solaredge

Installation Guide

SolarEdge Hot Water Controller ROW

Home Network

Version 1.2

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This equipment has been tested and found to comply with the limits applied by the local regulations.

These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

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- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

Contents

Version History

- Version 1.0, December 2022: Initial release
- Version 1.1, April 2023: General release
  - Phase out of Zigbee-based products
  - Migration to Home Network
- Version 1.2, July 2023: Updated LED Indications

HANDLING AND SAFETY INSTRUCTIONS

Safety Symbols Information

The following safety symbols are used in this document. Familiarize yourself with the symbols and their meaning before installing or operating the system.

WARNING!
Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **injury or loss of life**. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.

CAUTION!
Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **damage or destruction of the product**. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

NOTE
Denotes additional information about the current subject.

IMPORTANT SAFETY FEATURE
Denotes information about safety issues.

Disposal requirements under the Waste Electrical and Electronic Equipment (WEEE) regulations:

NOTE
Discard this product according to local regulations or send it back to SolarEdge.

SolarEdge Home Hot Water Controller Installation

Overview

The SolarEdge Smart Energy solutions allow for increasing the self-consumption of a site. One method used for this purpose is controlling the usage (consumption) of loads using Smart Energy products.

The Smart Energy devices divert power to an appliance (load) according to pre-configured schedules, using the following modes:

- **Schedule** - The device turns on and off at times set by the user for the user's convenience, regardless of available PV power.
- **Smart Save** - The device (typically a boiler or water pump) is controlled automatically to maximize self-consumption. Grid power is used only if PV power is insufficient to meet the user's "Ready by" time. For example, to heat water for 2 hours and have hot water by 18:00, set the **Duration** to 2 hours and **Ready-by** to 18:00. The boiler may work before 16:00 if there is available PV power. Regardless, you are guaranteed to have hot water by 18:00.

Refer to *Figure 2* for examples of the device modes of operation.

You can re-configure the schedules at any time and manually switch appliances on and off. You can configure the Smart Energy products locally through the inverter, or remotely via the monitoring platform (or monitoring smartphone app).

> **NOTE**
>
> A home network connection is required to connect your SolarEdge Home Hot Water Controller device.

The SolarEdge Home Hot Water Controller (referred to as "the device" throughout) is a Smart Energy product that diverts excess energy produced by the PV system to a load, normally a hot water heater. The device saves energy and reduces utility bills by storing energy as hot water during the day when surplus energy is high and providing free hot water later in the day.
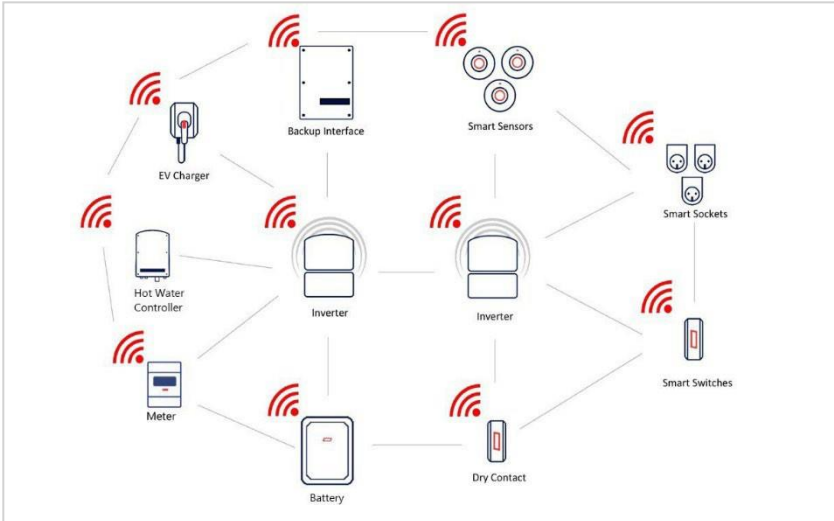
Figure 1: SolarEdge Smart Energy system

