QUICK INSTALL GUIDE (Model: HEMS-RM-02-ANZ)

IQ Energy Router+ for electric water heater (single-phase)

The IQ Energy Router+ for electric water heater (single-phase) includes the Enphase IQ Energy Router and a relay with an in-built energy meter functionality. The IQ Energy Router integrates Enphase solar and storage battery systems with electric water heaters, EV chargers, and other devices to maximize self-consumption and minimize costs for the overall site. Installers should use the Enphase Installer App and the Enphase Installer Portal to install and maintain the system. System owners can use the Enphase App to monitor energy and control the system.

1. Introduction

The IQ Energy Router and relay are connected to the home router directly or via an Ethernet switch. To install the IQ Energy Router and relay, read and follow all warnings and instructions in this guide. Safety warnings are listed at the end of this guide. If you do not fully understand any of the concepts, terminology, or hazards outlined in these instructions, refer the installation to a qualified electrician or installer. All installations must comply with national and local electrical codes. Professional installation is recommended.

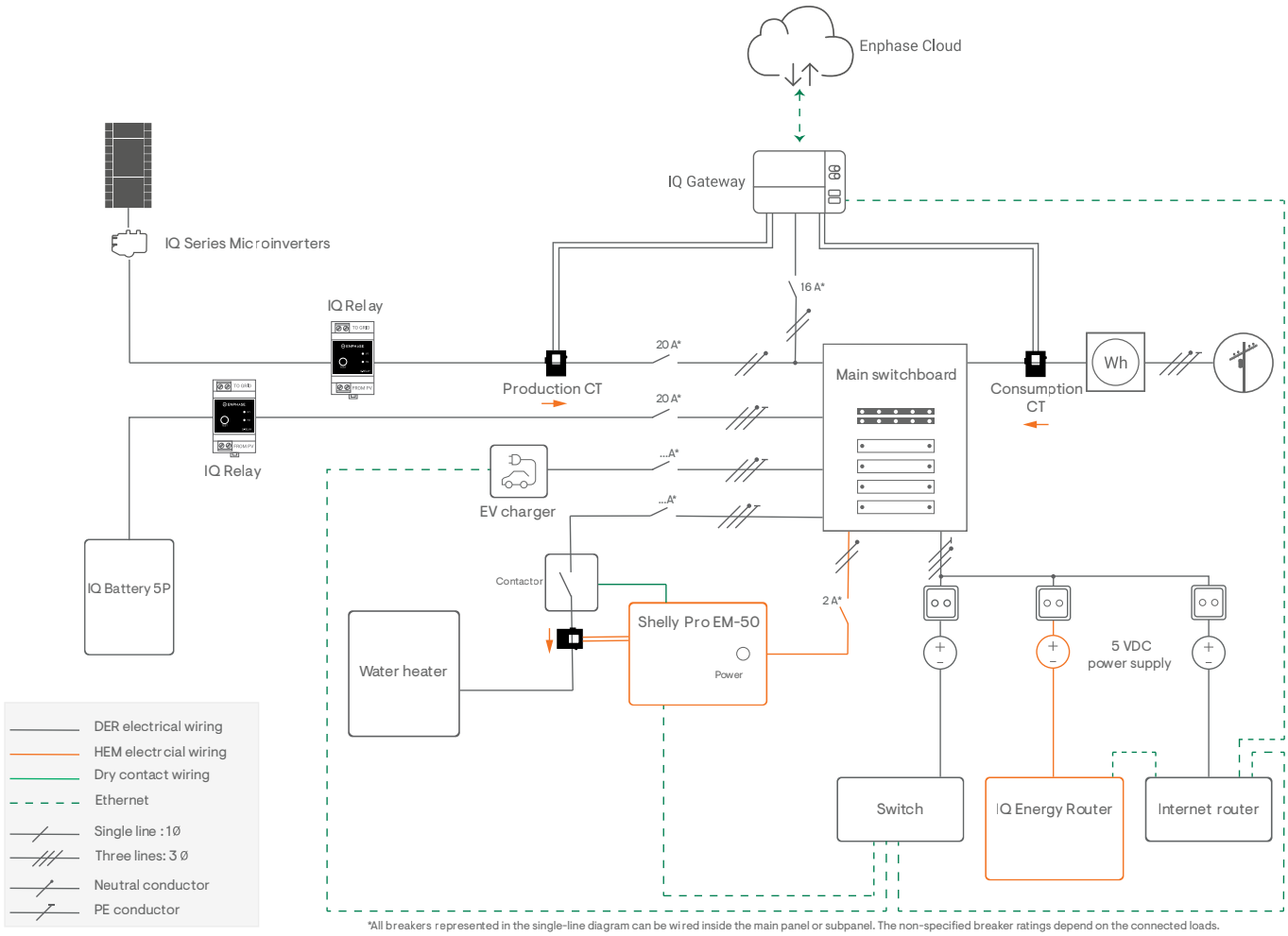

Figure 1: Single-phase water heater setup

NOTE: The IQ Energy Router+ can also be used in two-phase or three-phase sites with single-phase electric water heaters.

Applicable regions: Australia and New Zealand

2. What's in the box

The box contains the following components and accessories.

NOTE: No Ethernet switch is included in the box. Arrange one separately if required.

Component	Quantity	Accessories	Quantity
IQ Energy Router	1	CAT6 Ethernet cable with RJ45 jack on both ends	1
		DC power supply cable	1
Shelly Pro EM-50 Relay	1	Current transformer 50 A	2
CAT 5e Ethernet cable (1 m)	1	—	—

Table 1: IQ Energy Router specifications

Environmental specifications, standards, and certification	
Temperature range	10°C to 40°C
Directive	RoHS, WEEE, REACH
Flammability	UL 94
EMC	AS/NZS CISPR 32
Electrical safety	AS/NZS 62368.1:2022
Short-range radio devices compliance standard	AS/NZS 4268
