

# SolarEdge Home Hub Single Phase Inverter - Supported Use Cases for Storage and Backup Installations

## Revision History

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The images contained in this document are for illustrative purposes only and may vary depending on product models.

## Important Notice

Using a configuration, in contradiction to the instructions in this document, voids the warranty of any SolarEdge equipment.

## Overview

The SolarEdge Home Hub Single Phase Inverter (SExxxxH-RWBxxxx), is used for various applications that enable energy independence for system owners by utilizing a battery to store and supply power as needed. The Inverter, when installed in combination with the SolarEdge Home Backup Interface, provides backup power during a utility grid failure. The solution is based on an Inverter that manages both the PV system and the battery. This document outlines the allowed use case and installation scenarios of the SolarEdge Home Hub Inverter - Single Phase.

For detailed information on the connection between products and the configuration of the relevant products, refer to the SolarEdge [Knowledge Center](#) product installation guides.

## Definition of terms

- **DC coupling:** The inverter is connected to PV and Battery.
- **AC coupling:** Multiple inverters are connected in parallel on their AC side, while the PV production of one inverter can charge a battery on another inverter. It also refers to a case when the battery is charged from the grid.
- **Storage-only installations:** Systems using one or multiple inverters, at least one with a connected battery, but no Backup Interface (also referred to as "BUI").
- **Backup installations:** Systems using one or multiple inverters from which at least one is a Home Hub Single Phase Inverter with a connected battery. In addition, the BUI is installed to disconnect from the grid during a backup operation. For a Single Phase grid, a Single Phase BUI is required. For a three phase grid, a Three Phase BUI is required. **For the allowed Backup Interfaces**, refer to [Storage and Full Home Backup Use Cases table](#).
- **RS485 connections:** the inverter has two separate RS485 communication bus connections:
  - RS485-2 - labeled on the Inverter board as "RS485-2" - is ONLY used to connect Leader to Follower inverters.
  - RS485-1 – The Inverter has three RS485-1 terminal block connections on the communications connection board located on the left side of the connection unit. Refer to the [SolarEdge Home Hub Inverter – Single Phase Quick Installation Guide](#) for more information.
- **Third Party PV inverter/ Battery Storage:** A third-party device that can generate AC power according to the applicable grid code. The devices can be third-party PV inverters, or AC-coupled batteries.
  - Third-party devices must be connected on the grid connection point.
  - Diesel generators are not supported.

## Supported configurations

The following list provides a high-level illustration of current and future supported configurations.

- Single or multiple SolarEdge Home Hub Single Phase Inverter, Storage and Full Home Backup.
- SolarEdge Home Hub Single Phase Inverters with a SolarEdge Home Wave Single Phase Inverter, Storage, and Full Home Backup.

- SolarEdge Home Hub Single Phase Inverter with Full Home Backup - Third-Party Inverter/Storage (installed on the grid side).

For detailed information, supported models, applied performance, and availability refer to [Supported Use Cases](#).

## Supported hub inverter models

Inverter Model	Description
SE2500H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 2.5kW
SE3000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 3kW
SE3680H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 3.68kW
SE4000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 4kW
SE5000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 5kW
SE6000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 6kW
SE8000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 8kW
SE10000H-RWBMNBF54	SolarEdge Home Hub Inverter - Single Phase, 10kW

## Compatible backup interface

Use the relevant BUI according to the grid type and the supported configuration as described in the table below.

Manufacturer	Compatible Model	Supported Firmware Version
SolarEdge Home Backup Interface Single Phase for single phase grid	BI-EU1P	Inverters - 4.19 and above

## Compatible battery

Battery Manufacturer	Compatible Models	Supported Firmware Versions
SolarEdge Home Battery 400V for Europe	BAT-10K1P	Inverters - 4.19 and above

## Compatible meters

Manufacturer	Compatible Model	Supported Firmware Version
<a href="#">SolarEdge Home Inline Meter</a>	MTR-240-1PC1-DW-MW / MTR-240-1PC1-DW-MWA	4.14.xx and higher
<a href="#">Energy Meter with Modbus Connection</a>	SE-WND-3Y400-MB-K2 (UK G100/2/2)	
<a href="#">Energy Meter with Modbus Connection</a>	SE-MTR-3Y-400V-A	

