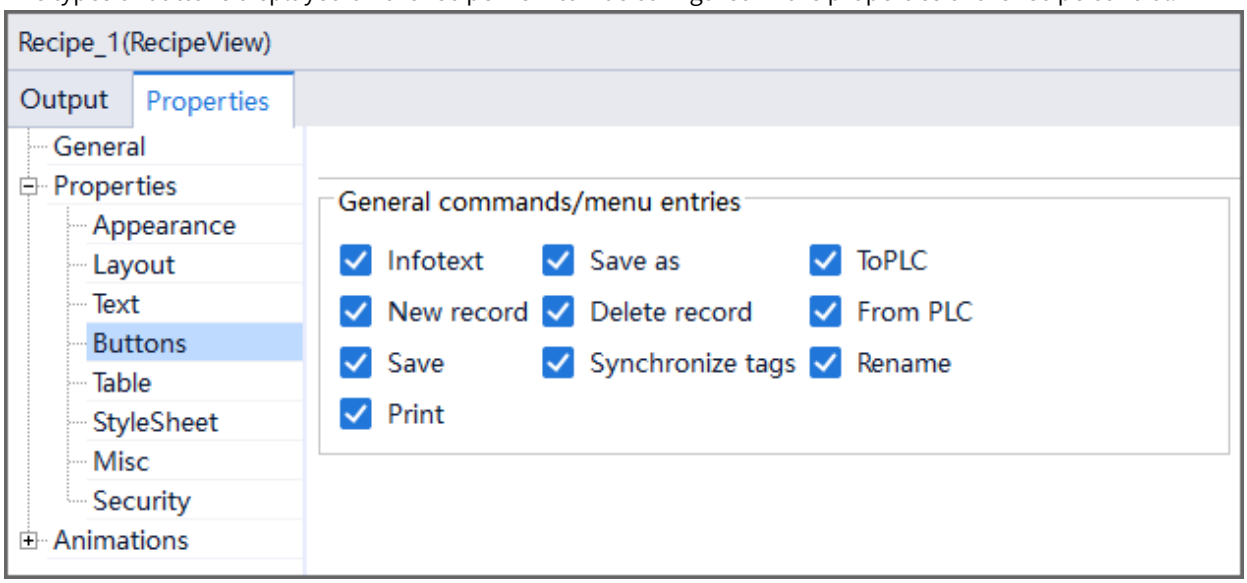
The recipe view consists of five sections, with the area division as shown in the figure below.



No.	Name
①	Recipe selection and display area

No.	Name
②	Data record selection and display area
③	Ingredient data display area
④	Command button display area
⑤	Operation status display area

The types of buttons displayed on the recipe view can be configured in the properties of the recipe control.



Button	Name	Description
	Infotext	View the information description of selected ingredient.
	New record	Add data records online, supporting downloading to the PLC, but not supporting updating to the offline project.
	Save	Save the new value of data record written online to the data buffer of the monitoring device.
	Delete record	Delete the current data record.
	Synchronize tags	When multiple different controls on the screen are associated to the same tag and a new value is written to this tag in the recipe view, use this button to synchronize the new value to other controls. For related rules, see Configuring Cross-Device Synchronization Rules for Recipe Data.
	Rename	Modify the display name of the current data record.
	Save as	Save the current data record as a new data record.
	From PLC	Upload the real-time values of each ingredient from the PLC to the online recipe view, and overwrite the existing values.
	ToPLC	Write the current data record valued to the PLC to make them effective.
	Print	Print the current data record.

The main online operations supported by the control view include:

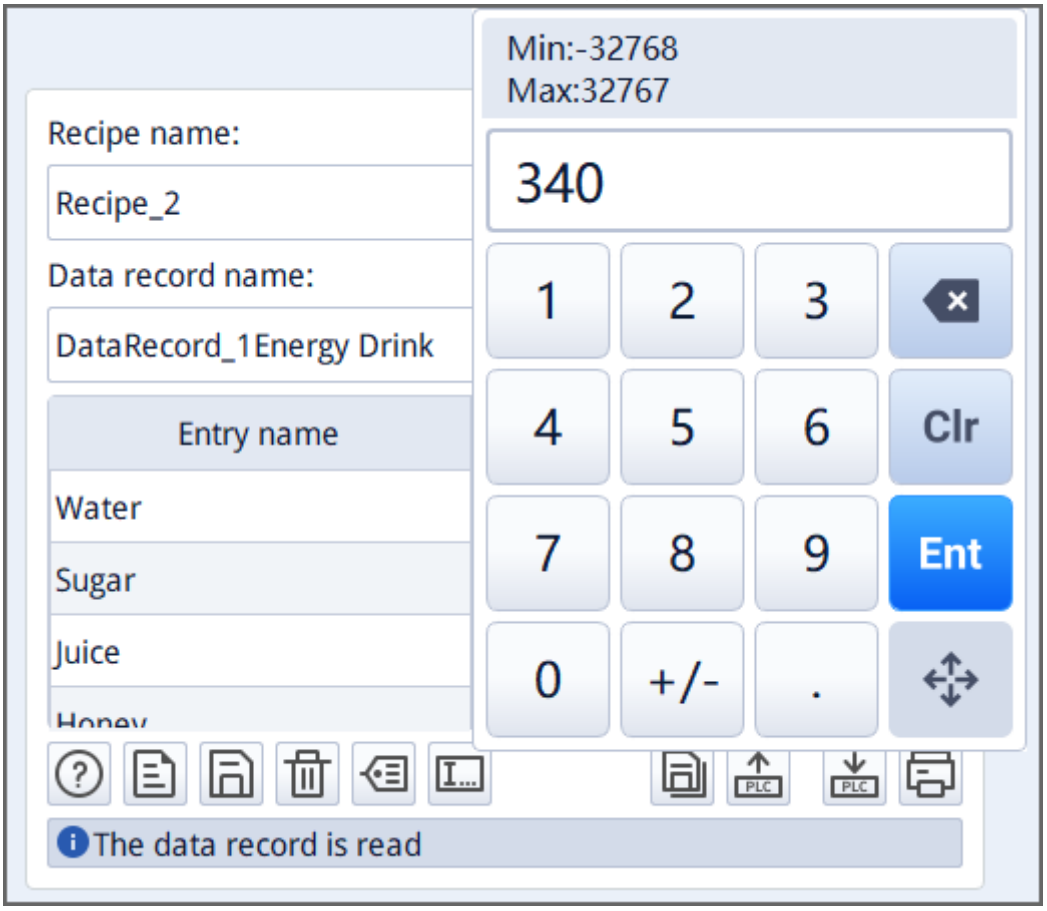
- Create a data record.

  Use the  button to add a data record. A single project supports up to 10,000 data records.

  Newly added data records are saved via the  button and take effect by writing to the PLC via the  button.

- Modify the data record value.

  Double-click the content value of a ingredient in the data record, enter the new value in the pop-up window. The new value must be within the specified range.



  Ingredient quantities modificationSave via the  button, and write the values to the PLC via the  button to make them effective.

10.3.2 Exporting Online Recipe Data

During online recipe operation, you can adjust and optimize recipe data on the screen according to on-site control requirements, such as creating new data records or modifying ingredient quantities. For specific editing operations, see the "Recipe Function" command instructions.

To ensure the security of online recipe data, the IT7000 series touchscreen provides the functionality to directly export online data from the device, facilitating data backup and management.

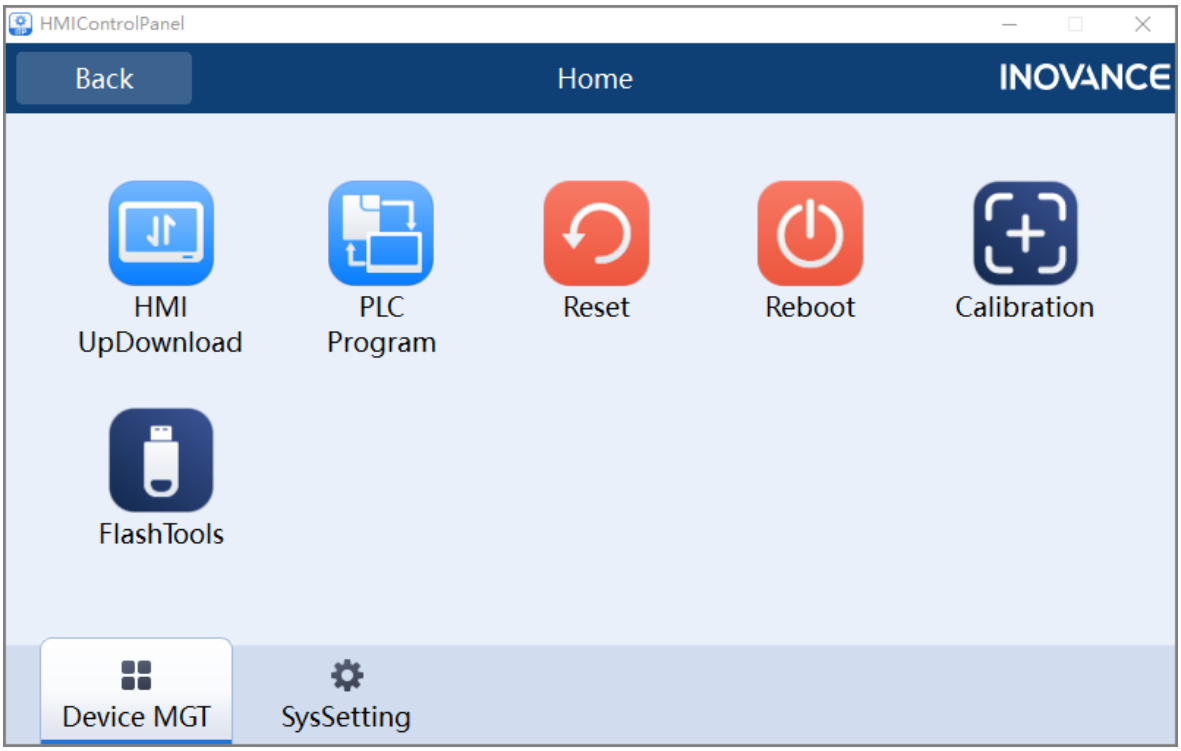
The following describes the procedure for exporting online recipe data:

1. Open the control panel interface of the touchscreen.

   There are two methods to open the control panel interface of IT7000 series touchscreen:

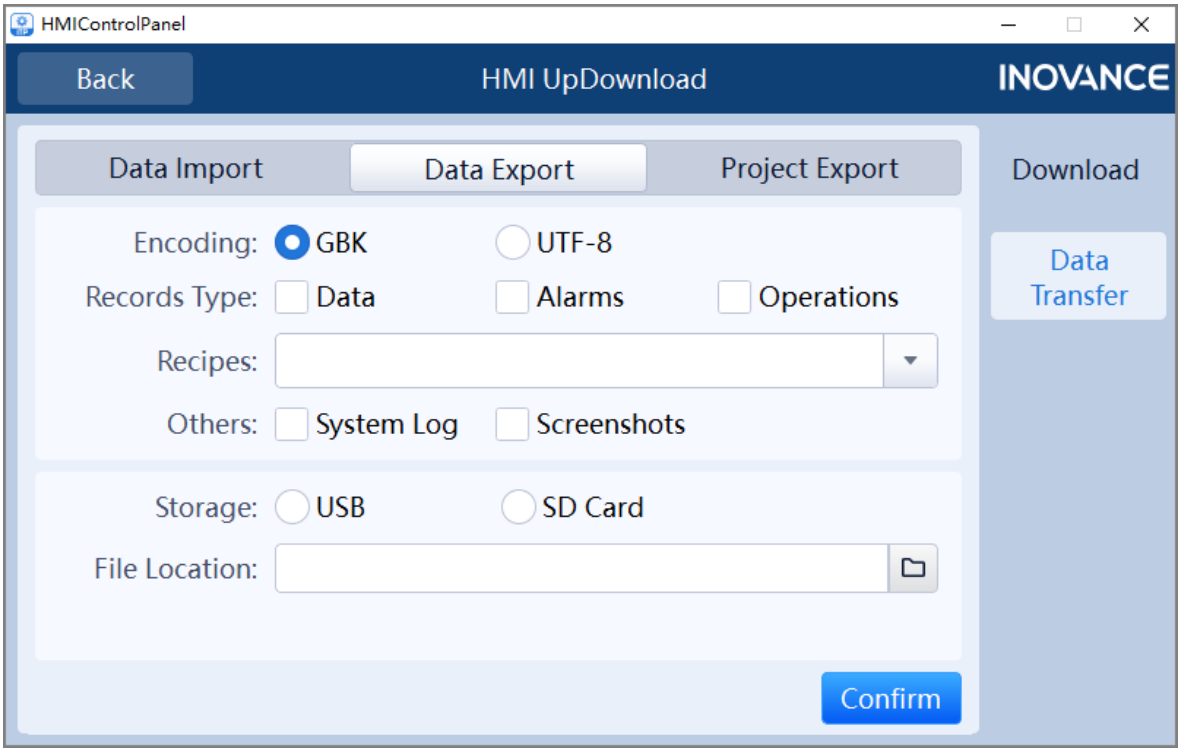
   Open during device startup. See the 19.3 HMI Control Panel section for instructions.

Open by clicking the button on the screen, where the button is linked to the function "OpenControlPanel".



2. Open the "Data Export" interface.

   Click the "HMI UpDownload" icon to open the corresponding interface, switch to the "Data Transfer" tab, and select the "Data Export" tab.



3. Configure the export parameters

   Recipe data export involves configuring 4 parameters:

   Encoding: Select as needed.

   Recipes: Select the name of the recipe to be exported.

   Storage: Specify the storage medium for exporting data.

   File Location: Select the storage path.

   Click the "Confirm" button to execute the data export operation for the target recipe.

4. Progress confirmation

   Confirmation pop-up for successful recipe data export, terminating the export operation.

11 Historical Data

11.1 Introduction

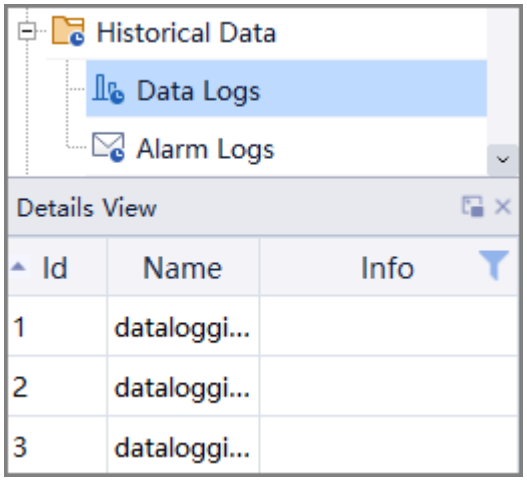
The history record keeps tag values and alarm values generated previously. The history data module includes "Data Logs" and "Alarm Logs" features, which are managed by different editors and property views respectively.

11.2 Data Record Dragging

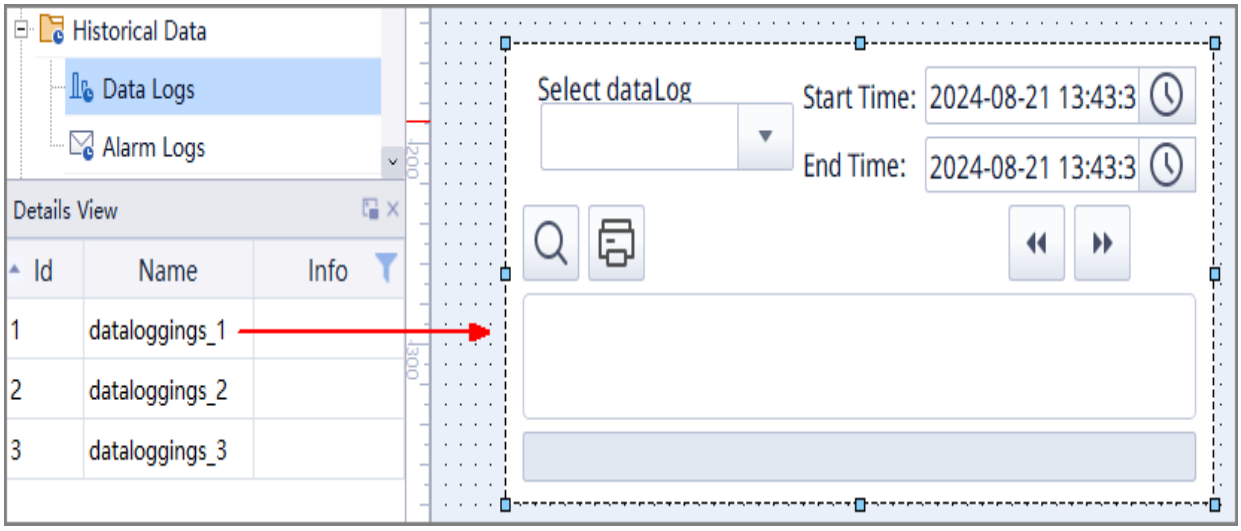
During project configuration, the procedure for displaying a data record in a data view is as follows:

1. Add a data record to the screen.
2. On the "Properties" tab page of the data view, click "Data Logs" and select the data record you want to display.

Then the data view displays the specified data record. A quick way to achieve this is using the data record drag-and-drop feature in the details view. Access the screen editor. In the "Project" navigation tree on the left, choose "Historical Data" > "Data Logs". The details view displays all created data records, as shown in the following figure.



In the details view, directly drag the data record you want to display to the screen. Then, the data view of this data record is directly generated in the screen, as shown in the following figure.



11.3 Data Logs

11.3.1 Editor

You can create data records and specify their properties in the data record editor.

Opening the data record editor

In the project view as shown below, choose "Historical Data" > "Data Logs" to open the data record editor (①: project view area; ②: table editing area; and ③: property view area).

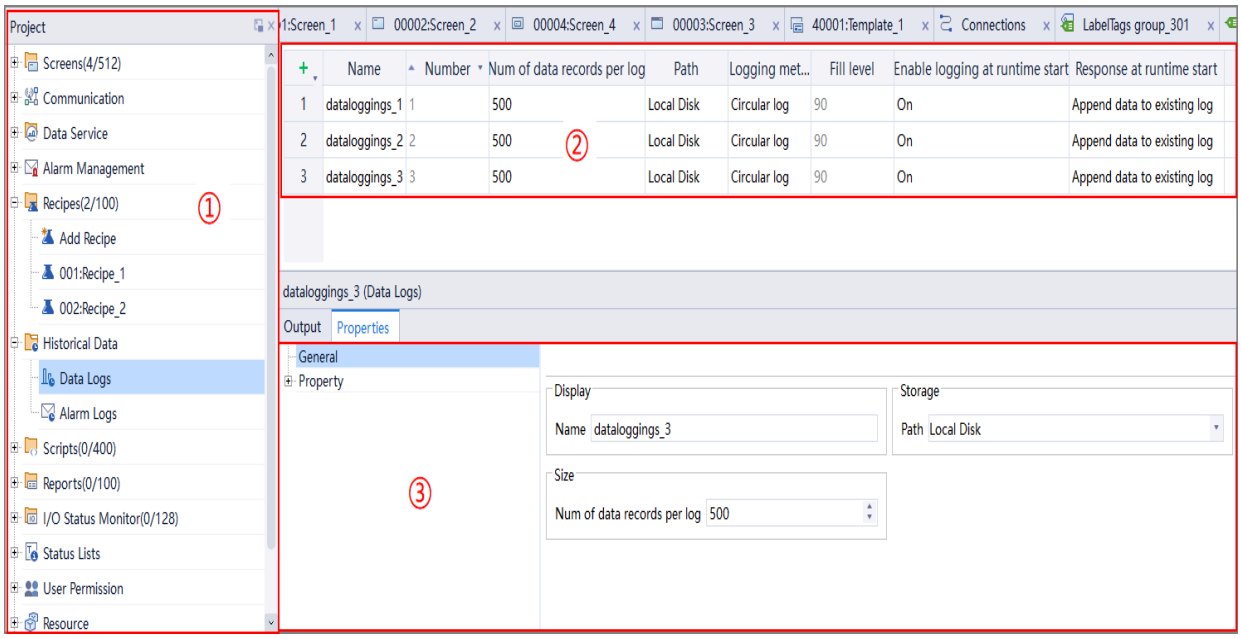
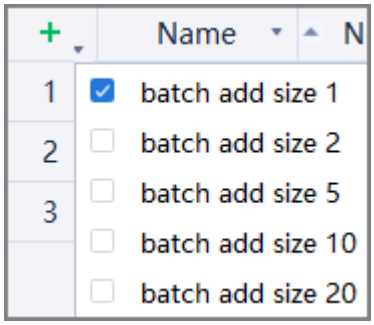
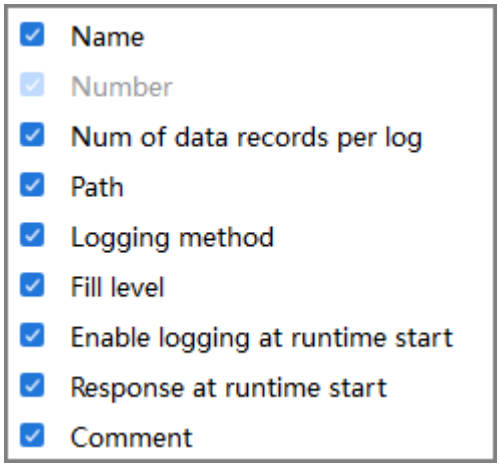


Table editing area

- Create an object: Click the icon in the upper-left corner of the table.
- Create objects in batch: Click the inverted triangle under the "New" button. In the dialog box displayed, make settings, and then click "New".



- Delete an object: Click the row header of the data record to be deleted. The button in the upper-left corner turns to . Click this button to delete the selected row.
- Hide and display column properties: Right-click the header of a column. In the dialog box displayed, select the columns to be displayed.



- Sort columns: Click the column header.

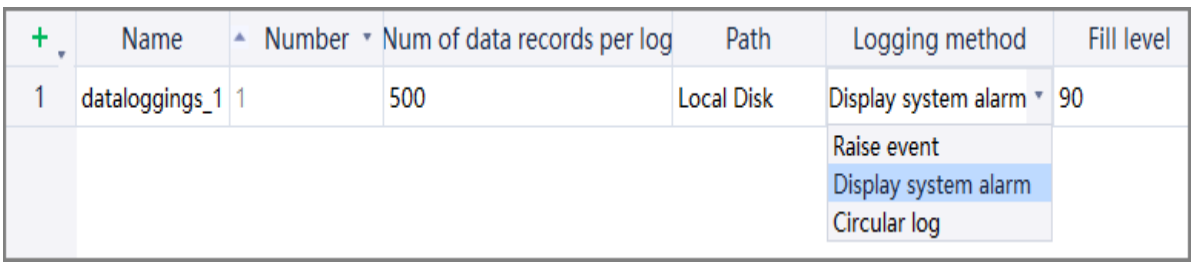
Property view area

- This area provides the same property setting feature as the table editing area. It also provides event editing.
- Trigger an event: When the data record size exceeds the limit, the script function configured will be triggered. Event items can only be used when you trigger events in the recording method configuration in "Properties".
- The system alarm is displayed.

11.3.2 Basic Settings

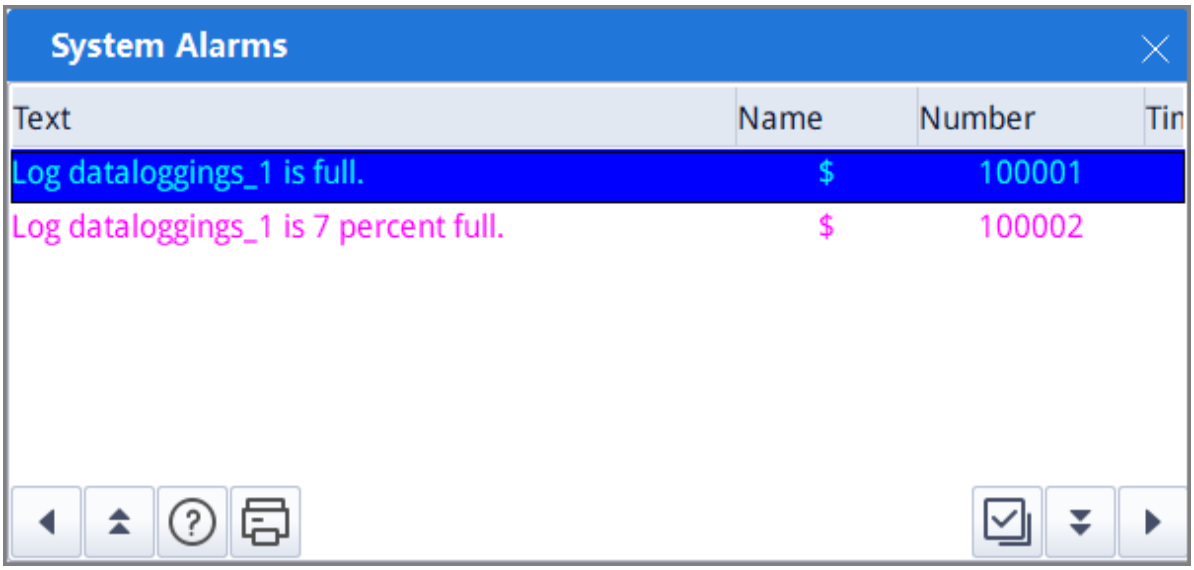
Property Settings

- Name: Name of a data record.
- Num of data records per log: Maximum number of historical data records allowed to record in each alarm log.
- Path: Position to store data records, which can be the HMI, USB drive, or SD card.
  - Logging method:
  - Circular log: When records are fully filled, the earliest record will be overwritten.
  - Raise event: When records are fully filled, a script function configured in the overflow event is triggered.
  - Display system alarm: A system alarm is displayed when the number of data records reaches a certain percentage of the specified maximum number.
- Fill level: Percentage of the maximum number of data records when "Logging method" is set to "Display system alarm".



- Enable logging at runtime start: Whether to enable the data record feature when HMI is started.

When the data records reach the percentage specified by "Fill level", a system alarm is generated when HMI is running.



Note

After "Display system alarm" is selected, if the data records reach the maximum capacity, no data will be written to the database.

- Response at runtime start:
  - Append data to existing log: The HMI retains previous data record entries when it is started.
  - Reset log: The HMI clears previous data record entries when it is started.
- Comment: Description text of the corresponding record.

11.3.3 Recording Tag Value

Configuring Data Records

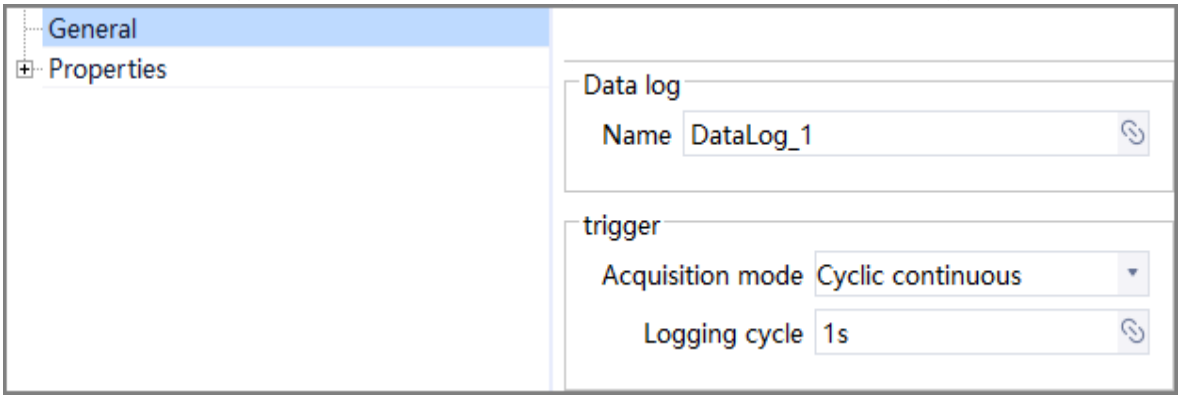
Opening the data record editor and add data records.

Configuring Tag Records



	Name	Connection Id	Data type	Length	Array count	Address	Acquisition cycle Id	Acquisition mode	Data log Id	Logging cycle Id	Logging acquisition mode	Upper limit
1	LW 0	<Internal tag>	Int16	2	1	LW 0	100ms	Cyclic on use	dataloggings_1	500ms	Cyclic continuous	<No limit>

- Data record: Select a tag value and record it to the specified data record.
  Method 1: Select a tag, and select the corresponding data record name in the "Data log Id" column.



Method 2: Click in the blank area of the tag table. Set "Name" in the "Data log" section of the tag group and

select the tag to be recorded in the "Log Tags" section.



Note

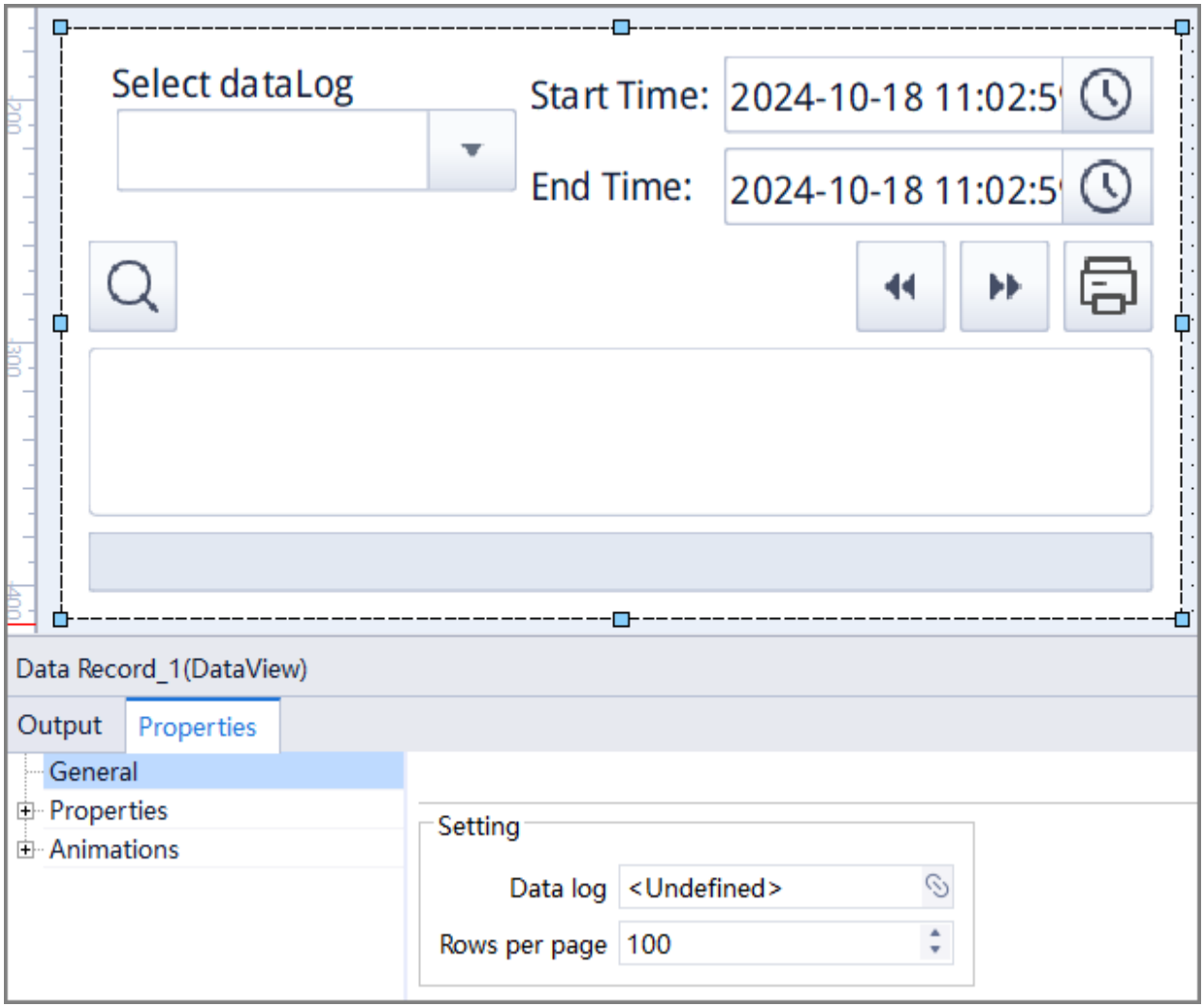
- Both methods can be used to record tag data. The data record set in the "Log Tags" section is prior to that set in the tag group. For example, if the data record is set to "DataLog_1" in the "Log Tags" section and to "DataLog_2" in the tag group, data will be recorded in "DataLog_1".
- When a tag needs to be associated with a historical report, the tag data record must be configured by using method 2.

- "Logging cycle": Sets the interval for recording tag values. The "Logging cycle" becomes enabled only when "Logging mode" is set to "Cyclic continuous". In the "Logging cycle" options, the minimum valid cycle is 1s. Cycles shorter than 1s are not recognized by the software.
- "Acquisition mode":
- "On change": Records the current value once when the tag value changes.
- "On demand": Calls the LogTag system function to record tag values.
- "Cyclic continuous": Regularly collects data according to "Logging cycle".

11.3.4 Outputting Recorded Data

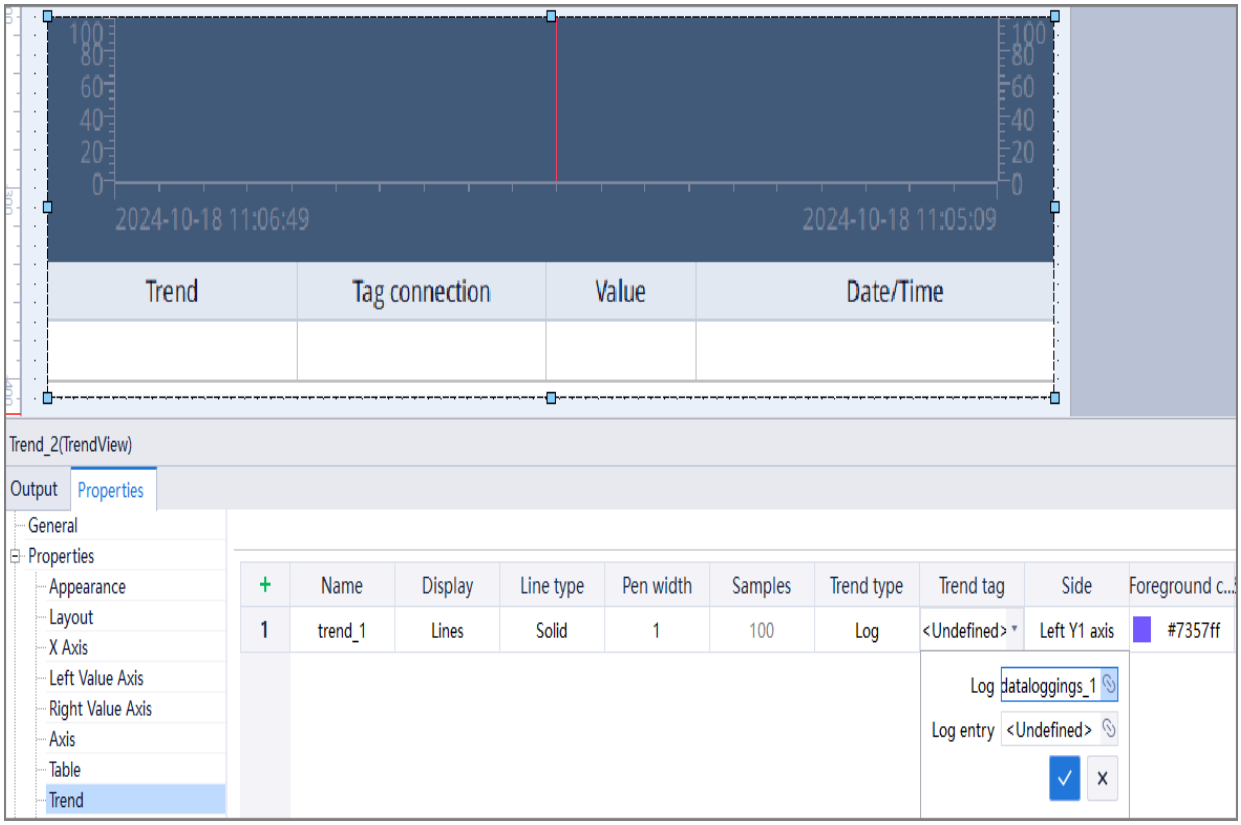
Viewing the tag values in the specified data record on the data view

As shown in the following figure, configure a data view control in the screen, and specify the data record. Then you can see all the recorded tag values in the specified data record in the specified time period on the HMI.



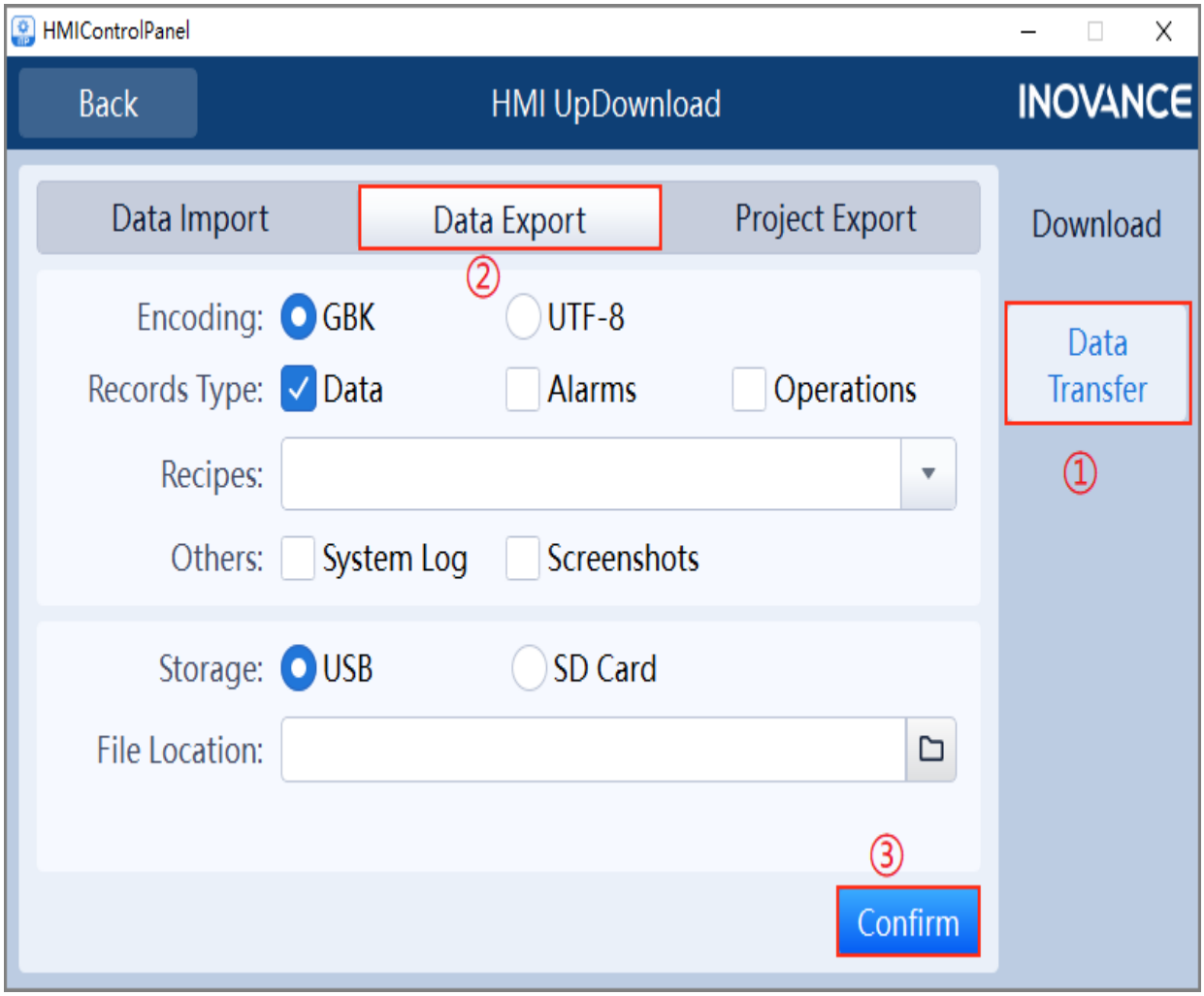
Viewing the tag values in the specified data record on the trend view

As shown in the following figure, configure a trend view control in the screen. In "Trend", set the "Trend type" to "Log", configure the related tag, and then the history curve of the specified tag can be displayed in the trend view.



Exporting a data record from the HMI

Insert an SD card to the HMI, and then, as shown in the following figure, choose "Control Panel" > "HMI UpDownload" > "Data Transfer" > "Data Export", and select "Data Log". Export the file as a *.csv file.



Note:
If you cannot enter the download page, check whether the USB drive or SD card is properly connected.

Access the control panel:

- When the HMI is running, if you insert a USB drive or SD card, the control panel page will pop up automatically.
- Configure the system function "OpenControlPanel" on the page.

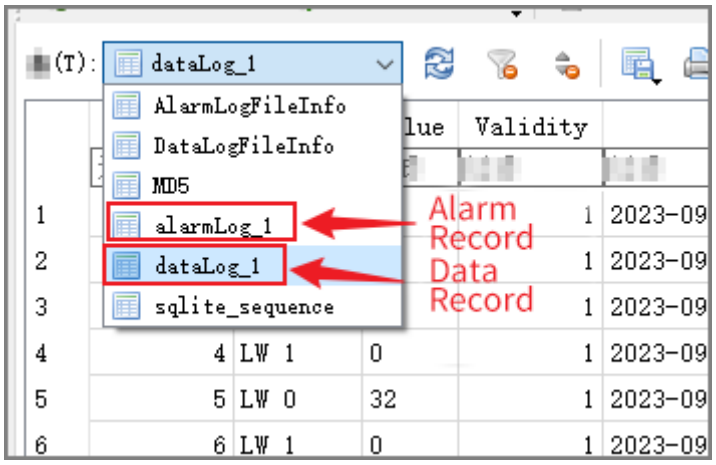
11.4 Alarm Logs

See 9.3.1 Basic Principles of Alarm Record.

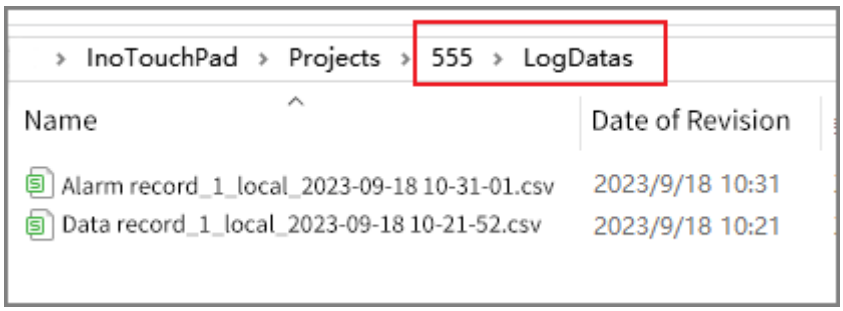
11.5 Historical Data Storage Position

11.5.1 Historical Data Storage Path upon Simulation Run on PC Side

Alarm records and data records are stored in the "\Projects\history" directory of local databases. These records are stored as SQLite database files. You need to use a database client software to open the files. In general, you are not recommended to open these files to view records.



Alarm records and data records are locally exported to the "\Projects\555\LogDatas" directory.



12 Report

12.1 Introduction

In project applications, most monitoring systems need to save and statistically analyze the data collected by data acquisition devices, and print data reports. These data reports display and print the statistically analyzed data in a certain format as needed. This aids in the comprehensive recording and summarizing on statuses of system monitoring objects.

Data reports are indispensable in the project control system and are the final output of the entire system. Commonly used report formats include real-time data reports and historical data reports (class reports, daily reports, and monthly reports). These can provide the following features:

- Displays static data, real-time data, historical records in the historical database, and their statistical results.
- Conveniently and quickly accomplishes the display of various reports.
- Easily completes various database query and statistics tasks.
- Modifies data and writes the table content into a designated tag, making creation of reports comprehensive.
- Displays multi-page reports. For creation and use of the project, see the sample projects, "Report_Historical Data Display", and "Report_Real-Time Data Display".

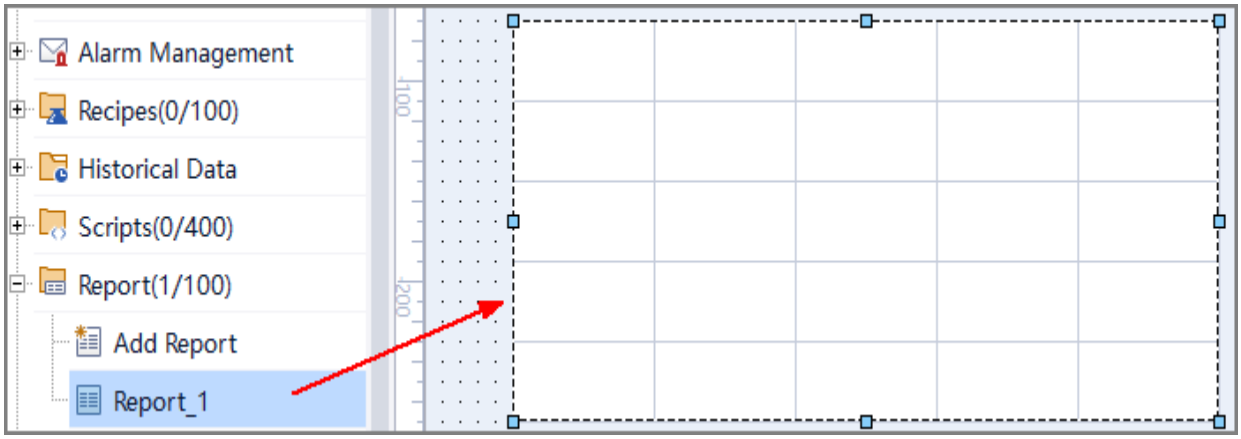
12.2 Dragging and Dropping a Report

During project configuration, the procedure for displaying a report in a report view is as follows:

1. Add a report view to the screen.

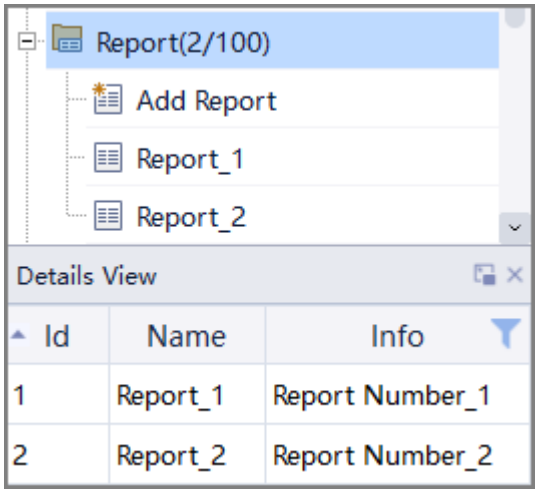
2. On the "Properties" tab page of the report view, locate the report list and select the report to be displayed.

Then the report view displays the specified report. A quick way to achieve this is using the report drag-and-drop feature, as shown in the following figure.

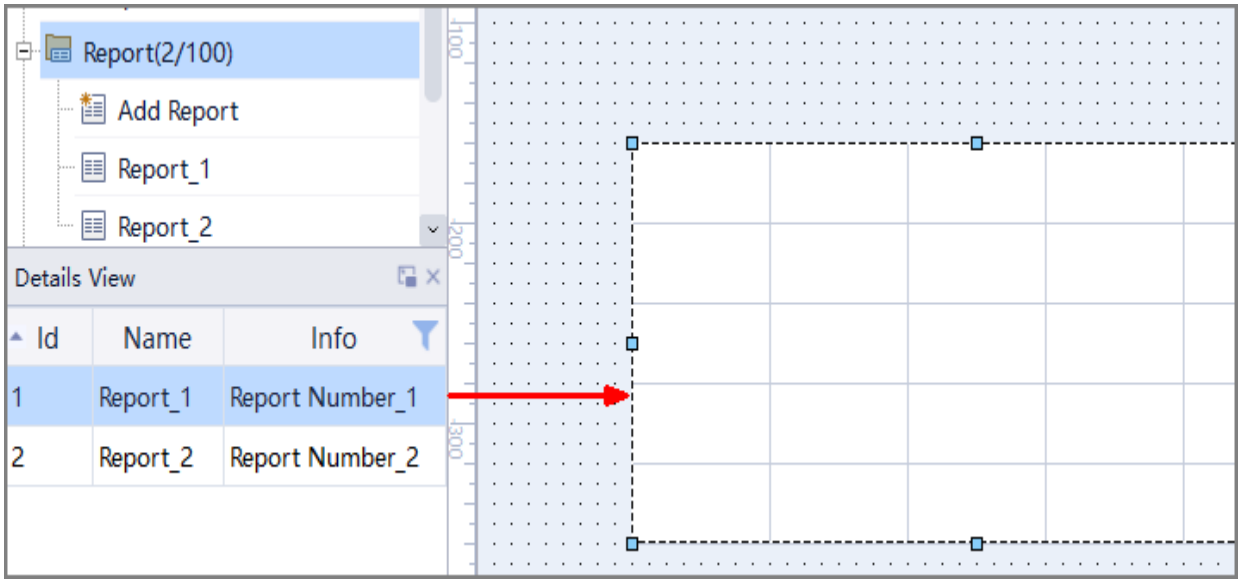


You can also directly drag the report you want to display from the details view to the screen as follows:

In the "Project" tree on the left, locate the root node of the report module, and select the node. In the details view, all created reports are listed, as shown in the following figure.

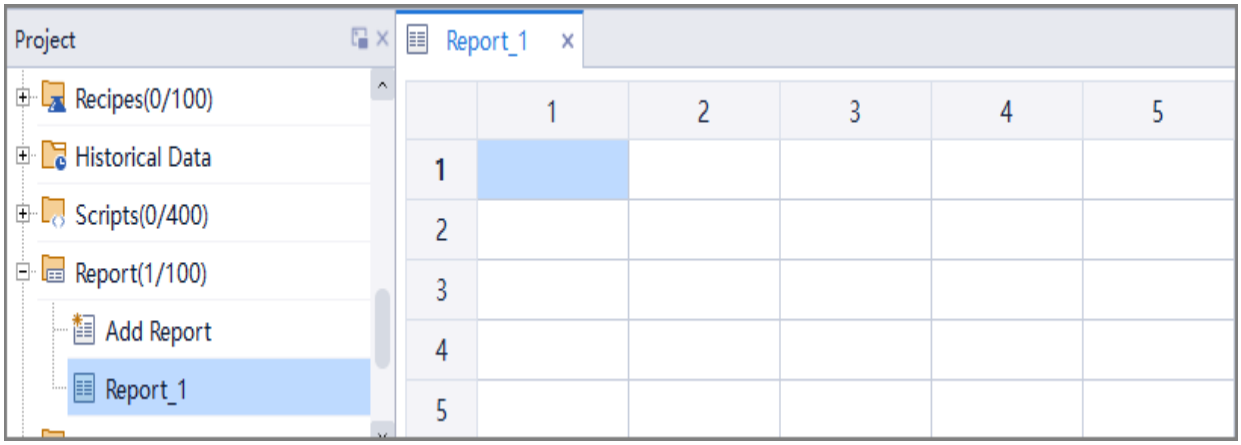


In the details view, directly drag the report you want to display to the screen. Then, the report view of this data record is directly generated in the screen, as shown in the following figure.



12.3 Creating a Report

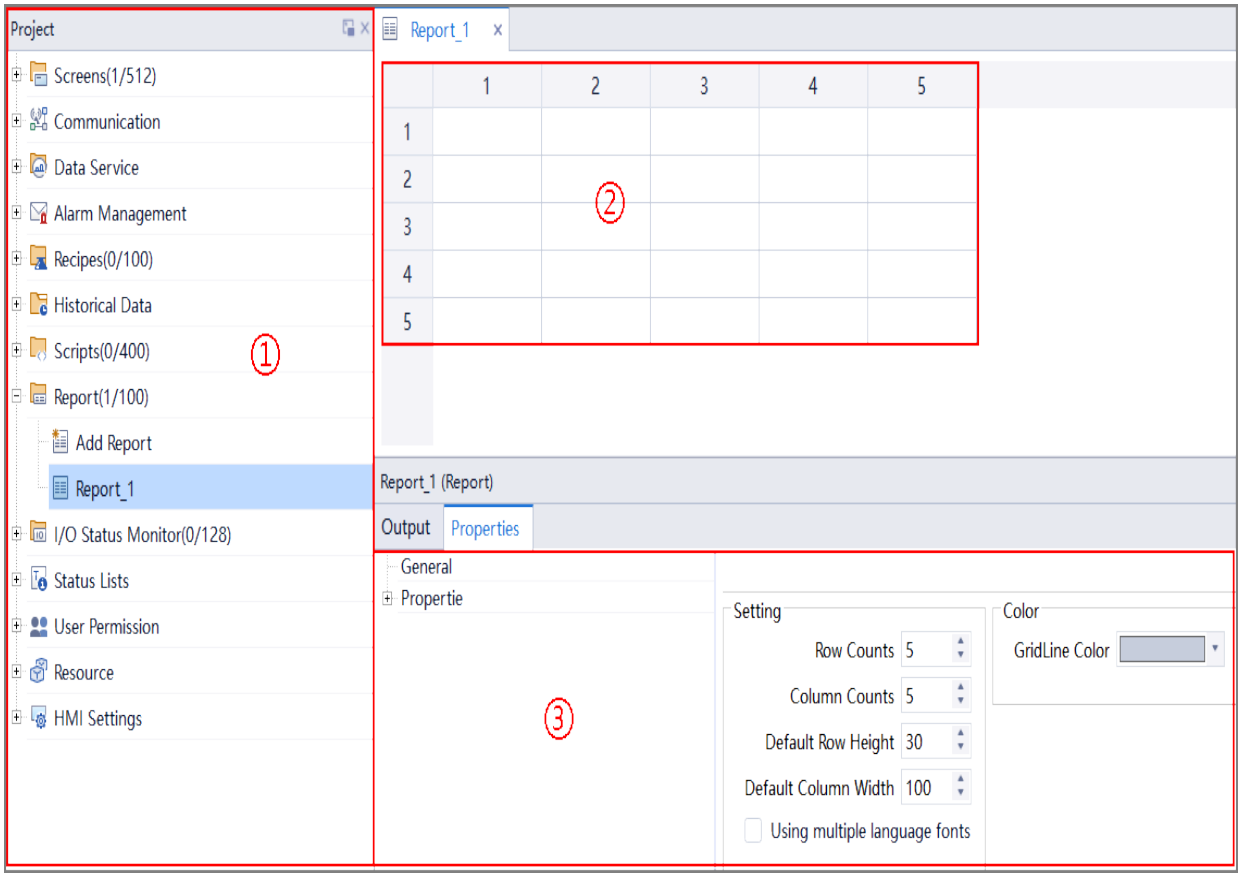
In the "Project" navigation tree, click "Report" and double-click "Add Report" to create a report, as shown in the figure below.



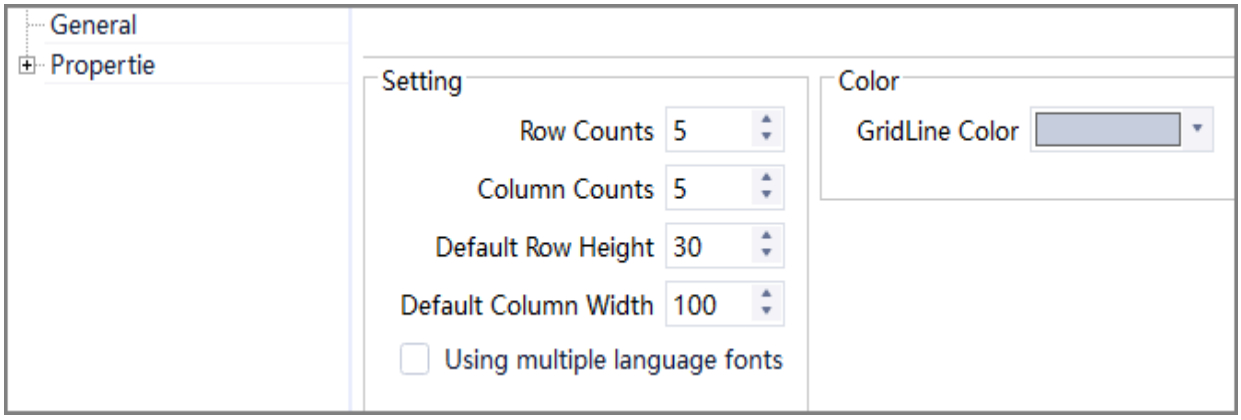
12.4 Properties and Basic Settings

12.4.1 Report Property Settings

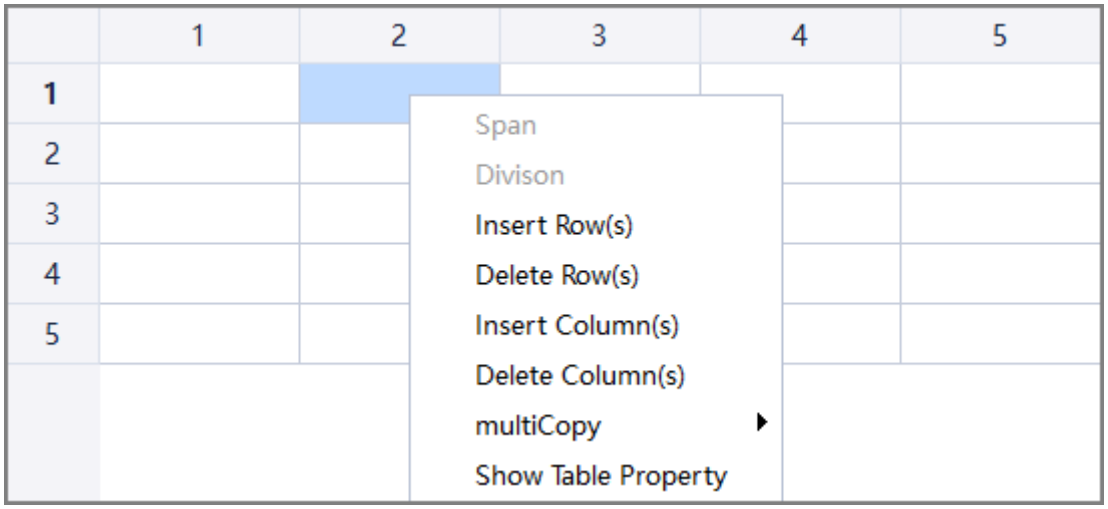
In a report, you can set the report properties, cell properties, and history cell properties. The report property editing interface is as follows: (①: Project view area, ②: Report work area, ③: Property editing area)



Setting report properties refer to the setting the entire report, rather than the selected cells. The property setting screen is shown in the figure below.



- Enter report property editing: You need to set report properties in the report work area. You can click the area outside the report table in the work area to display the report property setting box. In addition, you can right-click in a selected table area and choose "Show Table Property" to pop up the report property setting box, as shown in the figure below.



- Properties on the "General" tab page of the report are specifically described in the following table.

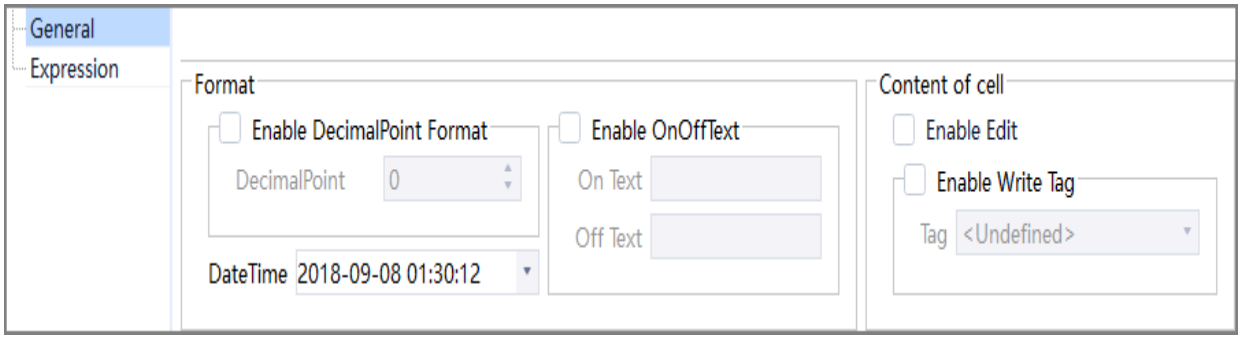
Item		Description
Settings	Row Counts	The number of rows in a report. The default value is 5, and the value range is 1 to 40.
	Column Counts	The number of columns in a report. The default value is 5, and the value range is 1 to 30.
	Default Row Height	The default height of a new row in a report. The default value is 30, and the value range is 10 to 200. When the value is changed, the row height of the entire table is readjusted.
	Default Column Width	The default width of a new row in a report. The default value is 100, and the value range is 10 to 200. When the value is changed, the column width of the entire table is readjusted.
	Using multiple language fonts	When this item is checked, information in a single cell in the report can be set to different fonts in different languages. When this item is not checked, information in a single cell in the report can be to the same font in different languages. (Regardless of whether it is checked, the font can be different for different cells.)
Color	GridLine Color	The display color of grids in a report.

- Report comment: On the "Properties" tab page, choose "Properties" > "Comment" to comment and mark the current report feature.

12.4.2 Cell Property Settings

A real-time data report displays and prints values of the current data object in a certain configured report format in real time, reflecting instantaneous quantities. It consists of regular cells. The cell property settings allow configuring the properties of one or more selected cells.

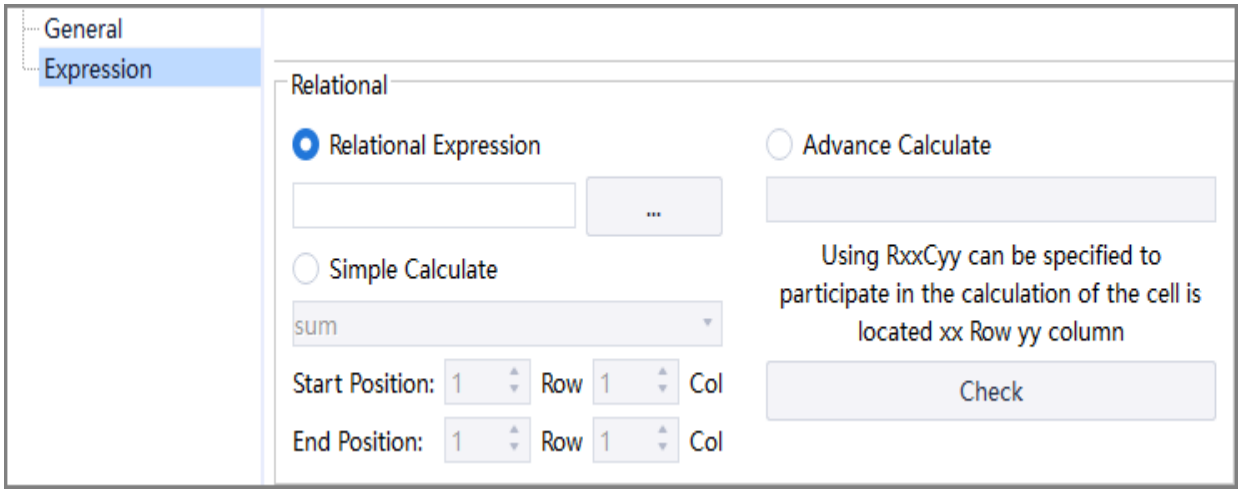
- Click on a selected cell to enter cell property editing, as shown in the figure below.



- The following table describes properties on the "General" page.

Item		Description
Format	Enable DecimalPoint Format	• When this option is checked, "DecimalPoint" can be set to the number of decimal places for a floating-point number displayed in a cell. • The value range is 0 to 13. The default value is 0. • In the runtime, a floating-point number is displayed in a cell with the specified number of decimal places.
	Enable OnOffText	• When this option is checked, "On Text" and "Off Text" can be set to the text to be displayed for the corresponding state. • In the runtime, when the value of a cell is 0, it is displayed as the text set for "Off Text"; when the value is not 0, it is displayed as the text set for "On Text". • Up to 128 specified characters can be input in the "On Text" or "Off Text" text box.
	DateTime	You can select a value of a date and time format from the drop-down list. In the runtime, the date and time is displayed in a cell in the specified format.
Content of cell	Enable Edit	• When this option is checked, selected cells can be edited in the runtime. • When it is not checked, selected cells can be displayed only.
	Enable Write Tag	• When this option is checked, you can select a write tag. • In the runtime, values displayed in cells can be written to specified tags. Values displayed in the runtime are tag values associated with expressions.

- The following figure shows the "Expression" property setting page.



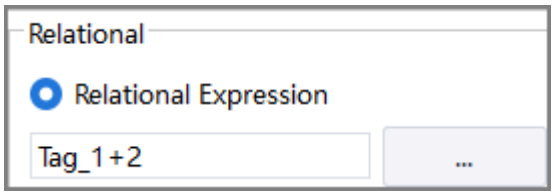
1. Relational Expression: If it is selected, the cell output is based on the association expression that can be a tag (bound to a tag) or a constant.

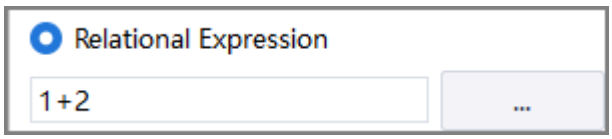




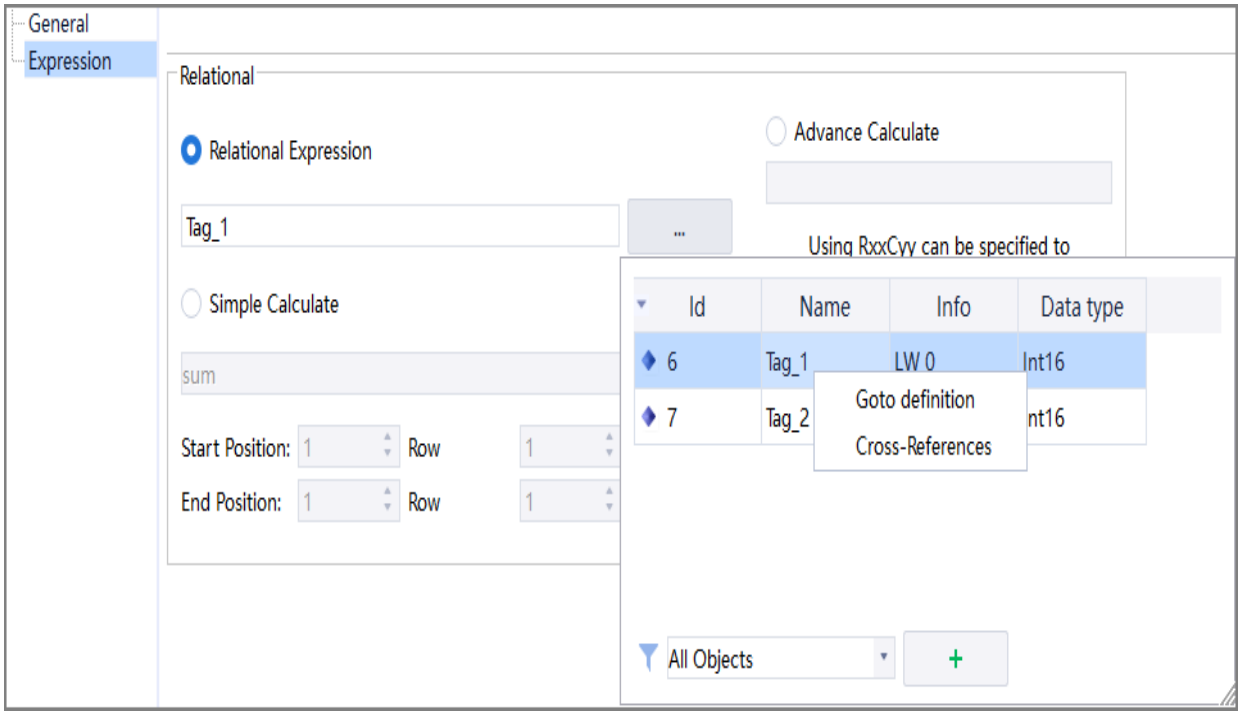
It also can be an expression of tag+tag, tag+constant, or constant+constant.





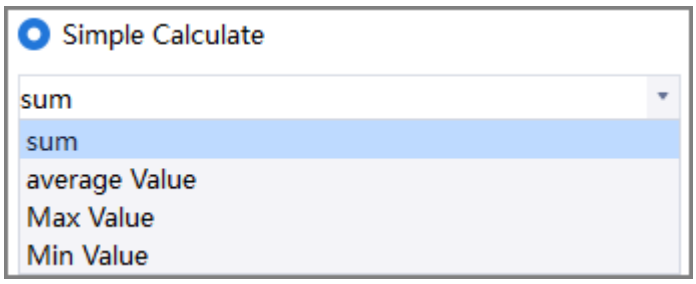


You can select the goto definition and cross-reference features for association expression tags.



2. Simple Calculate:

If it is selected, the cell output is based on the specified operation of specified cells. Simple Calculate can realize four operation modes, as shown in the figure below.



The operation modes include sum, average Value, Max Value, and Min Value. The configuration of a specified cell is shown in the figure below.

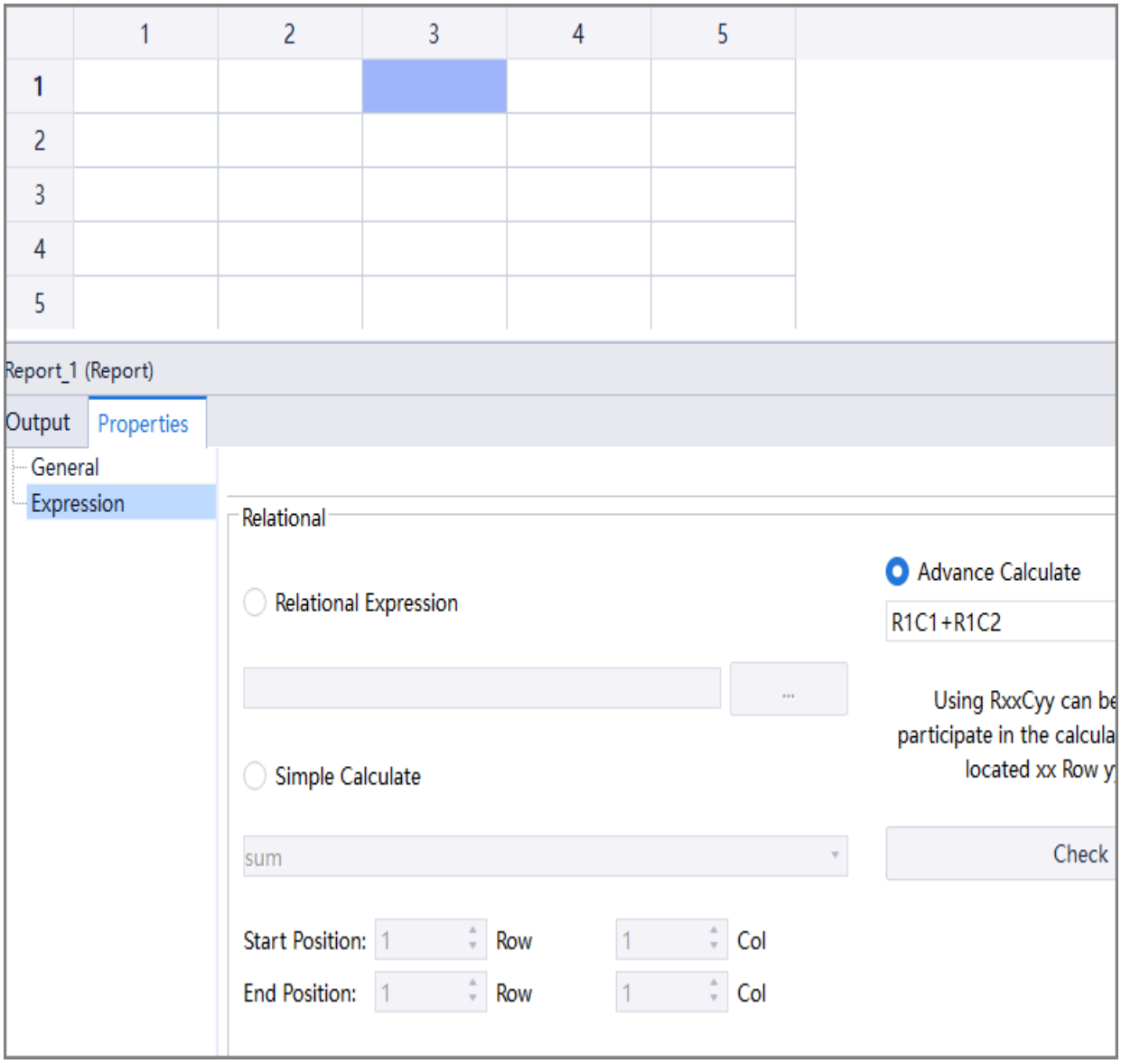


The cells involved in the calculation are R1C1, R1C2, R2C1, and R2C2, where "R" represents rows and "C" represents columns.

3. Advance Calculate:

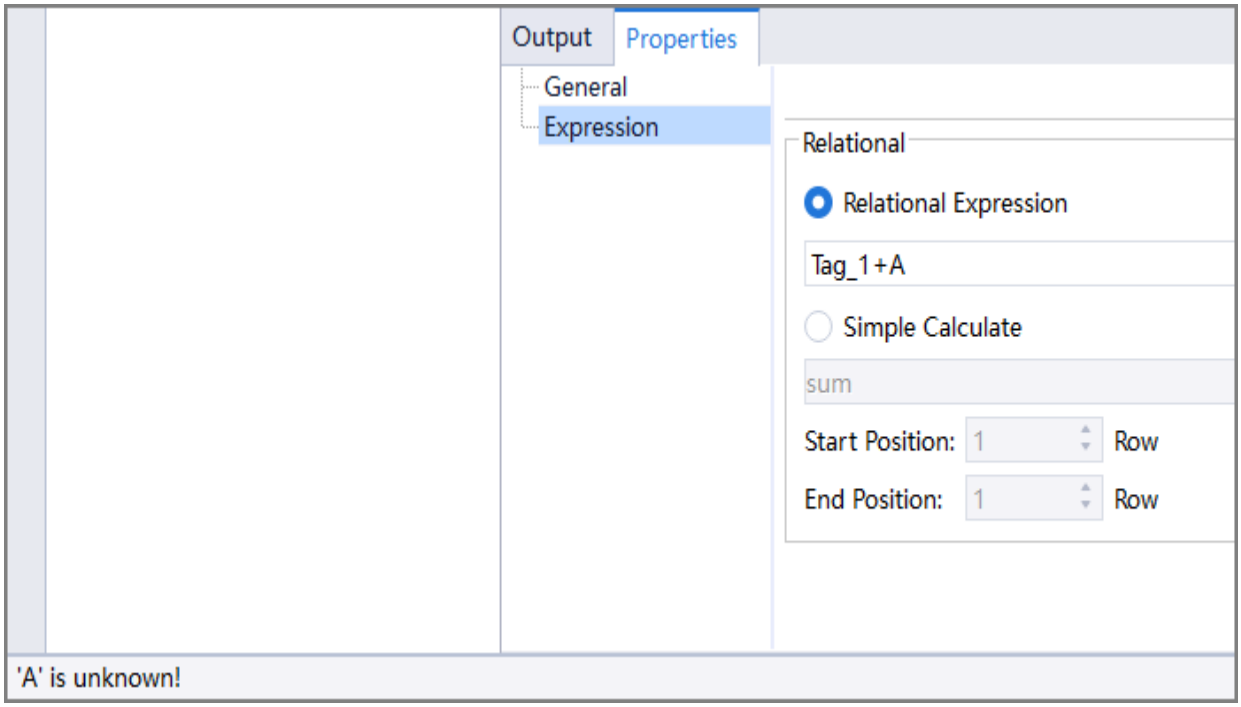
If it is selected, the cell output is based on the value of the advanced calculation expression. Advance Calculate refers to using the value of a specified cell for expression operation.

For example, to output the sum of the value of the first cell in the first row and the value of the second cell in the first row to the third cell in the first row, perform the following configuration:

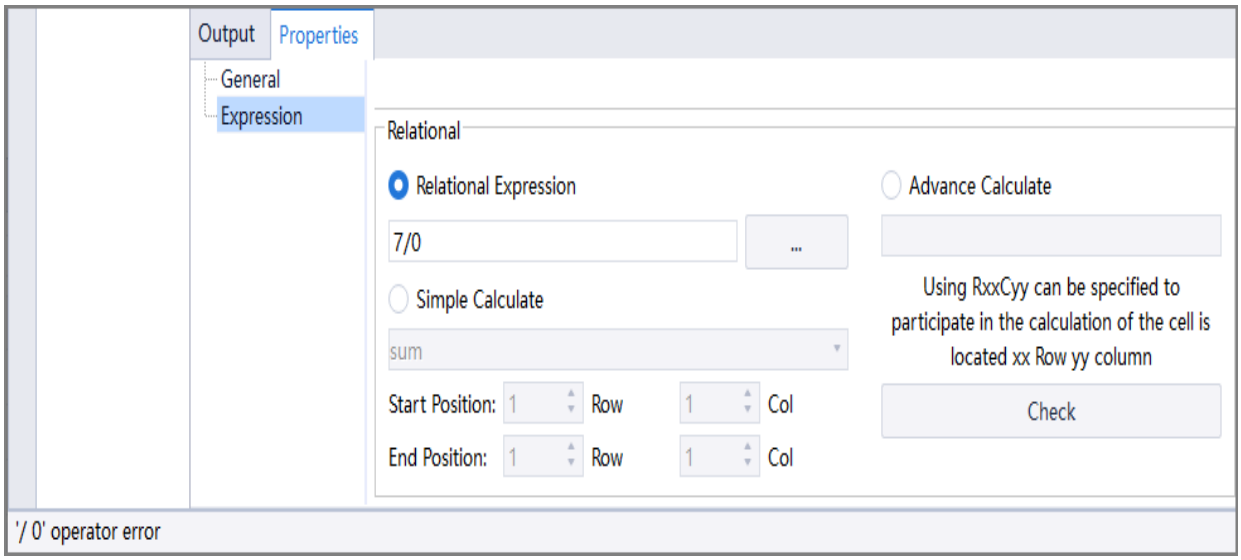


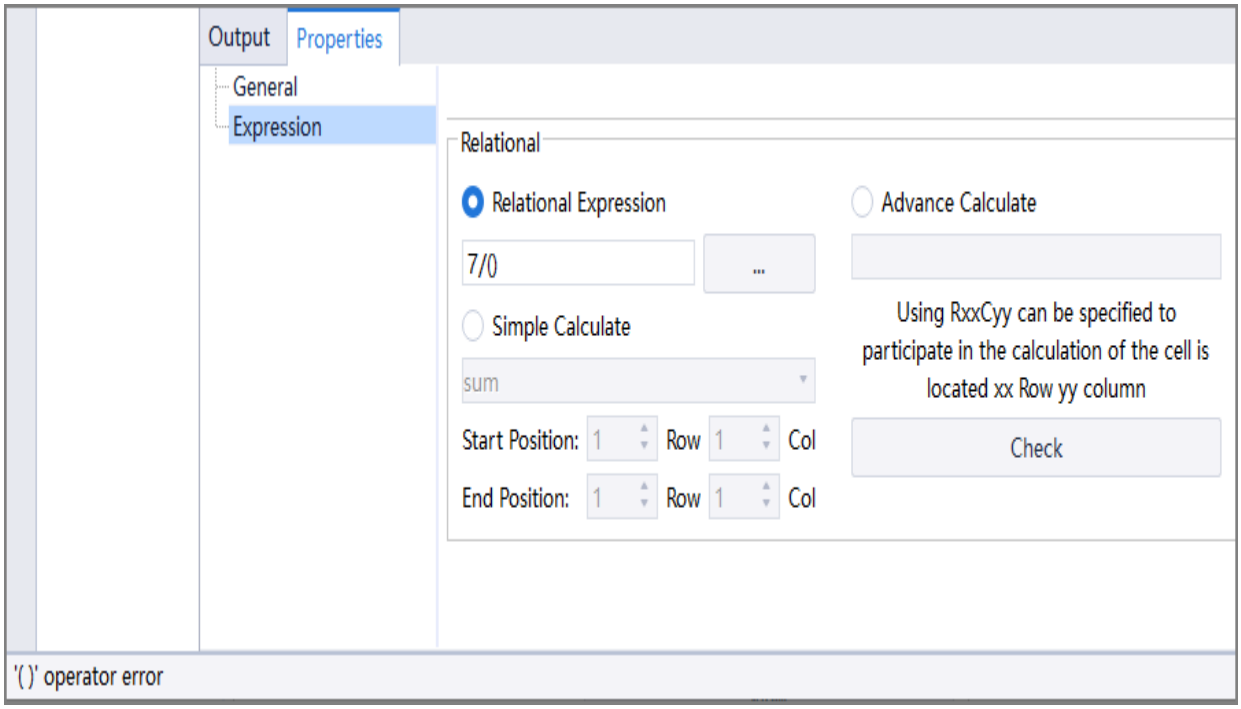
Select the third cell in the first row, and set "Advance Calculate" to "R1C1+R1C2". In the value, R represents rows and C represents columns of cells, which are case-insensitive. Subscripts of cells start from 1. For example, R1C1 represents the first cell in the first row.

After editing an association expression or advanced calculation expression, you can click "Check" to check the expression. If the expression is incorrect, an error message will be output in the status bar, as shown in the figure below.



When the denominator of the association expression is 0 or the parentheses () are empty, an error will be reported, as shown in the figure below.





4. Operator symbols supported by expression calculation:

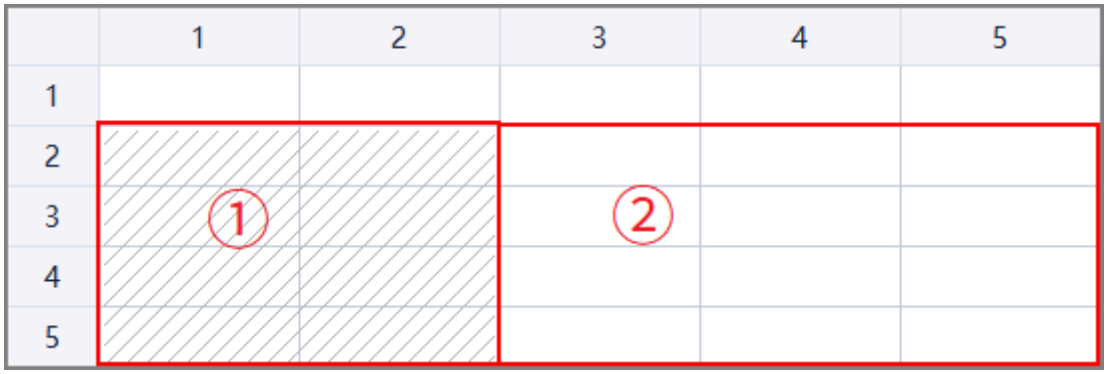
Four arithmetic operations: + - x /

Brackets: ()

pow(x,y): Power function; sqrt(): Square root function; sin, cos, tan: Trigonometric functions (Parameters are in radians but not degrees.)

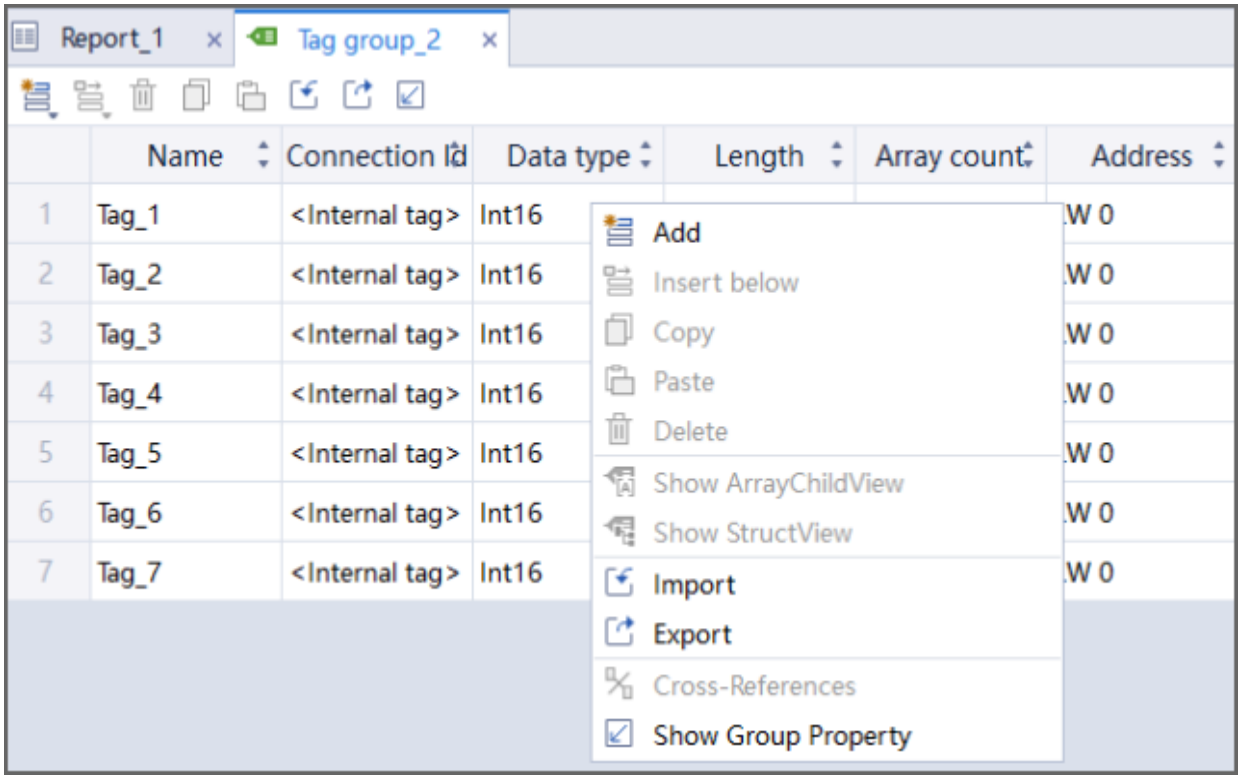
12.4.3 Property Settings of History Cells

A historical data report extracts stored data records from the historical database and displays and prints the historical data in a certain format. The historical data report is composed of history cells. After selecting a normal cell, click  . The selected cell becomes a history cell and is displayed with a shadow fill, as shown in the figure below (①: History cell, ②: Normal cell).

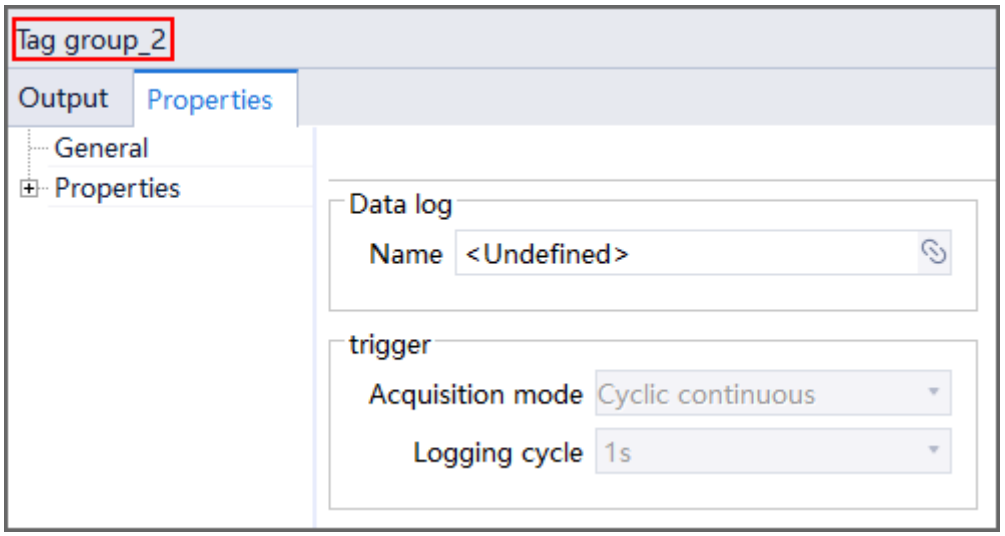


History cells are mainly used to display the historical data of tags in a group record. To display specified tags in a report, you need to first add the tags to a group record. Take the group record in "Tag group_2" as an example.

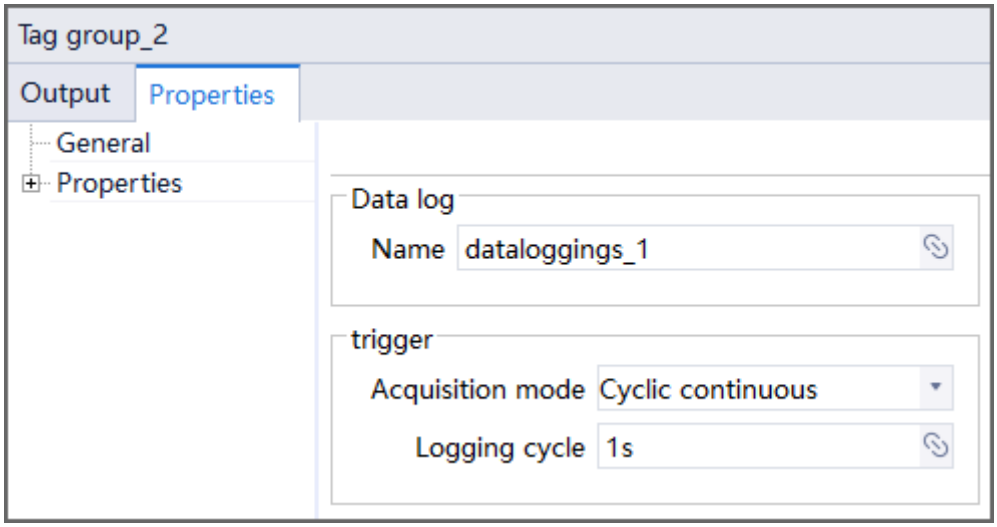
1. Enter the work area of "Tag group_2" and right-click to display properties of the group.



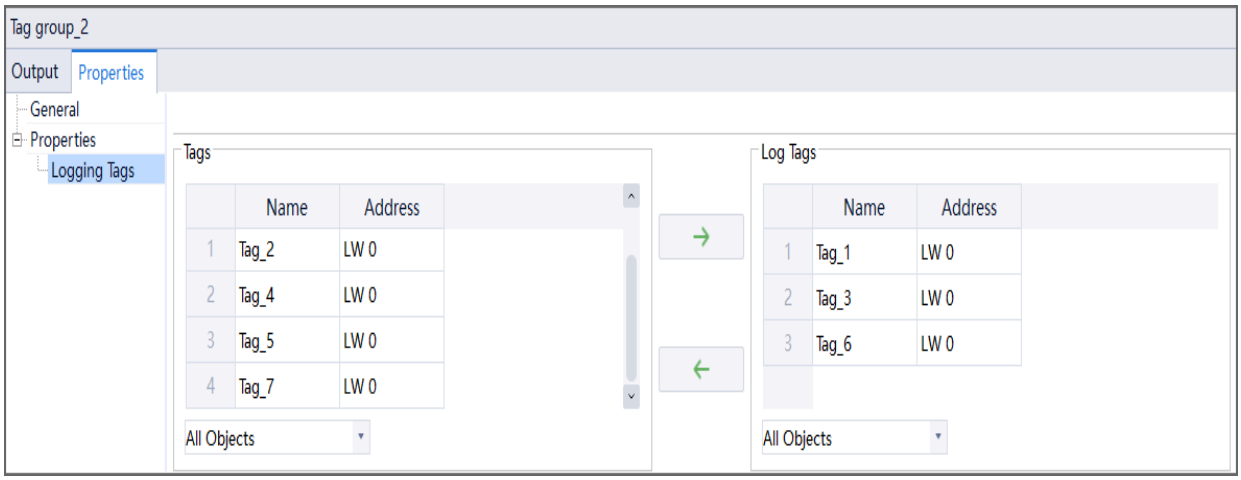
2. Select "Show Group Property" to view the tag group properties, as shown in the figure below.



3. Click "General", add a data record to the group, set "Acquisition mode" to "Cyclic continuous" or "On demand", and set "Logging cycle" (not required when "Acquisition mode" is set to "On demand"), as shown in the figure below.



4. Choose "Properties" > "Logging Tags". Select the tags to be recorded to the group record and use the tags as the data source to be displayed in a historical table. You can add Tag_1, Tag_3, and Tag_6 to "Logging Tags" and display them in the historical table as the data source, as shown in the figure below.

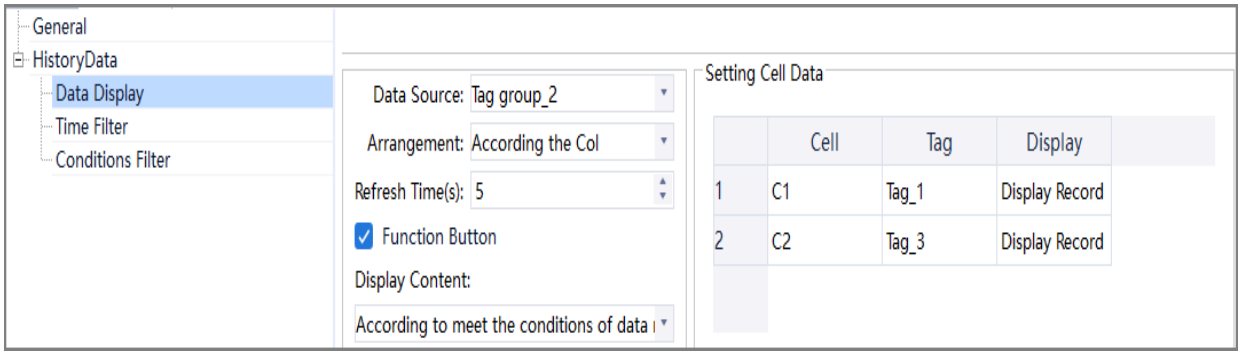


Properties of history cells are as follows:

- "General"

Properties of history cells on the "General" page are consistent with those of normal cells. For details, see 12.4.2 Cell Property Settings.

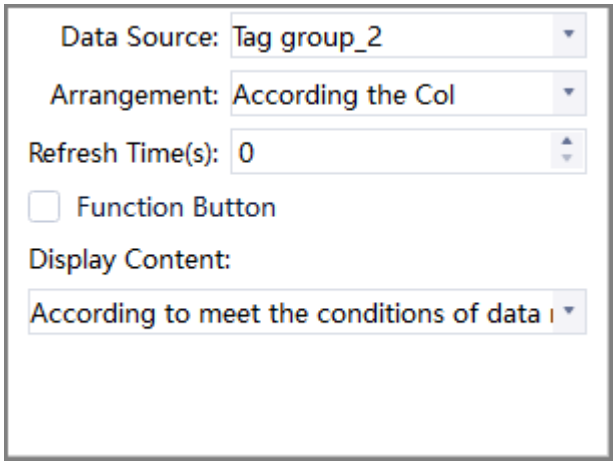
- "Data Display"



Properties of history cells on the "Data Display" page are as follows:

Data Source

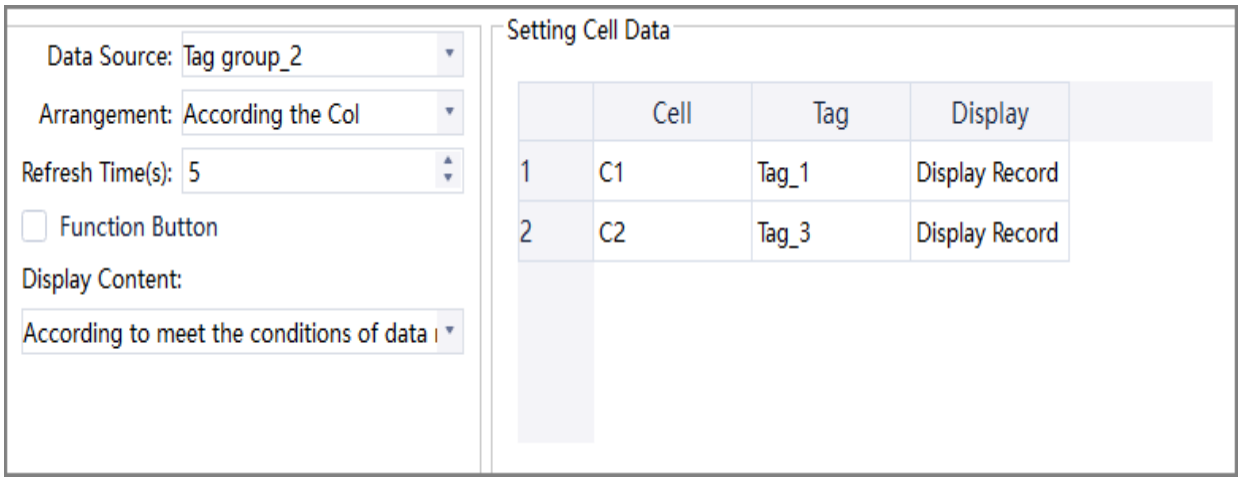
You can set "Data Source" to a configured tag group for historical data displayed in history cells.



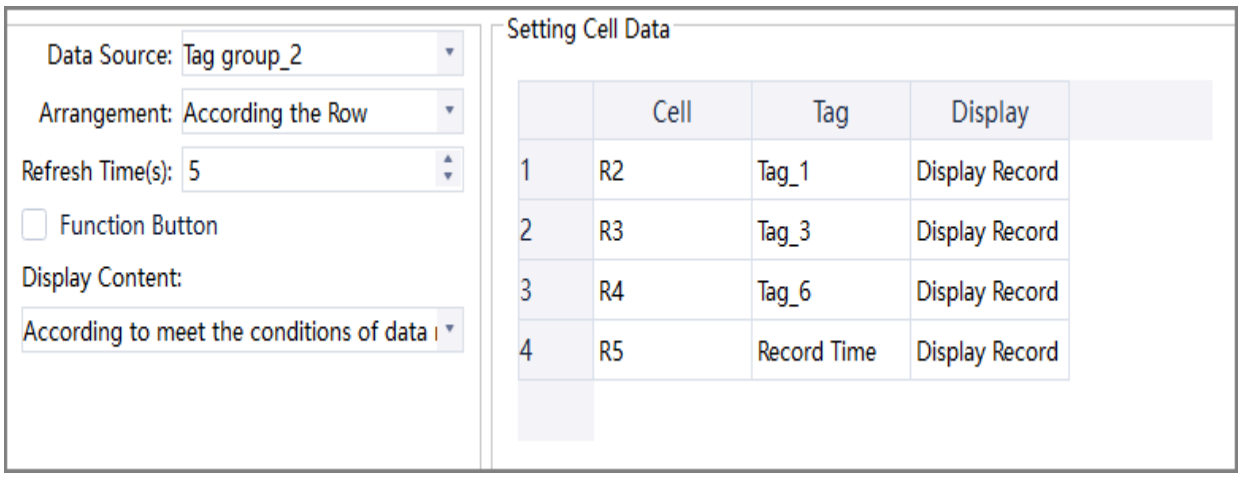
Arrangement

You can select "According the Col" or "According the Row". By default, "According the Col" is selected.

When "According the Col" is selected, history cells in the "Setting Cell Data" section are sorted by column, and the historical data is displayed by column.



When "According the Row" is selected, history cells in the "Setting Cell Data" section are sorted by row, and the historical data is displayed by row.

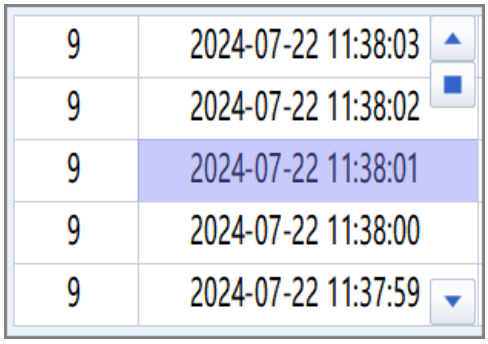


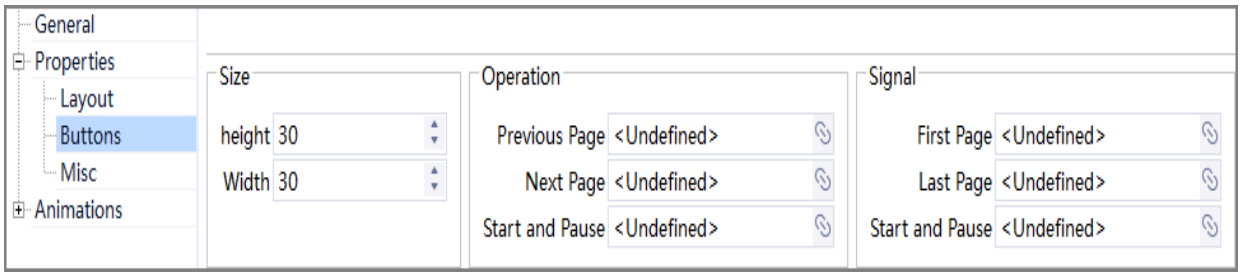
Refresh Time(s)

"Refresh Time(s)" indicates the time for refreshing historical data display, in the range of 0 to 65535. The default value is 0. When the value is set to 0, the historical table will not be refreshed (do not frequently refresh data when the data amount is large).

Button

Check "Function Button". On "Report View" of the screen, choose "Properties" > "Buttons" and set buttons. In the runtime, when you click a history cell, the pagination and start/stop buttons are displayed.



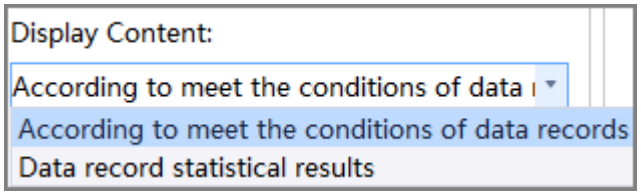


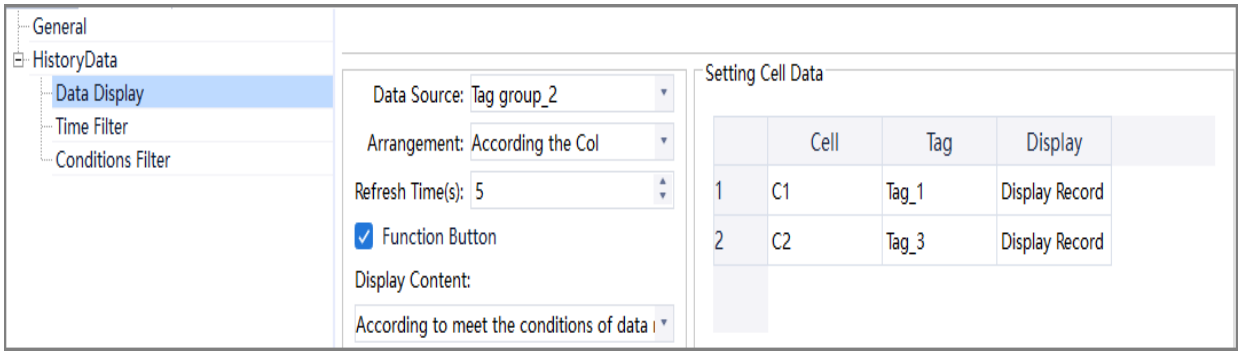
Properties	Description
height/Width	Sets the button size. Range: 30 to 100 Default: 50
Previous Page/Next Page	Pages up or down based on the value of the BOOL-type tag associated. The default value is null.
First Page/Last Page	Notifies users of the new report status through signals.
	Pages up or down based on the value of the BOOL-type tag associated. The default value is null.
Start and Pause	Controls the refreshing status by reading/writing the signal enabling tag.

Uncheck "Function Button". In the runtime, when you click a history cell, the pagination and start/stop buttons are not displayed.

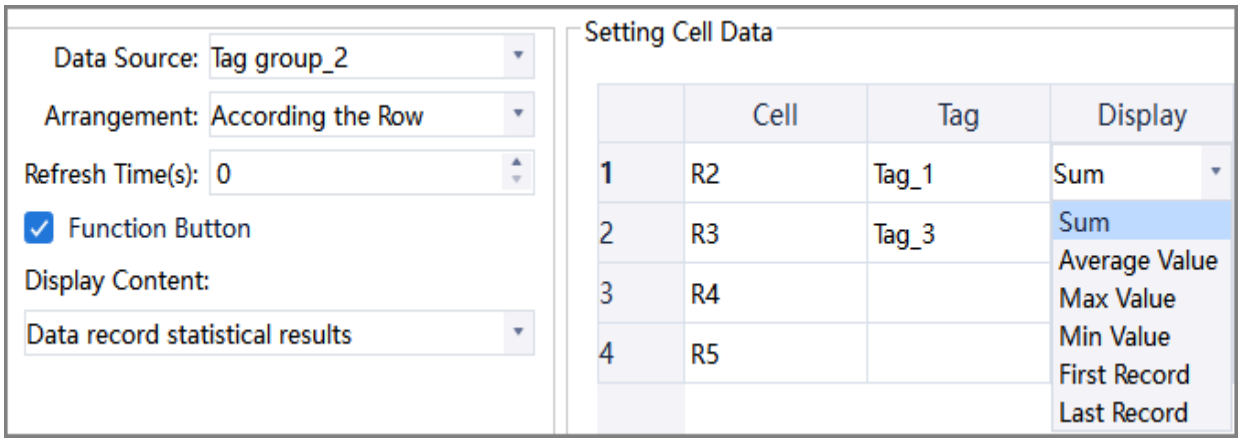
Display Content

One option is "According to meet the conditions of data records". When it is selected, the display records of objects in the "Setting Cell Data" section are displayed.





The other option is "Data record statistical results". When it is selected, the statistical results are displayed, and you can select a statistical mode in the "Display" column in the table.



Name	Description
Sum	Sums values of the recorded tag, with the result displayed in the history cell.
Average Value	Averages values of the recorded tag, with the result displayed in the history cell.
Max Value	Takes the maximum value of the recorded tag, with the result displayed in the history cell.
Min Value	Takes the minimum value of the recorded tag, with the result displayed in the history cell.
First Record	Displays data of the first record.
Last Record	Displays data of the last record.

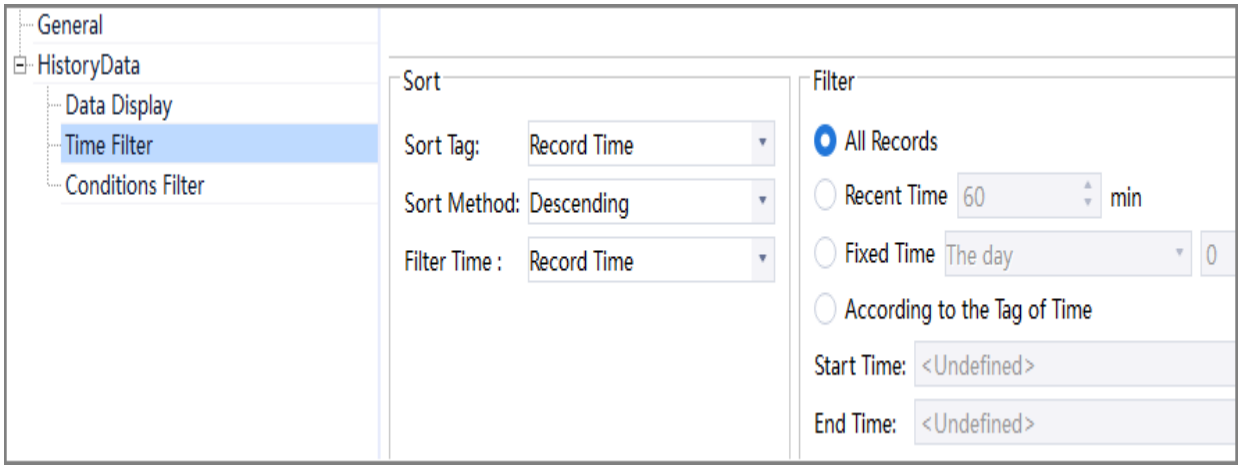
Setting Cell Data

Cell: Lists the rows or columns of the display report according to "Arrangement", which cannot be edited. Tag: Lists the record tags or recording time in the record of the group selected for "Data Source". Display: Information displayed in the column is determined by the method specified by "Display Content". When "According to meet the conditions of data records" is selected, the record data is displayed in the history cell.

When "Data record statistical results" is selected, the corresponding statistical results are displayed in the historical table.

- "Time Filter"

1. Properties of history cells on the "Time Filter" page are as follows.



Sort

1. "Sort Tag": The object used for sorting. The options are "Record Time" and the record tags selected in the group specified by "Data Source".

2. "Sort Method": The options are "Ascending" and "Descending", determined by the value of "Sort Tag".

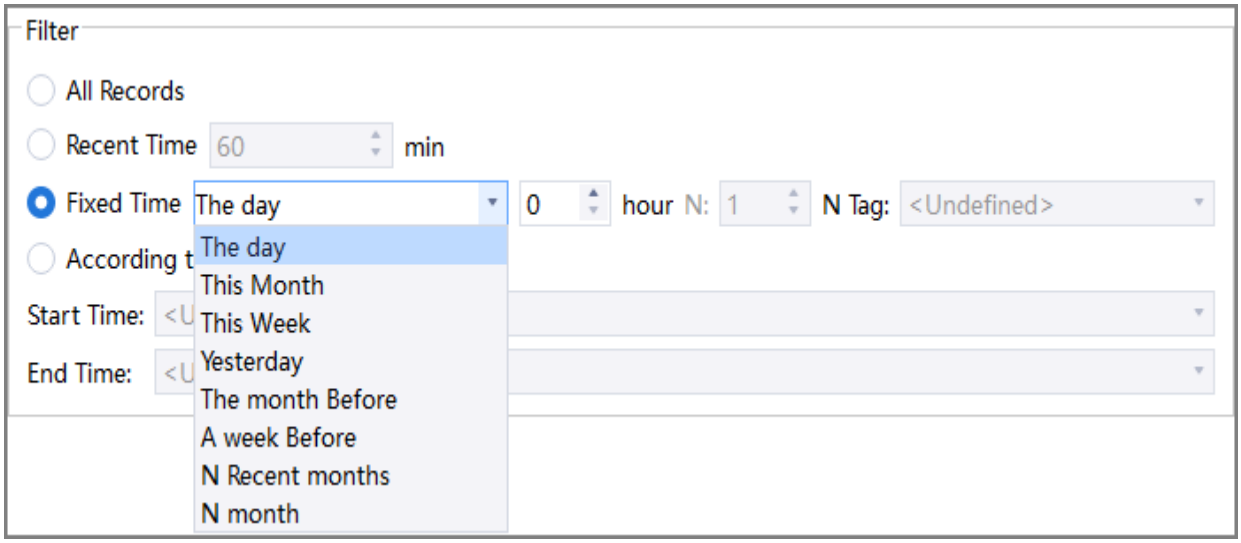
3. "Filter Time": Selects "Record Time" for a specified filter object.

Filter

1. "All Records": When it is selected, all data recorded in the specified group record will be filtered.

2. "Recent Time": When it is selected, data recorded in the specified group record within the latest X minutes will be filtered. The value of X ranges from 0 to 2147483647. The default value is 60.

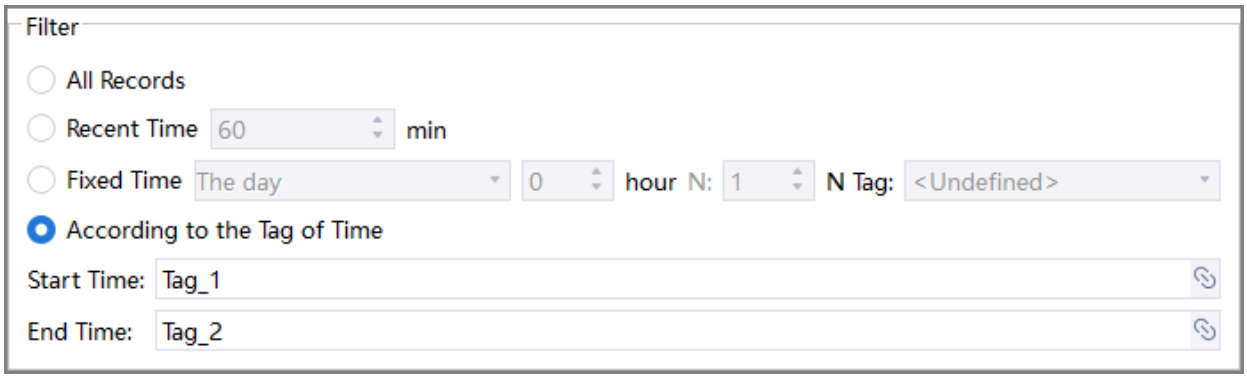
3. "Fixed Time": When it is selected, you can select an option from the drop-down list by recording time, as shown in the figure below.



Name	Description
The day	You can select a certain moment of the day. For example, if you set it to "6:00 of the day", data recorded from 6:00 of the day to the current moment will be filtered from historical records.
This Month	You can select a certain moment of this month. For example, if you select "6:00 of this month", data recorded from 6:00 on the first day of the month to the current moment will be filtered from historical records.

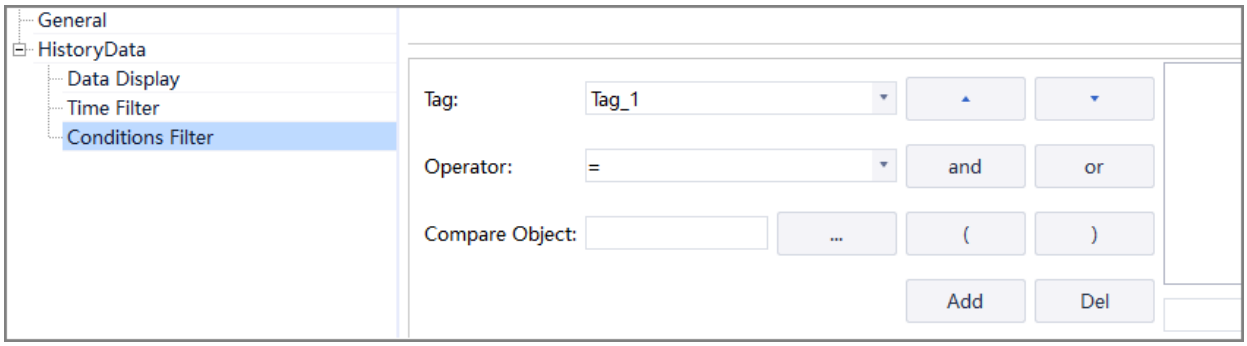
This Week	You can select a certain moment of this week. For example, if you select "6:00 of this week", data recorded from 6:00 on Monday of this week to the current moment will be filtered from historical records.
Yesterday	You can select a certain moment of yesterday. For example, if you set it to "6:00 of yesterday", data recorded from 6:00 of yesterday to 6:00 of the day will be filtered from historical records.
A week Before	You can select a certain moment of the last week. For example, if you set it to "6:00 of last week" and assume that today is Wednesday, data recorded from 6:00 of last Wednesday to 6:00 of the day will be filtered from historical records.
The month Before	You can select a certain moment of the last month. For example, if you set it to "6:00 of last month" and assume that today is October 16, data recorded from 6:00 of September 16 to 6:00 of the day (October 16) will be filtered from historical records.
N Recent months	You can select a certain moment of the recent N months. For example, if you set it to "6:00 of last two months" and assume that today is October 16, data recorded from 6:00 of August 16 to 6:00 of the day (October 16) will be filtered from historical records. N can be a constant or a tag.
N month	You can select a certain moment of the Nth month. For example, if you set it to "6:00 of tenth month", data recorded from 6:00 of October 1 to 6:00 on the first day of the next month will be filtered from historical records. N can be a constant or a tag.

4. "According to the Tag of Time": When it is selected, the data recorded between "Start Time" and "End Time" will be filtered based on the recording time.

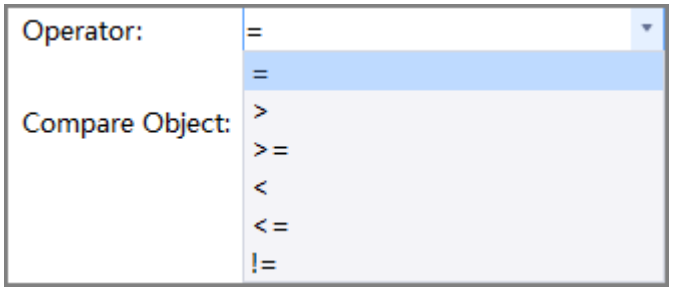


"Start Time" and "End Time" can be set to a date and time tag.

- "Conditions Filter": Filters data records that meet conditions from group records based on specified conditions.

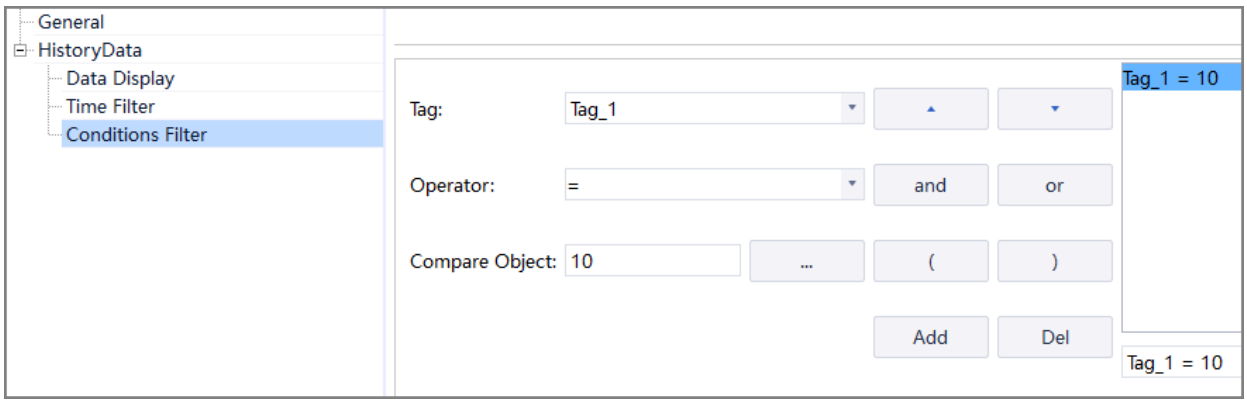


Properties of history cells on the "Conditions Filter" page are as follows: "Tag": Selects a tag recorded in "Data Source" as a comparison object. "Operator": Supports six comparison operations, including =, >, >=, <, <=, and !=.



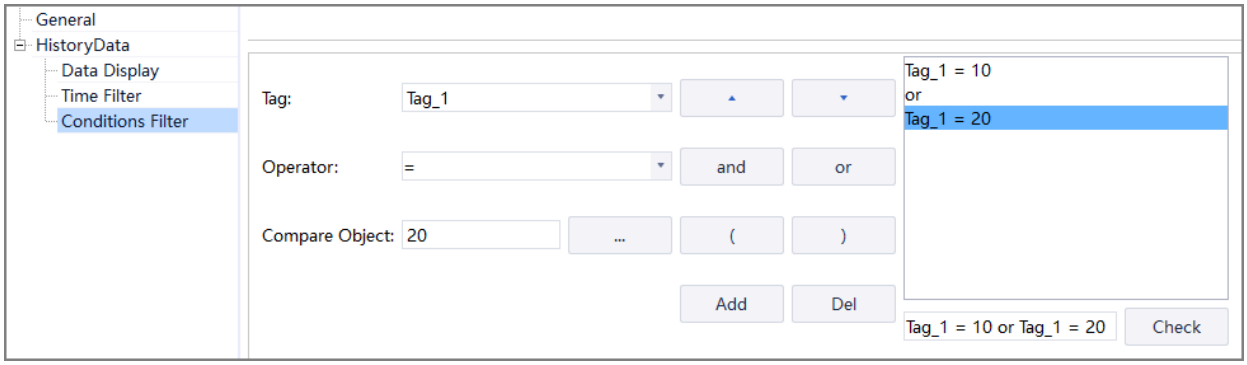
"Compare Object": Any created tag, constant, or character string (the input string needs to be enclosed in single quotation marks (''). Otherwise, an error will be reported and the string cannot contain any operator symbols of "Operator").

After "Tag", "Operator", and "Compare Object" are edited, a condition statement can be formed. You can click "Add" to add the edited condition statement to the condition box, as shown in the figure below.

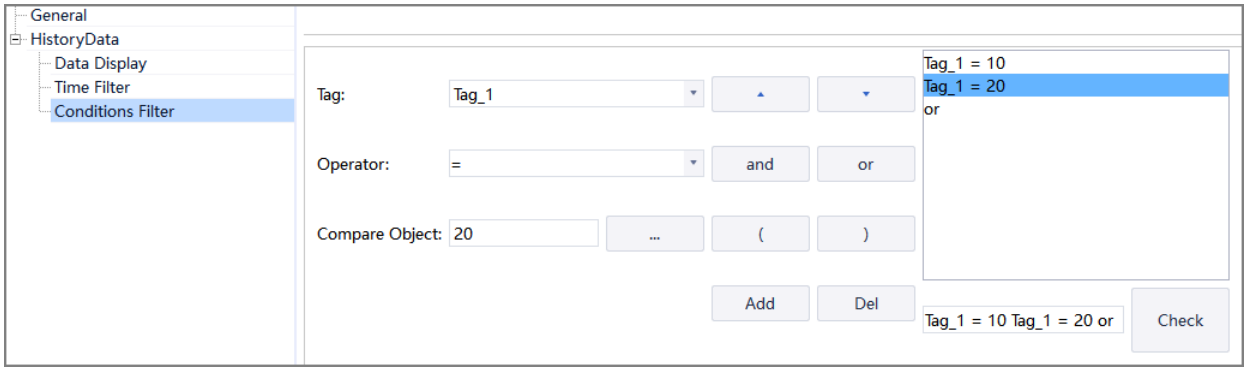


Multiple conditions can be added to the condition box for filtering, and two logical processing operators and/or are provided between conditions. After adding a condition, click "and" or "or" to add the logical operator to the condition box, and then continue to add the required conditions.

"and": All conditions before and after the "and" operator is used need to be met to filter data. "or": If one of the conditions before and after the "or" operator is met, data can be filtered. Filter the historical data where the value of "Tag_1" is 10 or 20. The filter conditions are configured as follows.



In addition, you can select condition statements and click the up or down button to move them up or down.

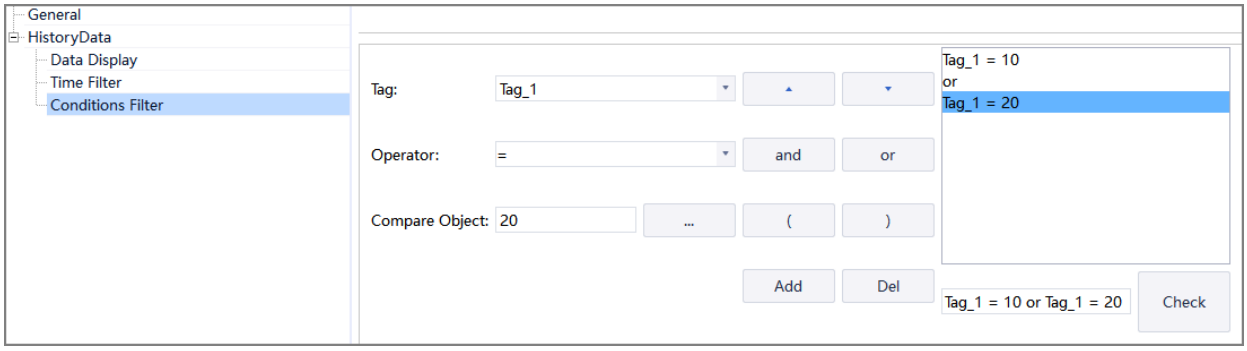


For example, select the third statement and click the up button to move it up by one line.

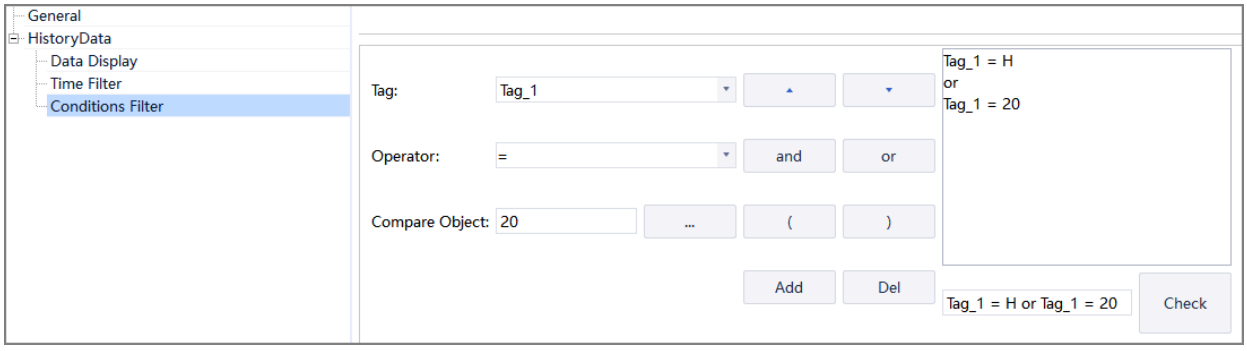
In addition, you can add parentheses in the condition box to change the logical processing priority of conditions.

To delete a condition, you can select the condition statement to be deleted in the condition box, and then click "Del". You can also directly edit statements in the condition box.

After input, press Enter or wait till the focus disappears to complete the condition editing, and directly input the edited condition into the condition box. After all conditions are edited, click "Check" to check the written condition statement. If the condition statement is normal, the following prompt will appear in the status bar in the lower left corner.



If the condition statement is incorrect, the error information will appear in the status bar for correction.

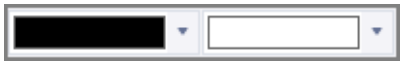


12.5 Common Report Operations

Top toolbar

The top toolbar allows you to perform the following operations on cells in the report editing area:

Icon	Name	Description
微软雅黑	Font setting	Set the text font for a single or multiple cells.

	Font size	Set the text font size for a single or multiple cells.
	Bold	Bold the text of a single or multiple cells.
	Italic	Italicize the text of a single or multiple cells.
	Underline	Underline the text of a single or multiple cells.
	Left align	Align the text of a single or multiple cells at the left.
	Center align	Align the text of a single or multiple cells in the center
	Right align	Align the text of a single or multiple cells at the right.
	Foreground color and background color	Foreground color: Set the foreground color of a single or multiple cells. Background color: Set the background color of a single or multiple cells.
	Size objects horizontally equal	Change the widths of all selected columns to the width of the column of the last selected cell.
	Size objects vertically equal	Change the heights of all selected rows to the height of the row of the last selected cell.
	Size objects size equal	Change the widths and heights of all selected rows and columns to those of the row and column of the last selected cell.
	Group	Change a single or multiple cells selected into historical cells.
	Ungroup	Restore a single or multiple historical cells selected as ordinary cells.

- Context menu

If you right-click the report editing area, the following menu will be displayed:



- Span

Selected cells are merged into one cell.

	1	2	3	4	5
1					
2					
3					
4					
5					

- Split

The selected merged cells are restored to separate cells.

	1	2	3	4	5
1					
2					
3					
4					
5					

- Insert Row(s)

If you select a single row or multiple rows, this command inserts the same number of new rows before the first row in the selection.

- Delete Row(s)

All the selected rows are deleted.

- Insert Column(s)

If you select a single column or multiple columns, this command inserts the same number of new columns before the first column in the selection.

- Delete Column(s)

All the selected columns are deleted.

- MultiCopy

If you select multiple cells, this command provides the following options:

1. expression Tag

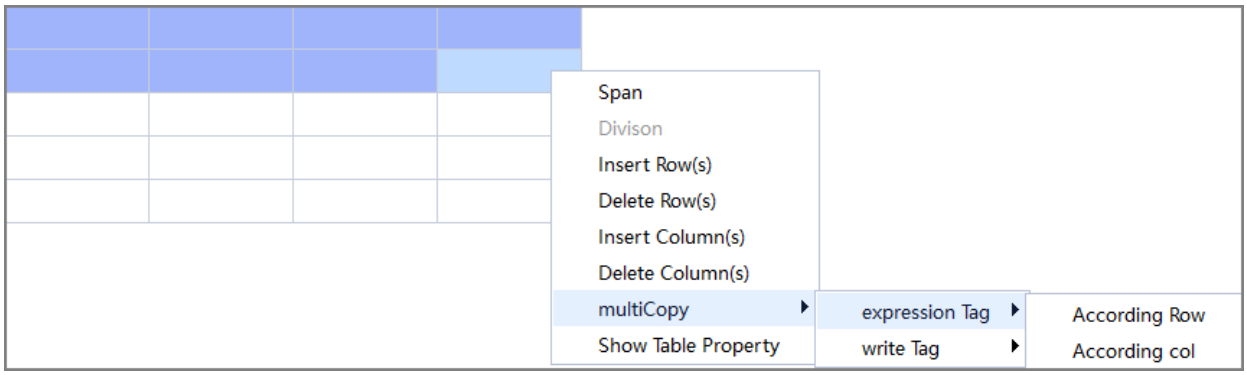
According Row: If you choose row-based multiple copy, the selected cells are based on the tags associated with the last selected cell. From the tag table, select the base tag number to start, find the tags of the same type, and automatically fill them into the associated expressions of cells in row order. If the number of tags of the same type queried in the tag table is not enough to fill the cells, then fill the remaining cells with the base tags after filling the tags of the same type.

According Column: If you choose column-based multiple copy, the selected cells are based on the tags associated with the last selected cell. From the tag table, select the base tag number to start, find the tags of the same type, and automatically fill them into the associated expressions of cells in column order. If the number of tags of the same type queried in the tag table is not enough to fill the cells, then fill the remaining cells with the base tags after filling the tags of the same type.

1. Enable Write Tag

According Row: If you choose row-based multiple copy, the selected cells are based on the write tag of the last selected cell. From the tag table, select the base tag number to start, find the tags of the same type, and automatically fill them into the write tag of cells in row order. If the number of tags of the same type queried in the tag table is not enough to fill the cells, then fill the remaining cells with the base tags after filling the tags of the same type.

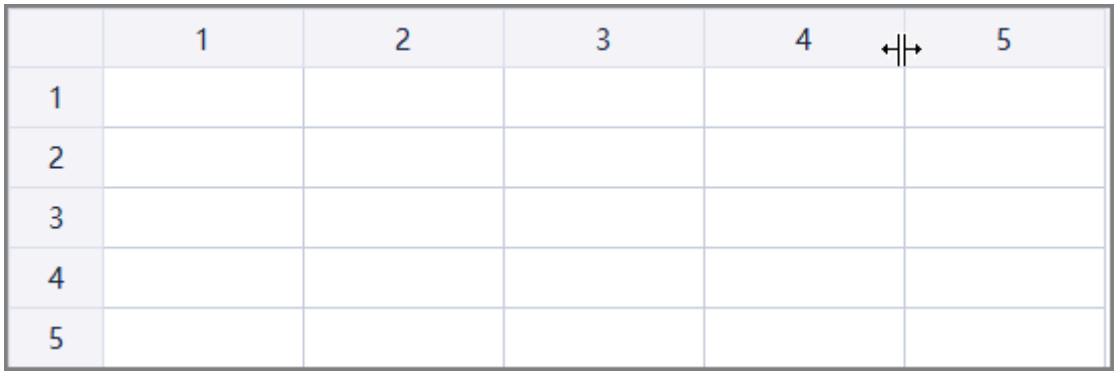
According Column: If you choose column-based multiple copy, the selected cells are based on the write tag of the last selected cell. From the tag table, select the base tag number to start, find the tags of the same type, and automatically fill them into the write tag of cells in column order. If the number of tags of the same type queried in the tag table is not enough to fill the cells, then fill the remaining cells with the base tags after filling the tags of the same type.



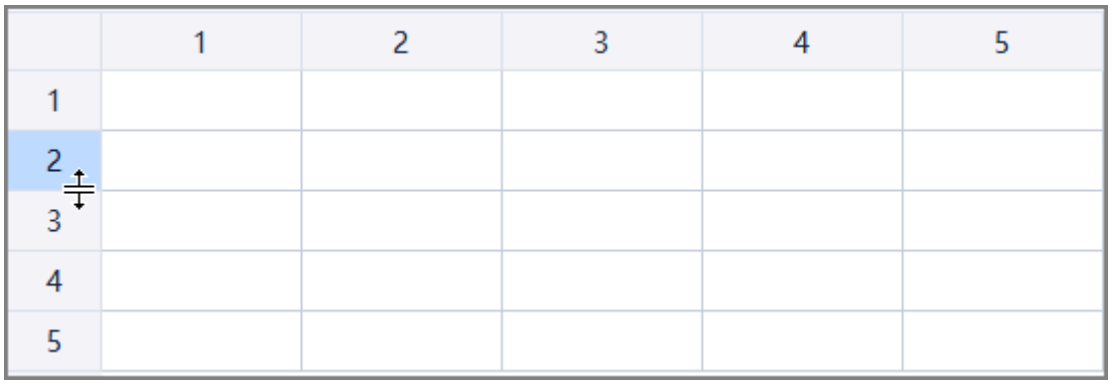
Show Table Property: Right-click the report editing area and select "Show Table Property". The "Properties" window will show the properties of the report.

Adjusting row height and column width

In the report editing area, you can drag the right boundary of a column header to change the column width, as shown in the following figure.



You can drag the bottom boundary of a row header to change the row height, as shown in the following figure.



12.6 Runtime Characteristics

After configuration in Real-Time Report Cases, run the project. The report view in the runtime has the following properties:

- Display static data: Displays the content of the table cells edited by the user in the configuration environment. This feature is generally used to complete the header of the report or other fixed content, and this feature is effective only when the table cells are not connected to tags or data sources.
- Edit data in running environment: Edits data of the table cells in the running environment and the editing results can be output to corresponding tags. In general, this feature is used to manually modify the current data of the report.
- Display dynamic data: Connects associated tags in table cells to dynamically display the values of real-time tags at run time.
- Display historical records: Connects record tags of the database in the table cells to dynamically display the values of the stored records in the stored data source at run time on multiple pages (use the built-in pagination button to switch the data to be displayed), and display the fields in the historical table by rows or columns.

- Pagination button: Clicks the historical report of setting the "Function Button" feature in the running system to display the function buttons, as shown in the figure below.



- Page up button: Queries the previous record when historical records are displayed in historical cells.
- Refresh start and stop button: Starts historical cells to automatically refresh historical records based on the set update time. When the update time is set to 0, clicking this button will refresh the historical data once.
- Page down button: Queries the next record when historical records are displayed in historical cells. Using this feature will stop automatic refresh.
- Hide function button: Clicks other places in the screen for automatic hiding.
- Display statistical results of historical records: Displays statistical results in two ways: Collect data of other real-time table cells of the table, such as the sum in the table; Collect the records in the historical database and connect the stored data source in the table cells of the table, to dynamically display the statistical results of the stored records in the stored data source at run time.

13 I/O Status Monitor

13.1 Introduction

Bit address values of tags are listed in a table, in which you can quickly search for and view the bit address value of a tag.

13.2 I/O Status Monitor

Bit address values of tags are listed in a table, in which you can quickly search for and view the bit address value of a tag.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create an I/O status table.

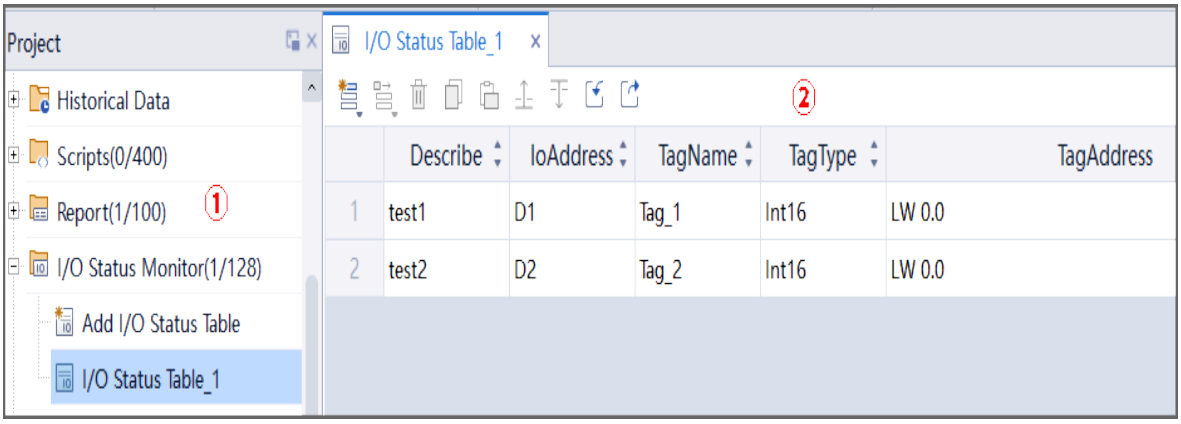
   In the "Project" navigation tree on the left, click "I/O Status Monitor" and double-click "Add I/O Status Table" to create an I/O status table, such as "I/O Status Table_1".

   > **Note**
   >
   > A maximum of 128 I/O status tables can be created.

   Right-click "I/O Status Table" and choose each feature, as listed in the table below.

Feature	Description
Open editor	Opens the editing area of an I/O status table.
Rename	• Renames an I/O status table, which will fail if the new name already exists. • The name of an I/O status table can contain up to 32 characters.
Duplicate	Creates a replica named "I/O status table_*Number*" in which *Number* is incremental.
Cross-References	Views information referenced from an I/O status table.
Export	Exports the content of the current I/O status table into a .csv file.
Import	• Imports the .csv file. • Obtains the template file by clicking  when the I/O status table is empty. For details about template parameters, see the Parameter Table in Step 3.
Delete	Deletes an I/O status table.

3. Click  to add I/O status table records. For parameter description, see parameter description. For other features, see the editing area feature description (①: Project view area; ②: Editing area).



Note

Each I/O status table can contain up to 1000 rows of records.

The following table lists the parameter description.

Parameter	Description
Describe	Describes the details of the I/O monitoring status. Value range: A string of up to 32 characters
IoAddress	Address information for monitoring the I/O status. Value range: A string of up to 16 characters
TagName	Tag name used to configure the I/O monitoring status. For details about how to create a tag, see 5.2.2 Configuring Tags.
TagType	Tag type, which is automatically filled in based on the data type of TagName and cannot be changed.
TagAddress	• Tag address, which is automatically filled in based on the address of TagName, in the format of "address.bit address", where "address" is the address corresponding to TagName, and "bit address" is the bit of the corresponding address of TagName. • When TagType is "Bool", this parameter cannot be modified.

The following table describes the features in the editing area.

Feature	Description
 Add	Adds the I/O status monitoring record at the end of the row.
 Insert	Selects a row and clicks  to insert an I/O status monitoring record below the row.

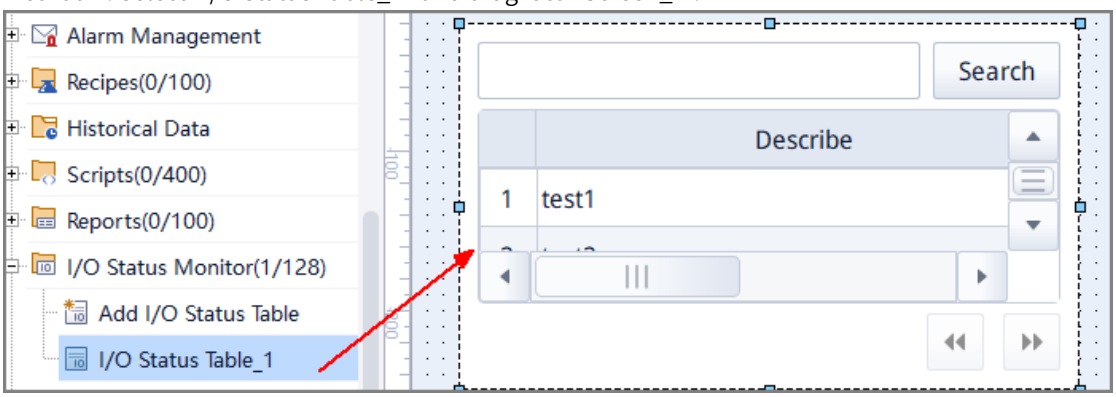
Feature	Description
Delete	Deletes an I/O status monitoring record from a selected row (or presses Ctrl+clicks or presses Shift+clicks to select more records).
Copy	Copies one or more I/O status monitoring records.
Paste	Pastes I/O status monitoring records.
Up	Moves up one or more selected I/O status monitoring records.
Down	Moves down one or more selected I/O status monitoring records.
Import	• Imports the .csv file. • Obtains the template file by clicking when the I/O status table is empty. For details about template parameters, see the parameter table above.
Export	Exports the content of the current I/O status table into a .csv file.

The following table describes the parameters of the CSV file template.

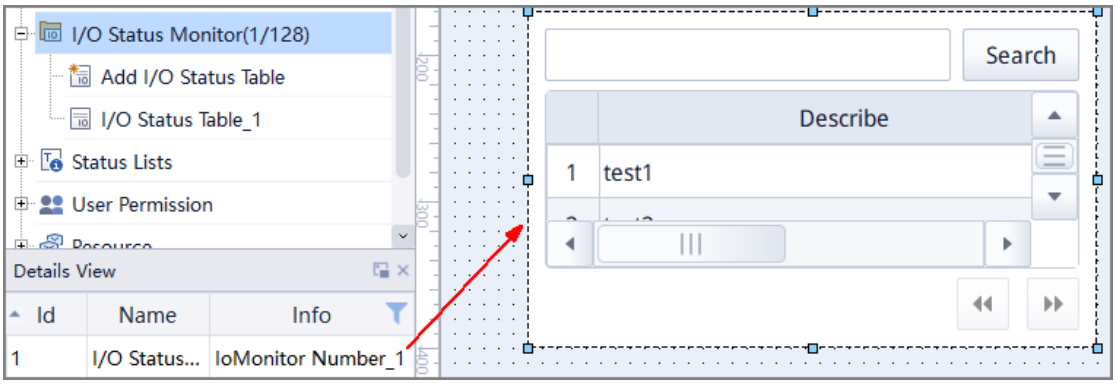
1	#I/O status table export file (Inovance)					
2	#2024-07-19 15:09:02					
3						
4	#Column A: Description Text					
5	#Column B: I/O Address					
6	#Column C: Connection (If this field is left empty, an internal connection is used. This field is required.)					
7	#Column D: Tag Name					
8	#Column E: Tag Type					
9	#Column F: Tag Address (required)					
10						
11	Description Text	I/O Address	Connection Name	Tag Name	Tag Type	Tag Address
12						
13						

4. Drag the I/O status table in any of the following methods:

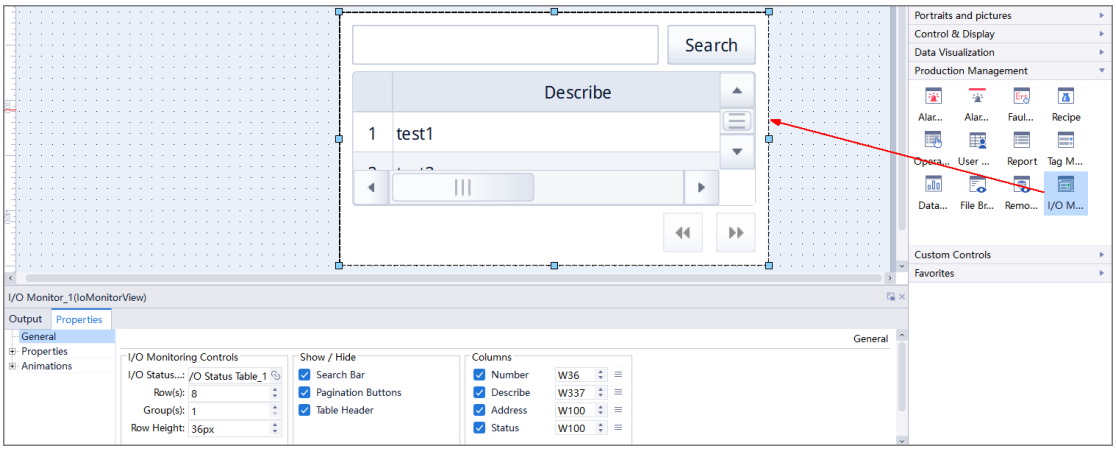
- Method 1: Select "I/O Status Table_1" and drag it to "Screen_1".



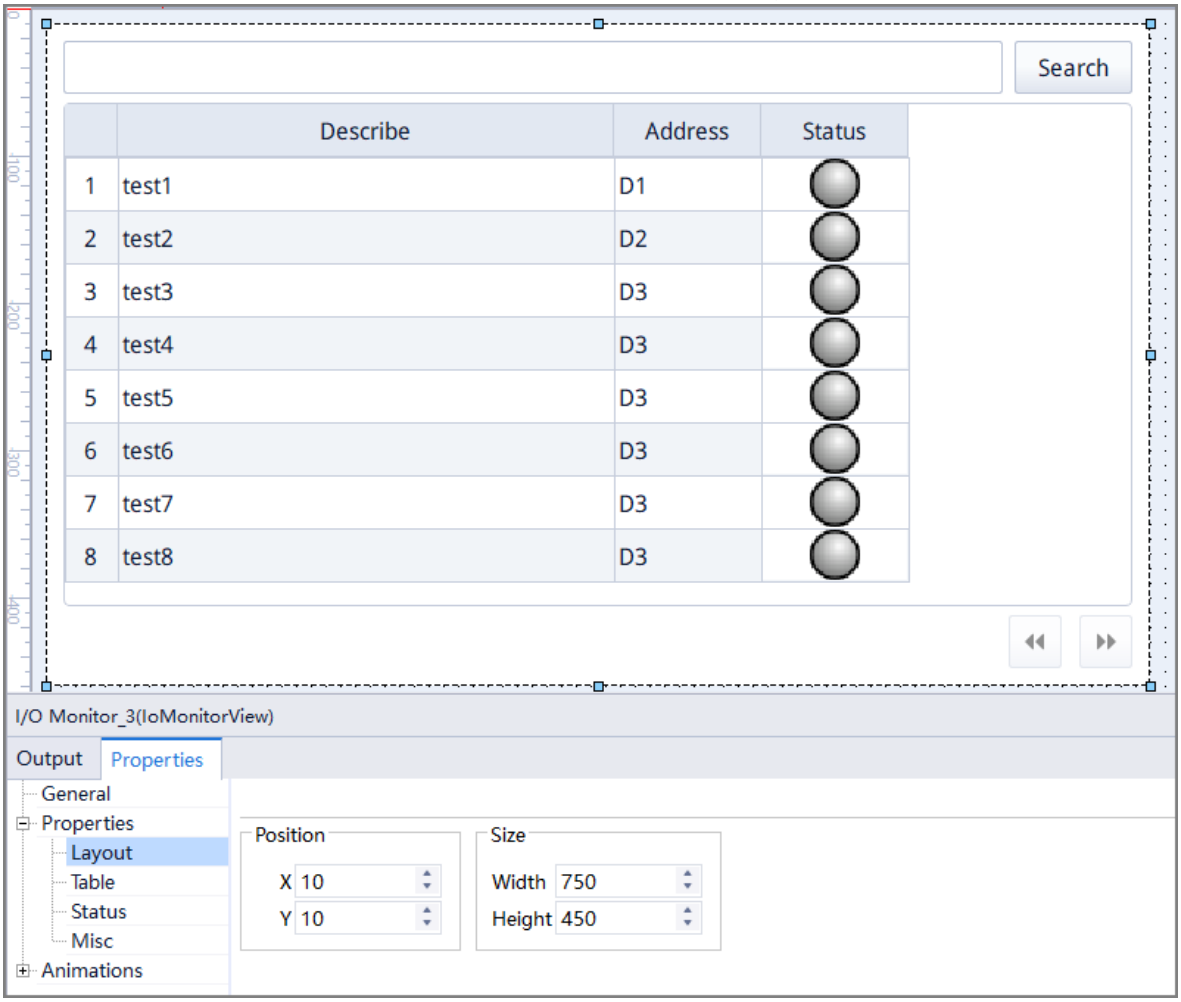
- Method 2: Click "I/O Status Monitor". In "Details View", select "I/O Status Table_1" and drag it to "Screen_1".



- Method 3: In the "Tools" navigation tree on the right, choose "Production Management" > "I/O Monitor" and drag it to "Screen_1". Click "I/O Monitor". On the "Properties" tab page, click "General". In the "I/O Monitoring Controls" section, set "I/O Status Table" to "I/O Status Table_1".

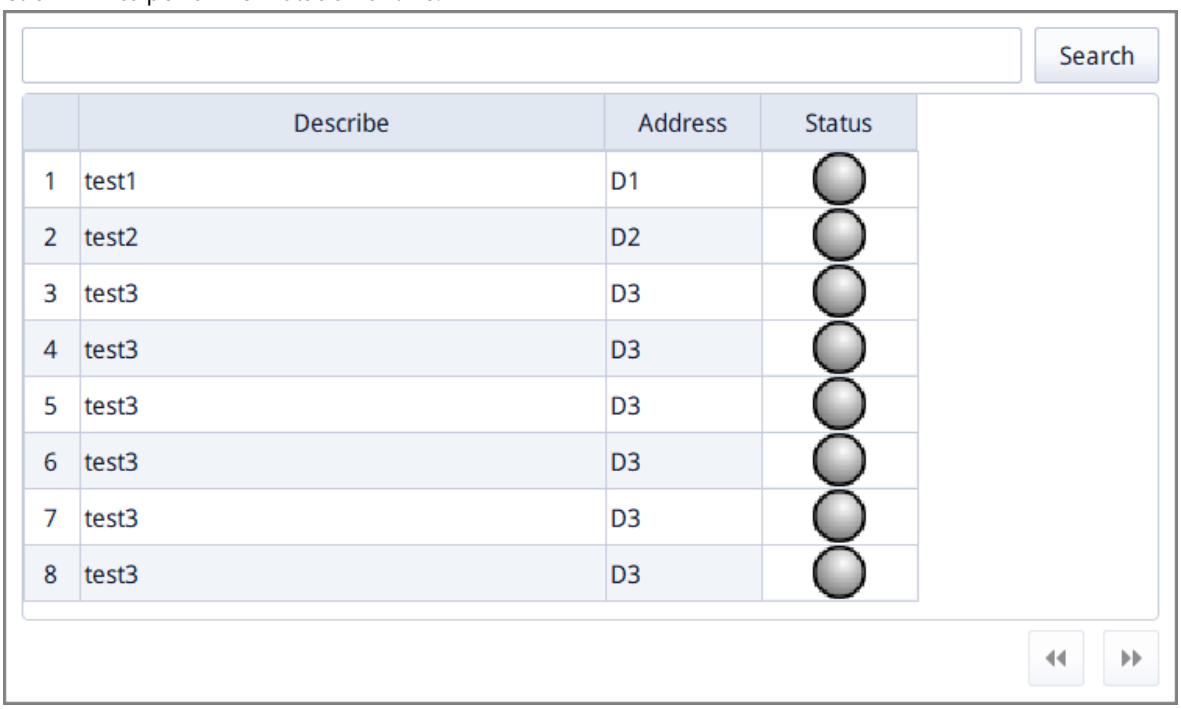


5. Click "I/O Monitor". On the "Properties" tab page, choose "Properties" > "Layout". In the "Position" section, set "X" and "Y" to 10. In the "Size" section, set "Width" to 750 and "Height" to 450.



6. Perform the simulation test.

Click  to perform simulation offline.

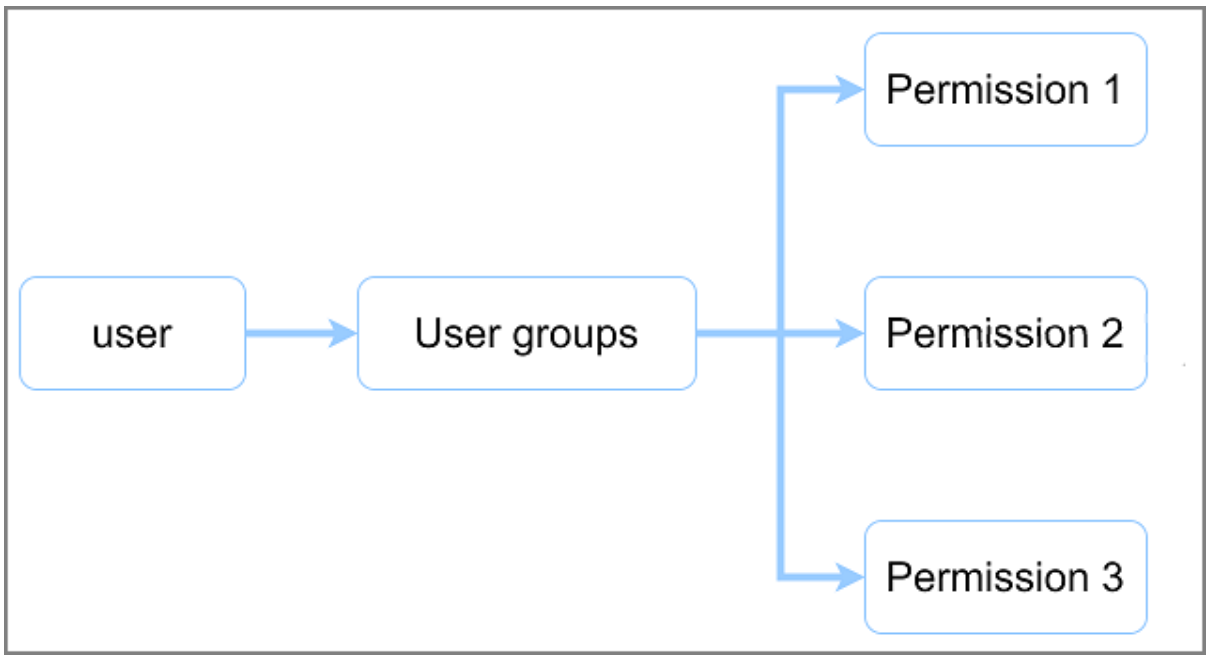


14 User Permission

14.1 Introduction

To prevent misoperation on important parameters during system operation, different permission levels must be set for differentiated access. In the configuration software, user management focuses on the protection of data and functions.

After creating users and user groups and assigning permissions, you can configure permissions for objects in the screen, as shown in the following figure. After they are transferred to the HMI, all screen objects configured with permissions will be protected, and users will only be able to access them if they log in successfully and are authorized.



Note:

- In user management, permissions are not assigned directly to users, but to user groups. For example, a user A is assigned to the "Commissioning Engineer" user group and granted corresponding permissions.
- You do not need to assign permissions to each user individually, but only to each group.

14.2 Basic Settings

14.2.1 Group Management

The group management editor displays a list of user groups and their permissions. You can manage user groups and assign them permissions.

Opening the group management editor

Click "User Permission". Double-click "Groups" to open the group editor (①: project view area; ②: table editing area; and ③: property view area).

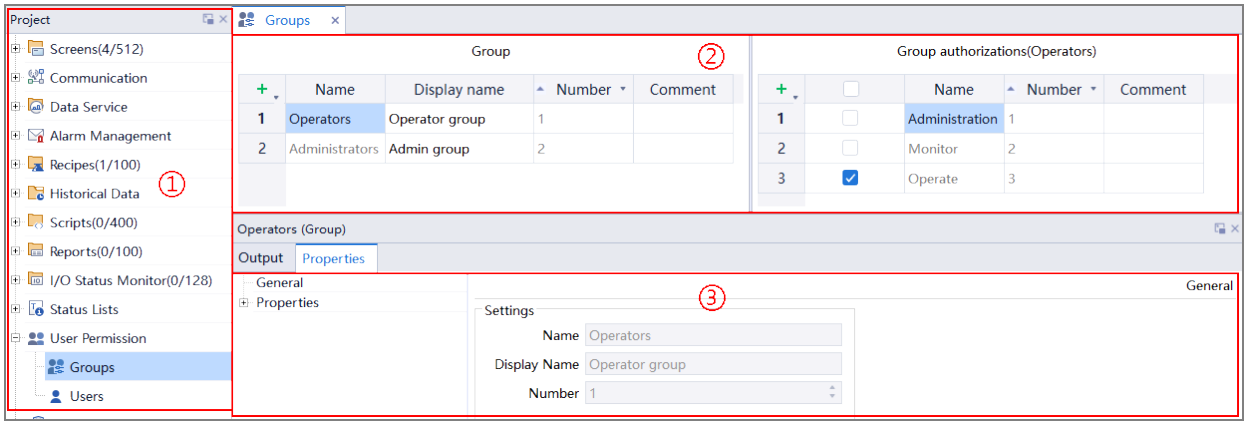


Table editing area

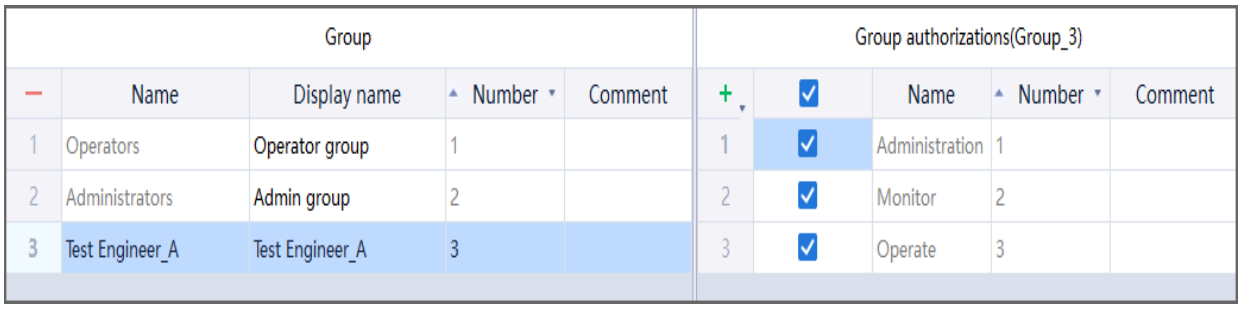
In this area, you can display and edit user groups and their permissions. For details, see 9.2.2 Alarm Configuration Editor.

Property view area

This area provides the same property setting feature as the table editing area.

Configuration

- Groups and group permissions displayed in gray in the group editor view are automatically generated by the system and cannot be edited by users.
- The system provides two default groups: administrators and operators. An administrator has all permissions by default, and operator permissions can be set as needed.
- If you check a permission in "Group authorizations", this permission is added to that group. As shown in the following figure, the "Test Engineer_A" group is assigned with the "Operate", "Administration", and "Monitor" permissions. This indicates that "Test Engineer_A" has the permissions for "Operation", "Administration", and "Monitor".

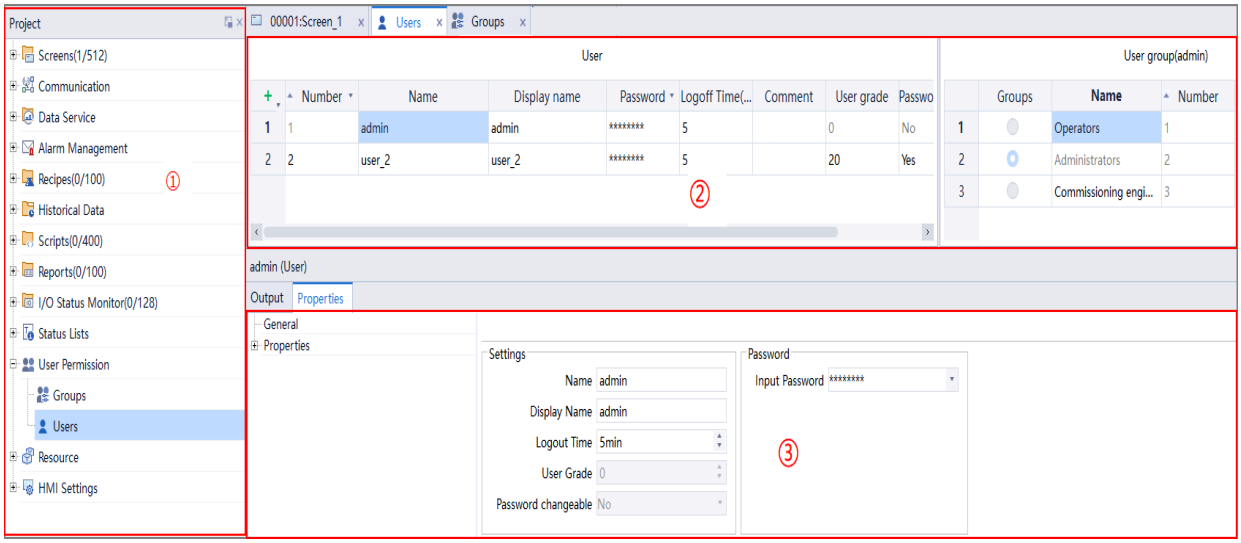


14.2.2 User Management

The user management editor displays users and user groups in tables. You can manage users and assign them to user groups.

Start the user management editor.

Click "User Permission" and double-click "User" to open the user editor (①: Project view area; ②: Table editing area; and ③: Property view area).



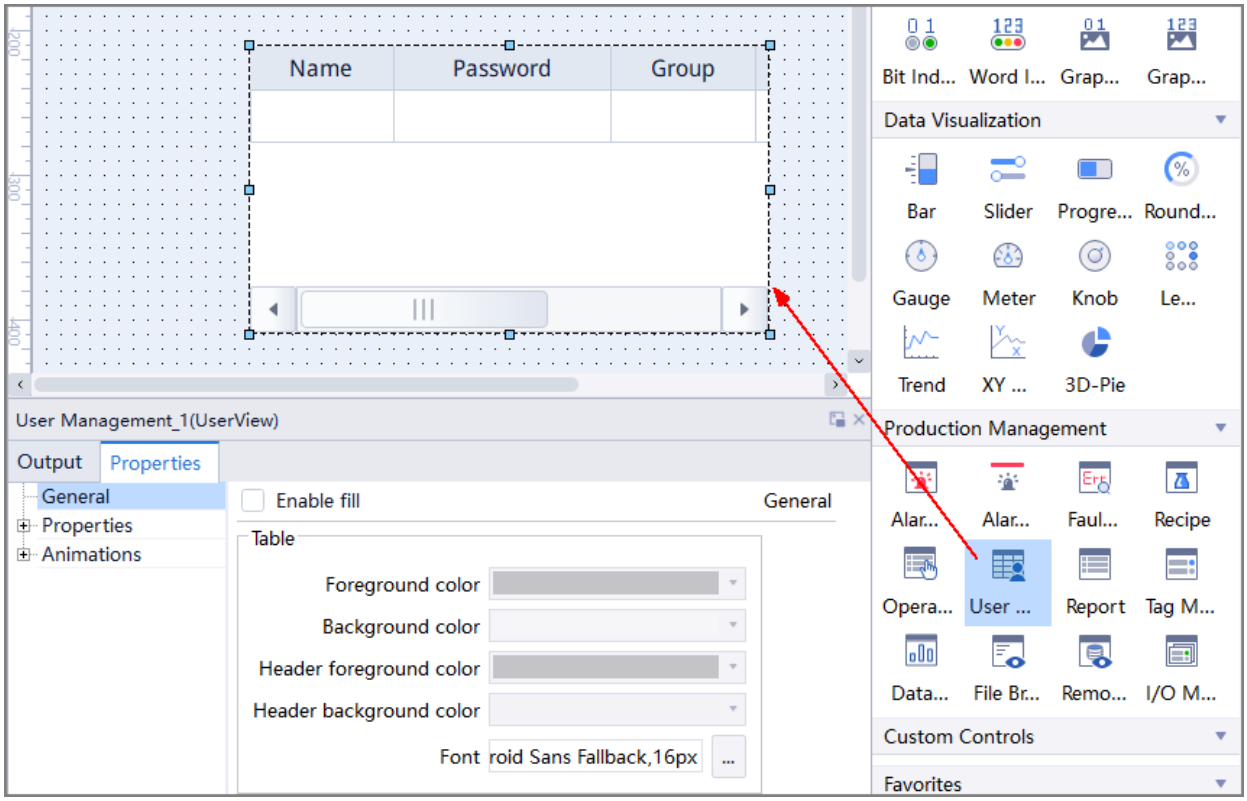
Note

- The smaller the value of the user level, the greater the permissions. Assume that the user level is 19 for User_1 and 20 for User_2. After User_1 logs in, User_2 is in the user view. After User_2 logs in, User_1 is not in the user view.
- When "Password changeable" is set to "No", only the login user and the administrator can change the password. When "Password changeable" is set to "Yes", other users with the same or higher levels can change the password according to hierarchical permission management rules.

14.3 Configuring the User Management View

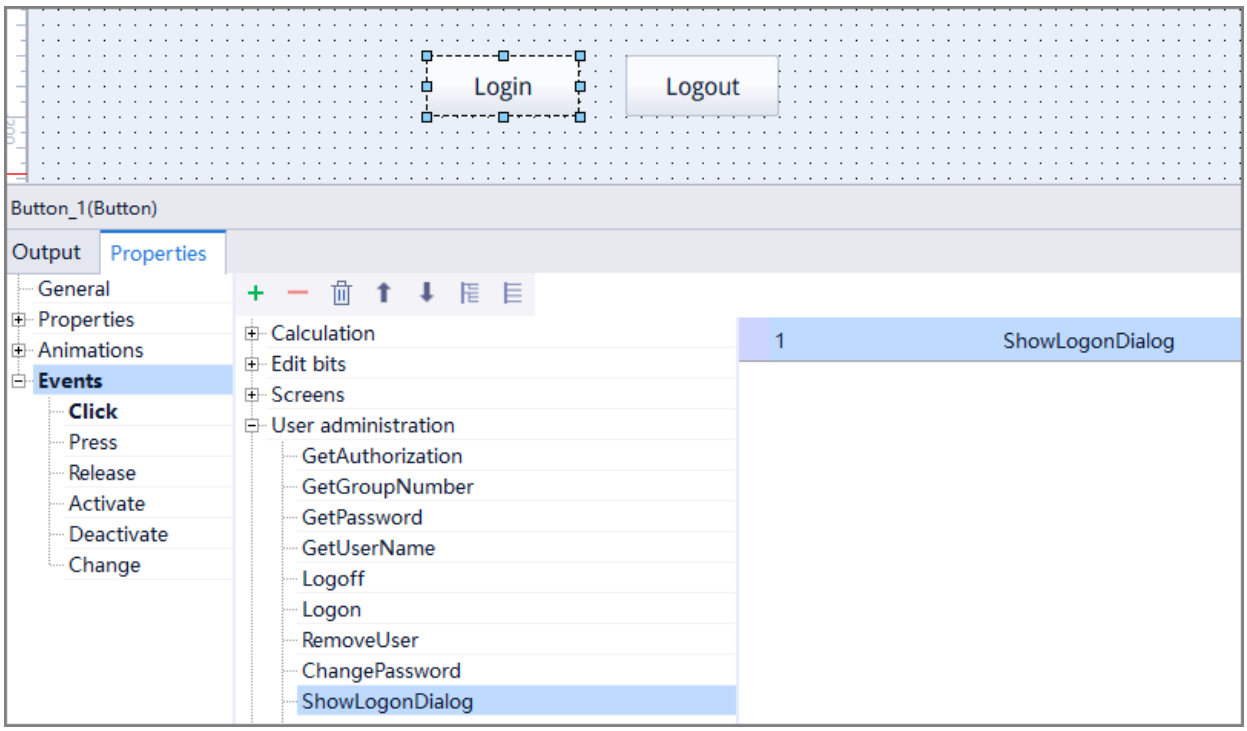
14.3.1 Creating a User Management View

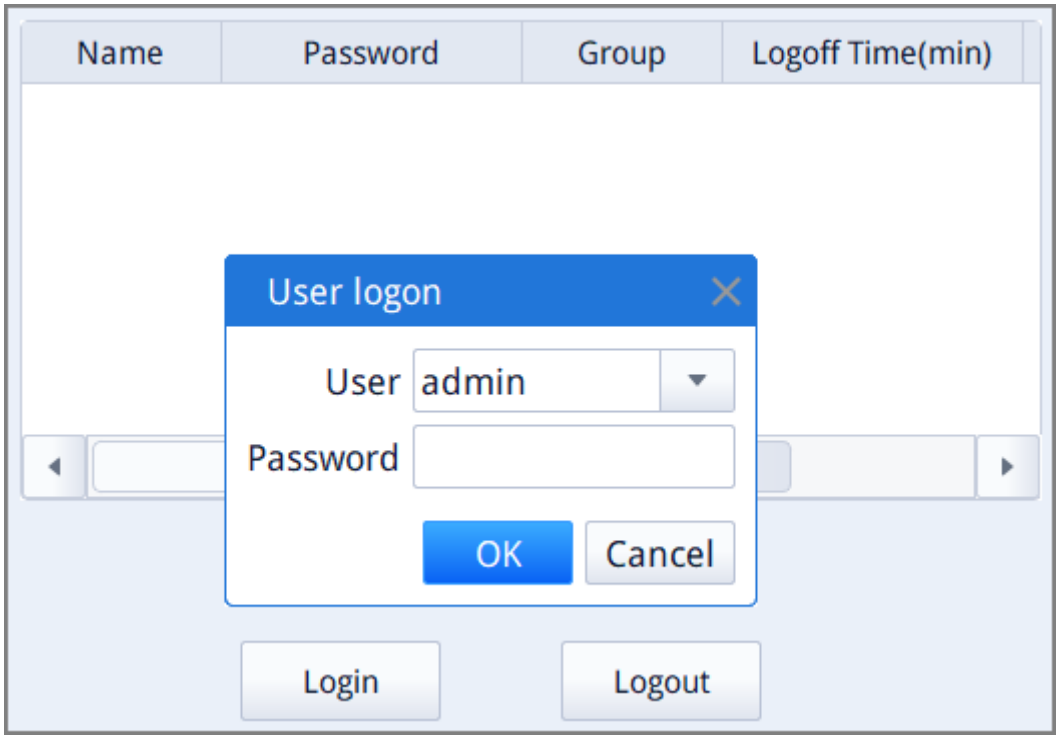
The user management view is an editing window for managing users in the HMI. Users with "management" permissions can manage all users in the user management view, while other restricted users can only manage themselves. In the "Tools" navigation tree on the right, choose "Production Management" > "User Management" and drag the control to the screen.



14.3.2 Configuring the User Login/Logout System Function

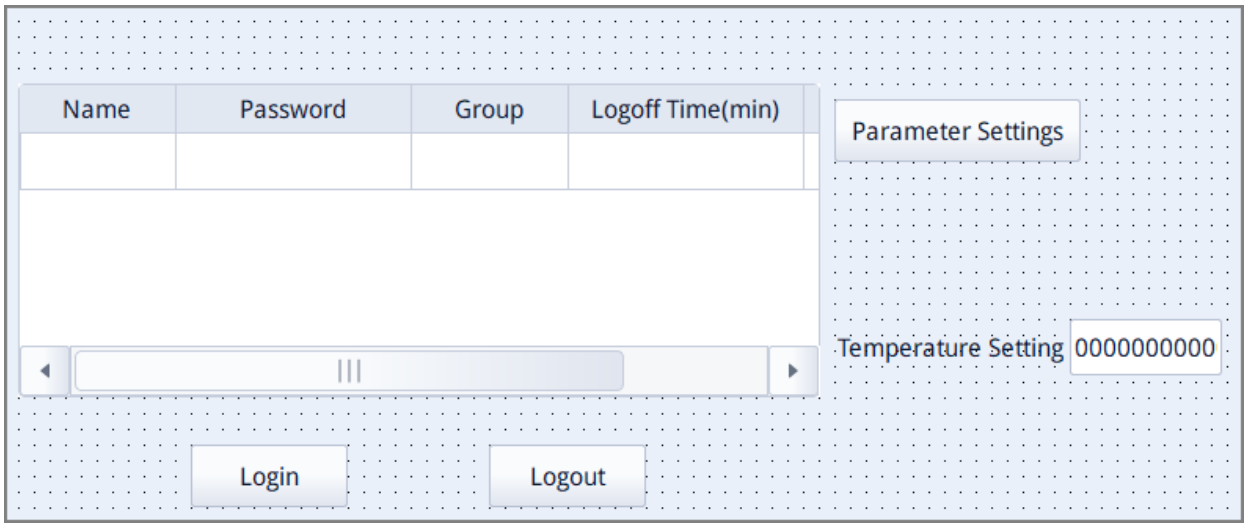
As shown in the following figure, select the "Login" button. Access the property view, and choose "Events" > "Click" > "User administration". In the expanded list of system functions, double-click "ShowLogonDialog" to add it to the button's click event. Then, you can click the Login button to execute the system function and display the login dialog box; In the same way, you can associate the "Logoff" function with the "Logoff" button so that you can click the button to log out.





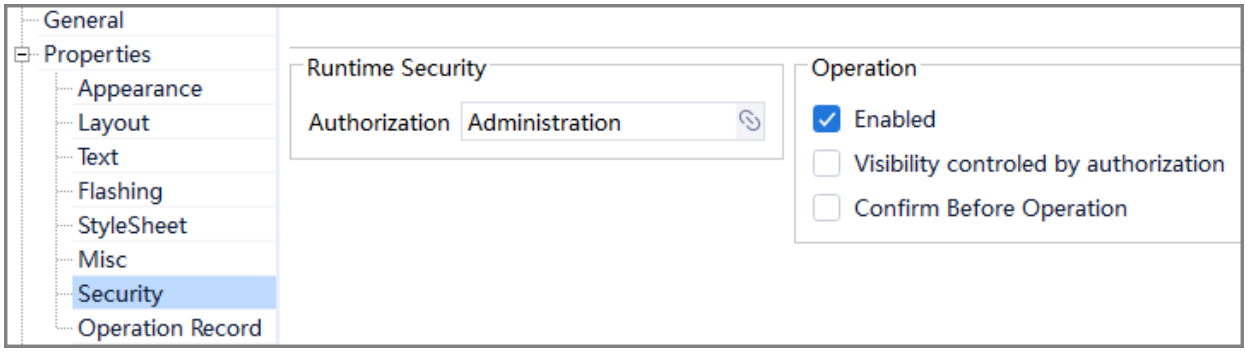
14.3.3 Application Example

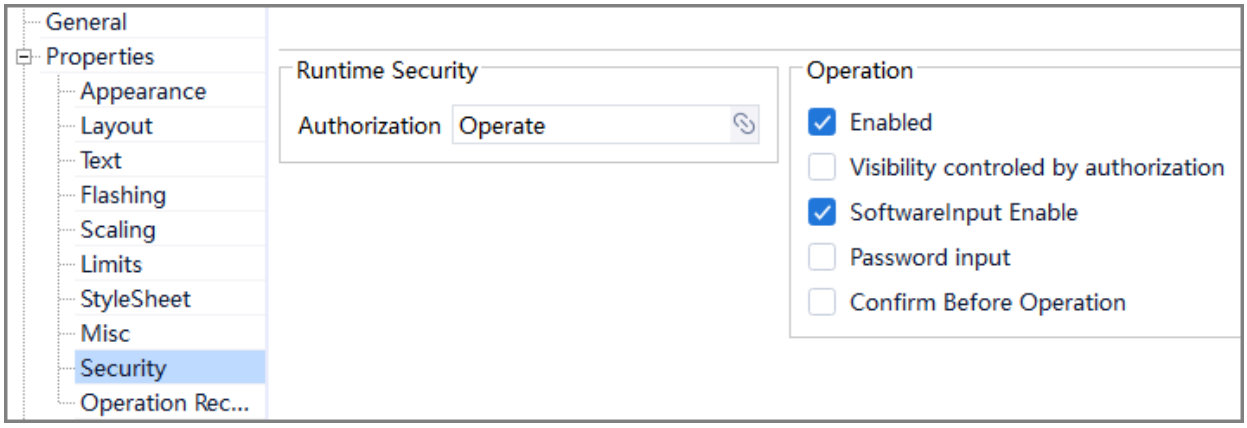
1. On "Screen_1", add the "Parameter Settings" button, the "Temperature Setting" text field, and the "Number IO Field" control, as shown in the following figure.



2. Set permissions of the "Parameter Settings" button and the "Number IO Field" control.

Select "Parameter Settings". On the "Properties" tab page, choose "Properties" > "Security", and then choose "Runtime Security" > "Authorization". From the drop-down list of "Authorization", select "Administration". Set the permission of the "Number IO Field" control to "Operate" in the same way.





3. Access HMI.

After the project is downloaded to the HMI, if you click the control for which the permission is configured without login or without permission, the "Login" dialog box is displayed to control the access.

Assume that "Jack" is granted with permissions of the "Parameter Settings" button and the numeric I/O field of "Temperature Setting", when you log in to the HMI with the account "Jack", the "Login" dialog box is not displayed.

Click "Logoff" and then log in with the account "Tom". If "Tom" only has the "Operate" permission, "Tom" can modify the temperature value, but the "Login" dialog box is still displayed when "Tom" clicks the "Parameter Settings" button.

15 Project Management

15.1 Compiling a Project

Compilation

After you have designed a project, you need to compile the project without any error before running it. Choose "Compiler" > "Compiler" in the menu bar, or click the  button in the toolbar, or press F5 to compile the configured project. After the compilation is completed, the output view displays the result, as shown in the following figure.

Output | Properties

Category	Description	Time
Info	Parsing Alarm!	17:44:45
Info	Parsing Recipe!	17:44:45
Info	Parsing Trend!	17:44:45
Info	Parsing I18n!	17:44:45
Info	Parsing Screen!	17:44:45
Warning	No data log assigned to 'Data Record_1'.	17:44:45
Info	Parsing Resources!	17:44:45
Info	Optimize images size ...	17:44:46

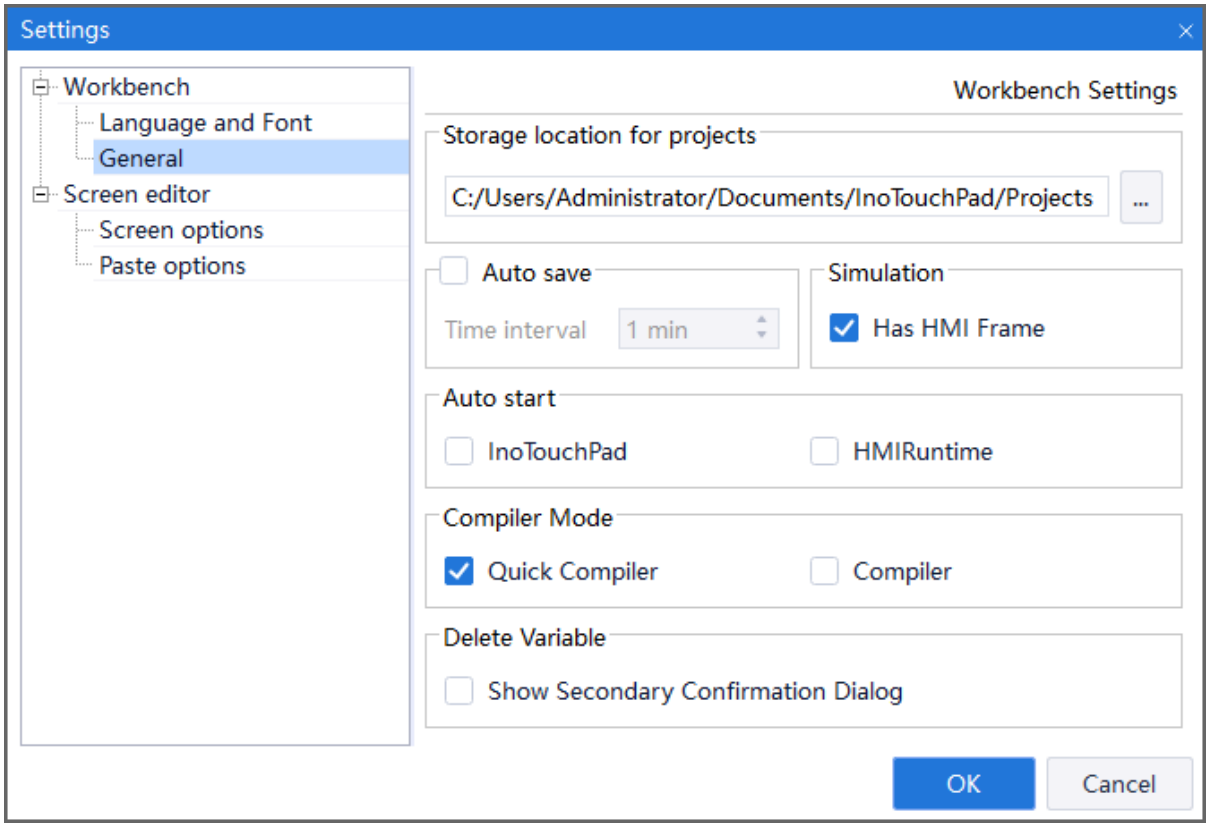
The result provides three types of information: Info, Warning, and Error. If some control properties are set incorrectly in the configuration, warnings or errors will be reported during compilation. You can locate those warnings and errors by clicking an item in the output window, and then modify the project to eliminate the warnings and errors.

Quick compilation

After a project has been compiled, you just need to modify some properties of the project in subsequent compilation tasks, which optimizes the compilation efficiency and project creation efficiency.

Procedure

1. Configure the quick compilation option. In the menu bar, choose "Options" > "Settings", as shown in the following figure.

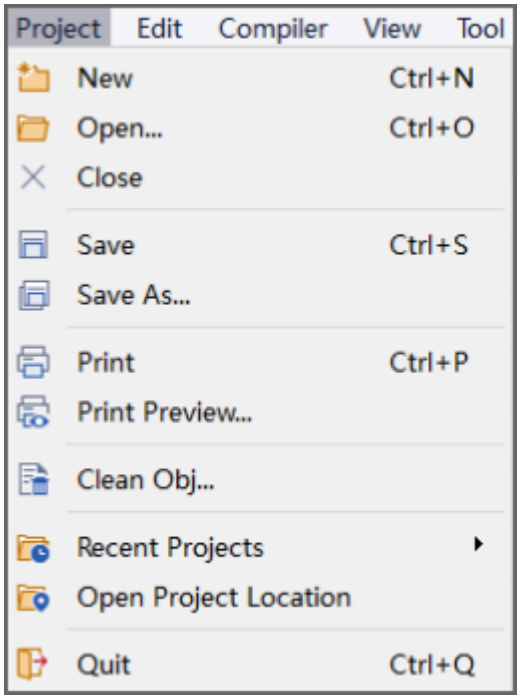


"Quick Compiler" is selected for "Compiler Mode" by default. For starting online simulator and offline simulator, packaging and downloading projects, and packaging runtime, the default compilation mode is "Compiler".

2. Choose "Compiler" > "I-Compiler" in the menu bar, or click the button in the toolbar, or press F6 to compile the configured project quickly.

> **CAUTION**
>
> Only errors, no warnings, are displayed in the statistics in the "Fast Compiler" mode.

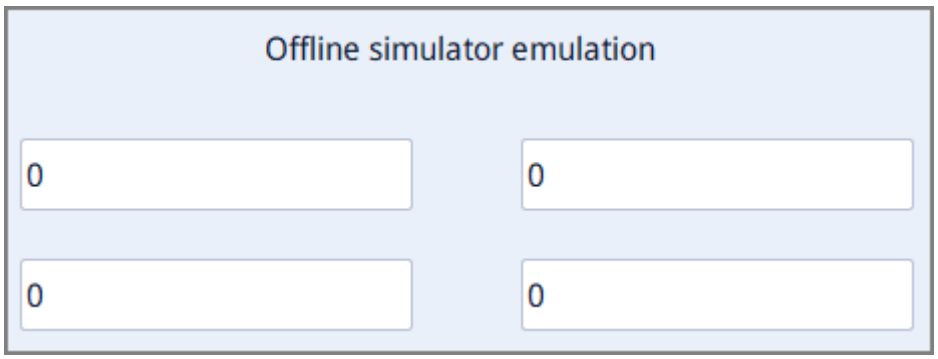
If some files are occupied and the generated compilation file is abnormal, choose "Project" > "Clean Obj..." to clean the files. You need to compile the project again by default, as shown in the following figure.



15.2 Simulation

15.2.1 Offline Simulation

Choose "Compiler" > "Start Offline Runtime" in the menu bar, click the button on the toolbar, or press Ctrl+R to view the offline simulation diagram of the new project. Offline simulation has two interfaces, with one simulating the touchscreen display and the other simulating the PLC for communication. The following figure shows an example of offline simulation for the touchscreen and Inovance H2U communication project.

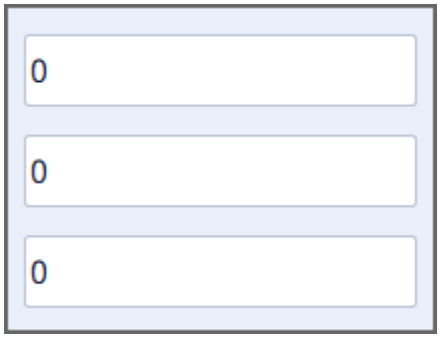


HMISimulator

	Tag	Data Type	Current value	Format	Write Cycle	Simulation	Set value	MinValue	MaxValue	Cycle	Start
1	LW 0	Int16	0	DEC	1	display		-32768	32767		
2	LW 1	Int16	0	DEC	1	display		-32768	32767		
3	LW 2	Int16	0	DEC	1	display		-32768	32767		
4	LW 3	Int16	0	DEC	1	display		-32768	32767		
5	---										

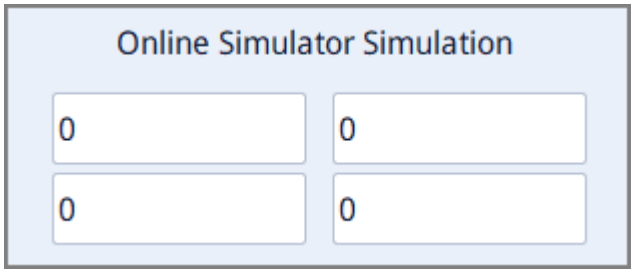
On the PLC simulation interface, you can input any value of the configured register address for offline simulation commissioning.
When the system tags are in offline simulation mode, reading internal device values is not supported. Values can only be written via HMISimulator.

For example, when configuring system tags Year, Month, and Day on the screen, the local device time fails to be retrieved during offline simulation, displaying a value of 0 (see figure below). Values can only be rewritten via HMISimulator.



15.2.2 Online Simulation

Choose "Compiler" > "Start Online Runtime" in the menu bar, or click the button on the toolbar. Then, you can see the online simulation diagram of the new project. There is only one online simulation screen to simulate the touchscreen display screen. The following figures show an example of online simulation for the communication project between the touchscreen and Inovance H2U controller.



You can use online simulation to simulate an HMI device on a PC and connect the HMI to a real PLC, which facilitates screen testing because you need not to download the screen program to the HMI every time. Before simulation, connect the PC and PLC through a serial port or network port communication cable. Since all serial ports of computers are RS232 ports, if the PLC port is RS485, an RS485 to RS232 converter is necessary. However, a download cable is usually used to connect the PC with the PLC.

Before connecting the PLC, you must set all communication parameters of the PLC correctly.

Since the computer simulates an HMI, if the COM1 port is used to connect to the PLC in HMI software settings, the computer and PLC need to be connected through the COM1 port of the computer. Otherwise. the "Start Online Runtime" feature cannot be executed correctly.

15.2.3 How to Use an Unauthorized Dongle

Introduction

You can unlock the online simulation duration by a hardware dongle or an unauthorized dongle (pure software authorization). The hardware dongle is easily lost and needs to occupy a USB port. Therefore, it is recommended to unlock the online simulation duration by an unauthorized dongle.

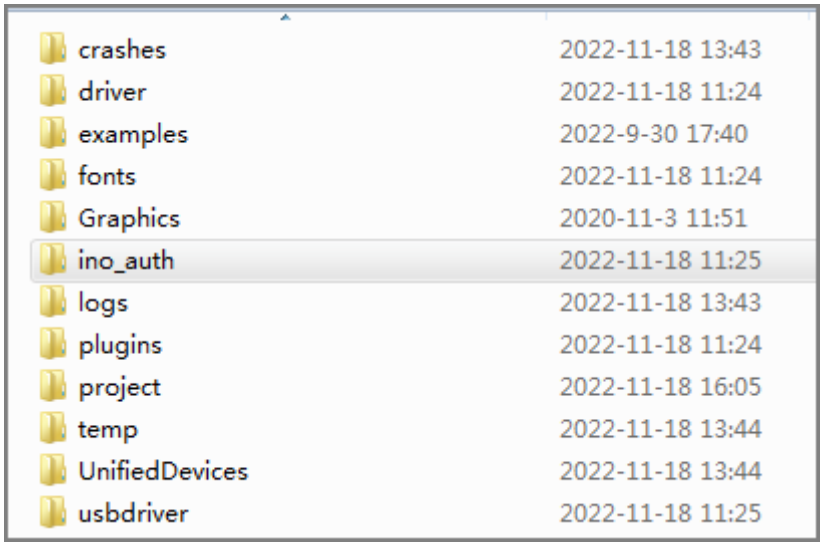
Condition

You have completed project commissioning.

Procedure

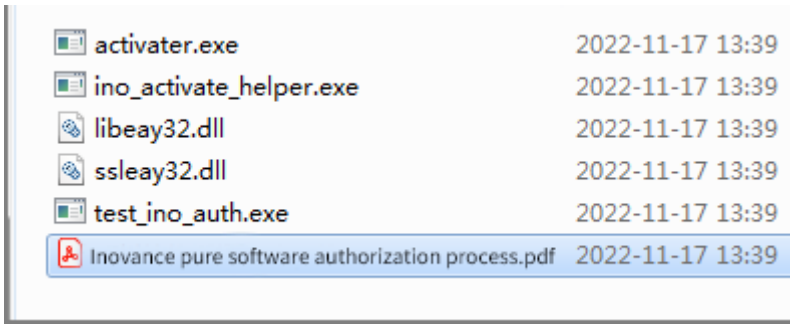
1. Pure software authorization tool

After InoTouchPad is installed, a pure software authorization tool and its instructions are available in the "ino_auth" folder in the software installation directory, as shown in the following figure.

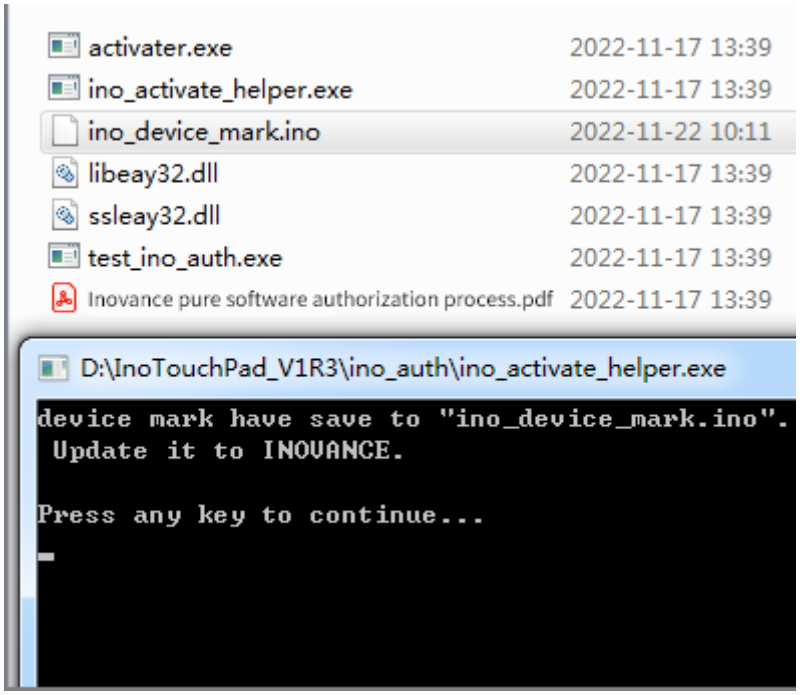


2. Inovance pure software authorization

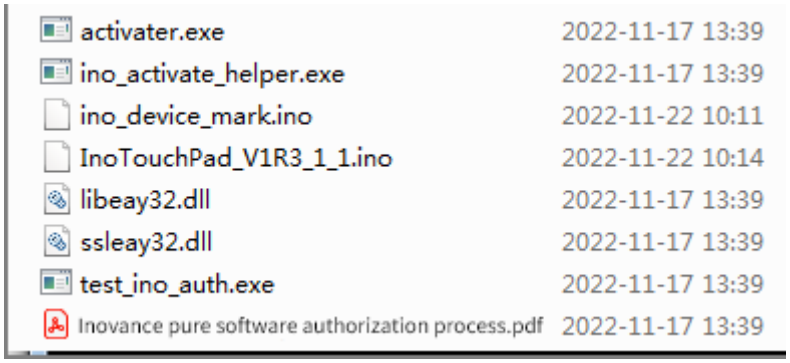
Access the "ino_auth" folder, open the "Inovance pure software authorization process.pdf" file, and read the authorization instructions, as shown in the following figure.



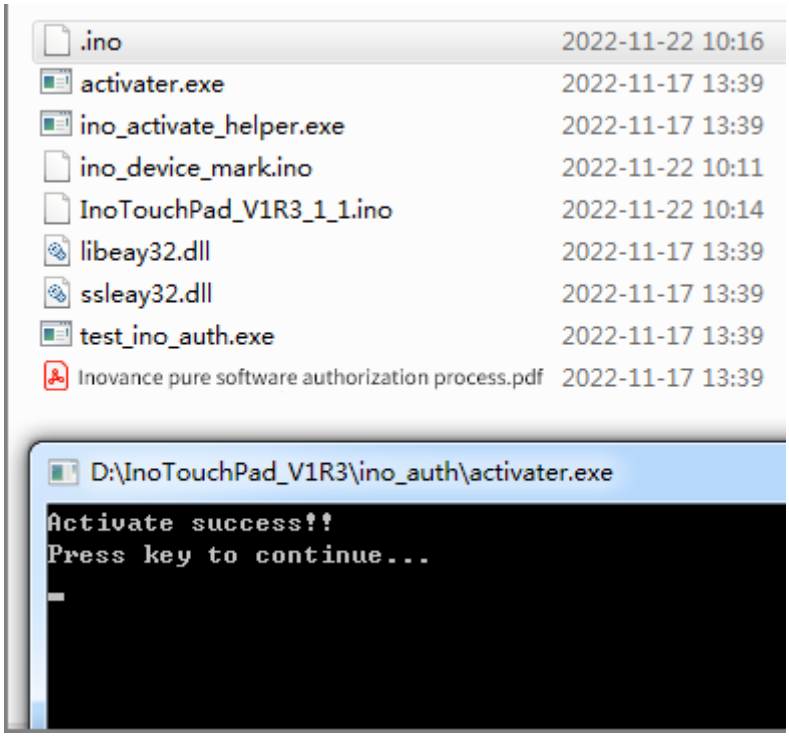
a. Run the "ino_activate_helper.exe" file. Then, the "ino_device_mark.ino" file is generated in the current directory, as shown in the following figure.



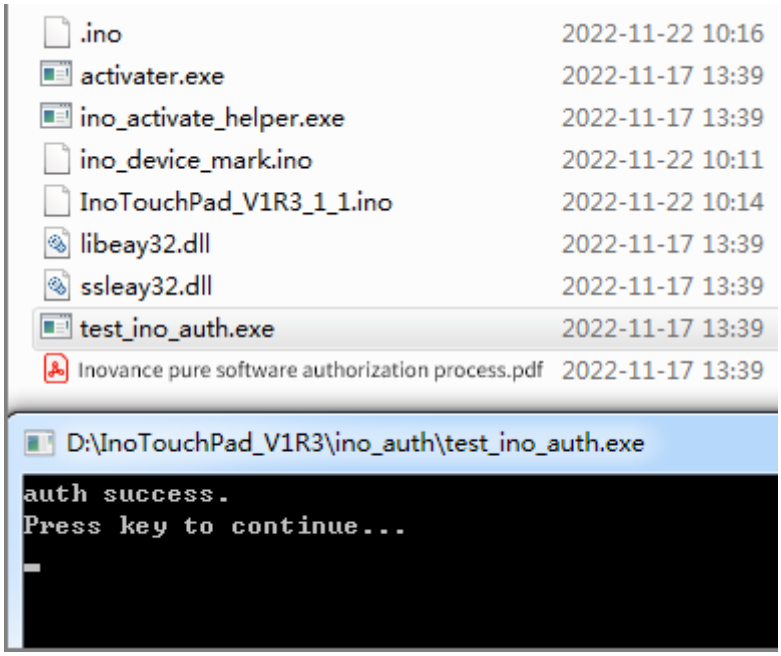
b. Send the "ino_device_mark.ino" file to Inovance engineers, upload the file to the dongle authorization platform server, and download the "license" file. The "InoTouchPad_V1R3_1_1.ino" file is generated, as shown in the following figure.



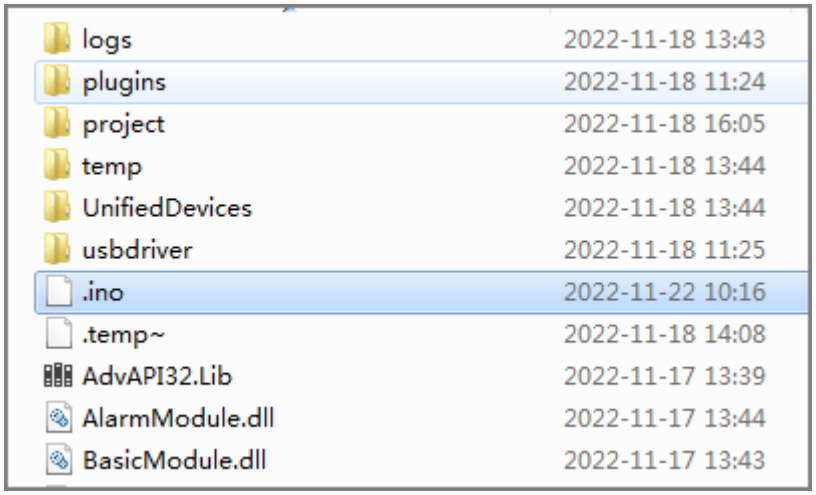
c. Run the "activater.exe" file and name the "license" file downloaded from the server. Then the license is activated and the ".ino" authorization file is generated, as shown in the following figure.



d. Run the "test_ino_auth.exe" file to check whether the ".ino" authorization file in the current directory is correct, as shown in the following figure.



e. Copy the ".ino" file to a directory of the same level of the "HMIRuntime.exe" directory, as shown in the following figure.



3. Other instructions

- The authorization file is bound to the computer instead of InoTouchPad. Each computer only needs to be authorized once.
- When running online simulation on the software, check whether the ".ino" authorization file is in a directory of the same level of the "HMIRuntime.exe" directory. After the authorization file is added, you need to run online simulation again.
- The authorization file is only effective during online simulation of InoTouchPad.

15.3 Uploading and Downloading a Project

15.3.1 Download

See the 3.3.5 Downloading a Project section.

15.3.2 Upload

Introduction

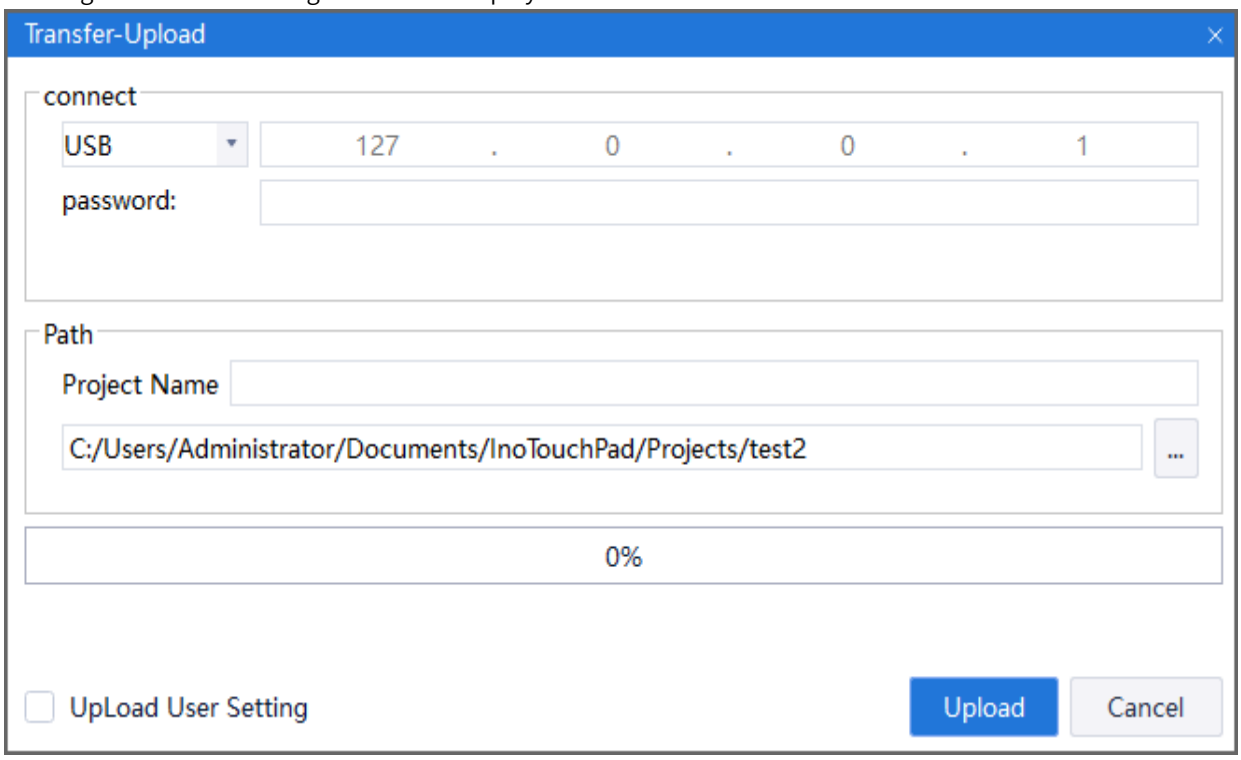
To upload the project running on the HMI to the PC, you can use the upload function in the software tool (note: the project size cannot exceed 30 MB).

Condition

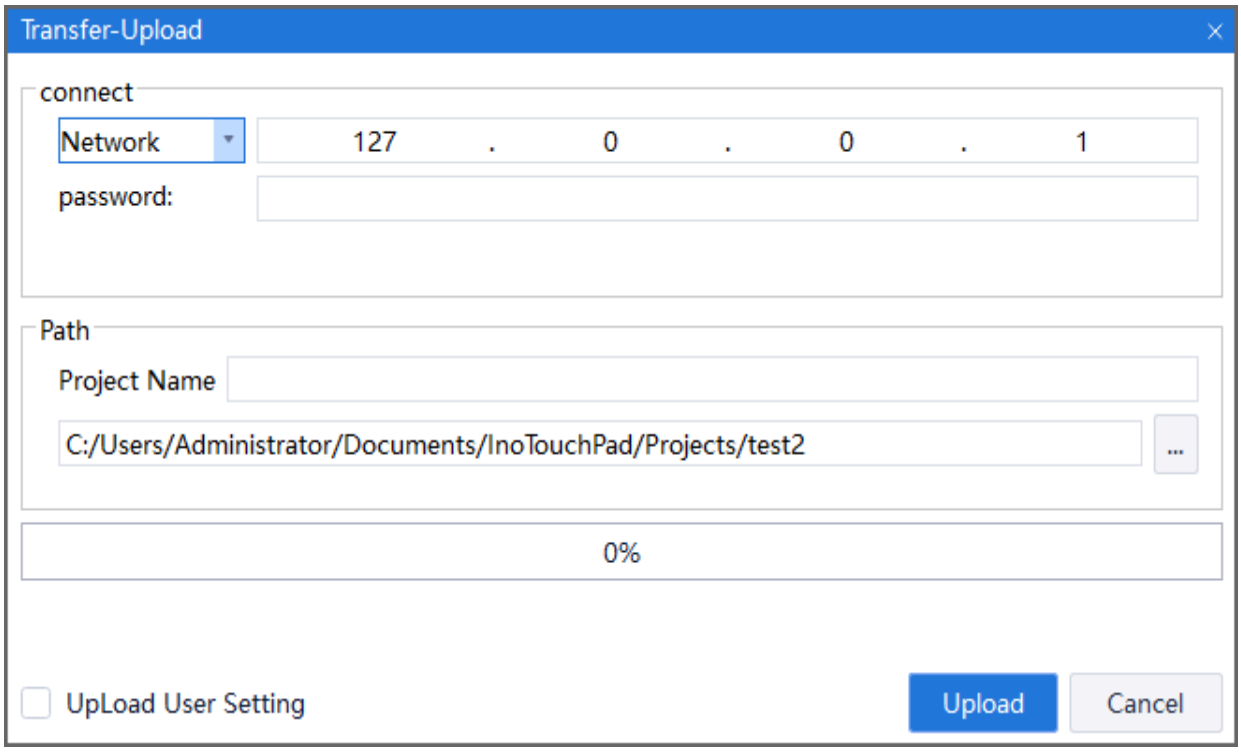
Communication between the HMI and PC has been established.

Procedure

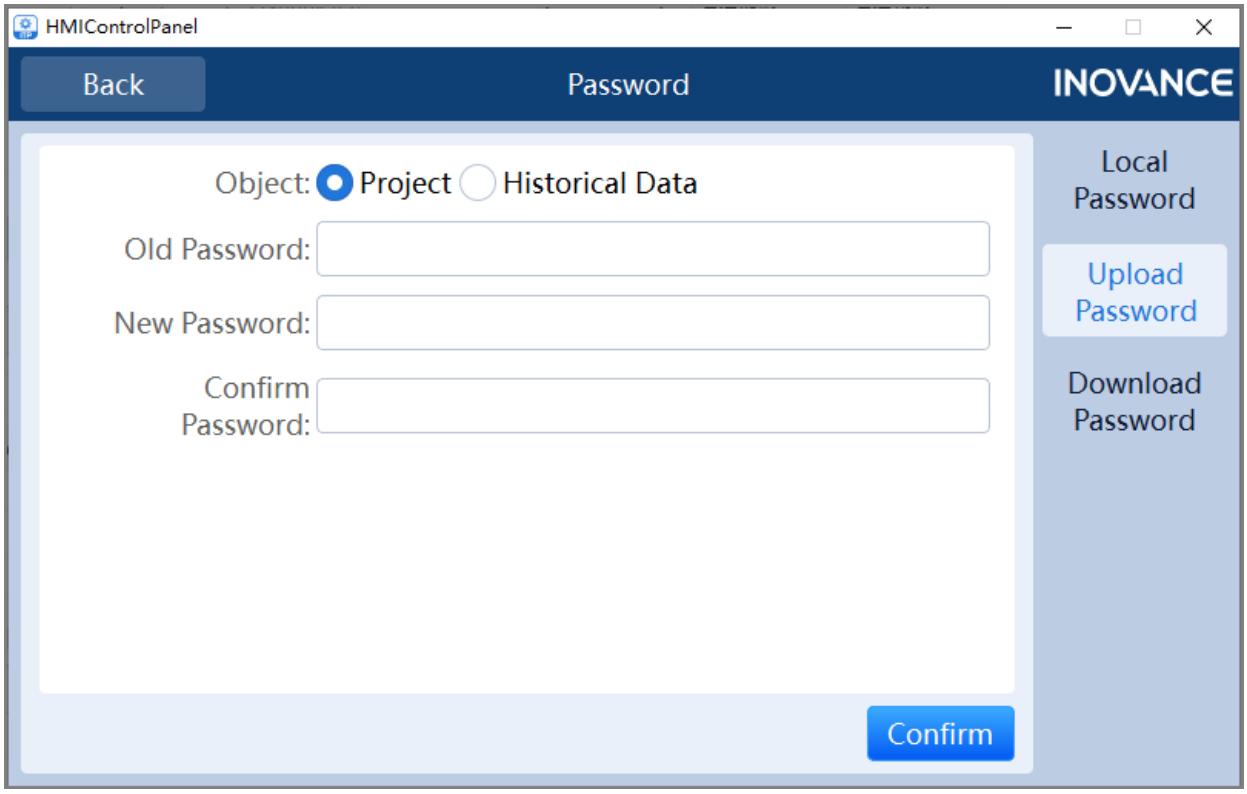
1. Choose "Compiler" > "Upload" in the menu bar at the top of the screen, click in the toolbar, or press F10. A dialog box shown in the figure below is displayed.



2. If you set "connect" to "Network", you need to enter the correct IP address and password of the connected touchscreen, and use a network cable for connection. If you set "connect" to "USB", you need to use an USB cable for connection, as shown in the figure below.



3. The password for upload to the touchscreen is null by default. You can choose "HMIControlPanel" > "SysSetting" > "Password" on the touchscreen, set the upload password, and then click "Apply", as shown in the figure below.

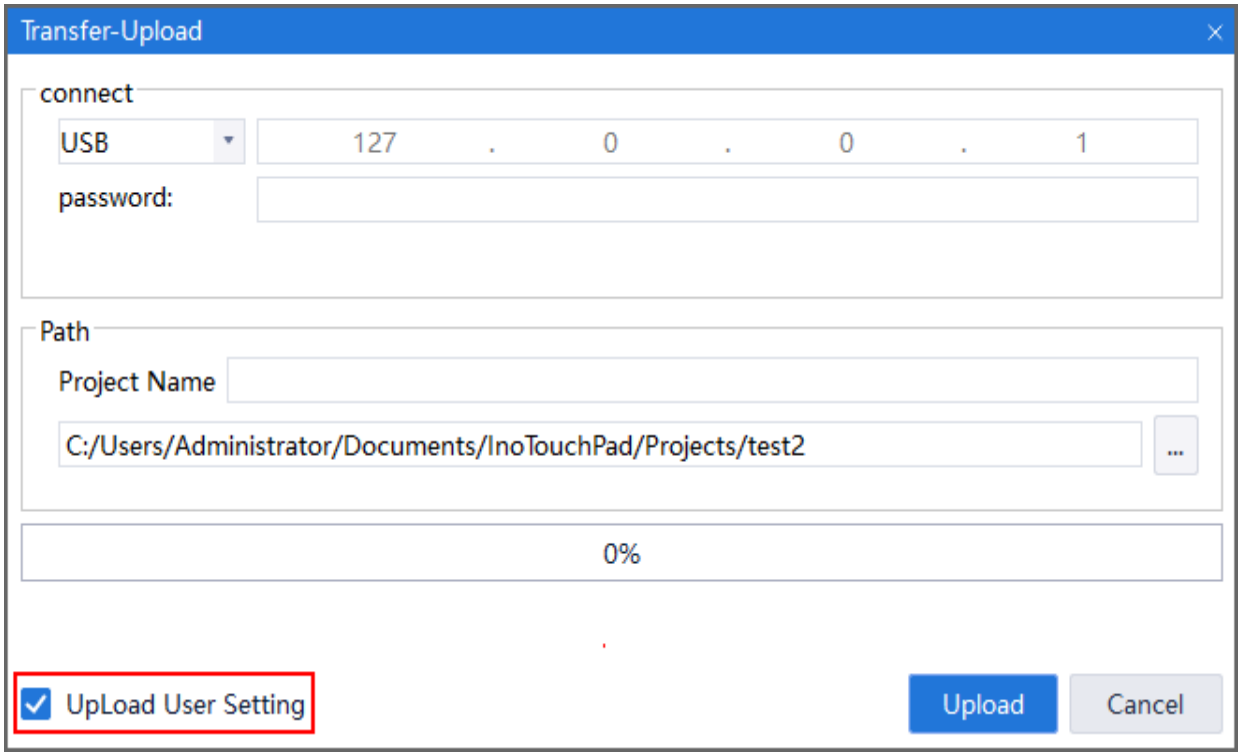


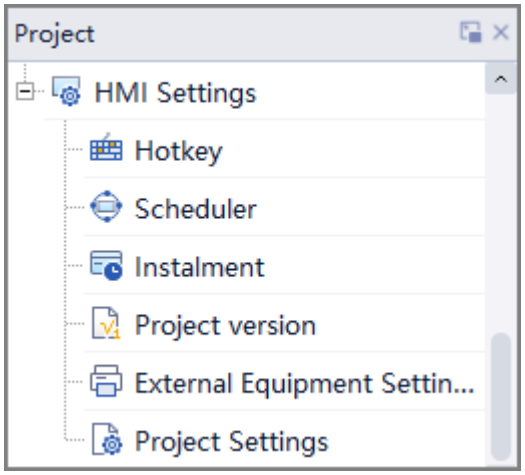
4. Enter a matching password, set a valid custom project name, and select the path to upload the project. Then the project can be uploaded to the PC, as shown in the figure below.

5. Click "Upload". When the progress bar is complete, the upload is successful and the currently uploaded project will be opened. If another project has been opened before the upload, you will be asked whether to save the current project before opening the uploaded project.

Upload User Settings

When you check "Up load user Setting", you can perform customization on the HMI screen. After uploading the project to the PC, open the software, choose "Project" > "HMI Settings" on the left side of the screen to view the customization, as shown in the figure below.

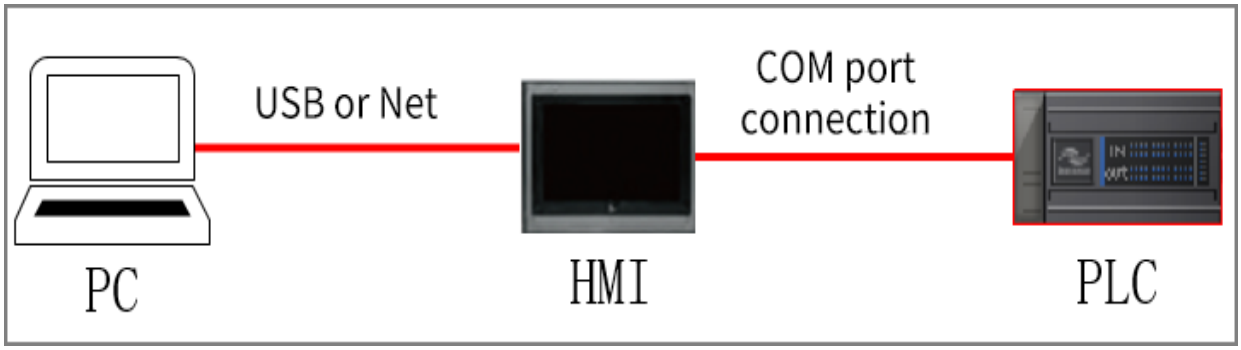




15.4 Pass-Through

15.4.1 Application Scenarios

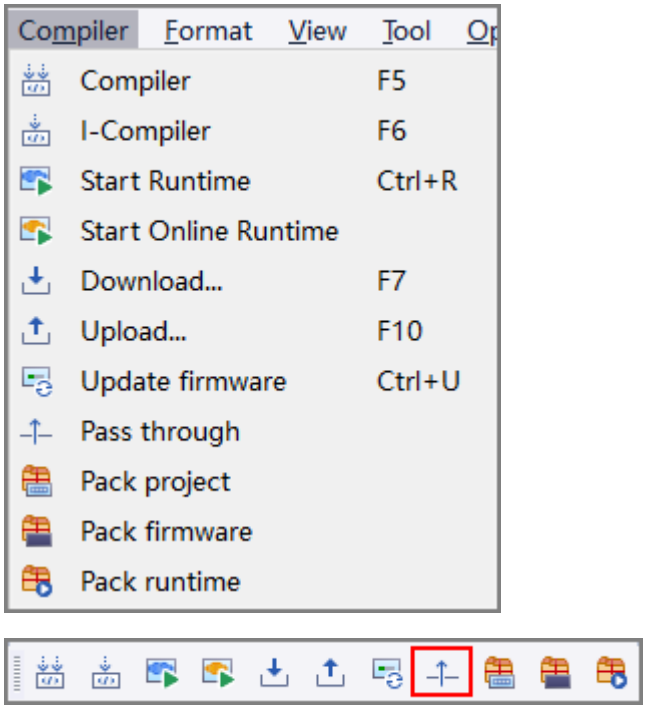
The pass-through feature is specifically designed for Inovance H1U, H2U, and H3U series PLCs. When the PC is not directly connected to a PLC, this feature connects the PC to the HMI and the HMI to the PLC for indirect connection between the PC and PLC, as shown in the following figure.



The pass-through feature is mainly used when the onsite PLC is installed inside the chassis and the PC cannot be directly connected to the PLC. It replaces direct connection with indirect connection.

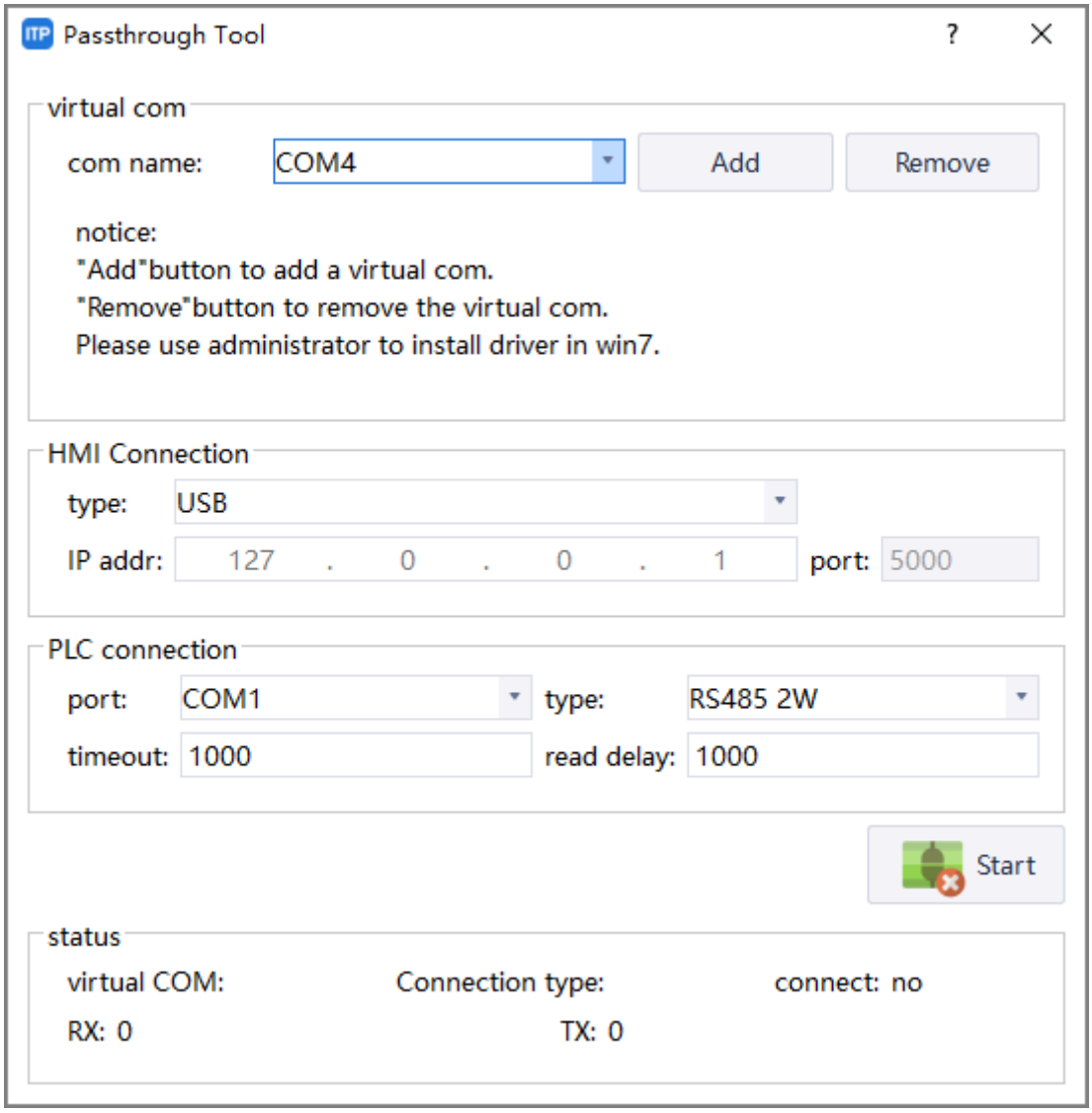
15.4.2 Procedure

In the "Compiler" tab and toolbar of the menu bar of InoTouchPad, locate the pass-through icon, and click "Pass through", as shown in the following figure.

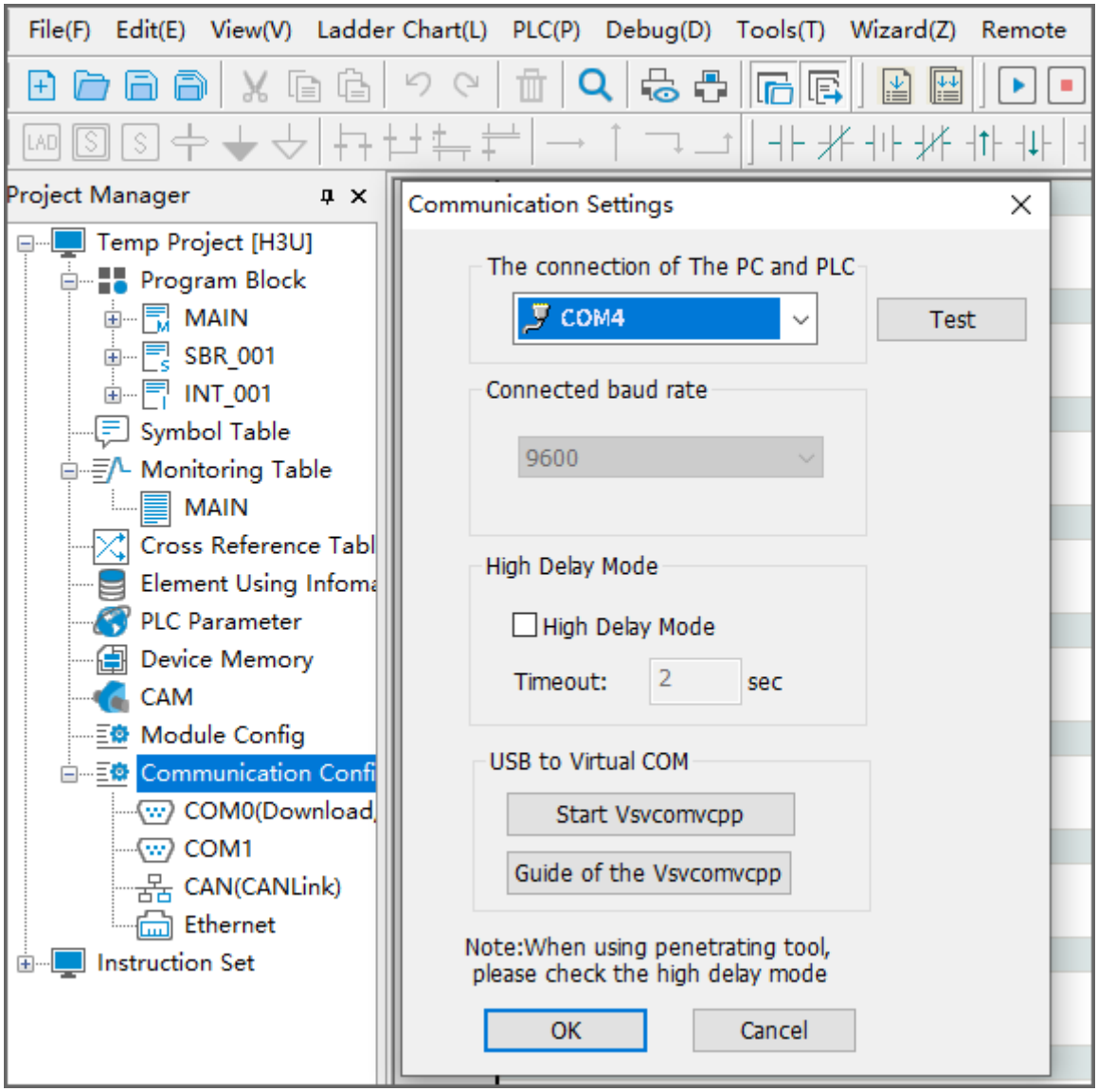


On the "Passthrough Tool" page displayed, set the parameters:

1. Add a virtual serial port to connect with Inovance PLC software tool AutoShop.
2. In "HMI Connection" -> "type", you can set the type of connection between the PC and HMI. Select either "USB" connection or "Net" (Ethernet) connection. If Ethernet is selected, you need to configure the "IP addr" below, which must match the IP address of the HMI device.
3. Under "PLC connection", select the port (such as COM1 on the field) for HMI and PLC connection and set other parameters.
4. Click "Start".



After the parameters are set and the pass-through feature is enabled, you need to start AutoShop. As shown in the following figure, set the serial port (consistent with the virtual serial port set in the pass-through tool) to COM4 in communication settings of AutoShop. Then you can operate the PLC connected to the HMI in AutoShop.



15.5 Packaging Project Files

15.5.1 Overview

Project files can be packaged by project, firmware, or runtime.

1. To package a project, select the target project. Two ZIP files, the project file and the firmware file, will be generated, which can be used for updating the project and firmware by using a USB drive or SD card.
2. To package the firmware, only the firmware files are packaged, and the project files are not packaged. The HMI firmware can be updated by a USB drive or SD card.
3. To package a runtime, select the target runtime. Then the runtime file is generated.

