

# System use cases for IQ8 Series Microinverters

**Note:** We have recently simplified our product and services naming across the Enphase Energy System. For a quick reference chart to map old names to new ones, visit [Enphase Products](#).

## Understanding system use cases for IQ8 Series Microinverters

The Enphase Energy System, with IQ8 Series Microinverters, enables many configurations for different customer needs. The system supports four use cases that are described as follows:

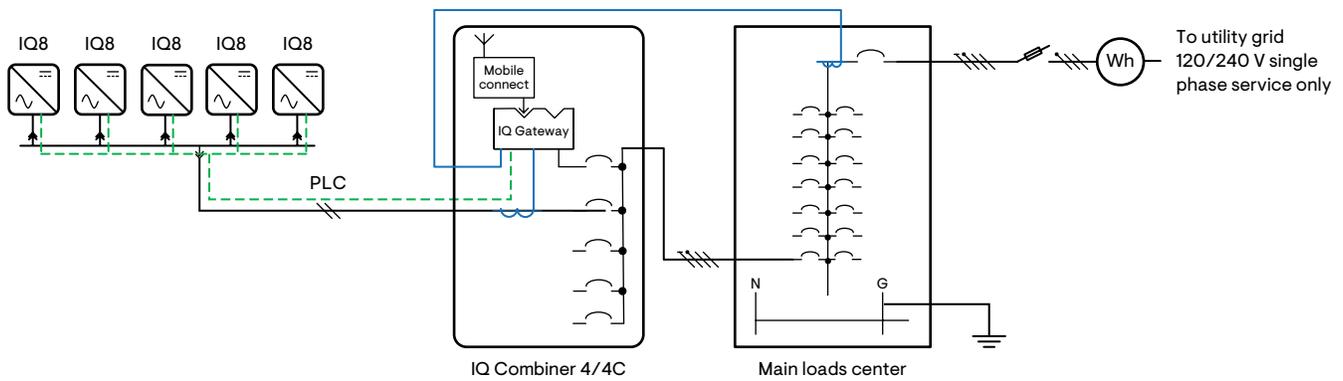
- 1. Solar Only:** The system does not provide any backup power. It offers economic savings by using the power produced to supply customer loads and exports excess power back to the grid when allowed.
- 2. Sunlight Backup:** In addition to the benefits offered by the Solar Only use case, the system provides backup for essential loads when the sun is shining.
- 3. Home Essentials Backup:** In addition to the benefits offered by the Sunlight Backup use case, the system provides backup for essential loads during the day or night.
- 4. Full Energy Independence:** In addition to the benefits offered by the Home Essentials Backup use case, the system provides backup for the whole home during the day or night.

## Solar Only

In this use case, the IQ8 Series Microinverters operate in a grid-interactive mode. The system does not provide any backup and offers economic savings by using solar power to offset the customer’s consumption from the grid. Excess PV power can be exported back to the grid when allowed by utilities and local Authorities Having Jurisdiction (AHJs).

The advantage of this use case with IQ8 PV is that the system can be easily upgraded to a Sunlight Backup use case by adding an IQ System Controller 2 and an Essential Loads solution.