## Recommend cables

Cable	Cross-section	Wire type	Maximum Length			
DC PV	6mm <sup>2</sup>	1000V double isolation	Up to 300m			
Battery DC	6-10mm <sup>2</sup>  For additional information on multi battery installation, click <a href="#">here</a> .	600V double isolation	<i>Max Distance (m)</i> <sup>1</sup>	Single Battery	Two Batteries	Three Batteries
			<11	6mm <sup>2</sup>	10mm <sup>2</sup>	10mm <sup>2</sup>
			11-20	6mm <sup>2</sup>	10mm <sup>2</sup>	10mm <sup>2</sup>
			21-30	6mm <sup>2</sup>	10mm <sup>2</sup>	NA
			31-35	6mm <sup>2</sup>	NA	NA
			36-50	10mm <sup>2</sup>	NA	NA
			1 – Longest distance from Battery to inverter (one way)			
RS485	>0.25mm <sup>2</sup>	CAT 5e/6 twisted pair, 600V insulation	Up to 50m			
AC cables	1-13mm <sup>2</sup>	Multi-core, Outer Diameter: 9-21mm	According to local regulations			

## Communication between multiple inverters

If there are multiple SolarEdge inverters on site one must be configured as a Leader, and the others as Followers.

To provide backup power, the Leader inverter must be a SolarEdge Home Hub Single Phase Inverter. The Leader Inverter must be connected to a compatible battery and connected to the SolarEdge Monitoring Platform, using one of the following options:

- A home router using an Ethernet (LAN) cable which is the recommended communication option).
- Wirelessly via the built-in Wi-Fi interface. An external antenna is required, purchased separately from SolarEdge.

- The SolarEdge Wi-Fi Gateway can be used for simple and robust configuration and to expand the wireless range; purchased separately from SolarEdge.
- A plug-in LTE module; purchased separately from SolarEdge).

Follower inverters are connected to the SolarEdge Monitoring via the Leader inverter. To communicate with the Leader inverter, the Follower inverters connect to the Leader inverter via the SolarEdge Modbus protocol using the RS485-2 communication port. For backup installation, the Leader inverter must be connected to SolarEdge Home Backup Interface.

For detailed installation instructions, refer to the [SolarEdge Home Hub Inverter Single Phase Quick Installation Guide](#).

## Connect to SolarEdge Home Battery 400V

SolarEdge recommends connecting the Inverter and the battery through the integrated SolarEdge Home Network. Alternatively, you can connect the battery and the inverter using wired communication.

For detailed installation instructions, refer to the [SolarEdge Home Hub Inverter Quick Installation Quick Guide](#) and the [Battery Installation Guide](#).

## Connect to backup interface

To enable the backup operation, the following prerequisites must be met:

- BUI must be used.
- The Leader inverter must be a Home Hub Single Phase Inverter connected to the BUI via a RS485 communication bus and a 12V power supply line from the Inverter.
- The Leader inverter must be connected to a SolarEdge Home Battery 400V.



### NOTE

For detailed installation instructions, refer to [SolarEdge Home Backup Interface, Single Phase Quick Installation Guide](#) and the [SolarEdge Home Hub Inverter Quick Installation Quick Guide](#).

## Connect the Rapid Shutdown (RSD) Switch and Double feed Supply

A Rapid Shutdown (RSD) switch is an external switch that remotely turns off the AC of the SolarEdge Home Hub Inverter - Single Phase and reduces the DC Voltage from the PV strings to a safe level.

If a backup operation is activated, which is the default when BUI is connected to the inverter, the inverter starts supplying backup power a few seconds after a grid outage, or after the main AC circuit breaker is turned off.

When the main AC circuit breaker is turned off for maintenance operations there is a safety risk because the inverter continues to provide backup power to the main load panel.

To prevent the inverter from providing backup power during maintenance operations, the inverter must also be turned off, either through the RSD switch or by switching the P/1/0 switch, of the Inverter or the BUI, to the "0" position.

To provide a quick and reliable shutdown of the backup inverter, SolarEdge recommends connecting a Rapid Shutdown switch which shuts down the inverter and activates SafeDC™, this automatically reduces the voltage in each module to 1 volt.



