

These commissioning instructions serve to illustrate each step of the integration of the gateway.

The basis of this information was collected from plant integration in Germany, Bavaria.

This is a detached house with a Buderus Logamax Plus GB192-15 with integrated hot water storage, a heating circuit and a solar thermal system.

Logamax Plus GB192-15 (Boiler)



RC310 (Thermostat):



- Wifi is also possible, but should only be used if cable pulling is difficult.
- If your boiler does not have an EMS service socket or you want to install the EMS gateway elsewhere, you can also connect the EMS gateway to the EMS screw terminal in the boiler in parallel with the thermostat. In this case, the EMS gateway must be supplied with power via the optional external 12 V power supply unit.

- So if your boiler or heat pump has a service socket, you will need the optional EMS service cable. If your boiler or heat pump does not have a service socket or you want to use it now, you will need the optional power supply unit and an EMS screw terminal cable.

Important hints doing Installation and commissioning:

Switch off the boiler or heat pump. Plug the cable first into the gateway and then into the boiler or heat pump.

or the heat pump. Press the plug firmly into the plug or both sides. Switch on the boiler or heat pump.

If the gateway is connected correctly, it will start flashing slowly to indicate that it is working

and is searching for the EMS bus and the WLAN network.

Note: If you plug in or unplug the jack cable on the gateway first and not on the boiler side, it may cause a temporary short circuit of the boiler.

temporary short circuit of the boiler. It will then restart, which may result in clicking noises.

Tip: If you have a thermostat such as the RC310 and the display switches off when you connect the gateway via the service socket, swap the two wires on the thermostat.

RC310 Note: With almost all boilers, it does not matter which EMS cable you connect to which of these two connection pins, as the gateway has an internal correction circuit.

The Gateway has an internal correction circuit. However, with some boilers and, for example, if you have installed an RC310, the

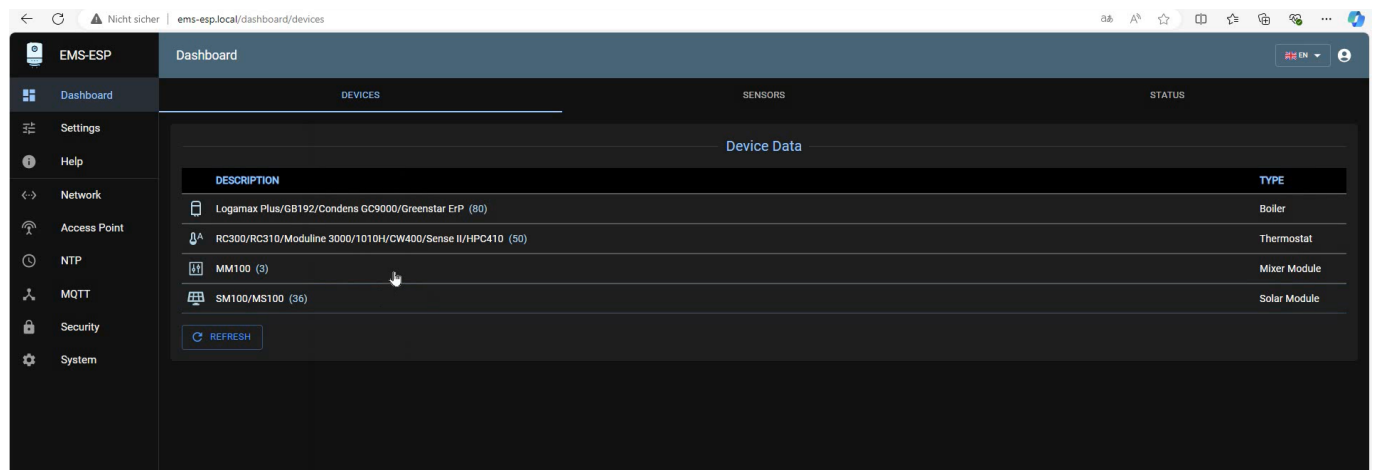
the orientation does play a role. If installed incorrectly, the thermostat display will not show anything. If this is the case, simply swap

simply replace both EMS cables on the gateway (i.e. swap them, don't replace them). If this does not work, replace the EMS cables on the thermostat.

Step 2: Gateway Commissioning

Use the integrated Webinterface of the Gateway:

With <http://ems-esp.local> or later with the IP Adress of the Gateway.



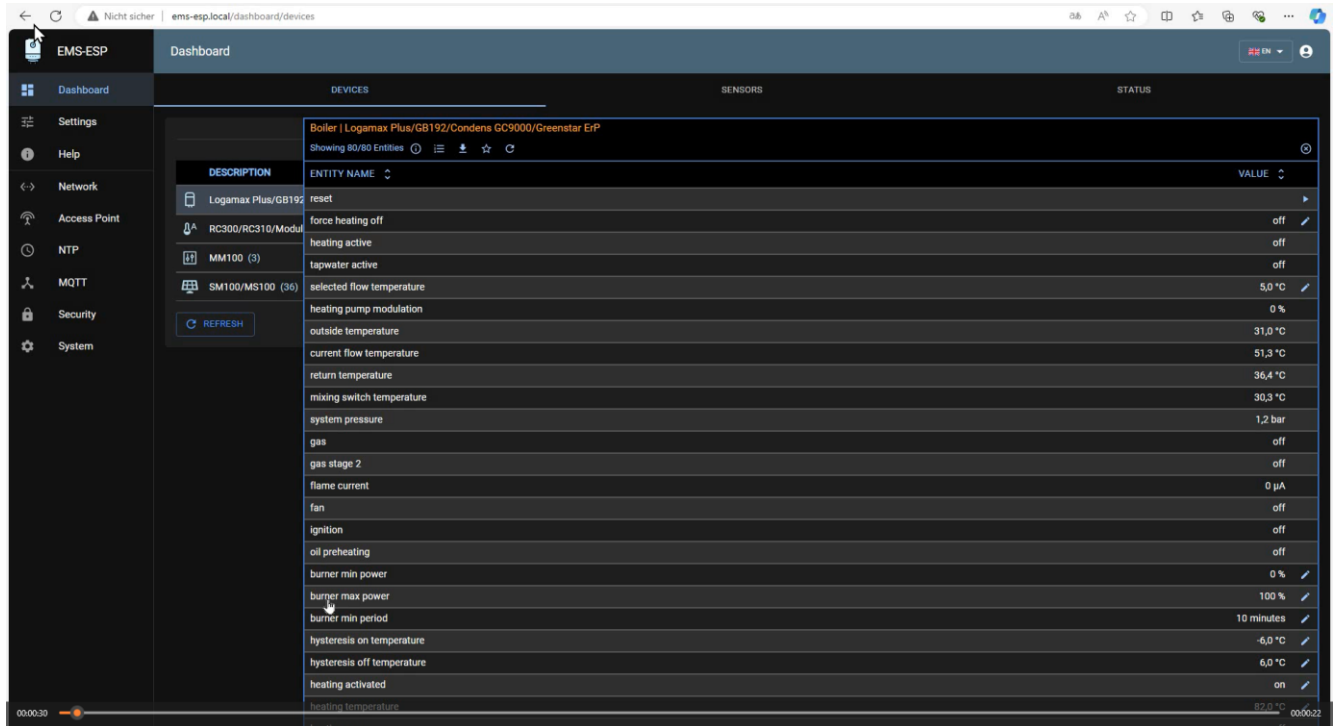
Why is the integrated Webinterface of the Gateway so important?

- To check which datapoints are available on the system, of course **this differs from system to system!**
Each hydraulic system is individual depending of the used devices and extension modules!
Boilers and heat pumps are identified as "Boiler"
Control units such as the RC 310 are identified as "thermostat"
Mixer modules such as the MM100 as "mixer"
Solar modules such as the SM100 as "solar"
These abbreviations are very important later in the Loxone Config and for querying the available parameters and write commands.
- Make network settings. Use a fixed IP adress.
- The bus connection between the modules and the devices can be checked and adjusted.
- Firmwareupdates & Diagnosticfunctions

Hint:

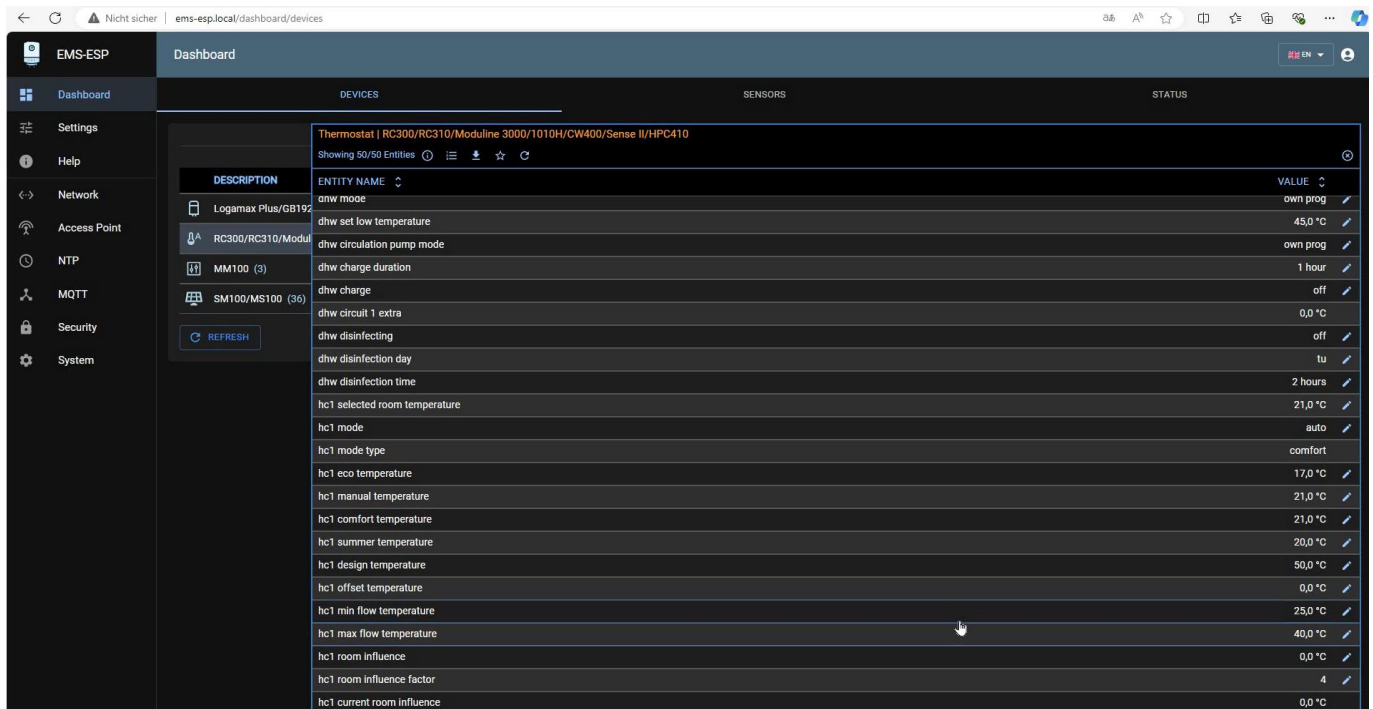
Please note that the settings shown may also differ from device to device! This is just one example of our successful integration!

