CLENERGY

User Manual

CGS Series

CGH S3.6/4.6/5.0/6.0H
CGI E6.0H
CGG C63S-AU

Ver. 1.0 / Last Updated - Jan. 2026

Clenergy

Trademark Authorization

CLENERGY trademarks used in this file are used under authorization by Clenergy Technology Co., Ltd.

All the other trademarks or registered trademarks mentioned in this file shall belong to their owners.

Attention

We may update this document from time to time as product versions are upgraded or for other reasons. The contents of this document do not replace the safety precautions on the product label or in the user manual, unless otherwise specified. The statements, information, and suggestions in this document do not constitute a guarantee, whether express or implied. All descriptions in this document are provided for guidance only.

Index

1 Preface

1.1 Overview

This manual covers the procedures for the Clenergy ESS CGS Series All-in-one Battery Energy Storage System, including installation, commissioning, operation, and maintenance. The CGS Series is an integrated residential energy storage system comprising a hybrid inverter, battery, and smart meter, with an optional gateway for parallel operation. Guidelines are provided for installation, electrical integration, system commissioning, diagnostic troubleshooting, and routine maintenance. A comprehensive review of this manual is essential prior to any handling of the system to ensure safety and operational proficiency. For the most up-to-date product specifications and documentation.

1.2 Model Description

The energy storage system includes the following products:

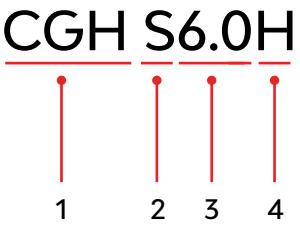
Product Type	Model Information	Description
All-in-one System	CGS S3.6 6H1	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 1 Module
	CGS S4.6 6H1	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 1 Module
	CGS S5.0 6H1	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 1 Module
	CGS S6.0 6H1	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 1 Module
	CGS S3.6 6H2	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 2 Module
	CGS S4.6 6H2	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 2 Module
	CGS S5.0 6H2	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 2 Module
	CGS S6.0 6H2	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 2 Module
	CGS S3.6 6H3	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 3 Module
	CGS S4.6 6H3	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 3 Module
	CGS S5.0 6H3	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 3 Module

Product Type	Model Information	Description
All-in-one System	CGS S6.0 6H3	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 3 Module
	CGS S3.6 6H4	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 4 Module
	CGS S4.6 6H4	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 4 Module
	CGS S5.0 6H4	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 4 Module
	CGS S6.0 6H4	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 4 Module
	CGS S3.6 6H5	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 5 Module
	CGS S4.6 6H5	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 5 Module
	CGS S5.0 6H5	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 5 Module
	CGS S6.0 6H5	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 5 Module
	CGS S3.6 6H6	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 6 Module
	CGS S4.6 6H6	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 6 Module
	CGS S5.0 6H6	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 6 Module
	CGS S6.0 6H6	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 6 Module
	CGS S3.6 6H7	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 7 Module
	CGS S4.6 6H7	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 7 Module
	CGS S5.0 6H7	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 7 Module
	CGS S6.0 6H7	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 7 Module

Product Type	Model Information	Description
All-in-one System	CGS S3.6 6H8	Clenergy All-in-One 3.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 8 Module
	CGS S4.6 6H8	Clenergy All-in-One 4.6kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 8 Module
	CGS S5.0 6H8	Clenergy All-in-One 5.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 8 Module
	CGS S6.0 6H8	Clenergy All-in-One 6.0kW Single Phase Hybrid High Voltage Inverter with 6 kWh LFP Battery x 8 Module
Inverter	CGH S3.6H	Nominal output power: 3.6kW-6kW
	CGH S4.6H	
	CGH S5.0H	
	CGH S6.0H	
Battery module	CGI E6.0H	Rated energy 6.0kWh
Gateway (Optional)	CGG C63S	Energy and signal communication control, maximum 63A
Battery Distribution Unit (Optional)	CGD C50H	Expansion battery distribution unit for number of battery modules > 4

Table 1-1 All models description

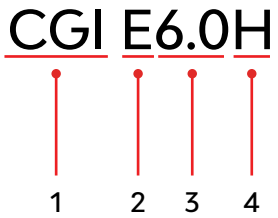
The model of the inverter is CGH S6.0H



No.	Item	Description
1	Product Series	CGH (Clenergy Hybrid Inverter Series)
2	Phase Identifier	S – Single Phase ; T – Three Phase
3	Rated Power	3.6 - 3.6kW ; 4.6 - 4.6kW ; 5.0 - 5.0kW ; 6.0 - 6.0kW
4	Battery Side Voltage Level	H – High Voltage ; L – Low Voltage

Table 1-2 Inverter model description

The model of the battery is CGI E6.0H



No.	Item	Description
1	Product Series	CGI (Clenergy Integrated Battery Series)
2	Unit Type	E – Energy
3	Rated Capacity	6 – 6kWh
4	Voltage Level	H – High Voltage ; L – Low Voltage

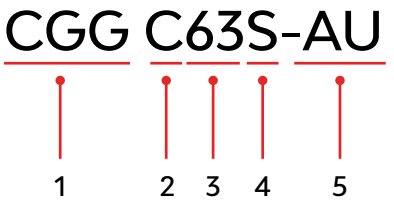
Table 1-3 Battery model description

The model of the All-in-one system is CGS S6.0 6H1

No.	Item	Description
1	Product Series	CGS (Clenergy Stackable ESS Series)
2	Phase Identifier	S-Single Phase T-Three Phase
3	Rated Power	3.6 – 3.6kW; 4.6 – 4.6kW; 5.0 – 5.0kW; 6.0 – 6.0kW
4	Battery Modular Rated Capacity	6.0kWh
5	Battery Side Voltage Level	H-High Voltage L-Low Voltage
6	Number of Battery Modules	1 - 1 battery module; 2 - 2 battery modules; 3 - 3 battery modules; 4 - 4 battery modules; 5 - 5 battery modules; 6 - 6 battery modules; 7 - 7 battery modules; 8 - 8 battery modules

Table 1-4 All-in-one system model description

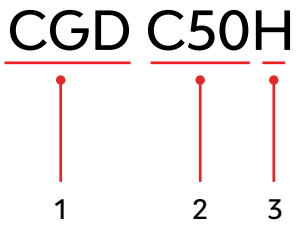
The model of the Gateway is CGG C63S-AU



No.	Item	Description
1	Product Series	CGG (Clenergy Gateway Series)
2	Parameter Type	C = Current
3	Rated Current	63.0 = 63.0A
4	Phase Number	S = Single Phase;T = Three Phase
4	Country Code	AU=Australia

Table 1-5 Gateway model description

The model of the battery distribution unit is CGD C50H



No.	Item	Description
1	Product Series	CGD (Clenergy Battery Distribution Unit Series)
2	Rated Current	C-Current, 50A
3	Voltage Level	H-High Voltage; H-Low Voltage

Table 1-6 Battery distribution unit model description

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 iniury and cause equipment damage.

Note

Provides tips that are valuable for the optimal operation of your product

2 Safety Precautions

2.1 General Safety

During operation, strictly adhere to the safety instructions provided in the user manual. The products are designed and tested in full compliance with applicable safety regulations. Prior to any use, follow all safety guidelines and warnings. As electrical product, improper operation may result in personal injury or property damage.

Attention

This document may be updated at any time due to product revision or other reasons. It complements but does not replace safety labels on the product or the user manual unless specified otherwise. All descriptions herein are for guidance only.

Danger: Fire Risk

Electrical devices can cause fires. Do not install the product near highly flammable materials, gases, or in potentially explosive atmospheres.

Warning

To reduce fire risk, install over-current protective devices (OCPD) for circuits connected to the product per local regulations.

Caution

The product surface temperature can become high during operation, posing a burn risk. Avoid contact.

Note

- Install, operate, and maintain the product in accordance with all applicable local laws, regulations, and specifications.
- Before installation, read through this document carefully to learn about the product and the precautions.

2.2 Personnel Requirements

Danger

All electrical work must be performed by licensed electricians in compliance with local and national electrical safety standards.

Qualified Personnel Only

Operation and maintenance must be conducted by professional, qualified electrical technicians familiar with local standards and the project site's safety specifications.

Strictly Prohibited

- Do not carry out derivative operations against product software or hardware, including reverse engineering, decompilation, disassembly, dismantling, rearrangement, implanting, studying internal parts, obtaining source code, stealing IPRs, or disclosing performance test results.
- Do not bypass safety circuits.
- Do not modify, damage, or cover identification labels or nameplates on the product.
- Do not open product covers or host panels; there are no user-serviceable parts inside. Refer servicing to qualified technicians.
- Do not install, use, or operate outdoor products and cables during severe weather conditions (e.g., lightning, rain, snow, strong wind).

2.3 System Safety

General Electrical Safety:

Danger

- Disconnect all upstream switches to power off the product before performing any electrical connections. Do not work on energized products.
- Install a suitable circuit breaker at the AC voltage input side of the product.
- Perform all electrical connections, including cable and component specifications, in accordance with applicable local laws, regulations, and standards.
- Use only the connectors provided in the package for cable connections.
- Ensure all cables are connected correctly, tightly, and securely. Improper wiring may cause poor connection and damage.
- The Protective Earth (PE) cables must be properly connected and secured.

Warning

- Do not apply mechanical load to terminals.
- Avoid excessive tension on cables. Leave sufficient cable length before connecting to ports.
- Avoid entangling or crossing cables.
- Keep cables at least 30mm away from heating components or heat sources to prevent insulation aging or damage.

2.3.1 PV String Safety

Warning: Electric Shock Risk

- The PV array supplies hazardous DC voltages when exposed to sunlight.Do not connect the positive (+) or negative (-) terminals of the PV array to ground/Earth. This may expose hazardous voltages and damage the inverter.
- Ensure the PV module frames and mounting system are securely grounded.
- Ensure all DC cables are connected tightly, securely, and correctly.
- Measure the DC cable polarity using a multimeter before connection to avoid reverse polarity. Ensure the voltage is within the inverter's permissible input range.
- The PV strings must not be grounded. Before connection, ensure the minimum insulation resistance of the PV string to ground meets requirements (R = Max. Input Voltage / 30 mA).
- Do not connect the same PV string to multiple inverters simultaneously.

Note

PV modules used must have an IEC 61730 Class A rating.

2.3.2 Inverter Safety

Warning: Electric Shock Risk

- Hazardous voltages are present inside the inverter. Do not remove covers.
- The voltage and frequency at the grid connection point must meet the inverter's requirements.
- It is recommended to install additional protective devices (e.g., circuit breakers or fuses) on the AC side. The device rating should be at least 1.25 times the inverter's maximum AC output current.
- If the PV system is not configured with batteries, using the BACKUP function is not recommended as it may pose a system power outage risk.

Danger

Do not connect grid cables to the AC BACKUP port. This may expose hazardous voltages on the grid during an outage, leading to death or serious injury. Protect the AC BACKUP port with the terminal plug even if not in use.

Note on Arc Fault

Arc fault alarms may clear automatically if triggered fewer than 5 times within 24 hours. The inverter will shut down for protection upon the 5th fault and can resume operation after the fault is resolved.

Caution: Burn Risk

The inverter surface temperature can reach up to 75°C (167°F). Do not touch while operating. Install out of children's reach.

2.3.3 Battery Safety

Danger

- Operate the product only within the specified environmental conditions. Using it outside those conditions may cause malfunction, injury, or property damage and may void the warranty.
- Batteries are electrochemical products. Improper operation may lead to serious injury or property loss.
- Ensure all power is switched off before performing any operation, and strictly follow all safety precautions.
- Do not disassemble, modify, or replace any part of the battery without manufacturer authorization.
- Do not open or damage the battery. Avoid contact with any released electrolyte.
- Do not hit, pull, drag, squeeze, step on the battery, or place it in fire or water.
- Do not place the battery in high-temperature environments (above 60°C), direct sunlight, or near heat sources.
- Do not use a battery if it is defective, broken, or damaged.
- Do not move the battery system while it is operational.
- A battery short circuit can cause high instantaneous current, fire, or personal injury.

Warning

- If faulty, battery surface temperature may exceed safe limits. Avoid contact.
- Factors like temperature and humidity may limit battery current and load capacity.
- If the battery cannot be started, contact after-sales service immediately to avoid permanent
- damage.
  Inspect and maintain the battery regularly according to requirements.
- Ensure the battery system is not damaged during transportation and storage. Keep it stable to avoid tipping.

Electrical Safety

- Wear proper Personal Protective Product (PPE). Use insulated tools when operating batteries.
- Ensure reliable product earthing before use.
- Batteries pose electric shock and short-circuit risks. During use:
  - Remove metal objects (watches, rings).
  - Use insulated tools.
  - Wear appropriate PPE (rubber gloves, boots, antistatic gear).
- Check for accidental battery grounding. Remove power supply from ground if found. Disconnect grounding before installation/maintenance to reduce shock risk.
- Do not stand on, lean against, or sit on the product.
- If a battery module is dropped or severely impacted, do not use it due to risks of electrolyte leakage or electric shock.

Emergency Measures

- Electrolyte Leakage: Avoid contact. If contact occurs:
  - Inhalation: Evacuate and seek medical help.
  - Eye Contact: Rinse with clean water for at least 15 minutes and seek medical help.
  - Skin Contact: Wash thoroughly with soap and water and seek medical help.
  - Ingestion: Induce vomiting and seek medical help.
- Fire: Battery may burn at ambient temperatures exceeding 150°C, releasing toxic gases.
  - Ensure a CO_2 or water fire extinguisher is nearby.
  - ABC dry powder extinguishers are ineffective. Firefighters must wear full protective gear and SCBA.
- If Fire Protection is Triggered (for applicable models):
  - Immediately cut off the main power switch.
  - Inspect the battery for damage, deformation, leakage, or odor.
  - Check temperature for overheating risk.
  - Isolate and label damaged batteries for proper disposal per local regulations.

Manual Handling Safety

- The equipment is heavy. Use caution when handling.
- Do not attempt to lift or carry the equipment if its weight exceeds safe manual-handling limits.
- Use lifting aids or team lifting to prevent injury.
  Keep the equipment stable and balanced during manual handling to prevent it from tipping or falling.

Transportation Safety

- Take precautions to prevent damage to the equipment and components during transport.
- Keep the equipment stable and secured to prevent tipping.
- Only trained personnel may transport the equipment.
- Record transport details and any handling incidents (e.g., impacts or visible damage), in accordance with your quality procedures.

2.4 Declaration of Conformity

2.4.1 Inverter Safety and EMC Compliance

The product complies with the following key international and regional standards for safety and electromagnetic compatibility.

Applicable Safety Standards

- IEC 62109-1 / EN 62109-1: Safety of power converters for use in photovoltaic power systems - Part 1: General requirements.
- IEC 62109-2 / EN 62109-2: Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters.
- IEC 62040-1:Uninterruptible power systems(UPS)-Part 1: Safety requirements.
- IEC 62619: Safety requirements for secondary lithium cells and batteries, for use in industrial applications.

Applicable EMC Standards

- IEC 61000-6-1 / EN IEC 61000-6-1: Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments.
- IEC 61000-6-3 / EN IEC 61000-6-3: Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments.

Applicable Grid Standard

The product for the Australian market complies with the following standards:

- Grid Connection Standard: AS/NZS 4777.2:2020 Amd 2:2024 - Grid connection of energy systems via inverters - Part 2: Inverter requirements.

3 System Introduction

3.1 Product Overview

3.1.1 Product Composition

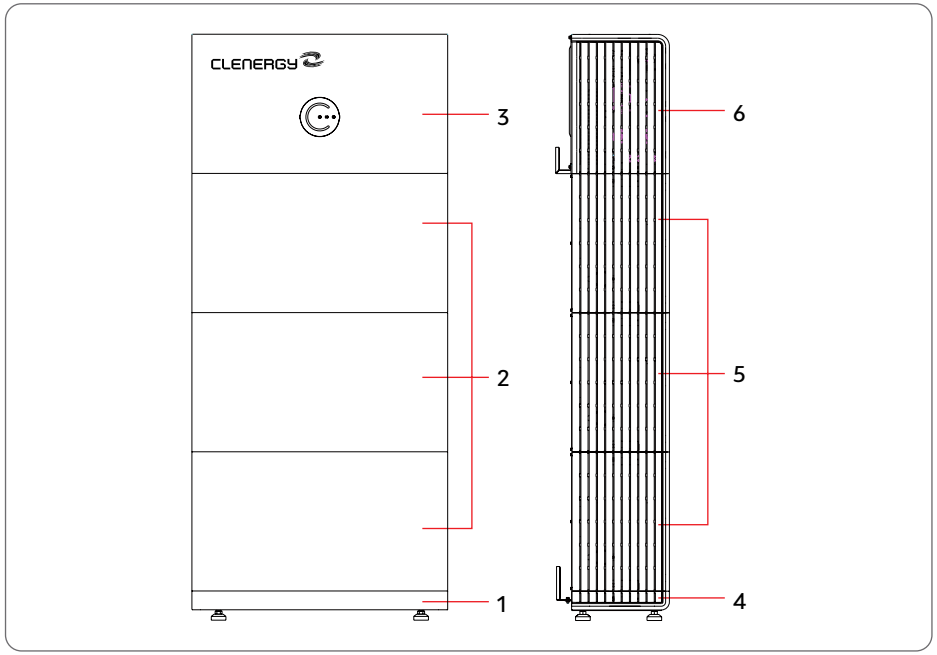


Figure 3-1 CGS system product composition

No.	Parts
1	Floor Mounting Base
2	Battery Module
3	Inverter
4	Base Decorative Cover
5	Battery Module Decorative Covers
6	Inverter Decorative Covers

Table 3-1 CGS system product composition description

Inverter Module Interface

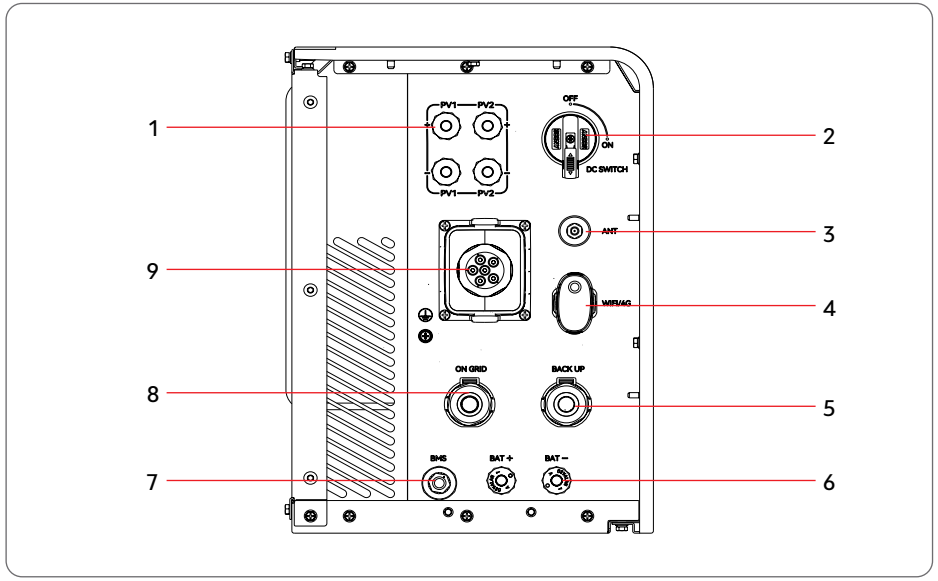


Figure 3-2 CGS system - CGH inverter product interface

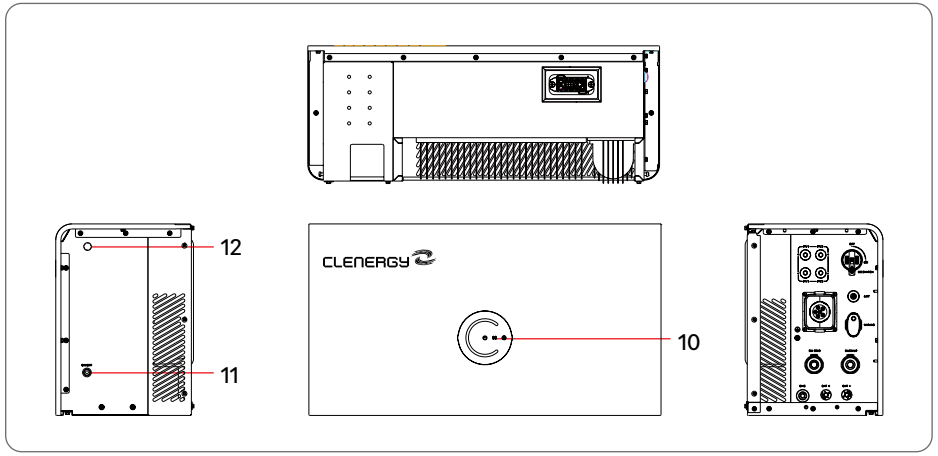


Figure 3-3 CGS system - CGH inverter product appearance

No.	Parts
1	DC PV Port
2	DC PV Switch
3	Antenna (Reserve)
4	Datalogger
5	AC Backup Port
6	DC Expansion Battery Port
7	BMS Port
8	AC On-Grid Port
9	Communication Port
10	Inverter LED Indicator
11	Battery Power Button
12	Pressure Relief Valve

Table 3-2 CGS system product interface description

Battery Distribution Unit Interface

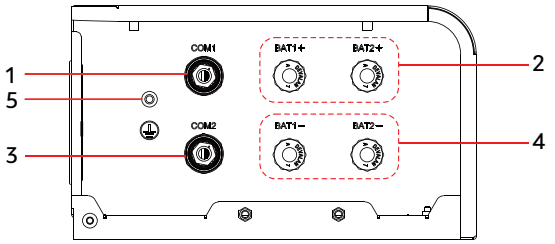


Figure 3-4 CGS system - CGD battery distribution unit product interface

No.	Parts
1	Expansion Battery Communication Port #1
2	Expansion Battery Power Port (Positive Battery Terminals)
3	Expansion Battery Communication Port #2
4	Expansion Battery Power Port (Negative Battery Terminals)
5	Grounding Port

Table 3-3 CGS system - CGD battery distribution unit product interface description

Battery Module Interface

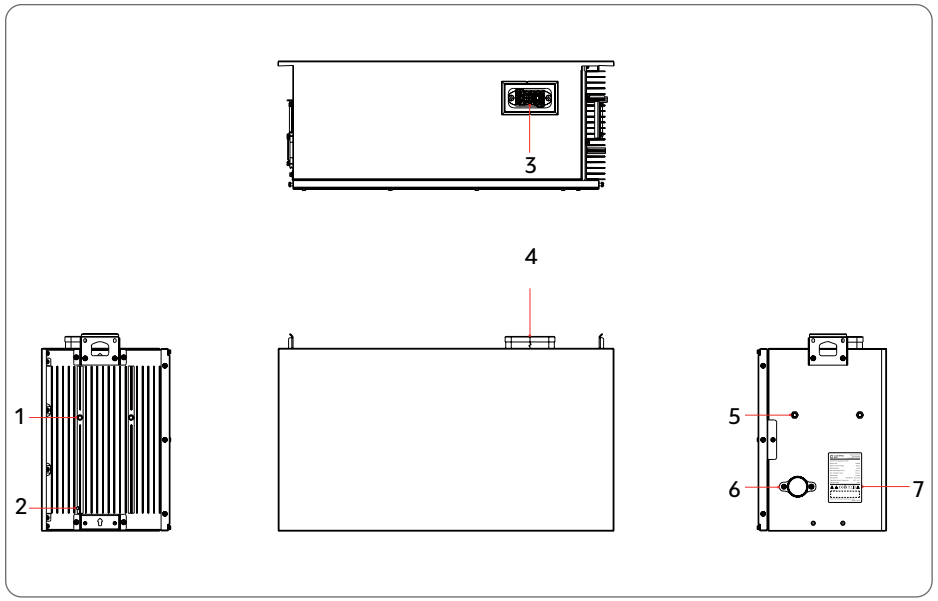


Figure 3-5 CGS system - CGI battery module product appearance

No.	Parts
1	Lift Handle Holes
2	LED Indicators
3	Battery Cascading Port (lower)
4	Battery Cascading Port (upper)
5	Lifting Handle Holes
6	Pressure Relief Valve
7	Product Labels

Table 3-4 CGS system - CGI battery module product composition description

Gateway Interface

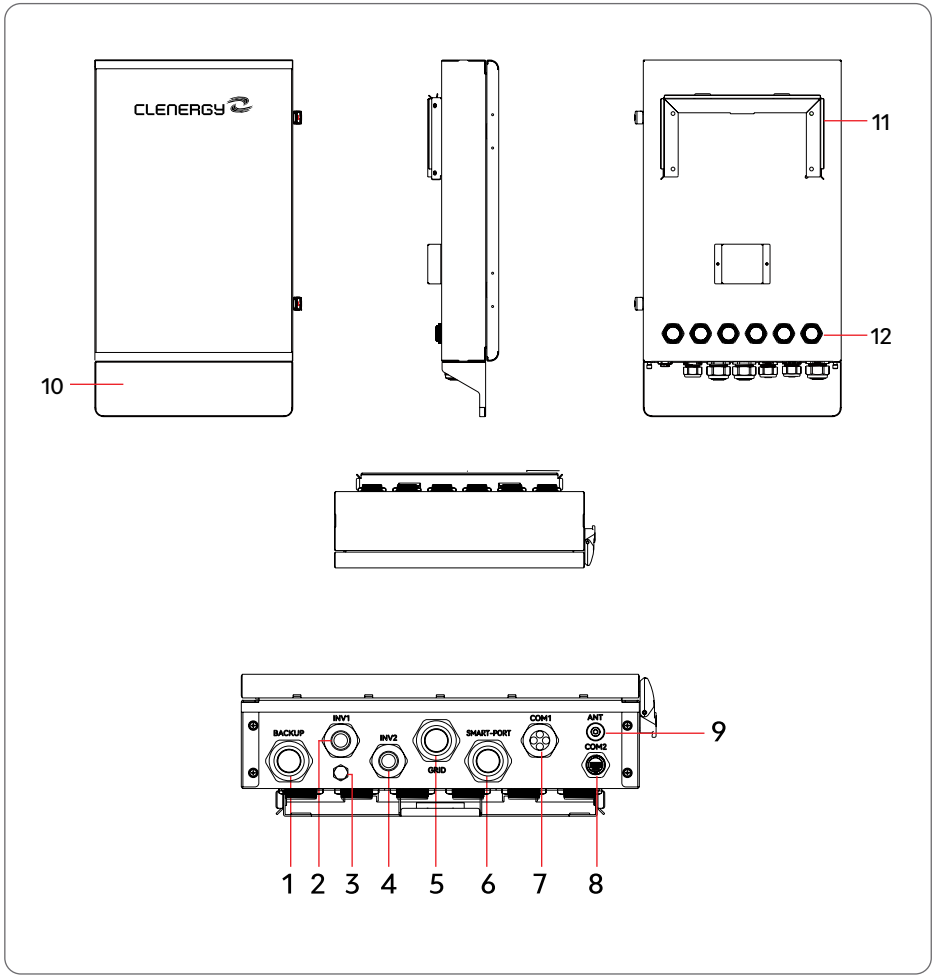


Figure 3-6 Gateway product appearance

No.	Parts
1	Backup Load Port
2	Inverter #1 Port
3	Air Valve
4	Inverter #2 Port
5	Grid Port
6	Smart Load Port
7	COM1 - Communication Port
8	COM2 - Datalogger Port
9	Wi-Fi Antenna Port
10	Bottom Protective Cover
11	Wall Mounting Bracket
12	Rear Cabling Holes