**Figure 1:** Solar Only single line diagram



## Sunlight Backup

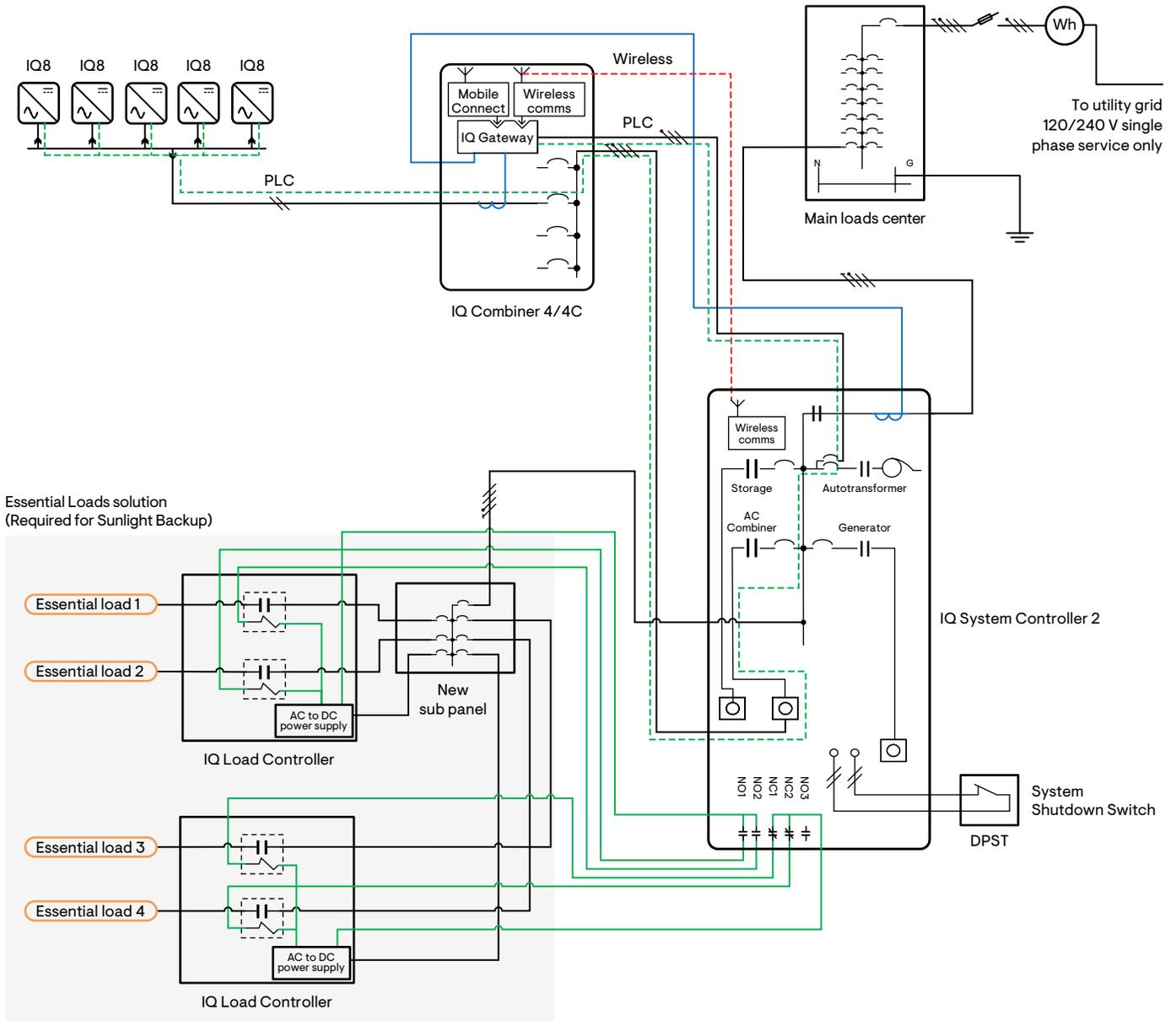
In this use case, the Enphase Energy System provides backup using IQ8 Series Microinverters when the sun is shining. The system does not include any IQ Batteries. The system can support PV branch circuits rated for up to 64 A continuous current output.

IQ System Controller 2 is installed on the load side of an existing main load panel. This configuration must be used with an Essential Loads solution. An Essential Loads solution consists of:

- An off-the-shelf panel with a maximum of four 240 V or eight 120 V pre-selected, essential load circuits that are backed up by the system. Additional breakers are needed to power the IQ Load controllers.
- Up to two IQ Load Controllers, each enabling fine-grained, circuit-level control for two 240 V or four 120 V essential load circuits. Each 240 V load can be controlled independently, but the 120 V loads can be controlled in groups of up to two loads.

Using this configuration for backing up an entire home will lead to a poor customer experience and is not a use case supported by Enphase. At least one IQ Load Controller is required for Sunlight Backup.

