GOODWE

YOUR SOLAR ENGINE

SMT Series User Manual

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SOLAR INVERTER

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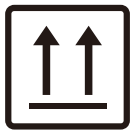
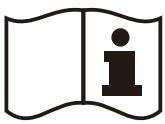
	There is a risk of injury due to improperly handle the device.		Component of product can be recycled
	Danger of high voltage and electric shock.		This surface is upward, and it should not be tilted and upended.
	Danger of hot surface! Do not touch the hot surface when the device is running.		No more than six(6) identical packages be stacked on each other
	Product should not be posed as normal house hold waste.		The package/product should be handled carefully and never be tipped over or slung.
	Refer to the operating instructions		Keep Dry
	This symbol indicates that you should wait at least 5mins after disconnecting the inverter from the utility grid and from the PV panel before touching any inner live parts.		CE mark.

1 Safety and warning

This manual contains important instructions for SMT series inverter that shall be followed during installation and maintenance of the inverter.

The SMT series for Three MPPT, Three-Phase solar inverter without transformer, which consists of GW25K-MT, GW30K-MT, and GW36K-MT model type.

SMT Series have been designed and tested strictly according to the international safety regulation. As electrical and electronic equipment, safety instructions related to them must be complied with during installation, commissioning, operation and maintenance. Incorrect or work may result in damage to:

1. The life and well-being of the operator or a third party.
2. The inverter and other properties that belong to the operator or a third party, Therefore the flowing safety instructions must be read and always kept in mind prior to any work. All detailed work-related safety warnings and notes will be specified at the critical points in corresponding chapter.

All installation and electrical work must only be performed by qualified personnel. They have:

- Been trained specially;
- Already completely read through and understood the manual and related documents.
- Be familiar with safety requirements for electrical systems.

The inverter must be installed and maintained by professionals in compliance with local electrical standards regulations and the requirements of local power authorities or companies.

- There is a risk of injury due to improperly handing device.
- Always follow the instructions contained in the manual when moving or positioning the inverter.
- The weight of the equipment can cause injuries, serious wounds or bruise if improperly handled.
- Please install it in the place beyond children's reach.
- Prior to installing and maintaining the inverter, it is crucial to make certain that the inverter in not electrically connected.

- Before maintaining the inverter, disconnect the connection between the AC grid and the inverter firstly, and then disconnect the connection between the DC input and the inverter, you should wait at least 5mins after these disconnection in case of electric shock.
- All cables must be firmly attached, undamaged, properly insulated, and adequately dimensioned.
- The temperature of some parts of the inverter may exceed 60℃ during operation. To avoid being burnt, do not touch the inverter during operation. Let it cool before touching it.
- Without permission, It is not allowed to open the front cover of the inverter. Users should not touch/replace any components of the inverter except the DC/AC connectors. GOODWE will not bear any consequences caused by unauthorized actions which will lead to potential injury to people and damage to inverters.
- Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the inverter; otherwise the inverter may be damaged and the warranty will be annulled.
- Ensure that the output voltage of the proposed PV array is lower than the maximum rated input voltage of the inverter; otherwise the inverter may be damaged and the warranty will be annulled.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- When exposed to sunlight, the PV array will generate very high voltage which can cause electrical shock hazard. Please strictly follow the instruction we provided.
- PV modules should have an IEC61730 class A rating.
- Prohibit inserting or pulling the AC or DC terminals when the inverter is working. Or the inverter will be destroyed. Only DC connectors provided by GoodWe are permitted to use, otherwise the inverter may be damaged and the warranty will be annulled.
- The inverter can exclude the possibility of DC residual currents to 6mA in the system,Where an external RCD is required in addition to the built-in RCMU, type A RCD must be used to avoid tripping。
- The default photovoltaic module is not grounded.
- If there are more than 3 PV strings on input side, an additional fuse installing will be suggested.

2 Product introduction

2.1 Intended Usage

The SMT series which is a Three MPPT, three phase transformer-less grid-connected inverter is a crucial unit between the PV string and the utility grid in the PV power system.

Inverter is dedicated to converting directing current generated by the PV modular into alternating current, which conforms to parameters to local utility grid and fed it into the utility grid. The intended usage of inverter is illustrated in figure 2.1-1 .

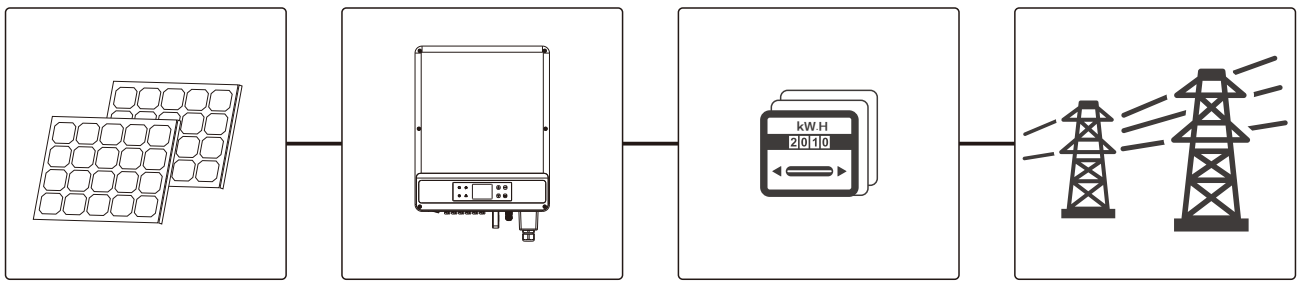


Figure 2.1-1

The inverter cannot be connected to the PV module that the positive or negative terminal of which should be grounded, Excepting a transformer has been used between inverter and grid.

Item	Description	Note
A	PV string	Monocrystalline silicon, polycrystalline silicon and else.
B	Inverter	SMT Series
C	Meter device	Meter cupboard with distributed generation system
D	Utility grid	TN-S, TN-C, TN-C-S, TT, IT (different Model types with different types of utility grid as below)

Note:

SMT series GW25K-MT GW30K-MT and GW36K-MT support four different types of grid. please refer to Figure 2.1-2

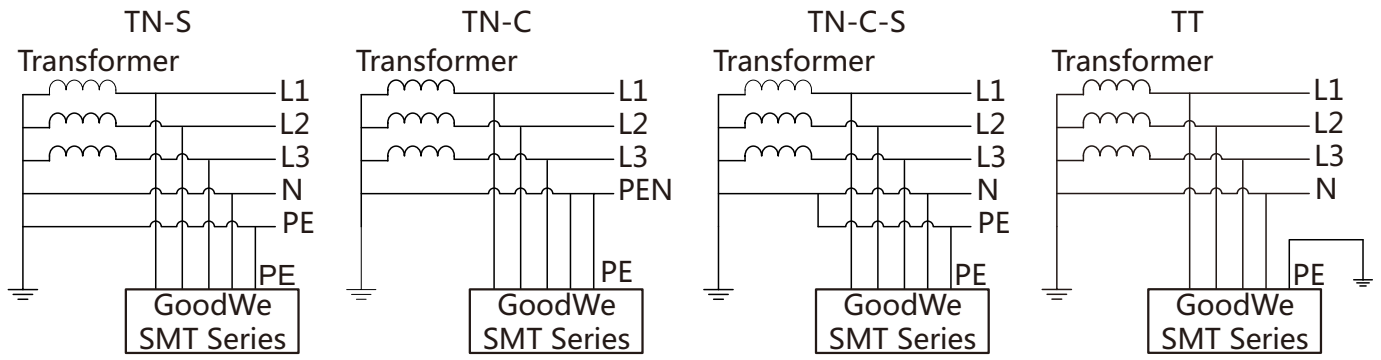
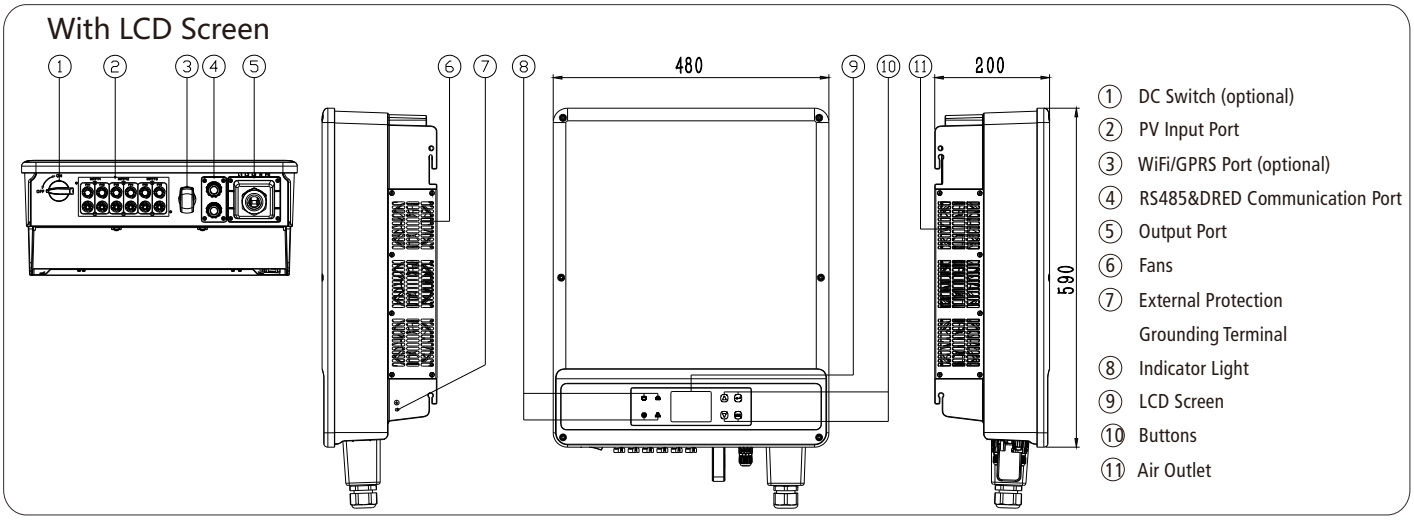


Figure 2.1-2

2.2 Inverter Overview

2.2.1 Inverter Overview

SMT Series inverter illustration.



