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The purpose of this document is to provide a consistent approach across Australia and New Zealand when applying the requirements within the particular Standard.*

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Multiple Mode Inverters Stand-alone Operation

An increasing number of multiple mode inverters (MMI) are being connected to solar and battery systems to provide a stand-alone a.c. supply in the event of a grid outage. The intention of this document is to explain the requirements when the stand alone (back-up) supply is operational. The particular focus is on the RCD requirements and the neutral connection.

AS/NZS 3000 and AS/NZS 4777.1 cover the broad requirements for these inverters.

Q. Do the final sub circuits supplied by the stand alone a.c. supply from the MMI require RCD protection?

A. Yes.

Clause 5.4.4 of AS/NZS 4777.1:2016 requires RCD protection to be installed on all final sub circuits of the stand-alone a.c. supply of the MMI. The RCDs need to be installed in accordance with the requirements outlined in AS/NZS 3000.

Note: the RCDs used on the stand-alone final sub circuits shall be of the type that correctly operates on the stand-alone output waveform and is in accordance with the requirements of MMI manufacturer.

Q. Does the stand-alone a.c. supply from the MMI need to be earth referenced?

A. Yes.

Clause 5.4.3 of AS/NZS 4777.1:2016 requires a MMI that is operating in stand-alone mode to be an earth referenced a.c. supply.

In addition to these two clauses mentioned above,

- Clause 5.4.1 of AS/NZS 4777.1:2016 requires the alternative supply arrangements of AS/NZS 3000 to be applied to the stand-alone a.c. supply of the MMI, and
- Clause 7.3.8.1.2 of AS/NZS 3000:2018 A2 requires the changeover device for the alternative supply to maintain the function of the electrical installation. The functions to be maintained of electrical installation include the continuity of the neutral conductor and the operation of RCD's.

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