



LGC Metering with Fronius Smart Meter and Fronius Solar.web

Measuring PV generation and creating reports for large-scale generation certificates

Quick Guide

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Gender-specific wording refers equally to female and male form.



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INTRODUCTION

This Quick Guide outlines how the Fronius Smart Meter and Fronius Solar.web can be used to measure PV generation. These measurements can be used to create large-scale generation certificate (LGCs) reports for grid connected photovoltaic (PV) systems above 100KVA.

For general information on the installation and commissioning of Fronius inverters, Fronius Smart Meters and Fronius Solar.web, please see our [Fronius SnapInverter Quick Installation Guide](#).

CALCULATING LGC

The general formula to calculate LGC is below:

$$LGC = TLEG - (FSL + AUX + (DLEG \times (1 - MLF)))$$

Where:

- TLEG = Total power generated by the power station
- FSL = Fossil fuel component of the power generated by the power station
- AUX = Auxiliary power consumed during the production or maintenance
- MLF = Marginal loss factor
- DLEG = Eligible generation = TLEG – AUX (assuming FSL = 0)

The Fronius Smart Meter measures this eligible generation data (including any auxiliary losses experienced during the power conversion process and night-time usage) and extracts these values into a CSV file directly from Fronius Solar.web.

To be eligible to claim 100% of the metered electricity generation (DLEG) for LGCs, both the meter and CTs must meet a specific accuracy class and fall within a maximum allowable overall error discrepancy. These values are specified in the NER Accuracy Rules, p. 996; S7.2.3 and vary according to the annual generation volume per connection point.

S7.2.3 Accuracy requirements for metering installations

Table S7.2.3.1 Overall Accuracy Requirements of Metering Installation Components

Type	Volume limit per annum per connection point	Maximum allowable overall error (±%) at full load (Item 7) active reactive		Minimum acceptable class or standard of components	Metering installation clock error (seconds) in reference to EST
1	greater than 1000GWh	0.5	1.0	0.2CT/VT/meter Wh 0.5 meter varh	±5
2	100 to 1000GWh	1.0	2.0	0.5CT/VT/meter Wh 1.0 meter varh	±7
3	0.75 to less than 100 GWh	1.5	3.0	0.5CT/VT 1.0 meter Wh 2.0 meter varh (Item 1)	±10
4	less than 750 MWh (Item 2)	1.5	n/a	Either 0.5 CT and 1.0 meter Wh; or whole current general purpose meter Wh: • meets requirements of clause 7.3.1(a)(10); and	±20 (Item 2a)

Figure 1: NER Accuracy Rules, page 996; S7.2.3

SETUP FOR LGC METERING

One Fronius Smart Meter can be used for either consumption monitoring or LGC metering but not both at the same time. To simultaneously perform both actions, two meters will be needed. In this scenario, the setup and Fronius Solar.web integration will look slightly different to Figure 3 (option 2 below).

Below, in option 1, you will find information on how the Fronius Smart Meter can be used for LGC metering via connecting to a separate Fronius Datamanager box. Option two of this section will provide information on how LGC metering and consumption monitoring can be archived.

Options for LGC setup:

1. Datamanager card in the inverter not used for Smart Meter + Datamanager Box for LGC monitoring
2. Datamanager connected to Smart Meter for Consumptions monitoring + Datamanager Box for LGC monitoring

1. Monitoring via Fronius Datamanager box

The Fronius Smart Meter can also be connected to the Fronius Datamanager box via the RS485 connection.