15.5.2 Packaging a Project

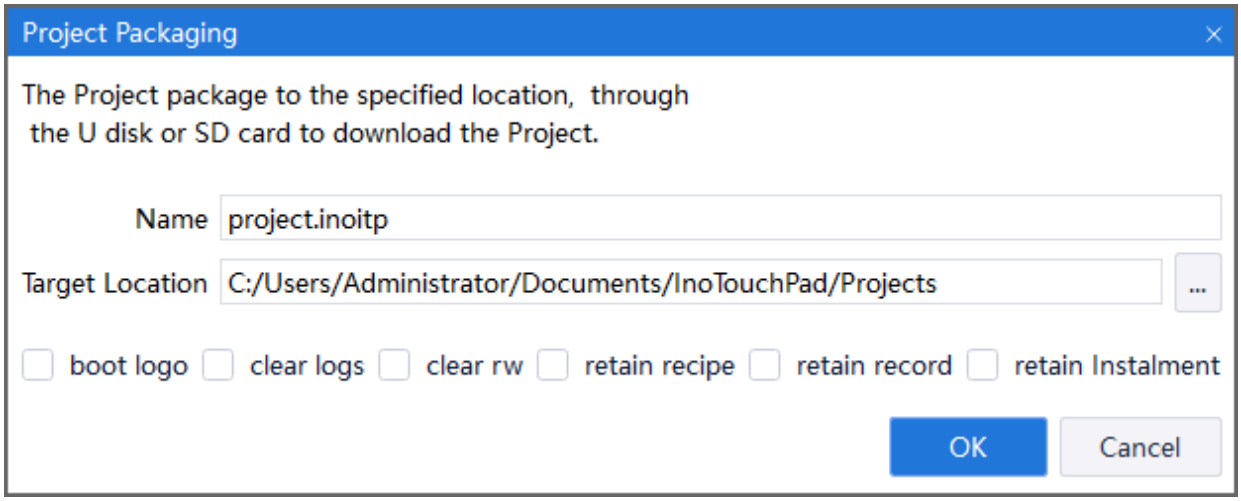
When you package a project, the project file and the firmware file will be generated, which can be used for updating the project and firmware by using a USB drive or SD card.

Procedure

1. Choose "Compiler" > "Pack project" in the menu bar, or click  in the toolbar.
2. In the "Project Packaging" window displayed, set the project name and target location, and then click "OK".

Note

- If the name of the packaged project is not ended with ".inoitp", the system automatically adds the suffix ".inoitp" to the packaged project file.
- You can select one or more options among "boot logo", "clear logs", "clear rw", "retain recipe", "retain record", and "retain installment" to retain or clear some content during project package. No option is selected by default.
- After packaging, two files are generated. The default name of the project file (.inoitp) is "project.inoitp", and the default name of the firmware file (.zip) is "firmware.zip" (the firmware upgrade file name cannot be modified).
- The project file (.inoitp) can only be used to update the HMI project through a USB drive. The file cannot be opened or decompressed.



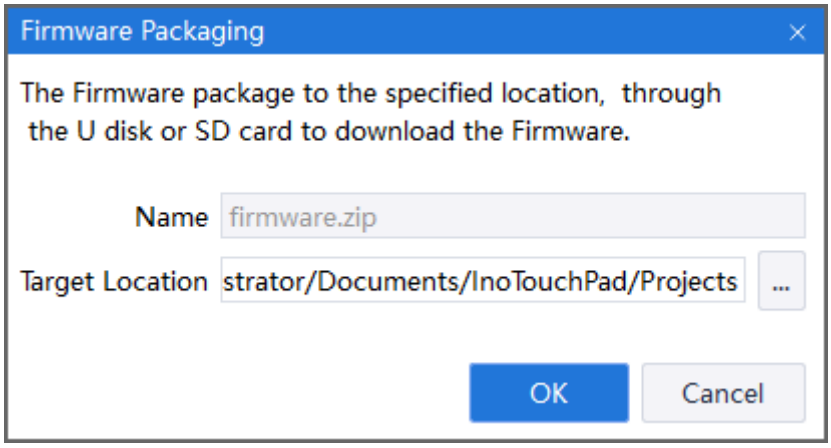
15.5.3 Packaging Firmware

You can update the touchscreen firmware by copying the firmware packaged by InoTouchPad to a USB drive or SD card.

Procedure

Case 1: Package the firmware when the project is opened

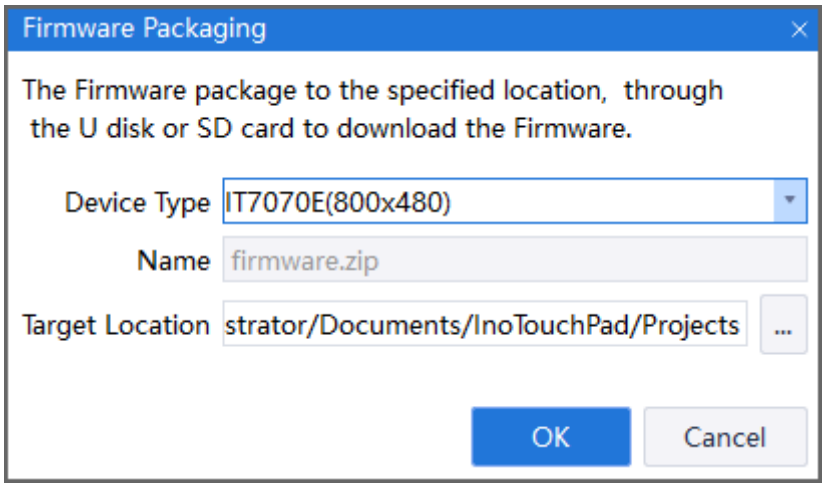
Choose "Compiler" > "Pack firmware" in the menu bar, or click in the toolbar. Set "Target Location", and click "OK".



Case 2: Package the firmware when the project is not opened

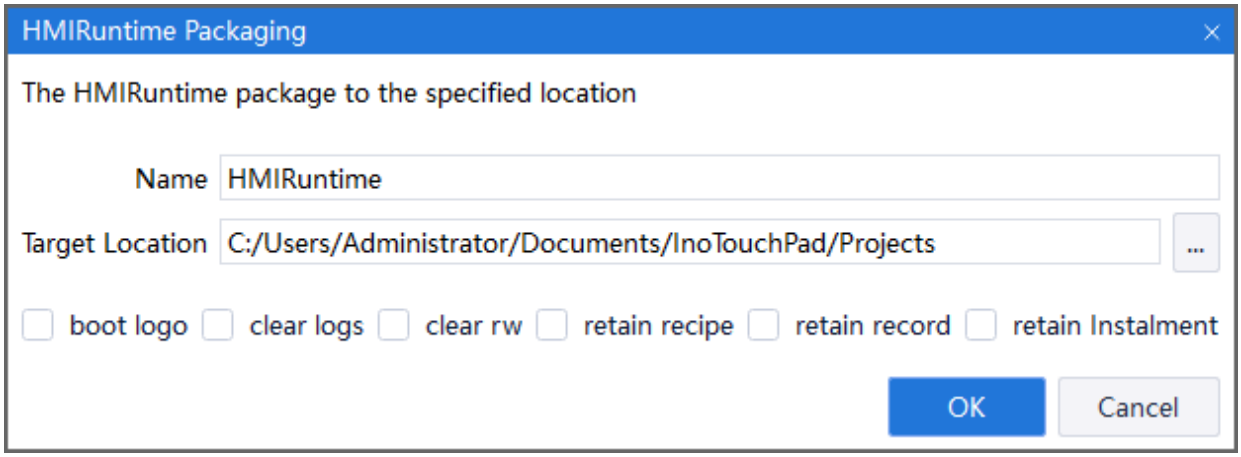
Choose "Compiler" > "Pack firmware" in the menu bar, select "Device type", set "Target Location", and click "OK".

> Note
>
> The device type set here must be the same as the device type of the firmware to be updated.



15.5.4 Packaging Runtime

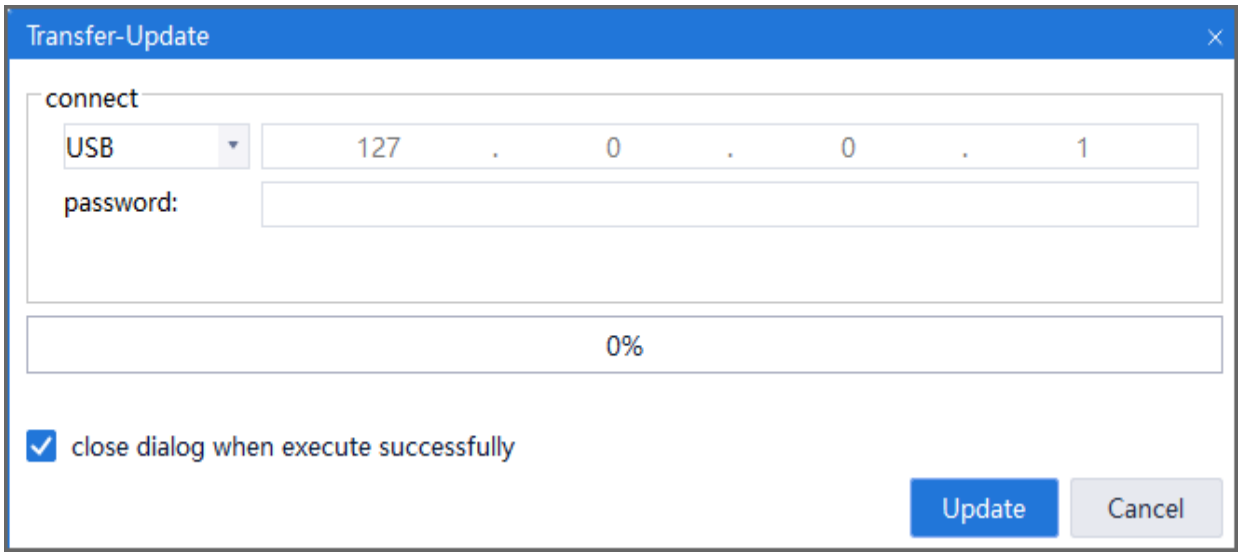
Copy the runtime packaged by InoTouchPad to a USB drive or SD card. Choose "Compiler" > "Pack runtime" in the menu bar, or click the button (note the button prompt). The firmware packaging page is displayed, as shown in the figure below. Check the content you want to keep or clear according to the project packaging instructions.



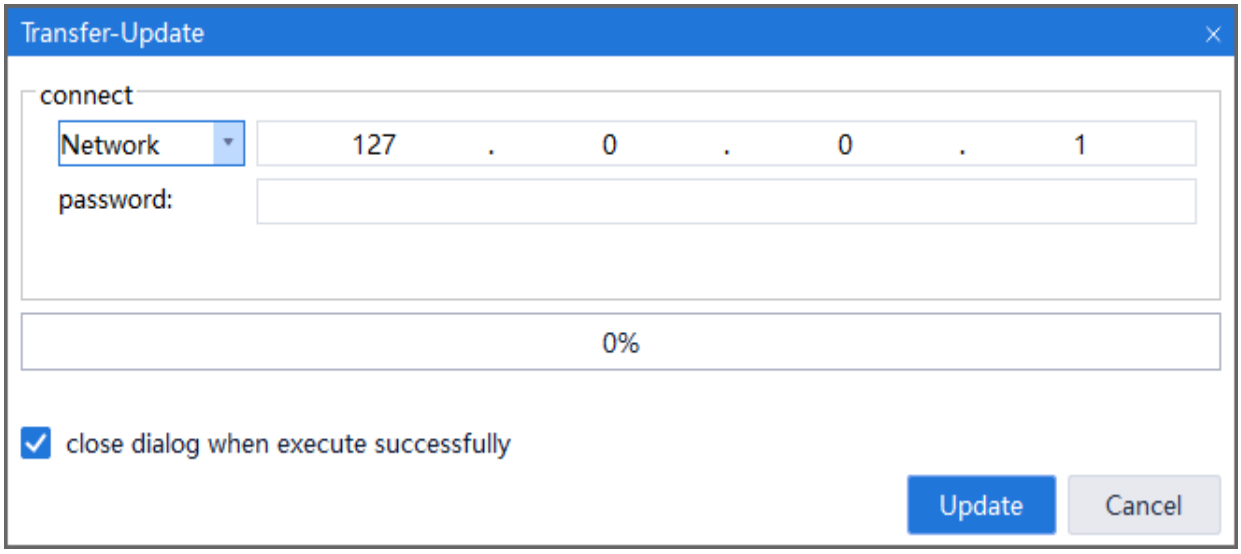
15.6 Firmware Update

When you have modified the touchscreen firmware for new requirements, you need to update the modified firmware. Generally, the firmware update occurs after InoTouchPad update is released, and the version of the update must be higher than that of the old firmware.

Choose "Compiler" > "update firmware" in the menu bar, or click the  button in the toolbar or press Ctrl+U. The following dialog box is displayed:



Based on the connection method between the touchscreen and the PC (USB or Ethernet), select the connection method, and input the IP address of the connected touchscreen correctly:



The password for firmware update is null by default. If you have set an update password in the control panel of the touchscreen (the download password is used as the update password), you need to enter the correct password before updating.

In addition, you also need to set the storage path of the firmware (usually the installation path of InoTouchPad). Click "Update". When the progress bar reaches 100%, the firmware is updated and the touchscreen will be started automatically. If any error occurs, a prompt is displayed.

15.7 Uploading and Downloading a Project, Updating the Firmware, and Transmitting Data in HMI Through a USB Drive

You can upload and download a project, update the firmware, and transmit data in HMI through a USB drive.

Preconditions

The project has been packaged. For details, see 15.5.2 Packaging a Project. The packaged project file and firmware upgrade file have been transferred to the USB drive.

Downloading procedure

1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

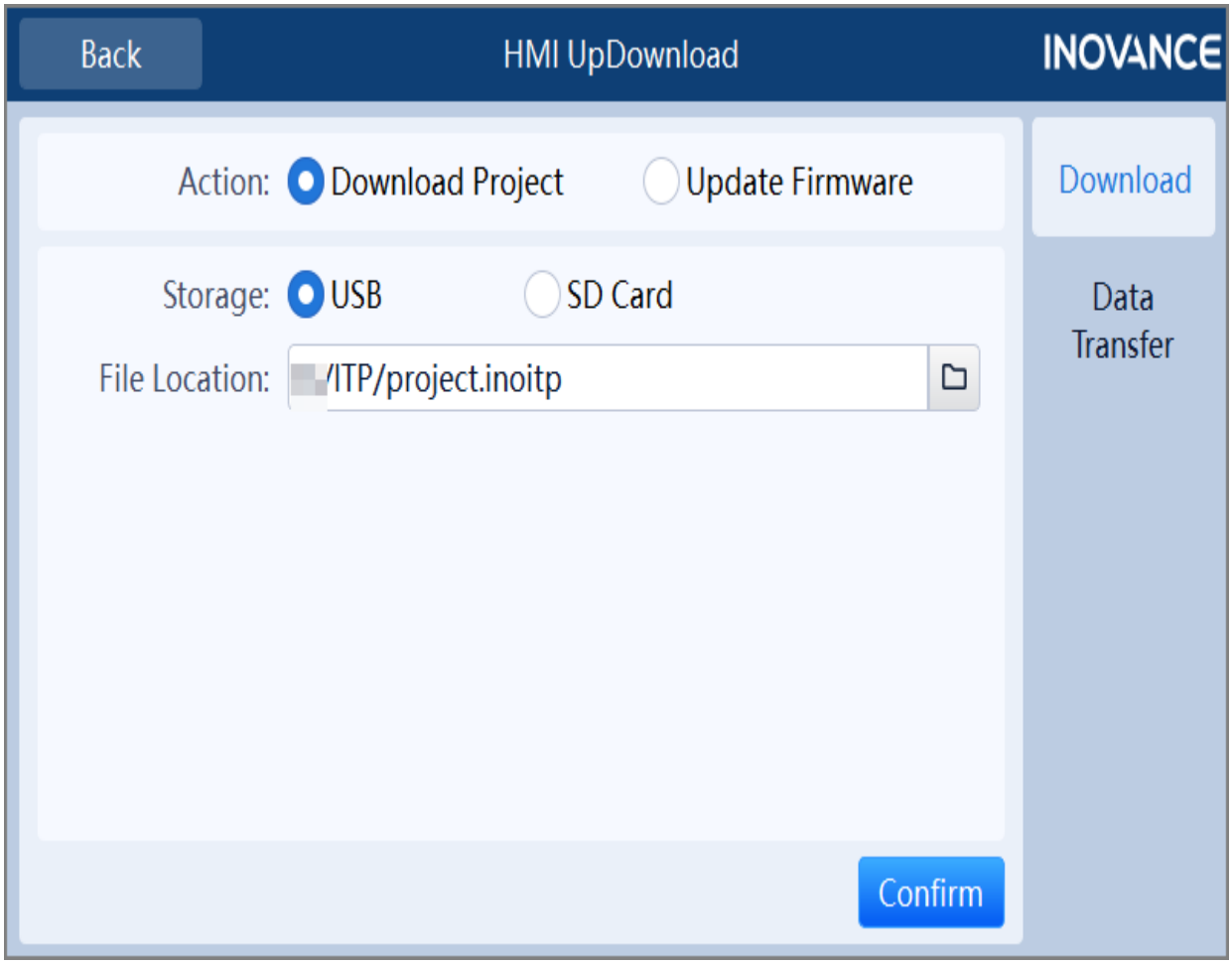
2. On the "HMI UpDownload" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download Project".
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .inoitp or .zip.

Note

Click "Confirm". A message is displayed, asking whether to update the firmware concurrently. Dialog box:

- If you click "No", only the project will be downloaded and the firmware will not be updated.
- If you click "Yes", the firmware will be updated and then the project will be automatically downloaded. The firmware upgrade file and the project file must be in the directories of the same level.



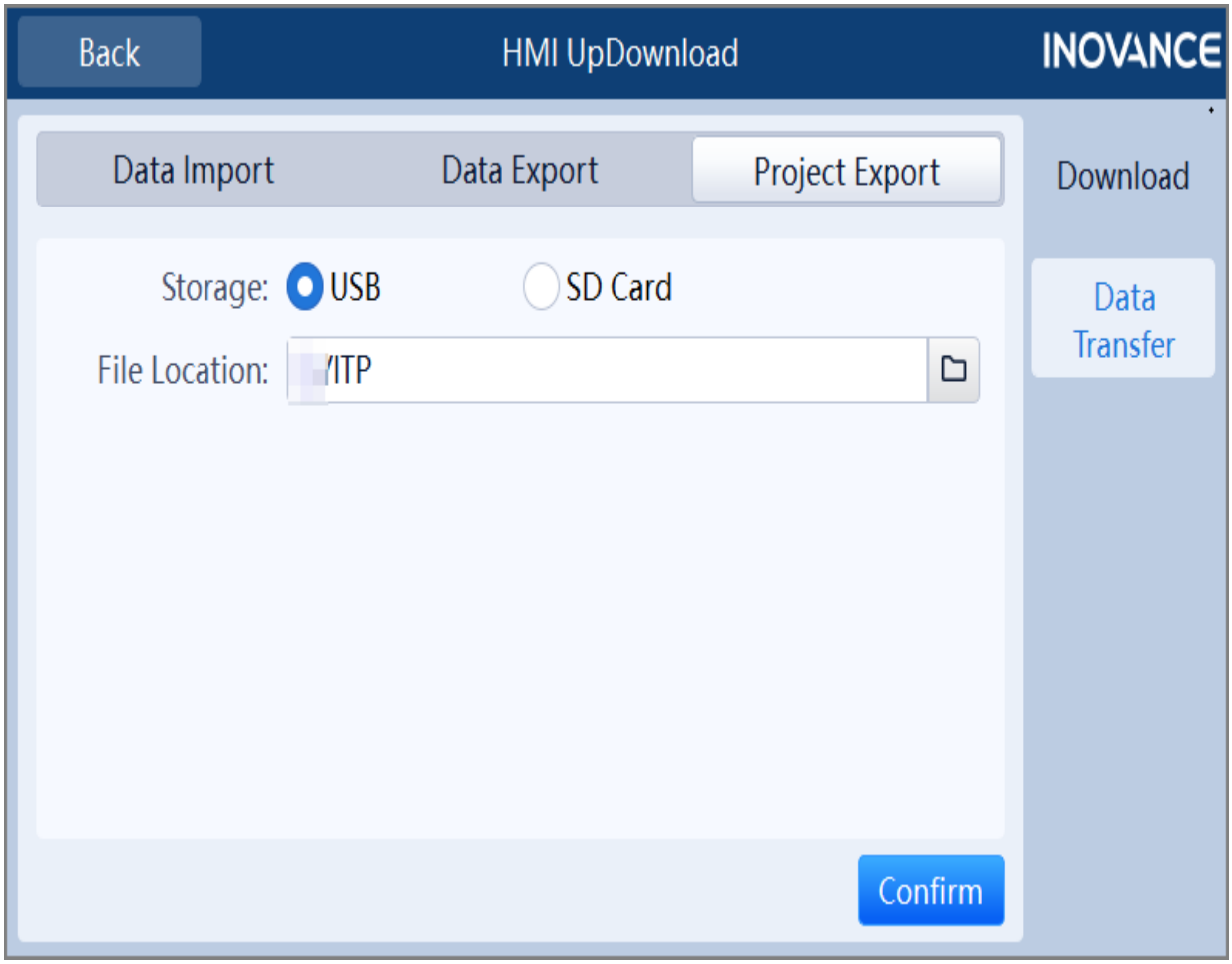
Uploading procedure

> Note
>
> In InoTouchPad, you need to uncheck "disable download project to external devices" in the "Security Settings" section (see 20.6 Project Settings). Otherwise, the project export fails.

1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

2. On the "HMI UpDownload" page, choose "Data Transfer" > "Project Export", configure parameters as follows on the page displayed, and then click "Confirm".

- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.



Firmware updating procedure

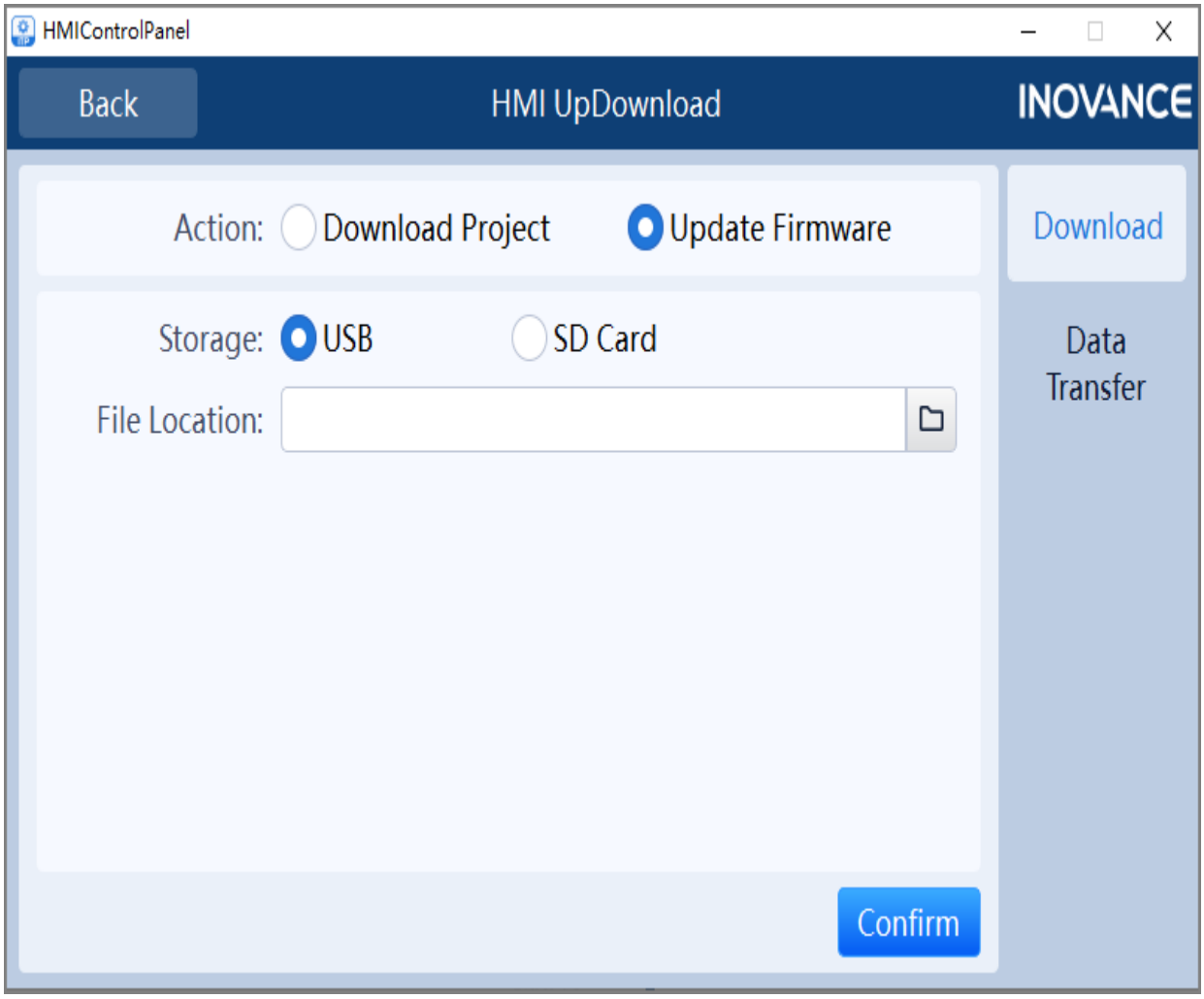
1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

2. On the "HMI UpDownload" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Update Firmware".
- "Storage": Select "USB".
- "File Location": Select the firmware.zip firmware upgrade file.

Note

- If the firmware version is upgraded, the firmware will be updated directly.
- If the firmware version is downgraded, a message will be displayed, asking whether to downgrade the version since the project will be deleted upon downgrade. Click "Yes" to update the firmware.



Data importing procedure

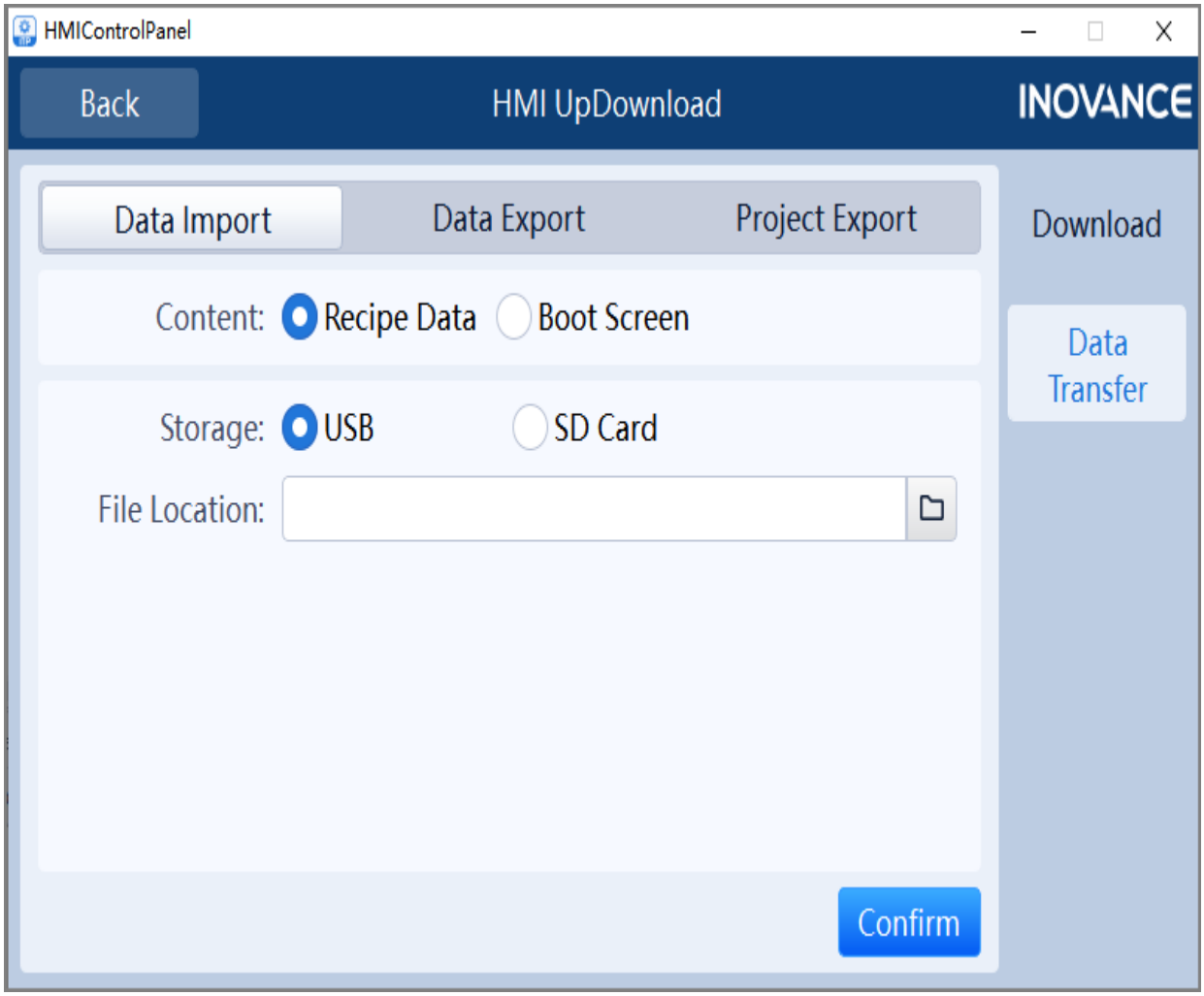
1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

2. On the "HMI UpDownload" page, choose "Data Transfer" > "Data Import", configure parameters as follows on the page displayed, and then click "Confirm".

- "Content": Select "Recipe Data".
- "Storage": Select "USB".
- "File Location": Select a file suffixed by .csv.

Note

- When "Content" is set to "Recipe Data", select a file suffixed by .csv for "File Location".
- When "Content" is set to "Boot Screen", select a file suffixed by .png for "File Location".

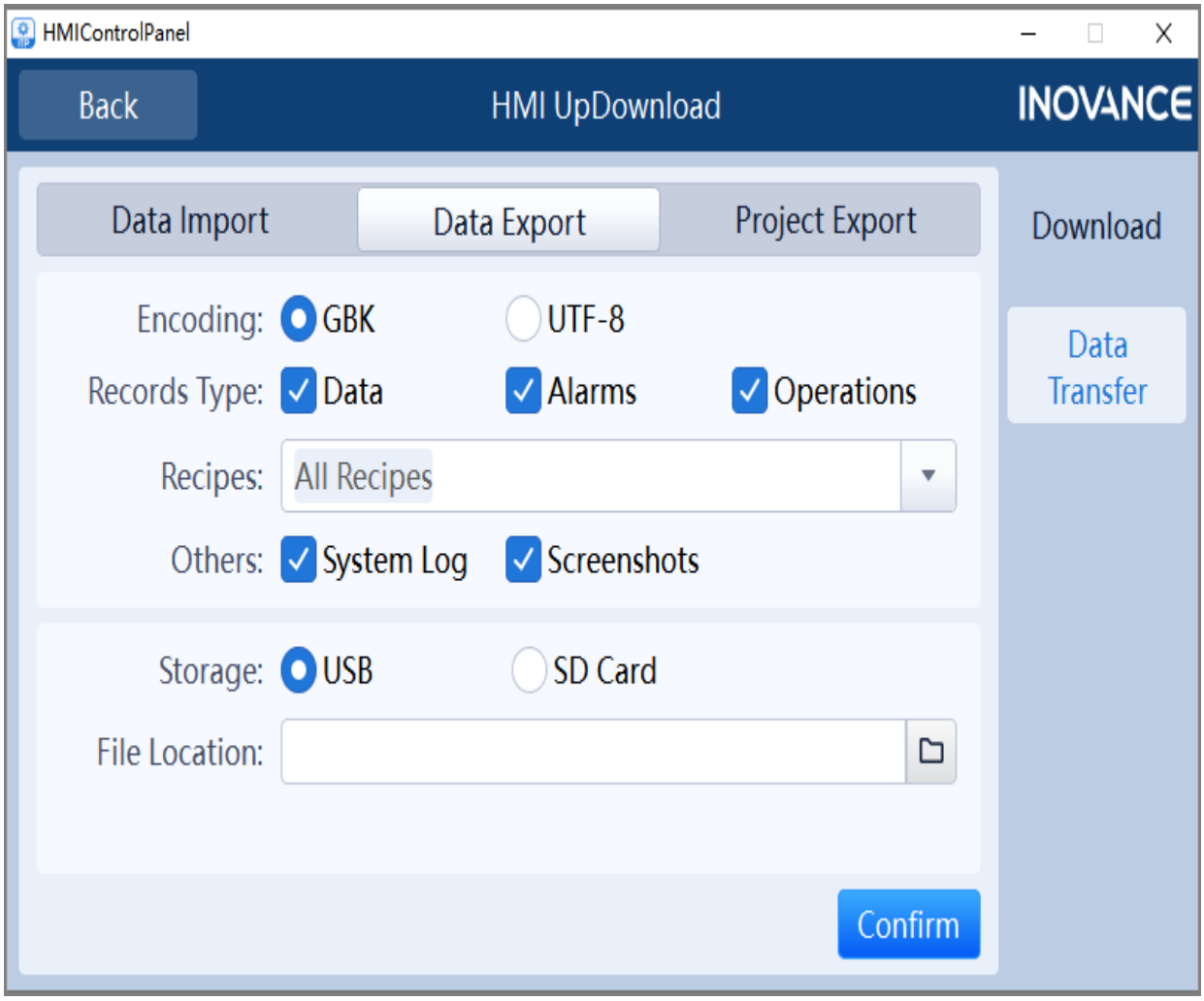


Data exporting procedure

1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

2. On the "HMI UpDownload" page, choose "Data Transfer" > "Data Export", configure parameters as follows on the page displayed, and then click "Confirm".

- "Encoding": Select "GBK".
- "Records Type": The options are "Data", "Alarms", and "Operations". Multiple options can be selected.
- "Recipes": Multiple options can be selected. Select "Recipe_1".
- "Others": The options are "System Log" and "Screenshots". Multiple options can be selected.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.



3. Check exported data files.

File	Description
LogDatas	Data records, alarm records, and operation records
RecipeDataRecords	Recipe data
Systemlogs	System log data
Screenshot	Local screenshot data

15.8 Uploading and Downloading a PLC Project, Updating the PLC Firmware, Restoring a PLC Project, and Transmitting PLC Files Through a USB Drive

Product series support overview table

Feature\ Model	H1U	H2U	H3U	H5U	Easy series PLC	AM300/500	AM400/600	AC700/800
Project download	Supported (serial port)	Supported (serial port)	Supported (serial port,	Supported (Ether	Supported (Ethernet port)	Supported (Ethernet port)	Supported (Ethernet port)	Supported (Ethernet port)

Feature\ Model	H1U	H2U	H3U	H5U	Easy series PLC	AM300/500	AM400/600	AC700/800
			Ethernet port)	net port)				
Firmware update	Not supported	Not supported	Not supported	Not supported				
Project export				Supported (Ethernet port)			Not supported	
File transfer				Not supported	Not supported		Supported (Ethernet port)	
Project restore							Not supported	

15.8.1 Downloading Projects Through Serial Port in H1U or H2U Series

Introduction

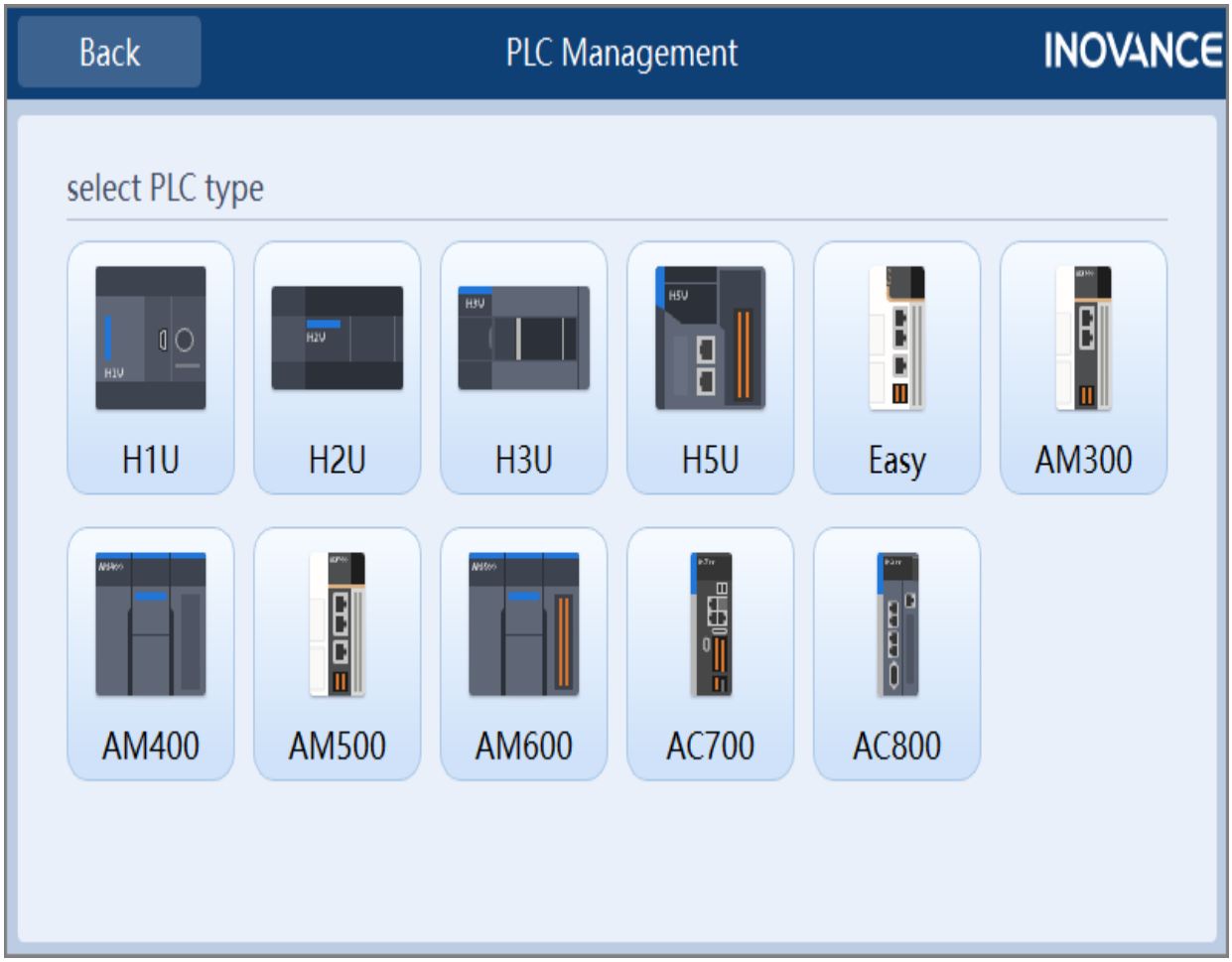
The H1U or H2U series only support downloading projects through a serial port.

Condition

The HMI has communicated with the PLC.

Downloading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "H1U" (the following takes H1U as an example).

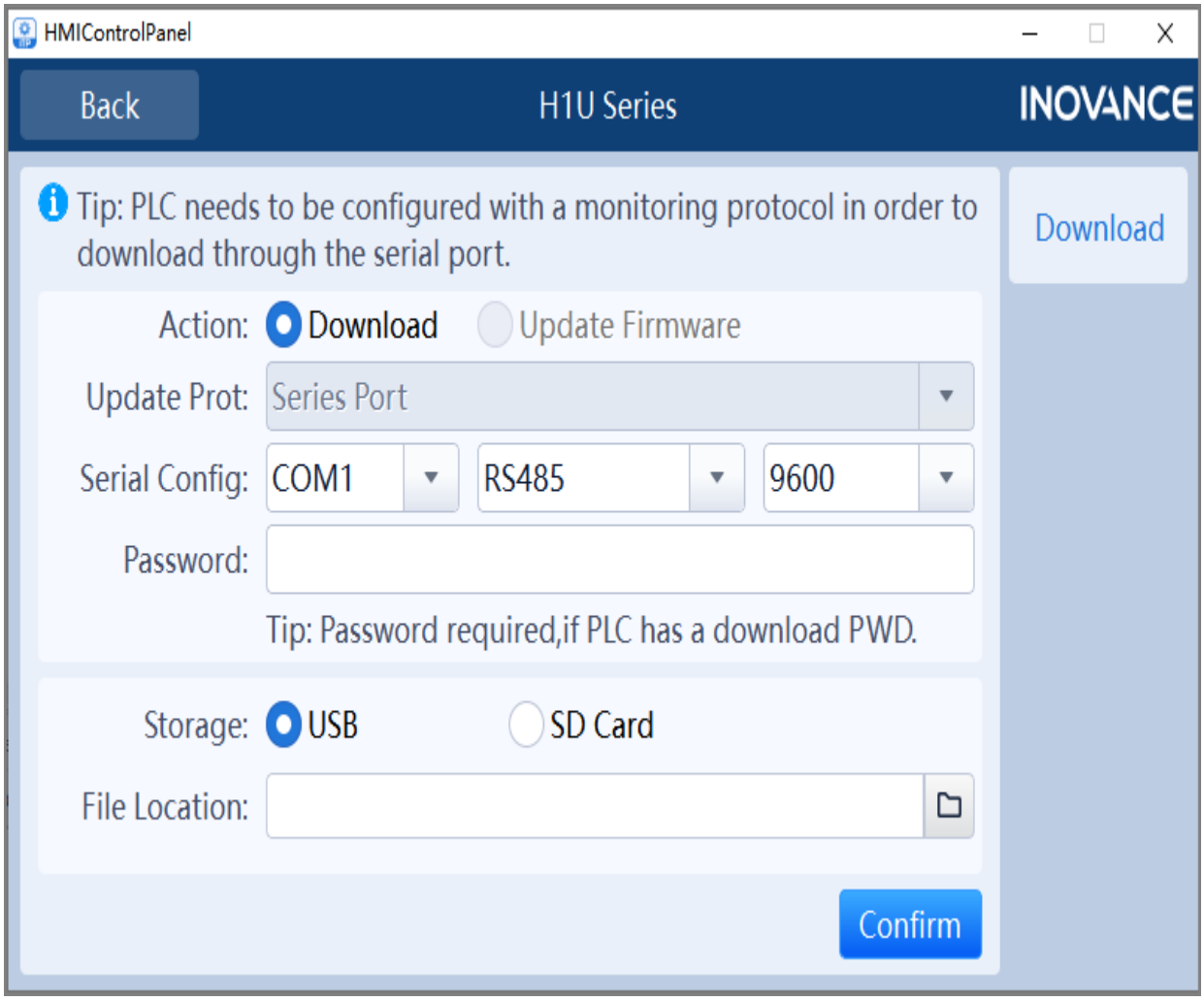


2. On the "H1U Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Operate": "Download" is selected by default and cannot be modified.
- "Update Port": "Series Port" is selected by default and cannot be modified.
- "Serial Config": Select "COM1", "RS485", and "9600" in turn.
- "Password": If a download password is set on the PLC, input the password.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .updown or .down.

Note

- Select "Serial Config" based on the actual jack position and supported protocol (RS485 or RS422).
- When the operation object is H1U but you select project files of H5U or other series, the system prompts "Failed to open the down file".



15.8.2 Downloading Projects Through Ethernet Port and Serial Port in H3U Series

Introduction

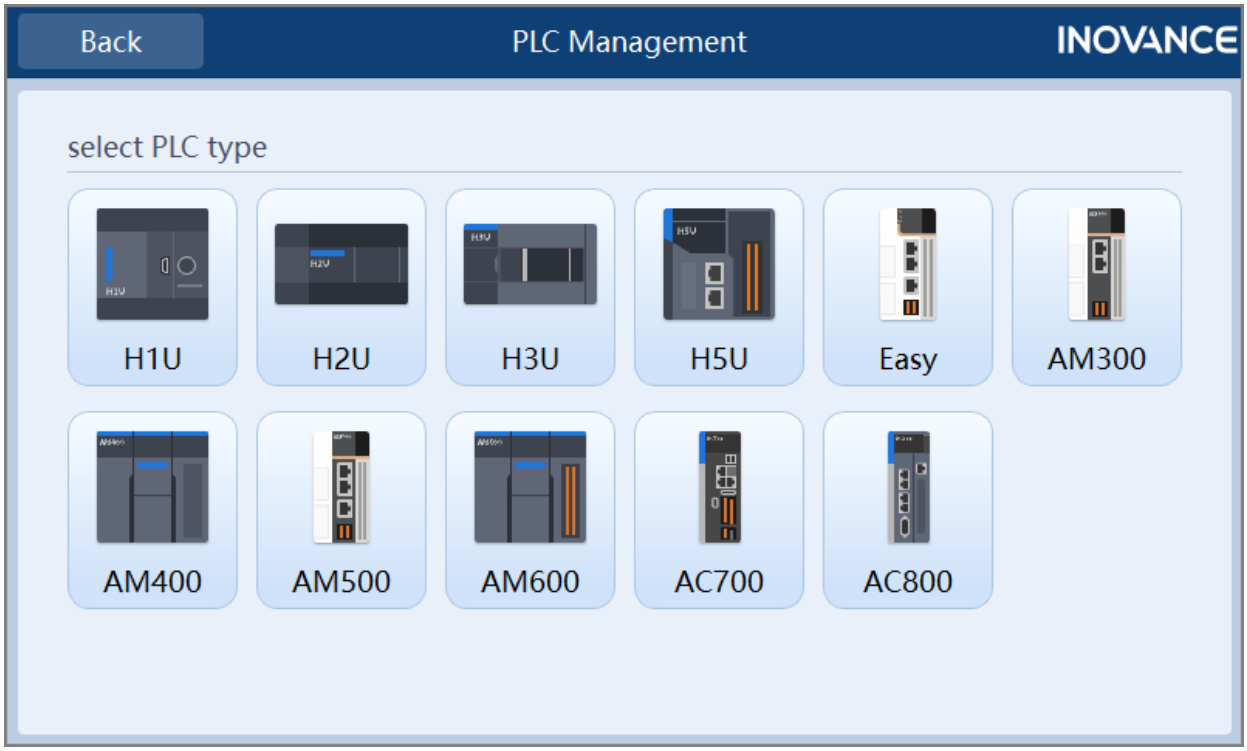
Projects can be downloaded through the Ethernet port and serial port in H3U series.

Condition

The HMI has communicated with the PLC.

Procedure (Ethernet Port)

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "H3U".

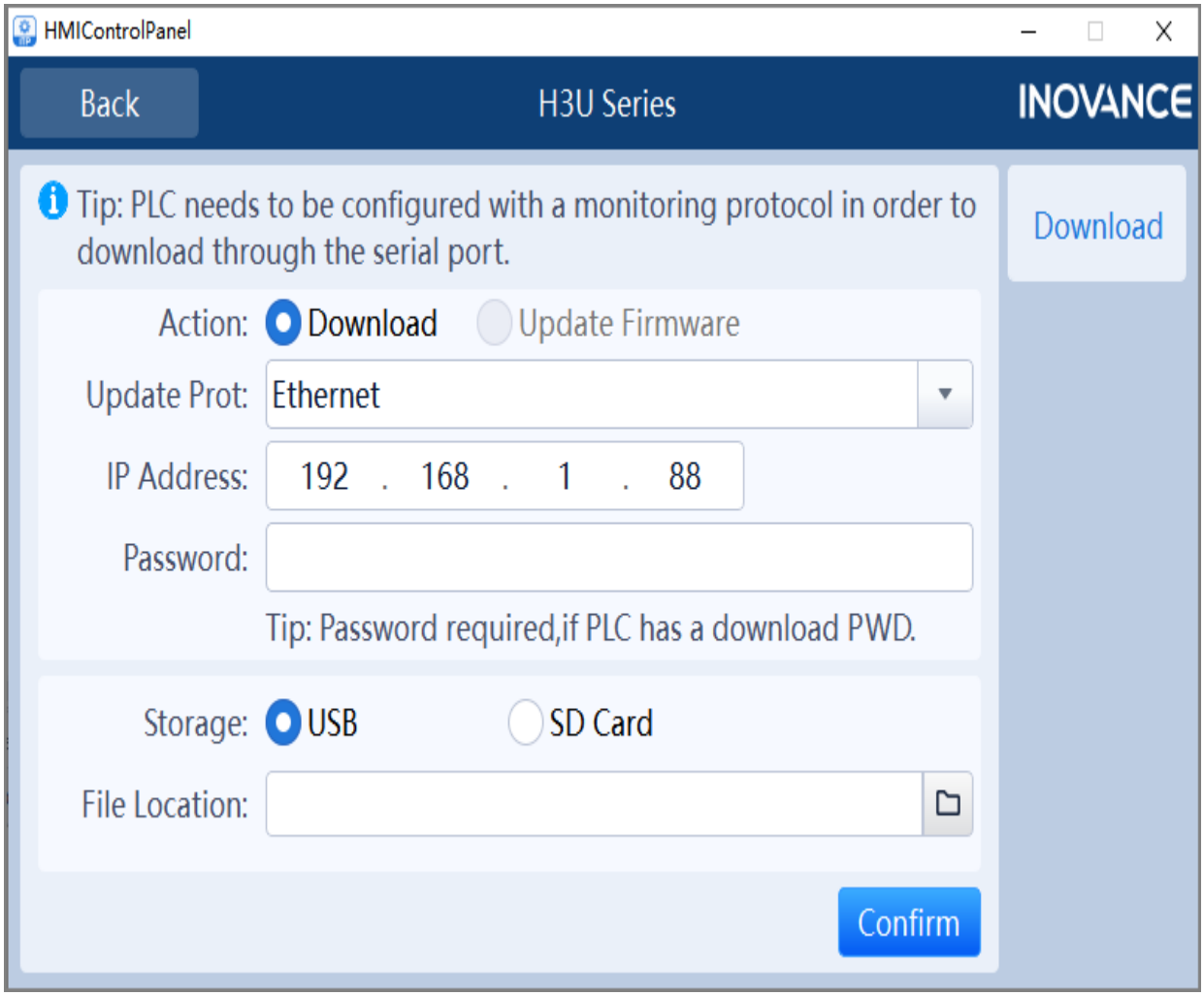


2. On the "H3U Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download".
- "Update Port": Select "Ethernet".
- "IP Address": Set the IP address of the H3U-series device.
- "Password": If a download password is set on the PLC, input the password.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .updown or .down.

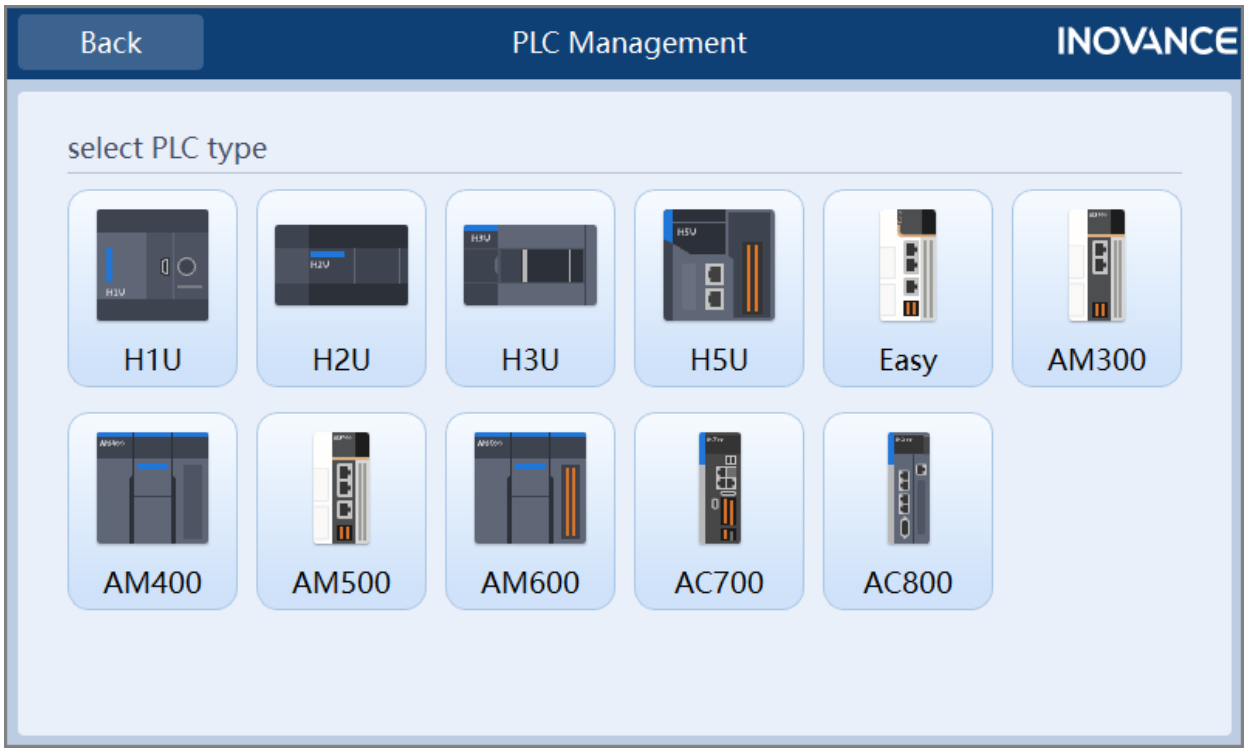
Note

When the operation object is H3U but you select project files of H5U or other series, the system prompts "Failed to open the down file".



Procedure (Serial Port)

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "H3U".

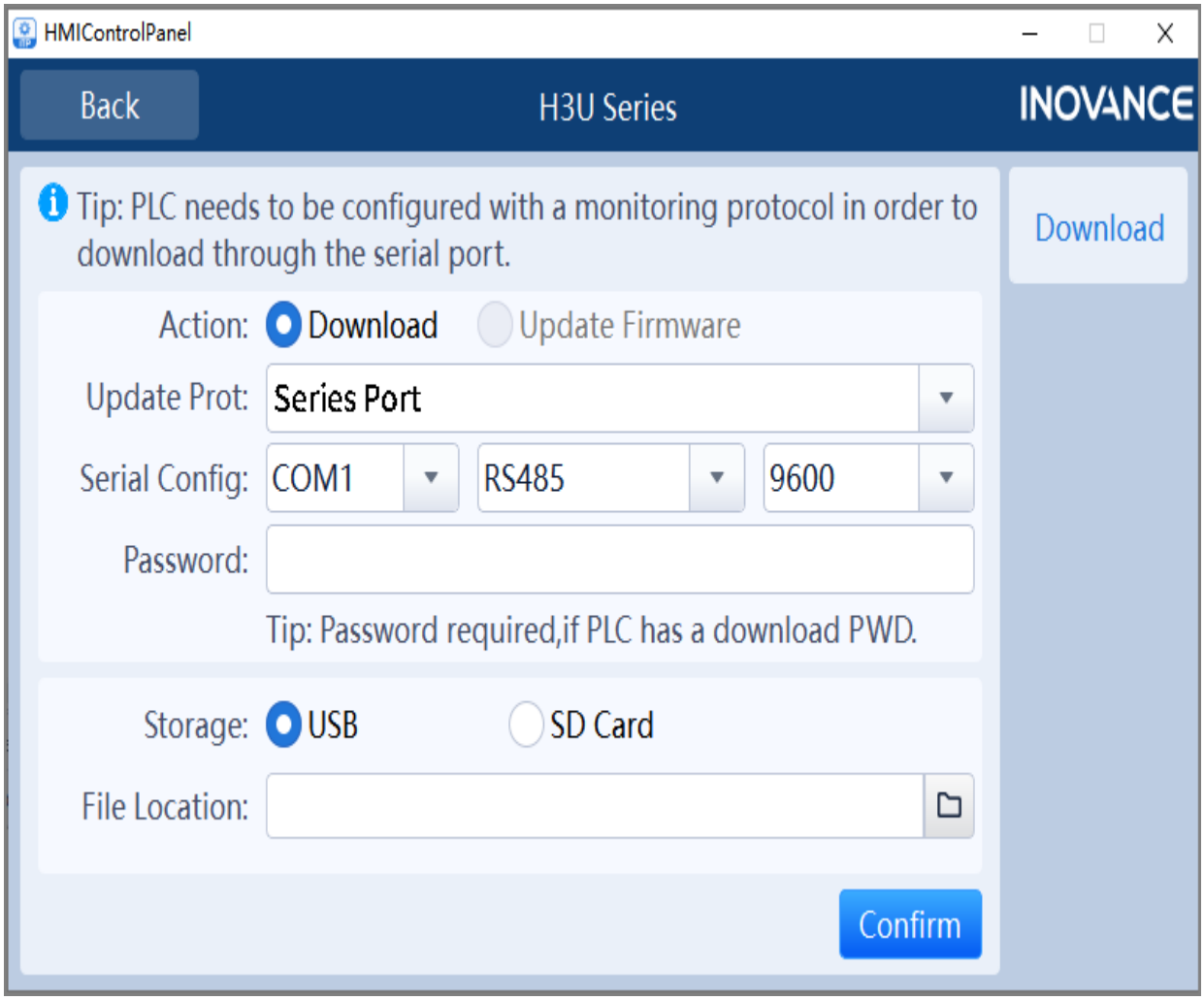


2. On the "H3U Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download".
- "Update Port": Select "Serial Port".
- "Serial Config": Select "COM1", "RS485", and "9600" in turn.
- "Password": If a download password is set on the PLC, input the password.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .updown or .down.

Note

- Select "Serial Config" based on the actual jack position and supported protocol (RS485 or RS422).
- When the operation object is H3U but you select project files of H5U or other series, the system prompts "Failed to open the down file".



15.8.3 Downloading Projects Through Ethernet Port in H5U Series

Introduction

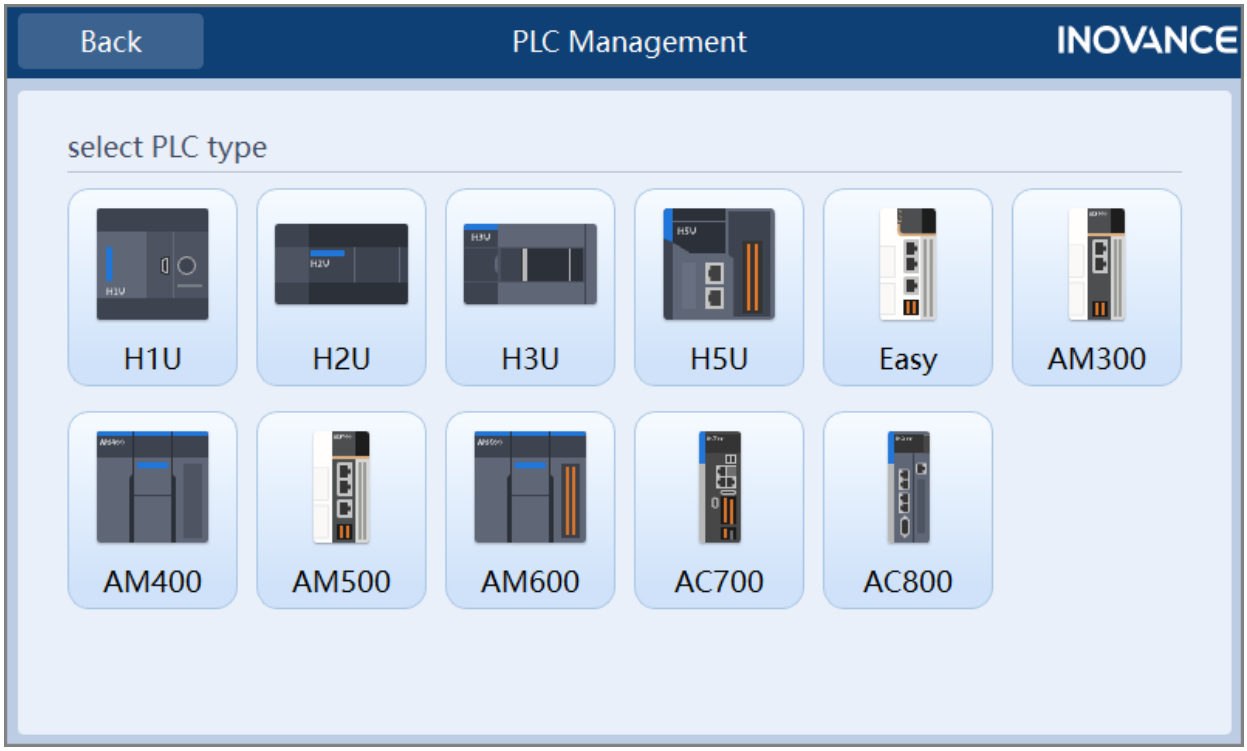
Projects can be uploaded and downloaded through the Ethernet port in H5U series.

Condition

The HMI has communicated with the PLC.

Downloading procedure

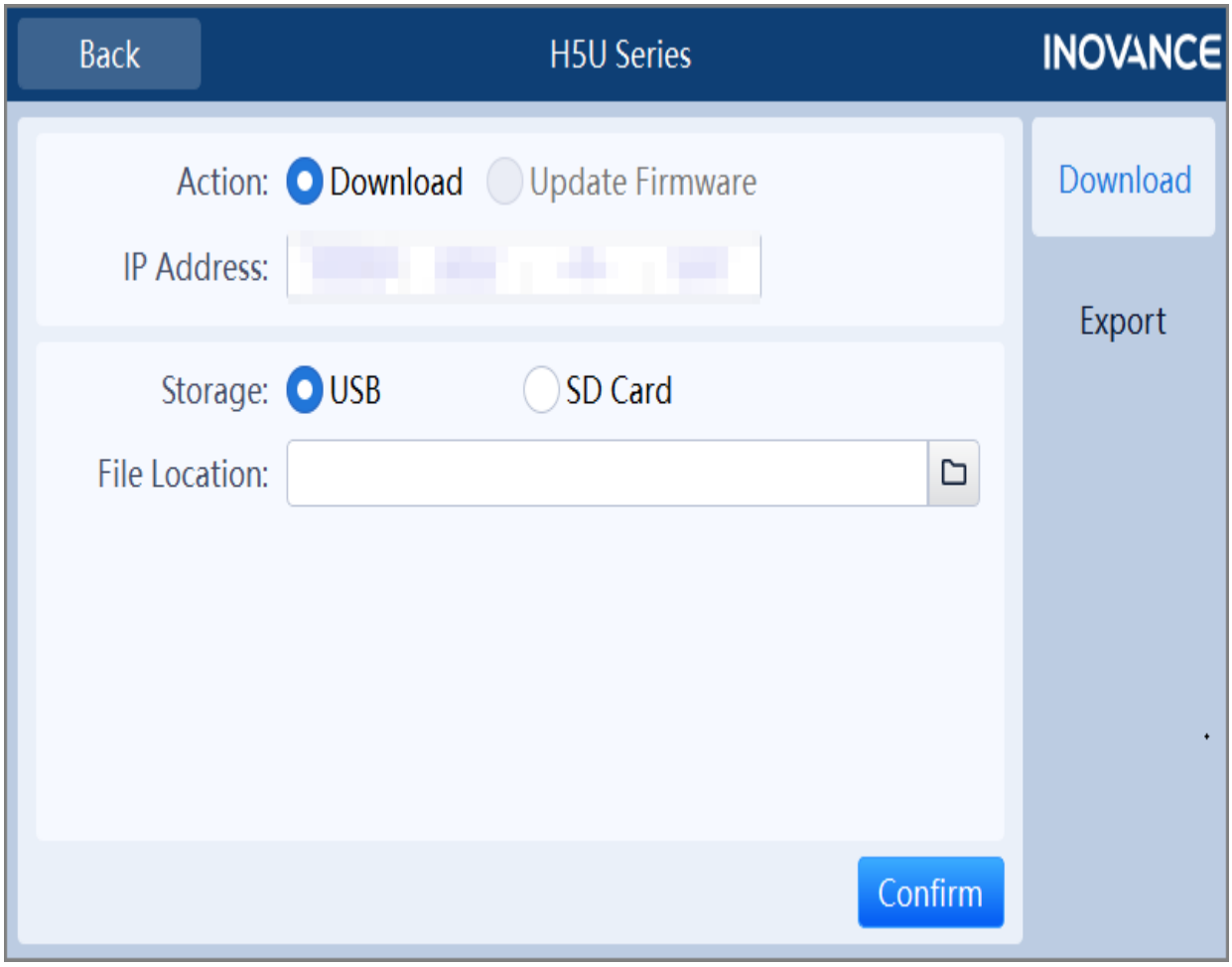
1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "H5U".



2. On the "H5U Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

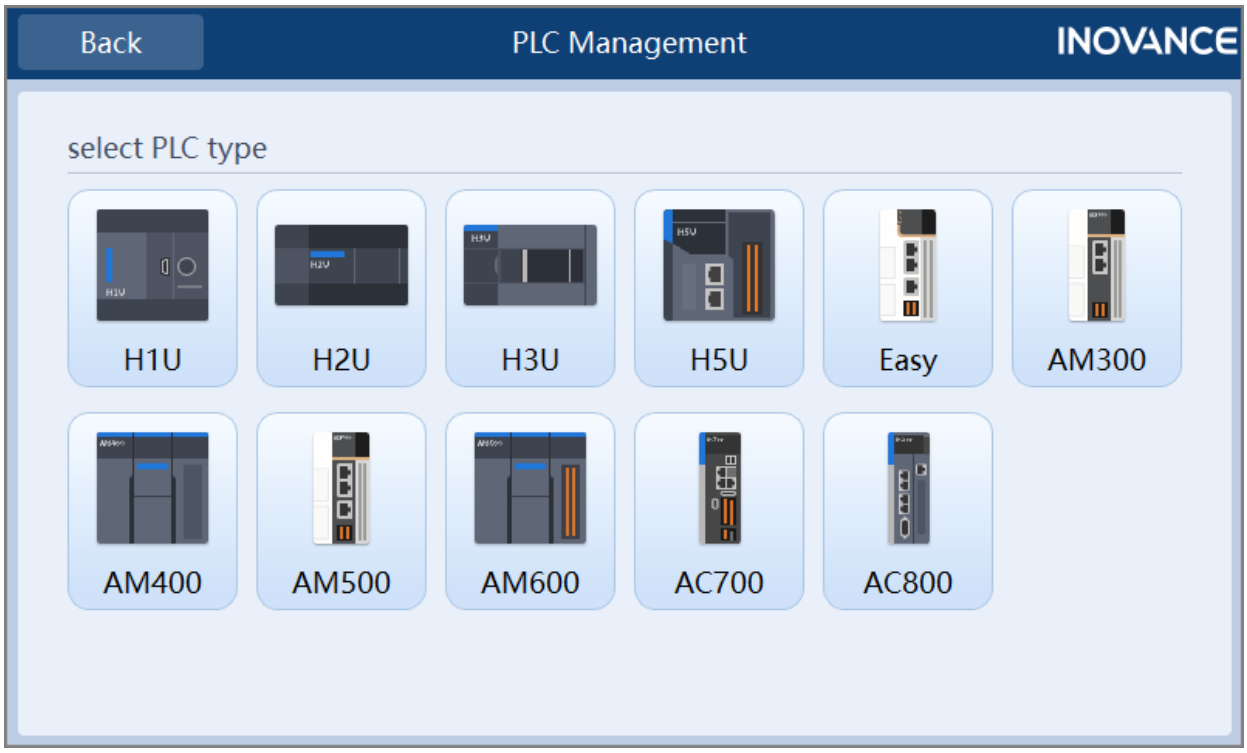
- "Action": Select "Download".
- "IP Address": Set the IP address of the H5U-series device.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .updown or .down.

> **Note**
>
> When the operation object is H5U but you select project files of H3U or other series, the system prompts "Failed to open the down file".



Uploading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "H5U".

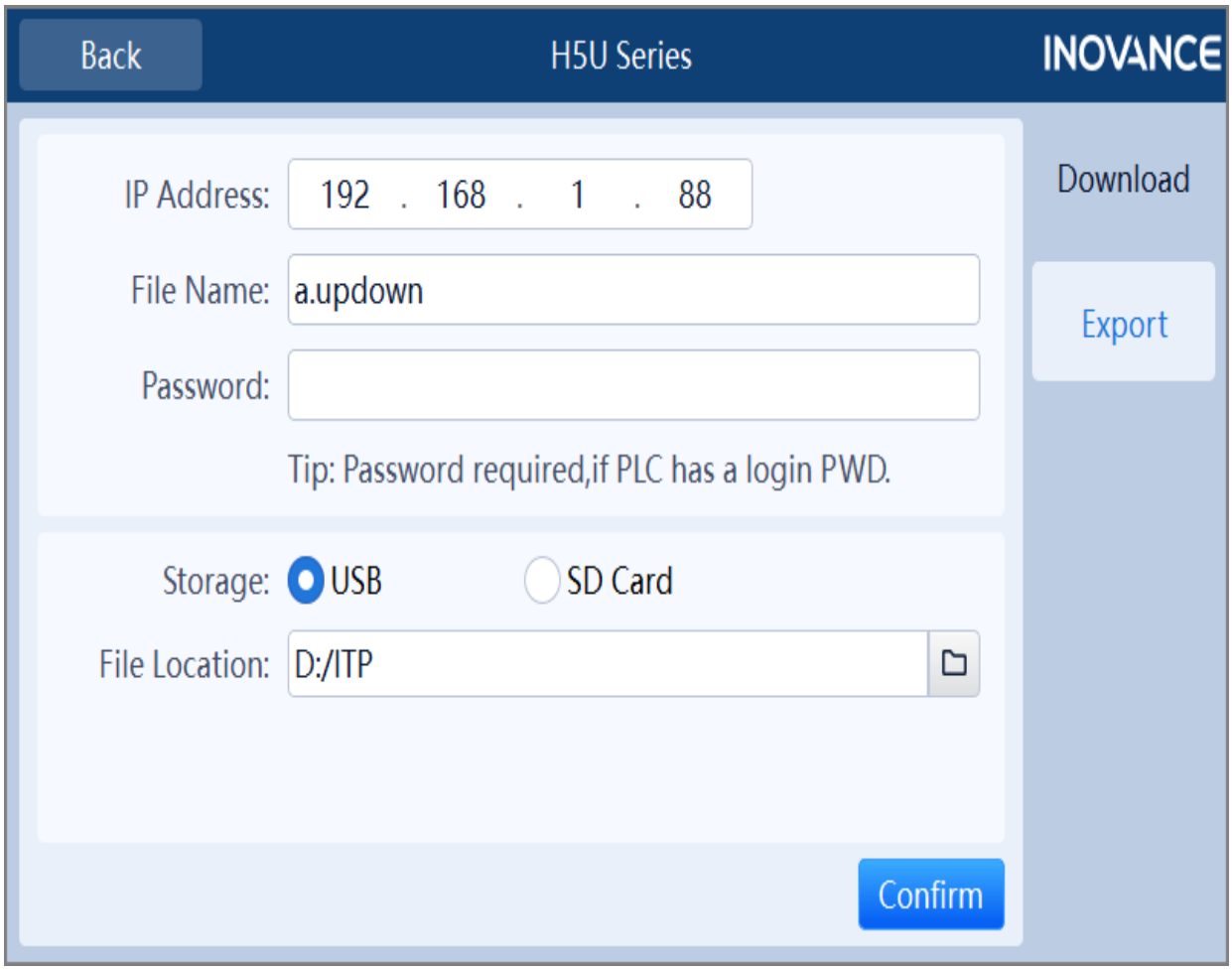


2. On the "H5U Series" page, click "Export". On the tab page displayed, configure the following parameters, and click "Confirm".

- "IP Address": Set the IP address of the H5U-series device.

- "File Name": Sets the name of the file to be uploaded.
- "Password": If a login password is set on the PLC, input the password.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.

> **Note**
>
> The file name suffix must be ".updown"; otherwise, the uploaded file is automatically added with the suffix ".updown" when you upload the project.



15.8.4 Uploading and Downloading Projects and Updating Firmware Through Ethernet Port in Easy Series

Introduction

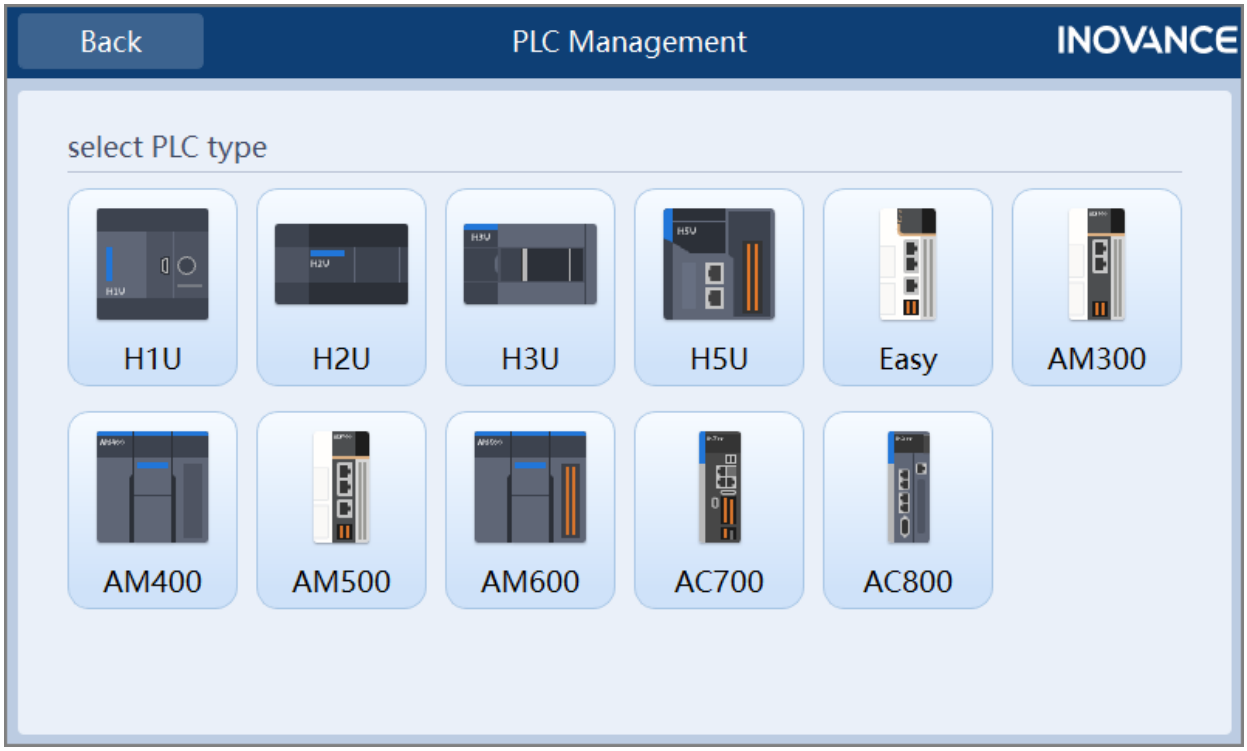
The Easy series supports uploading and downloading projects and updating firmware through an Ethernet port.

Condition

The HMI has communicated with the PLC.

Downloading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "Easy".

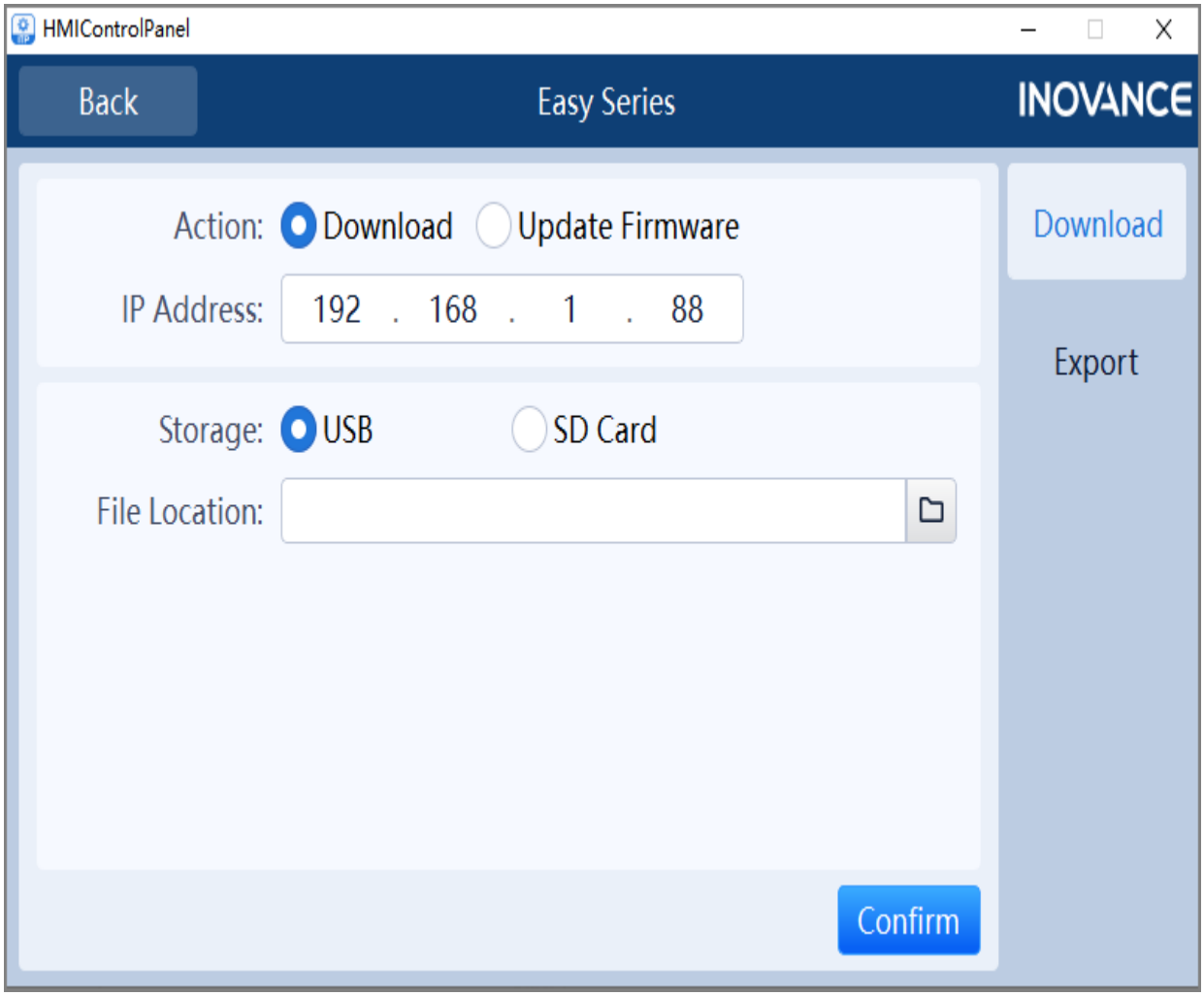


2. On the "Easy Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download".
- "IP Address": Set the IP address of the Easy-series device.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .updown or .down.

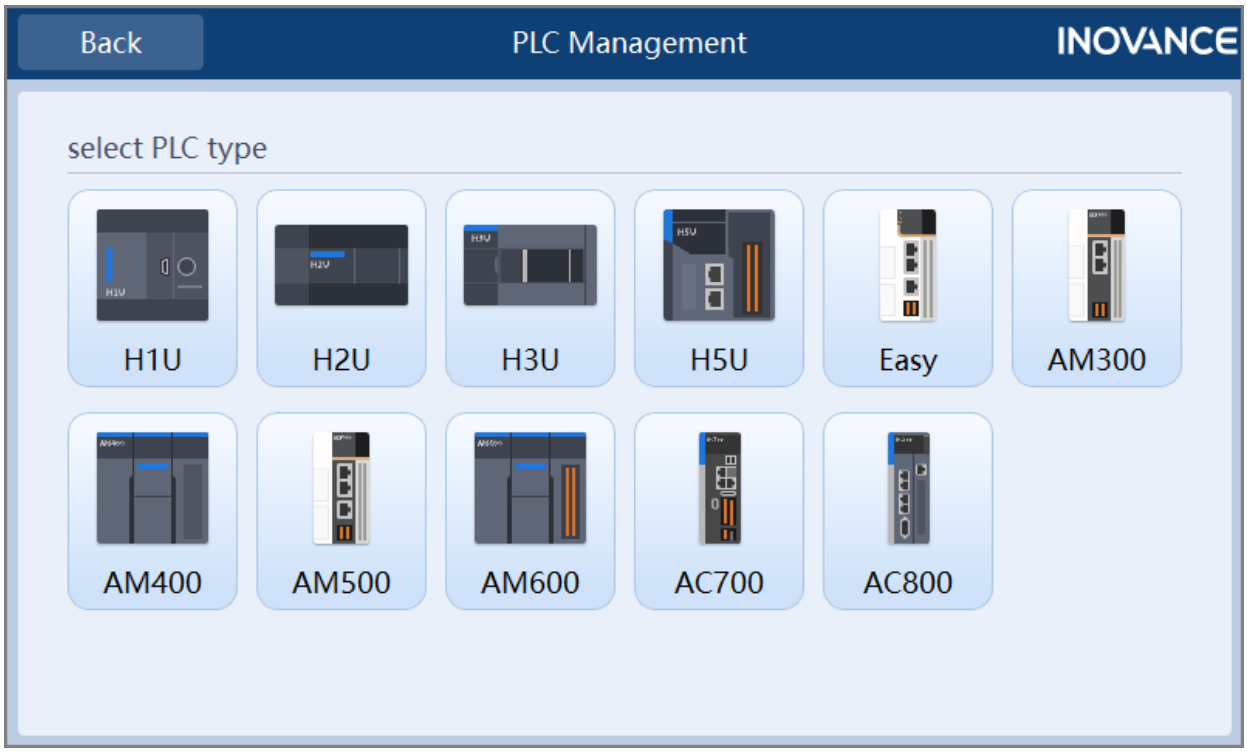
Note

When the operation object is Easy but you select project files of H3U or other series, the system prompts "Failed to open the down file".



Uploading procedure

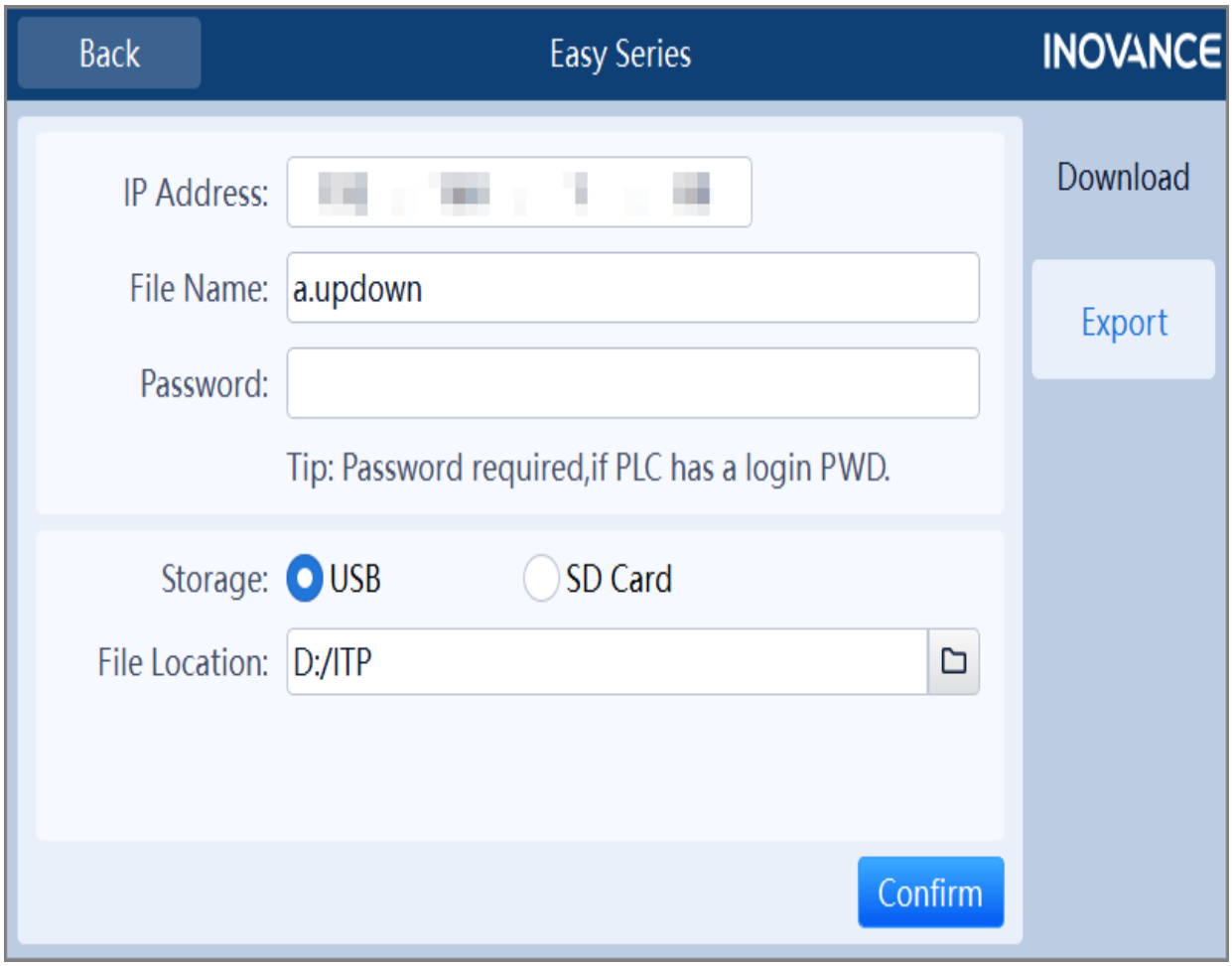
1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "Easy".



2. On the "Easy Series" page, click "Export". On the tab page displayed, configure the following parameters, and click "Confirm".

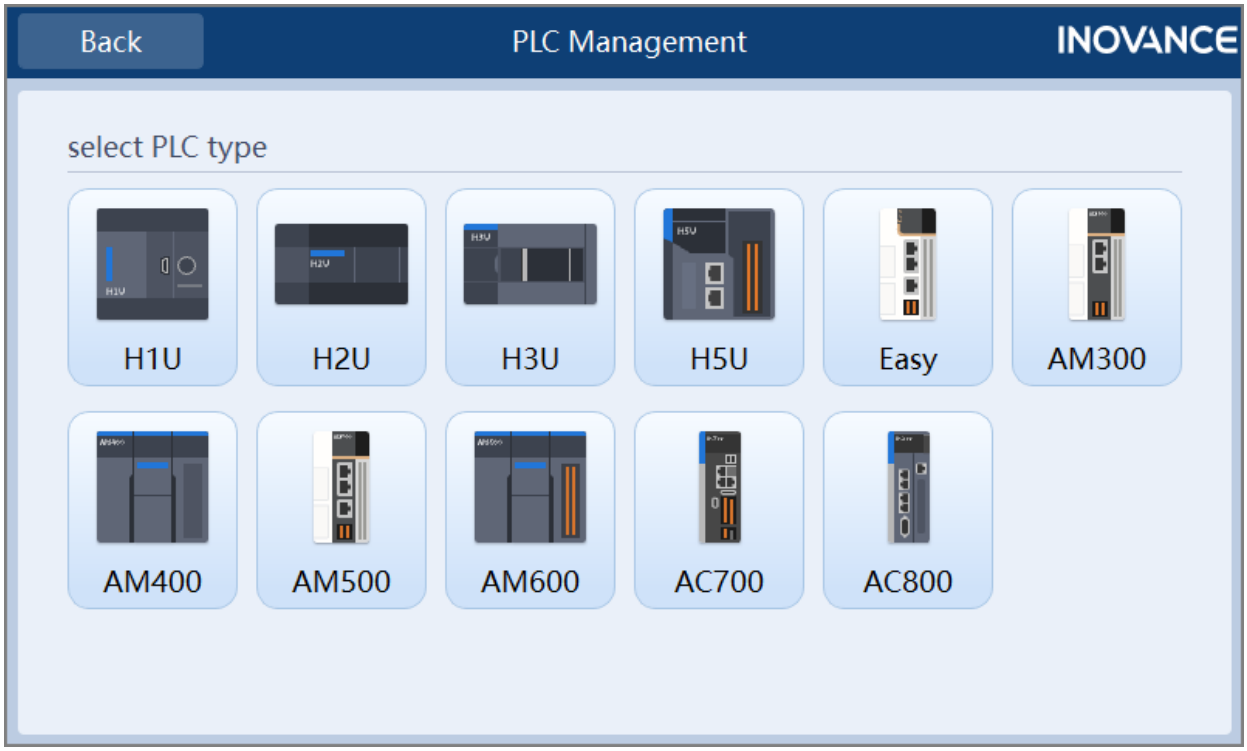
- "IP Address": Set the IP address of the Easy-series device.
- "File Name": Sets the name of the file to be uploaded.
- "Password": If a login password is set on the PLC, input the password.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.

> **Note**
>
> The file name suffix must be ".updown"; otherwise, the uploaded file is automatically added with the suffix ".updown" when you upload the project.



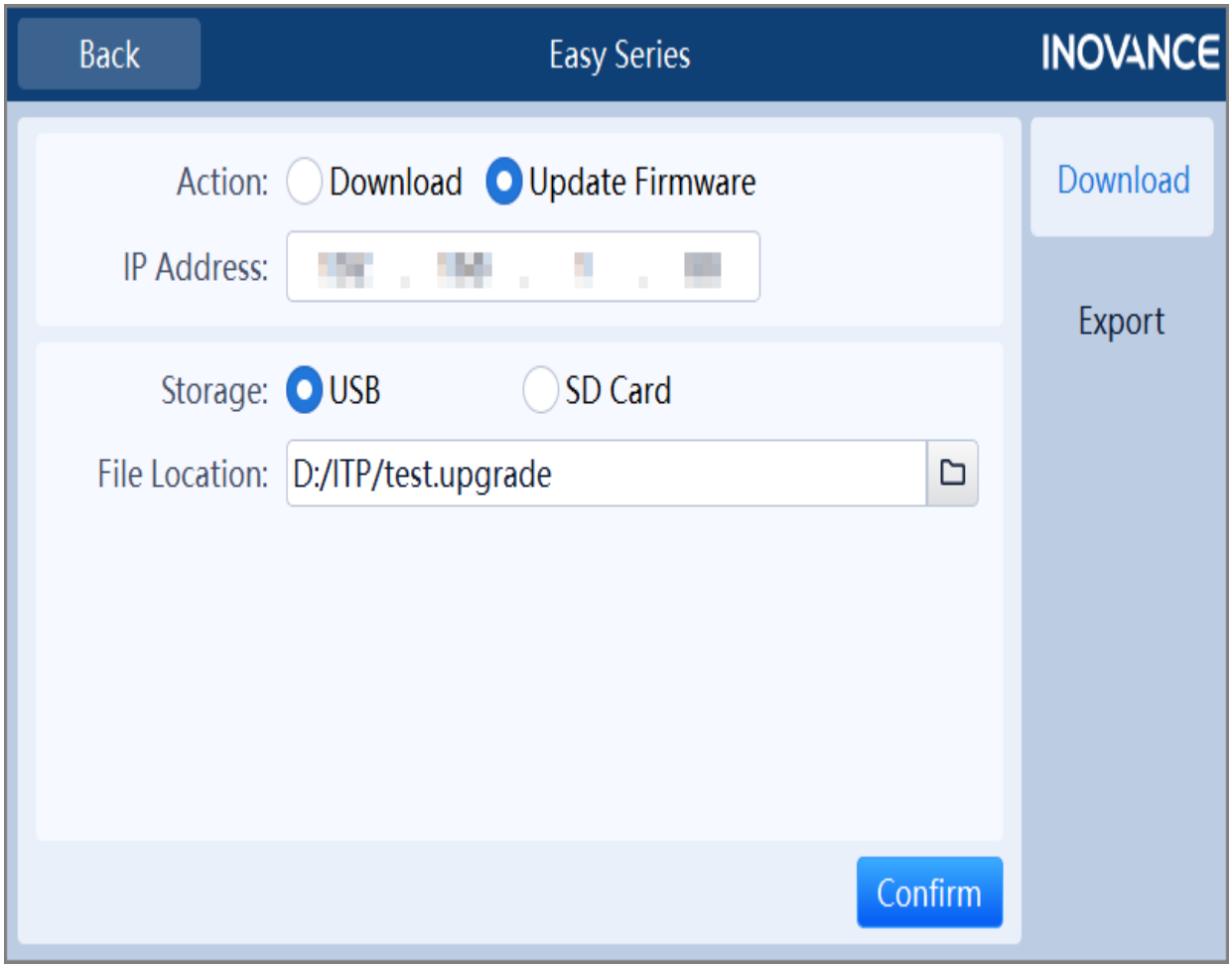
Firmware updating procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "Easy".



2. On the "Easy Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Update Firmware".
- "IP Address": Set the IP address of the Easy-series device.
- "Storage": Select "USB".
- "File Location": Select the firmware update file suffixed by .upgrade.



15.8.5 Uploading and Downloading a Project, Updating the Firmware, Restoring a Project, and Transmitting Files Through Ethernet Port in AM300, AM500, AC700, or AC800 Series

Introduction

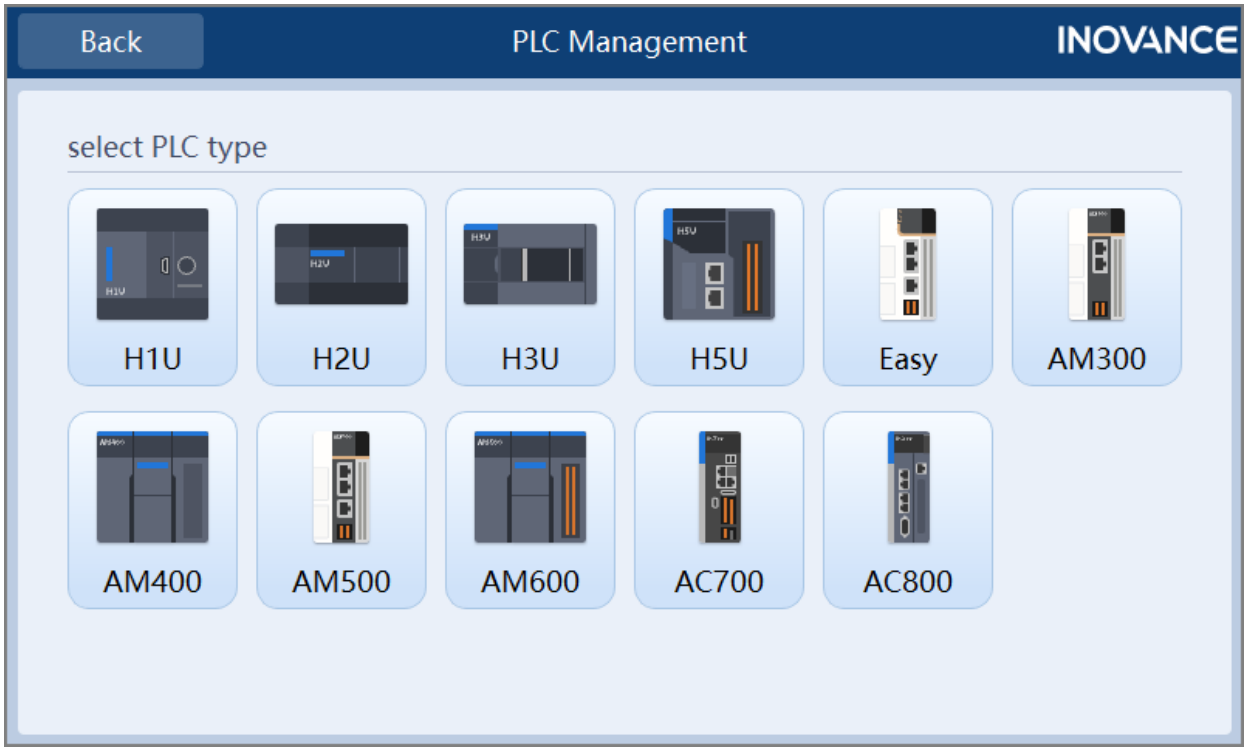
The AM300, AM500, AC700, or AC800 series allow you to upload and download projects, update the firmware, restore projects, and transmit files through an Ethernet port.

Condition

The HMI has communicated with the PLC.

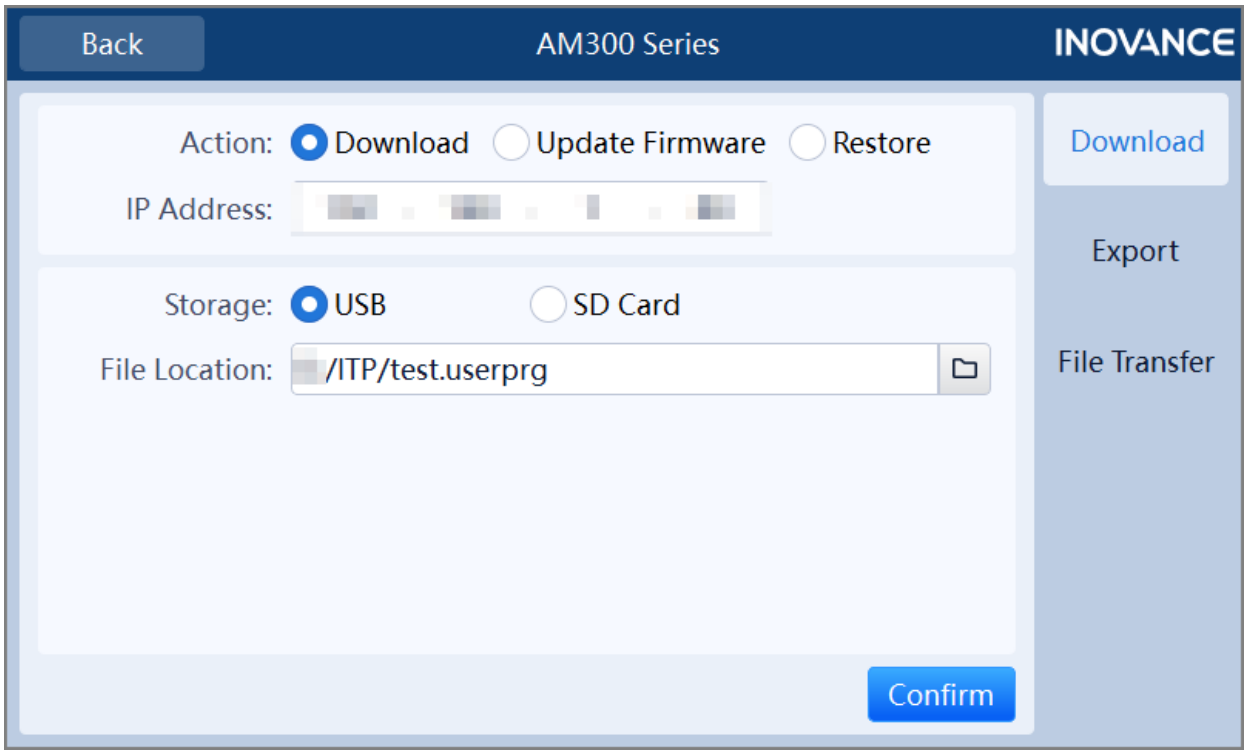
Downloading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).



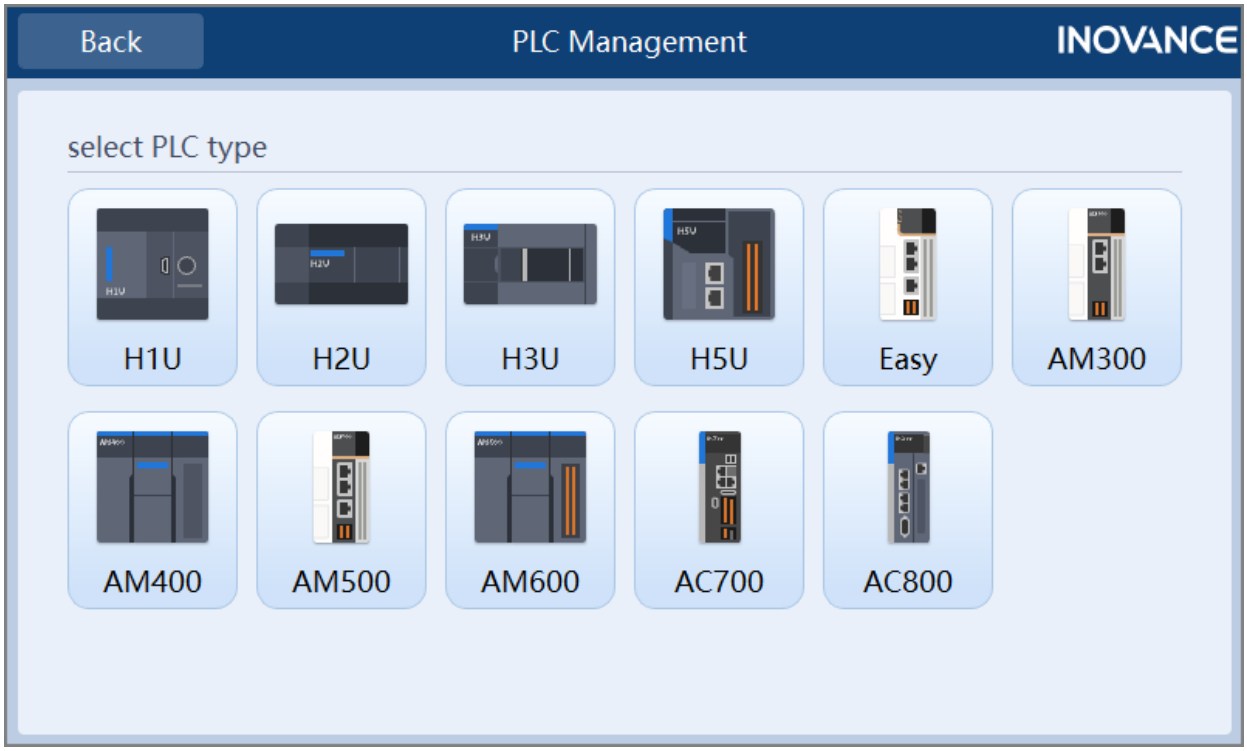
2. On the "AM300 Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download".
- "IP Address": Set the IP address of the AM300-series device.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .userprg.



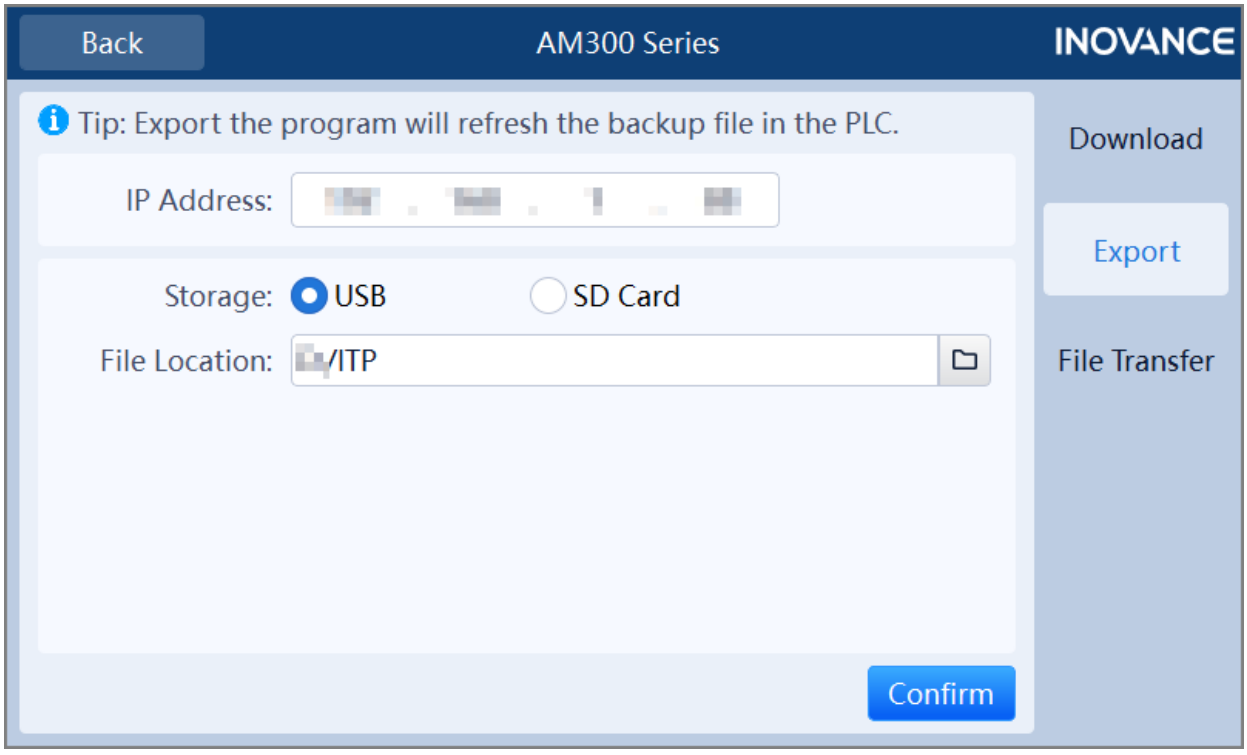
Uploading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).



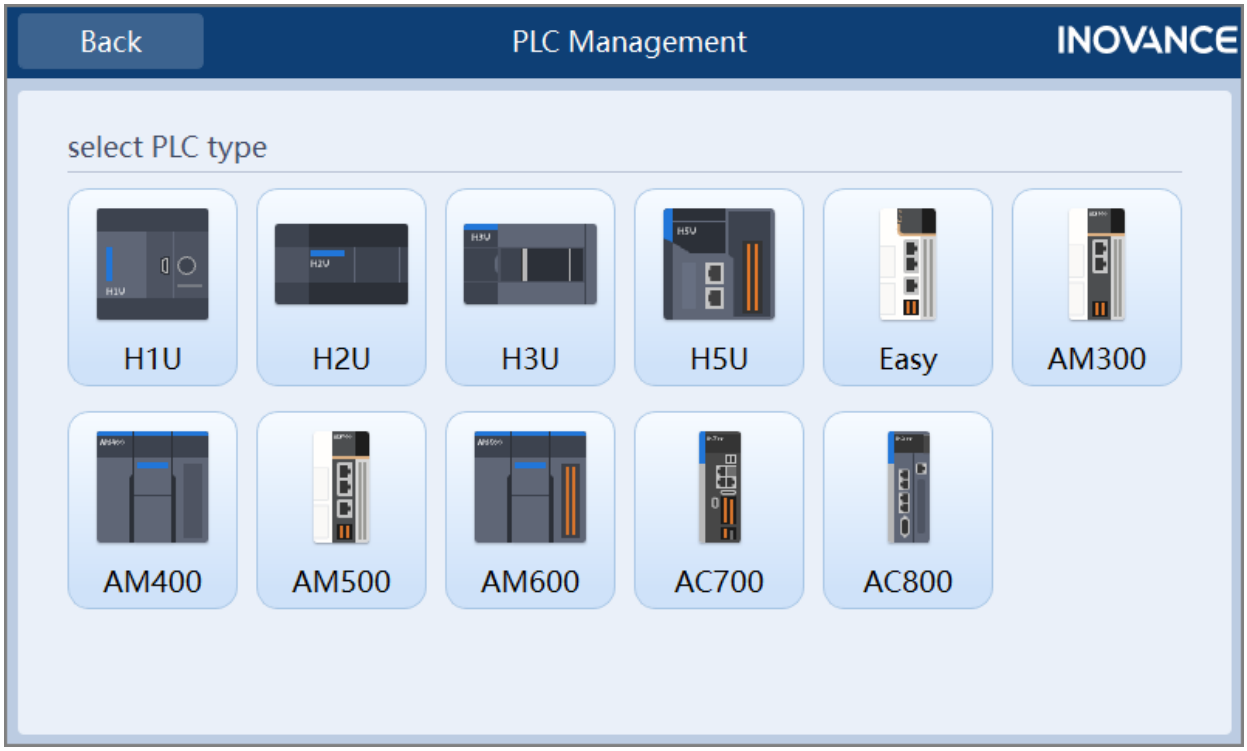
2. On the "AM300 Series" page, click "Export". On the tab page displayed, configure the following parameters, and click "Confirm".

- "IP Address": Set the IP address of the AM300-series device.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.



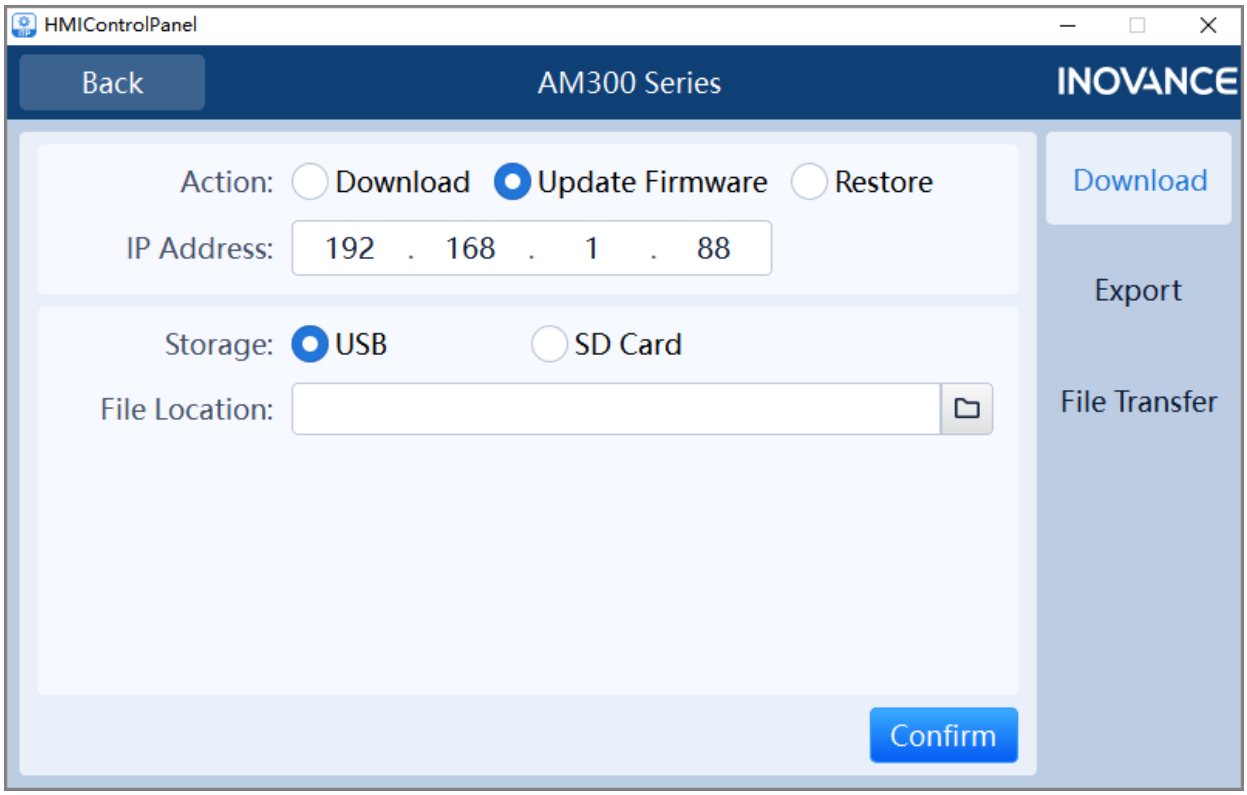
Firmware updating procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).



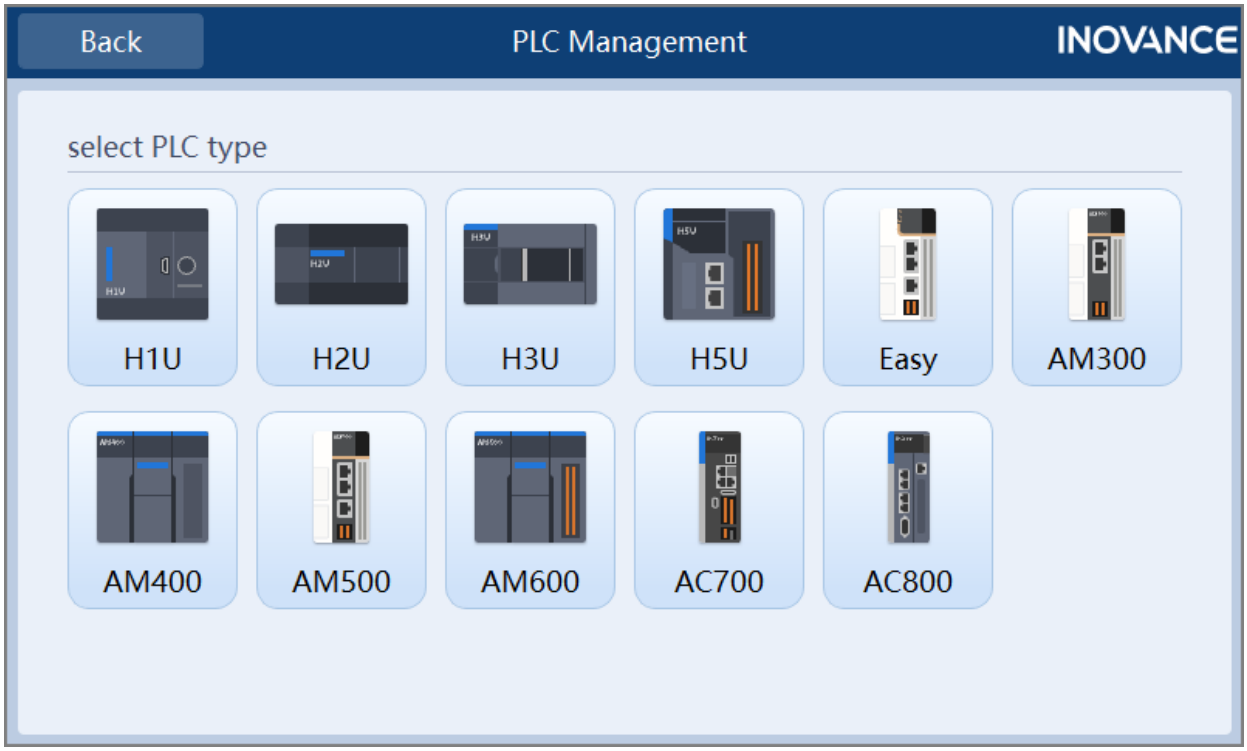
2. On the "AM300 Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Update Firmware".
- "IP Address": Set the IP address of the AM300-series device.
- "Storage": Select "USB".
- "File Location": Select the firmware update file suffixed by .upgrade.



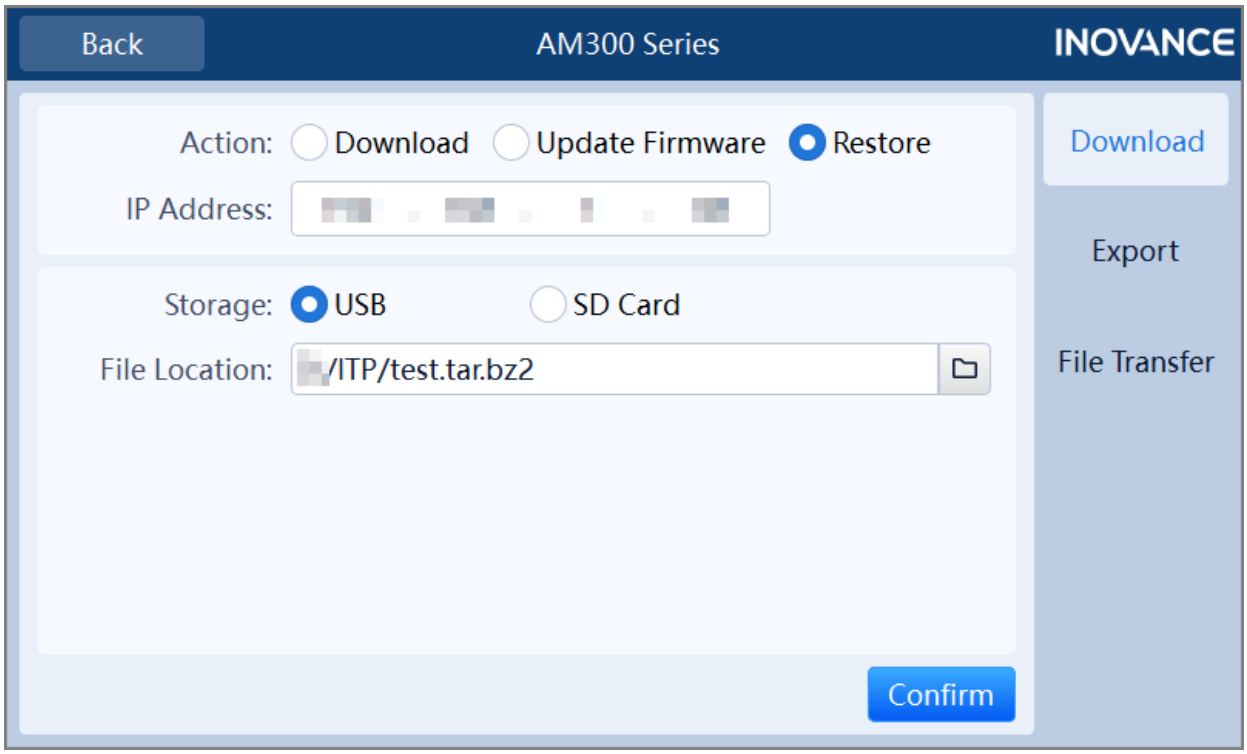
Project restoring procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).



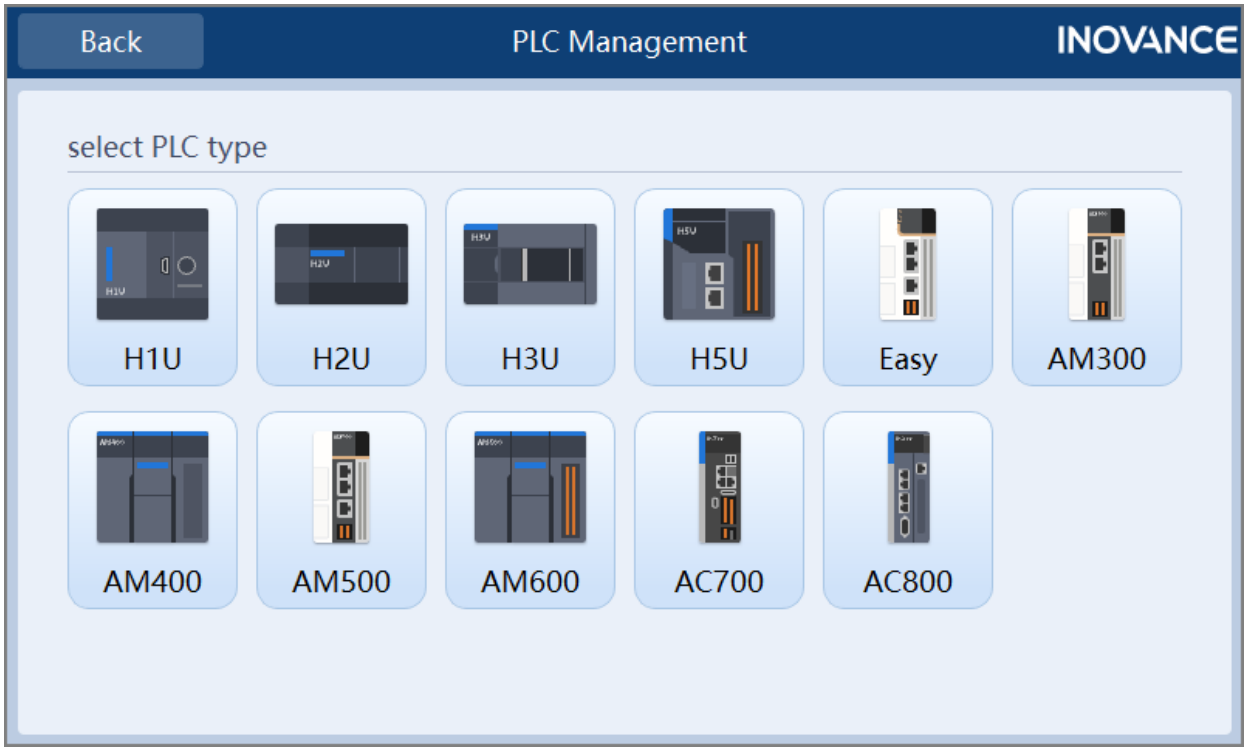
2. On the "AM300 Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Restore" (restore the project file backed up from the PLC).
- "IP Address": Set the IP address of the AM300-series device.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .tar.bz2.



Procedure for transmitting files from HMI to PLC

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).

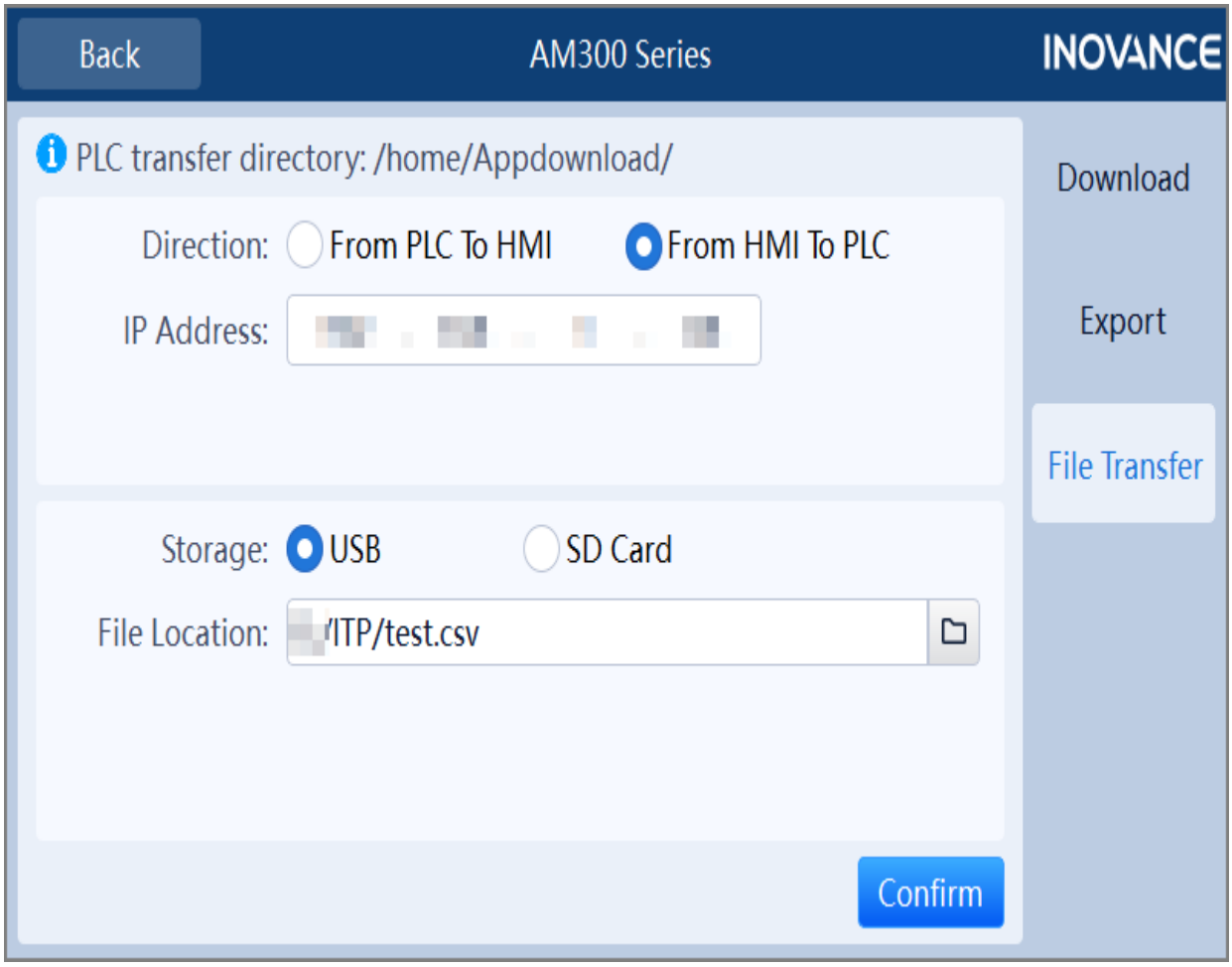


2. On the "AM300 Series" page, click "File Transfer". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Direction": Select "From HMI To PLC".
- "IP Address": Set the IP address of the AM300-series device.
- "Storage": Select "USB".
- "File Location": Select the file to be transmitted, such as "test.csv".

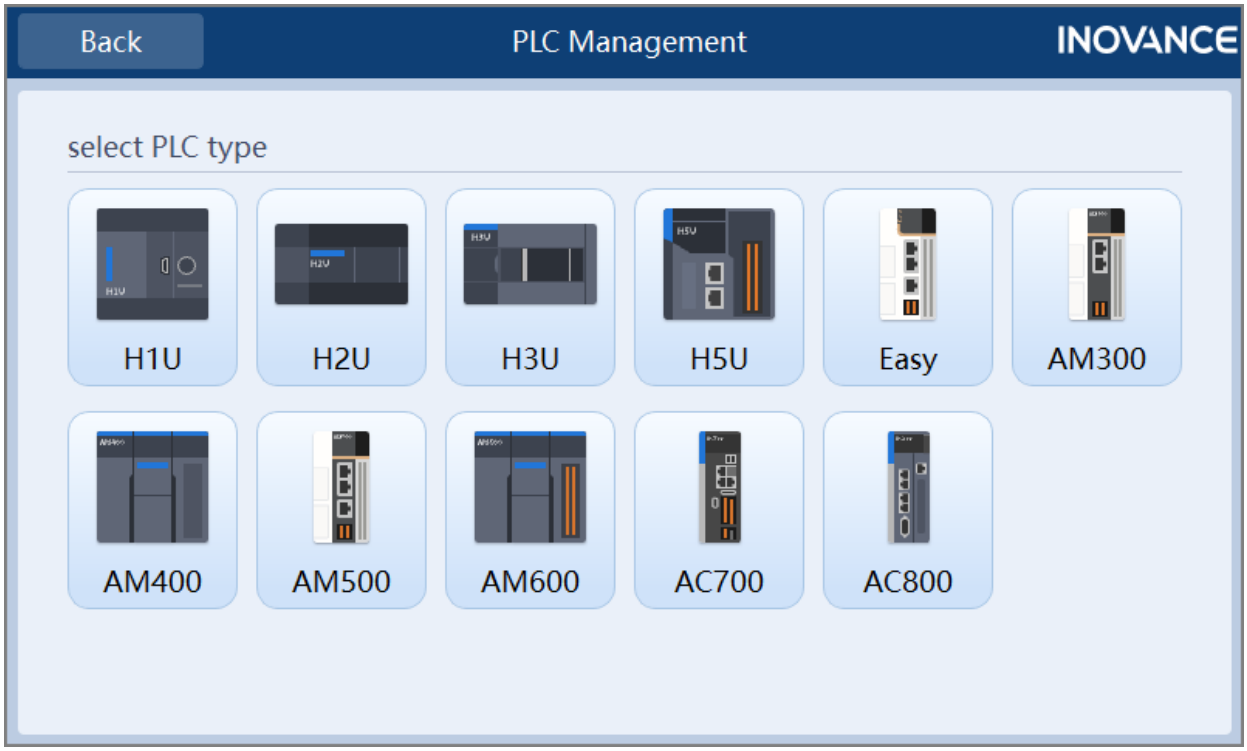
Note

The transmitted files are saved to the "/home/Appdownload/" directory of the AM300 series and other series.



Procedure for transmitting files from PLC to HMI

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM300" (the following takes AM300 as an example).

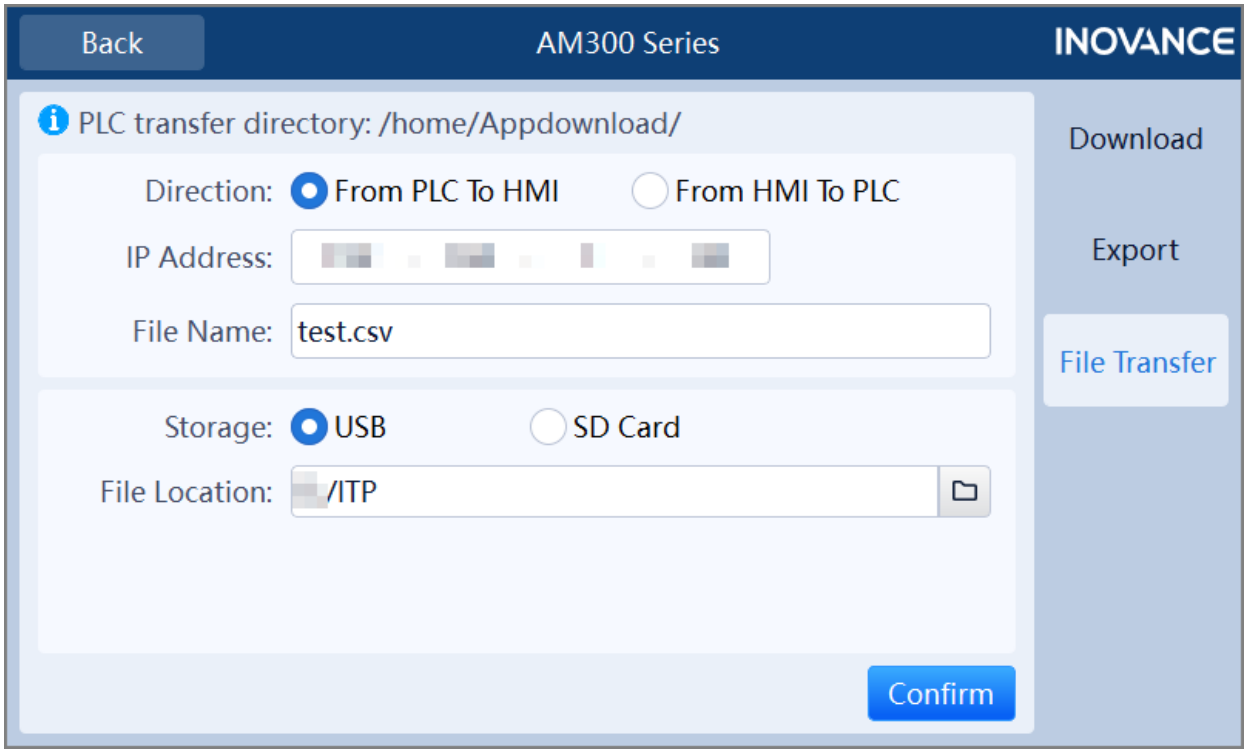


2. On the "AM300 Series" page, click "File Transfer". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Direction": Select "From PLC To HMI".
- "IP Address": Set the IP address of the AM300-series device.
- "File Name": Sets the name of the file to be transmitted.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.

Note

- The file name set here must be the same as that in the "/home/Appdownload/" directory.
- Only files in the "/home/Appdownload/" directory of the AM300 series and other series can be transmitted.



15.8.6 Downloading a Project, Updating the Firmware, and Transmitting Files Through Ethernet Port in AM400, or AM600 Series

Introduction

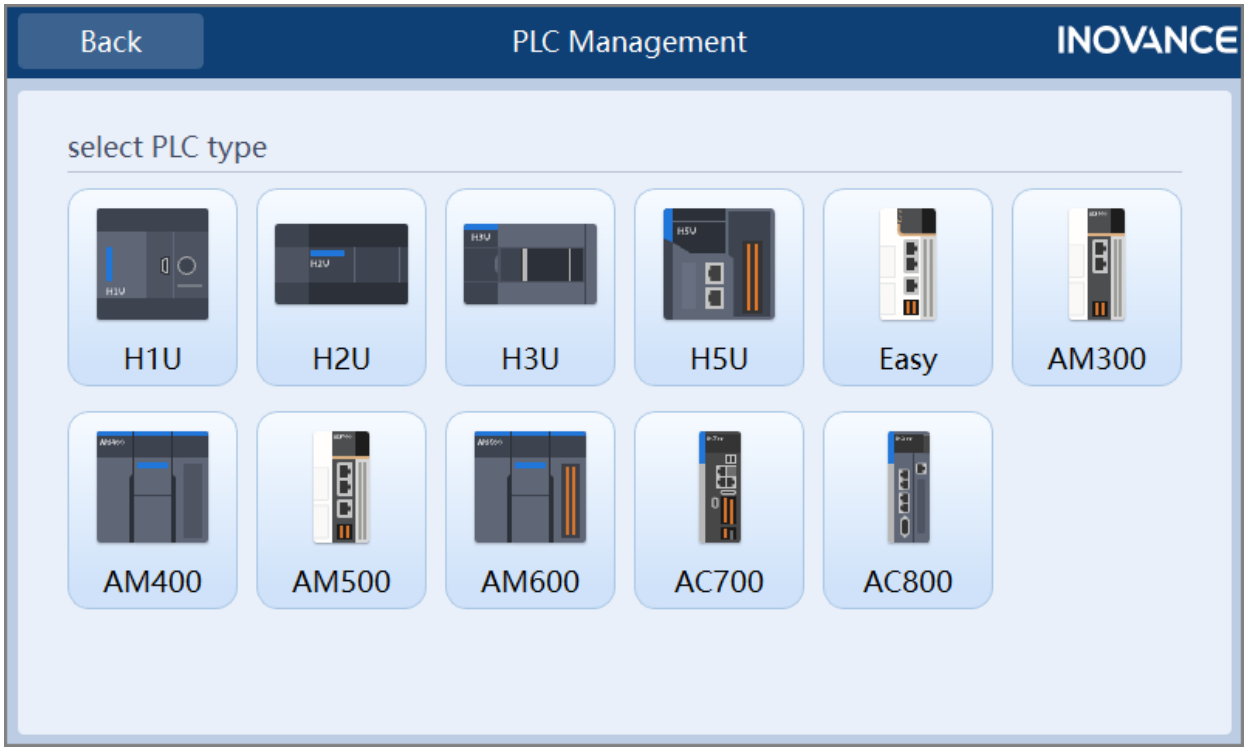
The AM400 or AM600 series allow you to download a project, update the firmware, and transmit files through an Ethernet port.

Condition

The HMI has communicated with the PLC.

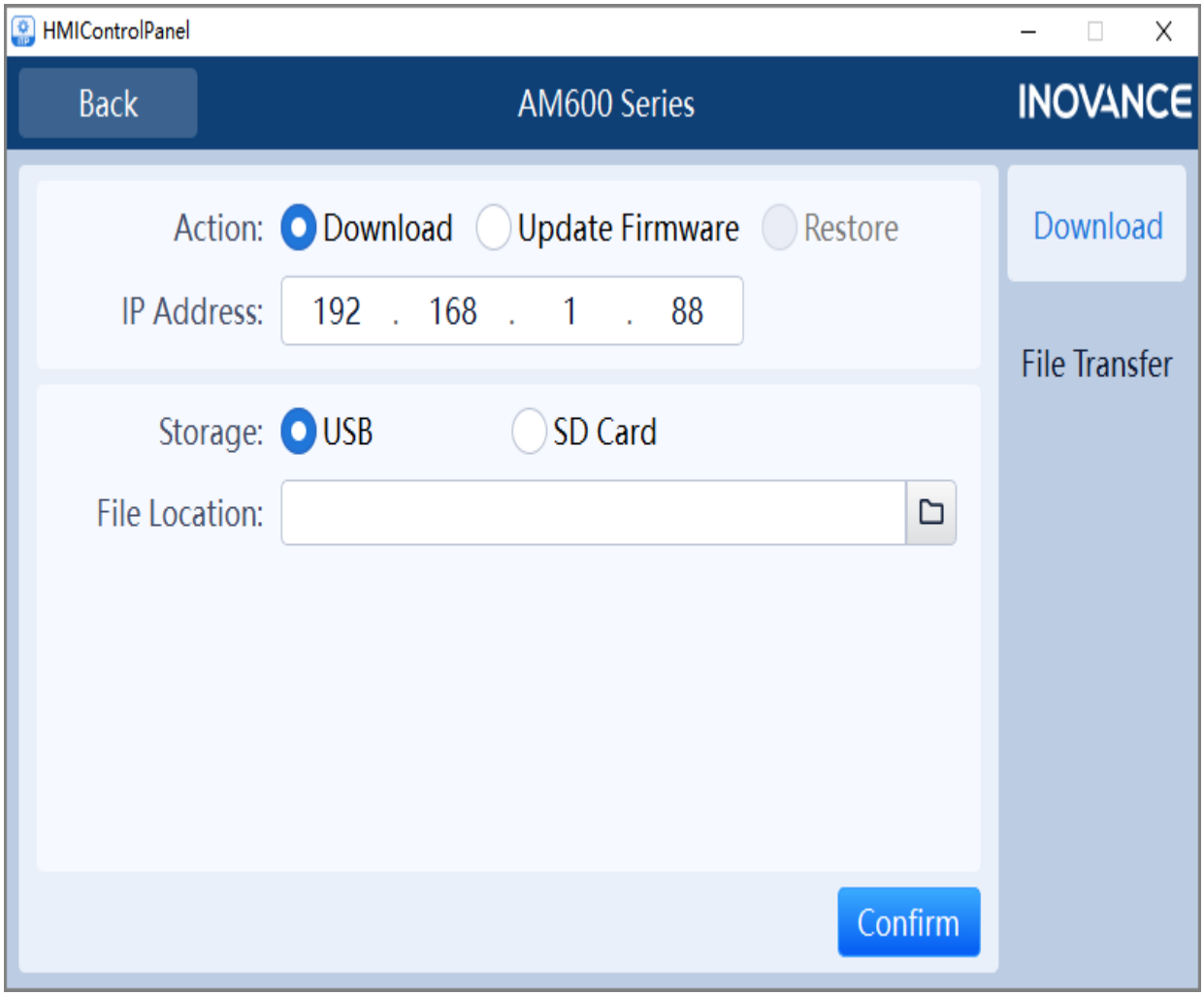
Downloading procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM600" (the following takes AM600 as an example).



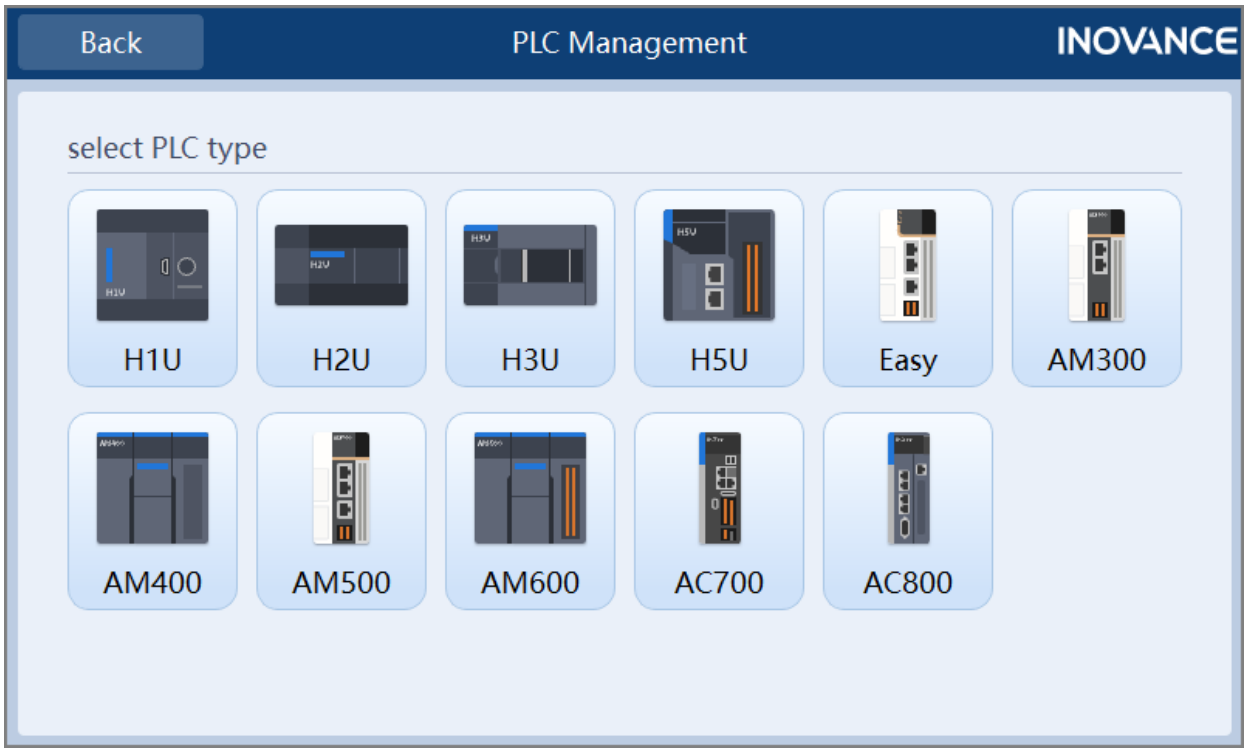
2. On the "AM600 Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Download".
- "IP Address": Set the IP address of the AM600-series device.
- "Storage": Select "USB".
- "File Location": Select a project file suffixed by .userprg.



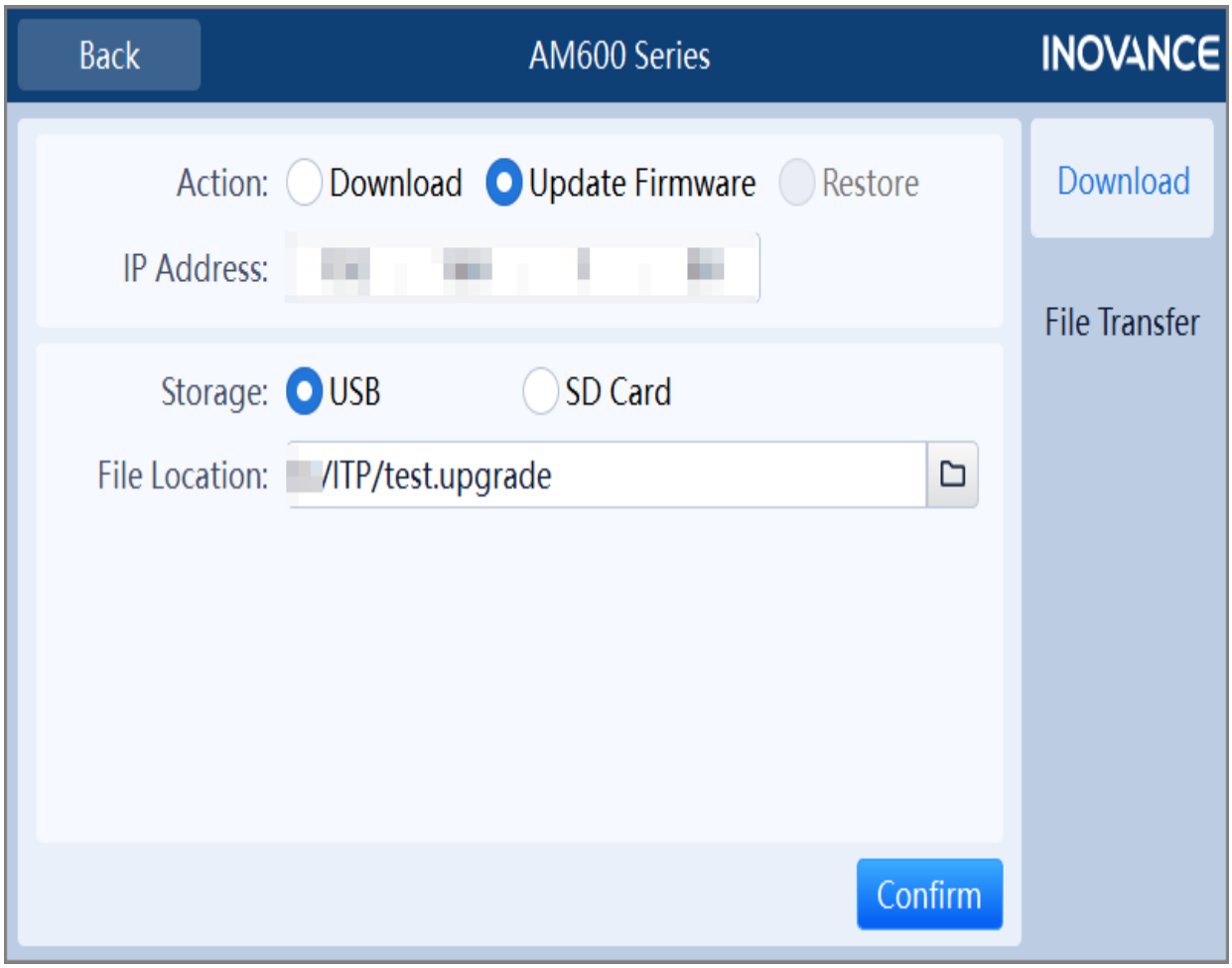
Firmware updating procedure

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM600" (the following takes AM600 as an example).



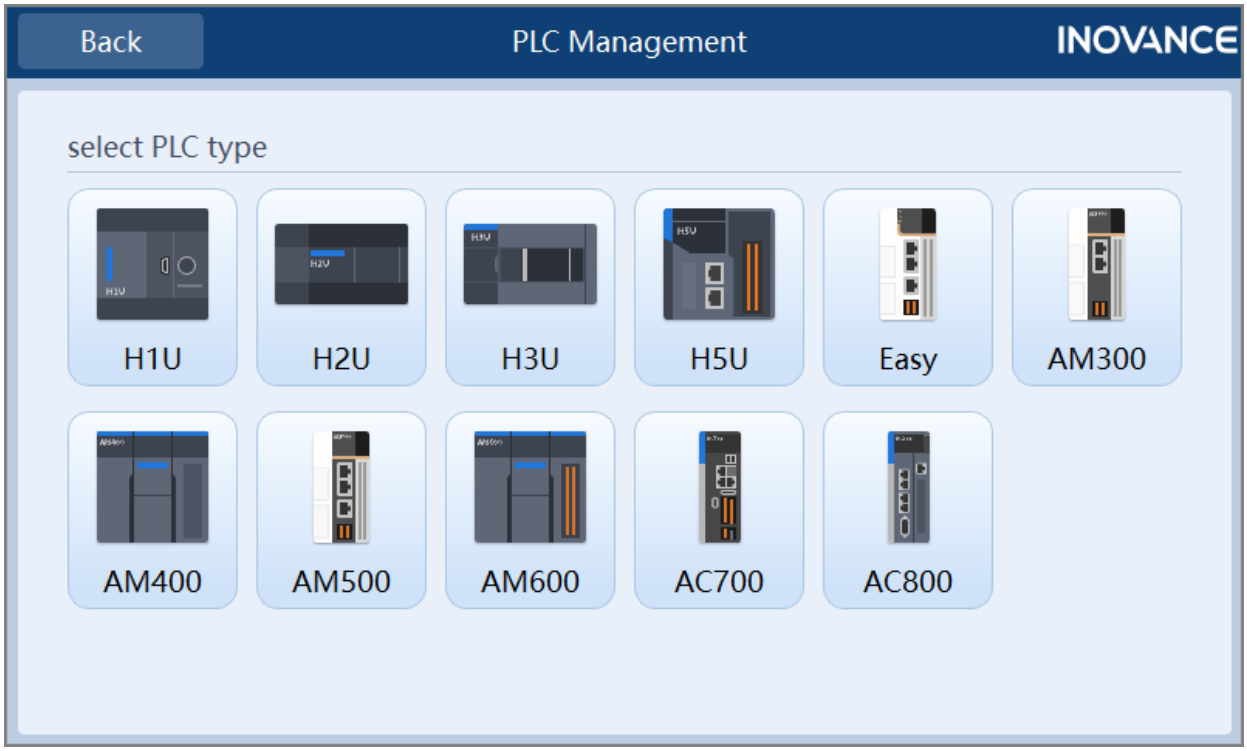
2. On the "AM600 Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Action": Select "Update Firmware".
- "IP Address": Set the IP address of the AM600-series device.
- "Storage": Select "USB".
- "File Location": Select the firmware update file suffixed by .upgrade.



Procedure for transmitting files from HMI to PLC

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM600" (the following takes AM600 as an example).

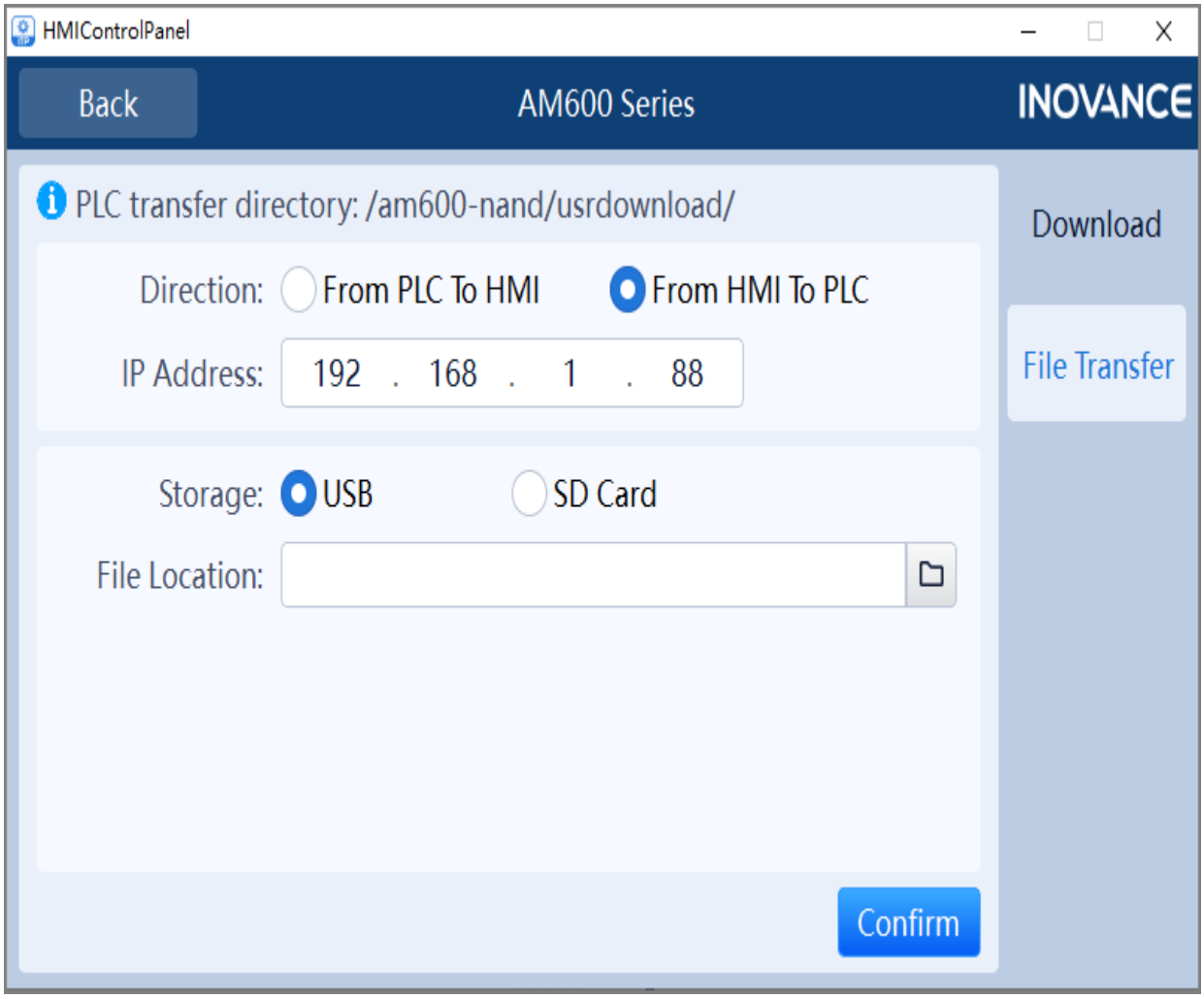


2. On the "AM600 Series" page, click "File Transfer". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Direction": Select "From HMI To PLC".
- "IP Address": Set the IP address of the AM600-series device.
- "Storage": Select "USB".
- "File Location": Select the file to be transmitted, such as "test.csv".

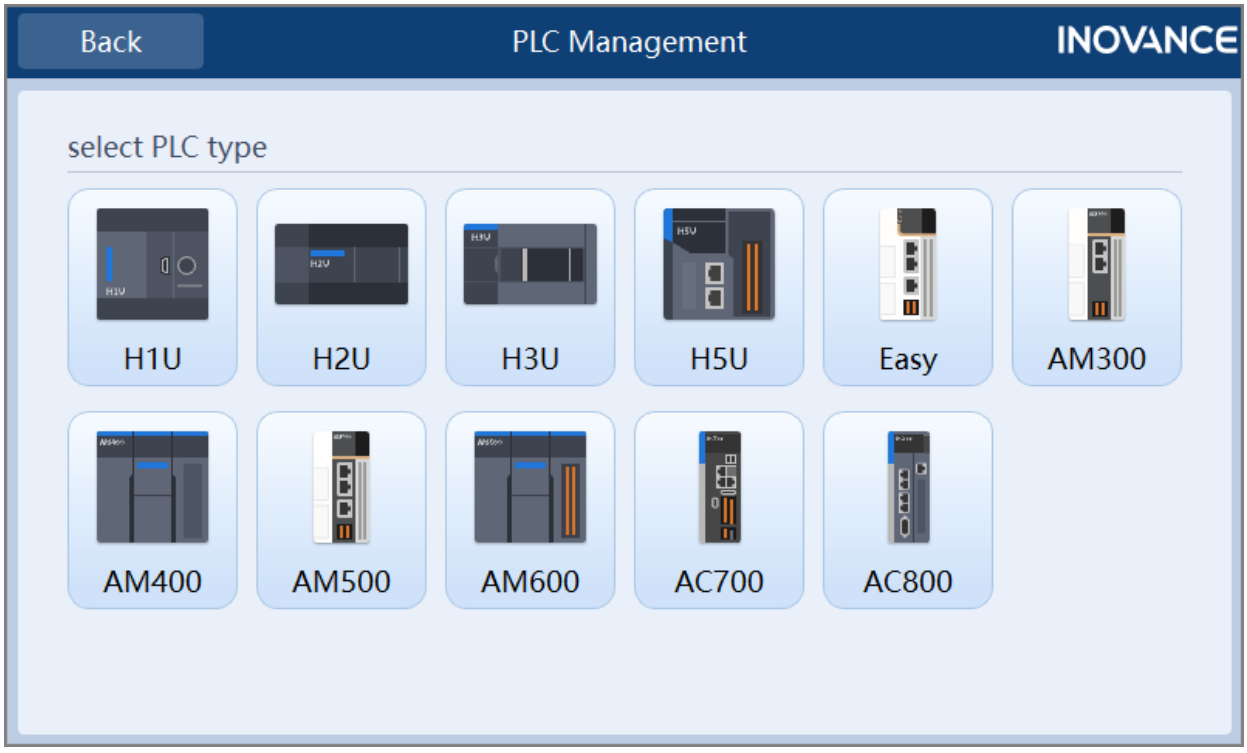
Note

The transferred files are stored in the "/am600-nand/usrdownload/" directory of the AM400 or AM600 series.



Procedure for transmitting files from PLC to HMI

1. Power on the HMI, enter the control panel as instructed, click "PLC Management", and select "AM600" (the following takes AM600 as an example).

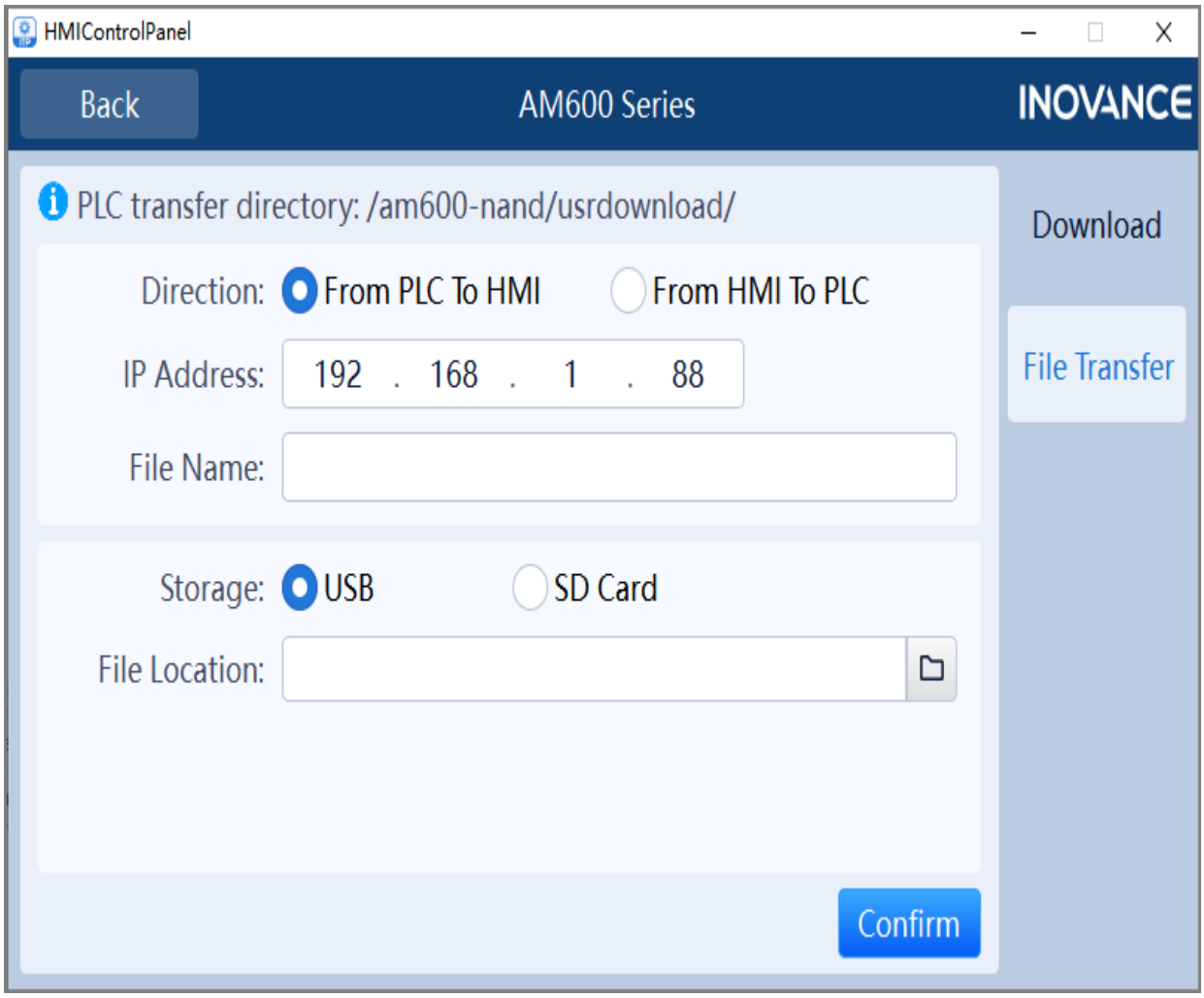


2. On the "AM600 Series" page, click "File Transfer". On the tab page displayed, configure the following parameters, and click "Confirm".

- "Direction": Select "From PLC To HMI".
- "IP Address": Set the IP address of the AM600-series device.
- "File Name": Sets the name of the file to be transmitted.
- "Storage": Select "USB".
- "File Location": Select the directory to which you want to save the file.

Note

- The file name set here must be the same as that in the "/am600-nand/usrdownload/" directory.
- Only the files in the "/am600-nand/usrdownload/" directory of the AM400 or AM600 series can be transferred.



15.9 Setting the Project Language and Font

For details, see Setting the Project Language.

16 System Function

16.1 Introduction

InoTouchPad provides predefined system functions for routine configuration tasks. You can use them to accomplish many tasks in the runtime without the need for programming skills.

For more complex problems, you can use running scripts. Running scripts provide programming interfaces to access some project data in the runtime. Running scripts are used for project designers with JavaScript knowledge.

16.2 Use of System Functions

You can configure system functions on all objects that can respond to events. System functions are mainly used in function lists and scripts to control processes.

- Function list: The system functions in the function list are processed in order.
- Script: In a script, you can use system functions related to commands and requirements in your code. In this way, scripts can be executed according to the specified system state.

16.3 Categories of System Functions

16.3.1 Overview

System functions are predefined functions to perform many tasks at run time, not requiring any programming knowledge.

16.3.2 Calculation

<table>
<tr><th>No.</th><th colspan="2">System Function</th><th>Description</th><th>Script Calling</th></tr>
<tr><td rowspan="4">1</td><td colspan="2">DecreaseValue (Tag, Value, Reset)</td><td>Tag = Tag – Value</td><td rowspan="4">Supported, for example, DecreaseValue(SmartTags('Tag_1'),1,0);</td></tr>
<tr><td rowspan="3">Parameter</td><td>Tag(InOut)</td><td>A tag defaulted to null</td></tr>
<tr><td>Value(In)</td><td>A constant/tag defaulted to 1</td></tr>
<tr><td>Reset</td><td>Reset. Options include "Yes" and "No" (default). If "Yes" is selected, the tag will be reset to the upper limit after being reduced to the lower limit.</td></tr>
<tr><td rowspan="4">2</td><td colspan="2">IncreaseValue (Tag, Value, Reset)</td><td>Tag = Tag + Value</td><td rowspan="4">Supported, for example, IncreaseValue(SmartTags('Tag_1'),1,1);</td></tr>
<tr><td rowspan="3">Parameter</td><td>Tag(InOut)</td><td>A tag defaulted to null</td></tr>
<tr><td>Value(In)</td><td>A constant/tag defaulted to 1</td></tr>
</table>

		Reset	Reset. Options include "Yes" and "No" (default). If "Yes" is selected, the tag will be reset to the lower limit after being increased to the upper limit.	
3	InverseLinearScaling (X, Y, b, a)		X = (Y - b)/a, X and Y cannot be the same.	Supported, for example, InverseLinearScaling(SmartTags('Tag_1'),SmartTags('Tag_2'),2,2);
	Parameter	X(Out)	A tag defaulted to null	
		Y(In)	A tag defaulted to null	
		b(In)	A constant/tag defaulted to 0	
		a(In)	A constant/tag defaulted to 1	
4	LinearScaling(Y,a,X,b)		Y= (a * X) + b, X and Y cannot be the same.	Supported, for example, LinearScaling(SmartTags('Tag_1'),3,SmartTags('Tag_2'),3);
	Parameter	Y(Out)	A tag defaulted to null	
		a(In)	A constant/tag defaulted to 1	
		X(In)	A tag defaulted to null	
		b(In)	A constant/tag defaulted to 0	
5	SetValue (Tag, Value)		Tag = Value	Supported, for example, SetValue(SmartTags('Tag_1'),22);
	Parameter	Tag(InOut)	A tag defaulted to null	
		Value(In)	A constant/tag defaulted to 0	
6	Random (Tag)		Takes a random value in the upper and lower limits of a tag.	Supported, for example, Random(SmartTags ('Tag_1'));
	Parameter	Tag(Out)	A tag defaulted to null	

16.3.3 Editing Bits

No.	System Function		Description	Script Calling
1	InvertBit (Tag)		Inverts the value of the set "BOOL" tag.	Supported, for example, InvertBit(SmartTags('tag_1'));
	Parameter	Tag(InOut)	A tag defaulted to null	
2	InvertBitInTag (Tag, Bit)		Inverts bits in a set tag.	

	Parameter	Tag(InOut)	A tag defaulted to null	Supported, for example, InvertBitInTag (SmartTags('Tag_2'),1);
		Bit(In)	A bit number. The value ranges from 0 to 31. The default value is 0.	
3	ResetBit (Tag)		Sets the "BOOL" tag to 0.	Supported, for example, ResetBitInTag(SmartTags('Tag_2'),1);
	Parameter	Tag(InOut)	A tag defaulted to null	
4	ResetBitInTag(Tag, Bit)		Sets a bit in a set tag to 0.	Supported, for example, ResetBitInTag(SmartTags('Tag_2'),0);
	Parameter	Tag(InOut)	A tag defaulted to null	
		Bit(In)	A bit number. The value ranges from 0 to 31. The default value is 0.	
5	SetBit(Tag)		Sets the "BOOL" tag to 1.	Supported, for example, SetBit(SmartTags('tag_1'));
	Parameter	Tag(InOut)	A tag defaulted to null	
6	SetBitInTag(Tag, Bit)		Sets a bit in a set tag to 1.	Supported, for example, SetBitInTag(SmartTags('Tag_2'),0);
	Parameter	Tag(InOut)	A tag defaulted to null	
		Bit(In)	A bit number. The value ranges from 0 to 31. The default value is 0.	

16.3.4 Screens

No.	System Function		Description	Script Calling
1	ActivateScreen(ScreenName)		Switches to the specified screen by screen name.	Supported, for example, ActivateScreen('screen_1');
	Parameter	ScreenName	The screen name	
2	ActivateScreenByNumber(ScreenId)		Switches to the specified screen by screen ID.	Supported, for example, ActivateScreenByNumber (SmartTags('tag_1'));
	Parameter	ScreenId	The screen ID, indicated by the tag value	
3	ActivatePreviousScreen		Switches to the previous screen.	Supported, for example, ActivatePreviousScreen();
4	ShowPopup		Displays a pop-up screen at the specified position.	Supported, for example, ShowPopup('screen_2', 100,200);
	Parameter	ScreenName	The name of the pop-up screen	
		posX	X coordinate of the pop-up screen, which is screen center by default Constant/tag	
		posY	Y coordinate of the pop-up screen, which is screen center by default Constant/tag	
5	HidePopup		Hides a pop-up screen.	Supported, for example, HidePopup('screen_2');
	Parameter	ScreenName	The name of the pop-up screen	

6	HideAllPopups	Hides all pop-up screens.	Supported, for example, HideAllPopups();

16.3.5 User Management

No.	System Function		Description	Script Calling
1	GetAuthorization		Writes permissions of the login user group into a specified tag. Note The permission value is calculated based on the group permission selected by the user. The group permissions are indicated by a 32-bit integer, with each bit representing one permission.	Not supported
	Parameter	Tag(Out)	Written tag, which is empty by default and only of the Int32 type	
2	GetGroupNumber (Tag)		Writes the group number of the login user into a specified tag.	
	Parameter	Tag(Out)	Written tag, which is empty by default	
3	GetPassword (Tag)		Writes the password of the login user into a specified tag.	
	Parameter	Tag(Out)	Written tag, which is empty by default	
4	GetUserName (Tag)		Writes the name of the login user into a specified tag.	
	Parameter	Tag(Out)	Written tag, which is empty by default	
5	Logoff		Logs out.	
6	Logon (UserName, Password)		Logs in.	
	Parameter	UserName(In)	User name, which is empty by default and only of the string type	
		Password(In)	User password, which is empty by default and only of the string type	
7	RemoveUser (UserName)		Deletes users from the administrator group by user names (admin cannot be deleted).	
	Parameter	UserName(In)	User name, which is empty by default	
8	ChangePassword (UserName, Password)		Changes the password of a specified user.	
	Parameter	UserName(In)		

			User name, which is empty by default and only of the string type	
		Password(In)	User password, which is empty by default and only of the string type	
9	ShowLogonDialog		Displays the login dialog box.	
10	RestoreDefaultPassword		Uses the supervisor password permission to restore the default password (111111) for all users.	
	Parameter	Super Password(In)	Super user password, which is empty by default and only of the string type	

16.3.6 HMI Date and Time

No.	System Function		Description	Script Calling
1	SetHMITime(Tag, Tag, Tag)		Sets the current HMI time, including the hour, minute, and second.	Not supported
	Parameter	Tag(In)	Reads the value of the bound tag, converts it into the format of hour, minute, and second, and writes it to the HMI.	
2	SetHMIDate(Tag, Tag, Tag)		Sets the current HMI date, including the year, month, and day.	
	Parameter	Tag(In)	Reads the value of the bound tag, converts it into the format of year, month, and day, and writes it to the HMI. (You need to verify the date. If it is set to February 30, no error will be reported.)	
3	SetHMIDateTime(Tag, Tag, Tag, Tag, Tag, Tag)		Sets the current HMI time, including the year, month, day, hour, minute, and second. The time should not be earlier than year 2000.	
	Parameter	Tag(In)	Reads the value of the bound tag, converts it into the format of year, month, day, hour, minute, and second, and writes it to the HMI. (You need to verify the date and time. If it is set to February 30, no error will be reported.)	
4	SetHMITimeZone(Tag)		Sets the current HMI time zone.	
	Parameter	Tag(In)	Sets the time zone of UTC.	
5	UpdateTagDateTime (Tag)		Reads the current HMI time value and writes it into the specified tag.	

	Parameter	Tag(Out)	Tag of the DateTime type.	

16.3.7 Settings

No.	System Function		Description	Script Calling
1	UpdateTag(Tag)		Obtains the latest value of a tag.	Not supported
	Parameter	tag	Tag	
2	SetLanguage (Language)		Sets the language on the HMI device.	
	Parameter	language(In)	Language, including abbreviations of multiple languages and Toggle (clicked to switch the language)	
		Tag	Tag of the string type	
3	SetStyle (styleSheet)		Sets the global style on the HMI device.	
	Parameter	styleSheet (In)	Style, including style names and Toggle (clicked to switch to the next style)	
4	SetBlacklightMode(BlacklightMode)		Sets the backlight mode.	
	Parameter	BlacklightMode (In)	On (default) or off	
5	SetBacklight(LightValue)		Sets the brightness value of the screen.	Not supported
	Parameter	LightValue(In)	Range: 0 to 100 Default: 90	
6	SetBacklightTime(TimeValue)		Sets the backlight time, in minutes.	
	Parameter	TimeValue(In)	Range: 0 to 255 Default: 5	
7	SetScreenSaverTime(TimeValue)		Sets the screen saver time, in minutes.	
	Parameter	TimeValue(In)	Range: 0 to 255 Default: 3	
8	SetSoftwareInputEnabled(Status)		Disables or enables the soft keypad.	
	Parameter	Status(In)	Value range: Enable/Disable	
9	OpenControlPanel		Accesses the HMIAutorun settings page.	
10	CalibrateTouchScreen		Accesses the calibration page.	
11	RestoreFactorySettings		Restores factory defaults.	

12	Sync		Synchronizes data from memory to a disk. This function needs to be called before exiting or restart to ensure that all data is synchronized to the disk.	
13	Reboot		Restarts the operating system of HMIRuntime.	
14	Shutdown		Shuts down the HMI device.	
15	UmountDisk(TmpType, Tag)		Unmounts a storage device.	
	Parameter	TmpType(In)	Value range: SD card (default) or USB drive	
		Tag(Out)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
16	TrigInstalMentEarly(Tag)		Triggers the next installment in advance.	
	Parameter	Tag(In)	Installment-based trigger tag of the Bool type	
17	UnlockCurrentInstalMent		Unlocks the current installment.	
18	SetIPAddress(DHCP, IP, Subnet, Mask, Gateway, Tag(out))		Configures the network.	
	Parameter	DHCP(In)	Value range: Yes (default) and No	
		IP(In)	Address range: Constant and tag	
		Subnet Mask(In)	Value mask range	
		Gateway(In)	Value range: Constant and tag	
		Tag(out)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
19	SetGlobalSoundControl(GlobalSoundControlIn)		Mutes or unmutes the global buzzer.	
	Parameter	GlobalSoundControl(In)	Global sound control, including off, on, and switchover (default)	
20	CloseScreenSaver()		Automatically closes the screen saver.	

16.3.8 Connection

No.	System Function	Description	Script Calling
1	SetConnectionEnableMode(Connection, Enabled status)	Enables the connection.	Supported. For usage, see SetConnectionMode.

<table>
<tr><td rowspan="3"></td><td colspan="2"></td><td>When controlling with functions, the "Delay Enable" time set in the Connection properties does not take effect.</td><td rowspan="5"></td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection(In)</td><td>Connection name</td></tr>
<tr><td>Enabled status</td><td>Range: Enable/Disable
Default: Enable</td></tr>
<tr><td rowspan="3">2</td><td colspan="2">ChangeConnection (Connection,Station address)</td><td>Modifies the station address of the slave device to be connected</td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection(In)</td><td>Connection name</td></tr>
<tr><td>Station address(In)</td><td>Station address of the slave device</td></tr>
<tr><td rowspan="3">3</td><td colspan="2">SetHMIStationID (Connection,Station number)</td><td>Modifies the station number when the HMI serves as a Modbus slave.
Note
Only the "Modbus Slave" protocol is supported.</td><td rowspan="3">Supported, for example, SetHMIStationID ("Connection_1",1)</td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection(In)</td><td>Connection name</td></tr>
<tr><td>Station number(In)</td><td>Slave number of the slave device</td></tr>
<tr><td rowspan="3">4</td><td colspan="2">SetConnectionMode(Connection, Mode)</td><td>Sets the connection status. This function is used in a script.</td><td rowspan="3">Supported
For example, SetConnectionMode("Connection 1", 0)
• 0: Online
• 1: Offline
• 2: Switch</td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection(In)</td><td rowspan="2">Connection name</td></tr>
<tr><td>Mode(Out)</td></tr>
</table>

5	ChangeConnectionIpAddress(Connection, IpAddress)		Modifies the IP address of the connected slave.	Not supported
	Parameter	Connection(In)	Connection name	
		IpAddress(In)	The IP address set. The tag type is string.	
6	GetConnectionIpAddress(Connection, IpAddress)		Obtains the IP address of the connected slave.	
	Parameter	Connection(In)	Connection name	
		IpAddress(Out)	The IP address set. The tag type is string.	
7	SetCOMParameters(Connection, Baud Rate,Data Bits,Parity,Stop Bits,Processing status)		Sets the serial port parameters.	
	Parameter	Connection(In)	Connection name	
		Baud Rate(In)	Baud rate Default: 9600	
		Data Bits(In)	Number of data bits Default: 7	
		Parity(0:none:Odd 2:even)	Parity check Default: 0	
		Stop Bits	Number of stop bits Default: 1	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
8	ChangeModbusMode(Connection,interface,ModbusMode,Reboot now)		Changes the Modbus mode (you need to restart the device to apply the modification).	
	Parameter	Connection interface(In)	Communication port Default: COM1	
		ModbusMode(In)	Modbus mode Default: Master	
		Reboot now(In)	Sets whether to restart the device immediately. Default: Yes	

<table>
<tr><td rowspan="3">9</td><td colspan="2">ModbusServerSlaveMonitor(Connection ,Modbus Connection status)</td><td>Monitors the Modbus slave.
 
Only the "Modbus Slave" protocol is supported.</td><td rowspan="3"></td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection(In)</td><td>Connection name. Select the "Modbus Slave" protocol for the serial port.</td></tr>
<tr><td>Modbus Connection status(In)</td><td>Connection state
• 0: Connected. A command complying with the Modbus protocol is received.
• 1: Disconnected. No command complying with the Modbus protocol is received.</td></tr>
<tr><td rowspan="3">10</td><td colspan="2">SetConnectionScheduTimeSlice(Connection,Value)</td><td>Sets the time slice for the network port to connect to the communication command.</td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection</td><td>Network port connection name</td></tr>
<tr><td>Value</td><td>Proportion of time slices of the command</td></tr>
<tr><td rowspan="3">11</td><td colspan="2">GetConnectionScheduTimeSlice(Connection,Time Slice)</td><td>Obtains the time slice for the network port to connect to the communication command.</td></tr>
<tr><td rowspan="2">Parameter</td><td>Connection</td><td>Network port connection name</td></tr>
<tr><td>Time Slice(Out)</td><td>Value of the time slice</td></tr>
<tr><td></td><td colspan="2"></td><td></td></tr>
</table>

12	SetComScheduTimeSlice(Connection interface,Value)		Sets the time slice for the serial port to connect to the communication command.	
	Parameter	Connection interface	Serial port name	
		Value	Proportion of time slices of the command	
13	GetComScheduTimeSlice(Connection interface,Time Slice)		Obtains the time slice for the serial port to connect to the communication command.	
	Parameter	Connection interface	Serial port name	
		Time Slice(Out)	Value of the time slice	

16.3.9 Data Service

No.	System Function		Description	Script Calling
1	PublishTag(Publisher)		Publishes specified tag information to the server.	Not supported
	Parameter	Publisher (In)	The publisher list ID	
2	WriteTagValuetoRemoteDB(Group)		Sends a command to the device to start sampling data to the database.	
	Parameter	Group(In)	The data group number	
3	ReadTagValuefromRemoteDB(Group)		Sends a command to the device to sample data from the database.	
	Parameter	Group(In)	Queries the group number.	
4	SendMail(MailId)		Sends an email from the HMI device to the specified recipient.	
	Parameter	MailId(In)	The email ID	

16.3.10 Print

No.	System Function	Description	Script Calling
1	PrintScreen (path)		Not supported

			Prints the current screen, and saves the screenshot to a USB drive when the printer is not connected (only the USB printer is supported).	
	Parameter	Path	Screenshot storage directory: Local HMI/Storage Card/U Disk	
2	PrintAlarm(Screen object)		Prints the content of an alarm view (only the USB printer is supported).	
	Parameter	Screen object(In)	Screen object. You can only select the alarm view control.	
3	PrintLog (Screen object)		Prints the content of a data view (only the USB printer is supported).	
	Parameter	Screen object (In)	Screen object. You can only select the data view control.	
4	PrintRecipe (Screen object)		Prints the content of a recipe view (only the USB printer is supported).	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
5	PrintBitMap (…)		Prints images in BMP format (only the USB printer is supported).	
	Parameter	BmpStartX(In)	X coordinate of the start point of the screenshot	
		BmpStartY(In)	Y coordinate of the start point of the screenshot	
		BmpWide(In)	Width of the screenshot	
		BmpHigh(In)	Height of the screenshot	
		LabelStartX(In)	X coordinate of the start point of the image on the label paper	
		LabelStartY(In)	Y coordinate of the start point of the image on the label paper	

16.3.11 Alarm

No.	System Function		Description	Script Calling
1	ClearAlarmBuffer		Deletes alarms from the alarm buffer on HMI devices. Unacknowledged alarms are also deleted.	Not supported
2	ShowAlarmView(ObjectName,DisplayMode)		Hides/displays the alarm window on the HMI device.	
	Parameter	ObjectName	The name of the alarm window object	
		DisplayMode	No: Hides the alarm screen. Yes: Displays the alarm screen. Toggle: Switches between the two modes.	
3	ClearActionedAlarmBuffer		Deletes processed alarms from the alarm buffer on HMI devices.	

4	ClickResetedAlarmBuffer	Clears the restored alarms when the button is clicked. You do not need to select a row.	
5	Beep	Beeps.	

16.3.12 Log

No.	System Function		Description	Script Calling
1	ClearLog (LogType, Log)		When this function is executed, data records or alarm records in the SQLite database are overwritten from the 1st entry.	Supported, for example, ClearLog('Data record_1');
	Parameter	LogType(In)	Data record/alarm record Default: Data record	
		Log(In)	The name of the record Default: Null	
2	CopyDataLog (LogType, Log)		Copies one data record to another data record.	Supported, for example, CopyDataLog('source data record', 'target data record', 'start time', 'end time', 'replace tag');
	Parameter	Source Data Log	The source data record (data record associated with the tag)	
		Target Data Log	The target data record	
		StarTime(In)	Start time	
		EndTime(In)	End time	
		Replace Tag	Replace tag (associated with the target data record, and of the same tag type of the source data record)	
3	CloseAllLogs		Disconnects the connection between the runtime and all records. Before closing a record, you must stop the recording function in the record control by using the system function "StopLogging".	Not supported
4	OpenAllLogs		Establishes a connection between the runtime and the record. Recording can be continued. Call the function "StartLogging" to start recording again.	Not supported
5	LogTag (Tag)		Saves the value of the specified tag to the specified data record. It is used for the record collection mode "On demand".	Supported, for example, LogTag(SmartTags('Tag_1'));
	Parameter	Tag(In)	The tag whose value you want to record Default: Null	
6	StartLogging (LogType, Log)		Starts recording of the specified record.	Not supported
	Parameter	LogType(In)		

			Data record/alarm record Default: Data record	
		Log(In)	The name of the record Default: Null	
7	StopLogging (LogType, Log)		Stops recording of the specified record.	Not supported
	Parameter	LogType(In)	Data record/alarm record Default: Data record	
		Log(In)	The name of the record Default: Null	
8	LogTagGroup (Tag)		Saves the values of all tags in the specified tag group to the specified data record. It is used for the tag group record mode "On demand".	Supported, for example, LogTagGroup('Tag group_2');
	Parameter	Group(In)	The tag group whose value you want to record Default: Null	
9	ClearOperationRecord		Deletes operation records.	Not supported
10	ExportDataLogs (Path, Encode, Processing status, Export file name)		Exports all data records.	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
		Export file name	The name of the file to be exported, which can be customized	
11	ExportAlarmLogs (Path, Encode, Processing status, Export file name)		Exports all alarm records.	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
		Export file name	The name of the file to be exported, which can be customized	
12	ExportOperationRecord(Path, Encode, Processing status)		Export Record	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Encode(In)	The format of the exported text Default: GBK	

		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
13	ExportDataLogsByTime(Path, Encode, Processing status, StartTime, EndTime)		Exports data records by time.	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
		StarTime(In)	Start time. The tag is of the "DateTime" type.	
		EndTime(In)	End time. The tag is of the "DateTime" type.	
14	ExportDataLogsForRows(Path, Encode, Processing status)		Exports data record by row.	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
15	ExportDataLogsSplitDate(Path, Dir, Encode, Processing status)		Exports data record by day.	
	Parameter	Path(In)	The path of the exported file, which cannot be a local disk	
		Dir(In)	Folder name, which can be a constant. The tag is of the String type.	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
		Export days (In)	Exports data within the specified day range. Default: Null	
		Retention days(In)	When this function is executed, all files in the export directory are filtered and files outside the retention days range are deleted. The default value is null.	
16	ExportAlarmLogsSplitDate(Path, Dir, Encode, Processing status)		Exports alarm records by day.	
	Parameter	Path(In)	The path of the exported file Default: Local disk	

		Dir(In)	Folder name, which can be a constant. The tag is of the String type.	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
17	ExportOperationRecordSplitDate(Path, Dir, Encode, Processing status)		Exports operation records by day.	
	Parameter	Path(In)	The path of the exported file Default: Local disk	
		Dir(In)	Folder name, which can be a constant. The tag is of the String type.	
		Encode(In)	The format of the exported text Default: GBK	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
18	ExportDataLogsByQueryParameter(Path,Encode,Filter Condition,Start Time,End Time,Processing status)		Exports user-defined query parameter data, which is applicable for group data.	
	Parameter	Path(In)	The path of the exported file Default: Local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Filter Condition(In)	Filter condition	
		Start Time(In)	Start time. The tag is of the "DateTime" type.	
		End Time(In)	End time. The tag is of the "DateTime" type.	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
19	MaintainFileCount(Path, Encode, Files, count, Processing status)		The maximum number of files under the folder	
	Parameter	Path(In)	The path of the exported file Default: Local disk	
		Encode(In)	The format of the exported text Default: GBK	
		Files count(In)	Number of files Default: 10	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
20				

	ExportTcpDataLog(Path, Processing status)		Exports the network port communication logs.	
	Parameter	Path(In)	The path of the exported file Default: USB drive	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	

16.3.13 Recipe

No.	System Function		Description	Script Calling
1	DeleteDataRecord (Recipe number/name,Data record number/name,Confirmation,Processing status)		Deletes a recipe data record.	Not supported
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number. When the parameter value is 0, all data records under this recipe are deleted.	
		Confirmation(In)	Confirms the operation. Options: Yes and No	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
2	GetDataRecordFromPLC (Recipe number/ name,Data record number/ name,Overwrite,Processing status)		Sends a value from the PLC to the data record of the recipe view of the screen.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number	
		Overwrite(In)	Overwrites the existing record. Options: Yes, No, and With confirmation	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
3	GetDataRecordName (Recipe number,Data record number,Recipe name,Data record name,Processing status)		Writes the names of the specified recipe and recipe data record to the specified tag.	
	Parameter	Recipe number(In)	The recipe number/name	
		Data record number(In)	The data record number	
		Recipe name(Out)	The recipe name	

		Data record name(Out)	The data record name	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
4	GetDataRecordTagsFromPLC (Recipe number /name,Processing status)		Sends a value from the PLC to the element tag of the screen.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
5	LoadDataRecord (Recipe number/name,Data record number/name,Processing status)		Synchronizes saved data record element values in the recipe view control to the tags of the screen. Note "Synchronize Tags" must be checked.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
6	NewDataRecord (Recipe number/name,Data logging name(Out),Data logging number(Out),Value taking method,Processing status(Out,optional))		Creates a data record when the recipe view is not configured in the screen.	
	Parameter	Recipe number/name	The recipe number/name	
		Data logging name(Out)	The data record name	
		Data logging number(Out)	The data record number	
		Value taking method	Value acquisition method • The start value (default value) of the recipe ingredient • The acquisition value of the ingredient tag	
		Processing status(Out,optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	

<table>
<tr><td rowspan="5">7</td><td colspan="2">GetDataRecordIdByName(Recipe number/ name,Data record name(In),Data record number(Out),Processing status(Out,optional))</td><td>Retrieves the data record number based on the data record name.</td><td rowspan="5"></td></tr>
<tr><td rowspan="4">Parameter</td><td>Recipe number/name</td><td>The recipe number/name</td></tr>
<tr><td>Data record name(In)</td><td>The data record name</td></tr>
<tr><td>Data record number(Out)</td><td>The data record number</td></tr>
<tr><td>Processing status(Out,optional)</td><td>Processing status 2: Ready 4: Execution successful 12: Execution failed</td></tr>
<tr><td rowspan="5">8</td><td colspan="2">SaveDataRecord (Recipe number/name,Data record number/name,Overwrite,Processing status)</td><td>Saves the current value of the element tag as data to form one data record. If the data record already exists, you can select whether to overwrite the exiting data record. If no data record exists, the saving operation fails.
 
"Synchronize Tags" must be checked.</td><td rowspan="5"></td></tr>
<tr><td rowspan="4">Parameter</td><td>Recipe number/ name(In)</td><td>The recipe number/name</td></tr>
<tr><td>Data record number /name(In)</td><td>The data record number</td></tr>
<tr><td>Overwrite(In)</td><td>Overwrites the existing record. Value range: Yes and With confirmation</td></tr>
<tr><td>Processing status(Out optional)</td><td>Processing status 2: Ready 4: Execution successful 12: Execution failed</td></tr>
<tr><td rowspan="2">9</td><td colspan="2">LoadDataRecordAlpha (Recipe number/ name,Data record number/name,Processing status)</td><td>Synchronizes saved data record element values in the recipe view control to the tags of the screen. This function has the same features with the "LoadDataRecord" function but has different parameters. For details, see the function parameter list.
 
"Synchronize Tags" must be checked.</td><td rowspan="2"></td></tr>
<tr><td>Parameter</td><td>Recipe number/ name(In)</td><td>The recipe number/name</td></tr>
</table>

		Data record number /name(In)	The data record number/name	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
10	SaveDataRecordAlpha(Recipe number/ name,Data record number/ name,Overwrite,Force creation,Processing status)		Saves the current value of the element tag as data to form one data record. If the data record already exists, you can select whether to overwrite the exiting data record. If no data record exists, a data record is created forcibly. Note "Synchronize Tags" must be checked.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number/name	
		Overwrite(In)	Overwrites the existing record. Value range: Yes and With confirmation	
		Force creation	Forces to create a record.	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
11	SetDataRecordTagsToPLC(Recipe number/ name,Processing status)		Downloads the value of the element tag in the screen to the PLC.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
12	SetDataRecordToPLC(Recipe number/ name,Data record number/name,Processing status)		Downloads saved data record element values in the recipe view to the PLC.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
13	SetRecipeTags(Recipe number/ name,Status,Processing status)		Sets the online/offline status of a recipe tag.	

	Parameter	Recipe number/ name(In)	The recipe number/name	
		Status (In)	Status. Value range: Online and Offline	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
14	ExportDataRecords(Recipe number/ name,Path,Code,Processing status,ExportFileName)		Exports a data record.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Path	Path	
		Code	Encoding. GBK is supported.	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
		ExportFileName	The name of the file to be exported	
15	ImportDataRecords(Path,File name,Processing status)		Imports a data record.	
	Parameter	Path	Path	
		File name	The name of the file (file: aaa. Note that the file name here is different from the export function. For example, when the path is a local disk, the file name is "RecipeDataRecords/aaa.csv".)	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
16	ExportSingleDataRecords(Recipe number/ name,Data record number,Path,Encode,Processing status,ExportFileName)		Exports a single data record.	
	Parameter	Recipe number/name	The recipe number/name	
		Data record number	The data record number	
		Path	The path of the data record, which can be a local disk, SD card, or USB drive	
		Encode	Encoding. GBK and UTF-8 are supported.	

		Processing status(Out,optional)	The processing status • 2: Ready • 4: Execution successful • 12: Execution failed	
		ExportFileName	The file name of the exported data record	
17	ImportSingleDataRecords(Recipe number/ name,Path,FileName,Processing status)		Imports a single data record.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Path	The path, which can be a local disk, SD card, or USB drive	
		FileName	The name of the file to be imported	
		Processing status(Out optional)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
18	SelectSingleDataRecords(Recipe number/ name,FileName)		Selects the data record to be displayed in the recipe view.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		FileName	The file name (which is the name of the data record)	
19	SetSingleDataRecordStatus(Recipe number/ name,Data record number/name,Data record Status)		Selects the status of a single data record.	
	Parameter	Recipe number/ name(In)	The recipe number/name	
		Data record number /name(In)	The data record number	
		Data record Status	The status of the data record	

16.3.14 Operations on Screen Objects

No.	System Function		Description	Script Calling
1	AlarmViewAcknowledgeAlarm (Screen object)		Acknowledges the alarm in the specified alarm view.	Not supported
	Parameter	Screen object (In)	Screen object. You can only select the alarm view control.	
2	AlarmViewShowOperatorNotes(Screen object)			

			Displays the operator instructions in the specified alarm view. These instructions are the information text configured in analog/discrete alarms.	
	Parameter	Screen object(In)	Screen object. You can only select the alarm view control.	
3	RecipeViewDeleteDataRecord(Screen object)		Deletes the data record displayed in the recipe view.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
4	RecipeViewGetDataRecordFromPLC(Screen object)		Sends the data record loaded in the PLC to the HMI and displays it in the recipe view.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
5	RecipeViewNewDataRecord(Screen object,Tag)		Creates a data record in the specified recipe view.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
		Tag(out)	Processing status 2: Ready 4: Execution successful 12: Execution failed	
6	RecipeViewSaveAsDataRecord(Screen object)		Saves the data record currently displayed in the recipe view with a new name.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
7	RecipeViewSaveDataRecord(Screen object)		Saves the recipe data record displayed in the recipe view.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
8	RecipeViewSetDataRecordToPLC(Screen object)		Sends the recipe data record displayed in the recipe view to the PLC.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
9	RecipeViewShowOperatorNotes(Screen object)		Displays configured information text of the specified recipe view.	
	Parameter	Screen object (In)	Screen object. You can only select the recipe view control.	
10	RecipeViewSynchronizeDataRecordWithTags(Screen object)		Synchronizes the element tag value to the data record displayed in the recipe view.	
	Parameter	Screen object (In)		

			Screen object. You can only select the recipe view control.	
11	TrendViewBackToBeginning (Screen object)		Returns to the beginning of the trend record in the trend view, where the start value of the trend record will be displayed.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
12	TrendViewRulerBackward (Screen object)		Moves the ruler backward in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
13	TrendViewRulerForward (Screen object)		Moves the ruler forward in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
14	TrendViewScrollBack (Screen object)		Scrolls backward by one display width in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
15	TrendViewScrollForward (Screen object)		Scrolls forward by one display width in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
16	TrendViewSetRulerMode (Screen object)		Hides or displays the ruler in the trend view. The ruler displays the Y value associated with the X value.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
17	TrendViewStartStop (Screen object)		Stops or continues trend recording in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
18	TrendViewQueryTrendByTime		Queries the trend records by time in the trend view.	
	Parameter	Screen object (In)	Screen object. You can only select the trend view control.	
		Start Time (In)	Start time	
		End Time (In)	End time	

16.3.15 Report

No.	System Function		Description	Script Calling
1	QueryHistoryReport		Queries historical reports.	Not supported
	Parameter	ShowDetailReport	The report whose detailed data you want to display, such as report 1	
		Parameter	The query parameter, which can be of any type. The query is performed based on the value of the associated tag.	
		Query Interval(In seconds)	The query interval at which queries are performed The default value is 0, that is, no query interval is set. The unit is second.	
		Start Time (In)	The start time of the historical report data to be queried	
		End Time (In)	The end time of the historical report data to be queried	
		Processing status(Out optional)	The query processing status of the report. 2 indicates processing, 4 indicates processed successfully, and 12 indicates processing failed.	

16.3.16 Free Protocol

No.	System Function		Description	Script Calling
1	FreeIn (Connection)		Receives data and returns an array (the FreeIn script function can read up to 2560 bytes).	Supported, for example, FreeIn('connection_1');
	Parameter	Connection (In)	The name of the configured free protocol	
2	FreeOut(Connection , Array)		Sends data in an array.	Supported, for example, var a = new Array(); a[0] = 1; FreeOut('connection_1',a);
	Parameter	Connection (In)	The name of the configured free protocol	
		Array (In)	The array to be sent	

3	AddCRC16 (Array)		Adds CRC16 check data to an array.	Supported, for example,
				var a = new Array();
				a[0] = 1;
				a[2] = 2;
				AddCRC16(a);

	Parameter	Array	The array to be CRC checked	

4	AddCheckSum(Array)		Adds checksum to an array.	Supported, for example,
				var a = new Array();
				a[0] = 1;
				a[2] = 2;
				AddCheckSum(a);

	Parameter	Array	The array to which the checksum to be added	

16.3.17 Timer

No.	System Function	Description	Script Calling

1	SetInterval(expression, value)		Sets a timer to repeatedly execute a function when a specified time is reached.	Supported, for example,
				function add()
				{
				var val= SmartTags('Tag_1');
				SmartTags('Tag_1')=val+1;
				}
				SetInterval(add , 1000);

	Parameter	expression	The name of the function to be executed	
		Value	Specifies the timing duration, in ms.	
2	ClearInterval(timer)		Clears the timer, used with SetInterval.	Supported, for example, var timer=SetInterval(add , 1000); ClearInterval(timer);
	Parameter	Timer	The timer created with SetInterval	

3	SetTimeout(expression, value)		Sets a timer to execute a function only once when a specified time is reached.	Supported, for example,
				function add()
				{
				var val= SmartTags('Tag_1');
				SmartTags('Tag_1')=val+1;
				}
				SetTimeout (add , 1000);

	Parameter	expression	The name of the function to be executed	
		Value	Specifies the timing duration, in ms.	
4	ClearTimeout(timer)		Clears the timer, used with SetTimeout.	Supported, for example, var timer= SetTimeout (add , 1000); ClearTimeout (timer);
	Parameter	The timer created with SetInterval	The timer created with SetTimeout	

5	SetSingleTimer		Sets a timer to execute a function only once when a specified time is reached. After the function is called n times, will be executed n times when a specified time is reached.	Supported, for example,
				function add()
				{
				var val = SmartTags('Tag_1');
				SmartTags('Tag_1') = val + 1;
				}
				Var timerId= SetSingleTimer (add,1000);

	Parameter	expression	The name of the function to be executed	
		Value	Specifies the timing duration, in ms.	

16.3.18 Data Operation

No.	System Function		Description	Script Calling

1	SwapByte(value)		Swaps high and low bytes.	Supported, for example,
				var tag=-32768;
				tag =SwapByte(tag);
				tag output value: 128

	Parameter	Value (In)	Object to be operated	
2	SwapWord(value)		Swaps high and low words.	Supported, for example, var tag= -2147483648; tag = SwapWord(tag); tag output value: 32768
	Parameter	Value (In)	Object to be operated	
3	LowByte(value)		Takes the value of the low byte.	Supported, for example, var tag= -32640; tag = LowByte (tag); tag output value: 128
	Parameter	Value (In)	Object to be operated	

4	HighByte(value)		Takes the value of the high byte.	Supported, for example, var tag= -32640; tag = HighByte (tag); tag output value: -32768
	Parameter	Value (In)	Object to be operated	
5	LowWord(value)		Takes the value of the low word.	Supported, for example, var tag= -2147450880; tag = LowWord (tag); tag output value: 32768
	Parameter	Value (In)	Object to be operated	
6	HighWord(value)		Takes the value of the high word.	Supported, for example, var tag= -2147483648; tag = HighWord (tag); tag output value: -2147483648
	Parameter	Value (In)	Object to be operated	

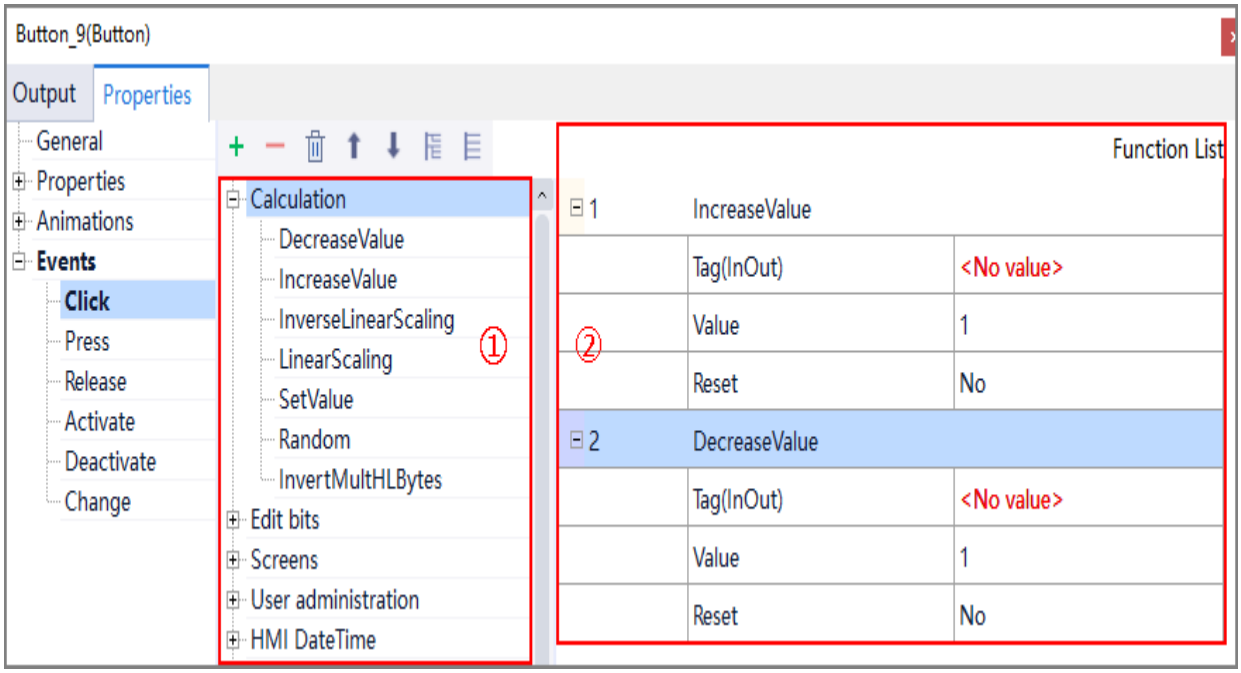
16.3.19 Reading and Writing an Array

No.	System Function		Description	Script Calling
1	ReadArray(tagSource, index, count, tagTarget)		Reads the value of an external array tag into an HMI array tag. The return value is the number of successful reads.	Supported For example, SmartTags('result')=ReadArray(SmartTags('plc_array'),SmartTags('index'),SmartTags('count'),SmartTags('local_array')); From the address offset 'index' of the tag 'plc_array', 'count' data records are read to 'local_array'. The function returns the number of successful reads to 'result'.
	Parameter	tagSource(In)	The source array tag	
		Index(In)	The start index	
		count(In)	The number of elements	
		tagTarget(In)	The target array tag	
2	WriteArray(tagSource, tagTarget, index, count)		Writes the data of the HMI array tag into an external array tag. The return value is the number of successful writes.	Supported For example, SmartTags('result')=WriteArray(SmartTags('local_array'),SmartTags('plc_array'),SmartTags('index'),SmartTags('count')); From the address offset 'index' of the tag 'local_array', 'count' data records are written to 'plc_arrar'. The function returns the number of successful writes to 'result'.
	Parameter	tagSource(In)	The source array tag	
		tagTarget(In)	The target array tag	
		Index(In)	The start index	
		count(In)	The number of elements	

16.4 Function List

16.4.1 Basic Principles

When an event is configured, multiple system functions and scripts can be executed according to the function list. For example, use the function list for button events, as shown in the figure below.



①: Function selection list; ②: Function execution list

Buttons	Feature
+	Adds the function selected in the function selection list to the function execution list.
−	Deletes the function selected in the function execution list.
🗑	Deletes all functions from the function execution list.
↑	Moves up the function selected in the function execution list by one row.
↓	Moves down the function selected in the function execution list by one row.
	Expands items in the function execution list.
	Collapses items in the function execution list.

16.4.2 Property

Different HMI devices can be used for the same project. When you change an HMI device in a project, all system functions and scripts that are not supported by the selected HMI device are marked yellow. Unsupported system functions cannot be executed at run time.

The system functions and scripts in the function list are processed at run time from top to bottom in sequence. To avoid latency, system functions that require longer runtime (such as file operations) are processed simultaneously. For example, even if the previous system function is not completed, you can still execute the next system function.

17 Scripts

17.1 Use of Scripts

Using scripts in the runtime, you can achieve a single solution in a project, such as:

- Configuring an advanced function list. By calling system functions and other scripts in a script, you can use the script just like using a function list. Execute system functions and scripts in a script according to conditions, or repeat them. Then add the script to the function list.
- Creating a function. Scripts are available throughout the project. You can use scripts as system functions. You can define send parameters and return values for these scripts. For example, you can use scripts to convert numeric values.

17.2 Script Functions

Introduction

- JavaScript introduction
  InoTouchPad uses JavaScript for coding to achieve higher flexibility and operation logic. JavaScript is the most popular scripting language on the Internet. It is applicable for HTML and web, and is widely used in servers, PCs, laptops, tablets, and smart phones.
- Introduction to JavaScript related function
  A function is a block of code wrapped in curly braces, preceded by the keyword function. When a function is called, the code within the function is executed. Functions can be called directly when certain events occur (for example, when you click a button), and can be called by JavaScript anywhere. JavaScript is case sensitive. The keyword function must be in lowercase, and the function must be called with the same case as the function name.
- Introduction to JavaScript conditional statements
  When writing code, you need to perform different actions for different decisions. You can use conditional statements in your code to accomplish this task. JavaScript supports the following conditional statements:
  - if statement: executes code only when the specified condition is true.
    if (condition){

    // Code to execute when the condition is true

    }
  - if...else statement: executes code when the condition is true, and executes other codes when the condition is false.
    if (condition){

    // Code to execute when the condition is true

    }

    else{

    // Code to execute when the condition is false

    }
  - if...else if...else statement: selects one block of code to execute.
    if (condition1){

    // Code to execute when the condition1 is true

```
}
else if (condition2){
// Code to execute when the condition2 is true
}
else{
// Code to execute when both condition1 and condition2 are false
}
```

- switch statement: selects one block of code to execute.

```
switch(n) {
case 1: // Code to execute for case 1
break;
case 2: // Code to execute for case 2
break;
default:
// Code to execute when n does not match case 1 or case 2
}
```

- Introduction to JavaScript loop statements
  If you want to run the same code over and over again, with different values each time, you should use the loop statement. JavaScript supports the following loop statements:
  - for statement: runs a block of code for a number of times.

```
for (Statement 1; Statement 2; Statement 3) {
// Block of code to be executed
}
```

    Statement 1 is executed before the block of code, statement 2 defines the conditions for the loop, and statement 3 is executed after the block of code is executed.

  - for/in statement: iterates the properties of an object.

```
var person={fname:"John", lname:"Doe", age:25};
for (x in person) { // x is the property name.
txt=txt + person[x];
}
```

  - while statement: repeats the specified block of code when the specified condition is true.

```
while (condition){
// Block of code to be executed
}
```

  - do/while statement: a variant of the while loop. The loop executes the block of code once regardless of the condition, and then repeats the block of code if the condition is true.

```
do{
// Block of code to be executed
}
```

while (condition);

- Introduction to JavaScript break and continue statements
  - break statement: breaks out of a loop and continues to execute the code after the loop.
    for (i=0;i<10;i++) {

    if (i==3) break;

    x=x + "The number is " + i + "<b>";

    }
  - continue statement: interrupts an iteration in a loop, and continues with the next iteration of the loop if a specified condition is met.
    for (i=0;i<10;i++) {

    if (i==3) continue;

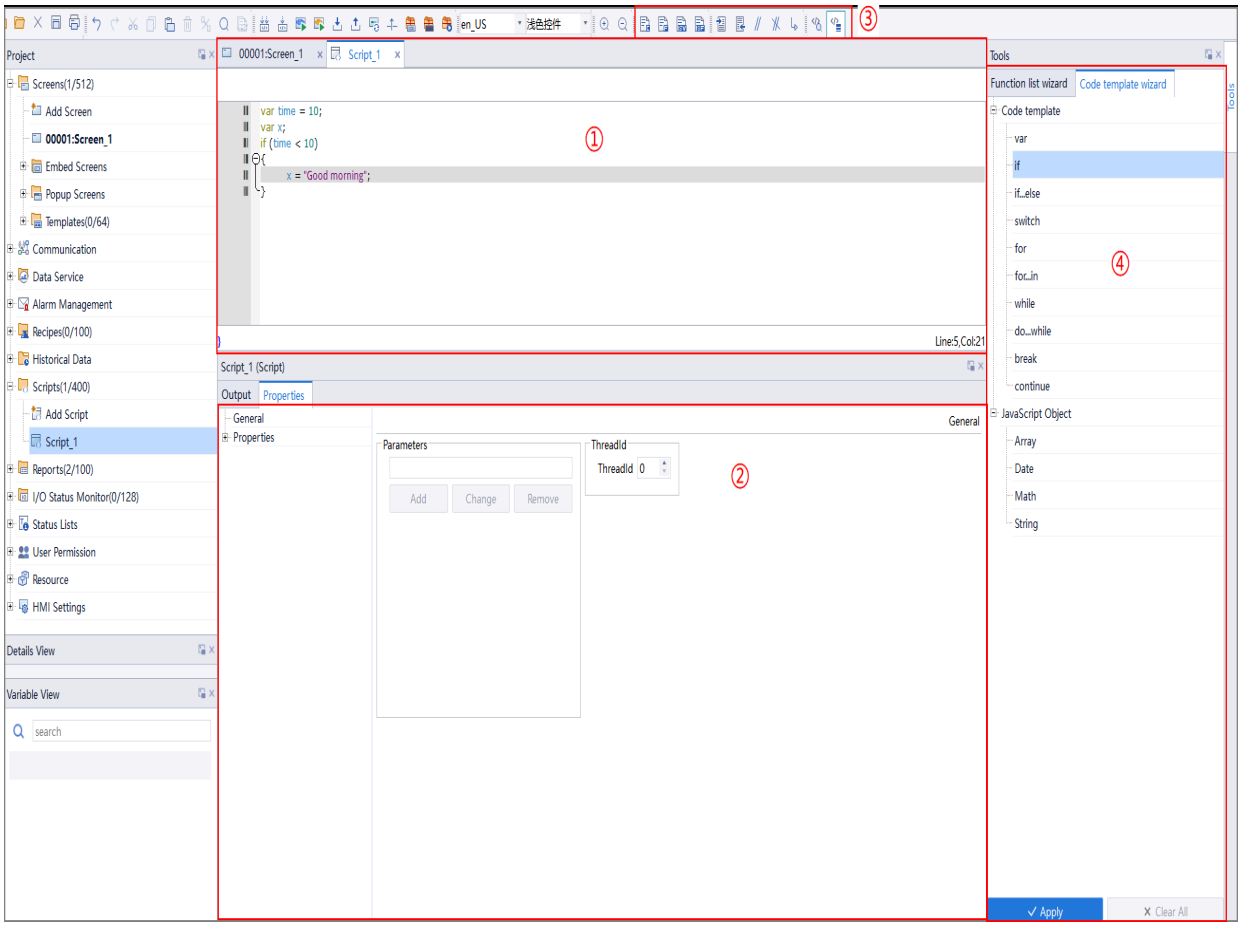
    x=x + "The number is " + i + "<b>";

    }

17.3 Script Editor

17.3.1 Overview

When you create a script or open an existing script, the script editor is started.



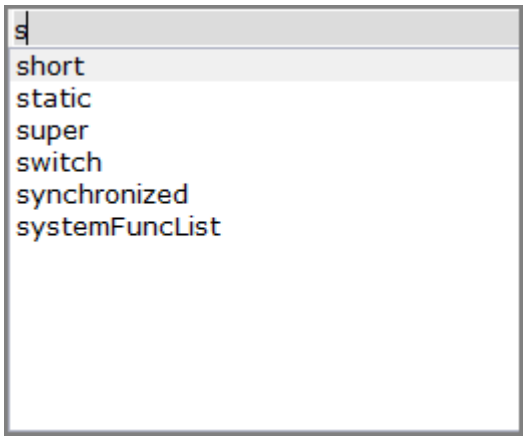
①: Work area; ②: Property view; ③: Script toolbar; ④: Script wizard

- Work area: You can create and edit scripts in the work area.

- Property view: You can configure scripts on the property view. You can determine whether a script is a process or function and declare the parameters used for the script. In addition, IT7000 provides the thread number feature to ensure stable running of multiple scripts. If a running script contains extensive content, it is recommended to run the script in a separate thread. IT7000 supports four threads (the range of "ThreadId" is 0 to 3), and each thread supports configuration of up to 64 scripts. If you configure different "ThreadId" values for multiple scripts, the scripts will run more efficiently.
- Script toolbar: Commands for synchronizing objects and tags and checking script syntax are located in the script toolbar. Moving the mouse over the corresponding tool icon will provide a hint. For example, if you click  , "Use basic syntax" pops up and the icon changes to  . In this mode, the script compiler does not strictly check the syntax, allowing you to write classes before defining advanced syntax such as tags.
- Script wizard: You can establish system functions and scripts using assigned parameters in this section as in the function list. Archived system functions and scripts can also be transmitted from the script wizard to the activated scripts. In this way, you need to assign parameters only once.

17.3.2 Property

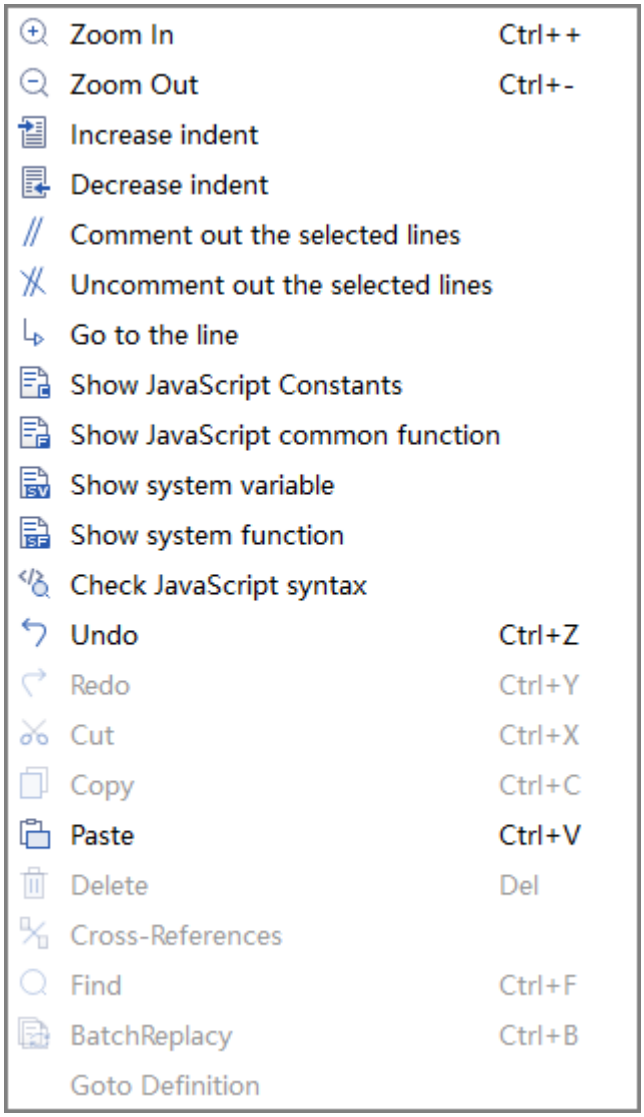
Auto-completion: When system functions under the JavaScript object model are accessed, smart auto-completion provides support. When characters are entered, matched functions are listed for quick selection.



Syntax highlighting: In the script editor, keywords are marked with different colors.

```
var arr = new Array(3);
arr[0]="a"
arr[1] = "b"
arr[2] = "c"
arr.push("d");
arr.pop();
arr.toString(); //"a,b,c"
arr.reverse(); //arr[0]=c,arr[1]=b, arr[2]=a
```

- Object list: Right-click in the work area. On the menu that pops up, choose menu options to display the script objects in a list for programming selection.



17.4 Script Syntax

17.4.1 Overview

InoTouchPad uses JavaScript for coding to achieve higher flexibility and operation logic. JavaScript is the most popular scripting language on the Internet. It is applicable for HTML and web, and is widely used in servers, PCs, laptops, tablets, and smart phones. In a project, up to 400 scripts can be created, and scripts cannot be called by each other.

17.4.2 JavaScript Literals

In programming languages, a fixed value is generally called a literal.

- Number literals: These can be integers, decimals, or in scientific notation (e), such as 3.14, 1001, and 123e5.
- String literals: These can be enclosed in single or double quotes, such as "John Doe" and 'John Doe'.
- Expression literals: These are used for computing, such as 5 + 6 and 5 * 10.
- Array literals: These define arrays, such as [40, 100, 1, 5, 25, 10].
- Object literals: These define objects, such as {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"}.
- Function literals: These define functions, such as function myFunction(a, b) { return a * b;}.

17.4.3 JavaScript Tags

In programming languages, tags are used to store values. In JavaScript, the keyword 'var' is used to define tags and the equals sign (=) is used to assign values to tags:

var x, length;

x = 5;

length = 6;

You can declare many tags in one statement. The statement begins with 'var' and tags are separated by commas (,):

```
var lastname = "Doe",age=30,job="carpenter";
```

The declaration can be in multiple lines:

```
var lastname = "Doe",
age=30,
job="carpenter";
```

In computer programs, tags are often declared without values. Tags declared without a value actually have the value 'undefined'. Tags can be accessed by using tag names. In imperative languages, tags are often mutable. A literal is a constant value. Tags can use short names (such as x and y), or descriptive names (such as age, sum, and totalvolume).

Note: Tags can start with a letter, or with the $ and _ symbols (not recommended), and tag names are case-sensitive (y and Y are different tags).

17.4.4 JavaScript Operators

JavaScript arithmetic operators

Operator	Description	Example
+	Addition	x=y+2 The + operator can be used to add up (concatenate) text values or string tags, for example: txt1="What a very "; txt2="nice day";txt3=txt1+txt2; the value of txt3 is "What a very nice day". In addition, the + operator can also add strings and digits, for example: z="Hello"+5. The value of z is "Hello5".
-	Subtraction	x=y-2
*	Multiplication	x=y*2
/	Division	x=y/2
%	Modulo (remainder)	x=y%2
++	Increment	x=++y
		x=y++

-	Decrement	x=--y
		x=y--

JavaScript assignment operators

Operator	Description	Example
=	Assignment	x=y
+=	Addition assignment	x+=y, that is, x=x+y
-=	Subtraction assignment	x-=y, that is, x=x-y
*=	Multiplication assignment	x*=y, that is, x=x*y
/=	Division assignment	x/=y, that is, x=x/y
%=	Remainder assignment	x%=y, that is, x=x%y

JavaScript comparison operators (assuming that x = 5)

Operator	Description	Comparison	Return Value
==	Equal	x==5	TRUE
		x==8	FALSE
===	Strict equal (both value and type are the same)	x===5	TRUE
		x===”5”	FALSE
!=	Not equal	x!=8	TRUE
!==	Strict not equal (the value and type are of the same type but not equal, or are of different type)	x!==5	FALSE
		x!==”5”	TRUE
>	Greater than	x>8	FALSE
<	Less than	x<8	TRUE
>=	Greater than or equal to	x>=8	FALSE
<=	Less than or equal to	x<=8	TRUE

JavaScript logical operators (assuming that x = 6 and y = 3)

Operator	Description	Example
&&	AND	(x < 10 && y > 1) is true.
||	OR	(x==5 || y==5) is false.
!	NOT	!(x==y) is true.
? :	Conditional assignment	voteable=(age<18)?"Too young":"The age is acceptable"; If the value of the tag "age" is less than 18, "Too young" is assigned to the tag "voteable"; otherwise, "The age is acceptable" is assigned.

17.4.5 JavaScript Statement Separation

JavaScript statements are separated by semi colons, for example, "x = 5 + 6;y = x * 10;".

17.4.6 JavaScript Keywords

JavaScript keywords are used to identify operations to be performed. Similar to other programming language, JavaScript reserves some keywords for its own use, as shown in the figure below.

abstract	else	instanceof	super
boolean	enum	int	swilch
break	export	interface	synchronized
byte	extends	let	this
case	false	long	throw
catch	final	native	throws
char	finally	new	transient
class	float	null	true
const	for	package	try
continue	function	private	typeof
debugger	goto	protected	var
default	if	public	void
delete	implements	return	volatile
do	import	short	while
double	in	static	with

17.4.7 JavaScript Comments

JavaScript does not execute comments. You can add comments to explain JavaScript, or improve the readability of code. Single-line comments start with double slashes (//). In this example, a single-line comment is used to explain code:

// Output the title.

document.getElementById("myH1").innerHTML="Welcome to my homepage";

// Output a paragraph. document.getElementById("myP").innerHTML="This is my first paragraph"; Multi-line comments start with a slash+an asterisk (/*) and end with an asterisk+a slash (*/). In this example, multi-line comments are used to explain code:

/* The following code will output a title and a paragraph, and represent the beginning of the homepage */ document.getElementById("myH1").innerHTML="Welcome to my homepage"; document.getElementById("myP").innerHTML="This is my first paragraph"; Use comments to prevent execution. In the following example, comments are used to prevent execution of a code line:

// document.getElementById("myH1").innerHTML="Welcome to my homepage"; document.getElementById("myP").innerHTML="This is my first paragraph"; Use comments at the end of lines. In the following example, comments are put at the end of code lines:

var x=5; // Declare x and assign 5 to it.

var y=x+2; // Declare y and assign x+2 to it.

17.4.8 JavaScript Data Types

- JavaScript data types

1. Value types (primitive types): String, Number, BOOL, Null, Undefined, and Symbol.

2. Reference data types: Object, Array, and Function

JavaScript is dynamically typed, which means that the same tag can be of different types: var x; // x is undefined.

var x = 5; // x is a number.

var x = "John"; // x is a string.

- Declaring the tag type

When you declare a new tag, you can use the keyword "new" to declare its type:

var carname=new String;

var x= new Number;

var y= new BOOLean;

var cars= new Array;

var person= new Object;

- JavaScript number

There is only one number type in JavaScript. Numbers may or may not have a decimal point:

var x1=34.00; //With a decimal point var x2=34; //Without a decimal point

- JavaScript BOOL

A BOOL (logical) tag can have only two values: true or false.

var x=true;

var y=false;

- JavaScript string

A string can be any text in quotation marks. You can use single or double quotation marks:

var carname="Volvo XC60";

var carname='Volvo XC60';

- JavaScript array

The following code creates an array named "cars":

var cars=new Array(); cars[0]="Saab";

cars[1]="Volvo";

cars[2]="BMW";

- JavaScript object

An object is created by figure brackets. Inside the brackets, the properties of the object are defined in the form of "name:value". Properties are separated by a comma:

var person={firstname:"John", lastname:"Doe", id:5566};

The object (person) in the above example has three properties: firstname, lastname, and id. Spaces and line breaks do not matter. The declaration can be in multiple lines:

var person={ firstname : "John", lastname : "Doe", id: 5566

};

The object property can be accessed through the following ways: name=person.lastname; name=person["lastname"];

- Null

A "Null" tag does not have a value. You can empty a tag by setting its value to null:

cars=null;

person=null;

17.4.9 JavaScript Functions

Introduction

A function is a reusable block of code driven by events or executed when it is called.

Function syntax

A function is a block of code wrapped in curly braces, preceded by the keyword function.

function functionname()

{

//Code to execute}

Calling of functions with parameters

When calling a function, you can transfer values to it. These values are called parameters that can be used for the function.

You can send any number of parameters separated by commas (,).

myFunction(argument1,argument2)

When you declare a function, declare the parameters as tags.

function myFunction(var1,var2)

{

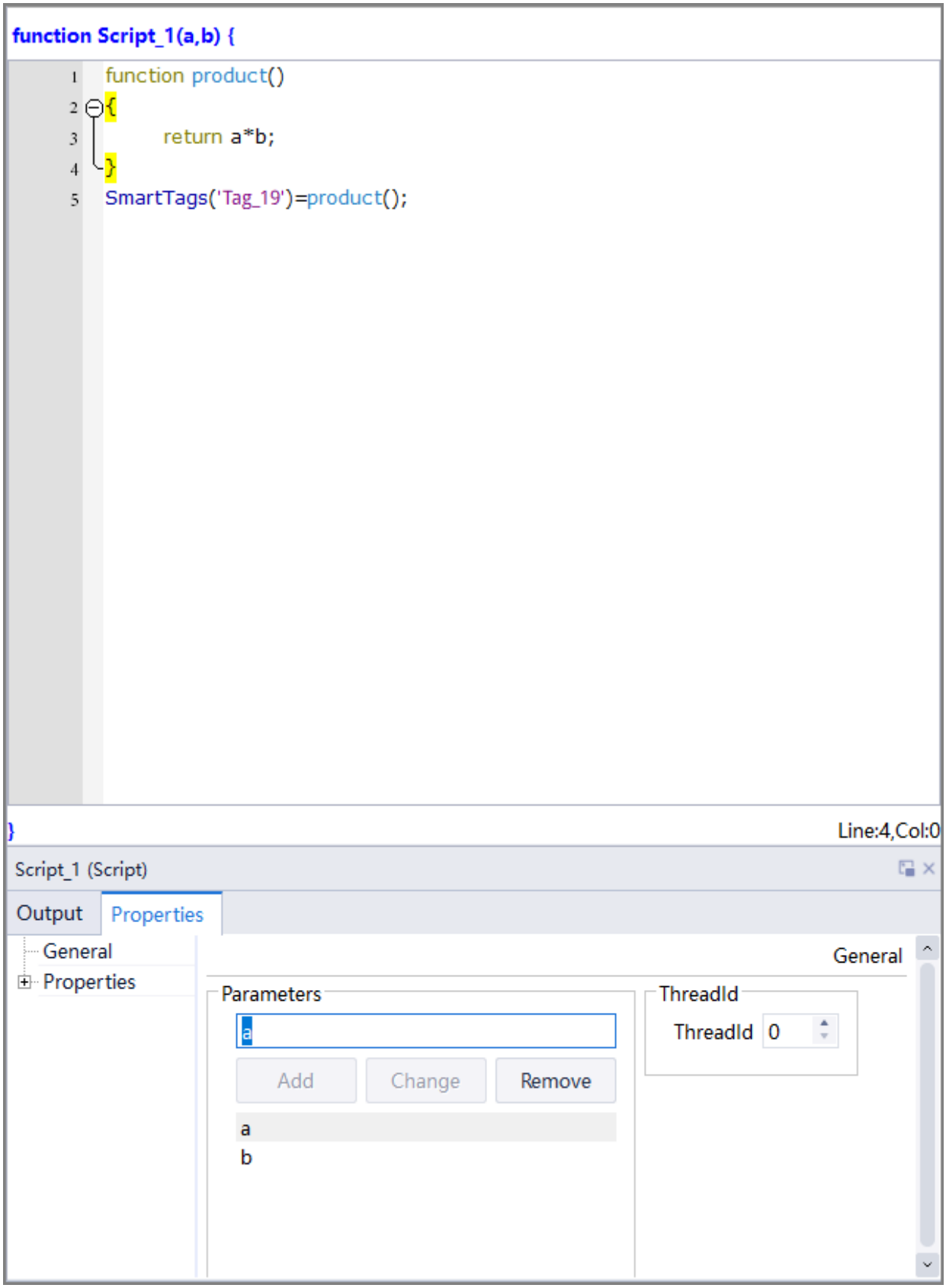
Code

}

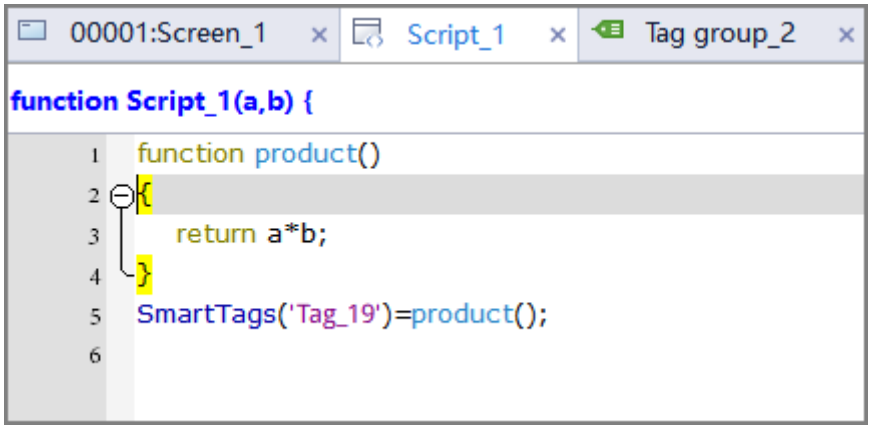
Tags and parameters must appear in a consistent order. The first tag corresponds to the value of the first transferred parameter, and so on.