The following figure illustrates a typical example of a device operation with Smart Save and Schedule modes. Note that in Smart Save mode, the consumption is reduced by taking advantage of excess PV earlier in the day.
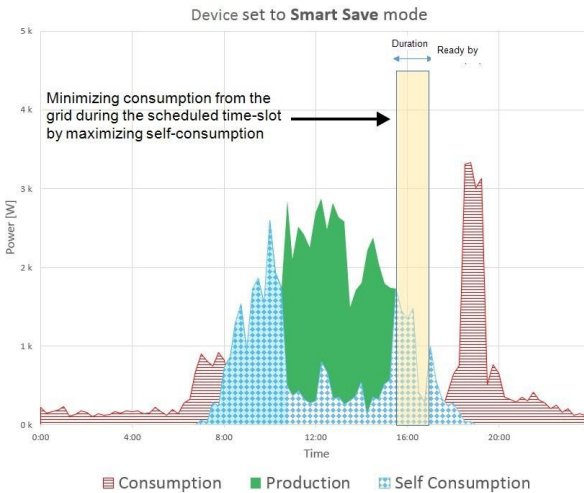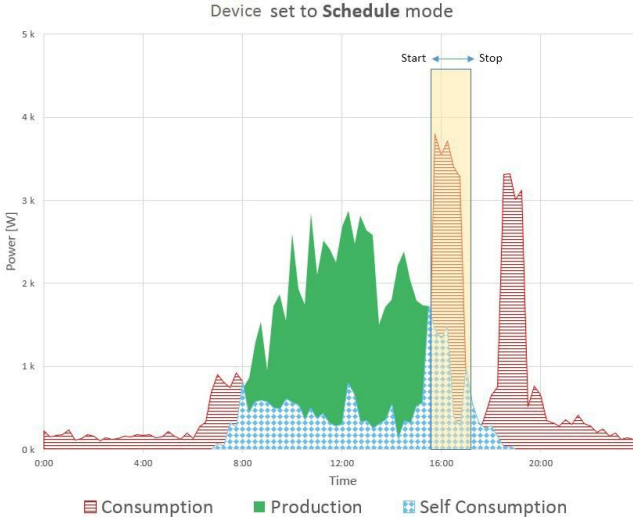

Figure 2: Examples of device operation

To enable the SolarEdge Home Hot Water Controller functionality, the following supporting devices must be installed:

Supporting Device	
➤ Energy Meter with Modbus Connection https://www.solaredge.com/sites/default/files/se-energy-meter-with-modbus-quick-installation-guide.pdf	
➤ Inline Energy Meter https://www.solaredge.com/sites/default/files/se-inline-energy-meter-qig.pdf	
➤ SolarEdge Home Network Plug-In https://www.solaredge.com/sites/default/files/se-energy-net-plug-in-installation-guide.pdf	
➤ Optionally, a temperature sensor may be used to display the water temperature (purchased separately). A third-party P100 sensor may also be used. https://www.solaredge.com/sites/default/files/se_temperature_sensor_installation_guide.pdf	
➤ Application Note https://www.solaredge.com/sites/default/files/se-smart-energy-configurations-and-operations-application-note-row.pdf	

SolarEdge Home Hot Water Controller Interfaces

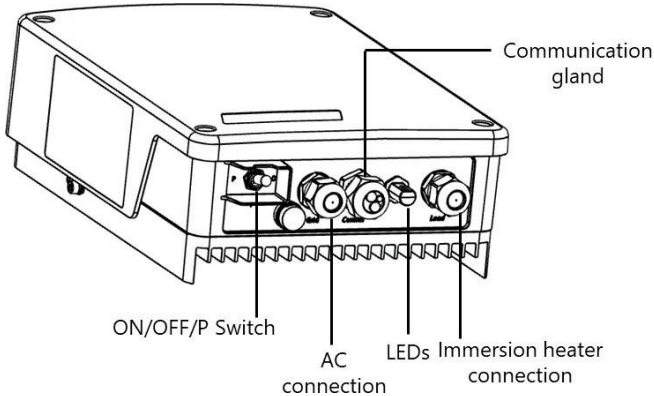The following figure shows the connectors and interfaces of the device.

Figure 3: Device interfaces

☛ **Cable connection glands**

☛ **ON/OFF/P Switch** - manages the device operation.

