Star Charge

Energy Infrastructure

MID-63S-AU

User Manual

Version: A0

Date: 2024-08-15

Legal Notice

The information presented in this guide is subject to change without prior notice.

The technical specifications indicated here do not constitute a contractual obligation.
In case of any doubt regarding a subject described or if you discover an error in this manual, please contact us.

Contents

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1 Manual Description

1.1 Scope of Use

This document describes the micro-grid interconnect device (MID) product MID-63S-AU (TSSAU00) in terms of installation, electrical connections, commissioning, maintenance, and troubleshooting.

1.2 Intended Audience

This manual is intended for

- Sales engineers
- System engineers
- Technical support engineers
- End users

And specially for electricians with electrical operation certificates, and the operation content described in the manual must be operated and performed by trained and experienced electricians in accordance with basic electrical safety protection requirements.

1.3 Symbol Description

The following is a list of safety instructions and general information on symbols that may be used in this manual.

DANGER	**DANGER** "DANGER" means a highly potentially dangerous situation which, if not avoided, may cause death or serious injury.
WARNING	**WARNING** "WARNING" indicates a moderate potentially hazardous situation that may cause death or serious injury.
CAUTION	**CAUTION** "CAUTION" indicates a lower hazardous situation that, if not avoided, may cause minor or moderate injury.
	**High temperature danger** The temperature of the device will increase during the operation process, and the contact should be avoided.
	**High voltage danger** Due to the high voltage present in the device, it is very likely to endanger the life.
	**Capacitor discharge** MID-63S-AU must be disconnected from the grid and from the inverter before opening the cover. Wait at least 5 minutes for the storage capacitor to discharge completely.
	Read the user manual before performing any operation on the product.
	The product should not be treated as household waste.
	**Grounding identification** Protect the ground wire connection position.

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2 Safety Instructions

2.1 General Safety

When installing, operating, and maintaining equipment, please read this manual first and follow all safety precautions marked on the equipment and in the manual.

The "instructions", "precautions", "warnings", and "dangers" in the manual do not represent all safety precautions that should be followed, but only serve as a supplement to all safety precautions. Our company does not assume any responsibility for violating general safety operation requirements or violating safety standards for design, production, and use of equipment.

This equipment should be used in an environment that meets the design specifications, otherwise it may cause equipment malfunction, resulting in equipment functional abnormalities or component damage, personal safety accidents, property losses, etc., which are not within the scope of equipment quality assurance.

Local laws, regulations, and specifications should be followed when installing, operating, and maintaining equipment. The safety precautions in the manual are only used as local laws and regulations supplement to regulations.

Our company shall not be responsible for any of the following situations:

- Not operating within the usage conditions specified in this manual.
- The installation and use environment exceeds the provisions of relevant international or national standards.
- Unauthorized disassembly, modification of products, or modification of software codes.
- Failure to follow the operating instructions and safety warnings in the product and documentation.
- Equipment damage caused by abnormal natural environments (such as earthquakes, fires, storms, etc.).
- Transportation damage caused by the customer's own transportation.
- Damage caused by storage conditions that do not meet product documentation requirements.

Live operation is strictly prohibited during installation:

- It is strictly forbidden to install, use and operate outdoor equipment and cables (including but not limited to handling equipment, operating equipment and cables, plugging and unplugging signal interfaces connected to outdoors, aerial work, outdoor installation, etc.) in bad weather such as

lightning, rain, snow, and winds above grade 6.

- After installing the equipment, empty packaging materials in the equipment area should be removed, such as cartons, foam, plastic, cable ties, etc.
- In the event of a fire, evacuate the building or equipment area and ring the fire alarm bell, or call the fire alarm. Under no circumstances is it strictly forbidden to re-enter the burning building.
- It is strictly forbidden to artificially alter, damage or obscure the markings and nameplates on the device.
- When installing the device, a tool is used to tighten the screws to the gauge torque.
- Fully familiar with the composition and working principle of the entire photovoltaic grid-connected power generation system, as well as the relevant standards of the country/region where the project is located.
- Paint scratches that occur during the transportation and installation of equipment must be repaired in time, and it is strictly forbidden to expose the scratched part to the outdoor environment for a long time.
- Do not open the host panel of the device.
- Do not reverse engineer, decompile, disassemble, disassemble, adapt, implant or other derivative operations on the equipment software, do not study the internal implementation of the equipment in any way, obtain the source code of the equipment software, steal intellectual property rights, etc., nor disclose the results of any equipment software performance test.
- During the operation of the equipment, if a fault that may lead to personal injury or equipment damage is found, the operation should be terminated immediately, reported to the person in charge, and effective protective measures should be taken.
- Before using the tool, please master the correct use of the tool to avoid injury and damage to the equipment.
- When the device is running, the case temperature is high, there is a risk of burns, do not touch.

Installation environment description:

- The equipment installation environment should be well ventilated, it is recommended to choose a sheltered installation site, or build a sunshade
- Do not install the device under adverse environmental conditions, such as near flammable or explosive substances; corrosive environments; exposure to extreme high or low temperatures; or places with high humidity.
- Do not cover vents or heat dissipation systems while the device is running to prevent high temperature fires.

2.2 Personnel Requirements

- Personnel responsible for the installation and maintenance of equipment must first undergo strict training, understand various safety precautions, and master the correct operation methods.
- Only qualified professionals or trained personnel are permitted to install, operate and maintain the equipment.
- Only qualified professionals are allowed to remove safety facilities and access equipment.
- Personnel operating equipment, including operators, trained personnel, and professionals, should have local or national requirements for special operation qualifications, such as high-voltage operation, climbing, and special equipment operation qualifications.
- The replacement of equipment or parts, including software, must be done by a professional or authorized person.

