

Manual: QA Energy Sharing Spot Single

Sharing of energy from a production plant with spot control to consumption locations — automatic sharing decisions based on economic advantage and allocation in the EDC.

Introduction

QA Energy Sharing Spot Single extends a system with SHE spot control by sharing energy from the production plant to consumption locations (CL) that are not actively controlled. The application continuously evaluates the consumption of the consumption locations in the current quarter-hour and their price mode (**SPOT** or **FIX**) and, based on economic advantage including distribution fees, decides when and how much energy from the production plant to share — from direct production or from the home battery.

The shared energy is allocated to the consumption location according to the registration in the Energy Data Centre (**EDC**). The user thus saves on the purchase of the commodity at the consumption locations and makes better use of their own production. In the spot control of the production plant, sharing takes priority over selling energy to the grid.

The application controls the inverter export power (via the inverter QA) and the energy intended for sharing; optionally, it also passes requests to energy management (**QA Consumption Control**) so that the surplus is used primarily by local appliances, for example domestic hot water heating.

For clear visualisation and access to measurement history and graphs, we recommend connecting to Mervis SCADA.

Warning: The application requires user registration in the EDC system (production plant and consumption locations) and a valid sharing licence (SSE) from Smart Home and Energy. The allocation of shared energy is carried out by the EDC according to the registration; the application only controls and evaluates the sharing.

Upstream and downstream applications

Upstream applications

Mandatory:

- **QA Spot Pro** — full spot control on the production plant side; the application takes over the spot plan and prices.
- **Meter QA** at each consumption location (local or remote consumption metering, e.g. QA EASTRON SDM230/630 Sharing or QA Shelly 3EM) — source of the consumption data of the consumption locations per quarter-hour. This is a separate meter next to the distribution system operator's billing meter.

Downstream applications

Mandatory:

- **Inverter QA** with export power control — the application controls the export power to the grid through this QA (option **Power Control to QA Inverter**).

Optional:

- **QA Consumption Control** — energy management; with the **Power Control to QA EMS** option, the application also passes the sharing requests to the control of local appliances.

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 application is installed into the unit automatically and allows future automatic updates. It requires the “superuser” credentials for the unit. See the separate “Installation Application” manual for details.
- **Standalone installation file (*.fqax)** — 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.

A trial version (TRIAL) is available on request — contact Smart Home and Energy support.

After a successful installation, the following appear on the unit desktop:

- the set of application cards (tiles): **Energy Sharing Spot Control** (main card), **Values overview**, **Energy overview**, **Consumption Locations**, **Sharing Settings**, **SSE Installation** and **Installation**,
- tiles with values (**Setpoint Exp Local**, **Export Target Period**, **Export Period**, **Import Period**, **Period time**, **Battery SOC**, **Active CL**),
- a separate tile with its name for each consumption location.

Operating prerequisites

- **Controller:** Fibaro HC3 or HC3L (or Yubii Home / Home Pro).
- Fully functional **SHE spot control (QA Spot Pro)** on the production plant side and an inverter QA with export power control.
- Compatible meters with a meter QA at the consumption locations for measuring and transmitting the consumption to the production plant. A consumption location can be local or remote.
- The user is registered in the **EDC** as a production plant and a consumption location and has a valid **SSE licence** (energy sharing) from Smart Home and Energy.

Opening the application control card

To open the application card in a web browser, move the cursor over the application tile (e.g. **Energy Sharing Spot Control**, **Sharing Settings**) and click the eye icon in its top-right corner. The application card 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

Initial setup procedure

1. "SSE Installation" card

- Check the validity of the sharing licence (SSE).
- Select the consumption locations to which the energy is to be shared.
- Check the local settings of the production plant (name, **EAN**).
- Save with the **SAVE** button.

2. "Installation" card

- Check the parameters taken over from the inverter.
- In the **CONTROLS SELECT** field, choose where the application passes the power control (inverter QA, EMS QA).
- Save with the **SAVE** button.

3. Consumption location card (tile with the CL name)

- Set the sharing coefficient and the purchase prices of the consumption location (type **FIX** / **SPOT**, commodity price, fees, **VAT**).
- Save with the **SAVE** button.

4. "Sharing Settings" card — choose the mode (**AUTO**), the control method for the automatic and manual mode and the calculation parameters.

