

# Visualization of a non Fronius PV system in Fronius Solar.web

White Paper

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

## Scope

For owners who want to **extend their existing non-Fronius PV system with a Fronius SnapINverter** can have an overview about the total production figures of the entire PV system in the Fronius system monitoring. This document describes the characteristics of the system and explains how to design and setup the system monitoring.

It is also possible to **retrofit a Fronius Symo Hybrid with a battery storage to an existing PV system**. Hereby the Fronius Symo Hybrid can increase the self-consumption ratio. It offers the possibility to provide emergency power during times of blackouts. Moreover, due to the advantages of the outstanding *Multi Flow technology* the Fronius Solar Battery can be charged from both inverters, the Fronius Symo Hybrid as well as the existing inverter.

The second chapter of this paper describes the setup for the monitoring for this application.

The Fronius monitoring is not limited to the integration of PV inverters but also all kind of AC sources in the system.

## EXTENSION OF A PV SYSTEM WITH A FRONIUS INVERTER

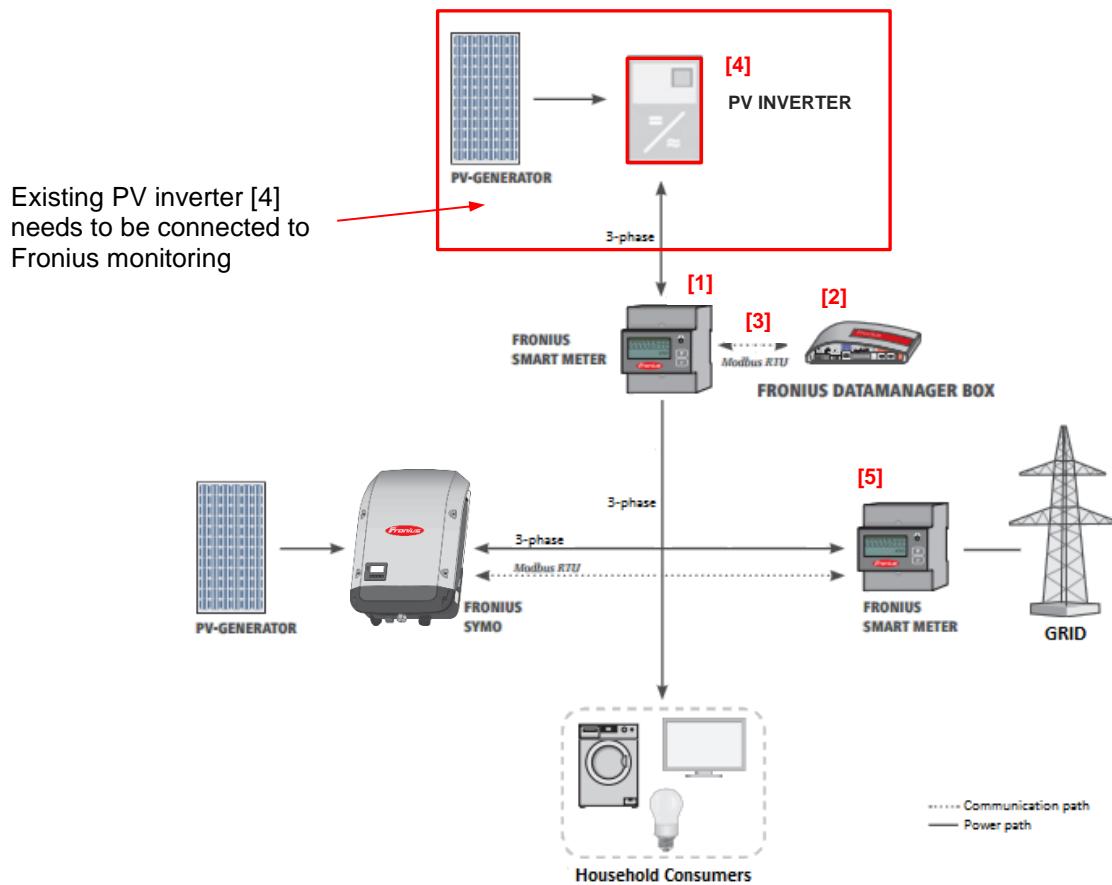


Figure 1: Existing PV system extended by an additional 3rd party inverter

In order to measure the PV production of the existing PV inverter in Fronius Solar.web, a Fronius Smart Meter (figure 1 [1]), linked to a Fronius Datamanager 2.0 Box (figure 1, [2]) needs to be installed in the “consumption path”. For communication the Fronius Smart Meter needs to be connected to the Fronius Datamanager 2.0 Box via Modbus RTU. After commissioning of the Fronius Datamanager 2.0 Box the logged data will be transmitted to Fronius Solar.web.