### NOTE

For detailed installation instructions of RSD, refer to the [SolarEdge Home Hub Inverter Quick Installation Quick Guide](#) and [SolarEdge Home Backup Interface, Single Phase Quick Installation Guide](#).

## Connect a Meter

### Use Meters in Backup Installations

There are two types of backup installation:

- **Full home Backup** – In this type of installation, ALL home loads are connected on the LOAD side of the BUI (also referred to as the “backup Island”). During grid outages, all home loads can operate. Note that the number of loads that operate during backup depends on the maximum power available during backup.
- **Partial Home Backup** – In this type of installation, SOME of the home loads are connected on the load side of the BUI while other loads are connected on the GRID side of the BUI (also referred to as “outside the backup Island”). During a grid outage only, the loads connected to the LOAD side of the BUI (the backup Island) operate, while the loads connected to the GRID side do not operate during a grid outage.
- **Full home backup:** In this type of installation, the BUI internal export/import meter must be used. There is no need to connect an external export/import meter.
- **Partial home backup:** For partial home backup, connect selected loads to the grid side (outside the backup island) of the BUI (labeled “GRID”) these loads do not operate during backup. At the grid connection point, a separate SolarEdge meter must be installed as an export/import meter, to control the system. This meter must communicate with the Leader inverter via the SolarEdge Home Network (“Home Network”) or via the RS485 port.
- **Third-party PV inverter/ Battery Storage:** If a third-party PV inverter or battery storage is used in the system, connect all third-party PV inverters or battery storage to the GRID side, outside the backup island of the BUI, labeled GRID. We recommend you install a separate SolarEdge external production meter at the PV inverter/Battery Storage output to correctly display the production of the third-party PV inverter/Battery Storage in the Monitoring platform. A single production meter must communicate with the Leader inverter via SolarEdge Home Network or via the RS485 port. In this case, all third-party PV inverter/Battery Storage must be aggregated on their AC side to be connected to the production meter.

Unless a specific firmware version enables you to connect third-party PV inverter/Battery Storage within the backup Island, to the load side of the BUI, it is forbidden to install third-party PV inverter/Battery Storage within the backup island. Third-party PV inverter/Battery Storage must be connected to the Grid side of the Backup Interface.

### Use meters in storage-only installations

A SolarEdge meter must be installed as an export/import meter at the grid connection point to control the system. This meter must communicate with the Leader inverter via SolarEdge Home Network (“Home Network”) or via the dedicated RS485 port.

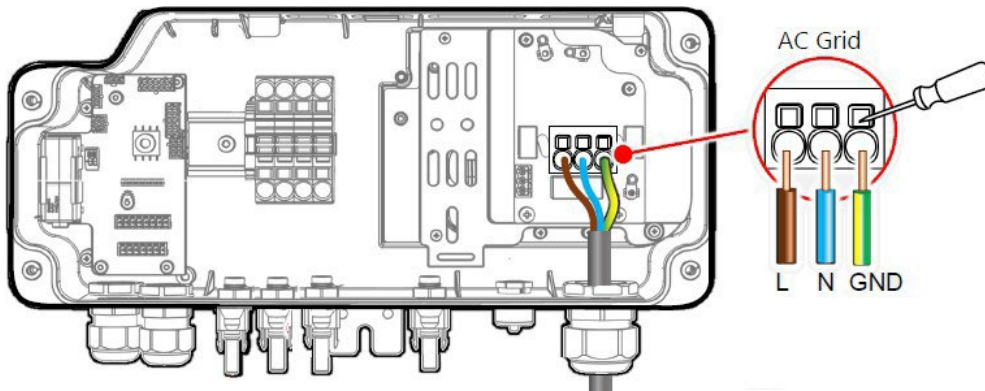
If a third-party PV inverter/Battery Storage is used, an additional SolarEdge meter must be installed at the AC output of the third-party PV inverter/Battery Storage as an ext. production meter, to correctly display production in the Monitoring platform. This meter must communicate with the Leader inverter via the SolarEdge Home Network or via the RS485 over the export/import meter. Meters connected via RS485 are configured with SolarEdge SetApp on the RS485-1 bus of the Leader inverter. In this case, all third-party PV inverter/Battery Storage must be aggregated on their AC side to be connected to the production meter.

## Connect multiple inverters to the same AC grid

When installing multiple inverters, all inverters, and the BUI must have the same phase sequence and

consistent phase mapping.

