Sigen Gateway SP AU Installation Guide

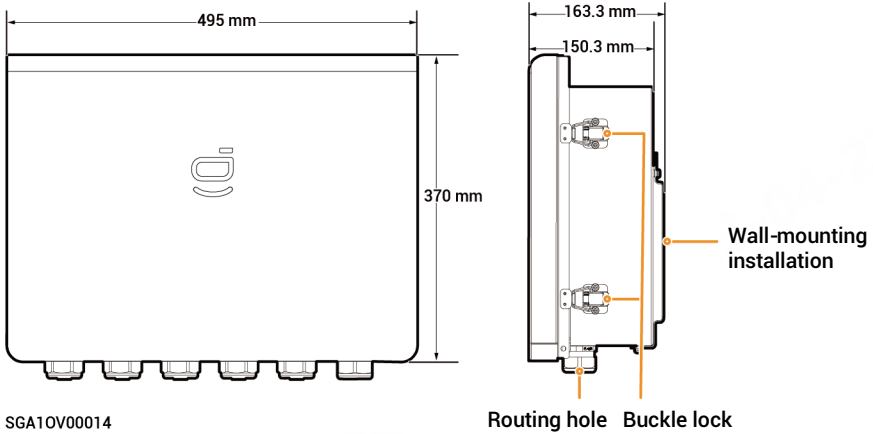
Version: 03
Part Number: 3101000018
Release date: 2024-11-30

Caution

- Only trained or qualified persons with electrical engineering knowledge can work directly on the equipment.
- Operators should be familiar with national and local laws, regulations, and standards, and the compositions and operating principles of relevant systems.
- Before operations, please carefully read operating requirements and precautions in this document and Important Notice. Any equipment damage caused by improper operation will not be covered under warranty.

1 Product Description

1.1 Appearance and Dimensions



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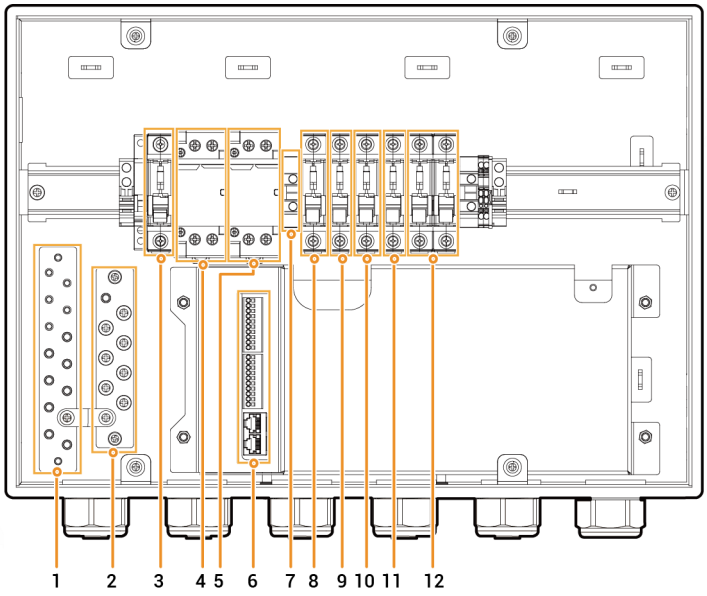
1.2 Introduction to Ports/Components



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No.	Label	Description
1	-	N-line copper busbar
2	-	Grounding copper busbar
3	QS1	Bypass switch
4	KM1	Grid contactor
5	KM2	Diesel generator contactor
6	-	Communication terminal (connecting to FE or DI communication cable)
7	X1	Terminal (connecting to a non-backup load)
8	QF1	Miniature circuit breaker (connecting to the power grid)
9	QF5	Miniature circuit breaker (connecting to a household load)
10	QF3	Miniature circuit breaker (connecting to a single-phase inverter in a power range of 8.0 to 10.0 kW)
11	QF4	Miniature circuit breaker (connecting to a single-phase inverter in a power range of 5.0 to 6.0 kW)
12	QF2	Miniature circuit breaker (connecting to a diesel generator/smart load)

Danger

Please check that all switches are turned off at the factory.
Always avoid hot-line work.

2 Inspections Before Installation

- Check whether the components are entirely supplied against the packing list and whether the appearance is in good condition. For any problem, contact your sales representative.
- Parts and accessories supplied with the packing box are personal assets of the owner and must not be taken away from the installation site.
- Check personal protective equipment and installation tools to ensure that they are complete; If not, please make them up.
- Check and ensure the completeness of personal protective equipment and installation tools; replenish if necessary.