## Installation and configuration

For integration of a non-Fronius PV inverter into a Fronius Solar.web monitoring, the following steps are necessary:

- 1.) Installation of Fronius Smart Meter into the “consumption path” of the existing PV inverter
- 2.) Installation and setup of Fronius Datamanager 2.0 Box
- 3.) Configuring the Fronius Smart Meter in Fronius Datamanager 2.0 Box Software
- 4.) Add data sources in the software settings on Fronius Solar.web

### 1. Installation of Fronius Smart Meter

An additional Fronius Smart Meter (see [1] in figure 1) needs to be installed in the AC bi-directional bridge of the existing PV inverter. Connect all required phases (lines) to the Smart Meter’s IN terminals and respective OUT terminals to the inverter, as shown in figure 2. In addition, connect the Modbus cables ([3] figure 1) to the communication line terminals. The “Modbus RTU” connection is the communication path to the Fronius Datamanager 2.0 Box ([2] figure 1). It is recommended to take an ordinary CAT5 or CAT6 (shielded) cable. In order to establish a Modbus RTU communication only 3 wires have to be connected on the Fronius Datamanager 2.0 Box and the Fronius Smart Meter for data transmission: D+, D- and GND (figure 2).

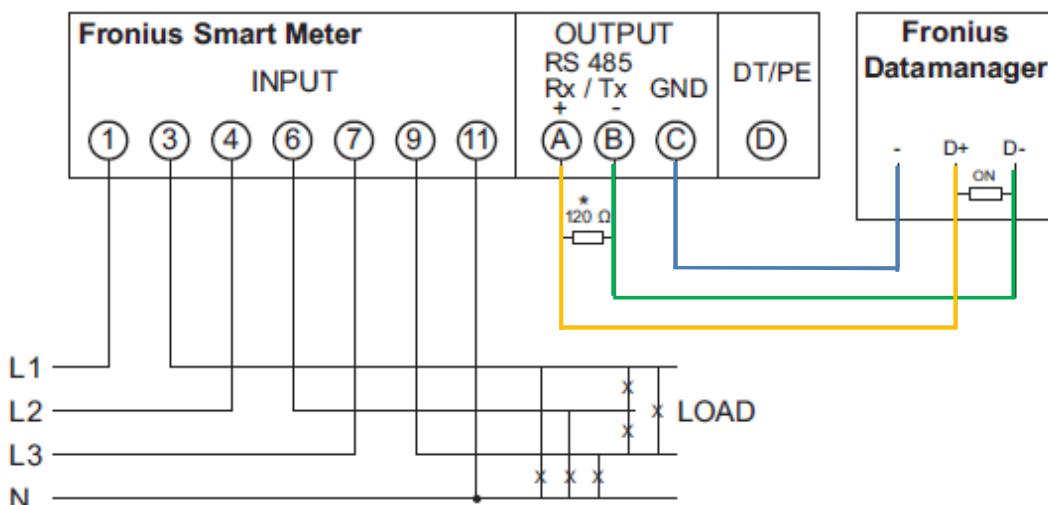


Figure 2: Fronius Smart Meter connections, Modbus RTU (in colour)

For more information on installation and setup, especially for retrofit or commercial line Fronius Smart Meter 50kA, please see the Fronius whitepaper “Quick Guide - Fronius Smart Meter 50kA installation and commissioning”.

### 2. Installation and setup of Fronius Datamanager 2.0 Box

The Fronius Datamanager 2.0 Box ([2] figure 1) needs to be connected to the Modbus communication line. Connect the 3 wires to the designated terminals on the orange I/O plug. Watch out for the labels D+, D- and GND and make sure that the cables are assigned correctly. The Datamanager 2.0 Box needs to be set up and configured, the procedure is described in the quick guide “Commissioning Fronius monitoring using Fronius Datamanager 2.0”. After the installation and setup of the Fronius Datamanager 2.0 the Fronius Smart Meter needs to be configured in the Datamanager 2.0 software.

