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EV Expert Wallbox
Integration manual

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INTRODUCTION

This manual describes EV Expert Wallbox integration into Loxone system.

Supported are one or two socket/cable smart wallboxes with firmware version 1.7.20 and above.

Templates and sample config files can be downloaded from https://library.loxone.com/detail/ev-expert-wallboxes-708/overview

OVERVIEW

EV Expert wallbox runs own webserver with API. Loxone uses this API to control wallbox and to get near real-time data (5s pooling interval). Loxone and wallbox are communicating on HTTP (TCP/IP).

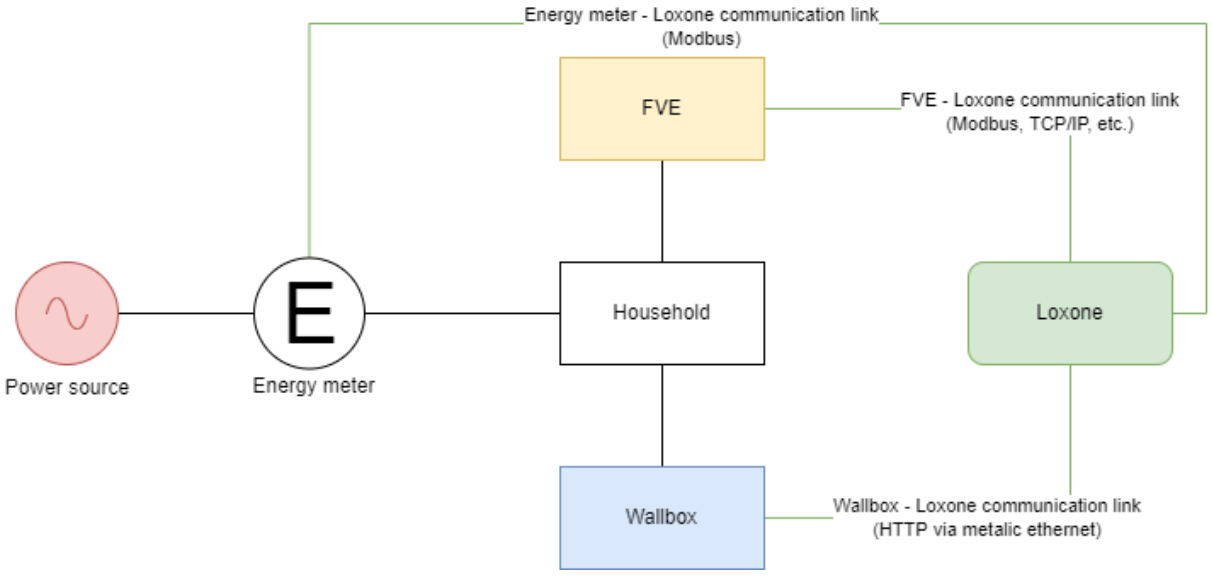
Data available in Loxone (provided by wallbox):

- Car connection status (Connected or Not connected)
- Car status (Not connected, Connected, Wants recharge, Wants ventilation, Error)
- Charging status (Inactive, Charging 1F, Charging 3F, Resetting)
- Lock status (Unknown, Locking, Unlocking, Locked, Unlocked, Error)
- Current (L1, L2, L3) in Amps
- Voltage in Volts
- Energy in kWh
- Total energy in kWh

Loxone can control:

- Current limit
- Charging enabled (socket 1, socket 2)

For real time current limit control there needs to be electricity metering installed and connected with Loxone. We recommend using compatible Modbus Energy Meter connected to Loxone via Modbus Extension.



REQUIREMENTS

For basic operation:

- Loxone miniserver connected to local network
- Wallbox connected to local network, static IP address assigned
- Energy meter installed on power source line and connected to Miniserver

For advanced operation:

- FVE system installed and connected to Miniserver
- Two tariff relay for two tariff operation (expensive/cheap electricity)

Wallbox setup

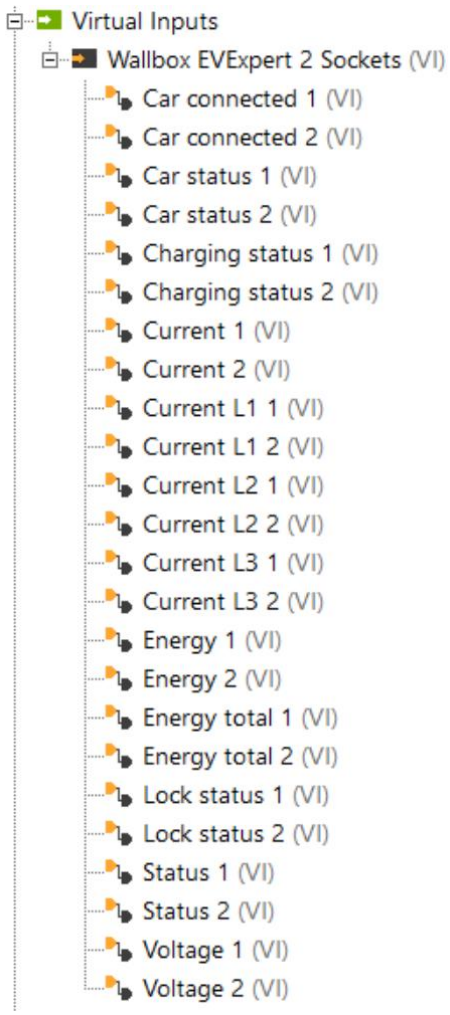
1. Assign static IP to the wallbox (done in your router)
2. Create admin user in wallbox web UI
    a. Please avoid special characters in both username and password!

