ISLAND MODE

Connect EPS Hybrid and AC

Overview

All inverters come with the option for providing an Emergency Power Supply (EPS), this can be used to provide power in the event of a grid outage. The EPS terminals are powered from the grid supply whenever it is available. When the inverter detects a grid outage it will automatically switch to take power from the batteries and solar (if available, on Hybrid inverters only).

Maximum Output (kW)	Gen 1 Hybrid 3.6 / 5kW	Gen 2 Hybrid 3.6 / 5kW	AC Coupled 3 kW
2.6 Battery only	1.25	1.25	1.25
5.2, 8.2kWh batteries only	2.6	3.6	3.0
All batteries with solar	3.6 / 5	3.6 / 5	N/A

An overload of the EPS circuit may damage the inverter. If the EPS circuit is overloaded, backup power will be lost for a minimum of 5 minutes, or until a manual restart is performed on the system. Multiple backup overloads may cause permanent damage to the inverter.

Care should be taken to ensure that the EPS installation meets wiring regulations set out in BS7671 and the IET Electrical Energy Storage Systems (2nd Edition). The inverter creates a Neutral-Earth bond internally upon loss of grid, this means an external relay is not required.

Please note that a small delay will be experienced following loss of grid **before** the EPS system energises. This should be approximately 5 seconds.

Electrical Connections

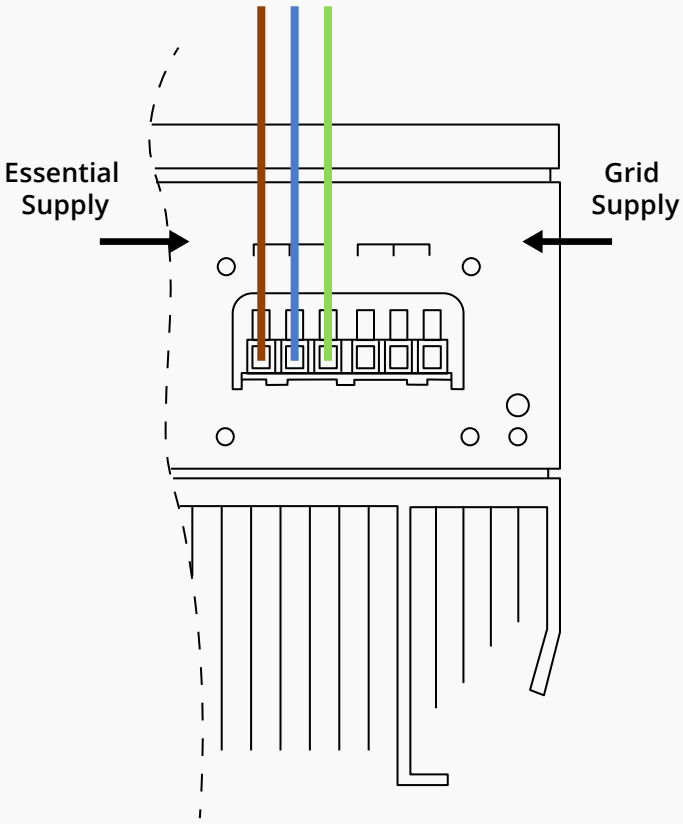
The EPS connection can be found under the same cover as the AC input, the EPS terminals are on the left side with the grid terminals on the right. The EPS output cable must be protected as close as possible to the inverter with at least;

- Double pole RCD protection at a maximum of 30mA
- Overload protection between 6 – 25A

Note

The EPS terminals will be live whilst the inverter is powered from AC, Battery, PV, or any combination – ensure safe isolation procedure is followed before removing the terminal covers.

EPS outputs for multiple inverters must not be joined.



Output Connection Terminals

Earthing

In island mode, EPS circuits must not rely on a TNS or TN-C-S earthing system as when grid live is lost grid earth and neutral may also be lost. A TNS or TN-C-S earthing system may be left connected when operating in island mode. Some key points to consider are;

