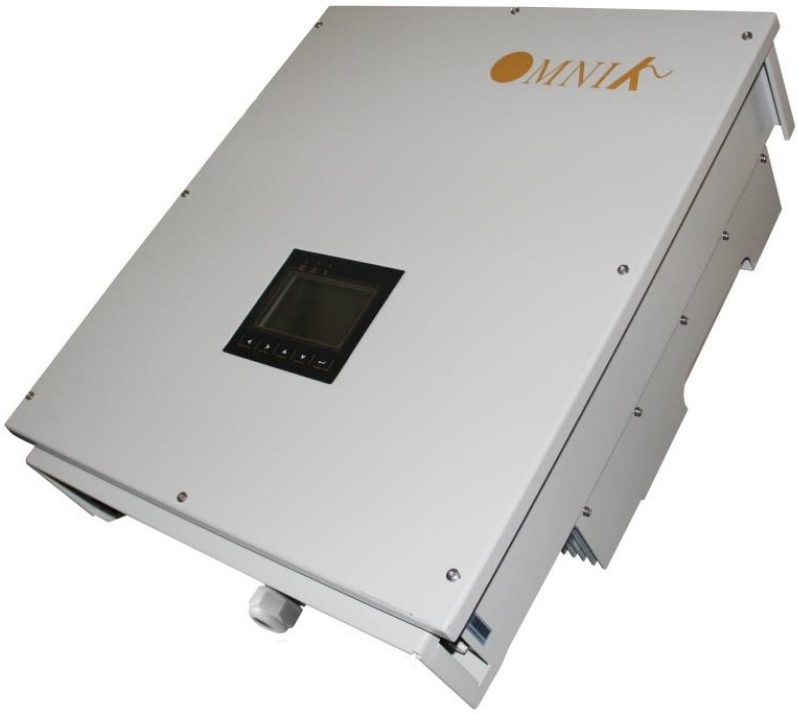


User Manual

-Installation
-Operation

Omniksol-13k-TL
Omniksol-17k-TL
Omniksol-20k-TL

Omnik New Energy Co.,Ltd.

Catalog

1. Notes on this manual

1.1 General notes

The main purpose of this User's Manual is to provide instructions and detailed procedures for installing, operating, maintaining, and troubleshooting the following three types of Omnik New Energy-Solar Inverters:

- Omniksol-13k-TL
- Omniksol-17k-TL
- Omniksol-20k-TL

Please keep this user manual all time available in case of emergency.

1.2 Symbols Used

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury.

CAUTION

CAUTION indicates a hazardous condition which, if not avoided, can result in minor or moderate injury.

NOTICE

NOTICE indicates a situation that can result in property damage, if not avoided.

1.3 Target Group

- Chapter 1, 2, 3, 4, 7, 8, 9, 10 and Chapter 11 are intended for anyone who is intended to use Omnik Grid Tie Solar Inverter. Before any further action, the operators must first read all safety regulations and be aware of the potential danger to operate high-voltage devices. Operators must also have a complete understanding of this device's features and functions.

WARNING

Do not use this product unless it has been successfully installed by qualified personnel in accordance with the instructions in Chapter 5, "Installation".

- Chapter 5 and Chapter 6 are only for qualified personnel who are intended to install or uninstall the Omnik Grid Tie Solar Inverter. Installation must be suitable to the on-site conditions and comply with local regulations and technical rules.

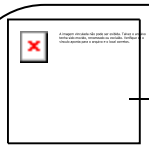
NOTICE

Hereby qualified personnel means he/she has the valid license from the local authority in:

- Installing electrical equipment and PV power systems (up to 1000 V).
- Applying all applicable installation codes.
- Analyzing and reducing the hazards involved in performing electrical work.
- Selecting and using Personal Protective Equipment (PPE).

2. Preparation

2.1 Safety Instructions



DANGER

DANGER due to electrical shock and high voltage

DO NOT touch the operating component of the inverter, it might result in burning or death.

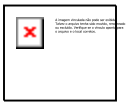
TO prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are plugged out.

DO NOT stay close to the instruments while there is severe weather conditions including storm, lighting etc.

WARNING

The installation，service ，recycling and disposal of the inverters must be performed by qualified personnel only in compliance with national and local standards and regulations. Please contact your dealer to get the information of authorized repair facility for any maintenance or repairmen.

Any unauthorized actions including modification of product functionality of any form will affect the validation of warranty service; Omnik may deny the obligation of warranty service accordingly.



NOTICE

Public utility only

The PV inverter designed to feed AC power directly into the public utility power grid，do not connect AC output of the device to any private AC equipment.

CAUTION

The PV inverter will become hot during operation; please don’t touch the heat sink or peripheral surface during or shortly after operation。

Risk of damage due to improper modifications.

Never modify or manipulate the inverter or other components of the system.

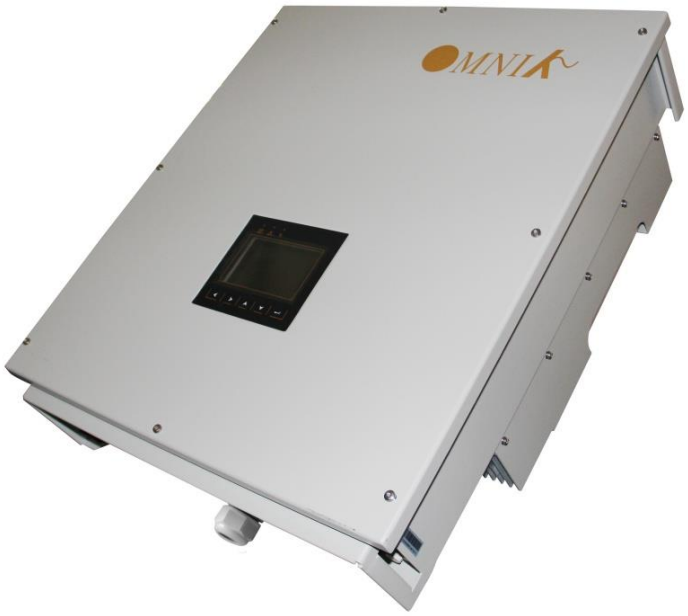
2.2 Explanations of Symbols on Inverter

Symbol	Description
	**Dangerous electrical voltage** This device is directly connected to public grid, thus all work to the inverter shall only be carried out by qualified personnel.
	**DANGER to life due to high electrical voltage!** There might be residual currents in inverter because of large capacitors. Wait **10 MINUTES** before you remove the front lid.
	**NOTICE, danger!** This device directly connected with electricity generators and public grid.
	**Danger of hot surface** The components inside the inverter will release a log of heat during operation, DO NOT touch aluminum housing during operating.
	**An error has occurred** Please go to Chapter 9 “Trouble Shooting” to remedy the error.
	**This device SHALL NOT be disposed of in residential waste** Please go to Chapter 8 “Recycling and Disposal” for proper treatments.
	**Without Transformer** This inverter does not use transformer for the isolation function.
	**German mark of conformity** The inverter complies with the requirement of the German Grid Regulations.
	**CE Mark** Equipment with the CE mark fulfils the basic requirements of the Guideline Governing Low-Voltage and Electromagnetic Compatibility.
	**No unauthorized perforations or modifications** Any unauthorized perforations or modifications are strictly forbidden, if any defect or damage (device/person) is occurred, Omnik shall not take any responsibility for it.

3. Product Information

3.1 Overview

- Industrial Layout



- Effective Shield For DC/AC/Communication Connections

3.2 Major Characteristics

Omnik inverter has following characteristics which make Omnik inverter “High Efficiency, High Reliability, High Cost Effective Ratio”

- Comply with multiple safety regulation of European, Asia Pacific and Oceania countries.
- Double MPPT Tracking, MPPT tracking accuracy up to 99.9%.
- Max. Efficiency 98.2%, European Efficiency 97.8%.
- Professional radiating design, protection Level IP65, work properly under severe outdoor circumstances.
- Full solution of safety protection, DC switch integrated.
- Flexible input and output connections support RS485, USB communication.
- Transformer less design and high power density, it is lighter and more convenient for installation.