### 3. Configuring the Fronius Smart Meter in Fronius Datamanager 2.0 Box Software

Since two Fronius Smart Meters are installed in one PV system, they need to be configured in order to obtain the correct visualization in Fronius Solar.web. Please configure as in the procedure in the above mentioned quick guide. Activate the *Wi-Fi access point* by moving the Datamanager 2.0 Box IP switch into position 'A' (figure 3).



Figure 3: Fronius Datamanager 2.0 Box connection area

Connect the smart device (Tablet or Smartphone) go to settings on the smart device, and search for the Wi-Fi network of the Datamanager 2.0 Box.

- The Datamanager 2.0 Box network name starts with the prefix '*Fronius\_240.xxxxx*'
- Enter password: '12345678'

After about 1 minute the network '*Fronius\_240.xxxxx*' will be established. Start the Fronius setup wizard by starting your web browser and typing in the URL bar the address of the Fronius Datamanager 2.0 interface: '<http://datamanager>' or IP address '<http://169.254.0.180>'. Then choose '*Technician Wizard*' (Figure 4).

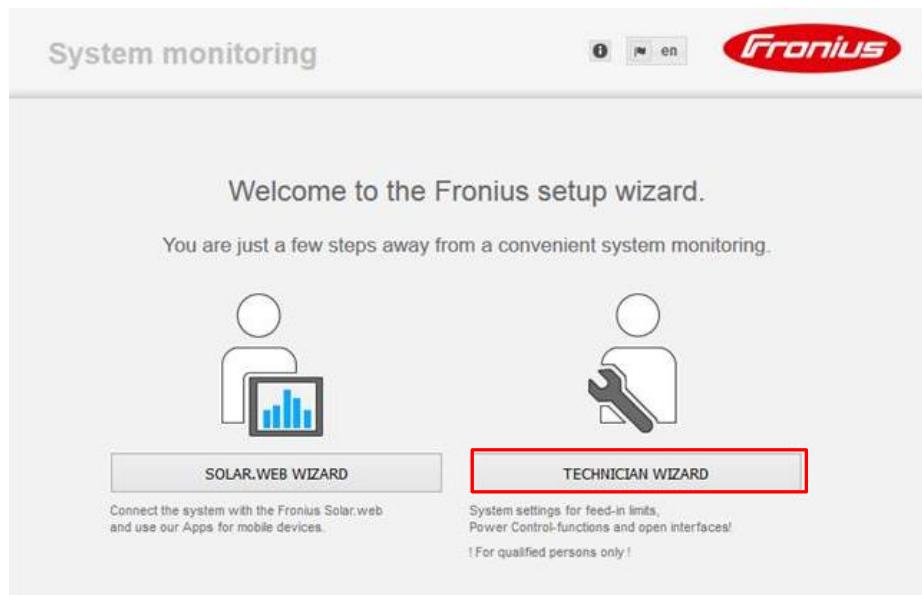


Figure 4: Fronius setup wizard

Proceed until the step '*Meter*' in the setup process. In the dropdown-list activate "*Fronius Smart Meter*". Click "*Settings*" and set the location of the Smart Meter to '*consumption path*' (figure 5). Save the changes by clicking '*forward*'.

