

Manual: QA Vehicle Integration (OBD2 WiCAN)

Reading the current state of charge of the electric vehicle battery directly from the car via the WiCAN OBD2 adapter and passing it on to charging planning in the SHE system.

Introduction

QA Vehicle Integration (OBD2 WiCAN) is an input application for smart charging control of an electric vehicle. The application reads vehicle values via the **WiCAN OBD2 adapter** plugged into the diagnostic socket of the car (OBD2) and passes them on to charging planning. The adapter reads data from the car's internal communication network (CAN bus) and sends them to the unit over the home Wi-Fi network using the MQTT protocol. It reads the values directly from the car, without requiring accounts with the vehicle manufacturer's cloud services.

The system then automatically works with the current state of charge of the battery (SOC) and schedules charging according to your requirement — typically from PV surplus or according to spot prices. After connecting the car to the wallbox, you do not have to enter the current charge manually.

The application reads information from the car whenever the adapter is connected to the data network and the car's CAN bus is active — regularly with the ignition on and during charging.

Transferred values:

- current battery charge SOC,
- vehicle battery capacity,
- connection state (connected / disconnected),
- charging state,
- voltage of the car's 12V battery,
- time of the last update of the values.

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

IMPORTANT WARNING: The application reads data from third-party devices — the WiCAN OBD2 adapter and the vehicle's CAN bus.

The transfer of values, their scope and update frequency depend on the WiCAN adapter, its firmware, the support for the specific car make and model and on when the car's CAN bus is active.

The functionality of the application and the support options of Smart Home and Energy depend on the availability, capabilities and terms of these sources. If they are changed, restricted or discontinued, the application may stop working completely or partially.

Smart Home and Energy does not guarantee the availability, completeness or correctness of data provided by a third party. The customer sets up and manages the WiCAN adapter, its installation in the car and its connection to the network on their own.

Warning: The application is intended only for compatible car makes and models (for the list, see the WiCAN documentation, section Supported Vehicles). On some makes, a plugged-in OBD2 adapter can trigger the alarm after the car is locked; some makes allow alarm monitoring on the OBD2 port to be switched off. Before deployment, we recommend verifying the function with your car using the TRIAL version.

Upstream and downstream applications

Upstream applications

- **WiCAN OBD2 adapter** — plugged into the diagnostic socket (OBD2) of the car and connected to the home Wi-Fi network; source of the values read by the application.

Downstream applications

- **QA Wallbox SPOT Planner** — takes over the loaded vehicle values and plans and controls charging based on them.

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 installs the purchased licences on its own. It provides automatic updates of all SHE applications and easy licence management (requires the credentials for the unit).
- **Standalone installation file** — the activation form provides a link 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.

Before purchase, you can try the application functions with full functionality for 2 days using the TRIAL version (a separate *.fqax to download in the product detail in the e-shop; in the TRIAL version the main card is named **OBD-II Trial**).

After a successful installation, the cards and tiles belonging to the application appear on the unit desktop (in the room to which you assign the application): **OBD-II**, **Values overview**, **"Nastavení adaptéru"** (adapter settings), **Installation**, **Setting Values** and tiles with the read values (**Battery LV**, **Plug**, **Charging**, **Battery SOC**).

Operating prerequisites

- A **Fibaro HC3** or **HC3 Lite** controller (or Yubii Home / Yubii Home Pro).
- A **WiCAN OBD2 adapter** plugged into the diagnostic socket of the car and connected to the home Wi-Fi network (**AP+Station** mode). The controller and the adapter are on the **same network**; the adapter has a known IP address.
- The car is listed among the WiCAN **supported vehicles** (car profile) and the car is parked within range of the home Wi-Fi network.
- An **MQTT licence** is assigned for the communication of the adapter with the unit (MQTT). The licence is assigned by Smart Home and Energy support on the SHE server after the application is purchased; you can see the licence state on the **Installation** card.
- For the actual charging planning and control, the downstream application **QA Wallbox SPOT Planner** is installed.

Warning: Smart Home and Energy does not carry out or support the installation and setup of the WiCAN adapter and is not responsible for its functionality — the installation and setup are carried out by the customer according to the documentation of the adapter manufacturer.

Connecting the WiCAN adapter to the home network

Plug the adapter into the diagnostic socket (OBD2) of the car and connect it to the home Wi-Fi network according to the manufacturer's documentation (<https://meatpihq.github.io/wican-fw/config/wifi>):

1. After being plugged in, the adapter broadcasts its own Wi-Fi network named **WiCAN_xxxxxx**. Connect to it with a phone or a computer (you can find the default password in the manufacturer's documentation) and open the address <http://192.168.80.1> in a browser (for the WiCAN PRO model <http://192.168.0.10>).
2. On the **Settings** tab, switch **Mode** to **AP+Station**, fill in the **SSID** and the password of your home Wi-Fi network and confirm with **Submit changes**. The manufacturer recommends also changing the default password of the adapter's own network.
3. On the **Status** tab, find the assigned IP address of the adapter (**Station IP**) — you will enter it into the application variable in the unit.

