Microinverter

User Manual

V1.0

SV400-PRO
SV500-PRO
SV600-PRO
SV800-PRO

Statement:

Before using this product, please read this document carefully to ensure that you fully understand this product and can use it correctly. After reading this document, please keep it properly for future reference.

Improper operation of the product may result in serious injury to oneself or others, or damage to the product and other property. When you use the product, you are deemed to have understood, acknowledged and accepted all the terms and conditions of this document. The Company shall not be liable for any loss caused by the user failing to operate the product in accordance with the instructions.

In accordance with laws and regulations, the Company reserves the final interpretation of this document and all documents related to the product. This document is subject to update without notice, please visit the official website for the latest version.

catalogue

1. Important instructions

1.1 Product range

This manual describes the assembly, installation, commissioning, maintenance and troubleshooting of the following models of micro-inverters.

SV400-PRO

SV500-PRO

SV600-PRO

SV800-PRO

** Note: "400" means 400 W,"500" means 500 W, "600" means 600 W, and "800" means 800 W.*

1.2 symbol description

notation	instructions
	**High voltage hazard** High voltages in microinverters can be life-threatening.
	**Caveat** Do not get within 8 inches (20 cm) of the microinverter while it is operating.
	**Watch out for the heat.** The inverter heats up during operation and should be operated to avoid contact with metal surfaces.
	**Disposal of equipment** Electronic equipment should not be disposed of with household waste, and old, unusable appliances must be collected and disposed of separately, in accordance with local ordinances or regulations.
	**CE mark** The microinverters are labeled with the CE mark to certify that the device complies with the European Low Voltage and EMC Directives.
	**Operating Instructions** Please read the instruction manual carefully before using this product.
	**Earth (wire)** The AC cable contains a ground wire and can therefore be grounded directly. For areas with special requirements, a grounding bracket is installed to complete the external grounding.
RoHS	**RoHs symbol** The product complies with 2011/65/EU & (EU) 2015/863.

2. safety criterion

2.1 Important safety instructions

- ✧ Before installing, using, or repairing this product, please carefully read all the documents, which may be changed due to the product updates or other reasons.
- ✧ All operations, including transport, installation, start-up and maintenance, must be performed by trained and qualified personnel.
- ✧ Before installation, check the packaging and appearance of the equipment to ensure that there is no damage during transportation.
- ✧ Before connecting, ensure that all cables and plugs are intact and dry to avoid electric shock.
- ✧ Before the installation, ensure that the solar photovoltaic panels and the micro inverters are not connected to the home power supply.
- ✧ Personal protective equipment such as gloves and goggles must be used during installation.
- ✧ Do not install or operate equipment in extreme weather conditions, such as lightning, snow, heavy rain, strong winds, etc.
- ✧ Warning signs on the equipment shall not be damaged, smeared or torn off.
- ✧ After installation, remove the installed legacy, such as cut cable tie, torn insulation materials, etc.
- ✧ Do not try to repair the micro inverter, please contact our customer support and start the replacement procedure. Private maintenance or opening of the micro-inverter will lead to the failure of the warranty policy.
- ✧ Understand the components and functions of the grid-connected PV system and ensure that all electrical connections as well as the voltage and frequency of the equipment meet local electrical standards.
- ✧ Be extremely careful whenever the inverter is disconnected from the public power grid, as some components may retain sufficient charge, causing a risk of electric shock.
- ✧ Ensure that the micro-inverters are firmly installed to prevent falling accidents or damage to the product.
- ✧ For safety reasons, the equipment shall use original or authorized cables and we are not responsible for damage to the equipment caused by the use of third party accessories.

2.2 Environmental requirements

- ✧ Ensure that the equipment is installed, operated or stored in a well ventilated place. insufficient ventilation can cause permanent damage to the equipment.
- ✧ Do not install or place this equipment in a strong current and strong magnetic field environment to avoid radio interference.
- ✧ Do not install the equipment in a flammable, explosive, corrosive, extremely hot, extremely cold, and humid environment.
- ✧ Do not install the device where children and pets can touch it.

