

Hub Assistant notes

Draft - work in progress

Special states

A system running the Hub-1 or Hub-2 Assistant, has the following special states:

Grid assist

normal mode was inverting, but now the system is temporarily connected to the grid to power high loads, which in total exceed the maximum inverter power. As soon as those loads are gone for ... , the system will switch back to invert mode again.

Prevent feedback (hub-2 only)

normal mode is connected during the grid (at least during the day). The Multi has now temporarily switched to inverter mode to prevent feeding power from the PV inverter back in to the grid. Also the AC output frequency will be increased, to reduce the PV output power from the PV inverter. As soon as there is no excess of PV available any more, (AC output frequency has dropped back to 50 Hz), the system will connect to the grid again.

Maintenance charge

A full charge cycle will be completed every 28 days (programmable). This full charge cycle includes the absorption charge, which is normally not included. And the maintenance charge cycle also includes an equalisation charge if appropriate for the chosen battery type.

Power from the grid will be used, if at the end of the day the cycle has not yet been completed. Put differently: power from the grid will be used when there has not been enough PV power available to complete the maintenance charge.

PV Reduction (of een betere naam, misschien gewoon frequency shift) (hub-2 only)

In inverter mode with increased AC output frequency to reduce PV power. Deze state overlapt natuurlijk met prevent feedback, ik zou prevent feedback voorrang geven.

Sustain

System is connected to the grid and the internal charger is enabled (but with its charge voltage setpoint to a lower voltage) to prevent batteries from being drained fully. System will stay connected

to mains as long as the battery voltage stays low.

After running 24hours in sustain (only possible if there has not been enough PV power to get out of that situation) the sustain voltage will be increased with (??) to further charge the batteries a little and prevent damage to the batteries by letting the be at a discharged state for a long time.

Recovery from Battery low

als hij onder de x% is geweest, zal hij de loads uit het net blijven voeden totdat de SOC weer x % is / cq absorptie bereikt is . Lade gaat alleen vanuit PV).

[more info on internal Assistant wishlist page on wiki]

State of Charge (SOC)

Under certain circumstances, the SOC is changed by the HUB2 assistant, there is a difference between HUB2v2 and HUB2v3:

HUB2v3

Changed to 'low level' -10%

- a) when a connected BMS signals a 'Low cell'
- b) when (on any connected Multi) $UBat < (UBat2LowInvert + 1V)$ for several seconds
(1V is for 12V systems)
- c) while sustain active
(sustain is activated when $IBat$ is llow and $UBat < 12$ or 12.5 for at least 30 seconds)

Changed to 'high level' -10%

- a) when loadshedding enabled and triggered due to overload
(overload is then also $IMains > IMainsLimit$)

Changed to 100%

- a) when a Lynx BMS signals 'High voltage/cell'

FAQ

Why does my Hub-2 system start charging the first day after setting it up?

This is the maintenance charge. If later on you reconnect VEConfigure and make changed to the Assistant, the same thing will happen: a maintenance charge, using power from the grid (if necessary) to fully charge the batteries.

How long does it take for the Hub-2 clock to sync with the grid?

How does Hub-2 know when it is day or night?

It looks at the direction of the current at the AC output of the Multi or Quattro. If there is excess PV , etc.

Note: configure an hub-2 during day time, because (hoe zat dit ook alweer Peter?)

How does Hub-1 know when it is day or night?

It looks at the direction of the current at the AC input of the Multi or Quattro. When there is power being fed back to the grid, it knows that it has to be day time.

Note that because it looks a the power being fed back to the grid, day/night syncing in a hub-1 system only works well if there really is an excess amount of PV available. If not, for example on most days, or during most part of the day ...

Can I add a small solar charger or wind turbine to a hub-2 installation?

Yes you can, and it even has certain advantages as well. [johannes, graag uitleggen].

You might think that the internals of the Hub-2 might get confused. The only thing that might happen is that the battery is a bit more charged than what the Assistant actually thinks, which can't hurt.

During charge, the SOC used for the algorithms is synced at several moments:

Input current limiting options

- It is possible to set (and change) the input current limit with a remote control panel, For example the Digital Multi Control or the Color Control GX.
- This limit will be used when charging the battery during the periodic battery maintenance cycle. During normal operation it will normally not be used. As long as there is enough sun, the Multi will use a lower current than set with the remote control panel.

[elaborate]

DISQUS Comments

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