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# 1 About this manual

## General notes

Thank you for choosing a Eversol inverter!

The Eversol is a transformerless solar inverter which converts the direct current from your solar system into grid-compliant alternating current.

When you choose Eversol inverter , you opt for reliable and powerful technology.

## 1.1 Validity

This instructions describe the installation , startup and operation of Eversolar New Energy inverters of Eversol-TL2000 and Eversol-TL1500.

## 1.2 Target group

Only qualified electricians who are approved by the supply grid operator can install and startup the inverter. This documentation contains important information regarding installation and operating of the unit. Be sure to read this instructions carefully.

## 1.3 Retention of the manuals

All documentations for the Eversol and the installed components must be kept with the unit and available at all times.

## 1.4 Regulations

| Type | Normative reference |
|---|---|
| Eversol-TL1500/2000 | ENEL Guide , EN50178, EN61000-6-1/3, EN61000-3-2/3, VDE0126-1-1 , RD1663 |

# 2 Safety instructions and regulations

## 2.1 Technical rules

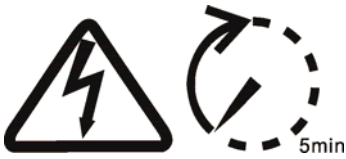
Installation must be suited to the on-site conditions and comply with local regulations and technical rules.

## 2.2 Intended use

Eversol inverters are designed according to the safety rules. However, improper use, move , personal maintenance or modification may cause lethal hazard for the operator, third parties , the units or the other property . Eversolar are not responsible for the loss and invalidate these warranty claims.

## 2.3 Accident prevention regulations

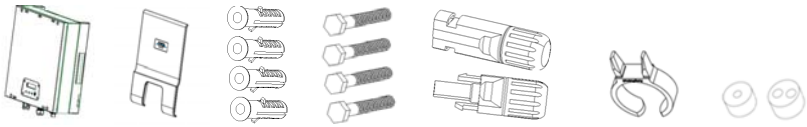
1. Only qualified electricians who have read and fully understood all safety information contained in the instructions, can install ,repair and modify the inverter.
2. The Eversol inverter must only be operated with PV generator. Do not connect any other source of energy to the Eversol.
3. Be sure that the PV generator and inverter connect to the ground in order to protect properties and persons.
4. Before opening the housing, the Eversol inverter must be disconnected from the grid and PV generator; while you must wait at least five minutes to let the energy storage capacitors are fully discharged after disconnecting from power sources.



# 3 Unpacking

## 3.1 Scope of delivery

| Object | Description | Quantity |
|---|---|---|
| A | Eversol inverter | 1 |
| B | Ornamental plate | 1 |
| C | Wall plug | 4 |
| D | Screw (ST6×50) | 4 |
| E | H4 or MC4-connectors (including male and female side connectors) | 1 pair |
| F | H4 or MC4 wrench tool | 1 |
| G | Sealing insert | 2 |
| H | AC female connector | 1 |
| I | Installation and operating instructions | 1 |



A B C D E F G



H I

Please check all of the components carefully in the carton. If anything missing, contact your dealer at once.

## 3.2 Check for transport damage

Thoroughly inspect the inverter upon received, if you detect any damage to the packaging which indicates that the inverter may be damaged, inform the responsible transport company immediately. We will be glad to assist you if required.

# 4 Technical data

## 4.1 DC input data

| Type | TL 1500 | TL 2000 |
|---|---|---|
| Max. PV-generator power [W] | 1800 | 2300 |
| Max. DC Voltage [V] | 450 | 500 |
| MPPT voltage range [V] | 125 - 450 | 125 - 450 |
| Turn off DC Voltage [V] | 125 | 125 |
| Max. DC current [A] | 18 | 18 |
| Nominal DC current [A] | 13.8 | 16.2 |
| Number of DC connection | 1 | 1 |
| Number of MPP tracker | 1 | 1 |
| DC connector | H4 or MC4-connector | |
| Turn on power [W] | 10 | |
| DC-Switch | optional | |

## 4.2 Output data

| Type | TL 1500 | TL 2000 |
|---|---|---|
| AC connector | Plug-in connector | |
| Power connection | Single phase | |
| Rated AC power [W] | 1500 | 2000 |
| Max. AC Power [W] | 1650 | 2000 (AS4777) /2200 |
| Grid voltage range [V] | 187-264 (VDE0126-1-1) /196-253(RD1663)/ 200-270 (AS4777) / 184-276(ENEL Guide) | |
| Grid frequency range [Hz] | 47.5-50.2 (VDE0126-1-1) /49-51 (RD1663)/ 45-55 (AS4777) / 49-51 (ENEL Guide) | |
| Rated current [A] | 6.52/6.25(AS4777) | 8.7/8.3(AS4777) |

| | | |
|---|---|---|
| Max. current [A] | 8.25 | 11 |
| Power factor | 0.99 | 0.99 |
| Harmonic distortion (THD) at rated output | <2% | <2% |
| Power consumption at night [W] | <1 | <1 |
| Power consumption at standby [W] | 6 | 6 |

## 4.3 Efficiency and safety equipment

| Type | TL 1500 | TL 2000 |
|---|---|---|
| Efficiency | | |
| Max. efficiency | 97.1% | 97.1% |
| Euro efficiency (at 360VDC) | 96.5% | 96.5% |
| MPPT adaptation efficiency | 99.5% | 99.5% |
| Safety equipment | | |
| Internal overvoltage protection | Integrated | |
| DC Insulation monitoring | Integrated | |
| Earth fault protection | Integrated | |
| Mains monitoring | According to VDE0126-1-1, RD1663, AS4777 , ENEL Guide | |
| Earth fault current monitoring | According to VDE 0126-1-1 | |
| DC current monitoring | According to VDE0126-1-1, RD1663, AS4777 , ENEL Guide | |
| Islanding protection | Active Frequence Disturbance (According to VDE0126-1-1 , RD1663 , AS4777 , ENEL Guide) | |