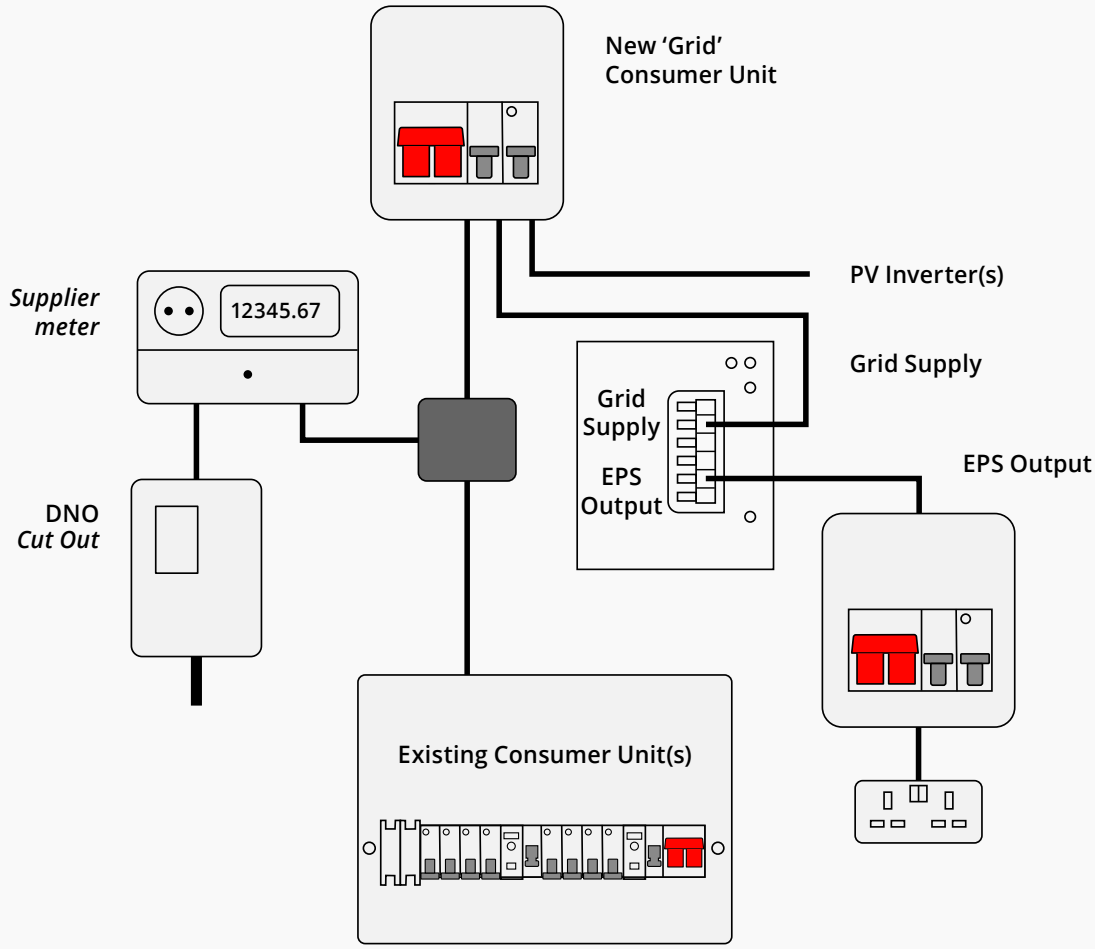
- Earth electrode resistance (ZEE) should be as low as possible and not exceed 200Ω.
- An earth bond should be provided between the inverter casing and all batteries.
- Earthing must be provided to the EPS output circuit(s) as the earth terminals for grid and EPS are not linked within the inverter.

Futher Support

If you have any further queries or are unsure of any points covered in this document, please send them to **support@givenergy.co.uk.**

Method One

Socket connected directly to EPS output terminals via consumer unit



Advantages

Easy to install, simple to explain. The backup power should last longer, due to minimal loads.

Disadvantages

Requires manual intervention by end user.

Installation

Install a single/double socket close to the inverter that is fed by the EPS output (via a consumer unit). The socket will be powered via the inverter, during normal operation and in the event of a power failure will automatically switch to EPS mode, so long as the battery has capacity. The end user can plug in devices of their choice.

