

Manual: QA Shelly 3EM

Integration of the Shelly 3EM three-phase electricity meter via the local network — measurement of power, voltage, current, frequency and energy with optional child devices.

Introduction

QA Shelly 3EM provides communication with the **Shelly 3EM** three-phase electricity meter (including the **Shelly 3EM-63**, **Shelly Pro 3EM** and **Shelly Pro 3EM-63** variants) and makes its measured values available in the controller. The application reads voltage, current, active / apparent power, power factor, frequency and active and reactive energy — per phase and in total. According to the user's selection, it automatically creates child devices for the selected quantities so that the data are available to other QA applications, scenes and the unit's logic.

The application communicates with the meter exclusively locally via the local network (HTTP API of the Shelly device). The manufacturer's cloud and remote communication are not used. No converter is needed.

The application cooperates with **Mervis SCADA** for visualisation and with other QA applications of the Energy Management family — for consumption and PV surplus control, sub-metering of major appliances (e.g. wallbox, heat pump), metering of rental units and more.

Upstream and downstream applications

Upstream applications

The application does not require any upstream QA application. The prerequisite for operation is a **Shelly 3EM** meter connected to the same local network as the controller.

Downstream applications

Optional:

- **QA Consumption Control** — use of the measured values for energy management (PV surplus, load control, appliance priorities).
- Sub-metering of individual major appliances (wallbox, heat pump, air conditioning, other equipment) or of rental units — the measured data serve as a basis for control and evaluation in other QA applications.

The measured values can also be used by other QA applications of the SHE ecosystem or by the user's own logic in the unit.

Installation and initial setup of the QA

Installation

Purchase the application in the Smart Home and Energy e-shop (<https://eshop.smarthomeenergy.cz>). After the purchase you receive an e-mail with a link to the activation form, in which you choose one of the two installation methods:

- **Installation via the SHE Installation Application (recommended)** — the activation form provides a link to download the Installation Application.
 - Install it into the unit; it then automatically installs the purchased licences.
 - It provides automatic updates of all SHE applications and easy licence management (requires the “superuser” credentials for the unit).
 - See the separate “Installation Application” manual for details.
- **Standalone installation file** — the activation form provides links to download an encrypted *.fqax file bound to the entered unit S/N.
 - Install the file manually into the unit according to the unit manufacturer’s instructions (logged in as “superuser”).
 - This option does not allow automatic updates.

To verify the function before purchase, a free **TRIAL** version for 2 days is available — download it from the product page in the e-shop.

After a successful installation, the **Meter** tile, the **Values overview** and **Installation** cards and the tiles of the selected child devices (e.g. **Total** for the total active power) appear on the unit desktop.

Operating prerequisites

- A Shelly 3EM, Shelly 3EM-63, Shelly Pro 3EM or Shelly Pro 3EM-63 meter, wired and connected to the local network (Wi-Fi or LAN) according to the manufacturer’s instructions.
- The meter and the controller are in the **same local network (LAN)**.
- **Authentication for local access is disabled** on the meter — in the meter’s web interface (IP address in the browser) **Settings → Authentication**.
 - With authentication enabled, the application does not connect to the meter.
 - Do not make the meter’s local interface accessible from the internet. Cloud connection and remote communication are not supported.
- A free slot for uploading the application in the controller.

Opening the application control card

To open the application card in a web browser, move the cursor over the tile (**Meter**, **Values overview**, **Installation**) and click the **eye** icon in its top-right corner. The card detail opens.

Warning: Not all cards and tiles are displayed to all users. Each user selects which cards and tiles are displayed on the Display Settings card (sheViewControl application) – levels **SHORT**, **ADVANCED** and **ADMIN**. If you cannot see a described card, check the settings on this card.

User settings

For QA Shelly 3EM, the following tiles and cards are displayed on the unit desktop:

- **Meter** — the main tile of the application; displays the total active energy (kWh) and, after opening, a summary of the measured values.
- **Values overview** — information card with a clear table of all measured quantities per phase.
- **Installation** — connection to the meter in the network, selection of child devices, child device type and setting of the reading periods.
- Child tiles (e.g. **Total** with the total active power in W) — displayed according to the selection in the **CHILDREN CHOOSING** field on the **Installation** card.

Initial setup procedure

1. Connect the Shelly meter to the local network.

- In the meter's web interface, disable authentication (**Settings** → **Authentication**).
- We recommend enabling automatic firmware updates of the meter.

2. "Installation" card

- Scroll down to the **IP Address Settings** section.
- Use the **SEARCH NETWORK** button to find the meter and select it in the **MAC ADDRESS** field (with several meters, compare the MAC addresses).
- Then go back up and check that the device data (**Device ID**, **Model**) have been loaded in the **Module Settings** section.

3. Set the child devices and the reading periods.

- In the **CHILDREN CHOOSING** field, select the quantities you want to have as separate tiles.
- Choose the child device type (**Production** / **Consumption**).
- Set the reading periods.

4. Press **SAVE** and wait until **Run status** changes to **Running**.

5. Compare the values read on the **Values overview** card with the data in the Shelly app (the same quantity and phase; due to the different reading times, the instantaneous values may differ slightly).

The **Meter** tile and the **Values overview** card are for information only and require no further configuration.

"Installation" card

The card is used to connect the application to the meter, select the child devices and set the reading periods.