## 4.4 General data

| Type | TL 1500 | TL 2000 |
|---|---|---|
| Installation environment | Indoor and outdoor | |
| Net Weight (kg) | 15.3 | |
| Operating temperature range | -20°C to +60°C(up 45°C derating) | |
| Relative humidity | 0% to 98%, no condensation | |
| Site altitude | Up to 2000m without derating above sea level | |
| IP protection type | IP 65 according to IEC 60529 | |
| Isolation type | Transformerless | |
| Cooling concept | Convection | |
| Noise level | < 40 dBA | |
| LED display | 3 | |
| LCD display | Backlight, 16×2 Character LCD | |
| Data logger<br>Data communication interfaces | RS485 | |
| Standard warranty (option) | 5 years | |

# 5 Installation and startup

## 5.1 Selecting an appropriate place for installation



**Danger!**

**Danger of lethal injury due to fire or explosion!**

The Eversol inverter may become hot in normal operation.

Do not install the Eversol inverter on easily flammable materials and where flammable materials are stored.

Do not install the Eversol inverter where there is a risk of explosion.

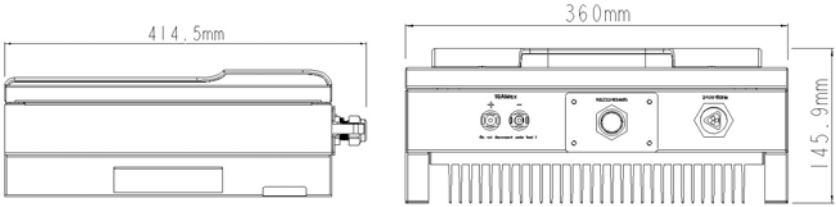


**Caution!**

**Danger of burns from the housing!**

Install the Eversol inverter at a proper place where it cannot be touched unintentional.

### 5.1.1 Dimensions

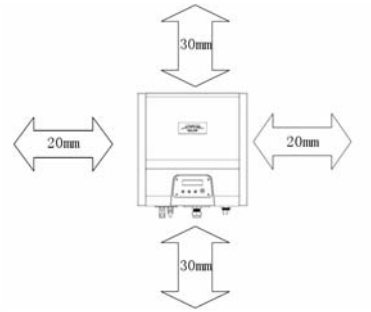



### 5.1.2 Ambient conditions

1. The area where the Eversol inverter installed is as dry as possible in order to extend the service life.
2. Ensure good access to the unit for installation or any service work that may later be required.

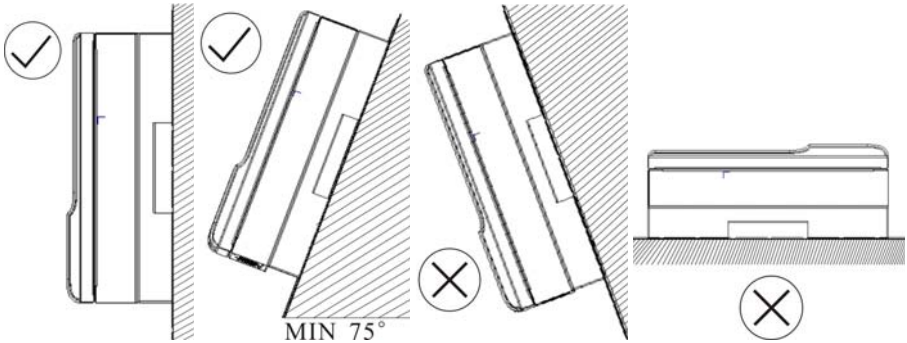
3. Be sure that the unit is out of the children's reach.
4. Maintain the following minimum clearances around the unit:

| Direction | Minimum clearance（cm） |
|---|---|
| above | 30 |
| below | 30 |
| sides | 20 |




5. If the wall is wooden, please add the heat insulation material between Eversol inverter and the wooden wall.
6. Do not expose the Eversol to direct sunlight, in order to avoid power reduction caused by excessive heating. That the ambient temperature keeps below 45 $^{o}$C will guarantee the Eversol inverter working in optimal opterating state.
7. Provide better ventilation for Eversol inverter to ensure that heat is dissipated adequately.
8. If the inverter is installed in the residential area, the inverter should be fixed onto the concrete wall, while the wooden wall or plastic board is not recommended. If installed on wooden wall, we don't recommend self-tapping screws and wall plugs present with the inverter, instead, please use the M6 bolt, nut, flat and lock washer each 4pcs. The bolt should be 10mm longer than thickness of wooden board in order for nut fixing. The wooden board should be above 15mm and of log material to meet the strength requirements when hanging.
9. Don't put any things on the inverter.
10. Before cleaning, disconnect the Eversol inverter separately from the grid by cutting off the AC breaker and from the PV generator by cutting off the DC breaker in order to exclude the danger of electric shock. After waiting for five minutes at least, use a soft, dry cloth to clean the unit. Never use corrosive, solvent-containing or abrasive cleaners or polishes.

