Operation Manual For Three Phase

PV Grid Tie Inverter

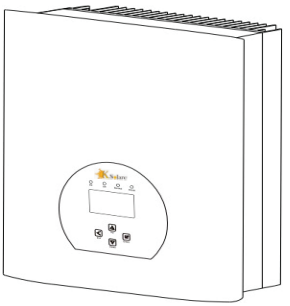
Single &Three Phase String Power Inverter

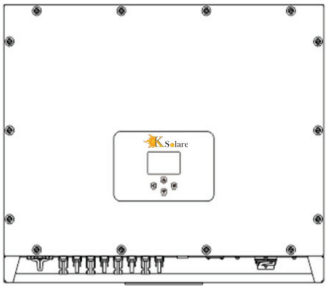
Single Phase

KSY-1KW, 1.5KW, 2KW, 2.2KW, 3KW, 3.2 KW,
4KW, 4.2KW, 5KW, 5.2KW, 6KW, 6.2KW.

Three Phase

KSY-4KW, 5KW, 6KW, 7KW, 8KW, 9KW, 10KW, 12KW, 15KW, 18KW, 20KW, 22KW,
25KW, 30KW, 33KW, 35KW, 40KW, 45KW, 50KW, 60KW 70KW, 80 KW.



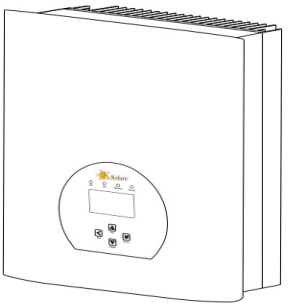


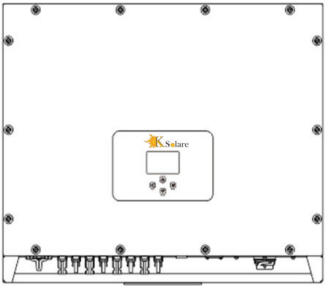
INDEX

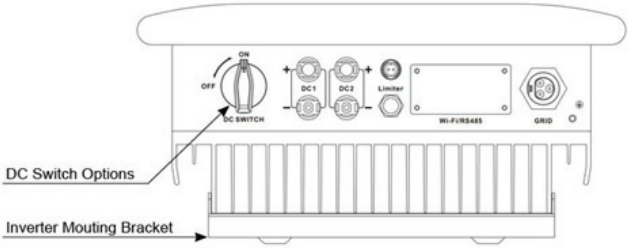
1 Introduction

1.1 Appearance for Three Phase Inverters 4KW-25KW

KSOLARE grid tie string inverter is the device which can convert DC power from the solar array into AC power and inject them into the utility grid. Please check the appearance below.

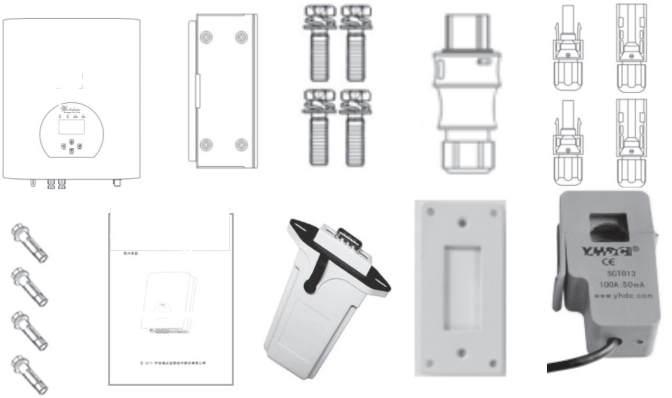






Accessories List

Please check and make sure all accessories are included after you received the package. The packing list including below things:

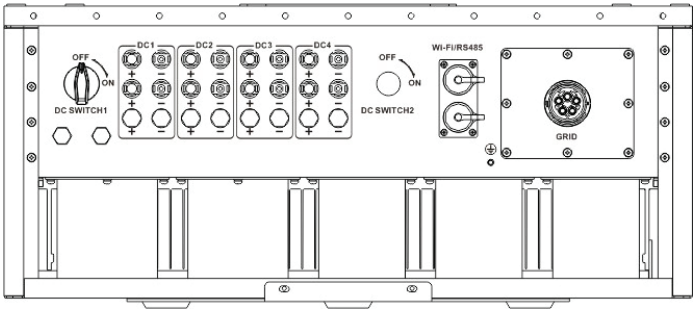


No.	Description	Qty
1	Inverter	1
2	Hanging panel	1
3	Installation screws M4*20 stainless steel	4
4	AC Connector	1
5	MC4 Connector	2 pairs
6	Expansion bolt M6*80	4
7	User Manual	1
8	Wifi-Plug（Optional）	1
9	Seal Panel	1
10	Current Sensor (Optional）	1

Table 1.1 Accessories

1.2 Appearance for Three PhaseInverter 30KW-80KW

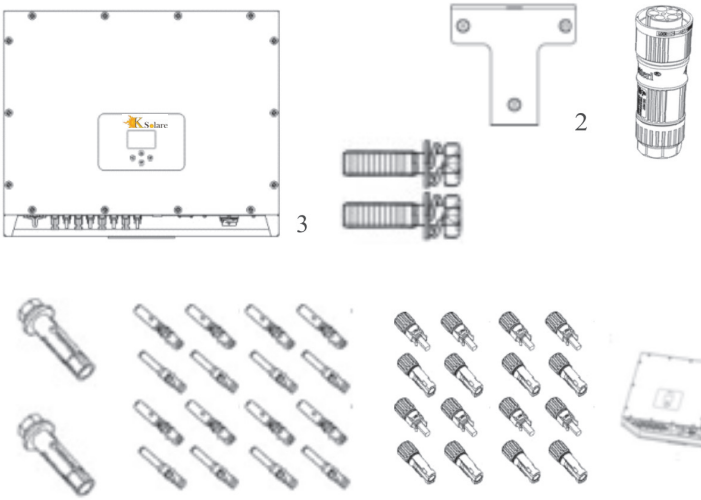
1.1 Front view



1.2 connector view

1.2 Parts list

Please check according to following table, to see whether all the parts were included in the packaging:



No	Description	Qty
1	PV grid tie Inverter	1
2	Wall mounting bracket	1
3	Installation screws M4*20	4
4	ac power connectors	1
5	expansion anchor bolt M6*80	4
6	DC power connectors	4pairs
7	instruction book	1

1.1 Parts list

1. Safety warnings andinstructions

Improper use of the inverter will cause electric shock and burn. During the installation and maintain. Please operate the unit in strict accordance with the user manual. Please read the user manual carefully before using the inverter. And please take care of the manual for afterwards use.

2.1. Safety signs

Warning

Safety warning——Indifference of the signs in the manual may cause injure or even death.

Shock Hazard

Shock warning sign Incorrect follow of this sign may get shocked

Safety Hint

Prudent operation——Incorrect follow of the safety operation hints in this manual may cause inverter defective.

High Temperature Hazard

Inverter's local temperature mayexceed 80℃ while under operating. Please do not touch the inverter case

2.2. Safety Guides

Warning

Electrical installation of the inverter must conform to the safety operation rules of the country or local area.

Warning

Electrical installation of the inverter must conform to the safety operation rules of the country or local area.

Warning

Inverter is non-isolated topology structure, hence must insure dc input and ac output are electrical isolated before operating the inverter. Strictly prohibit grinding the input positive and negative. Otherwise it will cause inverter malfunction.

Shock Hazard

Prohibit disassembling inverter case, existing shock hazard, because severe injury or death, please ask qualified person to maintenance.

Shock Hazard

When solar array expose to Ksolare-KSY shine, will create dc voltage on its output, prohibit touching, existing shock hazard.

Shock Hazard

While disconnect the input and output of the inverter for maintenance, please at least wait 5 mins until the Inverter discharge the remnant electricity.

2.3. Notes for using

The KSOLARE-KSY -15K three phase inverter which manufactured by Ksolare is designed and tested under related safety regulations. But as a electric device, It may cause shock or injury by incorrect operation. Please must operate the unit under below requirements:

1 Inverter should be installed and maintained by qualified person under local standard regulations.

2 Must disconnect the ac side first, then disconnect dc side while doing installation and maintenance, after disconnecting, please at least wait 5 minutes to avoid shock.

3 Local temperature of the inverter may exceed 80℃ while under operating. Do not touch, avoid injury.

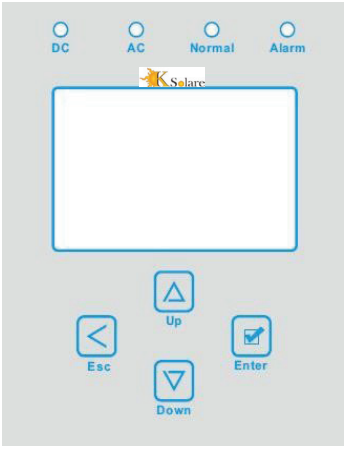
4 All electrical installation must according with local electrical standards, And achieved permission of local power company.

