



AC COUPLED

# INVERTER INSTALLATION MANUAL

AC 3.0 | UK | V1.0 17.11.23

## SPECIFICATIONS



### AN ALL ROUNDER

#### Battery Inverter for all situations

The GivEnergy AC Coupled Inverter works as a standalone energy storage system or alongside solar, hydro, or wind-turbine to store excess energy.

Make the most of a split rate energy tariff (e.g. Economy 7) by charging the battery at off-peak times when energy rates are cheaper and discharging during the more expensive periods to reduce your overall energy bill.

#### Specifications

**Dimensions**  
233D x 260H x 480W (mm)

**Weight**  
22.4 Kg

**Charge / Discharge Efficiency**  
97.1%

**Euro Efficiency**  
96.5%

**Warranty**  
12 years

**Operational temperature**  
-25°C - 60°C with derating at 45°C

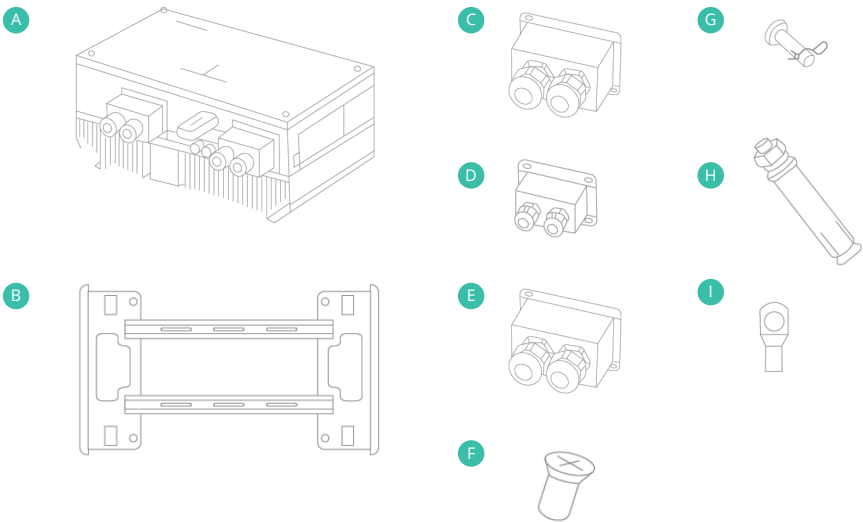
**Max. AC Output Power**  
3000W

**Max. Output Current**  
3200VA

## PACKAGING LIST

AC Output Cover

| Item | Item Name                  | Qty |
|------|----------------------------|-----|
| A    | Inverter                   | 1   |
| B    | Mounting Bracket           | 1   |
| C    | BAT Wire Cover             | 1   |
| D    | BMS, RS485 Com Wire Cover  | 1   |
| E    | AC Terminals Cover         | 1   |
| F    | Cover Screw                | 16  |
| G    | Inverter Security Pin      | 2   |
| H    | Bracket Wall Fixings       | 4   |
| I    | Battery Input Terminations | 2   |



### Introduction

All information contained in this booklet refers to the assembly, installation, commissioning, and maintenance of the AC Coupled Inverter. Please retain this manual for future reference.

**Legal Disclaimer:** This document is property of GivEnergy, reproduction is prohibited.

### Installation Requirements

Installation of all GivEnergy equipment must be carried out by a **GivEnergy Approved Installer**.

### Unit Information

The AC Coupled Inverter is bi-directional, allowing for connections to the grid and battery. The Inverter works with existing or new generation. It can also import from the grid at off-peak times when prices are lower, and discharge during busier periods when prices are more expensive.

### Storing the Inverter

The unit must be stored in its original packaging at temperatures between 5°C - 60°C.  
Do not stack more than 4 units on top of each other.