## 5.1.3 Position



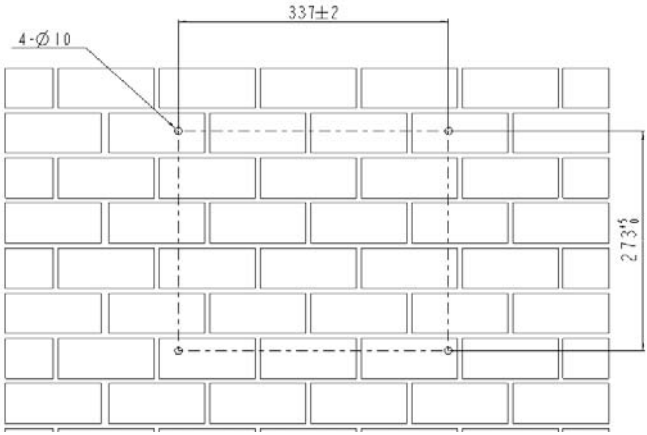

1. The unit has been designed for vertical or tilted backwards by max. 15° installation.
2. Do not install the Eversol inverter forwards.
3. Never install the Eversol inverter horizontally.
4. Installing at eye level makes it easier to operate and read the display.

## 5.2 Installing the inverter

**Installing procedure:**

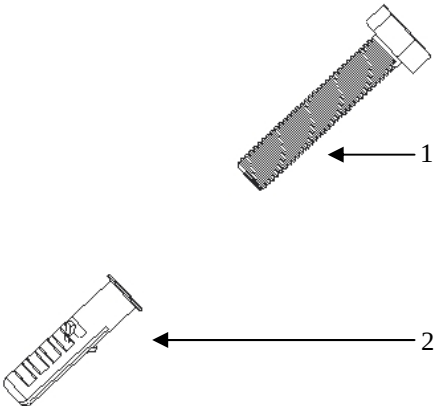
a) **Drilling holes**

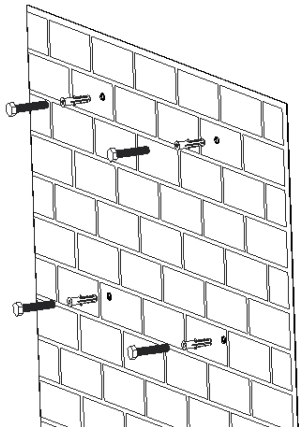
There are holes on the mounting template (A2) in the accessory,which is for help of orientation.Drill four holes for the screws at the selected installation position. The space between every two holes is shown in the figure below. Keep drilling vertical to the wall, and don’t shake the drill to avoid holes tilting. The depth of the holes must be the same and 55 mm ~ 60 mm. After removing the dust in the four holes, measure the net depth of the holes. If the depth is deeper than 60 mm or less than 55 mm, the wall plugs wouldn’t be installed and tightened.




b) **Wring the screws**

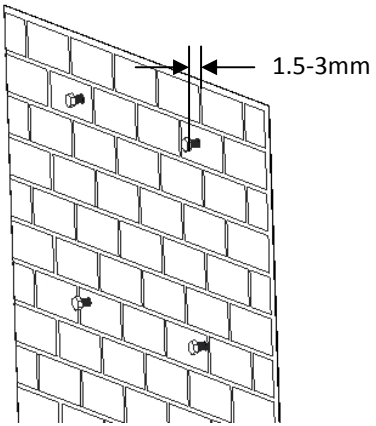
After drilling holes in the wall, place four wall plugs (object 2 shown in the left drawing below) in the holes using a rubber hammer. Then, wring four screws (object 1) into the wall plugs.



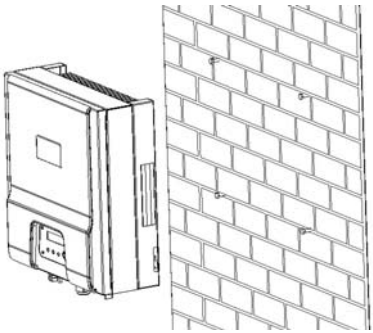



**Attention!**

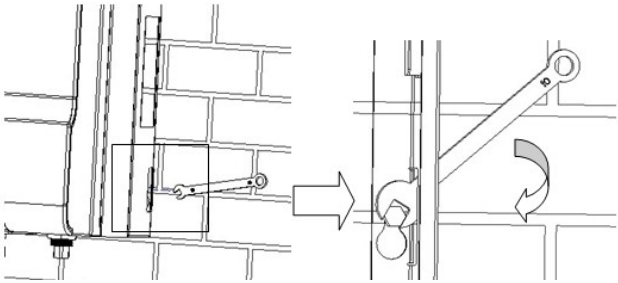
Before inserting wall plugs, measure the depth of every hole and the distance between every two holes. If the measure values do not meet the installing requirements, re-drill holes in the wall.



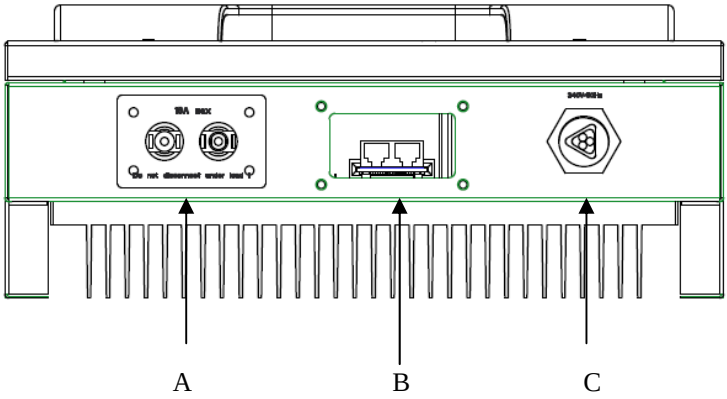

c) Attach the Eversol to the screws downwards slightly.



d) Check both sides for correct position. The inverter must be fixed by the two bottom self-tapping screws tigthen through the two gaps as shown in the picture to avoid any unexpected moving.