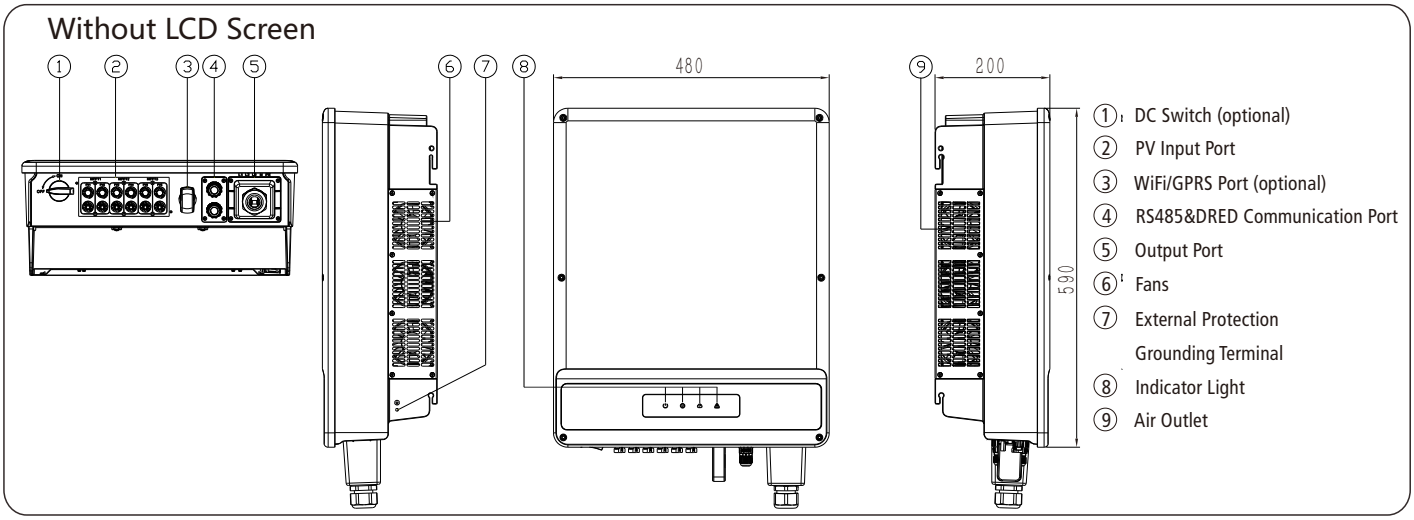


Image shown here is for reference only, actual product you receiver may differ.

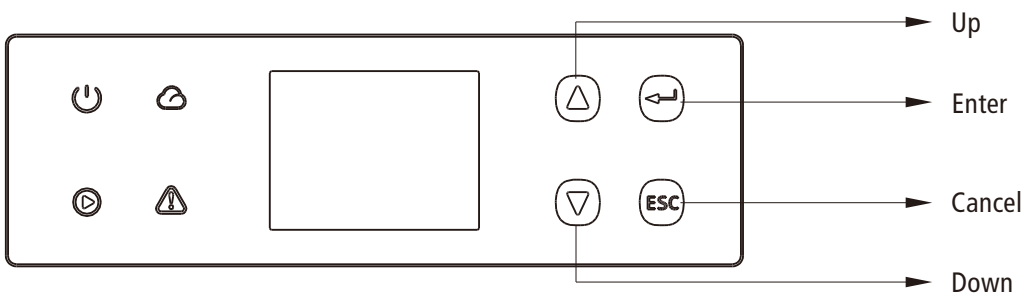
Item	Name	Description
1	DC Switch(optional)	During normal operation it is in "on" state, it can shut down the inverter after it is disconnected from the grid by the AC breaker.
2	PV Input terminal	For PV string connection
3	WiFi/GPRS Port (optional)	WiFi/GPRS For connection
4	RS485&DRED Communication Port	For Rs485 And DRED Communication
5	AC output port	For AC cable connection
6	Fans	There are three Fans to perform controlled force-air cooling.
7	External protection Grounding Terminal	Second protection earth terminals as specified in EN50178
8	LED indicator light	Display the state of the inverter
9	LCD display screen	Inverter operation data viewing and parameter configuration.
10	Buttons	For configuration and viewing parameters
11	Air Outlet	Exit of hot air during the inverter operation

2.2.2 LCD Panel

As a human-computer interaction interface, LCD display panel comprise LED indicators, buttons and LCD display on the front panel of the inverter.

LED indicates the working status of the inverter.

Buttons and LCD are used for configuration and viewing parameters.



Green /green/green/ red light respectively correspond to: / / /

INDICATOR	STATUS	EXPLANATION
		ON:EQUIPMENT POWER-ON
		OFF:EQUIPMENT POWER-OFF
		ON=INVERTER IS FEEDING POWER
		OFF=INVERTER IS NOT FEEDING POWER
		SINGLE SLOW FLASH=SELF CHECK BEFORE GRID CONNECT
		SINGLE FLASH=WILL CONNECT WITH GRID
		ON=WIRELESS CONNECTED/ACTIVE
		BLINK 1=WIRELESS SYSTEM RESETTING
		BLINK 2=WIRELESS ROUTER PROBLEM
		BLINK 4=WIRELESS SERVER PROBLEM
		BLINK =RS485 CONNECTED
		OFF =WIRELESS NOT ACTIVE
		ON =FAULT OCCURRED
		OFF =NO FAULT

2.2.3 DC Switch

The DC switch is designed for safely disconnecting DC input if required.

The inverter works automatically when the input and output meet the requirements. Rotating the DC switch to "OFF" position will immediately cut off the flow of DC current.

Rotate the DC switch to "ON" position before starting the inverter.

2.3 Technical Description

2.3.1 Principle Description

PV string voltage is transmitted to DC BUS via BOOST circuit.

The SMT series is equipped with Three MPPTs for three DC inputs to ensure that the maximum power is utilized even in different PV installation condition.

DC/AC converter circuit convert DC power into AC power, which can be fed into the utility. Protective circuit are designed to protect the inverter safety and human safety.

DC switch is integrated for safely disconnect the DC input. The inverter provides standard interface RS485, USB, WIFI/GPRS(optional) for communication. Inverters also provide running recode data display, parameter configuration via LCD panel.

The main block diagram please refer to chapter 4.6.

2.3.2 Function Description

Inverter functions can be grouped as following.

- Conversion function

Inverter converts direct current power into alternating current power, which conforms to the grid requirement of its installation country.

- Data storage and display

Inverter stores the running information and fault records and display them on the LCD screen.

- Parameter configuration

Inverter provides various parameter configurations for optional operation.

- Communication interface

Inverter provides standard RS485&DRED communication interface, also USB, WIFI(optional) can be provided.

- Protection functions

> Insulation resistance to ground surveillance.
> Input voltage monitor
> Residual current monitoring unit
> Anti-islanding protection
> PV array string fault monitoring
> DC switch
> DC SPD
> AC SPD
> SPD fault monitoring
> AC over curent protection
> Insulation monitoring

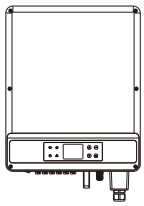
2.4 Package

2.4.1 Unpacking And Inspection

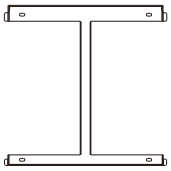
The unit is thoroughly tested and strictly inspected before delivery. Damage still be occur during shipping.

1. Check the packing for any visible damage upon receiving.
2. Check the inner contents for damage after unpacking.
3. Check the package list below.

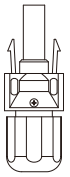
Package list



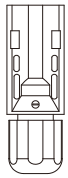
Inverter×1



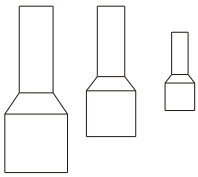
Backboard*1



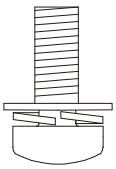
Positive DC Plug*6



Negative DC Plug*6

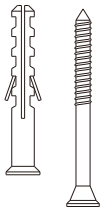


Connecting Terminal
15mm²x3 7mm²x2
0.5mm²x12

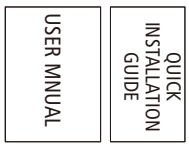


Fixed Screw *6

Safe Screw *2

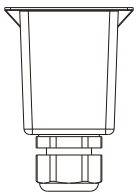


Expansion Bolt *4

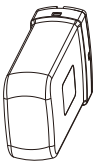


User manual*1
Quick Installation
Guide*1

RS 485 DRED
Communication Terminal *2

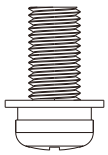


AC Cover*1

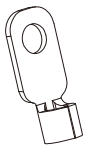


External WiFi/GPRS
Module *1
(WiFi/GPRS model only)

WiFi Connection Guide*1
(WiFi model only)



Grounding Screw *1



Connecting Terminal
Grounding*1

2.4.2 Identify The Inverter

A nameplate is attached to one side of the inverter. It provide information on type inverter, along with the most important specifications, marks of certifications, website and serial number, which is available and identified by Goodwe.

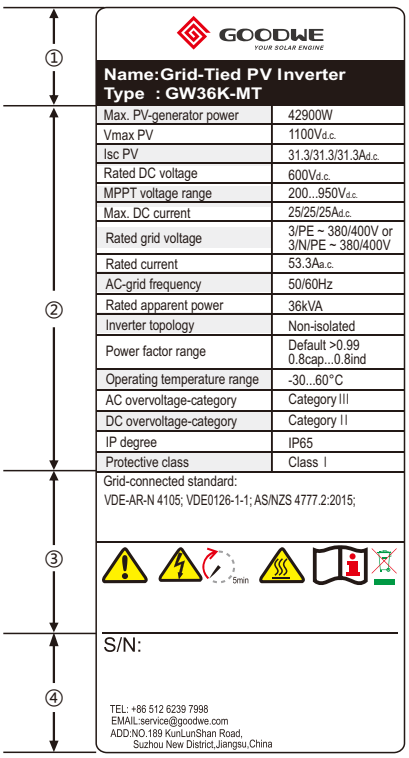


Image shown here is for reference only, actual product you receive may differ.

Item	Description
1	Logo and inverter type
2	Technical data of inverter
3	Marks of certification institution of inverter
4	S/N No. and Company name, website and origin

3 Mounting

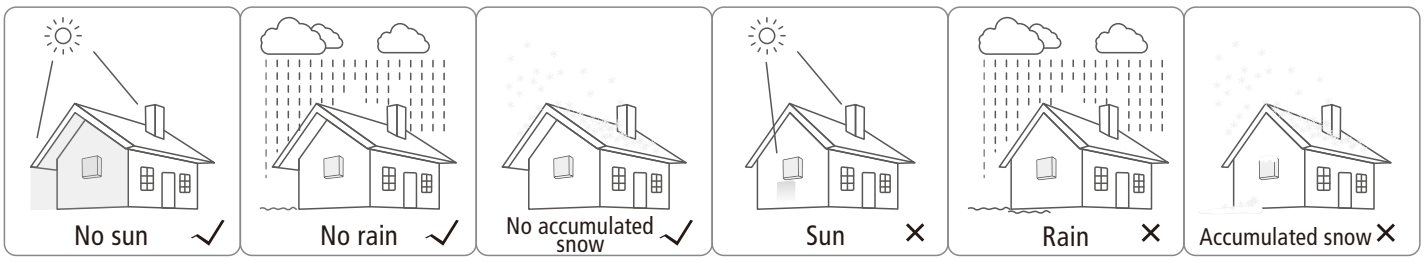
3.1 Mounting Instruction

In order to achieve optimal performance, the ambient temperature should be kept lower than 45 °C.

For the convenience of checking the LCD display and possible maintenance activities, please install the inverter at eye level.

Product label and warning symbol shall be clearly visible after installation.

Please do not install inverter under direct sunlight, rain and snow.



3.2 Equipment Installation

3.2.1Selecting The Installation Location

Take the load capacity of the wall into account. The wall (such as concrete wall and metal structure)should be strong enough to hold the weight of the inverter over a long time.

Install the unit where is accessible to install, electrical connect or service.

Do not install the unit on the wall of flammable material.