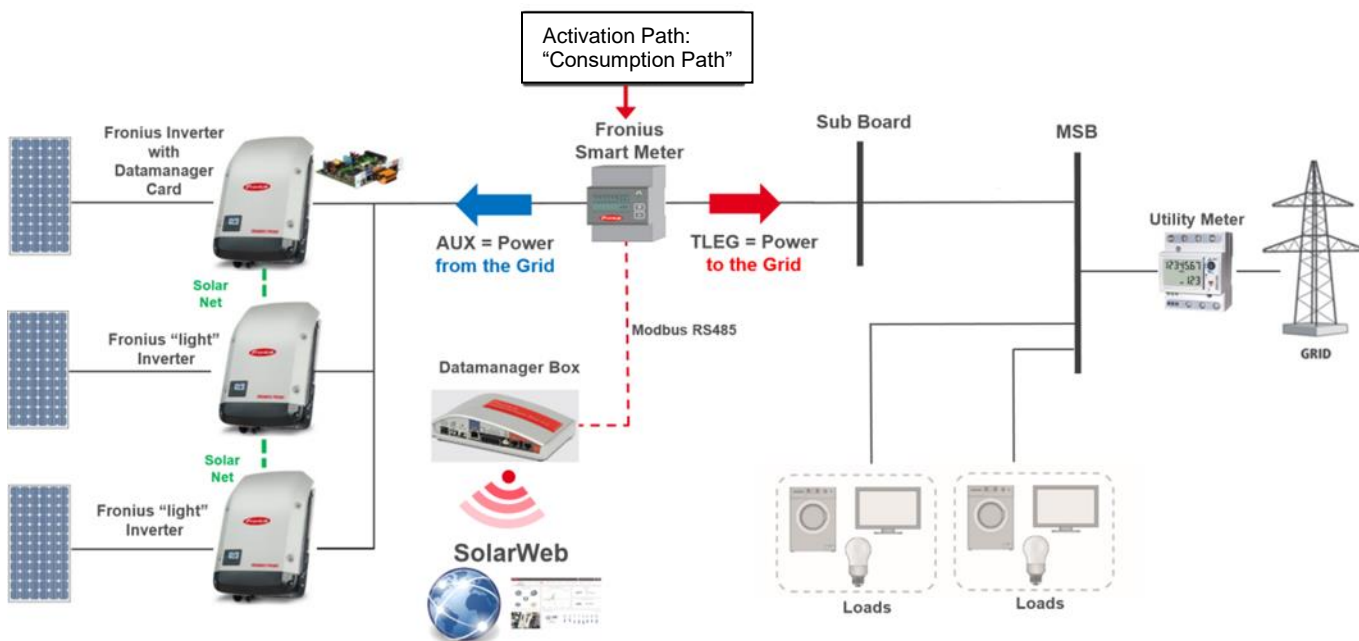


Figure 2: Fronius Smart Meter - connection via RS485

The Fronius Datamanager box has the same Datalogger as found in the Fronius Datamanager Card 2. The Datamanager box is a separate unit, the Datamanager Card 2 is built into all full version Fronius SnapInverters. The Fronius Datamanager box is therefore also shown as **Datalogger ID** and integration within Fronius Solar.web is the same as the integration of inverters.

Fronius Solar.web allows the creation of a separate system only for LGC data collection and the inverter e.g. Fronius Solar LGC

2. Consumption monitoring and LGC metering with Fronius

Due to the different installation locations for consumption monitoring and LGC metering, both features cannot be achieved with one Fronius Smart Meter at the same time. In this scenario, two Fronius Smart Meters are needed and must be installed at different locations. The installation location for consumption monitoring at the *feed in* location, if it was to be installed with the solar supply switch on the grid side of the Fronius Smart Meter, this would be "Consumption Path". The installation location for LGC metering ("LGC meter") should always be set in the "Consumption Path" to provide the correct LGC report data.