Example: Press a button, calculate the product of two numbers, and return the result.

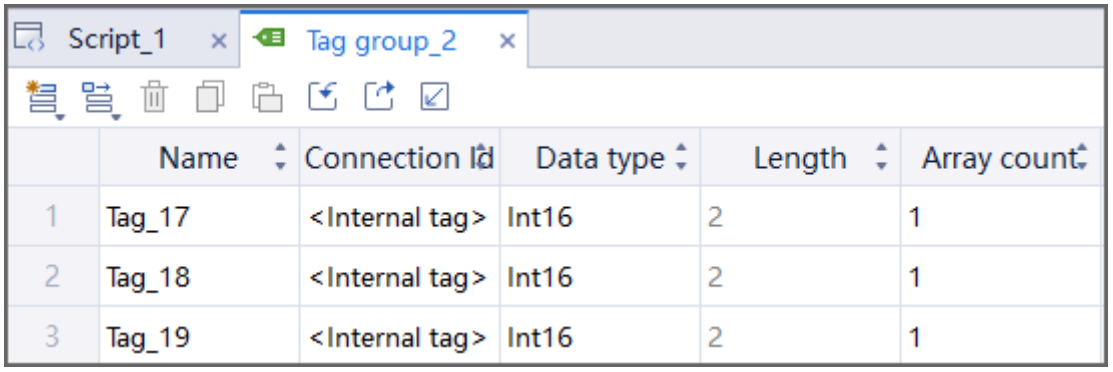
1. Define functions and parameters.



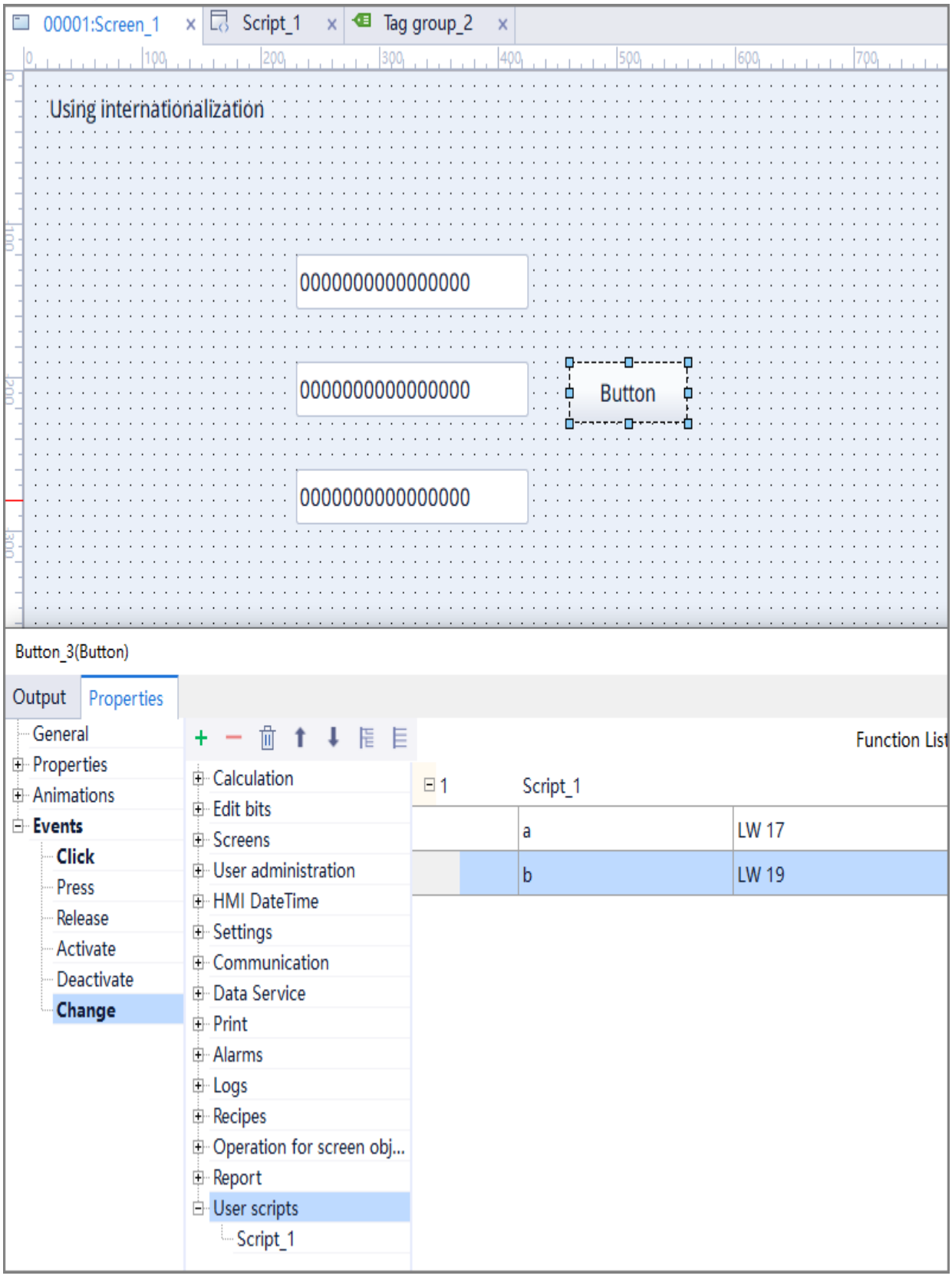
2. Call functions.



3. Define tags.



4. To configure a button, call a user script and set parameters.



5. Click the button and execute the script.



17.4.10 JavaScript Scope

JavaScript local scope

A tag declared inside a function is a local scope. A local tag can be accessed only inside a function. Different functions can contain tags of the same name because local tags only act within functions. Local tags are created when function execution starts, and will be automatically destroyed after execution is completed.

// The carName tag cannot be called. function myFunction() {

var carName = "Volvo";

// The carName tag can be called within the function.

}

- JavaScript global tag

Tags defined outside functions are global tags. Global tags have global scopes, which can be used by all scripts and functions.

var carName = " Volvo";

// The carName tag can be called. function myFunction() {

// The carName tag can be called within the function.

}

- JavaScript tag lifetime

The lifetime of a JavaScript tag is initialized when it is declared. Local tags are destroyed after the function execution is completed, and global tags are destroyed when the page is closed.

17.4.11 JavaScript Conditional Statements

In programming, you often need to perform different actions for different decisions. You can use conditional statements in your code to accomplish this task. JavaScript provides the following conditional statements:

The "if" statement executes the code only when the specified condition is true.

The "if...else" statement executes the code when the condition is true, and executes other codes when the condition is false.

The "if....else" statement selects one block of code to execute.

The "switch" statement selects one block of code to execute.

- if statement: executes code only when the specified condition is true. if (condition){

// Code to execute when the condition is true

}

- if...else statement: executes code when the condition is true, and executes other codes when the condition is false. if (condition){

// Code to execute when the condition is true

}

else{

// Code to execute when the condition is not true }

- if...else if...else statement: selects one block of code to execute. if (condition1){

// Code to execute when the condition 1 is true } else if (condition2){

// Code to execute when the condition 2 is true

}

else{

// Code to execute when both condition 1 and condition 2 are not true

}

- switch statement: selects one block of code to execute. switch(n) {

case 1: // Block of code to execute when n is 1 break;

case 2: // Block of code to execute when n is 2 break;

default:

// Code to execute when n does not match case 1 or case 2

}

17.4.12 Loop Statement

If you want to run the same code over and over again, with different values each time, you should use the loop statement. JavaScript supports different types of loops:

- The **for** loop can run a block of code for a number of times.
- The **for/in** loop can iterate the properties of an object.
- The **while** loop can repeat the specified block of code when the specified condition is true.
- The **do/while** loop can repeat the specified block of code when the specified condition is true.
- for statement: runs a block of code for a number of times.

for (Statement 1; Statement 2; Statement 3) {

Block of code to be executed}

Statement 1 is executed before the block of code, statement 2 defines the conditions for the loop, and statement 3 is executed after the block of code is executed.

- for/in statement: iterates the properties of an object.

```
var person={fname:"John",lname:"Doe",age:25};
for (x in person) // x is the property name. {
txt=txt + person[x];
}
```

- while statement: repeats the specified block of code when the specified condition is true.

```
while (condition){
Block of code to be executed
}
```

- do/while statement: a variant of the **while** loop. The loop executes the block of code once regardless of the condition, and then repeats the block of code if the condition is true.

```
do{
Block of code to be executed
}
while (condition);
```

17.4.13 JavaScript Break and Continue Statements

break statement: breaks out of a loop and continues to execute the code (if with) after the loop.

```
for (i=0;i<10;i++) {
if (i==3) break;
x=x + "The number is " + i + "<br>";
}
```

- continue statement: interrupts an iteration in a loop, and continues with the next iteration of the loop if a specified condition is met.

```
for (i=0;i<10;i++) {
if (i==3) continue;
x=x + "The number is " + i + "<br>";
}
```

17.4.14 JavaScript Character Set

JavaScript uses the Unicode character set, which covers all characters, including punctuation and other characters.

17.4.15 Calling Functions in a Script

SetConnection Enabled Mode

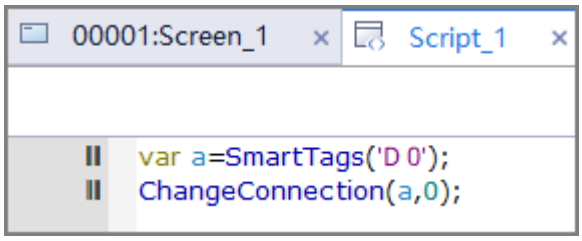
ChangeConnection

SetConnection Mode

ChangeConnectionlpAddress

Modbus Server SlaveMonitor

When the preceding functions are used in scripts, connection parameters can be transferred, as shown in the figure below.



Note

The preceding functions do not support tags in "Events" > "System Function".

17.5 Creating a Script

17.5.1 Tag Access

Introduction

You can access external and internal tags established in the project in scripts. The value of the tags can be read or changed at run time. Moreover, you can establish local tags in scripts as counters or buffer memory. Scripts retrieve the value of external tags from the runtime memory. When the runtime starts, it reads the actual values from the PLC and writes them into the runtime memory. Then, the tag values are updated according to the set cycle time. Scripts will first access the tag values read from the PLC at the checkpoint of the previous scan cycle.

Example

In a script, use SmartTags('tag name') to access the tags in the project:

var a = SmartTags('LW 0');

SmartTags('LW 0') = 2018;

When the tag is an array, SmartTags is SmartTags('tag name', subscript value, false/true):

SmartTags('LW0', 0, false)=2018;//Assign a value to the array LW0[0].

Note

Values false and true represent whether to enable script communication tag blocking, where true means enabled and false means disabled. After enabling, the value of the external tag is blocked in the script and will not be updated. In addition, if you have checked "Enable Script var block" in "Project Settings" > "Other Settings", even if the parameter in SmartTags is false, the value will still be blocked.

17.5.2 Calling of System Functions

You can insert system functions into the script from the script wizard or the shortcut menu "Show system function", or drag tags directly into the script from the "Details" view.

- **Example 1: Decreasing the value of tag LW 0 by 1 by calling DecreaseValue**

DecreaseValue(SmartTags('LW 0'),1);

- **Example 2: Setting a 1s timer to increase LW 0 by 1**

function add()

```
{
var val= SmartTags( "LW 0"); SmartTags( "LW 0")=val+1;
}
SetInterval(add , 1000);
```

- **Example 3: Swapping the high and low bytes of the tag LW 0, which is of type Int16**

```
var tag= SmartTags( "LW 0");
```

SmartTags('LW 0')=SwapByte(tag); For more system functions that can be called by a script, see the section "Categories of System Functions". The tag supports synchronous mode, and allows reading and writing of single tag of an array.

- **Example 4: SmartTags supporting synchronous mode, and allowing reading and writing of single tag of an array**

```
var i=0;
for(i=0;i<10;i++)
{
SmartTags( "LW 0",i,true )=i;
}
```

- **Example 5: Write values to three external tags by calling SetMultiTagValue**

```
SetMultiTagValue ({"4x 0":SmartTags( "LW 0"),"4x 1":6,"4x 2":32655,"4x 4":"modbus"});
```

CAUTION

- SetMultiTagValue supports common data types except Bool.
- Parameter format: {"Tag 1": value, "Tag 2": value}
- You can call the function to input 120 tags but the transmission efficiency is determined by the communication protocol and port.
- Tags of the Int16 and String can be put together and the number of commands is determined by the address continuity and protocol.
- It is recommended to increase the timeout period of the serial port protocol.

17.5.3 Example of Dynamic Drawing with Script

Introduction

With the script, you can draw graphics of higher levels on the canvas control.

Example 1: Drawing a clock

Script:

```
function clock(){
var now = new Date();
var canvas = ScreenItem ("Screen_1", "Canvas_1");
if( canvas.draw2d )
{
```

```
var ctx = canvas.draw2d();
var w = ctx.width();
var h = ctx.height();
var r = ( ( w > h ) ? h : w ) / 2 - 14;

ctx.manualUpdate = true; ctx.save();
ctx.clearRect(0,0,w,h);
ctx.translate(w/2,h/2);
ctx.rotate(-Math.PI/2);
ctx.strokeStyle = "black";
ctx.fillStyle = "white";
ctx.lineWidth = 4;
ctx.lineCap = "round";

// Hour marks
ctx.save();
ctx.beginPath();
var i;
for (i=0;i<12;i++)
{
ctx.rotate(Math.PI/6);
ctx.moveTo(r-12,0);
ctx.lineTo(r,0);
}
ctx.stroke();
ctx.restore();

// Minute marks
ctx.save();
ctx.lineWidth = 2;
ctx.beginPath();
for (i=0;i<60;i++)
{
if (i%5!=0)
{
ctx.moveTo(r-4,0);
```

```
ctx.lineTo(r,0);
}
ctx.rotate(Math.PI/30);
}
ctx.stroke();
ctx.restore();

var sec = now.getSeconds();
var min = now.getMinutes();
var hr = now.getHours();
hr = hr>=12 ? hr-12 : hr;
ctx.fillStyle = "black";

// write Hours
ctx.save();
ctx.rotate( hr*(Math.PI/6) + (Math.PI/360)*min + (Math.PI/21600)*sec );
ctx.lineWidth = 6;
ctx.beginPath();
ctx.moveTo( r - 140,0);
ctx.lineTo( r-40,0);
ctx.stroke();
ctx.restore();
// write Minutes
ctx.save();
ctx.rotate( (Math.PI/30)*min + (Math.PI/1800)*sec );
ctx.lineWidth = 4;
ctx.beginPath();
ctx.moveTo( r - 148,0);
ctx.lineTo( r - 24,0);
ctx.stroke();
ctx.restore();

// Write seconds
ctx.save();
ctx.rotate(sec * Math.PI/30); ctx.strokeStyle = "#D40000";
ctx.fillStyle = "#D40000";
```

```
ctx.lineWidth = 2;
ctx.beginPath();
ctx.moveTo( r - 150,0);
ctx.lineTo( r - 20,0);
ctx.stroke();
ctx.beginPath();
ctx.arc(0,0,5,0,Math.PI*2,true);
ctx.fill();
ctx.beginPath();
ctx.arc(r - 20,0,5,0,Math.PI*2,true);
ctx.stroke();
ctx.fillStyle = "#555";
ctx.arc(0,0,3,0,Math.PI*2,true);
ctx.fill();
ctx.restore();
ctx.beginPath();
ctx.lineWidth = 7;
ctx.strokeStyle = '#325FA2';
ctx.arc(0,0,r + 7,0,Math.PI*2,true);
ctx.stroke();
ctx.restore();
ctx.doUpdate();
}
}
SetInterval( clock,1000 );
```

The result is as follows:



Example 2: Drawing a heart shape

Script:

```
var canvas = ScreenItem ("Screen_3", "Canvas_5");
var ctx = canvas.draw2d();
var sleep = 0;
var count = 0;
var rx = 10;
var ry = 10;
var radius = 10;
function deg2rad(x)
{
return x *Math.PI/180;
}
function drawCircle( x, y, r )
{
ctx.beginPath();
ctx.arc(x,y,r,0,Math.PI*2,true);
ctx.stroke();
}

function drawLine( x1, y1, x2, y2 )
{
ctx.beginPath();
ctx.moveTo(x1, y1);
ctx.lineTo(x2, y2);
ctx.stroke();
if (count++ == 82)
{ count = 0;
sleep = 0;
}
}
this.line = drawLine;
function drawSide(begin1, end1, step1, begin2, step2 )
{
var d1, d2, x1, y1, x2, y2;
while ( begin1 != end1+step1 ) { d1 = deg2rad(begin1);
```

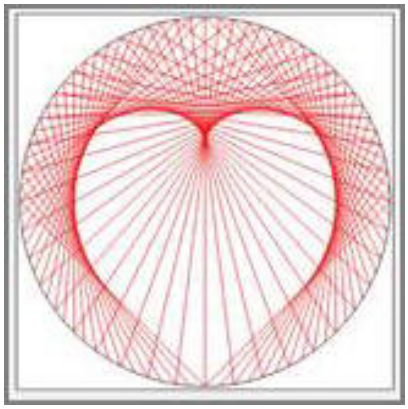
```
d2 = deg2rad(begin2);
x1 = rx + radius * Math.cos(d1);
y1 = ry - radius * Math.sin(d1);
x2 = rx + radius * Math.cos(d2);
y2 = ry - radius * Math.sin(d2);
SetTimeout( 'line(' + x1 + ',' + y1 + ',' + x2 + ',' + y2 + ')', sleep*100 );
sleep++;

begin1 += step1;
begin2 += step2;

}

}
function drawHeart(){
var canvas = ScreenItem ("Screen_3", "Canvas_5");
if( canvas.draw2d )
{
ctx = canvas.draw2d();
var w = ctx.width();
var h = ctx.height();
ctx.clearRect(0,0,w,h);
rx = w / 2;
ry = h / 2;
radius = ( ( rx > ry ) ? ry : rx ) - 4;
ctx.strokeStyle = "black";
drawCircle( rx, ry, radius );
ctx.strokeStyle = "red";
drawSide(-90, 0, 4.5, 0, 4.5 );
drawSide(-90, -180, -4.5, -180, -4.5 );
drawSide(0, 180, 4.5, 90, 9 );
}
}
drawHeart();
```

The result is as follows:



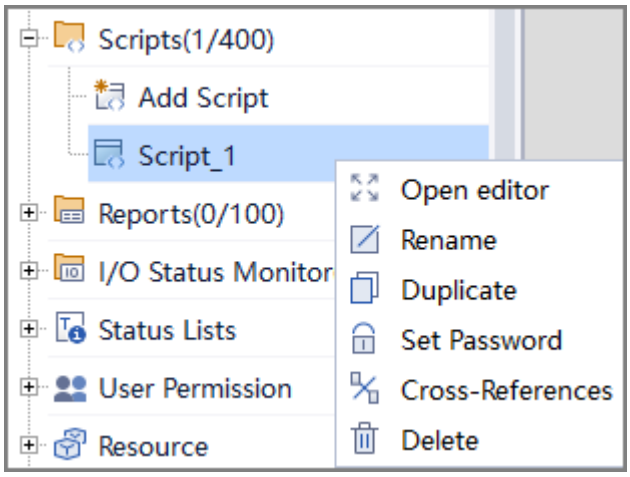
17.6 Setting a Password in a Script

Introduction

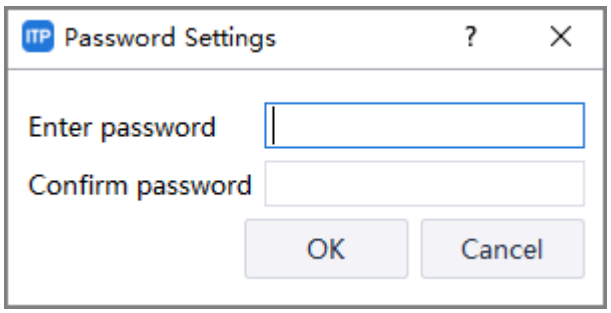
When a password is set in a script, you need to input the password correctly when opening the script for editing in the software. This can improve the script security.

Procedure

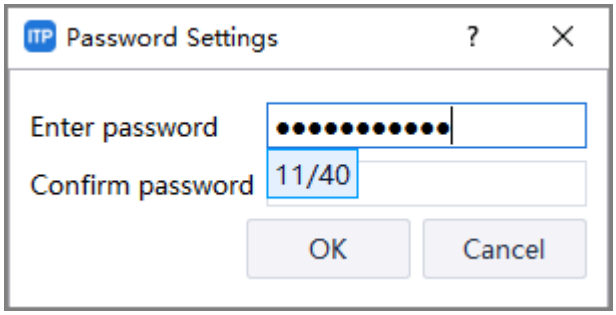
1. In the "Project" navigation tree on the left, click "Script", and then right-click "Script_1", as shown in the following figure.



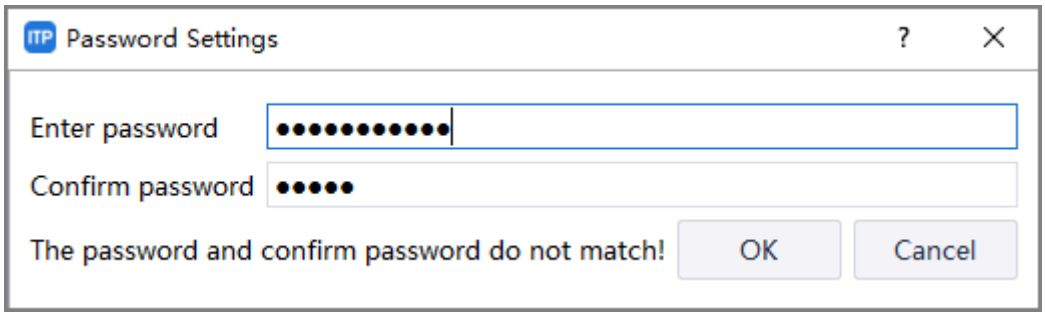
2. Click "Set Password". The "Password Settings" window pops up.



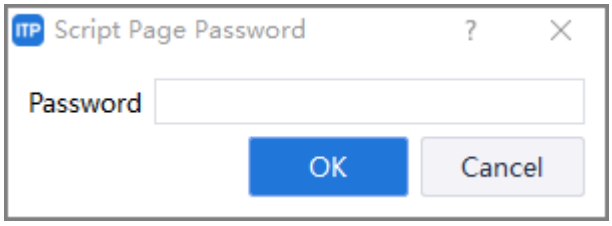
3. You can only input letters and digits up to 40 characters in "Enter password" and "Confirm password" fields respectively, as shown in the following figure.



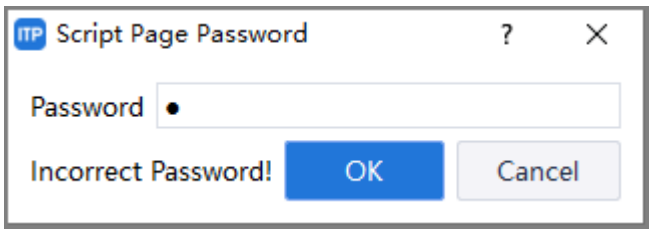
4. Click "OK". If the passwords input in "Enter password" and "Confirm password" fields are different, the prompt "The password and confirm password do not match" is displayed. If you click "Cancel", the password settings are not saved, as shown in the following figure.



5. Double-click "Script_1" and the system asks you to input the password, as shown in the following figure.



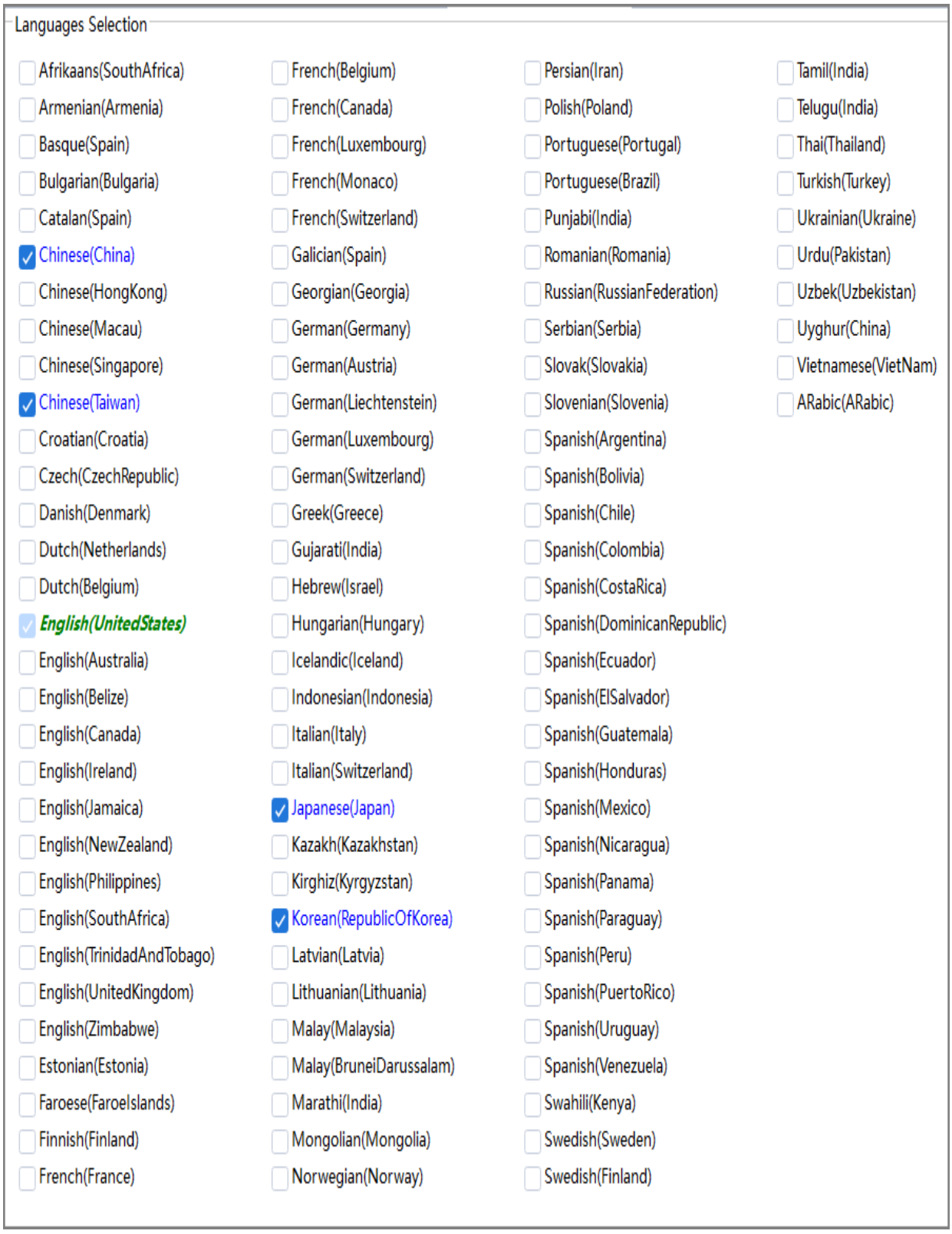
6. If the password is correct, the script editing page is displayed; otherwise, the system prompts "Incorrect Password", as shown in the following figure.



18 Resource

18.1 Project Language

The project language editor provides multiple languages for your choice, as show in the following example:



Five languages, Chinese(China), Chinese(Taiwan), English(UnitedStates), Japanese(Japan) and Korean(RepublicOfKorea), are selected by default. It indicates that these languages are activated, and you can edit these languages in the "Language and Font" editor. If you want to develop a project in a specified language,

you can select this language and enable it in the "Language and Font" editor. Then, you can configure the text of that language in internalization. For details, see 18.2 Language and Font.

18.2 Language and Font

Introduction

The language and font feature is used to set the properties of the selected project language.

Procedure

1. In the "Project" navigation tree on the left, double-click "Language and Font" under "Resource" to open the language and font page, as shown in the following page:

	Enabled	Name	DisplayName	Number	Font	Comment
1	✓	English(UnitedStates)	en_US	1	Droid Sans Fallback,16px ...	
2	☑	Chinese(China)	zh_CN	2	Droid Sans Fallback,16px ...	
3	☑	Chinese(Taiwan)	zh_TW	3	Droid Sans Fallback,16px ...	
4	☐	Korean(RepublicOfK...	ko_KR	4	Droid Sans Fallback,16px ...	
5	☐	Japanese(Japan)	ja_JP	5	Droid Sans Fallback,16px ...	

2. If you want to add a language, select the target language in "Project Language". In the following example, the German (Germany) language is added:

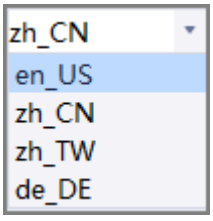
3. A property setting row for the German (Germany) language is automatically added. You can enable or disable the language and set its font and comment, but the language name and display name are predefined and cannot be edited. After editing the language properties, you need to select "Enabled" to apply this language in the project. To cancel this language, deselect this language in "Project Language", as shown in the following figure.

The language name is the name displayed in "Project Language", and the display name of the abbreviation of the language name, which is mainly used for internationalization, internationalization switchover preview, and project start language setting:

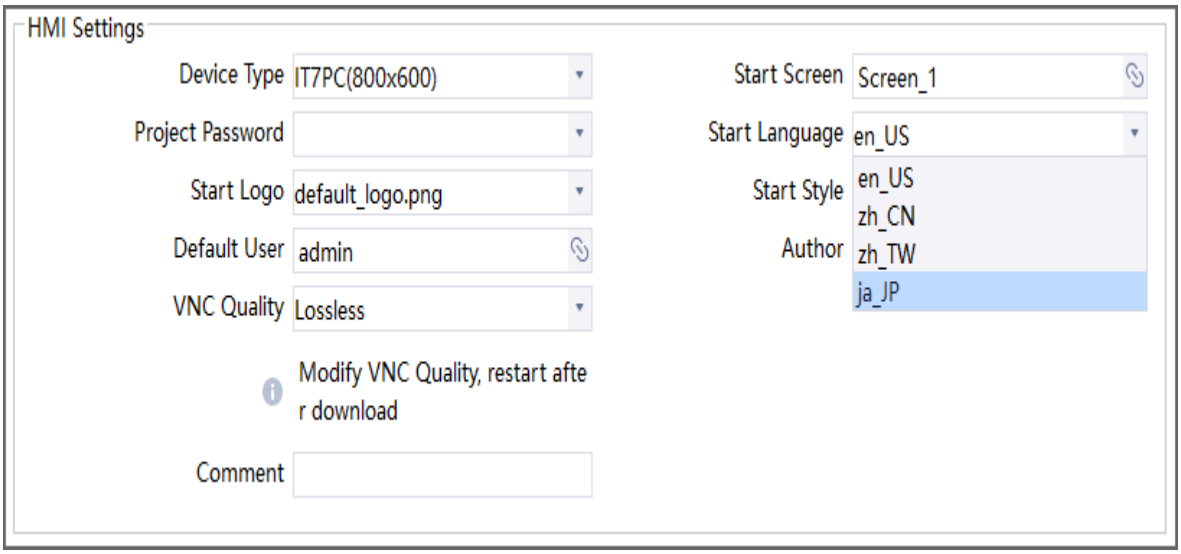
- Internationalization table header

	Referenced by	en_US	zh_CN	zh_TW	de_DE
1	ScreenList/40000/title	System Alarms	系统报警	系统報警	
2	ScreenList/40001/title	Communicat...	通信报警	通信報警	

- The language display name is used for internationalization switchover preview.



- Project start language setting



Fonts Supported for Common Minority Languages

Language	Fonts Supported	Fonts to be Downloaded
Japanese	Arial Unicode MS, Droid Sans Fallback, Malgun Gothic Semilight, MS Gothic, MS PGothic, MS UI Gothic, Siemens Sans Global, SIUPO Vertical, SIUPO Horizontal, Yu Gothic, Yu Gothic Light, Yu Gothic Medium, Yu Gothic UI, Yu Gothic UI Light, Yu Gothic UI Semibold, Yu Gothic UI Semibold	Source Han Sans CN Bold, Source Han Sans CN ExtraLight, Source Han Sans CN Heavy, Source Han Sans CN Light, Source Han Sans CN Medium, Source Han Sans CN Normal, Source Han Sans CN Regular
Korean	Arial Unicode MS, Droid Sans Fallback, Malgun Gothic, Malgun Gothic Semilight, Siemens Sans Global, SIUPO Vertical, SIUPO Horizontal	-
Vietnamese	Arial, Arial Unicode MS, Calibri, Calibri Light, Cambria, Cambria Math, Candara, Consolas, Constantia, Corbel, Corbel Light, Courier New, Leelawadee UI, Leelawadee UI Semilight, Lobster, Microsoft Sans Serif, MS Reference Sans Serif, Open Sans, Palatino Linotype, Roboto, Roboto Condensed, Roboto Slab, Segoe UI, Segoe UI Black, Segoe UI Light, Segoe UI Semibold, Segoe UI Semilight, Siemens Sans Global, Sitka Banner, Sitka Display, Sitka Heading, Sitka Small, Sitka Subheading, Sitka Text, SIUPO Vertical, SIUPO Horizontal, Tahoma, Times New Roman, Verdana, Source Han Sans CN Bold, Source Han Sans CN ExtraLight, Source Han Sans CN Heavy, Source Han Sans CN Light, Source Han Sans CN Medium, Source Han Sans CN Normal, Source Han Sans CN Regular	AcadEref, Agency FB, Algerian, AmdtSymbols, AMGDT, Arial Black, Arial Narrow, Arial Rounded MT Bold, Arvo, Bahnschrift Series, Bauhaus 93, Bell MT, Berlin Sans FB, Berlin Sans FB Demi, Bernard MT Condensed, Blackadder ITC, Bodoni Series, Book Antiqua, Bookman Old Style, Bradley Hand ITC, Britannic Bold, Broadway, Brush Script MT, Californian FB, Calisto MT, Candara Light, Castellar, Centaur, Century, Century Gothic, Century Schoolbook, Chiller, Colonna MT, Comic Sans MS, Complex, Cooper Black, Copperplate Gothic Bold, Copperplate Gothic Light, Curlz MT, Droid Sans Fallback, Droid Serif, Ebrima, Edwardian Script ITC, Elephant, Engravers MT, Eras Series, Felix Titling, Footlight MT Light, Forte, Franklin Series, Freestyle Script, French Script MT, Gabriola, Gadugi, Garamond, GDT, GENISO, Georgia, Gigi, Gill Series, Gloucester MT Extra Condensed, Gothic Series, Goudy Old Style, Goudy Stout, GreekC, GreekS,

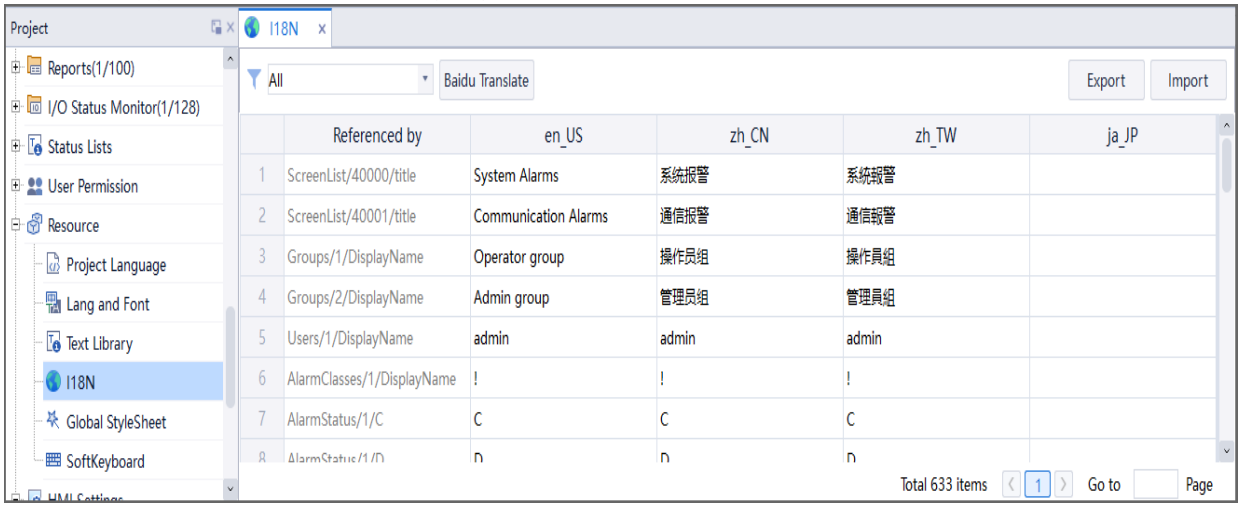
		Haettenschweiler, Harlow Solid Italic, Harrington, High Tower Text, Impact, Imprint MT Shadow, Indie Flower, Informal Roman, Ink Free, ISOC Series, ISOCT Series, Italic Series, Javanese Text, Jokerman, Juice ITC, Kristen ITC, Kunstler Script, Leelawadee Series, Lobster, Lucida Series, Magneto, Maiandra GD, Malgun Gothic, Malgun Gothic Semilight, Matura MT Script Capitals, Microsoft Series, MingLiU-ExtB, MingLiU_HKSCS-ExtB, Mistral, Modern No. 20, Mongolian Baiti, Monotxt, Monotype Corsiva, MS Series, MV Boli, Myanmar Text, Niagara Series, OCR A Extended, Old English Text MT, Onyx, Palace Script MT, Papyrus, Parchment, Perpetua, Perpetua Titling MT, Playbill, PMingLiU-ExtB, Poiret One, Poor Richard, Pristina, Proxy Series, Rage Italic, Raleway, Ravie, Rockwell Series, Roman Series, Script Series, Segoe UI Emoji, Segoe UI Historic, Segoe UI Symbol, Showcard Gothic, Siemens AD Sans, Siemens Logo, Siemens Logo, Siemens Sans, Siemens Sans Black, Siemens Sans SC, Siemens Sans SC Black, Siemens Serif, Siemens Serif SC, Siemens Serif SC Semi, Siemens Serif Semibold, Siemens Slab, Siemens Slab Black, Siemens Slab SC, Siemens Slab SC Black, Simplex, SimSun-ExtB, Snap ITC, Stencil, Syastro, Sylfaen, Symap, Symath, Symeteo, Symusic, Tempus Sans ITC, Trebuchet MS, Tw Cen MT Series, Txt, Viner Hand ITC, Vivaldi, Vladimir Script, Wide Latin, WinCC_flexible Series, Yu Gothic Series
Spanish	Arial, Cambria, Cambria Math, Courier New	-
Turkish	Refer to Latin fonts.	-
Thai	Arial Unicode MS, Leelawadee, Leelawadee UI, Leelawadee UI Semilight, Lucida Sans, Microsoft Sans Serif, Siemens Sans Global, Tahoma	-

18.3 I18N

18.3.1 Overview

The internationalization feature primarily addresses the issue of translating project texts into multiple languages simultaneously, while also managing and consolidating project texts related to online monitoring.

The internationalization editing entry is located under the "Resources" node in the project tree. Double-click the corresponding node to open the editing page.



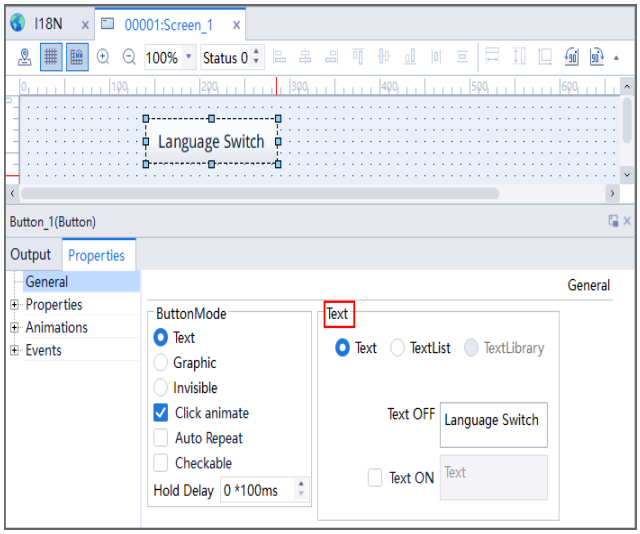
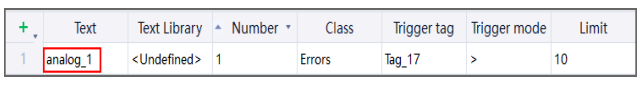
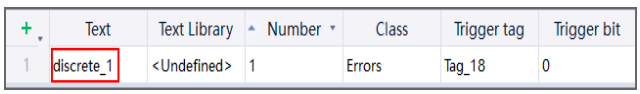
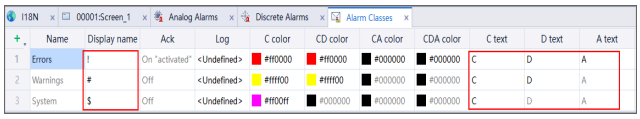
Project texts are displayed in pages, with a maximum of 10,000 entries per page.

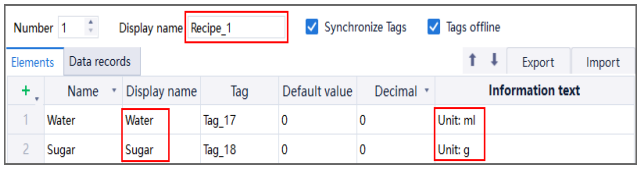
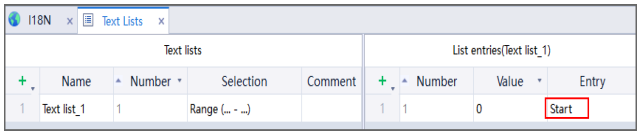
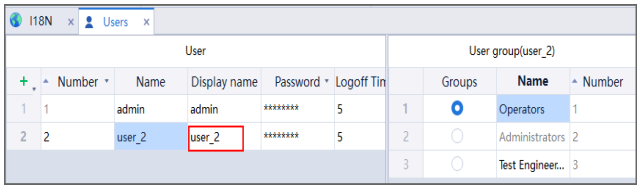
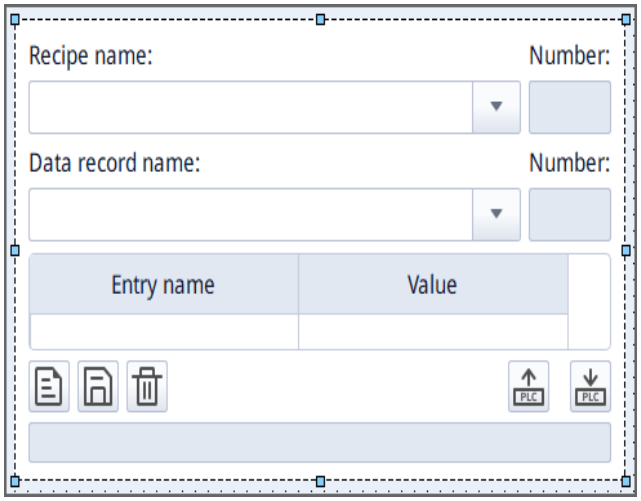
18.3.2 Translation Scopes and Sources

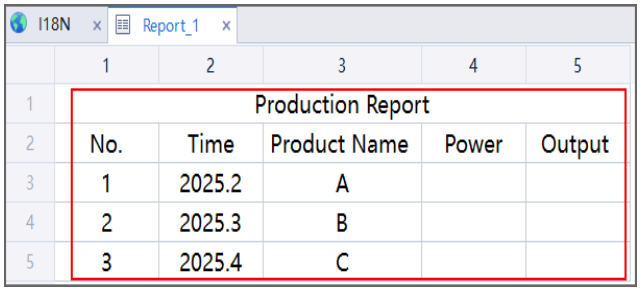
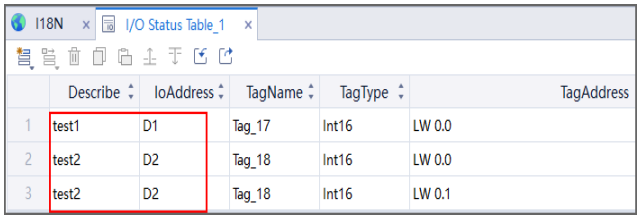
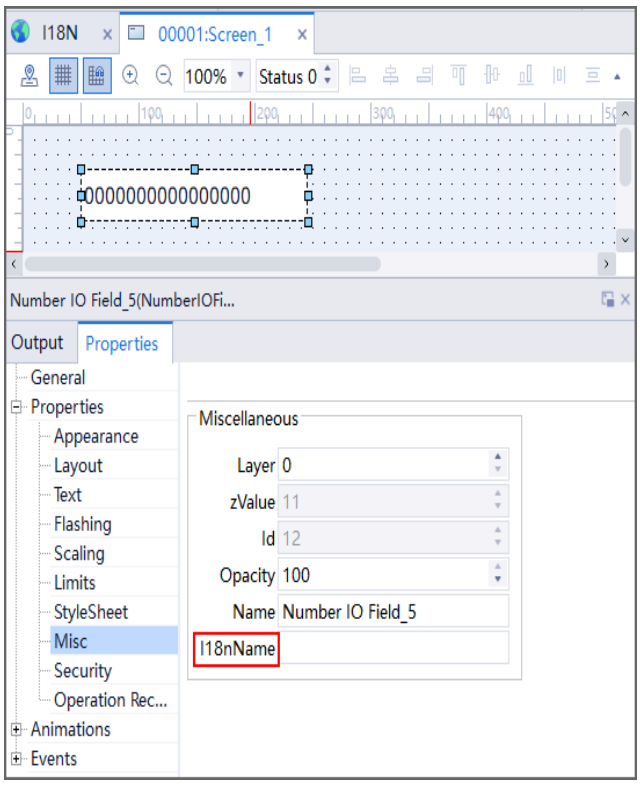
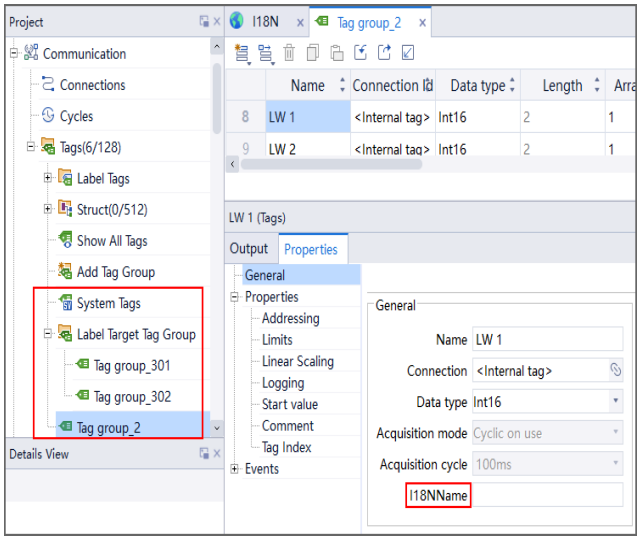
Project text sources

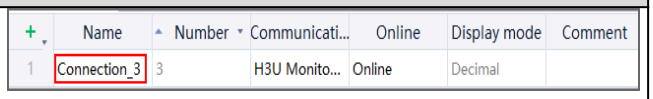
Project texts are categorized into 13 types based on their features, such as screens and recipes. The following table lists the sources and scopes of various project texts, facilitating user review and translation.

Table 18-3-2-1 Source description of project texts

Category	Scope	Location example
Screens	Text content of objects and system-related information on screens (process screens, embed screens, pop-up screens, and template screens).	
Analog alarm	Includes the values of "Text" and "InfoText" fields.	
Discrete alarm	Includes the values of "Text" and "InfoText" fields.	
Alarm configuration	Includes: • Alarm Classes: Values of the "Display name",	

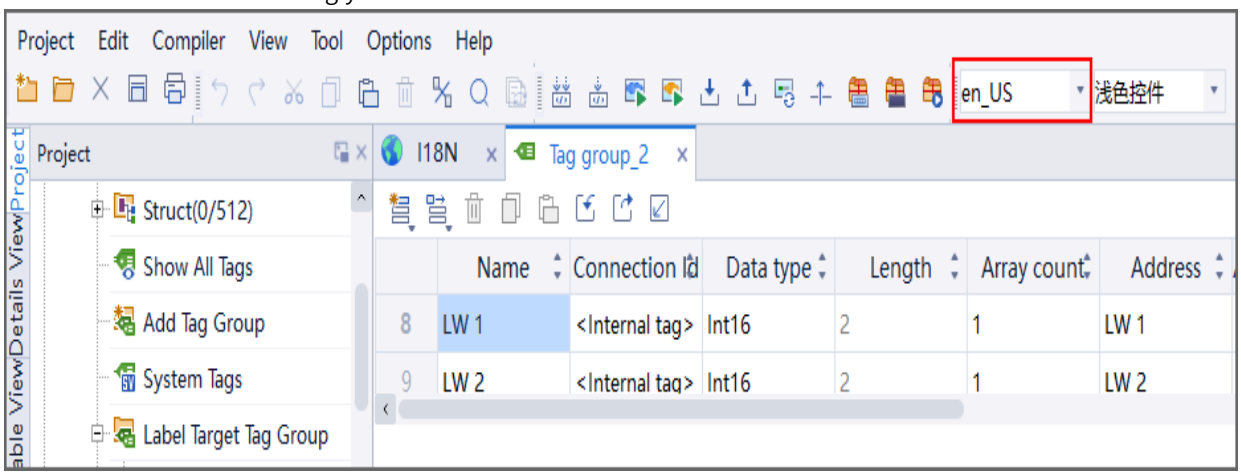
Category	Scope	Location example
	"C text", "D Text", and "A Text" fields. • Values of the "Name" field in "Alarm Groups" and "Alarm Grades".	
Recipe	Includes: • Values of the "Display name" field of the recipe. • Values of the "Display name" and "Information text" fields in "Elements". • Values of the "Display name" field in "Data records".	
List entries	Values of the "Entry" field in "Text Lists".	
Groups	Value of the "Display name" field under "Users" and "Groups" in the "User Permission" node.	
Predefined text	Includes texts displayed during the hardware runtime of the touchscreen, such as text on the control view.	

Category	Scope	Location example
Report	Includes all text content in the report.	
I/O status table	Includes the values of the "Describe" and "IoAddress" fields in the status table.	
Control name	Includes the "I18nName" field for all controls on the screen (including controls in the gallery and favorites), as well as system/ communication alarm-related content. The "I18nName" is empty by default and will be displayed on the internationalization page after being filled in.	
TagName	Includes the "I18nName" field for ordinary tags, label target tag groups, and system tags. The "I18nName" is empty by default and will be displayed on the internationalization page after being filled in.	
Connection		

Category	Scope	Location example
	Includes the "Name" field in "Connection".	

Project text update

The texts in internationalization pages (excluding connection names) support bidirectional synchronization with the texts in the project configuration. That is, when one of them is modified, it will automatically sync to the other. The specific language synchronized depends on the current page's language setting (as shown below). For example, when the page language is set to "zh_CN", changes to the "zh_CN" column text will automatically update the project configuration text. Similarly, when project configuration text changes, the "zh_CN" column text will also refresh accordingly.



As shown in the above figure, the current page language is "en_US". If you change the "I18nName" in the tag properties section from A to B, the corresponding entry in the "en_US" column of the internationalization page will automatically update to B. Similarly, modifying the entry to C in the internationalization page will automatically update the "I18NName" of the tag to C.

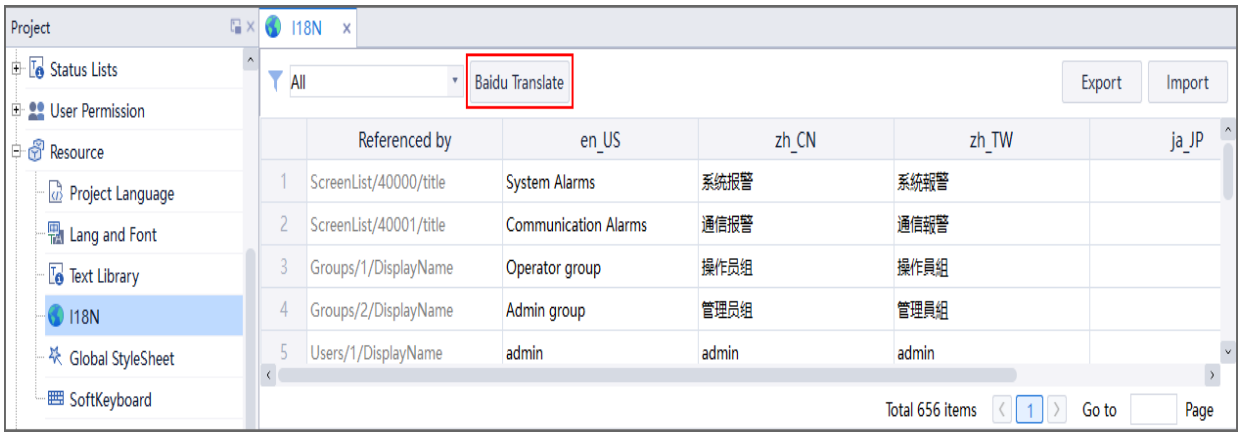
18.3.3 Translation Method Selection

The software is pre-configured with 3 languages by default. If the target language needs to be changed, you can select the target language in 18.1 Project Language first, then enable it on the 18.2 Language and Font page. The target language will be displayed in the internationalization page.

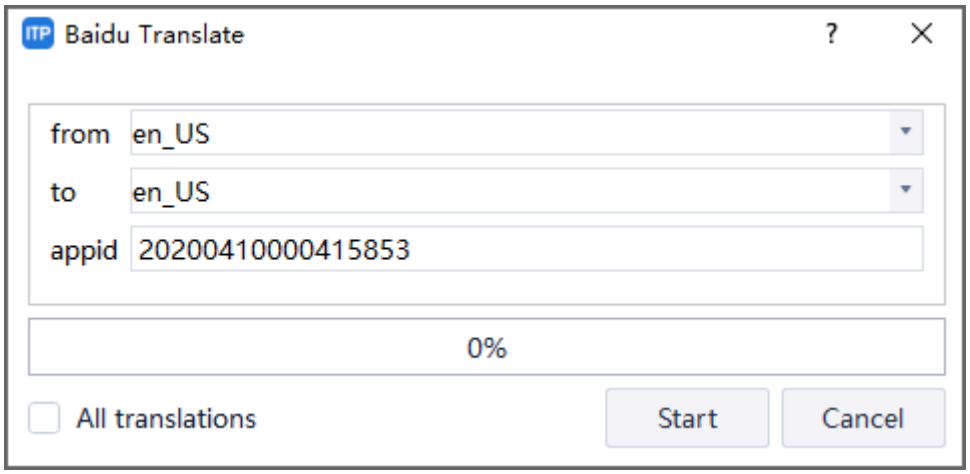
Automatic Translation

With the PC connected to the Internet, use the "Baidu Translate" button to translate the texts on the current page; this tool translates page by page, processing up to 10,000 entries per page, significantly improving

translation efficiency.



Click the "Baidu Translate" button to open the corresponding window, then configure translation settings within the window:



Properties	Description
From	Select the translation languages. To add or remove options from the dropdown menu, check the selections in 18.1 Project Language and 18.2 Language and Font in sequence.
To	
appid	This item is a fixed value and requires no modification.
All translations	Set whether to translate all cells in the target language. Unchecked: When the target language cell is empty, it will perform the translation; when content already exists in the target language cell, the translation for the cell will be skipped. Checked: Translate all.

Manual translation

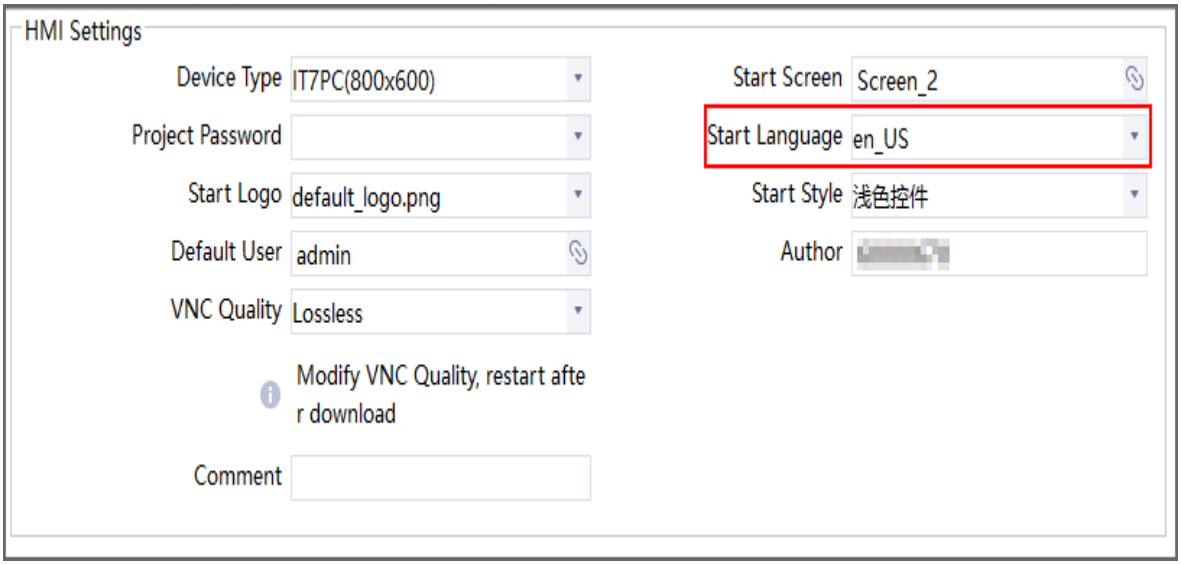
The texts in the internationalization pages support exporting for translation. The exported file is in spreadsheet format, and the export scope is the current category (e.g., All, Screens, Tag name). The translated or modified texts can be imported back to page. The unchanged content will not be updated.

18.3.4 Multi-Language Switch Feature Integration

In InoTouchPad, if you need to use the same project in multiple countries and regions, utilizing multiple languages simply requires translating the current project text into the specified language. This enables the project to run with the interface in the specified language, simplifying project development across countries and regions, and significantly reducing the development cycle.

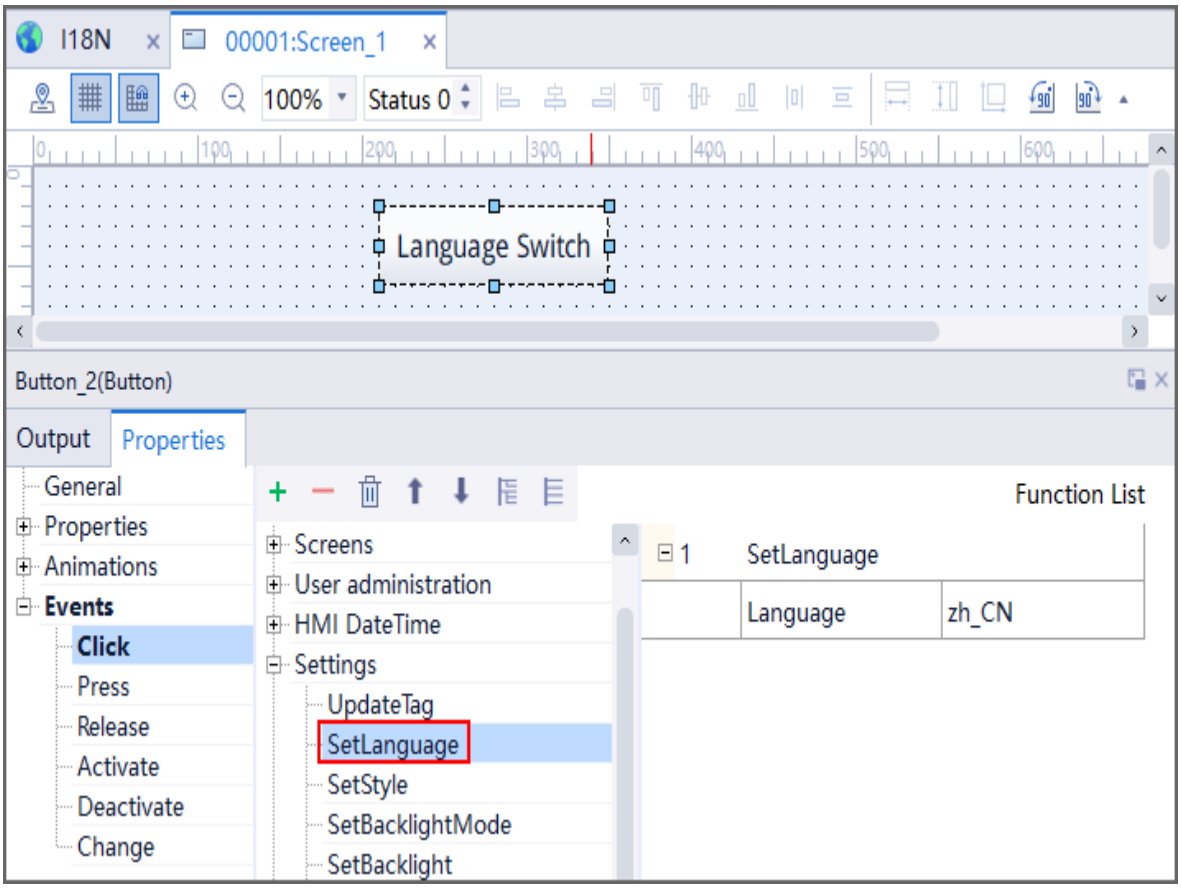
Configuration steps for switching between multiple languages during online project operation are as follows:

1. Configure the project.
   Complete the offline configuration of tags, screens, and other monitoring content for the project.
2. Configure the target language.
   Check the target language in both 18.1 Project Language and Language & Font to display it on the internationalization page.
3. Translate the text.
   Translate directly via the "Baidu Translate" button in the software, or export the text for translation. For the constraints of both operation methods, see 18.3.3 Translation Method Selection.
4. Configure the default language during runtime
   Set the initial language for the project during runtime in 20.6 Project Settings.



5. Switch the online language of HMI
   To enable real-time multilingual switching during runtime, configure the language switch button on the screen.

Configure the button with "SetLanguage" function, as shown in the figure below.

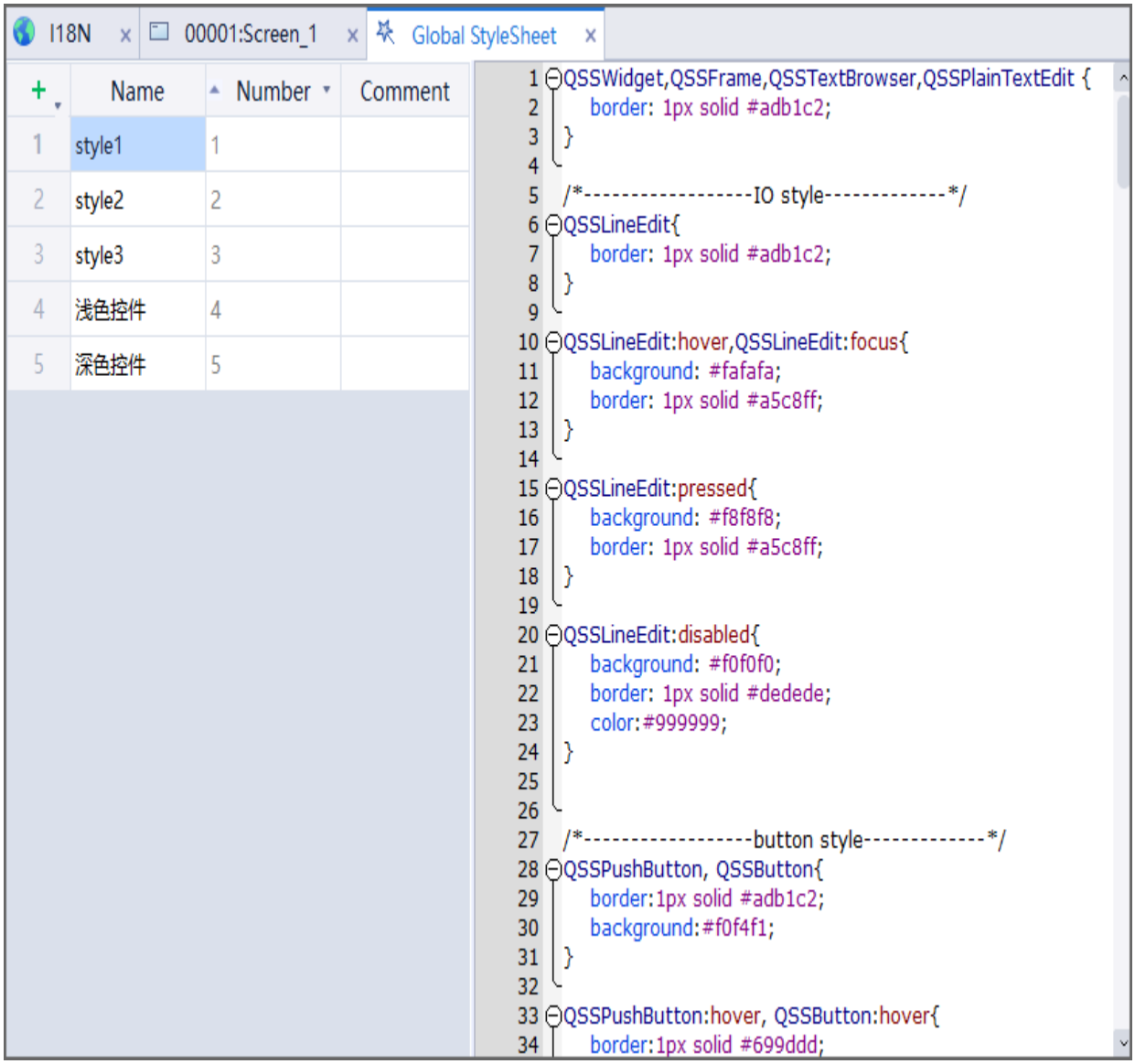


6. Compile and download the project

   After successfully compiling the project, download it to apply the configurations.

18.4 Global Style

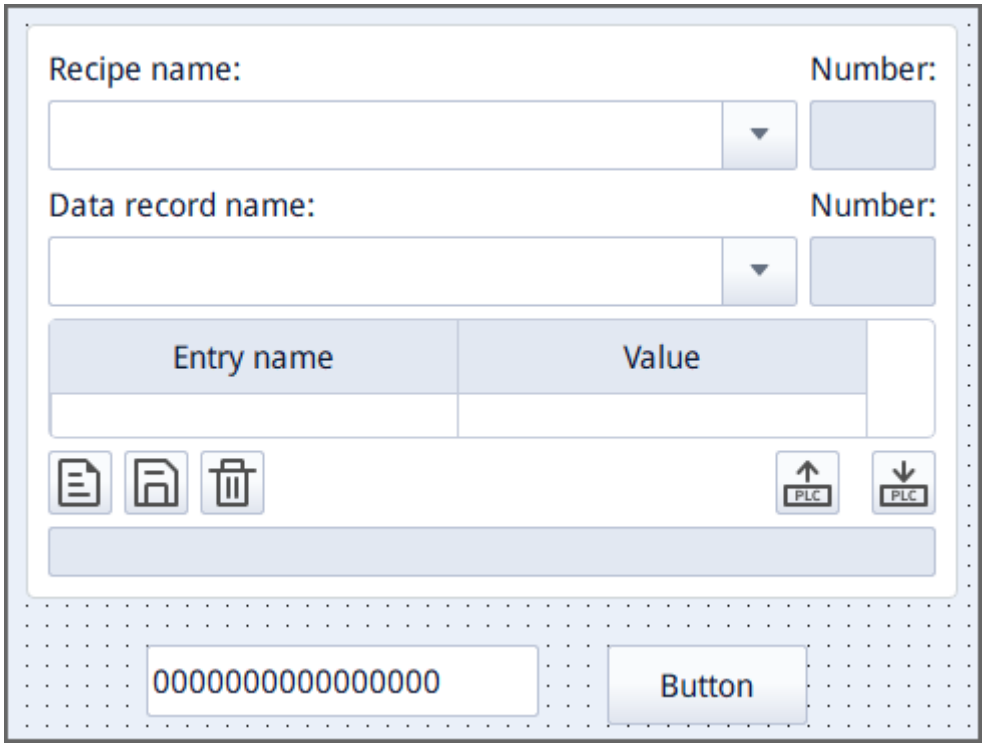
You can use the global style to customize the user interface in the QSS style table. The software provides three default styles: style1, style2, and style3, which can be edited and duplicated. The styles can be switched through tag configuration and scripting, as shown in the following figure.



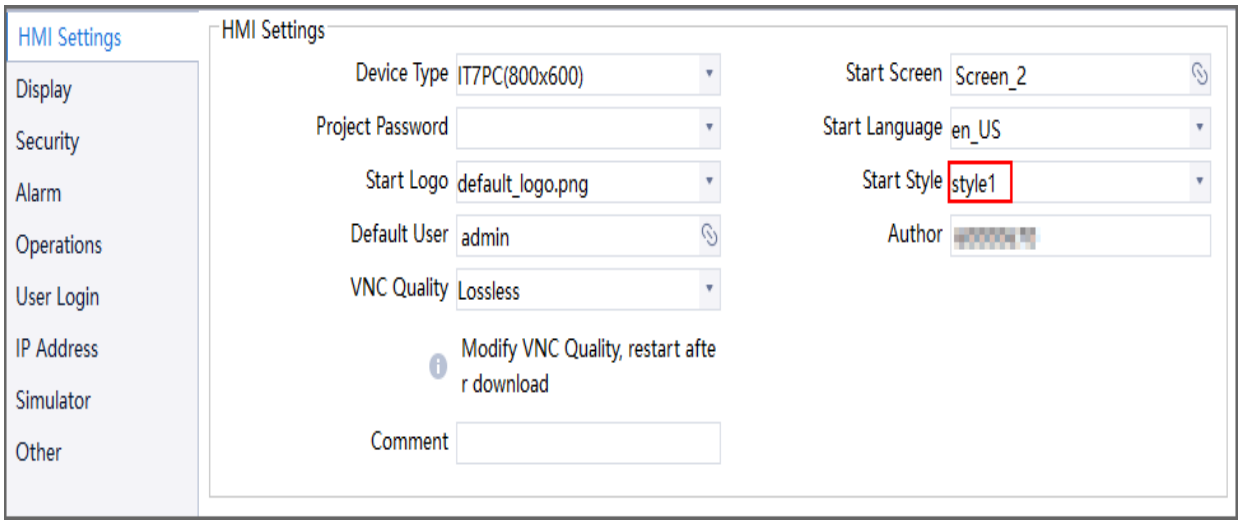
Feature

The global style feature is mainly used to customize a set of styles for the I/O field, button, text, progress bar, drop-down list control, slider, table, and table header.

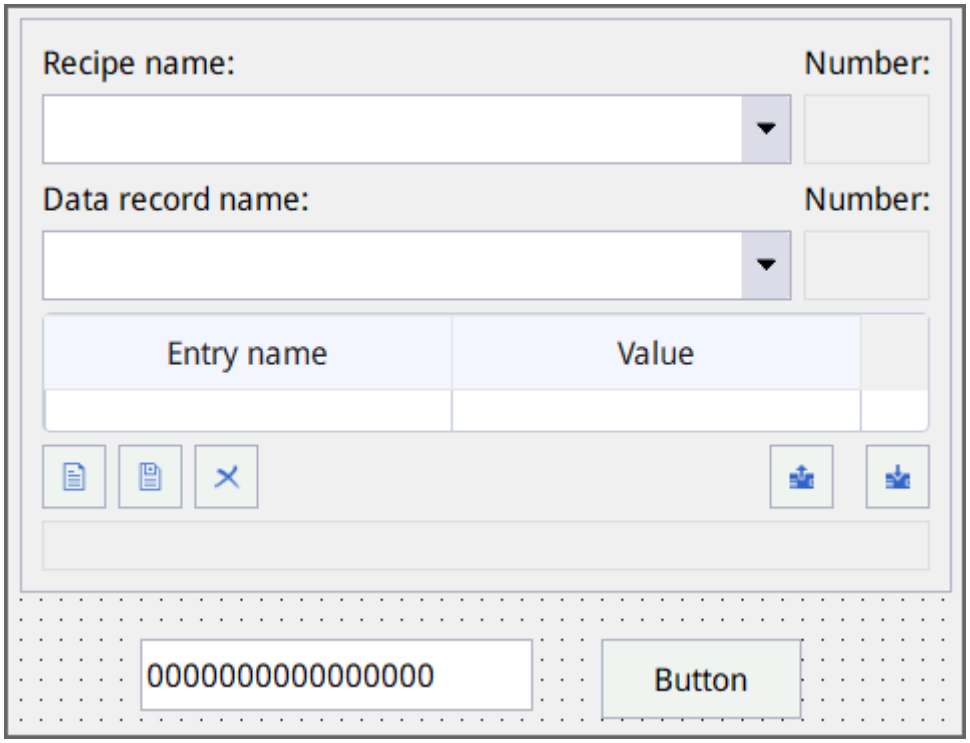
You can customize styles in the style adding area, and then use QSS code to realize custom styles in the style code editing area. Then you can apply such styles in "Start Style". For example, add a recipe view, an I/O field, and a button to the screen. The following figure shows the display effect of the screen before the global style is applied:



Choose "HMI Settings" > "Project Settings" > "Start Style" > "style1", as shown in the following figure.

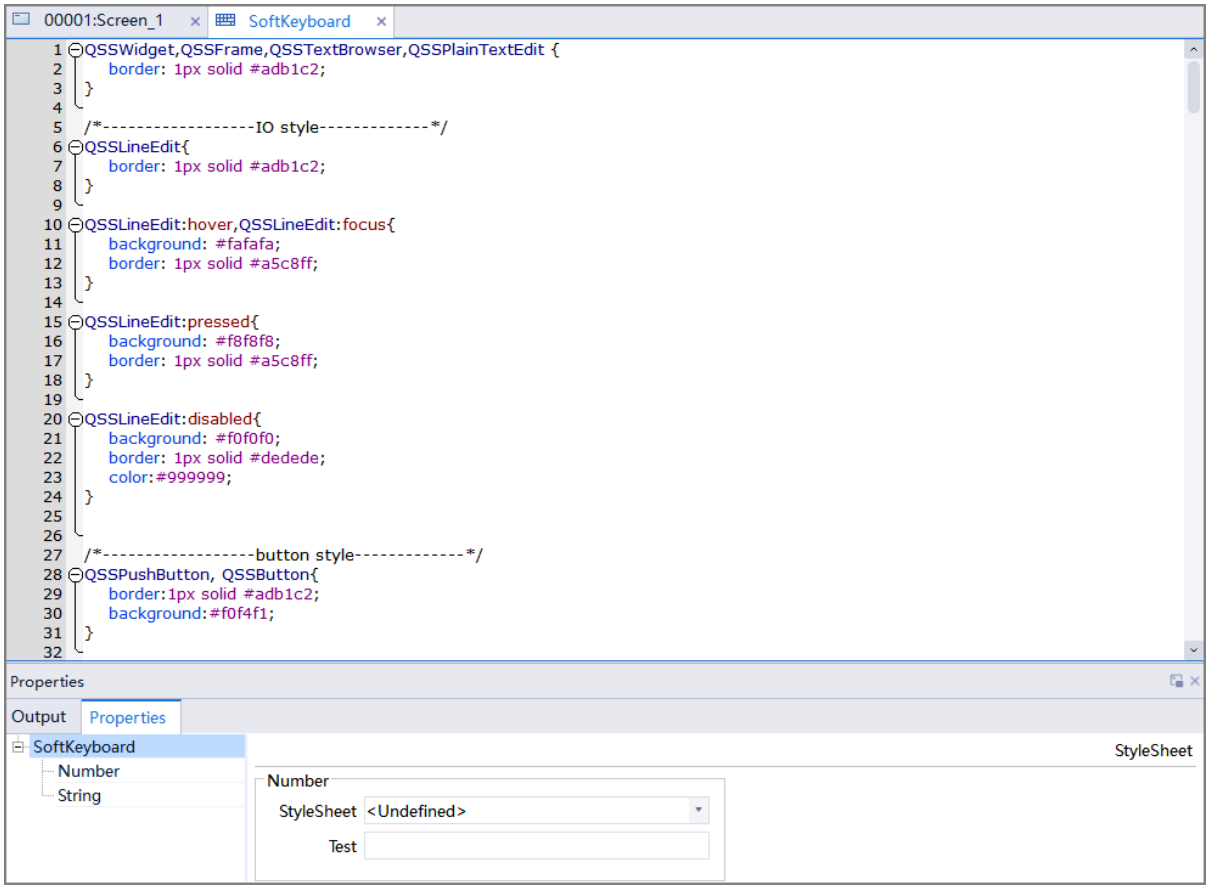


Apply the recipe of the global style "style1", recipe view, I/O field, and button controls. The following figure shows the display effect after application.



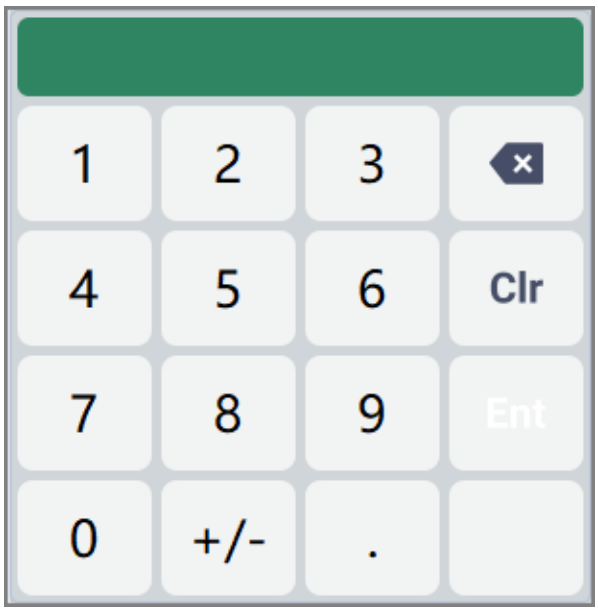
18.5 Soft Keypad

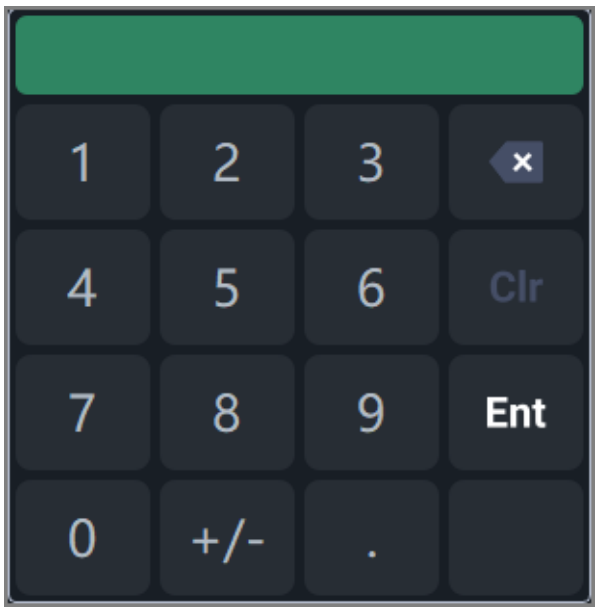
Similar to 18.4 Global Style, the soft keypad style can also be set.



The software provides three display styles, as shown in the figures below.


1
2
3
4
5
6
Clr
7
8
9
Ent
0
+/-
.


1
2
3
4
5
6
Clr
7
8
9
Ent
0
+/-
.


1
2
3
4
5
6
Clr
7
8
9
Ent
0
+/-
.

Note

- The styles provided by the system cannot be modified.
- Customized styles are not supported.

19 Common Features

19.1 Table Operations

19.1.1 Creation

Most modules of InoTouchPad, such as connection, tag, and alarm, are edited in a table. The following example demonstrates the creation process using a tag table.

When the number of table rows has not reached the limit, add new data at the end of the table using the  icon.



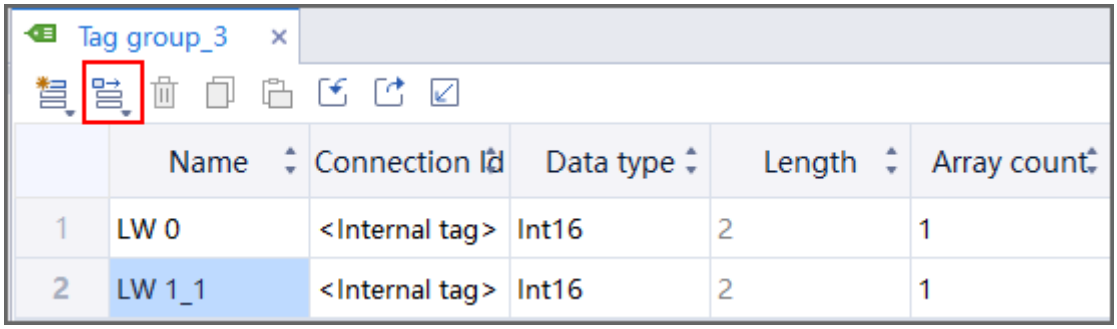
When hovering over the  icon, a settings box for adding rows will appear, with the default set to one row.



If you need to add multiple rows at once, enter the desired quantity in the text box to add the specified number of rows in one operation.

19.1.2 Insertion

To insert data in the table, select the target data row and use the  button to add a new data row below it.

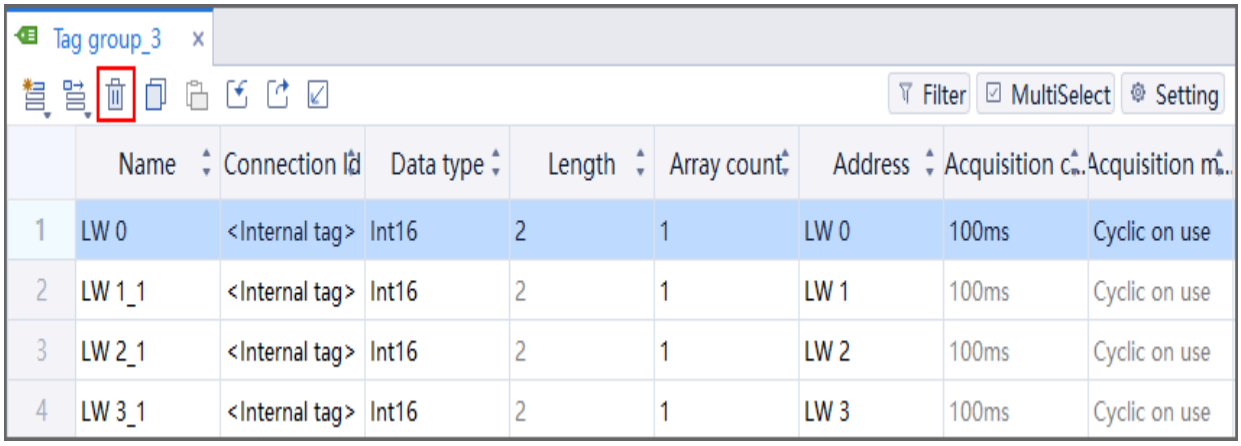


For newly inserted data, all attribute values except the values of Name, Upper limit, Lower limit, Upper limit alarm, Lower limit alarm, Comment, and Index Tag default to being consistent with the selected row.

Batch insert: Hover over the  icon to display the setting box of insertion row count, with one row as the default. To insert multiple rows at once, enter the desired quantity in the text box to insert the specified number of rows.

19.1.3 Deletion

If you do not want any created data during table editing, you can select the unwanted data and delete it. To delete table data, you need to select the row of the data to be deleted, rather than a cell in the row. For example, to delete a tag from the tag table, you need to select the row where the tag is located.

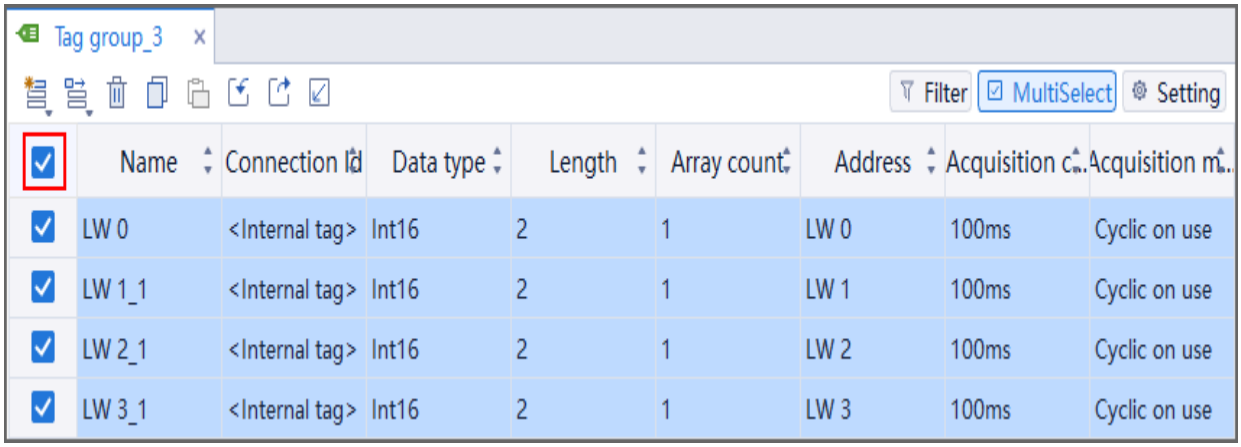


	Name	Connection Id	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...
1	LW 0	<Internal tag>	Int16	2	1	LW 0	100ms	Cyclic on use
2	LW 1_1	<Internal tag>	Int16	2	1	LW 1	100ms	Cyclic on use
3	LW 2_1	<Internal tag>	Int16	2	1	LW 2	100ms	Cyclic on use
4	LW 3_1	<Internal tag>	Int16	2	1	LW 3	100ms	Cyclic on use

Click the icon to delete the row data. In addition, you can also select the row data and press Delete to delete the data.

To delete multiple rows at once, click the MultiSelect button in the upper-right corner, then check the target row data in the table, and click the icon or press the Delete key to remove the data.

If you need to delete all the data in the table, press Ctrl+A to select all the rows, and then click the icon or press the Delete key.



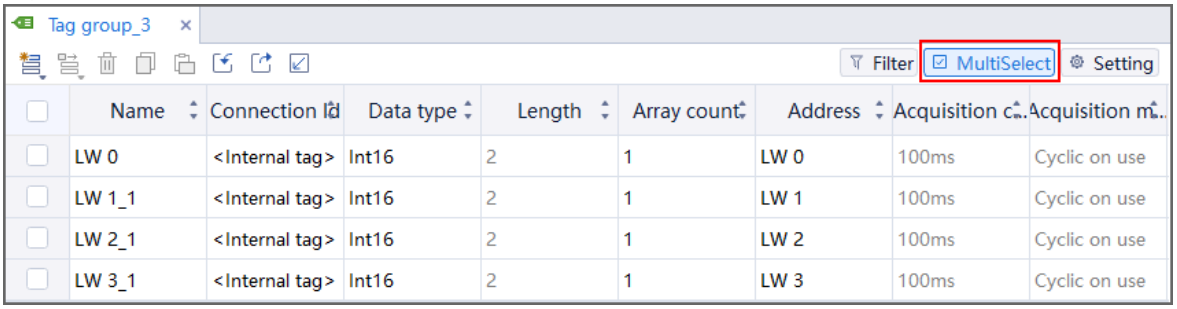
	Name	Connection Id	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...
☑	LW 0	<Internal tag>	Int16	2	1	LW 0	100ms	Cyclic on use
☑	LW 1_1	<Internal tag>	Int16	2	1	LW 1	100ms	Cyclic on use
☑	LW 2_1	<Internal tag>	Int16	2	1	LW 2	100ms	Cyclic on use
☑	LW 3_1	<Internal tag>	Int16	2	1	LW 3	100ms	Cyclic on use

19.1.4 Batch Operation

The tag group page supports batch operations, such as modifying attribute values in batch or deleting multiple tags in batch.

Procedure

1. Click the MultiSelect button in the upper right corner of the tag group page. The first column of the tag table will automatically change to checkboxes.



	Name	Connection Id	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...
	LW 0	<Internal tag>	Int16	2	1	LW 0	100ms	Cyclic on use
	LW 1_1	<Internal tag>	Int16	2	1	LW 1	100ms	Cyclic on use
	LW 2_1	<Internal tag>	Int16	2	1	LW 2	100ms	Cyclic on use
	LW 3_1	<Internal tag>	Int16	2	1	LW 3	100ms	Cyclic on use

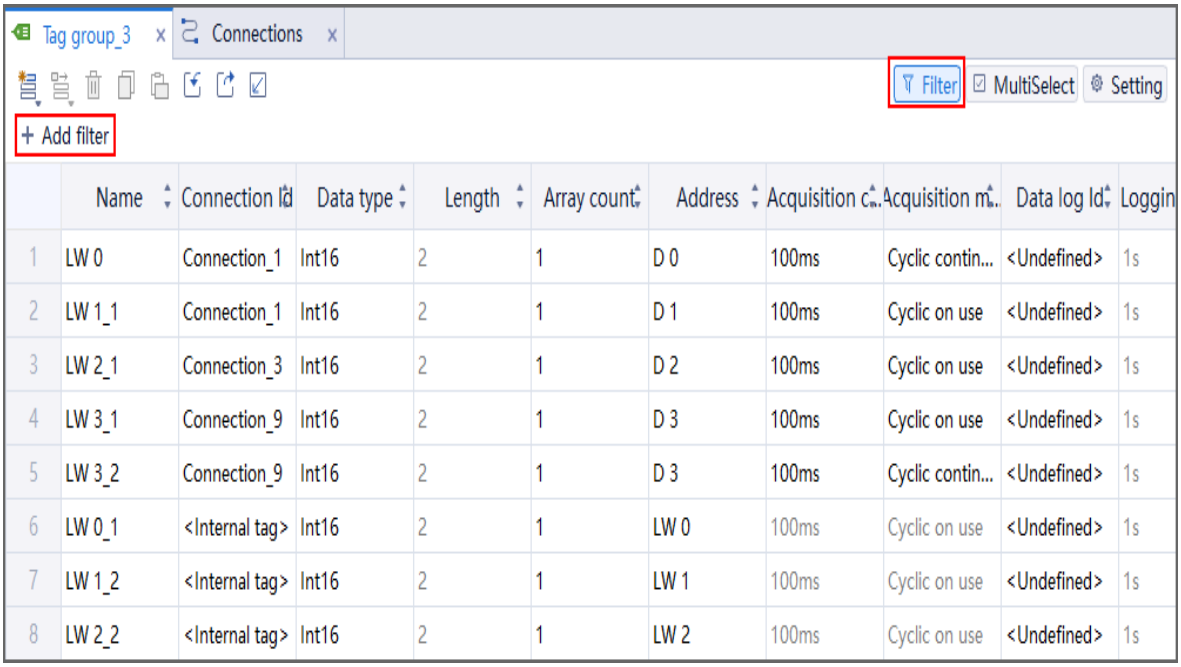
2. Check the target tag row, and modify one of the tag's attribute values (excluding name, address, upper limit, lower limit, upper limit alarm, lower limit alarm, and comment). The corresponding values of other selected tags will be updated synchronously.

19.1.5 Filter Operation

The tag group page supports creating specific filters to precisely locate the data you want to view.
Filter conditions apply to all data on the current tag group page. Range-specific filtering is not supported.

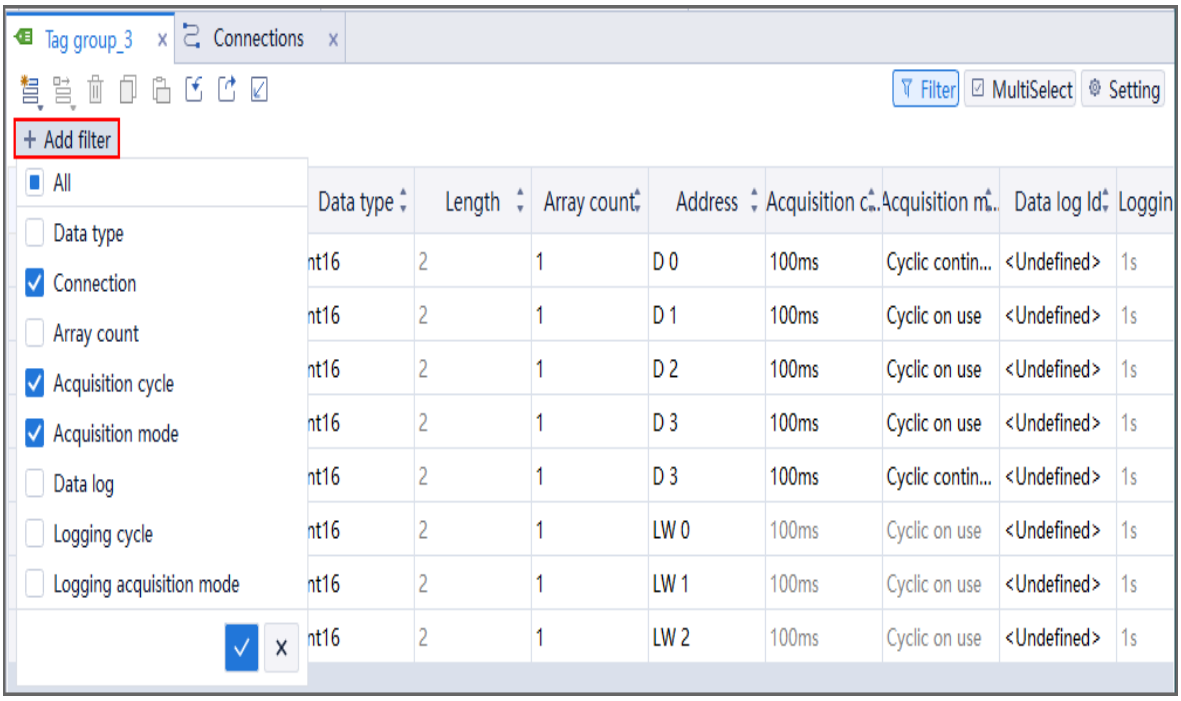
Procedure

1. Click the Filter button in the upper right corner of the tag group page to display the + Add filter button above the tag table.

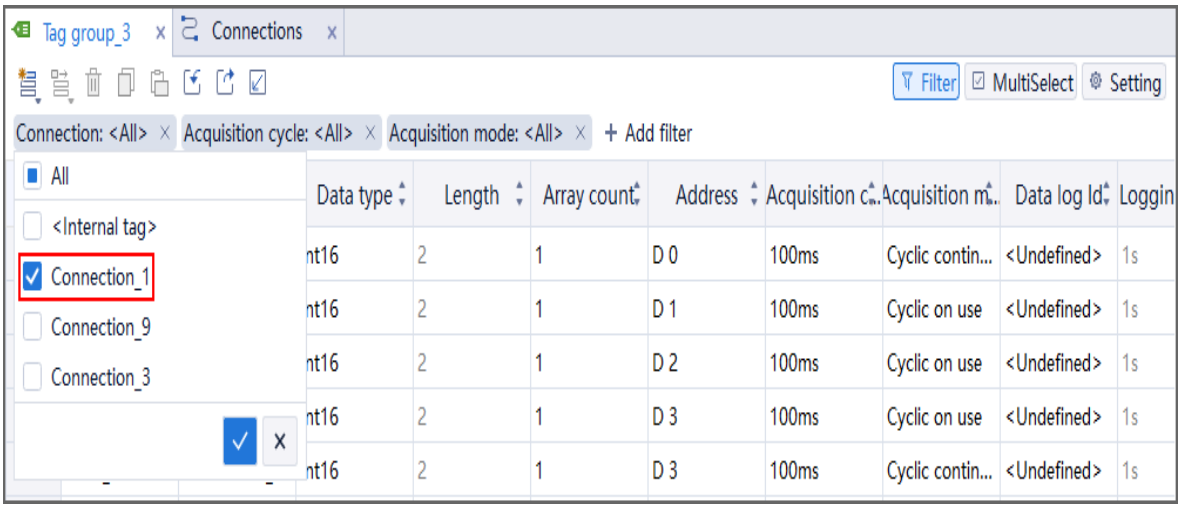


	Name	Connection Id	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...	Data log Id	Loggin
1	LW 0	Connection_1	Int16	2	1	D 0	100ms	Cyclic contin...	<Undefined>	1s
2	LW 1_1	Connection_1	Int16	2	1	D 1	100ms	Cyclic on use	<Undefined>	1s
3	LW 2_1	Connection_3	Int16	2	1	D 2	100ms	Cyclic on use	<Undefined>	1s
4	LW 3_1	Connection_9	Int16	2	1	D 3	100ms	Cyclic on use	<Undefined>	1s
5	LW 3_2	Connection_9	Int16	2	1	D 3	100ms	Cyclic contin...	<Undefined>	1s
6	LW 0_1	<Internal tag>	Int16	2	1	LW 0	100ms	Cyclic on use	<Undefined>	1s
7	LW 1_2	<Internal tag>	Int16	2	1	LW 1	100ms	Cyclic on use	<Undefined>	1s
8	LW 2_2	<Internal tag>	Int16	2	1	LW 2	100ms	Cyclic on use	<Undefined>	1s

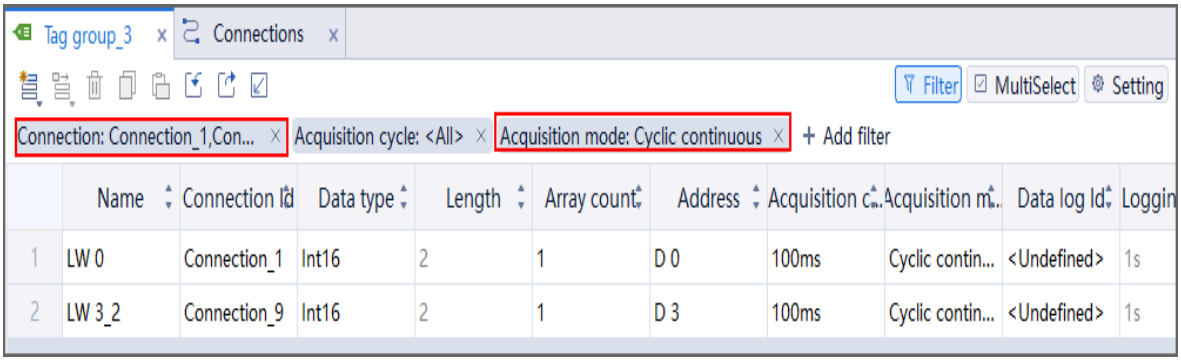
2. Click "+ Add filter" to specify filter attributes.



3. Click and select the attributes to set the filter condition.



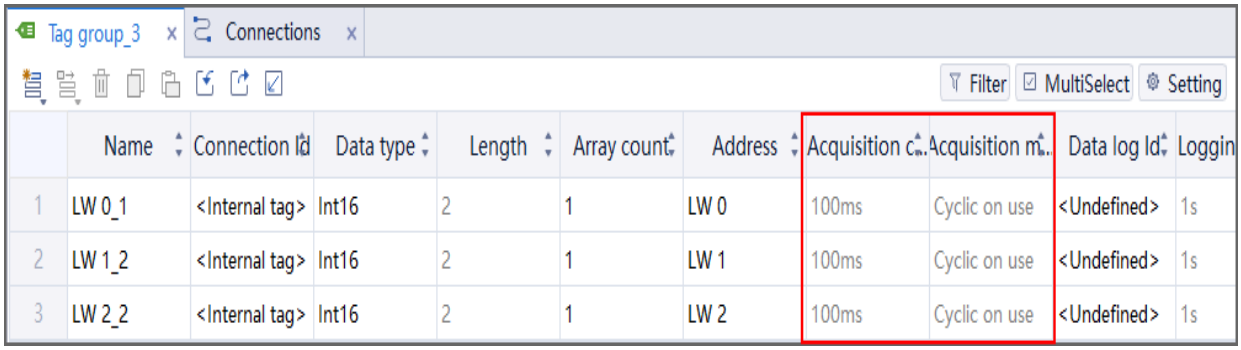
The conditions between attributes are in an "AND" relationship. For example, for the attributes shown in the figure below, the filtered tags must use either "Connection_1" or "Connection_9", while also meet the "Cyclic continuous" acquisition requirement.



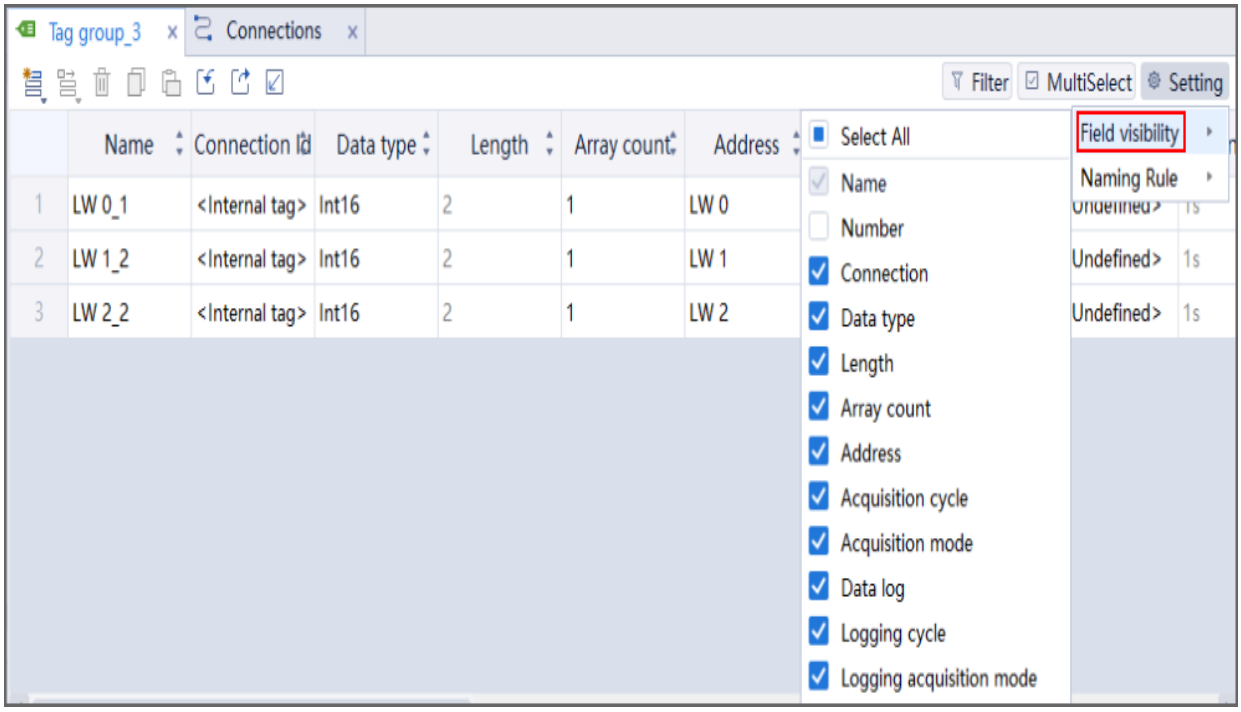
19.1.6 Column Hiding

A table typically has multiple fields, corresponding to some attributes of a module. Since some of these attributes are optionally editable, If you need not to use them, you can hide them. For example, for the internal tag LW 0 in the tag table, as no data logs are used, you can hide the "Logging cycle" and "Logging acquisition

mode" columns.



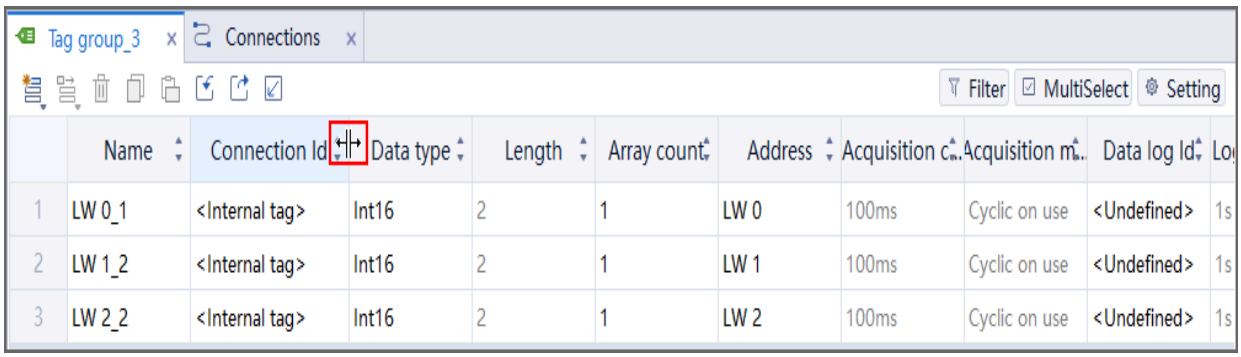
Click the button Setting in the upper right corner, and select "Field visibility" to display the interface as shown in the following figure:



Then, you can uncheck the check boxes of the "Logging cycle" and "Logging acquisition mode" columns to hide them.

19.1.7 Column Width Adjustment

For tables that allow adjusting column width, you can adjust the size by dragging the borders of columns with the mouse. For example, in the tag group table, you can adjust column width as shown in the following figure:



19.1.8 Copy and Paste

The tag group page supports copy and paste operations for tags. For example, when creating multiple tags with identical attributes, you can quickly define them using copy and paste operations.

Copy operation

Copy operation supports selecting single or multiple tags. Multiple tags can be selected by holding the "Ctrl" or "Shift" key, or through the 19.1.4 Batch Operation method. The operation commands are executed using the software's built-in commands and do not support the shortcut "Ctrl" + "C".

Paste operation

Copied tags cannot be pasted across pages and can only be pasted on the current page. Tag names are automatically appended with suffixes such as "_1" after pasting.

Operation commands are performed using the software's command functions; keyboard shortcuts like "Ctrl"+"V" are not supported.

19.2 Print Feature

19.2.1 Background Printing

Print Content

The print feature of InoTouchPad supports printer hot swapping and can print the following contents:

1. The current screen
2. Alarms in the alarm view
3. Recipe data in the recipe view
4. Data records in the data view

Printer Requirements

- Use a printer with a USB port.

HP Laserjet series printers are supported, including HP LaserJet 1000, HP LaserJet 1005, HP LaserJet 1018, HP LaserJet 1022nw, HP LaserJet 1022n, HP LaserJet 1020, and HP LaserJet 1022.

- Use A4 paper for printing.

Supported Print Formats

Both reports and pictures can be printed.

1. Reports of the following information can be printed:
   a. Alarms in the alarm view
   b. Recipe data in the recipe view
   c. Data records in the data view
   Print formats for reports are as follows:

For the title in the top row, such as "Alarm", the font is 16 and the font is normal.

For the title in the second row, such as the recipe name and record name, the font is 14 and the font is normal. For the attribute names of the recipe (such as Name, Path, Entry name, Value), use 10 point non-bold italic font formating; for the value of the recipe attribute name, use 10 point regular font formatting.

The font is Droid Sans Fallback for all printed information.

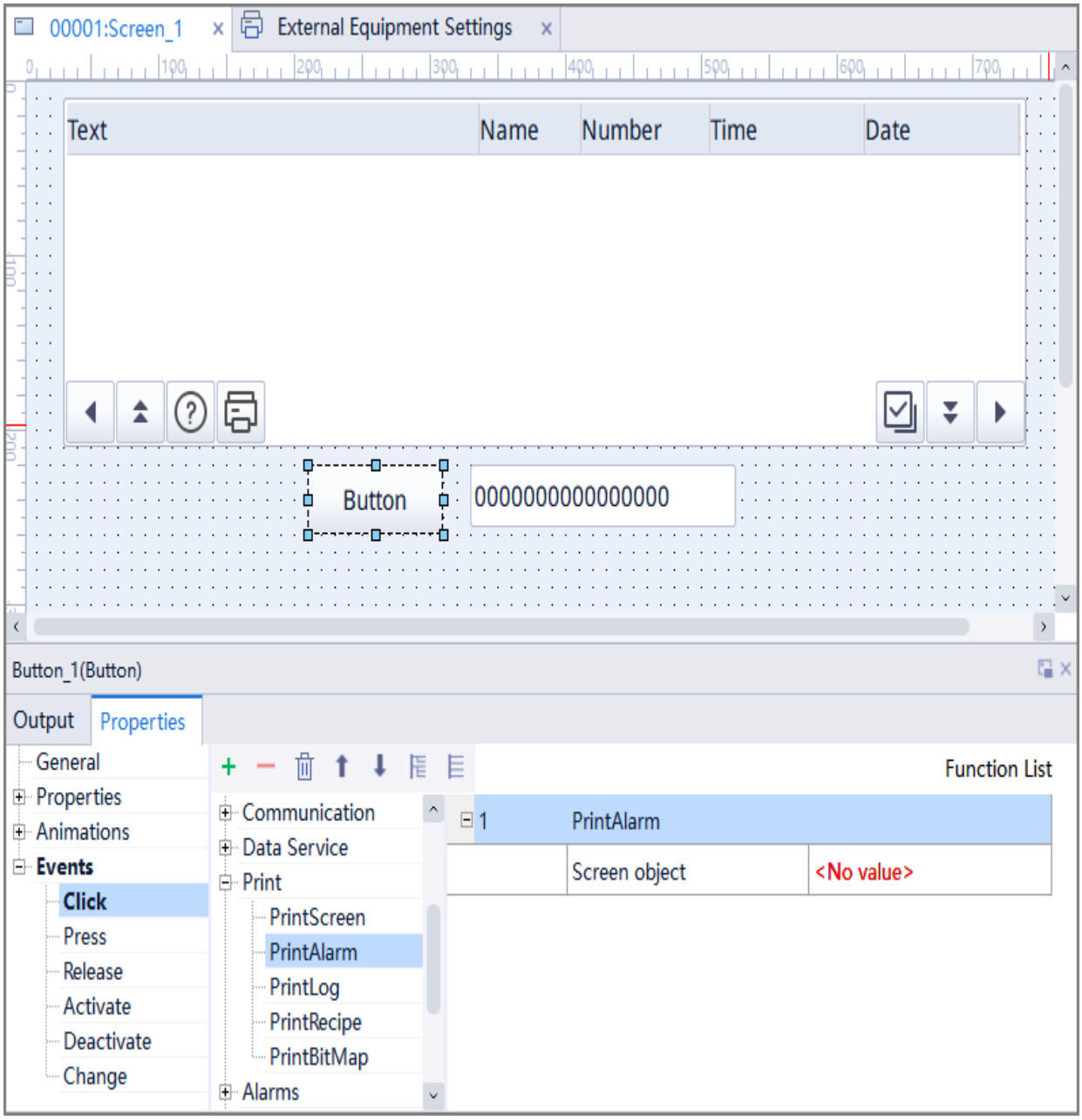
2. For picture printing, the current screen can be printed.

Report Print Feature

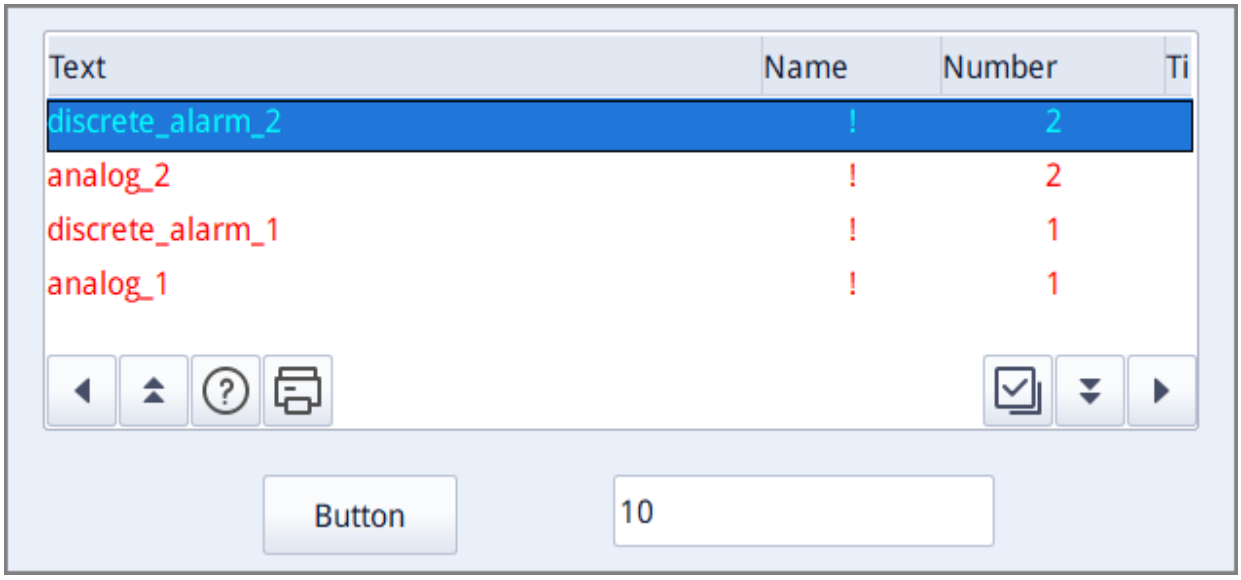
Alarm View Data Printing

Execute the system function PrintAlarm to print the specified alarm view on the current screen. Print the alarm information or alarm records in the alarm view, starting from the latest alarm time or the line where the cursor is located. Alarm records stored in the USB drive cannot be printed due to the same USB port as the printer, but they can be printed during simulation run. During simulation run, if the computer is not connected to the printer, the current alarm information and alarm records can be printed by a virtual printer and stored in the specified directory as print files. The print format is basically the same as the target machine printing format.

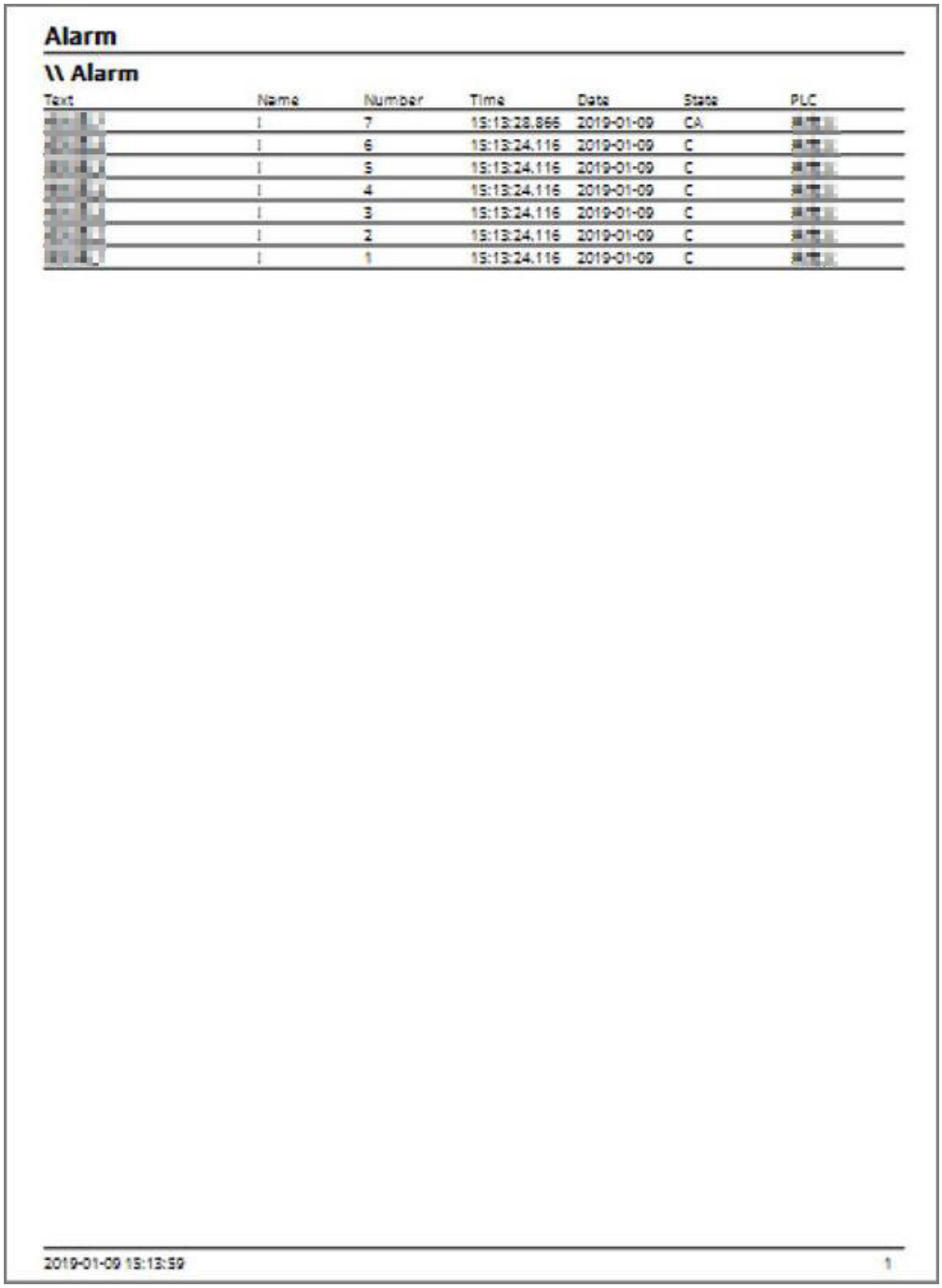
1. Create a project, configure the alarm view, button, and numeric I/O field in the screen, and configure the "PrintAlarm" button to print the current alarm or use the built-in print button on the alarm view, as shown in the following figure.



2. Check the simulation result, as shown in the following figure.



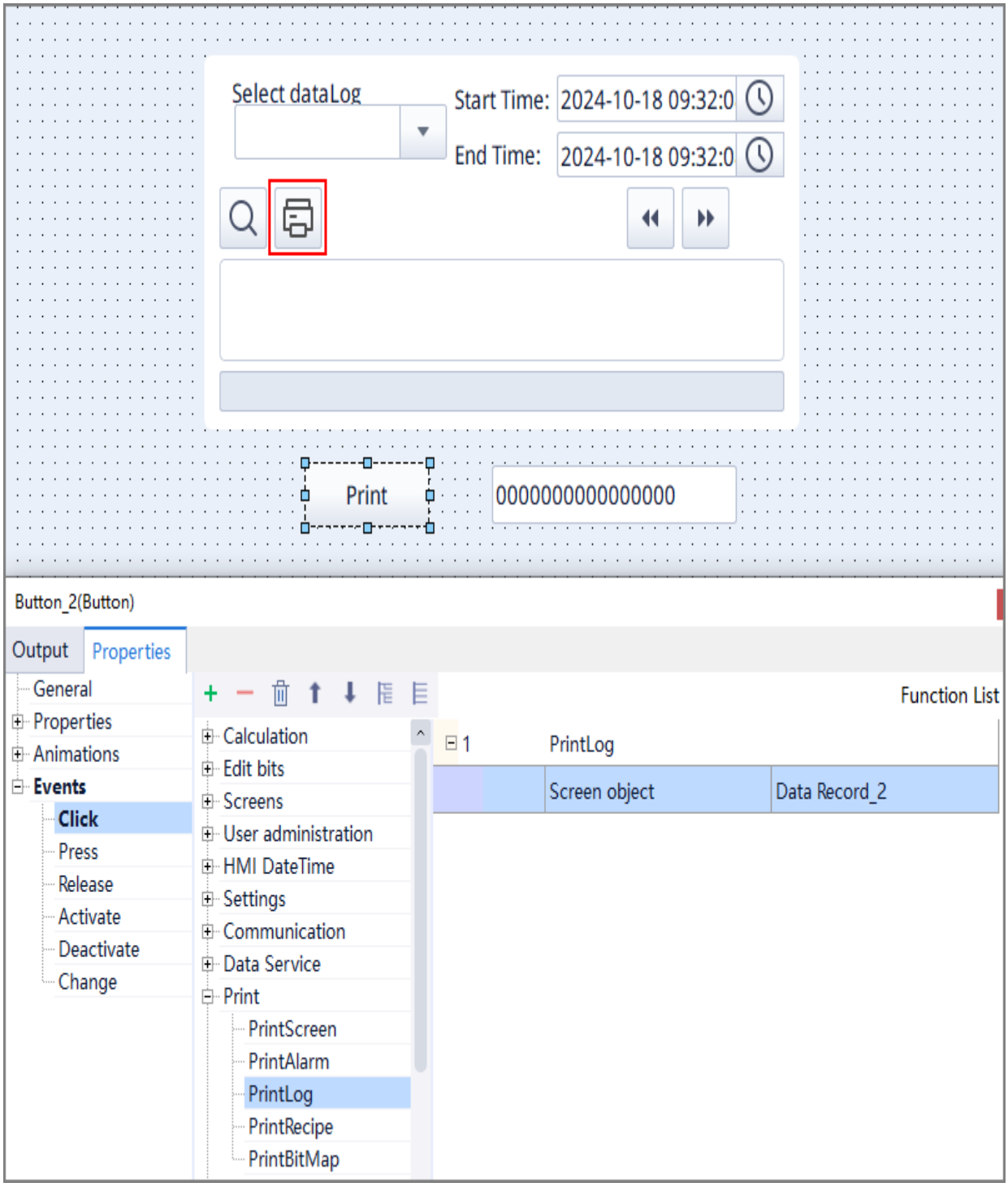
3. Check the print view, as shown in the following figure.



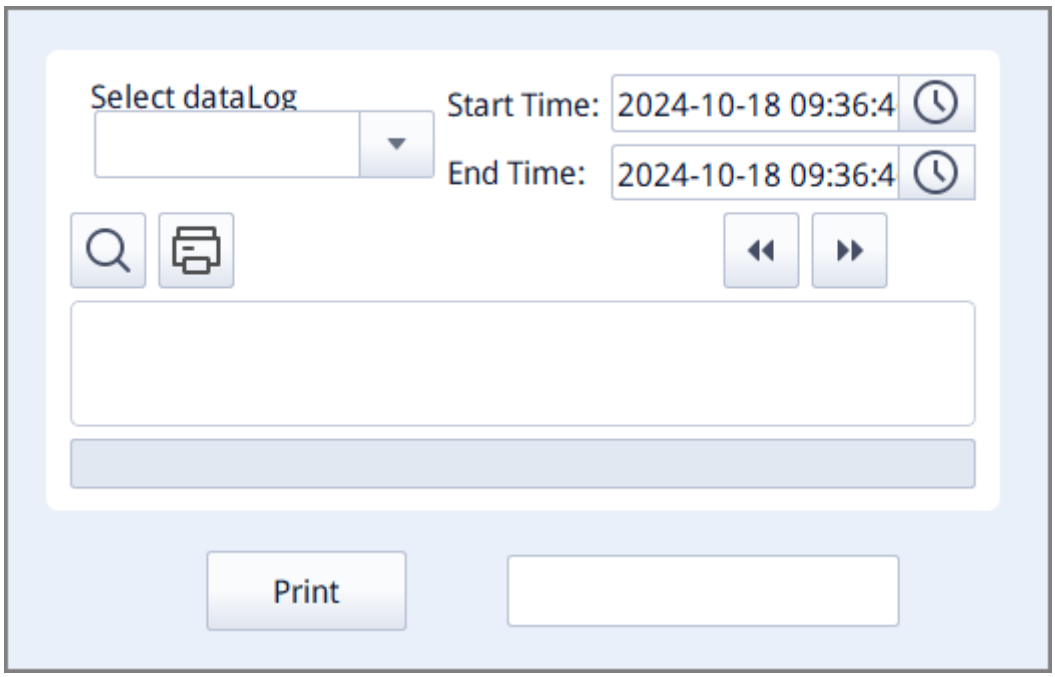
Data View Data Printing

Execute the system function PrintLog to print the specified data view on the current screen. Alarm records stored in the USB drive cannot be printed due to the same USB port as the printer, but they can be printed during simulation run. During simulation run, if the computer is not connected to the printer, the current data records can be printed by a virtual printer and stored in the specified directory as print files. The print format is basically the same as the target machine printing format.

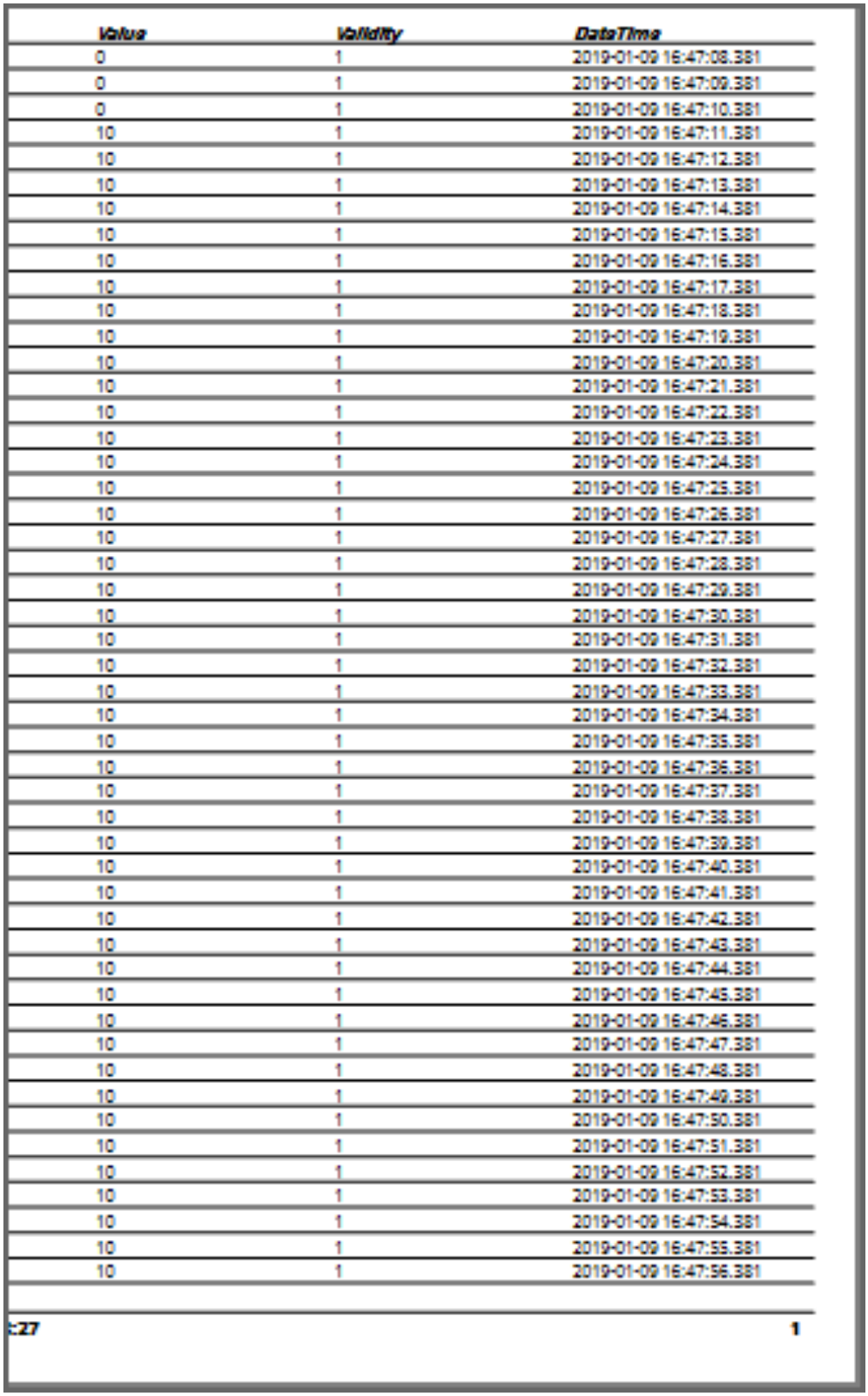
1. Create a project, configure the data view, numeric I/O field, and button in the screen, and configure the "PrintLog" button to print all data records on the current data view or use the built-in print button on the data view, as shown in the following figure.



2. Check the simulation result, as shown in the following figure.



3. Check the print view, as shown in the following figure.

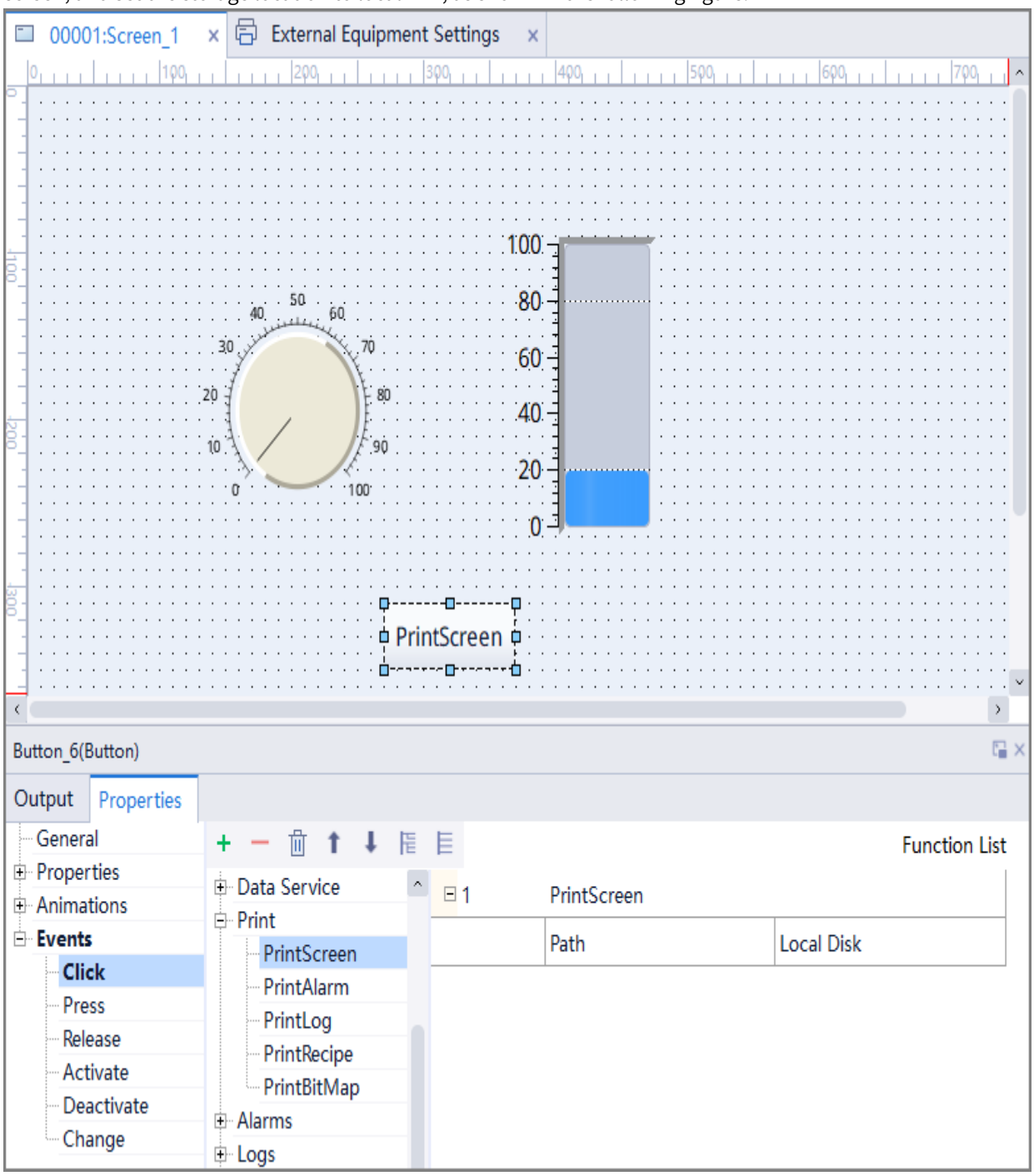


Value	Validity	DataTime
0	1	2019-01-09 16:47:08.381
0	1	2019-01-09 16:47:09.381
0	1	2019-01-09 16:47:10.381
10	1	2019-01-09 16:47:11.381
10	1	2019-01-09 16:47:12.381
10	1	2019-01-09 16:47:13.381
10	1	2019-01-09 16:47:14.381
10	1	2019-01-09 16:47:15.381
10	1	2019-01-09 16:47:16.381
10	1	2019-01-09 16:47:17.381
10	1	2019-01-09 16:47:18.381
10	1	2019-01-09 16:47:19.381
10	1	2019-01-09 16:47:20.381
10	1	2019-01-09 16:47:21.381
10	1	2019-01-09 16:47:22.381
10	1	2019-01-09 16:47:23.381
10	1	2019-01-09 16:47:24.381
10	1	2019-01-09 16:47:25.381
10	1	2019-01-09 16:47:26.381
10	1	2019-01-09 16:47:27.381
10	1	2019-01-09 16:47:28.381
10	1	2019-01-09 16:47:29.381
10	1	2019-01-09 16:47:30.381
10	1	2019-01-09 16:47:31.381
10	1	2019-01-09 16:47:32.381
10	1	2019-01-09 16:47:33.381
10	1	2019-01-09 16:47:34.381
10	1	2019-01-09 16:47:35.381
10	1	2019-01-09 16:47:36.381
10	1	2019-01-09 16:47:37.381
10	1	2019-01-09 16:47:38.381
10	1	2019-01-09 16:47:39.381
10	1	2019-01-09 16:47:40.381
10	1	2019-01-09 16:47:41.381
10	1	2019-01-09 16:47:42.381
10	1	2019-01-09 16:47:43.381
10	1	2019-01-09 16:47:44.381
10	1	2019-01-09 16:47:45.381
10	1	2019-01-09 16:47:46.381
10	1	2019-01-09 16:47:47.381
10	1	2019-01-09 16:47:48.381
10	1	2019-01-09 16:47:49.381
10	1	2019-01-09 16:47:50.381
10	1	2019-01-09 16:47:51.381
10	1	2019-01-09 16:47:52.381
10	1	2019-01-09 16:47:53.381
10	1	2019-01-09 16:47:54.381
10	1	2019-01-09 16:47:55.381
10	1	2019-01-09 16:47:56.381
:27		1

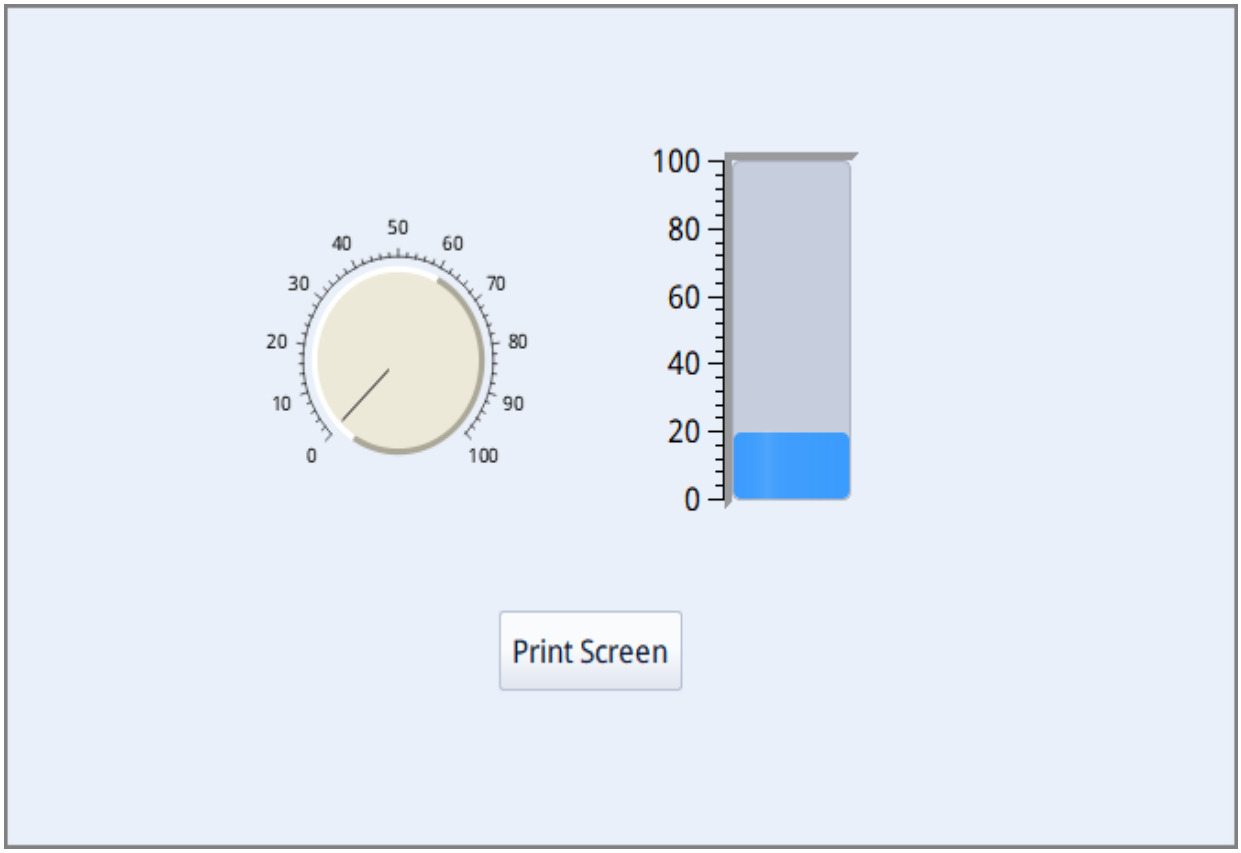
Picture Printing Feature

Execute the system function PrintScreen to print the current screen. Only the screen content is printed, without the print title and time. The screen print size is adaptive to the width of the paper. During simulation run, the current screen to be printed is stored in PNG format in C:\Users\Username\Documents\InoTouchPad\ScreenShots, and the print format is basically the same as the target machine printing format.

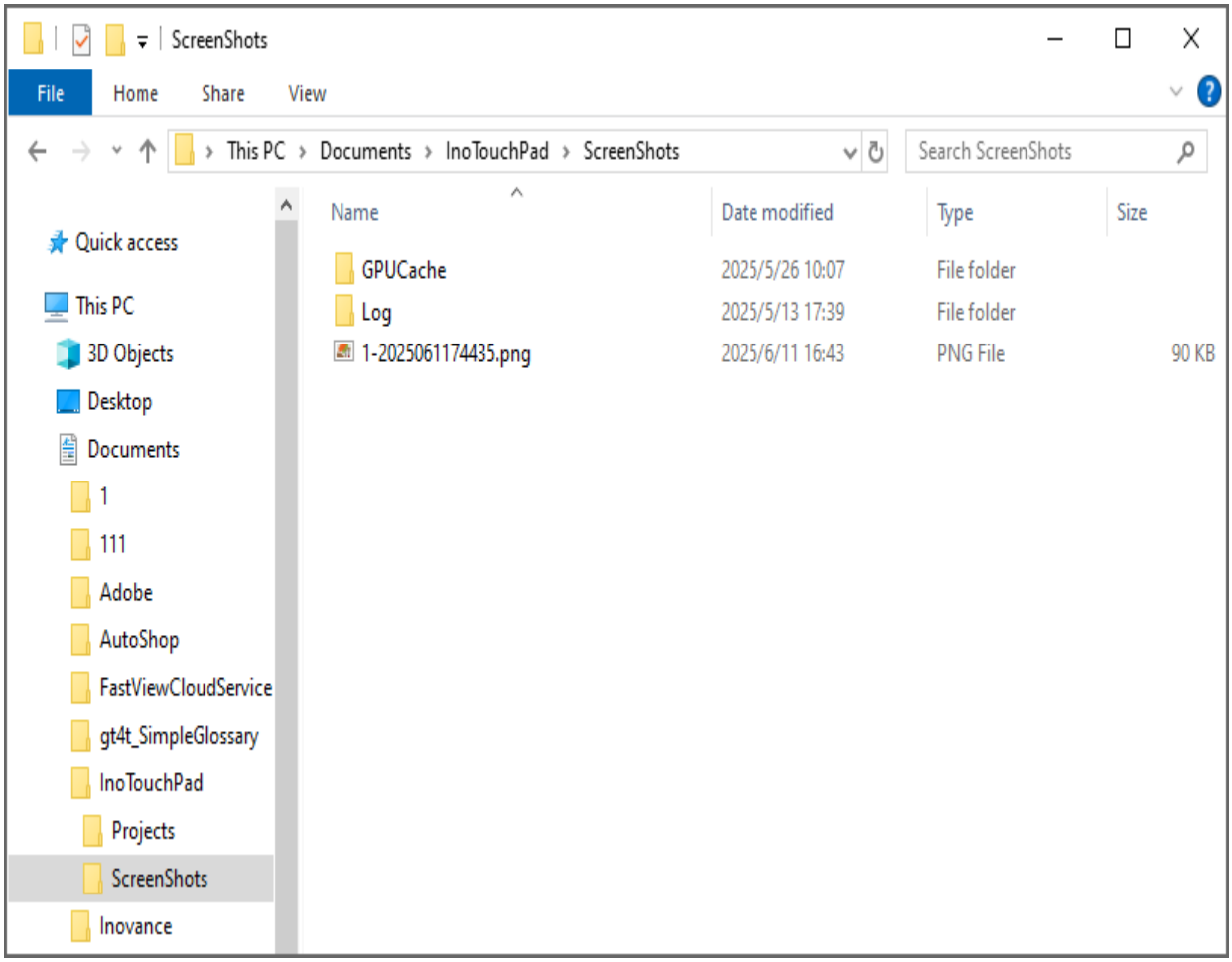
Create a project and configure a bar diagram, knob and a Print Screen button in the screen to print the current screen, and set the storage location to local HMI, as shown in the following figure:



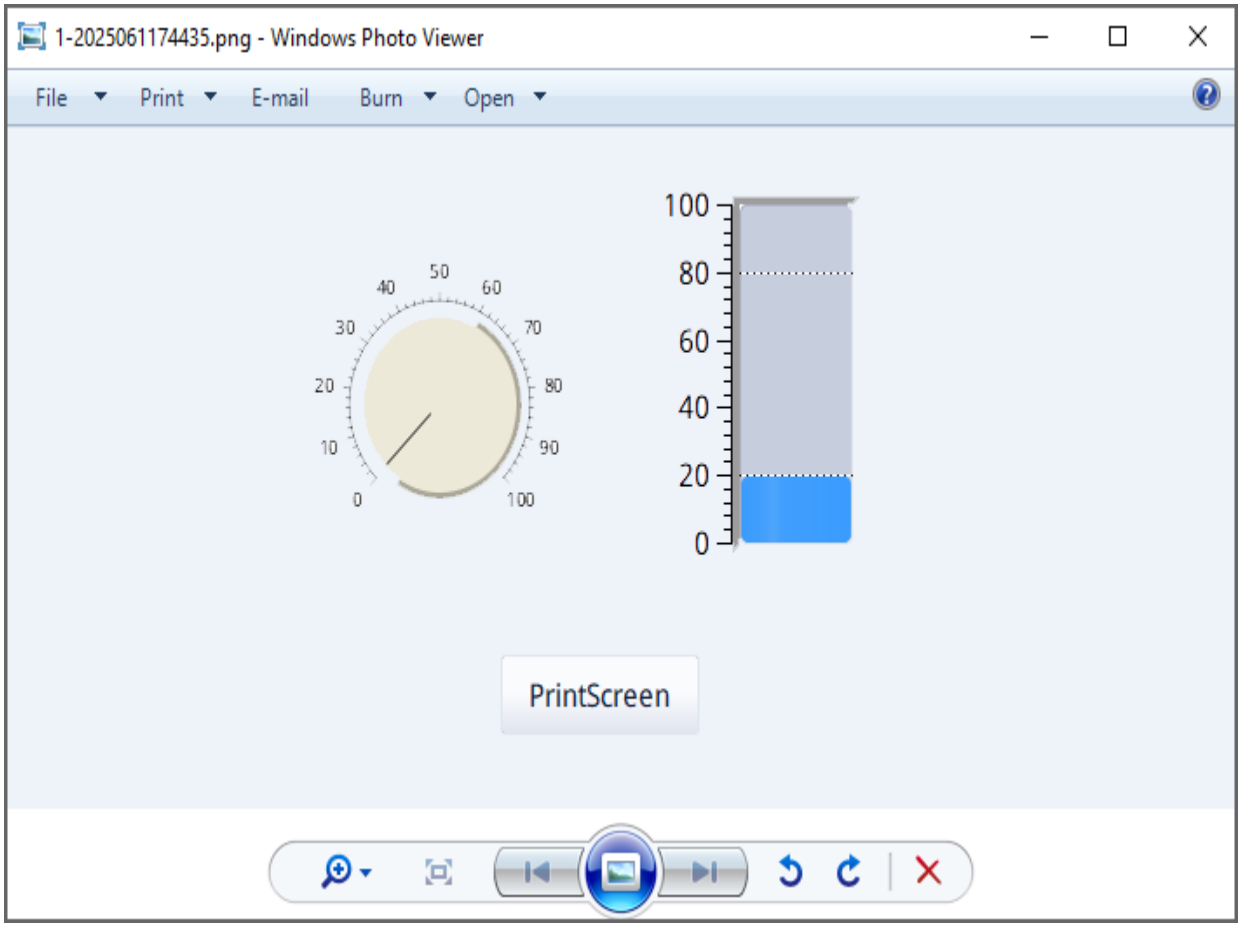
2. Check the simulation result, as shown in the following figure.



3. Check the print result, as shown in the following figure.



Open the printed image in C:\Users\Username\Documents\InoTouchPad\ScreenShots, as shown in the following figure.



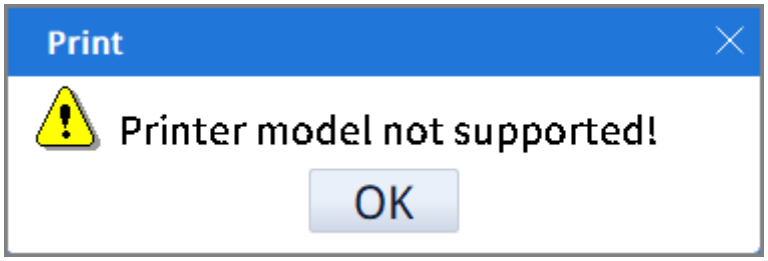
If the screen is printed on the target machine, the printed screen image is saved in the /screenshots path under the root directory of the storage medium, such as a local path, a USB drive, or an SD card.

Print Tips

1. To print a report on the target machine, if no printer is connected, the following dialog box will pop up.



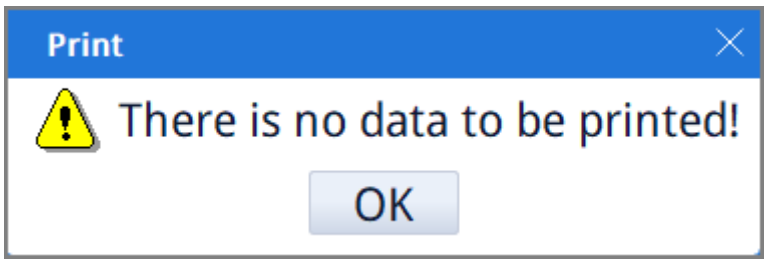
2. To print a report on the target machine, if a non-supported printer is connected, the following dialog box will pop up.



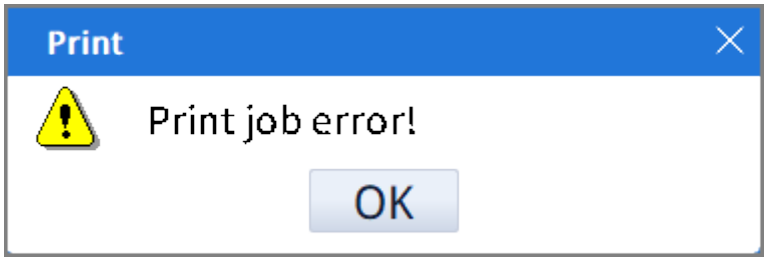
3. To print a report on the target machine, if the printer firmware fails to be obtained during printing, the following dialog box will pop up.



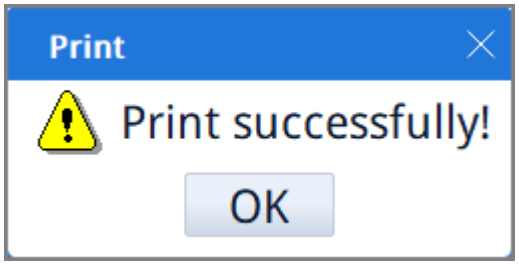
4. To print a report on the target machine, if the print content is empty, the following dialog box will pop up.



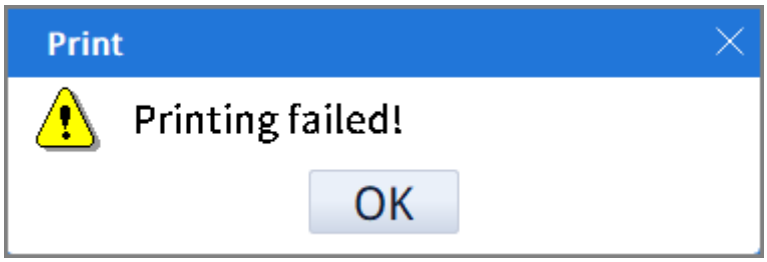
5. To print a report on the target machine, if the printing interrupts, the following dialog box will pop up.



6. If picture printing is successful, the following dialog box will pop up.



7. If picture printing fails, the following dialog box will pop up.



Print Feature of Historical Curve Trend Chart

Introduction

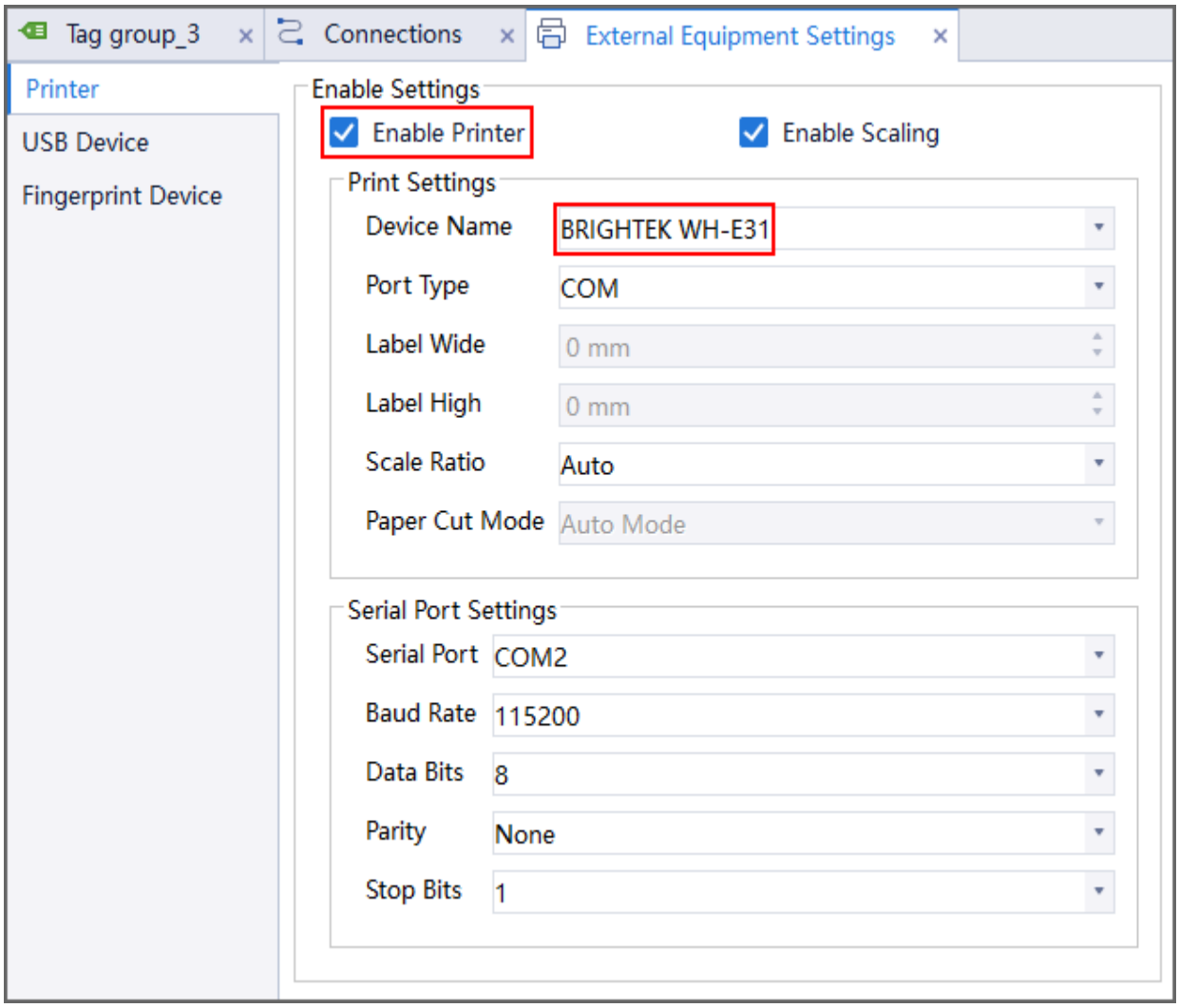
The print feature is implemented for standard QR code and Code 128B. Code 128B encodes uppercase A-Z, lowercase a-z, digits, and characters, for example, Abc123 and A-123(B).

Condition

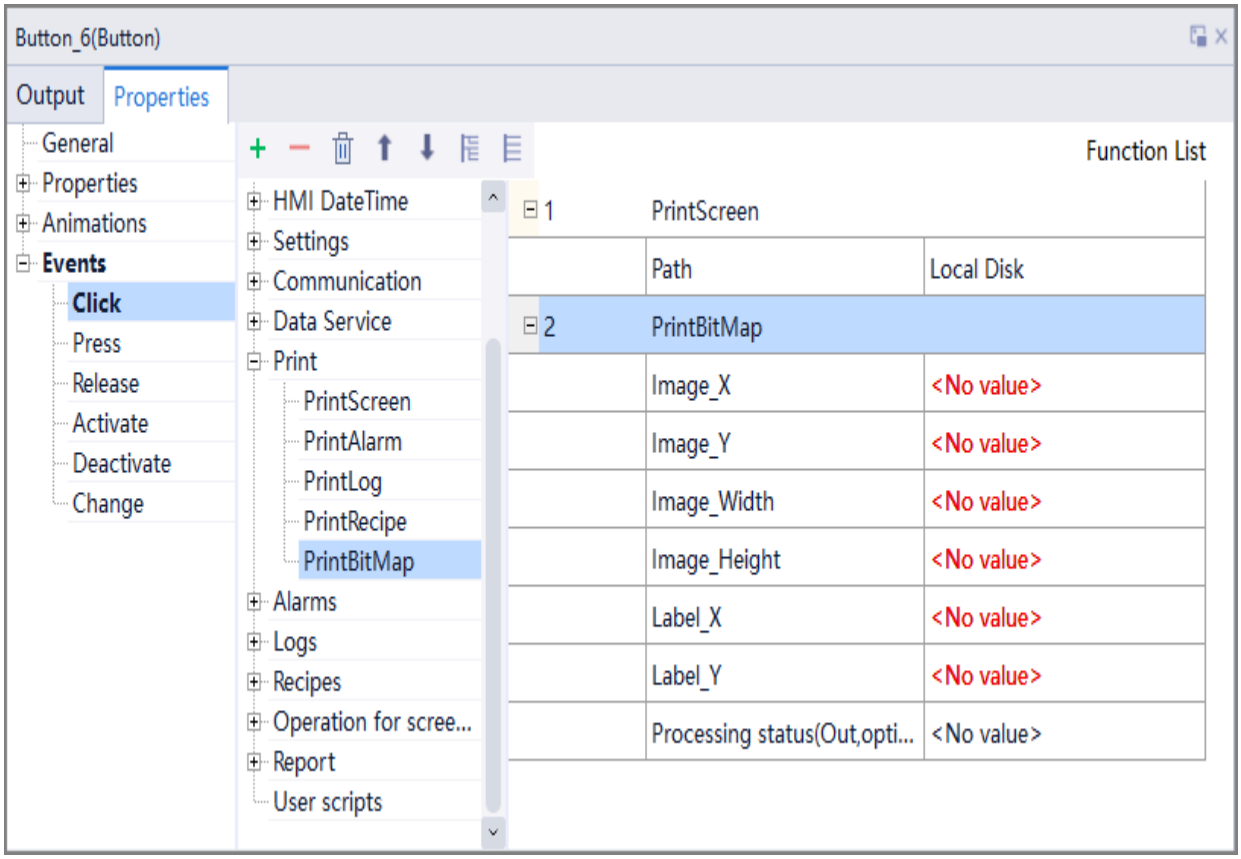
A project has been created.

Procedure

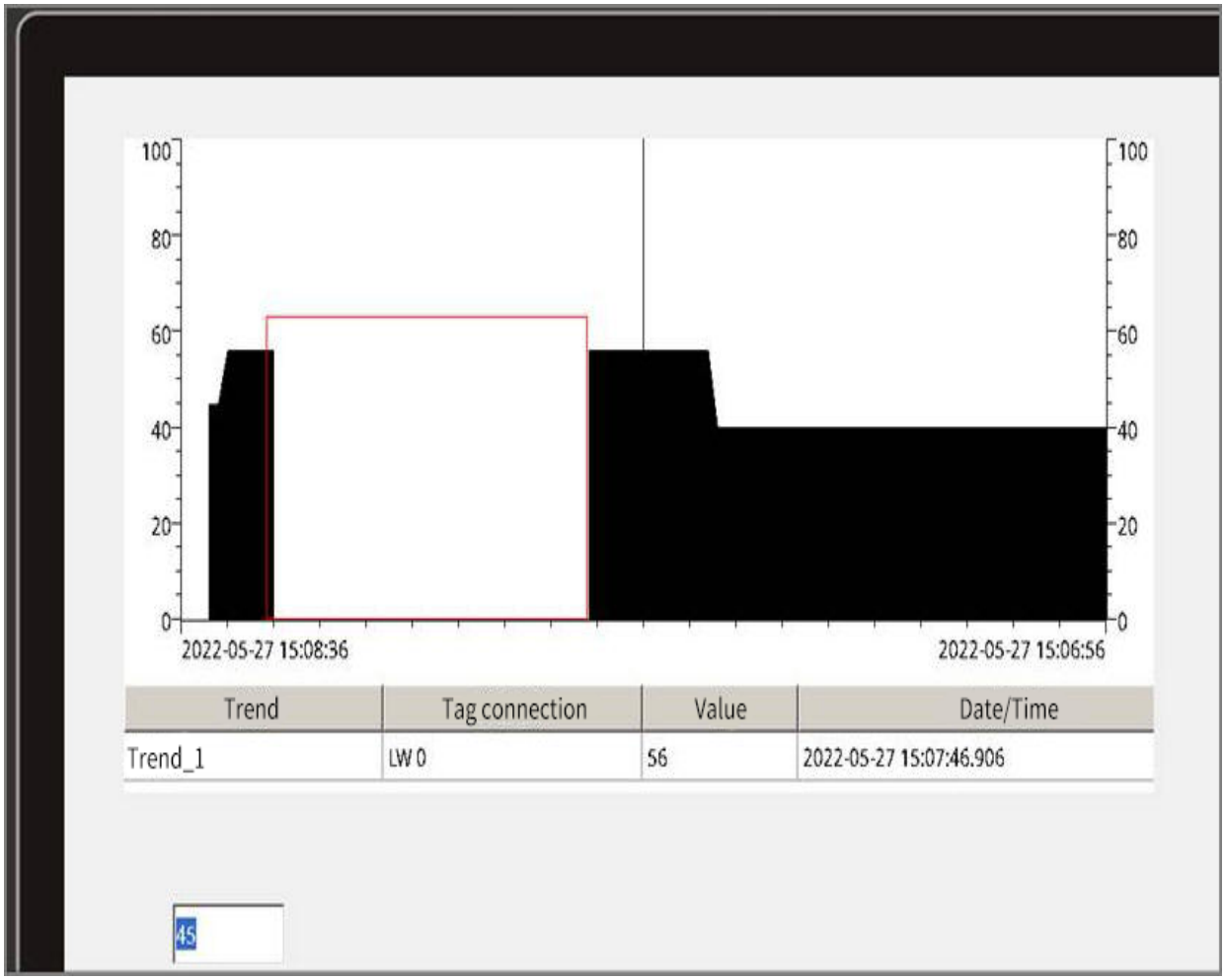
1. Open the project. In the "Project" tree on the left, choose "HMI Settings" > "External Equipment Settings". On the page displayed, check "Enable Printer", and select "BRIGHTEK WH-E31" for "Device Name" in the "Print Settings" section, as shown in the following figure.



2. Set system functions. Click the "Button" control, choose, "Events" > "Click" > "Print" > "PrintBitMap", and set "Image_Height".



3. Download and print the historical trend chart, as shown in the following figure.



19.2.2 HMI Printing

19.2.2.1 Printing Trigger Mode

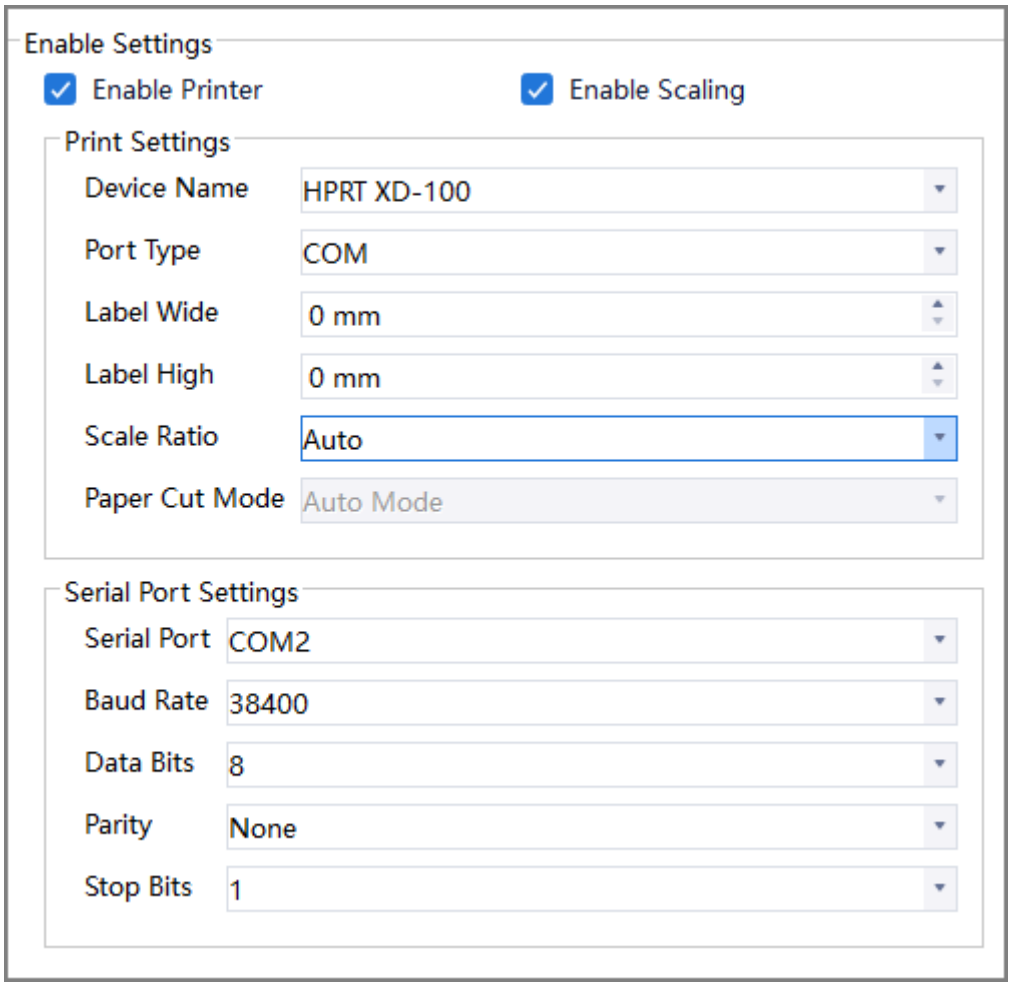
To print QR codes and barcodes, IT7000 provides the feature of capturing screens for printing. You can configure a QR code output control on the screen, and set the print functions and methods based on the control coordinate information on the screen.

1. Auto print: Bind tags to print functions to trigger printing on the PLC.
2. Manual print: Configure a button on the screen, and bind the button to the print system functions to manually trigger printing.

Note: The content captured from the current operating screen of the HMI is printed. If the screen is switched, the print content turns invalid.

19.2.2.2 Printer Configuration

Open the project. In the left project screen, choose "HMI Settings" > "Print Settings", as shown in the following figure.

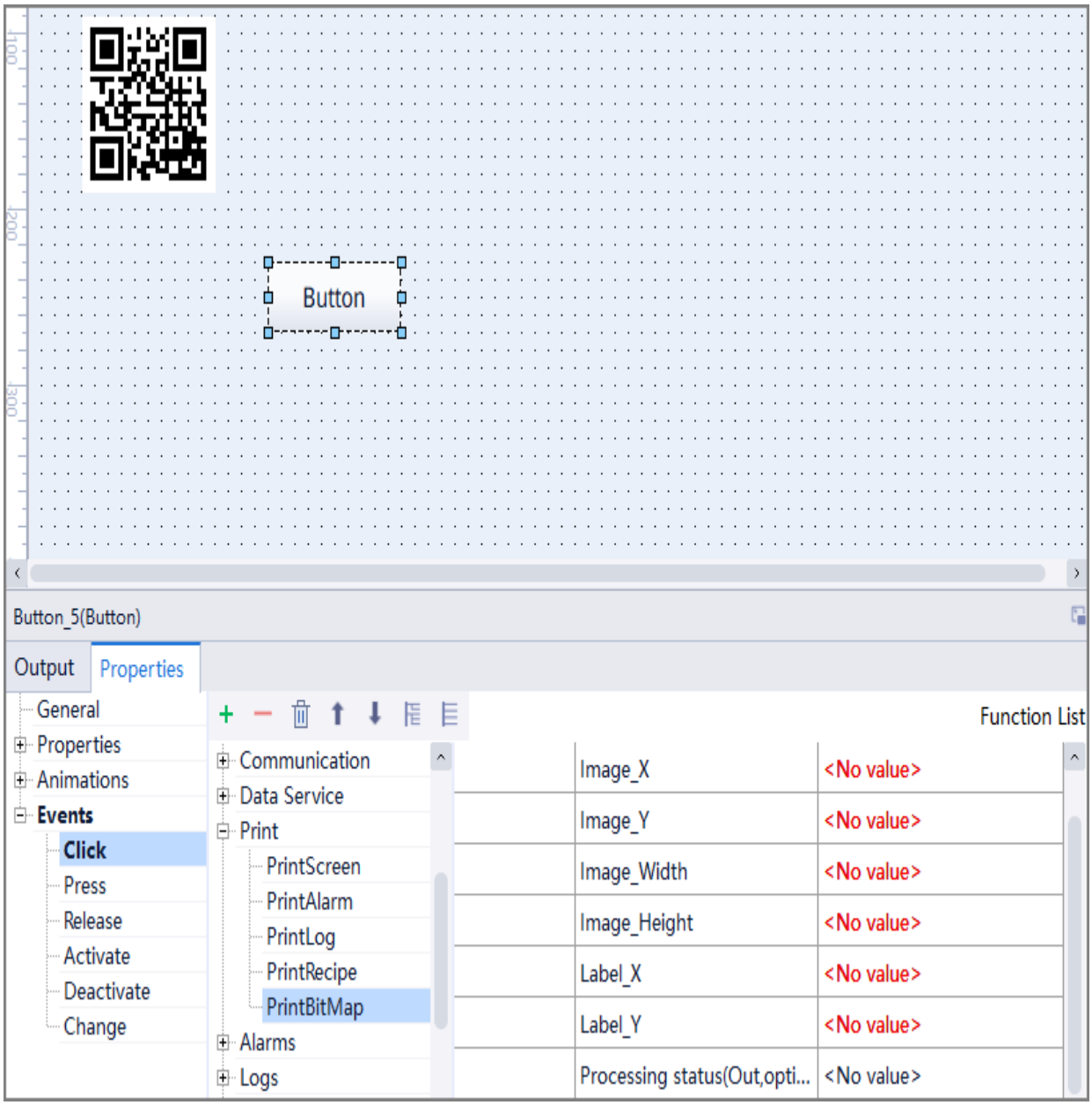


Name	Description
Device Name	Supported printers
Port Type	Printer connection method
Label Wide	Sets the width of the label paper.
Label High	Sets the height of the label paper.

Scale Ratio	The screen size to be printed will be scaled according to the size of label paper. To enable this feature, select "Enable Scaling".
Paper Cut Mode	The default mode is "Auto Mode".
Serial Port	The serial port you want to use
Baud Rate	Options: 4800, 9600, 19200, 38400, 57600, and 115200
Data Bits	Data bit 7 or 8
Parity	Options: None, Odd, or Even
Stop Bits	Stop bit 1 or 2

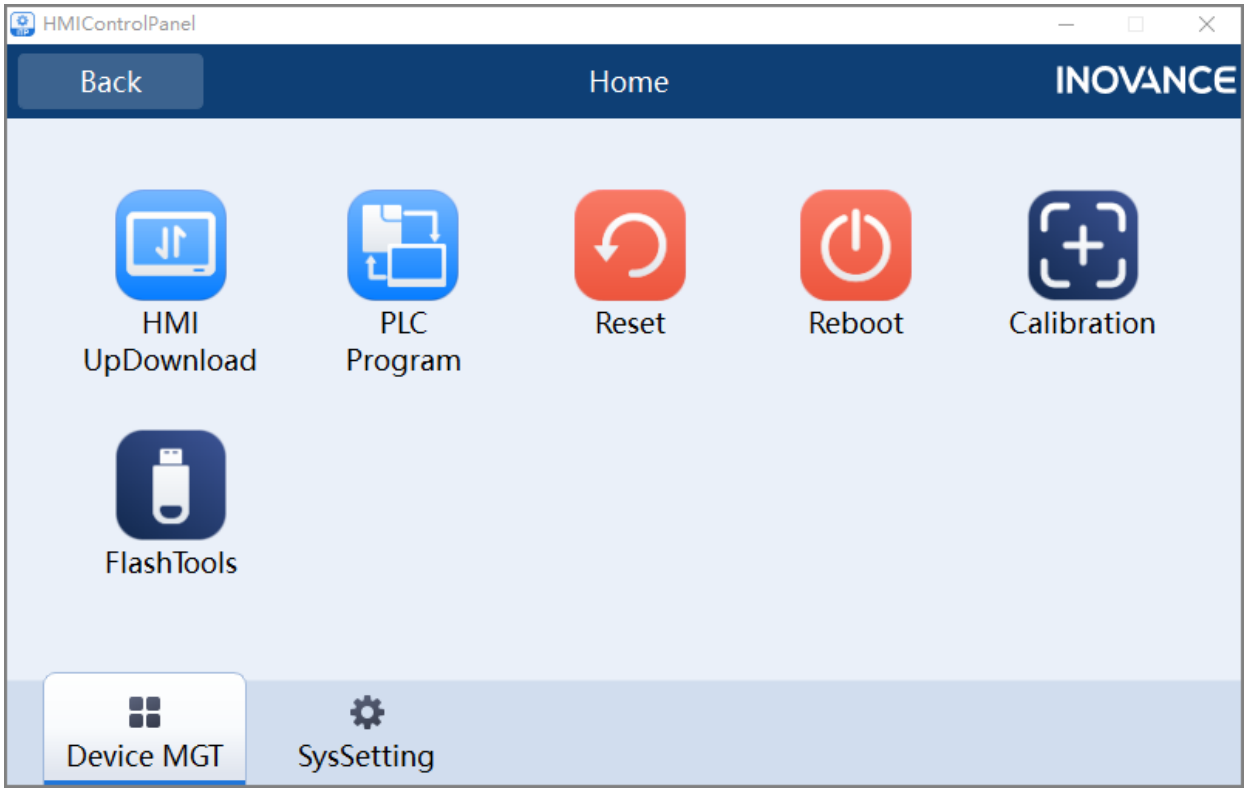
19.2.2.3 Printer Functions

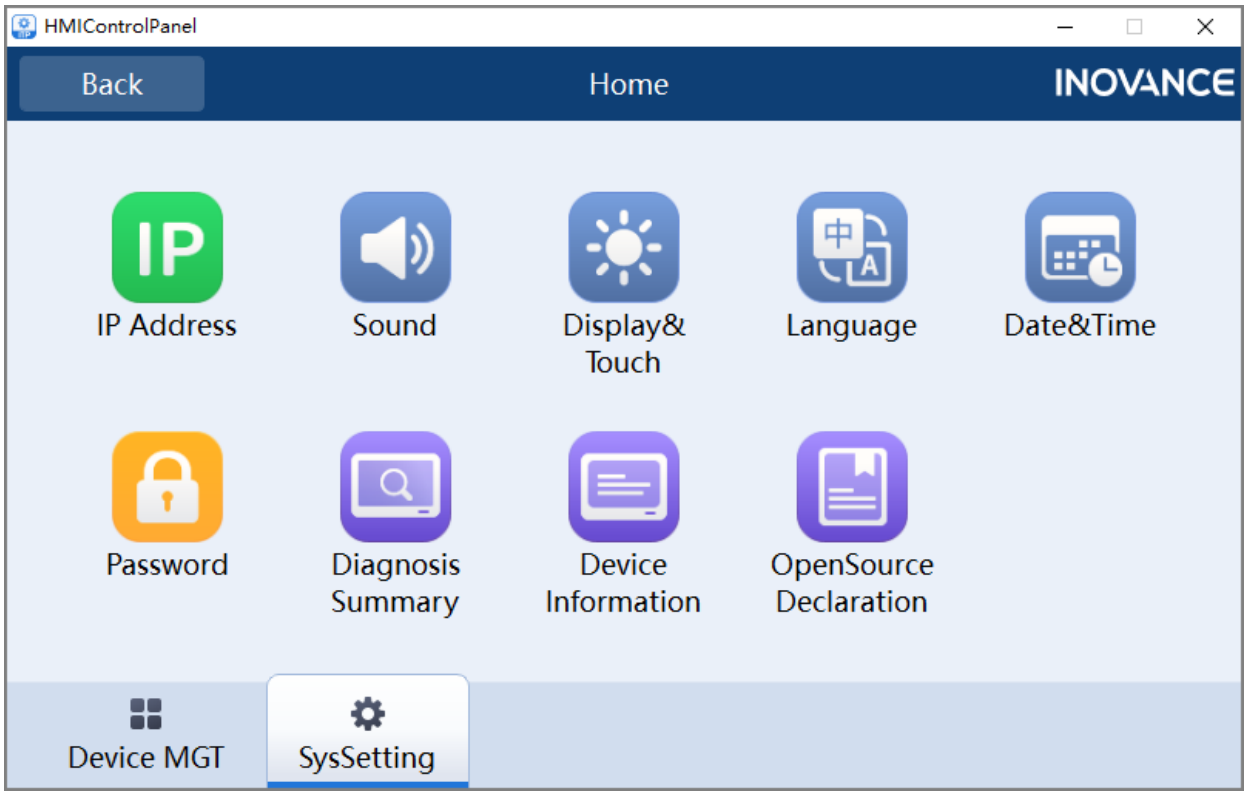
The button is bound a the print system function PrintBitMap, as shown in the figure below. For details, see 16.3.10 Print.



19.3 HMI Control Panel

After starting the IT7000 touch screen, hold down to enter the control panel as prompted in the screen. The screenshot of the control panel and the feature description of each button are as follows.





Note

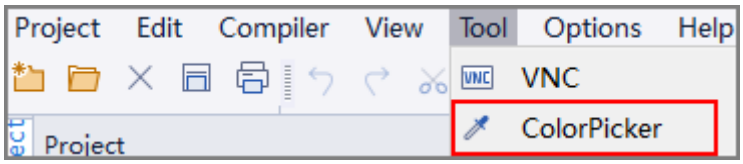
- When the HMI starts or restarts, it reads the tag data and then displays the project screen.
- Do not power off the HMI during factory reset or firmware update.

Name		Icon	Description
Device MGT	HMI UpDownload		Supports uploading and downloading projects by using a USB drive and updating firmware.
	PLC Program		Manages the upload and download of projects and firmware updates for various series.
	Reset		Restores the IT7000 touch screen to its original state, including that firmware and user projects can be restored to the factory state and all user files and log files are cleared. After the restoration is completed, the buzzer will sound continuously and restart.
	Reboot		Restarts the HMI device.
	Calibration		Calibrates the screen.
	FlashTools		Provides the flash tool.
SysSetting	IP Address		Views or configures the IP address and networking method of the IT7000 touch screen.
	Sound		Sets whether the IT7000 touch screen keys make a sound and whether they continue to make noise when there are unconfirmed alarms.
	Display&Touch		Sets the start screen, screen brightness, touch sensitivity, screen saver entry, and backlight off time for the IT7000 touch screen.
	Language		Sets the display language of the HMI device, including Simplified Chinese, Traditional Chinese, and English.
	Date&Time		Views and sets the local time of the IT7000 touch screen.
	Password		Sets the local password, upload password, and download password. • Local password: The password is used for local access to the control panel. • Upload password: The password is used to upload projects. • Download password: The password is used to download projects and firmware.
	Diagnosis Summary		Summarizes troubleshooting.

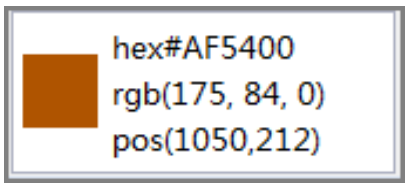
	Device Information		Views information such as the device name and version.
	OpenSource Declaration		Provides open-source statements.

19.4 Color Picker

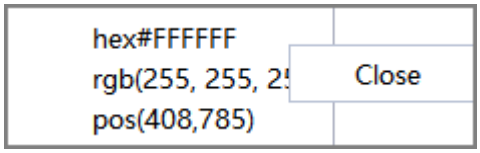
The color picker can obtain the screen coordinates, color value of the position where the cursor is, and color parameters. You can start it from the toolbar in InoTouchPad.



As shown in the following figure, a floating window is displayed when the tool is running.



Right-clicking this window will pop up the "Close" button.

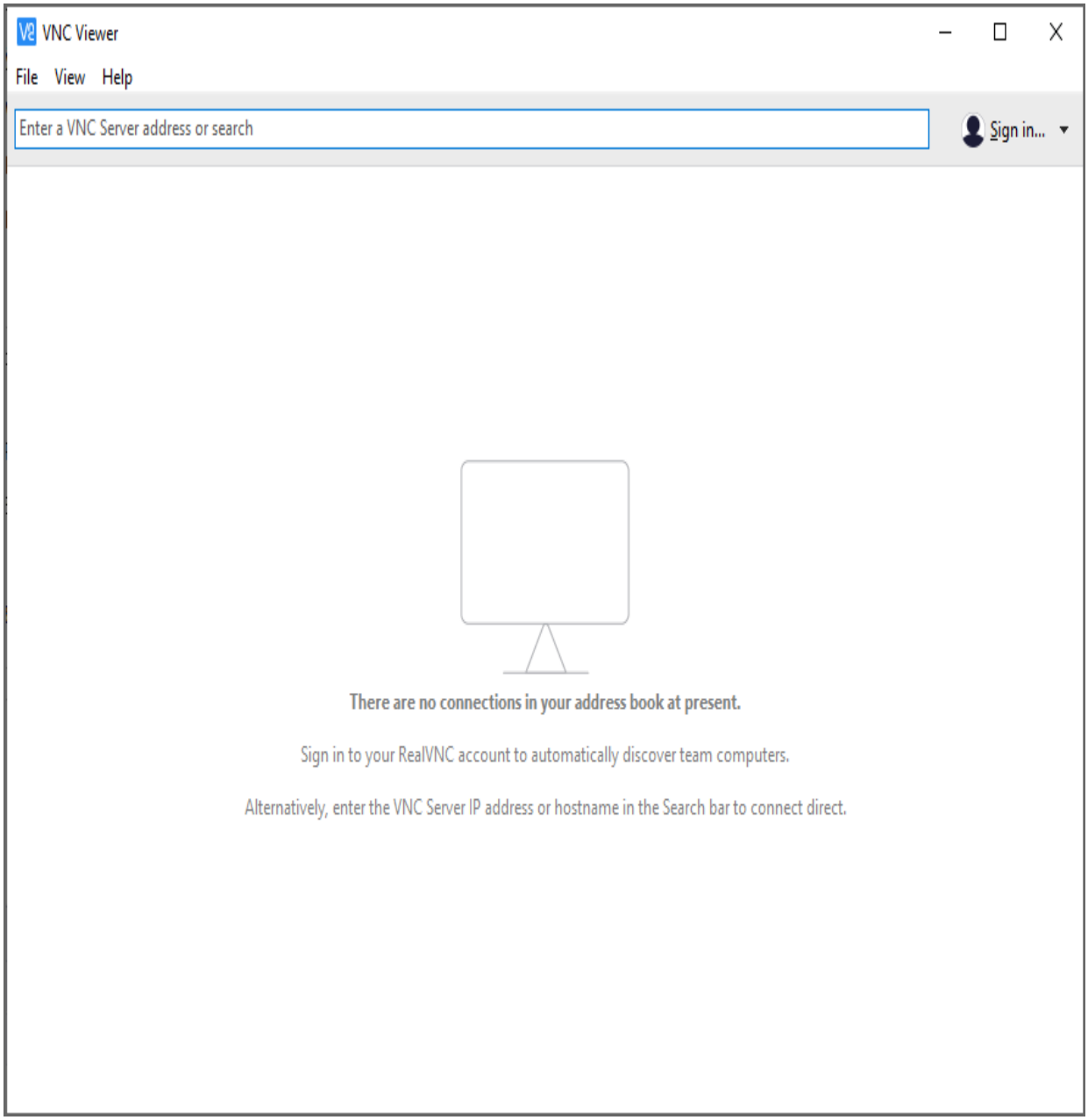


Parameter	Description
Hex#AF5400	The HEX value of the color, which is converted from the RGB value
Rgb(175,84,0)	The RGB value of the color
Pos(1050,212)	The screen coordinates of the position where the cursor is

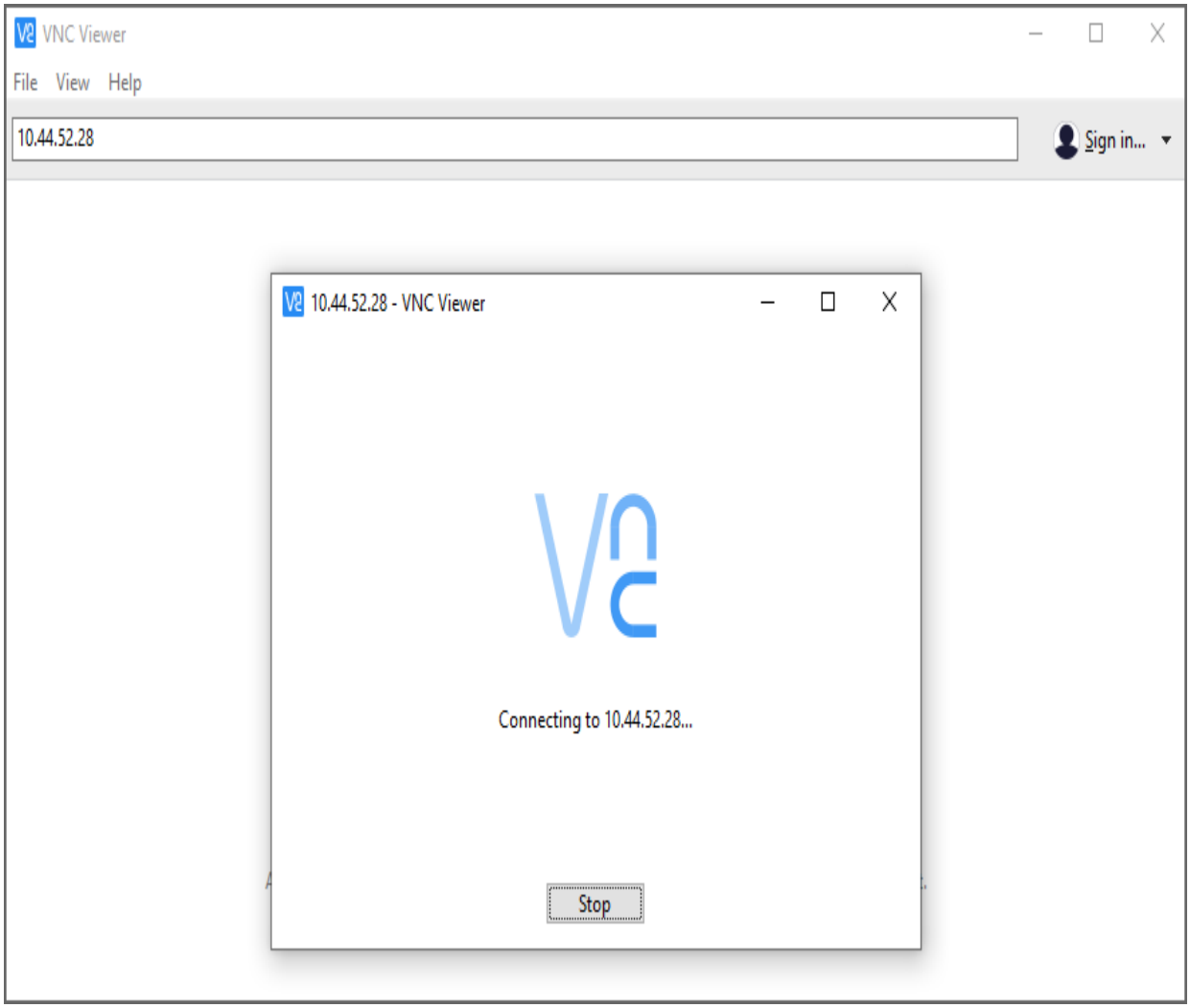
19.5 VNC Remote Tool

IT7000 comes with a VNC tool to help you monitor the HMI operating status easily. In the same LAN, you can log in to an HMI of which the IP address you want to view through a PC or mobile device, and then view the screen of the HMI and control it. To use the VNC tool through the IT7000 software, follow the steps as follows:

1. Click the toolbar of the IT7000 software, and select "VNC". The following window pops up.



2. Ensure that the HMI is in the same LAN as the PC. Enter the IP address of the HMI to be monitored in the input box, and then press Enter, as shown in the following figure.



3. After logging in to the HMI, you can view the screen and click on the screen for control. Click the  button to enter the full screen mode. The window size is adapted to the screen size by default. You can unlock the window by the  button and change its size through dragging.

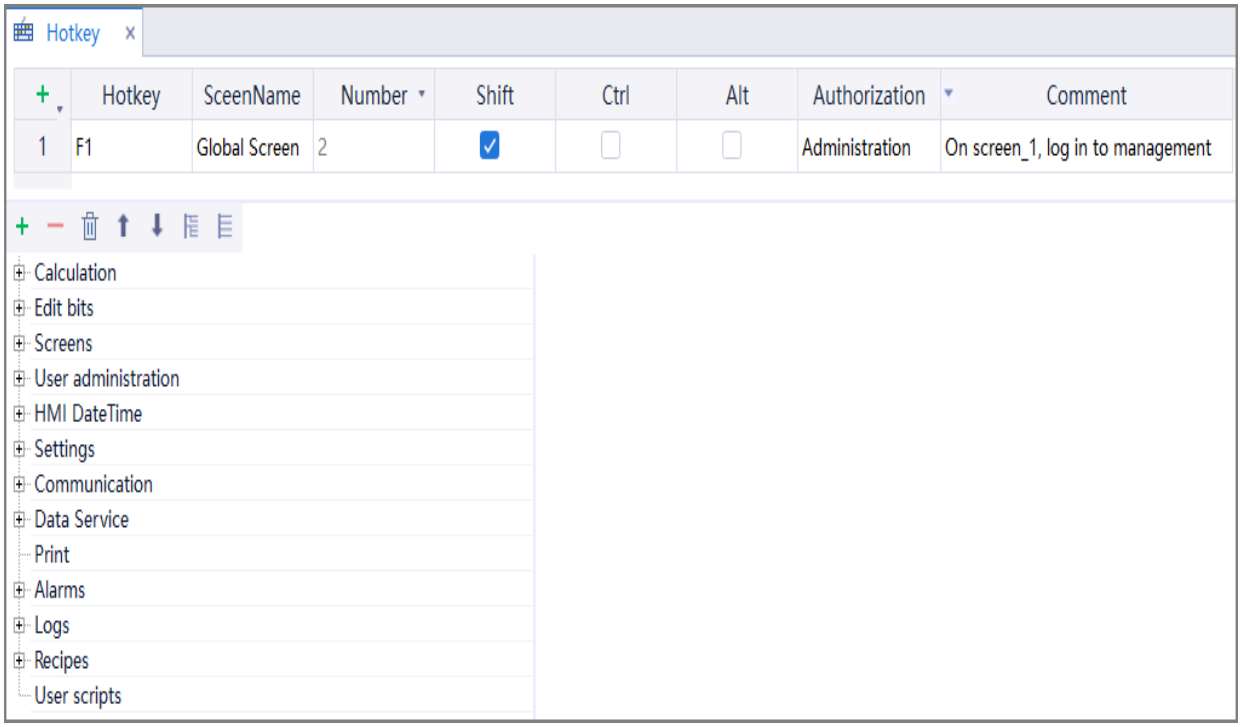

10.44.52.28 (HMI VNC Server) - VNC Viewer
Set position of curve 1
Update curve 1
Set position of curve 2
Update curve 2

20 HMI Settings

20.1 Hotkey

20.1.1 Introduction

The hotkey feature is mainly used for users to customize hotkey combinations in the configuration, and bind specific system functions or scripts, to control the configured runtime. If the same key has been configured for both the global screen and a specific screen, the hotkey will be executed in the specific configured screen prior to the global screen. The hotkey feature is only applicable to the configuration of AP70X series devices. The following figure shows the hotkey editing screen.

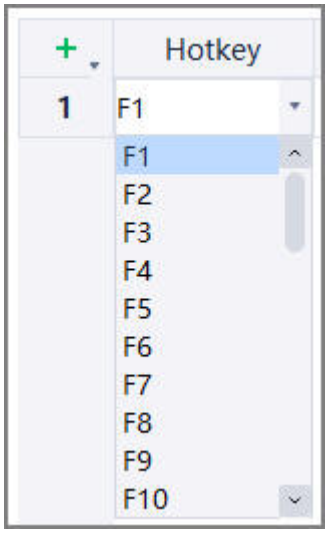


20.1.2 Editor

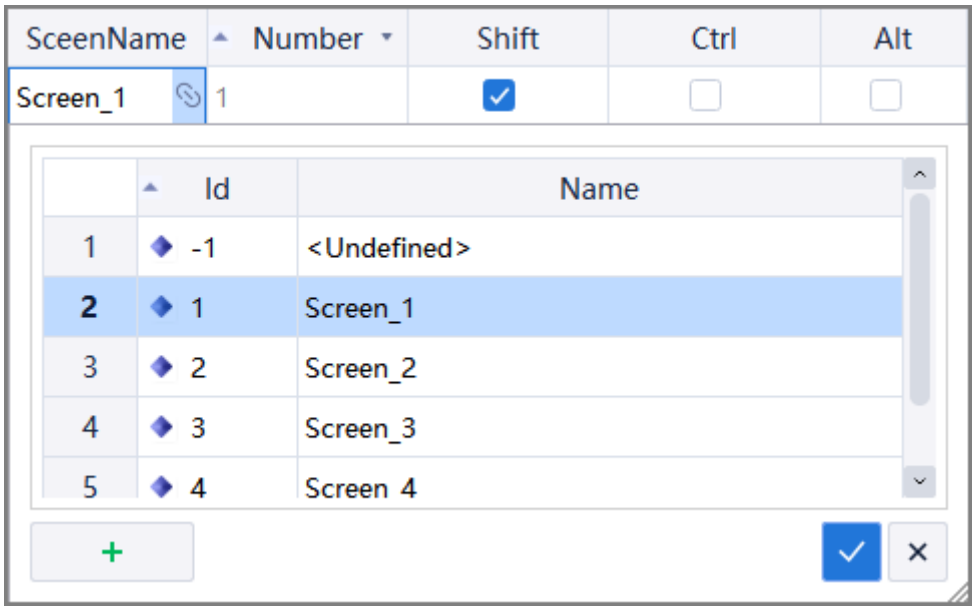
In the shortcut editor, you can customize key configuration function lists to implement shortcut operations. In the workspace, add key features for customizing. A shortcut can be a single key or a key combination. For the use of functions, see 16.2 Use of System Functions.

The shortcut editor workspace has eight fields, which are "Hotkey", "ScreenName", "Number", Shift, Ctrl, Alt, "Authorization", and "Comment".

Hotkey: It includes common keys (except digits) on a keyboard, as shown in the following figure.

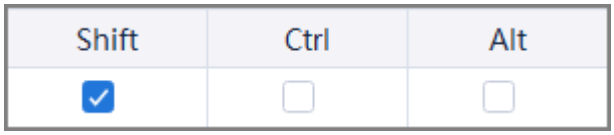


ScreenName: It includes the global screen and all created screens (except the template) in a project. When you select the global screen, the shortcut is effective in all screens. If you select any other screen, the shortcut can only take effect in that screen.

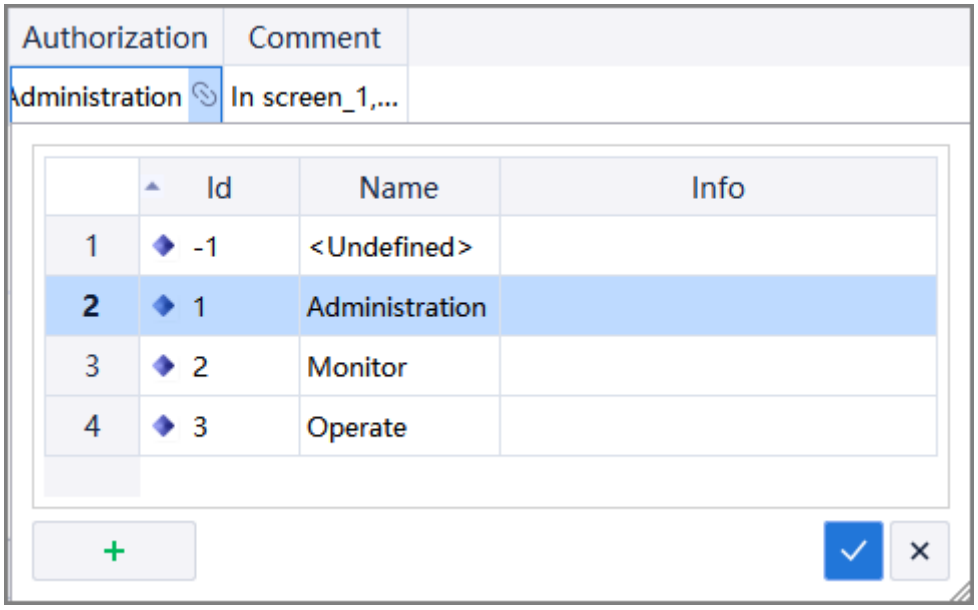


Number: It indicates the number of the added shortcut.

Shift, Ctrl, and Alt are used to create key combinations.



Authorization: It assigns the permission to a user to use the shortcut, that is, only the authorized user can operate the shortcut.



Comment: It describes the feature of the shortcut.

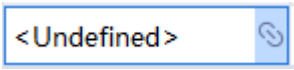
Comment
In Screen_1, when logging in as the administrator user, press the A + Shift key combination to increment 'Tag_1' by 1

20.1.3 Using Hotkeys

In the project view, expand the "HMI Settings" menu, →double-click "Hotkey" to open the hotkey configuration area.

Customize a hotkey. Click  to create hotkey A.

+	Hotkey	SceenName	Number	Shift	Ctrl	Alt	Authorization	Comment
1	A	Global Screen	1	☐	☐	☐	<Undefined>	

Configure an effective screen. Double-click the "SceenName" column. Click  and select a screen name for the hotkey to be used, such as "Screen_1", or select "Global Screen".

+	Hotkey	SceenName	Number	Shift	Ctrl	Alt	Authorization	Comment
1	A	Screen_1	1	☐	☐	☐	<Undefined>	

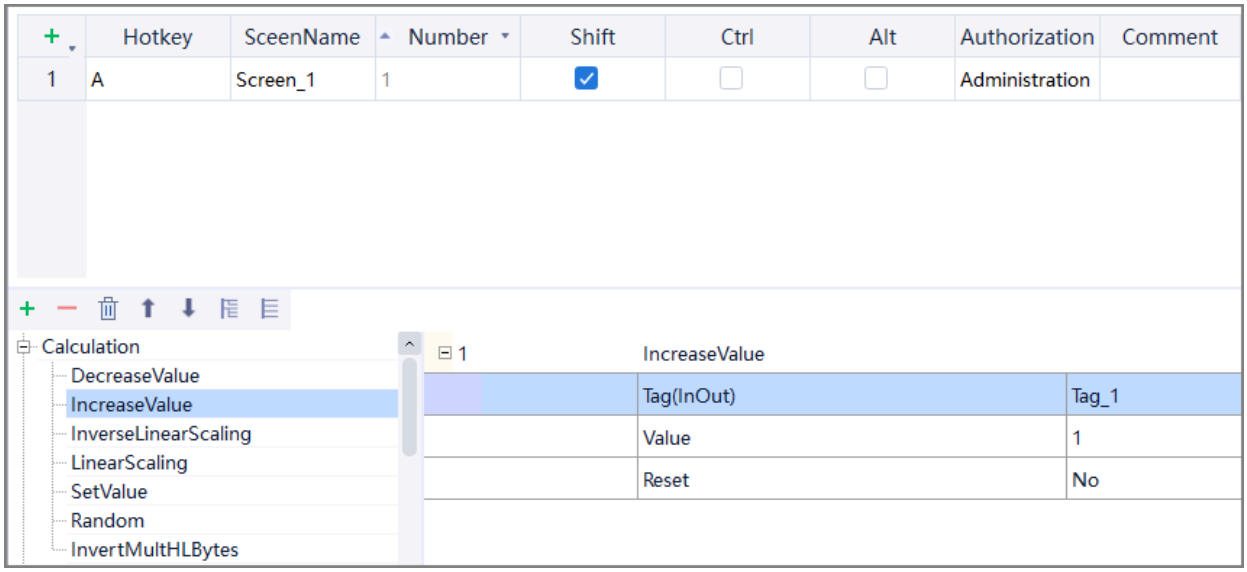
Configure a combination key. Select "Shift" in the table to enable the "A+Shift" combination key feature.

+	Hotkey	SceenName	Number	Shift	Ctrl	Alt	Authorization	Comment
1	A	Screen_1	1	☑	☐	☐	<Undefined>	

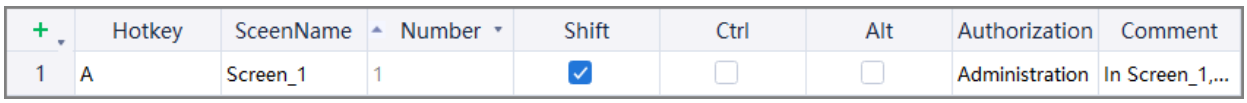
Configure a permission. Configure "Authorization" in the table to "Administration".

+	Hotkey	SceenName	Number	Shift	Ctrl	Alt	Authorization
1	A	Screen_1	1	☑	☐	☐	Administration

Use hotkeys to configure system functions. In the work area, select the configured hotkey and bind a system function with the tag value increased by 1 in the function area.



Edit the comment. Implement feature compilation and comment based on the hotkey.



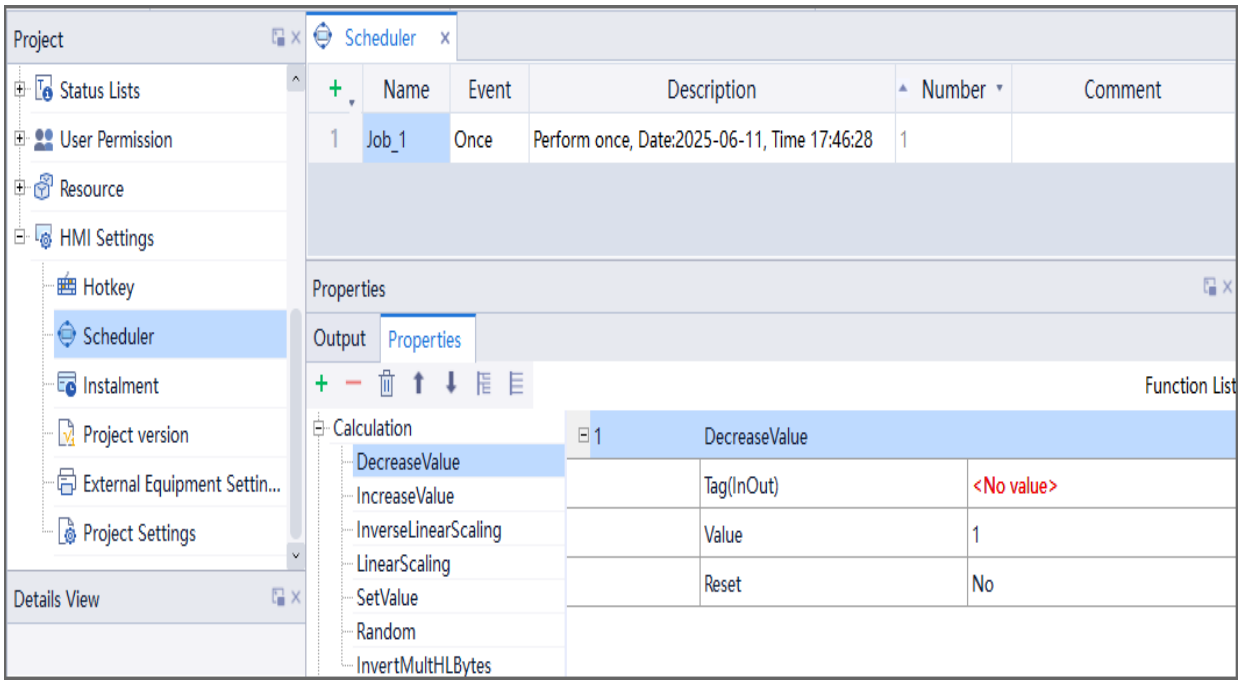
Then, the whole process of configuring a hotkey is completed. When "Screen_1" is displayed in the runtime and you have logged in as the administrator, press A+Shift. The value of Tag_1 is increased by 1.

20.2 Scheduler

20.2.1 Editor

In a scheduler, system functions are linked to a particular operation. When an event occurs, the linked function is called. The scheduler is used to automatically execute operations controlled by events. For details on the use of functions, see 16.2 Use of System Functions.

On the scheduler editing interface, the function list is configured for events to plan operations. You can add operations to be performed to the work area. The added operations are globally valid in the runtime.



The work area displays the planned operations. The operation table displays "Name", "Event", "Description", "Number", and "Comment". You can assign labels and comments and select events. You can compile description for an operation in the scheduler, and configure the functions or scripts to be executed in the operation in the function configuration area. Multiple operations can be configured in the work area. When running in the runtime, the system schedules and executes configured operations based on the operation event conditions.

20.2.2 Event

Scheduler events are bound to system functions. When an event is triggered, the associated system function will be triggered immediately. The following table describes all optional events of the scheduler.

Type	Event	Description	Restrictions
Time	Once	Triggered once when the system time reaches a set certain point. If no timer is selected in the Description column of the table, the event will be triggered when the set time is reached. If a timer tag is set, the event will be triggered only when the system time reaches the moment of the timer tag.	-
	X Seconds	Triggered once every X seconds, where X ranges from 0.1 to 60.	-
	1 min	Triggered once every minute.	-
	1 h	Triggered once at a specified time every hour, accurate to minute. The value ranges from 0 to 59. For example, if it is set to 10, the event will be triggered once at the 10th minute every hour.	-
	Daily	Triggered once at a specified time every day, accurate to minute. For example, if it is set to 10:22, the event will be triggered once at 10:22 every day. When the timer tag is set, the event will be triggered once only at the time (hour and minute) specified by the timer tag every day.	-
	Weekly	Triggered once at a specified time every week, accurate to minute. For example, if it is set to 10:22 on Tuesday, the event will be triggered once at 10:22 on Tuesday every week.	-
	Monthly	Triggered once at a specified time every month, accurate to minute. For example, it is set to 10:22 on the second day, the event will be triggered once at 10:22 on the second day every month.	-
	Yearly	Triggered once at a specified time every year, accurate to minute. For example, it is set to 10:22 on February 2, the event will be triggered once at 10:22 on February 2 every year. When the timer tag is set, the event will be triggered once only at the time (month, day, and hour) specified by the timer tag every year.	-
Event	Change screen	Triggered once upon screen switching.	

			This event can be configured only once for a project.
	Change user	Triggered once upon user changing.	This event can be configured only once for a project.
	Logon	Triggered once upon successful login.	This event can be configured only once for a project.
	Logoff	Triggered once upon logout.	This event can be configured only once for a project.
	Overflow alarm buffer	Triggered once when the alarm buffer overflows. The alarm buffer is a non-configuration circular buffer of a specified size of 512.	This event can be configured only once for a project.
	Start up	Triggered once upon run time startup.	This event can be configured only once for a project.
	ScreenSaver activated	Triggered once upon screen saver activation.	This event can be configured only once for a project.
	ScreenSaver deactivated	Triggered once upon screen saver deactivation.	This event can be configured only once for a project.

20.2.3 Job

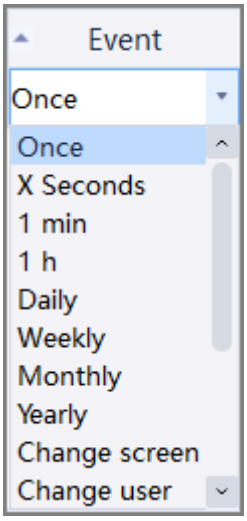
In the project view, expand the "HMI Settings" menu, →double-click "Scheduler" to open the scheduler configuration area.

Adding or deleting a job

Click  to add a job. Select a job and click  to delete it.

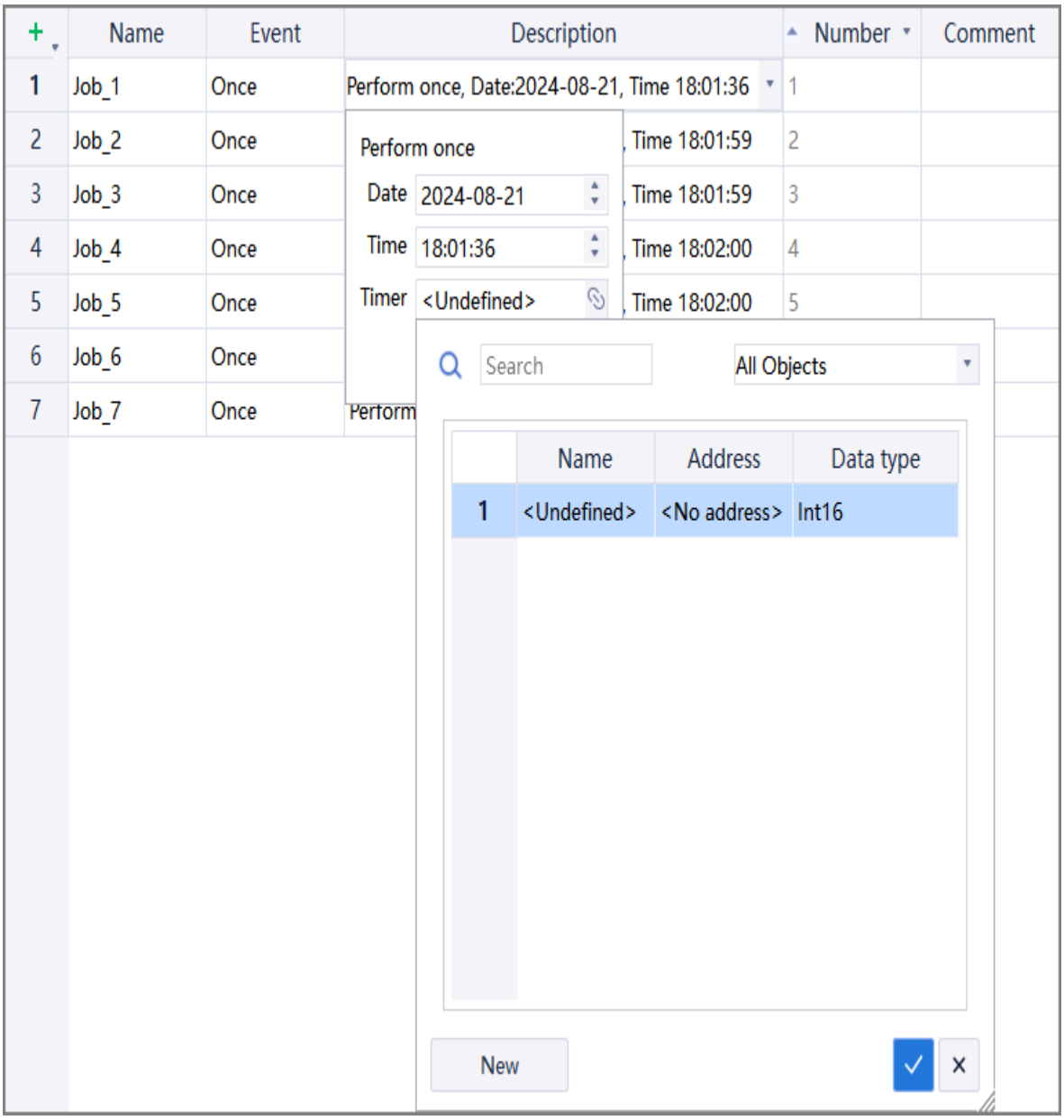
+	Name	Event	Description	Number	Comment
1	Job_1	Once	Perform once, Date:2024-08-20, Time 16:13:33	1	
2	Job_2	Once	Perform once, Date:2024-08-20, Time 16:13:38	2	

- Configuring the event Double-click the "Event" column. Click to expand the drop-down list. You can select one as needed from the 14 events.



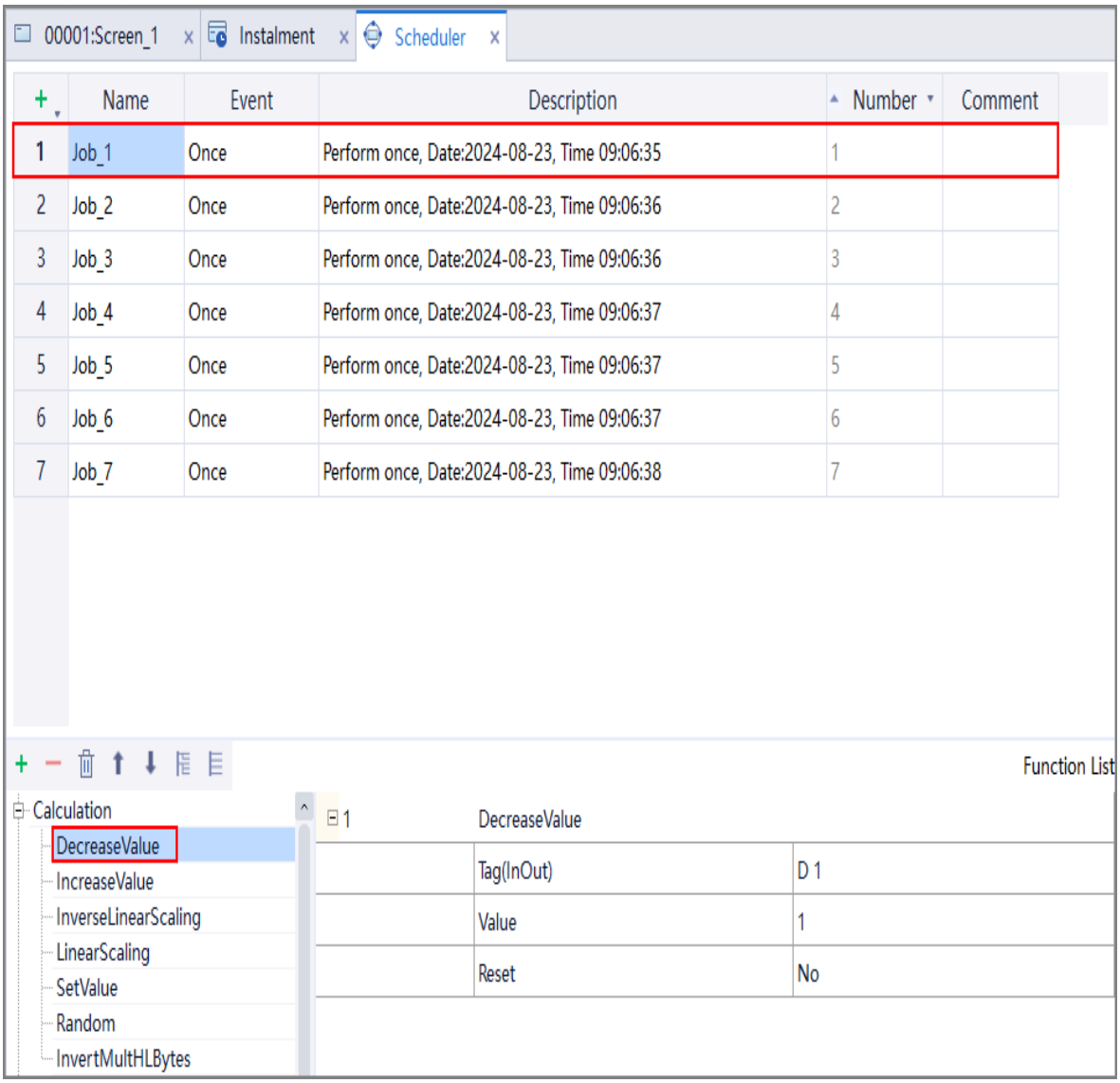
- Configuring the job description When creating a job, you need to describe the event.
- When the event is "1 min", "Change screen", "Change user", "Overflow alarm buffer", "Start up", or "ScreenSaver activated", the default description is used.
- To dynamically modify the configured startup time of a daily, annual, or one-time event at run time, select an internal tag as the timer. The tag value determines the start time of the job at run time. The tag must be of the "Date Time" type.

- For system events, only one job can be configured and executed on each HMI device.



- Comment: The comment is a description of the job.

- Configuring the system function When an event occurs, the linked function is called.



Select a job, select a function in the function list, and configure the tag and value. When an event occurs, the linked function is called.

20.2.4 Scheduler Job Execution Sequence

	Name	Event	Description	Number	Comment
1	Job_5	Once	Perform once, Date:2024-08-21, Time 15:59:59	5	
2	Job_6	Once	Perform once, Date:2024-08-21, Time 16:00:01	6	
3	Job_7	Once	Perform once, Date:2024-08-21, Time 16:00:01	7	

Jobs in a scheduler are executed in the order of their set execution time. If their execution time is the same, they are executed in the order of creation time.

20.3 Installment

20.3.1 Basic Information

For device manufacturers and customers who want to try HMI products, we offer an installment payment solution. This solution benefits device manufacturers when they want to extend the trial period, maintain multiple customers in a project, or customize the screen displayed after unlocking.

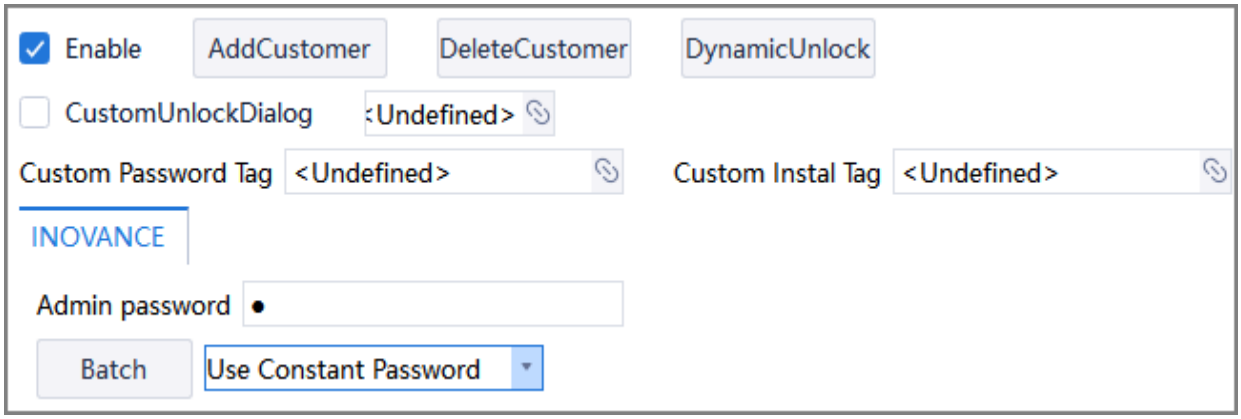
Major features:

1. Multiple customers can be created in one project, so that one project corresponds to multiple device buyers. Up to 10 customers can be created in one project.
2. Three installment payment methods are available:
    a. Static password
    b. Tag password
    c. Inovance dynamic password.
4. You can customize the pop-up screen after unlocking.
5. You can select whether to keep the original installment information when downloading a project.
6. You can trigger the next installment in advance.
7. Display the remaining time (in minutes) before the next installment.
8. Unlock the screen with the administrator password.

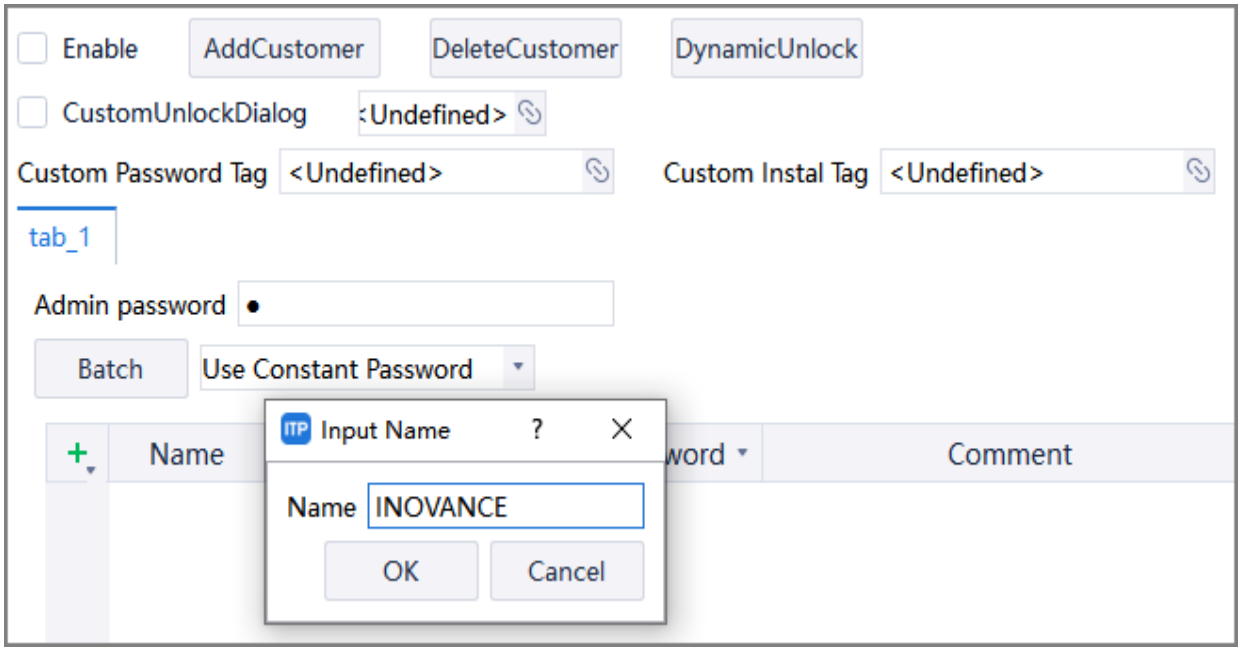
20.3.2 Usage

20.3.2.1 Implementing Installment with Constant Password

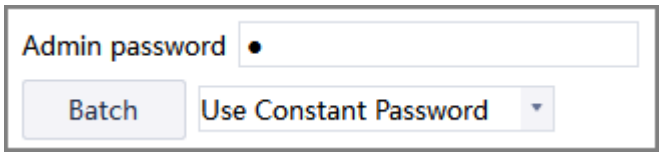
1. Click "AddCustomer" to add a customer, as shown in the following figure.



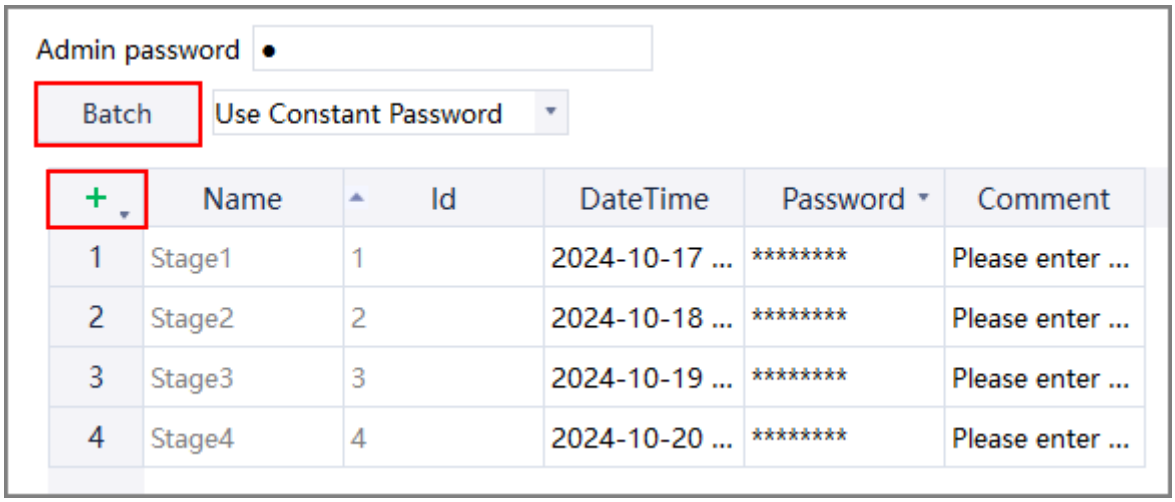
2. Double-click the customer label to modify the customer name, as shown in the following figure.



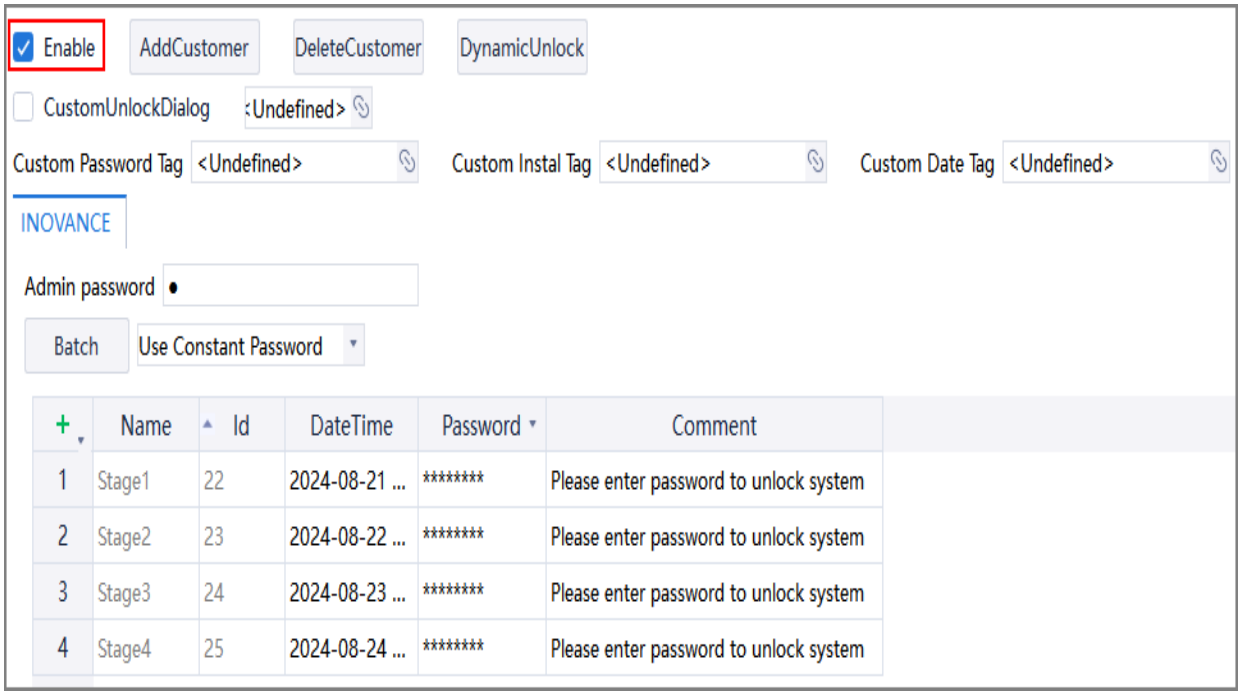
3. Select "Use Constant Password". The default admin password is 0, which can be modified.