  ☛ **ON (1)** - Turning this switch ON starts the operation of the device.

  ☛ **OFF (0)** - Turning this switch OFF stops the power supply to the immersion heater.

  ☛ **P** - Moving and releasing the switch allows viewing system information via the LEDs and on the Inverter SetApp mobile application, and performing the following functions:

P Position duration	Function	Comments
Switch moved to P for **less than 3 seconds**	**Boost Mode** - the device delivers maximum power to operate the immersion heater at full capacity for one hour.	
Switch moved to P for **less than 3 seconds**, *while in Boost Mode*	**Boost Mode** stops.	
Switch moved to P for **more than 10 seconds**	Factory reset - disconnects the device from the inverter.	After reset, association with the inverter is required.

NOTE

If the SolarEdge Hot Water Controller loses communication with the inverter for more than 30 minutes, it turns ON automatically to ensure there is hot water. Turn OFF the ON/OFF/P switch to stop power delivery.

☛ **LEDs** - The LED indicators provide information about the device operation status:
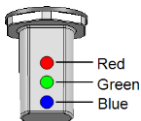

Figure 4: Three LED Indicators

All LEDs

○

ON
• Boot/Reset
OFF
• Not Powered

Power

●

ON
• Delivering power to the immersion heater
• During Boot/Reset
OFF
• Not powered
Flickering
• No power is delivered to the immersion heater

Communication

●

ON
• Connected to Home Network
• Boot/Reset
Blinking
• Scanning for network or connection with Home Network is lost
Blinking for 30 seconds
• Received request for identification

Fault

●

ON
• Fault
• During Boot/Reset
OFF
• No faults

Note: Flickering: 100mS ON, 5 Sec OFF

Installing the Device

⚠️

CAUTION!

To avoid damage to electrical equipment, connect only <u>purely resistive</u> loads/ appliances to the SolarEdge Home Hot Water Controller.

CAUTION!

⚠️

- This product must be operated under the specified operating specifications, as described in the latest technical specification data sheet.
- This product must be used with immersion heaters that include a thermostat that shuts off the power when reaching the required temperature.
- Configure the product so that the load connected is not switched on or off more frequently than specified by the load manufacturer.
- Do not connect loads that require a continuous current supply (e.g., fridge, freezer).
- Do not use the product if it is damaged or malfunctioning.
- Never connect loads that can cause injuries or fire if they are switched on unintentionally (e.g., an iron).
- Do not let the product come into contact with water or other liquids.
- The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference and observe all instructions contained therein.

NOTE

💬

It is recommended to install a 2-pole magneto-thermal switch breaker between the AC cables coming from the mains and the AC cables going to the immersion heater.

Package Contents

- SolarEdge Home Hot Water Controller device
- Mounting bracket kit with screws
- Antenna kit
- This installation guide

Mounting the Device

> **NOTE**
> Installation is allowed at up to 2000 meters of altitude.

> **NOTE**
> Make sure the mounting surface or structure can support the weight of the device.

1. Determine the device mounting location, on a wall, stud framing, or pole. To allow access and enable proper heat dissipation, maintain a minimum clearance and a maximum distance from the inverter, as shown below:
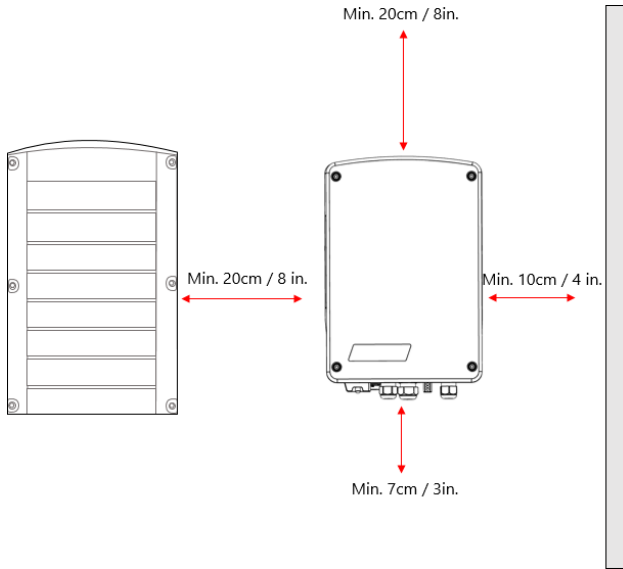
Min. 20cm / 8in.