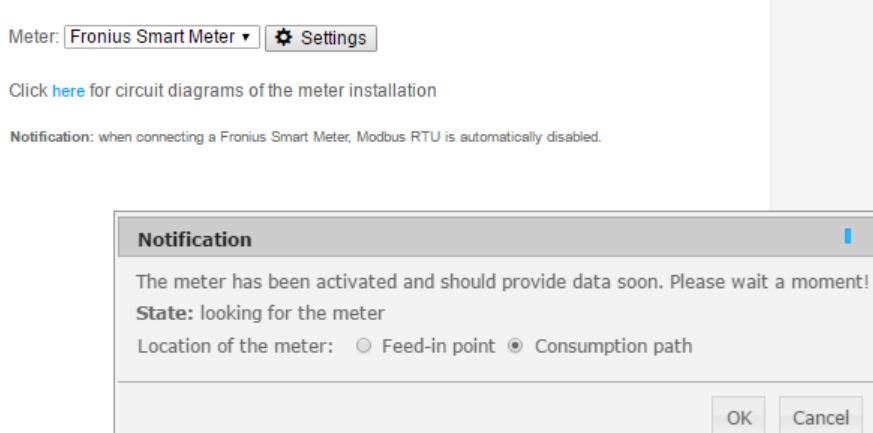


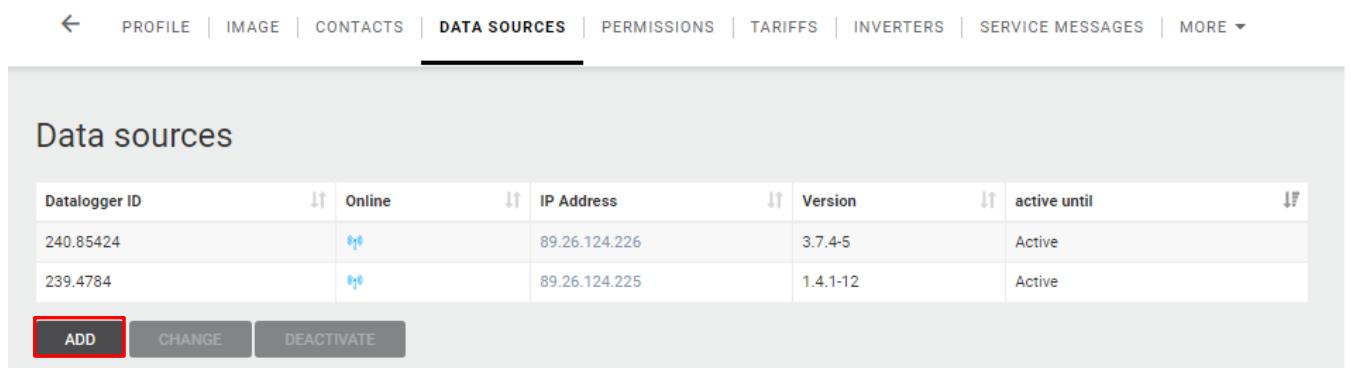
Figure 5: Meter configuration for the setting in consumption path

#### 4. Settings in Fronius Solar.web

As in the previously shown example in this document, it is based on the assumption of a previously installed Fronius PV system, the Fronius PV System's Datalogger ID is already existing in the portal Fronius Solar.web. In this case a PV system in Fronius Solar.web already exists and the according tab 'Data sources' is already filled with the assigned Datalogger ID, as shown in figure 6. For the integration of the existing PV inverter ([4] figure 1) to the PV system visualization, the connected additional Fronius Datamanager 2.0 Box ([2] figure 1) needs to be assigned to the PV system as a second data source.

Continue to add the second data source to the PV system:

1. Open Fronius Solar.web ([www.solarweb.com](http://www.solarweb.com)) and select your PV system. At the system 'overview' page, click on 'settings' and 'data sources'. Click 'add' and set the Datalogger ID of the Datamanager 2.0 Box, 5-6 digits after the 'Fronius\_240' in the Fronius Datamanager 2.0 network name.



← PROFILE | IMAGE | CONTACTS | DATA SOURCES | PERMISSIONS | TARIFFS | INVERTERS | SERVICE MESSAGES | MORE ▾

Data sources

Datalogger ID	Online	IP Address	Version	active until
240.85424		89.26.124.226	3.7.4-5	Active
239.4784		89.26.124.225	1.4.1-12	Active

[ADD](#) [CHANGE](#) [DEACTIVATE](#)

Figure 6: Adding data sources in Fronius Solar.web

2. For the correct visualisation it is essential to add the connected peak capacity (kWp) of the Fronius Symo Hybrid. At the tab 'inverter' in Solar.web set the value for PV generator size connected to each inverter as shown in figure 7.