4. Click "Batch" or the "+" button in the upper-left corner of the table to create an installment. The admin password of the customer can be modified. You can modify the password based on the time and password settings of an installment, as shown in the following figure.



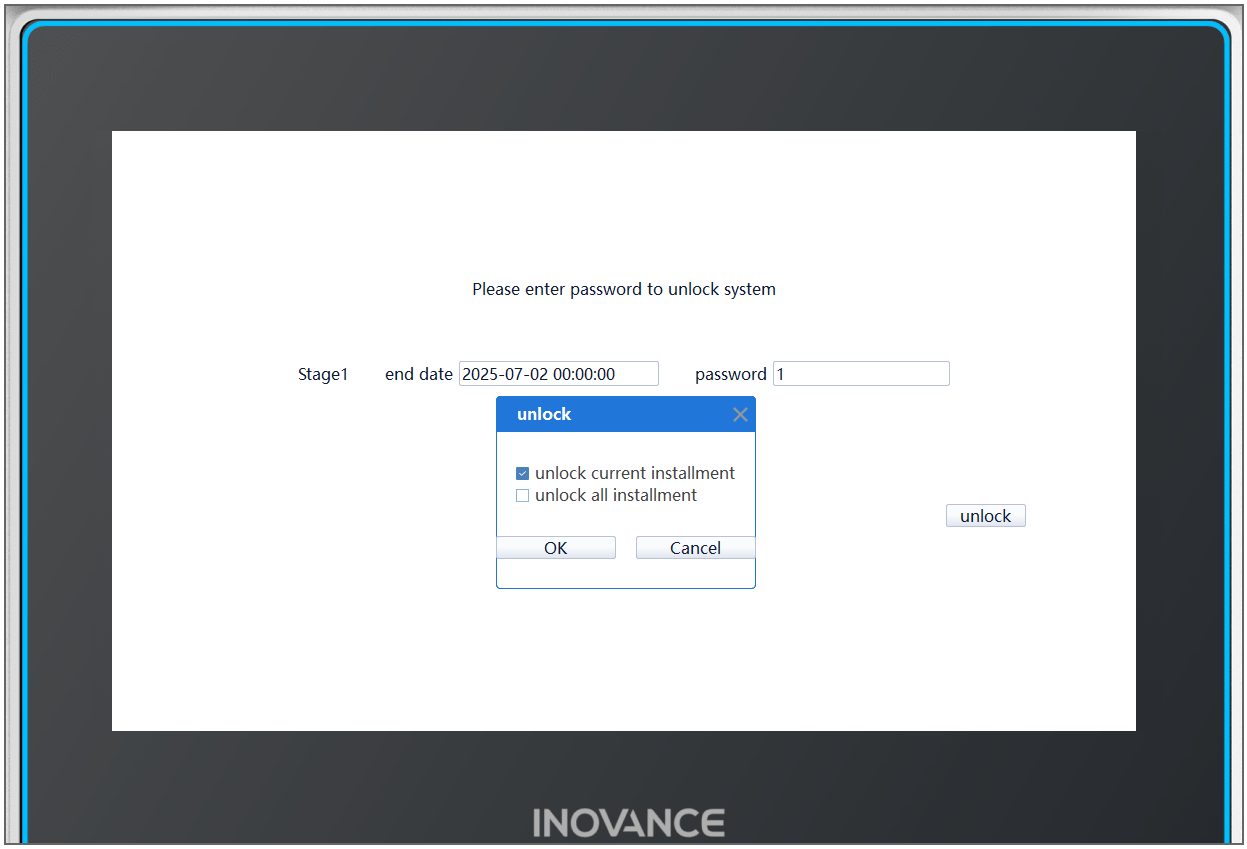
5. After the installment is created, select "Enable" in the upper-left corner of the page, and download the project to the HMI (you can determine whether to keep the previous installment at this time). Then, the installment takes effect. If you want to keep the previous installment, the previous installment is displayed; otherwise, the information of the current installment is displayed, as shown in the following figure.



6. When the installment time reaches, the system displays the installment page at run time, on which you need to input the unlock password to unlock the installment.

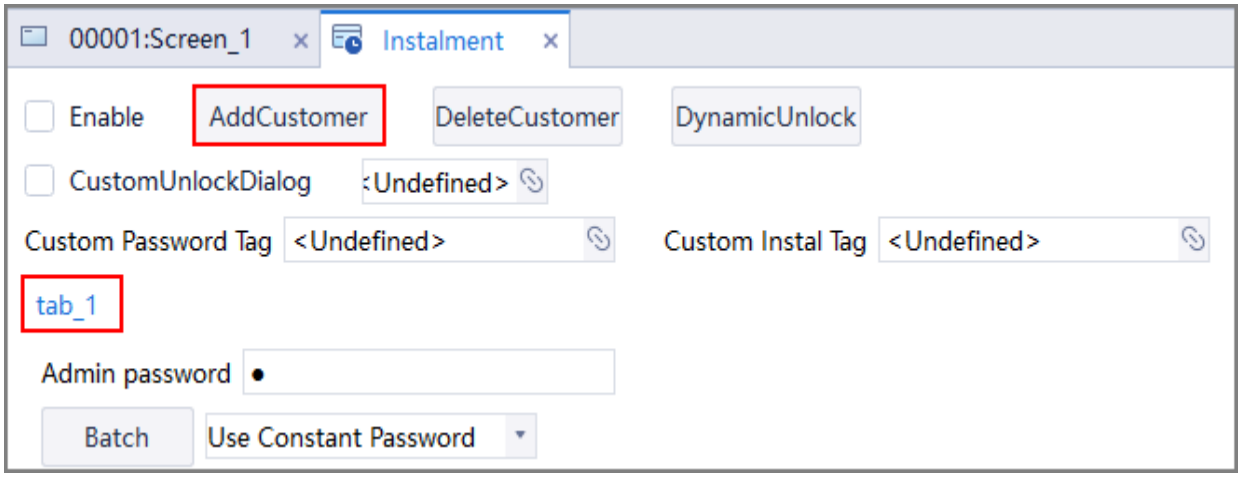
a) Input the password set for the current installment to unlock the current installment.

b) If you input the admin password, an unlock window is displayed, on which you can unlock the current installment or all the installments, as shown in the following figure.

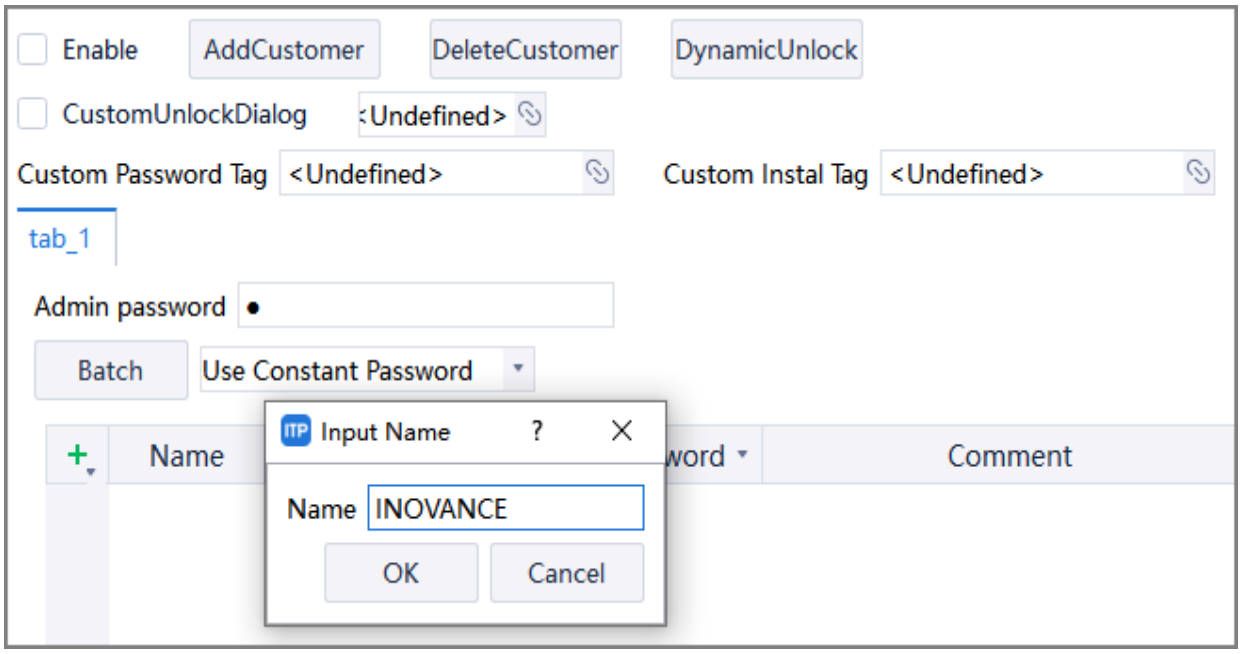


20.3.2.2 Implementing Installment with Tag Password

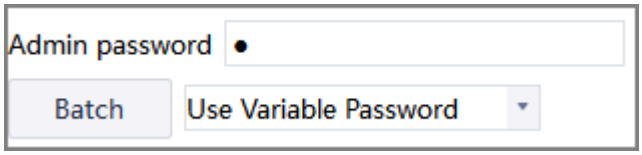
1. Click "AddCustomer" to add a customer, as shown in the following figure.



2. Double-click the customer name label. The customer name input window is displayed, on which you can modify the customer name, as shown in the following figure.



3. Select "Use Variable Password". The default admin password is 0, which can be modified.

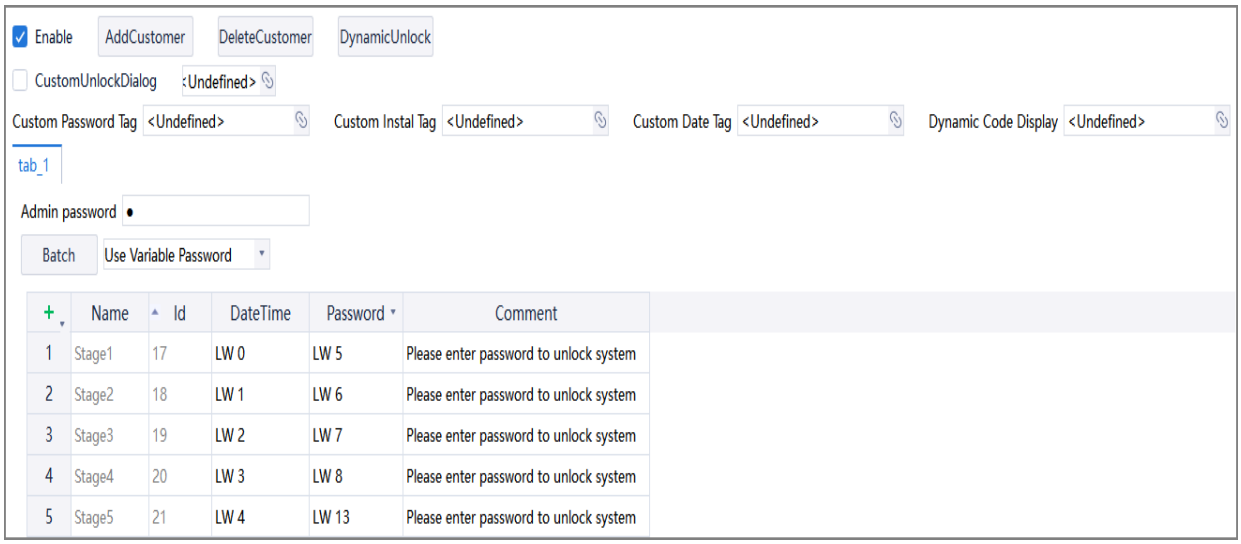


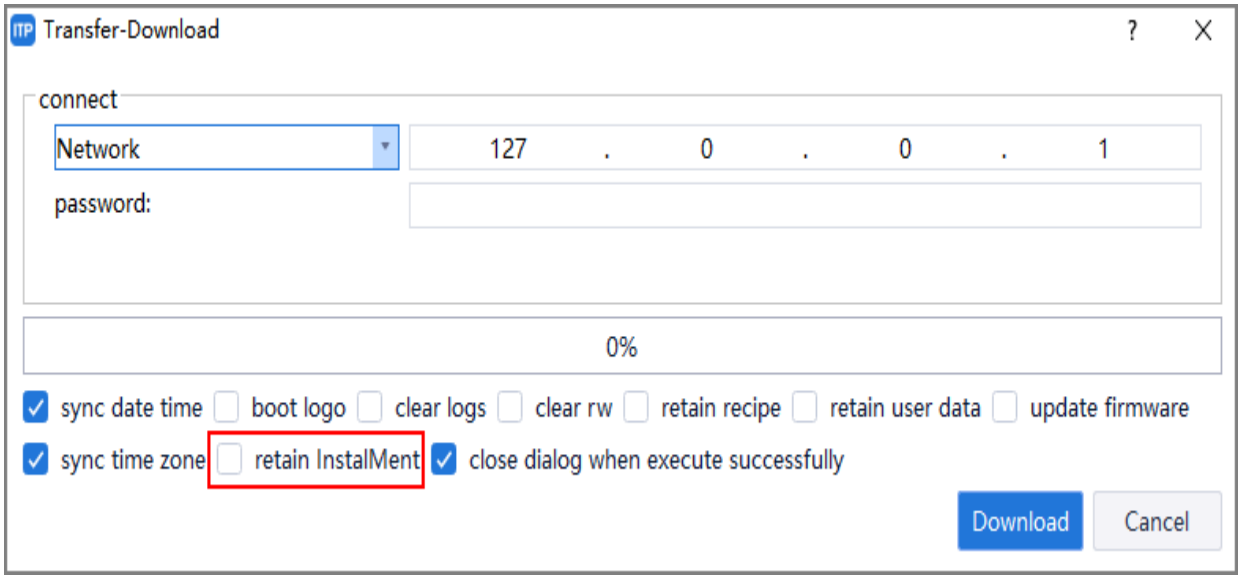
4. Click "Batch" or the "+" button in the upper-left corner of the table to create an installment, define the tag, and set the initial value of the tag. Associate the time and password with the tag, as shown in the following figure.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	DateTime	8	1	LW 0
2	LW 1	2	<Internal tag>	DateTime	8	1	LW 1
3	LW 2	3	<Internal tag>	DateTime	8	1	LW 2
4	LW 3	4	<Internal tag>	DateTime	8	1	LW 3
5	LW 4	5	<Internal tag>	DateTime	8	1	LW 4
6	LW 5	6	<Internal tag>	String	10	1	LW 5
7	LW 6	7	<Internal tag>	String	10	1	LW 6
8	LW 7	8	<Internal tag>	String	10	1	LW 7
9	LW 8	9	<Internal tag>	String	10	1	LW 8
10	LW 13	12	<Internal tag>	String	10	1	LW 13

	Name	Id	DateTime	Password	Comment
1	Stage1	17	LW 0	LW 5	Please enter password to unlock system
2	Stage2	18	LW 1	LW 6	Please enter password to unlock system
3	Stage3	19	LW 2	LW 7	Please enter password to unlock system
4	Stage4	20	LW 3	LW 8	Please enter password to unlock system
5	Stage5	21	LW 4	LW 13	Please enter password to unlock system

5. After the installment is created, select "Enable" in the upper-left corner of the page, and download the project to the HMI (you can determine whether to keep the previous installment at this time). Then, the installment takes effect. If you want to keep the previous installment, the previous installment is displayed; otherwise, the information of the current installment is displayed, as shown in the following figure.

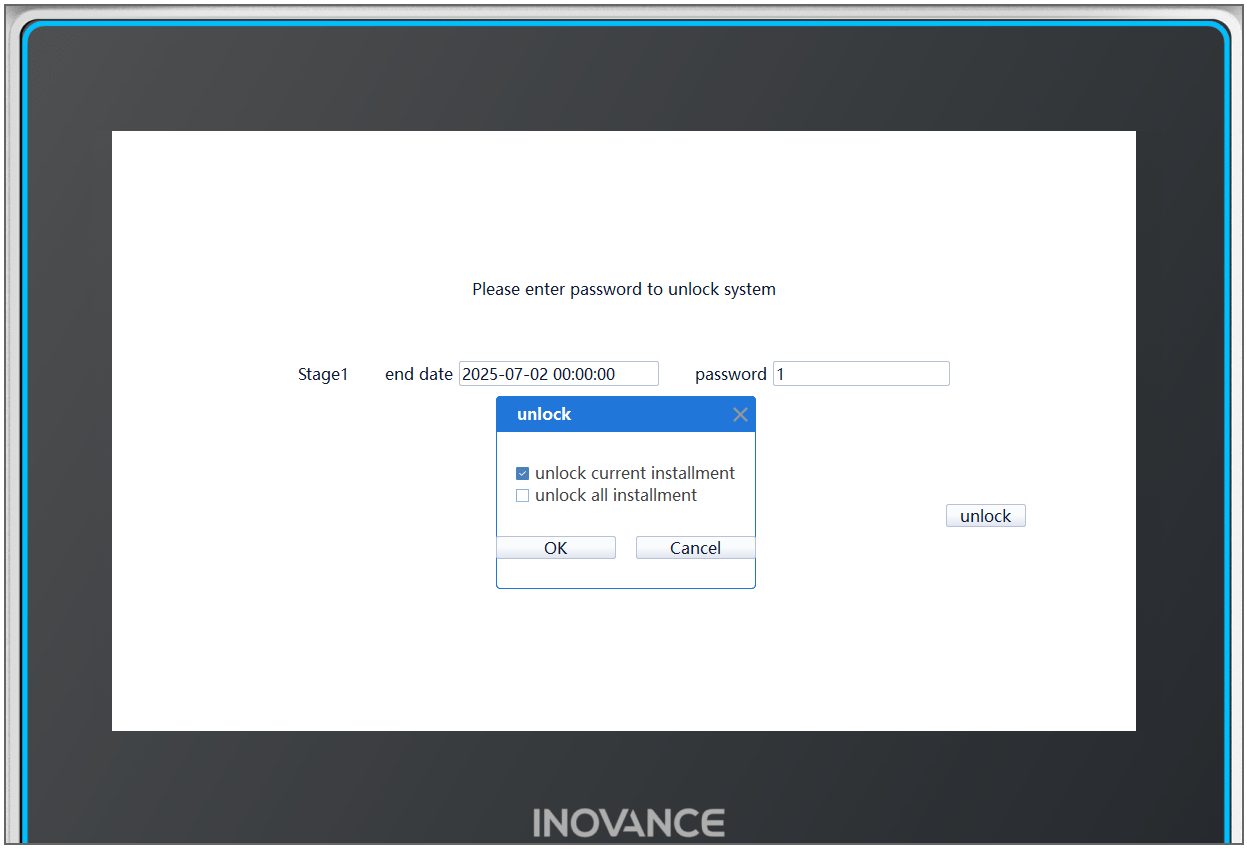




6. When the installment time reaches, the system displays the installment page at run time, on which you need to input the unlock password to unlock the installment.

a) Input the password set for the current installment to unlock the current installment.

b) If you input the admin password, an unlock window is displayed, on which you can unlock the current installment or all the installments, as shown in the following figure.

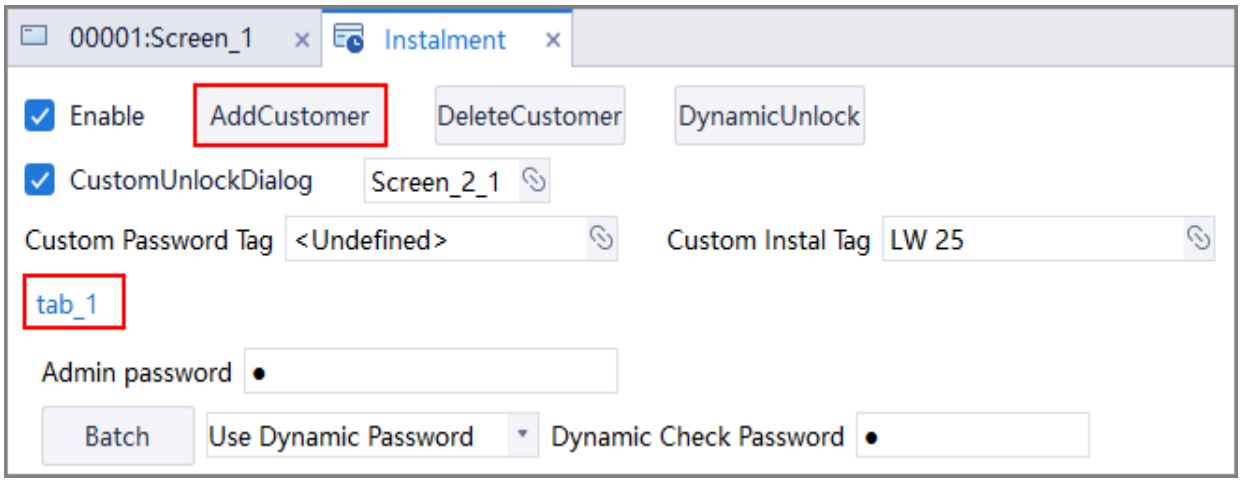


Note

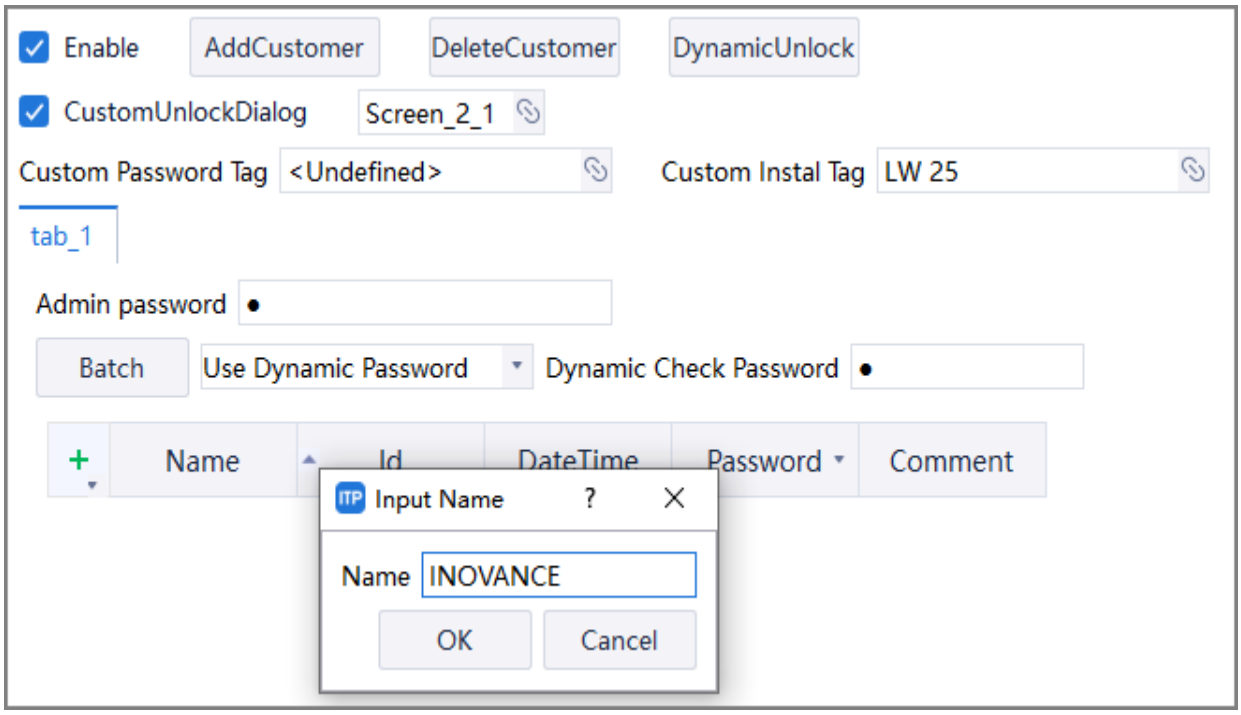
When the HMI is running, you can modify the value of the bound tag. Note that you can modify the time tag of the unlocked installment; however, after all installments are unlocked, installment is not triggered by time modification.

20.3.2.3 Implementing Installment with Dynamic Password

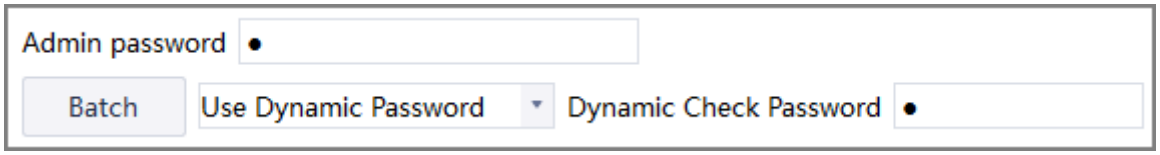
1. Click "AddCustomer" to add a customer, as shown in the following figure.



2. Double-click the customer name label. The customer name input window is displayed, on which you can modify the customer name, as shown in the following figure.



3. Select "Use Dynamic Password". By default, "Admin password" is 0, which can be modified. Set "Dynamic Check Password".



4. Click "Batch" or the "+" button in the upper-left corner of the table to create an installment, define the tag, and set the initial value of the tag. Associate the time with the tag, as shown in the following figure.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	13	<Internal tag>	DateTime	8	1	LW 0
2	LW 1	14	<Internal tag>	DateTime	8	1	LW 1
3	LW 2	15	<Internal tag>	DateTime	8	1	LW 2
4	LW 3	16	<Internal tag>	DateTime	8	1	LW 3

Admin password •

Batch | Use Dynamic Password | Dynamic Check Password •

	Name	Id	DateTime	Password	Comment
1	Stage1	10	LW 0	**	Please enter password to unlock system
2	Stage2	11	LW 1	**	Please enter password to unlock system
3	Stage3	12	LW 2	**	Please enter password to unlock system
4	Stage4	13	LW 3	**	Please enter password to unlock system

5. After the installment is created, select "Enable" in the upper-left corner of the page, and download the project to the HMI (you can determine whether to keep the previous installment at this time). Then, the installment takes effect. If you want to keep the previous installment, the previous installment is displayed; otherwise, the information of the current installment is displayed, as shown in the following figure.

Enable | AddCustomer | DeleteCustomer | DynamicUnlock

CustomUnlockDialog | Screen_2_1

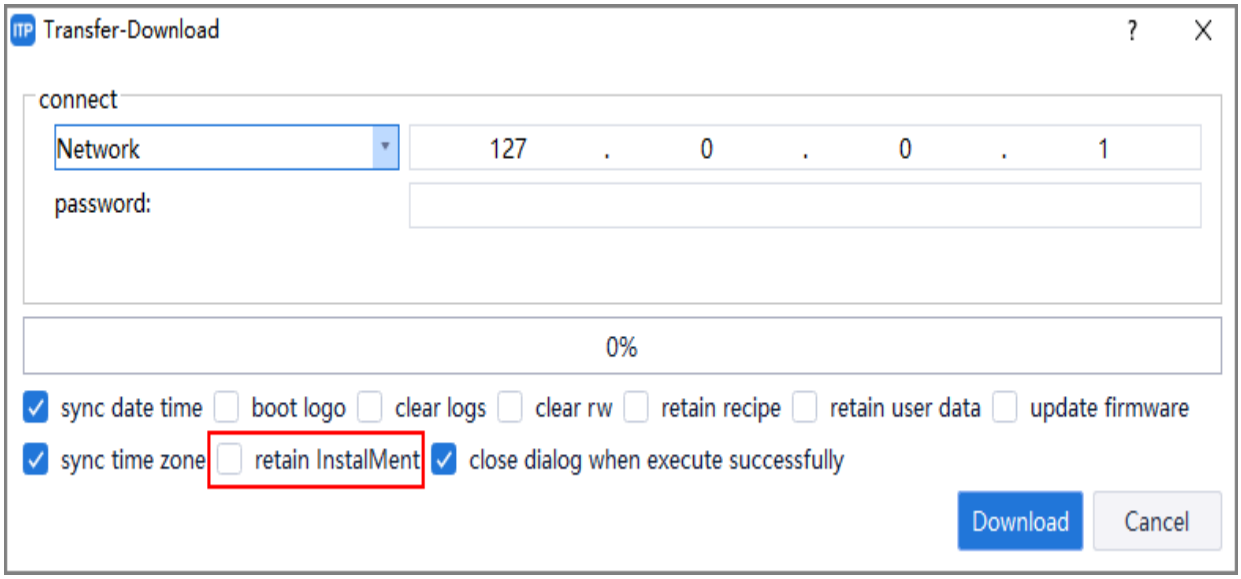
Custom Password Tag <Undefined> | Custom Instal Tag <Undefined> | Custom Date Tag <Undefined>

INOVANCE

Admin password •

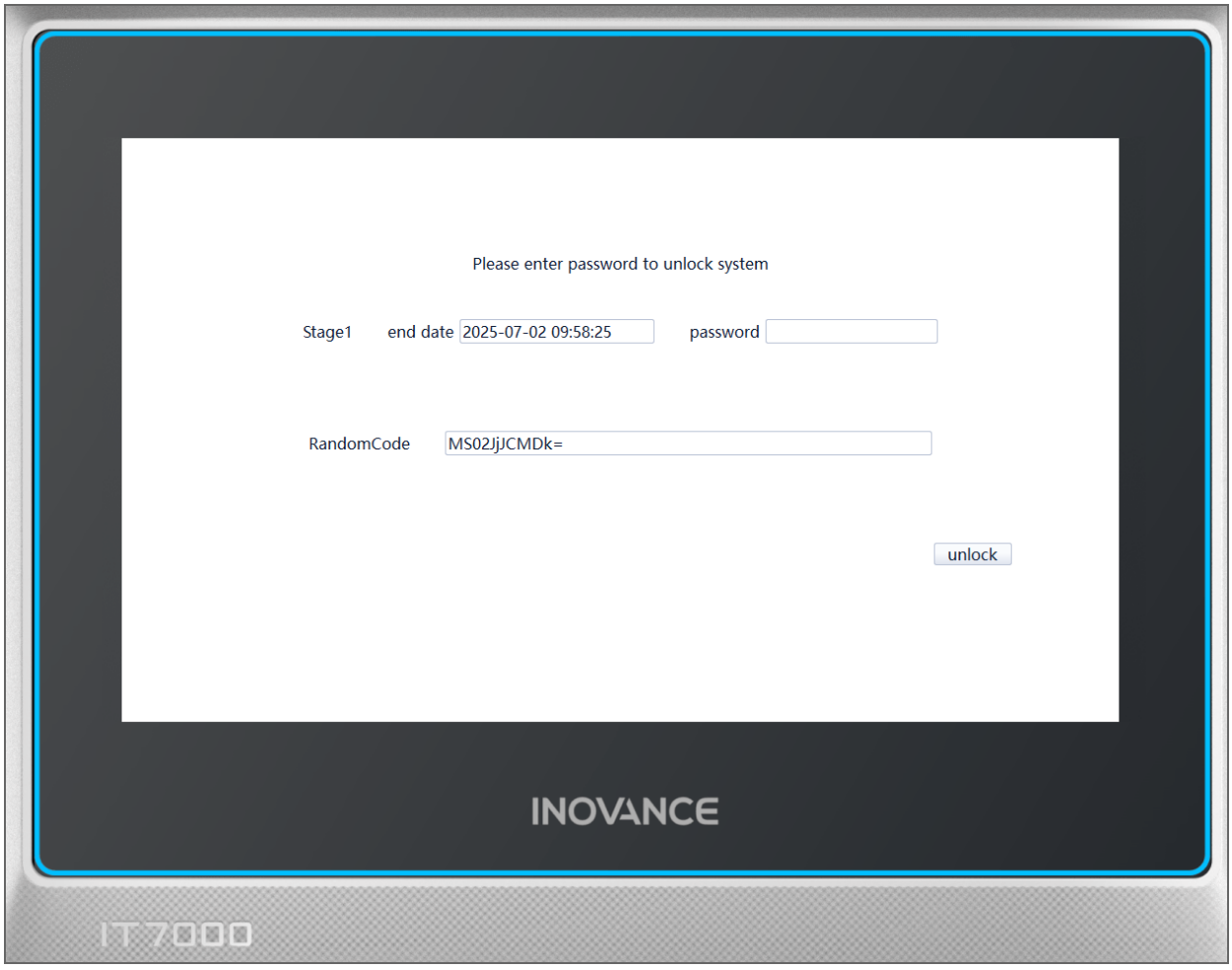
Batch | Use Dynamic Password | Dynamic Check Password •

	Name	Id	DateTime	Password	Comment
1	Stage1	10	LW 0	**	Please enter password to unlock system
2	Stage2	11	LW 1	**	Please enter password to unlock system
3	Stage3	12	LW 2	**	Please enter password to unlock system
4	Stage4	13	LW 3	**	Please enter password to unlock system



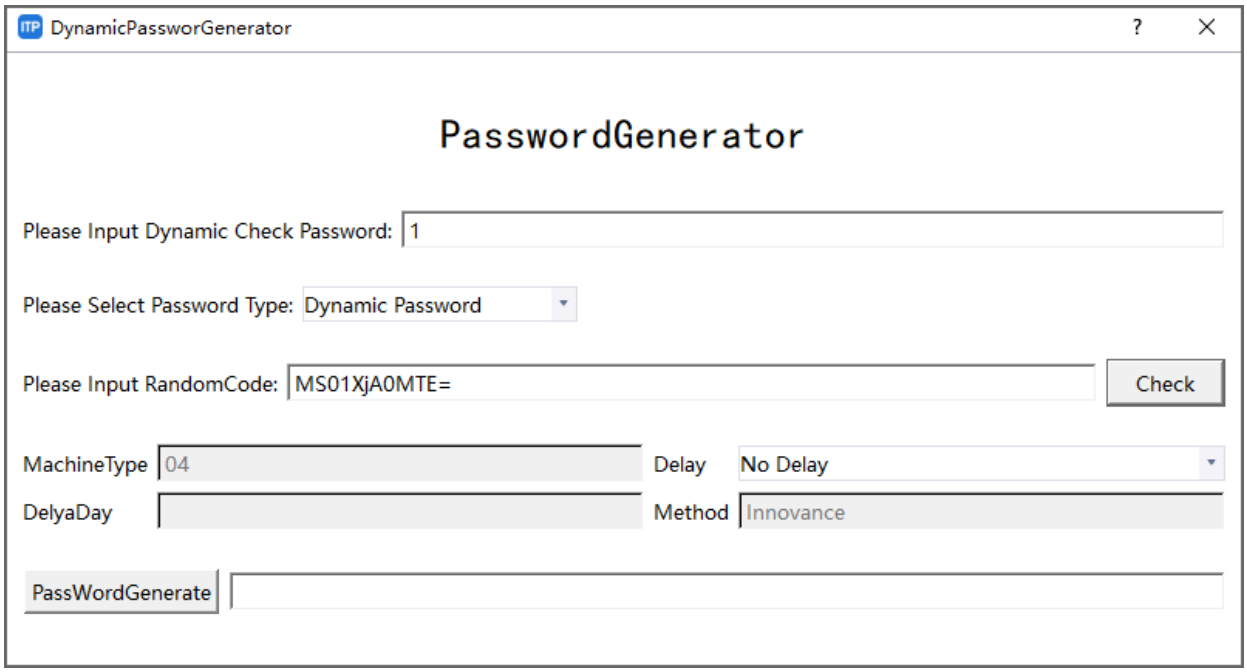
6. When the installment time reaches, the system displays the installment page at run time, on which you need to input the unlock password to unlock the installment.

a) Input the dynamic password to unlock the current installment. When the running status expires, the following window is displayed.

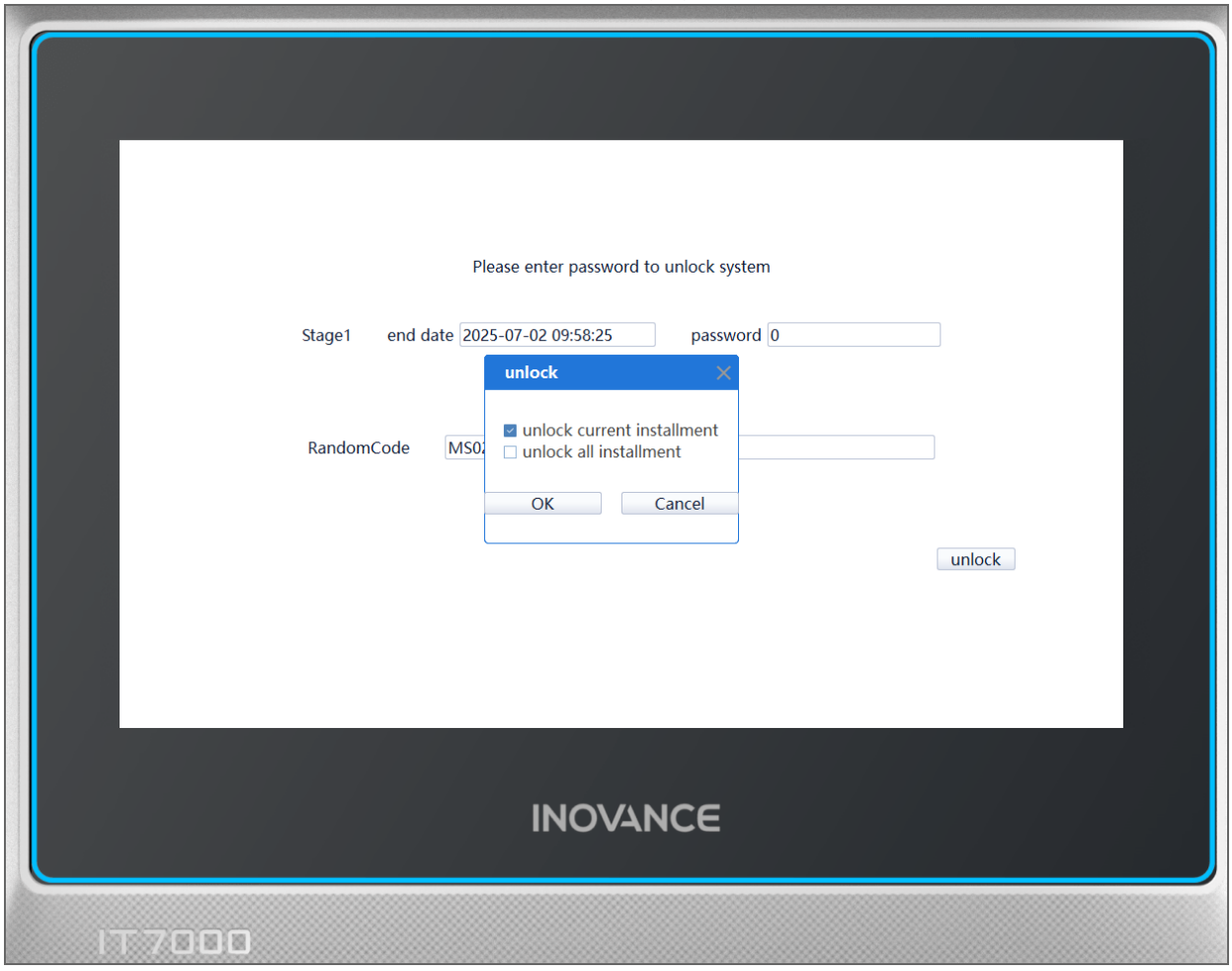


On the offline installment payment page, click "DynamicPasswordGenerator" and input parameters to generate a password. After the dynamic password expires, a random code is generated. Then, you can click "DynamicPasswordGenerator" on the configuration page, input the random code generated in the running status in the "Please Input RandomCode" field in the following figure, and input the dynamic detection password. Click "Check". After the check passes, select "Delay" or "No Delay". When you select "Delay", input the delay days (within the range of 1-99 days). Then, click "PassWordGenerate". Input the generated dynamic

password in the password field on the unlocking screen to unlock the installment.



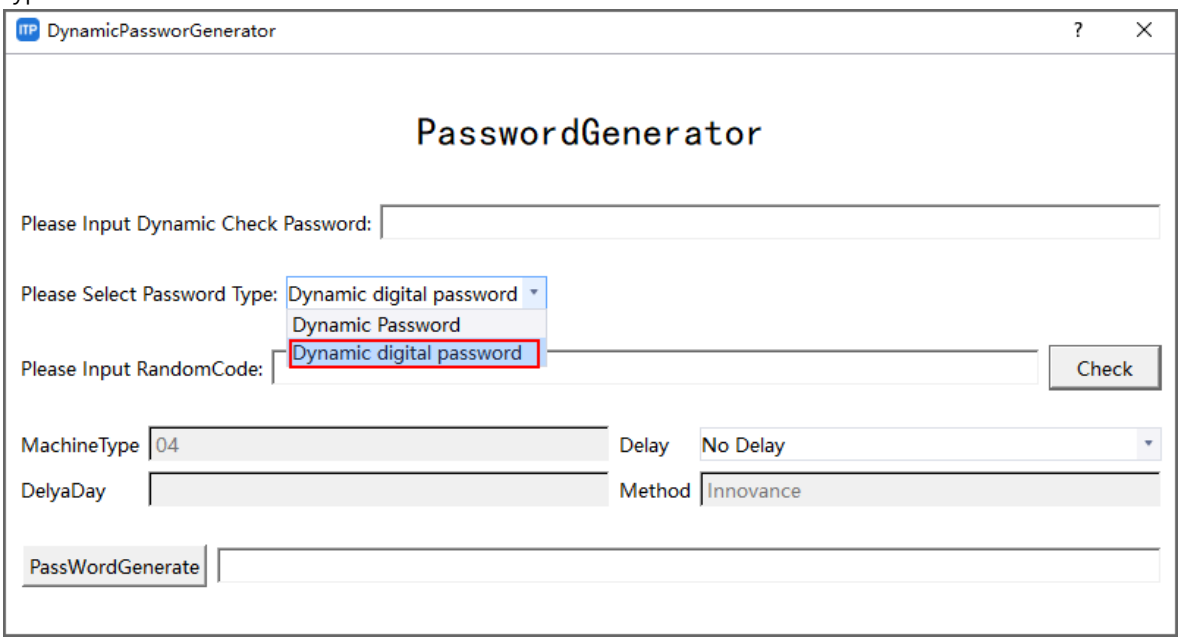
b) If you input the admin password, an unlock window is displayed, on which you can unlock the current installment or all the installments, as shown in the following figure.



20.3.2.4 Implementing Installment with Dynamic Digit Password

The difference between implementing installment with a dynamic digit password and implementing installment with a dynamic password is as follows:

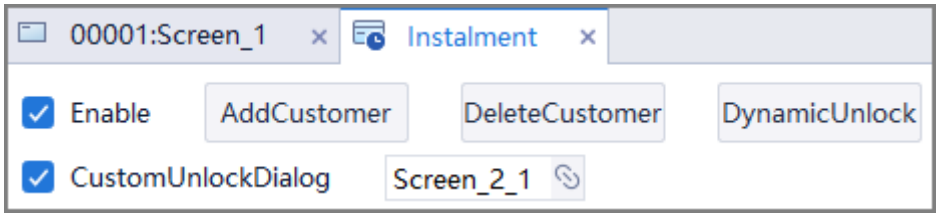
1. When a dynamic password is used, the random code generated in the running state after the installment time is characters (digits + letters), but when the dynamic digit password is selected, the random code generated in the running state is only digits.
2. The password type selected in the password generator must be consistent with the configured password type.



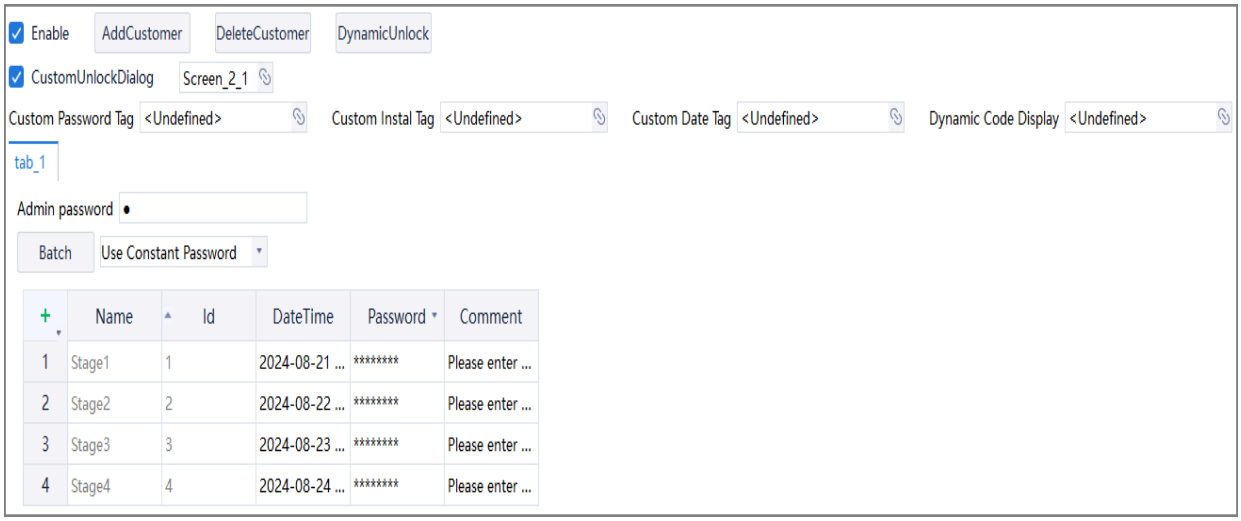
20.3.3 Customizing the Unlocking Screen

If you are not satisfied with the installment unlocking screen coming with the system, you can customize the unlocking screen as follows.

1. Select "Custom Unlock Screen".



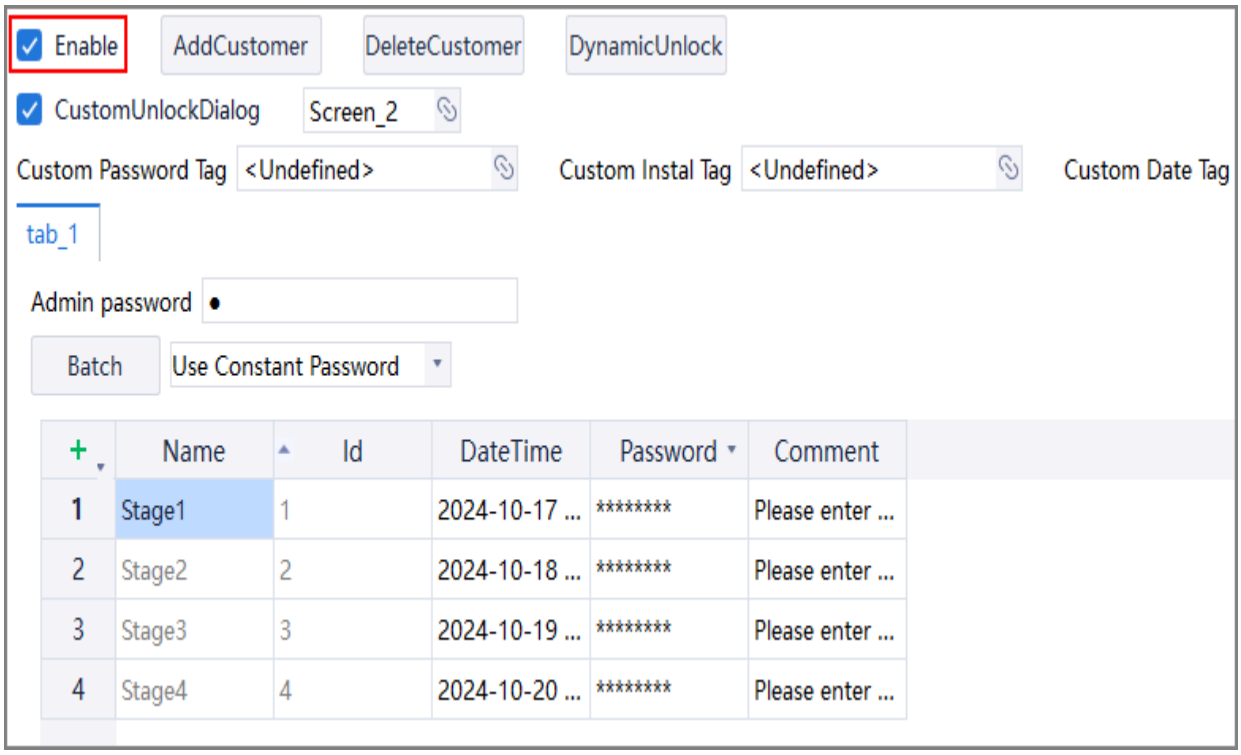
2. Select a pop-up screen which will pop up when the installment time arrives, and then set the "Custom Password Tag", "Custom Install Tag", and "Custom Date Tag". "Custom Password Tag" is used to obtain the input password after the installment arrives, "Custom Install Tag" is used to display the name of the installment after the installment arrives, and "Custom Date Tag" is used to display the date of the installment after the installment arrives, as shown in the following figure.

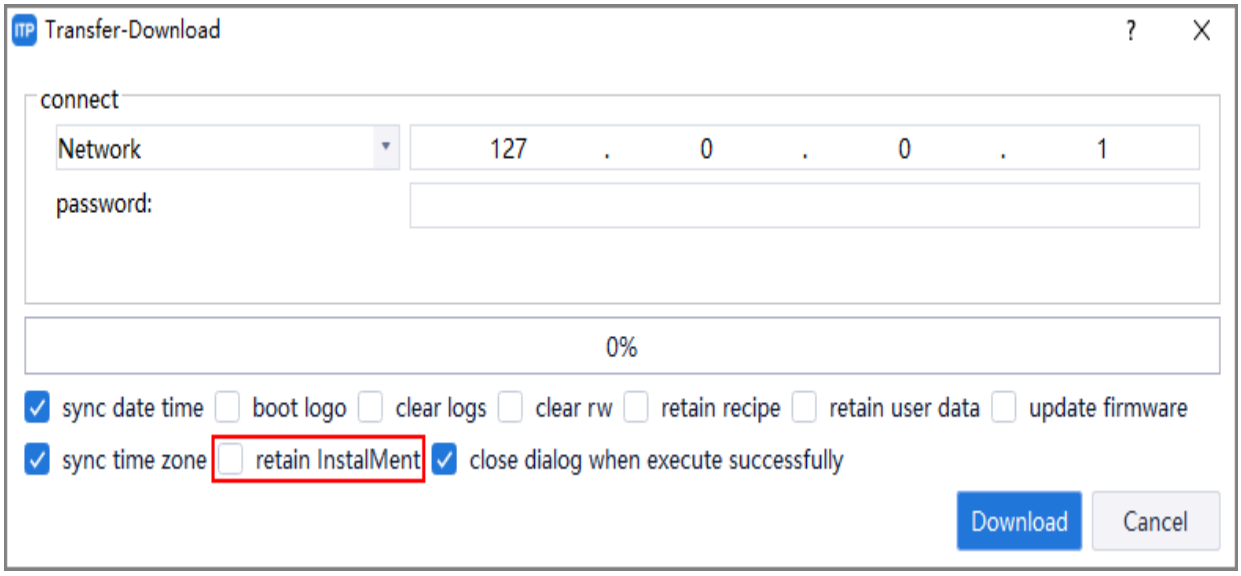


3. Configure the pop-up screen.

Bind the system function "UnlockCurrentInstalMent" to the unlocking button. Select a modal on the pop-up screen. The end time on the screen is the time of each installment. After the system starts, the end time is the time of installment 1. When installment 1 is unlocked, the end time is the time of installment 2, and so on.

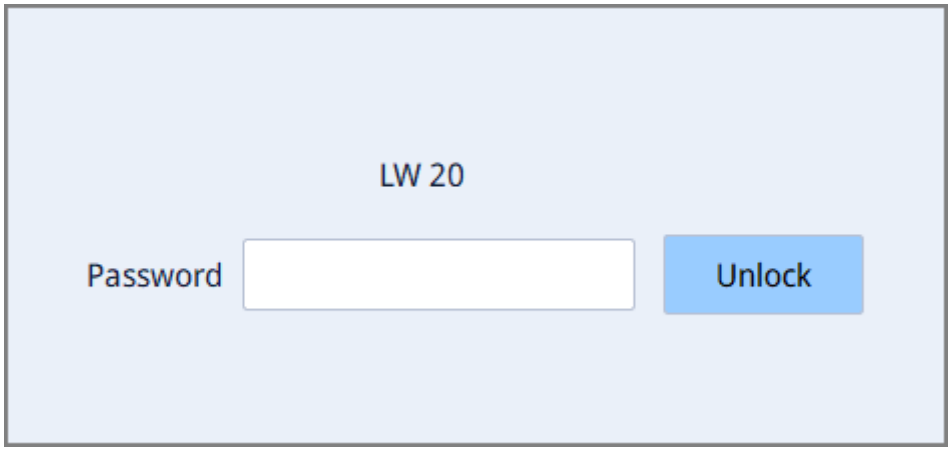
4. After the installment is created, select "Enable" in the upper-left corner of the page, and download the project to the HMI (you can determine whether to keep the previous installment at this time). Then, the installment takes effect. If you want to keep the previous installment, the previous installment is displayed; otherwise, the information of the current installment is displayed, as shown in the following figure.





5. When the installment time reaches, the system displays the installment page at run time, on which you need to input the unlock password to unlock the installment.

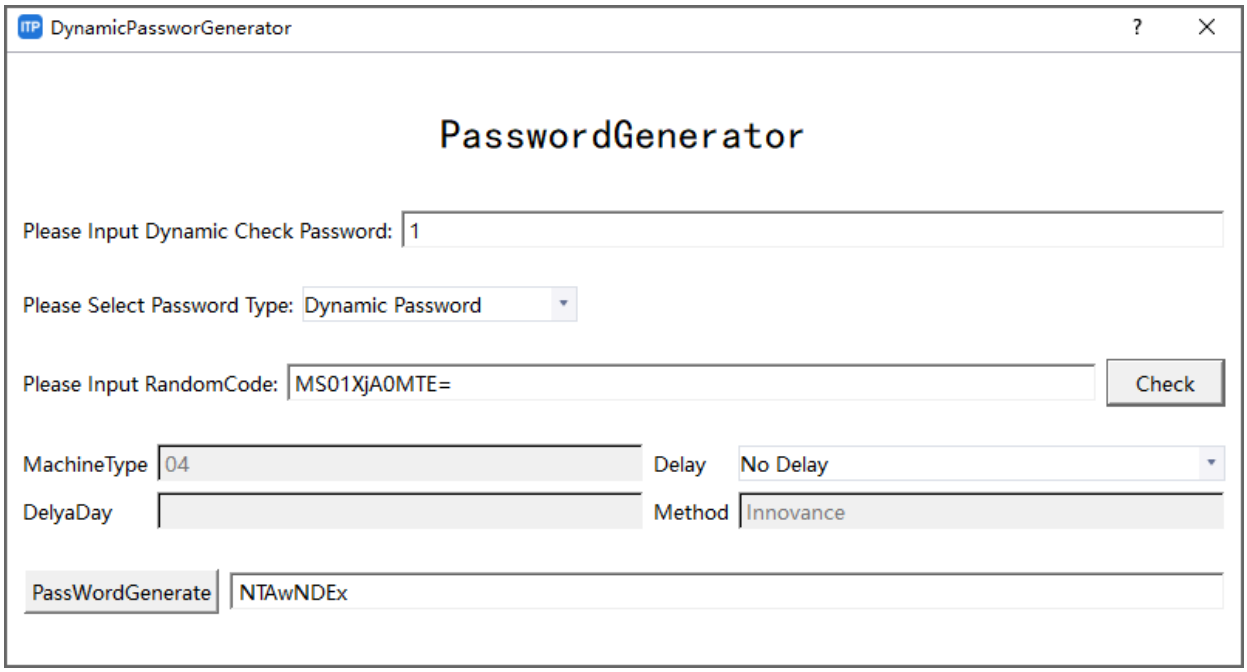
a) Input the dynamic password to unlock the current installment. When the running status expires, the following window is displayed.



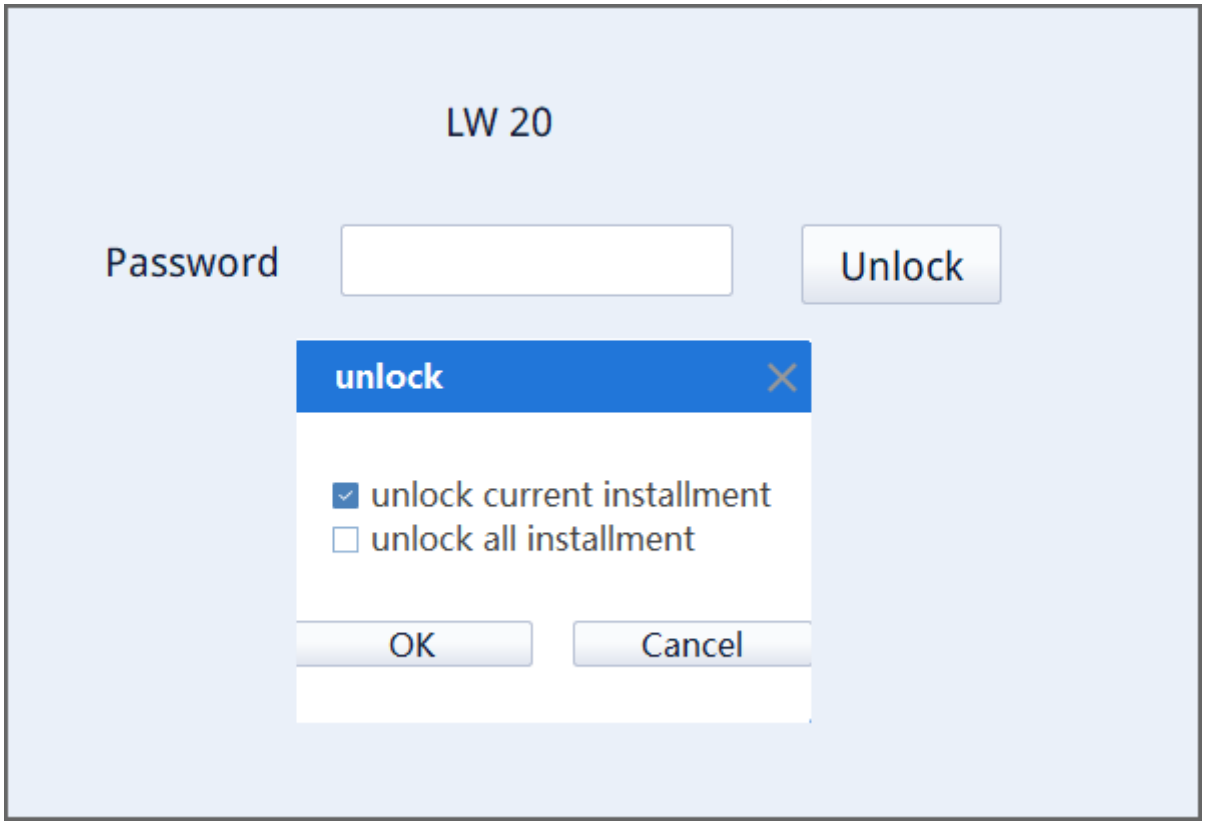
On the offline installment payment page, click "DynamicPasswordGenerator" and input parameters to generate a password.

After the dynamic password expires, a random code is generated. Then, you can click "DynamicPasswordGenerator" on the configuration page, input the random code generated in the running status in the "Please Input RandomCode" field in the following figure, and input the dynamic detection password. Click "Check". After the check passes, select "Delay" or "No Delay". When you select "Delay", input the delay days (within the range of 1-99 days). Then, click "PassWordGenerate". Input the generated dynamic

password in the password field on the unlocking screen to unlock the installment.



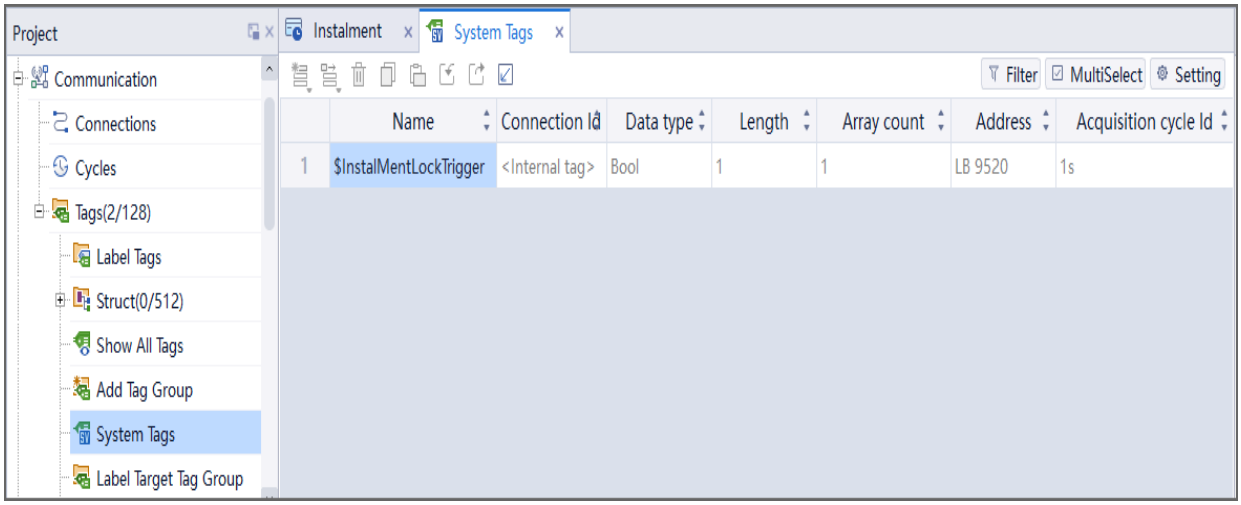
b) If you input the admin password and click "Unlock", an unlock window is displayed, on which you can unlock the current installment or all the installments, as shown in the following figure.



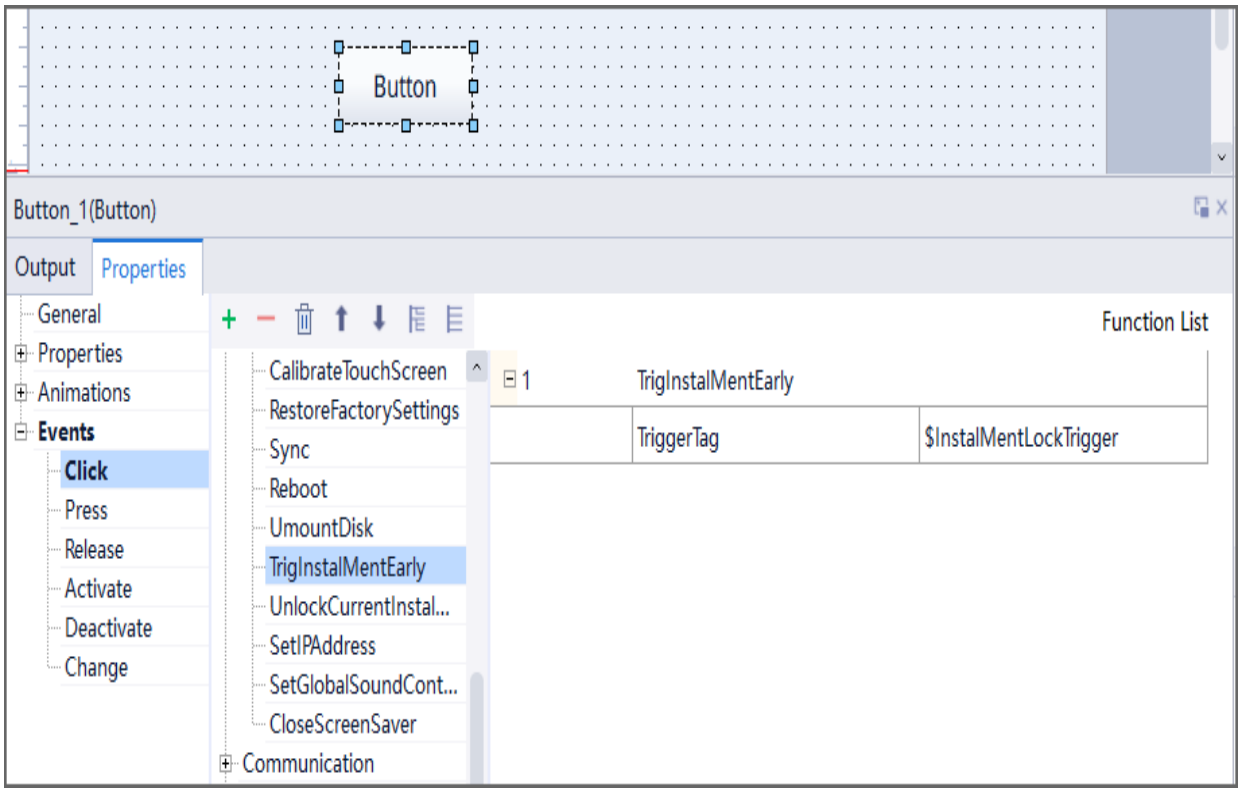
20.3.4 Triggering Next Installment in Advance

The system allows you to trigger the next installment in advance.

1. Add the system tag $InstalMentLockTrigger.



2. Bind the button to the system function TrigInstalMentEarly, and bind the tag to the system tag $InstalMentLockTrigger. In case of multiple installments, click the button to trigger the next installment in advance.

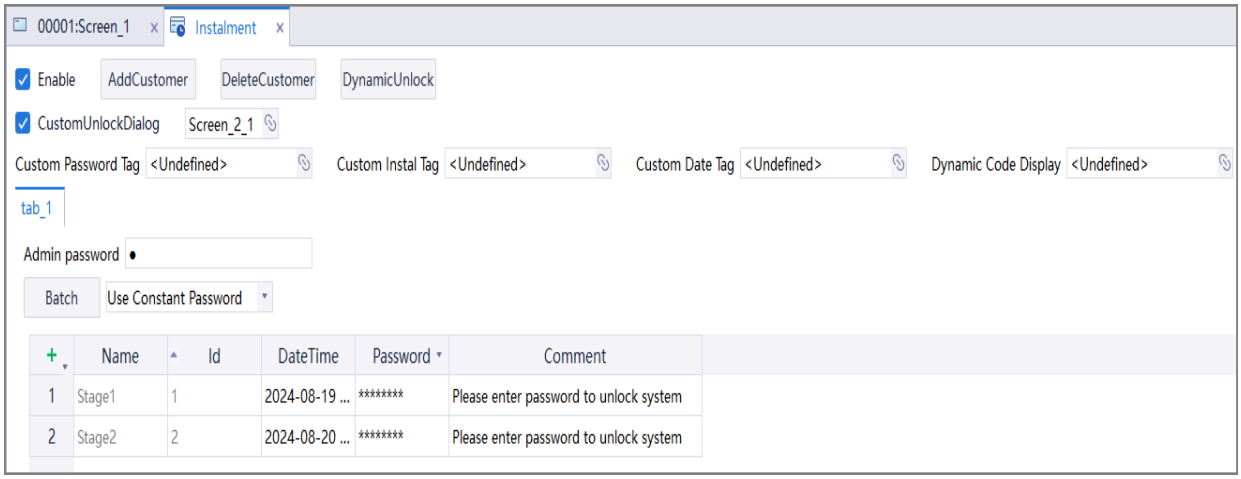


20.3.5 Displaying Remaining Time Before Next Installment

After you configure the system tag $InstalMentLockRemainTime, the remaining time before the next installment will be displayed, in minutes.

20.3.6 Downloading Multiple Customers

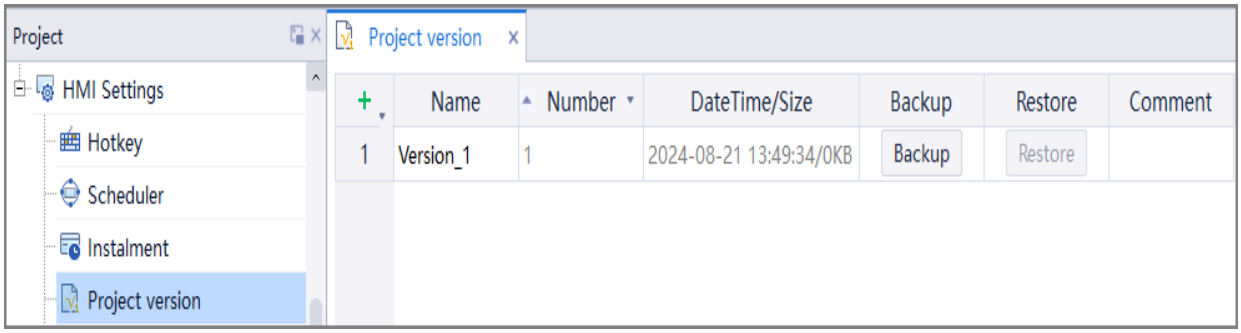
You can add or delete customers to maintain multiple customers. The customers selected during screen configuration are the installment customers that need to take effect after being downloaded to the HMI, as shown in the figure below. For example, if "Inovance" is selected, Inovance customers need to take effect.



20.4 Project Version

20.4.1 Editor

The project version feature mainly applies to backup and restore of created projects. During the creation, up to 16 projects can be backed up. The following figure shows the project version editing page.



Name	Description
Name	The version for project backup
Number	The number for project backup
DateTime/Size	The date, time, and size for project backup
Backup	The backup button, clicked to back up the current project
Restore	The restore button, clicked to restore the project backup
Comment	The comment for project backup

20.4.2 Using a Project Version

During project configuration, when some independent features are configured, and the modification is huge, it is often necessary to back up the project. If later configuration is inappropriate or need to be re-edited, you can go back to a backed up version, which increases the editing efficiency. The project version feature provides a good management method.

1. After configuring some independent feature modules, expand "HMI Settings" in the project view, and double-click "Project version" to open the project version editing area.

2. Add a backup/restore entry.

Click + to add a backup/restore entry.

3. In the "Backup" column, click "Backup" to back up the current project. At this time, the "Restore" button is enabled.

+	Name	Number	DateTime/Size	Backup	Restore	Comment
1	Version_1	1	2024-08-23 09:39:28/0KB	Backup	Restore	

4. After backup, in subsequent project configuration, if you need to re-edit a configured feature module, just locate the backup/restore entry created last time in the project version area, and click the "Restore" button in this entry to close the current project and then open it again.

20.5 Settings of External Devices

This section describes how to enable printers and set connection of USB devices (card reader and scanner).

20.5.1 Printer Enable Settings

- The following printer models support serial ports: HPRT XD-100, BRIGHTEK WH-E36, BRIGHTEK WH-E31, and BRIGHTEK WH-P12.
- The following printer models support USB ports: HP LaserJet 1022, HP LaserJet 1020, HP LaserJet 1022n, HP LaserJet 1022nw, HP LaserJet 1018, HP LaserJet 1005, and HP LaserJet 1000.

Preconditions

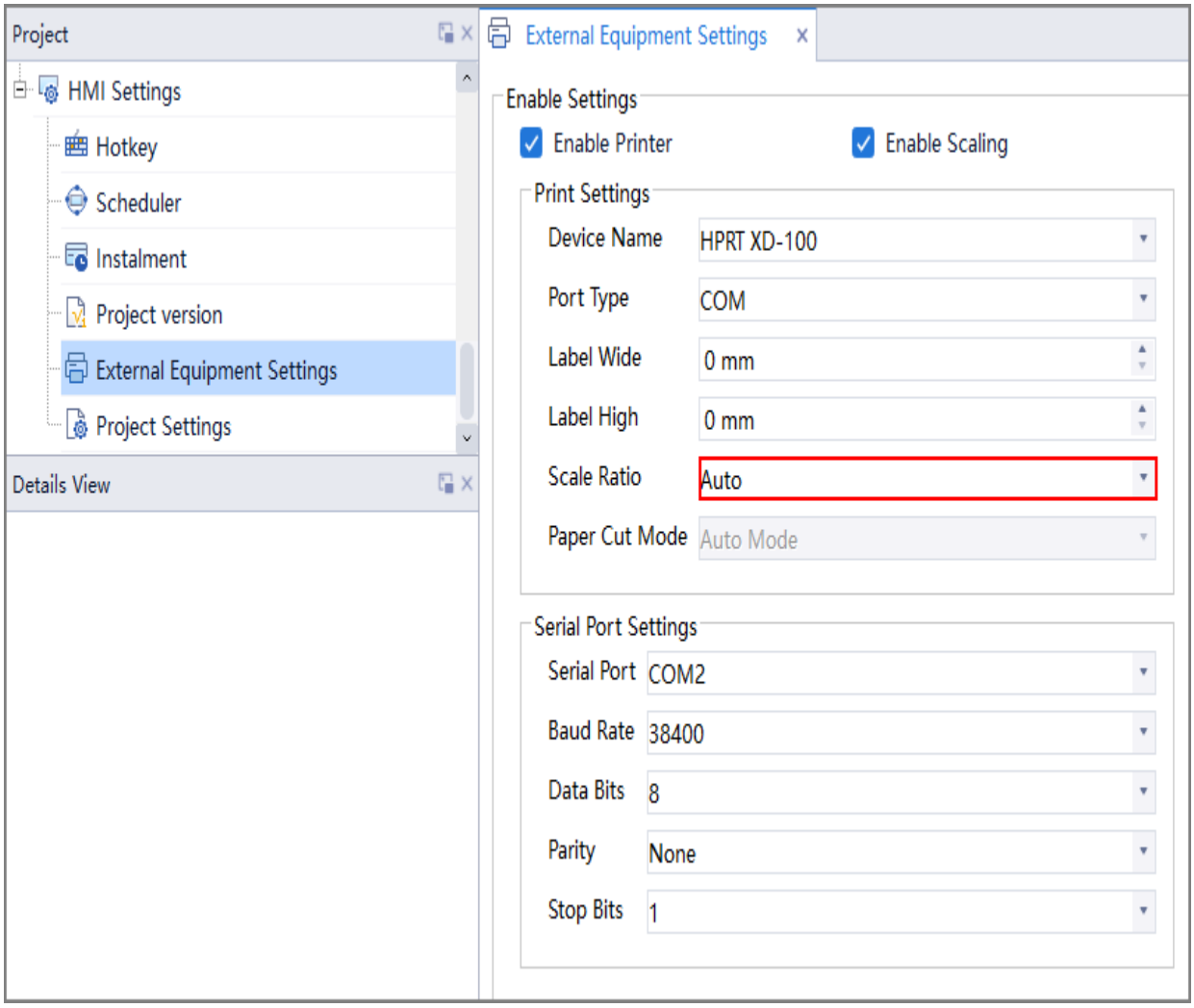
A project has been created.

Procedure

Open the project. In the "Project" tree on the left, choose "HMI Settings" > "External Equipment Settings". On the page displayed, check "Enable Printer" and "Enable Scaling" and set "Scale Ratio", as shown in the figure below.

Note

The total current of inserted peripherals should be less than 100 mA.



20.5.2 Connection Settings of USB Devices (Card Reader and Scanner)

Overview

- Data read by the card reader and scanner can be written into tags.
- After a device is inserted, you can write data into tags by card reading and code scanning.
- Devices can be inserted before booting. After booting, you can write data into tags by card reading and code scanning.
- Up to three devices can be inserted simultaneously.

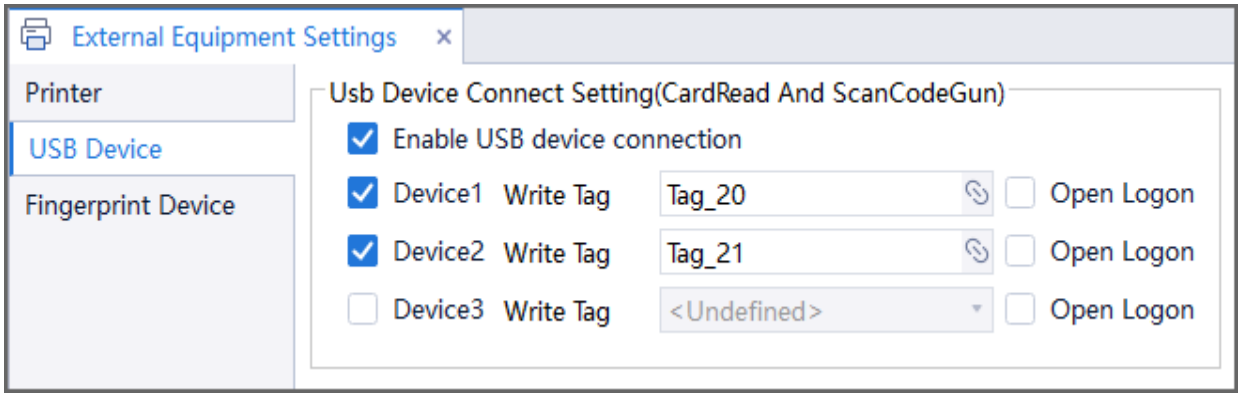
Preconditions

A project has been created.

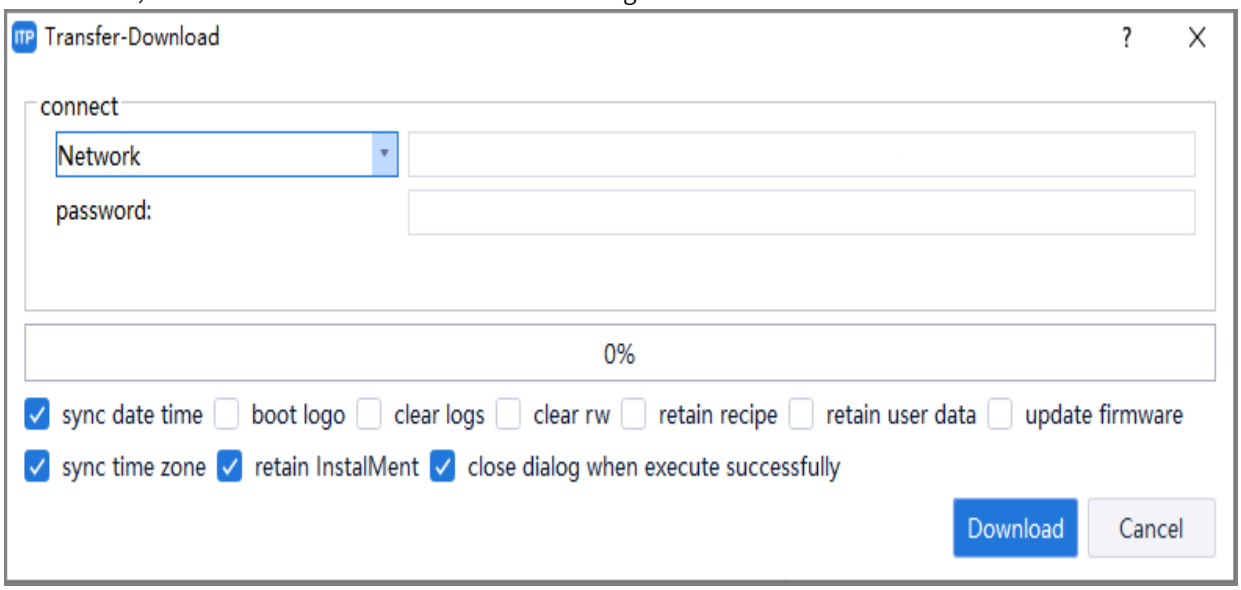
Procedure

1. In the "Project" tree on the left, choose "HMI Settings" > "External Equipment Settings", as shown in the following figure.

2. Check "Enable USB device connection", select the devices to be started, and select tags of the String and WString types. The device numbers are recognized in the order of device insertion, as shown in the following figure.



3. Click to download the project. In the "Transfer-Download" window, set "connect" to "Network" or "USB", and click "Download", as shown in the following figure. Insert an USB device (such as a card reader or scanner) to read data, and then write the data into the selected tag.



Note

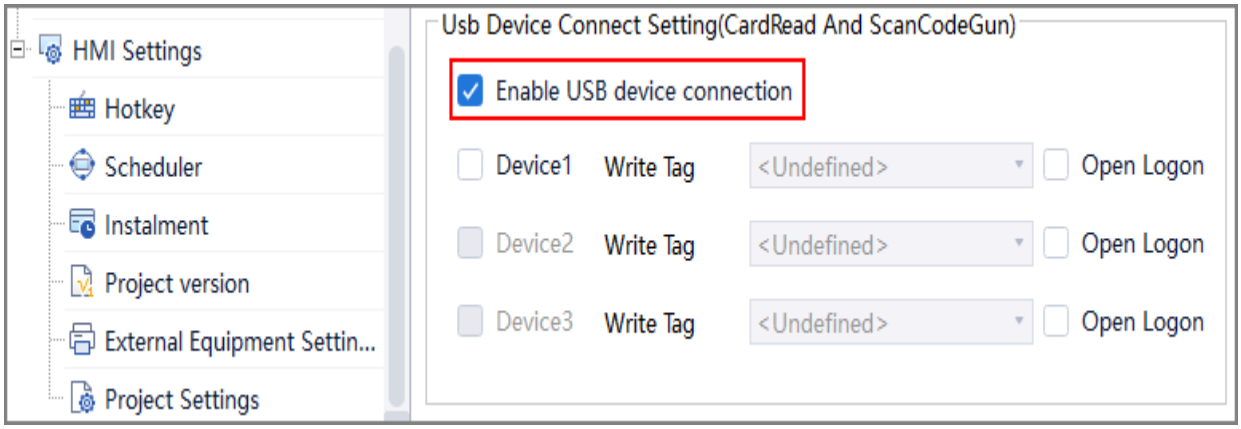
The total current of inserted peripherals should be less than 100 mA.

Case: User login by a card reader is supported.

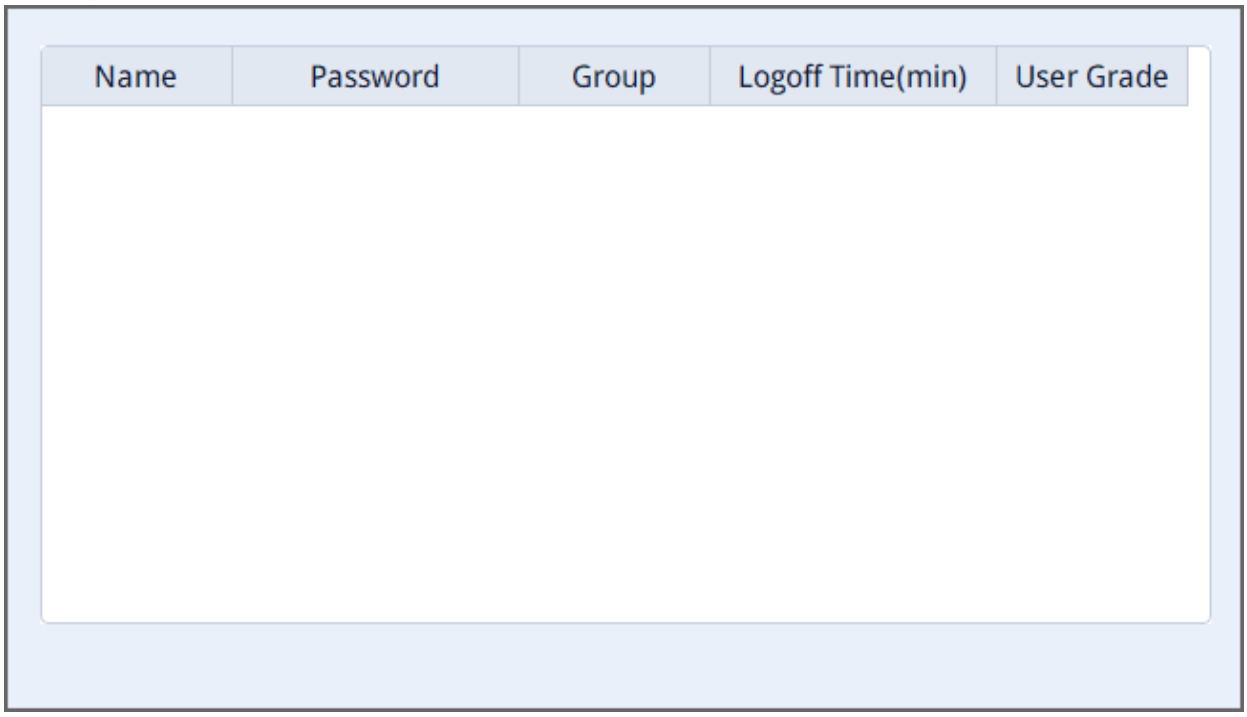
Condition: A project has been created, and the card reader is connected to the HMI.

Procedure:

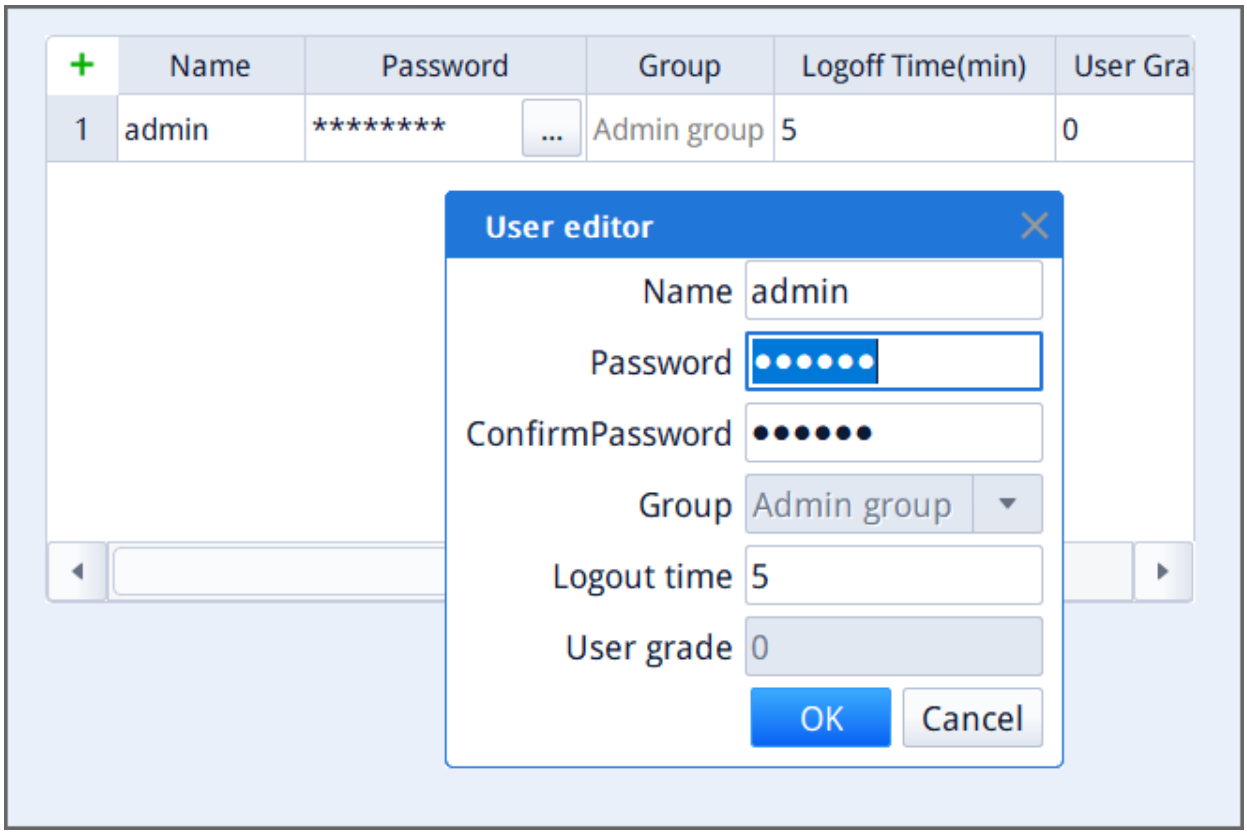
1. Configure the USB device and check "Enable USB device connection" on the "External Equipment Settings" page.



2. Configure the user view in the screen and download the project to the HMI.



3. Log in to the device with the admin account, enter the card number and password, and log out of the device with a Logoff event. Then, you can log in to the device by card reading.



Note

The card reader should be an IC card reader with USB connection, with a return as the terminator.

20.5.3 Fingerprint Device Connection Settings

Requirement: User login by fingerprint is supported.

Preconditions: A project has been created.

Procedure:

1. In the "Project" navigation tree on the left, choose "HMI Settings" > "Print Settings".

2. Select "Open Fingerprint Connect", select the device you want to enable, and set serial port parameters.

3. Click the icon to download the project. In the "Transfer-Download" dialog box displayed, select the connection method (Ethernet or USB), and click "Download".

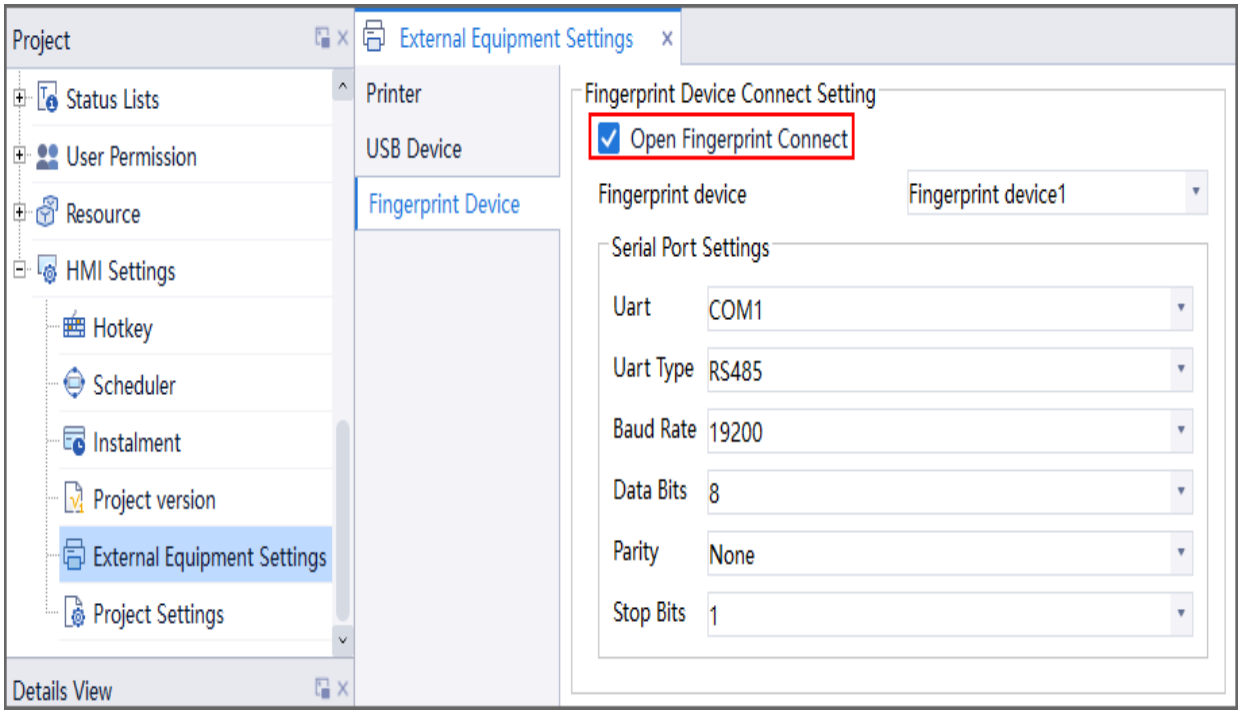
Case: User login by fingerprint is supported.

Procedure:

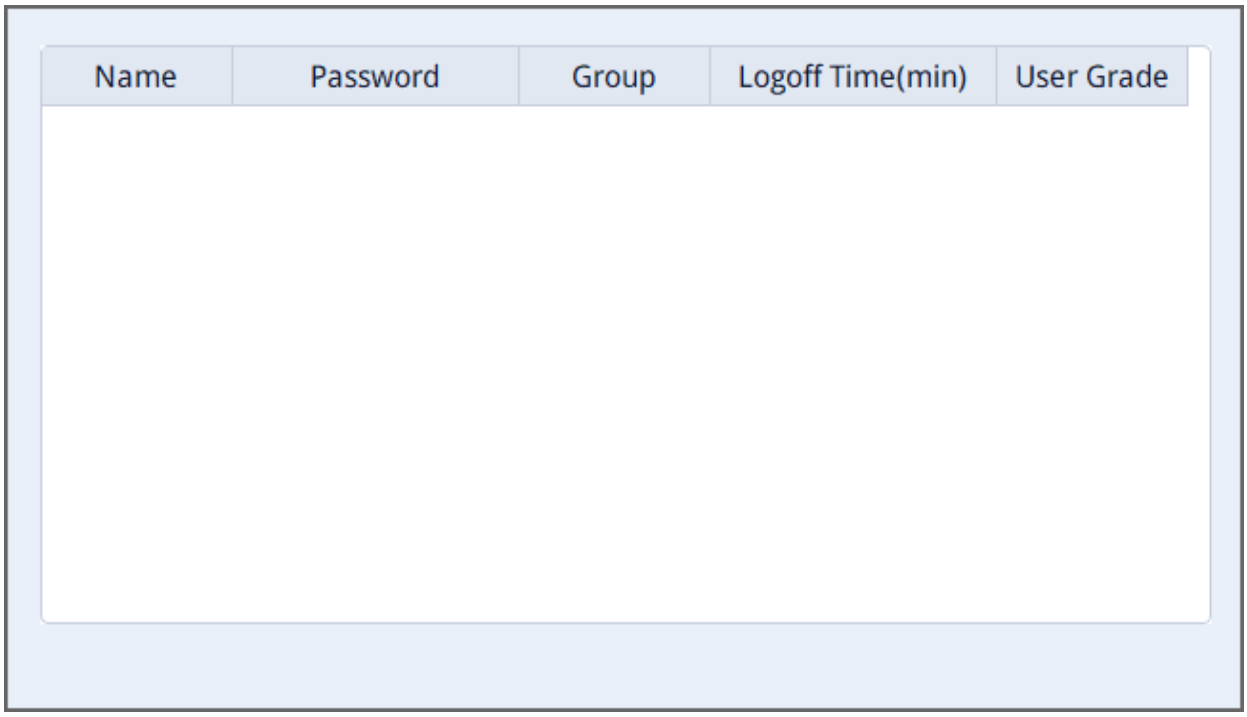
1. Connect the fingerprint device with the serial port of the HMI.

2. Set the communication parameters for the fingerprint device.

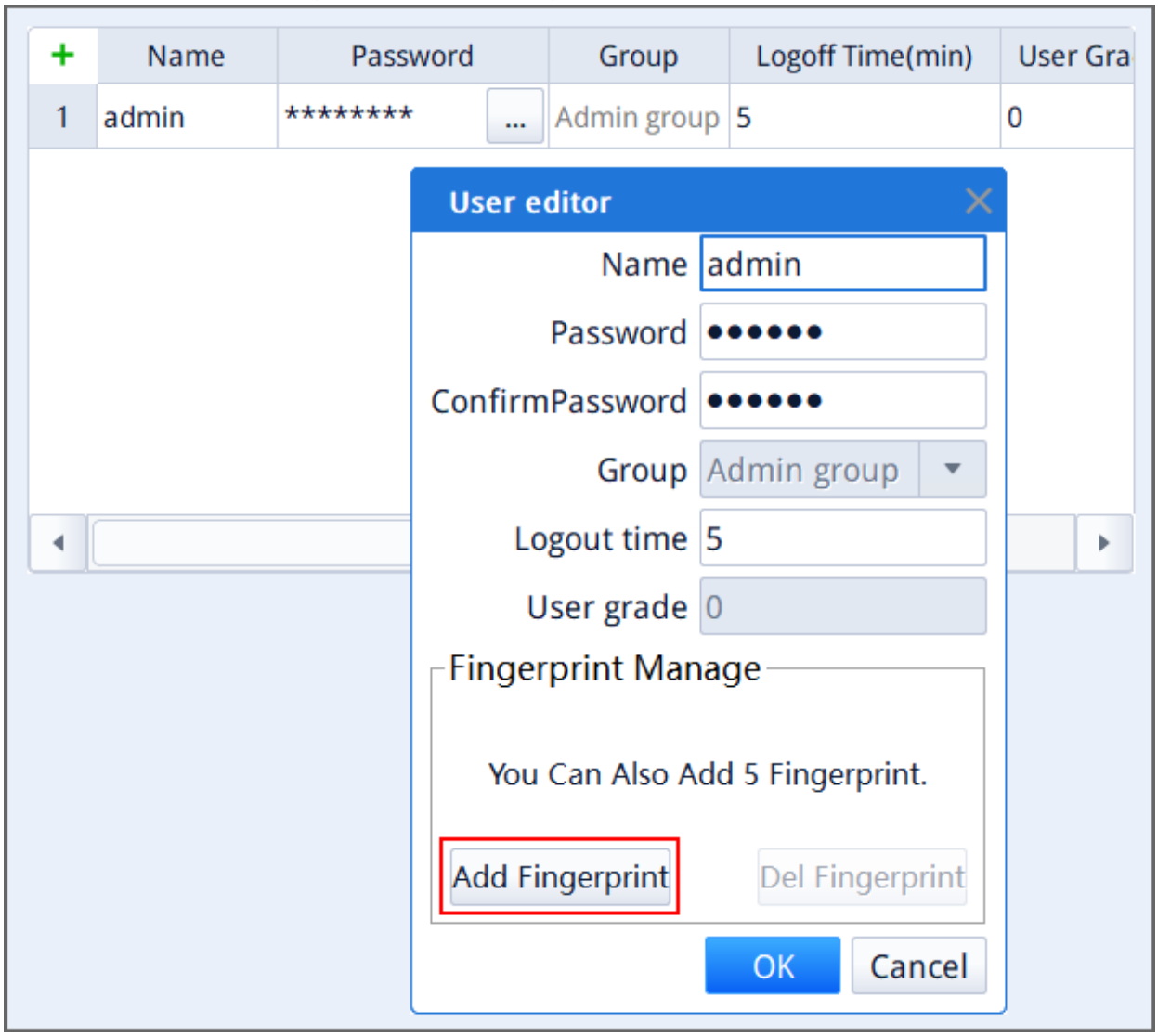
In the "Project" navigation tree on the left, choose "HMI Settings" > "Print Settings". On the page displayed, select the fingerprint device you want to enable, and set serial port parameters (must be the same as those of the serial port of the fingerprint device).



3. Configure the user view in the screen and download the project to the HMI.



4. Log in to the device with the admin account, add your fingerprint to the device, and log out the device with a Logoff event. Then, you can log in to the device by fingerprint.



Note

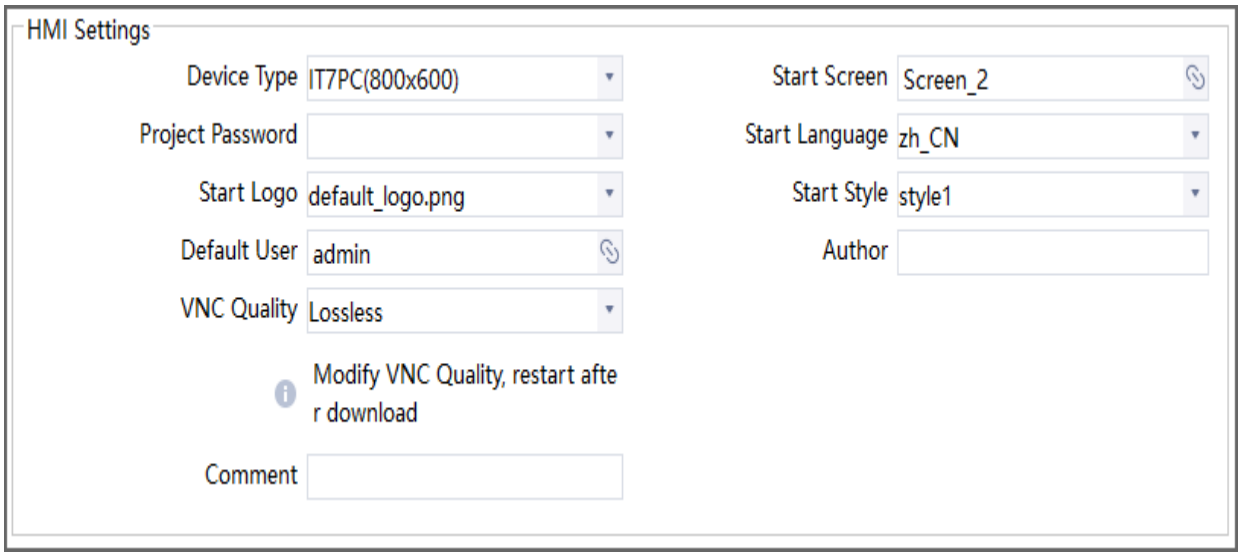
The supported fingerprint device model is D102-DM800-485. It communicates with the HMI through the Modbus485 serial port at a default baud rate of 19200 bps. The start bit is 1, the data bit is 8, and the stop bit is 1. No parity bit is set.

20.6 Project Settings

Introduction

Project settings are divided into 12 parts, including "HMI Settings", "Label Protocol Synchronization Settings", "Screen Saver & Black Light Settings", "Security Settings", "Other Settings", "Alarm Settings", "OperationRecord Settings", "Login User Settings", "Alarm/Data Refresh Rate Settings", "Simulator Menu", "IP Settings", and "NTP time synchronization".

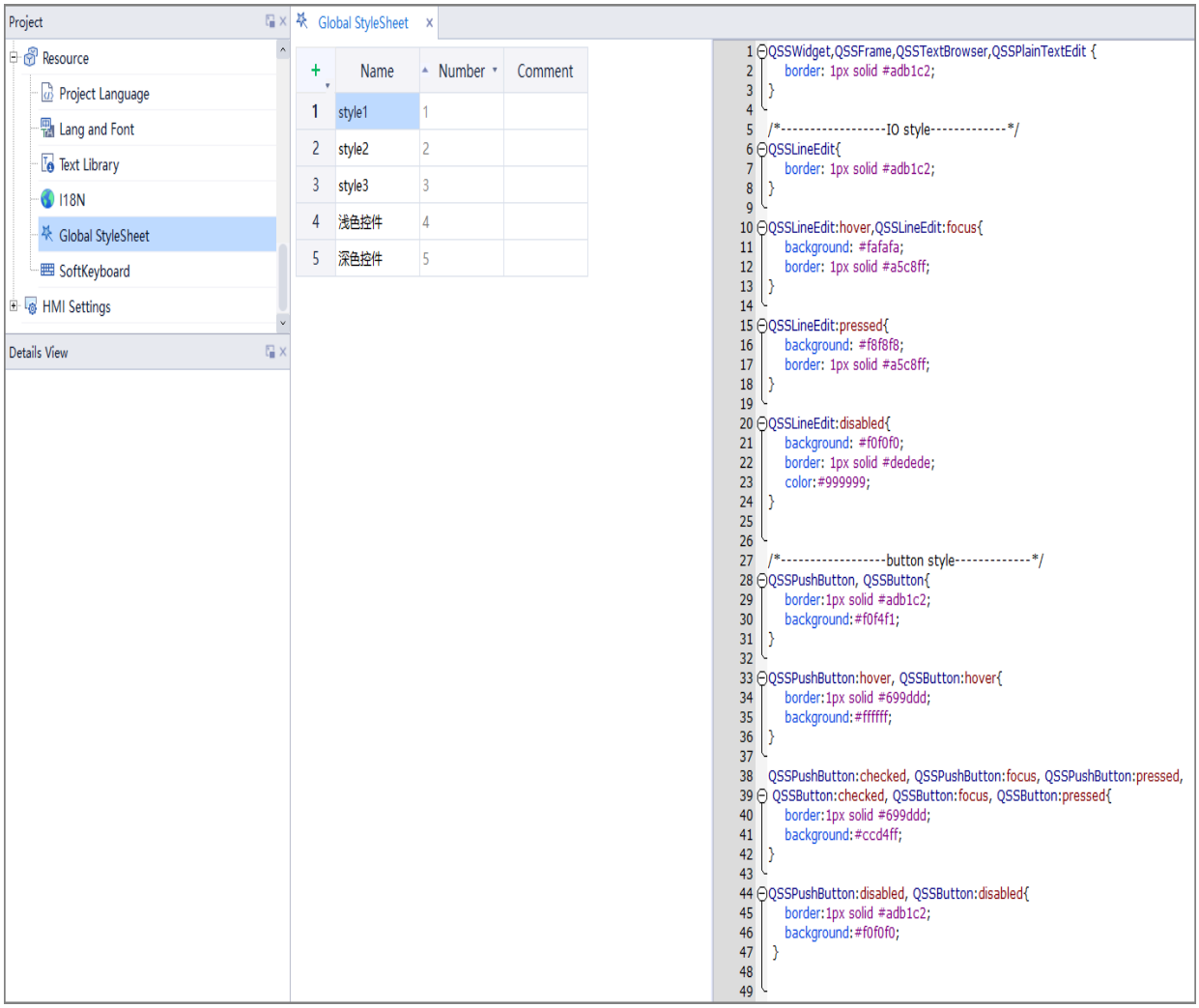
HMI Settings



Name	Description
Device Type	Selects the device model used to configure the project.
Project Password	Encrypts the project to improve the project security. After setting, you need to verify the password to continue project editing in the software.
Start Logo	Selects the logo to be displayed when the device boots up. Note: The logo can take effect only when "Start Logo" is set during download.
Default User	Selects the default user in the user permission window of the running device.
VNC Quality	Lossless: Resolution remains unchanged, supports 24-bit color depth; Smooth: Resolution remains unchanged, supports 16-bit color depth, does not support portrait mode. The setting value takes effect only after being downloaded to the device and completing a device restart (triggered automatically).

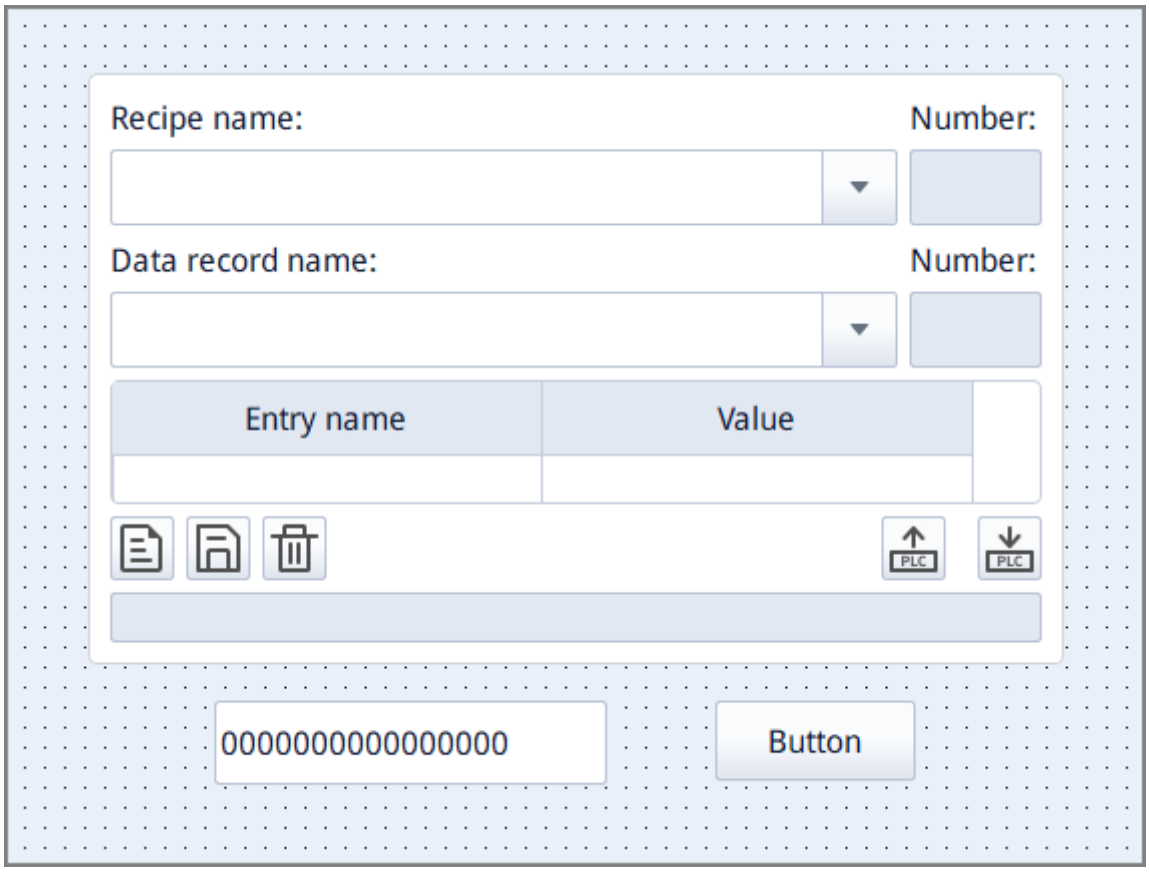
Comment	Comments on the current project.
Start Screen	The initial screen after the runtime starts
Start Language	The initial language after the runtime starts
Start Style	The initial global style after the runtime starts. The default value is "Light mode". **Note** When "Start Style" is set to <Undefined>, styles of versions earlier than V1R5 are compatible.
Author	The project creator

The predefined options for "Start Style" include "style1", "style2", "style3", "Light mode", and "Dark mode". You can choose "Resource" > "Global StyleSheet" to edit the styles, or copy new styles for redrawing, and you can switch styles through tag configuration or scripts, as shown in the figure below.

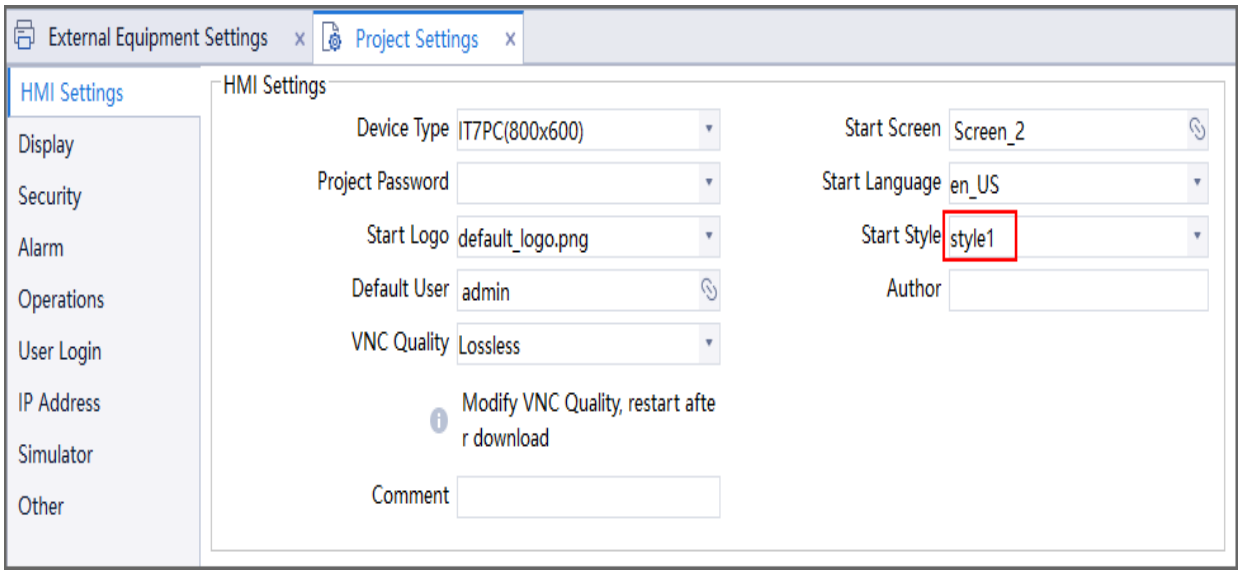


The global style feature is mainly used to customize a set of styles for the I/O field, button, text, progress bar, drop-down list control, slider, table, and table header. You can customize styles in the style adding area, and then use QSS code to realize custom styles in the style code editing area. Then you can apply such styles in "Start Style".

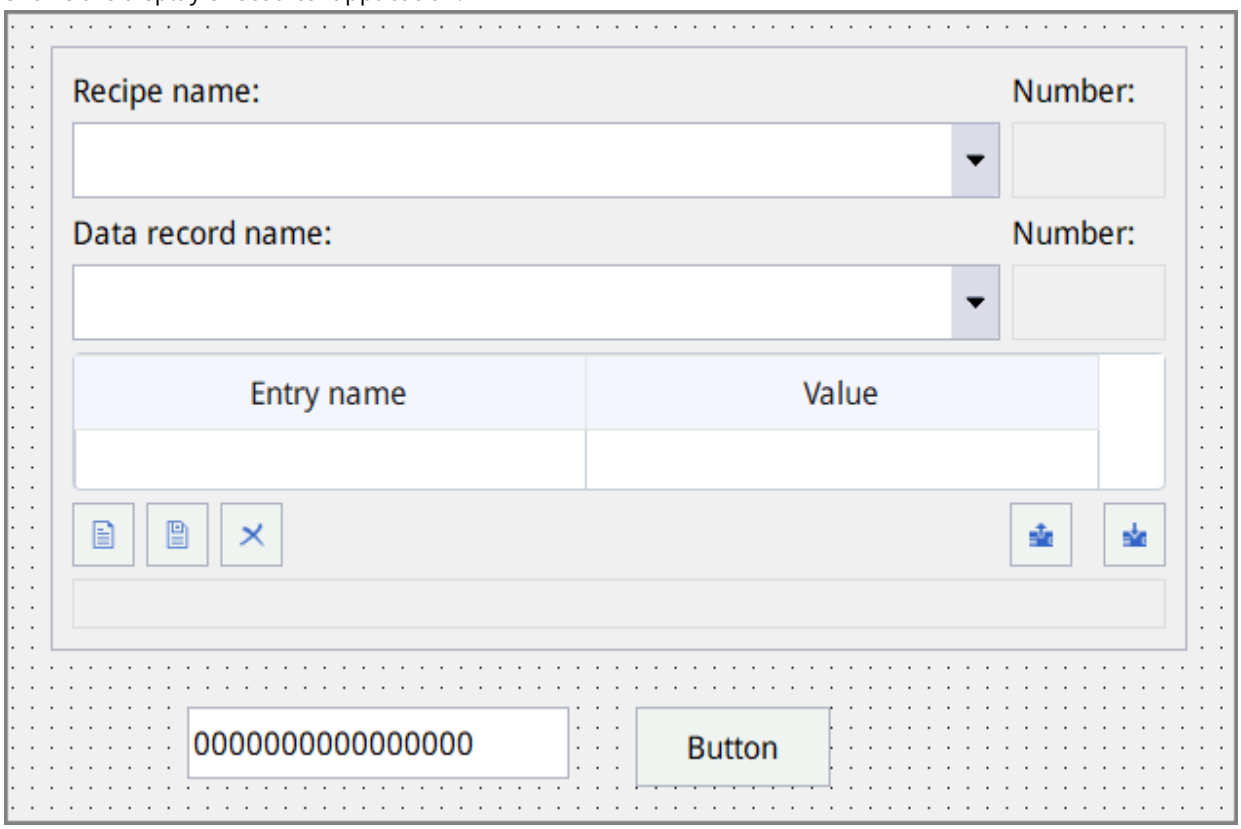
For example, add a recipe view, an I/O field, and a button to the screen. The following figure shows the display effect of the screen before the global style is applied:



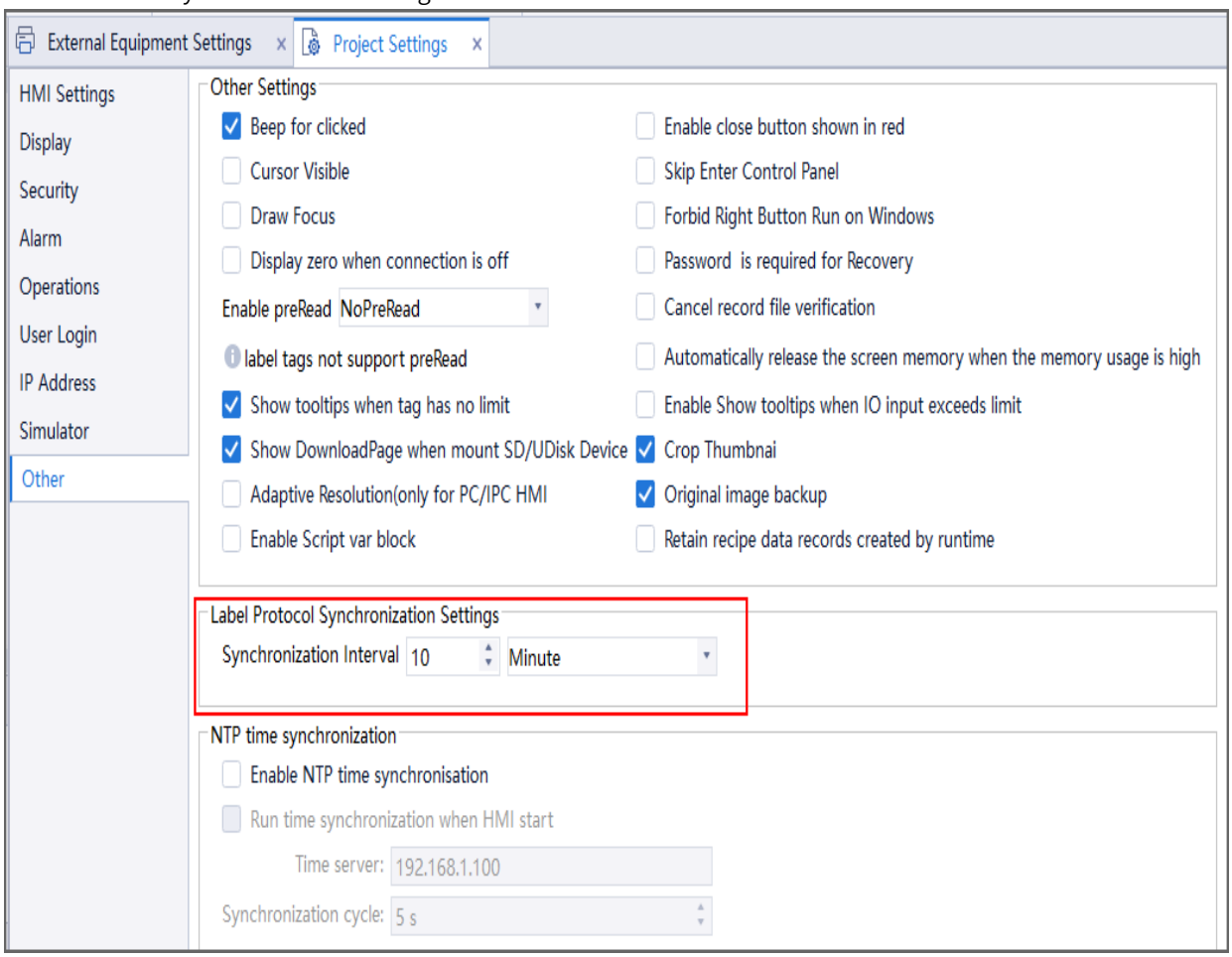
In the "HMI Settings" section, set "Start Style" to "style1", as shown in the figure below.



Apply the recipe of the global style "style1", recipe view, I/O field, and button controls. The following figure shows the display effect after application.



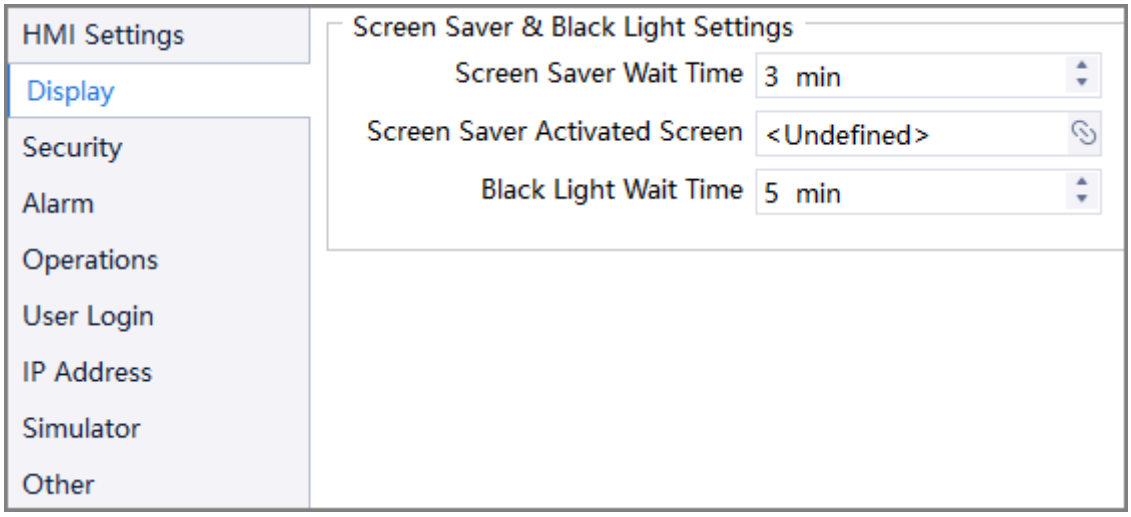
Label Protocol Synchronization Settings



Name	Description

Synchronization Interval	Sets an interval to monitor the change of the label tag XML file to be synchronized. The default value is 10 minutes. The value range is from 10 seconds to 72 hours.

Screen Saver & Black Light Settings

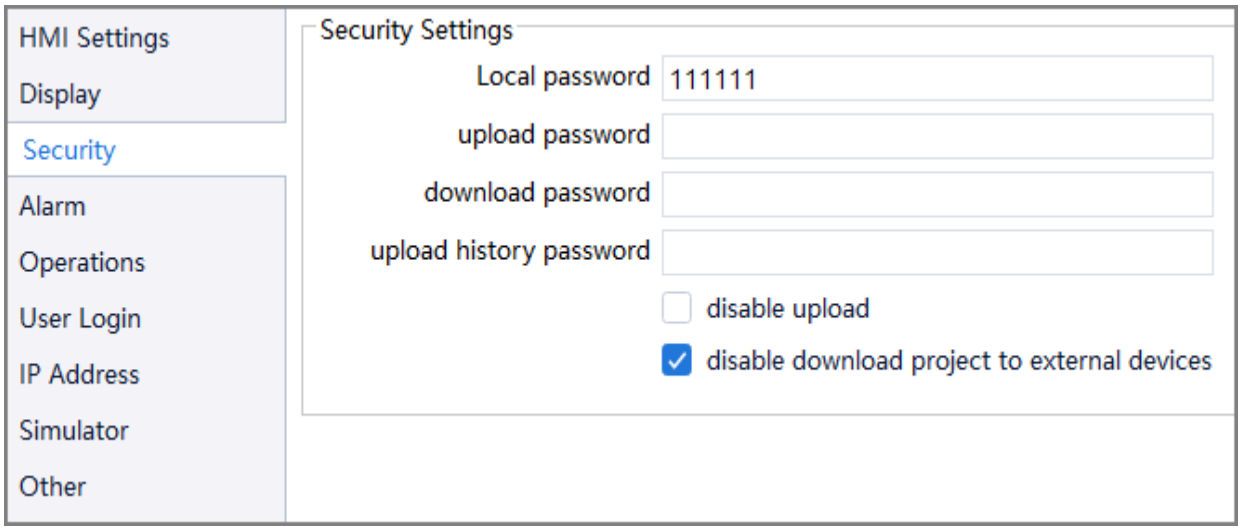


Name	Description
Screen Saver Wait Time	The waiting time before you enter the screen saver when the screen is not operated. The default value is 3 min. When it is set to 0, entering the screen saver is canceled.
Screen Saver Activated Screen	The specified screen to switch to when you enter the screen saver. In general, when you enter the screen saver, the home page set for the project is displayed.
Black Light Wait Time	The waiting time before you turn off the backlight when the screen is not operated. The default value is 5 min. When it is set to 0, turning off the backlight is canceled.

Note

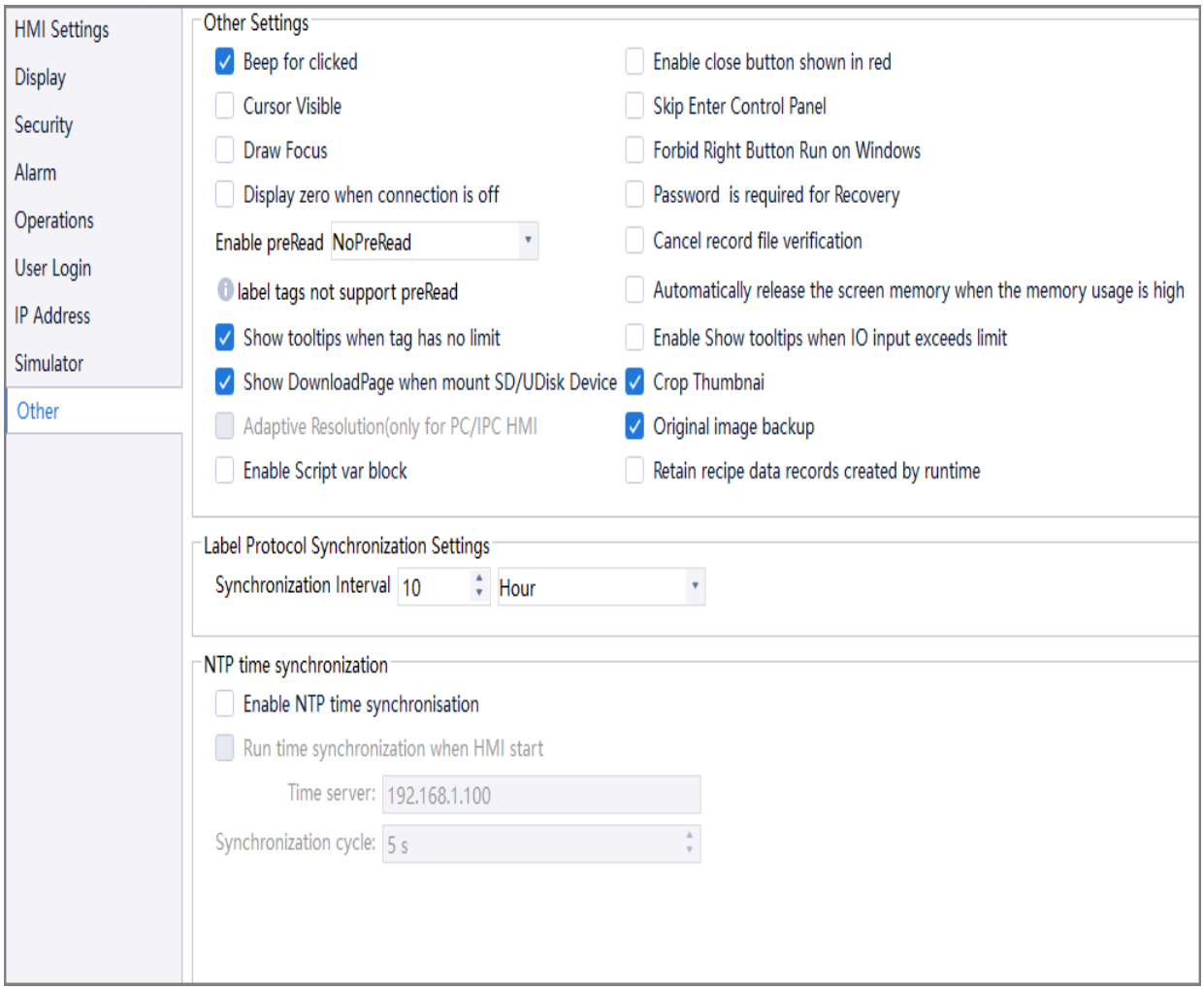
The wait time to enter the screen saver and the wait time to turn off the backlight are independent of each other. Both start timing when the runtime is not operated. If the value of "Black Light Wait Time" is less than the value of "Screen Saver Wait Time", the backlight will be turned off first, so you cannot see the screen saver effect. To see it, you need to set the value of "Black Light Wait Time" to be greater than the value of "Screen Saver Wait Time".

Security Settings



Name	Description
Local password	Sets the password to access the panel setting page on the HMI touchscreen.
upload password	Sets the password to upload the project.
download password	Sets the password to download the project and firmware.
upload history password	Sets the password to upload historical data.
disable upload	• Checked: Project upload is disabled. • Unchecked: Project upload is enabled.
disable download project to external devices	• Checked: The HMI disables project download to external devices. • Unchecked: The HMI enables project download to external devices.

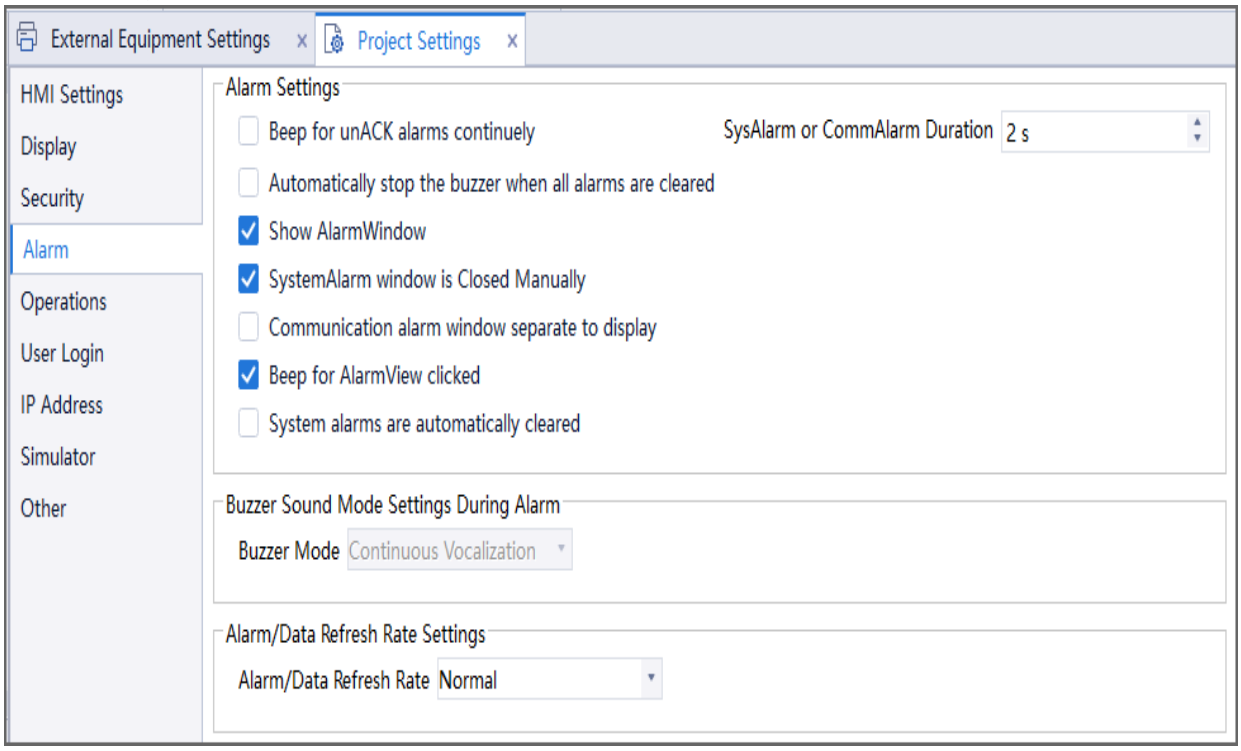
Other Settings



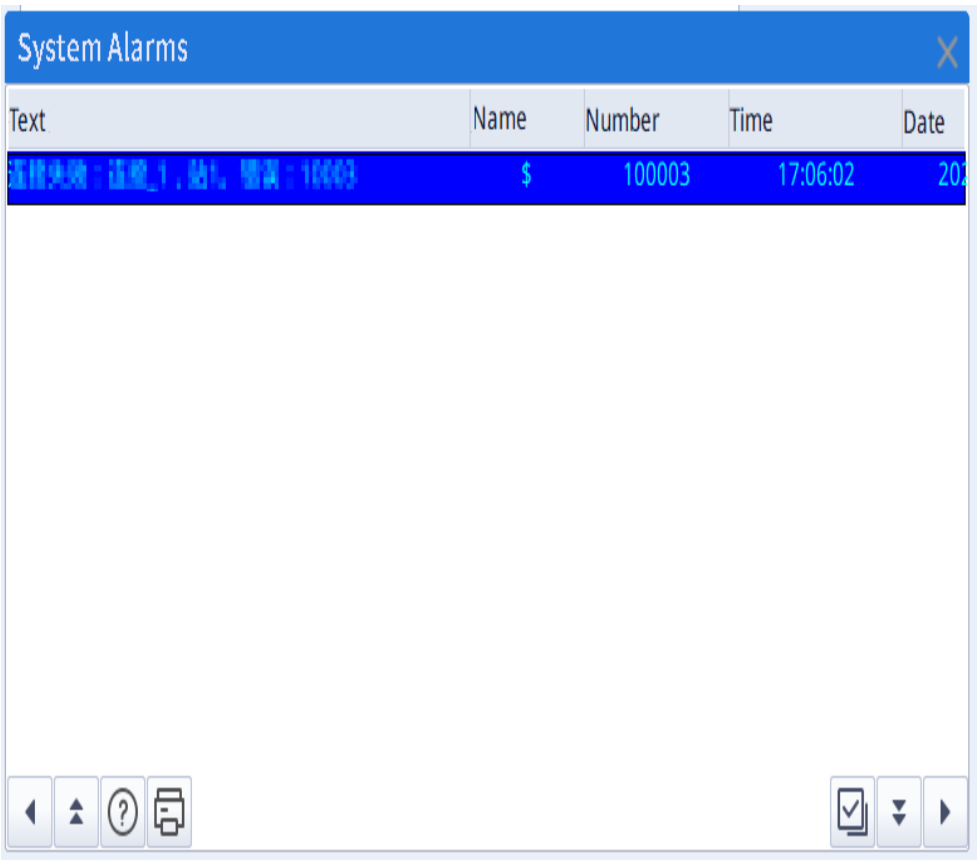
Name	Description
Beep for clicked	When you check it, the buzzer will continue to sound upon an alarm, prompting you of the fault. By default, the option is not selected.
Cursor Visible	When you check it, the runtime displays the cursor. Otherwise, the cursor is not displayed.
Draw Focus	When you check it, a dotted border focus is drawn in case of a focus on the control at the runtime. Otherwise, no dotted border focus is drawn.
Display zero when connection is off	Upon disconnection, the external tag configured in the numeric IO field is displayed as 0. When this option is unchecked, the default display is #####.
Enable preRead	When you set it to "PicTagsPreRead", tag data is read before screen display. When you set it to "AllTagPreRead", tag data is displayed and read properly.
Show tooltips when tag has no limit	When you check it, the maximum and minimum values are displayed on the numeric keypad. Otherwise, the values are not displayed.
Show DownloadPage when mount SD/UDisk Device	When you check it, the download page will automatically pop up if you insert a USB drive or an SD card. Otherwise, the page will not display. Note

	When you remove the USB drive, it is recommended to run Unmount to complete uninstallation. Otherwise, the USB drive turns to the read-only state or the files in the USB drive are lost.
Adaptive Resolution(only for PC/IPC HMI)	When you check it, you can enable adaptive resolution for IT7PC, AP701, and AP70X.
Enable Script var block	When you check it, the script reads and writes the communication tag to block the operation, and continues execution upon reply value reception or timeout. Otherwise, the operation will not be blocked.
Enable close button shown in red	When you check it, the off button on the pop-up screen is red. Otherwise, the button is normal.
Skip Enter Control Panel	When you check it, the HMI does not prompt to press and hold to enter the control panel upon power-on. Otherwise, you will not be prompted.
Forbid Right Button Run on Windows	When you check it, right-click is unavailable during simulation on Windows. Otherwise, right-click is available.
Password is required for Recovery	When you check it with the download password set, you need to enter the download password during factory reset on the control panel page. Otherwise, you do not need to enter the password.
Cancel record file verification	• Checked: After you modify data records, alarm records, and group records and the runtime takes effect, the original database file hmi_log.rdb will not be deleted. • Unchecked: After you modify data records, alarm records, and group records and the runtime takes effect, the original database file hmi_log.rdb will be deleted (the saved data records and alarm records will also be deleted), and the hmi_log.rdb file will be regenerated.
Automatically release the screen memory when the memory usage is high	When you check it, the screen memory will be automatically released upon a high memory usage.
Enable Show tooltips when IO input exceeds limit	When you check it, a prompt window will pop up if the numeric IO field input exceeds the limit.
Crop Thumbnail	When you check it, the project downloaded to the board will be displayed as a crop thumbnail.
Original image backup	When "Crop Thumbnail" and this option are checked, the project downloaded to the board will be displayed in original format. If this option is unchecked, it will be displayed as a crop thumbnail.

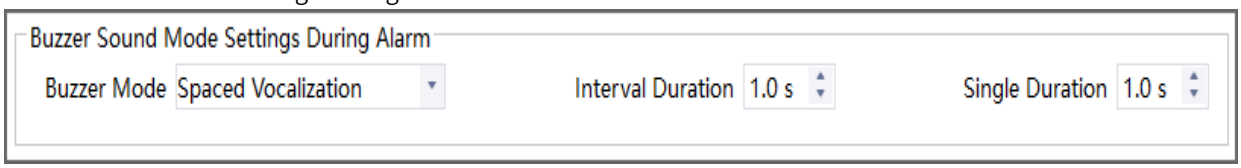
Alarm Settings



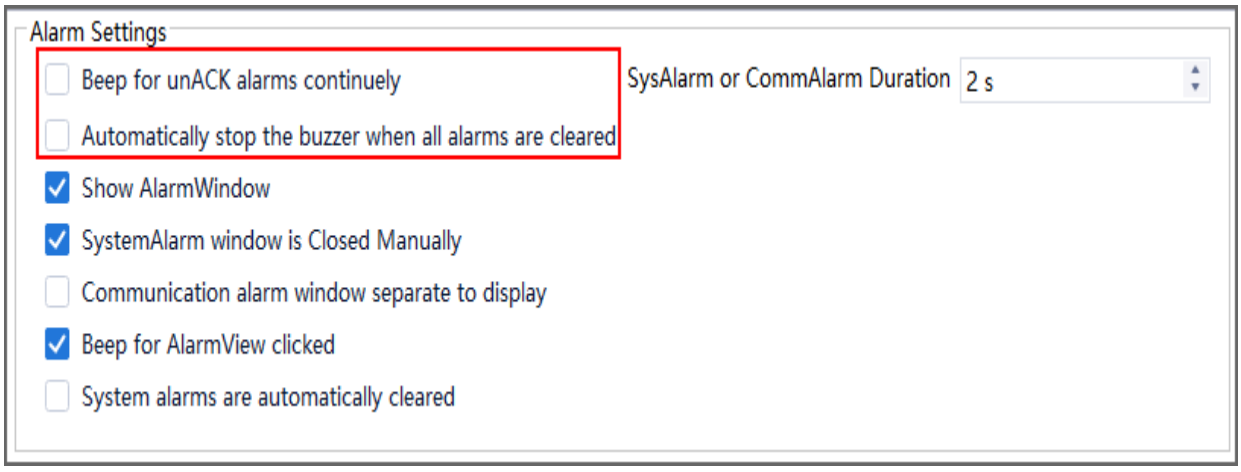
Name	Description
Beep for unACK alarms continuely	When you check it, the buzzer will continue to sound upon an alarm, prompting you of the fault. By default, this option is not selected.
Automatically stop the buzzer when all alarms are cleared	When you check it, the beep will automatically stop if all alarms are cleared. Otherwise, whether the beep will stop is not related to alarm resetting or clearing.
Show AlarmWindow	When you check it, the system alarm window will automatically pop up upon a system alarm. Otherwise, the window will not be displayed. By default, this option is selected.
SystemAlarm window is Closed Manually	When you check it, you need to manually close the system alarm window that pops up. Otherwise, the window will be automatically closed based on the system alarm display duration. By default, this option is not selected.
Communication alarm window separate to display	When you check it, a communication alarm window will be separated upon a communication alarm.
Beep for AlarmView clicked	Beep when tapping alarm view on the touchscreen.
SysAlarm or CommAlarm Duration	It is valid when "SystemAlarm window is Closed Manually" is not checked. It indicates the display duration of the alarm window before the window automatically closes. The

	default value is "2 s". 
System alarms are automatically cleared	When you check it, the system alarms, alarm pop-up window, and alarm bar are automatically cleared upon successful connection after connection failure alarm is reported. Real-time alarms on the alarm view need to be manually confirmed and cleared. By default, this option is not selected.

Buzzer Sound Mode Settings During Alarm



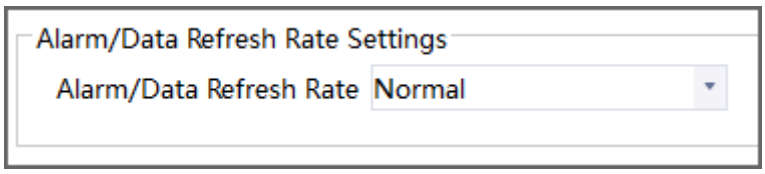
This item is enabled when either "Beep for unACK alarms continuely" or "Automatically stop the buzzer when all alarms are cleared" is checked.



Buzzer Mode: "Spaced Vocalization" and "Continuous Vocalization" are supported.
Interval Duration: This item is enabled when the buzzer mode is in "Spaced Vocalization" mode, with the setting range of 0.5s to 30s.

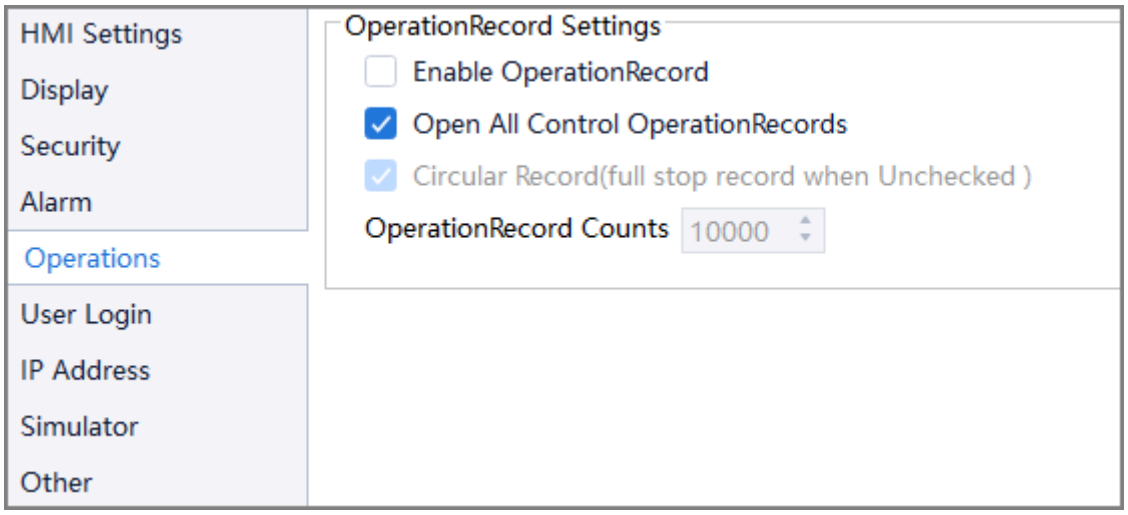
Single Duration: This item is enabled when the buzzer mode is in "Spaced Vocalization" mode, with the setting range of 0.5s to 30s.

Alarm/Data Refresh Rate Settings



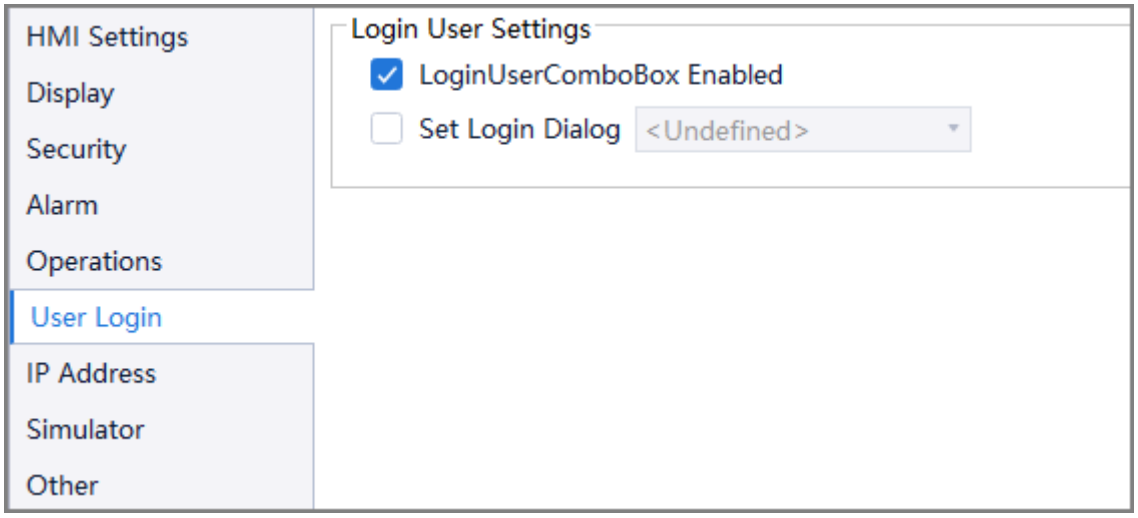
The options are "Slow", "Normal", and "Fast". The default value is "Normal". When "Alarm/Data Refresh Rate" is set to "Fast", the project running speed will be affected and the project may be blocked.

OperationRecord Settings



Name	Description
Enable OperationRecord	When you check it, the operation record feature is enabled. By default, this option is not selected. Otherwise, the operation record feature is invalid.
Open All Control OperationRecords	When you check it, all control operation records are activated. Example: If the operation record feature of the bit button is disabled, and "Open All Control OperationRecords" is checked, the operation record feature of the bit button will be reactivated.
Circular Record(full stop record when Unchecked)	When you check it and the number of records reaches the set number, recording will be circular and earlier records will be cleared. Otherwise, when the number of records reaches the set number, recording stops.
OperationRecord Counts	It indicates the total number of operation records, which is valid only when "Circular Record(full stop record when Unchecked)" is checked.

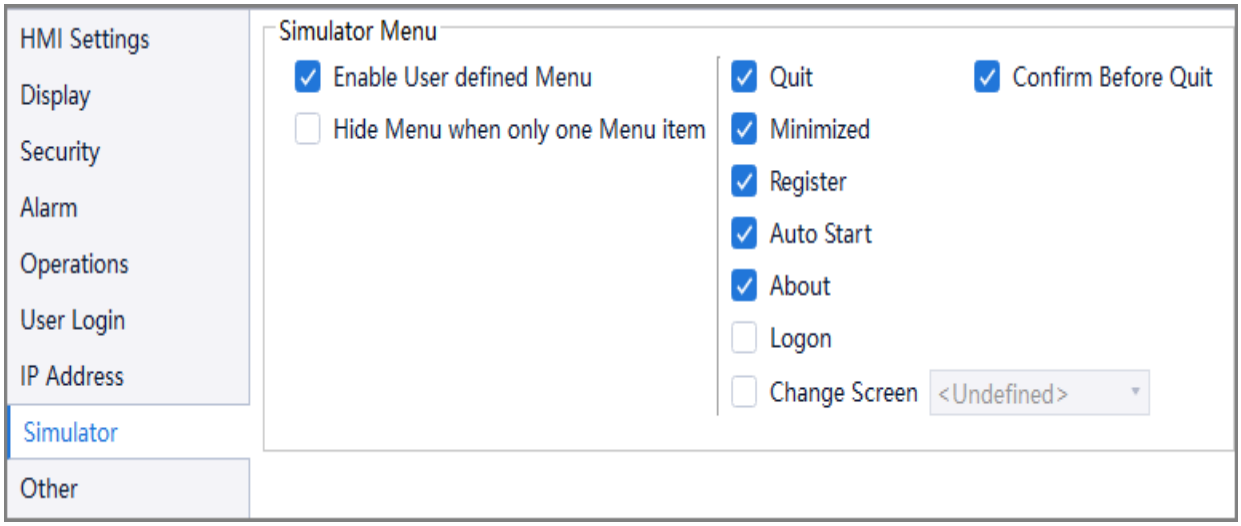
Login User Settings



Name	Description
LoginUserComboBox Enabled	When you check it, you can switch and select users from the drop-down list for login. Otherwise, you can confirm the login user based on the input password.
Set Login Dialog	When you check it, you can customize a pop-up screen as the login window. Otherwise, the default window will be used.

Simulator Menu

The "Simulator Menu" section is used for customization.



Name	Description
Enable User defined Menu	When you check it, customization of the simulator menu is enabled. By default, this option is not selected.
Hide Menu when only one Menu item	When you check it and "Enable User defined Menu" and select only one menu item, the menu will be directly executed without display. By default, this option is not selected.
Quit	Exits the simulator. By default, this option is selected.
Minimized	Minimizes the simulator to the task bar. By default, this option is selected.

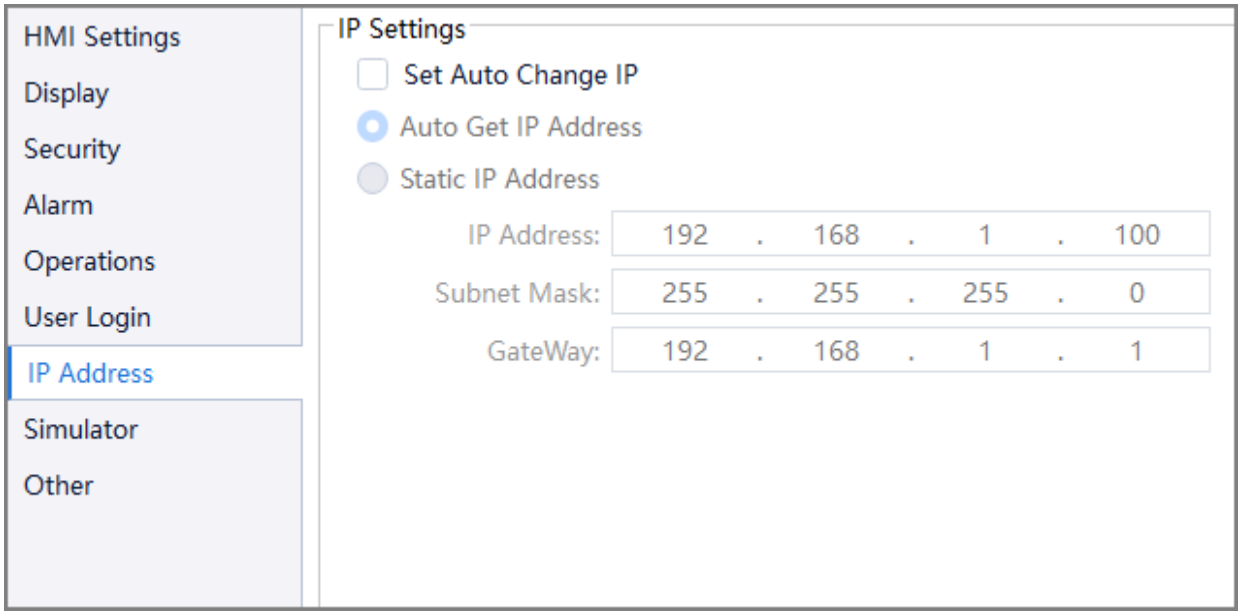
Register	Pops up the register dialog box only for online simulation. By default, this option is selected.
Auto Start	Automatically starts the simulator upon power-on only for online simulation. By default, this option is selected.
About	Software information. By default, this option is selected.
Logon	Pops up the login dialog box. By default, this option is not selected.
Change Screen	Switches to a specified valid screen. By default, this option is not selected.
Confirm Before Quit	Confirms whether to exit the simulator. By default, this option is selected.

Description

When "Enable User defined Menu" is not selected, "Quit", "Minimized", "Register", "Auto Start", and "About" are not confirmed upon exit. When it is selected, they need to be confirmed.

When "Change Screen" is set to an invalid value, such as <Undefined>, a compilation alarm will be reported.
When "Enable User defined Menu" and menu options are not checked, right-click is unavailable.

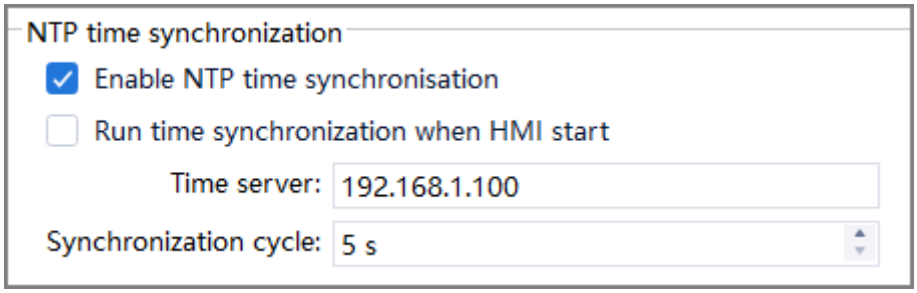
IP Settings



Name	Description
Set Auto Change IP	Enables IP setting for the project. By default, this option is not selected.
Auto Get IP Address	The HMI automatically obtains the IP address. When IP setting is enabled, this option is checked by default.
Static IP Address	When you check it, the HMI uses the set IP address. After the project is downloaded to the HMI screen, the IP address of the HMI screen changes to the set static IP address.
IP Address	Sets the HMI IP address.
Subnet Mask	Sets the subnet mask of the HMI.

Gateway	Sets the gateway of the HMI.

NTP time synchronization



Name	Description
Enable NTP time synchronisation	When you check it, NTP time synchronization is enabled.
Run time synchronization when HMI start	Synchronizes time when the HMI is powered on.
Time server	Sets the address of the NTP time server.
Synchronization cycle	Sets the time sync period, ranging from 5 to 86400.

21 Data Service

21.1 MQTT

21.1.1 MQTTServer

Introduction

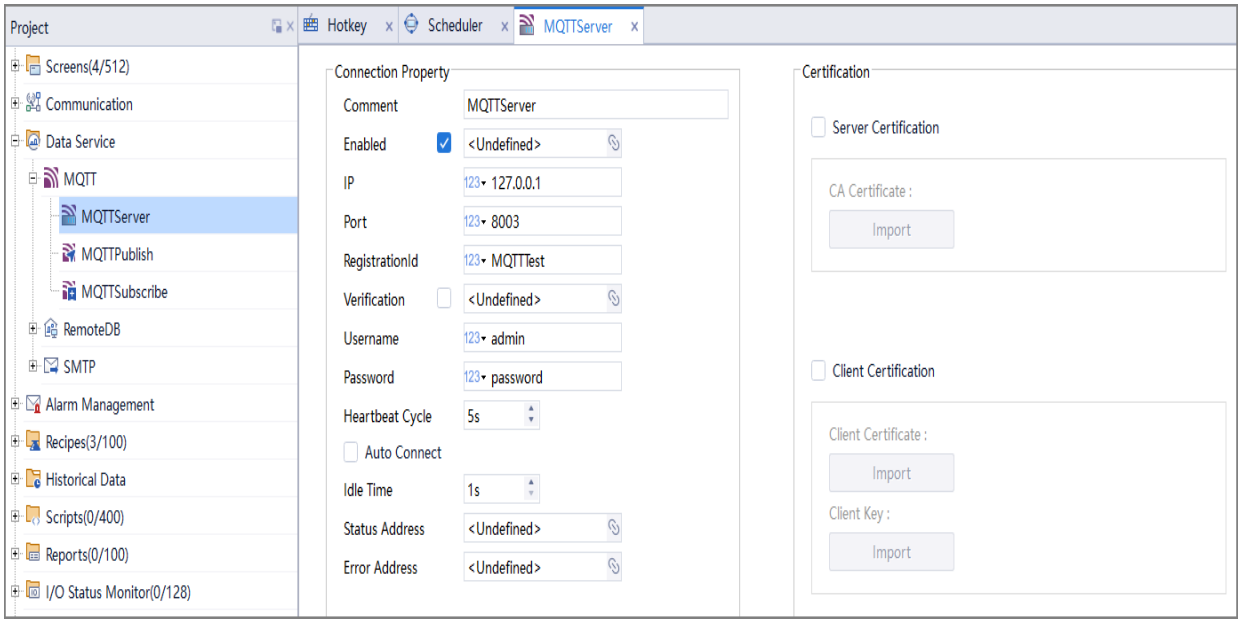
Message Queuing Telemetry Transport (MQTT) is a lightweight, publish-subscribe message protocol published by IBM. MQTT can be interpreted as a low overhead instant communication protocol with low bandwidth occupation. It can provide real-time reliable message service for connecting remote devices with minimal code footprint and network bandwidth. It is suitable for remote devices with low hardware performance and bad network environment. Therefore, the MQTT protocol has a wide range of applications in Internet of Things (IoT), small device applications, and mobile applications. At present, the HMI is only used as a client, which can subscribe to or publish JSON data. The HMI can be both a subscriber and a publisher. The topic, which is the key for MQTT, is a tag that connects to an application message and matches a subscription on the server. The server sends messages to each client that subscribes to the matching tag.

Property

The following figure shows the basic MQTT frame:

When a device sends data to a topic named "Inovance", all devices that have subscribed to the "Inovance" topic can receive information from the "Inovance" topic.

When the HMI is used as a client connecting to the specified MQTT server, the settings are as follows:



1. Description of settings

Item	Description	Limits	Supported Data Types and Limits ("/" indicates associated address not supported)
ON	Manage whether to enable the server connection	\	\

	property (Disabled by default).		
Comment	The description of the configuration	128 characters	\
Enabled	Enables/disables MQTT protocol connection.	\	Int16, UInt16, Int32, UInt32 0: Disable Non-0: Enable
IP	IP address of the MQTT server	IP address or domain name, up to 256 characters, automatically recognized	String
Port	The number of the MQTT server port	\	Int16, UInt16, Int32, UInt32
RegistrationId	The name of the HMI when it logs in to the server	Up to 256 characters	String
Verification	Enables logon verification	If you have enabled login verification on the server, you must also enable verification on the HMI; otherwise, the connection will fail.	Int16, UInt16, Int32, UInt32 0: Verification not required Non-0: Verification required
Username	The username used to log in to the server	Up to 256 characters	String
Password	The password used to log in to the server	Up to 256 characters	String
Heartbeat Cycle	Sends a heartbeat message to the server regularly. If the server does not respond within one and a half heartbeat cycle, the connection is interrupted.	2s to 32767s	\

2. Connection configuration

Name	Description
Enabled	Enables/disables connecting the HMI to the MQTT server. You can select this option to enable the connection or associate the corresponding tag to enable the connection (see the connection property settings table for relevant configuration). Enabling by tag association takes priority over default enabling.
RegistrationId	The ID of the device connecting to the MQTT server. This ID must be unique, that is, different devices connecting to the same MQTT server must use different login IDs.
Verification	Enables verification of username and password for server login. Enable or disable verification based on the requirement of the server. Verification enabling by tag association takes priority over default verification enabling.

Auto Connect	When this option is selected, the device will try to reconnect the MQTT server based on the reconnection interval if the heartbeat cycle expires.
Certification	CA certification is enabled for the MQTT server. When configuring server connection, enable certification and import the MQTT server CA certificate and the client certificate. Note that if CA certification is enabled for the MQTT server, do not select "Certification".

3. Additional information

1) Support to associating tag address refers to support to binding tags.

2) The error messages are listed in the following table:

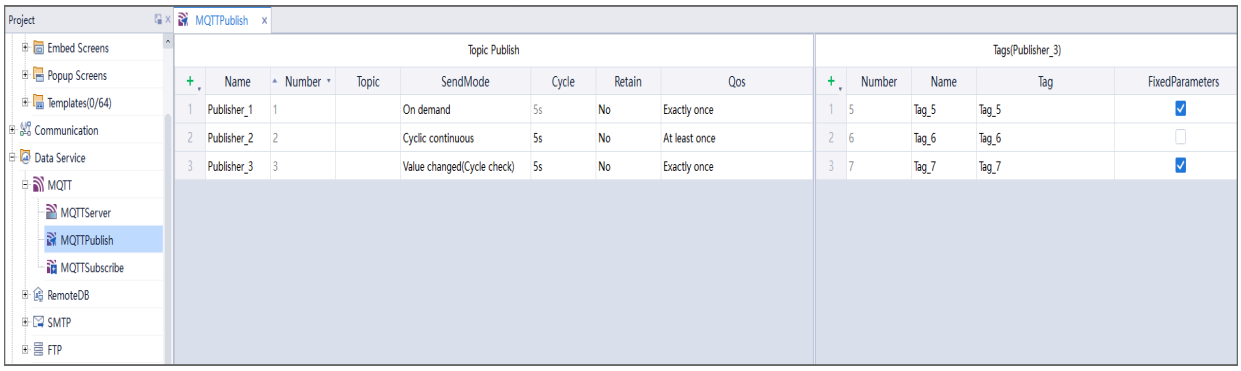
```
UnknownError = 0,
SocketConnectionRefusedError,
SocketRemoteHostClosedError,
SocketHostNotFoundError,
SocketAccessError,
SocketResourceError,
SocketTimeoutError,
SocketDatagramTooLargeError,
SocketNetworkError,
SocketAddressInUseError,
SocketAddressNotAvailableError,
SocketUnsupportedSocketOperationError,
SocketUnfinishedSocketOperationError,
SocketProxyAuthenticationRequiredError,
SocketSslHandshakeFailedError,
SocketProxyConnectionRefusedError,
SocketProxyConnectionClosedError,
SocketProxyConnectionTimeoutError,
SocketProxyNotFoundError,
SocketProxyProtocolError,
SocketOperationError,
SocketSslInternalError,
SocketSslInvalidUserDataError,
SocketTemporaryError
```

21.1.2 MQTTPublish

Introduction

As the MQTT topic publisher, the HMI assembles tags from a specified tag list into specific JSON data and publishes it to the MQTT server. Up to 255 publish items can be created, and up to 1024 tags can be added to the

tag list of each publish item, as shown in the figure below.



Feature

- Topic publishing attributes

Topic Publish

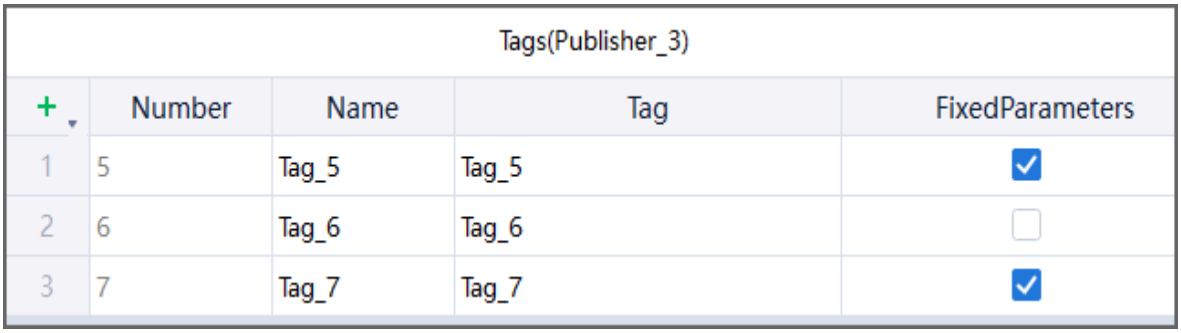
	Name	Number	Topic	SendMode	Cycle	Retain	Qos
1	Publisher_1	1		On demand	5s	No	Exactly once
2	Publisher_2	2		Cyclic continuous	5s	No	At least once
3	Publisher_3	3		Value changed(Cycle check)	5s	No	Exactly once

The topic publishing attributes are described in the following table:

Attribute	Description	Note
Name	The name of the topic subscription, which must be unique	Up to 128 characters
Topic	The topic of the message published to the server	Up to 512 characters
SendMode	The publishing mode of the topic	◦ On demand: The topic is published when the associated function "PblishTag" is triggered. ◦ Cyclic continuous: The topic is automatically published based on the publishing cycle. ◦ Value changed (Cycle check): a publishing action will be triggered when the tag value changes within the set time cycle. If the value changes multiple times within the cycle, only the latest value is published. The publishing applies to two types of objects: those with changed values in the current tags to be published, and all objects with the "FixedParameters" option checked. For the "FixedParameters" item, the publishing will be trigged whenever any tag value changes.
Cycle	The publishing cycle	Range: 1s to 32767s
Retain		\

	Sets whether to retain the message.	
Qos	The quality of the message published by MQTT	"At most once": Message delivery depends entirely on the underlying TCP/IP network. There is no definition of reply and retry in the protocol, and the message will either only arrive at the server once or not at all. "At least once": The message received by the server is acknowledged by the PUBACK message. If the communication link or sending device fails, or the acknowledgment message is not received within the specified time, the sender will resend the message with DUP bit set in the message header. "Exactly once": This is the highest level. Message loss and duplication are unacceptable, and there is additional overhead to use this level.

- Publishing tag attributes
  You can bind each publish item to multiple tag addresses. When a topic is published, tag values are obtained, assembled into specific JSON data, and published to the server. Up to 1024 tags can be added to each publish item. The configuration of the tag list is shown in the figure below.



The configuration attributes of the tag table are described in the table below:

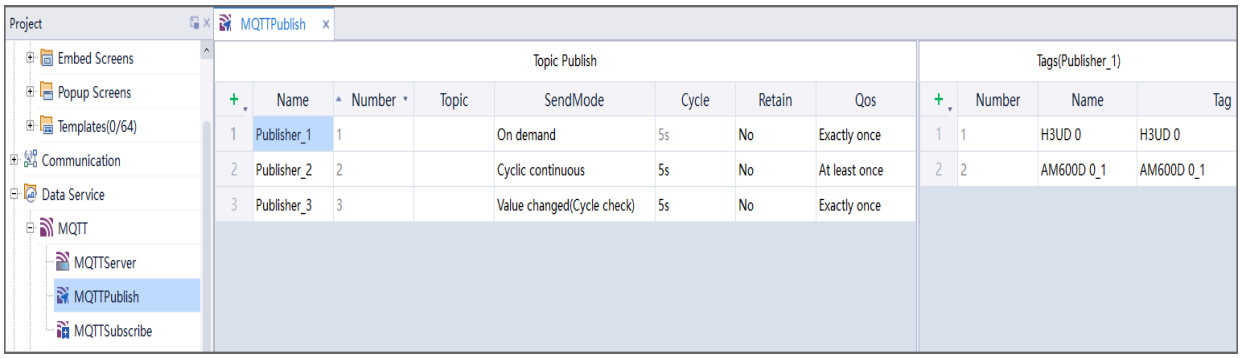
Properties	Description	Note
Name	The name used in JSON data format during publishing.	You can use a tag name. It will be automatically changed to the tag name when you select a tag. The length of the name is up to 128 characters. When the name contains a specific character ([), the system treats the tag with this character as array type and send it in a batched format. For example, the tags Publish1_[0] and Publish1_[1] in the above diagram are treated as array type and sent in a batched format.
Tag	The tag used in the JSON data format	-
FixedParameters	Fixed parameters are published whenever any tag value changes within the cycle.	In the "Value changed (Cycle check)" mode, there are two strategies for topic publishing to manage message delivery. ◦ Check "FixedParameters" ▪ The checked tags are published whenever any tag value changes within the cycle.

Properties	Description	Note
		▪ When the tag name contains the specific character ([), if one tag has this option checked, the entire group is considered as fixed parameters. For example, if Publish1_[1] is checked in the figure above, the system will consider the entire Publish1 as a fixed parameter. When the publish condition is met, it will package and publish the tag values of Publish1_[0] and Publish1_[1]. ◦ Uncheck "Fixed Parameters" only tags with changed values will be published.

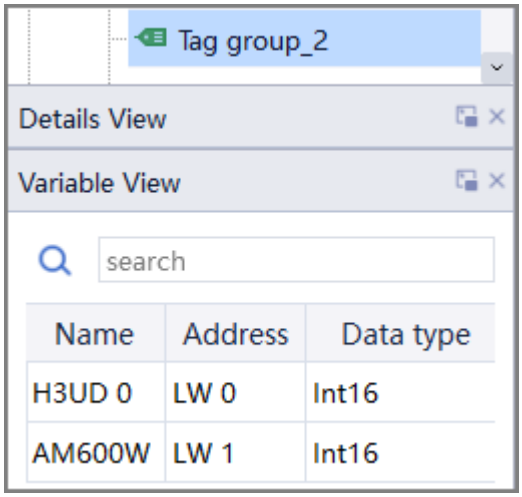
Operations on the tag list

You can drag tags from a tag group to publish the tags to the tag list. Procedure:

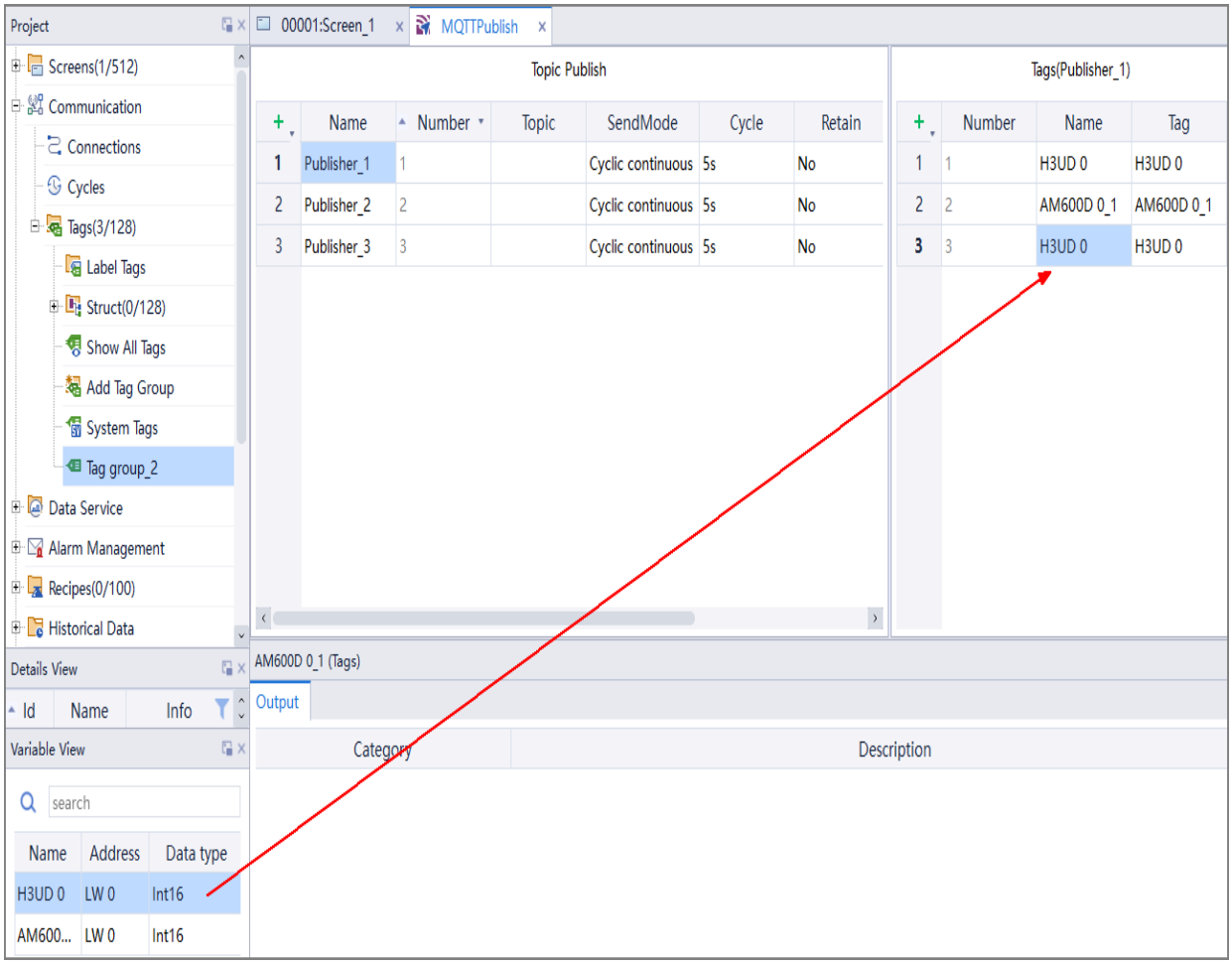
1. Access "MQTTPublish" and create publish items.



2. Choose "Communication" > "Tags" and click a tag group to display "Variable View", as shown in the figure below.



3. Hold down a tag in "Variable View", drag it to the publish item tag list, and release it. The item automatically named after the tag name is added to the publish item tag list, as shown in the figure below.



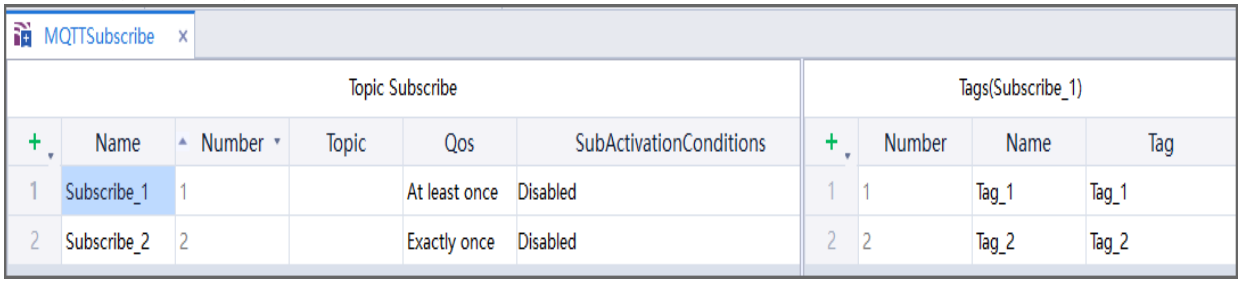
CAUTION

The publish item name can be changed.

21.1.3 MQTTSubscribe

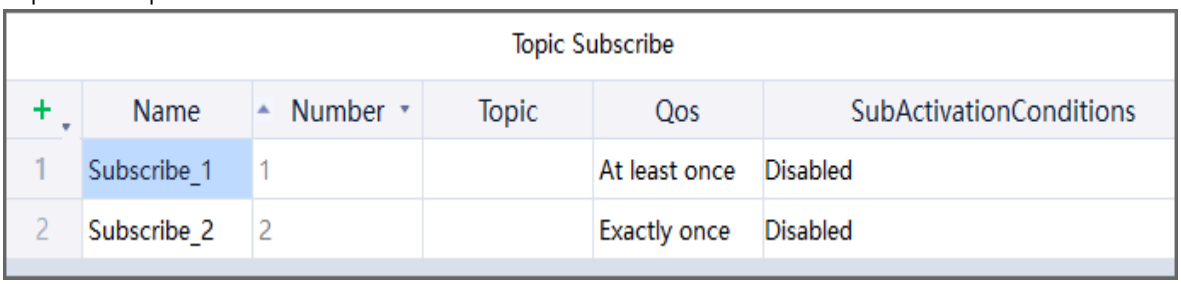
Introduction

The receiver receives the data published by the publisher and parses the data to the specified address. If the name in the data does not exist in the subscribed tag, the data is discarded. As shown in the following figure, you can create up to 256 new topic subscriptions. You can edit the properties in a table, with topic subscripts on the left and tags on the right.



Feature

- Topic subscription attributes

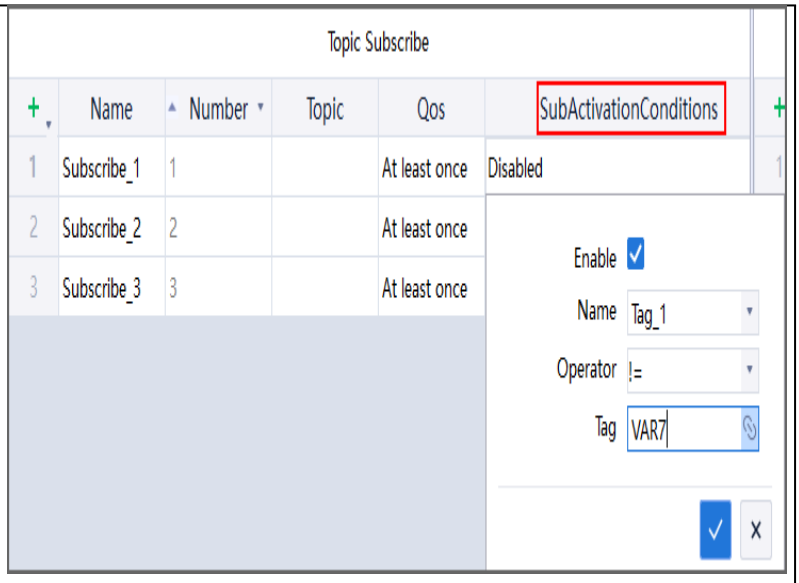


Topic Subscribe

	Name	Number	Topic	Qos	SubActivationConditions
1	Subscribe_1	1		At least once	Disabled
2	Subscribe_2	2		Exactly once	Disabled

The topic subscription attributes are described in the following table:

Attribute	Description	Note
Name	The name of the topic subscription, which must be unique	Up to 128 characters
Topic	The topic of the message subscribed from the server	Up to 512 characters
Qos	The quality of the message published by MQTT	"At most once": Message delivery depends entirely on the underlying TCP/IP network. There is no definition of reply and retry in the protocol, and the message will either only arrive at the server once or not at all. "At least once": The message received by the server is acknowledged by the PUBACK message. If the communication link or sending device fails, or the acknowledgment message is not received within the specified time, the sender will resend the message with DUP bit set in the message header. "Exactly once": This is the highest level. Message loss and duplication are unacceptable, and there is additional overhead to use this level.
SubActivationConditions	The prerequisites for the subscriber to receive messages from publisher	The "SubActivationConditions" consist of the "Name", "Operator", and "Tag" to establish a numerical comparison relationship. Here, although the "Name" and "Tag" are associated with different specific tags, their data types must be identical to ensure valid comparison. For example, both types are REAL.

		 The publisher periodically sends topic messages. When the "Enable" option is checked, messages will be forwarded to the subscriber only when the comparison result in the message meets the preset conditions, and the values in the subscriber's tag list will be correctly updated with the latest data. For example, if the values of "Temperature" and "VAR7" (both of Int16 type) are not equal, the subscriber will receive a message from the publisher. If the subscription condition is not enabled, the subscriber will immediately receive messages published by the publisher without waiting for condition fulfillment.

- Subscription tag attributes



After receiving subscribed topic messages from the MQTT publisher, the HMI parses the data and updates the values in the tag list according to the configured JSON template format. You can add up to 1024 tags to one tag list. The configuration page is as follows:

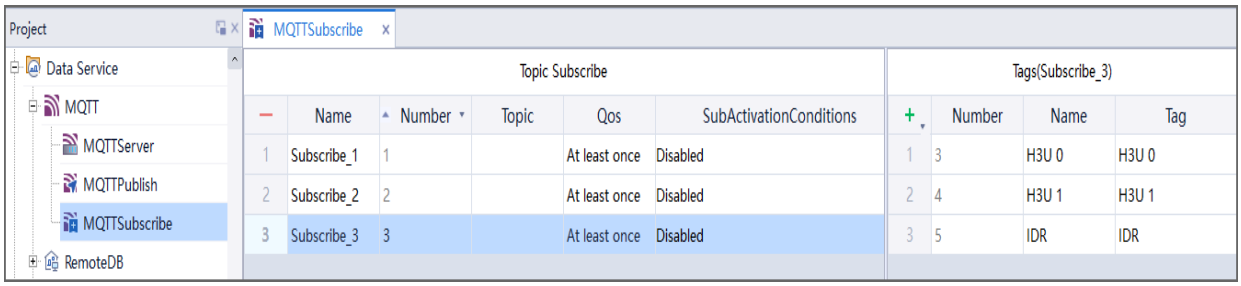
Attribute	Description	Note
Name	The name used in JSON data format during publishing.	You can use a tag name. It will be automatically changed to the tag name when you select a tag. The content must be consistent with that of the publisher. The length of the name is up to 128 characters.
Tag	The tag used in the JSON data format	The associated tags must be consistent with that of the publisher.

Operations on the subscription tag list

You can drag and drop tags to the subscription tag list. The subscription tag list can be operated in the same way as the publishing tag list.

Importing and exporting subscribed items

1. You can import and export MQTT subscribed topics in the same way as exporting MQTT published topics. The following figure shows the exporting result of MQTT subscribed topics:



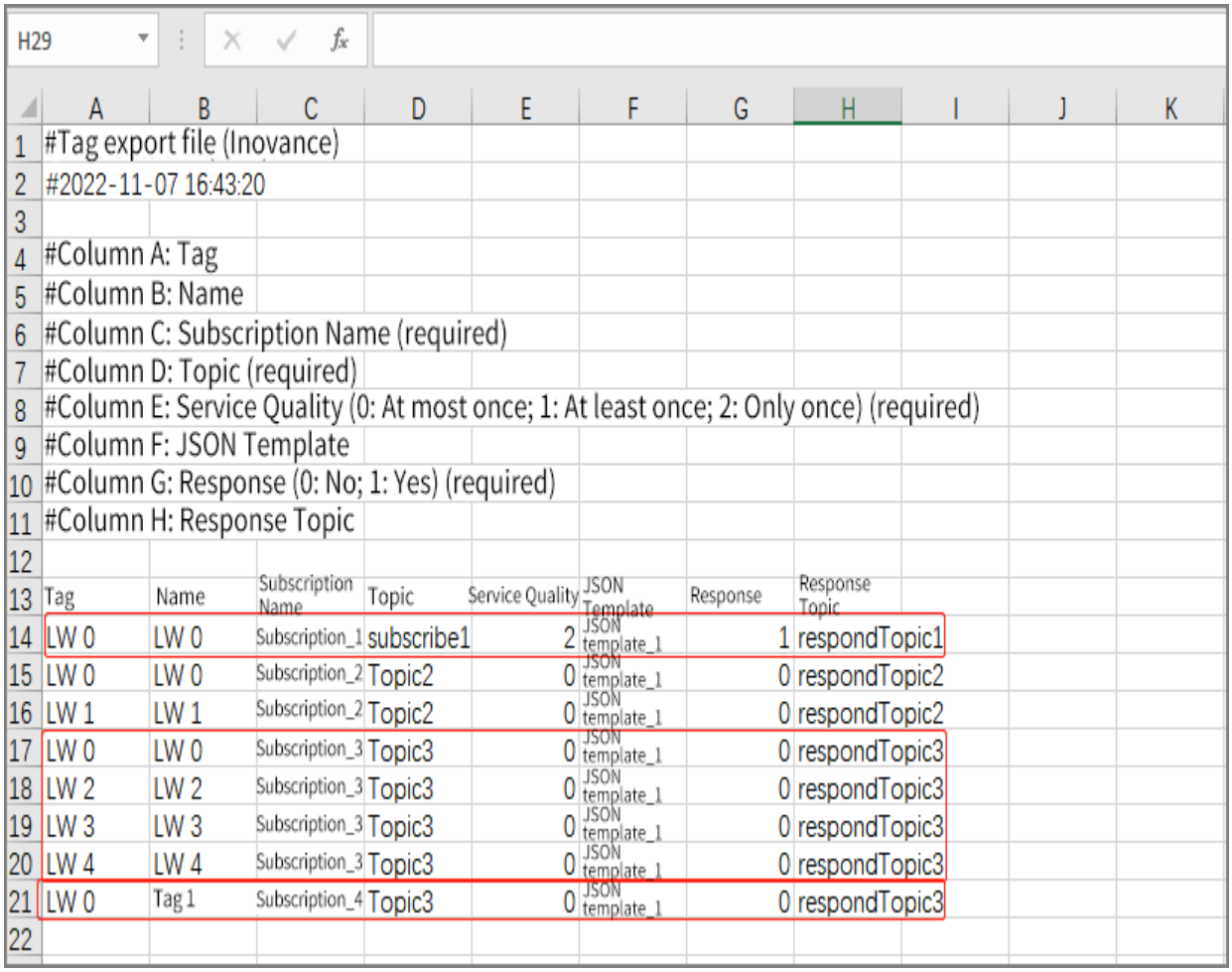
2. Export the result, as shown in the following figure.

3. Modify the MQTT subscription properties, and import the configuration:

a. Add a Subscription_4 whose property is consistent with that of Subscription_3. Add a tag LW 0 and name it as Tag 1.

b. Add a tag LW 4 to Subscription_3, name the tag as LW 4, and delete LW 1.

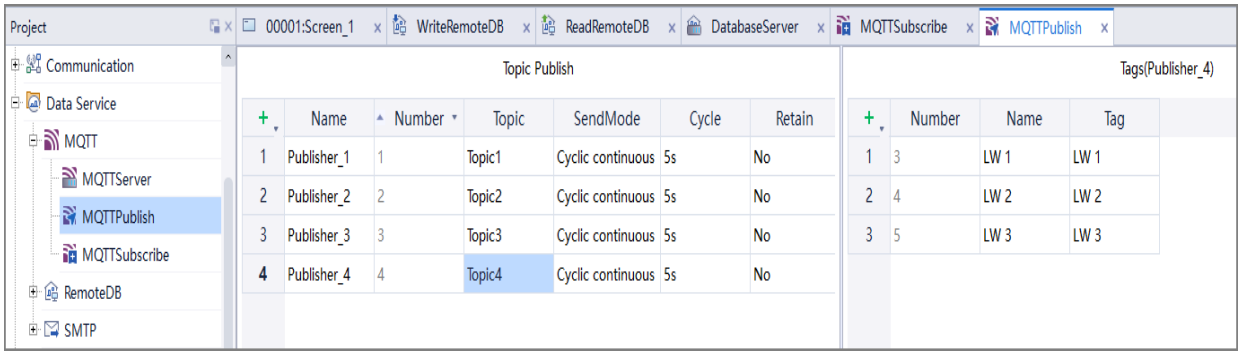
c. Modify the topic of Subscription_1 to subscribe1, set "Service Quality" to 2, and enable response.



H29

	A	B	C	D	E	F	G	H
1	#Tag export file (Inovance)							
2	#2022-11-07 16:43:20							
3								
4	#Column A: Tag							
5	#Column B: Name							
6	#Column C: Subscription Name (required)							
7	#Column D: Topic (required)							
8	#Column E: Service Quality (0: At most once; 1: At least once; 2: Only once) (required)							
9	#Column F: JSON Template							
10	#Column G: Response (0: No; 1: Yes) (required)							
11	#Column H: Response Topic							
12								
13	Tag	Name	Subscription Name	Topic	Service Quality	JSON Template	Response	Response Topic
14	LW 0	LW 0	Subscription_1	subscribe1	2	JSON template_1	1	respondTopic1
15	LW 0	LW 0	Subscription_2	Topic2	0	JSON template_1	0	respondTopic2
16	LW 1	LW 1	Subscription_2	Topic2	0	JSON template_1	0	respondTopic2
17	LW 0	LW 0	Subscription_3	Topic3	0	JSON template_1	0	respondTopic3
18	LW 2	LW 2	Subscription_3	Topic3	0	JSON template_1	0	respondTopic3
19	LW 3	LW 3	Subscription_3	Topic3	0	JSON template_1	0	respondTopic3
20	LW 4	LW 4	Subscription_3	Topic3	0	JSON template_1	0	respondTopic3
21	LW 0	Tag 1	Subscription_4	Topic3	0	JSON template_1	0	respondTopic3
22								

4. Import the result, as shown in the following figure.



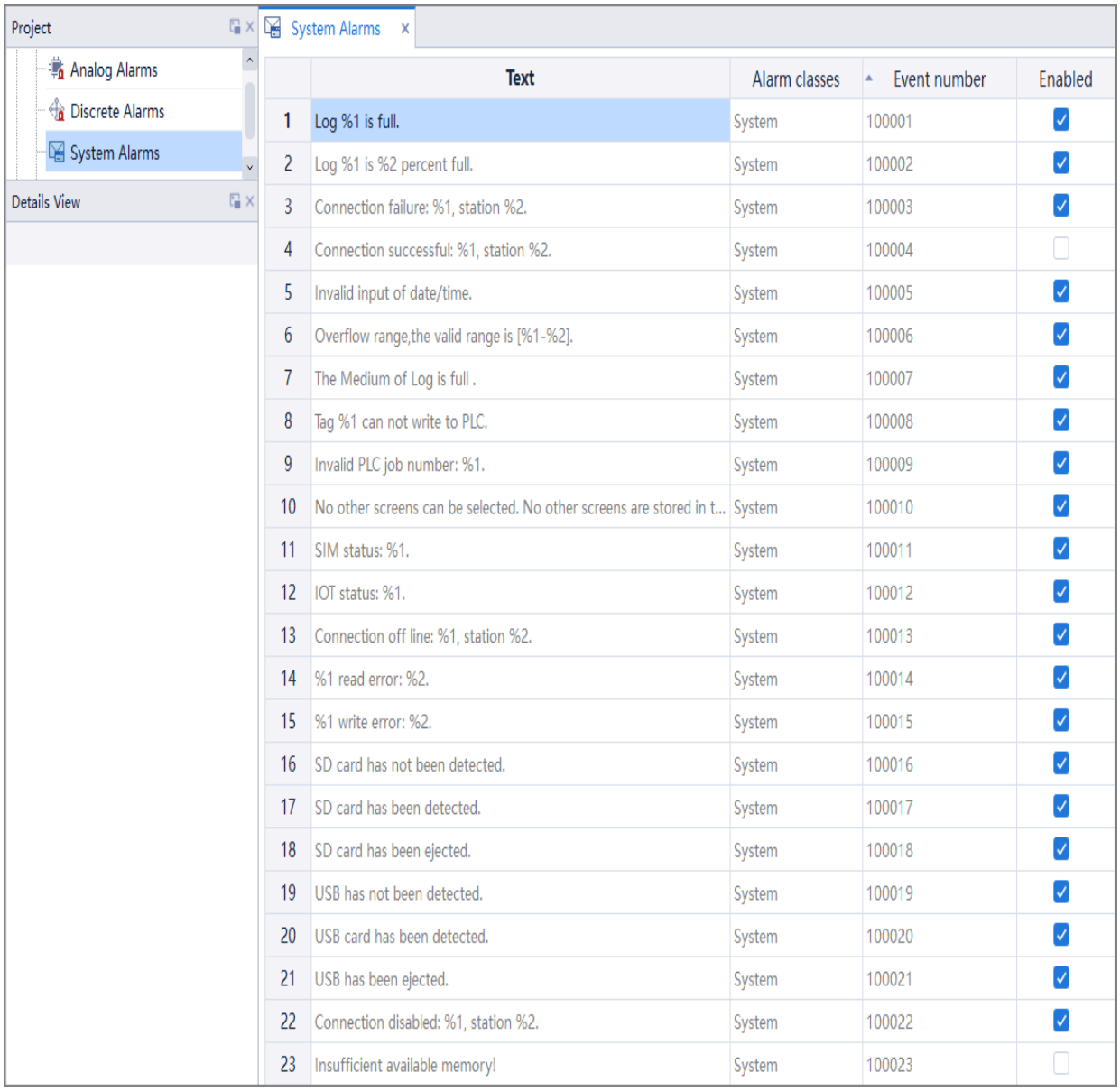
Log uploading

System alarms indicate operation statuses of the HMI device and PLC. System alarm messages consist of an event number and alarm text, with the alarm text accurately describing the alarm causes. The following figure lists HMI system alarms:

	Text	Alarm classes	Event number	Enabled
1	Log %1 is full.	System	100001	☑
2	Log %1 is %2 percent full.	System	100002	☑
3	Connection failure: %1, station %2.	System	100003	☑
4	Connection successful: %1, station %2.	System	100004	☐
5	Invalid input of date/time.	System	100005	☑
6	Overflow range,the valid range is [%1-%2].	System	100006	☑
7	The Medium of Log is full .	System	100007	☑
8	Tag %1 can not write to PLC.	System	100008	☑
9	Invalid PLC job number: %1.	System	100009	☑
10	No other screens can be selected. No other screens are stored in t...	System	100010	☑
11	SIM status: %1.	System	100011	☑
12	IOT status: %1.	System	100012	☑
13	Connection off line: %1, station %2.	System	100013	☑
14	%1 read error: %2.	System	100014	☑
15	%1 write error: %2.	System	100015	☑
16	SD card has not been detected.	System	100016	☑
17	SD card has been detected.	System	100017	☑
18	SD card has been ejected.	System	100018	☑
19	USB has not been detected.	System	100019	☑
20	USB card has been detected.	System	100020	☑
21	USB has been ejected.	System	100021	☑
22	Connection disabled: %1, station %2.	System	100022	☑
23	Insufficient available memory!	System	100023	☐

1. Configure system alarms

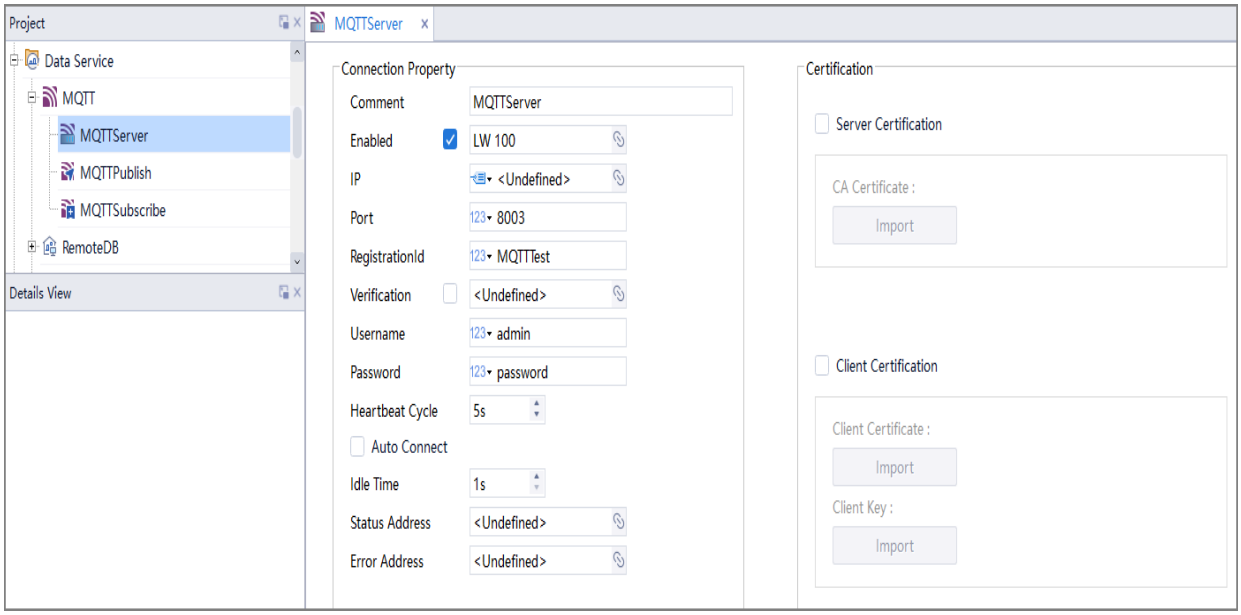
Choose "Alarm Management" > "System Alarms" to configure the system alarms. You can select device alarm items to enable the corresponding alarms. The configuration page is as follows:



	Text	Alarm classes	Event number	Enabled
1	Log %1 is full.	System	100001	☑
2	Log %1 is %2 percent full.	System	100002	☑
3	Connection failure: %1, station %2.	System	100003	☑
4	Connection successful: %1, station %2.	System	100004	☐
5	Invalid input of date/time.	System	100005	☑
6	Overflow range,the valid range is [%1-%2].	System	100006	☑
7	The Medium of Log is full .	System	100007	☑
8	Tag %1 can not write to PLC.	System	100008	☑
9	Invalid PLC job number: %1.	System	100009	☑
10	No other screens can be selected. No other screens are stored in t...	System	100010	☑
11	SIM status: %1.	System	100011	☑
12	IOT status: %1.	System	100012	☑
13	Connection off line: %1, station %2.	System	100013	☑
14	%1 read error: %2.	System	100014	☑
15	%1 write error: %2.	System	100015	☑
16	SD card has not been detected.	System	100016	☑
17	SD card has been detected.	System	100017	☑
18	SD card has been ejected.	System	100018	☑
19	USB has not been detected.	System	100019	☑
20	USB card has been detected.	System	100020	☑
21	USB has been ejected.	System	100021	☑
22	Connection disabled: %1, station %2.	System	100022	☑
23	Insufficient available memory!	System	100023	☐

2. Upload the log

When a system alarm occurs, the system alarm log is recorded locally. The configuration page is as follows:



3. The following table lists the formats:

Attribute	Description	Format

System alarm publishing	Publish the system alarm log	{
		"log": {
		"logCode": 100003,
		"logMsg": "Connection failure: connect_1, station 1.",
		"time": "2022-11-07 10:10:29",
		"type": 1
		},
		"reserveId": 1,
		"timeZone": "UTC+0800" }

System alarm log subscription	Request for system alarm subscription	{ "reserveId": 1, "url": "http://hostname.net/" }
Publishing/subscribing to a topic	System alarm topic	\

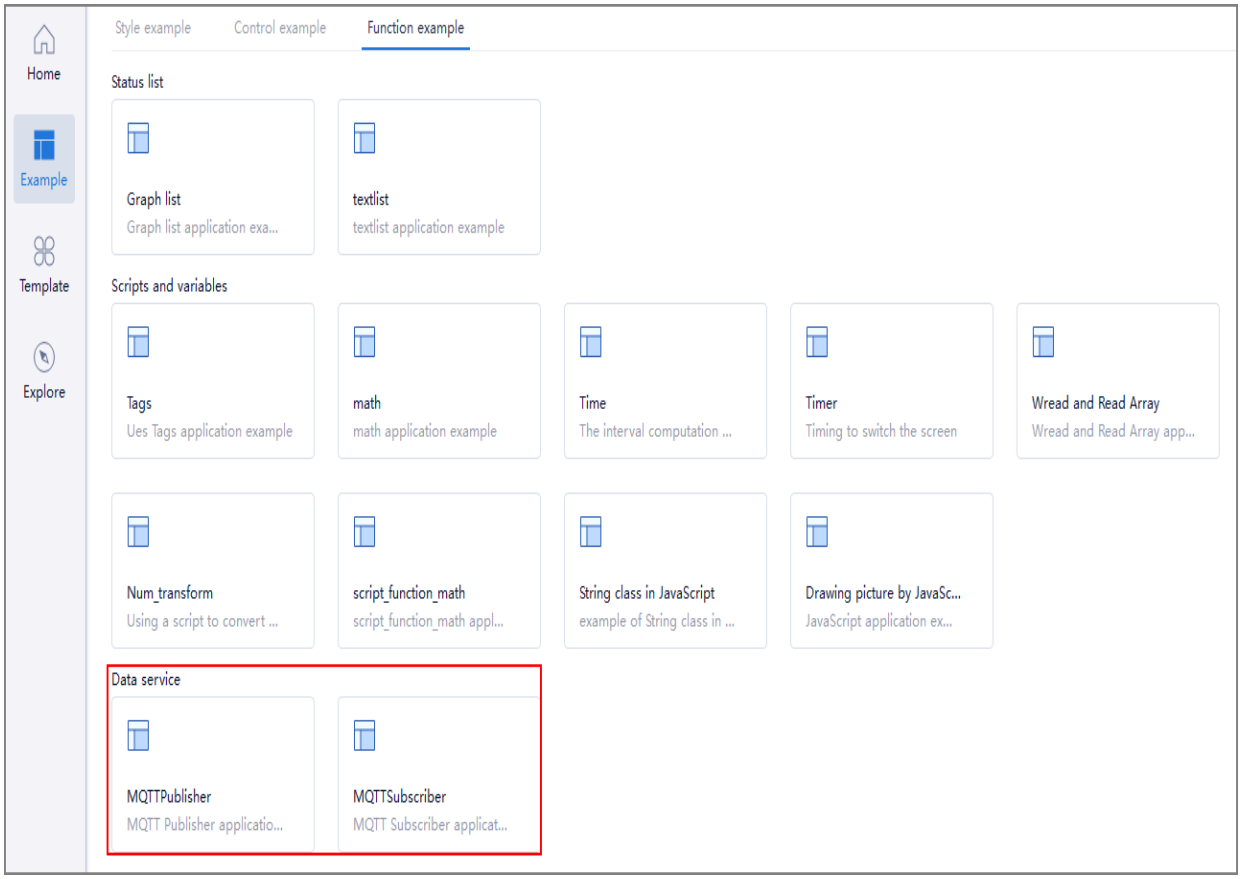
CAUTION

Only system alarm logs are published.

Device log publishing example:



4. For details about project creation, see the example projects "MQTTPublisher" and "MQTTSubscriber" that come with InoTouchPad:



21.1.4 Topic Wildcards

Introduction

To establish a connection, especially between a server and multiple clients, it is necessary to subscribe to topics of all devices. At this time, the MQTT wildcard feature is required. A subscription may contain special characters and allows to define multiple topics at a time. The topic level separator is used to introduce hierarchy for a topic. Multi-level wildcards and single-level wildcards can be used, but they cannot be used for publisher messages.

Usage

1. Topic level separators "/" are used to divide a topic tree into levels and provide a hierarchical structure for the topic space. In this way, levels of received messages can be determined based on separators in wildcards.

2. Multi-level wildcards "#" are used to match multi-level wildcards in a topic. For example, if a client subscribes to "finance/stock/ibm/#", it can receive messages on the following topics:

   finance/stock/ibm
   finance/stock/ibm/closingprice
   finance/stock/ibm/closingprice
   finance/stock/ibm/currentprice
   A wildcard "#" can represent the topic of the current level or next level, so "finance/#" can also match a separate level "finance". Ensure that a multi-level wildcard must be the last character in a topic tree. For example, "#" and "finance/#" are valid, but "finance/#/closingprice" and "finance#" are invalid.

3. Single-level wildcards "+" are used to match one level of a topic. For example, "finance/stock/+" can match "finance/stock/ibm" and "finance/stock/xyz" but does not match "finance/stock/ibm/closingprice" and "finance/stock". A single-level wildcard can be used with a multi-level wildcard, but it must be used

after a topic level separator, unless it only specifies itself. Therefore, "+", "finance/+", and "finance/+/ibm" are all valid, while "finance+" is invalid.

4. Ensure the following topic syntax items:

   a. A topic must contain at least one character.

   b. Topic names are case-sensitive. For example, ACCOUNTS and Accounts are two different topics.

   c. Topic names can contain spaces. For example, "Accounts payable" is a valid topic.

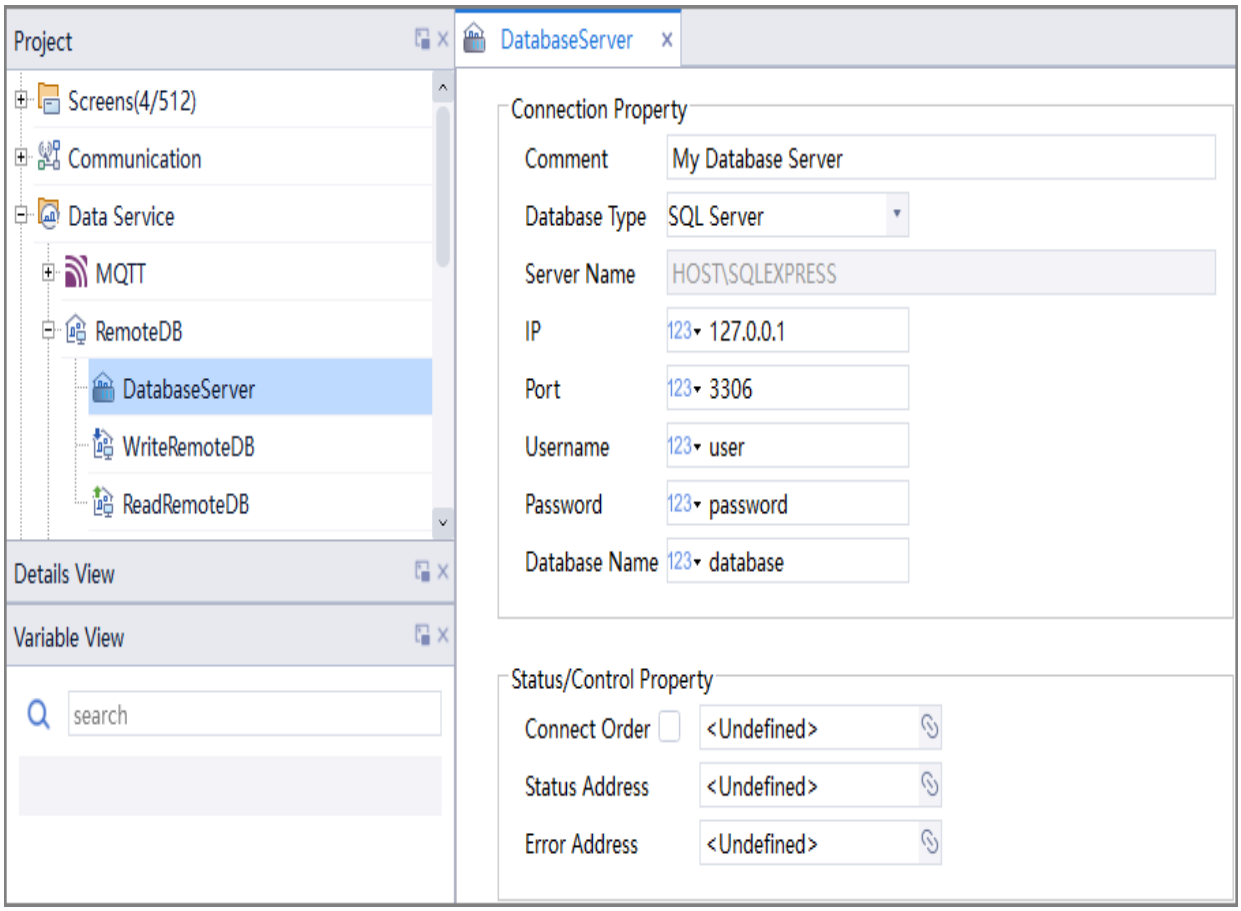
   d. Prefixing a topic with "/" will create a different topic. For example, "/finance" and "finance" are different topics. By the same token, "/finance" can match "+/+" and "/+".

   e. A topic name cannot contain characters such as null(Unicode\x0000).

21.2 RemoteDB

21.2.1 DatabaseServer

The IT7000 configuration software supports remote access to the SQL database to transmit data between the database servers of HMI and PC, and synchronize the recorded device tag values to database servers. It includes an SQL database access parameter setting manager for configuring connection with databases and a tag set configurator for history records used to record the tag sampling method and address value. The SQL database access server is used to establish a relationship between a column in a table in the database and a tag in HMI.



Properties

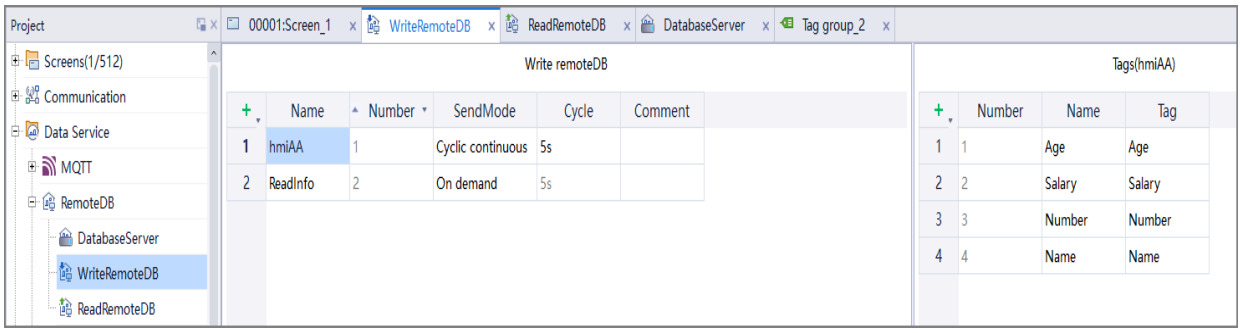
Name		Description	Additional Information
Connection Property	Comment		-

		Describes or adds comments to the database.	
	Database Type	Selects the type of the database server system to be connected.	Supported types are MySQL database and Microsoft SQLServer.
	Server Name	Selects the IP address format of the connected server, including the IP address, the domain name, or the server name.	The server name method is not supported now.
	IP	The address of the database server	-
	Port	The number of the server port connected to the database	Default for MySQL: 3306 Default for MS SQLServer:1433
	Username	The username used for connecting the database	Up to 32 characters are supported.
	Password	The user password for connecting the database	Up to 32 characters are supported.
	Database Name	The name of the database from which history records of the tag set is uploaded	-
Status/Control Property	Connect Order	The connection status address of the database The database connection is controlled by tags of the Int type. The control words are defined as follows: • 0: Disconnected • 1: Connected • 2: Refresh	• To connect to a database, you need to assign a value, such as 0, 1, or 2, to the connection command tag on the HMIRuntime side. In case of 0, the database is not connected. • By default, this option is not selected.
	Status Address	The database status is displayed based on tags of the Int type. • 0: Stop • 1: Connected • 2: Disconnected	
	Error Address	The database errors are displayed based on tags of the Int type: • 0: NoError/ • 1: ConnectionError/ • 2: StatementError/ • 3: TransactionError/ • 4: UnknownError	

21.2.2 WriteRemoteDB

Introduction

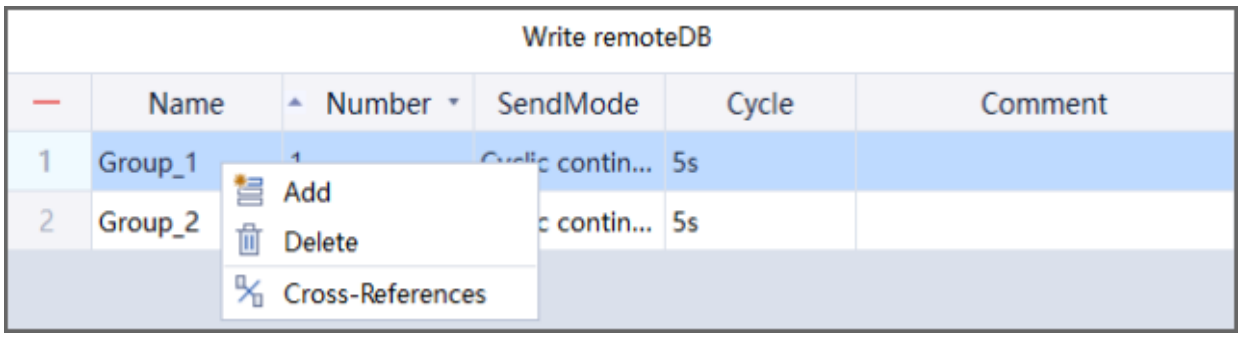
You can insert PLC tag values into a remote database for remote storage and sharing of PLC data, so that other terminal devices can access the data, as shown in the figure below.



Parameter	Description	Remarks
Name	The name of the database table.	The name is unique.
Number	The ID of the remote database write operation, used to call events.	-
SendMode	Cyclic continuous: Sample tag data in a fixed period, in seconds. On demand: Use an address to trigger the start of tag sampling. It is used with event calling by commands.	When it is set to "Cyclic continuous", HMIRuntime will periodically write tag values to the database according to the cycle. When it is set to "On demand", tag values will be written to the database only when commands are triggered.
Cycle	The continuous cycle period.	-
Comment	The information to be commented.	-

Function

It supports addition, deletion, and cross-reference of write remote data records, as shown in the figure below.



Feature	Description	Remarks
Add	Adds sampled tags and data arrays.	Up to 255 data arrays can be set, and up to 100 tags can be bound.
Delete	Deletes added sampling tags and data arrays.	-
Cross-References	Checks the database table to determine the called object.	-

Format

After sampled data is successfully synchronized to the database, the connected database will generate a data table named after the group name (SqlServer). Each field in the new table corresponds to a tag name in the tag set of the sampled data.

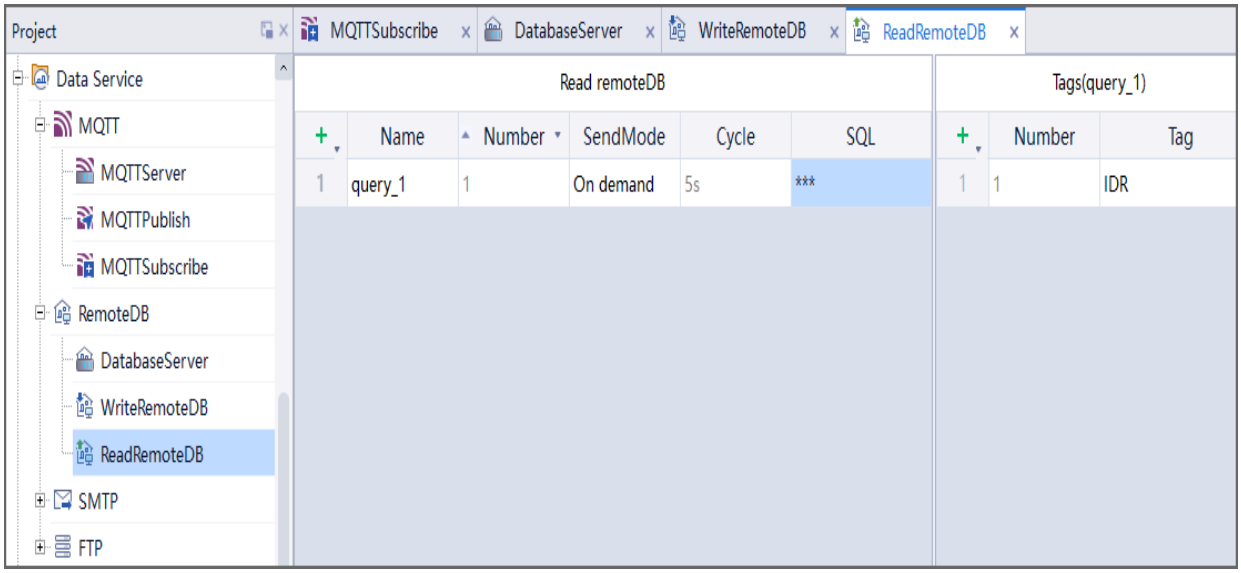
> **Note**
>
> The defined database table name should consist of both letters and digits. Names only containing digits, "group", or a database name such as sql are not allowed.

The tag group configured in the data record feature is used to store sampled data. The group name such as Group_1 should not contain spaces or other escape characters.

21.2.3 ReadRemoteDB

Introduction

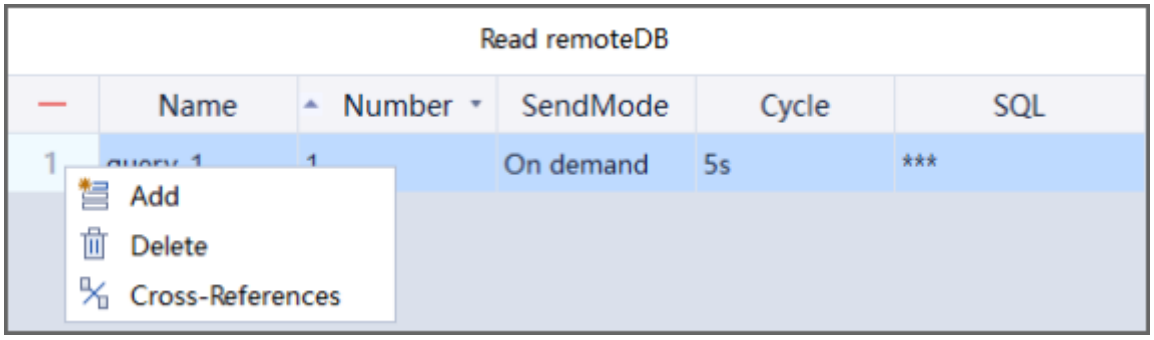
You can run custom SQL statements to query data in a remote database and assign the results to configured tags. You need to be clear about the table names, field names, and field types of the remote database. Types of the configured tags must match the field types in the remote database table, as shown in the figure below.



Parameter	Description	Remarks
Name	The name of the database table.	The name is unique.
Number	The ID of the remote database write operation, used to call events.	-
SendMode	Cyclic continuous: Sample tag data in a fixed period, in seconds. On demand: Use an address to trigger the start of tag sampling. It is used with event calling by commands.	-
Cycle	The continuous cycle period.	-
SQL	The user-defined query statement. The number and types of return values of the query should match those of tags in the tag group on the right.	-

Function

It supports addition, deletion, and cross-reference of write remote data records, as shown in the figure below.



Feature	Description	Note
Add	Adds sampled tags and data arrays.	Up to 255 data arrays can be set, and up to 1024 tags can be bound.
Delete	Deletes added sampling tags and data arrays.	-
Cross-References	Checks the database table to determine the called object.	-

21.3 SMTP

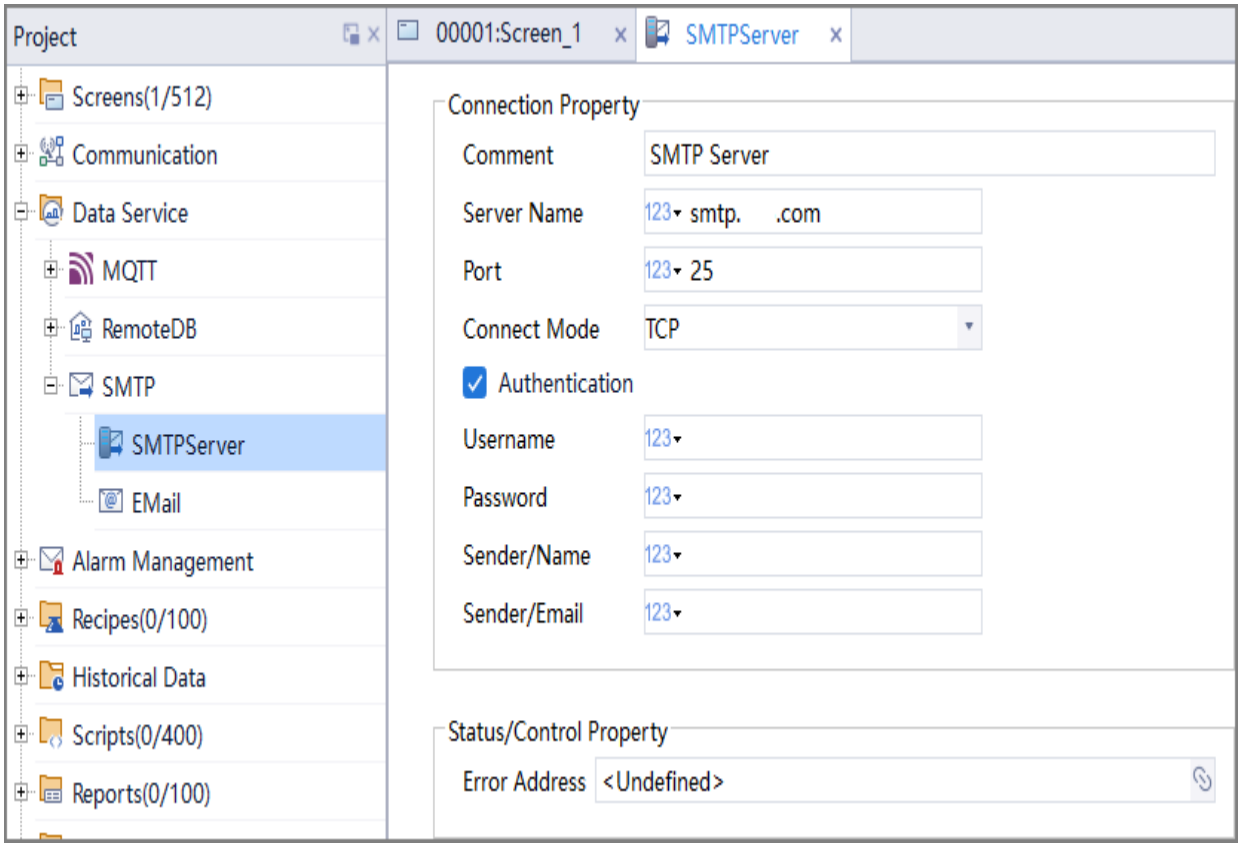
- 21.3.1 SMTP Server
- 21.3.2 Email
- 21.3.3 Message Notification Example

Simple Mail Transfer Protocol (SMTP) is an email service built on the FTP file transfer service, mainly used to transfer email information between systems and provide notifications about incoming emails. An SMTP server is an email sending server that follows the SMTP protocol, used to send or forward emails sent by users.

The SMTP feature of the HMI can be used to send system messages to a specified email address.

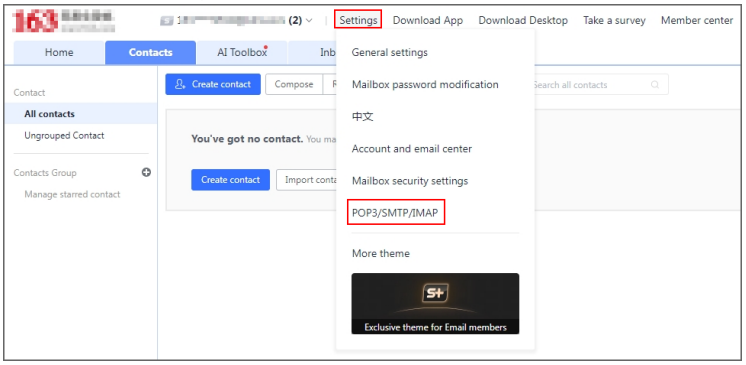
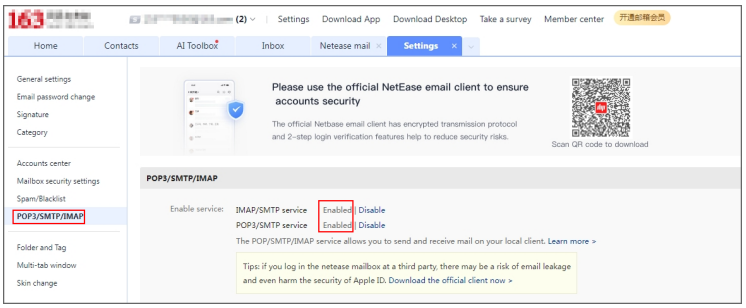
21.3.1 SMTP Server

The SMTP server is set, as shown in the figure below.



- The following table lists the parameters in the "Connection Property" section.

Parameter	Description	Remarks
Comment	Sets the comment information about the SMTP server.	It contains up to 128 characters.
Server Name	Sets the name of the SMTP server.	• The SMTP server domain name of NetEase 163 is "smtp.163.com". • The SMTP server domain name of Tencent QQ is "smtp.qq.com".
Port	Sets the port number of the SMTP server.	The TCP port number is "25".
Connect Mode	Sets the connection mode of the server.	TCP connection is supported. SSL and TLS connections are not supported.
Authorization	Enables/disables authorization for the SMTP server.	• When this option is selected, you can use "Username" and "Password" to log in to the SMTP server. • When it is not checked, you cannot log in to the SMTP server.
Username	Sets the username to log in to the SMTP server.	The username is used to log in to the SMTP server. For example, if you set "Username" to ABC, the email address will be ABC@163.com.
Password	Sets the password to log in to the SMTP server.	The password is used to log in to the SMTP server, which is the email address authorization code. For example, if you use the SMTP server of NetEase 163 to send emails, you need to log in to mail.163.com, access the "Setting" tab

		page, enable the SMTP service, and obtain the authorization code, as shown in the figure below.  
Sender/Name	Sets the sender name.	It is the name of the sender displayed in the email.
Sender/Email	Sets the sender email address.	It is the email address of the sender.

- Set "Status/Control Property".

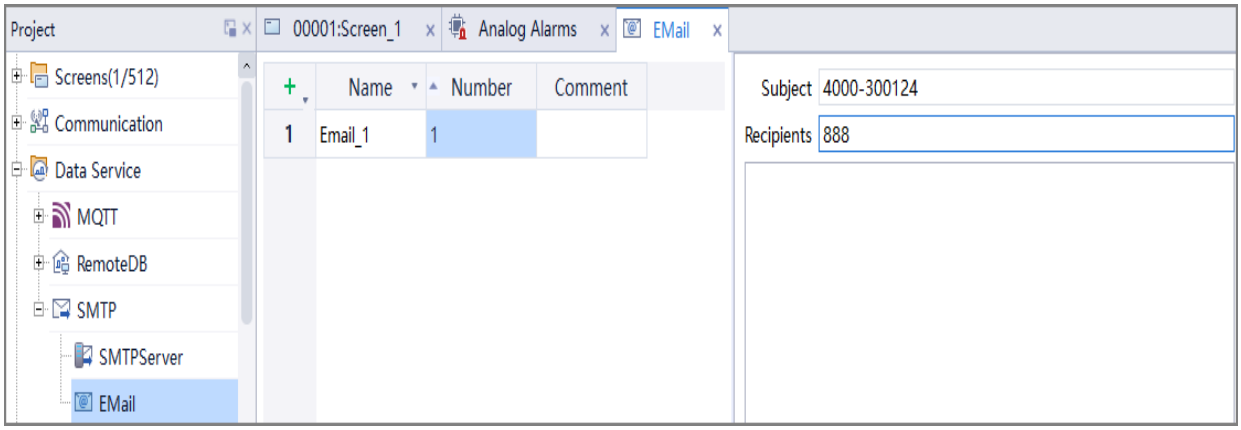
Set "Error Address" to the tag. This parameter indicates the status code after the email is sent. The following table describes the status codes.

Status Code	Description
-1	Unknown socket error
1	Connection closed by remote host
2	Host not found
3	Socket access permission error
4	Socket resource error
5	Socket operation timeout
6	Data message too long
7	Network error
8	Address in use
9	Socket address unavailable
10	Not supported socket operation

11	Pending socket operation
12	Proxy authentication request error
13	SSL handshake failed
14	Proxy connection refused
15	Proxy connection closed
16	Proxy connection timeout
17	Proxy server not found
18	Proxy protocol error
20	Connection successful
21	Connection refused

21.3.2 Email

Configure "EMail", as shown in the following figure.



Click  to add one email or multiple emails in a batch. Up to 32 emails can be configured.