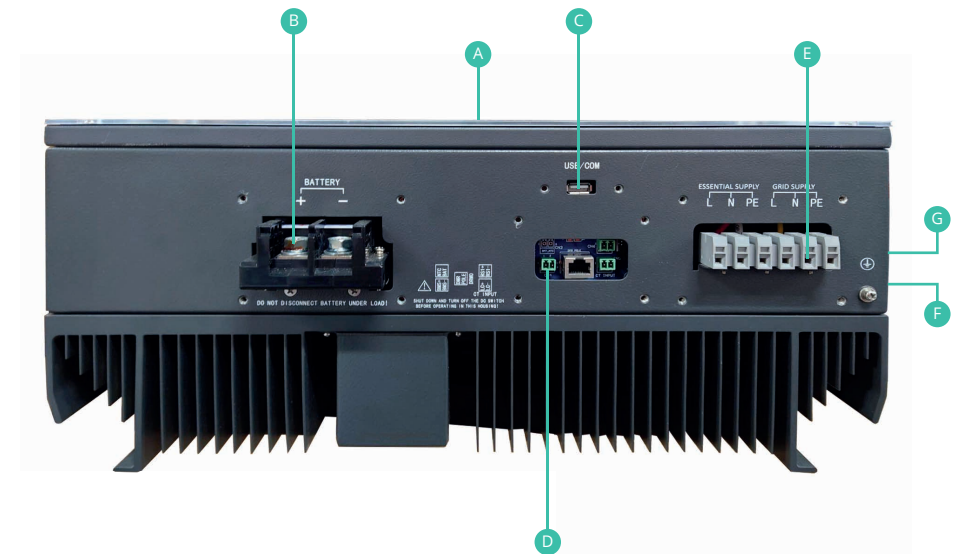
### Packaging Contents

When unpacking, please check the following:

- There are no missing accessories from the packaging list
- The model and specification of the AC Coupled Inverters' nameplate match the order specifications

If any damaged or missing parts are found, please contact GivEnergy on **01377 252 874** or email **support@givenergy.co.uk** immediately. Returns must be provided in original or equivalent packaging. The cardboard packaging is recyclable.

| Item | Item Name                            |
|------|--------------------------------------|
| A    | Power Flow Direction Indicators      |
| B    | Battery Input Terminals and Cover    |
| C    | WiFi or GPRS Com Module and USB Port |
| D    | BAT > NTC and RS485 Communication    |
| E    | AC Grid and EPS Terminals            |
| F    | Serial Number                        |
| G    | Specification                        |



## SAFETY AND INSTALLATION

### Safety Instructions

Extra care and attention must be taken when installing and maintaining any GivEnergy equipment.  
The system is capable of retaining a high voltage, even when disconnected.

- If you suspect something is wrong with the inverter, or if there are any missing/damaged parts contact GivEnergy on **01377 252 874** or email **support@givenergy.co.uk**
- All electrical installations must be carried out by a qualified and registered Electrician and in accordance with the local wiring regulations
- During operation, the heat sink may become hot. Do not touch the heat sink at the sides, or top of the inverter when in operation
- The inverter is designed to be connected to the grid; connecting your inverter to a generator or other power source can result in damage to the inverter or external devices
- All GivEnergy equipment must be installed by a GivEnergy Approved Installer



**The inverter must be installed in an easily accessible location, the status display must be visible and not obstructed**



**Please ensure that the wall to be mounted on is sufficient enough to hold the weight of the inverter and battery pack**



**The inverter must be installed in a well ventilated area, the ambient temperature should be below 40°C to ensure optimal operation**



**The inverter must be installed vertically with connections always positioned at the bottom, never install horizontally, and avoid tilting the unit**



**Do not install in direct sunlight or near water sources**



**Mount the inverter at least 3 feet above ground level (outside only)**

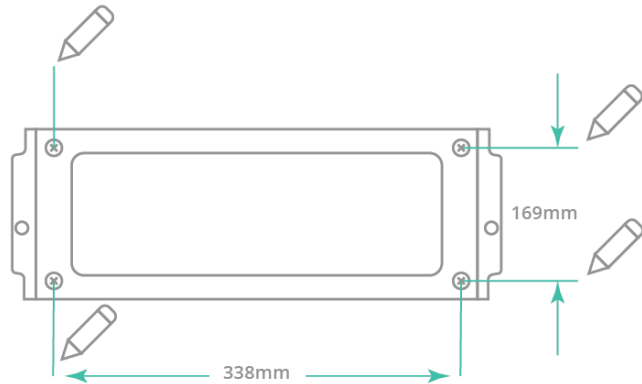
## CONNECTING THE BATTERY TO THE INVERTER

### Precautions

- It is very important for system safety and efficient operation to use appropriate cables for battery connections. 16mm<sup>2</sup> (minimum) tri-rated cables must be used for DC battery connections
- The voltage of the battery connected must not exceed 60V (or it will damage the inverter and void any warranty)
- Only GivEnergy batteries should be connected to our inverters
- Reversed polarity will damage the inverter
- The battery must be installed in accordance with the Battery Installation Guide
- The batteries must not be connected in series

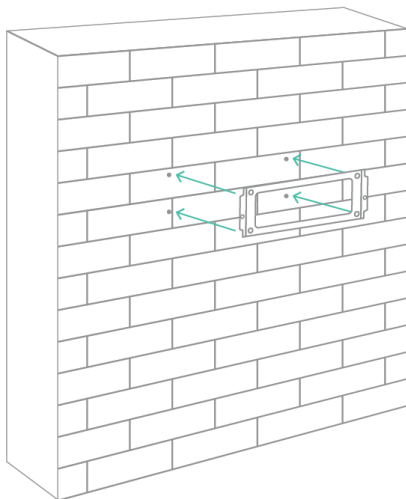
## STEP-BY-STEP INSTALLATION

1. Wall thickness for mounting the inverter should be suitable for the weight of the equipment. Place the wall mounting bracket horizontally onto the wall and mark the position of the bracket holes.

