MPPT Solar Charger Error Codes

Solar Chargers indicate an error with their LEDs. See the Toolkit App for the LED codes.

Detailed error codes can be read with:

- Remote panel, such as the Color Control GX or the MPPT Control.
- VictronConnect app.

The error code list applies to these products:

- All MPPT Solar Battery Chargers
- Skylla Battery Chargers
- Inverter RS / Multi RS
- Orion Smart DC-DC Charger

Error Codes

Err 1 - Battery temperature too high

This error will auto-reset after the battery temperature has dropped. The charger will stop charging to prevent damaging the battery. The battery temperature can be received by an external sensor (like Smart Battery Sense or BMV), or measured by the charger when this feature is available.

Err 2 - Battery voltage too high

This error will auto-reset after the battery voltage has dropped. This error can be due to other charging equipment connected to the battery or a fault in the charge controller. This error can also occur if the battery voltage (12, 24 48V) is set to a lower voltage than the connected battery.

Err 3, Err 4 - Remote temperature sensor failure

Check if the T-sense connector is properly connected to a remote temperature sensor. Most likely cause: the remote T-sense connector is connected to the BAT+ or BAT- terminal. This error will auto-reset after proper connection.

Err 5 - Remote temperature sensor failure (connection lost)

Check if the T-sense connector is properly connected to a remote temperature sensor. This error will not auto-reset.

Err 6, Err 7 - Remote battery voltage sense failure

Check if the V-sense connector is properly connected to the battery terminals. Most likely cause: the remote V-sense connector is connected in reverse polarity to the BAT+ or BAT- terminals.

Err 8 - Remote battery voltage sense failure (connection lost)

Check if the V-sense connector is properly connected to the battery terminals.

Err 11 - Battery high ripple voltage

High DC ripple is usually caused by loose DC cable connections and/or too thin DC wiring. After the inverter has switched off due to high DC ripple voltage, it waits 30 seconds and then restarts.

After three restarts followed by a shutdown due to high DC ripple within 30 seconds of restarting, the inverter will shutdown and stops retrying. To restart the inverter, switch it Off and then On.

Continuous high DC ripple reduces the inverter life expectancy

Err 14 - Battery low temperature

The charger is stopped to avoid charging LiFePO4 batteries at low temperature as this damages the cells.

Err 17 - Controller overheated despite reduced output current

This error will auto-reset after charger has cooled down. Check the ambient temperature and check for obstructions near the heatsink.

Err 18 - Controller over-current

This error will auto-reset. If the error does not auto-reset disconnect the charge controller from all power-sources, wait 3 minutes, and power up again.

Possible causes for an over-current on the battery terminals:

- switching on/off a very large load on the battery side.
- sudden change in irradiance causing a temporary over-power in the mppt.
- overloading the inverter ac output.

Possible solutions

- if possible provide adequate cooling for the unit, a cooler unit can handle more current.
- reduce the load on the inverter.
- charge the battery before using the inverter, at higher battery voltages the same amount of

power requires less current.

Err 20 - Maximum Bulk-time exceeded

Solar Chargers

The maximum bulk time protection is a feature that was in the chargers when they were just released (2015 or earlier) and later the feature was removed.

If you do see this error, then update to the latest firmware.

If you then still have the error, perform a reset to factory defaults of the configuration, and reconfigure the solar charger.

AC Chargers

This protection is default enabled on the Skylla-i and the Skylla IP44.

This error is generated when the battery-absorption-voltage is not reached after 10 hours of charging.

The feature of this safety protection is to detect a shorted cell; and stop charging.

Err 21 - Current sensor issue

The current measurement is out of range.

Disconnect all wires, and then reconnect all wires, to make restart the charger. Also, make sure the minus on the MPPT charge controller (PV minus/Battery minus) is not bypassing the charge controller.

This error will not auto-reset.

If the error remains, please contact your dealer, there might be a hardware defect.

Err 22, Err 23 - Internal temperature sensor failure

The internal temperature measurements are out of range.

Disconnect all wires, and then reconnect all wires, to restart the unit.

