Application Note

SolarEdge ONE for Residential Third-Party Integrations Guide

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About

This Integrations Guide lists and explains how selected third-party devices integrate with SolarEdge Home ecosystem.[1]

Revision history

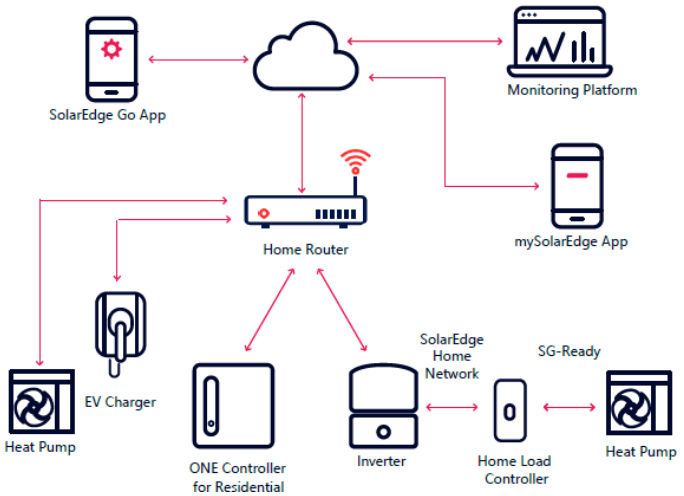
Version	Date	Description
1.2	January 2025	General updates.
1.1	August 2024	Updated availability.
1.0	June 2024	Initial release date.

Overview

SolarEdge ONE is an energy optimization system, that automatically manages the home's power in real-time to maximize savings and extend backup duration. SolarEdge ONE integrates with selected third-party devices using the SolarEdge ONE Controller or the SolarEdge Home Load Controller. This allows the customer to build a scalable system that integrates with third-party devices to monitor, manage, and expand your solar ecosystem as needed.

How it works

This diagram displays the interfaces among the devices in the SolarEdge ecosystem.



[1]The ONE Controller is set to launch in January 2025 in Germany, Austria, and Switzerland, with availability in other European countries expected from March/April 2025.

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SolarEdge ONE Controller

The ONE Controller integrates selected third-party products into the SolarEdge ecosystem by connecting to the home router via the Local Area Network (LAN). The home router links the ONE Controller to the Inverter, Electric Vehicle (EV) Charger, Heat Pump, and SolarEdge servers. It communicates with the integrated third-party devices through the home router using the EEBUS and OCPP 1.6J protocols, enabling continuous communication among the devices, even without connectivity to the SolarEdge Cloud.

SolarEdge ONE Controller communication protocols

- OCPP 1.6J
- EEBUS

SolarEdge Home Load Controller

The SolarEdge Home Load Controller is designed to connect most air-to-water Heat Pumps to the SolarEdge Home ecosystem using a SG Ready interface. For details about the SG Ready heat pump regulations, see: https://www.waermepumpe.de/fileadmin/user_upload/bwp_service/SG_ready/2020_SG-ready_Regularien_2.0_final.pdf.

The Load Controller is connected to the inverter through the SolarEdge Home Network. The Load Controller connects directly to the Heat Pump´s SG-Ready interface. It is designed to manage and control the different modes of operations. For details about how to commission Heat Pumps with the Home Load Controller, see Heat Pump Control with SolarEdge Home Load Controller.

Supported functionalities*

The following table displays the supported functionalities for EV Chargers and Heat Pumps, in combination with the ONE Controller or the Load Controller

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Controlled Device	Connection Method	Description

Electric Vehicle Charger
 	
(EVC)
	ONE
	
	Controller (OCPP1.6J)
		• EV Charger control via mySolarEdge
		  • Automatic charge when EV is plugged in
		  • **Start** or **Stop** charging manually through app
		  • **Scheduled charging**
		  • **Charging History**
		
		• **Excess Solar** – Automatically charges the car with excess PV power only. Can work in parallel with the Schedule function - car can be charged with Excess Solar power when it is not within the schedule and a full charge when it is within the schedule.
		• **Import Limit** – Charge as fast as possible, even with limited grid connection, using the circuit breaker protection capability. The SolarEdge system keeps your charging speed as high as possible according to the available power at any given time.