Figure 1 displays the AC wire terminals of an inverter.



**Figure 1 Inverter AC Wire Terminals**

## Supported use cases

The following table provides compatibility matrix options for combinations of inverters, batteries, and backup.



### NOTE

All use cases apply to full and partial home backup.

For simplicity, the following figures illustrate full home backup, but partial home backup is also allowed.



### IMPORTANT NOTES

Unless specifically written, assume that the grid is a single-phase grid and that the BUI in use is the single-phase backup interface, for all configurations in the following table.

Failure to follow the configuration instructions provided in this section voids the warranty coverage.

Configuration <sup>1,2</sup>	Leader	No. of Follower Inverters	Follower Inverter types	Batteries per Inverter	Maximum AC Power in Backup Mode	Maximum continues Battery charge power from PV+AC	Maximum continues Battery discharge power
Single Inverter	SolarEdge Home Hub Single Phase	NA	NA	1-3 SolarEdge Home Batteries 400V	Up to the maximum rated power of the inverter in backup mode.	<ul style="list-style-type: none"> <li>Battery max charge power: 5000W</li> <li>Max charge power for 2 batteries: 10000W</li> <li>Max charge power for 3 batteries: 15000W</li> </ul>	<ul style="list-style-type: none"> <li>Battery max discharge power: 5000W</li> <li>Total continuous discharge power is limited up to the inverter rated AC power in on-grid and backup applications</li> </ul>
Multiple Inverters	SolarEdge Home Hub Single Phase	Up to two inverters from the supported models	SolarEdge Home Hub Single Phase Inverter (SExxxHRWBMNBF54)	1-3 SolarEdge Home Batteries 400V	Sum of the maximum rated power of each inverter in backup mode.	<ul style="list-style-type: none"> <li>For Home Hub Single Phase inverter: Up to 15000W with 3 batteries</li> <li>For Home Wave single phase inverter: Up to 7500W with 2-3</li> </ul>	
			SolarEdge Home Wave Single Phase Inverter (SExxxHRW000BEN4)		Sum of the maximum rated power of each inverter		
			StorEdge AC Coupled Single Phase Inverter (SEXXXXH-RWSACBXXXX)		Sum of the maximum rated power of each inverter		



						batteries	
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<sup>1</sup> Any of the configurations in the table may be installed with EV chargers or Smart Devices.

Single Home Hub inverter with storage and full home backup

In this configuration, the inverter with the BUI provides homeowners with backup power for full home backup in the event of a grid outage. SolarEdge Smart Energy network optimizes the energy flow to the home loads, maximizing the amount of solar power produced, stored, and consumed. The BUI automatically connects to the inverters and batteries, controlling the disconnection of house loads from the grid during power failures, to provide backup power to full home loads. Figure 2 displays a configuration diagram of a single inverter with full home backup and smart energy devices.