5 Please take appropriate anti-static measure.

6 Please install where children can not touch.

3. Operation Interface

3.1 Interface View



V3.1 Interface View

Interface View

Status Indictor

The inverter panel has 4 indictors, the left one is dc output indictor, green indicate normal dc input. Beside is the AC indicator, green indicating normal ac connecting. Beside the AC indicator is the operating indicator, green indicating normal output. The right indicator is alarm. red indicates alarming.

Indicator	Status	Explanation
● DC	on	Inverter detected input
	off	DC low voltage
● AC	on	Grid Connected
	off	Grid Unavailable
● NORMAL	on	Under normal operating
	off	Stop operating
● ALARM	on	Detected faults or report faults
	off	Under normal operating

3.3 Buttons

There are four buttons on the inverter panel Above is Up and increase button UP, Below is down and decrease button DOWN Left is ESC button. ESC Right is Enter button ENTER Can achieve below functions by the four buttons Page Scroll Use UP and DOWN Button Modify adjustable parameters Use ESC and ENTER button

3.4 LCD Display

Display below content Inverter operation status and information
Operating information
Warning massage and malfunctiondisplay.

4 Product installation

4.1 Select installationlocation

After you received the inverter and prepare to install it, please select a suitable location, should consider below factors:
Ventilation—must ensure the air ventilation of the installation location; improper installation may cause overheating and affect the working efficiency and lifespan.
Sun shade — Expose the inverter under Sun shine will cause it over heating and effect the working efficiency.
Shelter for rain and snow—Even though the inverter is IP65 water proof. We still recommend install the inverter at the ventilated place where there is shelter for rain and snow. It can help extend the lifespan of the inverter.

4.1 The place recommended

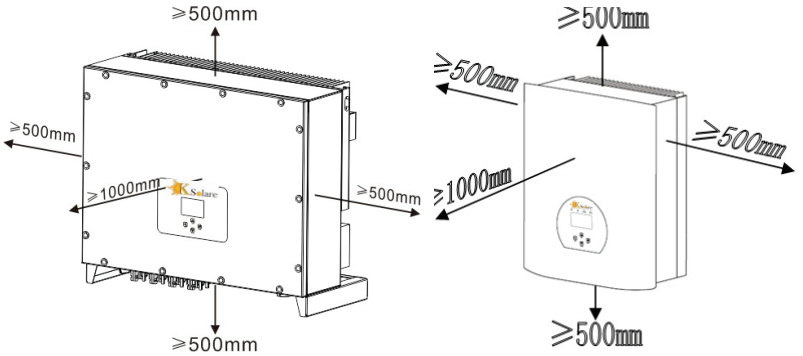
Please select the wall with certain bearingcapacity.

When do the installation, vertical slope cannot exceed +/-15° Make sure no lateral tilt Otherwise will affect the function of the heat sink. Cause the output power lower thanexpected.
If install more than one inverter, must leave at least 500mm gap between each inverter. And each inverter must leave at least 500mm from aboveand
below. And must install the inverter at the place where children can not touch.

- Consider whether the installation environment is helpful to see the inverter LCD display and indicator status.
- Must offer a ventilate environment if inverter installed in the airtighthouse.

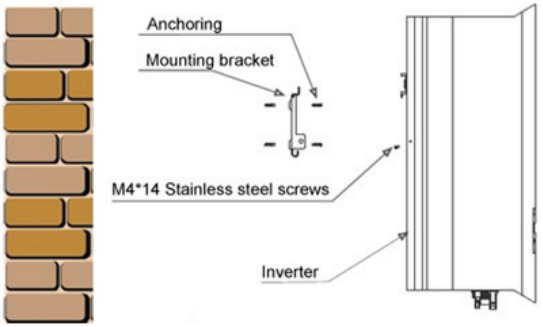
Safety Hint

Do not place or store any items next to the inverter



Pic 4.2 Installation gaps

4.21 Inverter Installation for Inverters 4kw to 25KW
The inverter is designed according to the wall mounted type installation, please use the wall mounted (the brick wall of the expansion bolt) .



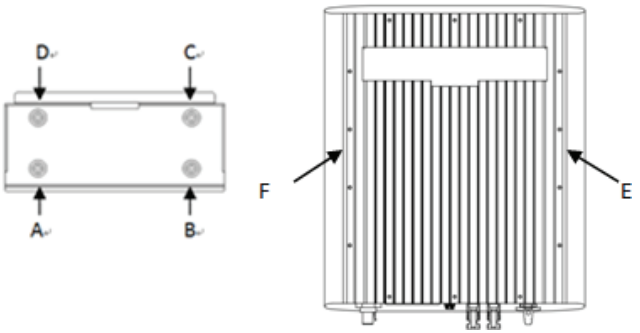
Pic 4.3 Installation

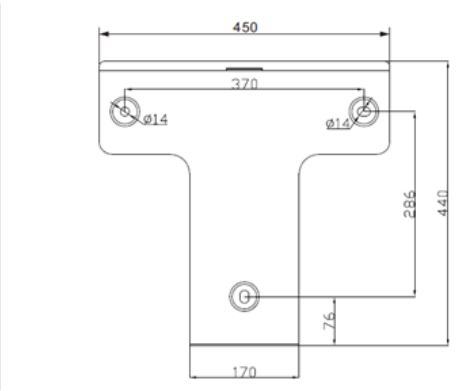
Inverter should vertically installed, asshownin pic 4.3 Install procedure showbelow:

1 Position the bolts on the appropriate wall according to the bolt positions on the mounting shelves and mark the holes. On the brick wall, the installation must be suitable for the expansion boltinstallation.

2 Ensure that the position of the installation holes on the wall (A, B, C, D) are the same position of the install plate (figure 4.3), and the mounting level isguaranteed.

3 Hang the inverter to the top of the mounting rack and then use the M4 screw in the accessory to lock E and F (figure 4.3) to ensure that the inverter does notmove.





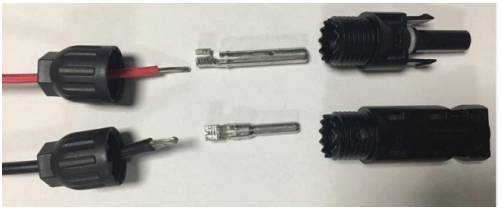
4.3Mouting bracket dimensions

1 The inverter should be mounted in a vertical position. The steps of mounting are as follows For brick walls, the position of the holes should be suitable for the expansionbolts.
2 Make sure the bracket is horizontal and the mounting holes are in the correct points. Drilling the holes on the wall according themarks
3 Using the expansion bolts to fix the bracket to thewall Electrical Connections

5.1 DC inputconnection

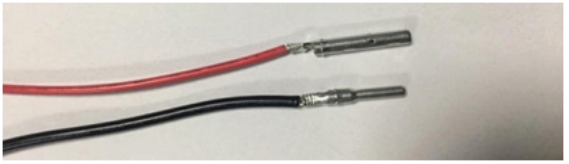
1 Switch ACoff
2 Switch DCoff
3 Connect the inverter to the grid

The steps of assembling the DC connector are listed as follows
1 Strip off the DC wire about 7mm, disassemble the connector cap nut (see figure 5.3)



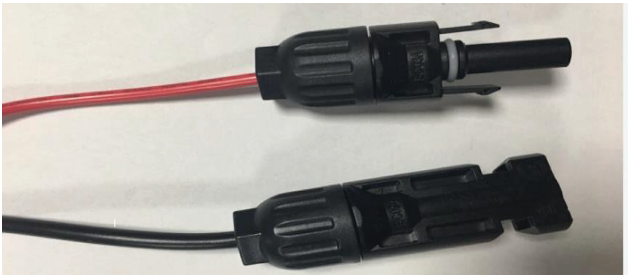
5.3 Disassemble the connector cap nut

2 Crimp the contact pin to the wire using a proper wire crimp tool as shown in 5.14



5.4 Crimp the contact pin to the wire

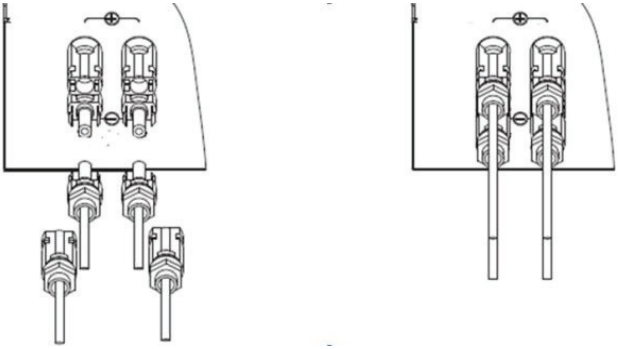
3 Insertthecontactpinintotheconnectorhousinguntilitlocksinplace. Screwthe cap nut onto the connector housing. Torque to 2.5-3Nm(as shown in figure5.5)



5.5 connector with cap nut screwed on

Cable type	Traverse area mm²		Outside diameter of cable mm
	Range	Recommended value	
Industry generic PV cable model;PV1-F	4.0-6.0 (12-10AWG)	4.0(12AWG)	5.5-9.0

d). Connect the finished DC cable to the inverter.



NOTE: Panels will generate high voltage, after series connection can lead to life-threatening conditions. So the solar panel needs to be covered with opaque material before connect DC input line and ensure that the DC switch is 'OFF', otherwise, the high voltage of the inverter may lead to life-threatening conditions.