Table 3-5 Gateway product interface description

3.1.2 Product Dimension

CGS Product Dimension

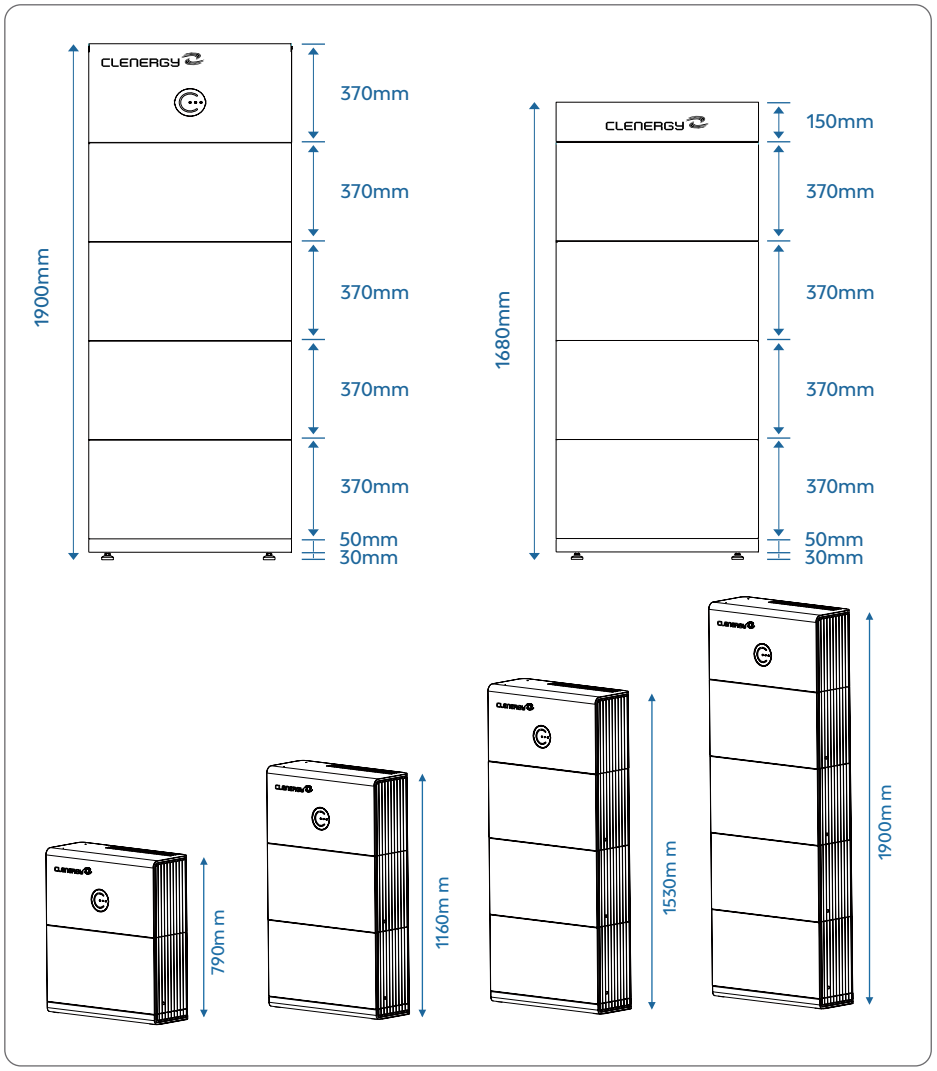


Figure 3-7 CGS system dimension

Maximum Battery Stacking Quantity

Mounting method	Maximum number of battery modules per stack
Floor Installation	≤4 modules
Wall-mounted Installation	≤2 units

Table 3-6 Maximum battery stacking quantity

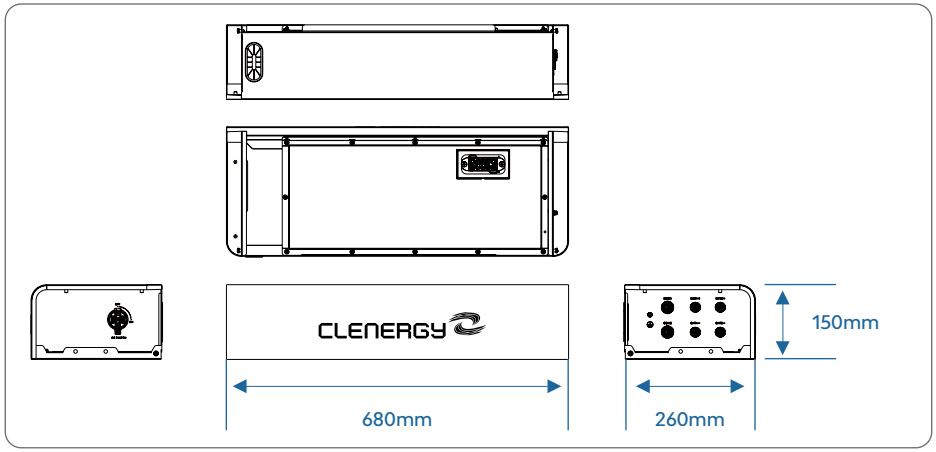


Figure 3-8 CGS system - CGD battery distribution unit dimension

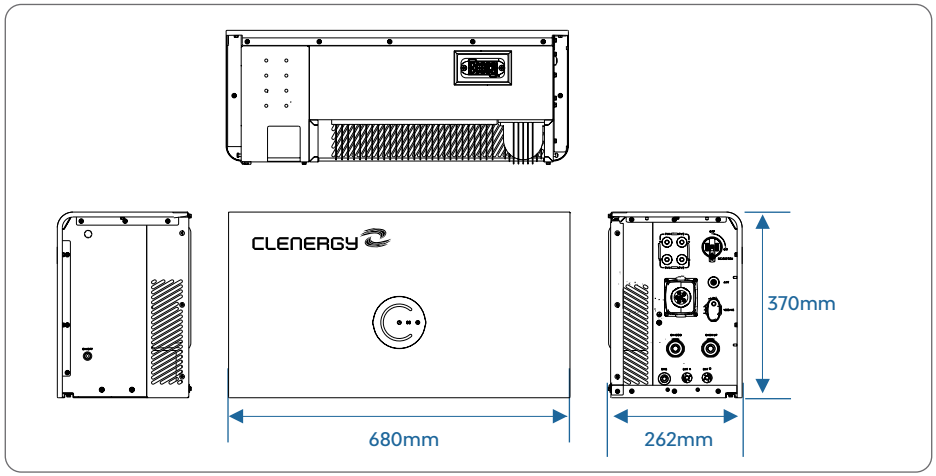


Figure 3-9 CGS system - CGH inverter dimension

Gateway Product Dimension

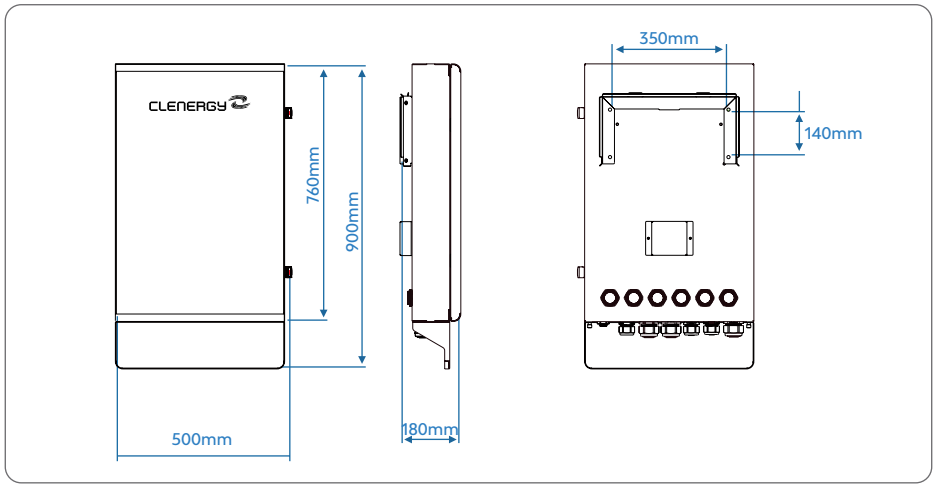


Figure 3-10 Gateway dimension

Meter Dimension

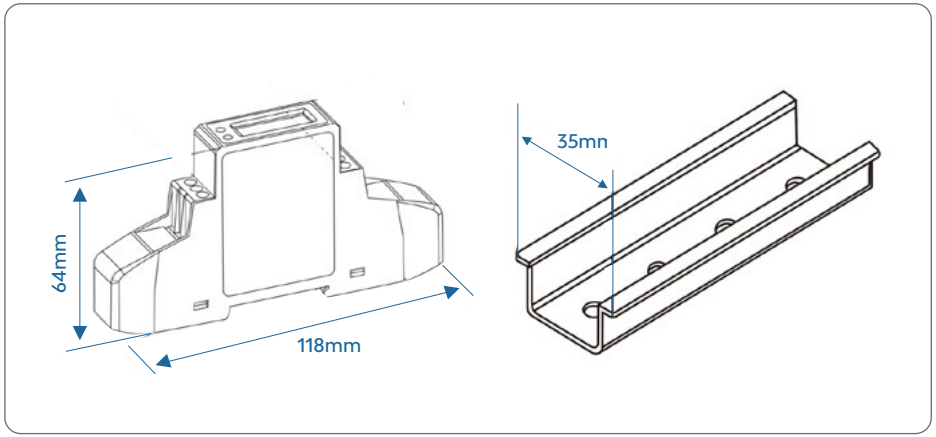


Figure 3-11 Smart meter dimension

3.1.3 LED Indicator & Power Button Definition

LED Flashes Description

Status	Description
	Light flashes ON 0.5s, OFF 2.5s
	Light flashes ON 0.5s, OFF 5.0s
	Light flashes ON 0.5s, OFF 0.5s
	Light flashes ON 2.5s, OFF 2.5s

Table 3-7 LED flashes description

Inverter Module Indicators

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

Table 3-8 Inverter indicators description

Battery SOC Indicator

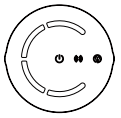
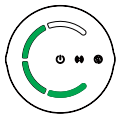
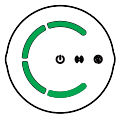
				
No battery	0%<SOC≤25%	25%<SOC≤50%	50%<SOC≤75%	75%<SOC≤100%
The indicator light flashes when the battery is charging: for example, when the battery SOC is between 50% and 75%, the light at the 75% position flashes.				

Table 3-9 Battery SOC indicator description

Battery Module Indicator

Status	Description
	The battery module operates in working mode
	The battery module operates in idle mode
	The battery module operates in firmware upgrade mode
	A fault has occurred
	The battery module operates in sleeping mode or standby mode

Table 3-10 Battery module indicator description

Power Button Definition

Status	Operation
Work Mode → Idle Mode	Power button long press 5 seconds
Idle Mode/ Sleep Mode → Work Mode	Power button long press 5 seconds
Idle Mode → Sleep Mode	5 minutes without communication or external voltage
Work Mode/ Idle Mode → Sleep Mode	Power button long press 10 seconds

3.2 System Configurations

This integrated home energy storage system comprises a hybrid inverter, battery, smart meter, and communications module. The inverter converts solar PV energy into usable AC electricity for household loads. Using real-time metering and control, the system manages energy flow by prioritising self-consumption, charging the battery, and exporting surplus energy to the grid, as configured.

Partial Home Backup Solution – with Gateway

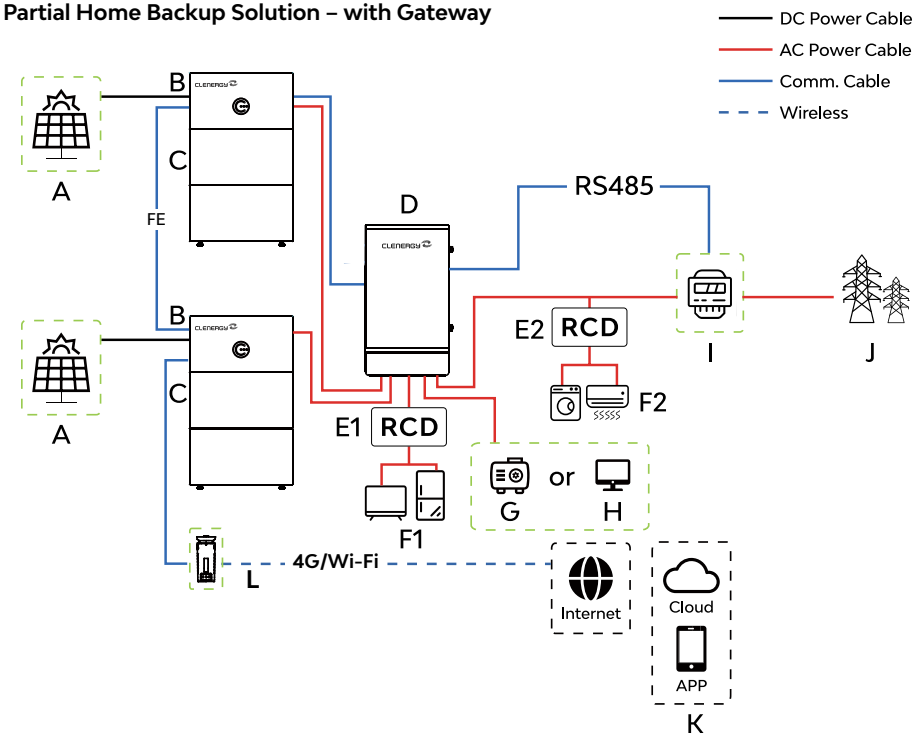


Figure 3-12 Partial home backup solution system diagram – with Gateway

A. PV panels	B. CGH Inverter	C. CGI Battery	D. Gateway
E1. Backup Load RCD	E2. Non-Backup Load RCD	F1. Backup Load	F2. Non-Backup Load
G. Diesel Generator	H. Smart Load	I. Meter	J. Grid
K. Clenergise Cloud	L. Datalogger		

Whole Home Backup Solution – with Gateway

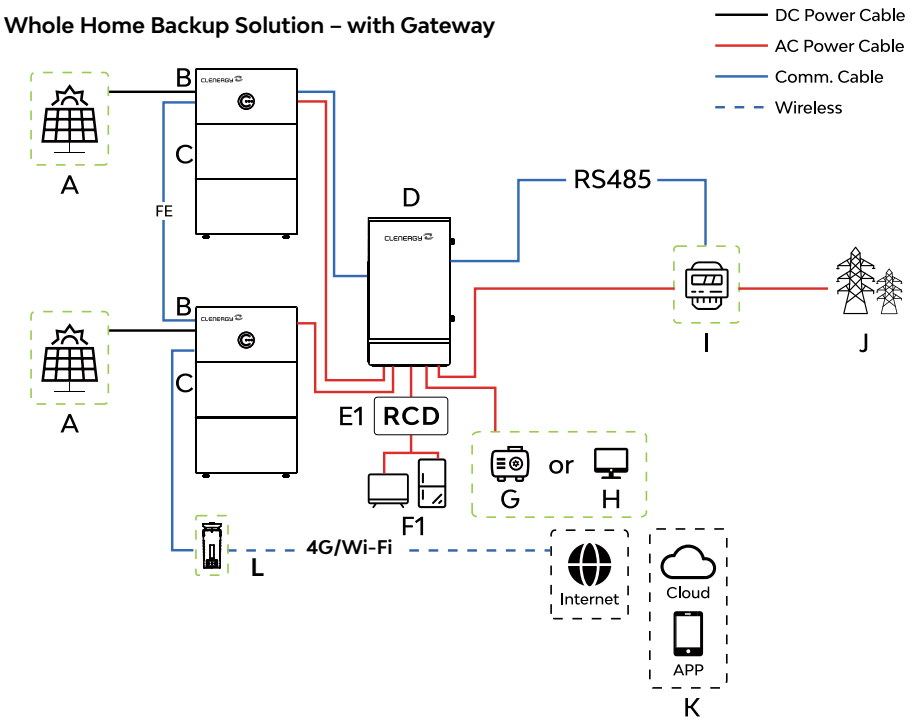


Figure 3-13 Whole home backup solution system diagram – with Gateway

A. PV panels	B. CGH Inverter	C. CGI Battery	D. Gateway
E1. Backup Load RCD	F1. Backup Load	G. Diesel Generator	H. Smart Load
I. Meter	J. Grid	K. Clenergise Cloud	L. Datalogger

Note

- An Type-A RCD (RCCB or Type-A RCD device) must be installed upstream of the backup (EPS) load circuits. During off-grid (EPS) operation, the main switchboard protective device(s) may not-provide effective residual-current protection for the backup circuits, and earth faults on backup-loads may create electric shock hazards.
- Clenergy recommends installing a Type-A RCD with a threshold current as specified below.
- The Type-A RCD protecting the backup (EPS) load supply must have a rated residual operating-current (IAn) of at least (number of inverters x 100 mA), e.g. IΔn ≥200 mA for two inverters.
- If an EV charger is configured in the system, it must be connected to a non-backup (non-EPS) load port/circuit.

Expansion Battery Home Backup Solution – without Gateway

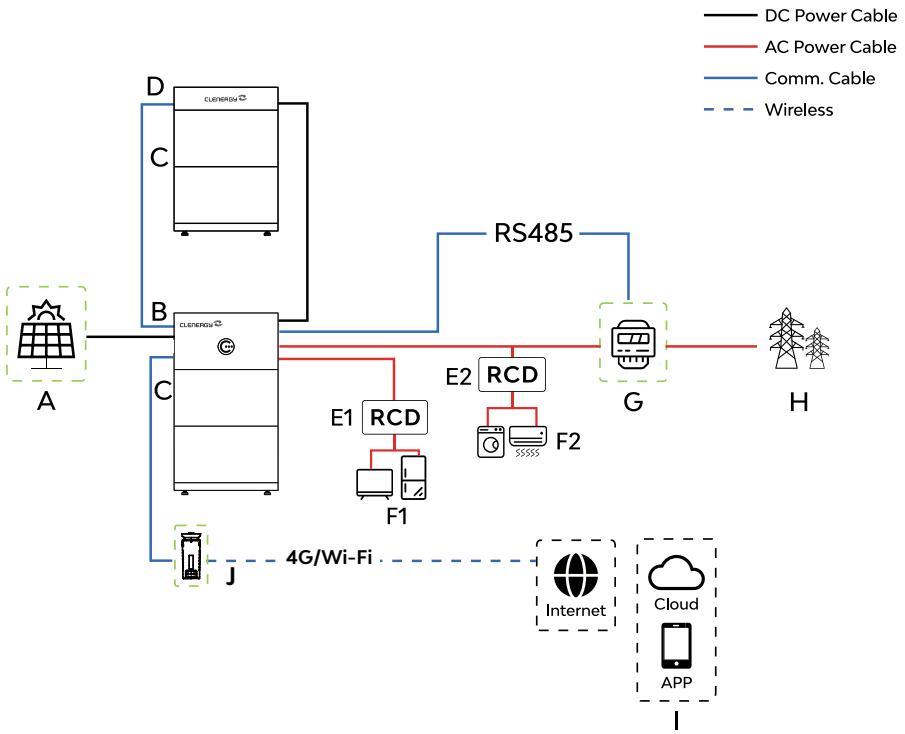


Figure 3-14 Expansion battery home backup solution system diagram – without Gateway

A. PV panels	B. CGH Inverter	C. CGI Battery	D. CGS Battery Distribution Unit
E1. Backup Load RCD	E2. Non-Backup Load RCD	F1. Backup Load	F2. Non-Backup Load
G. Meter	H. Grid	I. Clenergise Cloud	J. Datalogger

Note

- An RCD (RCCB or RCD device) must be installed upstream of the backup (EPS) load circuits.
- During off-grid (EPS) operation, the main switchboard protective device(s) may not provide effective residual-current protection for the backup circuits, and earth faults on backup loads may create electric shock hazards. Its rated residual operating current must be ≥ 100mA.
- If an EV charger is configured in the system, it must be connected to a non-backup (non-EPS) load port/circuit.
- The expansion battery modules are only required when the total number of battery modules needed exceeds four to achieve the target system battery capacity.

Home Backup Solution - without Gateway

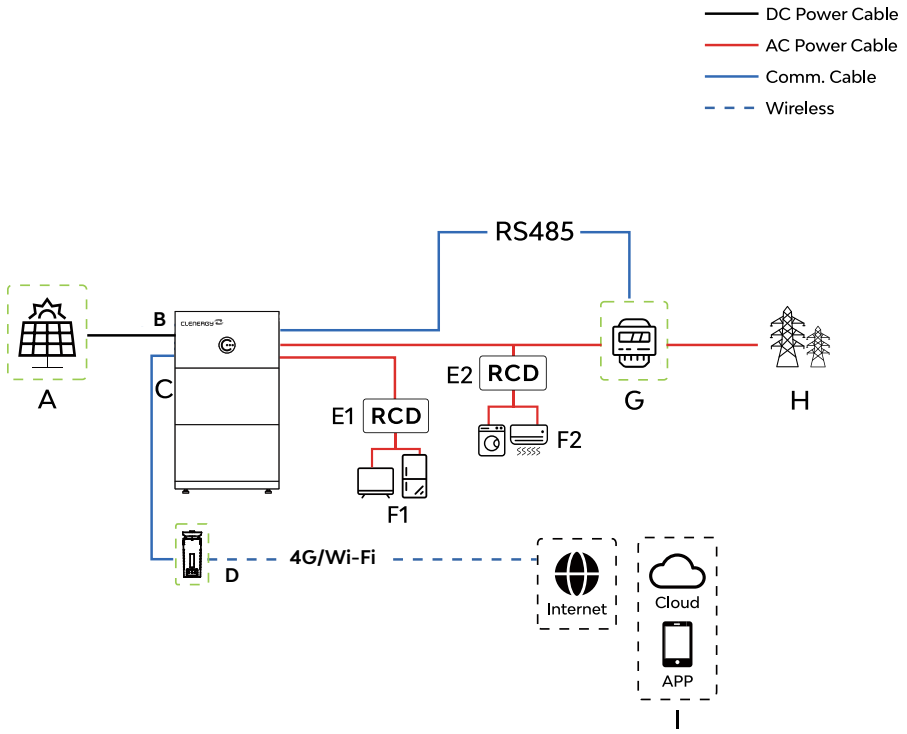


Figure 3-15 Home backup solution system diagram - without Gateway

A. PV panels	B. CGH Inverter	C. CGI Battery	D. Datalogger
E1. Backup Load RCD	E2. Non-Backup Load RCD	F1. Backup Load	F2. Non-Backup Load
G. Meter	H. Grid	I. Clenergise Cloud	

Note

- An RCD (RCCB or RCD device) must be installed upstream of the backup (EPS) load circuits.
- During off-grid (EPS) operation, the main switchboard protective device(s) may not provide effective residual-current protection for the backup circuits, and earth faults on backup loads may create electric shock hazards. Its rated residual operating current must be ≥ 100mA.
- If an EV charger is configured in the system, it must be connected to a non-backup (non-EPS) load port/circuit.

AC couple Solution – with Gateway

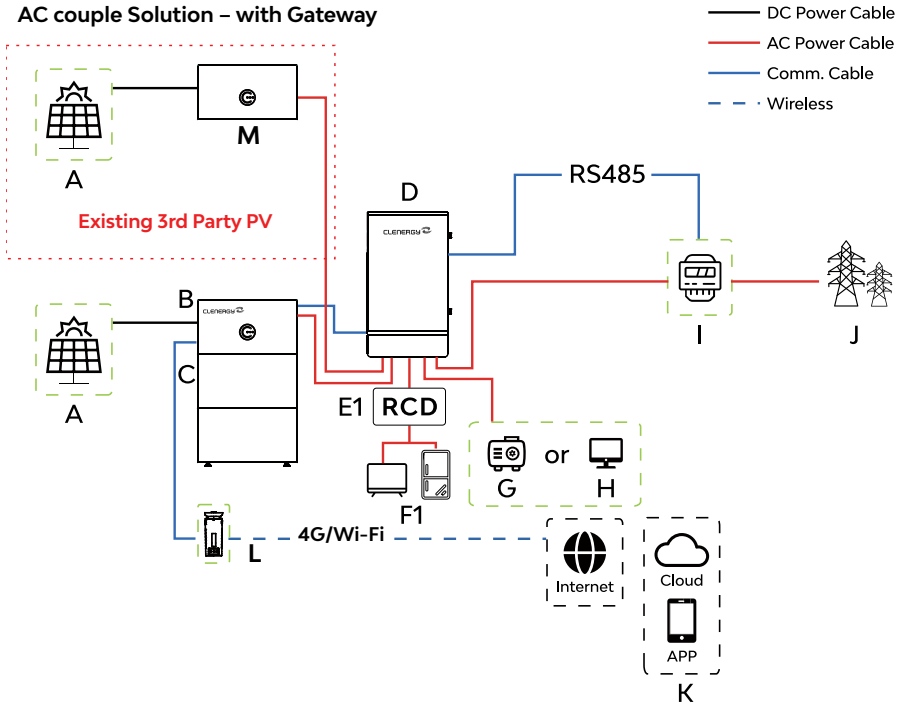


Figure 3-16 AC couple solution system diagram - with Gateway

A. PV panels	B. CGH Inverter	C. CGI Battery	D. Gateway
E1. Backup Load RCD	F1. Backup Load	G. Diesel Generator	H. Smart Load
I. Meter	J. Grid	K. Clenergise Cloud	L. Datelogger
M. 3rd Party PV Inverter			

Note

- An Type-A RCD (RCCB or Type-A RCD device) must be installed upstream of the backup (EPS) load circuits. During off-grid (EPS) operation, the main switchboard protective device(s) may not-provide effective residual-current protection for the backup circuits, and earth faults on backup-loads may create electric shock hazards.
- Clenergy recommends installing a Type-A RCD with a threshold current as specified below.
- The Type-A RCD protecting the backup (EPS) load supply must have a rated residual operating-current (IAn) of at least (number of inverters x 100 mA), e.g. IΔn≥200 mA for two inverters.
- If an EV charger is configured in the system, it must be connected to a non-backup (non-EPS) load port/circuit.

3.3 Grid Types

Attention

- The CGS system can not be connected to the IT Grid.