3.3 Technical Data

Type	Omniksol-13k-TL	Omniksol-17k-TL	Omniksol-20k-TL
Input (DC)			
Max. PV Power	13500W	17600W	21200W
Max DC Voltage	1000V	1000V	1000V
Nominal DC Voltage	640V	640V	640V
Operating MPPT Voltage Range	250-800V	250-850V	250-850V
MPPT Voltage Range at Nominal Power	400-800V	440-850V	480-850V
Start up DC Voltage	300V	300V	300V
Turn off DC Voltage	250V	250V	250V
Max. DC Current (A/B)	22A/11A	22A/22A	22A/22A
Max. Short Circuit Current for each MPPT	25A/15A	25A/25A	25A/25A
Number of MPP trackers	2	2	2
Number of DC Connection	A:3/B:3	A:3/B:3	A:3/B:3
DC Connection Type	MC4 connector	MC4 connector	MC4 connector
Output (AC)			
Max. AC Apparent Power	13000VA	17000VA	19200VA
Nominal AC Power (cos phi = 1)	13000W	17000W	19200W
Nominal AC Voltage	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V
Nominal Grid Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Max. AC Current	20.0A	26.0A	29.0A
Grid Voltage Range*	185-276V	185-276V	185-276V
Grid Frequency Range*	45-55Hz/55-65Hz	45-55Hz/55-65Hz	45-55Hz/55-65Hz
Power Factor	0.9i…1…0.9c	0.9i…1…0.9c	0.9i…1…0.9c
Total Harmonic Distortion (THD)	<2%	<2%	<2%
Feed in Starting Power	60W	60W	60W
Night time Power Consumption	<1W	<1W	<1W
Standby Consumption	<12W	<12W	<12W
AC Connection Type	Plug-in connector	Plug-in connector	Plug-in connector
Efficiency			
Max. Efficiency	98.0%	98.1%	98.2%
Euro Efficiency	97.5%	97.6%	97.8%
MPPT Efficiency	99.9%	99.9%	99.9%
Safety and Protection			
DC Insulation Monitoring	Yes		
DC Switch	Optional		
Residual Current Monitoring Unit (RCMU)	Integrated		
Grid Monitoring with Anti-islanding	Yes		
Protection Class	I (According to IEC 62103)		
Overvoltage Category	PV II / Mains III (According to IEC 62109-1)		
Reference Standard			
Safety Standard	EN 62109, AS/NZS 3100		
EMC Standard	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12		
Grid Standard	VDE-AR-N-4105, VDE 0126-1-1, RD1699, G59/2, AS4777, CEI0-21, CQC		

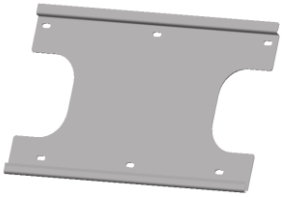
Type	Omniksol-13k-TL	Omniksol-17k-TL	Omniksol-20k-TL
Physical Structure			
Dimensions (WxHxD)	575x650x248mm		
Weight	45kg		
Environmental Protection Rating	IP 65 (According to IEC 60529)		
Cooling Concept	Natural convection		
Mounting Information	Wall bracket		
General Data			
Operating Temperature Range	-25°C to +60°C(derating above 45℃)		
Relative Humidity	0% to 100%, no condensation		
Max. Altitude (above sea level)	2000m		
Noise Level	<45dB		
Isolation Type	Transformerless		
Display	TFT Graphic Display		
Data Communication Interfaces	RS485(WiFi, GPRS optional)		
Standard Warranty	5 Years (10~25 years optional)		

*The AC voltage and frequency range may vary depending on specific country grid

4. Packing checklist

4.1 Assembly parts

After you receive the Omnik inverter, please check if there is any damage on the carton, and then check the inside completeness for any visible external damage on the inverter or any accessories. Contact your dealer if anything is damaged or missing. we will be glad to assist you if required.

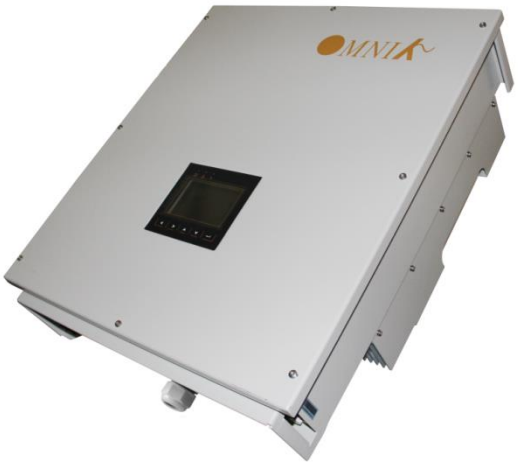
			
A	B	C	D
			
E	F	G	H
			
I	J		

Object	Quantity	Description
A	1	Omnik inverter
B	1	Wall mounting bracket
C	1	user manual
D	6	Screw(ST6x50)
E	6	Expansion tube
F	1	AC cover
G	6	DC connector(6 x positive,6 x negative)

H	1	Ground nut (M6)
I	5	Cord end terminal
J	4	Screw (M4X12)

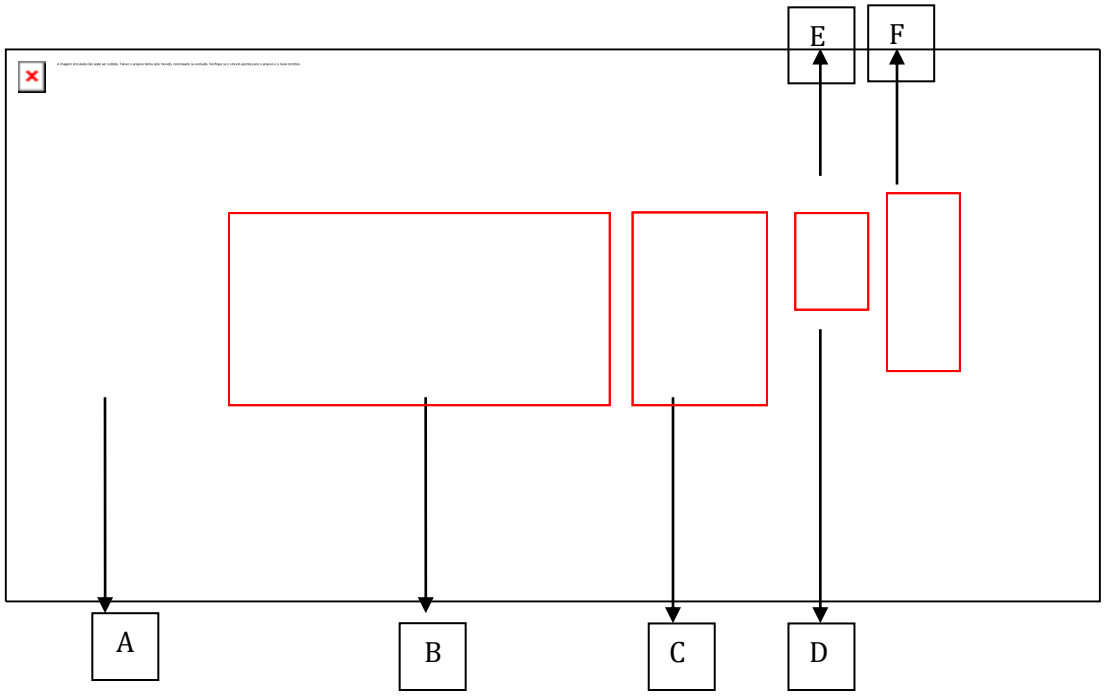
4.2 Product Appearance

- Front



Object	Description
A	LED light(Green) – RUN
B	LED light(Red) – FAULT
C	LED light(Yellow) – COM
D	< left choice
E	> Right choice
F	∧ up choice
G	∨ down choice
H	Ok identify key