Compliance	(RCM)
Max. radiated power	<10 dBm
Frequency	2405–2480 MHz

Electrical specifications	
Input voltage	5 VDC
Input current	1 A
Consumption	5 W

Mechanical specifications	
Weight	117 g
Height	27.3 mm
Width	96.1 mm
Length	96.6 mm
DC power cable	USB A to 5 VDC jack cable (2.5 mm × 5.5 mm barrel connector)
Power supply—voltage	100–240 V@ 50–60 Hz
Power supply—current	0.5 A max.
Ethernet port	RJ45
Color	White

Packaging specifications	
Weight	268 g
Height	72 mm
Width	115 mm
Length	117 mm
Included in the box	ANZ power supply, USB A to 5 VDC jack cable (2.5 mm × 5.5 mm DC plug), CAT 6 Ethernet cable with RJ45 jacks at both ends, and relay

2.1 IQ Energy Router

Figure 2: IQ Energy Router

2.2 CAT 6 Ethernet cable with RJ45 jacks on both ends

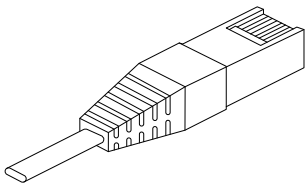

Figure 3: CAT 6 Ethernet cable with RJ45 jacks on both ends

2.3 DC power supply cable

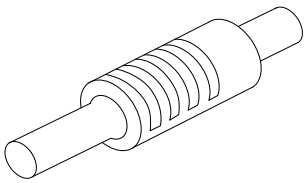

Figure 4: DC power supply cable

2.4 Shelly Pro EM-50 Relay

The Shelly Pro EM-50 Relay, with an inbuilt energy meter, communicates to the IQ Energy Router via Ethernet. The device switches the electric water heater on or off and measures its electrical energy consumption. The control signal is sent through one output relay to control a contactor to switch the electrical water heater on or off. The energy consumption of the single-phase electric water heater is measured using one of the two current transformers. For more information, see https://www.shelly.com/products/shelly-pro-em-50 or scan the following QR code.

Figure 5: Shelly Pro EM-50 Relay

2.5 CAT 5e Ethernet cable

A CAT 5e Ethernet cable can be used to connect the Shelly Pro EM-50 to an internet router or to an Ethernet switch connected to the router. This integrates the Shelly Pro EM-50 into the local network.

3. Setting up the IQ Energy Router

1. **Location:** Set up the IQ Energy Router close to the internet router or an Ethernet switch connected to the internet router.
2. **Network connectivity:** Plug one end of the CAT 6 Ethernet cable to the IQ Energy Router and the other end into the Ethernet port of your internet router or Ethernet switch.

