GEP
4-20kW Three Phase
User Manual

V1.0

Grid-Tied PV Inverter

www.gesolarinverter.com

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Notice

The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product labels or the safety precautions unless otherwise specified. All descriptions in the manual are for guidance only.

CONTENT

1 About This Manual

This manual describes the product information, installation, electrical connection, commissioning, troubleshooting, and maintenance. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and latest documents, visit www.gesolarinverter.com.

1.1 Applicable Model

This manual applies to the listed inverters below (GEP for short):

Model	Nominal Output Power	Nominal Output Voltage
GEP4.0-3-10	4kW	3/N/PE, 220/380Vac 3/N/PE, 230/400Vac 3/N/PE, 240/415Vac
GEP5.0-3-10	5kW	
GEP6.0-3-10	6kW	
GEP8.0-3-10	8kW	
GEP10-3-10	10kW	
GEP12-3-10	12kW	
GEP15-3-10	15kW	
GEP20-3-10	20kW	
GEP10-3-AU10	10kW	
GEP8-3-AU10	8kW	

1.2 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlight and supplement the texts. Or some skills and methods to solve product-related problems to save time.

1.4 Updates

The latest document contains all the updates made in earlier issues.

V1.0 2021-7-30

- First Issue

2 Safety Precaution

Notice

The inverters are designed and tested strictly complies with related safety rules. Read and follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the inverters are electrical equipment.

2.1 General Safety

Notice

- The information in this document is subject to change due to product updates or other reasons. This manual cannot replace the product labels or the safety precaution unless otherwise specified. All descriptions here are for guidance only.
- Before installations, read through the user manual to learn about the product and the precautions.
- All installations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, cloths, and wrist strips when touching electron devices to protect the inverter from damage.
- Strictly follow the installation, operation, and configuration instructions in this manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, visit www.gesolarinverter.com.

2.2 DC Side

⚠ DANGER

Connect the DC cables using the delivered DC connectors and terminals. The manufacturer shall not be liable for the equipment damage if other connectors or terminals are used.

⚠ WARNING

- Ensure the component frames and the bracket system are securely grounded.
- Ensure the DC cables are connected tightly and securely.
- Measure the DC cable using the multimeter to avoid reverse polarity connection. Also, the voltage should be under the permissible range.
- The PV modules used with the inverter must have an IEC61730 class A rating.
- If there are more than 3 PV strings on input side, an additional fuse installation will be suggested.
- When exposed to sunlight, the PV array will generate very high voltage which can cause electrical shock hazard. Please strictly follow the instruction we provided.

2.3 AC Side

WARNING

The voltage and frequency at the connecting point should meet the on-grid requirements.
An additional protective device like the circuit breaker or fuse is recommended on the AC side. Specification of the protective device should be at least 1.25 times the AC output rated current.
PE cable of the inverter must be connected firmly. The resistance between the neutral wire and the earth cable is less than 10Ω.
You are recommended to use copper cables as AC output cables. Contact the manufacturer if you want to use other cables.

2.4 Inverter Installation

DANGER

- Terminals at the bottom of the inverter cannot bear much load. Otherwise, the terminals will be damaged.
- All labels and warning marks must be clear and distinct after the installation. Do not block, alter, or damage any label.
- Install the inverter away from high magnetic field to avoid electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the inverter, you have to:
  - Install the inverter at least 30m far away from the wireless equipment.
  - Add a low pass EMI filter or a multi winding ferrite core to the DC input cable or AC output cable of the inverter.
- Warning labels on the inverter are as follows.

	HIGH VOLTAGE HAZARD. Disconnect all incoming power and turn off the product before working on it.		Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
	Read through the guide before working on this device.		Potential risks exist. Wear proper PPE before any operations.
	High-temperature hazard. Do not touch the product under operation to avoid being burnt.		Grounding point. Indicates the position for connecting the PE cable.
	CE marking		Do not dispose of the inverter as household waste.Discard the product in compliance with local laws and regulations, or send it back to the manufacturer.
	RCM marking.	NA	NA

2.5 Personal Requirements

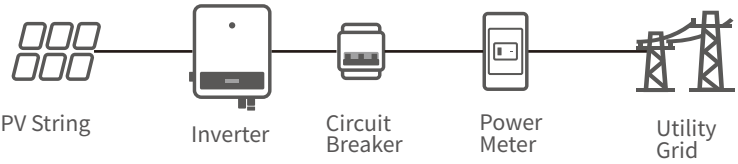
NOTICE

- Personnel who install or maintain the equipment must be strictly trained, learn about safety precautions and correct operations.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.

3 Product Introduction

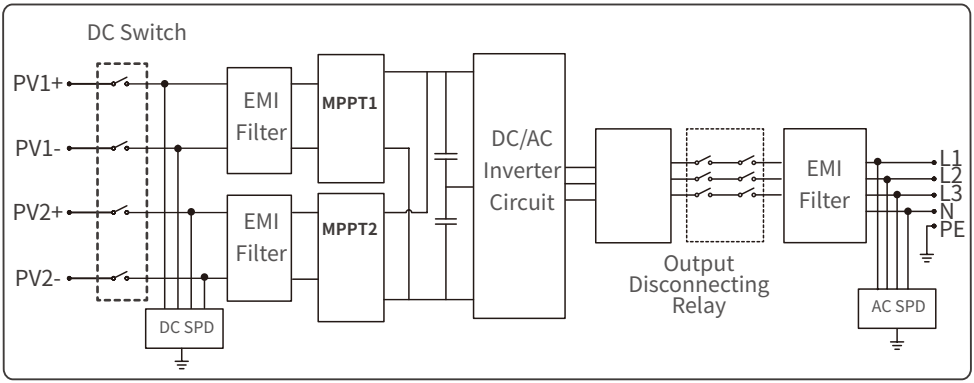
3.1 Application Scenarios

The GEP inverter is a three-phase PV string grid-tied inverter. The inverter converts the DC power generated by the PV module into AC power and feeds it into the utility grid. The intended use of the inverter is as follows:

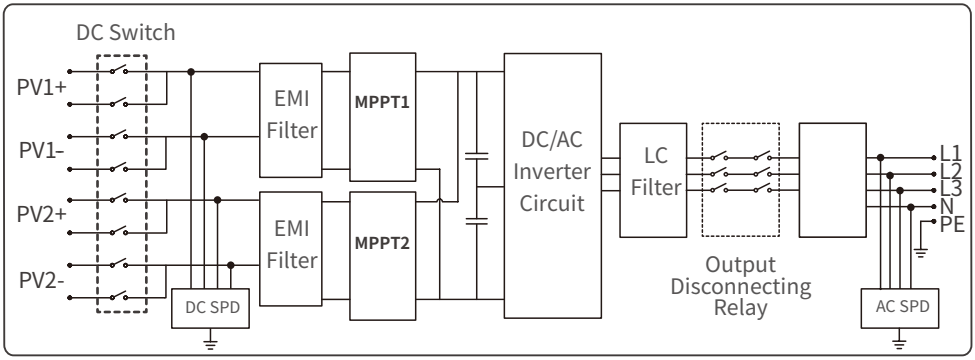


3.2 Circuit Diagram

The circuit diagram of GEP4.0-3-10, GEP5.0-3-10, GEP6.0-3-10, GEP8.0-3-10, and GEP10-3-10 is as follows.

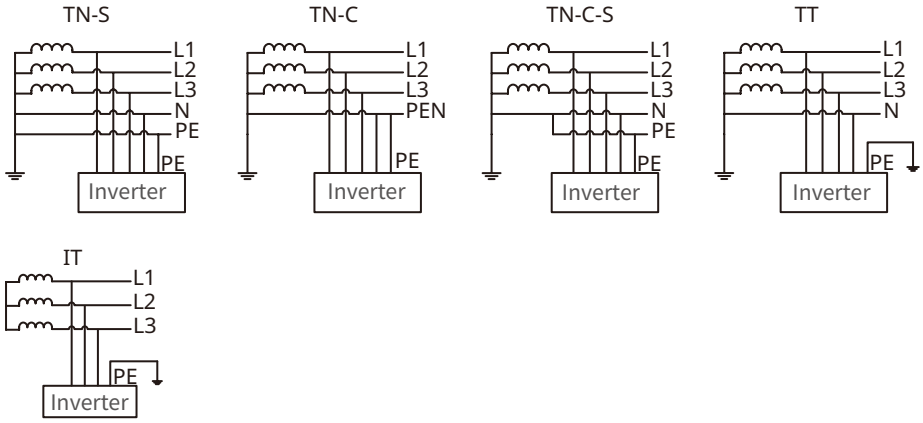


The circuit diagram of GEP8-3-US10, GEP10-3-AU10, GEP12-3-10, GEP15-3-10, and GEP20-3-10 is as follows.



3.3 Supported Grid Types

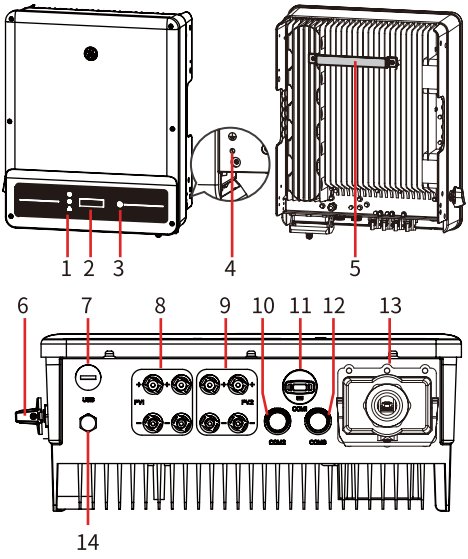
For the grid type with neutral wire, the N to ground voltage must be less than 10V.



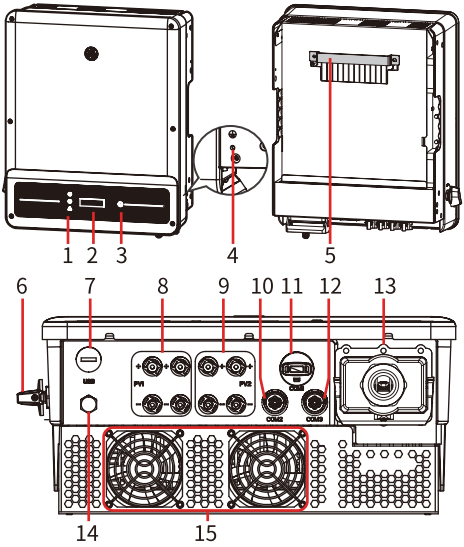
3.4 Appearance

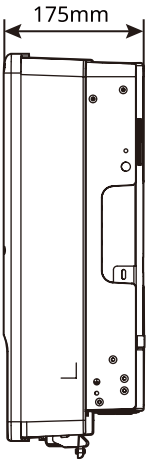
3.4.1 Appearance

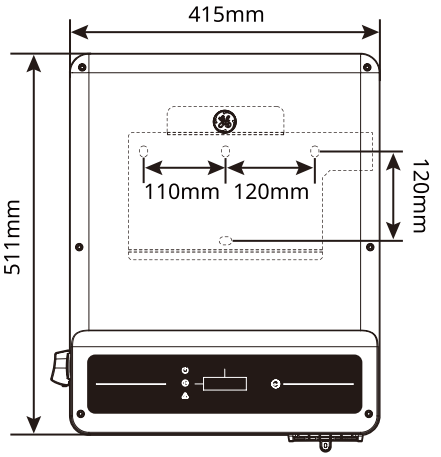
GEP4.0-3-10, GEP5.0-3-10, GEP6.0-3-10, GEP8.0-3-10, GEP8-3-AU10, GEP10-3-10, GEP10-3-AU10