Example datapoints Boiler: (Logamax Plus GB192)



DESCRIPTION	ENTITY NAME	VALUE
Logamax Plus/GB192	reset	
RC300/RC310/Modul	force heating off	off
MM100 (3)	heating active	off
SM100/MS100 (36)	tapwater active	off
	selected flow temperature	5,0 °C
	heating pump modulation	0 %
	outside temperature	31,0 °C
	current flow temperature	51,3 °C
	return temperature	36,4 °C
	mixing switch temperature	30,3 °C
	system pressure	1,2 bar
	gas	off
	gas stage 2	off
	flame current	0 µA
	fan	off
	ignition	off
	oil preheating	off
	burner min power	0 %
	burner max power	100 %
	burner min period	10 minutes
	hysteresis on temperature	-6,0 °C
	hysteresis off temperature	6,0 °C
	heating activated	on
	heating temperature	82,0 °C

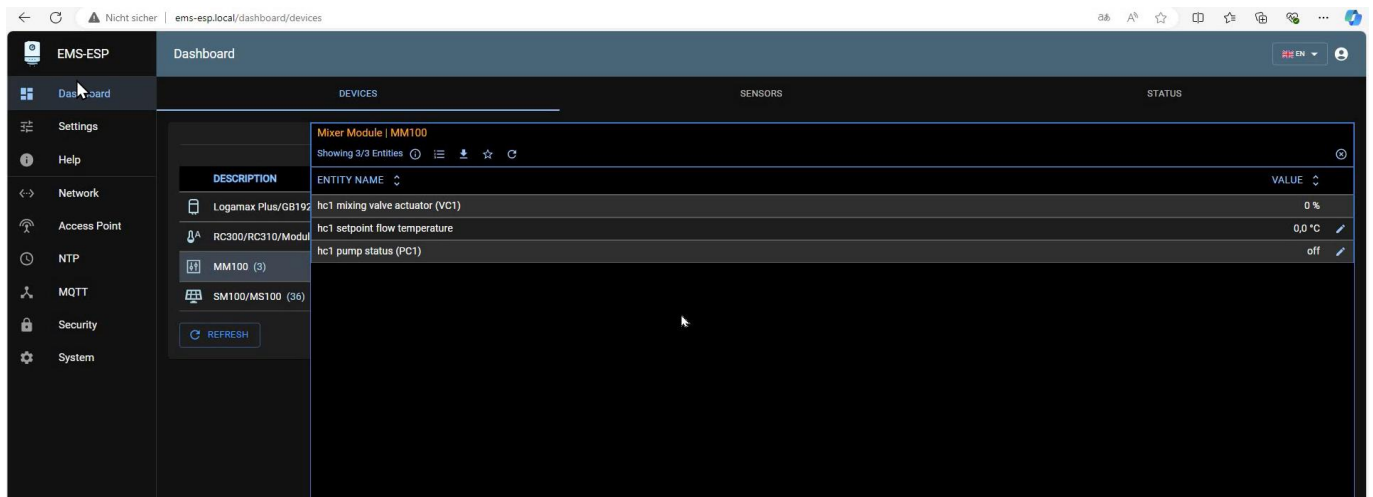
Example datapoints thermostat: (RC310)



The screenshot shows the EMS-ESP dashboard with the 'DEVICES' tab selected. The 'Thermostat | RC300/RC310/Module 3000/1010H/CW400/Sense II/HPC410' is selected, displaying 50 entities. The table lists various datapoints with their descriptions, entity names, and current values.

DESCRIPTION	ENTITY NAME	VALUE
Logamax Plus/GB192	dhw mode	own prog
RC300/RC310/Module	dhw set low temperature	45,0 °C
MM100 (3)	dhw circulation pump mode	own prog
SM100/MS100 (36)	dhw charge duration	1 hour
	dhw charge	off
	dhw circuit 1 extra	0,0 °C
	dhw disinfecting	off
	dhw disinfection day	tu
	dhw disinfection time	2 hours
	hc1 selected room temperature	21,0 °C
	hc1 mode	auto
	hc1 mode type	comfort
	hc1 eco temperature	17,0 °C
	hc1 manual temperature	21,0 °C
	hc1 comfort temperature	21,0 °C
	hc1 summer temperature	20,0 °C
	hc1 design temperature	50,0 °C
	hc1 offset temperature	0,0 °C
	hc1 min flow temperature	25,0 °C
	hc1 max flow temperature	40,0 °C
	hc1 room influence	0,0 °C
	hc1 room influence factor	4
	hc1 current room influence	0,0 °C

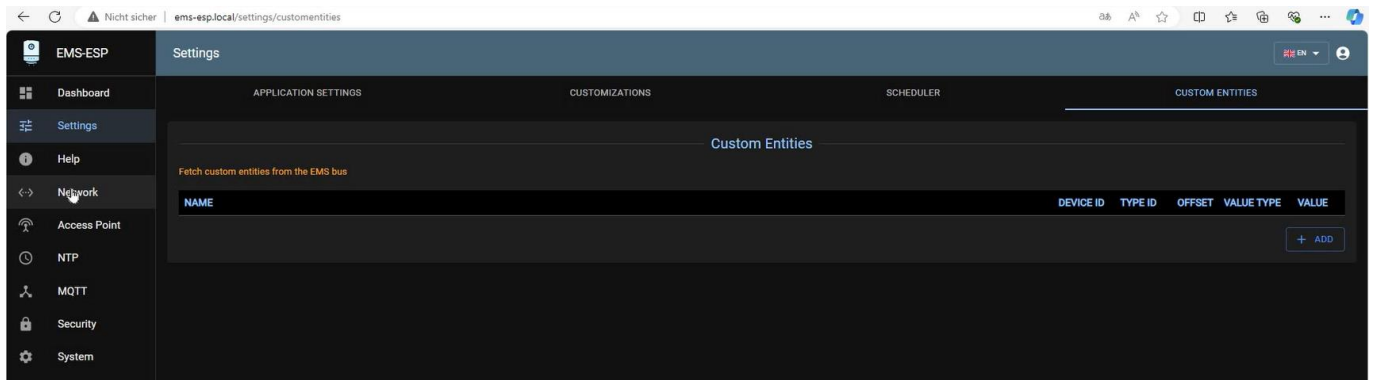
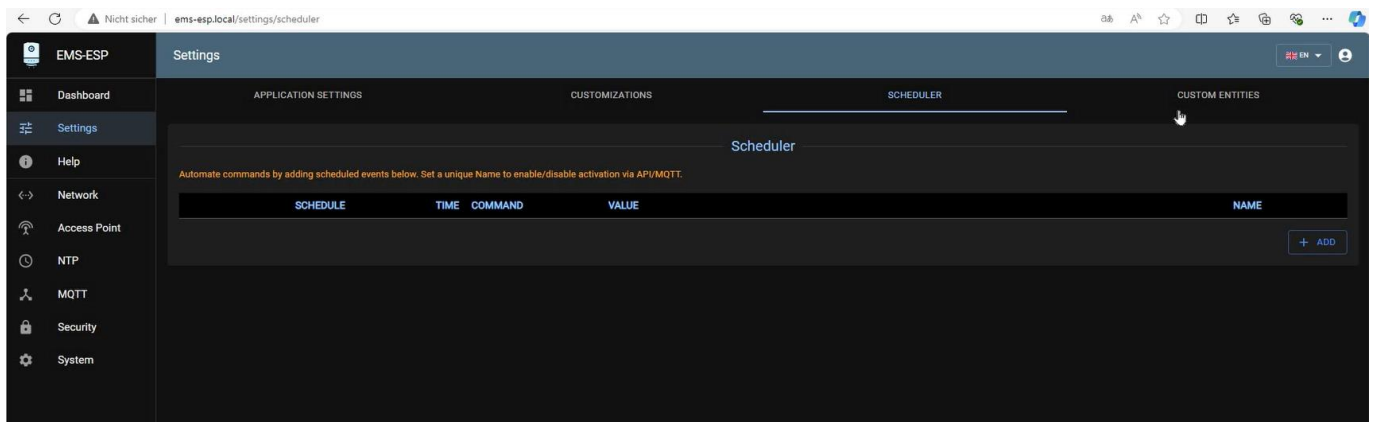
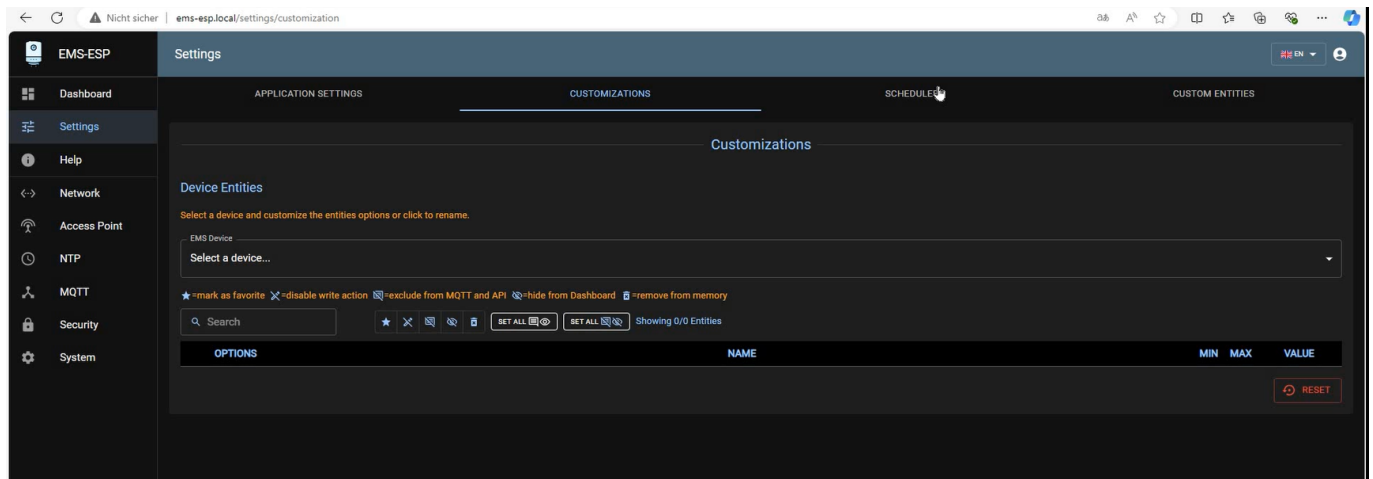
Example datapoints mixer module: (MM100)



