

# VE.Bus Error Codes

## General

During first installation, and in case of problems, update all devices to the latest firmware. This includes the latest VE.Bus firmware and also the latest firmware in the Color Control GX.

Firmware update instructions:

1. [for VE.Bus products](#)
2. [for Color Control GX](#)

To restart a system, first switch all units off, one by one. And then switch all units on again. Do this with the On / Off / Charger-only rocker-switch on the front of the device.

## VE.Bus Error Codes

### Error 1 - Device is switched off because one of the other phases in the system has switched off

One of the phases in a multi-phase system has failed. Commonly because of an Overload or High temperature alarm. When this happens, the other phases will show VE.Bus Error Code 1.

Trouble shooting: Look for the failing phase, which will be the phase that is not showing VE.Bus Error Code 1. And check the LEDs on that phase to find out what the reason was for the shut down.

Diagnosing on VRM First make sure that Automatic alarm monitoring is enabled; that is necessary to create the Overload and Temperature errors in the log. You will see Overload and Temperature alarms occurring at the same time as VE.Bus Error 1.

Note for split- and three-phase systems: VRM, nor the CCGX, will indicate on which phase the overload or the temperature alarm occurred. To find out on which unit the error occurs, go to system after it has switched off. And look on the LEDs. The unit with the overload or temperature alarm, will have the corresponding alarm LED lit continuously. The other units will indicate a VE.Bus error, indicating that they miss one unit.

### Error 2 - New and old types MK2 are mixed in the system

This should never happen, contact Victron service.

### Error 3 - Not all, or more than, the expected devices were found in the system

Possible causes and solutions:

1. This error often follows VE.Bus Error 1. Solution: solve the cause for VE.Bus Error 1. Note that when using an older CCGX (version before v1.40), it can be that the first error is not reported on the Alarm log on VRM. So even when it only lists VE.Bus Error 3, it can very well be that that error was preceded by VE.Bus Error 1.
2. The system is not properly configured: all VE.Bus devices connected to the VE.Bus network must be configured as one parallel, split- and/or three-phase system. Do not connect two separate VE.Bus systems together.
3. Communication cable error: check the communication cables.

## **Error 4 - No other device found**

The master device is configured to run in a parallel-, split- and/or three-phase system, but cannot find other devices on the bus.

Multiple possible causes:

### 1. During a system restart

Error 4 can be seen temporarily while the system restarts after an error. Not a real error in that case, no need to investigate.

### 2. Because of issues in cabling

Faulty cables. Check the communication cables. Don't use self made cables.

## **Error 5 - Overvoltage on AC out**

This problem can occur when the AC wiring of one of the slave units is not connected properly, or not connected at all.

Check the AC wiring.

## **Error 6 - Error in DDC Program**

This means: error in an Assistant. To solve, follow these steps:

1. update VE.Bus firmware in all devices to the latest firmware. Instructions [here](#).
2. download the latest VEConfigure and make sure it has downloaded all the latest Assistants.
3. re-configure the system

## **Error 7 - VE.Bus BMS detected, but not configured**

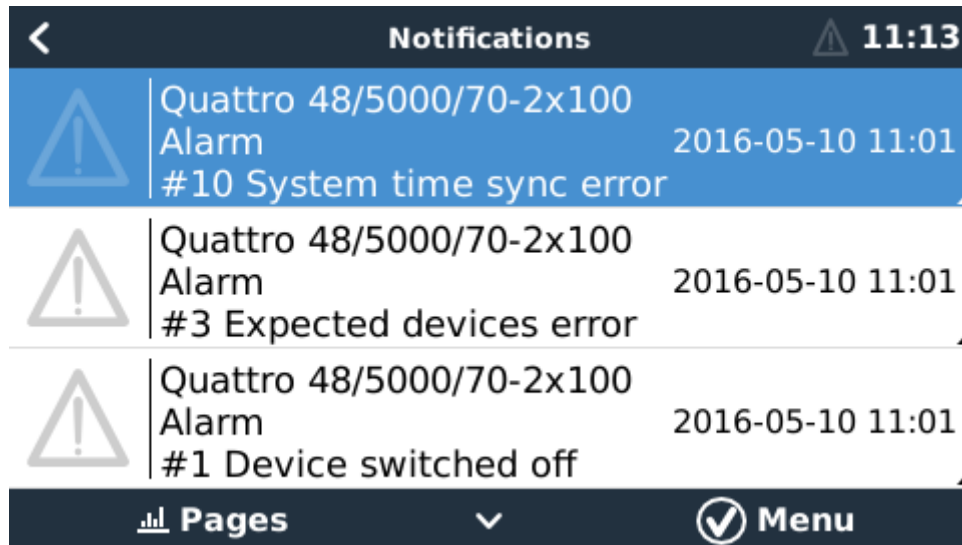
A VE.Bus BMS device is connected but there is no Assistant loaded which handles the VE.Bus BMS.