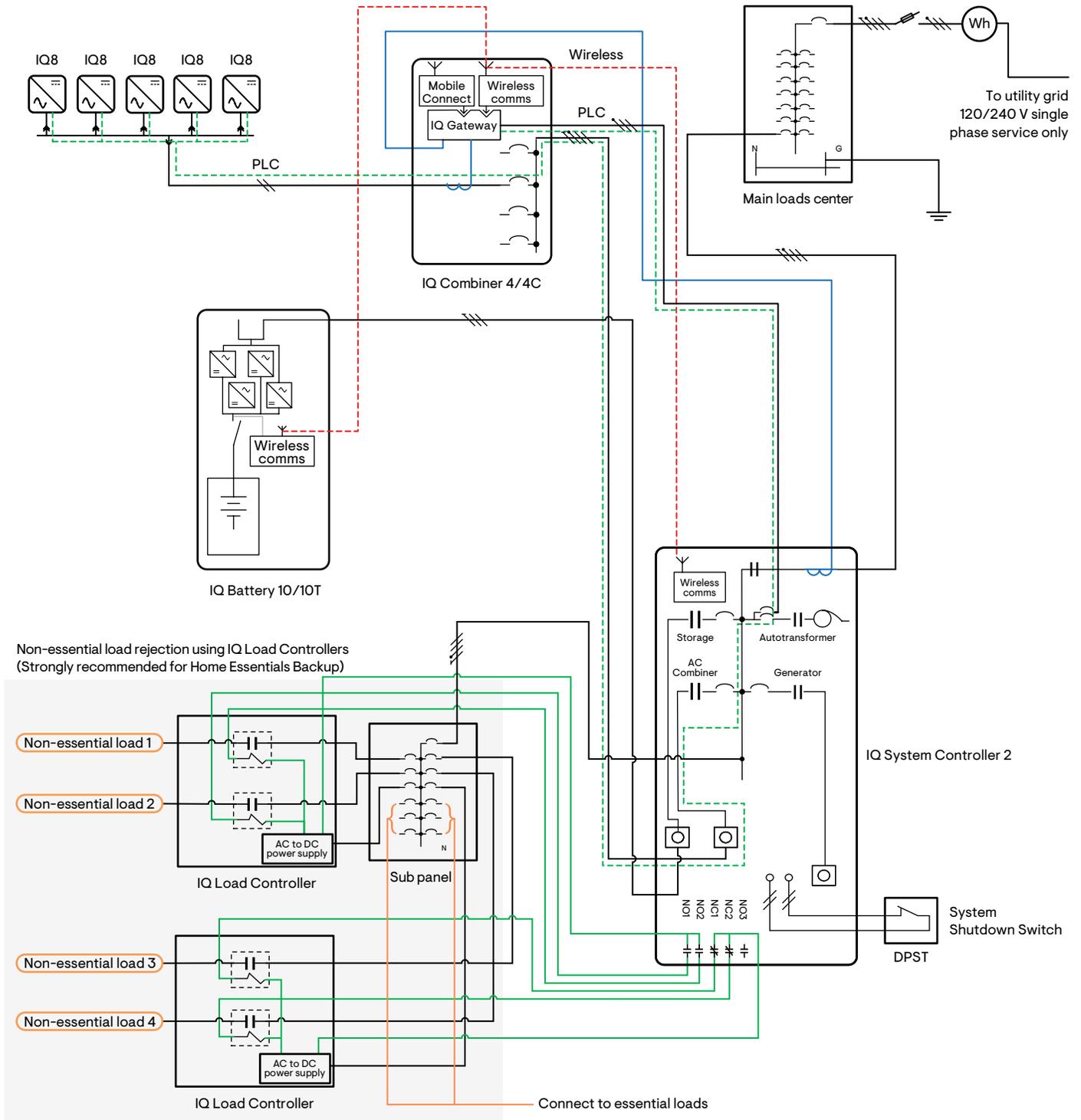
**Figure 2: Sunlight Backup single line diagram**



## Home Essentials Backup

In this use case, the Enphase Energy System provides backup using IQ8 Series Microinverters and IQ Batteries during the day or night. The system has at least one IQ Battery 3/3T. The IQ System Controller 2 is installed on the load side of an existing main load panel or service equipment. This use case can be used when the Enphase Energy system is configured to provide backup to a few pre-selected, essential load circuits. IQ Load Controllers are strongly recommended to reject high-power loads.

