

User and safety guide

Shelly Pro 3EM-3CT63

A DIN rail mountable single or three-phase energy meter

Safety information

For safe and proper use, read this guide, and any other documents accompanying this product. Keep them for future reference. Failure to follow the installation procedures can lead to malfunction, danger to health and life, violation of law, and/or refusal of legal and commercial guarantees (if any). Shelly Europe Ltd. is not responsible for any loss or damage in case of incorrect installation or improper operation of this device due to failure to follow the user and safety instructions in this guide.

⚠ This sign indicates safety information.

📌 This sign indicates an important note.

⚠ **WARNING!** Risk of electric shock. Installation of the Device to the power grid must be performed carefully by a qualified electrician.

⚠ **WARNING!** Before installing the Device, turn the circuit breakers off. Use a suitable test device to make sure there is no voltage on the wires you want to connect. When you are sure that there is no voltage, proceed to the installation.

⚠ **WARNING!** Before making any changes to the connections, ensure there is no voltage present at the Device terminals.

⚠ **CAUTION!** Plug in or unplug the LAN cable only when the Device is powered off. The parts of the LAN cable that may be touched when plugging in or unplugging it, must not be metallic.

⚠ **CAUTION!** Connect the Device only to a power grid and appliances that comply with all applicable regulations. A short circuit in the power grid or any appliance connected to the Device can cause fire, property damage, and electric shock.

⚠ **CAUTION!** Connect the Device only in the way shown in these instructions. Any other method could cause damage and/or injury.

⚠ **CAUTION!** The Device and the appliances connected to it, must be secured by a cable protection switch in accordance with EN60898-1 (tripping characteristic B or C, max. 16A rated current, min. 6 kA interrupting rating, energy limiting class 3).

⚠ **CAUTION!** Do not use the Device if it shows any sign of damage or defect.

⚠ **CAUTION!** Do not attempt to repair the Device yourself.

⚠ **CAUTION!** The Device is intended only for indoor use.

⚠ **CAUTION!** Keep the Device away from dirt and moisture.

⚠ **CAUTION!** Do not allow children to play with the buttons/switches connected to the Device. Keep the devices (mobile phones, tablets, PCs) for remote control of Shelly away from children.

Product description

Shelly Pro 3EM-3CT63 (the Device) is a DIN rail mountable single or three-phase energy meter. It reports accumulated energy as well as instantaneous voltage, current, active, and apparent power per phase/channel in real time. It stores data in non-volatile memory that can be retrieved for a period of up to 60 days in 1-minute intervals.

The Device has an embedded web interface used to monitor, control, and adjust the Device. The web interface is accessible at <http://192.168.33.1> when connected directly to the Device access point or at its IP address when you and the Device are connected to the same network.

The Device can access and interact with other smart devices or automation systems if they are in the same network infrastructure. Shelly Europe Ltd. provides APIs for the devices, their integration, and cloud control. For more information, visit <https://shelly-api-docs.shelly.cloud>.

The Device comes with factory-installed firmware. To keep it updated and secure, Shelly Europe Ltd. provides the latest firmware updates free of charge. Access the updates through either the embedded web interface or the Shelly Smart Control mobile application. Installation of firmware updates is the user's responsibility. Shelly Europe Ltd. shall not be liable for any lack of conformity of the Device caused by the failure of the user to install the available updates in a timely manner.

Wiring diagram

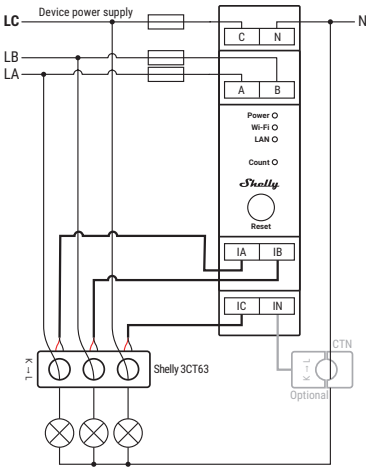


Fig. 1: Three-phase setup wiring diagram

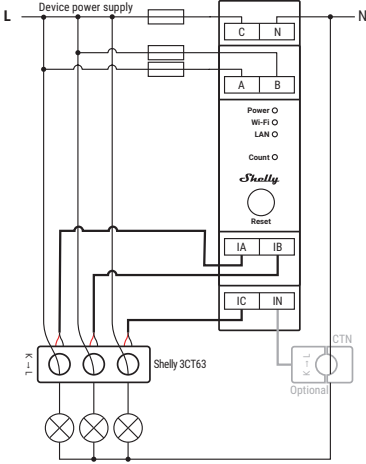


Fig. 2: Single-phase setup wiring diagram

Legend

Device terminals

- **A:** Phase A terminal
- **B:** Phase B terminal
- **C:** Phase C terminal
- **N:** Neutral terminal
- **IA:** Phase A current transformer input
- **IB:** Phase B current transformer input
- **IC:** Phase C current transformer input
- **IN:** Neutral current transformer input