Make sure the installation location is well ventilated.

Inverters should NOT be installed near inflammable or explosive items. Any strong electro-magnetic equipment should be kept away from installation site.

Installation the unit at eye level for easily buttons operation and display Read

Carry out the installation vertically or tilt backward no more than 15 degrees, no lateral tilt, and wiring area should be downward, which is shown in Figure 3.2.1-1.

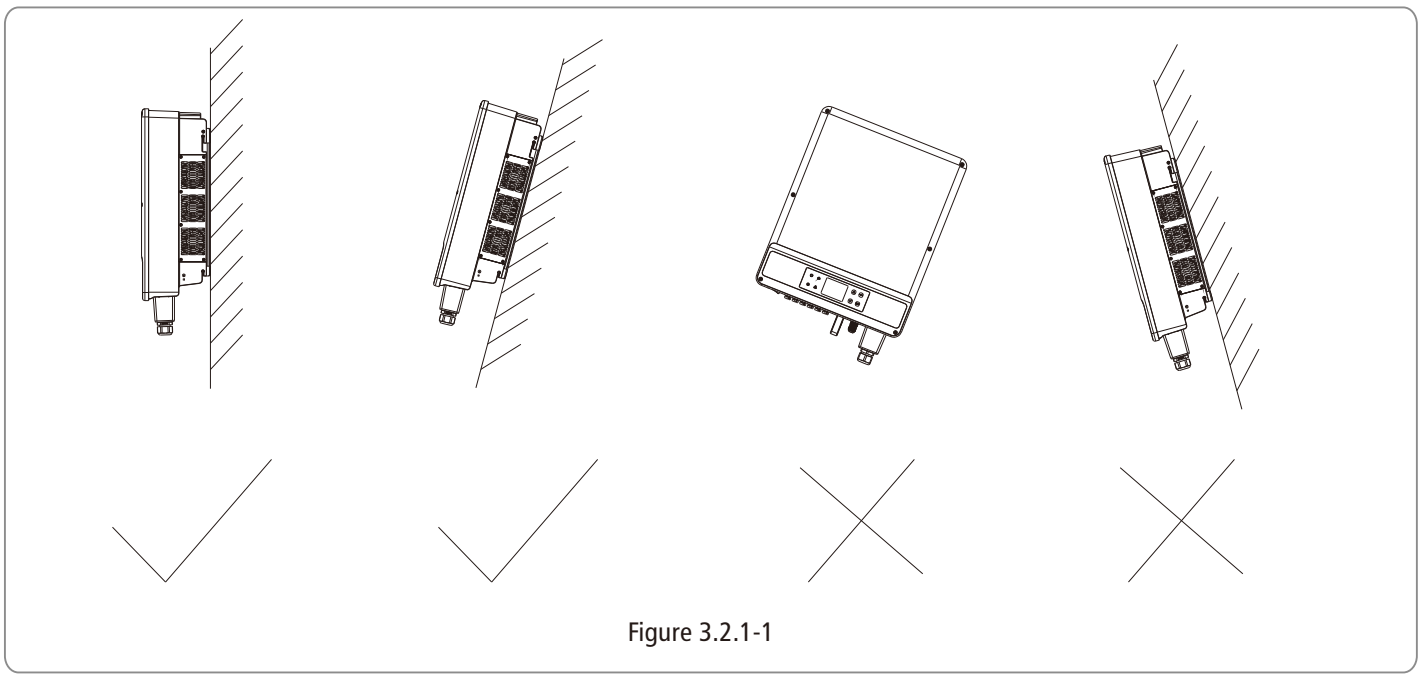
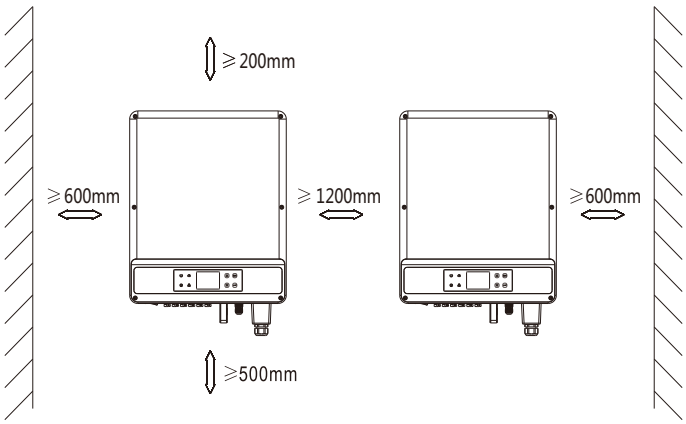


Figure 3.2.1-1

To ensure the good heat dissipation and convenient disassembly, the minimum clearance around the inverter should not be less than the following values, which are shown in figure 3.2.1-2

The installation position shall not prevent access to the disconnection means.



The Upward part----------200mm
The downward part---------500mm
The front part----------500mm
Both sides----------1200mm

Figure 3.2.1-2

3.2.2 Mounting Procedure

(1) Use the wall-mounted bracket as a template and drill 4 holes on the wall, 10 mm in diameter and 80 mm deep.
The inverter sizes of SMT series please refer to Figure 3.2.2-1.

(2) Fix the wall mounting bracket on the wall with four expansion bolts in accessory bag.

(3) Carry the inverter with the handles on both sides of the inverter of SMT series, which is shown in Figure 3.2.2-3.

(4) Place the inverter on the wall-mounted bracket as illustrated in Figure 3.2.2-4 , 3.2.2-5

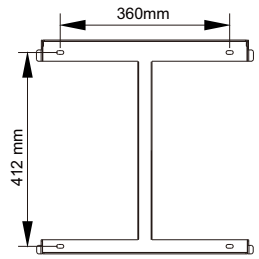


Figure 3.2.2-1

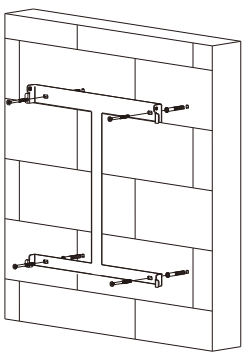


Figure 3.2.2-2

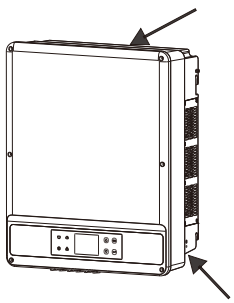


Figure 3.2.2-3

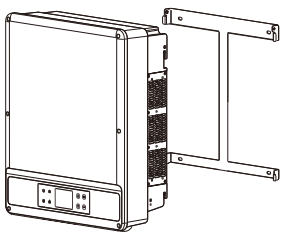


Figure 3.2.2-4

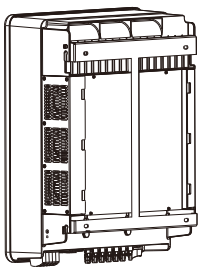


Figure 3.2.2-5

3.3 Electrical Connection

3.3.1 Connection To Grid (AC Side Connection)

(1) Measure the voltage and frequency of grid-connected access point, and make sure it is accordance with the grid-connected standard of inverter.

(2) It is recommended to add breaker or fuse to AC side, the specification should be more than 1.25 times of rated of AC output current.

(3) The PE line of inverter should be connected to the earth, make sure that the impedance between the neutral wire and earth wire is less than 10 ohm.

(4) Disconnect the breaker or fuse between the inverter and the utility.

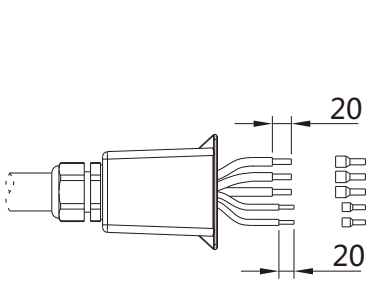
(5) Connect the inverter to the grid as follows:

The wiring installation method on the AC output side is shown in Figure 3.3.1-1.

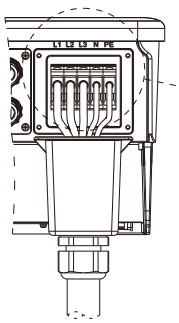
(6) Fix (Torque: 1.2~2 N.m) the connector of AC cable to the corresponding terminals

(7) Neutral conductor shall be blue, line conductor shall be black or brown (preferred), protective earth bonding line shall be yellow-green.

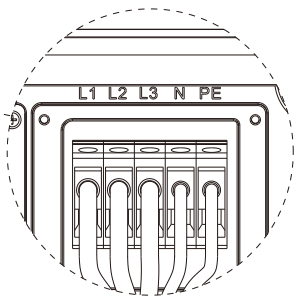
(8) The AC line construction shall be such that if the cord should slip in its anchorage, placing a strain on conductors, the protective earthing conductor will be the last to take the strain.



The crimping pliers impose the line



Tighten the nut

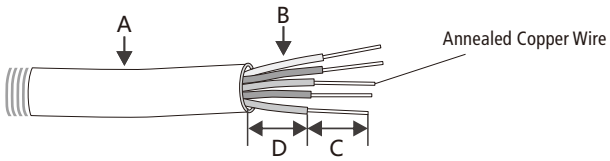


Tighten the screws (Torque:2~2.3N.m)

L1 ----- Live Wire 1
L2 ----- Live Wire 2
L3 ----- Live Wire 3
N ----- Neutral Wire
PE----- Earth Wire

Figure 3.3.1-1

AC cable illustration please refer to Figure 3.3.1-2.



Grade	Description	Value
A	O.D	22~30mm
B	Section area of conduction material (mm2)	10~25mm²(It is recommended to use 16mm² copper wire)
C	Length of Bare wire	About 20mm
D	Length of wire	About 45mm

Figure 3.3.1-2

3.3.2 AC Circuit Breaker And Residual Current Protection Device

An independent three or four pole circuit breaker for each inverter must be installed at the output side to ensure that the inverter can be securely disconnected from the grid.

The output current of GW25K-MT is 40A, so we recommend that the nominal current of the AC breaker is 50A.

The output current of GW30K-MT is 48A, so we recommend that the nominal current of the AC breaker is 60A.

The output current of GW36K-MT is 53.3A, so we recommend that the nominal current of the AC breaker is 66A.

Note: It's not allowed for several inverter to use the same circuit breaker.

It's not allowed to connect loads between inverter and circuit breaker.

The internal integrated residual current detection device (RCD)of inverter can detect external leakage current in real time, when detecting the leakage current value exceeds the limit value, the inverter will be disconnected from the grid as soon as possible. If an external RCD is installed , the action current should be 500mA or higher.

3.3.3 Earth Terminal Connection

The inverter is equipped with earth terminal according to the requirement of EN 50178.

All non-current carrying exposed metal parts of the equipment and other enclosures in the PV power system should be grounded.

Please connect 'PE' cable to ground .