Personal Protective Equipment


Safety hat


Goggles


Dust mask


Protective gloves


Insulating gloves

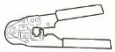

Insulating shoes

Installation Tools


Power drill


Vacuum cleaner


Wire cutter


Crimp tool


Crimping pliers


Wire stripper


Scissors


Cable ties


Heat shrinkable sleeve


Heat gun

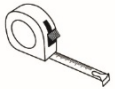

Insulated screwdriver set

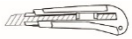

Insulated sleeve set

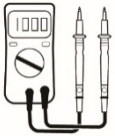
Torque socket wrench


Marker


Level


Tape measure


Utility knife


Multimeter

Caution

The specification of installer-provided cables shall meet the cable laws and standards of the countries/regions.

Self-supplied Cables

No.	Cable name		Recommended specification
1	AC cable	Used to connect an inverter	Three-core copper core cable for outdoor use (L, N, PE) • Power: 5.0 kW to 6.0 kW, cross-sectional area of conductor: 4 mm² to 6 mm², cable OD: 13 mm to 21 mm • Power: 8.0 to 10.0 kW, cross-sectional area of conductor: 10 mm² to 16 mm², cable OD: 16 mm to 20 mm
2		Used to connect a backup household load	Three-core copper core cable for outdoor use (L, N, PE) Cross-sectional area of conductor: 10 mm² to 16 mm², cable OD: 13 mm to 21 mm
3		Used to connect to the power grid	
4		Used to connect a non-backup load	
5		Used to connect a diesel generator/smart load (optional)	
6	RJ45 network cable		Eight-core shielded twisted pair for outdoor use Cross-sectional area of conductor: 0.13 mm² to 0.2 mm²; cable OD: 4 mm to 7.5 mm Single cable length: ≤ 100 m[1]
7	DI/DO signal cable		Two-core shielded cable for outdoor use Cross-sectional area of conductor: 0.2 mm² to 1.5 mm²; cable OD: 2 mm to 4 mm

Note [1]: The cable length should be limited for good communication. Too long cable degrades the communication effect. FE communication distance: ≤ 100 m.

Tips

- The warranty applies when the equipment has been installed properly for its intended use and in accordance with the operating instructions.
- During actual installation, the selection of installation location should comply with local firefighting, environmental protection regulations, and other relevant laws. The specific installation location planning should be subject to the installer or engineering, procurement, and construction (EPC) contracts.

Installation Environment

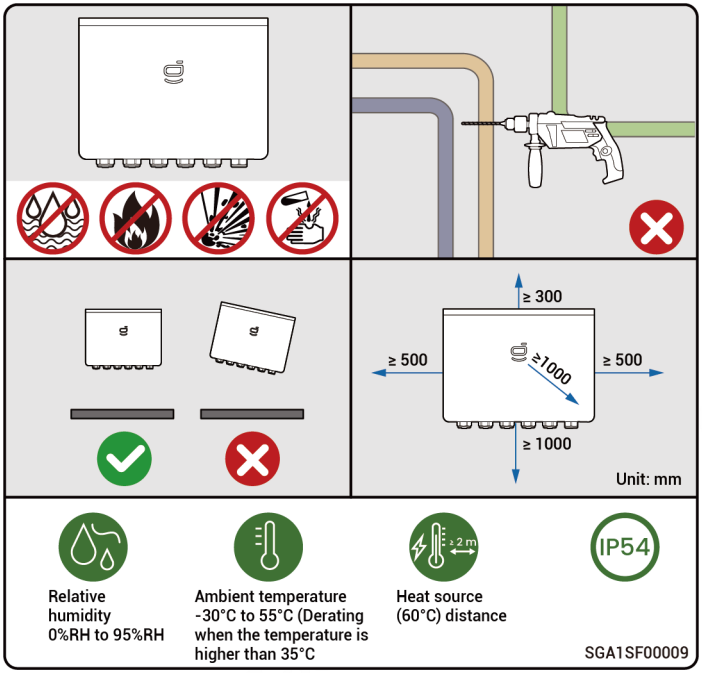
- Do not install the equipment in a smoky, flammable, or explosive environment.
- Avoid exposing the equipment to direct sunlight, rain, standing water, snow, or dust. It is suggested to install the equipment in a sheltered place. Take preventive measures in operating areas prone to natural disasters such as floods, mudslides, earthquakes, and typhoons.
- Do not install the equipment in an environment with strong electromagnetic interference.
- The temperature and humidity of the installation environment should meet equipment requirements.
- The equipment should be installed in an area that is at least 500 m away from corrosion sources that may result in salt damage or acid damage. Corrosion sources include but are not limited to seaside, thermal power plants, chemical plants, smelters, coal plants, rubber plants, and electroplating plants.