The other adapter settings (**CAN**, **MQTT**, car profile, sleep mode) are carried out by the application from the unit on the **"Nastavení adaptéru"** card.

Warning: The adapter is powered from the car's 12V battery. Check that the sleep mode (Sleep Mode) is switched on – according to the manufacturer's documentation it is switched off by default. The adapter goes to sleep when the 12V battery voltage drops below the Sleep Voltage threshold (default 13.1 V) for the Sleep After time (default 3 minutes); in sleep mode it draws less than 1 mA and wakes up when the car is started. Without the sleep mode, there is a risk of discharging the car's 12V battery.

Opening the application control card

To open the card in a web browser, move the cursor over the application tile (e.g. **Values overview**, “**Nastavení adaptéru**”) and click the eye icon in its top-right corner. The card detail with the current state and settings 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. Plug the WiCAN adapter into the diagnostic socket of the car and connect it to the home Wi-Fi network (see above).

2. "Installation" card

- In the **MQTT Licence** section, check that the licence is valid (it is assigned by Smart Home and Energy support). If it is not valid, reload the state with the **Update** button, or contact support.
- Use the **SEARCH NETWORK** button to find the adapter in the home network and select it in the **MAC ADDRESS** list.
- If the adapter is missing from the list or has changed its IP address, find it by the known MAC address with the **SEARCH IP by MAC** button.
- Check that the **IP Address** field contains the adapter address and the **Status** row does not report an error.
- Establish the connection with the **Connect** button and save the settings with the **SAVE** button.

3. "Nastavení adaptéru" card

- Use the **GET Adapter Settings** button to load the current adapter settings.
- Use the **GET Cloud Cars List** button to load the list of car profiles and select the profile of your car in the **SELECT CLOUD SETTINGS** list. If the profile of your car is not in the list, do not select the profile of another model – contact Smart Home and Energy support.
- Use the **UPDATE Adapter Settings** button to send the settings to the adapter and the **Save+Reboot** button to save them and restart the adapter.
- After the adapter has reconnected, save the card settings with the **SAVE** button.

4. **"Setting Values" card** — check the assigned value sources and enter **Car Battery Capacity** in kWh with the -- / - / + / ++ buttons.

5. In the application variables (gear icon on the **OBD-II** tile → **Variables** tab), set **GroupWallbox** — the same group number as the wallbox and the charging planner to which the car belongs — and optionally **CarName** (car name in the card header).

6. After the first reading from the car (ignition on or charging), check the values on the **Values overview** card including the update date and time — an old date means that a new reading has not taken place yet.

"Installation" card

The card is used to establish communication between the unit and the WiCAN adapter.

- **MQTT Licence** — **License Validity** and **Payment until**: state of the licence for the MQTT communication through which the adapter passes the values to the unit. The licence is assigned by Smart Home and Energy support on the SHE server; if it is not valid, contact support. Use the **Update** button to reload the licence state from the server.
- **Connection Status** — state of the MQTT connection (**Connected** / **Disconnected**). Establish the connection with the **Connect** button or terminate it with the **Disconnect** button.
- **Status** — result of the last search for the adapter in the network (e.g. **MAC address not found** — the adapter was not found in the network).
- **IP Address** and **MAC Address** — network identification of the adapter.
- **SEARCH IP by MAC** — finds the current IP address of the adapter by the saved MAC address (useful when the home router assigns a different IP address to the adapter).
- **MAC ADDRESS** (item **Select**) — selection of the adapter from the list of devices found.
- **SEARCH NETWORK** — searches for available adapters in the network.

The **Run status** field shows the run state of the application. Save the settings with the **SAVE** button. The application version is shown at the bottom of the card (e.g. sheWicanObdMqttCar 1.02.04).

Warning: The adapter is available in the network only when the car is within range of the home Wi-Fi and the adapter is not in sleep mode. Therefore, search the network with the ignition on or during charging.