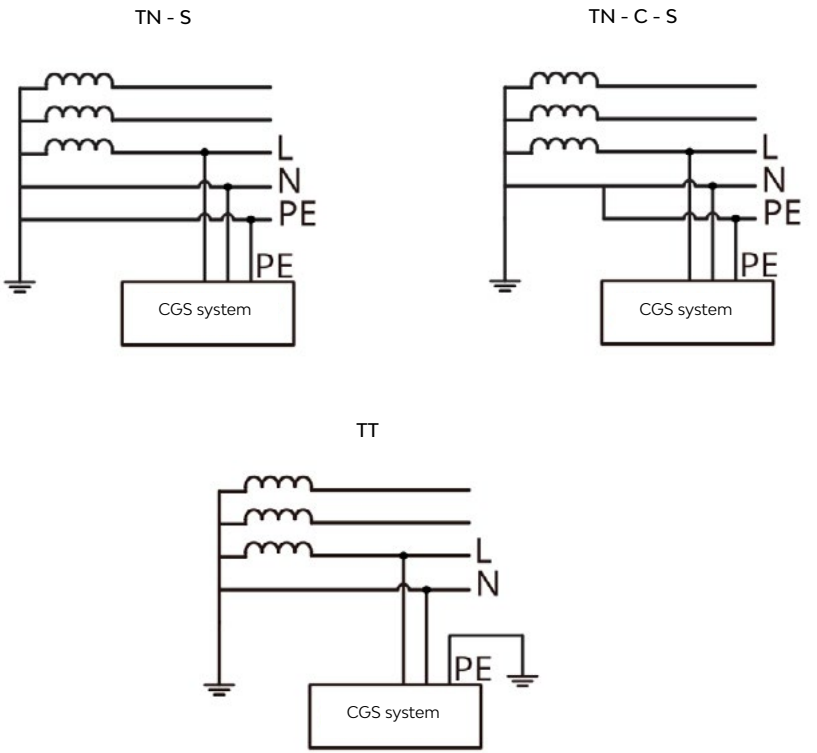
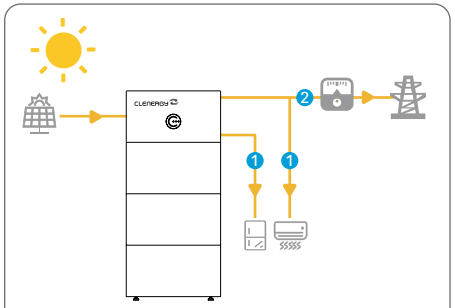


Figure 3-17 CGS grid type

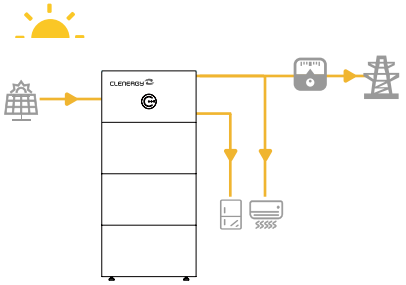
3.4 System Work Mode

3.4.1 Self-Use Mode

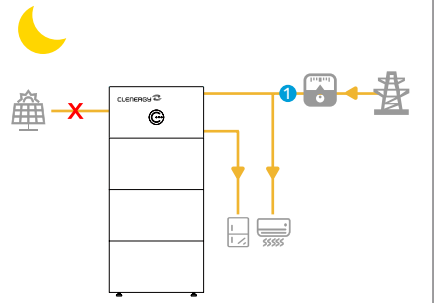
This mode can maximize the self consumption rate of PV power generation and saves electricity costs.



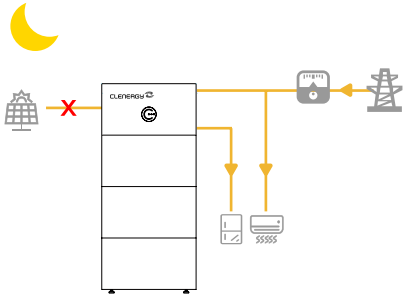
The PV-generated power is supplied to the load with priority, and any surplus power is used to charge the battery. Once the battery is fully charged, the remaining excess power is exported to the grid.



When PV power generation is insufficient or unavailable, the battery supplies the load. If the battery power is insufficient, the grid will then supply the load.



At night, when no PV power is available, the load is supplied by the battery. When the battery power is insufficient, the grid will supply the load.



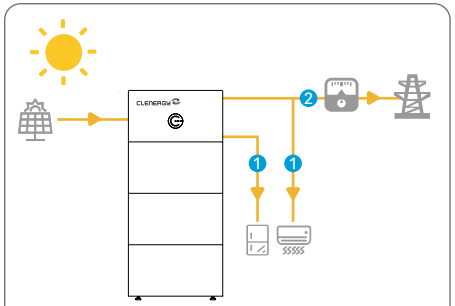
At night, if the battery is depleted, the load will be supplied by the grid.

Figure 3-17 System work mode: self-use mode

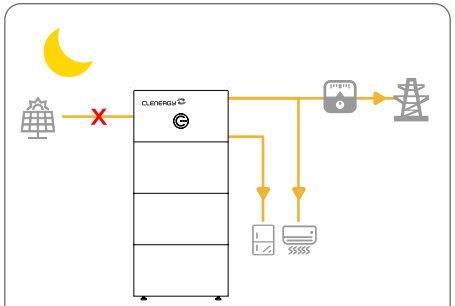
In this mode, you can set up multiple time-of-use rules to control the battery charging and discharging for more complex requirements, and the TOU setting will be enforced in priority, with the rest of the time period the inverter work in self-use mode.

3.4.2 Feed in Priority Mode

In this mode, once local load demand is fully met, excess power is exported to the grid as a priority. This setting is well suited for regions with high feed-in subsidies.



PV power generation is supplied to the load with priority. When the excess power is lower than the configured feed in power limit, it is exported to the grid. When the excess PV power exceeds the feed-in power limit, the battery is charged using the power above the limit, preventing energy waste.



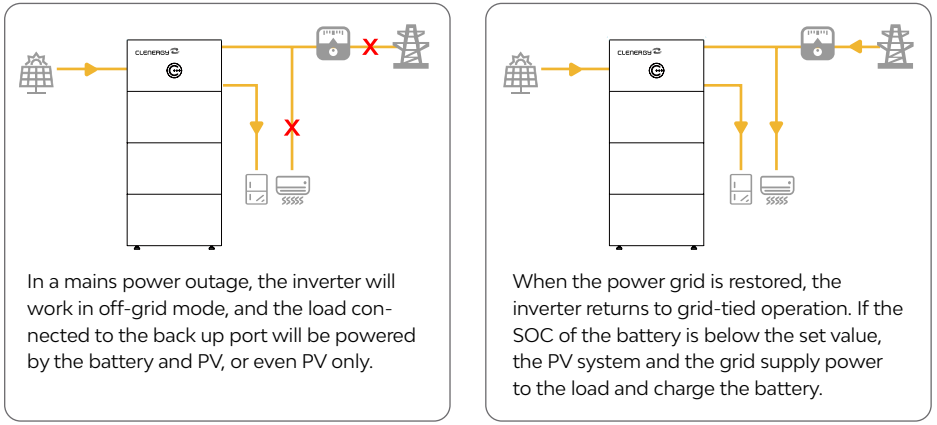
At night, when no PV power is available, the load is powered by the battery. If the battery power is insufficient, the load is supplied by the grid.

Figure 3-18 System work mode: feed in priority mode

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.

3.4.3 EPS Mode

In the event of a power outage, the CGH series hybrid inverter immediately switches to off-grid operation. This mode is recommended for use in areas with an unstable power grid.



In a mains power outage, the inverter will work in off-grid mode, and the load connected to the back up port will be powered by the battery and PV, or even PV only.

When the power grid is restored, the inverter returns to grid-tied operation. If the SOC of the battery is below the set value, the PV system and the grid supply power to the load and charge the battery.

Figure 3-19 System work mode: EPS mode

3.5 Features

The specific functional features described are subject to the actual product configuration.

3.5.1 AFCI(Optional)

The inverter incorporates an integrated AFCI (Arc-Fault Circuit Interrupter) protection device, which detects arc faults and rapidly disconnects the circuit to prevent electrical fires.

Common causes of arc faults include:

- Damaged connectors within the PV or system.
- Incorrectly connected or broken cables.
- Aged or deteriorated connectors and cables.

3.5.2 Load Control

The inverter includes a dry contact control port for connecting external contactors to switch loads on or off. This supports the control of domestic loads, heat pumps, and similar equipment.

Available load control modes are as follows:

- Time-based Control: Allows setting specific times to turn the load on or off. The load will operate automatically according to the scheduled periods.
- Switch Control: When set to ON, the load is energized; when set to OFF, the load is de-energized.
- Back-up Load Control: Utilizing the built-in relay dry contact port, this mode enables load switching via the relay. In off-grid operation, if the back-up terminal is detected to be overloaded while the battery state of charge (SOC) falls below the off-grid protection threshold, the load connected to the relay port can be automatically disconnected.

4 Product Check

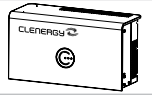
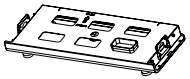
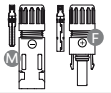
4.1 Pre-inspection Before Opening

Prior to unpacking the outer package, please check if the outer package is damaged, such as holes' cracks or other external damage and the product model. Do not unpack the product and contact your dealer as soon as possible if the package is abnormal or the product model does not meet the requirements.

4.2 Package Check List

After unpacking the outer package, please check if the parts inside are intact and have any obvious appearance damage. Please contact your dealer, if there is any missing part or damaged part. Remarks: See the packing list inside the packaging box for the quantity of the parts delivered inside the box.

4.2.1 Inverter Check List

Parts Name	Diagram	Quantity	Function
Inverter		1	Enable bidirectional power flow between DC (battery/PV) and AC (grid/loads) systems
Floor Mounting Base		1	Support all in one product bottom floor-mounted installation
Base Wall Fixing Bracket		2	Securely fix the floor-mount base to the wall
Wall Fixing Bracket		2	Securely fix the All-in-one Battery system to the wall to prevent tripping
Base Decorative Covers		1	Enclose the product base and providing basic protection
Inverter Decorative Covers		1	Enclose the inverter and provide basic protection.
PV Connectors		2	Sealed connectors for the safe and watertight interconnection of photovoltaic (PV) input cables

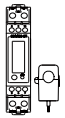
Parts Name	Diagram	Quantity	Function
Expansion Screw & Wall Plug Set		4	Threaded fasteners used to attach the wall brackets to the wall
M5*12 Screw		4	Threaded fasteners used to attach the decorative covers
OT Terminal		1	Copper terminal for connecting wires
Lift Handles		4	Ergonomic handles to safe and easy transport and position battery modules
AC Connector		2	Sealed connectors for the safe and watertight interconnection of AC grid and backup load port cables.
AC Connector Disassembling Tool		1	Specialized tool for safely releasing the locking mechanism of the AC connectors
PV Connector Disassembling Tool		1	Specialized tool for safely releasing the locking mechanism of the PV connectors
Meter Cable		1	Connect the internal system to an external smart meter
Smart Meter & CT		1	Metering device with current transformers (CTs) that measures home energy,consumption and grid interaction for optimized energy management
Datalogger		1	Local data collection and cloud platform data upload device
Cord End AC Terminal		3	Copper terminal for connecting wires to match with AC connectors.
Quick Installation Guide and Inspection Report		2	Documented verification confirming quality and performance checks and installation guide.

Table 4-1 Inverter package contents

4.2.2 Battery Checklist

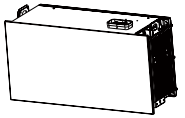
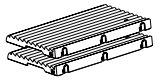
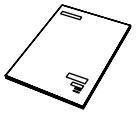
Parts Name	Diagram	Quantity	Function
Battery Module		1	The core energy storage component that stores DC electrical energy
Module Decorative Covers		2	Enclose the battery module and providing basic protection
M5*12 Screw		4	Threaded fasteners used to attach the decorative covers
Inspection Report		1	Documented verification confirming quality and performance checks

Table 4-2 Battery module package contents

4.2.3 Wall-mounted Installation Checklist (Optional)

Parts Name	Diagram	Quantity	Function
Wall Mounting Bracket L		1	Support all in one product wall-mounted installation
Wall Mounting Bracket R		1	
Wall Mounting Bracket Base		1	
Expansion Screw & Wall Plug Set		4	Threaded fasteners used to attach the wall brackets to the wall
M6*16 Screw		4	Threaded fasteners used to attach the wall mounting bracket base

Table 4-3 Wall-mounted installation package contents (optional)

4.2.4 Gateway Checklist(Optional)

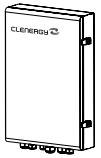
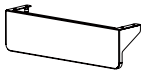
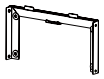
Parts Name	Diagram	Quantity	Function
Gateway		1	Main enclosure structure of the Gateway
Bottom Decorative Cover		1	Conceals and protects wiring ports on the lower section
Wall Mounting Bracket		1	Enables secure wall-mounted installation of the Gateway
MEN Busbar		1	Optional busbar fo connecting Neutral (N) and Ground (PE) bars
Datalogger		1	Enables data acquisition and wireless communication via Wi-Fi
Quick Installation Guide		1	Provides product installation instructions and guidelines
M5*12 Screw		6	Fasteners for assembling the Gateway to the wall mounting bracket
Washer		4	Fasteners for securing the wall bracket to the wall surface
Expansion Screw & Wall Plug Set		4	Threaded fasteners used to attach the wall brackets to the wall

Table 4-4 Gateway package contents (optional)

5 Installation

5.1 Installation Requirements

5.1.1 Installation Location Requirements

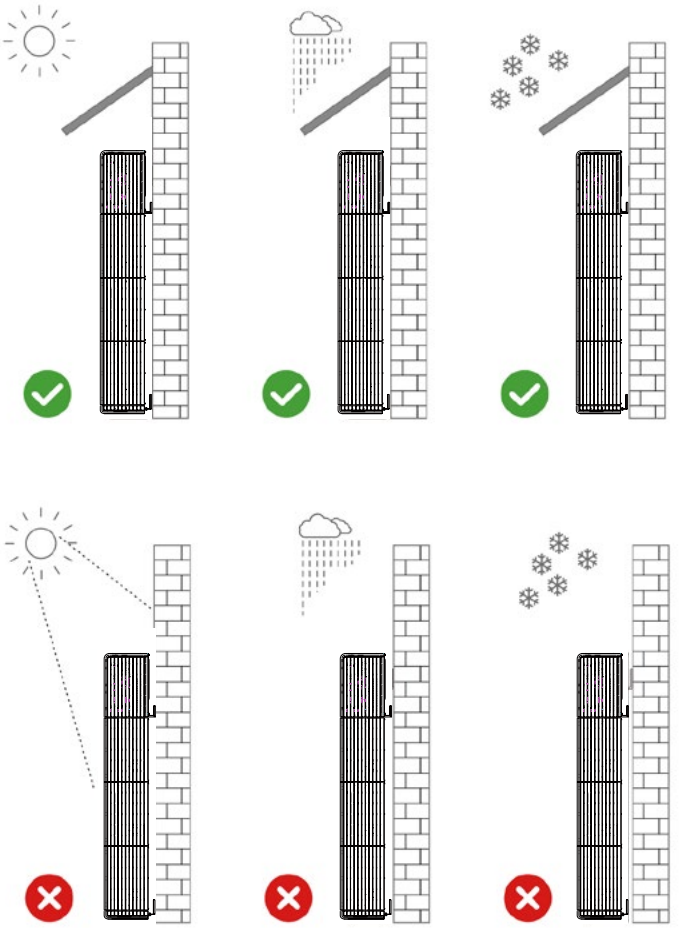


Figure 5-1 Recommend installation location

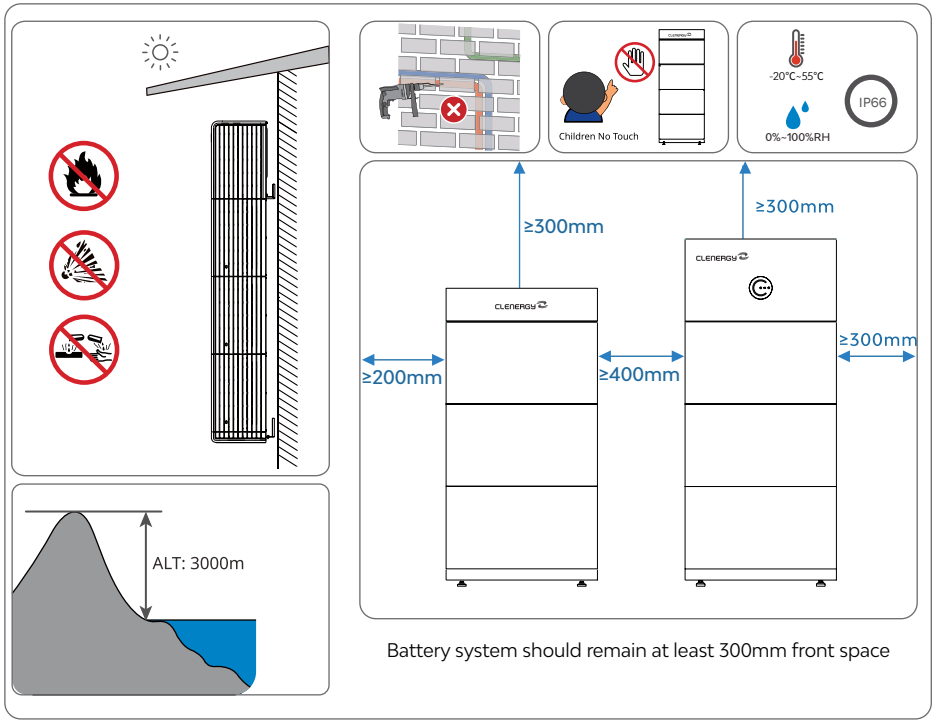
Note

Working temperature plays a key role in influencing the equipment's running and service life of the equipment.
Please install the equipment in an environment that meets or exceeds the conditions outlined above.

Warning

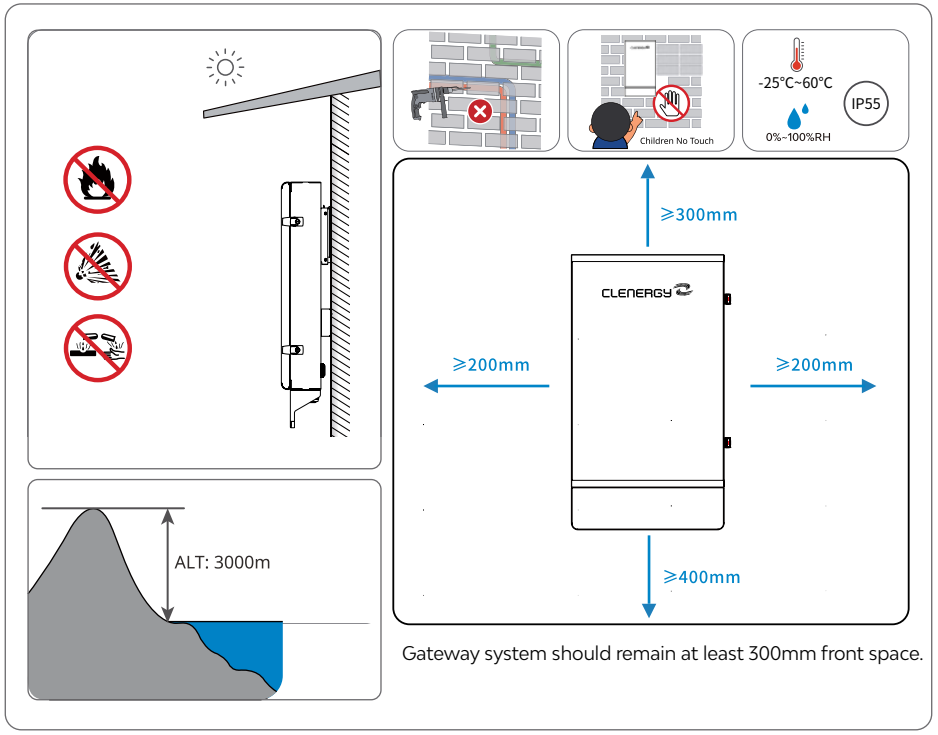
- For floor or wall-mounted installation, ensure that the load-bearing capacity meets the requirements (one battery module weights 50kg).
- A force of 200N is required to install the Inverter unit to ensure that there is no obvious gap between the Inverter unit and the battery module.

5.1.2 Installation Space Requirements



Battery system should remain at least 300mm front space

Figure 5-2 System installation requirement



Gateway system should remain at least 300mm front space.

Figure 5-3 Gateway installation requirement

5.1.3 Installation Tools Requirements

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

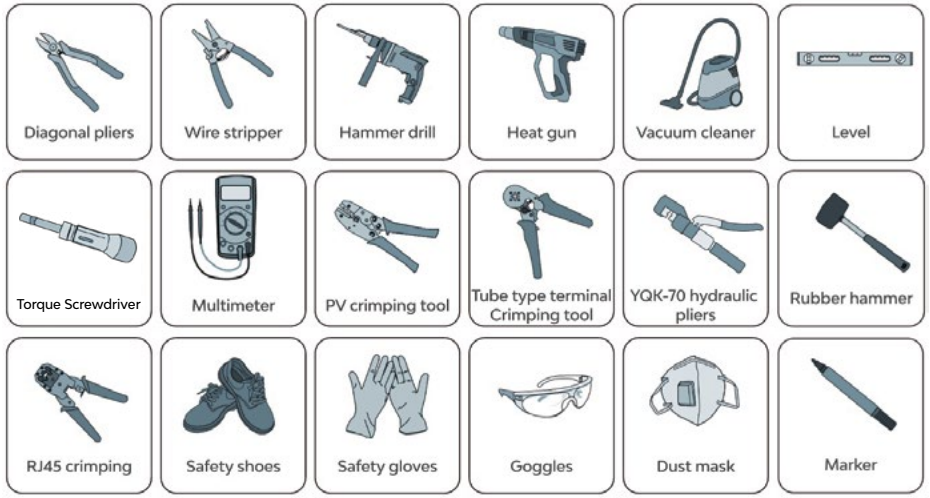


Figure 5-4 Installation tools requirement

5.2 Pre-Installation Handling and Transportation

Warning

All operations including transportation, repositioning, and installation must comply with the laws and regulations of the country or region where the battery systems are installed. Prior to installation, relocate the equipment to the designated site. Adhere to the following instructions to prevent personal injury or equipment damage.

- Assess the weight of the equipment before moving it. Ensure an adequate number of personals are assigned for the task to avoid injury.
- Wear appropriate safety gloves during handling to prevent personal injury.
- Maintain proper balance while moving the equipment to prevent it from falling.
- The battery module may be transported to the installation site using a crane or forklift.
- When hoisting equipment, use flexible slings.

5.3 Installation Procedures

Floor-mounted Installation

Step 1
Fold the positioning cardboard as needed and place it 35-45mm away from the wall. Mark the screw hole positions on the floor, then attach the cardboard template to the wall and mark the screw hole positions. Drill out the marked holes with a drill bit.
PS: Adjust the cardboard template placement based on the number of battery modules being installed

Step 2
Loosen the two side fixing screws, detach the battery bottom bracket from the inverter, and remove the battery floor mounting base.

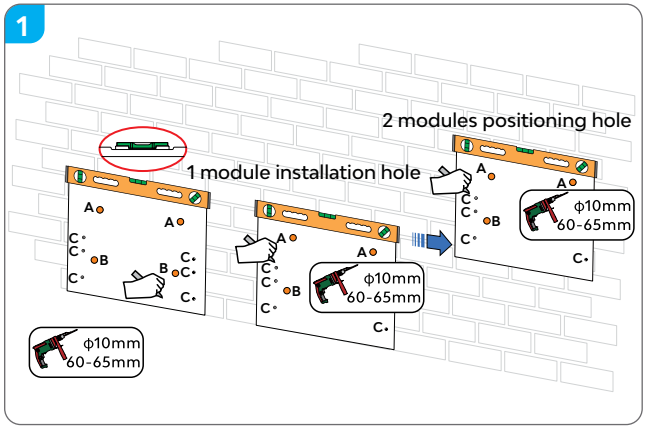
Step 3
Clean the floor, place the battery floor mounting base in position, and rotate the adjustable leveling nuts. Use a spirit level to adjust the bracket, then secure it to the floor with expansion bolts.

Step 4
To install the first battery module, use the lift handles to carry the battery module and place it on the floor-mount base, fix the screws on both sides, and remove the lift handles on both sides.

Step 5
Follow the steps above to install the rest of the battery module separately.

Step 6
Install the L-shaped mounting brackets.

Step 7
Install the inverter, tighten the screws on both sides.



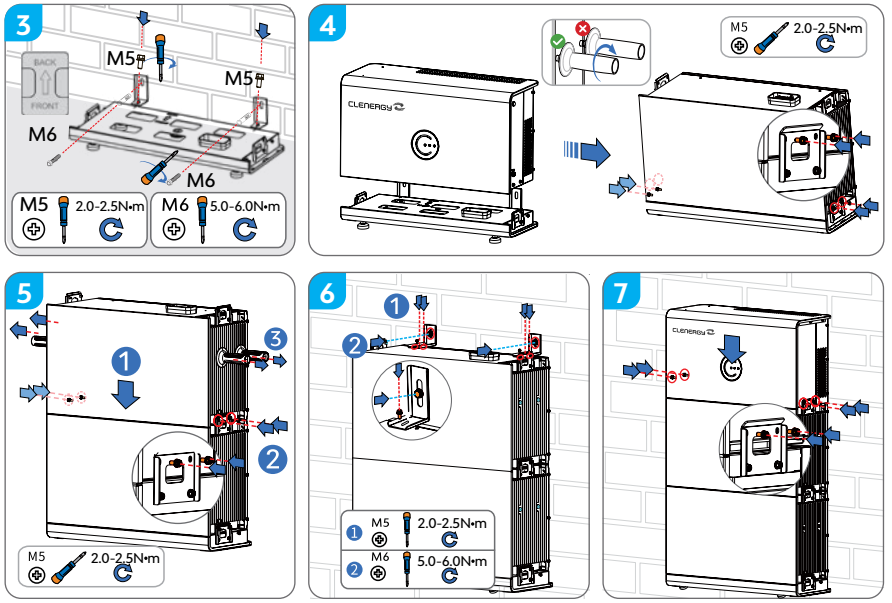


Figure 5-5 Floor fixed wall-mounted installation procedures

Wall-mounted Installation

Step 1

Attach the positioning cardboard to the appropriate position on the wall, use a leveling tool to ensure it is even, and mark the screw hole positions on the wall. Then, drill out the marked holes with a driller.

Step 2

Clean the wall surface, then secure the wall mounting bracket to the wall using bolts.

Step 3

Loosen the two side fixing screws, detach the battery bottom bracket from the inverter, and remove the battery floor mounting base.

Step 4

Place the bracket onto the wall mounting bracket base, rotate the adjustable the position to align the bracket, and then install the fixing screws.

Step 5

To install the first battery module, use the lift handles to carry the battery module and place it on the floor mounting bracket, fix the screws on both sides, and remove the lift handles on both sides.

Step 6

Follow the steps above to install the rest of the battery packs separately.

Step 7

After installing all battery modules and mounting parts, install the inverter and fix the screws on both sides.

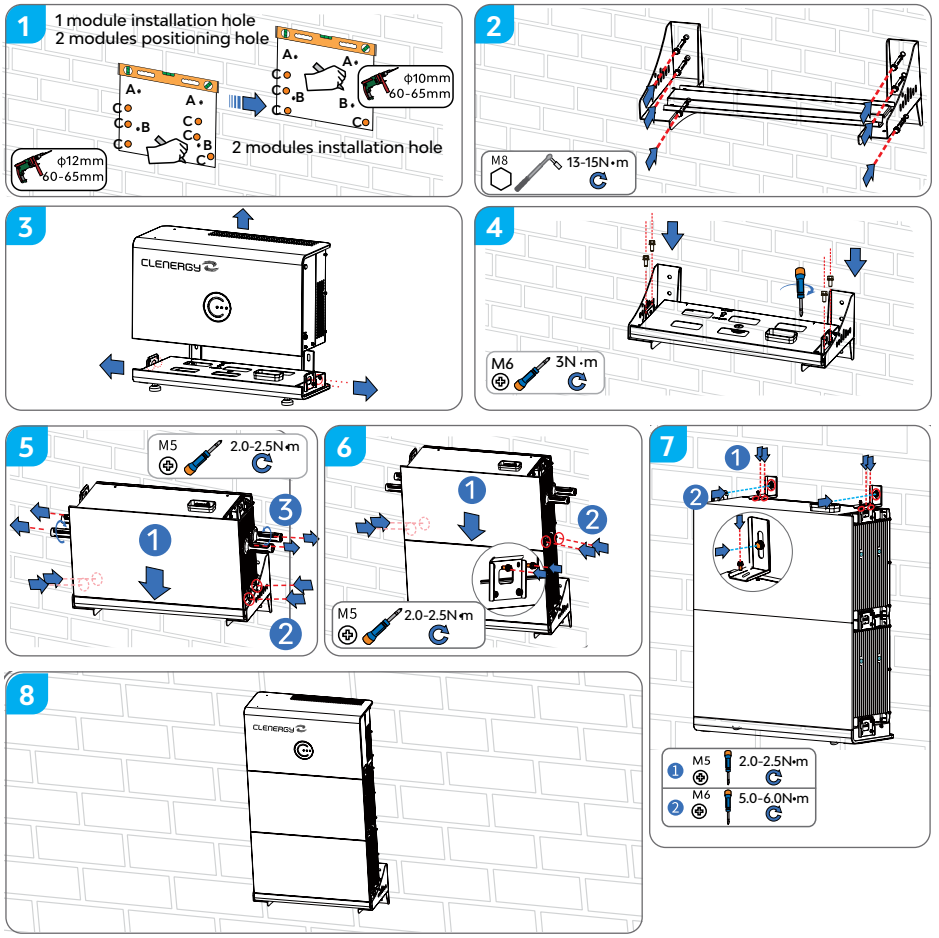


Figure 5-6 Wall-mounted installation procedures

Warning

A maximum of two battery modules can be installed on a solid wall for wall mouting.