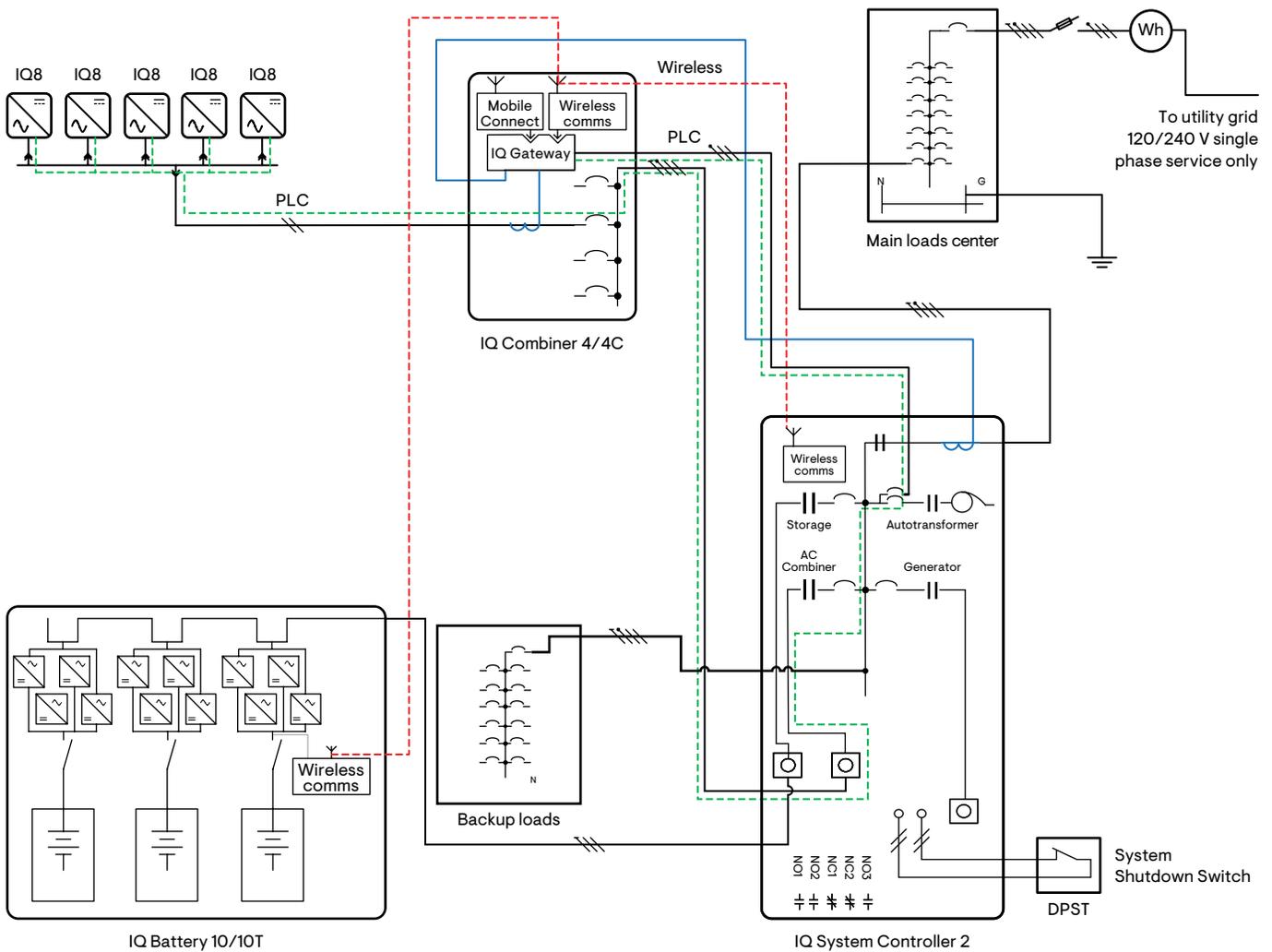
**Figure 3: Home Essentials Backup single line diagram**