5.2 AC inputconnection

5.2 Connection of AC connectors for 4KW to 25 KW Inverters

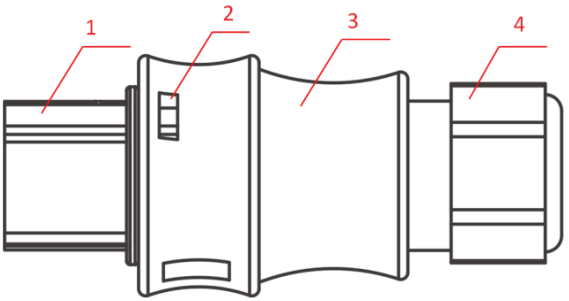
After DC are connected, please do not switch on the dc breaker, Do connect the AC,The AC side equipped with Three phase terminal of the original plant.Very convenient for connection.In order for easier connection, we recommend soft cables, cable details and suitable breakers please check in table 5.1.

Warning

SIt is forbidden to use a circuit breaker for multiple inverters, and it is forbidden to load between inverters and circuit breakers.

Item parameter	2.5mm^2	6 mm^2	15-18mm^2	10^2
Applicable model	KSOLARE-KSY			
Applicable Breaker	30A/400V			
Maximum ACcable	Outdoor cable(2+PE)Length 20m			

Table 5.1 Cable Parameter Table



The acoutput socket,
sleeve and sealing sleeve, as shown in Picture 5.4, The steps are asfollows:

Step 1 screw the cable sealing ring and sleeve in sequence from theac connector.

Step 2 use strippers to strip the protective sheath and insulation layerof the ac cable to the right length.

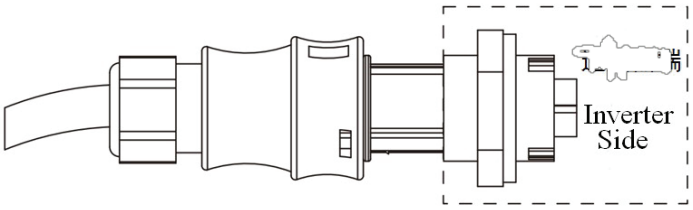
Warning

Be careful to distinguish the L, N and PE of the ac cables connect the cable (L, N, PE) into the sealing sleeve andsleeve.

Step 4: use the hexagon screwdriver, loosen the bolts of the socket inturn, and insert each cable core into the corresponding jack, and set eachscrew.

Step 5:Fix the sleeve and seal to their respective positions.

Step 6: Connect the ac terminals to the inverter as shown in figure 5.5.When you hear the “click” sound, it indicates a reliableconnection.



Pic 5.5 AC connection diagram

5.3 Other Connections

Good grounding is important for resist the surge voltage shock. improving EMI's performance, So before the connection of AC, DC, communicationconnections,need to ground first. For a singlesystem, just ground the PE cable; For multiple machine systems, all PEcables of the inverter need to be connected to the same grounding copperplatoon to ensure the equipotential connection.

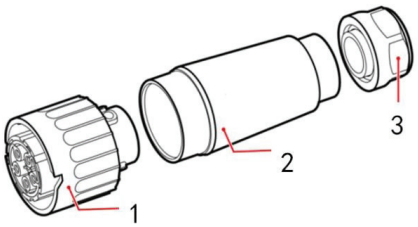
Safety Hint

Inverter has built - in leakage current detection circuit, ife external connect leakage current protection device, the Current action must be greater than 300mA or higher, other wise inverter may not work properly

5.2.1 15KW -35KW AC input connection

After the DC terminal is connected, do not close the DC switch first. Connect the AC terminal to the AC terminal of the inverter, the AC terminal is equipped with three-phase AC terminals that can be conveniently connected. Flexible cords are recommended for ease of installation. The specifications are as shown in table 5.1(example)

Cable diameter		Copper core cable	Aluminum Alloy cable
Cable CSA mm²	Range	10-16	20-30
	Recommended	16	30
Cable outer diameter mm	Range	20-30	
	Recommended	25	



1 Matching socket 2.Sleeve 3.Sealing sleeve

5.7 AC connector structure for 15 KW to 35 KW Inverter

The ac output connector is divided into three parts: matching socket, sleeve and sealing sleeve, as shown in Picture 5.7, The steps are as follows:

Step 1 Remove the cable sealing ring and sleeve in sequence from the ac connector.

Step 2 use strippers to strip the protective sheath and insulation layer of the ac cable to the right length, as shown in Picture 5.8

5.8 Strip ACcable

Warning

Be careful to distinguish the L1, L2, L3 and PE of the AC cables. The KSOLARE-KSY -(30K -80K)doesn't involve N lines.

Step 3: connect the cable (L1, L2, L3, PE) into the sealing sleeve and sleeve.

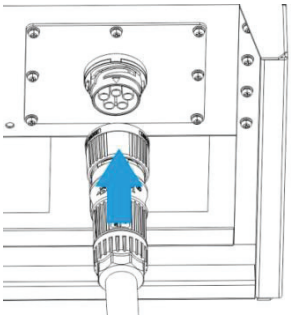
Step 4 use the hexagon screwdriver, loosen the bolts of the socket in turn, and insert each cable core into the corresponding jack, and set each screw. The connection hole of AC connection terminal labeling is shown in Picture 5.9.

Safety Hint

The ac cable line L1 is connected to socket 1; L2 is connected to socket 2; L3 is connected to socket 3, the PE line is connected to the earth .

Step 5 set the sleeve and sealing ring in place

Step 6 connects the terminals to the inverter as shown in picture 5.10



5.10 AC connectiondiagram

5.2.2 40KW -80KW AC terminalconnection

AC connection can use 16-25mm², 105°Ccable, please make sure the resistance of cable is lower than 1.5ohm. If the cable is longer than 20m, it's recommended to use 20-25mm² cables.

Warning :

Be careful to distinguish the L1, L2, L3 and PE of the ac cables. The KSOLARE-KSY series doesn't involve N lines. The ground wire is connected by the connection hole on the right side of the inverter.

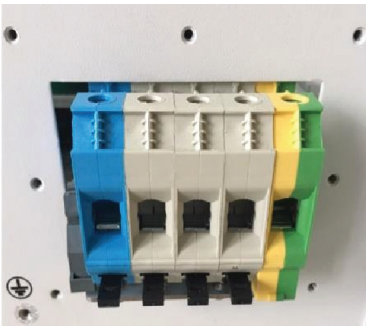
Cable specifications		Copper core cable	Copper clad aluminum/alumin um alloy cable
Conductor cross-sectional area mm²	range	16-25	25-35
	Recommended number	25	35
Cable outside diameter mm	Range	22-32	
	Recommended	27	

AC wire production method is the same as that of 5.2.1.
AC wire installation method:

1) Remove the 8 fixing screws on the AC junction box of the inverter as shownin

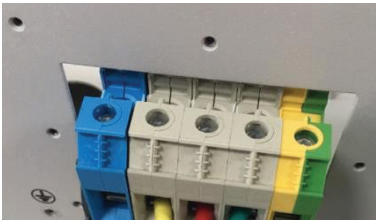
Pic 5.11. After removing the junction box, you can see the terminals of the inverter. The default is 5 digits as shown in Pic 5.12.

5.11 AC junction box

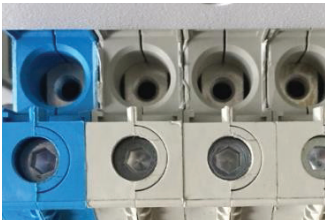


5.12 AC terminal

2) Connect the cable through the junction box, waterproof jacket, and insert into the terminal (The picture shows the connection mode of three phase lines connected to the junction box, ground wire screwed on the inverter shell) Pic5.13,and use hexagon screwdriver to presses the wiring harness to the connect terminal as shown in Pic5.14.



5.13 AC cable connected totheterminal



5.14 tightening the AC connectioncable

3 Screw the AC connection cover back to the shell and tighten all the screws to tighten the waterproof protection connector, as shown in Pic5.15

5.16 Tighten the AC junction box

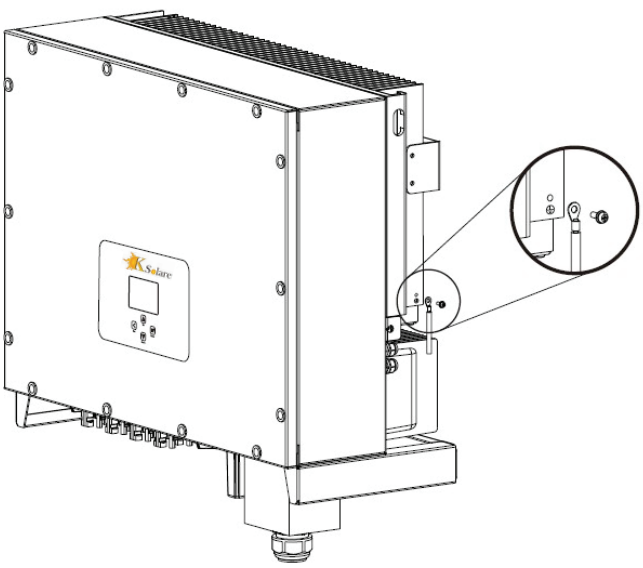
Recommended current protector specifications

Inverter	Rated voltage	Rated output power KW	Current protection device A
KSOLARE-KSY -25K	380	25	50
KSOLARE-KSY -	380	33	60
KSOLARE-KSY -35K	380	35	60
KSOLARE-KSY - 40K	380	40	70
KSOLARE-KSY -50K	380	50	80
KSOLARE-KSY - 60/70/80KW	380	60/70/80	90/105/120

5.3 Other connections

5.3.1 The connection of the ground line

Good grounded is important for resist the surge voltage shock. improving EMI's performance, So before the connection of AC, DC, communication connections, need to ground first. For a single system, just ground the PE cable; For multiple machine systems, all PE cables of the inverter need to be connected to the same grounding copper platoon to ensure the equipotent connection. The installation of the shell ground wire is shown as figure 5.16.