Note

1. The depth of the holes should be equal to or greater than the length of the wall plug.
2. Do not discard this cardboard until installation is completed.

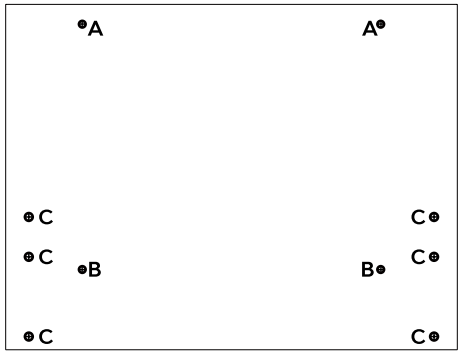


Figure 5-7 Positioning Cardboard

How to Sure Positioning Cardboard:

1. Unfold the positioning cardboard and place it against the installation wall.
2. Observe the contour lines and adjust the unfolded cardboard to the appropriate installation position
3. Drill holes in the wall according to the hole positions on the cardboard.

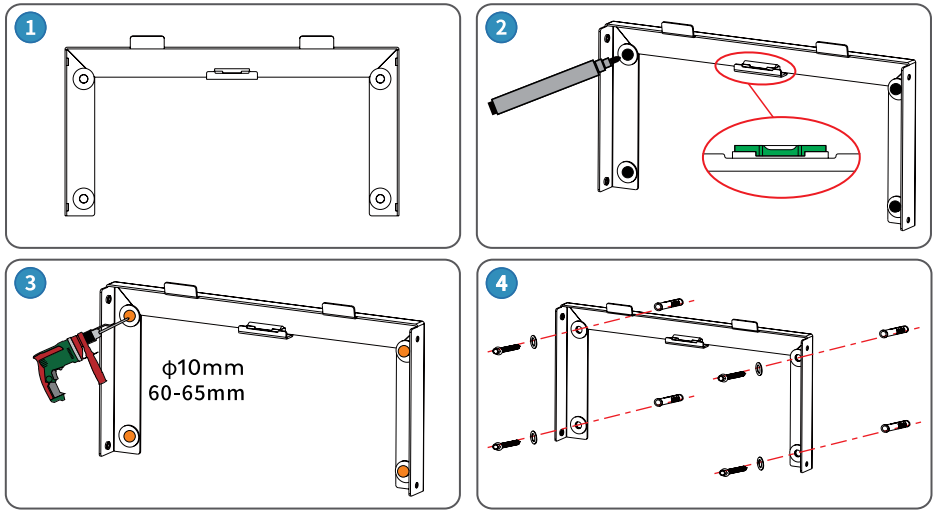
Floor Instalation:

A) are the mounting holes for the battery pack.(Depth 70mm,ø10mm)
B) are the mounting holes of base on the wall.(used when the base cannot be fixed to the ground)
Or positioning holes for battery packstacking.(Depth 70mm,ø10mm)

Wall-mounted Installation:

C) are the wall bracket mounting holes.(Depth 70mm,ø12mm)

Gateway Installation (Optional)



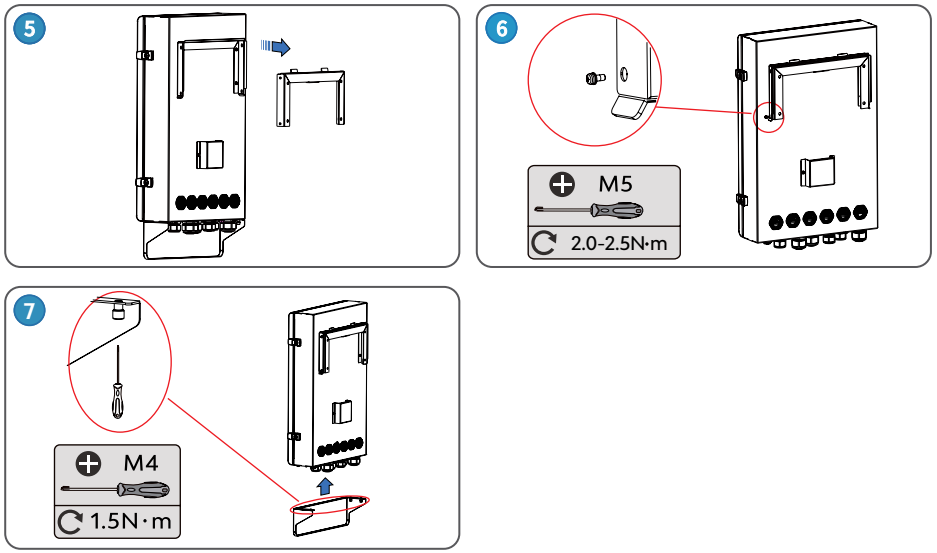


Figure 5-8 Gateway installation procedures

Step 1
Using the leveler from the wall mounting bracket, position the bracket against the wall and mark the drilling holes with a marker pen.

Step 2
Using a Ø10 mm drill bit, drill Ø10 mm holes to a depth of 55–60 mm at the marked positions on the wall.

Step 3
Using the provided expansion tubes, self-tapping screws, and washers in the accessory's parts, securely fasten the bracket to the wall.

Step 4
Hang the Gateway onto the installed bracket.

Step 5
Using a Phillips screwdriver, insert and tighten the provided M5 combination screws into both sides of the bracket.

Step 6
After all cables are connected well, pushed the bottom cover and secure it with a Phillips screwdriver at the bottom of the Gateway.

6 System Wirings

6.1 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 regions where N and PE are connected together in the main panel, such as Australia, South Africa, New Zealand, etc.

Neutral continuity between grid-connected and backup circuits shall be established externally in accordance with local electrical regulations, typically within the main distribution panel as shown in the wiring diagrams below.

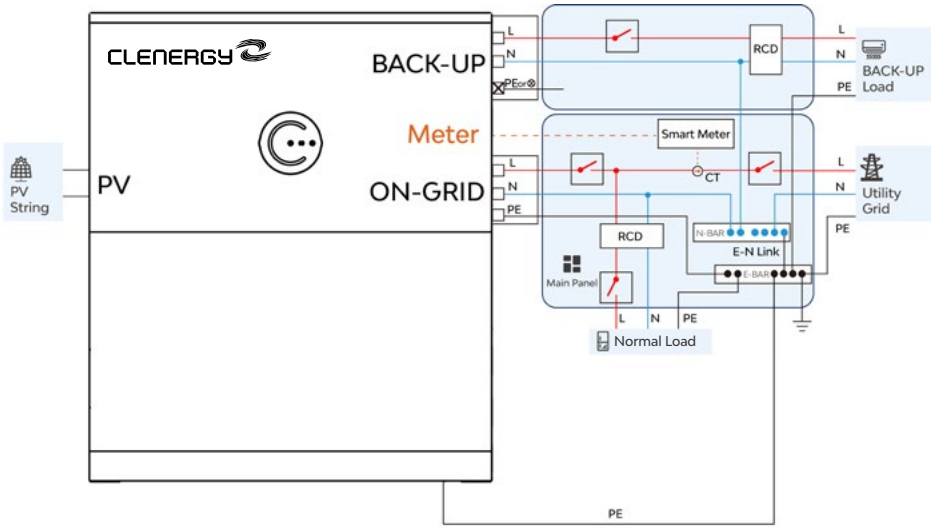


Figure 6-1 Electrical Topology 1

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.

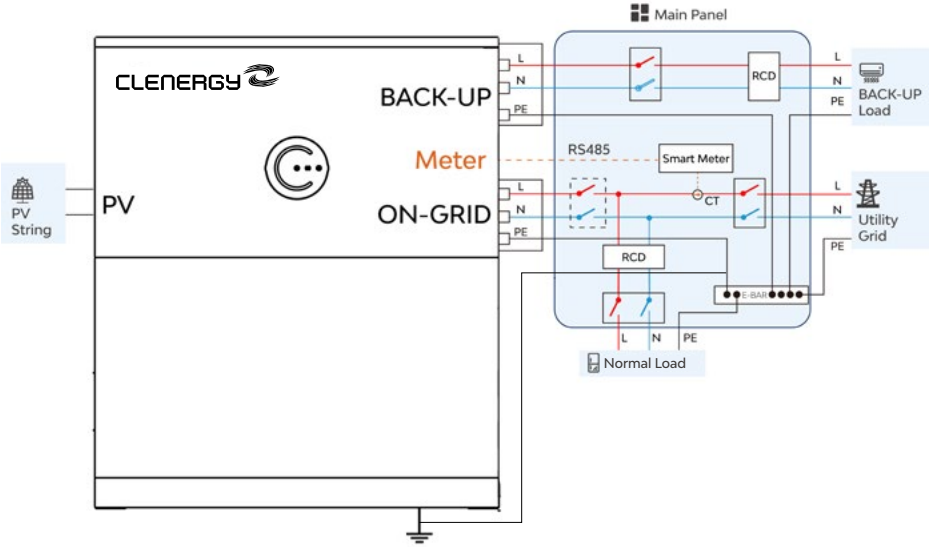


Figure 6-2 Electrical Topology 2

Note

Make sure the BACK-UP port's ground connection is correct and securely tightened; otherwise, EPS mode may not operate normally during a power outage

6.2 Cable Preparation

NO	Cable Type	Recommended Specification	Self-prepared
1	Grounding Cables	• Single-core outdoor copper cable • Conductor cross-sectional area: recommend. 4~6mm²	√
2	PV DC Cable	• Industry-standard outdoor photovoltaic cable • Conductor cross-sectional area: recommend. 4~6mm²	√
3	AC Cable	• Inverter AC input/output cable (BACK UP/ON GRID): • ON GRID conductor cross-sectional area: recommend 10mm² (inverter),16mm²(gateway) • BACKUP conductor cross-sectional area: recommend 6mm² (inverter),16mm²(gateway)	√
4	Signal Cable	• RJ45 connector • CAT 5E/+ shielded network cable • Signal cable type: Meter RS485, DI/DO etc.	√
5	Inverter Parallel Signal Cable	• RJ45 connector • CAT 5E/6E: max. 5m • CAT 7E: max. 10m	√
6	Battery Expansion DC Cable(Optional)	Only for CGH 3.6-6.0kW models: • Industry-standard outdoor photovoltaic cable • Conductor cross-sectional area: recommend. 8~10mm²	√

Table 6-1 Cable prepartion

Selecting OCPD

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	Input current	Recommended CB rating	Maximum CB rating
CGH S3.6H	220/230/240V	32.7a.c.A	40.0A	50A
CGH S4.6H	220/230/240V	41.8a.c.A	50.0A	63A
CGH S5.0H	220/230/240V	45.5a.c.A	50.0A	63A
CGH S6.0H	220/230/240V	50a.c.A	63A	63A

Table 6-2 OCPD models selection

6.2.1 Connecting PE Cable

Mounting of Earthing Lead

Danger

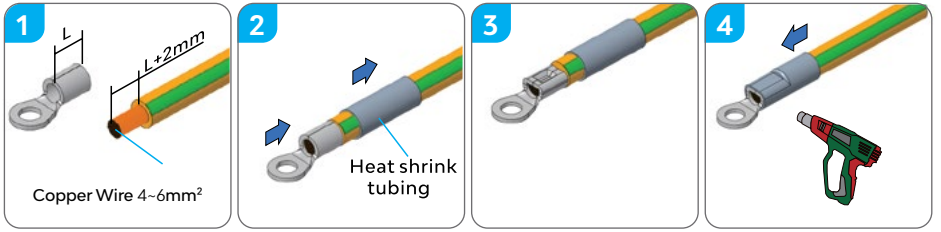
- Please confirm the earthing lead has been connected reliably. Electric shock may happen if the lead is not connected or becomes loose.

Attention

- It is suggested to apply silica gel or paint onto the external side of earthing terminal after the earthing lead is mounted.

Step 1

Crimp an OT terminal.



Step 2

Use a Philips screwdriver to clockwise rotate 2.5N·m tighten the PE cable in the hole next to communication port with a M5 screw.

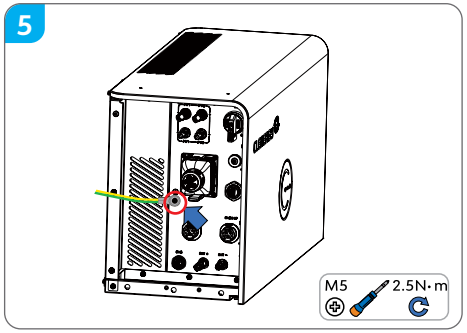


Figure 6-3 PE cable connecting procedures

6.2.2 Connecting the PV Cable

Warning

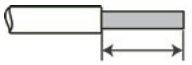
Use only approved DC cable for the PV system.

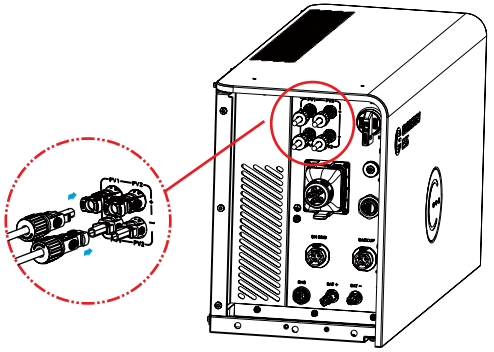
Caution

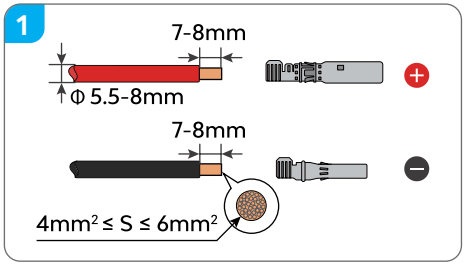
- Before connecting the PV Array, ensure that the open circuit voltage of the PV array is within the limit of the inverter's PV input voltage range.
- Before connecting the PV array, verify the output polarity: connect the PV positive conductor to the PV+ port and the PV negative conductor to the PV- port.

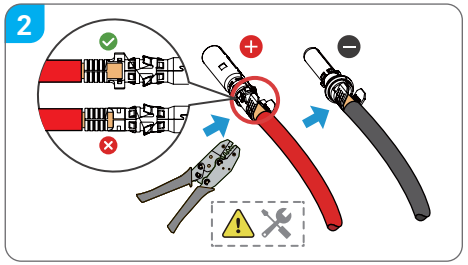
Select a suitable DC cable and strip the insulation by 7+0.5mm.

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









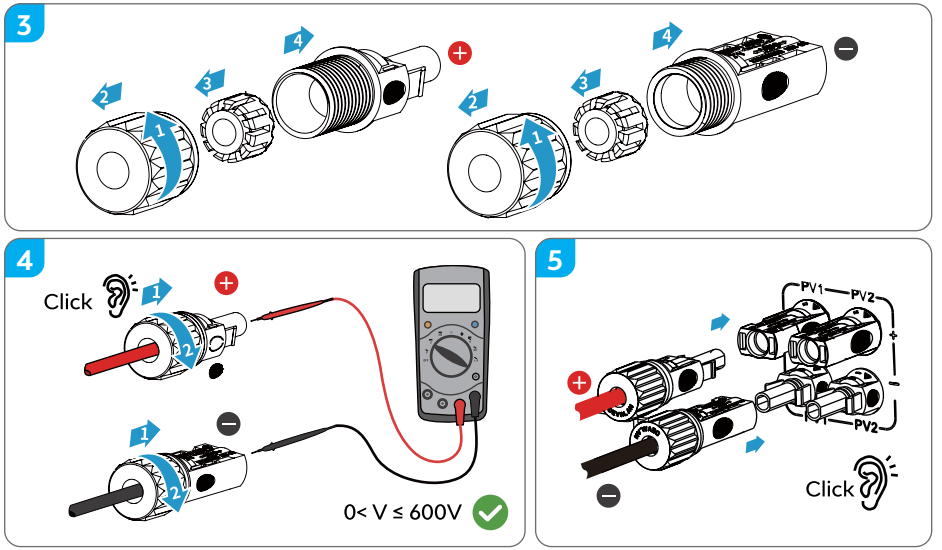


Figure 6-4 PV cable connecting procedures

Step 1
Strip the DC cable conductors to approximately 8mm of exposure.

Step 2
Connect the cable to the DC terminal and crimp it with a PV crimping tool.

Step 3
Insert the crimped cable firmly into the DC terminal, then insert the waterproof rubber ring into the DC terminal and tighten the nut.

Step 4
Verify that the polarity of the PV DC input cable is correct using a multimeter.

Step 5
Connect the wired DC terminal to the inverter and ensure the connector is seated properly by listening for a slight 'click sound.

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 red alarm indicator will flash, and the alarm code "PViSO-PRO 01 " or "PVISO-PRO 02 "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 ano monitoring device to comply with AS/NZS 5139.

6.2.3 Connecting AC Cable

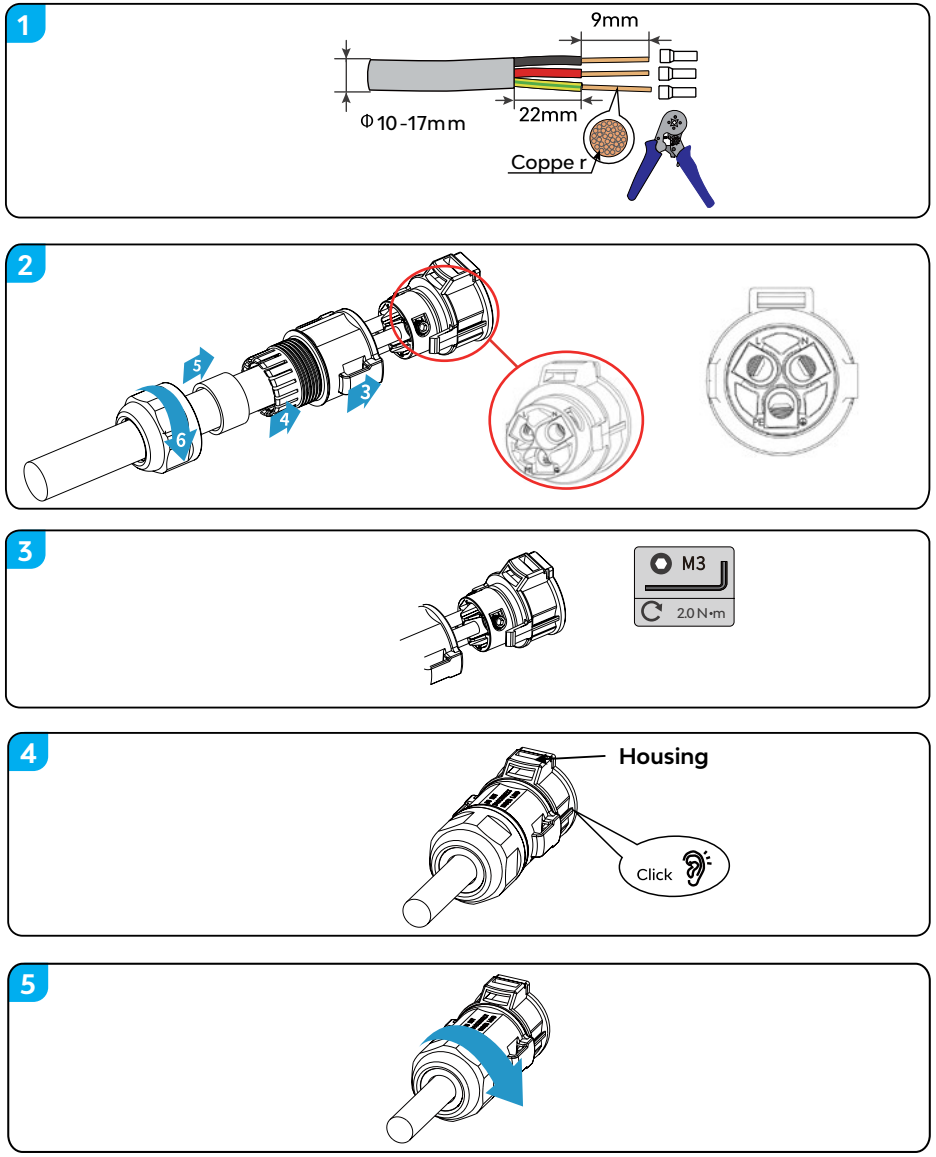


Figure 6-5 AC cable connecting procedures

Step 1
Strip the AC cable conductors to approximately 9mm of exposure.

Step 2
Dissassemble the provided AC connector and assemble the connector components onto the cable.

Step 3
Bootlace crimps (ferrules) may be required to prevent the escape of individual strands. Crimp the wires and tighten the screws with a torque of 2.0N.m.

Step 4
Push housing into body.

Step 5
Insert seal and clamp finger into socket, then tighten the nut to a torque of 4 + 0.5N.m.

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-BACK-UP 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.

6.2.4 Connecitng Meter Cable

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.

Meter Port Connection

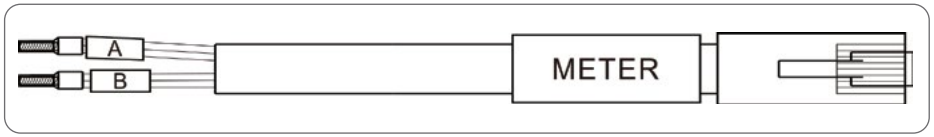
1. Retrieve the pre-made meter cable from the package
2. Connect the Rj45 end to the inverter's Meter port
3. Connect the loose RS485 A&B pins to the meter RS485 terminal (cable length: 5 meters)

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 inverter.

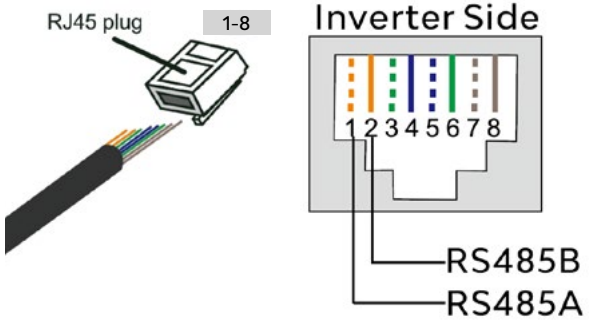
If you extend or fabricate a new meter communications cable, use shielded CAT6 cable and terminate the drain wire at one end only.

Failure to use a shielded cable and/or correctly terminate the shield may cause communication dropouts due to electromagnetic interference (EMI), resulting in loss of signal integrity.



Note

'Meter Port pin definition
(EIA/TIA 568B)
RS485 A on Pin 1
RS485 B on Pin 2



Pin	Definition
9	RS485 B-
10	RS485 A+

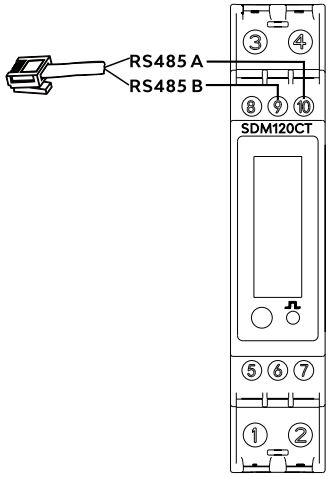
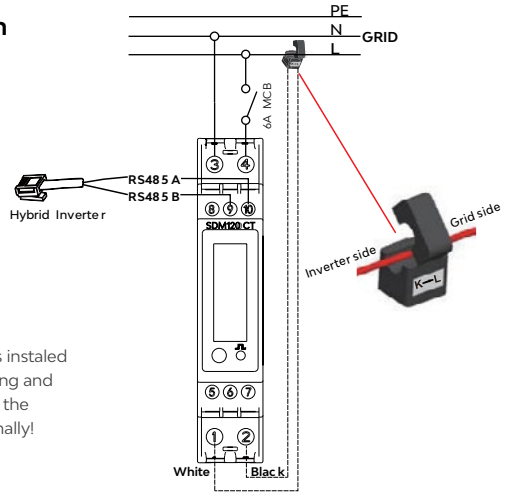


Figure 6-6 Communication cable connection to meter

Single-phase Meter Installation



NOTE:
Please make sure that the CT is instaled at the point of common coupling and the direction is right,otherwise the system will not operation normally!

Figure 6-7 Power supply and CT connection to Meter

Note

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

6.2.5 Connecting Communication Port

No.	Parts	Indicate
COM1	Ethernet communication port #1	/
COM2	Ethernet communication port #2	
GW (Reserve)	/	1: 485B_GW_O 2: 485A_GW_O 3: CT- 4:CT2- 5: CT2+ 6: CT+ 7: DSP_GW_485B 8: DSP_GW_485A
EMS_P_A	COM port used for inverter paralleliz-ing connection	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
EMS_P_B		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
DRM	To realize Demand Response or Logic Interface function. It may be required in UK and Australia (optional)	1: DRMS1/5 2: DRMS2/6 3: DRMS3/7 4: DRMS4/8 5: DRM_POWER 6: COM Load 7: NC 8: NC
DO/DI	Dry contact port (optional)	1: DI_I+ 2: DI_1- 3: Midpoint 4: Midpoint 5: Normally-close 6: Normally-close 7: Normally-open 8: Normally-open

Table 6-3 Communication port description

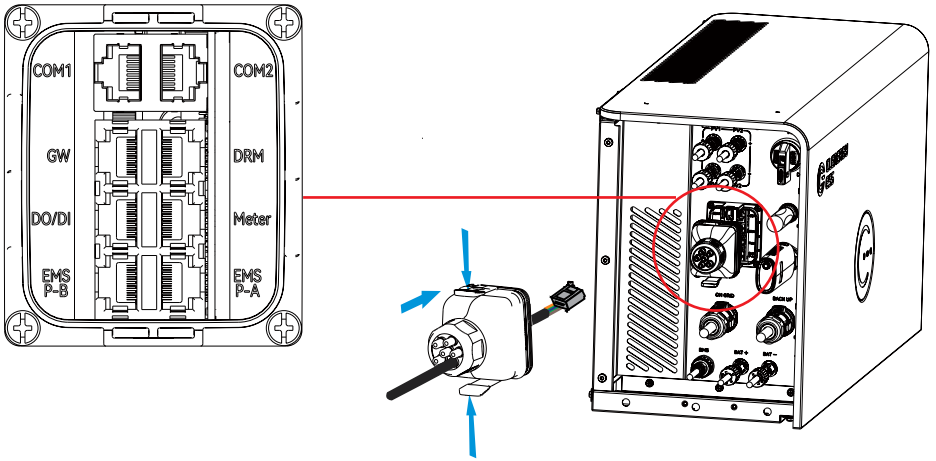


Figure 6-8 Communication port installation

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 plugs inside the cable gland based on the number of cables, keeping the unused holes sealed with watertight plugs.

