RCD Tripping Issue and Solution

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.

1. Reasons for RCD Tripping

According to the Standard AS3000, if the cable is installed into cavity walls without heavy conduit protection, installer shall install an RCD/RCBO to protect this cable. For domestic installations, the RCD/RCBO must feature 30mA tripping current. This current is overly sensitive for solar systems. In addition, the 30mA threshold is the protection upper limit, for most RCD/RCBO manufacturers could trigger at 15mA or 16mA.

PV arrays and rooftop (especially metal roofing) are good conductors, and they could form a capacitor between the solar array and the earth. This capacitor will result in leakage current which is quite common in solar systems. For some weather conditions, such as rainy and cloudy days, this common-mode capacitor will be increased and will cause a higher leakage current. This could trigger the RCD/RCBO.

2. Test Firmware

If the RCD/RCBO trips frequently, please contact Sungrow. Sungrow will do the initial diagnose through a special firmware (**MDSP_V69_RCD_21020401.zip)** which can display the leakage current and insulation resistance of the system.

If the IR reading is low, the installer may need to attend site and use a megger to test the insulation of PV array of the system. If the test result is low, the installer needs to check the DC cables and isolators to see if there are any damages.

3. Sungrow Solutions

a. Replace the RCD/RCBO with a MCB if possible.

If the cable run through a conduit on the surface of the wall, the RCD is not mandatory. We can advise the installer to replace the RCD/RCBO with a MCB which would not be tripped by residue current.

b. Use the recommended RCD/RCBO.

Sungrow has tested many RCD/RCBO which are commonly used in Australia market and has found some RCD/RCBO are less sensitive than others. Note these two RCBO are only suitable for SG5K-D inverter.

- **Nader NDB2LE-25** (Not sold through retailer and will be supplied by Sungrow)
- **Clipsal RCBE232/30S** (Can be bought from retailers)

c. Firmware update

Sungrow will update the inverter with a special firmware which allows the inverter to protect before RCD/RCBO trips.

Note: For certain weather like cloudy and rainy days, there is a risk that inverter may not be able to start or stop frequently because of the higher leakage current.

d. Long term solution

Sungrow team will keep improving the software and hardware to reduce the residue current. Meanwhile, we are planning to supply RCBO which has good compatibility.

Note: Currently we may only supply **Nader NDB2LE-25** (25A) to the customer, which can only be used with SG5K-D. The 40A RCBO is not available because it has not been certified in Australia yet. The Sungrow team is working with the RCBO manufacturer to get the certificate which is anticipated to be done before April 2021.

If the issue persists after following above procedures, please take photos testing on site and contact Sungrow Service Department on 1800 786 476 or email to service@sungrowpower.com.au, Monday- Friday 9am - 5pm (AEDT).