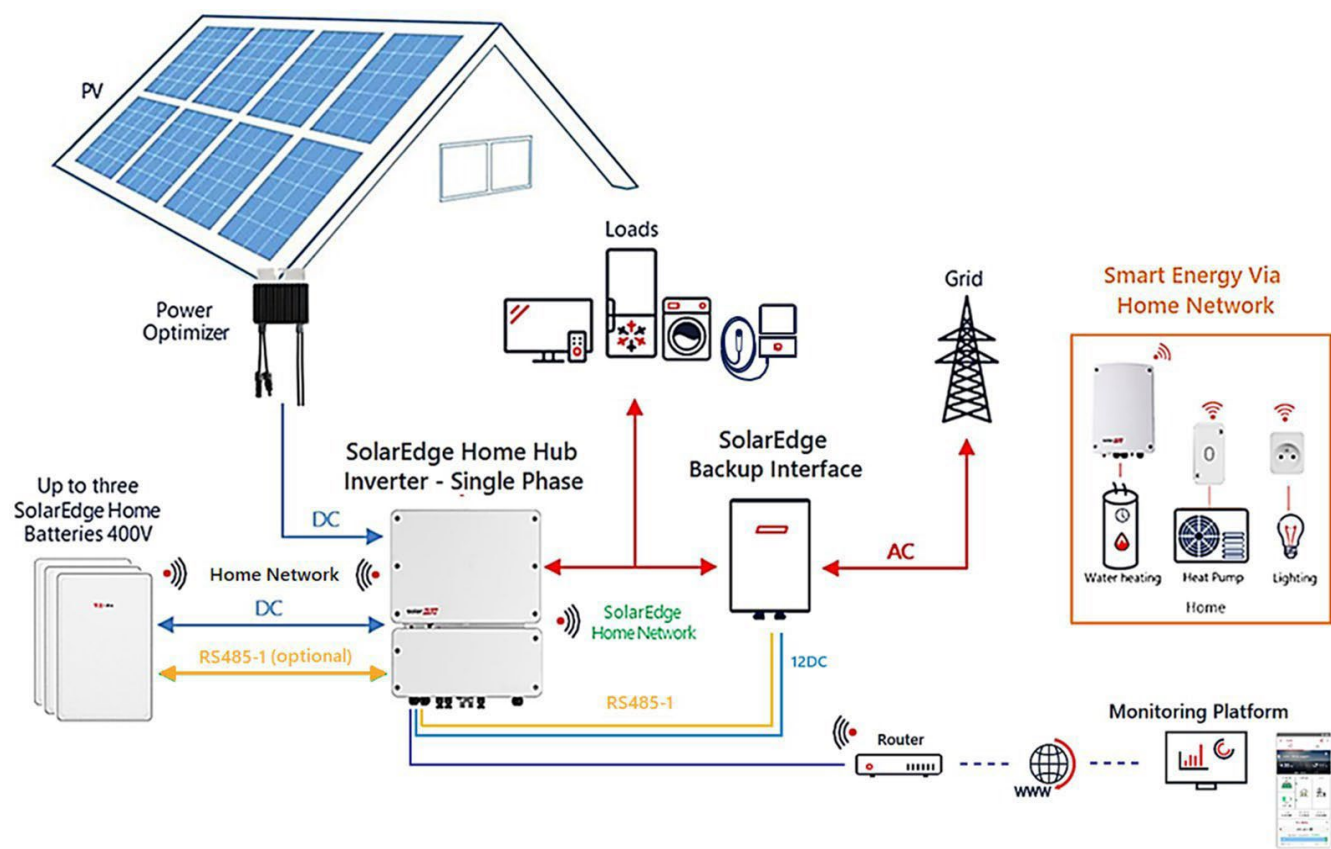


Figure 2 Single Home Hub Inverter with Storage and Full Home Backup

Multiple Home Hub single phase inverters with storage and full home backup

In this configuration, the inverters with the BUI provide homeowners with backup power for full home loads in the event of a grid outage. The BUI connects to the inverters and batteries automatically, controlling the disconnection of house loads from the grid during power failures to provide backup power to full home loads. Figure 3 displays a configuration diagram of multiple Inverters with storage and full home backup.