Installation Location

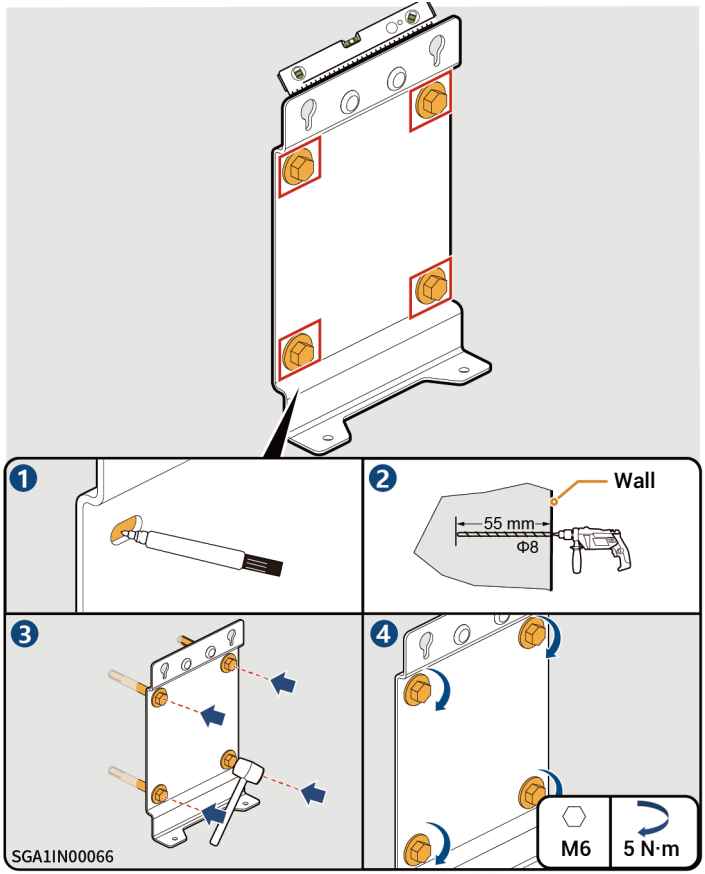
- Do not tilt the equipment or place it upside down. Ensure that the equipment is horizontally installed.
- Do not install the equipment in areas easily accessible to children.
- Do not install the equipment in a place with fire hazards or is prone to moisturizing.
- The equipment produces sound when it is operating. Please install the equipment in a place with appropriate distance at which there is no impact to daily work and life.
- Do not install the equipment in a sealed, poorly ventilated location without fire protection measures and inaccessible for firefighters.
- The equipment is hot when it is operating. If the equipment is installed indoors, please ensure good indoor ventilation and avoid significant indoor temperature rise by more than 3° C while the equipment is operating. Otherwise, the equipment will be derated.
- Do not install the equipment in mobile scenarios such as recreational vehicles, cruise ships, and trains.
- It is recommended to install the equipment in a location where you can easily access, install, operate, and maintain it, and view the indicator status.
- Do not place the equipment in the vehicle passage when installed in a garage to avoid collisions.

Installation Base

- Do not install the equipment on a flammable base.
- The installation base should meet the load-bearing requirement. Solid brick-concrete structures, concrete walls are recommended.
- The installation base should be flat, and the installation area should meet the installation space requirements.
- No plumbing or electrical alignments are allowed inside the installation base to avoid potential drilling hazards during equipment installation.



1


1
2
Wall
55 mm
Φ8
3
4
M6
5 N·m
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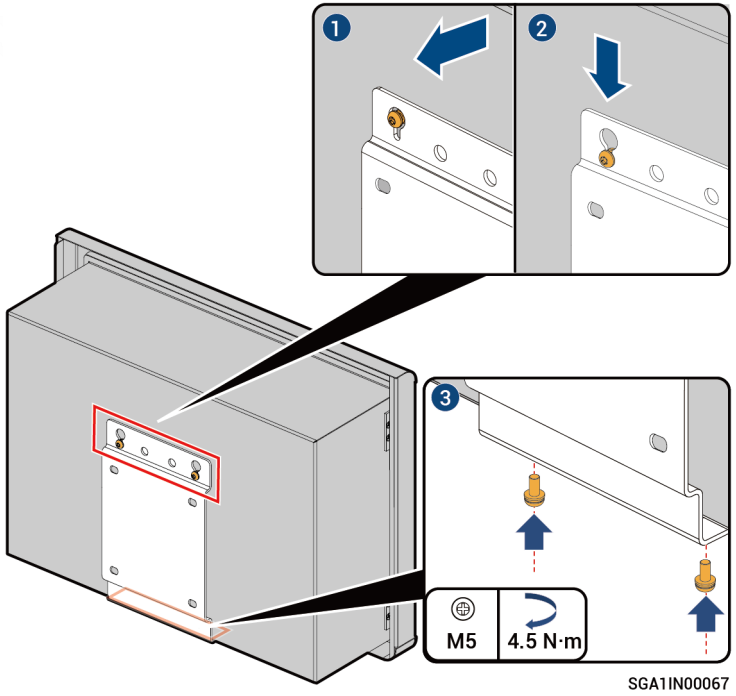
2