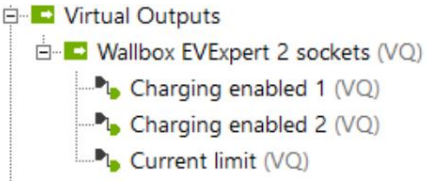
Loxone setup

1. Connect Loxone with Modbus energy meter, import energy meter template into your config and review received data (for the integration we need actual current for phase 1, 2 and 3 separated)
2. Set minimum polling cycle interval for these three metrics (5 seconds)

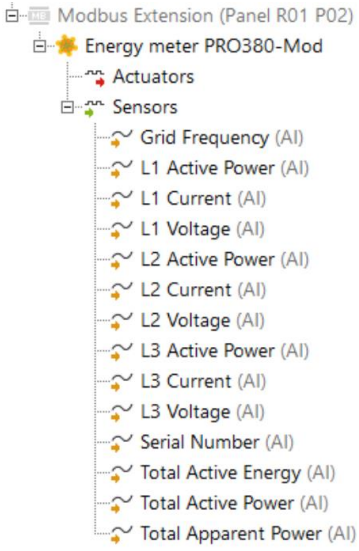
LOXONE CONFIG INSTRUCTIONS

Please download Virtual Inputs and Virtual Outputs template from https://library.loxone.com/detail/ev-expert-wallboxes-708/overview and import it into your Config.





You should also have your Modbus Energy meter already connected and working – it will look like this:



You must replace wallbox IP address and username and password with values valid for you installation:

- In Virtual Inputs on *Wallbox EVExpert 2 Sockets* please replace IP address in URL with IP address of your wallbox
  - E.g. when your wallbox IP address is 10.0.10.2, you should set http://10.0.10.2/api/status?loxone into the URL value
- In Virtual Outputs on *Wallbox EVExpert 2 Sockets* please:
  - Replace **IP address** in Address with IP address of your wallbox
  - Replace **username** in Address with username of your wallbox user (created in Requirements – Wallbox setup section)
  - Replace **password** in Address with password of your wallbox user
  - E.g. for user *loxone* with password *pass123* and wallbox IP address *10.0.10.2* you should set http://loxone:pass123@10.0.10.2 into the Address value

Next please look at config template available in Loxone Library (the same link as above). There are two pages:

- *Charging* – Wallbox control block, Utility Meter block and some utilities
- *Wallbox* – Wallbox readings visualizations and Current control logic

You must set proper values on *Wallbox* page (all are marked with TODO note):

- Set wallbox circuit breaker value on V2 on "*Available current*" block
  - Please set value of circuit breaker installed in front of wallbox (e.g. 16A)
- Connect phase used in 1P charging
  - Please connect current reading from energy meter for phase used while 1-phase charging is in process
  - The best way to detect which phase is used, please connect your EV with 1-phase on board charger and check current values for each phase. Then in Loxone Config connect the phase which is used by car.
- Set main circuit breaker value on V3 on "*Technical current limit (max available current for location)*" block
  - Please set value of main circuit breaker installed in front of energy meter (e.g. 32A)
  - We recommend setting a few Amps less than CB current rating (e.g. 30A)

You should also change default and maximum values for Virtual Input "*Max charging current*". Maximum value must not be greater then rating of circuit breaker installed in front of wallbox. Current limit will be set to Default value after Loxone Miniserver restart. Please do not change minimum value, it should be set to 6 (smaller limits are not visible in EVExpert wallbox web UI).

You can copy & paste all blocks/pages from the template to your Config. Just be sure you connect right inputs and outputs with right blocks.

REMARKS

You should add some other blocking logic like HDO (two-tariff operation) in Czech Republic or to charge just in case of excesses from FVE. All these blocking/allowing logics should control "*Charging enabled*" switches on Charging page. These switches are visible in visualization thus this blocking can be overridden by user in case of need.

Loxone has Modbus polling cycle limitation, minimum interval is 5 seconds. HTTP polling is limited to 10 seconds minimum. Therefore circuit breaker current rating can be exceeded for a small period of time. This should have no effect on circuit breaker type B or C. We recommend sizing the installation well.