## 5.3 Electrical connection




| Object | Description |
|---|---|
| A | DC input: Plug-in connectors for connecting the PV generator<br>Their corresponding polarities is marked at the side of connector. |
| B | Communication connecting area:Eversol inverters are configured with RS485 interface |
| C | AC output: plug-in connector for the grid |

**Notes:**

1. After the inverter has been installed in its fixed position, the electrical connection to the unit can be established.
2. Choose the appropriate cable model for AC wire (AWG 10, 4 $mm^2$)/ DC wire (AWG12, 2.5 $mm^2$).
3. To connect the inverter, the AC and DC end must be disconnected from all power sources.

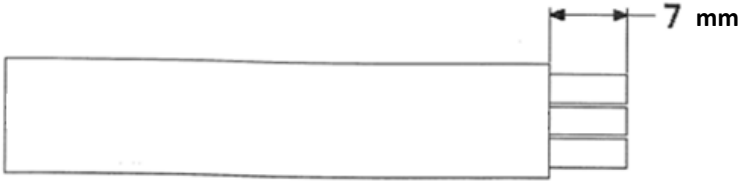
## 5.3.1 Connection to the grid (AC)

**Attention!**
You must safeguard each inverter with an individual AC breaker in order that the inverter can be safely disconnected under load.

Please connect AC wires with the inverter via the AC female connector obey the procedures below:

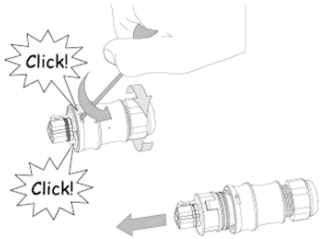


1. Switch off AC breaker and secure against being switched back on inadvertently.
2. Strip the cable as the below figure .

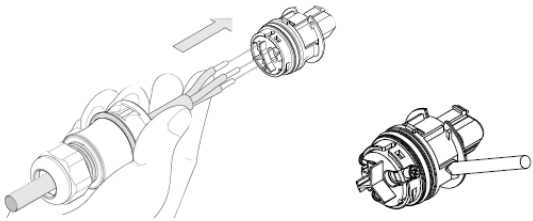



3. Open the AC female connector and connect the wires (three wires including L, N and PE) as shown in the figure below.
   Insert the striped cable including L, N and PE into the corresponding three holes and then fully tighten all screws. The polarity of each hole is signed around the holes. Please note that wire L must be connected to hole L, wire N to hole N and wire PE to hole ⏚.

**Open the connector:**



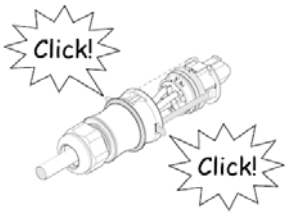

**Connect the wires:**



| | |
|---|---|
| Wire L | Hole L |
| Wire N | Hole N |
| Wire PE | Hole ⏚ |

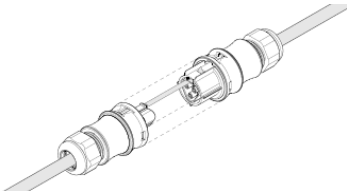
4. After fasten the three wires, combine every component together.

**Close the connector:**

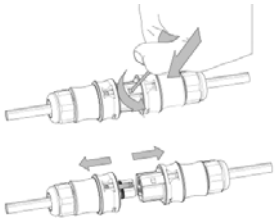



5. Finally, connect the AC female connector to the AC male connector on the inverter.

**Lock the housing:**



**Unlock the housing:**



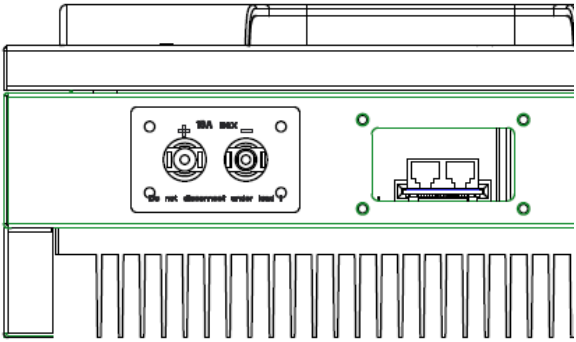
## 5.3.2 Connection to the PV generator (DC)

**Attention!**

In order to safeguard the installation and startup of the device, a manual DC breaker must be fit at the input end of the inverter. The breaker should have certain capacity of over current and over voltage. In addition, before cutting off the DC end connection, please cut off the AC end connection at first.

| Type | Maximum input voltage | Maximum input current |
|---|---|---|
| Eversol-TL1500 | 450 V | 18 A |
| Eversol-TL2000 | 500 V | 18 A |

For Eversol inverter TL1500 and TL2000, there is a pair of DC connection and one MPPT tracker. The polarity of the DC connectors is signed close to the connectors as shown below.



## Attention!

1. The open circuit voltage of the PV generator must be measured,which must not exceed the maximum input voltage of the unit. Connecting to a higher voltage will destroy the unit.
2. The total short circuit current of the PV modules should be less than the inverter's maximum DC input current.
3. Before connecting PV generator to the unit, please make sure the polarity of the strings is correct.
4. Please use professional tools to mate and separate H4 connectors.

**Connection procedure by H4:**

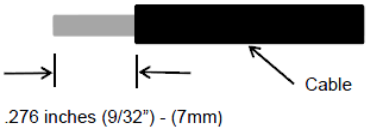
Connect the PV generator and the inverter using H4 connectors as below. The positive and negative terminals of the PV generator are corresponding to positive (+) terminals and negative (-) terminals on the inverter.






