

Mating Microinverters with PV Modules for Correct Polarity

Introduction

This technical brief provides connector and polarity information so that you can order the correct Enphase Microinverters for your module connector type.

Follow these guidelines when mating microinverter connectors with various PV module DC connector types (or adapter cables) to ensure correct polarity between the microinverter and the PV module.

Microinverter DC Connector Types

Enphase microinverters are available with one of two DC connector types. The polarity of the microinverter DC connector varies with the type of connector:

- Microinverters with **MC-4 compatible locking connectors (part number suffix S12 or S22)**: With MC-4 compatible connectors, the positive DC output of the PV module (+) connects to the microinverter connector *labeled* negative (-). These connections are straightforward and consistent.
- Microinverters with **Tyco style locking connectors (part number suffix S13 or S23)**: For microinverters with Tyco connectors, the positive DC output of the PV module (+) connects to the microinverter connector labeled positive (+).

However, Tyco connectors can vary in polarity. With Tyco connectors either the male or female connector may be positive, and only the MALE positive mates with the Enphase microinverter S13/S23 connector. Order the correct connector type for both microinverter and PV module from your distributor.

Guidelines

Here are guidelines to avoid reversing the polarity between your PV module and the microinverter:

- Order Enphase Microinverters with the correct connectors for your PV modules. *If re-termination of the module connectors is required, then you must identify the positive output of the PV module from the labeling on the PV junction box.*
- Since labeling can be deceiving, always connect the **electrically** positive output of the PV module to the positive input of the microinverter.

PV Module Compatibility

Enphase maintains a list of Electrically Compatible PV Modules (see “Wiring Diagrams & Compatibility Lists” under <http://enphase.com/downloads/>). Although inclusion on the Enphase list indicates PV module electrical compatibility, it does not guarantee mechanical compatibility of the PV module connectors. In addition, connector labels can be misleading.

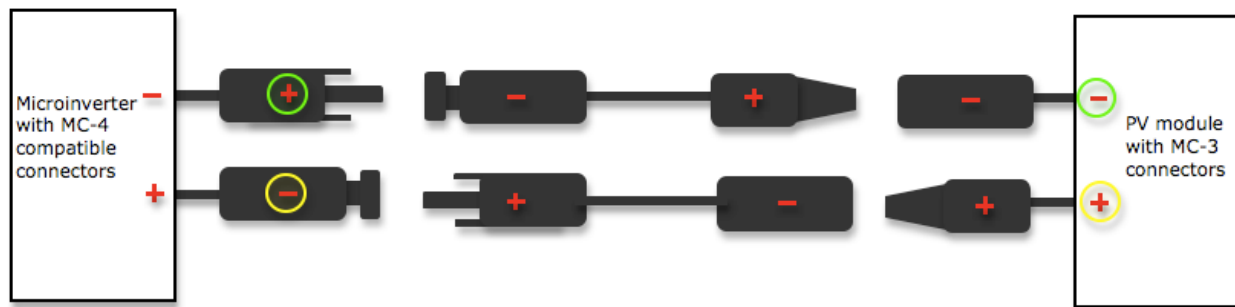
About Connectors and Adapters

Tyco Connectors: You can order some PV modules with either plus-keyed or minus-keyed Tyco connectors. With Tyco connectors, connect the negative marked connector on the PV module to the negative output connector on the Enphase microinverter.

Tyco to MC-4 Adapters: If you need to use Tyco to MC-4 adapters, be sure that they look like those shown in the figure below.



MC-4 to MC-3 Adapters: The figure below shows how to use adaptor cables to connect an Enphase microinverter with MC-4 connectors to a PV module with MC-3 connectors.



IMPORTANT: The Enphase microinverter is powered on when sufficient DC voltage from the module is applied. The status LED flashes green six times one to two minutes after DC power is applied. These green blinks indicate proper start-up and verify that connections are correct.