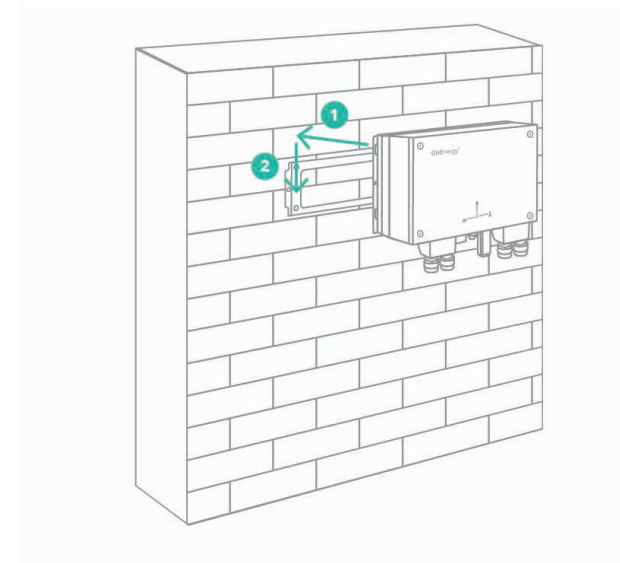


2. Drill 4 holes at the marked positions to a suitable depth for the fixings to be used. Fix the mounting rack to the wall using 4 M6x50 expansion bolts or hardware suitable for the wall type.

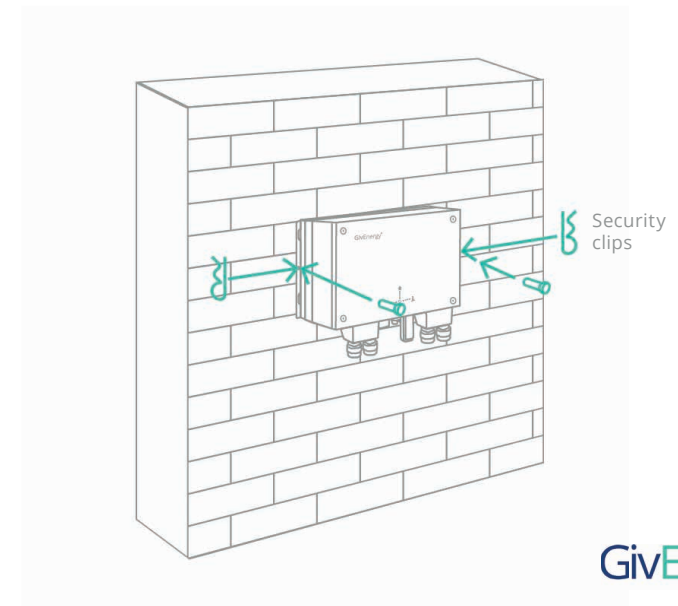
**Please note:** If fitting inverter to a non-masonry wall, different fixings will be required.



3. Mount the inverter onto the mounting bracket.

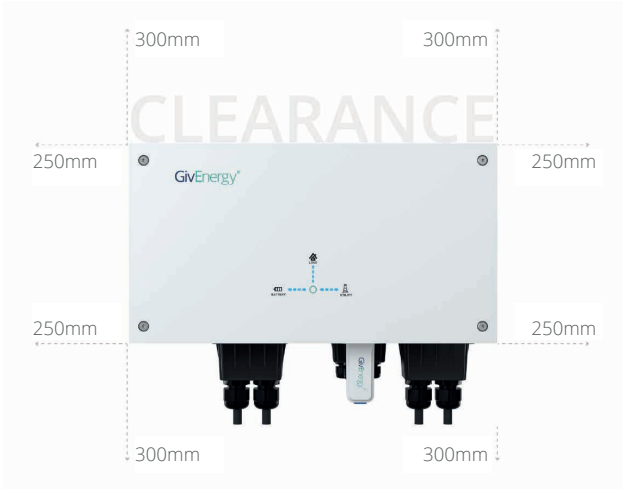


4. Insert the 2 security clips on the left and right side to prevent the inverter from being lifted off the bracket.



Space Clearance

There must be adequate clearance around the inverter to allow for heat dissipation. The diagram below illustrates the space required around the inverter.



Maintenance

When maintaining and cleaning the inverter, **the whole system must be powered down**. Please refrain from using cleaning products on the surface of the inverter.