2.3 Electrical Safety

2.3.1 Earthing Requirements

- When installing equipment that needs to be grounded, the protective ground wire must be installed first; when dismantling equipment, the protective ground wire must be removed last.
- It is prohibited to damage the grounding conductor.
- It is prohibited to operate equipment without installing grounding conductors.
- The equipment should be permanently grounded for protection. Before operating the equipment, the electrical connection of the equipment should be checked to ensure that it is properly grounded.

2.3.2 General Requirements

DANGER

Before making electrical connections, please ensure that the equipment is not damaged,otherwise it may cause electric shock or fire.

- All electrical connections must meet the electrical standards of the country/region where they are located.
- It is necessary to obtain permission from the power department of the country/region in order to connect to the grid for power generation.
- User provided cables should comply with local laws and regulations.
- When performing high-voltage operations, please use specialized insulation tools.

2.3.3 Wiring Requirements

DANGER

It is forbidden to install or remove the power cord with live electricity. The moment the power cord core touches the conductor, it will generate an arc or electric spark, which can cause fire or personal injury.

- Before the electrical connection of the equipment, if there is a possibility of encountering live parts, the disconnecting device corresponding to the front stage of the equipment must be disconnected.
- Before connecting a power cord, you must verify that the power cord label is correctly identified before connecting.
- If the device has multiple inputs and outputs, disconnect all inputs and output to the device and operate the device only after the device is completely powered down.
- The use of the cable in a high temperature environment may cause aging and damage to the insulation layer, and the distance between the cable and the heating device or the periphery of the heat source area is at least 1.18 inches (30 mm).
- Similar cables should be tied together, and different types of cables should be arranged at least 1.18 inches (30 mm) apart, and it is forbidden to entangle or cross them.
- The cables used in photovoltaic grid-connected power generation systems must be firmly connected, well insulated, and of appropriate specifications.

2.4 Mechanical Safety

2.4.1 Handling Safety

- When carrying heavy objects, you should be prepared to bear the weight to avoid being crushed or sprained by heavy objects.
- When handling the device by hand, protective gloves should be worn to avoid injury.

2.4.2 Using Ladders

- When it is possible to involve electric climbing operations, wooden ladders or fiberglass ladders should be used.
- The rope must be firmly drawn when using the herringbone ladder, and someone must hold the ladder during operation.
- Before using the ladder, please confirm that the ladder is intact, the weight of the ladder meets the requirements, and it is strictly forbidden to use it overweight.
- When using a ladder, the wide foot of the ladder should be facing down or protective measures should be applied at the bottom of the ladder to prevent slipping.
- The ladder should be placed in a stable place. The inclination of the ladder should be 75° .

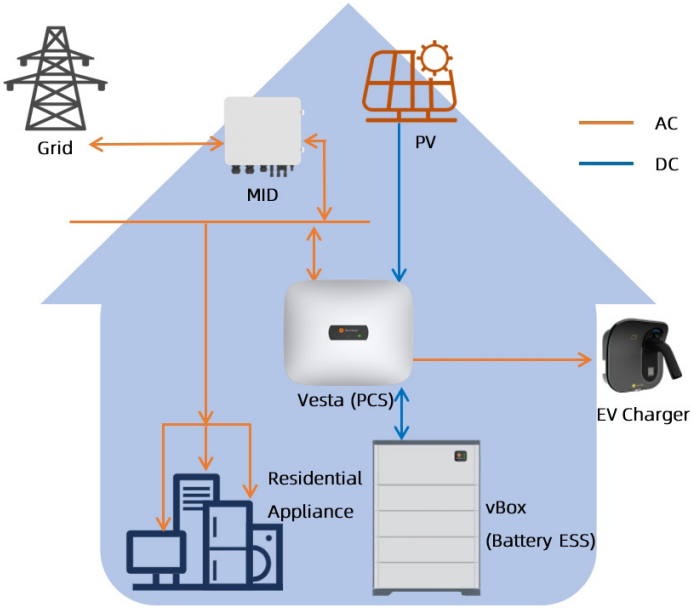
3 Introduction of Residential Energy Storage System

3.1 System Introduction

As electricity prices increase, time-of-use pricing, and tiered bills, the photovoltaic with energy storage system can effectively reduce electricity costs. Moreover, when confronted with grid capacity limitations, grid instability, or even power outages, the system can better guarantee the household's electricity needs. With higher penetration of photovoltaic energy, self-consumption of green electricity has become a trend.

A complete residential solar energy storage and charging system integrates photovoltaic, energy storage, and EV chargers, utilizing solar power to supply electricity for household use and charge electric vehicles.

As shown below, the entire system typically includes photovoltaic facilities, smart inverters (PCS), energy storage batteries, micro-grid interconnect device (MID), EV chargers, energy management system (APP), and more. Depending on specific requirements, different configurations may be employed, and certain components can be adjusted or omitted based on actual circumstances. The diagram below illustrates the typical total solution for residential energy storage system.



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With Star Charge, we offer the complete system solution, including ESS vBox, Vesta inverter, EV charger, and MID device. With these components we can establish a complete residential PV, storage, and EV charger system. The key features of this system are managing PV, Storage & Charger output/input with a single AC device. The benefits are as follows:

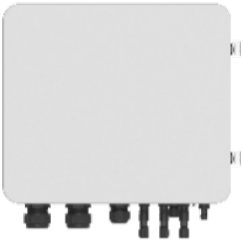
- Save the grid input (main panel) capacity. The capacity would be the Max. capacity among PV, Storage & Charger, rather than the total capacity of them.
- Save the facility cost and construction fee, one step for the whole system.
- Improve self-consumption rate by introduce the EV as an additional storage device through EVSE and appliance management by EMS (Energy Management System).

3.2 Components Introduction

Vesta (PCS): An intelligent inverter in the residential energy storage system, designed and manufactured by Star Charge. It can simultaneously connect to the grid, photovoltaic panels, household loads, batteries, and EV chargers. It serves as the central component of the entire system, capable of performing rectification, inversion, and various energy management functions. It offers various power options from 5kW to 8kW, and supports single-phase grid connection methods.

vBox (Battery ESS): The battery ESS in the residential energy storage system, designed and manufactured by Star Charge. It consists of a battery control module and 2-6 battery modules, with state-of-art LFP cells inside. It offers battery capacity options ranging from 6.9kWh to 20.7kWh. It can store electricity from the grid and photovoltaic panels for household or electric vehicle use.