Min. 20cm / 8 in.

Min. 10cm / 4 in.

Min. 7cm / 3in.

Figure 5: Clearance

2. Position the bracket against the wall/ pole, level the bracket, and mark the drilling hole locations. Ensure that the U-shaped indentations of the bracket are facing up.
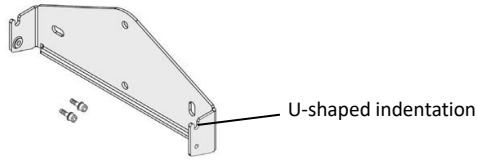

U-shaped indentation

Figure 6: Mounting bracket kit

3. Drill the holes and mount the bracket. Verify that the bracket is firmly attached to the mounting surface.

4. Lift the device from the sides or hold it at the top and bottom to lift the device into place.

5. Lower the device onto the U-shaped indentations (see *Figure 7*). Let the device lay flat against the wall or pole.

6. Insert the two supplied screws through the outer heat sink fin on both sides of the device and into the bracket. Tighten the screws of 4.0 N*m.
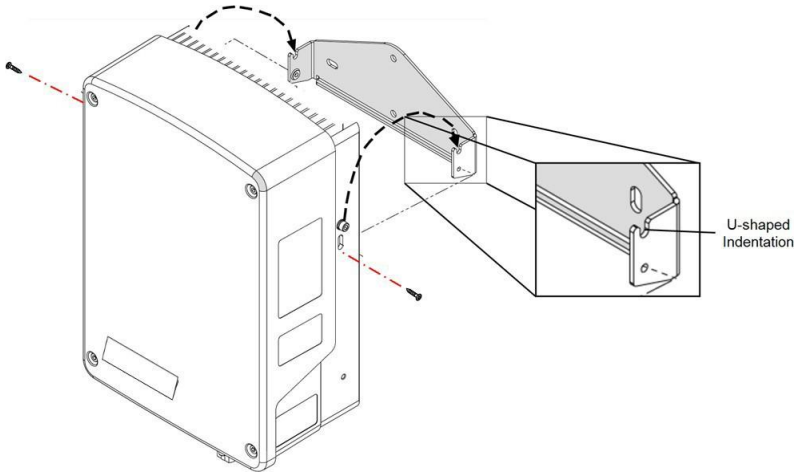

U-shaped Indentation

Figure 7: Hanging the device on the bracket

Connection

Guidelines

- Make sure that the power is disconnected from the main distribution panel.
- Connect the device through a circuit breaker in the AC distribution panel.
- Connect the device through a 2-pole magneto-thermal switch breaker in the AC distribution panel.
- Use a 3-core cable with a minimum wire cross-section of 2.5 mm^2.
- Use the connection gland suitable for the cable diameter (6 - 12 mm or 4 - 8 mm).
- Use the following cable types for the power supply:
  - Rubber sheathed, H05RR-F of type HD 22.4
  - PVC sheathed, H05W-F of type HD 21.5

NOTE

The electrical connections to the grid and load may be different depending on the device version. Therefore, pay attention to the connector labels when replacing the device for maintenance. The cable connections may also require an extension to fit the location of grid/ load terminal blocks.

Connecting the Device

1. Turn OFF the AC circuit breaker of the main distribution panel.

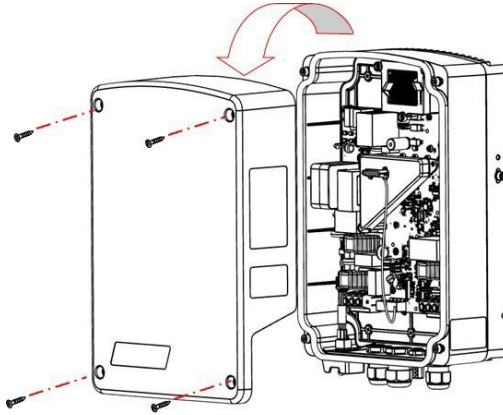2. Release the four screws attaching the device cover to the enclosure and remove the cover.