Wires

- **LA:** Phase A live (110-240 V~) wire
- **LB:** Phase B live (110-240 V~) wire
- **LC:** Phase C live (110-240 V~) wire
- **N:** Neutral wire

Current transformers

- **3CT63:** 3-phase current transformer/63A
- **CTN:** Neutral current transformer (optional, not included)
- **K→L:** Direction of the measured energy flow

Installation instructions

🔧 To connect the Device, we recommend using solid single-core wires or stranded wires with ferrules. The wires should have insulation with increased heat resistance, not less than PVC T105°C (221°F).

🔧 When connecting wires to the Device terminals, consider the specified conductor cross section and stripped length. Do not connect multiple wires into a single terminal.

🔧 For security reasons, after you successfully connect the Device to the local Wi-Fi network, we recommend that you disable or password-protect the Device AP (Access Point).

Connecting the Pro 3EM-3CT63 to the line wires

1. Connect the LA, LB, and LC phase wires to the corresponding Device A, B, and C phase input terminals as shown in Fig. 1.

For a single-phase setup, connect the Live wire (L) to all phase input terminals (A, B, and C) as shown in Fig. 2.

🔧 The Device is powered through its C terminal.

2. Connect the Neutral wire to the N input terminal.

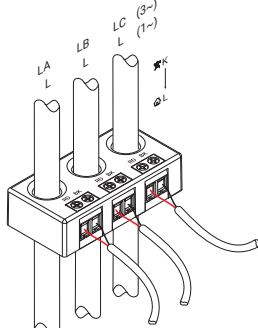


Fig. 3 Shelly 3CT63 installation overview

Installing the Shelly 3CT63 current transformer

1. Connect the stripped ends of the 3 signal cables to the corresponding Shelly 3CT63 terminals following the RD-BK (Red-Black) color marking as shown in Fig. 3.

2. Plug the signal cable connectors to the Shelly Pro 3EM-3CT63 current input (IA, IB, and IC) terminals.

3. Thread the LA, LB, and LC phase wires, which carry the currents you want to measure, through the conductor apertures of Shelly 3CT63. For a single-phase setup, thread the Live wires (L) through the conductor apertures (Fig. 3).

🔧 Make sure that each phase wire goes through the correct aperture by strictly following the wiring diagram (Fig. 1). For example, phase wire LA must pass through the coil connected to the Device IA input terminal.

🔧 Follow the K→L marking on the current transformer for correct energy-flow measurement.

LED indications

- Power (red): Red light indicator will be on if power supply is connected.
- Wi-Fi (varies):
 - Blue light if in AP mode.
 - Red light if in STA mode, and not connected to a Wi-Fi network.
 - Yellow light if in STA mode, and connected to a Wi-Fi network. Not connected to Shelly Cloud or Shelly Cloud disabled.
 - Green light if in STA mode, and connected to a Wi-Fi network and the Shelly Cloud.
- The LED will be flashing Red/Blue if OTA update is in progress.
- LAN (green): Green light indicator will be on if LAN is connected.
- Count: Red light will be flashing when the Device is measuring energy according to settings with frequency dependent on the energy flowing through the measured circuit.

Control button

- Press and hold for 5 sec for AP mode.
- Press and hold for 10 sec for factory reset

