Connecting IQ Commercial Microinverters to other voltages

Applicable countries

- North America
- Mexico

Overview

Enphase IQ8 Commercial Microinverters support grid interconnection for 208/120 V WYE three-phase applications. Depending on the supported grid, IQ9 Commercial Microinverters support grid interconnection for 480/277 V WYE and 208/120 V WYE three-phase applications.
For system voltages other than microinverter-supported grid voltages, a transformer is required to connect to the grid. This technical note provides guidelines for connecting IQ Commercial Microinverters to different grid voltages.

- Specify the transformer kVA size to meet the inverter output in kW AC. Some additional deratings, such as adjustments for power factor and temperature, may apply. Refer to the transformer manufacturer's specifications for transformer sizing.
- The transformer's primary connection must match that of the grid configuration at the site, and its secondary connection should match the supported grid configuration for an IQ Commercial PV system.

Recommendations

The following table lists utility voltage values and transformer requirements. Consult the transformer manufacturer for appropriate sizing and loss analysis for the system. Also, refer to AHJ requirements in your region for transformer installations.

For IQ Commercial Microinverters operating at 208 V/120 V WYE:

Utility voltage configurations	Nominal primary voltage (L-L)	Nominal primary voltage (L-N/G)	Secondary voltage	Transformer requirements
208 V/120 V WYE	—	—	—	No transformer is required for interconnection, depending on the existing meter service panel size.
480 V/277 V WYE	480 V	277 V	208/120 V WYE	The electrical installer should select the transformer configuration according to NEC and the local code.
480 V Delta	480 V	—	208/120 V WYE	
240 V High-Leg Delta	240 V	—	208/120 V WYE	
Other	Other	Other	208/120 V WYE	For interconnection to system voltages other than 208/120 V WYE three-phase, a transformer is required to connect to the grid.

For IQ Commercial Microinverters operating at 480 V/277 V WYE:

Utility voltage configurations	Nominal primary voltage (L-L)	Nominal primary voltage (L-N/G)	Secondary voltage	Transformer requirements
480 V/277 V WYE	—	—	—	No transformer is required for interconnection, depending on the existing meter service panel size.
480 V Delta	480 V	—	480 V/277 V WYE	The electrical installer should select the transformer configuration according to NEC and the local code.
Other	Other	Other	480V/277V WYE	For interconnection to system voltages other than 480 V/277 V WYE three-phase, a transformer is required to connect to the grid.

Installers can choose transformers with adjustable taps. Use the tap to make minor adjustments when the utility-provided voltage is high or when optimizing conductor sizing versus expected voltage rise for a value-engineered PV system. It is common to specify high-efficiency or ultra-high-efficiency, general-purpose and dry-type transformers for an Enphase Energy System.

NOTE: Installers are responsible for transformer procurement, installation, maintenance, and support. Damage to the IQ Commercial Microinverter due to incorrect transformer installation will invalidate the Enphase warranty.

NOTE: Enphase IQ Commercial system interconnection using transformers for grid voltage other than microinverter-supported grid voltage complies with the IEEE 1547: 2018 standards only if a third-party meter instrument is added at the primary meter service location. Installers should install the IQ8 Commercial system with transformers only when the system meets all the compliance standards applicable to your AHJ.

Revision history

Revision	Date	Description
TEN-00009-2.0	July 2025	Added IQ9 Microinverters content.
TEN-00009-1.0	February 2024	Initial release.