1 Symbols

Risk of injury due to improper handling of the device	Recyclable naterials	High voltage & electric shock danger
Keep upward	Don't touch, hot surface!	Stack no more than 8
Special disposal instructions	Fragile	CE mark.
Keep Dry	5min Wait at least 5 minutes after disconnecting the inverter before touching internal parts	
Refer to operation instructions		

2 Safety

The GoodWe's XS-Series strictly conforms and has been tested according to international safety regulations.
GoodWe strongly advises installers to follow the local safety regulations during the commissioning, operation and maintenance of the XS-Series inverter. An improper operation may result in electric shocks or damage to equipment and property.

- The installation, maintenance and connection of the inverters must be performed by qualified personnel, in compliance with local electrical standards, regulations and following the regulations of the local power suppliers, companies and related authorities.
- To avoid electric shocks, the DC input and AC output port of the inverters must be disconnected and wait at least 5 minutes before performing any installation or maintenance.
- The temperature of some components of the inverters 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.
- Touching or changing inverter components without following the manufacturer's manual instructions may cause personal injury, damage the inverters and ultimately be a reason for warranty invalidation.
- The electronic components of the inverter may be damaged by static electricity. Appropriate methods must be adopted to prevent such damage, otherwise the manufacturer's warranty may be void.
- Make sure that the output voltage of the proposed PV array is lower than the maximum rated input voltage of the inverter; otherwise the inverter may be damaged and the warranty may be void.
- When exposed to sunlight, the PV array generate dangerous high DC voltage; we strongly operators to strictly follow the manufacturer's instructions and avoid actions that put lives at risk.
- The PV modules should have as a minimum an IEC61730 class A rating protection.
- If the equipment is used in a way not authorized by the manufacturer, the equipment built-in protections may be damaged.
- In order to achieve a complete isolation of the equipment: Turn off the DC switch, disconnect the DC terminal, the AC terminal and the AC breaker
- Do not insert or pull the AC or DC terminals when the inverter is in operation.
- An earthing photovoltaic system requires the installation of an Arc Fault Detector on the DC side.

The below bullet points are not understandable. Urgently review!

- 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. DO NOT UNDERSTAND

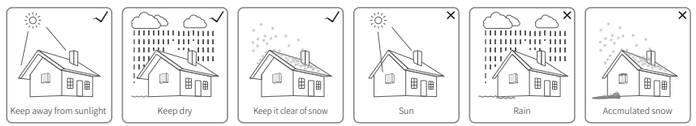
- The PV is not grounded as default configuration. DO NOT UNDERSTAND

To ensure that the IP65 protection is maintained, please make sure that the inverter is rigorously packed and its component sealed properly. The manufacturer strongly suggests to install the inverter at most one day after it has been unpacked. If this is not the case and the installation takes longer, please re-seal all the unused terminals and ensure that the inverter and its components are not exposed to water or dust.

3 Installation

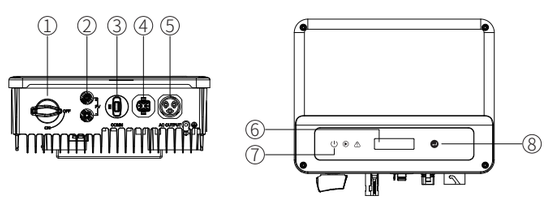
3.1 Mounting instructions

- In order to achieve optimal performance, the ambient temperature should be lower than 45°C.
- For easy maintenance, we suggest to install the inverter at eye level.
- Inverters should NOT be installed near inflammable and explosive items. Strong electro-magnetic charges should be kept away from installation site.
- Product label and warning symbols should be placed at a location that is easy to read by the users.
- Make sure to install the inverter at a place where it is protected from direct sunlight, rain and snow.



3.2 Inverter Overview

When the inverter is delivered, please check nothing is missing and there is no visible damage.



1. DC Switch (Optional)
2. PV input terminals
3. External WiFi module or LAN module (Optional)
4. CT or DRED or Remote Shutdown
5. AC output terminal
6. LCD display
7. Indicator light
8. Button

4 Electrical Connection

4.1 Connection to the grid (AC side connection)

1. When connecting the inverter make sure to adjust the voltage and the frequency in compliance with the grid regulations and the specifications of the manufacturer.
2. Add a breaker or fuse to the AC side. Please note that the specification should be more than 1.25 times of rated AC output current.
3. The PE line of the inverter should be connected to earth. Make sure the impedance of neutral wire and earth wire is less than 10ohm.
4. Disconnect the breaker or fuse between the inverter and the utility.
5. Please note that there are two AC connector brands compatible with the GoodWe inverters: VACONN and WIELAND. Choose one of the to connect the inverter to the grid.
6. When laying the AC line make sure that the protective earthing conductor is not strained.

