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1 Symbols

Caution! - Failure to observe a warning indicated in this manual may result in minor or moderate injury.

Components of the product can be recycled.

Danger of high voltage and electric shock!

This side up - The package must always be transported, handled and stored in such a way that the arrows always point upwards.

Danger of hot surface!

No more than six (6) identical packages be stacked on each other.

Product should not be disposed as normal household waste.

The package/product should be handled carefully and never be tipped over or slung.

Refer to the operating instructions

Keep Dry – The package/product must be protected from excessive humidity and must accordingly be stored under cover.

Signals danger due to electrical shock and indicates the time (5 minutes) to allow after the inverter has been turned off and disconnected to ensure safety in any installation operation.

CE Mark

2 Safety and Warning

DT/ Smart DT (hereinafter referred to as SDT) series inverter of Jiangsu GoodWe Power Supply Technology Co., Ltd. ( hereinafter referred to as GoodWe ) strictly conforms to related safety rules in design and test. As electric and electronic equipment, Safety Regulation shall be followed during installation and maintenance. Improper operation may bring severe damage to the operator, the inverter, and the surrounding environment, and may even impair people's lives and property safety.

Installation, maintenance and connection of inverters must be performed by qualified personnel, in compliance with local electrical standards, regulations and the requirements of local power authorities and companies. To avoid electric shock, must be terminated AC output of inverter then terminated DC input disconnected and wait at least 5 minutes before performing any installation or maintenance. The temperature of some parts of the inverter may exceed 60°C during operation. To avoid being burnt, do not touch the inverter during operation. Let it cool before touching it. Keep children away from the inverter. Without permission, open the front cover of the inverter is not allowed. Users should not touch/replace any of the components except for the DC/AC connectors. GOODWE will not bear any consequences caused by unauthorized actions which will lead to potential injury to people and damage to inverters.

Static electricity may damage electronic components. Appropriate method must be adopted to prevent such damage to the inverter; otherwise the inverter may be damaged and the warranty will be annulled.

Ensure the output voltage of the proposed PV array is lower than the maximum rated input voltage of the inverter; otherwise the inverter may be damaged and the warranty will be annulled. When exposed to sunlight, the PV array will generate very high voltage which will cause potential danger to people. Please strictly follow the instruction we provided. PV modules should have an IEC61730 class A rating. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Completely isolate the equipment should: switch off the DC switch, disconnect the DC terminal, and disconnect the AC terminal or AC breaker.

Prohibit inserting or pulling the AC and DC terminals when the inverter is working. Only DC connectors provided by GoodWe are permitted to use, otherwise the inverter may be damaged and the warranty will be annulled. Person could access to inverter status through mobile phone and computer display please refers to chapter 3.4.4 and 3.4.5. and error code could be shown not only on inverter LCD display but also mobile phone APP interface. The inverter can exclude the possibility of DC residual currents to 6mA in the system, Where an external RCD is required in addition to the built-in RCMU, type A RCD must be used to avoid tripping. The default photovoltaic module is not grounded.

If there are more than 3 PV strings on input side, an additional fuse installing will be suggested.

3 Installation

3.1 Mounting Instruction

- In order to achieve optimal performance, the ambient temperature should be kept lower than 45 °C.
- For the convenience of checking the LCD display and possible maintenance activities, please install the inverter at eye level.
- Inverters should NOT be installed near inflammable or explosive items. Any strong electro-magnetic equipment should be kept away from installation site.
- Product label and warning symbol shall be clear to read after installation.
- Please do not install inverter under direct sunlight, rain and snow.

3.2 Overview and Packaging

After opening the package, confirm if it is consistent with specification of inverter you purchased.

3.2.1 Inverter Overview

DT Series inverter illustration.
1. PV input terminals
2. DC Switch (Optional)
3. DRED & METER (Optional)
4. RS485 port or External WiFi module
5. AC output terminal
6. LCD display
7. LED lights
8. Buttons

1. PV input terminals
2. Waterproof vent
3. DC Switch (Optional)
4. USB port
5. RS485 port or External WiFi module
6. DRED & METER (Optional)
7. AC output terminal
8. LED lights
9. LCD display
10. Buttons

3.3 Inverter Installation
3.3.1 Selecting the Installation Position

Installation position should be selected based on the following aspects:
- The installation method and mounting location must be suitable for the inverter's weight and dimensions.
- Mount on a solid surface.
- Select a well ventilated place sheltered from direct sun radiation.
- Install vertically or tilted backward by max 15°. The device cannot be installed with a sideways tilt. The connection area must point downwards. Refer to Figure 3.3.1-1.

- In consideration of heat dissipation and convenient dismantlement, the minimum clearances around the inverter should be no less than the following value:
- The installation position shall not prevent access to the disconnection means.
3.3.2 Mounting Procedure

(1) Use the wall-mounted bracket as a template and drill 6 holes on the wall, 10 mm in diameter and 80 mm deep. The inverter sizes of DT series please refer to Figure 3.3.2-1, and the size of SDT series refer to Figure 3.3.2-2.

