INTEGRATION GUIDE

WattWächter Plus on the Loxone Miniserver

Reading a smart meter over Modbus TCP — with ready-made Loxone Config device templates that create every register for you.

A step-by-step walkthrough: add the Modbus server, import the template, save to the Miniserver and check the live values.

Product	**WattWächter Plus**
Manufacturer	**SmartCircuits GmbH**
Interface	**Modbus TCP, port 502**
Profile	**SunSpec model 1 + 203**
Device firmware	**1.2.0 or newer**
Loxone Config	**17.1.6.30 or newer**
Revision	**2026-08-25**

Online version, register reference and downloads:
https://docs.xn--wattwchter-u5a.de/en/plus/integrations/loxone/
Shop: www.wattwächter.de · Support: info@smartcircuits.de

Loxone Miniserver

The WattWächter Plus integrates with Loxone via its Modbus TCP server. Loxone Config has **no** SunSpec auto-discovery — unlike Home Assistant or evcc, the Miniserver does not parse the SunSpec header itself.

So that you don't have to type register addresses by hand, there are **two ready-made Loxone templates**. They create all Modbus sensors, set the data type, polling cycle and scaling, and deliver values directly in kW, kWh, A, V and Hz. The manual route is still described under Adding registers manually.

Prerequisites

- WattWächter Plus running firmware **1.2.0** or newer
- Modbus TCP enabled on the WattWächter — web interface → **Settings** → **Modbus TCP** → **Enable Modbus TCP server** → **Save**. Other ways under Modbus TCP → Enabling
- Loxone Miniserver (Gen 1 with Modbus Extension or Gen 2) on the same network
- **Loxone Config 17.1.6.30** or newer — the templates declare this as their minimum version
- A **static IP address** for the WattWächter (see the warning below)

> **Loxone needs the IP address — not the `.local` name**
>
> The Miniserver does not resolve mDNS/`.local` names. Enter the WattWächter's **IP address** in the Modbus server object, not `wattwaechter-XXXXXXXXXXXX.local`.
>
> Set up a **DHCP reservation** in your router or configure a static IP on the WattWächter. Without it the connection breaks on the next lease change — and Loxone will silently keep showing the last value it read instead of reporting an error. The FAQ explains how to find the current IP.

Downloading the templates

Template	Sensors	Contents	Who is it for?
WattWächter Plus	3	Active power, import, export	The default — every supported meter delivers these three values
WattWächter Plus – All Values	15	Additionally per-phase power/current/voltage, total current, average voltage, grid frequency	Meters that also send per-phase values

Download — pick the file that matches your meter:

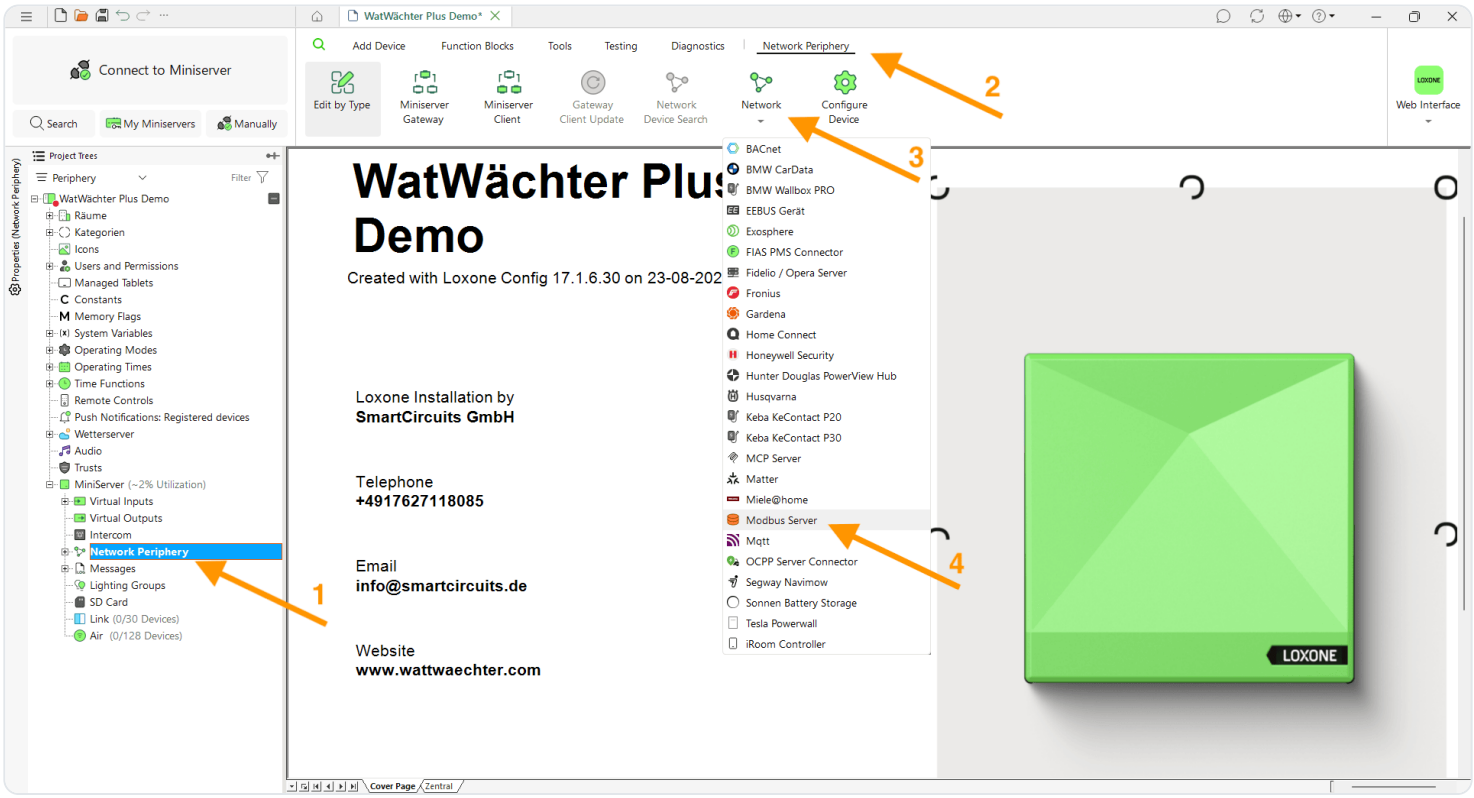
WattWächter Plus (3 values) | **All Values (15 values)**

```
3 values: https://download.xn--wattwchter-u5a.de/d/1bfe92db-7137-4ab7-a07d-1c1bff1485a3
All values: https://download.xn--wattwchter-u5a.de/d/9ffdd5e8-37ae-45d5-a517-3a12d8b4556a
```