Specifications

Physical

- Size (HxWxD):
 - Shelly Pro 3EM-3CT63: 94x19x69 mm / 3.70x0.75x2.71 in
 - Shelly 3CT63: 14x54x26 mm / 0.55x2.12x1.02 in
- Weight:
 - Shelly Pro 3EM-3CT63: 62 g / 2.19 oz
 - Shelly 3CT63: 32 g / 1.12 oz
- CT aperture: Ø9 mm / Ø0.35 in
- Wire diameter: 6 mm / 10 AWG
- Screw terminals max torque: 0.4 Nm / 3.5 lbin
- Conductor cross section:
 - Shelly Pro 3EM-3CT63: 0.5 to 2.5 mm² / 20 to 14 AWG (solid, stranded, and bootlace ferrules)
 - Shelly 3CT63: 0.2 to 2.5 mm² / 24 to 14 AWG (solid, stranded, and bootlace ferrules)
- Conductor stripped length: 6 to 7 mm / 0.24 to 0.28 in
- Mounting:
 - Shelly Pro 3EM-3CT63: DIN rail
 - Shelly 3CT63: Freestanding on phase wires
- Shell material: Plastic
- Shell color: White

Environmental

- Ambient working temperature: -20°C to 40°C / -5°F to 105°F
- Humidity: 30% to 70% RH
- Max. altitude: 2000 m / 6562 ft

Electrical

- Power supply: 100 - 260 V~ 50/60 Hz
- Power consumption: < 3 W
- Shelly 3CT63 electrical strength: 1000 V~, 60 sec

Sensors, meters

- Internal-temperature sensor: Yes
- Voltmeters (RMS for each phase): 100 - 260 V
- Voltmeters accuracy: ±1 %
- Ammeters (RMS via CT for each phase and the Neutral): 0 - 63 A
- Compatible CT: 3CT63
- Ammeters accuracy:
 - ±1 % (2 - 63 A),
 - ±2 % (1 - 2 A),
 - ±5 % (0 - 1 A)
- Power and energy meters:
 - Active and apparent power
 - Active and apparent energy
 - Power factor
 - Fundamental active and fundamental reactive energy
- Channel-to-channel calibration minimum load: 500 W per channel
- No load threshold: 30 VA per channel
- Measurement data storage: At least 60 days of 1 min data resolution
- Data export:
 - CSV for PQ recorded values
 - JSON format export through RPC

Radio

Wi-Fi

- RF band: 2400 - 2495 MHz
- Max. RF power: < 20 dBm
- Protocol: 802.11 b/g/n
- Range: Up to 50 m / 165 ft outdoors, up to 30 m / 99 ft indoors (depending on local conditions)

Bluetooth

- Protocol: 4.2
- RF band: 2400-2483.5 MHz
- Max. RF power: <4 dBm
- Range: Up to 30 m / 100 ft outdoors, up to 10 m / 33 ft indoors (depending on local conditions)

Microcontroller unit

- CPU: ESP32-D0WDQ6
- Flash: 16 MB

Firmware capabilities

- Webhooks (URL actions): 20 with 5 URLs per hook
- Wi-Fi range extender: Yes
- BLE Gateway Yes
- Scripting: Yes
- MQTT: Yes
- Encryption: Yes

Shelly Cloud inclusion

The Device can be monitored, controlled, and set up through our Shelly Cloud home automation service. You can use the service through either our Android, iOS, or Harmony OS mobile application or through any internet browser at <https://control.shelly.cloud/>.

If you choose to use the Device with the application and Shelly Cloud service, you can find instructions on how to connect the Device to the Cloud and control it from the Shelly app in the application guide: <https://shelly.link/app-guide>.

The Shelly mobile application and Shelly Cloud service are not conditions for the Device to function properly. This Device can be used stand-alone or with various other home automation platforms.

Troubleshooting

In case you encounter problems with the installation or operation of the Device, check its knowledge base page:

https://shelly.link/pro_3EM-3CT63

Declaration of Conformity

Hereby, Shelly Europe Ltd. declares that the radio equipment type Shelly Pro 3EM-3CT63 is in compliance with Directive 2014/53/EU, 2014/35/EU, 2014/30/EU, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address: https://shelly.link/pro_3EM-3CT63_DoC

Disposal and recycling

This refers to the waste of electrical and electronic equipment. It is applicable in the EU, US and other countries to collect waste separately.

🗑 This symbol on the Device or in the accompanying literature indicates that it should not be disposed of in the daily waste. The Device must be recycled to avoid possible damage to the environment or human health from uncontrolled waste disposal and to promote the reuse of materials and resources.

It is your responsibility to dispose of the Device separately from general household waste when it is already unusable.

Manufacturer: Shelly Europe Ltd.

Address: 103 Cherni Vrah Blvd., 1407 Sofia, Bulgaria

Tel.: +359 2 988 7435

E-mail: support@shelly.cloud

Official website: <https://www.shelly.com>

Changes in contact information are published by the Manufacturer on the official website.

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