1
2
3
M5
4.5 N·m
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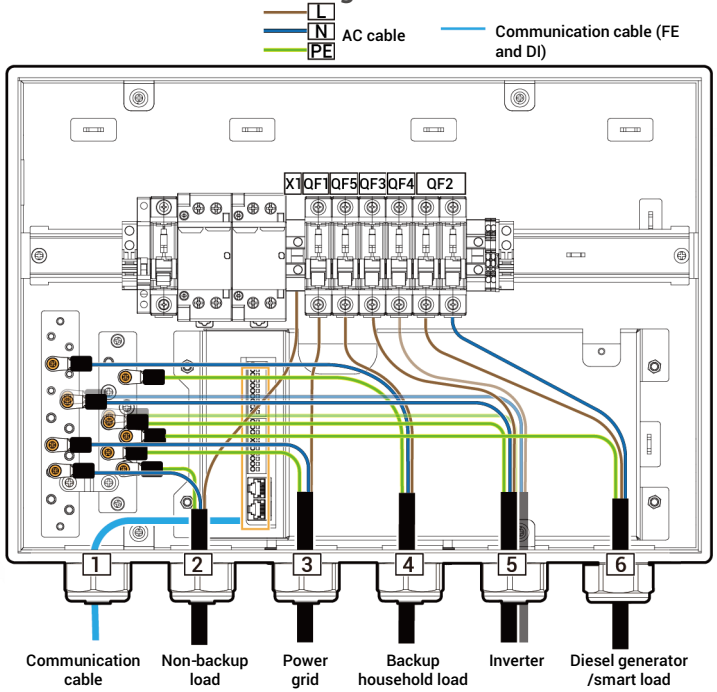
5 Cable Connection

5.1 Recommended Routing



Tips

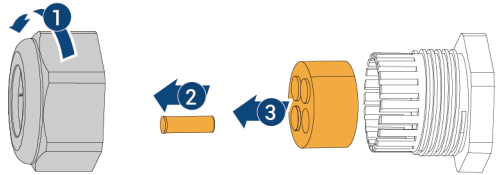
- QF3 supports the connection of inverters with a power range of 8.0 kW to 10.0 kW, while QF4 supports the connection of inverters with a power range of 5.0 kW to 6.0 kW. Please connect according to the actual requirements.
- The routing method shown in the figure is for reference only. Please select a proper routing hole as needed.
- Connect cables according to the corresponding labels to prevent personal injury and equipment damage caused by incorrect cable connection.

Removing routing holes

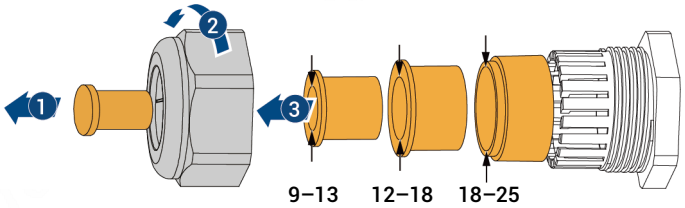
Caution

Do not remove or loosen reserved routing holes to avoid the effect on ingress protection.

Routing hole 1



Routing holes 2 – 6

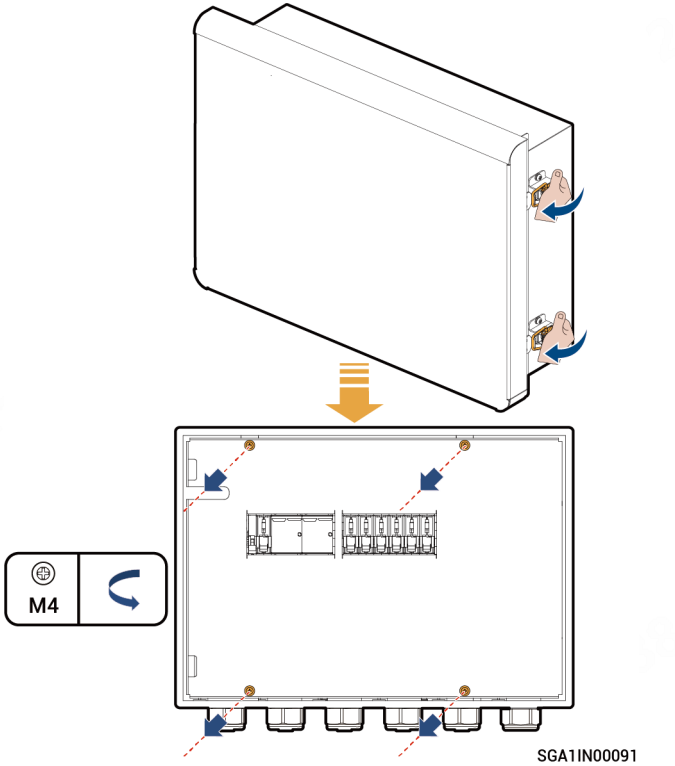


Unit: mm

5.2 Opening Equipment Door

Danger

Do not perform operations on the equipment with power on. Before operation, please make sure all power supplies to the equipment have been disconnected, including but not limited to the grid side, inverter and diesel generator power switches.