- Bottom

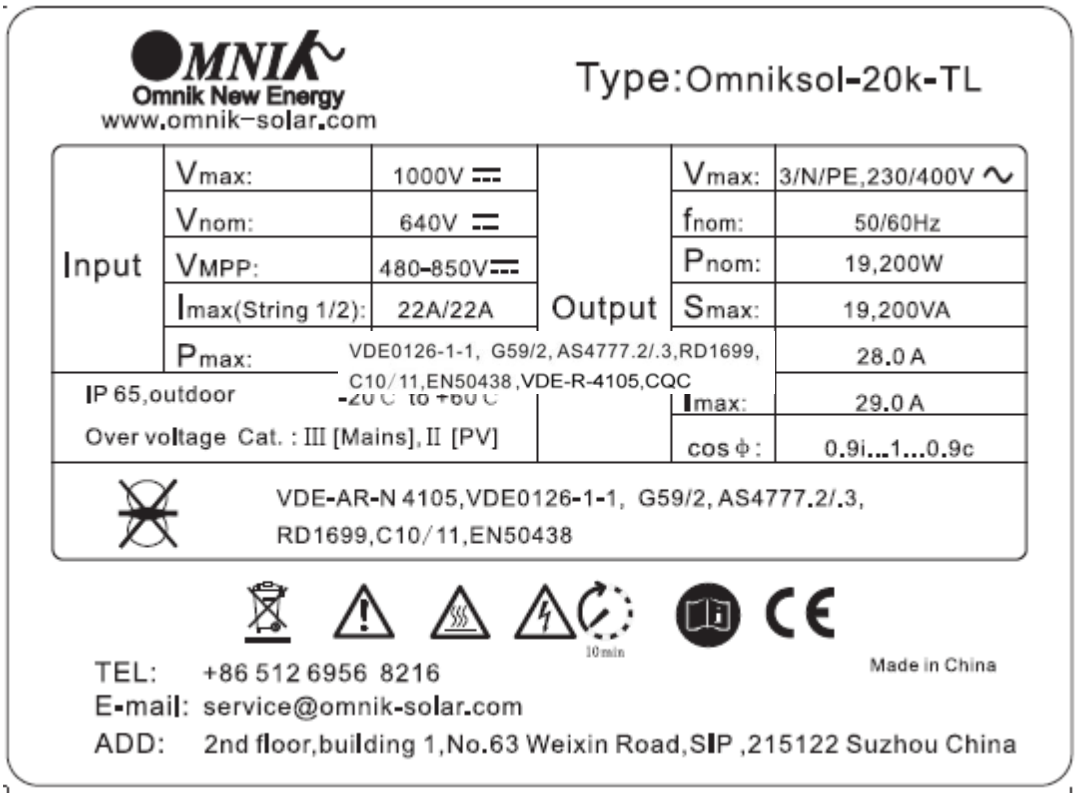


- Left and right

Object	Description
A	DC switch
B	Plug connectors for DC input.
C	Terminal for grid connection (AC output)
D	Earthing
E	USB interface
F	RS485 interface

4.3 Product Identification

You can identify the inverter by the side nameplate. Information such as serial number (SN.), type of the inverter, as well as inverter specifications are specified on the side name plate. The name plate is on the middle part of the right side of the inverter housing. And the following figure is the side name plate example as on Omniksol-20k-TL.

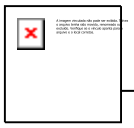


4.4 Further Information

If you have any further questions concerning the type of accessories or installation, please check our website www.omnik-solar.com or contact our service hotline.

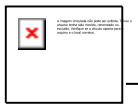
5. Installation

5.1 Safety



DANGER

DANGER to life due to potential fire or electricity shock.
DO NOT install the inverter near any inflammable or explosive items.
This inverter will be directly connected with HIGH VOLTAGE power generation device, the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.



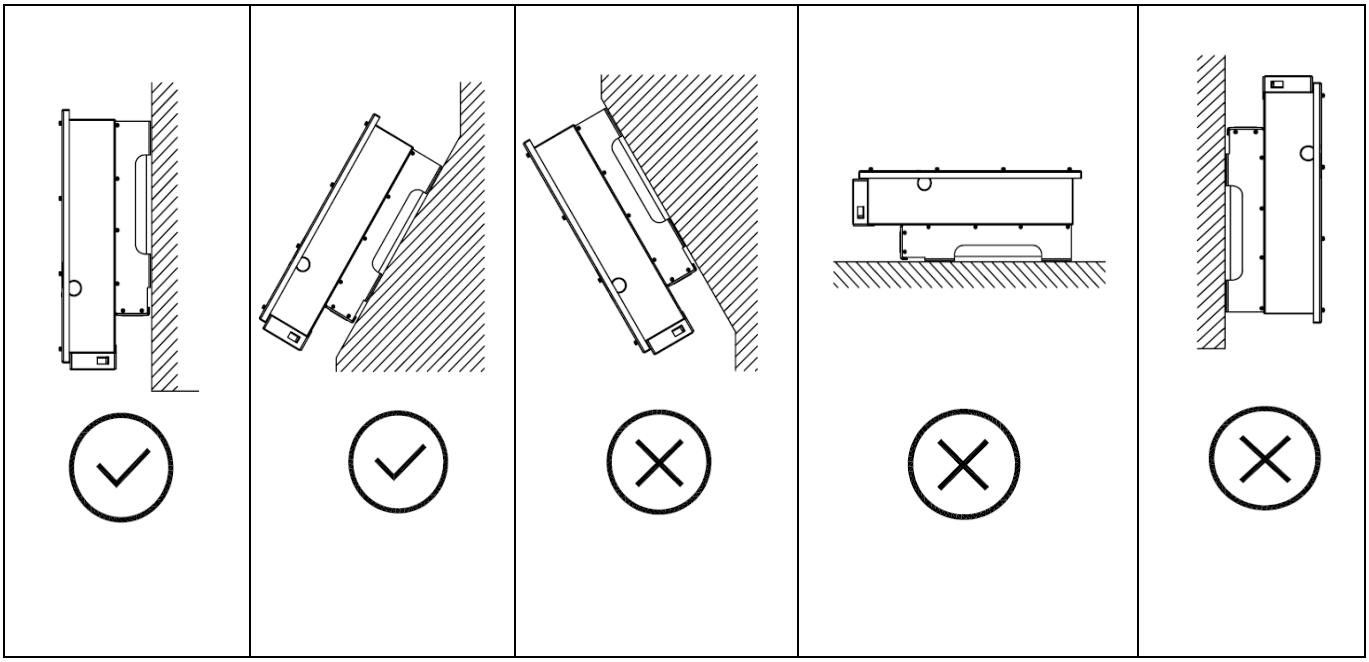
NOTICE

NOTICE due to the inappropriate or the harmonized installation environment may jeopardize the life span of the inverter.
Installation directly expose under intensive sunshine is not recommended.
The installation site MUST have good ventilation condition.

5.2 dimensions, weight

Model	weight	Dimension (L×W×D)
Omniksol-13K-TL	45kg	575mm×650mm×248mm
Omniksol-17K-TL	45kg	575mm×650mm×248mm
Omniksol-20K-TL	45kg	575mm×650mm×248mm