The following table lists the parameter description.

Parameter	Description
Name	The email name
Number	The email number automatically assigned by the system, which cannot be changed
Comment	The email comment information

In the area on the right of the page, edit the email content, including "Subject", "Recipients", and email text, as shown in the following figure.



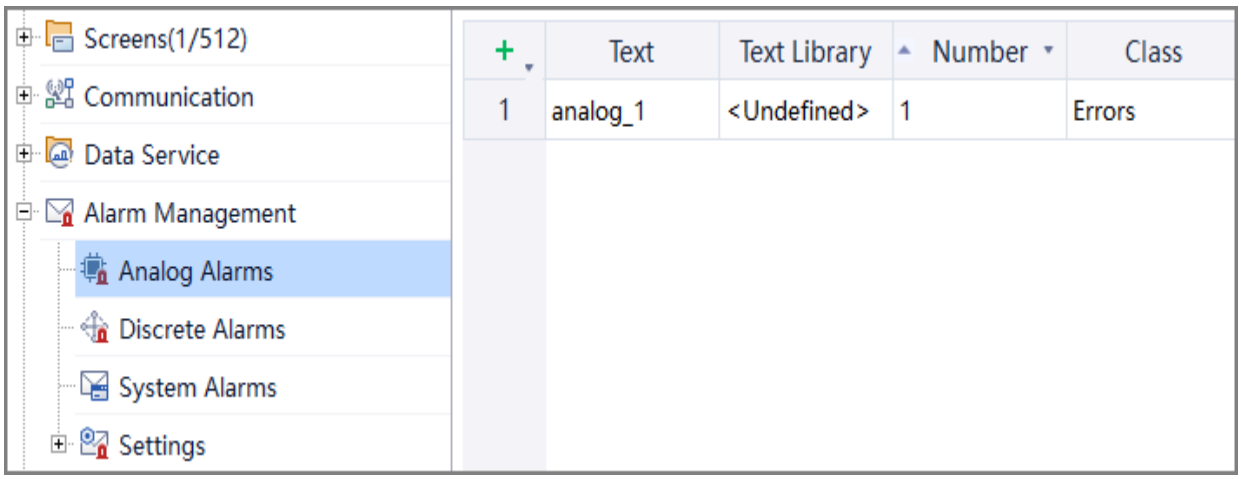
The following table lists the parameter description.

Parameter	Description
Subject	The email subject
Recipients	The recipient's email address
Text	The email content

21.3.3 Message Notification Example

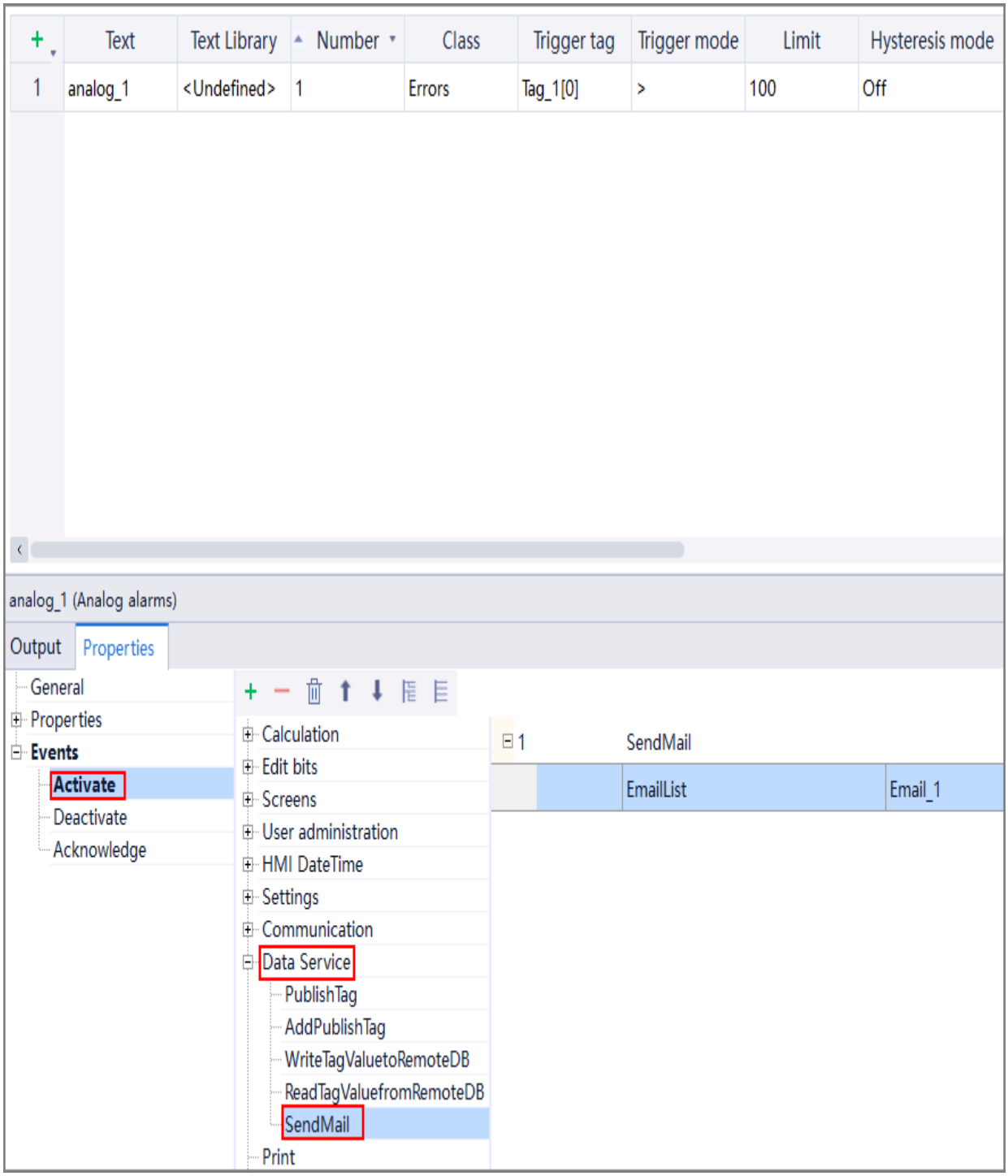
Example (when an alarm of tag_1 is activated, automatically send an email to the mail box of the specified engineer)

1. Click "Analog Alarms", and set to trigger an alarm when the value of tag_1 is greater than 100.



2. In the "Events" menu, click "Activate". In the expanded menu, choose "Data Service" > "SendMail". In the "EmailList" column, select the name of the email to be sent.

When the analog alarm is triggered, the HMI automatically sends an email to the recipient.



21.4 FTP

21.4.1 FTP Server

Introduction

You can configure the FTP server parameters in the software tool, then download the project to the HMI touchscreen to control server start/stop, enabling data transfer among the HMI device's local disk, USB drive, and SD card.

Scenarios

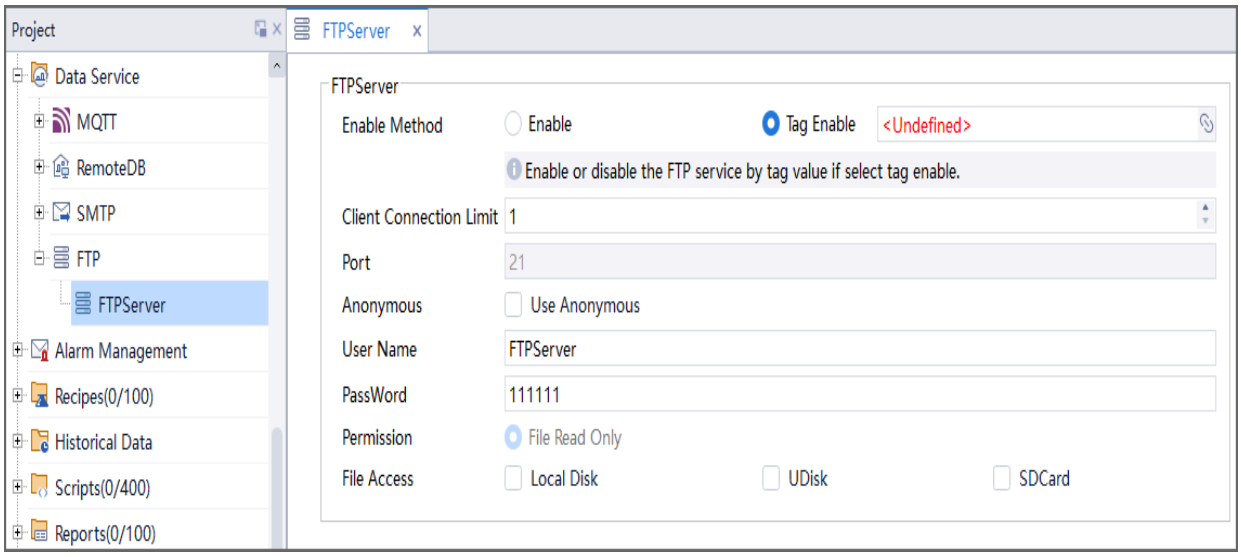
The HMI device uploads alarm logs, data records, operation records, and recipe records stored in local disks, USB drives, and SD cards to the PC via the FTP function.

Notes

- The FTP function currently does not support resumable uploads.
- The maximum number of allowed PC connections is 5.
- The currently accessed PC has read-only permissions for FTP.
- At least one item of "File Access" must be selected. If not, a warning will be issued during compilation.
- You can access the FTP server via a browser (visiting ftp://FTP server IP address), Windows Explorer (visiting ftp://FTP server IP address), or command line (using the command "ftp FTP server IP address").

Interface Introduction

Double-click "Data Service" > "FTP" > "FTPServer" to open the interface, as shown in the figure below.



Properties		Description	Default Value
Enable Method	Enable	Checked: Enable FTP server. Unchecked: Disable FTP server. **Note** You can only select either "Enable" or "Tag Enable" as the method.	Unchecked
	Tag Enable	Checked: Enable the FTP server using a tag of Bool type (True for enabled; False for disabled).	Unchecked

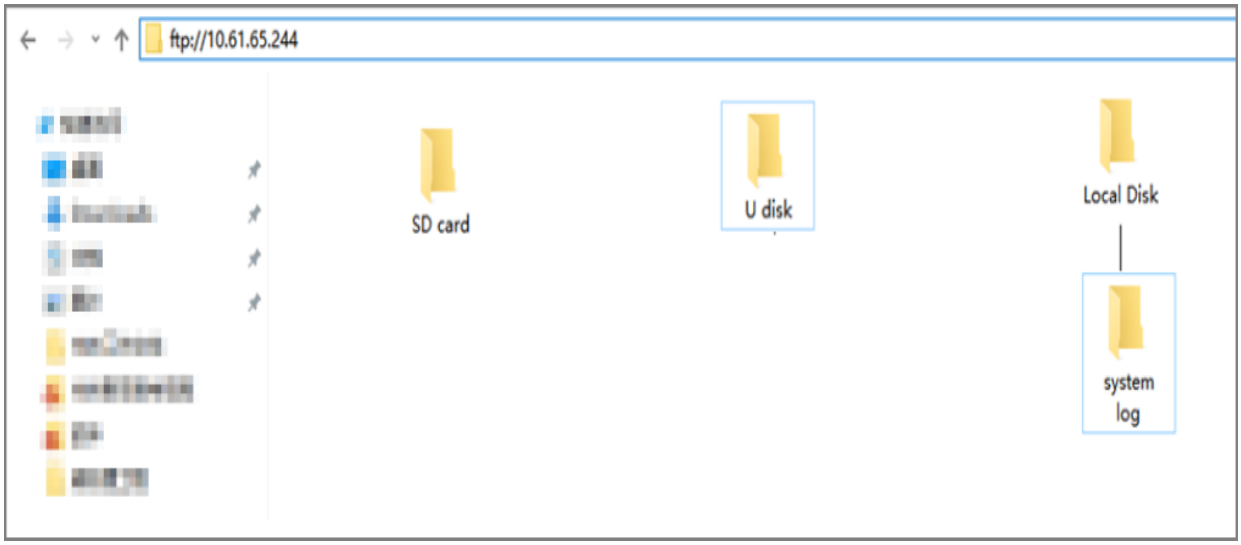
		Note • You can only select either "Enable" or "Tag Enable" as the method. • When the method is checked, a tag must be associated; otherwise, the compilation will report "FTP server tag association invalid or missing".	
Client Connection Limit		Set the number of PCs that can simultaneously access the HMI device, where the maximum value is 5.	1
Port		The port number is 21 and cannot be changed.	21
Anonymous		Check "Use Anonymous" to gray out the "User Name" and "PassWord" fields.	Unchecked
User Name		The user name for accessing the FTP server, used for user name verification when a PC accesses the HMI device.	FTPServer
Password		The user password for accessing the FTP server, used for authentication when a PC accesses the HMI device. The password can be customized with the following rules: • Set the password with letters, numbers, and special characters. • Special characters must be entered in English input mode. • Space is not allowed. • Up to 40 characters are supported. • Password is displayed in plain text.	111111
Permission		The permission only supports "File Read Only" and cannot be modified.	Checked
File Access	Local Disk	Access local disk via FTP.	Unchecked
	UDisk	Access USB drive via FTP.	Unchecked
	SDCard	Access SD card via FTP.	Unchecked

Example

Check the "Enable" option for the FTP server; set "Client Connection Limit" to 5; set the user name and password respectively as "FTPServer" and "111111"; select "Local Disk", "UDisk", and "SDCard" for "File Access", as shown in the figure below.



When entering "ftp://10.61.65.244" in a PC on the same IP subnet (where 10.61.65.244 is the HMI device IP address), and after entering the user name and password, you can read-only access the "Local Disk", "UDisk", and "SDCard", as shown in the figure below.



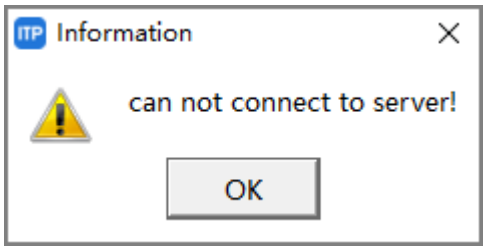
22 FAQ

22.1 Project Upload/Download Problems

22.1.1 HMI Project Download Failure

Symptom

Symptom 1: During project download, the message "can not connect to server!" appears, as shown in the figure below.



Symptom 2: During project download, a message appears, asking to use the same major version number for download or update the HMI.

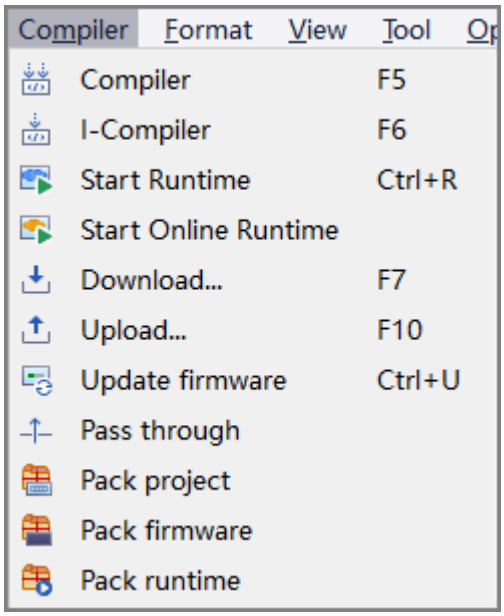
Solution

Solution for symptom 1: When you download the project and select "Ethernet", ensure that both communication parties are in the same network segment. For the download process, see 3.3.5 Downloading a Project.

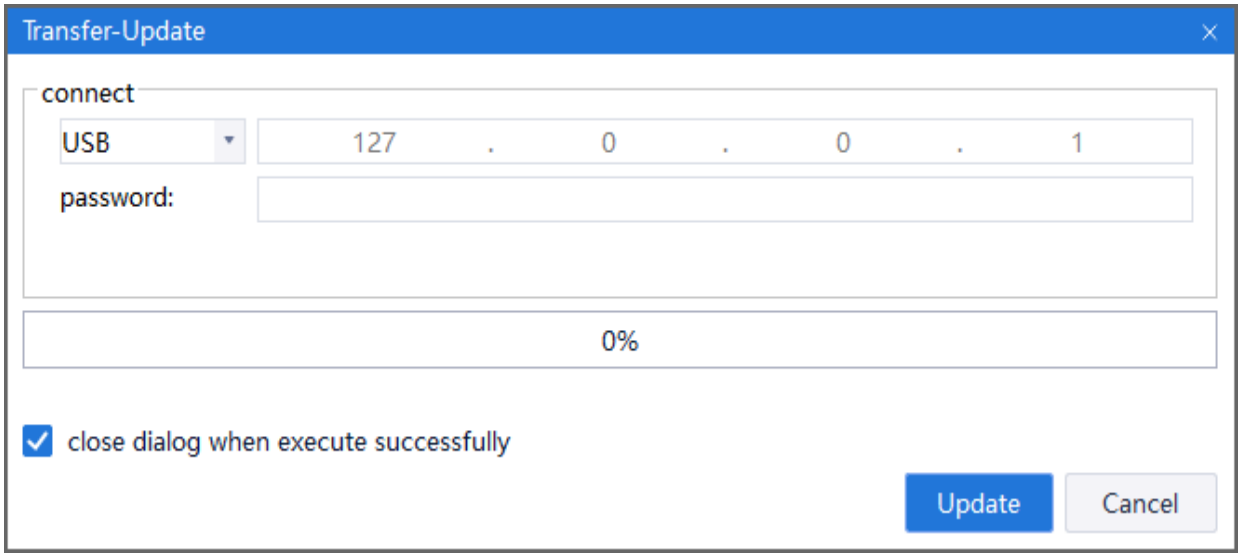
Solutions for symptom 2 are as follows:

Solution 1: Manually update firmware.

1. In the top toolbar of InoTouchPad, choose "Compiler" > "update firmware" or click the  button.

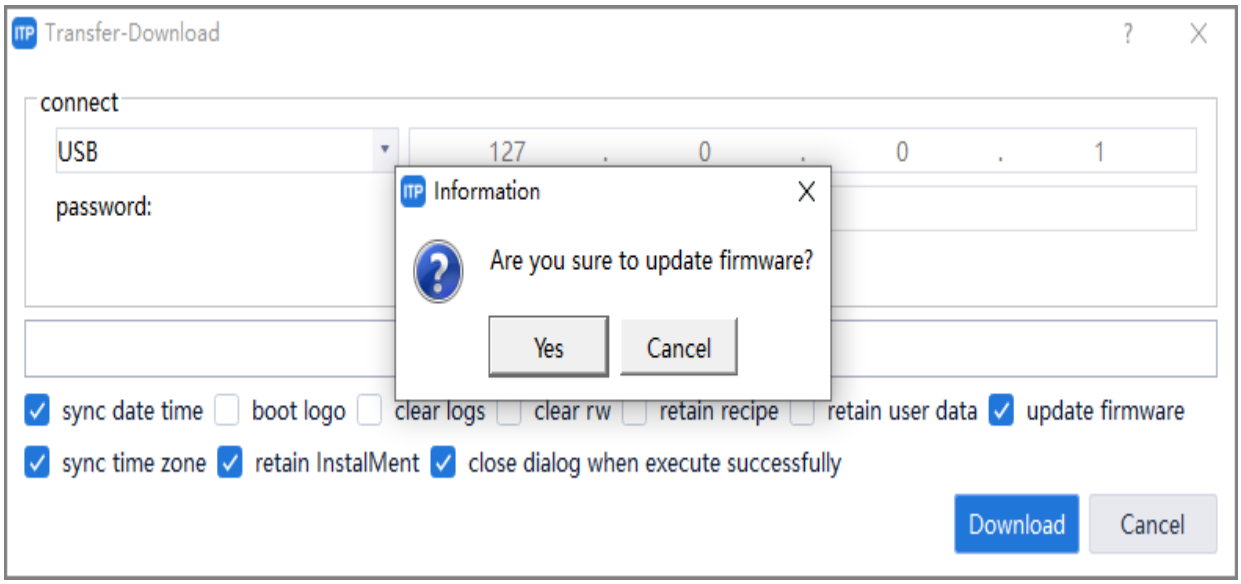


2. In the dialog box that pops up, click "Update". After the HMI is updated and restarted, click "OK" to complete firmware update.



Solution 2: Update firmware during download.

1. When downloading a project, check "update firmware" and click "Download". In the dialog box that pops up, click "Yes", and then wait for the HMI to update and restart.



2. Click "OK" to complete firmware update.

22.1.2 Support to Downgrading a Later Version to an Earlier Version

Not supported

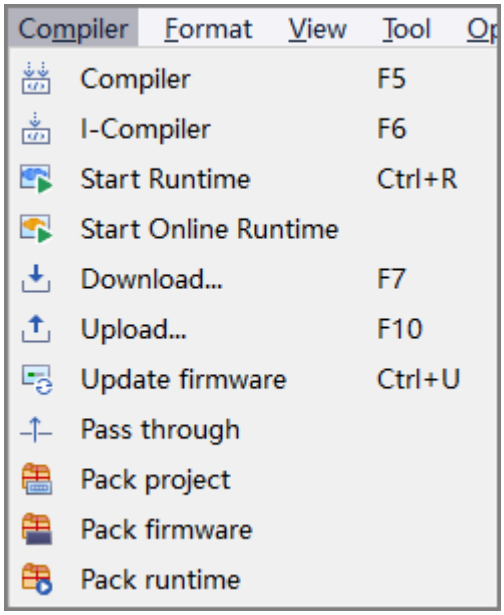
22.1.3 Prompt of Different Major Versions When a Project Is Downloaded to HMI

Solution

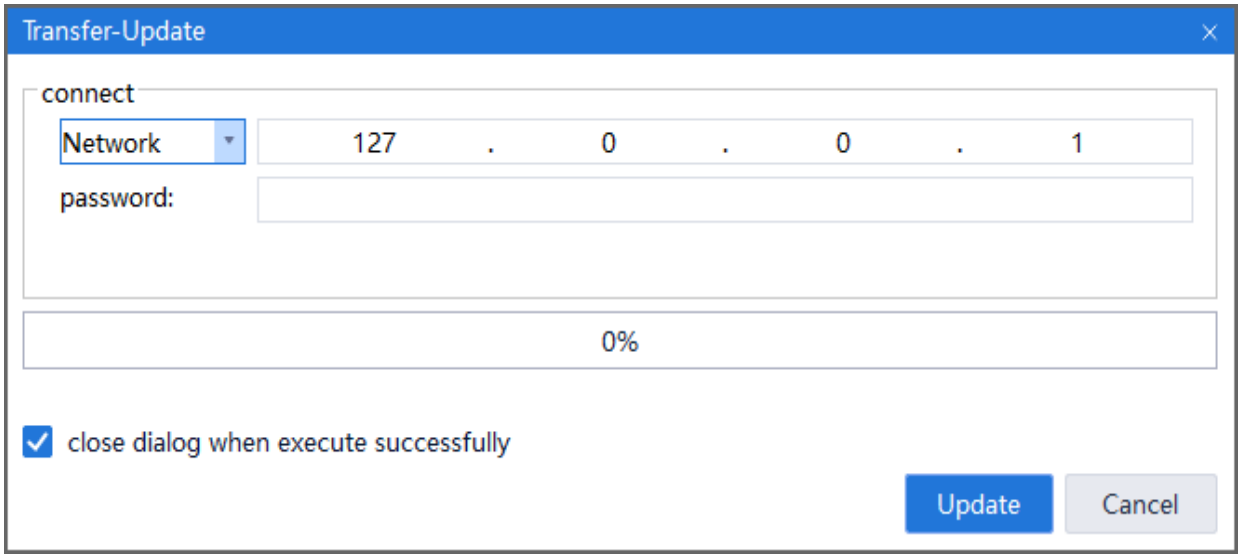
Update firmware as follows:

Solution 1: Manually update firmware.

1. In the top toolbar of InoTouchPad, choose "Compiler" > "update firmware" or click the  button.

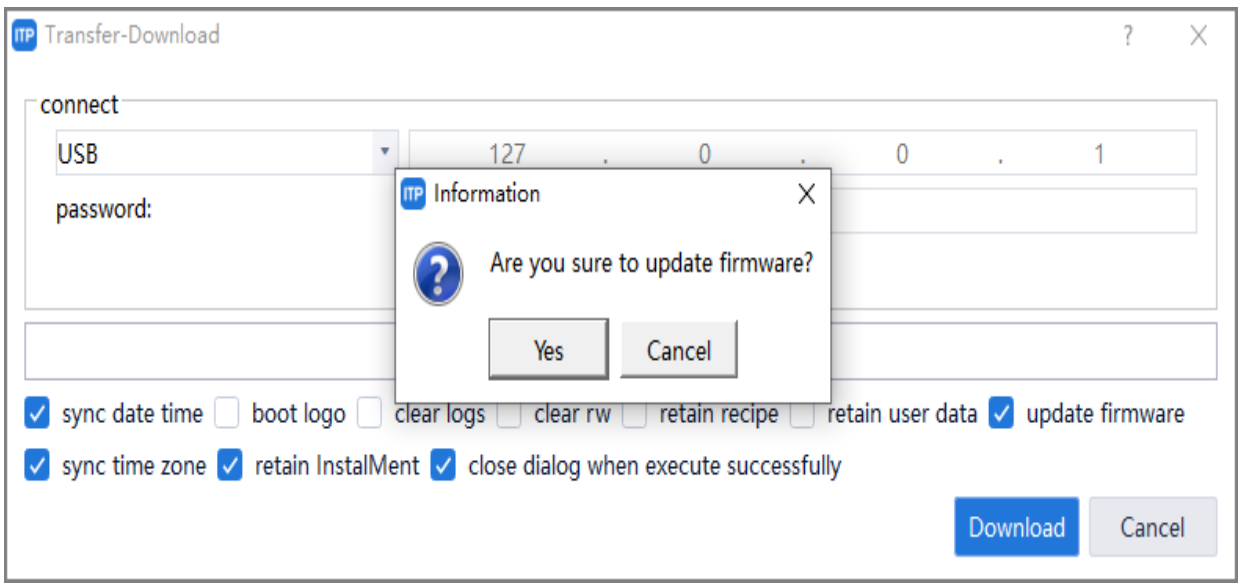


2. In the dialog box that pops up, click "Update". After the HMI is updated and restarted, click "OK" to complete firmware update.



Solution 2: Update firmware during download.

1. When downloading a project, check "update firmware" and click "Download". In the dialog box that pops up, click "Yes", and then wait for the HMI to update and restart.



2. Click "OK" to complete firmware update.

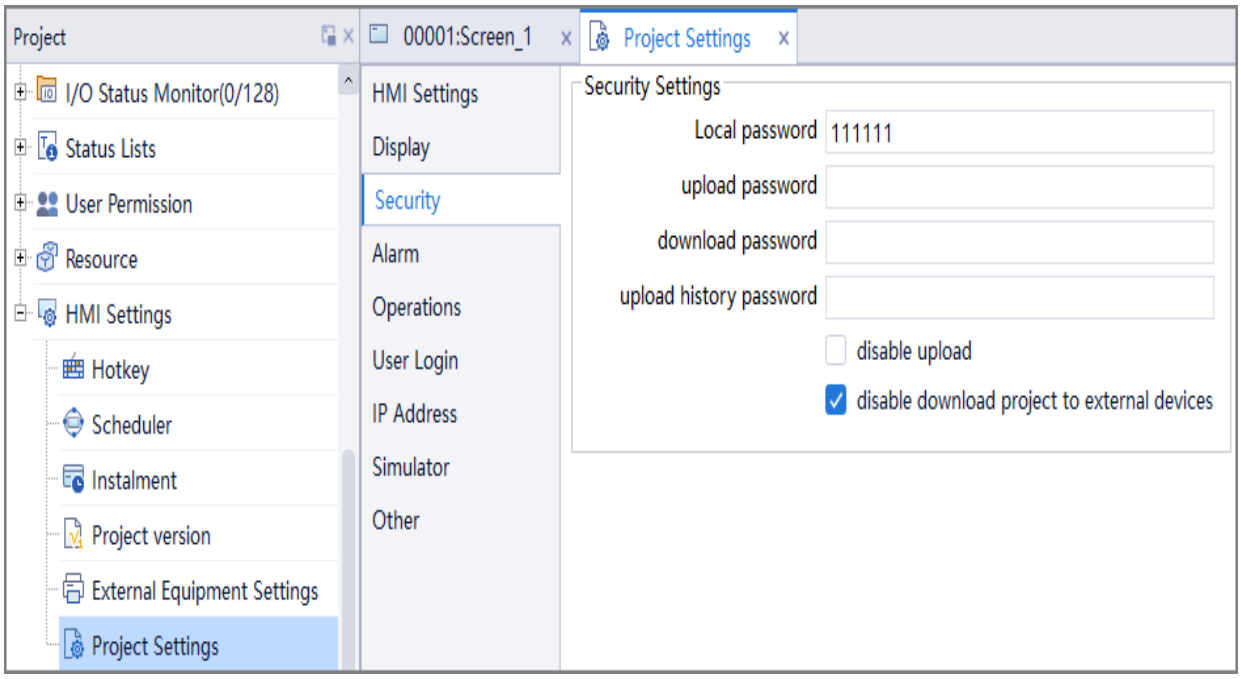
22.1.4 Failed to Upload a Project

Symptom

You selected "disable upload" when downloading a project last time.

Solution

In the left "Project" navigation tree in InoTouchPad, click "HMI Settings". Double-click "Project Settings". In the menu displayed, click "Security". In the "Security Settings" section, deselect "disable upload". After downloading the project, click "Upload". Then, the project can be uploaded.



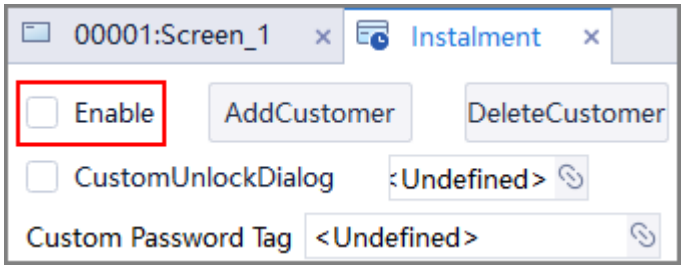
22.1.5 Failed to Download Installment Information to HMI

Symptom

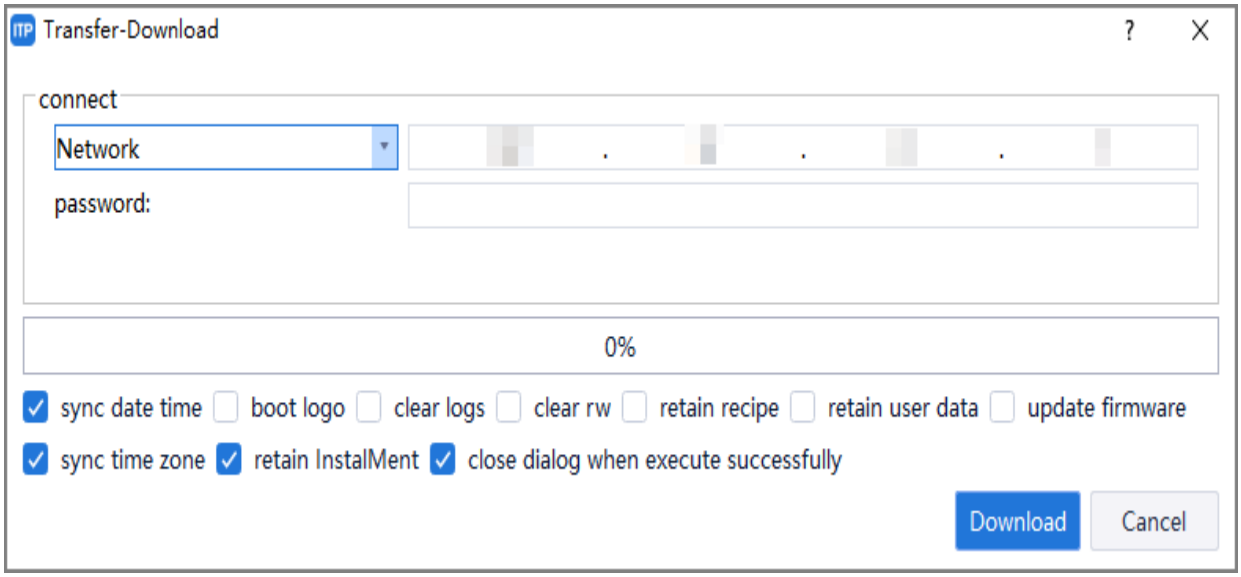
The installment information cannot be downloaded to the HMI.

Analysis

Cause 1: In the "Project" navigation tree on the left of InoTouchPad, you do not select "Enabled" on the "Installment" tab page of "HMI Settings".



Cause 2: "retain installment" is selected when you download a project.



Solution

After completing the above operation, select "Enabled" or deselect "retain installment".

22.1.6 Prompted 'can not find any USB device' When Downloading a Project to HMI

Symptom

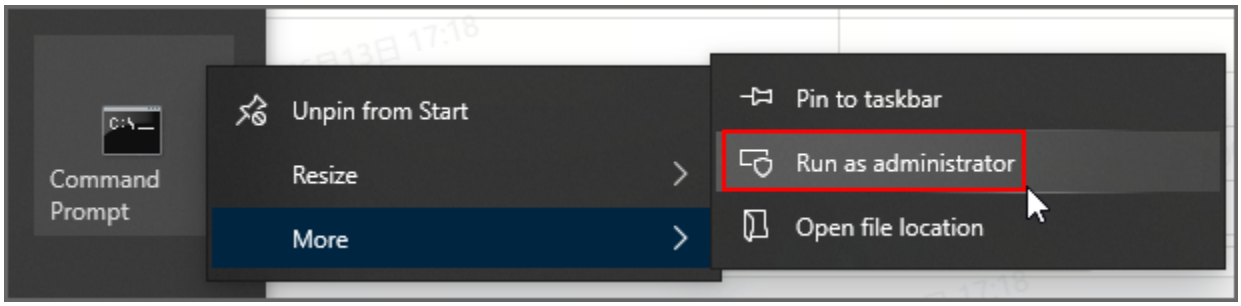
A USB drive has been installed but "can not find any USB device" is still prompted when you download a project.

Precautions

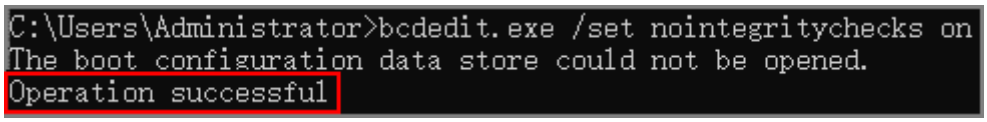
This problem occurs only in the Windows 10 system.

Solution

1. In the lower-left corner of the Windows desktop, enter "cmd" in the search bar and click "Run as Admin" to open the command running window.



2. Enter the command "bcdedit.exe /set nointegritychecks on" and press Enter. When "Operation successful" is displayed, the force digit signature feature is permanently disabled.



22.1.7 Decompression Failure

Release the flash space on the HMI.

22.1.8 Can HMI Be Downgraded to an Earlier Version for New Mirrors of Integrated Controller

Integrated controllers ITU7070EI and ITU7070E cannot be downgraded to an earlier version. The default version is V1R4C00SPC74.

22.2 Questions About HMI Settings

22.2.1 Password of the HMI Control Panel

The default password is 111111.

22.2.2 Password of the Default Account "Admin" of HMI

The default password is 111111.

22.2.3 Default Initial IP Address of IT7000

The default IP address is 192.168.1.100.

22.2.4 How to Check the HMI IP Address

Solution

Solution 1: Check the IP address on the HMI.

1. Power off and restart the HMI.

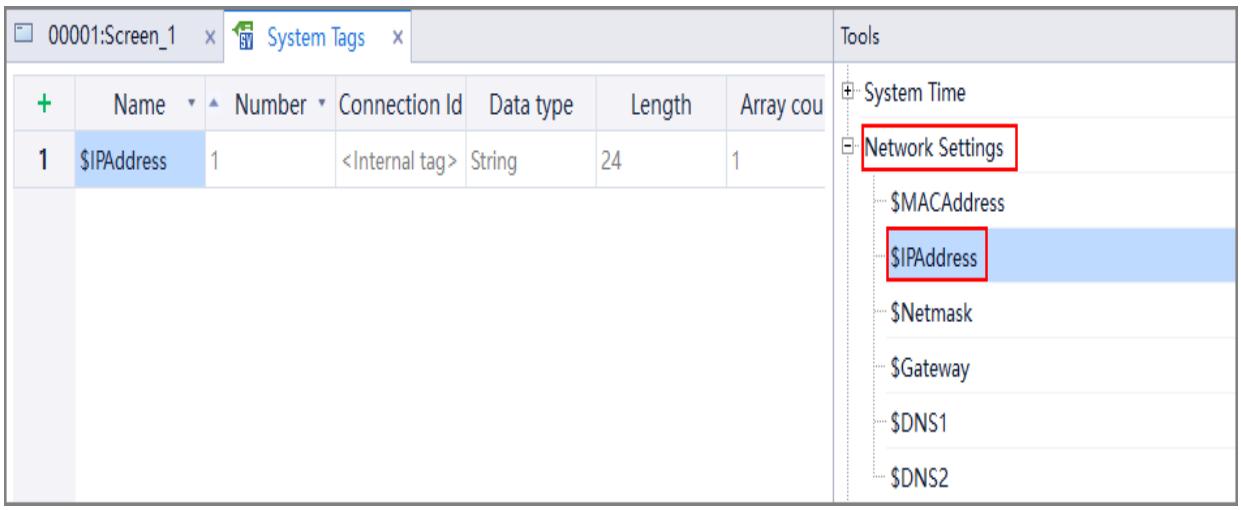
2. Long press the screen with your finger. When the screen displays "long press to enter Control Panel", release your finger.

3. Enter the password and click "Logon" to complete the login.

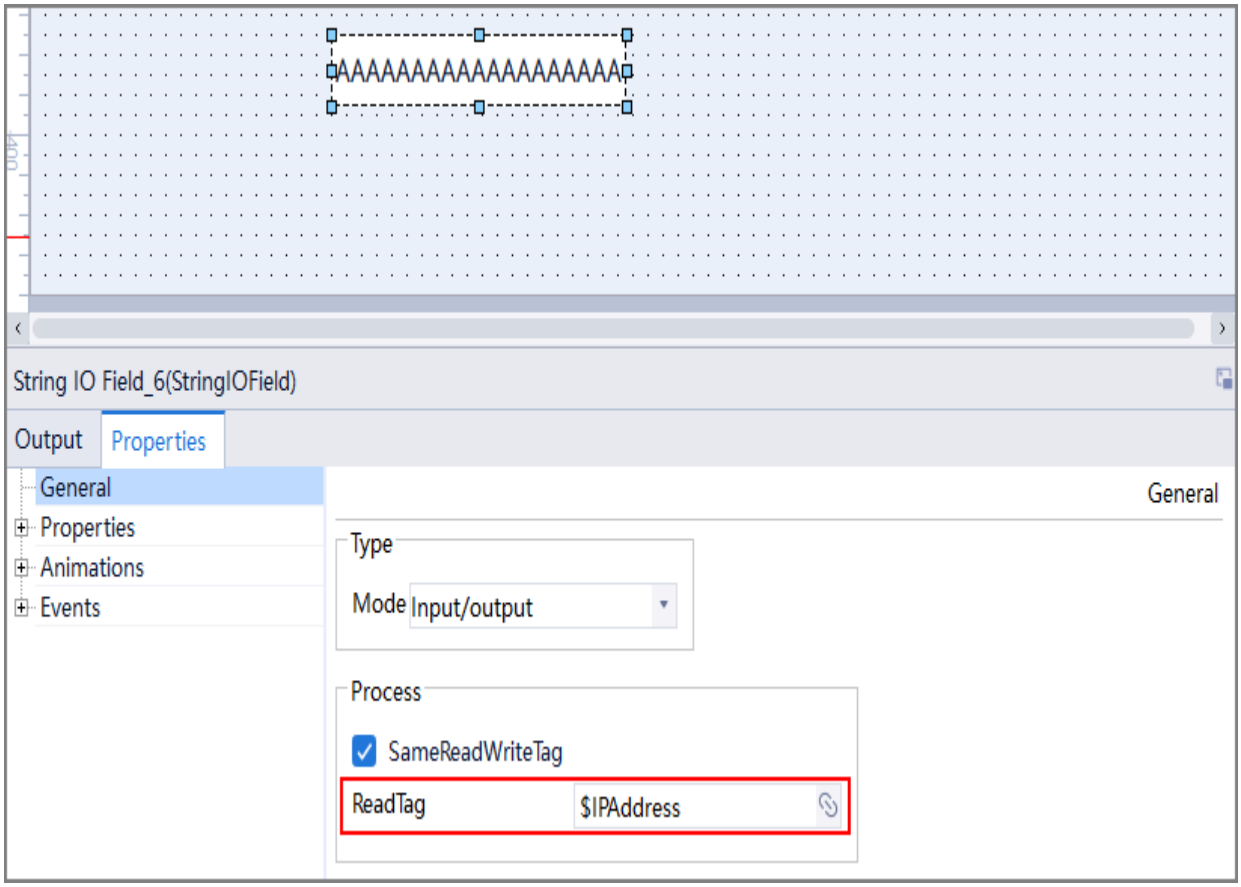
4. On the "SysSetting" tab page, click the "IP Address" icon to view the IP address of the HMI.

Solution 2: Use the system tag $IPAddress to check the IP address of the HMI.

1. In the left "Project" navigation tree in InoTouchPad, choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, click "Network Settings" and double-click "$IPAddress" to add a system tag.



2. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "String IO Field", and drag the field to "Screen_1". On the "Properties" tab page, click "General" and set "ReadTag" to "$IPAddress" in the "Process" section.

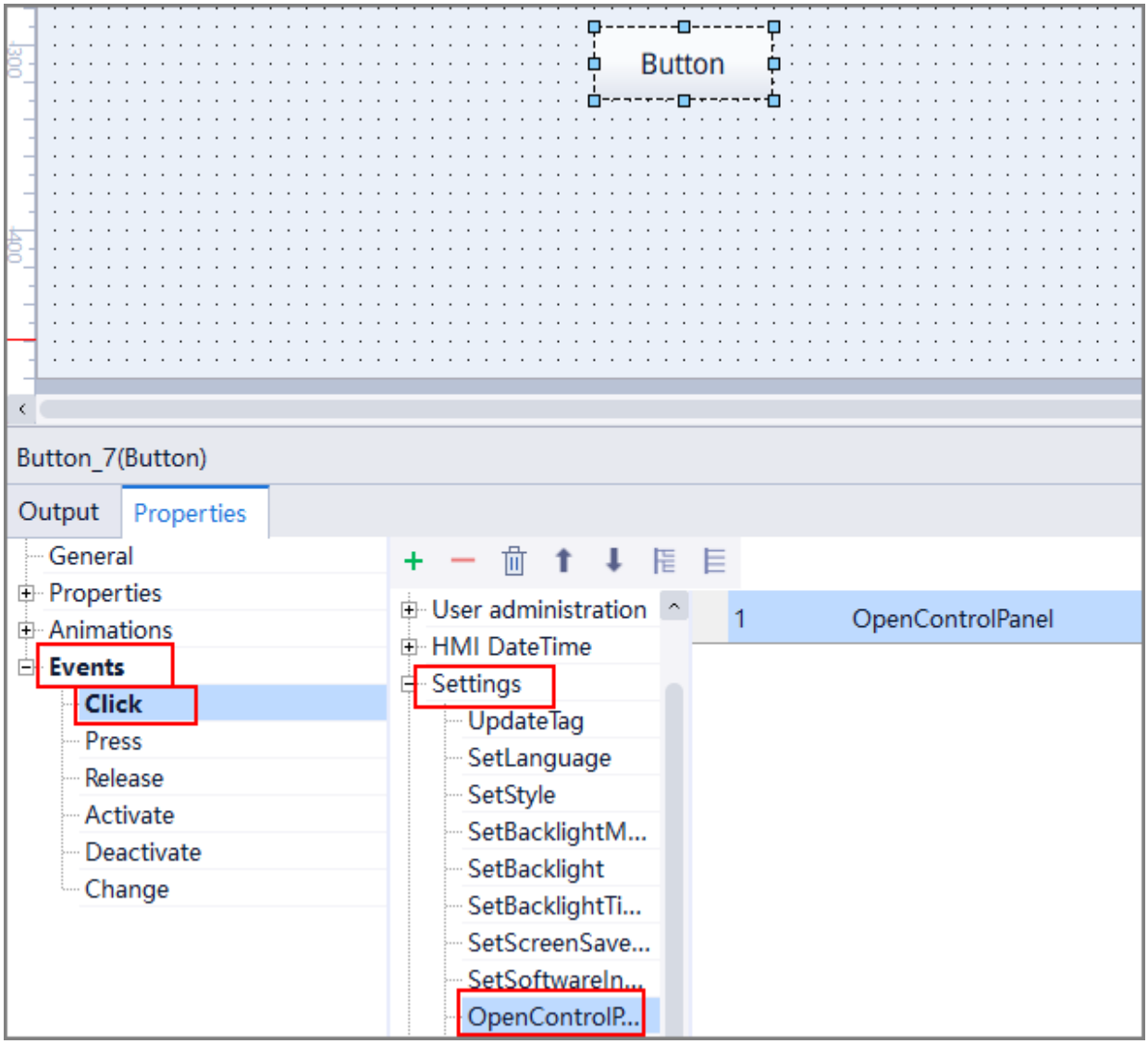


3. Click to download the project to the HMI, and check the IP address of the HMI.

Solution 3: Configure the system functionOpenControlPanel to check the IP address of the HMI.

1. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".

2. Click the button control. On the "Properties" tab page, choose "Events" > "Click", click "Setting", and double-click "OpenControlPanel" to add the function.



3. Click to download the project to the HMI. Click "Button" on the HMI screen, enter the password, and click "Logon" to complete the login.

4. On the "SysSetting" tab page, click the "IP Address" icon to view the IP address of the HMI.

22.2.5 How Long Is Online Simulation Duration

The online simulation duration is up to 30 minutes.

22.2.6 Displayed Content Not Changed with Status of Bit Button and Word Button

Symptom

When the status of the bit button and word button is changed, the displayed content remains unchanged.

Solution

When the global style is configured, configure the control style.

Note

If the global style is configured, the style of the bit button and word button also needs to be configured, and then the displayed content can be switched.

22.3 Questions About Features

22.3.1 How to Implement Control-Level Activation for Composite Objects

The control-level activation of composite objects is an implementation approach that ensures state changes within the composite object remain confined to its internal members, without impacting control elements outside the composite object. Each member is associated with different tags, and the entire composite object is managed and operated through an index tag.

The principles of control-level activation are as below:

- Local Impact
  Any state changes or interactions within a composite object only impact tags inside that object and do not impact other parts outside the composite object. This indicates that operations within the composite object are independent and isolated.
- Event Isolation
  When a control element within a composite object changes, for example, when an index value modification alters an element value, this change does not trigger external alarm mechanisms, preventing unnecessary global responses.

The following table lists the differences between global and control-level scopes in terms of application range and tag usage.

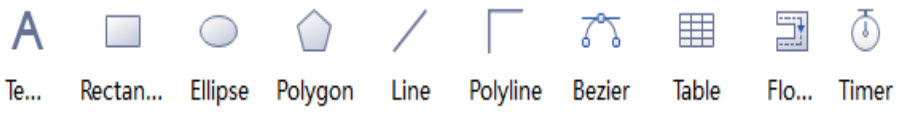
Table 22-3-1-1 Scope difference table between global and control-level activation

Category	Screen controls	Associated tag	Upper/lower limit alarm	Data record
Control-level activation	Current composite control	Structs	Not supported	Not supported
Global activation	Controls on the screen associated with the same tag, excluding those with "Control-level activation" checked.	No limit	Supported	Supported

Single control element requirement

For the control element used to form a composite object, the following conditions must be met:

- Specific control elements
  Composite object can only contain specific control elements. The following table lists the available types and names:

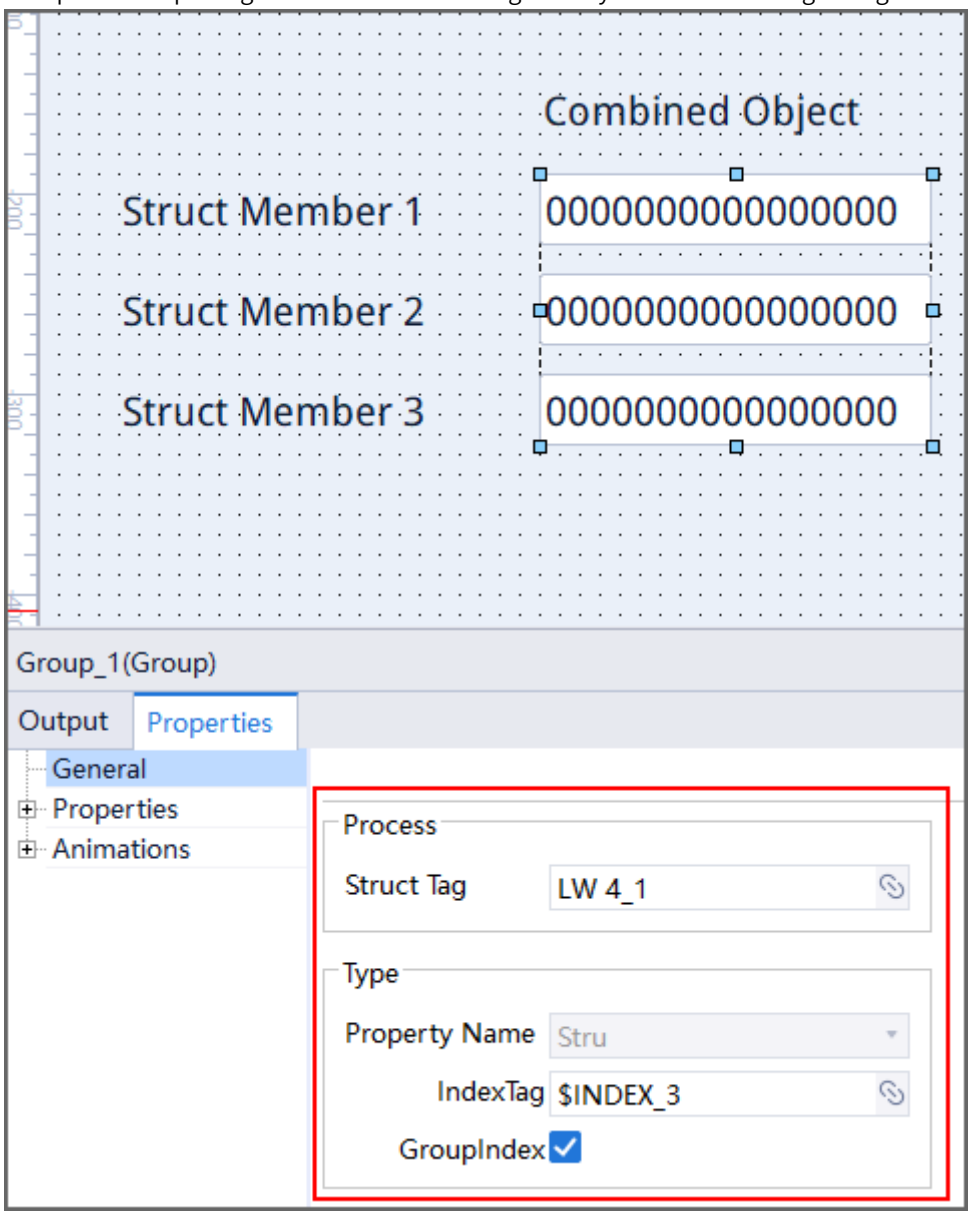
Category	Name
Drawing Tools	
Portraits and pictures	

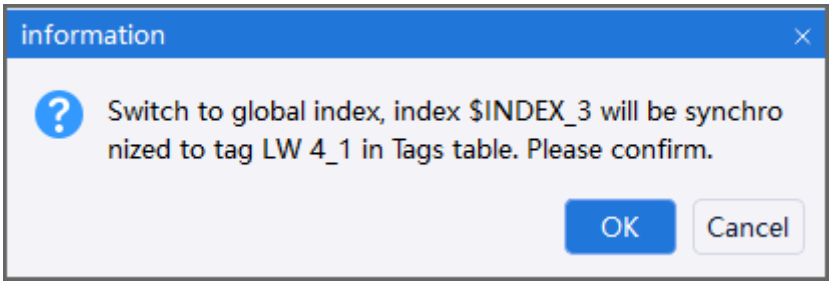
Category	Name
Control & Display	Numb... Strin... Symb... Ti... Button Wor... Bit B... Text ... Bit Ind... Word I... Grap... Grap...
Data Visualization	Bar Slider Progre... Round... Gauge Meter Knob Le... 3D-Pie

- Label structure tag
  The member tag associated with control element can only come from the same label structure tag.
- Specific function
  structure tag member configuration function is not mandatory; judge according to the actual needs of the project. When configuration is required, the available functions include 16.3.2 Calculation and Edit bits.

Control-level parameter configuration

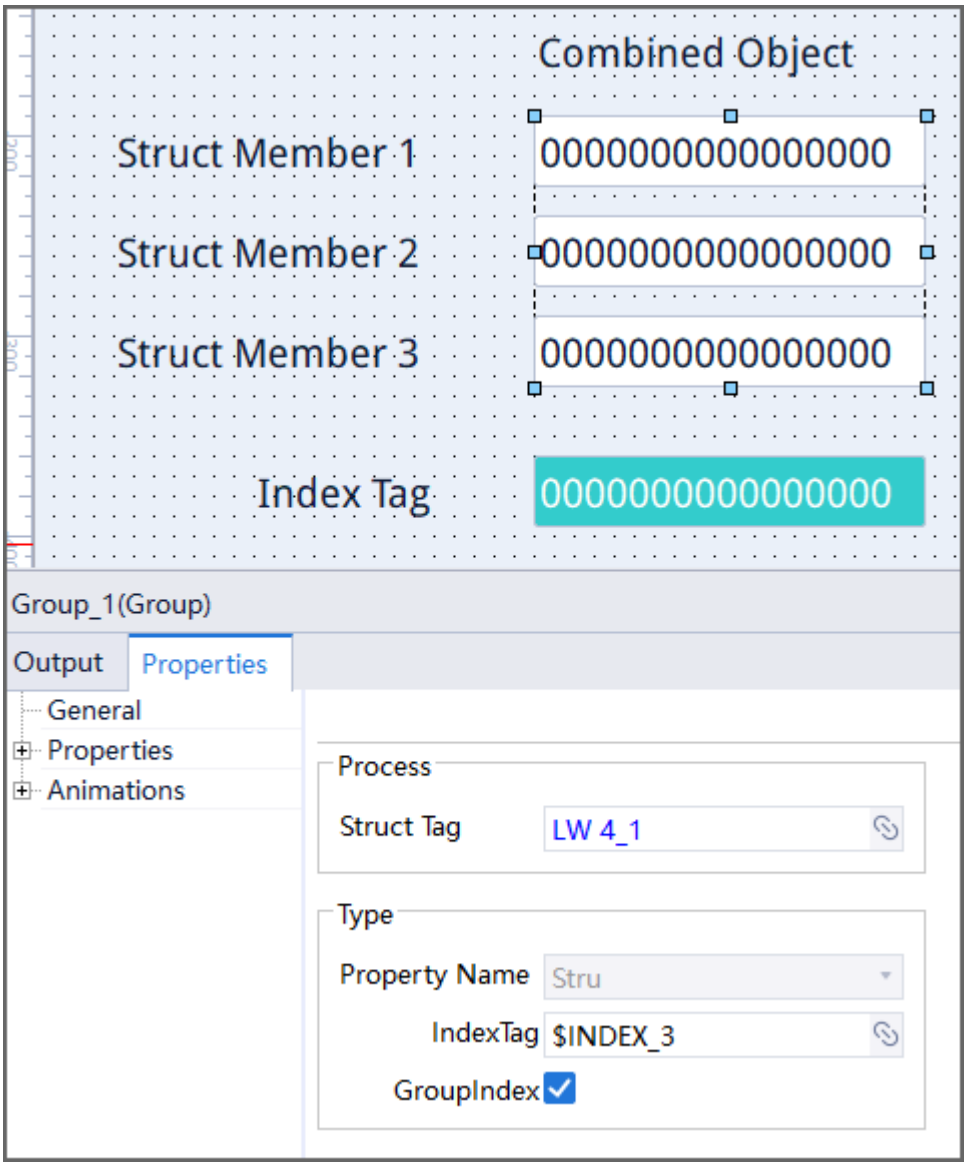
Compose multiple eligible elements into a single entity with the following configuration requirements:



<table>
<tr><th>Configuration item</th><th>Description</th></tr>
<tr><td>Structure tag</td><td>When all control elements are associated with tag members from the same label structure tag, this field will be automatically filled and requires no modification. The setting rules for the "Acquisition mode" and "Acquisition cycle" of label structure member tags:
"Cyclic on use" mode: The acquisition cycle follows the actually set value.
Other modes: It automatically switches to "Cyclic on use" mode with a fixed 100 ms acquisition cycle, disregarding the actual set value.</td></tr>
<tr><td>Index value</td><td>Before associating the index tag, first check the "Control-level activation" option.
The associated index tag must differ from the tag's own index tag. If identical configurations are used on both sides, the global activation will be implemented, and a warning will be generated during project compilation:<table><tr><th>Category</th><th>Description</th></tr><tr><td>Info</td><td>Compiling started ...</td></tr><tr><td>Info</td><td>Parsing log!</td></tr><tr><td>Info</td><td>Parsing communication!</td></tr><tr><td>Info</td><td>Parsing Alarm!</td></tr><tr><td>Info</td><td>Parsing Recipe!</td></tr><tr><td>Info</td><td>Parsing Trend!</td></tr><tr><td>Info</td><td>Parsing Digitalization!</td></tr><tr><td>Info</td><td>Parsing Screen!</td></tr><tr><td>Warning</td><td>'$INDEX_3' configured for screen item 'Group_1' in screen '00002:Screen_2' is globally effective</td></tr><tr><td>Info</td><td>Parsing I18n!</td></tr></table></td></tr>
<tr><td>Control-level activation</td><td>Set the control range for index values:
Checked: The control range for index values is limited within the composite object.
Unchecked: The control range for index values applies to the entire project, which is the default state.
When switching from a checked to an unchecked state, the control-level index tag will automatically synchronize with the tag. A pop-up prompt will appear before synchronization: 
</td></tr>
</table>

Example

Add 4 numeric IO field controls to the screen: Associate 3 controls respectively to different members of a structure tag and compose them into a composite object; Associate 1 control to an index tag (e.g., tag-level index configuration "$INDEX_3", as shown in the figure below) for switching tag values within the composite object. The drawing results and parameter configuration are shown in the following figure:



During online runtime, when tag values within a composite object switch with index tag values, it does not affect the displayed values of "Struct members 1-3" in other areas of the screen.

22.3.2 How to Use Script to Obtain the Value of a Specific Bit in an Int Type

In code "SmartTags('LW 1') = (SmartTags('LW 0')>>1)&1 ;" written in a script, ">>1" indicates a right shift by one bit to get the value of the second bit.

> **Note**
>
> Int16 is an integer composed of 16 bits, with the value range of -32768 to +32767.

22.3.3 How to Delete Alarm Records from HMI Device

You can run the following functions as needed to delete alarm records with different deletion effects. For usage details, see 16.3.11 Alarm.

- ClearAlarmBuffer: It is used to delete all alarms, including acknowledged, deactivated, and unacknowledged alarms in the alarm buffer of the HMI device. After this function is executed, all alarms in the alarm view are deleted.

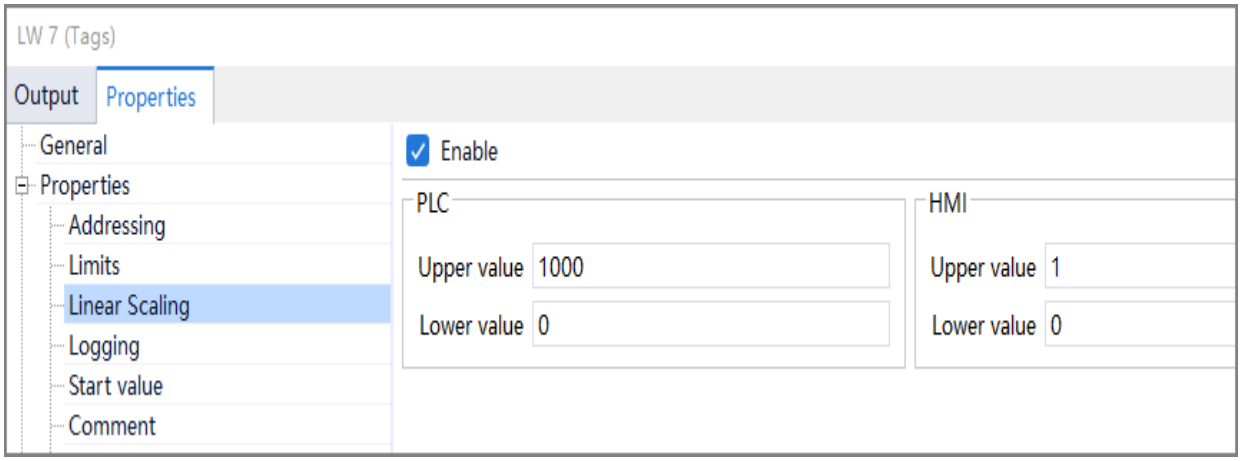
- ClearActionedAlarmBuffer: Only processed alarms (deactivated and acknowledged alarms) in the alarm buffer of the HMI device are deleted.
- ClearLog: All data entries in the specified record are deleted.

22.3.4 How to Convert Inputs in Seconds into Inputs in Milliseconds in HMI and Send Them to PLC

Method 1:

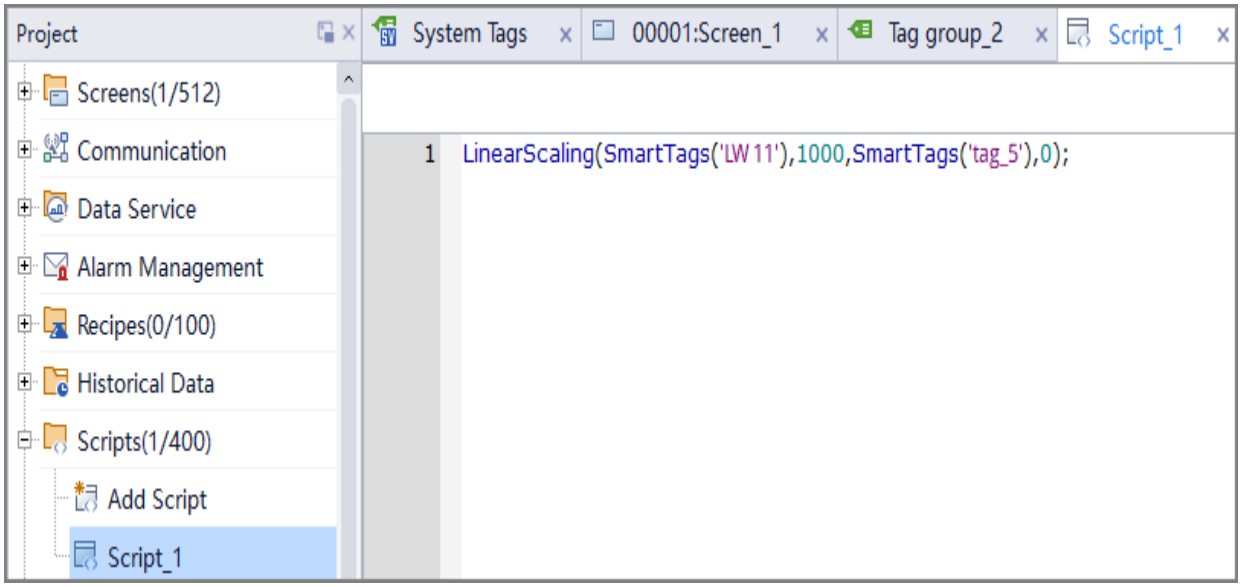
1. In the "Project" navigation tree on the left of InoTouchPad, choose "Communication" > "Tag", double-click the tag group associated with the HMI, and select the name of the tag for converting from second into millisecond.

2. In the "Properties" section of the tag, choose "Properties" > "Linear Scaling" and select "Enabled". In the "PLC" section, set the upper limit (the tag upper limit) to 1000. In the "HMI" section, and set the upper limit to 1. Then, the inputs in seconds in HMI are converted into inputs in milliseconds in the PLC.



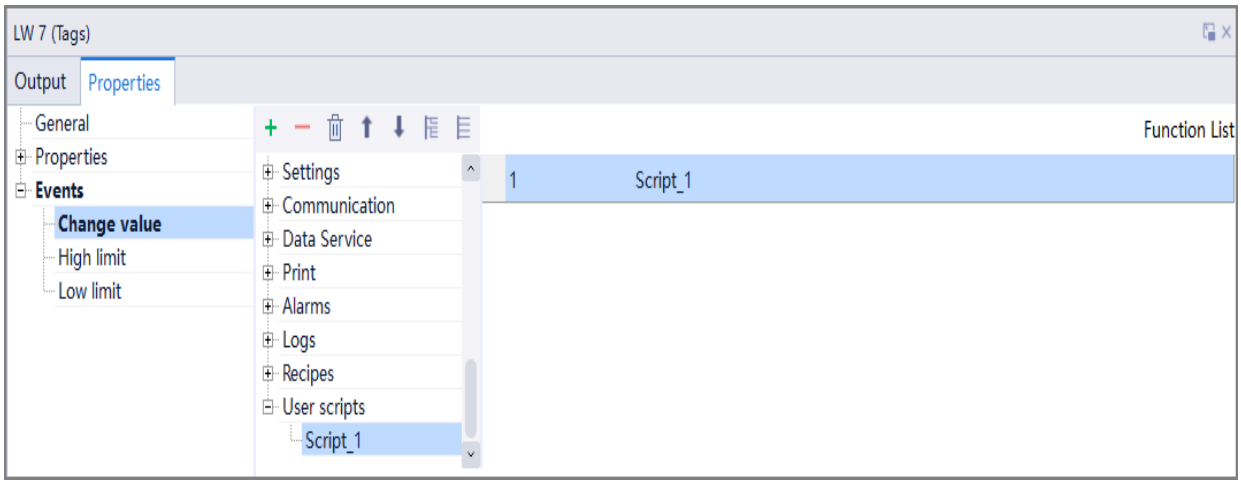
Method 2:

1. In the "Project" navigation tree on the left of InoTouchPad, click "Script". In the expanded menu, click "Add Script". On the page displayed, input the script "LinearScaling(SmartTags('LW 11'),1000,SmartTags('Tag_5'),0);".



2. In the "Project" navigation tree on the left of InoTouchPad, choose "Communication" > "Tag", double-click the tag group associated with the HMI, and select the name of the tag for converting from second into millisecond.

3. In the "Properties" section of the tag, choose "Events" > "Change value" > "user scripts", and double-click "Script_1" to associate the tag. Then, the inputs in seconds in HMI are converted into inputs in milliseconds in the PLC.



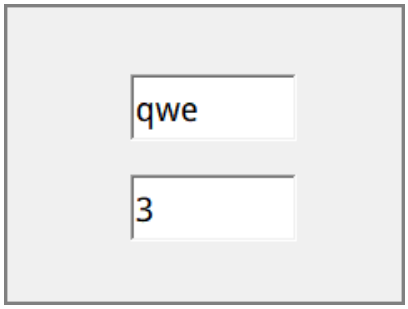
22.3.5 How to Judge the Length of a String

Solution

1. Compile code "SmartTags('LW 50') = SmartTags('LW 40').length;" in the script.

2. Ensure that LW 50 is a tag of the Int type and LW 40 is a tag of the string type.

3. Set LW40 to qwe on the page. The character string length is 3.

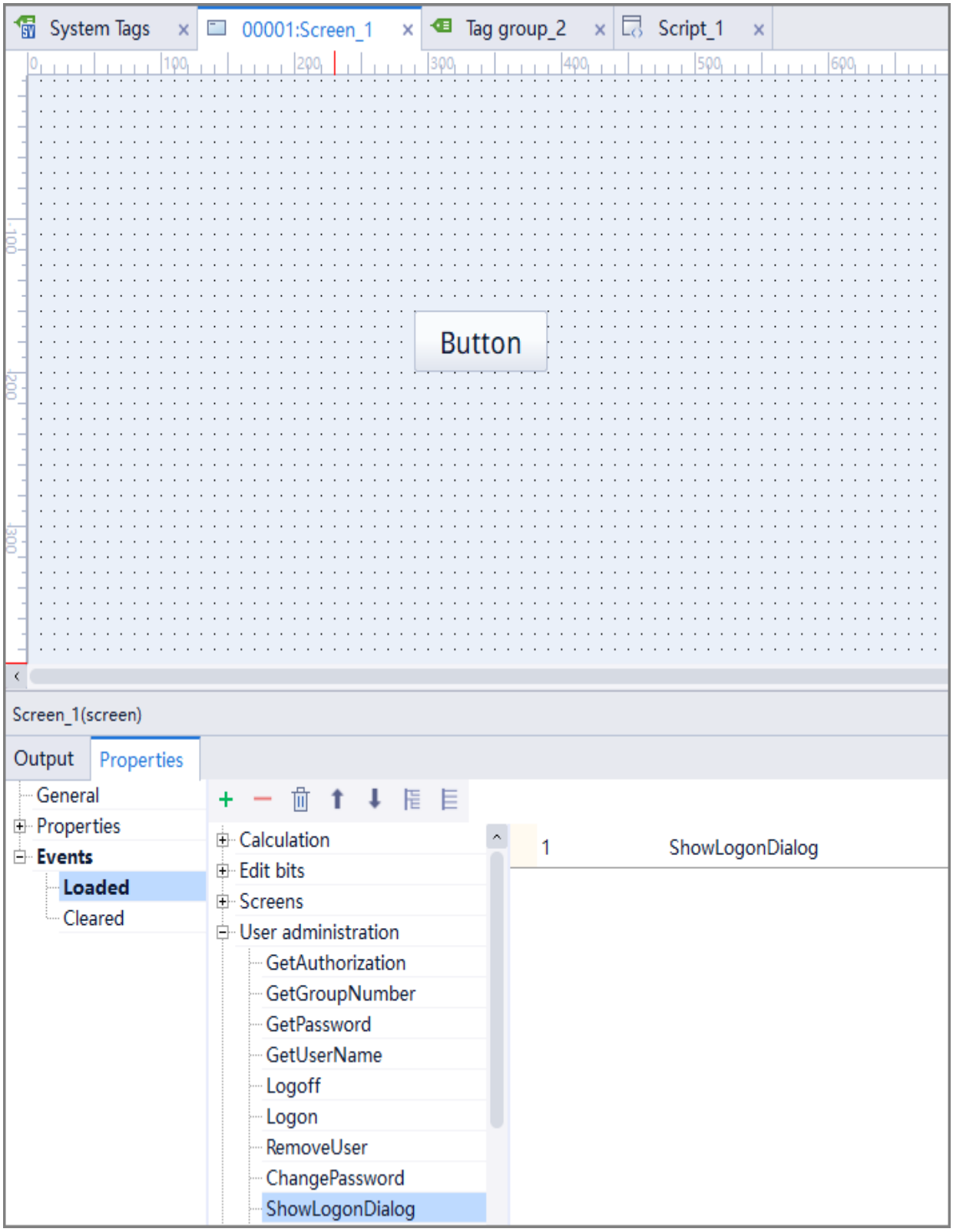


22.3.6 How to Pop Up the User Login Window

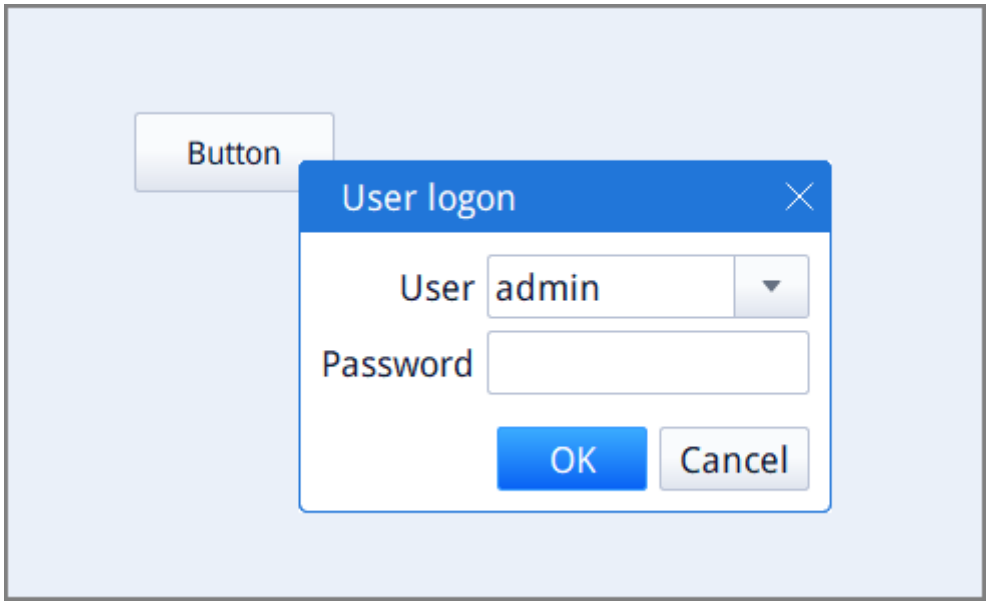
Solution

1. Open the target screen.

2. Select the screen. On the "Properties" tab page, choose "Events" > "Loaded" > "User administration", and double-click "ShowLogonDialog" to add the function.



3. Click in the toolbar at the top of InoTouchPad, and click "Download" in the pop-up window to implement the login window display during HMI runtime.

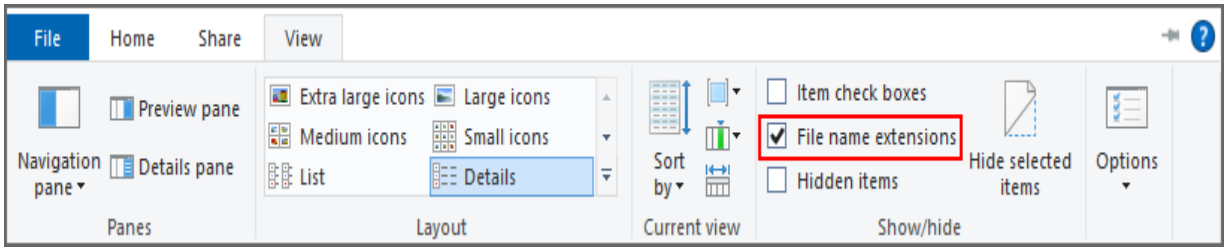


22.3.7 How to Open Project File Backups

In InoTouchPad, choose "Project" > "Open Project Location", delete the file extension name .bak , and double-click to open the file.

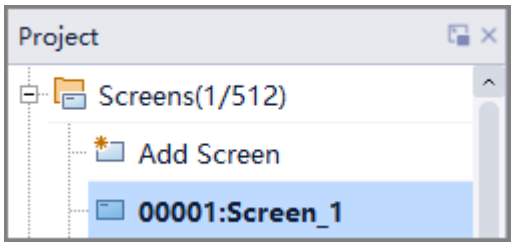
Note

If the file name extension is not displayed, click "View" in the top menu bar of the Windows folder (only for Windows 10), and select "File Extension".



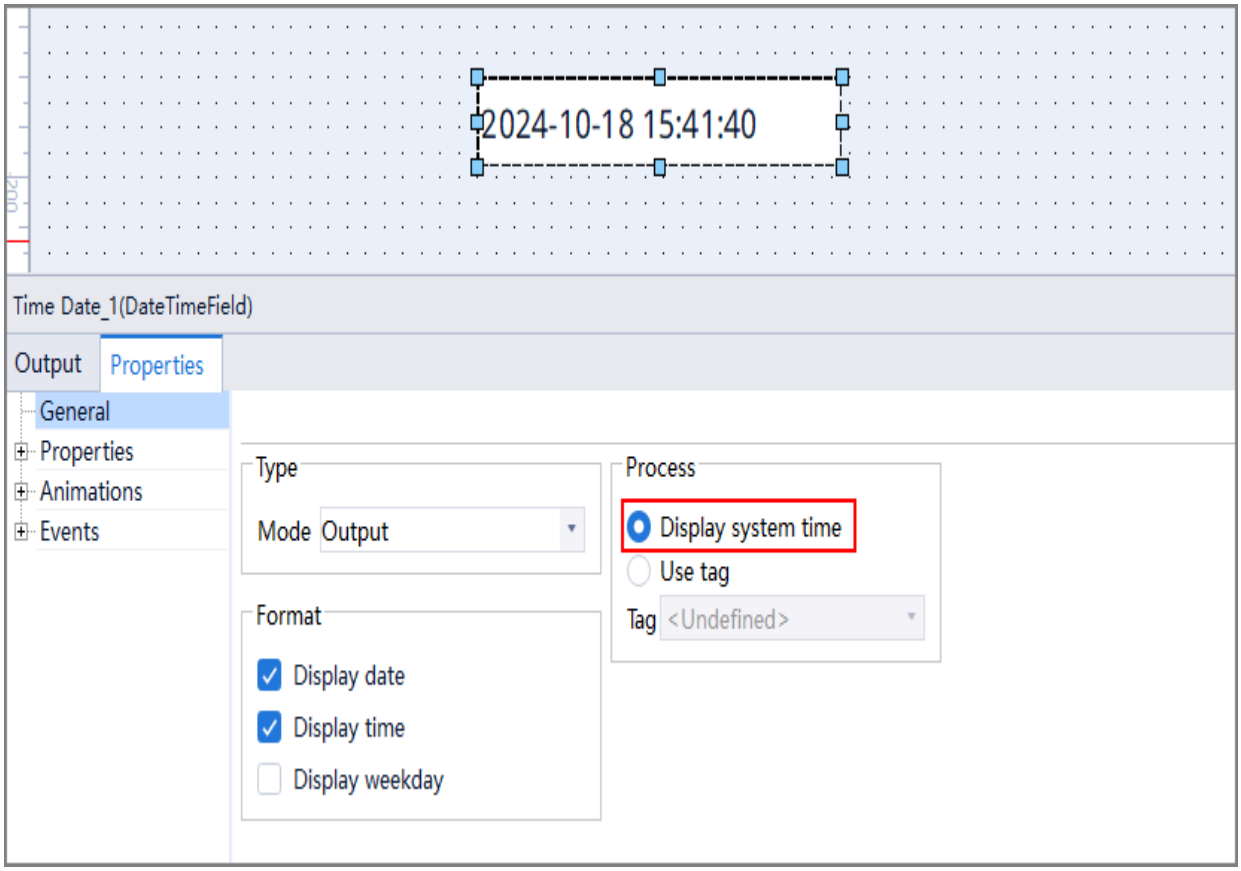
22.3.8 How to Display the HMI System Time

1. In the "Project" navigation tree on the left of InoTouchPad, click "Screens", and then double-click "Add Screen" to create a screen.



2. In the "Tools" navigation tree on the right, choose "Control & Display" > "Time Date", and drag the time to the screen.

3. Click the control. On the "Properties" tab page, click "General". In the "Process" section, check "Display system time".



4. Click to display the system time on HMI. For the download process, see "Downloading a Project".

22.3.9 How to Switch Languages

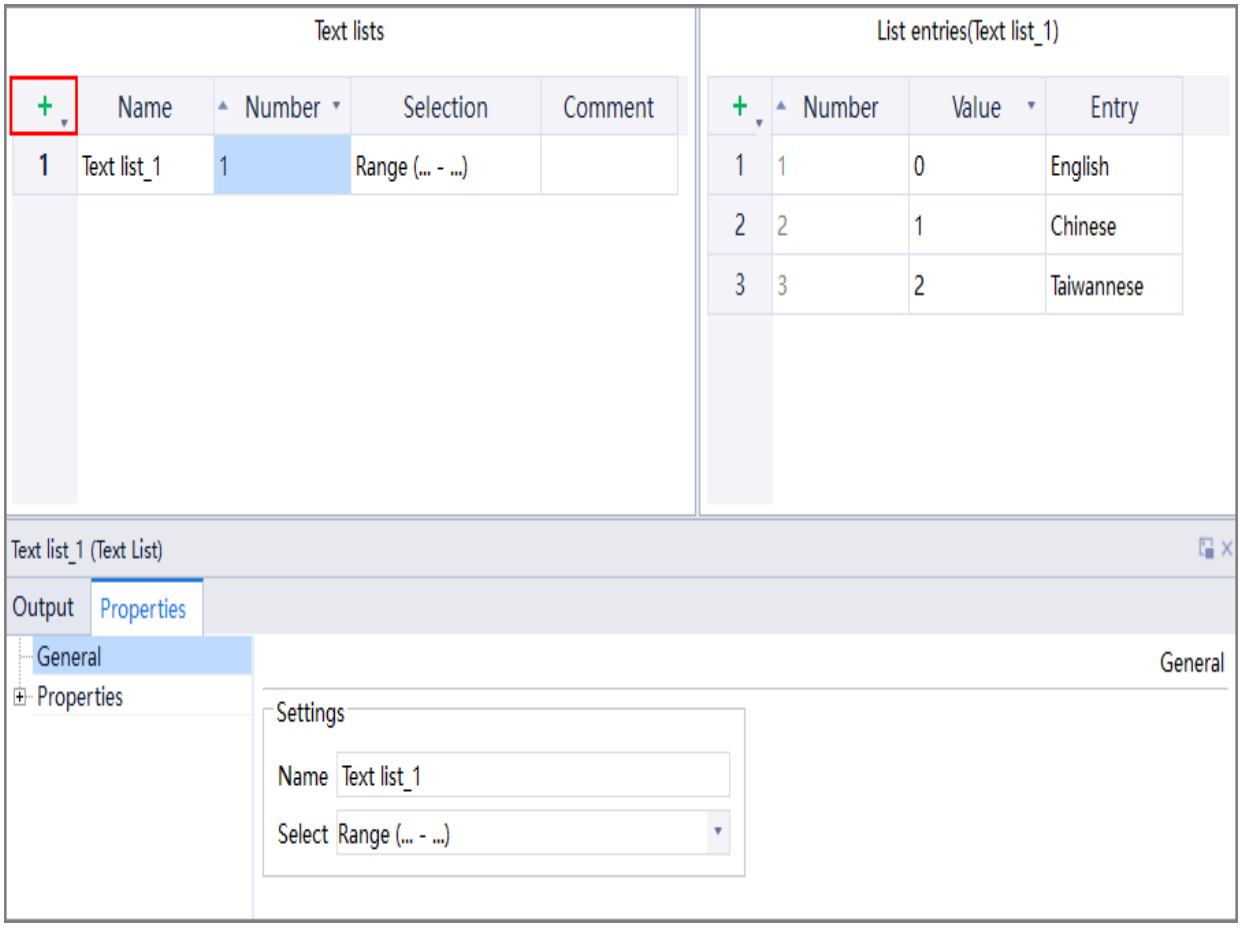
Symptom

How can we switch languages onsite when necessary?

Solution

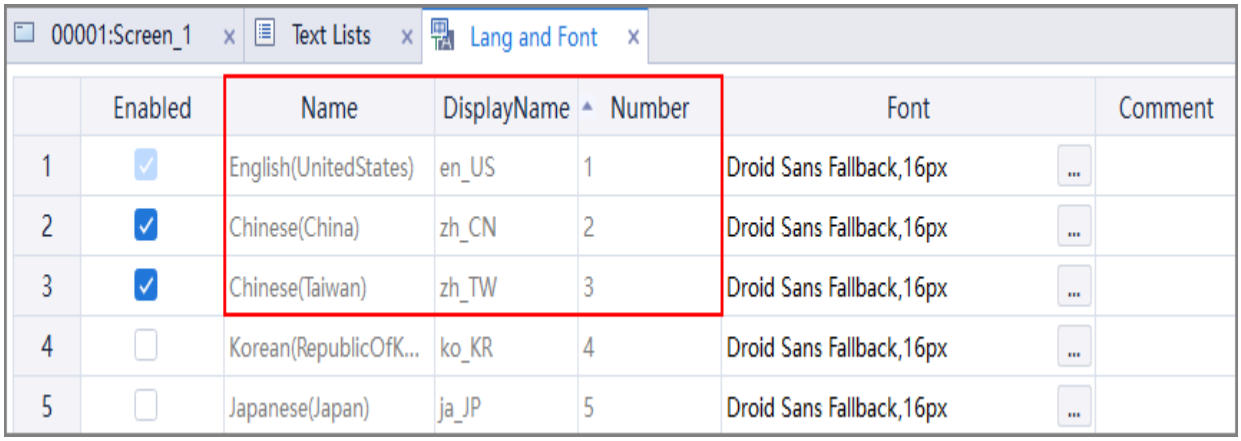
You can use the symbolic IO field to switch languages.

1. In the "Project" navigation tree on the left side of the InoTouchPad software, click "Status Lists", double-click "Text lists", click + in the text list to add "Text list_1"; click + in the list entries to add 3 entries, and input corresponding values and items ("number", "value", and "Entry" must matches each other one-to-one).

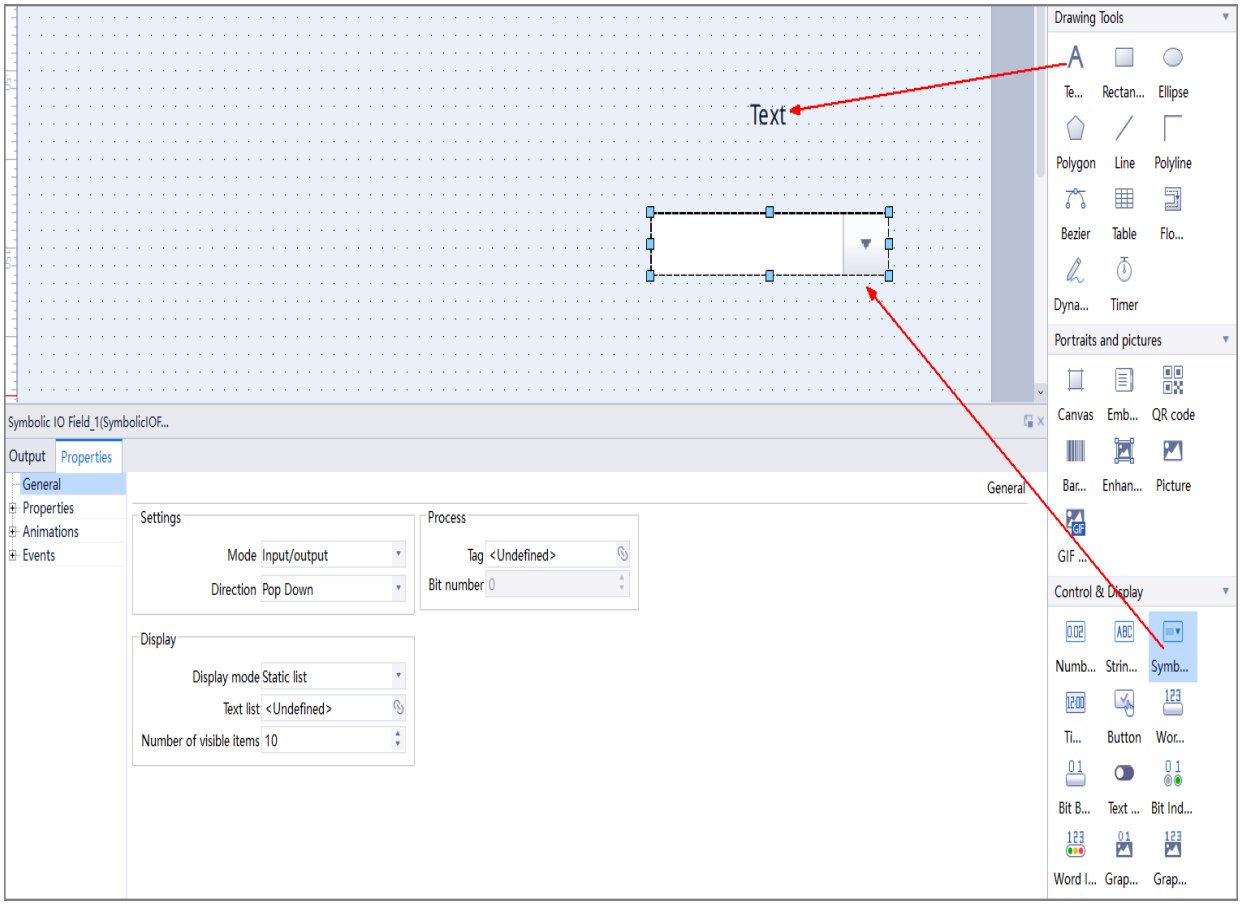


Note

In the "Project" navigation tree on the left, click "Resource", double-click "Lang and Font", and check the mappings between "Name", "DisplayName", and "Number".



2. In the "Project" navigation tree on the left of InoTouchPad, click "Screens", and then double-click "Add Screen" to create a screen. In the "Tools" navigation tree on the right, drag "Text Field" and "Symbolic IO Field" to the new screen.



3. In the "Project" navigation tree on the left, click "Resource" and double-click "I18N". On the page displayed, set "controlName" to Simplified Chinese, English, and Traditional Chinese respectively to display information.

4. In the "Project" navigation tree on the left, choose "Communication" > "Tags", double-click "Tag group_2", and add "Tag 1".

5. Use the symbolic IO field to bind tags, text lists, and events.

- Click "Symbolic IO Field" on the screen. On the "Properties" tab page, click "General". In the "Display" section, set "Text list" to "Text list_1" created in step 1.
- In the "Process" section, set "Tag" to "Tag 1" created in step 4.
- Choose "Events" > "Change value" > "Settings", and double-click "SetLanguage" to add the function. Set "Language" to "Tag" and select "Tag 1".

6. Click  to switch languages on HMI by using the symbolic IO field. For the download process, see "Downloading a Project".

7. Perform operation commissioning.

- If you set the symbolic IO field to Simplified Chinese, the text and options in the drop-down list are displayed in Simplified Chinese.
- If you set the symbolic IO field to English, the text and options in the drop-down list are displayed in English.
- If you set the symbolic IO field to Traditional Chinese, the text and options in the drop-down list are displayed in Traditional Chinese.

22.3.10 How to Cancel a System Alarm

In the "Project" navigation tree on the left of InoTouchPad, click "Alarm Management". Double-click "System Alarms". On the page displayed, select an alarm, deselect "Enabled", make configuration, and download the configuration to the HMI. Then the alarm is canceled.

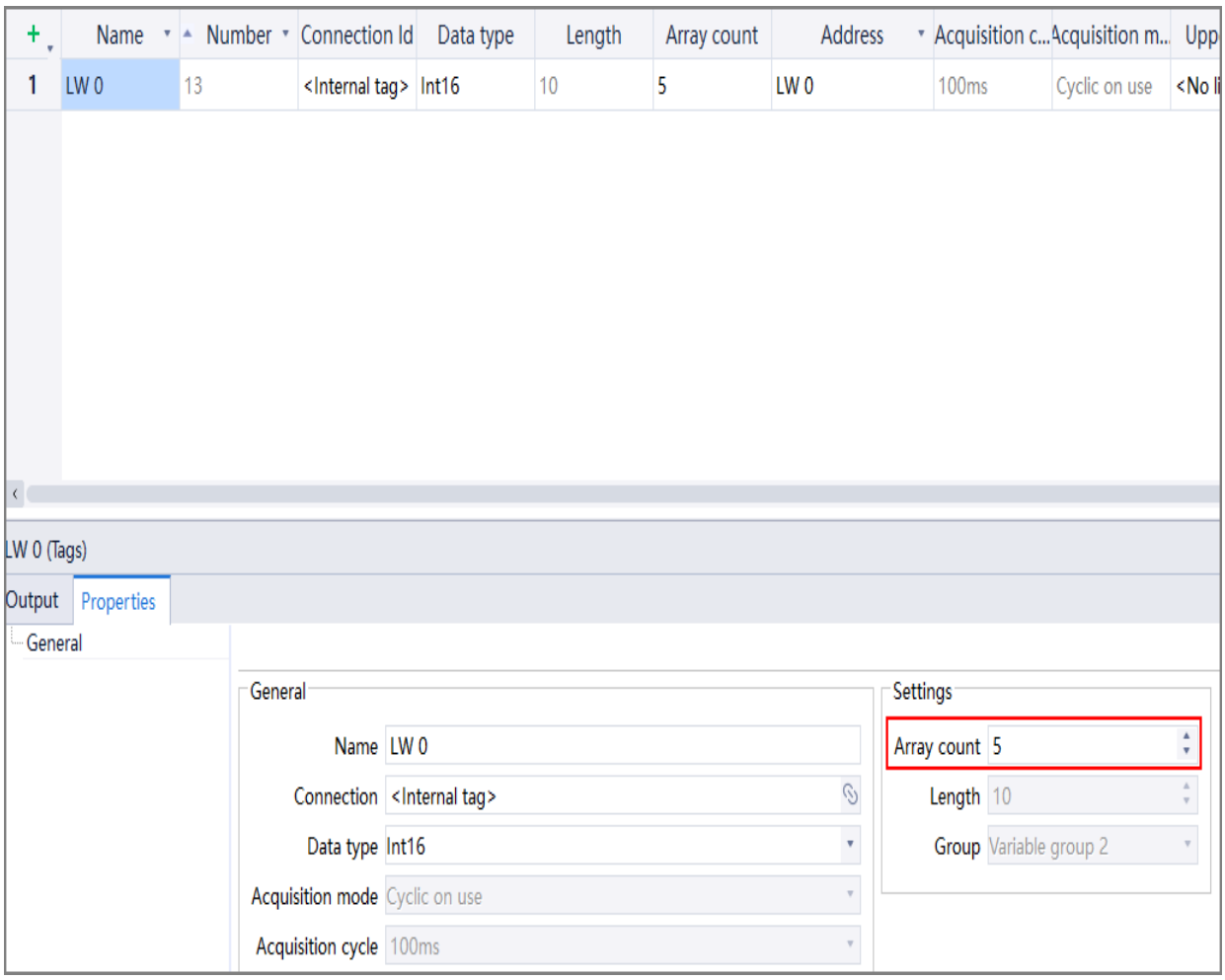
System Alarms

	Text	Alarm classes	Event number	Enabled
1	Log %1 is full.	System	100001	☑
2	Log %1 is %2 percent full.	System	100002	☑
3	Connection failure: %1, station %2.	System	100003	☑
4	Connection successful: %1, station %2.	System	100004	☐
5	Invalid input of date/time.	System	100005	☑
6	Overflow range,the valid range is [%1-%2].	System	100006	☑
7	The Medium of Log is full .	System	100007	☑
8	Tag %1 can not write to PLC.	System	100008	☑
9	Invalid PLC job number: %1.	System	100009	☑
10	No other screens can be selected. No other screens are stored in t...	System	100010	☑
11	SIM status: %1.	System	100011	☑
12	IOT status: %1.	System	100012	☑
13	Connection off line: %1, station %2.	System	100013	☑
14	%1 read error: %2.	System	100014	☑
15	%1 write error: %2.	System	100015	☑
16	SD card has not been detected.	System	100016	☑
17	SD card has been detected.	System	100017	☑
18	SD card has been ejected.	System	100018	☑
19	USB has not been detected.	System	100019	☑
20	USB card has been detected.	System	100020	☑
21	USB has been ejected.	System	100021	☑
22	Connection disabled: %1, station %2.	System	100022	☑
23	Insufficient available memory!	System	100023	☐

22.3.11 How to Create an Array Tag

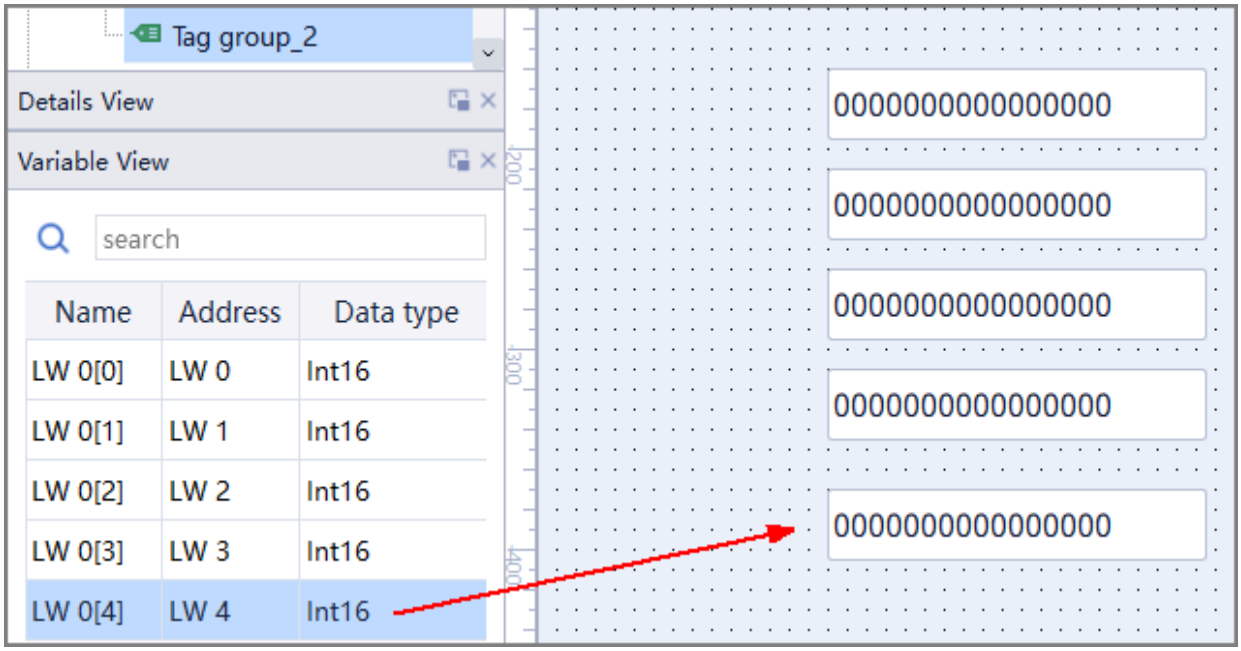
1. In the "Project" navigation tree on the left of InoTouchPad, choose "Communication" > "Tags", double-click "Tag Group_X", and add a tag.

2. Select the added tag. On the "Properties" tab page, click "General". In the "Settings" section, set "ArrayCount" to 5 (indicating five array elements).



3. In the "Project" navigation tree on the left of InoTouchPad, click "Screens", and then double-click "Add Screen" to create a screen.

4. In the "Project" navigation tree on the left, click "Tag group_2". Drag tags LW 0[0] to LW 0[4] from "Variable View" to the screen. The array tag is created.



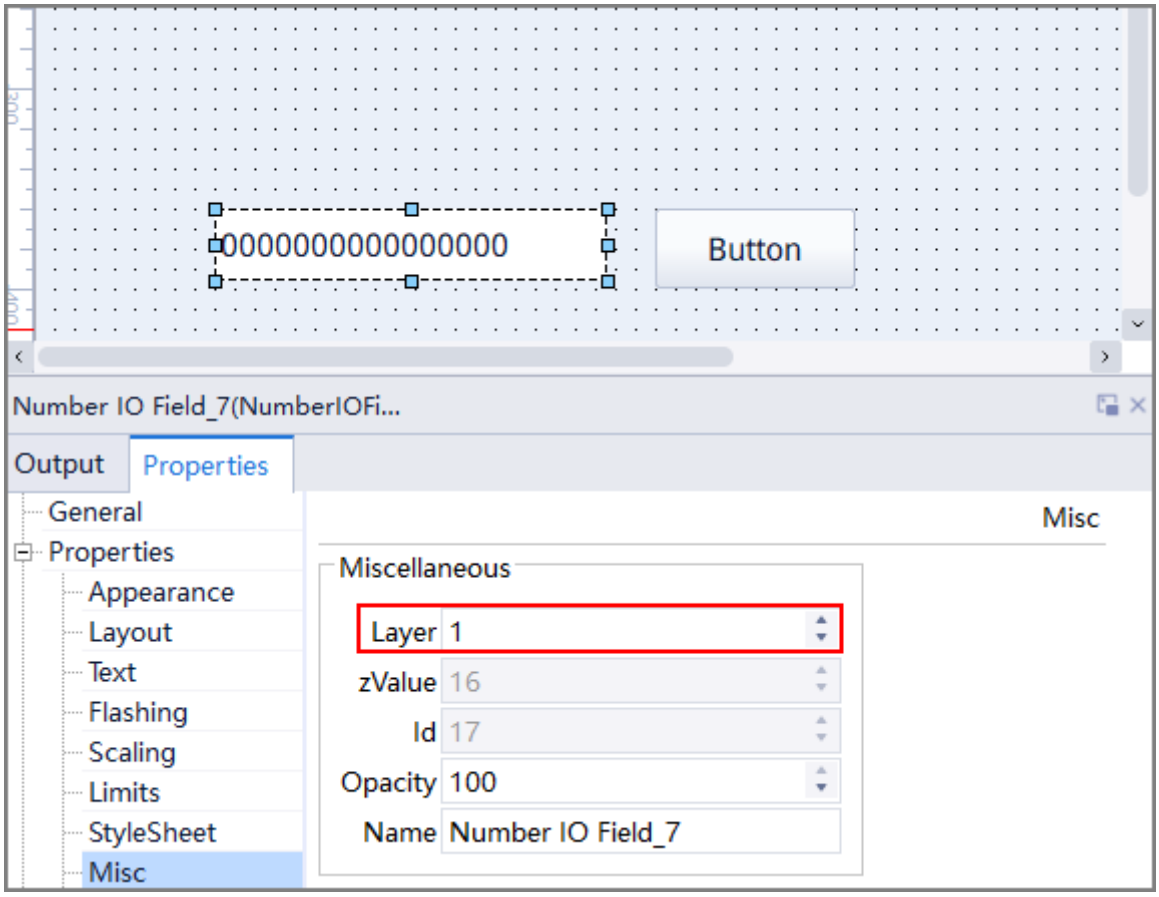
22.3.12 How to Use Layers

Solution

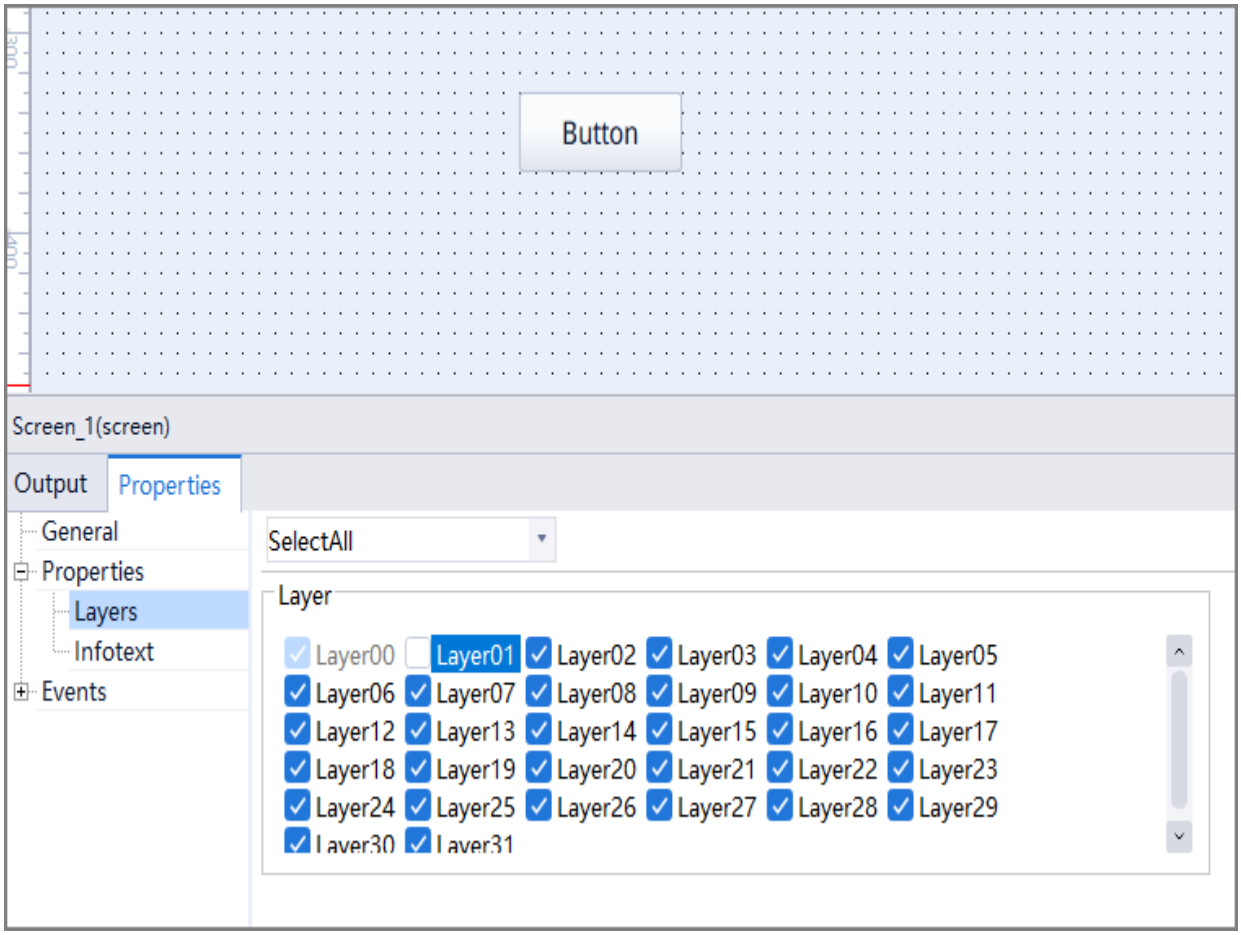
1. In the "Project" navigation tree on the left of InoTouchPad, click "Screens", and then double-click "Add Screen" to create a screen.

2. In the "Tools" navigation tree on the right, choose "Control & Display" > "Number IO Field", and drag the field to the screen. Then, choose "Control & Display" > "Button", and drag the button to the screen.

3. Select a control. On the "Properties" tab page, choose "Properties" > "Misc". In the "Miscellaneous" section, set "Layer" to 1.



4. Click at a blank area of the screen. On the "Properties" tab page, choose "Properties" > "Layers". Select this layer to display it (the layer 00 is always displayed by default). Deselect the layer to hide it.

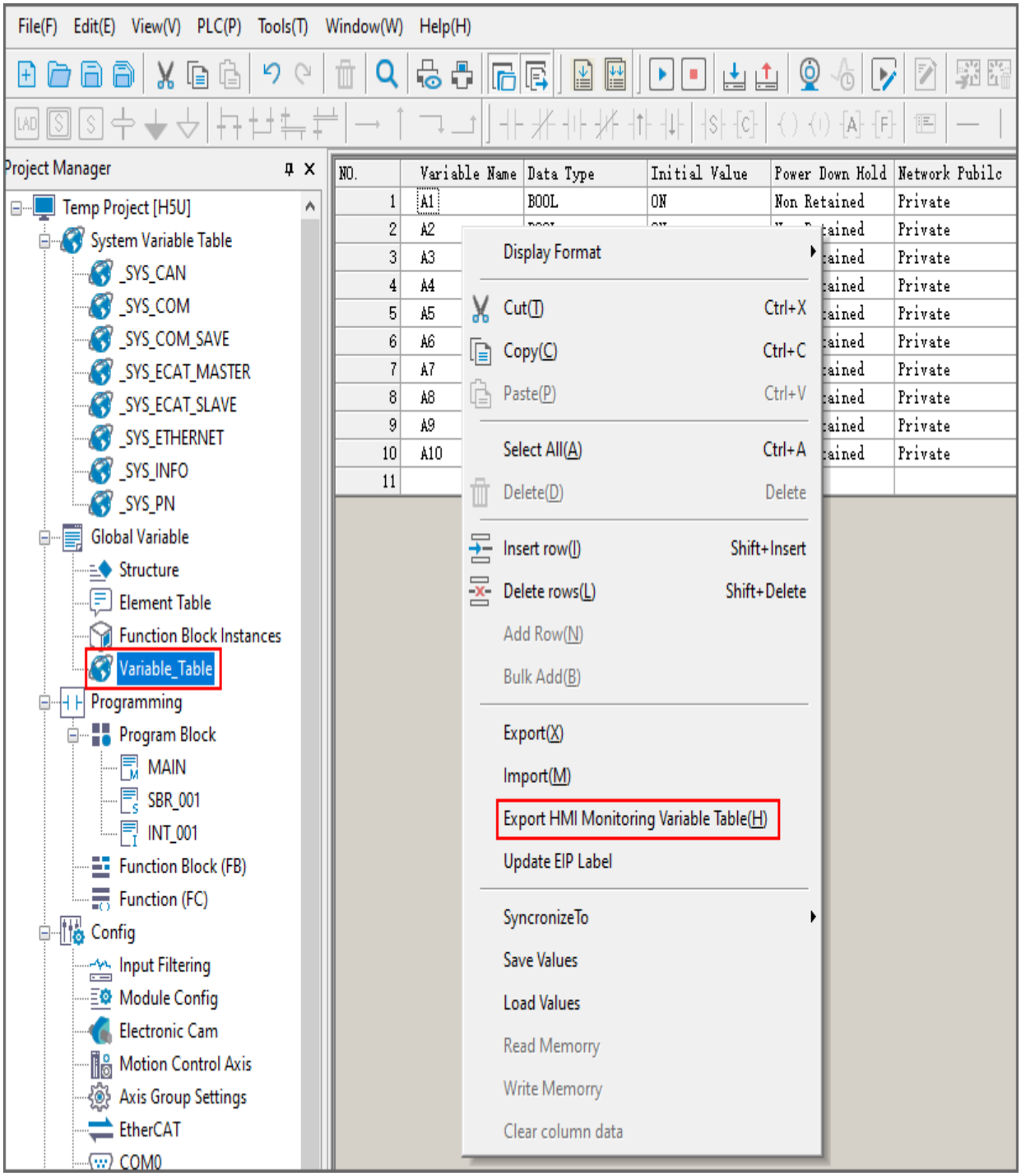


Note

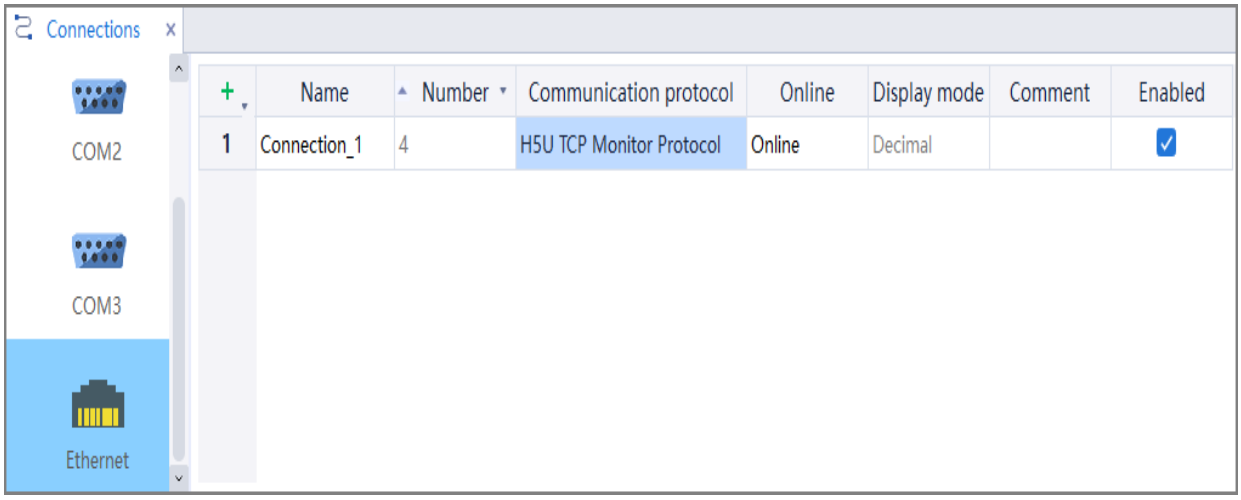
- The above operations are only applied to the HMI software. No matter whether the layer is selected or not, the control display on the board is not affected.
- One screen can have up to 32 layers. Choose to hide or display some layers based on needs.

22.3.13 How to Import Tags from H5U to InoTouchPad

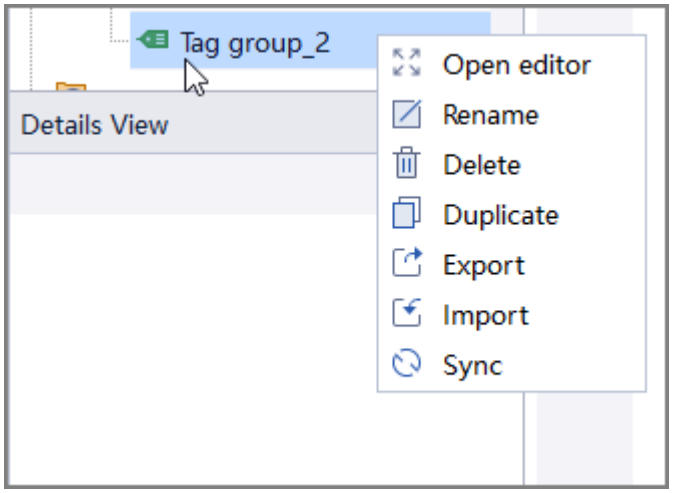
1. Run AutoShop. In the "Project Management" navigation tree on the left, click "Global Variable". Double-click "Variable Table", right-click a tag table, and then select "Export HMI Monitoring Variable Table".



2. Run InoTouchPad. In the "Project" navigation tree on the left, click "Communication". Double-click "Connection", select "Serial Port", add a connection, and select "H5U TCP Monitor Protocol" for the communication protocol.



3. In the "Project" navigation tree on the left of InoTouchPad, choose "Communication" > "Tag". Double-click "Add Tag Group", select a tag group to be added, right-click the group, and select "Import". Select the file exported in Step 1, and click "Open". Then the file is imported.



22.3.14 How to Synchronize Modification to Tag Name to All Points

After a tag name is changed, it is automatically applied in all instances (excluding scripts) in the system. The tag name in scripts needs to be manually changed.

22.3.15 Supported Fonts

In a system, fonts in .fon and .otf formats do not support trimming and therefore cannot be used in HMI. When a font is not supported, the system will use the default font, Droid Sans FallBack.

22.3.16 Difference Between Linear Conversion of Tags and Zooming of Numeric I/O Field

- Linear conversion of tags: The value of HMI tags is changed linearly.
- Zooming of numeric I/O field: The displayed value of the current value is changed by zooming.

22.4 Features of Supported Peripherals

22.4.1 Supported Formats and Purchase of Peripherals

The HMI touchscreen allows you to use peripherals such as USB drives and SD cards for project file management. Currently, the formats of peripherals mainly include FAT32, NTFS, and exFAT. The following table lists the operating systems supported for the peripherals.

Partition Format	FAT32	NTFS	exFAT
System compatibility (read/write support)	Windows, Mac OS, and Linux	Windows	Windows and Mac OS
Brief description of features	The disk utilization is slightly low, the size of one file cannot exceed 4 GB, but more systems are compatible.	The security and stability are high but the compatibility is moderate.	The flash memory and large files are supported.

Note

- It is recommended to buy mainstream brand USB drives from official channels to prevent compatibility issues.
- It is recommended to use USB drives or SD cards in FAT32 format to manage the project files of the HMI.

22.5 Communication Errors

22.5.1 Connection Failure of MySQL Database

Symptom

When you connect HMI to a MySQL database, the prompt "Incorrect returned status address 2" is displayed.

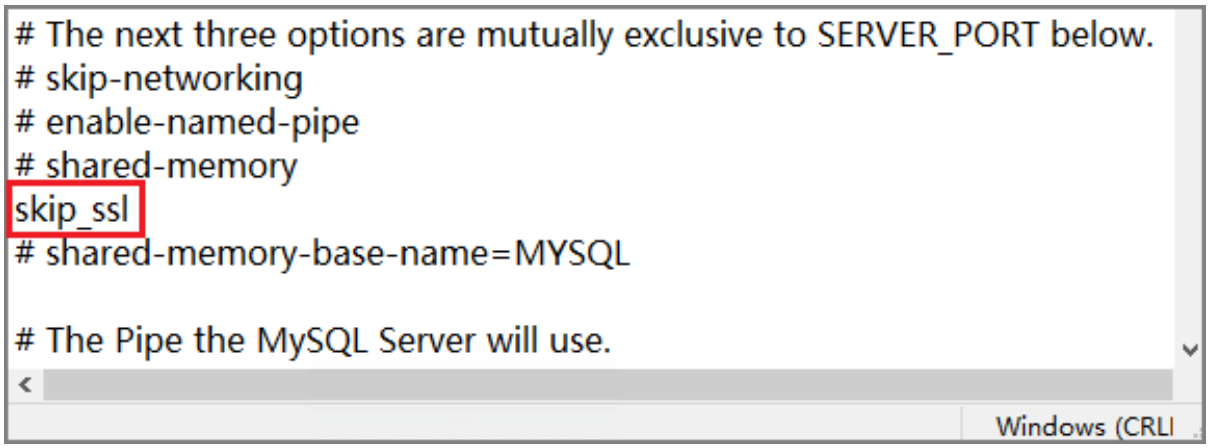
Symptom 1

In the "Inovance Control\InoTouchPad\logs" directory, check whether the following error messages are contained in the HMIRuntime log: "2026, "QMYSQL: Unable to connect", "SSL connection error: unknown error number"". If yes, disable SSL in the MySQL configuration file my.ini.

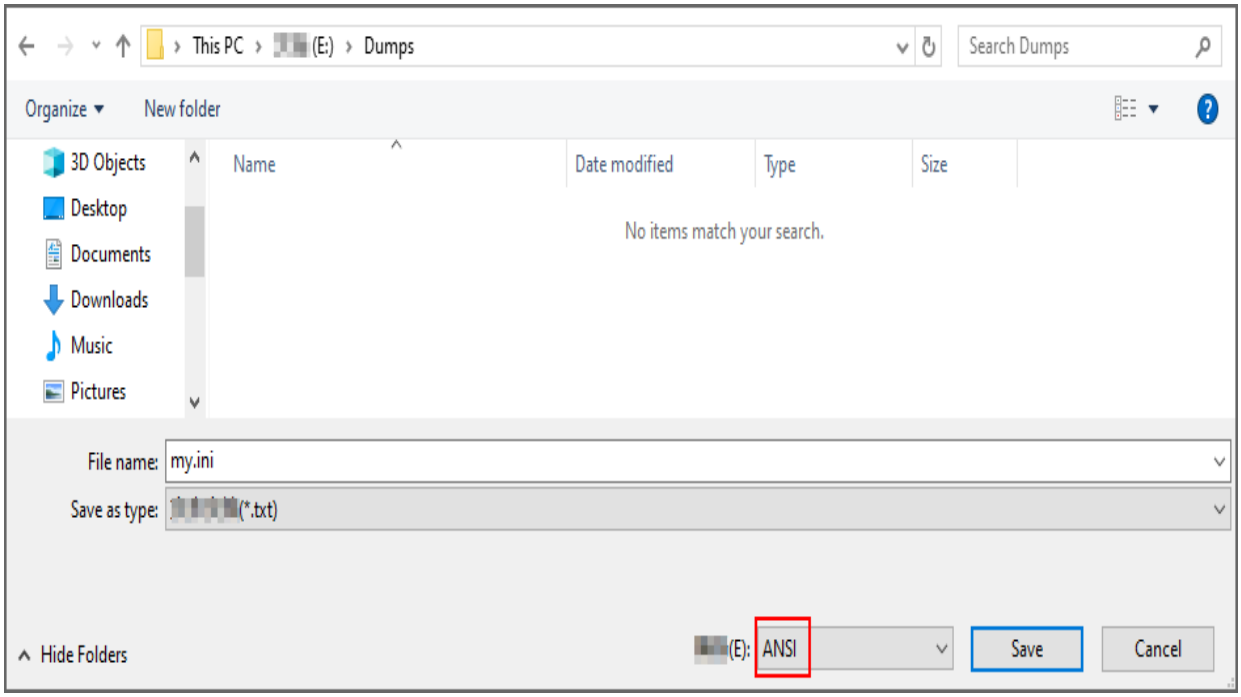
Solution

1. Open the my.ini file in the "\ProgramData\MySQL\MySQL Server 8.0\my.ini" directory in the notepad.

2. Search for "# shared-memory", and add the "skip_ssl" statement in the line below.

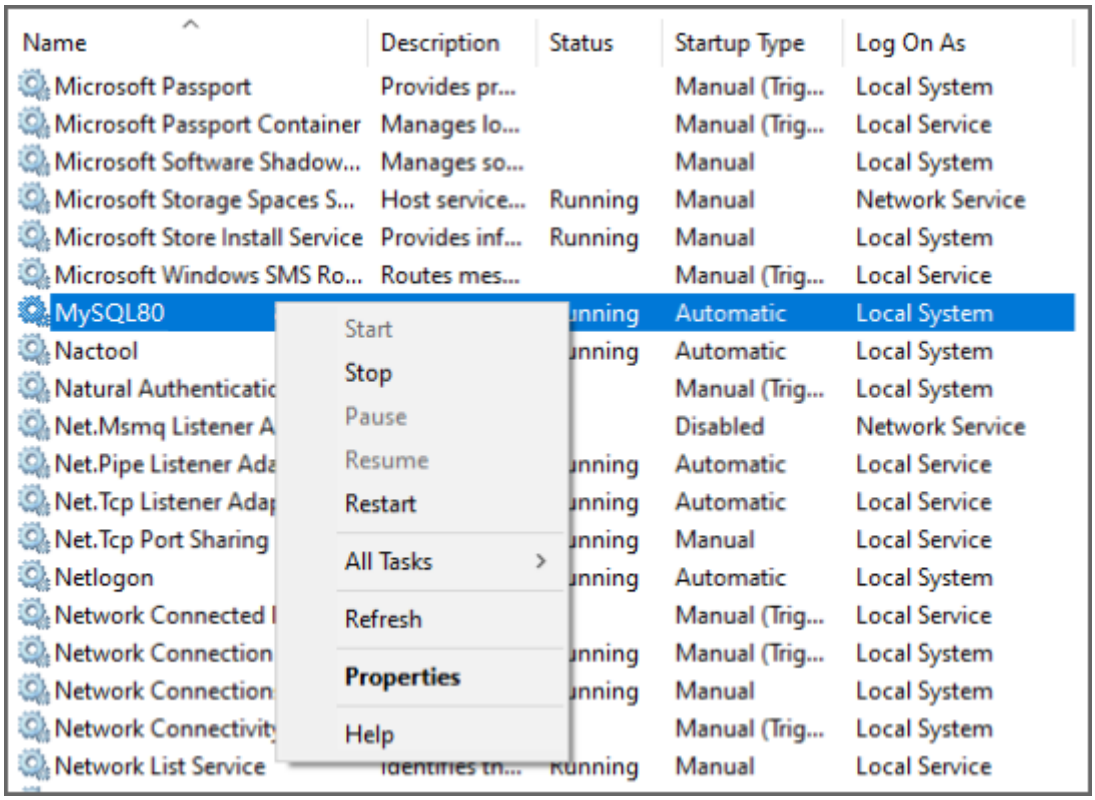


3. Save the file. In the dialog box displayed, select "ANSI" from the drop-down list of "Encode", and click "Save".



4. Press Windows and R. In the window displayed, input "SERVICES.MSC" and click "OK". The service window is displayed.

5. Right-click "MySQL80" and select "Restart Action" to restart the MySQL server.



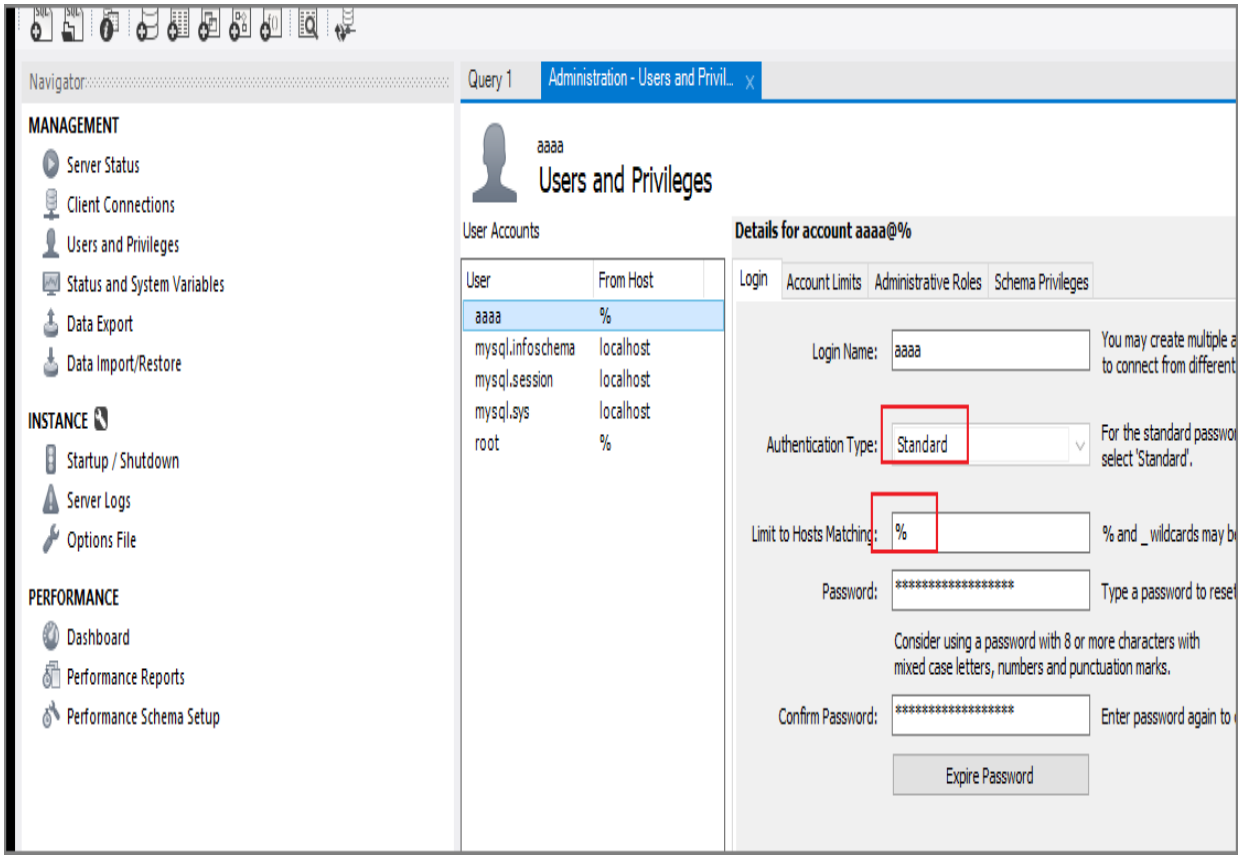
Symptom 2

In the "Inovance Control\InoTouchPad\logs" directory, check whether the following error messages are contained in the HMIRuntime log: "1045, "QMYSQL: Unable to connect", " Access denied for user 'ODBC'@'localhost' (using password: YES)".

This means the user access request is rejected. In Windows, the default DOS user is "odbc", but this user is not available in the MySQL server. As a result, this error is reported.

Solution

In the MySQL server, add a user that has the remote access permission, as shown in the following figure.



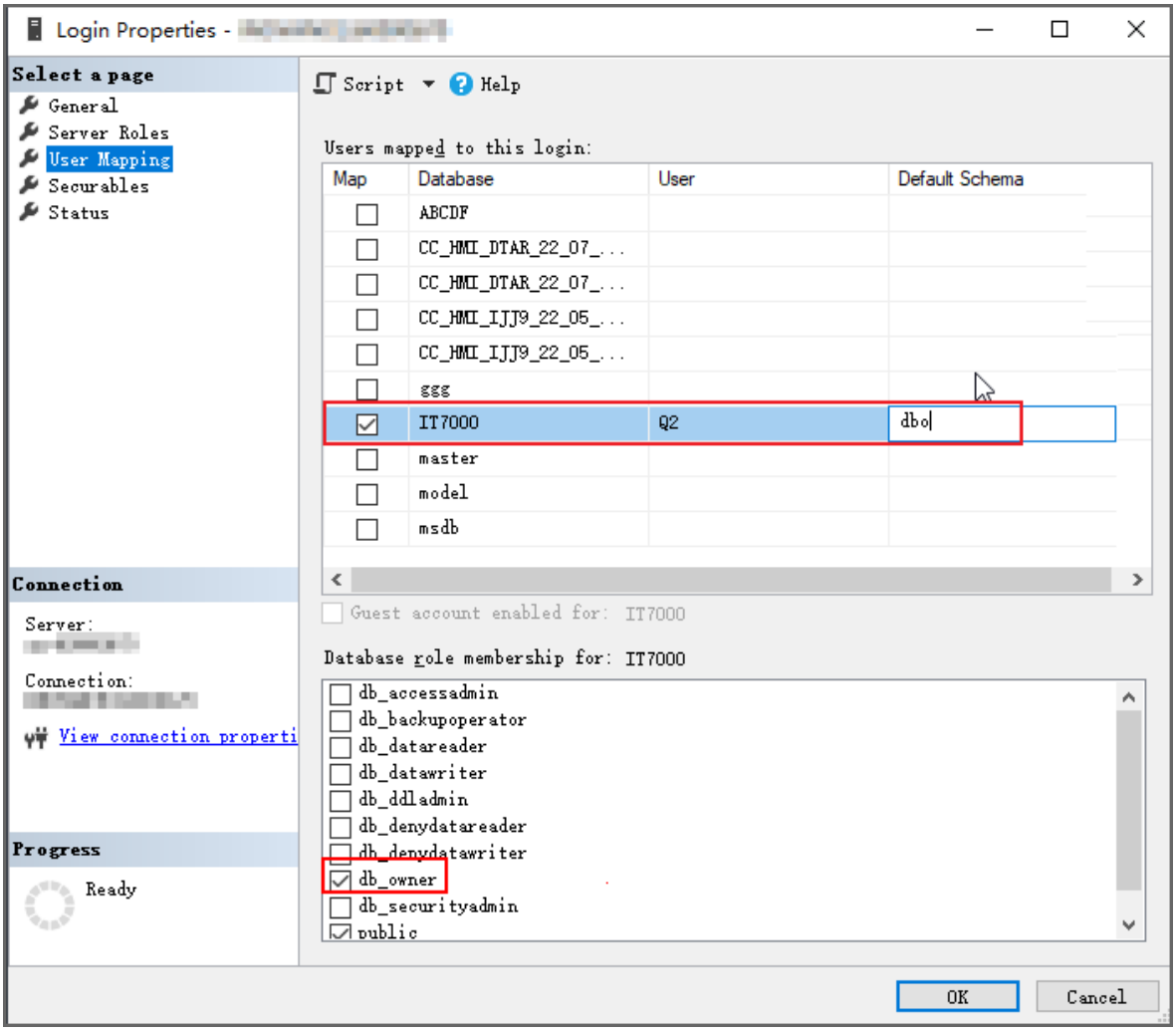
22.5.2 Connection Failure of SQL Server Database

Symptom

HMI fails to connect to the SQL server database.

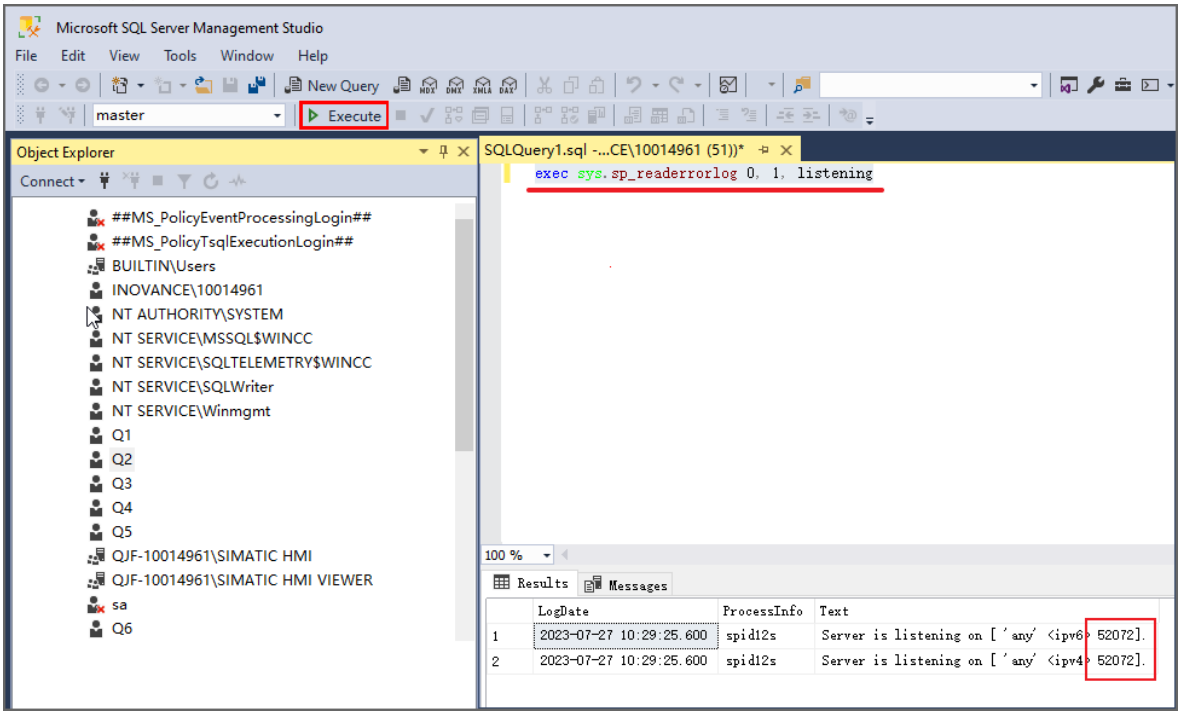
Solution

1. Check whether the user is mapped to the database to be accessed and whether the user is allocated with a database role.

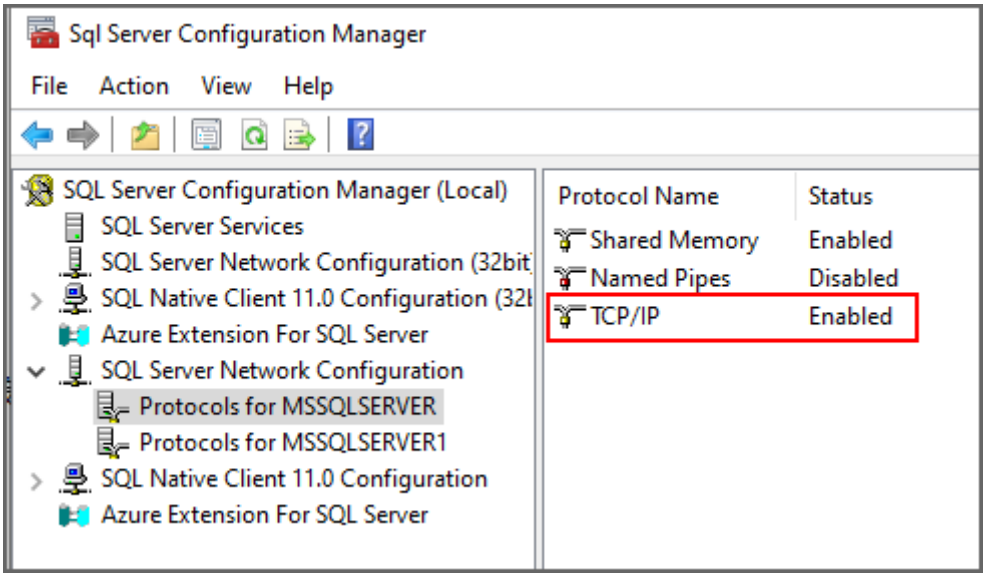


2. Check whether the database port is consistent with the runtime port.

In the client tool, create the query statement "exec sys.sp_readerrorlog 0, 1, listening", as shown in the following figure.



3. Check whether the TCP/IP protocol is enabled.
   If the TCP/IP protocol is not enabled, access "SQL Server Configuration Manager", and choose "SQL Server Network Configuration" > "MSSQLSERVER Protocol". On the page displayed, select "TCP/IP", and then restart the SQL server.



4. Check whether the SQL server firmware is disabled.

22.5.3 List of Protocol Communication Error Codes

Protocol	Error Code and Description
Inovance monitoring protocol	0x10: CRC error
	0x11: Incorrect data length
	0x12: Unknown operation
	0x15: Error 15

Modbus family protocol	0x01: Illegal feature
	0x02: Illegal data address
	0x03: Illegal data value
	0x04: Slave device fault
	0x05: Acknowledgment
	0x07: Slave device busy
	0x08: Storage parity error
	0x0a: Unavailable gateway path
	0x0b: Gateway target device failed to respond
FINS protocol	See Omron series PLC user manuals.

22.5.4 List of System Communication Error Codes

Error	Error Code and Description
System communication error	0x10001: Failed to start the device
	0x10002: Device write error
	0x10003: Read error
	0x10004: Read timeout
	0x10006: Bus busy
	0x10007: Serial port identification error
	0x10008: Disconnected
	0x10009: Error in writing command once
	0x1000a: Error in reading command once

22.6 Common HMI Errors

When you download a project or update the firmware on InoTouchPad, the following errors may occur.

Error Type	Error Code	Description
HMI device communication	10004	Write error
	10005	Read error
	10006	Device start error
	10007	Timeout
	10008	Failed to start the device.
HMI device operation	3	Check whether you have the permission to use this feature.
	4	Insufficient resources. More flash space is needed.
	100	

		The password is incorrect when the pass-through feature is used.
	102	HMI is operated by another user when the pass-through feature is used.
	200 to 202	HMI upload error. Check whether the connection is unstable.
	205 or 10001	Incorrect HMI version
	301, 400, 401, and 10009	Failed to unzip or open the file. More flash space is needed.
	302, 303, 203, and 204	CRC32 error. Check the file.
	10002	Incorrect permission password
	10003	Device type mismatch

Note

When error codes 10006 to 10008 are displayed, check the USB drive or the network port connection.

22.7 Inovance Service Hotline

Inovance service hotline: 4000-300124

23 Cases

23.1 Issues of Upgrading to V1R5

23.1.1 Datalog Update

Introduction

The datalog update feature is used for updating data logging from older version to newer version.

Prerequisites

When upgrading from a lower version to V1R5, the system triggers the datalog update if data logs are detected in the HMI local disk, USB drive, or SD card.

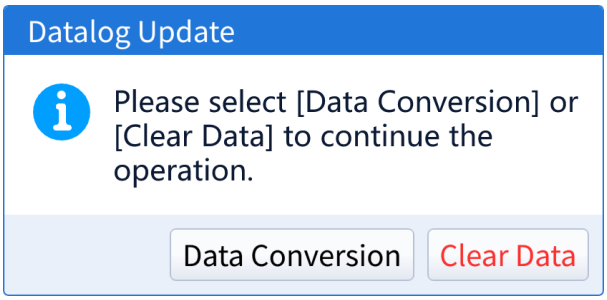
Note

- Do not power off the device during the upgrade.
- Data conversion can be performed via PC or on the panel. Using a PC for data conversion is recommended for reducing upgrade time.

Procedure

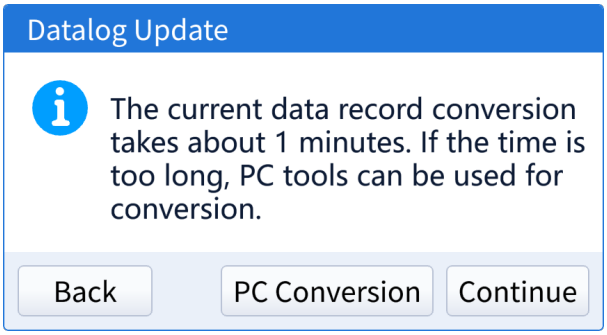
1. Trigger datalog update.

   When upgrading InoTouchPad software from a lower version to V1R5, after completing the firmware upgrade, if the system detects data logs from the old version stored in the HMI local disk, USB drive, or SD card, it will trigger the "Datalog Update" pop-up window, as shown in the figure below.

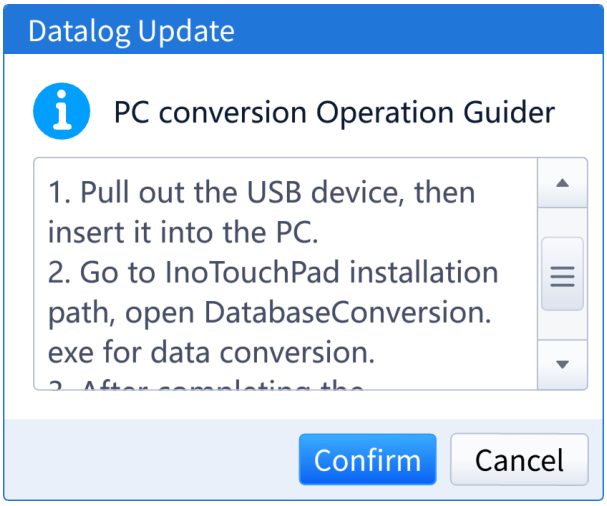
   - Data Conversion: Select when data retention is required.
   - Clear Data: Select when historical data logs from older version are not required (this action only deletes data records while preserving alarm records and group records). Click "Confirm" in the pop-up window, and the data will be deleted after the countdown completes.

2. Select "PC conversion" or on-screen conversion.
   Click "Data Conversion" and complete the selection according to the pop-up prompt as shown below.



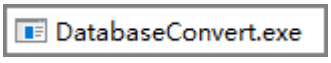
- Back: Back to step 1 to reselect "Data Conversion" or "Clear Data".
- PC Conversion: Use the system's built-in "DatabaseConvert.exe" tool on the PC to complete the conversion, which takes less time and is recommended.
- Continue: Complete the upgrade on the HMI screen, which takes a longer time. The system will enter the project after the upgrade.

3. Complete data conversion on the PC.
   a. Click "PC Conversion", and a pop-up window will display the "PC Conversion Operation Guider" as shown below.

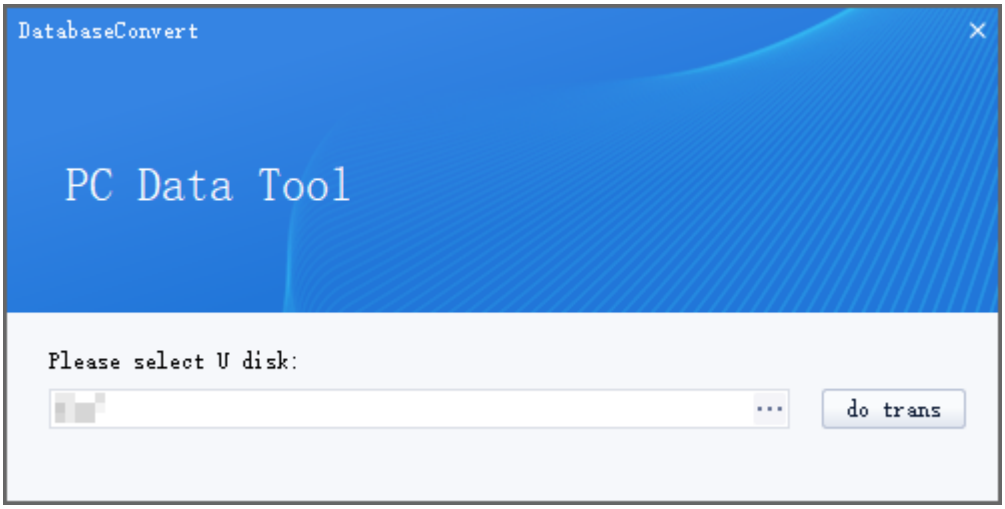


   b. Remove the USB/SD card from the InoTouchPad and insert it into the PC (the "Confirm" button will be grayed out after removal).

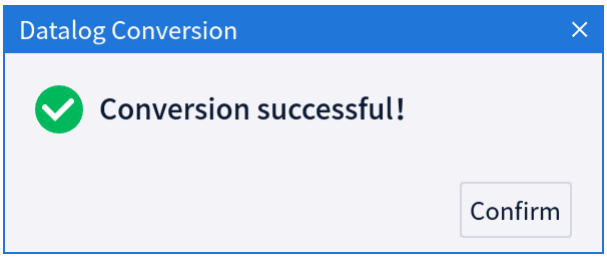
   c. Double-click the "DatabaseConvert.exe" tool in the InoTouchPad software root directory (...\InoTouchPad). The tool icon is shown in the figure below.



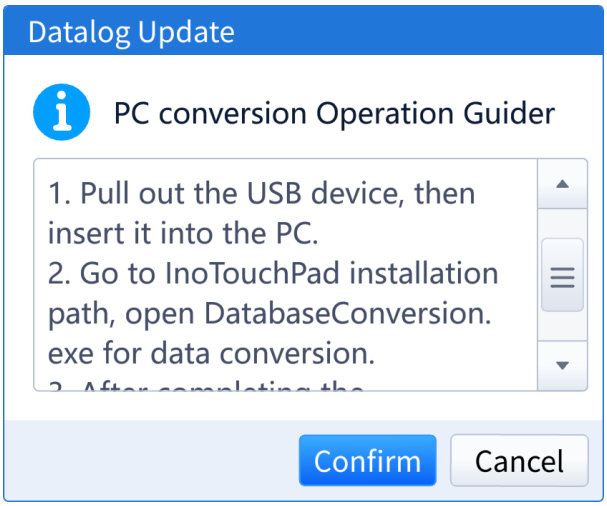
   d. Click "..." to select the USB drive address, then click "Data Conversion".



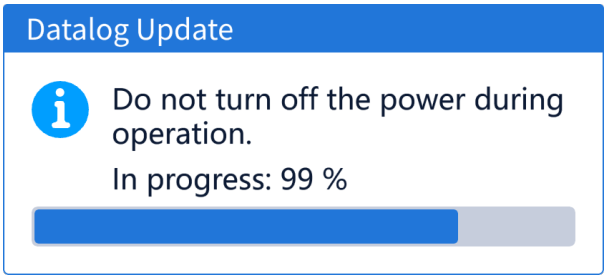
e. Click "Confirm" after a pop-up window prompts "Conversion successful!".



4. Remove the USB drive, reinsert it into the HMI touch screen, and click "Confirm" to continue the upgrade, as shown in the figure below.



5. Wait for the progress bar to complete, then proceed with the project to complete the datalog update as shown in the figure below.



23.2 Control

23.2.1 Switching Pages by Word Buttons

Case

Switch pages by the word buttons.

Purpose

Switch pages by the word buttons.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a screen.
   Click "Screens", and then double-click "Add Screen" to create two screens, such as "Screen_2" and "Screen_3".

3. Create a tag.

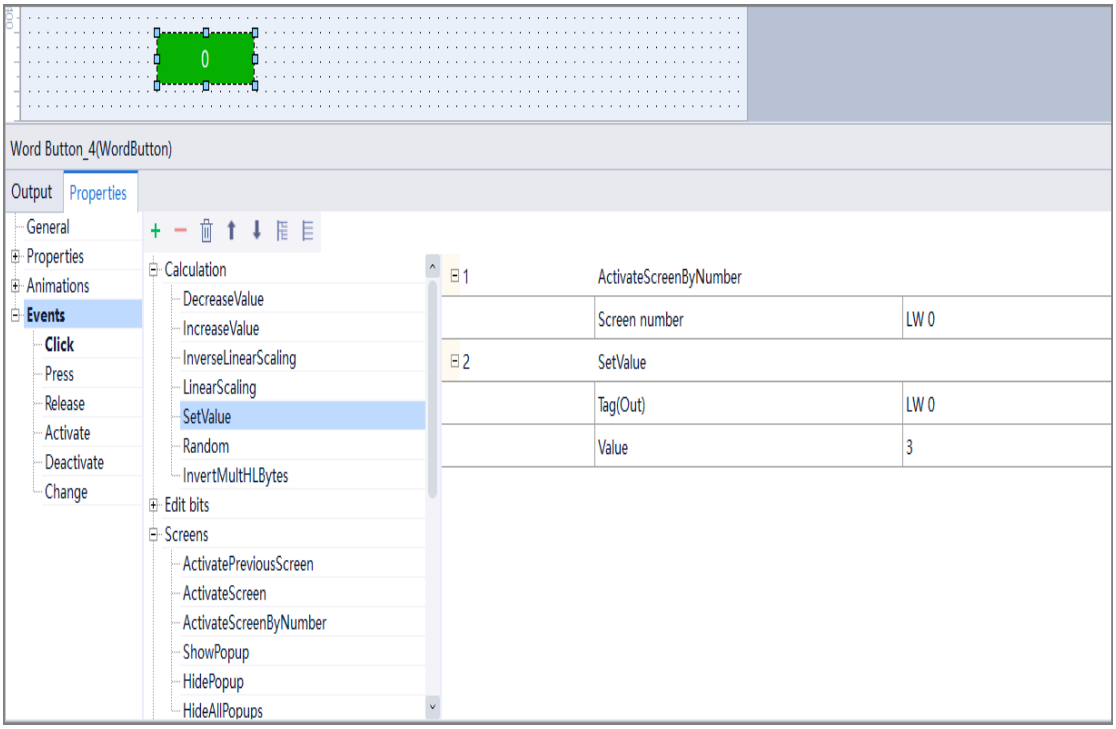
   Choose "Communication" > "Tags", double-click "Tag group_2", and create the tag LW 0.

	Name	Connection	Data type	Length	Array count	Address
1	LW 0	<Internal tag>	Int16	2	1	LW 0

4. Configure the word button and switch to the screen whose number is the same as that in "Screen number".

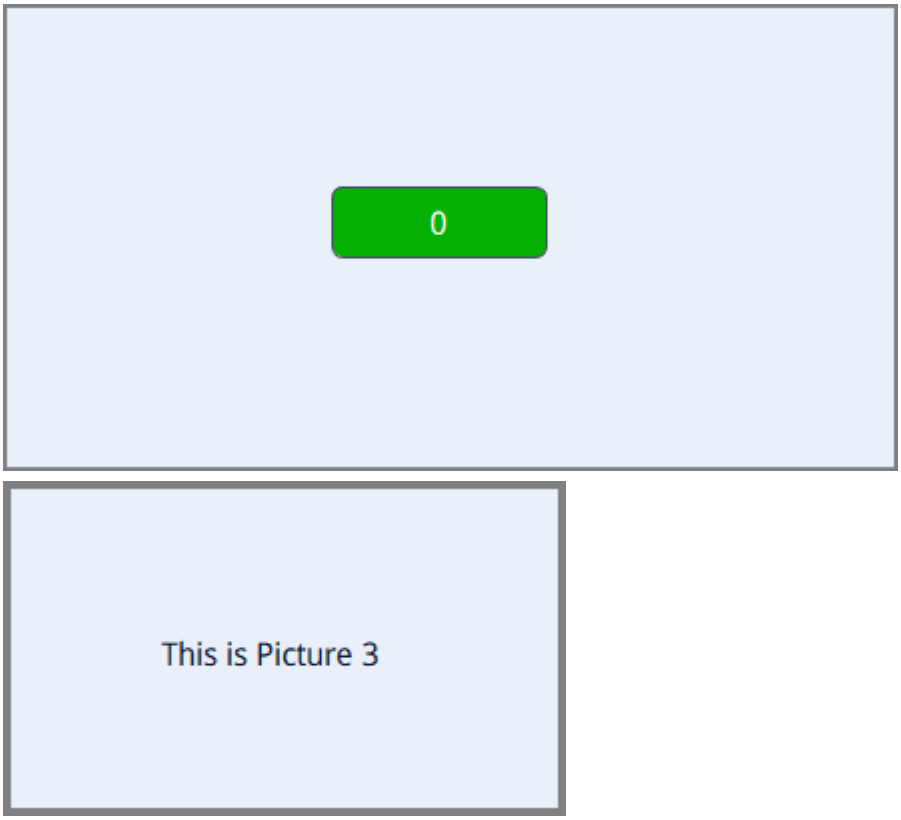
   Click "Screens" and switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Word Button", and drag the button to "Screen_1". Select this button and set the following parameters on the "Properties" tab page:

   - Choose "Events" > "Click" > "Screens", double-click "ActivateScreenByNumber" to add the function, and then select "LW 0" for "Screen number".
   - Choose "Events" > "Click" > "Calculation", and then double-click "SetValue" to add the function. Select "LW 0" for "Tag(Out)" and set "3" for "Value".



5. Perform the simulation test.

Click to perform simulation offline.



23.2.2 Calling a Gallery by Controls and Customizing the Control Background Color

Case

If you need to change the appearance of screen controls for personal preference, or because of specific business needs, you can hide some button controls in the application. InoTouchPad allows you to customize user interfaces flexibly.

Purpose

Change the control style based on the built-in gallery or hide some button controls.

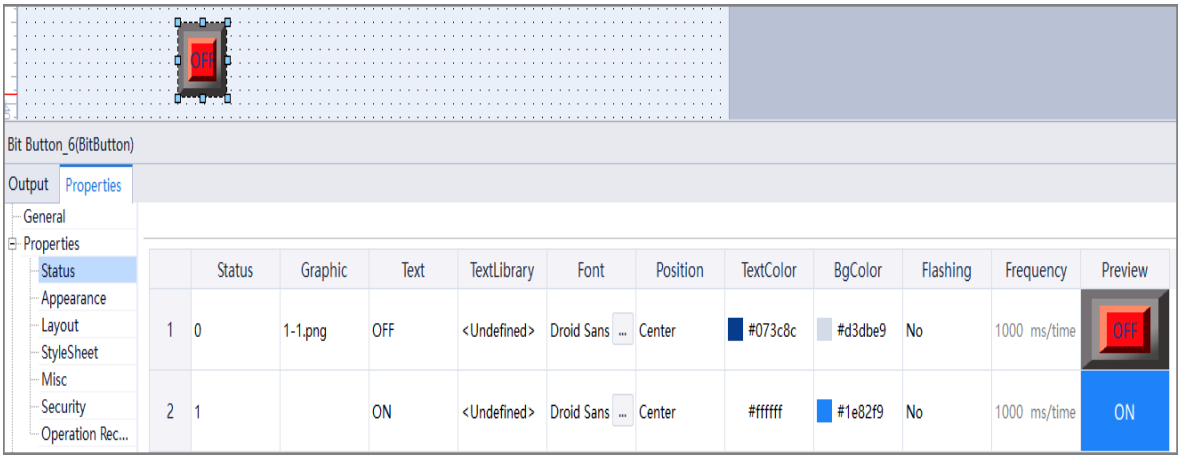
Procedure

Changing the control style

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Drag the bit button to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", and drag the button to "Screen_1".
3. Change the style of the bit button.

   Select "Bit Button". On the "Properties" tab page, choose "Properties" > "Status". In the "Graphic" column, select the required icon, such as 1-1.png.

> **Note**
>
> The system saves the icon you selected for next style change without the need of opening the gallery again.

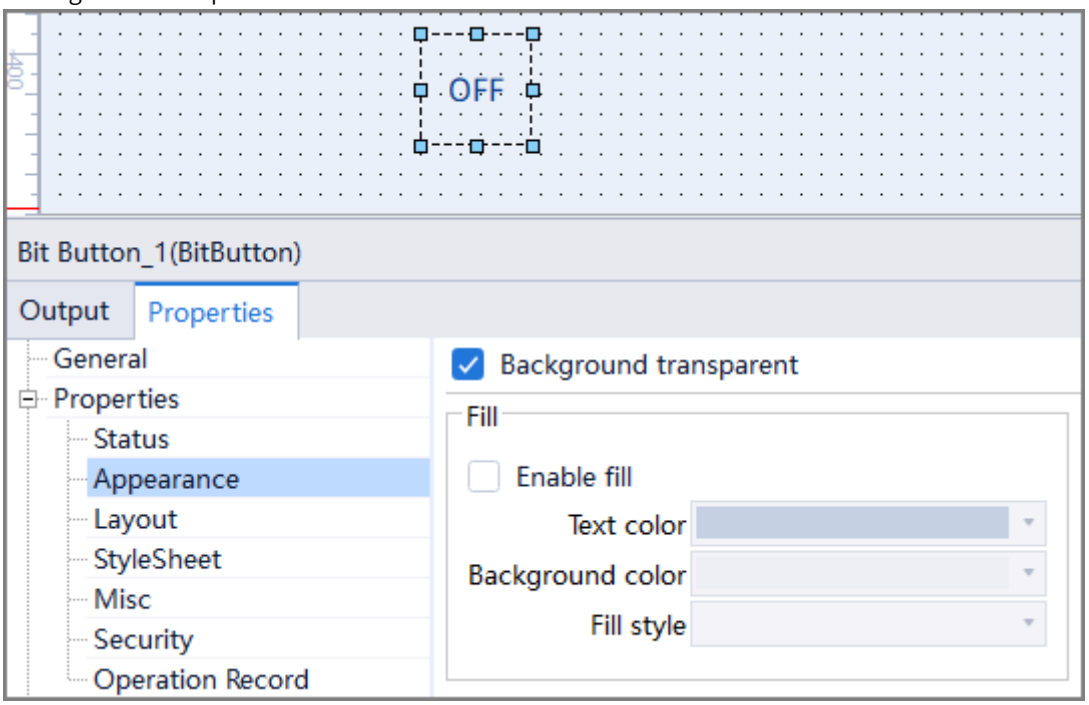


Hiding a control

1. Create a project by referring to the instructions in the "Creating a Project" section.
2. Drag the bit button to the screen.

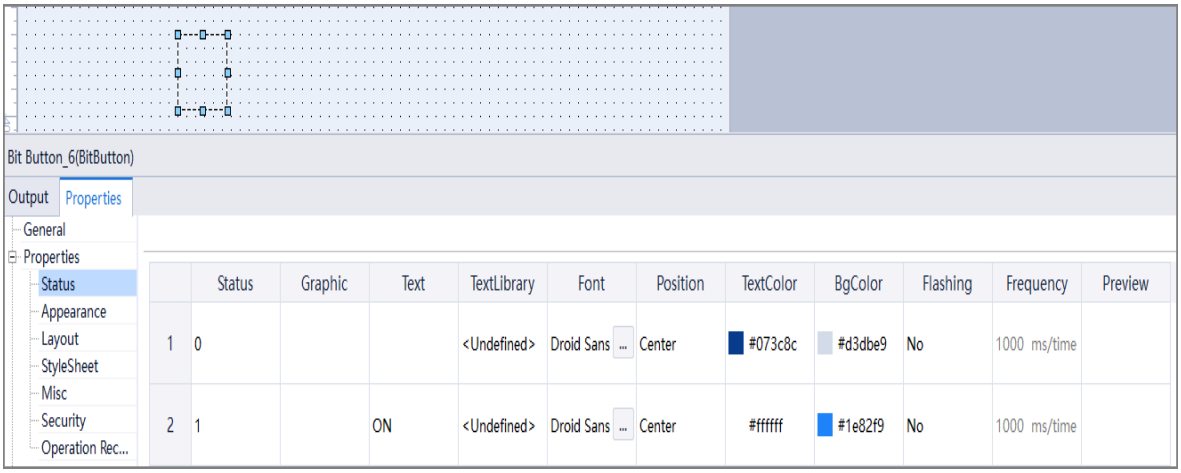
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", and drag the button to "Screen_1".
3. Set the background color of the bit button to transparent.

   Select "Bit Button". On the "Properties" tab page, choose "Properties" > "Appearance", and select "Background transparent".



4. Hide the bit button.

Select "Bit Button". On the "Properties" tab page, choose "Properties" > "Status". In the "Text" column, select the "OFF" text.



23.2.3 Switching Graphics by Graphic I/O Field and Graphic List

Case

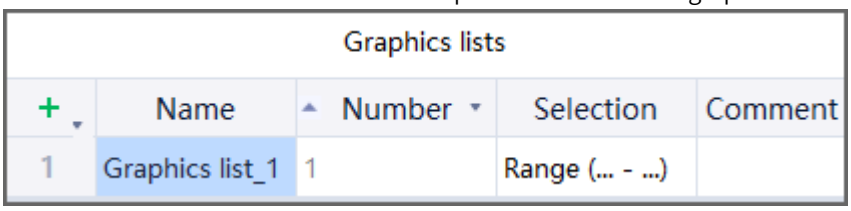
When you need to control graphic changes by using a certain tag, InoTouchPad associates "Graphic IO Field" with "Graphics list" and process tags in the PLC to switch data control graphics.

Purpose

To learn the features of the graphics list and learn to use the graphics list tool

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a graphics list.
   Click "Status Lists" and double-click "Graphics list" to create a graphics list named "Background Switch".

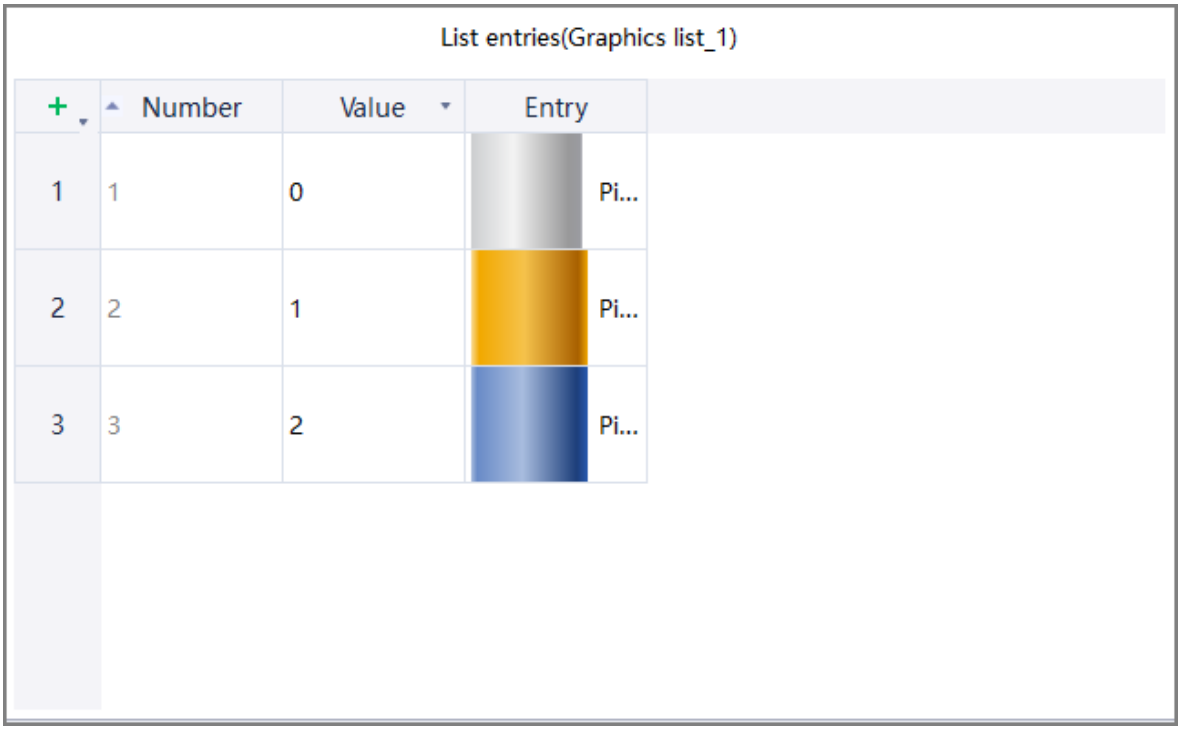


Item	Description	Value Range
Name	The name of a graphics list	It consists of 1 to 128 characters.
Number	The number of a graphics list, which is automatically generated by the system	-
Selection	The type of the associated tag	• Bits 0 and 1: The tag is of the Bool type, and the optional statuses are 0 and 1. • Bits 0 to 31: The tag value is a 32-bit integer used to set a bit of an integer tag. • Range: The tag value is in a range, with the setting taking effect immediately.

Comment	The customized description	It consists of 0 to 500 characters.

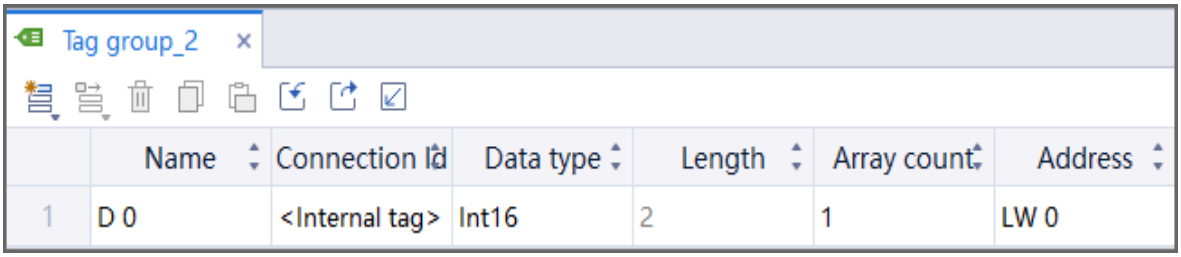
3. Set the list entries.

   In the "List entries (Background Switch)" section, create three list entries and select images in the "Entry" column.



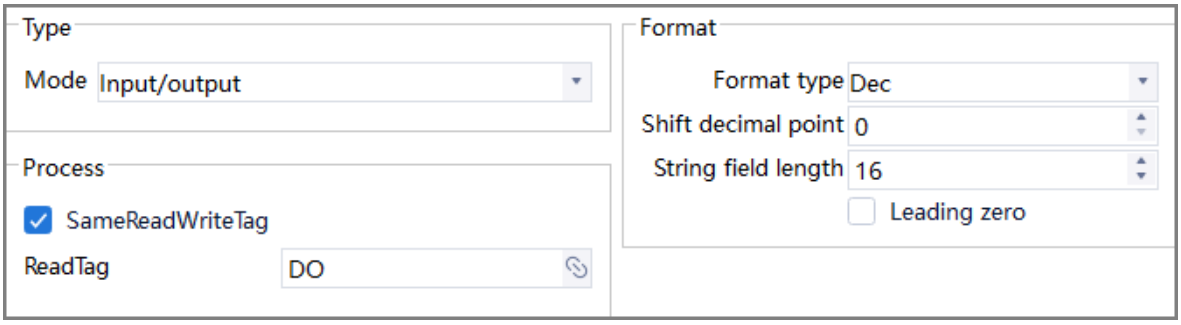
4. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag "DO".



5. Add the numeric I/O field in the screen.

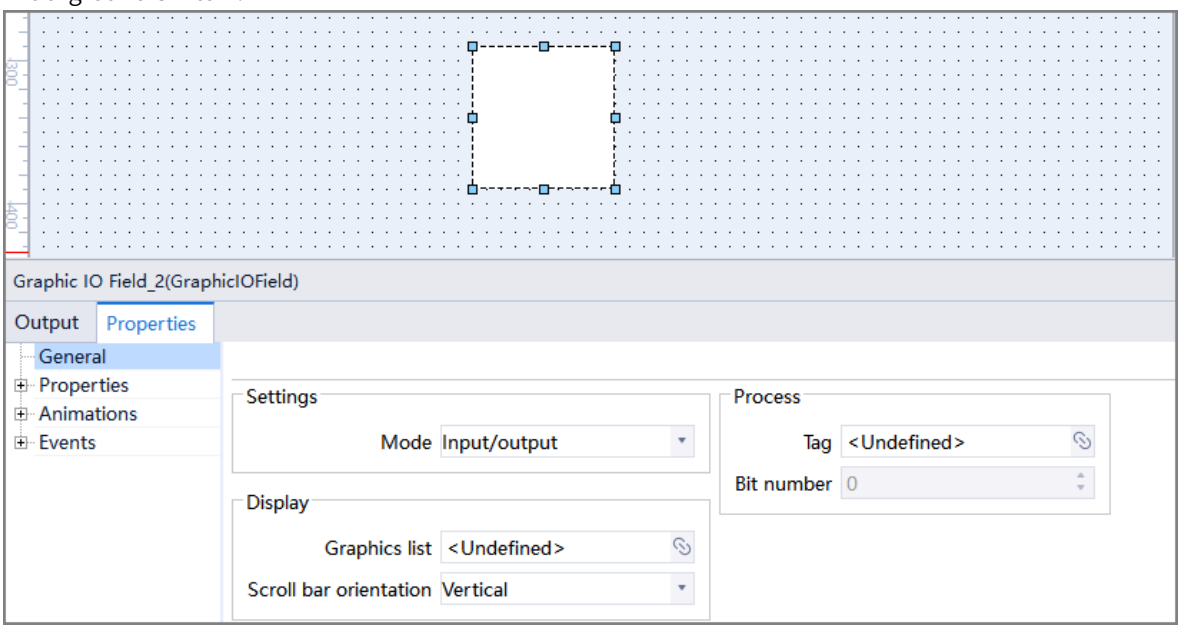
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Number IO Field", and drag the field to "Screen_1". Select the numeric I/O field. On the "Properties" tab page, click "General". In the "Process" section, set "ReadTag" to "DO".



6. Add the graphic I/O field in the screen.

   In the "Tools" navigation tree on the right, choose "Control & Display" > "Graphic IO Field", and drag the field to "Screen_1". Select the graphic I/O field. On the "Properties" tab page, click "General". In the

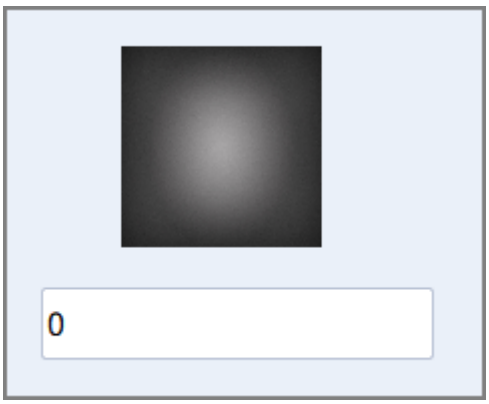
"Settings" section, set "Mode" to "Output" and "Tag" to "DO". In the "Display" section, set "Graphics list" to "Background Switch".

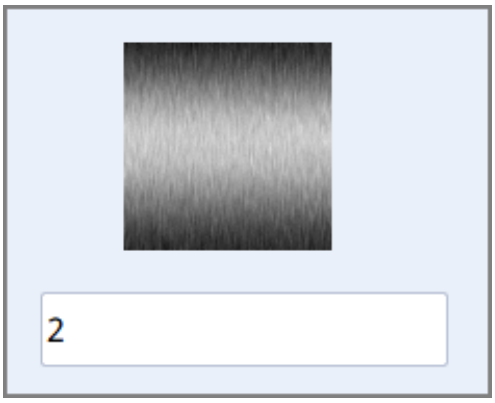


7. Perform the simulation test.

Click to perform simulation offline. Change the numeric tag of "Graphic IO Field" for corresponding changes of the graphics list.

> **Note**
>
> In this case, only graphics corresponding to 0, 1, and 2 are set. Therefore, when the "Number IO Field" input is not 0, 1, or 2, "Graphic IO Field" is empty.





23.2.4 Switching Modes by Symbolic I/O Field and Text List

Case

When you need to control text changes by using a certain tag, InoTouchPad allows you to associate a symbolic I/O field with a text list and process tags in the PLC to switch texts based on data.

Purpose

To learn the features of the text list and learn how to use the text list tool.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a text list.

   Click "Status Lists". Double-click "TextList". In the "Text List" section, create a text list named "Single-step Debugging".

Text lists

	Name	Number	Selection	Comment
1	Text list_1	1	Range (... - ...)	

3. Create list entries.

   In the "List entries" section, create five list entries. Specify a value range in the "Value" column, and set the text content (length: 0 to 512 characters) in the "Entry" column.

List entries

	Number	Value	Entry
1	1	0 - 9	Mechanical return to zero
2	3	20 - 29	The X-axis is positioned to 1...
3	4	30 - 39	The Y-axis runs at 200 speeds
4	5	40 - 49	The Z-axis is moved down t...
5	2	10 - 19	The spindle starts

4. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag "DO".

Tag group_2

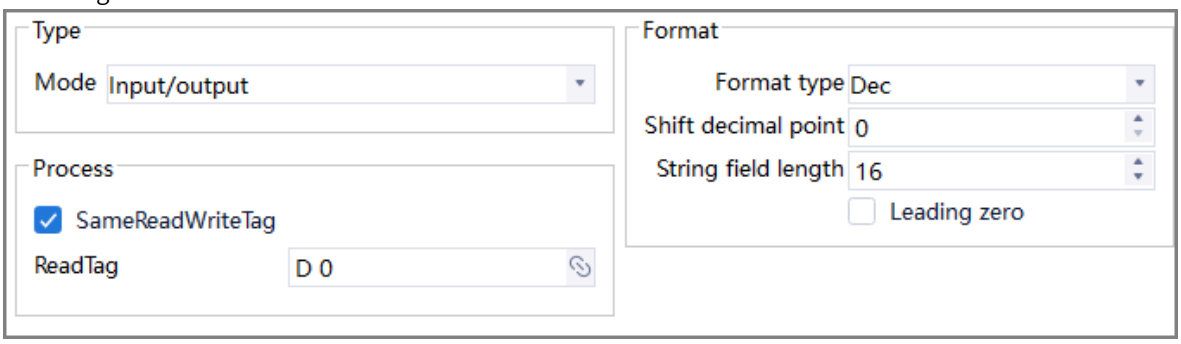
	Name	Connection Id	Data type	Length	Array count	Address
1	D 0	<Internal tag>	Int16	2	1	LW 0

5. Add the numeric I/O field and symbolic I/O field in the screen.

Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Number IO Field", and drag the control to "Screen_1". Then, choose "Control & Display" > "Symbolic IO Field", and drag the control to "Screen_1".

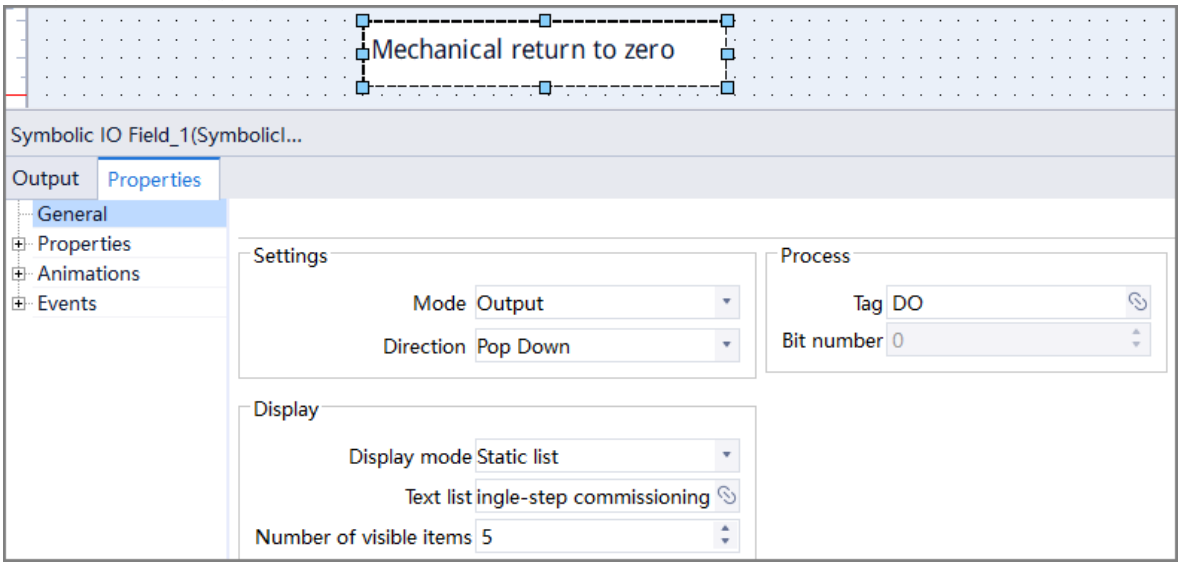
6. Configure the numeric I/O field.

Select the numeric I/O field. On the "Properties" tab page, click "General". In the "Process" section, set "ReadTag" to "DO".



7. Configure the symbolic I/O field.

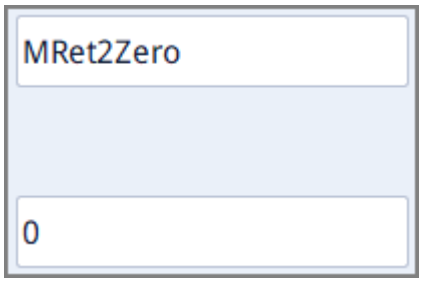
Select the symbolic I/O field. On the "Properties" tab page, click "General". In the "Settings" section, set "Mode" to "Output". In the "Process" section, set "Tag" to "DO". In the "Display" section, set "TextList" to "Single-step Debugging" and modify the value of "Number of visible items" to 5.

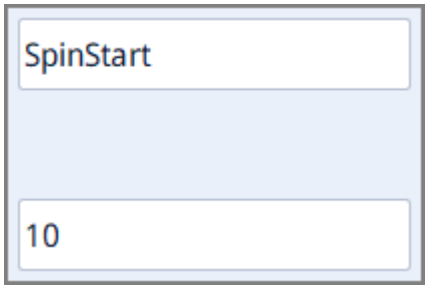


8. Perform the simulation test.

Click  to perform simulation offline. Change the numeric tag of the numeric I/O filed for corresponding changes of the text list.

> **Note**
>
> In this case, only texts corresponding to 0 to 49 are set. Therefore, when the "Number IO Field" input is not within the range of 0 to 49, "Graphic IO Field" is empty.





Other operations

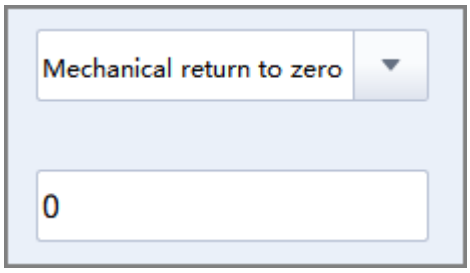
1. Set the mode to "Input/output".
   - Switch to "Screen_1". and select the symbolic I/O field. On the "Properties" tab page, click "General". In the "Settings" section, set "Mode" to "Input/output".
   - Switch to the text list. In the "List entries" section, set the required value in the "Value" column. You only need to set the start value.

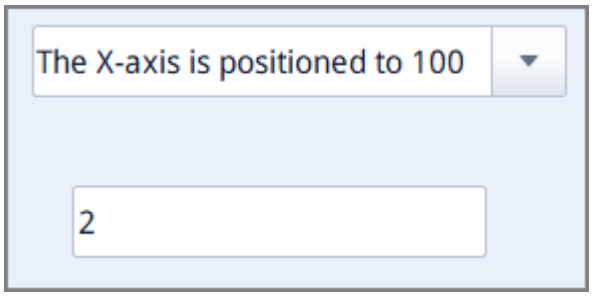
List entries

+	Number	Value	Entry
1	1	0	Mechanical return to zero
2	2	1	The spindle starts
3	3	2	The X-axis is positioned to 1...
4	4	3	The Y-axis runs at 200 speeds
5	5	4	The Z-axis is moved down t...

2. Perform the simulation test.

   Click  to perform simulation offline. Change the numeric tag of the numeric I/O filed for corresponding changes of the text list. You can also directly click "Symbolic IO Field" to view all the text content.





23.2.5 Implementing Resetting, Bit Setting, and Interlocking by Buttons

Case

When you want to use a button for resetting, bit setting, and interlocking, you can call the "SetBit" and "ResetBit" functions for this purpose.

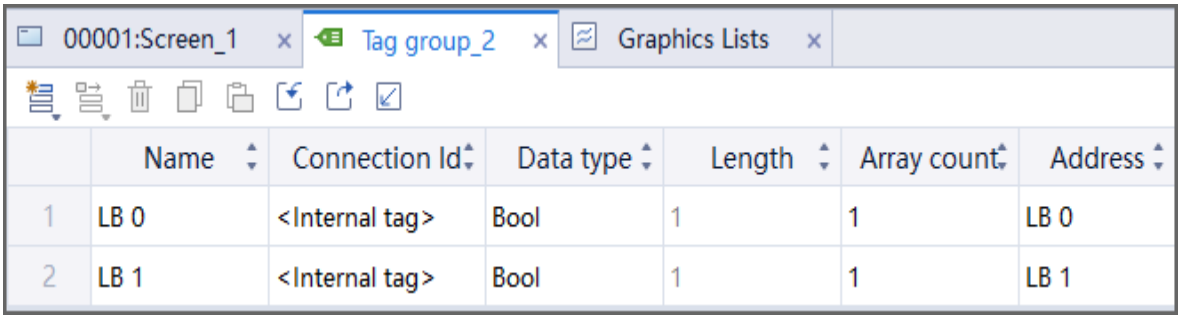
Purpose

To learn how to configure events of tags

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add tags "LB 0" and "LB 1" of the BOOL type.



	Name	Connection Id	Data type	Length	Array count	Address
1	LB 0	<Internal tag>	Bool	1	1	LB 0
2	LB 1	<Internal tag>	Bool	1	1	LB 1

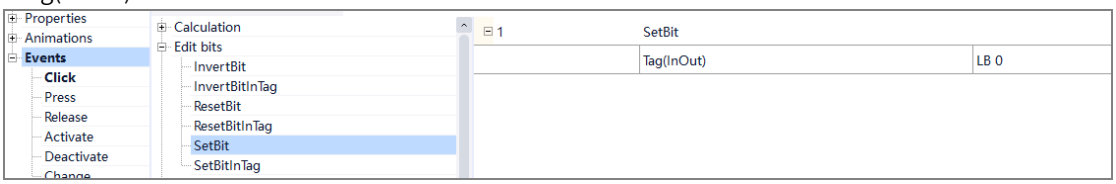
The following describes how to use a button for resetting, bit setting, and interlocking respectively.

Resetting

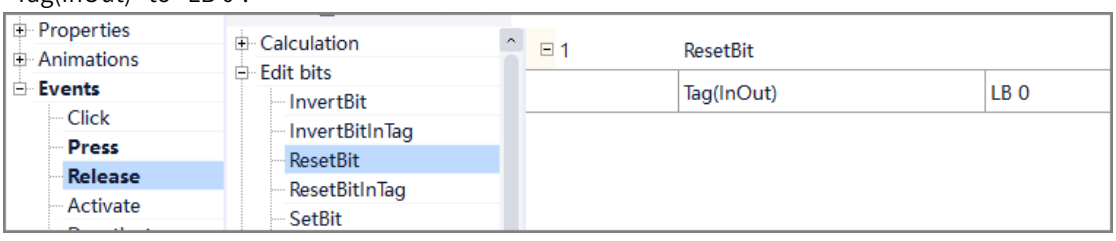
1. Add a button to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".
2. Configure the button.

   Select the button, and make the following settings on the "Properties" tab page:

   - Click "General". In the "Text" section, modify "Text OFF" to "Reset".
   - Choose "Events" > "Press" > "Edit bits" and double-click "SetBit" to add the function. Set "Tag(InOut)" to "LB 0".



   - Choose "Events" > "Release" > "Edit bits" and double-click "ResetBit" to add the function. Set "Tag(InOut)" to "LB 0".



Bit setting

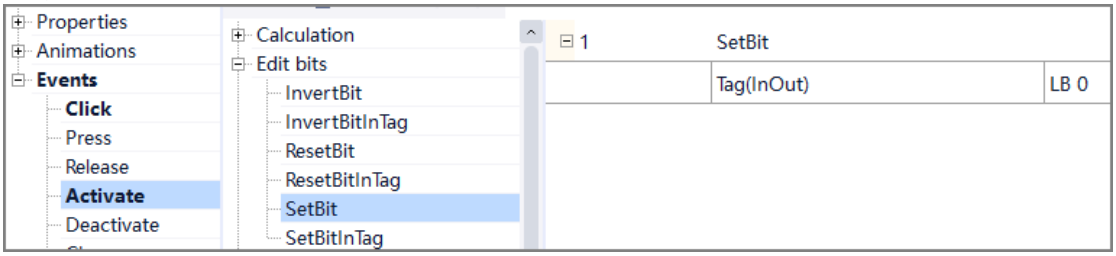
1. Add a button to the screen.

   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".

2. Configure the button.

   Select the button, and make the following settings on the "Properties" tab page:

   - Click "General". In the "Text" section, modify "Text OFF" to "Bit setting".
   - Choose "Events" > "Click" > "Edit bits" and double-click "SetBit" to add the function. Set "Tag(InOut)" to "LB 0".

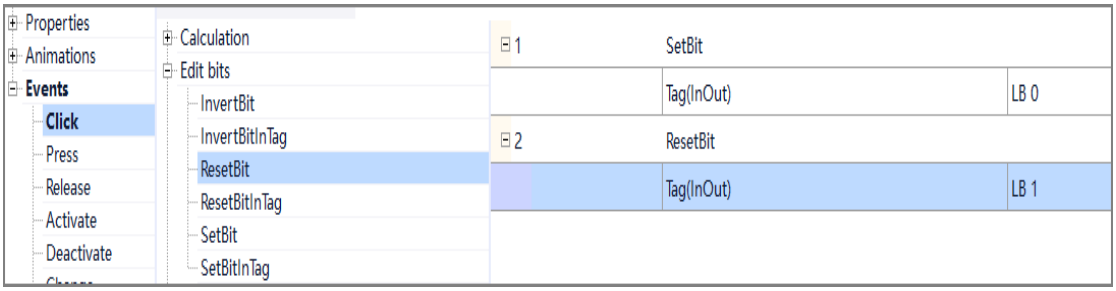


Interlocking

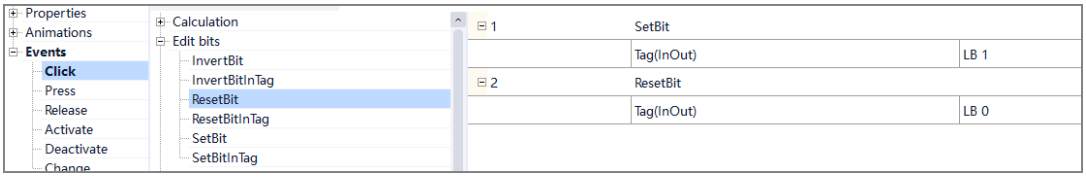
1. Add a button to the screen.

   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the control to "Screen_1", and add two buttons. Select the button. On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "LB 0" and "LB 1" respectively.

   b. Select the LB 0 button. Choose "Events" > "Click" > "Edit bits" and double-click "SetBit" to add the function. Set "Tag(InOut)" to "LB 0". Double-click "ResetBit" to add the function. Set "Tag(InOut)" to "LB 1".



   c. Select the LB 1 button. Choose "Events" > "Click" > "Edit bits" and double-click "SetBit" to add the function. Set "Tag(InOut)" to "LB 1". Double-click "ResetBit" to add the function. Set "Tag(InOut)" to "LB 0".



23.2.6 Hiding and Disabling Buttons

Case

This case describes how to hide or disable a button.

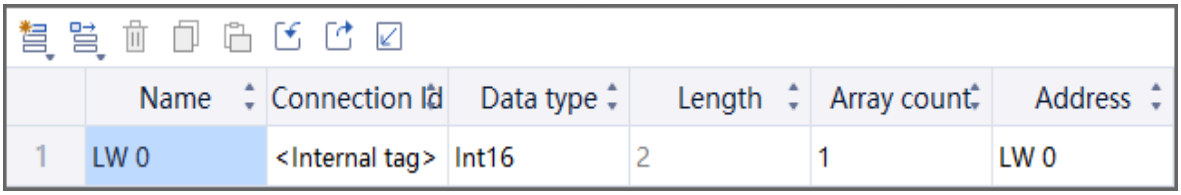
Purpose

Hide and disable a button.

Procedure

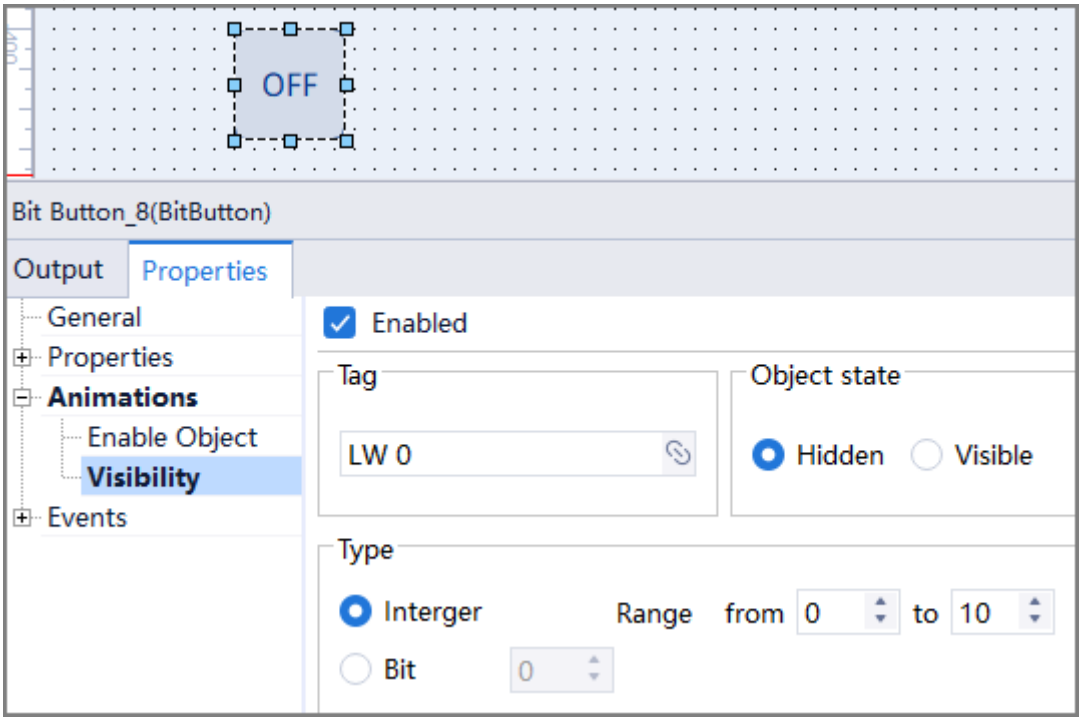
Hiding a button

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and create the tag LW 0.

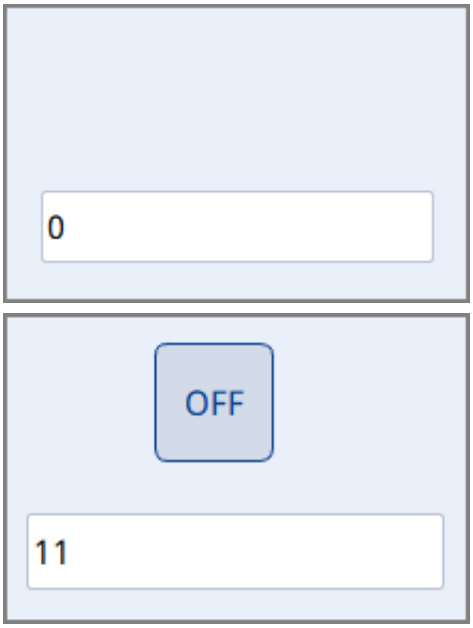


	Name	Connection Id	Data type	Length	Array count	Address
1	LW 0	<Internal tag>	Int16	2	1	LW 0

3. Add a bit button to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", and drag the button to "Screen_1". Select the bit button. On the "Properties" tab page, choose "Animations" > "Visibility", select "Enabled", and select "LW 0" for "Tag". In the "Type" section, select "Integer", and set "Range" to 0 to 10. In the "Object state" section, select "Hidden".



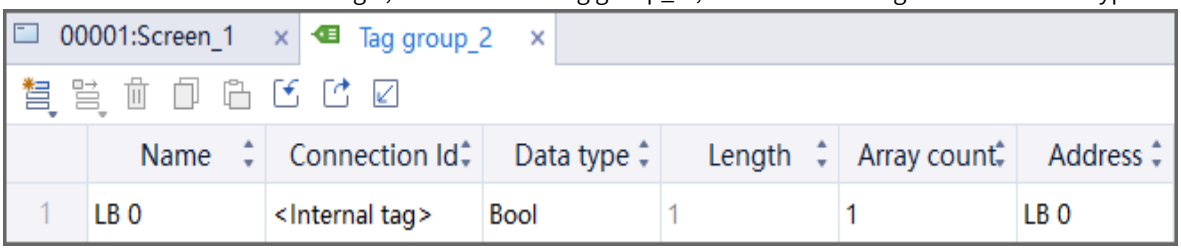
4. Add a tag to the screen.
   In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1".
5. Perform the simulation test.
   Click to perform simulation offline. When the input value is within the range of 0 to 10, the button is hidden; otherwise, the button is displayed.



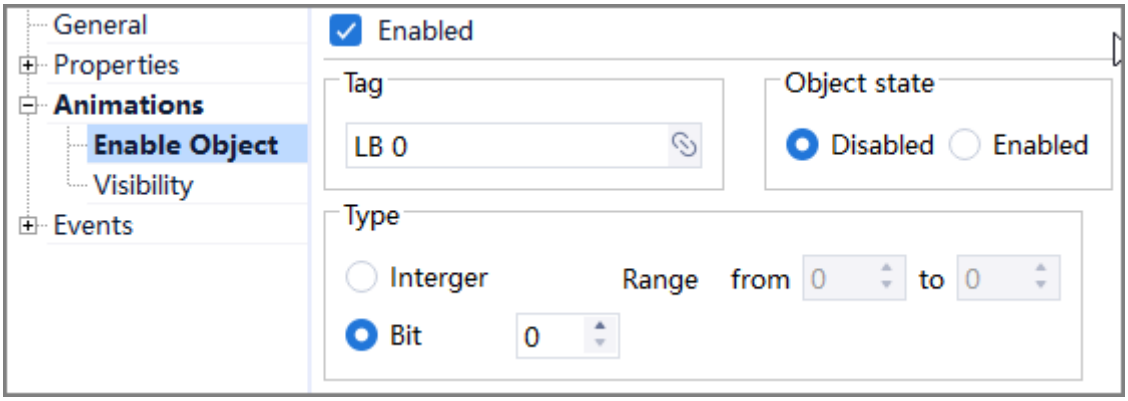
Disabling a button

You can disable a button to prevent misoperation on the button.

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and create the tag LB 0 of the Bool type.



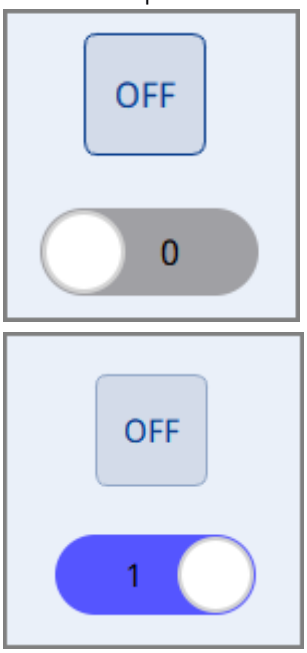
3. Add a bit button to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", and drag the button to "Screen_1". Select the bit button. On the "Properties" tab page, choose "Animations" > "Enable Object", select "Enabled", and select "LB 0" for "Tag". In the "Type" section, select "Bit" and set it to 0. In the "Object state" section, select "Disabled".



4. Add a tag to the screen.
   In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1".

5. Perform the simulation test.

Click to perform simulation offline. When you set LB 0 to 1, the bit button is disabled.



23.2.7 Synchronizing Time Between HMI and PLC by Buttons and the "SetHMIDateTime" Function

Case

In actual application, it is always necessary to synchronize the system time of the touchscreen and the PLC.

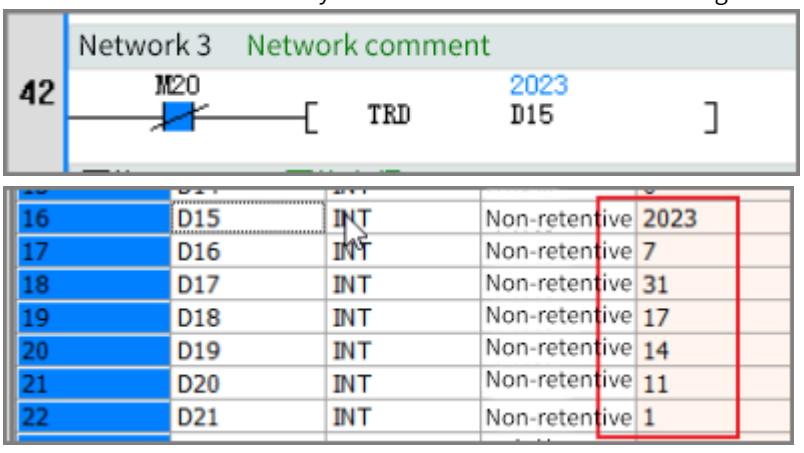
Purpose

To synchronize the system time between the touchscreen and the PLC

Procedure

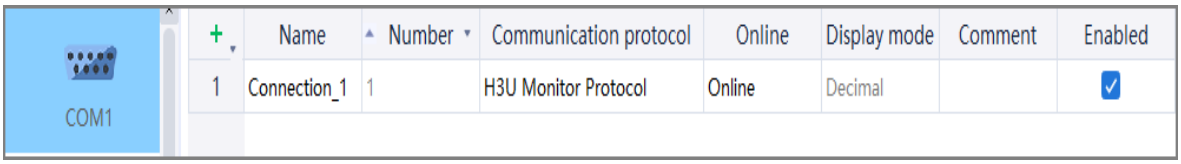
Solution 1: Take the PLC clock as the standard and synchronize the PLC time to the HMI (take H5U as an example).

1. Extract the controller clock by instructions and store it in the D register.



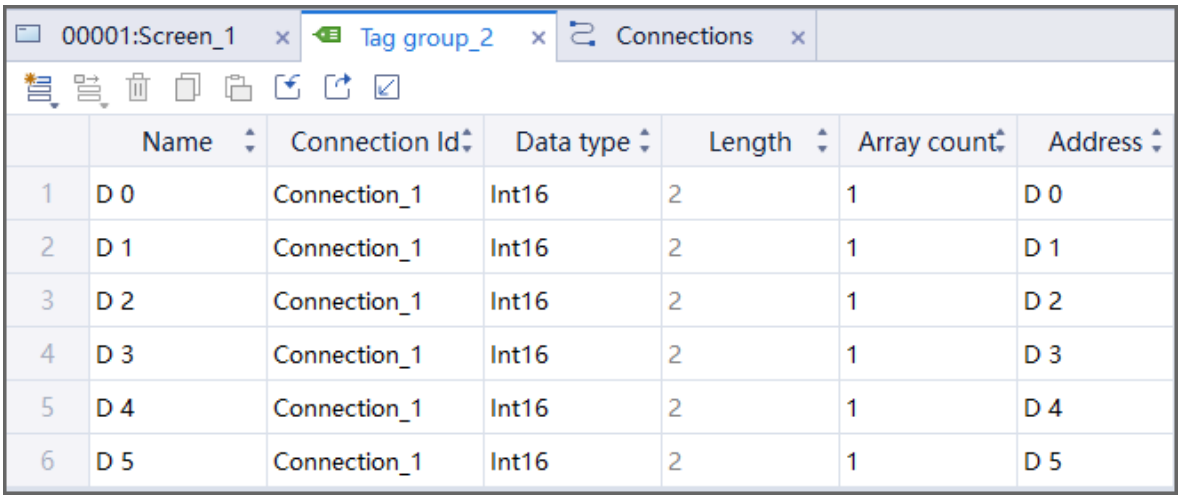
2. Create a connection.

Click "Communication", double-click "Connections", select "COM1", and create "Connection_1".



3. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and create tags. Set "Connection Id" to "Connection_1".

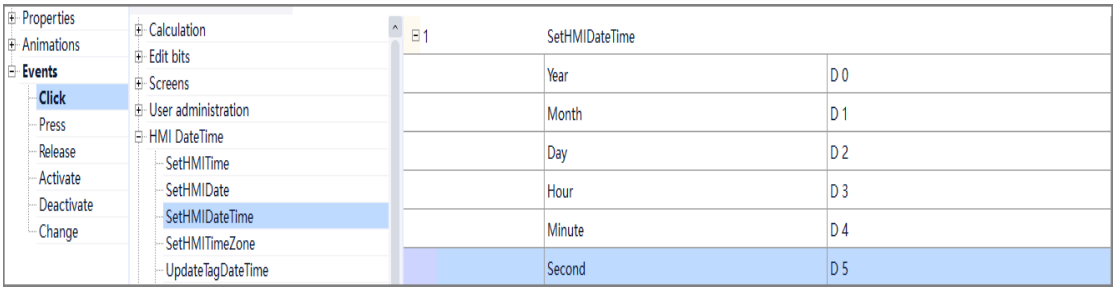


	Name	Connection Id	Data type	Length	Array count	Address
1	D 0	Connection_1	Int16	2	1	D 0
2	D 1	Connection_1	Int16	2	1	D 1
3	D 2	Connection_1	Int16	2	1	D 2
4	D 3	Connection_1	Int16	2	1	D 3
5	D 4	Connection_1	Int16	2	1	D 4
6	D 5	Connection_1	Int16	2	1	D 5

4. Add a button to the screen.

   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".

   b. Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Time Synchronization Button". Choose "Events" > "Click" > "HMI DateTime", double-click "SetHMIDateTime" to create a function, and set the tags such as "Year", "Month", and "Day" to the values in "Tag group_2".



5. When you press the button online, the PLC clock will be synchronized to the HMI.

> **Note**
>
> This feature can only take effect in the actual touchscreen, but not in the online simulation.

Solution 2: Take the HMI system clock as the standard and synchronize the HMI clock to the PLC.

1. Create a system tag.

   Choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, click "System Time" and then click "$Year", "$Month", "$Day", "$Hour", "$Minute", and "$Second" to create

system tags in sequence.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	$Year	1	<Internal tag>	Int16	2	1	LW 9000
2	$Moth	2	<Internal tag>	Int16	2	1	LW 9001
3	$Day	3	<Internal tag>	Int16	2	1	LW 9002
4	$Hour	4	<Internal tag>	Int16	2	1	LW 9003
5	$Minute	5	<Internal tag>	Int16	2	1	LW 9004
6	$Second	6	<Internal tag>	Int16	2	1	LW 9005

System Time
- $Year
- $Moth
- $Day
- $Hour
- $Minute
- $Second
- $Weekday

2. Create a connection.

Click "Communication", double-click "Connections", select "COM1", and create "Connection_1".

COM1

	Name	Number	Communication protocol	Online	Display mode	Comment	Enabled
1	Connection_1	1	H3U Monitor Protocol	Online	Decimal		☑

3. Create a tag.

Choose "Communication" > "Tags", double-click "Tag group_2", and create tags. Set "Connection Id" to "Connection_1".

00001:Screen_1 | Tag group_2 | Connections

	Name	Connection Id	Data type	Length	Array count	Address
1	D 0	Connection_1	Int16	2	1	D 0
2	D 1	Connection_1	Int16	2	1	D 1
3	D 2	Connection_1	Int16	2	1	D 2
4	D 3	Connection_1	Int16	2	1	D 3
5	D 4	Connection_1	Int16	2	1	D 4
6	D 5	Connection_1	Int16	2	1	D 5

4. Compile the script.

Click "Script", double-click "Add Script" to create a script such as "Script_1", and compile the script.

```
SmartTags('D 0') = SmartTags('$Year');
SmartTags('D 1')= SmartTags('$Moth');
SmartTags('D 2')= SmartTags('$Day');
SmartTags('D 3') =SmartTags('$Hour');
SmartTags('D 4') = SmartTags('$Minute');
SmartTags('D 5') = SmartTags('$Second');
```

5. Configure the clock data write instructions in the PLC.

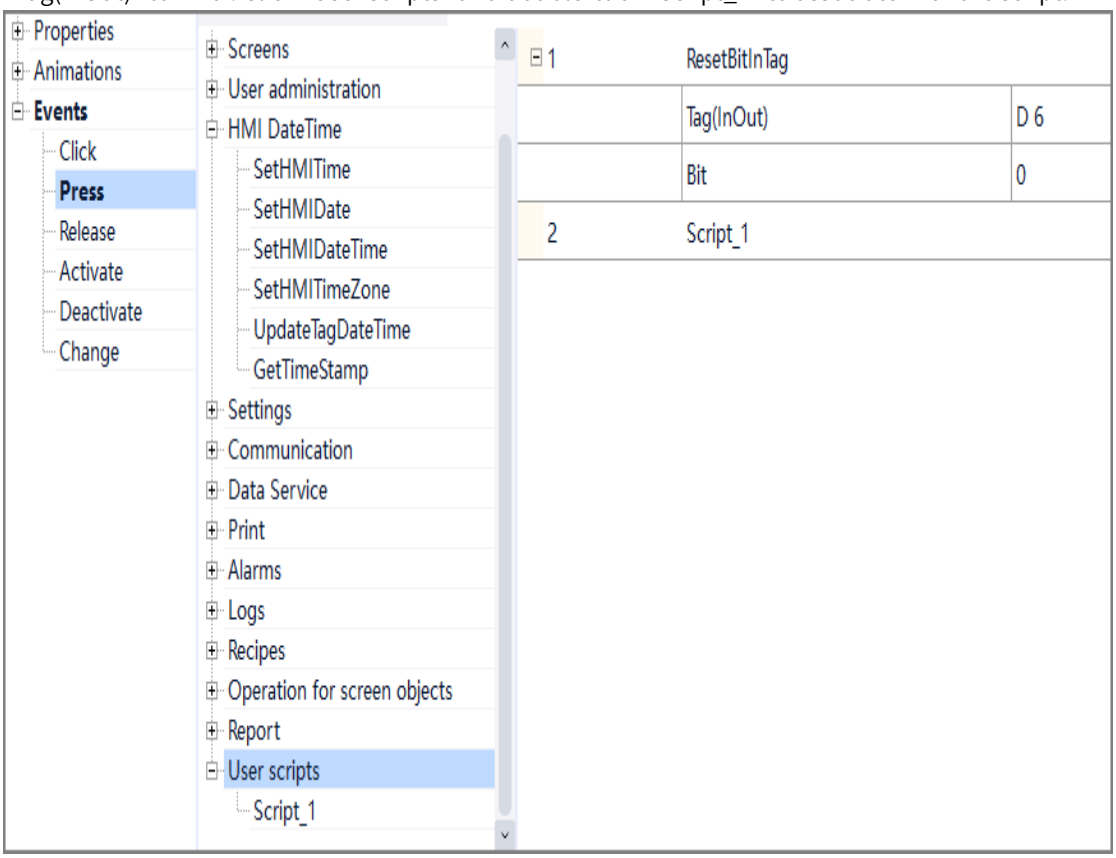


6. Add a button to the screen.

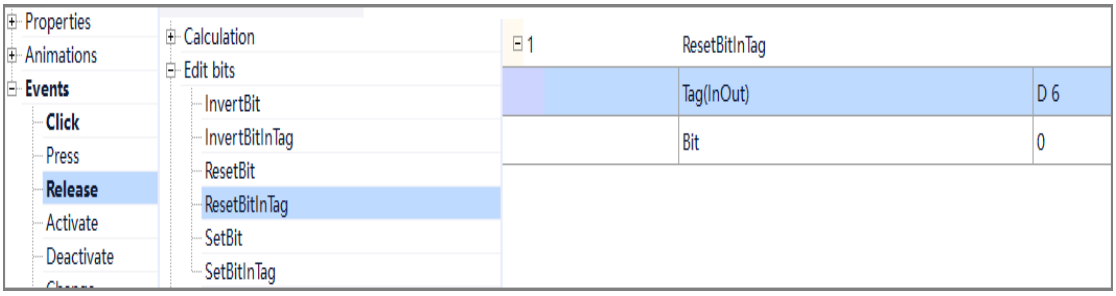
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".

   b. Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Time Synchronization Button".

   c. Choose "Events" > "Press" > "Edit bits" and double-click "SetBitInTag" to create a function. Set "Tag(InOut)" to "D 6". Click "User scripts" and double-click "Script_1" to associate with the script.



   d. Choose "Events" > "Release" > "Edit bits" and double-click "ResetBitInTag" to create a function. Set "Tag(InOut)" to "D 6".



7. Click to download the program to the HMI. When you press "Time Synchronization Button", the HMI clock is synchronized to the PLC.

> **Note**
>
> This feature can only take effect in the actual touchscreen, but not in the online simulation.

23.2.8 Enabling and Disabling Slave Communication by Buttons and the "SetConnectionMode" Function

Purpose

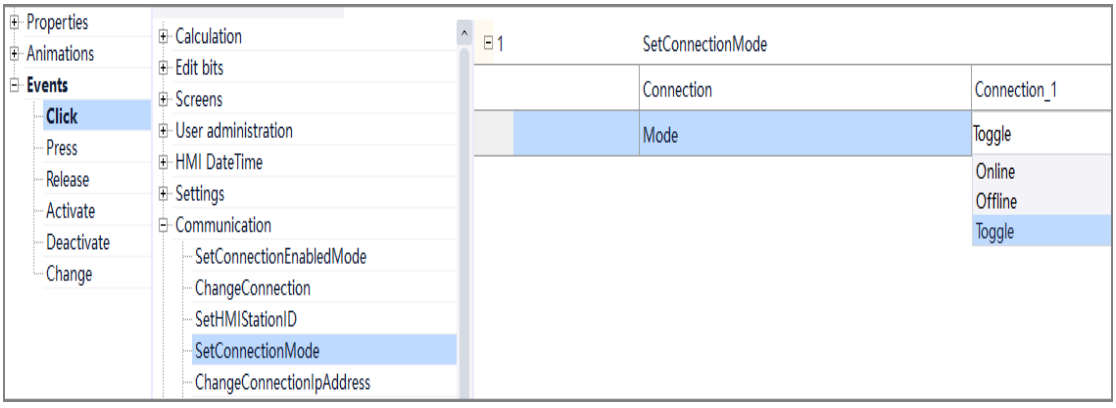
1. To learn how to start and stop the communication slave online
2. To learn how to switch the communication slave status online

Procedure

1. Create a connection.
   Click "Communication", double-click "Connections", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "AM600 Series", and double-click "AM600 Modbus Protocol" to create Connection_1.

+	Name	Number	Communication protocol	Online	Display mode	Comment	Enabled
1	Connection_1	2	AM600 Modbus Protocol	Online	Decimal		☑

2. Add a button in the screen and associate it with the SetConnectionMode function.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", and select "Button". On the "Properties" tab page, choose "Events" > "Click" > "Communication", and double-click "SetConnectionMode" to add the function. Set "Connection" to "Connection_1" and "Mode" to "Online", "Offline", or "Toggle".
   - In "Online" mode, the corresponding slave is always online after the button is clicked.
   - In "Offline" mode, the corresponding slave is always offline after the button is clicked.
   - In "Toggle" mode, the slave mode is switched between "Online" and "Offline" after the button is clicked.



23.2.9 Monitoring the Project Status by GIF Display and Table

Case

You can display embed screens through the .gif images dynamically to realize the TAB window feature.

Purpose

- Get basic application knowledge about the GIF display and tables.
- Learn how to apply the GIF display to a project.

Preconditions

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add a tag.

00001:Screen_1 | Tag group_2

	Name	Connection id	Data type	Length	Array count	Address
1	GIF Switch	<Internal tag>	Bool	1	1	LB 0
2	1#Exhaust system	<Internal tag>	Bool	1	1	LB 1
3	2#Exhaust system	<Internal tag>	Bool	1	1	LB 2
4	3#Exhaust system	<Internal tag>	Bool	1	1	LB 3
5	1#Inlet Temperature	<Internal tag>	Int16	2	1	LW 4
6	1#Outlet Tempera...	<Internal tag>	Int16	2	1	LW 5
7	1#Temperature	<Internal tag>	Int16	2	1	LW 6
8	2#Inlet Temperature	<Internal tag>	Int16	2	1	LW 7
9	2#Outlet Tempera...	<Internal tag>	Int16	2	1	LW 8
10	2#Temperature	<Internal tag>	Int16	2	1	LW 9
11	3#Inlet Temperature	<Internal tag>	Int16	2	1	LW 10
12	3#Outlet Tempera...	<Internal tag>	Int16	2	1	LW 11
13	3#Temperature	<Internal tag>	Int16	2	1	LW 12

3. Create a screen.

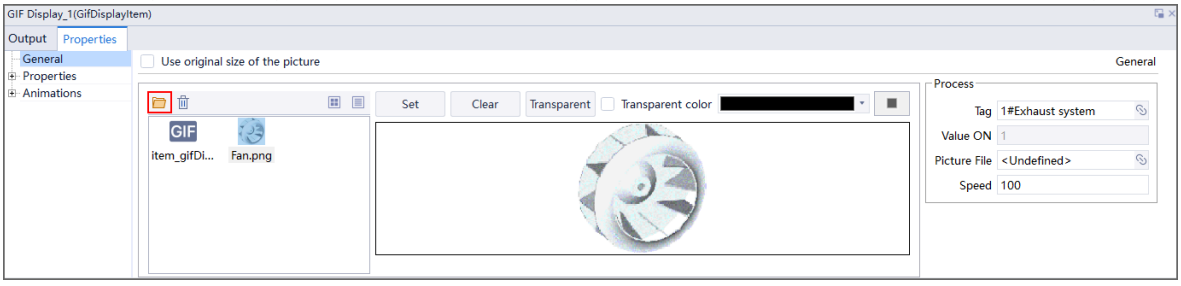
   In the "Project" navigation tree on the left, click "Screens", and then double-click "Add Screen" to add a screen, such as "Screen_2".

Procedure

Applying GIF and embed screen

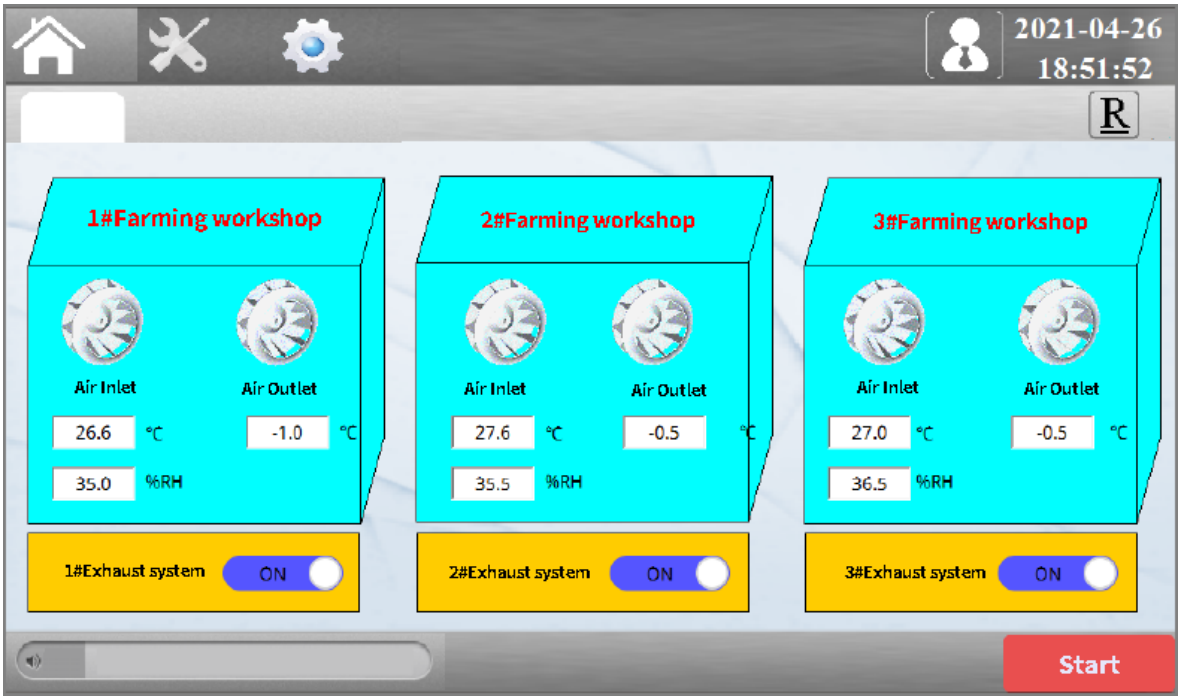
1. Create an embed screen.

   Choose "Screens" > "Embed Screens", and then click "Add Embed Screen" to create an embed screen, such as "Screen_4". In the "Tools" navigation tree on the right, choose "Portraits and pictures" > "GIF display", and drag the control to "Screen_4". Select "GIF display", click "General", click  , and then select the target GIF image. On the "Process" tab page displayed, select "1#Exhaust system" for "Tag".



2. Configure the embed screen and bit button to play or pause the embed screen by the bit button (taking "1#Breeding workshop" as an example).
   a. Switch to "Screen_1". In the "Project" navigation tree on the left, choose "Screens" > "Embed Screens", select "Screen_4", and then drag it to Screen_1. Select the embed screen view. On the "Properties" tab page displayed, click "General". In the "Process" section, select "1#Exhaust system" for "Tag".
   b. In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", and drag the button to "Screen_1". Select the bit button. On the "Properties" tab page displayed, click "General" and set "ReadTag" to "1#Exhaust system" in the "Read" section.
   c. In the "Project" navigation tree on the left, click "Tag group_2". Drag "1#Inlet temperature", "1#Outlet temperature", and "1#Humidity" from "Tag View" to "Screen_1" to display the temperature and humidity.
   d. Set "2#Breading workshop" and "3#Breeding workshop" in the same way.
3. Perform the simulation test.

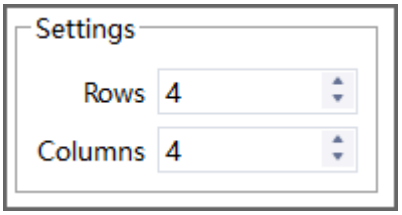
   Click  to perform simulation offline.



Applying a table

1. Switch to "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Table", and drag the table to "Screen_2".
2. Configure the number of rows and columns for the table.

   Select "Table". On the "Properties" tab page displayed, click "General". In the "Settings" section, set "Rows" to 4 and "Columns" to 4.



3. Configure the table location and size.

Choose "Properties" > "Layout". In the "Position" section, set "X" to 160 and "Y" to 210. In the "Size" section, set "Width" to 583 and "Height" to 198.

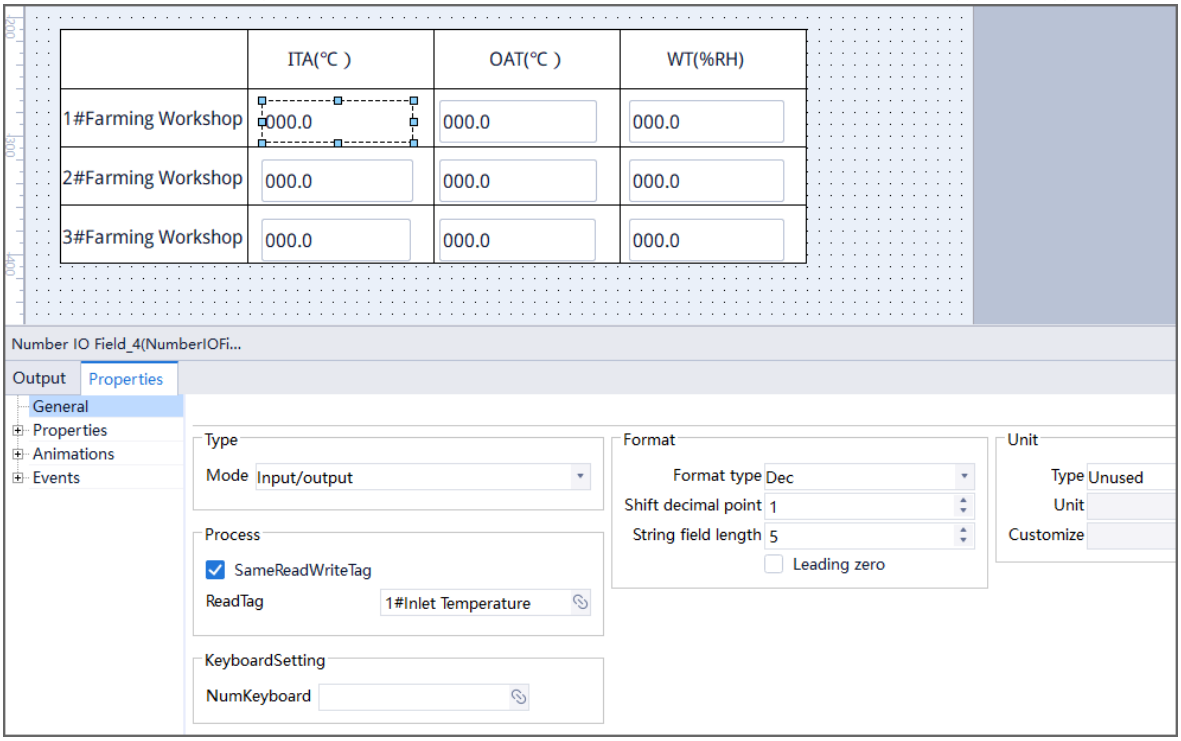


4. Configure the table header.

   In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag six text fields to "Screen_2". On the "Properties" tab page displayed, click "General". In the "Text" section, modify the text content to "1#Breeding workshop" and "2#Breeding workshop" in turn.

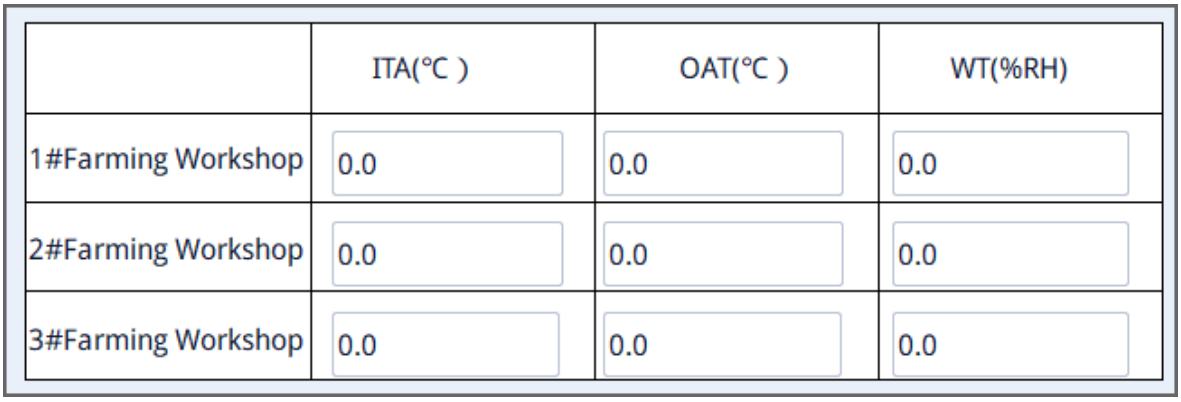
5. Configure the numeric I/O field in the table.

   In the "Project" navigation tree on the left, click "Tag group_2". Drag the inlet temperature, outlet temperature, and humidity tags in "Tag View" to the table by name, and then click "Number IO Field". On the "Properties" tab page displayed, click "General". In the "Format" section, set "String field length" to 5.



6. Perform the simulation test.

   Click  to perform simulation offline.



23.2.10 Viewing Data Change by Graphic Controls

Case

You can view data change through knobs, gauges, instruments, and 3D-pie charts visually, and view the ratio of multiple process tags through 3D-pie charts.

Purpose

- Learn how to use knobs, gauges, instruments, and 3D-pie charts.
- Learn how to set values for process tags through knobs.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

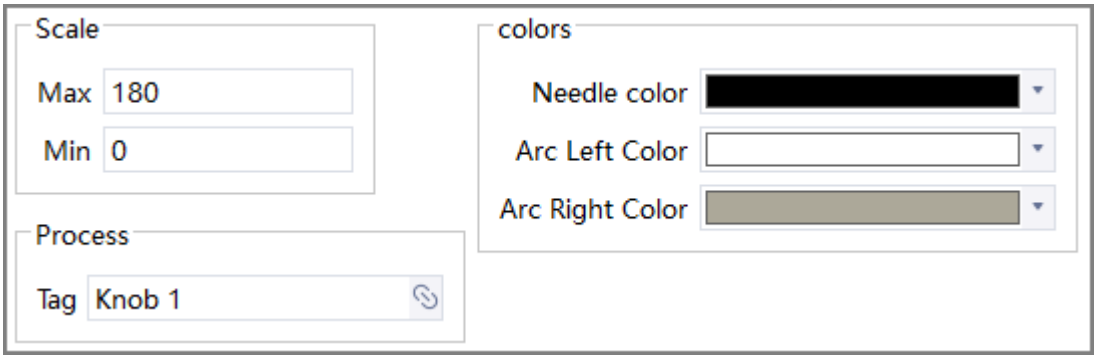
   Choose "Communication" > "Tags", double-click "Tag group_2", create a tag, and set "Name" and "Data type", as shown in the following figure.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	knob1	1	<Internal tag>	Int16	2	1	LW 0
2	knob2	2	<Internal tag>	Float	4	1	LW 1
3	3D-Frequency converters	3	<Internal tag>	UInt16	2	1	LW 2
4	3D-servo	4	<Internal tag>	UInt16	2	1	LW 3
5	3D-PLC	5	<Internal tag>	UInt16	2	1	LW 4
6	3D-HMI	6	<Internal tag>	UInt16	2	1	LW 5
7	Meter cap	7	<Internal tag>	Float	4	1	LW 6
8	Lower meter limit	8	<Internal tag>	Float	4	1	LW 7

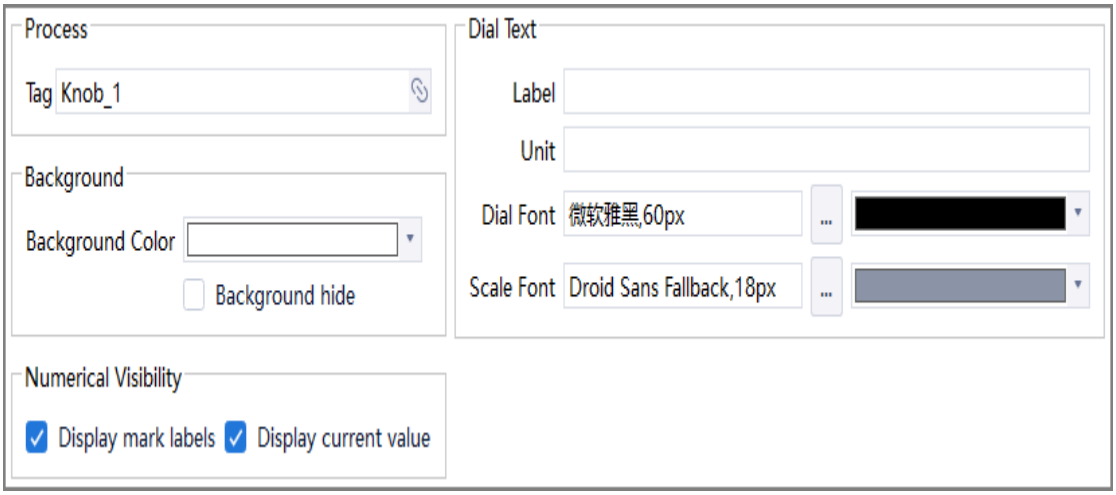
3. View the data change through a knob and gauge.