◀ PROFILE | IMAGE | CONTACTS | DATA SOURCES | PERMISSIONS | TARIFFS | **INVERTERS** | SERVICE MESSAGES | MORE ▶

### Inverters

Name	Type	Datalogger ID	Wp	Active	Update
Symo Hybrid 5.0-3-S (1) (# 1)	Symo Hybrid 5.0-3-S	239.4784	2475		

**EDIT**

Figure 7: Setting of PV generator size

### Current power view (bubble view)

After installation and configuration, the Fronius Datamanager 2.0 Box will log the energy values of the existing PV inverter and transferring it to Fronius Solar.web. As both Datalogger IDs are assigned to the same PV system, the energy production values are correctly processed in order to display the merged energy profile of both, the “current power” and “archive data view”.

For example: The existing PV inverter of **1000W** and the extended Fronius inverter of **970W** are added up to the total displayed power of **1970W**.

This is a great advantage, as the total performance of the entire system is visible at a glance.

**Please note:** The DC power connected to the Fronius inverter and the AC power of the existing PV inverter are being processed.

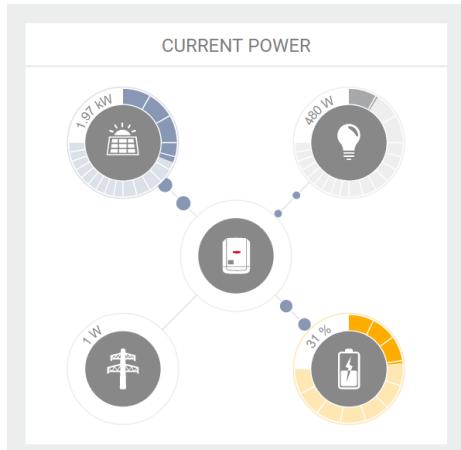


Figure 8: Bubble view in Fronius Solar.web

### Archive data view

The logged production data of both systems will be presented on Solar.web as a single value and a production curve.

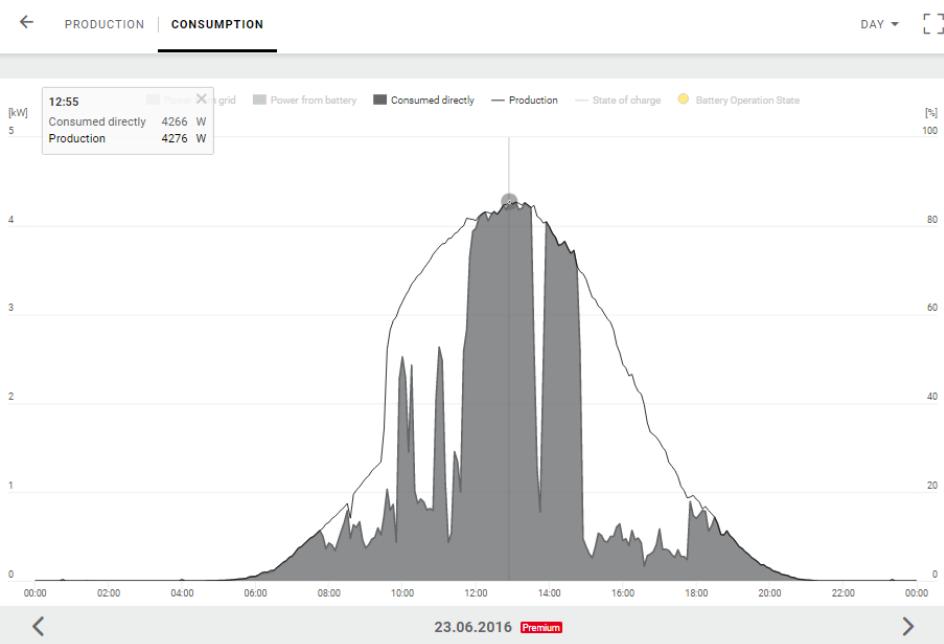


Figure 9: Archive data view in Fronius Solar.web

## EXTENTION OF A PV SYSTEM WITH A FRONIUS HYBRID INVERTER

This chapter describes the system architecture with two Fronius inverters for example:

- / Fronius Symo Hybrid (equipped with Fronius Hybridmanager card)
- / Fronius Symo grid connected inverter (equipped with Fronius Datamanager card)

The Fronius Symo Hybrid is connected to the Fronius Smart Meter. The Fronius Hybridmanager card needs to be set up for the home network and Fronius Solar.web.  
For details of the setup please see the chapter before.