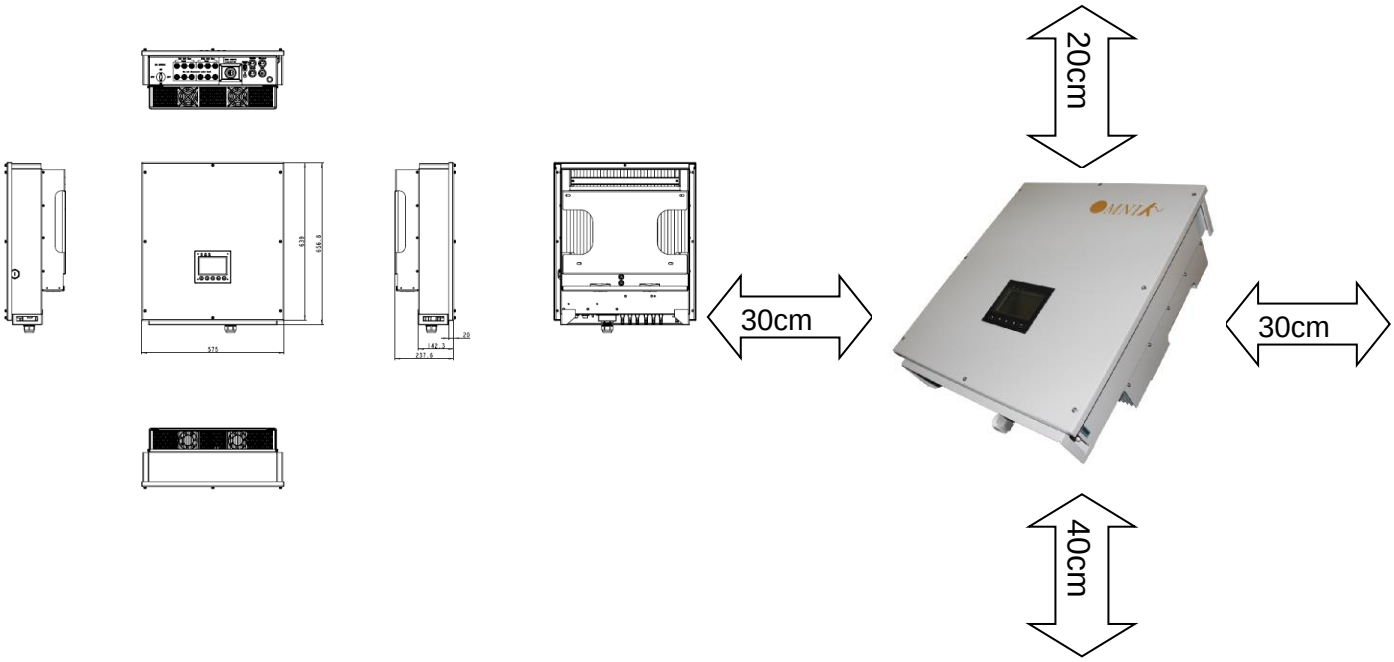
5.3 Mounting Instructions



- Omnik inverter is designed for indoors and outdoors installation
- Please mount the inverter in the direction as illustrated above
- Install the inverter in the vertical direction is recommended, with a max.15 degrees backwards.
- For the convenience of checking the LCD display and possible maintenance activities, please install the inverter at eye level.
- Make sure the wall you selected is strong enough to handle the screws and bear the weight of the inverter
- Ensure the device is properly fixed to the wall
- It is not recommended that the inverter is exposed to the strong sunshine, because the excess heating might lead to power reduction
- The ambient temperature of installation site should be between -20 °C and +60 °C (between -4 °F and 140 °F)
- Make sure the ventilation of the installation spot, not sufficient ventilation may reduce the performance of the electronic components inside the inverter and shorten the life of the inverter

5.4 Safety Clearance

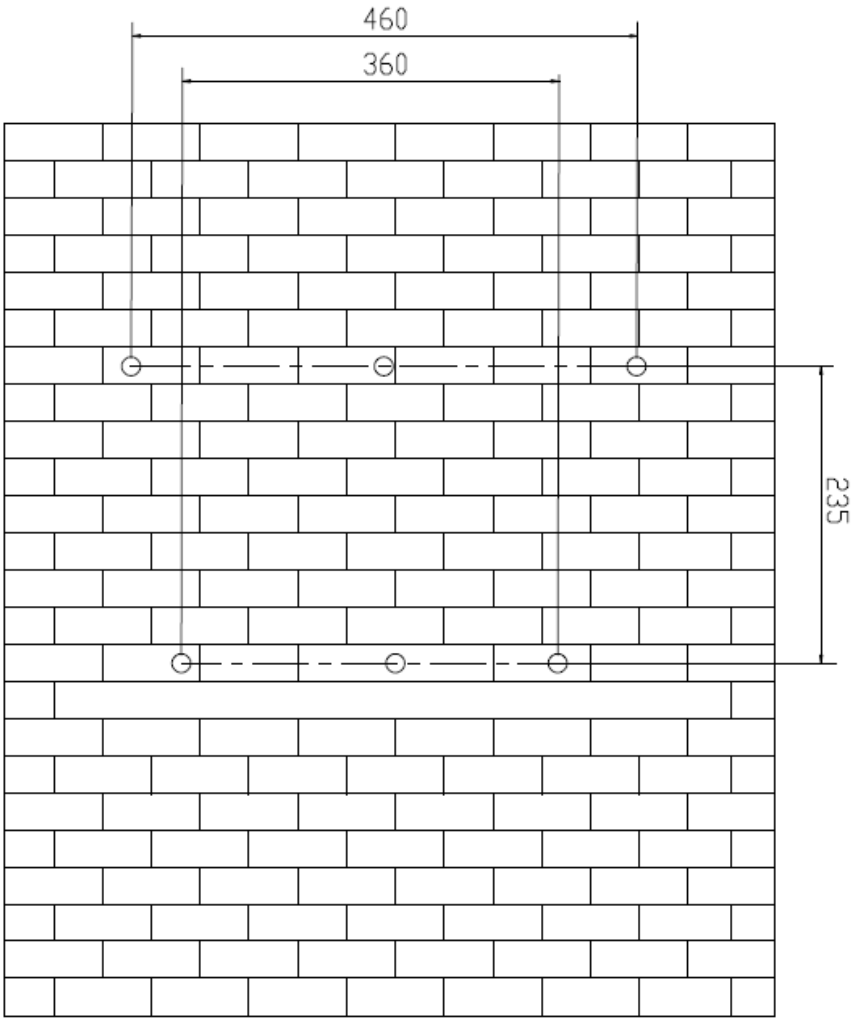
Observe the following minimum clearances to walls, other devices or objects to guarantee sufficient heat dissipation and enough space for pulling the electronic solar switch handle.



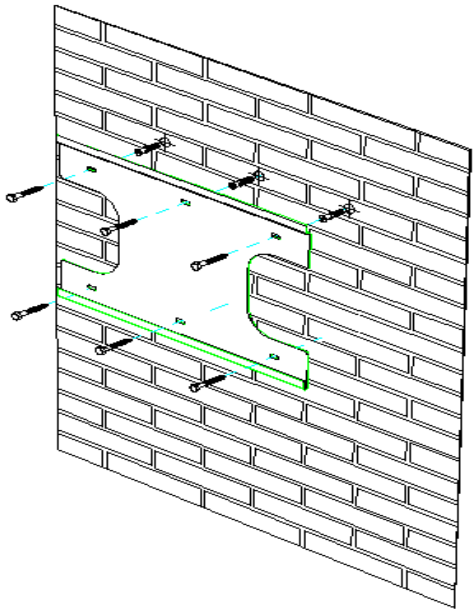
Direction	Minimum clearance
Above	20 cm
Below	40 cm
Sides	30 cm

5.5 Mounting Procedure

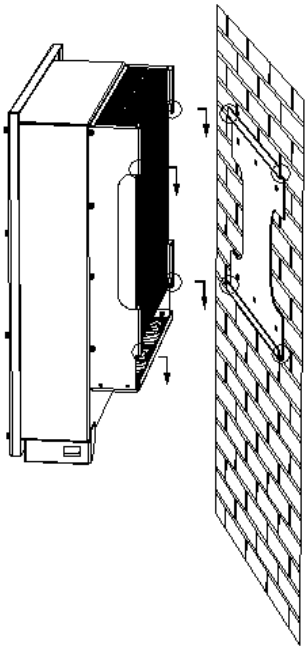
1) Mark 6 positions of the drill holes on the wall according to the paper installation position scale packed in the carton box.

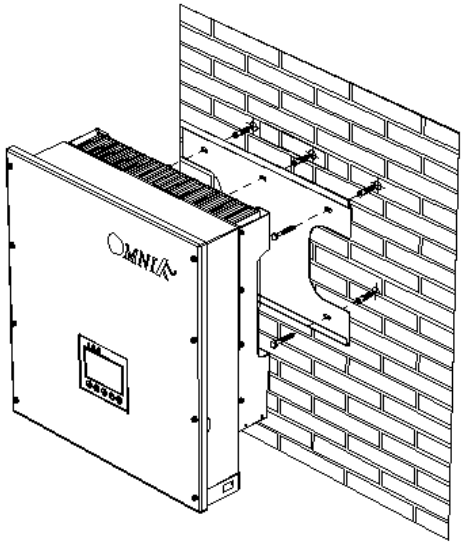


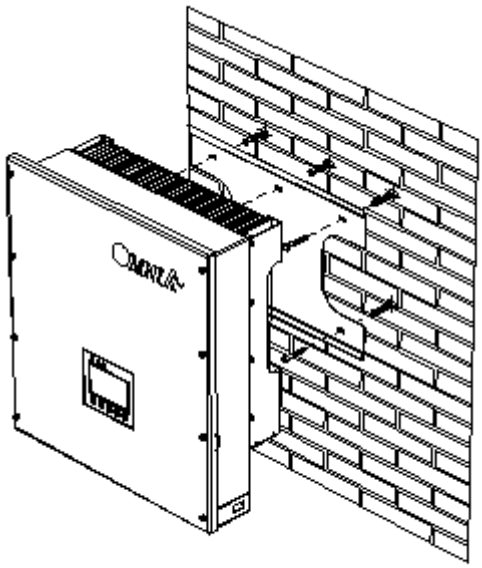
2) First, according to the marks, drill 6 holes in the wall. Then, place four expansion tubes in the holes using a rubber hammer. Next, wring 6 screws into the expansion tubes.