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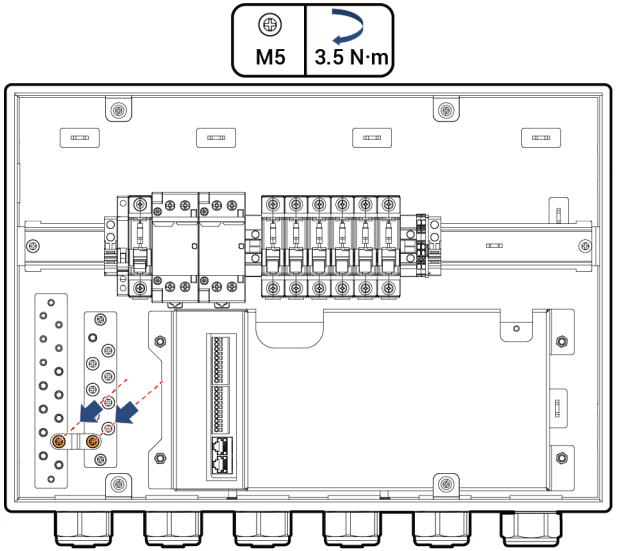
5.3 (Optional) Installing Short-connected Copper Busbar

Tips

If the Gateway serves as the power distribution box at the first stage, you must short-connect the N-line copper busbar to the grounding copper busbar with a short-connected copper busbar. A short-connected copper busbar is not installed in other settings.



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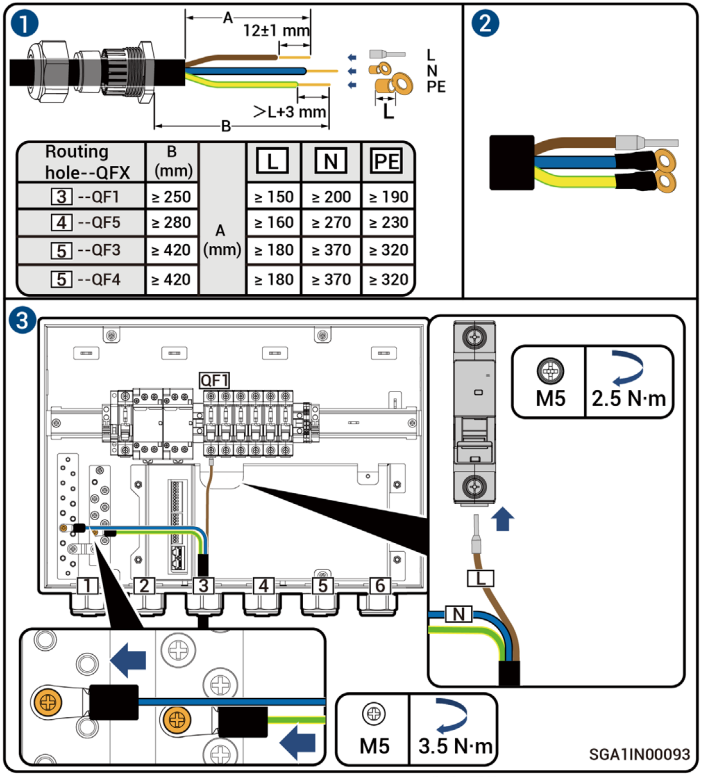
5.4 Connecting Power Grid/Inverter/Backup Household Load

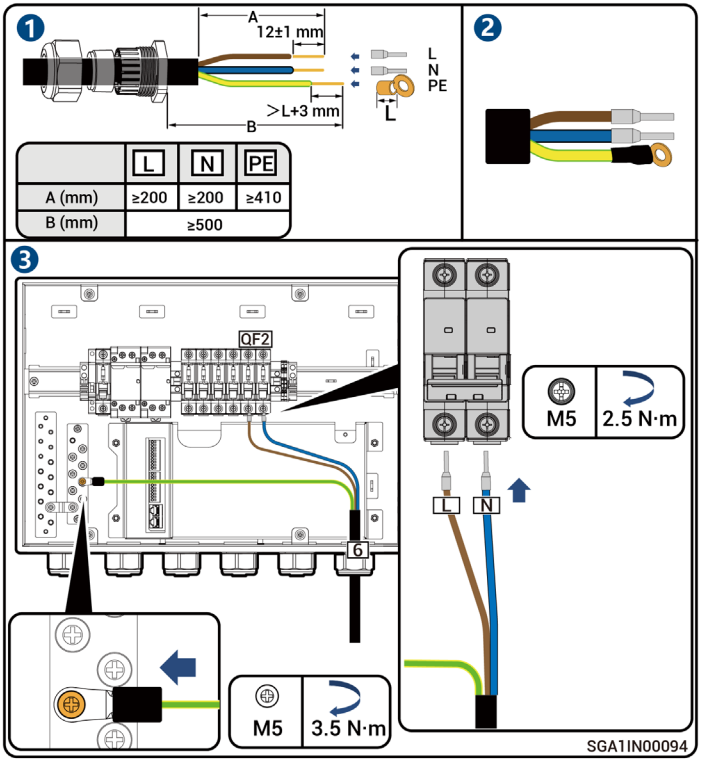
Tips

- The method to connect the power grid/inverter/backup household load is the same. This section takes connecting the power grid as an example.
- To ensure that the inverters, loads, and the Gateway are connected to the common ground point, connect the PE cable.



