

How to detect and fix a 'Floating Neutral'

Disclaimer

The material in this document has been prepared by Sungrow Australia Group Pty. Ltd. ABN 76 168 258 679 and is intended as a guideline to assist solar installers for troubleshooting. It is not a statement or advice on any of the Electrical or Solar Industry standards or guidelines. Please observe all OH&S regulations when working on Sungrow equipment.

Scenario:

Inverter keeps shutting down for no reason.

Symptoms:

Random variations in phase voltage for no apparent reason.

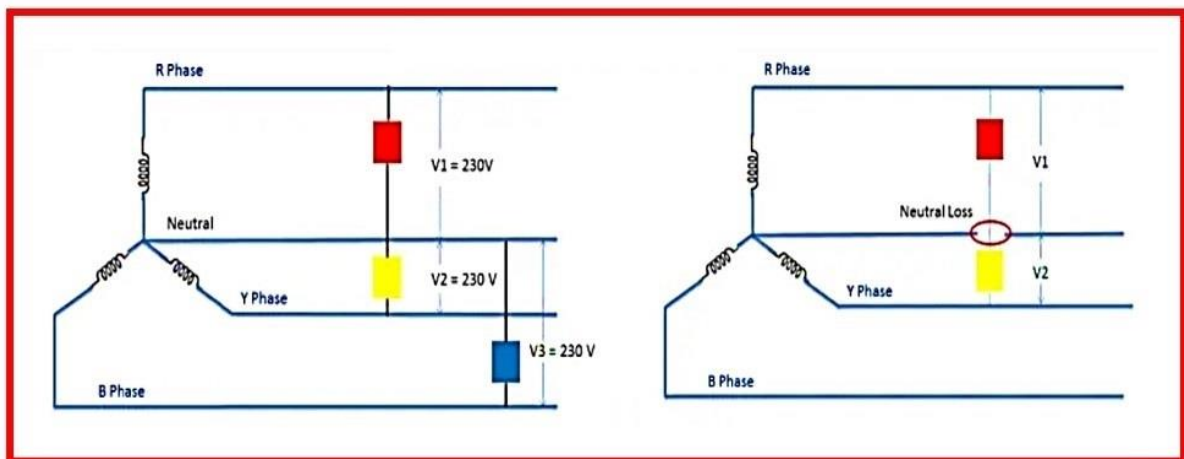
There are cases where, for no apparent reason, the inverter shuts down. On investigation, some odd AC voltages may or may not show on iSolarCloud.

Floating Neutral problem:

In 3-phase supplied in Australia (and elsewhere), the three-phase supply is in 'Star connection, with the neutral at the star point, and the MEN link to earth close by.

In this configuration the voltage across the phases is normally 400V phase-to-phase, and 230V phase to Neutral.

However, it is possible for some reason for the neutral to lose connection to the star point as per the below diagram.



If there is a break in the neutral, the Phase-to-Phase voltages will be unaffected, but Phase to Neutral will vary, because the neutral has lost its reference to the star point.

This is what is called a 'Floating Neutral'.

This will be more apparent when loads are applied to the phases.

Testing/Diagnostics:

There are a few ways that this can be tested.

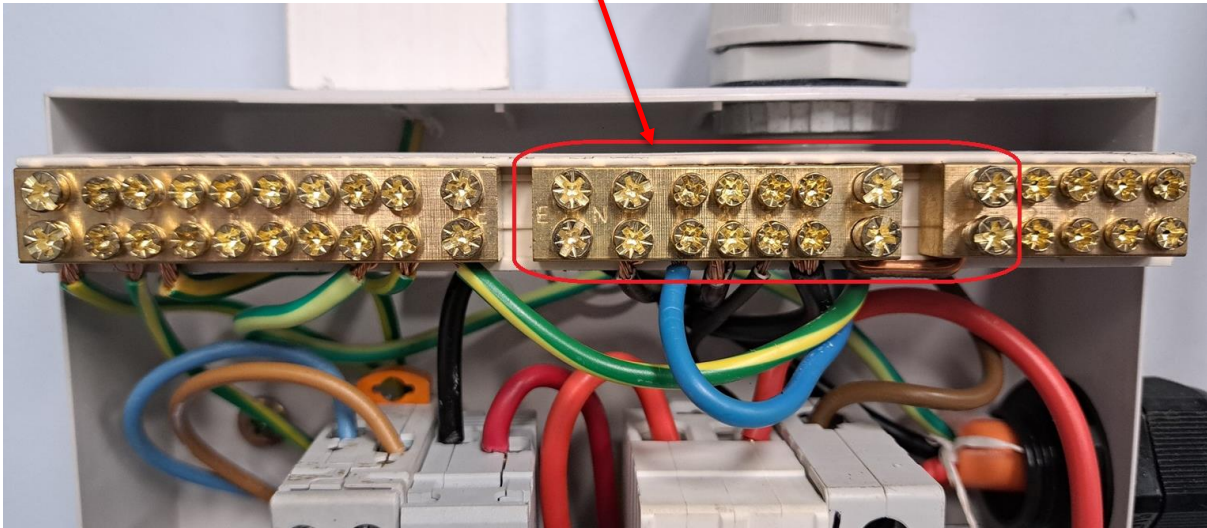
If the Phase-to-Phase voltages are correct, but Phase to Neutral incorrect, it could be a floating Neutral.

Resistance measurement at the appliance from Neutral to Earth may be a high resistance or open circuit.

If the above test suggests a floating neutral, the electrical system must be inspected thoroughly, as this could pose a danger. Shut down at the main switch or fuse.

While it is possible that the neutral has been damaged, the most likely causes are:

- Disconnected neutral due to someone working on the wiring.
- Loose Neutral at the switchboard.



Please check 'ALL' Neutral and Earth connections in every MSB and sub-board and carry out continuity tests before re-energising the switchboard.

If the issue still persists, please take photos testing on site and contact Sungrow Service Department on 1800 786 476 or email to service@sungrowpower.com.au.