

Summary

A change per serial number HQ2150 results in a significantly increased chance of the Smart Solar MPPT 250/100 failing. It then fails with a dead short on the PV terminals, often during installation and a relay can be heard clicking at that moment.

To prevent this from happening, it is of utmost importance to always follow the connection sequence as documented in the manual, as well as make sure that the latest firmware is installed before connecting the PV array.

Procedure:

Step 1. Make sure to use VictronConnect v5.80 or later. Version 5.80 was released on 2022-12-13

Step 2. Power up by connecting the battery

Step 2. With VictronConnect: update the firmware to version v3.12 or higher ^(see note 1)

Step 3. With VictronConnect: check that the Battery voltage setting, 12/24/36/48V, is set correctly.

Step 4. With VictronConnect: check that the app asks for a pin code when trying to change the battery voltage setting ^(see note 2)

Step 5. Only when all above is correct, connect the PV array

In case the above is not followed correctly, eg. connecting the PV array on a charger configured for 12V while connected to a 48V battery bank, the charger will engage its protection.

To recover from such failure, there is a reset procedure that may help. For chargers with a serial number between HQ2150 and HQ2250, the reset procedure – unfortunately – often does not work. In which case the MPPT will be replaced under warranty.

Affected models

SCC125110412 - SmartSolar MPPT 250/100-Tr VE.Can - per HQ2150xxxx onwards

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¹ Firmware versions v3.12 was released on 2022-12-13. And will be included in a VictronConnect version that, at the moment of releasing this tech note, is not yet released. Until then, download the firmware file from <https://professional.victronenergy.com/>, and install it in VictronConnect. Detailed instructions: <https://ve3.nl/vc-fw-file>. The needed model number for this solar charger, to find the right file, is A115.

² VictronConnect v5.74, released on Sept 26th 2022, and later have an improvement to prevent accidentally changing the battery voltage setting; checking for that further ensures the right version of VictronConnect is used.

How to handle a failed charger

When the Solar Charger fails even though above sequence was followed

Even when powered up according to above sequence, it is still possible for the unit to fail in this manner. I.e. a dead short on the PV terminals; relay clicking. We have not seen this often, but have seen it a few times. We are urgently working to fix that and; the first result is in firmware version v3.12.

If you have taken steps 1-5 described above, but still experience a failure, then:

1. First see if it can be recovered by following the PV Short Relay reset procedure in the appendix.
2. Next, regardless of the outcome, please ask your Distributor to inform our Repairs department, using the fault description "PV Input HQ2150". Preferably include:
 - Serial number
 - A VictronConnect settings file (Connect to the MPPT, Click the settings cog icon, Click icon of disk to "Save settings to file")
 - Description of installation (MultiPlus/Quattro models, Off-grid, ESS or other application, type and make of battery)
 - Description when the issue occurred: during installation and commissioning versus after already running for several days without a problem.
 - VRM URL (if available)