Figure 8: Opening the cover

> CAUTION!
>
> <u>Do not</u> connect the device *output* (labeled A & B) to the grid, as this will damage the product and void the warranty. Connect the AC grid cable to the designated *input* only (see *Figure 9*).
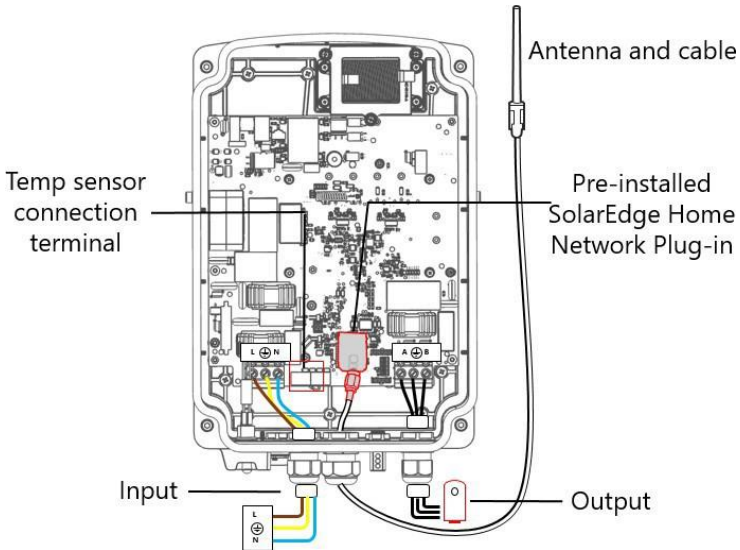
Figure 9: SolarEdge Home Hot Water Controller wire connections

3. Connect AC (to the grid; see *Figure 9*):

   a. Insert the AC cable coming from the mains through the **left-most** gland.

   b. Connect the AC wires according to labels (L,⏚, N) on the left terminal block.

4. Connect to the immersion heater (see *Figure 9*):

   ⚠ **CAUTION!**

   <u>Do not</u> connect the device to an immersion heater that is not equipped with a safe-temperature sensor. You can use immersion heaters with mechanical thermostats only.

   No additional components are allowed to be connected between the hot water tank and the Hot Water Controller.

   a. Insert the cable from the immersion heater through the **right-most** gland.

   b. Connect the three wires coming from the hot water tank according to labels (A,⏚, B) on the right terminal block.

5. Unpack the antenna kit and release the cable binding:

   a. **For the heat sink mounting (1)**: Attach the mounting clip with the antenna vertically to the top of the heat sink fins.
   For the wall mounting (2): Attach the mounting clip with the antenna vertically to the wall.
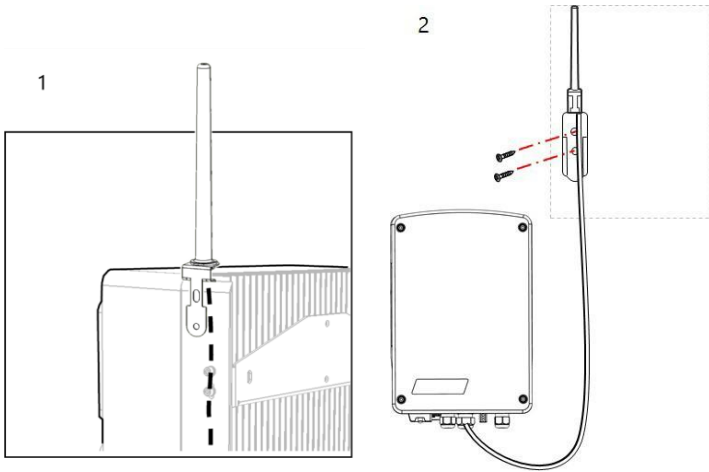
b. Ensure that the gland is closed properly, and the antenna cable is connected to the SolarEdge Home Network Plugin.