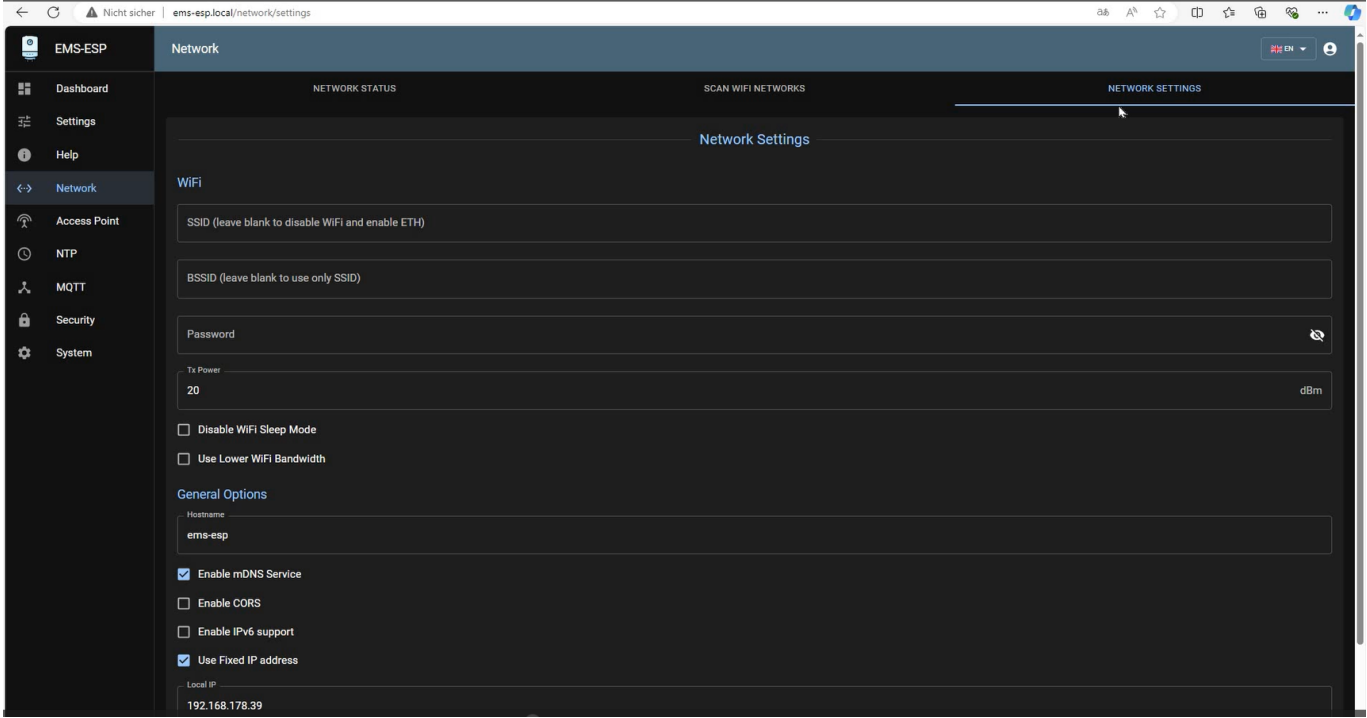
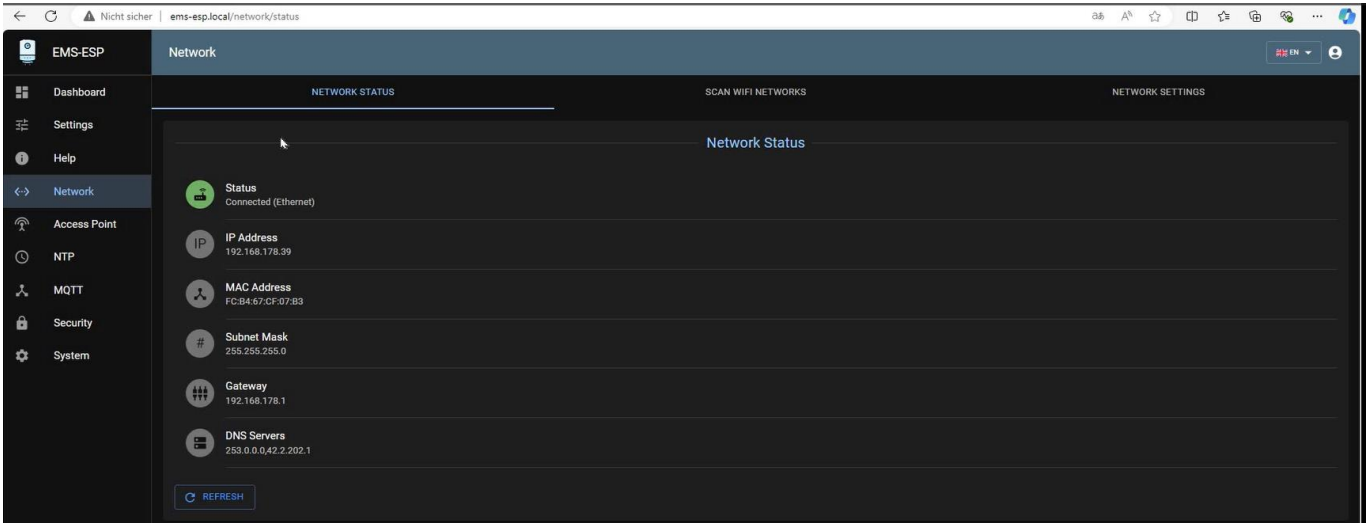
The screenshot shows the EMS-ESP dashboard with the 'DEVICES' tab selected. The 'Mixer Module | MM100' is selected, displaying 3 entities. The table lists various datapoints with their descriptions, entity names, and current values.