3. Delivery list

1. Micro-inverter * 1
2. Power cord * 1
3. User Manual * 1

4. M8 screw combination * 2

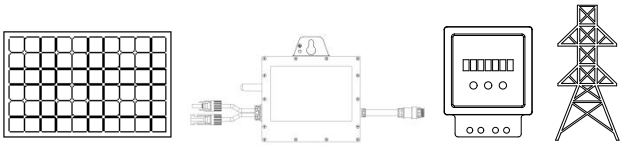
pour:

- ✧ If any accessories are missing, please contact the customer service department.
- ✧ Other tools and accessories involved in the installation and debugging are not included in the package list. If you need to use them, please purchase them separately.

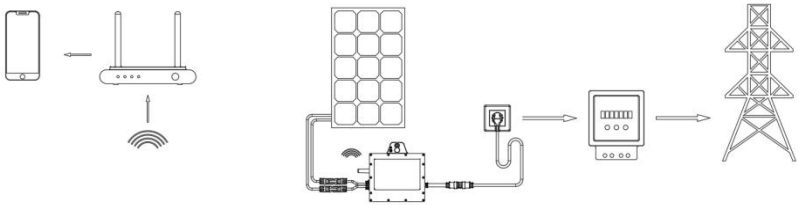
4. summary

4.1 Overview of the grid-connected photovoltaic inverter system

The grid-connected photovoltaic inverter system includes photovoltaic modules, micro inverters, meters and power grid. The micro inverter converts the direct current generated by the photovoltaic modules into alternating current that meets the requirements of the grid, and then integrates the alternating current into the grid through the meter.



	Photovoltaic	Micro inverter	Grid-connected	electrifi
✧	modules	f a single micro-inverter	metering device	ed wire
				netting



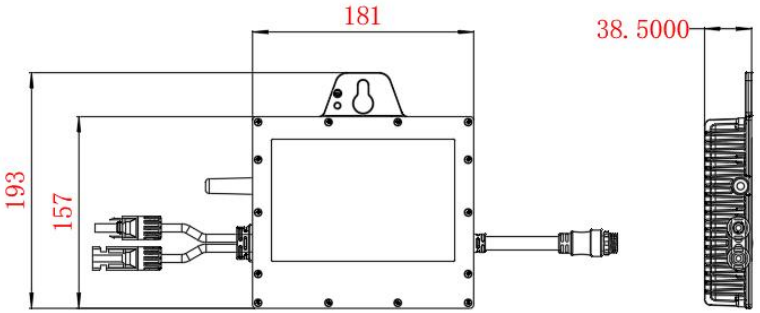
4.2 Overview of the micro-inverters

- ✧ A micro-inverter is a module-level solar inverter that can track the maximum power point of each photovoltaic module.
- ✧ When one photovoltaic module fails or is blocked, the other modules are not affected.
- ✧ The micro-inverter can monitor the current, voltage and power of each module to realize the module-level data monitoring.
- ✧ The micro inverter has the characteristics of low pressure DC, which eliminates the risk of personnel exposure to dangerous HVDC.
- ✧ The micro inverter is simple to install and can be changed according to the number of photovoltaic modules.
- ✧ The micro-inverter shell is designed for outdoor installation and complies with the IP67 protection grade standard.

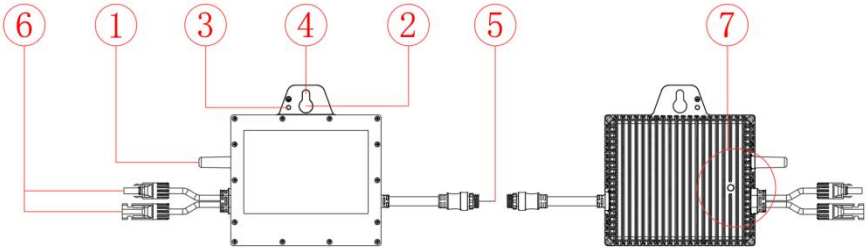
4.3 compatibility

Please see the "Data Sheet" in this manual to verify the electrical compatibility of PV modules, please always order PV modules suitable for microinverters.

4.4 Visual dimensions (mm)



4.5 function Introduction



Item times	explain
1	antenna
2	handle
3	Ground hole
4	mounting hole
5	The AC output connector
6	The DC input connector
7	LED pilot lamp

4.6 System monitoring

The micro inverter is connected to the Internet through the broadband router, and when connected to the system platform according to the operating instructions, the platform will display the current and historical performance trends and inform the status of the photovoltaic system in real time.

5. install

5.1 Installation requirements

The connection between the equipment and the power grid must be cut off, and the photovoltaic modules must be shaded or isolated.

The input PV cable should be less than 3 meters.