5.16 The installation of the shell ground wire

Warning

Inverter has built-in leakage current detection circuit, if the external connect leakage current protection device, the current action must be greater than 300mA or higher, otherwise inverter may not work properly.

6. 3. Startup and Shutdown

Before start the inverter need to ensure that meet the following conditions, otherwise may cause fire or damage to the inverter without quality assurance at the same time the situation on our company does not undertake any responsibility. At the same time, to optimize the system configuration, it is recommended that the two inputs be connected to the same number of photovoltaic modules.

a) The maximum open voltage of each set of photovoltaic modules shall not exceed 1000VDC under anyconditions.
b) Each input of the inverter must use the same type of photovoltaic module inseries.
c) Total output power of pv shall not exceed the maximum input power of inverter, each photovoltaic modules shall not exceed the rated power of each channel.
d) The short circuit current of each series of photovoltaic modules cannot be greater than 18A at anytime

6.1 Start up the inverter

When start up the KSOLARE-KSY series Inverters, should follow below steps

1) First switch on the ACbreaker.
2) Turn on the dc switch of the photovoltaic module, and if the panel provides sufficient starting voltage and power, the inverter will start.
3) When the ac voltage and dc voltage are normal, the inverter start-up is ready to begin. The inverter will first check the internal parameters and the grid parameters, while the LCD will show that the inverter is self-checking.
4) If the parameter is within acceptable range, the inverter will generate the normal grid. NORMAL indicator light ison.

6.2 Inverter Shutdown

Must follow below steps while Shutting down the KSOLARE-KSY:

1) Switch off the ACbreaker.
2) Wait for 30 seconds, turn off the dc switch (if any), or simply disconnect the dc input connector. The inverter will close the LCD and all LED,s within two minutes.

7 Repair andMaintenance

KSOLARE-KSY - string type inverter don't need to carry out regular maintenance. However, debris or dust will affects radiator cooling performance. Therefore, it can be clean with a soft brush. If the surface of the inverter is too dirty, affect the reading LCD and LED lamp, can use wet cloth to clean up.

Warning

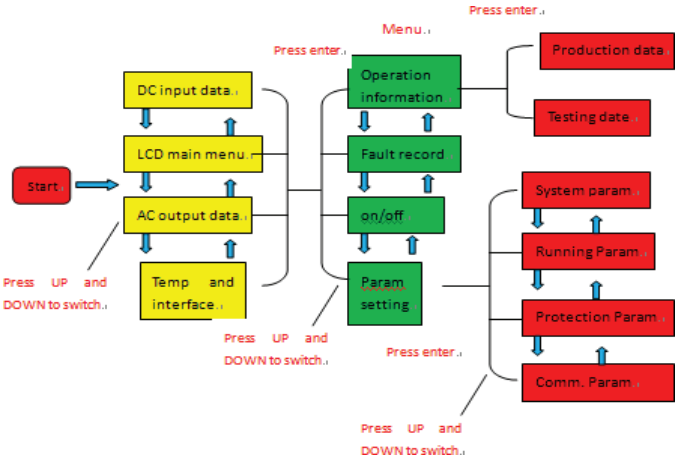
when the device is running, the local temperature is too high and the touch can cause burns. Turn off the inverter and wait for it to cool and then clean and maintain.

Warning

When cleaning any part of the inverter, no solvent, abrasive materials or corrosive materials shall be used for cleaning.

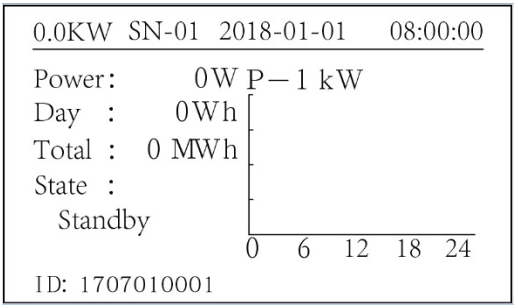
8. General Operation

During normal operation, the LCD shows the current statusof the inverter, including the current power, total generation, a bar chart of power operation and inverter ID, etc. Press the Up key and the Down key to see the current DC voltage, DC current, AC voltage, AC current, inverter radiator temperature, software version number and Wifi connection state of the inverter.



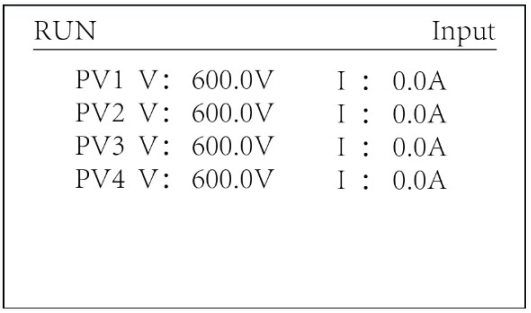
8.1 The initial interface

From the initial interface, you can check power, day power, total power, inverter ID , model and time



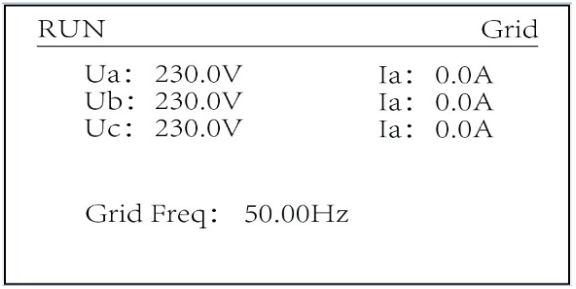
8.1 The initial interface

Press UP or Down you can check inverter DC voltage, DC current, AC voltage, AC current, inverter temperature, software version information.



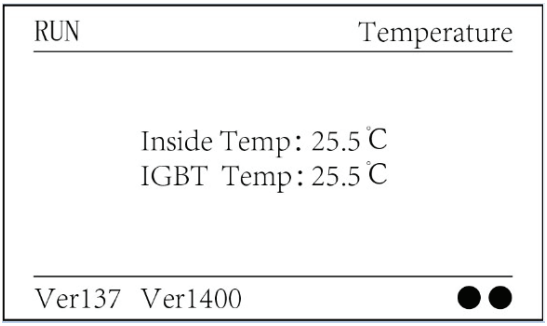
8.2 PV input and DC current information

You can check the PV information, the number of strings input, MPPT voltage and MPPT current.



8.3 AC running state information

You can check the three phase voltage, current, and grid currency

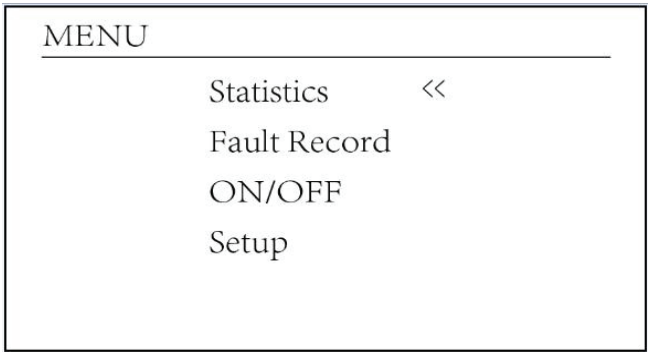


8.4 Temperature and software version

You can check the inverter inside temp, LCD software Ver137 and inverter software Ver1400. There are two black spot in the bottom right corner. The first flash means inverter is communicating with LCD. The second flash means LCD is communicating with Wifiplug.