Female side connector (+) Male side connector (-)

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 , insure all conductor strands are captured in the contact barrel.
4. Crimp contact barrel by using a hex crimping die. A specified crimping tool can be used in this step. Put the contact barrel with striped cable in the corresponding crimping notch and crimp the contact.





Crimped pin contact



Crimped socket contact



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



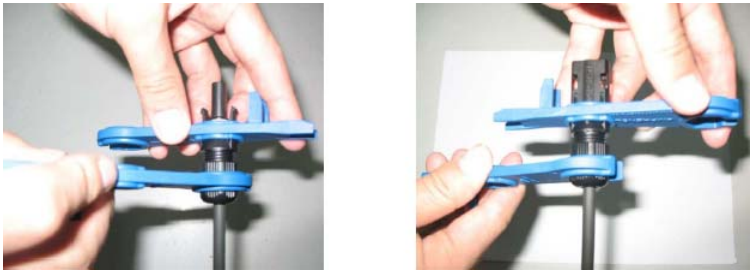
Female side connector



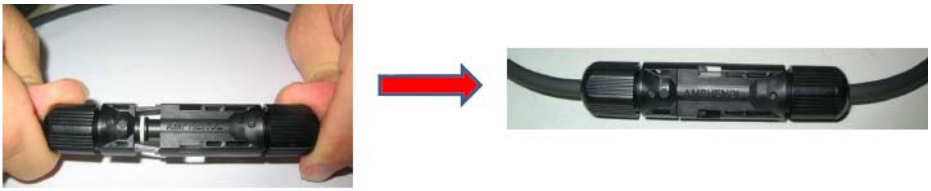
Male side connector

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 a specified tool (ring tool or wrench tool) to separate.And while using the ring tool or wrench tool,please make sure the wedge side of the fingers face the female connector and push the tool down.Then separate the connector by hand. See below figures.



Separated by Ring tool



Separated by Wrench tool

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



**DANGER!**

DANGER to life due to potential fire or electricity shock.

**NEVER** connect or disconnect the connectors under load.

## 5.4 Set frequency range & clearance time of voltage protection

The function of Set frequency range & clearance time of voltage protection is required according to the Italian standard of ENEL Guide. This option is only available in the main menu if “Italy” was selected as the installation location. Switch on DC-break, shut off AC-break, and then set frequency range & clearance time of voltage protection. All the thresold can be only setted by the ENEL.

## 5.5 Startup

After completing the mechanical and electrical installation, the inverter is operated as follows:

1. Switch on the DC and AC breakers.
2. The inverter starts up automatically when DC-power from the PV generator is sufficient. There are three normal states during its operation:

**Waiting:** When DC voltage of PV generator is greater than 125V (minimum startup voltage) but lower than 150V (minimum working voltage). The inverter waits for sufficient power.

**Checking:** When DC voltage of PV generator is greater than 150V, the inverter is checking feeding conditions.

**Normal:** After checking, the inverter operates in the normal state, and the green LED light up. Meanwhile, it feeds power into the grid, and shows present power in LCD display.

As long as the inverter working, it tracks the maximum power from the PV modules (MPPT).The inverter automatically stops when the PV power is not enough.

**Notes：**

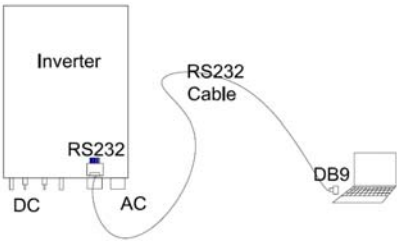
If the inverter is in "**Fault**" state, look over the FAQ part in the seventh chapter.

## 5.6 Communication

### 5.6.1 Communication through RS232

The firmware can be updated via RS232. The maximum length of the cable for RS232 is 10 m. Because an inverter can only communicate with one PC through RS232 at the same time, this communication method is usually used during updating the fireware .

**The connected graph of RS232 for communication:**

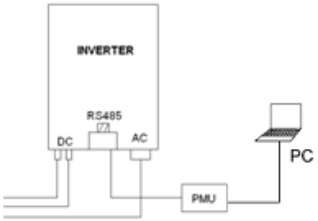



**Notes：**

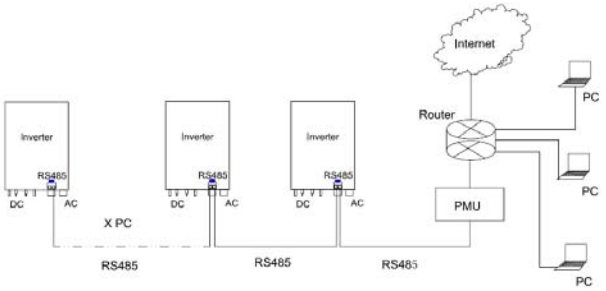
If your computer doesn't have the DB9 communication interface, you can use RS232-USB cable to achieve this function.

### 5.6.2 Communication through RS485

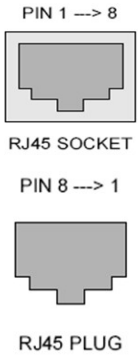
RS485 is used for multipoint communication. A PMU can communicate with and monitor 50 units inverters at the same time. But the maximum length of the cable should not surpass 1000 m. All the inverters, which communicate through one cable, should use the provided RS485 interface. The connected graph of RS485 for one inverter is shown below.




The connected graph of the monitoring system, in which the multipoint communication of the inverters can be realized through RS485 interface, is shown below. The software “AS Control” in the PC can handle real-time monitoring of max 16 PMU at the same time.