5. "Energy Sharing Spot Control" card — monitor the sharing chart, the Spot plan and the allocation of energy to the consumption locations. The **Values overview**, **Energy overview** and **Consumption Locations** cards are used to check the values.

6. After the setup, check:

- the licence validity and the selection of consumption locations,
- the measurement update time and the communication status (OK) on the **Values overview** card and the consumption location cards.
- Zero assigned energy does not in itself mean an error — energy is shared only when there is a surplus and it is economically advantageous.

"SSE Installation" card

The card is used to set up the sharing licence and select the consumption locations.

- **License SSE** — installation name, **License Validity**, **Valid until** and **SSE Number** (sharing licence number). Use the **Update** button to reload the licence status from the server. The licence is assigned by Smart Home and Energy support; if it is not valid, contact support.
- **SSE Configurations** — **SUPPLY LOCATIONS**: selection of the consumption locations to which the energy is shared. A separate tile is created on the desktop for each selected consumption location.
- **Local settings** — data of this installation: **Type** (Production), **Name**, **EAN** (EAN of the production plant registered in the EDC), **Priority** and **HC** (serial number of the controller).

The **Run status** row shows the application run state. Save the settings with the **SAVE** button.

"Installation" card

- **Inverter settings** — **Battery capacity**, **Inverter Power Max Phase** and **Inverter Power Max Total** of the inverter; the application takes the values over from the inverter QA.

- **CONTROLS SELECT** — where the application passes the power requests: **Power Control to QA Inverter** (inverter export control) and **Power Control to QA EMS** (passing the requests to energy management so that the surplus is used primarily by local appliances).

The **Run status** row shows the application run state. Save the settings with the **SAVE** button. The application version is shown at the bottom of the card (e.g. sheEsgManagementSpot 1.04.04).

Consumption location card

For each consumption location selected on the **SSE Installation** card, the application has a separate card (tile with the name of the consumption location, e.g. KlientA-Praha).

- **Meter values** — **Name**, **Period time** (elapsed time of the current quarter-hour, mm:ss), **Status** (OK) and **Update** (time of the last reading).
 - **Recalculated** / **Uncalculated** energy for the period, today and in total.
 - **Uncalculated** is the actual consumption of the consumption location, recalculated is the consumption multiplied by the sharing coefficient.
- **Sharing Settings** — **Coefficient** (share of the consumption of the consumption location to be covered by sharing, e.g. 100.00 %); change the value with the **-0.01** / **+0.01**, **-0.1** / **+0.1**, **-1** / **+1**, **-10** / **+10** buttons, or set **0** or **100**.
- **Buy Price Settings**
 - **BUY PRICE TYPE** (**FIX** or **SPOT** according to the contract of the consumption location),
 - **Commodity High tariff FIX** (commodity price in CZK/kWh for a fixed tariff),
 - **Other fees High tariff** (distribution and other fees in CZK/kWh),
 - **VAT** (%).
 - From these values, the application calculates whether sharing is economically advantageous.
 - Set the values with the **--** / **-** / **+** / **++** buttons; for the fees and **VAT**, the **0** button resets the value to zero.

The **Run status** row shows the application run state. Save the settings with the **SAVE** button.

"Sharing Settings" card

Setting of the sharing mode and of the method for calculating the energy to be shared.

- **Control Mode** — current mode (e.g. **AUTO-EXPORT**). Buttons: **AUTO** (automatic sharing based on economic advantage and the spot plan), **MANUAL-ON** (sharing permanently on) and **MANUAL-OFF** (sharing off).
- **Automatic mode**
 - **MODE OF CONTROL AUTO**: how the energy to be shared is determined from the consumption of the consumption locations in the current quarter-hour: **Off**, **Minimum value**, **Median**, **Average value**, **Max Avg+Median** or **Maximum value**.
 - **Min Sharing Request** — minimum energy to be shared in the period (kWh, e.g. 0.1kWh); set the value with the **--** / **-** / **+** / **++** buttons, the **0** button resets it to zero.
- **Manual Mode** — **CONTROL METHOD MANUAL MODE**: the same options as in the automatic mode, applies to the **MANUAL-ON** mode.
- **Calculation parameters** — **Energy Change Max**: maximum change of the energy to be shared (kWh, e.g. 0.5kWh); set the value with the **--** / **-** / **+** / **++** buttons (**-** / **+** change the value in small steps); the **Nothing** button clears the value and **--** is displayed.