With Vesta and vBox together, we can offer several EMS functions such as TOU and self-consumption to improve the self-consumption rate of photovoltaic generation.



MID: An intelligent micro-grid interconnect device with metering function designed and manufactured by Star Charge. It can intelligently detect the grid status based on voltage levels and disconnects during grid outages, enabling backup operation to supply.

EVSE: Electric Vehicle Supply Equipment, or electric vehicle charging equipment, provided by Star Charge with various product options. It allows charging electric vehicles at home. The EVSE is an optional device only needed when there is a requirement for EV charging.

PV: Photovoltaic panels, not currently manufactured by Star Charge. They can convert solar energy into electricity as green energy.

3.3 Application Scenarios

With different combination of components, we can fulfill requirements for different scenarios. In general, we can separate the scenarios with 2 major categories, the new installation and retrofit installation which is with existing photovoltaic system. The EV charger Artemis would always be an option for every residential energy scenario, if the electric vehicle is available.

The scenarios for new installation are as follows:

No.	Description	Required Components	Major Benefits (support functions)
1	Pure PV	Vesta Inverter PV Panels	PV generation to reduce electricity bill
2	Pure storage with backup	Vesta Inverter vBox ESS MID	TOU (some region) Backup during grid outage
3	PV with ESS with backup	Vesta Inverter vBox ESS MID PV Panels	PV generation to reduce electricity bill TOU (some region) Zero export Backup
4	EV charging (optional)	Artemis EV Charger	To charge electric vehicle

With existing PV system, the major scenarios for retrofit installation are as follows:

No.	Description	Required Components	Major Benefits (Support Functions)
5	PV with ESS with backup with existing PV system	Vesta Inverter vBox ESS MID	PV generation to reduce electricity bill TOU (some region) Zero export Backup
6	EV charging (optional)	Artemis EV Charger	To charge electric vehicle

4 Product Description

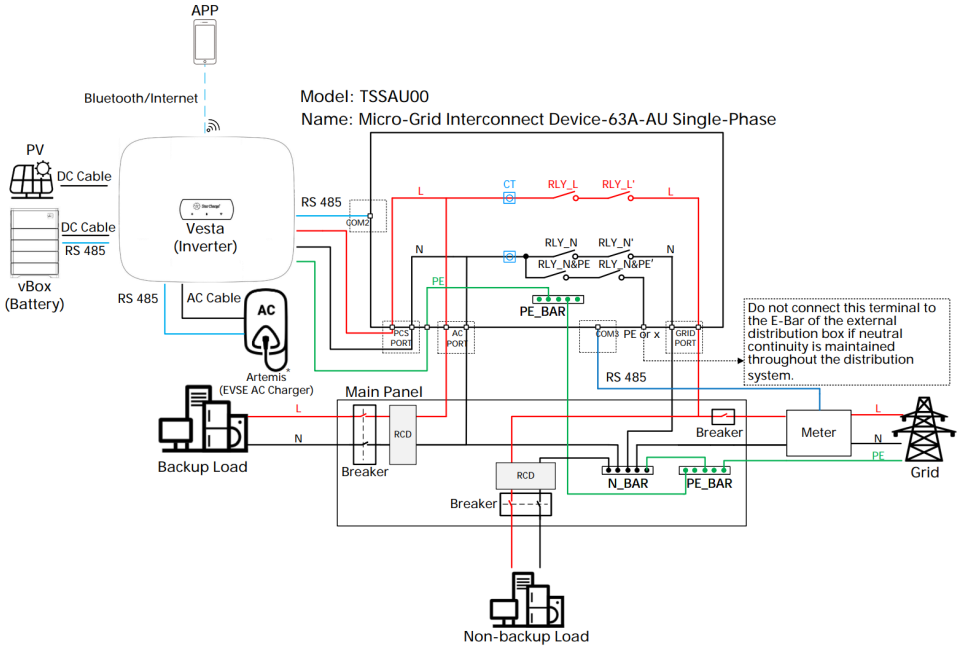
4.1 Function

MID (Micro-grid Interconnect Device) is used in a residential energy storage system to control the inverter operating between grid-tied and off-grid (backup) states. During a grid outage, the MID will switch off the grid connection automatically and separate the system behind the MID from the main grid. After this, the inverter can switch to the off-grid (backup) state and supply power to backup loads. When the grid recovers, the MID will notify the inverter and then switch to the grid-tied mode and bring the whole system back to grid-tied operation.

4.2 System Design

The MID supports both partial home backup mode and whole home backup mode, which is flexible for customer selection. With whole home backup, the whole home load can be energized during a gird outage if the whole consumption is lower the output of the inverter. Besides, there is less cabling working with the whole home backup configuration.

Partial Home Backup System



The diameter of the wire connected to the Main Panel and the N wire and PE wire in the Main Panel is 13.3 square millimeters, and the maximum current is 75A.

