

TECHNICAL BRIEF - ANZ

Enphase Energy System one-day installation best practices

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Applicable Countries

- Australia
- New Zealand

Overview

This guide describes the recommended installation approach for the standard installation of a single IQ System Controller, two IQ Batteries, and two branches of 25 A single-phase IQ7 Microinverters on a single-phase supplied house. The instructions in this guide cover only specific configuration and wiring options to achieve a whole home or partial home with the Enphase Energy System. For detailed installation instructions of the IQ System Controller and the IQ Battery, refer to the IQ System Controller QIG and IQ Battery QIG.

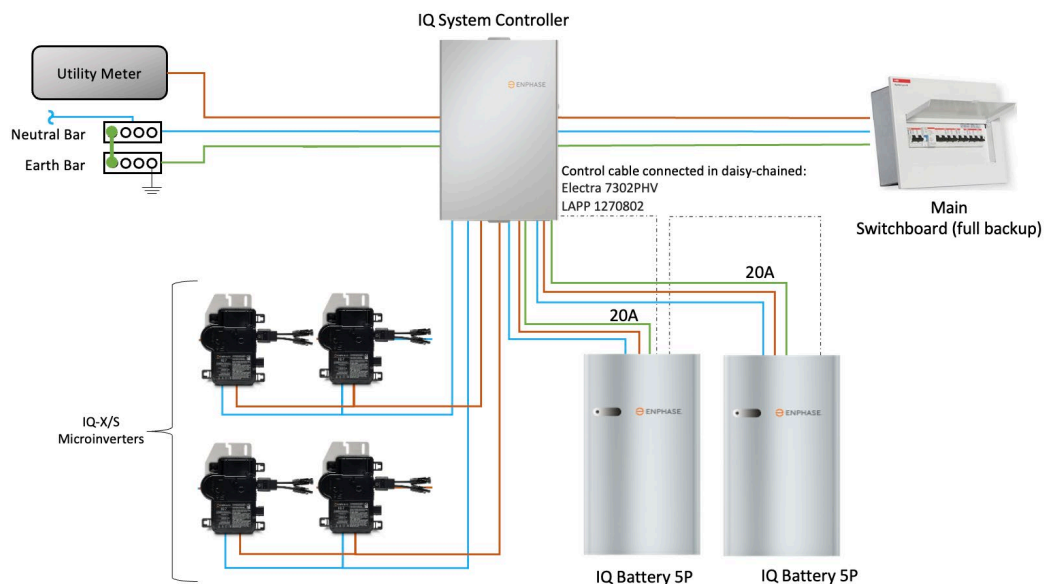
The Enphase Energy System must be installed in compliance with AS/NZS rules and regulations. For further information, refer to the Enphase Energy System Installation Compliance Guide.

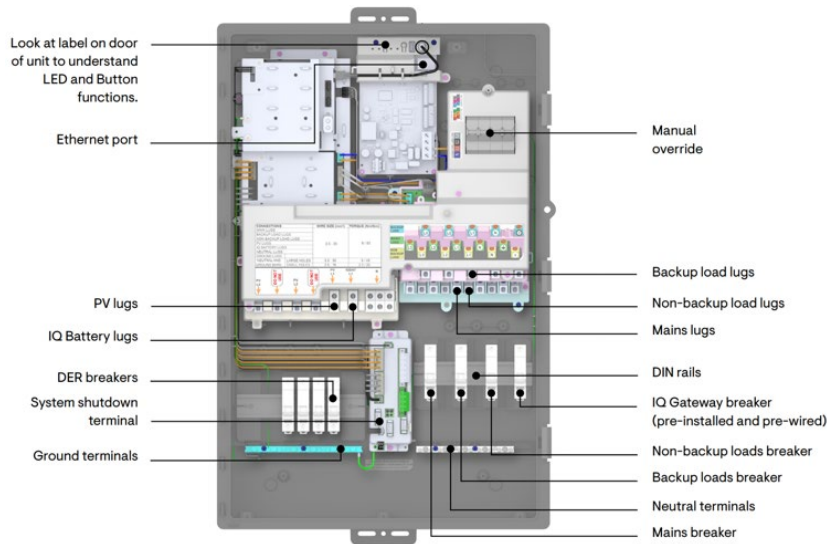
Planning your installation

The IQ System Controller is the main hub for the IQ Battery 5P and IQ Microinverters. It cannot, however, be used as a main switchboard as it is certified for overvoltage category 3. In this case, the multiple earth neutral (MEN) connections must be maintained at the existing MEN in the electrical reticulation, and the neutral and earth bars in the IQ System Controller must not be bridged.