For automatic decisions based on economic advantage, use the **AUTO** mode; after using the manual mode, switch back to **AUTO**.

"Energy Sharing Spot Control" card

The main card — overview of the current sharing state, chart and spot plan.

The meaning of each symbol on the card is displayed when you move the mouse cursor over the symbol (tooltip). In the upper part there are the symbols **Local** (production plant, left), control mode (centre) and **Remote** (consumption locations, right), and below them the current values:

- setpoint export power of the local production plant (W),
- target export energy in the period (Wh),
- energy shared to the consumption locations in the current quarter-hour (Wh),
- home battery state (% and kWh),
- control time and state (e.g. MAX).

The **Sharing chart** shows the course of the day hour by hour: energy **Surplus** and **Lack**, the **Battery** state and, for both the local and the remote side, **Export**, **Import** and **Export plan**. Use the **Today / Tomorrow** buttons to switch the displayed day.

Tables:

- **Energy Period [Wh]** — for each consumption location, the consumption in the period (**Period**), the consumption recalculated by the coefficient (**Recalculated**) and the energy assigned for sharing (**Assigned**); rows **Total**, **Not assigned** and **Export Total**.
- **Plan Spot Local** — spot plan of the production plant by hours: **Hour**, price **Now** and **New** (price after sharing is taken into account), **Energy** and energy path (symbols production plant → consumption location).
 - The **Detailed view** button writes the path out in words, e.g. **Directly exp->Directly imp** (sharing from direct production) or **Bat exp->Directly imp** (sharing from the battery).
- **Demands energy Spot** — energy demands according to the spot plan (**Hour**, **Price Max**, **Energy**, path).
- **Demands energy Remote** — demands of the consumption locations (**From**, **To**, **Price Max**, **Energy**, delivery method **Direct**).
- **Offer energy Local** — energy the production plant can offer (**From**, **To**, **Price**, **Energy**, source **Direct / Battery**).

Use the **Update** button to reload the values and the **Detailed view** button to switch the detailed display of the tables. The detailed display also contains the demands and the offer for the following day (rows marked D24:hh).

“Values overview” card

- **Period time** — elapsed time of the current quarter-hour (mm:ss; e.g. 10:00 = 10 minutes from the start of the quarter-hour).
- **Local Values** — **Import** and **Export** energy of the production plant for the period (Wh), today and in total (kWh), communication **Status** and **Update** (time of the last reading).
- **Energy Remote Recalculated Import** — energy of the consumption locations recalculated by the coefficient (**Selected**) for the period, today and in total, **Status** and **Update**.

“Energy overview” card

Energy CL — overview of the recalculated consumption of the individual consumption locations (**Name**, **Period.Rec.**, **Today**, **Total.Rec.**) and the sum **Total**.

“Consumption Locations” card

Configuration CL — overview of the consumption locations and their sharing coefficients (**Name**, **Coefficient**) and the sum **Total**. Set the **Coefficient** of an individual consumption location on its card.

Tiles with values

The following tiles are displayed on the desktop:

- **Setpoint Exp Local** (setpoint export power of the production plant, W),
- **Export Target Period** (target export energy in the period, Wh, and the selected control method, e.g. Maximum),

- **Export Period** and **Import Period** (Wh),
- **Period time** (elapsed time of the current quarter-hour in seconds and in the mm:ss format),
- **Battery SOC** (% and kWh),
- **Active CL** (number of active consumption locations).

Notes

- Sharing takes place in quarter-hours: the application evaluates the consumption of the consumption locations in the current period and decides on the energy to be shared according to the selected control method, coefficients and prices.
- Energy is shared only when it is economically advantageous with regard to the purchase price (**SPOT** / **FIX**) at the consumption location; sharing takes priority over selling energy from photovoltaics to the grid.
- The user arranges the registration in the **EDC** (production plant and consumption locations) themselves; the **SSE licence** is assigned by Smart Home and Energy before the application is put into operation.
- The application variables (**Variables** tab in the device settings) contain only internal and statistical values (e.g. SystemID, DeviceName, _savedValues) — the user does not set anything in them. All settings are made on the application cards.
- For clear visualisation and access to measurement history and graphs, we recommend connecting to Mervis SCADA.