Shelly 3EM-63 Gen3

Device image(s)

Device identification

- Name:
  - **Shelly 3EM-63W Gen3** (Wire model)
  - **Shelly 3EM-63T Gen3** (Flat terminal model)
- Model: **S3EM-003CXCEU63**
- Device SSID: **Shelly3EM63G3-XXXXXXXXXXXX**
- BLE model ID: **0x1026**

Short description

Shelly 3EM-63 Gen3 (The Device) is a compact energy meter designed to monitor either a three-phase system or three independent single-phase circuits. It can work standalone in a local Wi-Fi network, or it can also be operated through cloud home automation services through MQTT, HTTP, and WebSocket. All inbound connections support TLS.

The Device reports accumulated energy as well as instantaneous voltage, current, active, and apparent power per phase in real time. It stores the data in non-volatile memory that can be retrieved for a period of up to 7 days in 1-minute intervals.

The Device has a real-time clock to keep the correct time if the connection to an SNTP server is lost.

The Device can be accessed, set up, and monitored remotely by the User, as well as the Device can access and communicate with an automation system, as long as they are in the same network infrastructure.

The Device has an embedded Web Interface which can be used to monitor and control the device, as well as adjust its settings.

Main features

- 4-quadrant measurement
- On-MCB mounting: above[1] or below the circuit breaker
- Multiple connection types: three phase or single phase installations
- Non-contact current measurements through current transformers
- Phase sequence error detection[2] (option)
- No load threshold[3]
- Optical pulse indication of energy usage
- Real-time clock: stored data keeps correct timestamps even if the internet connection is interrupted.[4]
- Data logs: up to 7 days of data stored on the device for later retrieval
- Accuracy Class B (IEC 62053-21)
- Photovoltaic ready

[1] Shelly 3EM-63T Gen3 only.

[2] The Device has phase sequence error detection circuits. This detection works on phase voltages and considers only the zero crossings. The regular succession of these zero-crossing events is Phase A followed by Phase B followed by Phase C. If the sequence of zero-crossing events is, instead, Phase A followed by Phase C followed by Phase B, then a `phase_sequence` error is reported when the *Phase sequence error detection* option is enabled.

[3] In case the total load for the three channels drops below 30 VA per channel the measured power level will be displayed, but no consumed energy will be accumulated to the energy statistics and a `No load threshold` notification will be displayed in the Device web interface and the mobile application.

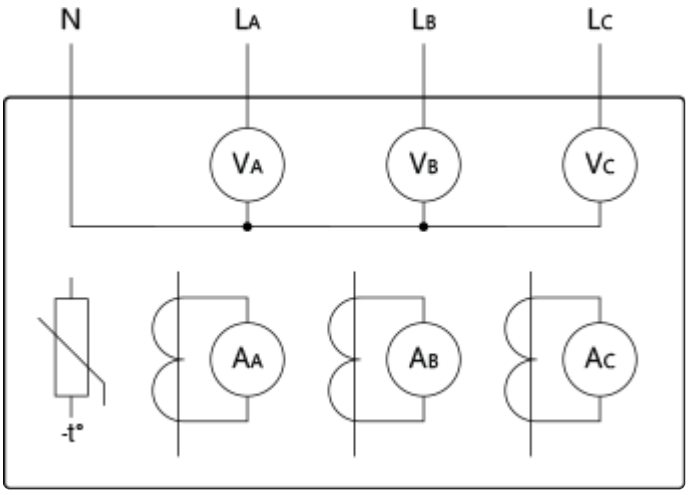
[4] Shelly devices rely on internet connection for device clock. In case of installation network requirement or service interruption, the built-in clock provides correct timestamps for records.