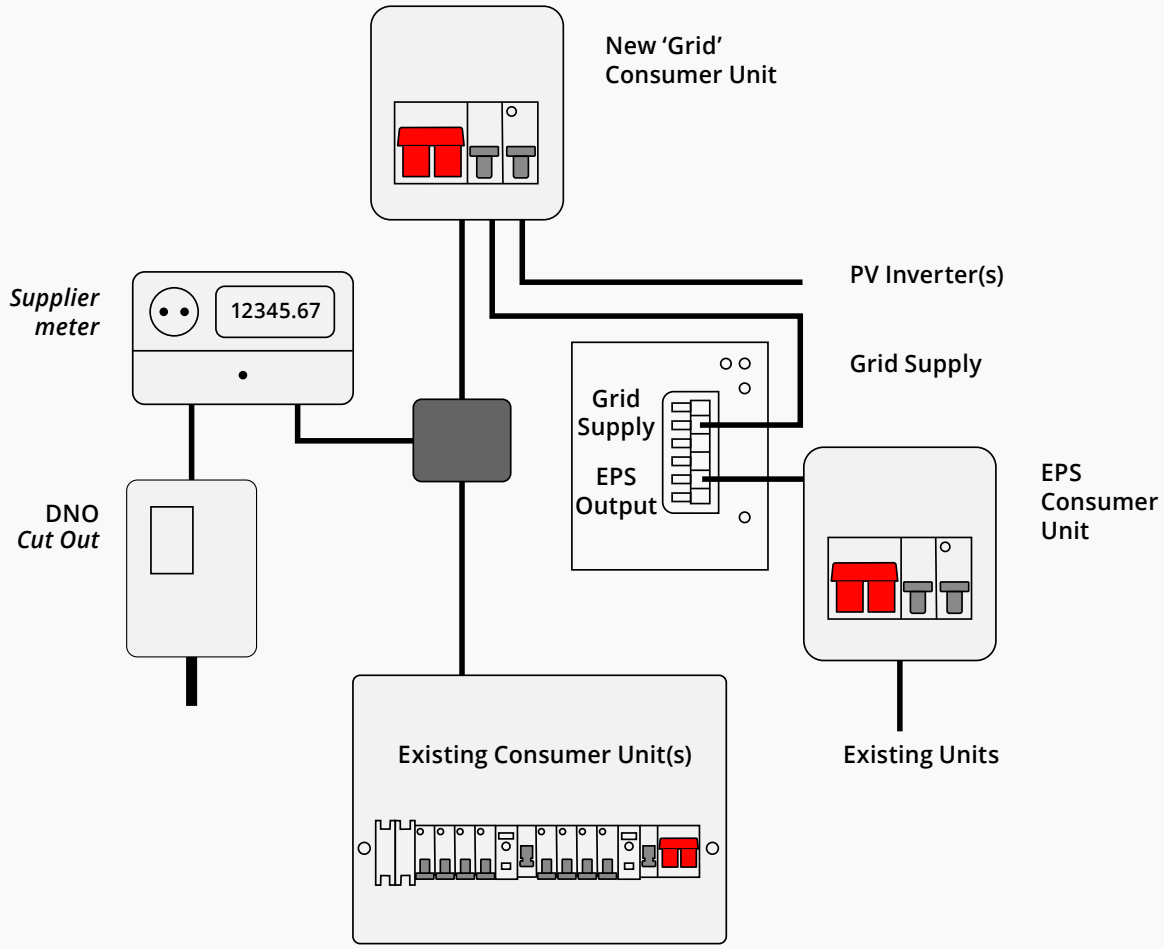
Earthing

Socket/consumer unit will require TT earthing method.

Note: With method 1, the grid supply to the GivEnergy inverter and any other grid tied generation may be supplied from an exisiting consumer unit.

Method Two

EPS consumer unit supplying dedicated EPS circuits



Advantages

Backup of dedicated circuits only, less risk of accidental overload. Backup should last longer due to only supplying essential circuits.

Disadvantages

Does not backup whole property, requires re-wiring of existing circuits or new circuits to be installed.

Installation

Install a small consumer unit that is fed by the EPS output. This consumer unit can have new or existing circuits installed into it. All circuits connected to this consumer unit will be powered via the inverter, during normal operation. In the event of a power failure, it will automatically switch to EPS mode, so long as the battery has capacity.

Earthing

At a minimum, the EPS consumer unit will require TT earthing method.

Note: With method 2, the grid supply to the GivEnergy inverter and any other grid tied generation may be supplied from an existing consumer unit.

