



CGH S3.6-6.0L

User Manual



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This document applies to the following modes of inverters:

◆CGH S3.6L ◆CGH S4.6L ◆CGH S5.0L ◆CGH S6.0L

Attention:

For product version upgrade or other reasons, the contents of the document will be updated from time to time, and unless otherwise specified, the contents of the document cannot replace the safety precautions in the product label or user manual. All statements, information and suggestions herein will not constitute any express or implied warranty. All descriptions herein are only used as a guide.

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Introduction

Product Overview

The CGH Series single-phase hybrid inverters are designed for residential energy systems. The hybrid inverter controls and optimizes energy flow through the integrated energy management system in the PV system . The electric power generated in the PV system can be used for the load , stored in the battery and transmitted to the grid , etc. This manual covers the CGH S3.6L, CGH S4.6L, CGH S5.0L , CGH S6.0L.

CGH S6.0L

Battery Side Voltage Type

L:Low Voltage, H:High Voltage.

Rated Power

6.0:the rated power is 6000W.

Ac Side Type

S:single phase, T:three phase.

Series Code

CGH Series

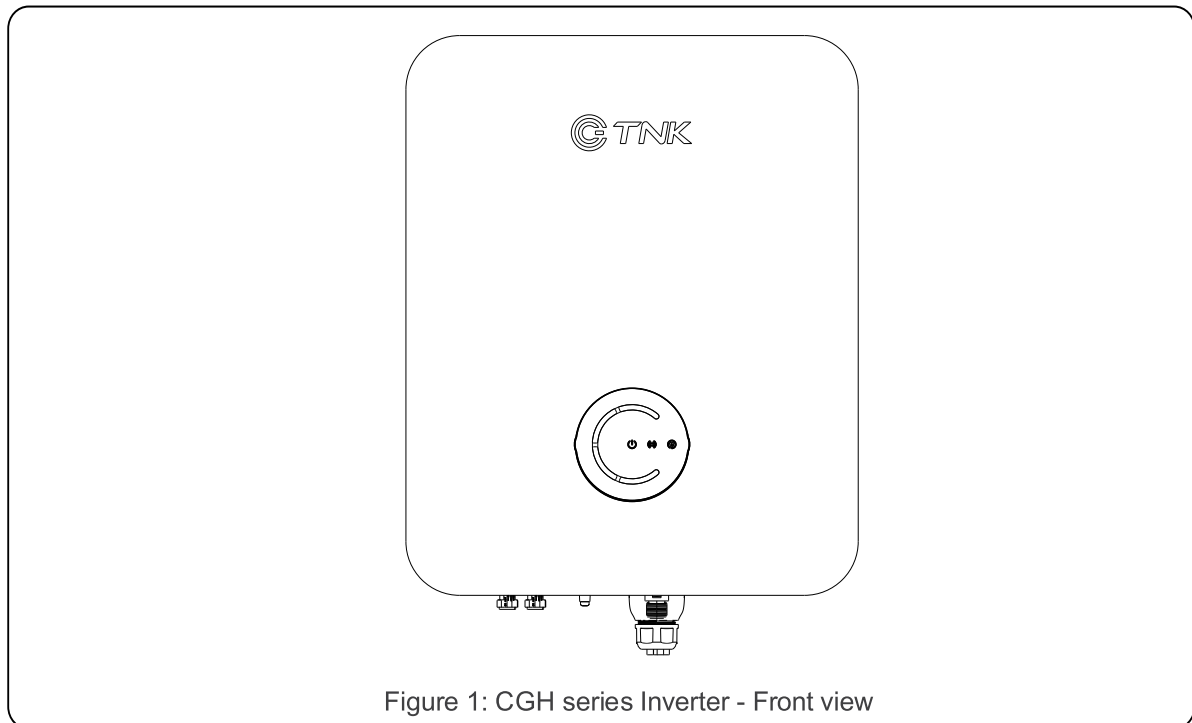
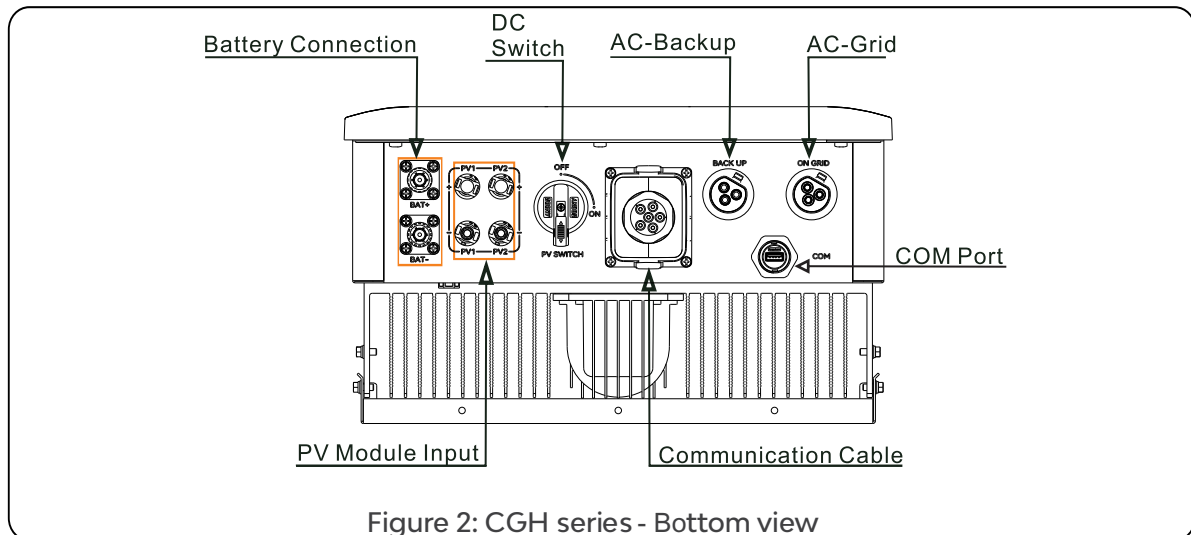


Figure 1: CGH series Inverter - Front view

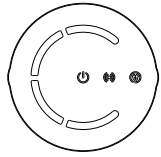
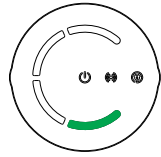
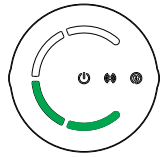
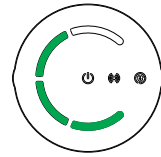
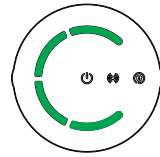


LED Indicator

Inverter indicator

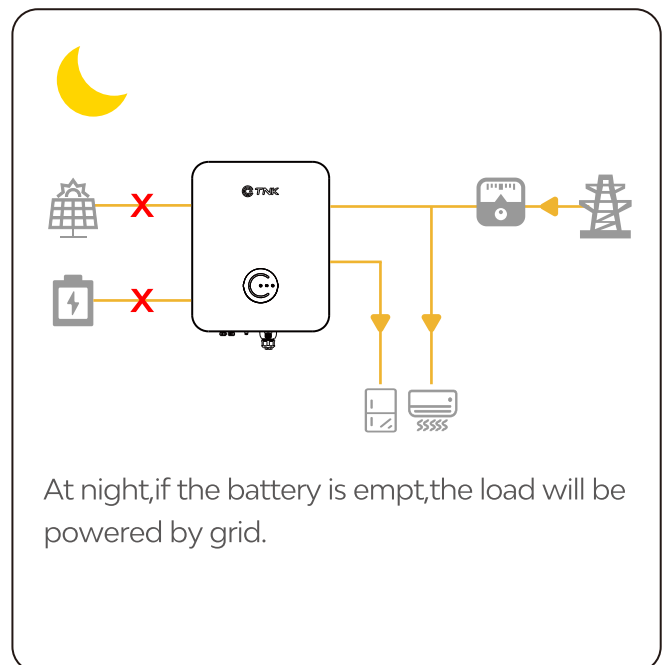
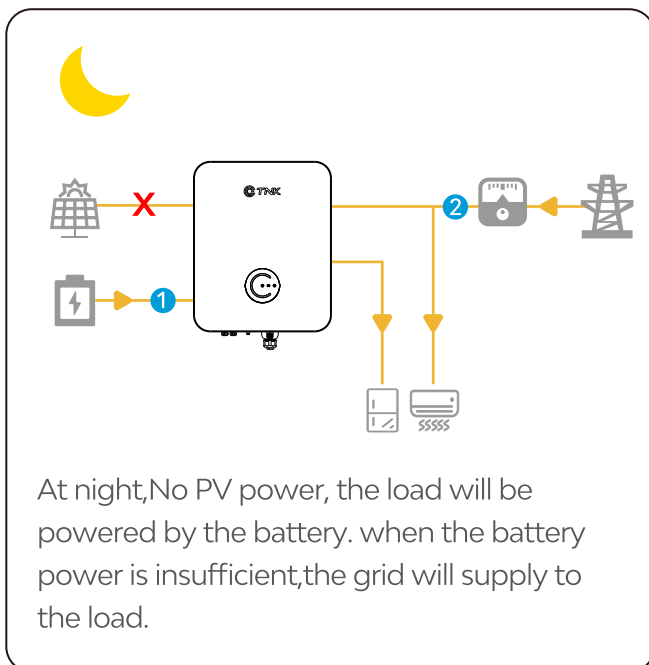
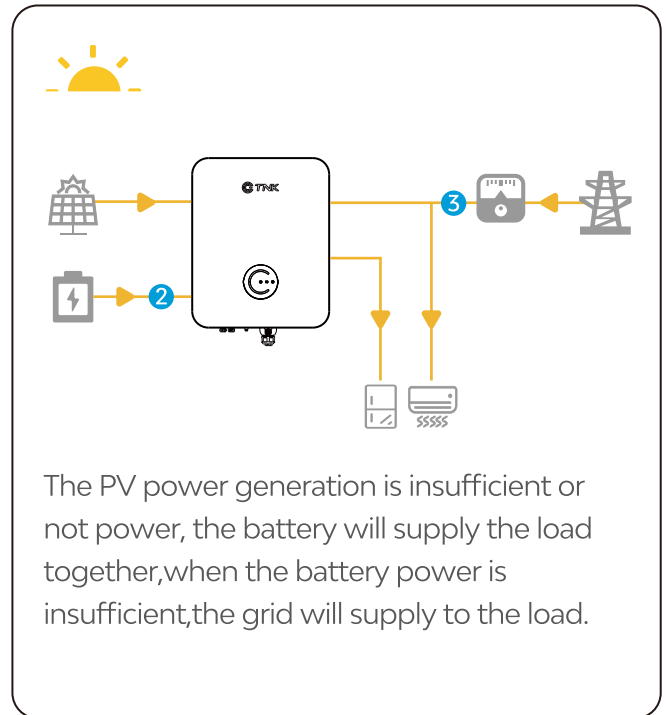
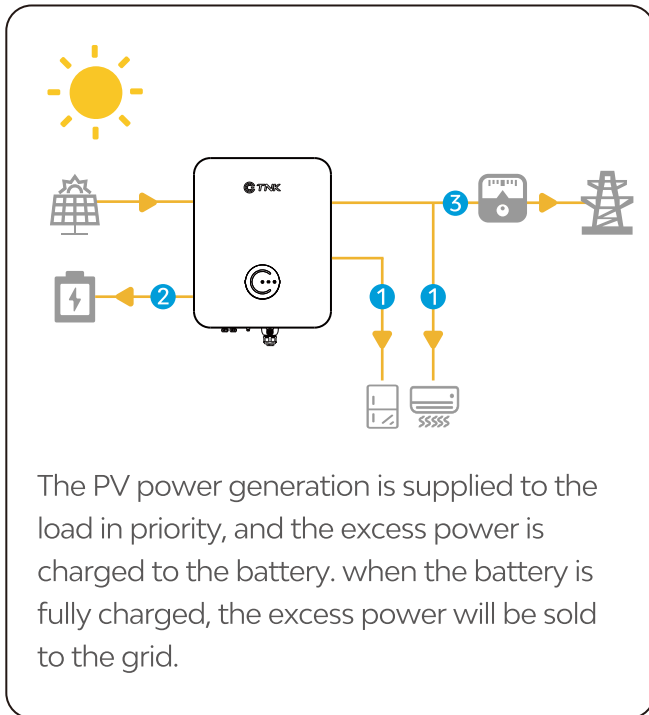
Indicator	Status	Description
		The inverter operates in off grid mode
		The inverter operates in standby mode
		The inverter operates in grid tied mode
		Internal communication failure
		A fault has occurred
		Abnormal communication of smart meter
		Abnormal CAN communication of battery
		Abnormal RS485 communication of battery
		The communication is normal
		The grid is abnormal
		The grid is normal
		No power grid

Battery SOC indicator

				
No battery	0%<SOC≤25%	25%<SOC≤50%	50%<SOC≤75%	75%<SOC≤100%
The indicator light flashes when the battery is charging: for example, when the battery SOC is between 50% and 75%, the light at the 75% position flashes.				

Self-Use Mode (default)

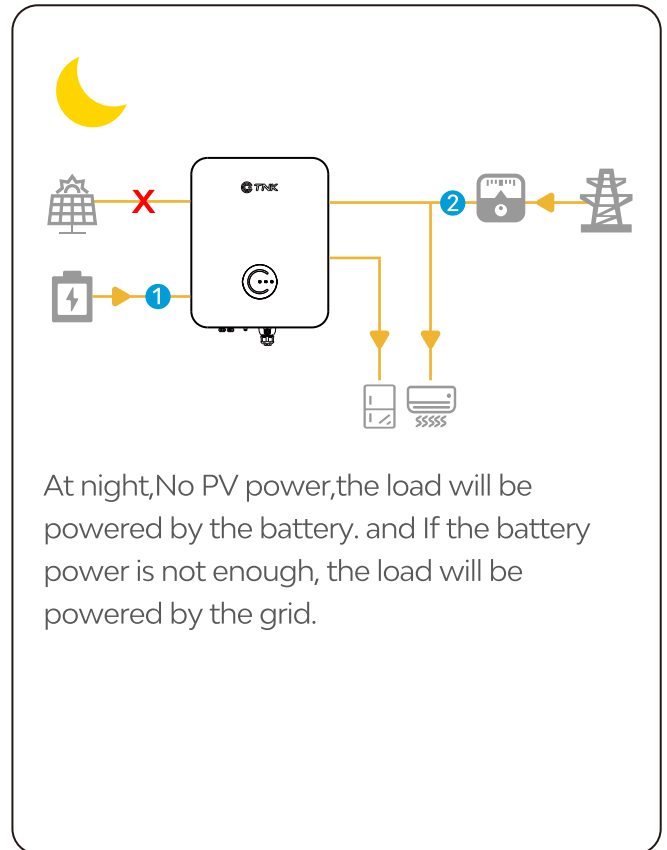
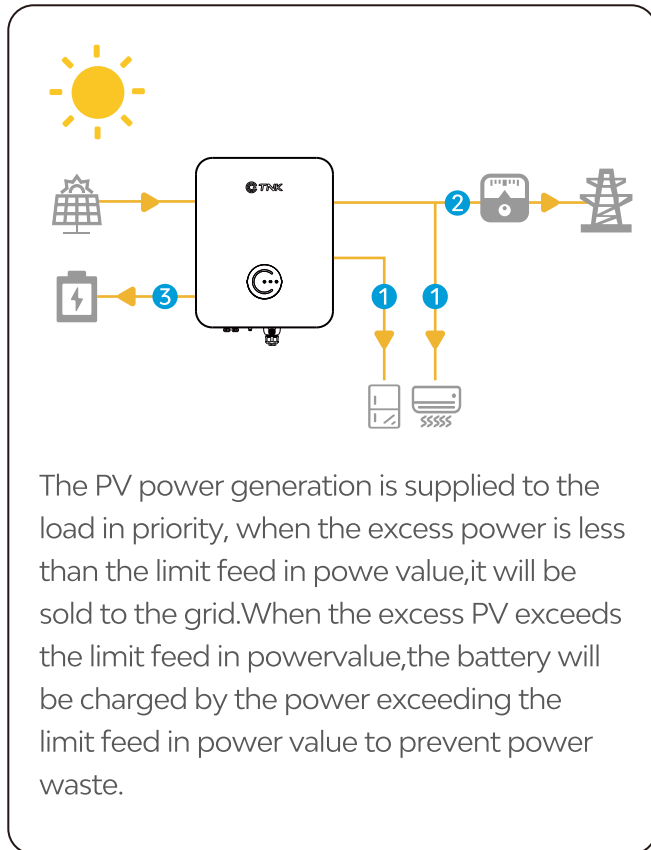
This mode can maximize the self consumption rate of PV power generation and saves electricity costs.



In this mode, you can set up multiple time-of-use rules to control the battery charging and discharging for more complex requirements, and the TOU setting will be enforced in priority, with the rest of the time period the inverter work in self-use mode.