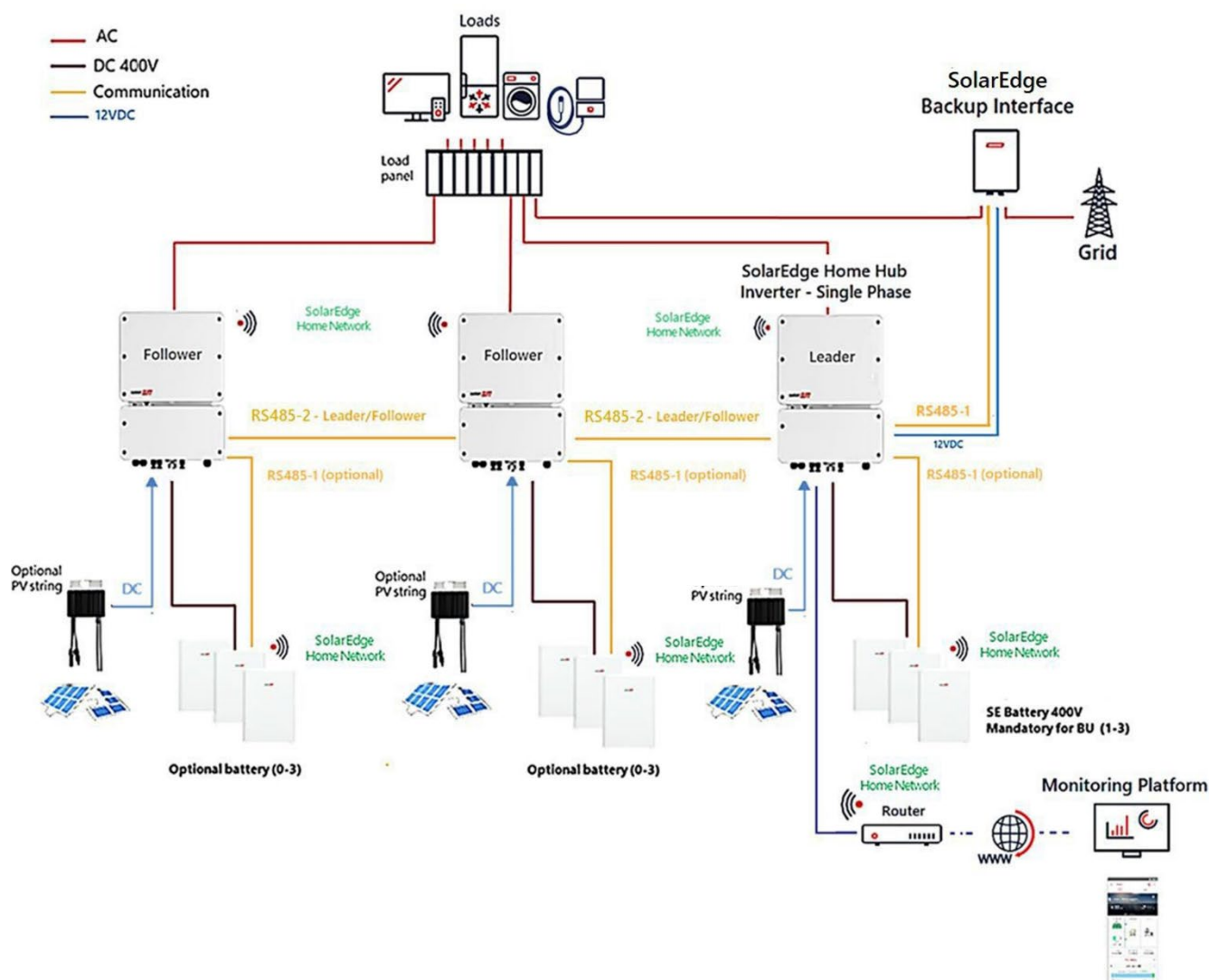


Figure 3 Multiple Home Hub/Wave Single Phase Inverters with Storage and Full Home Backup

## Home Hub single phase inverter with full home backup and third-party PV inverter/battery storage

In this configuration, a SolarEdge Inverter, BUI, and batteries are added to an existing Third-party PV/Battery Storage system.

The SolarEdge inverter connected to the BUI provides homeowners with backup power for full home loads in the event of grid interruption.

The BUI connects to the SolarEdge inverter and batteries automatically, controlling the disconnection of house loads from the grid during power outages, to provide backup power to home loads.