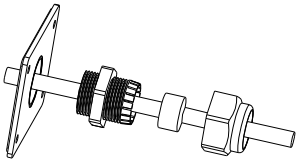



**The definition of the pins of RS485 for Eversol-TL series:**

| | |
|---|---|
| Pin1------- TX_RS485A |  |
| Pin2-------TX_RS485B | |
| Pin3-------RX_RS485A | |
| Pin4-------GND | |
| Pin5-------GND | |
| Pin6-------RX_RS485B | |
| Pin7-------+7V | |
| Pin8-------+7V | |

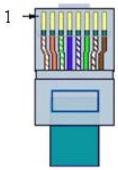
**Connection procedure:**

1. Pull RS485 cable through the components as below .We provide you sealings with no hole, one hole and two holes. If no communication required, you should use the sealing without hole. According to different requirement, you can choose one-hole or two-hole sealings.



2. A RS485 cable is composed by eight wires with different color. Cut off outside envelope to reveal the eight wires. Then make the end of every wire straight, and put them in order.




3. The connection between crystal connectors and RS485 wires is one-to-one correspondence, one pin of crystal connector to one specific color wire, as shown in the table below.

| The number of the pins of crystal connector | Color of the RS485 wires |
|---|---|
| 1 | Orange and white |
| 2 | Orange |
| 3 | Green and white |
| 4 | Blue |
| 5 | Blue and white |
| 6 | Green |
| 7 | Brown and white |
| 8 | Brown |



4. Insert the eight wires to corresponding slots of the crystal connector at the same time, and then press them together by a professional tool.





5. Connect the other end of RS485 cable to crystal connector by repeating the procedure 3 and 4.
6. The inverter can connect with a PMU by a RS485 cable. After the PMU connects with PC by Ethernet or USB, the inverter can communicate with PC.

**Notes：** The wires connection sequence of two ends of a RS485 cable is the same.

## 5.7 Safety protection

### 5.7.1 Basic safety protection

We provide the following safety protection for you:

1. Grid voltage and frequency protection
2. Over temperature monitoring
3. Ground fault current interruption (GFCI)
4. Isolation fault detection
5. Earthing fault monitoring
6. Active anti-islanding protection
7. DC current injection monitoring
8. DC reverse polarity protection

### 5.7.2 Auto test

The Auto test function is required according to the Italian standard of ENEL Guide.

1.Autotest operating procedure:

Firstly, press the button constantly until the LCD display switch to “Auto Test set”; Secondly, keep pressing the button for 10 seconds until it switches to secondary menu;And then press the button again, the auto-testing will run and the device will start self-checking.

2.Autotest upper & lower limit:

For each testing item of Autotest, threshold and clearance time can be set by ENEL.

3.Autotest testing sequence:

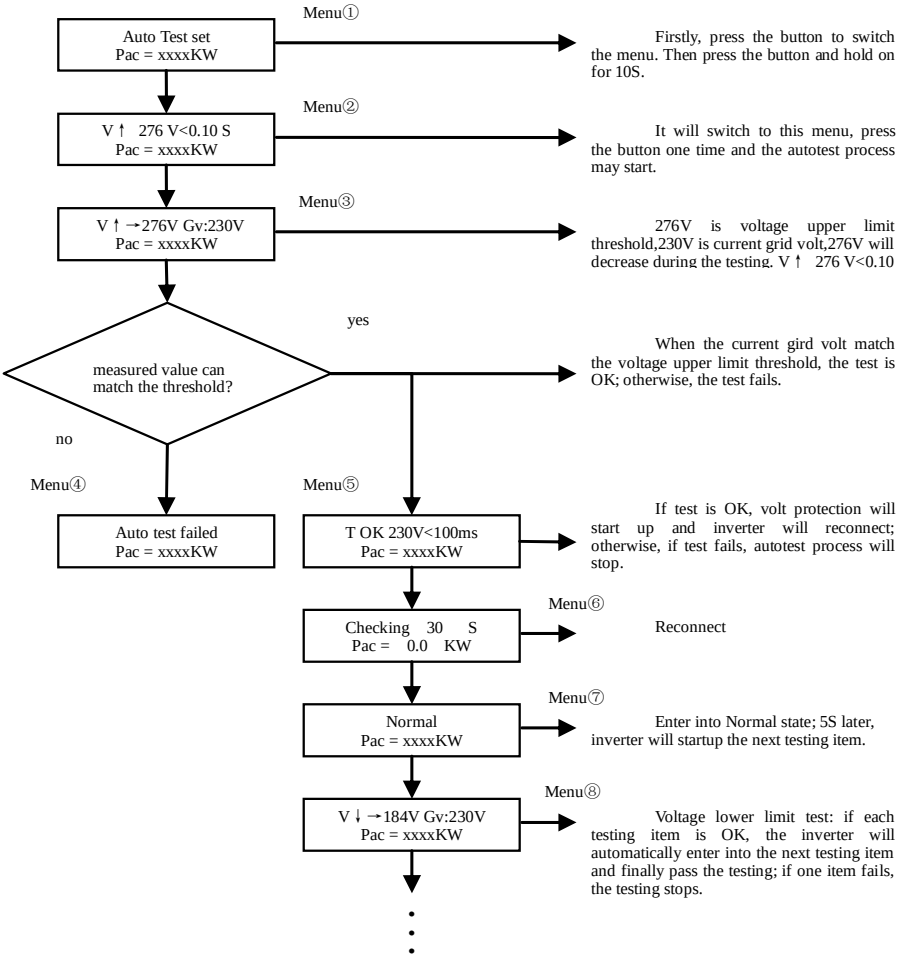
voltage upper limit——voltage lower limit——frequency upper limit——frequency lower limit

When measured value matches threshold during single testing, the device will trip off, and then reconnect to enter into the Normal State which will hold on for 5 seconds and go on into the next testing item;

If the measured value cannot match the threshold, the testing fails to pass.

