# **PV Inverter Support Assistant**

* PV Inverter support	(click for a readable version)
PV Inverter support  PV Inverter support  PV Inverters approved  PV Inverter support  PV Inverters connected to the output of an inverter, Multi of Quartin.  Introduction  INTRODUCTION:  A Multi/Inverter can be used in conjunction with a grid-connected solar converter [PV Inverters to be computed on the requirements below!] [at the end of the introduction]  INTRODUCTION:  A Multi/Inverter can be used in conjunction with a grid-connected solar converter [PV Inverters] to make an island system. Namely all exits energy levelse energy minute load) will flow to the battery. This can cause the batteries to become over charged To prevent this, the solar converter should be limited in power or shut off when the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off when the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off usen the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off usen the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off usen the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off usen the battery voltage becomes too high.  Most brands and types of PV Inverters can be limited in power or shut off usen the output frequency of the Multi. So by changing the lexylatery through the charge' power this assistant is used, changing the 'system frequency' on the general page has no effect on the inverter frequency. (It can still have effect on the incoming Lex accepted, one must be badeed in all Multis in the system.  Multi phase system must be system the voltage becomes too high.  A Multi phase system must be symmetrical, this implex  A Multi phase system must be symmetrical, this implex  A Multi phase system must be symmetrical, this implex  A Multi phase system must be symmetrical, this implex  A Multi phase system must be sa	

#### 1. When to use

Use this Assistant in Off-grid systems that have AC-Coupled solar power: a grid-tie PV inverter connected to the AC out of an inverter inverter/charger.

Compatible with Multis, Quattros as well as Inverters that have a VE.Bus connection.

Also use this Assistant for systems connected to the grid, that for a particular reason are not setup as ESS and therefor not using the ESS Assistant. Usually all mains-connected systems do need the ESS Assistant, and in that case do not also install the PV Inverter Assistant as well.

## 2. Summary of functionality

When the system is in inverter mode, this Assistant controls the output power of the grid-tie inverter by changing the AC output frequency of the system. A mechanism commonly referred to as Frequency Shifting. It does so to regulate the charge process: limiting the output power of the Grid-tie inverter to proper manage the charge and also prevent overcharge of the batteries.

This Assistant will be idle when the Multi or Quattro is connected to mains.

# **3. Frequency control details**

The Assistant will use the AC-output frequency to keep both the charge current and the charge voltage within limits.

To prevent DC and AC voltage overshoots because of varying solar irradiance and/or load fluctuations, it will limit the charge current already before battery voltage has rised up to the absorption voltage. It will derate the maximum charge current from 100% at 13.5 / 27 / 54V to 10% at 14.4 / 28.8 / 57.6V. These thresholds are **not** related to the configured absorption voltage.

## 4. Related documentation

- AC-coupling and the Factor 1.0 rule
- AC-coupled PV with Fronius PV Inverters
- CCGX & Fronius PV Inverters
- Step by step guide for setting up PV Inverter Support on a three-phase 2xx installation

# 5. FAQ

#### Q1 - The system is locked to 53 Hz and does not resume

Its locked to the upper limit because of a battery over voltage.

The frequency will reset itself automatically, in case one of the following conditions is met:

- the battery voltage drops below the re-bulk voltage threshold: the voltage that makes the system restart the charge cycle. For lithium batteries this threshold is defined as the float voltage minus 0.8V. Note that when float is configured to 54.8 volts or higher, then the battery voltage needs to drop below 54V. For lead batteries, the re-bulk voltage is defined as 5.2V below the configured float voltage. Unless that is configured to 56.8V or higher: then the battery voltage needs to drop below 51.6V.
- 2. the system is connected to mains or generator power. As soon as it sees a voltage on AC-in, it will sync the AC frequency to 50Hz and then connect.

Alternatively, power cycle the system with the rocker switch on the front panel on the inverter/charger.

To prevent this from happening again, check your configured absorption voltage: setting it lower will prevent the overvoltage condition from happening again.

Notes:

- all mentioned voltages are for 48V systems. For 24V divide all values by 2, and for 12V divide by four.
- the mentioned 53 Hz is the PV Inverter disconnect frequency as configured in the Assistant, default 53 Hz.

From: https://www.victronenergy.com/live/ - Victron Energy

Permanent link: https://www.victronenergy.com/live/assistants:pv-inverter-support

3/3

Last update: 2023-10-10 11:47