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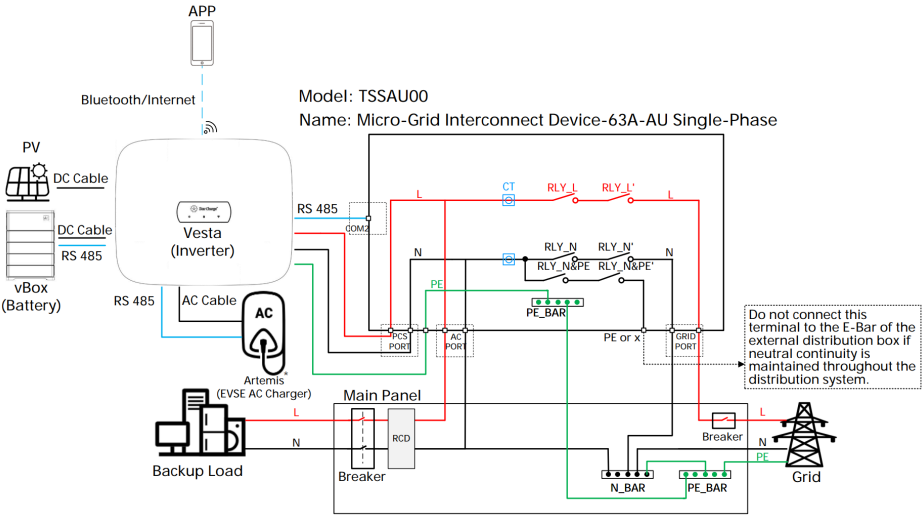
Attention:

An 80A circuit breaker should be used on the load side, and a leakage protector must be selected and installed in accordance with local regulations.

Whole Home Backup System

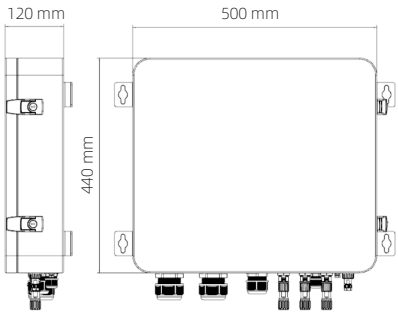


The diameter of the wire connected to the Main Panel and the N wire and PE wire in the Main Panel is 13.3 square millimeters, and the maximum current is 75A.

Attention:

An 80A circuit breaker should be used on the load side, and a leakage protector must be selected and installed in accordance with local regulations.

4.3 Dimensions



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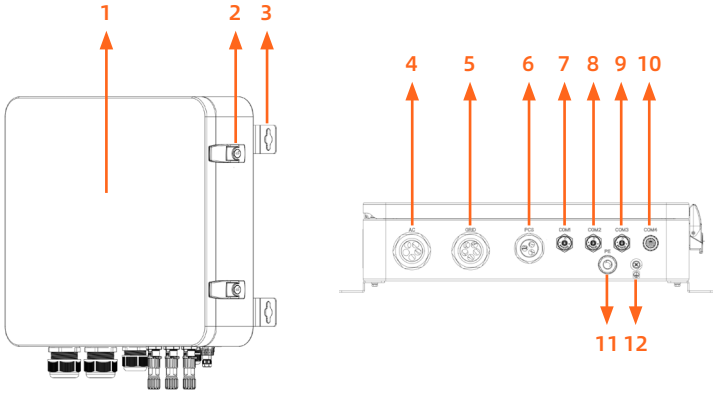
4.4 Appearance



No.	Description
1	Chassis
2	Lock
3	Hanging kit
4	AC output port (AC)
5	Grid port (GRID)
6	Inverter port (PCS)
7	Communication port (Spare) (COM1)
8	Communication port for PCS (COM2)
9	Communication port for meter (COM3)
10	RJ45 (COM4)
11	Neutral line port (PE)
12	Ground point

Attention:

Installation, operation, and maintenance are permitted only for professional or trained personnel.

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5 Technical Parameters

5.1 PCS Port

Technical Specifications	MID-63S-AU
Model	TSSAU00
AC-input rated input voltage	1/N/PE, 230 V
AC-input rated frequency	50 Hz
AC-input rated input current	21.7 A (SI503SENA00),(1) 26.1 A (SI603SENA00), 34.8 A (SI803SENA00)
AC-output rated output voltage	1/N/PE,230 V
AC-output rated frequency	50 Hz
AC-output rated output current	21.7 A (SI503SENA00),(1) 26.1 A (SI603SENA00), 34.8 A (SI803SENA00)
Compatible inverter	5.0/6.0/8.0-S

5.2 Grid Port

Technical Specifications	MID-63S-AU
Model	TSSAU00
AC-input rated input voltage	1/N/PE, 230 V
AC-input rated frequency	50 Hz
AC-input rated input current	63A
AC-output rated apparent output power	5000VA (SI503SENA00),(1) 6000VA (SI603SENA00), 8000VA (SI803SENA00)
AC-output rated output voltage	1/N/PE, 230 V
AC-output rated frequency	50 Hz
AC-output rated output current	21.7 A (SI503SENA00),(1) 26.1 A (SI603SENA00), 34.8 A (SI803SENA00)

Note:

(1) SI503SENA00, SI603SENA00, and SI803SENA00 respectively refer to the 5kw, 6kw, and 8kw inverter models matched with MID-63S-AU.

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5.3 AC Port[2]

Technical Specifications	MID-63S-AU
Model	TSSAU00
AC-output rated output voltage	1/N/PE,230 V
AC-output rated frequency	50 Hz
AC-output rated output current	63 A
AC-output rated apparent output power	14490 VA

Note:

(2) The AC PORT can only be used to connect to Backup load.

5.4 General Parameters

Technical Specifications	MID-63S-AU
Model	TSSAU00
Dimensions (WxHxD)	500 x 440 x 120 mm
Weight	7 kg
Operating temperature	-25℃ to +60℃
Operating humidity(RH)	0%-95%
Operating altitude	3000 m
Ingress protection	IP 65

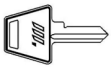
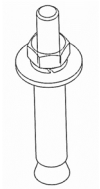
6 Installation

6.1 Visual Inspection

Before unpacking the device, check the outer packing materials for damage, such as holes and cracks, and check the device model. If any damage is found or the device model is not what you requested, do not unpack the package and contact your supplier as soon as possible.

6.2 Packing List

Open the package and remove the product, please check the attachments first. The packing list is shown below.