To ensure your inverter operates optimally at all times, annual maintenance checks need to be carried out. Check for visible damage or discolouration of the cables, and that they are intact. Please ensure that the top of the inverter is not obstructed in any way.

| Item | Item Name                        |
|------|----------------------------------|
| A    | Battery DC Ring Terminals        |
| B    | USB Input                        |
| C    | EPS Connections                  |
| D    | AC Connections                   |
| E    | Battery and Meter communications |



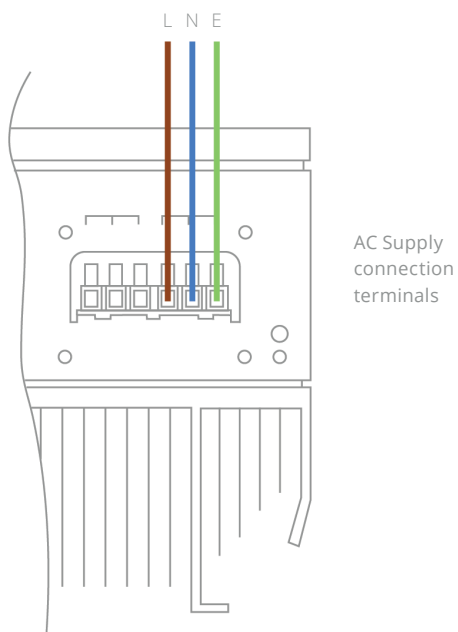
## AC UTILITY GRID CONNECTION

Cable size requirements for the AC Coupled Inverter are:

AC 3.0 - minimum 2.5mm<sup>2</sup>

The recommended maximum cable length should not exceed 50m as the resistance of the cable will consume inverter output power and reduce the inverter efficiency.

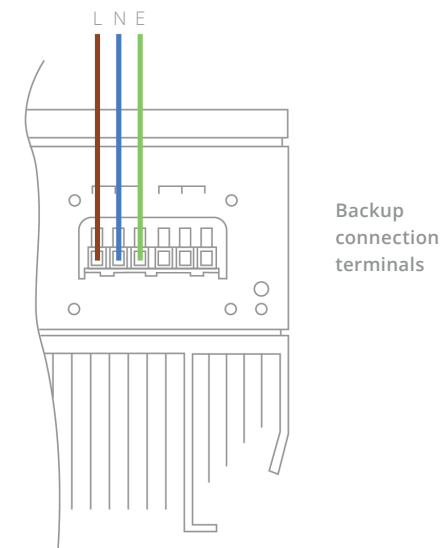
You must install a separate AC circuit-breaker per inverter in order to ensure that it is adequately protected and can be safely disconnected under load.



## CONNECTING TO THE EPS

The Emergency Power Supply (EPS) can provide a maximum output power of 3000W (battery dependent) during a grid failure. This output must be protected as close to the inverter as possible, with a double pole 30mA RCD and overload protection rated at up to 20A.

There are four approved methods to connect to the EPS, please refer to the EPS Connection Guide on our Knowledge Base for more information.



If the backup terminals are used, please ensure the following:

An earth rod must be installed and connected to the main earthing terminal, as close to the origin of supply, and adequate overload / short circuit protection is installed in accordance with the local wiring regulations.