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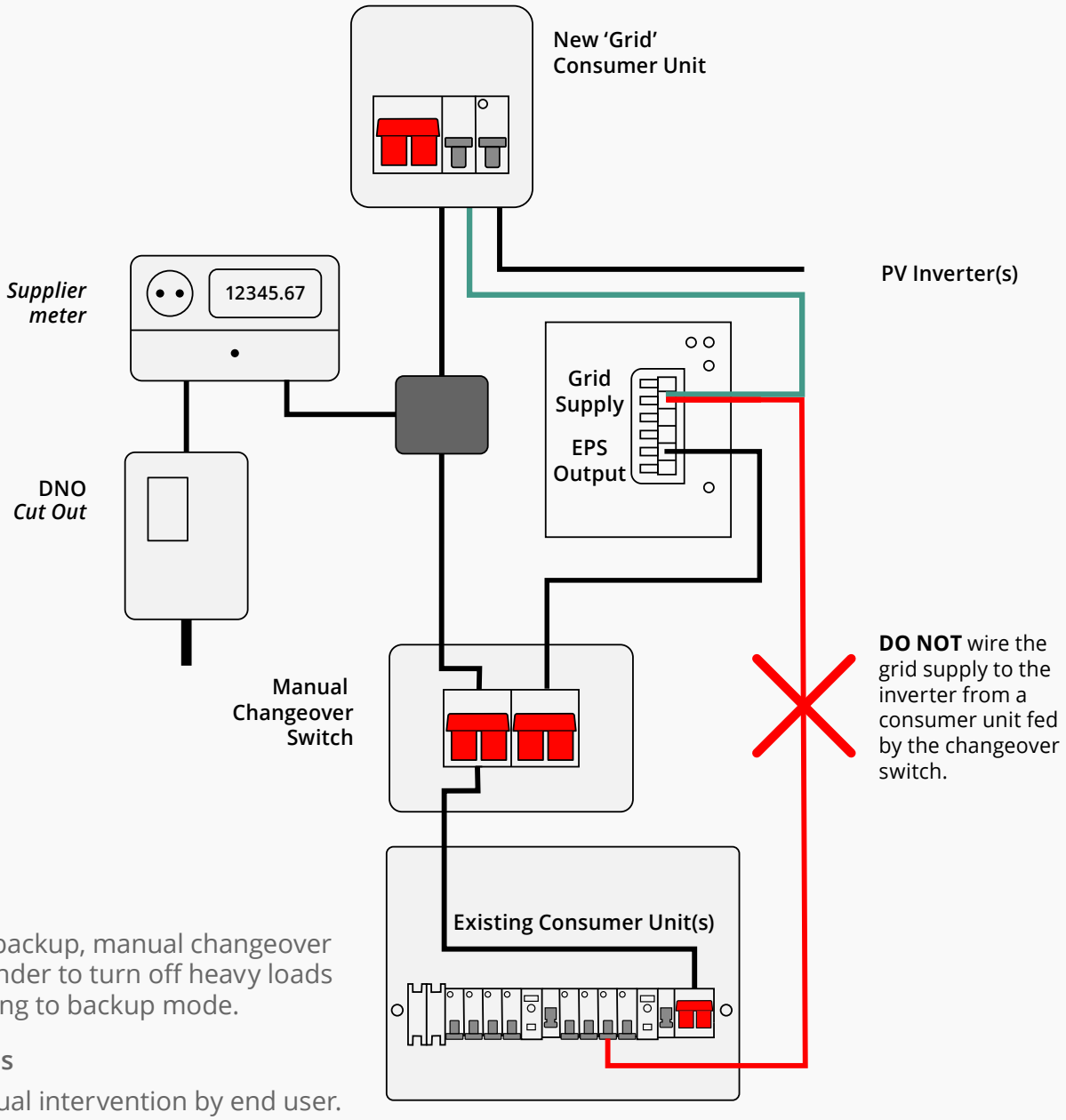
Method Three

Full property backup with manual changeover switch



Advantages

Full property backup, manual changeover acts as a reminder to turn off heavy loads before switching to backup mode.

Disadvantages

Requires manual intervention by end user.

Installation

Install a manual change over switch at the point of the incoming supply. In the event of a power failure, the end user can switch over to EPS mode. All circuits in the property can then be supplied by the EPS output, so long as the battery has capacity.

Earthing

Whole property will require TT earthing method for off grid operation.

Note: With method 3, the grid supply to the GivEnergy inverter and any other grid tied generation **must** be supplied from the **grid side** of the manual changeover switch.