6. Close the device cover and fasten the screws.

7. Turn ON the AC circuit breaker of the main distribution panel.

8. Manual operation can be validated with the boost function. See page *10*

> **••• NOTE**
> See Appendix A for alternative immersion heater connection methods.

Configuration

SolarEdge Home Smart Energy devices are configured using the following inverter types:

☛ Inverters with SetApp configuration

NOTE
Verify that the inverter has a SolarEdge Home Network Plug-in installed and is connected to the monitoring platform (refer to the *Inverter Installation Guide* for details on setting up communication).

NOTE
If you have an inverter with an LCD, an upgrade is required. The inverter should be equipped with a communications board supporting SolarEdge Home Network. Refer to https://http://www.solaredge.com/sites/default/files/se-plugin-kit-selection-tech-note.pdf

NOTE
In Auto mode, if you configure overlapping timeframes between Schedule and Smart Save options, Schedule mode takes precedence over the Smart Save mode. Refer to https://knowledge-center.solaredge.com/sites/kc/files/se-smart-energy-configurations-and-operations-application-note-row.pdf

Configuration with Inverters

Required inverter Firmware CPU version: v4.17xx and later.

1. Access SetApp
2. Select **Commissioning > Device Manager (Found new devices)**
3. Select device > **Add new device.**
4. Select the device and add device parameters:
   - ☛ Power rating is found on the label of the hot water tank/element.
   - ☛ Min on time
5. Complete schedules and operating modes in mySolarEdge application.

→ To configure the Smart Energy device:

1. Go to the Monitoring platform website on your computer or open the Monitoring platform application on your mobile device.
2. Click/tap the **Smart Energy** icon.
3. Select a device and go to **Details and Settings**.

4. Complete the following information:
   - Rated power
   - Min On time
   - Device icon
   - Device name

5. Return to the device screen and configure:
   - Schedules
   - Ready-by timers
   - Excess Solar Power mode (requires a SolarEdge Energy Meter)
   - Device state
   - Essential device configuration

Modifying the Device Operation Mode and Schedules

You can re-configure the device operation mode and schedules at any time, using the monitoring platform.

To	Do this
Manually turn the load on or off	Select the device from the Device Manager screen. Select **Mode ➔ Manual** and set the device to either **ON** or **OFF**.
Disconnect the device(s) from the network	Select **Remove Device** or **Remove All** from the device screen.
Modify the schedule configuration	Select the device from the **Smart Home** screen. Select **Schedule➔Add Schedule**. Set the time and days and press **OK**.
Delete a schedule	Select the Schedule from the **Schedule** screen and press **Delete.**

Verifying the Connection

1. Go to **Device Manager** > **Device Info**.
2. Check that the following device details are correct:

- **Serial number**: the full serial number of the device
- **Last Communication**: The date and time when the device communicated with the inverter
- **MFG**: The device manufacturer
- **Model**: The device model type
- **Power [W]**: The energy delivered to the load
- **Voltage & Frequency**: Grid voltage and frequency of the hot water
- **Negative Energy [Wh]**: Consumption of the hot water tank

Troubleshooting Errors

Depending on your inverter type, the following error messages may be displayed in the SetApp application.

| Symptom / Error	Possible Cause	Troubleshooting
• **Not connected** error message is displayed. • In the Communication status screen, the number of detected devices does not match the number of communicating devices. • The device is powered on but the blue LED is OFF.	The device is not associated with the inverter	Try to solve using these options. If problem is not solved, proceed with the next option: • Turn the device OFF and ON Re-check communication. • Turn the device OFF and then repeat the association process. Reconfiguration is not required. • From the Device Manager screen select **Remove Device** and repeat the discovery processes. Reconfiguration is required in this case. • Contact SolarEdge support.
The device is powered on and the green LED is flashing.	Error is detected.	
All the devices are not communicating		• Turn OFF the AC to the inverter. • Check that the SolarEdge Home Network Plug-in is inserted correctly inside the inverter. • Turn ON the AC to the inverter.

