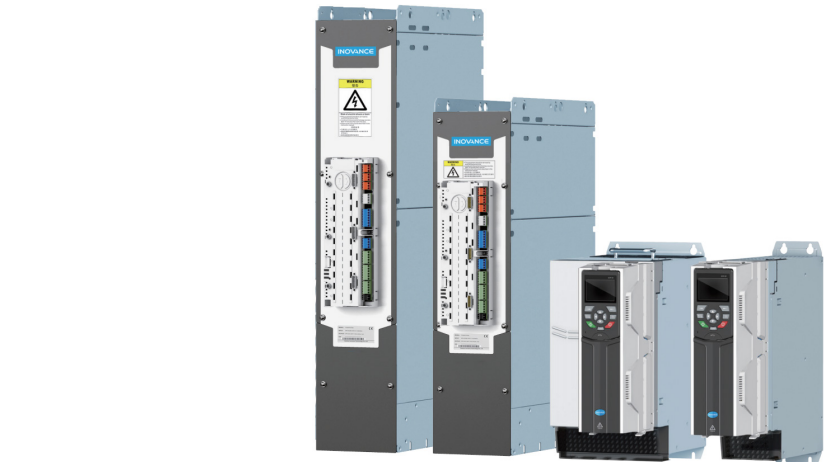




MD880-40D Series

Active Line Module

User Guide



1. Overview

Thank you for purchasing Inovance MD880 series active line module.

The MD880-40D series low-voltage and low-power active line module features high power density, compact structure, and high reliability. It has a voltage class of 400 V, with rated power ranging from 64 kW to 271 kW. The power module, filter, controller, and detection unit of the line module are delivered separately to be integrated by customers.

This user guide describes product information, installation instructions, and electrical connection. If you have any question concerning the product function or performance, contact Inovance for technical support.

Document Acquisition

The user guide is not delivered together with the product. To purchase the user guide, contact the sales personnel.

2. Product Information

Model

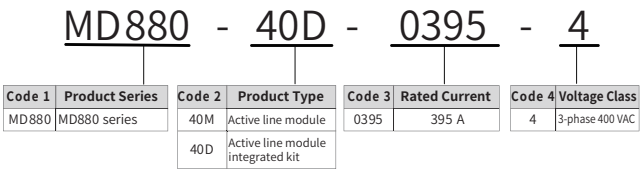


Figure 1 Model description

Specifications and model selection

Table 1 Specifications and selection of MD880-40D series active line module

Active line module model	Power module model	Application without overload					Application with light overload		Application with heavy overload		Thermal design power	Air volume
		I _N	I _N	I _{max}	S _N	P _N	I _{Ld}	P _{Ld}	I _{Hd}	P _{Hd}		
		A _{ac}	A _{dc}	A _{dc}	kVA	kW	A _{dc}	kW	A _{dc}	kW		
MD880-40D-0094-4	MD880-40M-0094-4	94	107	140	65	64	103	62	81	48	1.60	178
MD880-40D-0149-4	MD880-40M-0149-4	149	170	221	103	102	164	98	128	77	2.55	297
MD880-40D-0183-4	MD880-40M-0183-4	183	209	272	127	126	201	120	157	94	3.15	331
MD880-40D-0299-4	MD880-40M-0299-4	299	342	444	207	205	328	197	256	154	5.12	420
MD880-40D-0395-4	MD880-40M-0395-4	395	452	587	274	271	433	260	339	203	6.77	700

I_N: Rated input (AC)/output (DC) current
I_{max}: Maintaining the max. output current for at least 10s (every 300s) upon start
S_N: Apparent power
P_N: Rated output power
I_{Ld}: Continuous output current in applications with light overload
P_{Ld}: Output power in applications with light overload
I_{Hd}: Continuous output current in applications with heavy overload
P_{Hd}: Output power in applications with heavy overload