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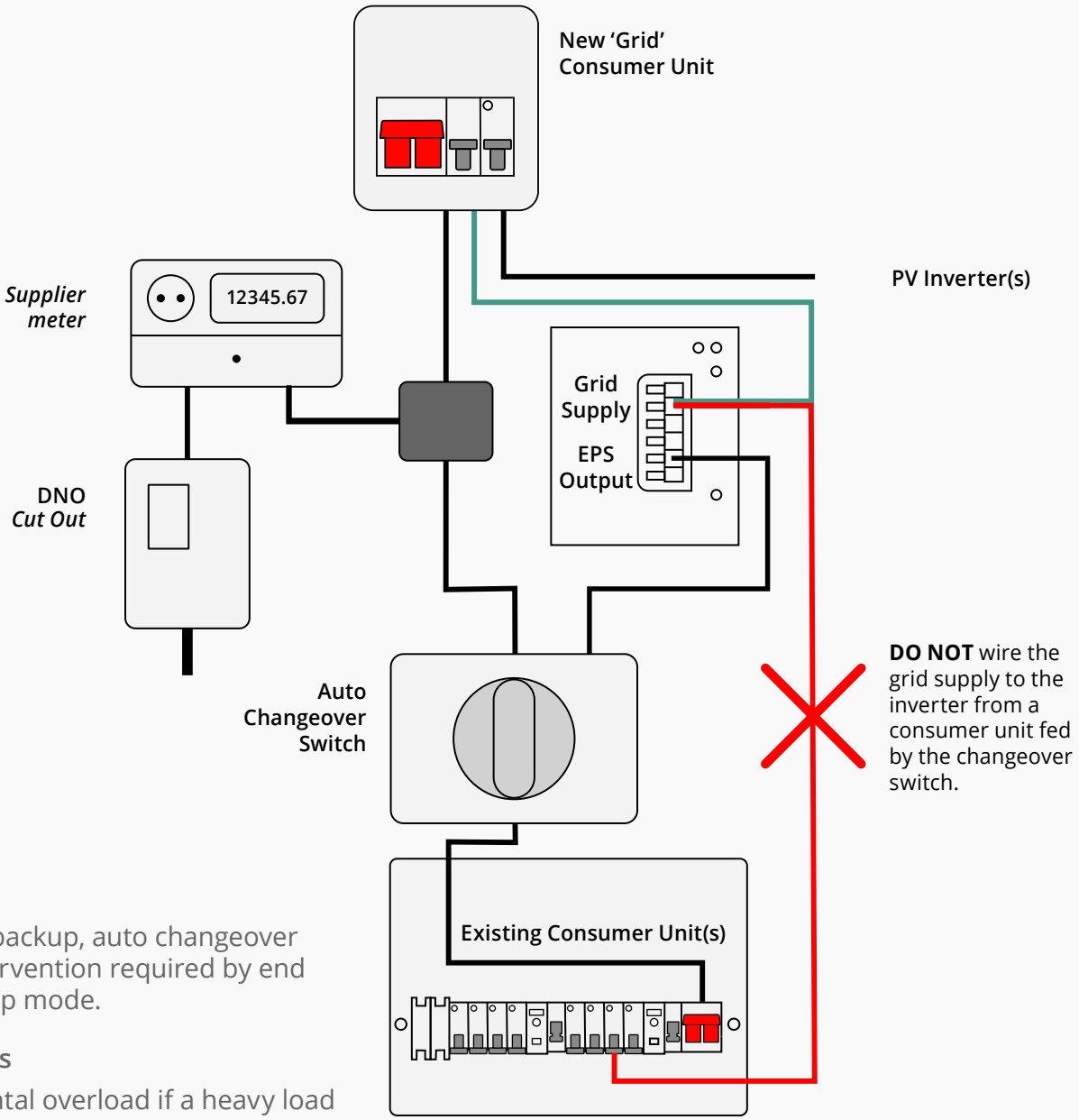
Method Four

Full property backup with auto changeover switch



Advantages

Full property backup, auto changeover means no intervention required by end user for backup mode.

Disadvantages

Risk of accidental overload if a heavy load was switched on prior to grid failure.

Installation

Install an auto change over switch at the point of the incoming supply. In the event of a power failure, the supply will automatically switch over to EPS mode. All circuits in the property are then automatically supplied by the EPS output, so long as the battery has capacity.

Earthing

Whole property will require TT earthing method for off grid operation.

Note: With method 4, the grid supply to the GivEnergy inverter and any other grid tied generation **must** be supplied from the **grid side** of the auto changeover switch.

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