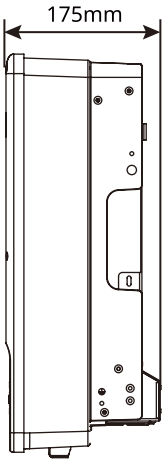


GEP12-3-10, GEP15-3-10, GEP20-3-10









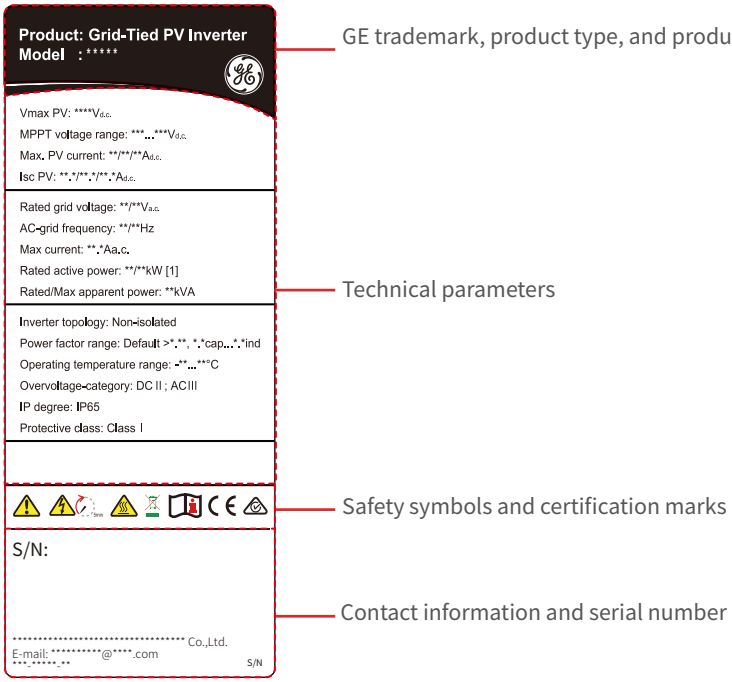
No.	Parts	Description
1	LED Indicator	Indicates working state of the inverter.
2	LCD	Optional. Used to check the parameters of the inverter.
3	Button	Optional. Used to control contents displayed on the screen.
4	Grounding Point	Used to connect the PE cable.
5	Mounting Plate	Used to install the inverter.
6	DC Switch	Start or stop DC input.
7	USB Port (USB)	Reserved.
8	PV Input Terminal(PV1)	Used to connect the PV module DC input cables.
9	PV Input Terminal(PV2)	
10	Communication Port(COM2)	Used to connect the RS485 communication cable.
11	Communication Port(COM1)	Used to connect communication modules like Bluetooth, WiFi, LAN, 4G, etc.
12.	Communication Port(COM3)	Used to connect DRED or remote shutdown communication cable.
13	AC Output Terminal	Used to connect AC output cable. Connect the inverter and the utility grid.
14	Ventilation Valve	-
15	Fan	Used to cool the inverter.

3.4.2 Indicators

Type	Status		Description
Power		Steady yellow	Communication status is normal.
		Single yellow blinking	Communication is resetting or restarting.
		Double yellow blinking	The inverter is not connected to the router.
		Quadruple yellow blinking	The inverter is not connected to the server.
		Yellow blinking	RS485 communication is normal.
		Off	Communication failure.
Operating		Steady green	The inverter is grid-tied successfully.
		Off	The inverter is off-grid.
Alarming		Steady red	System fault.
		Off	No fault.

3.4.3 Nameplate

The nameplate is for reference only.



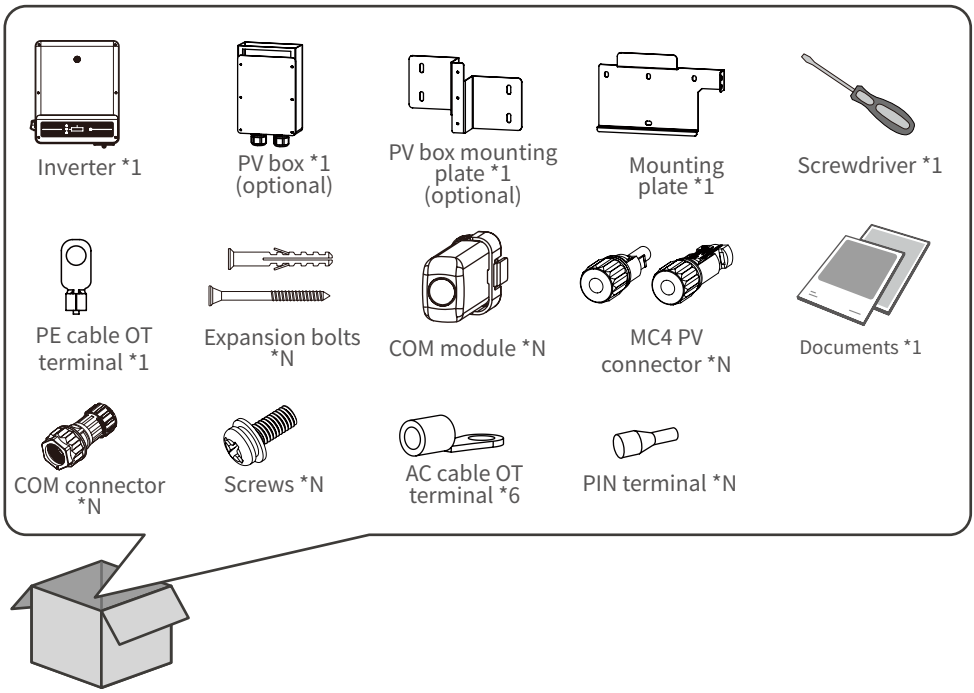
4 Check and Storage

4.1 Check Before Receiving

Check the following items before receiving the product.

1. Check the outer packing box for damage, such as holes, cracks, deformation, and others signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the inverter model. If the inverter model is not what you requested, do not unpack the product and contact the supplier.
3. Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

4.2 Deliverables



NOTICE

- The PV box and PV box mounting plate will be delivered when GEP15-3-10 or GEP20-3-10 is used in Australia only.
- The number of MC4 PV connectors and the PV terminals in the inverter is the same.
- The type and number of the communication connector are decided by the selected communication method.
- Communication module types: WiFi, 4G, LAN, etc. The actual module delivered depends on the communication method of the selected inverter.
- The number of expansion bolts, screws, pin terminals are various depending on different inverters. The actual accessories may differ.

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

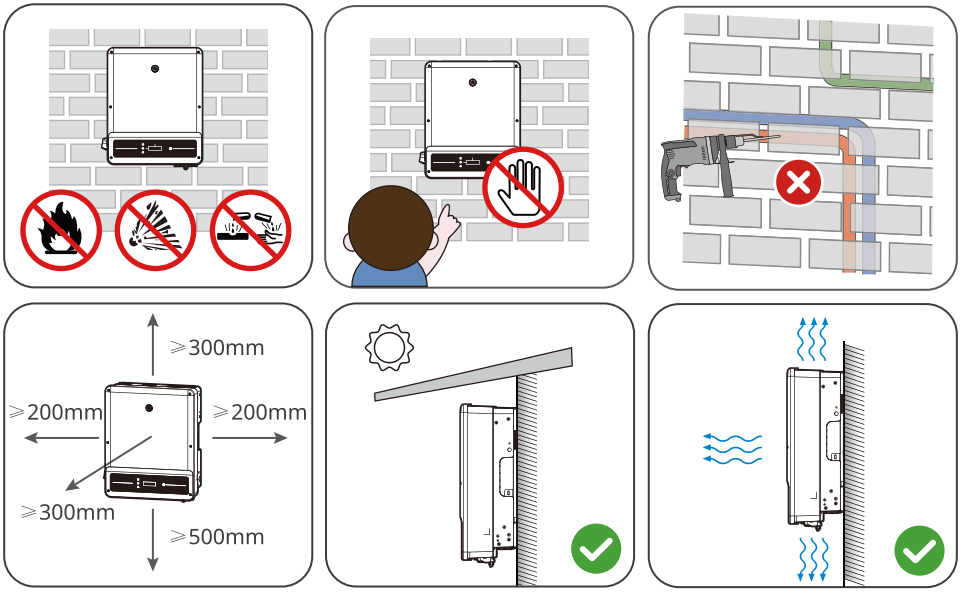
1. Do not unpack the outer package or throw the desiccant away.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
3. The height and direction of the stacking inverters should follow the instructions on the packing box.
4. The inverters must be stacked with caution to prevent them from falling.
5. If the inverter has been long term stored, it should be checked by professionals before being put into use.

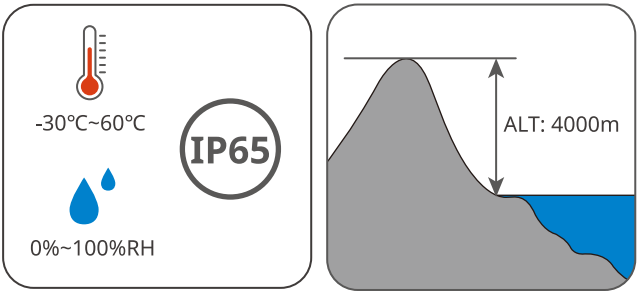
5 Installation

5.1 Installation Requirements

Installation Environment Requirements

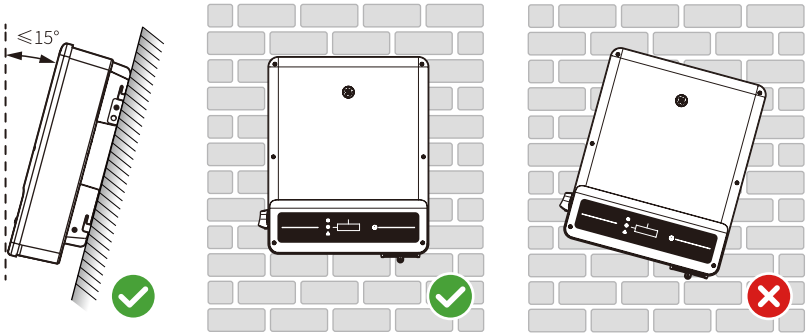
1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. Install the equipment on a surface that is solid enough to bear the inverter weight.
3. Install the equipment in a well-ventilated place to ensure good dissipation. Also, the installation space should be large enough for operations.
4. The equipment with a high ingress protection rating can be installed indoors or outdoors. The temperature and humidity at the installation site should be within the appropriate range. (60 °C for outdoor unconditioned with solar effects.)
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
6. Do not install the equipment in a place that is easy to touch, especially within children' s reach. High temperature exists when the equipment is working. Do not touch the surface to avoid burning.
7. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
8. Install the equipment away from electromagnetic interference.





Installation Angle Requirements

- Install the inverter vertically or at a maximum back tilt of 15 degrees.
- Do not install the inverter upside down, forward tilt, back forward tilt, or horizontally.



Mounting Support Requirements

- The mounting support shall be nonflammable and fireproof.
- Make sure that the support surface is solid enough to bear the product weight load.
- Do not install the product on the support with poor sound insulation to avoid the noise generated by the working product, which may annoy the residents nearby.

Installation Tool Requirements

The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

5.2 Inverter Installation

5.2.1 Moving the Inverter

CAUTION

Move the inverter to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.

1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
2. Wear safety gloves to avoid personal injury.
3. Keep balance when moving the equipment.

5.2.2 Installing the Inverter

NOTICE

- Avoid the water pipes and cables buried in the wall when drilling holes.
- Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.
- The anti-theft lock of appropriate size should be prepared by customers. Diameter of the lock hole is 10mm.
- Make sure that all the DC input terminals are inside the PV box when installing the box. Install the box cling to the bottom of the inverter.

Step 1 Put the mounting plate on the wall horizontally and mark positions for drilling holes.

Step 2 Drill holes to a depth of 80mm using the hammer drill. The diameter of the drill bit should be 10mm.

Step 3 Secure the mounting plate using the expansion bolts.

Step 4 Install the inverter on the mounting plate.