The IQ System Controller is usually set up as a gateway and simplifies the wiring. The grid supply is fed into the IQ System Controller through a 63 A miniature circuit breaker (MCB) before feeding back to the downstream loads or the main switchboard.

The following image shows users can feed the main switchboard from the IQ System Controller’s backup or non-backup lugs.

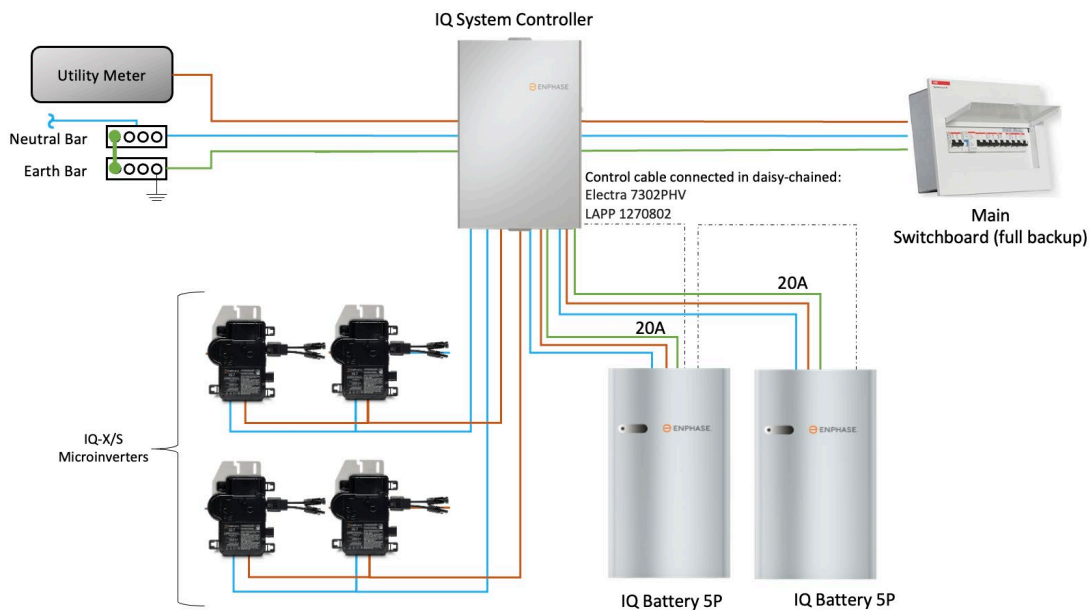




For whole home backup, wire the submains of the main switchboard through a 63 A MCB into the backup terminal of the IQ System Controller located on the right-hand side. The IQ System Controller is rated for 80 A continuous current (per phase). As most houses have 63 A supply, it is recommended to use 16 mm² wires when wiring the mains back to the main switchboard.

Wiring the DER

The left-hand side is where the DER sources terminate. There is an 80 A shared bus between the PV and the battery, but only the PV terminals will have the embedded Production CT. **Make sure to wire the right terminal for PV!**



Recommended MCB for each microinverters branch is 25 A, and the minimum PV submains are 6 mm² each.

For microinverter branch circuit sizing, refer to the Designing with Enphase guide on the website.

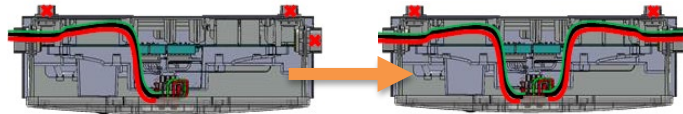
For wiring the PV circuit in the Enphase Energy System, the pre-installed 4-pole 25 A PV breaker in the IQ System Controller 3 INT is to be used with the PV neutral wire connected to the pre-wired N-line in the 4-pole breaker. Connecting the PV Neutral to the neutral bar of the IQ System Controller 3 INT may hamper power line communication (PLC) in the system.

