



PS00017987A00

GE21-RTU Coupler Configuration Card User Guide

Suzhou Inovance Technology Co., Ltd.

Add.: No. 52, Tian E Dang Road, Wuzhong District, 215104,

Suzhou City, Jiangsu Province, P.R. China

Tel: (0512) 6637 6666 Fax: (0512) 6285 6720

www.inovance.com



Preface

■ Introduction

This guide introduces the full-scene task information for using this product, including product introduction, installation, configuration, and commissioning. Before using this product, read this guide carefully to ensure safe use.

■ Standards Compliance

The following table lists the certifications, directives, and standards that the product may comply with. For details about the acquired certificates, see the certification marks on the product nameplate.

Certification Name	Directive Name		Standards compliance
CE Certification	EMC Directive	2014/30/EU	24 VDC products: EN 61131-2 220 VAC products: EN 61131-2 EN 61000-3-2 EN 61000-3-3
	LVD	2014/35/EU	EN 61010-1 EN 61010-2-201
	RoHS Directive	2011/65/EU amended by (EU) 2015/863	EN IEC 63000
UL/cUL Certification	-		UL 61010-1 UL 61010-2-201 CAN/CSA-C22.2 No. 61010-1 CSA C22.2 NO. 61010-2-201
KCC certification	-		-
EAC certification	-		-

Certification Name	Directive Name		Standards compliance
UKCA certification	Safety Regulations	Electrical Equipment (Safety) Regulations 2016	EN 61010-1 EN 61010-2-201
	EMC Regulations	Electromagnetic Compatibility Regulations 2016	24 VDC products: EN 61131-2 220 VAC products: EN 61131-2 EN 61000-3-2 EN 61000-3-3
	RoHS Regulations	Directive (RoHS) Regulations 2012	EN IEC 63000

■ More Data

Data Name	Code	Description
Easy321&Easy511 Programmable Logic Controller User Guide	PS00017976	Introduces comprehensive task information for using Easy321 and Easy511 products, including product introduction, installation, wiring, configuration and commissioning, product features, fault diagnosis, maintenance, and more.
H5U and Easy Series Programmable Logic Controller Programming Guide	19011157	Introduces the basics of H5U&Easy series PLC programming, quick start guide, communication, motion control, and high-speed counter usage.
H5U and Easy Series Programmable Logic Controller Instruction Guide	19011156	Introduces the basic and complex instructions, as well as examples of instructions used in product programming and application.
GE21-RTU Communication Interface Module User Guide	PS00017987	Introduces the full-scene task information for using this product, including product introduction, installation, configuration, and commissioning.

■ Revision History

Date	Version	Revision
May 2025	A00	Initial release.

■ 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 www.inovance.com.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install My Inovance app, where you can search for and download user guides.



■ Warranty Disclaimer

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. Maintenance will be charged after the warranty period expires.

Within the warranty period, maintenance will be charged for the following damage:

- Damage caused by operations not following the instructions in the user guide
- Damage caused by fire, flood, or unusual voltage
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product
- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see Product Warranty Card.

Fundamental Safety Instructions

■ Safety Precautions

- This chapter presents essential safety instructions for a proper use of the equipment. Before operating the equipment, read through the guide and comprehend all the safety instructions. Failure to observe the safety precautions may result in serious injuries or death of personnel or device damage.
- "DANGER", "WARNING", and "CAUTION" in this guide only indicate some of the precautions that need to be followed; they just supplement the safety precautions.
- Use this product according to designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper usage.

■ Safety Levels and Definitions



DANGER

Indicates that failure to comply with the notice will result in severe personal injuries or even death.



WARNING

Indicates that failure to comply with the notice may result in death or severe personal injury.



CAUTION

Indicates that failure to comply with the notice may result in minor or moderate personal injuries or equipment damage.

■ Fundamental safety instructions

- Drawings in the guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.
- Operators must take mechanical precautions to protect personal safety and wear protective equipment, such as anti-smashing shoes, safety clothing, safety glasses, protective gloves, and protective sleeves.

Unpacking



WARNING

- Do not install the equipment if you find damage, rust, or signs of use on the equipment or accessories upon unpacking.
- Do not install the equipment if you find water seepage or missing or damaged components upon unpacking.
- Do not install the equipment if you find the packing list does not conform to the equipment you received.



CAUTION

- Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking.
- Unpack the package in accordance with the package sequence. Do not hit the package with force.
- Check whether there is damage, rust, or signs of bumping on the surface of the equipment and equipment accessories before unpacking.
- Check whether the package contents are consistent with the packing list before unpacking.

Storage and Transportation



WARNING

- Large-scale or heavy equipment must be handled by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injuries or equipment damage.
- Before hoisting the equipment, ensure that components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage.
- Do not stand or stay below the equipment when it is being hoisted.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.



CAUTION

- Handle the equipment with care during transportation and mind your steps to prevent personal injuries or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport the equipment strictly based on the requirements. Failure to comply may result in equipment damage.
- Do not store or transport the equipment in environments with water splash, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing the product for more than 3 months. When the product needs to be stored for an extended period, take more strict protection and necessary inspection.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Do not transport the equipment with other devices or materials that may harm or have negative impacts on the equipment.

Installation



DANGER

- Installation must be carried out by skilled personnel who have undergone specialized electrical training and possess comprehensive electrical expertise. Non-professionals are not allowed to install the equipment.



WARNING

- Read through the guide and safety precautions before installation.
- Do not install the equipment in places with strong electric or magnetic fields.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in electric shock.
- When installing the equipment in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When the equipment is installed in a cabinet or final assembly, a fireproof enclosure providing both electrical and mechanical protections must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the product on an incombustible object such as metal and do not touch or attach the product to combustibles. Failure to comply can result in fire accident.



CAUTION

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the cloth or paper to prevent over-temperature caused by poor ventilation due to blocked ventilation holes.
- Resonance may occur when the equipment operating at a constant speed switches to variable speed operations. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring



DANGER

- Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals.
- Before wiring, disconnect all the power supplies of the equipment. Wait for at least the time designated on the equipment warning label before further operations because residual voltage still exists after power-off. Measure the DC voltage of the main circuit and make sure that it is below the safety voltage. Failure to comply can result in electric shock.
- Do not perform wiring, remove the equipment cover, or touch the circuit board with power ON. Failure to comply will result in an electric shock.
- Ensure the equipment is grounded properly. Failure to comply can result in electric shock.



WARNING

- Do not connect the input power supply to the output end of the equipment. Failure to comply will result in equipment damage or even a fire.
- When connecting a drive to the motor, check that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Tighten the terminal screws with the tightening torque specified in the guide. Failure to comply may result in overheat, damage to the connection parts, or fire.
- After wiring, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in electric shock or equipment damage.



CAUTION

- During wiring, follow the proper electrostatic discharge (ESD) procedures, and wear an antistatic wrist strap. Failure to comply will result in damage to internal equipment circuits.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply can result in equipment malfunction.

Power-On



DANGER

- Before power-on, check that the equipment is installed properly with reliable wiring and the motor can be restarted.
- Check that the power supply meets equipment requirements before powering on to prevent equipment damage or a fire.
- When the equipment is powered on, do not open the cabinet door or protective cover, touch any wiring terminal, or disassemble any component of the equipment. Failure to comply can result in electric shock.