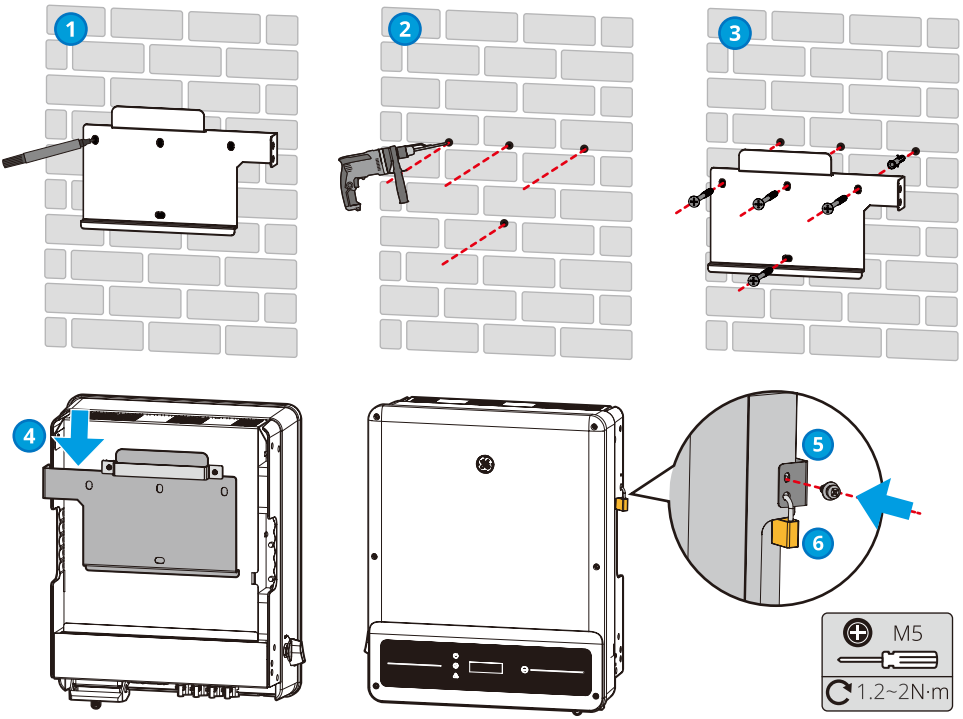
Step 5 Tighten the nuts to secure the mounting plate and the inverter.

Step 6 Install the anti-theft lock.

Step 7 (For Australia only) Install the PV box and the PV box mounting plate together using the delivered M5 screws.

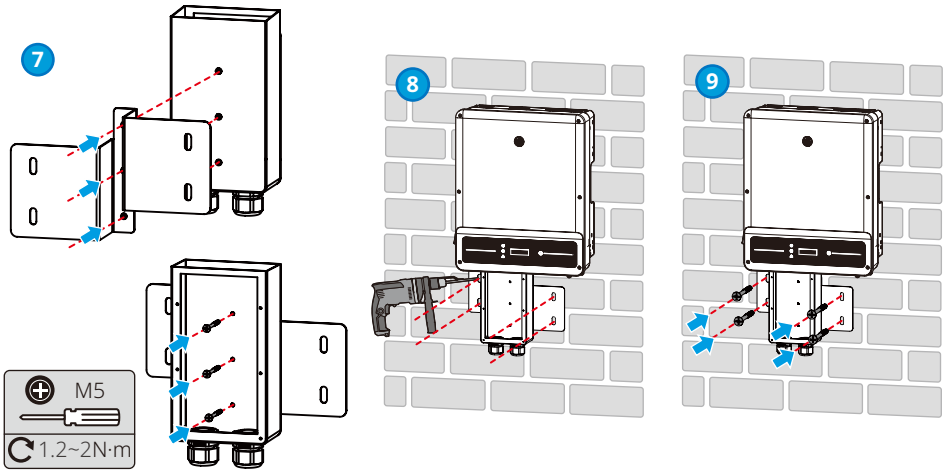
Step 8 (For Australia only) Drill holes to a depth of 60mm using the hammer drill. The diameter of the drill bit should be 8mm.

Step 9 (For Australia only) Secure the PV box at the bottom of the inverter using the delivered expansion bolts.



NOTICE

The PV box should be installed when GEP15-3-10 or GEP20-3-10 is used in Australia only. Install the cover of the PV box after connecting the DC input cable to the equipment. Otherwise, the DC input cable cannot be connected.



6 Electrical Connection

6.1 Safety Precautions

DANGER

- Disconnect the DC switch and the AC output switch of the inverter to power off the equipment before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Perform electrical connections in compliance with local laws and regulations. Including operations, cables, and component specifications.
- If the tension is too large, the cable may be poorly connected. Reserve a certain length of the cable before connecting it to the inverter cable port.

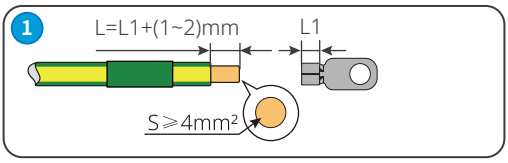
NOTICE

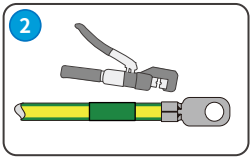
- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications should meet local laws and regulations.

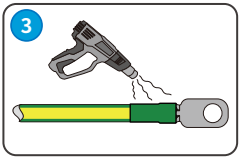
6.2 Connecting the PE Cable

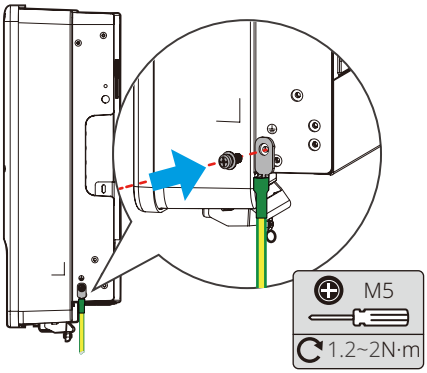
WARNING

- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Both of the two PE cables must be securely connected.
- Make sure that all the grounding points on the enclosures are equipotential connected when there are multiple inverters.
- To improve the corrosion resistance of the terminal, it is recommended to apply silica gel or paint on the ground terminal after installing the PE cable.
- The PE cable should be prepared by customers. Recommended specifications:
  - Type: single-core outdoor copper cable
  - Conductor cross-sectional area: 4mm^2









6.3 Connecting the PV Input Cable

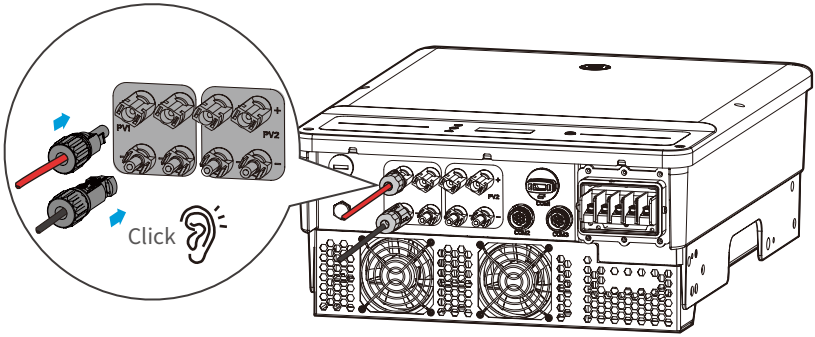
DANGER

Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property losses.

1. Make sure that the max short circuit current and the max input voltage per MPPT are within the permissible range.
2. Make sure that the positive pole of the PV string connects to the PV+ of the inverter. And the negative pole of the PV string connects to the PV- of the inverter.
3. The minimum impedance to earth of the PV module shall be greater than R. R=Max.Input Voltage (V)/30mA, i.e. R=1100V/30mA=36.7KΩ or R=1000V/30mA=33.4KΩ).

WARNING

- Connect the DC cables using the delivered PV connectors. The manufacturer shall not be liable for the damage if other connectors are used.
- The PV strings cannot be grounded. Ensure the minimum isolation resistance of the PV string to the ground meets the minimum isolation resistance requirements before connecting the PV string to the inverter.
- The DC input cable should be prepared by customers. Recommended specifications:
  - Type: the outdoor photovoltaic cable that meets the maximum input voltage.
  - Conductor cross-sectional area: 2.5~4mm²



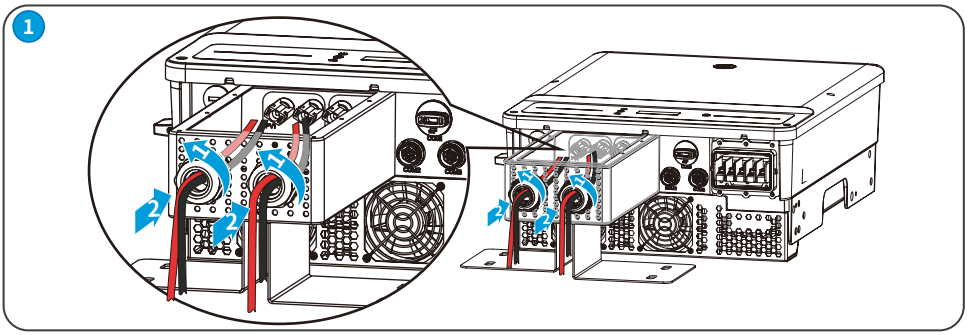
NOTICE
Seal the PV input terminals using waterproof covers when they are not to be used. Otherwise, the ingress protection rating will be influenced.

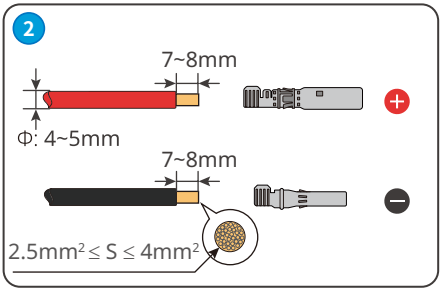
Connecting the DC Input Cable(with PV box)

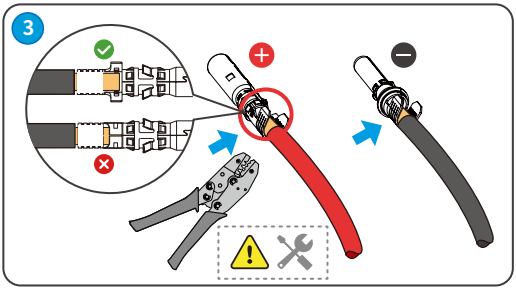
NOTICE
The PV box should be installed when GEP15-3-10 or GEP20-3-10 is used in Australia only. Install the cover of the PV box after connecting the DC input cable to the equipment.

Step 1 Route the DC cables into the PV box.
Step 2 Prepare DC cables.
Step 3 Crimp the crimp contacts.
Step 4 Disassemble the PV connectors.
Step 5 Make the DC cable and detect the DC input voltage.
Step 6 Plug the PV connectors into the PV terminals.
Step 7 Install the PV box cover.