4. Lead the cables into the holes in the cable gland.

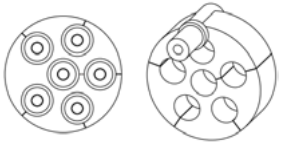
5. Crimp the RJ45 connectors onto the cables according to the pin definitions described in the following sections and connect them to the ports accordingly.

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 communication cables into the holes through the side opening.



DRED Control Function (AU and NZ only)

DRED (Demand Response Enabling Device) provides the interface for Demand Response Mode (DRM) functions required under AS/NZS 4777.2:2020 and AS/NZS 4777.2:2024. This function applies to inverters that comply with these standards. An RJ45 port is provided for the DRM connection.

Pin	Assignment	Pin	Assignment
1	DRMS 1/5	5	DRM_POWER
2	DRMS 2/6	6	COM Load
3	DRMS 3/7	7	NC
4	DRMS 4/8	8	NC

Table 6-4 DRED control port description

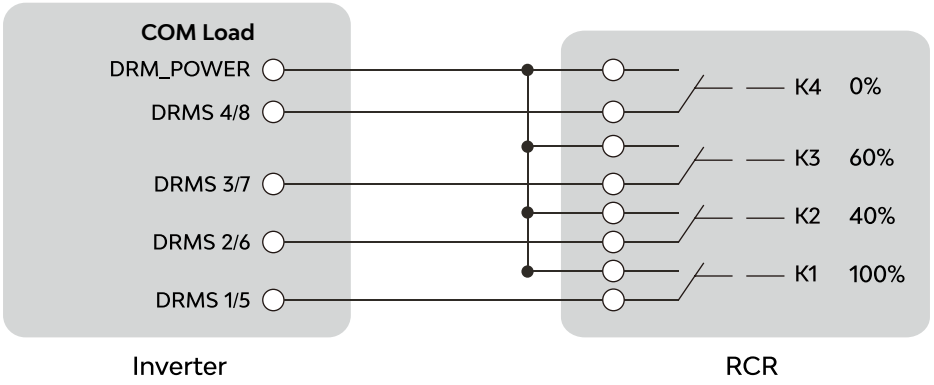


Figure 6-9 DRED control circuit diagram

6.2.6 Connecting Datalogger

The inverter unit can be remotely monitored via Wi-Fi or 4G. The USB port at the side ports of the inverter unit connects to the supplied Clenergy Data logger for remote monitoring on the Clenergise platform.

A dust cover is provided in the inverter unit 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.

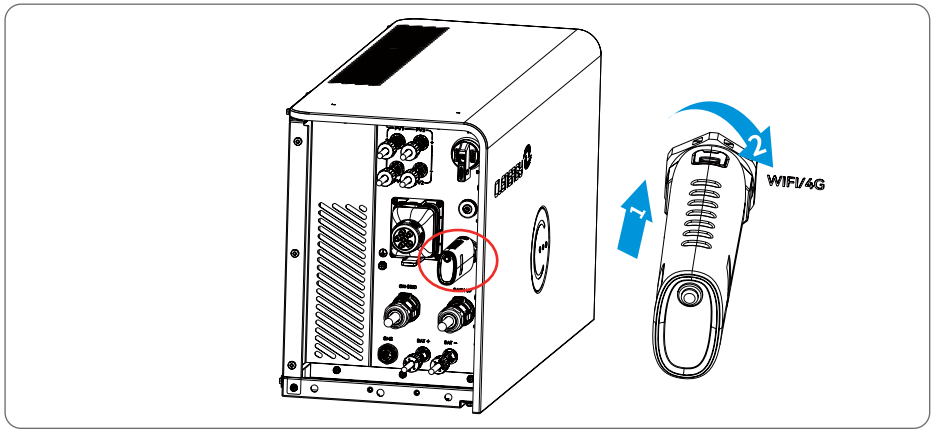


Figure 6-10 Datalogger connecting procedures

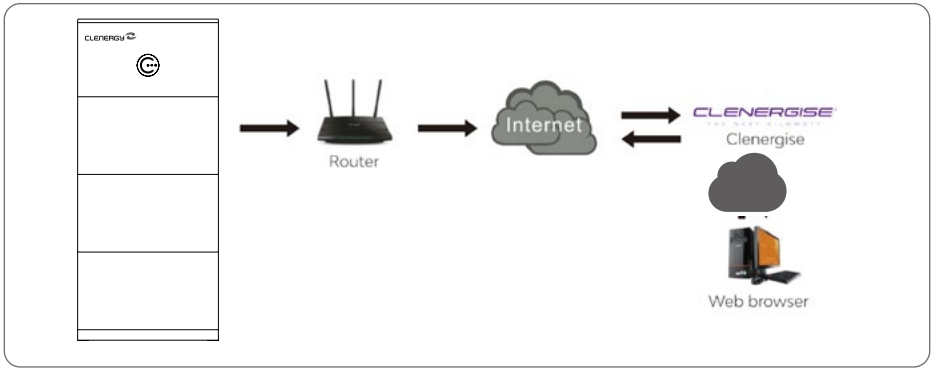
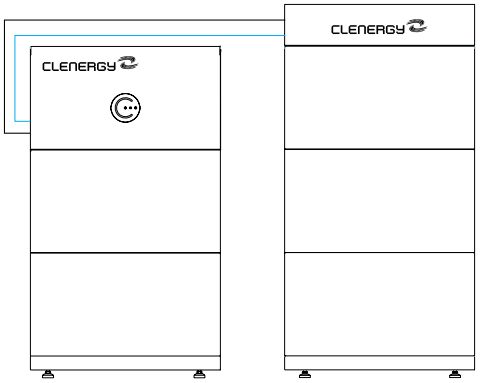
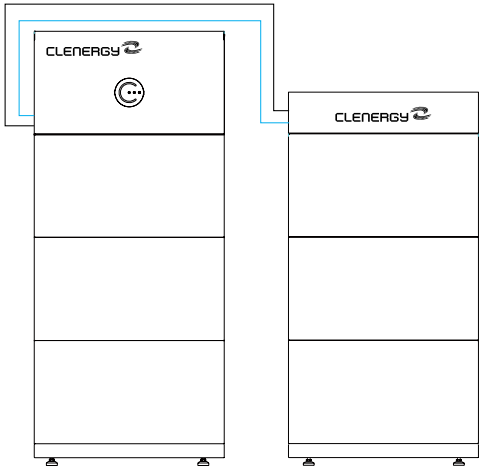


Figure 6-11 Remote monitoring connection topology

6.3 Expansion Battery Cable Connection (Optional)



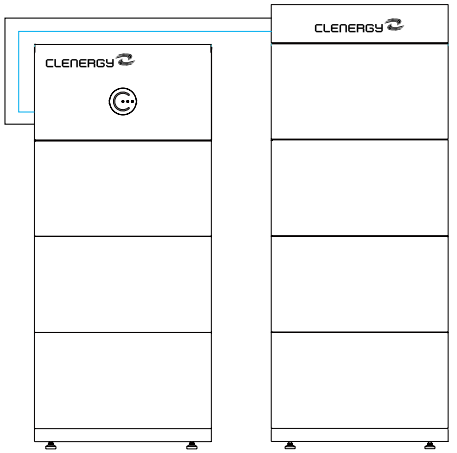
30kWh System



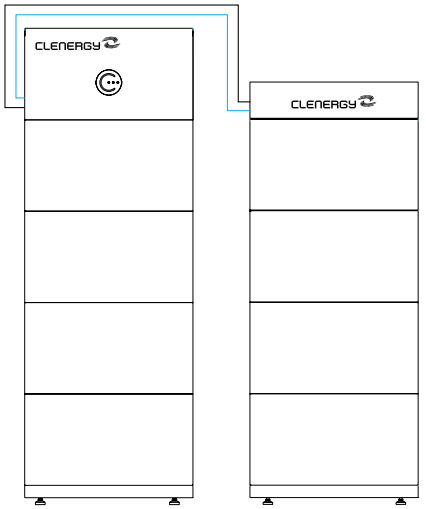
36kWh System

The DC power cable should be less than 3m.

DC Power Cable
Comm. Cable



42kWh System

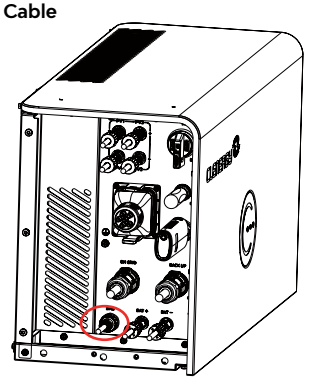


48kWh System

The DC power cable should be less than 3m.

DC Power Cable
Comm. Cable

6.3.1 Expansion Battery Signal Cable



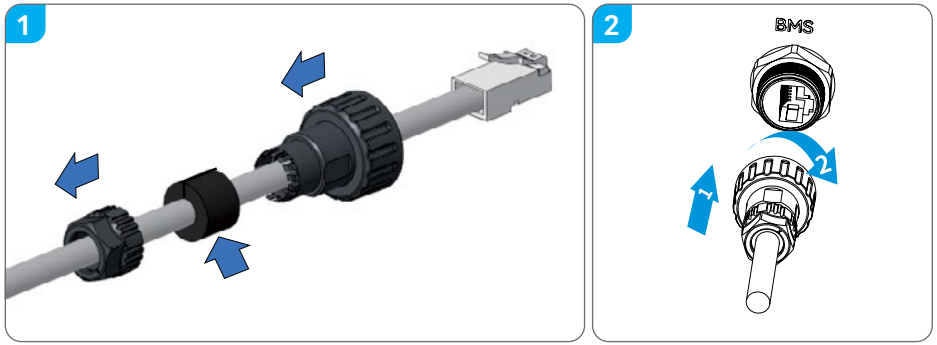


Figure 6-12 Expansion battery signal cable connecting procedures

Step 1

Retrieve the pre-made signal cable from the inverter package. Unscrew cap to disassemble, then remove the waterproof rubber ring. Pass the signal cable through the nut and waterproof rubber ring.

Step 2

Insert the signal cable firmly into the BMS terminal, then insert the waterproof rubber ring into the signal terminal and tighten the nut.

Note

If you extend or fabricate a new meter communications cable, use shielded CAT6 cable and terminate the drain wire at one end only.

Failure to use a shielded cable and/or correctly terminate the shield may cause communication dropouts due to electromagnetic interference (EMI), resulting in loss of signal integrity.

6.3.2 Expansion Battery Power Cable

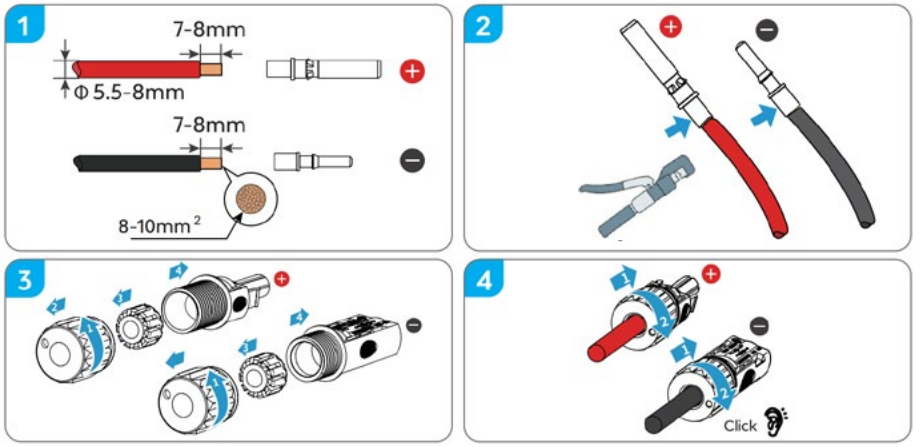


Figure 6-13 Expansion battery power cable connecting procedures

Step 1
Strip the DC cable conductors to approximately 8mm of exposure.

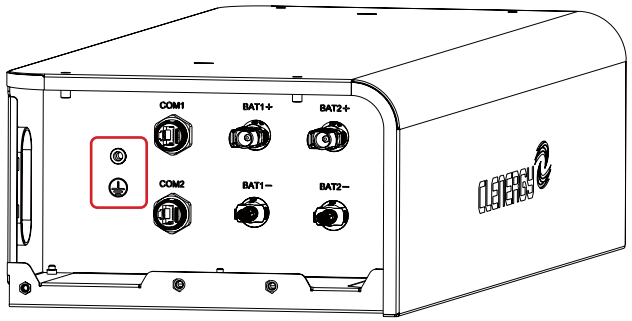
Step 2
Connect the cable to the DC connector and crimp it with a hydraulic crimping tool.

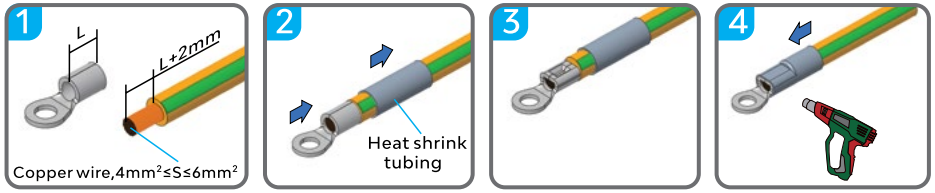
Step 3
Insert the crimped cable firmly into the DC connector, then insert the waterproof rubber ring into the DC connector and tighten the nut.

Step 4
Connect the wired DC terminals to the inverter BAT+ and BAT- ports, ensuring correct polarity. Fully insert each connector until it seats securely, and confirm engagement by listening for a slight "click" sound.

6.4 Expansion Battery BDU Cable Connection(Optional)

6.4.1 Expansion Battery BDU Grounding Cable





Step 1
Crimp an OT terminal.

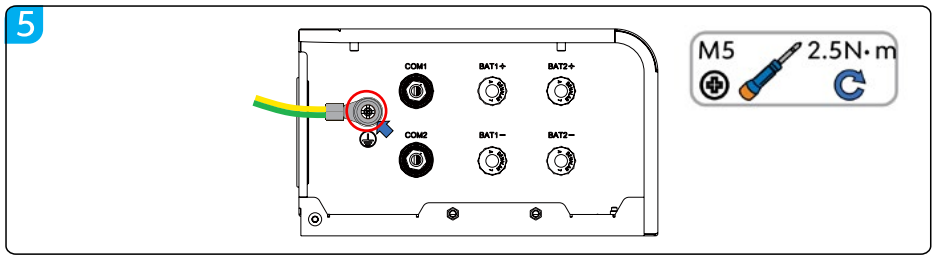
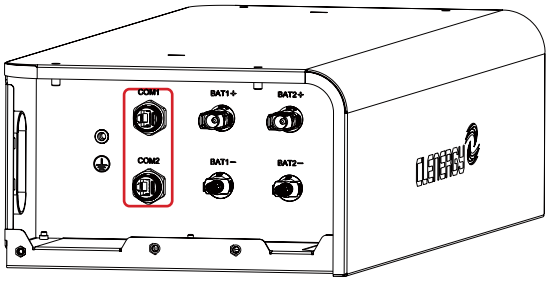


Figure 6-16 Expansion battery BDU grounding cable connecting procedures

Step 2
Connect the PE cable to the Expansion Battery BDU grounding point.

6.4.2 Expansion Battery BDU Signal Cable



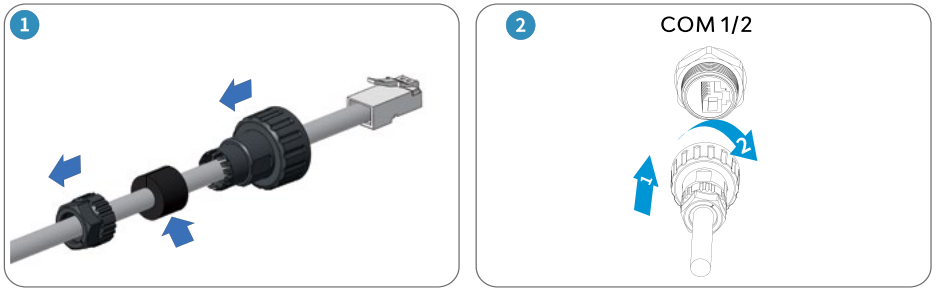
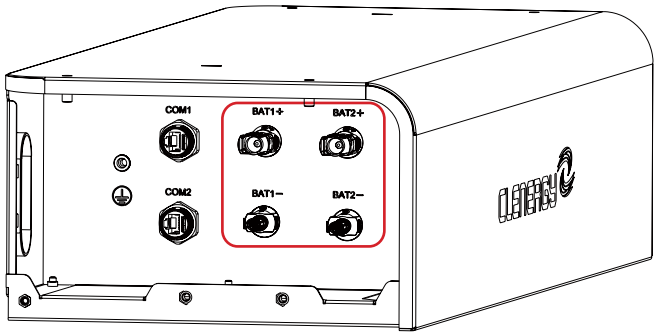


Figure 6-14 Expansion battery BDU signal cable connecting procedures

Step 1
Retrieve the pre-made signal cable from the inverter package. Unscrew cap to disassemble, then remove the waterproof rubber ring. Pass the signal cable through the nut and waterproof rubber ring.

Step 2
Insert the signal cable firmly into the COM terminal, then insert the waterproof rubber ring into the signal terminal and tighten the nut.

6.4.3 Expansion Battery BDU Power Cable



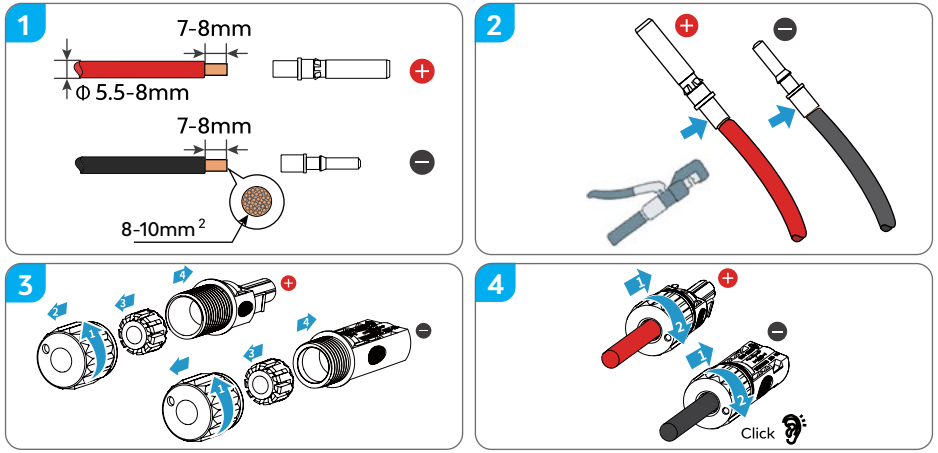


Figure 6-15 Expansion battery BDU power cable connecting procedures

Step 1
Strip the DC cable conductors to approximately 8mm of exposure.

Step 2
Connect the cable to the DC connector and crimp it with a hydraulic crimping tool.

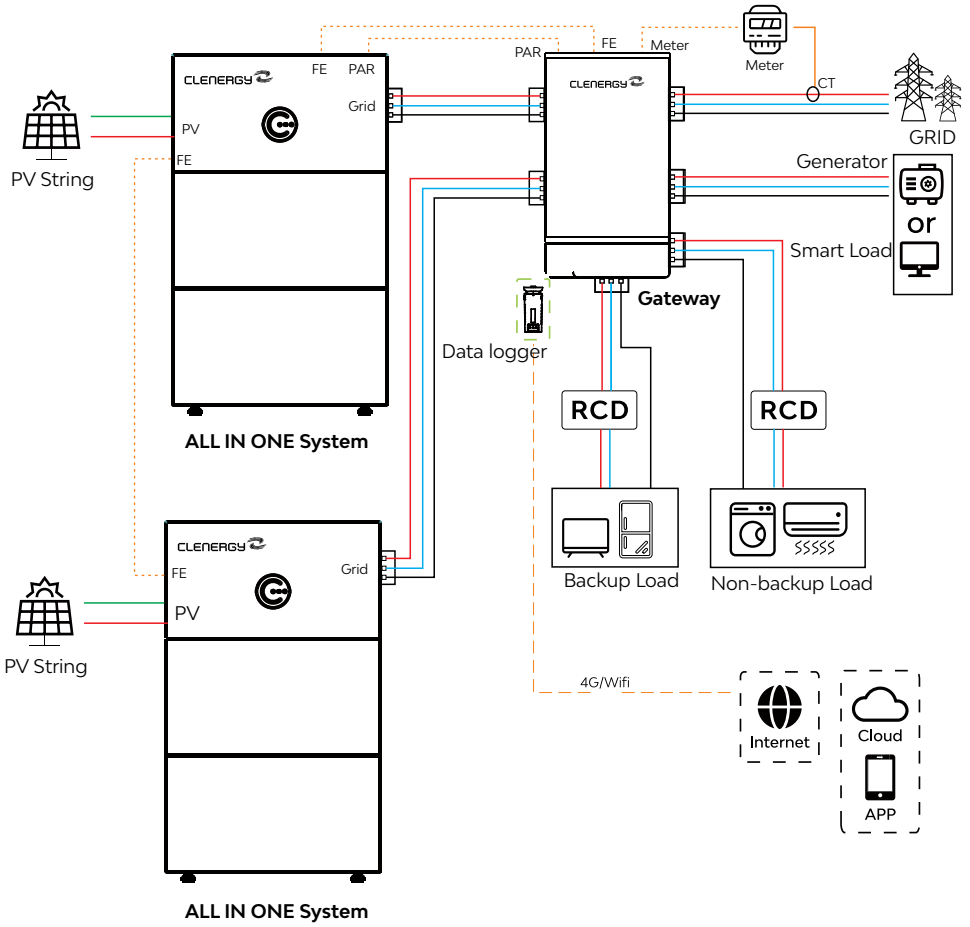
Step 3
Insert the crimped cable firmly into the DC connector, then insert the waterproof rubber ring into the DC terminal and tighten the nut.

Step 4
Connect the wired DC terminals to the BDU BAT+ and BAT− ports, ensuring correct polarity. Fully insert each connector until it seats securely, and confirm engagement by listening for a slight “click” sound.

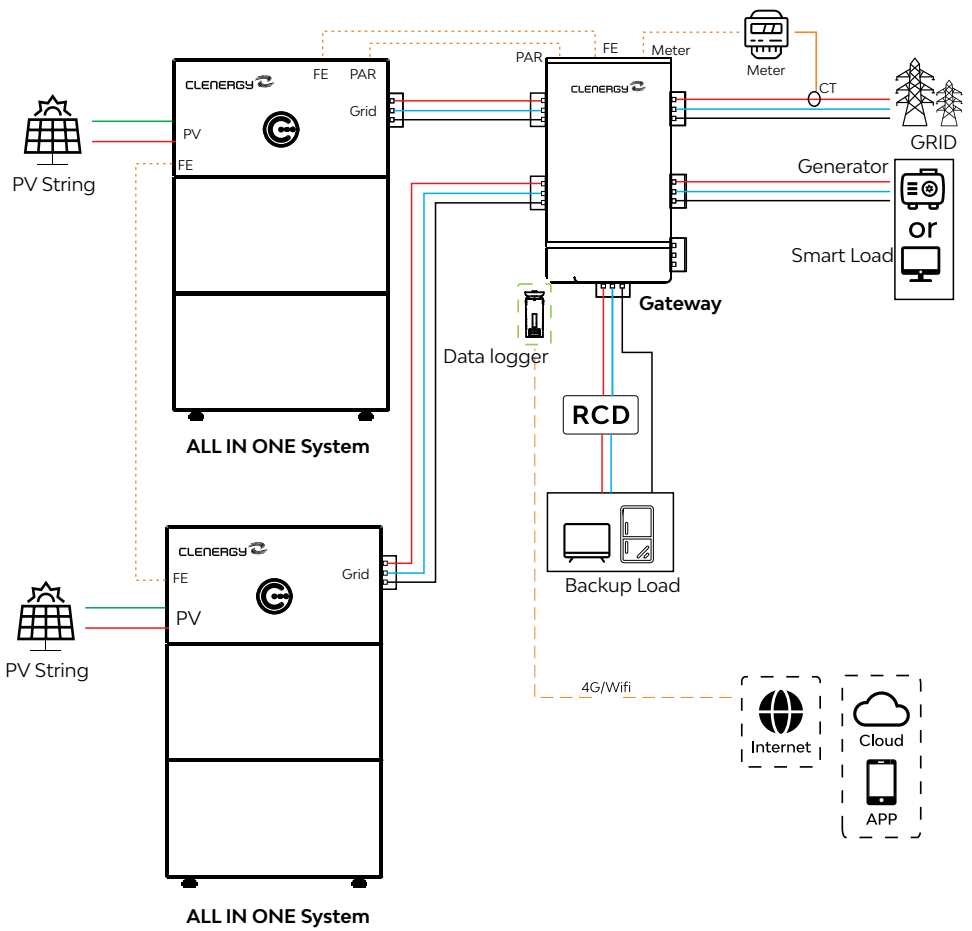
6.5 Gateway Cable Connection (Optional)

6.5.1 System Electrical Topology with Gateway

1.Partial home backup solution with gateway electrical diagram



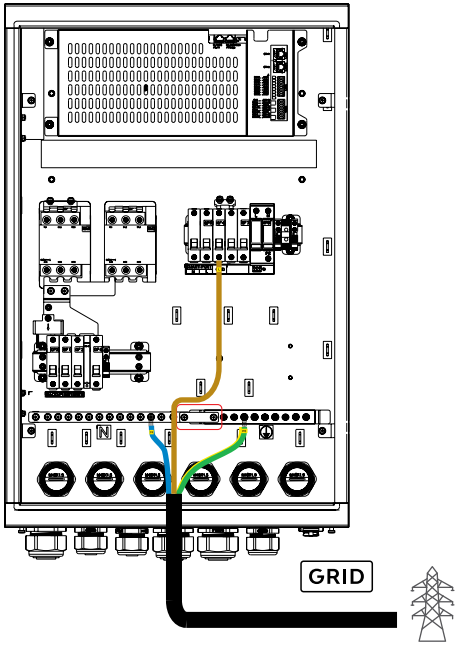
2.Whole home backup solution with gateway electrical diagram



Note

1. For whole home backup system, the total backup load power through RCD to gateway should be limits at the total input inverter power to the gateway.
2. Products in countries (e.g. Australia, South Africa, NewZealand etc.) performs local electrical regulations that the an neutral continuity between grid-connected ar backup circuits shall be established externally; thus, an extra MEN Busbar, should be installed in gateway.

6.5.2 Connecting Gateway AC Grid Cable



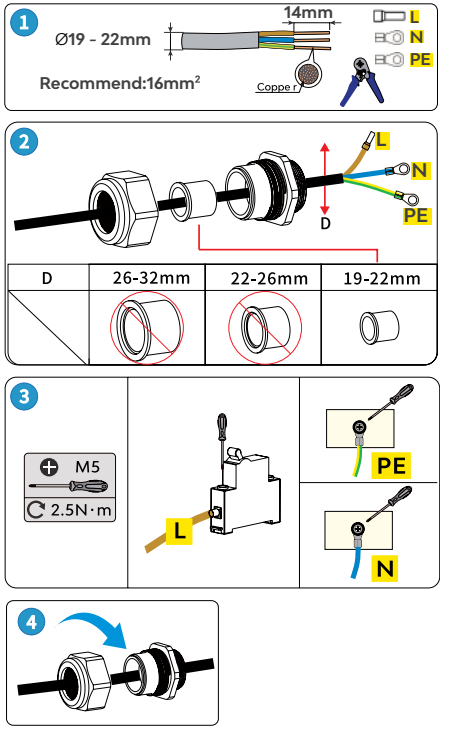


Figure 6-17 Gateway AC grid cable connecting procedures

Step 1
Using the recommended cables, strip the insulation from the L, N, and PE wires to a suitable length. Crimp a ferrule terminal onto the L wire and OT terminals onto the N and PE wires.