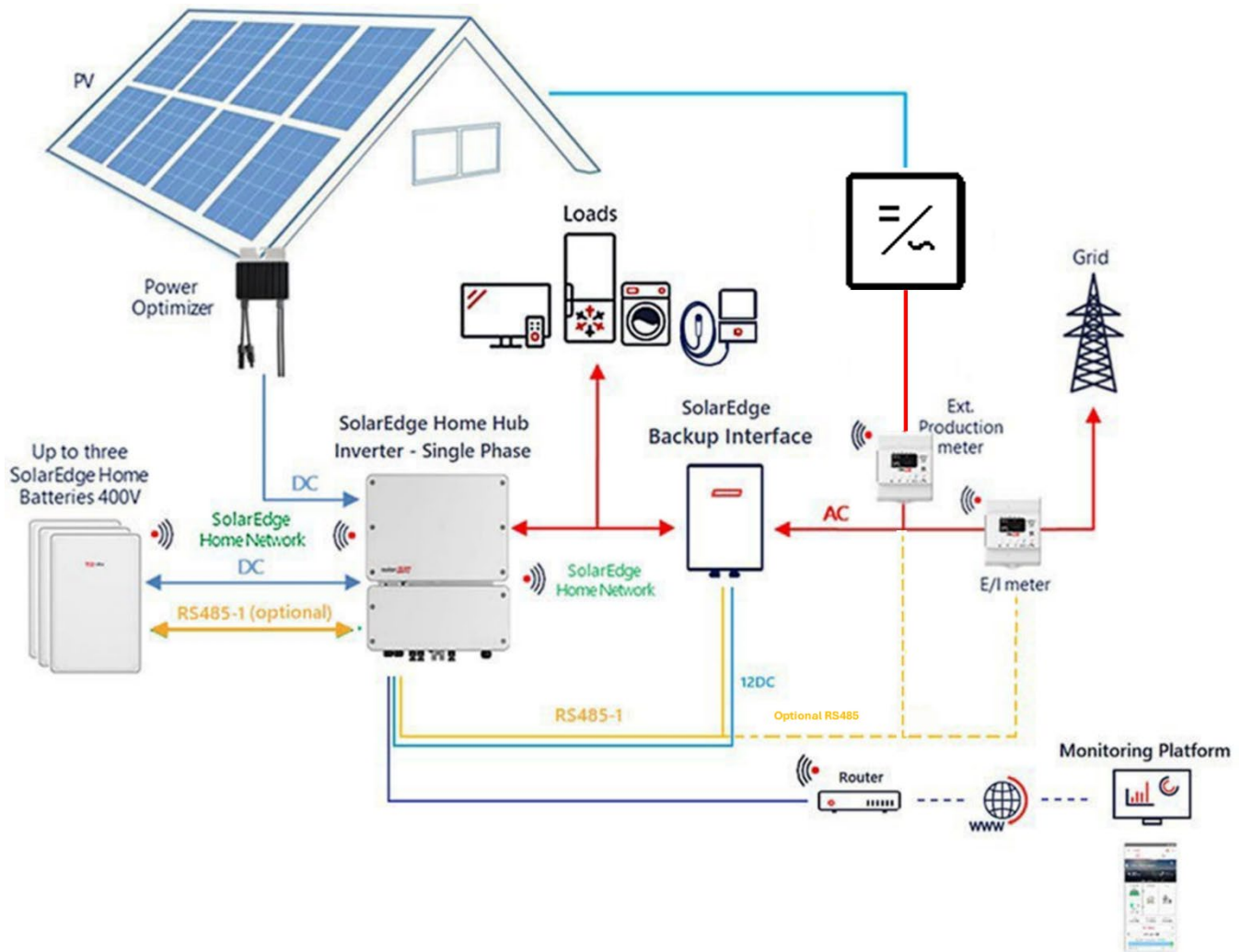
Figure 4 displays a backup configuration with a home hub Inverter, third-party PV inverter/Battery Storage, PV, and storage.



### NOTE

Third-party PV inverter/Battery Storage does not generate any power during backup power operation and must be connected to the grid side of the BUI. We recommend

connecting a third-party PV inverter/Battery Storage to a single production meter on their AC side.



**Figure 4 Home Hub Single Phase Inverter with Third-Party PV inverter/ Battery Storage, Storage, and Full Home Backup**

The external E/I meter must be installed at the grid connection point. The meter integrated within the backup interface must be disabled in SetApp. Follow the SetApp commissioning process.

### Home Hub single phase inverter with partial backup

In this configuration, the inverter with the BUI provides homeowners with backup power for partial home loads - loads that are within the island network - in the event of a grid outage.

The BUI connects to the inverters and batteries automatically, controlling the disconnection of house loads from the grid during power failures to provide backup power to partial home loads.

Figure 5 displays a backup configuration for partial backup.



#### NOTE

When configured using SetApp, the integrated import/export meter of the backup interface cannot be used with a partial backup power solution.

Instead, an external import/export meter must be installed at the grid connection point and the meter integrated with the backup interface must be disabled in SetApp. Make sure you follow the SetApp commissioning process.

