

Technical Brief: Mating Microinverters with PV Modules for Correct Polarity

Enphase Microinverters must be ordered for specific module connector types. Read the information presented here for guidance when mating microinverter connectors with various PV modules DC connector types (or adapter cables). Follow these guidelines to ensure correct polarity between the microinverter and the PV module.

Background

Enphase Microinverters are manufactured with two types of DC connectors for mating with PV modules:

- MC-4 compatible locking connectors (part number suffix S12)
- Tyco style locking connectors (part number suffix S13)

The polarity of the DC connectors on the microinverter varies with the type of connector.

- When your microinverters are built with **MC-4 compatible (S12) connectors**: The positive DC output of the PV module (+) connects to the microinverter connector *labeled* negative (-). These connections straightforward and consistent.
- When your microinverters are built with **Tyco (S13) 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 will mate with our S13s. Be sure to order the correct connector type for both microinverter and PV module from your distributor.

Mechanical Compatibility

Enphase maintains a list of Electrically Compatible PV Modules (see “Design Resources” under the Enphase downloads at <http://www.enphaseenergy.com/support/downloads.cfm>). However, be aware that inclusion on the Enphase list indicates PV module *electrical* compatibility and does not guarantee mechanical compatibility of the PV module connectors. In addition, connector labels can be misleading.

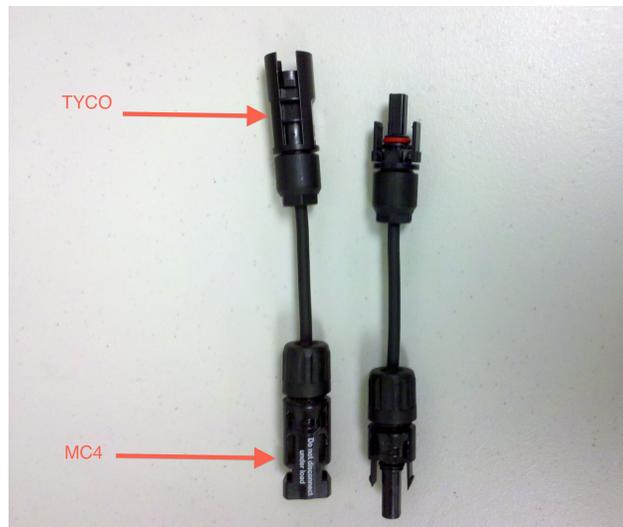
Follow these guidelines to avoid reversing the polarity between your PV module and the microinverter:

- Order Enphase Microinverters with the correct connectors for your PV modules. However, *if re-termination of your module’s connectors is required, it is critical that you identify the positive output of the PV module from labeling on the PV junction box.*
- Keeping in mind that labeling can be deceiving, always connect the **electrically** positive output of the PV module to the positive input of the microinverter.

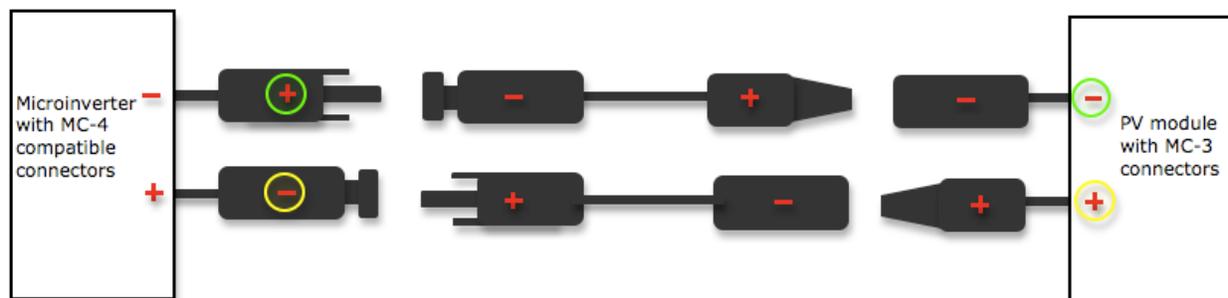
About Connectors and Adapters

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 will flash green six times one minute after DC power is applied. These green blinks indicate proper start-up and verify that connections are correct.