Symptom / Error	Possible Cause	Troubleshooting
	Network problems	Try to solve using these options. If the problem is not solved, proceed with the next option: • From the Device Manager screen select **Remove All** and repeat the discovery process for all the devices. • Contact SolarEdge support.
No hot water	The device is associated with the inverter (blue LED is on) but not delivering power to the load.	Try to solve using these options. If the problem is not solved, proceed with the next option: • Check that the circuit breaker is ON and if there is an ON/OFF manual switch in series with the device. It should be turned ON. • Check the configured schedules to verify device should deliver power. • Check that the load is connected properly. • Turn the device OFF and ON. recheck communication. • Turn the device OFF and ON and then repeat the discovery process. Reconfiguration is not required. • From the Device Manager screen select **Remove Device** and repeat the discovery process. Reconfiguration is required in this case. • Contact SolarEdge support.
The device is not functioning		1. Turn the inverter ON/OFF/P switch

Symptom / Error	Possible Cause	Troubleshooting
		to OFF. Wait 5 minutes for the capacitors to discharge.
		2. Disconnect the AC from the system by turning OFF the main circuit breakers on the distribution panel.
		⚠️ **WARNING!** ELECTRICAL SHOCK HAZARD. Do not touch uninsulated wires when the device cover is removed.
		3. Open the device screws and remove the cover.
		4. Check that all the wires are correctly and firmly connected.
		5. Return the cover and fasten the screws.