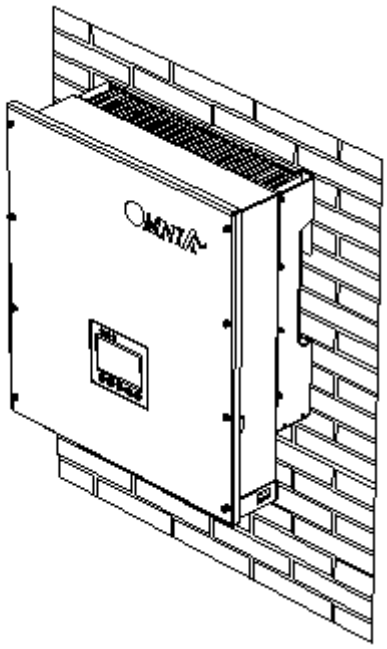


3) First check the 4 holes in the backside of the inverter. Then, lift the inverter carefully, align the 4 holes in the inverter and the 4 screws in the wall, and finally attach the inverter to the screws slightly.









4) Please carefully check the accessories and original carton to make sure every necessary part is used and nothing is missing during installation.

6. Electrical Connection

6.1 Safety

DANGER

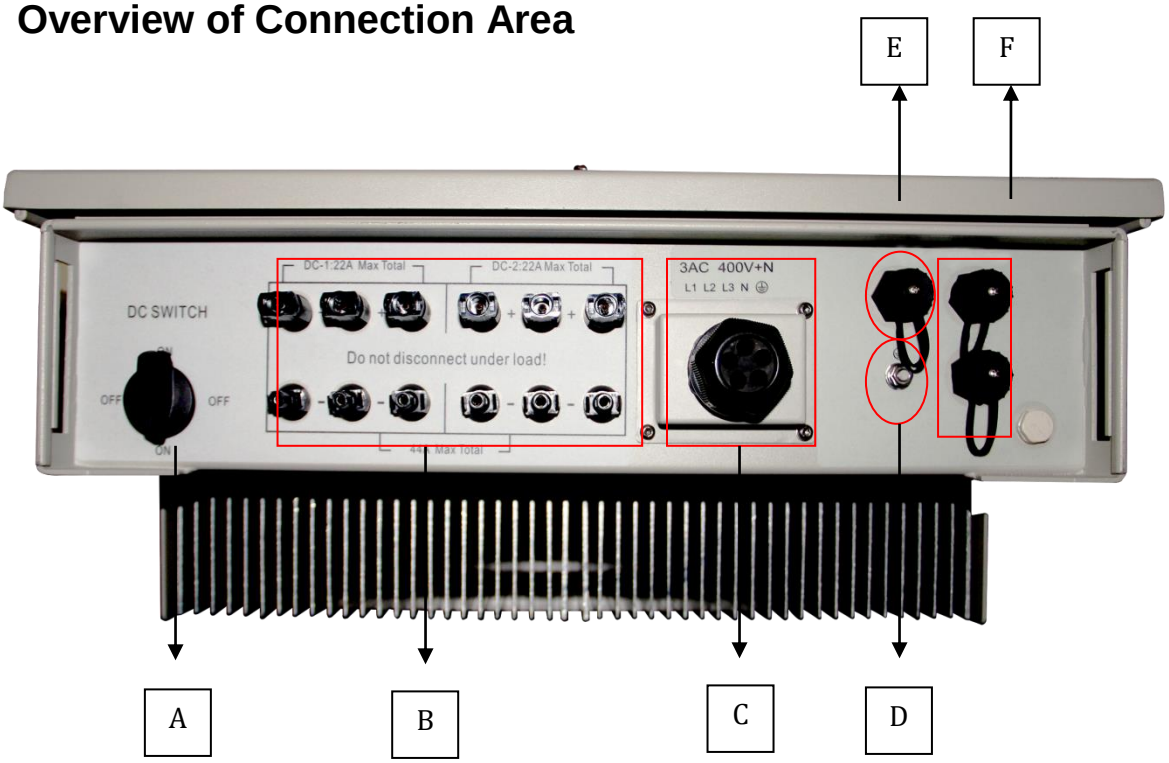
DANGER to life due to potential fire or electricity shock. With the inverter powered, comply with all prevailing national regulations on accidents prevention.

This inverter will be directly connected with HIGH VOLTAGE power generation device; the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.

NOTICE

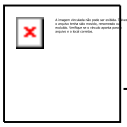
Electrical connections shall be carried out in accordance with the applicable regulations, such as conductor sections, fuses, PE connection.

6.2 Overview of Connection Area



Object	Description
A	DC switch
B	Plug connectors for DC input.
C	Terminal for grid connection (AC output)
D	Earthing
E	USB interface
F	RS485 interface

6.3 DC Side Connection



DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

NOTICE

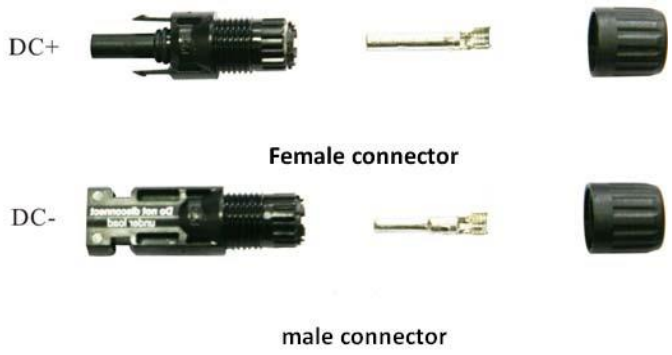
DC Switch (**Optional**) may be integrated or external to Inverter, and it can be used to connect or disconnect the DC source from Inverter.

For Omniksol-13k-TL,Omniksol-17k-TL and Omniksol-20k-TL, there are two MPP Tracker, and the DC characteristics of them are illustrated as the following table.

Inverter Type	MPP Tracker	Max. DC Power	Max. DC Voltage	Max. DC Current
Omniksol-13k-TL	2	13500W	1000V	22/11A
Omniksol-17k-TL		17600W		22/22A
Omniksol-20k-TL		21200W		22/22A

Connection procedure by MC4:

Connect the PV modules and inverter using MC4 connectors below. Connect the positive and negative terminals from the PV modules to positive (+) terminals and negative (-) terminals on Omniksol.



Connection Procedure:

1) Switch off the DC breaker and secure against being switched back on inadvertently.

2) Strip the cable 7 mm.

3) Insert striped cable into contact barrel and insure all conductor strands are captured in the contact barrel.

4) Crimp contact barrel by using a hex crimping die. Put the contact barrel with striped cable in the corresponding crimping notch and crimp the contact.

5) Insert contact cable assembly into back of the male and female connector. A “click” should be heard or felt when the contact cable assembly is seated correctly.

6) Wrest the cap by using the torque of 2.6~2.9NM.

7) After wrest the cap tightly, align the 2 half connectors and mate them together by hand until a “click” is heared or felt.

8) When the separation of connector is necessary, use the specified wrench tool to separate.Please make sure the wedge side of the fingers face the male connector and push the tool down.Then separate the connector by hand. See below figure.

9) If input connector is not enough, adopt“ Y ”connector (optional) just as below:

10) Please use sealing caps for tight sealing of unplugged PV connectors.

If using H4 connector, the operating procedure is similar as that of MC4 connector.

6.4 AC side connection

DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

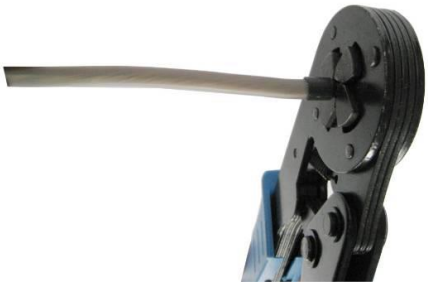
NOTICE

DC Switch (**Optional**) may be integrated or external to Inverter, and it can be used to connect or disconnect the DC source from Inverter.