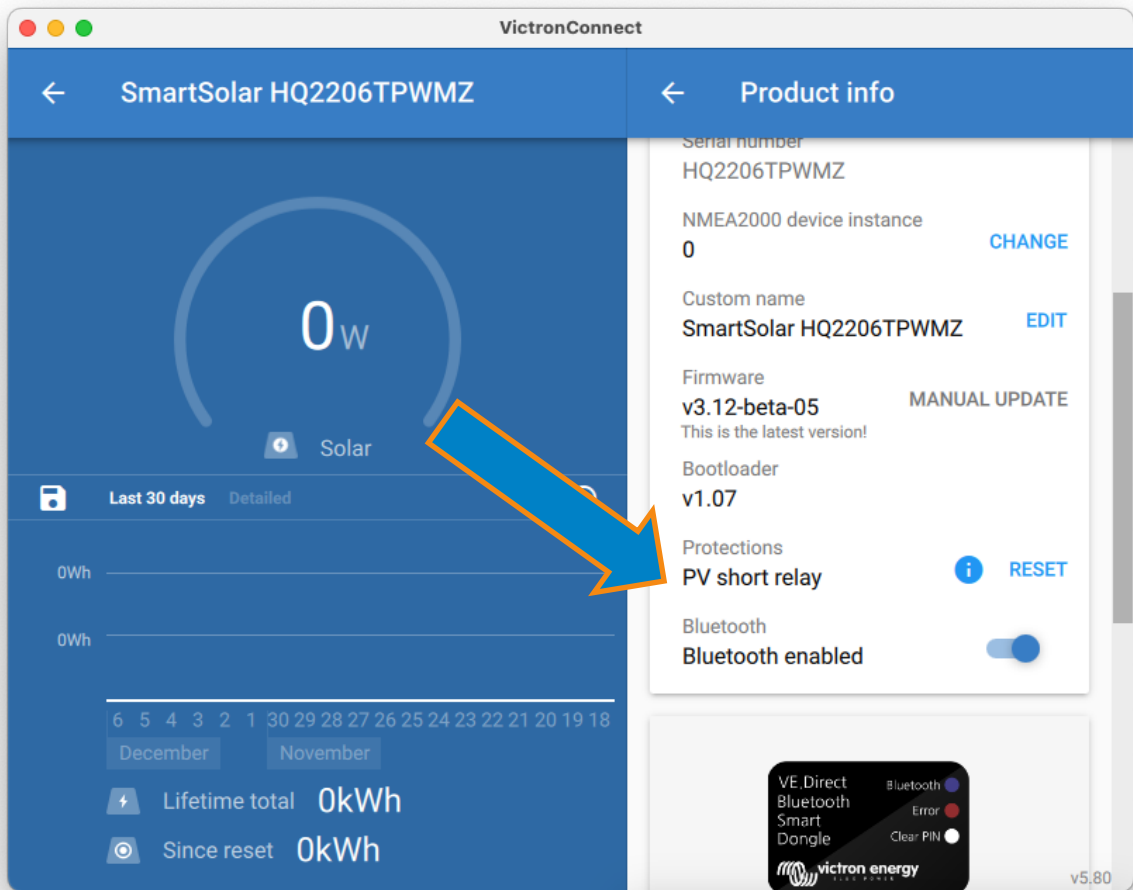
When the Solar Chargers fails due to wrong procedure followed

First try the reset procedure as outlined below, and if that does not recover the solar charger then file for RMA.

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Reset procedure for PV Short Relay protection

1. Power the solar charger with a battery or bench power supply set to 12V.
2. Leave the PV Input terminals disconnected.
3. Open VictronConnect and navigate to the Product settings menu. There the PV Short reset feature is shown:



Note that the feature only shows when (a) the connected units features the protection, ie. 250/100 VE.Can model, HQ2150 and later; (b) requires the input voltage to be between 10 and 15V; (c) requires VictronConnect v5.80 or later and (d) requires firmware version v3.12 or later to be installed on the Solar Charger.

4. Then click the RESET button. It will gray out for a few seconds and return blue.
5. Verify with a multi meter, set to Ohms/continuity mode, that the PV Input terminals is no longer shorted.

Note that for units between HQ2150 and HQ2250, the reset procedure – unfortunately – often does not work. In which case the MPPT will be replaced under warranty.

Technical background

The SmartSolar 250/100 VE.Can has a protection mechanism to prevent that an internal fault results in a battery over voltage. The type of internal fault referred to is a short circuit between the Solar Charger's PV Input and Battery output.

Per HQ2150, this protection has been improved to make it more robust. The old version automatically reset itself: the protection was released by power cycling the unit. A side effect of the newer protection is that it does not reset itself.

The protection consists of a latching relay, which is mounted across the PV Input. When the firmware detects a short between PV inputs and Battery outputs, by monitoring the battery voltage for an over voltage, it engages the relay and as such shorts the PV Input.

As explained in the previous chapter, it is possible to manually reset the protection, ie the latching relay. Which is a very valuable feature in case it "mistriggered". However – and unfortunately – the current in stock has a hardware issue in this manual reset function.

Overview of relevant hardware changes for the Smart Solar MPPT 250/100 VE.Can:

- HQ2150: introduced the new protection (latching relay), with sometimes working manual reset feature.
- HQ2250: manual reset feature is corrected to be 100% reliable.