

Manual: QA EASTRON SDM630

Integration of the EASTRON SDM630 three-phase electricity meter via Modbus RTU — measurement of voltage, current, power, frequency and energy with optional child devices.

Introduction

QA EASTRON SDM630 provides communication with the **EASTRON SDM630** three-phase electricity meter and makes its measured values available in the controller. The application reads voltage, current, active / apparent / reactive power, power factor, frequency and active and reactive energy (import, export, total) — 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 supports both hardware variants of the meter:

- **EASTRON SDM630 Modbus RTU** — communication via the Modbus RTU bus; an external **Modbus TCP / Modbus RTU converter** is required to connect it to the unit's network.
- **EASTRON SDM630-TCP MID** (newer variant) — the meter has an integrated **Modbus TCP** interface, connects to the local network directly with an **Ethernet cable** and no external 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, energy sharing in apartment buildings, sub-metering of significant appliances and more.

Upstream and downstream applications

Upstream applications

The application does not require any upstream QA application. The prerequisite for operation is a physically installed **EASTRON SDM630** meter and a **Modbus TCP / Modbus RTU converter** through which the meter is accessible in the unit's network.

Downstream applications

Optional:

- **QA Consumption Control** — use of the measured values for energy management (PV surplus, load control, appliance priorities).
- **QA Energy Sharing Apartment Buildings** — sub-metering of the consumption of individual apartment units for energy sharing and allocation in apartment buildings.
- In general, sub-metering of individual significant appliances (heat pump, wallbox, air conditioning and other equipment) — 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 tiles of the selected child devices (e.g. **Total** for the total active power) and the **Values overview** and **Installation** cards appear on the unit desktop.

Operating prerequisites

- A physically installed **EASTRON SDM630** meter in one of the hardware variants (Modbus RTU or SDM630-TCP MID).
- For the **Modbus RTU** variant: a **Modbus TCP / Modbus RTU converter** through which the meter is accessible in the unit's network (not included with the application).
- For the **SDM630-TCP MID** variant: connection of the meter to the unit's local network with an Ethernet cable (no external converter is needed).
- A correctly set Modbus address and communication parameters on the meter side. For the **SDM630-TCP MID** variant, the meter must be configured for Modbus TCP communication according to the manufacturer's instructions.
- For the Modbus RTU bus, a correctly designed topology and carefully chosen reading periods so that no collisions occur.
- A free slot for uploading the application in the controller.

Opening the application control card

To open the application cards 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 EASTRON SDM630, the following tiles and cards are displayed on the unit desktop:

- **Meter** — the main tile of the application; displays a summary of the meter's measured quantities (total energy, power, currents, voltages, frequency, energy per phase).
- **Total** — child tile with the current total active power (sum of all three phases). It is displayed if the **Power Active Total** option is selected in the **CHILDREN CHOOSING** field on the **Installation** card.
- Other child tiles — displayed according to the selection in the **CHILDREN CHOOSING** field (e.g. phase voltage, current, energy import / export, etc.).
- **Values overview** — information card with a clear table of all measured quantities.
- **Installation** — connection to the meter via the converter, selection of child devices and setting of the reading periods.

After the installation is complete, first set up the **"Installation" card** — select the converter in the network, determine which quantities you want to display as separate tiles, and set the reading periods. The **Meter** and **Values overview** cards 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.

Meter

- **CHILDREN CHOOSING** — selection of the quantities to be displayed in the unit as separate child tiles. The following options are available:
 - **Voltage Phase** — voltage on the individual phases L1, L2, L3.
 - **Current Phase** — current on the individual phases L1, L2, L3.
 - **Current Total** — total current (sum of the phases).
 - **Power Active Phase** — active power on the individual phases.
 - **Power Active Total** — total active power (sum of all three phases).
 - **Frequency** — grid frequency.
 - **Energy Import Active Phase / Energy import Active Total** — consumed active energy per phase / in total.
 - **Energy Export Active Phase / Energy Export Active Total** — supplied active energy per phase / in total.
 - **Energy Total Active Total / Energy Total Active** — total active energy (import + export) per phase / in total.

Select only the quantities you need for further use in the unit — each child device increases the communication load.

Reading periods setting

A separate reading interval from the meter can be selected for each group of values:

- **READING PERIOD-POWER** — interval for reading the active, apparent and reactive power (e.g. 30 s).
- **READING PERIOD-CURRENT** — interval for reading the currents (e.g. 60 s).
- **READING PERIOD-VOLTAGE** — interval for reading the voltage, power factor and frequency (e.g. 60 s).
- **READING PERIOD-ENERGY** — interval for reading the energies (e.g. 10 m).

Choose the periods carefully with regard to the load on the Modbus RTU bus. Fast-changing quantities (power, current) are typically read more often than slow quantities (energy, frequency). The application does not control the traffic on the bus — with more devices or intervals that are too short, communication collisions may occur.

IP Address Settings

- **Unit ID** — meter address on the Modbus bus (RTU or TCP). It is set with the -- / - / + / ++ buttons.
- **IP Address** — IP address of the target device in the unit's network (for the Modbus RTU variant the converter address, for the SDM630-TCP MID variant the address of the meter itself).
- **MAC Address** — MAC address of the target device.
- **MAC ADDRESS** — selection of the device from the list of devices found in the network.
- **SEARCH NETWORK** — starts the search for available Modbus TCP devices in the unit's network (the converter for the RTU variant, or the meter itself for the SDM630-TCP MID variant). After the search is complete, the device can be selected in the **MAC ADDRESS** field.

After completing the settings, save the configuration with the **SAVE** button and wait until **Run status** changes to **Running**.

"Meter" tile

The main tile of the application displays a summary view of the meter's measured values:

- **Value** — total active energy (e.g. 3247 kWh).
- Current **Active Power Total** and the power of the individual phases L1 / L2 / L3.
- **Current Total** and the currents of the individual phases.
- **Voltage** of the individual phases.
- Grid **Frequency**.
- **Energy Total Active** in total and per individual phase.
- Date and time of the last reading.

The card is for information only — it provides a quick overview of the current meter state and requires no settings.

"Total" tile

Child tile that is displayed if the **Power Active Total** option is selected on the **Installation** card. It shows the current total active power on all three phases — suitable for a quick overview of the current consumption / export on the unit desktop and for use in the logic of other QA applications.

Other child tiles are displayed in the same way — for each option in the **CHILDREN CHOOSING** field on the **Installation** card.

"Values overview" card

Information card with a clear table of all quantities read from the meter. The card is divided into four sections:

- **Powers** — active (W), apparent (VA) and reactive (VAr) power for phases L1 / L2 / L3 and in total.
- **Values** — voltage (V), current (A), power factor and frequency (Hz) for phases L1 / L2 / L3 and in total.
- **Active Energy** — import, export and total (import + export) active energy (kWh) for phases L1 / L2 / L3 and in total.
- **Reactive Energy** — import, export and total (import + export) reactive energy (kVAr / kVArh) for phases L1 / L2 / L3 and in total.

The card is for information only and contains no controls.

Notes

Typical uses of the application include measurement of production and consumption in PV installations (export to the grid, import from the grid, self-consumption), sub-metering of the consumption of individual significant appliances (heat pump, wallbox, air conditioning and other equipment), metering of the consumption of apartment units for energy sharing in apartment buildings, and monitoring of the phase balance, power factor and grid frequency as input data for energy management.

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