G100 Export Limitation Compliance

SolarEdge Energy Meter with Modbus connection - PN SE-WND-3Y400-MB-K2 with Firmware - 3.2251 – 3.2273or 3.24xx and above for LCD screen inverters, and 4.6.1x for SetApp inverters (Minimum.)

To implement export limitation in a SolarEdge system, a SolarEdge Energy Meter with Modbus communication and current transformers (CT's) measuring active power are used. The meter has an RS485 hardwired connection to a SolarEdge inverter(s) and/or a Communication Gateway (CG) if fitted.

The export limitation is calculated and operated by the inverter/Communication Gateway and does not rely on any additional hardware, other than the aforementioned meter acting as the Power Measurement Unit. Any schematic will therefore not comprise of additional discrete units such as detailed in G100 (Load Control Unit, Interface Unit, Generator Interface Unit, or Control Unit).

The limitation is based on the inverter moving the solar modules' operating points so that the inverter is simply not extracting the energy it does not need from the PV modules. It does not use any load dump such as a water heater and therefore there are no additional harmonics due to the ELS functioning. The inverter harmonics and compliance are stated in the respective G98/G99 certification.

The ELS may be programmed with a site export limit in kW and is set within a password protected menu to prevent system owner override. The limit can also be set to zero, upon which the inverters output relays will open circuit the inverter to give a true zero output. There is also the option to set P(V) limits should the DNO specifically request this to prevent exported power above statutory voltage limits.

The regulation states The ELS must detect an excursion and reduce the export to the Agreed Export Capacity or less within 5 seconds.

Failure Modes – the following detail describes why the SolarEdge ELS is a failsafe scheme

- 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.
- If the Energy meter itself were to fail, the RS485 communications would be lost and the inverters would permanently reduce to the site export limit, which has been set.
- If the CG (if fitted) were to lose its power supply/fail then the inverters would permanently reduce to any export limit, which has been set due to communications failure from the unit.
- If the RS485 communication connections/cable is damaged, then the RS485 signal would be lost and the inverters would permanently reduce to the export limit, which has been set.
- If an individual inverter fails, then that inverter is bypassed due to a parallel connection and does not affect the operation of other components, which would continue to limit the system to the export limit, which has been set.
- If the current transformer wiring is removed, or signal is lost, the inverters would permanently reduce to the site export limit, which has been set. Requires meter with PN SE-WND-3Y400-MB-K2 and inverter CPU version 3.2251 – 3.2273 or 3.24xx and above for LCD screen inverters, and 4.6.1x for SetApp inverters or above, and requires the installer to enable the CT loss feature.

For ELS compliance, inverters must utilise CPU version 3.2251 – 3.2273or 3.24xx and above for LCD screen inverters, and 4.6.1x for SetApp inverters or above.

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Place	Date	Meir Adest, VP Core Technologies