Feed in Priority Mode

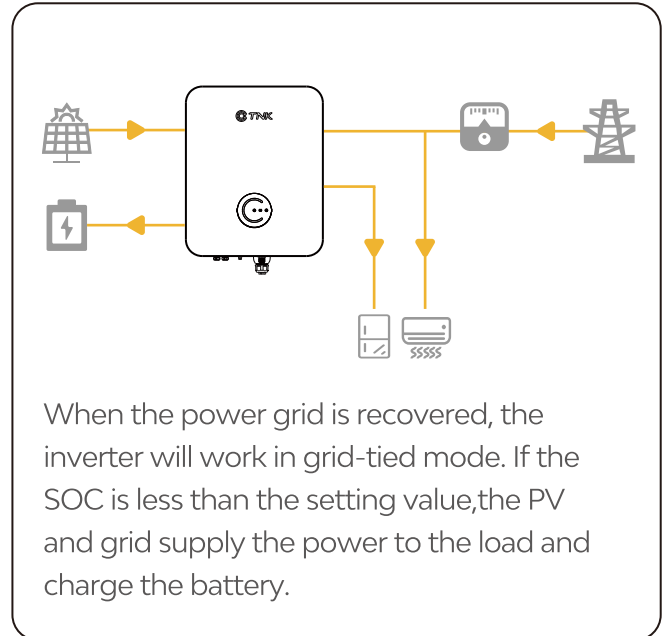
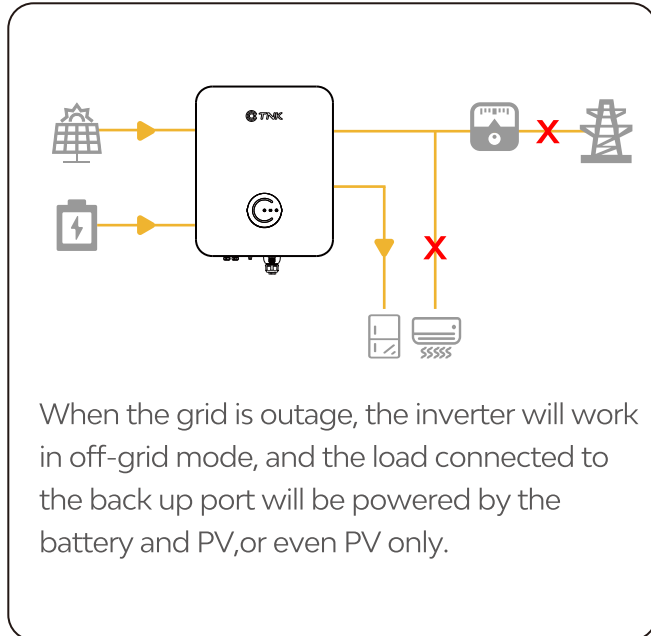
In this mode, the power can be sold to the grid in priority when the load is met. It is suitable for using in areas with high subsidized.



In this mode, you can set up multiple time-of-use rules to control the battery charging and discharging for more complex requirements, and the TOU setting will be enforced in priority, with the rest of the time period the inverter work in Feed in Priority mode.

EPS Mode

In the event of a power outage, the CGH series Hybrid inverter will work in off-grid mode immediately. It is recommended to use in areas with unstable power grid.



Safety Warnings & Notices

Warnings & Notices

Various safety instructions and general information are provided throughout this document:

	Danger: Indicates a hazardous situation that, if not avoided, is highly likely to result in death or serious injury and cause equipment damage.
	Warning: Indicates a hazardous situation that, if not avoided, is moderately likely to result in death or serious injury and cause equipment damage.
	Caution: Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury and cause equipment damage.
	Note: Provides tips that are valuable for the optimal operation of your product.

General Safety Instructions

	Danger: Fire risk Despite careful construction, electrical devices can cause fires. - Do not install the inverter near highly flammable materials or gases. - Do not install the inverter in potentially explosive atmospheres.
	Danger: Any electrical work must be carried out by a licensed electrician and be completed according to local and national electrical safety standards.
	Warning: Do not connect the positive (+) or negative (-) terminals of the PV array to ground/Earth. Doing so may expose hazardous voltages and may damage the inverter.
	Caution: Only devices compliant with ES1 (EN IEC 62368-1) may be connected to the RJ45 connectors.

	Danger: Do not connect the grid cables to the BACKUP port. Doing so may expose hazardous voltages on the grid in the event of a local grid outage, which could lead to death or serious injury. Protect the AC BACKUP port by installing the terminal plug (even if there is no EPS/backup circuit) to minimise the exposure of hazardous voltages.
	Warning: Electric shock risk Do not remove the front cover – there are no user-serviceable parts inside. Removing the cover will expose hazardous voltages and void the warranty. Refer servicing to qualified and accredited service technicians.
	Warning: Electric shock risk The PV array supplies potentially hazardous DC voltages when exposed to sunlight.
	Warning: Electric shock risk Installers should wear suitable electrical gloves throughout the installation process to minimize the risk of injury from electrical hazards.
	Warning: To reduce the risk of fire, over-current protective devices (OCPD) are required for circuits connected to the inverter and must be installed per local regulations. CGH Series hybrid inverters feature an integrated DC switch, which is compliant with AS60947.3.
	Warning: Use only compatible batteries with the CGH Series hybrid inverter.
	Caution: Burn risk High temperature on the surface of the inverter. To avoid the risk of burns, do not touch the inverter's surface while it is operating. Ensure the inverter is installed out of the reach of children.
	Caution: Risk of electric shock, wait 5 minutes after all power off until the storage energy are completely discharged before access to equipment internal.
	Note: Refer to the user manual before operating.
	Note: PV modules used with the inverter must have an IEC 61730 Class A rating.

Minimum Installation Requirements

CGH S3.6L~6.0L are single-phase inverters. Please note the following compatible configurations:

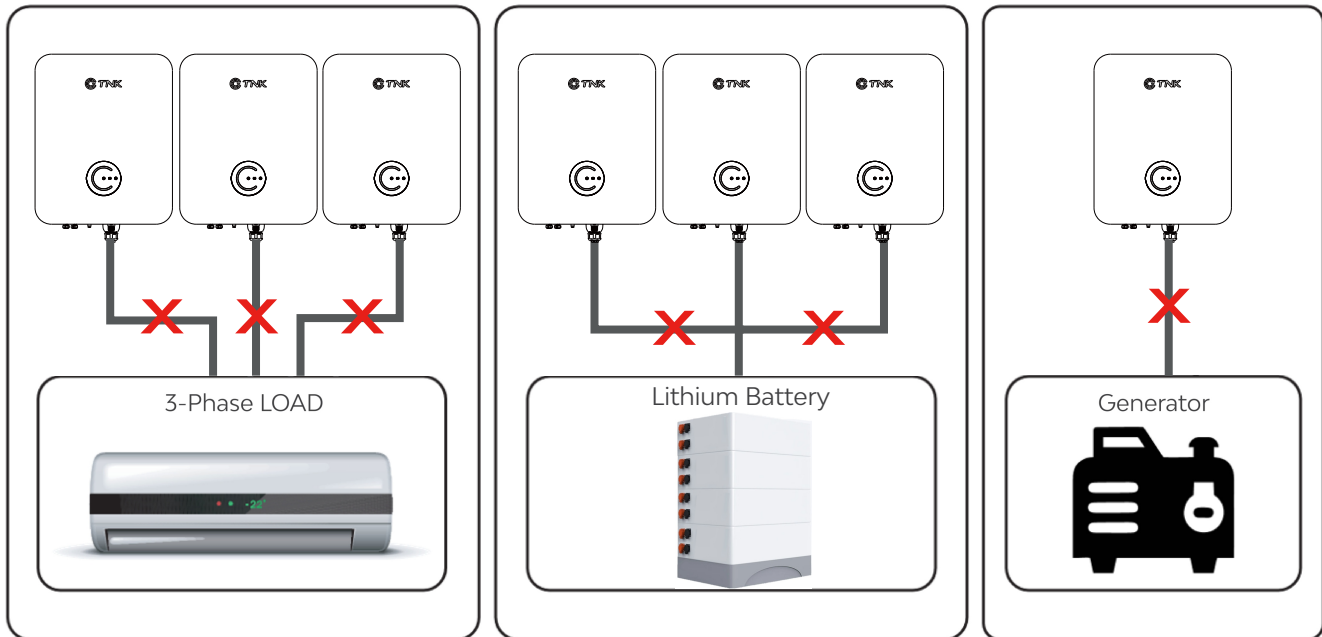


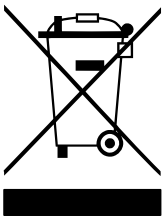
Figure 3: Compatible electrical configurations

The following are the minimum installation requirements for TNK systems:

1. Installations must be permanent.
2. The electrical installation must comply with all applicable regulations and standards.
3. Inverter installation must be completed according to the instructions stated in this manual.
4. All equipment external to the inverter (for example, an accompanying TNK battery) must be compatible with the CGH Series hybrid inverters.

Disposal Notice

Do not dispose of this product with household waste. At the end of the product's operational life, it should be taken to a dedicated recycling depot to minimise environmental impact.



 Follow local waste management regulations when disposing of this product.

Installation

Select a Location for the Inverter

Consider the following when selecting a location to install the inverter:

- Avoid installing in direct sunlight, as this can cause the product to overheat and reduce its power output as a protective measure.
- For optimal operation, the inverter should be installed in a shaded location that does not exceed 40°C under normal circumstances.

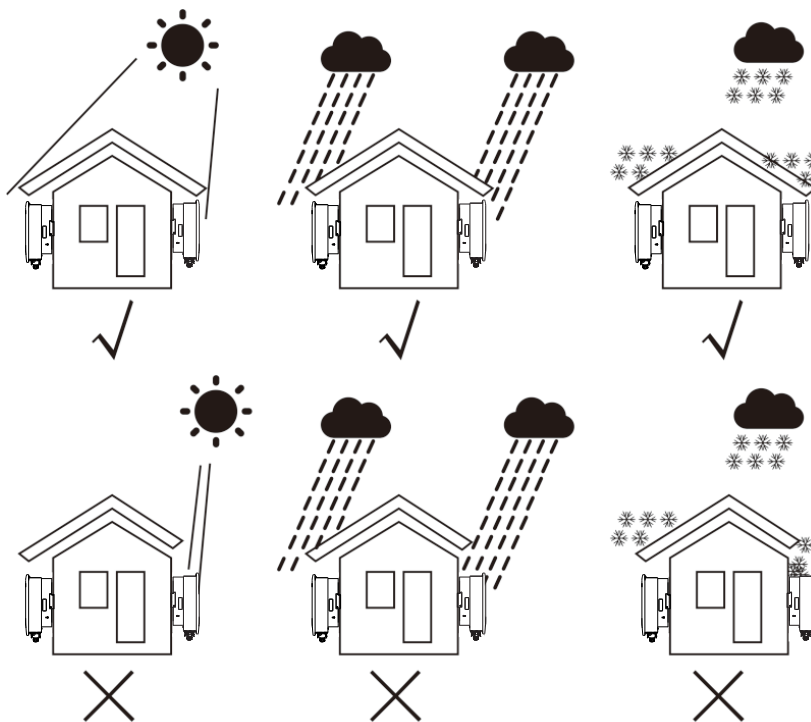


Figure 4: Recommended installation locations



Danger: Fire risk

Despite careful construction, electrical devices can cause fires.

Do not install:

- In areas containing highly flammable materials or gases.
- In potentially explosive atmospheres.
- On a mounting structure which is highly flammable.



Note:

To avoid overheating, ensure that airflow around the inverter is not inhibited. Maintain a minimum clearance of 200mm between the inverter and other objects, per Figure 5.

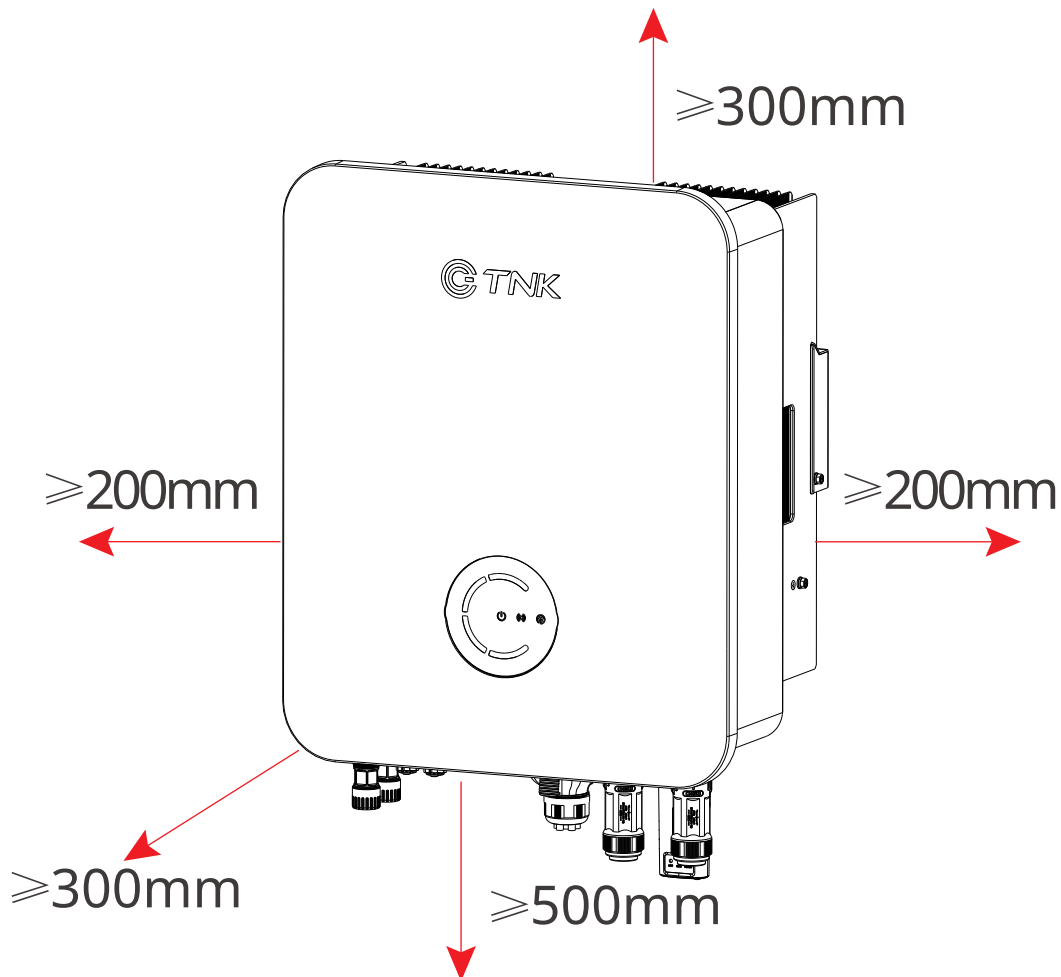


Figure 5: Inverter mounting clearances



Note:

Nothing should be stored on or placed against the inverter.

Installation Tool Requirements

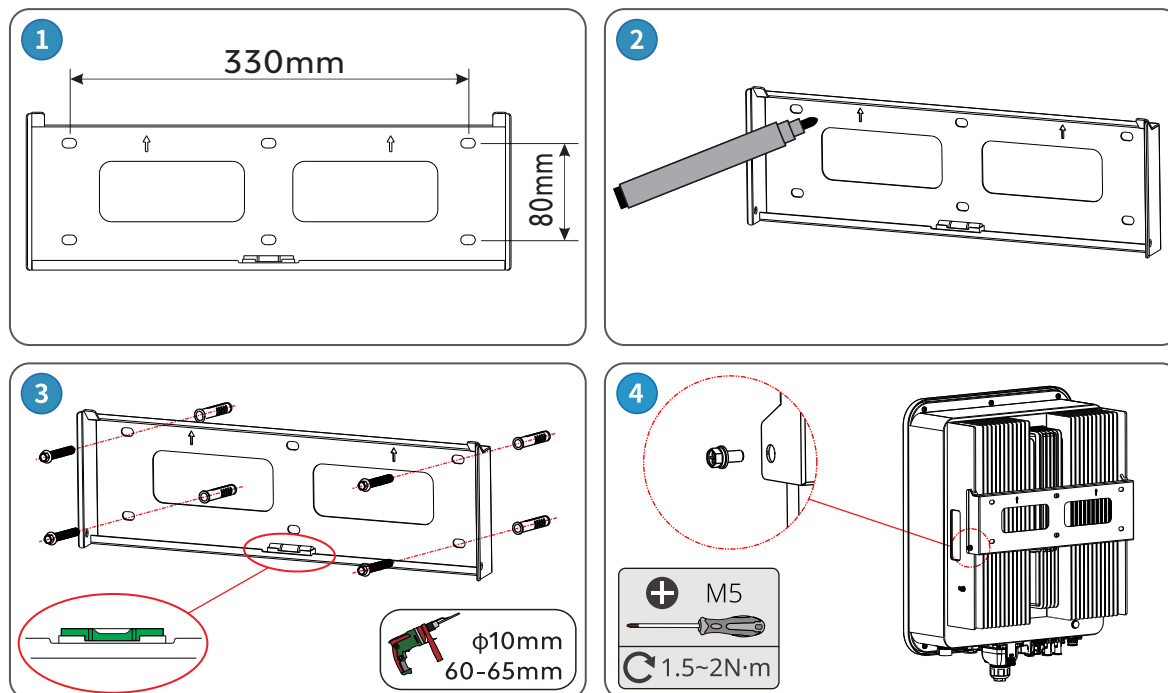
The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.