No.	Name	Image	Qty	No.	Name	Image	Qty
1	MID-63S-AU		1	7	Tubular terminals for AC and GRID port		4
					Tubular terminals for PCS port		2
2	Hanging kit		4	8	Key		2
3	M6*60 expansion bolt		4	9	Nylon cable gland (M40)		2
					Nylon cable gland (M32)		1
					Nylon cable gland (M20)		1
4	M5*10 screw		9	10	Four-core plug		3*

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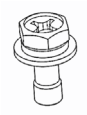
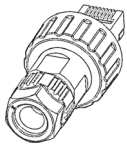
5	M4*10 screw		4	**11**	RJ45 plug		1
6	Internal earthing terminal		3	**12**	Punching positioning paper		1
	Housing earthing terminal		1				

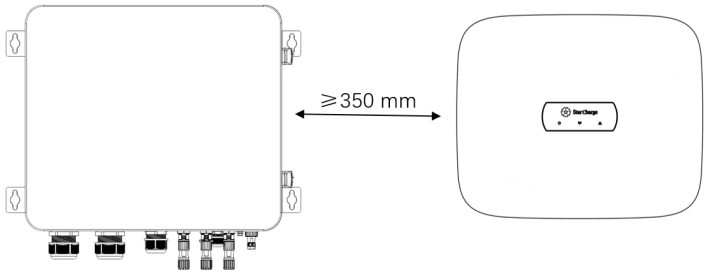
* When the optional parts are not included, the quantity of four core plugs is 2.

6.3 Installation Requirements

DANGER

1. **When a MID-63S-AU is installed outdoors, avoid direct sunlight. It's advised to install it in a sheltered place or install an awning over it.**
2. **A surge protective device (SPD) needs to be installed on the grid side of the MID.**

Space requirements:



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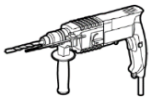
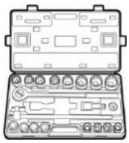
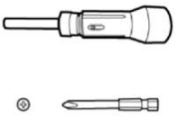
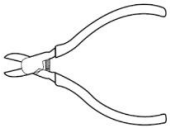
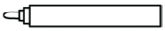
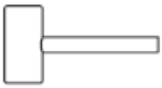
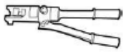
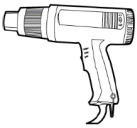
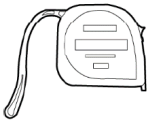
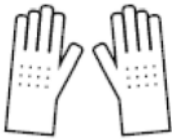
Type	Tool			
Installation Tools	 Impact drills Drill bit: Φ8mm	 Socket wrench	 Torque screwdriver Cross cutter head: M4	 Diagonal pliers
	 Adjustable wrench	 Marker pen	 Rubber hammer	 Utility knife
	 Cable cutter	Cable ties	 Crimping pliers (2.5-6mm²)	 Spirit level
	 Thermal casing	 Heat gun	 Tape measure	 Crimping pliers (5.5-22 mm²)
Protective Equipment	 Dust masks	 Safety goggles	 Safety gloves	 Safety shoes

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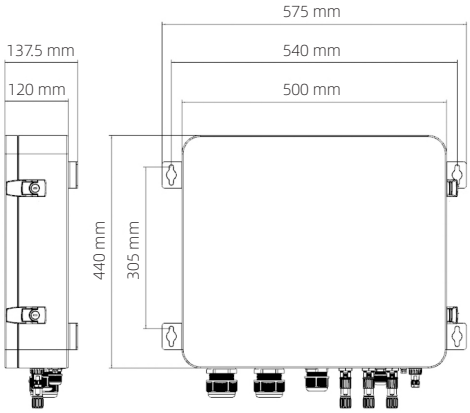
6.4 Mounting Holes and Dimensions

When drilling holes, avoid the water pipes and power cables buried in the wall.



6.5 Installation

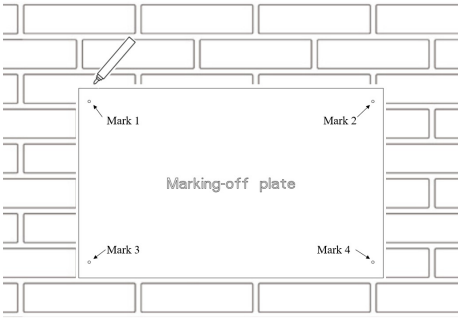
Note:

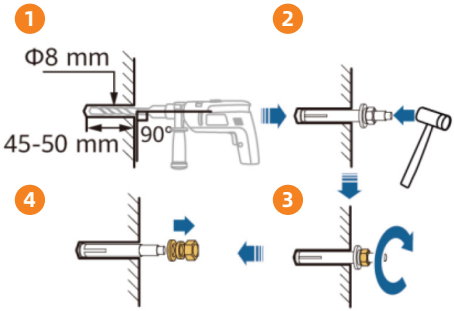
M6x60 expansion bolts are delivered with the MID-63S-AU. If the length and number of the bolts do not meet installation requirements, prepare M6 stainless steel expansion bolts by yourself.

The expansion bolts delivered with the device are mainly used for solid concrete walls. For other types of walls, prepare bolts by yourself and ensure that the wall meets the load bearing requirements of the device.

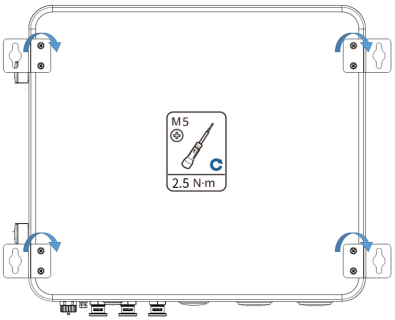
Do not install the device on dry walls or walls made of similar materials which have a weak sound insulation performance because the noise generated by the device is noticeable.