Solution: configure the use of the VE.Bus BMS in one of the Assistants.

## Error 10 - System time synchronisation problem

This typically happens during a system restart, and is then not a real error; no need to investigate.

For example this screenshot from the Color Control GX:



The real problem is Error 1. In this example it was caused by switching device L2 off with the front toggle switch. It was then quickly followed by Error 3. And when switching device L2 back on, briefly Error 10 is visible, followed by full recovery.

Note: System restarts can also be triggered when using Remote VEConfigure.

## Error 11 - Relay Test Fault - Installation error or possibly relay failure

This error only applies to the MultiGrid, MultiPlus-II, EasySolar-II and other inverter/chargers with a dual backfeed relay. As part of grid-code compliance; the device tests verifies that its internal relays function properly.

The relays are tested when a grid code is selected in VEConfigure. When the grid-code is set to None, the tests are not performed.

When VE.Bus error 11 shows, either the back-feed relay test, ground relay test, or measurement redundancy tests has failed. The tests are automatically performed every time before connecting to mains.

The three root causes of the error can be (from most common to least common):

1) In most cases, when you see Error 11, its due to an installation error:

- Please verify that the neutral is connected to earth on the supply side. In many countries this is done by the utility in the transformer cabinet (a TN network).
- Line should be connected to the corresponding Line input on the inverter/charger, same for Neutral. A swapped connection results in Error 11.
- There should be no external connection between N-out and GND

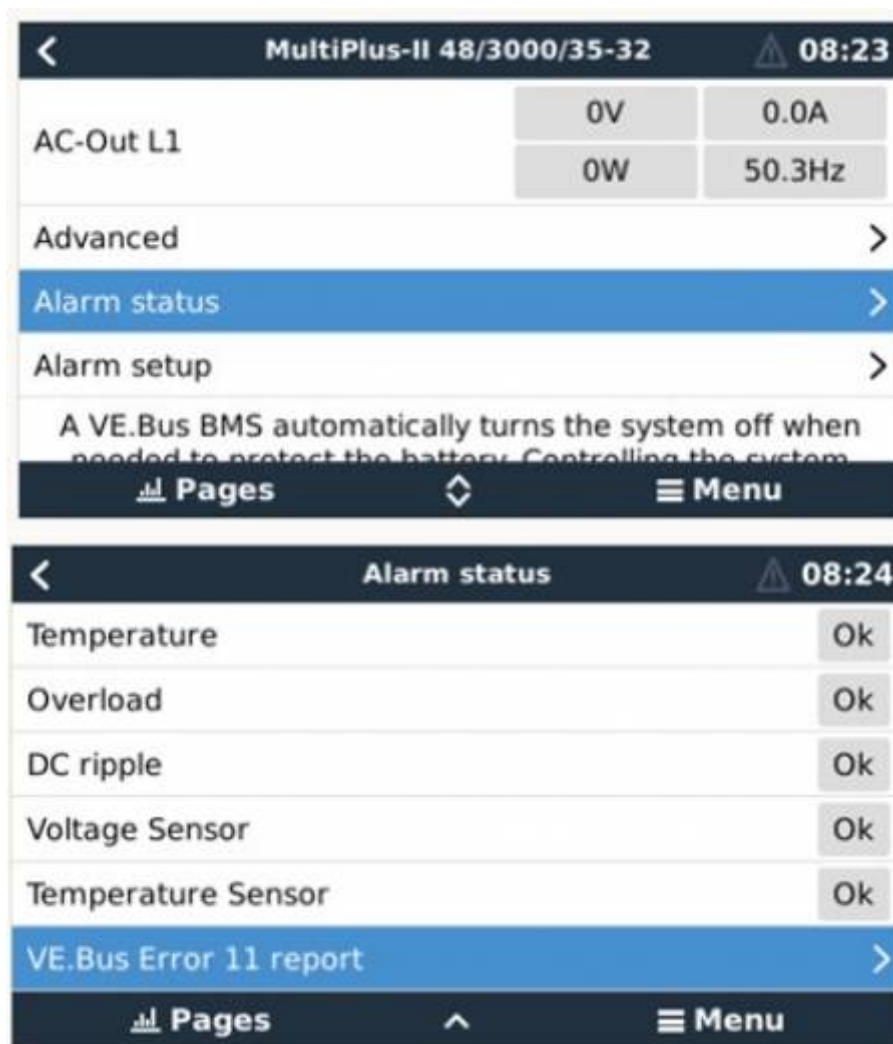
2) For Australia: contact your distributor.