Mounting the Inverter

Follow these steps to mount the inverter on the wall:

1. Select the mounting height of the bracket and mark the mounting holes. For brick walls, position the holes to be suitable for the expansion bolts.
2. Drill holes by using the hammer drill.
3. Lift up the inverter (taking care to follow safe handling practices) and align the back bracket on the inverter with the convex section of the mounting bracket, Hang the inverter on the mounting bracket, Tighten the nuts to secure the mounting plate and the inverter, ensuring it is securely placed.



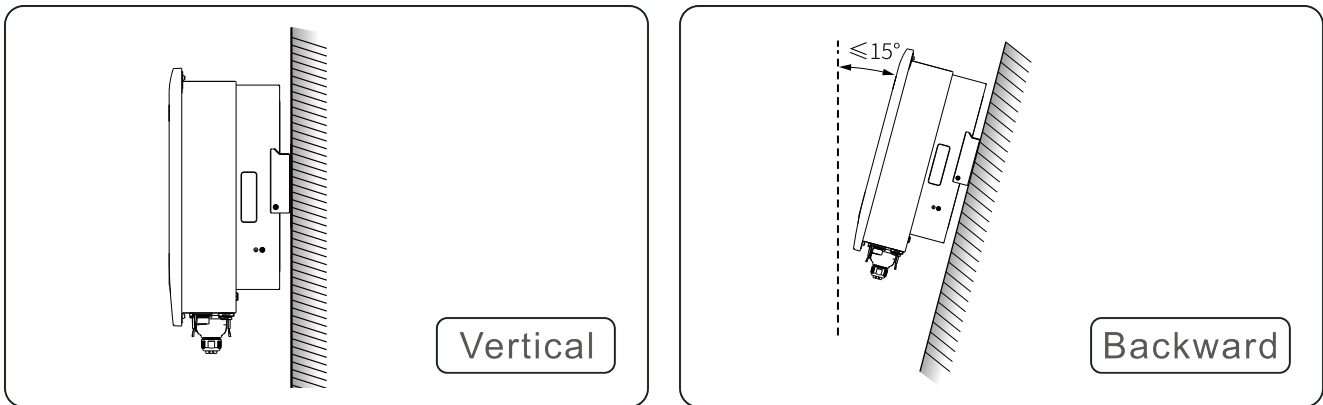


Figure 8: Installation location tilt limit

	Note: ■ The inverter can be installed vertically (+/- 5°) or tilted backwards ($\leq 15^\circ$). ■ Do not mount the inverter on a wall that is tilted forward greater than 5°. ■ Do not mount the inverter horizontally.
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PE Cable Installation

An external ground/earthing connection is provided on both sides of the inverter.

1. Prepare an M5 ring crimp terminal and use the appropriate tooling to crimp the lug to the terminal.
2. Connect the M5 ring crimp terminal with the ground cable to one of the grounding connections on the inverter and torque to 2N·m.

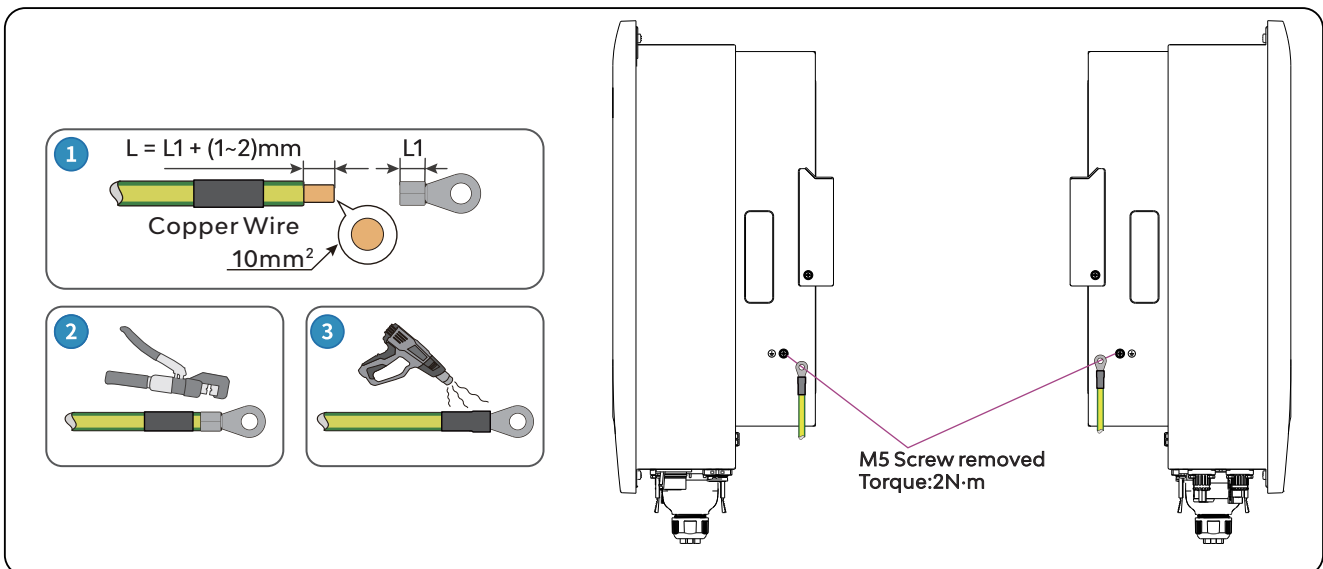


Figure 9: External grounding connections

Over Current Protection Device (OCPD)

To protect the inverter's AC grid connection conductors, Clenergy recommends installing AC breakers that will protect against overcurrent. The following table defines OCPD ratings for these inverters.

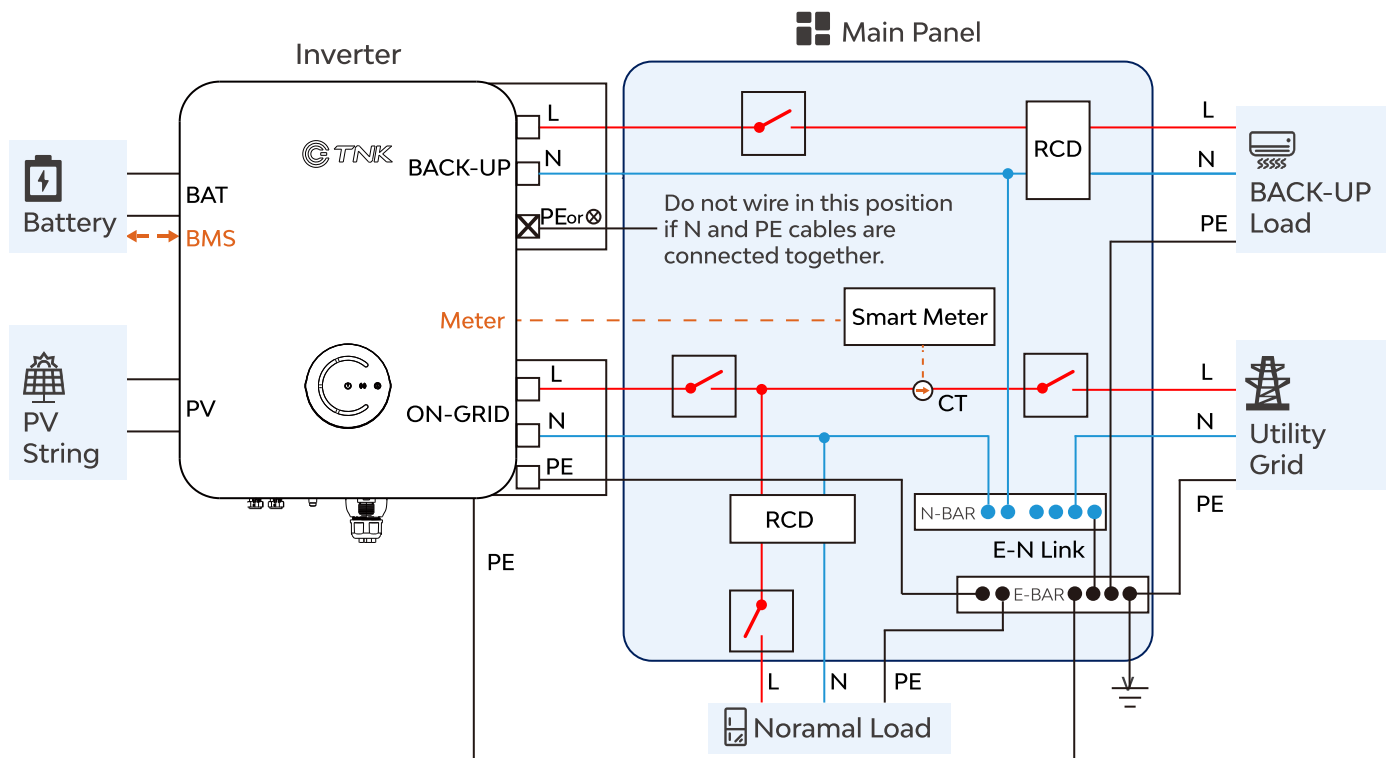
Inverter	Rated voltage	Rated output/ input current	Recommended CB rating	Maximum CB rating
CGH-3.6L	220/230/240V	15.7/31.4A	40.0A	50A
CGH-4.6L	220/230/240V	20/40A	50.0A	63A
CGH-5.0L	220/230/240V	21.7/43.5A	50.0A	63A
CGH-6.0L	220/230/240V	26.1/43.5A	50.0A	63A

System Electrical Topology

The N and PE wiring of system are different depending on the regulatory requirements in different regions. Refer to the specific requirements of local regulations.

System 1: N and PE lines are connected together in the main panel

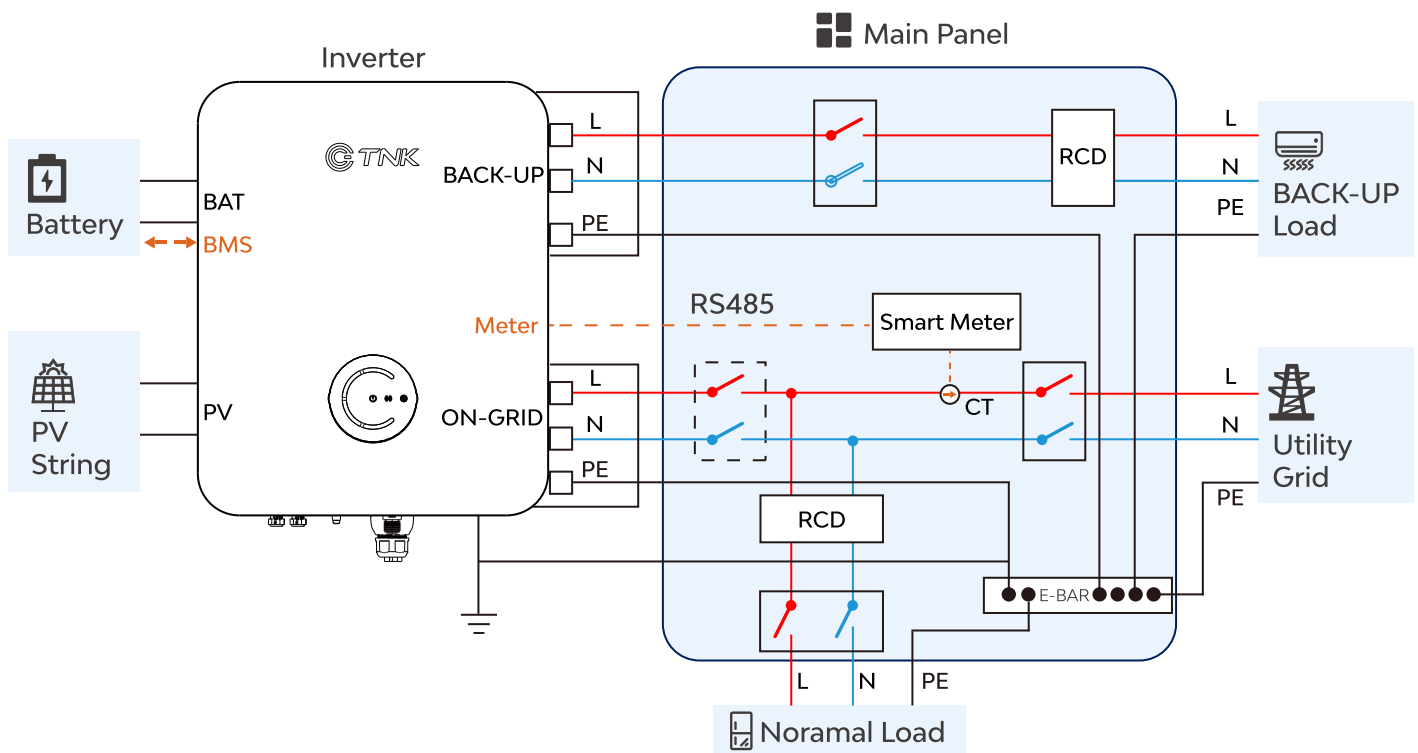
The system wiring below are applicable to areas where N and PE are connected together in the main panel, such as Australia, South Africa, New Zealand, etc.



System Electrical Topology

System2: N and PE lines are wired separately in in the main panel

The system wiring below are applicable to areas without special requirements for distribution system wiring.



Note:

Ensure that the grounding of BACK-UP port is correctly and tightened. Otherwise, the EPS mode may be abnormal in the event of power outage.

PV Input Cable Installation



Warning:
Use only approved DC cable for the PV system.



Caution:
Before connecting the PV Array, ensure that the open circuit voltage of the PV array is within the limit of the inverter.



Caution:
Before connecting the PV Array, ensure that the polarity of the output voltage of the PV array matches the "DC+" and "DC-" symbols.