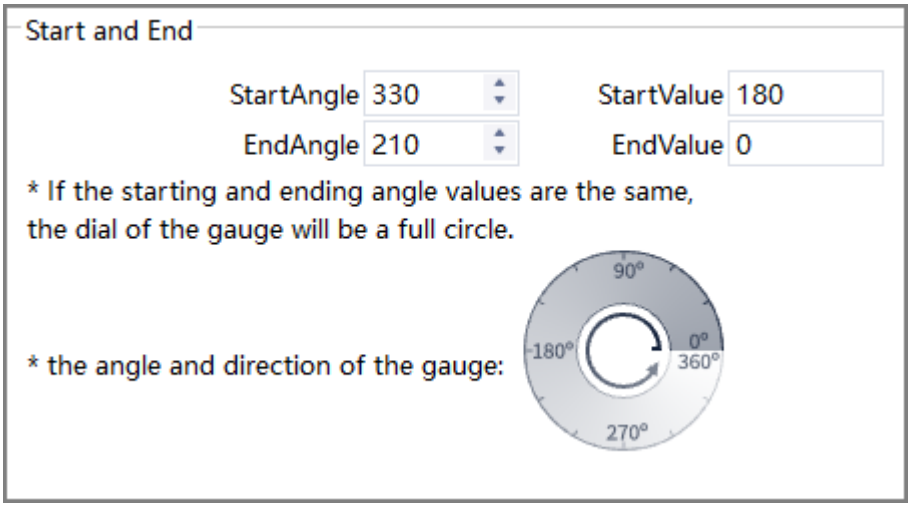
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "Knob", and drag the knob to "Screen_1". Drag a gauge to "Screen_1" in the same way.

   b. Select the knob. On the "Properties" tab page displayed, click "General". In the "Scale" section, set "Max" to 180 ad "Min" to 0. In the "Process" section, select "Knob 1" for "Tag".



   c. Select the gauge. On the "Properties" tab page displayed, click "General". In the "Process" section, select "Knob 1" for "Tag". Choose "Properties" > "Scale". In the "Start and End" section, set "StartValue" of "StartAngle" to 180 and "EndValue" of "EndAngle" to 0.

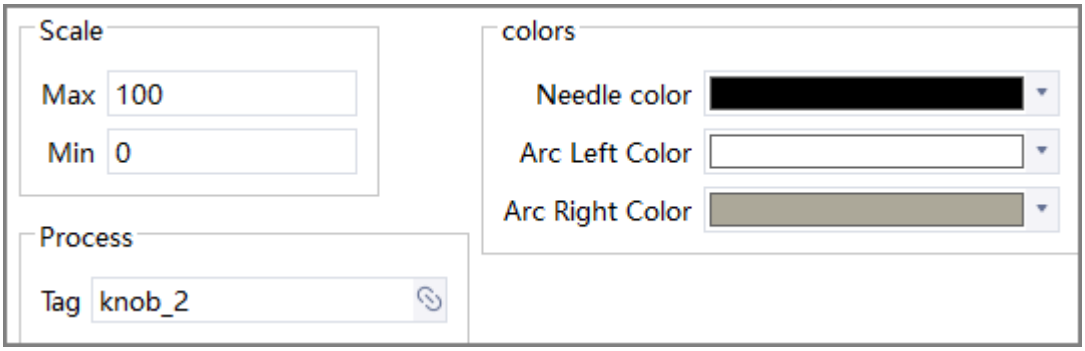




4. View the data change through a knob and instrument.

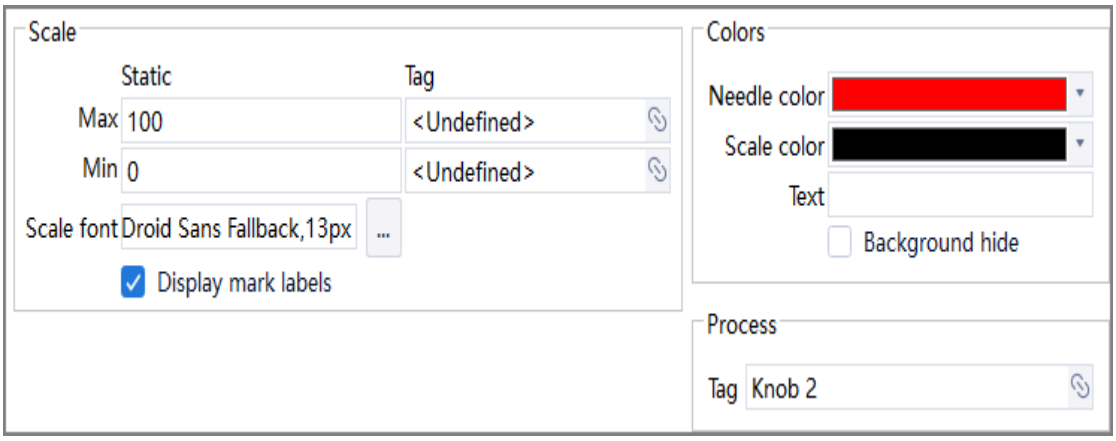
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "Knob", and drag the knob to "Screen_1". Drag an instrument to "Screen_1" in the same way.

   b. Select the knob. On the "Properties" tab page displayed, click "General". In the "Scale" section, set "Max" to 100 ad "Min" to 0. In the "Process" section, select "Knob 2" for "Tag".



   c. Select the instrument. On the "Properties" tab page displayed, click "General". In the "Scale" section, select "Meter cap" under "Tag" for "Max", and "Lower meter limit" under "Tag" for "Min". In the

"Process" section, select "Knob 2" for "Tag".

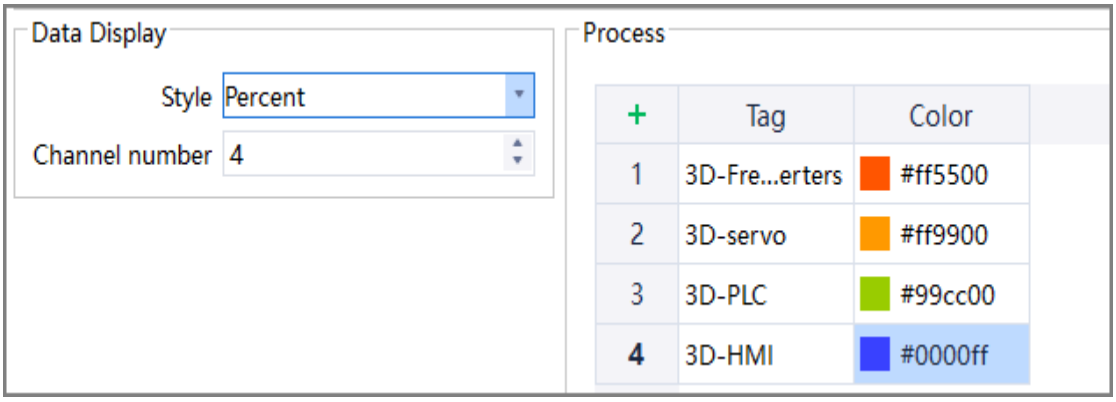


d. In the "Project" navigation tree on the left, click "Tag group_2". Drag "Meter cap" and "Lower meter limit" from "Variable View" to "Screen_1", and set the instrument upper and lower limits.

5. View the proportion of data through a 3D-pie chart.

a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "3D-Pie", and drag the 3D-pie chart to "Screen_1".

b. Select the 3D-pie chart. On the "Properties" tab page displayed, click "General". In the "Data Display" section, select "Percent" for "Style" and set "Channel number" to 4. In the "Process" section, add four tags: "3D-Frequency converters", "3D-servo", "3D-PLC", and "3D-HMI", and set a color for each of them in the "Color" column.



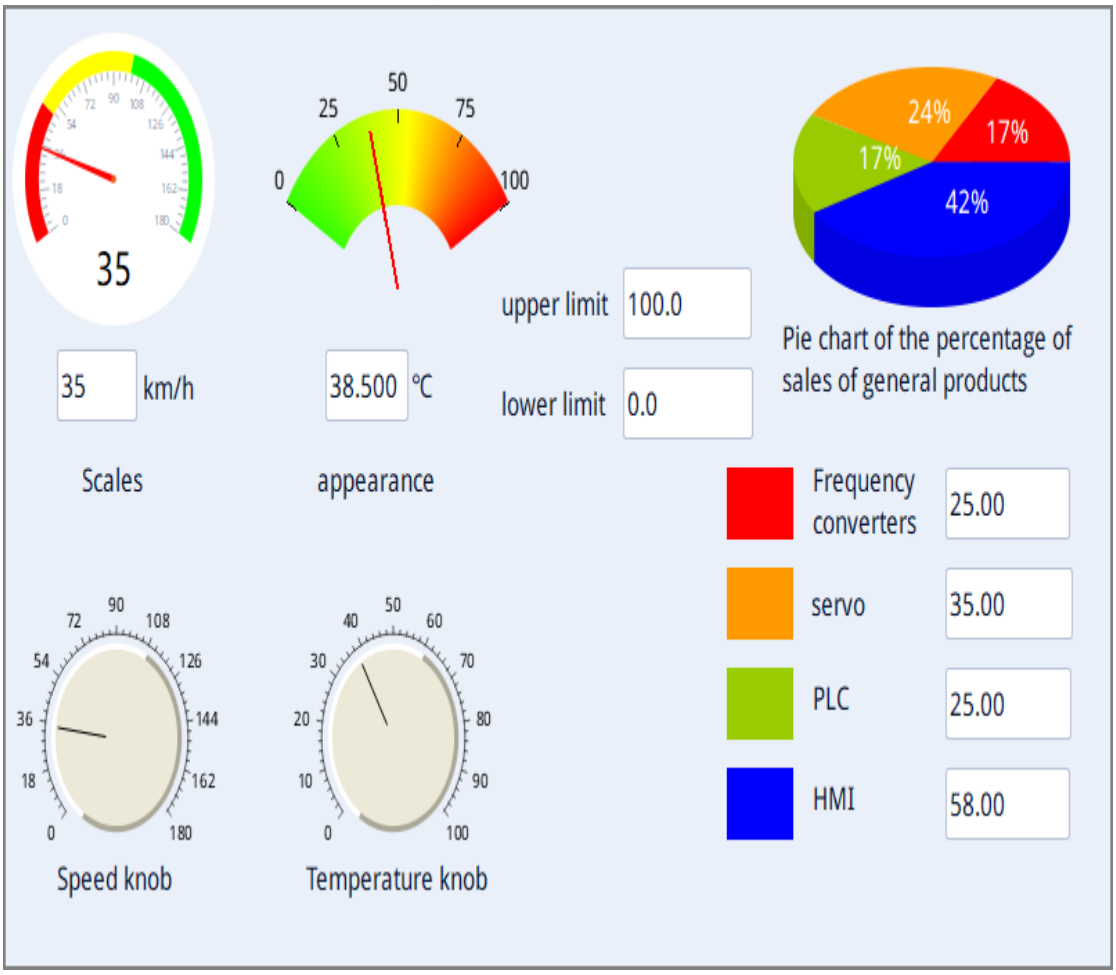
c. In the "Project" navigation tree on the left, click "Tag group_2". Drag "3D-Frequency converters", "3D-servo", "3D-PLC", and "3D-HMI" from "Variable View" to "Screen_1".

6. Perform the simulation test.

Click  to perform simulation offline.

- When you adjust the speed knob, the speed setting is displayed on the corresponding gauge.
- When you adjust the temperature knob, the temperature setting is displayed on the corresponding gauge.

- You can set the tag value corresponding to the 3D-pie chart to adjust the status of the 3D-pie chart.



23.2.11 Creating a Download Progress Bar by Bar Graphs

Case

You can use the "Bar Graphs" control to view the download progress or project progress.

Purpose

- To use the bar graph and timer to make a download progress bar
- To learn how to use the timer

Procedure

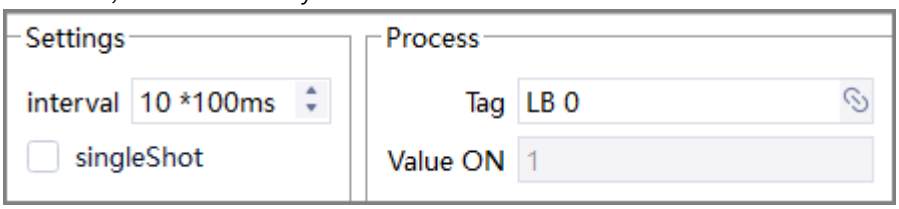
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add tags LW 0 and LB 0. For LW 0, set "Data type" to Int16, "Upper limit" to 100, and "Lower limit" to 0; For LB 0, set "Data type" to Bool and "Start value" to 1.

	Name	Number	Connection Id	Data type	Length	Array count	Address	Upper limit	Lower limit	Start value
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0	100	0	
2	LB 0	2	<Internal tag>	Bool	1	1	LB 1	<No limit>	<No limit>	1

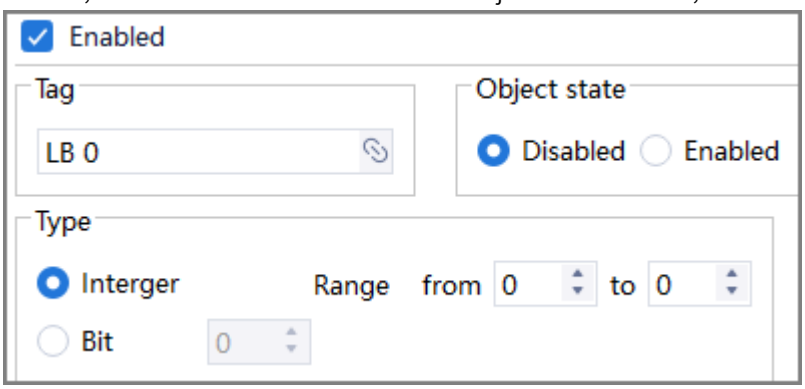
3. Add a timer to the screen.

Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Timer", drag it to "Screen_1", and perform the following setting: On the "Properties" tab page,

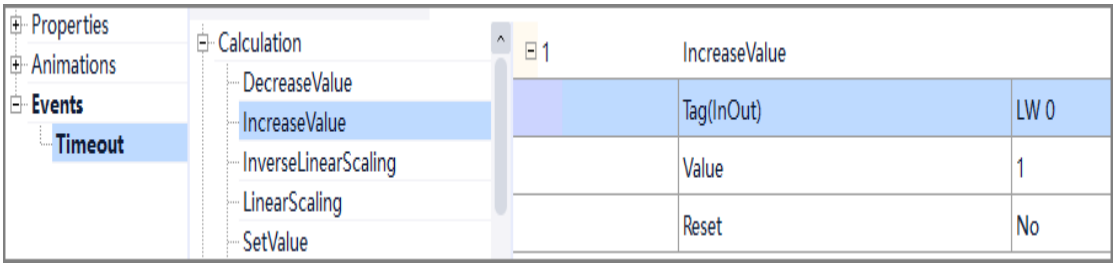
- Click "General". In the "Process" section, set "Tag" to "LB 0". For LB 0, "Start value" is set to 1. Therefore, the timer directly starts.



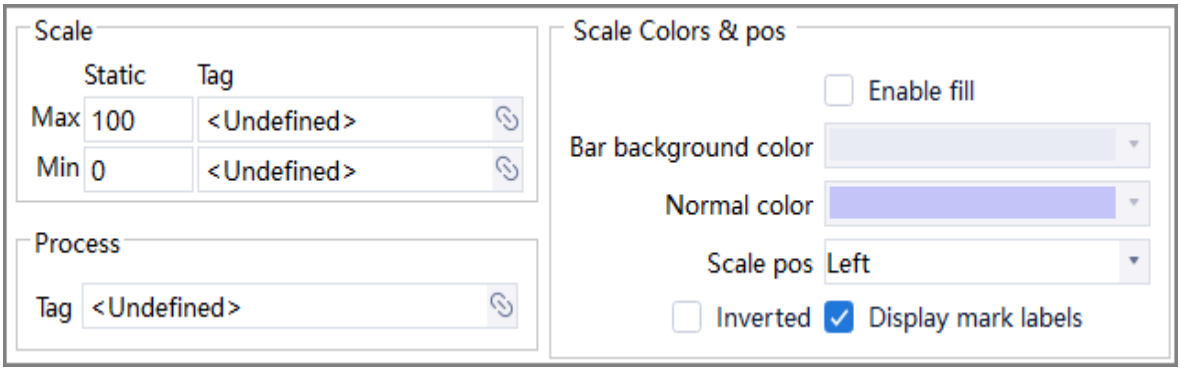
- Choose "Animations" > "Visibility", check "Enabled", and select "LB 0" for "Tag". In the "Type" section, select "Bit" and set it to 0. In the "Object state" section, select "Hidden".



- Choose "Events" > "Timeout", double-click "IncreaseValue" to add the function, and set "Tag(InOut)" to "LW 0".

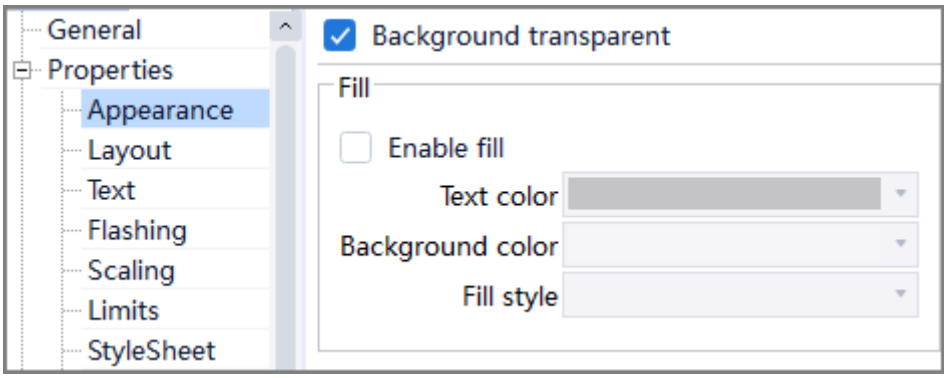


4. Add a bar graph to the screen.
   In the "Tools" navigation tree on the right, choose "Data Visualization" > "Bar", drag the bar graph to "Screen_1", and select it. On the "Properties" tab page, click "General". In the "Scale Colors & pos" section, select "Scale pos" to "No". In the "Process" section, set "Tag" to "LW 0". Choose "Properties" > "Layout". In the "Size" section, set "Width" to 45 and "Height" to 300.



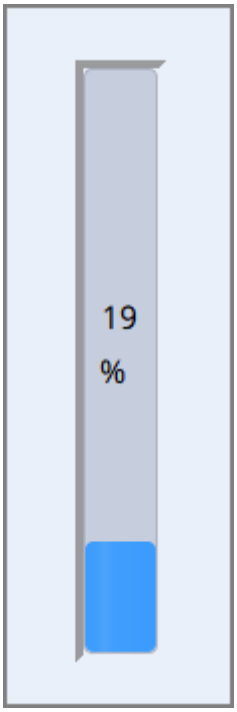
5. Add the tag LW 0 to the screen.
   In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1". On the "Properties" tab page, choose "Properties" > "Appearance", and select "Background

transparent".



6. Add a text field to the screen.
   In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_1". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "%".

7. Perform the simulation test.
   Click  to perform simulation offline.



23.2.12 Displaying Data Change in the Trend View

Case

You can use the "Trend" view control to display trends.

Purpose

To learn the role of the "Trend" view control

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

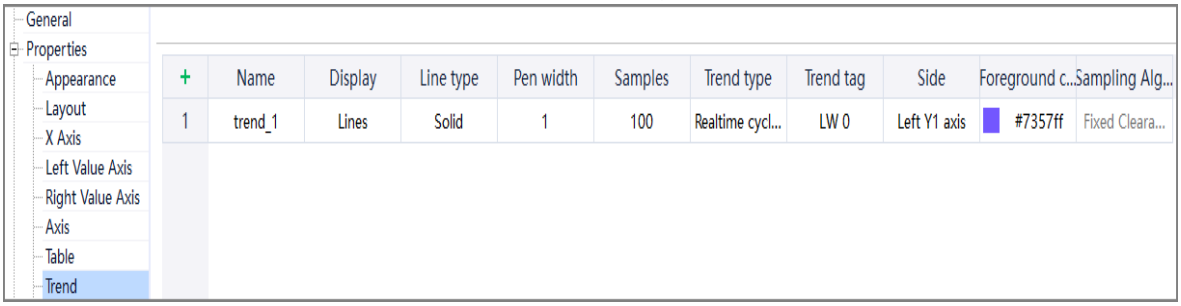
2. Create a trend tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag LW 0.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0

3. Add a trend view to the screen.

   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "Trend", and drag "Trend" to "Screen_1". Click the "Trend" view. On the "Properties" tab page, choose "Properties" > "Trend", add a trend, and select "LW 0" from the "Trend tag" drop-down list.

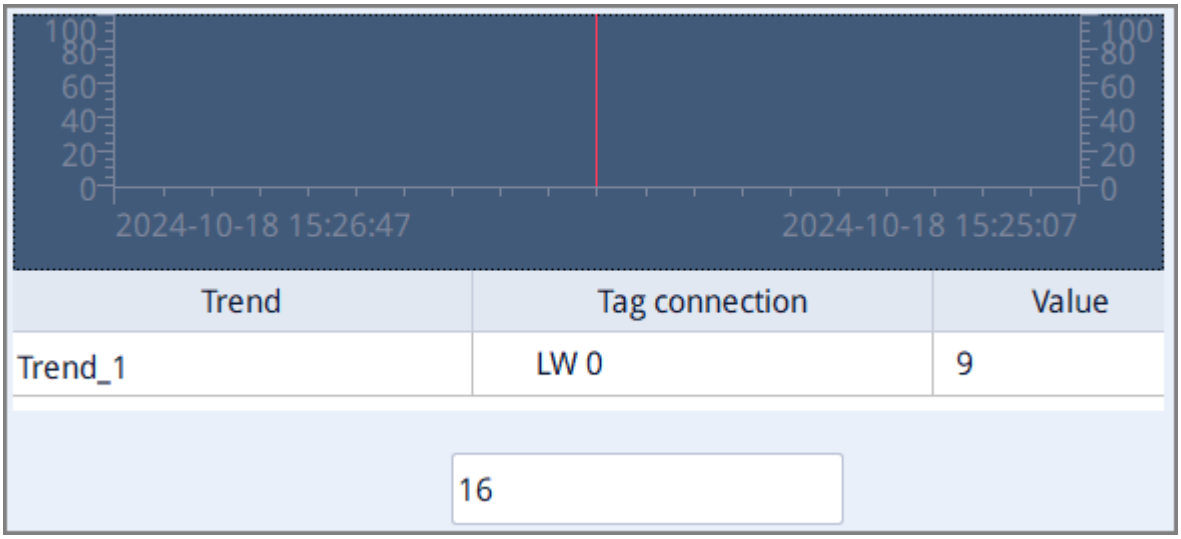


4. Add the tag LW 0 to the screen.

   In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1".

5. Perform the simulation test.

   Click  to perform simulation offline. Manually input the tag value and check the trend view changes.



23.2.13 Changing the Status of Multiple Tag Groups by XY Curve

Case

The change trend of one or more groups of tags is displayed on the same image.

Purpose

To change the status of multiple tag groups by XY curve.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

2. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add six tags, including two control tags and four arrays that respectively represent the X and Y tags of two channels. Values in the "Address" column corresponding to LW 3, LW 4, and LW 5 are respectively LW 7, LW 12, and LW 17, as shown in the following figure.

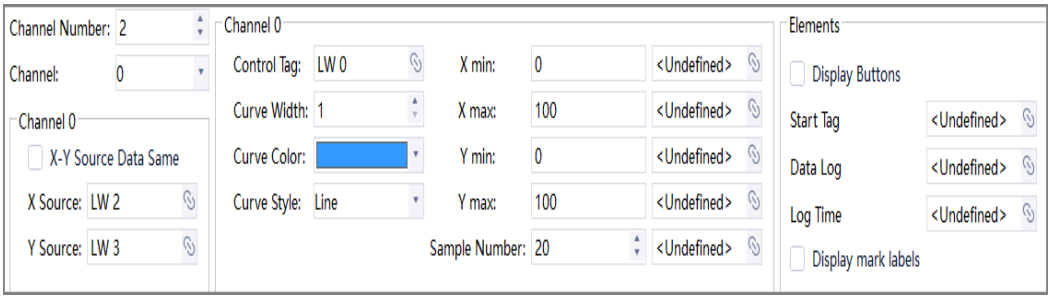
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	10	5	LW 2
4	LW 3	4	<Internal tag>	Int16	10	5	LW 7
5	LW 4	5	<Internal tag>	Int16	10	5	LW 12
6	LW 5	6	<Internal tag>	Int16	10	5	LW 17

3. Configure "XY Curve".

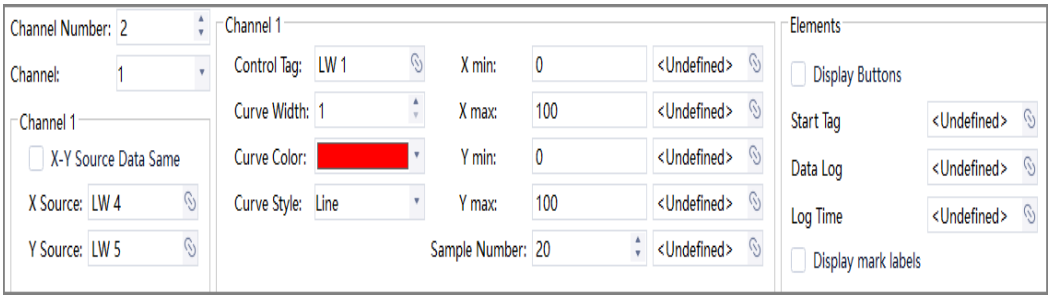
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "XY Curve", and drag the curve to "Screen_1".

   b. Click "XY Curve". On the "Properties" tab page, click "General" and set "Channel Number" to 2.

   - When "Channel" is set to 0, "X Source" is set to "LW 2", "Y Source" to "LW 3", "Control Tag" to "LW 0", "Curve Width" to 1, and "Curve Color" to blue.



   - When "Channel" is set to 1, "X Source" is set to "LW 4", "Y Source" to "LW 5", "Control Tag" to "LW 1", "Curve Width" to 1, and "Curve Color" to red.



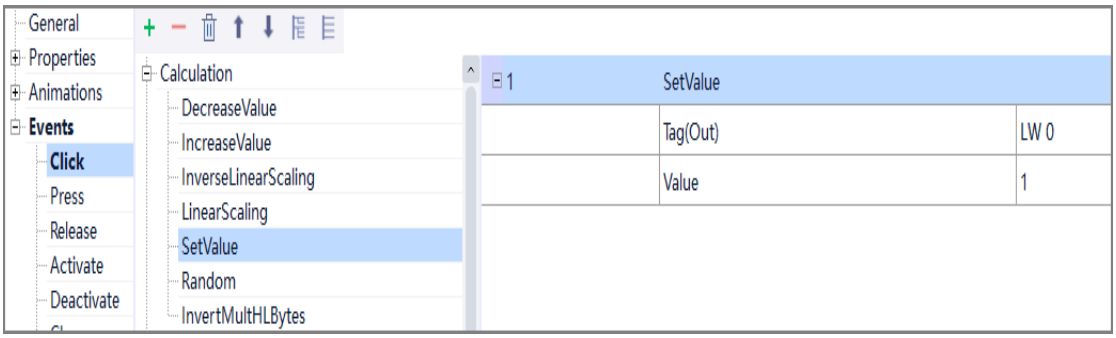
4. Drag the numeric IO field, representing data of the X and Y axes.

   In the "Project" navigation tree on the left, click "Tag group_2". Drag tag groups LW 2, LW 3, LW 4, and LW 5 from "Variable View" to "Screen_1".

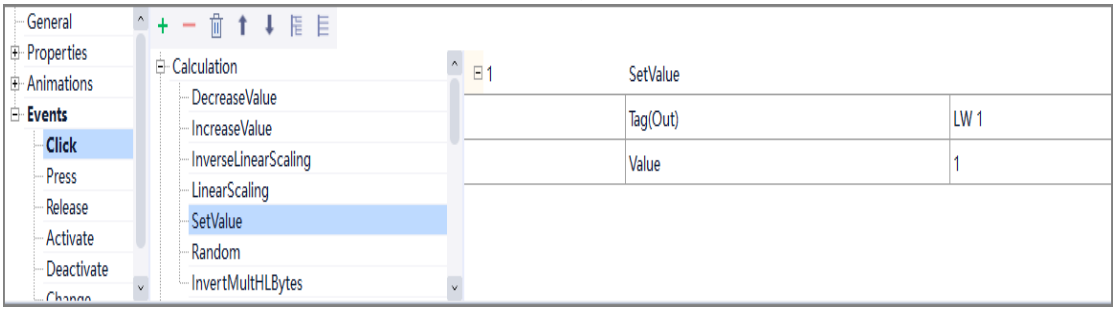
5. Add two buttons to control the tags of "XY Curve".

   a. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Button LW 0". Choose "Events" > "Click" > "Calculation", and then double-click

"SetValue" to add the function. Select "LW 0" for "Tag(Out)" and set "1" for "Value".

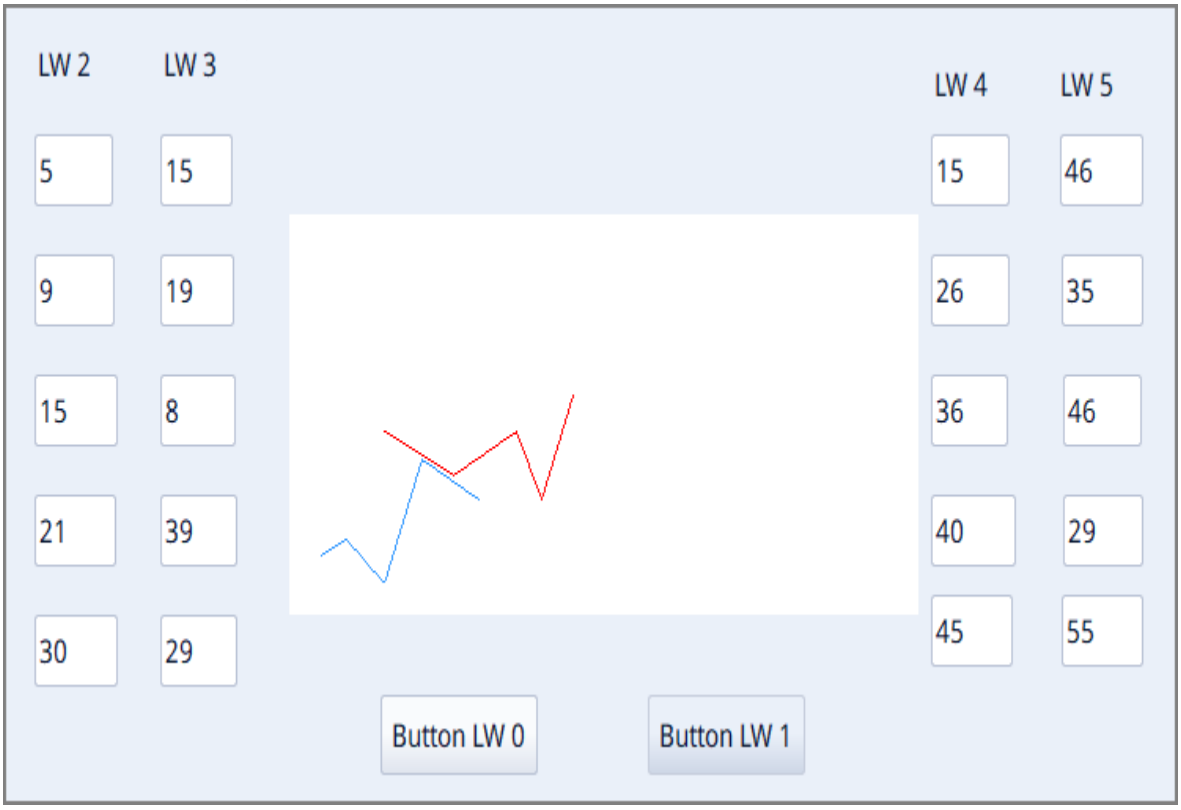


b. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Button LW 1". Choose "Events" > "Click" > "Calculation", and then double-click "SetValue" to add the function. Select "LW 1" for "Tag(Out)" and set "1" for "Value".



6. Perform the simulation test.

Click  for offline analog simulation. After setting parameters, click "Button LW 0" and "Button LW 1", as shown in the following figure.



23.2.14 Modifying the Style Code of a Control

Case

Modify the style code of a control.

Purpose

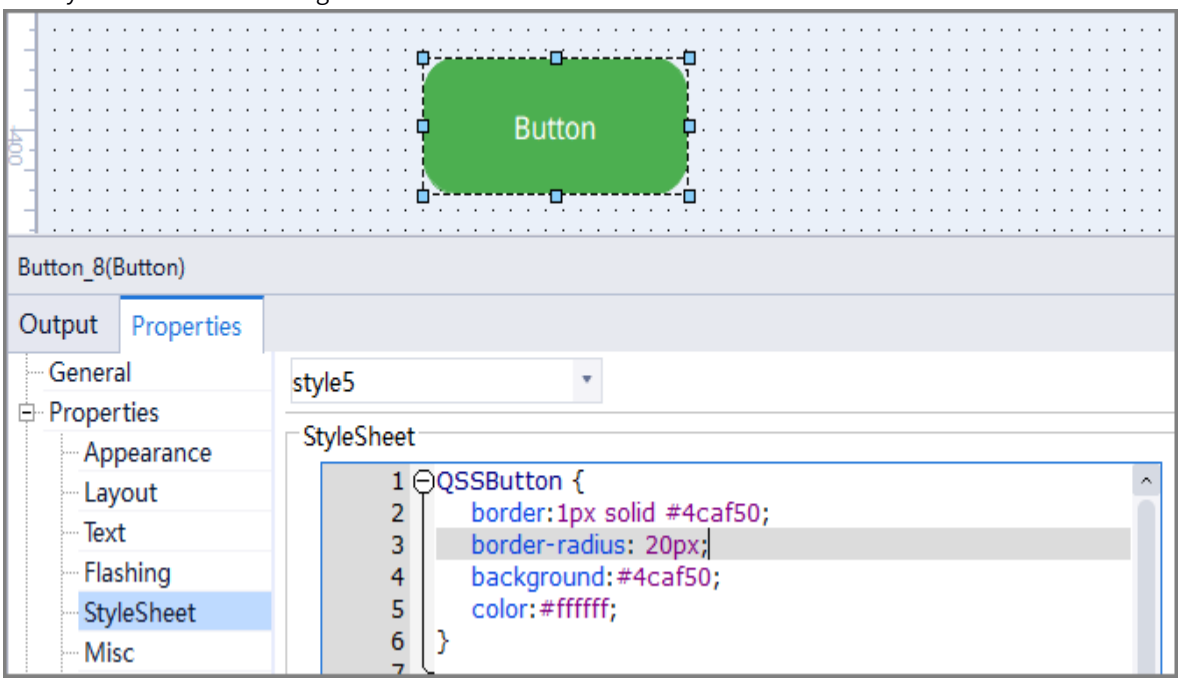
Modify the style code of a control.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Modify the style code of a control.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the button to "Screen_1". Select this button. On the "Properties" tab page, choose "Properties" > "Style", select "style5", and set the following parameters on the "Properties" tab page.

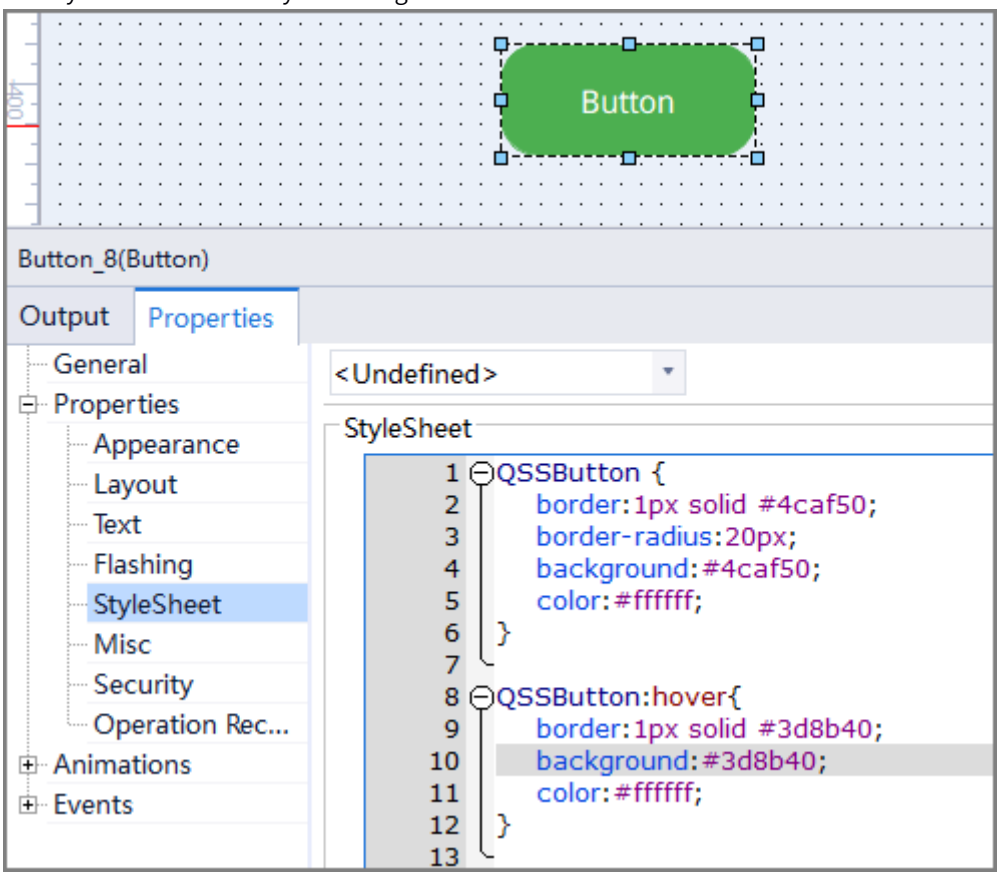
```
QSSButton { border:1px solid #4caf50; background:#4caf50; color:#ffffff; } QSSButton:hover{ border:1px solid #3d8b40; background:#3d8b40; color:#ffffff; } QSSButton:checked, QSSButton:focus, QSSButton:pressed{ border:1px solid #3d8b40; background:#3d8b40; color:#ffffff; } QSSButton:disabled{ border:1px solid #94cf96; background:#94cf96; color:#fae1fe; }
```

   - Each style code generally contains the following four statuses:
     - Normal: Normal
     - Hover: The pointer hovers over the button.
     - Focus/Press: The button is pressed.
     - Disable: The button is disabled.
   - Each status generally contains the following three parts:
     - Border: The border of the button. Common borders are right-angled edges and fillets.
     - Background (fill color): The background color of the button.
     - Color (character color): The color of the button text
3. Set the button border to fillet (if the fillets of the button are not clear, modify the button size).
   Modify the fillet radius through the border-radius code value.



4. Hover the pointer over the button to change the button color.

   Modify the button color by the background code value in hover.



   Not hover over the button:



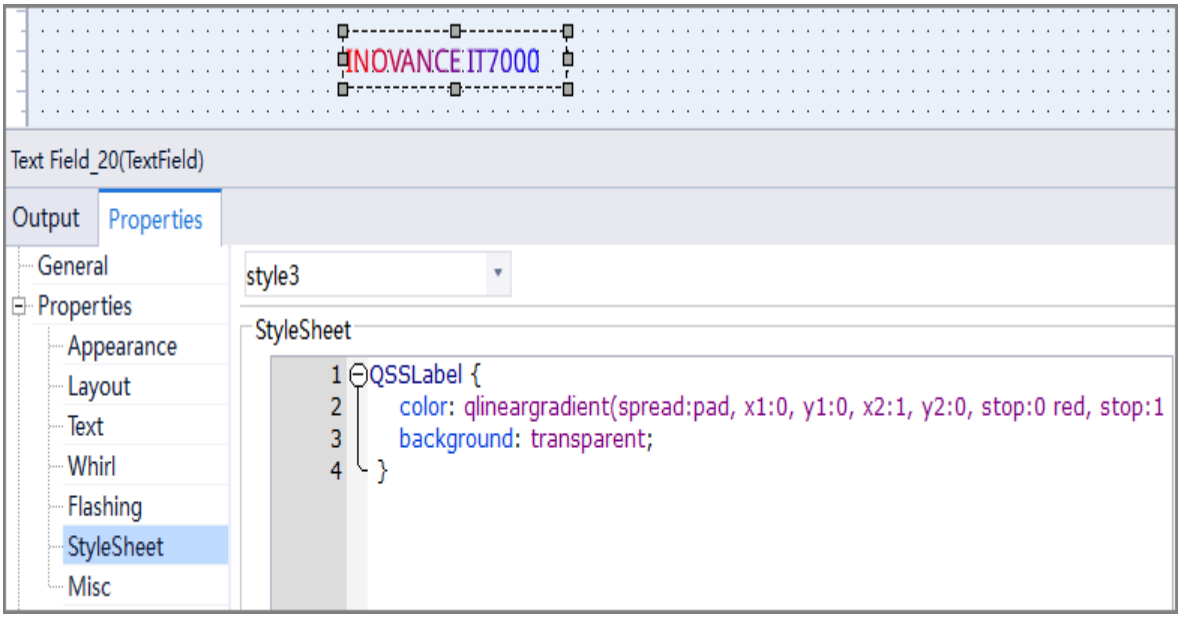
   Hover the pointer over the button and then the button color changes.



5. Set the text gradient ramp.

   Choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_1". Select the text field. On the "Properties" tab page, click "General". In the "Text" section, modify the text to "INOVANCE IT7000". Choose

"Properties" > "Style", and then select "style3" to realize text gradient ramp.



23.3 Screen

23.3.1 Applying a Template Screen and Layer

Case

The template screen and layer features help you program screens efficiently and control the display of screens based on the template order to design the screen layout rationally.

Purpose

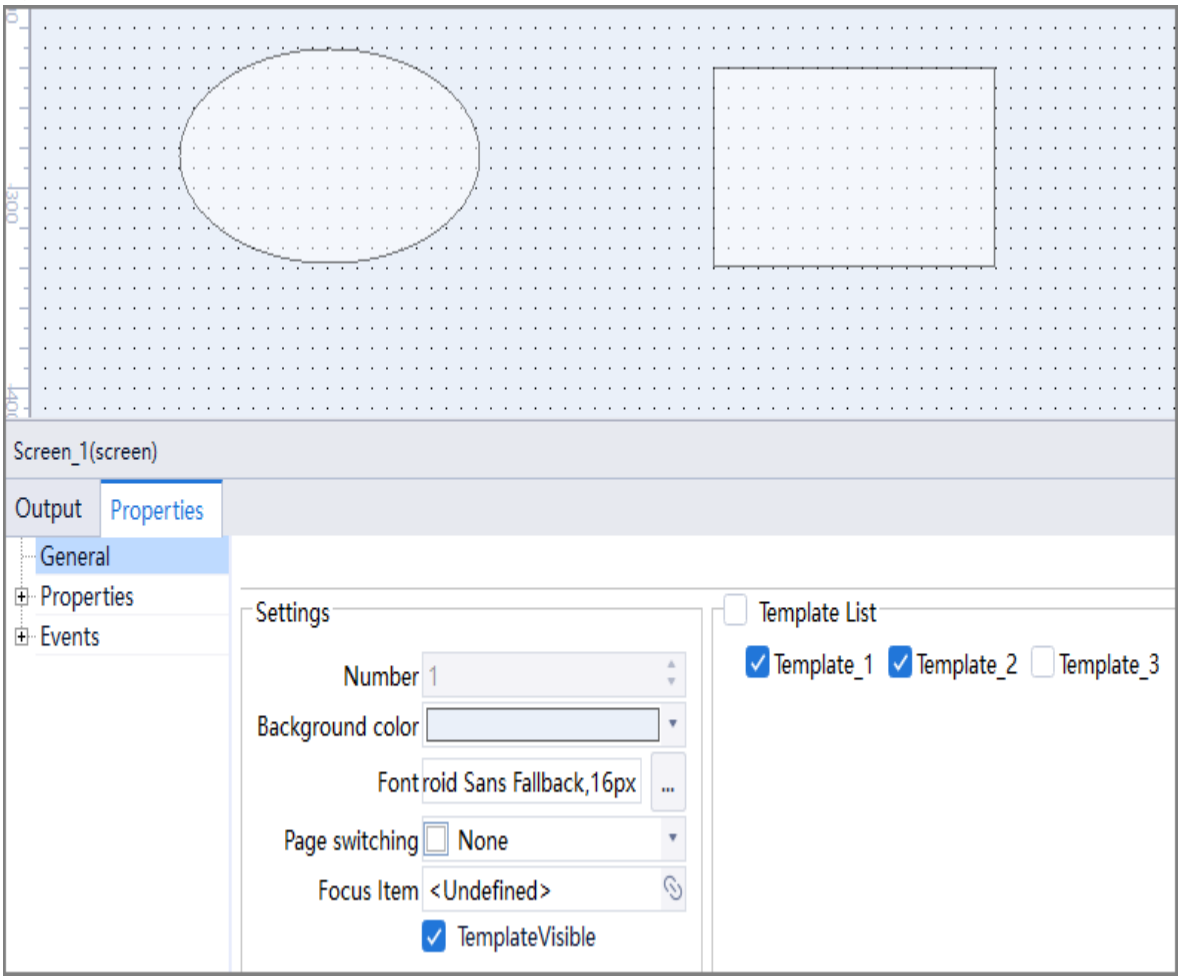
- Describe features of the template screen.
- Describe how to design layer layout.

Procedure

Applying a template screen

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a template screen.
   a. Choose "Screens" > "Templates". Double-click "Add Template", and add three template screens.
   b. Switch to "Template_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Template_1".
   c. Switch to "Template_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Rectangle", and drag the rectangle to "Template_2".
   d. Switch to "Template_3". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Polygon", and drag the polygon to "Template_3".
3. Use the template screen.
   Switch to "Screen_1". On the "Properties" tab page, click "General". In the "Template List" section, select "Template_1" and "Template_2". In the "Settings" section, select "TemplateVisible". Then, you can only view the ellipse of "Template_1" and rectangle of "Template_2" in "Screen_1", as shown in the following

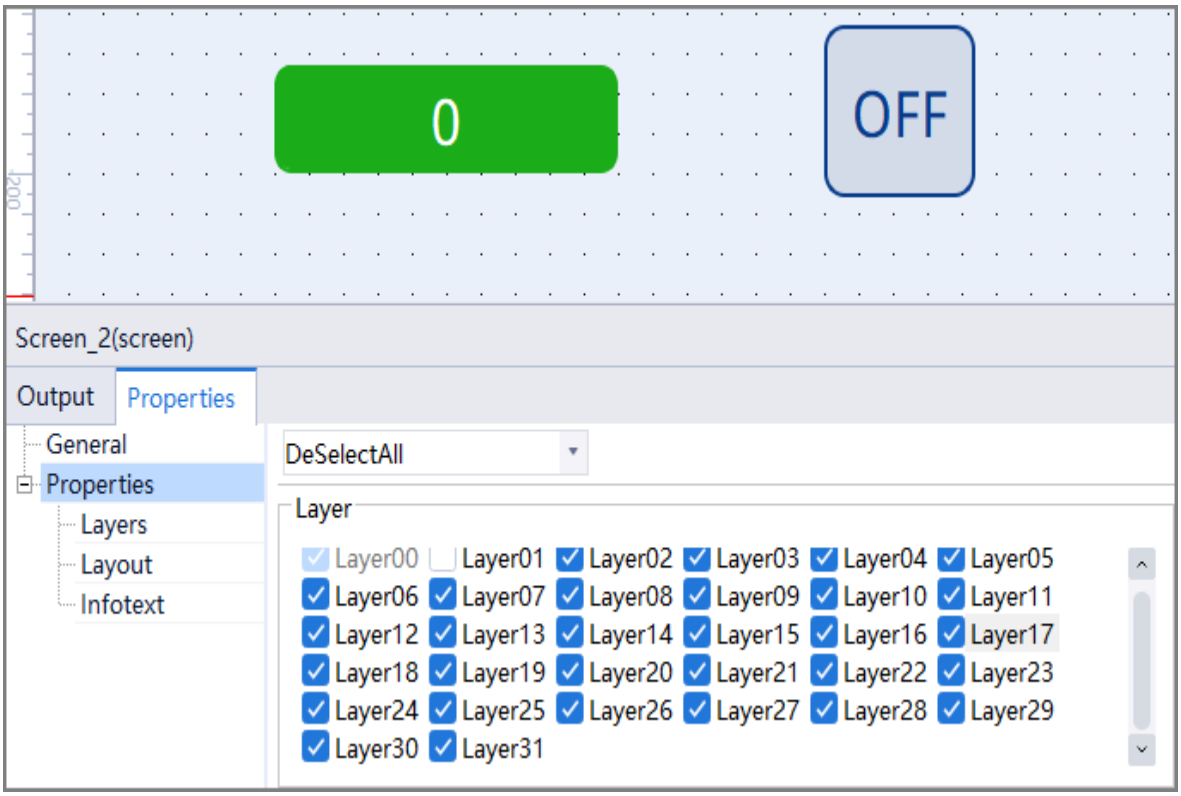
figure.



Applying a layer

1. Create a project by referring to the instructions in the "Creating a Project" section.
2. Configure the control layer.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the button to "Screen_1", and select the button. On the "Properties" tab page, choose "Properties" > "Misc". In the "Miscellaneous" section, set "Layer" to 1.
   b. In the "Tools" navigation tree on the right, choose "Control & Display" > "Word Button", drag the word button to "Screen_1", and select it. On the "Properties" tab page, choose "Properties" > "Misc". In the "Miscellaneous" section, set "Layer" to 2.
   c. In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", drag the bit button to "Screen_1", and select the button. On the "Properties" tab page, choose "Properties" > "Misc". In the "Miscellaneous" section, set "Layer" to 3.
3. Use the layer.
   Click in a blank area of "Screen_1". On the "Properties" tab page, choose "Properties" > "Layers". In the

"Layer" section, deselect "Layer01". Then the button of layer 1 is not displayed in the screen.



23.3.2 Creating a Pop-up Menu with Buttons and Screens

Case

You can customize a pop-up menu to switch screens and then hide the pop-up screen when the screen is switched.

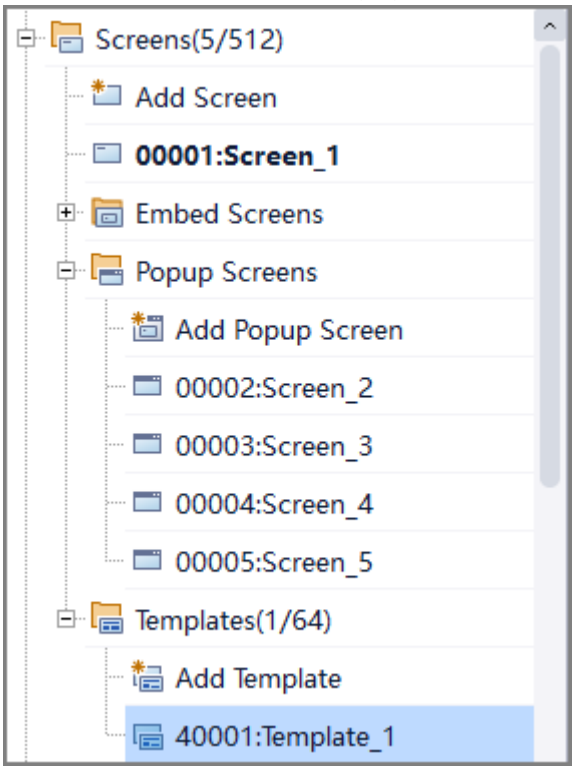
Purpose

Learn how to make a pop-up menu.

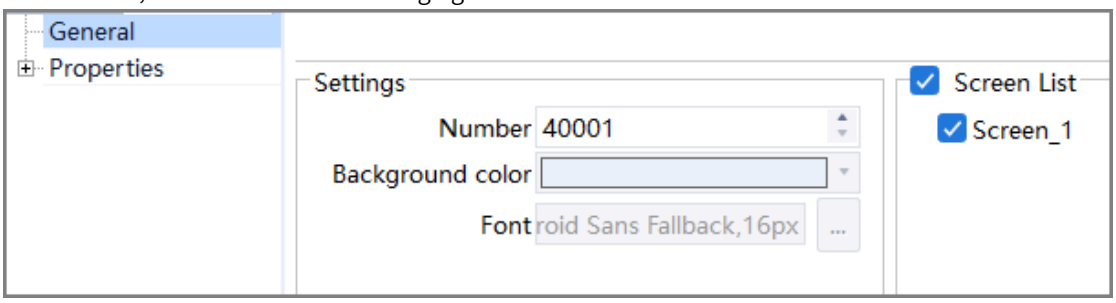
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a pop-up screen.
   a. Choose "Screens" > "Popup Screens". In the expanded menu, double-click "Add Popup Screen" and add four pop-up screens, named "Screen_2", "Screen_3", "Screen_4, and ""Screen_5". Choose "Screens" > "Templates". In the expanded menu, double-click "Add Template" to add a template

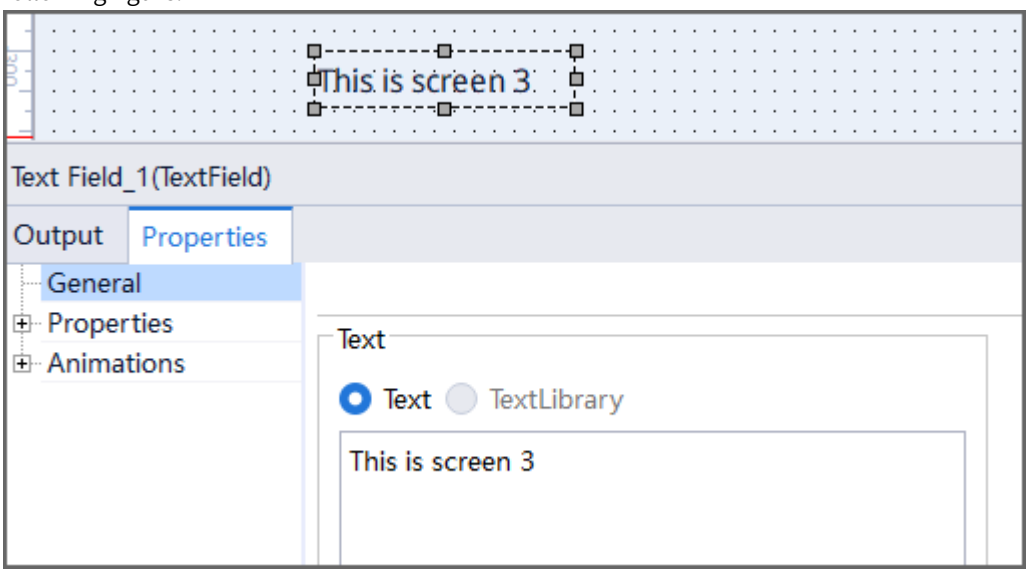
screen, as shown in the following figure.



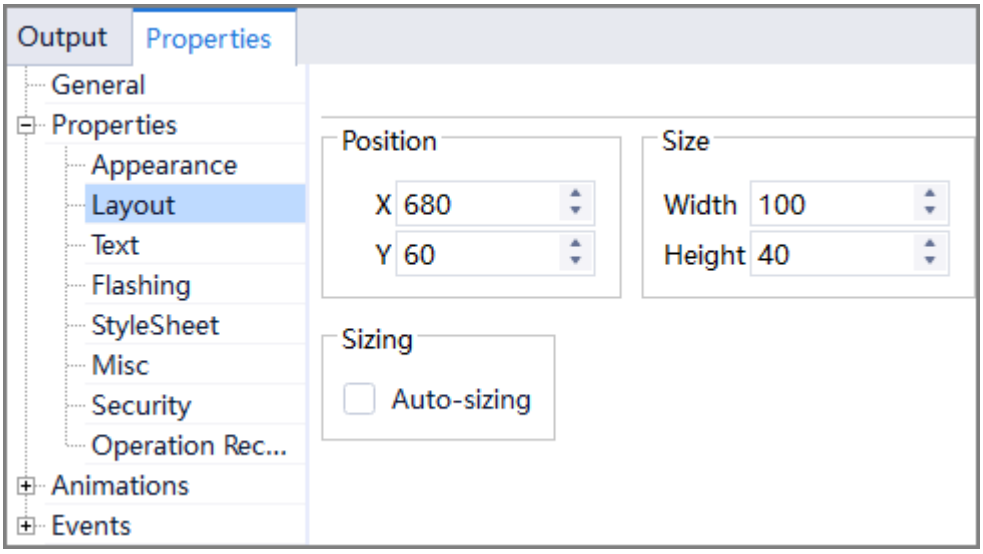
b. Select "Template_1". On the "Properties" tab page, click "General". Select all screens in the "Screen List" section, as shown in the following figure.



c. Select "Screen_3". In the "Tools" section on the right, choose "Tools" > "Text Field" and drag the control to the screen. In the "General" section, modify the text to "This is Picture 3", as shown int he following figure.



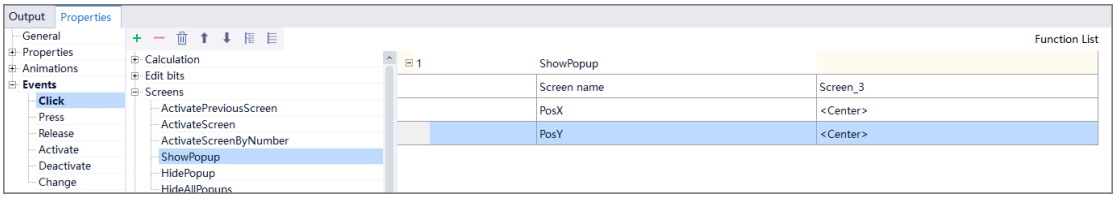
3. Configure a template screen.
   a. Switch to "Template_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the button to "Template_1", and select the button.
   b. In the "Properties" section, click "General". In the "Text" section, modify "Text OFF" to "Change screen". Choose "Properties" > "Layout". In the "Position" section, set X to 680 and Y to 60, as shown in the following figure.

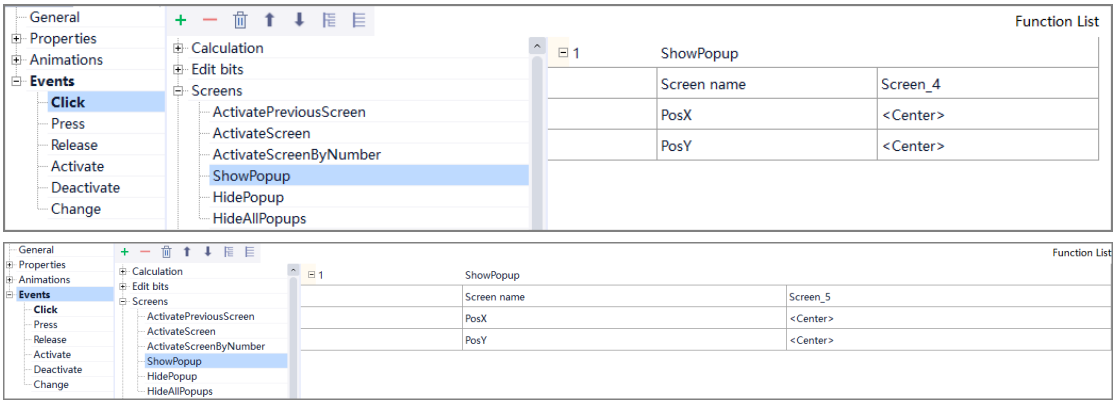


   c. Choose "Events" > "Click" > "Screens". Double-click "ShowPopup" to add the "ShowPopup" function. Select "Screen_2" for "Screen name", and set "PosX" to 680 and "PosY" to 60, as shown in the following figure.

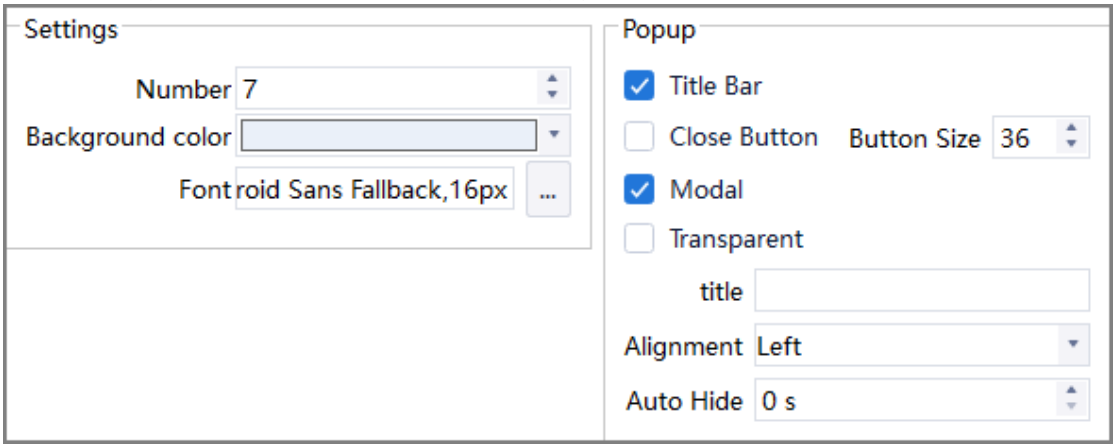


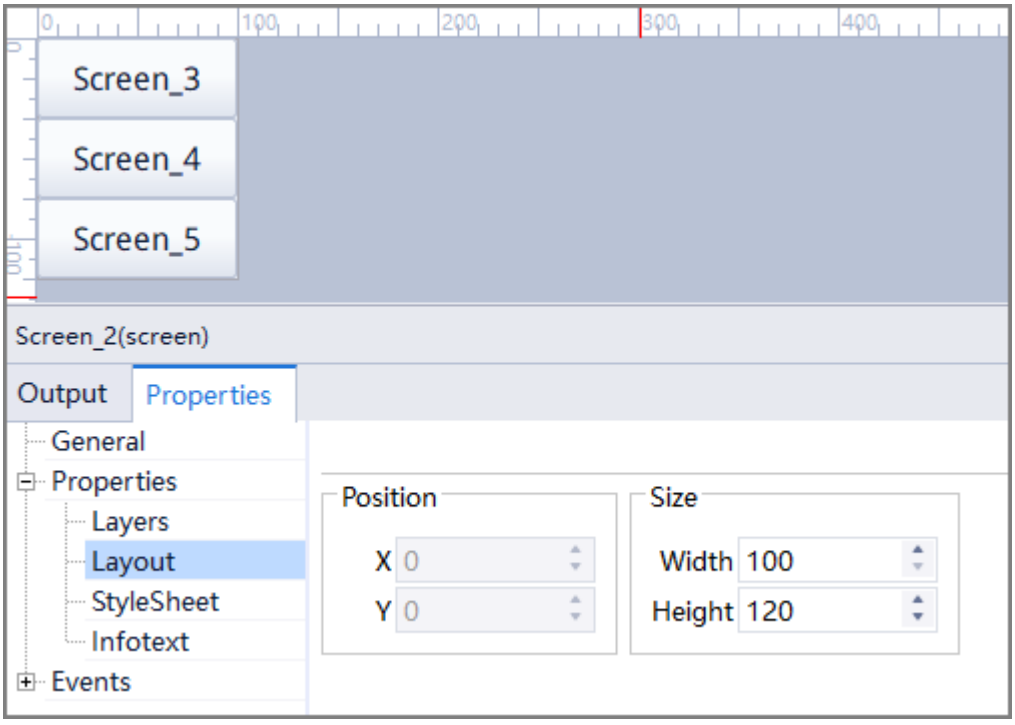
4. Configure the pop-up screen.
   a. Switch to "Screen_2". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the button control to "Screen_2" for three times, and select these buttons in turn. On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Screen_3", "Screen_4", and "Screen_5" in turn.
   b. Select "Screen_3", "Screen_4", and "Screen_5" in turn. On the "Properties" tab page, choose "Events" > "Click" > "Screens", and double-click "ShowPopup" to add the "ShowPopup" function. Modify the screen name to "Screen_3", "Screen_4", and "Screen_5" in turn.





c. Click in a blank area of "Screen_2". On the "Properties" tab page, click "General". In the "Popup" section, deselect "Close Button". Choose "Properties" > "Layout". In the "Size" section, set "Width" to 100 and "Height" to 120, as shown in the following figure.

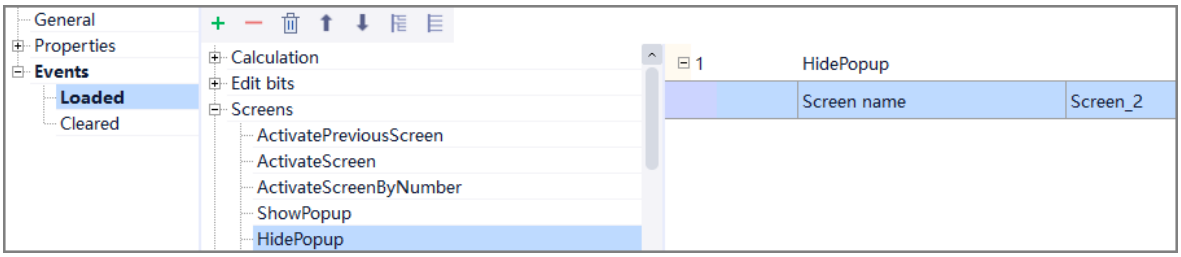




5. Add the "HidePopup" function to "Screen_1".

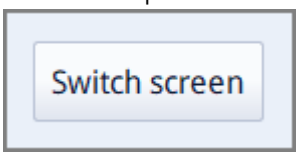
Switch to "Screen_1". On the "Properties" tab page, choose "Events" > "Loaded" > "Screens", double-click

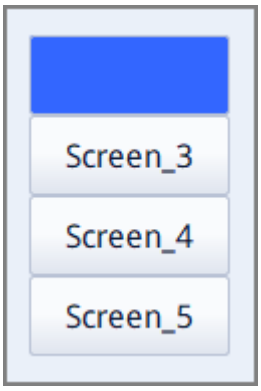
"HidePopup" to add the function, and select "Screen_2" for "Screen name".

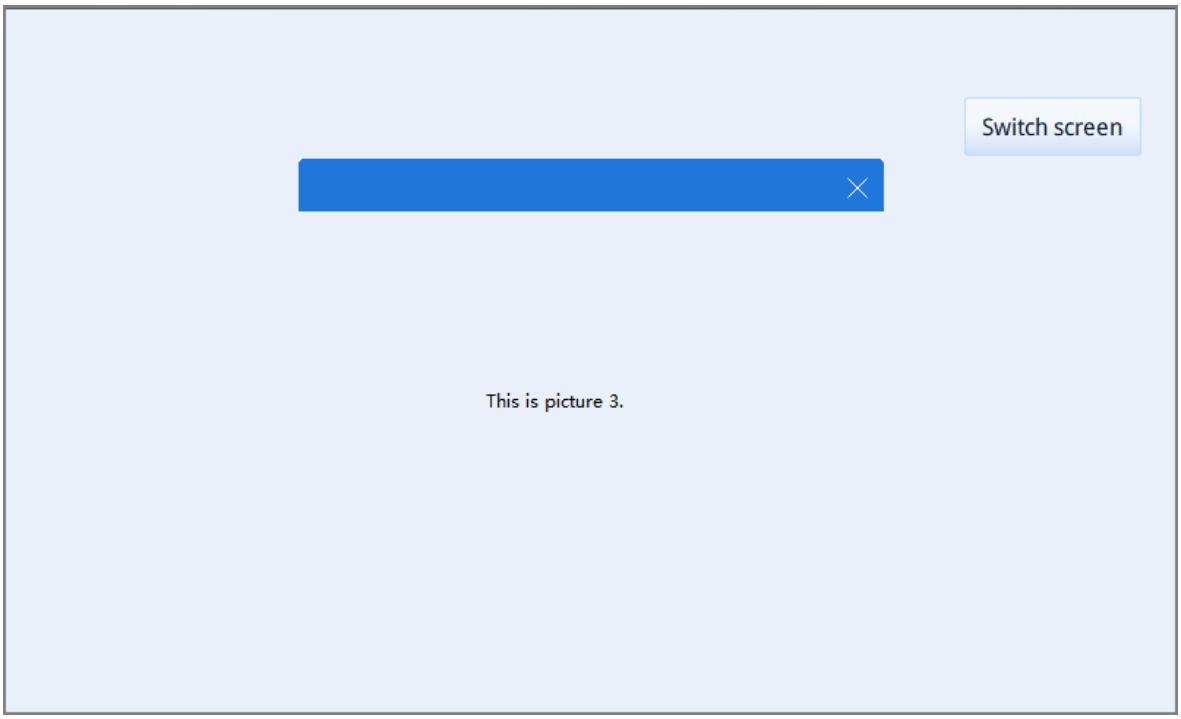


6. Perform the simulation test.

Click  to perform simulation offline.







23.3.3 Implementing Jump of Password Controlled Screen by Users and User Groups

Case

If you want to control the screens to which different roles can jump by permissions, you can assign an "administration" permission to buttons through the security feature. Then, only roles with the "administration" permission can switch screens.

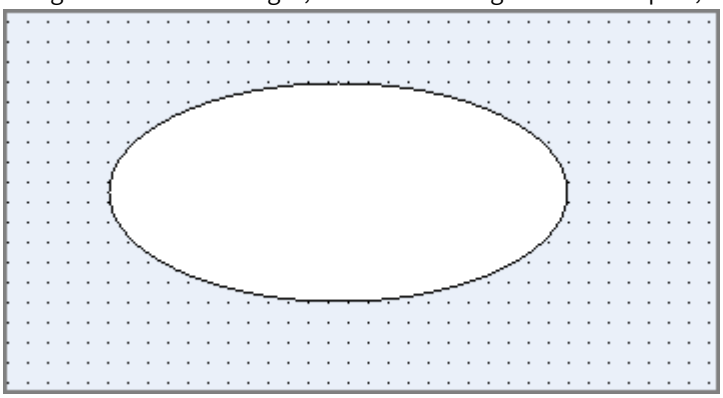
Purpose

Introduce how to use the user permission feature.

Procedure

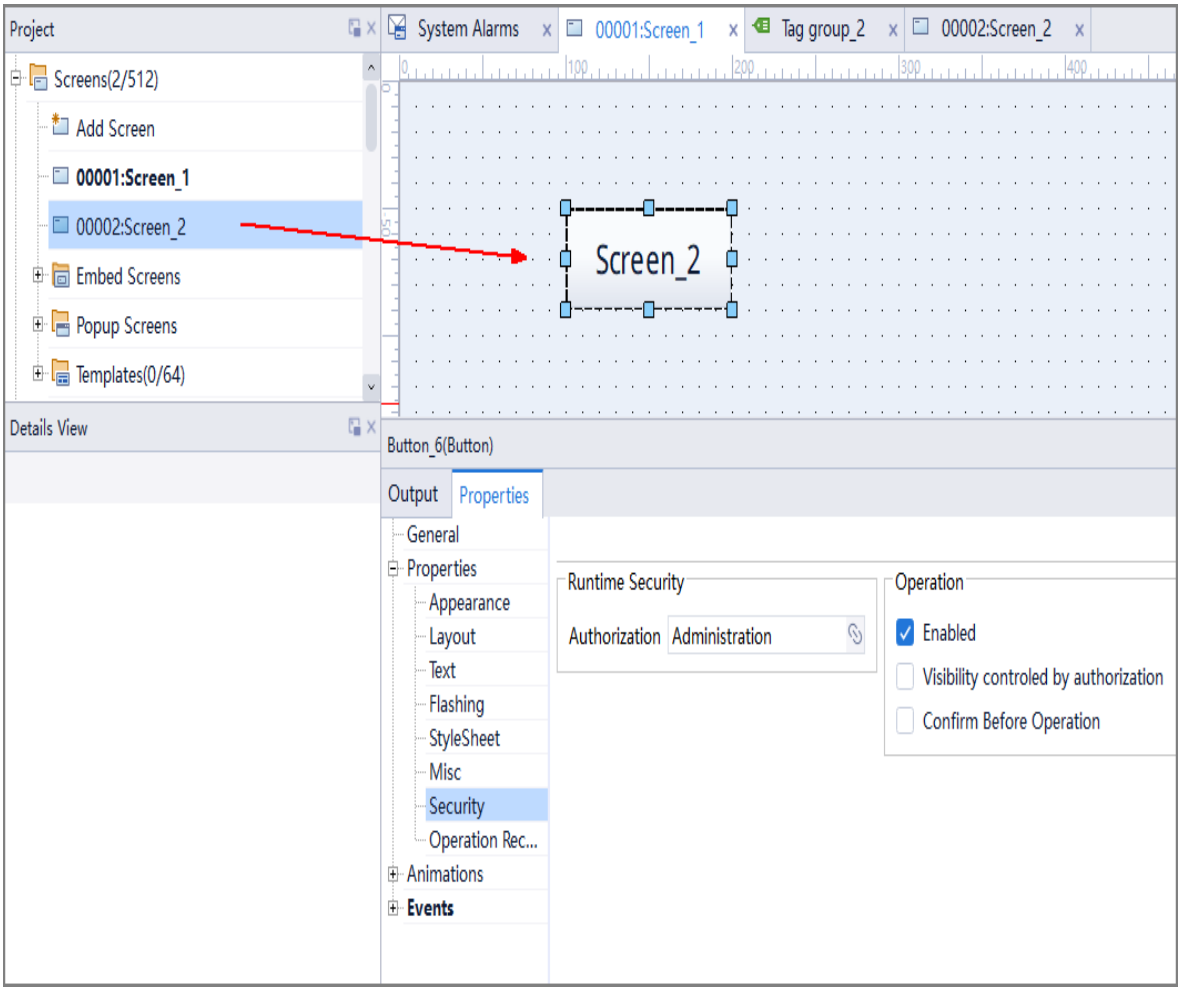
1. Create a project by referring to the instructions in the Creating a Project section.
2. Crete a screen for switching by button.

   Click "Screens", and then double-click "Add Screen" to create a screen, such as "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Screen_2".



3. Configure the screen switching button.

   Switch to "Screen_1". In the "Project" navigation tree on the left, select "Screen_2", and drag it to "Screen_1". On the "Properties" tab page, choose "Properties" > "Security". In the "Runtime Security" section, select "Administration" from the drop-down list of "Authorization".



4. Add a user with the administration permission.

   a. Click "User Authority". Double-click "Group" to add a group such as "Group_3" and assign the "administration" permission to the group.

Group

	Name	Display name	Number	Comment
1	Operators	Operator gro...	1	
2	Administrators	Admin group	2	
3	Group_3	Group_3	3	

Group authorizations(Group_3)

		Name	Number	Comment
1	☑	Administration	1	
2	☐	Monitor	2	
3	☑	Operate	3	

   b. Double-click "User" to add a user such as "user_2" and add it to "Group_3".

User

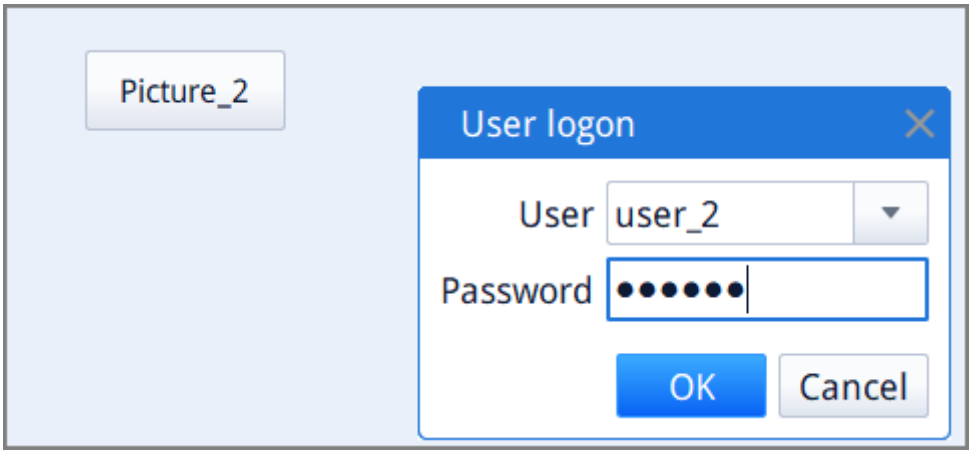
	Number	Name	Display name	Password	Logoff Time(...	Comment	User grade	Password cha...
1	1	admin	admin	********	5		0	No
2	2	user_2	user_2	********	5		20	Yes

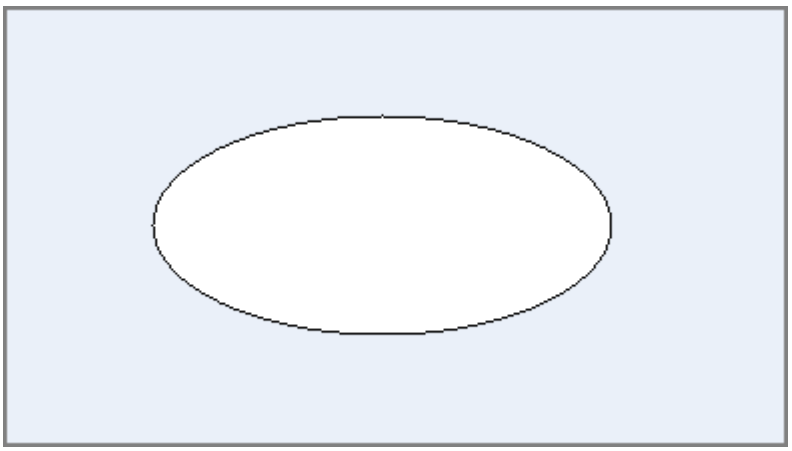
User group(user_2)

	Groups	Name	Number
1	○	Operators	1
2	○	Administrators	2
3	●	Group_3	3

5. Perform the simulation test.

Click  to perform simulation offline. Then, you can log in to the device with user_2 that has the "administration" permission and click the button to switch screens.





23.3.4 Implementing Delayed Jump of Screens by Timers

Case

During power-on, you can use the "Timer" control to switch to another screen after a certain delay.

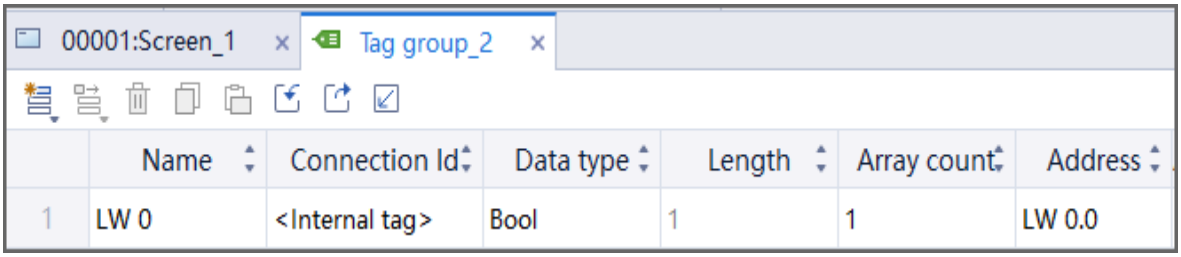
Purpose

To learn how to automatically switch to another screen after a delay

Procedure

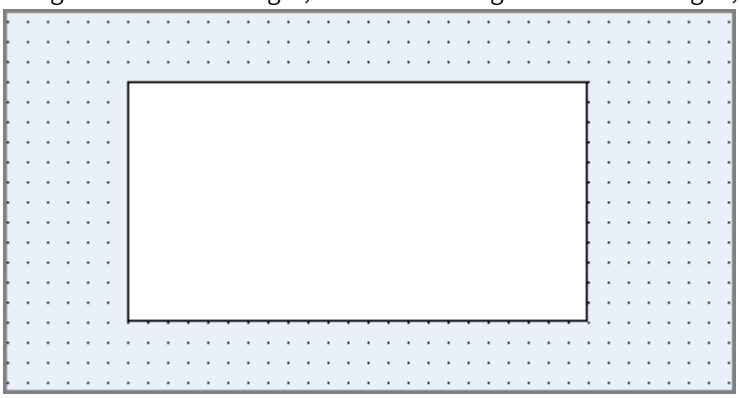
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a Bool tag to activate the timer.

   Choose "Communication" > "Tags", double-click "Tag group_2", add the tag LW 0, and set "Data type" to "Bool".



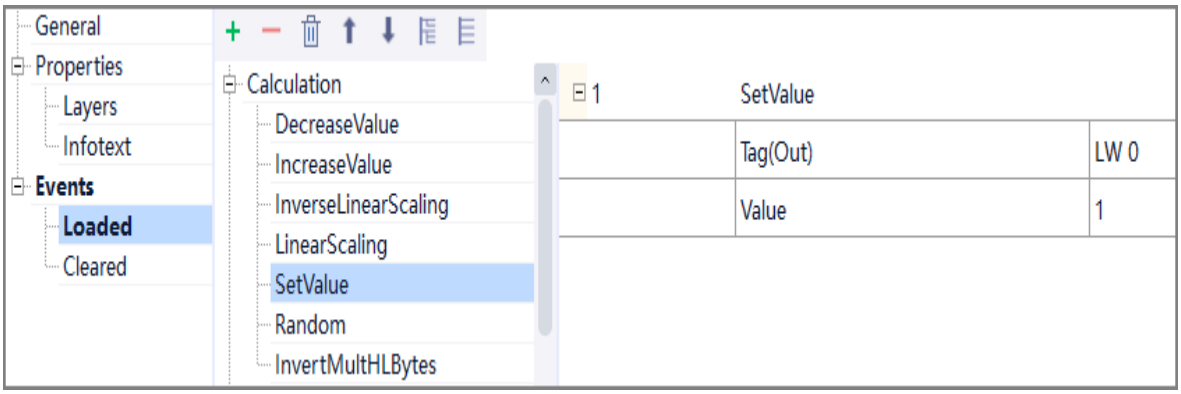
3. Create a screen to switch to after the delay.

   Click "Screens", and then double-click "Add Screen" to create a screen, such as "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Rectangle", and drag the rectangle to "Screen_2".



4. Add the SetValue function to "Screen_1".

   Switch to "Screen_1". On the "Properties" tab page, choose "Events" > "Loaded" > "Calculation", and then double-click "SetValue" to add the function. Select "LW 0" for "Tag(Out)" and set "1" for "Value".



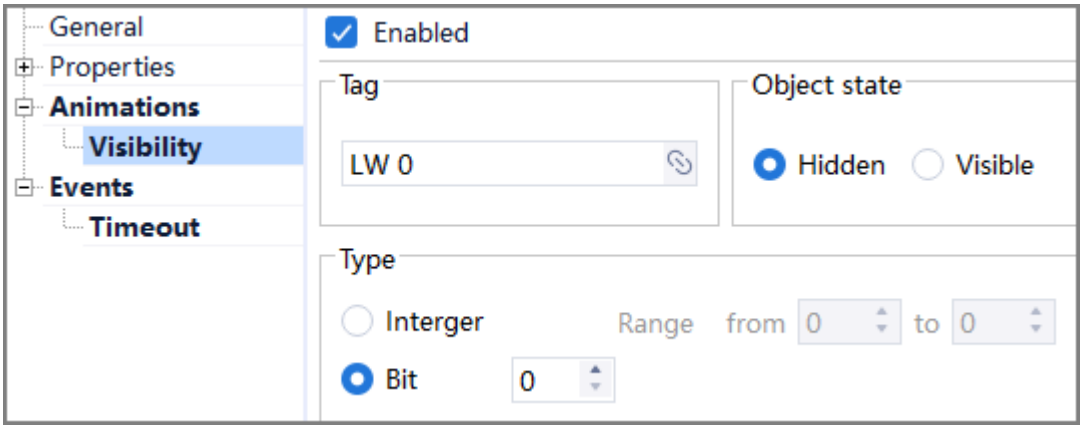
5. Add a timer to the screen.

   In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Timer", drag "Timer" to "Screen_1", select it, and perform the following setting on the "Properties" tab page:

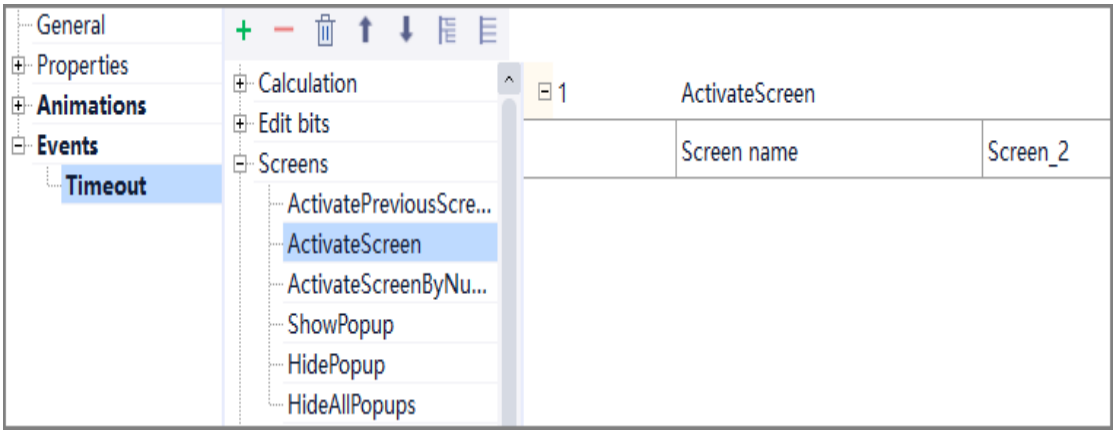
   - Click "General". In the "Settings" section, set "interval" to "50*100ms". In the "Process" section, set "Tag" to "LW 0".

   - Choose "Animations" > "Visibility". Check "Enabled" and set "Tag" to "LW 0". Set "Object state" to "Hidden". Set "Type" to "Bit" and set the value to 0. This hides the timer when the program is running, making the screen more aesthetically pleasing.

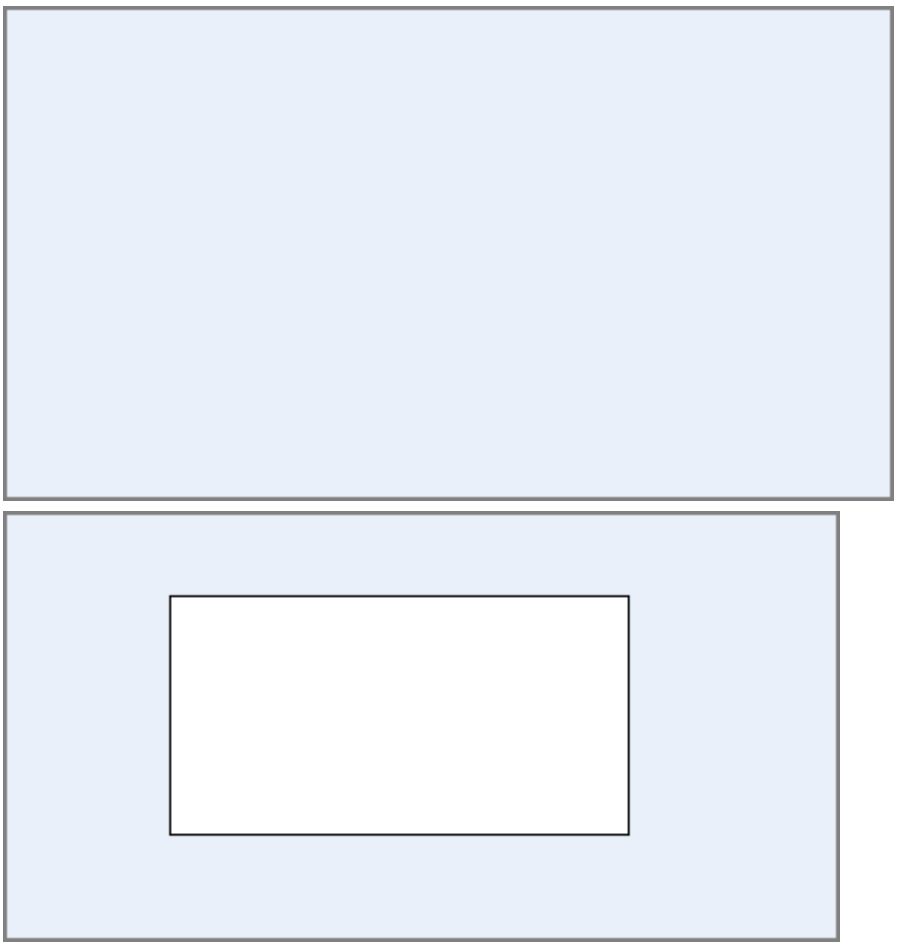
     

   - Choose "Events" > "Timeout" > "Screens", and then double-click "ActivateScreen" to add the function and select "Screen_2" for "Screen name". This automatically switches from "Screen_1" to "Screen_2" after the timer ends.

6. Perform the simulation test.

   Click  to perform simulation offline. "Screen_1" is initially displayed, which automatically switches to "Screen_2" after 5 seconds.



23.3.5 Highlighting Current Page by Setting Background Color Through Buttons

Case

You can use buttons to switch between different screens. When you stay on the current page, the corresponding button remains highlighted.

Purpose

To learn how to configure events of tags.

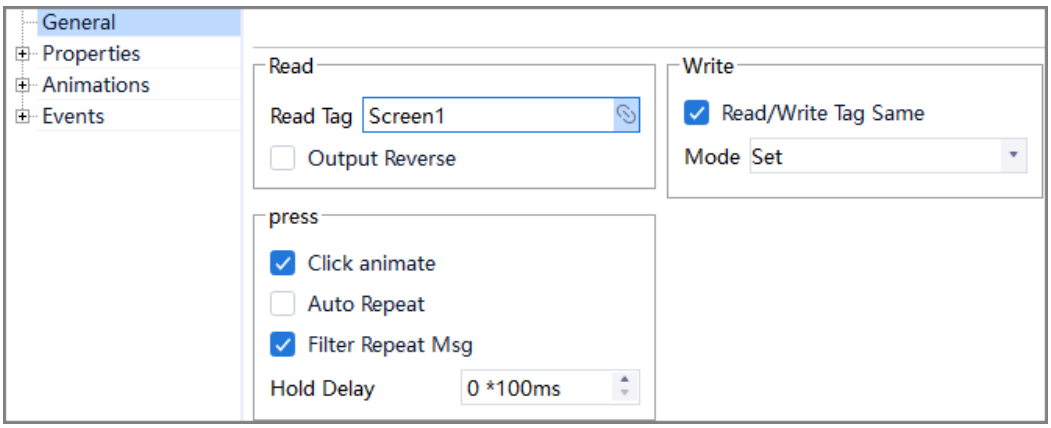
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a screen.
   Click "Screens", and then double-click "Add Screen" to create four screens. Choose "Screens" > "Templates" and double-click "Add Template" to create a template screen.
3. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and create six tags that are "Screen 1",

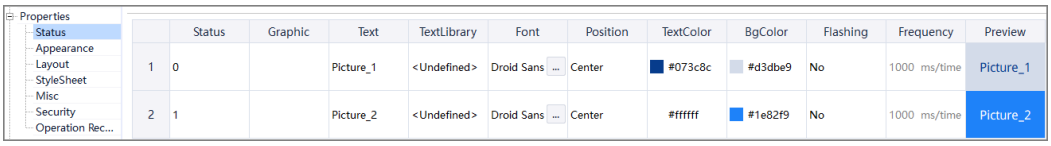
"Screen 2", "Screen 3", "Screen 4", "Screen 5", and "LW 0". "Start value" is set to 1 for "LW 0".

	Name	Number	Connection Id	Data type	Length	Array count	Address	Upper limit	Lower limit	Start value
1	Picture 1	1	<Internal tag>	Bool	1	1	LW 0.0	<No limit>	<No limit>	
2	Picture 2	2	<Internal tag>	Bool	1	1	LW 0.1	<No limit>	<No limit>	
3	Picture 3	3	<Internal tag>	Bool	1	1	LW 0.2	<No limit>	<No limit>	
4	Picture 4	4	<Internal tag>	Bool	1	1	LW 0.3	<No limit>	<No limit>	
5	Picture 5	5	<Internal tag>	Bool	1	1	LW 0.4	<No limit>	<No limit>	
6	LW 0	6	<Internal tag>	Int16	2	1	LW 0	<No limit>	<No limit>	1

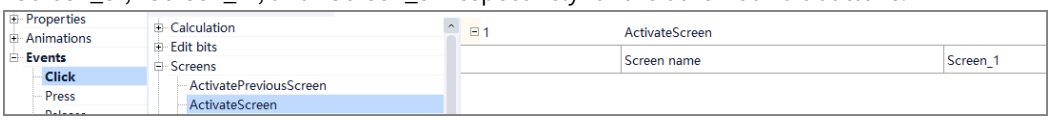
4. Add a bit button to the screen.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", drag "Button" to "Screen_1", and add five bit buttons.
   b. Select one bit button and set parameters on the "Properties" tab page. Configure the other four bit buttons in the same way.
      - Click "General". In the "Read" section, set "Read Tag" to "Screen 1" for the selected bit button, and to "Screen 2", "Screen 3", "Screen 4", and "Screen 5" respectively for the other four bit buttons.



      - Choose "Properties" > "Status". Change the values in the "Text" column to "Screen 1" for the selected bit button, and to "Screen 2", "Screen 3", "Screen 4", and "Screen 5" respectively for the other four bit buttons.

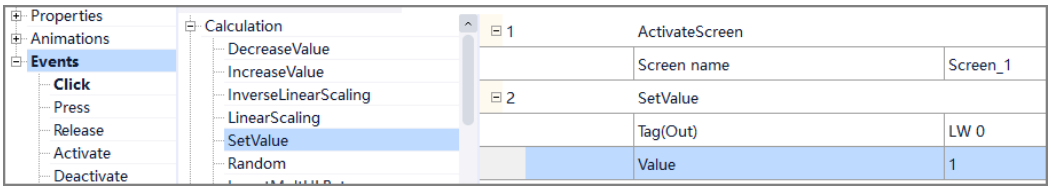


      - Choose "Events" > "Click" > "Screens", and then double-click ActivateScreen to add the function. Set "Screen Name" to "Screen_1" for the selected bit button, and to "Screen_2", "Screen_3", "Screen_4", and "Screen_5" respectively for the other four bit buttons.



      - Choose "Events" > "Click" > "Calculation", and then double-click "SetValue" to add the function. Set "Tag(Out)" to "LW 0" and "Value" to 1 for the selected bit button, and "Tag(Out)"

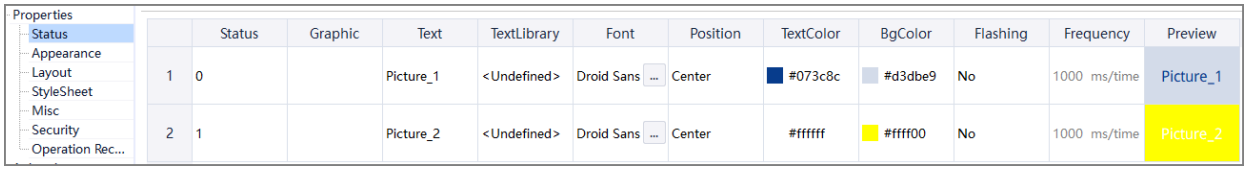
to "LW 0" and "Value" to 2, 4, 8, and 16 respectively for the other four bit buttons.



5. Select all bit buttons on "Screen_1" and copy them to "Screen_2", "Screen_3", "Screen_4", and "Screen_5" respectively.

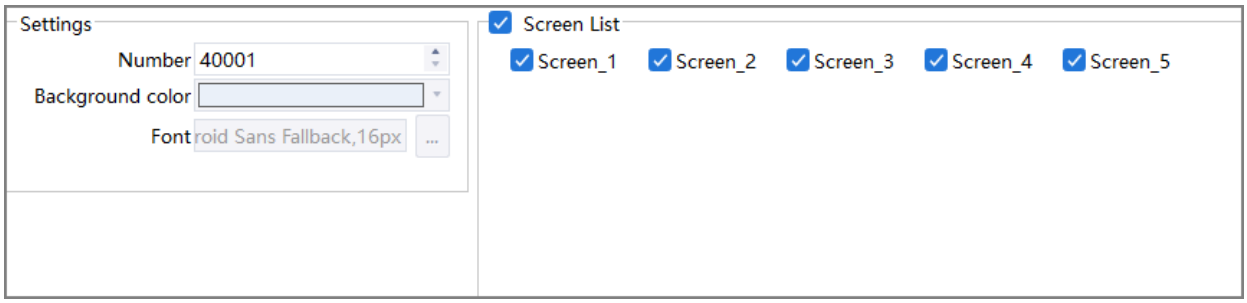
6. Configure bit buttons to be highlighted.

Switch to "Screen_1" and select a bit button in the screen. On the "Properties" tab page, choose "Properties" > "Status". Set "BgColor" to yellow (highlighted) in the row where "Status" is 1. Configure other screens in the same way.



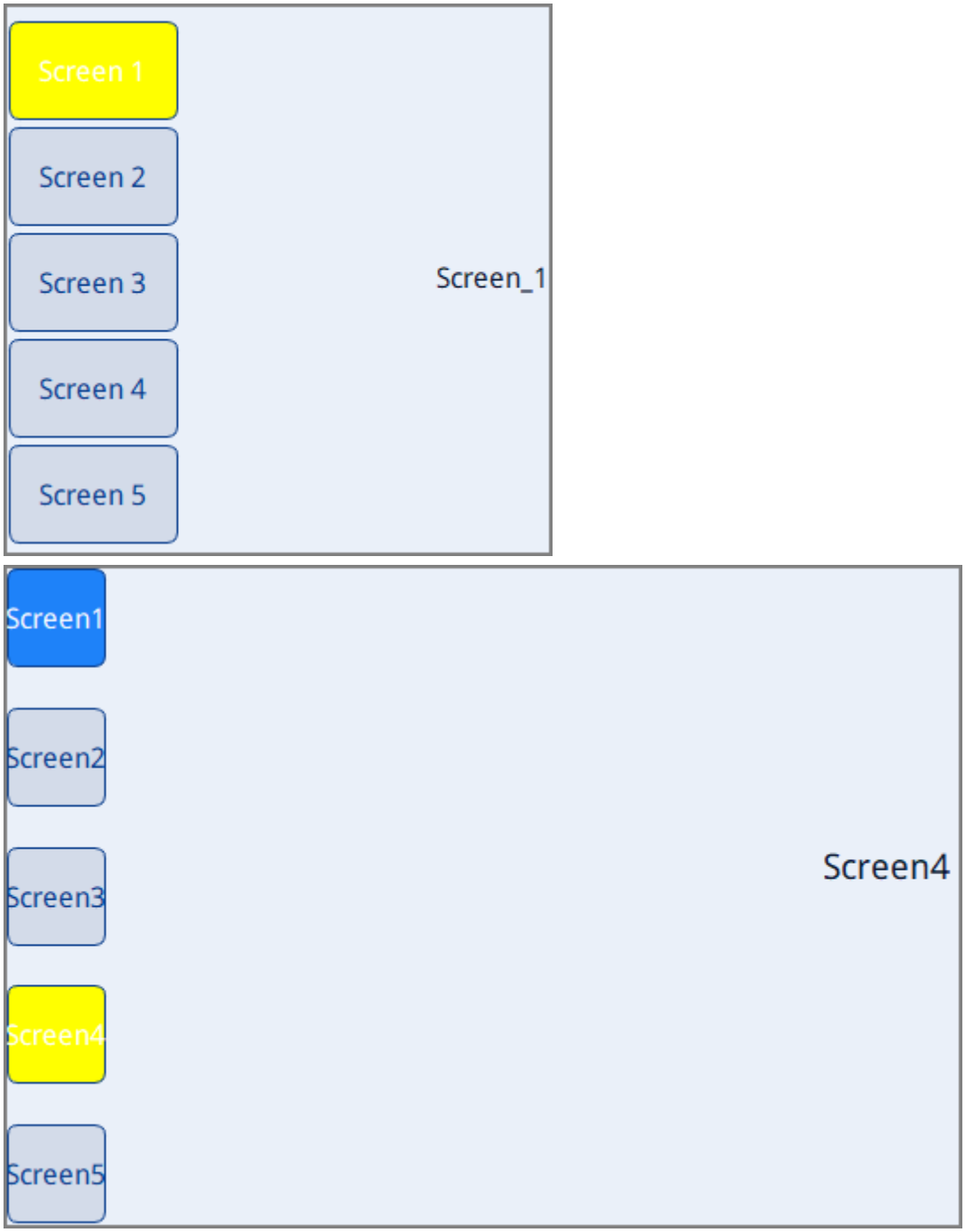
7. Configure a template screen.

Screen to "Template_1". On the "Properties" tab page, click "General". Select all screens in the "Screen List" section.



8. Perform the simulation test.

Click  to perform simulation offline. Click different buttons to switch to different screens and highlight them.



23.3.6 Popping up Prompt by Clicking a Button Through the "HidePopup" Function

Case

You can use the "HidePopup" function to implement the following feature: when you click a button, a window is displayed, asking you to confirm whether to close the window when writing the tag LW 0; if you click "Yes", the tag is written and the window is closed; when you click "Cancel", the window is closed but the tag is not written.

Purpose

Describe how to realize inputs by using a button and a pop-up window.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

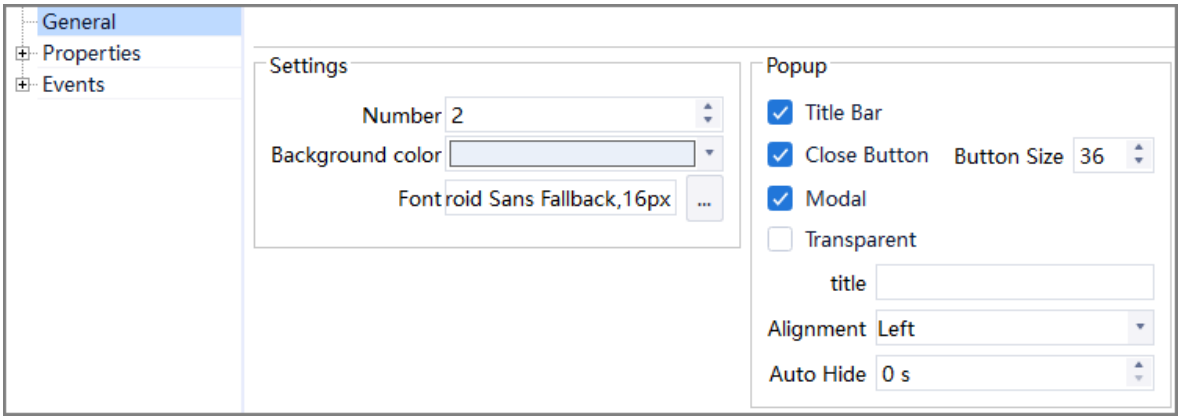
2. Create a tag.

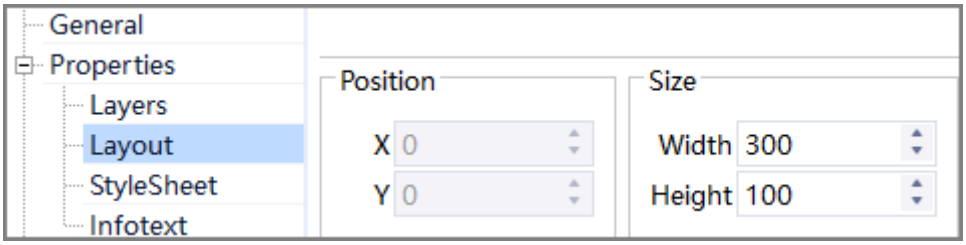
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag LW 0.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0

3. Create a pop-up screen.

   Choose "Screens" > "Popup Screens", and double-click "Add Popup Screen" to add a screen such as "Screen_2" to display the confirmation content. On the "Properties" tab page, click "General". In the "Popup" section, set "Title" to "Write 100 to LW0?". Choose "Properties" > "Layout". In the "Size" section, set "Width" to 300 and "Height" to 100.



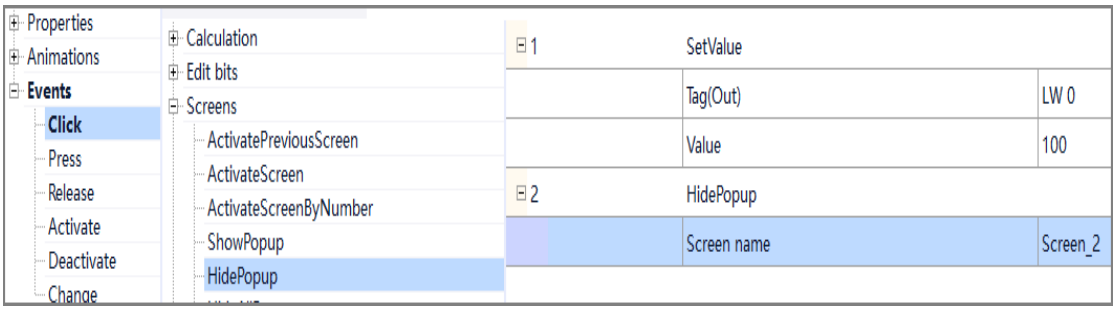


4. Add a button to the pop-up screen.

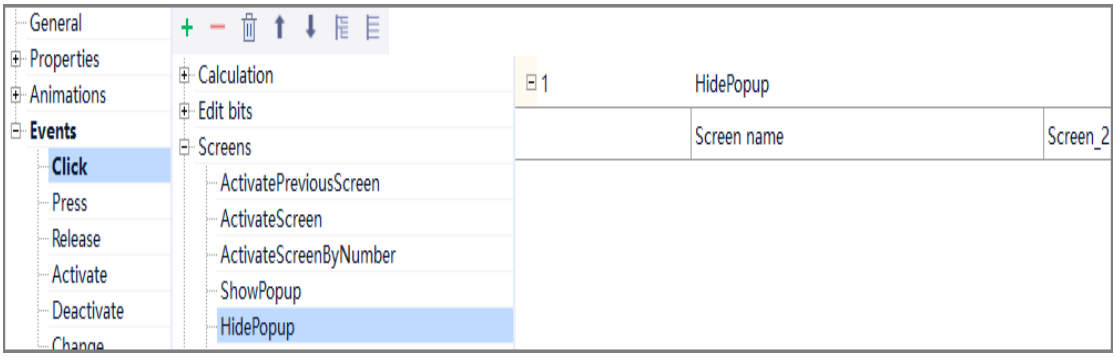
   a. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the button to "Screen_2" to add two buttons. Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Yes" and "No" respectively.

   b. Select the "Yes" button. Choose "Events" > "Click" > "Calculation", double-click "SetValue" to add the function, and select "LW 0" for "Tag(Out)", and set "100" for "Value".

   c. Choose "Events" > "Click" > "Screens", double-click "HidePopup" to add the function, and select "Screen_2" for "Screen name".

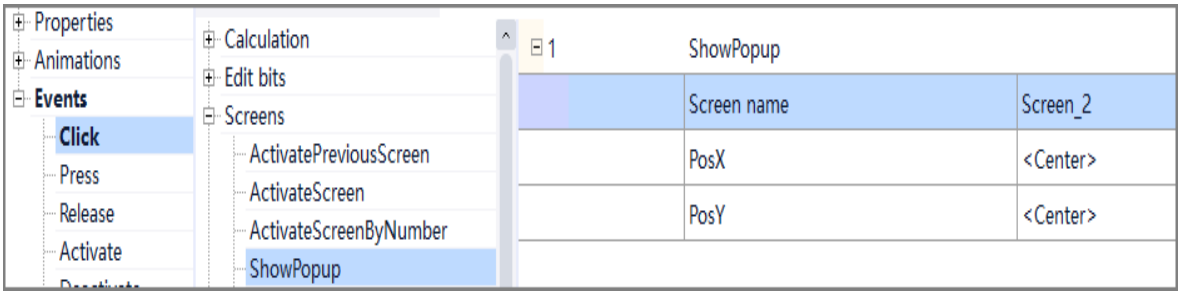


d. Select the "No" button. On the "Properties" tab page, choose "Events" > "Click" > "Screens", double-click "HidePopup" to add the function, and select "Screen_2" for "Screen name".



5. Add a button to the screen.

Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the button to "Screen_1", and select the button. On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Write LW 0". Choose "Events" > "Click" > "Screens", double-click "ShowPopup" to add the function, and select "Screen_2" for "Screen name".



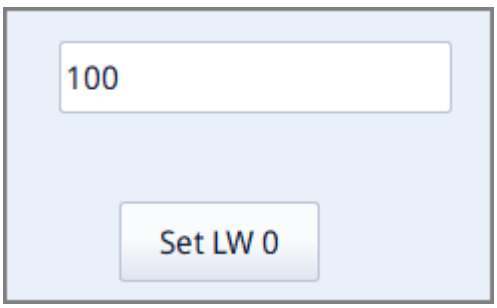
6. Add the tag LW 0 to the screen.

In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1".

7. Perform the simulation test.

Click  to perform simulation offline. Click "Write LW 0".





23.3.7 Activating the TAB Window Through Embed Screens

Case

"Embed Screens" is added to activate the TAB window feature.

Purpose

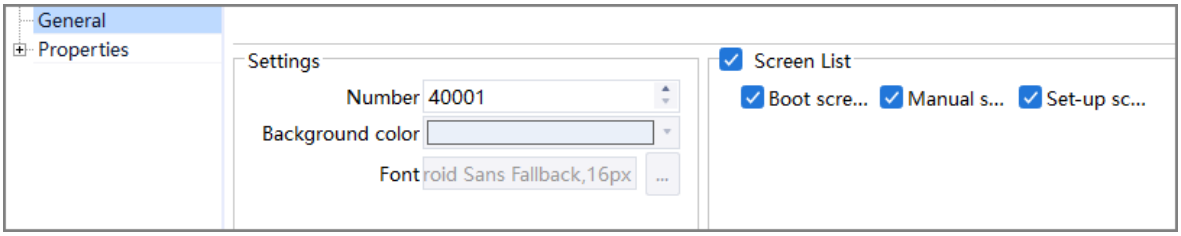
- To learn the "Embed Screens" feature and how to use the feature
- To learn how to use the "Embed Screens" feature to switch pages in the TAB window

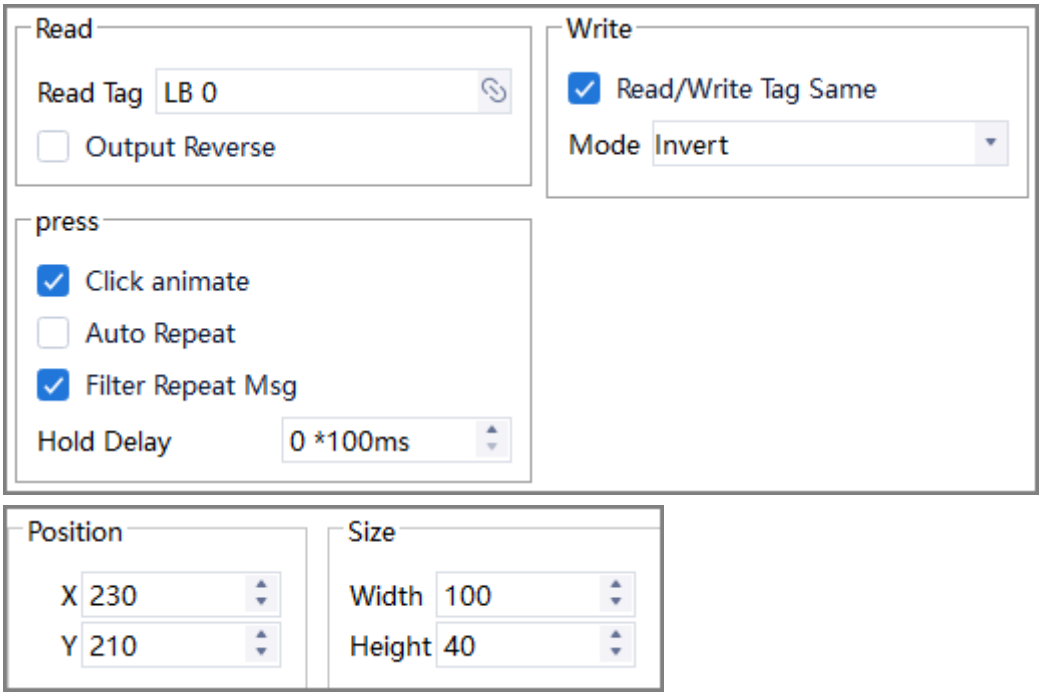
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create boolean tags.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag LB 0.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LB 0	1	<Internal tag>	Bool	1	1	LB 0

3. Create a screen.
   Click "Screens", double-click "Add Screen" to create screens, and rename them as "Boot screen", "Manual screen", and "Set-up screen" respectively.
4. Create a template screen.
   Choose "Screens" > "Templates". In the expanded menu, double-click "Add Template" to add a template screen. On the "Properties" tab page, click "General". In the "Screen List" section, select "Boot screen", "Manual screen", and "Set-up screen". In the "Tools" navigation tree on the right, choose "Control & Display" > "Bit Button", drag "Bit Button" to "Template_1", and select "Bit Button". On the "Properties" tab page, click "General". In the "Read" section, set "Read Tag" to "LB 0". In the "Write" section, set "Mode" to "Invert". Choose "Properties" > "Layout". In the "Size" section, set "Width" to 100 and "Height" to 40.



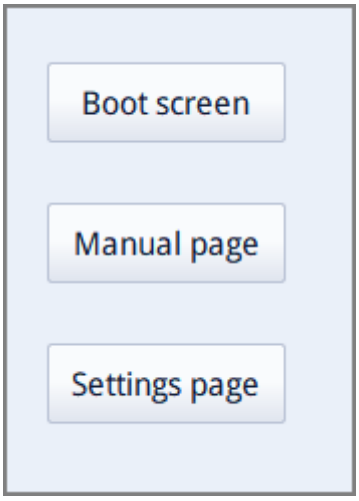


5. Create an embed screen and add a button.

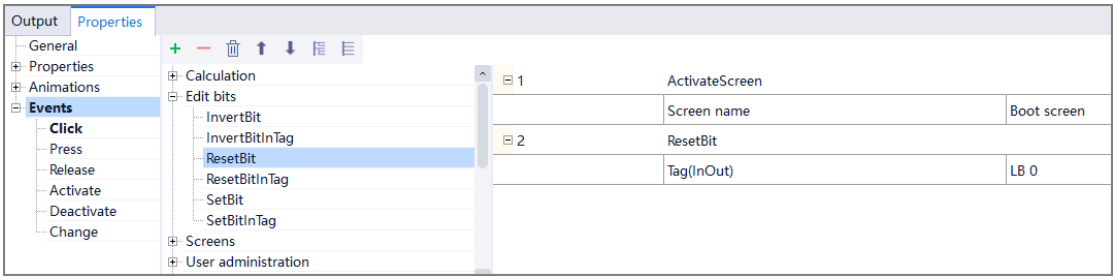
   a. Choose "Screens" > "Embed Screens", click "Add Embed Screen" to create an embed screen, and rename it as "Page switching".

   b. On the "Properties" tab page, choose "Properties" > "Layout". In the "Size" section, set "Width" to 150 and "Height" to 200.

   c. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Page switching", add three buttons, and select each button. On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Boot screen", "Manual pages", and "Settings page" respectively.



   d. Click "Boot screen". On the "Properties" tab page, choose "Events" > "Click" > "Screens", double-click "ActivateScreen" to add the function, and set "Screen name" to "Boot screen". Choose "Events" > "Click" > "Edit bits", double-click "ResetBit" to add the function, and set "Tag(InOut)" to "LB 0".

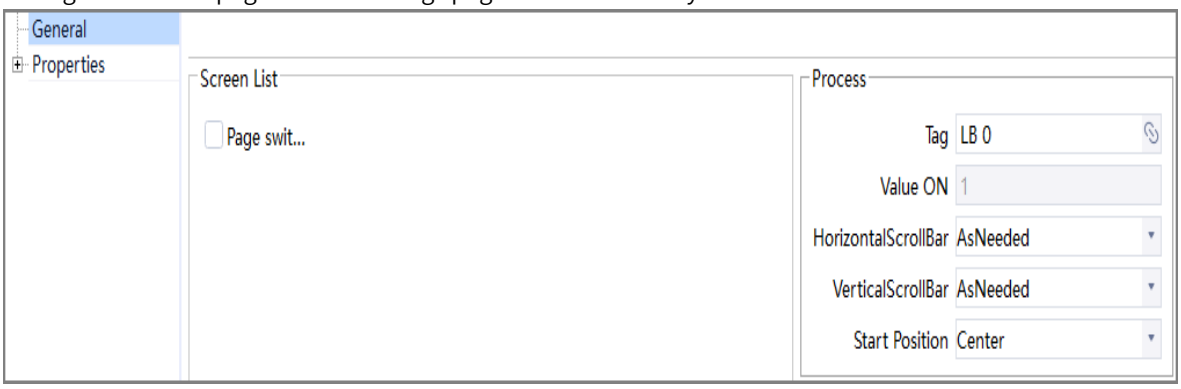


e. Click "Manual pages". On the "Properties" tab page, choose "Events" > "Click" > "Screens", double-click "ActivateScreen" to add the function, and set "Screen name" to "Manual pages". Choose "Events" > "Click" > "Edit bits", double-click "ResetBit" to add the function, and set "Tag(InOut)" to "LB 0".

f. Click "Settings page". On the "Properties" tab page, choose "Events" > "Click" > "Screens", double-click "ActivateScreen" to add the function, and set "Screen name" to "Settings page". Choose "Events" > "Click" > "Edit bits", double-click "ResetBit" to add the function, and set "Tag(InOut)" to "LB 0".

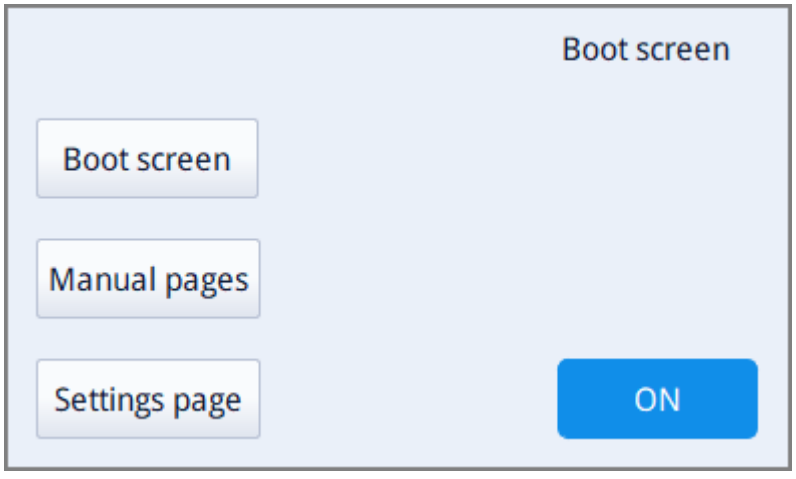
6. Create an embed screen to the screen.

Switch to "Boot screen". In the "Project" navigation tree on the left, select "Page switching" and drag it to "Boot screen". On the "Properties" tab page, click "General". In the "Process" section, set "Tag" to "LB 0". Configure "Manual pages" and "Settings page" in the same way.



7. Perform the simulation test.

Click  to perform simulation offline. Click the buttons to switch pages in the TAB window.





23.4 Alarm

23.4.1 Activating Alarm in Alarm Management

Case

To obtain alarm information, you can use the alarm management feature of InoTouchPad to activating alarm features, including:

- Analog data alarm
- Discrete quantity data alarm
- System alarm
- Alarm bar

Purpose

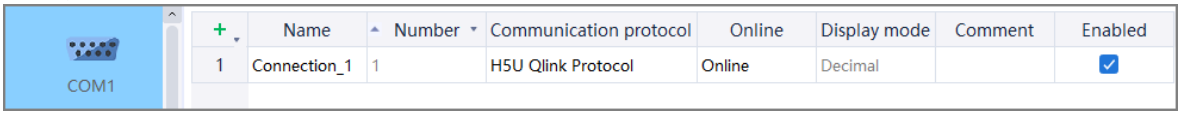
- To learn why alarms are triggered
- To learn the role and usage of alarm controls

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add a tag.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	Tag_1	1	<Internal tag>	Int16	2	1	LW 0
2	Tag_2	2	<Internal tag>	Int16	2	1	LW 1
3	Tag_3	3	<Internal tag>	Int16	2	1	LW 2

3. Create a connection.
   Click "Communication", double-click "Connections", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "H5U Series", and double-click "H5U Qlink Protocol" to create a connection.



4. Create an analog alarm.
   Click "Alarm Management". Double-click "Analog Alarms", create an analog alarm, and set "Trigger tag" to "Tag_1" and "Limit" to 10 and 20 respectively.

	Text	Text Library	Number	Class	Trigger tag	Trigger mode	Limit
1	analog_1	<Undefined>	1	Errors	Tag_1	>	10
2	analog_2	<Undefined>	2	Errors	Tag_1	>	20

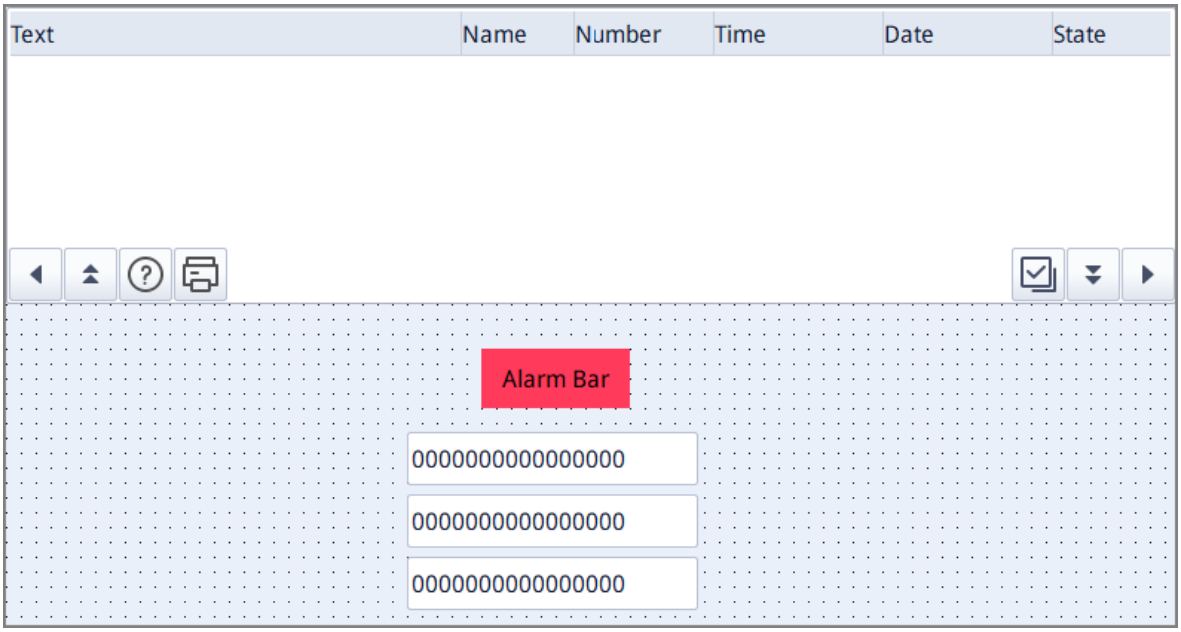
5. Create a discrete alarm.
   Click "Alarm Management". Double-click "Discrete Alarms", create a discrete alarm, and set "Trigger tag" to "Tag_2" and "Tag_3" respectively.

+	Text	Text Library	Number	Class	Trigger tag	Trigger bit
1	discrete_1	<Undefined>	1	Errors	Variable_1	0
2	discrete_2	<Undefined>	2	Errors	Variable_2	0

Name	Meaning
Text	The alarm title to be displayed, which can be customized
Text Library	The text library that can be associated with the alarm title to be displayed
Number	The number of the created alarm, which cannot be changed
Class	The alarm category, which can be customized as needed and divided into Errors, Warnings, and System, corresponding to different alarm information
Trigger tag	The trigger tag of an alarm, which is a tag of the BOOL, Int6, or UInt16 type for a discrete alarm and a tag of the Int16, UInt16, Int32, UInt32, Int64, UInt64, Float, or Double type for an analog alarm
Trigger mode	The trigger mode of a tag, which can be set to <, >, ==, >=, or <= for an analog alarm and to 0>1, 1>0, ==0, or ==1 for a discrete alarm
Limit	Sets a value based on the trigger mode of an analog alarm.
Infotext	Displays details of an alarm.
Infotext Library	Displays details of an alarm.
Alarm Group	Divides alarm information into different alarm groups for categorization
Alarm Grade	The alarm level

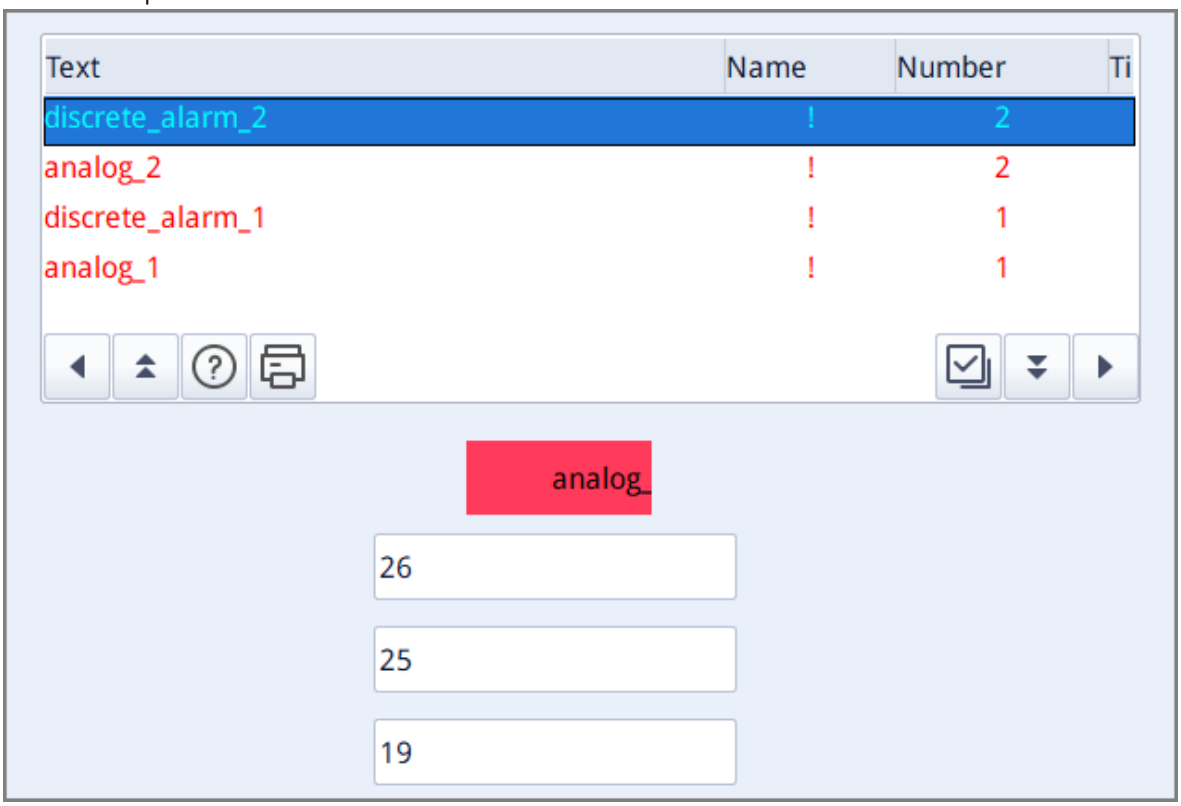
6. Add an alarm bar and an alarm record view to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Production Management" > "Alarm Bar" and drag it to "Screen_1"; choose "Production Management" > "Alarm Logs" and drag it to "Screen_1".

7. Add a tag to the screen.
   In the "Project" navigation tree on the left, click "Tag group_2". Drag "Tag_1", "Tag_2", and "Tag_3" from "Variable View" to "Screen_1".



8. Perform the simulation test.

Click to perform simulation offline.



23.4.2 Creating an Alarm Pop-up Window

Case

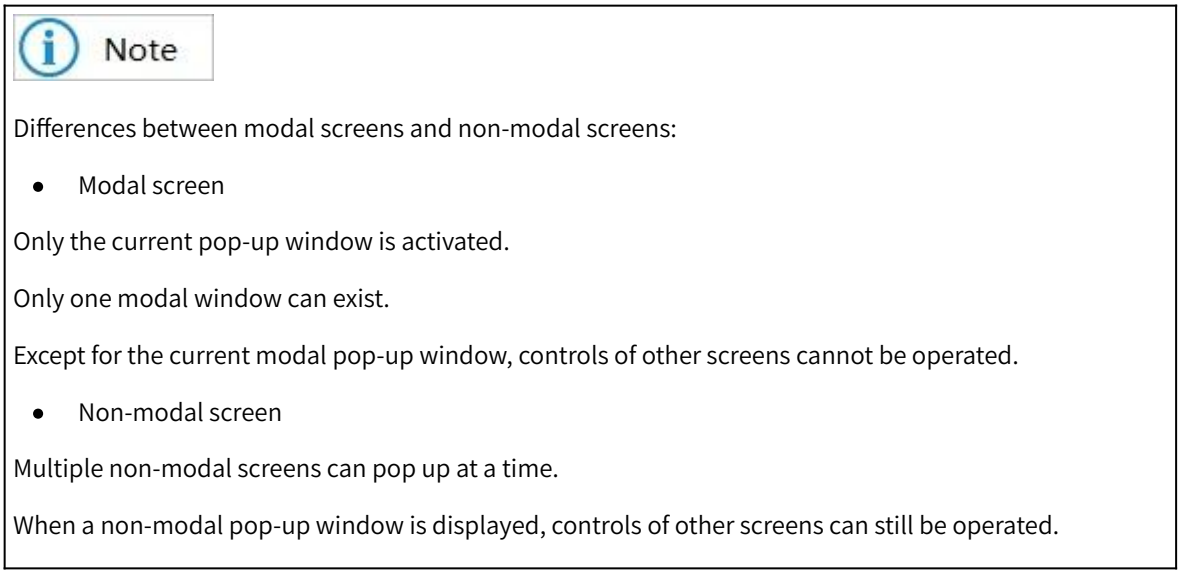
When you want to report alarms by pop-up windows, make an alarm pop-up window in InoTouchPad.

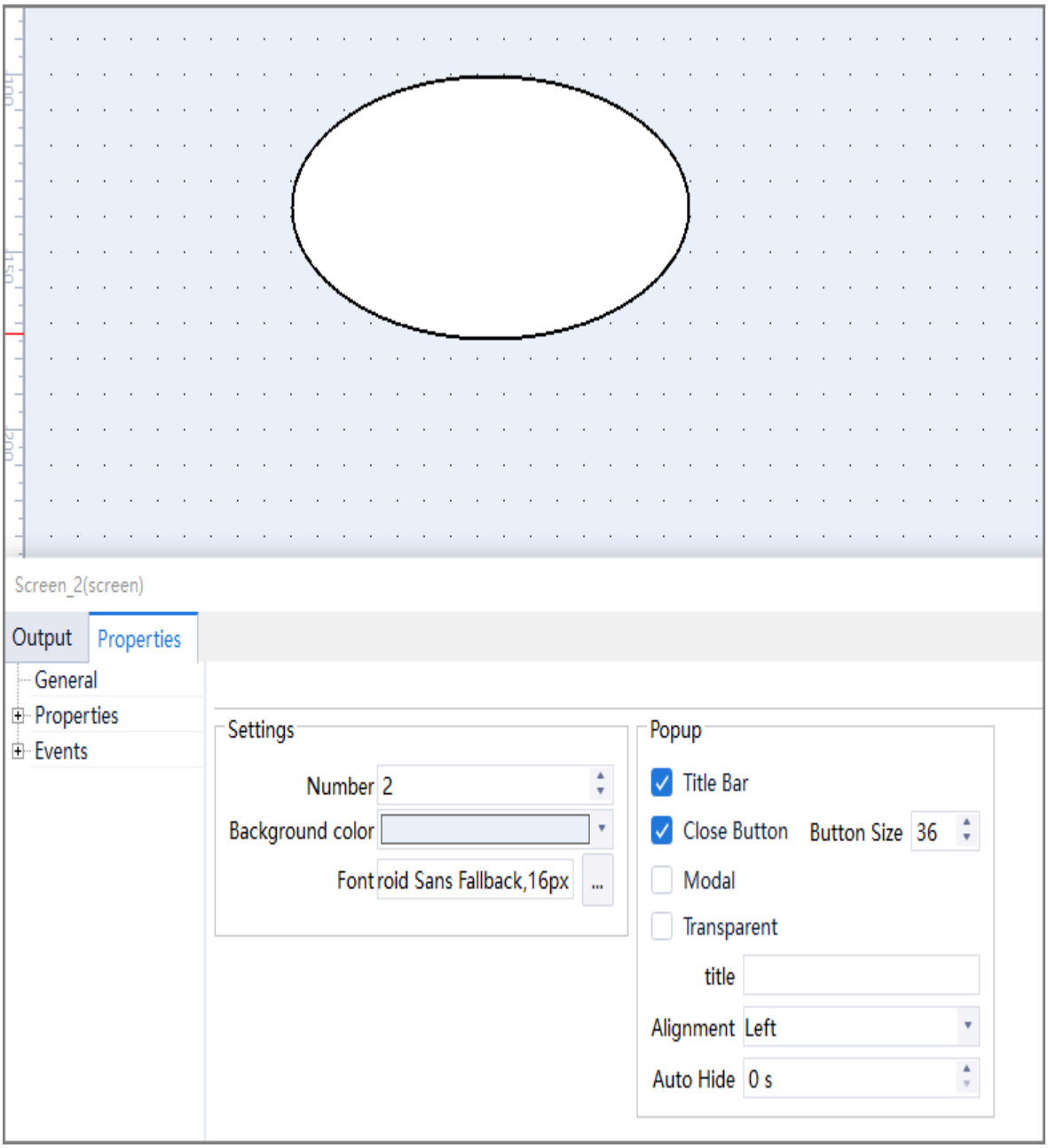
Purpose

Describe how to use the alarm pop-up window.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a pop-up screen.
   Choose "Screens" > "Popup Screens", and then double-click "Add Popup Screen" to create a pop-up screen, such as "Screen_2". On the "Properties" tab page, click "General". In the "Popup" section, deselect "Modal". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Screen_1".

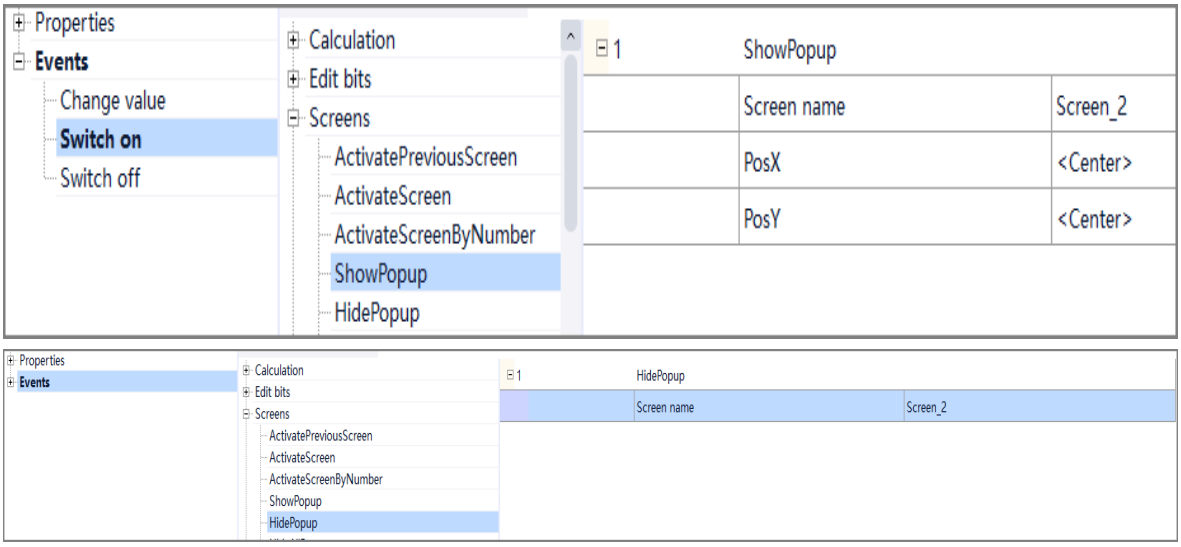




3. Create boolean tags.

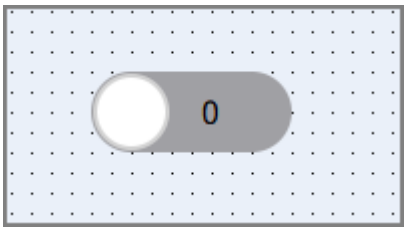
   Choose "Communication" > "Tags", double-click "Tag group_2", and add a tag of the Bool type. Select the tag LB 0. On the "Properties" tab page, choose "Events" > "Switch on" > "Screens", and double-click "ShowPopup" to add the function. Select "Screen_2" for "Screen name". Choose "Events" > "Switch off" > "Screens", and double-click "HidePopup" to add the function. Select "Screen_2" for "Screen name".

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LB 0	1	<Internal tag>	Bool	1	1	LB 0



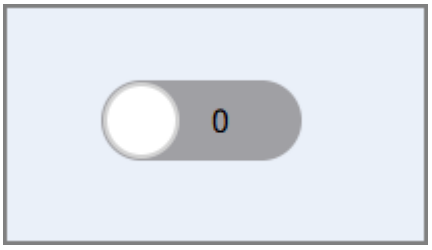
4. Add a tag to the screen.

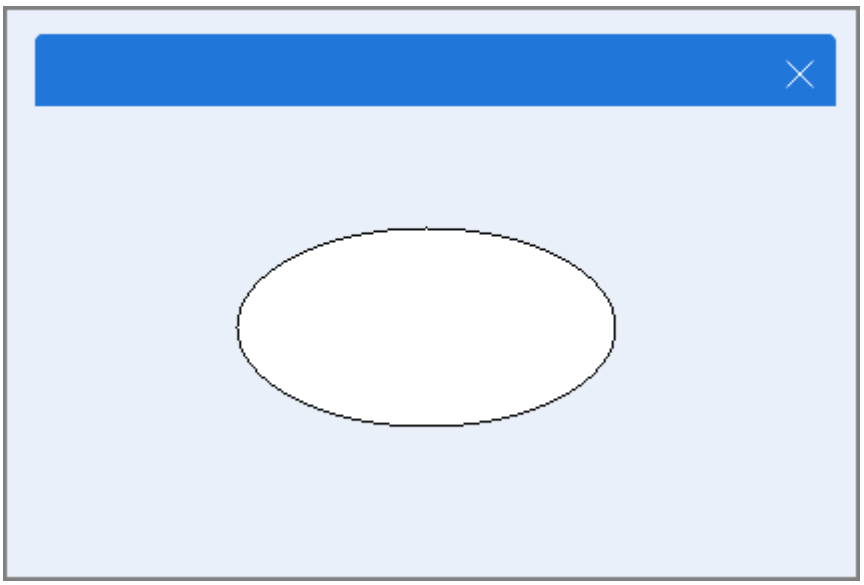
   In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LB 0 from "Variable View" to "Screen_1".



5. Perform the simulation test.

   Click  to perform simulation offline. The window is displayed when you click the button.





23.4.3 Activating Real-Time Alarm and History Alarm Through the Alarm Control

Case

Use this case to activate the real-time alarm and history alarm features through the alarm control.

Purpose

- Use this case to learn alarm-related concepts.
- Use this case to learn how to activate the real-time alarm and history alarm features.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

   Choose "Communication" > "Tags", double-click "Add Tag Group", rename it as "Alarm_Tag Group", and add tags, as shown in the figure below.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LB 1	4	<Internal tag>	Bool	1	1	LB 3
5	LB 2	5	<Internal tag>	Bool	1	1	LB 4
6	LB 3	6	<Internal tag>	Bool	1	1	LB 5

3. Create an analog alarm.

   Click "Alarm Management". Double-click "Analog Alarms", add alarm information, set "Trigger tag" to "LW 0", "LW 1", and "LW 2" respectively, and set "Limit" to 50, 100, and 200 respectively.

+	Text	Text Library	Number	Class	Trigger tag	Trigger mode	Limit
1	Overheating alarm!	<Undefined>	1	Errors	LW 0	>	50
2	Overvoltage alarm!	<Undefined>	2	Errors	LW 1	>	100
3	Servo limit alarm!	<Undefined>	3	Errors	LW 2	>	200

4. Create a discrete alarm.

   Click "Alarm Management". Double-click "Discrete Alarms", add alarm information, and set "Trigger tag" to "LB 1", "LB 2", and "LB 3" respectively.

+	Text	Text Library	Number	Class	Trigger tag	Trigger bit
1	Emergency Stop	<Undefined>	1	Errors	LB 1	0
2	Red Light Flashing	<Undefined>	2	Errors	LB 2	0
3	Safety Door Open	<Undefined>	3	Errors	LB 3	0

5. Create an alarm record (for a historical alarm).

   Click "Historical Data". Double-click "Alarm Logs" and add one alarm record.

+	Name	Number	Num of data records per ..	Path	Log alarm text and error loc..	Logging met...	Fill level	Enable logging at runtime st..	Response at runtime ..	Comment
1	alarmlogging...	1	500	Local Disk	On	Circular log		On	Append data to exis...	

6. Associate an alarm category with an alarm record (for a historical alarm).

   Choose "Alarm Management" > "Setup". Double-click "Alarm Classes" and set "Log" to "AlarmLog_1".

+	Name	Display name	Ack	Log	C color	CD color	CA color	CDA color
1	Errors	!	On "activated"	AlarmLog_1	#ff0000	#ff0000	#000000	#000000
2	Warnings	#	Off	AlarmLog_1	#ffff00	#ffff00	#000000	#000000
3	System	$	Off	AlarmLog_1	#ff00ff	#000000	#000000	#000000

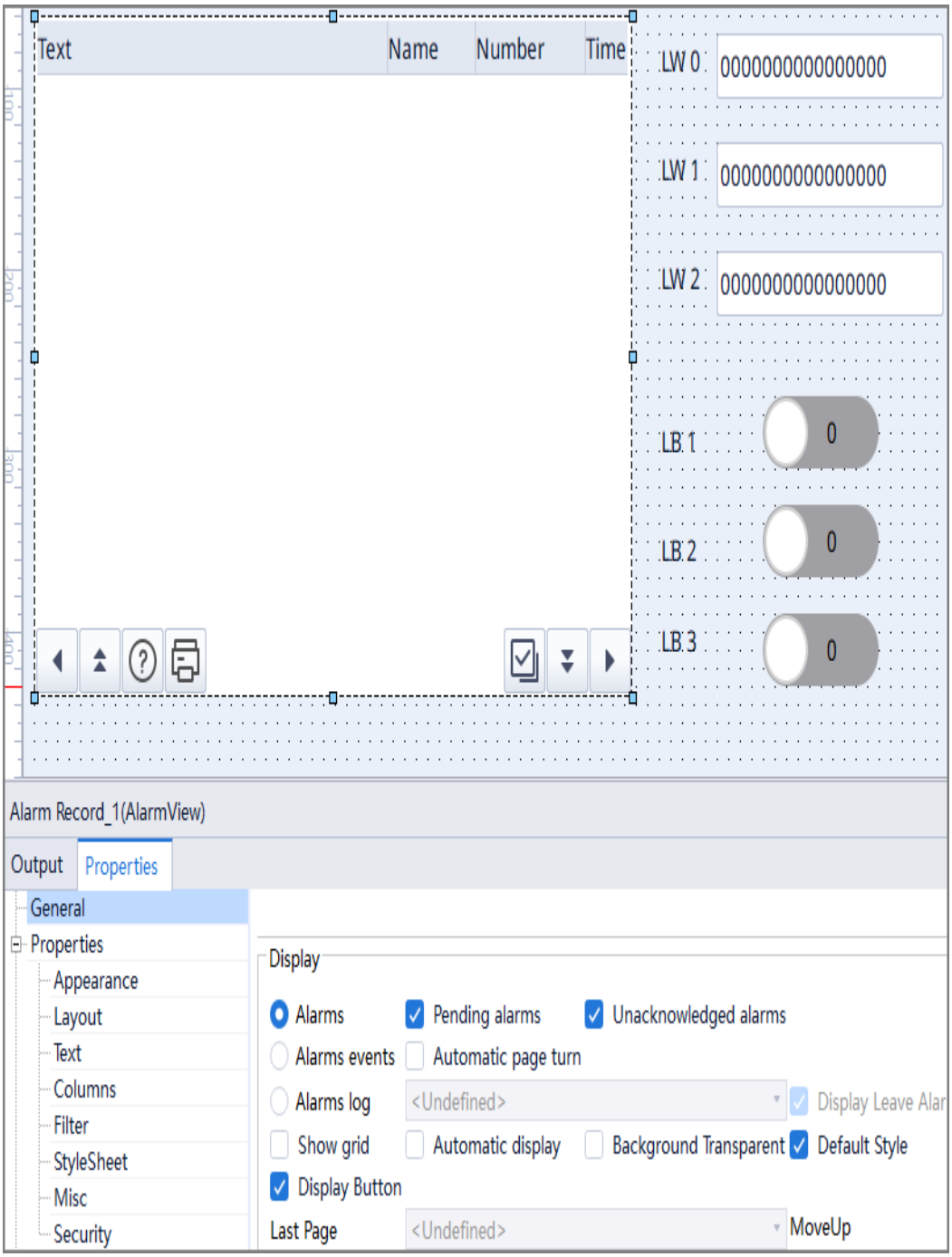
7. Configure the screen.

   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Production Management" > "Alarm Logs" and drag it to "Screen_1".

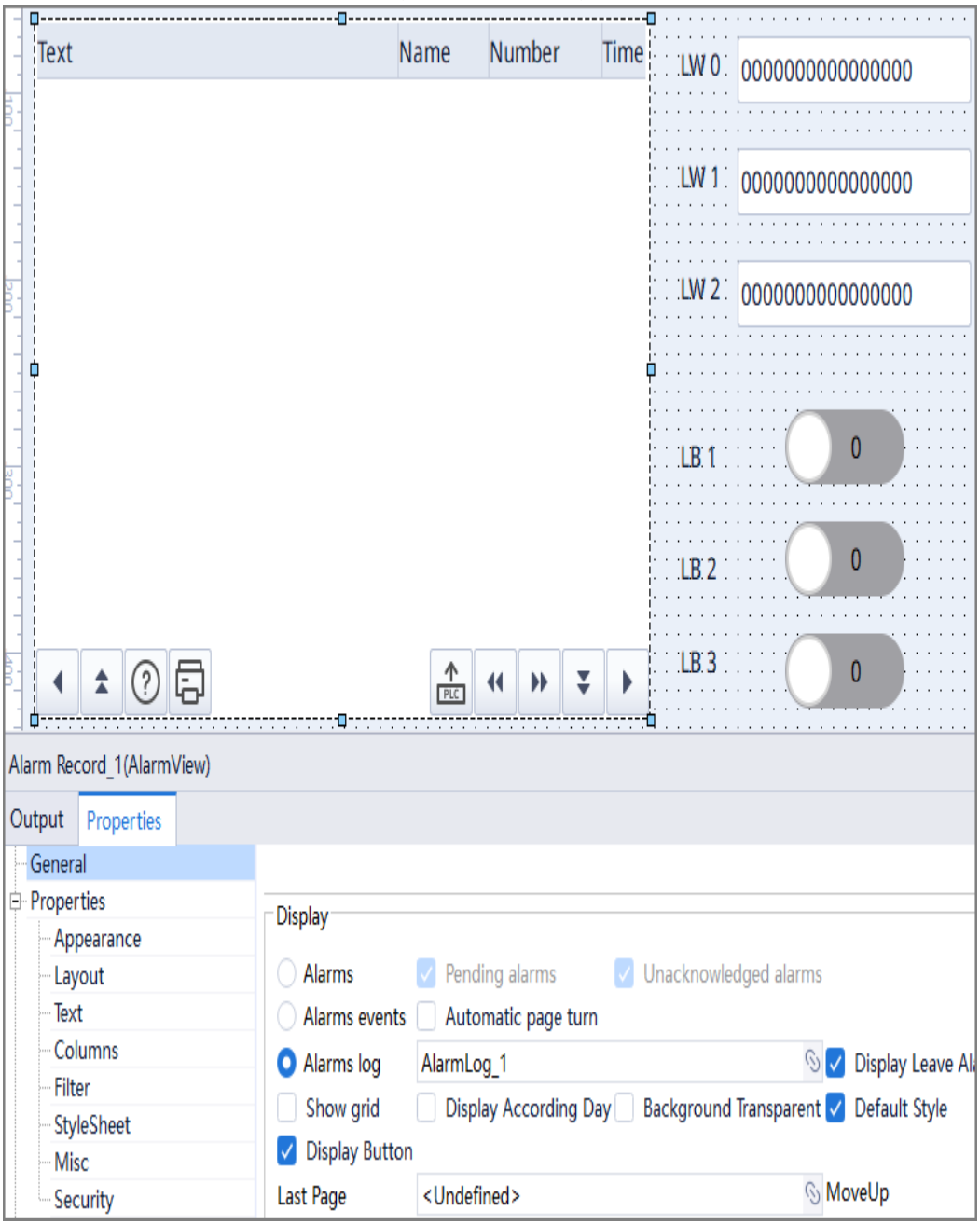
   b. In the "Project" navigation tree on the left, click "Alarm_Tag Group". Drag tags LW 0, LW 1, LW 2, LB 1, LB 2, and LB 3 from "Variable View" to "Screen_1".

c. Select "Alarm Logs". Click "General" on the "Properties" tab page. In the "Display" section, set parameters as follows:

- For a real-time alarm, check "Alarm".



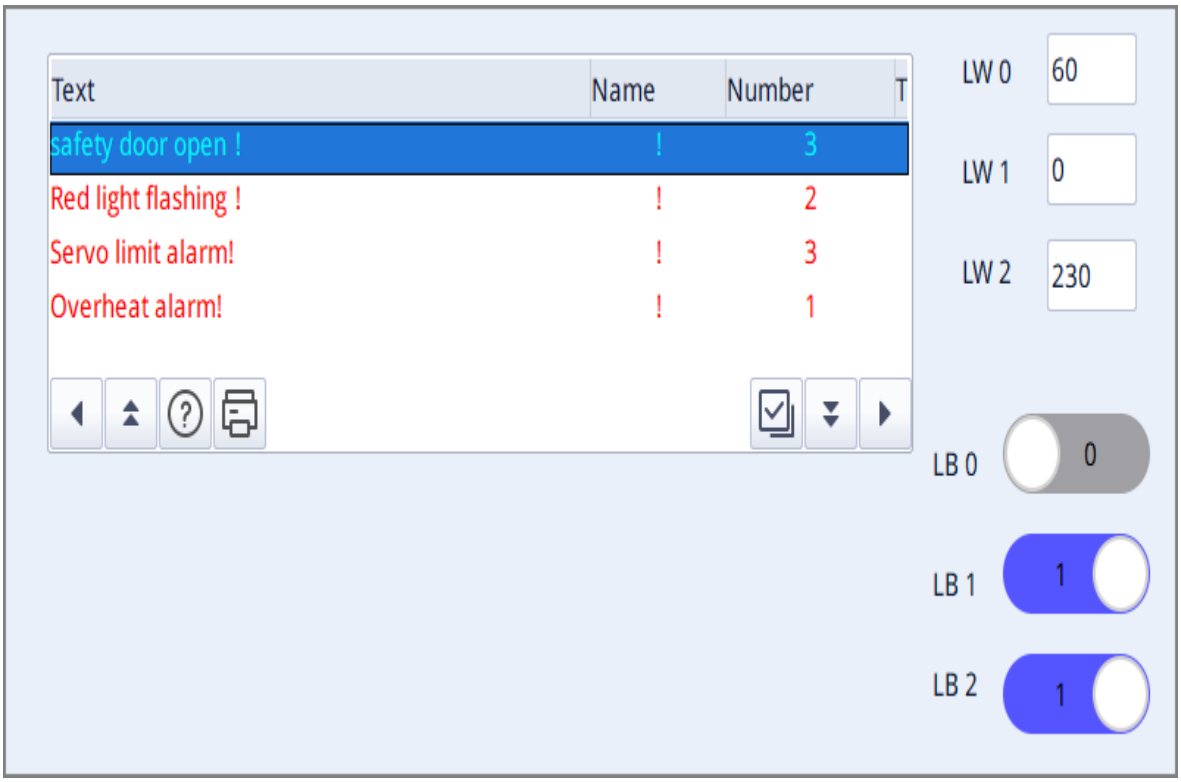
- For a historical alarm, check "Alarm Logs" and "AlarmLog_1".



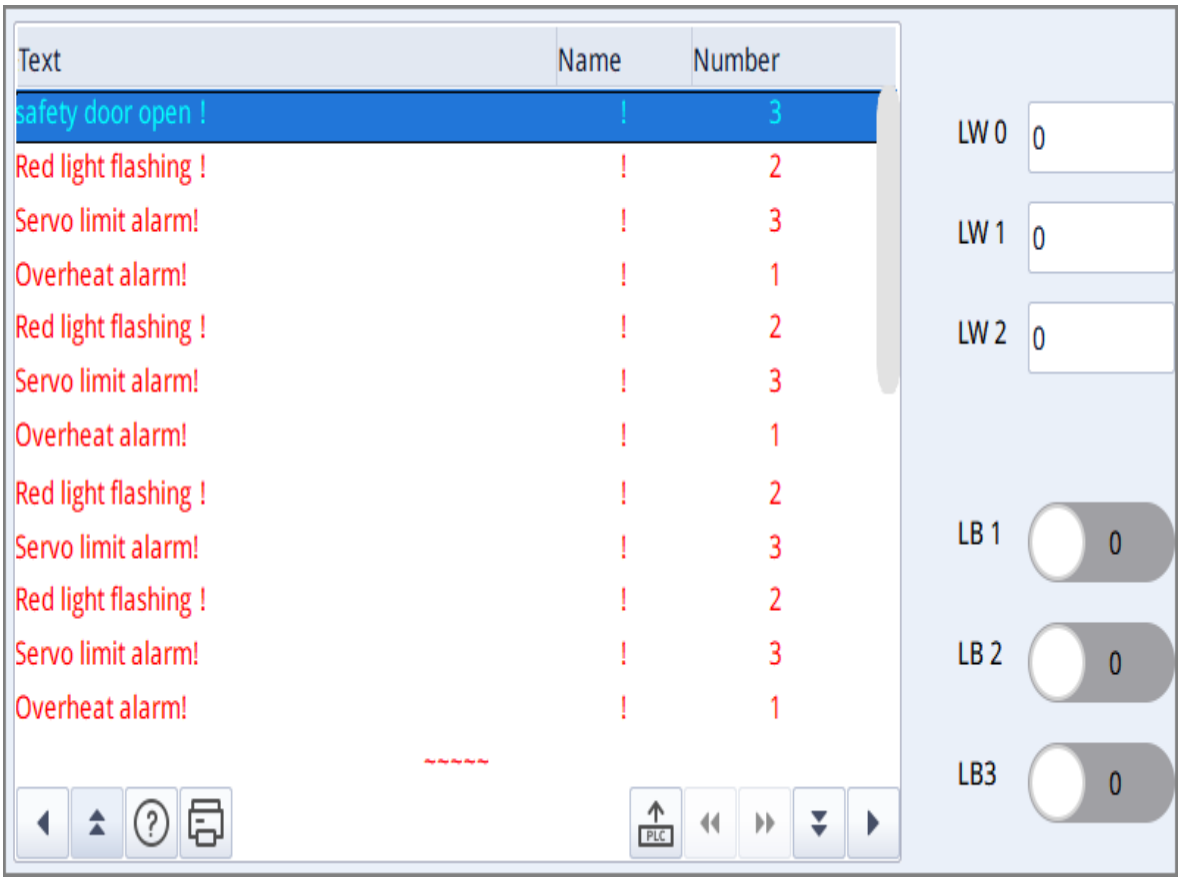
8. Perform the simulation test.

Click  to perform simulation offline.

Real-time alarm:



Historical alarm:



23.5 Communication

23.5.1 Configuring Communication Connection

Case

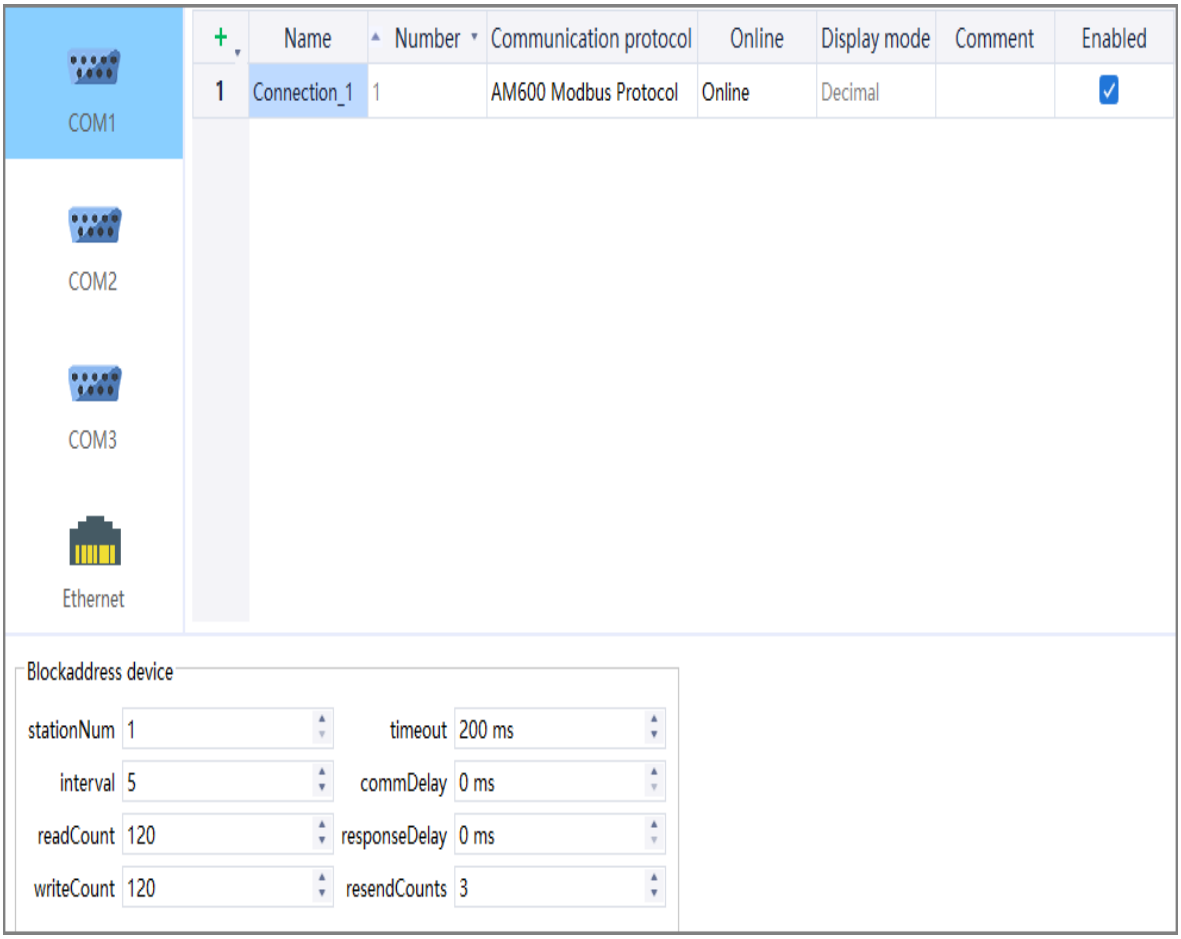
When the HMI communicates with a PLC, you need to configure the communication connection.

Purpose

Introduce how to configure communication parameters.

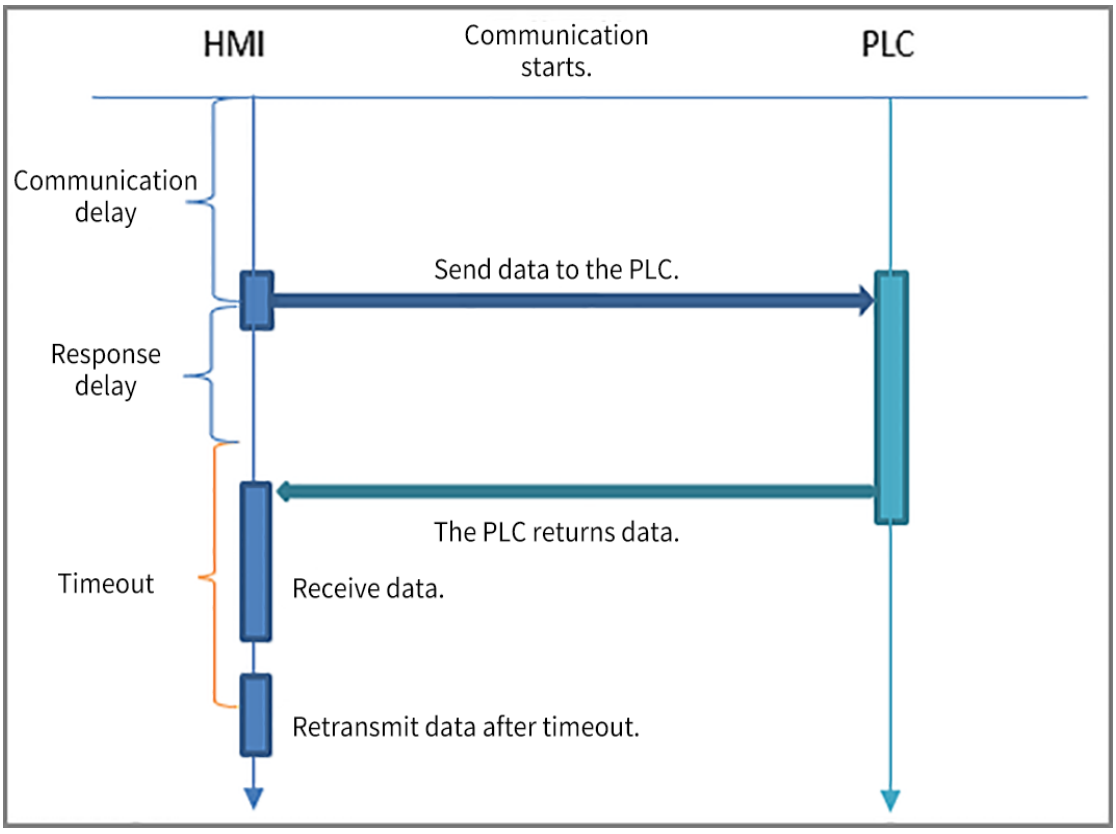
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a connection.
   Click "Communication". Double-click "Connection", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "AM600 Series", and double-click "AM600 Modbus Protocol", create a connection named Connection_1, and configure connection parameters.

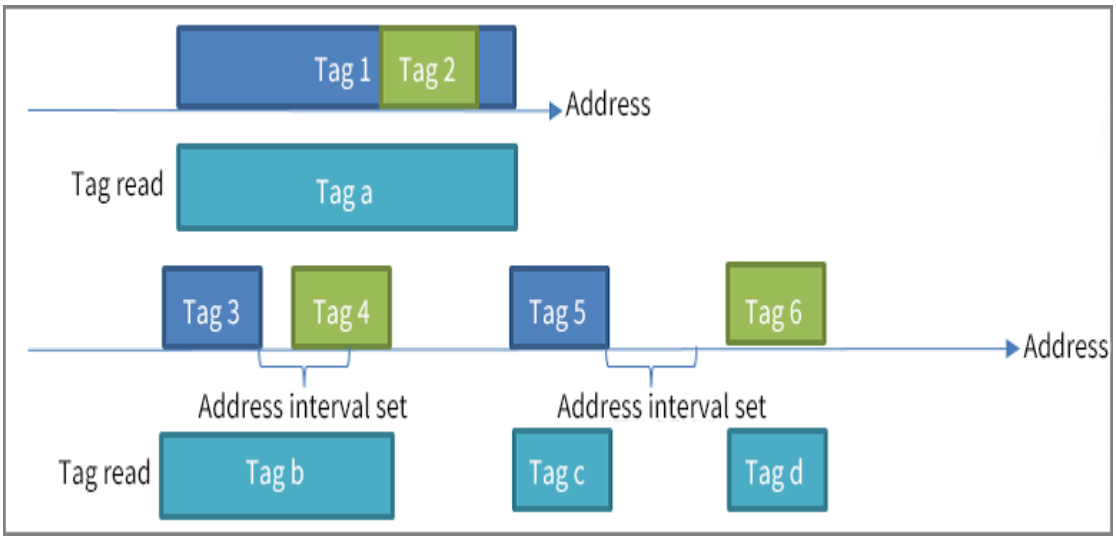


- Parameters "timeout", "commDelay", "responseDelay", and "resendCounts" are used to set the communication process.
  When the communication starts, the HMI sends data to the PLC and makes response at the specified delay time. If data is received within the timeout time set after the response delay, the communication is successful; otherwise, data is resent to start communication again. If no data is received after the resend count is used up, the communication fails. The following figure shows the

communication process.



- Parameters "interval", "readCount", and "writeCount" are used to set the communication data content.
  The parameter "interval" sets whether a data frame is generated between tags. Parameters "readCount" and "writeCount" set the maximum number of characters to be read or written, as shown in the following figure.



23.5.2 Enabling/Disabling the Communication Slave

Case

Enable or disable the communication slave by using the function "SetConnectionMode".

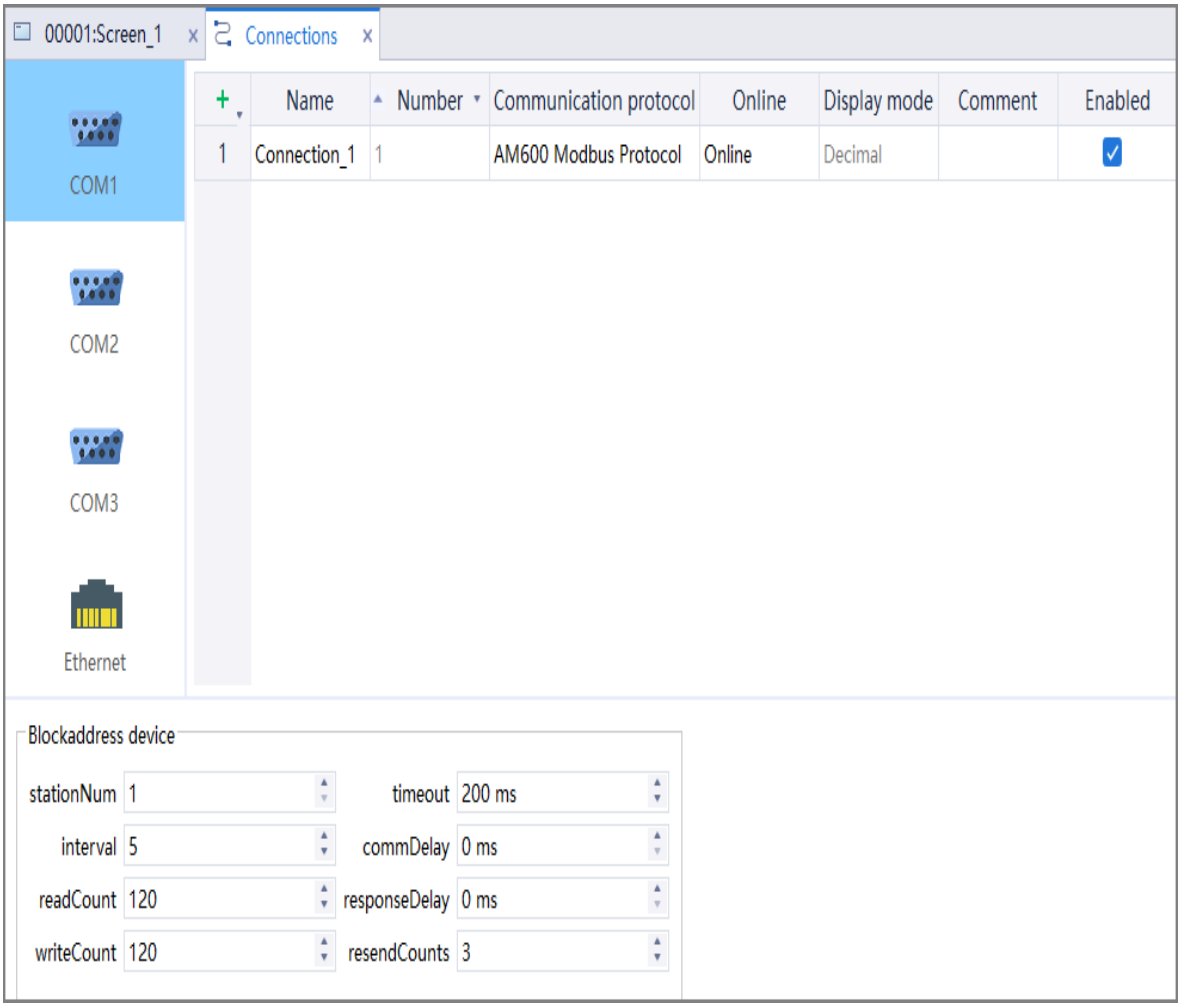
Purpose

Enable or disable the communication slave by using the function "SetConnectionMode".

Procedure

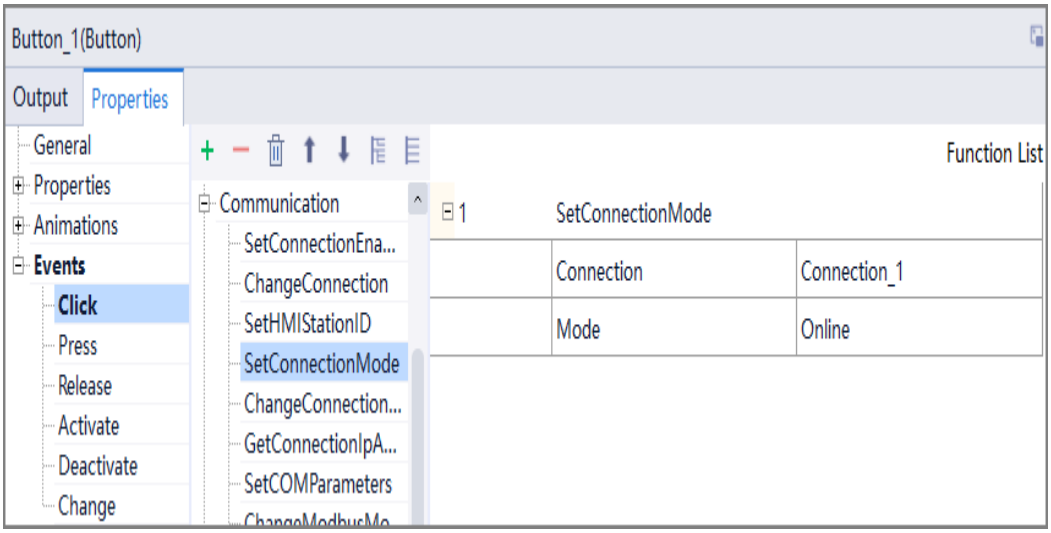
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a connection.

   Click "Communication", double-click "Connections", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "AM600 Series", and double-click "AM600 Modbus Protocol" to create Connection_1.



3. A button for switching the slave communication status is added to the screen.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the button to "Screen_1".
   b. Select "Button". On the "Properties" tab page, choose "Events" > "Click" > "Communication", and double-click "SetConnectionMode" to add the function. Select "Connection_1" for "Connection", and select "Online", "Offline", or "Toggle" for "Mode".
      - In "Online" mode, the corresponding slave is always online after the button is clicked.
      - In "Offline" mode, the corresponding slave is always offline after the button is clicked.

- In "Toggle" mode, the slave mode is switched between "Online" and "Offline" after the button is clicked.



23.5.3 Using Pass Through to Download the PLC Program

Case

The pass-through feature is mainly used when the onsite PLC is installed inside the chassis and the PC cannot be directly connected to the PLC. It replaces direct connection with indirect connection.

The pass-through feature is specifically designed for Inovance H1U, H2U, and H3U series PLCs. When the PC is not directly connected to a PLC, this feature connects the PC to the HMI and the HMI to the PLC for indirect connection between the PC and PLC.

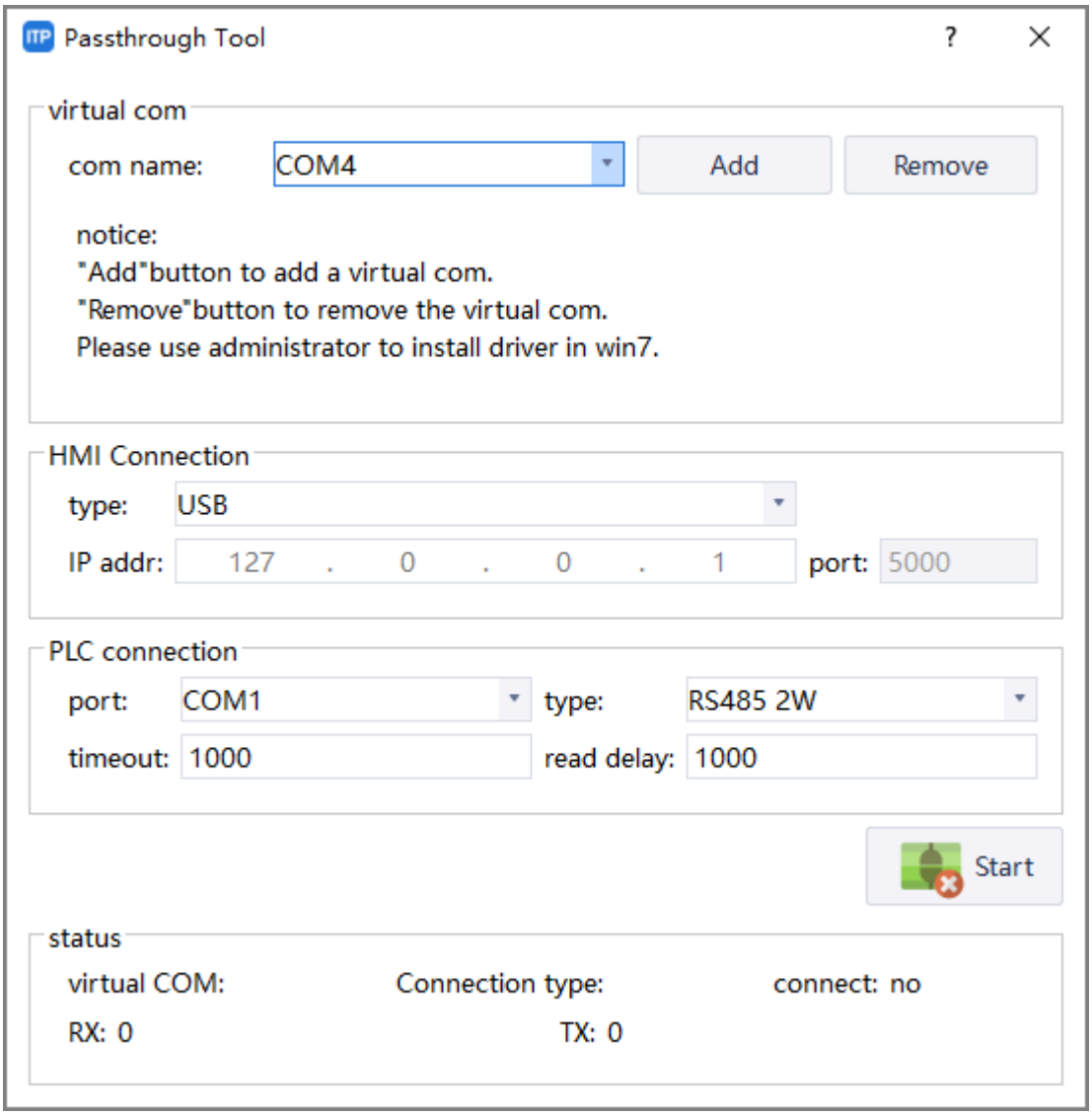
Purpose

To use the pass-through feature to download the PLC program

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Click  in the menu bar. In the "Passthrough Tool" pop-up window, set the following parameters and click "Start".
   - In the "virtual com" section, set "com name" to a serial port. You can click "Add" to add a virtual serial port to connect to the Inovance PLC software tool AutoShop.
   - In the "HMI Connection" section, set "type" to "USB" or "Net". When "Net" is selected, set "IP addr" to the IP address of the HMI and "port" to the port number corresponding to the IP address.

- In the "PLC connection" section, set "port", "type", "timeout", and "read delay" as needed.



3. Start Inovance small-sized PLC programming software AutoShop. Access communication configuration and set the serial port and the virtual serial port the same. Then you can operate the PLC connected to the HMI in AutoShop.

23.5.4 Automatically Starting Runtime on the PC in Full Screen Mode

Case

Run IT7000 as a small configuration software on the PC or IPC.

Purpose

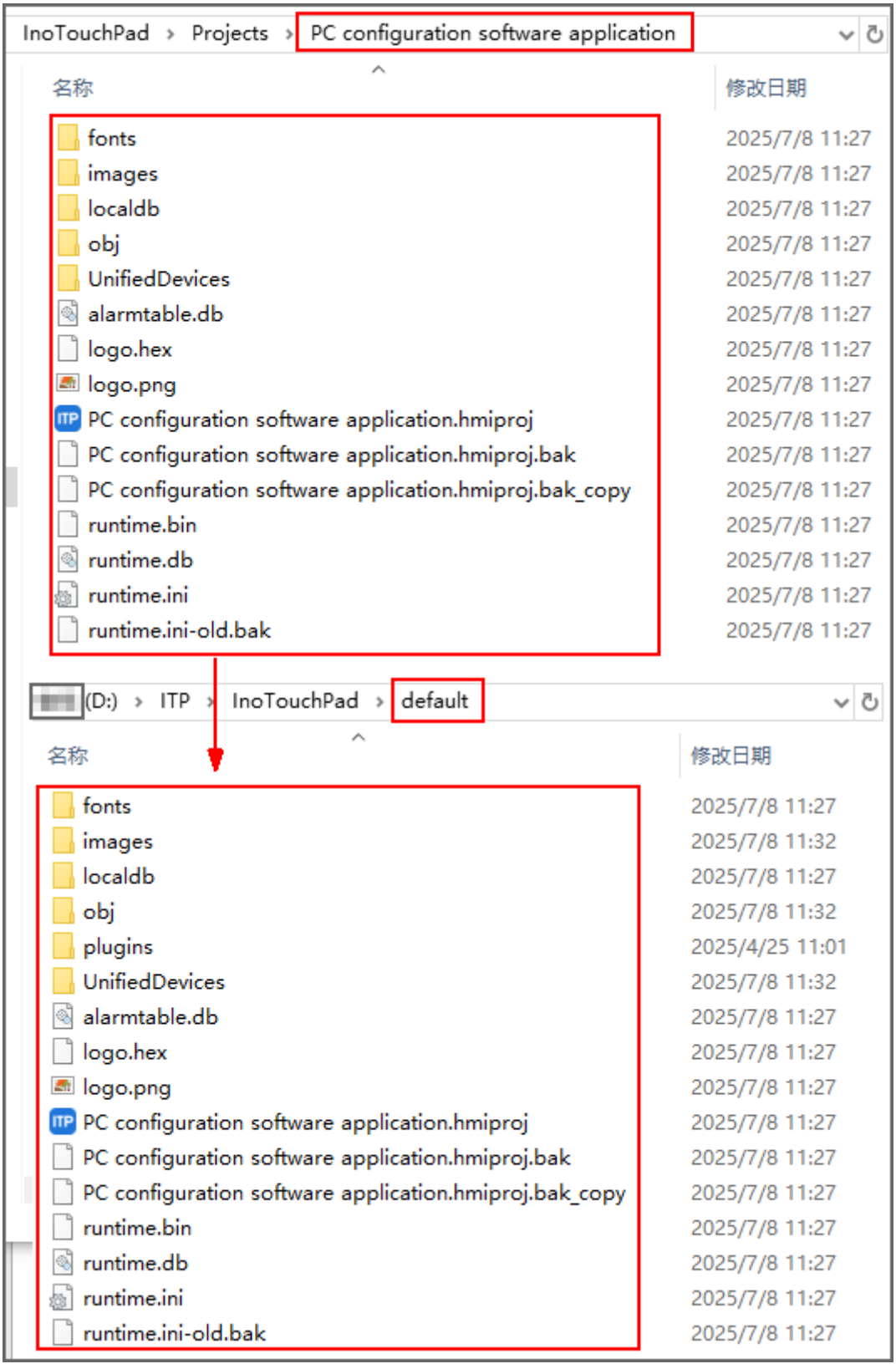
Run IT7000 as a small configuration software on the PC or IPC.

Procedure

1. Create a project (such as platform PC configuration application) by referring to the instructions in the 3.3.1 Creating a Project section, and select "IT7PC(800x600)" from the drop-down list of "Device Type".
2. Compile and save the project.

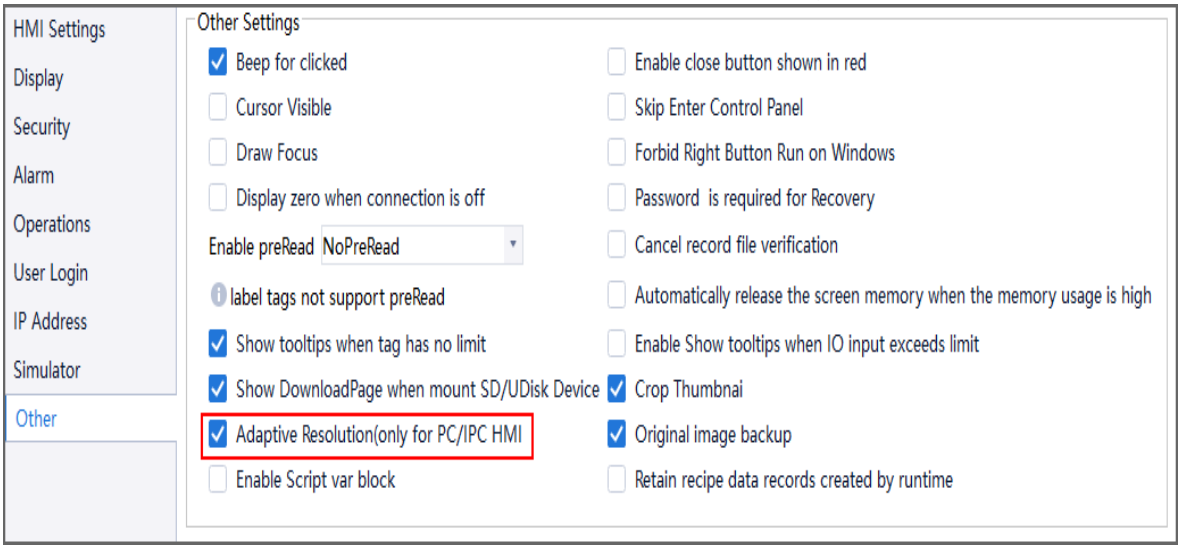
Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Screen_1". In the menu bar, choose "Compiler" > "Compiler", compile the project, and then choose "Project" > "Save" to save the project.

3. Copy all the files in the project directory named "PC configuration software application" to the "default" folder (you need to create this folder manually) in the InoTouchPad installation directory.



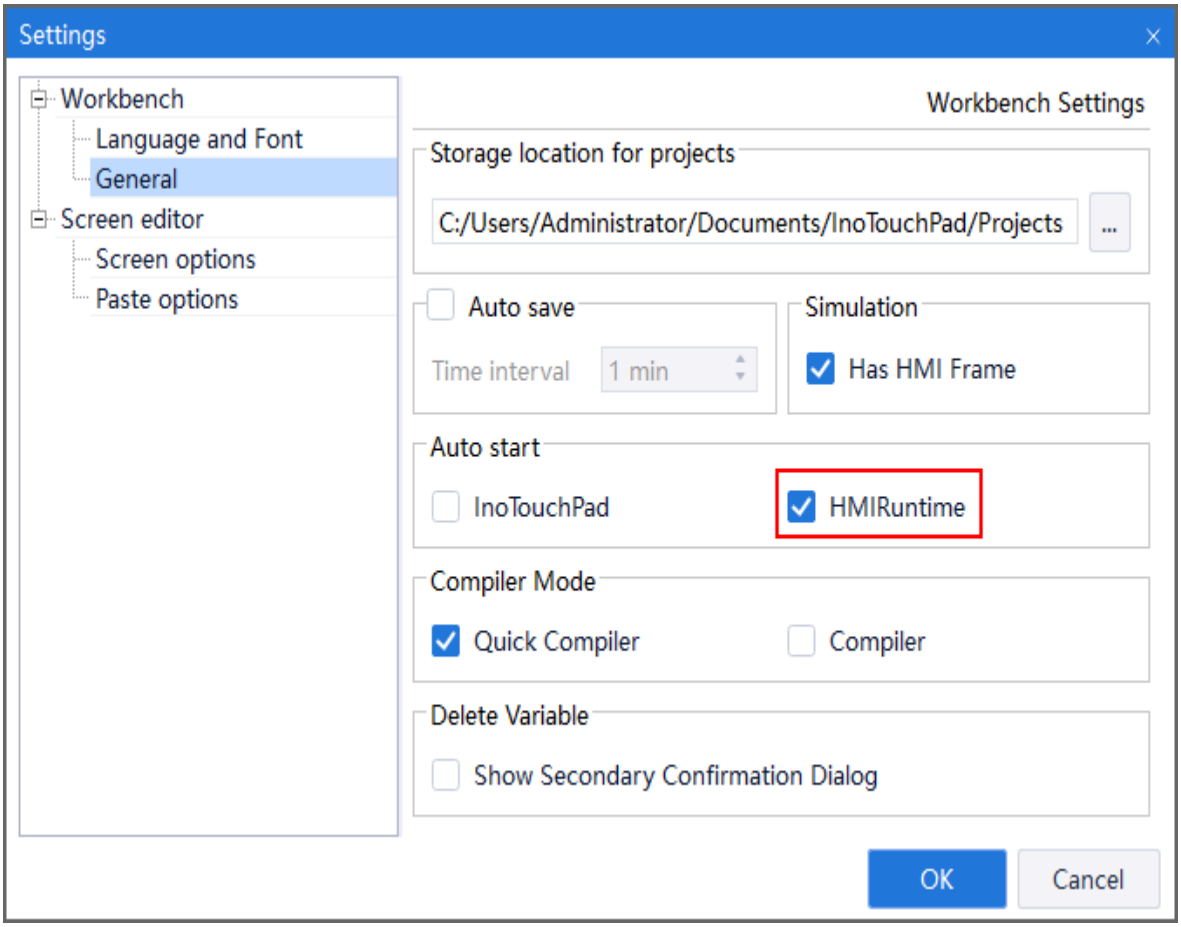
4. (Optional) Run the project in full screen mode.

Switch to InoTouchPad and click "HMI Settings". On the page displayed, double-click "Project Settings", and select "Adaptive Resolution (only for PC/IPC HMI) under "Other Settings".



5. (Optional) Automatically start the project upon power-on.

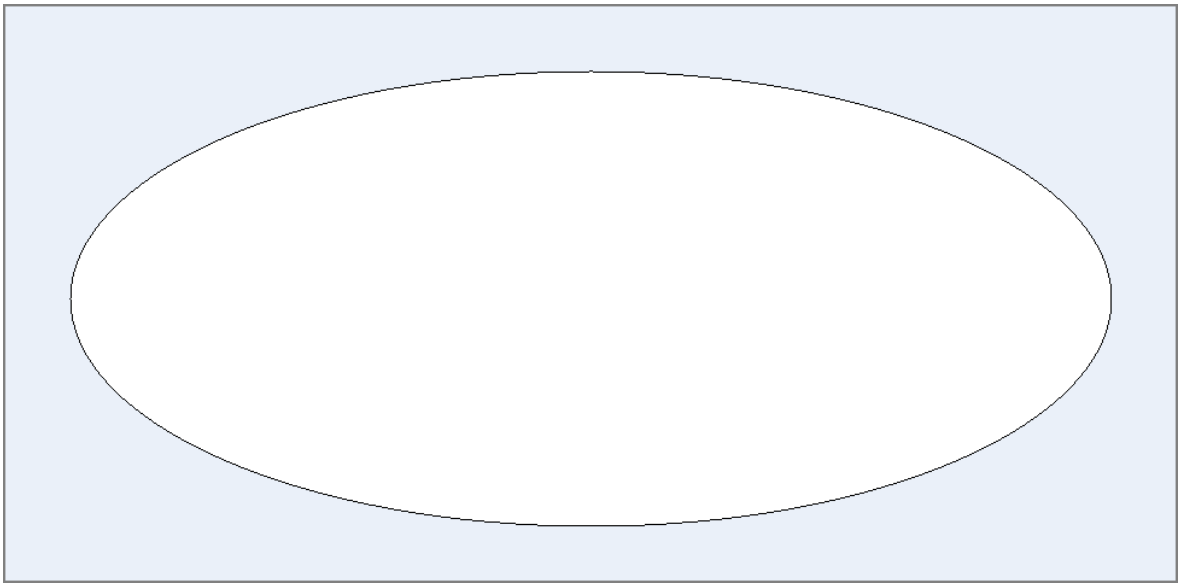
   In the menu bar, choose "Options" > "Settings". On the tab page displayed, choose "Workbench" > "General", and select "HMIRuntime" under "Auto start".



6. Create a desktop shortcut.

   Enter the InoTouchPad installation directory, and right-click "HMIRuntime.exe". In the menu displayed, choose "Send to" > "Desktop shortcut", and rename the desktop shortcut as "HMIRuntime01".

7. Insert the encrypted USB drive, and double-click "HMIRuntime01".



23.5.5 Using the Cross Reference Feature

Case

Introduce how to use the cross reference feature and index tags by cross reference.

Purpose

Introduce how to find the reference scope of tags and search for controls associated with tags by cross reference.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add tags.

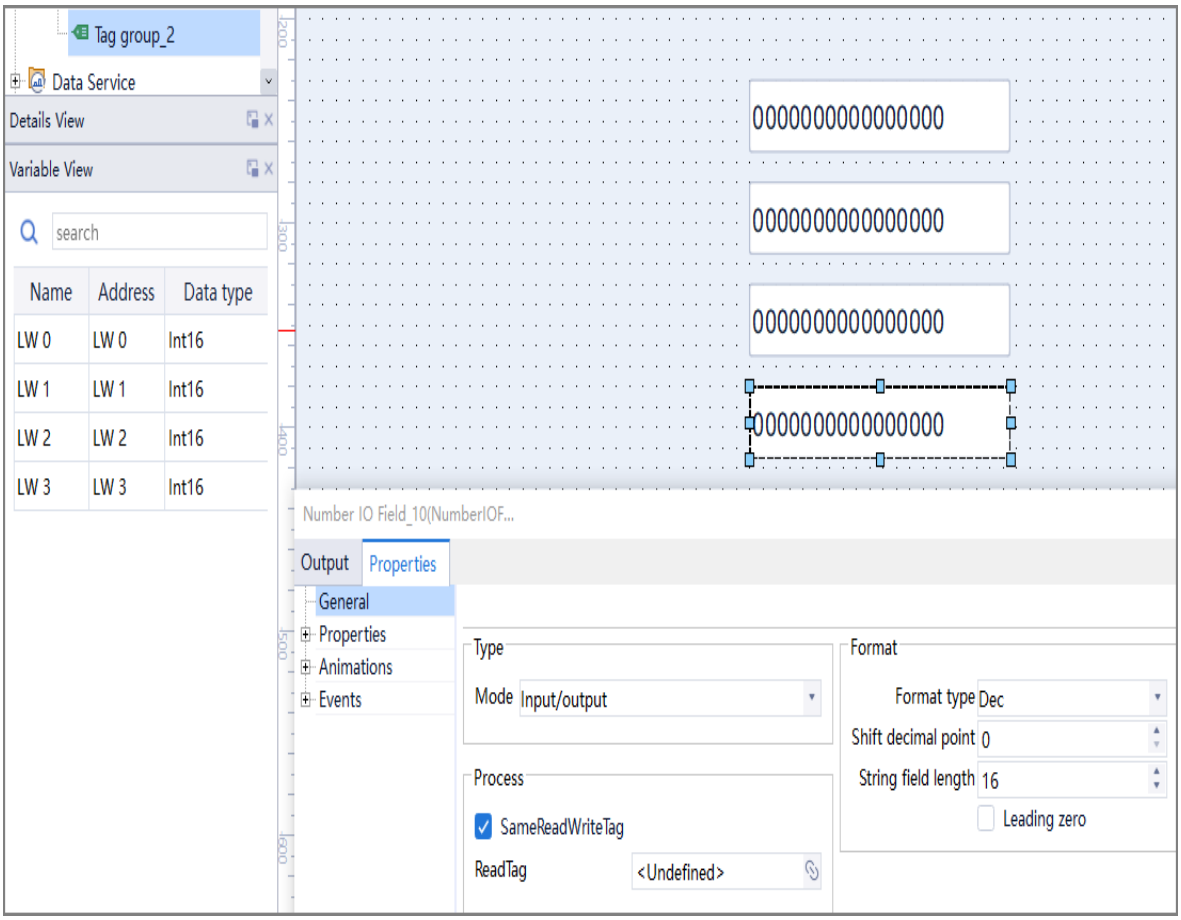
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 3.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LW 3	4	<Internal tag>	Int16	2	1	LW 3

3. Add a tag to the screen.

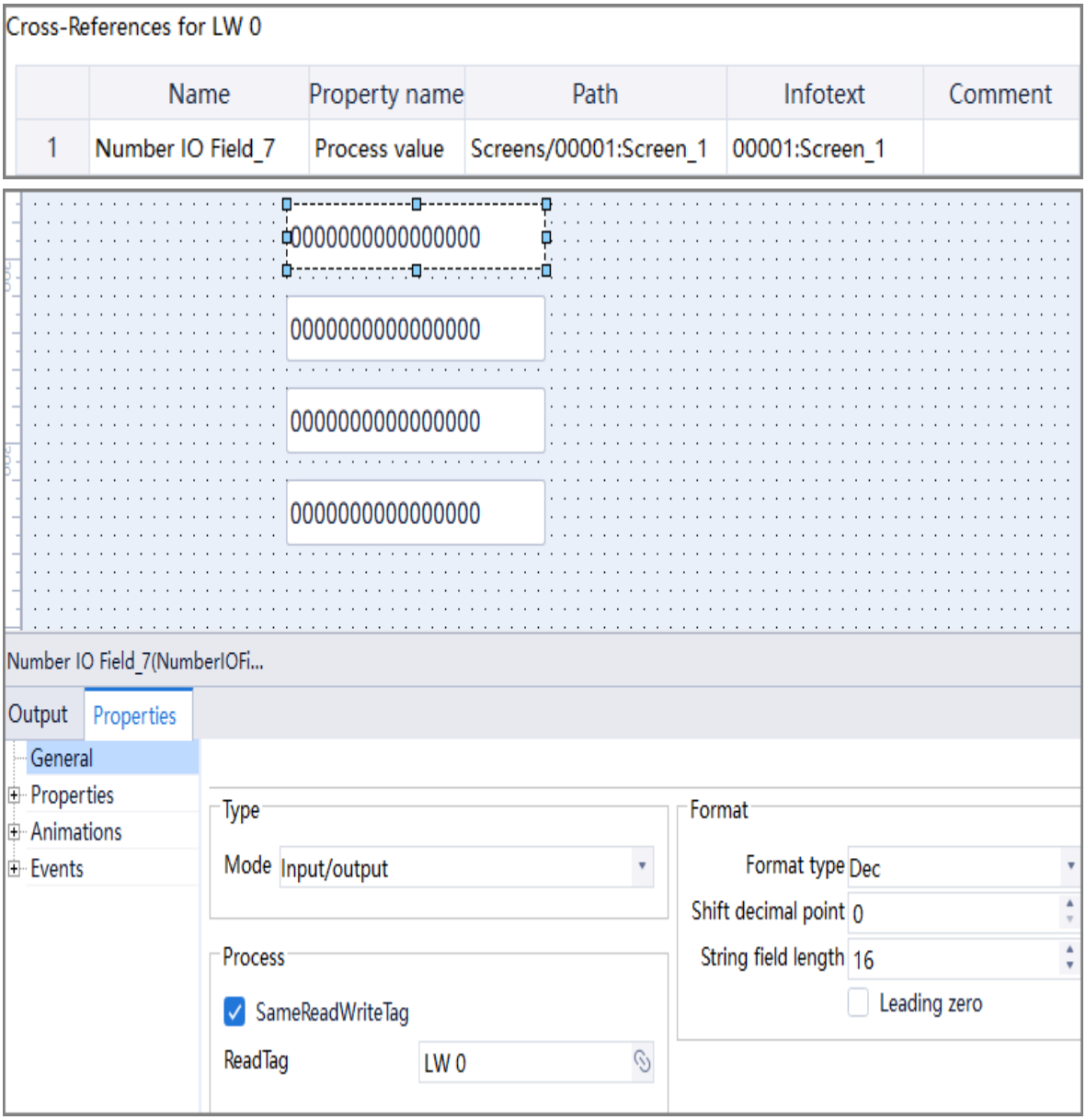
   Switch to "Screen_1". In the "Tools" navigation tree on the left, click "Tag group_2". Drag tags LW 0 to LW 3

from "Variable View" to "Screen_1".



4. Index tags by cross reference.

   In "Tag group_2", right-click the number on the left of the tag LW 0, and then select "Cross-References" to view tag information such as tag name and properties. Double-click the tag information to jump to "Screen_1".



23.5.6 Configuring TCP Free Protocol Communication

23.5.6.1 Sending and Receiving Digit

Case

Digits are sent and received to implement TCP free protocol communication.

Purpose

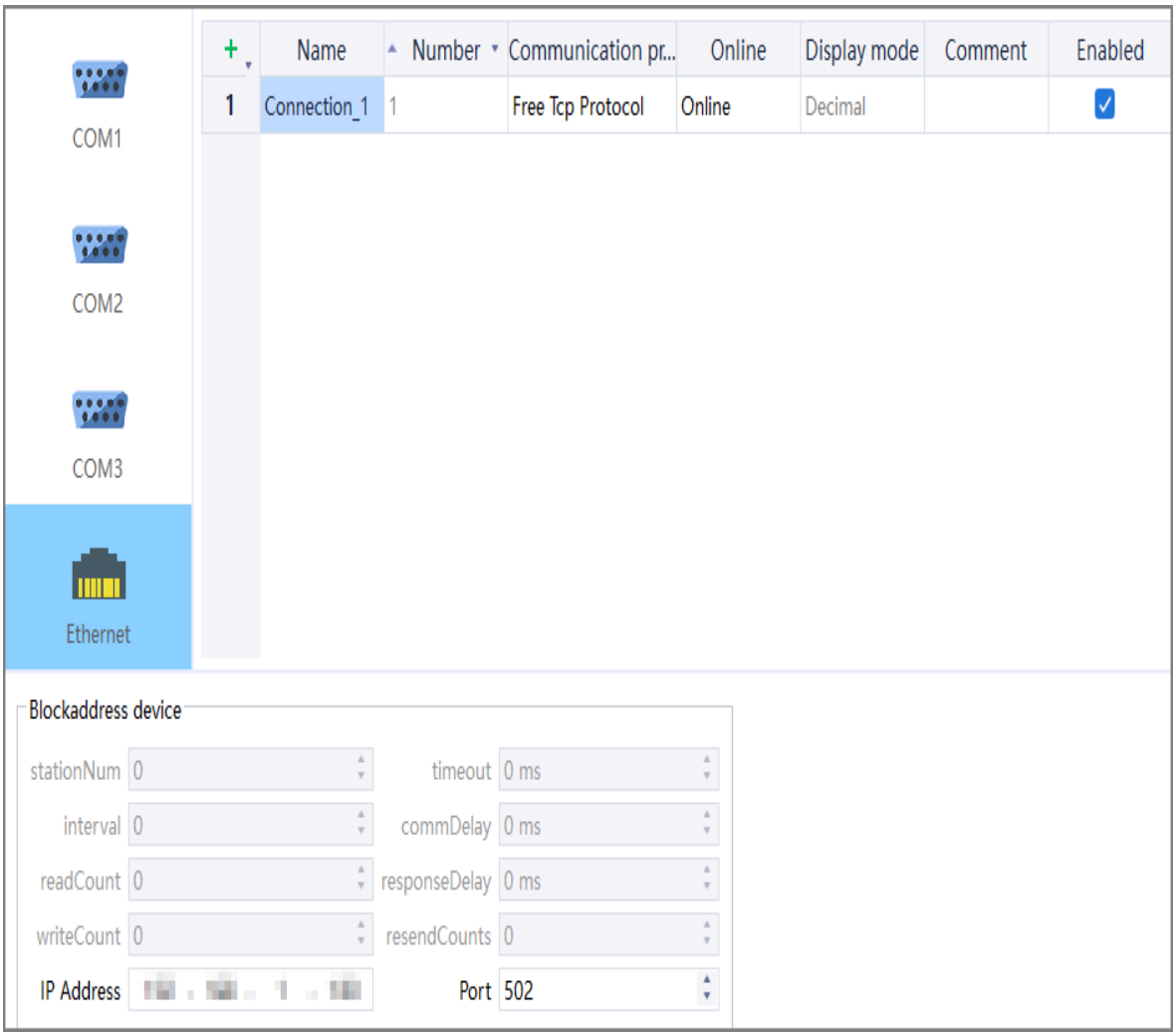
Digits are sent and received to implement TCP free protocol communication.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a TCP free protocol connection at a network port.

   Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, click "Free Protocol" and double-click "Free Tcp Protocol" to create "Connection_1". In the

"Blockaddress device" section, set "IP Address" and "Port".



3. Create tags to send and receive data.

Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 7.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LW 3	4	<Internal tag>	Int16	2	1	LW 3
5	LW 4	5	<Internal tag>	Int16	2	1	LW 4
6	LW 5	6	<Internal tag>	Int16	2	1	LW 5
7	LW 6	7	<Internal tag>	Int16	2	1	LW 6
8	LW 7	8	<Internal tag>	Int16	2	1	LW 7

4. Compile scripts to send and receive data.

Click "Script", and double-click "Add Script" to create two scripts such as "Script_1" and "Script_2".

- Double-click "Script_1" to compile a script to send data.

```
//Send data.

var a = new Array();
```

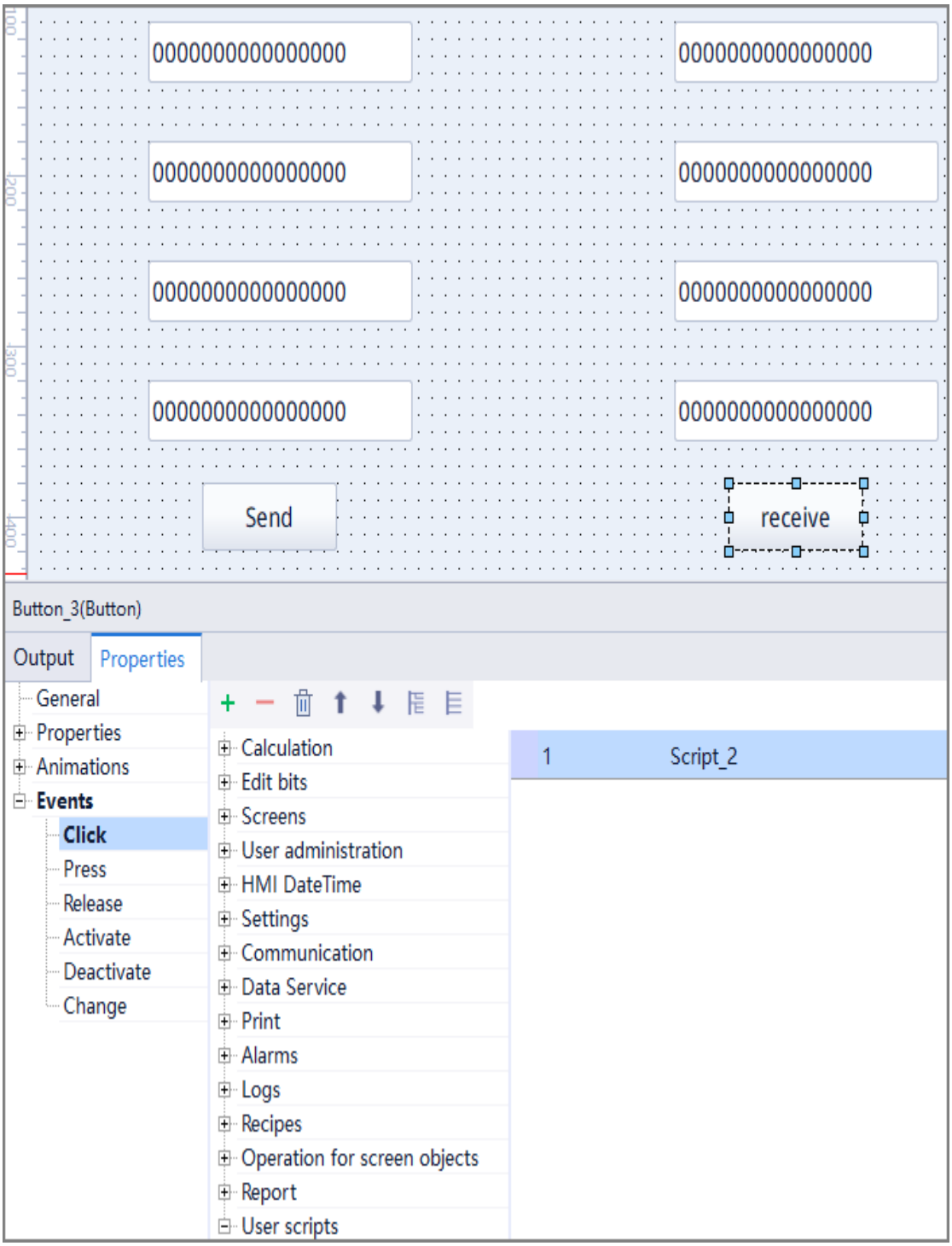
```
a[0] = SmartTags('LW 0');
a[1] = SmartTags('LW 1');
a[2] = SmartTags('LW 2');
a[3] = SmartTags('LW 3');
FreeOut('connection_1',a);
```

- Double-click "Script_2" to compile scripts to receive data.

```
//Receive data.
var c = new Array();
c = FreeIn('connection_1');
SmartTags('LW 4')= c[0];
SmartTags('LW 5')= c[1];
SmartTags('LW 6')= c[2];
SmartTags('LW 7')= c[3];
```

5. Configure screens to send and receive data.
   a. Switch to "Screen_1". In the "Project" navigation tree on the left, click "Tag group_2" and drag tags LW 0 to LW 7 from "Variable View" to "Screen_1", where LW 0 to LW 3 are senders and LW 4 to LW 7 are receivers.
   b. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", add two buttons, and select "Button". On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Send" and "receive".
   c. Select "Send". On the "Properties" tab page, choose "Events" > "Click" > "User scripts", and double-click "Script_1" to associate the script. Select "receive". On the "Properties" tab page, choose

"Events" > "Click" > "User scripts", and double-click "Script_2" to associate the script.



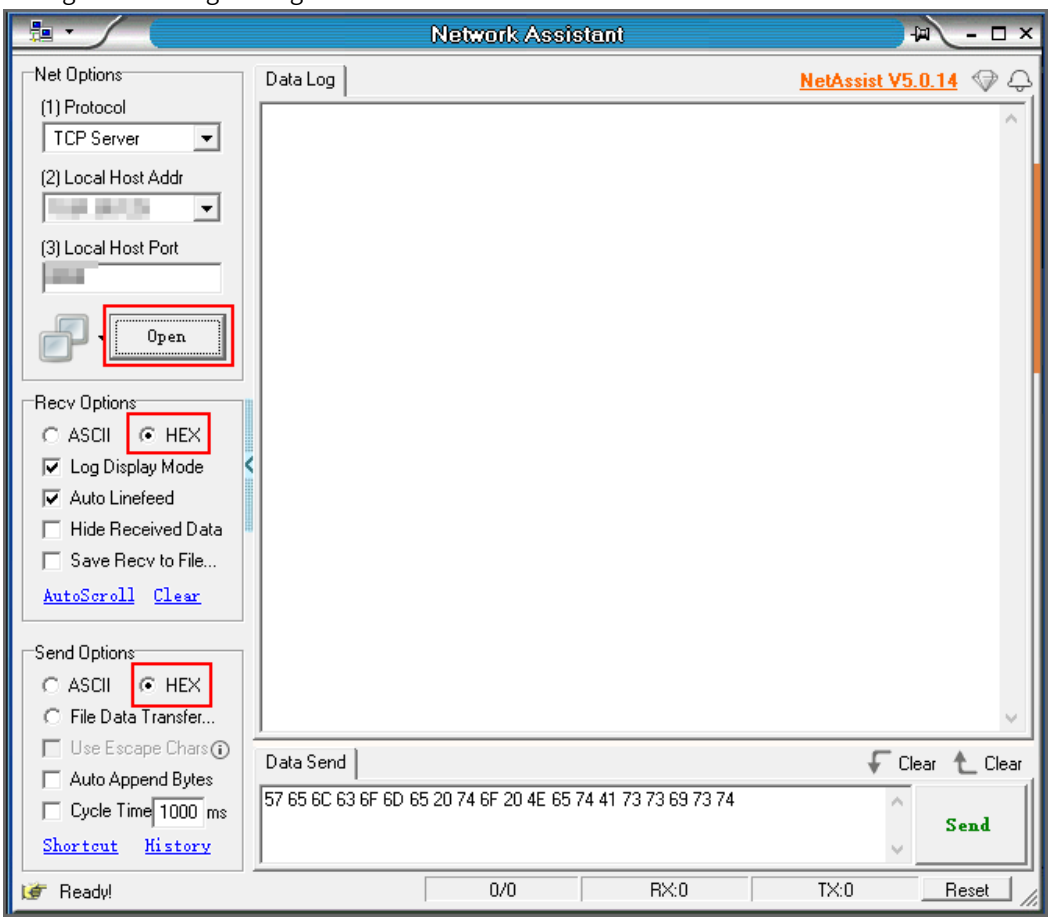
6. Perform the simulation test.

a. Click  to perform simulation online.

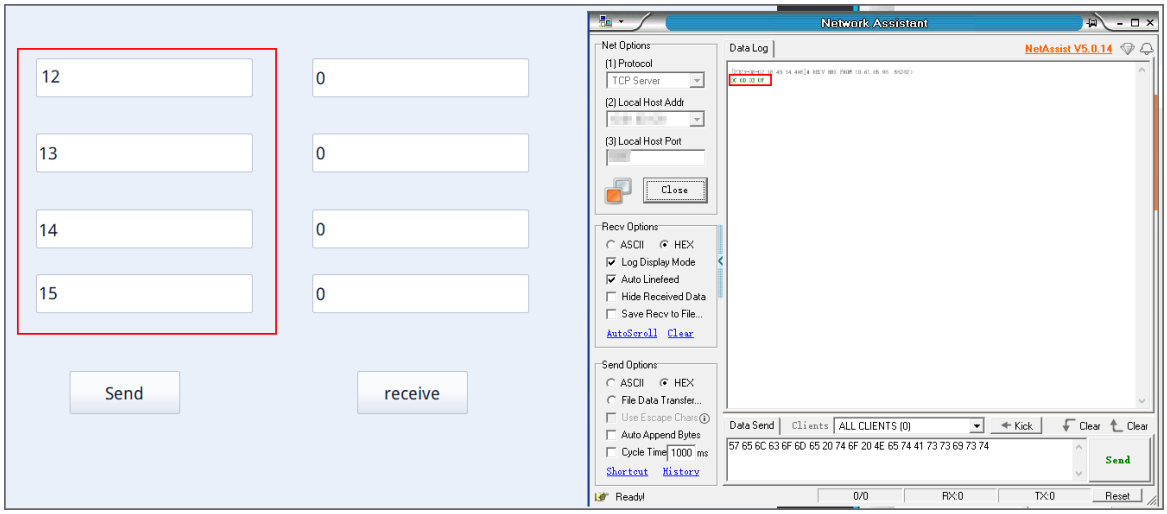
b. Start and configure the network commissioning assistant.

- Configure "Network Settings".
  - Set "Protocol Type" to "TCP Server" to use the commissioning assistant as a server for data exchange with InoTouchPad.
  - Set "Local Host Address" to the IP address recorded in Creating a TCP free protocol connection at a network port.
  - Set "Local Host Port" to the port number recorded in Creating a TCP free protocol connection at a network port.
  - Turn on "Network Settings".

- Configure "Receiving Setting": Check "HEX" (hexadecimal mode).
- Configure "Sending Setting": Check "HEX".

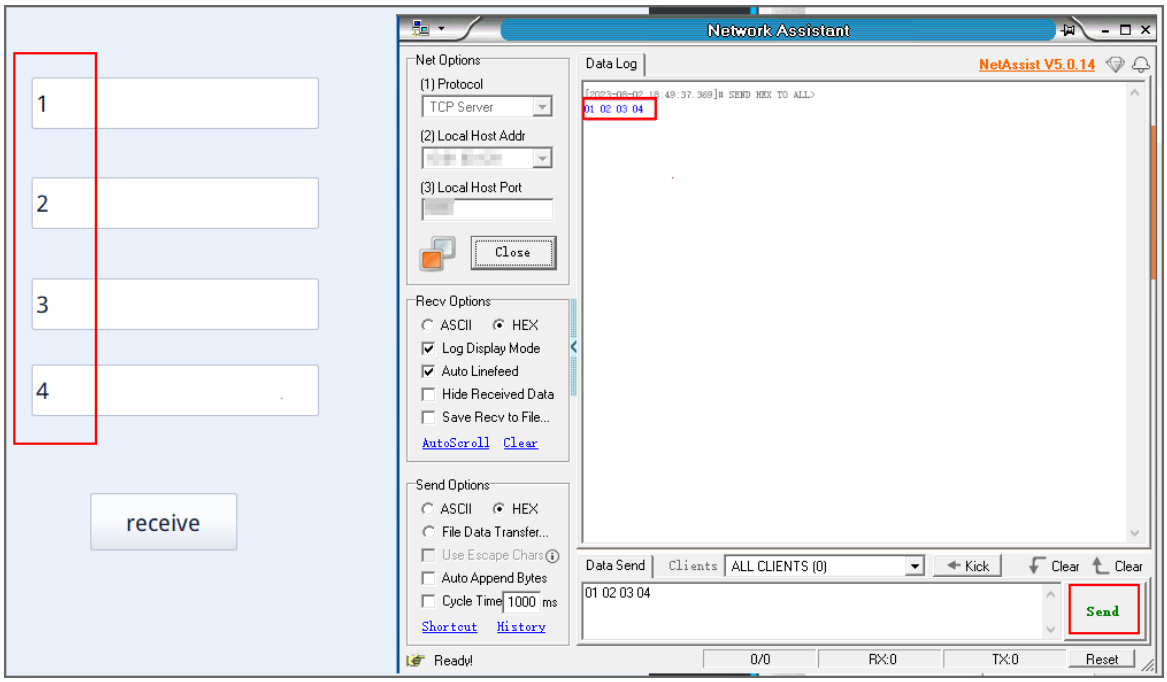


c. Send data: After entering data in the InoTouchPad analog simulation sender, click "Send". You can receive the sent data in the "Data Log" of the commissioning assistant.



d. Receive data: Enter hexadecimal data in the "Data Sending" input box of the commissioning assistant, click "Send" to send the data to the server side. At this time, InoTouchPad simulation end

works as a client. Click "Receive" to receive the data sent by the network commissioning assistant.



23.5.6.2 Sending and Receiving English Character and Special Character

Case

English characters and special characters are sent and received to implement TCP free protocol communication.

Purpose

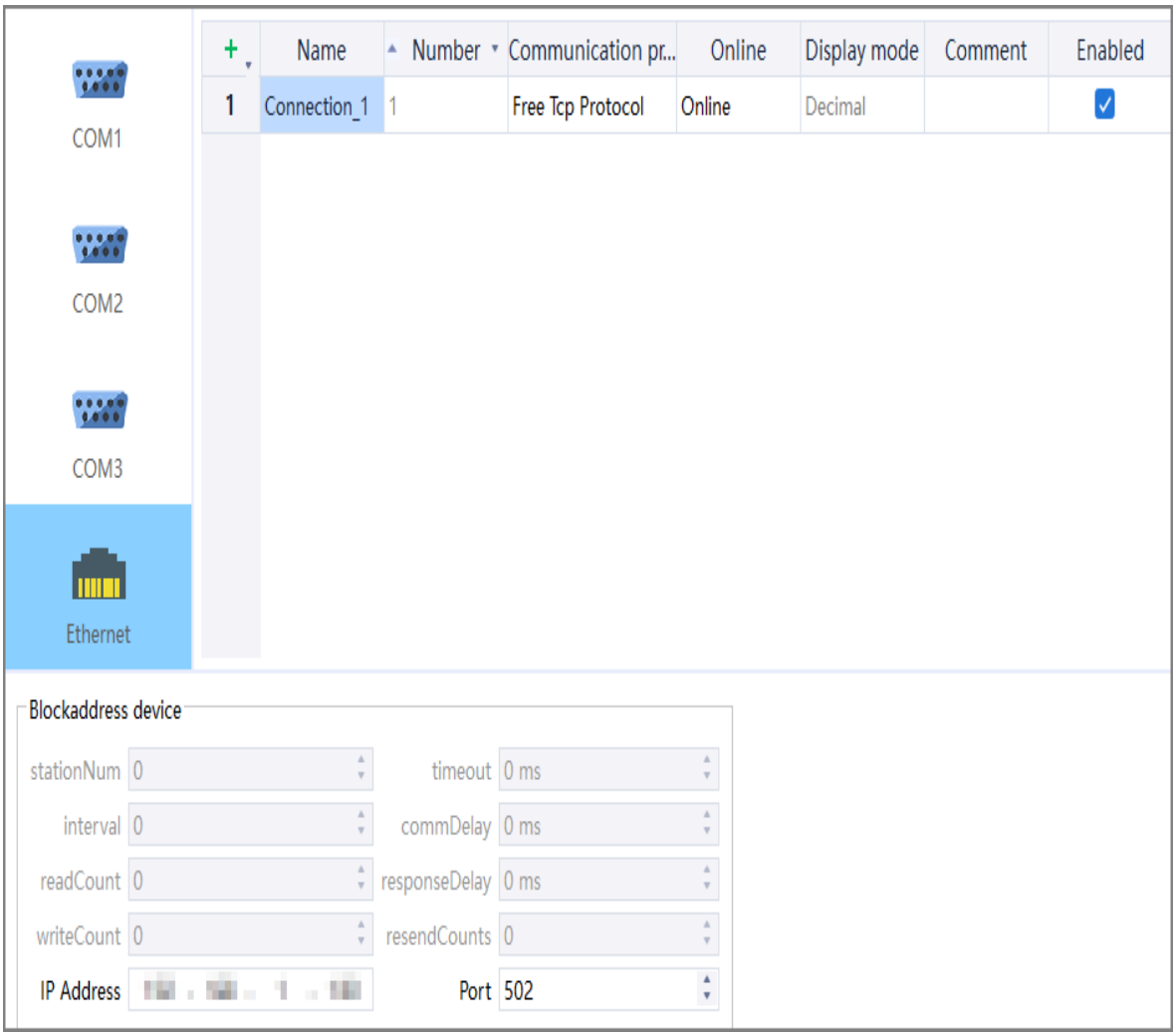
English characters and special characters are sent and received to implement TCP free protocol communication.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a TCP free protocol connection at a network port.

   Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, click "Free Protocol" and double-click "Free Tcp Protocol" to create "Connection_1". In the

"Blockaddress device" section, set "IP Address" and "Port".



3. Create tags to send and receive data.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add a tag.

	Name	Number	Connection Id	Data type	Length
1	Send content	1	<Internal tag>	WString	20
2	LW 1	2	<Internal tag>	Int16	2
3	The length of the sent character	3	<Internal tag>	Int16	2
4	Accepted content	4	<Internal tag>	WString	20

4. Compile scripts to send and receive data.

   Click "Script", and double-click "Add Script" to create two scripts such as "Script_1" and "Script_2".

   - Double-click "Script_1" to compile a script to send data.

     ```
     //Send data.

     var code = new Array();

     var i = 0;

     SmartTags('length of characters to be sent') = SmartTags('content to be sent').length;

     for ( i = 0;i<SmartTags('length of characters to be sent');++i)

     {
     ```

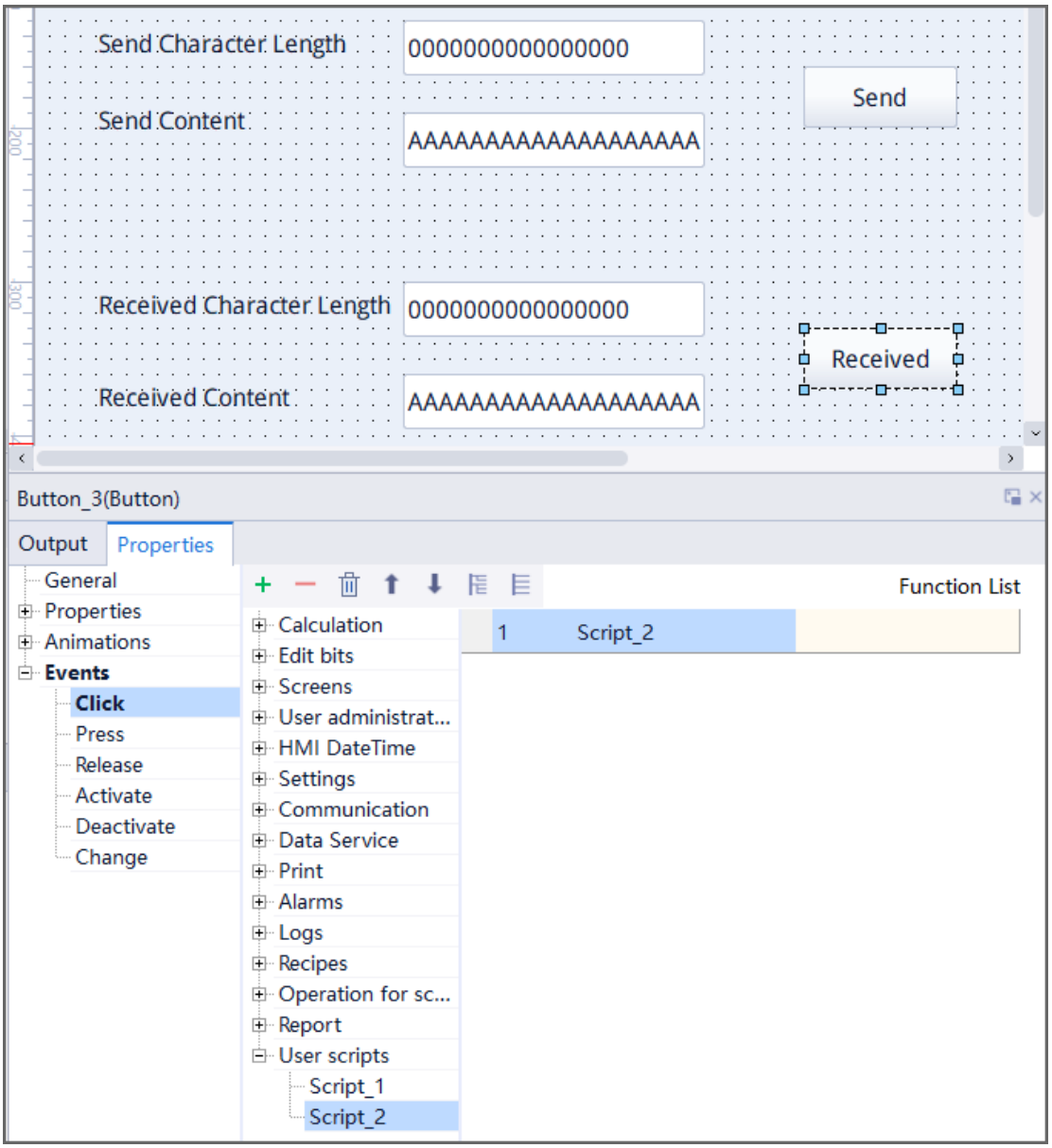
```
code[i] = SmartTags('content to be sent').charCodeAt(i); //Convert characters into an ASCII value
}
FreeOut('connection_1',code);
```

- Double-click "Script_2" to compile scripts to receive data.

```
//Receive data.
var i = 0;
var c = FreeIn('connection_1');
SmartTags('length of characters to be received') = c.length;
if (c.length)
{
var str = "";
for(var i=0;i<c.length;++i)
{
str += String.fromCharCode(c[i]); //Convert the decimal ASCII code into English characters
}
SmartTags('content to be received') = str;
}
```

5. Configure screens to send and receive data.
   a. Switch to "Screen_1". In the "Project" navigation tree on the left, click "Tag group_2". Drag tags "Sent content", "Sent character length", "Received content", and "Received character length" from "Variable View" to "Screen_1".
   b. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", add two buttons, and select "Button". On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Send" and "receive".
   c. Select "Send". On the "Properties" tab page, choose "Events" > "Click" > "User scripts", and double-click "Script_1" to associate the script. Select "receive". On the "Properties" tab page, choose

"Events" > "Click" > "User scripts", and double-click "Script_2" to associate the script.



