ENPHASE

Sunlight Backup installation guidelines

Overview

With Enphase grid-forming IQ8 Series Microinverters and the Sunlight Backup energy system, homeowners can now power their high-priority loads during a grid outage even without a battery, provided there is sufficient sunlight available. Later, they can easily upgrade their systems to include batteries whenever they are ready.

It is essential to understand the benefits and limitations of a Sunlight Backup energy system. A Sunlight Backup energy system does not work in scenarios when the power required by appliances or loads exceeds the power available from the solar panels. This might occur in the early morning, evening, and of course at night. The microgrid could also collapse if the sun is blocked by clouds, solar panels are covered by snow, or too many heavy loads are used at once.

Enphase has addressed some of these issues with IQ Load Controllers. Using IQ Load Controllers, the Sunlight Backup energy system can automatically shed backup loads and balance the power required by appliances or loads with the amount of power available from solar panels. Additionally, homeowners can manually turn loads on or off, or even set schedules for loads using the Enphase App.

An IQ Load Controller enables fine-grained, circuit-level control of either two 240 V or four 120 V essential load circuits. Each 240 V load can be controlled independently, but the 120 V loads can only be controlled in groups of two.

The Enphase Energy System in Sunlight Backup configuration also supports third-party utility sense generator integration. Refer to the "Generator integration technical brief" for details on supported third-party generators, generator sizing requirements and so on.

To guarantee a hassle-free homeowner experience, installers must adhere to three easy steps:

1. **Talk to homeowners about the advantages and limitations of a Sunlight Backup energy system.**

- Explain to homeowners that the Sunlight Backup energy system works only when there is sufficient sunlight available.

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- Identify high-priority loads. From our experience, most homeowners like to backup appliances like Wi-Fi router and modem, refrigerator, microwave oven, and electric cooktop.

- Ensure that peak load power consumption during back up does not exceed 30% of solar power capacity. For instance, a system with 24 IQ8 Microinverters has a rated power output of 5.7 kW AC. Peak load power consumption should not exceed 1.7 kW during backup.

2. **Correctly wire the Sunlight Backup energy system (Refer to Figures 1 and 2 on the following pages).**

- Install an essential loads panel that is powered by the IQ System Controller 2.

- Connect the input terminals of the contactors in the IQ Load Controllers to the breakers powering the loads in the essential loads panel and power backed-up loads from the output terminals of the contactors.

- Connect the contactor coil control wires in the IQ Load Controllers to the auxiliary contacts in the IQ System Controller 2. Any circuit that powers the Wi-Fi router and modem must be controlled by the first normally closed (NC1) auxiliary contact in the IQ System Controller 2. This circuit must be in "Manual" mode so that the Wi-Fi router and modem are always powered on.

3. **Correctly commission the system using the Enphase Installer App (formerly known as the Installer Toolkit).**

- Configure the two normally closed (NC1 and NC2) and two normally open (NO1 and NO2) auxiliary contacts in IQ System Controller 2.

- Set each load's operating mode, schedule and explain the settings to the homeowner.

Failure to follow the above steps may result in either a dysfunctional system or a sub-optimal homeowner experience.

For more information, watch the video on designing, wiring, and configuring a Sunlight Backup system and refer to the user guide.

Watch a demonstration video of this installation:
https://link.enphase.com/video/sunlight-backup-installation

