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	N/A		
Address			

Tel		Web site	
E:mail			

Export/Import capabilities

Export	Y ~~/ N~~	Import	Y ~~/ N~~

Description of Operation

EREC G100 section 4.2 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-HY-6.0-G3-HV, GIV-HY-8.0-G3-HV, GIV-HY-10.0-G3-HV

These hybrids are the same Generation 3 as existing **GIVEN/08085/V2/A1,** but with HV battery and higher output powers. Power logic is the same.
Tested using firmware version: SG_090808 03 Oct 2024.

CLS Operation – The CLS consists of a MODBus connected meter utilising a CT on the incoming grid supply**.** The GEM120CT transmits measured Active Power values, one averaged value per second to the GivEnergy EMS (Energy Management System) within the inverter control board. 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.

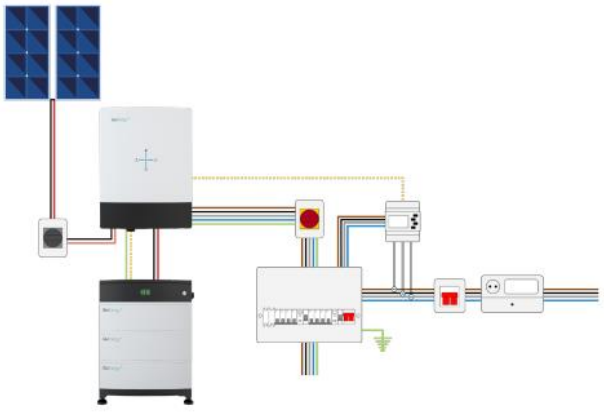
Configuring the CLS - The CLS may be programmed with a site export limit in W and is can only be set by engineering level access to prevent system owner override *(G100/2 para 4.2)*. There is also the option to set export limitation against exiting PV, should the DNO specifically request this to prevent 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 GEM120CT 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 GEM120CT is hard wired to the generation or energy storage system using 1 pair twisted copper shielded cable, to always ensure guaranteed communications.

Power Quality – The GEM120CT in conjunction with the generation/storage system meets all the requirements laid down in G100/2.



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: -

1. Hard wired ModBus RS485 protocol. Using screened twisted pair cable.
2. Hard wired dedicated CT. Optional digital LoRa wireless is available.

CLS External communication – Is in the form of a datalog device (Dongle). The settings for access and setup of this are secured during commissioning, automatically using the GivEnergy commissioning App process. Login password is set, random and stored securely in the database. The WiFi encryption key is also generated at this time, again stored in the database, should it be required later. Data to and from the device to the customers network, is over secure WiFi.
The communications link is maintained in the form of a heartbeat, send & receive. This ensures the internet connection between Dongle & cloud server is always maintained. Should this be interrupted, the CLS is marked as Offline, so the User can be informed there is a communication issue.

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 4.7.

The energy storage system complies with the requirements laid down in ETSI EN303 645 V2.1.1. See separate Cyber security declaration.

Under provision 5.1-1 the password cannot be left default, the commissioning process, forces this password to be set by the user. If the user tried to bypass the commissioning process and set the dongle manually the 1st login, will enforce a password change.

In accordance with ETSI Provision 5.1-1. In accordance with provision 5.1-5 brute force attack against the login is prevented, if the admin login is incorrect, after 3 tries, the login will lock out for an ever-increasing time. Making it difficult to attack the login.

Should customer find a possible vulnerability, the portal feedback has a dedicated vulnerability reporting feature.

For the full list of applicable provisions, these are provided in the Dongle Compliance appendix to the GivEnergy 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 full test reports.

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. *Ref. Para 4.3.3*

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 0 and raise an alarm to the user, alerting them there is a “Meter Communication Error”

3.If the EMS were to lose its power supply/fail then the generation and/or energy storage solution would be unable to output any power.

4.If the RS485 communication connections/cable is damaged, then the RS485 signal would be lost and the generation and/or energy storage would reduce output to 0W and raise an alarm to the user “Meter Comms Error”

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 0W. As without an actual grid power reference the inverter is unable to operate.

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 fail safe mode and reduce its output to 0W.

Communication and power supply failures between **Components** and **Devices**. Please document here compliance with EREC G100 section 5.5

Component/Device number/description	Communication failure test	Power supply failure test
GEM120CT	Generation system reduced actual output to 0W	Generation system reduced actual output to 0W

Operational Tests

In accordance with EREC G100 section 5.6 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:	15kVA

No	Starting level	Step value	**CLS** registers change in level?	**CLS** and/or **Component** and/or **Device** initiates correct response of ≥ 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	58 seconds	Yes
2	Below Export Limit (EL)	110% of EL	As above	Yes	58 seconds	Yes
3	Below Export Limit (EL)	120% of EL	As Above	Yes	58 seconds	Yes
4	Below Import Limit (IL)	105% of IL	Yes, Inverter charge demanded power is reduced, to maintain below IL (State 1)	Yes	58 seconds	Yes
5	Below Import Limit (IL)	110% of IL	As Above	Yes	58 seconds	Yes
6	Below Import Limit (IL)	120% of IL	As Above	Yes	58 seconds	Yes

Test B						
Nominal Export Limit:						3600W 16A
Nominal Import Limit						15kVA
No	Starting level	Step value	**CLS** registers change in level?	**CLS** and/or **Component** and/or **Device** initiates correct response of ≥ 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 0W, therefore guaranteeing the inverter cannot output without knowledge of the CLS metering.	Yes	62 seconds	Yes
8	Below Import Limit (IL)	105% of IL	Yes	Yes	62 Seconds	Yes

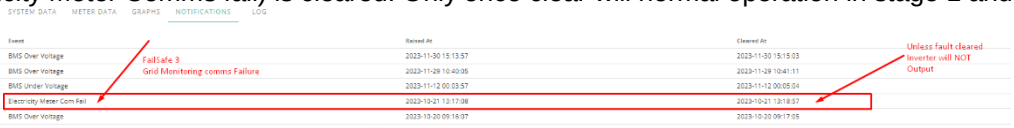
State 3 Reset

These tests are to demonstrate compliance with section EREC G100 4.5.2

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 MANUALLY reset/rebooted. On reboot the fault condition will be verified clear, noted by the fault (Electricity Meter Comms fail) 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 reboot Inverter command. If the error state is CLEAR, above shows the error, invoked and then cleared.

If the inverter is restarted 3 times within 1 hour, the portal will force logout for the user.