1. Strip the wire insulation sheet of a suitable length with a wire stripper, illustrated as Figure 3.3.3-1.

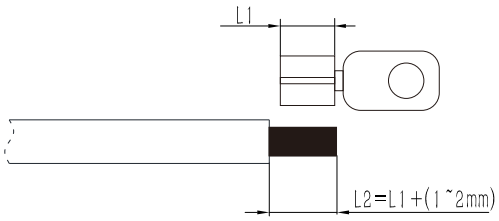
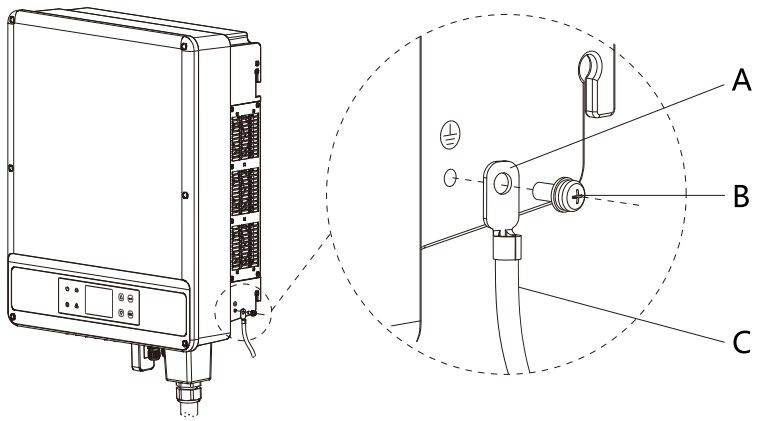


Figure 3.3.3-1

2. Insert the stripped wire into the terminal and compress it tightly by crimping pliers, illustrated as Figure 3.3.3-2.

Figure 3.3.3-2

3. Fix the earth wire shall on the machine, illustrated as Figure 3.3.3-3.



NO.	Name	Explanation
A	Cold-pressed terminal	
B	Screw	M5*12
C	Yellow and green line	The maximum is 15mm²

Figure 3.3.3-3

4. In order to improve the corrosion resistance of the terminal, it is recommended to apply silica gel on the earth terminal for the corrosion protection after the grounding cable assembly is completed.

3.3.4 Connecting Inverter To PV Panel

Caution

Make sure the DC switch is turned off before connecting PV string to the inverter.

Make sure PV string polarity confirms with DC connector, otherwise, it will cause damage to inverter.

Make sure the maximum open circuit voltage (Voc) of each PV string does not exceed the maximum input voltage of the inverter under any condition(1000V).

Make sure that the maximum short circuit current of each DC input is less than the inverter allowable limit.

Do not connect positive or negative pole of PV string to earth (PE terminal). Otherwise, it will permanently destroy the inverter.

Positive shall be red, negative shall be black .

The minimum insulation resistance to ground of the PV panels must exceed 33.3kΩ（R = 1000/30 mA)， there is a risk of shock hazard if the requirement of minimum resistance is not met.

The SMT series has Three PV input area PV1 input, PV2 input, PV3 input, each with MPP tracker. therefore the three PV input can be different with each other, including different type of modular, different numbers of connecting PV strings, different orientation angel of PV modular.

The installation method of DC connector is shown in Figure 3.3.4-1 or Figure 3.3.4-2.

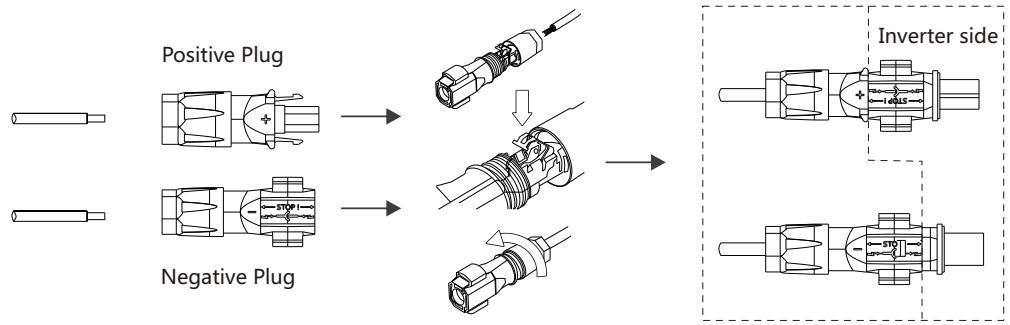


Figure 3.3.4-1

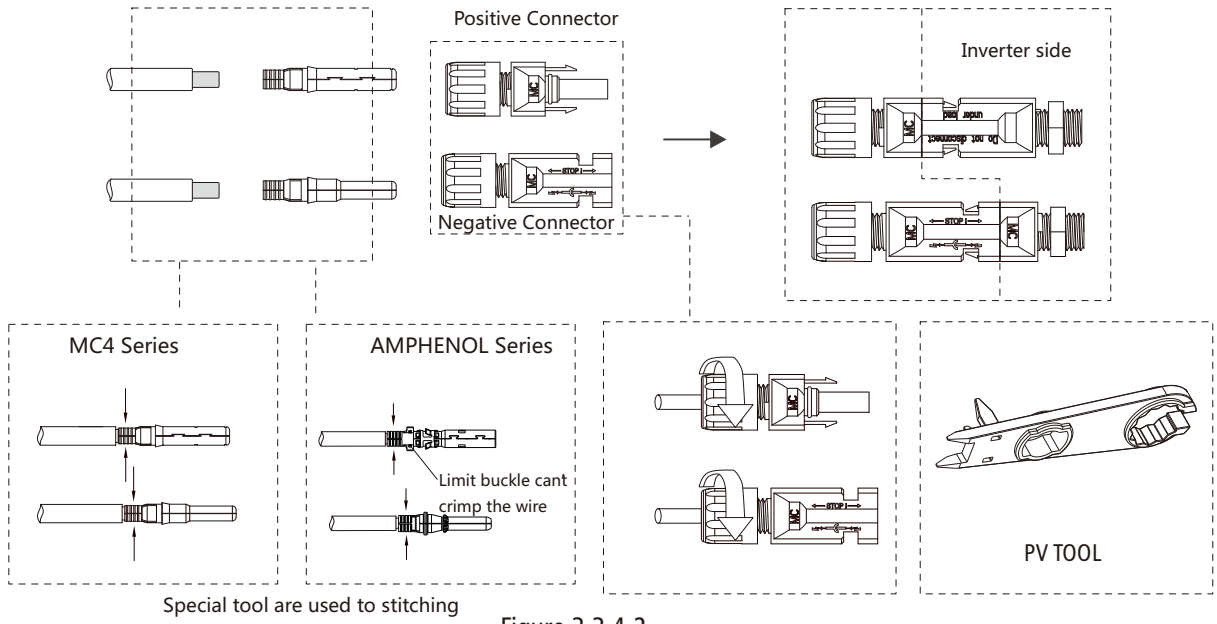
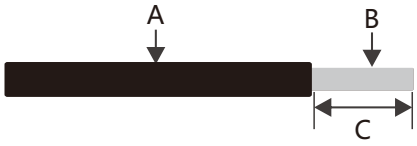


Figure 3.3.4-2

DC Cable specification please refer to Figure 3.3.4-3.



Label	Description	Value
A	External diameter of wire stock	4~5mm
B	Cross-sectional area of conductor material	2.5~4mm²
C	Length of bare wire	About 7mm

Figure 3.3.4-3

In order to make the internal inverter better dustproof and waterproof, all the DC connectors provided by accessory bag should be connected to the inverter, if only some of the DC connectors are used, the DC connectors without connection should be blocked with non-conductive insulator.

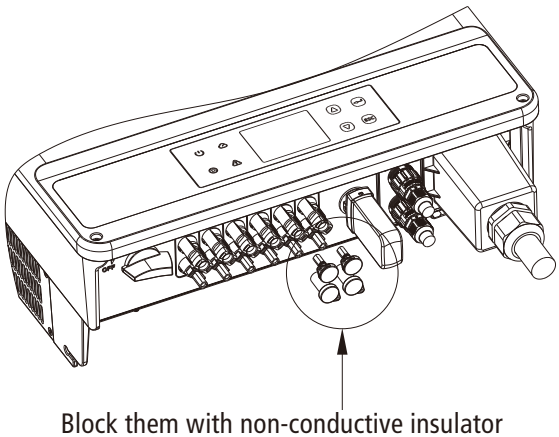


Figure 3.3.3-4

3.4 Communication Connection

Inverter operation data can be transferred by RS485, or WIFI Modular to a PC with monitoring software or to data logger device such as Ezlogger Pro. USB just used for service debug; RS485 is the standard communication choice for inverter, and WIFI modular can be used optionally for communication.

3.4.1 RS485 Communication

This function is only applies to the inverter with RS485 ports.
The RS485 port of inverter is used to connect the EzLogger Pro, and the total length of connecting cable should not exceed 1000m. Communication lines must be separated from other power lines to prevent the communication from being interfered. RS485 connection please refer to Figure 3.4.1-1.