 **Warning:** When saving settings, always wait until Run status changes to Running. Do not press SAVE before that. Pressing it repeatedly before the restart is complete may cause configuration errors.

Module Settings

Data loaded from the meter after selecting it in the network:

- **Device name**,
- **Device ID** (e.g. shelly3em63g3-...),
- **APP**,
- **Model** (e.g. S3EM-003CXCEU63),
- **GEN** (Shelly device generation),
- **Profile** (e.g. triphase — three-phase measurement).

Used to check that the correct device is selected. The ID number in the card header is the device identifier in the unit and is not related to the meter's **Device ID**.

Meter

- **CHILDREN CHOOSING** — selection of the quantities to be displayed in the unit as separate child tiles.
 - Options: **Voltage Phase**, **Current Phase**, **Current Total**, **Power Active Phase**, **Power Active Total**, **Frequency**, **Energy Active Phase** and **Energy Total Active**.
 - A child device is a separate subordinate device with its own tile — select e.g. **Power Active Total** if you want to monitor the power directly on the desktop or use it in scenes and other applications.
 - Select only the quantities you really need; the field shows the number of selected items (e.g. 1 Selected).
- **CHILD TYPE ENERGY TOTAL** — choice of the type of the total energy child device: **Production** or **Consumption** (depending on what the meter measures — e.g. photovoltaic production or wallbox consumption).
- **CHILD TYPE POWER** — the same for the power child device: **Production** or **Consumption**.

Reading periods setting

A separate reading interval from the meter can be selected for each group of values (**Disabled**, 5s, 10s, 15s, 20s, 30s, 60s, 120s, 5m or 10m; 30s means reading once every 30 seconds, 10m once every 10 minutes):

- **READING PERIOD-POWER** — interval for reading the power values (e.g. 30s).
- **READING PERIOD-CURRENT** — interval for reading the current values (e.g. 60s).
- **READING PERIOD-VOLTAGE** — interval for reading the voltage, power factor and frequency (e.g. 60s).
- **READING PERIOD-ENERGY** — interval for reading the energy values (e.g. 60s).
- For fast-changing quantities (power, current), typically set a shorter reading interval than for slower-changing quantities (energy).
- Shorter intervals increase the load on the network and the unit; if the communication is unstable, extend the intervals.
- With the **Disabled** option you switch off reading of the given group — do not use it for a group whose values you need in scenes or other applications.

IP Address Settings

- **IP Address** — IP address of the meter in the unit's network.
- **MAC Address** — MAC address of the meter.
- **MAC ADDRESS (Select item)** — selection of the meter from the list of devices found in the network. Verify the correct item by the MAC address shown in the Shelly app or on the device label.
- **SEARCH NETWORK** — starts the search for available Shelly devices in the unit's network. After the search is complete, choose the meter in the **MAC ADDRESS** field.

The **Run status** field displays the application run state (e.g. Running). After completing the settings, save the configuration with the **SAVE** button and wait until **Run status** changes to **Running**. The application version is shown at the bottom of the card (e.g. sheShellyMeter3EMLocal 1.01.07).

"Meter" tile

The main tile of the application displays the total active energy of the meter (kWh). After opening the card, the following are displayed:

- **Value** — total active energy (e.g. 780.1 kWh),
- current total active power and the power values of the individual phases (W),
- total current and the currents of the individual phases (A),
- voltage of the individual phases (V),
- frequency of the individual phases (Hz),
- active energy in total and per individual phase (kWh),
- **Update** — date and time of the last reading.

The values on the card have no labels — you distinguish them by their units (W power, A current, V voltage, Hz frequency, kWh energy); for triplets of values, these are the phases **L1**, **L2** and **L3**. To check a specific phase, use the **Values overview** card. The card is for information only and requires no settings.

Child tiles

For each quantity selected in the **CHILDREN CHOOSING** field, a separate tile with the current value is displayed on the desktop (e.g. **Total** — total active power in W).

- The tiles provide a quick overview on the unit desktop and are used in the logic of other QA applications and scenes.
- A value of 0 W on its own does not confirm a working connection — also check the voltage and the **Update** time on the **Meter** tile.

“Values overview” card

Information card with a clear table of all quantities read from the meter for phases **L1** / **L2** / **L3** and **Total**. The card is divided into three sections:

- **Powers** — **Active** (W) and **Apparent** (VA) power.
- **Values** — **Voltage** (V), **Current** (A), **Power factor** and **Frequency** (Hz).
- **Energy** — **Active** (kWh) and **Reactive** (VARh) energy.
- For voltage, power factor and frequency, --- is displayed in the **Total** column; these quantities are not summed.
- For a basic check of the consumption, monitor the active power (W) and the active energy (kWh); the apparent power, power factor and reactive energy are used for a more detailed assessment of the load.
- The overview of measured values is for information only and contains no controls for setting the measurement.

Notes

Typical uses of the application include:

- measurement of production and consumption in PV installations,
- sub-metering of the consumption of individual major appliances (wallbox, heat pump, air conditioning, other equipment),
- metering of the consumption of rental units,
- monitoring of the load on the individual phases as input data for energy management.

The application communicates with the meter exclusively locally; in the event of a local network outage or with authentication enabled on the Shelly side, the values stop updating (see **Update** on the **Meter** tile).

For long-term archiving of measurements, consumption and production charts and evaluation over time, we recommend connecting to **Mervis SCADA** (value export, charts, history).