

Manufacturer's CLS Product Information

This form is available in a Microsoft Word version from the ENA's website.

G100/2 - Form B - Compliance Verification Report for Customer Export or Import Limitation Schemes

This form shall be used by the **Manufacturer** to demonstrate and declare compliance with the requirements of EREC G100. The form can be used in a variety of ways as detailed below:

1. For Fully Type Tested status

The **Manufacturer** can use this form to obtain **Fully Type Tested** status for a **CLS** by registering this completed form with the Energy Networks Association (ENA) Type Test Register.

2. To obtain Type Tested status for a product

The **Manufacturer** can use this form to obtain **Type Tested** status for one or more **Components** which are used in a **CLS** by registering this form with the relevant parts completed with the Energy Networks Association (ENA) Type Test Register.

3. One-off Installation

The **Installer** can use this form to confirm that the **CLS** has been tested to satisfy the requirements of this EREC G100. This form shall be submitted to the **DNO** before commissioning.

A combination of (2) and (3) can be used as required, together with Form C where compliance of the **CLS** is to be demonstrated on site.

Note:

If the **CLS** is **Fully Type Tested** and registered with the Energy Networks Association (ENA) Type Test Register, Form C shall include the **Manufacturer's** reference number (the Type Test Register system reference), and this form does not need to be submitted.

Where the **CLS** is not registered with the ENA Type Test Register or is not **Fully Type Tested** this form (all or in parts as applicable) shall be completed and provided to the **DNO**, to confirm that the **CLS** has been tested to satisfy all or part of the requirements of this EREC G100.

| | | | |
|--------------------------|----------------------|---|---|
| CLS Designation | | Type Tested | |
| Manufacturer name | | GivEnergy | |
| Address | | Unit 1, Osprey House, Brymbo Rd, Newcastle-under-Lyme, ST5 9HX | |
| Tel | 01377252874 | Web site | https://www.givenergy.co.uk/ |
| E:mail | info@givenergy.co.uk | | |
| Installer's name | | | |
| Address | | | |

| | | | |
|--------|--|----------|--|
| Tel | | Web site | |
| E:mail | | | |

Export/Import capabilities

| | | | |
|--------|-----|--------|------|
| Export | Y/N | Import | Y /N |
|--------|-----|--------|------|

Description of Operation

EREC G100 section **Error! Reference source not found.** requires a description of the **CLS**, and schematic diagram, to be provided to the **Customer**. Please provide that description and the diagram here.

Product Details – GIV-HY3.6-G3, GIV-HY5-G3. Tested using firmware version D303-A303

CLS Operation – The CLS consists of a MODBus connected meter utilising a CT on the incoming grid supply. The EM115/GEM120/EM418 transmits measured Active Power values, one averaged value per second to the GivEnergy EMS (Energy Management System). The Giv-EMS sends new set points and controls the AC output power from the inverter. The MPPT controller adjusts the power transfer from the panels to the inverter output. If the maximum allowed exported power has been reached the MPPT will reduce the production from the PV panels and/or battery export.

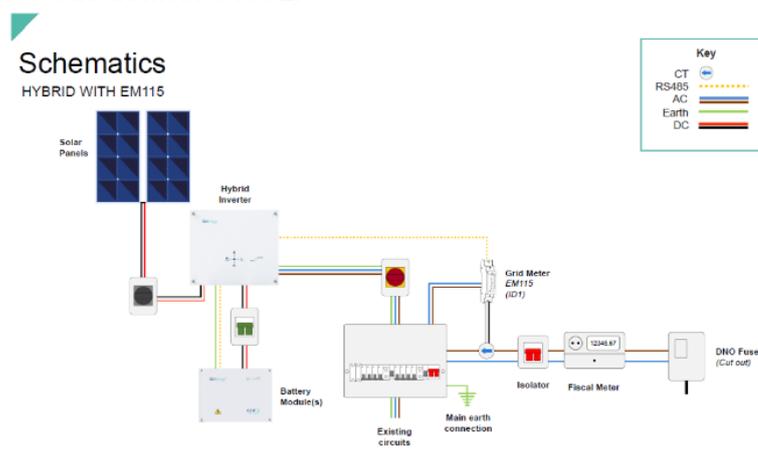
Configuring the CLS - The CLS may be programmed with a site export limit in W and is can only be set by engineering level access to prevent system owner override (*G100/2 para 4.2*). There is also the option to set export limitation against exiting PV, should the DNO specifically request this to prevent exported power above statutory voltage limits. The regulation states. *G100/2 para 4.3.2*

CLS Response Time - The CLS will detect an excursion to the set limit and reduce the export to the Agreed Export Capacity or less within 5 seconds. Export power is on average 5% lower than the set limit, to prevent further breaches of the limit.

CLS State 1,2,3 - The EM115/GEM120/EM418 meets the requirements (timing and allowable number of excursions) for state 1, 2 and 3 requirements, as required in the G100/2 policy.

CLS Connection Method – The EM115/GEM120/EM418 are hard wired to the generation or energy storage system using 1 pair twisted copper shielded cable, to always ensure guaranteed communications.

Power Quality – The EM115/GEM120/EM418 in conjunction with the generation/storage system meets all the requirements laid down in G100/2.