4.It will display “ok” after each sucessful Autotest step; otherwise, the inverter will disconnect from grid.

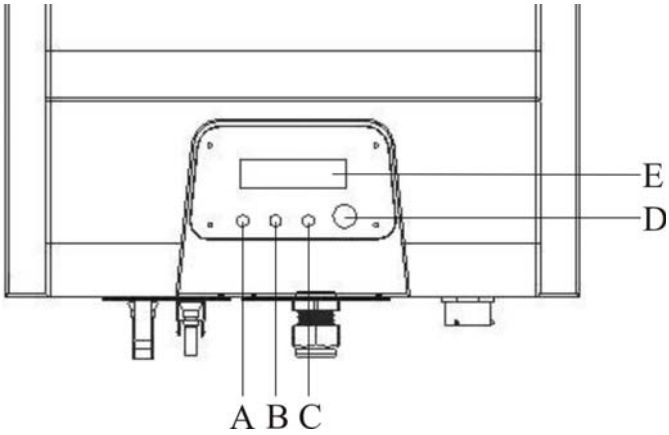
## 5.Operation：


Menu①
Auto Test set
Pac = xxxxKW
Firstly, press the button to switch the menu. Then press the button and hold on for 10S.
Menu②
V↑ 276 V<0.10 S
Pac = xxxxKW
It will switch to this menu, press the button one time and the autotest process may start.
Menu③
V↑→276V Gv:230V
Pac = xxxxKW
276V is voltage upper limit threshold,230V is current grid volt,276V will decrease during the testing. V↑ 276 V<0.10
yes
measured value can match the threshold?
When the current gird volt match the voltage upper limit threshold, the test is OK; otherwise, the test fails.
no
Menu④
Auto test failed
Pac = xxxxKW
Menu⑤
T OK 230V<100ms
Pac = xxxxKW
If test is OK, volt protection will start up and inverter will reconnect; otherwise, if test fails, autotest process will stop.
Menu⑥
Checking 30 S
Pac = 0.0 KW
Reconnect
Menu⑦
Normal
Pac = xxxxKW
Enter into Normal state; 5S later, inverter will startup the next testing item.
Menu⑧
V↓→184V Gv:230V
Pac = xxxxKW
Voltage lower limit test: if each testing item is OK, the inverter will automatically enter into the next testing item and finally pass the testing; if one item fails, the testing stops.

# 6 Operating

Info provided here mainly includes operational methods of the unit, display, safety instructions and regulations.

## 6.1 Overview




| Object | Description |
|---|---|
| A | Working normally (Green LED) |
| B | Fault (Red LED) |
| C | Communication (Yellow LED) |
| D | Function key |
| E | LCD display |

## 6.2 LED display

Eversol inverters are equipped with three LEDs including “green”, “red” and “yellow” which provide information about various operating status in the following ways.

**Green LED:**

The green LED lighting indicates that the inverter is active and working normally. Normally, this LED begins to light up in the morning when the sunshine intensity is enough and goes out when it gets dark.

**Red LED:**

The red LED indicates that the inverter has stopped feeding power into the grid because of fault, and the corresponding fault information will display on the LCD at the same time. The faults as follows in the table below will activate the red LED.

**Yellow LED:**

The yellow LED blinks during the inverter communicating with other devices including PMU and PC etc through RS485 and goes out after the communication finishes.

The yellow LED keeps on lighting during the firmware updating.

For details, please refer to table as below:

| LEDs | State |
|---|---|
| Green | Working Normally |
| Red | Fault including: Output relay failure, EEPROM problem, SCI failure, Output AC sensor abnormal, GFCI detection abnormal, Isolation failure, GFCI failure, Fac Fault, Vac Fault, No Utility, Input voltage too high, Output DC injection too high, Fan abnormal, Temperature abnormal, and Consistent failure. |
| Yellow | Communication |
| | Burning or updating firmware |

## 6.3 LCD display

The LCD display consists of 16 characters and 2 lines. The bottom line (Line 2) always displays the output power (Pac = xxxW). The top line (Line 1) shows current state information by default, and by pressing function key it will display different operating information as follows:

| | | |
|---|---|---|
| **Line 1** | **State information** | Current state information: |
| | ↓ | all possible content shows in the following table |
| | E-today | The energy generated today (kwh) |
| | ↓ | |
| | E-total | The energy generated since starting up the inverter (kwh) |
| | ↓ | |
| | Vpv | The present voltage of the PV generator |
| | ↓ | |
| | Ipv | The present current of the PV generator |
| | ↓ | |
| | Iac | The present grid current |
| | ↓ | |
| | Frequency | The grid frequent |
| | ↓ | |
| | Model | The model of the inverter |
| | ↓ | |
| | Ver | The Firmware version |
| | ↓ | |
| | Set Language | Languages are provided , you can select any one you require |
| | ↓ | |
| | Vac | The grid voltage |
| | ↓ | |
| | Auto test set | Protection function of voltage & frequency range starts self-checking (for Italian standard of ENEL Guide) |
| | ↓ | |
| | Volt protect set | |
| | ↓ | |
| | Freq protect set | |
| | ↓ | |
| | ↑ | |
| **Line 2** | **Pac = xxx W** | **The current output power (W)** |