Step 2
Thread the prepared wires through the waterproof cable gland. Select the appropriate gland plug based on the outer diameter of the cables (minimum diameter range: 19-22mm).

Step 3
Connect the L wire to QF4, the N wire to the Neutral bar, and the PE wire to the Ground bar. Tighten the connections securely using an M5 Phillips screwdriver.

Step 4
After completing the wiring, tighten the waterproof gland nut and seal the cable gland.
Use the copper busbar to connects the Neutral (N) and Ground (PE) bars in gateway.

Note

Please choose the recommend 19-22mm diameter waterproof gland. Other diameter size glands are for backup purpose.

6.5.3 Connecting Gateway AC Inverter Cable

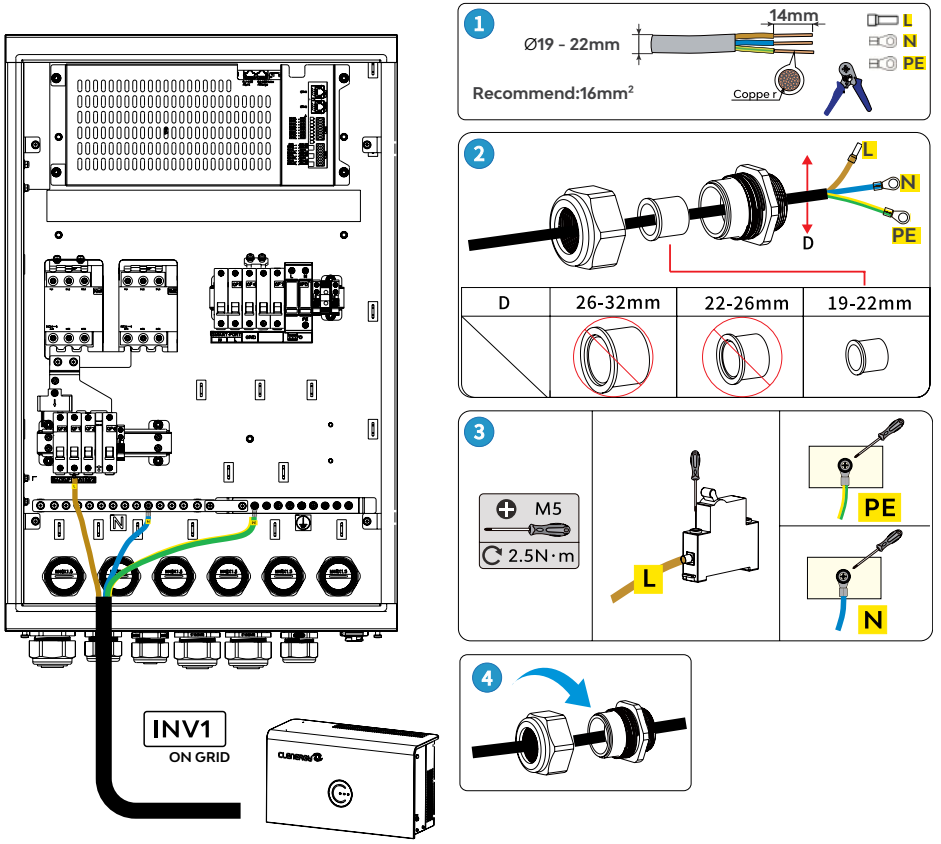


Figure 6-18 Gateway AC inverter cable connecting procedures

Step 1
Using the recommended cables, strip the insulation from the L, N, and PE wires to a suitable length. Crimp a ferrule terminal onto the L wire and OT terminals onto the N and PE wires.

Step 2
Thread the prepared wires through the waterproof cable gland. Select the appropriate gland plug based on the outer diameter of the cables (minimum diameter range: 19-22mm).

Step 3
Connect the L wire to QF1, the N wire to the Neutral bar, and the PE wire to the Ground bar. Tighten the connections securely using an M5 Phillips screwdriver.

Step 4
After completing the wiring, tighten the waterproof gland nut and seal the cable gland.

6.5.4 Installing Gateway Backup Load Cables

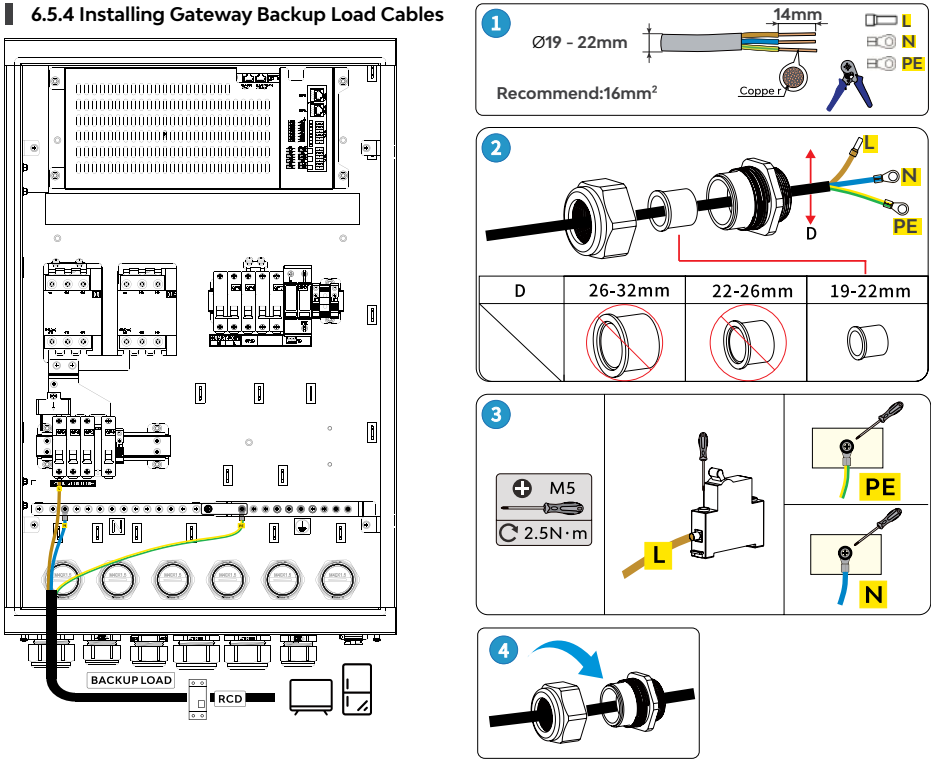


Figure 6-19 Gateway backup load cable connecting procedures

Step 1
Using the recommended cables, strip the insulation from the L, N, and PE wires to a suitable length. Crimp a ferrule terminal onto the L wire and OT terminals onto the N and PE wires.

Step 2
Thread the prepared wires through the waterproof cable gland. Select the appropriate gland plug based on the outer diameter of the cables (minimum diameter range: 19-22mm).

Step 3
Connect the L wire to QF3, the N wire to the Neutral bar, and the PE wire to the Ground bar. Tighten the connections securely using an M5 Phillips screwdriver.

Step 4
After completing the wiring, tighten the waterproof gland nut and seal the cable gland.

Note

It is recommended to connect external backup loads via an RCD(Residual-Current Device). Clenergy recommends installing a Type-A RCD with a threshold current as explained in section 3.2.

6.5.5 Installing Gateway Non-Backup Load Cables

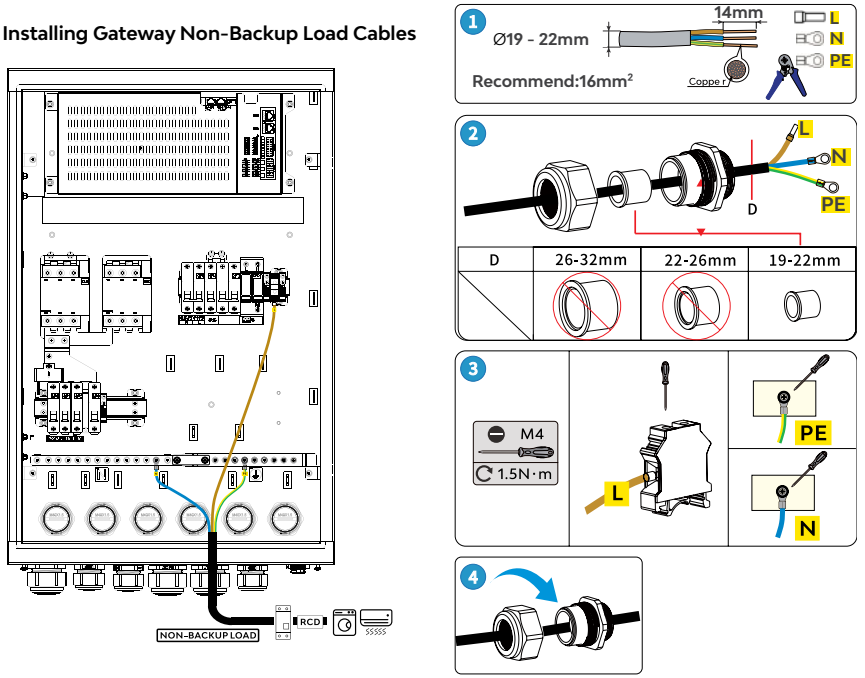


Figure 6-20 Gateway non-backup load cable connecting procedures

Step 1
Using the recommended cables, strip the insulation from the L, N, and PE wires to a suitable length. Crimp a ferrule terminal onto the L wire and OT terminals onto the N and PE wires.

Step 2
Thread the prepared wires through the waterproof cable gland. Select the appropriate gland plug based on the outer diameter of the cables (minimum diameter range: 19-22mm).

Step 3
Connect the L wire to the terminal indicated in the diagram, the N wire to the Neutral bar, and the PE wire to the Ground bar. Tighten all connections securely using an M5 Phillips screwdriver.

Step 4
These cables share the same entry port with SMART-PORT. After the SMART-PORT wiring installation is also completed, tighten the waterproof gland nut and seal the cable gland for both sets of cables.

Note

This waterproof entry port accommodates two cable sets. Select the appropriate gland grommet based on the combined outer diameters of both cables. It is recommended to connect external backup loads via an RCD(Residual-Current Device). Clenergy recommends installing a Type-A RCD with a threshold current as explained in section 3.2.

6.5.6 Installing Gateway Smart-Port Cables

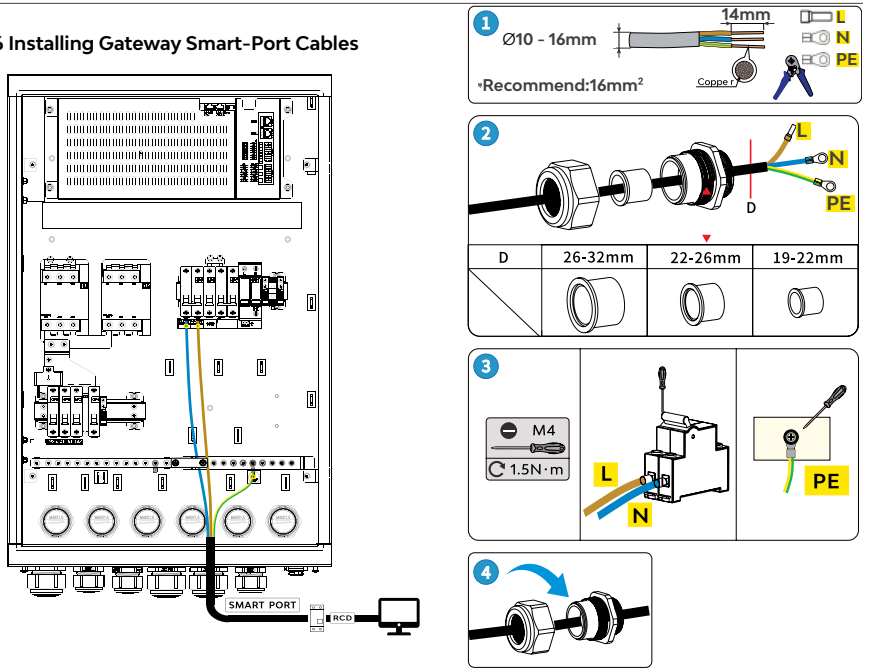


Figure 6-21 Gateway smart port connecting procedures

Step 1
Using the recommended cables, strip the insulation from the L, N, and PE wires to a suitable length. Crimp ferrule terminals on both the L and N wires, and an OT terminal onto the PE wire.

Step 2
Thread the prepared wires through the waterproof cable gland. Select the appropriate gland plug based on the outer diameter of the cables (minimum diameter range: 19-22mm).

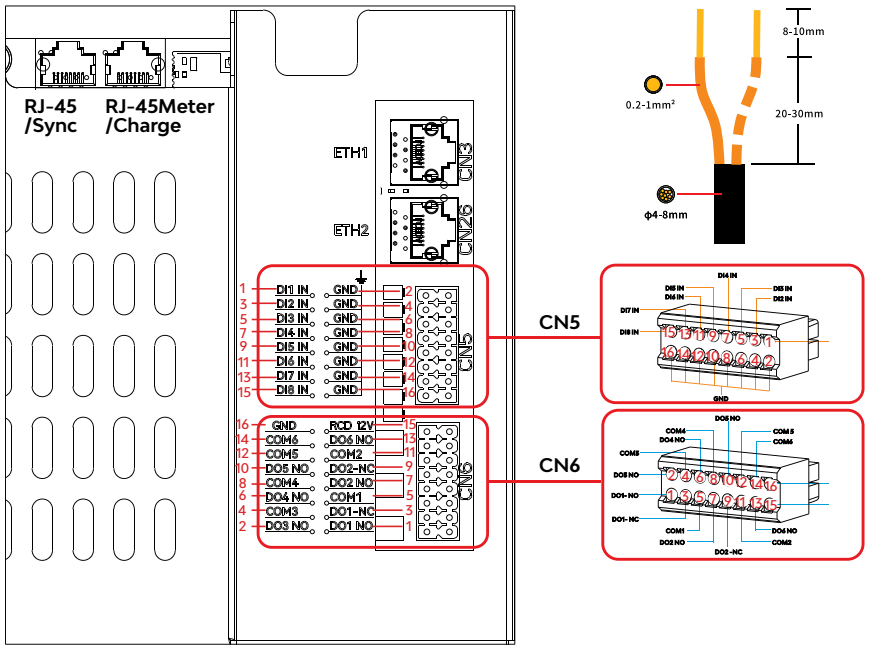
Step 3
Connect the L wire to QF5, the N wire to the Neutral bar, and the PE wire to the Ground bar. Tighten all connections securely using an M5 Phillips screwdriver.

Step 4
After wiring is complete, note that this shares the same cable entry port with the NON-BACKUP LOAD line. Wait until the NON-BACKUP LOAD wiring is also completed, then tighten the waterproof gland nut and seal the cable gland for both sets of cables.

Note

This waterproof entry port accommodates two cable sets. Select the appropriate gland grommet(s) based on the combined outer diameters of both cables. It is recommended to connect external backup loads via an RCD(Residual-Current Device). Clenergy recommends installing a Type-A RCD with a threshold current as explained in section 3.2.

6.5.7 Installing Gateway Signal Cables

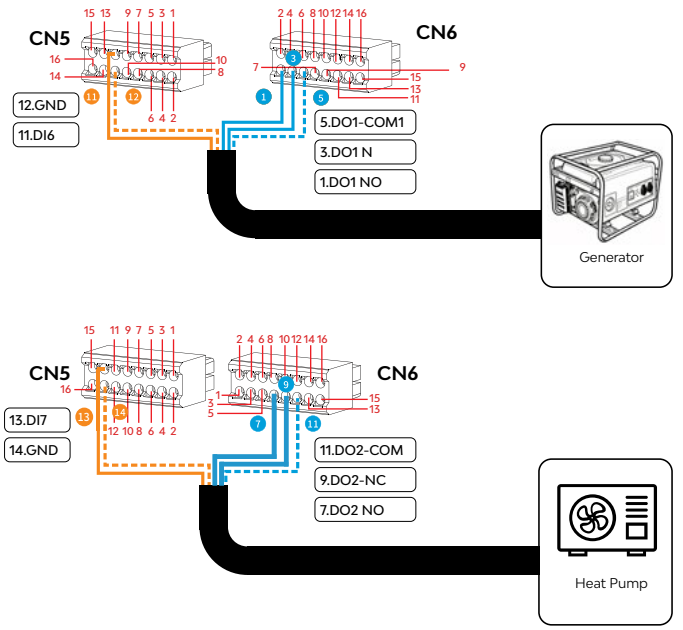


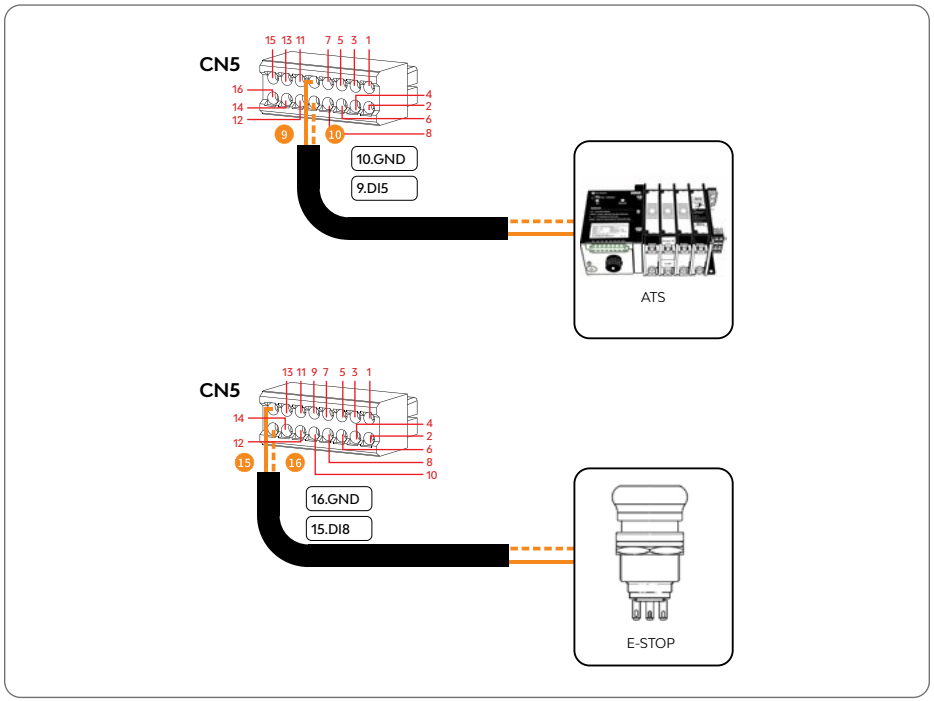
PIN	Assignment	PIN	Assignment
1	485A_INV	5	NC
2	485B_INV	6	CAN_L
3	CAN_H	7	485A_GW_O
4	NC	8	485B_GW_O

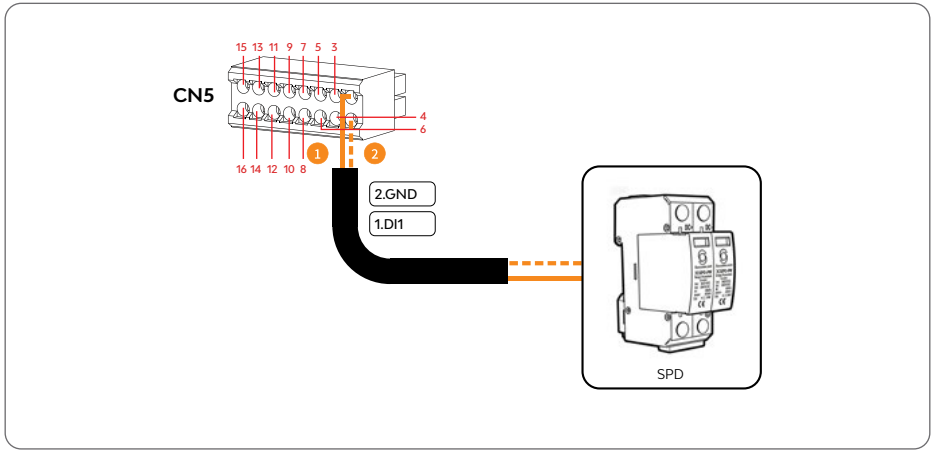
Table 6-5 Synchronization signal port description

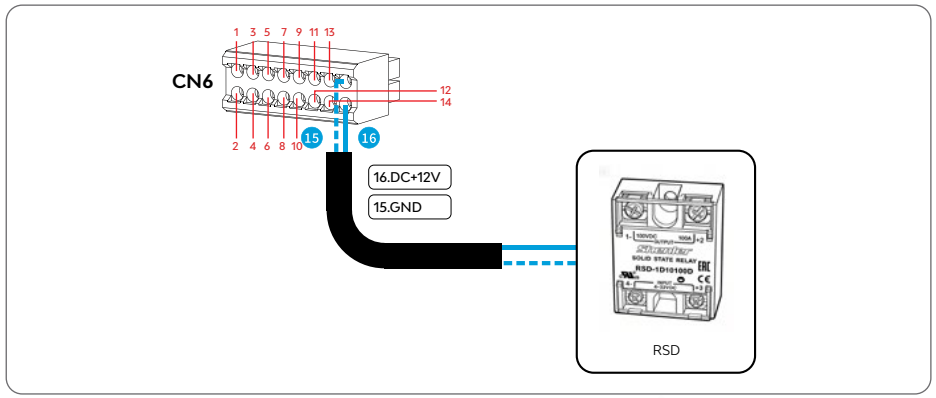
PIN	Assignment	PIN	Assignment
1	485A_Meter	5	NC
2	485B_Meter	6	NC
3	NC	7	485B_Charge(Reserve)
4	NC	8	485A_Charge(Reserve)

Table 6-6 Meter & EV charger signal port description









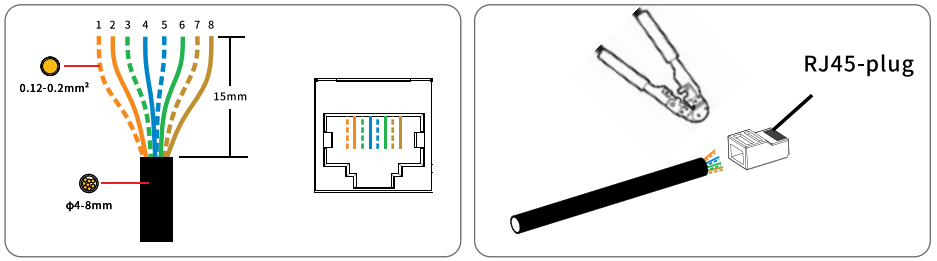


Figure 6-22 Gateway signal cable description

PIN	Definition		Description
	Ditigal Output Controls		
1	DO1 (Generator Start-Stop)	DO1-NO	DO1 - Open. DO1 is used for generator control via 2-wire start. Contact limit: 30 Vdc / 1 A. NO/COM - Open, NC/COM - Closed.
3		DO1-NC	DO1 - Closed
5		DO1-COM	DO1 - Common
7	DO2 (Heat Pump Control)	DO2-NO	DO2 - Open. DO2 is used for heat pump control.
9		DO2-NC	DO2 - Closed
11		DO2-COM	DO2 - Common
15	DO7 (Rapid Shutdown Control)	GND	Power Ground. Connects to the RSD control. Supply +12V @ 1A.
16		DC+12V	Power +12V

PIN	Definition		Description
Ditigal Input Controls			
1	DI1 (SPD Status)	DI1	DI1 - feedback contact of the surge protector
2		GND	
3	DI2	DI2	DI2 (Reserved)
4		GND	
9	DI5 (ATS Status)	DI5	DI5 - external ATS feedback signal to identify whether the Gateway's Grid Port is powered by the grid or a generator. Low-impedance input (ATS signal shorted) indicates grid power. High-impedance input (ATS signal open) indicates diesel generator.
10		GND	
11	DI6 (Generator)	DI6	DI6 - feedback of generator Function reserve
12		GND	

* Ditigal Output Controls DO3/DO4 are used, DO5/DO6 reserved.
* Ditigal Input Controls DI2/DI3/DI4 reserved.

Table 6-7 DIDO signal port description

Note

- When routing signal cables, ensure they are routed separately from power cables in case of signal disruption.
- The cable sheath must terminate inside the connector. Any excess wire strands should be trimmed flush with the sheath.
- The wire cores must be fully inserted into the terminal holes with no exposed conductors, and all cable connections must be securely fastened.
- Signal No. 11-16 can be used for backup ATS feedback, generator, heatpump etc. purpose.

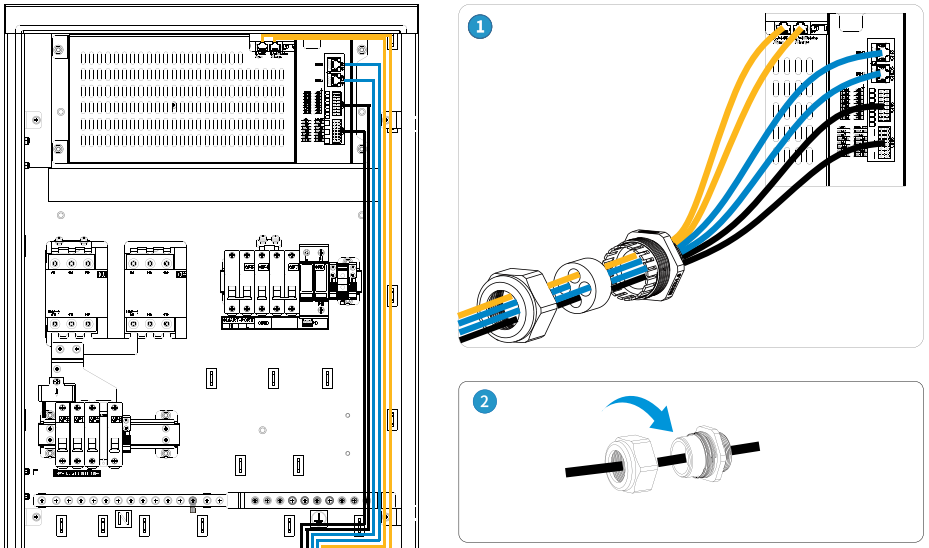


Figure 6-23 Gateway signal cable connecting procedures

Step 1
Plug in the signal cable to their corresponding ports.
- Yellow color network cable represents the RS485 signal communication connects the CGS inverter GW port to Gateway RJ-485/Sync port.
- Blue color network cable represents the Fast Ethernet signal communication that connects CGS inverter COM1 to Gateway ETH1.
- Black color signal cable represents the DIDO (Digital Input & Digital Output) that extend various functions of feedback and control signals to external devices, such as generator, heat pump etc.

Step 2
Tighten the waterproof gland nut and seal the cable gland for both sets of cables after the Gateway signal cables installation completed.

Note

The signal cables shown in the diagram are for reference only; the exact quantities may vary based on requirements.

6.5.8 Installing Gateway Datalogger

The gateway can be remotely monitored via Wi-Fi or 4G. The USB port at the side ports of the gateway connects to the supplied Clenergy Data logger for remote monitoring on the Clenergise platform. A dust cover is provided in the gateway in case the port is not used.