Devalan DC Connector







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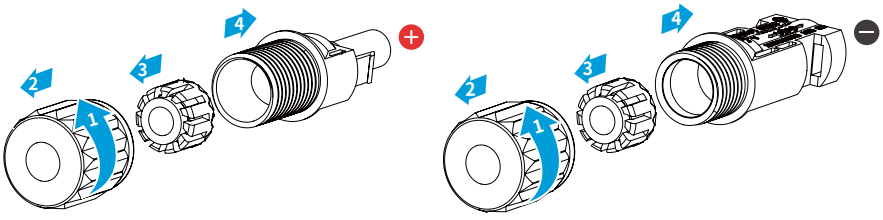
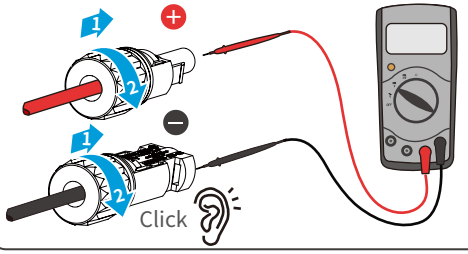


5 Use a multimeter to measure the DC voltage and check the polarity of the connectors.



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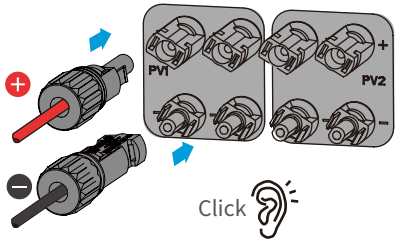

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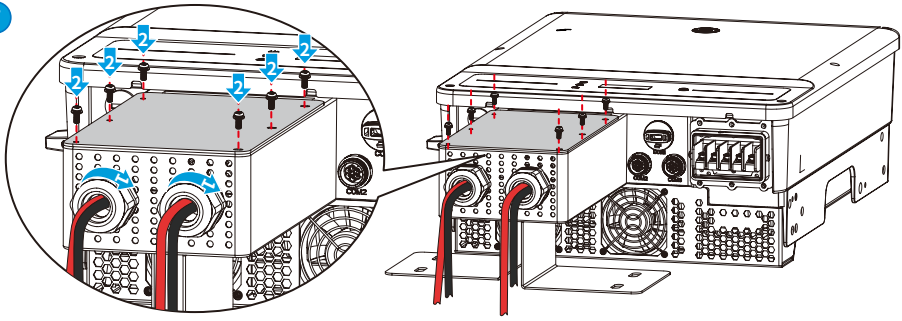
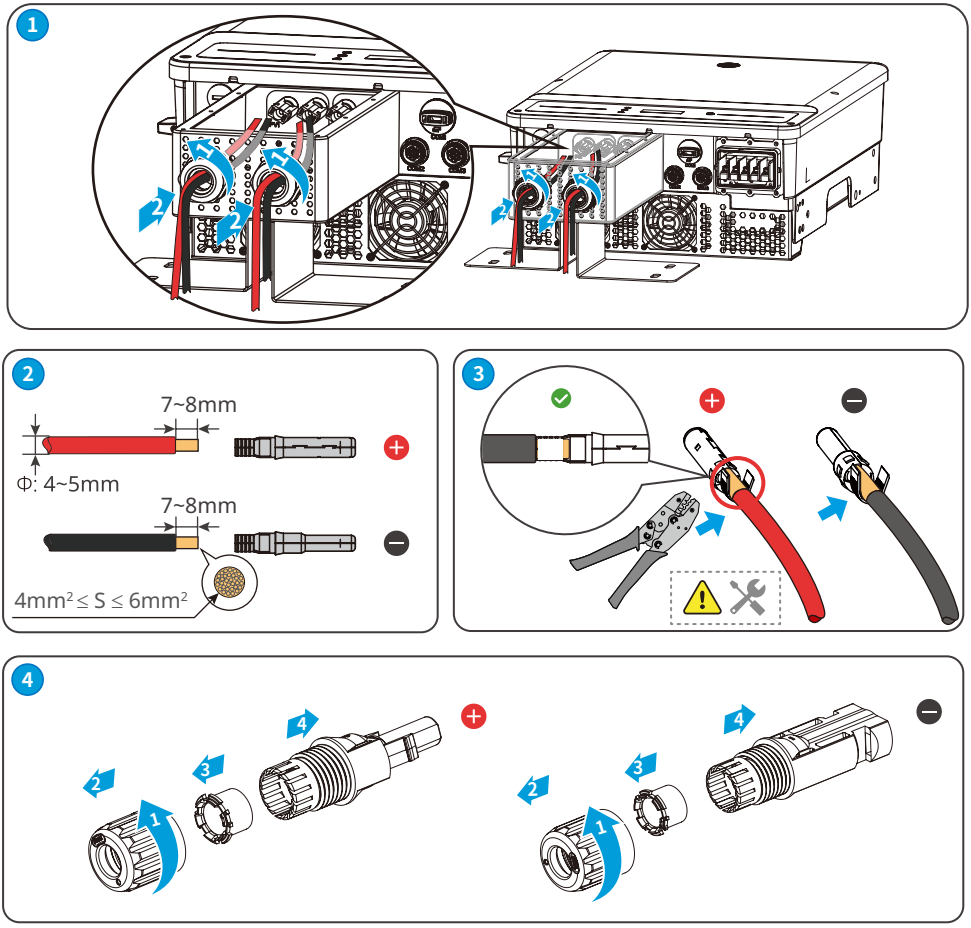
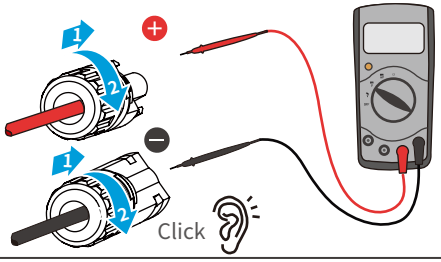


Staubli MC4 DC Connector



5 Use a multimeter to measure the DC voltage and check the polarity of the connectors.



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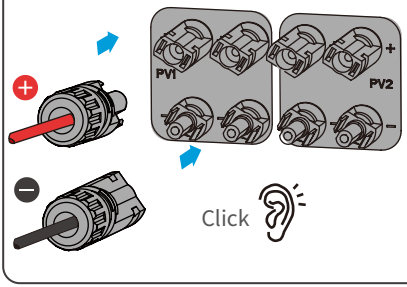

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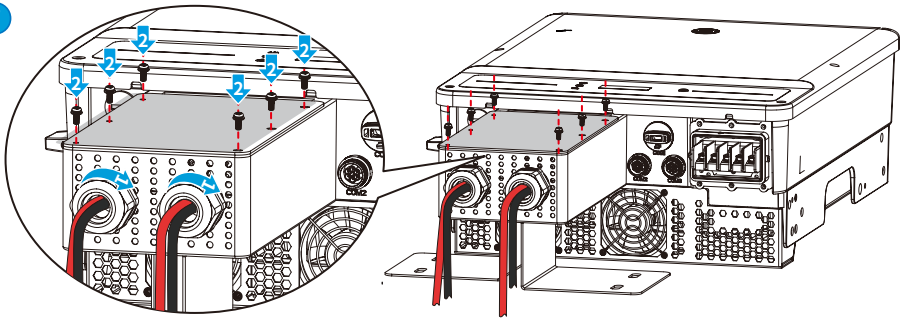


Connecting the DC Input Cable (without PV box)

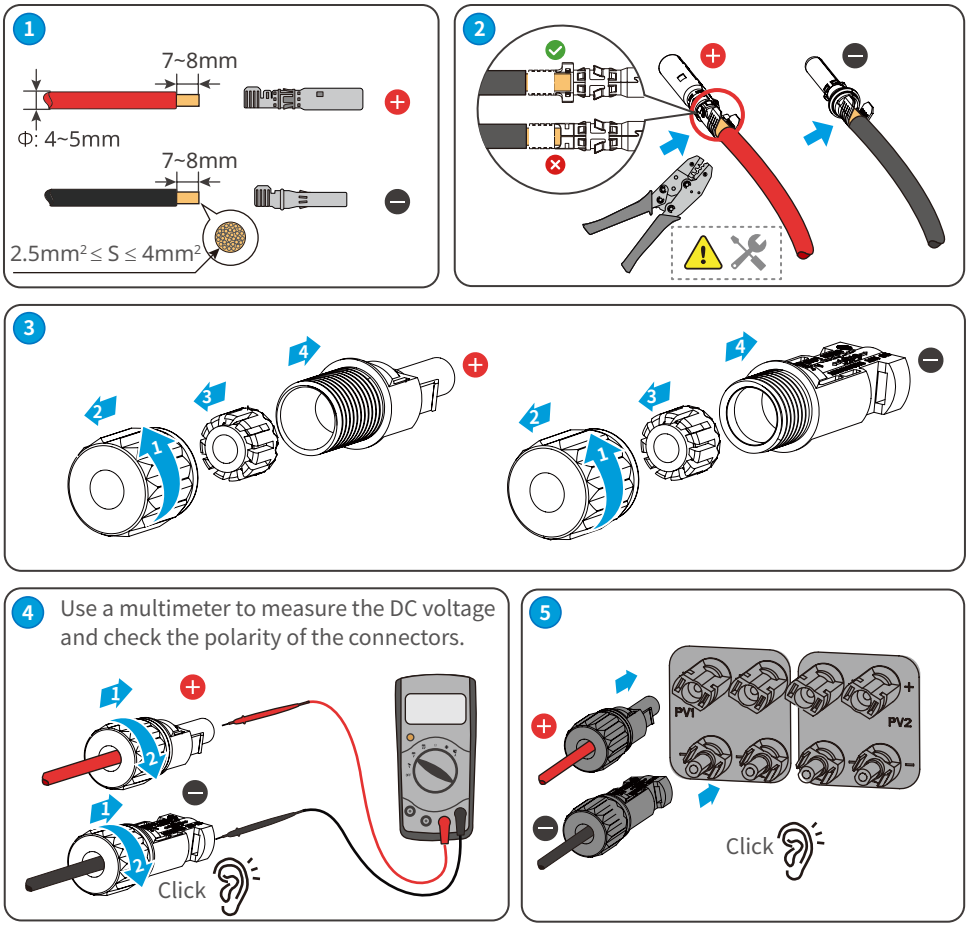
Step 1 Prepare DC cables.
Step 2 Crimp the crimp contacts.

Step 3 Disassemble the PV connectors.

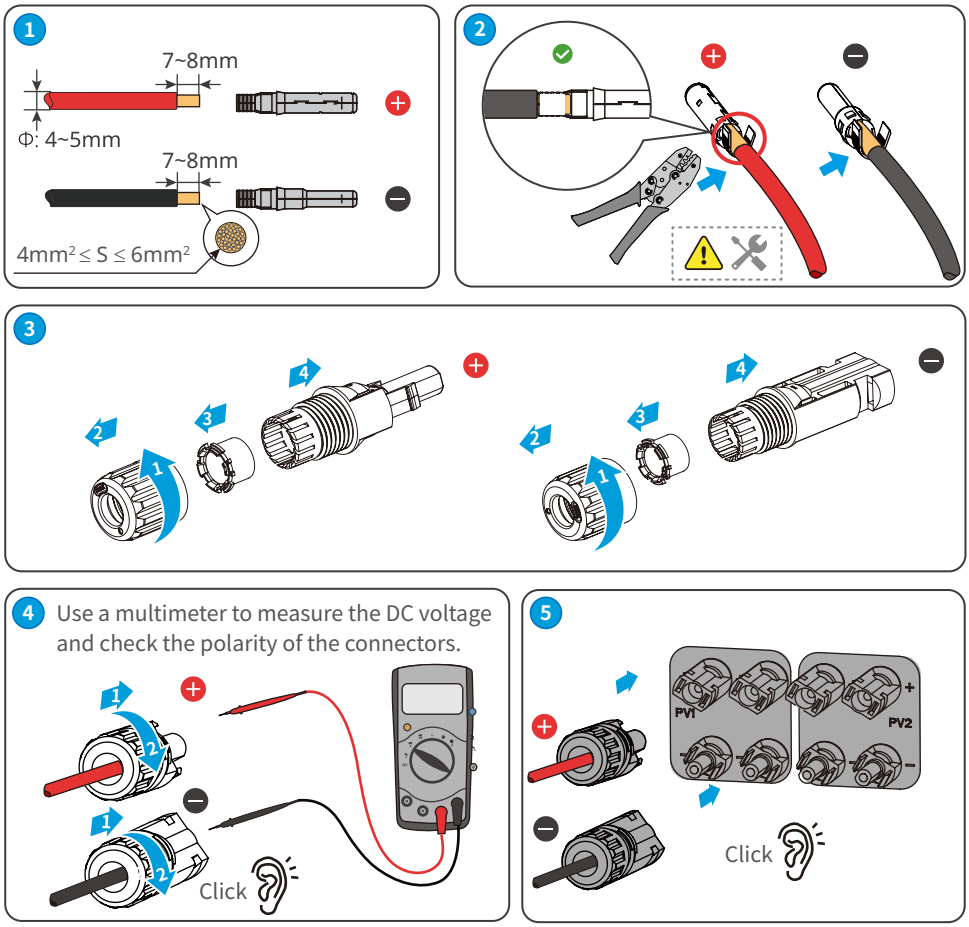
Step 4 Make the DC cable and detect the DC input voltage.