1. Select a suitable DC cable and strip the insulation by $7 \pm 0.5\text{mm}$. Refer to Table 1 for details.

Cable Type	Cross Section (mm^2)
PV cable	Range: 4.0-6.0 (12-10AWG)

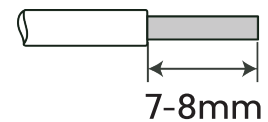


Table 1: PV cable specifications and insulation exposure length

2. Retrieve the DC terminal from the accessory bag, unscrew cap to disassemble, then remove the waterproof rubber ring.

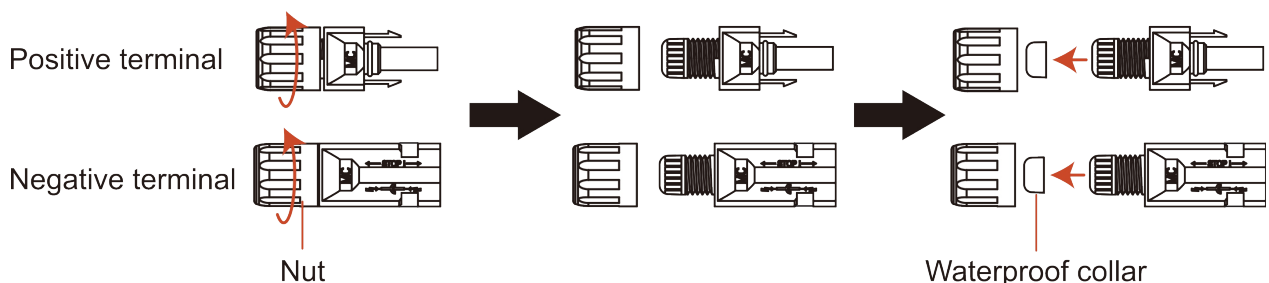


Figure 10: DC terminal

3. Pass the stripped DC cable through the nut and waterproof rubber ring.

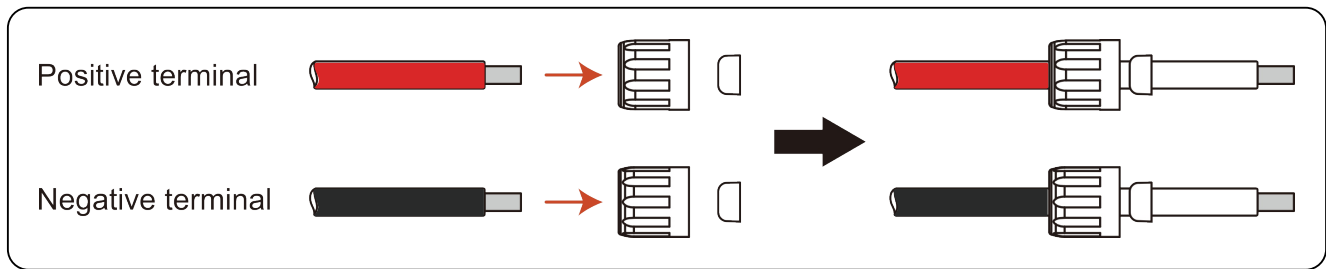


Figure 11: Waterproof nut and rubber ring assembly

4. Connect the cable to the DC terminal and crimp it with a hydraulic crimping tool.

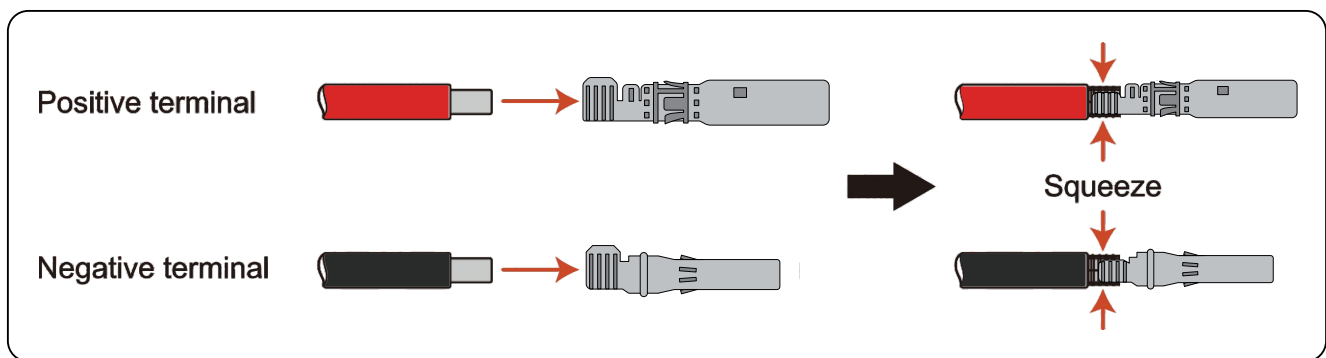


Figure 12: Terminal crimping

5. Insert the crimped cable firmly into the DC terminal, then insert the waterproof rubber ring into the DC terminal and tighten the nut.

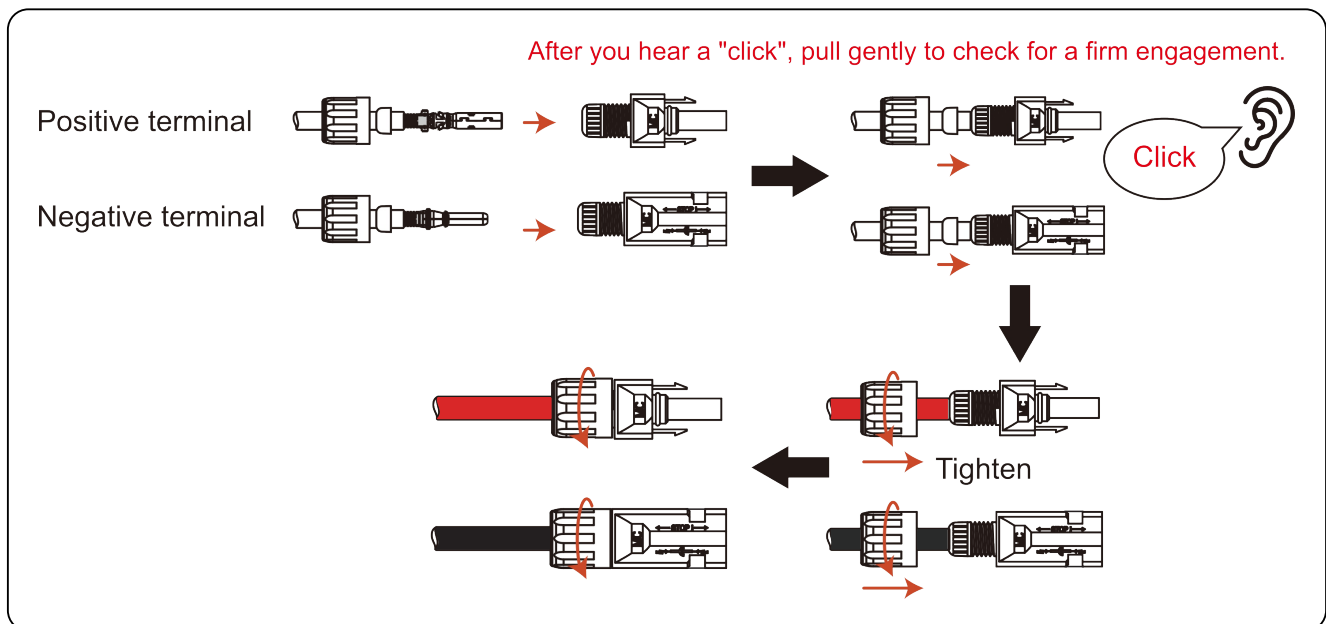


Figure 13: Final cable assembly

6. Verify that the polarity of the PV DC input cable is correct using a multimeter.

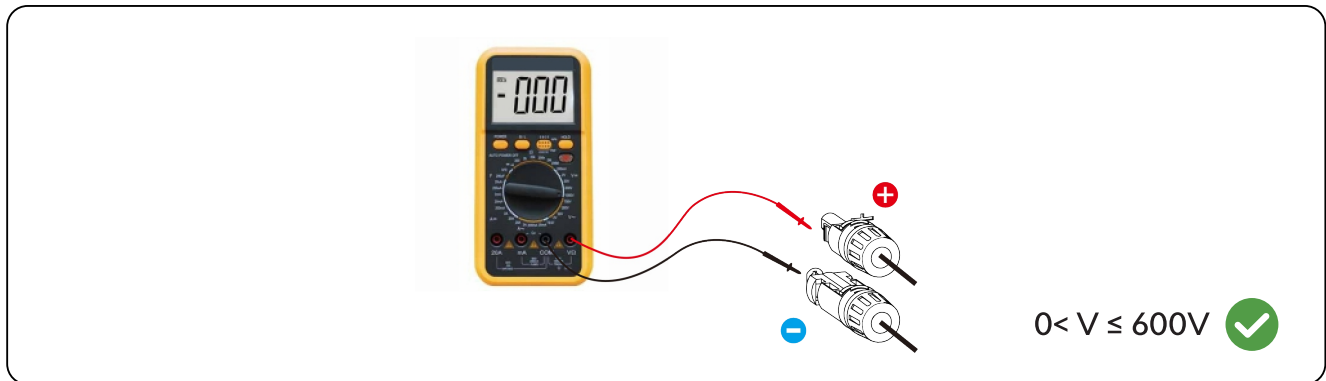


Figure 14: PV DC cable polarity measurement

7. Connect the wired DC terminal to the inverter and ensure the connector is seated properly by listening for a slight 'click'.

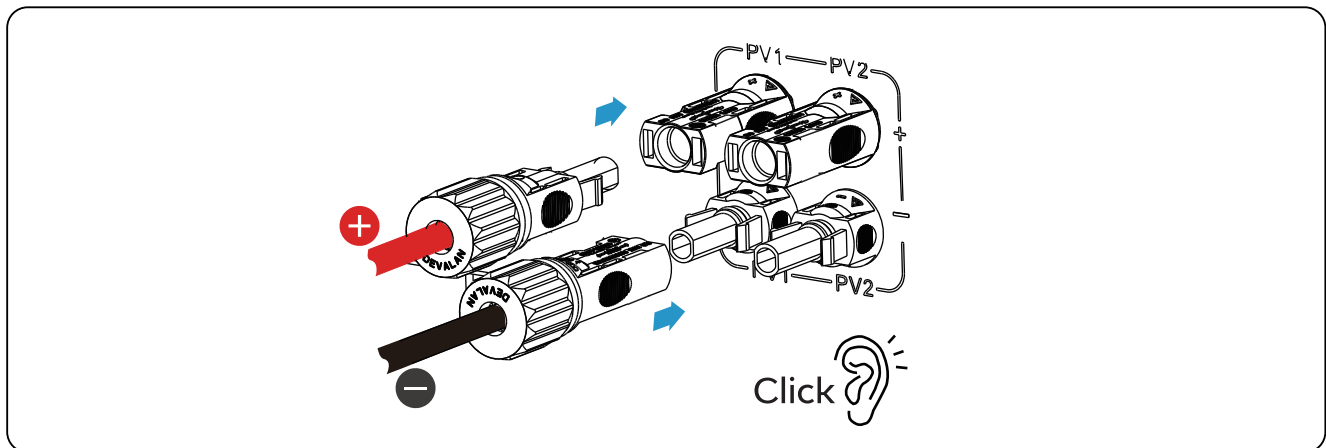


Figure 15: PV DC cable inverter connection

Warning:

Do not turn off the DC switch if the DC inputs are connected in reverse polarity or the inverter is faulty. Doing so may result in a DC arc, causing damage to the inverter or even leading to a fire. The correct actions are as follows:

1. Use a clip-on ammeter to measure the DC string current.
2. If the current is above 0.5A, wait until solar irradiance reduces and the current decreases to below 0.5A, or isolate elsewhere in the string.
3. **Only after the current is below 0.5A** may the DC switch be turned off and the PV strings disconnected.
4. To completely eliminate the possibility of failure, disconnect the PV strings after turning off the DC switch to avoid secondary failures due to continuous PV energy the next day.

Please note that damage caused as a result of not following the above procedure is not covered by the device warranty.



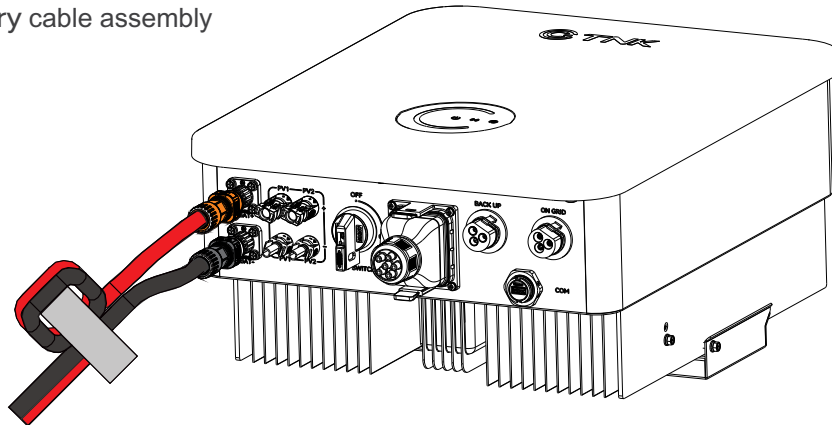
Battery Power Cable Installation



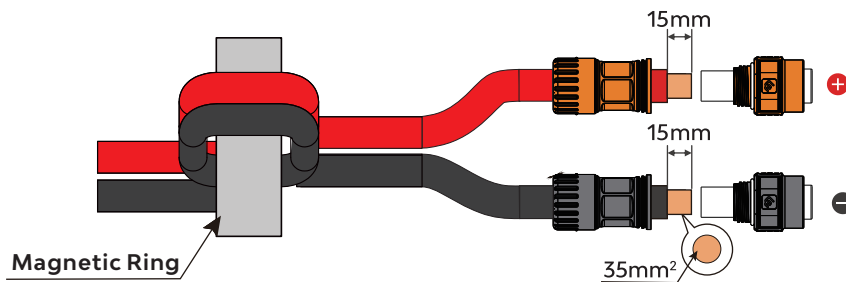
Caution:

1. Please refer to Figure 16 to install the battery cables.
2. It is recommended that the length of the connected cable should not exceed 3 meters.
3. The positive battery cable is connected to the positive socket, and the negative battery cable is connected to the negative socket.

Figure 16: Battery cable assembly

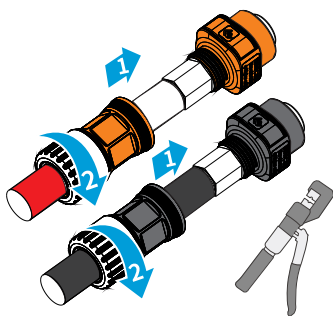


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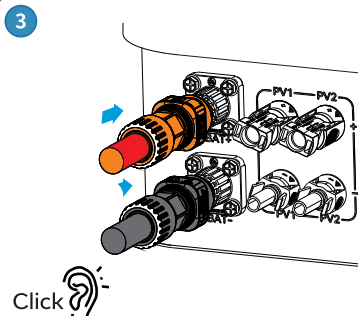


Pass the 2 wires through the magnetic ring and wrap it around the magnetic ring once.

2



3



Note:

For the Australian market, an overcurrent protection and isolation device that operates both positive and negative conductors simultaneously is required between the inverter and the battery system and between parallel battery systems.

AC Cable Installation

Retrieve the two AC connectors from the packaging.
Refer to Table 2 for cable specifications for fabricating the AC cables.

NO.	Inverter Model	Cross-sectional (BACK-UP)	Cross-sectional (ON-GRID)
1	CGH S3.6L	2.5mm ²	6.0mm ²
2	CGH S4.6L	2.5mm ²	10.0mm ²
3	CGH S5.0L	2.5mm ²	10.0mm ²
4	CGH S6.0L	4.0mm ²	10.0mm ²

Table 2: AC cable specifications

- Strip the AC cable conductors to approximately 9mm of exposure.

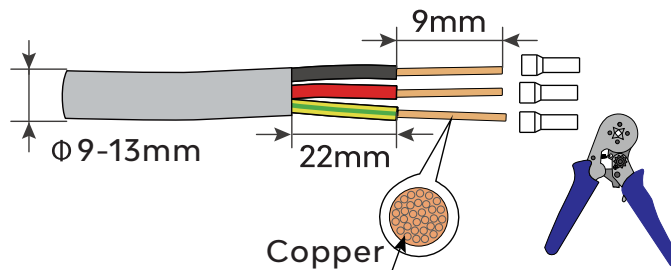


Figure 17: Strip AC cables

- Dissassemble the provided AC connector and assemble the connector components onto the cable.

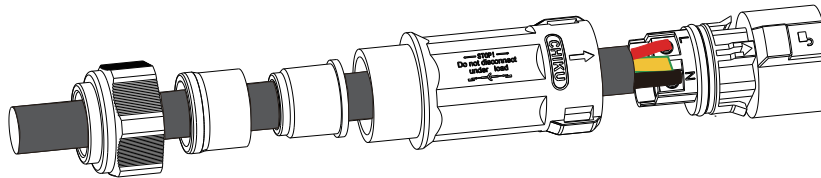


Figure 18: AC connector minor assembly

- Bootlace crimps (ferrules) may be required to prevent the escape of individual strands.
Crimp the wires and tighten the screws with a torque of $0.8 \pm 0.1\text{N}\cdot\text{m}$.