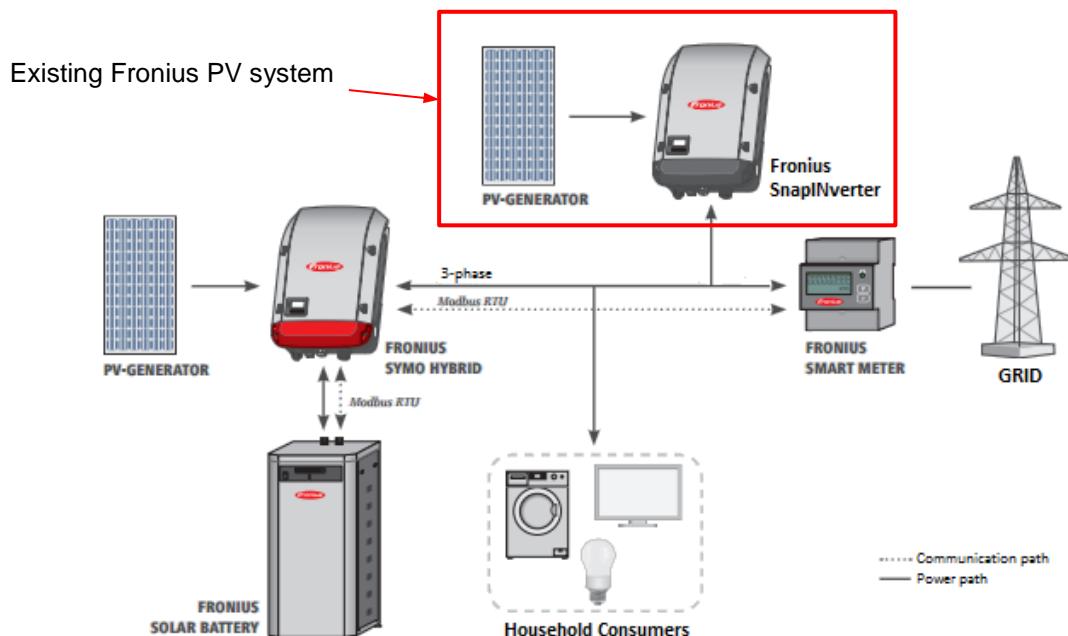


Figure 10: Two Fronius inverters in a PV system

The Fronius Symo inverter needs to be set up for the same home network and Fronius Solar.web. Both Datamanager ID's of the Fronius Hybridmanager and the Fronius Datamanager need to be integrated to the same system on Fronius Solar.web .

### Settings in Fronius Solar.web

Make sure that the Fronius SnapInverter and the Fronius Symo Hybrid are in the list of 'Data sources'. To add a data source go to the tab '*Settings*', then '*Datasources*' and click "Add" to integrate the new Datalogger ID to the same PV system on Fronius Solar.web.

← PROFILE | IMAGE | CONTACTS | **DATA SOURCES** | PERMISSIONS | TARIFFS | INVERTERS | SERVICE MESSAGES | MORE ▾

## Data sources

Datalogger ID	Online	IP Address	Version	active until
240.45869		193.83.120.32	3.7.3-1	<b>UPDATE</b>
239.1559		193.83.120.32	1.4.1-12	Active

**ADD**   **CHANGE**   **DEACTIVATE**

Figure 11: Configuration of two Datalogger ID's in the same PV system

For correct visualisation of the cumulative data on Fronius Solar.web, it is essential to set the correct peak capacity of the PV generators (kWp) connected to the inverters.

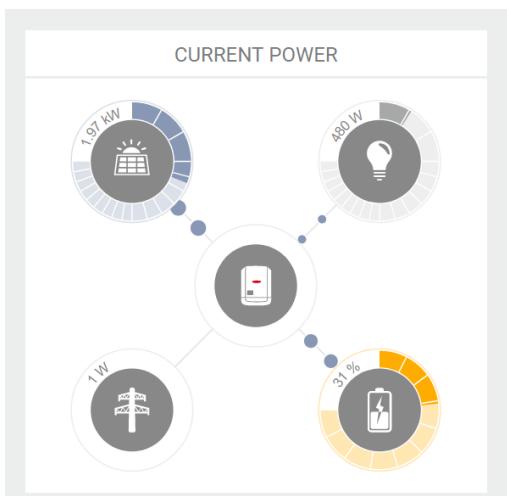
← PROFILE | IMAGE | CONTACTS | DATA SOURCES | PERMISSIONS | TARIFFS | **INVERTERS** | SERVICE MESSAGES | MORE ▾