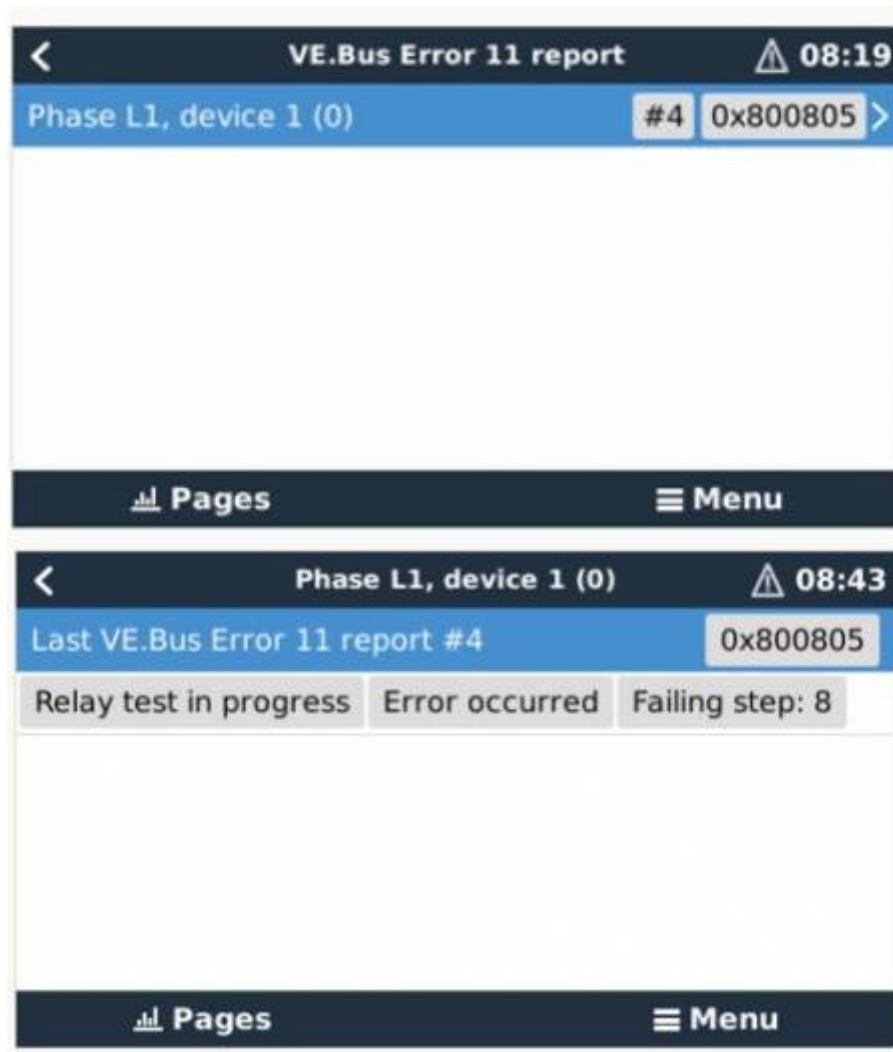
3) Hardware defect; contact your distributor for a replacement.

## Detailed diagnosis of Error 11

After updating your VE.Bus inverter/charger to firmware 454 or higher; and running Venus OS v2.23~3 or later, a detailed VE.Bus Error report becomes available:

[TODO; add image here]





It shows:

- A six digit number; which contains all the details
- A counter
- Flags
- The failed step; it counts backwards: step 9 → 8 → 7 and so forth.

Common causes:

- Failing step #8: check that line and neutral have not been swapped. Unlike non-grid code installations; line and neutral need to be wired correctly.
- PE2 open error: check that AC-out Neutral is not wired to Ground. Short circuiting them is not allowed. Also, check that there is no leakage between Neutral and ground, for example because broken consumer. Start by disconnecting all loads: open all the circuit breakers.