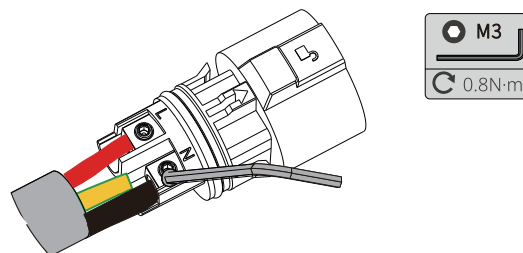


Figure 19: AC wire crimping

4. Push housing into body.

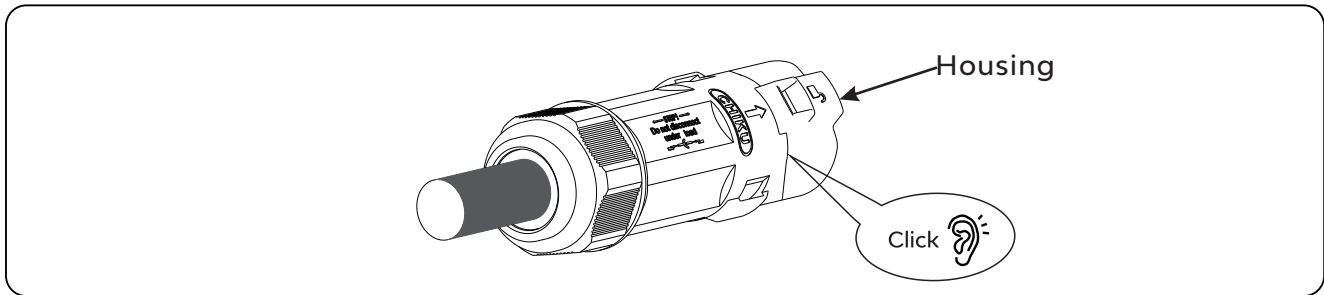


Figure 20: Final AC connector assembly

5. Insert seal and clamp finger into socket, then tighten the nut to a torque of $4 \pm 0.5\text{N}\cdot\text{m}$.

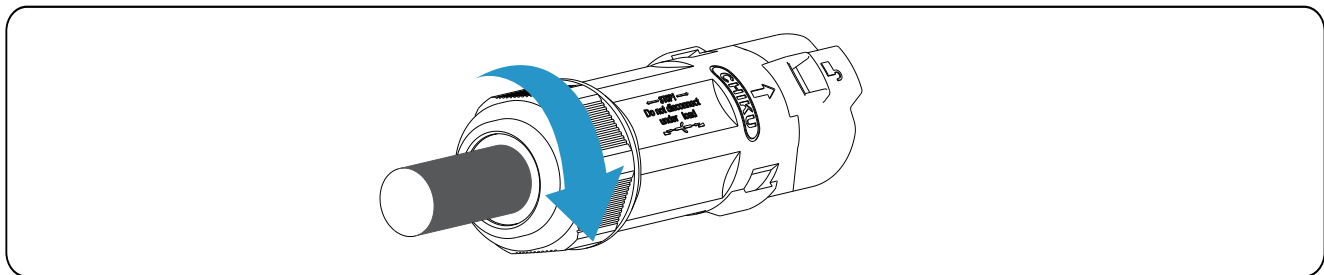


Figure 21: AC socket installation

6. Mating plug and socket: Push the plug into the socket completely.

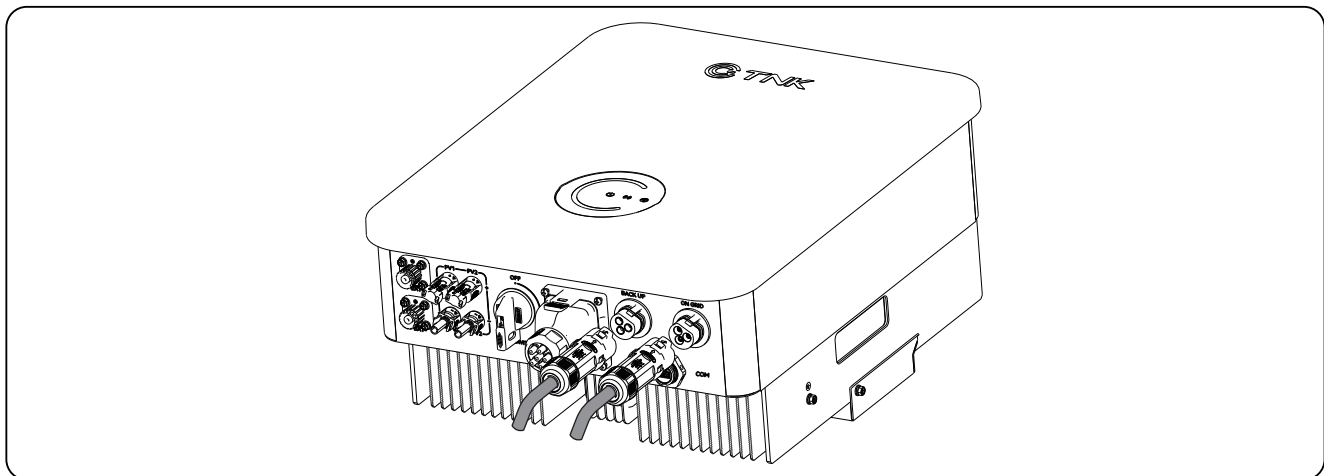


Figure 22: AC cable plug and socket mating



Danger:

Do not connect the grid cables to the AC-BACKUP port. Doing so may expose hazardous voltages on the grid in the event of a local grid outage, which could lead to death or serious injury.



Warning:

Install the AC-BACKUP connector into the inverter to seal the AC-BACKUP socket, even if you are not using the EPS (backup) function. This is to minimise exposure to hazardous voltages, as well as keep the socket clear from debris and ingress.

Communication Cable Installation

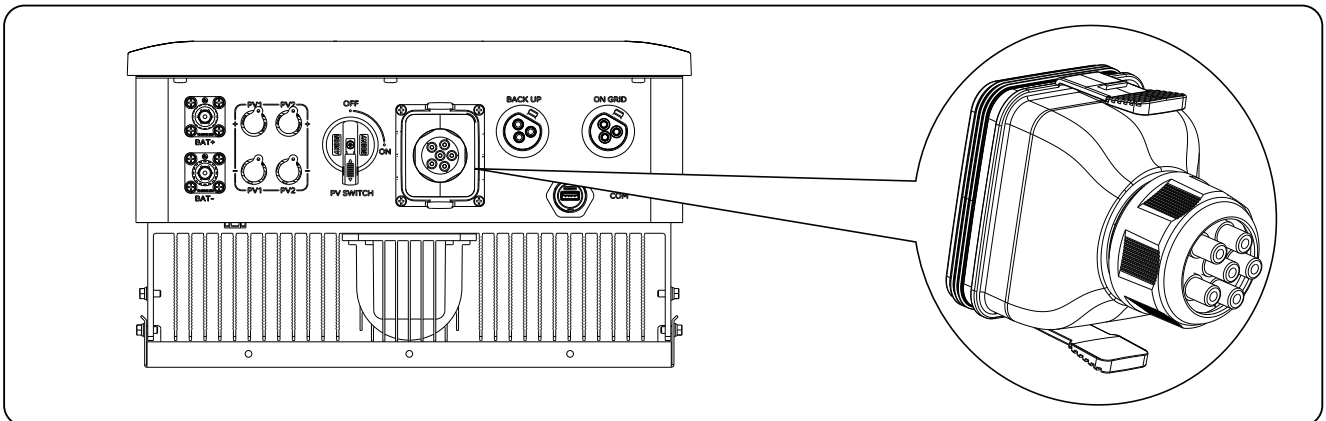


Figure 23: Protective cover on communications port

The inverter has a cover to protect the communications port.

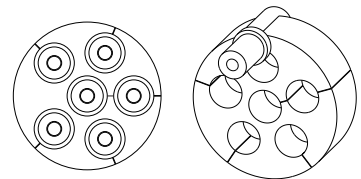
1. Remove the protective cover.
2. Prepare each data cable according to the procedures in the following sections.
3. Loosen the cable gland and remove the watertight caps inside the cable gland based on the number of cables, keeping the unused holes sealed with watertight caps.
4. Lead the cables into the holes in the cable gland.
5. Crimp the RJ45 connectors onto the cables according to the pin definitions described in the following sections and connect them to the ports accordingly.
6. Assemble protective cover.
7. Reassemble the cable gland and ensure there is no bending or stretching of the data cables inside the cover.



Note:

The 6-hole fastening rings inside the cable gland have openings on the side.

To install the cables, bend each slot open by hand and insert into the holes through the side openings.



Communication Port Definition

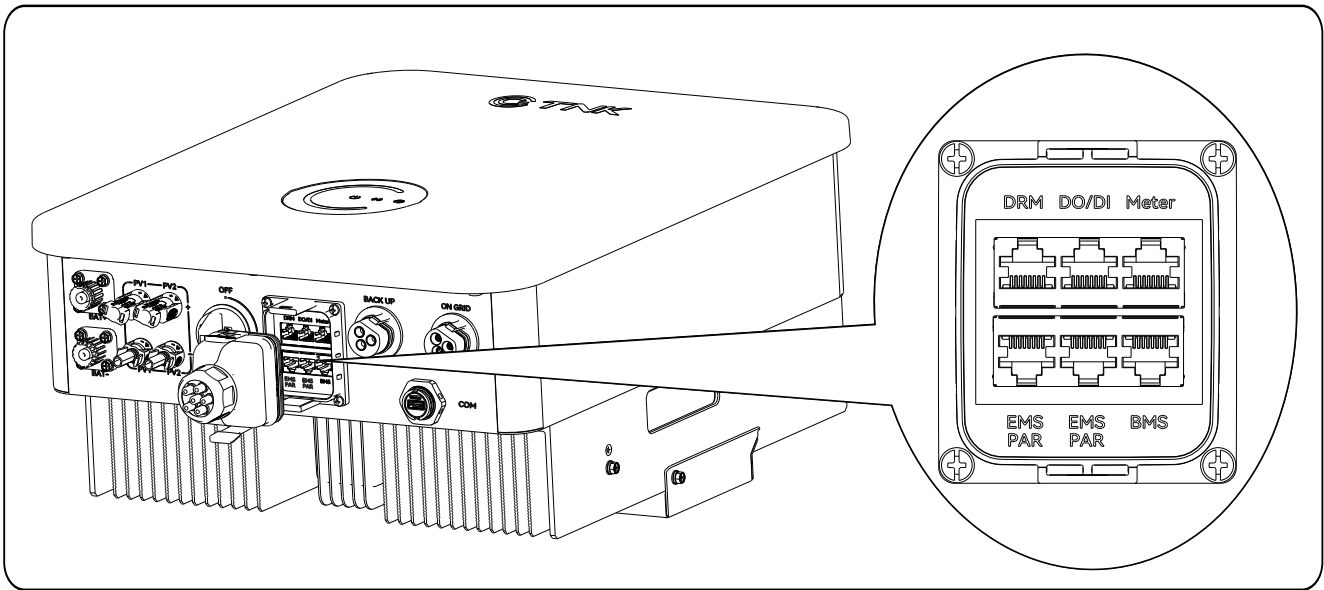


Figure 24: Communications port definitions

Port	Function	Indicate	
DRM	To realize Demand Response or Logic interface function, this function may be required in UK and Australia.	1:NC 2:NC 3:DRM_POWER 4:DRMS3/7	5:DRMS0/0 ☒ 6:DRMS4/8 7:DRMS1/5 8:DRMS2/6
DO/DI	Dry contact port.	1:DI_I+ 2:DI_I- 3:Midpoint 4:Midpoint	5:Normally-close 6:Normally-close 7:Normally-open 8:Normally-open
Meter	Used for RS485 communication between inverter and the smart meter. It is necessary to realize the normal hybrid control logics.	1:485A_Meter_O 2:485B_Meter_O 3:CT+ 4:CT+	5:CT- 6:CT- 7:NC 8:NC
EMS PAR	EMS COM port: used to connect with the third party device. PAR COM port: serve as the COM port for the inverter parallelizing.	1:485A_EMS_O 2:485B_EMS_O 3:DSP_CANH_PARA_O 4:RELAY_SYN+	5:RELAY_SYN- 6:DSP_CANL_PARA_O 7:AC_SYN+_O 8:AC_SYN-_O
BMS	Used for communication between inverter and Lithium battery BMS.	1:485B_BMS_O 2:485A_BMS_O 3:NC 4:CANH_BMS	5:CANL_BMS 6:NC 7:485A_BMS_O 8:485B_BMS_O

Table 3: Communication cable specifications

Meter Port Connection

1. Retrieve the pre-made meter cable from the package
2. Connect the RJ45 end to the inverter 'Meter' port
3. Connect the loose RS485 A&B pins to the meter RS485 terminal (cable length: 5 meters)



Note:

If extending/fabricating a new metering communications cable, use shielded CAT6 cable, ensuring to terminate the drain wire at one end only.

Failure to use shielded cable and/or terminate the shielding correctly may lead to communications drop-outs due to exposure of the cable to background electromagnetic interference (EMI) and a subsequent loss of signal integrity.

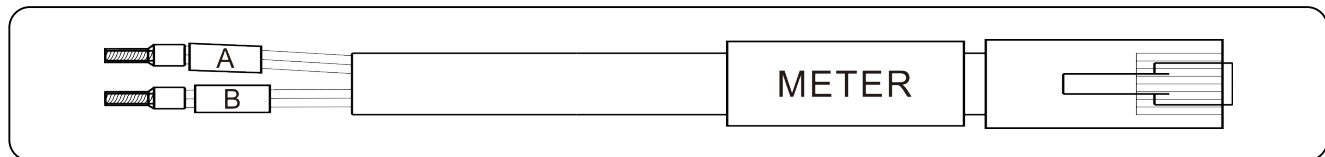


Figure 25: Provided meter cable



Note:

'Meter' Port pin definition (EIA/TIA 568B):

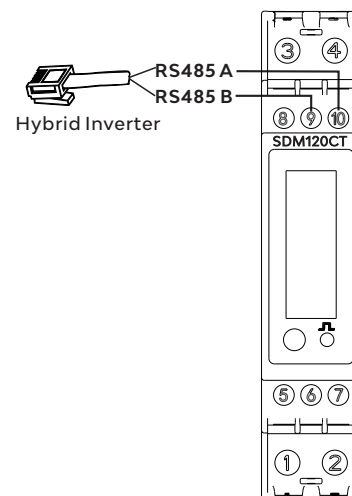
- RS485 A on Pin 1
- RS485 B on Pin 2

Compatible Meter RS485 Connection

Table 4 defines the pinout for the meter connection.

Pin	Definition
9	RS485 B-
10	RS485 A+

Table 4: Eastron Single-phase Meter (SDM120CT) RS485 pin definition



BMS Port Connection

1. Connect one end to the battery CAN IN port.
2. Connect the other end to the inverter BMS port .

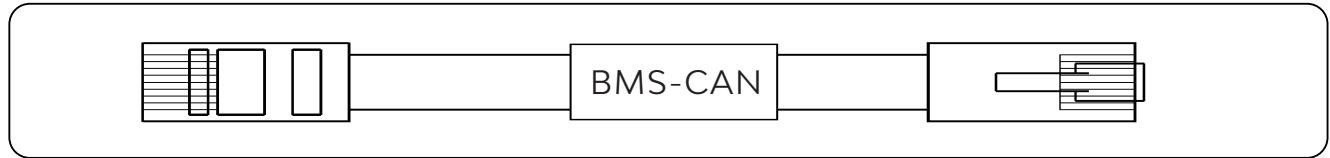


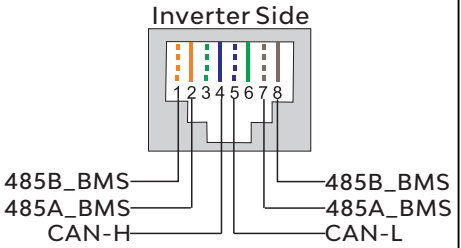
Figure 26: Provided CAN RJ45 cable



Note:
BMS port pin definition (EIA/TIA 568B):

■ 485B_BMS on Pin 1	■ CAN-L on Pin 5
■ 485A_BMS on Pin 2	■ 485A_BMS on Pin 7
■ CAN-H on Pin 4	■ 485B_BMS on Pin 8

Inverter Side



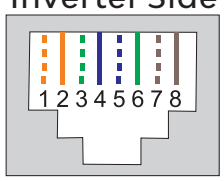
DRM Port Connection (Optional)

Clenergy ESS inverters support remote shutdown via the DRM protocol.



Note:
When pins 4, 5, 6, 7, and 8 are at a low level of 0-0.8V, the inverter is turned off.

Inverter Side



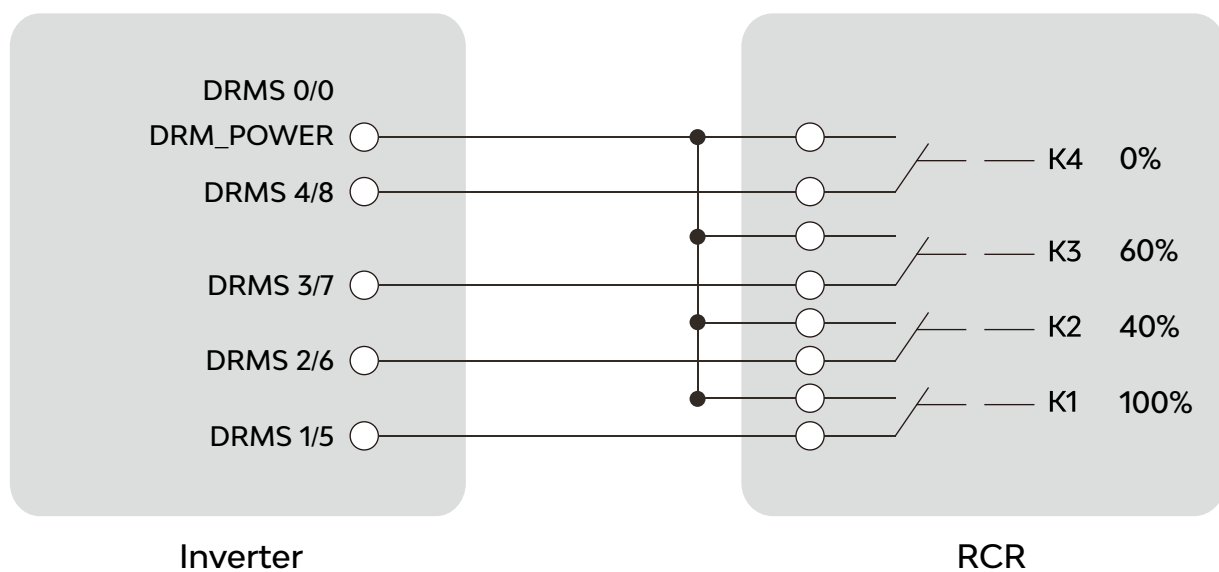
DRED Control Function (AU and NZ only)

DRED stands for Demand Response Enable Device. AS/NZS 4777.2:2020 and AS/NZS 4777.2:2024 mandates that inverters must support a Demand Response Mode (DRM). This function is applicable to inverters complying with AS/ NZS 4777.2:2020 and AS/NZS 4777.2:2024 .