8.1.1 Main Menu

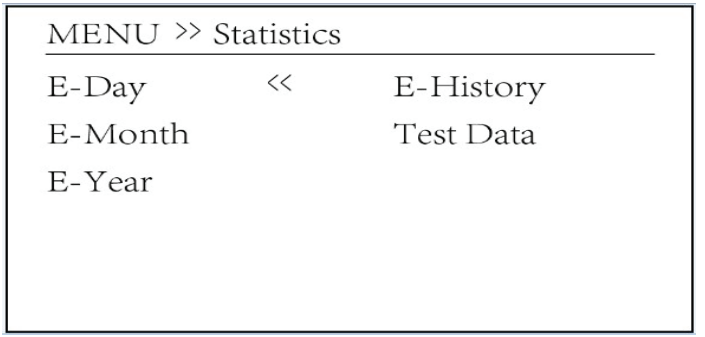
There are four submenu in the Main Menu



8.5 . Main Menu

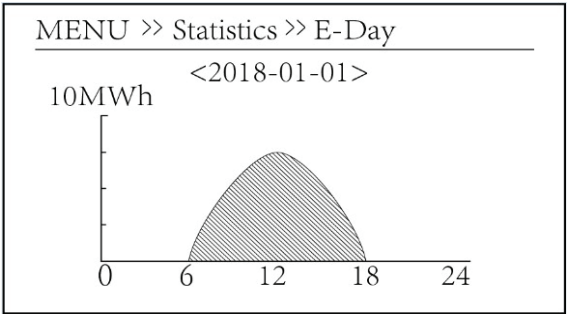
8.2 Statistics information

There are five submenu in the statistics

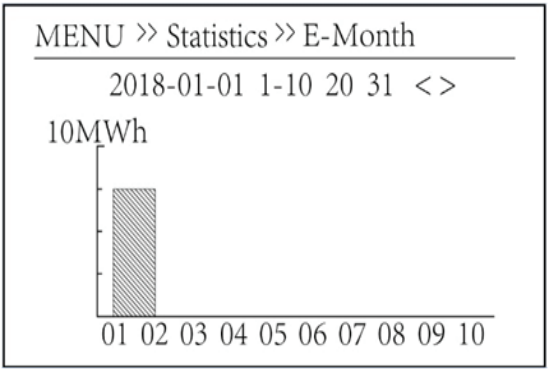


8.6 Statistics

Into each submenu through cursor

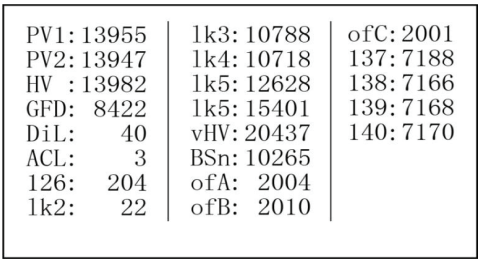


8.7 E-Day



8.8 E - Month

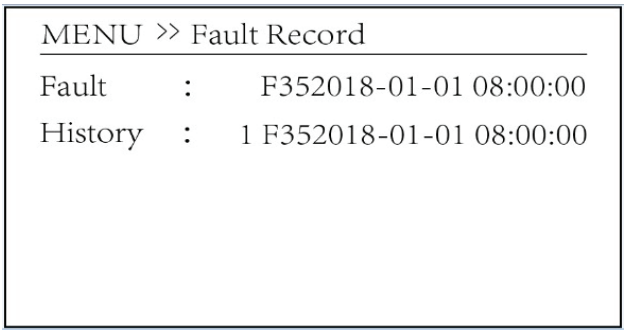
This information is fortechnician's reference



8.9 Information

8.3 Fault Record

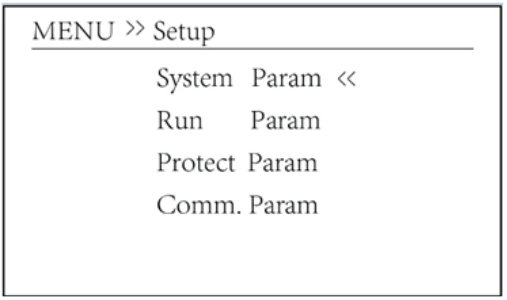
Only can keep four fault records in the menu include time, customer can deal with it depends on the error code



8.10 Fault Record

8.4 Parameter setting

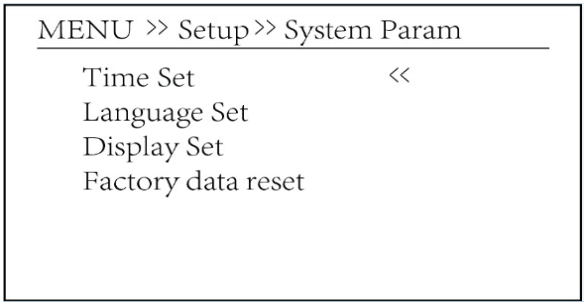
Setting include system param, run param, protect param, comm.. param. All of these information for maintenance reference



8.11 Setting

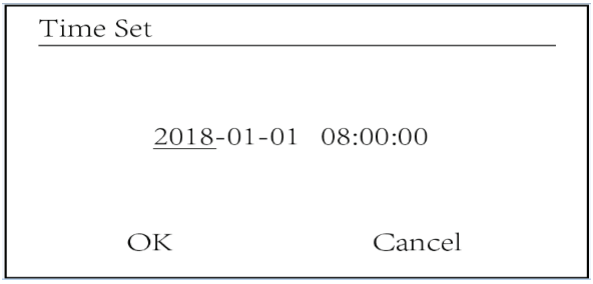
8.4.1 System Parameter

System Parameter includes time set, language set, display set and factory date reset



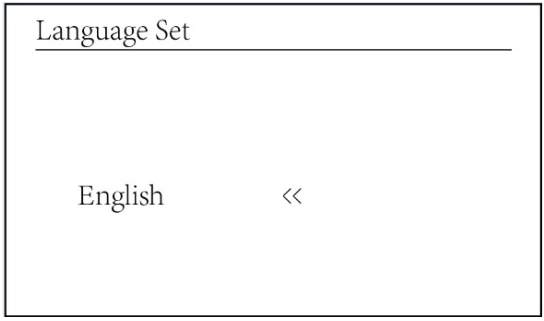
8.12 System Param

8.4.1.2 Time set



8.13 Time Set

8.4.1.3 Language Set

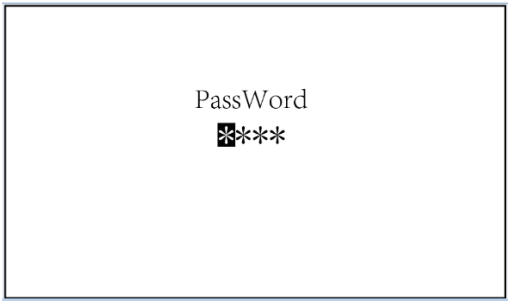


8.14 Language set

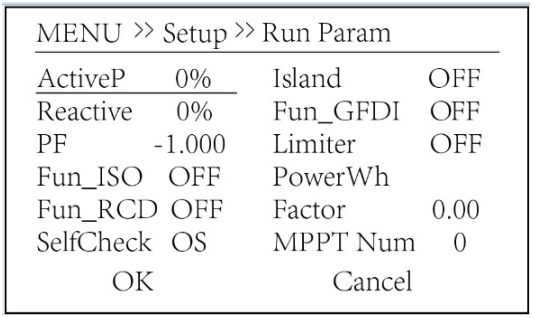
8.4.2 Running Parameter

Note :

Password required-restricted access-authorized technicians only. Un-authorized access may avoid the warranty. The initial password is 1234



8.15 Password

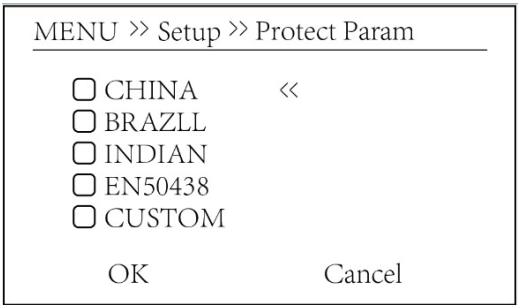


8.16 Running Parameter

8.4.3 Protect Parameter

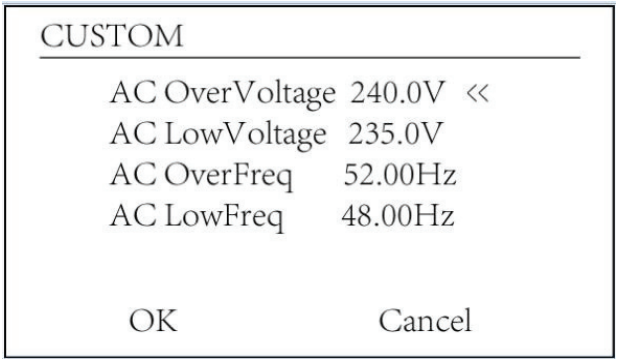
Note :

Technicians only. We will set the param depends on the safety requirements, so customers don't need to reset it. The password is same as 8.4.2 Running param.



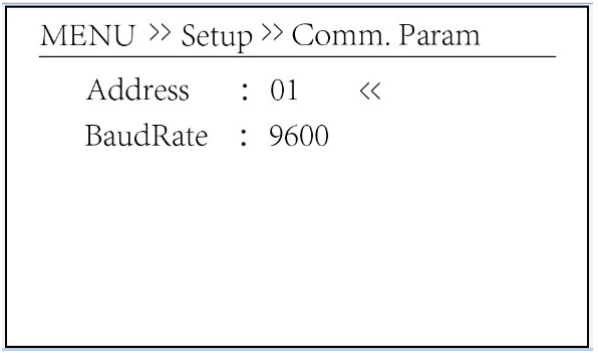
8.17 Protect Parameter

Note :
Technicians only.



8.18 “CUSTOM”

8.4.4 Comm. Parameter



8.19 Communication parameters

9. Troubleshooting

Ksolare Inverters has been designed in accordance with international grid tied standards for safety, and electromagnetic compatibility requirements. Before delivering to the customer the inverter has been subjected to several tests to ensure its optimal operation andreliability.