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

(3) Hold the inverter by the groove on it, (DT models please refer to Figure 3.3.2-3, and SDT models refer to Figure 3.3.2-4.)

(4) Place the inverter on the wall-mounted bracket as illustrated in Figure 3.3.2-5, 3.3.2-6, 3.3.2-7, 3.3.2-8, 3.3.2-9.

3.4 Electrical Connection

3.4.1 Connection to Grid (AC Side Connection)

(1) Check the grid voltage and frequency, select a suitable safety standard from inverter that comply with this requirements.

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

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

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

(5) The integrated leakage current detection device of the inverter can detect external leakage current in real time. When the detected leakage current exceeds the limit value, inverter will quickly disconnect with the grid. If the leakage current protection device is installed externally, the action current should be 300mA or higher.

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

(7) Fix (Torque: 2~2.5 N.m) the connector of AC cable to the corresponding terminals.

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

(9) The AC line construction shall be such that if the cord should slip in its anchorage, placing a strain on conductors, the protective earthing conductor will be the last to take the strain. such as the PE line is longer than L and N.

Installation instruction of waterproof coupling series connector please refer to Figure 3.4.1-1.

AC cable illustration please refer to Figure 3.4.1-2.

---

### Table: Conductor Material Sectional Area

<table>
<thead>
<tr>
<th>Model</th>
<th>Conductor Material Sectional Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>GW12KLV-DT</td>
<td>6~10mm²</td>
</tr>
<tr>
<td>GW015KLV-DT</td>
<td>10~25mm²</td>
</tr>
<tr>
<td>GW015K-DT</td>
<td>4~10mm²</td>
</tr>
<tr>
<td>GW017K-DT</td>
<td>6~10mm²</td>
</tr>
<tr>
<td>GW020K-DT</td>
<td>6~10mm²</td>
</tr>
<tr>
<td>GW025K-DT</td>
<td>10~25mm²</td>
</tr>
<tr>
<td>GW030K-DT</td>
<td>10~25mm²</td>
</tr>
</tbody>
</table>

---

Note: The N line of GW30K-DT should not be reconnected.
The minimum insulation resistance to ground of the PV panels must exceed 33.3 kΩ, there is a risk of shock hazard if the requirement of minimum resistance is not met.

Positive shall be red, negative shall be black.

The inverter is added earth terminal according to the requirement of EN 50178. It is suggested that installation person should connect the terminal to earthing wire.

1. Strip the wire insulation sheet of a suitable length with a wire stripper, illustrated as Figure 3.4.1-3.

2. Insert the stripped wire into the terminal and compress it tightly by crimping pliers, illustrated as Figure 3.4.1-4.

3. Fix the earth wire shall on the machine, illustrated as Figure 3.4.1-5.

4. In order to improve the corrosion resistance of the terminal, coat the terminal with silica gel after connection.

**Grid compatibility**

DT series GW12KLV-DT~GW25K-DT and SDT series support four different types of grid. Please refer to Figure 3.4.1-5.

**Grid compatibility**

GW30K-DT support IT grid type. Please refer to Figure 3.4.1-6.

3.4.2 AC circuit breaker and leakage current protection device

In order to ensure that the inverter can be safe and reliable to disconnect from the power grid, please install an independent circuit breaker to protect the inverter.

<table>
<thead>
<tr>
<th>Inverter model</th>
<th>Recommended circuit breaker specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>GW4000-DT</td>
<td>16A</td>
</tr>
<tr>
<td>GW5000-DT</td>
<td>25A</td>
</tr>
<tr>
<td>GW6000-DT</td>
<td>32A</td>
</tr>
<tr>
<td>GW8000-DT</td>
<td>40A</td>
</tr>
<tr>
<td>GW9000-DT</td>
<td>50A</td>
</tr>
</tbody>
</table>

Note: Multiple inverters are not allowed to share a circuit breaker. Leakage current protector is not allowed to connect between the inverter and the circuit breaker.

The integrated leakage current detection device of the inverter can detect external leakage current in real time. When the detected leakage current exceeds the limit value, inverter will quickly disconnect with the grid. If the leakage current protection device is installed externally, the action current should be 300 mA or higher.