An RJ45 terminal is used for DRM connection.

Pin	Assignment	Pin	Assignment
1	NC	5	DRMS 0/0 ☒
2	NC	6	DRMS 4/8
3	DRM_POWER	7	DRMS 1/5
4	DRMS 3/7	8	DRMS 2/6

Table 1: DRED Control Function information



Note:

Cleenergy ESS hybrid inverters are designed to provide 5V for DRED.

Meter Installation



Warning:

Ensure that the AC cable is completely isolated from AC power before connecting the smart meter and CT.

Installation of the included smart meter is mandatory. It provides a grid reference point for the system, which the inverter then uses to calculate the amount of electrical load present in the site at any point in time and respond accordingly.



Note:

The smart meter with CT is pre-configured. Do not change any settings on the smart meter. Each smart meter can be used with only one CGH hybrid inverter.

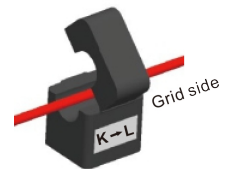
The CGH Series hybrid inverter connects to compatible Eastron meters to enable the self - use mode, export power control, system monitoring, etc.

Refer to Table 4 in the previous section for the RS485 interface pinout definition. Meter installation instructions are in the following section.



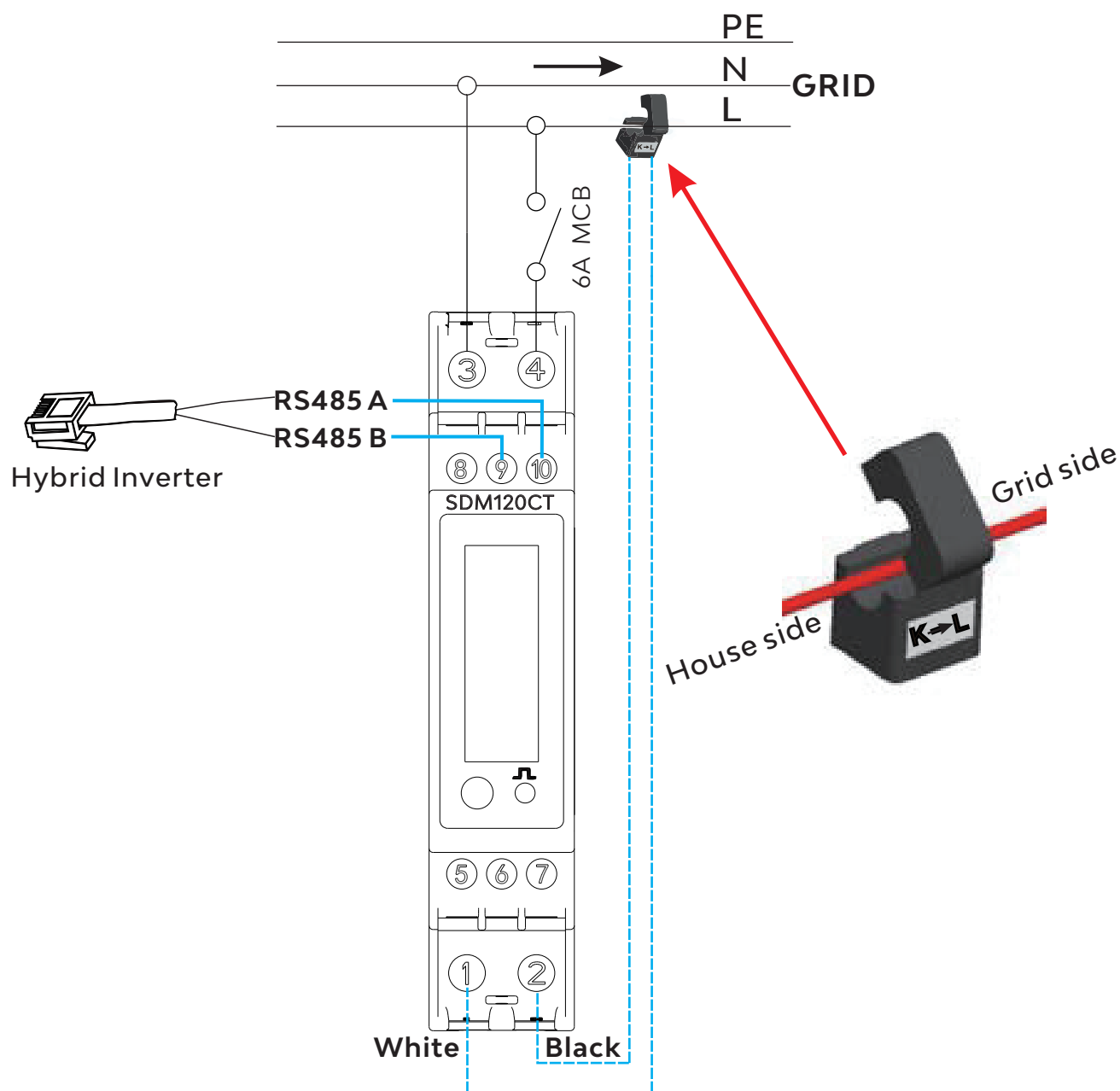
Note:

Ensure that the CT orientation is correct, otherwise the system will not operate correctly.



Single-phase Meter Installation

Refer to Figure 27 for a detailed wiring diagram.



Inverter Remote Monitoring Connection

The inverter can be remotely monitored via Wi-Fi or 4G.

The COM port at the bottom of the inverter connects to the supplied Clenergy Data logger for remote monitoring on the Clenergise platform.

A dust cover is provided in the inverter package in case the port is not used.



Note:

The COM port is only to be used to connect to Clenergy data loggers. It is not to be used for other purposes.

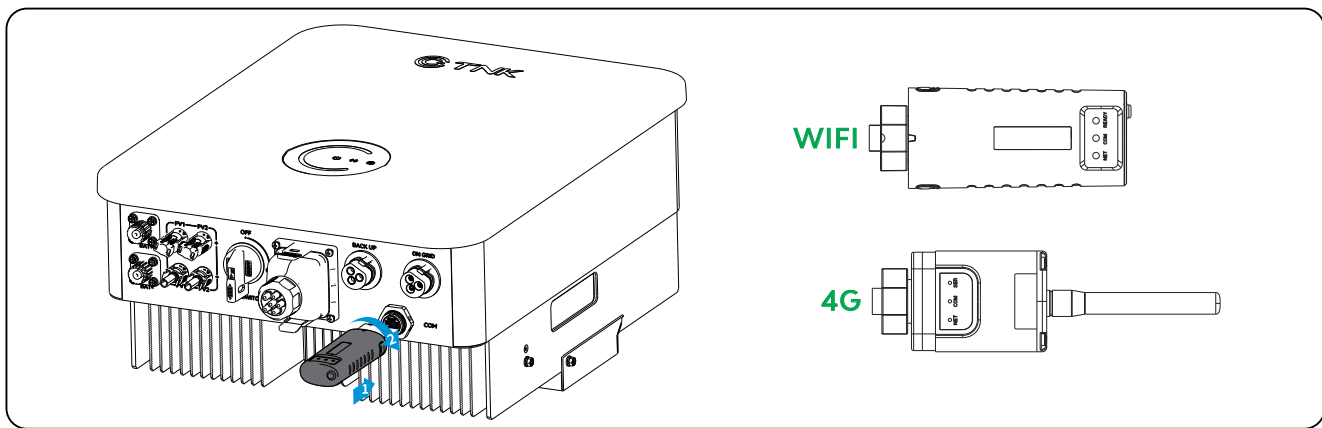


Figure 28: Data logger COM port

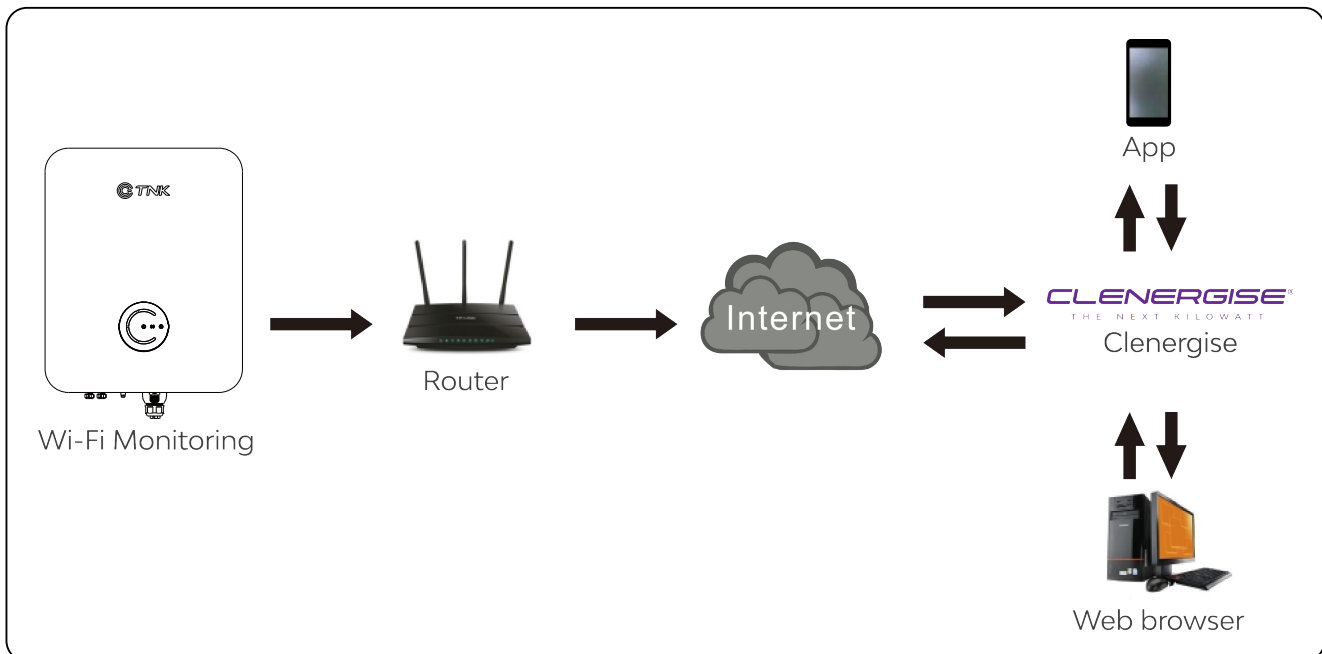


Figure 29: Remote monitoring connection topology

■ Protection and Alarming

■ External Residual Current Device (RCD)

All Clenergy ESS inverters include an integrated residual current device and comply with IEC60364-7-712, as such they are designed to not feed DC fault current into the system.

If an external RCD is required per local regulations, Clenergy recommends installing a Type-A RCD with a threshold current greater than 100mA.

■ Earth Fault Alarm

Clenergy ESS inverters comply with IEC62109-2 in terms of earth fault alarm (PV insulation detection and protection). During an Earth Fault on the PV, the yellow alarm indicator will flash, and the alarm code "PVISO-PRO" will show up on the APP. The inverter should be installed in a high-traffic area to ensure prompt notice of the alarm.

The inverter will not start to generate until the fault is resolved. Please refer to the troubleshooting section of this manual to resolve the earth fault or contact Clenergy Technical Support for assistance. For earth faults occurring on battery inputs, customers are required to install an external alarm and monitoring device to comply with AS/NZS 5139.

Commissioning

Preparation

Ensure that all of the below items are completed prior to commissioning the system:

1. All system components can be physically accessed for operation, maintenance and service.
2. Inverter has been installed per the instructions in the 'Installation' section of this manual.
4. Nothing has been left on top of the inverter or battery.
6. Cables are installed according to local regulations and protected against mechanical damage.
7. Warning signs and labels are suitably affixed to the installation.
8. The Clenergy Data Logger has been installed to the COM port of the inverter.
9. The Clenergise app is installed on the Android or iOS device to be used to commission the system.
10. The voltage of the PV strings and battery have been verified to be of the correct magnitude and polarity.
11. Grid voltage and frequency have been verified according to local standards.
12. Measure the insulation resistance of the PV array between Positive (+) and Earth/Ground, and Negative (-) and Earth/Ground at 1000V and verify that they comply with local standards.

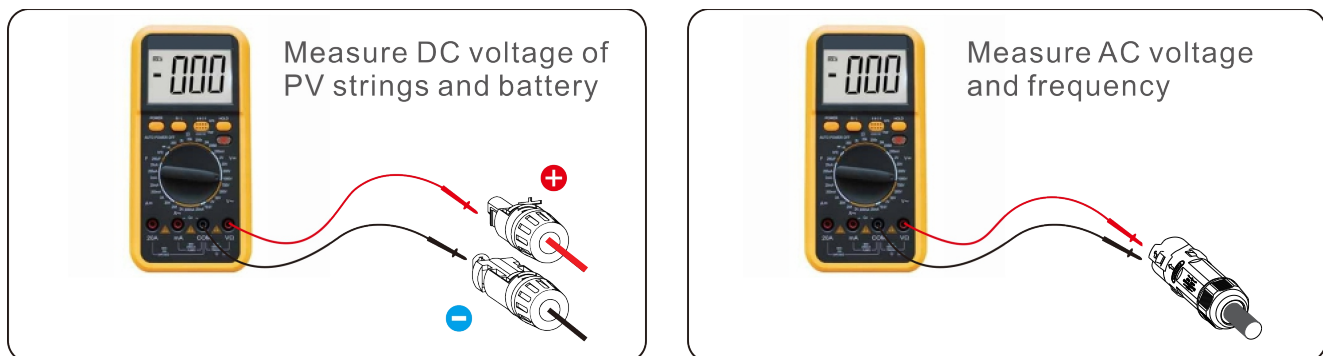


Figure 30: Verify AC and DC voltages

App Download

Method1: Search Clenergise in Google Play or iOS APP Store to download and install the APP.

Method2: Scan the QR code below to download and install the APP.



First Start-up

The inverter can be powered on using PV only, battery only, or grid only.

Follow this procedure for first start-up:

1. Turn on and configure the battery (refer to the manufacturer's user manual for detailed instructions)
2. Configure the metering for the system
3. Once the above configuration steps are completed, turn on the PV and grid breakers, and verify that the system is operating correctly.

Log into the Clenergise App

If you do not yet have a Clenergise account, follow the steps within the app to register a new account.