In the case of failure the LCD screen will display an alarm message. In this case the inverter may stop feeding energy into the grid. The alarm description and their corresponding alarm messages are listed Table 7.1

Error code	Description
F01	DC input polarity reverse fault
F02	DC insulation impedance permanent fault
F03	DC leakage current fault
F04	Ground fault GFDI(battery and grounding)
F05	Read the memory error
F06	Write the memory error
F07	GFDI blown fuse
F08	GFDI grounding touch failure
F09	IGBT damaged by excessive drop voltage
F10	Auxiliary switch power supply failure
F11	Ac main contactor errors
F12	Ac auxiliary contactor errors
F13	reserved
F14	DC firmware over current
F15	AC firmware over current
F16	GFCI(RCD) Ac leakage current fault
F17	Three phase current, over-current fault
F18	AC over current fault of hardware
F19	All hardware failure synthesis
F20	DC over current fault of the hardware
F21	Dc leakage flow fault
F22	Crash stop (if there is a stop button)
F23	Ac leakage current is transient over current
F24	Dc insulation impedance failure
F25	Dc reverse irrigation failure
F26	The dc busbar is unbalanced
F27	Dc end insulation error
F28	Inverter 1 dc high fault
F29	Ac load switch failure
F30	Ac main contactor failure
F31	Ac secondary contactor failure
F32	Inverter 2 dc high fault

F33	AC over current
F34	AC current over load
F35	No AC grid
F36	AC grid phase error
F37	Ac three-phase voltage imbalance failure
F38	Ac three-phase current imbalance failure
F39	AC over current
F40	DC over current
F41	AC Line W,U over voltage
F42	AC Line W,U low voltage
F43	AC Line V,W over voltage
F44	AC Line V,W low voltage
F45	AC Line U,V over voltage
F46	AC Line U,V low voltage
F47	AC Over frequency
F48	AC lower frequency
F49	U phase grid current dc over current
F50	V phase grid current dc over current
F51	W phase grid current dc over current
F52	AC inductor A, phase current dc current high
F53	AC inductor B, phase current dc current high
F54	AC inductor C, phase current dc current high
F55	dc busbar voltage is too high
F56	dc busbar voltage is too low
F57	AC reverse irrigation
F58	AC grid U over current
F59	AC grid V over current
F60	AC grid W over current
F61	Reactor A phase over current
F62	Reactor B phase over current
F63	Reactor C phase over current
F64	IGBT heat sink high temperature

9.1 Toubleshooting

F41-F48	Check AC connection
F35	Check grid voltage
F37,F38	Check grid voltage and reset inverter
F55,F56	Check PV string voltage
F26	Reset inverter or contact distributor
F14,F15	Reset inverter or contact distributor
F21,F23	Check PV string or AC connection
F39,F40	Check if voltage is too high
F64	Check inverter ambient condition
Communication failure	Reset inverter
Other error code	Reset inverter or contact distributor

9.2 Troubleshooting

Note :

When you reset the machine and still don't solve the problem, please contact our distributor and provide the below details

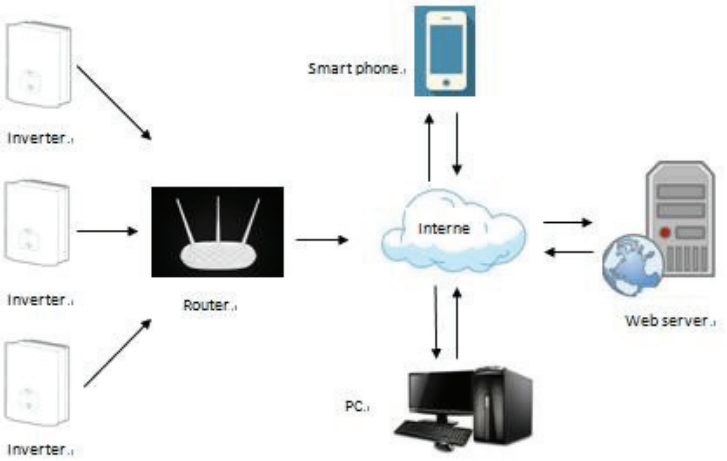
1. Serial number of the inverter
2. The distributor / dealer of the inverter if available
3. Installation date
4. The description of problem include LCD's error code and LED status indicator lights
5. Your contact details

10 Technical specification for Three Phase Inverter

	KSOLARE THREE PHASE INVERTERS - 5KW TO 25KW											KSOLARE THREE PHASE INVERTERS - 30KW TO 80KW							
Model	**KSY-5KW**	**KSY-6KW**	**KSY-7KW**	**KSY-8KW**	**KSY-9KW**	**KSY-10KW**	**KSY-12KW**	**KSY-15KW**	**KSY-18KW**	**KSY-20KW**	**KSY-25KW**	**KSY-30KW**	**KSY-33KW**	**KSY-35KW**	**KSY-40KW**	**KSY-50KW**	**KSY-60KW**	**KSY-70KW**	**KSY-80KW**
Input (DC)																			
Max. DC I/P Power (KW)	6	7	8	9	10	12	13.2	17.5	20	22	28	33	36	38.5	44	55	66	81.5	82.5
Max. DC I/P (V dc)	1000V DC																		
Max. MPPT I/P Current(A)	20 A											28.5 A.							
MPPT Short Circuit Current(A)	26 Amps.											37 Amps.							
MPPT Tracking Voltage(Vdc)	200-1000V																		
Min. Start/Shut down (V)	250VDC/150VDC(Low) & 1000VDC(High)																		
Number of MPPT Tracker	1/2							2				2		2/3/4					
strings per MPPT Trackers	2							2				3		3					
Output (AC)																			
Nominal output power (KW)	5	6	7	8	9	10	12	15	18	20	25	30	33	35	40	50	60	70	80
Max output power (KW)	5.5	6.6	7.7	8.8	9.9	11	12.5	16.5	19	21	26	32	36	38.5	42	52	66	77	82.5
Nominal Grid Voltage (V)	320-470V User Defined																		
Nominal Grid freq.(Hz)	47-55 HZ Auto Selected																		
Max. output current AC(A)	8	9	10	11	13.5	15	18	22	27	29	36	43	47.8	51	58	72.4	91	100	114
AC Connection (With PE)	3P + N + E																		
THD (%)	<2.3%																		
Power factor(%)	>99.99% (User Defined from 0.85 to 0.99)																		
Efficiency																			
Max. conversion eff. (%)	98.5	98.6	98.6	98.7	98.7	98.8	98.7	99	99	98.7	98.7	98.6	98.7	98.7	98.6	98.6	98.9	98.9	98.9
Max. Euro Efficiency(%)	98	98.1	98.2	98.3	98.3	98.3	98.4	98.5	98.5	98.2	98.2	98.2	98.2	98.2	98.1	98.2	98.2	98.2	98.2
Max. MPPT Efficiency (%)																			
Standards, Safety & Protections																			
Protection & Safety	DC Reverse Polarity, DC High / Low /Over Current Protection, DC / AC Side SPD, Thermal Protection, GDT, Static ELCB / RCCB, User Defined Grid Monitoring Setting & Anti Islanding.																		
SPD	TYPE-3 SPD														TYPE -2 & TYPE- 3 SPD				
MPPT Efficiency	EN50530																		
Inverter Efficiency	IEC61685																		
Protection Class	1(According to IEC -62103)																		
Over Voltage Category	PVII/MAINS II(According to IEC -62109-1)																		
Safety Standard	IEC 62109-1&2																		
EMC Standard	IEC 61000-6-1/2/3/4																		
Emnvironment Protection	IEC 60068-2-1/2/14/15																		
Product Safety for Relay	IEC 60255-27:2013																		
Anti-Islanding	IEC-62116																		
Ingress Protection	IP 65 (Accordance to IEC 60529)																		
Physical Parameters																			
Dimensions(WXHXD) mm	385*490*180							430*600*220				500*700*310							
Weight (Kg)	26							30				52	57	60	60	62	65	68	70
General Data																			
Operating Temperature	MINUS 25 TO PLUS 60 DEGREE																		
Design Life	OVER 25 YEARS																		
Night Con. (W)/Noise Level	<0.2/<25dB																		
Heat Dissipation	Natural Convection											Forced Cooling + Natural Convection							
RH/Max. Altitude	0% to 98%. No condensation/<2000 without power derating																		
Display	LED with LCD Display																		
DC /AC Connectors	MC-4/IP 65 PLUG														MC4/H4				
Communication Interface	RS 485/RS 232/HOTSPOT/WIFI/GPRS/ETHERNET LAN																		
Standard Warranty	5 YEARS/10 YEARS (For Selected Model)																		

11 Inverter monitoring connection

Ksolare KSY series inverter has the function of wireless remote monitoring inverter. The inverter has Wifi function and Wifi Plug in the accessories are used to realize the connection between the inverter and the network.The operation, installation, networking, APP download are detailed in the WIFI PLUG instructions. Figure 5.12 is the Internet monitoring solution.