Ensure that the environmental conditions meet the requirements of the micro-inverter (protection grade, temperature, humidity, altitude, etc.).

Avoid direct sunlight to prevent power reduction caused by temperature inside the micro inverter.

Please place the inverter away from the gas or flammable materials.

Avoid electromagnetic interference, because it will affect the normal operation of the electronic devices.

The stripe on the back of the micro inverter is the heat sink. When installed, ensure that the heat sink is above 20CM from other objects and keep a ventilated state

pour:

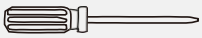
- ✧ If you want to check and use the solar system immediately, it should be assembled in clear weather.
- ✧ We recommend that at least three people work together during the assembly or disassembly process.

5.2 Install the required parts and tools

M8 screws * 1

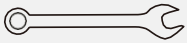
M8 nut * 1

Tie with * 10

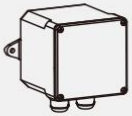


Screw knife * 1

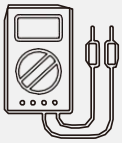
Hexagon wrench * 1



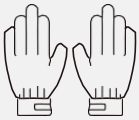
Wrench * 1



Terminal box * 1



Voltmeter * 1



Protective gloves * 1

pour:

- ✧ Except for the equipment and accessories in the delivery list, other tools should be prepared by themselves.

5.3 Installation steps

The installation of the microinverter involves the following key steps, each step described in detail below.

Step 1-Planning and installation of micro-inverters

Step 2-Layout the AC cables

Step 3-Micro-inverter connection

Step 4-Connect the junction box

Step 5-Create the installation diagram

Step 6-Connect the photovoltaic modules

Step 7-The System is energized

Step 8-Establish the monitoring system

Step 1-Planning and installation of micro-inverters

A) Mark the position of each microinverter on the guide rail according to the photovoltaic module layout.

B) Attach the screws to the guide rail.

C) Hang the micro inverter on the screw and tighten the screw.

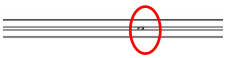


Figure A

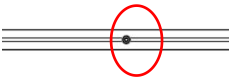


Figure B

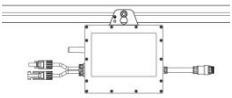
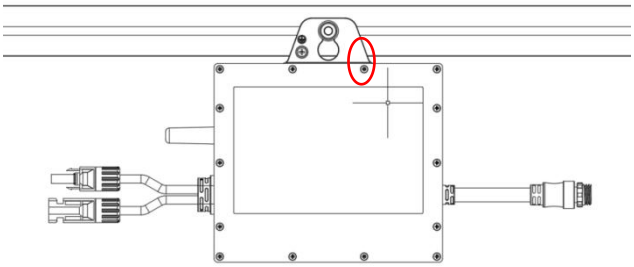


Figure C

* Microinverters must be installed under the photovoltaic module to avoid direct sunlight, rain, snow, ultraviolet light, etc.

The AC cable contains the ground wire and can be directly grounded. For the areas with special requirements, we provide the grounding bracket. Pass the continuous grounding cable through the micro-inverter grounding bracket and connect to the electrode conforming to the local regulations to complete the grounding requirements.



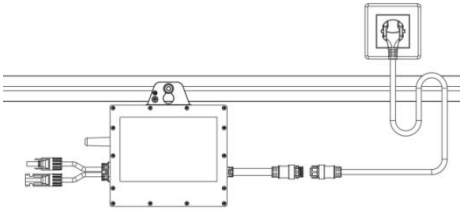
Install the ground support wire in the ground hole at the top of the micro inverter with a screwdriver and tighten the screw to 2N.m。

Step 2-Layout the AC cable

A) Determine the number of microinverters installed on each AC branch and prepare the corresponding number of AC cables.

B) Select the appropriate length of AC cable according to the distance between the microinverters. Advance extra length for connection, stalling and bending.

C) The trunk AC cable is laid on the guide rail and simply fixed to connect the miniature inverter to the trunk.

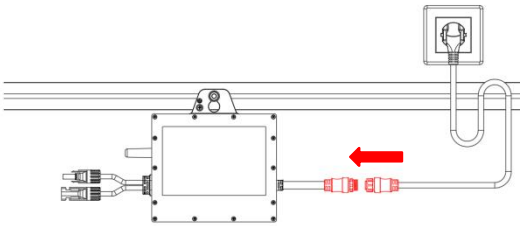


Step 3-Parallel miniature inverter

A) Point the interface of the trunk AC cable to the right AC output port of the micro inverter until the "click" and tighten it to 9N.m。

B) Repeat the above operation and connect the micro-inverter to the same branch line.