For the IQ Battery 5P, users can opt to use a 40 A MCB when wiring the IQ Battery 5P in a daisy chain (see the above diagram) or use two 20 A MCBs when wiring the IQ Battery 5P into individual circuits as in the following image. All the IQ Battery 5P neutral wires coming from the batteries of each phase must be connected to the N-bar in the IQ System Controller 3 INT.

The typical minimum wire sizes for two IQ Battery 5P are:

- a) 16 mm² for the main IQ Battery 5P connection, and 10 mm² for the sub-connection (daisy-chain)
10 mm² for both main IQ Battery 5P connections (individual MCB)

The following top-view image shows the daisy-chain wiring of the IQ Battery 5P mains:



Both methods are correct, and it is up to the discretion of the installer to choose to either meet the spacing compliance or for aesthetic reasons.

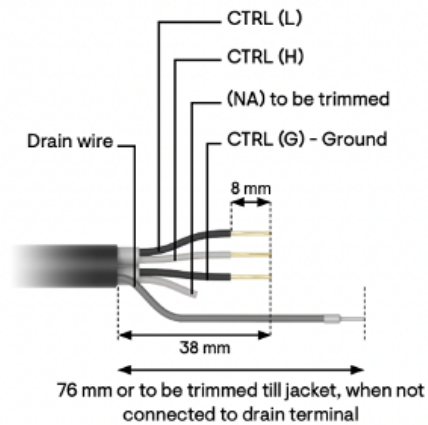
When wiring all the connectors on the battery BMS board, ensure that all the connectors are latched properly and a clicking sound is heard.

While wiring the IQ System Controller 3 INT unit,

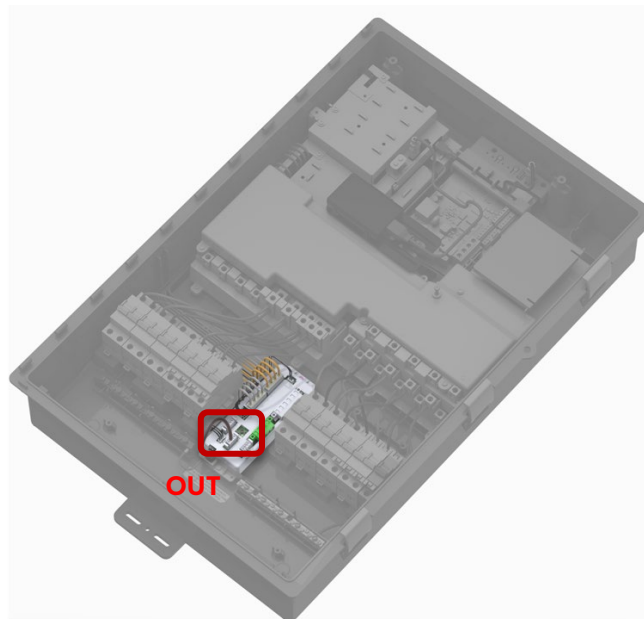
- Remove the Mobile Connect cable before opening the dead front of the IQ System Controller 3 INT unit.
- Ensure the USB cable of IQ Gateway is connected properly before the start of commissioning the system.

Refer to the [IQ System Controller 3 INT Quick Install Guide](#) for more details.

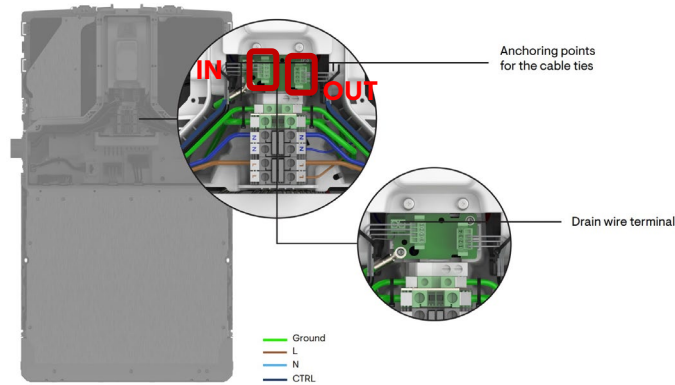
Enphase IQ Battery 5P uses Control/CTRL cable communication, and the required cable is a $2 \times (2 \times P) + G$ twisted/shielded and field wired into a 5-pin terminal block. The termination guidance for the terminal block is shown in the following image. The tested and supported Control/CTRL cable make, and models are **Electra EAS7302PHV**, **Electra EAS7502PHV**, or the **LAPP 1270802**.