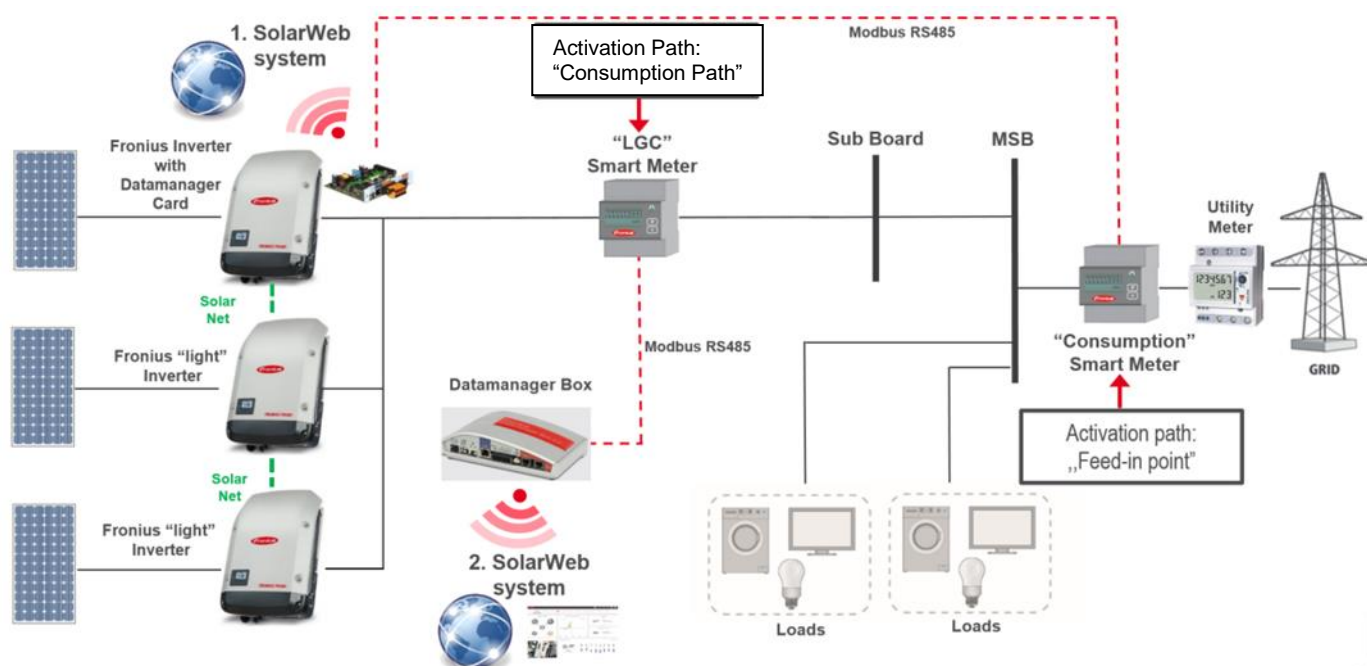


Figure 3: Setup - consumption meter and LGC meter

Please note: The consumption meter must be connected to the inverter and the LGC meter must be connected to a separate Fronius Datamanager box.

Currently, two Fronius Smart Meters cannot be integrated into the same Fronius Solar.web system. This requires the creation of two separate systems within Fronius Solar.web.

- / One system for PV production and consumption monitoring e.g. Fronius Solar Monitoring
- / One system for LGC metering e.g. Fronius Solar LGC Monitoring

Both can be created within the one Fronius Solar.web account e.g. under one email address.

The consumption meter must be connected to the inverter as the PV production values (shown in the *energy balance* view) are measured by the data sent from the inverter; this data is not required for the LGC creation.

The consumption meter must be connected to the inverter, as the PV production values for the *energy balance* view are measured and sent from the inverter and they are essential for the consumption calculation, and in turn, the LGC creation.

If the distance between the consumption meter and the inverter is too far to run a cable, the same connection can also be established via Wi-Fi and 2x RS485 to Wi-Fi converters (supplied by third party manufactures e.g. Selectronics and Supply Partners). Please contact our Application Engineers for more information and support.

CREATING REPORTS FOR LGC CLAIMS VIA FRONIUS SOLAR.WEB

The CSV file as shown in Figure 6 can be easily created via the *new report* function on Fronius Solar.web. The steps are outlined below. Please note; you will need a Solar Web Premium account for this (currently free of charge).

Create new report

The report function can be accessed via the *reports* tab on the Overview page.