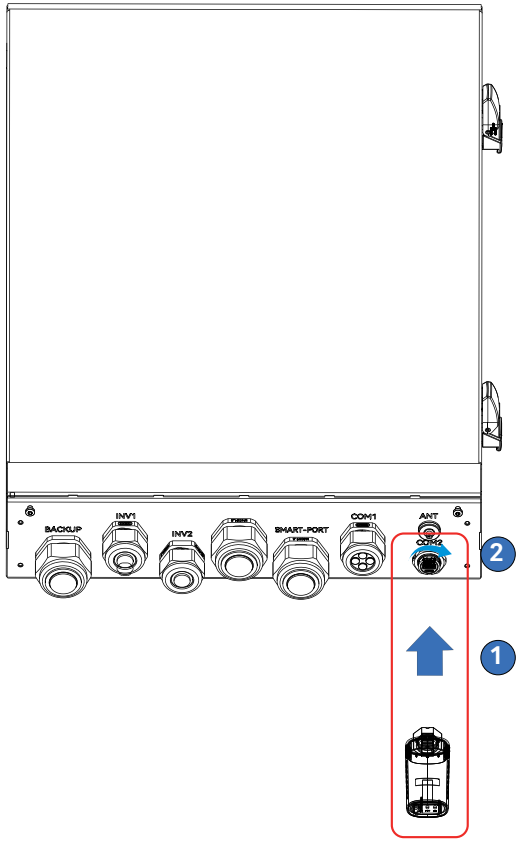


Figure 6-24 Gateway datalogger connecting procedures

7 System Commissioning

7.1 Connection Prerequisite

• Ensure the PE,DC, AC and signal cables are correctly and securely connected.
• Cable routing and bundling must comply with local regulations, ensuring a neat, logical layout without any damage to the cables.
• All unused cable entry points and ports must be sealed using the reliable terminal plugs provided with the accessories or adhesive isolation tape to avoid any metal terminal short circuit.
• All used cable entry points must be properly sealed after installation.
• Verify that the voltage and frequency at the grid connection meets the inverter's specified requirements for interconnection.

7.2 System Startup/ Shutdown Procedures

System Startup Procedure

1. Set the AC On-grid port circuit breaker to the ON position.
2. Set the AC Backup port circuit breaker to the ON position.
3. Turn the battery power switch ON.
4. Turn the DC PV isolator ON.

System Shutdown Procedure

1. Turn the DC PV isolator OFF.
2. Turn the battery power switch OFF.
3. Set the AC Backup port circuit breaker to the OFF position.
4. Set the AC On-grid port circuit breaker to the OFF position.

7.3 Installating Protective Cover

After completing the electrical connections and system debugging, verify that the cables are connected correctly and securely, then install the external decorative covers.

1. Slide the base protective cover into position from the bottom until it is fully seated.2–4. Starting from the bottom, slide each battery module protective cover downward into position. Install the covers in order (Steps 2 to 4).5. Slide the inverter unit protective cover into position from the front until it is fully seated.

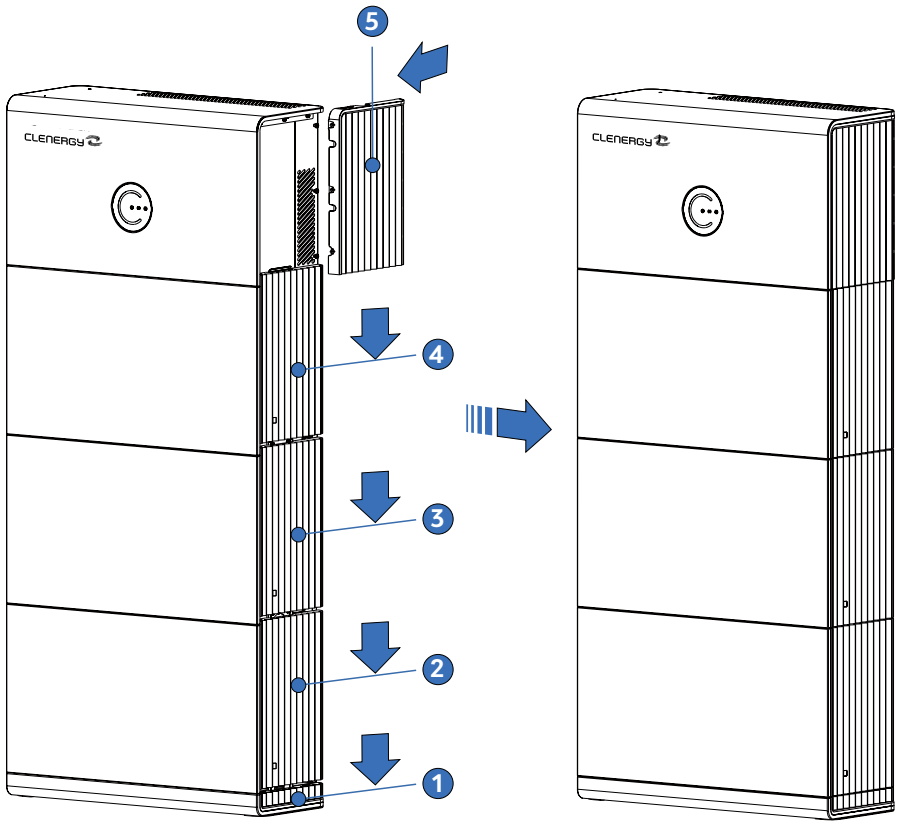


Figure 7-1: CGS system protective cover installation (inverter)

After completing the electrical connections and system debugging, verify that all cables are correctly and securely connected. Then proceed to install the external decorative covers.

1. Slide the base protective cover into position from the bottom until it is fully seated.
2–4. Starting from the bottom, slide each battery module protective cover downward into position. Install the covers in order (Steps 2 to 4).

5. Slide the BDU protective cover into position from the front until it is fully seated.

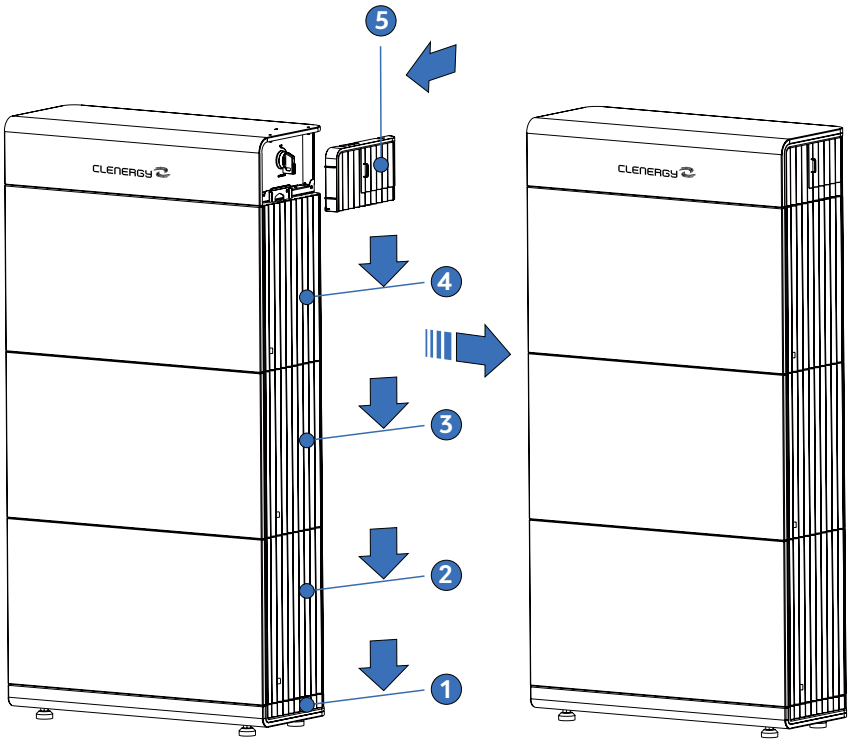


Figure 7-2: CGS system protective cover installation (BDU)

Note

A similar installation method is also applicable for the Expansion Battery Cluster.

8 System Configuration

8.1 Download the Clenergise App

Mobile Device Requirements

Ensure your mobile phone meets the following specifications:
• Mobile Phone Operating System: Android / iOS 12.0 or later.
• Network: Capable of connecting to the internet.
• Connectivity: Supports WLAN or Bluetooth functionality.

Note

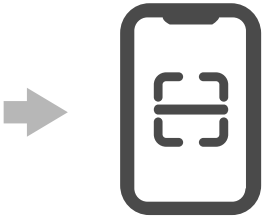
Once the Clenergise App is installed, you will automatically receive notifications when updates are available.

Installation Methods

Method 1: Search for " Clenergise" in Google Play (Android) or the App Store (iOS) to download and install the application.

Clenergise APP

Method 2: Scan the QR code below to download and install the application.



Clenergise APP

Figure 8-1: Clenergise App download

8.2 Configuration Startup Commissioning

Product can be powered on using PV only or grid only. Follow this procedure for first start-up:
1. Turn ON the Battery Power Button in the inverter and configure the product
2. Configure the metering for the system
3. Once the above configuration steps are completed, turn ON the DC PV switch and grid breaker, and verify that the system is operating correctly.

8.3 Connection Datalogger

Datalogger should be well plugged to the inverter as mentioned above on 6.2.6 Connecting Datalogger. If any Datalogger indicator is not shown on the device, please contact with your corresponding agent or supplier for further technical support.

8.4 Communication Parameter Setting

8.4.1 Clenergise App Account Login

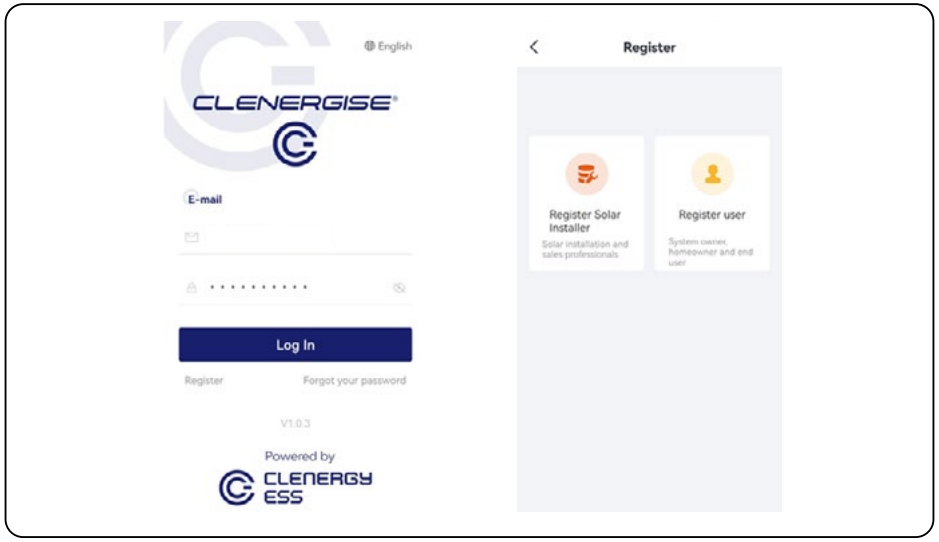
If you do not yet have a Clenergise account, follow the steps within the app to register a new account.

Note

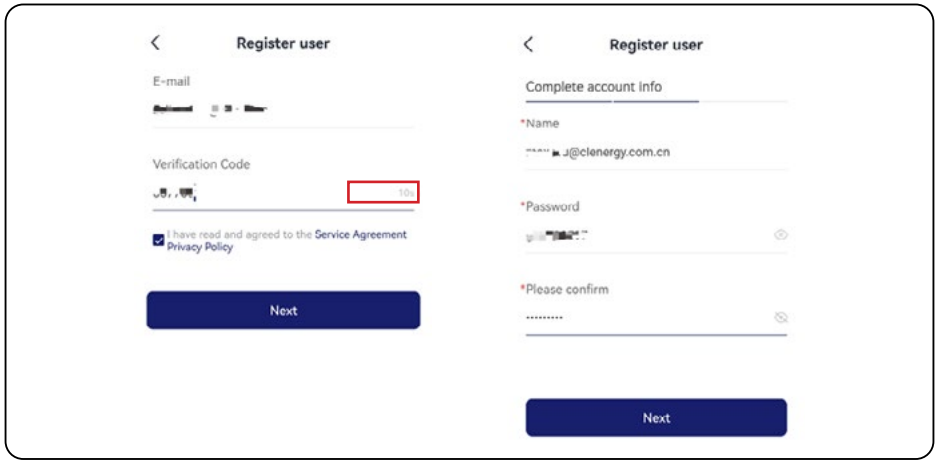
If your Solar Business already has an account with Clenergise, please do not register another account. Instead, contact your system administrator or Clenergy Technical Support for assistance. Please do not create multiple accounts for a single business.

8.4.2 Configure Network Parameters

Step 1: Login to Clenergise APP with registered email and password. If user is the first time using the APP, click "Register" below the "Log in" icon. Choose either "Register Solar Installer" or "Register user" according to the user type.



Step 2: Type in the registered "E-mail" and "Verification Code" after receiving the verification code from the registered email. Then create a "Name" and "Password" for the account to complete account information.



8.4.3 Add Datalogger & End User Authorization

Follow these steps to configure the system for the first time.
Step 1: Log into the Clenergise app with your installer account.
Step 2: To set up a new site, click the [+] button in the top right-hand corner:

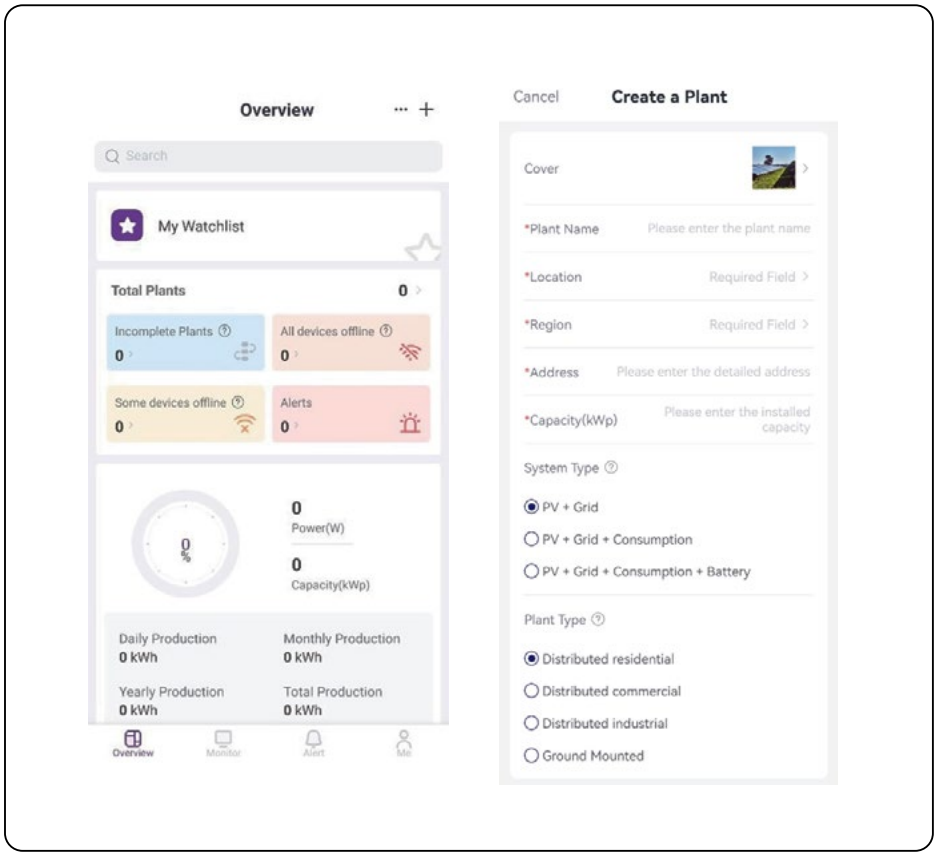


Figure 8-2: Clenergise App - add datalogger & end user authorization

Step 3: Fill in the following required fields: Click 'Save' when finished.

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

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

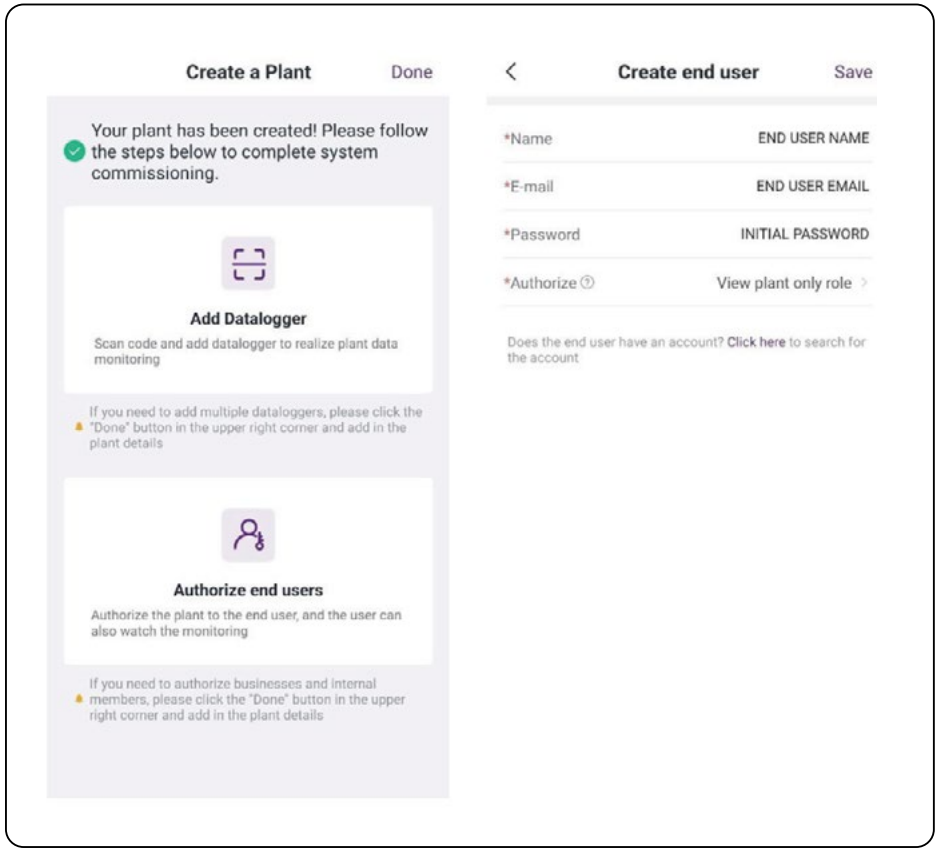


Figure 8-3: Clenergise App - Create end user

The site has now been created within the Clenergise app.

Step 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:

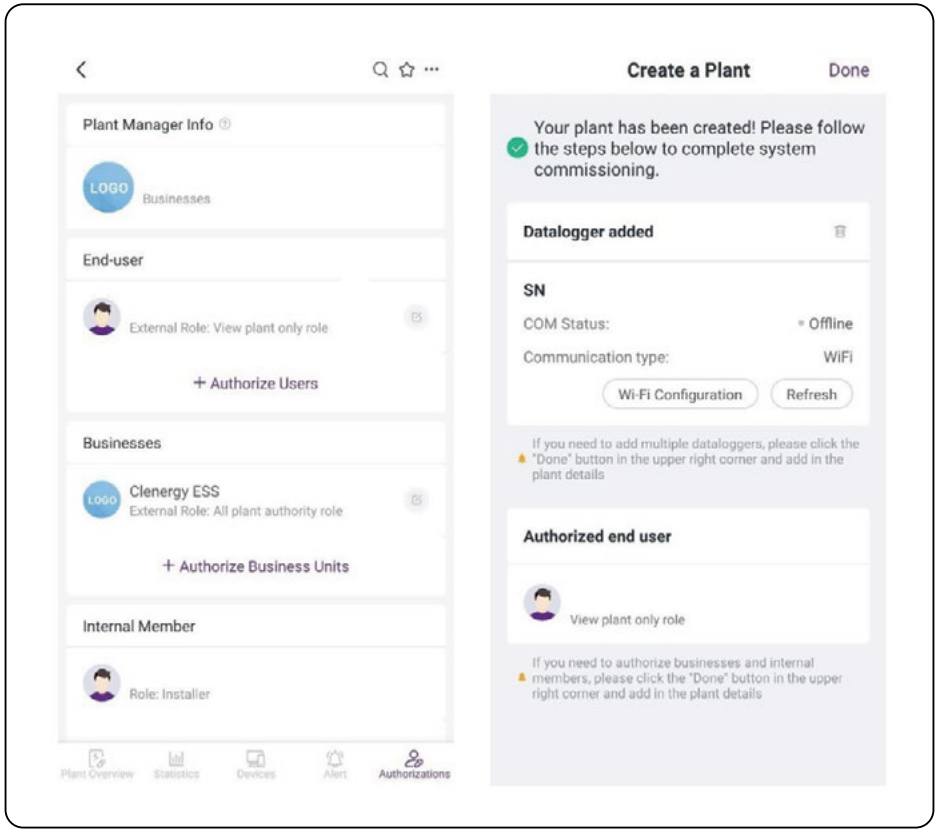
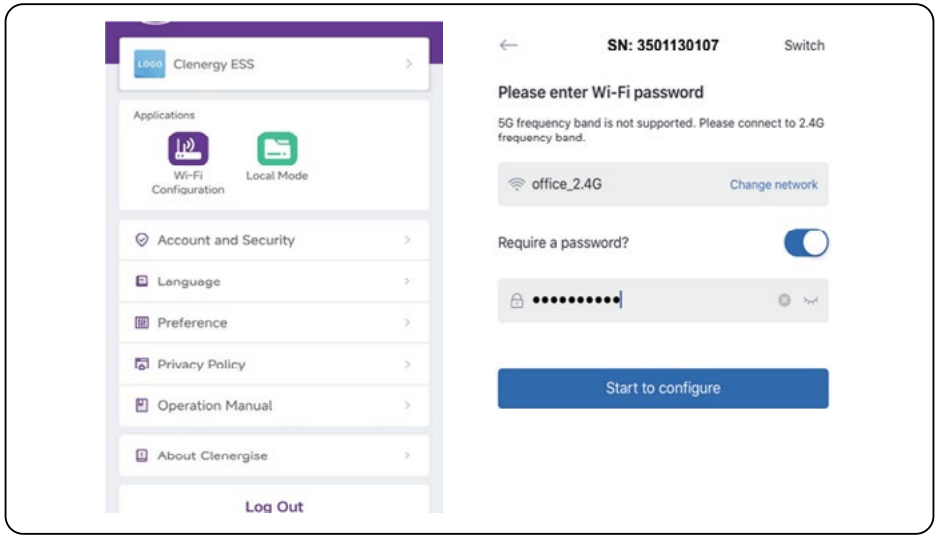
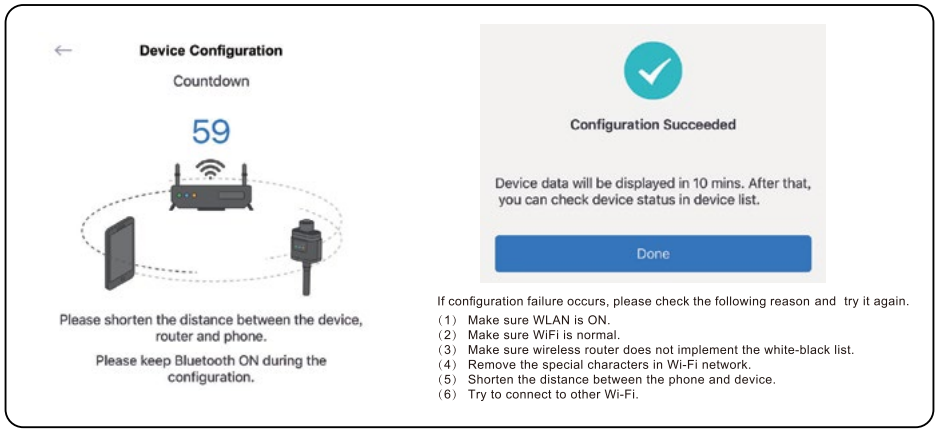


Figure 8-4: Clenergise App - Authorise

Step 7: "Wi-Fi Configration" can also be set by another method. Click "Wi-Fi Configuration" to initialize cloud network. Choose the proper Wi-Fi SSID (Wi-Fi SSID will automatically choose the same Wi-Fi SSID with the phone Wi-Fi connected). Users can also click "Change network" selection to bond other networks. "Start to configure" when they are all set.



Step 8: Please wait for a few minutes. Then click "Done" and view plant data.



Notice:
Only supports 2.4GHz network

Figure 8-5: Clenergise App - configure network parameters

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.

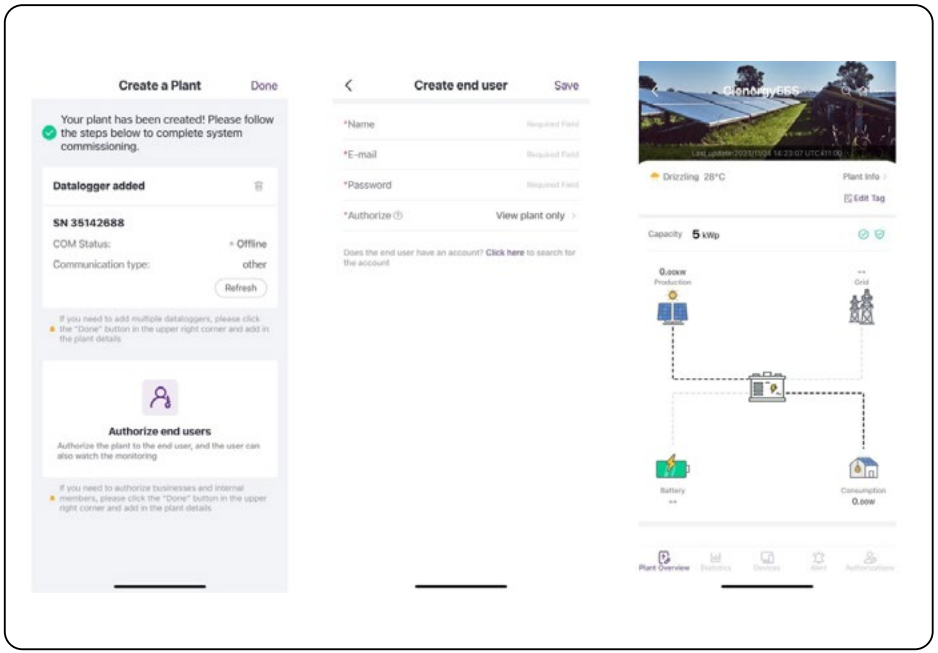


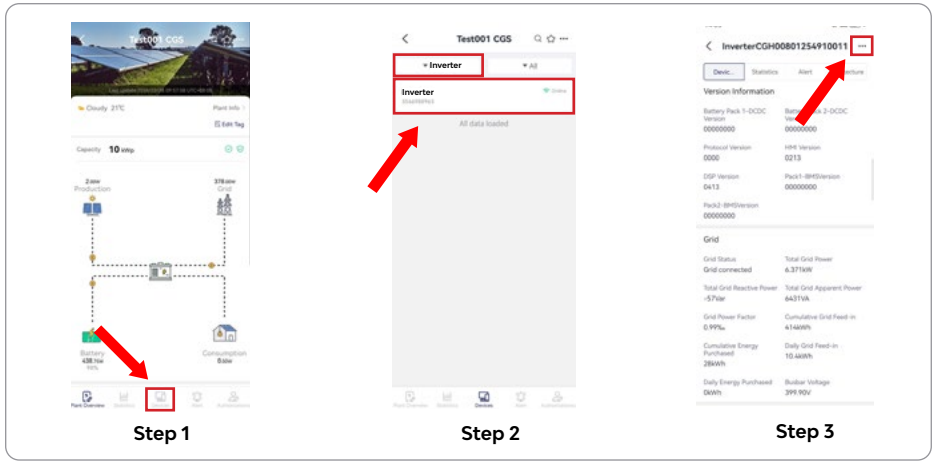
Figure 8-6: Clenergise App - Configure end users

8.5 Initial Parameter Setting

Commissioning the ESS System

Once the site has been created, go to the device page to perform the site commissioning. All the commissioning work will be performed through the inverter.