P_{loss}: Total loss of active line module

Table 2 Fuse selection

Model	Type	Model (SINOFUSE)	Specifications	Quantity
0094-4	AC fuse	RS306-1-W1Z-125A690V	125 A, 690 V	3
	DC fuse	RS306-1-W1Z-160A690V	160 A, 690 V	2
0149-4	AC fuse	RS306-1-W1Z-200A690V	200 A, 690 V	3
	DC fuse	RS306-1-W1Z-250A690V	250 A, 690 V	2
0183-4	AC fuse	RS306-1-W1Z-250A690V	250 A, 690 V	3
	DC fuse	RS306-1-W1Z-315A690V	315 A, 690 V	2
0299-4	AC fuse	RS306-1-W1Z-400A690V	400 A, 690 V	3
	DC fuse	RS306-1-W1Z-450A690V	450 A, 690 V	2
0395-4	AC fuse	RS306-1-W1Z-550A690V	550 A, 690 V	3
	DC fuse	RS306-1-W1Z-630A690V	630 A, 690 V	2

Technical Data

Item	Name	Specifications
Basic performance	AC input voltage	400 V system: 380 VAC to 415 VAC, ±10% (-15%, < 1 min)
	Input frequency	47 Hz to 63 Hz
	Degree of voltage unbalance	±3% of rated voltage at most
	Output voltage	400 V system: 540 VDC to 720 VDC
	Overload capacity	Light overload: Operating continuously for 1 min every 5 min upon 110% I _{Ld} Heavy overload: Operating continuously for 1 min every 5 min upon 150% I _{Hd}
Basic performance	Operating efficiency	More than 97%
	Power factor	> 0.99 (at rated power with full load)
	Total harmonics THD	THDI < 5% (rated power) THDU < 5% (Rsc > 20)
Operating environment	Ambient temperature	-10°C to +40°C , derating required for temperatures between 40°C to 50°C
	Relative humidity	5% to 95%, without condensation
	Altitude	≤ 1000 m: derating not required > 1000 m: derating required Max.: 4000 m
Storage	Storage temperature	-40° C to +70° C
	Storage humidity	5% to 95%, without condensation
Mechanical data	Vibration resistance	Compliant with vibration class 3M4 in GB/T4798.3
		Steady-state sinusoidal vibration: 2-9 Hz, 3 mm
		9-200 Hz, 10 m/s²
	IP rating	Module: IP00 Cabinet: IP21
		Safety performance
	Cooling method	Forced air cooling (AF), compliant with EN 60146 for the module; Natural cooling for the reactor
Protective functions	Protective functions	Providing protection against short circuit, overcurrent, overload, overvoltage, undervoltage, phase loss, three-phase unbalance, and overtemperature

3. Electrical Wiring

The following figure shows the electrical wiring of MD880-40D series active line module integrated kit.