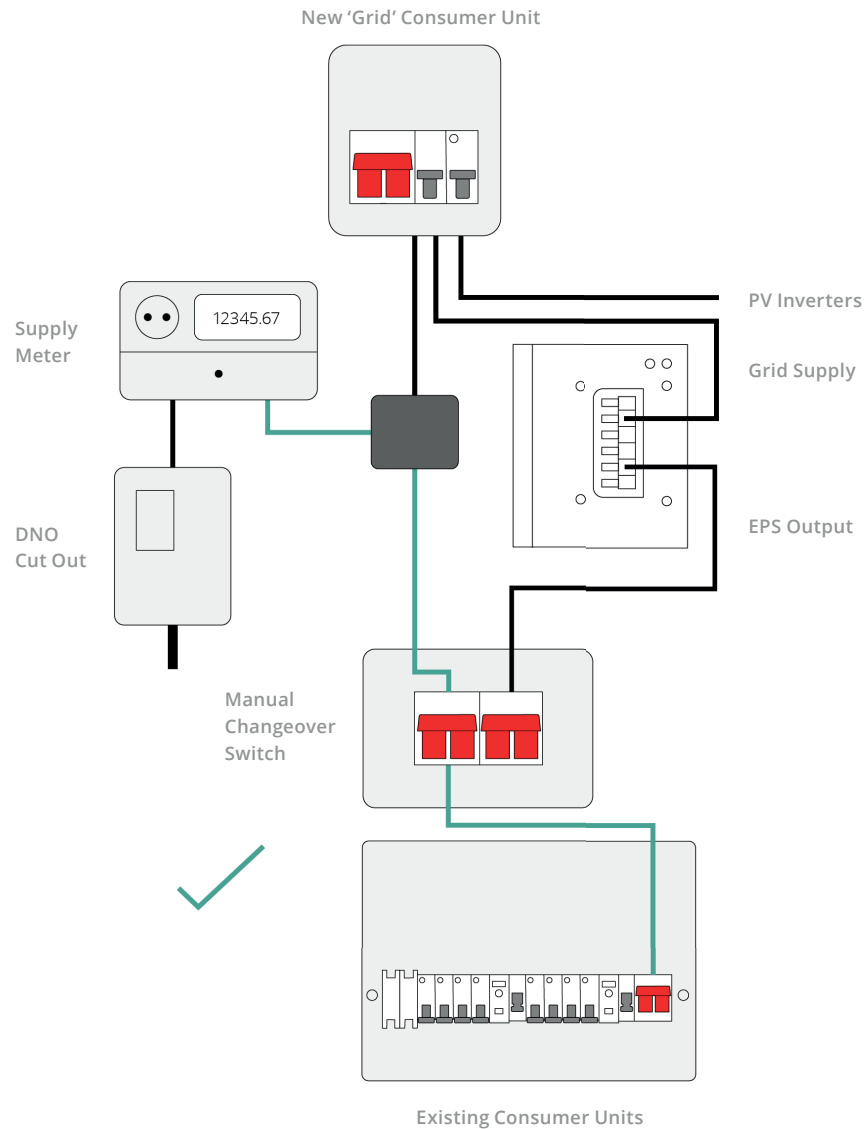


The EPS MAX output power is 3000W. If the load is greater than 3000W the inverter will stop outputting and going to fault. The EPS output will only operate when the battery(s) have capacity available.

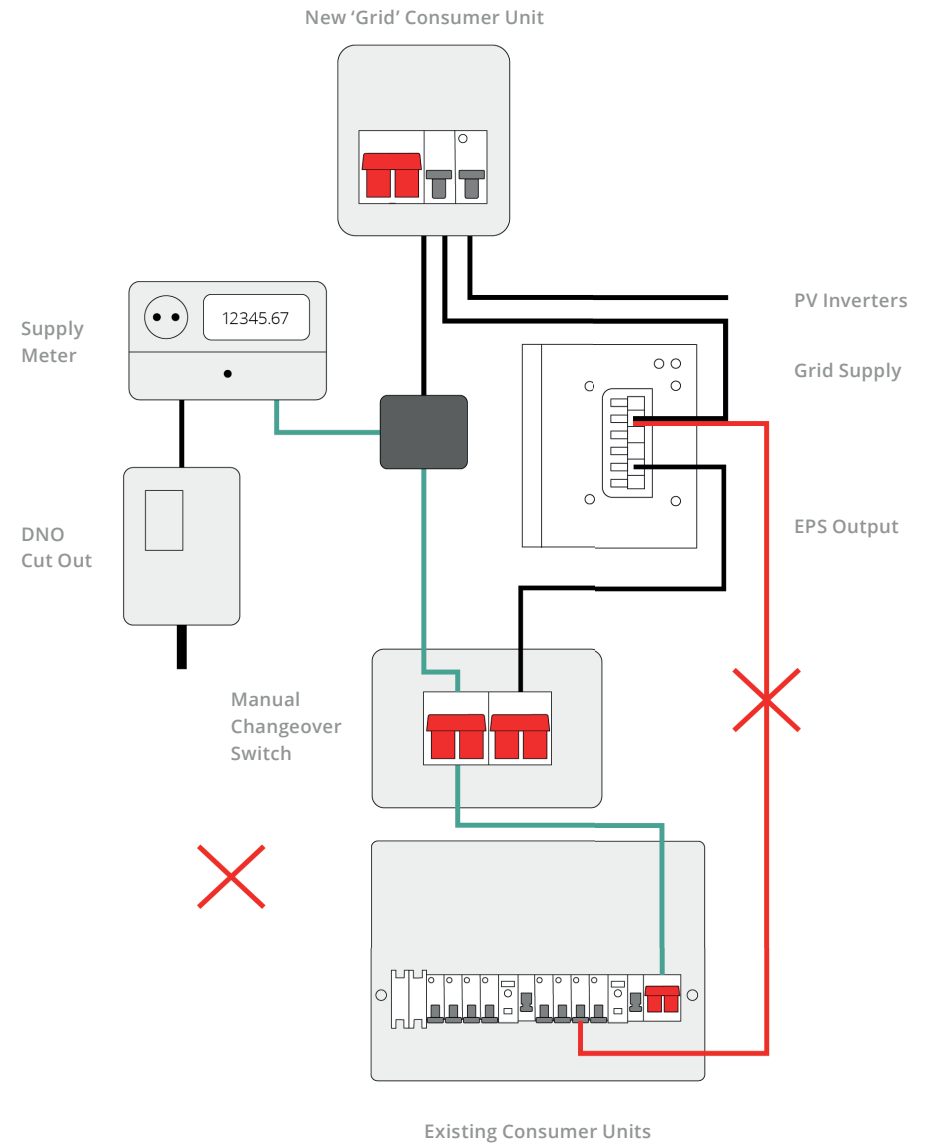
Any other grid tied generation must be supplied from the grid side of any changeover switch to avoid damage to the inverter, and void in warranty (see the following diagrams for reference).

