

Manual: QA Window Control

Smart control of the opening of motorised windows — cooling with outdoor air, night pre-cooling and CO2 ventilation.

Introduction

QA Window Control is an application for controlling the opening of motorised windows in the SHE system. It cools the room with outdoor air to the required temperature, in summer mode pre-cools the room at night if the predicted heat gain for the next period is high, and ventilates when the CO2 concentration is increased. In strong wind, rain or when the building is armed, it closes the windows. Based on the weather forecast, it calculates the heat gain of the room from sunlight and the temperature difference.

The application cooperates with Mervis SCADA for visualisation and with the other room comfort QA applications — thus ensuring unified optimal control.

Upstream and downstream applications

Upstream applications

Mandatory:

- **QA Weather Forecast YR** — source of the weather forecast (calculation of the heat gain, wind, rain).

Optional:

- **QA Global Climate Mode** — annual climate mode (summer / winter).
- **QA Profile Control** — time schedules for Climate.
- **QA Jablotron Integration (JA-121T)** — arming state of the building.
- **CO2 sensor, wind and rain sensors, room temperature and outdoor temperature sensors** — make the control more accurate; without sensors, the application works with the weather forecast.

Downstream applications

In terms of control, the application is the last link in the chain — it directly controls the motorised windows integrated in the unit that you assign to it on the Device settings card. It does not require any downstream QA application.

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)** — installation and updates are carried out automatically. 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.

Before purchase, you can try the full functionality of the application using the TRIAL version, which is available for 2 days.

After a successful installation, the application cards — Window control, Rooms overview, Setting Properties and Device settings — appear on the unit desktop together with the mode tiles AUTO, VENTILATE, CLOSE NOW, CLOSE TODAY, MANUAL-OPEN and MANUAL-CLOSED.

Operating prerequisites

- A **Fibaro HC3** or **Fibaro HC3L** controller.
- Motorised windows integrated in the unit (you assign them on the **Device settings** card).
- **QA Weather Forecast YR** — source of the weather forecast.
- Optionally a CO2 sensor, a wind sensor, a rain sensor and room temperature and outdoor temperature sensors.
- For CO2 ventilation, a CO2 sensor must be present in the system.

Opening the application control card

To open the application card in a web browser, move the cursor over the tile (e.g. **Device settings**, **Setting Properties**) — click the eye icon in the top-right corner of the tile.

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. **"Device settings" card** — select the section and the room, assign the main time schedule, temperature sensors, CO2 sensor, sensors and controlled windows. Confirm the settings with the **SAVE** button.
2. **"Setting Properties" card** — set the parameters of auto cooling, night pre-cooling, CO2 ventilation, the actions in the event of wind, rain and arming and the room parameters.
3. **"Window control" card** — select the control mode, **AUTO** for normal operation.

"Device settings" card

On this card you assign devices and data sources to the application:

- **SECTION** and **ROOMS** — selection of the section and the room in which the application controls the windows.
- **MAIN SCHEDULE** — time schedule for Climate from which the application takes over the required temperature.
- **ROOM TEMPERATURE** and **OUTDOOR TEMPERATURE** — room temperature and outdoor temperature sensors.
- **SENSOR CO2** — optional CO2 concentration sensor for the ventilation function.
- **WIND SENSOR** and **RAIN SENSOR** — optional sensors; if a sensor is not installed, the application works with the weather forecast.
- **CONTROL WINDOWS** — selection of the windows the application controls.

Confirm the changes with the **SAVE** button.

 **Warning:** When saving settings, always wait until Run status changes to Running. Do not press SAVE before that.

"Setting Properties" card

Auto cooling

Cooling of the room with outdoor air to the temperature set in the time schedules for Climate. **Correction the set cooling temperature** adjusts the required cooling temperature (e.g. -1 °C). Switch the function on with the **Auto Cooling** button.

Night precooling

If the predicted heat gain for the next period is high, the application pre-cools the room at night:

- **Room temperature setpoint** — temperature to which the room is pre-cooled (e.g. 20 °C).
- **Minimum outdoor temperature** — pre-cooling takes place only if the outdoor temperature is higher than the set minimum (e.g. 16 °C).
- **Precooling time From / To** — time window of the pre-cooling (e.g. 1–6 h).

Switch the function on with the **Nighttime pre-cooling** button.

Ventilate CO2

Ventilation of the room when the air quality is poor:

- **Limit CO2** — ventilation takes place when the CO2 concentration is higher than the set value (e.g. 1000 ppm).
- **Maximum Time** — maximum ventilation time (e.g. 20 min); the **Nothing** button switches the limitation off.
- **WINDOW OPENING VALUE** — use the slider to set the window opening during ventilation in % (0–100).

Switch the function on with the **CO2 Ventilate** button.

Wind Close

Closing of the windows when the forecast or the sensor reading of the wind speed is higher than **Wind speed limit** (e.g. 30 km/h). The **Nothing** button switches the limit off. Switch the function on with the **Wind Close** button.

When it rains

Closing of the windows when it rains. **Delay after rain** determines the delay after the rain stops (e.g. 5 min). Switch the function on with the **Rain Close** button.

Arming

The **Armed Close** and **Part.armed Close** buttons determine whether the windows close when the building is armed or partially armed, respectively.

Room Specifications

Setting of how the outdoor environment affects the room temperature:

- **Temperature gain Total**, **Temperature gain by transfer** and **Temperature gain by sunlight** — display the calculated heat gain of the room.
- **OUTDOOR TEMPERATURE TRANSMISSION** — degree of influence of the difference between the outdoor and the indoor temperature.
- **SOLAR GAIN** — degree of the heat gain from sunlight.
- **Prediction hours** — number of forecast hours from which the heat gain is calculated (e.g. 24 h).

“Window control” card

The main control card of the application. The card header shows the current control state (e.g. AUT-CLOSED).

Control modes:

- **AUTO** — the windows are controlled by the application according to the set rules; recommended mode for normal operation.
- **MANUAL-CLOSE / MANUAL-OPEN** — permanent manual switching of the windows. Use the slider 0–100 to set the required window opening.
- **VENTILATE** — one-off ventilation for the set time. **Ventilation time** determines the length of ventilation (e.g. 10 min); use the slider 0–100 to set the window opening.
- **CLOSE NOW** — immediate closing of the windows.
- **CLOSE TODAY** — closing of the windows valid for the current day.

The lower part of the card shows the current values — room temperature, temperature setpoint target, setpoint after correction, setpoint cooling, room cooling state, annual climate mode, CO2 sensor, outdoor temperature for cooling, outdoor temperature, wind, rain sensor, weather and sunrise and sunset times.

The active control mode is also shown by the **AUTO**, **VENTILATE**, **CLOSE NOW**, **CLOSE TODAY**, **MANUAL-OPEN** and **MANUAL-CLOSED** tiles on the unit desktop.

“Rooms overview” card

Summary overview of the room state:

- **Auto Ventilation Windows** — All / Open / Cooling by ventilation Efficient / Cooling by ventilation Effective up to setpoint.
- **Cooling** — All / Ready Equipment / Ready / Active.
- **Blinds** — All / Open / Closed.

Notes

- The scope of the automatic actions depends on the installed sensors (CO2, wind, rain) — without a sensor, the application works with the weather forecast.
- CO2 ventilation requires a CO2 sensor in the system.
- Before purchase, you can verify the full functionality of the application using the TRIAL version (available for 2 days).
- For clear visualisation and for working with the measurement history and charts, we recommend connecting to **Mervis SCADA**.