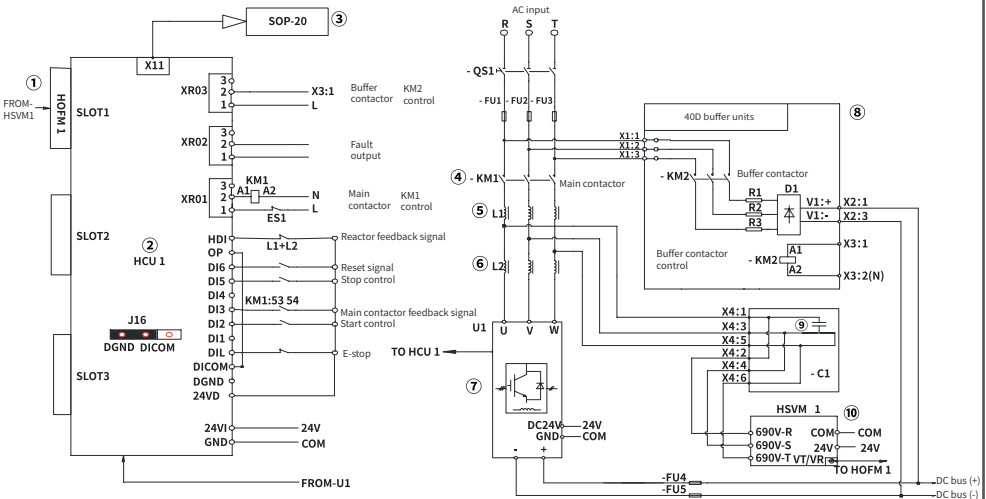


Figure 3 Electrical wiring

Table 3 List of deliverables

No.	Name	Description
1	HOFM-30 optical fiber extension module	Connected to HCU through the SLOT to provide multiple optical fiber interfaces for HCU.
2	HCU controller module	Connected to line module U1 through the electrical interface to be used as the controller for MD880-40D.
3	SOP-20 smart operating panel	Connected to the HCU through the network cable to perform parameter setting, software programming, start/stop control, and communication relay on the active line module (including the operating panel base).
4	Main contactor	Used to control switch-on/off of the three-phase incoming cables.
5	Reactor on the power grid side	Small reactor of LCL filter
6	Reactor on the line module side	Large reactor of LCL filter
7	Active line module	Power module of the active line module
8	Buffer components	Providing DC bus buffer circuit for the active line module
9	Capacitor module	Three-phase capacitor module
10	HSVM-10	Synchronous voltage module to collect incoming voltage for the active line module

NOTE

- ◆ Table 2 lists recommended fuse models.
- ◆ Table 3 lists the deliverables. Components not listed are to be configured by customers.
- ◆ The terminal block is not available for the capacitor module of the bolt fixing terminal. Perform wiring based on the label of the copper busbar.

4. Technical Data for Installation

Dimensions of the line module

1) H3

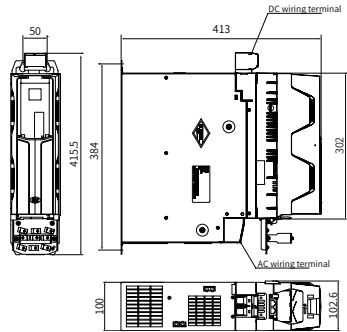


Figure 4 H3 dimensions (unit:mm)

Structure	Line module model	Wiring hole diameter
H3	MD880-40M-0094-4	M6

2) H4

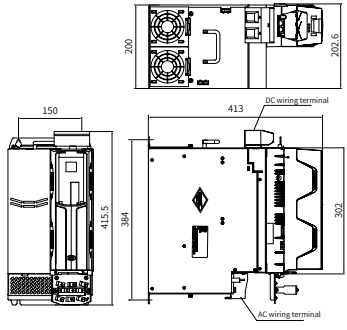


Figure 5 H4 dimensions (unit:mm)

Structure	Line module model	Wiring hole diameter
	MD880-40M-0149-4 MD880-40M-0183-4	
H4		M10

3) H6

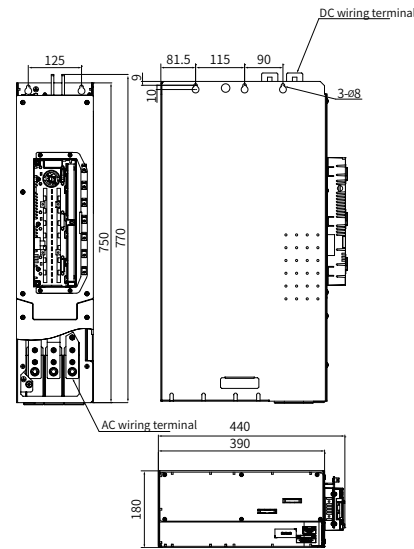


Figure 6 H6 dimensions (unit:mm)