3.4.3 DC Side Connection

1. Before connecting PV string, make sure DC switch is turned off.
2. Make sure PV string polarity confirms with DC connector, otherwise, it will cause damage to inverter.
3. Make sure the maximum open circuit voltage (Voc) of each PV string does not exceed the inverter input voltage Vmax under any condition.
4. Do not connect positive or negative pole of PV string to earth wire. Otherwise, it will cause damage to inverter.
5. Positive shall be red, negative shall be black.
6. The minimum insulation resistance to ground of the PV panels must exceed 33.3kΩ (R = 1000/30 mA), there is a risk of shock hazard if the requirement of minimum resistance is not met.
3.4.4 RS485 Communication

This function only applies to inverter with RS485 ports. The RS485 interface is used to connect EzLogger Pro only, please make sure the connecting cables not exceed 1000m. Communication lines must be separated from other power lines to avoid communications interference. RS485 connection please refer to Figure 3.4.4-1.

(1) RS485 communication connection procedure:
- Remove the waterproof kit of RS485 cover with screwdriver.
- Remove the screw cap of the cable gland.
- Remove the one-hole sealing ring.
- Insert the RS485 cable through the components as the followings: screw cap, one-hole sealing ring, insulation body and sheet metal parts.
- Fasten the cable as Figure shown, figure 3.4.4-2(SDT), figure 3.4.4-3(DT)
- Connect the compressed cable to the built-in communication interface of inverter.
- Fasten the RS485 waterproof kit to inverter.
- Fasten the screw cap of the cable gland.

DC Cable specification please refer to Figure 3.4.3-3.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>O.D.</td>
<td>4~5mm</td>
</tr>
<tr>
<td>B</td>
<td>Conductor Material Sectional Area</td>
<td>2.5~4mm²</td>
</tr>
<tr>
<td>C</td>
<td>Bare Wire Length</td>
<td>7mm around</td>
</tr>
</tbody>
</table>

*DC Cable should be used dedicated PV cable.
(4) RS485 communication connection method

- If there are several GoodWe PV inverters, their connection can be realized by RS485 communication cables which are in daisy chain connection.
- For single inverter communication, put on the dip switch near the terminal. (The default is OFF). Then shielding layer of communication cable is single point grounding, illustrated as Figure 3.4.4-5.

(2) Connect the inverter to EzLogger Pro with RS485 cable, and EzLogger Pro to switch or router with CAT5E STP cable.
3.4.5 WiFi Communication

The WiFi communication function is only applied to WiFi models, the detailed configuration instruction can be referred to WiFi configuration in the accessory box or the "WiFi Monitoring Video" on the official website, http://www.goodwe.com.cn/en/Download.aspx. After configuration, please browse http://www.goodwe-power.com to create PV station.

Installation of DT external WiFi module, please refer to 3.4.5-1.
Installation of SDT external WiFi module, please refer to 3.4.5-2.
Installation of SDT10KL&15KW external WiFi module, please refer to 3.4.5-3.

NOTE:
2-pin terminal is used to make connection to meter. You can find it inaccessory bag.
6-pin terminal is used to make connection to DRED device. If DRED device is not available, please keep it not connected.

Connection Procedure:
- Pull the cable through the components in this order: screw cap, one-hole sealing ring, insulation body and sheet metal parts.
- Pull out the 6-pin terminal from the socket in the cabinet and take off the resistor which is fixed in it. Cable should be connected as Figure 3.4.6-2.
- Insert the green terminal into the corresponding interior terminal of the inverter. Pull cable softly to maintain the cable not to be pulled out.
- Lock the sheet metal parts onto the box and tighten the screw cap.

If several GoodWe DT inverters linked together with Ezlogger Pro, the inverter number in daisy chain could be 20 at most.
The inverter complies with IEC62109-2 chapter 13.9. When earth fault occurs, the fault indicator LED on front cover will light up, and, for WiFi inverters, it will email the fault information to the customer; for non-WiFi inverters, the buzzer inverter will keep ringing 1 minute and ring again after half an hour unless the fault is resolved (This function is only available to Australia/New Zealand).

3.4.7 Earth Fault Alarm

The inverter complies with IEC62109-2 chapter 13.9. When earth fault occurs, the fault indicator LED on front cover will light up, and, for WiFi inverters, it will email the fault information to the customer; for non-WiFi inverters, the buzzer inverter will keep ringing 1 minute and ring again after half an hour unless the fault is resolved (This function is only available to Australia/New Zealand).
In level 2 menu, move the cursor to the setting area through 'DOWN' and 'UP' key operation. For the level 2 menu which has three parameter. In the meanwhile, backlight will turn on for 1 min; Press "Enter" to unlock the interface for information display, the current, grid voltage and current, line frequency. Pressing button "Enter" to move cursor, long press 'Enter' to save the settings.

In the level 2 menu, choose 'Language' and press 'Enter' to enter language setting interface, the LCD will flash, press 'up' or 'down' to change the language, long press 'Enter' to save the settings, when it stops flashing, press 'Esc' to return.

In the level 2 menu, short press 'Date&Time' to enter the time setting interface, press 'up' and 'down' to change the data, short press 'Enter' to move cursor, long press 'Enter' to save the settings.