Connection Procedure

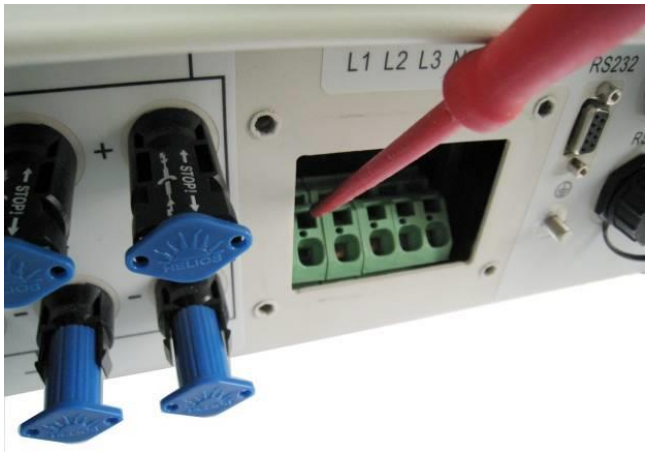
1) Strip the cable 12mm

2) Insert the striped cable into cord end terminal and insert the assembly into barrel.Then the line will like the picture belows.



3) Insert the finished 5 lines into AC cover assembly with the following sequence：

Open the plastic cover, use slot type screwdriver to press the shrapnel in the indicated position, and then put the line in the right hole, please note the sequence of the line shall in the right order: L1,L2,L3,N,PE



Cover the assembly, tightly screwed and then screw the cable gland

6.5 Communication and Monitoring connector

There are RS485, and USB interface in the bottom side of the Omnik inverter as the following figure:

The function is as below:

Object	Description	Function
A	USB interface	Connect with USB
B	RS485 interface	Connect with PMB

7. Display

7.1 Main interface

“Output Power”, ”Today’s Generation” and “Total Generation” are shown in the right side of the display. At the bottom of the display are five most often used menus. Details are as below:

Object	Description
Real time value	Shows the current real time parameter’s value of input and output ends
Information sheet	Shows the fault list
Data map	Information about generating capacity
Settings	Set the time, language, safety regulations, and data removal
System	View the product’s serial number, model or software version

The LCD panel is integrated in the front lid of the inverter, so it is easy for user to check and set the data. In addition, the user can press the function key to illuminate the LCD screen.

NOTICE

Omnik inverter is not an aligned measuring instrument for current, voltage or power consumption. A slight deviation of a few percent points is intrinsic to the system, the results from the inverter cannot be used for grid balance calculations. An aligned meter will be required to make calculations for the utility company.

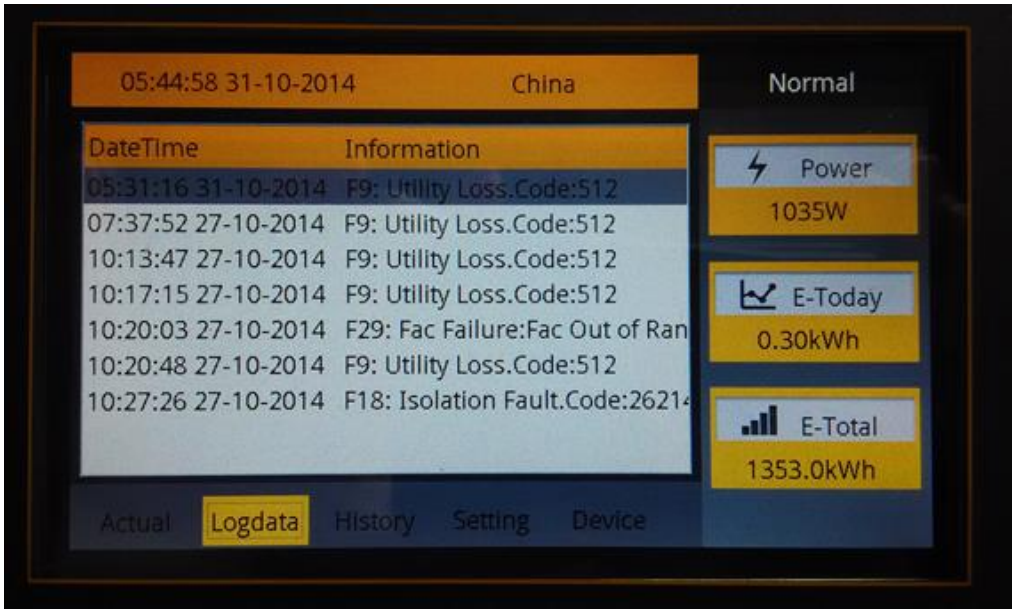
7.2 LCD Display

1) Real time value

“Real time value ”could be selected from the “left” or “right” key at the bottom of the display, including DC real time value and AC real time value.

2) Information Sheet

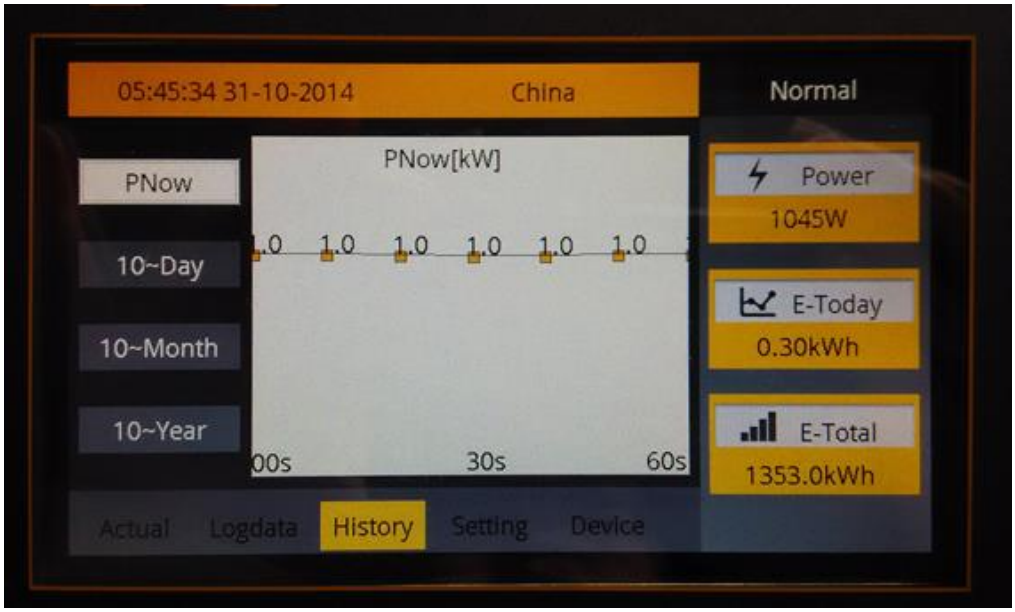
”Information Sheet” could be selected from the “left” or “right” key at the bottom of the display. The information sheet shows the last 10 error information, including the occurring time of the error, error description and error code.