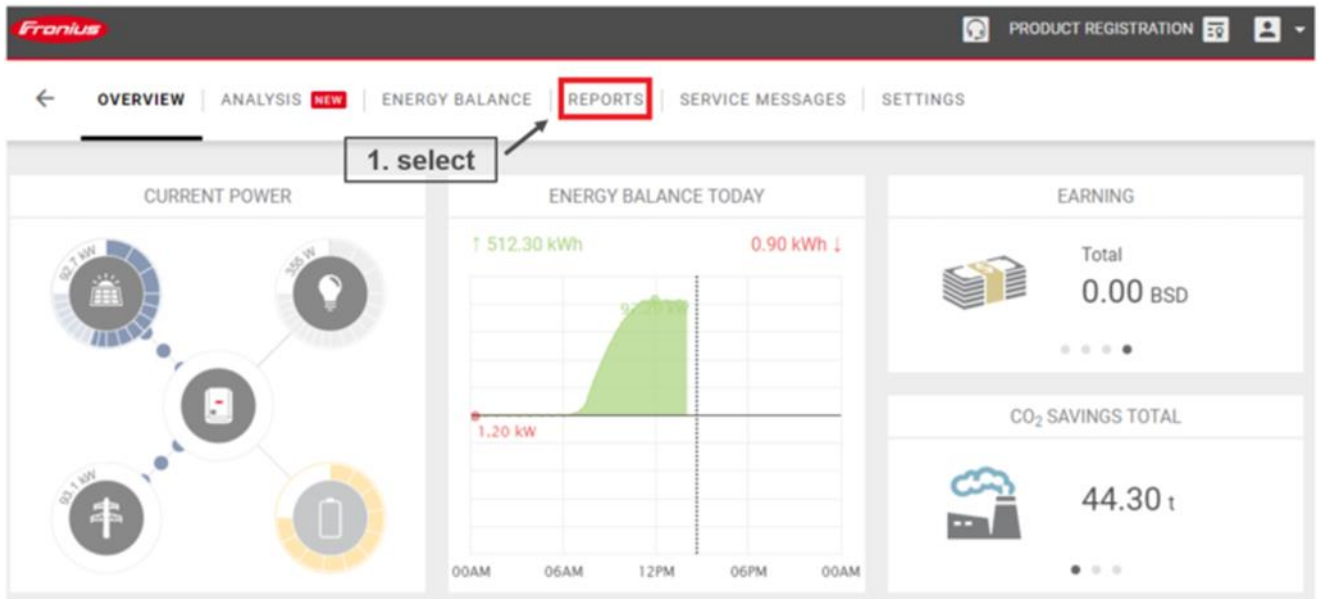


Figure 4: Fronius Solar.web - Reports

Select *create new report* in the Reports section.

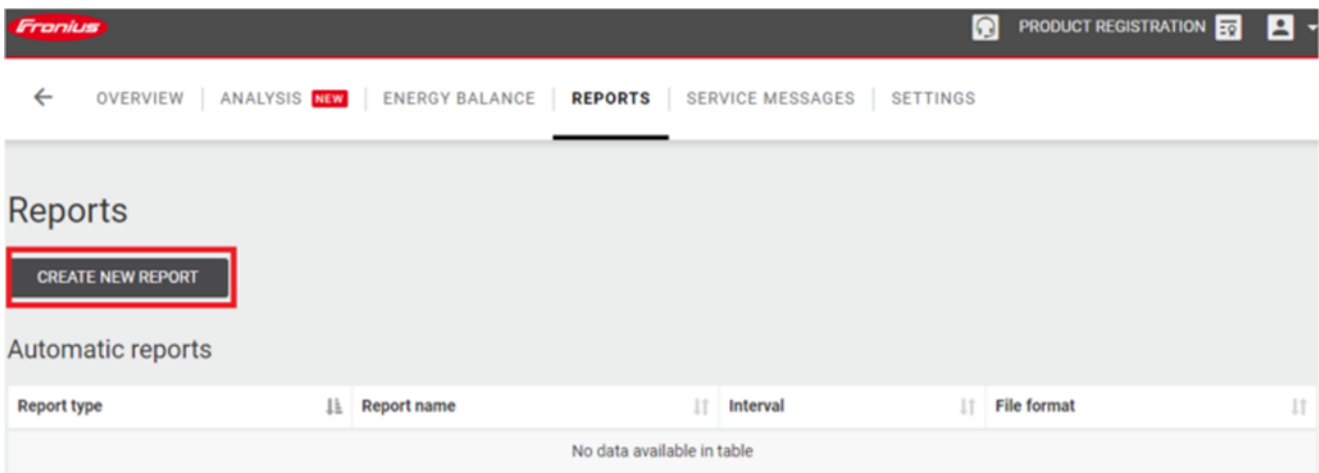
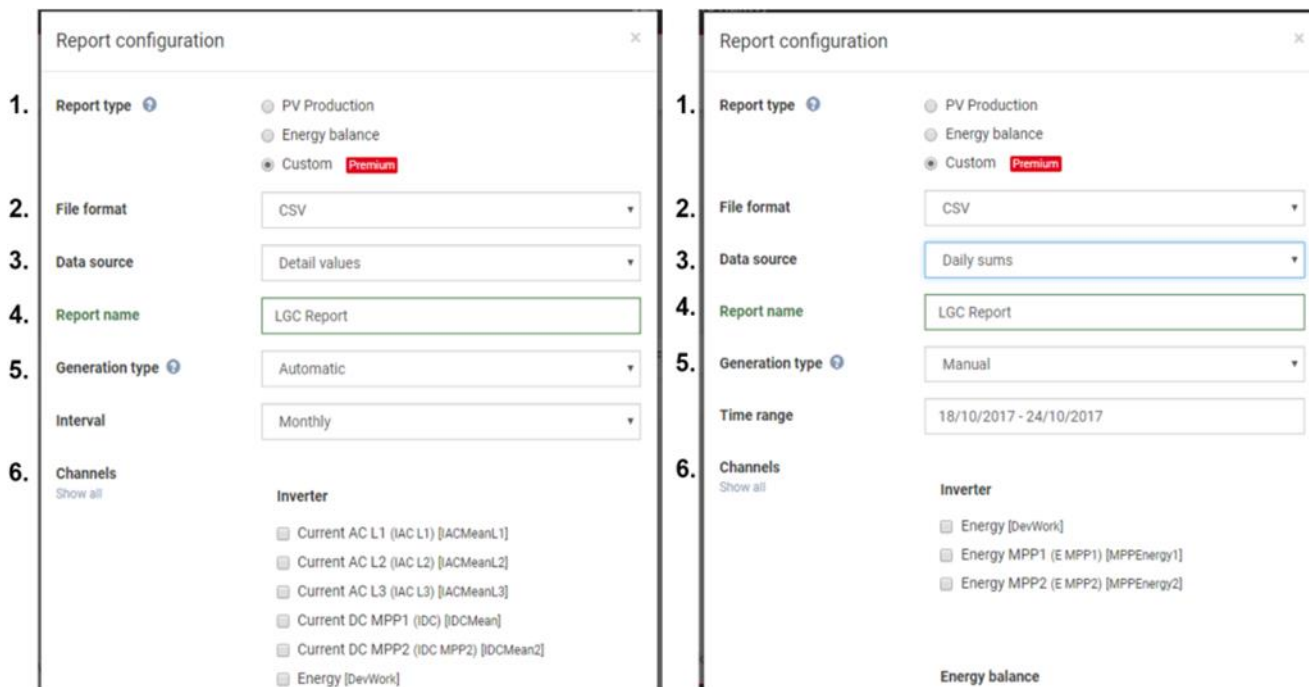