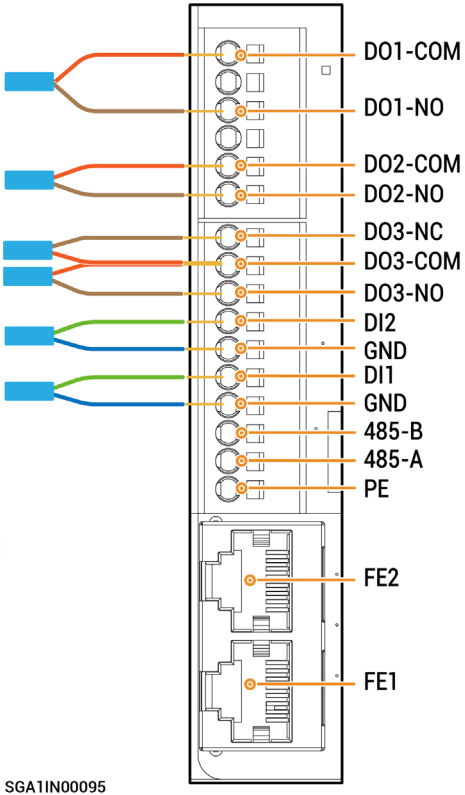
Routing hole--QFX	B (mm)	A (mm)	L	N	PE
3 --QF1	≥ 250		≥ 150	≥ 200	≥ 190
4 --QF5	≥ 280		≥ 160	≥ 270	≥ 230
5 --QF3	≥ 420		≥ 180	≥ 370	≥ 320
5 --QF4	≥ 420		≥ 180	≥ 370	≥ 320

5.5 Connecting Diesel Generator/Smart Load



	L	N	PE
A (mm)	≥200	≥200	≥410
B (mm)	≥500		

5.6 Connecting Communication Cable



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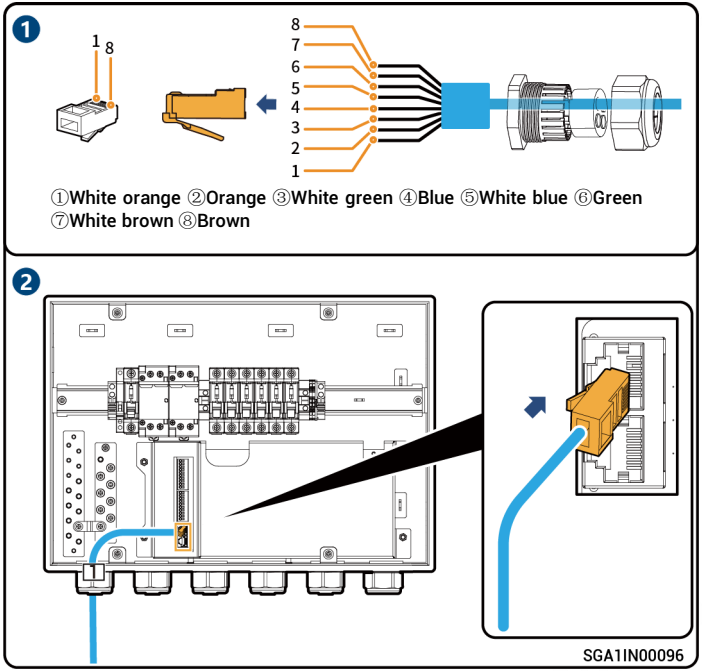
Label		Definition		Description
FE (Network cable interface)		FE1	Fast Ethernet 1	Used to connect an inverter.
		FE2	Fast Ethernet 2	Used to connect an Sigen EV AC Charger, inverter, router and so on.
(Reserved)485 (RS485 interface)		PE	PE signal shielding ground	Used to connect the equipment over RS485.
		485-A	RS485 signal 2_A+	
		485-B	RS485 signal 2_B-	
DI1 (Digital input 1)		GND	Signal GND	• Universal digital input interfaces. • DI1 is used to connect the feedback contact of the bypass switch.
		DI1	Digital input 1	
DI2 (Digital input 1)		GND	Signal GND	• DI2 can be used to connect the feedback signal of the external Automatic Transfer Switch (ATS) to identify whether the gateway "grid port" is powered by the grid or the generator. • Low impedance input (short circuit on ATS relay) indicates the power grid. High impedance input (open circuit on the ATS relay) indicates the diesel generator.
		DI2	Digital input 2	
DO3 (Dry contact 3)	-	DO3-NO	Digital output 3 - Normal Open	• Universal digital output interface. • DO1 has a contact capacity of 250 Va.c./1 A or 30 Vd.c./1 A. • DO2 and DO3 have a contact capacity of 30 Vd.c./1 A. • NO/COM is normally open contact and NC/COM is normally close contact. • The DO3-COM and DO3-NC interface can be used for controlling generator start in two-wire start mode.
	GEN (Diesel generator startup)	DO3-COM	Digital output 3 - Common	
		DO3-NC	Digital output 3 - Normal Close	
DO2 (Dry contact 2)		DO2-NO	Digital output 2 - Normal Open	
		DO2-COM	Digital output 2 - Common	
DO1 (Dry contact 1)		-	-	
		DO1-NO	Digital output 1 - Normal Open	
		-	-	
		DO1-COM	Digital output 1 - Common	