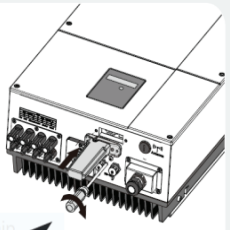


5.12 Internet monitoring solution

Wi-Fi Plug
Quick Installation Guideline

1. Installing

1.1 Use RS-232 able to connect the Wi-Fi Plug and the equipment. And use RS-232 cable or adaptor to supply power. The PWR light will be blue when it works



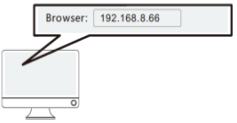
2. Network Setting

Note: Please use computer with wireless network adapter or APP "SmartLink" (download from website) to set the network parameters

2.1 Connect Wi-Fi Plug using Wi-Fi
Access : PN of Wi-Fi Plug
Password: 12345678

2.2 Visit setting page of Wi-Fi Plug
IP address: 192.168.8.66
User name: admin
Password: admin

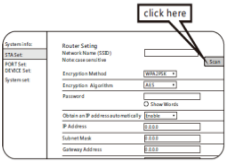
Note: Please don't refresh the web frequently and use the web browser under version IE9.0



2.3 Set network parameters

Click on"STA set" →Click on "Scan" to search APs → Select the right AP → Fill in the Password → Click on"Save" → Restart to be effective

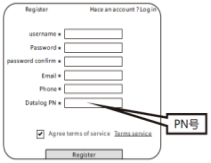
Note: Please make sure the Router has connected to internet



3. Registering

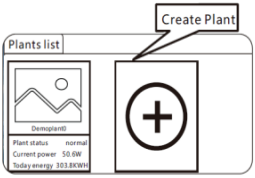
3.1 Register account

Enter(**http://ksolare.shinemonitor.com**)in the web browser, and click on Register to fill in details



3.2 Create Plant

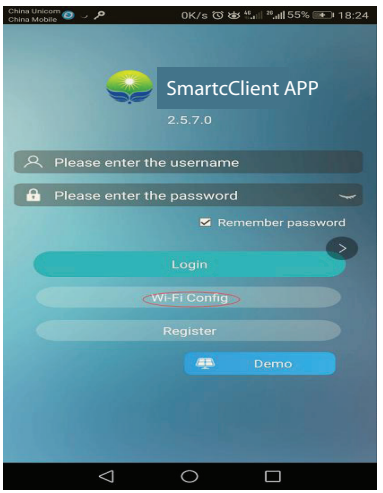
Click on the "+" in the home page to create a new plant and fill in the related information

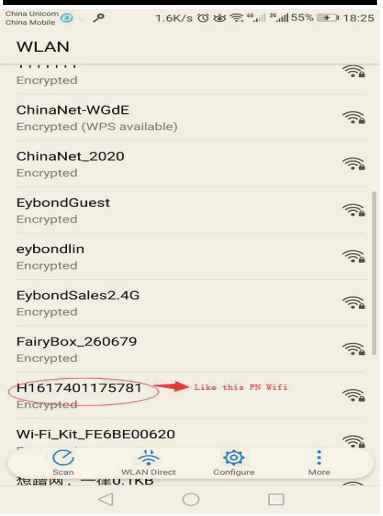


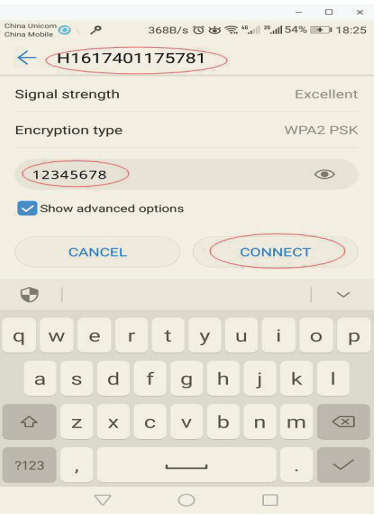
11.3 Wi-Fi + Hotspot

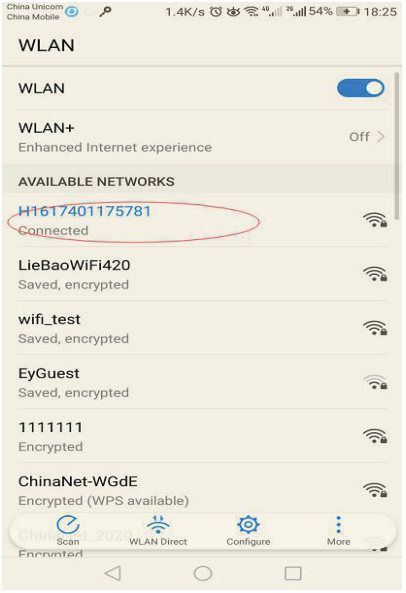
1. 2. 4 WiFi Network setting.

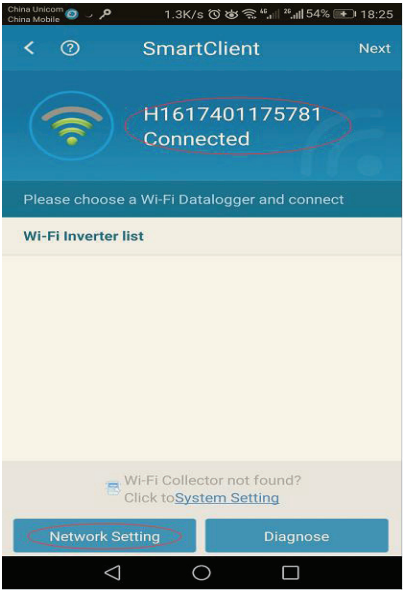
Firstly, download the SmartcClient APP, click **Wifi config**, then click the **System setting**—and then find the Wifi named PN code—enter password 12345678 for the Wifi named PN code, then click **Connect**, then back to the main page, next, click **Network setting,** then enter the name of your Wifi signal and the password (you must enter the password again there) then click **Setting,** then wait for about 30 seconds, then click **Diagnose,** if no red mark on the page, congratulations， you set the connection between the WiFi RTU and your local Wifi signal successfully. Then you need to back to the login page and click **Register,** enter the info you need to fill out, then click the **Register** of this page. Finally, you can log in with your username and password, check the below pictures for more details.

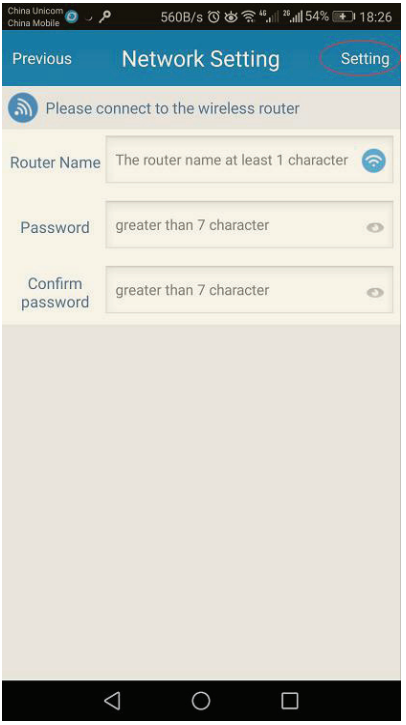




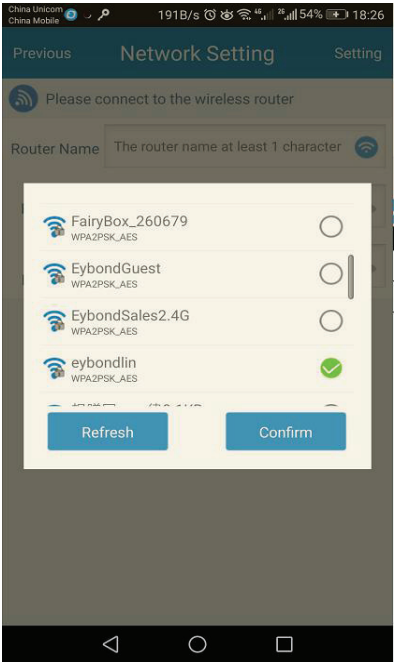


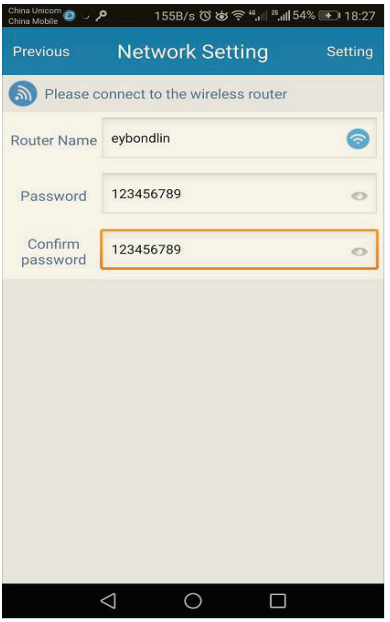


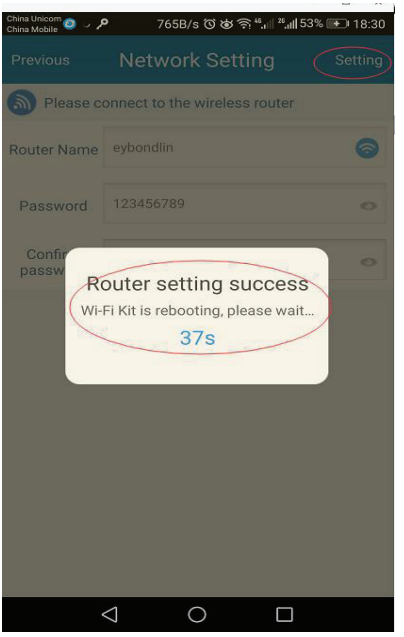




For example, Choose one of our local wifi signal.