Air-Water Heat Pump
 	
(HP)
	ONE
	
	Controller (EEBUS)**
		• Heat Pump control via mySolarEdge
		  • View **Hot Water** temperature and change set point temperature
		  • Change **Climate Control** set point temperature
		  • Change **Climate Control** and **Hot Water** mode of operation
		  • See Heat Pump power consumption
		• Heat your Hot Water tank and buffer tank with **Excess Solar.**

	Load Controller (SG-Ready)	• Activate the Heat Pump automatically when the Heat Pump has Excess Solar available. • Ability to set two different set points for Excess Solar operation • Increase your battery life during power outage by automatically turning the Heat Pump OFF when configured as a **Nonessential** device.

* Expected in Q1 2025

** Only available with Vaillant Heat pumps – see “Supported Vendors”

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Supported vendors*

Device	Company	Model
EV Charger	MENNEKES [8]	AMTRON® models with the following P/N: 134xxxx, 136xxxx, 137xxxx, 138xxxx, 139xxxx that support OCPP 1.6J and connected through home router using Ethernet. Integration via ONE Controller.
EV Charger	Wallbox	Pulsar Max, Pulsar Plus, Pulsar Pro that support OCPP 1.6J and connected through home router using Wi-Fi or Ethernet. Integration via ONE Controller.
EV Charger	Alfen	Eve S-line, Eve Pro line that support OCPP 1.6J and connected through home router using Ethernet. Integration via ONE Controller.
EV Charger	ABB	Terra AC Wallbox that supports OCPP 1.6J and connected through home router using Wi-Fi or Ethernet. Integration via ONE Controller.
Heat Pump	Vaillant	All Heat Pumps from 2018 that support EEBUS. Before commissioning Vaillant Heat Pump, install the following equipment: • Vaillant Heat Pump that support EEBUS (all models from 2018) • Vaillant Communication Gateway VR921 or VR940F • Vaillant Wall Thermostat VRC700 or VRC720

* Expected in Q1 2025

Supported use cases

This section explains which devices can be combined and used in one installation. Only one Controller can be used for each site.

EV Chargers

Only one of the following EV Chargers can be used at a time:

- One SolarEdge EV Charger
- One third-party EV Charger

Heat Pumps

Possible Heat Pump combinations:

- One Heat pump with EEBUS connection

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- One Heat pump with SG-Ready control using the SolarEdge Load Controller (the ONE Controller is not required)

Combination of Heat pumps and EV Chargers

You can use any combination of one EV Charger with one Heat Pump with an EEBUS connection.

Commission EV Chargers

This section explains how to commission supported third-party EV Chargers.

Required equipment

Before commissioning third-party EV Chargers, you must install the following equipment:

- SolarEdge residential PV system
- ONE Controller
- Supported EV Charger

Before you begin

Before commissioning third-party devices, make sure:

- The EV Charger is connected to the same internet network as the ONE Controller and SolarEdge Inverter through the home router. For details about the ONE ecosystem, see How it Works.
- SolarEdge Go application is downloaded on the installer´s mobile device.
- SolarEdge Go has access to relevant site.

EV Charger integration limitations

The following functionalities are currently **not** supported for integrated third-party EV Chargers:

- Essential Device Support



NOTE

The ONE Controller can only be paired with one third-party EV Charger. PV charging only begins when the Excess Solar power is higher than:

- 1.4 kW when charging a Single Phase EV
- 4.1 kW when charging a Three Phase EV

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Commission EV Chargers in SolarEdge Go

To pair an EV Charger to the ONE Controller:

1. Open SolarEdge Go, go to **Manage** and select the relevant site.
2. Make sure the ONE Controller is added and connected to the system. Go to **Equipment >** check for and go to **Local Controller >** check for **Connected**
3. In screen tab **Action > +Add Device >** select the relevant EV Charger brand. The mandatory parameters for the brand are displayed.
4. Enter the mandatory parameters in the EV Charger on the third-party's website interface or mobile application.

After the EV Charger and the ONE Controller are connected, the EV Charger appears in the Device list (this may take a few minutes). The EV Charger can now communicate with the ONE Controller and the SolarEdge servers.

Commission supported vendors

MENNEKES*

This table describes how to commission MENNEKES charger.