WARNING

- Perform a trial run after wiring and parameter setting to ensure the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, check that the rated voltage of the equipment is consistent with that of the power supply. Failure to comply may result in fire accident.
- Before powering on, check that no one is near the equipment, motor, or machine. Failure to comply may result in death or personal injuries.

Operation



DANGER

- The equipment must be operated only by professionals. Failure to comply can result in death or personal injuries.
- During operation, do not touch any connecting terminals or disassemble any component of the equipment. Failure to comply can result in electric shock.



WARNING

- Do not touch the equipment enclosure, fan, or resistor with bare hands. Failure to comply may result in burns.
- During operation, prevent metal or other objects from falling into the equipment. Failure to comply may result in fire or equipment damage.

Maintenance



DANGER

- Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals.
- Do not maintain the equipment with power ON. Failure to comply can result in electric shock.
- Before maintenance, disconnect all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
- When a permanent magnet motor is used, do not touch the motor terminals immediately after power-off because the motor terminals can generate induced voltage during rotation even after the equipment is powered off. Failure to comply can result in electric shock.



WARNING

- Perform routine and periodic inspection and maintenance on the equipment in accordance with maintenance requirements and keep a record.

Repair



DANGER

- Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals.
- Do not perform maintenance on the equipment with power on. Failure to comply can result in electric shock.
- Before inspection and maintenance, disconnect all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.



WARNING

- Submit a request for repair services in accordance with the product warranty agreement.
- When the fuse is blown or the circuit breaker or earth leakage current breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply may result in death, personal injuries, or equipment damage.
- When the equipment is faulty or damaged, require professionals to perform troubleshooting and repair by following repair instructions and keep a repair record.
- Replace quick-wear parts of the equipment in accordance with the replacement instructions.
- Do not operate on damaged equipment. Failure to comply may result in death, personal injuries, or equipment damage.
- After the equipment is replaced, check the wiring and set parameters again.

Disposal



WARNING

- Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in death, personal injuries, or property damage.
- Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

■ Safety Labels

For safe operation and maintenance, comply with the safety labels on the equipment. Do not damage or remove the safety labels. See the following table for descriptions of the safety labels.

To ensure safe operation, comply with equipment-related safety labels. See the following table for description of the safety labels.

Safety Label	Description
	• Read through the safety instructions before operating the equipment. Failure to comply may result equipment damage, personal injuries, or even death. • Do not touch the terminals or remove the cover with power ON or within 10 min after power-off. Failure to comply will result in an electric shock.

1 Product Introduction

1.1 Product Overview

The GE21-RTU series I/O configuration card is designed to work with the Easy321 and Easy511, enabling quick configuration of the PLC as a PROFINET coupler. Supporting software-free maintenance, the card can back up the configuration information when the PLC is used as a smart I/O, and automatically download the configuration information after a PLC replacement to resume operation from its previous state. The function of configuring the PLC to a coupler can be downloaded.

1.2 Model and Nameplate

■ Model description

GE21 - RTU

①

②

① Product Series

GE21 series general-purpose expansion card

③ Product Code

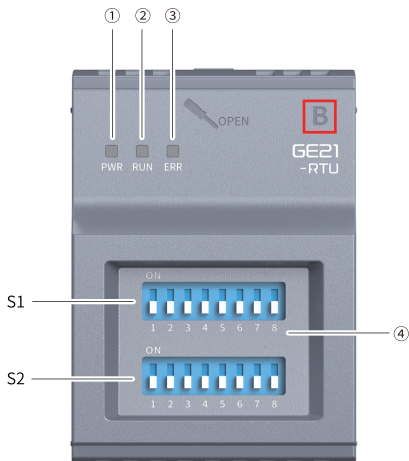
RTU: Remote terminal unit

■ Nameplate Description



Model	Description	Code
GE21-RTU	PLC options - GE21-RTU-GE21 series coupler card	01480069

1.3 Components



No.	Component	Mark	Definition	Indicator Color	Description
①	Power supply status indicator	PWR	Power supply state	Yellow-green	● ON: The power supply is normal ● OFF: The power supply is abnormal.
②	Upload/Download indicator	RUN	-	-	Reserved
③	Fault indicator	ERR	-	-	Reserved
④	DIP switch	-	-	-	For details, see <i>"Table 1-1 DIP switch"</i> on page 16.

Table 1-1 DIP switch

Group	No.	Function
S1	1	Reserved
S1	2	
S1	3	
S1	4	
S1	5	
S1	6	
S1	7	
S1	8	
S2	1	● 0: Uploading backup data from the expansion card to the PLC is supported. ● 1: Downloading backup data from the PLC to the expansion card is supported.
S2	2	● 010: Indicates the PROFINET coupler mode. ● Other DIP switch settings: Indicates the PLC mode.
S2	3	
S2	4	
S2	5	Reserved
S2	6	
S2	7	
S2	8	

Note

The letter "B" on the product indicates that only the card slot B of the PLC is supported.

1.4 Product Specifications

1.4.1 General Specifications

Item	Specification
IP rating	IP20
Dimensions (W x H x D)	58 mm x 42 mm x 21.4 mm
Weight	About 22 g

1.4.2 Power Supply Specifications

Item	Specification
Short circuit protection	Supported
Hot swap	Not supported

1.4.3 Communication Specifications

Item	Specification
Protocol selection	When S2 DIP switches 2 to 4 are set to 010, the PLC is used as the PROFINET coupler.
Data supporting backup	Device name and IP assigned by PROFINET bus communication

1.5 Environmental Specifications

Take the operability, serviceability, and adaptability to environment into account when installing the expansion card to the PLC.

Item	Specification
Installation/Ambient environment	Free from conductive dust, conductive fibers, explosive dust, flammable gases, water mist/greasy dirt, corrosive dust/gases, strong vibration, and repetitive shock.
Max. altitude	≤ 2000 m
Pollution degree	Level 2
Interference immunity	2 kV on DC power supply line (IEC61000-4-4)
Overvoltage category	I

Item	Specification
EMC immunity level	Zone B, IEC61131-2
ESD protection level	Contact discharge +/-6 kV, air discharge +/-8 kV
Vibration resistance	● Application scenario: Tested according to IEC60068-2-6. 3.5 mm amplitude at 5 Hz to 8.4 Hz; 1 g acceleration at 8.4 Hz to 200 Hz; in ten cycles/axes ● Transportation scenario: Tested according to IEC60068-2-64, 0.01 g²/Hz power spectral density at 5 Hz to 100 Hz; 0.001 g²/Hz power spectral density at 200 Hz; 1.14 g Grms
Shock resistance	Application/Transportation scenario: Tested according to IEC60068-2-27; 15 g peak acceleration, 11 ms pulse width, 18 cycles in total in X, Y and Z axial directions
Ambient temperature/humidity	● Temperature: -20°C to +55°C ● Humidity: < 95% RH (30°C), without condensation
Storage temperature/humidity	● Temperature: -20°C to +60°C ● Humidity: < 95% RH (30°C), without condensation
Transportation temperature/humidity	● Temperature: -40°C to +70°C ● Humidity: < 95% RH (40°C), without condensation

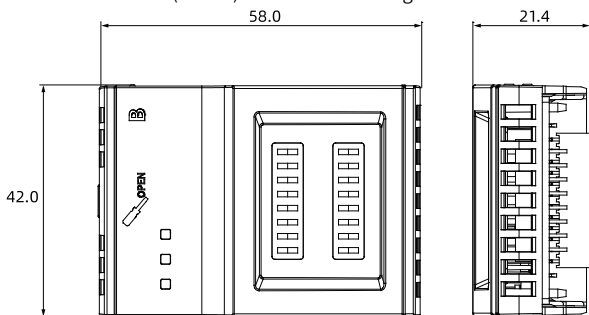
2 Installation

2.1 Installation Precautions

- Make sure the PLC is powered off before installing or removing the expansion card.
- Do not connect/disconnect the expansion card with power ON. This may lead to PLC restart or user data loss or damage.
- Do not drop or shock the housing or terminals of the expansion card to avoid damage.

