

Appendix B – 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:

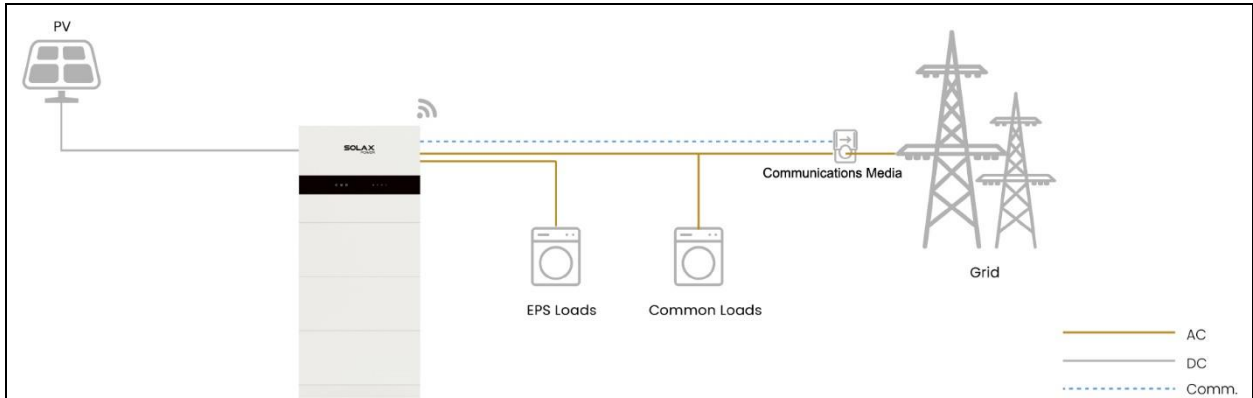
If the **CLS** is **Fully Type Tested** and registered with the Energy Networks Association (ENA) Type Test Register, Form C shall include the **Manufacturer’s** reference number (the Type Test Register system reference), and this form does not need to be submitted.





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			
Manufacturer’s reference number		X1-IES-2.5K;X1-IES-3K;X1-IES-3.7K;X1-IES-4.6K; X1-IES-5K;X1-IES-6K;X1-IES-8K; X1-IES-3.7K-A;X1-IES-5K-A;X1-IES-6K-A;X1-IES-8K-A;	
Manufacturer name		SolaX Power Network Technology (Zhe jiang) Co., Ltd.	
Address		No.278, Shizhu Road, Chengnan Sub-district, Tonglu County, Hangzhou, Zhejiang, China	
Tel	+86(0571)-56260011	Web site	www.solaxpower.com
E:mail	info@solaxpower.com		
Installer’s name			
Address			

Tel		Web site	
E:mail			

Export/Import capabilities			
Export	Y / N	Import	Y / N
Description of Operation			
<p>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.</p>			
<p>The SolaX Power Network Technology (Zhe jiang) Co., Ltd. realize the function of CLS through set the limit value on the inverter LCD display. The realization of the function is based on the control of the internal logic of the inverter, control the communication between the inverter and the meter, monitor the grid-connected information and adjust in real time.</p> <p>SolaX Power CLS Controls & Settings</p> <p>SolaX Power systems meet EREC G100 version 2 policy requirements through the following high-level control & settings:</p> <ol style="list-style-type: none"> 1. <u>SolaX Power Energy Meter (monitoring PoC with the grid)</u>: The SolaX Power meter will ensure that the current is monitored in real-time at the main PoC, ensuring that all potential import / export current flows are captured by the SolaX Power CLS. For multiple incomers, these values are aggregated according to DNO requirements to ensure the requisite import / export limits are managed correctly. 2. <u>SolaX Power Control Response Times</u>: The SolaX Power CLS response time are compliant to the G100 2nd amendment time harmonization requirement fixes and will tether the applicable import / export elements to ensure no excursion into State 2 is greater than 15 seconds. 3. <u>SolaX Power State 1, 2 & 3</u>: SolaX Power's solution meets the requirements (timing and allowable number of excursions) for state 1, 2 and 3 requirements, as detailed in the G100 2nd amendment policy. 4. <u>SolaX Power Interrogation & Data</u>: SolaX Power's solution captures all control, power and current data which is presented in real-time via an HMI (Human Machine Interface) both on site and off site which enables multi-tier extensive data interrogation (by either installer or manufacturer). 			



No	Product type	Icon	Product number
1	PV		
2	Battery		
3	Communications Media		Meter: DDSU666; CT: SCT-16-100A/33.33mA Datahub: DataHub1000
4	Inverter		X1-IES-2.5K;X1-IES-3K; X1-IES-3.7K;X1-IES-4.6K; X1-IES-5K;X1-IES-6K;X1-IES-8K; X1-IES-3.7K-A;X1-IES-5K-A; X1-IES-6K-A;X1-IES-8K-A;

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.

The communication mediums of the CLS can be Wired or Wireless and are registered by the CLS. At the commissioning process the device is registered as a generation/non generation device. The G100-2 logics are also implemented in each of the CLS devices.