3) Data Map

”Data Map” could be selected from the “left” or “right” key at the bottom of the display. There are four sub-menus at this interface, which are real time power, the last 10 days’ generation amount, the last 10 months’ generation amount and the last 10 years’ generation amount. Corresponding generation amount could be selected through “Up” and “Down” keys.

a) Real time power



b) The last 10 days' generation amount

c) The last 10 months' generation amount

d) The last 10 years' generation amount

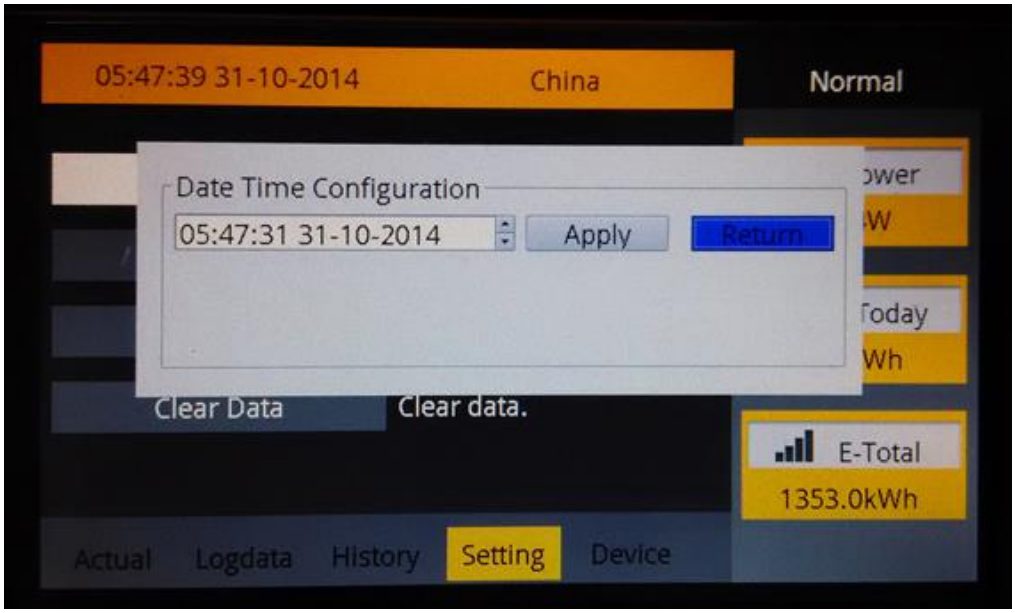
4) Settings

"Settings" could be selected from the "left" or "right" key at the bottom of the display. There are four items, which include Date & Time, Languages, Safety Regulations and Data Removal. The setting items could be selected through "Up" or "Down" keys.

a) Date & Time

Under the menu of "Settings", "Date and Time" could be selected through "Up" and "Down" keys. Click "Ok" to enter the setting interface.

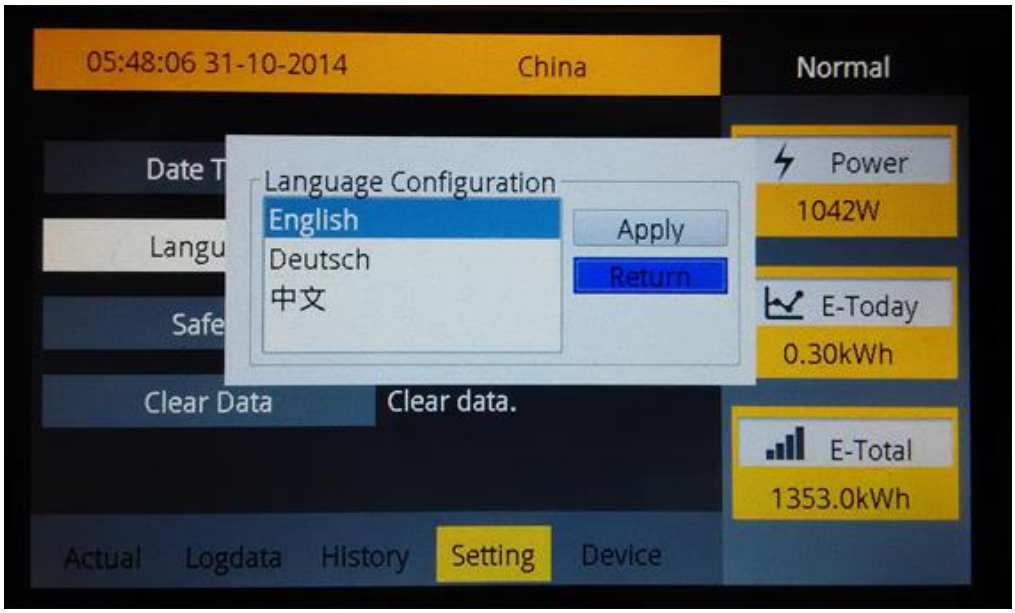
Select the figure which needs to be change through “left” and “right” keys. The figures could be amplified or reduced through the “Up” and “Down” keys. After the time is adjusted, select “Apply” through the “Left” and “Right” keys. Click “OK”, then the Date and Time is finished setting.



b) Date & Time

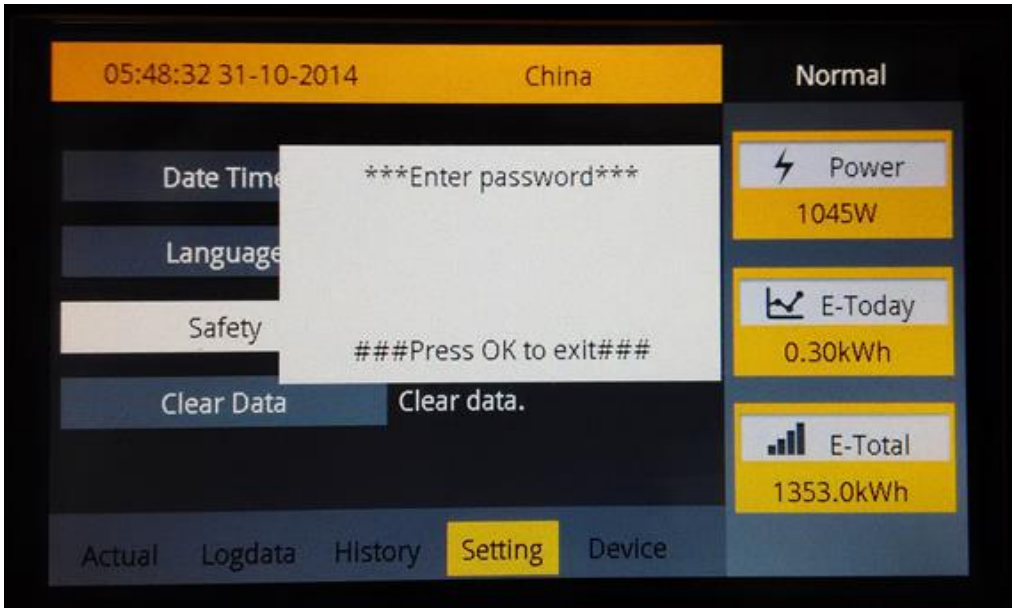
Under the menu of “Settings”, “Date and Time” could be selected through “Up” and “Down” keys. Click “Ok” to enter the setting interface.

Click the “Up” and “Down” keys to select corresponding languages (English, German, or Chinese only). Select “Apply” through the “Left” and “Right” keys. Click “OK”, then the language is finished setting.