5.6.1 Connecting RJ45 Network Cable

Tips

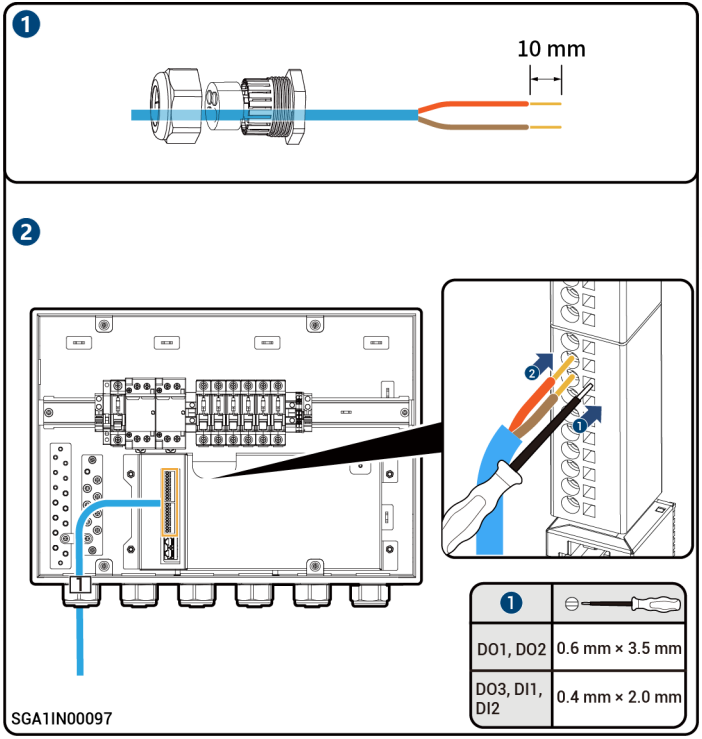
- The RJ45 network cable is an EIA/TIA 568B standard network cable.
- Two network ports, one of which is connected to the inverter, and the other is connected to other devices. (for example, Sigen EV AC Charger, inverter, and router)



5.6.2 Connecting DI/DO Cable

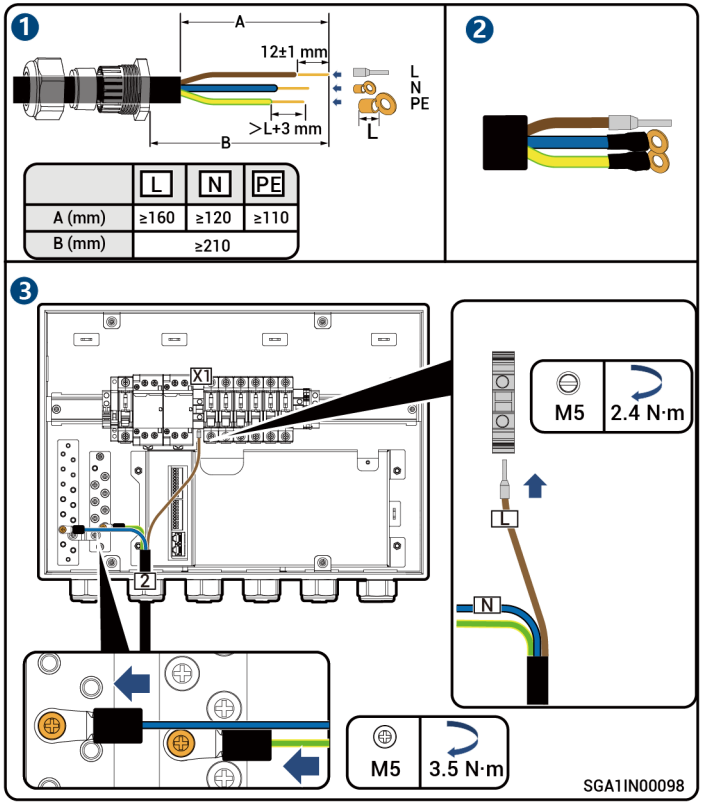
Tips

The method to connect the DI/DO cable is the same. This section takes connecting the DO cable as an example.