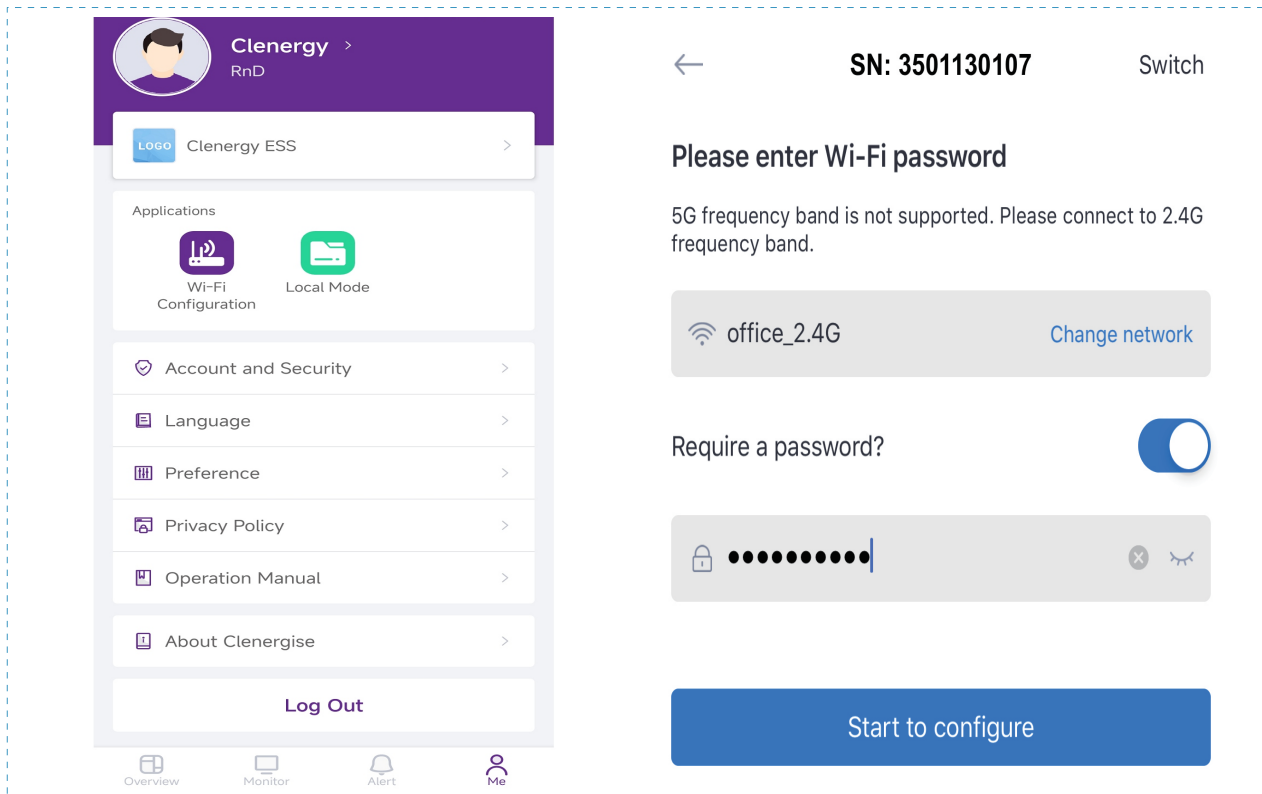


Note:

If your Solar Business already has an account with Clenergise, please do not register another account. Instead, contact your system administrator or Clenergise Technical Support for assistance. It's crucial not to create multiple accounts for a single business.

Network Configuration

Step 1: Click "Go to Configure" to set the network. (Please make sure Bluetooth and WiFi are ON.)



Step 2: Please wait for a few minute. Then click "Done" and view plant data

Device Configuration

Countdown

59

Please shorten the distance between the device, router and phone.

Please keep Bluetooth ON during the configuration.

Configuration Succeeded

Device data will be displayed in 10 mins. After that, you can check device status in device list.

Done

If configuration failure occurs, please check the following reason and try it again.

- (1) Make sure WLAN is ON.
- (2) Make sure WiFi is normal.
- (3) Make sure wireless router does not implement the white-black list.
- (4) Remove the special characters in Wi-Fi network.
- (5) Shorten the distance between the phone and device.
- (6) Try to connect to other Wi-Fi.



Notice:
Only supports 2.4GHz network

Initial Setup

Follow these steps to configure the system for the first time:

1. Log into the Clenergise app with your installer account.
2. To set up a new site, click the [+] button in the top right-hand corner:

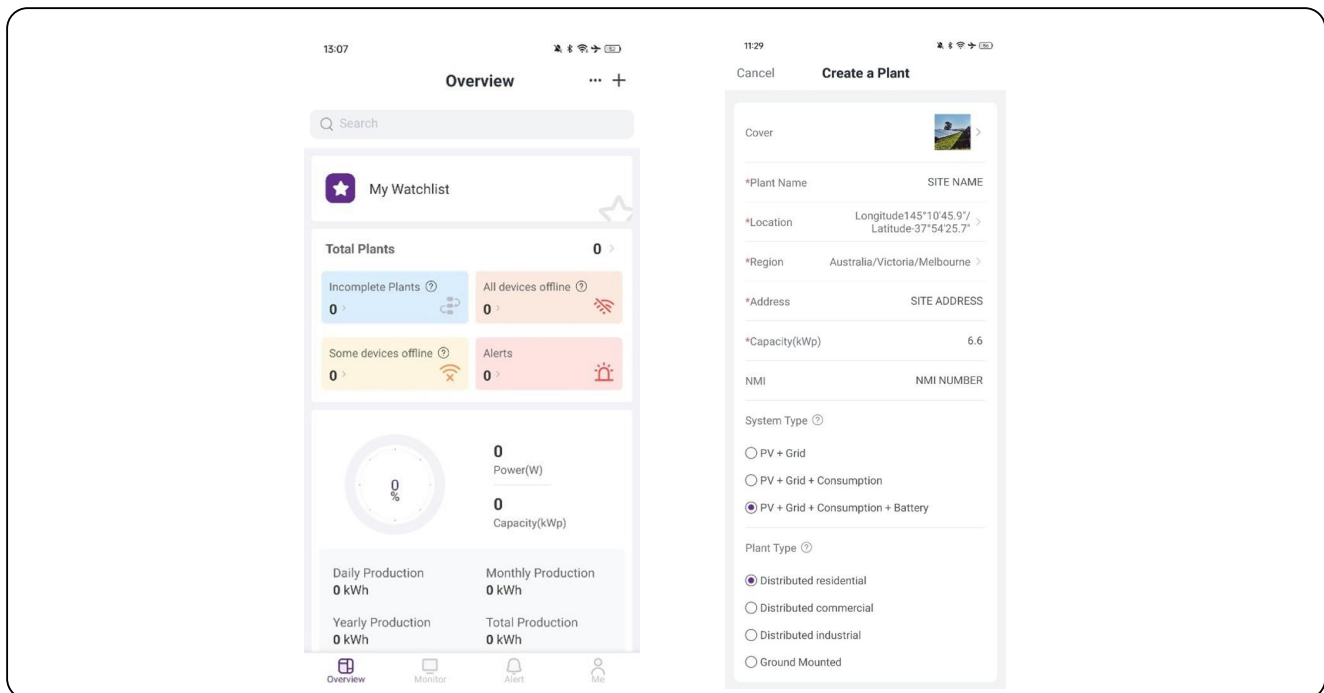


Figure 31: Initial Clenergise setup steps

3. Fill in the following required fields:

Click 'Save' when finished.

- | | |
|--------------|--------------------------------|
| ■ Site photo | ■ Address |
| ■ Site Name | ■ Capacity of PV system in kWp |
| ■ Location | ■ System type |
| ■ Region | ■ Site type |

4. To add the Data Logger to your site, click 'Add Datalogger' and scan the QR code of the datalogger, per Figure 32.

5. To create a user, click 'Authorize end users' and fill in the end user's detail to create an account for them. Or search for their accounts if they already have one with Clenergise:

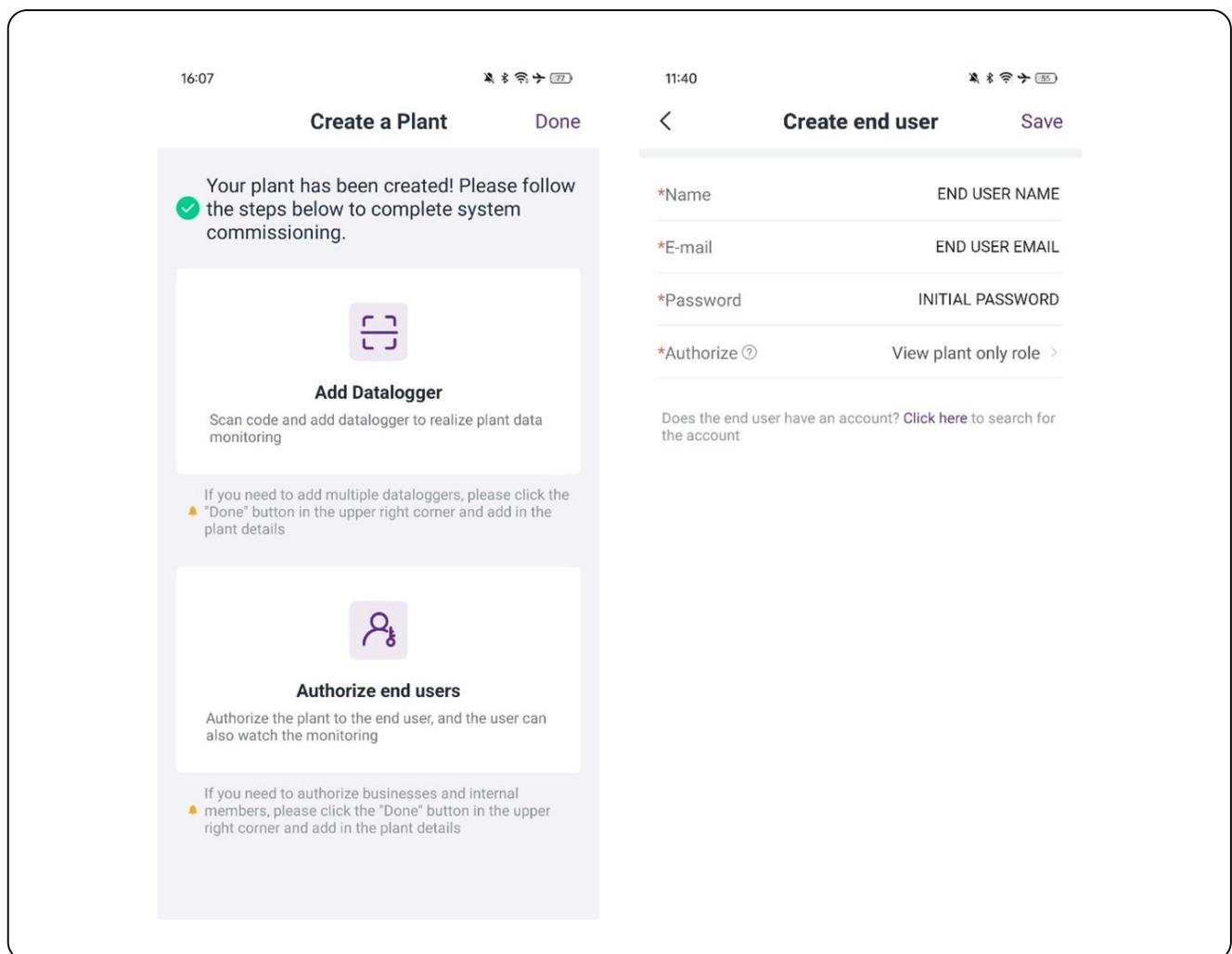


Figure 32: Create end user

The site has now been created within the Clenergise app.

6. Authorise Clenergy ESS in order to enable remote support – click the 'Authorizations' tab and add 'Clenergy ESS' by using the 'Authorize Business Units' function:

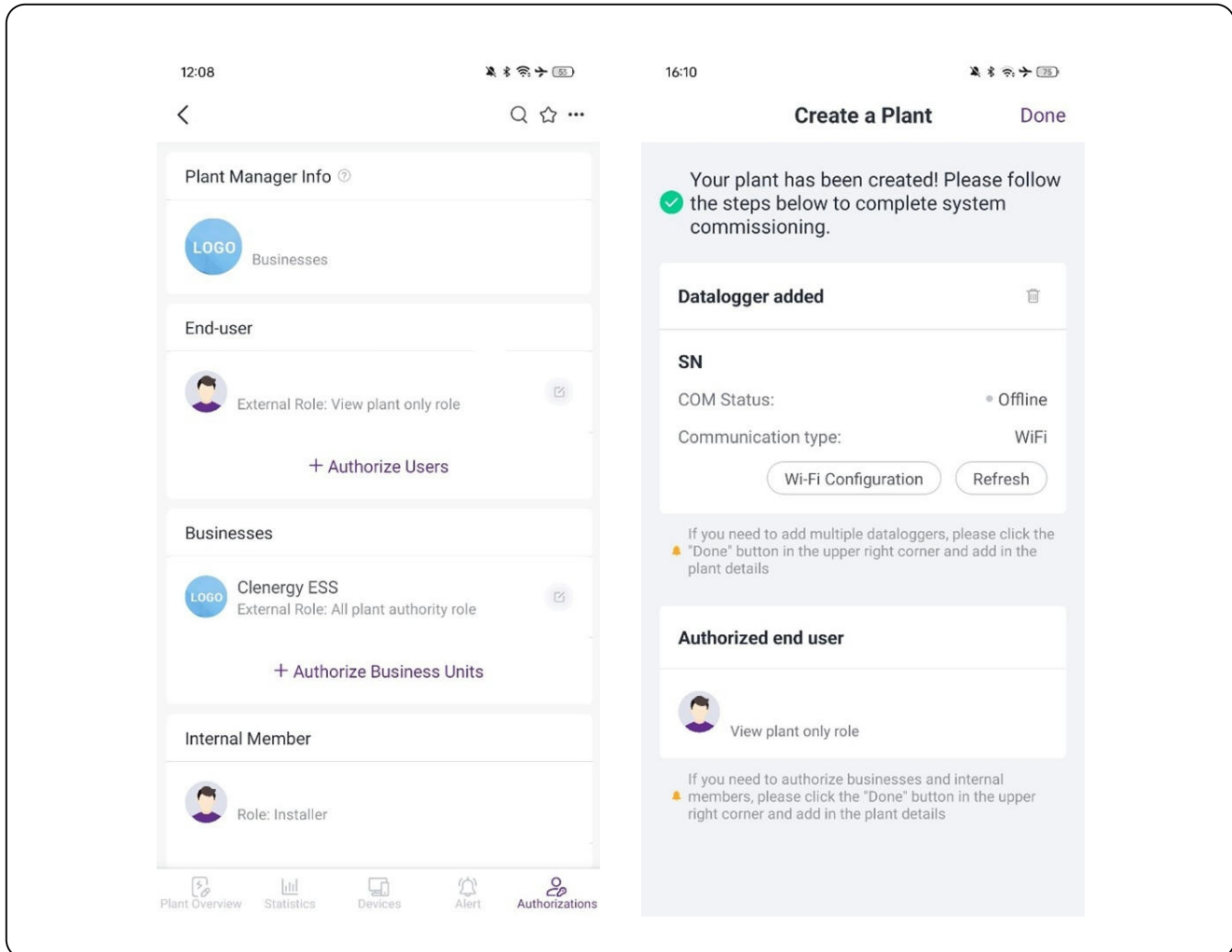


Figure 33: Authorise Clenergy ESS

Viewing Data Online

Authorising end users (as covered in the previous section) gives the system owner access to the newly created site on Clenergise – this can be achieved by following the aforementioned authorisation process for each new user.

From the app, the system owner will be able to see system status, energy flow and generation, state of charge of the battery etc.

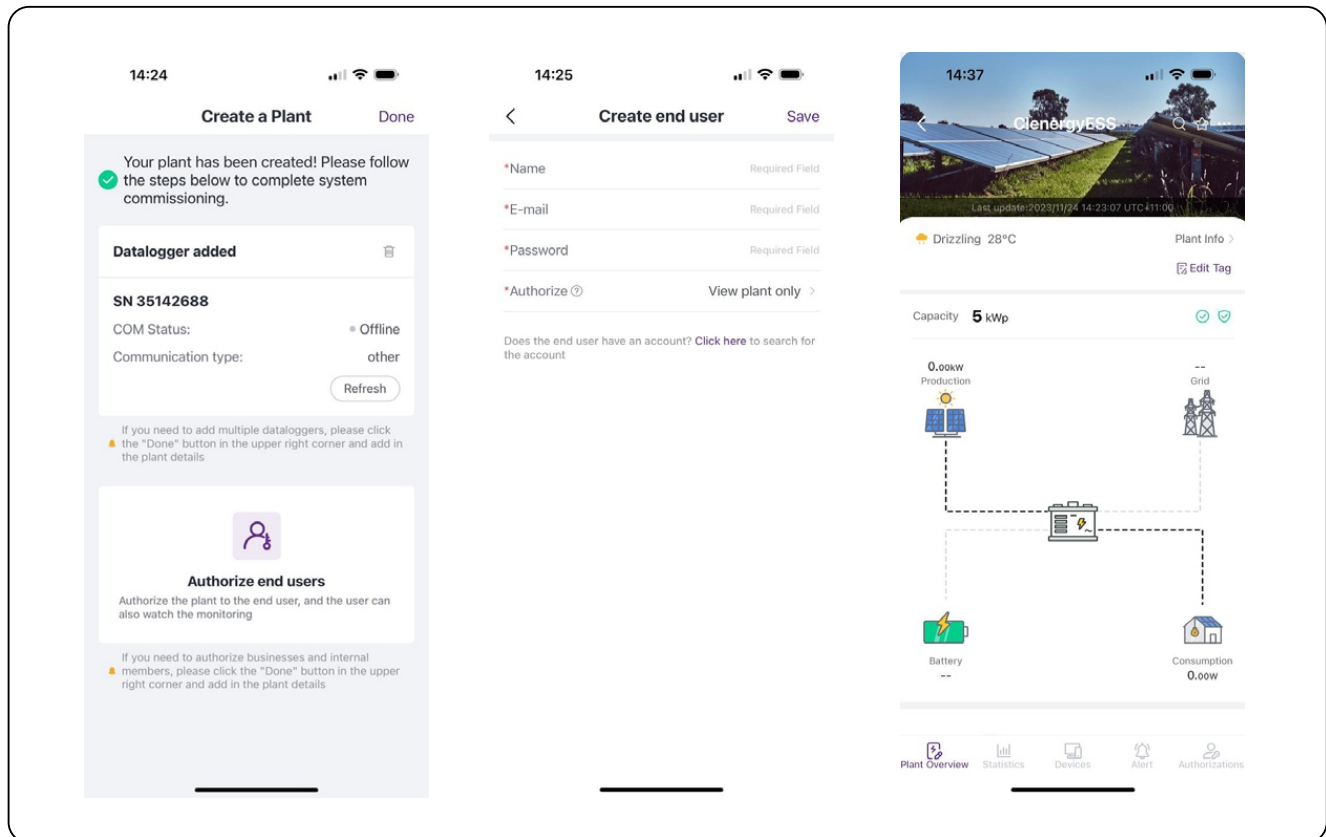


Figure 34: Configure end users

Operation

Inverter Configuration

To view the inverter configuration and firmware version after the system has been commissioned:

1. Open the Clenergise app
2. Select 'Plant' -> 'Devices', then select the inverter.

To modify settings, click the three dots [· · ·] in the top right corner, then select 'Device Control'.