## FULL PROPERTY BACKUP

Correct wiring of full property back-up with manual or automatic change over switch:

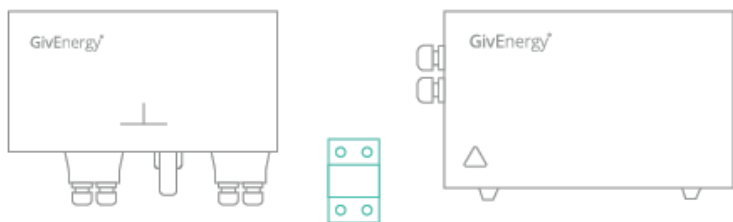


Incorrect wiring of full property back-up with manual or automatic change over switch:



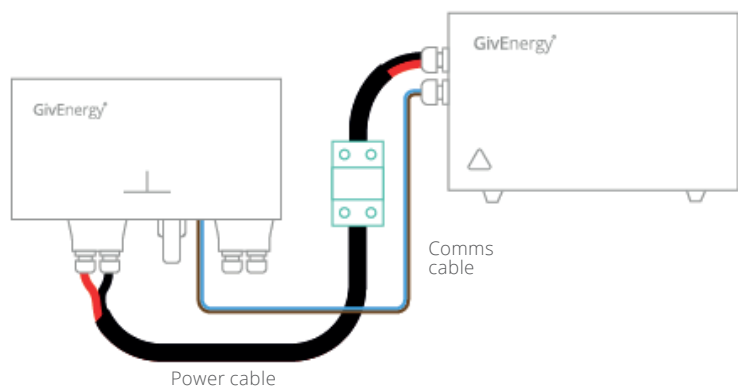
## CONNECTING THE BATTERY TO THE INVERTER

1. A DC MCB must be installed between the master battery and the inverter of Gen 1 batteries (not less than 100A), this will ensure the inverter can be safely disconnected during maintenance. Please note that a separate DC MCB is not required with Gen 2 batteries as they have one integrated, unless Gen 1 batteries are installed after a Gen 2 battery pack.



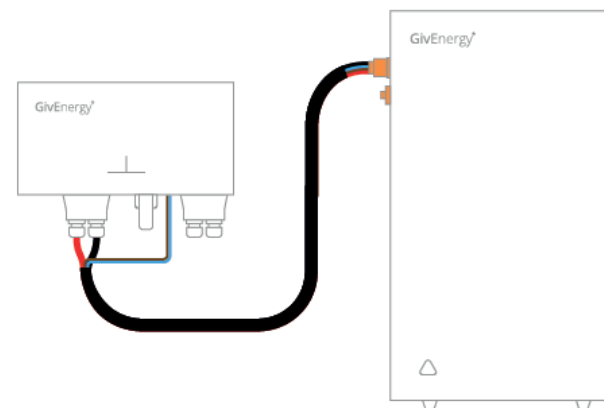
### Generation 1 battery only

2. Check the battery nominal voltage and polarity. When connecting a Gen 1 inverter to a Gen 1 battery (2.6kWh, 5.2kWh, 8.2kWh), a ring terminal to ring terminal cable must be used.



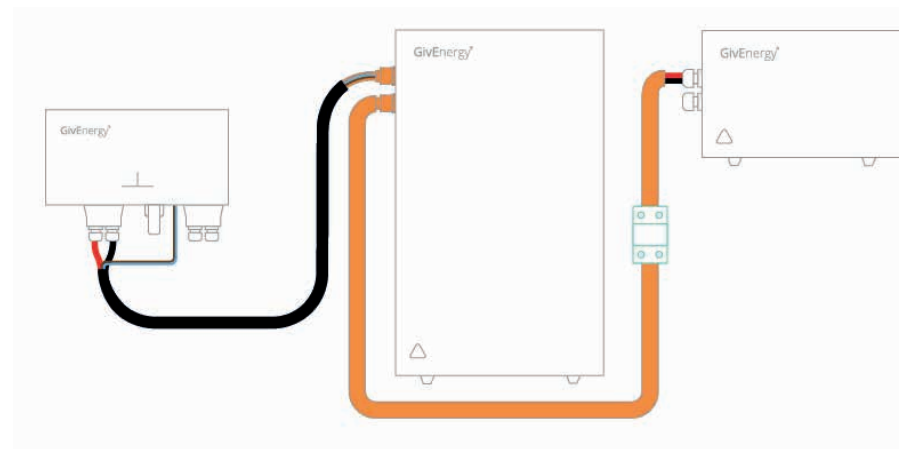
### Generation 2 battery only

3. When connecting a Gen 1 inverter to a Gen 2 battery (9.5kWh), a ring terminal to all in one cable must be used. Connect the ring terminal cable onto the battery terminal connection on the inverter. The other end can then be connected to the A-socket on the Gen 2 battery (ensure that the red clip is facing away from the inverter, and is pushed in securely).