In all other cases, contact your Victron representative for support. Please provide a photo of the error; and otherwise the 6 digit number at the top.

## Error 14 - Device cannot transmit data

Most probably a short circuit in the communication cables.

Another possibility, very rare though, is a broken component on the board. Return the device to the nearest service point for repair.

## **Error 16 - VE.Bus dongle is missing**

Update firmware to latest version: VE.Bus dongles are no longer necessary.

Instructions [here](#).

## **Error 17 - Original Master Missing**

This error can only occur on systems with multiple devices installed per phase. For example a single phase installation with two or more devices in parallel, or a three-phase installation with six or more devices.

Error 17 will only appear on slaves. You'll see it when its phase-master is no longer communicating on the VE.Bus network.

- In some cases this error can be seen temporarily while using Remote VEConfigure to write a new configuration.
- Otherwise, the most likely cause is bad cabling/contacts on the VE.Bus: Check cabling and contacts. Make sure to also inspect the female RJ-45 sockets, instead of only the cabling: Sometimes badly mounted RJ45 cable connectors prevent the spring-contacts in the female RJ45 connectors on the Multis to properly make contact.

If nothing can be found and the failure persists a hardware error might be the cause. Contact your distributor, and also report the exact LED indication of the Master and all slaves in that phase.

## **Error 18 - AC Over-voltage on the output of a slave while switched off**

Solution: check if AC wires are not swapped by accident. There can never be voltage on the AC out when a unit is switched off.

## **Error 22 - This device cannot function as a slave**

This device is an obsolete and unsuitable model. It should be replaced.

## **Error 24 - Switch-over system protection initiated**

There is a back-feed (or 'anti-islanding') relay present on the AC input of each unit. This relay is automatically opened during periods of AC input loss (e.g. grid or generator failure) as a safety mechanism to avoid the back-feeding of AC energy 'upstream'.

Error 24 is raised when a Multi or Quattro detects current flowing through the back-feed relay during a period when the relay should be open - which means that the relay did not open when it should.

This should not occur in a correctly installed and sized system. Possible causes in order of probability:

1. There is too much AC load connected at the moment the relay needs to switch off. This large current will prevent the relay contacts from opening.

Solution: remove excessive load.

2. The AC input voltage slowly drops before it is being rejected by the Multis. Typically happens in installations with a genset. Especially when combined with AC loads that increase their current draw when the AC voltage drops: at the moment the Multis or Quattros decide to switch off, the current through the relays is too high to open them.

Solution: Make the Multis or Quattros disconnect earlier: increase lower limit of AC input voltage in VEConfigure3. For example to 210 VAC. The factory setting is 180 VAC.

3. The back-feed relay has a hardware failure (and is stuck 'on')

Solution: Replace faulty unit.

#### Diagnostic notes for systems showing error 24 where a stuck 'on' relay is suspected

In a single unit system, turn the unit 'off' on the front panel rocker switch and apply AC input power. Measure the AC output. If AC voltage is present, the unit is faulty (stuck relay).

In a three-unit, three-phase cluster (only one unit per phase), the faulty unit can be identified in the same way. As for the single unit case, any unit presenting AC output voltage when the rocker switch is set to 'off' is faulty.

You can also determine the faulty unit(s) by just listening for units that are *audibly humming* while their front panel rocker switch is set 'off'. The humming is because AC power is being applied to the internal circuitry when it should not be.

Where there are multiple units hardwired in parallel (a multi-unit/single phase system, or a three-phase cluster with 6 or more units), then there is an additional diagnostic challenge. In these systems, the faulty unit will be feeding energy out from its AC output and this energy will then flow into to the other (good) units via their respective AC output terminals. This results in *all* units that are parallel-wired appearing to be faulty, and all units concerned humming while set to 'off'.

The most conclusive way to determine which unit is faulty in this case is to un-wire the AC outputs of all the units concerned to prevent the cross-feeding of AC energy via the AC outputs. Then apply AC power with all units still set to 'off' on their front panel rocker switches. The faulty unit is the one that is still humming and that is still presenting AC voltage on its output terminals.

## **Error 25 - Firmware incompatibility**

Make sure to use the same firmware in all devices.

Solution: update all devices to the latest available firmware. Instructions [here](#).

## Error 26 - Internal error

Should not occur. Switch all equipment off, and then on again; it will then resume operation. Contact Victron Energy if the problem persists.

## DISQUS

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