Appendix A

Supported Connection Methods

Supported - Connecting 1 x HWC to a 1 Phase load
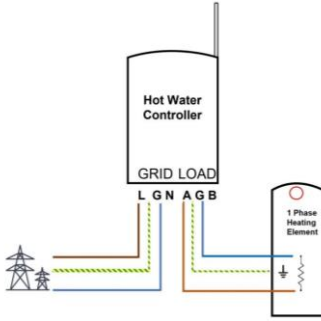
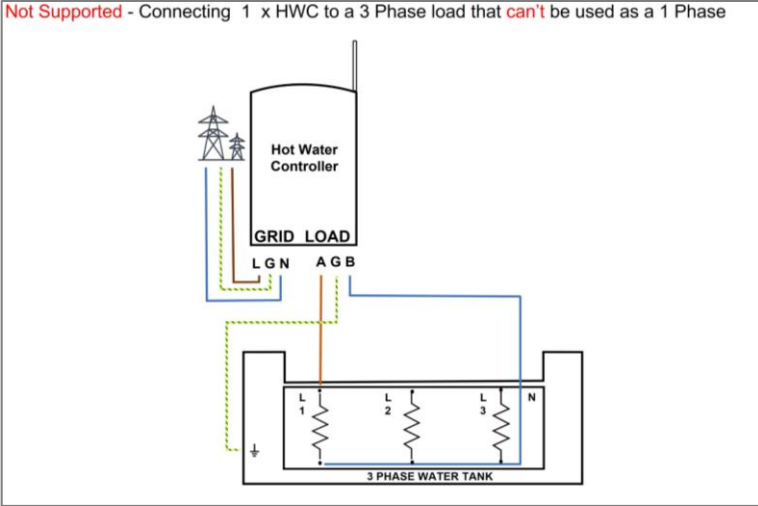Supported - Connecting 1 x HWC to a 3 Phase load that can be used as a 1 Phase
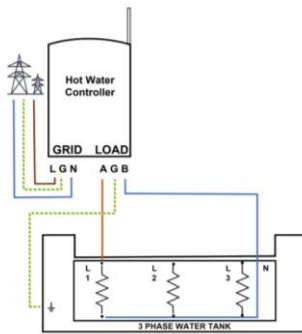
Supported - Connecting 1 x HWC to a 3 Phase load that can be used as a 1 Phase (Allowed by manufacturer)
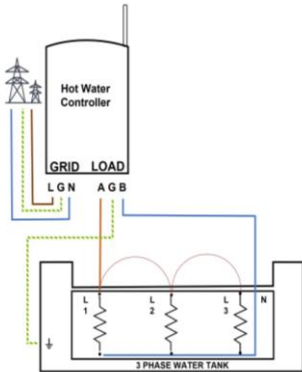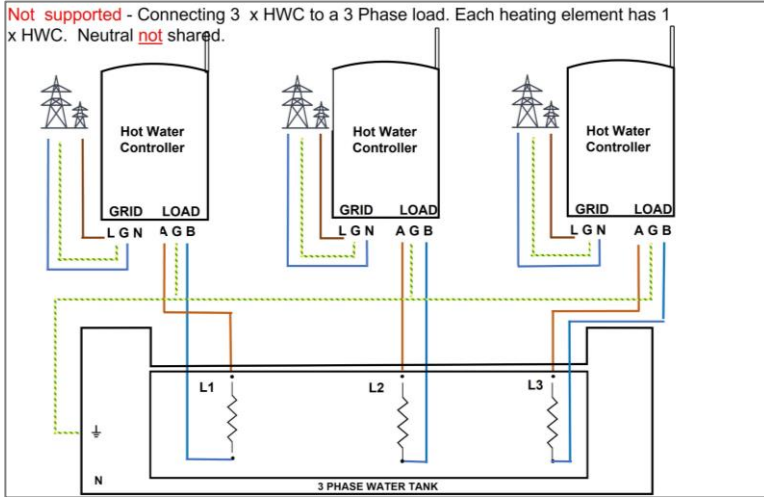
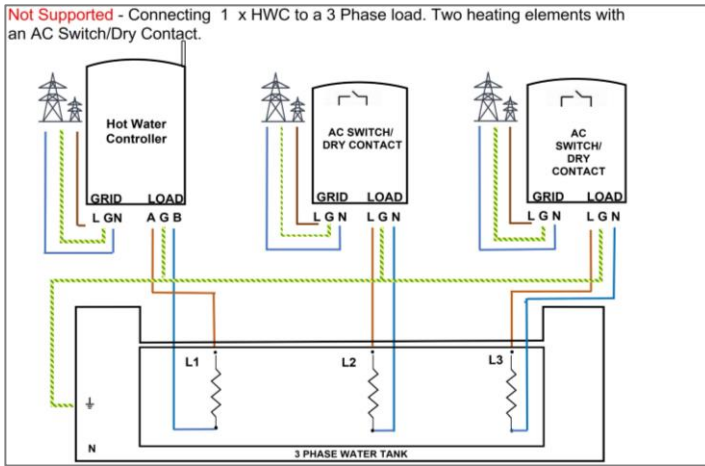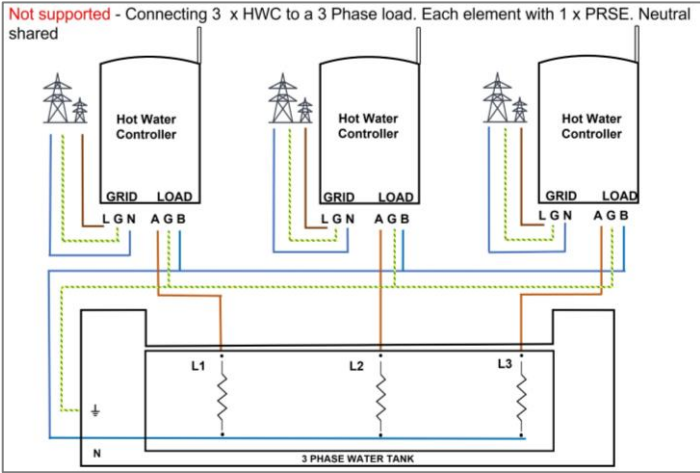# Non-Supported Connection Methods

Non-Supported Connection Methods

<table>
<tr><td>⋯</td><td>NOTE</td></tr>
</table>

Any other alternative connection methods are not allowed and will void all warranties.

Support Contact Information

If you have technical problems concerning SolarEdge products, please contact us:

https://www.solaredge.com/service/support

Before contacting support make sure you have the following information:

- Product model and serial number
- The error as indicated on the SetApp mobile application, LCD screen, on the monitoring platform, or by the LEDs, if there is such an indication.
- System configuration information to include the type, the number of modules connected, and the number and length of the strings.
- The communication method used to connect to the SolarEdge server if the site is connected.
- The product's software version displayed in the ID status screen.