Use cases

- **Power Consumption Monitoring**: Monitor your appliances' power consumption in real time. This information can be valuable for understanding energy usage patterns and making informed decisions to reduce consumption.
- **Energy Efficiency Optimization**: Identify electrical energy consumption patterns and optimize electricity usage.
- **Appliance Health Check**: Monitor the power usage of individual appliances to assess their health and performance over time. Sudden spikes or changes in power consumption may indicate issues with the appliance.
- **Cost Management**: Understanding your power consumption is key to managing your electricity expenses. With Shelly 3EM-63 Gen3, you can estimate the cost of running specific devices, allowing you to make informed decisions and reduce your energy bills.
- **Space-efficient installation**: Save space by mounting the smart energy meter right above or under a DIN-rail mounted circuit breaker.
- **Remote Monitoring**: Shelly 3EM-63 Gen3 supports publishing data to Shelly Cloud or other cloud-based data collection and storage systems. This allows you to monitor power consumption even when you're away from home.
- **Local Monitoring**: Shelly 3EM-63 Gen3, like the other Shelly Wi-Fi devices, offers local-only monitoring and automation. You can access stored energy consumption records directly from the device web interface, making it convenient to track your power usage. You can

also set up local automation based on instantaneous power consumption or energy consumption over a period of time.

Simplified internal schematics



Device electrical interfaces

- 3 Live inputs: **LA**, **LB**, **LC**
  - Flat terminals for Shelly 3EM-63T Gen3
  - Color-coded wires for Shelly 3EM-63W Gen3
- 1 Neutral input wire: **N**

Connectivity

- Wi-Fi
- Bluetooth

Safety function

- Internal temperature sensing and reporting

Supported load types

- Resistive (incandescent bulbs, heating devices)
- Capacitive (capacitor banks, electronic equipment, motor start capacitors)
- Inductive (LED light drivers, transformers, fans, refrigerators, air-conditioners)

User interface

Inputs

- One tactile dome button
    - Press and hold for 5 sec to activate Device AP.
    - Press and hold for 10 sec to factory reset.

Outputs

- LED indication
    - 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.
    - 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.

Specifications

Quantity	Value
Physical	
Size (HxWxD):	• 21x54x42 mm / 0.83x2.13x1.65 in (Shelly 3EM-63W Gen3, without the wires) • 31x54x42 mm / 1.22x2.13x1.65 in (Shelly 3EM-63T Gen3, without the wire)
Wires length:	260 mm (including the flat terminal)
Weight:	• 58 g / 2.05 oz (Shelly 3EM-63W Gen3, including the wires) • 52 g / 1.83 oz (Shelly 3EM-63T Gen3, including the wire)
Conductor aperture:	Ø8 mm / Ø0.3 in
Mounting:	Above or under DIN-rail mounted circuit breakers
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:	220-240 V~ 50/60 Hz (between LA and N)
Power consumption:	< 2 W

External protection:	63 A, tripping characteristic B or C, 6 kA interrupting rating, Energy limiting class 3
Sensors, meters	
Internal-temperature sensor:	Yes
Voltmeters (RMS for each phase):	220-240 V~ 50/60 Hz
Voltmeters accuracy:	better than ±1%
Ammeters (RMS via integrated CT for each phase):	0 - 63 A (130 A saturation)
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
No load threshold:	30 VA
Measurement data storage:	At least 7 days of 1 min data resolution
Data export:	• CSV for PQ recorded values • JSON format export through RPC
Radio	
Wi-Fi	

Protocol:	802.11 b/g/n
RF band:	2401 - 2483 MHz
Max. RF power:	< 20 dBm
Range:	Up to 30 m / 100 ft indoors and 50 m / 160 ft outdoors (Depends on local conditions)
Bluetooth	
Protocol:	4.2
RF band:	2400 - 2483.5 MHz
Max. RF power:	< 4 dBm
Range:	Up to 10 m / 33 ft indoors and 30 m / 100 ft outdoors (Depends on local conditions)
Microcontroller unit	
CPU:	ESP-Shelly-C38F
Flash:	8 MB
Firmware capabilities	
Schedules:	20
Webhooks (URL actions):	20 with 5 URLs per hook
Scripting:	Yes
MQTT:	Yes

Troubleshooting

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