Step 5 Plug the PV connectors into the PV terminals.

Devalan DC Connector



Staubli MC4 DC Connector



6.4 Connecting the AC Output Cable

⚠ WARNING

- Do not connect loads between the inverter and the AC switch directly connected to it.
- Where an external RCD (Residual Current Device) is required in addition to the built-in RCMU (Residual Current Monitoring Unit), and a type A RCD must be used to avoid tripping, with a tripping current of 300mA or higher.

An AC circuit breaker should be installed on the AC side to make sure that the inverter can safety disconnect the grid when an exception happens. Select the appropriate AC circuit breaker in compliance with local laws and regulations. Recommended AC circuit breakers:

Inverter model	AC circuit breaker
GEP4.0-3-1, GEP5.0-3-1, GEP6.0-3-10	16A
GEP8.0-3-10, GEP8-3-AU10, GEP10-3-10, GEP10-3-AU10	25A
GEP12-3-10, GEP15-3-10	32A
GEP20-3-10	40A

NOTICE

Install one AC circuit breaker for each inverter. Multiple inverters cannot share one AC circuit breaker.

Cable Type	Five-core outdoor copper cable
Outside Diameter	18~25mm
Conductor cross-sectional area	6~16mm^2

⚠ WARNING

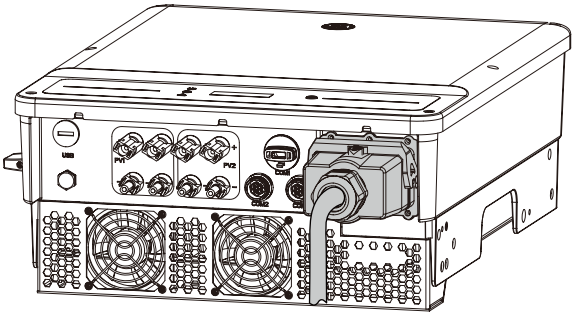
- Pay attention to the silkscreens L1, L2, L3, N, PE on the AC terminal. Connect the AC cables to the corresponding terminals. The inverter may be damaged if the cables are connected inappropriately.
- Make sure that the whole cable cores are inserted into the AC terminal holes. No part of the cable core can be exposed.
- Make sure that the cables are connected securely. Otherwise, the terminal may be too hot to damage the inverter when the inverter is working.
- Reserve certain length of PE cable. Make ensure that the PE cable is the last one to bear the stress when the AC output cable is under tension.

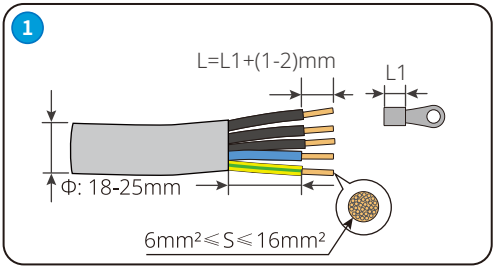
Step 1 Make the AC output cable.

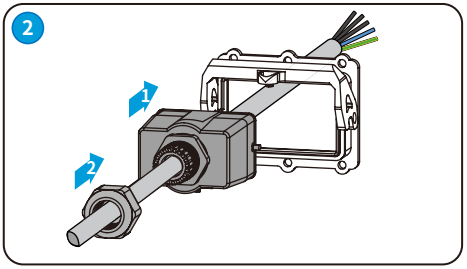
Step 2 Disassemble the AC cover.

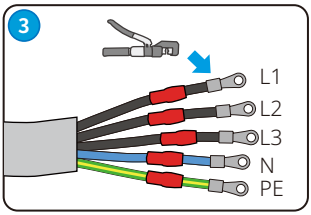
Step 3 Crimp the AC cable OT terminal and route the cable into the AC cover.

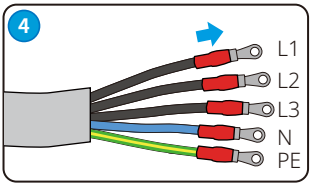
Step 4 Fasten the AC output cable and secure the AC cover.

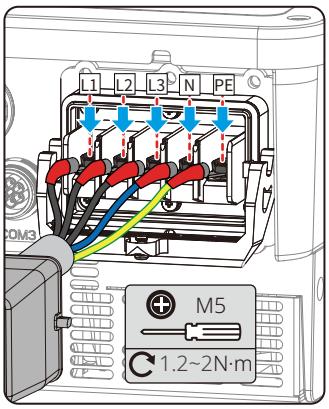


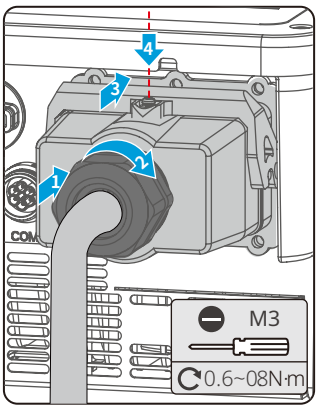












NOTICE

- Make sure that the cables are connected correctly and firmly after connections. Clean all the debris in the maintenance compartment.
- Seal the AC output terminal to ensure the Ingress Protection Rating.

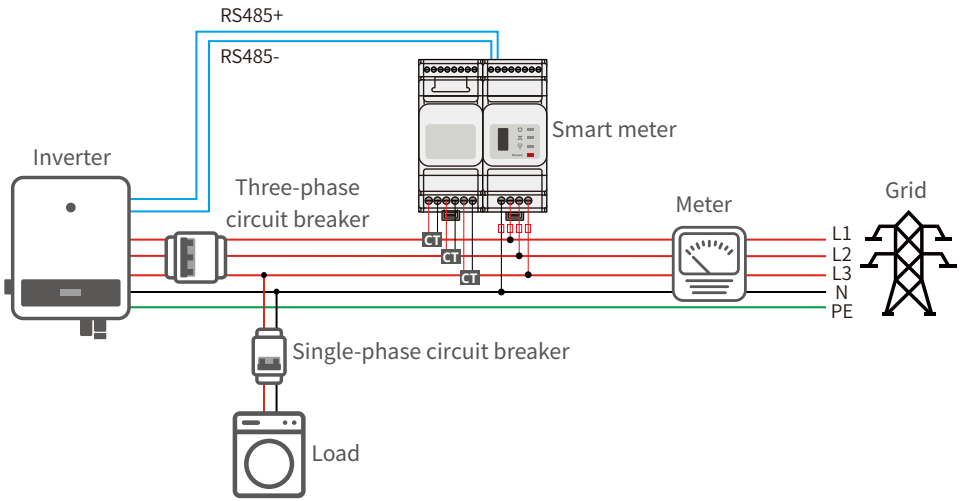
6.5 Communication

6.5.1 Connecting the Communication Cable (optional)

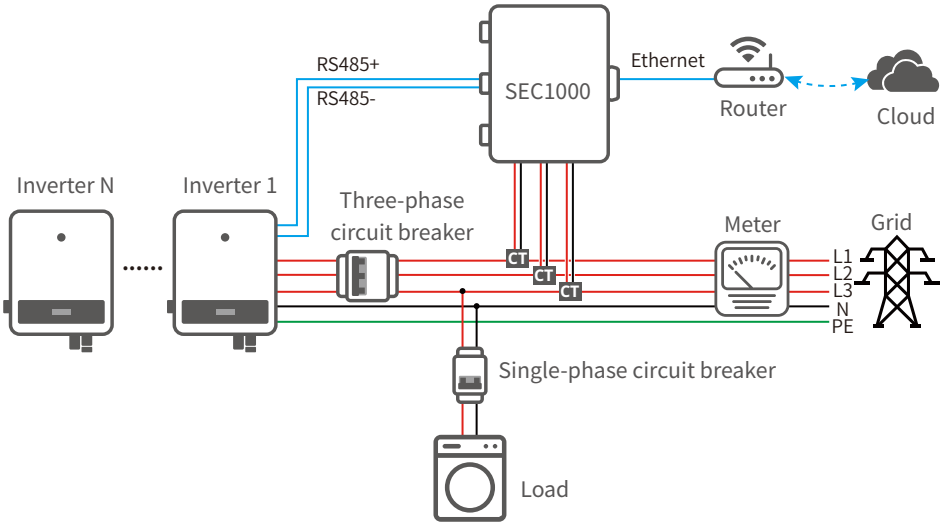
NOTICE
Make sure that the communication device is connected to the right COM port. Route the communication cable far away from any interference source or power cable to prevent the signal from being influenced.

Communication Type	COM Port	Port Definition	Function Description
RS485	COM2	1: RS485 B 2: RS485 B 3: RS485 A 4: RS485 A	Used to connect the inverter to other inverters or the RS485 port on the data logger.
Meter Communication		5: Meter + 6: Meter -	Realize the anti-backfeed function by connecting the meter and the CT. Contact the manufacturer to purchase the devices if you need them.
DRED	COM3	1: DRM1/5 2: DRM2/6 3: DRM3/7 4: DRM4/8 5: REFGen 6: Com/DRM0	The DRED port is reserved in compliance to grid regulations in Australia and New Zealand. Related devices should be prepared by customers.
Remote Shutdown		+:DRM4/8 -: REFGen	The Remote Shutdown port is reserved in compliance to grid regulations in Europe. Related devices should be prepared by customers.

Power limit networking scenario (single inverter)



Power limit networking scenario (multi inverters)



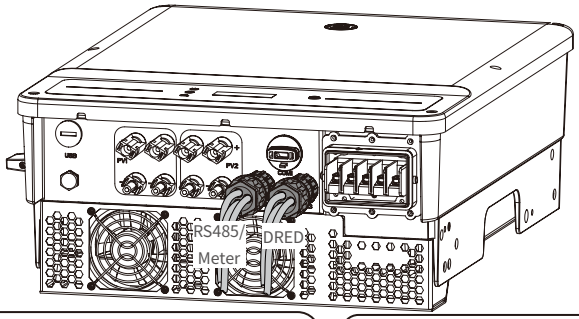
NOTICE

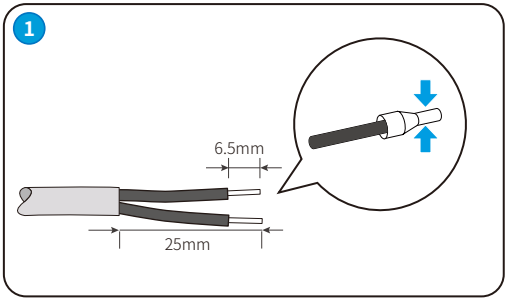
After completing cable connections, set related parameters via LCD or SolarGo app to enable export power limit control or output power limit control.

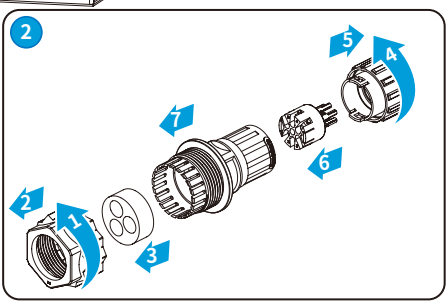
Connecting the Communication Cable(RS485, Meter, and DRED)

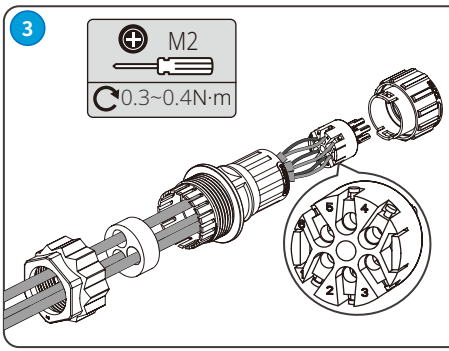
NOTICE

Connect the RS485 cable, meter cable, and DRED cable using a 6PIN communication terminal as follows.