4.2 AC circuit breaker and leakage current protection device

Please install an independent two pole circuit breaker to protect the inverter and make sure it is safe to disconnect it from the grid.

In addition to the built-in RCMU, an external RCD is required to ensure that the inverter system does not carry DC residual currents. To avoid tripping, the types A or B can be used.

Inverter model	Recommended circuit breaker specifications
GW700-XS/GW1000-XS/GW1500-XS	16A
GW2000-XS/GW2500-XS/GW3000-XS	25A

Note: it is not recommended that multiple inverters share a single circuit breaker.

4.3 DC Side Connection

1. Before connecting the PV strings, please ensure the plug connectors have the correct polarity. Incorrect polarity has the potential to cause permanent damage to the unit.
2. The open circuit voltage of the PV strings cannot exceed the maximum input voltage of the inverter.
3. Only the GoodWe supplied DC connectors are suitable for use.
4. The positive and negative pole should not be connected to the PE wire (ground wire). Not following this instruction may cause damage to the inverter.
5. Do not connect the positive or negative poles of the PV string to the PE wire. Not following this instruction may cause damage to the inverter.
6. Red represents positive, black represents negative.
7. For the XS series the minimum insulation resistance to the ground of the PV panels must exceed 16.7kΩ (R=500/30mA). There is risk of shock hazard if this minimum resistance requirement is not met.

4.4 Wi-Fi Communication

The Wi-Fi communication function is only available with Wi-Fi BOX. For detailed configuration instructions please refer to the Wi-Fi Configuration on the accessory box. Once configuration is completed, please browse the monitoring portal website to set up PV stations on the system.

4.5 Earth Fault Alarm

In compliance with the section 13.9 of IEC62109-2, the GoodWe XS inverter is equipped with an earth fault alarm. When earth fault occurs, the fault indicator at the front LED screen will light up. On inverters with Wi-Fi communication, the system sends an email with the fault notification to the customer. For inverters without Wi-Fi, the buzzer of the inverter will keep ringing for one minute and ring again after half an hour until the fault is resolved. (This function is only available in Australia and New Zealand).

4.6 Auto-Test

Short press the key 2S to enable the Auto Test Function. There are two types of Auto Test, Remote and Local. The Remote type default is 1 and cannot be modified. The Local default is 0 and can be set from 0 to 1. If the Auto Test is set to 1, the testing order will be 59.S1, 59.S2, 27.S1, 81>S2, 81<S2. Otherwise, the testing order would be: 59.S1, 59.S2, 27.S1, 81>S2, 81<S2. When the AC is connected, the Auto Test will start to run once the inverter relay has been completed: the output power is equal to zero and the test information will be indicated on the LCD screen.

If the test is passed, the inverter automatically gets reconnected to the grid in accordance with CEI 0-21 requirement. The next test then gets started. If the test is not passed, the inverter enters wait mode. To try again, the user will need to power off the inverter and reboot it. For future reference, all previous tests records get stored: to access the information, short press the key Autotest Result on the Menu, then long press the key 2S to view previous tests reports.

4.7 Wi-Fi Reset & Wi-Fi Reload

The Wi-Fi reload function is used to change the Wi-Fi configuration to default value. Press the key until the LCD displays "Wi-Fi Reload", then long press until the LCD displays "Wi-Fi Resetting". Stop pressing and wait for the screen to show "Wi-Fi Reset OK" or "Wi-Fi Reset Failed".

Press the key until the LCD displays "Wi-Fi Reload", then long press until the LCD displays "Wi-Fi Reloading". Stop pressing and wait for the screen to show "Wi-Fi Reloading OK" or "Wi-Fi Reloading Failed".

4.8 Special Adjustable Setpoints

The inverter has a field corresponding to adjustable functions, such as trip points, trip times, times of reconnection, active and invalid of QU curve and PU curve.

This is adjustable using a special software. Interested customers, please contact GoodWe After-Sales Department.