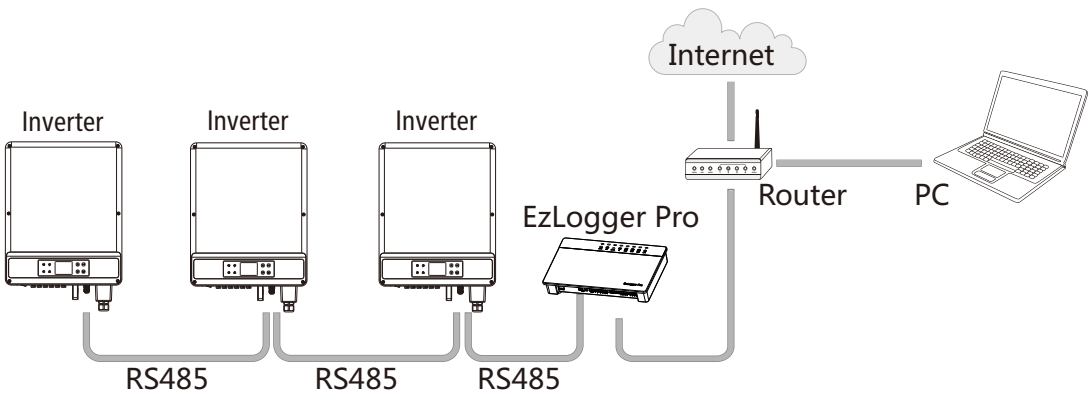
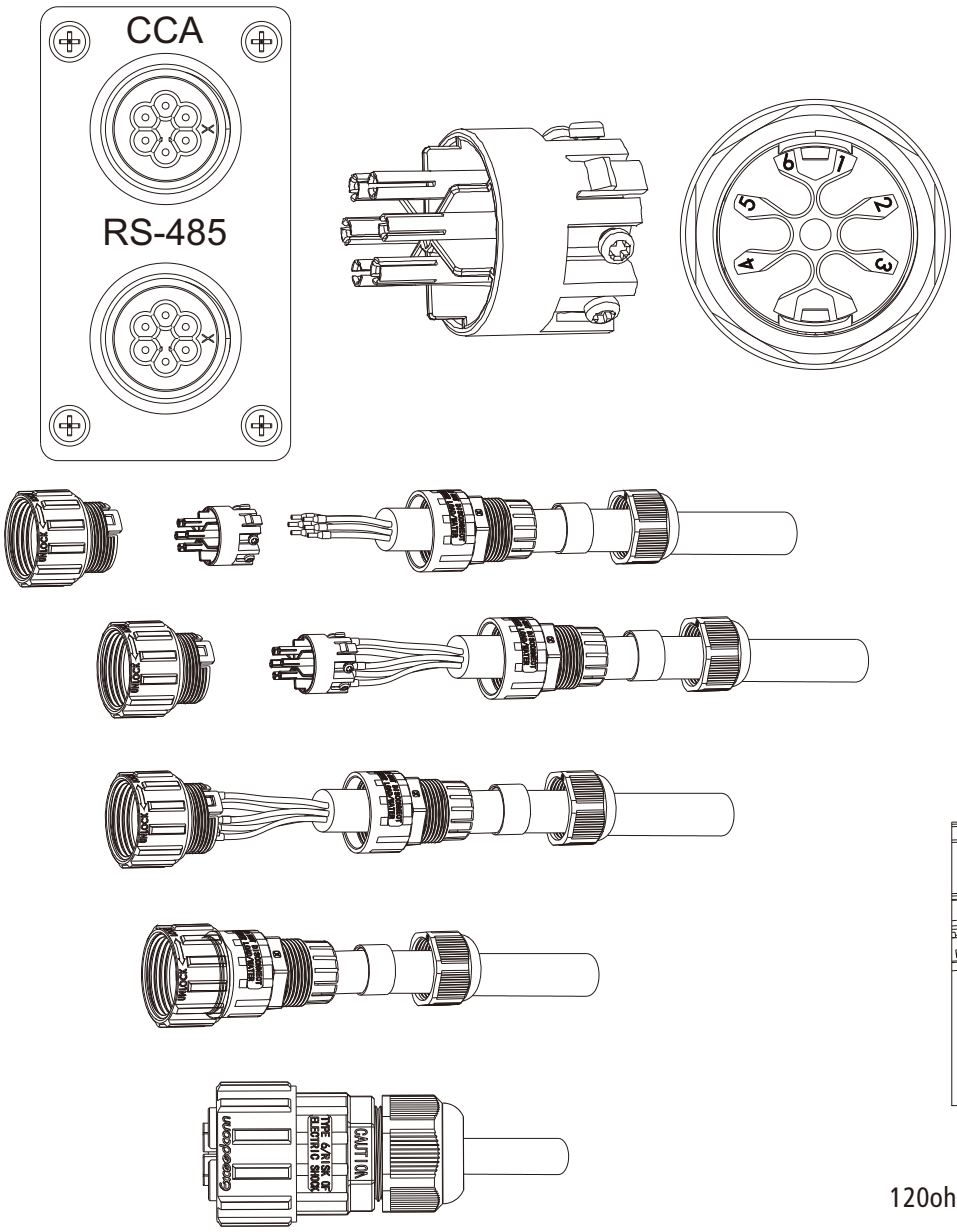


Figure 3.4.1-1

The connection steps of RS485 communication of SMT series are as follows:

- Remove the screw cap of the cable gland.
- Remove the one-hole sealing ring.
- Insert the RS485 cable through the components as the followings: screw cap, one-hole sealing ring, insulation body and terminal.
- Fasten the cable as Figure 3.4.1-2 shown.
- Connect the client with the machine and tighten the nut.

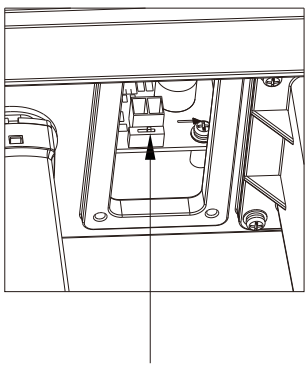


CCA

Wire Size	Function
1	485−A2
2	485−B2
3	SINGL GROUND

RS-485

Wire Size	Function
1	485−A1
2	485−B1
3	485−A1
4	485−B1



120ohm termination resistor dip switch

Figure 3.4.1-2

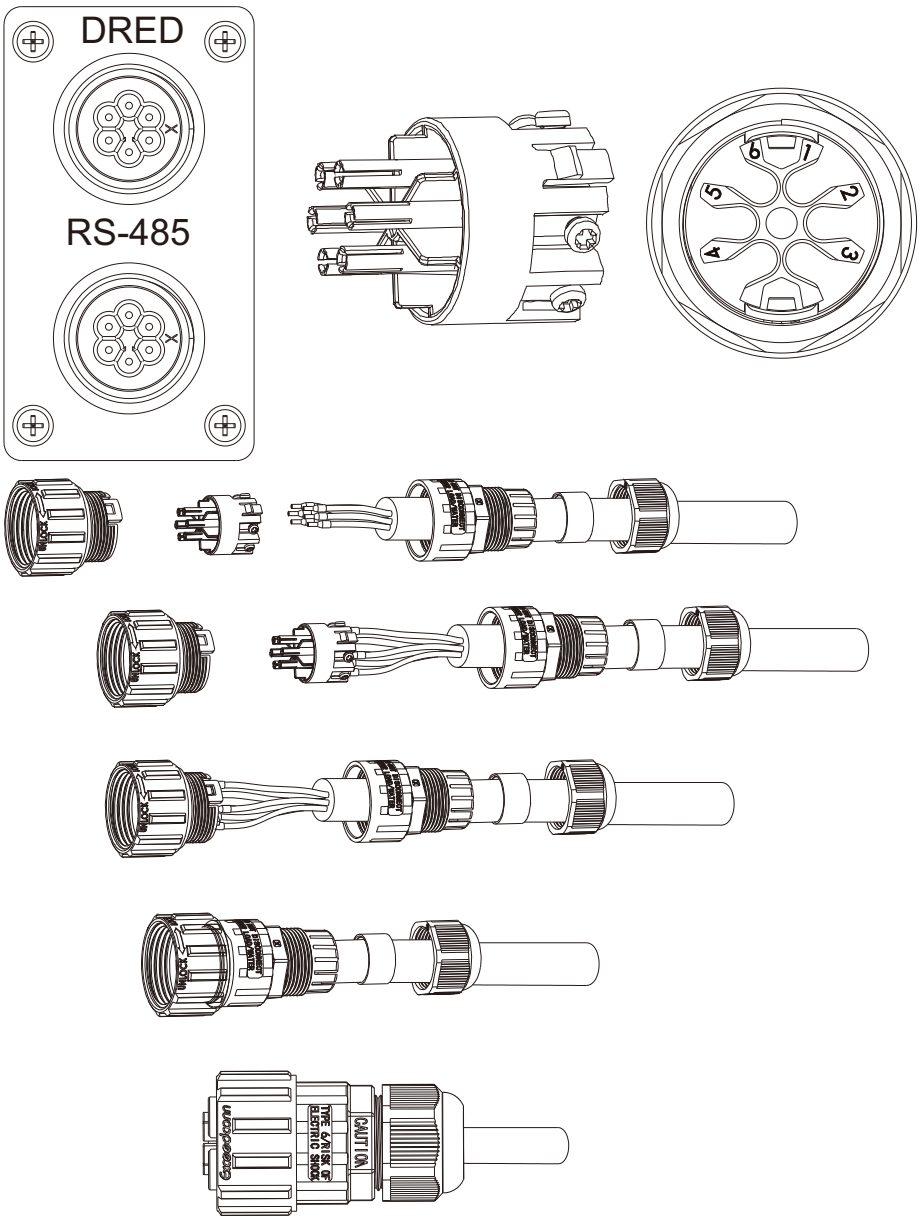
Caution

Cable requirements of RS485 communication: Shielded twisted-pair cable or shielded twisted-pair
Ethernet cable 120ohm termination resistor is controlled by dip switch. "ON" means connected, and "OFF" means disconnected, illustrated as Figure 3.4.1-2.
Selection mode of terminal resistance dial switch with 120ohm.

- When single inverter is in communication, dial the terminal resistance dial switch to ON state (The default is OFF) which is next to the RS485 communication port of inverter, so that the RS485 terminal is with 120ohm.and make the shielding layer of munication line single-point grounding, as shown inFigure 3.4.2-2.
- If multiple inverters are in communication, connect all the inverters in a daisy chain through the RS485 communication cable For device at the end of daisy chain, dial the terminal resistance dial switch to ON state (The default is OFF), and make the shielding layer of communication line single-point grounding.

3.4.2 DRED

DRM function is achieved by Ezlogger Pro, and please connect the Ezlogger Pro through RS485 port. Detailed DRED connection refer to Ezlogger Pro manual.Fasten the cable as Figure 3.4.2-1 shown.



DRED

Wire Size	Function
1	DRED1
2	DRED2
3	DRED3
4	DRED4
5	REF1
6	REF2

RS-485

Wire Size	Function
1	485–A1
2	485–B1
3	485–A1
4	485–B1
5	485–A2
6	485–B2

Figure 3.4.2-1

3.4.3 WiFi Communication

This function is only applicable for WiFi model, for specific configurations, please refer to WiFi Connection Configurations in the attachment, and you can also refer to the description of "Demo Videos of Monitoring Installation" on the http://www.goodwe.com.cn/DownLoad.aspx website.

After the configurations are completed, please register on the website http://www.goodwe.com.cn

The WiFi module installation of SMT series is shown in Figure 3.4.3-1.

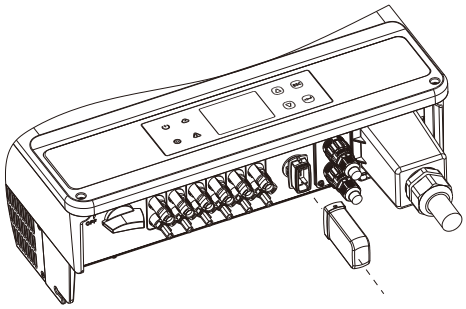


Figure3.4.3-1

3.4.4 Earth Fault Alarm

The inverter complies with IEC62109-2 13.9. When earth fault occurs,Buzzer in EzLogger Pro will ring for 1 minute, and RUN LED will be lighting for 1 minute. The alarm will ring again after half an hour unless the fault is resolved.