Figure 5: Fronius Solar.web - Create new report

Report configuration

The *report* function offers a range of different options and values to choose from. Below are two possible scenarios which would generate the required data and report for LGC claims.



The figure shows two screenshots of the 'Report configuration' dialog box. The left screenshot is numbered 1 through 6, corresponding to the steps in the legend below. The right screenshot shows a similar configuration but with 'Data source' set to 'Daily sums' and 'Generation type' set to 'Manual', with a 'Time range' field appearing.

Figure 6: Report Setup

1. **Report type:** Select *custom* report. This will provide the option to choose only the required channels (energy from/to grid). Alternatively, you can also select *energy balance*, but this will include values for PV production, consumption and consumed directly which are not required for LGC claims.
2. **File format:** Select CSV
3. **Data source:** Select either *detailed values* (data at five minute intervals) or *daily sums* (data at daily rates).
4. **Report name:** Type in your desired report name
5. **Generation type:** Select between *automatic* or *manual*
 - a. **Automatic:** This will generate periodic data; an interval period (daily, weekly or monthly) must be selected
 - b. **Manual:** Select the desired time range for the report
6. **Channels:** The options will vary slightly depending on whether *automatic* or *manual* generation type has been selected. For LGC claims, select from the *energy balance* channel (see Figure 9 below).
 - a. Energy from grid
 - b. Energy to grid



Report name LGC Report

Generation type Automatic

Interval Monthly

Channels
Show all

Inverter

- Current AC L1 (IAC L1) [IACMeanL1]
- Current AC L2 (IAC L2) [IACMeanL2]
- Current AC L3 (IAC L3) [IACMeanL3]
- Current DC MPP1 (IDC) [IDCMean]
- Current DC MPP2 (IDC MPP2) [IDCMean2]
- Energy [DevWork]
- Voltage AC L1 (UAC L1) [UACMeanL1]
- Voltage AC L2 (UAC L2) [UACMeanL2]
- Voltage AC L3 (UAC L3) [UACMeanL3]
- Voltage DC MPP1 (UDC) [UDCMean]
- Voltage DC MPP2 (UDC MPP2) [UDCMean2]

Energy balance

- Consumed directly [FromGenToConsumer]
- Consumption [ToConsumer]
- Energy from battery [FromBattToConsumer]
- Energy from grid [FromGridToConsumer]
- Energy to battery [FromGenToBatt]
- Energy to grid [FromGenToGrid]
- PV production (PV prod) [FromGen]

Figure 7: Energy balance options

For more information and advice, contact our Application Engineers:

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