1	
DO1, DO2	0.6 mm × 3.5 mm
DO3, DI1, DI2	0.4 mm × 2.0 mm

5.7 Connecting Non-backup Load

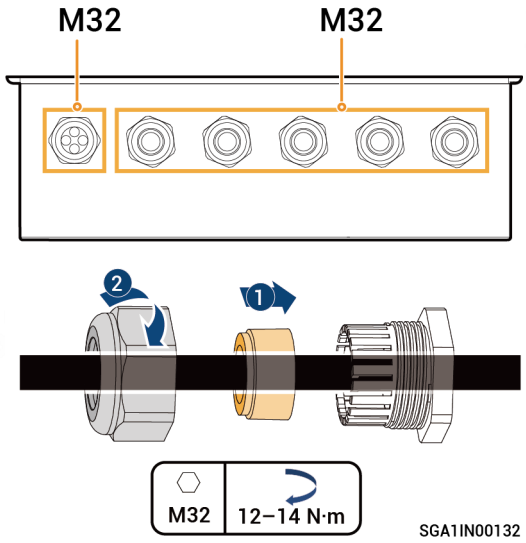


	L	N	PE
A (mm)	≥160	≥120	≥110
B (mm)	≥210		

5.8 Installing Inner Panel

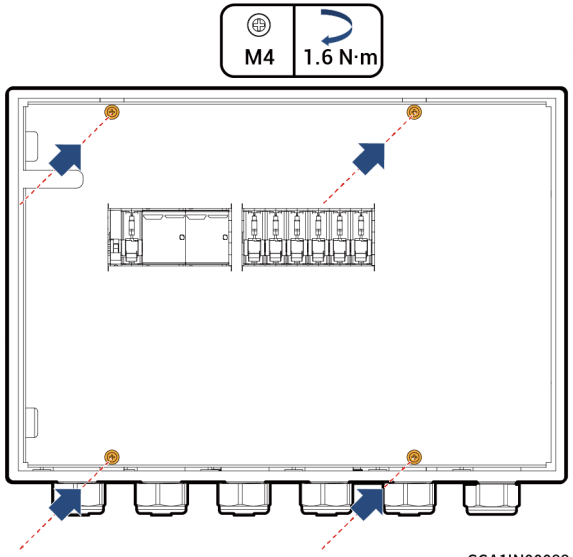
Check the following items against the provided table, tighten routing holes, and install the Inner Panel.

No.	Check Item
1	The equipment is securely installed.
2	Grounding cable, AC cables, and signal cables are properly connected without omission.
3	Lock screws or connector are installed in place without any looseness.
4	Cutouts of cable ties are free of burr or sharp edges.
5	No construction residue inside and outside the equipment.



Caution

Measure the voltage of the switch QF1 on the power grid side and check that the measured value is within the allowable range. Ensure that the cable is connected properly and install inner panel.



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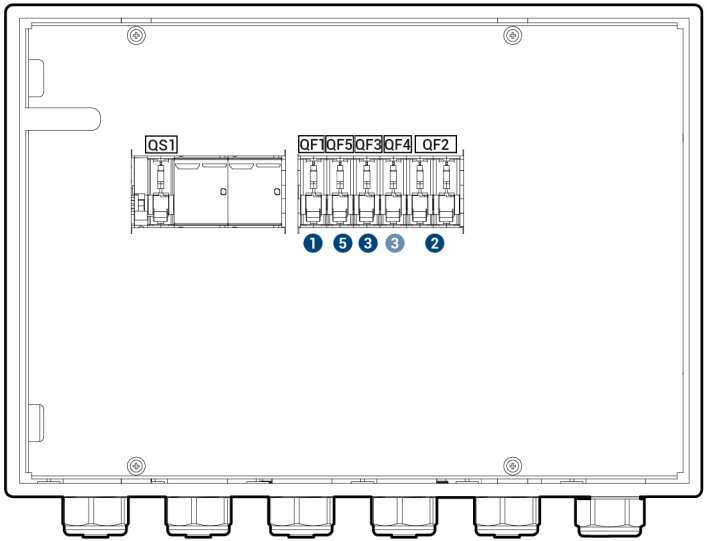

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Tips

- Turn on the upstream AC switch.
- There is a risk of electric shock when the Gateway is not grounded.

1

Caution

Do not turn on the miniature circuit breaker when it is not connected to its corresponding device.

1. Turn on the miniature circuit breaker QF1 (connecting to the power grid).
2. Turn on the miniature circuit breaker QF2 (connecting to a diesel generator/smart load).
3. Turn on the miniature circuit breakers QF3 or QF4 (connecting to an inverter).
4. Wait until inverter is powered on.
5. Turn on the miniature circuit breaker QF5 (connecting to a backup household load).

2

Finally, close the equipment door.

Danger

In normal cases, the bypass switch is turned off.

Sigenergy Technology Co., Ltd.

Website	LinkedIn	YouTube

www.sigenergy.com