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| Communications Media |
| Document the provisions made for the use of various communication media, and both the inherent characteristics and the design steps made to ensure security and reliability. |
| CLS Internal communication – All components of the CLS to generation and/or energy storage use the following: - <ol style="list-style-type: none">1. Hard wired ModBus RS485 protocol. Using screened twisted pair cable.2. Hard wired dedicated CT. |
| Cyber Security |
| Confirm that the Manufacturer or Installer of the CLS has provided a statement describing how the CLS has been designed to comply with cyber security requirements, as detailed in section Error! Reference source not found. |
| The Generation and/or energy storage system complies with the requirements laid down in ETSI EN303 645 V2.1.1. See separate Cyber security declaration. |
| Power Quality Requirements |
| Where the CLS includes the power electronics that controls generation or loads (as opposed to the power electronics being included in Devices that are subject to their own power quality compliance requirements) please submit the harmonic and disturbance information here as required by EREC G5 and EREC P28. |
| Power quality requirements are met in their respective G98 & G99 declarations. Separately provided, along with test reports. |

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| Fail Safe |
| CLS internal failure: please submit here the description of the internal Fail Safe design and operation. Please also document how it has been demonstrated, including the non-volatile recording of times and numbers of state 2 operations, and confirm the overall response of the CLS to this internal failure. |
| Failure Modes – the following detail describes why the GivEnergy CLS is a failsafe scheme Declaration: G100/2 Compliance Certificate. <i>Ref. Para 4.3.3</i> <ol style="list-style-type: none">1.As the Energy meter is located at the grid connection point, a power failure would naturally isolate the PV system through standard G98/G99 methods.2.If the Energy meter itself were to fail, the RS485 communications would be lost and the generation and/or energy storage solution would permanently reduce output to the site export limit which has been set.3.If the EMS were to lose its power supply/fail then the generation and/or energy storage solution would permanently reduce output to any export limit which has been set due to communications failure |

from the grid meter..

4.If the RS485 communication connections/cable is damaged, then the RS485 signal would be lost and the generation and/or energy storage would permanently reduce output to the export limit which has been set.

5.If an individual inverter fails (In a paralleled configuration), then that inverter is bypassed due to a parallel connection and does not affect the operation of other components (If Present) which would continue to limit the system to the export limit which has been set.

6.If the current transformer wiring is removed, or the signal is lost, the inverters would permanently reduce output to the site export limit which has been set.

In summary – All components of the CLS are hard wired, an utilise heartbeat monitoring for correct communication flow. If this heartbeat is lost, missing or corrupted, the Generation and or energy storage solution will revert to fail0safe mode and permanently reduce it output to that set.

Communication and power supply failures between **Components** and **Devices**. Please document here compliance with EREC G100 section **Error! Reference source not found.**

| Component/Device number/description | Communication failure test | Power supply failure test |
|-------------------------------------|---|---|
| EM115 Meter | Generation system reduced actual output to the Export limit | Generation system reduced actual output to the Export limit |
| GEM120 Meter | Generation system reduced actual output to the Export limit | Generation system reduced actual output to the Export limit |
| EM418 Meter | Generation system reduced actual output to the Export limit | Generation system reduced actual output to the Export limit |

Operational Tests

In accordance with EREC G100 section **Error! Reference source not found.** undertake the tests A and B to confirm correct operation in state 1 and state 2, that transition into state 3 occurs as required, and that behaviour in state 3 is also as required.

Test A

| | |
|---|--------------|
| Nominal Export Limit (for type tests this will be at maximum, minimum and one intermediate setting) in Amp: | 3600W 16A |
|---|--------------|

| | |
|---|-----|
| Nominal Import Limit (for type tests this will be at maximum, minimum and one intermediate setting) in Amp: | N/A |
|---|-----|

| No | Starting level | Step value | CLS registers change in level? | CLS and/or Component and/or Device initiates correct response of $\geq 5\%$? | Duration of step in test | Correct state 1/ state 2 operation |
|----|----------------|------------|--------------------------------|---|--------------------------|------------------------------------|
| | | | | | | |

| 1 | Below Export Limit (EL) | 105% of EL | Yes. Power output is reduced so that the meter measured at or below the EL | Yes | 30 seconds | Yes |
|-----------------------|-------------------------|------------|---|---|--------------------------|---------------------------|
| 2 | Below Export Limit (EL) | 110% of EL | As above | Yes | 30 seconds | Yes |
| 3 | Below Export Limit (EL) | 120% of EL | As Above | Yes | 30 seconds | Yes |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Test B | | | | | | |
| Nominal Export Limit: | | | | | | 3600W 16A |
| Nominal Import Limit | | | | | | N/A |
| No | Starting level | Step value | CLS registers change in level? | CLS and/or Component and/or Device initiates correct response of \geq 5%? | Duration of step in test | Correct state 3 operation |
| 7 | Below Export Limit (EL) | 105% of EL | Yes. CLS initially adopts stage 2 and reduced output to the EL or below. 60 seconds later, Grid Fault alarm is raised and the CLS adopts state 3, and reduced its output to match the EL set, therefore guaranteeing the EL cannot be breached, while still maintaining the load powered. | Yes | 65 seconds | Yes |
| 8 | | | | | | |

State 3 Reset

These tests are to demonstrate compliance with section EREC G100 **Error! Reference source not found..**

Please document how the reset from state 3 to state 1 has been demonstrated. Please include how the reset is achieved.

Please confirm that for **CLSs** to be installed in **Domestic installations** three (3) resets causes lockout or that for non-domestic installations lockout can only be reset after four hours. Please explain how lockout is reset.

If the generation and/or energy storage solution enters stage 3 (FailSafe). Normal operation cannot return till the system is reset/rebooted. On reboot the fault condition will be verified clear, noted by the fault (Grid Meter Communications failure) is cleared. Only once clear will normal operation in stage 1 and 2 be allowed.

The reset is achieved only by logging onto the portal and sending a reset Inverter command.

If the inverter is restarted 3 times within 1 hour, the portal will force logout for the user. The user will not be able to log in for a set duration.