- ① Place the punching positioning paper on the wall and mark the positions of the 4 holes with a marker pen;
- ② Use an electric drill to drill a hole with a diameter of 8mm and a depth of 45-50mm in the wall, and clean the debris of holes;
- ③ Tap the expansion bolts into the holes with a rubber mallet until the head washer of the expansion bolts is flat against the wall (if the length or quantity of the expansion bolts cannot meet the installation requirements, please prepare M6*60mm stainless steel expansion bolts);
- ④ After tightening the nut clockwise, then use a spanner to twist the nut 3-5 turns to fix the expansion bolt to the wall;
- ⑤ Screw down the nut, metal shrapnel, and washer counterclockwise, leaving the bolt and expansion tube fixed to the wall;

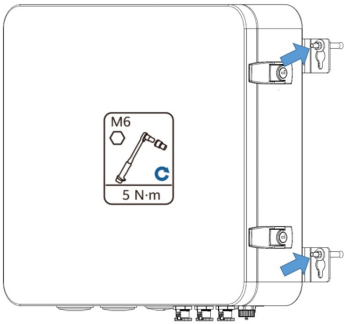




- Flip the device to let backside facing up, and use a screwdriver to screw the hanging kit in clockwise direction.
- The screw is M5.
- The recommended torque is 2.5 N·m.



- Hang the device to the wall and make sure that it is installed in place. Take out the M6 stainless steel screw and install it on the right side of the machine, and tighten the screw (torque 5 N·m).



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7 Electrical Connections

7.1 Preparations

Note:

Connect cables in accordance with local installation laws and regulations.

Connect cables in accordance with local installation laws and regulations.

Before connecting cables, ensure that all the switches connecting to MID-63S-AU are set to OFF position. Otherwise, the high voltage of MID-63S-AU may result in electric shocks.

The leakage protection switch on the grid side should be greater than or equal to 300 mA.

An 80A circuit breaker should be used on the load side, and a leakage protector must be selected and installed in accordance with local regulations.

Prepare cables based on site requirements.

No.	Cable	Type	Conductor Cross-Sectional Area
1	Ground cable	Single-core outdoor copper cable	13.3 mm^2
2	Off-grid load output power cable	Outdoor copper cable	13.3 mm^2
3	Grid AC output power cable	Outdoor copper cable	13.3 mm^2
4	Inverter AC input power cable	Outdoor copper cable	8.4 mm^2
5	Communication cable for PCS and meters	Electromagnetic shielding cable	0.5 mm^2
6	RJ45	Electromagnetic shielding cable	0.5 mm^2

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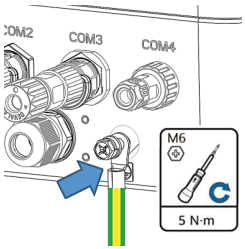
7.2 Installing Cables

Install the Earth Cable

DANGER Do not connect the neutral wire to the enclosure as a ground cable. Otherwise, electric shocks may occur.

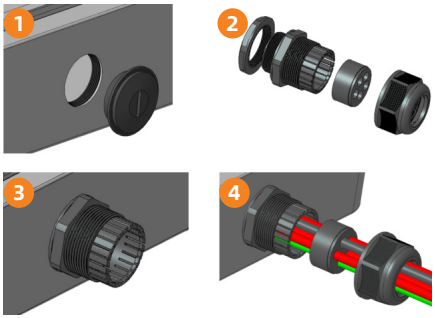


CAUTION Ensure that the ground cable is properly connected. If it is disconnected or loose, electric shocks may occur.

Install an Output Power Cable for Off-Grid Loads

- Use wire strippers to remove the insulation sheath of the cable, exposing the conductor by approximately 18 mm. Then use crimping pliers to crimp the blue tubular terminals onto the end of the cable:

- For cable installation, follow the steps shown in the diagram and tighten the gland nut with a torque of 1.5-2.0 N·m.



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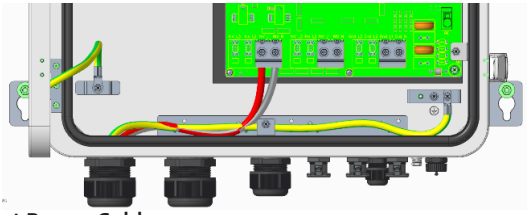
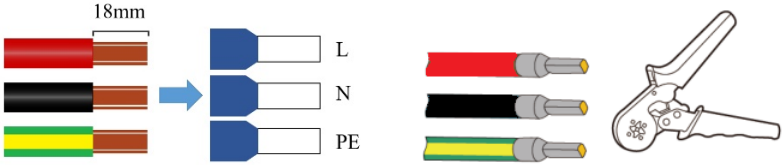
- Connect each cable to the terminal inside the MID-63S-AU cabinet as shown below. The power line sequence from left to right is L-N, with a screw torque of 2 N·m, and a ground screw torque of 1.2N·m.

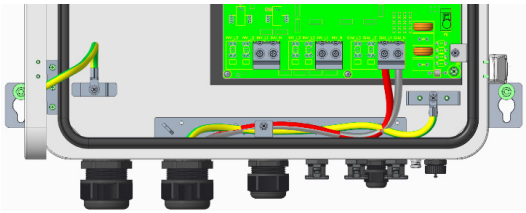


Install a Grid AC Output Power Cable

- Use wire strippers to remove the insulation sheath of the cable, exposing the conductor by approximately 18 mm. Then use crimping pliers to crimp the blue tubular terminals onto the end of the cable:



- Connect each cable to the terminal inside the MID-63S-AU cabinet as shown below. The power line sequence from left to right is L-N, with a screw torque of 2 N·m, and a ground screw torque of 1.2 N·m.



■ Notice:

If multiple inverters are connected in parallel, the connection of AC power cables on the power grid side of the MID-63 connected to each inverter must be the same.