Along with the different working states of the inverter, the LCD display different information as follows:

| State | Display | State information |
|---|---|---|
| Wait | Waiting | Initialization & waiting |
| | Reconnect | Reconnect |
| | Checking | Checking |
| Normal | Normal | Normal state |
| Fault | Ground I Fault | GFCI failure |
| | Fac Failure | Grid frequency failure |
| | Vac Failure | Grid voltage failure |
| | Utility Loss | No Utility&Island |
| | PV Over Voltage | Input voltage too high |
| | Fan Lock | Fan abnormal |
| | Over Temperature | Temperature abnormal |
| | Consistent Fault | Consistent failure<br>(occur for the first time) |
| | Isolation Fault | Isolation failure |
| | Relay-Check Fail | Output relay failure |
| | DC INJ High | Output DC injection too high |
| | EEPROM R/W Fail | EEPROM problem |
| | SCI Failure | Serial communication interface failure |
| | AC HCT Failure | Output AC sensor abnormal |
| | GFCI Failure | GFCI device abnormal |
| | Auto test failed | Protection function of voltage & frequency range fails (for Italian standard of ENEL Guide) |
| Flash | F/W Updating | Update |

## 6.4 Function key

The Eversol inverter has a function key which is necessary to switch between the different displays, entering next level and locking.
Press the key once, it displays next information. The menu is continuous, if you are at the end of the menu, the first entry will be displayed on LCD when you press the key again.
If you don't press the key within approx. 10 seconds, it will display the state information again and keep on.

### 6.4.1 Setting the Language

The Eversol provide two kinds of languages: English and Germany.
At the entry of "Set Language", press the key for approx. 5 seconds, you can enter the language menu.
Select the language which you require with the function key.
Keep this state without any operation. When it returns to the main menu automatically, the setting is saved.

### 6.4.2 LOCK

If you want to freeze the display during normal operation, you can press the key for a few seconds when it display the entry you desire. Release the key until you see "LOCK". Then it always shows the selected entry until you press the key again or the working state of the inverter changes.

### 6.4.3 LCD Backlight control

To save power, the backlight of LCD display automatically turns off after 20 seconds. To activate it, press the key again.

## 7 FAQ (Frequently asked questions)

When the PV plant does not work normally, we recommend the following solutions for quick troubleshooting. If there is a fault, the red LED will light up .

| | 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 2MΩ.<br>2. Check whether the AC end has contacted with earth. |
| | Ground I Fault | 1. The ground current is too high.<br>2. After cutting off the AC end connection, unplug the inputs from the PV generator and check the peripheral AC system.<br>3. After the cause is cleared, re-plug the PV generator and AC connection, and check PV-Inverter status. |
| | Grid Fault<br>Fac Over Range<br>Vac Over Range | 1. Wait for a moment, if the grid returns to normal, PV-Inverter automatically restarts.<br>2. Make sure grid voltage and frequency meet the specifications. |
| | Utility Loss | 1. Grid is not connected.<br>2. Check grid connection cables.<br>3. Check grid usability.<br>4. If grid is ok, the problem persists, maybe the fuse in the inverter is open, please call the service. |
| | Over Temperature | 1. The internal temperature is higher than specified normal value.<br>2. Find a way to reduce the ambient temperature or move the inverter to a cooler environment. |

| | | |
|---|---|---|
| | PV over Voltage | 1. Check the open circuit voltage of the PV generator , see if it is greater than or too close to 450VDC (for Eversol-TL 1500) or 500VDC (for Eversol-TL 2000).<br>2. If PV voltage is less than 450VDC or 500VDC, and the problem still occurs, please call the service. |
| Permanent Fault | Consistent Fault | Disconnect PV (+) or PV (-) from the input, restart the inverter. |
| | Relay-Check Fail | 1. Disconnect all PV (+) or PV (-).<br>2. Wait for a few seconds.<br>3. After the LCD switches off, reconnect and check again.<br>4. If the problems remain, please call the service. |
| | DC INJ High | |
| | EEPROM R/W Fail | |
| | SCI Failure | |
| | AC HCT Fault | |
| | GFCI Failure | |

If there is no information on the LCD display, please check whether the connection of the inverter with PV generator or the grid is correct. The safety information in this instructions must be fully observed in doing so.

If the PV voltage is higher than 150V, but the inverter doesn't work, please call the service.

During periods of little or no sunlight, the inverter may continuously start up and shut down. This is due to insufficient power generated by PV modules.If the problems remain, please call the service.

## 8 Service and maintenance

Eversolar New Energy grants a warranty of 60 months as standard, starting from the date of the purchase invoice date marked. Eversolar New Energy will only perform warranty services when the faulty unit is returned to Eversolar New Energy together with a copy of the invoice and warranty card which were issued by the dealer to the user. And the unit should be returned in its original or equivalent packaging, please preserve the original packaging. The cost for new packaging and shipment are payed by the customer. In addition, the S/N label on the unit must be fully legible. If these requirements are not fulfilled, Eversolar New Energy reserves the right to deny warranty services.

Warranty claims are excluded for direct or indirect damages due to:

1. Beyond warranty date, without warranty card or serial number;
2. Improper use, operation and refitting;
3. Transport damage;
4. Non-observance to the relevant safety instructions and work in the severe environment out of the recommended ones in the instructions;
5. Beyond installation and use areas of the relevant international standards;
6. Influence of abnormal environment disaster and force majeure (earthquake, fire, flood etc).

## 9 Recycling and disposal

Both the inverter and its packaging are predominantly made of recyclable raw materials. Ensure that they are disposed of appropriately.

## 10 Contact

If you have any technical problems about our product, you can contact us via:

www. ever-solar.com

ADD: Building 9 No. 198 Xiangyang Road, CN-215011 Suzhou, China

Tel.: +86 512 6937 0998

Fax: +86 512 6937 0630

Email: service@ever-solar.com