The software instructions are available for downloading from the Goodwe website. Alternatively, please contact GoodWe's after sales team for more information.

5 Technical Parameters

Technical Data	GW700-XS	GW1000-XS	GW1500-XS	GW2000-XS	GW2500-XS	GW3000-XS
PV String Input Data						
Max. DC Input Power (W)	910	1300	1950	2600	3250	3900
Max. DC Input Voltage (V)	500	500	500	500	500	500
MPPT Range (V)	40~450	40~450	50~450	50~450	50~450	50~450
Start-up Voltage (V)	40	40	50	50	50	50
Nominal DC Input Voltage (V)	360	360	360	360	360	360
Max. Input Current (A)	12.5	12.5	12.5	12.5	12.5	12.5
Max. Short Current (A)	15.6	15.6	15.6	15.6	15.6	15.6
No. of MPP Trackers	1	1	1	1	1	1
No. of Input Strings per Tracker	1	1	1	1	1	1
AC Output Data						
Nominal Output Power (W)	700	1000	1500	2000	2500	3000
Max. Output Apparent Power (VA)	770	1100	1650	2200	2750	3300
Nominal Output Voltage (V)	220/230	220/230	220/230	220/230	220/230	220/230
Nominal Output Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60
Max. Output Current (A)	3.5	4.8	7.2	9.6	12	14.3
Output Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)					
Output THDi (@Nominal Output)	<3%					
Efficiency						
Max. Efficiency	97.2%	97.2%	97.3%	97.5%	97.6%	97.6%
Europe Efficiency	96.0%	96.4%	96.6%	97.0%	97.2%	97.2%
Protection						
Anti-islanding Protection	Integrated					
Input Reverse Polarity Protection	Integrated					
Insulation Resistor Detection	Integrated					
DC SPD Protectioin	Integrated					
AC SPD Protectioin	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 (°C)	-25~60					
Relative Humidity	0~100%					
Operating Altitude (m)	≤4000					
Cooling	Natural Convection					
User Interface	LCD & LED					
Communication	WiFi or LAN					
Weight (kg)	5.8					
Size (Width*Height*Depth mm)	295*230*113					
Protection Degree	IP65					
Night Self Consumption (W)	<1					
Topology	Transformerless					
Certifications & Standards						
Grid Regulation	VDE0126-1-1, EN50438（PL）, VDE4105, G98, AS/NZ S4777.2, CEI 0-21, UTE 15-712-1 RD1699+UNE, EN505049-1, IEC61727, IEC62116					
Safety Regulation	IEC62109-1&2					
EMC	EN61000					

Note:

Overvoltage category definition

Category I: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.

Category II: applies to equipment not permanently connected to the installation. Examples are appliances, portable tools and other plug-connected equipment;

Category III: applies to fixed equipment downstream, including the main distribution board. Examples are switchgear and other equipment in an industrial installation;

Category IV: applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board). Examples include electricity meters, primary overcurrent protection equipment and other equipment connected directly to outdoor open lines.

Moisture location category definition

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

Environment category definition

Outdoor : the ambient air temperature ranges from -20~50°C. The relative humidity ranges from 4% to 100%. Category PD3 .

Indoor unconditioned: the ambient air temperature ranges from -20~50 °C. The relative humidity range is 5% to 95%. Category PD3.

Indoor conditioned: the ambient air temperature ranges from 0 to 40 °C, the relative humidity ranges from 5% to 85%. Category PD2.

Pollution degree definition

Pollution degree 1: No pollution or only dry conditions; there is no non-conductive pollution. Occasionally a temporary conductivity caused by condensation can be expected.

Pollution degree 2: Normally there is only non-conductive pollution. Occasionally, however, a temporary conductivity caused by condensation can be expected.

Pollution degree 3: Conductive pollution occurs, or, dry, non-conductive pollution occurs which becomes conductive due to condensation, which can be expected.

Pollution degree 4: Persistent conductive pollution occurs, for example, the pollution caused by conductive dust, rain and snow.

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

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

Boot order:

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

Caution: in case there is no switch, follow steps from 1 to 3.

shutdown order:

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

Caution: if there is no switch, follow steps from 1 to 3.

Electrical Connection Check

1. Check if the AC or DC wire is loose.
2. Check if the earth wire is grounded on a solid surface.
3. Make sure that the waterproof terminal of the Wi-Fi (or LAN) and CT (or the DRED or the Remote Shutdown) port is fasten.
4. Please use a torque wrench to tighten the AC and the battery terminal wiring connection once a year. Follow the torque instruction to loosen from 6.3/6.4
5. Activate the DC switch 10 times in a row.