“Nastavení adaptéru” card (adapter settings)

The card is used to set up the WiCAN adapter from the unit — without having to open the adapter's web interface. It is divided into sections; the meaning of the items corresponds to the settings of the WiCAN adapter (manufacturer's documentation: <https://meatpihq.github.io/wican-fw/>):

- **AP Config — Mode** (Wi-Fi mode of the adapter), **Auto-Disable AP** (automatic switch-off of the adapter's own network, AP).
- **Station Config — SSID** (the Wi-Fi network to which the adapter connects).
- **CAN — Protocol** (protocol of communication with the car), **MQTT Enable** (switching MQTT on).
- **MQTT — MQTT URL, MQTT Port, MQTT Keep alive, TX Enable, TX Topic, RX Enable, RX Topic.**
- **Automate User Destinations — Grouping, Destination Type, Destination.**
- **Standard PIDs — Standard PIDs Enable, Standard PIDs, ECU Protocol, Available PIDs.**
- **Automate Vehicle Specific — Vehicle Specific Enable, Vehicle Model.**
- **Sleep Mode — Sleep Mode, Sleep Voltage, Sleep After** (sleep mode of the adapter, see the warning in the chapter on connecting the adapter).
- **Check Status — ECU Status, Device ID, HW Version, FW Version, GIT Version, Cloud FW Version** (identification of the adapter and firmware versions; **Cloud FW Version** is the firmware available for download).

During standard commissioning, do not change these parameters manually — use the car profile (see below).

The **Status** row shows the result of the last action (e.g. `getWicanFwInfo` success).

Control buttons:

- **GET Adapter Settings** — loads the current settings from the adapter.
- **SELECT CLOUD SETTINGS** — selection of a preset car profile from the cloud (e.g. **KIA-EV4 WiCAN-OBD, VW E-UP WiCAN-OBD, Toyota WiCAN-OBD**); the profile contains the adapter settings for the given make and model. The selected profile is shown in the list heading (e.g. **WICAN-OBD_KIA-EV4**).
- **GET Cloud Cars List** — loads the current list of available car profiles.
- **UPDATE Adapter Settings** — sends the selected profile and settings to the adapter.
- **Save+Reboot** — saves the settings to the WiCAN adapter and restarts it.
- **Get Cloud FW Info** — determines the latest available firmware version of the adapter.
- **Update FW** — updates the adapter firmware to the version shown in **Cloud FW Version**. Do not disconnect the adapter from power during the update.

The **Run status** field shows the run state of the application. Save the application (QA) settings with the **SAVE** button.

Warning: The adapter must be online during the setup (car with the ignition on or during charging, adapter connected to Wi-Fi). After Save+Reboot, wait until the adapter reconnects to the network.

“OBD-II” card

The main card displays the adapter state: **ECU Status** (online / offline — whether the car's CAN bus is active), **Battery voltage 12V**, **Device ID**, **HW Version**, **FW Version**, **GIT Version**, **Uptime** of the adapter since the last start and **Last adapter reading** (date and time).

“Setting Values” card

The card shows from which adapter values the application reads the individual vehicle data; the assignment results from the selected car profile.

- **Source SOC** — adapter value for the current battery charge (e.g. SOC),
- **Source Battery Capacity** — adapter value for the battery capacity (if the car does not provide it, enter the capacity manually below),
- **Connection Source** — value for the state of the charging cable connection (e.g. AC_PLUG),

- **Charging source** — value for the charging state (e.g. CHARGING),
- **LV V Battery Source** — value for the 12V battery voltage (e.g. LV_V),
- **Update Source** — value for the time of the last update.

Car Battery Capacity — enter the battery capacity in kWh (e.g. 81.0kWh) with the -- / - / + / ++ buttons according to the car manufacturer's data. The value is used by the downstream application to calculate the energy needed for charging.

"Values overview" card

The card displays a summary of the currently read vehicle values:

- **Battery SOC** — current battery charge in %,
- **Car Battery Capacity** — capacity in kWh,
- **Plug status** — connection of the charging cable: **Connected** / **Not connected**,
- **Charging Status** — charging in progress,
- **Battery LV V** — voltage of the car's on-board battery,
- **EV Update** — time of the last update of the vehicle values,
- **"Aktualizace Mqtt"** — time of the last update of the values received via MQTT.

Some of these values are also shown by tiles on the desktop: **Battery SOC** (SOC in %), **Battery LV** (12V battery voltage), **Plug** and **Charging** (with the time since the last state change).

Variables

The application uses these variables (gear icon on the tile → **Variables** tab):

- **IP** — IP address of the WiCAN adapter in the home network,
- **MAC** — MAC address of the adapter,
- **GroupWallbox** — wallbox group for assigning the vehicle to the downstream charging application,
- **CarID** — vehicle ID,
- **CarName** — vehicle name (displayed in the card header),
- **_savedValues** — internal backup of the settings (do not edit).

Notes

- The values are updated only when the car's CAN bus is active (ignition on, charging) and the adapter is connected to the home Wi-Fi network. Out of network range, the last loaded values with the update time remain in the unit.
- The essential minimum is the current battery charge SOC; the other values are supplementary.
- For the actual charging planning and control, the downstream application **QA Wallbox SPOT Planner** is required.
- WiCAN adapter documentation: <https://meatpihq.github.io/wican-fw/> (Wi-Fi settings, sleep mode, supported vehicles).
- For visualisation and for working with the measurement history and charts, we recommend connecting to **Mervis SCADA**.