Wire the Control/CTRL cable in a daisy chain, connecting the IQ System Controller, first IQ Battery 5P, and second IQ Battery 5P. The following image shows the IQ System Controller's Control/CTRL cable termination.



The following image shows the IQ Battery 5P Control/CTRL cable terminations. Note that the IN and OUT labels on the IQ Battery 5P Control/CTRL board must be wired in the correct order.



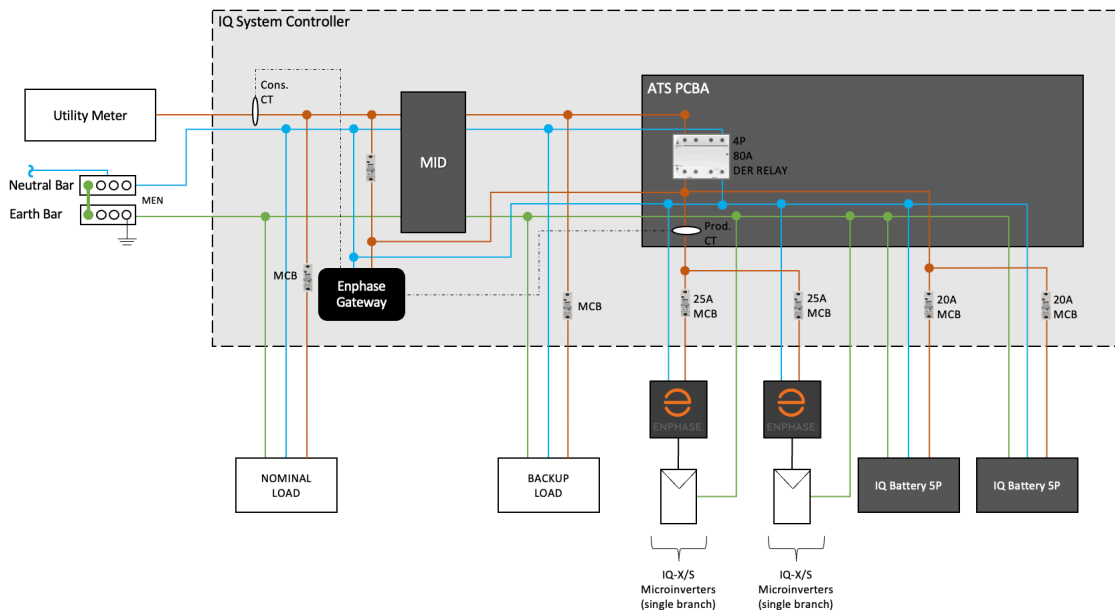
Other practical considerations

When mounting the IQ System Controller and the IQ Battery 5P onto a wall, consider the height and width requirements and the AS/NZS 5139 exclusion zones below (when installing behind a habitable room).

While the IQ Battery 5P can be floor mounted, the IQ System Controller is wall mounted and requires a minimum of 150 mm space clearances for optimal installation and operation (150 mm between IQ System Controller and IQ Battery). For front clearance, ensure a minimum of 900 mm free space in front of the IQ Battery 5P and IQ System Controller.

As the IQ Battery 5P installation location can vary for compliance and aesthetic reasons, ensure that the AC cable used is sized to meet voltage rise requirements. Also, the total length of the Control/CTRL cable utilized between IQ Battery 5P and IQ System Controller and IQ Battery 5P is within 50 meters. IQ System Controller and IQ Battery 5P locations must be chosen per this distance.

The following image shows the simplified single-line representation of the IQ System Controller with associated connections. Note that installers have the flexibility to change wiring while adhering to IQ System Controller rating and installation instructions in Quick Install Guide and AS/NZS 3000/3008 wiring rules and regulations.



**NOTE:**

1. This guide provides the conceptual installation guide only. For detailed information, refer to the full installation manuals and QIGs.
2. For cable sizing requirements, refer to AS/NZS3008.
3. For any inquiries and support, contact support_au@enphaseenergy.com

Revision history

Revision	Date	Description
TEB-00050-1.0	July 2023	Initial release