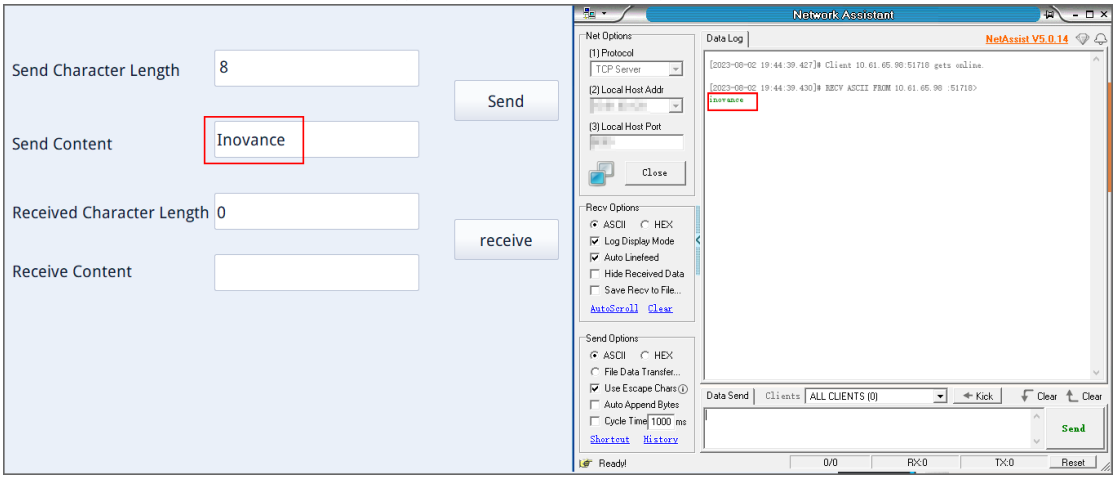
6. Perform the simulation test.

a. Click  to perform simulation online.

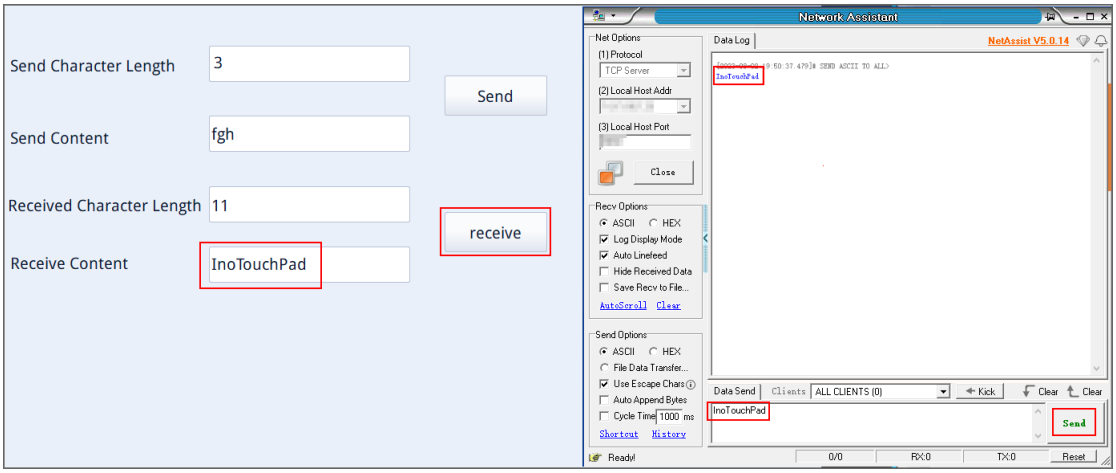
b. Start and configure the network commissioning assistant.

- Configure "Network Settings".
  - Set "Protocol Type" to "TCP Server" to use the commissioning assistant as a server for data exchange with InoTouchPad.
  - Set "Local Host Address" to the IP address recorded in Creating a TCP free protocol connection at a network port.
  - Set "Local Host Port" to the port number recorded in Creating a TCP free protocol connection at a network port.
  - Turn on "Network Settings".
- Configure "Receive Settings": Select "ASCII".
- Configure "Send Settings": Select "ASCII".

c. Send data: After entering data in the InoTouchPad analog simulation sender, click "Send". You can receive the sent data in the "Data Log" of the commissioning assistant.



d. Receive data: Enter data in the "Data Sent" input box of the commissioning assistant, click "Send" to send the data to the server side. At this time, InoTouchPad simulation end works as a client. Click "Receive" to receive the data sent by the network commissioning assistant.



23.5.7 Modifying Communication Parameters

23.5.7.1 Modifying the Slave Address

Case

Call the "ChangeConnection" function to modify the address of the RS485 communication slave.

Purpose

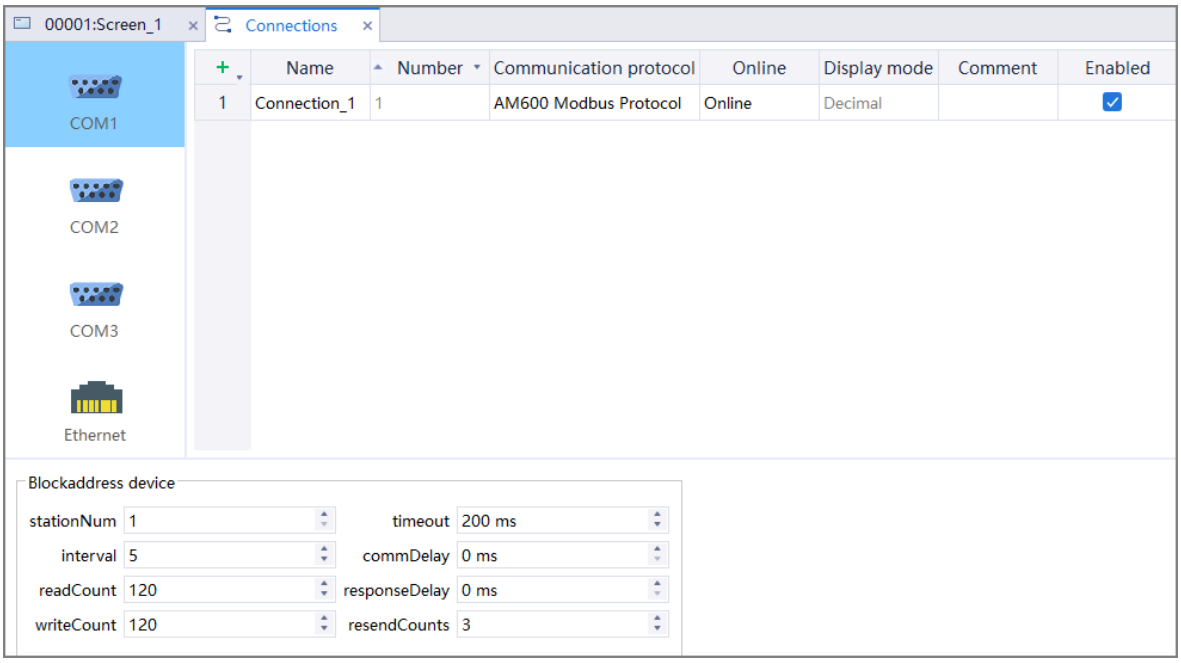
Call the "ChangeConnection" function to modify the address of the RS485 communication slave.

Procedure

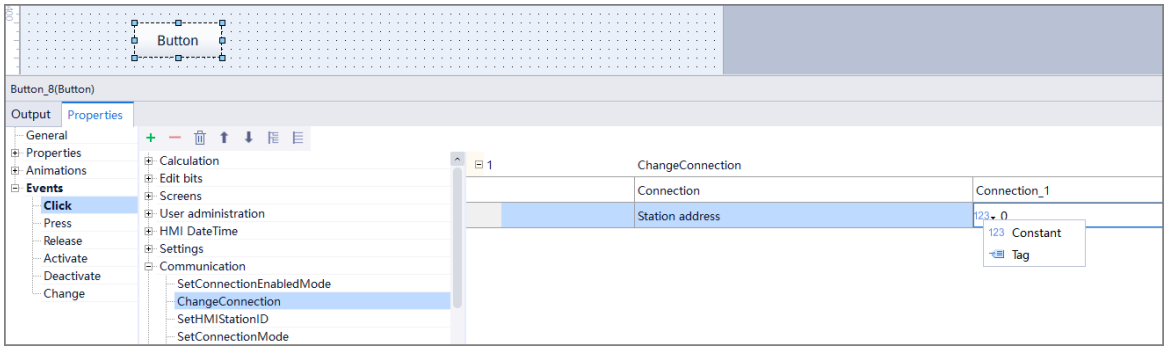
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a serial port connection.

   Click "Communication", double-click "Connections", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "AM600 Series", and double-click "AM600 Modbus Protocol" to create

Connection_1.



3. Call the "ChangeConnection" function to modify the address of the RS485 communication slave.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".
   b. Select the button. On the "Properties" tab page, choose "Events" > "Click" > "Connections". Double-click "ChangeConnection" to add the function. Select "Constant" or "Tag" for "Station address". Then you can modify the slave address communication parameters.



23.5.7.2 Changing the IP address

Case

The ChangeConnectionIpAddress function is used to change the Ethernet communication IP address.

Purpose

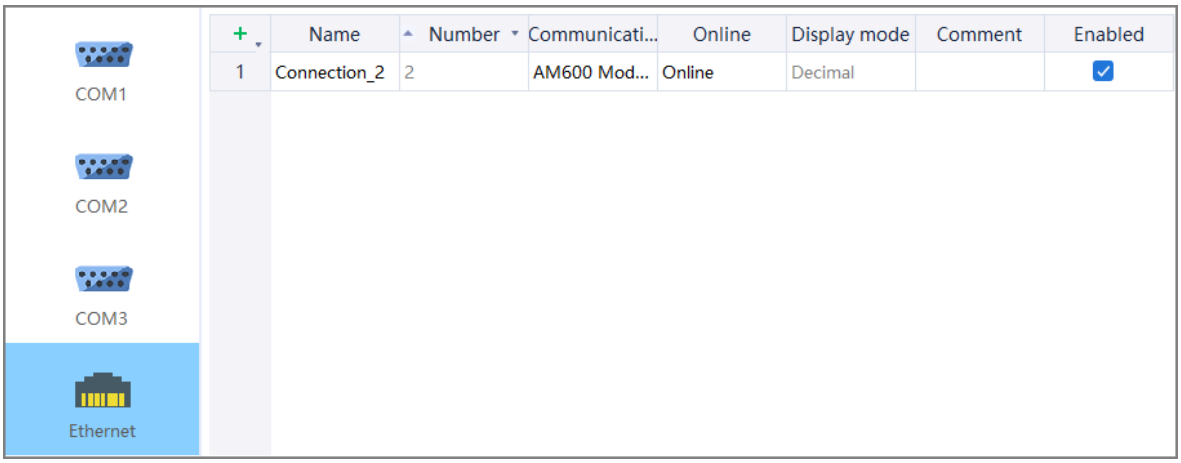
To use the ChangeConnectionIpAddress function to change the Ethernet communication IP address

Procedure

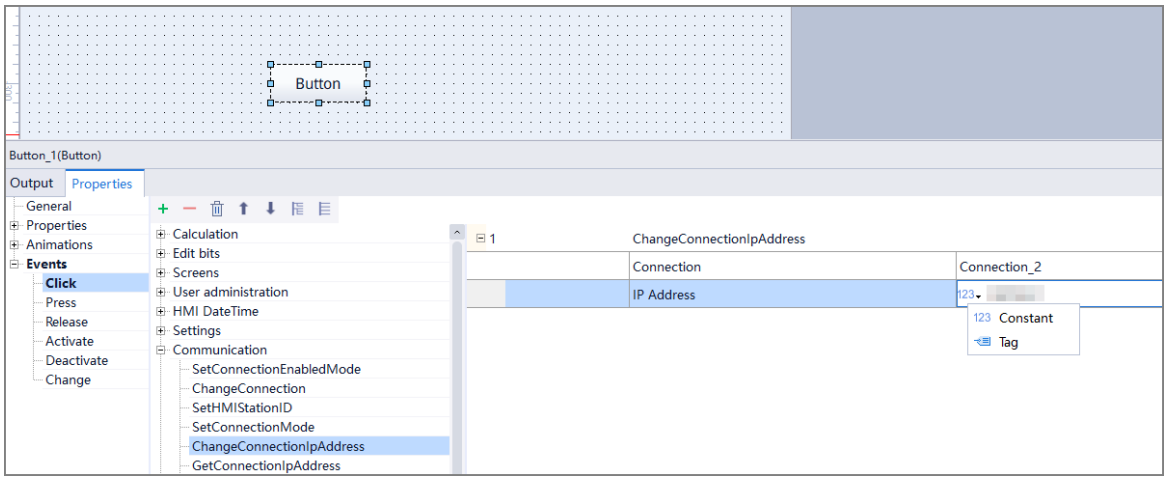
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a network port connection.

   Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, choose "Inovance" > "AM600 Series", and double-click "AM600 Modbus TCP Protocol" to

create Connection_2.



3. Use the ChangeConnectionIpAddress function to change the Ethernet communication IP address.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the control to "Screen_1".
   b. Select "Button". On the "Properties" tab page, choose "Events" > "Click" > "Communication". Double-click "ChangeConnectionIpAddress" to add the function. Set "Connection" to "Connection_2" and "IP Address" to "Constant" or "Tag" to modify the IP address communication parameter.



23.5.8 Connecting to HMI via VNC

Case

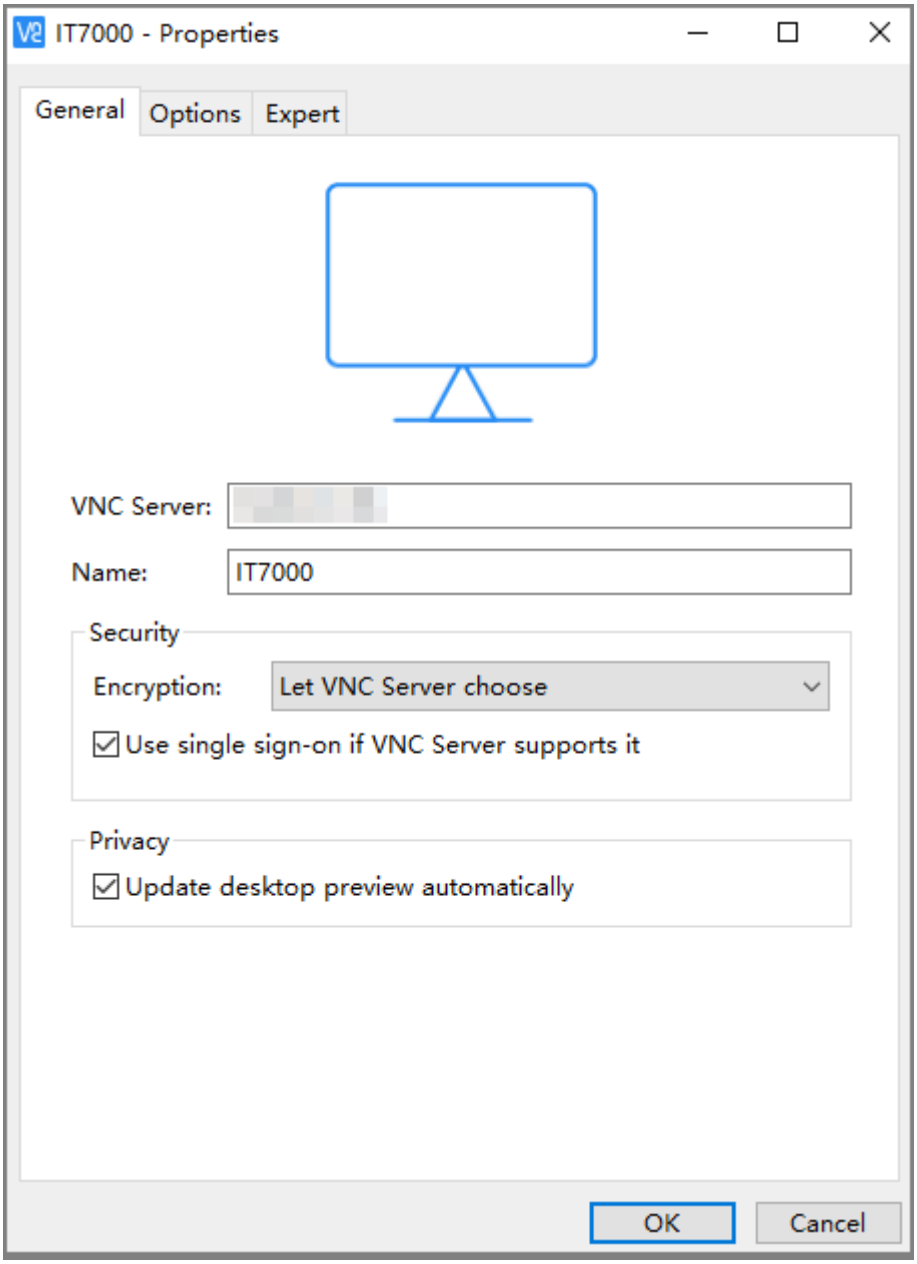
Remotely monitor and control the HMI.

Procedure

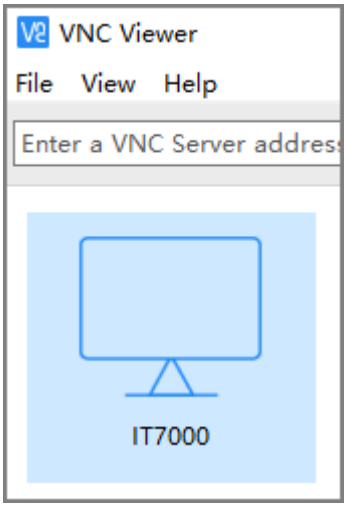
Method 1: Connect to the HMI via VNC on a computer

1. Run the VNC in the InoTouchPad software.
   In the menu bar, click "Tool" > "VNC". When opening VNC for the first time, you need to confirm the agreement. Check "I have read and accept these terms and conditions" and then click "OK". Click "GOT IT" in the "What's new in VNC Viewer" pop-up window.
2. Create a new VNC connection to HMI.
   a. Click "File" > "New connection..." in the "VNC Viewer" pop-up window.

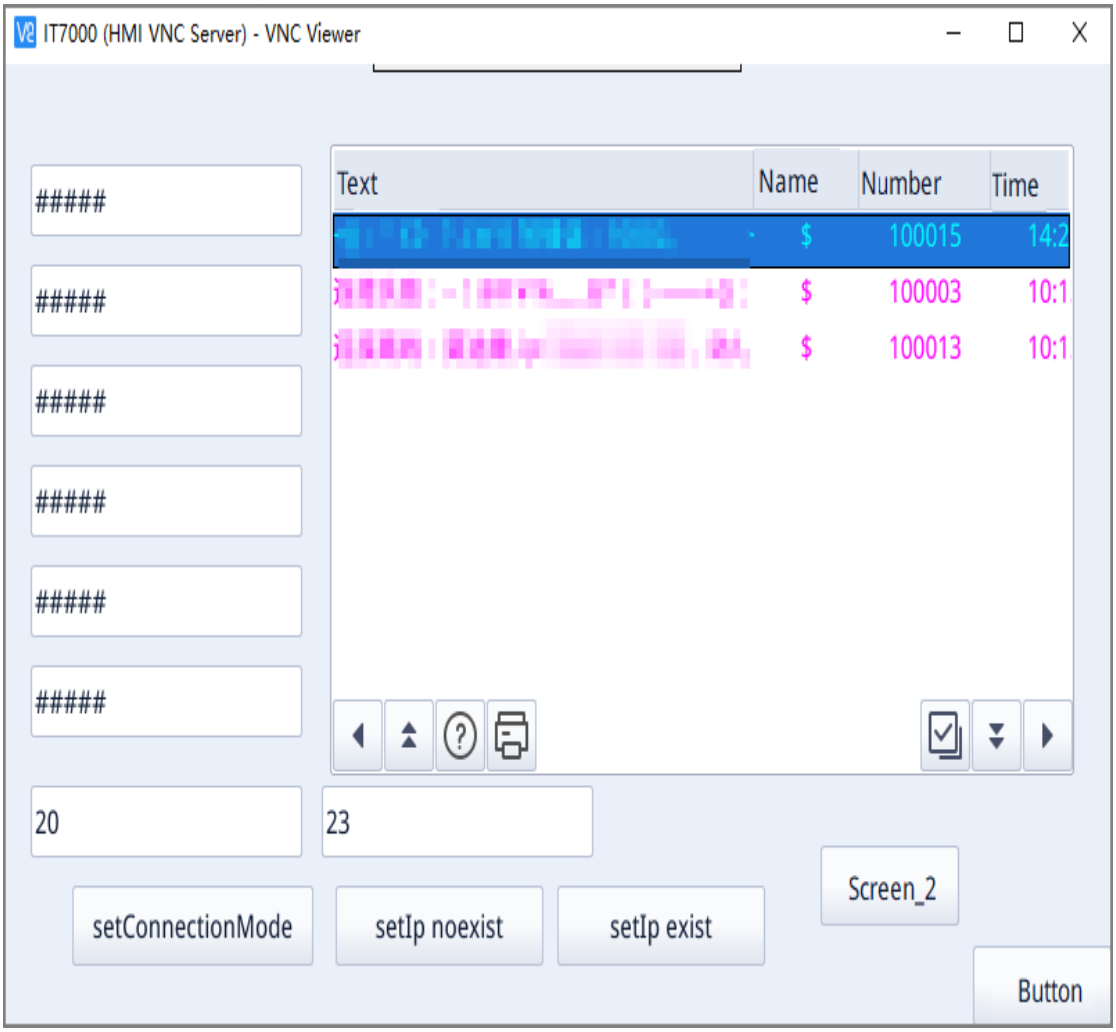
b. In the "Properties" pop-up window, ensure the "VNC Server" matches the actual connected HMI address. Set the "Name" as the display name (using IT700 as an example), then click "OK".



c. In the "VNC Viewer" pop-up window, double-click the newly created "IT7000" connection to connect to the HMI. When connecting to the HMI for the first time, check "Don't warn me about this again on this computer" in the "Encryption" pop-up window to prevent it from appearing next time, then click "Continue."



d. The VNC connection to the HMI is successful. You can remotely operate the HMI on the connected tab, such as performing mouse clicks and keyboard inputs.



Method 2: Connect to the HMI via VNC on an Android device

Obtain the VNC software installation package through the official website or Inovance customer service (4000-300124), install it on your Android device. For software configuration steps, see the corresponding user guide.

Recommended VNC software:

- RemoteToGo RDP/VNC For Android
- VNC Viewer For Android

23.5.9 Exporting XML Files from PLC

23.5.9.1 Exporting XML Files from InoProShop

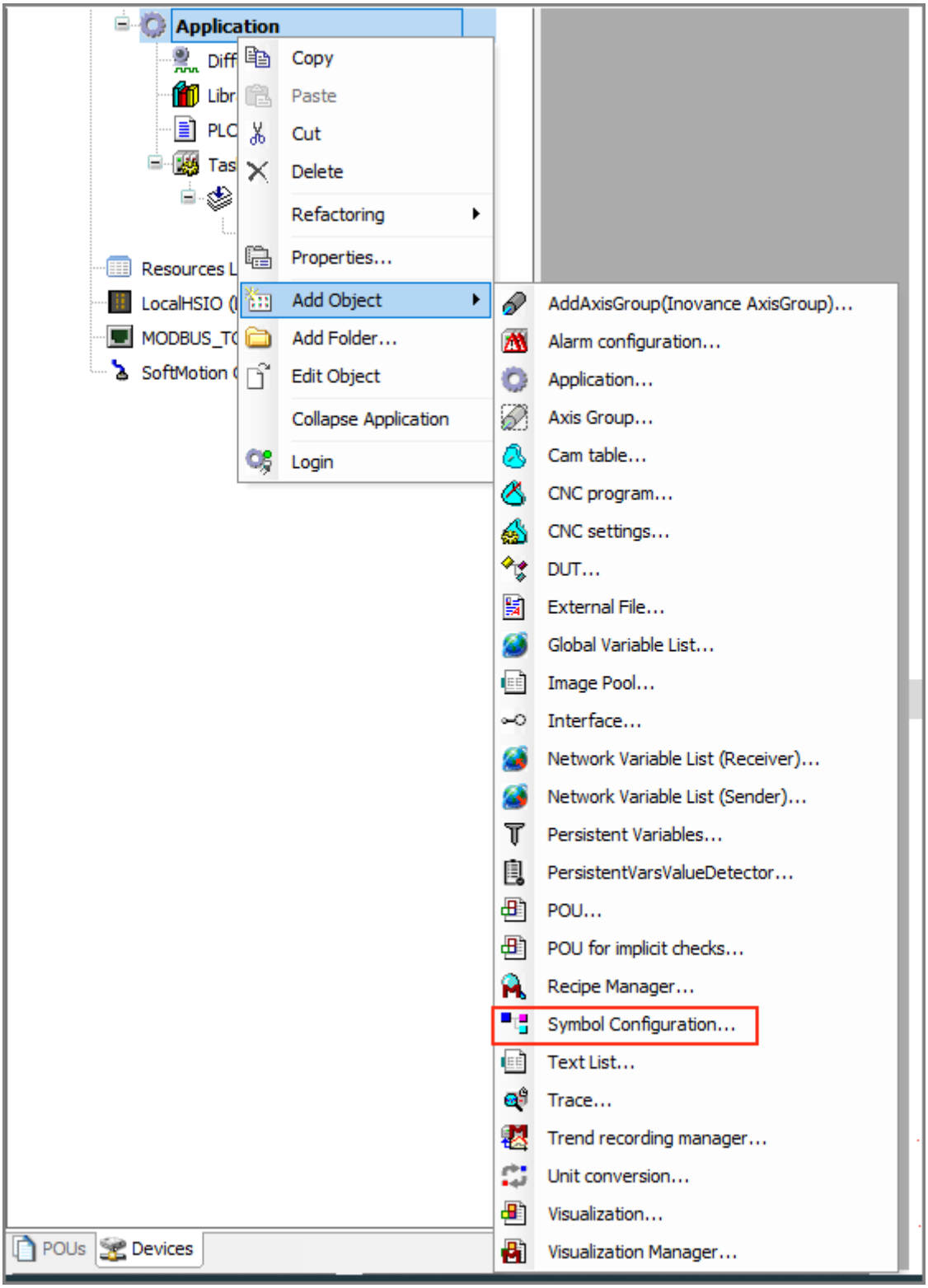
Case

When you create a connection in InoTouchPad after communication between the HMI and the PLC is completed, you need to obtain the XML files for importing the label tags.

Procedure

1. Set the PLC project.

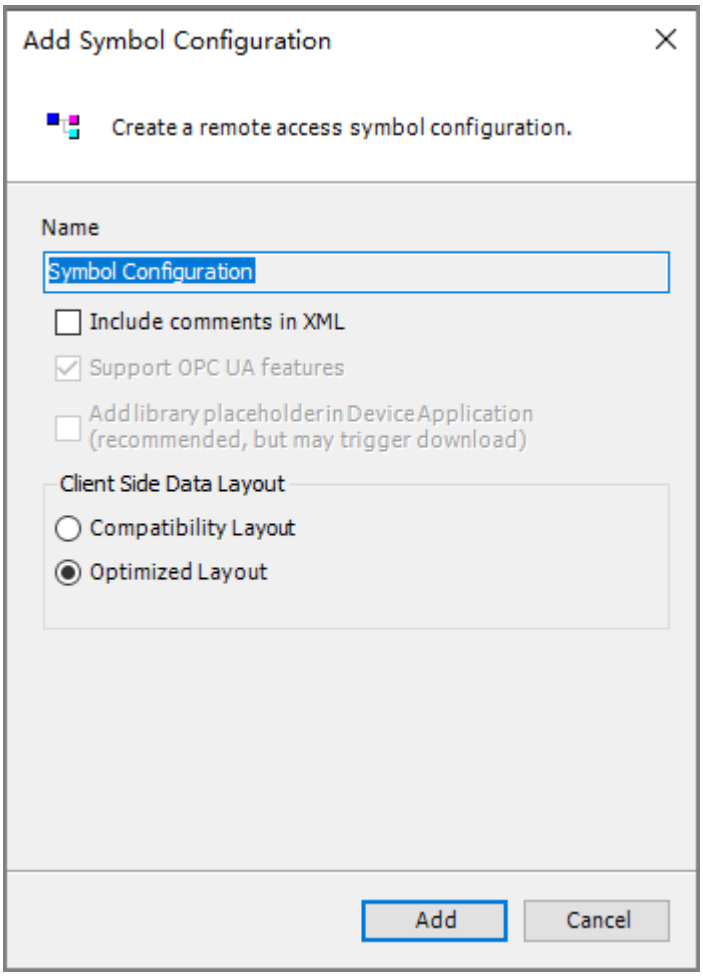
   Run InoProShop. Right-click "Application", and choose "Add Object" > "Symbol Configuration".



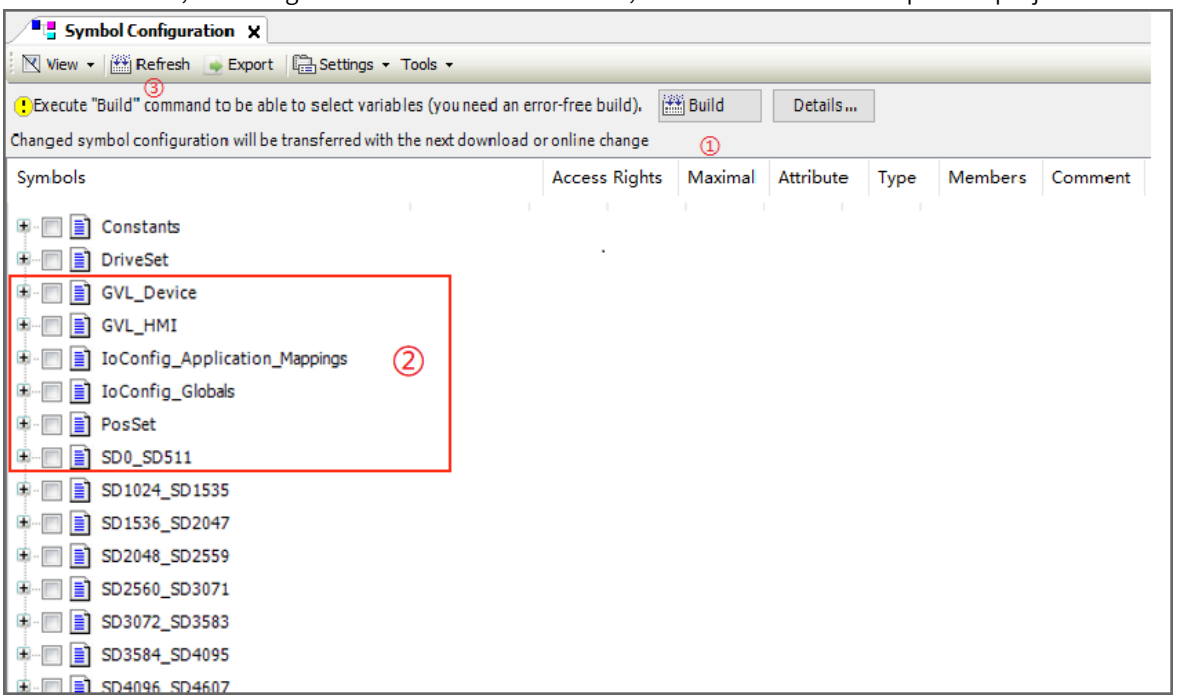
2. Configure the symbol.

   Select "Include comments in XML" to identify element comments. To make the tag accessible by OPC UA,

select "Support OPC UA features" and then click "Add".



3. Click "Establish", select tags for communication with HMI, and click "Build" to compile the project.



4. After compilation, choose "Build" > "Generate runtime system files" (the XML files are generated in the PLC program folder).



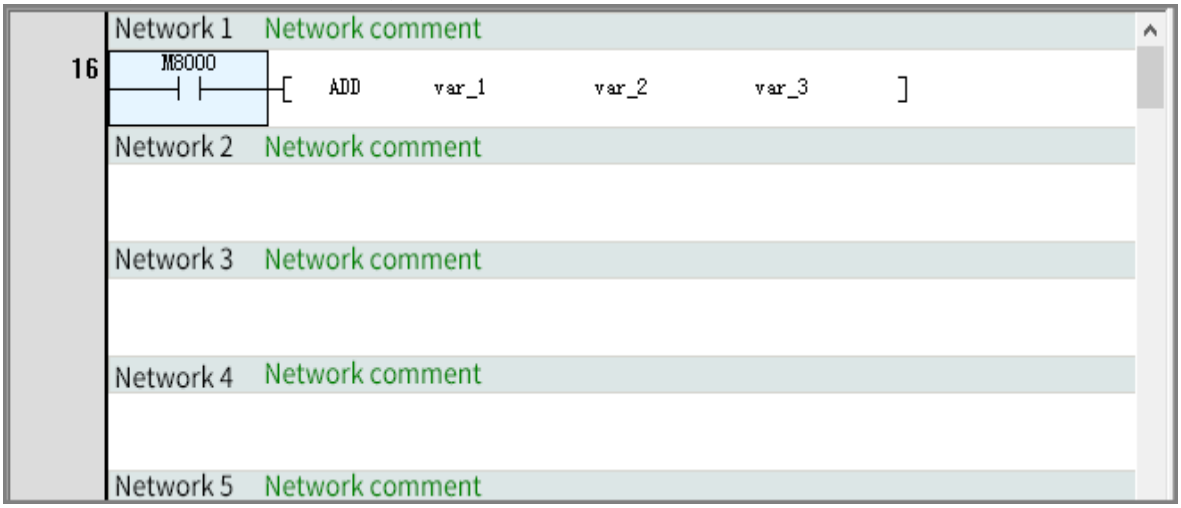
23.5.9.2 Exporting XML Files from AutoShop

Case

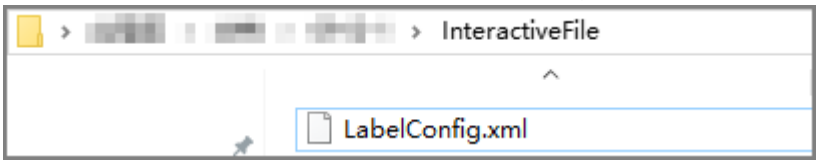
When you create a connection in InoTouchPad after communication between the HMI and the PLC is completed, you need to obtain the XML files for importing the label tags.

Procedure

1. Create a PLC project.
   Open AutoShop and create a PLC project.
2. Write a PLC program.
   Write a program, as shown in the figure below.



3. Generate an XML file.
   In the "Project Management" navigation tree on the left, double-click "Tag Table". Set "Network Public" to "Public" for a tag, and click "Compiler". The system automatically generates an XML file in the *Project directory*\InteractiveFile directory, as shown in the figure below.



23.6 Tag

23.6.1 Applying Tags

Case

Learn the tag collection mode, upper and lower limits, start value, and events.

Purpose

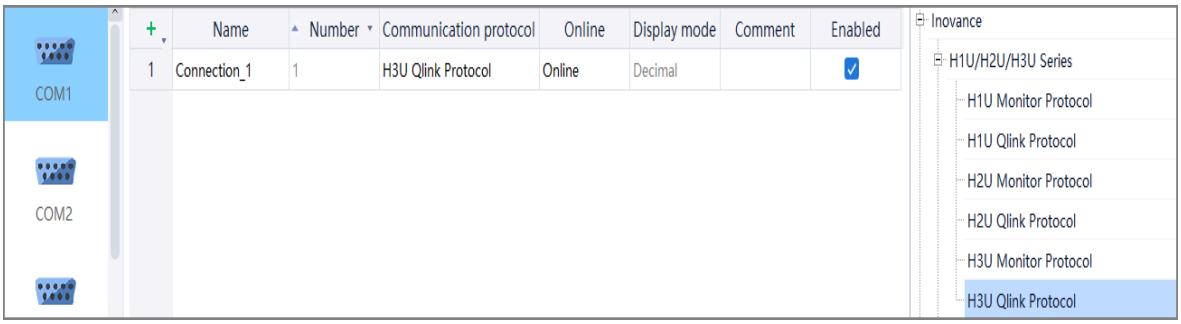
Learn the tag collection mode, upper and lower limits, start value, and events.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

2. Create a connection.

   Click "Communication". Double-click "Connection", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "H1U/H2U/H3U Series", and double-click H3U Qlink Protocol" to add a connection, such as "Connection_1".



3. Create a tag.

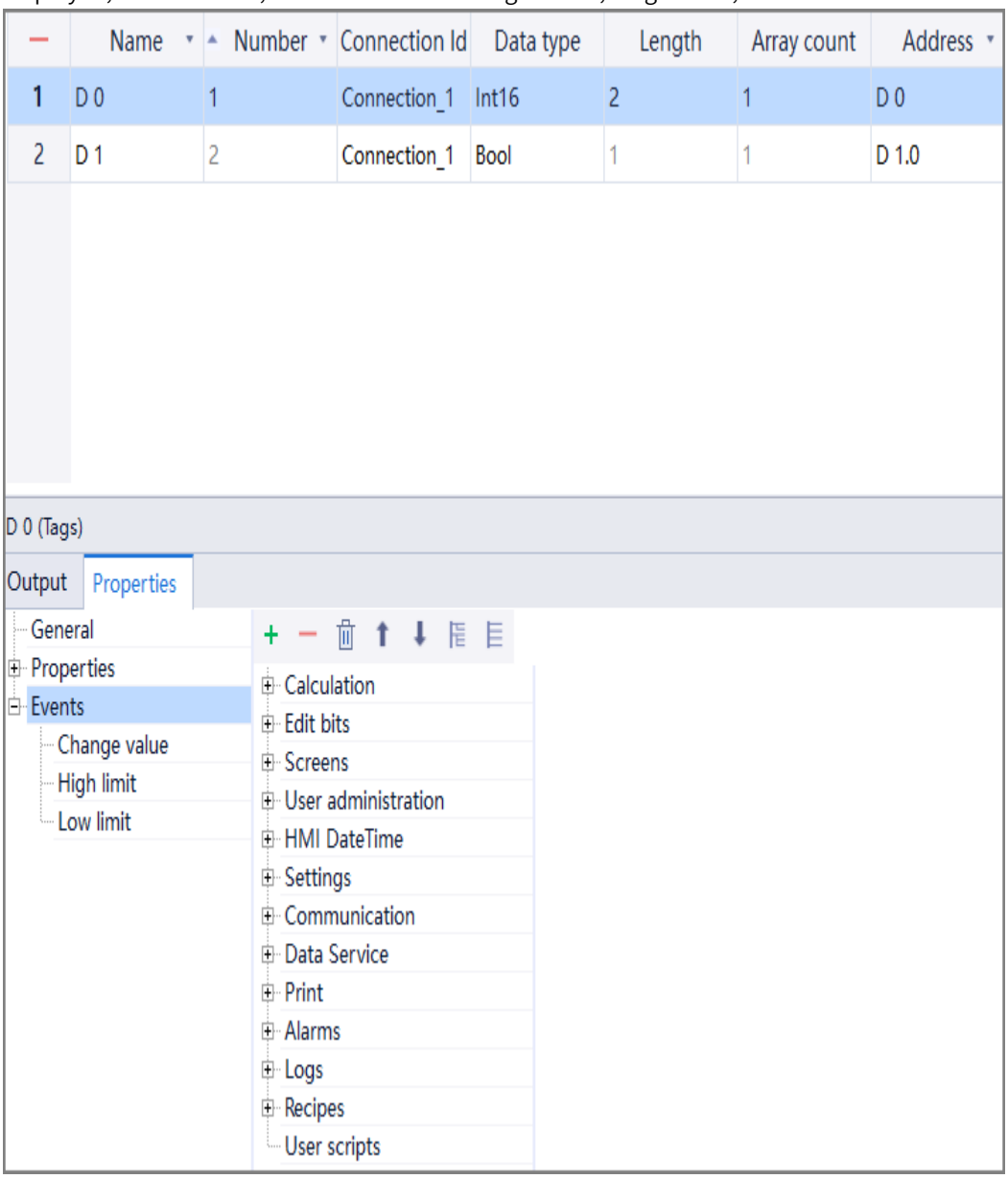
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags D 0 to D 1.

	Name	Number	Connection Id	Data type	Length	Array count	Address	Acquisition mode	Upper limit	Lower limit	Start value
1	D 0	1	Connection_1	Int16	2	1	D 0	Cyclic on use	<No limit>	<No limit>	
2	D 1	2	Connection_1	Bool	1	1	D 1.0	Cyclic on use	<No limit>	<No limit>	

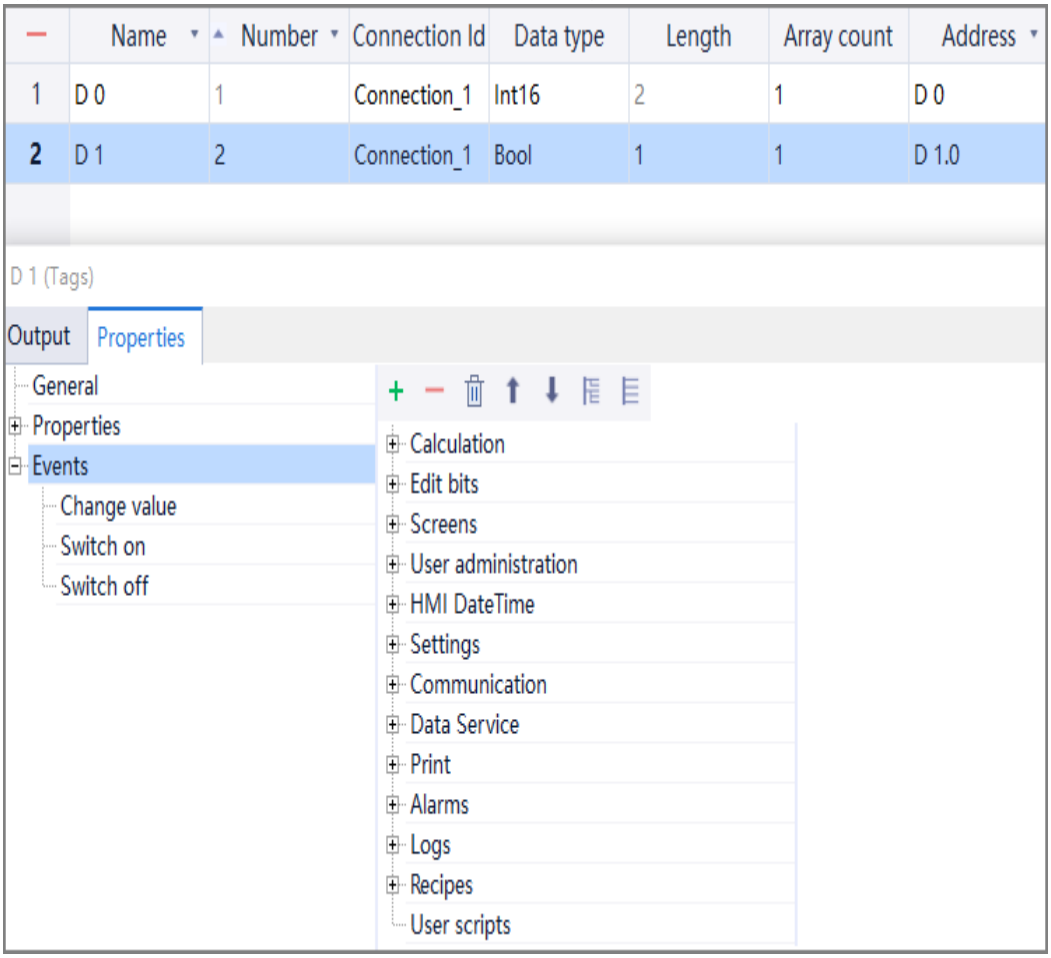
- Tag acquisition mode (options are "On demand", "Cyclic on use", and "Cyclic continuous")
  - On demand: Call the system function "UpdateTag" to update the tag.
  - Cyclic on use: The screen is updated only when the current tag is displayed in the current screen.
  - Cyclic continuous: The tag is always refreshed.
- Upper limit, lower limit, and start value of the tag.

  Select "Constant" or "Tag" for "Upper limit". If you select "Constant", input an upper limit. When you select "Tag", you can select "D 1". Set the lower limit in the same way. Input a value for "Start value".

- Tag event.
  - When a tag of the Int type is selected for "Data type": Select "D 0". On the "Properties" tab page displayed, click "Events", and then select "Change value", "High limit", or "Low limit".



- When a tag of the Bool type is selected for "Data type": Select "D 1". On the "Properties" tab page displayed, click "Events", and then select "Change value", "Switch on", or "Switch off".



23.6.2 Applying Array Sub-indexes

Case

Use scripts to implement the array sub-index feature.

Purpose

Use scripts to implement the array sub-index feature.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create an array tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", add a tag, and set "Array count" to 5.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	10	5	LW 0
2	LW 5	2	<Internal tag>	Int16	10	5	LW 5
3	LW 10	3	<Internal tag>	Int16	10	5	LW 10
4	LW 15	4	<Internal tag>	Int16	10	5	LW 15

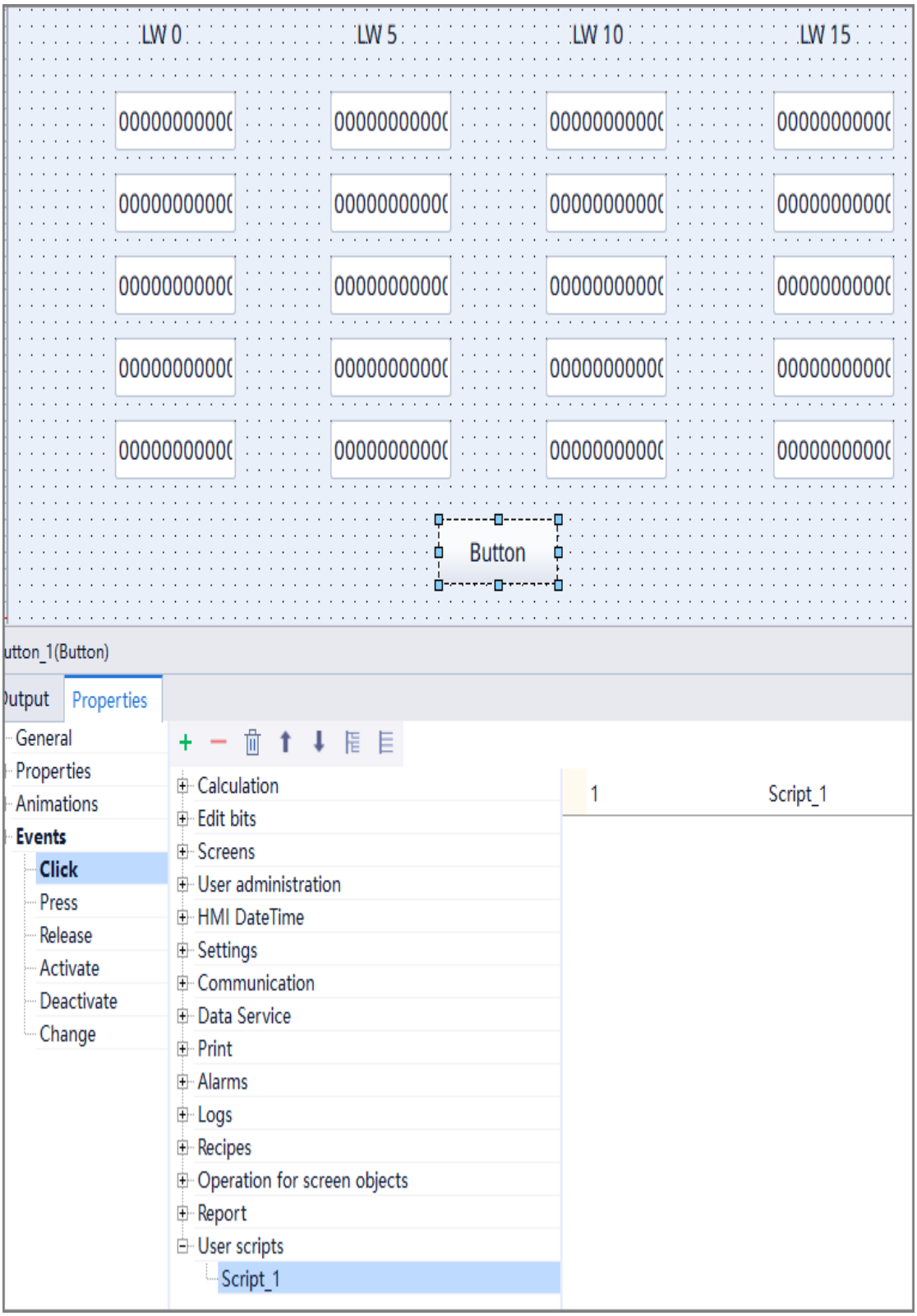
3. Compile the script.

Click "Script", and double-click "Add Script" to create a script such as "Script_1".

```
var x = 0,i;
var a=5;
var array=[20,21,22,23,24,25,26,27];
for ( i = 0; i < 5; i++ )
{
    SmartTags('LW 0',i,true)=11;
    SmartTags('LW 5',i,true)=a;
    SmartTags('LW 10',i,true)=i+2;
    SmartTags('LW 15',i,true)=array[i];
}
```

4. Configure the screen.
    a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag four text fields to "Screen_1", and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "LW 0", "LW 5", "LW 10", and "LW 15" in turn.
    b. In the "Project" navigation tree on the left, click "Tag group_2". Drag tag groups LW 0, LW 5, LW 10, and LW 15 from "Variable View" to "Screen_1".
    c. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", and select "Button". On the "Properties" tab page, choose "Events" > "Click" > "User

scripts", and double-click "Script_1" to associate the script.



5. Perform the simulation test.

Click to perform simulation offline.

- Arrays LW 0[0] to LW 0[4] are displayed as constant 11.
- Arrays LW 5[0] to LW 5[4] are displayed as the same tag a=5.
- Arrays LW 10[0] to LW 10[4] are displayed as constant i+2.
- Arrays LW 15[0] to LW 15[4] are displayed as the values of arrays.



23.6.3 Switching Visibility to Display Tags

Case

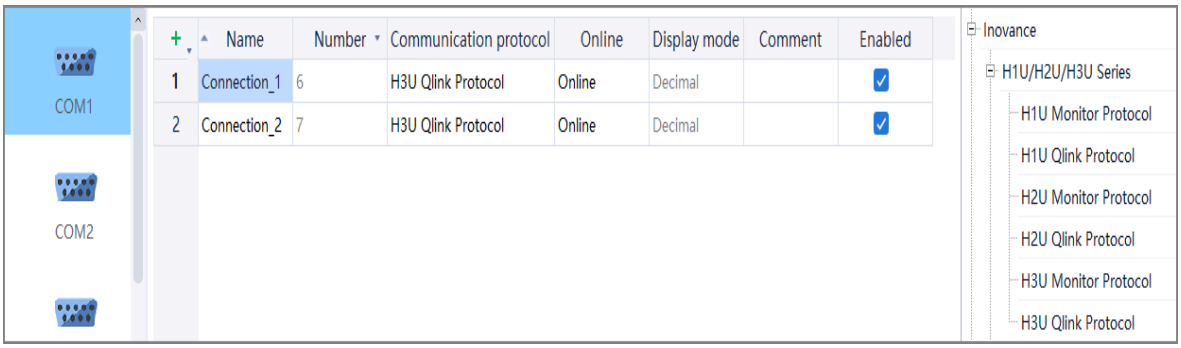
Display tags of two different connections on the same screen by switching the visibility setting.

Purpose

Display tags of two different connections on the same screen by switching the visibility setting.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add a connection.
   Click "Communication". Double-click "Connection", and select "COM1". In the "Tools" navigation tree on the right, choose "Inovance" > "H1U/H2U/H3U Series", and double-click "H3U Qlink Protocol" to add two connections, such as "Connection_1" and "Connection_2".



3. Add tags.
   Choose "Communication" > "Tags". Double-click "Tag group_2", and add tags. In the "Connection Id" column, select "Connection_1" for tags D 0 to D 2, "Connection_2" for tags D 3 to D 5, and "Internal tag" for

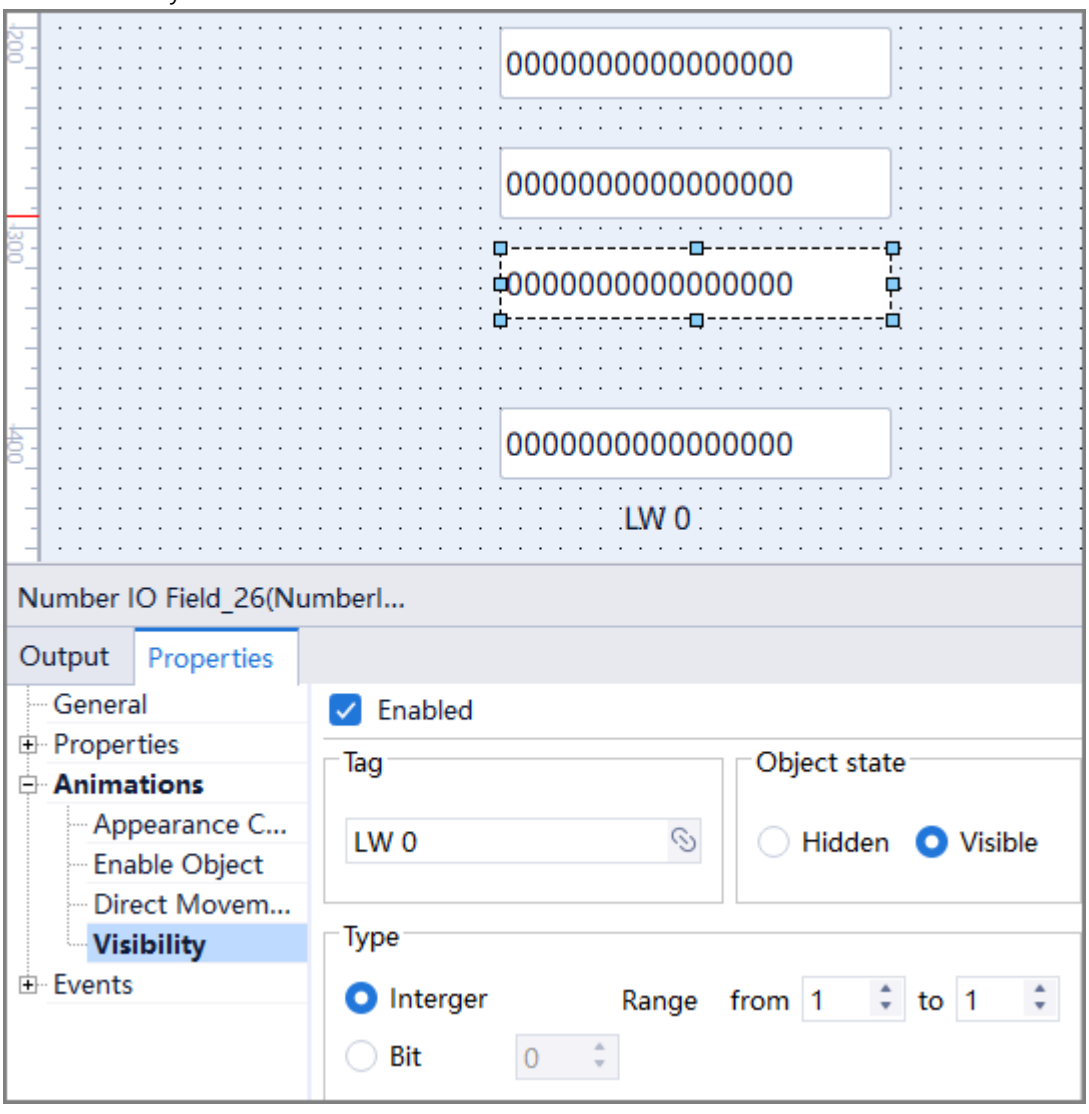
LW 0. In the "Start value" column, set the value to 0 to 5 in turn for distinguishing.

	Name	Number	Connection Id	Data type	Length	Array count	Address	Start value
1	D 0	1	Connection_1	Int16	2	1	D 0	0
2	D 1	2	Connection_1	Int16	2	1	D 1	1
3	D 2	3	Connection_1	Int16	2	1	D 2	2
4	D 3	4	Connection_2	Int16	2	1	D 3	3
5	D 4	5	Connection_2	Int16	2	1	D 4	4
6	D 5	6	Connection_2	Int16	2	1	D 5	5
7	LW 0	7	<Internal tag>	Int16	2	1	LW 6	

4. Configure the screen.

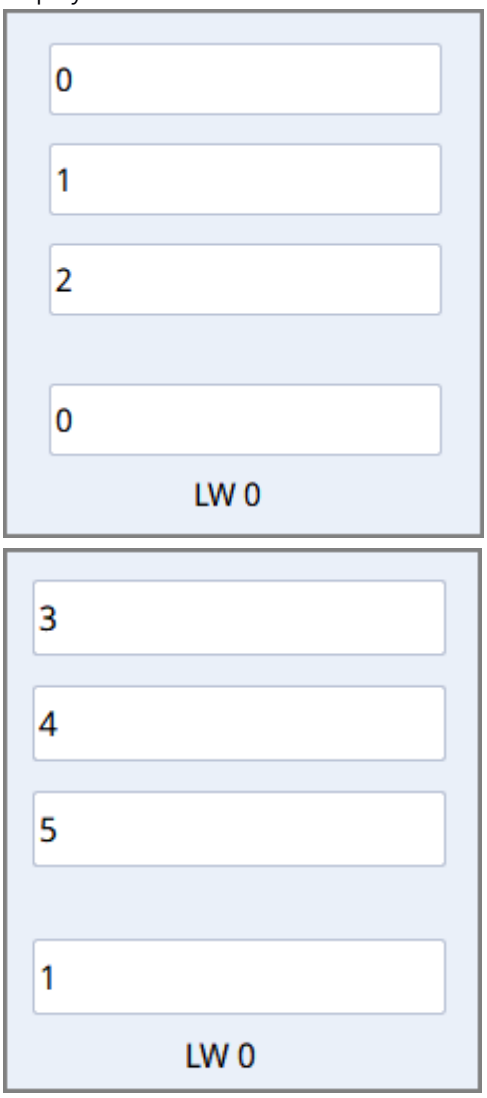
   a. Switch to "Screen_1". In the "Tools" navigation tree on the left, click "Tag group_2". Drag tags D 0 to D 5 and LW 0 from "Variable View" to "Screen_1". Then, D 3 overwrites D 0, D 4 overwrites D 1, and D 5 overwrites D 2.

   b. Select the numeric I/O field of D 3. On the "Properties" tab page, choose "Animations" > "Visibility", select "Enabled", and select "LW 0" for "Tag". In the "Object state" section, select "Visible". In the "Type" section, select "Integer", and set "Range" to 1. Configure the numeric I/O fields of D 4 and D 5 in the same way.



5. Perform the simulation test.

   Click  to perform simulation offline. If and only if LW 0 is 1, the tags D 3 to D 5 corresponding to "Connection _2" are displayed; otherwise, the tags D 0 to D 2 corresponding to "Connection _1" are displayed.



23.6.4 Using Text Switch for Automatic Pop-up Window

Case

You can use the text switch to associate with a boolean tag. When the boolean tag changes, a window automatically pops up. This case simulates a popup window when the boolean tag LW 0 is 1.

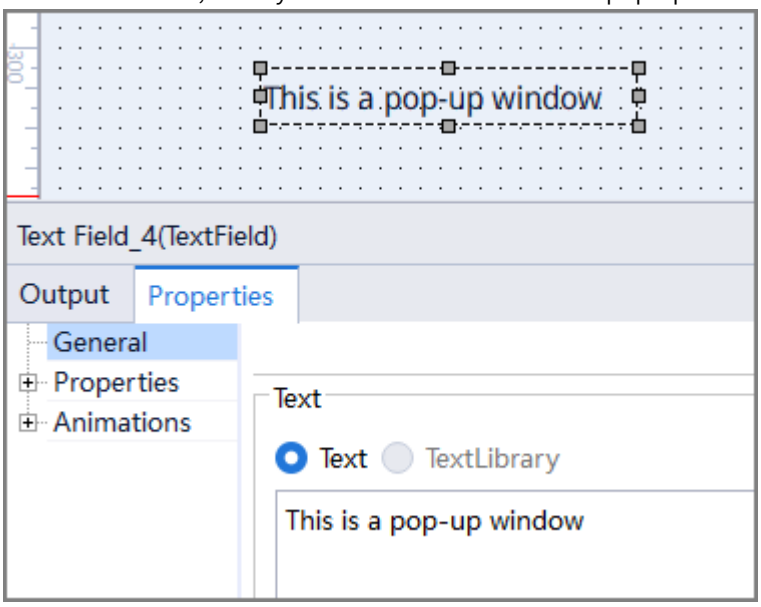
Purpose

To learn how to configure events of tags

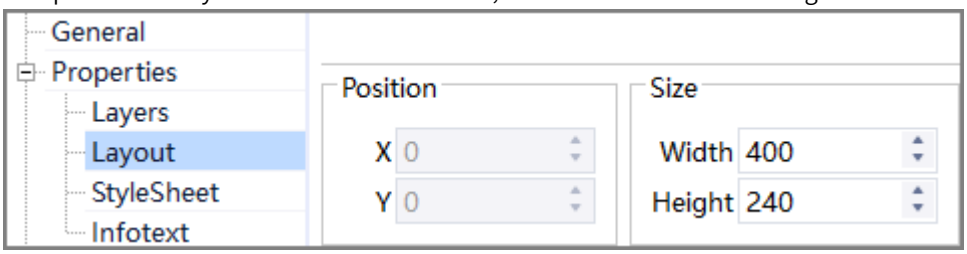
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a pop-up screen.
   a. In the "Project" navigation tree on the left, choose "Screens" > "Popup Screens", and double-click "Add Popup Screen" to add a screen such as "Screen_2".

b. Set the content of a screen: In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_2". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "This is a pop-up window".

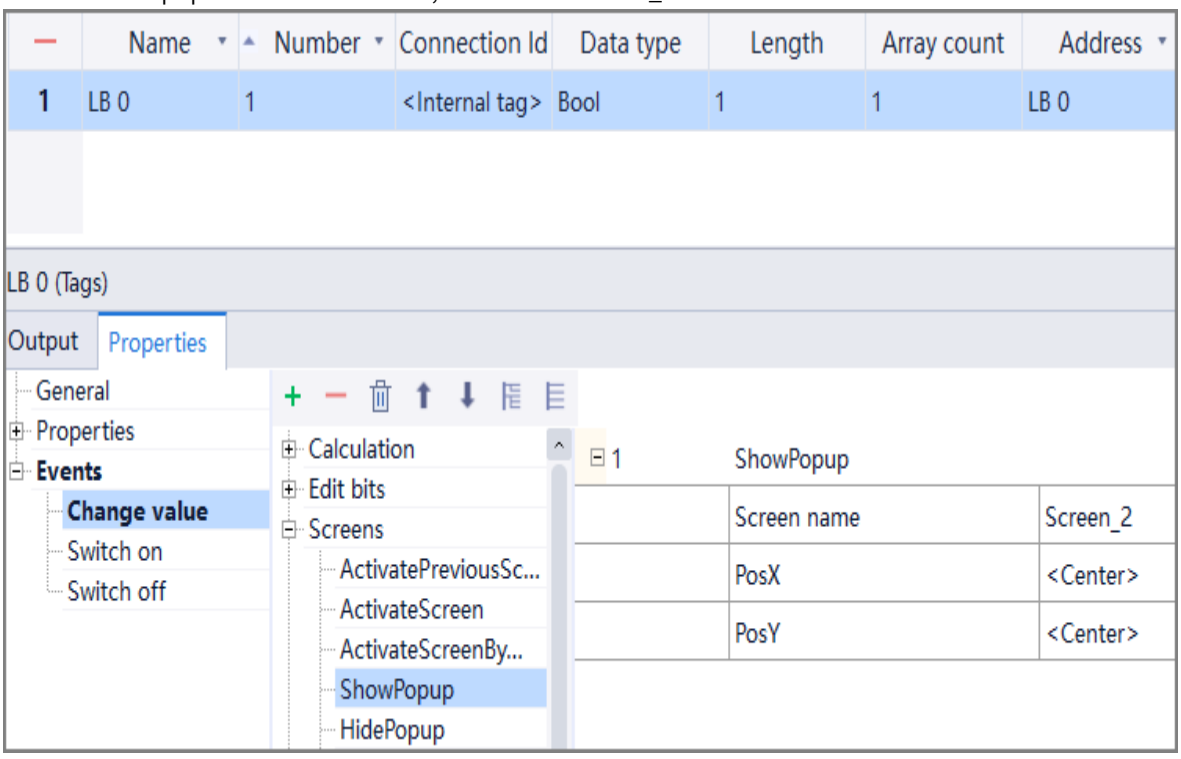


c. Set the size of a screen: Click the blank area on "Screen_2". On the "Properties" tab page, choose "Properties" > "Layout". In the "Size" section, set "Width" to 400 and "Height" to 240.



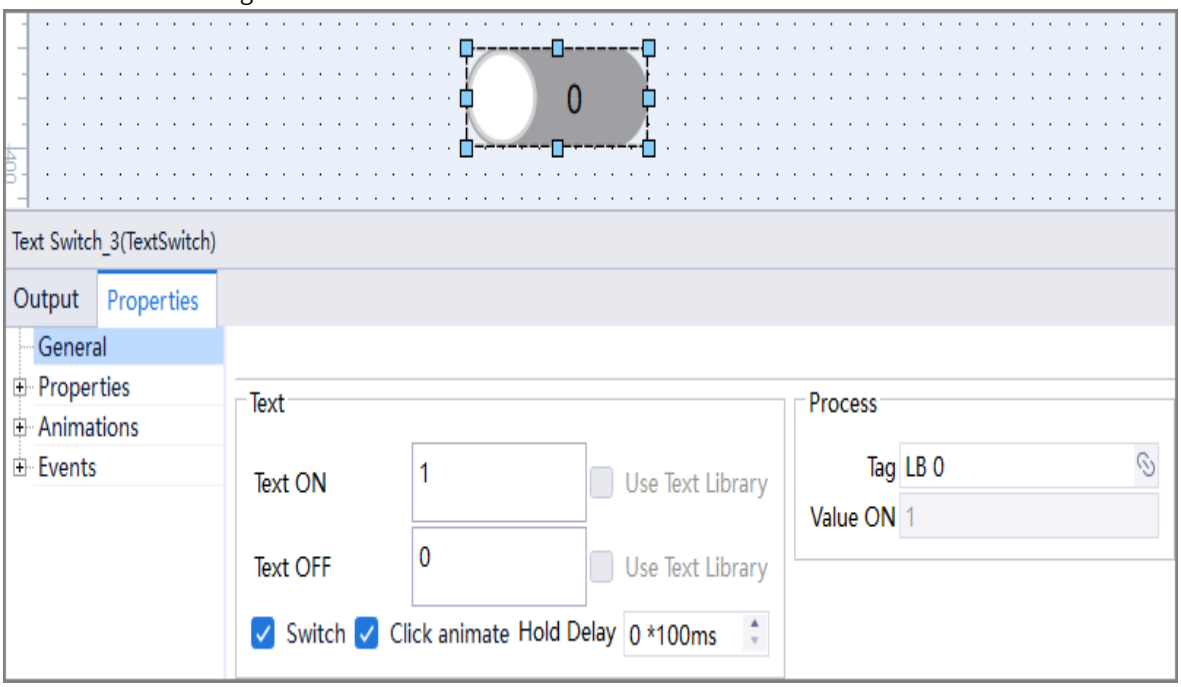
3. Create boolean tags.

Choose "Communication" > "Tags", double-click "Tag group_2", and add the boolean tag LB 0. Select the boolean tag LB 0. On the "Properties" tab page, choose "Events" > "Change value" > "Screens", double-click "ShowPopup" to add the function, and select "Screen_2" for "Screen name".



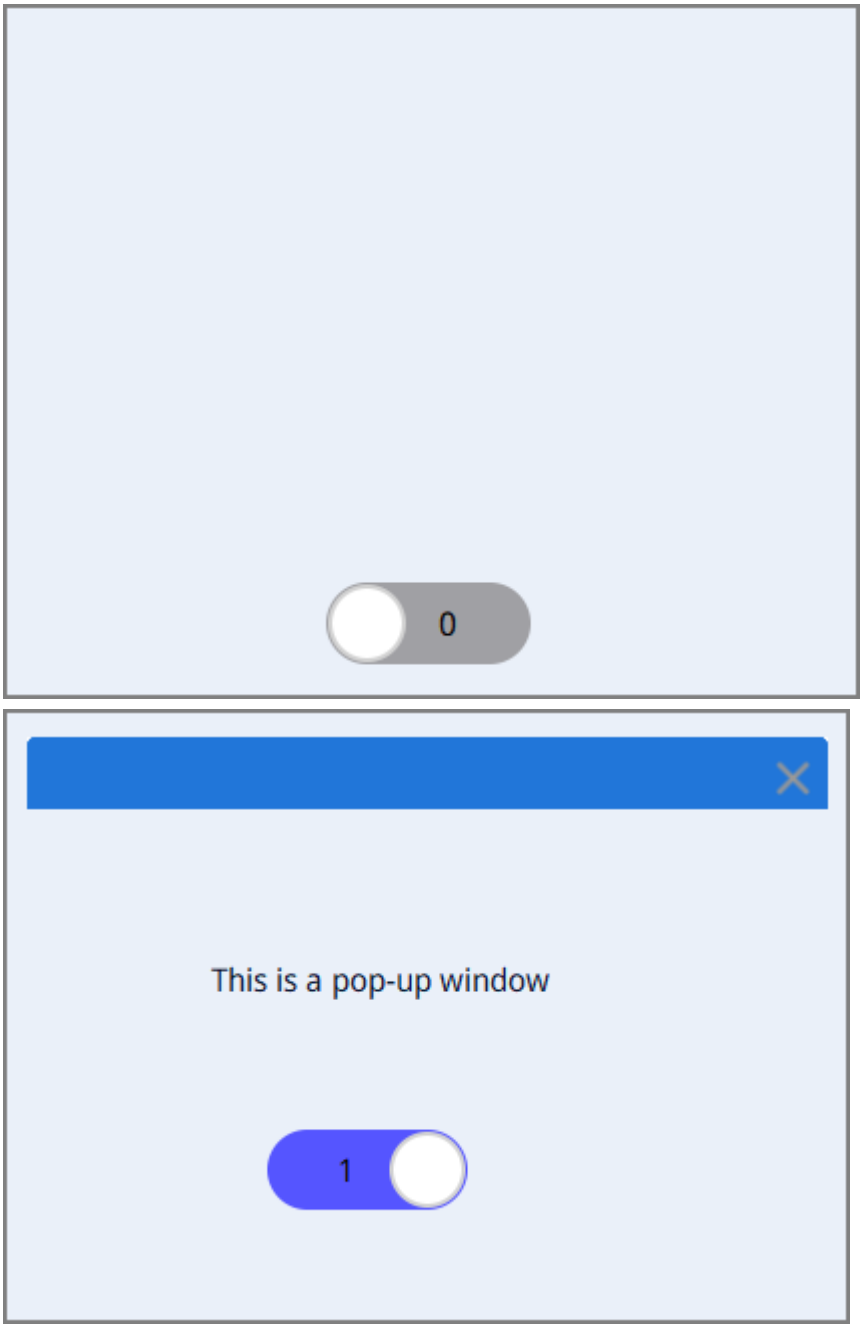
4. Add a text switch to the screen.

   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "String IO Field", and drag the field to "Screen_1". Select the text switch. On the "Properties" tab page, click "General" and set "Tag" to "LB 0" in the "Process" section.



5. Perform the simulation test.

   Click  to perform simulation offline. When you turn the text switch to 1, the HMI automatically pops up a window.



23.6.5 Applying Index Tags

Case

Values of index tags are changed for the same group of controls to access multiple address spaces.

Purpose

To change values of index tags for the same group of controls to access multiple address spaces

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create an index tag.
   Choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, choose "Tag Index" > "16 Bit" and double-click "$INDEX_0" to add an index tag. (Take the 16-bit index tag

"$INDEX_0" as an example.)

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	$INDEX_0	1	<Internal tag>	Int16	2	1	LW 9600

3. Associate a tag with the index tag by selecting the index tag in the tag table or manually entering the index tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 3.

   - Method 1: Select the index tag "$INDEX_0" from the tag table for LW 0.
   - Method 2: Manually enter the index tag in the format of "Tag name+$INDEX_index tag serial number". For details, see Associating with an Index Tag. A new tag "LW 0+$INDEX_0" will be created.

	Name	Number	Connection Id	Data type	Length	Array count	Address	Tag group	Index Tag
1	LW 0	2	<Internal tag>	Int16	2	1	LW 0	Tag group_2	$INDEX_0
2	LW 1	3	<Internal tag>	Int16	2	1	LW 1	Tag group_2	<Undefined>
3	LW 2	4	<Internal tag>	Int16	2	1	LW 2	Tag group_2	<Undefined>
4	LW 3	5	<Internal tag>	Int16	2	1	LW 3	Tag group_2	<Undefined>
5	LW 0+$INDEX_0	8	<Internal tag>	Int16	2	1	LW 0	Tag group_2	$INDEX_0

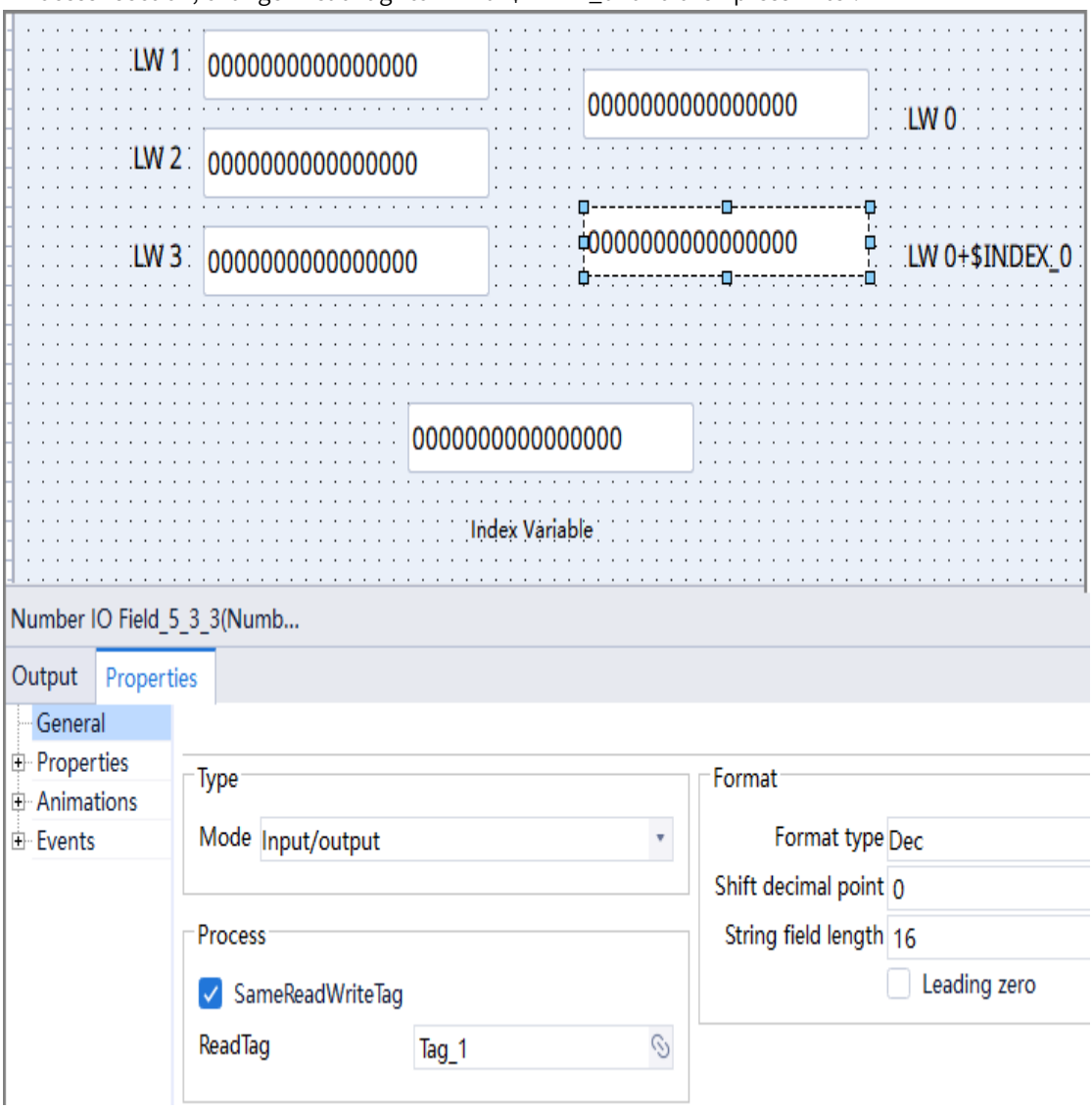
4. Configure the screen.

   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field" and drag the text field to "Screen_1". Add six text fields and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the content to LW 0, LW 1, and others in turn.

   b. In the "Project" navigation tree on the left, click "Tag group_2". Drag tags LW 0 to LW 3 from "Variable View" to "Screen_1", including two LW 0.

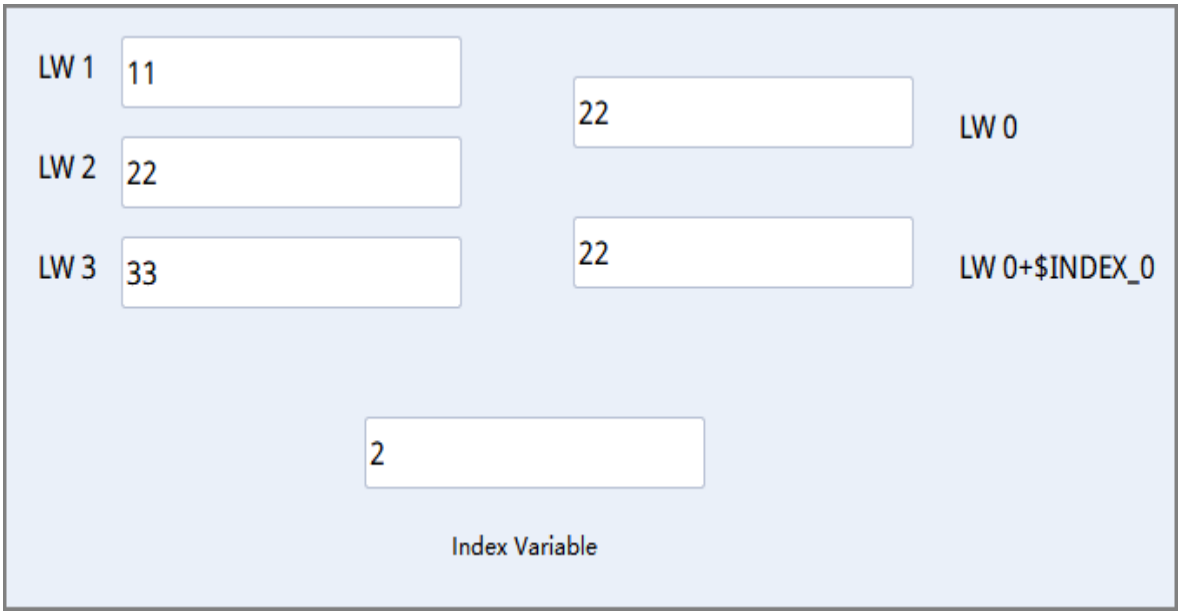
   c. Click "System Tags" and drag the tag "$INDEX_0" from "Variable View" to "Screen_1".

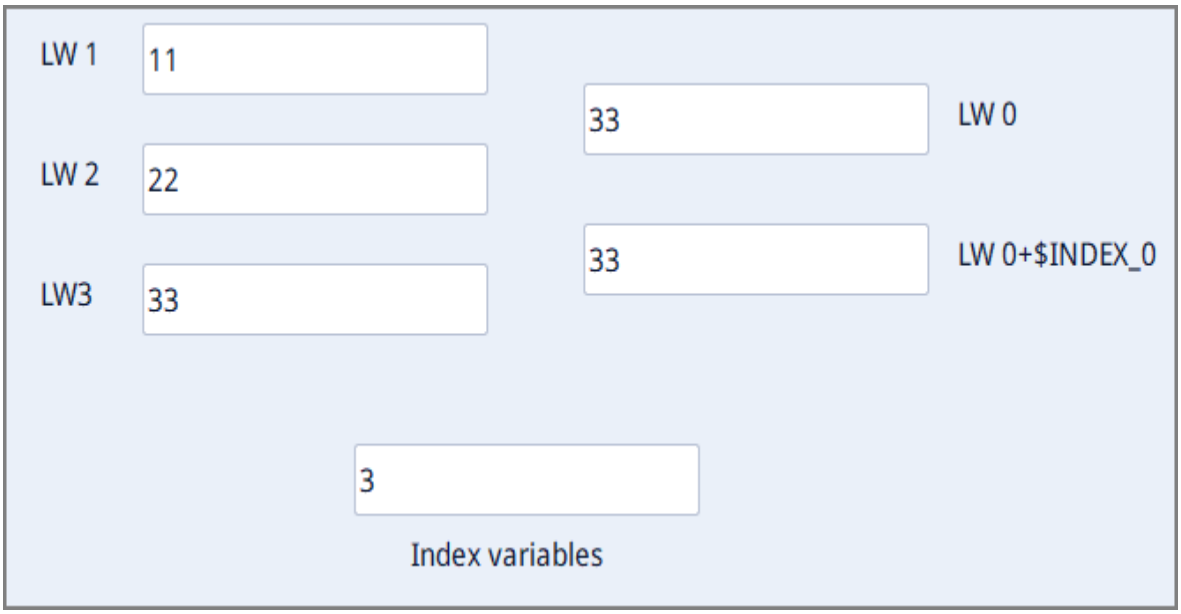
d. Select the numeric IO field of one LW 0. On the "Properties" tab page, click "General". In the "Process" section, change "ReadTag" to "LW 0+$INDEX_0" and then press Enter.



5. Perform the simulation test.

Click to perform simulation online. Enter the values for LW 1 to LW 3 and set "Tag Index" to 1, 2, or 3. Values of LW 0 and LW 0+$INDEX_0 are displayed as a value from LW 1 to LW 3.





23.6.6 Using Tags to Change Status of Bar Graph, Slider, Progress Bar, and Flow Block

Case

- Use tags to change the status of a bar graph, slider, progress bar, and flow block.
- Add a bar graph, slider, and progress bar.
- Add a flow back of custom specifications.
- Set the slider speed, and monitor the status of the flow block, bar graph, and progress bar.

Purpose

- Describe basic applications of the bar graph, slider, progress bar, and flow block.
- Describe how to set the flow speed and direction of the flow block.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

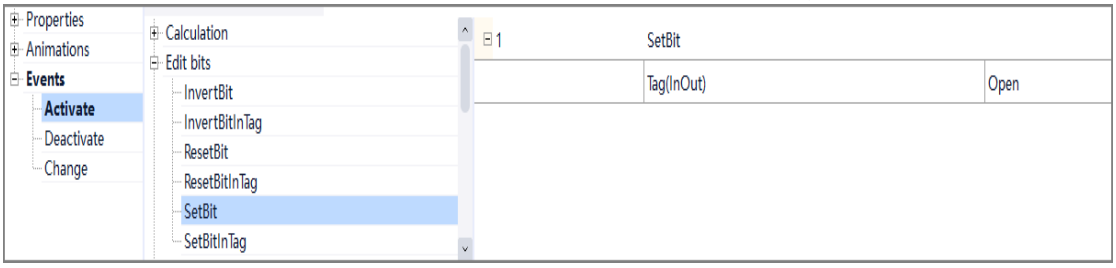
2. Add tags.

Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags "Flow tag", "Bar tag", and "Enabled".

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	Flow Variable	7	<Internal tag>	Int16	2	1	LW 0
2	Rod Variable	8	<Internal tag>	Int16	2	1	LW 1
3	Turn On	9	<Internal tag>	Bool	1	1	LB 100

3. Configure the screen.

a. Add a slider, progress bar, and instrument to the screen. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Data Visualization" > "Slider", drag the slider to "Screen_1", and select it. On the "Properties" tab page, click "General". In the "Process" section, select "Flow tag" for "Tag". In the "Scale" section, set "Max" of "Static" to 100. Set the progress bar and instrument in the same way. Select the progress bar. On the "Properties" tab page, choose "Events" > "Activate" > "Edit bits", double-click "SetBit" to add the function, and select "Open" for "Tag(InOut)".



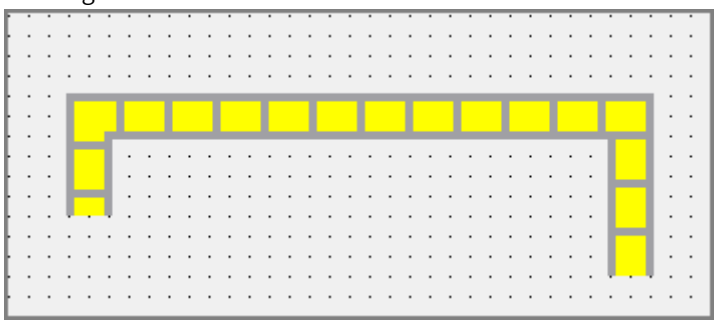
b. Add a bar graph to the screen.

In the "Tools" navigation tree on the right, choose "Data Visualization" > "Bar", drag the bar graph to "Screen_1", and select it. On the "Properties" tab page, click "General". In the "Process" section, select "Bar tag" for "Tag". In the "Scale" section, set "Max" of "Static" to 1000.

c. Add a custom flow block to the screen.

In the "Tools" navigation tree on the right, choose "Data Visualization" > "FlowBlock", drag the flow block to "Screen_1", and select it. On the "Properties" tab page, click "General". In the "Flow" section, select "Dynamic Speed". In the "Process" section, select "Flow tag" for "Tag".

- Press and hold the left mouse to draw a flow block.
- Press and hold the left mouse to change the direction of the flow block.
- Click the left mouse to draw a flow block and then click the right mouse to end the drawing.

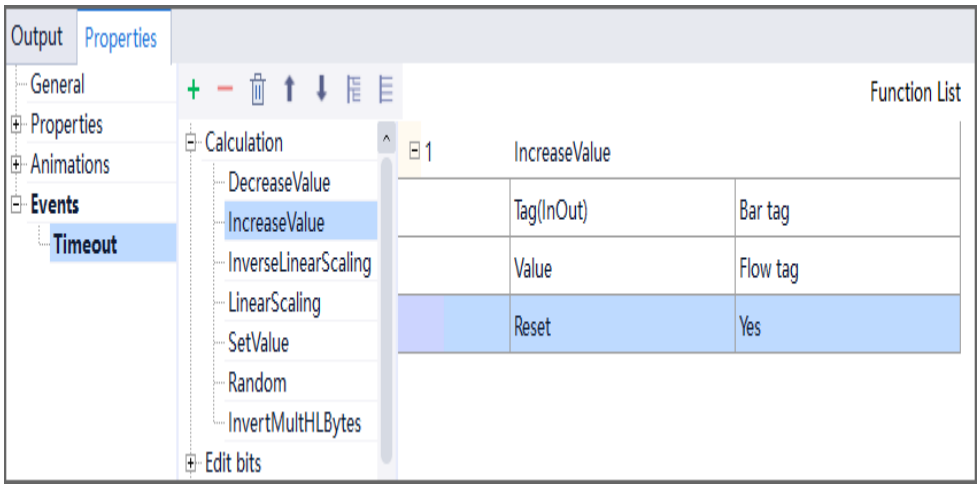


d. Add a timer to the screen.

In the "Tools" navigation tree on the right, choose "Tools" > "Timer", and drag the control to "Screen_1". On the "Properties" tab page, click "General". In the "Settings" section, set "Cycle time" to "5*100ms". In the "Process" section, select "Enabled" for "Tag". Choose "Events" > "Timeout" >

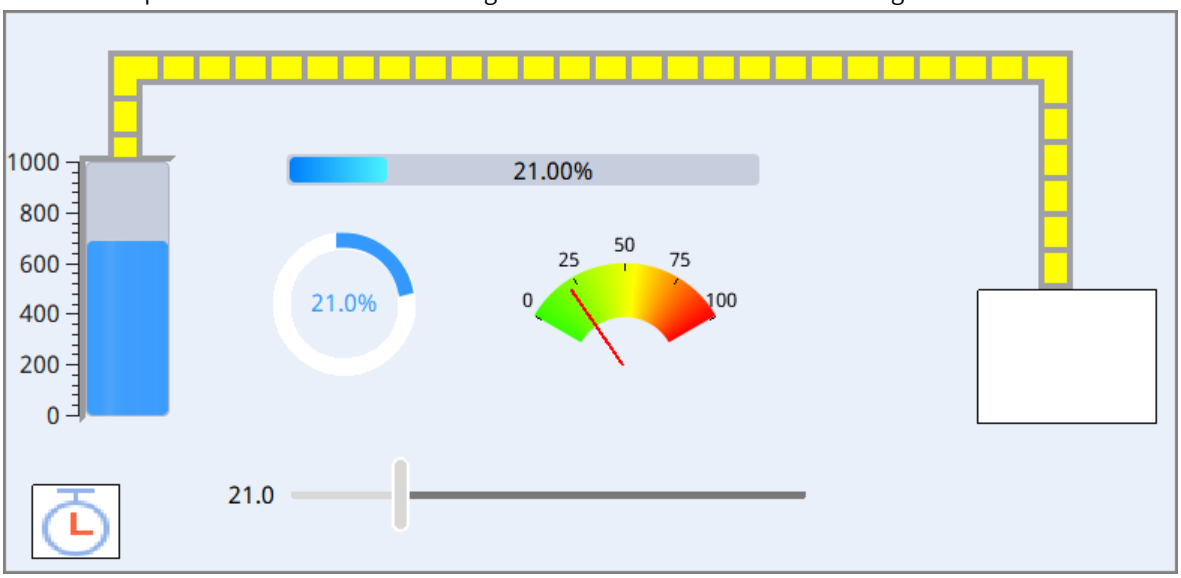
"Calculation", double-click "IncreaseValue" to add the function, and configure the function parameters:

- Select "Bar tag" for "Tag(InOut)".
- Select "Flow tag" for "Value".
- Select "Yes" for "Reset".



4. Perform the simulation test.

Click to perform simulation offline. Drag the slider to check the control change.



23.6.7 Using Tags to Switch Screens

Case

Tags are used to switch screens.

Purpose

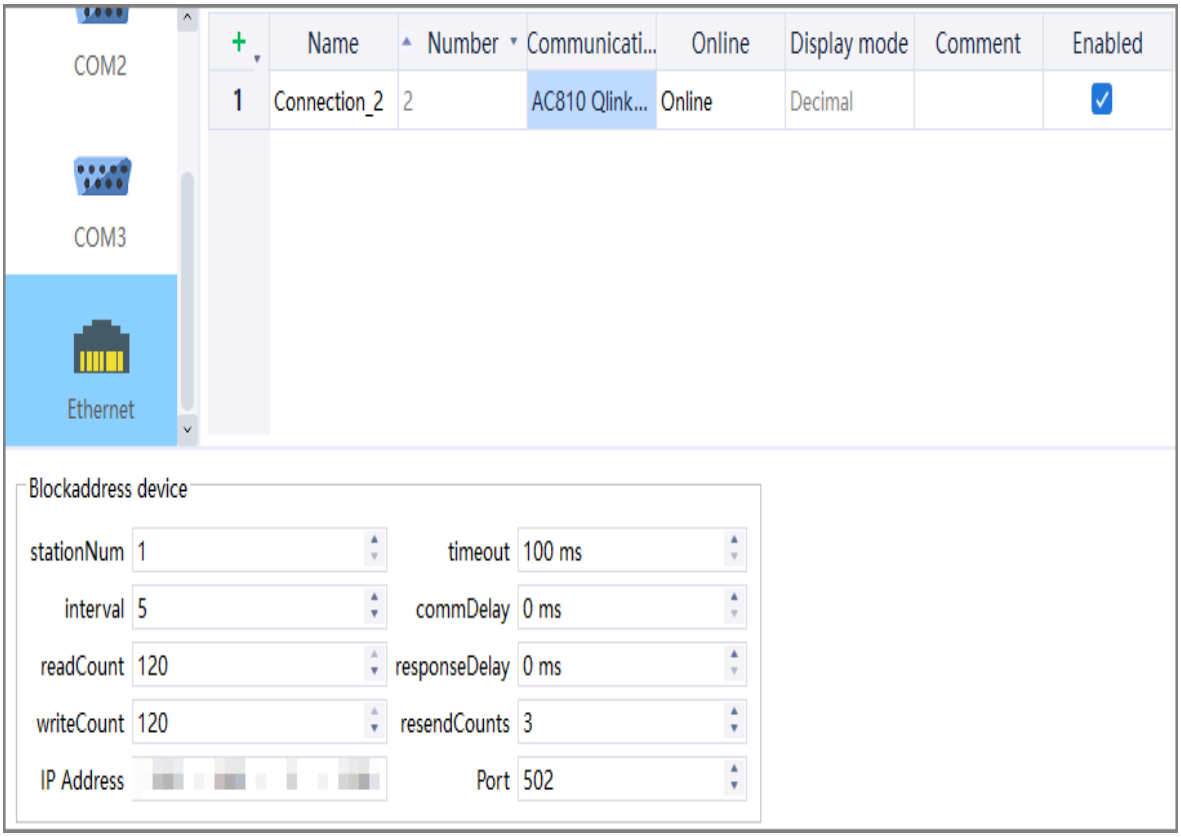
To use tags to switch screens.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

2. Create a screen.
   Click "Screens", double-click "Add Screen" to create a screen, such as "Screen_2", and then switch to "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Ellipse", and drag the ellipse to "Screen_2".

3. Create a connection (ensuring that the IP address is the same as the PLC IP address).
   Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, choose "Inovance" > "AC810 Series", and double-click "AC810 Qlink TCP Protocol" to create "Connection_1". In the "Blockaddress device" section, set "IP Address" to the PLC IP address.



4. Create tags of the Bool and Int16 types.
   a. Choose "Communication" > "Tags", create tags of the Bool and Int16 types, and set "Connection Id" to "Connection_1". Set "Upper limit" to 10 for the tag of the Int16 type.

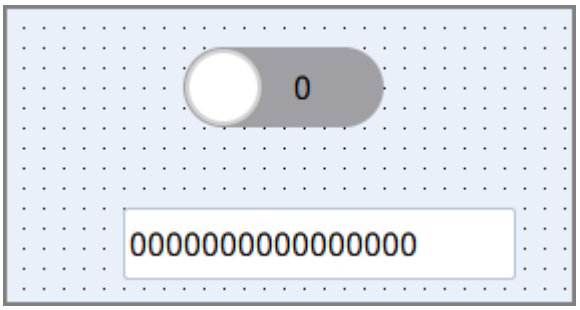
	Name	Number	Connection Id	Data type	Length	Array count	Address	Upper limit
1	Boolean	28	Connection_1	Bool	1	1	Q 1.0	<No limit>
2	Numeric type	29	Connection_1	Int16	2	1	MW 2	10

   b. Select the tag of the Bool type. On the "Properties" tab page, choose "Events" > "Change value" > "Screens" and then double-click "ActivateScreen" to add a function and select "Screen_2" for "Screen name".

   c. Select the tag of the Int16 type. On the "Properties" tab page, choose "Events" > "High limit" > "Screens" and then double-click "ActivateScreen" to add a function and select "Screen_2" for "Screen name".

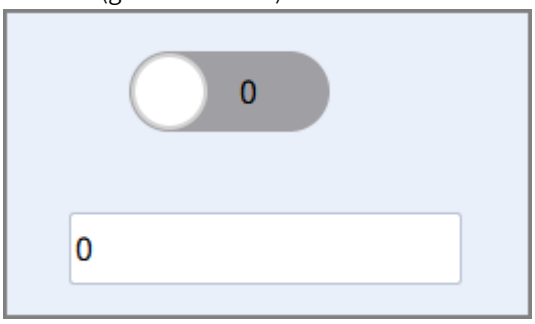
5. Configure "Screen_1".
   Switch to "Screen_1". In the "Project" navigation tree on the left, click "Tag group_2". Drag tags of the Bool

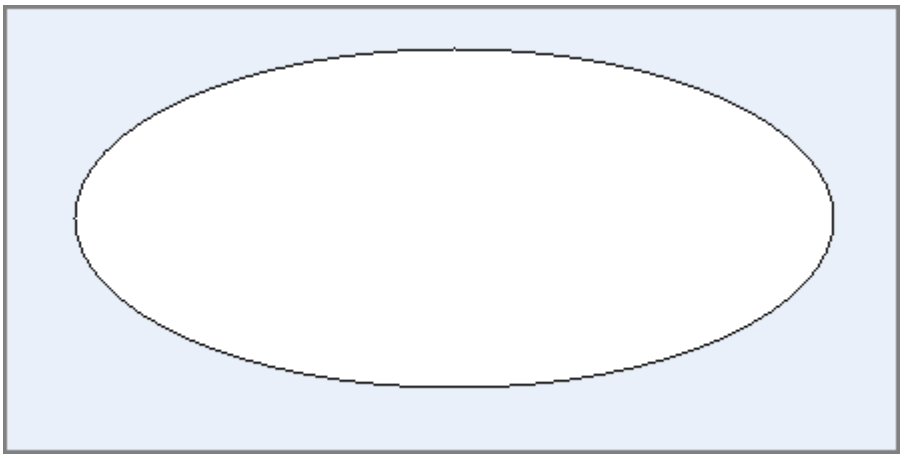
and Int16 types from "Variable View" to "Screen_1".



6. Perform the simulation test.

Click to perform simulation online. On the PLC side, click the Bool control to switch to "Screen_2". Enter 15 (greater than 10) in the Int16 control and switch to "Screen_2".





23.6.8 Establishing Label Communication and Reading Structure Array Tag Values

Case

- Create a label communication over the AC800 Tags protocol.
- Modify the structure index tag value of the grouped control to read the values of different structure array tags.

Purpose

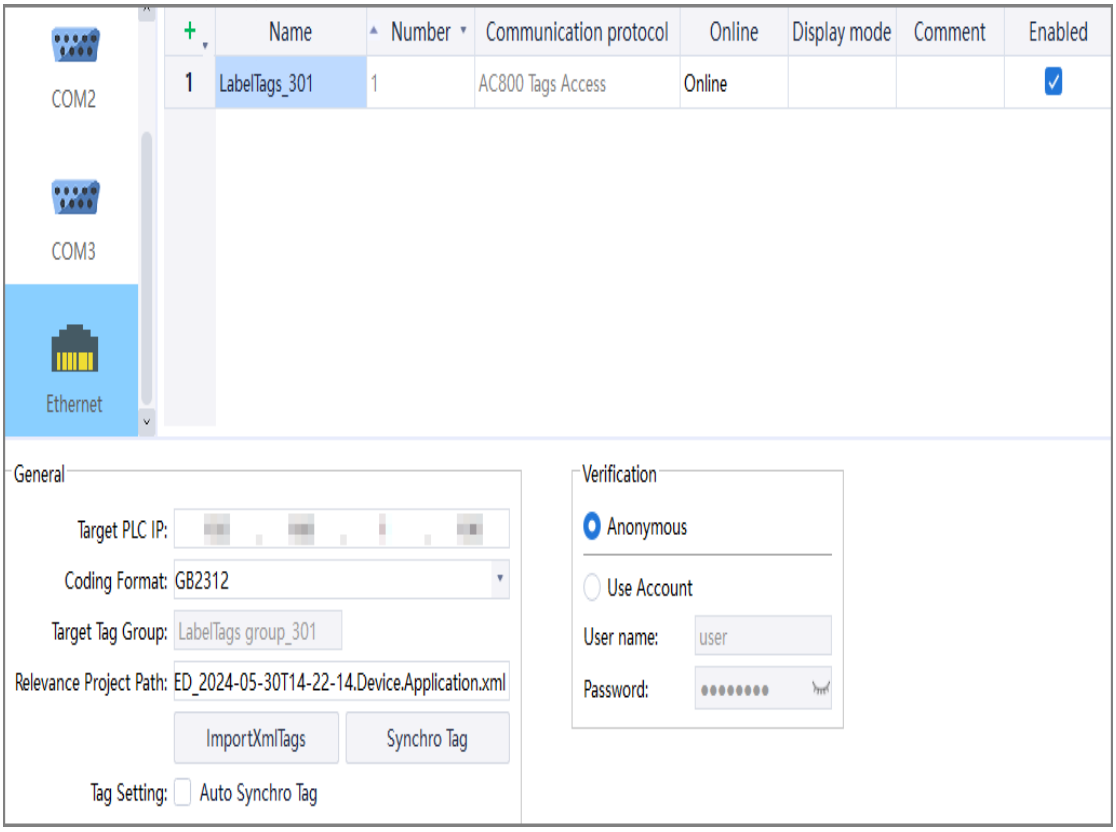
- Create a label communication over the AC800 Tags protocol.
- Modify the structure index tag value of the grouped control to read the values of different structure array tags.

Preconditions

The label tag XML file has been prepared.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a connection over the AC800 Tags protocol and import the label tag.
   a. Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, choose "Inovance" > "Inovance PLC TAG Series" and double-click "AC800 Tags Protocol" to create a label communication named "LabelTags_301".
   b. Click "ImportXmlTags" to import the label tag. In the "Tags Import Info" window displayed, click "yes" to view "LabelTags_301".



Name	Data type	Length	Array count	Address	Acquisition c...	Acquisition m...	Data log Id	Logging cycl...	...ogging acqu...
Application									
PLC_PRG									
newVar									
newVar[0,1]	String	26	1	newVar[0,1]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar[0,2]	String	26	1	newVar[0,2]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar[1,1]	String	26	1	newVar[1,1]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar[1,2]	String	26	1	newVar[1,2]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar[2,1]	String	26	1	newVar[2,1]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar[2,2]	String	26	1	newVar[2,2]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar1									
newVar1[0,1]	WString	52	1	newVar1[0,1]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar1[0,2]	WString	52	1	newVar1[0,2]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...
newVar1[1,1]	WString	52	1	newVar1[1,1]	100ms	Cyclic on use	<Undefined>	1s	Cyclic contin...

3. Create a structure and set the structure name and data type with those of "LabelTags_301".
   Choose "Communication" > "Tags" > "Struct" > "StructGroup_1", and double-click "Add Struct" to add a structure such as "Stru". Double-click "Stru" to add four structures.
   - In the "Name" column, select "newStruct", "newStruct1", "newStruct2", and "newStruct3" respectively.
   - In the "Data type" column, select "Bool", "Int16", "Float", and "Int16" respectively.

+	Name	Number	Data type	Length	Comment
1	newStruct	3	Int16	2	
2	newStruct1	4	Int16	2	
3	newStruct2	5	Int16	2	
4	newStruct3	6	Int16	2	

4. Create a structure tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag LW 0. Select "LabelTags_301" in the "Connection Id" column and "Stru" in the "Data type" column.

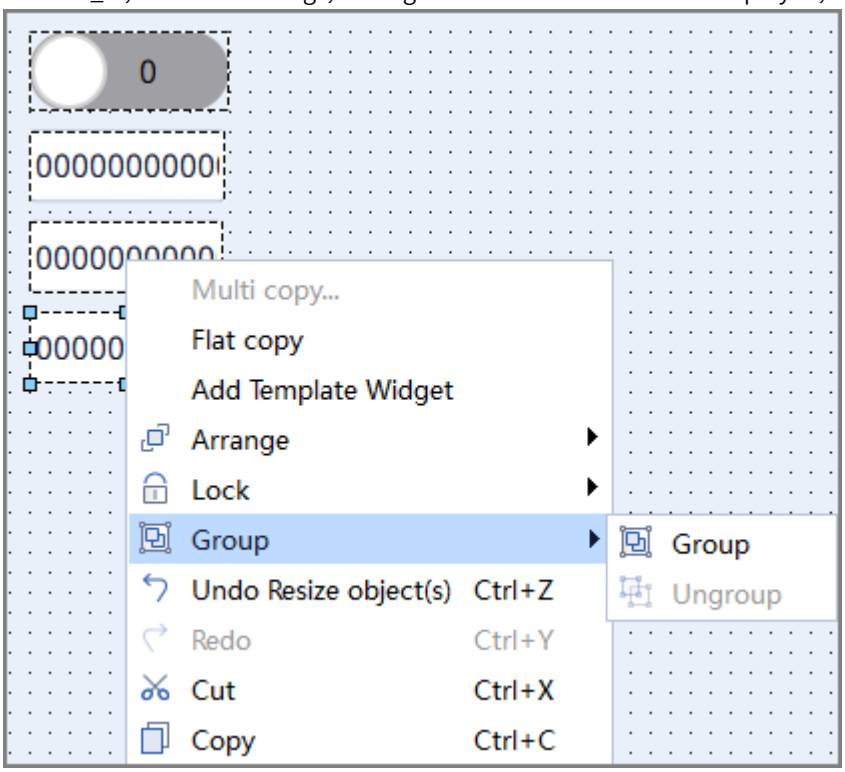
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	LabelTags_301	Stru	9	1	LW 0

5. Create an index tag.

   Choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, choose "Tag Index" > "16 Bit" and double-click "$INDEX_0" to add an index tag.

6. Add these tags into a group.

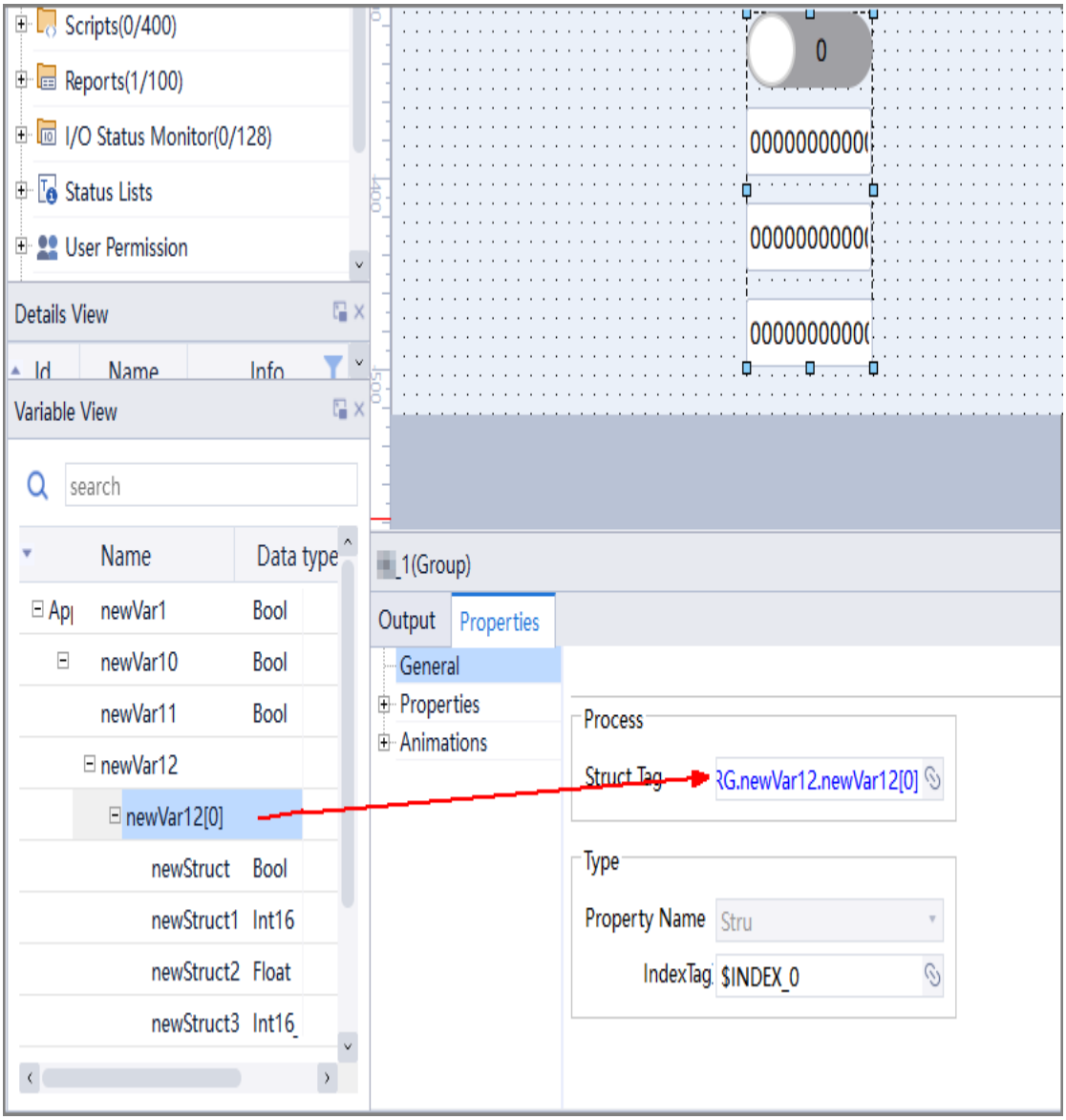
   Switch to "Screen_1". In the "Project" navigation tree on the left, click "Tag group_2". Drag tags "LW 0.newStruct", "LW 0.newStruct1", "LW 0.newStruct2", and "LW 0.newStruct3" from "Variable View" to "Screen_1", select all the tags, and right-click them. In the menu displayed, choose "Group" > "Group".



7. Associate the structure array with the index tags.

   a. In "Screen_1", select the objects you want add to the group. On the "Properties" tab page, click "General". In the "Project" navigation tree on the left, click "LabelTags_301". In the "Variable View" section, choose "Application" > "PLC_PRG" > "newVar12" > "newVar12[0]", drag the tag to "Struct Tag" in the "Process" section, to associate the tag with the structure array.

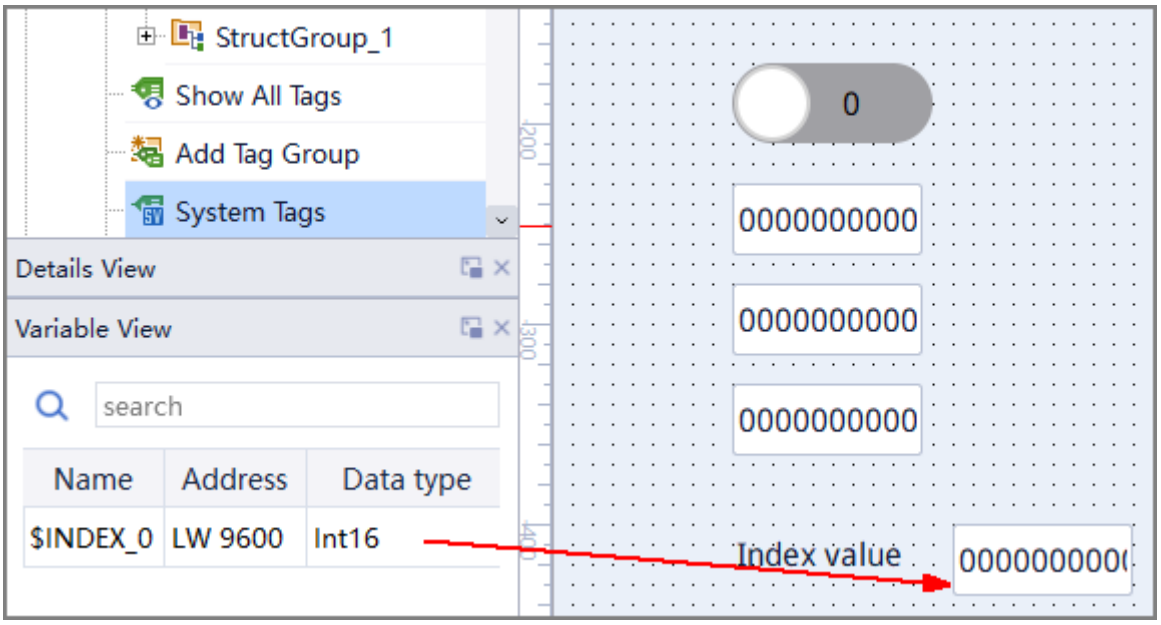
   b. In the "Type" section, select "$INDEX_0" in the "IndexTag" column.



8. Add an index tag to the screen.

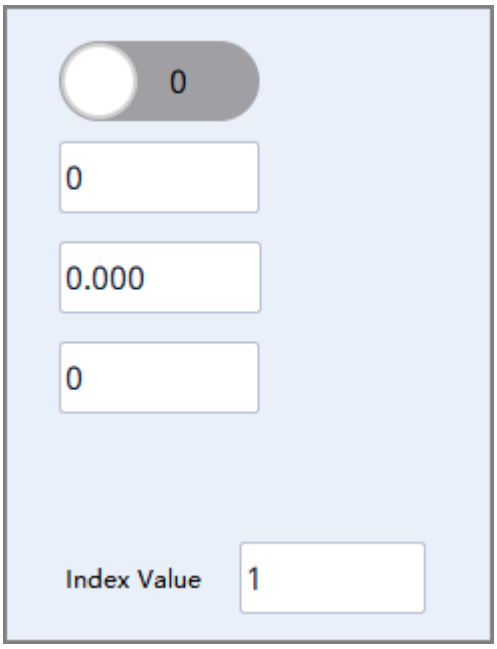
   In the "Project" navigation tree on the left, click "System Tags" and drag the tag "$INDEX_0" from "Variable

View" to "Screen_1".



9. Perform the simulation test.

Click to perform simulation offline. Then, you can modify the index value to enable controls in the group to access the structure array with the corresponding offset sub-index.



23.7 Batch Operation

23.7.1 Changing Fonts in Batch

Case

Change fonts in batch by text field.

Purpose

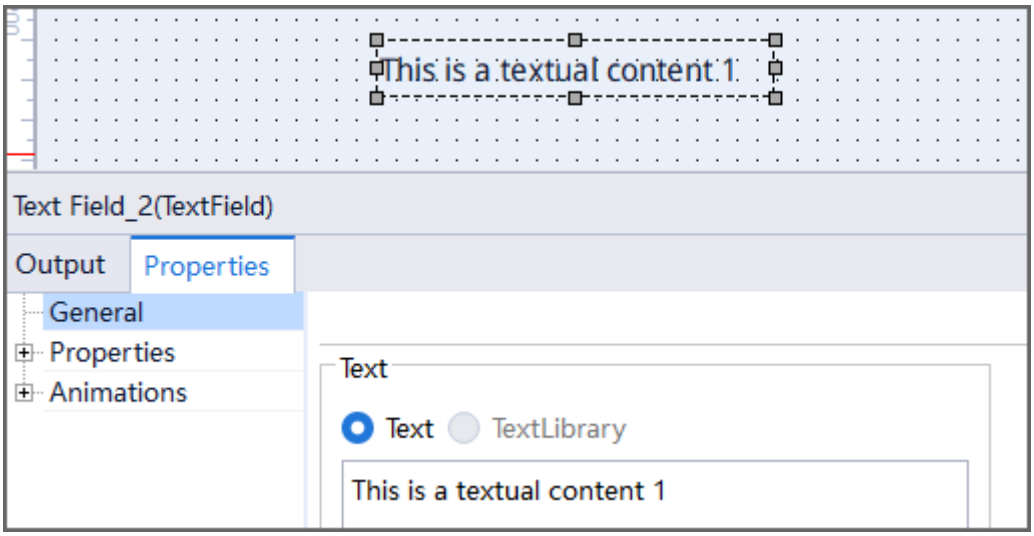
Change fonts in batch by text field.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

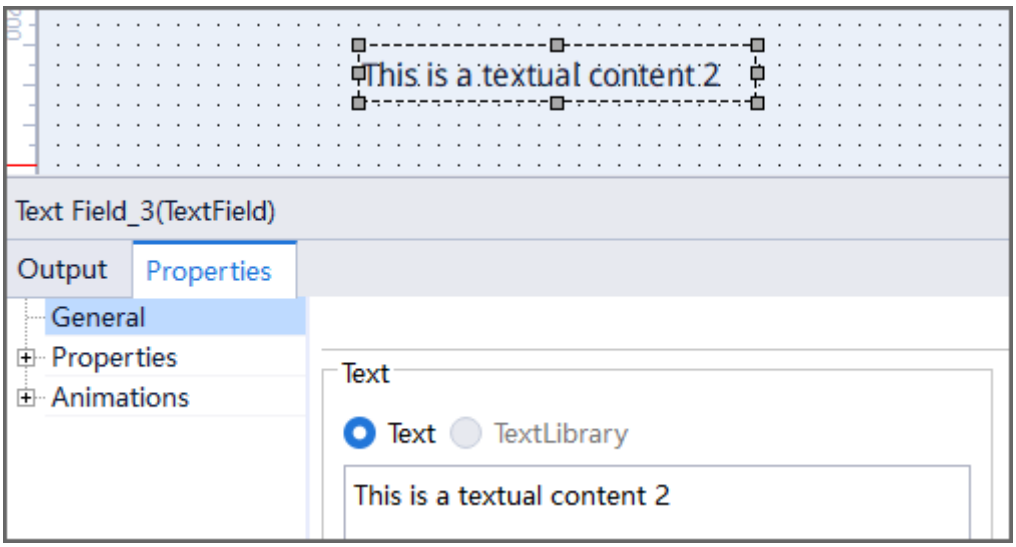
2. Add a text field to "Screen_1".

   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag the text field to "Screen_1", and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "This is a textual content 1".



3. Add a text field to "Screen_2".

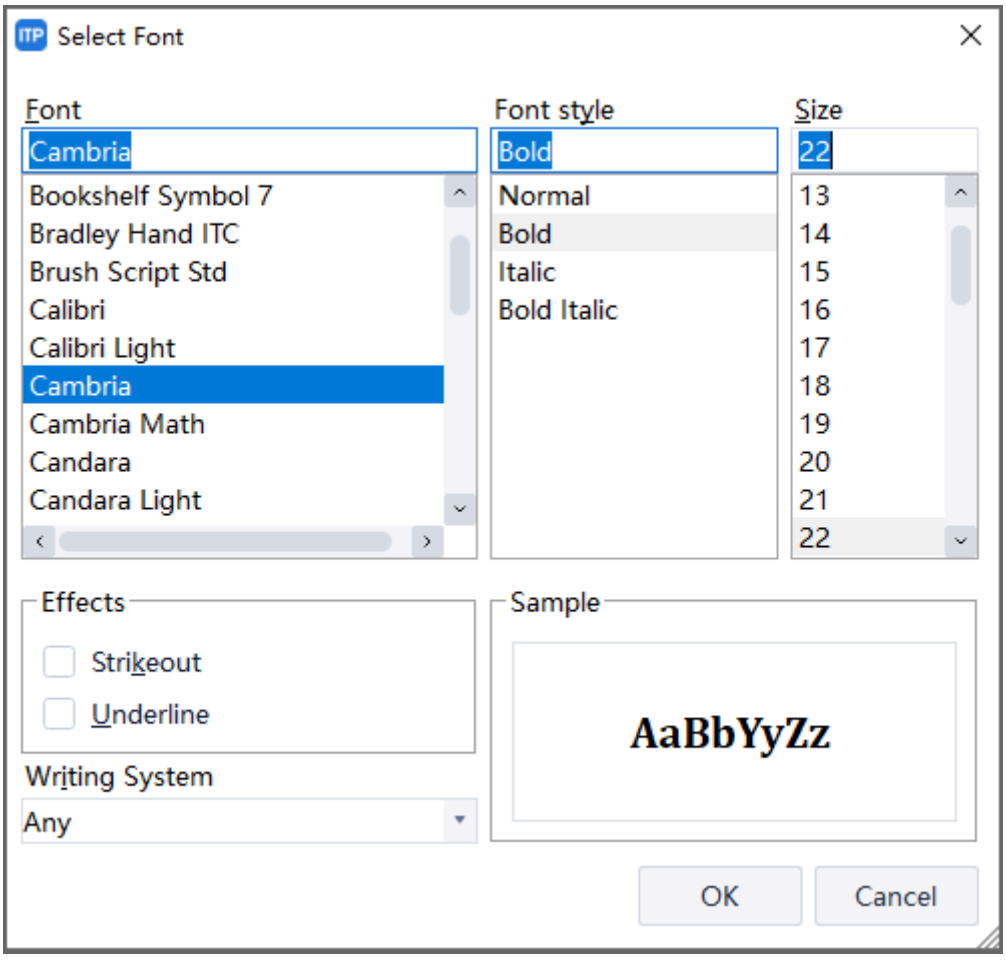
   Click "Screens", and then click "Add Screen" to create a screen, such as "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag the text field to "Screen_2", and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "This is a textual content 2".



4. Modify the font.

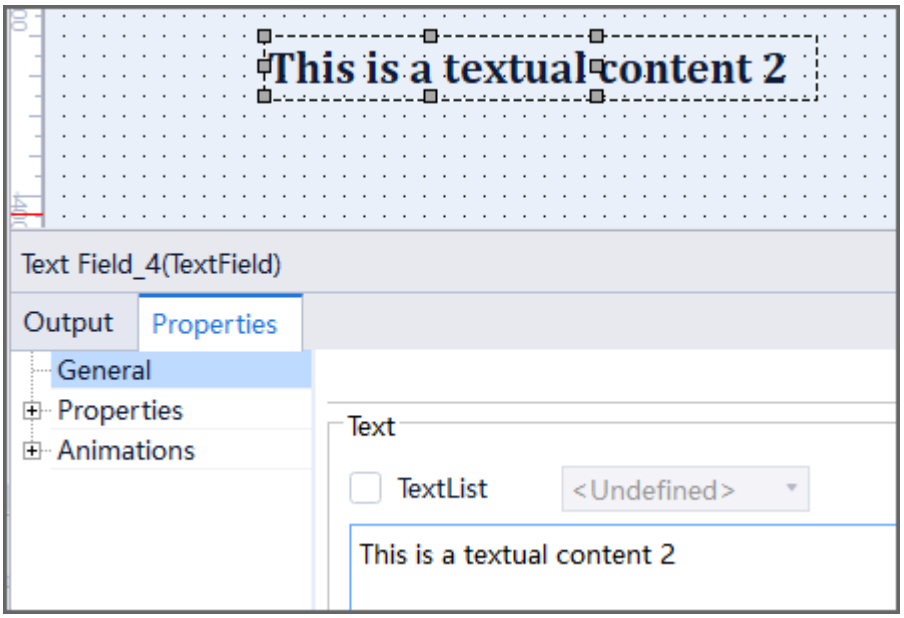
   Click "Resource", and double-click "Lang and Font". In the "Font" column whose "Name" is "English(UnitedStates)", click ... . In the "Select Font" pop-up window, select "Arial Black" from the drop-down list of "Font", select "Bold" from the drop-down list of "Font style", select "22" from the drop-

down list of "Size", and then click "OK".



5. The following figure shows the final effect.





23.8 HMI Settings

23.8.1 Scheduler

23.8.1.1 Switching Screens by Scheduler

Case

Switch screens by the scheduler.

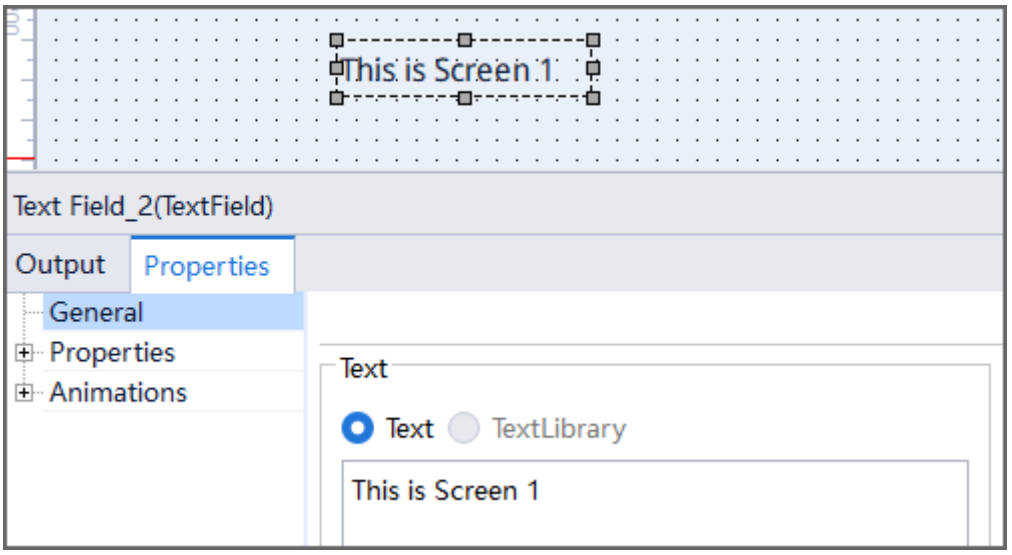
Purpose

Switch screens by the scheduler.

Procedure

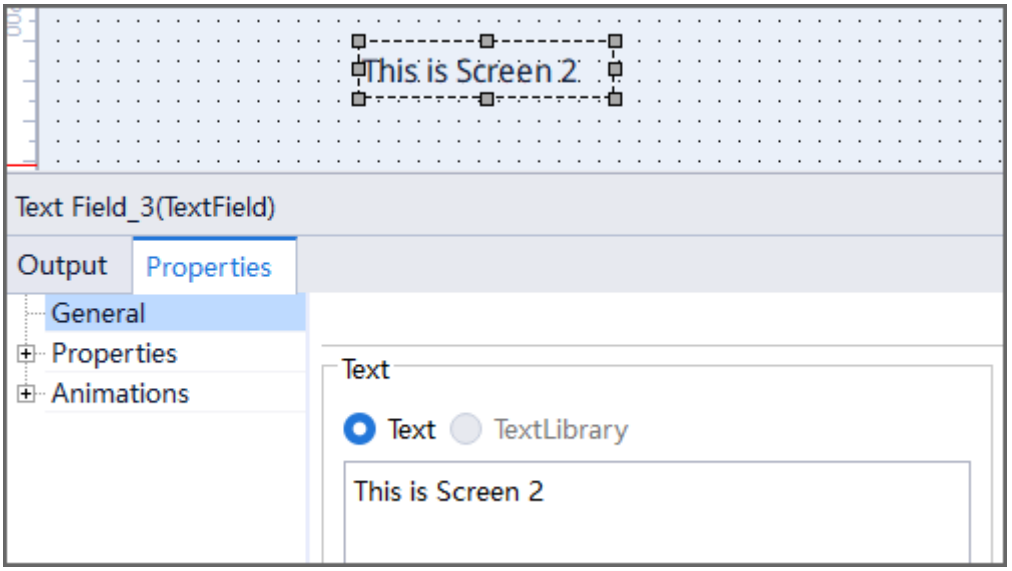
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add a text field to "Screen_1".
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag the text field to "Screen_1", and select "Text". On the "Properties" tab page, click "General". In the

"Text" section, modify the text content to "This is Picture 1".



3. Add a text field to "Screen_2".

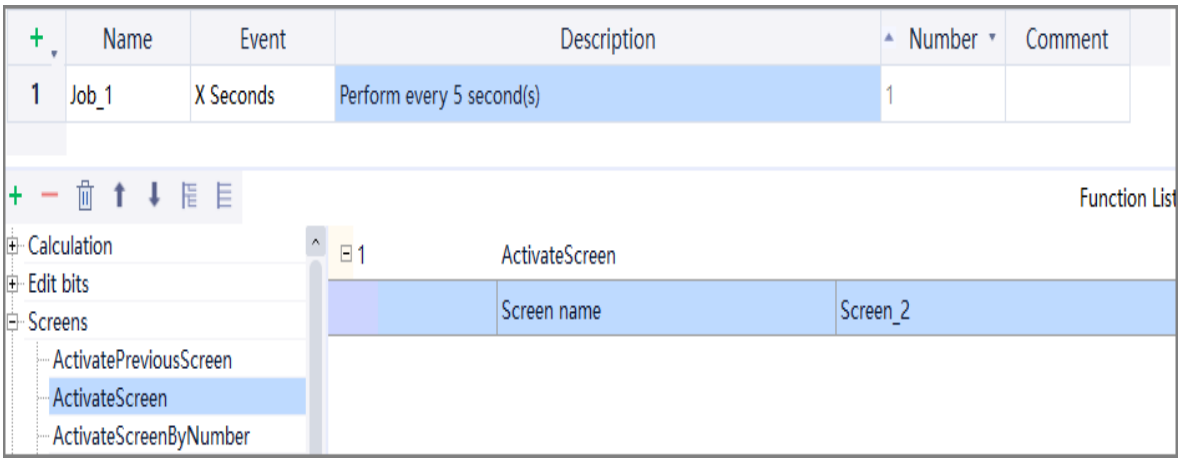
   Click "Screens", and then double-click "Add Screen" to create a screen, such as "Screen_2". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag the text field to "Screen_2", and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "This is Picture 2".



4. Configure the scheduler.

   Click "HMI Settings", and then double-click "Scheduler" to add a scheduler. Select "X Seconds" in the "Event" column and select "Perform every 5 second(s)" in the "Description" column. On the "Properties" tab page, click "Screens", and then double-click "ActivateScreen" to add the function and select

"Screen_2" for "Screen name".



5. Perform the simulation test.

Click  to perform simulation offline.





23.8.2 Project Version

23.8.2.1 Backing Up a Project

Case

Back up a project. Up to 16 versions can be backed up.

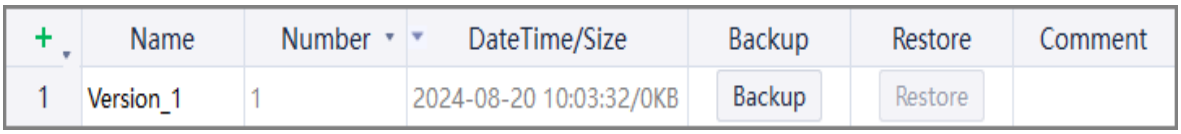
Purpose

Back up a project.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Back up the project.
   Click "HMI Settings". Double-click "Project Version" and add one version. Click "Backup". In the pop-up

window, click "Yes" to back up the project.



Parameter	Description
Name	The name of the project version
Number	The number of the project version
DateTime/Size	The creation time and size of the project version
Backup	Click "Backup" to back up the current project.
Restore	Click "Restore" to restore the backup version of the current project.
Comment	The comment of the backup project

23.8.2.2 Upgrading HMI Program by a USB Drive or an SD Card

Case

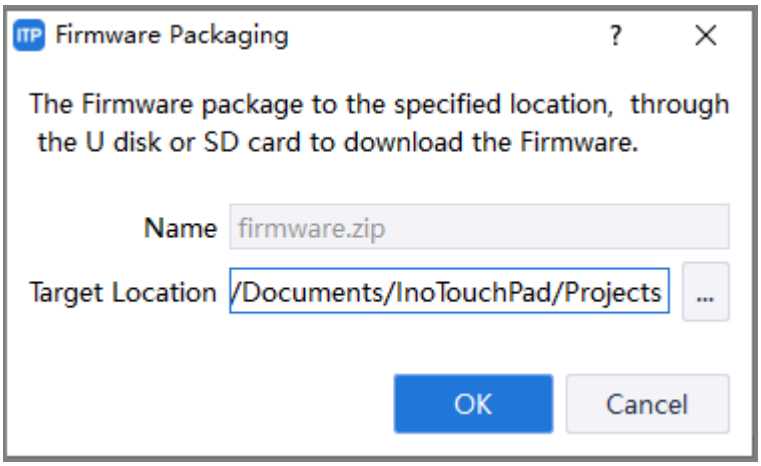
Upgrade the firmware by using a USB drive or an SD card.

Purpose

Upgrade the firmware by using a USB drive or an SD card.

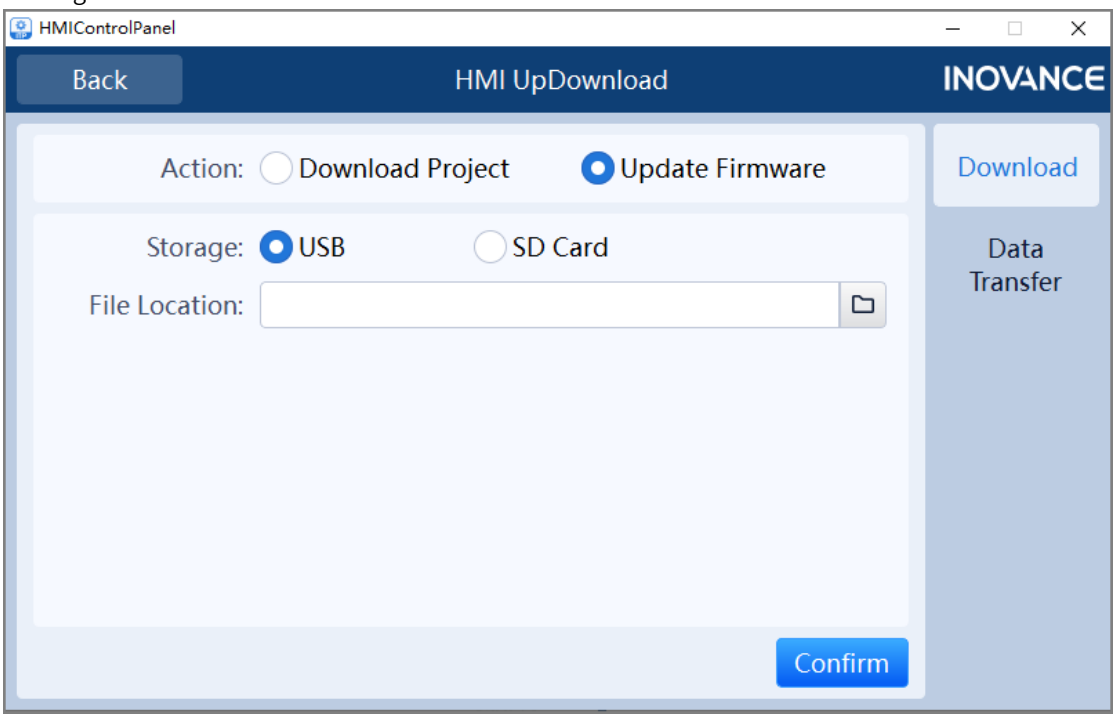
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Package the firmware.
   Choose "Compiler" > "Pack firmware". In the "Firmware Packaging" dialog box that pops up, set "Target Location" and click "OK".



3. Copy the firmware file to a USB drive or an SD card (the file system of the USB drive or SD card should be in FAT32 format: Right-click on the USB drive or SD card, and choose "Properties" > "NTFS").
4. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".

5. On the "HMI UpDownload" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".
   - "Action": Select "Update Firmware".
   - "Storage": Select "USB".



> **Note**
>
> - If the firmware version is upgraded, the firmware will be updated directly.
> - If the firmware version is downgraded, a message will be displayed, asking whether to downgrade the version since the project will be deleted upon downgrade. Click "Yes" to update the firmware. "File Location": Select the firmware.zip firmware upgrade file.

23.8.3 Project Settings

23.8.3.1 Setting the Screen Saver and Backlight

Case

Set the screen saver and backlight.

Purpose

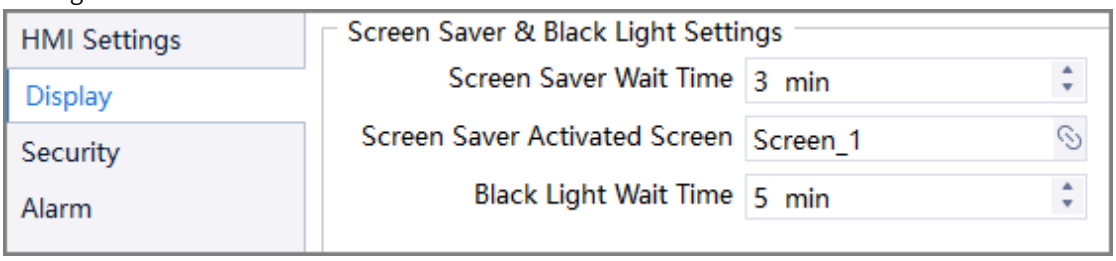
Set the screen saver and backlight.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Set the screen saver time, screen saver activated screen, and backlight time.
   Click "HMI Settings". Double-click "Project Settings", and click "Display". In the "Screen Saver & Back Light

Settings" section, set the screen saver time, screen saver activated screen, and backlight time.

- Set "Screen Saver Wait Time" to 3 minutes.
- Set "Screen Save Activated Screen" to "Screen_1". When "Screen Saver Wait Time" is set to 0 minute, you cannot select any screen.
- Set "Back Light Wait Time" to 5 minutes. When "Back Light Wait Time" is set to 0 minute, the backlight is never turned off.



23.8.3.2 Setting the Start Screen and Start Language

Case

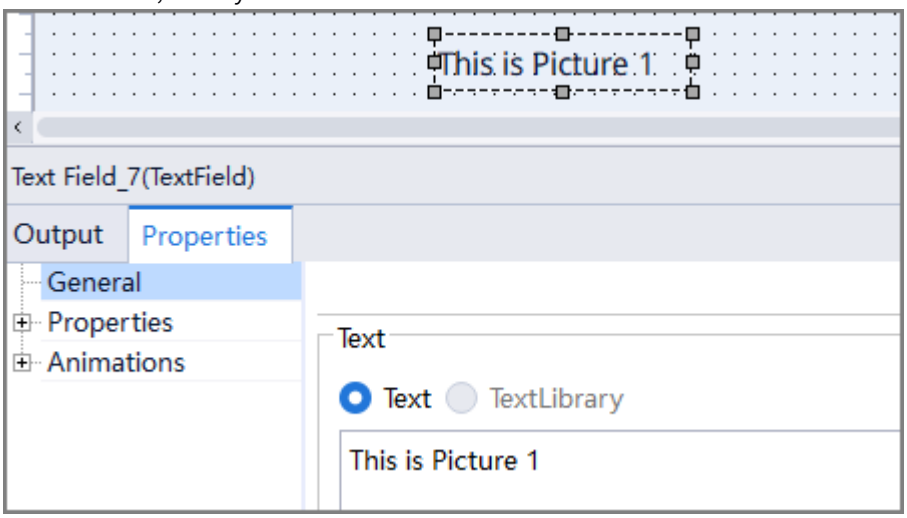
Set the start screen and start language.

Purpose

Set the start screen and start language.

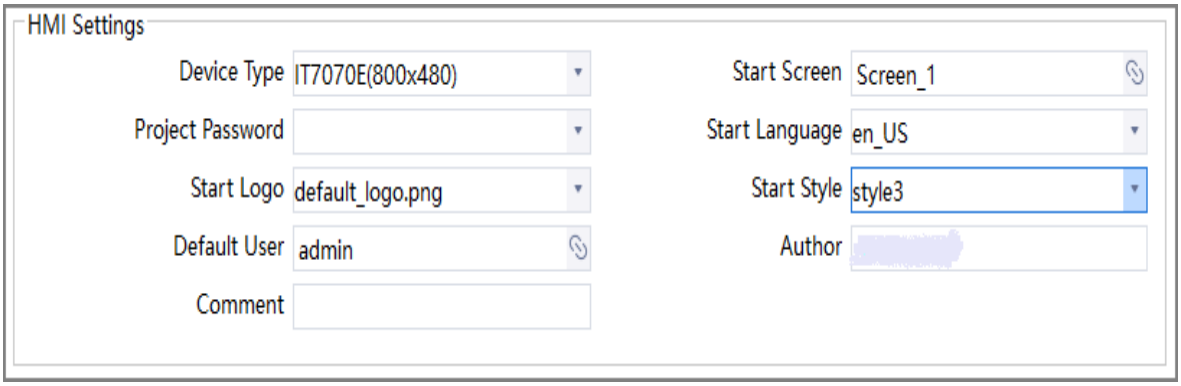
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Configure the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", drag the text field to "Screen_1", and select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "This is Picture 1".



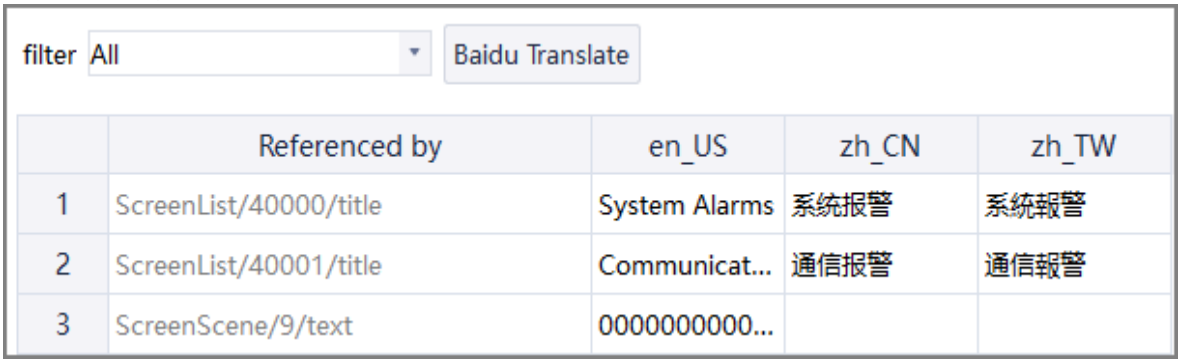
3. Set the start screen and start language.
   Click "HMI Settings", and double-click "Project Settings". On the "HMI Settings" tab page, select "Screen_1" for "Start Screen", and select "en_US'" for "Start Language". Other supported languages are zh_CN and

zh_TW.



4. Set internationalization.

   Click "Resource", double-click "Internationalization", select "Screens", and set "This is picture 1" corresponding to "This is picture 1" in the "en_US" column.



5. Perform the simulation test.

   Click  to perform simulation offline.



23.8.3.3 Changing the Password

Case

You can:

- Change local passwords.
- Change project passwords.
- Change upload passwords.
- Change download passwords.

Purpose

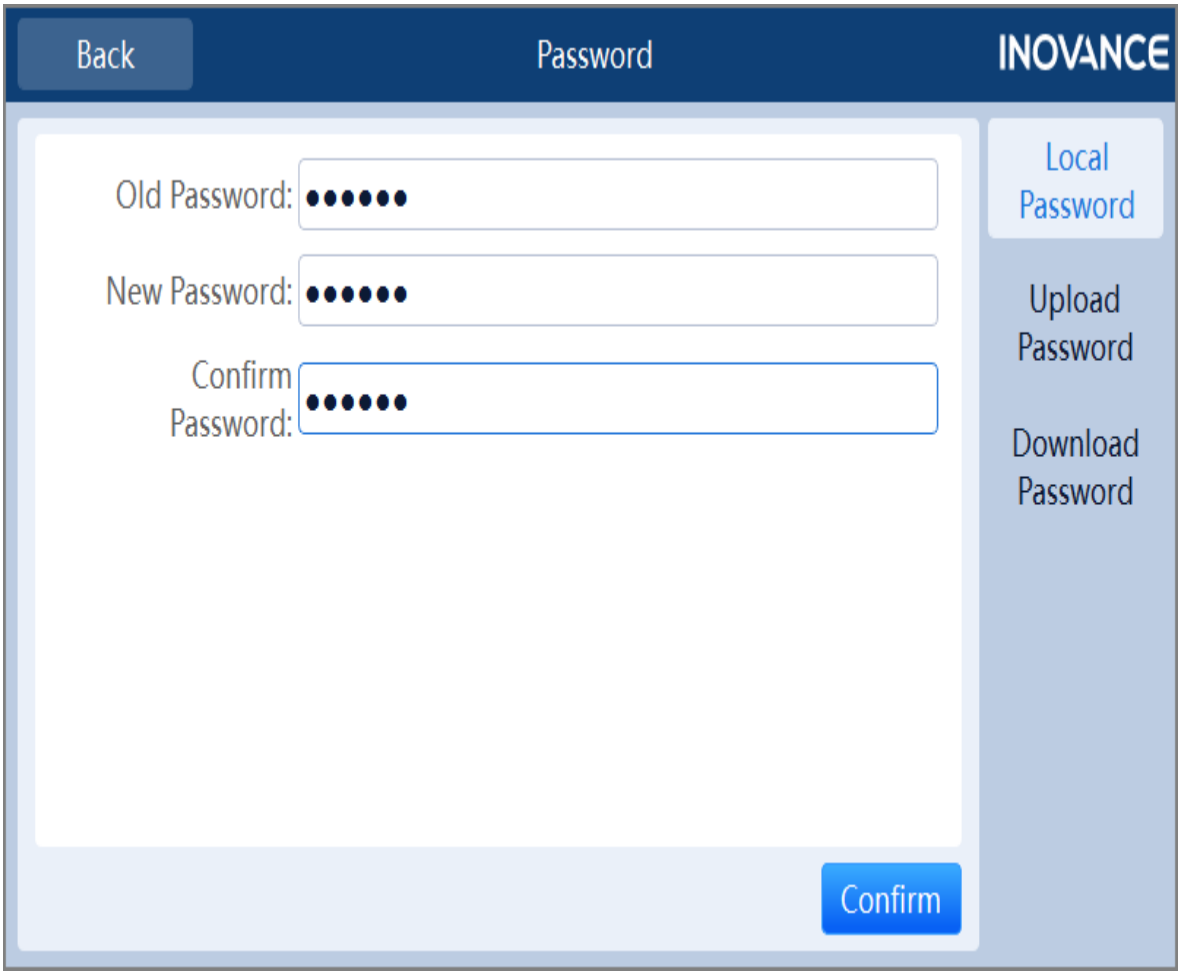
To learn how to change IT7000 local passwords, project passwords, upload passwords, and download passwords

- "Local Password": The password used to log in to the control panel. The default password is 111111.
- "Project Password": By default, no password is required when you open a project. After you set the project password, you need to enter the correct project password to open the project each time.
- "Upload Password": By default, no password is required when you upload the HMI program. After you set the upload password, you need to enter the correct upload password to upload the HMI program each time.
- "Download Password": By default, no password is required when you download the HMI program. After you set the download password, you need to enter the correct download password to download the HMI program each time.

Procedure

Change the local password, upload password, and download password on the control panel.

1. Power on the HMI, enter the control panel as instructed, and choose "SysSetting" > "Password".
2. Change the password.
   Access the "Local Password", "Upload Password", and "Download" tab pages respective, set "Old Password", "New Password", and "Confirm password", and click "Confirm".

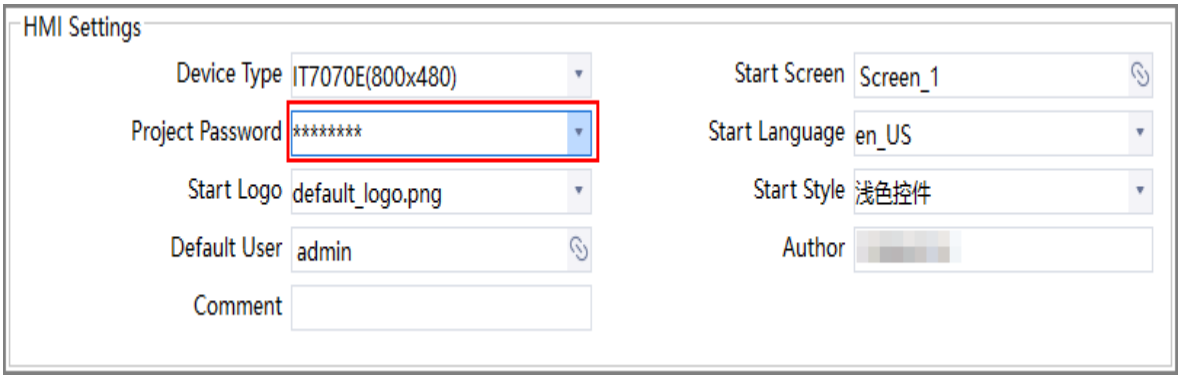


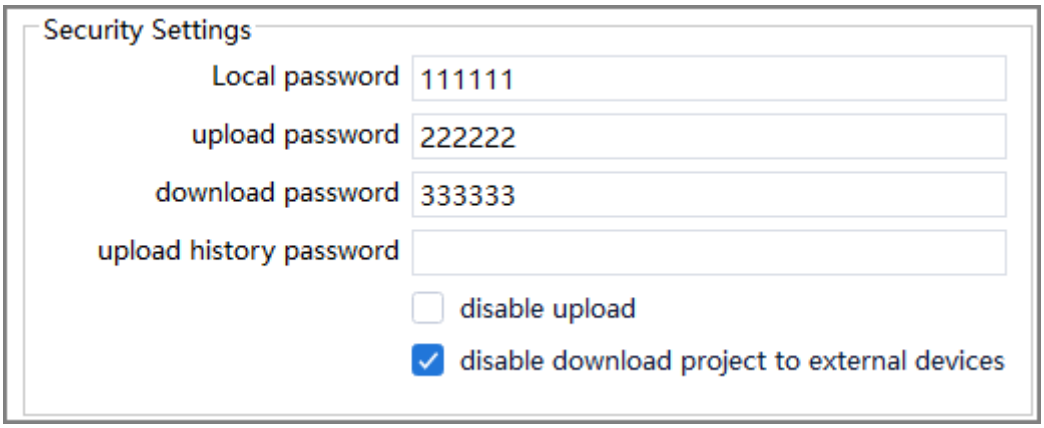
Use InoTouchPad to change "Local password", "upload password", "download password", and "Project Password".

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

2. Change the password.

   Click "HMI Settings", double-click "Project Settings", and click "HMI Settings". In the "HMI Settings" section, set "Project Password" and click "Security". In the "Security Settings" section, set "Local password", "upload password", and "download password".





23.8.4 Control Panel

23.8.4.1 Viewing Firmware Version and Upgrading Firmware

Case

View the firmware version and upgrade the firmware.

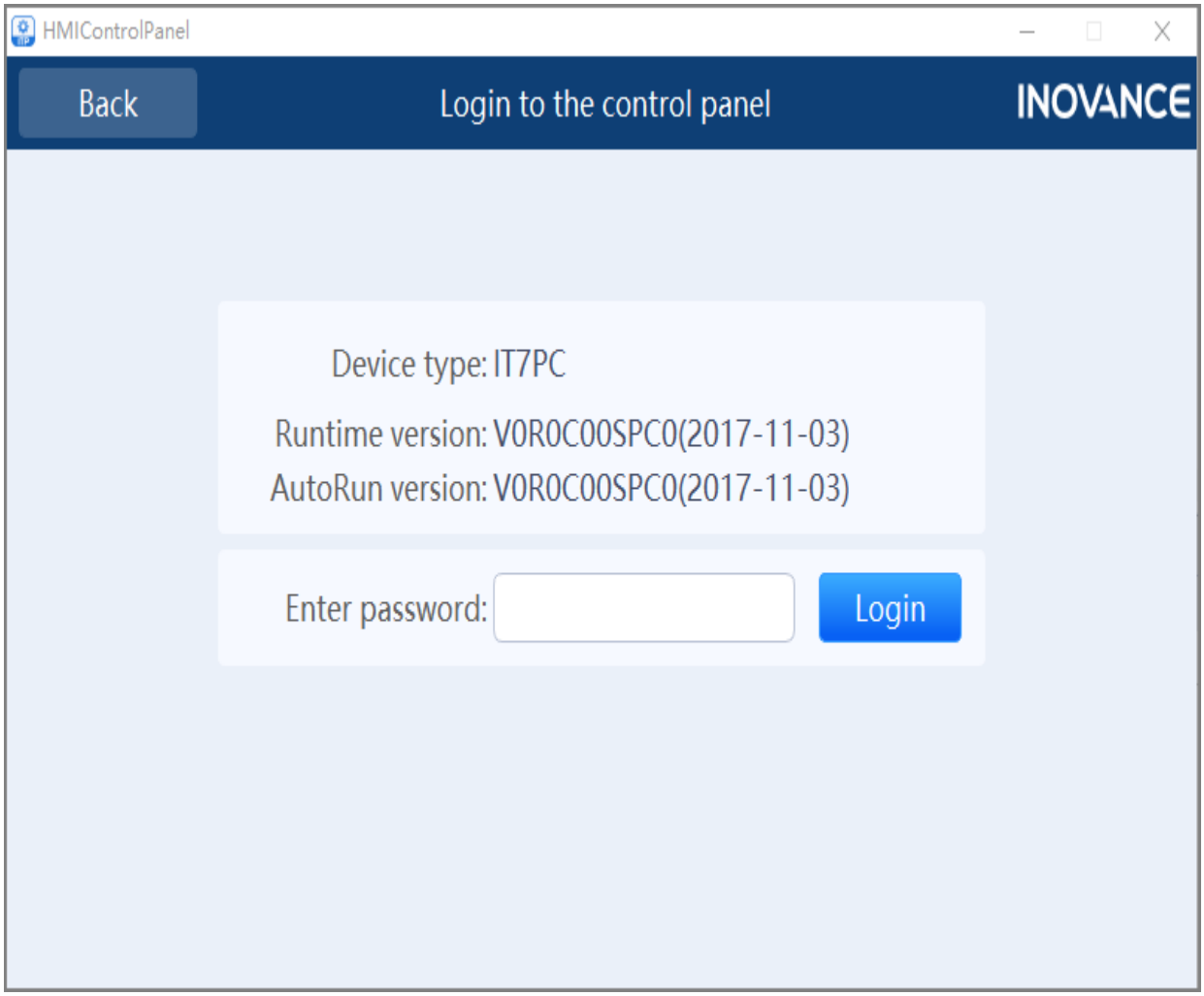
Purpose

View the firmware version and upgrade the firmware.

Procedure

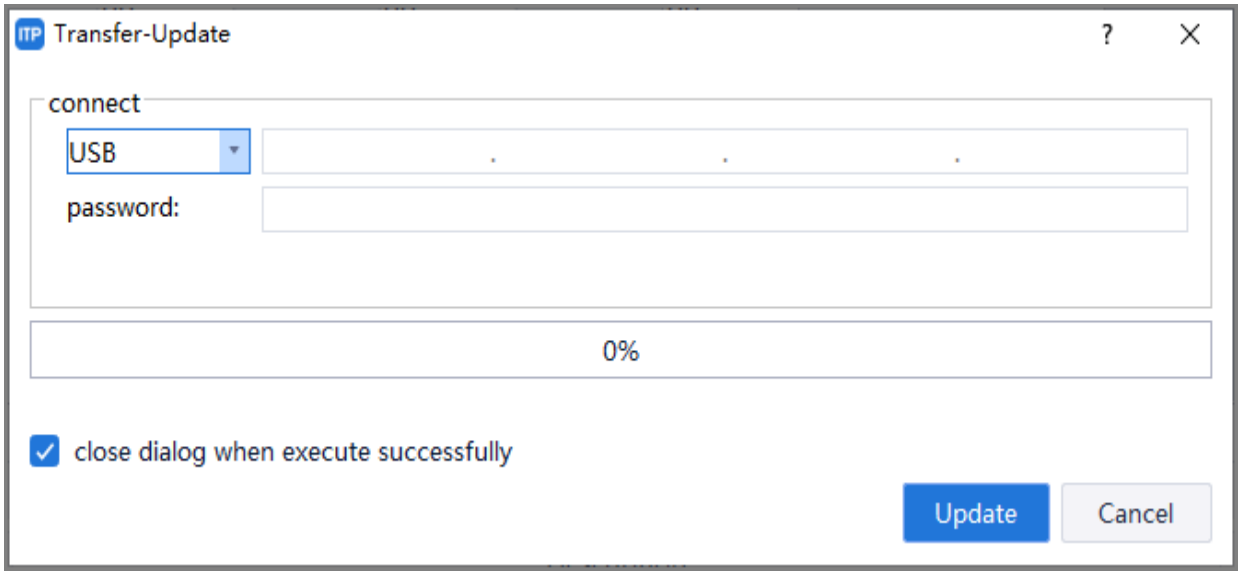
Viewing the firmware version

After the IT7000 touchscreen is powered on, press and hold the screen to enter the background and then view the runtime version.



Upgrading the firmware in InoTouchPad

In the menu bar, choose "Compiler" > "update firmware" or click  . In the pop-up window "Transfer-Update", click "Update".



23.9 Permission Management

23.9.1 Management of User Login Permission

Case

"User View" is an editing window for managing users in the HMI. Users with "management" permissions can manage all users in "User View", while other restricted users can only manage themselves.

Based on this case, you will learn how to:

- Configure and use the user view in the HMI.
- Configure user login/logout system functions.
- Apply user management and permission settings.

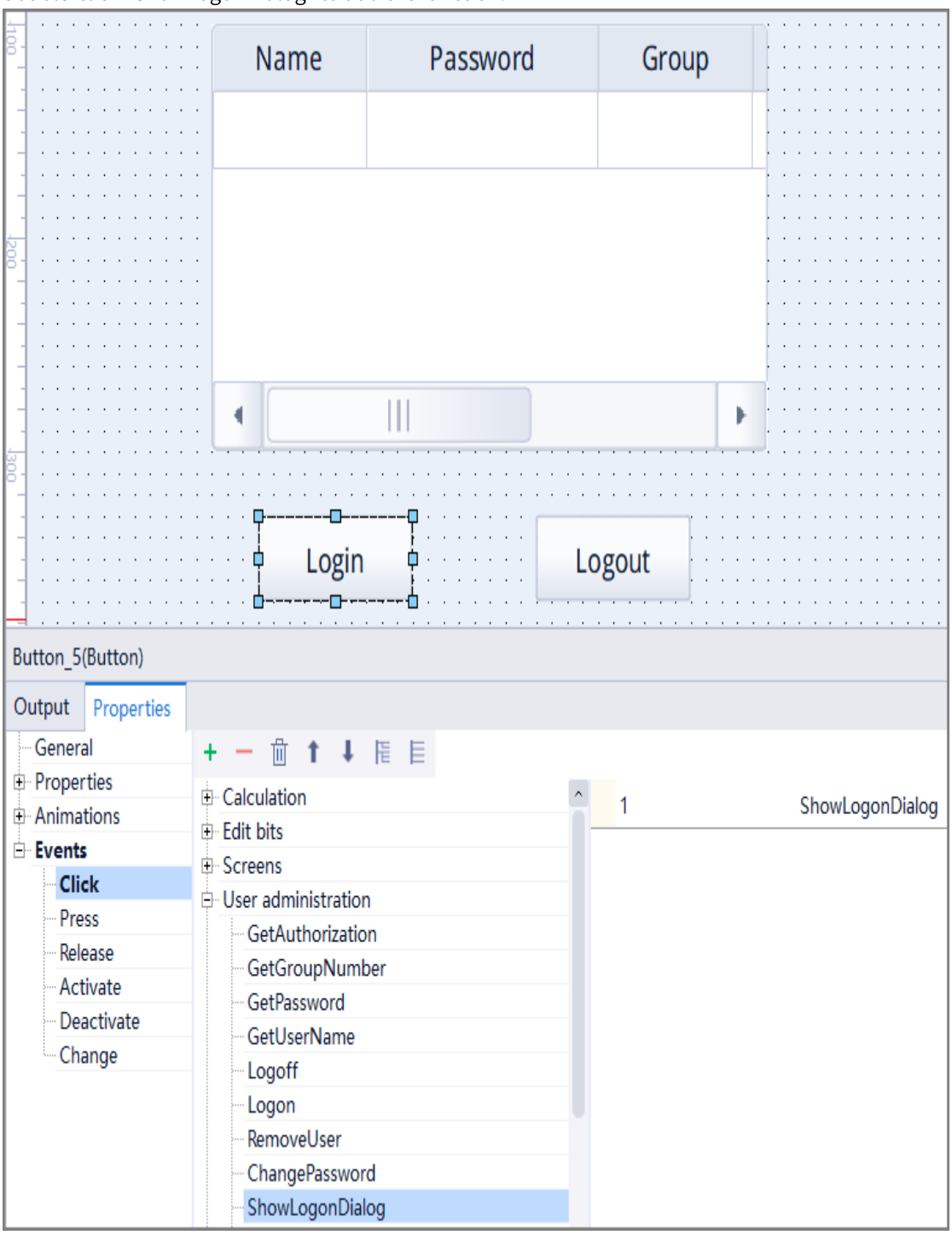
Purpose

To learn to use the IT7000 user login permissions

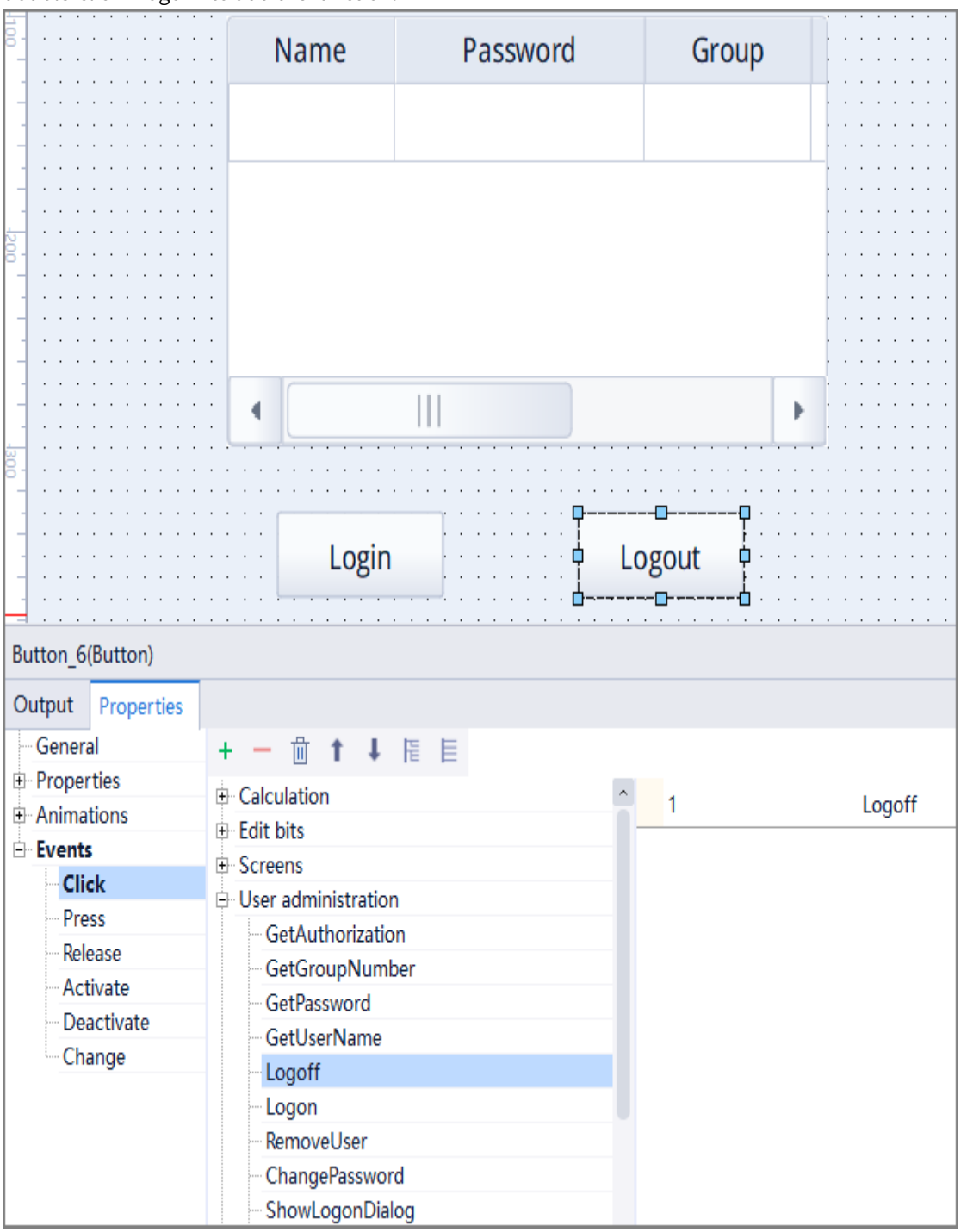
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a user management view to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Production Management" > "User Management" and drag it to "Screen_1".
3. Add a button to the screen.
   a. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the button to "Screen_1" to add two buttons. Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Logon" and "Logoff" respectively.

b. Click "Logon". On the "Properties" tab page, choose "Events" > "Click" > "User administration", and double-click "ShowLogonDialog" to add the function.

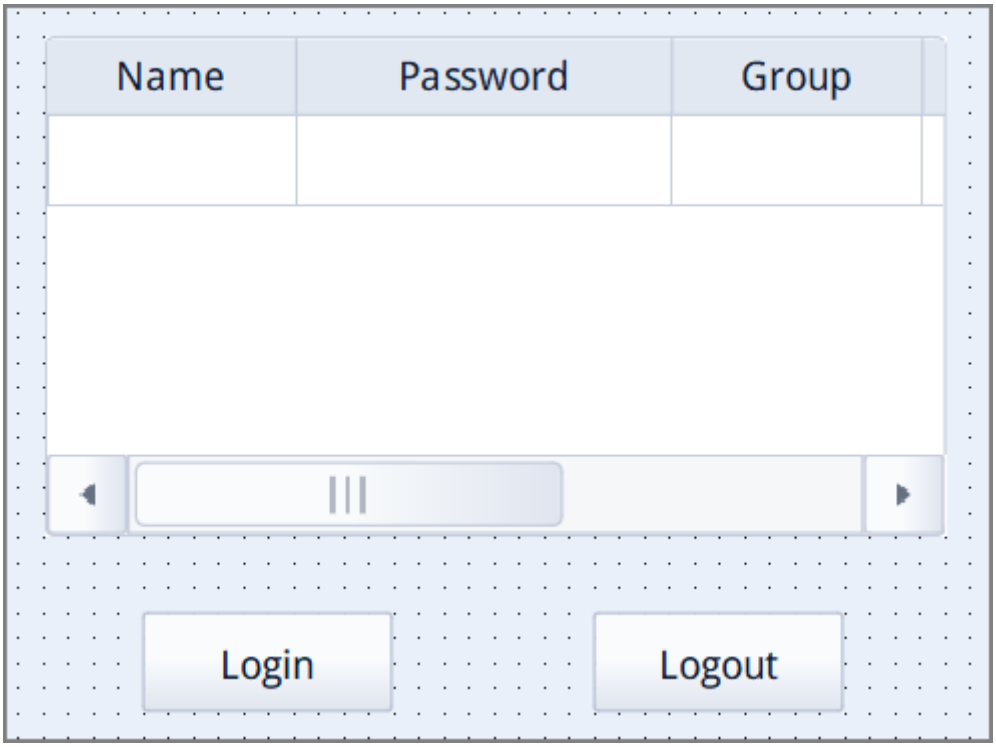


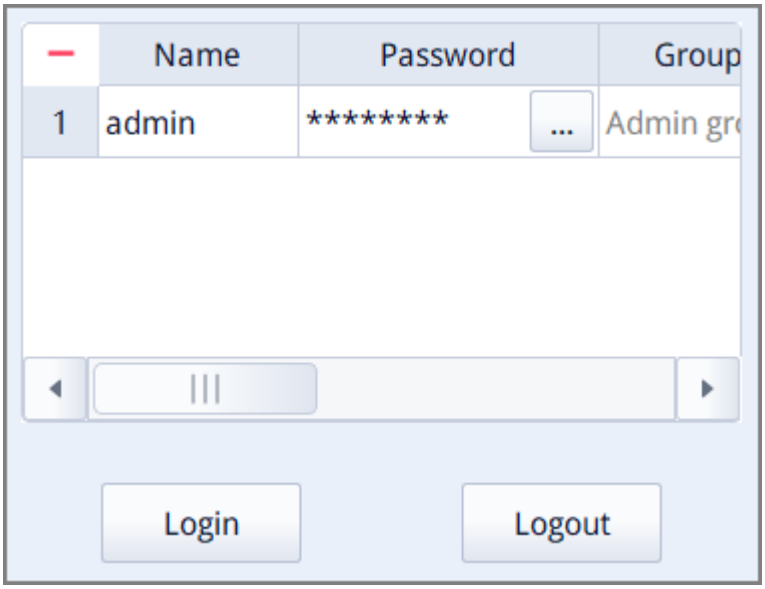
c. Click "Logoff". On the "Properties" tab page, choose "Events" > "Click" > "User administration", and double-click "Logoff" to add the function.



4. Perform the simulation test.

Click  to perform simulation offline. Click "Logon". Set "User" to "admin" and "Password" to "111111", and click "OK".



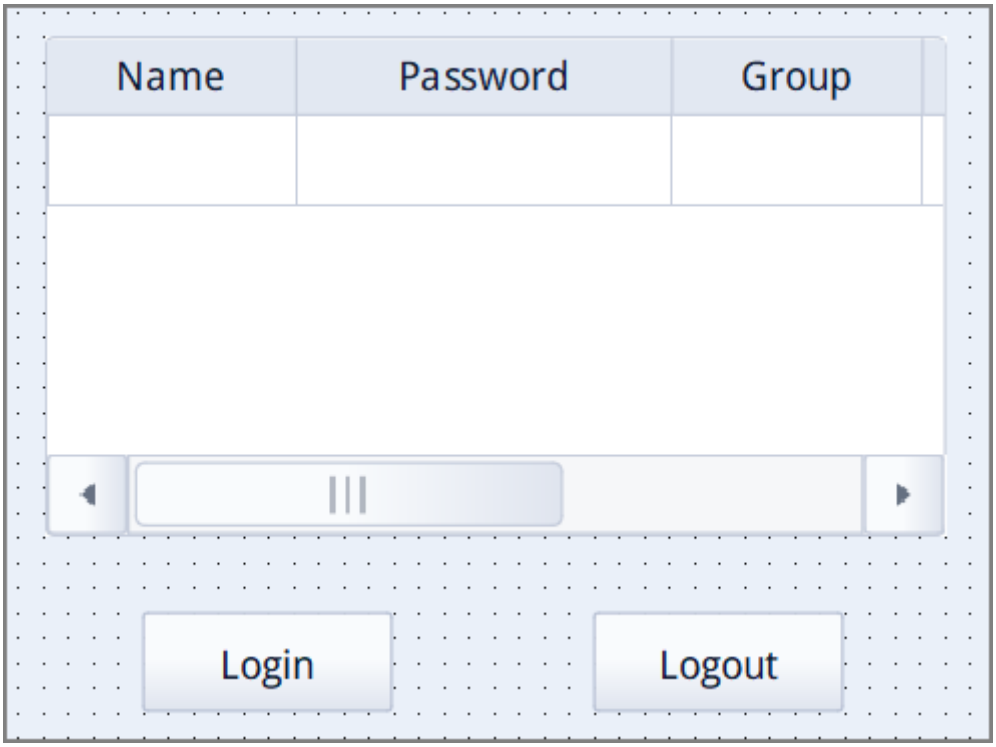


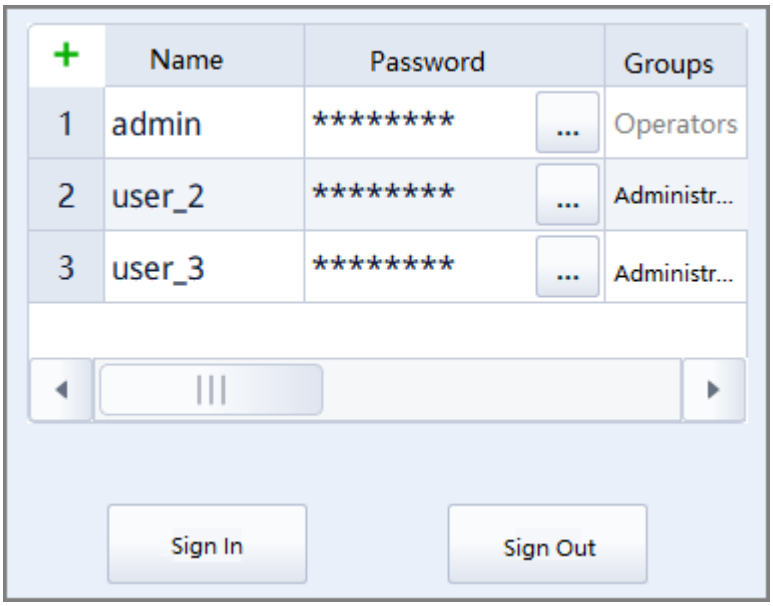
5. Stop the simulation test. Click "User Permission" and double-click "Users" to add two users.

+	Number	Name	Display name	Password	Logoff Time(min)	Comment	User grade	Password changeable
1	1	admin	admin	********	5		0	No
2	2	user_2	user_2	********	5		20	Yes
3	3	user_3	user_3	********	5		20	Yes

6. Perform the simulation test.

   Click  to perform simulation offline. After a user with the administrator permission logs in, all user information will be displayed. Click "Logon". Set "User" to "admin" and "Password" to "111111", and click "OK".

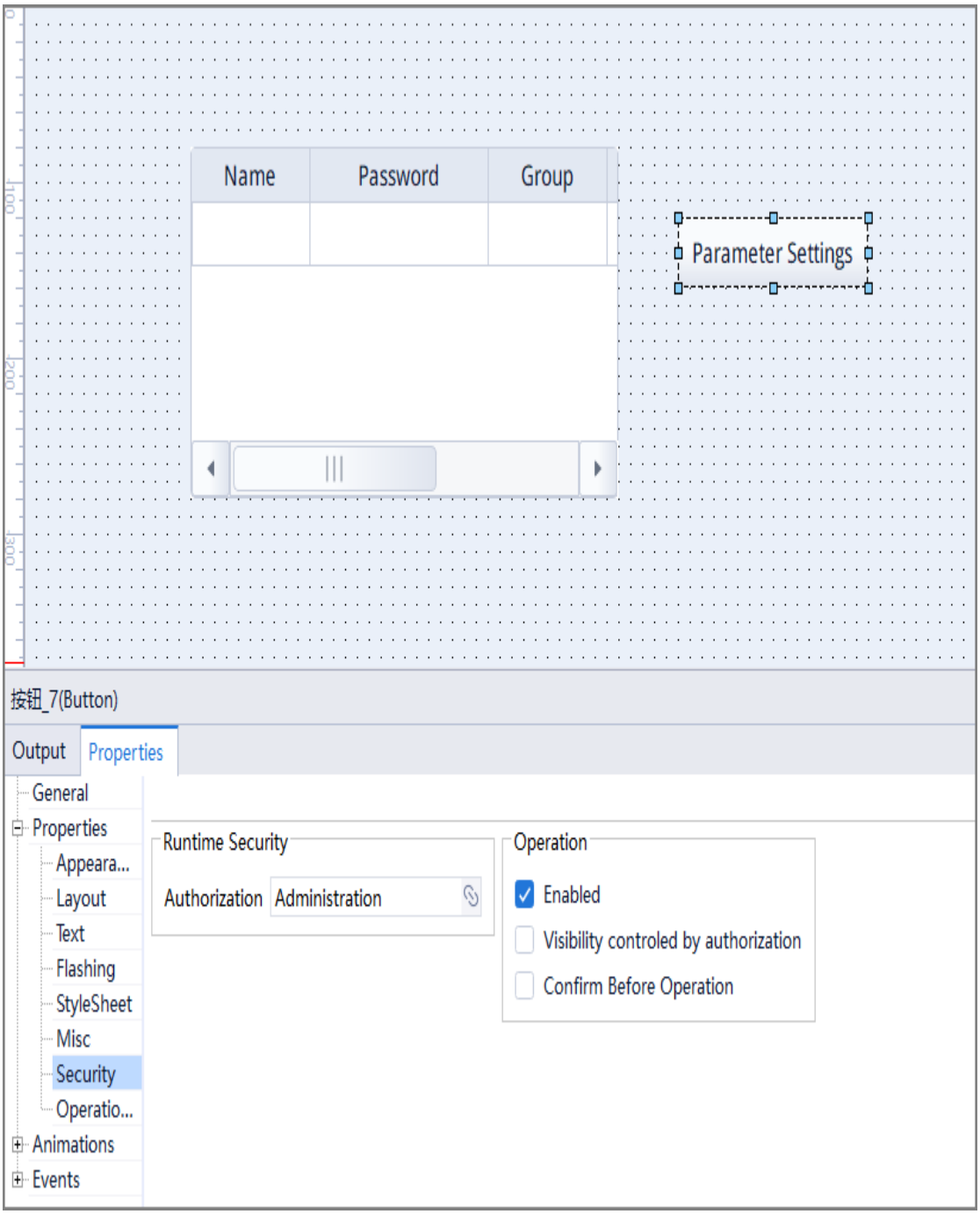




7. Stop the simulation test. Add buttons, text fields, and numeric IO fields to a screen.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Button" and drag the control to "Screen_1"; choose "Drawing Tools" > "Text Field" and drag the field to "Screen_1"; choose "Control & Display" > "Number IO Field" and drag the field to "Screen_1".

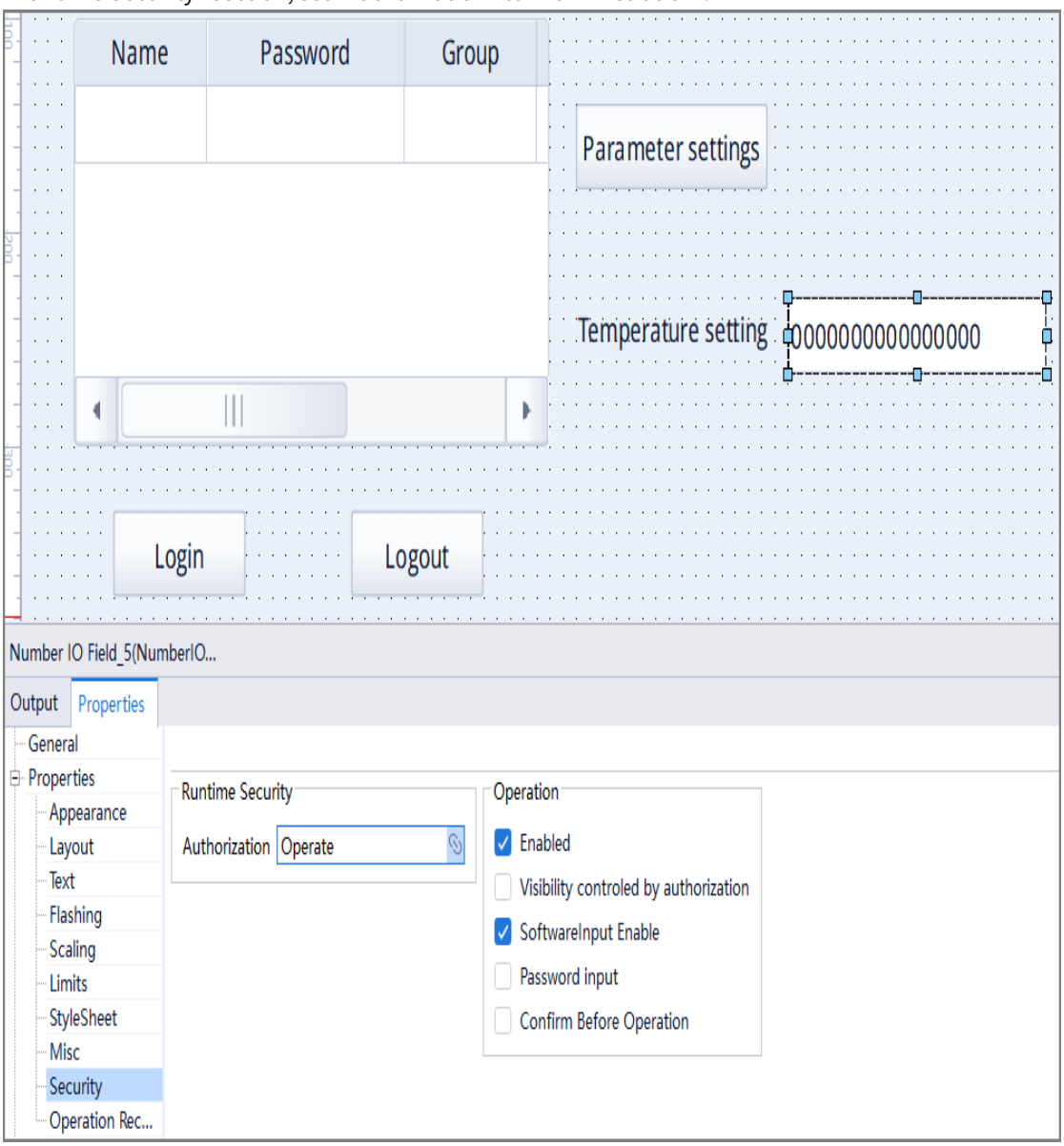
   b. Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Parameter Settings". Choose "Properties" > "Security". In the "Runtime Security" section,

set "Authorization" to "Administration".



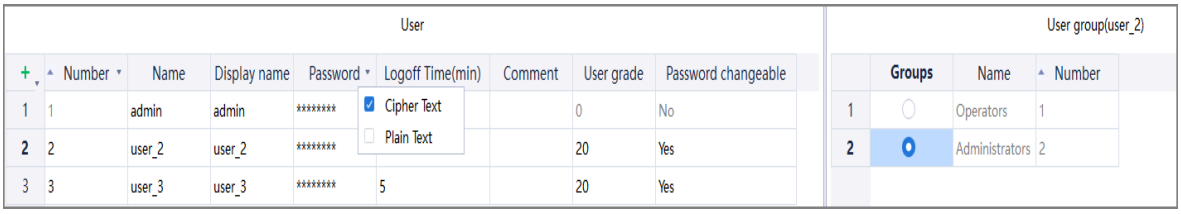
c. Click "Text". On the "Properties" tab page, click "General". In the "Text" section, change the text content to "Temperature setting".

d. Select ".Number IO Field" On the "Properties" tab page, choose "Properties" > "Security". In the "Runtime Security" section, set "Authorization" to "Administration".



8. Allocate permissions for users.

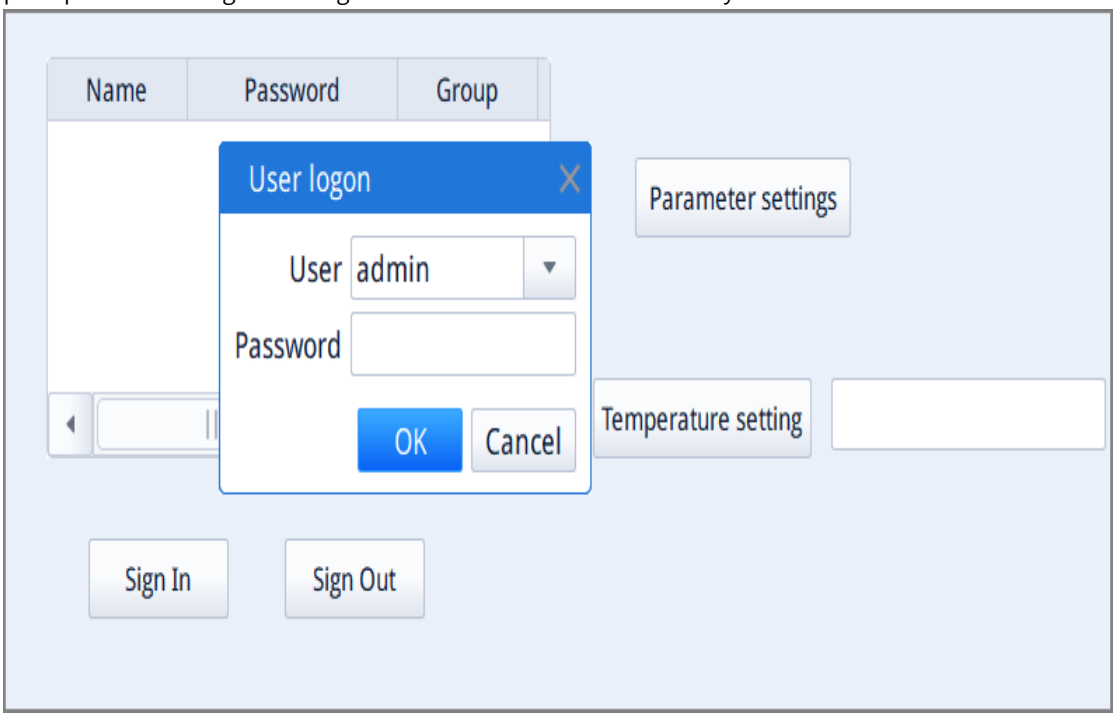
Click "User Permission" and double-click "Users". Select "user_2" and select "Administrators" in the "Groups" column to set user_2 as the administrator. Click  next to "Password" and select "Cipher Text" or "Plain Text". The password is displayed as 111111 in both modes.



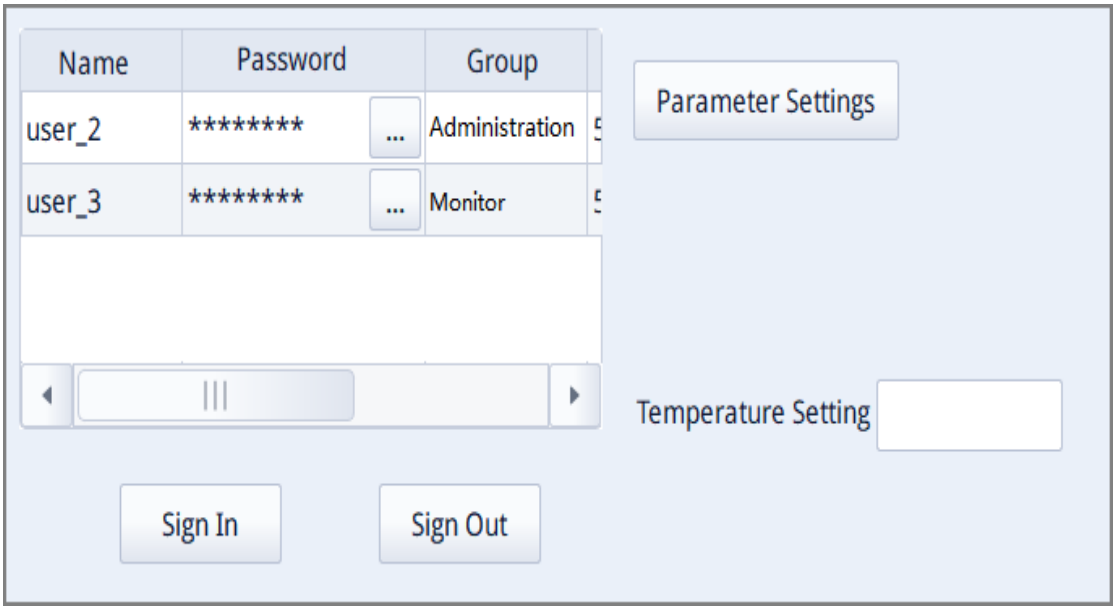
9. Perform the simulation test.

Click  to perform simulation offline.

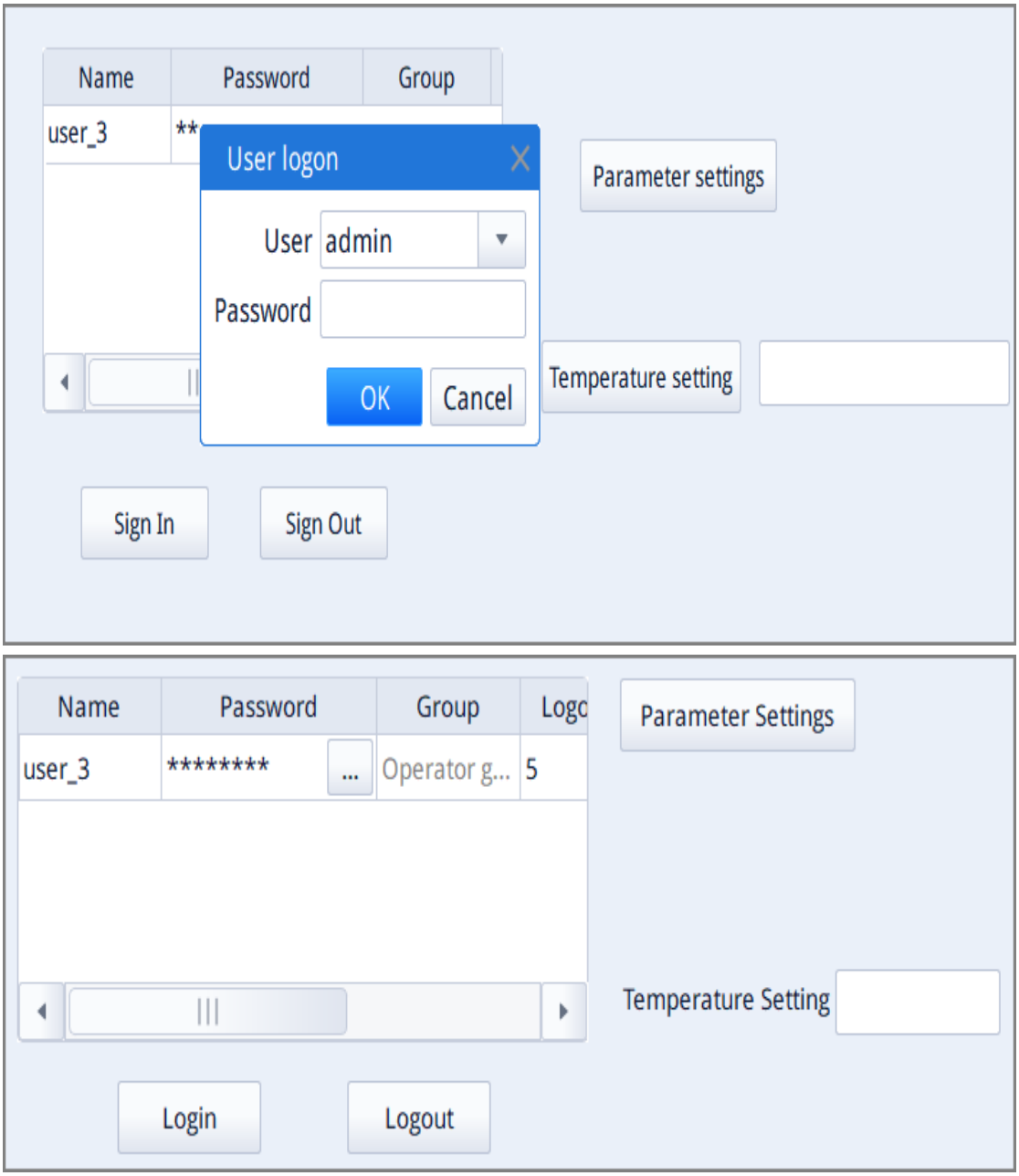
a. Before login, if you click the "Parameter Settings" and "Number IO Field" controls., the system will prompt the "User logon" dialog box to control the access authority.



b. Click "Sign In". Set "User" to "user_2" and "Password" to "111111", and click "OK". If you click the "Parameter Settings" and "Number IO Field" controls, the system will not prompt the "User logon" dialog box.



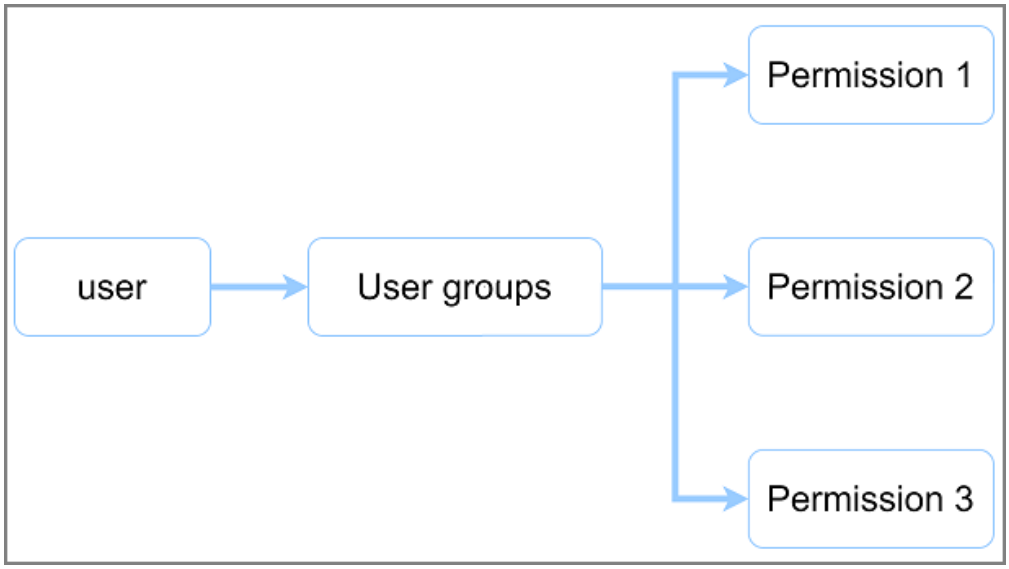
c. Click "Sign In" and then "Sign Out" again. Set "User" to "user_3" and "Password" to "111111", and click "OK". If you click the "Parameter Settings" control, the system will prompt the "User logon" dialog box. If you click the "Number IO Field" control, the system will not prompt the "User logon" dialog box.



23.9.2 Login with User Permission to Control Button

Case

The basic principle of the user management is to assign permissions to user groups and assign user groups to users.



- Log in with user permission to control the button control.
- Learn how to add users and management groups.
- Learn how to modify user information and management group permissions online.
- Learn how to set security login permissions of the control.

Purpose

- To learn the basic principle of user management
- To learn user management elements and basic settings
- To master application of the user view in user management
- To master how to set security permissions of the control

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add group permissions and groups.
   Click "User Permission" and double-click "Group". In the "Group authorizations" section, add the "System maintenance" permission. In the "Group" section, add the "Workshop Director" and "System maintenance" groups. When you select the "Workshop Director" group, select the "Administration", "Monitor", and "Operate" permissions in the "Group authorizations" section. When you select the "System maintenance" group, select the "Operate" and "System maintenance" permissions in the "Group authorizations" section.

Group

	Name	Display name	Number	Comment
1	Operators	Operator group	1	
2	Administrators	Administrators group	2	
3	Workshop Director	Workshop Director	3	
4	System maintenance	System maintenance	4	

Group authorizations(System ...

		Name	Number	Comment
1	☐	Administration	1	
2	☐	Monitor	2	
3	☑	Operate	3	
4	☑	System maintenance	4	

3. Add users.
   Click "User Permission" and double-click "User". In the "User" section, add "Workshop Director", "System

Maintainer A", and "Operator A". When you select the "Workshop Director" user, select "Workshop Director" in the "User group" section. When you select the "System Maintainer A" user, select "System maintenance" in the "User group" section. When you select the "Operator A" user, select "Operators" in the "User group" section.

User

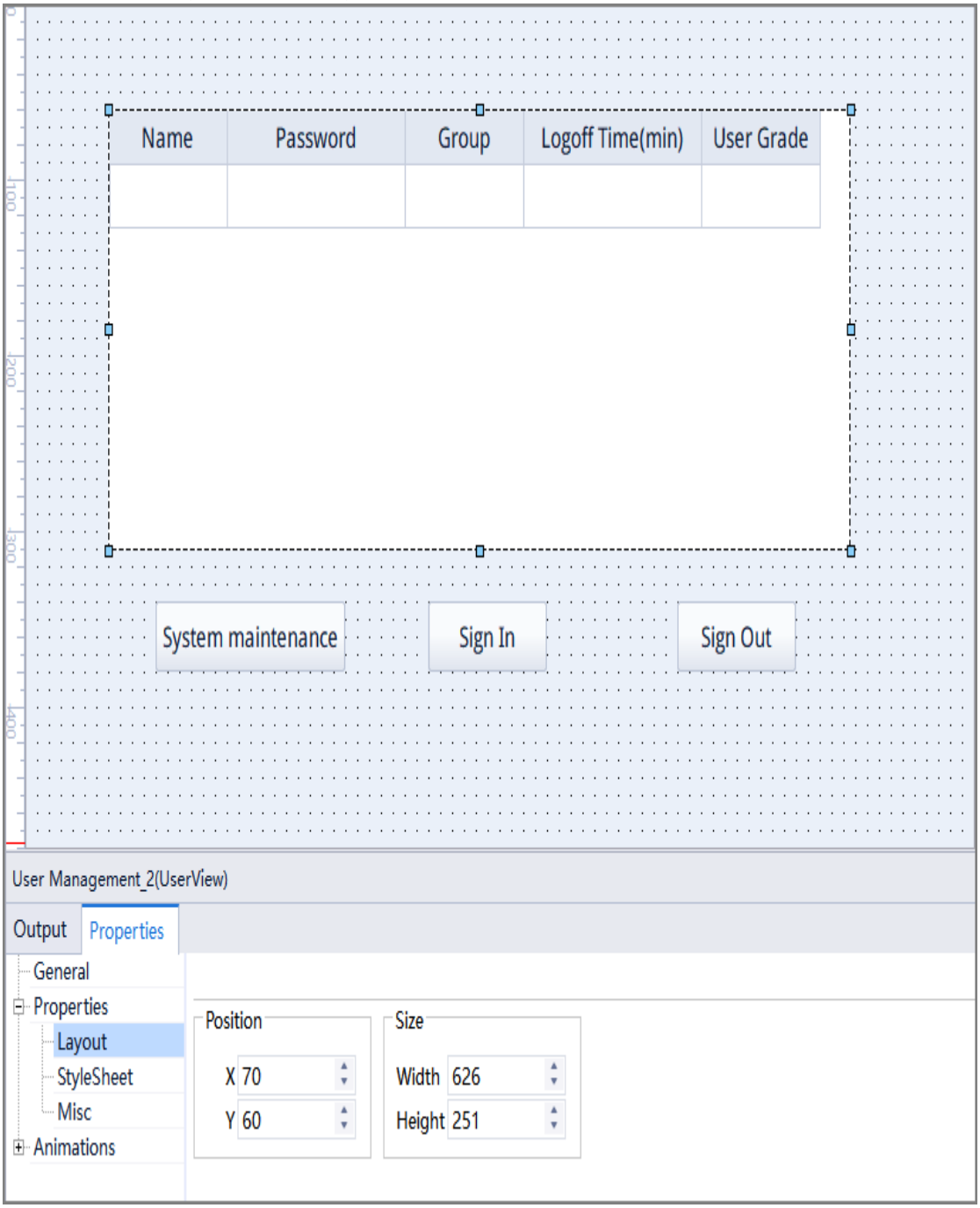
	Number	Name	Display name	Password	Logoff Time(...	Comment	User grade	Password cha...
1	1	admin	admin	********	5		0	No
2	2	Workshop di...	Workshop di...	********	5		20	Yes
3	3	System Main...	System Main...	********	5		20	Yes
4	4	Operator A	Operator A	********	5		20	Yes

User group(Operator A)

	Groups	Name	Number
1	●	Operators	1
2	○	Administrators	2
3	○	Workshop di...	3
4	○	System Main...	4

4. Configure the screen.
   a. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", add three buttons, and select "Button". On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "System maintenance", "login", and "logout".
   b. Select "System maintenance". On the "Properties" tab page, choose "Properties" > "Security". In the "Runtime Security" section, set "Authorization" to "System maintenance" (setting the permission in control security properties).
   c. Click "Sign In". On the "Properties" tab page, choose "Events" > "Click" > "User administration", and double-click "ShowLogonDialog" to add the function. Click "Sign Out". On the "Properties" tab page, choose "Events" > "Click" > "User administration", and double-click "Logoff" to add the function (setting the permission by using the system function ShowLogonDialog or Logoff).
   d. In the "Tools" navigation tree on the right, choose "Production Management" > "User Management" and drag it to "Screen_1". Select "User Management". On the "Properties" tab page, choose "Properties" > "Layout". In the "Size" section, set "Width" to 600 and "Height" to 200 (setting the

permission by using the user management view).

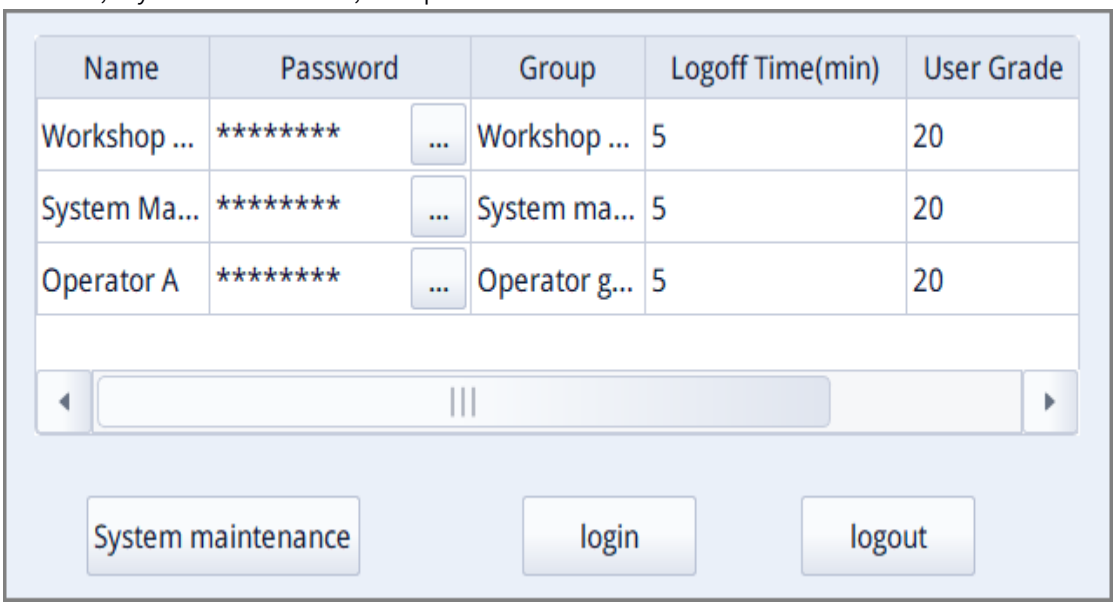


5. Perform the simulation test.

Click  to perform simulation offline.

- Click "System maintenance". On the user login page that pops up, log in to the system as the "System Maintainer A" user.
- Click "login". On the user login page that pops up, log in to the system as the "Workshop Director", "System Maintainer A", or "Operator A" user. Click "logout" to log out of the system as the user.

- Click "User View". On the user login page that pops up, log in to the system as the "Workshop Director", "System Maintainer A", or "Operator A" user.



23.10 Recipe

23.10.1 Exchanging Ingredient Values Between HMI and PLC Through Recipe View

Case

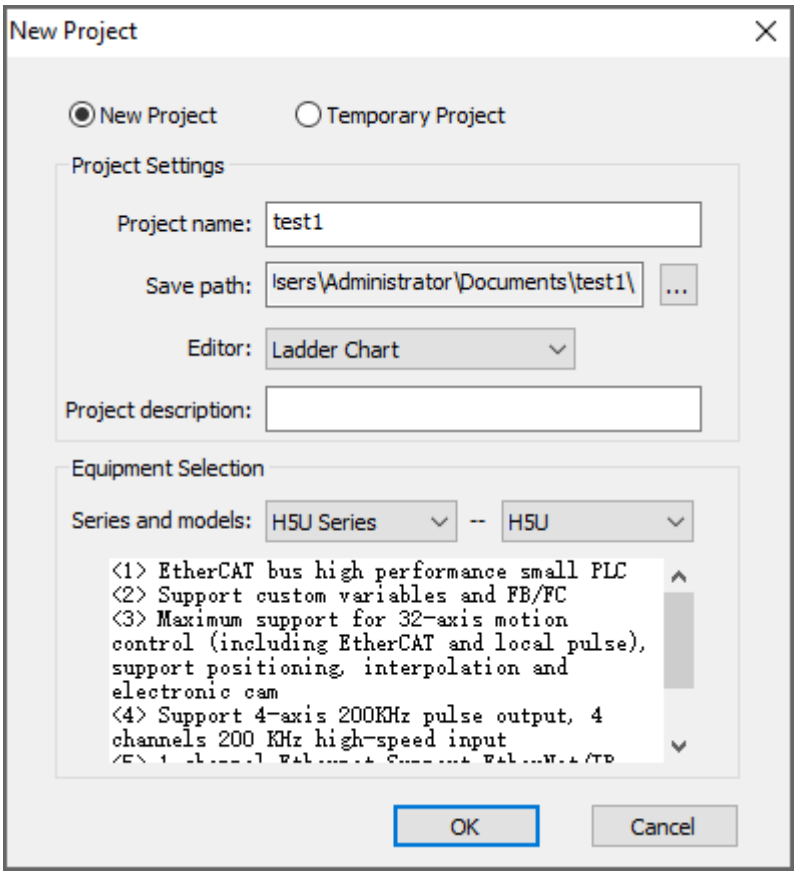
The recipe view is a general-purpose enhanced screen object for displaying and editing recipes, and managing recipe data records. It presents data records in tables. In the recipe view, the values displayed and input can be stored in data records, which exchange data with the PLC through system features.

Purpose

- To write values to the PLC through the recipe
- To read data from the PLC to the recipe

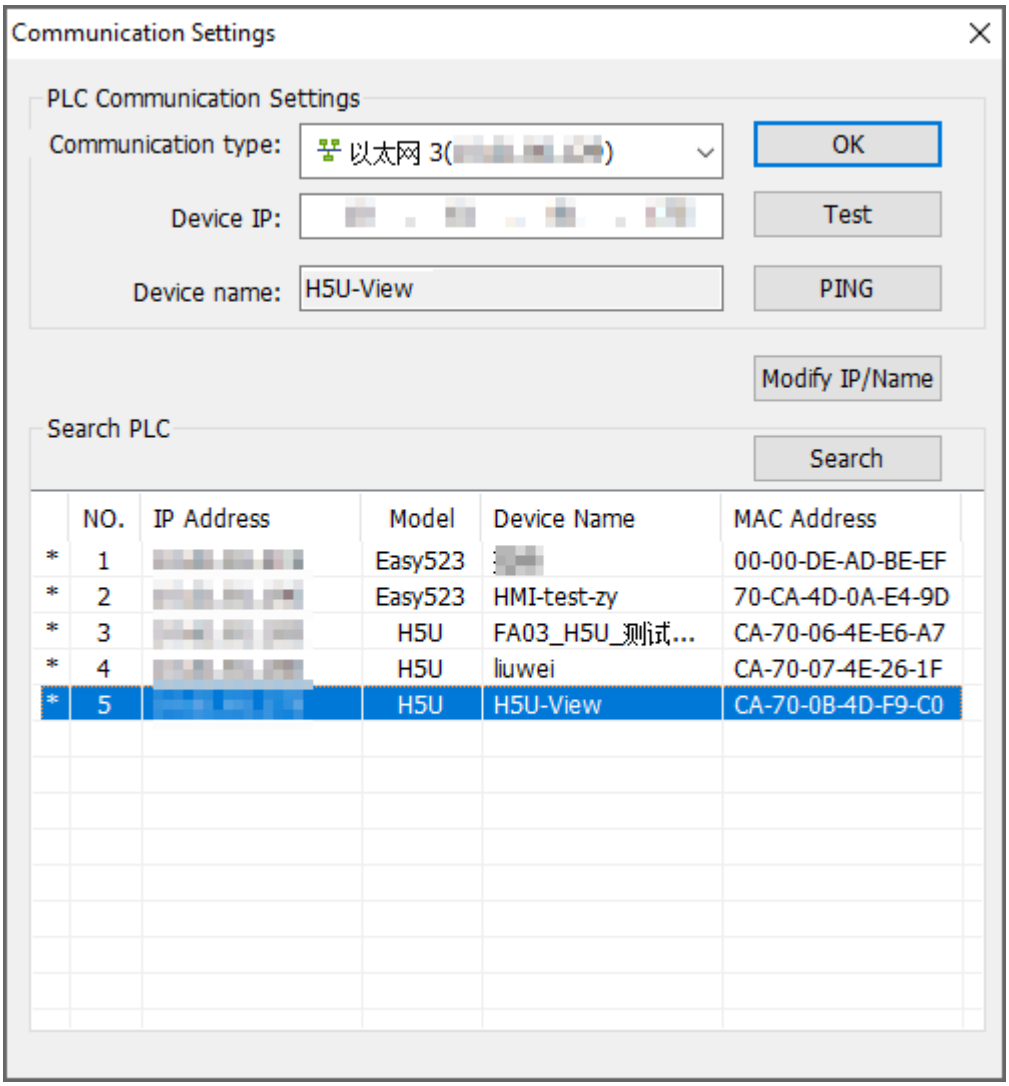
Procedure

1. Create a PLC project.
   a. Start the AutoShop software, choose "File" > "New Project" in the menu bar, set "Project Name" to "test1" and "Series and Model" to "H5U Series--H5U", and click "OK".



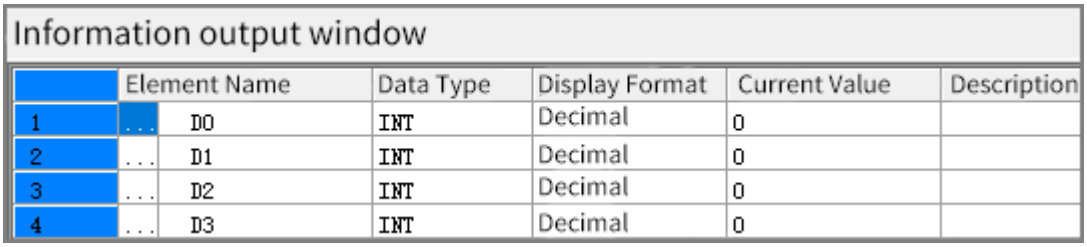
   b. Establish an H5U communication connection.
   In the menu bar, choose "Tools" > "Communication Settings". In the "Communication Settings" window that pops up, click "Search" to search for PLCs. Click the H5U-View PLC to automatically fill parameter information in the "PLC Communication Settings" section. After the connection test,

record the device IP address and click "OK".



c. Monitor tags.

Click  . In "Info Output Window", set "Element Name" to D0 to D3 respectively.



2. In the AutoShop software, create a project by referring to the instructions in the 3.3.1 Creating a Project section.

3. Create an H5U connection.
   Click "Communication", double-click "Connections", and select "Ethernet". In the "Tools" navigation tree on the right, choose "Inovance" > "H5U Series", and double-click "H5U TCP Monitor Protocol" to create "Connection_1". In the "Blockaddress device" section, set "IP Address" to the device IP address recorded in

Establishing an H5U communication connection.



4. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and create tags. Set "Connection Id" to "<Internal tag>" for LW 0 to LW 3, and to "Connection_1" for D0 to D3.

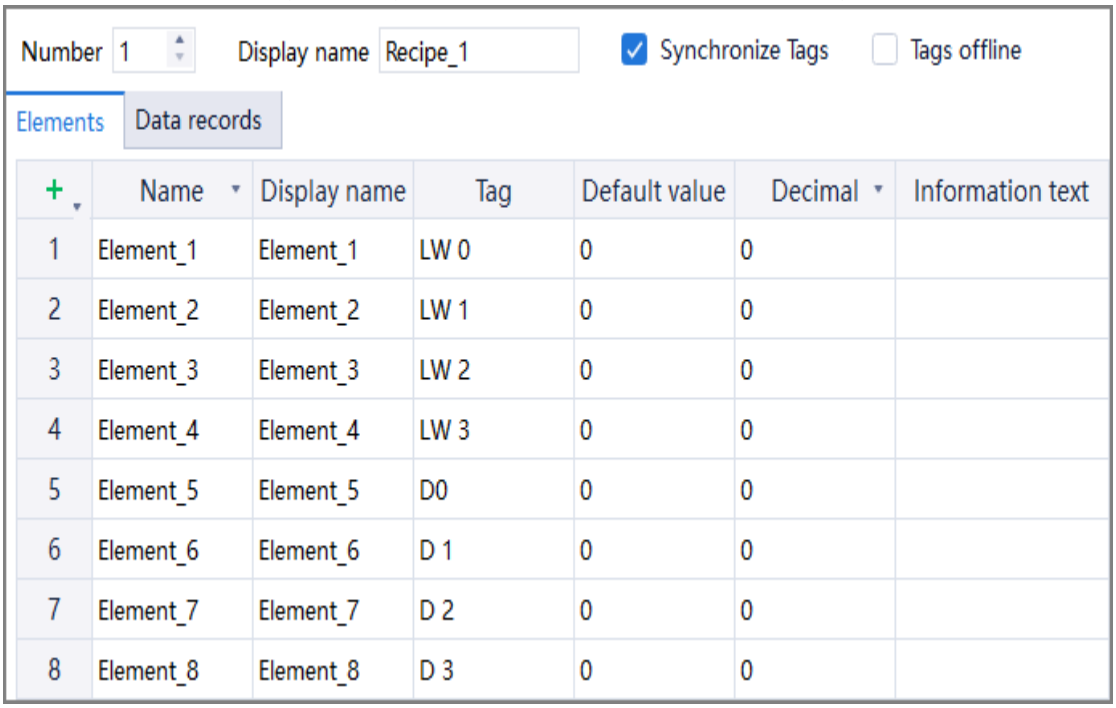
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LW 3	4	<Internal tag>	Int16	2	1	LW 3
5	D 0	5	Connection_1	Int16	2	1	D 0
6	D 1	6	Connection_1	Int16	2	1	D 1
7	D 2	7	Connection_1	Int16	2	1	D 2
8	D 3	8	Connection_1	Int16	2	1	D 3

5. Create a recipe.

   a. Click "Recipe" and double-click "Add Recipe" to add a recipe.

   b. Check "Synchronize Tags" and uncheck "Tags offline".

c. On the "Elements" tab page, add eight elements and associate them with tags.

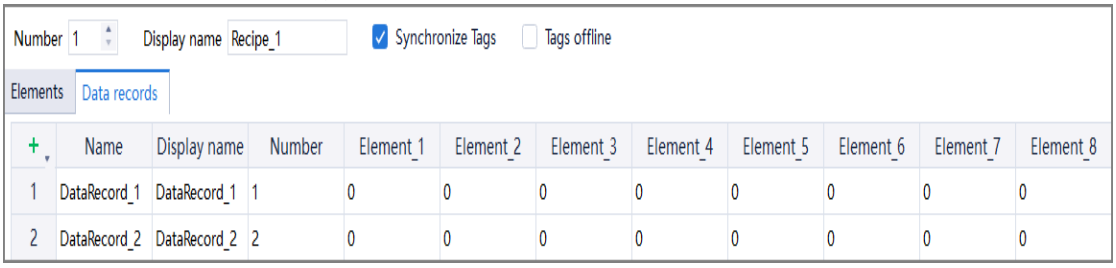


Number 1 Display name Recipe_1 Synchronize Tags Tags offline

Elements | Data records

	Name	Display name	Tag	Default value	Decimal	Information text
1	Element_1	Element_1	LW 0	0	0	
2	Element_2	Element_2	LW 1	0	0	
3	Element_3	Element_3	LW 2	0	0	
4	Element_4	Element_4	LW 3	0	0	
5	Element_5	Element_5	D0	0	0	
6	Element_6	Element_6	D 1	0	0	
7	Element_7	Element_7	D 2	0	0	
8	Element_8	Element_8	D 3	0	0	

d. On the "Data records" tab page, add two data records.



Number 1 Display name Recipe_1 Synchronize Tags Tags offline

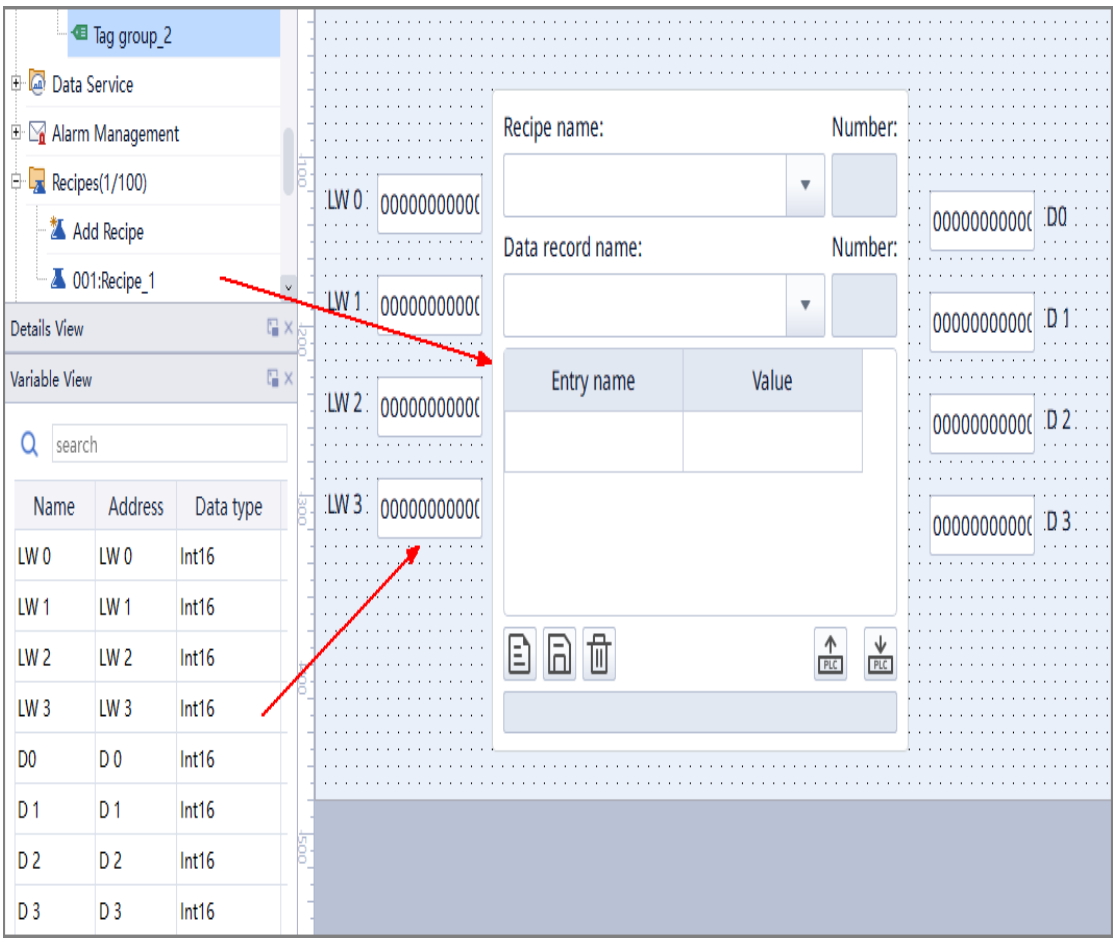
Elements | Data records

	Name	Display name	Number	Element_1	Element_2	Element_3	Element_4	Element_5	Element_6	Element_7	Element_8
1	DataRecord_1	DataRecord_1	1	0	0	0	0	0	0	0	0
2	DataRecord_2	DataRecord_2	2	0	0	0	0	0	0	0	0

6. Add recipes and tags to the screen.

a. Switch to "Screen_1". In the "Project" navigation tree on the right, click "Recipe_1" and drag it to "Screen_1".

b. In the "Project" navigation tree on the left, click "Tag group_2". Drag tags LW 0 to LW 3 and D0 to D3 from "Variable View" to "Screen_1".



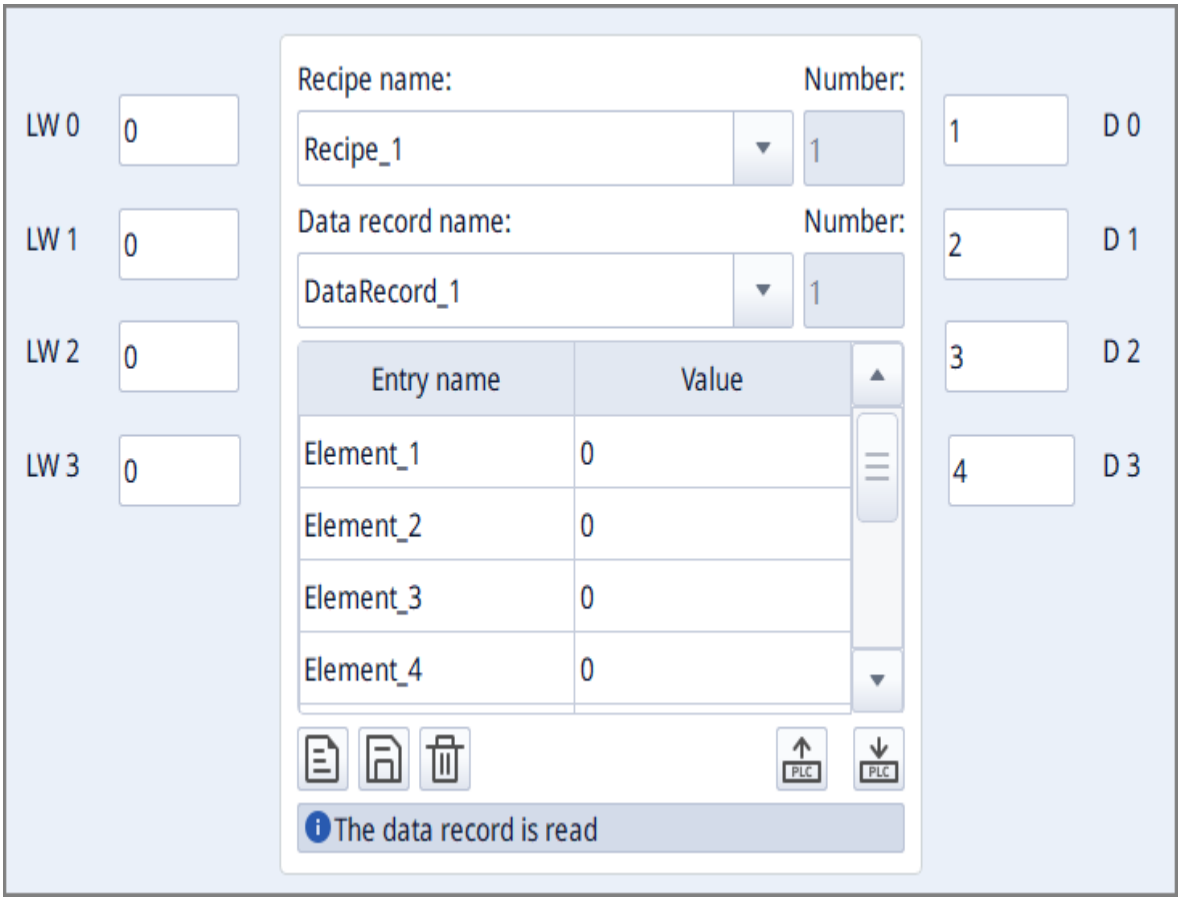
7. Perform the simulation test.

Click to perform simulation online. Check "Synchronize Tags" and uncheck "Tags offline". In the PLC monitoring information output window, when you set the current values for D0 to D3, they will be synchronized to the HMI in real time. On the HMI side, when "Data record name" is set to other data records, these records will be synchronized to the PLC.

