

Circuit breakers – Thermal tripping

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.

Nuisance tripping:

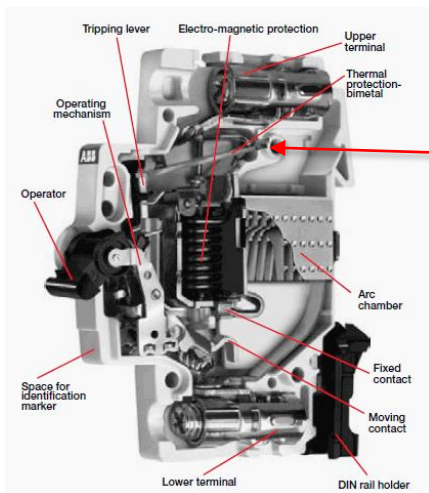
There are occasions where for no apparent reason, the AC breaker protecting a solar inverter will randomly trip, with no obvious cause. Error code 010 will be displayed.

It is normally assumed to be an inverter fault.

However, this is rarely the case.

Thermal tripping:

Circuit breakers are designed to trip under multiple circumstances which also includes a thermal trip mechanism.

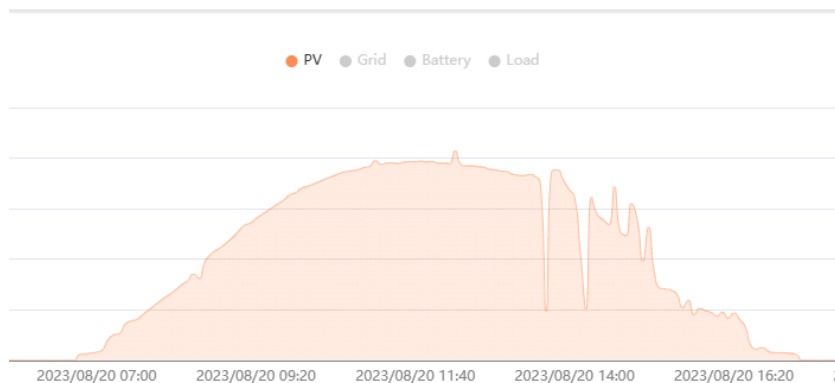


Thermal trip (Bi-Metal strip) will trip the breaker if there is too much heat.

Picture 1 – The internal mechanism

Under normal circumstances, circuit breakers will only occasionally be exposed to large currents as devices are switched on and off.

However, in the case of solar inverters, they can be running at maximum power for several hours of the day.



Picture 2 – Typical output curve from a PV system

Inverter currents:

On a sunny day, an inverter may be pushing out peak output for several hours of the day.

A 5 kW inverter for example will push in excess of 21 Amps continuously through its protecting breaker and AC cable.

During hot weather in particular, if the MCB is in a typical switchboard, it will have no ventilation each side, and has less capacity to dissipate the heat, and a high ambient temperature exists in the enclosure. It will often eventually trip from overheating.



Picture 3 – Typical fully loaded switchboard (Courtesy of Clipsal)

Solution:

Sungrow recommends that in these cases, mount the protective device in its own enclosure with air gap around the MCB to allow thermal cooling.



Picture 4 – MCB in a 2-pole enclosure

**Always refer to the wiring rules and appropriate standards when sizing a protective device.*

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.