4 System Operation

4.1. Overview of Menu Architecture

The display menu through the Up, Down, Enter, Esc key to operate the menu, which Enter key is divided into long press (greater than 3s)and short press, so a total of five key operation. Press the Enter Esc key to toggle the 123 menu, use the up and down keys to select the item and change the parameters, and long press the Enter (short press is also ok for some item) to set the parameters.The display and keys of SMT series is shown in Figure 4.1-1

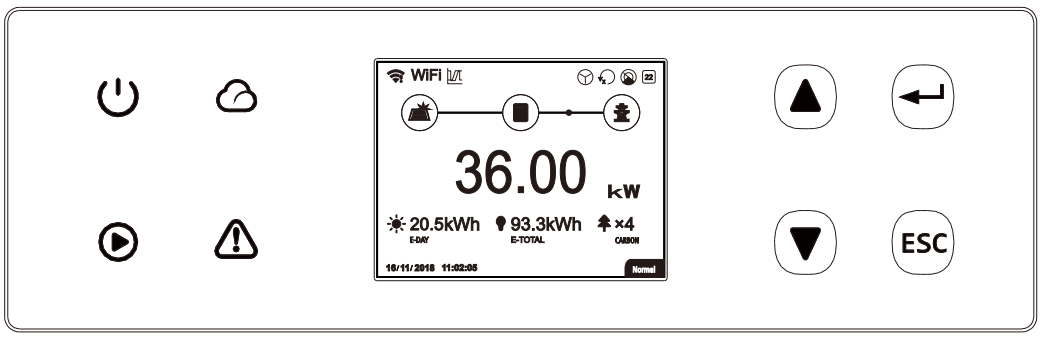
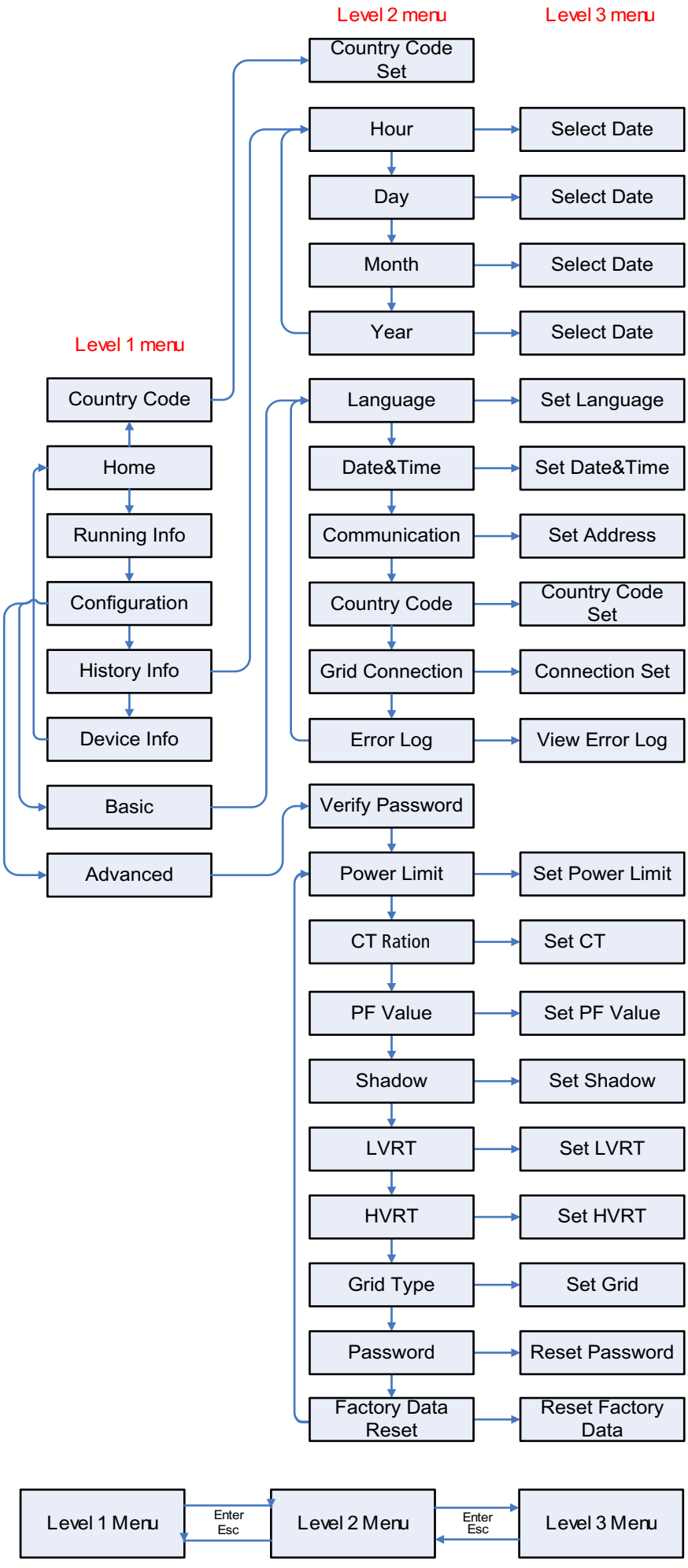
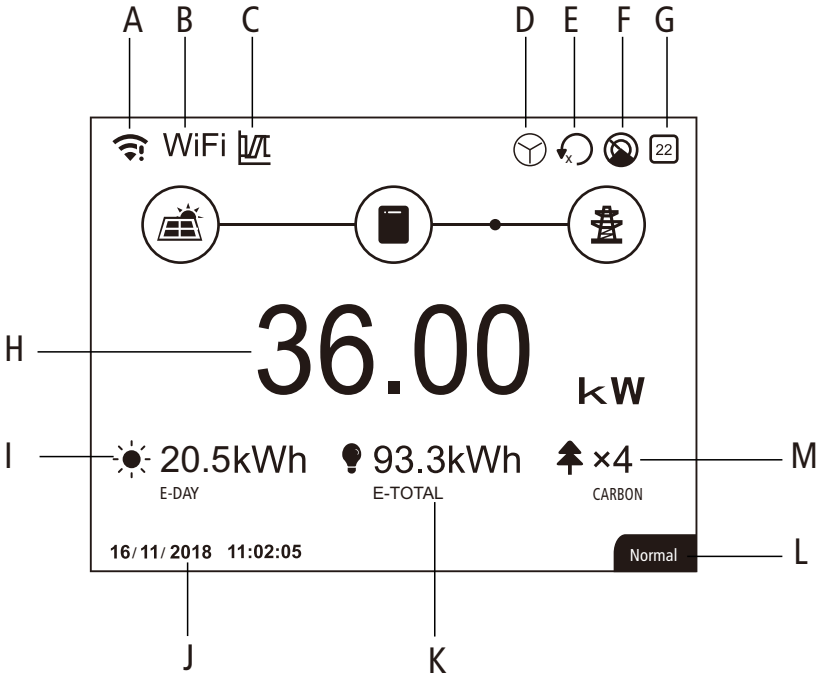


Figure 4.1-1


Level 2 menu
Level 3 menu
Country Code Set
Hour
Select Date
Day
Select Date
Month
Select Date
Year
Select Date
Level 1 menu
Country Code
Language
Set Language
Home
Date&Time
Set Date&Time
Running Info
Communication
Set Address
Configuration
Country Code
Country Code Set
History Info
Grid Connection
Connection Set
Device Info
Error Log
View Error Log
Basic
Verify Password
Advanced
Power Limit
Set Power Limit
CT Ration
Set CT
PF Value
Set PF Value
Shadow
Set Shadow
LVRT
Set LVRT
HVRT
Set HVRT
Grid Type
Set Grid
Password
Reset Password
Factory Data Reset
Reset Factory Data
Level 1 Menu
Enter
Esc
Level 2 Menu
Enter
Esc
Level 3 Menu

4.2 Home Introduction



A: Communication information icon:GPRS and WiFi show the signal strength, RS485 shows the communication address.

B: Communication icon:The way of communication,There are GPRS, WiFi LAN and RS485

C: LVRT/HVRT icon:The icon indicates that the system LVRT/HVRT function is on

D: Grid Type icon:The icon indicates that the system select Delta Grid/Star Grid

E: Power limit icon:The Power limit icon indicates that the Power limit function is on

F: Shadow icon:The Shadow icon indicates that the Shadow function is on

G: Safety icon:The number represents the safety serial number

H: Real-time power

I: E-day icon:The number represents the safety serial number

J: System time and date

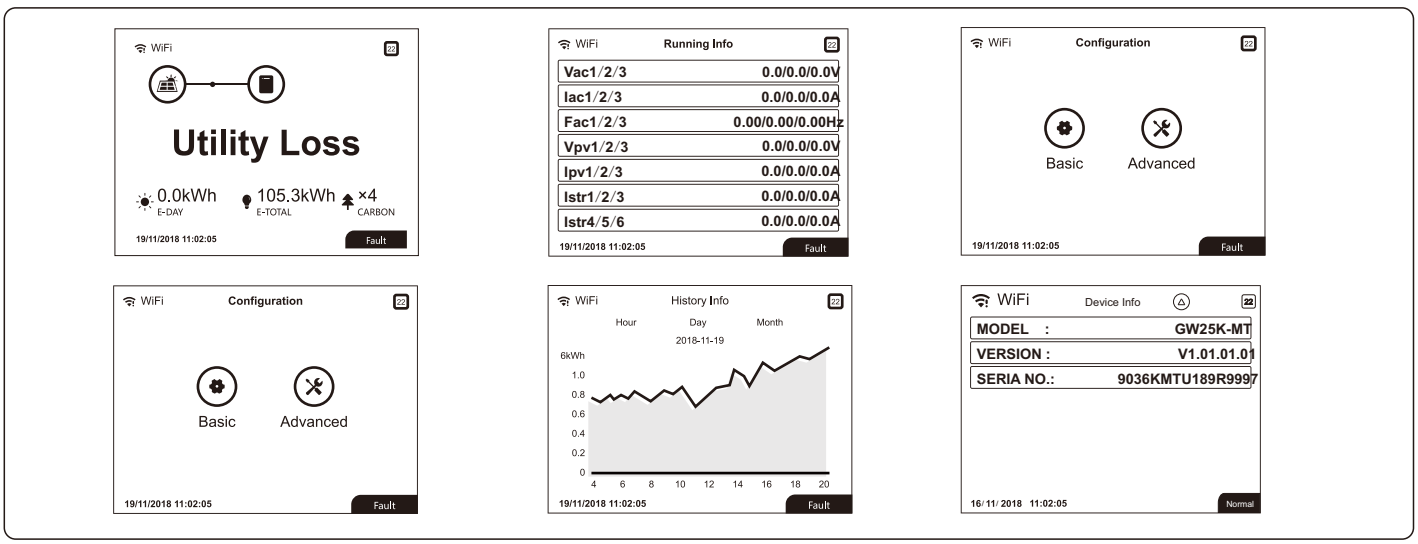
K: E-Total:Historical cumulative power generation