This error will not auto-reset.

If the error remains, please contact your dealer, there might be a hardware defect.

Err 24 - Fan failure

This error indicates that the fan is powered on but the circuit does not measure any current draw by the fan. Most likely its either broken or obstructed.

Please contact your dealer, there might be a hardware defect.

Applies to Skylla-IP44 & Skylla-IP65 chargers only.

Err 26 - Terminal overheated

Power terminals overheated, check wiring, including the wiring type and type of strands, and/or fasten bolts if possible.

This error will auto-reset.

Err 27 - Charger short circuit

This condition indicates an over-current condition on the battery side. It can occur when a battery is attached to the unit using a contactor. Or in case the charger starts up without a battery connected but connected to an inverter that has a large input capacitance.

This error will auto-reset. If the error does not auto-reset disconnect the charge controller from all power-sources, wait 3 minutes, and power up again. If the error persists the charge controller is probably faulty.

Err 28 - Power stage issue

This error will not auto-reset.

Disconnect all wires, and then reconnect all wires. If the error persists the charge controller is probably faulty.

Note that this error was introduced in v1.36. So when doing an update, it might look like the firmware update caused this issue; but it doesn't. The Solar charger was then already not performing 100% before the update; updating to v1.36 or later merely made the issue more visible. The unit needs to be replaced.

Err 29 - Over-Charge protection

This error will auto-reset once the battery voltage drops below the float voltage. To protect the battery from over-charging the battery is disconnected.

Possible causes:

- over-sized PV array configuration, if there are too many panels in series the battery voltage cannot be reduced any further. Consider wiring more PV panels in parallel to reduce the voltage.
- configuration issue, check if the battery settings match with the installation (especially

absorption and float voltage settings).
- another charger in the system raises the battery voltage above the expected level.

Err 33 - PV over-voltage

This error will auto-reset after PV-voltage has dropped to safe limit. This error is an indication that the PV-array configuration with regard to open-circuit voltage is critical for this charger. Check configuration, and if required, re-organise panels.

Err 34 - PV over-current

The current from the solar-panel array has exceeded the rated current limit. This error could be generated due to an internal system fault. Disconnect the charger from all power-sources, wait 3 minutes, and power-up again. If the error persists the controller is probably faulty, contact your dealer.

Err 35 - PV over-power

Applies to the MPPT RS, Inverter RS and Multi RS products.

Please upgrade your firmware to at least v1.08 as the issues causing this error have been addressed.

If you are using firmware v1.08 or newer this error indicates that the internal dc voltage is too high. This error will auto-reset. If the error does not auto-reset disconnect the charge controller from all power-sources, wait 3 minutes, and power up again. If the error persists the charge controller is probably faulty.

Err 38, Err 39 - PV Input shutdown

When these errors show, the PV Input is internally shorted in order to protect the battery from over-charging the battery.

Prior to any other trouble shooting, make sure to update to the latest firmware version.

Possible reasons for this error to occur:

- The Battery voltage (12/24/36/48V) is set incorrectly. Use VictronConnect to set the right Battery Voltage.
- There is another charger connected to the battery, which chargers at a higher voltage. The solution is to make sure that charge voltages configured in the MPPT match the other chargers in the system. In case equalisation is set in one of the other chargers, especially at higher voltages such as 16 or 17V, then configure the same in the MPPT. Even when the MPPT is not used for equalisation.
- The battery is disconnected using a manual switch, without first disconnecting the PV array. Which is not ideal but otherwise harmless. If necessary the voltage trip-level for the PV Short protection can be increased by raising the Equalization voltage set-point; which works even when Equalization itself is not enabled .

- The battery is disconnected using a Lithium charge relay connected to the “allow-to-charge” output of a BMS. Consider wiring this signal to the Remote terminal of the charger instead. This shuts down the charger gracefully.

Error recovery:

- Error 38: First disconnect the solar panels and disconnect the battery. Wait for 3 minutes, then reconnect the battery first and next the panels.
- Error 39: The charger will automatically resume operation once the battery voltage drops below its maximum voltage setting (normally Equalisation or Absorption voltages). It can also takes a minute to reset the fault.