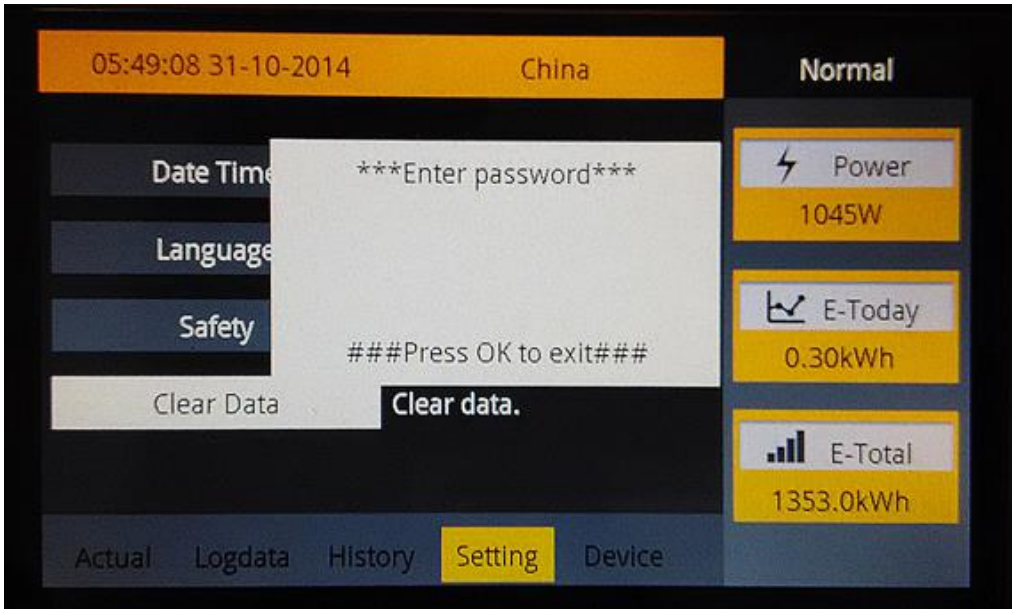
c) Safety Regulations

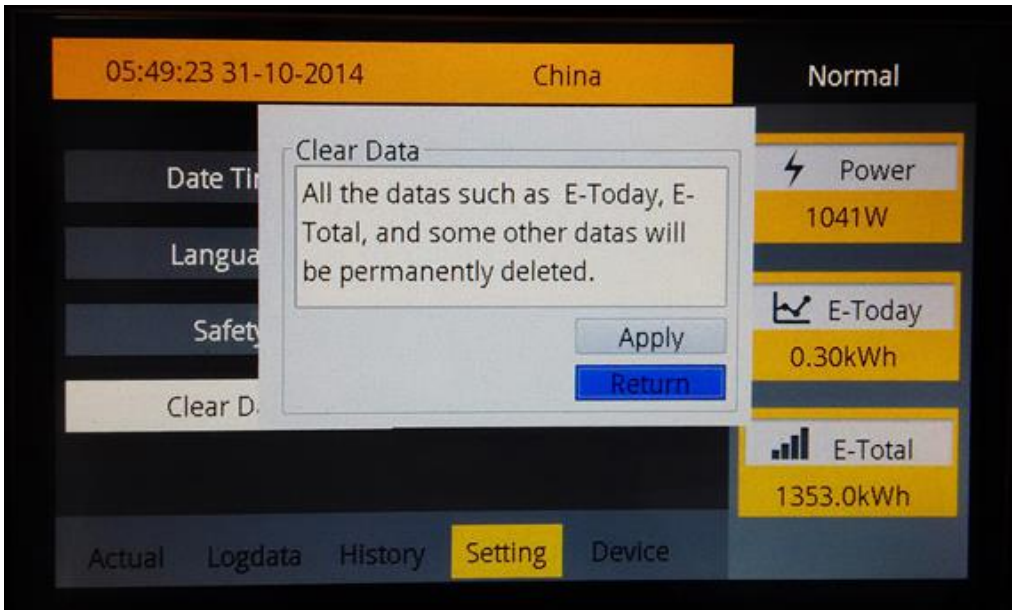
Under the menu of “Settings”, “Safety Regulations” could be selected through “Up” and “Down” keys. Click “Ok”. Then it appears an interface which requires inputting passwords. The default password of the machine is the four keys of “<>∧∨”. Input password, then click “OK”. The machine will enter into the interface of setting Safety Regulations. Select the Safety Regulations of the corresponding country. Then select “Apply”. Then click “OK”. So far, the Safety Regulations are finished setting.



d) Data Removal

Under the menu of “Settings”, “Data Removal” could be selected through “Up” and “Down” keys. Click “Ok”. Then it appears an interface which requires inputting passwords. The default password of the machine is the four keys of “**<>**∧∨”. Input password, then click “OK”. The machine will enter into the interface of data removal. Select “Apply”. Then click “OK”. So far, the settings are finished.





5) Systems

"Systems" could be selected through "Left" and "Right" keys. Then it will show the serial number of the current equipment, the equipment type, the software version of the human-computer interface, and the software version of the controlling unit.

7.3 State Information

State	Display	State information
Wait	Waiting	Initialization & waiting
	Connect Sec.	Connect
Normal	Normal	Normal state
Fault	SPI Failure:Communication Fails between M-S	SPI Failure:Communication Fails between M-S
	EEPROM R/W Fail	EEPROM R/W Fail
	Relay-Check Fail	Relay-Check Fail
	DC Injection High	DC Injection High
	The result of Auto Test Function is fail	The result of Auto Test Function is fail
	DC bus is too high	DC bus is too high

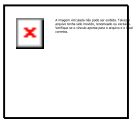
	The voltage reference inside is abnormal	The voltage reference inside is abnormal
	AC HCT Failure	AC HCT Failure
	GFCI Device Failure	GFCI Device Failure
	Device fault	Device fault
	M-S Version Unmatched	M-S Version Unmatched
	Fac Failure:Fac Out of Range	Fac Failure:Fac Out of Range
	AC Voltage Out of Range	AC Voltage Out of Range
	Utility Loss	Utility Loss
	GFCI Failure	GFCI Failure
	PV Over Voltage	PV Over Voltage
	Isolation Fault	Isolation Fault
	Fan Lock	Fan Lock
	Over Temperature in Inverter	Over Temperature in Inverter
	Consistent Fault:Vac differs for M-S	Consistent Fault:Vac differs for M-S
	Consistent Fault:Fac differs for M-S	Consistent Fault:Fac differs for M-S
	Ground I differs for M-S	Ground I differs for M-S
	DC inj. differs for M-S	DC inj. differs for M-S
	Consistent Fault:Fac, Vac Differs for M-S	Consistent Fault:Fac, Vac Differs for M-S
	High DC Bus	High DC Bus
Flash	Flashing	Update inverter

About the further information for each fault, please reference to Chapter “9.TROUBLESHOOTING”.

8. Recycling and Disposal

To comply with European Directive 2012/19/EU on waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer required must be returned to your dealer or you must find an approved collection and recycling facility in your area.

Ignoring this EU Directive may have severe affects on the environment and your health.



WARNING

This device SHALL NOT be disposed of in residential waste.

9. Troubleshooting

	LCD display	Possible actions
Resumable Fault	Isolation Fault	1. Check the impedance between PV (+) & PV (-) and the inverter is earthed. The impedance must be greater than 2.4MΩ. 2. Check whether the AC-side has contacts with earth.
	Ground I Fault	1. The ground current is too high. 2. After cut off the AC side connection, unplug the inputs from the PV generator and check the peripheral AC system. 3. After the cause is cleared, re-plug the PV panel and AC connection, and check PV-Inverter status.
	Grid Fault Fac Failure:Fac Out of Range AC Voltage Out of Range	1. Wait for a moment, if the grid returns to normal, PV-Inverter automatically restarts. 2. Make sure grid voltage and frequency meet the specifications.
	Utility Loss	1. Grid is not connected. 2. Check grid connection cables. 3. Check grid usability. 4. If grid is ok, and the problem persists, maybe the fuse in the inverter is open, please call service.
	Over Temperature in Inverter	1. The internal temperature is higher than specified normal value. 2. Find a way to reduce the ambient temperature. 3. Or move the inverter to a cooler environment.
	PV Over Voltage	1. Check the open PV voltage, see if it is greater than or too close to 1000VDC (for Omniksol-13k-TL or Omniksol-17k-TL or Omniksol-20k-TL). 2. If PV voltage is less than 1000VDC, and the problem still occurs, please call local service.

<table>
<tr><td rowspan="10">Permanent Fault</td><td>Consistent Fault:
Fac differs for M-S
Vac differs for M-S
Fac, Vac Differs for M-S
Ground I differs for M-S
DC inj. differs for M-S</td><td>Disconnect PV (+) or PV (-) from the input, restart the inverter.</td></tr>
<tr><td>AC Relay Check Fail</td><td rowspan="9">1. Disconnect ALL PV (+) or PV (-).
2. Wait for a few seconds.
3. After the LCD switches off, reconnect and check again.
4. If the problems remain please call local service.</td></tr>
<tr><td>High DC bus</td></tr>
<tr><td>DC Injection High</td></tr>
<tr><td>EEPROM R/W Fail</td></tr>
<tr><td>Fan Lock</td></tr>
<tr><td>M-S Version Unmatched</td></tr>
<tr><td>SPI Failure:Communication Fails between M-S</td></tr>
<tr><td>AC HCT Fault</td></tr>
<tr><td>GFCI Device Failure</td></tr>
</table>

10. Abbreviation

LCD	Liquid Crystal Display
LED	Light Emitting Diode
MPPT	Maximum Power Point Tracking
PV	Photovoltaic
Vdc	Voltage at the DC side
Vac	Voltage at the AC side
Vmpp	Voltage at the Maximum Power Point
Impp	Amperage at Maximum Power Point
AC	Alternating Current (Form of electricity supplied by Utility Company)
DC	Direct Current (Form of electricity generated by PV modules)
VDE 0126-1-1	German standards for establishing suitability for Grid Connection of the Inverter.
DC Switch	Switch in the DC Circuit. Disconnects DC source from Inverter. May be integrated or external to Inverter.

11. Contact

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