

Manual: QA AMPERO SDM16I

Integration of the AMPERO SDM16I expansion module — 16 digital inputs and counters via Modbus.

Introduction

QA AMPERO SDM16I reads values from the AMPERO SDM16I expansion module and makes its inputs available as separate devices in the unit. The application automatically creates child devices for each of the 16 inputs and, depending on the selection, displays them as a **digital input** or a **counter**. It is used to extend the number of inputs in installations where the standard inputs of the controller are not sufficient.

The application cooperates with Mervis SCADA for visualisation and with other QA applications of the Energy Management family — for spot prices, DHW heating, control of heat pumps, wallboxes and more.

Upstream and downstream applications

Upstream applications

The application does not require any specific upstream QA application. The prerequisite for operation is a physically installed **AMPERO SDM16I** module and a **Modbus TCP / Modbus RTU converter** through which the module is available in the unit network.

Downstream applications

Optional:

- **QA HDO** — if the HDO signal is wired to one of the digital inputs of the module.
- **QA Spot Pro** — use of S0 counters as input data for the calculation of consumption and prices.
- **QA Consumption Control** — input data from circuit breaker states or fault signals of connected equipment.

The inputs and counters of the module 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 **SDM-16I** tile, the tiles of the individual selected inputs (e.g. **DI 1**, **DI 2**, ...) and the **Values**, **Settings** and **Installation** cards appear on the unit desktop.

Operating prerequisites

- A physically installed **AMPERO SDM16I** module.
- A **Modbus TCP / Modbus RTU converter** through which the module is available in the unit network (not supplied with the application).
- A correctly designed network topology and carefully chosen reading periods, so that no collisions occur on the Modbus RTU bus.
- 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 (**Values**, **Settings**, **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 AMPERO SDM16I, the following tiles and cards are displayed on the unit desktop:

- **SDM-16I** — the main information tile of the application.
- **DI 1, DI 2, ...** — child devices for the individual digital inputs and counters of the module. Only the inputs selected on the **Installation** card are displayed.
- **Values** — overview of the current states and values of all 16 inputs of the module.
- **Settings** — overview of the current input configuration read from the module.
- **Installation** — connection to the module, selection of the displayed inputs and setting of the reading periods.

After the installation is complete, first set up the **"Installation" card** — select the module in the network, determine which inputs you want to display as digital inputs and which as counters, and set the reading periods. The **Values** and **Settings** cards are for information only and require no further configuration.

"Installation" card

The card is used to connect the application to the module, select the displayed inputs 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

- **Module ID** — address of the module on the Modbus RTU bus.
- **DI STATUS CHILD** — selection of the inputs to be displayed as **digital inputs** (state Connected / Disconnected).
- **CHILD COUNTERS** — selection of the inputs to be displayed as **counters**.
- **CHILD COUNTERS CAPTURED** — selection of the inputs to be displayed as **captured counters** (stored counter value at a defined event).

The same input can be displayed in several roles at the same time — e.g. as a digital input and as a counter.

Reading periods Settings

- **Reading Period-Digital Inputs** — interval at which the application reads the states of the digital inputs (e.g. 30 s).
- **Reading Period-Counters** — interval at which the application reads the counter values (e.g. 60 s).
- **Reading Period-Settings** — interval at which the application reads the module configuration (e.g. 10 min).

Choose the periods carefully with regard to the load on the Modbus RTU bus. The application does not manage the traffic on the bus — with a higher number of devices or intervals that are too short, communication collisions may occur.

IP Address Settings

- **Unit ID** — Modbus unit identifier on the converter.
- **IP Address** — IP address of the Modbus TCP / RTU converter.
- **MAC Address** — MAC address of the converter.
- **MAC ADDRESS** — selection of the converter from the list of devices found in the network.
- **SEARCH NETWORK** — starts a search for available Modbus TCP converters in the unit network. When the search is complete, the converter can be selected in the **MAC ADDRESS** field.

When the setup is complete, save the configuration with the **SAVE** button and wait until Run status changes to **Running**.

"Values" card

The card displays the current states of all 16 inputs of the module in the **Input states** table:

- **Title** — designation of the input (**Input1** to **Input16**).
- **Status** — current state of the digital input (**Connected** / **Disconnected**).
- **Counter** — current value of the pulse counter.
- **Counter capture** — counter value stored at a defined event.

The card is for information only and requires no settings.

“Settings” card

The card displays the current configuration of the individual inputs read directly from the module. For each input (**Input1** to **Input16**), the columns **Measurement** (measurement mode) and **AutoC**, **CatOnLow**, **ResetAf**, **ResetLow**, **Encod** (other configuration options of the module) are visible.

The card is for information only — it is used to check how the module is physically configured. The module itself is configured in its interface according to the manufacturer's instructions.

Digital input and counter tiles

For each input selected on the **Installation** card, a separate tile appears on the unit desktop — **DI 1**, **DI 2**, ... for digital inputs, or counter tiles. The tiles display the current state or value of the input and can be used further in the unit logic just like any other device.

Notes

Typical use of the application includes:

- extending the number of inputs for wired sensors (motion, windows, doors) in a technical room or switchboard,
- measuring energy via S0 outputs of electricity, water or gas meters (counter mode),
- monitoring circuit breaker states or fault signals from other equipment (heat pumps, air handling),
- centralised collection of signals from push buttons in larger installations.

For long-term archiving of values, consumption graphs and evaluation of input states over time, we recommend a connection to **Mervis SCADA** (value export, graphs, history).