If the error persists the charge controller is probably faulty.

Err 40 - PV Input failed to shutdown

If the charger is unable to turn off the PV input, it will go into a safe mode in order to protect the battery from over-charging or having a high voltage on the battery terminals. In order to do that, the charger will stop charging and disconnect its own output. The charger will become faulty.

Err 41 - Inverter shutdown (PV isolation)

PV panel isolation resistance too low. Check the PV array cabling and panel isolation, the inverter restarts automatically once the issue is resolved.

Err 42 - Inverter shutdown (PV isolation)

The ground leakage current in the PV array exceeds the allowed 30mA limit. Check the PV array cabling and panel isolation. Check the installation and restart the unit using the power-switch.

Err 43 - Inverter shutdown (Ground Fault)

The voltage difference between Neutral and Ground is too high.

Inverter or Multi (not connected to the grid):

- The internal ground relay is activated but the voltage over the relay is too high. The relay might be damaged.

Multi (connected to the grid):

- The ground wire in the installation is not present or not connected properly.
- Line and Neutral are swapped in the installation.

This error will not auto-reset. Check the installation and restart the unit using the power-switch.

Err 50, Err 52 - Inverter overload, Inverter peak current

Some loads like motors or pumps draw large inrush currents in a start-up situation. In such circumstances, it is possible that the start-up current exceeds the over current trip level of the inverter. In this case the output voltage will quickly decrease to limit the output current of the inverter. If the over current trip level is continuously exceeded, the inverter will shut down: wait 30 seconds and then restart.

The Inverter can supply more power than the nominal power level for a short time. If the time is exceed the inverter stops.

After three restarts followed by another overload within 30 seconds of restarting, the inverter will shutdown and remain off. To restart the inverter, switch it Off, then On.

If the error persists reduce the load on the AC out terminal by switching off or disconnecting appliances.

Err 51 - Inverter temperature too high

A high ambient temperature or enduring high load may result in shut down to over temperature. Reduce load and/or move inverter to better ventilated area and check for obstructions near the fan outlets.

The inverter will restart after 30 seconds. The inverter will not stay off after multiple retries.

Err 53 - Inverter output voltage

If the battery voltage is getting low and a large load is applied to the AC output the inverter is unable to maintain the proper output voltage. Re-charge the battery or reduce the AC loads to continue operation.

Err 54 - Inverter output voltage

If the battery voltage is getting low and a large load is applied to the AC output the inverter is unable to maintain the proper output voltage. Re-charge the battery or reduce the AC loads to continue operation.

If the error immediately pops up when switching on the inverter (without load) on a full battery the cause is most likely a broken internal fuse.

Err 55, Err 56, Err 58 - Inverter self test failed

The inverter performs diagnostic tests before it activates its output. In the case that one of these tests fails an error message is displayed and the inverter does not turn on.

First try to restart the inverter, by switching it Off, and then On. If error persists the inverter is

probably faulty.

Err 57 - Inverter ac voltage on output

There is already AC voltage on the AC out terminal before switching on the inverter. Check that the AC out is not connected to a mains outlet or to another inverter.

This error will not auto-reset. Check the installation and restart the unit using the power-switch.

Information 65 - Communication warning

Communication with one of the paralleled controllers was lost. To clear the warning, switch the controller off and back on

Information 66 - Incompatible device

The controller is being paralleled to another controller that has different settings and/or a different charge algorithm.

Make sure all settings are the same and update firmware on all chargers to the latest version.

Err 67 - BMS Connection lost

This error shows when the charger is configured to be controlled by a BMS, but does not receive any BMS control messages. In that situation, the charger stops charging by reducing its output voltage to the battery base voltage (12V/24V/36V/48V). This is a safety mechanism, the reason to still enable the output is to allow a system to self-recover from a battery low situation.

Solar Chargers only show this error when there is solar power available and thus the device is ready to initiate charging. It does not show at night. And in case there is a permanent problem, the error will raise in the morning and clear at night, and so forth.