Section	Description
Requirements	• AMTRON® models with the following P/N: 134xxxx, 136xxxx, 137xxxx, 138xxxx, 139xxxx that support OCPP 1.6J and connected to the internet through home router via Ethernet. Integration via ONE Controller. • Latest firmware version • Admin credentials on personal laptop • USB or Ethernet Cable

Limitations	• Only supports Ethernet LAN connection
	  • Mennekes charger does not support Wi-Fi connection.
	• Configuration only using a laptop
	  • Mobile phones are not supported

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Section	Description

Commission	Before you begin, verify the following:
	• SolarEdge ONE Controller is installed and connected to the internet through the home router. The ONE Controller is connected to the inverter via internet.
	• MENNEKES EV Charger is installed and connected to the internet, and to the same home router and same internet network as SolarEdge ONE Controller.
	• Use your PC to connect to the charger's WebUI using the username and password from the MENNEKES guide. For details, see the MENNEKES video.
	• Enter the following parameters:
	• SolarEdge Backend credentials in Backend → OCPP tab:
	  • ChargeBox identity number
	  • HTTP basic authentication password
	  • WebSockets Controller JSON OCPP URL In OCPP tab, select instructed **OCPP mode.**
	• In Authorization tab →Free Charging: change **Free Charging** to **On.**
	• In Authorization tab→Free Charging: change **Free Charging Mode:**
	• Once all parameters were set and saved, the EV Charger will start communication with SolarEdge Cloud and MENNEKES EV Charger will appear in SolarEdge Go device list (may take a few minutes)
	• No additional configuration in SolarEdge Go is required

* Expected in Q1 2025

Wallbox*

This table describes how to commission Wallbox charger.

Section	Description
Requirements	• Wallbox Pulsar Max, Pulsar Plus, Pulsar Pro with OCPP 1.6J support. Integration via ONE Controller • Mobile Phone with Wallbox App • FW Version 6.4.19

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Section	Description

Commission	Before you begin, verify the following:
	• SolarEdge ONE Controller is installed and connected to the internet through the home router. The ONE Controller is connected to the inverter via internet.
	• Wallbox EV Charger is installed and connected to the internet, and to same home router and internet network as SolarEdge ONE Controller.
	• Use Wallbox App to connect to the charger. For details, see the Wallbox Instructions.
	
	Enter SolarEdge Backend parameters:
	• Tap the **Settings cogwheel** in the top right corner:
	• Tap OCPP and switch on “Enable OCPP”
	• Enter SolarEdge Parameters
	  • URL
	  • ChargePoint Identity
	  • Password
	  • Accept the Terms & Conditions, then tap **Save**.
	• The charger will automatically restart, and the new OCPP configuration will be applied. An OCPP icon will display on your charger app overview screen
	  • After setting all the parameters, the EV Charger starts communicating with SolarEdge Cloud, and the Wallbox EV Charger appears in SolarEdge Go device list after a few minutes
	• After it was added to SolarEdge Go, additional configuration in required to complete pairing process:
	  • Configure charger power input: Single Phase or Three Phase and Max Current.

* Expected in Q1 2025

Alfen*

This table describes how to commission Alfen charger.

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Section	Description
Requirements	• Eve S-line, Eve Pro line that supports OCPP 1.6J and is connected to the internet through home router via Ethernet. Integration via ONE Controller. • Firmware version 6.6.2-4312 or higher • Admin credentials on personal laptop • Alfen ACE Service Installer software must be installed • Download ACE Service Installer • Ethernet Cable
Limitations	• Configuration only using a laptop • Mobile phones are not supported

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Section	Description

Commission	Before you begin, verify the following:
	• SolarEdge ONE controller is installed and connected to the internet through the home router. The ONE Controller is connected to the inverter via internet.
	• Alfen EV Charger is installed and connected to the internet, and to same home router and internet network as SolarEdge ONE Controller.
	• Use your PC to connect to the charger with ACE Service Installer using your Installer username and password. For details, see the Alfen Instructions.
	• Enter SolarEdge Backend parameters:
	• In General tab → General:
	  • Customer Ident. Number
	• In Connectivity tab → General:
	  • Backoffice preset
	• In Connectivity tab → Network Profile 1:
	  • Protocol
	  • CSMS URL
	  • Security Profile
	• In Connectivity tab → Back office security:
	  • Back office authentication Key
	• In Authorization tab → Authorization:
	  • Without Authorization → Authorization mode: Plug & Charge
	• After you set all the parameters, the EV Charger starts communicating with SolarEdge Cloud and the Alfen EV Charger appears in the SolarEdge Go Device list. This can take a few minutes.
	  • No additional configuration in SolarEdge Go is required

* Expected in Q1 2025

ABB*

This table describes how to commission ABB charger.