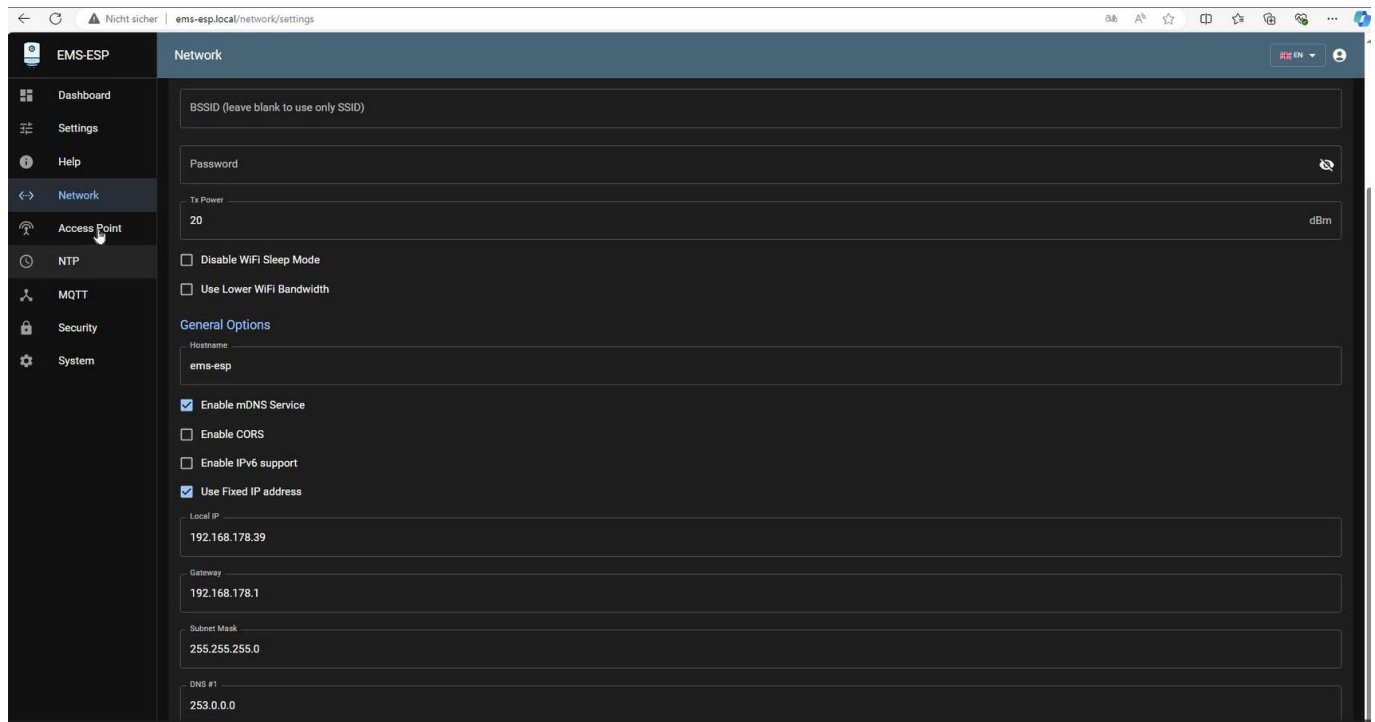
DESCRIPTION	ENTITY NAME	VALUE
Logamax Plus/GB192	hc1 mixing valve actuator (VC1)	0 %
RC300/RC310/Module	hc1 setpoint flow temperature	0,0 °C
MM100 (3)	hc1 pump status (PC1)	off

Example datapoints mixer module: (SM100)

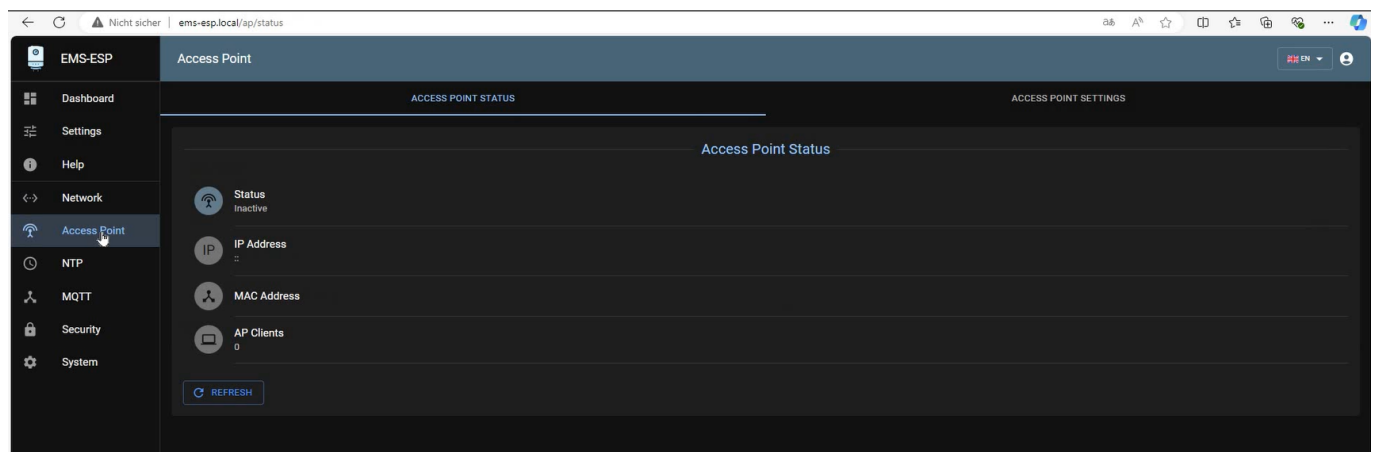


Network Settings: Very Important --> Use a Fix IP Address Reservation in the router & the Webinterface settings!

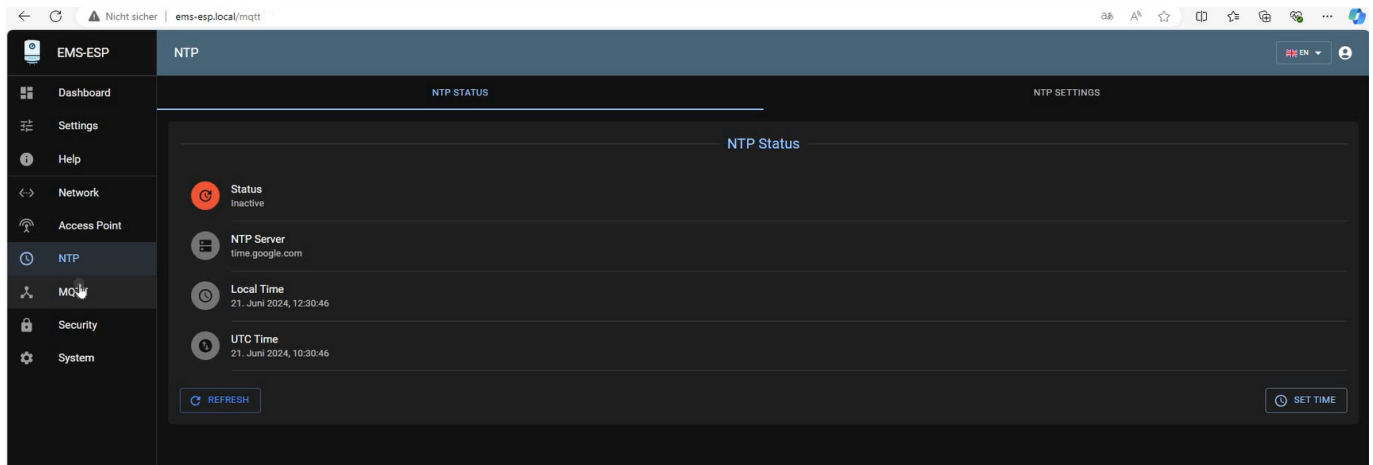




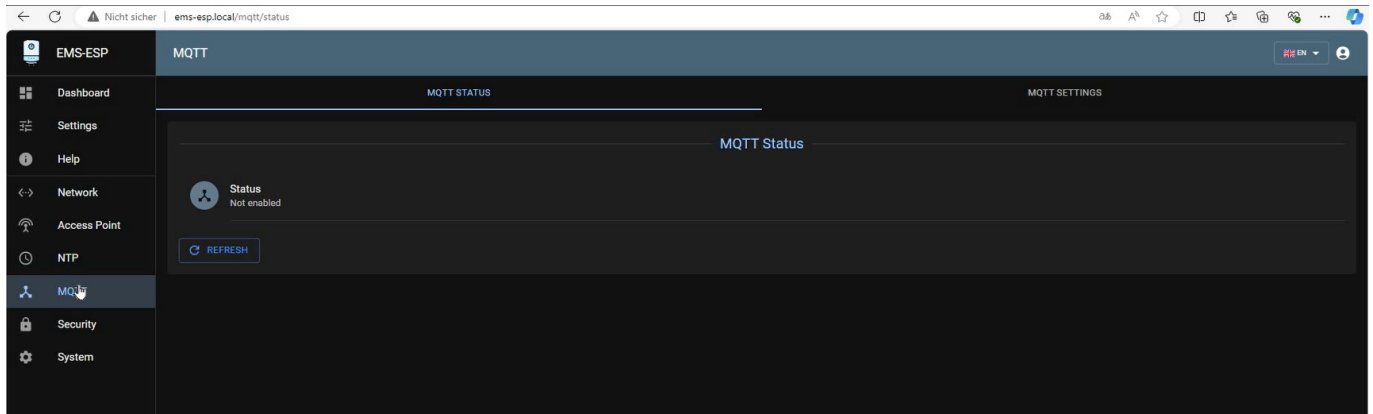
Access Point Settings: Not necessary in our example



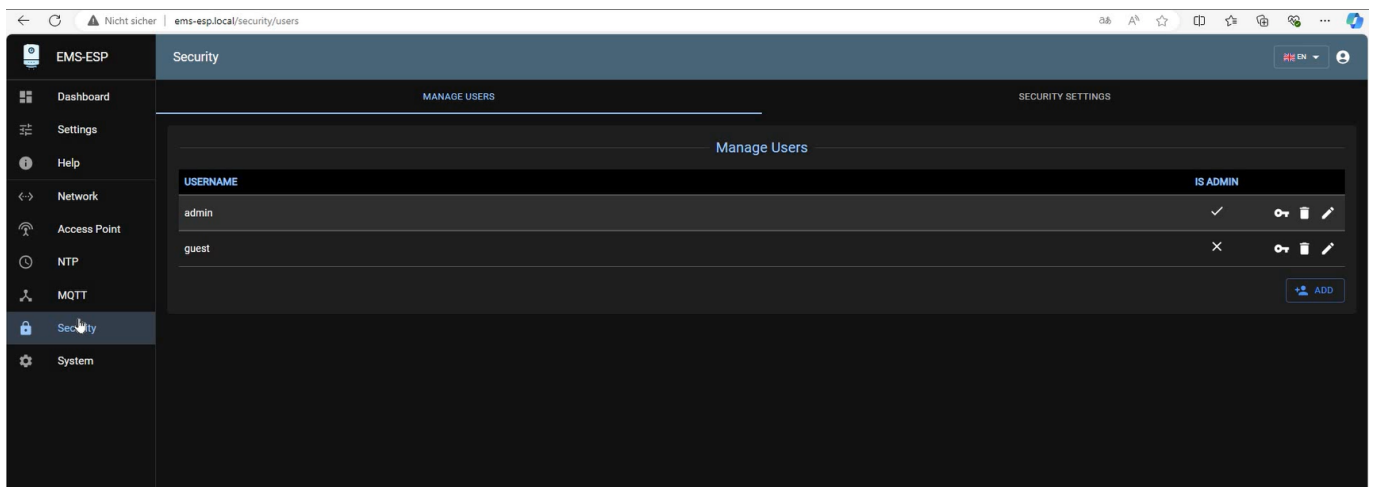
NTP Settings: Not necessary with Virtual Inputs & Outputs