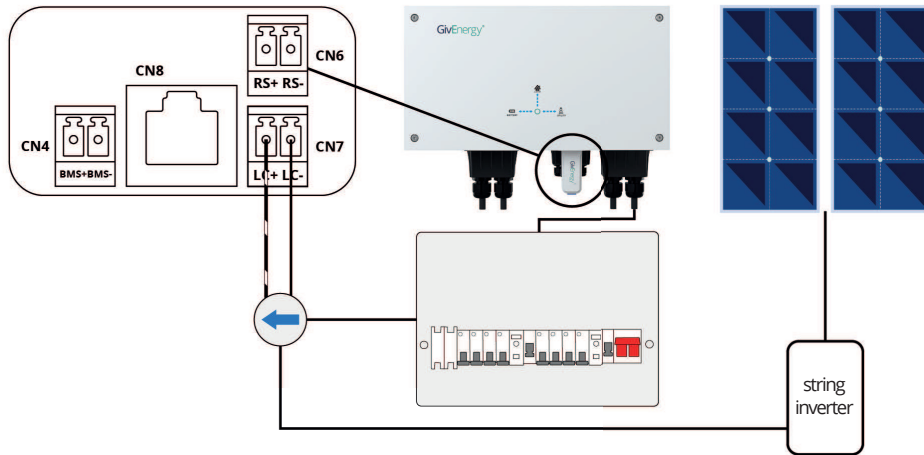
### Installation of additional batteries

4. If connecting additional Gen 1 batteries after a Gen 2 battery, you must install a DC MCB in between the Gen 2 and the Gen 1 battery to ensure that the Gen 1 battery can be safely isolated.