2.2 Installation Dimensions

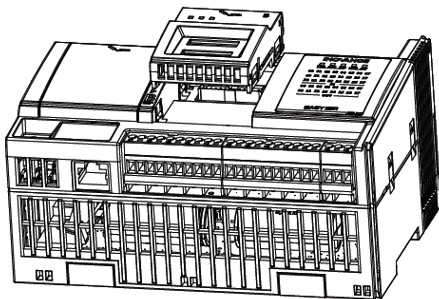
The installation dimensions (in mm) are shown in the figure below.



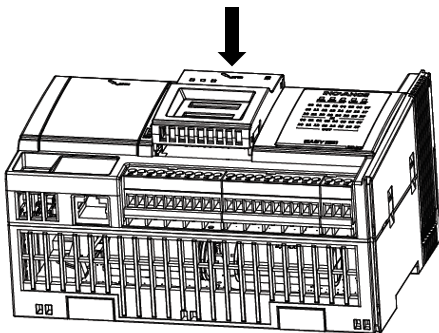
2.3 Installation Method

■ Installing the expansion card

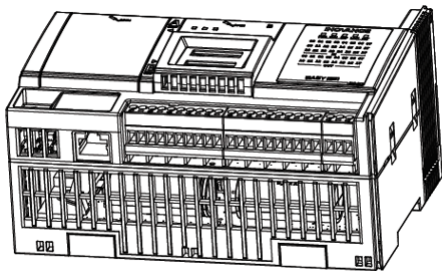
1. Place the PLC and the expansion card horizontally.



2. Insert the expansion card into the card slot B vertically along the guide ribs, and press the expansion card.

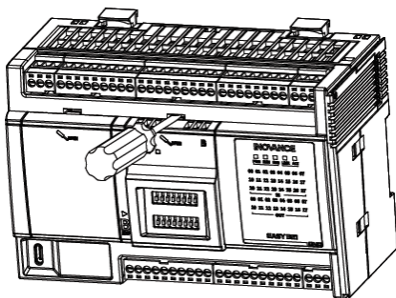


3. The installation is complete when you hear a click and the surface of the expansion card is flush with the surface of the PLC.

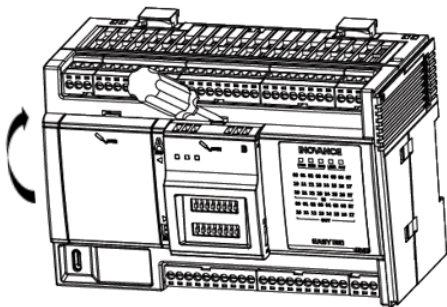


■ Removing the expansion card

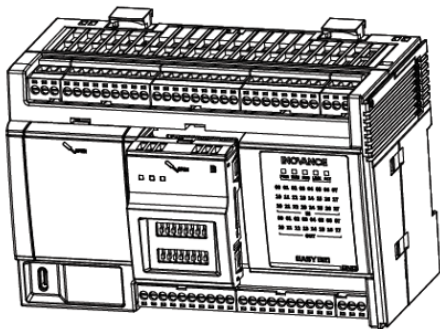
1. Place the PLC horizontally and insert a slotted screwdriver into the inner snap-fit position.



2. Pry the expansion card module in the direction of the arrow.



3. Remove the expansion card module vertically when you hear a distinct sound indicating that the expansion card has partially detached from the PLC.



3 Configuration and Commissioning

3.1 Configuring the GE21-RTU Expansion Card

This chapter introduces how to configure the Easy321/Easy511 and GE21-RTU expansion card through the AutoShop.

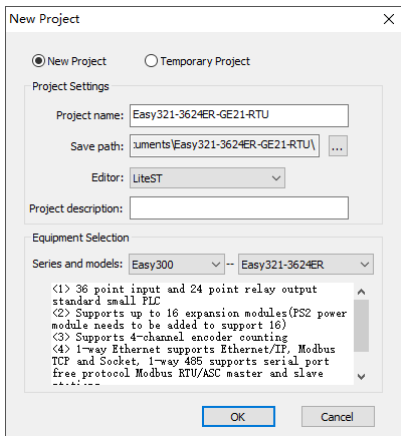


Caution

- The GE21-RTU expansion card can support the corresponding functions (mode switching, data backup) without project configuration and downloading through AutoShop.
- The type ID of the GE21-RTU expansion card is 18. The configured expansion card type must be consistent with the actually installed expansion card type.
- The GE21-RTU expansion card supports only the EXP-B card slot.

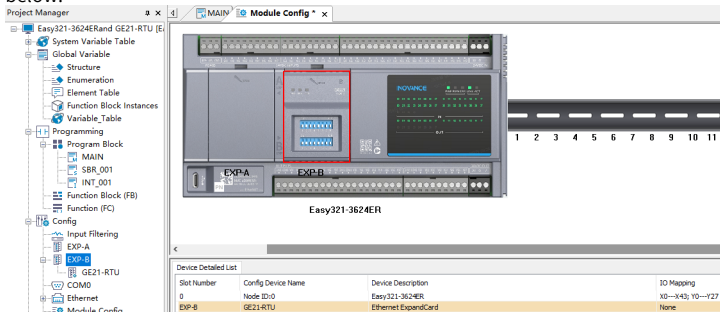
Operation procedure

1. Create a project.
 - a. Double-click the AutoShop shortcut icon on the PC desktop to open the AutoShop programming software.
 - b. In the menu bar, select **File > New Project** to open the **New Project** dialog box, as shown below.



c. Set **Project name**, **Save path**, **Editor**, **Project description**, and **Series and models**, and then click **OK**.

2. In the **Project Manager** pane, go to **Config > EXP-B**. Right-click **EXP-B** and select **GE21-RTU**. Alternatively, go to **Config > Module Config**. Right-click **Module Config** and select **Auto Scan** to add the GE21-RTU expansion card, as shown in the figure below.



3. After successful compiling, download the project and run it.

- a. Click the download button  in the toolbar to download the program to the PLC.
- b. After the download is complete, click the run button  in the toolbar to run the program.

3.2 Switchover to PROFINET Coupler Mode



Caution

When the GE21-RTU expansion card is inserted, the mode is determined by the DIP switch on the expansion card. At the same time, the mode configured by AutoShop becomes invalid.