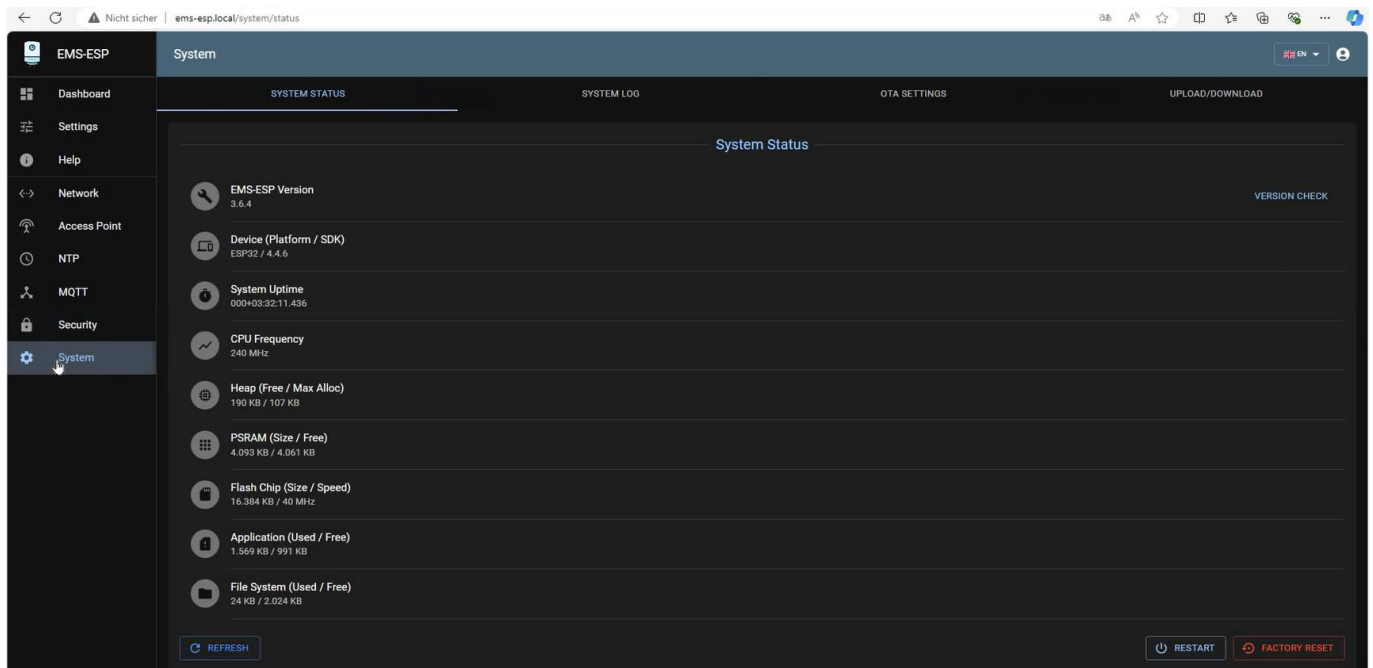
MQTT Settings: Not necessary with Virtual Inputs & Outputs



Security Settings: Not necessary in our example



System Settings: Necessary for Firmware reasons in our example



Step 3: Loxone Config

Step 3.1 Download Templates in Loxone Library

Download of the Virtual Inputs & Outputs

The Boiler Virtual Input is in the “download button”

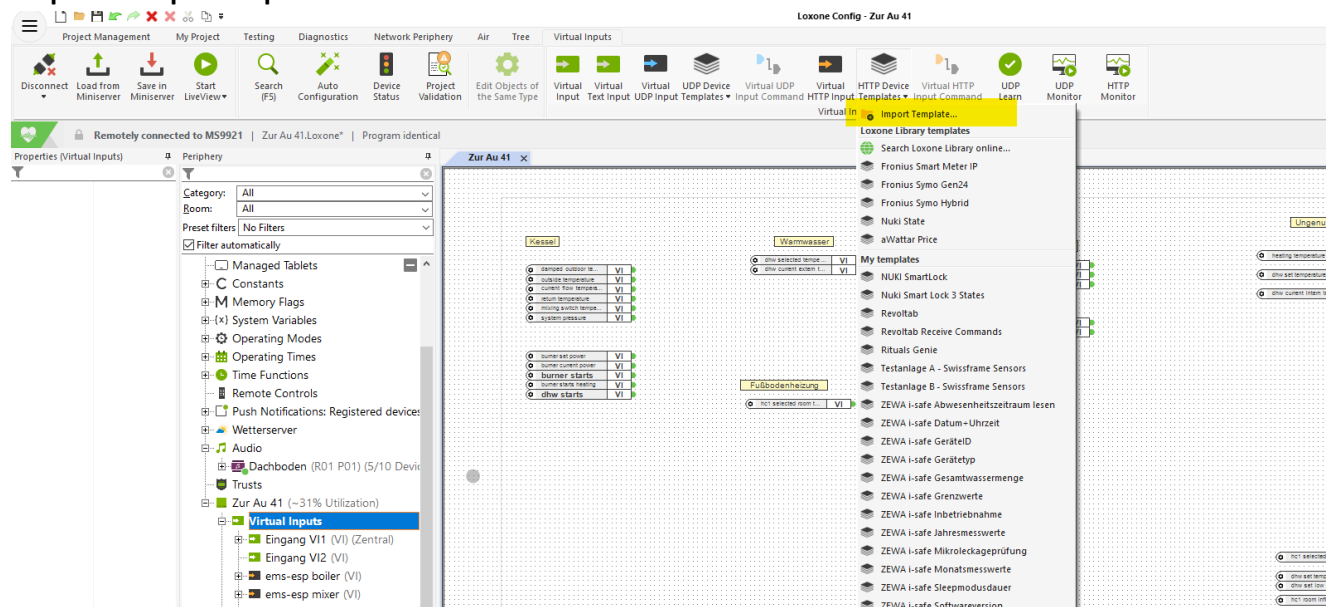
Download

Other Virtual Inputs are in the “Additional downloads” of the template

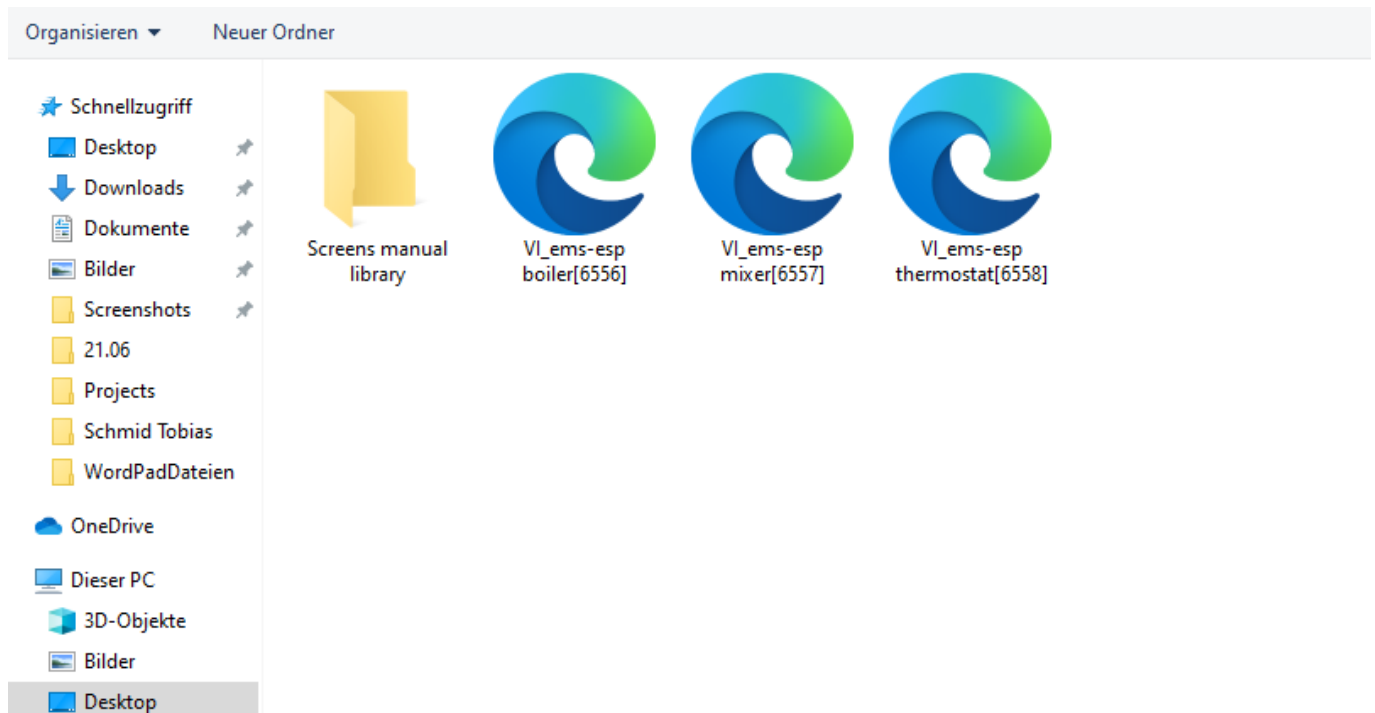
Additional Downloads

	VL_ems-esp mixer.xml XML File • 2KB	 
	VL_ems-esp solar.xml XML File • 2KB	 
	VL_ems-esp thermostat.xml XML File • 5KB	 