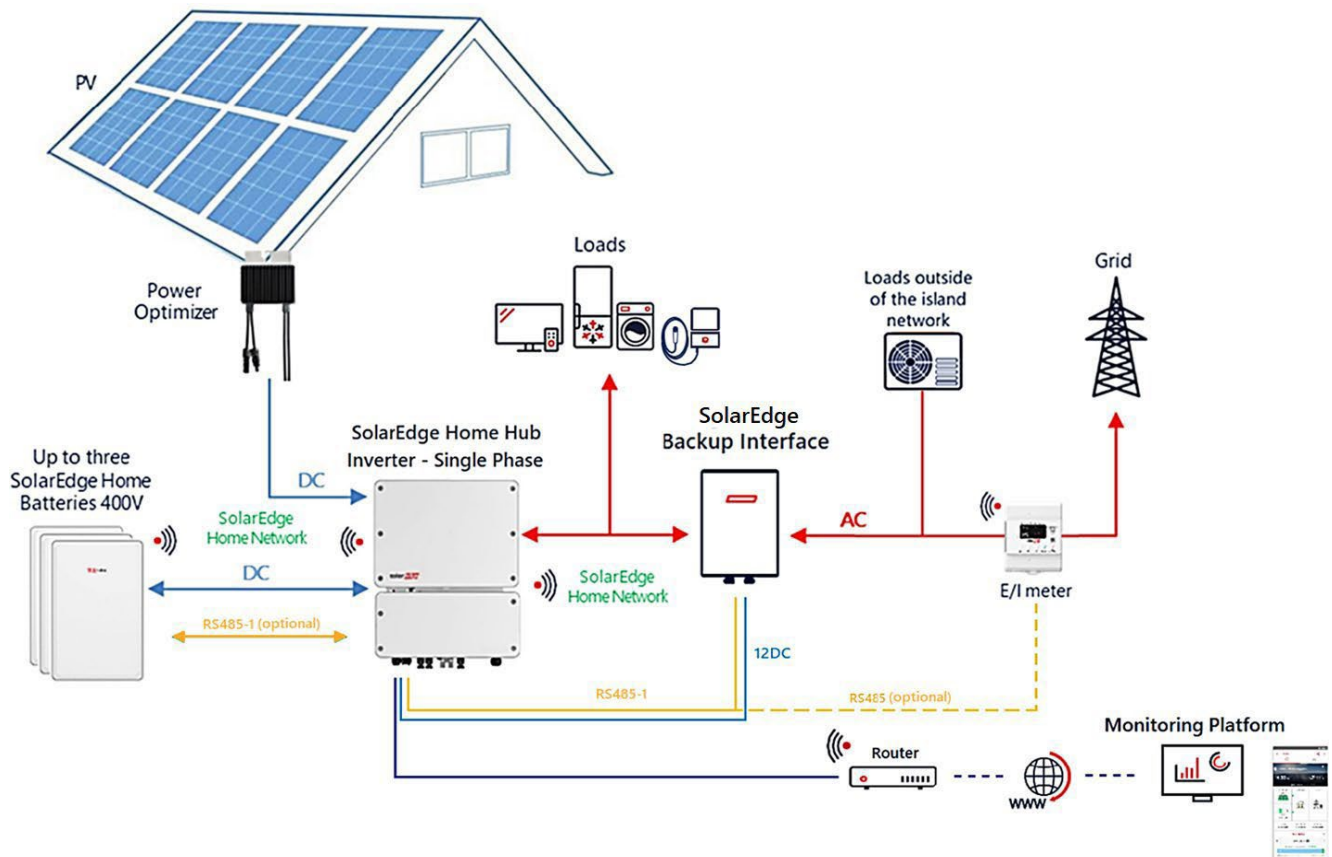


Figure 5 Home Hub Single Phase Inverter with Partial Backup

## Support contact information

If you are having technical problems concerning SolarEdge products, [please contact us](#):



Before contacting SolarEdge, make sure to have the following information at hand:

- The model and serial number of the product in question.
- The error is indicated on the LEDs, the SetApp mobile application, or on the monitoring platform, if there is such an indication.
- System configuration information, including the type and number of modules connected and the number and length of strings.
- The method of communication with the SolarEdge server if the site is connected.
- The product's software version appears in the ID status screen.

To view YouTube videos for installing, wiring, and commissioning SolarEdge Inverters please click the links or scan the following QR codes:

For more information on Installation:

<https://youtu.be/pjuo7KjRHXc>



For more information on Wiring:

[https://youtu.be/o\\_EgCnL\\_r38](https://youtu.be/o_EgCnL_r38)



For more information on Commissioning:

[https://youtu.be/\\_JoiC4\\_H8sk](https://youtu.be/_JoiC4_H8sk)