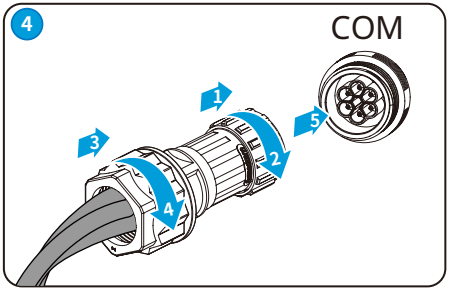








RS485/Meter (COM2)	DRED (COM3)
1: RS485 B	1: DRM1/5
2: RS485 B	2: DRM2/6
3: RS485 A	3: DRM3/7
4 RS485 A	4: DRM4/8
5: Meter +	5: REFGen
6: Meter -	6: Com/DRM0



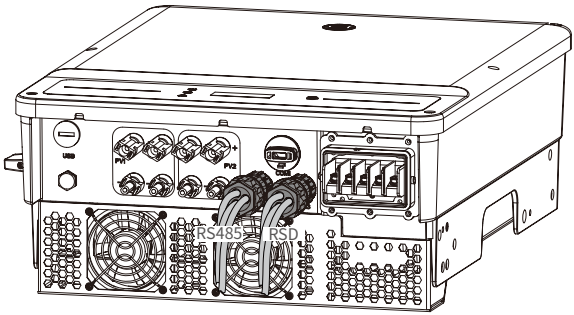
WARNING

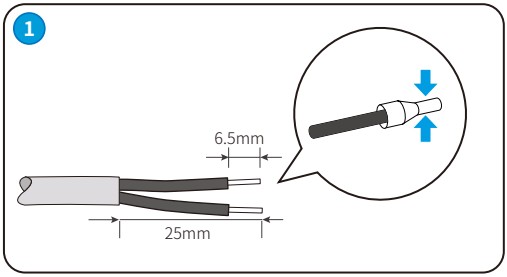
Do not remove the pre-installed terminal when the DRED function is unused. Install the terminal back to the inverter when the DRED function is not to be used. The inverter cannot be grid-tied if the terminal is removed.

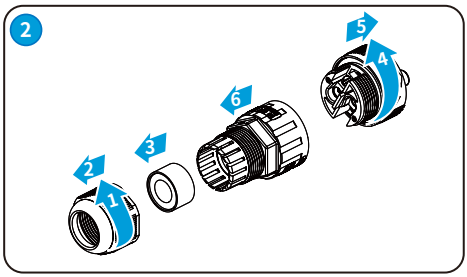
Connecting the Remote Shutdown (RSD) Communication Cable

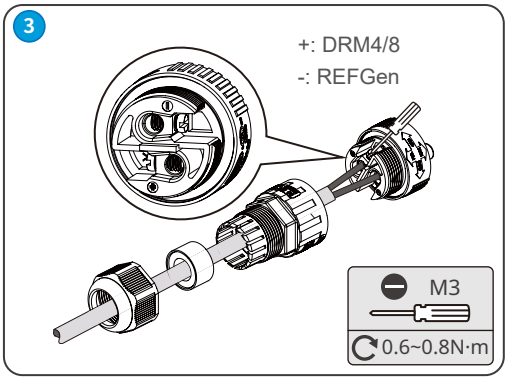
NOTICE

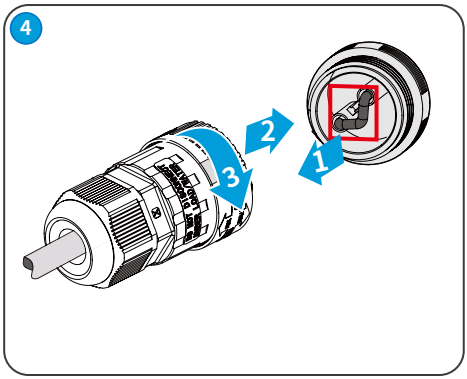
Connect the remote shutdown cable using a 2PIN communication terminal as follows.





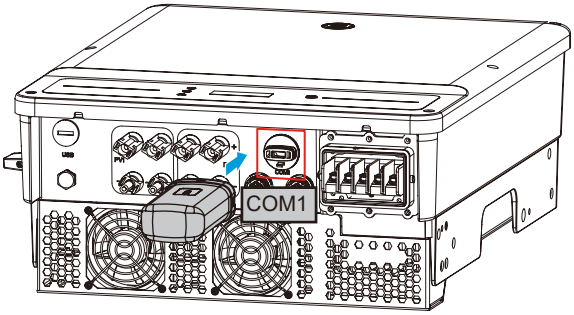






6.5.2 Installing the Communication Module (optional)

Plug a communication module into the inverter to establish a connection between the inverter and the smartphone or web pages. The communication module can be a Bluetooth module, WiFi module, LAN module, or 4G module. Set inverter parameters, check running information and fault information, and observe system status in time via the smartphone or web pages.



NOTICE
Refer to the delivered communication module user manual to get more introduction to the module. For more detailed information, visit www.gesolarinverter.com.

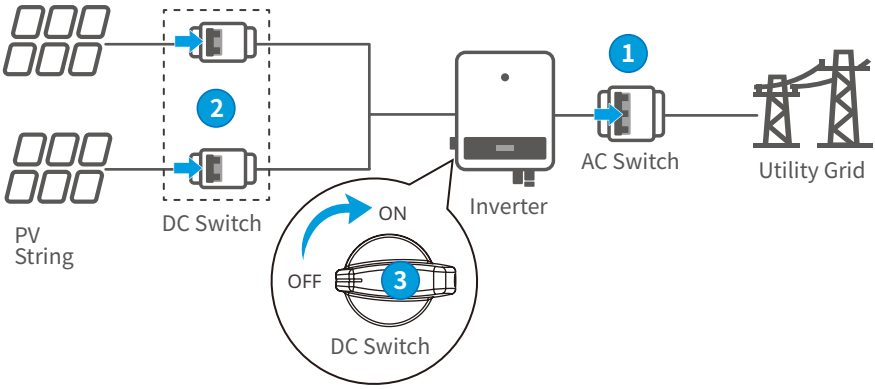
7 Equipment Commissioning

7.1 Check Items Before Switching Power ON

No.	Check Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE cable, DC input cable, AC output cable, and communication cable are connected correctly and securely.
3	Cable ties are routed properly and evenly, and no burrs.
4	Unused ports and terminals are sealed.
5	The voltage and frequency at the connection point meet the on-grid requirements.

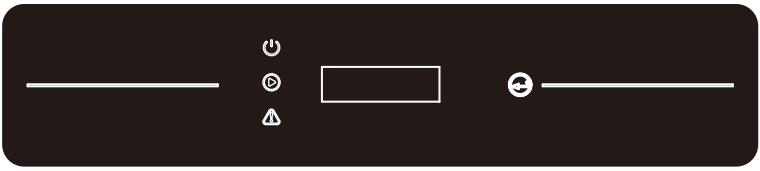
7.2 Power On

Step 1 Turn on the AC switch between the inverter and the utility grid.
Step 2 (optional) Turn on the DC switch between the inverter and the PV string.
Step 3 Turn on the DC switch between the inverter and the battery.



8 System Commissioning

8.1 Indicators and Button



Type	Status		Description
Power		Steady yellow	Communication status is normal.
		Single yellow blinking	Communication is reseting or restarting.
		Double yellow blinking	The inverter is not connected to the router.
		Quadruple yellow blinking	The inverter is not connected to the server.
		Yellow blinking	RS485 is working normally.
		Off	No communication.
Operating		Steady green	The inverter is grid-tied successfully.
		Off	The inverter is off grid.
Alarming		Steady red	System fault.
		Off	No fault.

LCD Button Description

Stop pressing the button for a period in any page, the LCD will get dark and go back to the initial page, which means the parameter in that page has been saved successfully.

