Self-consumption hub-1

Self-consumption Hub-1

Welcome

This assistant is designed to make optimal use of solar energy, produced by Victron Solar Chargers which are directly connected to the battery.

Refer to the Hub-1 manual for more info.

Principle of operation

Normally solar chargers will reduce their power, when the batteries become full, to prevent overcharging the batteries. This implies that solar energy is wasted!
A Multi/Quattro system connected to the batteries can prevent this energy waste by converting the surplus DC solar power to AC power. This power will then be fed to the connected AC loads or, when there is a surplus, it can optionally be fed into the mains.

IMPORTANT

1) The firmware version in the Multi has to be xxxx3xx/xxxx4xx. (more info about versions)
2) Since batteries are charged by an external device the State of Charge is unknown by the Multi/Quattro! Please do not use this assistant together with assistants which rely on the State of Charge calculation.
3) This assistant must be placed in ALL possible phase masters
4) When using a Lynx Ion BMS, It MUST be connected to the master of phase L1. This will be indicated by the assistant.
5) Extended systems (e.g. a system with more than 1 AC input, build with Multis) are not possible in combination with a Lynx Ion BMS.
   (Note: A system with 2 AC inputs build with Quattros is not an extended system!)
6) Take care that the total charge current (Multis + Solar chargers) does not exceed the maximum allowed charger current for the batteries.

Charge process

1) When there is communication between the MPPT charger and the Multi/Quattro system, the charge process is controlled by the assistant and optimized for solar energy. (More info on this communication will be given further on, depending on the selections made.)
   Under normal circumstances the batteries will not be charged with power from the AC mains but only with solar power. Exceptions:

   * Sustain mode.
     A safety mechanism will prevent that the batteries are fully drained. In that case the Multi/Quattro enters the sustain mode in which a small amount of energy will be taken from the net to maintain the battery at a minimum voltage.
   * Once per 28 days (standard setting) a full charge request is issued. If, at the end of the day, the battery is not fully charged, energy will be taken from the mains to complete the request.
   * Also when automatic equalization (for OPzS/OPzV batteries) is selected it is possible that during equalization energy is taken from the mains.

2) The following settings in VEConfig are not relevant:

   "Stop after 10Hr bulk"
   "Storage mode"
   "Use tubular plate traction battery curve"
   "Charge curve"
   "Absorption time / Maximum absorption time"