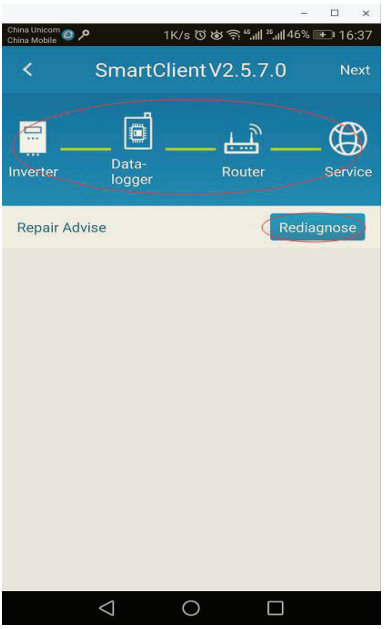


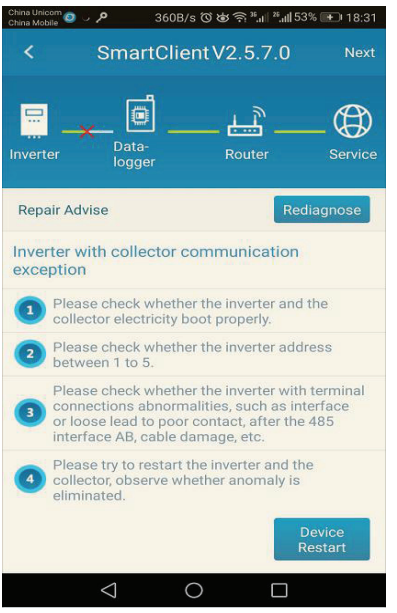




Below picture is normal display

Below picture is abnormal display





2. Download APP

2. 2. 1 Download Android APP

Download the SmartClient APP in the Google Play.

2. 2. 2 Download IOS APP

Download the SmartClient forsolar the APP in the apple shop.

3 Precautions for use

3. 1 According to the inverter of each brand, it is necessary to prepare 485 twisted pair with good quality or replace it with cable and network cable (the poor quality cable is easy to break).

3. 2 It needs the 220V power from the grid.

3. 3 The data logger must be installed in a place for protecting it from the rain.

3. 4 The data logger needs to be installed in places where there is no strong electrical interference, because this product belongs to wireless communication, preventing the occurrence of data loss during the process of data transmission by the data logger due to strong electrical interference.

3. 5 If the data logger is installed in an enclosed space, it is necessary to extend the antenna to enhance the signal, and the extension antenna needs to be placed outdoors.

3. 6 After the data logger is installed, you can adjust the direction of the antenna, preferably against an open space.

3. 7 The user name and password when setting the router are not allowed to have special characters such as Chinese and @#¥, and the router's second last IP address cannot be 8.

4 Transportation and storage

4. 1 Transportation: Do not squeeze heavy objects during transportation to ensure that the packaging is in good condition.

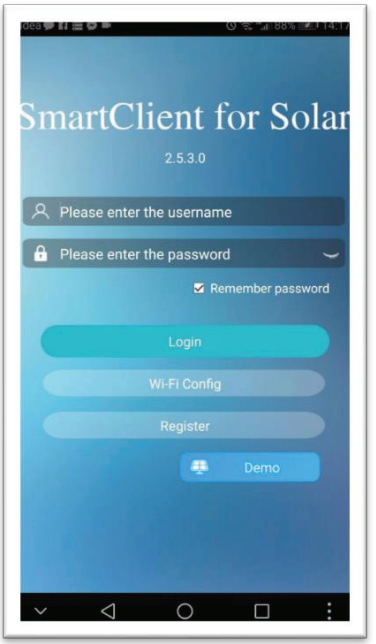
4. 2 Storage: Avoid placing it in a damp place and not soaking it.

11.4 Inverter monitoring connection with SMART CLIENT on Mobile Phones (Android &IOS)

Step 1: Open the Smart Client for solar from Google Play store

Step 2 Run the Smart Client for solar on your mobile phone

Step 3: Please enter the User name and Password (It's important to remember the username and the password, Ksolare will not be responsible for retrieval due to security reasons.



4: 2: Open to view all the parameters on your mobile phone:

12.TEST REPORT

Model		Date :	Sr. No.
		Requirement	
1	Dieletric strength og primary (input/output)-Protective Earthing	Be able to withstand 2121v DC (or 1600V Ac) voltage for 2 second, without are or breakdown; the leakage current should	Ok
2	Dieletric strength og primary (input/output)-Communication	Be able to withstand 4242V DC (or 3000V Ac) voltage for 2 second, without are or breakdown; the leakage current should	Ok
		No alarm and the LED no indicator Display.	
4	Insulation resistance test	Connect 1.1Mohm resistance between PV1+ and PE the invertor should alarm and the invertor can not connect to the	Ok
5	sudden instance of residual current test	Simulate the residual current suddenly up to 0.3A the invertor alarm "GFCI",disconnect the grid within 300ms. Record the	Ok
	Quality Check of the machine and cabinat	No sags and crests,no mark,no lucuna.	Ok
7	Full loading test	Boot,the machine output load,without any exception as	Ok
8	Efficiency	97.2% to 98.7 When 100% load,650V MPPT voltage	OK
9	Harmonic current test	Less Than 3% When 100% Load	OK
10	PF Test	More Than 0.95 When 100% Load < 0.99	OK
11	The output DC Current	Less Than 60mA -Typical range 10 to 15mA	OK
12	Over voltage test (each phase relative to the Neutral Line)	The grid varies gradually from 440V to about 470V,the invertor Disconnects the grid within 200ms.Record the time.	Ok
13	Under-voltage test (each phase relative to the Neutral Line)	The grid varies gradually from 370V drop to about 340V,the invertor Disconnects the grid within 200ms.Record the time.	Ok
14	Automatic reconnection test on output at over-voltage	The grid return to 440V from 470V,waiting 60 seconds at lest before Connecting to the grid again.	Ok
15	Automatic reconnection test at under voltage test	The grid varies gradually from 340V to 370V, the invertor disconnects the grid within 200ms.Record the time.	Ok
16	Over-frequent testing	50Hz grid frequency from the nominal output transition to about 50.5Hz, requires off-grid invertor within 200ms; required safety Talkaround considered Qualified or unqualified	Ok
17	Under-frequency disconnecting test	50Hz grid frequency from the nominal output transition to about 48.5Hz,requires off-grid invertor within 200ms,required safety Talkaround considered qualified or unqualified	Ok
18	Re-connection test on over-Frequency recovery	Grid frequency output from the frequency 50.5Hz had restored to the rated Frequency 50Hz, need to wait for more than 60S, to re-grid invertor.	Ok
19	Re-connection test on under-frequency recovery	Recovery from low Frequency 48.5Hz to wait 60S rated frequency 50Hz, or more, in order to re-ongrid inverting	Ok
20	Lightning performance test	Applied to the power cord (L-N) 1.2/50us (8/20us) combination wave 6KV working properly, not be harmed	Ok
21	Input Voltage DC	200-850VDC for 5 to 20KW & 220 to 920 VDC for 25 to 80KW	Ok
22	Output Voltage AC	370-470	Ok
24	Efficiency	>=95%	Ok
25	THDi	<=3%	Ok
26	PF	>=0.99	Ok
27	MPPT Efficiency	>=97%	Ok
28	SPD-Class-3	DC and AC side up to 35KW	OK
29	SPD-Class-2	DC and AC side above 40KW	OK
30	DC switch as per IEC-60947	5KV,1500V -Isolator	Ok
31	Factory Reset		Ok

Ksolare Energy Pvt. Ltd

5Years' Warranty Card

S.No:

Customer Information

☆Name:

☆Address:

City: State: Zip Code:

Tel.: Phone/Mobile: E-mail:

System Information

System Commissioning Date: Model of Products:

Model No.:KSY- Date of Bill of Lading:

Installation Information

☆Modules Make & Model No.:

☆Modules Per String: No. of Strings:

☆Installation Company:

☆External protection used:☐SPD in DCDB,☐SPD in ACDB,☐MCCB/MCB,RCCB/ELCB, ☐Lighting Arrestors,☐Earthling for☐lighting arrestor,☐DCDB, ☐ACDB.

Installer Name:

For the information on our warranty terms and conditions, please see the user's manual.As to extended warranty, we will provide special declaration for each inverter after getting extra payment.

Fields marked with ☆are required information.

☆ Customer signature :_____ ☆ Date: _____

☆ For Service related Enquiry Kindly send the duly filled singed copy to service@ksolare.com with Exact problem /Error Code /Display Fauly/LED Indicator/Site Photo relevant for the prompt service.

E-mail:servive@ksolare.com; www.ksolare.com;India