

Two-phase installations with Enphase microinverters

Enphase microinverters can be installed into two-phase (415 V L1–L2) and split-phase (480 V L1–L2) connections, using the following method.

The microinverter solar system is connected using a two-phase circuit. Within each of the 25 A circuit phases, a single-phase IQ Cable is required for each of the L1 and L2 phases throughout the PV arrays.

NOTE: Do not use a three-phase IQ Cable for a two-phase installation.



For each 25 A solar circuit, L1 and L2 solar phases are connected to the 25 A multi-phase IQ Relay. The relay is programmed into two phases to satisfy interlocking requirements and protect against loss of phase. The solar circuit neutral conductor(s) are also connected to the Neutral terminal at the IQ Relay. A two-pole 25 A circuit breaker is required for each 25 A PV circuit.

To program the multi-phase IQ Relay to two-phase, hold down the test button until only the V1 and V2 lights are flashing red, then release. After this is done, green lights should appear only on V1 and V2.

A two-pole circuit breaker is required for a two-phase Envoy circuit so that each voltage line reference is present at the IQ Gateway (previously known as IQ Envoy).

It is recommended to utilize a PV sub-board for all Enphase equipment on site. This can be done prior to the installation date or pre-purchased from an authorized wholesaler.

Confirm the phase imbalance threshold with the local DNSP

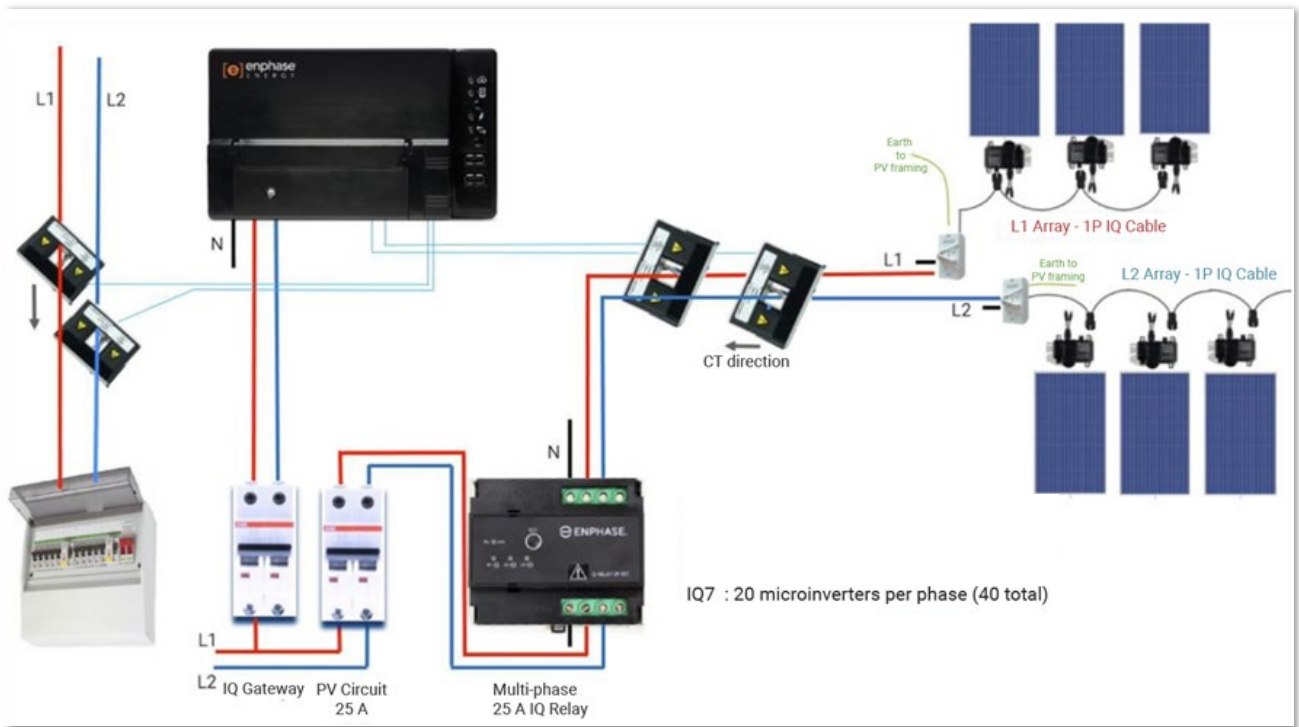
Distributed network service providers (DNSPs) usually allow 21.7 A (5 kW phase imbalance between phases), however, some DNSPs have a lower requirement for two-phase systems. This phase imbalance threshold can be adjusted in an Enphase grid profile. For optimal performance, Enphase recommends installing each two-phase 25 A circuit relatively balanced. Example: 1 x 10 microinverters on L1 circuit 1 and 1 x 10 microinverters on L2 circuit 2.

It is important to not exceed 25 A per microinverter circuit. To install more than the maximum number of microinverters listed below, additional circuits and multi-phase IQ Relays are required.

Microinverter	Number of microinverters per phase (25 A circuit)
IQ8HC	12
IQ8AC	13
IQ7A	13
IQ7+	16
IQ7	20
IQ7X	14

Note: IQ7 and IQ8 cannot be installed on the same IQ Gateway (Envoy).

Wiring diagram of a typical single-circuit two-phase site



Contact Enphase APAC

Should you require any additional help or information, contact Enphase Support.

Email: support_au@enphaseenergy.com

Telephone: 1800 006 374

Web form and live chat: <https://enphase.com/en-au/support/contact>

Revision history

Revision	Date	Description
TEN-00001-2.0	September 2023	Editorial and IQ8-specific updates
TEN-00001-1.0	May 2023	Updated the document to change Q Relay to IQ Relay.

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