L: System status information

M: Carbon:Energy conservation and emission reduction

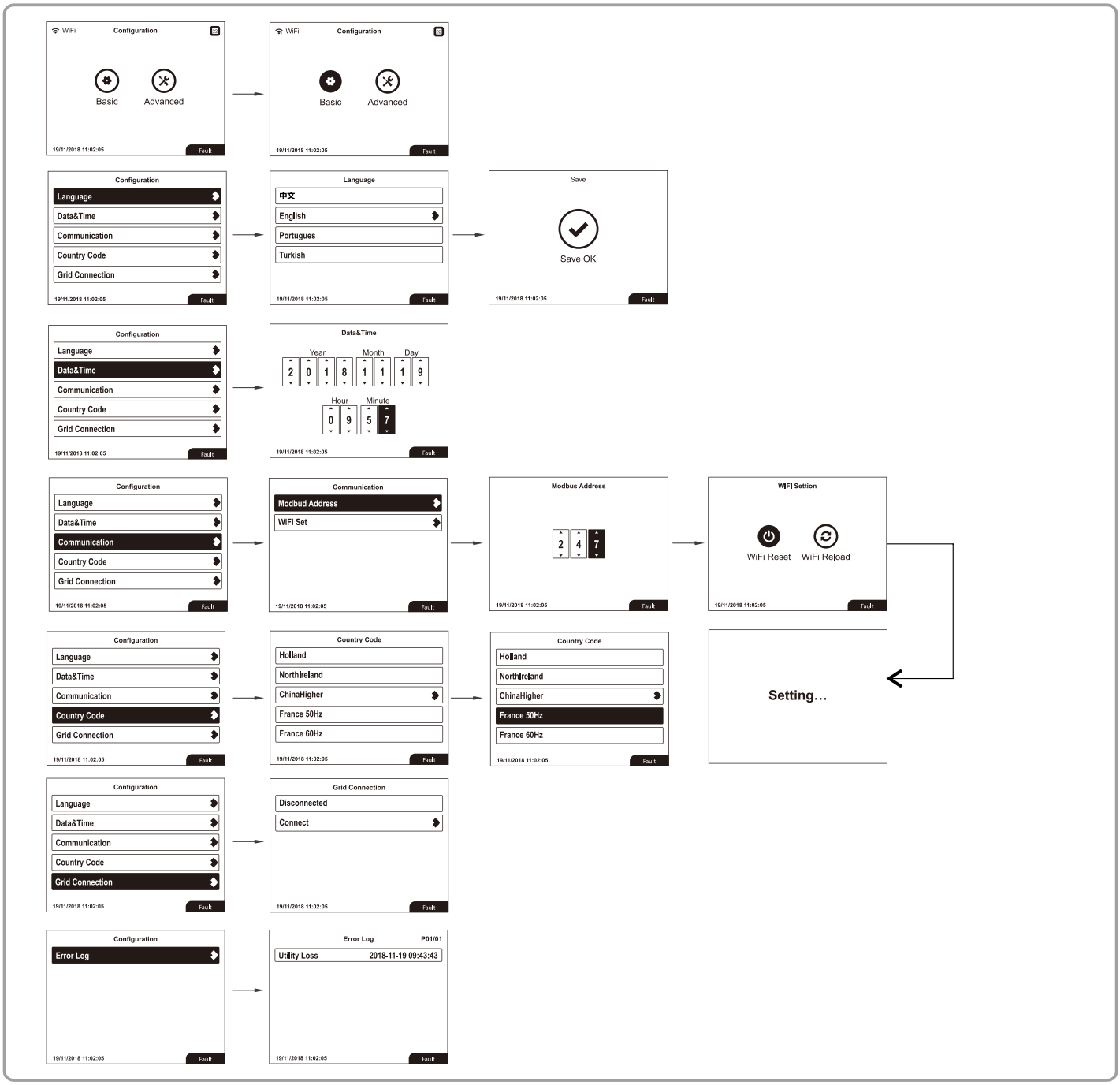
4.3 Level 1 Menu

Level 1 menu interface through the up and down key cycle, in the historical information, configuration, advanced settings interface, press the Enter key will enter the Level 2 menu. To enter the Level 2 menu, select the item from the up and down keys. Press Enter to enter the project setup menu, go to the Level 3 menu, change the setting contents by pressing the up and down keys, and press the Enter key to set the contents. If safety country is not selected (shows "Configure Safety" on display at home page) ,press any key will enter Safety Country page.



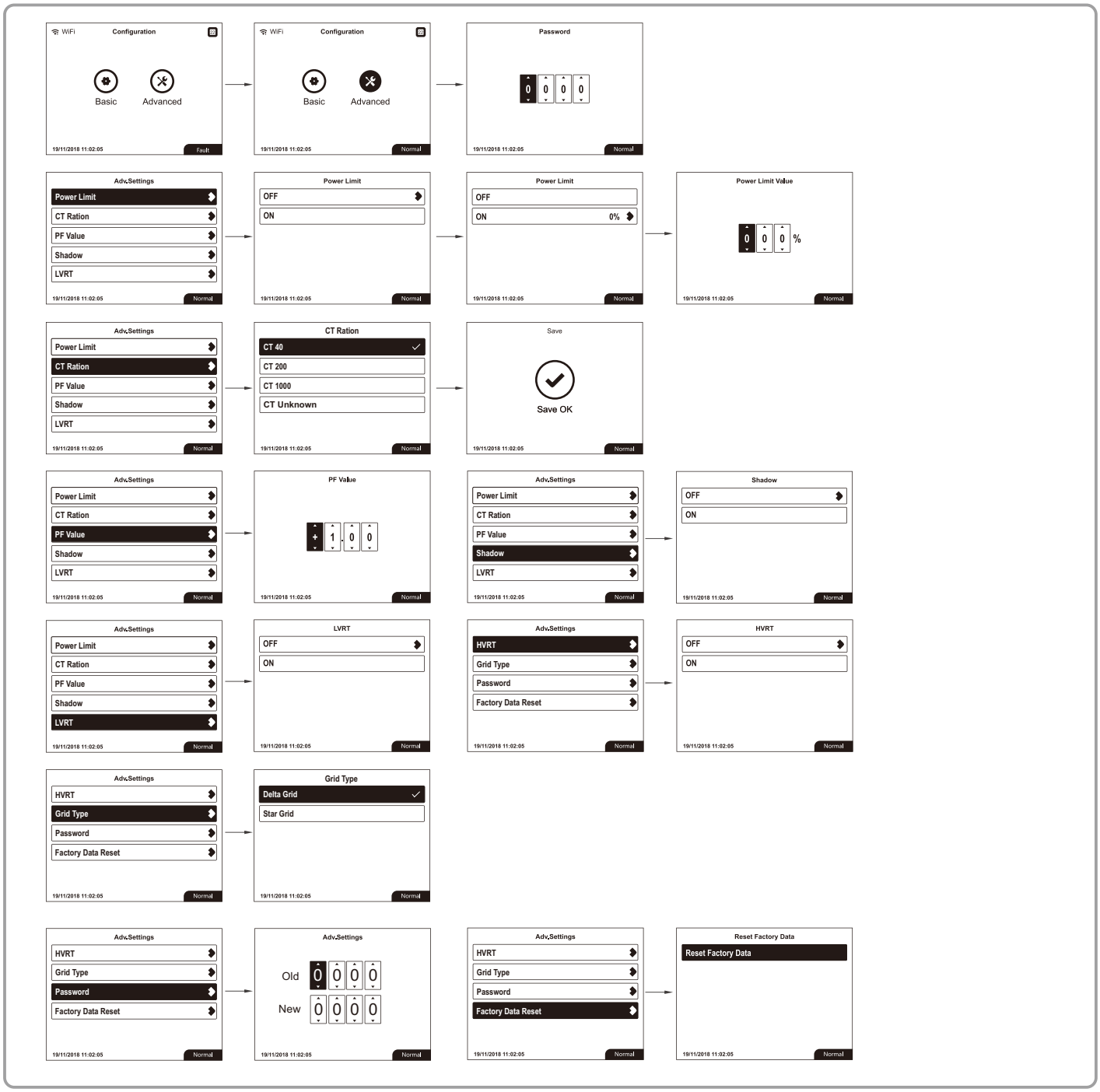
4.4 Basic Settings

Basic Settings is mainly used to set the commonly used parameters, including language settings, time settings, communication settings and safety settings four projects.



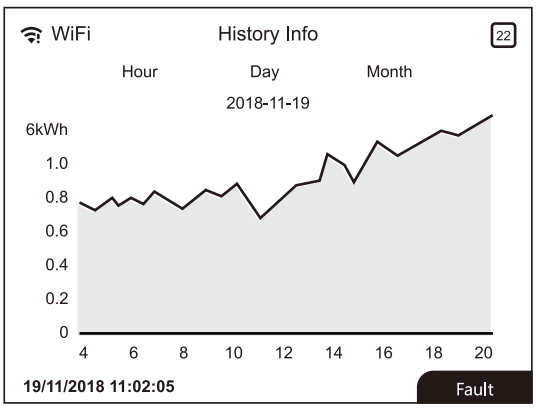
4.5 Advanced Settings

Advanced settings are mainly used to set the function parameters of the equipment to running, in order to prevent the customer malfunction caused the device to run abnormal, all advanced settings items need to enter the password to obtain advanced settings permission to operate (enter a password you can set the advanced settings menu all the items) .The default password is :1111,In order to prevent customers forgetting the password, all devices have a unique super password, the super password and SN binding.Advanced settings items include Power limit settings, PF value settings, LVRT settings, HVRT settings,Shadow settings, Password modification settings and Factory data reset seven projects.



4.6 History Information

The history information mainly includes the information of the generating capacity of the equipment, the power generation information mainly includes the amount of electricity generation, daily power generation, monthly power generation and annual power generation information



4.7 Wi-Fi Reset & Wi-Fi Reload

The Wi-Fi communication function is only applied to WiFi BOX, the detailed configuration instruction can be referred to Wi-Fi Configuration in the accessory box.

After configuration, please browse the monitoring portal website to create PV station

4.8 Special Adjustable Setpoints

The inverter has field adjustable function,such as trip points,trip times, reconnect times,active and invalid of QU curve,PU curve. It is adjustable through special software ,if you want to use it ,plaese contact with after sales.

The methods document of using the software can download from goodwe website or contact with after sales.

5 Troubleshooting

In most situations, the inverter requires very little maintenance. However, if the inverter is not working properly, please try the following troubleshooting solutions:

●When a problem occurs, the red (fault) LED indicator on the front panel will light up and the LCD screen will display the type of fault. The following table lists error messages and the solutions for associated faults.

Display		Troubleshooting
System failure	Isolation Fail	1.Disconnect DC switch, take off DC connector, Check the impedance between PV (+) & PV (-) to earth. 2.If impedance is less than 100 kΩ, please check the insulation of PV string wiring to the earth. 3.If impedance is larger than 100 kΩ, please contact local service office. 4.Take off AC connector, measure the impedance between neutral and PE. If it is larger than 10 kΩ, please check AC wiring.
	Ground I Fail	1.Disconnect DC switch, check the insulation of PV string wiring to earth. 2.Reconnect the DC switch again. 3.If the problem still exits, please call the local service office.
	Vac Fail	1.Disconnect the DC switch, taking off AC connector, measuring the voltage between line and neutral in connector, make sure if it conforms to the grid-connected specification of inverter. 2.If it does not, please check grid wiring. 3.If it does, please connect AC connector, reconnect DC switch, inverter will connect grid automatically. If the problem still exits, please call the local service office.
	Fac Fail	1.The PV Inverter will automatically restart if the Fac returns to normal. 2.If the problem still exits, please call the local service office.
	Utility Loss	1.Disconnect the DC switch, taking off AC connector, measure the voltage between line and neutral n connector, make sure if it conforms to the grid-connected specification of inverter. 2.If it does not, please check if the distribution switch is connected and the grid is normal. 3.If it does, reconnect AC connector and DC connector; If the problem still exits, please call the local service office.