C) Fixed AC cable using rolled rolling.



* The number of microinverters in the same branch line shall not exceed the specified maximum number of connections.

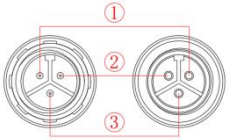
Step 4-Connect the junction box

A) The AC cable is connected to the micro-inverter AC output port.

B) Connect the AC cable to the socket or junction box.

a) Connect to the socket.

b) Connect to the junction box.

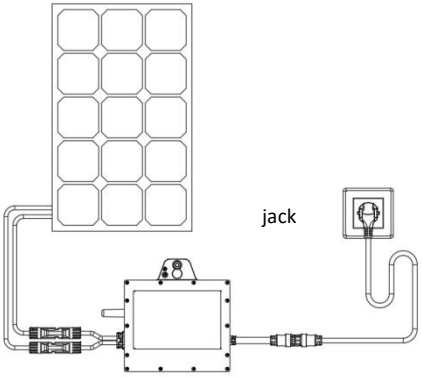


① ---L (Fireline)

② ---N(null line)

③ ---PE

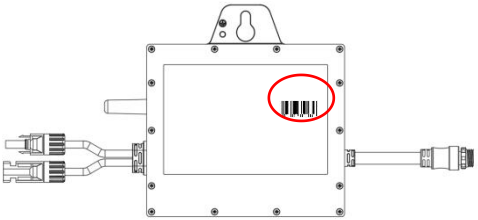
* Interfaces and wires used by the microinverters.

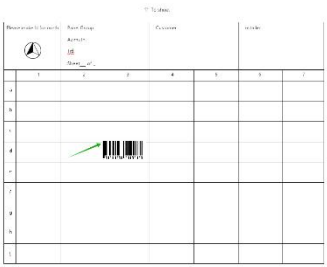


Step 5-Create the installation diagram

A) Peel off the removable label and attach the label to the position corresponding to the micro-inverter.

B) According to the position of the micro-inverter in the whole system, put the corresponding label in the installation diagram.

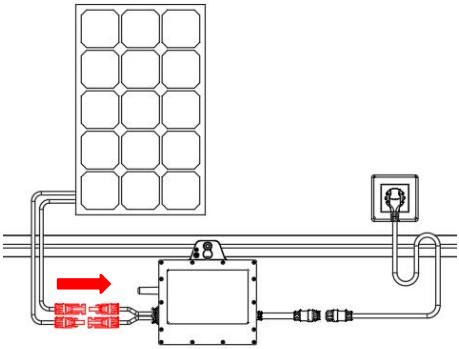




Step 6-Connect the photovoltaic modules

A) Install the photovoltaic modules.

B) Connect the DC cable of the photovoltaic module to the DC input port of the micro inverter.



* A DC cable for a photovoltaic module must be connected to the DC input port on the same side of the micro inverter.

* The power of the photovoltaic module shall meet the input requirements of the micro-inverter, please refer to the data sheet.

Step 7-The System is energized

A) Open the AC circuit breaker for the branch circuit.

B) Turn on the main AC breaker on the house and the system will start generating electricity in about two minutes.

6. APP

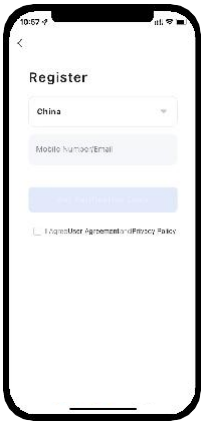
6.1 download APP

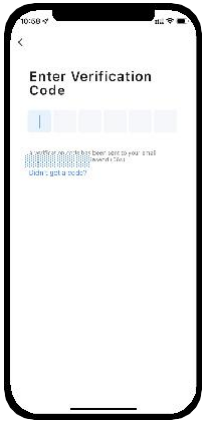
With the application, you can remotely monitor and adjust the microinverters.

Search for "Smart Life" in the Apple App Store and other major app stores, or scan the QR code below to download the "Smart Life" APP.