## Full Energy Independence

In this use, the Enphase Energy System provides backup using IQ8 Series Microinverters and IQ Batteries during the day or night. The system must have at least 10 kWh of IQ Batteries installed i.e., at least an IQ Battery 10/10T. Depending on the IQ Battery sizing, the system will be able to sustain off-grid operation for extended periods. This use case supports whole home backup i.e., backing up all the loads in the home. Note that the batteries must be sized correctly to supply the loads. IQ Load Controllers can be used to enable fine-grained control of backed-up loads.

**Figure 4:** Full Energy Independence single line diagram



**Figure 5: Legend**

	PLC Communication path
	In-premise wireless
	24 V DC supply
	CT wiring
	Energy meter
	Autotransformer
	Current transformer (CT)
	Switch or disconnect
	Circuit breaker
	Battery module
	NO contactor or relay
	NC contactor or relay
	Inverter
	Fuse
	Grounded conductor (neutral)
	Equipment ground conductor
	Set of N ungrounded conductors, one is implied if not labeled

COMPONENT TYPE	PRODUCT NAME AND MODEL NUMBER	SOLAR ONLY	SUNLIGHT BACKUP	HOME ESSENTIALS BACKUP	FULL ENERGY INDEPENDENCE
Microgrid-forming microinverters (240 VAC)	<b>IQ8 Series</b> IQ8-60-2-US IQ8PLUS-72-2-US IQ8M-72-2-US IQ8A-72-2-US IQ8H-240-72-2-US	As needed per system design	As needed per system design (up to 64 A continuous)	As needed per system design (up to 64A continuous)	As needed per system design (up to 64 A continuous)
Grid-tied microinverter (208 VAC)	<b>IQ8 Series</b> IQ8H-208-72-2-US	As needed per system design	Not supported	Not supported	Not supported
Combiner	<b>IQ Combiner 4/4C</b> X-IQ-AM1-240-4 X-IQ-AM1-240-4C X2-IQ-AM1-240-4 <sup>1</sup> X2-IQ-AM1-240-4C <sup>1</sup> (Includes IQ Gateway and two consumption CTs)	1	1	1	1
Gateway	<b>IQ Gateway for IQ Series</b> ENV-IQ-AM1-240 ENV2-IQ-AM1-240 <sup>1</sup>	1 (If not using IQ Combiner)	0	0	0
IQ System Controller with microgrid interconnection device (MID)	<b>IQ System Controller 2</b> EP200G101-M240US01 EP200G-SC2-RSD-KIT <sup>2</sup> EP200G-SC2-RSD-BRK-KIT <sup>3</sup>	0	1	1	1
Load control	<b>IQ Load Controller</b> EP-NA-LK02-040	0	2	0, 1, or 2	0, 1, or 2
System Shutdown Switch	<b>For use with IQ System Controller 2 for IQ8 PV rapid shutdown and system shutdown</b> EP200G-NA-02-RSD <sup>4</sup>	0	0 or 1	0 or 1	0 or 1
Enphase Energy System communications (between IQ Batteries, IQ System Controller 2, and IQ Gateway)	<b>Enphase Communications Kit</b> COMMS-CELLMODEM-M1-06 (COMMS-KIT-01 and CELLMODEM-M1-06-SP-05) or COMMS-KIT-01 (if the system already has a cellular modem or if using an IQ Combiner SKU that already has a cellular modem)	1	1	1	1
Mobile Connect	<b>Enphase Mobile Connect</b> CELLMODEM-M1-06-SP-05 (T-Mobile/Sprint five-year data plan) CELLMODEM-M1-06-AT-05 (AT&T five-year data plan)	0 or 1 (If not using an IQ Combiner with cell modem built-in)	0 (Part of COMMS-CELLMODEM-M1-06)	0 (Part of COMMS-CELLMODEM-M1-06)	0 (Part of COMMS-CELLMODEM-M1-06)
