Appendix B – Manufacturer's CLS Product Information

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		SMA Export Limitation	
Manufacturer name		**SMA SOLAR TECHNOLOGY AG**	
Address		Sonnenallee 1, 34266 Niestetal (Germany)	
Tel	+49-561-9522-0	Web site	https://www.sma.de
E:mail	info@sma.de		
Installer's name	N/A		
Address	N/A		
Tel	N/A	Web site	N/A
E:mail	N/A		

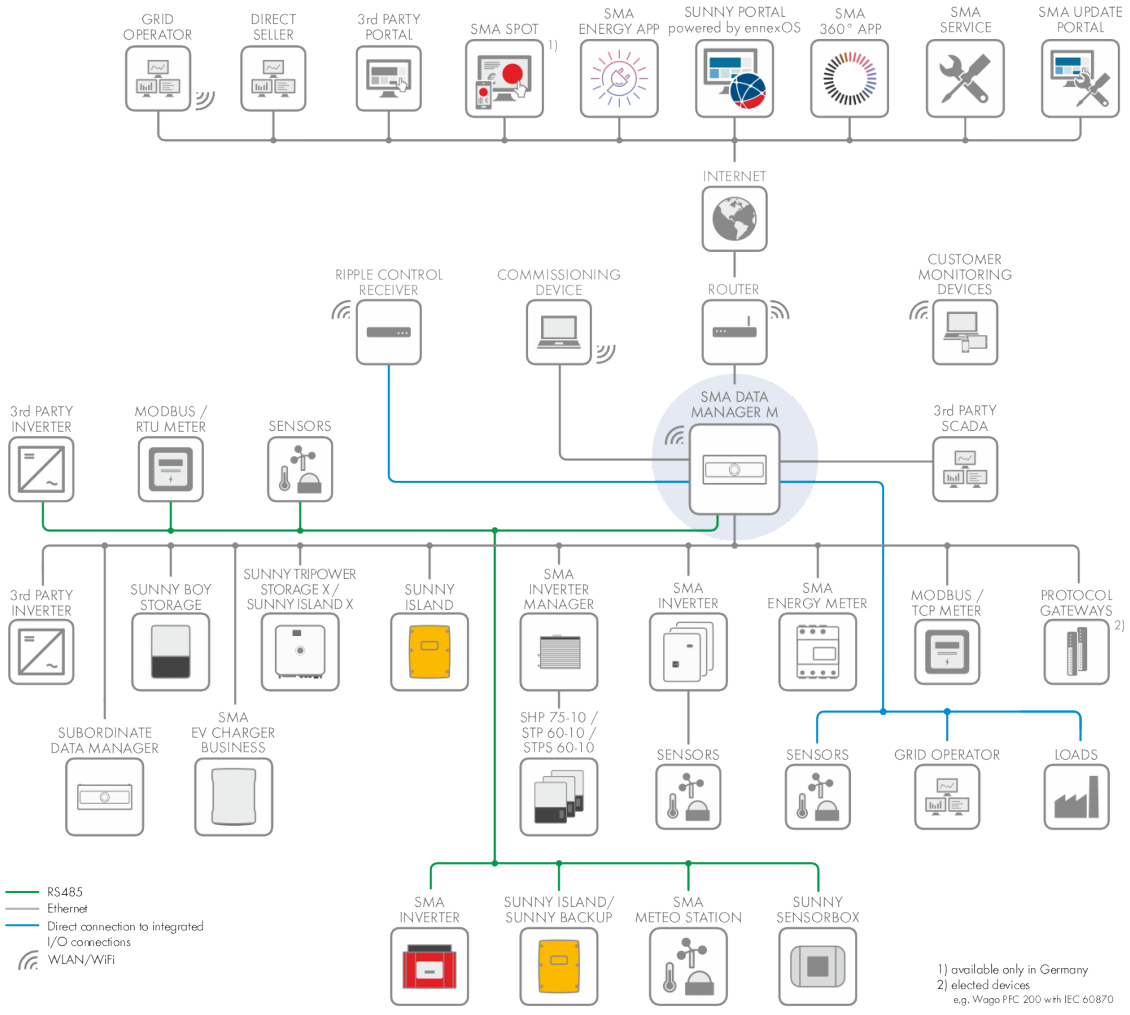
Export/Import capabilities

Export	YES	Import	NO

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.

Example diagram of installation:



System description: CLS is composed by the following CLS components:

- SMA Data Manager M (EDMM-20) that regulates the energy exported in the point of connection, acting as the system controller, with a FW 02.01.10.A or higher
- A compatible meter like the SMA Commercial Meter (COM-EMETER-A/B-20), the SMA Energy Meter (EM-20) or the Janitza UMG604E, that acts as the power measurement unit, sending the information it measures to the SMA Data Manager M.
- At least one of the following SMA inverters as generating units:
    - Sunny Tripower X 12/15/20/25 (STP 12-50, STP 15-50, STP 20-50, STP 25-50)

- Sunny Tripower CORE1 (STP 50-41)
- Sunny Tripower 125 (STP 125-70)
- Sunny Tripower Storage X 30/50 (STPS 30-20, STPS 50-20)
- Sunny Island X 30/50 (SI30-20, SI50-20)

- Up to 50 devices (inverters, meters and other components) can be connected to one SMA Data Manager M

System performance: below you can see how the SMA system is designed for achieving a proper performance in accordance with the EREC G100 Issue 2 Amendment 2 2023 standard.