In the level 2 menu, short press 'Error Log' to enter the historical error message interface, press 'up' and 'down' to inquire the first 5 historical error message, press 'Esc' to return.

In the level 2 menu, choose 'Shadow OFF' (if shadow mode has not been turned on), long press 'Enter', it shows 'Shadow ON Successful'.

In the level 2 menu, choose 'Set Safety' or '60Hz Grid Default' accordingly.

In all levels of menu, it will automatically enter the first item of the level 1 menu if no action is taken within 305, meanwhile, the modified data will be stored into internal memory.

(3) Use of the display and LCD display:

The buttons near the LCD screen are mainly used for inverter information display, setting of time, language selection and histogram information display.

The menu in LCD display area has three levels; In the level 1 menu, first 6 interfaces showing inverter status, model, PV voltage and current, grid voltage and current, line frequency. Pressing button 'Enter' to lock current menu interfaces in order to observe specific data. In the meanwhile, backlight will turn on for 1 min; Press "Enter" to unlock the interface for information display, the backlight will be kept on for 305 and then switch back to default initial interface.

The last interface (including error Log, time and data, language setting and historical electricity generation) can be entered by pressing 'Enter' to according Level 2 menu.

In level 2 menu, move the cursor to the setting area through 'DOWN' and 'UP' key operation. For the level 2 menu which has three level menus, press 'ENTER' to get in and change the figures at cursor location through 'DOWN' and 'UP' key operation, in addition the cursor location can be changed by pressing 'ENTER'.

72kWh means the maximum power generation of recent 16 days. The unit on the left corner sometimes turns to "MWh" from "kWh", it depends on Maximum power generation. 0.2—1.0 on the left is scare factor, which is fixed display content; 17-31 are based on current mode which shows the bar chart label.

Area③ Displays total power generation, daily power generation, real-time power generation and time information, described as follow:

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-DAY</td>
<td>Daily power generation</td>
</tr>
<tr>
<td>E-TOTAL</td>
<td>Gross power generation after first time use of inverter. The unit is &quot;kWh&quot;. When power generation exceeds 999.9kWh, the unit changes to &quot;MWh&quot;.</td>
</tr>
<tr>
<td>TIME</td>
<td>Current system time</td>
</tr>
<tr>
<td>POWER</td>
<td>Real-time power Generation of the system</td>
</tr>
</tbody>
</table>

(4) Menu introduction:

Long press 'ENTER' in the Configure Safety interface, there will be set safety interface. Press 'Down' or 'Up' to choose the safety you need and then long press 'ENTER', the safety you need can be set.

When PV panel is feeding power to the inverter, the screen shows the first interface of level 1 menu. The interface displays current state of the system. It shows 'Waiting' in the initial state; it shows 'Normal' during power generation mode; if there is something wrong with the system, error message is shown. Error code can be referred to 4.3.

Press any key once to turn on the LCD backlight when it is off; if the backlight is on, press 'DOWN' key to enter the next menu displaying data of Vpv and Ipv; press 'ENTER' to lock the current interface.

In the level 1 menu, the displayed information can be switched through 'DOWN' and 'UP' key operation, there are 7 interfaces in total, which are circulatory. The level 2 menu can only be selected through 'ENTER' from the seventh interface.

In the level 2 menu, short press 'Error Log' to enter the historical error message interface, press 'up' and 'down' to inquire the first 5 historical error message, press 'Esc' to return.

In the level 2 menu, short press 'Date&Time' to enter the time setting interface, press 'up' and 'down' to change the data, short press 'Enter' to move cursor, long press 'Enter' to save the settings.

In the level 2 menu, choose 'Language' and press 'Enter' to enter language setting interface, the LCD will flash, press 'up' or 'down' to change language, long press 'Enter' to save the settings, when it stops flashing, press 'Esc' to return.

In the level 2 menu, choose 'Histogram', short press 'Enter' to enter the level 3 menu to inquire the historical power generation, in the level 3 menu, press 'up' or 'down' to inquire power generation data in Year Mode, Month Mode, Day Mode and Hour Mode, short press 'Enter' to show the historical power generation, press 'Esc' back to main menu.

In the level 2 menu, short press 'Shadow OFF' to enter the shadow setting interface, if it is WiFi model, please choose 'WiFi Reload' or 'WiFi Reload' and long press 'Enter' will reset or reload the inverter WiFi mode. Wait for 20 seconds, operation result will show on display.

In the level 2 menu, the menu after 'Histogram' is communication selecting interface, if it is WiFi model, it shows as 'RSSI: XXXX % (0000%—100%). It cannot be choose.

In the level 2 menu, long press 'Set Addr' to get an added menu 'Set Addr: x47'. Press 'Down' to choose 'Set Addr: x47' and short press 'Enter' to enter Modbus address set interface. Press 'Up' or 'Down' to set the address, long press 'Enter' to save the address.