8.2 Setting Inverter Parameters via LCD

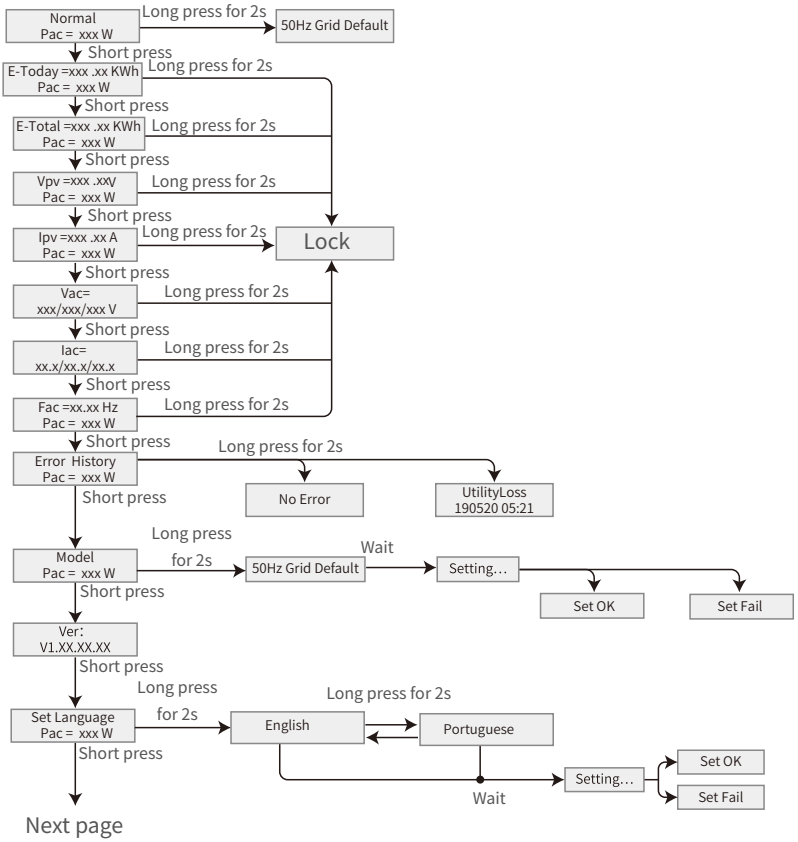
NOTICE

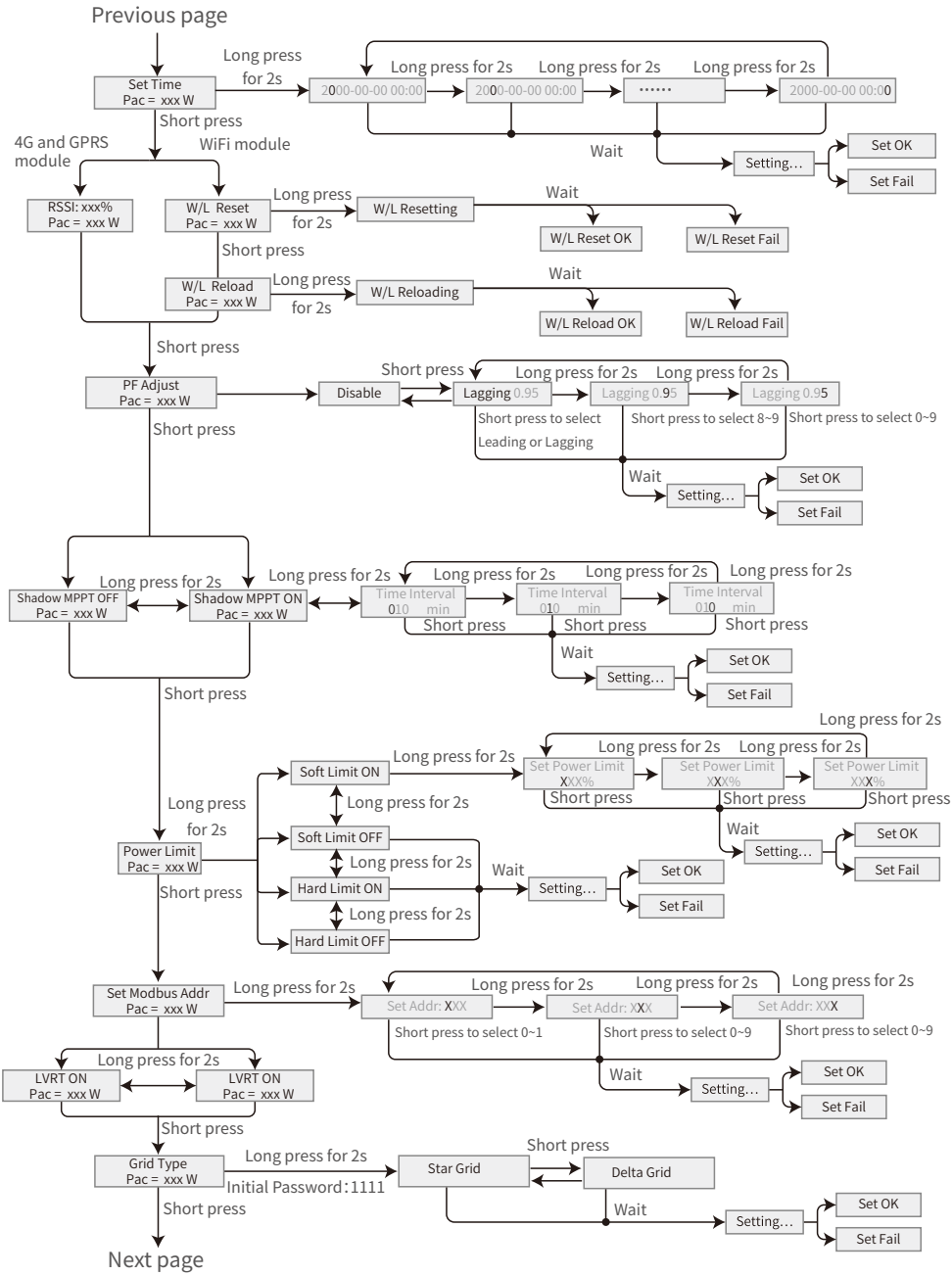
- Inverter software version shown in this document is V1.00.00.13. The screen shots are for reference only. The actual display may differ.
- The name, range, and default value of the parameters is subject to change or adjust. The actual display prevails.
- The power parameters should be set by professionals to prevent the generating capacity from being influenced by wrong parameters

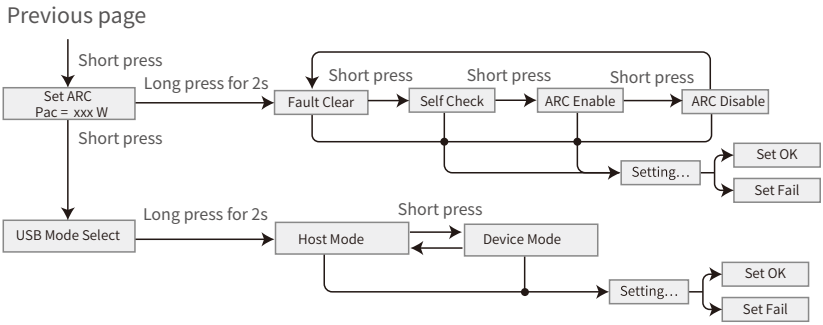
8.2.1 LCD Menu Introduction

This part describes the menu structure, allowing you view inverter information and set parameters more conveniently.

Main menu




Previous page
Set Time
Pac = xxx W
Long press for 2s
2000-00-00 00:00
Long press for 2s
2000-00-00 00:00
Long press for 2s
Long press for 2s
2000-00-00 00:00
Short press
4G and GPRS module
WiFi module
Wait
Setting…
Set OK
Set Fail
RSSI: xxx%
Pac = xxx W
W/L Reset
Pac = xxx W
Long press for 2s
W/L Resetting
Wait
W/L Reset OK
W/L Reset Fail
Short press
W/L Reload
Pac = xxx W
Long press for 2s
W/L Reloading
Wait
W/L Reload OK
W/L Reload Fail
Short press
PF Adjust
Pac = xxx W
Short press
Disable
Lagging 0.95
Long press for 2s
Lagging 0.95
Long press for 2s
Lagging 0.95
Short press to select Leading or Lagging
Short press to select 8~9
Short press to select 0~9
Wait
Setting…
Set OK
Set Fail
Short press
Shadow MPPT OFF
Pac = xxx W
Long press for 2s
Shadow MPPT ON
Pac = xxx W
Long press for 2s
Time Interval
010 min
Long press for 2s
Time Interval
010 min
Long press for 2s
Time Interval
010 min
Short press
Short press
Short press
Wait
Setting…
Set OK
Set Fail
Short press
Power Limit
Pac = xxx W
Long press for 2s
Soft Limit ON
Long press for 2s
Soft Limit OFF
Long press for 2s
Hard Limit ON
Long press for 2s
Hard Limit OFF
Long press for 2s
Set Power Limit
XXX%
Long press for 2s
Set Power Limit
XXX%
Long press for 2s
Set Power Limit
XXX%
Short press
Short press
Short press
Wait
Setting…
Set OK
Set Fail
Wait
Setting…
Set OK
Set Fail
Short press
Set Modbus Addr
Pac = xxx W
Long press for 2s
Set Addr: XXX
Long press for 2s
Set Addr: XXX
Long press for 2s
Set Addr: XXX
Short press to select 0~1
Short press to select 0~9
Short press to select 0~9
Wait
Setting…
Set OK
Set Fail
Long press for 2s
LVRT ON
Pac = xxx W
LVRT ON
Pac = xxx W
Short press
Grid Type
Pac = xxx W
Long press for 2s
Initial Password:1111
Star Grid
Short press
Delta Grid
Wait
Setting…
Set OK
Set Fail
Short press
Next page



8.2.2 Inverter Parameter Introduction

Parameters	Description
Normal	Home page. Indicates the real-time power of the inverter. Long press for 2s to check the current safety code.
E-Today	Check the generated power of the system for that day.
E-Total	Check the total generated power of the system.
Vpv	Check the DC input voltage of the inverter.
Ipv	Check the DC input current of the inverter.
Vac	Check the voltage of the utility grid.
Iac	Check the AC output current of the inverter.
Fac	Check the frequency of the utility grid.
Error History	Check historical error message records of the inverter.
Model	Indicates the specific inverter model. Long press for 2s to set the safety code. Set the safety country in compliance with the local grid standards and application scenario of the inverter.
Ver	Check the software version.
Set Language	Set language accordingly. Languages: English, Portuguese, Spanish。
Set Time	Set time according to the actual time in the country/region where the inverter is located.
RSSI	Indicates the received signal strength of the GPRS module and 4G module.
W/L Reset	Power off and restart the WiFi module.
W/L Reload	Restore the factory settings of the WiFi module. Reconfigure the WiFi module network parameters after restoring the factory settings,
PF Adjust	Set the power factor of the inverter according to actual situation.
Time Interval	Set Time Interval according to actual needs.
Shadow MPPT	Enable the shadow scan function if the PV panels are shadowed.

Parameters	Description
Power Limit	**Soft limit**: Set the power feed into the utility grid according to local requirements and standards. **Hard limit**: The inverter and the utility grid will automatically disconnect when the power feeds into the grid excesses the required limit.
Set Power Limit	Set the power feed back into the utility grid according to the actual situation.
Set Modbus Addr	Set the actual Modbus address.
LVRT	With LVRT on, the inverter will stay connected with the utility grid when a short-term utility grid low voltage exception occurs.
HVRT	With HVRT on, the inverter will stay connected with the utility grid when a short-term utility grid high voltage exception occurs.
Grid Type	Set the grid type according to the actual grid type. Supported grid type: star grid and delta grid.
Set ARC	ARC is optional and off by default. Enable or disable ARC accordingly.
Fault Clear	Clear ARC alarm records.
Self Check	Check whether ARC can work normally.
USB Mode Select	Reserved for troubleshooting by after-sales service staff.

8.3 Setting Inverter Parameters via App

SolarGo is an application used to communicate with the inverter via Bluetooth module, WiFi module, or GPRS module. Commonly used functions:

1. Check the operating data, software version, alarms of the inverter, etc.
2. Set grid parameters and communication parameters of the inverter.
3. Maintain the equipment.

For more details, refer to the SolarGo APP User Manual. Scan the QR code or visit https://www.gesolarinverter.com/file/SolarGo%20APP%20User%20Manual-EN.pdf to get the user manual.

SolarGo App

SolarGo App User Manual

8.4 Monitoring via Power Sight

Power Sight is an monitoring platform used to manage organizations/users, add plants, and monitor plant status.

For more details, refer to the Power Sight User Manual. Scan the QR code or visit https://www.gesolarinverter.com/file/Power%20Sight%20User%20Manual-EN.pdf to get the user manual.

Power Sight

Power Sight User Manual

9 Maintenance

9.1 Power Off the Inverter

DANGER

- Power off the inverter before operations and maintenance. Otherwise, the inverter may be damaged or electric shocks may occur.
- Delayed discharge. Wait until the components are discharged after power off.

Step 1 (optional) Send shutdown command to the inverter,
Step 2 Turn off the AC switch between the inverter and the utility grid.
Step 3 Turn off the DC switch of the inverter.
Step 4 (optional) Turn off the DC switch between the inverter and the PV string.

9.2 Removing the Inverter

WARNING

- Make sure that the inverter is powered off.
- Wear proper PPE before any operations.

Step 1 Disconnect all the cables, including DC cables, AC cables, communication cables, the communication module, and PE cables.
Step 2 Remove the inverter from the mounting plate.
Step 3 Remove the mounting plate.
Step 4 Store the inverter properly. If the inverter needs to be used later, ensure that the storage conditions meet the requirements.

9.3 Disposing of the Inverter

If the inverter cannot work any more, dispose of it according to the local disposal requirements for electrical equipment waste. Do not dispose of it as household waste.

9.4 Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.

Collect the information below before contacting the after-sales service, so tha the problems can be solved quickly.

1. Inverter information like serial number, software version, installation date, fault time, fault frequency, etc.
2. Installation environment, including weather conditions, whether the PV modules are sheltered or shadowed, etc. It is recommended to provide some photos and videos to assist in analyzing the problem.
3. Utility grid situation.

No.	Fault	Cause	Solutions
1	Ver. Error	Wrong software version.	Contact after-sales service to upgrade the software.
2	Utility Loss	1. Utility grid power failure. 2. The AC circuit or the AC breaker is disconnected.	1. Check whether other electrical devices under the same grid connection point is working normally and whether the main supply is normal. 2. Make sure that the upstream switches of the inverter are connected. 3. Make sure that the phase sequence of the AC cables are connected correctly, and the neutral wire and PE cable are connected properly and firmly.
3	Vac Fail	The utility grid voltage is out of the allowed range.	1. Make sure that the grid voltage is within the allowed range. 2. Make sure that the phase sequence of the AC cables are connected correctly, and the neutral wire and PE cable are connected properly and firmly.
4	Fac Fail	The utility grid frequency is out of the allowed range.	1. Check whether other electrical devices under the same grid connection point is working normally, and whether the main supply is normal. 2. Make sure that the grid frequency is within the allowed range. 3. Make sure that the phase sequence of the AC cables are connected correctly, and the neutral wire and PE cable are connected properly and firmly. 4. Pay attention to the frequency of the fault. If it happens occasionally, the fault may be caused by the instantaneous utility grid frequency change and does not need to be handled.

