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Electrical Standards and Safety Technical Compliance Guide

Polarity Sensitive RCBO Devices

What is the hazard?

Incorrectly wired RCBO devices may not operate when leakage current is present.

How does this hazard occur?

Installation error – device failure resulting from reversed polarity wiring defect (polarity sensitive RCBO devices installed contrary to manufacturer's instructions).

Background

An RCBO is a residual current device (RCD) and circuit breaker (CB) combined in a single device.

Wiring defects are most likely to occur when wiring requirements are not adequately checked.

Polarity sensitive RCBO devices are available on the Australian market with differing physical orientations for load and line terminals.

Load and line terminals must be correctly identified to ensure that these devices are installed according to manufacturer's instructions.

Additional care is advised when mixing brands or unit types within the same switchboard. This may typically occur in situations such as when replacing RCBO devices in existing installations.

Risk

Reverse polarity current flow will almost certainly result in irreparable damage to polarity sensitive RCBO devices. This defect can be difficult to identify through function testing.

When triggered with the reverse polarity wiring defect, polarity Sensitive RCBO units will likely function once and can then be physically reset.

However, these devices are highly unlikely to function again and will not provide any earth leakage protection.

Two or more function tests are required immediately after each other to detect reverse polarity wiring defects for these polarity sensitive RCBO devices.

Safety considerations

Test existing RCBOs using the test button **TWICE**

Testing prior to starting work increases protection for yourself, other workers, and occupiers.

Check the RCBO terminals

Be mindful that different RCBO devices can have the line and load terminals oriented differently. That is, the line terminal could be on the top or the bottom.

Check the installation

Ensure that supply is connected to line terminals and final sub-circuits are connected to load terminals. Refer to the manufacturer's instructions for installation.

Always trip twice

Use a trip tester or the test button to verify the functionality. Incorrectly installed RCBOs will likely trip once and then be irreparably damaged, unable to function again. Testing twice is more likely to detect device failure.

Document Development History

Version	Application Date	Sections amended
1.0	July 2018	Original release
2.0	September 2022	Renamed and released as a Technical Compliance Guide, minor updates

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