X Cancel   <<   >>

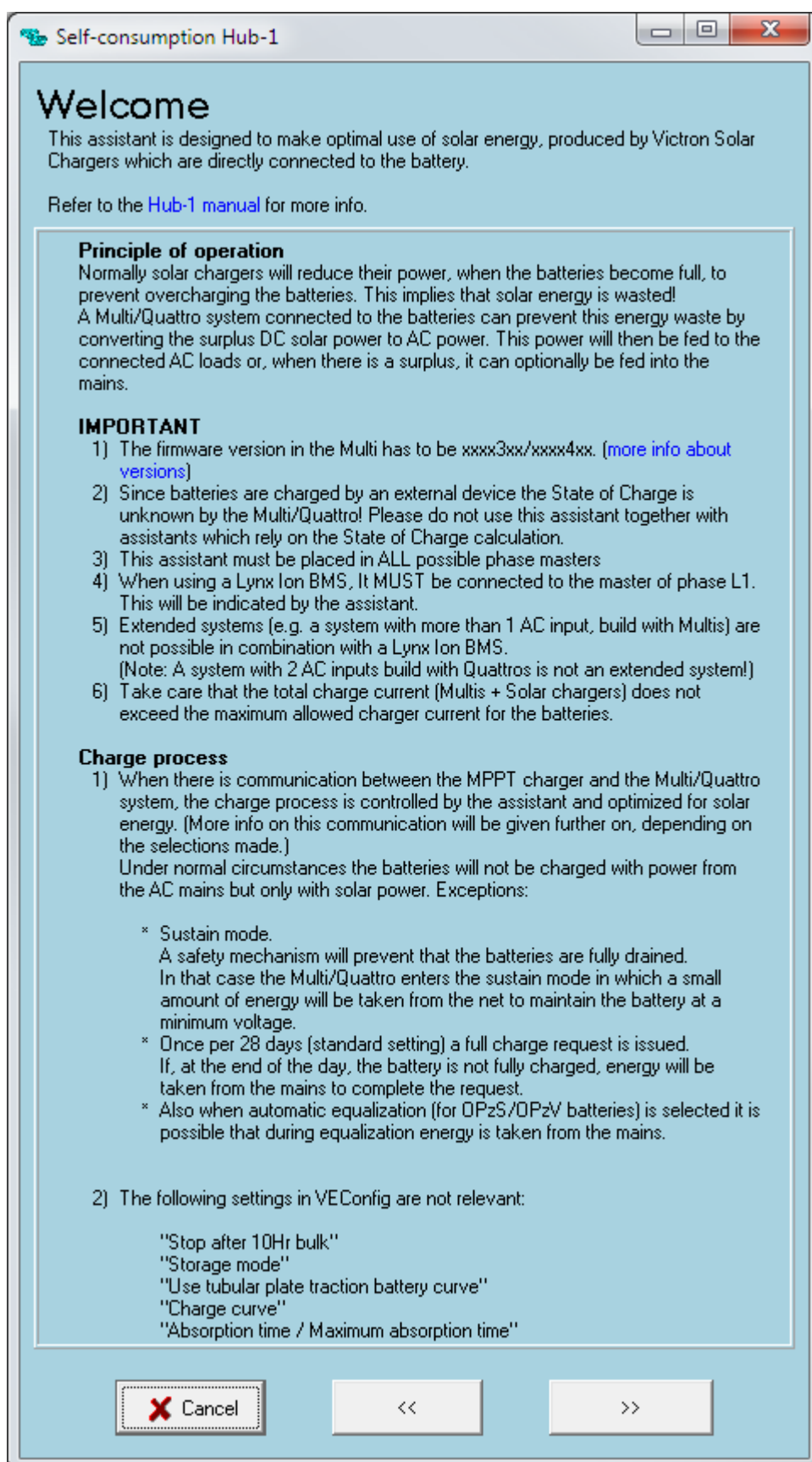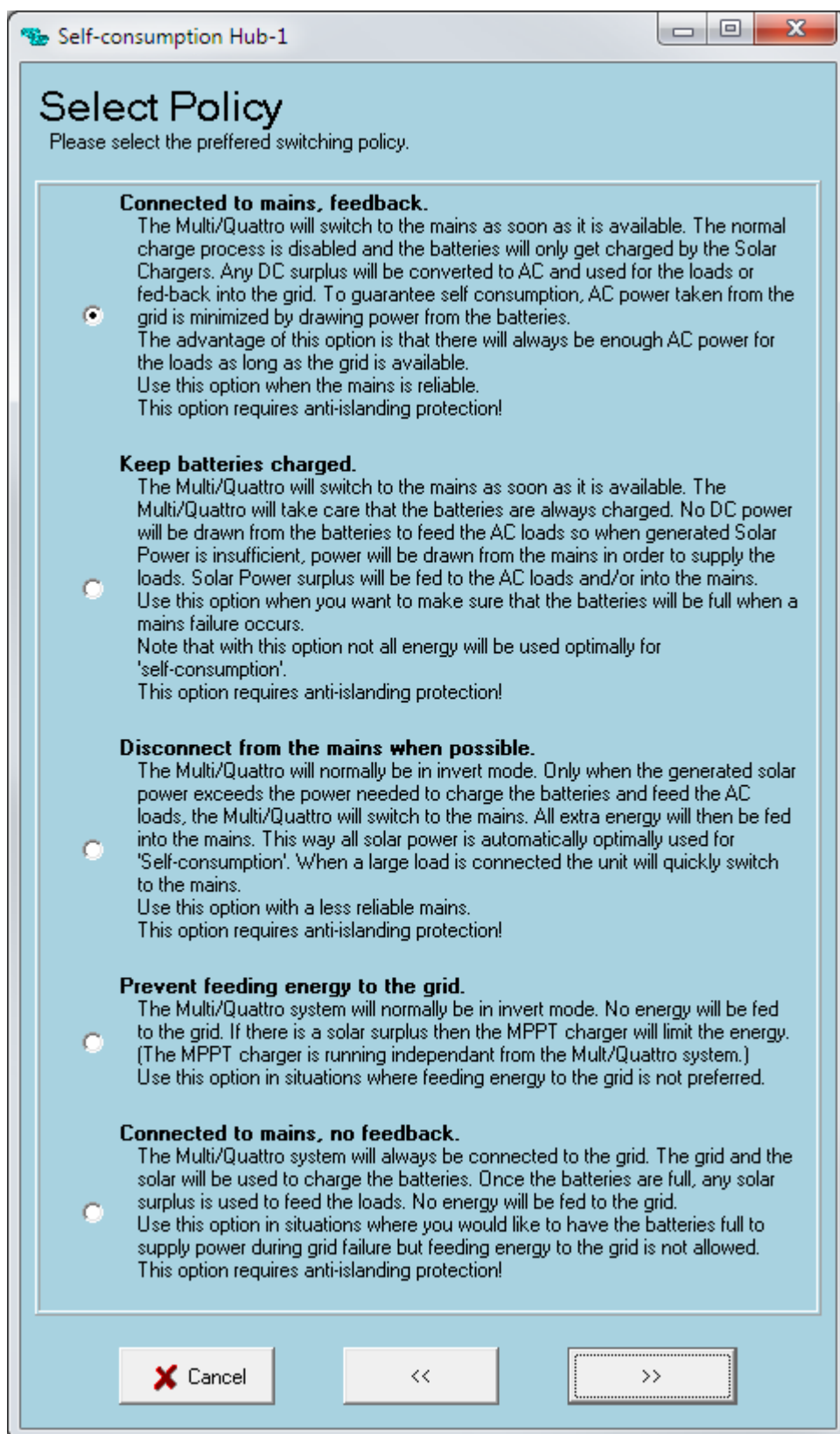## Self-consumption Hub-1