6.2 Registered account

1. Click Sign Up to read carefully and agree to User Agreement and Privacy Policy and go to page Register.
2. Register an account with an email address or mobile phone number. State / Region is automatically specified and can also be changed manually. However, after account, this field value cannot be changed, click Get Ver i fication Code.
3. Enter the received verification code, enter to the password Settings page, set the password as

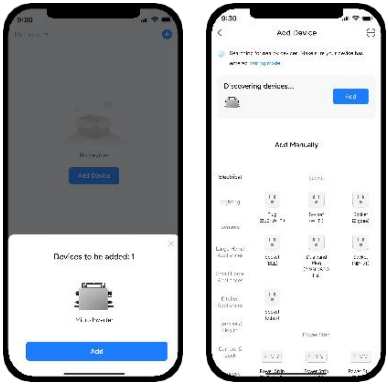


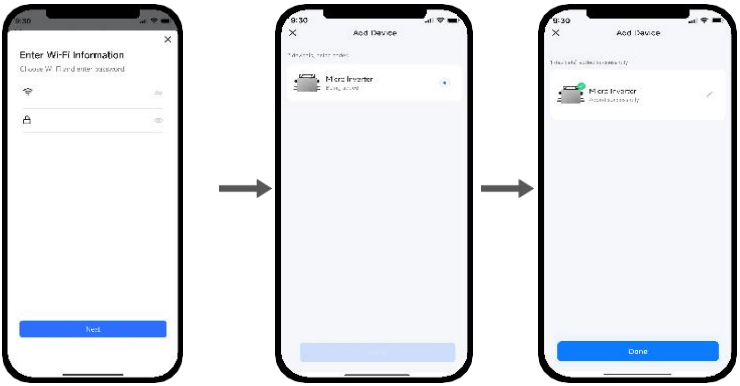


required, and click Done.

6.3 Connect to the micro-inverter

1. The distribution network mode is allowed within 3 minutes of starting up, and the AC is inserted and pulled three times within 20s to start the distribution network.
2. Open the intelligent life APP, automatically pop up the micro inverter Add button, click Add to start to connect the micro inverter. If there is no Add button automatically displayed, you need to manually click the Add Devise button to search for nearby devices and enter the distribution network mode.
3. Enter the Wi-Fi account and password, click the Next button after completion, wait for a few minutes, and the micro inverter completes the distribution network.