Display		Troubleshooting
System failure	PV Over Voltage	1.Disconnect the DC switch, take off DC connector, check PV string voltage, make sure if it exceeds the input voltage in inverter specification. 2.If it does, please reconfigurate PV panel string. 3.If the problem still exits, please call the local service office.
	Over Temperature	1.Please check if installation position conforms to the specification. 2.Try to lower the surrounding temperature. 3.Move the inverter to vents or alter the installation position. 4.If the problem still exits, please call the local service office.
Inverter failure	Relay-Check Fail	1.Disconnect the DC connector. 2.Reconnect the DC connector. 3.If the problem still exits, please call the local service office.
	DCI High	
	EEPROM R/W Fail	
Inverter failure	SPI Fail	1.Disconnect the DC connector. 2.Reconnect the DC connector. 3.If the problem still exits, please call the local service office.
	DC Bus High	
	GFCI Fail	
	No display	1.Disconnect the DC switch, take off DC connector, measure the voltage of PV string. 2.Plug in DC connector, and reconnect DC switch. 3.If the voltage is less than 70V, please check the PV string configuration. 4.If the voltage is higher than 125V and still no display, please contact local service office.

Note: When sunlight is insufficient, the PV Inverter may continuously start up and shut down automatically due to insufficient power generated by the PV panels, which would not lead to inverter damage. If the problem still exits, please call the local service office.

5.1 Overvoltage Category Definition

Category I : applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.
Category II : applies to equipment not permanently connected to the installation. Examples are appliances, portable tools and other plug-connected equipment;
Category III: applies to fixed equipment downstream of and including, the main distribution board. Examples are switchgear and other equipment in an industrial installation;
Category IV: applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board). Example are electricity meters, primary overcurrent protection equipment and other equipment connected directly to outdoor open lines.

5.2 Moisture location Category Definition

Moisture parameters	Level		
	3K3	4K2	4K4H
Temperature range	0~+40℃	-33~+40℃	-20~ +55°C
Humidity range	5% ~85%	15% ~ 100%	4% ~100%

5.3 Environment Category Definition

Outdoor : the ambient air temperature is -20~50°C, Relative humidity range is 4 % to 100 %, applied to PD3.
Indoor unconditioned: the ambient air temperature is -20~50°C, Relative humidity range is 5 % to 95%,applied to PD3.
Indoor conditioned: the ambient air temperature is 0~40°C, Relative humidity range is 5 % to 85%,applied to PD2.

5.4 Pollution Degree Definition

Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.
Pollution degree 3: Conductive pollution occurs, or, dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected.
Pollution degree 4: Persistent conductive pollution occurs, for example, the pollution cause by conductive dust, rain and snow.

6 Technical Parameters And Block Diagram

6.1 Technical Parameters

Technical Data	GW25K-MT	GW30K-MT	GW36K-MT
PV String Input Data			
Max.DC Input Power(W)	32500	39000	42900
Max.DC Input voltage(V)	1100	1100	1100
MPPT range(V)	200-950	200-950	200-950
Start-up voltage(V)	180	180	180
MPPT Range for Full Load (V)	470-860	470-860	510-860
Nominal DC Input Voltage (V)	600	600	600
Max. Input Current (A)	25/25/25	25/25/25	25/25/25
Max. Short Current (A)	32/32/32	32/32/32	32/32/32
Max.inverter backfeed current to the array(a.c. or d.c. A)	0		
Current(inrush)(a.c. A,peak and duration)	54.25 5μsμ		
No.of MPP Trackers	3	3	3
No.of Input Strings per Tracker	2/2/2	2/2/2	2/2/2
AC Output Data			
Nominal Output Power (W)	25000	30000	33000*1
Max. Output Power (W)	27500	33000*2	36000
Maximum output fault current (a.c. A,peak and duration or RMS)	116 50μ ֆμ		
Maximum output over current protection (a.c. A)	116		
Max. Output Apparent Power (VA)	27500	33000*3	36000
Nominal Output Voltage (V)	380/400,3L/N/PE or 3L/PE		
Nominal Output Frequency(Hz)	50/60		
Max. Output Current (A)	40	48	53.3
Output Power Factor	~1 (Adjustable from0.8leading to 0.8lagging)		
Output THDi (@Nomina Output)	<3%		
PF precision	<0.01		
Efficiency			
Max. efficiency	98.4%	98.5%	98.5%
Europe efficiency	>98.2%	>98.3%	>98.3%
MPPT efficiency	99.9%	99.9%	99.9%

*1:33kW for Italy,36kW for other country
*2:30kW for Australia,33kW for other country
*3:30kW for Australia,33kW for other country

Technical Data	GW25K-MT	GW30K-MT	GW33K-MT
Protection			
PV String Current Monitoring	Integrated		
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
PID Detection	Selection		
DC SPD Protection	Integrated(Type Ⅱ)		
AC SPD Protection	Integrated(Type Ⅱ)		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
General Data			
Operating Temperature Range(℃)	-30~60		
Operating Temperature Range for full load(℃)	-30~50		
Operating Altitude(m)	≤3000(>2000load decline)		
Relative humidity	0-100%Without condensation		
Environment category	Outdoor&Indoor		
External Environment Pollution Degree	Grade1、2、3		
Noises range	≤45dB		
Cooling	Fan Cooling		
UserInterface	LCD & LED		
Communication	RS485;WiFi/GPRS		
Weight(kg)	39	39	39
Size (Width*Height*Depthmm)	480*590*200		
Protection degree	IP 65		
Night self consumption(W)	<1		
Topology	Transformerless		
Certifications&Standards			
Grid regulation	VDE-AR-N 4105 EN50438(PL) IEC62116 IEC61727,AS4777.2 PV502 VDE0126-1-1		
Safety regulation	IEC62109-1&2		
EMC regulation	EN61000-6-1,EN61000-6-2,EN61000-6-3,EN61000-6-4		

6.2 Block Diagram

SMT series main circuit is shown in Figure 6.2.1:

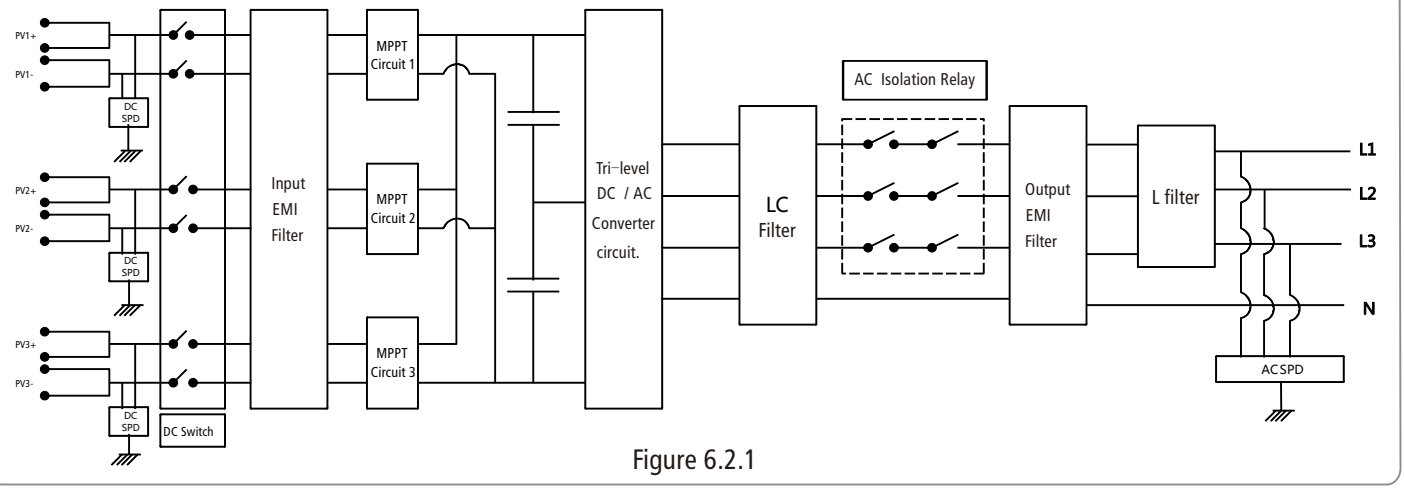


Figure 6.2.1

7 Maintenance

Regular maintenance ensures a long operating life and optimal efficiency of the entire PV plant.

Caution: Before maintains please disconnect the AC breaker firstly and then disconnect DC breaker. Wait 5 minutes until the residual voltage has been released.

7.1 Clearing The Fan

MT series inverter is equipped with three fans on its left side. The fan intakes and handle covers should be cleaned yearly with a vacuum cleaner. For more thorough cleaning, completely remove the fans.

- Disconnect the AC breaker firstly and then disconnect DC breaker.
- Wait 5 minutes until the residual voltage has been released and the fans are no longer turning.
- Disassembly the fans (refer to Figure 7.1-1).

1)Loosen the five screws with a crosshead screwdriver, then remove the fans out the cabinet about 50mm slowly.

2)Open the lockers of the three fans connectors and remove them from housing, then take the fans away.

- Clean the ventilation grid and the fan with a soft brush, a paint brush, a cloth, or compressed air.
- Reassembly the out fans into cabinet.
- Please use towel to clean the heatsink once a year.

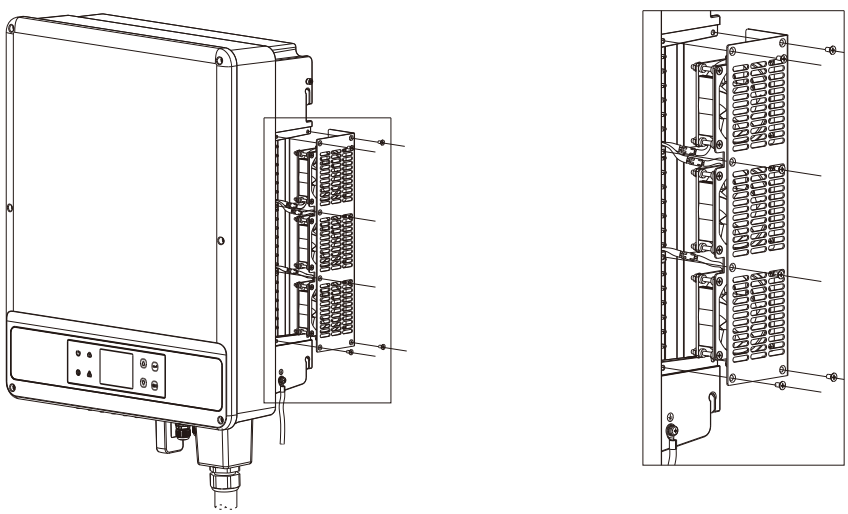


Figure 7.1-1

7.2 Checking The DC Switch

DC switch does not require any maintenance.

It is recommended, though not compulsory, to:

- Check the DC switch regularly.
- Activate the DC switch 10 times in a row once a year.

Operating the switch will clean the contacts and will extend the life of the DC switch.

Boot order:

1. Turn on the breaker on AC side.
2. Turn on the DC switch.
3. Turn on the breaker on DC side.

Caution: if there is no switch, operate from step1 to step 3.

shutdown order:

1. Turn off the breaker on AC side.
2. Turn off the DC switch.
3. Turn off the breaker on DC side.

Caution: if there is no switch, operate from step1 to step 3.

7.3 Checking The Electrical Connection

1. Check if the AC or DC wire is loose.
2. Check if the earth wire is reliable grounding.
3. Check if the waterproof covers of RS485 and USB port is fasten.
4. please use torque wrench to tighten the AC and battery terminal wiring connection once a year;Followed 3.3 torque instruction.

Caution: Maintenance cycle is once half a year.

8 Relevant Certification

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