■ Retaining PLC functions in the PROFINET coupler mode

When the PLC is switched to the PROFINET coupler mode, the PLC cannot enter the running state and only supports the following PLC functions:

- Firmware upgrade: Upgrading or downgrading does not change the mode. Upgrading of the SD card and IMG can restore the PLC to the default PLC mode.
- Project upload and download: After the project is downloaded, the PLC cannot run, and the background software prompts the information indicating that the PLC is in the coupler mode and cannot be switched to the running mode.
- Online monitoring: Only the IO status can be monitored. The PLC program does not run, and online modification is not supported.
- IP address modification: The modified IP address takes effect immediately.

■ Switchover to the coupler mode

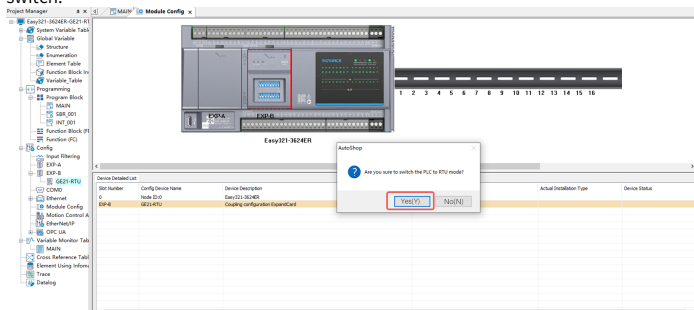
You can switch to the PROFINET coupler mode through the AutoShop and the DIP switch.

● Through the AutoShop

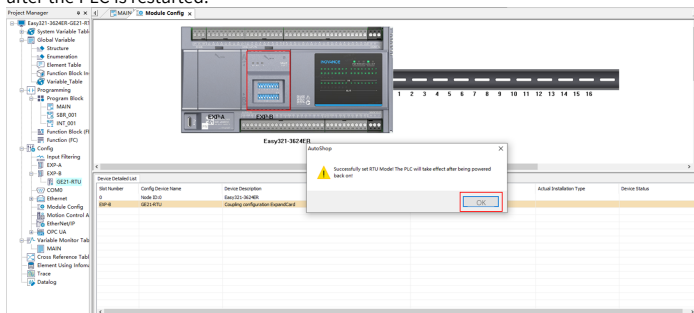
Operation procedure

1. Create a project in the AutoShop. For detailed steps, see ["3.1 Configuring the GE21-RTU Expansion Card" on page 23](#).

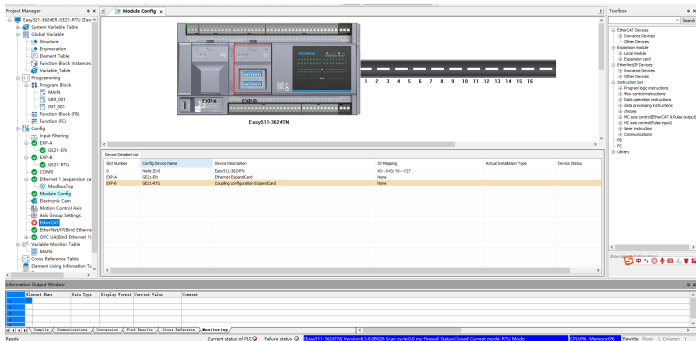
2. Click the RTU button  in the toolbar, and click **Yes** in the displayed dialog box to switch.



3. A dialog box indicating successful setting pops up. Click **OK**. The setting takes effect after the PLC is restarted.



4. After the setting takes effect, the AutoShop enters the monitoring state. **Current mode: RTU Mode** is displayed at the bottom of the interface.



● Through the DIP switch

■ S2: Switch 1

- Set to 0: Uploading backup data from the expansion card to the PLC is supported.
- Set to 1: Downloading backup data from the PLC to the expansion card is supported.

■ S2: Switches 2 to 4

- Set to 010: Indicates the PROFINET coupler mode.
- Other DIP switches: Indicates the PLC mode.

■ Other DIP switches are not enabled.

3.3 Configuring the PROFINET Coupler (with TIA Portal)

This section describes how to configure the PROFINET coupler, the PLC and expansion modules through TIA Portal.

Prerequisites

- Cable connections have been completed.
- PLC has been powered on and started running.

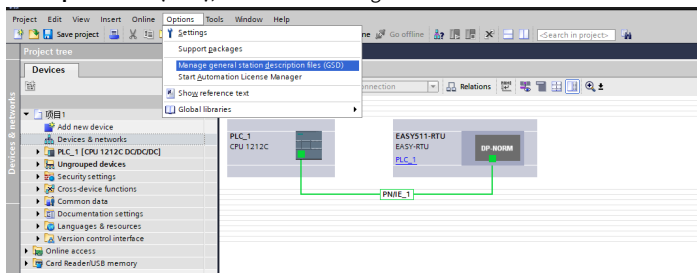
Operation procedure

1. Obtain the GSD file.

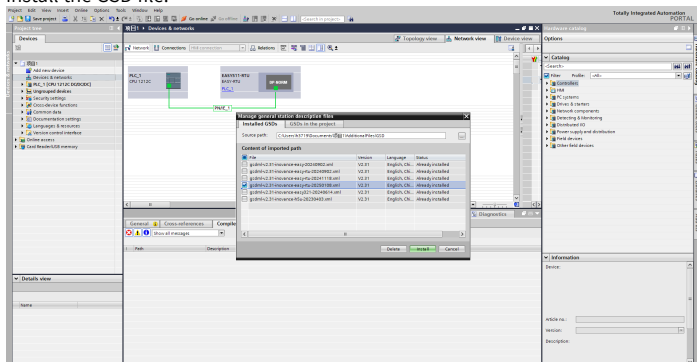
Log in to the Inovance Technology official website (www.inovance.com), search for and download the GSD file named with "EASY" in "Services and Support".

2. Import the GSD file.

- a. In the TIA Portal menu bar, select **Options > Manage general station description files (GSD)**, as shown in the figure below.

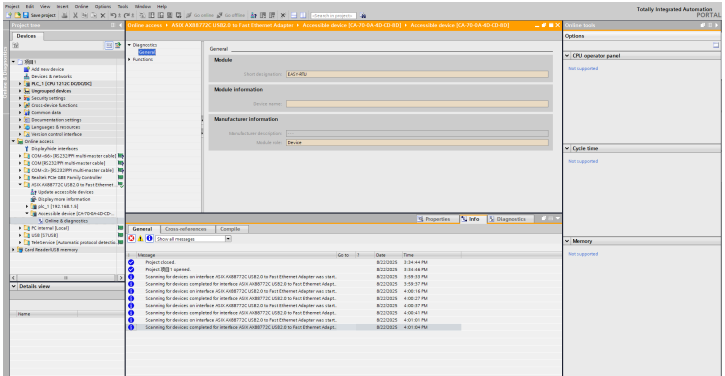


- b. In the opened dialog box, select the path where the GSD file is located (the software automatically indexes the file), check the GSD file, and click **Install** to install the GSD file.