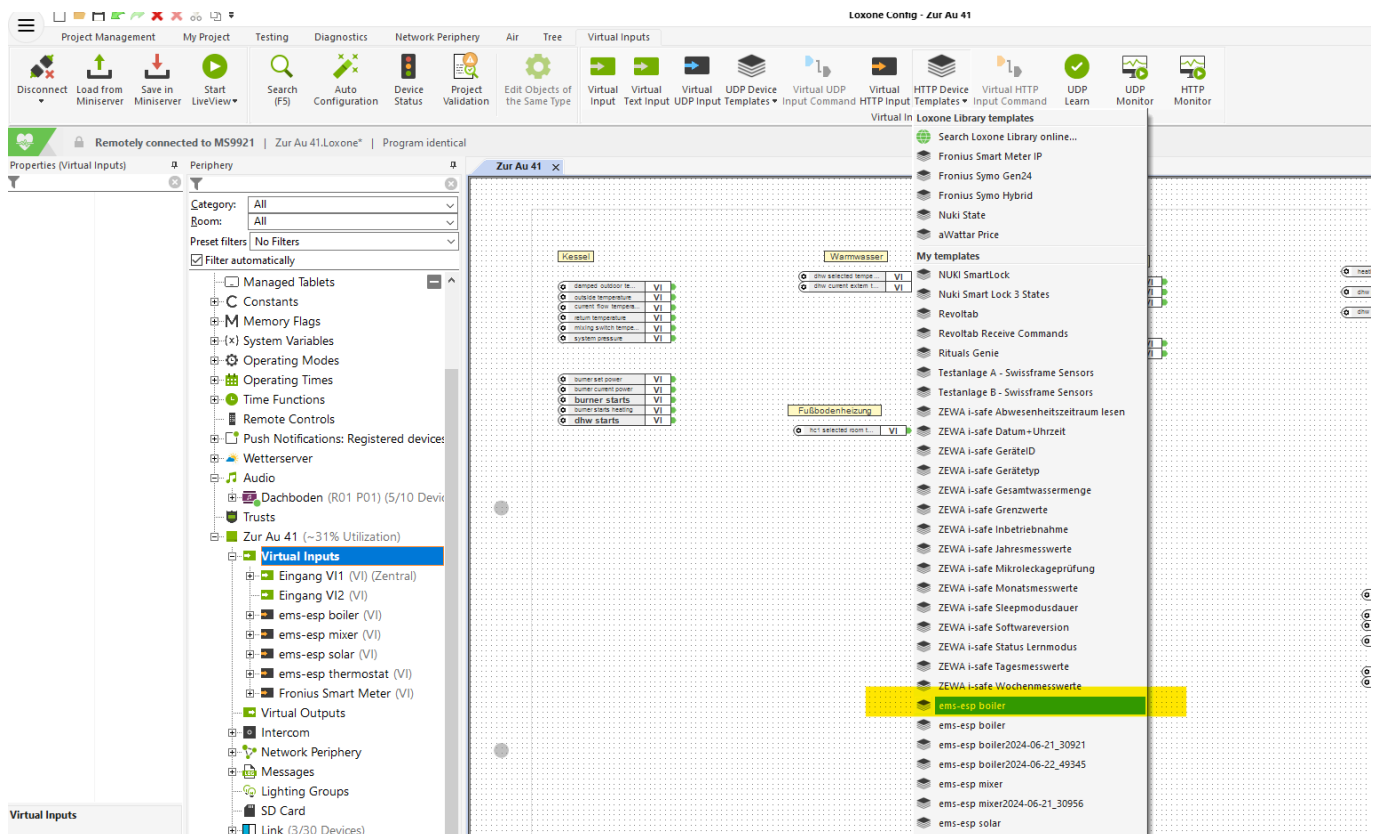
Step 3.2 Templateimport



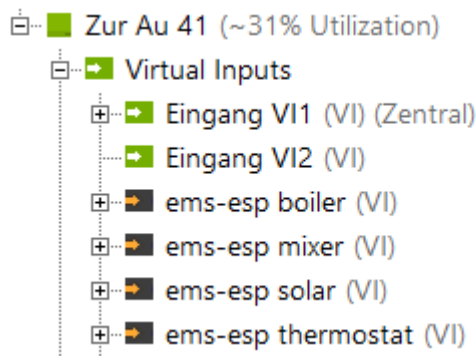
Choose the Downloaded Template from the Download Button or Attached Download area



Click in the pasted Template.



The HTTP Device Templates appears on the left side on "Periphery"



Step 3.3: Adjust the URL & Polling Cycle

Klick on the “ems-esp boiler” and change the IP Address to the IP Address of your own Gateway:

Recommended polling cycle: 30 Seconds (can differ from project to project)

Top Screenshot: ems-esp boiler (VI)

Tab	Field	Value
General	Name	ems-esp boiler
	Description	
	Object Type	Virtual HTTP Input
Settings	URL	http://192.168.178.39/api?device=boiler&cmd=info
	Polling cycle [s]	30
	Timeout [ms]	4000
	Number of permitted timeouts	10
	Display Diagnostic Inputs	<input type="checkbox"/>

Bottom Screenshot: ems-esp mixer (VI)

Tab	Field	Value
General	Description	
	Object Type	Virtual HTTP Input
	Display Diagnostic Inputs	<input type="checkbox"/>
Settings	URL	http://192.168.178.39/api?device=mixer&cmd=info
	Polling cycle [s]	35
	Timeout [ms]	4000
	Number of permitted timeouts	10
	Display Diagnostic Inputs	<input type="checkbox"/>

Object Type	Virtual HTTP Input
Settings	
URL	http://192.168.178.39/api?device=solar&cmd=info
Polling cycle [s]	30
Timeout [ms]	4000
Number of permitted timeouts	10

Object Type	Virtual HTTP Input
Settings	
URL	http://192.168.178.39/api?device=thermostat&cmd=in...
Polling cycle [s]	30
Timeout [ms]	4000
Number of permitted timeouts	10

- hc1 setpoint flow temperature (VI) (Zentral,Heizung)
- hc2 flow temperature (TC1) (VI) (Zentral,Heizung)
- hc2 mixing valve actuator (VC1) (VI) (Zentral,Heizung)
- ems-esp solar (VI)**
- collector temperature (TS1) (VI) (Heizraum,Zentralheizung)
- cylinder bottom temperature (TS2) (VI) (Heizraum,Zentralheizung)
- energy last hour (VI) (Heizraum,Zentralheizung - Solar)
- pump (PS1) (VI) (Heizraum,Zentralheizung - Solar)
- pump modulation (PS1) (VI) (Zentral,Heizung)
- pump working time (VI) (Zentral,Heizung)

- Status thermische Solarenergie Total (VI) (Heizraum,Zentralheizung)
- total energy today (VI) (Heizraum,Zentralheizung - Solar)
- ems-esp thermostat (VI)**
- damped outdoor temperature (VI) (Heizraum,Zentralheizung)
- dhw charge (VI) (Zentral,Heizung)
- dhw circulation pump mode (VI) (Zentral,Heizung)
- dhw mode (VI) (Zentral,Heizung)
- dhw set low temperature (VI) (Zentral,Heizung)
- dhw set temperature (VI) (Zentral,Heizung)
- hc1 comfort temperature (VI) (Zentral,Heizung)

Step 3.4 : Create individual commands


Where can I get the commands?

Click on the "three" dots marked in yellow

General

Name	damped outdoor temperature
Description	Aktuell Gedämpfte Außentemperatur
Hint Text	Edit...
Connection	VCI46
Category	Zentralheizung- Kessel
Room	Heizraum
Object Type	Virtual HTTP Input Command

User Interface

<input checked="" type="checkbox"/> Use in User Interface	
<input type="checkbox"/> User interface password	
Icon	 Edit...
Rating	☆☆☆☆☆☆☆☆
<input type="checkbox"/> Set as Favorite	
Linked Function Blocks	Select...