Choose “Inverter” group type behind“All”, and select the target monitored inverter.Tap “Device Control” to start the commissioning steps.



Please make sure to perform a ‘Read’ command of all the parameters first before applying the setting with a ‘Set’ command. The following pages: ‘Battery Setting’, ‘Meter Setting’, ‘Grid Code’ and ‘Backup Port’ are required to be set. Other pages should remain default/pre-flled parameters unless there are specific requirements.

* Basic version information (incuding current battery.and inverter firmware versions) can be read referred as step 3 image.

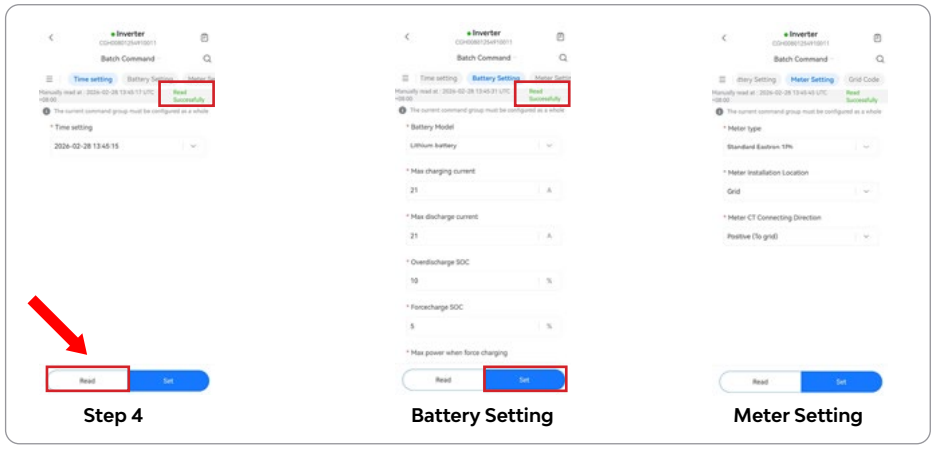


Figure 8-7: Clenergise App - ESS parameter commisioning prcedures

Click ‘Set’ to save the parameters after completing each page.

The grid parameters will be automatically filled in once the Grid code is selected. If the site is confgured for Full Backup, please enable the Backup port on the Commissioning steps.

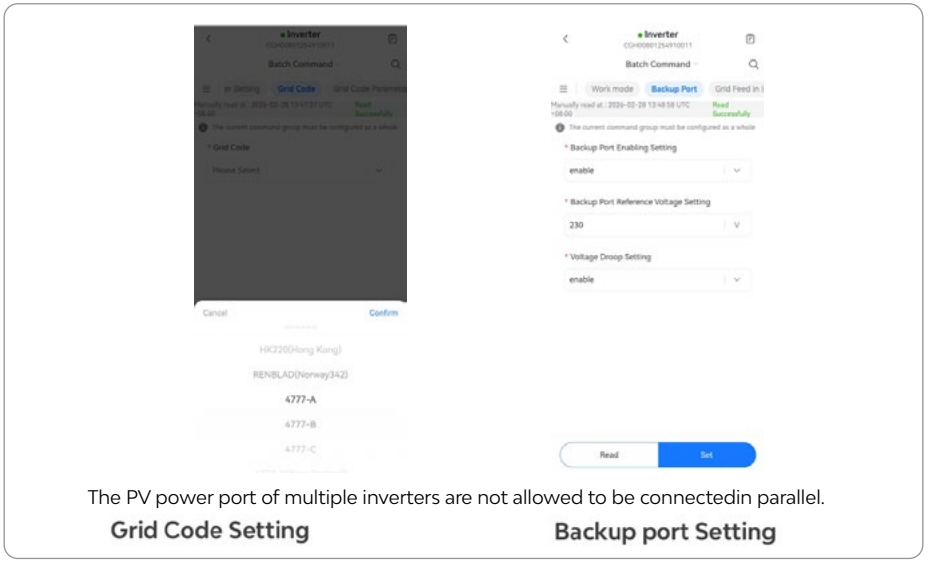


Figure 8-8: Clenergise App - Grid code & backup port setting

The Export Limit should be set up according to the DNSP requirements in the region.

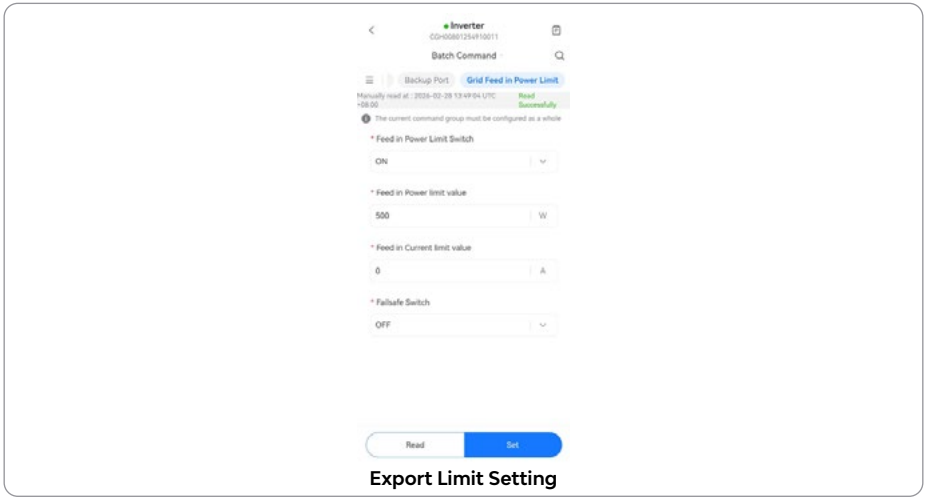
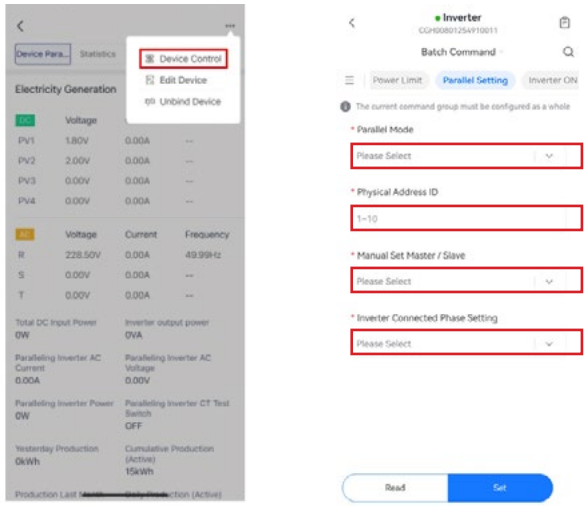


Figure 8-9: Clenergise App - Export limit setting

Parallel parameter setting

Parallel setting via APP step as below.
Device Control → Parallel Setting → Parallel Parameter Setting



Device Control **Parallel Parameter Setting**

Figure 8-10: Clenergise App - Parallel parameter setting

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, including overvoltage protection, undervoltage protection, overfrequency protection, underfrequency protection etc. in the Grid Code Parameters.
1. Grid codes can be viewed or modified within the app by navigating to 'Device Control' -> 'Grid Code.
2. Grid codes parameters can be viewed or modified within the app by navigating to 'Device Control' -> 'Grid Code Parameters – contact Clenergy Technical Support for the required installer password.

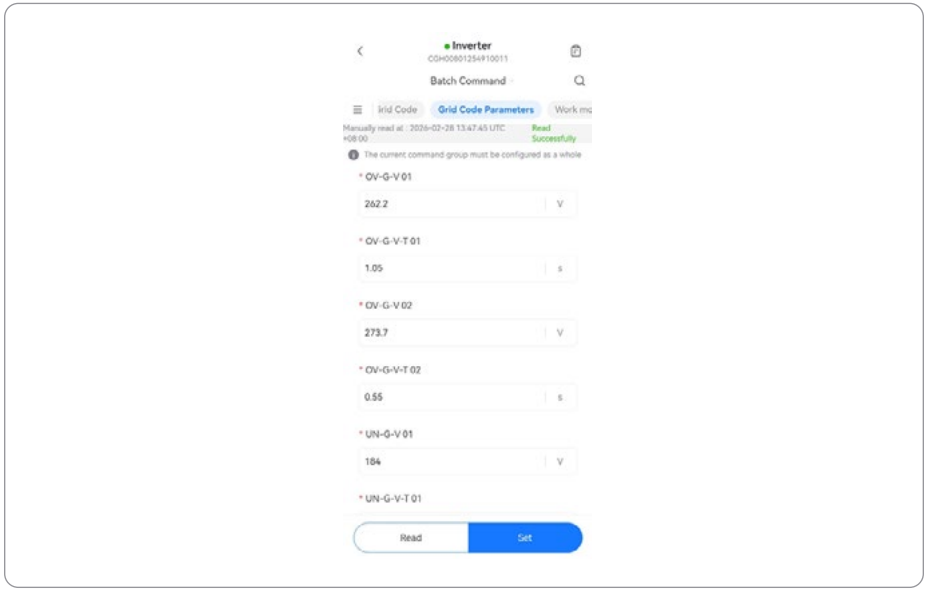


Figure 8-11: Clenergise App - Grid code parameters setting

Note

The standard code selections'4777-A', '4777-B', '4777-C' and '4777-N'(for Australia only) 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.

Power Quality Response Mode

Installers can complete the configuration process via the Clenergise app to read and set current mode according to local regulations.
Power Quality Response Mode can be viewed or modified within the app by navigating to 'Device Control' -> 'CERTT mode' -> 'P-Q'.

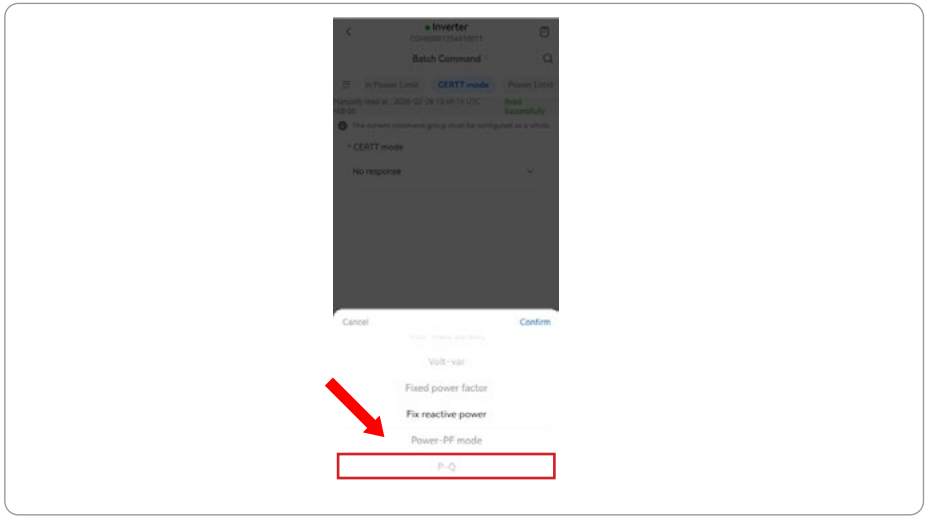


Figure 8-12: Clenergise App - Power quality response mode setting

Protection Settings

Installers can complete the configuration process via the Clenergise app to read and set current mode according to set protection limits and functions for the system.

- Battery Protection Settings can be viewed or modified within the APP by navigating to 'Device Control' -> 'Battery Setting'.

- Work Mode Protection Settings can be viewed or modified within the APP by navigating to 'Device Control' -> 'Work Mode'.

- Backup Protection Settings can be viewed or modified within the APP by navigating to 'Device Control' -> 'Backup Port'.
- Power Limit Protection Settings can be viewed or modified within the APP by navigating to 'Device Control' -> 'Power Limit'.

- Grid Feed in Power Limit Protection Settings can be viewed or modified within the APP by navigating to 'Device Control' -> 'Grid Feed in Power Limit'.

9 Maintenance

9.1 Power OFF the System

Follow the system shutdown procedures given in section 6.2 before carry out any maintenance work.

Danger

- De-energize the equipment before performing any operation or maintenance. Failure to do so may result in equipment damage or electric shock.
- Allow sufficient time for component discharge after power OFF.
- Strictly adhere to the power OFF sequence and requirements to prevent system damage.

9.2 Product Decommissioning Procedure

Danger

- Ensure the equipment is disconnected from all power sources before commencing any work.
- Always wear appropriate personal protective equipment (PPE) during operations.
- Use standardized tools when disconnecting wiring terminals to prevent damage to the terminals or the equipment.

Note

Unless otherwise specified, the disassembly procedure for the equipment is the reverse of the installation sequence and will not be redundantly detailed in this document.

1. System Power-Off: De-energize the entire system.
2. Cable Identification: Label all system cables with tags clearly indicating their type and function.
3. Cable Disconnection: Disconnect all interconnecting cables within the system, including DC cables, AC cables, PE cables and signal cables from the inverter, battery and smart meter.
4. Equipment Removal: Remove key modules and parts including the Datalogger, inverter, battery and smart meter.
5. Equipment Storage: If the equipment is intended for future use, store it properly under conditions that meet the specified environmental requirements.

9.3 Product Disposal

If the equipment is no longer functional, it must be disposed of in accordance with local regulations for waste electrical and electronic equipment (WEEE). The equipment must not be disposed of as unsorted municipal waste.

9.4 Routine Maintenance

Warning

- If any issues are detected that may affect the battery or the hybrid inverter, please contact after-sales service for assistance. Unauthorized disassembly is strictly prohibited.
- If the copper conductor becomes exposed, do not touch or attempt to disassemble the unit, as there is a risk of high voltage. In such cases, contact after-sales service immediately.
- For any other emergencies, reach out to after-sales service as soon as possible. Always follow the instructions in the manual or wait for authorized service personnel to handle the situation.

Maintenance Item	Method	Frequency	Purpose
System Cleaning & Ventilation	1. Inspect heat sink, air intake and outlet for dust, blockage, or debris. 2. Ensure installation space is clear and meets ventilation requirements.	Every 6 months	Prevent overheating and ensure effective heat dissipation.
Physical & Mechanical Integrity	1. Verify all mounting points and fastening screws are secure. 2. Inspect enclosure for physical damage or deformation. 3. Check wall bracket for firm installation.	Every 6–12 months	Ensure mechanical stability and structural integrity of the installation.
Electrical Connections	1. Check that all cable connections are tight. 2. Inspect cables for wear, damage, breaks, or exposed conductors. Replace if needed.	Every 6–12 months	Maintain reliable and safe electrical connections, prevent faults.
Enclosure Sealing	1. Inspect terminals, ports, and cable openings for proper sealing. 2. Re-seal any unsealed or oversized openings. 3. Check for signs of water or insect ingress.	Annually	Maintain ingress protection (IP rating) and waterproof performance.
Battery Storage Maintenance	If battery is in long-term storage or not regularly fully charged, perform a periodic maintenance charge.	Every 15 days	Preserve battery health and prevent deep discharge during storage.
Battery Conditioning (Long Term Storage)	If battery is not in active use: fully charge, then discharge to 30–40% of capacity.	Every 3 months	Maintain battery chemistry and prolong overall service life.
Battery Surroundings	Remove any foreign objects around the battery to ensure clear airflow.	Every 6 months	Ensure proper battery cooling and avoid overheating risks.

Table 9-1: Routine Maintenance

10 Troubleshooting

10.1 Preliminary Steps

Attempt to resolve system issues by following the troubleshooting methods provided in this section. If the issue persists, contact the after-sales service department for assistance.

10.2 Information for Technical Support

To facilitate a swift diagnosis and resolution, please gather the following information before contacting technical support:

- Product Information: Device SN, software & firmware version, installation date, time of fault occurrence and fault frequency.
- Installation Environment: Details including ambient weather conditions, and whether the PV modules are obstructed or shaded. Providing photographs or videos of the installation site is recommended to aid in problem analysis.
- Utility Grid Status: Relevant information regarding the electrical grid at the time of the fault.

Danger

If a fault or abnormal condition occurs that is not described in this manual, or if the issue persists after following the instructions provided, stop operating the system immediately and contact your distributor or technical support without delay.

10.3 Errors and Troubleshooting

Message / Error	Description	Troubleshooting
Off	The device is currently powered off.	Turn on the device per the 'Startup Prodedure' 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	

Message / Error	Description	Troubleshooting
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	
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	
UN-G-V01		
OV-G-F01	Grid frequency exceeds the upper frequency 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-F01		
G-PHASE	Unbalanced grid voltage	
G-F-GLU	Grid voltage frequency fluctuation	
NO-Grid	No grid	
OV-G-V03	Grid transient overvoltage	Restart the system and confirm if the fault persists.
OV-G-V04	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 that voltage rise calculations comply with regulations.
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. Verify that the battery voltage is within standards. 2. Measure the battery voltage at the plug.
OV-Vbackup	Inverting overvoltage	1. Check whether the backup port wiring is normal. 2. Restart the system and confirm if the fault persists.
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
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-DCA-I (1025 DATA:0000)	DC 1 average overcurrent	
OV-DCB-I (1026 DATA:0000)	DC 2 average 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.
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 ISO-PRO02 (1033 DATA:0002)**	PV negative ground fault PV positive ground fault	1. Check whether the PV strings have insulation problems. 2. Check whether the PV cable is damaged.
ILeak_Check (1039 DATA:0000)	Leakage current sensor 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.

Table 10-1: Error & Troubleshooting

Note

If the inverter displays any of the alarm messages listed in table above, power off the inverter and wait for 5 minutes prior to restarting it. If the failure persists, contact Clenergy Technical Support.

11 Technical Parameters

System Model	CGS S3.6 6Hy*	CGS S4.6 6Hy*	CGS S5.0 6Hy*	CGS S6.0 6Hy*
System Parameters				
Inverter Model	CGH S3.6H	CGH S4.6H	CGH S5.0H	CGH S6.0H
Number of hybrid inverter	1	1	1	1
Battery Model	CGI E6.0H			
Number of battery modules	1~8 Units			
Number of Battery Distribution Unit	A BDU is required only when the battery packs is more than 4 units.			
Battery Input and Output Data				
Rated Voltage	330 V d.c.			
Battery Voltage Range	280-380 V d.c.			
Max. inverter backfeed current to the battery	156 Apeak (2.4ms)			
Max. output fault current	220 Apeak (1.1ms)			
PV Input Data				
Max. Input Power	7200W	9200W	10000W	12000W
Max. Input Voltage	600 V d.c.			
Start-up Voltage	65V d.c.			
PV input operating voltage range	60-600 V d.c.			
MPPT Operating Voltage Range	60-550 V d.c.			
Full Power MPPT Voltage Range	180-520 V d.c.	230-520 V d.c.	250-520 V d.c.	300-520 V d.c.
Rated Input Voltage	360 V d.c.			
MPPT number	2			
Input strings number per MPPT	1			
Max. Input Current per MPPT	16A/16A			
Isc PV (Max. Input Short Circuit Current per PV)	23A/23A			
AC Input and Output Data(On Grid)				
Rated Output Active Power to Grid	3600W	4600W	5000W	6000W
Rated Output Apparent Power to Grid	3600VA	4600VA	5000VA	6000VA
Max. Output Apparent Power to Grid	3600VA	4600VA	5000VA	6600VA
Max. Apparent Power From Grid	7200VA	9200VA	1000VA	12000VA
Rated AC Output Current to Grid	16.4A	20.9A	22.7A	27.3A
Max. AC Output Current to Grid	16.4A	20.9A	22.7A	30A
Rated AC Input Current from Grid	32.7A	41.8A	45.5A	50A
Max. AC Input Current from Grid	32.7A	41.8A	45.5A	50A

System Model	CGS S3.6 6Hy*	CGS S4.6 6Hy*	CGS S5.0 6Hy*	CGS S6.0 6Hy*
Inrush current	61.5 Apeak (1.0ms)			
Max. output fault current	338 Apeak (1.6ms)			
Max. input and output overcurrent protection	40-50a.c.A	50-63a.c.A	50-63a.c.A	63a.c.A
Rated Voltage	L/N/PE; 220V/230V/240 V a.c.			
Rated Frequency	50/60Hz			
Power Factor	1 (Adjustable from 0.8 leading to 0.8 lagging)			
Output THDi (@Nominal output)	<3%			
AC Output Data(Backup)				
Rated Apparent Power	3600VA	4600VA	5000VA	6000VA
Max. Apparent Power	3600VA	4600VA	5000VA	6600VA
Peak Output Apparent Power,Duration	5400VA,60S	6900VA,60S	7500VA,60S	9000VA,60S
Rated Output Current	16.4A	20.9A	22.7A	27.3A
Max. Output Current	16.4A	20.9A	22.7A	30A
Inrush current	38.6 Apeak (1ms)			
Max. output fault current	308 Apeak (0.9ms)			
Max. input and output overcurrent protection	20-25a.c.A	25-32a.c.A	25-32a.c.A	40a.c.A
Switch Time	≤10ms			
Rated Voltage	L/N/PE; 220V/230V/240 V a.c.			
Rated Frequency	50/60Hz			
THDv (@Liner load)	<2%			
Efffciency				
Max. efffciency	97.40%			
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:OVC II, AC:OVC III			
AFCI	Optional			
General Data				
Topology	Non-isolated			
Active anti-islanding method	Active Frequency Drift			
Mounting Method	Floor/Wall Mounted			
Display	LED&APP			
Communication	WiFi , RS485,Fast Ethernet,Optional:Ethernet/4G,			

System Model	CGS S3.6 6Hy*	CGS S4.6 6Hy*	CGS S5.0 6Hy*	CGS S6.0 6Hy*
System Parameters				
Operating Ambient temperature range[2]	-20 ~ 55°C			
Max. Operation Altitude	<3000m(>2000m deratings)			
Relative Humidity	0%~100%(Non-condensing)			
Cooling Method	Natural Convection			
Protective Class	I			
IP Rating	IP66			
Pollution degree	PD2, PD3			
Environmental category	Outdoor,Indoor			
Net Weight	26.5kg (Inverter), 4.5kg (Base), 65kg (Battery module), 9kg (Battery distribution unit)			
Dimension(W*H*D)	680*370*265mm (inverter), 680*80*260mm (base), 680*260*370mm (Battery module), 680*260*150mm (Battery distribution unit)			
* y for battery system configuration	y presents the number of battery modules,it can be 1,2,3,4,5,6,7,8. For battery combinations and ratings refer to the battery combination datasheet			

The Battery Combination Datasheet								
Suffix y for battery combinations	1	2	3	4	5	6	7	8
Battery Type	LFP							
Number of battery modules	1	2	3	4	5	6	7	8
Rated Voltage	330 V d.c.							
Battery Voltage Range	280~380 V d.c.							
Rated Energy[1]	6.0kwh	12.0kwh	18kwh	24kwh	30kwh	36kwh	42kwh	48kwh
Usable Energy	5.8kwh	11.6kwh	17.4kwh	23.2kwh	29.0kwh	34.8kwh	40.6kwh	46.4kwh
Rated Charge/Discharge Current for CGS S3.6 6Hy*	9A/9A	12.9A/12.9A	12.9A/12.9A	12.9A/12.9A	12.9A/12.9A	12.9A/12.9A	12.9A/12.9A	12.9A/12.9A
Rated Charge/Discharge Current for CGS S4.6 6Hy*	9A/9A	18A/16.4A	21A/16.4A	21A/16.4A	21A/16.4A	21A/16.4A	21A/16.4A	21A/16.4A
Rated Charge/Discharge Current for CGS S5.0 6Hy*	9A/9A	18A/17.9A	21A/17.9A	21A/17.9A	21A/17.9A	21A/17.9A	21A/17.9A	21A/17.9A
Rated Charge/Discharge Current for CGS S6.0 6Hy*	9A/9A	18A/18A	21A/21A	21A/21A	21A/21A	21A/21A	21A/21A	21A/21A
Rated Charge/Discharge Power for CGS S3.6 6Hy*	3kW/3kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW	3.6kW/ 3.6kW
Rated Charge/Discharge Power for CGS S4.6 6Hy*	3kW/3kW	6kW/ 4.6kW	6kW/ 4.6kW	6kW/ 4.6kW	6kW/ 4.6kW	6kW/ 4.6kW	6kW/ 4.6kW	6kW/ 4.6kW
Rated Charge/Discharge Power for CGS S5.0 6Hy*	3kW/3kW	6kW/5kW	6kW/5kW	6kW/5kW	6kW/5kW	6kW/5kW	6kW/5kW	6kW/5kW
Rated Charge/Discharge Power for CGS S6.0 6Hy*	3kW/3kW	6kW/6kW	6kW/6kW	6kW/6kW	6kW/6kW	6kW/6kW	6kW/6kW	6kW/6kW

1 Test conditions: Cell Voltage 2.5 - 3.65V, 0.2C charge & discharge at +25 ±2°C for battery system at beginning life.
2 Battery pack is assembled heating film and when the cell temperature between -20 to 0°C, the heating film will work to heat cell higher than 0°C, and in this progress the battery pack cannot be charged.
* Performance may be de-rated at non-standard condition.
* The final explanation right belongs to Clenergy

Model	CGG C63S-AU
Grid Port	
Rated Voltage	L/N/PE,220/230/240V
Rated Frequency	50/60Hz
Max. Current	63A
INV Port[1]	
Inverter port number	2
Rated Voltage	L/N/PE,220/230/240V
Rated Frequency	50/60Hz
Max. Current	63A/63A
Backup Load Port	
Backup Load port number	1
Rated Voltage	L/N/PE,220/230/240V
Rated Frequency	50/60Hz
Max. Current	63A
Non-Backup Load Port	
Non-backup Load port number	1
Rated Voltage	L/N/PE,220/230/240V
Rated Frequency	50/60Hz
Max. Current2	63A
Smart Load Port	
Smart Load port number	1
Rated Voltage	L/N/PE,220/230/240V
Rated Frequency	50/60Hz
Max. Current	63A
Smart Load Port	
Switch Time	≤10ms
Dimension(W*H*D)	500*700*150mm
Operating Ambient temperature range	-25~60℃
Max. Operation Altitude	<3000m
Relative Humidity	0%~100%(Non-condensing)
Cooling Method	Natural Convection
IP Rating	IP55
Mounting Method	Wall Mounted(Support rear-wiring)
Bypass mode	Manual

Model	CGG C63S-AU
Grid Port	
Communication	Wifi/4G,Ethernet,RS485,Dry Contact
Overvoltage category	OVC III
Standard	EN/IEC 61439-1/2, AS 61439-1/2, EN/IEC 61000-6-1/3, AS 61000-6-1/3
Country of Manufacture	China
Bypass mode	63A

1.The total power of the inverter cannot exceed 12 kW.
2 The total current of the backup port and the non-backup port only could be up to 63A.

CLENERGY

Clenergy Technology Co., Ltd.

Manufacturing: Xiamen Well Energy Technology Co., Ltd. is a wholly owned subsidiary of Clenergy
China: 1001 -1009 Min'an Rd, Xiang'an District 361101, Xiamen, Fujian, China
Australia: 3/10 Duerdin Street, Clayton VIC 3168

Technical Support Contact

Phone: 1800 255 269

Made in China | Designed in Australia