## Inverters

Name	Type	Datalogger ID	Wp	Active	Update
Symo Hybrid 5.0-3-S (1) (# 1)	Symo Hybrid 5.0-3-S	239.1559	6510		
Symo 8.2-3-M (3) (# 3)	Symo 8.2-3-M	240.45869	DC1: 7800 DC2: -		

Figure 12: Defining the PV generator sizes of one PV system

## Current Power view (bubble view)



The total output of all inverters is represented in the value of current power.

For example: Fronius Symo Hybrid 1000W and the Fronius SnapInverter of 970W will show the value of 1.97kW

**Note:** Power from the AC coupled inverter for charging the battery is included in the total values.

Figure 13: Current Power view in Fronius Solar.web

## Archive data view

The logged production data of both systems will be presented on Solar.web as a single value and a production curve.

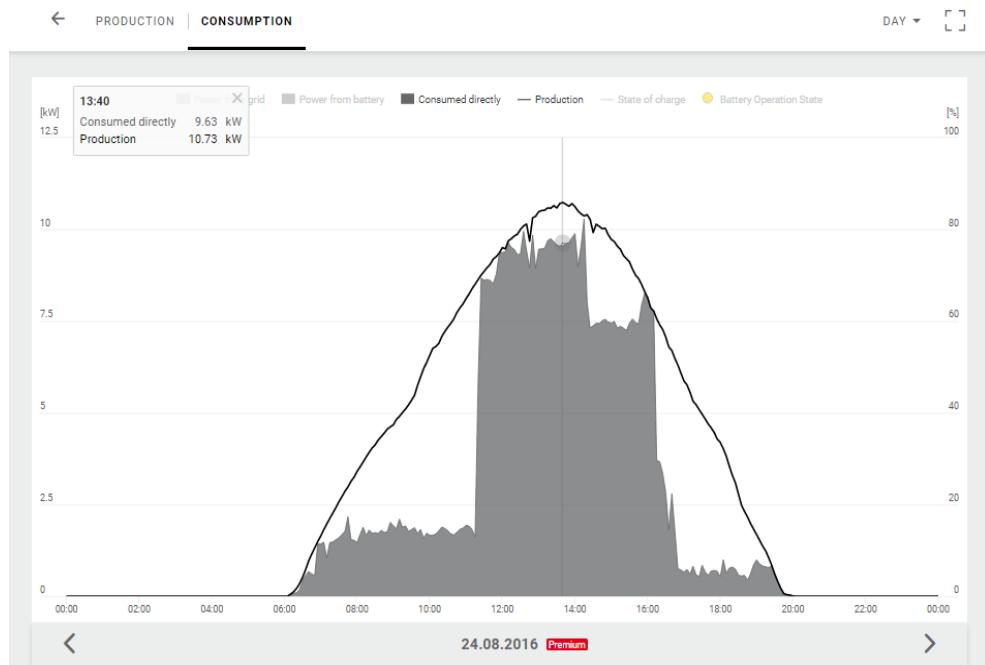


Figure 14: Archive data view in Fronius Solar.web

## Additional information: Restrictions with enabled dynamic power reduction setting

In case dynamic power reduction is required (in some countries e.g. Germany) please be informed about the following restrictions:

- / If dynamic power reduction is activated for the entire PV system and the AC capacity of the additional Fronius inverter / 3<sup>rd</sup> party inverter is smaller or equal to the AC capacity of the Fronius Symo Hybrid, it is possible to show all data in Fronius Solar.web without any limitations.
- / If the AC capacity of the additional SnapINverter is bigger than the AC capacity of the Fronius Symo Hybrid, the data in Solar.web is not displayed correctly. In this case both inverters have to be defined as separate systems.
- / For this case Fronius provides a separate documents: '*Export limiting using the Fronius Smart Meter*' '[Dynamic power reduction with Fronius SnapINverters](#)' and '*Planning aid for dynamic power reduction*'. Please contact technical support for further information.

**Fronius International GmbH**

Solar Energy

Wels, 10<sup>th</sup> of April 2017