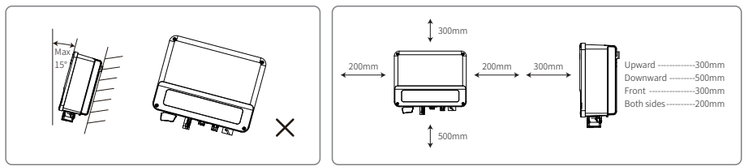
The caution: the maintenance cycle should be scheduled at minimum once per half year.

6 Inverter Installation

6.1 Select installation location

Please take the following points into consideration when you are selecting a proper location to install inverter.

- Please choose appropriate mounting methods and installation location in terms of weight and dimension of inverter.
- The location must be well ventilated and sheltered from direct sunlight.
- Install inverter vertically or with a backward tilt within 15 degrees. No lateral tilt is allowed. The inverter should not be tilted sideways. The area of the connectors should point downwards.

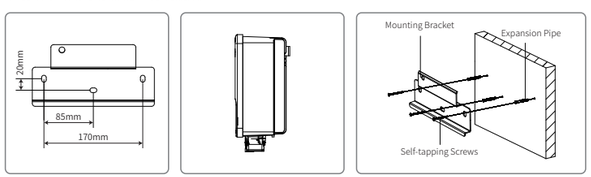


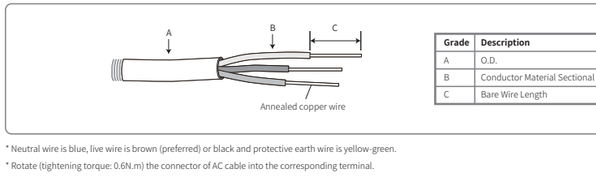
To allow for a dissipation of the heat and in order to facilitate dismantling, the space around the inverter should allow for some clear spaces.

The spacing around inverter should met the requirements as illustrated in below figures for the sake of heat dissipation and demounting.

6.2 Mounting procedure

1. Use the wall-mount bracket as a template and drill holes with 10mm in diameter and 80 mm in depth on the wall.
2. Fix the wall-mount bracket on the wall with the expansion bolts in the accessories bag.
3. Hold the inverter by the side groove.
4. Mount the inverter onto the wall-mount bracket.

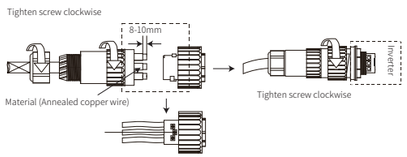




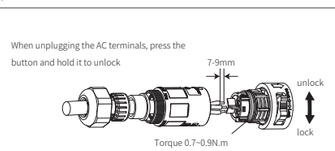
6.3 AC connection

GoodWe inverter are compatible with two brands of AC connector: VACONN and Exceedconn

VACONN AC connectors installation instruction



Exceedconn connectors installation instruction



Make sure the terminal is rotated to the lock position before the inverter is started

AC cable specification

Grade	Description	Value
A	O.D.	10~12mm
B	Conductor Material Sectional Area	2.5~4mm²
C	Bare Wire Length	10mm around

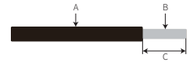
* Neutral wire is blue, live wire is brown (preferred) or black and protective earth wire is yellow-green.

* Rotate (tightening torque: 0.6N.m) the connector of AC cable into the corresponding terminal.

6.4 DC connection

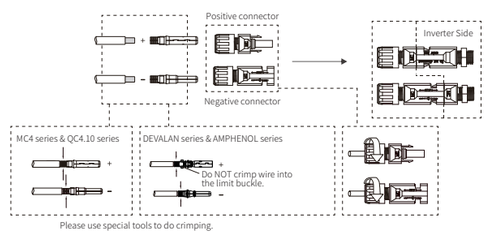
GoodWe inverters are compatible with four brands of DC connector: DEVALAN, SUNCLIX/MC4, AMPHENDL H4 and the QC4.10 series.

