

Transformer Design and PV Systems with M215 and M250 Microinverters

This technical brief discusses the simple separation architecture between the DC side and AC side of Enphase® Energy M215™ and M250™ Microinverters and provides guidance for PV system design and installation.

Simple Separation Architecture

Enphase Energy M215 and M250 Microinverters perform DC-to-AC conversion with high frequency transformers. This transformer design provides full galvanic isolation (or simple separation) and does not allow DC fault currents to feed into the electrical installation.

Guidelines

Simple Separation

Any PV system using M215 or M250 Microinverters meets the requirement of simple separation between the AC side and DC side. Therefore, no residual current device (RCD) of any type is required to meet BS 7671 Section 712.411.3.2.1.2 and MCS Guide, Section 2.3.2.

In addition, the M215/M250 Microinverter simple separation architecture removes the requirement to earth the array mounting frame, but does not override the need to connect the frame to earth for lightning protection purposes.

AC Circuit Design

All AC cabling must be specified and installed in accordance with BS 7671. For example, when a cable is buried behind plasterboard, in a domestic installation, a standard 30mA Type AC RCD must be used as with any other supply circuit.

Enphase recommends that the M215/M250 Microinverter PV circuit is not grouped with any other supply circuits connected behind a common RCD, such as in a 17th Edition split load consumer unit. To avoid nuisance tripping where an RCD is considered a requirement, use a dedicated device to provide connection to the PV system only and have no common supply circuits.

References

- BS 7671:2008 Requirements for Electrical Installations British Standards
- Microgeneration Certification Scheme - Guide to the Installation of Photovoltaic Systems (ISBN 978-0-9574827-1-5)
- Microgeneration Installation Standard: MIS 3002 Issue 2.1