Structure	Line module model	Wiring hole diameter
H6	MD880-40M-0299-4	M10

4) H7

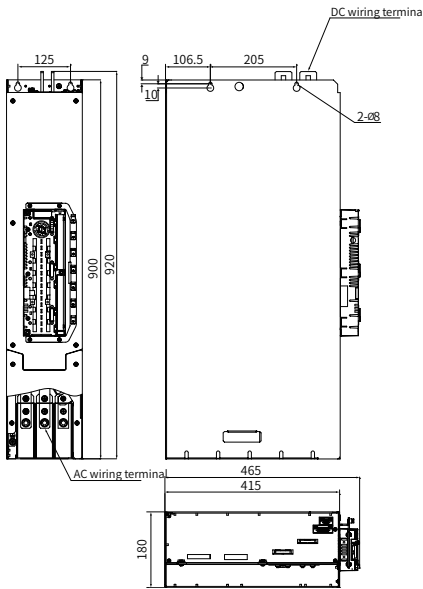


Figure 7 H7 dimensions (unit:mm)

Structure	Line module model	Wiring hole diameter
H7	MD880-40M-0395-4	M10

■ Reactor dimensions

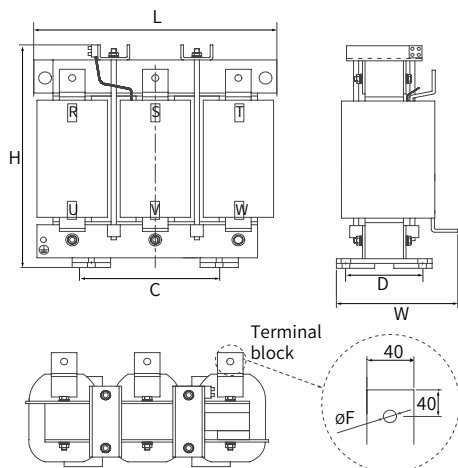


Figure 8 Dimension diagram of the reactor

Model of active line module kit	Reactor L1 on the power grid side				Reactor L2 on the power grid side			
	Outline dimensions (mm) L x W x H	Mounting dimensions (mm) Hole diameter - C x D	Wiring terminal hole diameter F	Weight (kg)	Outline dimensions (mm) L x W x H	Mounting dimensions (mm) Hole diameter - C x D	Wiring terminal hole diameter F	Weight (kg)
MD880-40D-0094-4	260x150x280	4-Ø9-130x100	Ø9	19	380x200x320	4-Ø10-220x150	Ø9	44
MD880-40D-0149-4	330x180x350	4-Ø9-200x120	Ø11	27	444x330x385	4-Ø12-240x210	Ø11	69
MD880-40D-0183-4	330x180x350	4-Ø9-200x120	Ø11	30	440x273x365	4-Ø12-240x210	Ø11	75
MD880-40D-0299-4	390x200x390	4-Ø9-200x120	Ø11	49	444x330x445	4-Ø12-240x210	Ø11	138
MD880-40D-0395-4	390x200x390	4-Ø9-200x120	Ø11	54	450x350x520	4-Ø12-240x210	Ø11	172



NOTE

◆ A tolerance of ± 5 mm is included in the reactor dimensions.

■ Main contactor dimensions

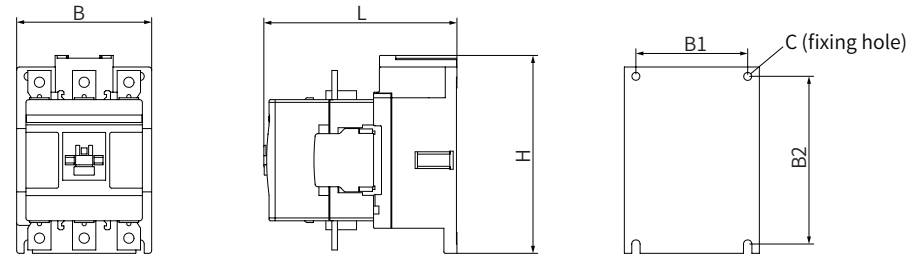


Figure 9 Main contactor dimensions

Model of active line module kit	Outline dimensions of main contactor (mm)	Mounting dimensions of main contactor (mm)		Wiring terminal hole diameter
	B x H x L	B1 x B2	C (Mounting hole)	
MD880-40D-0094-4	120 x 173 x 205	100 x 130	4-M6	M8
MD880-40D-0149-4	120 x 173 x 205	100 x 130	4-M6	M8
MD880-40D-0183-4	145 x 212 x 239	120 x 180	4-M8	M10
MD880-40D-0299-4	160 x 218 x 261	130 x 180	4-M8	M10
MD880-40D-0395-4	160 x 218 x 261	130 x 180	4-M8	M10



NOTE

◆ A tolerance of ± 2 mm is included in the main contactor dimensions.