4.3.2 State 2 – Occasional Excursion: In case of excursion beyond the configured MEL, the SMA Data Manager M will get it via the meter and then sends a power reduction command to the inverter. The power reduction is achieved in a short period of time, being always in less than 15s from the instant the active power injected into the grid goes beyond the MEL configured. The final active power will be below the MEL value. Please check below the minimum MEL that was defined during the test campaign.

4.3.3 State 3 – Failed State: State 3 is not achieved by the system, as there is no case in which the limit is overpassed for more than 15s. In addition, tests have been performed to prove that communication faults lead to disconnection or a fallback value equal to 0 W. The following test scenarios were carried out:

- Communication interruption between the controller and the inverter
- Communication interruption between the controller and the meter

Tested system: two systems were tested to assess the correct system´s behaviour in accordance with the EREC G100 Issue 2 Amendment 2 2023 standard**. T**he current declaration sums up the test results from both test systems.

System S1 included the following devices:

- Controller: SMA Data Manager M (**EDMM-20**), serial number 3022074445, FW 02.01.10.A
- Inverter: SMA Sunny Tripower CORE1 (**STP 50-41**), serial number 3011348414, FW 04.06.04.R
- Meter: SMA Commercial Meter (COM-EMETER-B-20), serial number 3018710369, FW 2.2..2.R

System S2 included the following devices:

- Controller: SMA Data Manager M (**EDMM-20**), serial number 3022074388, FW 02.01.10.A
- Inverter: SMA Sunny Tripower 125 (**STP 125-70**), serial number 3019386953, FW 04.00.48.R
- Meter: SMA Commercial Meter (COM-EMETER-A-20), serial number 3018709630, FW 2.2..2.R

Validity

All devices mentioned above under "System description" can be used, as they are compatible with the tested systems.

Do note that the test results are valid for systems including devices with firmware equal or higher than the corresponding tested firmware.

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.

A simple internet router / switch acts as the communication hub, connecting each controlled unit via ethernet cable.

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.
Cybersecurity for SMA Products To achieve the goal of security-optimized products, we bring together the engineering expertise concentrated at SMA in electrical engineering, software development and cybersecurity – and thus not only align with internationally recognized standards (such as IEC 62443 or EN 303645), but also shape them. SMA prioritizes the products here, which means, among other things, that priority is given to products that fall under the new Radio Equipment Directive (2014/53/EU based on Delegated Regulation (EU) 2022/30/EU) in the context of CE conformity. The conformity of these products with the new cybersecurity requirements will soon be confirmed via the EU Declaration of Conformity. **Cybersecurity Measures at SMA** Ensuring cybersecurity for products has many facets. This includes: secure product development and product care over the entire life cycle, measures to prevent, detect and respond to cyber-attacks, and ensuring the secure operation of your plant.
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.
Please refer to the G99 type test report for each inverter available at www.SMA.de - For the STP 12-50, STP 15-50, STP 20-50, STP 25-50: File name ZE_STPxx-50_G99_en_10. - For the STP 50-41: File name G99-STP50-4x-ZE-en-14. - For the STP 125-70: File name ZE_STP125-70_G99-en-10. - For the STPS 50-20, STPS 30-20, SI 50-20, SI 30-20: File name ZE_STPSxx-20_SIxx-20_G99_en_10.
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.
4.5.1 Failure Detection **4.5.1.1 Internal failure**: failures on component supply are not possible on a simple fault condition. All components are connected into the same grid. So, any fault in the supply would mean one of the live wires has been damaged or disconnected, interrupting the current flow between the system and the grid. **4.5.1.2 Communication failures** - if the communication between the SMA Data Manager and the inverter is interrupted, the inverter will detect it and proceed to reduce its power to a fallback value equal to 0 or disconnect from the grid. Please refer to the A summary of the test below.

- if the communication between the SMA Data Manager and the meter is interrupted, the SMA Data Manager will detect it, and send a setpoint to the inverters in order to reduce its power to a fallback value equal to 0 or disconnect from the grid. Please refer to the A summary of the test below.

4.5.1.3 Excessive state 2 operation: once the active power exported into the grid rises above the configured MEL the system will regulate the active power generated by the units, and the system will return to state 1 sooner than 15s. This means that the condition for state 3, the case where state 2 is maintained over 60 s will never be seen by design.

4.5.2 Recovery from Failure

4.5.2.1 Internal Failures and Excessive State 2 Operation: as explained above, the conditions that lead to a fault are either not possible (excessive state 2 operation) or the system will not be able to recover state 1 operation (internal failures).