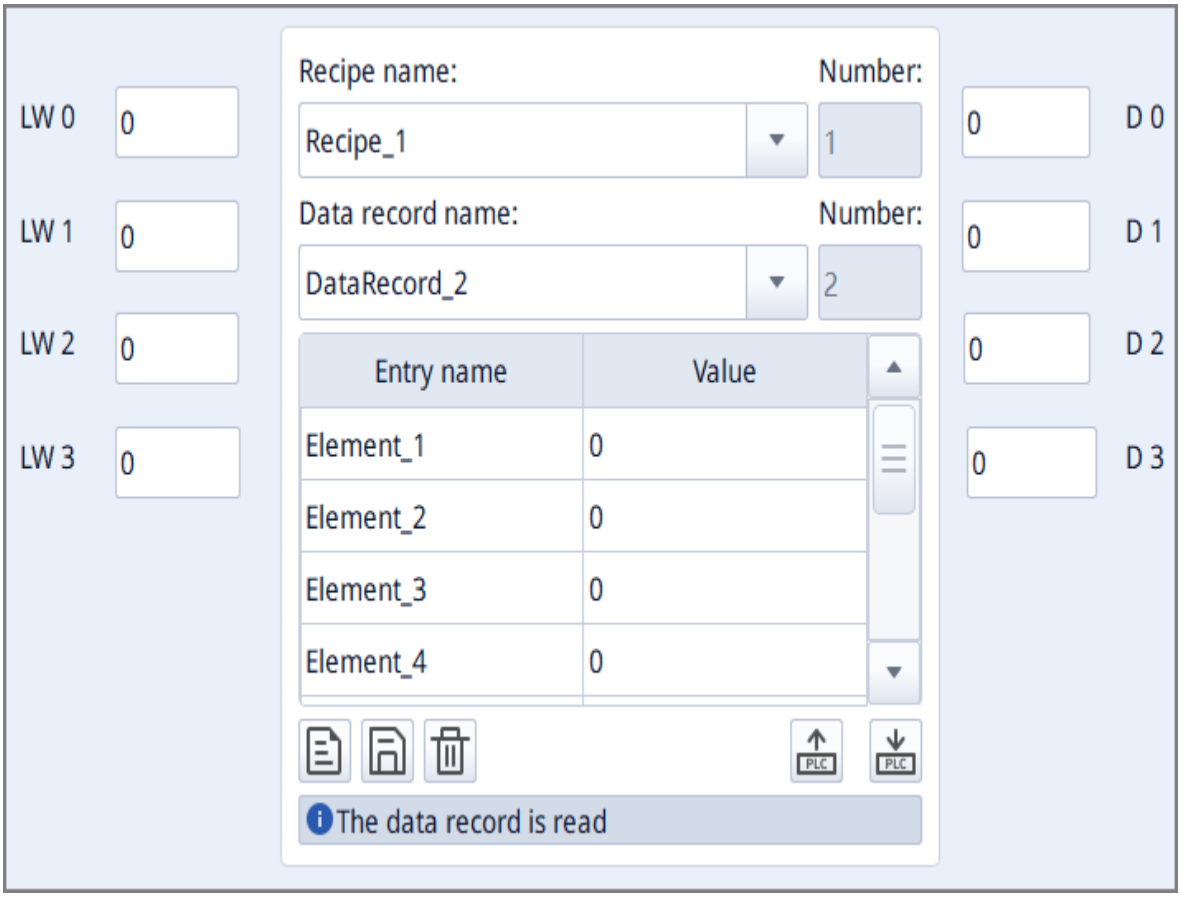
When PLC parameters are modified, data will be synchronized to the HMI in real time.

Information output window

	Element Name	Data Type	Display Format	Current Value	Description
1	D0	INT	Decimal	1	
2	D1	INT	Decimal	2	
3	D2	INT	Decimal	3	
4	D3	INT	Decimal	4	



When data records are switched on the HMI side, data will be synchronized to the PLC in real time.



Information output window

	Element Name	Data Type	Display Format	Current Value	Description
1	D0	INT	Decimal	0	
2	D1	INT	Decimal	0	
3	D2	INT	Decimal	0	
4	D3	INT	Decimal	0	

8. Modify recipe configuration. Check both "Synchronize Tags" and "Tags offline".



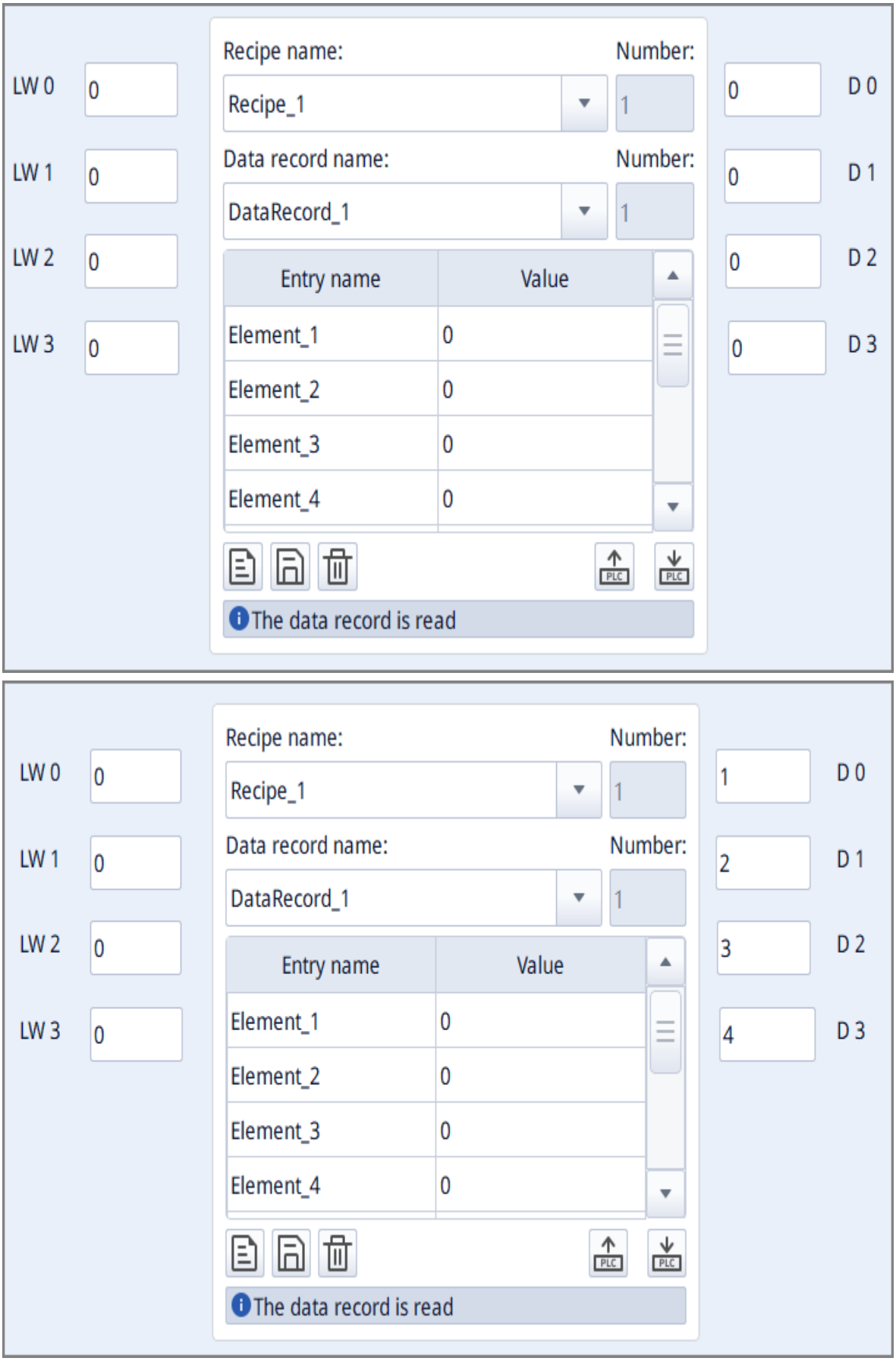
9. Perform the simulation test.

Click to perform simulation online. Check both "Synchronize Tags" and "Tags offline". In the PLC monitoring information output window, when you set the current values for D0 to D3, they will not be synchronized to the HMI in real time before you click . On the HMI side, when "Data record name" is set to other data records, these records will not be synchronized to the PLC before you click .

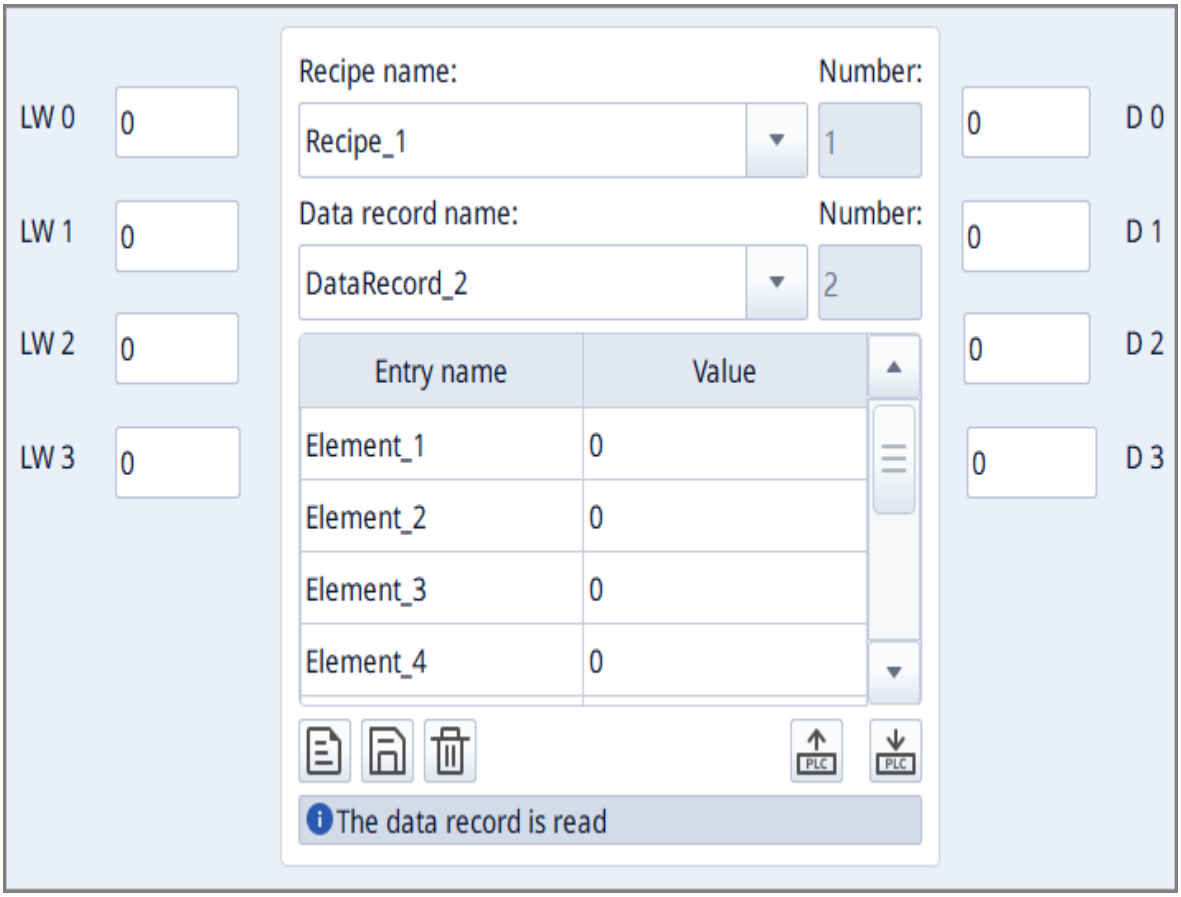
When PLC parameters are modified, data will not be synchronized to the HMI in real time before you click .

Information output window

	Element Name	Data Type	Display Format	Current Value	Description
1	D0	INT	Decimal	1	
2	D1	INT	Decimal	2	
3	D2	INT	Decimal	3	
4	D3	INT	Decimal	4	



When data records are switched on the HMI side, data will not be synchronized to the PLC in real time before you click  .



Information output window

	Element Name	Data Type	Display Format	Current Value	Description
1	D0	INT	Decimal	1	
2	D1	INT	Decimal	2	
3	D2	INT	Decimal	3	
4	D3	INT	Decimal	4	

Information output window

	Element Name	Data Type	Display Format	Current Value	Description
1	D0	INT	Decimal	0	
2	D1	INT	Decimal	0	
3	D2	INT	Decimal	0	
4	D3	INT	Decimal	0	

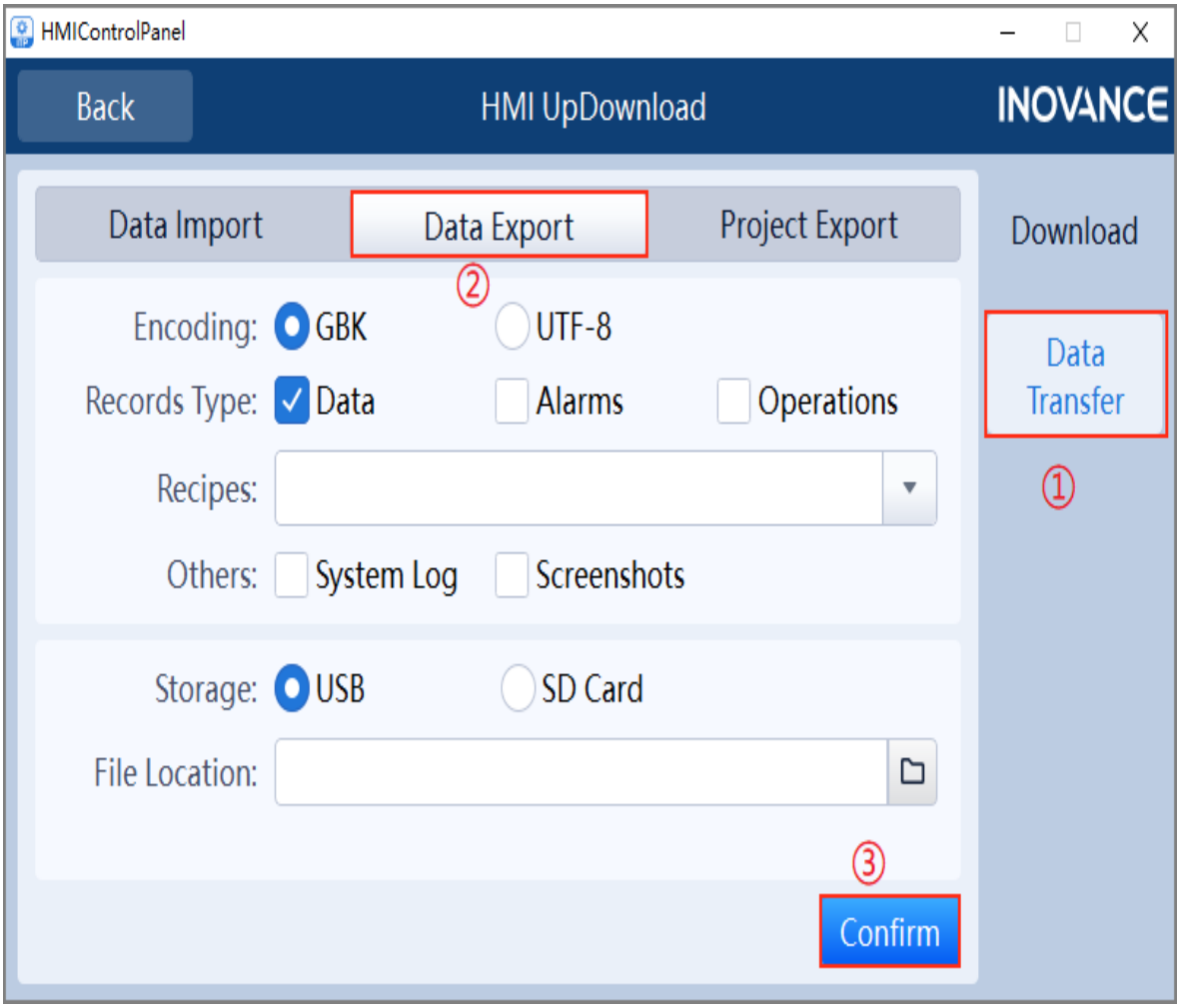
23.10.2 Importing a Recipe Data Record from HMI to a Recipe of the Software

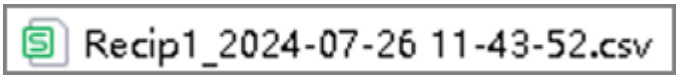
Case

Import a recipe data record from HMI to an InoTouchPad project and modify the data record and then download the record to HMI.

Procedure

1. Export the data record.
   Access the control panel of HMI. Click "HMI UpDownload", and then click "Data Transfer" on the right. On the page displayed, click the "Data Export" tab, set the parameters, and click "OK". The recipe is exported as a .csv file, as shown in the following figure.

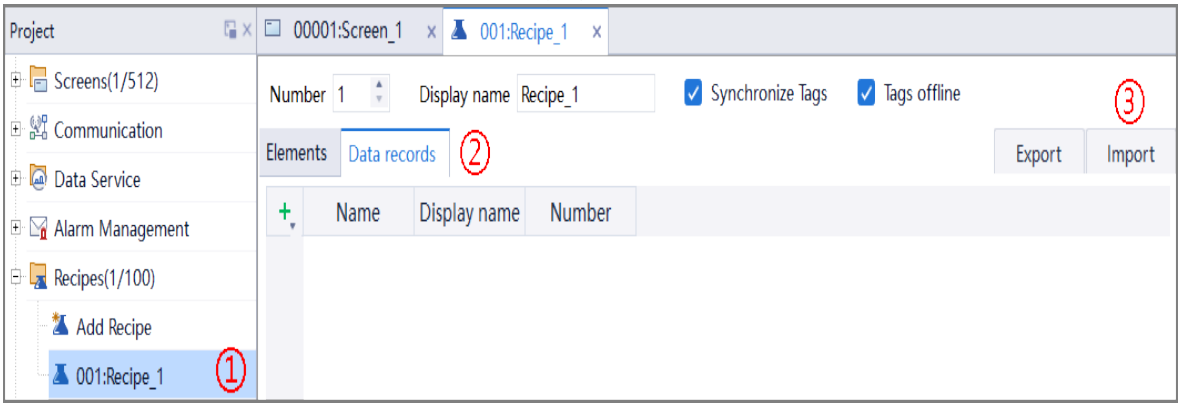




Note

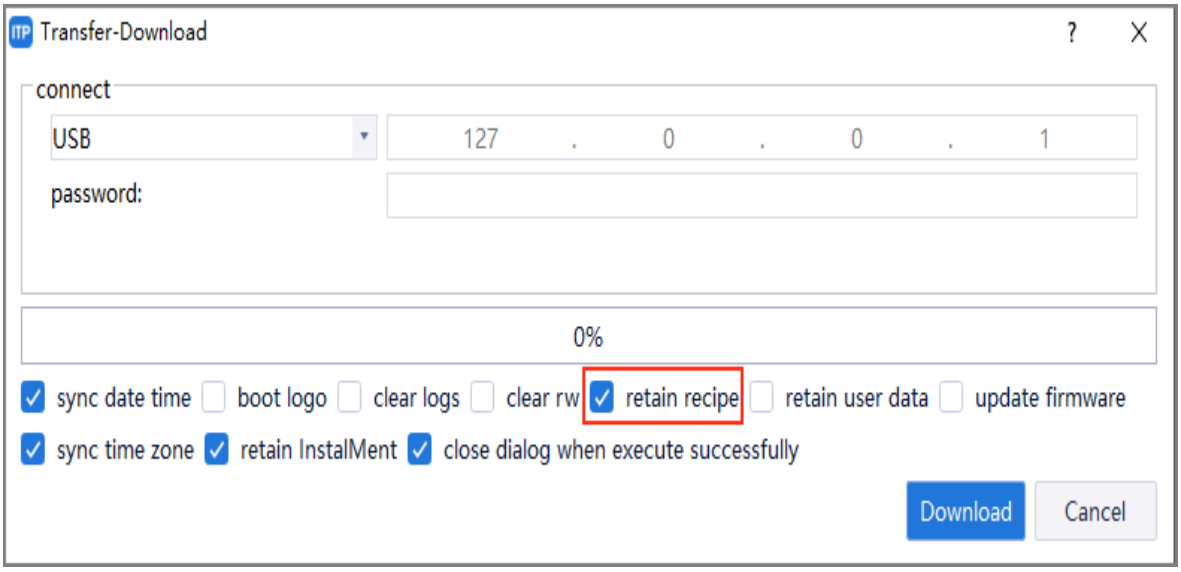
- Select "USB" or "SD Card" for "Storage" as needed.
- "File Location" is the path of the USB or SD card file.

2. Import the exported data record (the .csv file) to the software.
   In InoTouchPad, select "Recipe" in the "Project" navigation tree on the left, and double-click "001:Recipe_1". On the page displayed, choose "Data Log" > "Import", and select the *.CSV file exported in Step 1 to import the file, as shown in the following figure.



> **Note**
>
> You can adjust the imported data record in the software as needed.

3. After adjusting the recipe, click to download the project. If you select "retain recipe", the adjusted recipe is downloaded to the HMI after you click "Download", as shown in the following figure.



> **Note**
>
> - The option "retain recipe" is only valid for recipe data records.
>   - After "retain recipe" is selected, recipe data records already existing in the touchscreen cannot be deleted.
>   - If this option is not selected, existing records will be deleted.
> - The recipe ingredients are overwritten when the project is updated, no matter whether "retain recipe" is selected.
> - It is recommended to place new ingredients after existing ingredients to avoid data disorder when "retain recipe" is selected and the project is downloaded after the ingredients change.

23.11 History Record

23.11.1 Viewing Operation Record of a Control

Case

View and export operation records of controls.

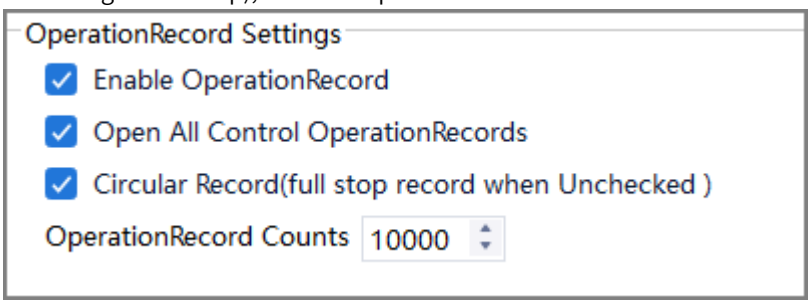
Purpose

View and export operation records of controls.

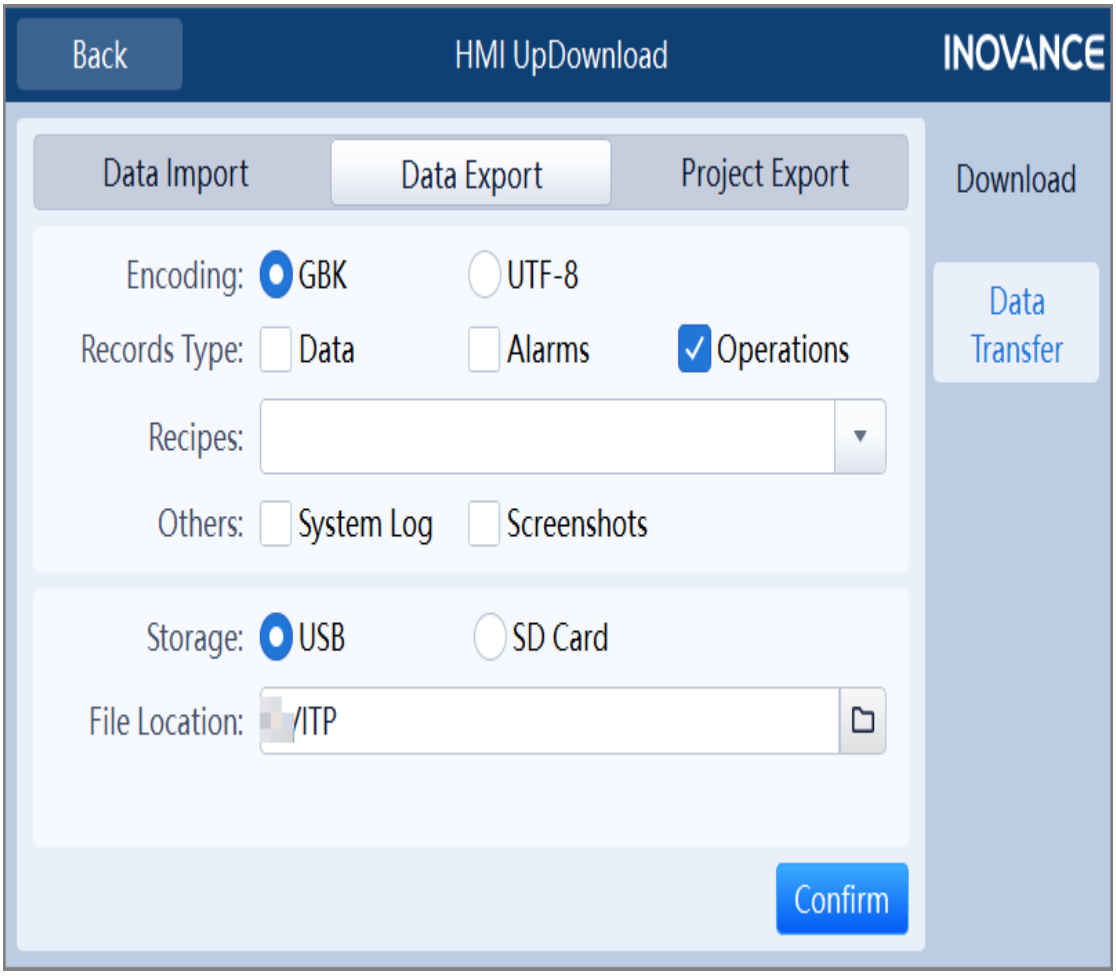
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.

2. Set the operation record.
   Click "HMI Settings", double-click "Project Settings", and click "Operation Record". On the "OperationRecord Settings" tab page displayed, select "Enable OperationRecord", "Open All Control OperationRecords", and "Circular Record" (if this option is not selected, operation recording stops when the storage is used up), and set "OperationRecord Counts" to a value in the range of [1000,100000].



3. Export the operation record to a USB drive or SD card.
   1. Power on the HMI, enter the control panel as instructed, and click "HMI UpDownload".
   2. On the "HMI UpDownload" page, choose "Data Transfer" > "Data Export", configure parameters as follows on the page displayed, and then click "Confirm".
      - "Encoding": Select "GBK".
      - "Records Type": Select "Operations".
      - "Storage": Select "USB".



23.12 Report

23.12.1 Using Report for Statistics

Case

Make data statistics by using the report feature.

Purpose

Make data statistics by using the report feature.

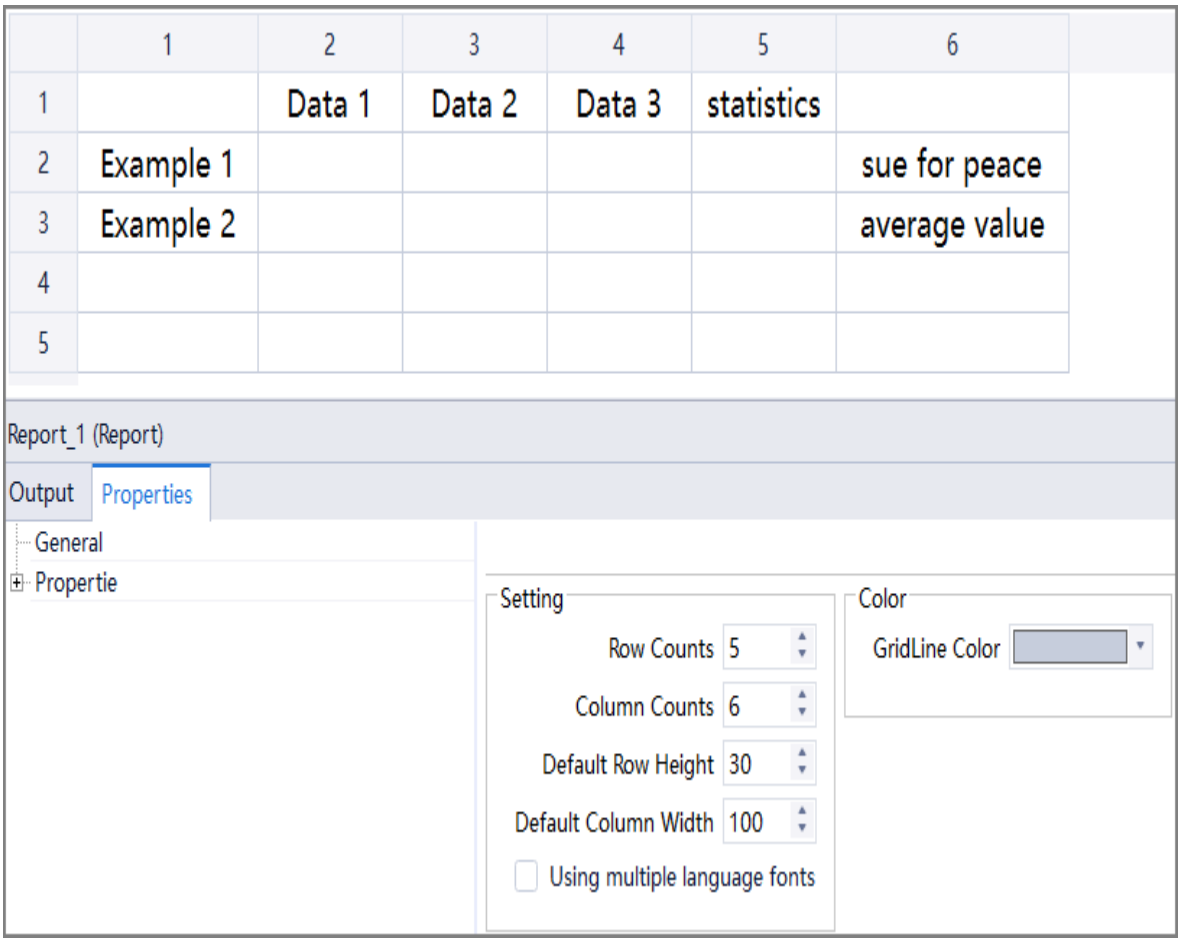
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 5.

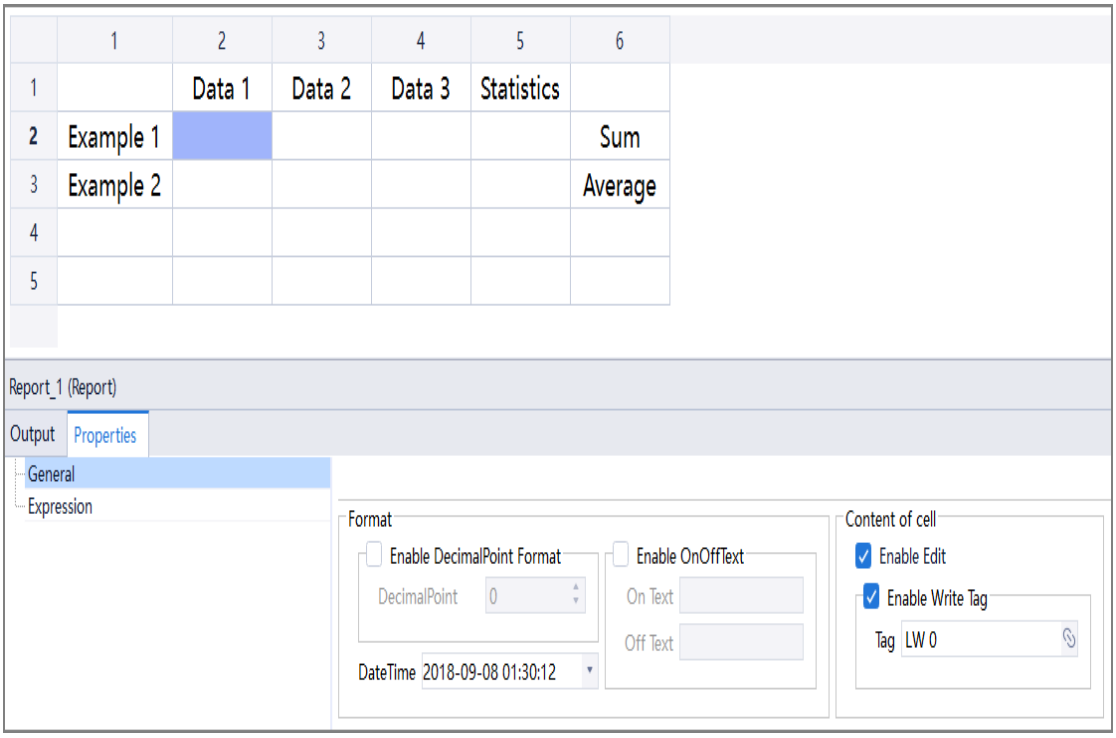
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LW 3	4	<Internal tag>	Int16	2	1	LW 3
5	LW 4	5	<Internal tag>	Int16	2	1	LW 4
6	LW 5	6	<Internal tag>	Int16	2	1	LW 5

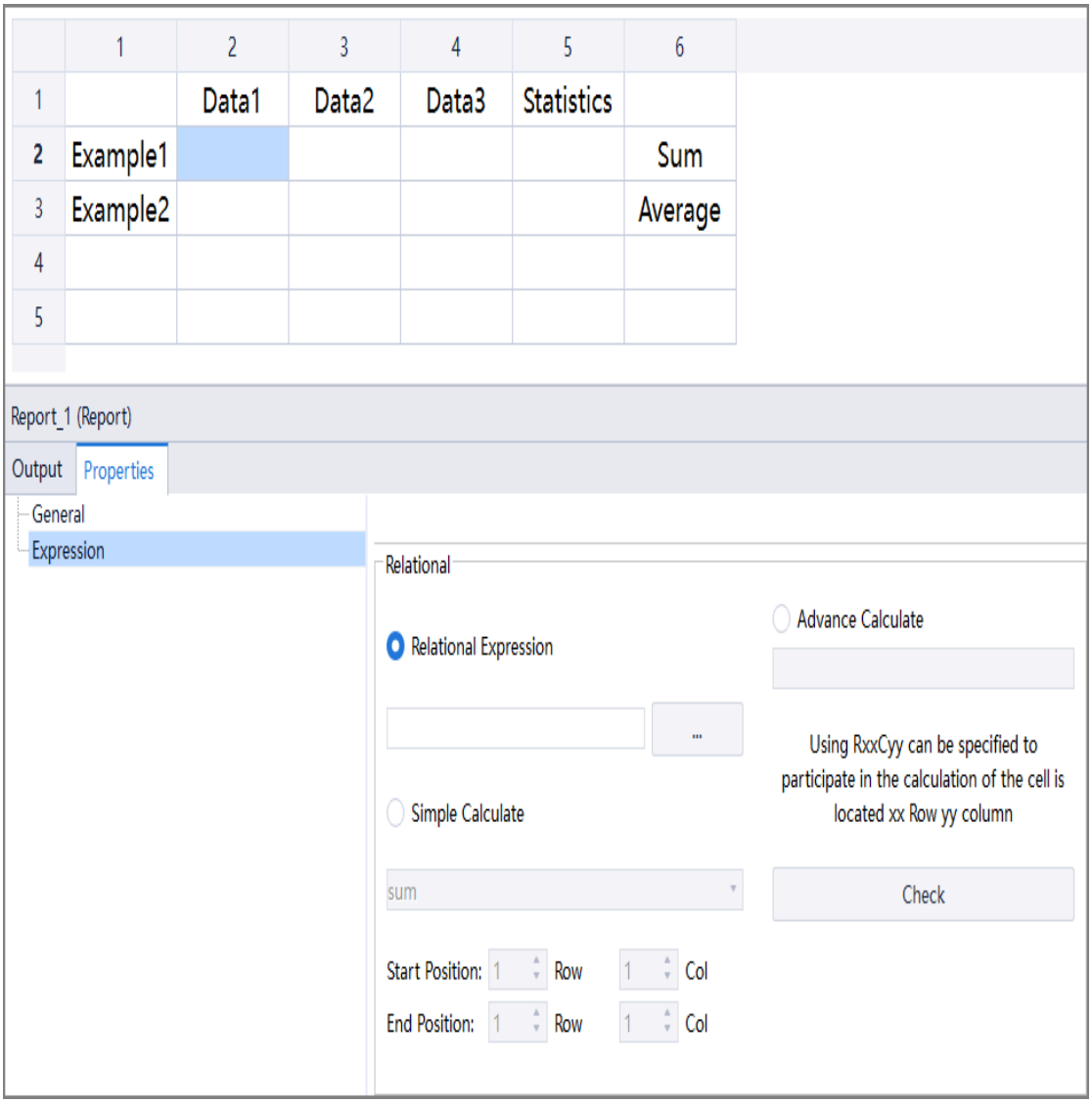
3. Create a report.
   Click "Report". Double-click "Add Report", add a report such as "Report_1", and click in a blank area out of the table. On the "Properties" tab page, click "General". In the "Setting" section, set 6 for "Column Counts".

Double-click the cells and input content such as "Data 1", "Data 2", and "Data 3".



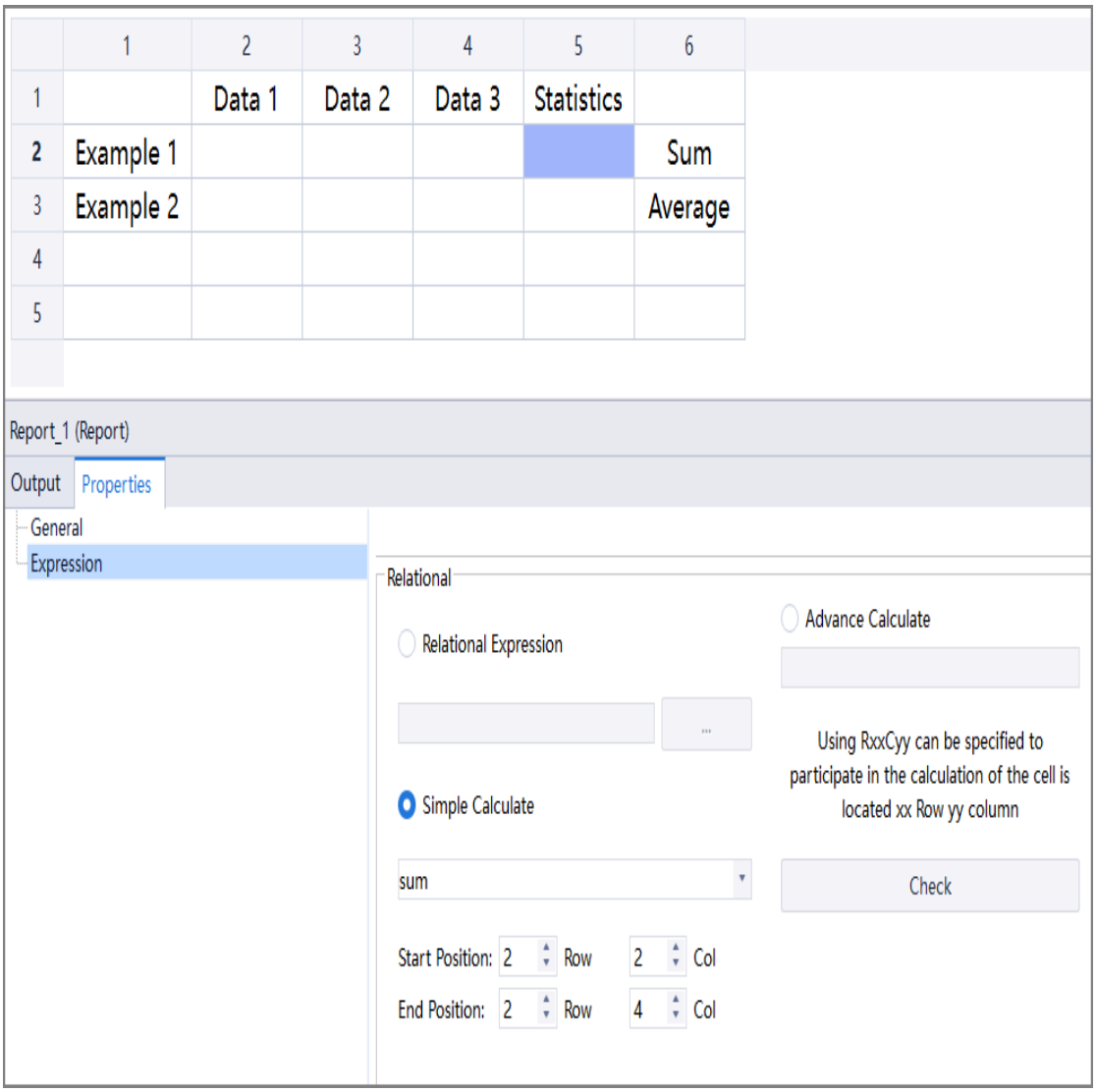
4. Associate a cell (taking the row-2-column-2 cell as an example) with the tag.
   Select the row-2-column-2 cell. On the "Properties" tab page, click "General". In the "Content of cell" section, select "Enable Edit" and "Enable Write Tag", select LW 0 for "Tag", and click "Expression". In the "Relational" section, "Relational Expression" is selected by default. Click ..., and select the tag LW 0.
   - Row-2-column-2: Associated the cell with LW 0.
   - Row-2-column-3: Associated the cell with LW 1.
   - Row-2-column-4: Associated the cell with LW 2.
   - Row-3-column-2: Associated the cell with LW 3.
   - Row-3-column-3: Associated the cell with LW 4.
   - Row-3-column-4: Associated the cell with LW 5.





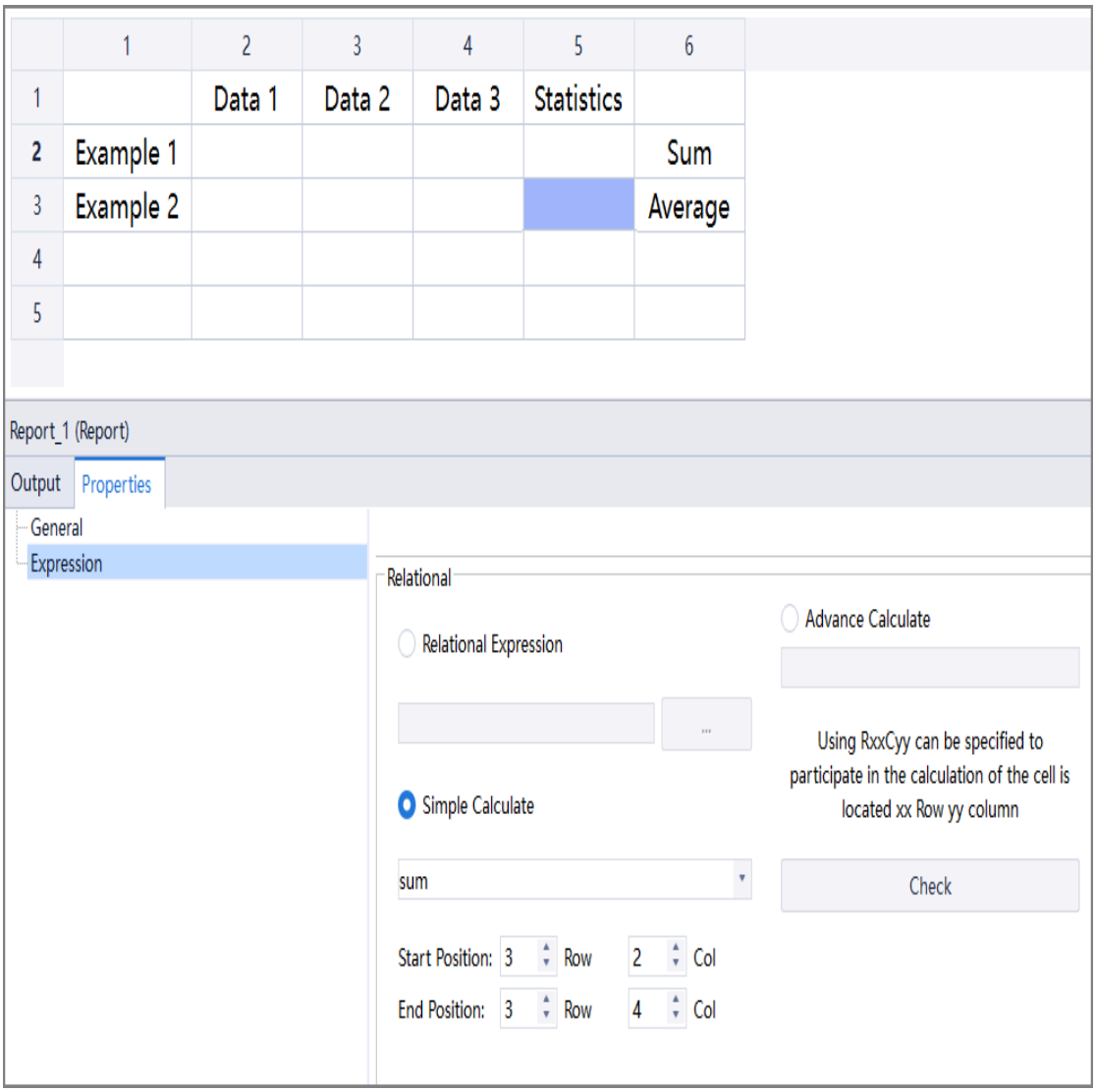
5. Associate a cell with a calculation method.
   - Select the row-2-column-5 cell. On the "Properties" tab page, click "Expression". In the "Relational" section, select "Simple Calculate" and "sum", and set "Start Position" to row-2-column-2 and "End

Position" to row-2-column-4.



- Select the row-3-column-5 cell. On the "Properties" tab page, click "Expression". In the "Relational" section, select "Simple Calculate" and "Average", and set "Start Position" to row-3-column-2 and

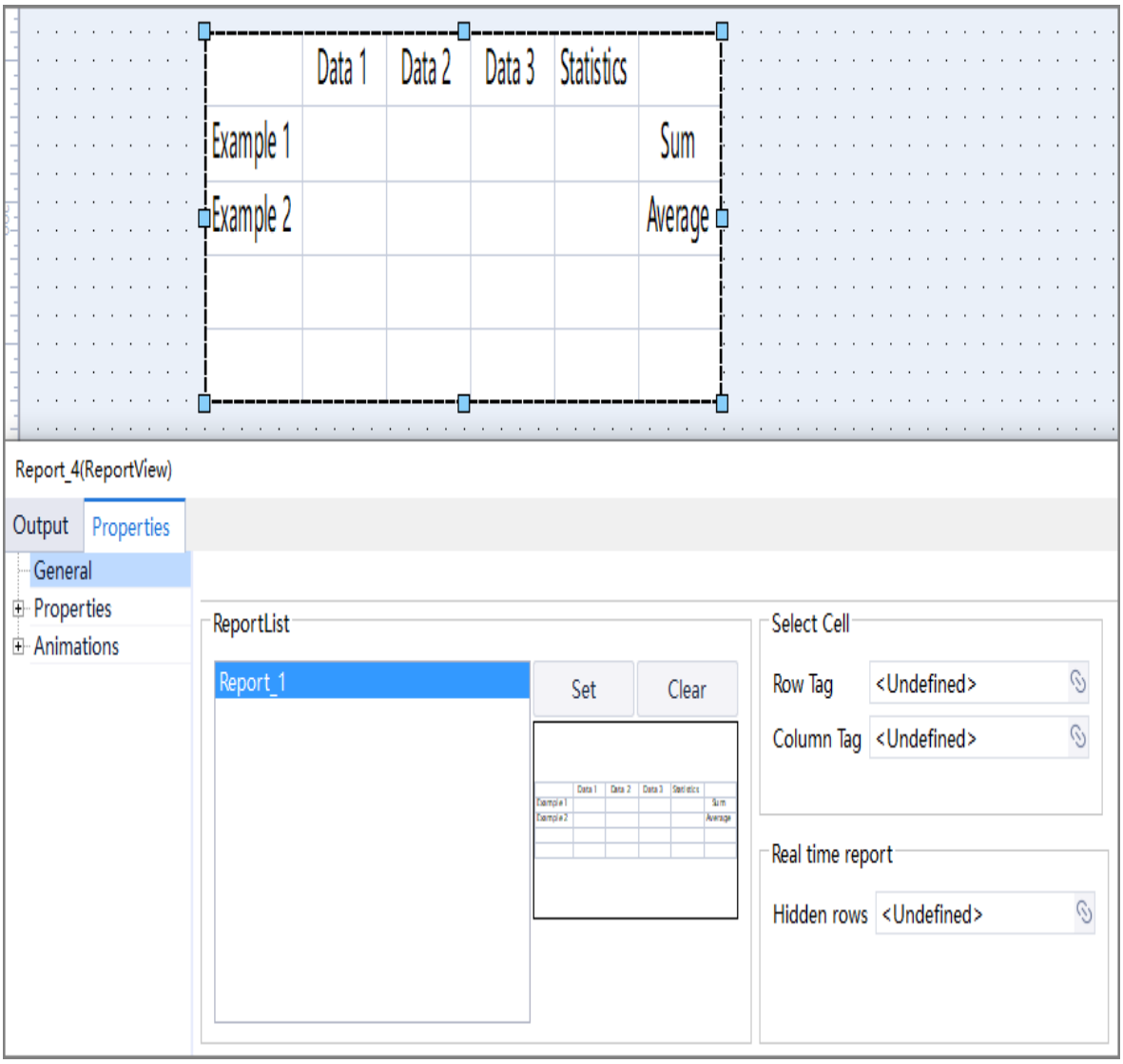
"End Position" to row-3-column-4.



6. Add a report in the screen.

   Switch to "Screen_1". In the "Tools" navigation tree on the right, select "Production Management" > "Report", and drag the report to "Screen_1". Select the report view. On the "Properties" tab page, click

"General". In the "ReportList" section, select "Report_1", and click "Set".



7. Perform the simulation test.

Click  to perform simulation offline. After you input values, the system automatically calculates the sum and average of these values.

	1	2	3	4	5	6
1		Data1	Data2	Data3	Statistics	
2	Example1	12	13	14	39	Sum
3	Example2	11	12	13	12	Average
4						
5						

23.12.2 Real-Time Report Application

Example 1: Prepare a "XXX production line daily output statistics table" by using the report feature

Visual design:

1. In the "Project" navigation tree on the left, create a report.

2. In the report editor, adjust the table to 5 rows and 5 columns.

3. Adjust the table size, such as increasing the width of the title row and total row, and merge cells as required, such as merging the first five columns in the first row into a cell and displaying the title in this cell.

4. Set the static text, such as the report title, statistics names, and periods, directly in the corresponding cells.

5. Set the background color. For example, you can set the background color of the title row to yellow, and the total row to light blue as follows:

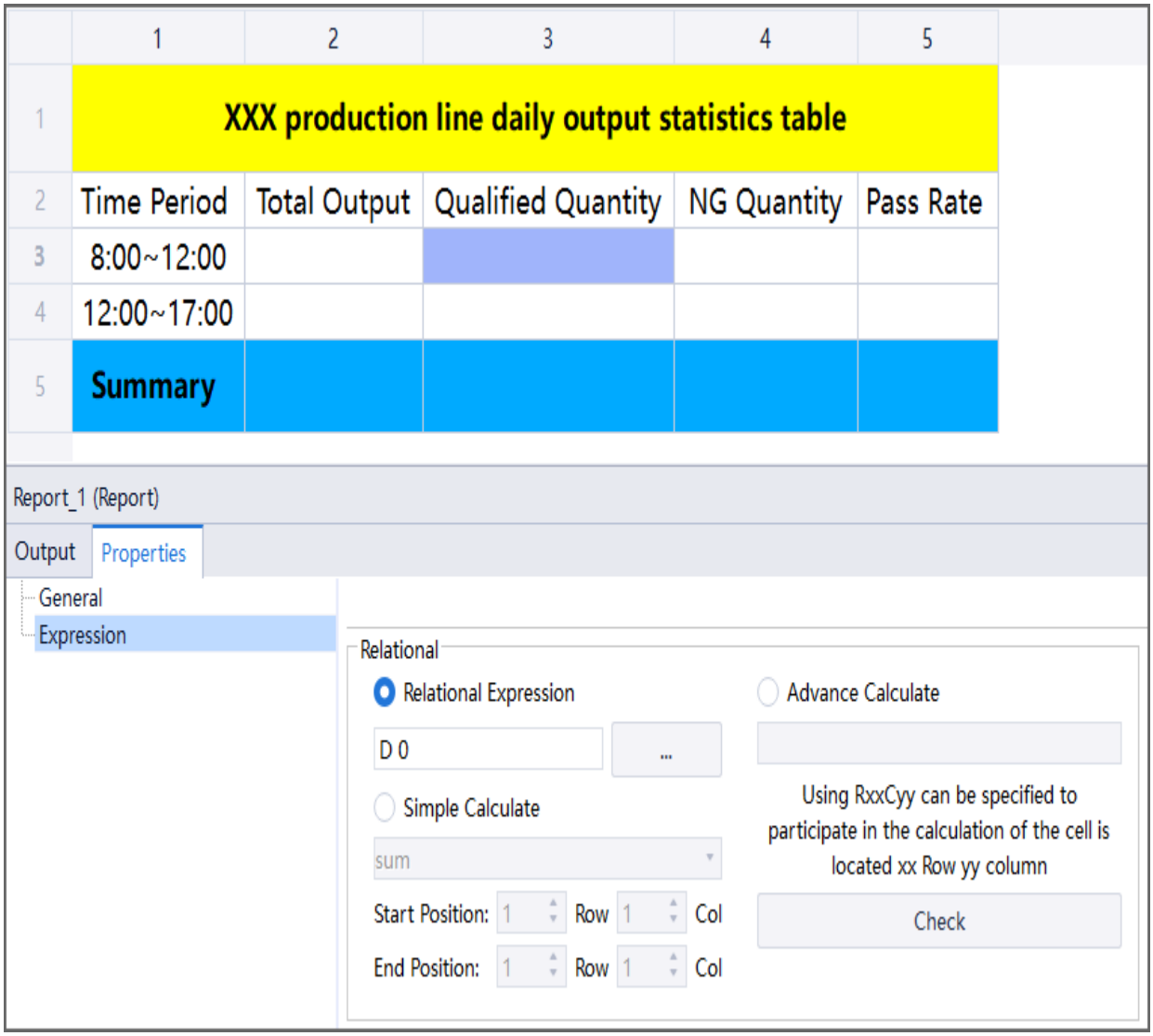
	1	2	3	4	5
1	**XXX production line daily output statistics table**				
2	Time Period	Total Output	Qualified Quantity	NG Quantity	Pass Rate
3	8:00~12:00				
4	12:00~17:00				
5	**Summary**				

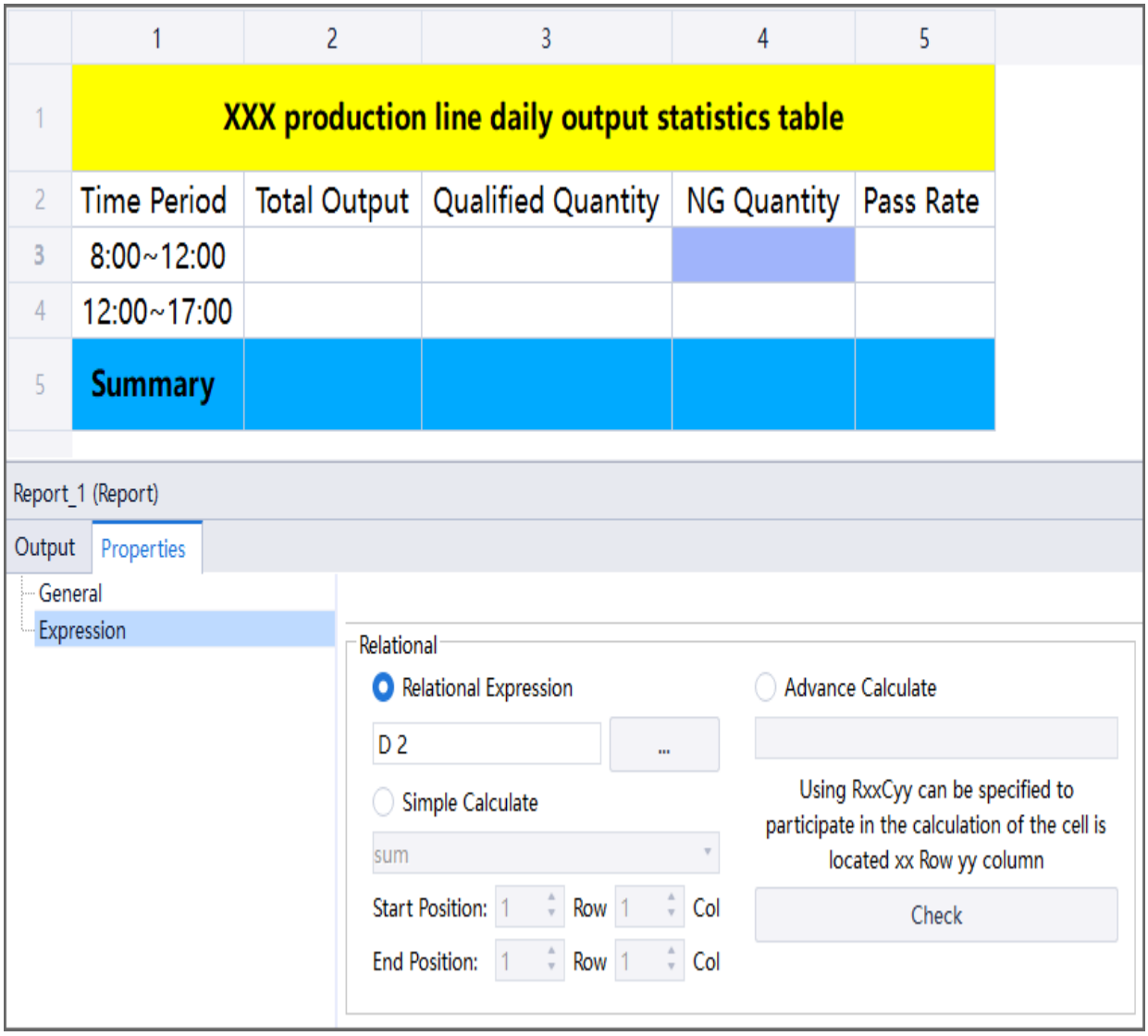
Statistics feature implementation:

1. Create a tag group for good products of the day and NG products of the day respectively, and add statistical tags in the groups, as shown in the following figure.

	Name	Connection Id	Data type	Length	Array count	Address
1	D 0	Connection_1	Int16	2	1	D 0
2	D 1	Connection_1	Int16	2	1	D 1
3	D 2	Connection_1	Int16	2	1	D 2
4	D 3	Connection_1	Int16	2	1	D 3

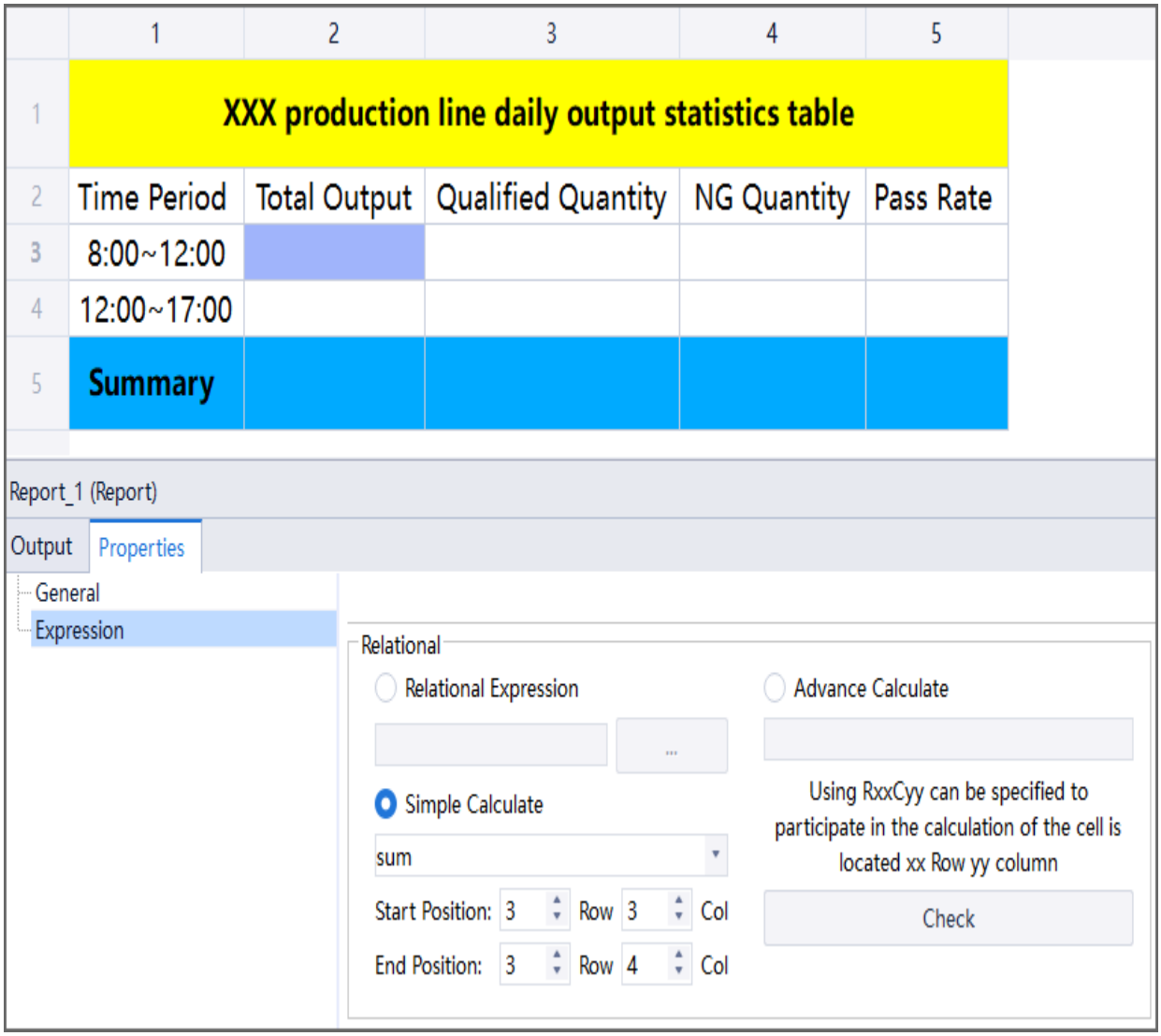
2. In the report, the period cells in the "Number of good products" column and the "NG number" column are associated with these statistical tags to display real-time data. For details, see the following example in which the period cells of 8:00-12:00 are associated with these tags:

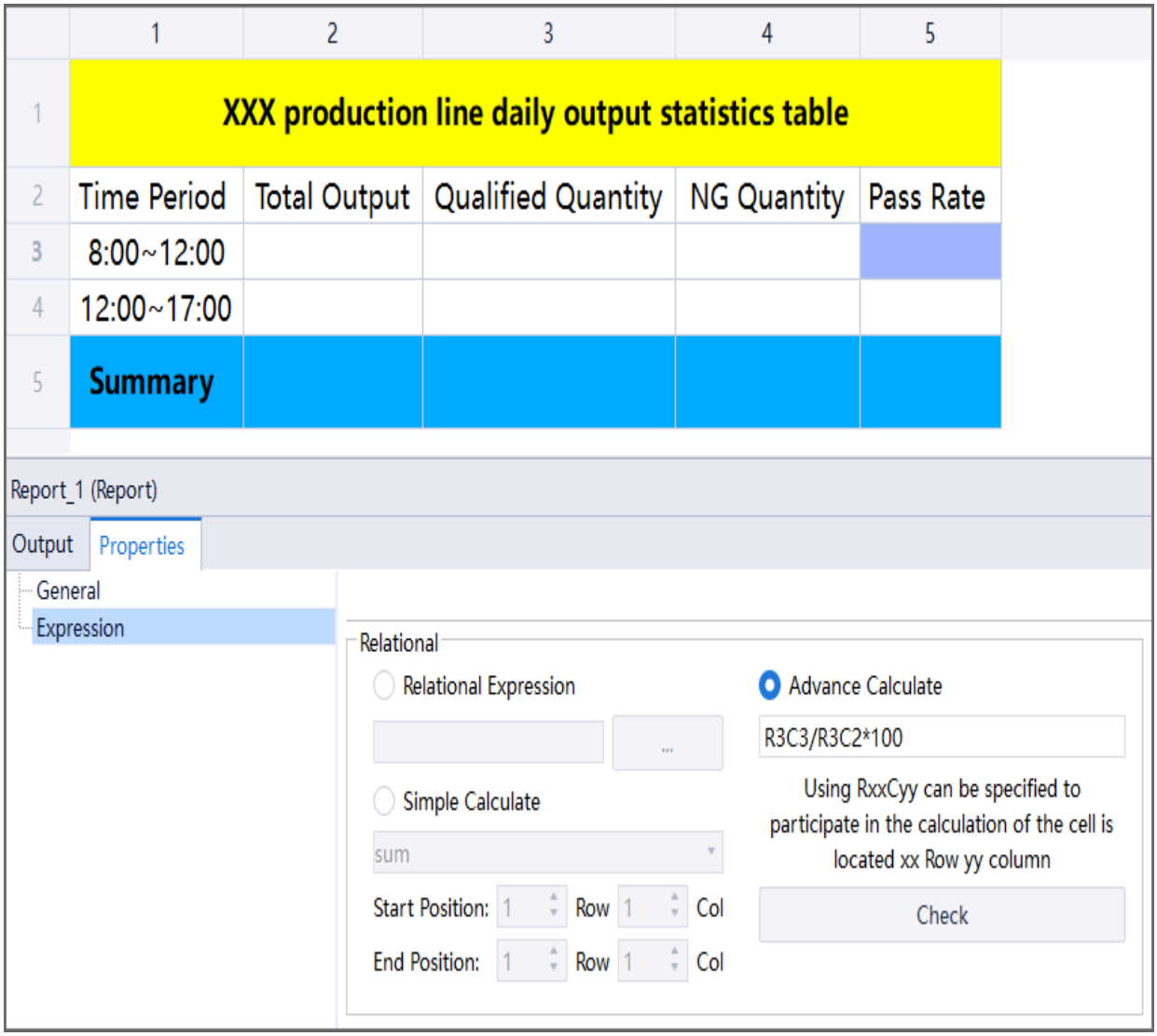

1
2
3
4
5
XXX production line daily output statistics table
Time Period
Total Output
Qualified Quantity
NG Quantity
Pass Rate
8:00~12:00
12:00~17:00
Summary
Report_1 (Report)
Output
Properties
General
Expression
Relational
Relational Expression
D 0
...
Simple Calculate
sum
Start Position: 1 Row 1 Col
End Position: 1 Row 1 Col
Advance Calculate
Using RxxCyy can be specified to participate in the calculation of the cell is located xx Row yy column
Check



The association of other period cells is the same.

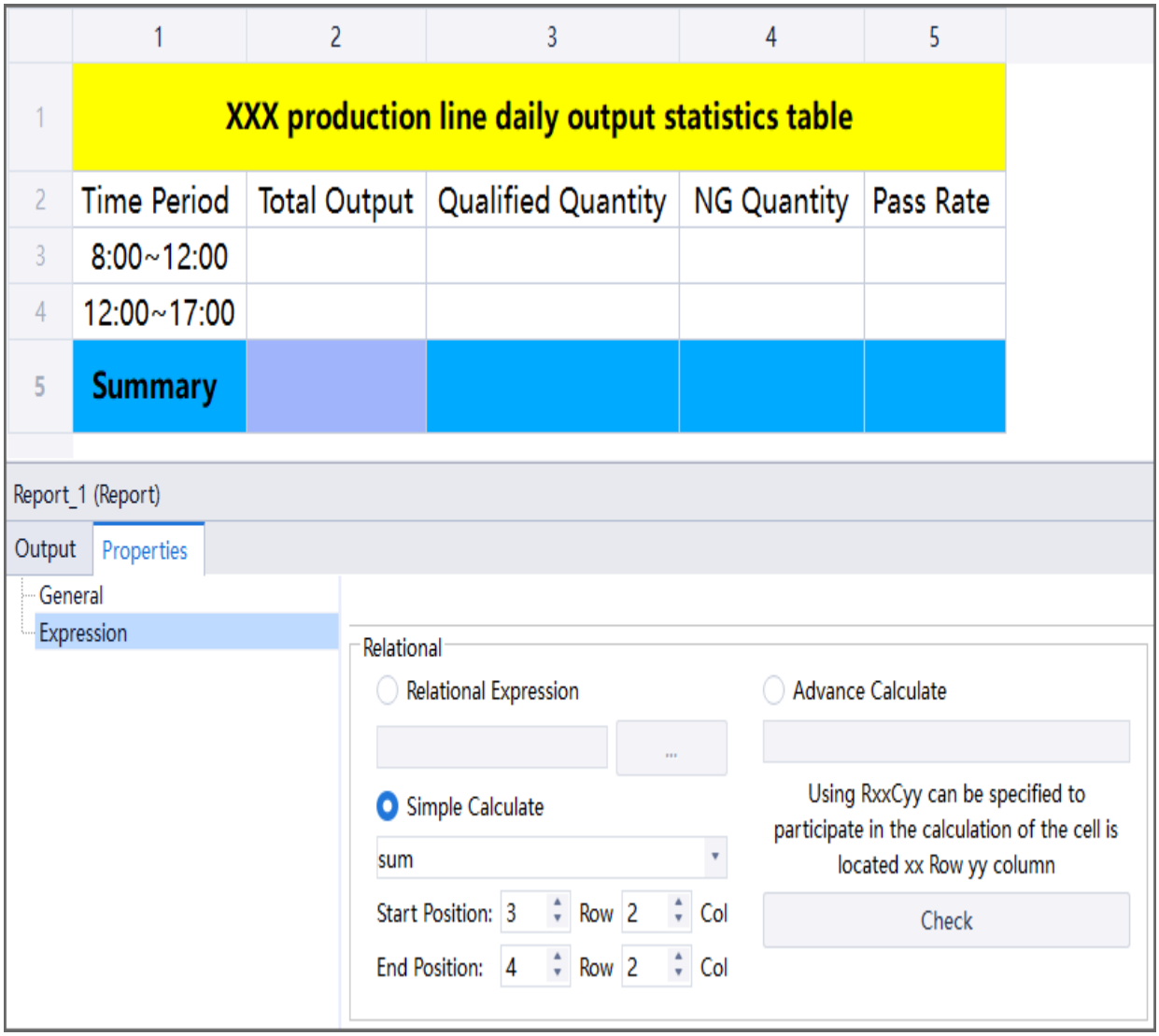
3. Set the calculation mode and expression for the cells in the "Total production" column and "Acceptance Rate" column respectively in the period cells of 8:00-12:00, as shown in the following figure.


1
2
3
4
5
XXX production line daily output statistics table
Time Period
Total Output
Qualified Quantity
NG Quantity
Pass Rate
8:00~12:00
12:00~17:00
Summary
Report_1 (Report)
Output
Properties
General
Expression
Relational
Relational Expression
Advance Calculate
Simple Calculate
sum
Start Position: 3 Row 3 Col
End Position: 3 Row 4 Col
Using RxxCyy can be specified to participate in the calculation of the cell is located xx Row yy column
Check

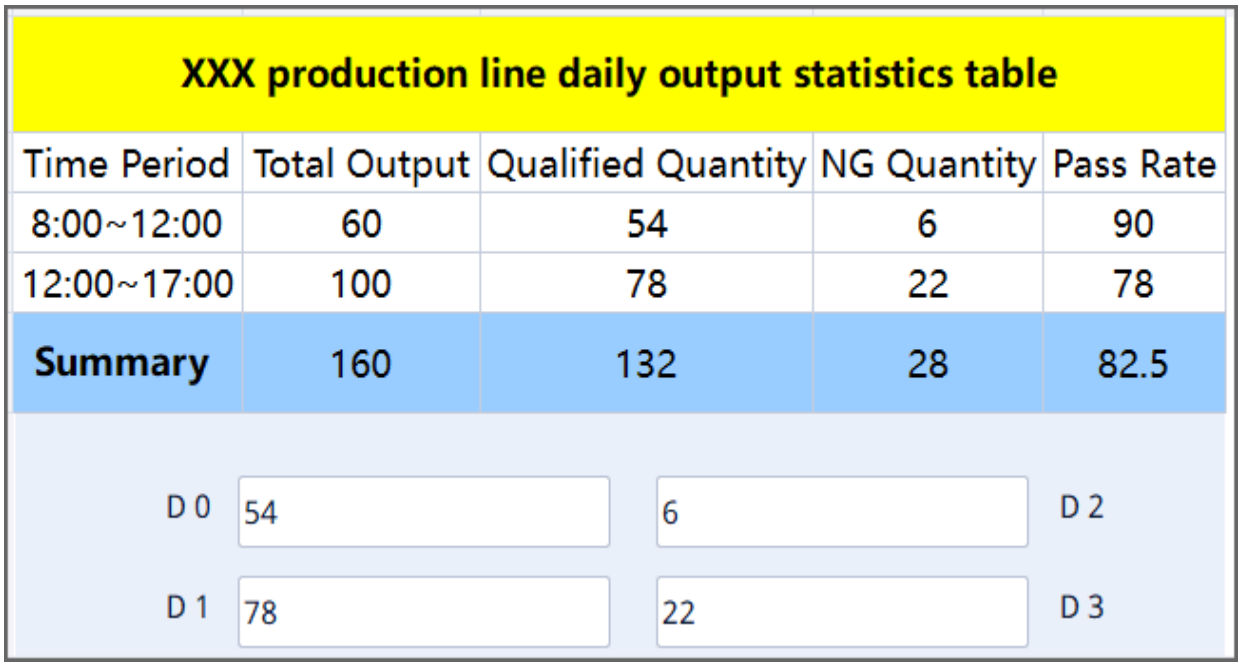


The setting method also applies to other period cells.

4. Set the calculation method in each cell of the total row, as shown in the following figure.



This applies to all total row cells. After you have configured the report in the screen in the report view, real-time statistics can be made based on the number of good products and NG products transmitted by tags in the runtime. The effect is as follows.



23.12.3 Historical Report Application

Introduction

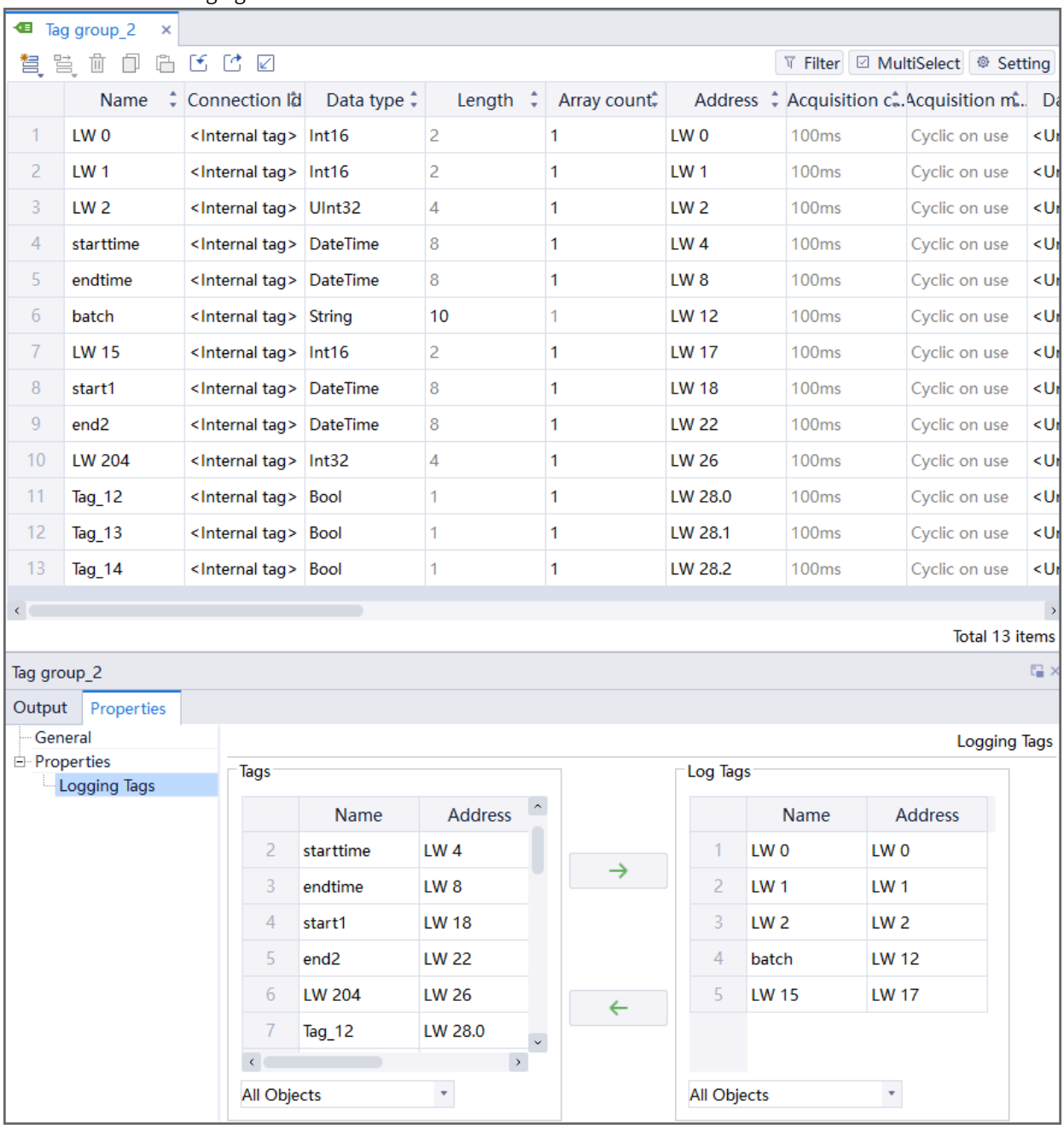
After data records are collected on the HMI, you need to screen report history data by condition and count and analyze the data based on the screening result.

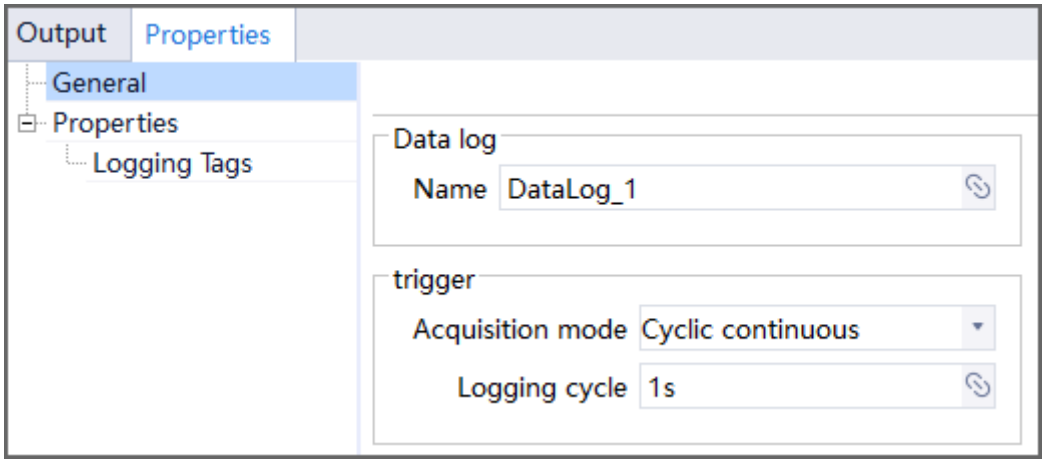
Preconditions

- You have learned how to set history cells in 12.4.3 Property Settings of History Cells.
- A project and a screen have been created.

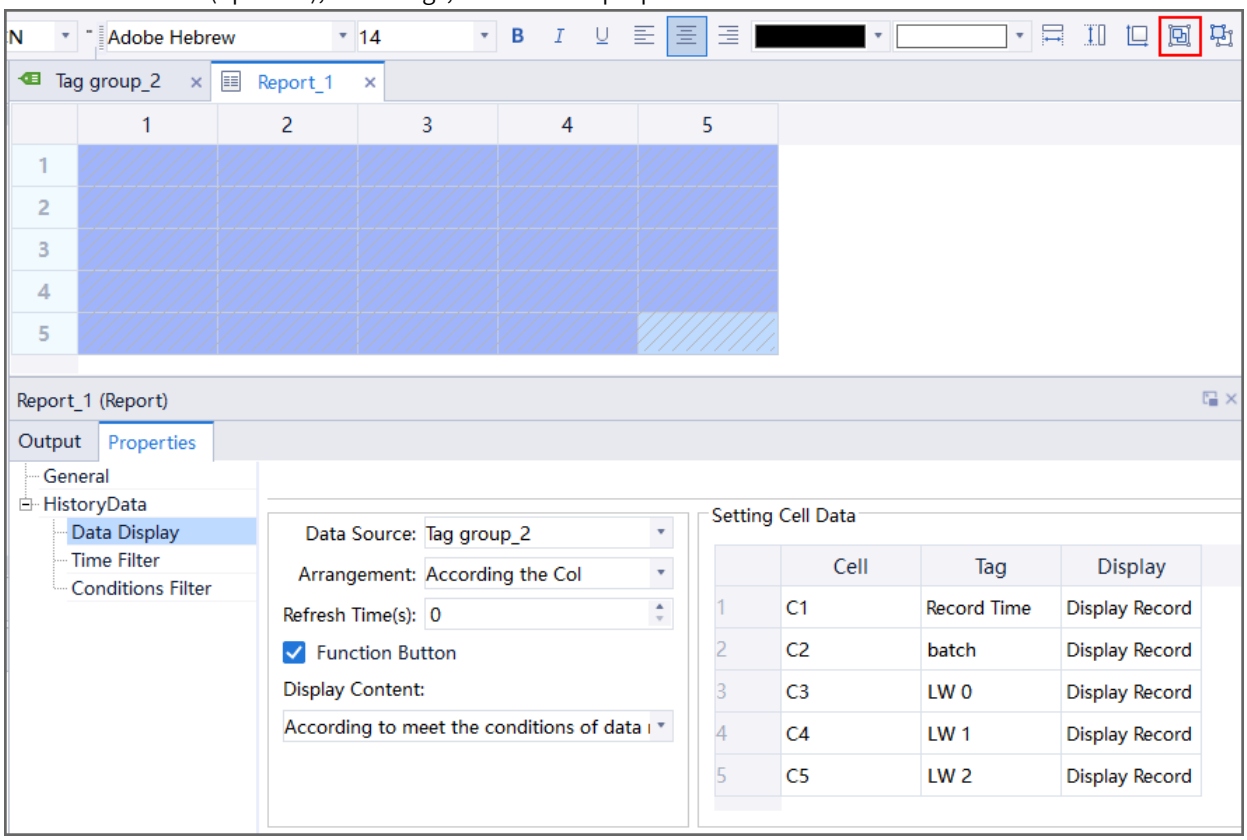
Procedure

1. Create a tag group. Choose "Communication" > "Tags" > "Tag group_2", create a tag group, add tags to the group, add tags for which you want to monitor records to the group display property, and set the data record, as shown in the following figure:

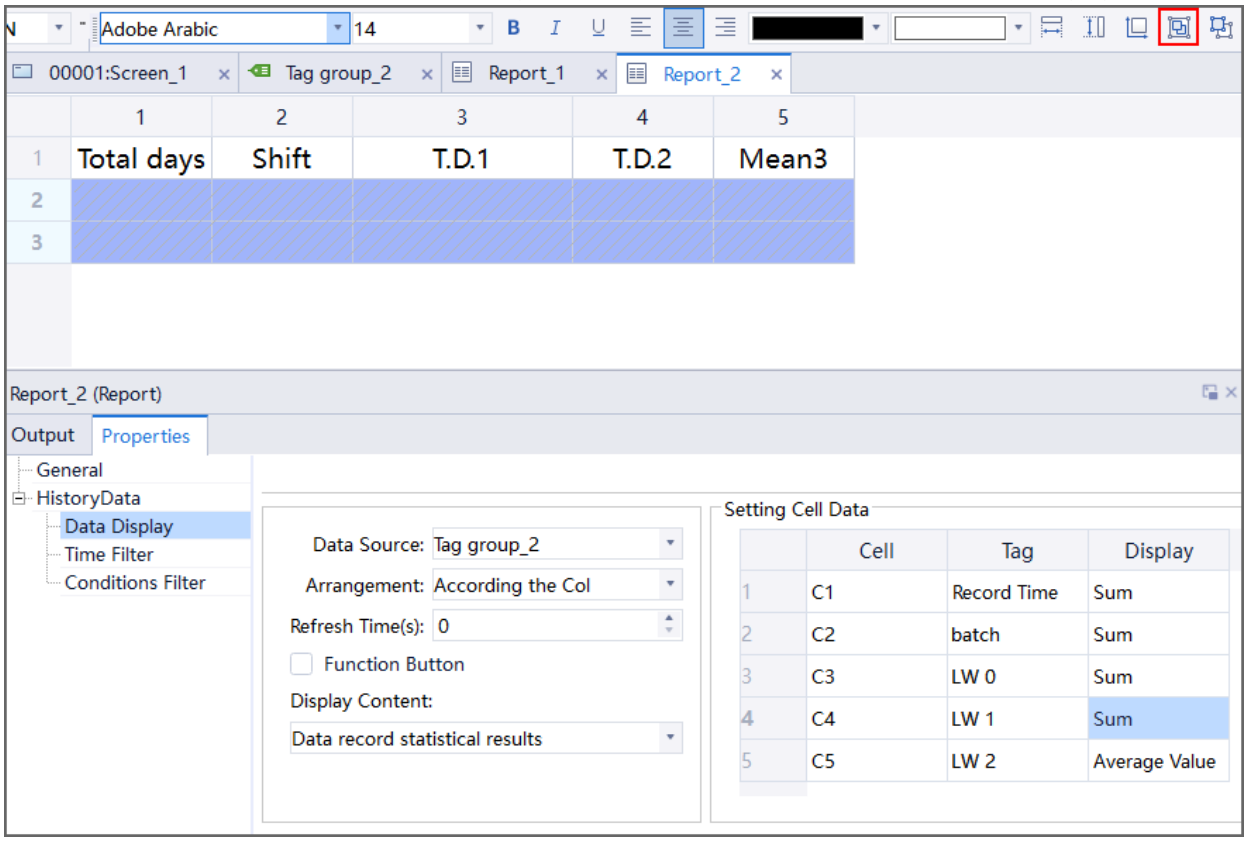




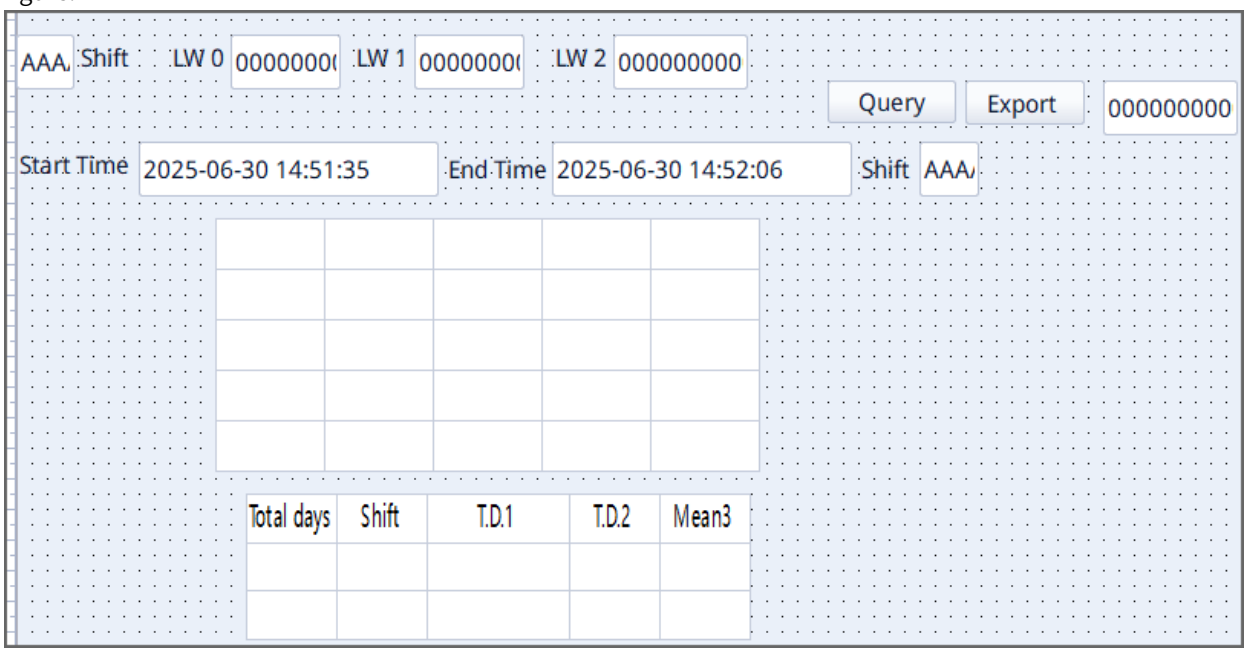
2. In the "Project" navigation tree on the left, select "Report". In the screen displayed, create two historical reports (select a cell and click ), one for displaying the detailed data by condition and one for display data to be summarized (optional), select tags, and set their properties.



3. Set the properties of the report for displaying data to be summarized, as shown in the following figure.

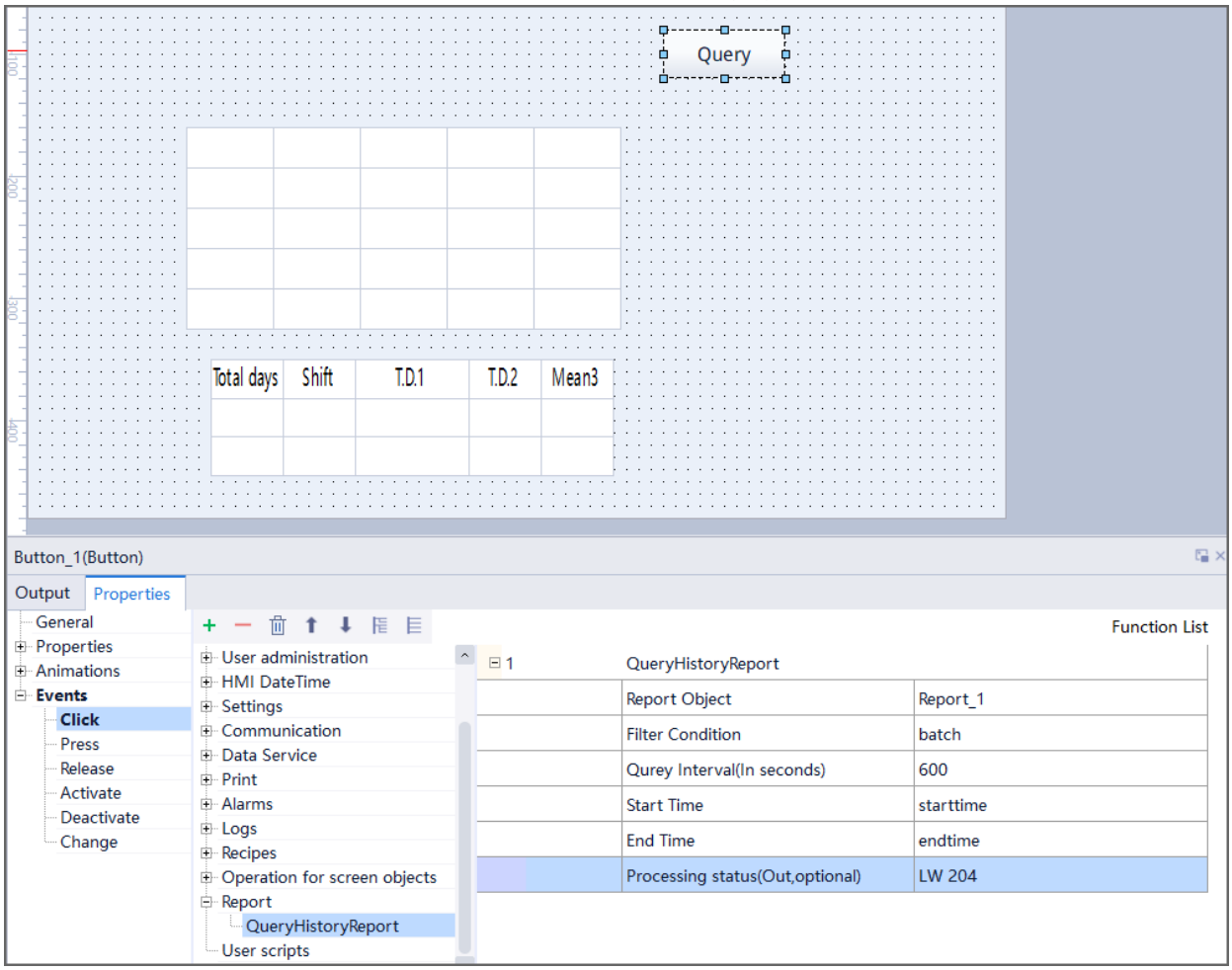


4. Create a report view and associate the report. In the "Production Management" navigation tree on the right, drag two report controls to the screen, and associate "Report_1" and "Report_2", as shown in the following figure.



5. Associate the query system function. In the screen, add a button control, and associate it with the query system function "QueryHistoryReport". "Start Time", "End Time", and "Query Parameter" must be set for query.

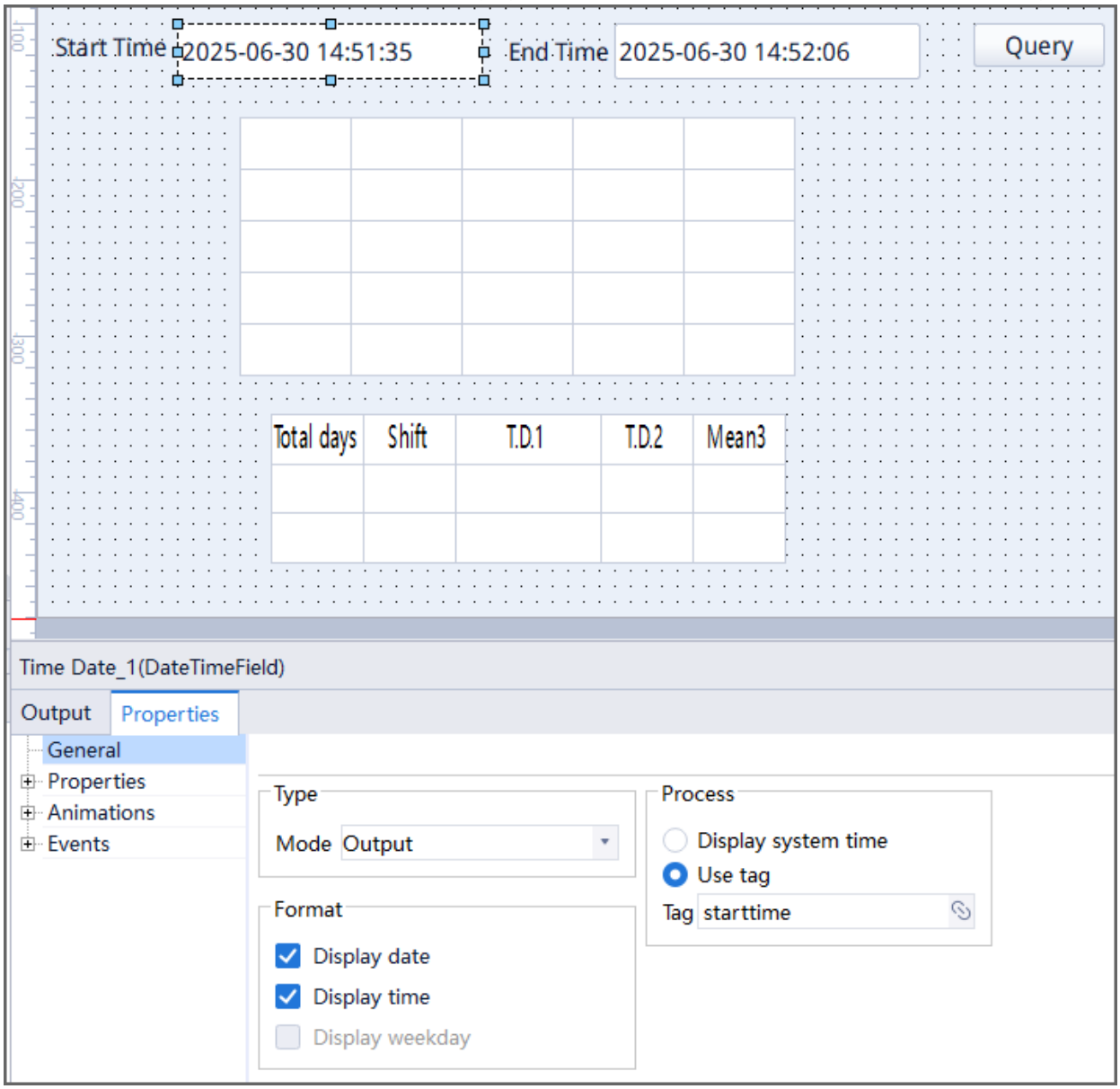
In the screen, add two date-time controls, as shown in the following figure.



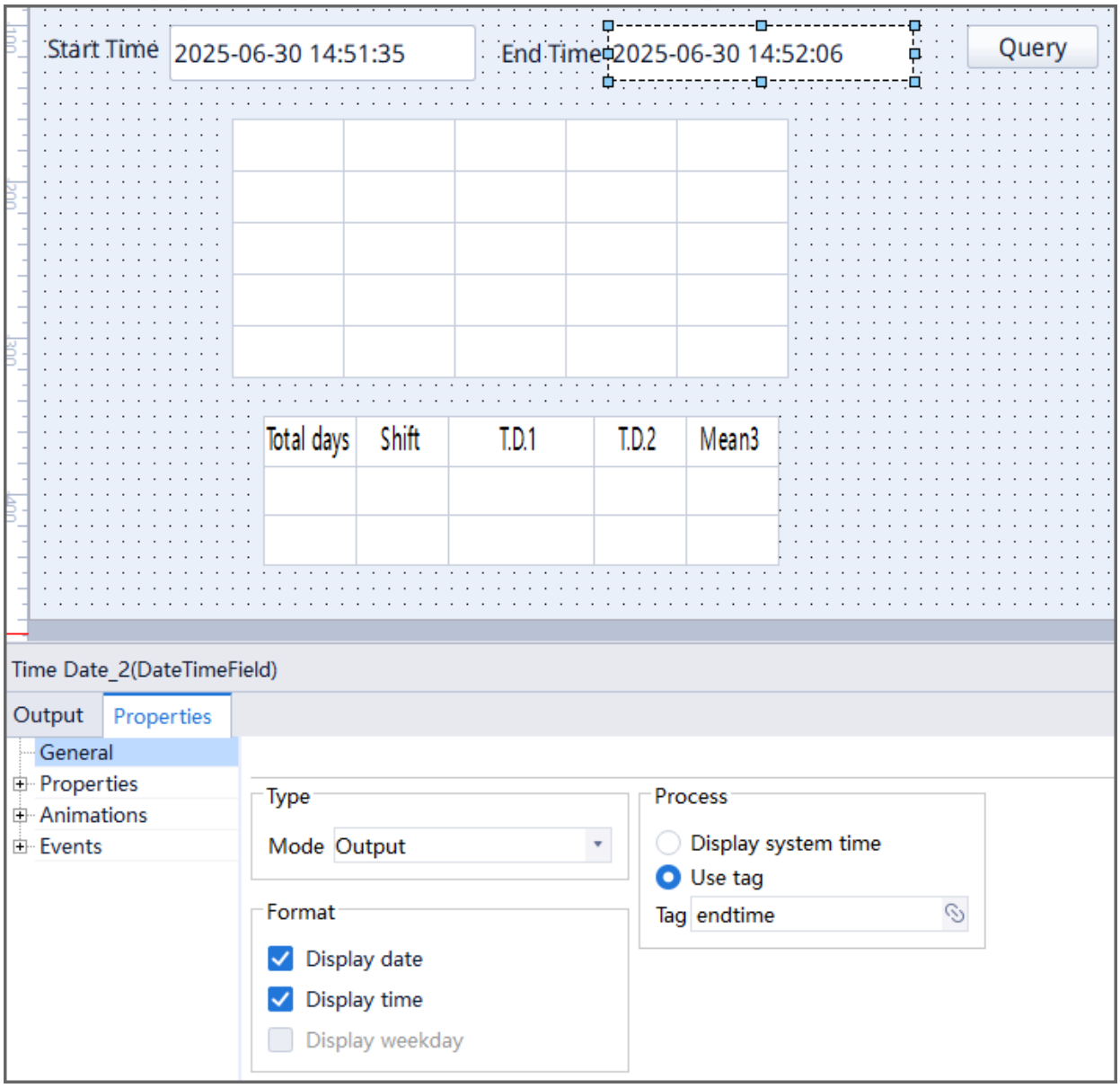
Name	Description
Report Object	The report whose detailed data you want to display, such as report 1
Filter condition	The query parameter, which can be of any type. The query is performed based on the value of the associated tag.
Query Interval	The query interval at which queries are performed The default value is 0, that is, no query interval is set. The unit is second.
Start Time	The start time of the historical report data to be queried
End Time	The end time of the historical report data to be queried
Processing status(Output, optional)	The query processing status of the report. 2 indicates processing, 4 indicates processed successfully, and 12 indicates processing failed.

6. In the screen, create two date-time controls as the start time and end time. Create the query parameter control. The date-time controls and query parameter control must be the same as the 2nd, 4th, and 5th

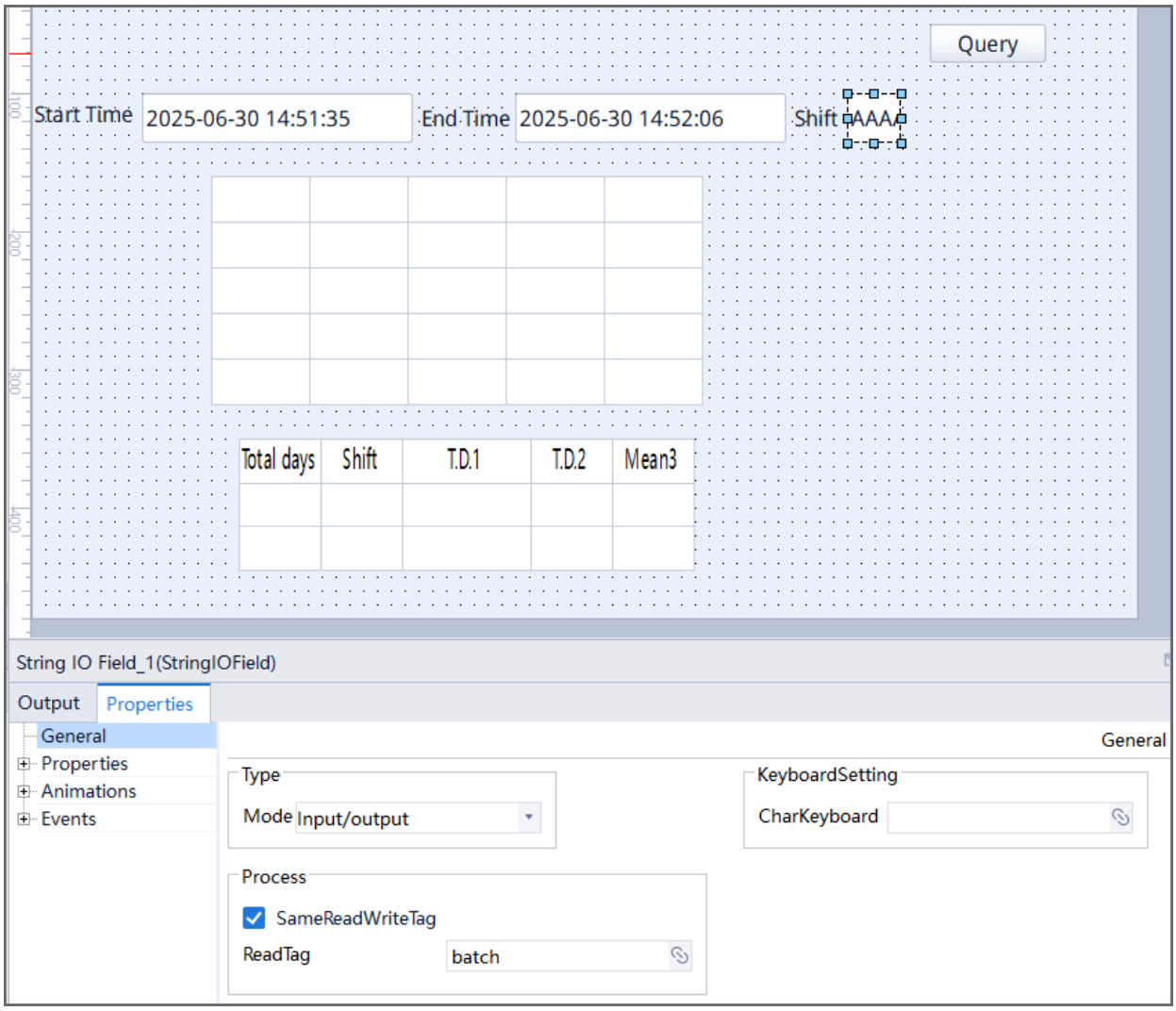
parameters in the system function. The following figure show the association of the "Start Time" input tag.



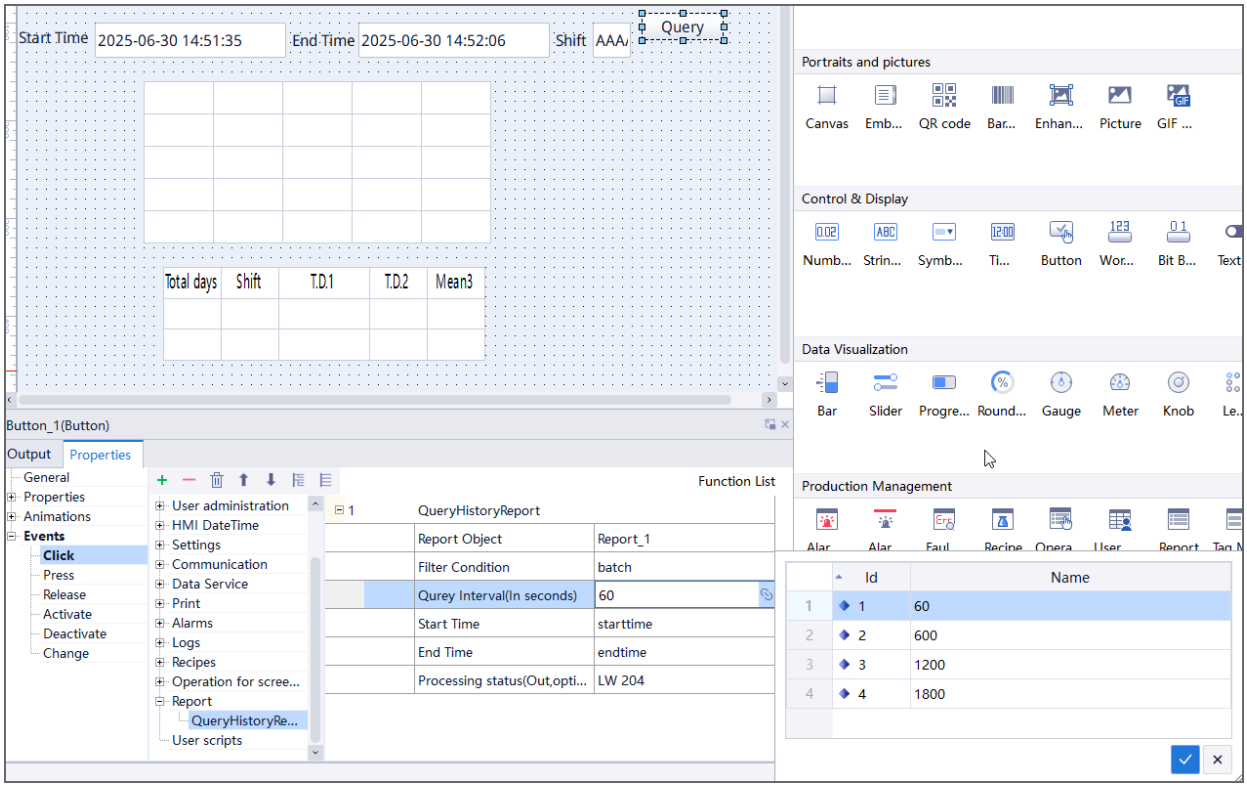
7. The following figure show the association of the "End Time" input tag.



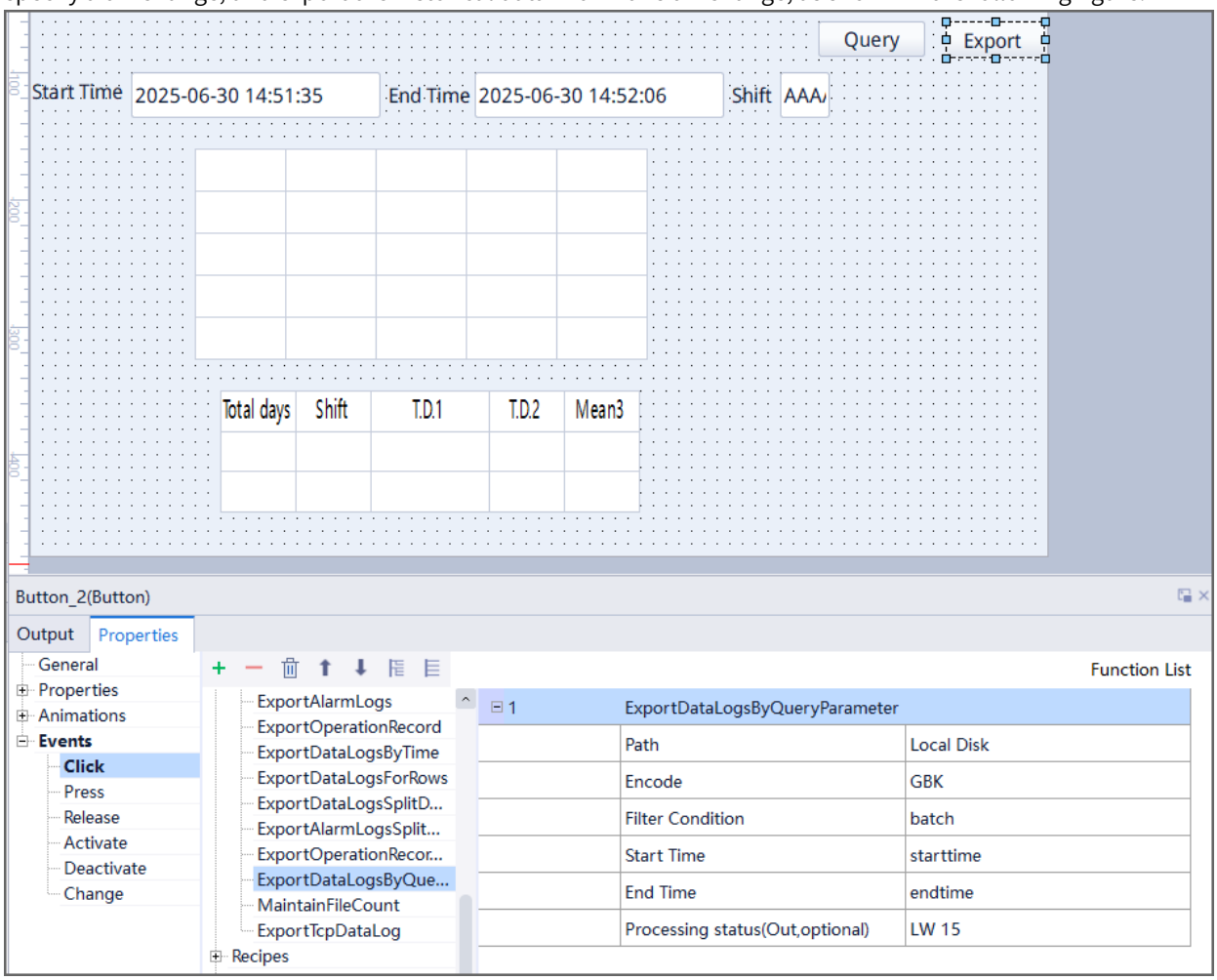
8. The following figure show the association of the "schedules" input tag.



9. Options for "Query Interval" are 60s, 600s, 1200s, and 1800s, corresponding to 1 minute, 10 minutes, 20 minutes, and 30 minutes, respectively. If these options do not meet your needs, you can input an interval, as shown in the following figure.



10. Associate the report data and export the system function. When exporting the system function, you can specify a time range, and export the historical data within this time range, as shown in the following figure.



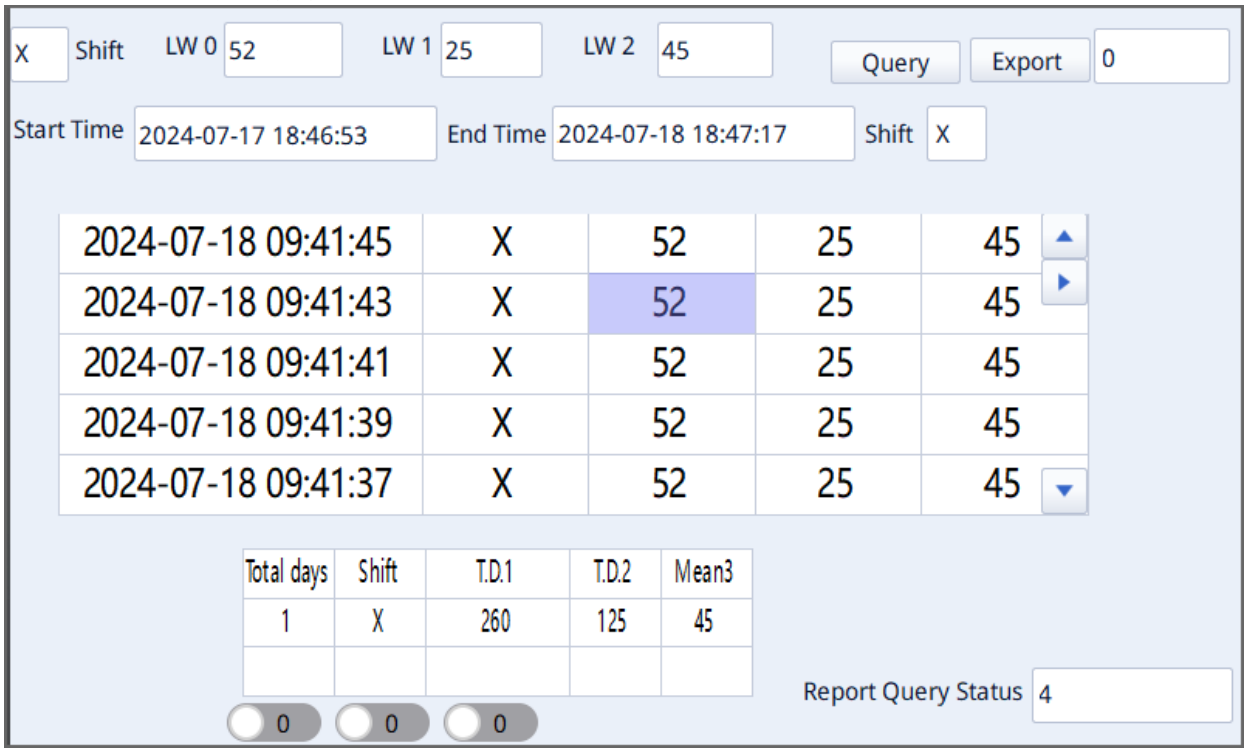
Name	Description
Path	You can export the report to a local hard disk, SD card, or USB drive.
Encode	Exported data can be encoded in GBK or UTF-8 format.
Output Status	The export processing status of the report. 2 indicates processing, 4 indicates processed successfully, and 12 indicates processing failed.
Filter Condition	Exports data using this tag as the parameter.
Start Time	The start time of exported data
End Time	The End time of exported data

Note

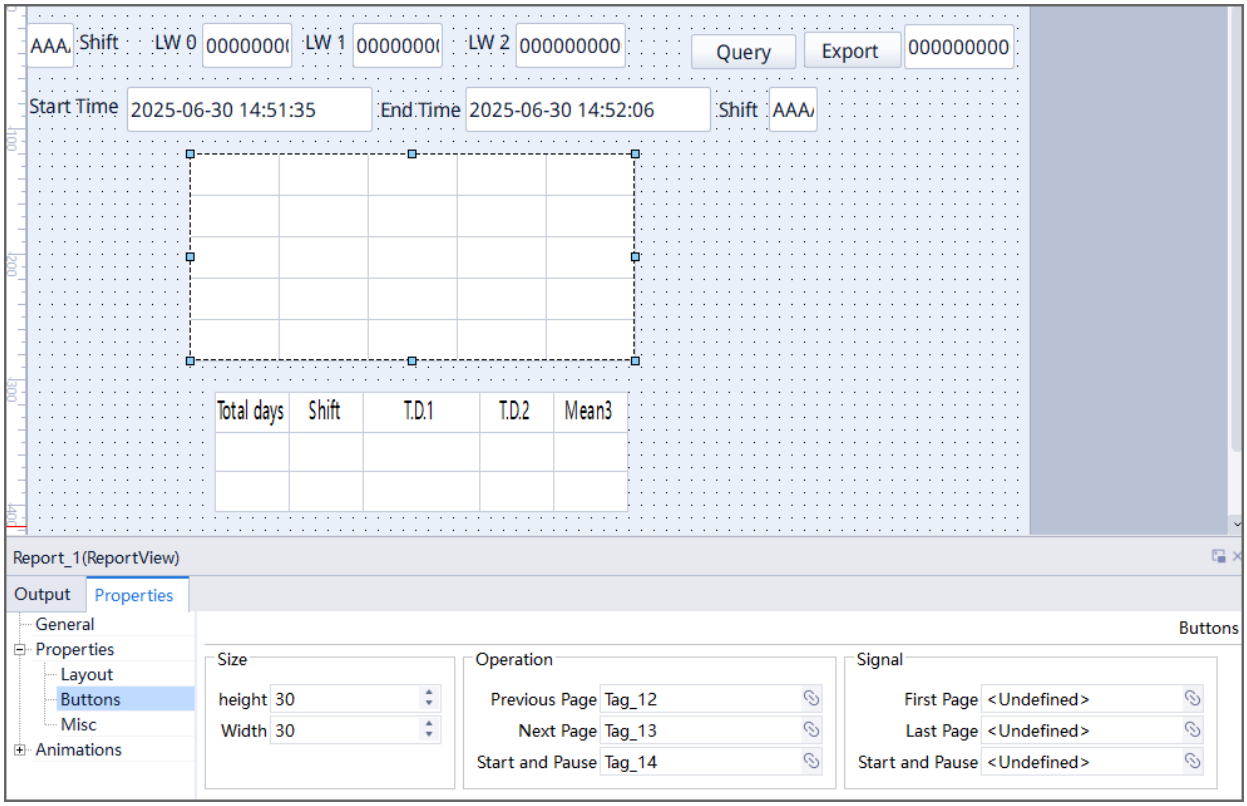
When the report is running, if you do not click "query", the data is directly exported at the default interval of 0s. If you click "query" and then click "Export data", the data is exported according to the interval set in the query system function.

11. Switch the report status. Reports can be refreshed dynamically. When you query reports by time and keywords (manual report), you can switch between a manual report and an automatic report. A running report is an automatic report that is refreshed in real time. After you input the start time, end time, and query parameter such as shift and click "Query", data meeting the conditions is displayed and the status is "Manual" at this time,

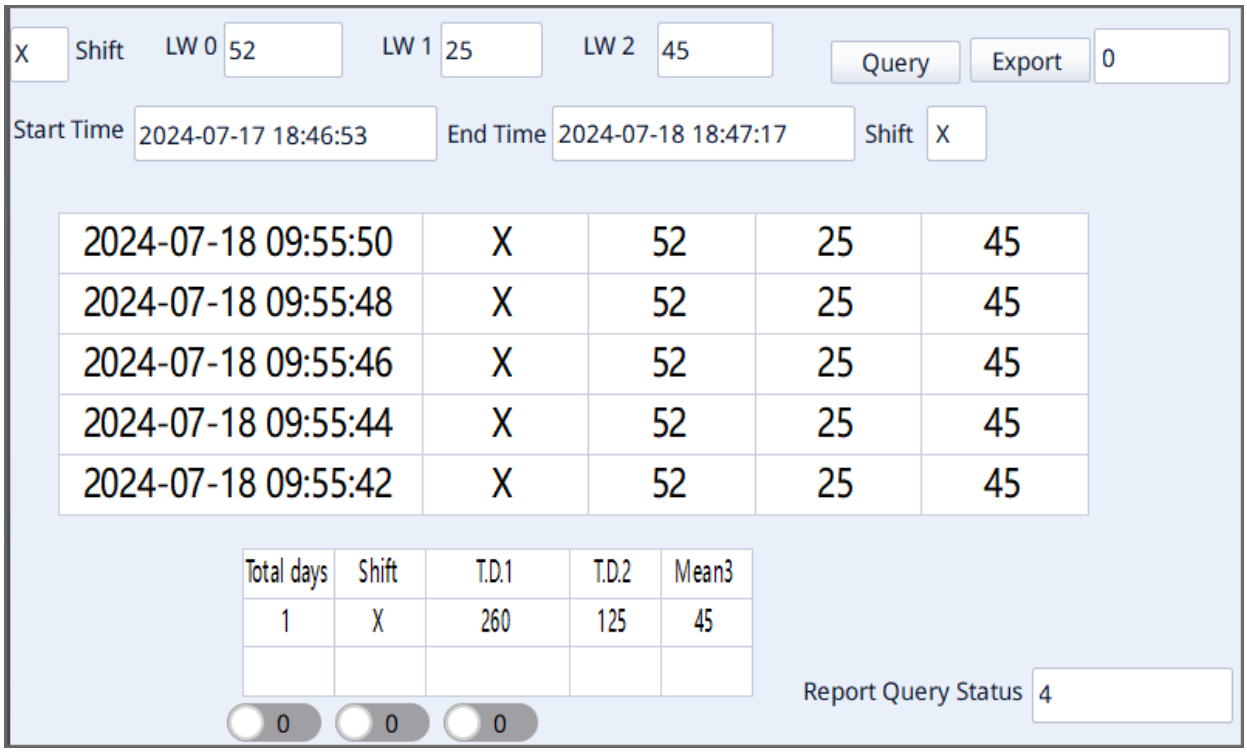
as shown in the following figure.



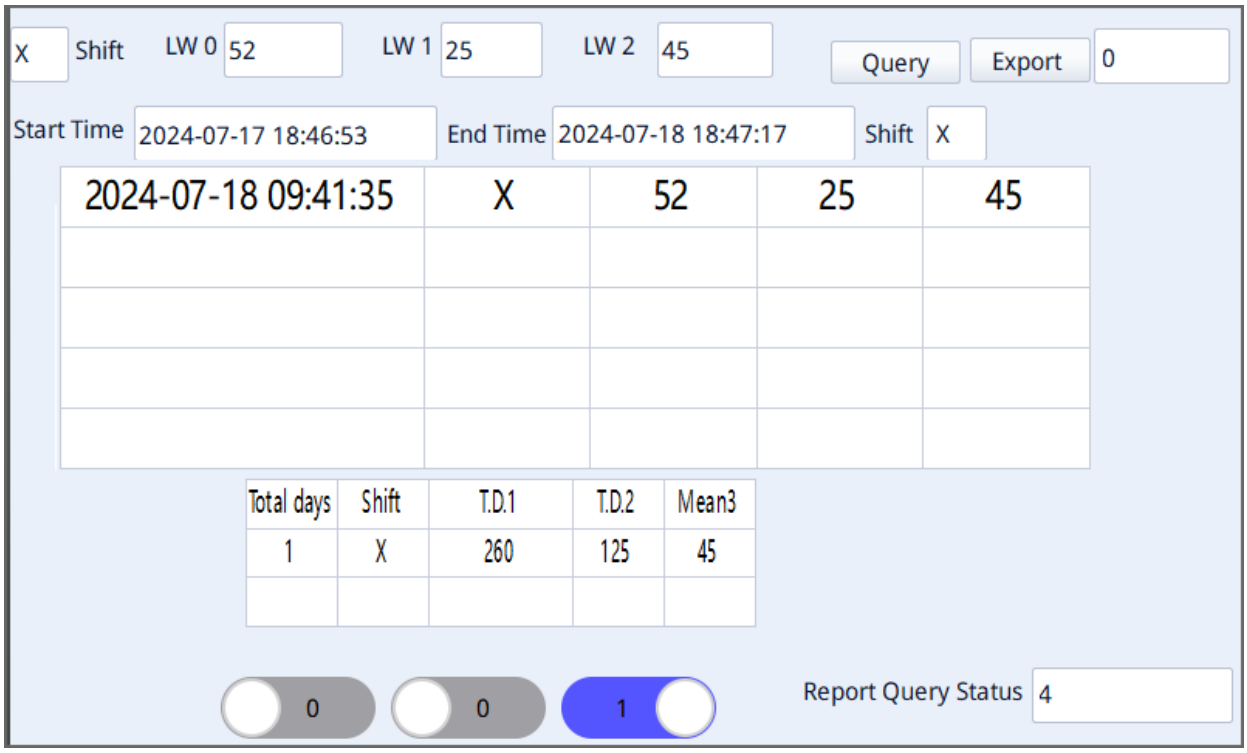
12. In the manual status, the report is no longer refreshed and the found results are displayed. In this status, if there is too much data, click the page up or down button on the right. Click the enable/disable button on the right to automatically restore the report status, and then the system refreshes the data at the refreshing interval in real time. Page up or down and enable/disable the associated tags. Dynamic reports allow you to page up or down and enable/disable the associated tags. This feature is also supported for manual query conditions. Click the report view of the associated report 1. Choose "Properties" > "Button". In the "Operation" section, set the "Page up", "Page down", and "Start and Pause" tags, and associate three bit buttons on the screen, as shown in the following figure.



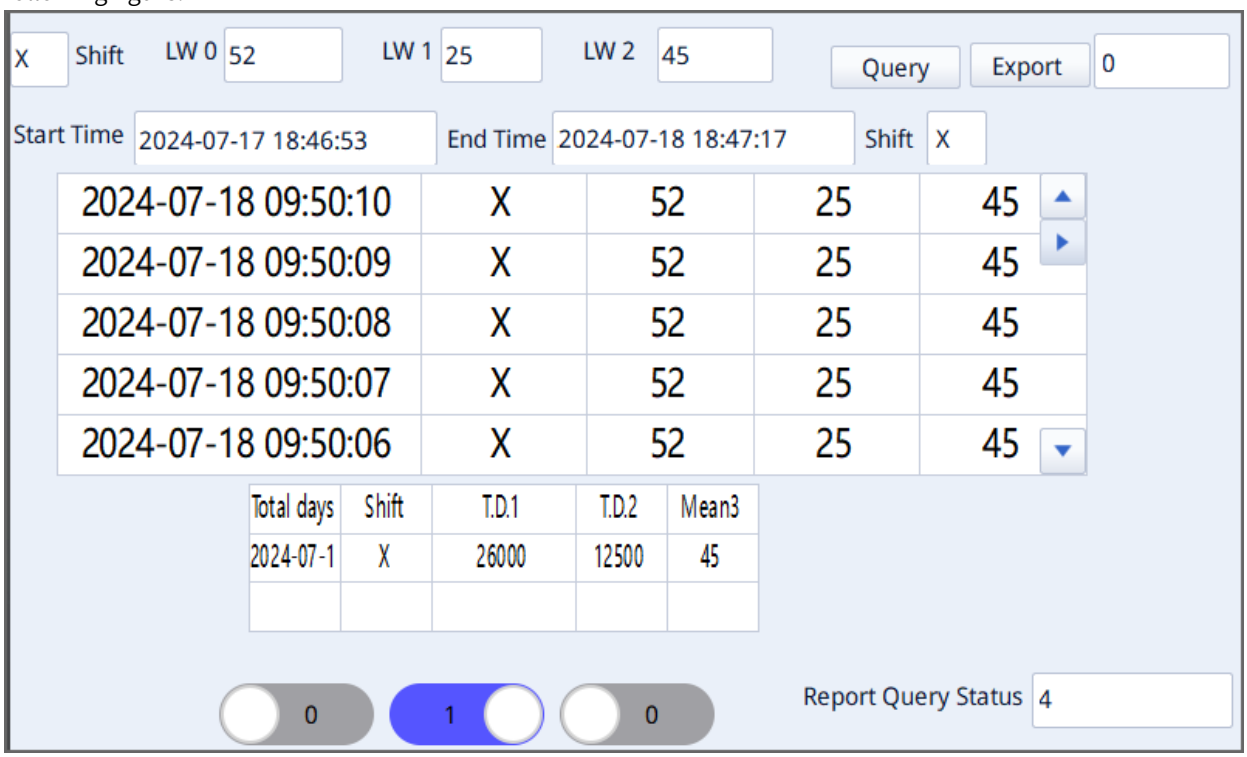
13. The following figure shows the running effect.



Page down the screen, as shown in the figure below.

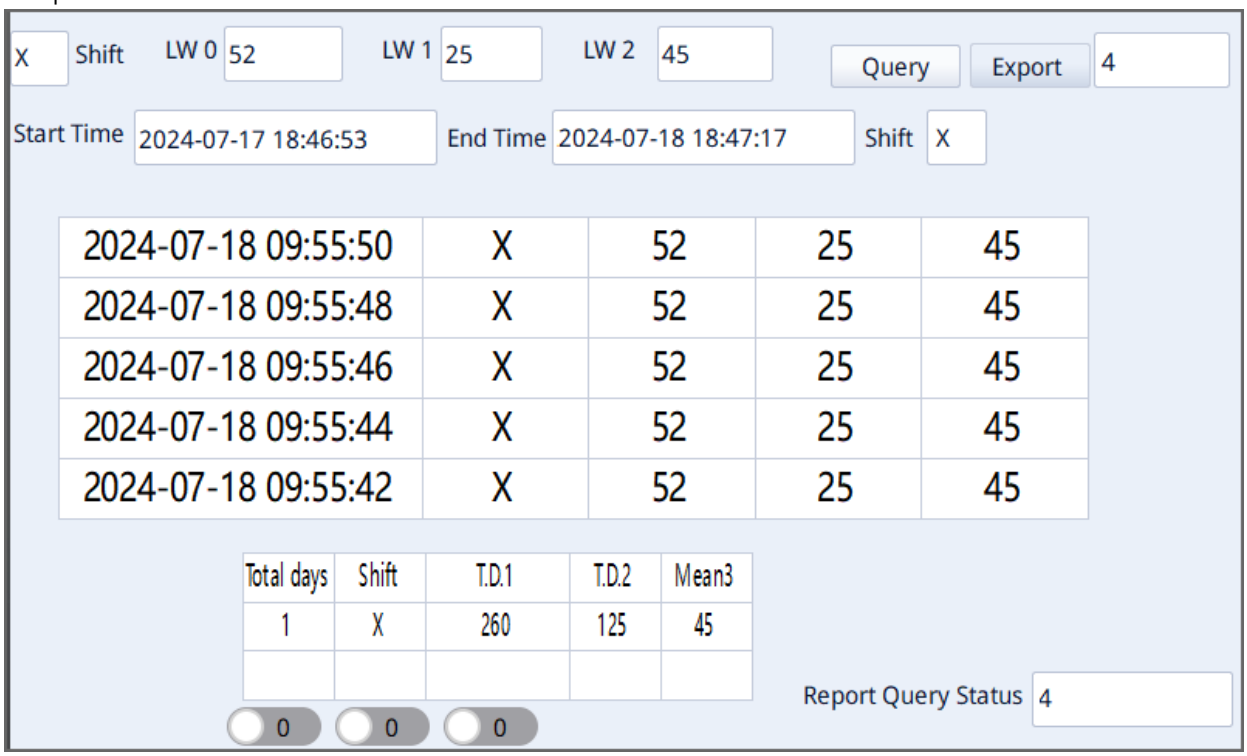


14. The data is refreshed after you click "Start and Pause", and the mode is changed to "Auto", as shown in the following figure.

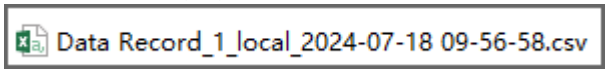


15. Manually match keywords and date-time query conditions. Signal paging and signal pausing are not supported.

To export the data, you need to create a button on the screen and associate the button with the export system function. After the project runs online, click "Export" to export the data. No prompt is displayed and the exported result is determined by the generated file or the output status code. In the following example, the data is exported to a local hard disk.



16. The following figure shows the exported data file and generated data.



1	#Data Record 1					
2						
3	#Column A: Number of rows					
4	#Column B: Tag Name					
5	#Column C: Value					
6	#Column D: Validity (0 - invalid, 1 - valid)					
7	#Column E: Date and Time					
8	#Column F: Tag ID					
9						
10	Number of rows	Tag Name	Value	Validity	Date and Time	Tag ID
11						
12	Tag group_2					
13	row	Date and Time	batch	LW 0	LW 1	LW 2
14	481	2024/7/18 9:48	X	52	25	45
15	483	2024/7/18 9:48	X	52	25	45
16	485	2024/7/18 9:48	X	52	25	45
17	487	2024/7/18 9:48	X	52	25	45
18	489	2024/7/18 9:48	X	52	25	45
19	491	2024/7/18 9:48	X	52	25	45

23.13 Scripts

23.13.1 Generating a QR Code and Barcode Through Script

Case

QR codes and barcodes can be generated through scripts.

Purpose

To generate QR codes and barcodes through scripts

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the "String input", "Company name", "Year", and "Sales" tags.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	String input	1	<Internal tag>	String	40	1	LW 0
2	Company name	2	<Internal tag>	String	10	1	LW 1
3	Year	3	<Internal tag>	UInt32	4	1	LW 2
4	Sales	4	<Internal tag>	Float	4	1	LW 3

3. Compile the script.
   Click "Script", and double-click "Add Script" to create a script such as "Script_1".
   // Convert and combine strings
   //Load a into string

```
var a=SmartTags("Company name");
//Load b1 into string converted from integer
var b=SmartTags("Year");
var b1=b.toFixed(0);
//Load c1 into string converted from floating-point number
var c=SmartTags("Sales");
var c1=c.toFixed(2);
//Combine two strings
var e="-";
var a1=a.concat(e);
var a2=a1.concat(b1);
var a3=a2.concat(e);
SmartTags("String input")=a3.concat(c1); //Connect strings for QR code/Barcode
```

4. Add a QR code and barcode in the screen.
   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Portraits and screens" > "QR code" and drag the code to "Screen_1", or choose "Portraits and screens" > "Bar Code", and drag the code to "Screen_1".
   b. Select the QR code. On the "Properties" tab page, click "General". In the "Process" section, set "Tag" to "String input". Choose "Properties" > "Layout". In the "Size" section, set "Width" and "Height" to 200.
   c. Select the barcode. On the "Properties" tab page, click "General". In the "Process" section, set "Tag" to "String input". Choose "Properties" > "Layout". In the "Size" section, set "Width" to 410 and "Height" to 120.
5. Add a tag to the screen.
   a. In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_1". Add four text fields in the same way, and then select "Text Field". On the "Properties" tab page, click "General". In the "Text" section, modify the content to "String input", "Company name", "Year", and "Sales", respectively.
   b. In the "Project" navigation tree on the left, click "Tag group_2". Drag the "String input", "Company name", "Year", and "Sales" tags from "Variable View" to "Screen_1".
6. Add a button in the screen and associate it with a script.
   In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag "Button" to "Screen_1", and select "Button". On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Load". Choose "Events" > "Click" > "User scripts", and then double-click "Script_1" to

associate the script.



7. Perform the simulation test.

Click  to perform simulation offline. Set "Company name", "Year", and "Sales", and click "Load".



23.13.2 Displaying a Pop-up Window at a Specified Time Through Script

Case

A pop-up window can be displayed at a specified time through script.

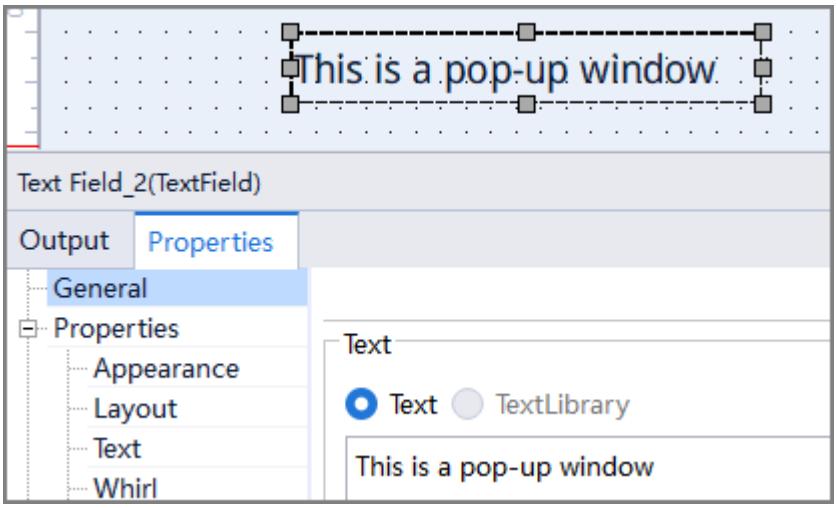
Purpose

To display a pop-up window at a specified time through script

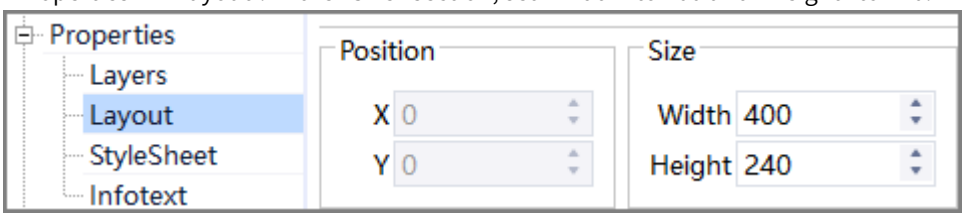
Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add a pop-up screen.
   a. Choose "Screens" > "Popup Screens". In the expanded menu, double-click "Add Popup Screen" and add a pop-up screen, such as "Screen_2".
   b. Set the content of a screen: In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_2". On the "Properties" tab page, click "General". In

the "Text" section, modify the text content to "This is a pop-up window".



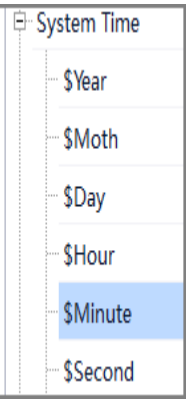
c. Set the size of a screen: Click the blank area on "Screen_2". On the "Properties" tab page, choose "Properties" > "Layout". In the "Size" section, set "Width" to 400 and "Height" to 240.



3. Create a system tag.

Choose "Communication" > "Tags". Double-click "System Tags". In the "Tools" navigation tree on the right, click "System Time" and then double-click "$Year", "$Moth", "$Day", "$Hour", "$Minute", and "$Second" to add corresponding system tags and obtain the system time.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	$Year	1	<Internal tag>	Int16	2	1	LW 9000
2	$Moth	2	<Internal tag>	Int16	2	1	LW 9001
3	$Day	3	<Internal tag>	Int16	2	1	LW 9002
4	$Hour	4	<Internal tag>	Int16	2	1	LW 9003
5	$Minute	5	<Internal tag>	Int16	2	1	LW 9004



4. Create internal tags.

Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 4.

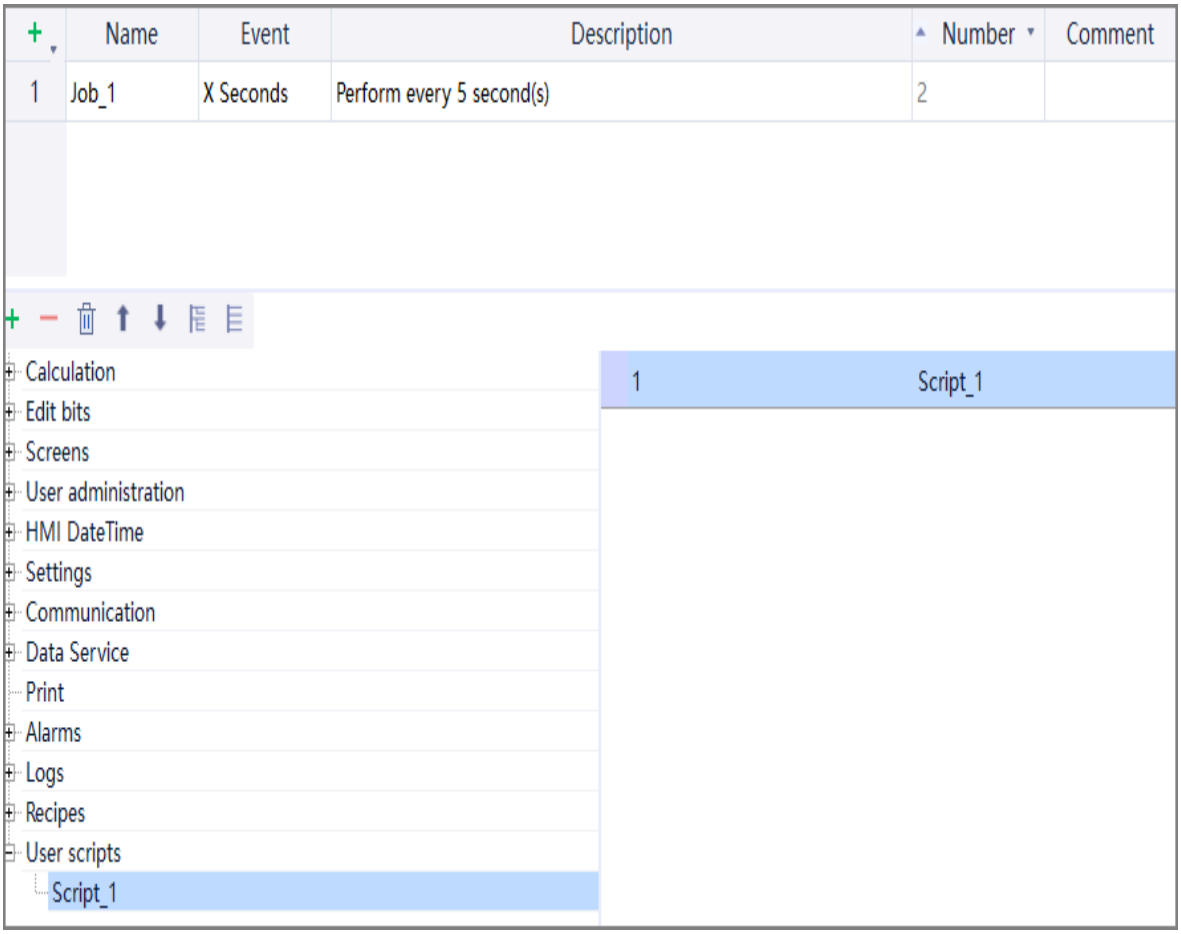
	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	6	<Internal tag>	Int16	2	1	LW 0
2	LW 1	7	<Internal tag>	Int16	2	1	LW 1
3	LW 2	8	<Internal tag>	Int16	2	1	LW 2
4	LW 3	9	<Internal tag>	Int16	2	1	LW 3
5	L3 4	10	<Internal tag>	Int16	2	1	LW 4

5. Compile the script.

Click "Script", double-click "Add Script" to create a script such as "Script_1", and compile the script.

```
var a =SmartTags('$Year');
var b =SmartTags('$Moth');
var c =SmartTags('$Day');
var d =SmartTags('$Hour');
var e=SmartTags('$Minute');
var f=SmartTags('LW 0');
var g=SmartTags('LW 1');
var h=SmartTags('LW 2');
var j=SmartTags('LW 3');
var k=SmartTags('LW 4');
if((a==f)&&(b==g)&&(c==h)&&(d==j)&&(e==k))
{
    ShowPopup('Screen_2',-1,-1);
}
```

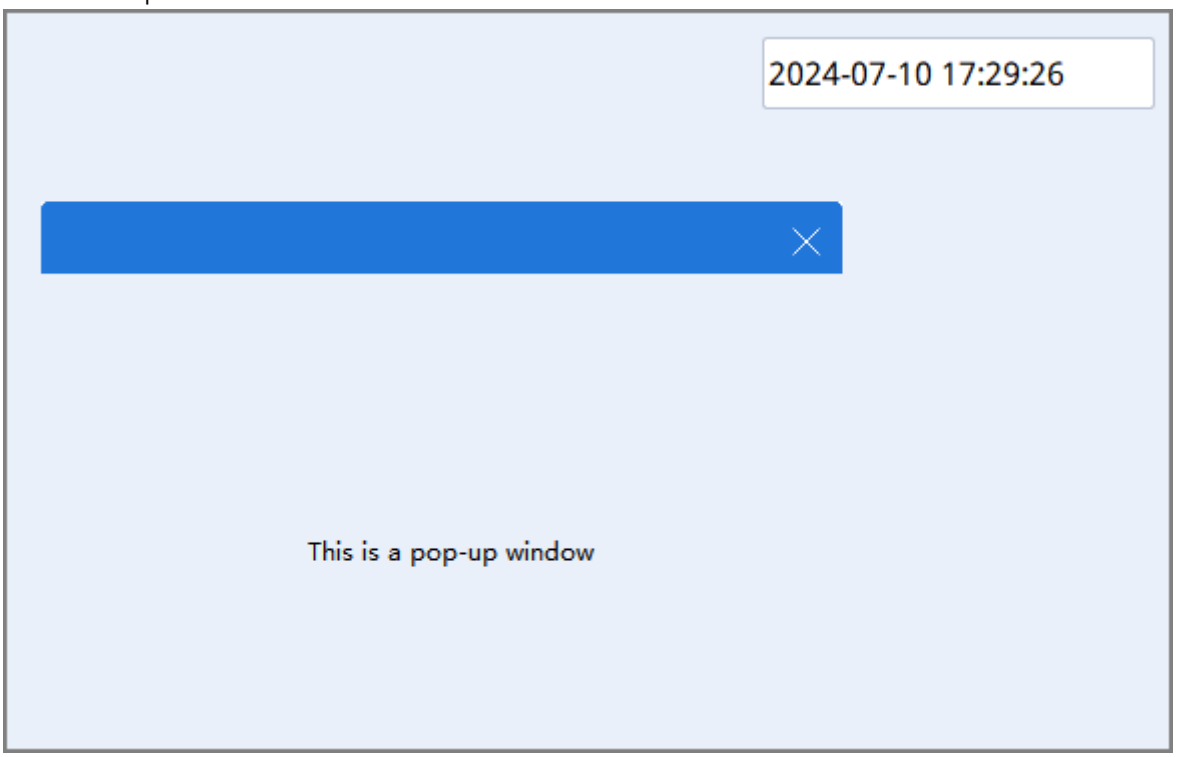
6. Configure the scheduler.
   Click "HMI Settings", and then double-click "Scheduler" to add a scheduler. Set "Event" to "X Seconds", and "Description" to "Perform every 5 second(s)". On the "Properties" tab page, click "User scripts" and double-click "Script_1" to associate with the script.



7. Add a date-time field to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Control & Display" > "Time Date", and drag the time to "Screen_1".

8. Perform the simulation test.

   Click to perform simulation offline.



23.13.3 Automatically Increasing Tags by Executing a Script in the Scheduler

Case

Execute a script in the scheduler to automatically increase the tag LW 0 by 1 every 5s.

Purpose

Execute a script in the scheduler to automatically increase the tag LW 0 by 1 every 5s.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tag LW 0.

	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0

3. Compile the script.

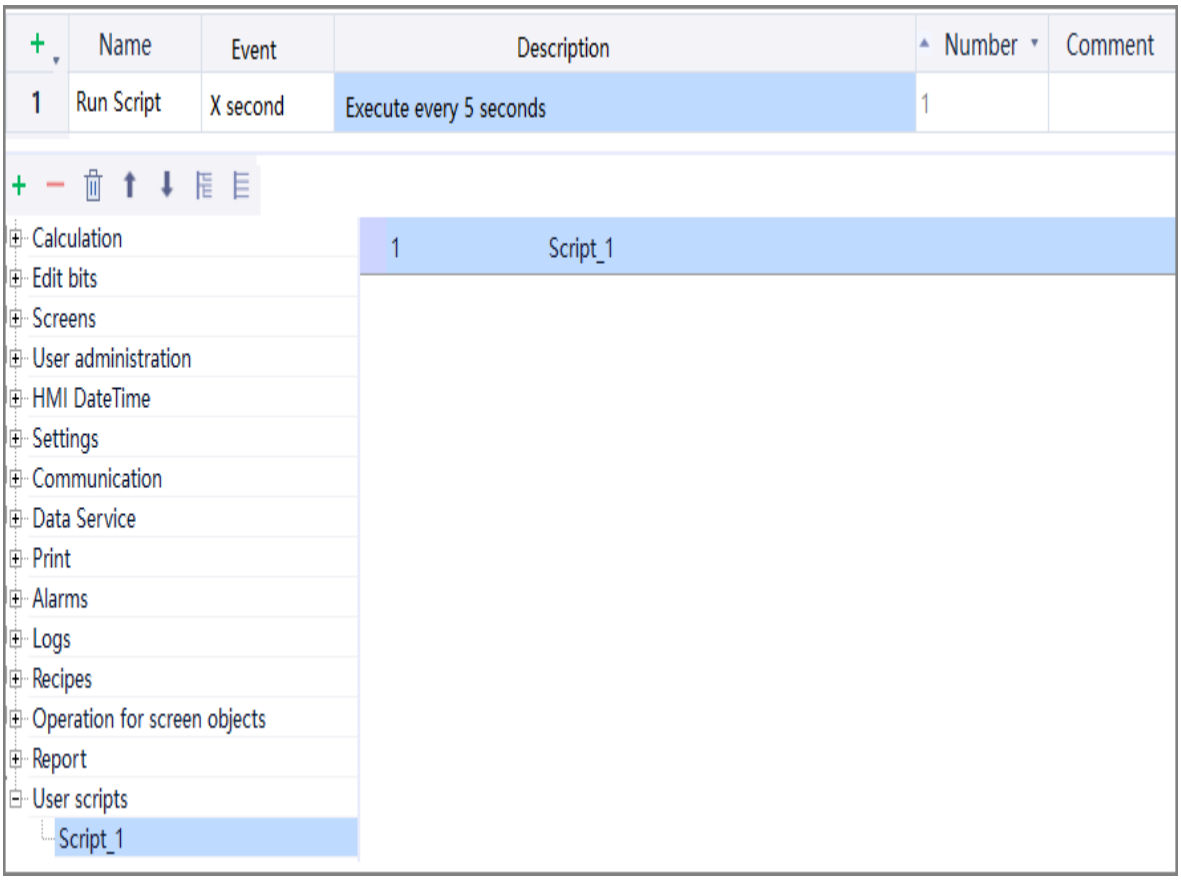
   Click "Script", double-click "Add Script" to create a script such as "Script_1", and compile the script for auto increase by 1 each time.

   IncreaseValue(SmartTags('LW 0'),1,0);

4. Configure the scheduler.

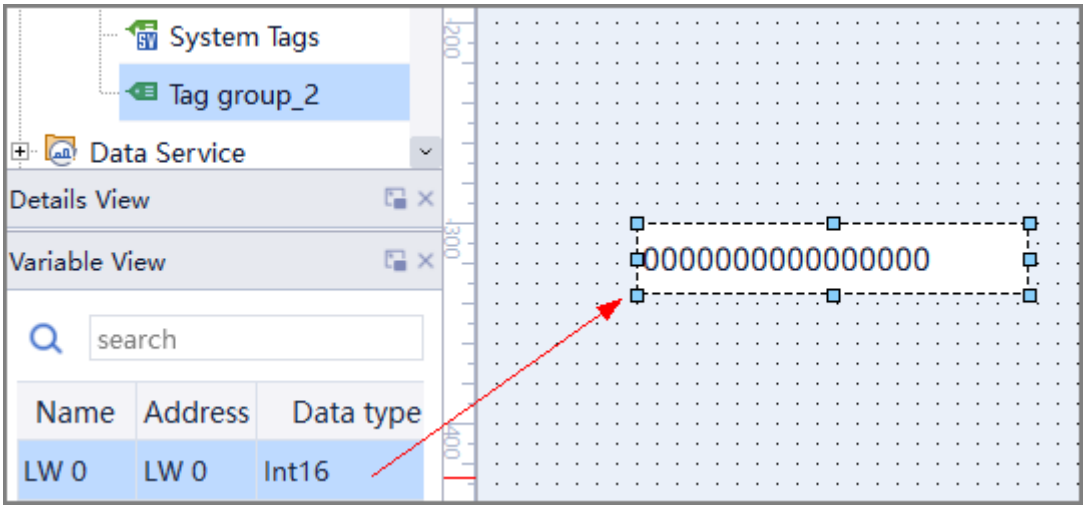
   Click "HMI Settings", and then double-click "Scheduler" to add a scheduler. Set "Name" to "Run Script", "Event" to "X Seconds", and "Description" to "Perform every 5 second(s)". On the "Properties" tab page,

click "User scripts" and double-click "Script_1" to associate with the script.



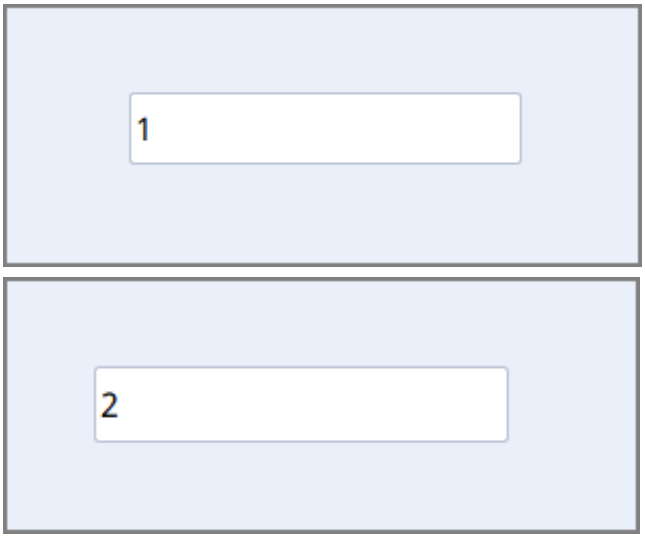
5. Add a tag to the screen.

   Switch to "Screen_1". In the "Project" navigation tree on the left, click "Tag group_2". Drag the tag LW 0 from "Variable View" to "Screen_1".



6. Perform the simulation test.

   Click  to perform simulation offline.



23.13.4 Obtaining the System Time Through Script

Case

The system time is obtained through a script.

Purpose

To obtain the system time through a script

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.
   Choose "Communication" > "Tags", double-click "Tag group_2", and add the tags LW 0 to LW 7.

+	Name	Number	Connection Id	Data type	Length	Array count	Address
1	LW 0	1	<Internal tag>	Int16	2	1	LW 0
2	LW 1	2	<Internal tag>	Int16	2	1	LW 1
3	LW 2	3	<Internal tag>	Int16	2	1	LW 2
4	LW 3	4	<Internal tag>	Int16	2	1	LW 3
5	LW 4	5	<Internal tag>	Int16	2	1	LW 4
6	LW 5	6	<Internal tag>	Int16	2	1	LW 5
7	LW 6	7	<Internal tag>	Int16	2	1	LW 6
8	LW 7	8	<Internal tag>	Int16	2	1	LW 7

3. Compile the script.
   Click "Script". Double-click "Add Script" to create a script such as "Script_1". In the "Tools" navigation tree on the right, click "Code template wizard". In the "JavaScript Object", double-click "Date" and then modify the script.

```
var dt = new Date();

//Getter

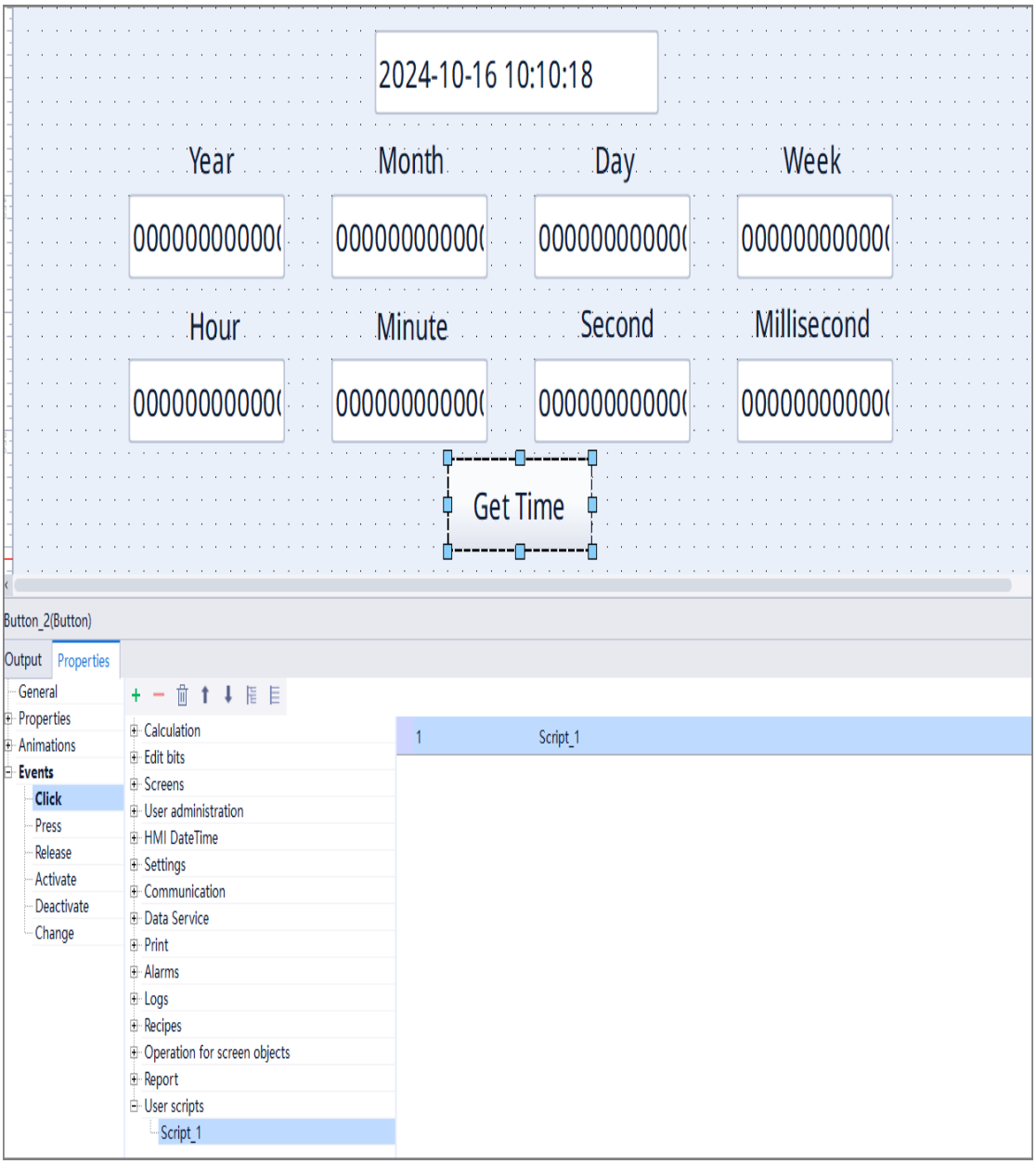
var year = dt.getFullYear();//the year as a four-digit number.

var month = dt.getMonth(); //(0=January to 11=December)
```

```
var day = dt.getDate(); //(1 to 31)
var week = dt.getDay();//(0=Sunday to 6=Saturday)
var hour = dt.getHours();//(0 to 23)
var minute = dt.getMinutes();//(0 to 59)
var second = dt.getSeconds();//(0 to 59)
var ms = dt.getMilliseconds();//(0 to 999)
//Assign a value for the tag.
SmartTags('LW 0')=year;
SmartTags('LW 1')=month+1;
SmartTags('LW 2')=day;
SmartTags('LW 3')=week;
SmartTags('LW 4')=hour;
SmartTags('LW 5')=minute;
SmartTags('LW 6')=second;
SmartTags('LW 7')=ms;
//Setter
dt.setFullYear( year );
dt.setMonth( month );
dt.setDate( day );
dt.setHours( hour );
dt.setMinutes( minute );
dt.setMilliseconds( ms );
```

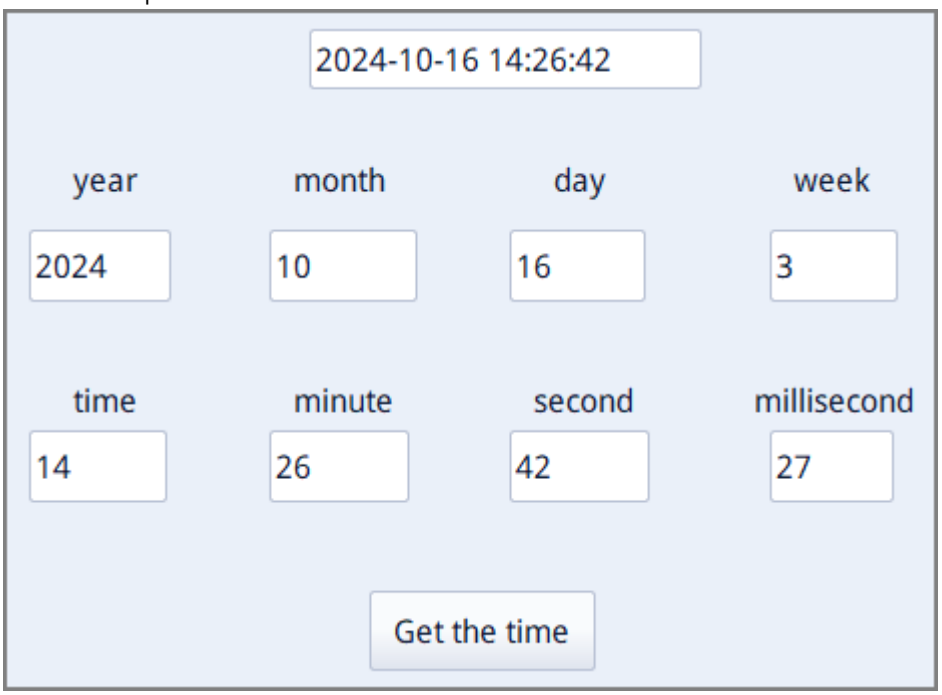
4. Configure the screen.
    a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field", and drag the text field to "Screen_1". Add eight text fields in the same way, and then select "Text". On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "Year", "Month", "Date", "Week", "Hour", "Minute", "Second", and "Millisecond", respectively.
    b. In the "Project" navigation tree on the left, click "Tag group_2". Drag tags LW 0 to LW 7 from "Variable View" to "Screen_1".
    c. In the "Tools" navigation tree on the right, choose "Control & Display" > "Time Date", and drag the control to "Screen_1".
    d. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", and drag the button to "Screen_1". Select "Button". On the "Properties" tab page, click "General". In the "Text" section, modify "Text OFF" to "Get the time". Choose "Events" > "Click" > "User scripts", and then

double-click "Script_1" to associate the script.



5. Perform the simulation test.

   Click  to perform simulation offline and then click "Get Time".



23.13.5 Assigning a Value to an Array Through Script

Case

Assign a value to an array through script.

Purpose

Assign a value to an array through script.

Procedure

1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Create a tag.

   Choose "Communication" > "Tags", double-click "Tag group_2", add the tag LW 0, and set "Array count" to 5.

	Name	Number	Connection Id	Data type	Length	Array count
1	LW 0	1	<Internal tag>	Int16	10	5

3. Compile the script.

   Click "Script", double-click "Add Script" to create a script such as "Script_1", and compile the script.

```
var i;

for ( i = 0; i < 5; i++ )

{

    SmartTags('LW 0',i, true) = 160;

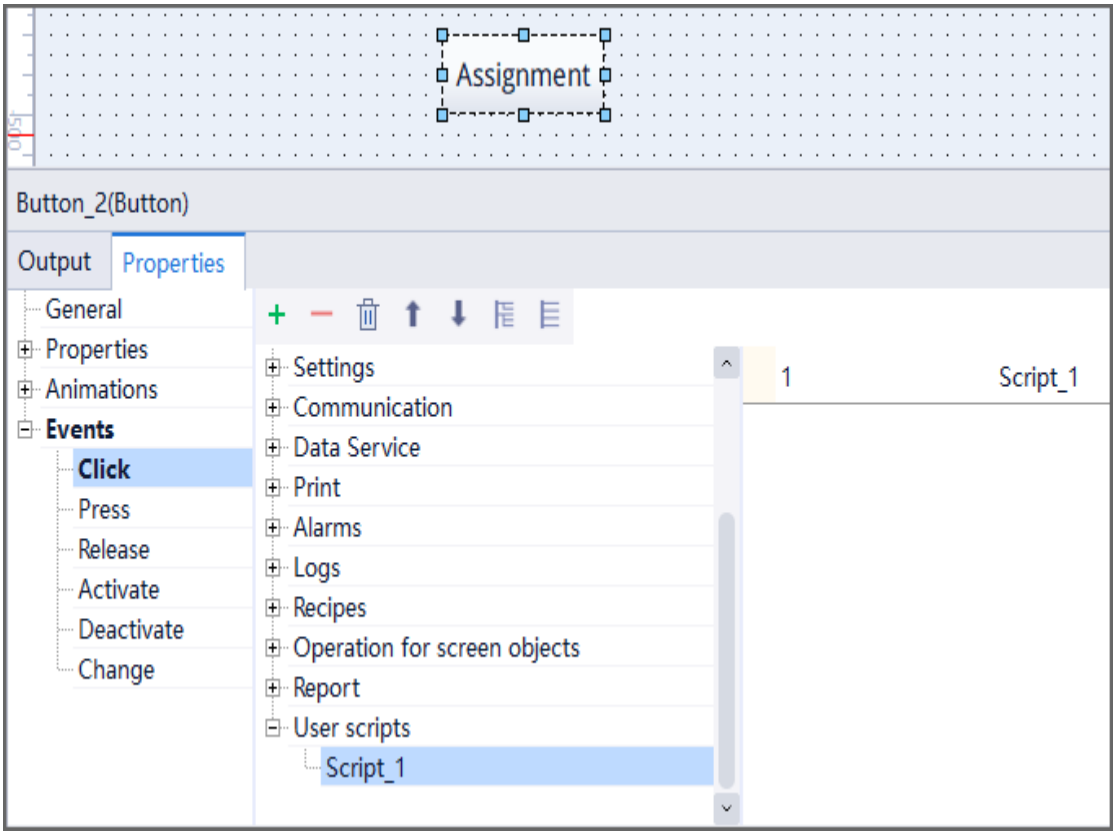
}
```

4. Configure the screen.

   a. Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field" and drag the text field to "Screen_1". Add five text fields in the same way, and select "Text". On the "Properties" tab page, click "General". On the "Text" tab page, modify the text content to "LW 0[0]", "LW 0[1]", "LW 0[2]", "LW 0[3]", and "LW 0[4]" in turn.

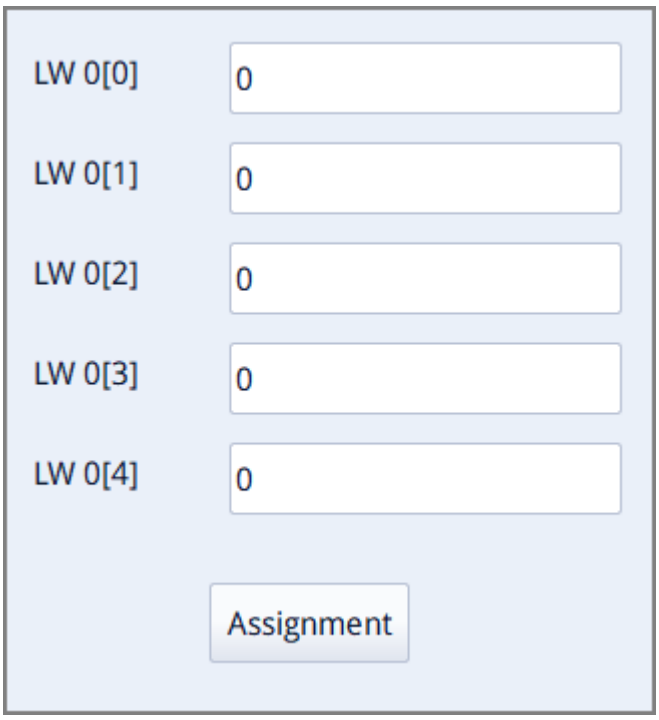
   b. In the "Project" navigation tree on the left, click "Tag group_2". Drag tags LW 0[0] to LW 0[4] from "Variable View" to "Screen_1".

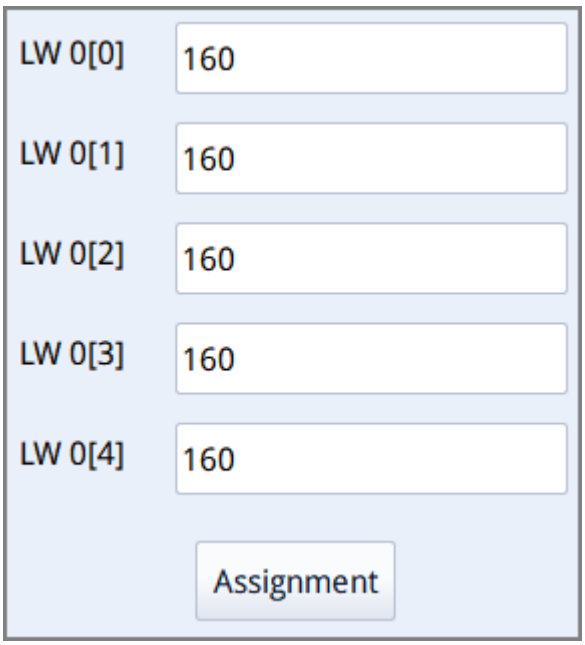
   c. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the button to "Screen_1", and select the button. On the "Properties" tab page, click "General". On the "Text" tab page, modify "Text OFF" to "assignment". Choose "Events" > "Click" > "User scripts", and then double-click "Script_1" to associate the script.



5. Perform the simulation test.

   Click  to perform simulation offline and then click "Assignment".





23.14 Resource

23.14.1 Automatic Translation

Case

Implement automatic translation.

Purpose

Implement automatic translation.

Procedure

1. Create a project by referring to the instructions in the "3.3.1 Creating a Project" section.

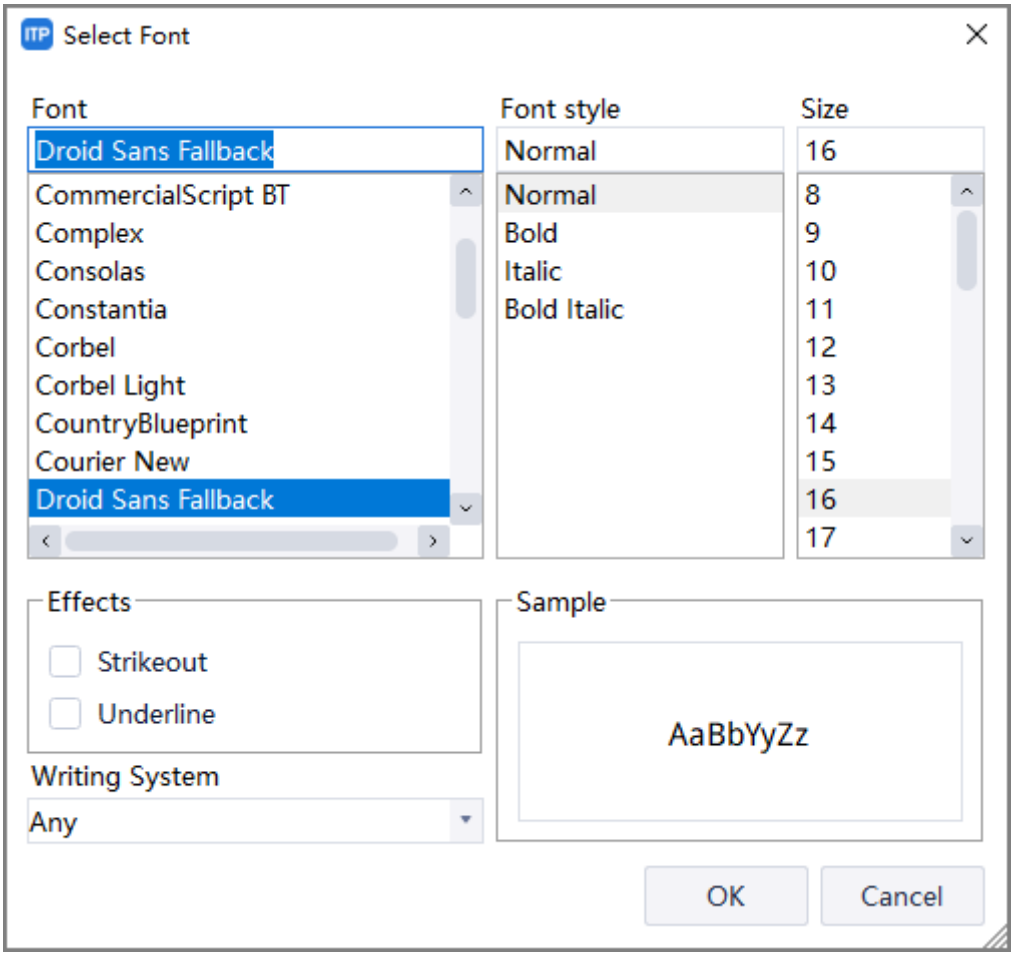
2. Set the project language.

   Click "Resource". On the page displayed, double-click "Project Language". On the page displayed, select "French(Switzerland)" in "Languages Selection".



3. Set the language and font.

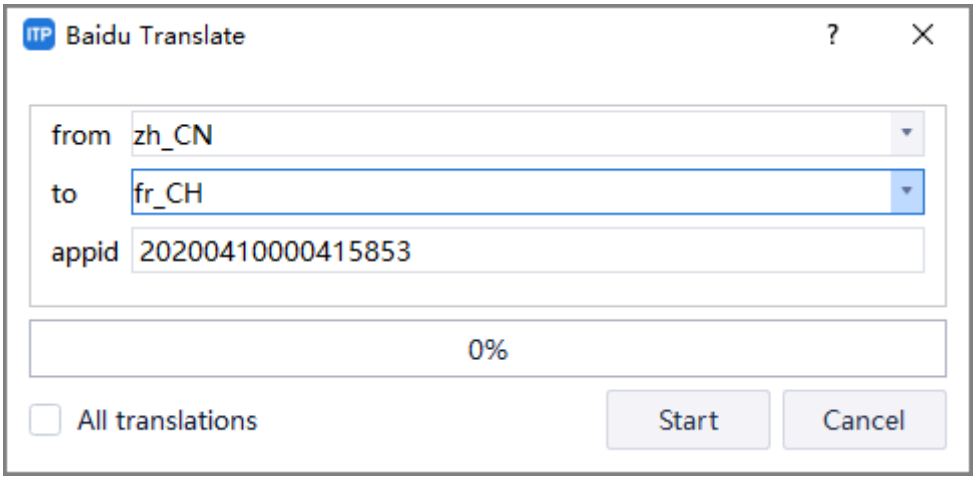
   Click "Resource". On the page displayed, double-click "Language and Font". In the "Font" column named "French(Switzerland)", click ... . In the "Select Font" window displayed, set the font style, and click "OK".



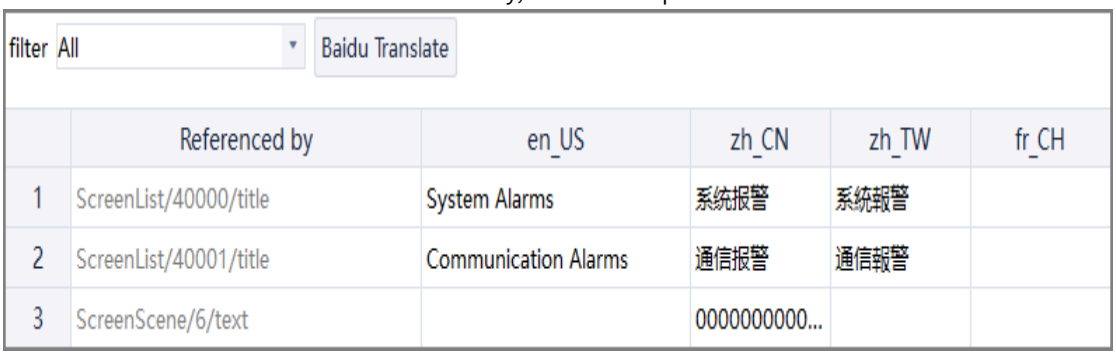
4. Set internationalization.

   Click "Resource". On the page displayed, double-click "Internationalization". Select "All". Click "Baidu

Translate". In the window displayed, select "zh-CN" for "from" and "fr_CH" for "to", and then click "Start".



5. (Optional) If the text has been translated in the target language "fr_CH" column or the translation has garbled characters, clear the "fr_CH" column before using Baidu Translate; otherwise, the text cannot be translated. To clear the content in the "fr_CH" column, perform the following steps.
   a. On the "Internationalization" page, click "Export". In the "Export I18N" window displayed, select "UTF-8 CSV Files (*.csv)" for "Save as type", modify the file name to "Internationalization", and then click "Save" to save the text to a local directory.
   b. Open the "Internationalization.csv" in the local directory, delete the data in the "fr_CH" column (do not delete the column name "fr_CH"), and then save the file.
   c. On the "Internationalization" page, click "Import". In the "Import I18N" window displayed, select the "Internationalization.csv" in the local directory, and click "Open".



23.14.2 Switching Project Language Through the Multi-Language Feature

Case

Use the multi-language feature to switch the project language.

Purpose

Use the multi-language feature to switch the project language.

Procedure

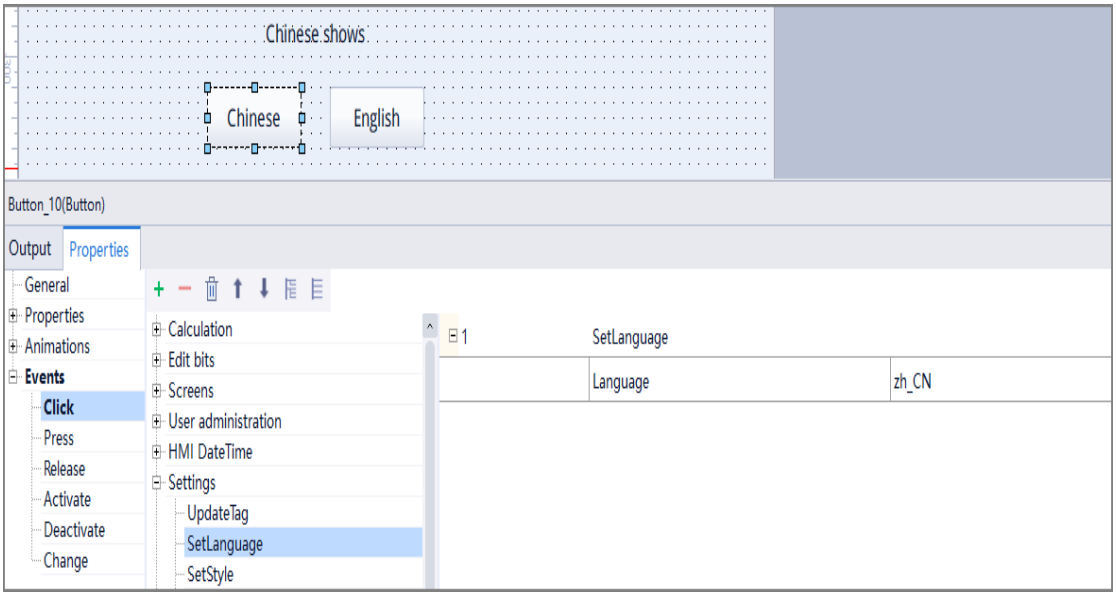
1. Create a project by referring to the instructions in the 3.3.1 Creating a Project section.
2. Add a text to the screen.
   Switch to "Screen_1". In the "Tools" navigation tree on the right, choose "Drawing Tools" > "Text Field",

drag the control to "Screen_1", and select the text field. On the "Properties" tab page, click "General". In the "Text" section, modify the text content to "Chinese shows".

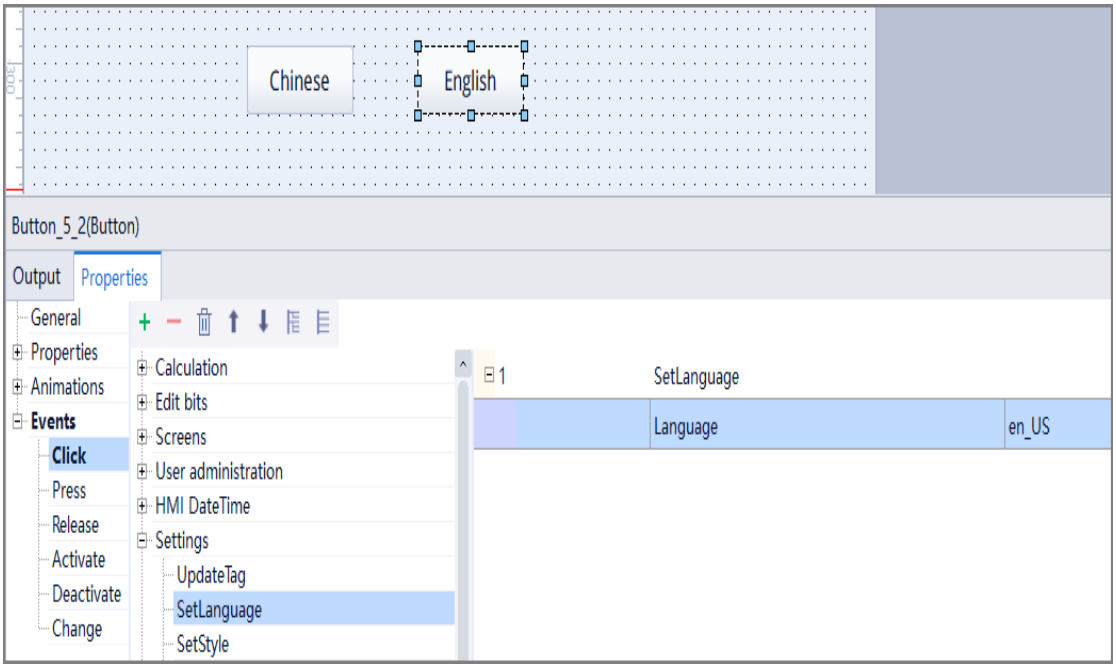
3. Add a button to the screen.

   a. In the "Tools" navigation tree on the right, choose "Control & Display" > "Button", drag the control to "Screen_1", add two buttons, and select "Button". On the "Properties" tab page, click "General". In the "Text" section, set "Text OFF" to "Chinese" and "English" in turn.

   b. Select "Chinese". On the "Properties" tab page, choose "Events" > "Click" > "Settings", and double-click "SetLanguage" to add the function. Set "Language" to "zh_CN".

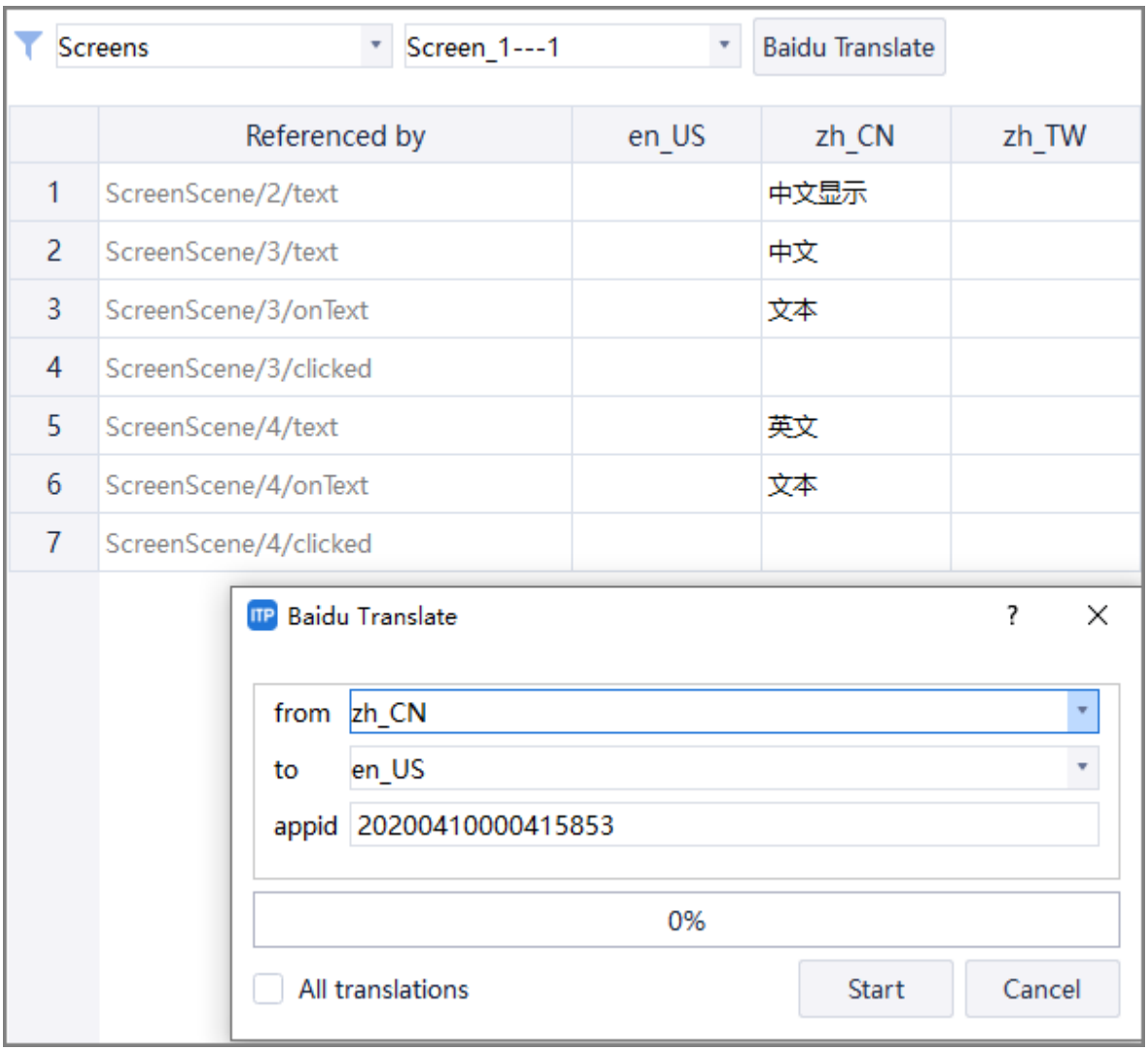


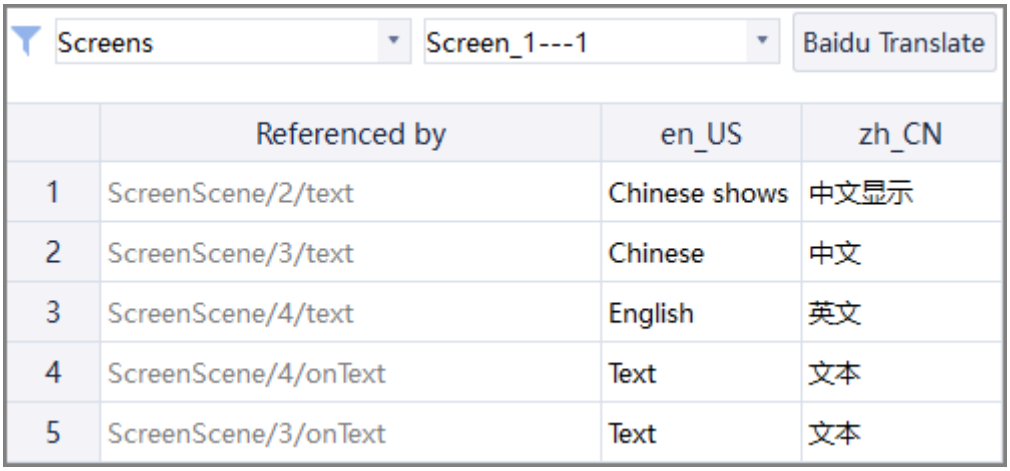
   c. Select "English". On the "Properties" tab page, choose "Events" > "Click" > "Settings", and double-click "SetLanguage" to add the function. Set "Language" to "en_US".



4. Set internationalization.

   Click "Resource". On the page displayed, double-click "Internationalization". Select "Screens" and then select "Screen_1". Click "Baidu Translate". In the window displayed, select "zh-CN" for "from" and "en_US" for "to", and then click "Start".


Screens
Screen_1---1
Baidu Translate
Referenced by
en_US
zh_CN
zh_TW
1 ScreenScene/2/text 中文显示
2 ScreenScene/3/text 中文
3 ScreenScene/3/onText 文本
4 ScreenScene/3/clicked
5 ScreenScene/4/text 英文
6 ScreenScene/4/onText 文本
7 ScreenScene/4/clicked
Baidu Translate
from zh_CN
to en_US
appid 20200410000415853
0%
All translations
Start
Cancel


Screens
Screen_1---1
Baidu Translate
Referenced by
en_US
zh_CN
1 ScreenScene/2/text Chinese shows 中文显示
2 ScreenScene/3/text Chinese 中文
3 ScreenScene/4/text English 英文
4 ScreenScene/4/onText Text 文本
5 ScreenScene/3/onText Text 文本

5. Preview the internationalized project.

Select "en_US" in the menu bar.



6. Perform the simulation test.

Click to perform simulation offline.



23.14.3 Upgrading the PLC Program by Using a USB Drive or an SD Card

Case

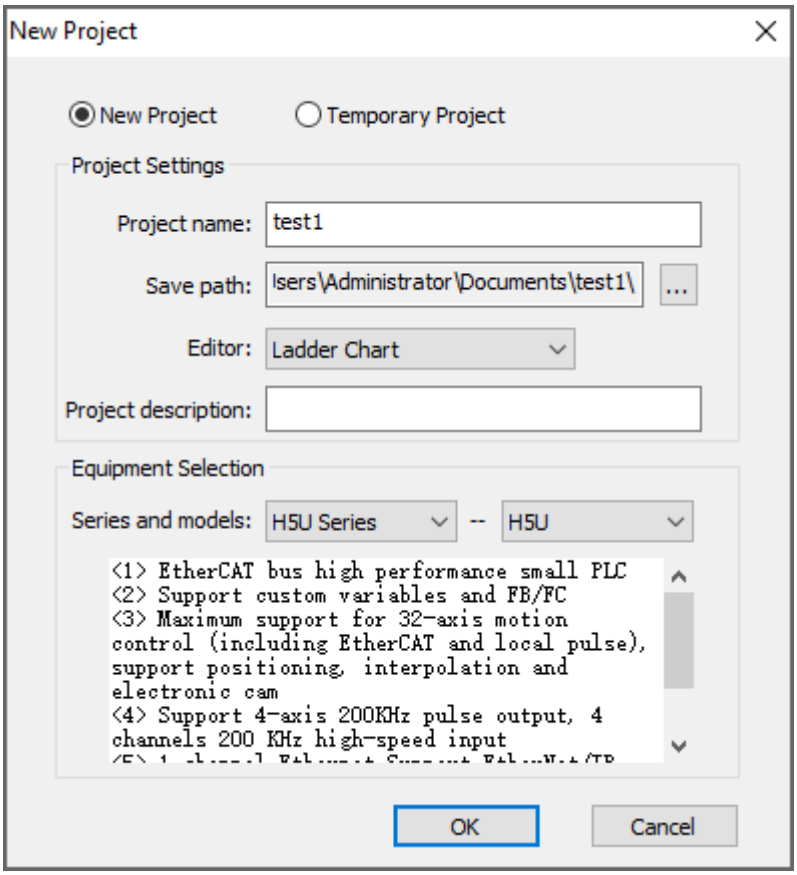
Upgrade the PLC program by using a USB drive or an SD card.

Purpose

Upgrade the PLC program by using a USB drive or an SD card.

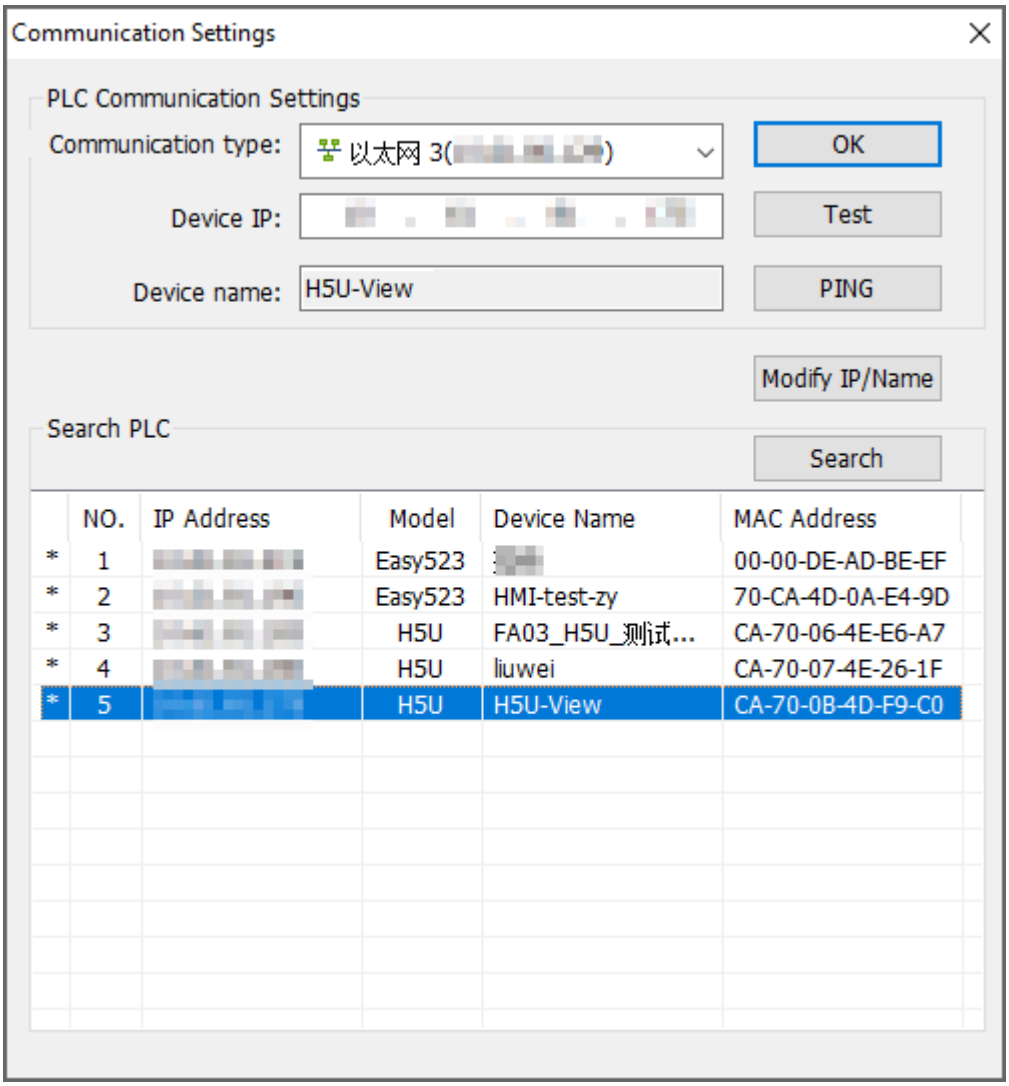
Procedure

1. Create a PLC project and generate a download file.
   a. Start the AutoShop software, choose "File" > "New Project" in the menu bar, set "Project Name" to "test1" and "Series and Model" to "H5U Series--H5U", and click "OK".



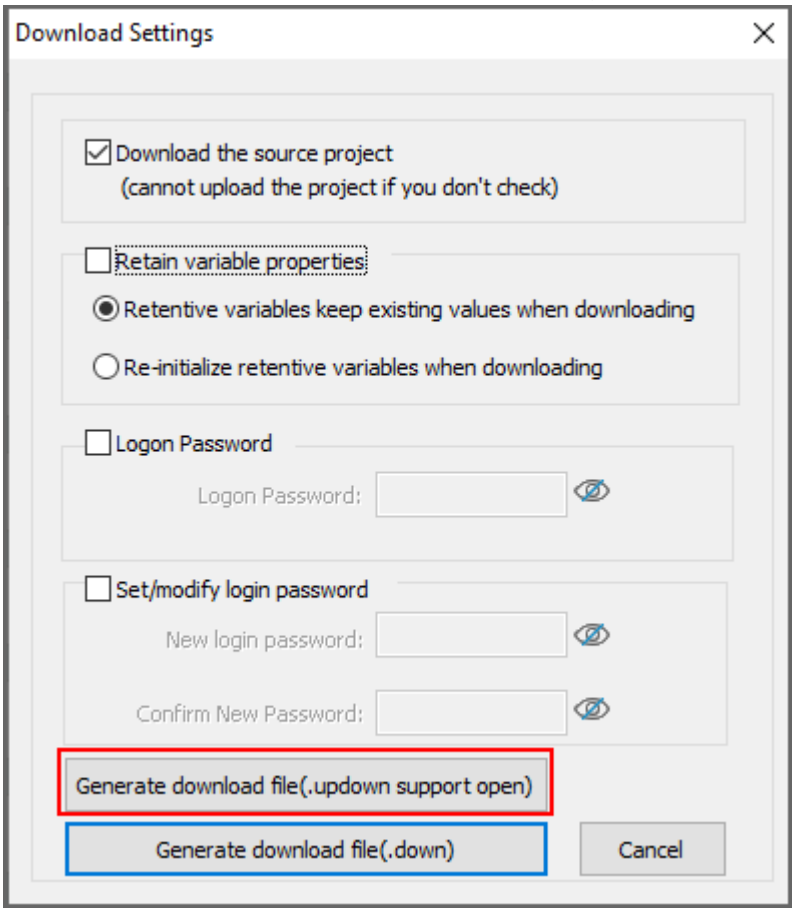
   b. Establish an H5U communication connection.
   In the menu bar, choose "Tools" > "Communication Settings". In the "Communication Settings" window that pops up, click "Search" to search for PLCs. Click the H5U-View PLC to automatically fill parameter information in the "PLC Communication Settings" section. After the connection test,

record the device IP address and click "OK".



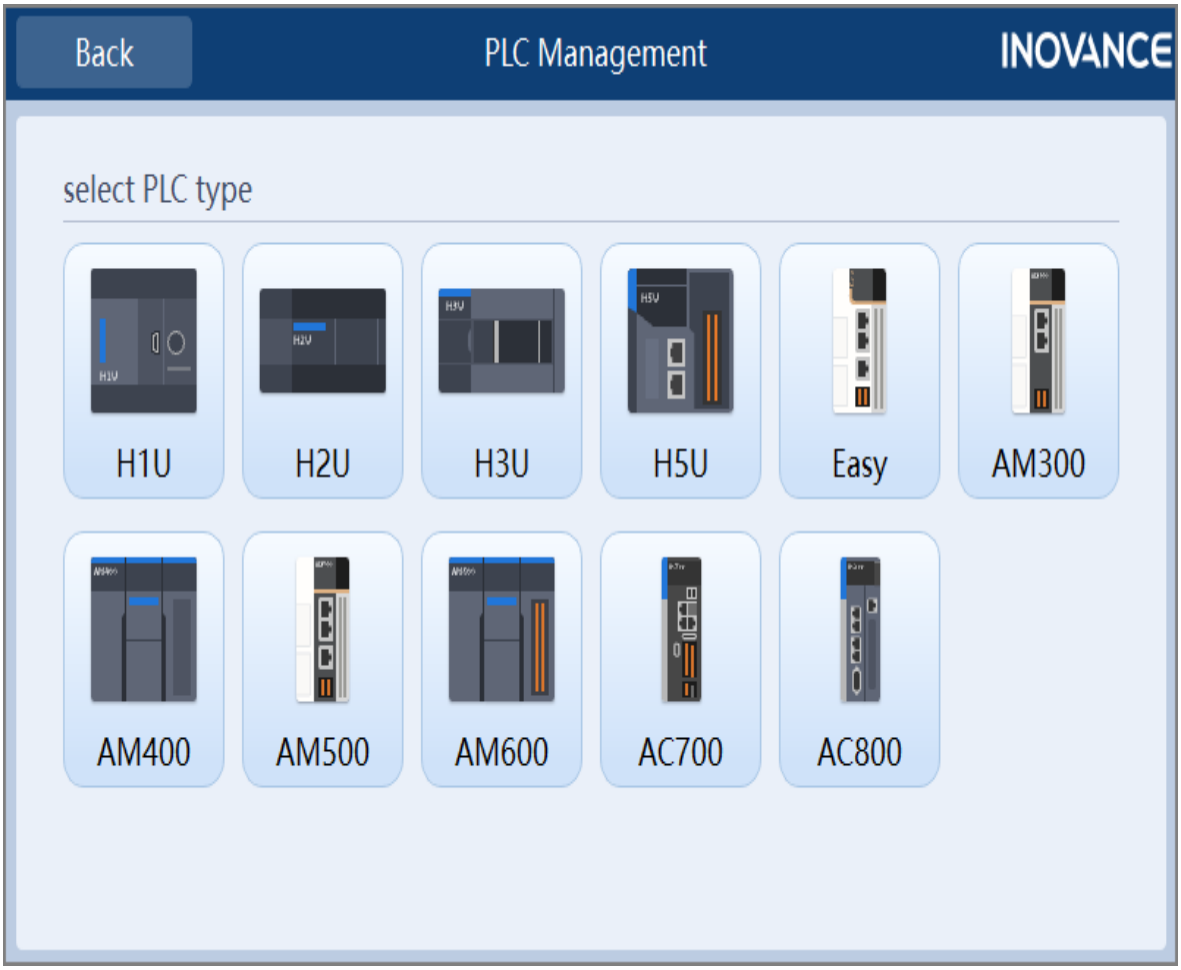
c. Choose "File" > "Generate Download File". In the "Generate Download File" window that pops up, check "Download the source project (cannot upload the project if you don't check)" and click

"Generate download file(.updown support open)" to generate the download file H5U.updown.



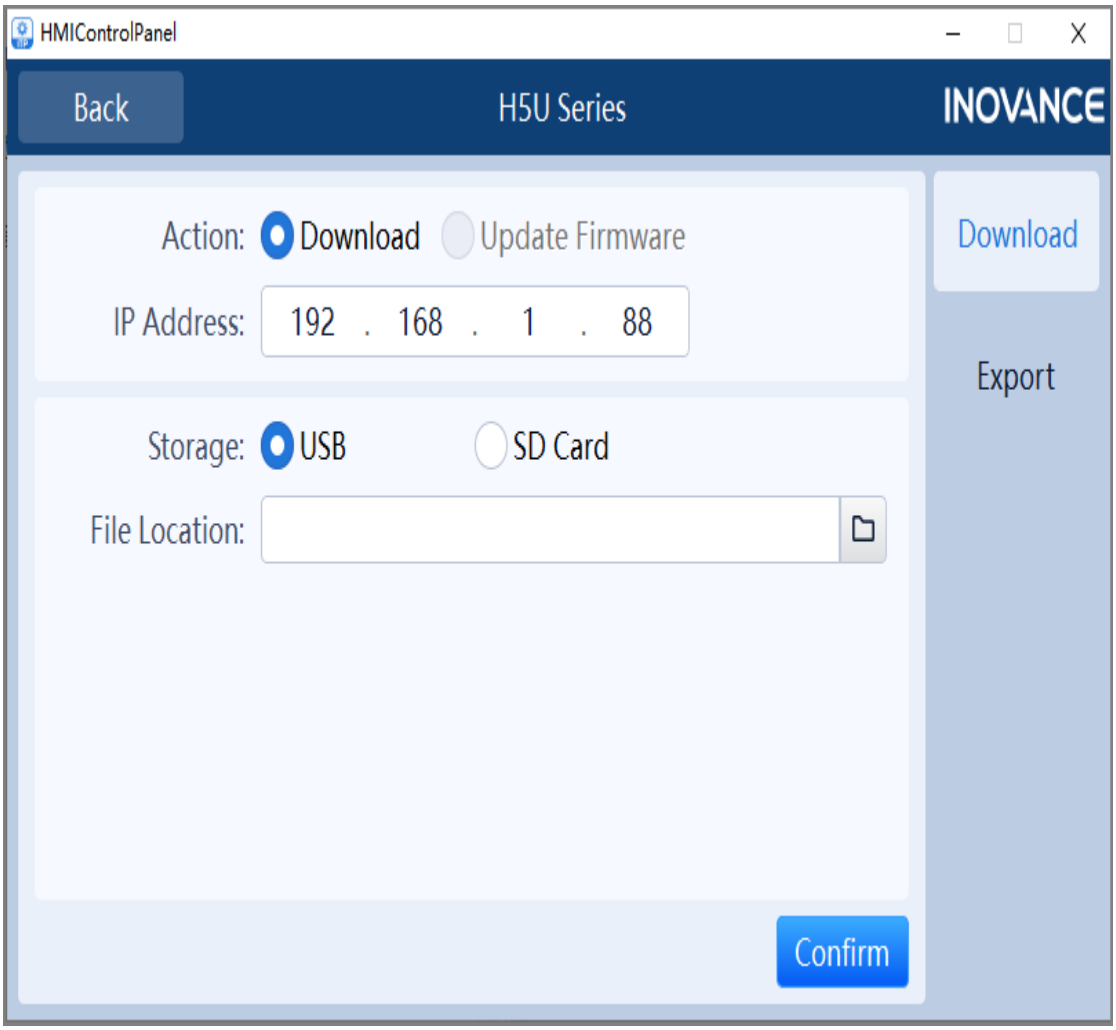
2. Copy the generated file H5U.updown to the USB drive or SD card (take the USB drive as an example).

3. Power on the HMI, connect the USB drive to the HMI, enter the control panel as instructed, click "PLC Management", and select "H5U".



4. On the "H5U Series" page, click "Download". On the tab page displayed, configure the following parameters, and click "Confirm".
   - "Action": Select "Download".
   - "IP Address": Set the device IP address recorded in Establish an H5U communication connection.
   - "Storage": Select "USB".

- "File Location": Select H5U.updown.



5. In the "PLC Download" window that pops up, click "Yes". The PLC downloads the project successfully.

23.14.4 Modifying the Style Through QSS

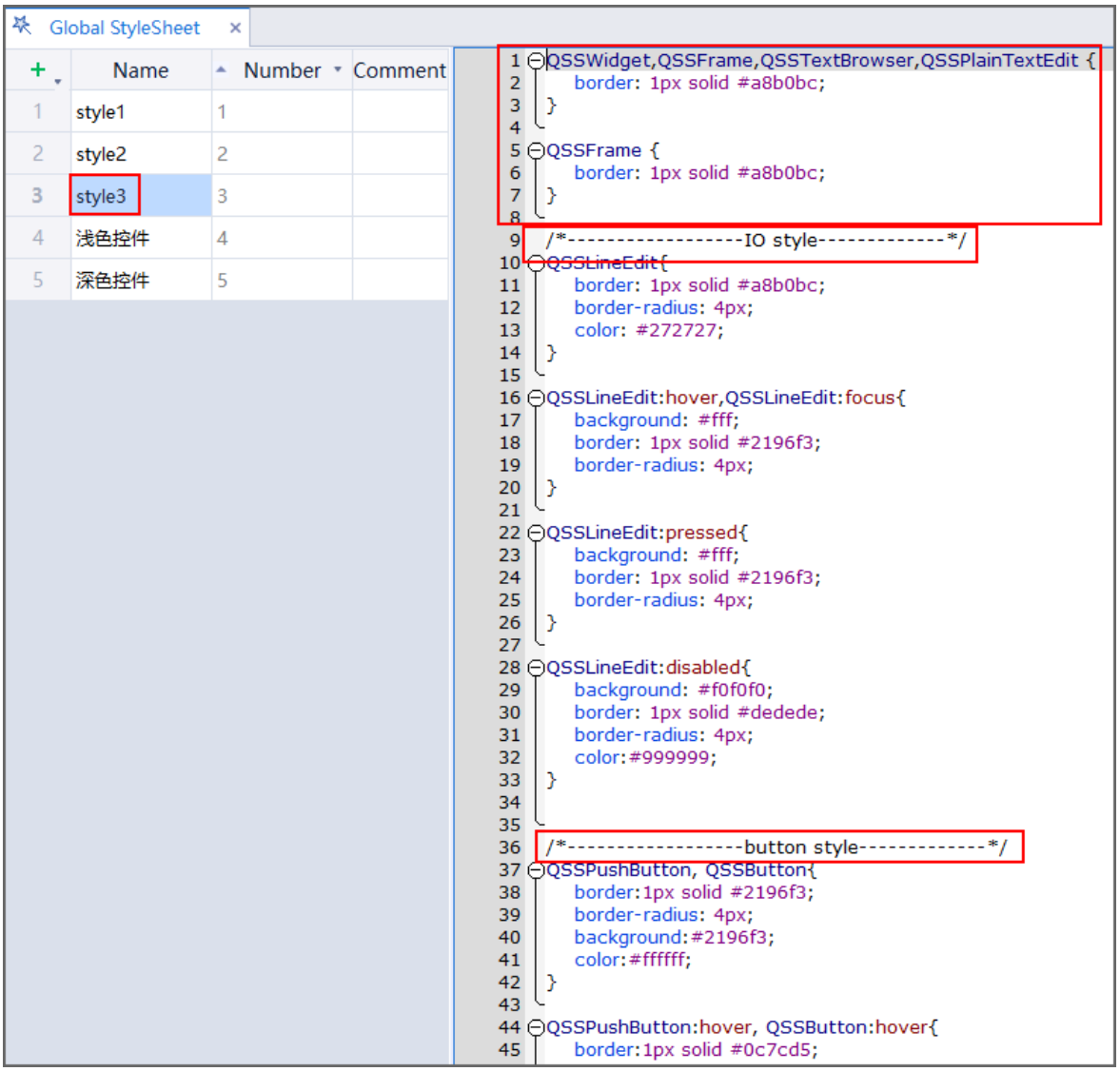
You can customize a style by modifying the global style.

Preconditions

You have located the control style you want to modify in the global code (taking the light-colored control as an example).

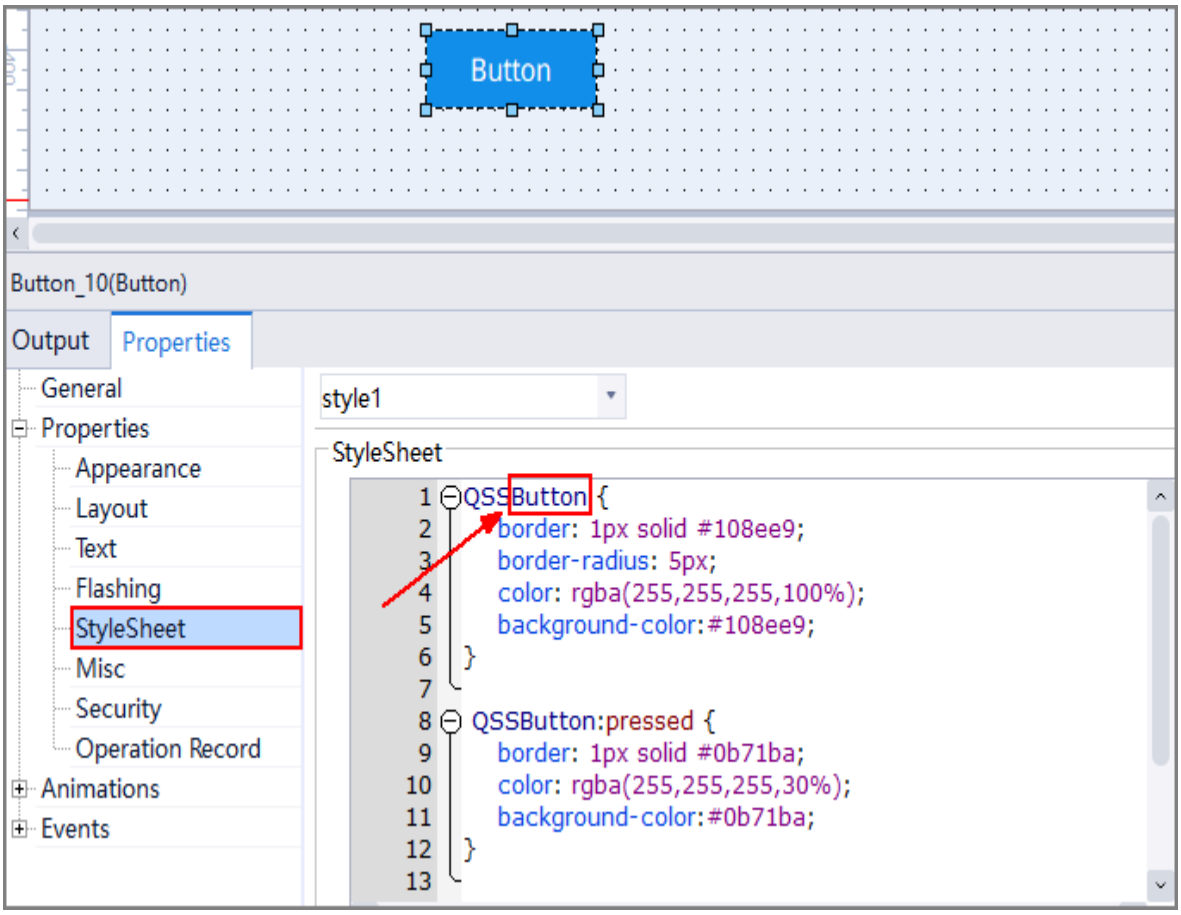
1. In the "Project" navigation tree on the left, click "Resource", and then double-click "Global StyleSheet" to view the global style code list, as shown in the following figure. The list contains description of all style

properties and displays the numeric I/O field and character I/O file styles and button styles.

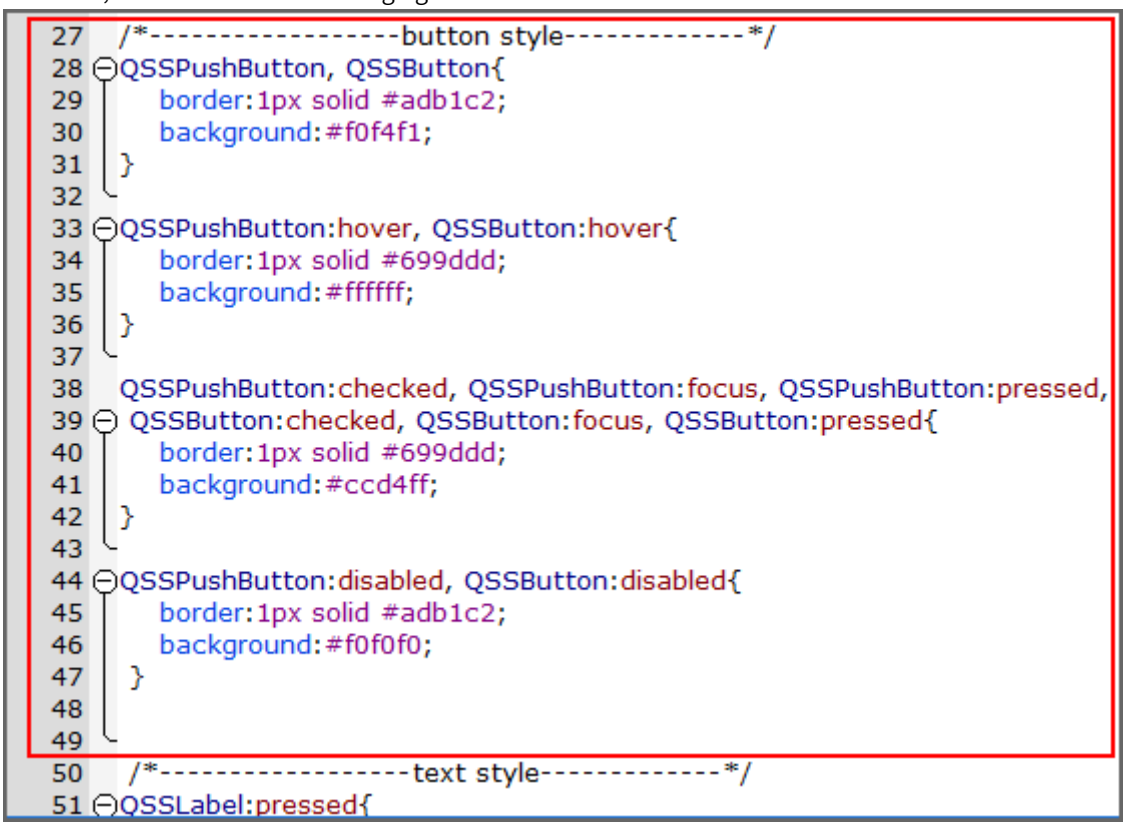


2. Switch to "Screen_1". Drag the control, such as a button you want to modify and drop it to Screen_1, and then select the control. On the "Properties" tab page, choose "Properties" > "Style". Select "style1" or "style2" from the drop-down list, and get the type name "Button" of the button control, as shown in the

following figure.



3. Switch to the global style code list, and modify the code in "button style". Then the button style is switched, as shown in the following figure.



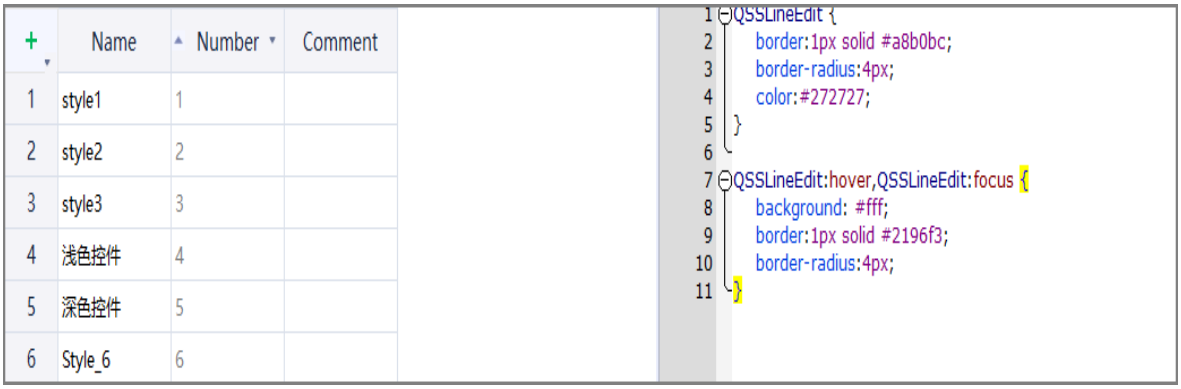
> **Note**
>
> - Both QSSPushButton and QSSButton are button styles. Therefore, when the code is modified, the style of all controls of the PushButton and Button categories is modified.
> - To modify the style of PushButton and Button independently in the global style, copy the code of "button style", delete the QSSButton keyword to indicate the QSSPushButton, and vise versa.

Method 1: Modify the style in global style

> **Note**
>
> - After you modify a global style which is selected for "Start Style", the style is applied immediately after modification. For how to modify the start style, see 20.6 Project Settings.
> - For the final style displayed in case of style conflict due to style modifications in different positions, see the description about the control style priority.

The following takes style modification of the button field as an example.

1. In the "Project" navigation tree on the left, click "Resource", and then double-click "Global StyleSheet".
2. Click  to add a style. Compile the QSS code in the editing area on the right. The default QSS style is as follows.

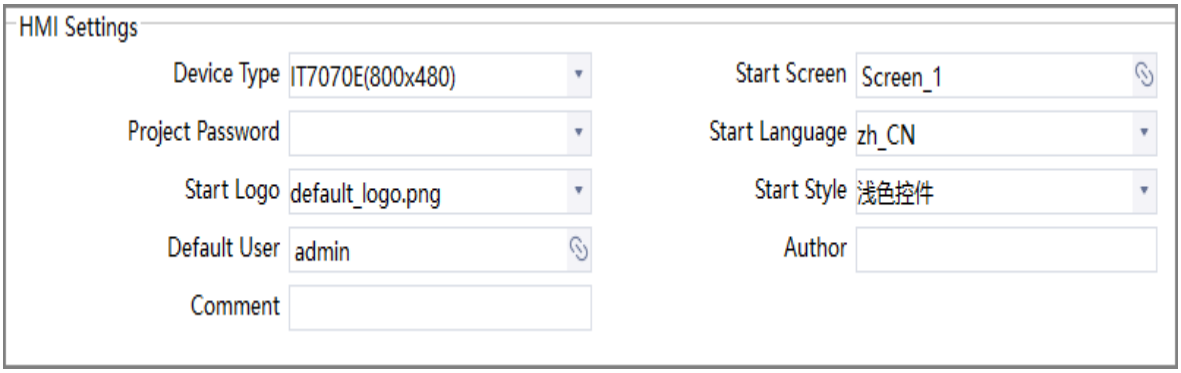


Style description:

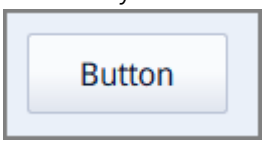
Category	Sub-item	Description
QSSLineEdit{ }	QSSLineEdit	QSSLineEdit is the category name of the control.
	border: 4px solid rgb(255.0,0);	Sets the border width of the control category to 4px, line type to solid, and border color to red.
	background: rgb(0,0,255);	Sets the background color of the control category to blue.

Category	Sub-item	Description
QSSLineEdit:hover,QSSLineEdit:focus{ }	LineEdit:hover LineEdit:focus	Sets the control display effect when the control is hovered or focused. • Hover: The display effect when the cursor hovers over or crosses the control • Focus: The display effect when the control is selected.
	background: rgb(255,255,255);	The background color turns to white when the control is hovered or focused.
	border: 5px solid rgb(255,255,0);	When the control is hovered or focused, the border width of the control is 5px, the line type is solid, and the border color is yellow.

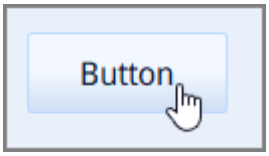
3. In the "Project" navigation tree on the left, click "HMI Settings", and then double-click "Project Settings". From the "Start Style" drop-down list, select a style, such as light-colored control, as the global style.



4. In the "Project" navigation tree on the left, click "Screens", and then double-click "00001: Screen 1". Drag and drop the button control to the configuration screen, and set the start style to the "light-colored control" style selected in Step 3, as shown in the following figure.



5. Perform simulation on InoTouchPad or download the project to the HMI. When the control is hovered or focused, the effect is shown as follows.



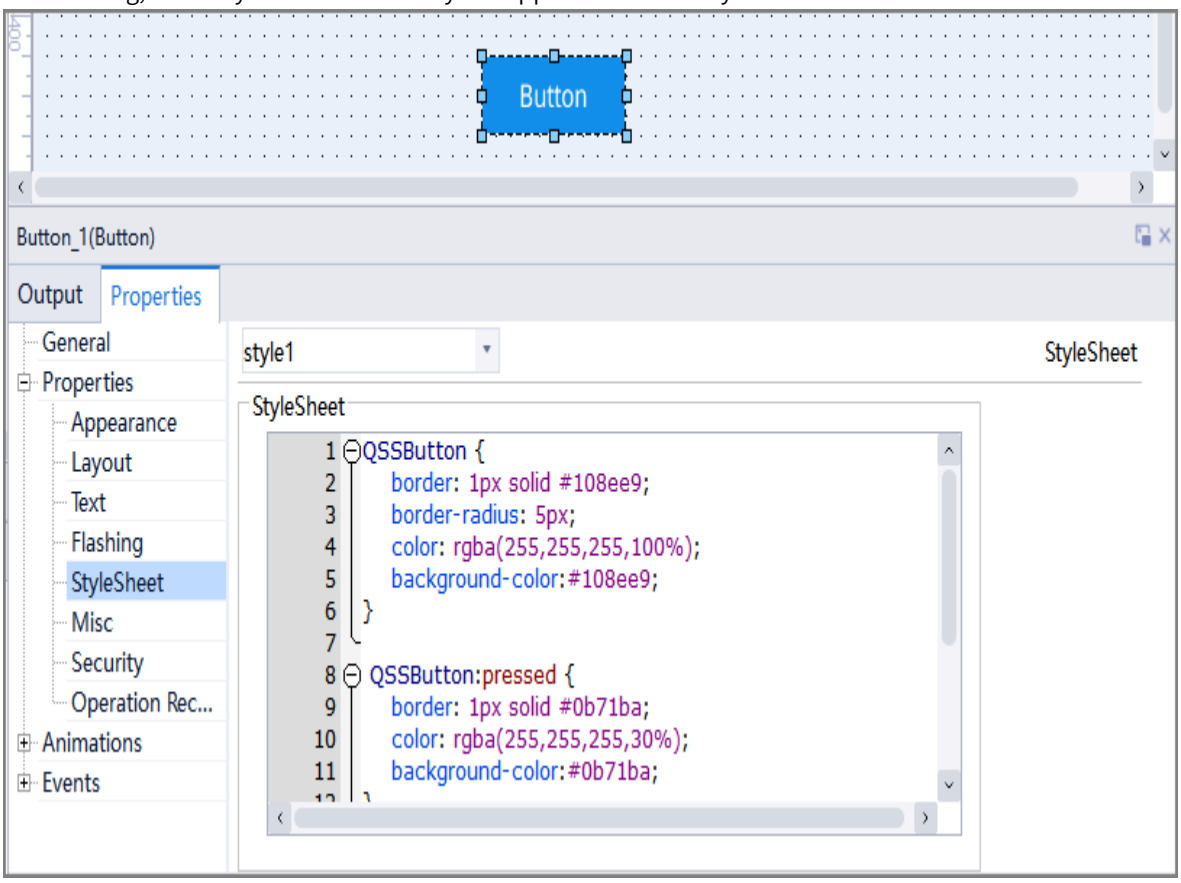
Method 2: Modify the style in the control style

Note

- When you modify the style of a control, the modification takes effect immediately and is only applied to the current control.

- For the final style displayed in case of style conflict due to style modifications in different positions, see the description about the control style priority.

1. Select the control of which style you want to modify in the screen.
2. On the "Properties" tab page, choose "Properties" > "Style". Select "style1" or "style2" from the drop-down list, or compile the QSS code in the editing area below (such as rgb(255,255,0) (modifying the border color to yellow), and rgb(255,0,0) (modifying the control color to red when the control is hovered or focused)), to modify the style of the current control.
3. After editing, click any other area. The style is applied immediately.



4. Perform simulation on InoTouchPad or download the project to the HMI. When the control is hovered or focused, the effect is shown as follows.



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