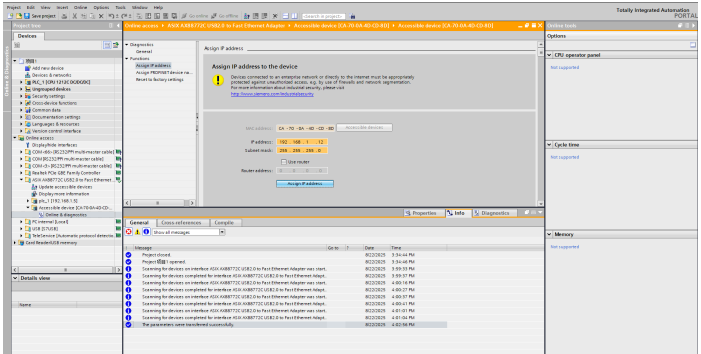
3. In the main interface, select **Project tree > Devices > Online access** to expand the list of network cards corresponding to the PLC, and then double-click **Update accessible devices** under the target network card to scan online EASY-RTU modules.

The middle lower pane will display information after successful scanning, as shown below. Select **Accessible device > Online & diagnostics** under the corresponding network card, and select **Diagnostics > General** in the middle upper pane. The short name of the device **EASY-RTU** is displayed.

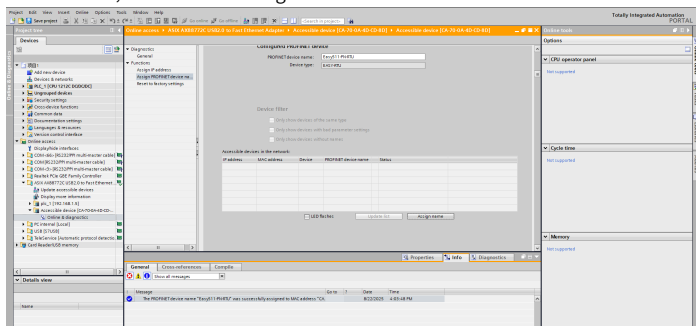


4. Assign an IP address and a PROFINET device name for the EASY-RTU module.

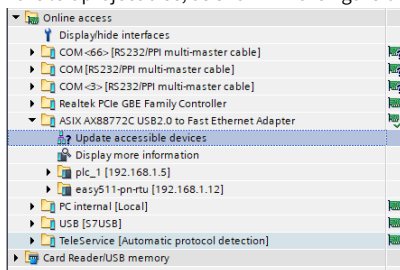
a. In the **Online & diagnostics** interface, select **Functions > Assign IP address**. In the **Assign IP address** area, configure the IP address and subnet mask for the EASY-RTU module, and click **Assign IP address**, as shown in the figure below.



- b. In the **Online & diagnostics** interface, select **Functions > Assign PROFINET device name**. In the **Configure PROFINET device** area, configure the PROFINET device name, as shown in the figure below.



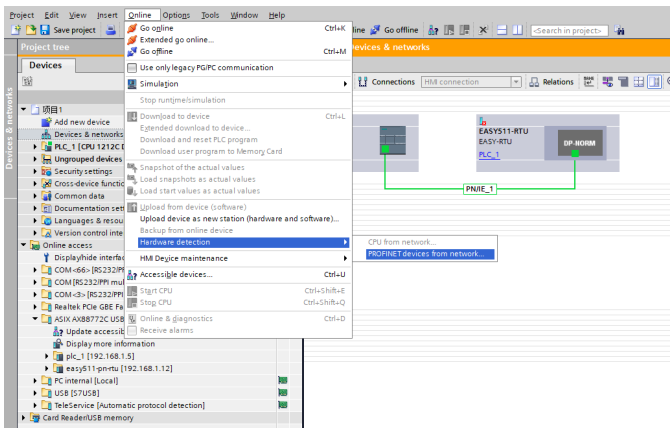
- c. Check the configuration result. Upon successful configuration, the PROFINET device name and IP address will be displayed under the corresponding network card of the PLC in the left project tree, as shown in the figure below.



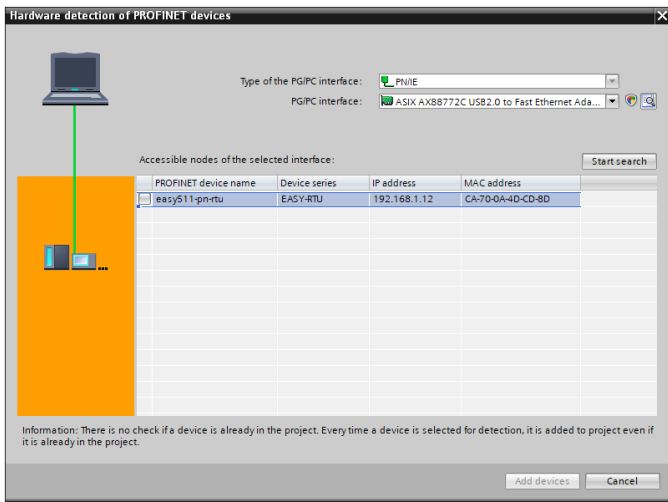
5. Configure EASY-RTU and expansion modules using one of the two methods below.

- Automatic configuration

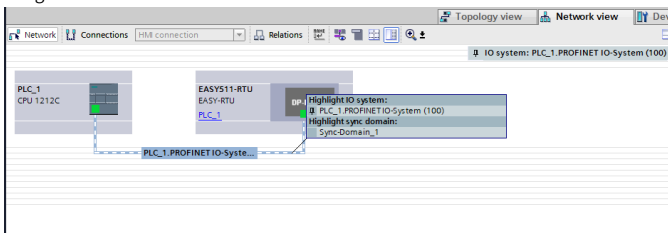
- a. In the menu bar, select **Online > Hardware detection > PROFINET devices from network**, as shown in the figure below.



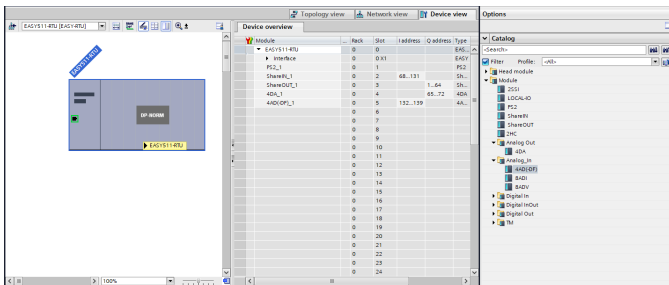
- b. In the displayed **Hardware detection of PROFINET devices** dialog box, select the corresponding network card, and click **Start search**. Check the GE21-RTU module to be configured, and click **Add devices**. After successful adding, a prompt box indicating successful hardware detection will pop up.



- c. Click the PLC and hold down the left button to drag the green frame of the PLC to the green frame of the EASY-RTU module to connect them.