This function is used for special requirements.

Press 'Enter' in the model type interface, there will be set safety interface. Press 'Down' or 'Up' to choose the safety you need and then long press 'ENTER', the chosen safety will be set. If there is no EXACTLY proper country code, please choose '50Hz Grid Default' or '60Hz Grid Default' accordingly.

This function is used for special requirements.

In the level 2 menu, choose 'Shadow OFF' (if shadow mode has not been turned on), long press 'Enter', it shows 'Shadow ON Successful'.

This function is used for special requirements.

In the level 2 menu, choose '70% Rated', at this time, the inverter is 100% output power, long press 'Enter', it becomes '100%'.
Rated', then the output power will be limited to 70%. The function is only for using with VDE AR-N 4105 standard or in France areas, and only for service person. Misuse will cause the inverter derating. This menu is not shown for other standards.

This function is used for special requirements.

4.4 WiFi Reset & WiFi Reload

Choose ‘WiFi Reset’ button in level 2, long press ‘Enter’ to reset inverter WiFi model; wait for a while, operation result will show on display, the function can be applied when inverter is unable to connect to router or monitor server.

Choose ‘WiFi Reload’ button in level 2, long press ‘Enter’ button will reload the inverter WiFi model to initial setting. Wait for a while, operation result will show on display, the function can be applied when inverter is unable to connect to WiFi model. Once WiFi model restore initial setting, WiFi model need be reset again.

Notice: WiFi model only.

4.5 Power limiting function setting

The Operations that the ON/OFF of power limiting function (the default is OFF) and the power limiting settings (the default is 2% Rated) are shown below:

Note: If the power limiting function is ON, the maximum output power of the inverter will be limited at the power limiting setting value while the inverter is without the power limiting device (such as a CT/Meter) or the power limiting device is out of work.

4.6 Special Adjustable Setpoints

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

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

5 Troubleshooting

If the Inverter is not able to work properly, please refer to the following instructions before contact your local service. Should any problems arise, the red (FAULT) LED indicator on the front panel lights up and the LCD screen will display relevant information. Please refer to the following table for a list of error message and associated solutions.

<table>
<thead>
<tr>
<th>Error code</th>
<th>Error message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>SPI Failure</td>
<td>Internal communication failure</td>
</tr>
<tr>
<td>02</td>
<td>EEPROM R/W Failure</td>
<td>Memory chip failure</td>
</tr>
<tr>
<td>03</td>
<td>Fac Failure</td>
<td>Grid frequency out of range</td>
</tr>
<tr>
<td>07, 25</td>
<td>Relay Check Failure</td>
<td>Relay self-checking failure</td>
</tr>
<tr>
<td>13</td>
<td>DC Injection High</td>
<td>Overhigh DC injection</td>
</tr>
<tr>
<td>14</td>
<td>Isolation Failure</td>
<td>Ground insulation impedance is too low</td>
</tr>
<tr>
<td>15</td>
<td>Vac Failure</td>
<td>Grid voltage out of range</td>
</tr>
<tr>
<td>16</td>
<td>EFan Fault</td>
<td>External Fan Failure</td>
</tr>
<tr>
<td>17</td>
<td>PV Over Voltage</td>
<td>Overvoltage at DC input</td>
</tr>
<tr>
<td>19</td>
<td>Over Temperature</td>
<td>Overtemperature on the case</td>
</tr>
<tr>
<td>20</td>
<td>IFan Fault</td>
<td>Internal Fan Failure</td>
</tr>
<tr>
<td>21</td>
<td>DC Bus High</td>
<td>Overhigh BUS voltage</td>
</tr>
<tr>
<td>22</td>
<td>Ground I Failure</td>
<td>Overhigh ground leakage current</td>
</tr>
<tr>
<td>23</td>
<td>Utility Loss</td>
<td>Grid-disconnection/fault</td>
</tr>
<tr>
<td>30</td>
<td>Ref 1.5V Failure</td>
<td>1.5V reference voltage failure</td>
</tr>
<tr>
<td>31, 24</td>
<td>AC HCT Failure</td>
<td>Output current sensor failure</td>
</tr>
<tr>
<td>32, 28</td>
<td>GFCI Failure</td>
<td>Detection circuit of ground leakage current failure</td>
</tr>
<tr>
<td>Others</td>
<td>Device Failure</td>
<td>Internal device failure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System</th>
<th>Fault</th>
<th>Possible actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation Failure</td>
<td>1. Check the impedance between PV(+)&amp;PV(-) and make sure the inverter is earthed. The impedance value must be greater than 200kΩ. 2. Contact local service office for help if the problem still exists.</td>
<td></td>
</tr>
<tr>
<td>Ground Failure</td>
<td>1. The ground current is too high. 2. Unplug the inputs from the PV generator and check the peripheral AC system. 3. When the problem is cleared, reconnect the PV panel and check the Inverter status. 4. Contact local service office for help if the problem still exists.</td>
<td></td>
</tr>
<tr>
<td>Vac Failure</td>
<td>1. The PV Inverter will automatically restart within 5 minutes if the grid returns to normal. 2. Make sure grid voltage is in conformity with the specification. 3. Make sure Neutral (N) Wire and PE wire is connected well. 4. Contact local service office for help if the problem still exists.</td>
<td></td>
</tr>
<tr>
<td>Fac Failure</td>
<td>1. The PV Inverter will automatically restart within 5 minutes if the grid returns to normal. 2. Make sure grid frequency is in conformity with the specification. 3. Contact local service office for help if the problem still exists.</td>
<td></td>
</tr>
<tr>
<td>Utility Loss</td>
<td>1. Grid is not connected. 2. Check grid connection cables 3. Check grid usability.</td>
<td></td>
</tr>
</tbody>
</table>
6 Technical Parameters and Block Diagram

