

Manual: QA Shelly 3EM Sharing (ESG)

Metering of consumption locations with Shelly 3EM electricity meters with data transfer via MQTT for energy sharing in the SHE system.

Introduction

QA Shelly 3EM Sharing (ESG) receives data via **MQTT** from three-phase **Shelly 3EM** electricity meters installed at consumption locations and makes them available in the control unit. For each selected meter, it displays the energy (total, for the period, the hour and today) and the power, voltage, current and energy per phase **R, S, T**, as well as the total power, current and energy.

The **ESG** (Energy Sharing Group) variant is intended for energy sharing, in which energy from a production plant is shared with individual consumption locations. The application is bound to the **sharing licence (SSE)** — it displays the number and the name of the sharing group and the licence validity. One application serves several meters; in the **SUPPLY LOCATIONS** field you select the consumption locations whose meters are to be processed.

The Shelly meter at the consumption location is added to the SHE cloud account, and the sending of data via MQTT is set up by SHE service. You do not need to set anything on the meter; we recommend enabling automatic updates.

For clear visualisation and for working with measurement history and charts, we recommend connecting to SCADA Mervis.

Upstream and downstream applications

Upstream applications

The application does not require any upstream QA application. The prerequisite for operation is a **Shelly 3EM** meter at the consumption location, added to the SHE cloud account with data sending via **MQTT** set up (provided by SHE service).

Downstream applications

- Energy sharing applications, e.g. **QA Energy Sharing Surplus** or **QA Energy Sharing Spot Single** — take over the consumption data of the consumption location as the basis for energy sharing control. A sharing application is not required for the metering and display of values alone.

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 downloads and installs the purchased licences. It provides automatic updates of all 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.

After a successful installation, the following appear on the unit desktop in the section (room) to which the application was assigned (**Meter** in the screenshots):

- the main tile **Shelly Meter MQTT**,
- tiles of the selected meters (with the name of the Shelly device, e.g. **shelly3em63g3-...**, and the total energy in kWh),
- the **Installation** card.

Operating prerequisites

- **Control unit:** Fibaro HC3 or HC3L (or Yubii Home / Home Pro).
- A three-phase Shelly meter at the consumption location. The models used are **Shelly 3EM-63W Gen3** and **Shelly 3EM-63T Gen3** (Wi-Fi, Bluetooth), **Shelly Pro 3EM** with 120 A or 400 A current transformers and **Shelly Pro 3EM-3CT63** (LAN, Wi-Fi, Bluetooth).
- The meter added to the SHE cloud account and data sending via MQTT set up by SHE service.
- A valid **sharing licence (SSE)** from Smart Home and Energy.
- A free slot for uploading the application in the control unit.

We recommend enabling automatic firmware updates on the Shelly meters.

Opening the application control card

To open the card in a web browser, move the cursor over the tile (**Shelly Meter MQTT**, meter tile, **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 Sharing (ESG), the following tiles and cards are displayed on the unit desktop:

- **Shelly Meter MQTT** — the main card of the application; displays the sharing licence data.
- Cards of the individual meters (e.g. **shelly3em63g3-...**) — measured values of the consumption location.
- **Installation** — licence data, selection of meters and MQTT connection.

Initial setup procedure

1. Confirm with SHE service that the Shelly meter has been added to the SHE cloud account and that data sending via MQTT has been set up.

- We recommend enabling automatic firmware updates of the meter.

2. "Installation" card

- Check that **License Validity** shows Valid and that **SSE Number** and **SSE Name** correspond to your sharing group.
- If the licence is not valid, contact Smart Home and Energy.

3. In the **SUPPLY LOCATIONS** field, tick the meters of the consumption locations that are to be processed.

- If an expected meter is missing from the list, press **Update**.
- If it is still missing, ask SHE service to check the addition of the meter and the MQTT setup.

4. Press **SAVE** (after each change of the meter selection).

5. Check that **Connection Status** shows Connected.

- If not, use the **Connect** button.
- Then check for each selected meter that the **Update** item changes.

6. On the meter card, check that the values are being updated (the **Update** item) and correspond to the data in the Shelly application.

"Installation" card

License SSE

- **License Validity** — state of the sharing licence (e.g. Valid).
- **Valid until** — expiry date of the licence (--- in the screenshot).
- **SSE Number** — number of the sharing licence (number of the sharing group, in the format 00000xxxxx).
- **SSE Name** — name of the sharing group to which the consumption locations are assigned.

Device Configuration

- **SUPPLY LOCATIONS** — selection of the meters that the application is to process.
 - The drop-down field shows the number of selected items (e.g. 2 Selected).
 - For each meter, the name of the consumption location and the ID of the Shelly device are given (e.g. **Consumption location A:shelly3em63g3-...**).
 - Select a meter by ticking its box; cancel the selection by unticking it.
- **Update** — loads the list of meters for selection in the **SUPPLY LOCATIONS** field.
- **Connection Status** — state of the connection to MQTT (e.g. Connected).
- **Connect / Disconnect** — manually connects or disconnects the application to/from MQTT. For normal operation, keep the application connected.

Save the settings with the **SAVE** button. The application version is shown at the bottom of the card (e.g. sheMqttMeterShellyESG 1.02.08).

“Shelly Meter MQTT” card

The main card of the application is for information only and displays the sharing licence data:

- **SSE Number** — number of the sharing licence,
- name of the sharing group (displayed without a label),
- **License Validity** — state of the licence (e.g. Valid).

The card requires no settings. The ID number in the card header is the device number in the control unit.

Meter card

For each selected meter, a separate tile is displayed (the name of the Shelly device, e.g. **shelly3em63g3-...**) with the total energy in kWh. When you open the card, the following is displayed:

- **Value** — total energy of the meter (kWh); the same value is shown on the tile.
- **Meter values** — **Name** of the Shelly device and an energy overview:
 - **Period time** — elapsed time of the current quarter-hour period (e.g. 40s = 40 seconds from the start of the quarter-hour),
 - **Energy Period** — energy for the period (Wh),
 - **Energy Hour** — energy for the hour (Wh),
 - **Energy Today** — energy for the current day,
 - **Energy Total** — total energy (kWh).
- table per phase (under the second **Meter values** heading) — columns **Phase R**, **Phase S**, **Phase T** and **Total**, rows:
 - **Power** (W, kW),
 - **Voltage** (V; the **Total** column shows -),
 - **Current** (A),
 - **Energy** (Wh or kWh depending on the size of the value).
- **Status** — status of the meter (---).
- **Update** — time and date of the last reading of values.

The meaning of each symbol on the card is displayed when you move the mouse cursor over the symbol (tooltip). The card is for information only and requires no settings.

Notes

- If the **Update** item on the meter card does not change, check the **Connection Status**, **License Validity** items and the selection of the meter in the **SUPPLY LOCATIONS** field on the **Installation** card. If this does not help, contact SHE service.
- The sharing licence (SSE) is assigned by Smart Home and Energy. The addition of the meter to the SHE cloud account and the MQTT setup are performed by SHE service.
- The basic application QA Shelly 3EM (without sharing, with local communication in the local network) is described in a separate manual.
- The application variables (the **Variables** tab in the device settings) contain only internal values (SystemID, _savedValues) — the user does not set or edit anything in them. All settings are made on the application cards.
- For clear visualisation, measurement history and charts, we recommend connecting to SCADA Mervis.