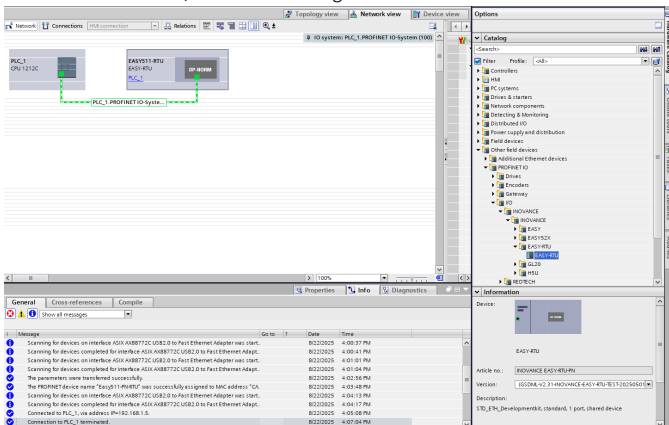
- d. Double-click the EASY-RTU module on the **Network view** tab to open **Device view**, as shown in the figure below.



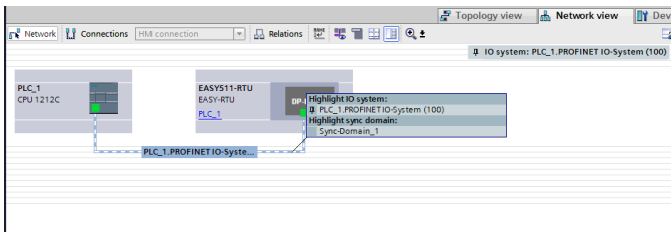
e. (Optional) Assign I address or Q address for the module.

- Manual configuration

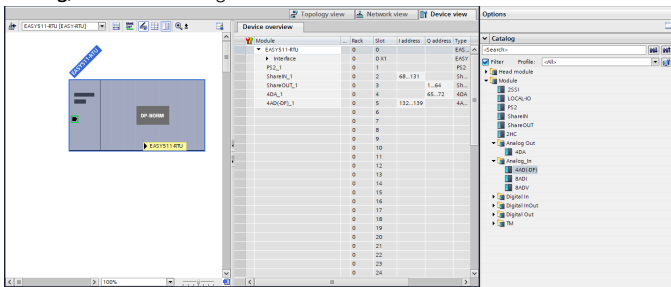
a. In the right **Hardware catalog** pane, double-click **EASY-RTU** or drag **EASY-RTU** to the **Network view** tab, as shown in the figure below.



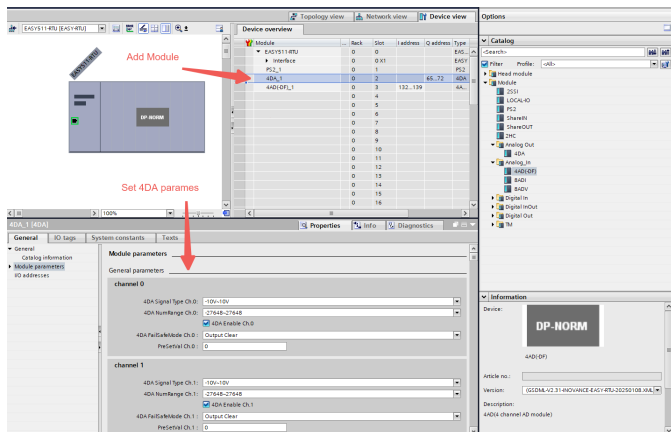
b. Click the PLC and hold down the left button to drag the green frame of the PLC to the green frame of the EASY-RTU module to connect them.



- c. Double-click the EASY-RTU module on the **Network view** tab to open **Hardware catalog**, as shown in the figure below.

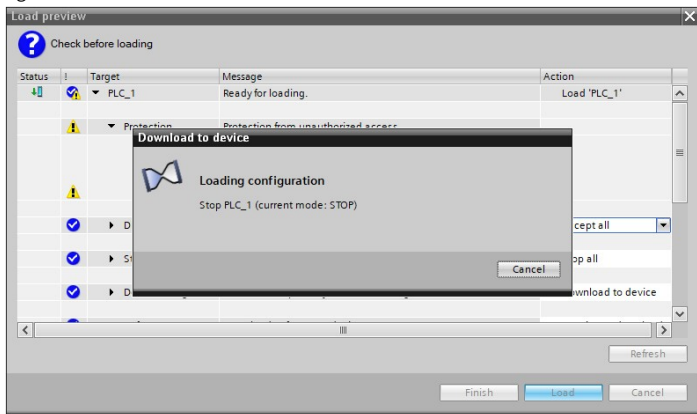


- d. According to the actual module installation sequence, double-click the expansion modules in the hardware catalog on the right to add them and automatically assign addresses.
- e. Click the expansion module to be configured on the **Device overview** tab, and then configure the corresponding module parameters under **Properties > General > Module parameters**. For detailed descriptions of the module parameters, see ["4.2 Appendix 2: Expansion Module Parameter Description" on page 39](#).



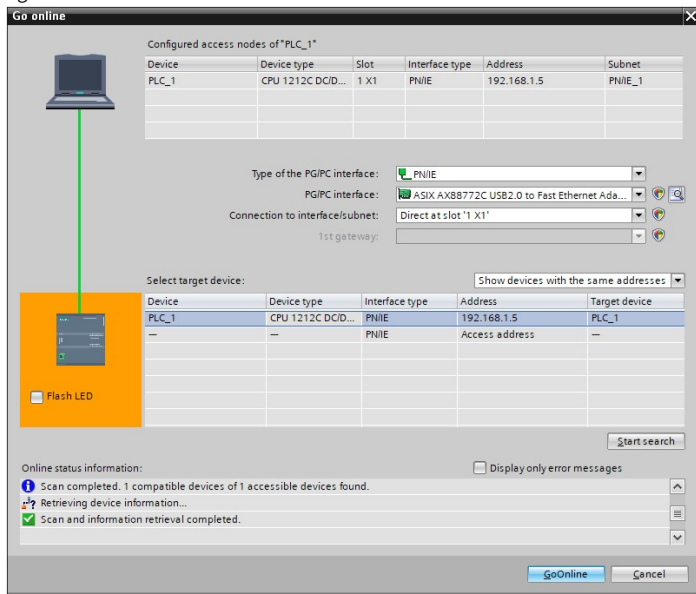
6. Download the program to the device and switch to online.

- Click  in the toolbar to open the **Load preview** dialog box, as shown in the figure below.



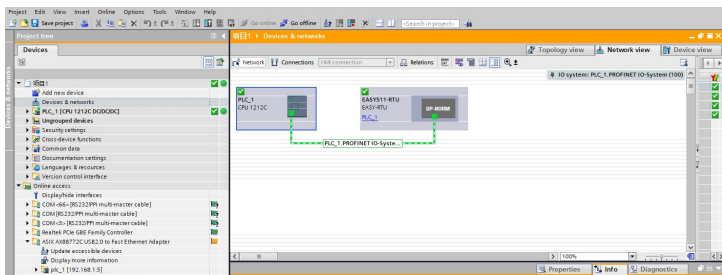
- Click **Load** to download the program to the device.

- c. Click  in the toolbar to open the following dialog box, as shown in the figure below.



- d. Check the PLC and click **GoOnline**.

7. Check if the EASY-RTU module configuration is successful. If green icons are displayed in both the project tree and network view, the EASY-RTU module is successfully configured; otherwise, the configuration is unsuccessful, as shown in the figure below.



If the configuration is unsuccessful, contact Inovance for technical support.