No.	Fault	Cause	Solutions
5	Isolation Fail	1. The PV system is short-circuited to the ground. 2. The PV system is in a moist environment and the circuit is not well insulated to the ground.	1. Check whether the PV input cables are broken. 2. Check whether the module frames and the metal bracket are securely grounded. 3. Check whether the AC side is properly grounded Inverters sold in Australia and New Zealand will also alarm as following when Isolation Fail occurs. 1. The buzzer in the inverter will sound for 1minute. If the problem persists, the buzzer willsound every 30 min. 2. After adding the inverter to Power Sight, the alarm information will be emailed to the customers via Power Sight.
6	DC inject High	DC injection exceeds the allowed range.	1. Check whether the software version is the latest one. 2. Restart the inverter and check whether the inverter can work properly.
7	Ground I Fail	The input insulation impedance to the ground decreases when the inverter is operating.	1. Check whether the working environment of the inverter meets the requirements. For example, the fault may occur due to high humidity on rainy days 2. Make sure that the components are properly grounded and the AC side is properly grounded.
8	PV Over Voltage	Excess PV modules are connected in the series, and the open-circuit voltage is higher than the operating voltage.	1. Check whether the PV string input voltage consistent with the value displayed on the LCD. 2. Check whether the PV string voltage meets the maximum input voltage requirements.
9	Over Temperature	1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. The inverter is working improperly.	1. Check the installation environment and space of the inverter. Make sure that the ventilation meets heat dissipation requirements. 2. Make sure that the fans are working properly and not covered or blocked. 3. Check whether the operating ambient temperature is too high.

No.	Fault	Cause	Solutions
10	AFan Fail	A fault occurs in all fans of the inverter.	1. Restart the inverter and check whether the inverter can work normally. 2. Make sure that the fans are working properly and not covered or blocked.
11	EFan Fail	A fault occurs on the external fan of the inverter.	
12	IFan Fail	A fault occurs in the internal fan of the inverter.	1. Restart the inverter and check whether the inverter can work normally. 2. A fault occurs in the internal fan, contact after-sales service.
13	ARC Fault	The PV string cables arc or are in poor contact.	1. Check whether the PV terminals and cables are connected properly. 2. Clear the error messages. Contact after-sales service if the fault occurs frequently.
14	DC Bus High	Inverter internal fault.	1. Make sure that the software version is the latest one. 2. Restart the inverter to check whether the inverter can work properly.
15	SPI Fail		
16	Ref 1.5V Fail		
17	AC HCT Fail		
18	GFCI Fail		
19	Relay Check Fail		
20	EEPROM R/W Fail		

9.5 Routine Maintenance

Maintaining Item	Maintaining Method	Maintaining Period
System Clean	Check the heat sink, air intake, and air outlet for foreign matter or dust.	Once 6-12 months
Fan	Check the fan for proper working status, low noise, and intact appearance.	Once a year
DC Switch	Turn the DC switch on and off ten consecutive times to make sure that it is working properly.	Once a year
Electrical Connection	Check whether the cables are securely connected. Check whether the cables are broken, or whether there is any exposed copper core.	Once 6-12 months
Sealing	Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is not sealed or too big.	Once a year
THDi Test	For Australia requirements, in the THDi test, there should add Zref between inverter and mains. Zref: Zmax or Zref (phase current>16A) Zref: L: 0.24 Ω + j0.15 Ω; N: 0.16 Ω + j0.10 Ω (phase current>16A, <21.7A) Zref: L: 0.15 Ω + j0.15 Ω; N: 0.1 Ω + j0.1 Ω (phase current>21.7A, <75A) Zref: ⩾5% Un/Irated+j5% Un/Irated (phase current>75A)	As needed

10 Technical Parameters

Technical Data	GEP4.0 -3 -10	GEP5.0 -3 -10	GEP6.0 -3 -10	GEP8.0 -3 -10	GEP8-3-AU10
Input					
Max. Input Power (W)	8,000	10,000	12,000	16,000	16,000
Max. Input Voltage (V)	1100	1100	1100	1100	1100
MPPT Operating Voltage Range (V)	140~950	140~950	140~950	140~950	140~950
MPPT Voltage Range at Nominal Power (V)	160~850	180~850	220~850	290~850	160~850
Start-up Voltage (V)	180	180	180	180	180
Nominal Input Voltage (V)	620	620	620	620	620
Max. Input Current per MPPT (A)	15	15	15	15	30
Max. Short Circuit Current per MPPT (A)	18.7	18.7	18.7	18.7	37.5
Max. Backfeed Current to The Array (A)	0	0	0	0	0
Number of MPP Trackers	2	2	2	2	2
Number of Strings per MPPT	1	1	1	1	2
Output					
Nominal Output Power (W)	4,000	5,000	6,000	8,000	8,000
Nominal Output Apparent Power (VA)	4,000	5,000	6,000	8,000	8,000
Max. AC Active Power (W)	4,400	5,500	6,600	8,800	8,800
Max. AC Apparent Power (VA)	4,400	5,500	6,600	8,800	8,800
Nominal Power at 40°C (W)(Only for Brazil)	4,000	5,000	6,000	8,000	8,000
Max Power at 40°C (Including AC Overload) (W)(Only for Brazil)	4,000	5,000	6,000	8,000	8,000
Nominal Output Voltage (V)	380/400/415, 3/N/PE	380/400/415, 3/N/PE	380/400/415, 3/N/PE	380/400/415, 3/N/PE	380/400/415, 3/N/PE
Output Voltage Range (V)	180~260	180~260	180~260	180~260	180~260
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60	50/60	50/60

Technical Data	GEP4.0 -3 -10	GEP5.0 -3 -10	GEP6.0 -3 -10	GEP8.0 -3 -10	GEP8-3-AU10
AC Grid Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. Output Current (A)	6.4	8.0	9.6	12.8	12.8
Max. Output Fault Current (Peak and Duration) (A)	16A@5ms	20A@5ms	24A@5ms	32A@5ms	32A@5ms
Inrush Current (Peak and Duration) (A)	80A@50us	80A@50us	80A@50us	80A@50us	80A@50us
Nominal Output Current (A)	5.8	7.2	8.7	11.6	11.6
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	22.13	22.13	22.13	38.37	38.37
Efficiency					
Max. Efficiency	98.3%	98.3%	98.3%	98.3%	98.3%
European Efficiency	97.6%	97.6%	97.6%	97.6%	97.6%
CEC Efficiency	97.8%	97.8%	97.8%	97.8%	97.8%
Protection					
PV Insulation Resistance Detection	Integrated				
Residual Current Monitoring	Integrated				
PV Reverse Polarity Protection	Integrated				
Anti-islanding Protection	Integrated				
AC Overcurrent Protection	Integrated				
AC Short Circuit Protection	Integrated				
AC Overvoltage Protection	Integrated				
DC Switch	Integrated				
DC Surge Protection	Type II				
AC Surge Protection	Type III (Type II Optional)				
AFCI	Optional				

Technical Data	GEP4.0 -3 -10	GEP5.0 -3 -10	GEP6.0 -3 -10	GEP8.0 -3 -10	GEP8-3-AU10
Emergency Power Off	Optional				
Remote Shutdown	Optional				
General Data					
Operating Temperature Range (°C)	-30~+60				
Relative Humidity	0~100%				
Max. Operating Altitude (m)*1	4000				
Cooling Method	Natural Convection				
User Interface	LED, LCD (Optional), WLAN+APP				
Communication	RS485 or WiFi or LAN or 4G(Optional)				
Communication Protocols	Modbus-RTU (SunSpec Compliant)				
Weight (kg)	20.5	20.5	20.5	20.5	24.0
Dimension (W×H×D mm)	415×511×175				
Noise Emission (dB)	＜25				
Topology	Non-isolated				
Self-consumption at Night (W)	＜1				
Ingress Protection Rating	IP65				
Anti-corrosion Class	C4				
DC Connector	MC4 (2.5～4mm^2)				
AC Connector	OT Terminal				
Environmental Category	4K4H				
Pollution Degree	III				
Overvoltage Category	DC II / AC III				
Protective Class	I				
The Decisive Voltage Class (DVC)	PV:C AC:C Com:A				
Active Anti-islanding Method	AFDPF + AQDPF *2				
Country of Manufacture (Only for Australia)	China				

Technical Data	GEP10-3-10	GEP10-3-AU10	GEP12-3-10	GEP15-3-10	GEP20-3-10
Input					
Max. Input Power (W)	20,000	20,000	24,000	30,000	40,000
Max. Input Voltage (V)	1100	1100	1100	1100	1100
MPPT Operating Voltage Range (V)	140~950	140~950	140~950	140~950	140~950
MPPT Voltage Range at Nominal Power (V)	360~850	180~850	220~850	275~850	360~850
Start-up Voltage (V)	180	180	180	180	180
Nominal Input Voltage (V)	620	620	620	620	620
Max. Input Current per MPPT (A)	15	30	30	30	30
Max. Short Circuit Current per MPPT (A)	18.7	37.5	37.5	37.5	37.5
Max. Backfeed Current to The Array (A)	0	0	0	0	0
Number of MPP Trackers	2	2	2	2	2
Number of Strings per MPPT	1	2	2	2	2
Output					
Nominal Output Power (W)	10,000	10,000	12,000	15,000	20,000
Nominal Output Apparent Power (VA)	10,000	10,000	12,000	15,000	20,000
Max. AC Active Power (W)	11,000	11,000	13,200	16,500	22,000
Max. AC Apparent Power (VA)	11,000	11,000	13,200	16,500	22,000
Nominal Power at 40°C (W)(Only for Brazil)	10,000	10,000	12,000	15,000	20,000
Max Power at 40°C (Including AC Overload) (W)(Only for Brazil)	10,000	10,000	12,000	15,000	20,000
Nominal Output Voltage (V)	380/400/415, 3/N/PE				
Output Voltage Range (V)	180~260	180~260	180~260	180~260	180~260
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60	50/60	50/60

Technical Data	GEP10-3-10	GEP10-3-AU10	GEP12-3-10	GEP15-3-10	GEP20-3-10
AC Grid Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. Output Current (A)	16.0	16.0	19.1	24.0	32.0
Max. Output Fault Current (Peak and Duration) (A)	32A@5ms	32A@5ms	36A@5ms	41A@5ms	54A@5ms
Inrush Current (Peak and Duration) (A)	80A@50us	80A@50us	150A@50us	150A@50us	150A@50us
Nominal Output Current (A)	14.5	14.5	17.3	21.7	29.0
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)				
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	38.37	38.37	88.93	88.93	88.93
Efficiency					
Max. Efficiency	98.3%	98.3%	98.4%	98.4%	98.4%
European Efficiency	97.6%	97.6%	97.8%	97.8%	97.8%
CEC Efficiency	97.8%	98.0%	98.0%	98.0%	98.0%
Protection					
PV Insulation Resistance Detection	Integrated				
Residual Current Monitoring	Integrated				
PV Reverse Polarity Protection	Integrated				
Anti-islanding Protection	Integrated				
AC Overcurrent Protection	Integrated				
AC Short Circuit Protection	Integrated				
AC Overvoltage Protection	Integrated				
DC Switch	Integrated				
DC Surge Protection	Type II				
AC Surge Protection	Type III (Type II Optional)				
AFCI	Optional				

Technical Data	GEP10-3-10	GEP10-3-AU10	GEP12-3-10	GEP15-3-10	GEP20-3-10
Emergency Power Off	Optional				
Remote Shutdown	Optional				
General Data					
Operating Temperature Range (°C)	-30~+60				
Relative Humidity	0~100%				
Max. Operating Altitude (m)*1	4000				
Cooling Method	Natural Convection				
User Interface	LED, LCD (Optional), WLAN+APP				
Communication	RS485 or WiFi or LAN or 4G(Optional)				
Communication Protocols	Modbus-RTU (SunSpec Compliant)				
Weight (kg)	20.5	24.0	23.5	26.0	26.0
Dimension (W×H×D mm)	415×511×175				
Noise Emission (dB)	＜25	＜25	＜50	＜50	＜50
Topology	Non-isolated				
Self-consumption at Night (W)	＜1				
Ingress Protection Rating	IP65				
Anti-corrosion Class	C4				
DC Connector	MC4 (2.5～4mm^2)				
AC Connector	OT Terminal				
Environmental Category	4K4H				
Pollution Degree	III				
Overvoltage Category	DC II / AC III				
Protective Class	I				
The Decisive Voltage Class (DVC)	PV:C AC:C Com:A				
Active Anti-islanding Method	AFDPF + AQDPF *2				
Country of Manufacture (Only for Australia)	China				

*1:For Australia Max. Operating Altitude (m) is 3000;
*2:AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.

Intelligence
Switched On

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