4.5.2.2 Communication Failures: the system recovers back to normal operation immediately once the communication has been recovered.

State 3 is not achieved by the system, as explained in section "**Description of Operation**" of this form.

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
SMA Data Manager M – SMA Inverter	Compliant. The ethernet cable that connects the SMA Data Manager and the inverter in the system with the Switch/router is disconnected. The time to disconnect is measured from the disconnection of the communication cable until the current falls below 5% of its rated value. Measured disconnection time: • System Si: 10,974 s • System S2: 11,282 s	N/A. CLS power is supplied from the same conductors used for the connection of the installation with the grid. Therefore, loss of the CLS's power supply will mean that the installation is separated from the grid and no current flows.
SMA Data Manager M - Meter	Compliant. The ethernet cable that connects the SMA Data Manager and the meter in the system with the Switch/router is disconnected. The time to disconnect is measured from the disconnection of the communication cable until the current falls below 5% of its rated value. Measured disconnection time: • System S1: 11,284 s • System S2: 11,748 s	N/A. CLS power is supplied from the same conductors used for the connection of the installation with the grid. Therefore, loss of the CLS's power supply will mean that the installation is separated from the grid and no current flows.

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 two intermediate settings. Below you can see the corresponding tests which were carried out:

- System S1
  - Test A-max: maximum MEL defined as 80%Pmax or 40000 W (equivalent to 57,7 A)
  - Test A-mid1: intermediate MEL defined as 50%Pmax or 25000 W (equivalent to 36,1 A)
  - Test A-mid2: intermediate MEL defined as 30%Pmax or 15000 W (equivalent to 21,7 A)
  - Test A-min[3]: minimum MEL defined as 10%Pmax or 5000 W (equivalent to 7,2 A)
- System S2
  - Test A-max: maximum MEL defined as 80%Pmax or 100000 W (equivalent to 144,3 A)
  - Test A-mid1: intermediate MEL defined as 50%Pmax or 62500 W (equivalent to 90,2 A)
  - Test A-mid2: intermediate MEL defined as 30%Pmax or 37500 W (equivalent to 54,1 A)
  - Test A-min(3): minimum MEL defined as 10%Pmax or 12500 W (equivalent to 18,1 A)

No	Starting level P ($\%P_{MEL}$)	Step value ΔP ($\%P_{MEL}$)	**CLS** registers change in level?	**CLS** initiates correct response of ≥ 5%?	Duration of step in test	Correct state 1/state 2 operation[1]
Test A-max (Maximum MEL 80%Pmax)						
1	95%	10%	**YES**	**YES**	58 s	**YES**
2	95%	15%	**YES**	**YES**	58 s	**YES**
3	95%	25%	**YES**	**YES**	58 s	**YES**
Test A-mid1 (Intermediate MEL 50%Pmax)						
1	95%	10%	**YES**	**YES**	58 s	**YES**
2	95%	15%	**YES**	**YES**	58 s	**YES**
3	95%	25%	**YES**	**YES**	58 s	**YES**
Test A-mid2 (Intermediate MEL 30%Pmax)						
1	95%	10%	**YES**	**YES**	58 s	**YES**
2	95%	15%	**YES**	**YES**	58 s	**YES**
3	95%	25%	**YES**	**YES**	58 s	**YES**
Test A-min[3] (Minimum MEL 10%Pmax)						
1	95%	10%	**YES**	**YES**	58 s	**YES**
2	95%	15%	**YES**	**YES**	58 s	**YES**
3	95%	25%	**YES**	**YES**	58 s	**YES**

[1] Correct state 1 / state 2 operation is understood as sticking to the behavior explained in the previous section "Description of Operation".

[3] Note: the parameter Parameter.PlntCtl.WCtlBoost.GainMod is set by default to "Normal". In case that very small load variations are expected, such, as in the Test A-min, please change it to "High."

Test B	
Nominal Export Limit:	N/A [2]

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	95%	10%	N/A	N/A	N/A	Never reached
8	95%	10%	N/A	N/A	N/A	N/A

[2] Once the active power exported into the grid rises above the configured MEL the system will regulate the active power generated by the units, and the system will return to state 1 sooner than 15s. This means that the condition for state 3, where state 2 is maintained over 60 s will never be seen by design. For that reason, Test B is not needed, as the system will show the same behaviour as during Test A.

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.
State 3 is not achieved by the system, as explained in section "**Description of Operation**" of this form. The recovery from failure meets the required behavior detailed in section 4.5.2 • **4.5.2.1 Internal Failures and Excessive State 2 Operation:** as explained above, the conditions that lead to a fault are either not possible (excessive state 2 operation) or the system will not be able to recover state 1 operation (internal failures). • **4.5.2.2 Communication Failures:** the system recovers back to normal operation immediately once the communication has been restored.

Niestetal, 2025-5-22

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