Statistics

<input type="checkbox"/> Statistics	
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Permissions

Authorized users / groups	Edit...
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Settings

Command recognition

<input type="checkbox"/> Display Error Output	
<input checked="" type="checkbox"/> Signed values	

Correction

Input Value 1	0
Target Value 1	0
Input Value 2	100
Target Value 2	100

Logging/Mail/Call/Track

Validation

<input type="checkbox"/> Use validation	
<input checked="" type="checkbox"/> Monitor validation	

Simulation/LiveView

Display

Unit	<v.1> °C
Input type	Slider

Category: All Room: All

Preset filters No Filters

☒ Filter automatically

- Status thermische Solarenergie Total (VI) (Heizraum)
- total energy today (VI) (Heizraum,Zentralheizung)
- ems-esp thermostat (VI)
- damped outdoor temperature (VI) (Heizraum)**
- dhw charge (VI) (Zentral,Heizung)
- dhw circulation pump mode (VI) (Zentral,Heizung)
- dhw mode (VI) (Zentral,Heizung)
- dhw set low temperature (VI) (Zentral,Heizung)
- dhw set temperature (VI) (Zentral,Heizung)
- hc1 comfort temperature (VI) (Zentral,Heizung)
- hc1 current room influence (VI) (Zentral,Heizung)
- hc1 eco temperature (VI) (Zentral,Heizung)
- hc1 mode (VI) (Zentral,Heizung)
- hc1 mode type (VI) (Zentral,Heizung)
- hc1 room influence (VI) (Zentral,Heizung)
- hc1 room influence factor (VI) (Zentral,Heizung)
- hc1 selected room temperature (VI) (Heizraum,Zentral,Heizung)
- hc1 selected room temperature (VI) (Zentral,Heizung)
- hc1 target flow temperature (VI) (Zentral,Heizung)
- hc1 target flow temperature (VI) (Zentral,Heizung)
- hc2 selected room temperature (VI) (Zentral,Heizung)
- hc2 target flow temperature (VI) (Zentral,Heizung)
- Fronius Smart Meter (VI)
- Virtual Outputs
- Intercom
- Network Periphery
- Messages
- Lighting Groups

Or: Use the following commands in a Webbrowser

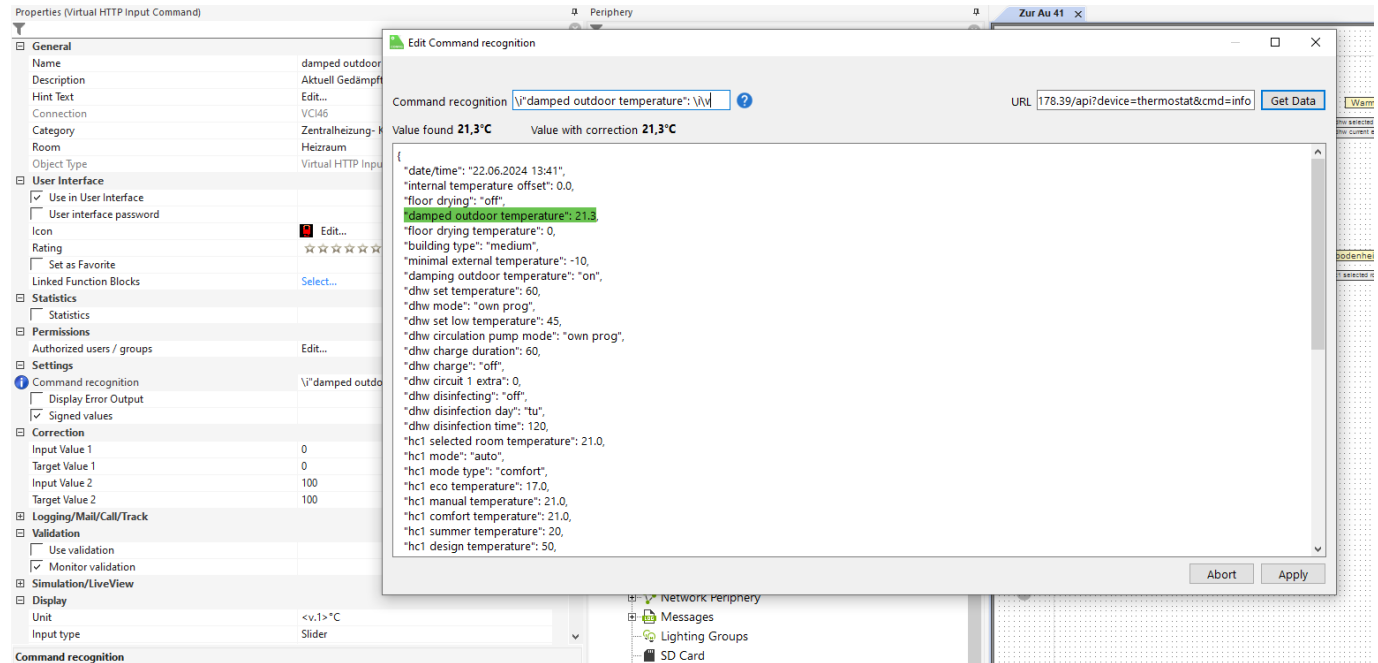
[http://\[ems-esp-ip\]/api/boiler/info](http://[ems-esp-ip]/api/boiler/info)

[http://\[ems-esp-ip\]/api/thermostat/info](http://[ems-esp-ip]/api/thermostat/info)

[http://\[ems-esp-ip\]/api/mixer/info](http://[ems-esp-ip]/api/mixer/info)

[http://\[ems-esp-ip\]/api/solar/info](http://[ems-esp-ip]/api/solar/info)

A window appears with all commands:



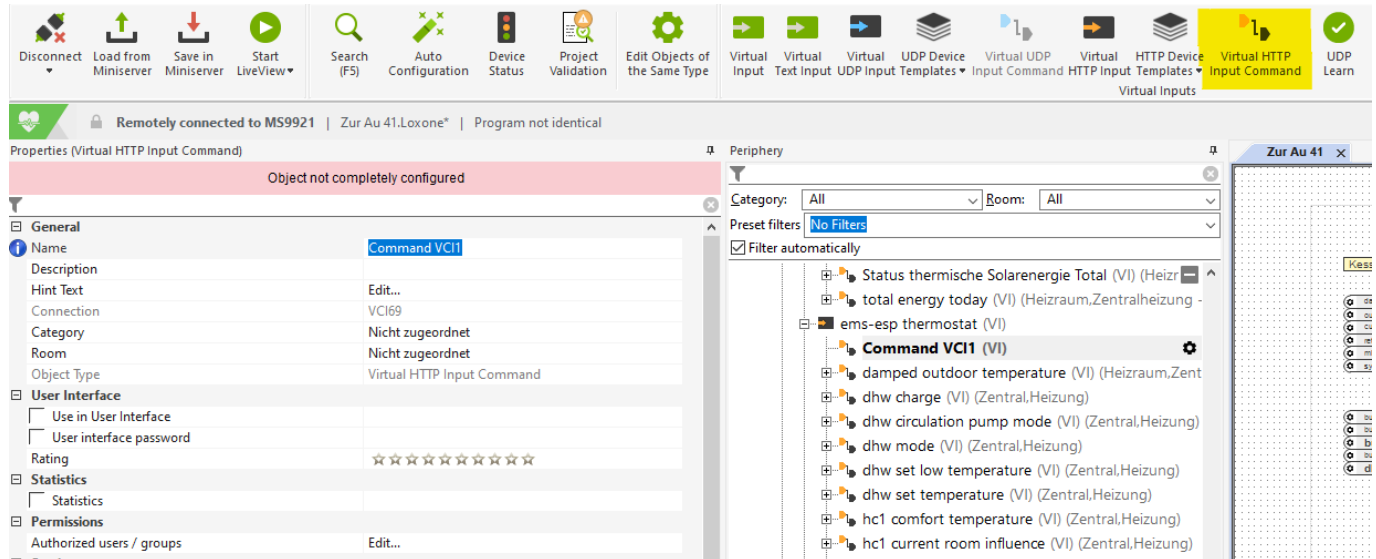
Copy and paste the commands in an Editor for example

Datei Bearbeiten Format Ansicht Hilfe

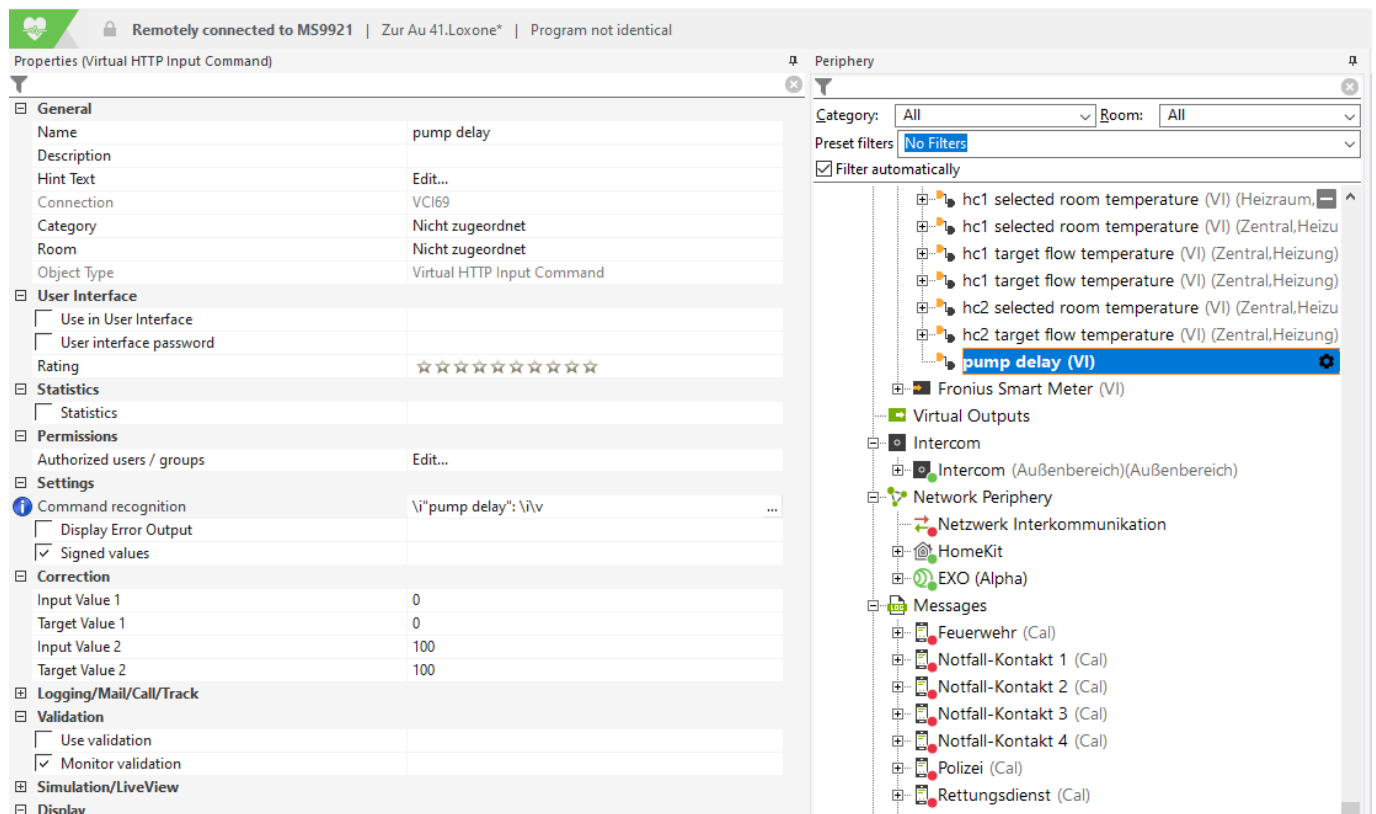
Boiler:

```
"force heating off": "off",
"heating active": "off",
"tapwater active": "off",
"selected flow temperature": 5,
"heating pump modulation": 0,
"outside temperature": 27.6,
"current flow temperature": 59.1,
"return temperature": 56.4,
"mixing switch temperature": 32.3,
"system pressure": 1.2,
"gas": "off",
"gas stage 2": "off",
"flame current": 0.0,
"fan": "off",
"ignition": "off",
"oil preheating": "off",
"burner min power": 0,
"burner max power": 100,
"burner min period": 10,
"hysteresis on temperature": -6,
"hysteresis off temperature": 6,
"heating activated": "on",
"heating temperature": 82,
"heating pump": "off",
"boiler pump max power": 70,
"boiler pump min power": 10,
"boiler pump mode": "proportional",
"pump delay": 3,
"set flow temperature": 0,
"burner set power": 0,
"burner selected max power": 0,
"burner current power": 0,
"burner starts": 133941,
"total burner operating time": "924 days 5 hours 6 minutes",
"burner stage 2 operating time": "0 days 0 hours 0 minutes",
"total heat operating time": "780 days 0 hours 0 minutes",
"burner starts heating": 50296,
"total UBA operating time": "2545 days 15 hours 20 minutes",
"last error code": "6L(229) 24.03.2024 12:26 (0 min)",
"service code": "0H",
"service code number": 203,
"maintenance message": "H00",
"maintenance scheduled": "off",
"time to next maintenance": 6000,
"next maintenance date": "01.01.2009",
"dhw set temperature": 63,
"dhw selected temperature": 60,
```

