AC-coupled PV with Fronius PV Inverters

This document describes how to setup Energy-storage, Off-grid/Micro-grid and Backup systems with AC-coupled PV, using Fronius PV Inverters. For Fronius information on the same subject, see their MicroGrid flyer.

The Victron system monitor, the Color Control GX includes built-in Fronius monitoring.

Frequency shifting

To make sure that the Fronius PV inverter works well with Victron inverter/chargers, both must be configured with the right 'frequency shift settings'. For the Fronius PV Inverter, this means that the MG setup must be chosen. MG is short for micro-grid. And the Victron inverter/charger must be loaded with either the PV Inverter support Assistant or the Hub-2 v3 Assistant.

And the factor 1.0 rule must be adhered to.

Fronius / Victron specifics

With a Fronius PV inverter this is a very easy setup. The Fronius Setup MicroGrid (MG) has been developed in close cooperation with Victron Energy. Simply order the PV Inverters with option Setup MG 50 (for 50 Hz systems) or Setup 60 for 60 Hz systems. Everything is then preconfigured. The MG Setups have all the necessary settings preconfigured, and match the default Victron Assistant settings, such as:

- Tolerant voltage and frequency boundaries
- Disable Anti-Islanding detection
- Frequency dependent power reduction according to the graph in the MicroGrid flyer (Starting at 51 Hz with a droop of 60 %/Hz, so at 52.8 Hz the power = zero and the inverter disconnects at 53 Hz)

Compatible inverters are:

- Fronius IG Plus V (1~, 2~, 3~, 2.5 kW up to 12 kW) → from IGF 5.0.66 on with settings according to the VICTRON recommendations.
- Fronius Galvo (1~, 1.5 kW up to 3.1 kW) → use latest FW
- Fronius Symo (3~, 3 kW up to 20 kW) → use latest FW
- Fronius Primo (1~, 3 kW up to 8.2 kW) → use FW that will be available next week (week32)
- Fronius Eco (3~, 25 kW up to 27 kW) → use latest FW
- Fronius Agilo (3~, 75 kW up to 100 kW) → use latest FW

Recommended for new systems are the SYMO inverters for 3~ systems and PRIMO inverters for 1~ systems. Do note that these products topology is transformerless and therefore PV-Modules that need to be grounded cannot be connected.

In case of PV modules that need to be grounded, use inverters from the IG Plus V series or Fronius

Galvo inverters.

When setting up a system, always update both the Fronius and the Victron devices to their latest versions.

Setting up the Fronius with MG 50/60

When not pre-ordered with a MicroGrid setup, follow these steps:

1. Make sure that the Fronius PV inverter is updated to at least the firmware version mentioned above. See table above.
2. After making the inverter operational according to the manual, select the language and after this the country specific setup.
3. Here choose MG50 or MG60 depending on the system frequency.
4. Ready to start up.

Setting up the Victron Multi or Quattro

1. After connecting the MultiPlus or Quattro with the battery, you can now connect a computer through the VE.Bus (in combination with the Victron interface MK2USB) to configure the system with the latest version of the software VE.Configure.
2. Go to the tab Assistants:
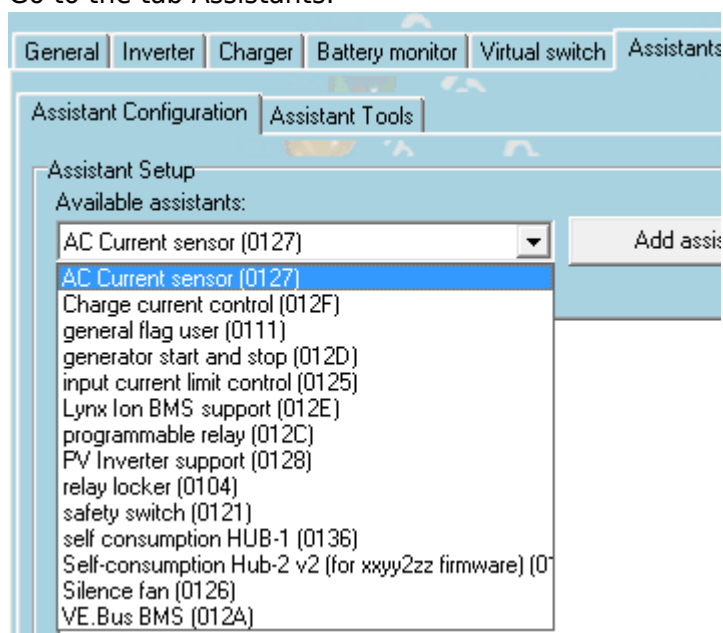
3. Add one of the Assistants that regulate output frequency:
    1. Self-consumption Hub-2 v2
    2. Self-consumption Hub-2 v3
    3. PV Inverter support
4. Note that it is not necessary to change the default settings in the Assistant. The default settings work together with the default Fronius Micro-grid settings.
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5. Complete the rest of the Assistant and write the new settings to the MultiPlus or Quattro.

Frequently asked questions

Why doesn't the frequency settings in the Multi and the Fronius need to be the same?

The first two frequencies do not need to be the same since the Multi actively regulates.

I have an Fronius IG inverter (not Plus), can that work?

No, the IG inverters cannot be made to work in a MicroGrid system. The appropriate substitute for an IG 30 is the GALVO 2.5-1 or an IG Plus 25V-1 (depending on the desired DC voltage range).

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