6.4 APP interface

Generated and historical data

Accumulated power generation and power savings

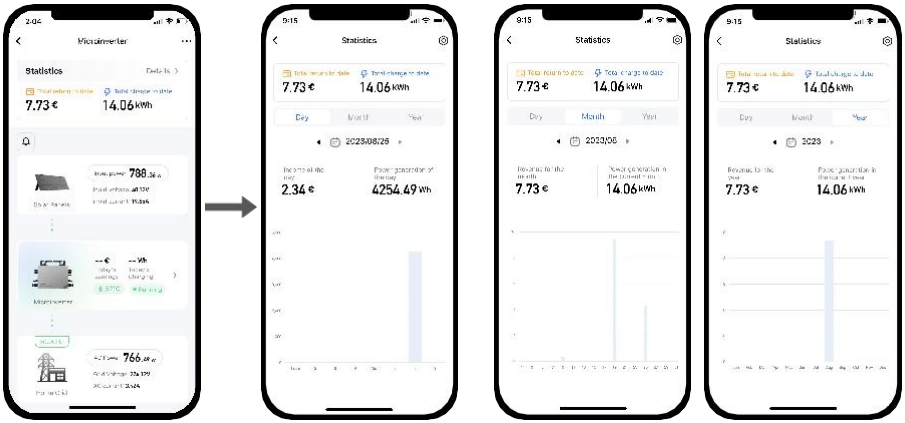
Abnormal alarm

Solar panel working data

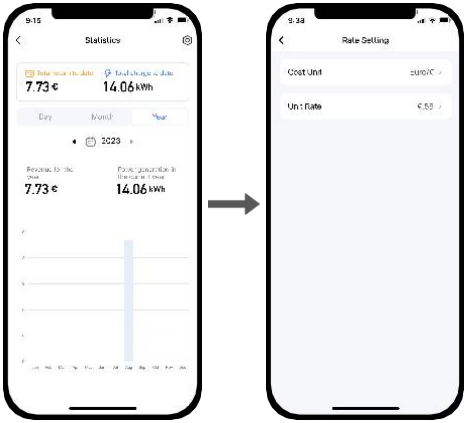
Working data of the micro-inverter

Grid data

1. Click the Details to view the generation and historical generation data

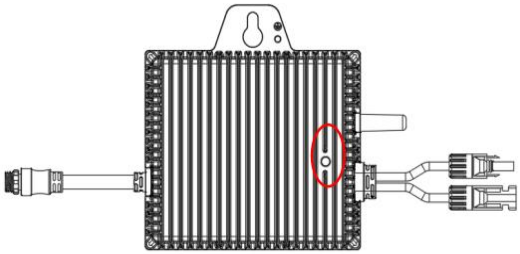


2. Click the Settings button in the upper right corner to enter the Rate Settings screen to set the currency and power unit price.



7. Debugging

7.1 LED status indication



Red light always on	Check APP alarm information
Green light flashing	MPPT Maximum Power Tracking
Green light always on	Maximum power tracked
The light does not come on	No input voltage
Yellow light on for 5S	WIFI rewiring

7.2 APP alarm information

	APP alarm information
1	PV high-voltage protection
2	PV low-voltage protection
3	WiFi not connected
4	High temperature reminder
5	High temperature protection
6	AC low-frequency protection
7	AC high-frequency protection
8	AC high-voltage protection
9	AC low-voltage protection
10	AC power outage
11	Island protection
12	AC not connected
13	Relay fault
14	AC ground fault
15	PV ISO fault
16	Auxiliary Power fault
17	Internal Communication fault
18	PVA no current fault
19	PVB no current fault

7.3 Replace the micro-inverter

Follow the following steps to replace the micro inverter

a) Turn off the branch circuit breaker and disconnect the AC power supply.

b) Disconnect the AC connector of the micro-inverter.

c) Cover the PV module with an opaque lid to ensure that there is no current in the wire between the PV module and the micro-inverter.

d) Disconnect the PV module connector on the micro-inverter.

e) Remove the micro-inverter from the photovoltaic bracket.

f) The micro inverter that will be replaced is installed to the photovoltaic bracket.

g) Remove the shading cover from the PV module.

h) Connect the photovoltaic module connector on the micro inverter.

i) Connect the AC cable on the micro inverter to verify that the micro inverter is working correctly.

* The inverter must be replaced by a trained professional.

* The DC working voltage range of the pv module must match the allowable input voltage range of the micro-inverter.

8. Data sheet

Model	SV400-PRO	SV500-PRO	SV600-PRO	SV800-PRO
Input parameters (DC)				
Solar panel input power is recommended	200-430W× 1	200-530W× 1	200-625W× 1	200-430W× 2
Number of DC input connections	MC4 ×1			MC4 ×2
Maximum input voltage	60V			
Max input short-circuit current	20A*1			20A*2
The DC voltage input range	16-60V			
starting voltage	22V			
Maximum power point tracking voltage range	22-55V			
MPPT, and the tracking accuracy	>99.5%			
Maximum input DC flow	14A*1	16A*1	18A*1	14A*2
Output Parameters (AC)				
Maximumoutput	400W	500W	600W	800W
Rated output voltage	230V			
AC voltage range	190-270V			
Maximum output current	1.74A	2.17A	2.6A	3.47A
Rated output frequency	50Hz/60Hz			
Output frequency range	47.5-51.5Hz/57.5-62.5Hz			
Harmonic distortion	<5%			
Output power factor	>0.99			
Maximum conversion efficiency	96%			
Protection level	Class I			
Defencive function				

Overvoltage / undervoltage protection	Yes
Overfrequency / underfrequency protection	Yes
Prevent the isolated island effect of protection	Yes
Overcurrent protection	Yes
Overload protection	Yes
Overtemperature protection	Yes
levels of protection	IP67
Operating temperature range	-40℃ to +65℃
Pilot lamp	Operating status light
Communication mode	Wi-Fi / 2.4G
Cooling-down method	Natural cold (fanless)
Work environment	Indoor / outdoor
Weight	1.9kg
Dimension (L * W * H) mm	181mm*193*38.5mm
Meet a criterion	EN50549; VDE4105;EN62109;IEC62321

9. Appendix

9.1 Attachment 1. Installation map

Please make N for north		P anel Gr oup: A zimuth.T itl. Sheet___of___		Customer :		Inst aller:	
	1	2	3	4	5	6	7
a							
b							
c							
d							
e							
f							
g							
h							
i							

9.2 Attachment 2 wiring diagram