Dimensions of capacitor units

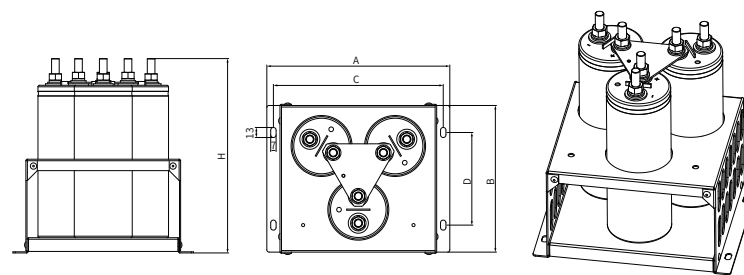


Figure 10 Capacitor units in star-type connection

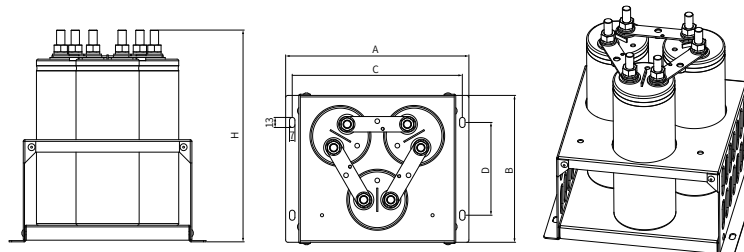


Figure 11 Capacitor units in delta-type connection

Model	Outline dimensions A x B x H (mm)	Mounting dimensions C x D (mm)	Capacitor connection mode
MD880-40D-0094-4	237x190x255	220x120	Star type
MD880-40D-0149-4	237x190x255	220 x 120	Star type
MD880-40D-0183-4	237x190x175	220 x 120	Delta type
MD880-40D-0299-4	237x190x200	220 x 120	Delta type
MD880-40D-0395-4	237x190x255	220 x 120	Delta type

■ Dimensions of buffer components

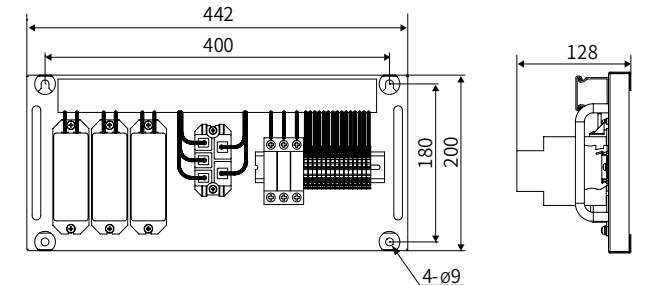


Figure 12 Dimensions of buffer components (unit:mm)

INOVANCE Warranty Agreement

- Inovance provides an 18-month warranty to the equipment (12-month warranty for the battery) from the date of manufacturing (subject to the barcode on the product) for the failure or damage that occur under normal use.
- Within the warranty period, maintenance fee will be charged for the following damage:
 - Damage caused by improper use or disassembly/repair/retrofit without prior permission
 - Damage caused by fire, flood, abnormal voltage, other disasters, and secondary disasters
 - Hardware damage caused by dropping or transportation
 - Damage caused by operations not following the instructions in the user guide
 - Damage caused by peripheral faults (for example, external device faults)
- The maintenance fee is charged according to the latest Maintenance Price List of Inovance.
- For service issues, contact Inovance agent or Inovance directly.
- Customers who purchase the product are assumed to agree on terms and conditions of this warranty agreement. Inovance reserves the right for the final explanation to the warranty agreement.

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