Local Mode

If you are onsite, you can access 'Local Mode' for configuration using the following procedure:

1. Click the 'Me' icon in the bottom right of the screen
2. Select 'Local Mode' – from here, you can view the inverter configuration and firmware version.

To change the battery, metering, back-up, or export limit configurations from 'Local Mode', contact Clenergy Technical Support to obtain the required installer password.

Grid Code Settings

Installers can complete the configuration process via the Clenergise app to select the corresponding grid codes according to local regulations.

Grid codes can be viewed or modified within the app by navigating to 'Device Control' -> 'Grid Code Setting' – contact Clenergy Technical Support for the required installer password.



Note:

The standard code selections '4777-A', '4777-B', '4777-C' and '4777-N' come with preset default settings compliant with AS/NZS 4777.2:2020. Unless specifically required, customers do not need to access or modify any settings within the following sections.

Maintenance

CGH Series hybrid inverter are designed to not require regular maintenance.

However, cleaning the heatsink will help the inverter dissipate heat more effectively and increase the lifetime of the inverter. Dust and debris can be cleaned off with a soft brush or a microfiber cloth.



Caution: Burn risk

Do not touch the surface when the inverter is operating. Some parts may be hot and could cause burns. Power off the inverter and allow it to cool before touching.

The screen and LED status indicator lights can be cleaned with a microfiber cloth.



Note:

Do not use solvents, abrasives, or corrosive materials to clean the inverter, as this can cause damage to the exterior of the product.

Startup Procedure

1. Turn on the PV DC switch on the left side of the inverter.
2. Turn on the battery breaker and push the switch button on the battery.
3. Switch on the AC backup and AC grid.
4. Wait for the inverter to initialise.

Shutdown Procedure

1. Turn off the AC circuit breaker at the grid connection point.
2. Turn off the DC switch of the inverter.
3. Turn off the battery circuit breaker.
4. Wait until the device is powered off and the system has shut down completely.

Errors and Troubleshooting

Message / Error	Description	Troubleshooting
Off	The device is currently powered off.	Turn on the device per the 'Startup Procedure' in the previous section.
LmtByEPM	The inverter's output is being controlled by an export manager or other device.	1. Confirm whether the inverter is connected to an Export Power Manager, or other metering/control device. 2. Confirm whether the inverter is being controlled by an external third-party device. 3. Confirm whether the device is limiting the inverter's power output.
LmtByDRM	DRM function ON	No action is necessary – the system is functioning as designed.
LmtByTemp	Over temperature power limited	Check clearances and airflow around the inverter. Ensure that the heatsink is free of dust and debris.
LmtByFreq	Frequency power limited	The grid frequency is causing lowered power output. Verify that the grid frequency is within bounds.
LmtByUnFr	Under frequency limit	
LmtByVg	The device is in Volt-Watt mode.	Volt-Watt mode is triggered when the grid voltage is too high, as required by AS/NZS4777.2:2020. Verify that the grid voltage is within bounds and that the inverter's grid code is configured according to the geographical location of the system.
LmtByVar	The device is in Volt-Watt mode.	
Standby	Bypass run	No action is necessary – the system is functioning as designed.
StandbySynoch	Off-grid status to on-grid status	
GridToLoad	Grid to load	

Message / Error	Description	Troubleshooting
Surge Alarm	On-site grid surge	Grid side fault, restart the device. Verify grid measurements and inverter parameters to confirm correct operation. If the issue persists, contact Clenergy Technical Support.
OV-G-V01	Grid voltage exceeds the upper voltage range	1. Verify grid measurements and inverter parameters. 2. Confirm that the AC cable is properly connected. 3. Verify voltage rise calculations are within regulations.
UN-G-V01		
OV-G-F01	Grid frequency exceeds the upper frequency range	
UN-G-F01		
G-PHASE	Unbalanced grid voltage	
G-F-GLU	Grid voltage frequency fluctuation	
NO-Grid	No grid	
OV-G-V02	Grid transient overvoltage	Restart the system and confirm if the fault persists.
OV-G-V03	Grid transient overvoltage	
IGFOL-F	Grid current tracking failure	
OV-G-V05	Grid voltage RMS instantaneous overvoltage fault	
OV-G-V04	Grid voltage exceeds the upper voltage range	
UN-G-V02	Grid voltage exceeds the lower voltage range	
OV-G-F02	Grid frequency exceeds the upper frequency range	
UN-G-F02	Grid frequency exceeds the lower frequency range	
NO-Battery	The battery is not connected	1. Check whether the backup port wiring is normal. 2. Restart the system and confirm if the fault persists.
OV-Vbackup	Inverting overvoltage	
Over-Load	Load overload fault	Backup load power is too large, or some inductive load startup power is too large. Consider removing some backup load or the inductive load on the backup.

Message / Error	Description	Troubleshooting
BatName-FAIL	Wrong battery brand selection	Confirm whether the battery model configured in the app is consistent with the installed model.
CAN Fail	CAN Fail	CAN failure indicates a communication breakdown between the inverter and the battery. Check the cable conditions. Ensure it is correctly connected to the CAN port of both the battery and inverter. Confirm you are using the correct cable. Note that some batteries may require a specific cable provided by the manufacturer.
OV-Vbatt	Battery overvoltage detected	Verify that the battery voltage is within standards. Measure the battery voltage at the inverter connection point. Contact your battery manufacturer for further service.
UN-Vbatt	Battery undervoltage detected	Restart the system and check if the fault persists. If it is still not eliminated, please contact Clenergy Technical Support.
Fan Alarm	Fan alarm	Check if the internal fan is jammed or otherwise not functioning. If so, please contact Technical Support.
OV-DC01 (1020 DATA:0001)	DC 1 input overvoltage	1. Check if the PV Voltage is abnormal. 2. Restart the system and confirm if the fault persists.
OV-DC02 (1020 DATA:0002)	DC 2 input overvoltage	
OV-BUS (1021 DATA:0000)	DC bus overvoltage	Restart the system and confirm if the fault persists.
UN-BUS01 (1023 DATA:0001)	DC bus undervoltage	
UNB-BUS (1022 DATA:0000)	DC bus unbalanced voltage	
UN-BUS02 (1023 DATA:0002)	Abnormal detection of DC bus voltage	
DC-INTF. (1027 DATA:0000)	DC hardware overcurrent (1, 2, 3, 4)	Check if the DC wires are connected correctly without a loose connection.
OV-G-I (1018 DATA:0000)	A phase RMS value overcurrent	1. Confirm if the grid is abnormal. 2. Confirm that the AC cable connection is not abnormal. 3. Restart the system and confirm if the fault persists.
OV-DCA-I (1025 DATA:0000)	DC 1 average overcurrent	Restart the system and confirm if the fault persists.
OV-DCB-I (1026 DATA:0000)	DC 2 average overcurrent	
GRID-INTF. (1030 DATA:0000)	AC hardware overcurrent (abc phase)	

Message / Error	Description	Troubleshooting
DCInj-FAULT (1037 DATA:0000)	The DC current component exceeds the limit.	1. Confirm if the grid is abnormal. 2. Confirm that the AC cable connection is not abnormal. 3. Restart the system and confirm if the fault persists.
IGBT-OV-I (1048 DATA:0000)	IGBT overcurrent	Restart the system and confirm if the fault persists.
OV-TEM (1032 DATA:0000)	Module over temperature	1. Check whether the surrounding environment of the inverter has poor heat dissipation. 2. Confirm whether the product installation meets the requirements.
RelayChk-FAIL (1035 DATA:0000)	Relay failure	Restart the system and confirm if the fault persists.
UN-TEM (103A DATA:0000)	Low temperature protection	1. Check the working environment temperature of the inverter. 2. Restart the system and confirm if the fault persists.
PV ISO-PRO01 (1033 DATA:0001)	PV negative ground fault	1. Check whether the PV strings have insulation problems. 2. Check whether the PV cable is damaged.
PV ISO-PRO02 (1033 DATA:0002)	PV positive ground fault	
12Power-FAULT (1038 DATA:0000)	12V undervoltage failure	Check for current leakage to the ground. Verify your grounding, and that all wires are in good condition and not leaking current to ground.
ILeak-PRO0 (1034 DATA:0001)	Leakage current failure 01 (30mA)	
ILeak-PRO02 (1034 DATA:0002)	Leakage current failure 02 (60mA)	
ILeak-PRO03 (1034 DATA:0003)	Leakage current failure 03 (150mA)	
ILeak-PRO04 (1034 DATA:0004)	Leakage current failure 04	
ILeak_Check (1039 DATA:0000)	Leakage current sensor failure	
GRID-INTF02 (1046 DATA:0000)	Power grid disturbance 02	1. Confirm whether the grid is seriously distorted. 2. Check whether the AC cable is connected reliably.
OV-Vbatt-H/ OV-BUS-H (1051 DATA:0000)	Battery overvoltage hardware failure / VBUS	1. Check if the battery circuit breaker is tripping. 2. Check if the battery is damaged.

Message / Error	Description	Troubleshooting
OV-ILLC (1052 DATA:0000)	LLC hardware overcurrent	1. Check if the backup load is overloaded. 2. Restart the system and confirm if the fault persists.
INI-FAULT (1031 DATA:0000)	AD zero drift overlink	
DSP-B-FAULT (1036 DATA:0000)	The master-slave DSP communication is abnormal	Restart the system and confirm if the fault persists.
AFCI-Check (1040 DATA:0000)	AFCI self-test failure	
ARC- FAULT (1041 DATA:0000)	AFCI failure	Verify that connections are tight within your PV system. If further adjustments are necessary, arc fault settings can be changed in advanced settings.

Table 3: Fault troubleshooting matrix

	Note: If the inverter displays any of the alarm messages listed in Table 3, power off the inverter and wait for 5 minutes prior to restarting it. If the failure persists, contact Clenergy Technical Support.
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Before contacting Clenergy Technical Support, ensure to have the following information ready:

1. Inverter serial number
2. Distributor/retailer/installer of the inverter
3. Installation date
4. Description of the issue along with supplementary information including photos/videos
5. PV array configuration (e.g. number of panels, capacity of panels, number of strings, etc.)
6. An electrical wiring diagram of the site (request this from your installer) which accurately reflects the electrical wiring at the time of the issue occurring
7. Your contact details

Having the above information on hand to provide to Technical Support will minimise the amount of time required to troubleshoot the issue.

Specifications

Datasheet	CGH S3.6L	CGH S4.6L	CGH S5.0L	CGH S6.0L
Battery Data				
Battery Type	Lithium-ion			
Rated Battery Voltage	48d.c.V			
Battery Voltage Range	40-60d.c.V			
Max. Charging / Discharging Power	3600W/3600W	4600W/4600W	5000W/5000W	5000W/5000W
Max. Charging Current	80d.c.A	100d.c.A	100d.c.A	100d.c.A
Max. Discharging Current	80d.c.A	100d.c.A	100d.c.A	100d.c.A
Communication With BMS	CAN,RS485			
Max.inverter backfeed current to the battery	592 Apeak (140ms)			
Max. output fault current	638 Apeak (161ms)			
PV Input Data				
Max. Input Power	7200W	9200W	10000W	12000W
Max. Input Voltage	600d.c.V			
Start-up Voltage	50d.c.V			
Rated Input Voltage	360d.c.V			
PV input operating voltage range	50-600d.c.V			
MPPT Operating Voltage Range	60-550d.c.V			
Full power MPPT voltage range	180-520d.c.V	230-520d.c.V	250-520d.c.V	300-520d.c.V
MPPT number /Input strings number per MPPT	2/1			
Max. operating PV input current	16d.c.A/16d.c.A			
Isc PV	23d.c.A/23d.c.A			
Max. inverter backfeed current to the array	0A(930 Apeak@1.017ms)			
AC Input And Output Data (On Grid)				
Rated Apparent Power Output to Grid	3600VA	4600VA	5000VA	6000VA
Max. Apparent Power Output to Grid	3600VA	4600VA	5000VA	6000VA
Max. Apparent Power from Grid	7200VA	9200VA	10000VA	10000VA
Rated AC Current Output to Grid	15.7a.c.A	20a.c.A	21.7a.c.A	26.1a.c.A
Max. AC Current Output to Grid	15.7a.c.A	20a.c.A	22.7a.c.A	27.3a.c.A
Rated AC Current from Grid	31.4a.c.A	40a.c.A	43.5a.c.A	43.5a.c.A
Max. AC Current from Grid	31.4a.c.A	40a.c.A	43.5a.c.A	43.5a.c.A
Rated Grid Voltage	1W+N+PE, 220a.c.V / 230a.c.V / 240a.c.V			
Grid Voltage Range	170-280a.c.V (According to local standard)			
Rated Frequency	50Hz / 60Hz			
Inrush current	61.5 Apeak (1ms)			
Max. output fault current (L-N)	269 Apeak (3.55ms)			
Max.inverter backfeed current to the AC grid	286 Apeak (1.01ms)			
Output THDi (@Nominal output)	<3%			
Power Factor	1 (Adjustable from 0.8 leading to 0.8 lagging)			
AC Output Data(Backup)				
Rated Apparent Power	3600VA	4600VA	5000VA	6000VA
Peak Output Apparent Power,Duration	5400VA, 60s	6900VA, 60s	7500VA, 60s	9000VA, 60s
Rated output current	15.7a.c.A	20a.c.A	21.7a.c.A	26.1a.c.A
Max. output current	15.7a.c.A	20a.c.A	22.7a.c.A	27.3a.c.A
Rated Voltage,Frequency	220a.c.V/230a.c.V/240a.c.V, 50/60Hz			
Inrush current	38.6 Apeak (1ms)			
Max. output fault current (L-N)	35.6 Apeak (0.301ms)			
THDv (@Liner load)	<2%			
Switch Time	≤10ms			

Specifications

Datasheet	CGH S3.6L	CGH S4.6L	CGH S5.0L	CGH S6.0L
Efficiency				
Max. Efficiency	97.1%	97.1%	97.1%	97.1%
European Efficiency	96.7%	96.7%	96.7%	96.7%
BAT Charged by PV/AC Max. Efficiency	96.4% / 95.0%			
BAT Discharged to AC Max. Efficiency	95.0%			
Protection				
PV Reverse Polarity Protection	Yes			
PV Insulation Resistance Detection	Yes			
Anti-islanding Protection	Yes			
AC Over Voltage Protection	Yes			
AC Over current protection	Yes			
AC Short Circuit Protection	Yes			
Leakage Current Monitoring	Yes			
DC Switch(Solar)	Yes			
Overvoltage category	DC:OVCI, AC:OVCI			
Electrical supply system	TN, TT			
AFCI	Optional			
General Data				
Operating Ambient temperature range	-25°C~+60°C			
Storage ambient temperature range	-25°C~+60°C			
Standby self-consumption	<15W			
Topology	Non-isolated (between AC and PV), reinforced insulation (bwtween AC/PV and Battery)			
Active anti-islanding method	Active Frequency Drift			
IP Rating	IP66			
Relative Humidity	0~100% (Non-condensing)			
Storage humidity	0-100% (non-condensing)			
Communication	Wifi/4G (optional),RS485,CAN			
Max. Operation Altitude	3000m(> 2000m deratings)			
Net Weight	25kg			
Cooling Method	Natural Convection			
Dimension (W*H*D)	520*420*224mm			
Mounting Method	Wall Mounted			
Display	LED Indicators, Bluetooth+APP			
Standards	EN 61000-6-1, EN 61000-6-3,EN IEC 61000-3-2,EN IEC 61000-3-12, EN 61000-3-3,EN 61000-3-11,IEC 62109-1/2,AS/NZS 4777.2, G98 / G99, PEA,MEA			



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