1. SolaX Power's solution CLS Internal Communications: All the component parts within the Solution:

CLS system use a combination of:

- 1) Hard-wired serial Modbus RTU
 - 2) Hard-wired wired communication (LAN)
 - 3) Hard-wired serial dedicated protocol (over RS485)
 - 4) Dedicated wireless communication (Sub-Giga)
 - 5) Standardized wireless communication (Wi-Fi/LTE/Bluetooth)
2. SolaX Power's solution 'Local Network' Communications: All units that constitute the full SolaX Power's solution CLS system are inter-connected by 'hard-wired' and dedicated communications cables. No 3rd party equipment is connected to this network, ensuring that we create a ring-fenced solution.
 3. Remote communications: SolaX Power's solution CLS systems can either communicate remotely via homeowner local LAN or via LTE mobile router installed within the Inverters.

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.

We SolaX Power Network Technology (Zhe jiang) Co., Ltd. declare that G100 certified products, And the variant models to be included in the certification, Are in compliance with Cyber security requirements in accordance with the standards:

- ENA Engineering Recommendation G99 Issue 1 Amendment 8 2021
- ETSI EN 303 645;
- PAS 1879 "Energy smart appliances – Demand side response operation – Code of practice";
- Schedule 2 of 2023 No. 1007 CONSUMER PROTECTION

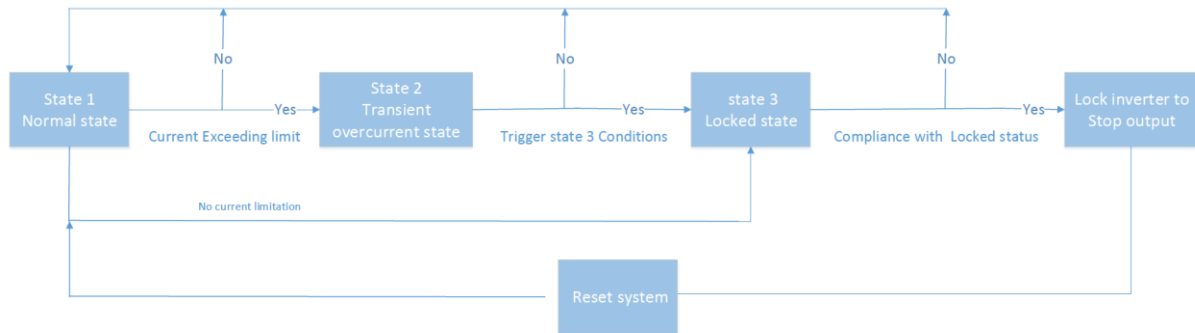
Power Quality Requirements

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.

SolaX Power Network Technology (Zhe jiang) Co., Ltd. confirms that the product complies with the requirements of the relevant harmonics standards and that the relevant harmonic data has been provided as required by ER G5.

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.



G100 CLS Fail Safe Compliance

G100 CLS was designed with a fail-safe mechanism according to G100 section 4.5. Therefore, the system design ensures that it will limit the imported/exported current at the site to the DNO's agreed limit(s).

All the components in the system are either wired or wireless and are registered by the CLS. At the commissioning process the device is registered as a generation/non generation device.

In the event of a detected failure the system will operate the Fail-safe mechanism by reducing the component generation to zero immediately according to the table above.

Note:

Record of entering state 2 for the first time

```

2023-10-15 10:15:45: ***** Publishing CLS state *****
2023-10-15 10:16:31: info CLS: MIL: 16, MEL: 16
2023-10-15 10:16:31: info CLS: export Curr: 18.00 A
2023-10-15 10:16:31: info CLS: cls state: 2 -- WARNING
2023-10-15 10:16:31: info CLS: import out of range: false
2023-10-15 10:16:31: info CLS: export out of range: true
2023-10-15 10:16:31: info CLS: meter coms lost: false
2023-10-15 10:16:31: info CLS: inv coms lost: false
2023-10-15 10:16:31: info CLS: --state2: enter state time :2023-10-15 10:16:21
2023-10-15 10:16:31: info CLS: --cnt in state2: 1
  
```

Note:

Resets state 1

```

***** Publishing CLS state *****
2023-10-15 10:16:51: info CLS: MIL: 16, MEL: 16
2023-10-15 10:16:51: info CLS: cls state: 1 -- NORMAL
2023-10-15 10:16:51: info CLS: import out of range: false
2023-10-15 10:16:51: info CLS: export out of range: false
2023-10-15 10:16:51: info CLS: meter coms lost: false
2023-10-15 10:16:51: info CLS: inv coms lost: false
  
```

Note:

Record of entering state 2 for the second time

***** Publishing CLS state *****
2023-10-15 10:16:58: info CLS: MIL: 16, MEL: 16
2023-10-15 10:16:58: info CLS: export Curr: 17.00 A
2023-10-15 10:16:58: info CLS: cls state: 2 -- WARNING
2023-10-15 10:16:58: info CLS: import out of range: false
2023-10-15 10:16:58: info CLS: export out of range: true
2023-10-15 10:16:58: info CLS: meter coms lost: false
2023-10-15 10:16:58: info CLS: inv coms lost: false
2023-10-15 10:16:58: info CLS: --state2: enter state time :2023-10-15 10:16:48
info cls: --cnt in state2: 2

Note:

Resets state 1

***** Publishing CLS state *****
2023-10-15 10:17:18: info CLS: MIL: 16, MEL: 16
2023-10-15 10:17:18: info CLS: cls state: 1 -- NORMAL
2023-10-15 10:17:18: info CLS: import out of range: false
2023-10-15 10:17:18: info CLS: export out of range: false
2023-10-15 10:17:18: info CLS: meter coms lost: false
2023-10-15 10:17:18: info CLS: inv coms lost: false

Note:

Record of entering state 2 for the third time

***** Publishing CLS state *****
2023-10-15 10:17:24: info CLS: MIL: 16, MEL: 16
2023-10-15 10:17:24: info CLS: import Curr: 18.00 A
2023-10-15 10:17:24: info CLS: cls state: 2 -- WARNING
2023-10-15 10:17:24: info CLS: import out of range: true
2023-10-15 10:17:24: info CLS: export out of range: false
2023-10-15 10:17:24: info CLS: meter coms lost: false
2023-10-15 10:17:24: info CLS: inv coms lost: false
2023-10-15 10:17:24: info CLS: --state2: enter state time :2023-10-15 10:17:14
info cls: --cnt in state2: 3

Note:

Resets state 1

***** Publishing CLS state *****
2023-10-15 10:17:49: info CLS: MIL: 16, MEL: 16
2023-10-15 10:17:49: info CLS: cls state: 1 -- NORMAL
2023-10-15 10:17:49: info CLS: import out of range: false
2023-10-15 10:17:49: info CLS: export out of range: false
2023-10-15 10:17:49: info CLS: meter coms lost: false
2023-10-15 10:17:49: info CLS: inv coms lost: false

Note:

The CSL system directly enters state 3:

The fourth occurrence of state 2 within 24 hours is greater than 10 seconds

***** Publishing CLS state *****
2023-10-15 10:17:56: info CLS: MIL: 16, MEL: 16
2023-10-15 10:17:56: info CLS: import Curr: 18.00 A
2023-10-15 10:17:56: info CLS: cls state: 3 -- ERROR
2023-10-15 10:17:56: info CLS: import out of range: true
2023-10-15 10:17:56: info CLS: export out of range: false
2023-10-15 10:17:56: info CLS: meter coms lost: false
2023-10-15 10:17:56: info CLS: inv coms lost: false
2023-10-15 10:17:56: info CLS: --state3: enter state time :2023-10-15 10:17:51
2023-10-15 10:17:56: info CLS: --cnt in state3: Inverter shutdown

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
Meter DDSU666	PASS	PASS
CT SCT-16-100A/33.33mA	PASS	PASS
Datahub DataHub1000	PASS	PASS
Inverter X1-IES-2.5K;X1-IES-3K; X1-IES-3.7K;X1-IES-4.6K; X1-IES-5K;X1-IES-6K;X1-IES-8K; X1-IES-3.7K-A;X1-IES-5K-A; X1-IES-6K-A;X1-IES-8K-A;	PASS	PASS
Battery	PASS	PASS

Operational Tests						
In accordance with EREC G100 section 5.6 undertake the tests A to D 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:						21A
Nominal Import Limit (for type tests this will be at maximum, minimum and one intermediate setting) in Amp:						21A
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	20.5 IAC	22.5 IAC	Yes	Yes	58s	1 > 2 > 1
2	20.4 IAC	23.7 IAC	Yes	Yes	58s	1 > 2 > 1
3	20.5 IAC	25.9 IAC	Yes	Yes	58s	1 > 2 > 1
4	20.8 IAC	22.9 IAC	Yes	Yes	58s	1 > 2 > 1
5	20.9 IAC	24.2 IAC	Yes	Yes	58s	1 > 2 > 1
6	20.9 IAC	26.3 IAC	Yes	Yes	58s	1 > 2 > 1

Test B						
Nominal Export Limit:						21A
Nominal Import Limit						21A
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	21.6 IAC	21.7 IAC	Yes	Yes	62s	1>2>3
8	21.6 IAC	21.7 IAC	Yes	Yes	62s	1>2>3

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.

1. System state is "State 3 - Lock-Out".
2. Expert investigation has ended successfully.
3. CLS changes system state to "State 1 - Normal Operation" and sends commands to Load & Generation devices.
4. CLS Clears all G.100 related events from its memory due to investigations.
5. Devices receive the command and enter their Normal Operational Mode.
6. CLS logs the state change.
7. CLS sends generated event to "Cloud".
8. CLS sends an alert to a User Interface that the system is in "State 1 - Normal Operation".