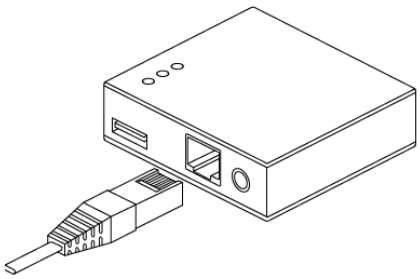

Figure 6: Plugging the Ethernet cable into the IQ Energy Router

3. **Powering the IQ Energy Router:** Connect the IQ Energy Router to an electrical outlet using the provided DC power cable.

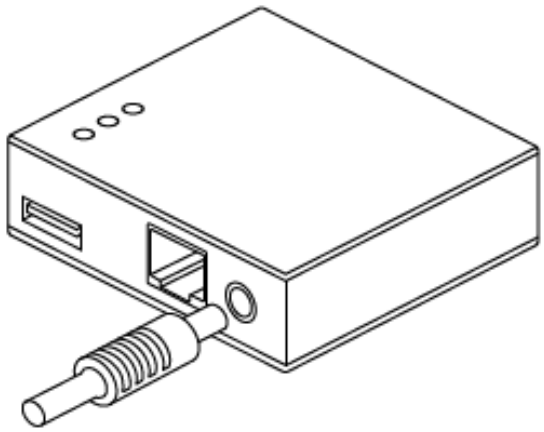

Figure 7: Plugging the DC power cable into the IQ Energy Router and the socket

4. **Monitoring IQ Energy Router:** Wait for the IQ Energy Router to boot up. This can take a few minutes. A solid green light indicates that the IQ Energy Router is ready.

   Monitor the LED pattern of the IQ Energy Router:

   - Flashing green: The IQ Energy Router is booting up.
   - Solid green: Normal operation.
   - Rapid flashing red: The IQ Energy Router is experiencing issues and is attempting to re-establish connectivity with both the internet and LAN. If the issue persists, contact https://enphase.com/contact/support.

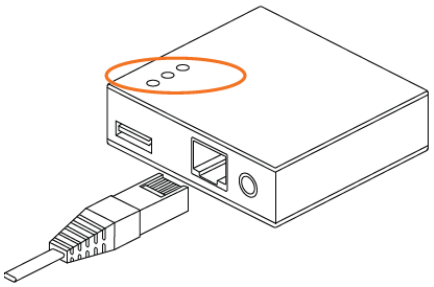

Figure 8: Monitoring the IQ Energy Router

4. Setting up the relay

Requirements

The following hardware (not included in the box) is required for installation:

- Contactor: One NO contact, manual override, 240 V, 25 A.
- Miniature circuit breaker (MCB): A C2-rated 2A can be used to protect the relay.
- Electrical cabling: To power the relay (two-wire L/N 0.5-2.5 mm^2).
- Ethernet switch (optional): 5-port switch, unmanaged. To connect the IQ Energy Router and/or relay to the local network via the Ethernet switch.

Installation

WARNING: Connect the device using solid single-core cables with high insulation heat resistance, not less than PVC T105°C.

1. **Location**

NOTE: The Ethernet cable from the home router or Ethernet switch should be accessible to the location of installation of the relay to ensure network connectivity.

The relay can be installed in the main panel if space is not a constraint, or can be installed in a separate subpanel closer to the location of the electric water heater.

2. **Mounting**: The relay is DIN rail mountable.

3. **Electrical connections**

WARNING: Ensure the circuit is not energized while working on the electrical connections. Ensure upstream breakers are open and zero voltage is verified using a multimeter.

The following wiring diagram shows the electrical connection.