Solution: check the connection between the charger and the BMS.

How to reconfigure the charger to standalone mode

Our Chargers and Solar Chargers automatically configure themselves to be BMS-controlled when they are connected to one; either direct or via a GX Device. And that setting is semi-permanent: power cycling the charger will not reset it.

When removing charger from such system, and reusing it in a system without BMS, that setting needs to be cleared. Here is how to do that:

- Chargers with LCD display: go into the setup menu, and change setting ‘BMS’ from ‘Y’ to ‘N’ (setup item 31).
- Other chargers: reset the charger to factory defaults with VictronConnect, and then reconfigure it.

Err 68 - Network misconfigured

Applies to SmartSolar/BlueSolar MPPTs VE.Can (FW version v1.04 or higher) and SmartSolar VE.Direct MPPTs (FW version v1.47).

To clear the error on the SmartSolar VE.Direct MPPTs update the FW version to v1.48 or higher.

To clear the error on the SmartSolar/BlueSolar MPPTs VE.Can, update the software. If the error persists, it will be because the charger is connected with both a VE.Direct cable and on VE.Can. That is not supported. Remove one of the two cables. The error will disappear and the charger will resume normal operation, within a minute.

Background

Error 68 indicates that the charger detects multiple conflicting network sources, with the same priority, trying to send the same information to the charger. VE.Can and VE.Direct interfaces have both the same priority level, and BLE (using VE.Smart Networking) has a lower priority.

Having a higher priority level means that, if the same information (e.g. Battery voltage sense) is being received from both VE.Can and BLE (using VE.Smart Network) by the charger, the information on VE.Can will be used and the one coming from BLE will be ignored.

Now, if the same information is being received from two interfaces that have the same priority level (as VE.Can and VE.Direct), the charger does not know how to prioritize those, causing error 68 to be triggered.

Err 69 - Network misconfigured

Applies to Inverter RS and Multi RS models. Firmware versions 1.11 and higher.

This error indicates an issue in the configuration. There are units present on the same can bus that have different system configurations. Please ensure that all units are set to either “Single Phase” or “Three Phase”. All units will remain off until the configuration is fixed, after which the units will resume operation.

Err 70 - Network misconfigured

Applies to Inverter RS models. Firmware versions 1.11 and higher.

The Inverter RS model used cannot be paired with a Multi RS and/or Transfer Switch. Only Inverter RS models with a production code newer than HQYYWW can be used for this purpose. Only the incompatible Inverter RS units will remain off.

Err 71 - Network misconfigured

Applies to Inverter RS and Multi RS models. Firmware versions 1.11 and higher.

There are units present with incompatible firmware on the can bus. Make sure that all units are

updated to the same firmware version. All units will remain off until the until the firmwares are updated, after which the units will resume operation.

Err 80 to Err 87 - PV Input shutdown

When these errors show, the PV Input is internally shorted in order to protect the battery from over-charging the battery.

Prior to any other trouble shooting, make sure to update to the latest firmware version.

Possible reasons for this error to occur:

- The Battery voltage (12/24/36/48V) is set incorrectly. Use VictronConnect to set the right Battery Voltage.
- There is another charger connected to the battery, which chargers at a higher voltage. The solution is to make sure that charge voltages configured in the MPPT match the other chargers in the system. In case equalisation is set in one of the other chargers, especially at higher voltages such as 16 or 17V, then configure the same in the MPPT. Even when the MPPT is not used for equalisation.
- The battery is disconnected using a manual switch, without first disconnecting the PV array. Which is not ideal but otherwise harmless. If necessary the voltage trip-level for the PV Short protection can be increased by raising the Equalization voltage set-point; which works even when Equalization itself is not enabled .
- The battery is disconnected using a Lithium charge relay connected to the “allow-to-charge” output of a BMS. Consider wiring this signal to the Remote terminal of the charger instead. This shuts down the charger gracefully.

Error recovery:

- Errors 80 to 83: First disconnect the solar panels and disconnect the battery, then follow the reset procedure described here.
- Errors 84 to 87: First disconnect the solar panels and disconnect the battery. Wait for 1 minute, then reconnect the battery first and next the panels.