DC Cable specification:



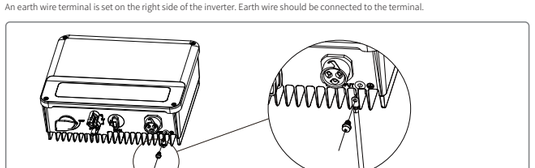
Please use solar PV cable in DC connection.
(4mm PV1-F wire recommended)

Grade	Description	Value
A	O.D.	4~5mm
B	Conductor Material Sectional Area	2.5~4mm²
C	Bare Wire Length	7mm around



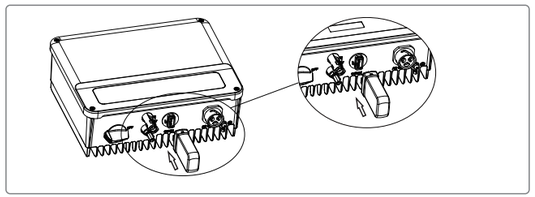
6.5 Earth wire connection

An earth wire terminal is set on the right side of the inverter. Earth wire should be connected to the terminal.



6.6 Wi-Fi Communication

Wi-Fi communication option is only applicable to Wi-Fi version inverter and Wi-Fi communication module is required. Please refer to Wi-Fi Configuration in the accessory box for detailed instruction.



This port is used for connection of Wi-Fi or LAN module only. No connection to USB is allowed. Do not connect PC or other devices to this port.

6.7 Connection of export power limit, DRED & emergency shutdown functions

Please do connection as illustrated in Figure 6.7-1 for inverter equipped with only one function, export power limit or emergency shutdown.

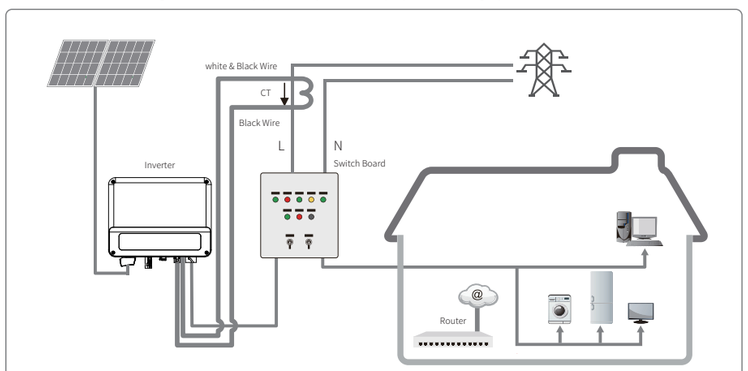


Figure 6.7-1

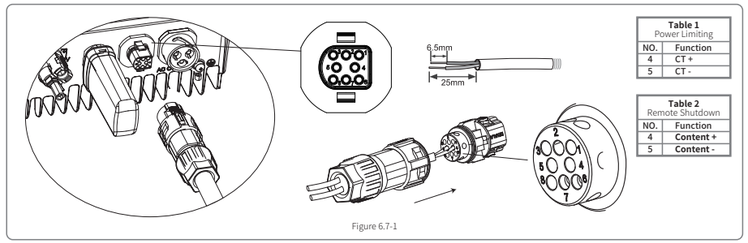


Figure 6.7-1

Table 1 Power Limiting	
NO.	Function
4	CT +
5	CT -

Table 2 Remote Shutdown	
NO.	Function
4	Content +
5	Content -

Note:

1. The connector (2 pin) is allocated for connection of export power limit function. Please refer to Figure 6.7-1 for CT wiring and to Table 1 in Figure 6.7-2 for connector connection. CT+(with white & black wire) should be connected to PIN 4 of inverter's terminal and CT- (with black wire) to PIN 5 of inverter's terminal.
2. The connector (2 pin) is allocated for connection of emergency shutdown function, which is applicable only to European countries. Please refer to Table 2 in Figure 6.7-2 for connector connection. Content+ should be connected to PIN 4 and Content- to PIN 5 of inverter's terminal.
3. The connector (2 pin) in the accessory box is in short circuit with special wire attached. To activate export power limit function, please remove the wire and connect CT to the connector; to activate emergency shutdown function, please remove the wire and connect corresponding device to the terminal.
4. For inverter with remote shutdown function, please keep the connector (2 pin) in short circuit status with the wire untouched and connect it to inverter if user is in no intent to use emergency shutdown function. Otherwise, inverter will stay in waiting status.