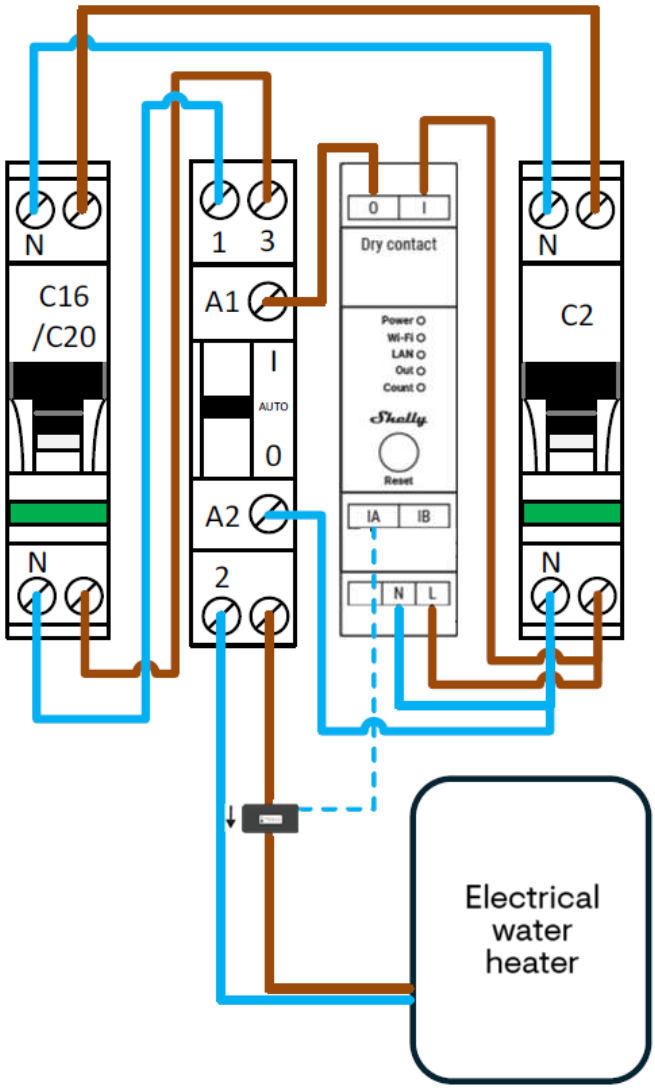

Figure 9: Shelly Pro EM-50 Relay wiring diagram

Table 2: Shelly Pro EM-50 Relay terminals and cables

Terminal	Description
0	Relay output terminal
I	Relay input terminal
IA, IB	Current transformer inputs A and B
L	Live terminal
N	Neutral terminal
LAN	RJ45 LAN connector

Cables	Description
N	Neutral cable
L1	Contactor control circuit
L2	Relay power circuit

For electrical connections, follow these steps:

a. Connect terminal N to the Neutral cable.

b. Connect terminal L to the relay power supply circuit breaker.

c. Connect the contactor control circuit to the 0 terminal.

d. Connect terminal I to the contactor circuit breaker.

e. Connect the current transformer to the IA terminal. The arrow on the current transformer must point in the direction of energy flow—that is, toward the water heater.

4. **Network connection:** Plug the Ethernet cable coming from the internet router or switch into the LAN connection of the relay, as shown in the following figure.

Figure 10: Shelly Pro EM-50 Relay Ethernet port

Monitor the LED pattern of the relay:

- Power: Red, when the device is powered on.
- Wi-Fi
  - Blue: In AP mode.
  - Red: In STA mode without Wi-Fi connection.

- Yellow: In STA mode and connected to Wi-Fi. Not connected to the Shelly Cloud, or Shelly Cloud is disabled.
- Green: In STA mode and connected to Wi-Fi and the Shelly Cloud.
- LED flashes red/blue: OTA update is in progress.

- LAN: Green, when LAN is connected.
- Out: Red, when the relay is closed.
- Count: Red flashes when energy is measured according to the relay settings.

5. Setting up the contactor

A day-night contactor is often present in electric water heater installations. After wiring the relay to the contactor, ensure that the contactor is set to the relay-controlled position (often marked as **AUTO**; see the following figure). This allows the contactor to open or close the water heater circuit, turning the water heater on or off based on the signal from the relay. Requirements for the contactor: One NO contact, manual override, 240 V, 25 A.

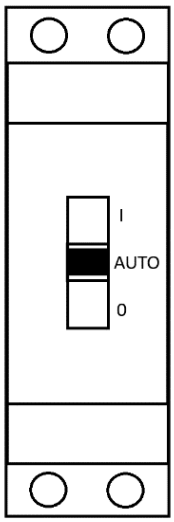

Figure 11: Illustration of a contactor

NOTE: Keep in mind that the water heater is not always heating water when the contactor is closed. If the set temperature has already been reached, the water heater's thermostat may have automatically opened the power circuit, shutting off the heating cycle. The thermostat will close the power circuit again when the temperature falls below the set level.