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Section	Description
Requirements	• ABB Terra AC Wallbox models that support OCPP 1.6J. Integration via ONE Controller • Mobile Phone with TerraConfig App • Firmware version 1.8.21

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Section	Description

Commission	Before you begin, verify the following:
	• SolarEdge ONE Controller is installed and connected to the internet through the home router. The ONE Controller is connected to the inverter via internet.
	• ABB Charger is installed and connected to the internet, and to same home router and internet network as SolarEdge ONE Controller.
	• Use TerraConfig App to connect to the charger. For details, see the ABB Instructions.
	
	Enter SolarEdge Backend parameters (For details, see the ABB Video):
	• Tap the **OCPP Server** in the Configuration section
	• Choose **Custom server - available on your device only**
	• Enter SolarEdge Parameters
	  • Server URL
	  • Password:
	
	NOTE
	• You can select any password to establish connection to the charger. After the connection is established, you won't need to use this password again.
	• If you need to reestablish the connection, create a new password and reconfigure the charger.
	
	• Press **CONFIRM CONFIGURATION**
	• After you set all the parameters, the EV Charger starts communicating with SolarEdge Cloud and the ABB EV Charger appears in SolarEdge Go Device list. This can take a few minutes.
	• After the EV Charger is added to SolarEdge Go, to complete the pairing process, configure the charger power input as Single Phase or Three Phase and the maximum current.
	• From SolarEdge Go, go to **EV Charger** > **Home ONE Controller** and set the **Maximum Rated Current** and **Phase Connection**.
	• Tap **Save**.

* Expected in Q1 2025

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Commission Vaillant Heat Pump

This section explains how to commission supported third-party Heat pumps using the SolarEdge ONE Controller.

NOTE

To maximize energy management savings, we recommend the following:

- Homeowner should define the preferred schedule for hot water.
- The most effective strategy for homeowners is to determine the amount of hot water needed during the early morning and/or evening hours. This allows the SolarEdge ONE energy management system to heat the hot water tank using only excess solar power.
  - The hot water temperature is set to 48 degrees Celsius and is required daily from 17:00 to 22:00.
  - During the day, the Hot Water Tank remains at a lower temperature, but the ONE Energy Management System ensures it reaches the desired temperature at the desired time, using as much Excess Solar as possible.

Required equipment

Before commissioning the Vaillant Heat Pump, install the following equipment:

- SolarEdge residential PV system
- SolarEdge One Controller. For details, see [Commission SolarEdge ONE Controller for Residential].
- Vaillant Heat Pump that support EEBUS (all models from 2018)
- Vaillant Communication Gateway VR921 or VR940F
- Vaillant Wall Thermostat VRC700 or VRC720

Before you begin

Before commissioning the Vaillant Heat Pump, make sure:

- The Vaillant Heat Pump Communication Gateway is connected to the heat pump and to the same internet network as the ONE Controller and SolarEdge Inverter through the home router.
- SolarEdge Go application is downloaded on your mobile device

Vaillant integration limitations

SolarEdge ONE does not support the following:

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- Scheduling and advanced settings – these can be done by the homeowner via the myVaillant App.
- Only partial control capabilities over Vaillant Heat Pump are available in mySolarEdge App.

Commission the Vaillant Heat Pump in SolarEdge Go

To pair a heat pump to the ONE Controller:

1. Open SolarEdge Go, go to **Manage** and select the relevant site.
2. Go to **Equipment** > **Local Controller > Connected** to verify the ONE Controller has been added and connected to the system.
3. From the **Action** tab, go to **+Add Device** and select **Vaillant**.
4. After the Vaillant Heat Pump is found, tap> **Add Device**

To enable EEBUS and add SolarEdge ONE controller as trusted device via Vaillant App:

1. Tap **Settings** in Vaillant App.
2. Go to **EEBUS** and tap **ON**. [is this a toggle or a button?]
3. Select SolarEdge ONE Controller from the **Available units** list and tap **Continue**.
4. Verify that the displayed SKI number with the ONE Controller SKI number displayed in SolarEdge Go App are compatible and tap **Trust**.

After the Heat Pump and the ONE Controller are connected, the Heat Pump appears in the Device list and is available in mySolarEdge

Once approved in the Vaillant App, the connection can take a few minutes.

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