Consumption CTs	<b>Current transformers</b> CT-200-SPLIT	2 (If not using a new IQ Combiner that ships with consumption CTs)	0	0	0
Main breaker and/or load breaker for IQ System Controller 2	<b>IQ System Controller main breakers</b> BRK-200A-2P-240V (Eaton SKU: CSR2200N) BRK-175A-2P-240V (Eaton SKU: CSR2175N) BRK-150A-2P-240V (Eaton SKU: CSR2150N) BRK-125A-2P-240V (Eaton SKU: CSR2125N) BRK-100A-2P-240V (Eaton SKU: CSR2100)	0	0, 1, or 2	0, 1, or 2	0, 1, or 2
Circuit breakers for IQ8 PV, IQ Battery, and generator circuits in IQ System Controller 2	<b>IQ System Controller 2 circuit breakers</b> BRK-20A-2P-240V-B (Eaton SKU: BR220B) BRK-30A-2P-240V (Eaton SKU: BR230B) BRK-40A-2P-240V (Eaton SKU: BR240B) BRK-60A-2P-240V (Eaton SKU: BR260) BRK-80A-2P-240V (Eaton SKU: BR280)	0	1 or 2 (For PV and generator)	2 or 3 (For PV, batteries, and generator)	2 or 3 (For PV, batteries, and generator)
Circuit breakers for PV in IQ Combiner 4/4C	<b>IQ Combiner 4/4C circuit breakers<sup>5</sup></b> BRK-20A-2P-240V-B (Eaton SKU: BR220B) BRK-15A-2P-240V-B (Eaton SKU: BR215B)	1, 2, 3, or 4	1, 2, 3, or 4	1, 2, 3, or 4	1, 2, 3, or 4
Hold down kit for IQ Combiner 4/4C	X-IQ-NA-HD-125A <sup>6</sup>	0	1 or 2	1 or 2	1 or 2
Hold down kit for IQ System Controller 2	EP200G-NA-HD-200A <sup>7</sup>	0	1 or 2	2 or 3	2 or 3
Off-the-shelf panel	For essential loads backup	No	Yes	Yes	No
PV modules	Any	As needed per system design	As needed per system design	As needed per system design	As needed per system design

1) These SKUs must be used in jurisdictions that require IEEE 1547:2018 compliance.

2) EP200G-SC2-RSD-KIT includes IQ System Controller 2 and pre-wired System Shutdown switch (EP200G-NA-02-RSD).

3) EP200G-SC2-RSD-BRK-KIT includes IQ System Controller 2, pre-wired System Shutdown switch (EP200G-NA-02-RSD), one 60 A, two 40 A and three 20 A Eaton BR breakers, 2X breaker hold-down kit for IQ Combiner, two breaker hold-down kit for IQ System Controller 2.

4) System Shutdown switch must be bought separately when using a standalone IQ System Controller 2 SKU. It need not be ordered separately if using EP200G-SC2-RSD-KIT or EP200G-SC2-RSD-BRK-KIT. These come bundled with the System Shutdown switch.

5) Enphase recommends using breakers compatible with hold-down kits in IQ Combiner 4/4C for IQ8 Solar Only use case to enable an easy upgrade to a backup use case when the homeowner decides to add backup.

6) Hold-down kits need not be ordered separately if you are using EP200G-SC2-RSD-BRK-KIT.

7) Two IQ System Controller 2 hold-down kits are bundled with EP200G-SC2-RSD-BRK-KIT.

## Revision history

REVISION	DATE	DESCRIPTION
TEB-00001-2.0	April 2023	Editorial updates
TEB-00001-1.0	April 2023	Internal release
Previous releases		

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