6. Controlling the water heater thermostat

1. Ensure that the water heater thermostat is set to at least 60°C to maintain optimal water temperature and prevent Legionella bacteria growth.
2. The thermostat is typically located behind an access panel on the side or bottom of the water heater. Refer to the water heater manual for its exact location and instructions on how to access it.
3. Thermostats often do not display temperature values but instead have markings or numbers, as shown in the following figure. These numbers correspond to specific temperature values (for example, 1 = 15°C, 2 = 30°C, 3 = 45°C, 4 = 60°C, 5 = 75°C). Refer to the water heater manual to understand the markings on the thermostat.

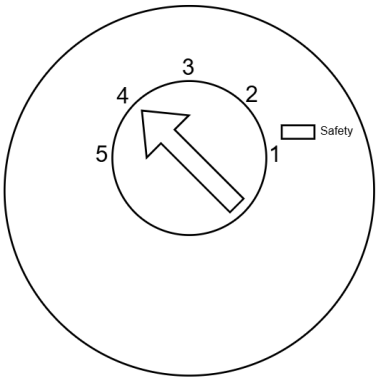

Figure 12: Illustration of a thermostat

4. Ensure the thermostat is set to at least 60°C or higher.

7. Commissioning the devices in the Enphase Installer App

Go to the Enphase Installer App and follow the steps to commission the IQ Energy Router and relay.

8. Safety

Safety and advisory symbols

DANGER: This indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

WARNING: This indicates a situation where failure to follow instructions may be a safety hazard or cause equipment malfunction. Use extreme caution and follow the instructions carefully.

NOTE: This indicates information particularly important for optimal system operation. Follow the instructions carefully.

Safety instructions

DANGER: Risk of electric shock. Risk of fire. Do not attempt to repair the IQ Energy Router or relay. They contain no user-serviceable parts. Tampering with or dismantling the IQ Energy Router or relay will void the warranty. If the equipment fails, contact https://enphase.com/contact/support for assistance or replacement equipment.

DANGER: Risk of electric shock. Do not use the IQ Energy Router or relay in a manner not specified by the manufacturer. Doing so may cause death or injury to persons or damage to equipment.

DANGER: Risk of electric shock. Risk of fire. Only qualified personnel should troubleshoot, install, or add parts to the IQ Energy Router.

DANGER: Risk of electric shock. All sources to the equipment being serviced must be disconnected external to the device. In particular, the storage system may energize conductors, so storage circuits must ALWAYS be isolated via a circuit breaker or

disconnected before working on any portion of the system.

DANGER: Risk of electric shock. Be aware that the installation of this equipment includes the risk of electric shock. If you wire the relay at the subpanel, always de-energize the subpanel before beginning.

DANGER: Risk of electric shock. Risk of fire. Only use electrical system components approved for wet locations.

DANGER: Risk of electric shock. Risk of fire. Ensure that all wiring is correct and that none of the wires are pinched or damaged.

DANGER: Risk of electric shock. Risk of fire. Do not work alone. Someone should be in the range of your voice or close enough to come to your aid when you work with or near electrical equipment. Remove rings, bracelets, necklaces, watches, etc. when working with batteries, photovoltaic modules, or other electrical equipment.

WARNING: Before installing or using the IQ Energy Router or relay, read all instructions and cautionary markings in the technical description and on the components.

NOTE: Using unapproved attachments or accessories could result in damage or injury.

NOTE: Perform all electrical installations in accordance with all national and local electrical codes.

Environmental Protection ELECTRONIC DEVICE: DO NOT THROW AWAY. Waste electrical products should not be disposed of with household waste. Proper disposal is required. Refer to your local codes for disposal requirements.

Compliance with Australian and New Zealand directives

This product complies with the Regulatory Compliance Mark (RCM) and can be used in Australia and New Zealand without any restrictions. The RCM confirmation of conformity is available at the following internet address:

Importer:
Enphase Energy Australia PTY. LTD.
88 Market Street, South Melbourne, VIC 3205
VIC 3205

Enphase Energy New Zealand LTD.
1 Treffers Road, Wigram, Christchurch

Manufacturer:
Centrica Hive Limited
Millstream, Maidenhead, Berkshire, SL4 5GD, UK

https://enphase.com/en-au/installers/resources/documentation/home-energy-management

9. Revision history

Revision	Date	Description
140-01022-01	September 2025	Initial release.