If the error persists the charge controller is probably faulty.

Err 114 - CPU temperature too high

This error will reset after the CPU has cooled down. If the error persists, check the ambient temperature and check for obstructions near the air inlet and outlet holes of the charger cabinet. Check manual for mounting instructions with regard to cooling. If error persists the controller is probably faulty.

Err 116 - Calibration data lost

If the unit does not work and error 116 pops up as the active error the unit is faulty, contact your dealer for a replacement.

If the error is only present in the history data and the unit operates normally this error can be ignored safely. Explanation: when the units power up for the very first time in the factory, it does not have calibration data and an error 116 is logged. Obviously this should have been cleared, but in the beginning units left the factory with this message still in the history data.

SmartSolar models (not the BlueSolar models): upgrading to v1.4x firmware is a one-way trip, you cannot go back to an older firmware version once you upgrade to v1.4x. Reverting to older firmware gives error 116 (calibration data lost), this can be fixed by re-installing the v1.4x firmware.

Err 117 - Incompatible firmware

This error indicates that a firmware update did not complete, so the device is only partially updated. Possible causes are: device out of range when updating over the air, a cable got disconnected or power was lost during the update session.

To fix this the update needs to be retried, download the correct firmware for your device from the Victron Professional Portal

When your GX device is connected to VRM, you can do a remote firmware update using this firmware file. You can do this via the VRM website or using the VRM tab in VictronConnect. VictronConnect can also be used together with the firmware file to update using a Bluetooth connection.

The procedure to add the file to VictronConnect and start the update is described here: 9. Firmware updates

Err 119 - Settings data lost

The charger cannot read its configuration, and stopped.

This error will not auto-reset. To get it working again:

1. First, restore it to factory defaults. (top right in Victron Connect, click on the three dots)
2. Disconnect the charge controller from all power-sources
3. wait 3 minutes, and power up again.
4. Reconfigure the charger.

Please do report this to your Victron dealer and ask him to escalate it to Victron; as this error should never happen. Preferably include firmware version and any other specifics (VRM URL, VictronConnect screenshots or similar).

Err 121 - Tester fail

If the unit does not work and error 121 pops up as the active error the unit is faulty, contact your dealer for a replacement.

If the error is only present in the history data and the unit operates normally this error can be ignored safely. Explanation: when the units powers up for the very first time in the factory, it does not have calibration data and an error 121 is logged. Obviously this should have been cleared, but in the

beginning units left the factory with this message still in the history data.

Err 200 - Internal DC voltage error

The unit performs internal diagnostics when activating its internal DC-DC converter. This error indicates that something is wrong with the DC-DC converter.

This error will not auto-reset. Check the installation and restart the unit using the power-switch. If the error persists the unit is probably faulty.

Err 201 - Internal DC voltage error

Applies to the MPPT RS, Inverter RS and Multi RS.

This “Internal DC voltage measurement error”, is raised in case an internal (high-) voltage measurement does not match certain criteria.

First, make sure to update the firmware to v1.08 or later. The limits were too strict in earlier versions. And it could trigger falsely during MPPT start-up in the morning and MPPT shutdown in the evening.

If the error still occurs after updating to v1.08 or later, then it means that a measurement circuit inside the unit is broken.

This error will not auto-reset. Check the installation and restart the unit using the power-switch. If the error persists, even after above mentioned firmware update, the unit is most likely faulty and must be sent in for repair/replacement.

Err 202 - Internal GFCI sensor error

The sensor used to measure residual current did not pass the internal self test.

This error will not auto-reset. Check the installation and restart the unit using the power-switch. If the error persists the unit is probably faulty and must be sent in for repair/replacement.

Err 203, Err 205, Err 212, Err 215 - Internal supply voltage error

The unit performs internal diagnostics when activating its internal voltage supplies. This error indicates that something is wrong with an internal supply voltage.

This error will not auto-reset. Check the installation and restart the unit using the power-switch. If the error persists the unit is probably faulty.