Create a new command, copy & paste an old command and replace the datapointname in the command recognition trough the new command text



Example: command recognition with “pump delay”

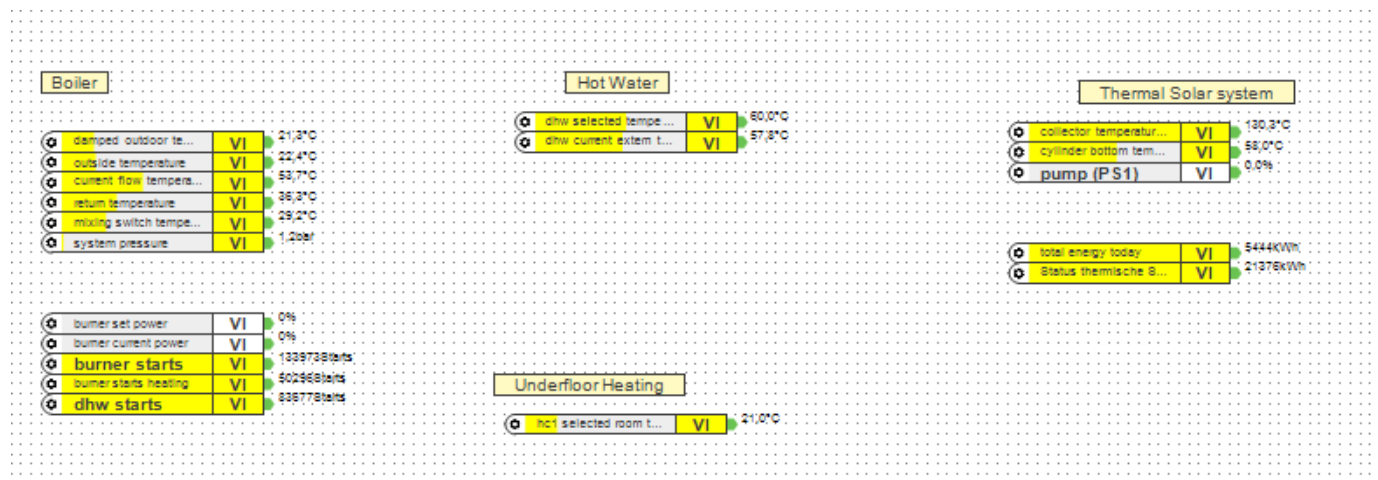


Step 3.4 : Control the values

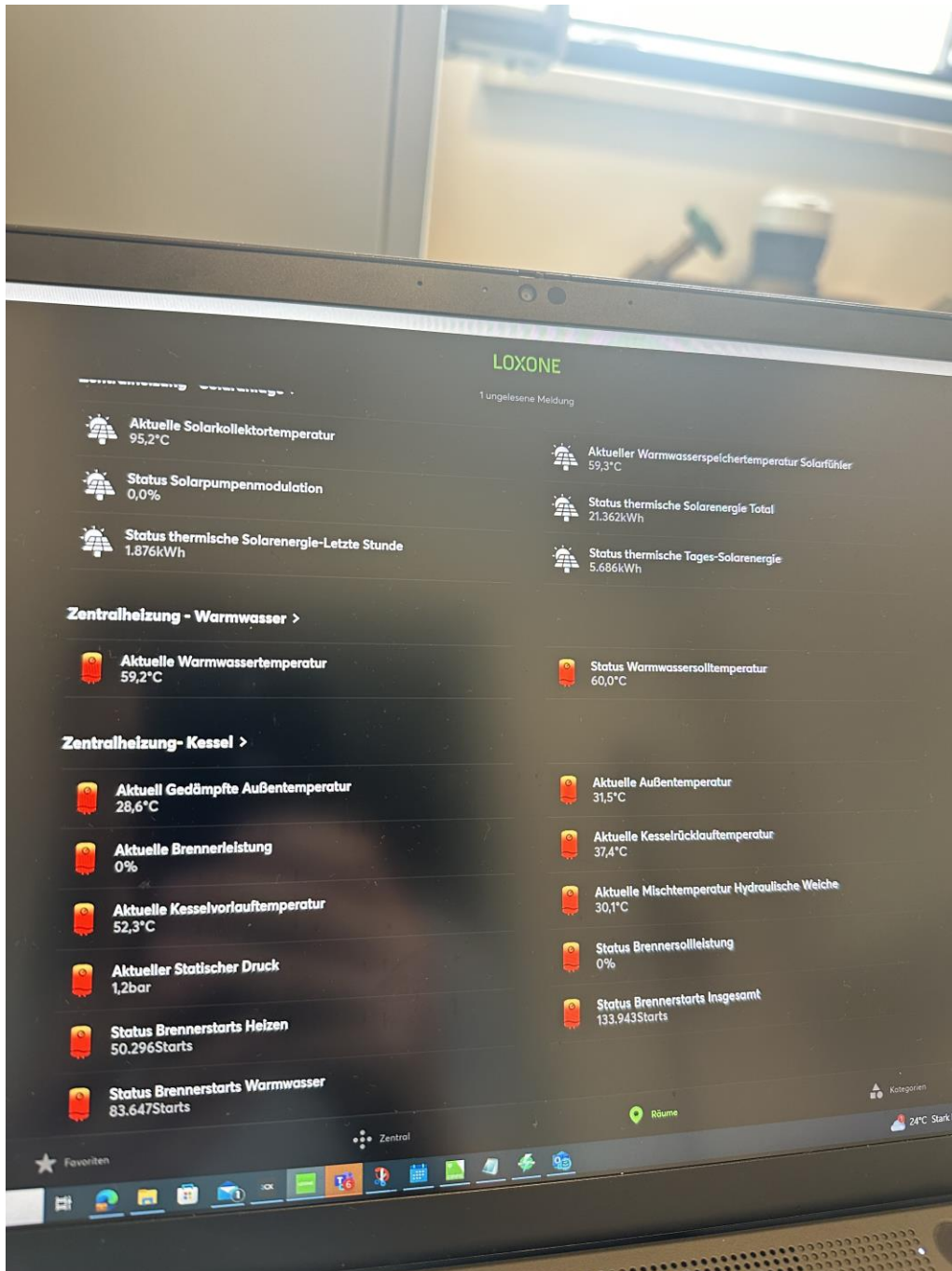
All Virtual Inputs should receive after the polling cycle the correct values.

You can compare it with the operation unit for example the "RC310".

To do this, it is also necessary to access the service level. This is possible by pressing and holding the "Menu" button for 5 seconds on the RC310.



By adjusting the description, category, room, units and corrections, the actual values appear in the app



Create your own visualization, control the hot water temperature with virtual outputs and individual logic. Influence the heating curve, the room influence or flow temperatures with individual logic or the intelligent temperature controller and the Climate Controller.

Hints for Virtual Outputs:

Use the following manual: [Configuration for Loxone — EMS Gateway documentation \(bbgkees-electronics.nl\)](https://www.bbgkees-electronics.nl/en/loxa/ems-gateway/ems-gateway-configuration)

The part from Loxberry and MQTT is NOT required.

You can check all available parameters for Virtual Outputs with the following commands:

```
http://\[ems-esp-ip\]/api/boiler/commands  
http://\[ems-esp-ip\]/api/thermostat/commands  
http://\[ems-esp-ip\]/api/mixer/commands  
http://\[ems-esp-ip\]/api/solar/commands
```