### 6.1 Technical Parameters

<table>
<thead>
<tr>
<th>Display</th>
<th>Possible actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Over Voltage</td>
<td>1. Check whether the PV open voltage is higher or too close to the maximum input voltage. 2. If the problem still exists when PV voltage is less than the maximum input voltage, contact local service office for help.</td>
</tr>
<tr>
<td>Over Temperature</td>
<td>1. The internal temperature is higher than normal value specified. 2. Reduce ambient temperature. 3. Move the inverter to a cool place. 4. If the problem still exists, contact local service office for help.</td>
</tr>
<tr>
<td>Relay-Check Failure</td>
<td>1. Turn off DC switch of the inverter. 2. Wait till inverter LCD unlighted. 3. Turn on DC switch and make sure it connected. 4. If the problem still exists, contact local service office for help.</td>
</tr>
<tr>
<td>No display</td>
<td>1. Turn off DC switch, take off DC connector, check inverter module voltage. 2. Plug in DC connector, and turn on DC switch. 3. If voltage is lower than 250V (5), please check configuration of invert module. 4. If voltage is higher than 250V (5), please contact local office.</td>
</tr>
</tbody>
</table>

**Notice:** 1. At the place that marked (5) in the chart, DT series2KW/15KW/15K/20K/25K-DT is 250V SDT Series 400LL/500LL/600LL/10KL/10KN/15KW-DT is 180V. 2. When sunlight is insufficient, the PV Inverter may continuously start up and shut down automatically due to insufficient power generated by the PV panel.
### Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>GW15K-DT</th>
<th>GW17K-DT</th>
<th>GW20K-DT</th>
<th>GW25K-DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Output Power (W)</td>
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<td>17000</td>
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<td>400.3L/N/PE</td>
<td>400.3L/N/PE</td>
<td>400.3L/N/PE</td>
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<tr>
<td>Nominal Output Frequency (Hz)</td>
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<td>50/60</td>
<td>50/60</td>
<td>50/60</td>
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<tr>
<td>Max. Output Current (A)</td>
<td>25</td>
<td>25</td>
<td>30</td>
<td>37</td>
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<td>Output Power Factor</td>
<td>&gt;1 (Adjustable from 0.8 leading to 0.8 lagging)</td>
<td>&gt;1 (Adjustable from 0.8 leading to 0.8 lagging)</td>
<td>&gt;1 (Adjustable from 0.8 leading to 0.8 lagging)</td>
<td>&gt;1 (Adjustable from 0.8 leading to 0.8 lagging)</td>
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<tr>
<td>Output THDi (@Nominal Output)</td>
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<td>&lt;1.5%</td>
<td>&lt;1.5%</td>
<td>&lt;1.5%</td>
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<tr>
<td>AC Overcurrent Protection(A)</td>
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<td>47</td>
<td>49.5</td>
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<tr>
<td>AC Backfeed Current</td>
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<tr>
<td>Over Voltage Category</td>
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<td></td>
</tr>
<tr>
<td>Current (inrush) a.c. A</td>
<td>100A 2us</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maximum output fault current a.c.A (peak and duration)</td>
<td>64.5A &lt;100us</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt;98.2%</td>
<td>&gt;98.4%</td>
<td>&gt;98.3%</td>
<td>&gt;98.1%</td>
</tr>
<tr>
<td>MPPT efficiency</td>
<td>99.9%</td>
<td></td>
<td></td>
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</tr>
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</table>