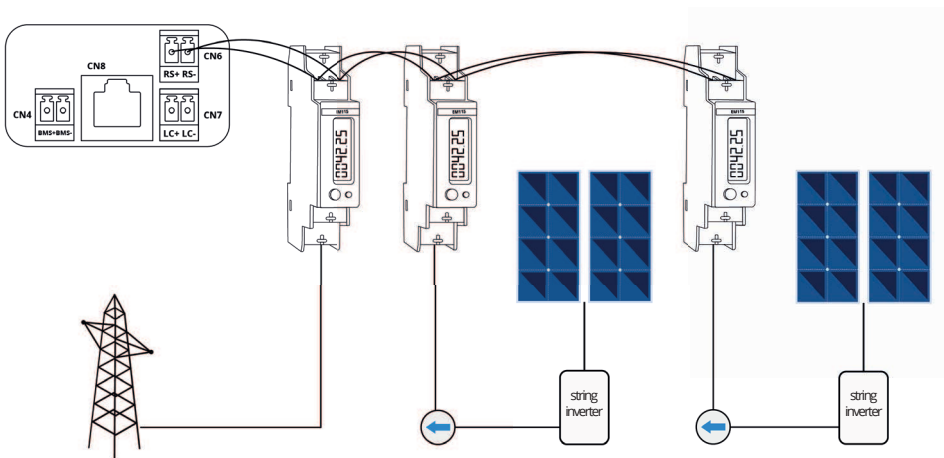


## MONITORING PV SYSTEM

### Blue CT Method



### Meter Method

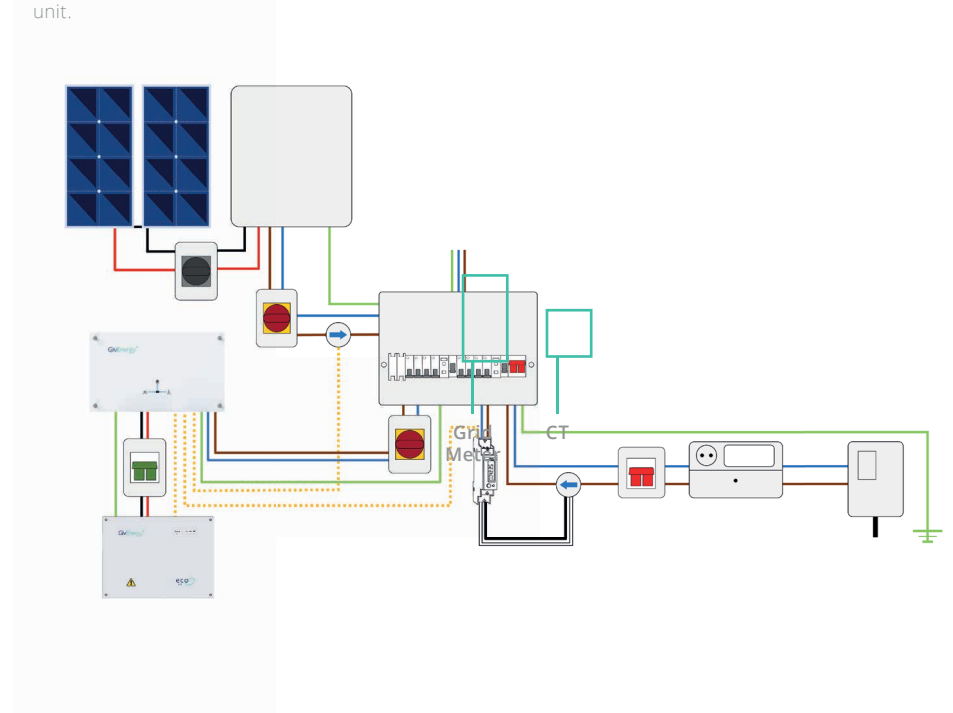


## CONNECTING MID APPROVED METER TO INVERTER

In the system, a mid approved meter must be installed to ensure correct monitoring of the grid power. The inverter uses this information to decide whether to charge or discharge the battery.

The CT clamp that is connected to the mid approved meter must be installed around the live incoming supply to the property, with the arrow pointing in the direction of grid import, in order to monitor the complete consumption of the building. Ensure that the meter used is approved for use with GivEnergy equipment.

The blue CT clamp supplied shall be used to monitor a single source of generation. The CT clamp must be installed around the live supply cable of the inverter, with the arrow pointing back towards the consumer unit.



### Start-Up Procedure

1. Connect the AC circuit breaker, ensure that the system is powered and commissioned using the portal/App. Ensure that the grid power is reading identical to that of the mid approved meter (this can be found on the screen of the meter).
2. Turn on the battery breaker
3. Turn on the battery
4. The inverter will start automatically when the battery voltage is higher than 46.4V

### Shutdown Procedure

1. Turn off the battery
2. Disconnect the AC circuit breaker to prevent it from being reactivated
3. Disconnect the battery breaker to prevent it from being reactivated
4. Check the inverter operating status
5. Wait until all LEDs have gone out. The inverter is now shut down

All systems must be commissioned to ensure correct battery and meter communications, as well as connection to the online portal.

**Note: Without commissioning, the system may not operate correctly.**

Check that all the wires are securely connected before the battery breaker and the AC isolator is switched on. You MUST set the parameters of the battery according to your battery system.

### Accessing the Commissioning Portal

Sign into the online portal at <https://portal.givenergy.cloud> with your GivEnergy Engineer login. If you are a first time user, and you do not have an account or Engineer login, please consult your supplier to get this set up.

➤ To download a fully illustrated guide, please visit our Knowledge Base at [www.givenergy.co.uk](http://www.givenergy.co.uk)

### Uninstalling the Inverter

1. Follow the shut-down procedure
2. Remove all connections and cables from the inverter
3. Remove the locking pins which are securing the inverter to the bracket
4. Lift the inverter off the bracket
5. Remove the wall bracket

### Packaging the Inverter

If possible, always pack the inverter in its original packaging and secure it with tension belts. If this is not available, you may also use an equivalent sized box. The box must be capable of being closed completely and be strong enough to support both the weight and the size of the inverter.

### Storing the Inverter

Store the inverter in a dry place where ambient temperatures are always between -25°C and +60°C



### Eco Mode

The system optimises the delivery of generated power (if available) and battery power to prioritise the home load. Grid power is used as a last resort if the generation or battery power are unavailable.



### Off Peak Charging

This is prioritised to charge the battery during off peak times when energy is cheaper, greener, and cleaner. The battery will start to discharge outside of the off peak time when energy is more expensive.



### Back Up / Island Mode

The system has the ability to be used in the event of a power cut. To utilise this feature, circuits must be connected to the inverter's EPS terminals.

To download a fully illustrated guide on connecting the inverter to the EPS, please visit our Knowledge Base at [www.givenergy.co.uk](http://www.givenergy.co.uk).

## MANUFACTURER WARRANTIES

This inverter is covered by a 12-year warranty.

### Products Covered



**AC Coupled Inverter 3.0**  
12 years

**Legal Disclaimer:** This document is property of GivEnergy, reproduction is prohibited.