4 Appendix

4.1 Appendix 1: Applicable Modules in the Coupler Mode

ShareIN
ShareOUT
GL20-2SSI
GL20-PS2
GL20-4DA/GL20S-4DA
GL20-4AD/GL20S-4AD/GL20-4AD-DF
GL20-8ADI
GL20-8ADV
GL20-0800END
GL20-1600END/GL20S-1600END
GL20-3200END/GL20S-3200END/GL20-3200END-M/GL20S-3200END-M
GL20-0404ETP-5V
GL20-0808ETN
GL20-3232ETN/GL20-3232ETN-M
GL20-0008ER/GL20S-0008ER
GL20-0008ETN
GL20-0008ETP
GL20-0016ETN/GL20S-0016ETN
GL20-0016ETP/GL20S-0016ETP
GL20-0032ETN/GL20S-0032ETN/GL20-0032ETN-M/GL20S-0032ETN-M
GL20-4PT/GL20S-4PT
GL20-4TC/GL20S-4TC

4.2 Appendix 2: Expansion Module Parameter Description

■ GL20-4AD/GL20S-4AD/GL20-4AD-DF/GL20-8ADI/GL20-8ADV/GL20-4DA/GL20S-4DA Expansion Modules

4AD(-DF) 1 [4AD(-DF)]

General parameters

channel 0

4AD Signal Type Ch.0: -10V~10V

4AD NumRange Ch.0: -27648~27648

☒ 4AD Enable Ch.0

4AD FilParam Ch.0: 8

☐ 4AD PeakHoldEn Ch.0

☐ 4AD OpenChkEn Ch.0

☐ 4AD OverRangeChkEn Ch.0

☐ 4AD OverflowEn Ch.0

Device overview

Module	Rack	Slot	I address	Q address	Type
EASY11-4RJ	0	0			EAS...
PS2_1	0	0	0 X1		EAS...
4DA_1	0	2		65..72	4DA...
4AD(OP)_1	0	3	132..139		4A...
	0	4			
	0	5			
	0	6			
	0	7			
	0	8			
	0	9			
	0	10			
	0	11			
	0	12			
	0	13			
	0	14			
	0	15			
	0	16			

Module parameters

General parameters

channel 0

4DA Signal Type Ch.0: -10V~10V

4DA NumRange Ch.0: -27648~27648

☒ 4DA Enable Ch.0

4DA FailSafeMode Ch.0: Output Clear

PreSetVal Ch.0: 0

channel 1

4DA Signal Type Ch.1: -10V~10V

4DA NumRange Ch.1: -27648~27648

☒ 4DA Enable Ch.1

4DA FailSafeMode Ch.1: Output Clear

PreSetVal Ch.1: 0

Options

Catalog

Filter Profile: -ok-

Module

- Head module
- Module
 - 255i
 - LOCAL I/O
 - PS2
 - ShareIN
 - Share-OUT
 - 2HC
 - Analog Out
 - 4DA
 - Analog_In
 - 4AD(-DF)
 - 8ADI
 - 8ADV
 - Digital In
 - Digital InOut
 - Digital Out
 - Rel

Information

Device:

DP-NORM

4AD(-DF)

Article no.:

Version: (GSDML-V2 31-4NOVANCE-EASY-4RJ-20250108-00A)

Description: 4AD(4 channel AD module)

-	Rated Input Range	Rated Range	Input Limit Range	Limit Range	GSD Interface Range
Analog voltage input and output	-10 V to 10 V	-20000 to 20000 -32000 to 32000 -27648 to 27648	-10.20 V to 10.20 V	-20400 to 20400 -32640 to 32640 -28200 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	0 V to 10 V	0 to 20000 0 to 32000 0 to 27648	-0.5 V to 10.24 V	-1000 to 20400 -1600 to 32640 -1382 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	-5 V to 5 V	-20000 to 20000 -32000 to 32000 -27648 to 27648	-5.10 V to 5.10 V	-20400 to 20400 -32640 to 32640 -28200 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	0 V to 5 V	0 to 20000 0 to 32000 0 to 27648	-0.25 V to 5.10 V	-1000 to 20400 -1600 to 32640 -1382 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	1 V to 5 V	0 to 20000 0 to 32000 0 to 27648	0.8 V to 5.10 V	-1000 to 20400 -1600 to 32640 -1382 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648

-	Rated Input Range	Rated Range	Input Limit Range	Limit Range	GSD Interface Range
Analog current input and output	-20 mA to 20 mA	-20000 to 20000 -32000 to 32000 -27648 to 27648	-20.50 mA to 20.50 mA	-20400 to 20400 -32640 to 32640 -28200 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	0 mA to 20 mA	0 to 20000 0 to 32000 0 to 27648	-1 mA to 20.50 mA	-1000 to 20400 -1600 to 32640 -1382 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648
	4 mA to 20 mA	0 to 20000 0 to 32000 0 to 27648	3.2 mA to 20.50 mA	-1000 to 20400 -1600 to 32640 -1382 to 28200	-20000 to 20000 -32000 to 32000 -27648 to 27648

Note

Due to GSD file restrictions, although the interface currently only displays three ranges (-20,000 to 20,000, -32,000 to 32,000, and -27,648 to 27,648), the other ranges listed in the above table are also supported. For example, if a range of 0 V to 10 V is selected, the corresponding ranges would be 0 to 20,000, 0 to 32,000, or 0 to 27,648. Since the -20,000 to 20,000 range includes the 0 to 20,000 range, you can directly select -20,000 to 20,000 option on the interface. The same logic applies to other ranges.

The parameters within the red box in the interface are described in the following table.

Parameter Name	Parameter Description
PeakHoldEn	Keep the maximum collected value if subsequent values do not exceed the current value. Check to enable.
OpenChkEn	Trigger the alarm when no wiring input is detected. The function is supported in the ranges of 1 V to 5 V and 4 mA to 20 mA. Check to enable.
OverRangeChkEn	Trigger the alarm when the rated range is exceeded. Check to enable (excluding 0 V to 10V, 0 V to 5V, 1 V to 5 V, 0 mA to 20 mA, and 4 mA to 20mA; values below -200 are considered below the lower limit, while those above 20000 are considered above the upper limit).
OverFlowEn	Trigger the alarm when the limit range is exceeded. Check to enable.

If 4 mA to 20 mA and 0 to 27648 mode are selected, the sampled value will be displayed without wiring:

- If the parameter within the red box is not checked, -1382 is displayed (corresponding to -1000 in the range of -20000 to +20000).
- If the "OpenChkEn" option is checked, -1382 is displayed (corresponding to -1000 in the range of -20000 to +20000).
- If the "OverFlowEn" option is checked, -1382 is displayed (corresponding to -1000 in the range of -20000 to +20000).