#### Protection

<table>
<thead>
<tr>
<th>Protection</th>
<th>GW15K-DT</th>
<th>GW17K-DT</th>
<th>GW20K-DT</th>
<th>GW25K-DT</th>
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</thead>
<tbody>
<tr>
<td>Anti-islanding Protection</td>
<td>AFD</td>
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<tr>
<td>Input Reverse Polarity Protection</td>
<td>Integrated</td>
<td></td>
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<tr>
<td>Insulation Resistor Detection</td>
<td>Integrated</td>
<td></td>
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<tr>
<td>DC SPD Protection</td>
<td>Integrated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Current Monitoring Unit</td>
<td>Integrated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over Output Current Protection</td>
<td>Integrated</td>
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<tr>
<td>Output Short Protection</td>
<td>Integrated</td>
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<tr>
<td>Output Over Voltage Protection</td>
<td>Integrated</td>
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<tr>
<td>AC Backfeed Current</td>
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<tr>
<td>Over Voltage Category</td>
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<tr>
<td>Current (inrush) a.c. A</td>
<td>100A 2us</td>
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<tr>
<td>Maximum output fault current a.c.A (peak and duration)</td>
<td>64.5A &lt;100us</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Efficiency</td>
<td>&gt;98.2%</td>
<td>&gt;98.4%</td>
<td>&gt;98.3%</td>
<td>&gt;98.1%</td>
</tr>
<tr>
<td>MPPT efficiency</td>
<td>99.9%</td>
<td></td>
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</tbody>
</table>

#### Grid regulation

- VDE-AR-N 4105, VDE0126-1-1, EN50438(PL), EN50438(SW)
- GB3, IEC61727, AS4777.2
- IEC62116, EN50438(IR)
- EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4
- AS4777.2

#### EMC

- EN61000-4-2, EN61000-4-3, EN61000-4-4, IEC62116, EN50438(IR)
- AS4777.2

#### Moisture Location Category

- 4K4H

#### Environment category

- Outdoor & Indoor

#### External Environment Pollution Degree

- Grade 1, 2, 3

### General Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>GW15K-DT</th>
<th>GW17K-DT</th>
<th>GW20K-DT</th>
<th>GW25K-DT</th>
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<tbody>
<tr>
<td>Operating Temperature Range(°C)</td>
<td>-25 to 60</td>
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<tr>
<td>Relative humidity</td>
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<tr>
<td>Operating Altitude(m)</td>
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<td>Cooling</td>
<td>Fan Cooling</td>
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<tr>
<td>Noise (dB)</td>
<td>&lt;30</td>
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<tr>
<td>User Interface</td>
<td>LCD&amp;LED</td>
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<td></td>
</tr>
<tr>
<td>Communication</td>
<td>WiFi or RS485</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (Width<em>Height</em>Depth mm)</td>
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<td>516<em>455</em>192</td>
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<td></td>
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<tr>
<td>Protection degree</td>
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<td>Night self consumption(W)</td>
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<td>Topology</td>
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<td>Moisture Location Category</td>
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<td>Environment category</td>
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<tr>
<td>External Environment Pollution Degree</td>
<td>Grade 1, 2, 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Maximum operating voltage is 950V.
### Technical Data

#### GW15K-DT
- Max. DC Input Power: 5200 W
- Max. DC Input Voltage: 6600 V
- MPPT range (V): 200 ~ 550 V
- Start-up voltage: 180 V
- MPPT Range for Full Load (V): 200 ~ 550 V
- Nominal DC Input Voltage: 480 V
- Max. Input Current: 13.8 A
- No. of MPP Trackers: 2
- No. of Input Strings per Tracker: 1
- DC Backfeed Current: 0 A
- Over Voltage Category: II

#### GW17K-DT
- Nominal Output Power: 4000 W
- Max. Output Apparent Power (VA): 4000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

#### GW20K-DT
- Current (inrush) a.c.: 15A
- Maximum output fault current a.c.: 40A
- DC Backfeed Current: 0 A

#### GW25K-DT
- Nominal Output Power: 6000 W
- Max. Output Apparent Power (VA): 6000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

#### GW5000L-DT
- Nominal Output Power: 5000 W
- Max. Output Apparent Power (VA): 5000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

#### GW6000L-DT
- Nominal Output Power: 6000 W
- Max. Output Apparent Power (VA): 6000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

#### GW10KL-DT
- Nominal Output Power: 10000 W
- Max. Output Apparent Power (VA): 10000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

#### GW15KL-DT
- Nominal Output Power: 15000 W
- Max. Output Apparent Power (VA): 15000 VA
- Nominal Output Voltage (V): 50/60 V
- Nominal Output Frequency (Hz): 60 Hz
- Max. Output Current (A): 8.5 A
- Output Power Factor: -1 (Adjustable from 0.8 leading to 0.8 lagging)
- Output THD (%): 2%
- AC Overcurrent Protection (A): 25 A
- AC Backfeed Current: 0 A
- Over Voltage Category: III

### Protection
- Anti-islanding Protection: AFD
- Input Reverse Polarity Protection: Integrated
- Insulation Resistor Detection: Integrated
- Residual Current Monitoring Unit: Integrated
- Output Over Current Protection: Integrated
- Output Short Protection: Integrated
- Output Over Voltage Protection: Integrated