Figure 1: Sunlight backup energy system

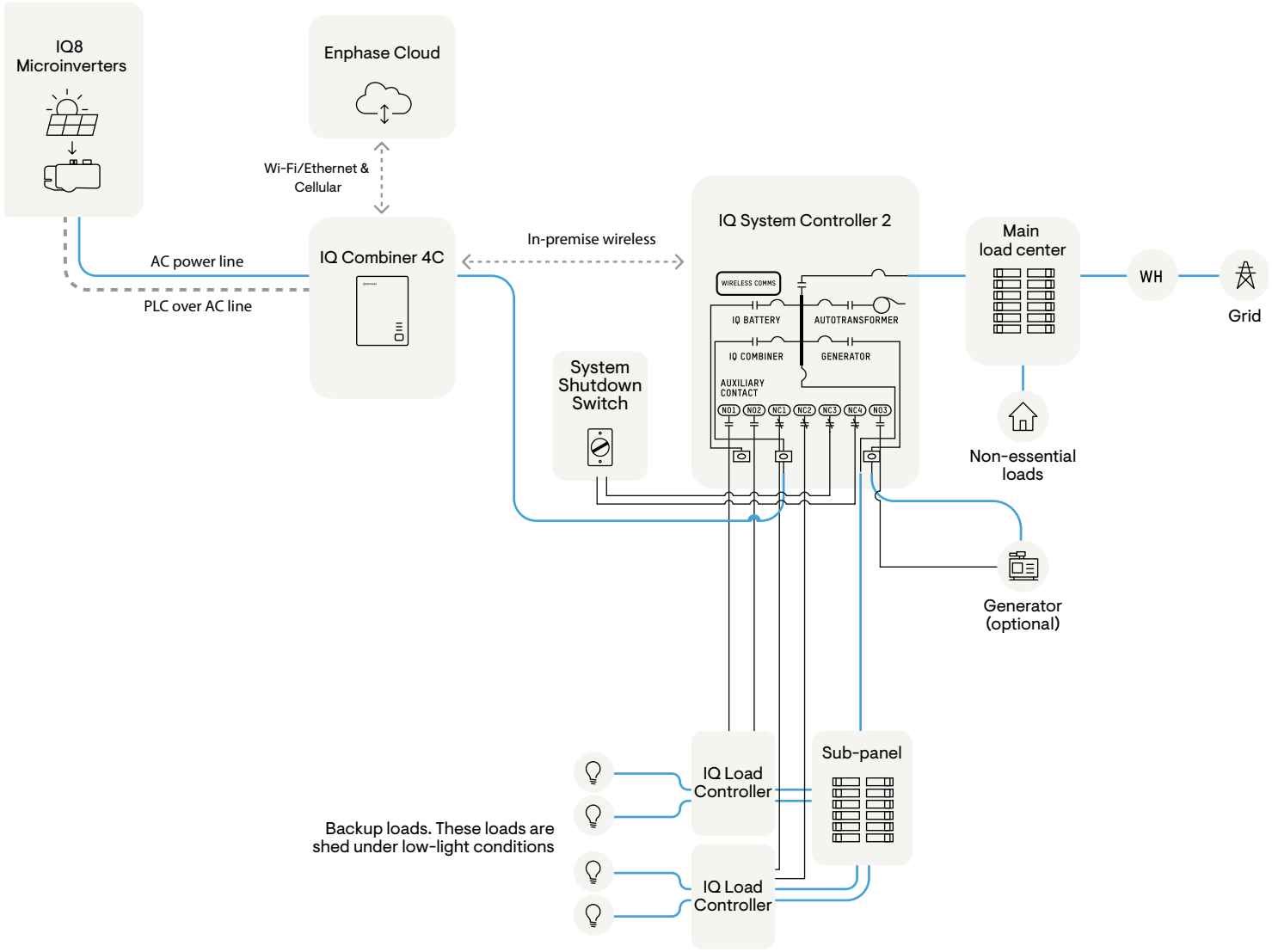
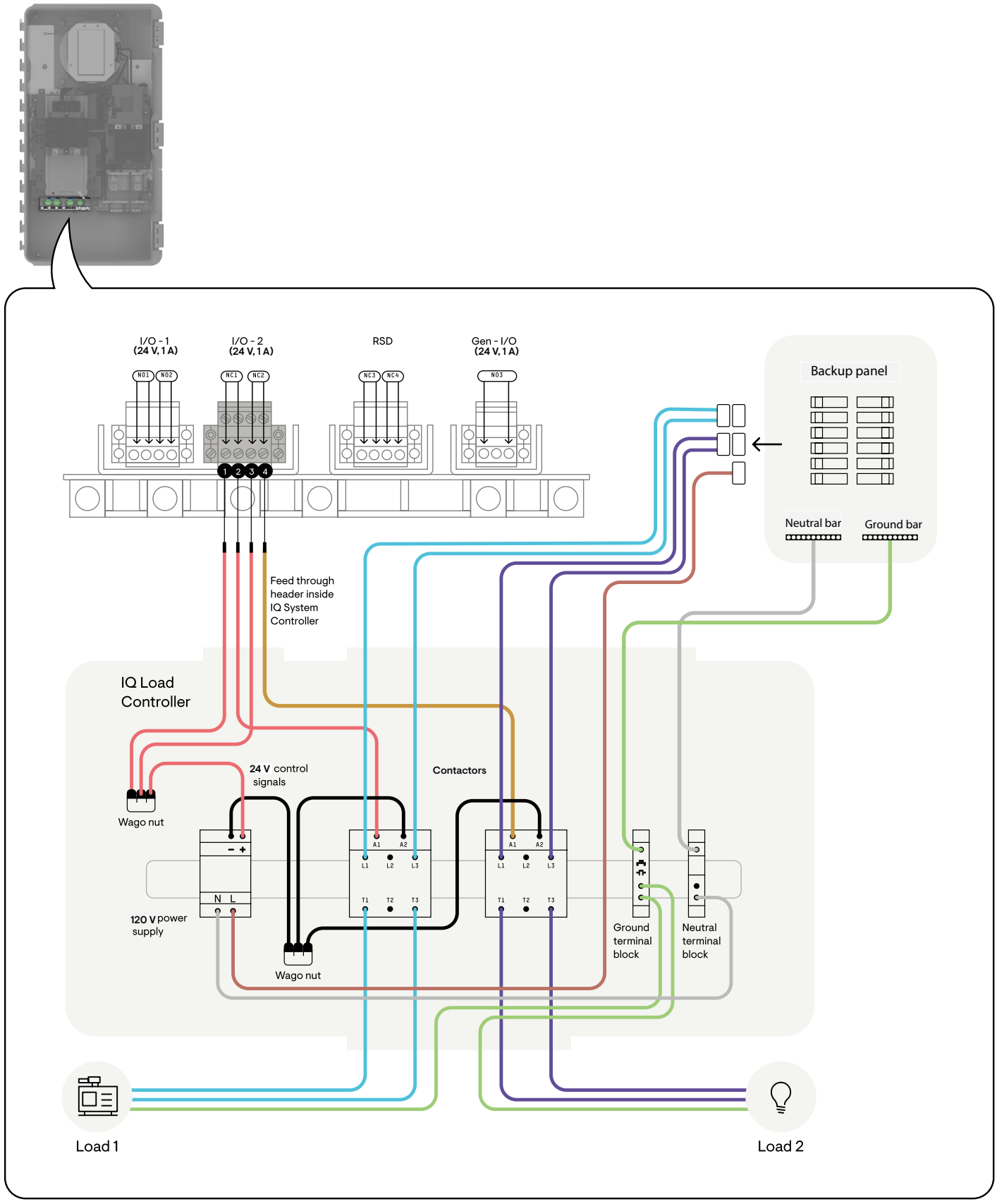


Figure 2: IQ Load Controller wiring



Revision history

REVISION	DATE	DESCRIPTION
TEB-00002-2.0	April 2023	Editorial updates
TEB-00002-1.0	April 2023	Internal release
Previous releases		