■ GL20-4PT/GL20S-4PT/GL20-4TC/GL20S-4TC expansion module

4PT_1 [4PT]

General IO tags System constants Texts

General

Catalog information

Inputs

Module parameters

General parameters

IO addresses

General parameters

General configure

4PT Sampling Time Ch : 500ms

4PT Temperature Unit Ch : Celsius

channel 0

4PT Thermocouple Model Ch.0 : Pt100

4PT Enable Ch.0 : Enable

4PT FiltParam Ch.0 : 5

4PT Bias Ch.0 : 0.0000

4PT UpLimit Ch.0 (200 C-850 C) (-328 F-1562 F) : 850.0000

4PT DownLimit Ch.0 (200 C-850 C) (-328 F-1562 F) : -200.0000

4PT Detect Drift Ch.0 : Disable

4PT Detect Offline Ch.0 : Disable

4PT Detect OverRun Ch.0 : Disable

4PT Detect Overflow Ch.0 : Disable

4TC_1 [4TC] Properties Info Diagnostics

General IO tags System constants Texts

General
Catalog information
Inputs
Module parameters
General parameters
IO addresses

General parameters

General configure

4TC Sampling Time Ch : 500ms

4TC Cold Config Ch : intern

4TC ExtCode Wiring Ch : 2 wiring

4TC Temperature Unit Ch : Celsius

4TC Resolution Ch : 0.1

channel 0

4TC Thermocouple Model Ch.0 : K

4TC Enable Ch.0 : Enable

4TC FiltParam Ch.0 : 5

4TC Bias Ch.0 : 0.0000

4TC UpLimit Ch.0 (-270 C~-1800 C) (-454 F~-327 F) : 1370.0000

4TC DownLimit Ch.0 (-270 C~-1800 C) (-454 F~-327 F) : -270.0000

4TC Detect Drift Ch.0 : Disable

4TC Detect Offline Ch.0 : Disable

4TC Detect OverRun Ch.0 : Disable

4TC Detect Overflow Ch.0 : Disable

Parameter Name	Parameter Description
Temperature Unit	Select the unit of Celsius or Fahrenheit based on actual conditions.
Bias	Set the temperature offset value. This parameter takes effect when "Detect Drift" is configured as "Enable". Set the offset value as needed.
UpLimit	Set the upper temperature limit. Set this parameter based on the range values of the corresponding temperature unit, with precision to one decimal place.
DownLimit	Set the lower temperature limit. Set this parameter based on the range values of the corresponding temperature unit, with precision to one decimal place.
Detect Drift	Set whether to enable temperature offset detection. This parameter is used in combination with the "Bias" parameter. This function takes effect when set to "Enable".

For the technical specifications of GL20-4PT/GL20-4TC, see "Technical Specifications" section in the corresponding *User Guide*.

■ GL20-0800END/GL20-1600END/GL20S-1600END/GL20-3200END-M/GL20S-3200END-M/GL20-3200END/GL20S-3200END/GL20-0404ETP-5V/GL20-0808ETN/GL20-3232ETN-M/GL20-3232ETN/GL20-0008ER/GL20S-

0008ER/GL20-0008ETN/GL20-0008ETP/GL20-0016ETP/GL20S-0016ETP/ GL20-0016ETN/GL20S-0016ETN/GL20-0032ETN-M/GL20S-0032ETN-M/ GL20-0032ETN/GL20S-0032ETN expansion module

0008ETP_1 [0008ETP]

General IO tags System constants Texts

General

Catalog information

Module parameters

General parameters

IO addresses

General parameters

Stop/Offline Output State Channel Group0

Channel 0

FailSafeMode: OutputPreSetVal

PreSetVal: 0

Channel 1

FailSafeMode: OutputPreSetVal

PreSetVal: 0

Channel 2

FailSafeMode: OutputPreSetVal

PreSetVal: 0

Channel 3

FailSafeMode: OutputPreSetVal

PreSetVal: 0

Channel 4

FailSafeMode: OutputPreSetVal

PreSetVal: 0

Parameter Name	Parameter Description
FailSafeMode	Set the output mode upon stop/disconnection. "OutputHold" and "OutputPreSetVal" are optional, with the following meanings: - OutputHold: Keep present output status - OutputPreSetVal: Output according to preset value, used in combination with the "PreSetVal" parameter.
PreSetVal	Set the preset value upon stop/disconnection. Set to "0" or "1" as needed.



GL20-2SSI expansion module

2SSI_1 [2SSI]

Properties Info Diagnostics

General IO tags System constants Texts

General

Catalog information

Inputs

Module parameters

General parameters

I/O addresses

General parameters

channel 0

☒ SSI Enable

SSI Multiple Sampling Mode: Close

SSI Baudrate: 500K

SSI Coding: Gray Code

SSI Type Change: None

SSI Frame Type: MultiTurn

SSI Parity Check: None

SSI Direction invert: No invert sign

SSI transmission interval: 1024

SSI Frame Size: 25

SSI MSB config: 25

SSI Probe Enable: Close

SSI Probe TriggerMode: Rising edge

SSI Probe TriggerType: One time trigger

channel 1

☒ SSI Enable

SSI Multiple Sampling Mode: Close

SSI Baudrate: 500K

SSI Coding: Gray Code

SSI Type Change: None

SSI Frame Type: MultiTurn

SSI Parity Check: None

SSI Direction invert: No invert sign

SSI transmission interval: 1024

SSI Frame Size: 25

SSI MSB config: 25

SSI Probe Enable: Close

SSI Probe TriggerMode: Rising edge

Parameter Name	Parameter Description
Enable	Check to enable the channel. Drop-down options: ● Checked ● Unchecked Default: Checked
Multiple Sampling Mode	Turn the mode on to check the validity of the encoder position value. A fault code will be sent to the host if the value is invalid. Drop-down options: ● Close ● Open Default: Close

Parameter Name	Parameter Description
Baudrate	The baud rate affects the accuracy of the encoder as well as the rate of position updates. You can adjust it according to the actual transmission rate and performance of the encoder. (Unit: bps) This parameter is strongly related to the encoder performance. Drop-down options: 100k/200k/300k/400k/500k/1000k/1250k/1500k/2000k Default: 500k
Coding	Select the coding mode according to the encoder type. Drop-down options: ● Gray Code ● Binary Code Default: Gray Code
Data Mode	● When "Coding" is set to "Gray Code", configure this parameter if you need to upload data as binary code. ● When "Coding" is set to "Binary Code", use the default value. Drop-down options: ● None ● Gray->Binary Default: None
Frame Type	It is recommended to select "Variable" when there are status bits in the encoder bits. This parameter should be used in combination with "Frame Size" and "MSB config". Drop-down options: ● SingleTurn-13Bit ● MultiTurn-25Bit ● Variable Default: MultiTurn-25Bit

Parameter Name	Parameter Description
Parity Check	If the assigned parity check is for a 25-bit encoder, 26 bits can be read from the encoder. The bit after the least significant bit will be judged as the parity check bit, and parity check errors will be sent to the host in the form of a fault code. Drop-down options: • None • Odd check • Even check Default: None
Direction invert	The inversion function can adjust the motion direction of the absolute encoder to the direction of the motion axis. Drop-down options: • No invert sign • Invert sign Default: No invert sign
Transmission interval	Set the interval according to the encoder specifications. If you need to increase the response speed of the encoder, you can adjust this parameter according to the performance of the encoder. This parameter is strongly related to the encoder performance. Drop-down options: 16/32/48/64/512/1024 Default: 1024
Frame size	When you need to switch the data frame type, manually modify the parameter based on the actual bits of the data frame type. Value range: 0 to 32. Default: 25
MSB config	When you need to switch the data frame type, manually modify the parameter based on the actual bits of the data frame type. Value range: 0 to 32. Default: 25