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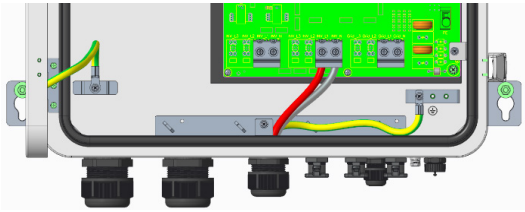
Install an Inverter AC Input Power Cable

- Use wire strippers to remove the insulation sheath of the cable, exposing the conductor by approximately 18 mm. Then use crimping pliers to crimp the red tubular terminals onto the end of the cable:

- Connect each cable to the terminal inside the MID-63S-AU cabinet as shown below. The power line sequence from left to right is L-N, with a screw torque of 2 N·m, and a ground screw torque of 1.2 N·m.



■ Notice:

The sequence of connecting the cables to a MID-63S-AU and to the AC terminals L, N, and PE on the inverter must be the same. Otherwise, the device cannot work properly.

Install Communication Cables for PCS (COM1-COM3)

- The definitions and application scenarios of the three communication ports (COM1- COM3) are shown in the table below:

Name	Description
COM1	Spare
COM2	Communication port for PCS
COM3	Communication port for meter

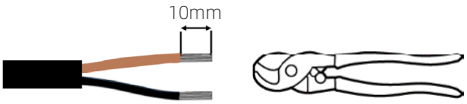
Name	Application scenario
COM2	Whole home backup
COM2+COM3	Partial home backup

When the usage scenario is partial home backup, COM2 and COM3 need to be wired.

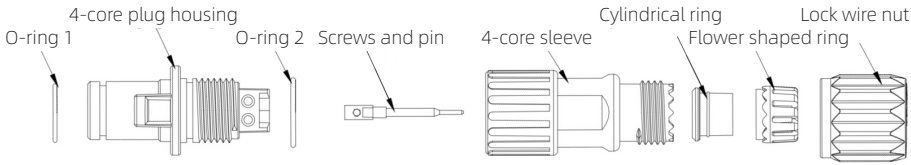
When the usage scenario is whole home backup, only COM2 needs to be connected.

The specific cable making methods of the four-core plugs used when connecting the cables of communication port are as follows.

- Use wire strippers to remove the insulation sheath of the cable (twisted pair is recommended for communication cables), exposing the conductor to approximately 10 mm and crimp the cable as below:

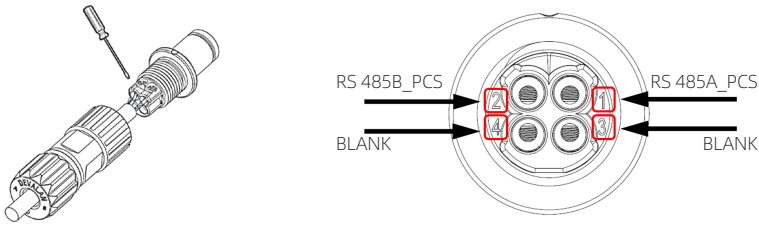


- Open the packaging of the four-core plug, and its accessories are shown in the following figure:

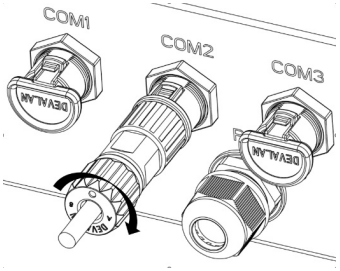


COM2:

- Thread the communication cables through the various components of the four-core plug as shown in the following diagram. Then insert one of the cable into pin 1 (corresponding to RS 485A) of the quad plug and another into pin 2 (corresponding to RS 485B). Use the screwdriver to tighten the screw and check that the cables are not loose:



- Install the four core plug that has been wired in COM2, tighten the plug in the direction of the arrow in the following figure, and then connect the other end of the communication cable to the PCS:



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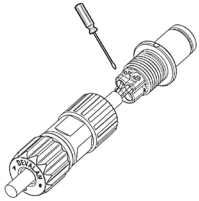
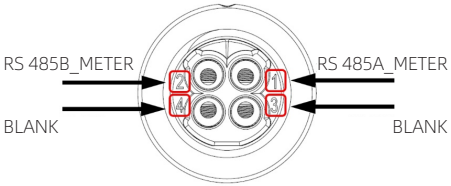
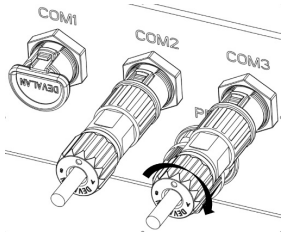
COM3:

- Thread the communication cables through the various components of the four-core plug as shown in the following diagram. Then insert one of the cable into pin 1 (corresponding to RS 485A) of the quad plug and another into pin 2 (corresponding to RS 485B). Use the screwdriver to tighten the screw and check that the cables are not loose:



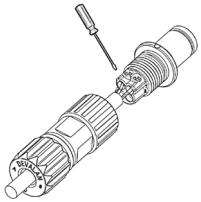


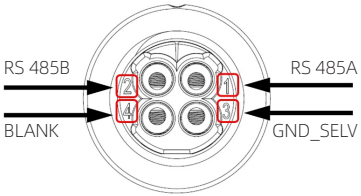
- Install the four core plug that has been wired in COM3, tighten the plug in the direction of the arrow in the following figure, and then connect the other end of the communication cable to the meter:



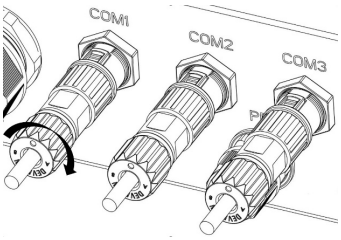
COM1:

- Usually COM1 is spare, but when COM1 needs to be connected to the device, please use the same method for wiring:





- Install the four-core plug that has been wired in COM1, and tighten the plug in the direction of the arrow in the following figure:



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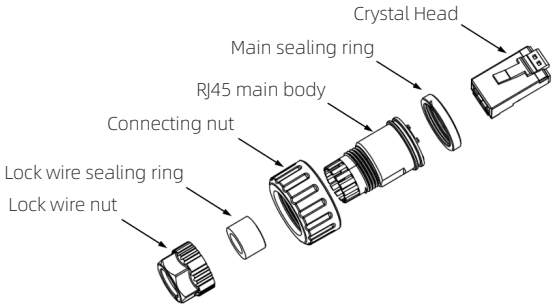
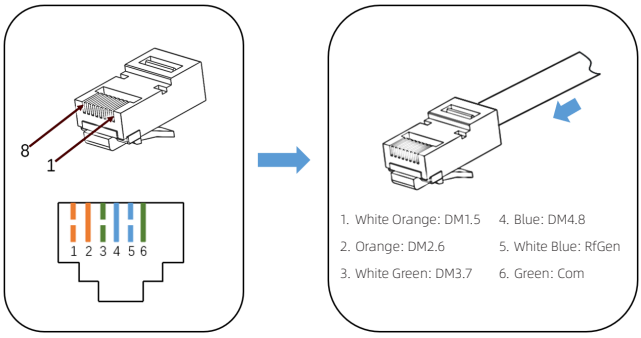
Install Communication Cables for RJ45 (COM4)

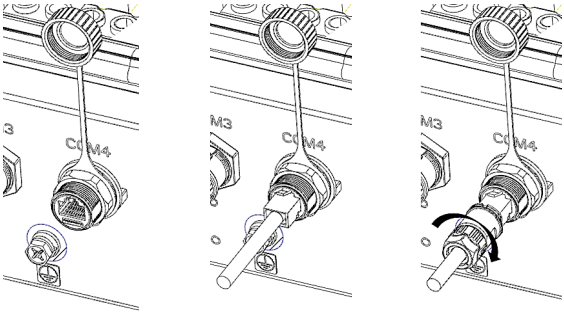
- Open the packaging of the RJ45 plug, and its accessories are shown in the following figure:



- Crimp the RJ45 communication cable according to the following diagram, pin1 to pin6 correspond to DM1.5, DM2.6, DM3.7, DM4.8, RfGen and Com respectively on the board:



- Firstly, loosen the cover of the RJ45 socket. Then insert the crystal head of the Ethernet cable into the socket, with the other end passing through the RJ45 plug. Finally, tighten the RJ45 plug and connect the other end of the Ethernet cable to the DRED device:



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8 Troubleshooting

MID-63S-AU alarm severity is defined as follows:

Major: MID-63S-AU operates in abnormal mode due to a fault.

The fault level is defined as follows:

Fault Level	Fault Definition
Major	Faults occurring in MID-63S-AU that involve grid-connected function accompanied by a buzzer.

The list of faults is as follows:

Fault Name	Fault Code	Fault Description	Fault Level	Solution
FAULT_SELFCHECK_ON	500	Software self-test relay closed error	Major	Hardware fault, please power off the MID-63S-AU. After 5 minutes, power on the MID-63S-AU. If issues persist after reboot, please contact operations for further assistance.
FAULT_SELFCHECK_OFF	501	Software self-test relay open error	Major	
FAULT_RUNNING_ON	502	Software running relay closed error	Major	
FAULT_RUNNING_OFF	503	Software running relay open error	Major	
FAULT_GRID_OVERVOLTAGE	504	The grid voltage is higher than the withstand voltage of the device	Major	1. Check whether the line voltage of the two-phase power grid is incorrectly connected to the system.If yes, connect the phase voltage to the system. 2. If the alarm occurs occasionally, the power grid may be abnormal temporarily. The device automatically recovers after detecting that the power grid becomes normal.

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				3. Check whether the peak voltage of the power grid is too high. If the fault occurs frequently and persists for a long time, contact the local power operator.
FAULT_TEMPERATURE_OVER	505	Overtemperature occurs on the compartment	Major	1. Check whether the device is covered by foreign objects. If yes, clean the foreign objects. 2. Check whether the ambient temperature exceeds the allowed range. If yes, adjust the ambient temperature. 3. You are advised to shut down some high-power loads. 4. If the fault persists, contact your vendor or technical support.
FAULT_ COMMUNICATIONF	506	The MID-63S-AU and inverter are disconnected	Major	Power off the MID-63S-AU. After 5 minutes, check whether the RS485 communications cable between the MID-63S-AU and the inverter is properly connected.If not, rectify the fault.If issues persist after reboot, please contact operations for further assistance.
FAULT_UPDATE	507	Update fault of version mismatch	Major	1. Perform the update again. 2. If the update fails for multiple times, you are advised to contact your vendor or technical support.

9 Regular Maintenance

To ensure the long-term and proper running of the system, you are advised to perform regular maintenance on the MID-63S-AU periodically.

1. Check the system cleanliness, system running status, electrical connections, and grounding reliability every half year.
2. Check whether the on-gird/off-grid switching function is normal each quarter.

CAUTION Only professionals can perform these operations.

10 Handling the MID-63S-AU

10.1 Removing the MID-63S-AU

- Disconnect all the input and output cables from the MID-63S-AU and take 5 minutes for the MID-63S-AU to discharge to the safe voltage.
- Disconnect communications cables and ground cables.
- Remove the MID-63S-AU from the mounting place.

10.2 Packing the MID-63S-AU

If the original packing materials are available, put the MID-63S-AU inside them and then seal them by using adhesive tape.

If the original packing materials are not available, put the MID-63S-AU inside a suitable cardboard box and seal it properly.

10.3 Storage and Disposal

The MID-63S-AU should be stored in a clean and dry place, keep the storage temperature at -40℃ to +85℃ . A maximum of four MID-63S-AU can be stacked. To avoid personal injury or device damage, stack MID-63S-AU with caution to prevent them from falling over. If the MID-63S-AU service life expires, dispose of it according to the local disposal rules for electrical equipment waste.

Connect the world
Connect the people

CUSTOMER SERVICE

For any questions, please contact customer service.

Before contacting the customer service:
View the troubleshooting measures described in the "Troubleshooting List" section of this manual.

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