Select Policy
Please select the preffered switching policy.

Connected to mains, feedback.
The Multi/Quattro will switch to the mains as soon as it is available. The normal charge process is disabled and the batteries will only get charged by the Solar Chargers. Any DC surplus will be converted to AC and used for the loads or fed-back into the grid. To guarantee self consumption, AC power taken from the grid is minimized by drawing power from the batteries.
The advantage of this option is that there will always be enough AC power for the loads as long as the grid is available.
Use this option when the mains is reliable.
This option requires anti-islanding protection!

Keep batteries charged.
The Multi/Quattro will switch to the mains as soon as it is available. The Multi/Quattro will take care that the batteries are always charged. No DC power will be drawn from the batteries to feed the AC loads so when generated Solar Power is insufficient, power will be drawn from the mains in order to supply the loads. Solar Power surplus will be fed to the AC loads and/or into the mains.
Use this option when you want to make sure that the batteries will be full when a mains failure occurs.
Note that with this option not all energy will be used optimally for 'self-consumption'.
This option requires anti-islanding protection!

Disconnect from the mains when possible.
The Multi/Quattro will normally be in invert mode. Only when the generated solar power exceeds the power needed to charge the batteries and feed the AC loads, the Multi/Quattro will switch to the mains. All extra energy will then be fed into the mains. This way all solar power is automatically optimally used for 'Self-consumption'. When a large load is connected the unit will quickly switch to the mains.
Use this option with a less reliable mains.
This option requires anti-islanding protection!

Prevent feeding energy to the grid.
The Multi/Quattro system will normally be in invert mode. No energy will be fed to the grid. If there is a solar surplus then the MPPT charger will limit the energy. (The MPPT charger is running independant from the Mult/Quattro system.)
Use this option in situations where feeding energy to the grid is not preferred.

Connected to mains, no feedback.
The Multi/Quattro system will always be connected to the grid. The grid and the solar will be used to charge the batteries. Once the batteries are full, any solar surplus is used to feed the loads. No energy will be fed to the grid.
Use this option in situations where you would like to have the batteries full to supply power during grid failure but feeding energy to the grid is not allowed.
This option requires anti-islanding protection!

X Cancel   <<   >>

When to use the hub-1 Assistant?

Use the Assistant for these systems with Solar chargers, ie. dc-coupled solar power:

- Grid that allows feed-back

- Grid that does not allow feed-back
- Grid + a backup generator

Do not use this Assistant for the following systems, even though they have solar chargers:

- No grid nor generator; solar only
- Only a generator connected to the ac-input of the Multi or Quattro, no grid.

More information:

- blog post on hub-1.
- Deprecated: Hub-1 - Policy 'Connected to mains, no feedback'
- blog post about using a CCGX as a communication hub between a Multi (or Quattro) and one or more VE.Direct chargers

Frequently asked questions

Do I need to use the VE.Bus to VE.Can interface cable?

No, not anymore since CCGX v1.73. See v1.73 blogpost for details.

What happens when there is to power to be fed back, but there is no grid available?

The solar charger will charge the batteries until the absorption voltage is reached, and then reduces it's output. It switches to regulation on battery voltage instead of MPPT or output current. In other words: the batteries will not be overcharged.

What happens when the battery is full and feeding back the grid is has not been enabled in the configuration?

See previous answer.

I do not have a Multi with the new microprocessor, what are my alternatives?

With older Multis and Quattros it is unfortunately not possible to feed power from DC back into the grid. It is possible to prioritize solar in a dc-coupled system.

How many MPPT 150|70 or 150|85 can be connected in parallel

A maximum of 25 units can be connected in parallel.

~~DISQUS~~

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Last update: **2016-11-07 22:49**