Instructions for connecting the Power Limit, the Remote Shutdown and the DRED device as follows:

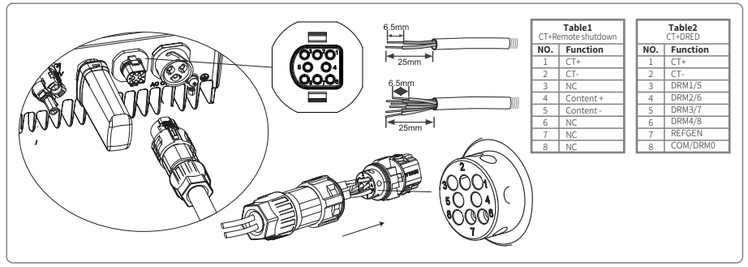


Table1 CT+Remote shutdown	
NO.	Function
1	CT+
2	CT-
3	NC
4	Content +
5	Content -
6	NC
7	NC
8	NC

Table2 CT+DRED	
NO.	Function
1	CT+
2	CT-
3	DRM1/5
4	DRM2/6
5	DRM3/7
6	DRM4/8
7	REFGEN
8	COM/DRM0

Note:

1. The 8-pin connector is used for connection of dual functions of inverter, export power limit + DRED or export power limit + emergency shutdown.
2. Please refer to Table 2 in Figure 6.7-3 for connection of dual functions export power limit + DRED.
3. Please refer to Table 1 in Figure 6.7-3 for connection of dual functions export power limit + emergency shutdown.
4. DRED function is only applicable to Australia and New Zealand.
5. The PIN 7 and PIN 8 of the 8-pin connector from accessory box are connected with a resistor of 15k, and the PIN 4 and PIN 5 is in short circuit status with special wire attached. Please remove the resistor and wire before you do normal connection.
6. For inverter with export power limit + DRED functions, please keep the resistor (15k) untouched and remove the special wire between PIN 4 and PIN 5 on the connector if there is no external DRED device. Then connect it to inverter. Otherwise, inverter will stay in waiting status.
7. For inverter with export power limit and emergency shutdown functions, please keep the wire for short circuit purpose between PIN 4 and PIN 5 untouched and remove the resistor (15k) between PIN 7 and PIN 8 of the connector if there is no external emergency shutdown device. Then connect it to inverter. Otherwise, inverter will stay in waiting status.
8. Compatible DRED commands are DRM0, DRM5, DRM6, DRM7, DRM8.
9. Please set up power limit function at local setting page once all connection steps are done.
10. CT is directional. Please make sure CT+ is properly connected to white & black wire and CT- to black wire. Please make sure the limit buckle is connected to the output live wire (L) of inverter.
11. If CT is not well connected, it will display "CT disconnected" on the inverter. If CT is reversely connected, it will display "CT Reverse" on the inverter when connected to grid.

Connection Procedure:

1.Pass the wire through components screw nut, gasket ring and insulator in sequence.
2. Remove resistor or short circuit wire from the connector.
3. Connect wires as illustrated in above figures.
4.Connect connector into corresponding terminals and double check wire is well connected.

6.8 Select the country code and set the time

Select the Safety Country Setting

Step 1: Turn on DC switch

Step 2: Please select target country or region when it displays "Select Country/ Region" on the LCD screen. Otherwise, the setting is confirmed and no further steps required.

Select
Country / Region

Step 3: Press and hold ENTER button till "50 Hz Grid Defalt" is displayed.

50Hz Grid Defalt

Step 4: Continue to to press ENTER button if you need to change the Safety Country to another such as

Germany

If there is no desired Safety Country at the setting page, please select "50Hz Grid Default" for 50Hz application or "60Hz Grid Default" for 60Hz application.

Step 5: The setting will be confirmed and valid if no further operation is done.

Time Setting

1. From primary menu, select language and then press ENTER button to Set Time menu.
2. Press ENTER button and hold for 2 seconds to the secondary menu. The default and initial time is set as "2019 -00- 00 00:00" in format "year-month-day time" .
3. Press up or down button to change the number of current position of time setting according to local time. Press and hold the button to change the number of next position. Time setting will be confirmed and saved with no operation for 20 seconds. Then it will return to the main menu on the screen automatically. Screen light will turn off.

Please access to http://www.goodwe.com/downloadcenter.html or scan the QR code to download the full version of this user manual

Full Version User Manual | SEMS Portal APP | SEMS Portal website www.semsportal.com | LinkedIn | Company's offical website

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