### General Data
- Operating Temperature Range: -25 ~ 60°C
- Relative Humidity: 0 ~ 95%
- Operating Altitude: ≤ 4000 m
- Cooling: Natural convection
- Noise (dB): <30
- Weight (kg): 24 ~ 26
- Size (Width x Height x Depth mm): 516 x 455 x 192
- Protection degree: IP65
- Night self consumption (W): < 1
- Topology: Transformerless
- Moisture Location Category: 4K4H
- Environment category: Outdoor & Indoor
- External Environment Pollution Degree: Grade 1, 2, 3

### Certifications & Standards
- Grid regulation: AS4777.2, VDE0126-1-1, VDE-AR-N 4105, EN50438
- Safety regulation: IEC62116, EN50438
- EMC: EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4
Technical Data

<table>
<thead>
<tr>
<th></th>
<th>GW12KLV-DT</th>
<th>GW15KLV-DT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC Output Date</strong></td>
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</tr>
<tr>
<td><strong>Nominal Output Power (W)</strong></td>
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</tr>
<tr>
<td>208Vac System</td>
<td>11300</td>
<td>14200</td>
</tr>
<tr>
<td>220Vac System</td>
<td>12000</td>
<td>15000</td>
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<tr>
<td>240Vac System</td>
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<tr>
<td><strong>Current (inrush) a.c. A</strong></td>
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<td>100A 2us</td>
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<td><strong>Maximum output fault current a.c. A (peak and duration)</strong></td>
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<td>64.5A &lt;100us</td>
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<td><strong>Efficiency</strong></td>
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<td>Max. efficiency</td>
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<td>Europe efficiency</td>
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<td>MPPT efficiency</td>
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<tr>
<td><strong>Protection</strong></td>
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<tr>
<td>Anti-islanding Protection</td>
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<tr>
<td>Input Reverse Polarity Protection</td>
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<tr>
<td>Insulation Resistor Detection</td>
<td>Integrated</td>
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<td>Residual Current Monitoring Unit</td>
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<td>DC SPD Protection</td>
<td>Integrated(Type II )</td>
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<td>Output Over Current Protection</td>
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<td>Output Short Protection</td>
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<td>Cooling</td>
<td>Fan Cooling</td>
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<td>Noise (dB)</td>
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<td>Communication</td>
<td>WiFi or RS485</td>
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<tr>
<td>Weight (kg)</td>
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<tr>
<td>Night self consumption(W)</td>
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</tbody>
</table>

**Technical Data**

**Topologies**

- Transformerless

**Moisture Location Category**

- Outdoor & Indoor

**Environment category**

- Outdoor & Indoor

**External Environment Pollution Degree**

- Grade 1, 2, 3

**Certification & Standards**

- Grid regulation: IEEE1547
- Safety regulation: IEC62109-1 & 2
- EMC: EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4

**Technical Data**

- GW12KLV-DT
- GW15KLV-DT

**Environment category definition**

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

**Pollution degree definition**

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

Block Diagram of SDT4~10KW refer to figure 6.2-1:

Block Diagram of SDT10KL&SDT15KW refer to figure 6.2-2:

Block Diagram of GW12KLV-DT&GW15K-DT&GW17K-DT&GW20K-DT refer to Figure 6.2-3.

Block Diagram of GW15KLV-DT/GW25K-DT refer to Figure 6.2-4.

Block Diagram of GW30K-DT refer to Figure 6.2-5.

7 Maintenance

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

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

7.1 Cleaning

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

- Disconnect the AC breaker firstly and then disconnect DC breaker.
- Wait 5 minutes until the residual voltage has been drained and the fans are no longer turning.
- Disassembly the fans (refer to Figure 7.1-1).
- Loosen the five M4 screws with a crosshead screwdriver, then remove the fans out the cabinet about 50mm slowly.
- Open the lockers of the two fan connectors and remove them from housing, then take the fans away.
- Clean the ventilation grid and the fan with a soft brush, a paint brush, a cloth, or compressed air.
- Reassembly the out fans into cabinet.
- Please use towel to clean the heatsink once a year.
7.2 Checking the DC Switch

DC switch does not require any maintenance. It is recommended, though not compulsory, to:
- Check the DC switch regularly.
- Activate the DC switch 10 times in a row once a year.

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

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

Caution: if there is no switch, operate from step 1 to step 3.

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

Caution: if there is no switch, operate from step 1 to step 3.

7.3 Checking the Electrical Connection

1. Check if the AC or DC wire is loose.
2. Check if the earth wire is reliable grounding.
3. Check if the waterproof covers of RS485 and USB port is fasten.
4. Please use torque wrench to tighten the AC and battery terminal wiring connections followed by 3.4 torque instruction.

Caution: Maintenance cycle is once half a year.