> **When in doubt, take the small template**
>
> Which registers your meter actually populates depends on the meter model. `W` (active power), `TotWhImp` (import) and `TotWhExp` (export) are always valid — everything else only if your meter sends the matching OBIS codes. If you use "All Values", the sensors that aren't delivered will show a fixed placeholder value; see Removing values your meter doesn't deliver for how to spot and remove them.

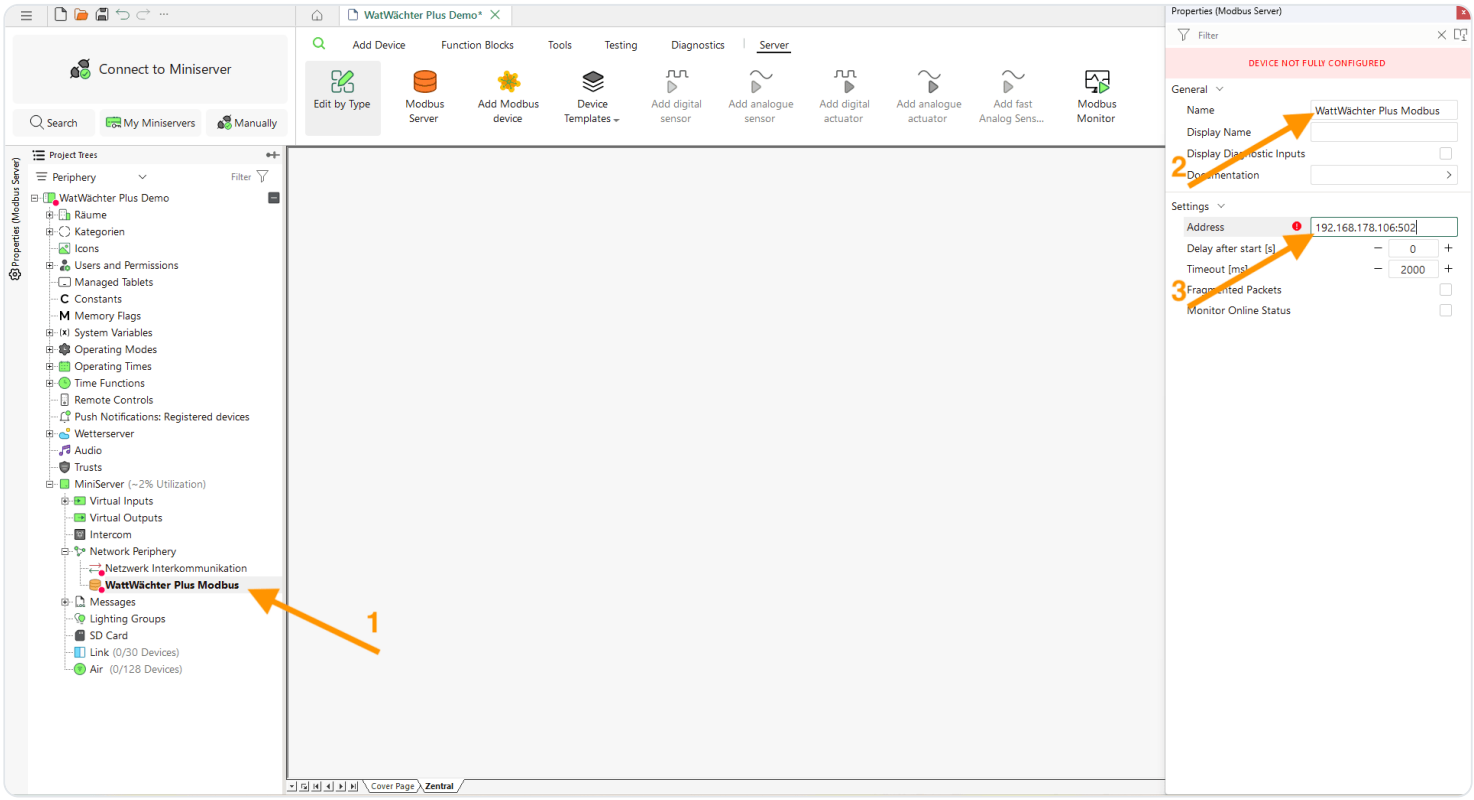
Step 1 — Add the Modbus server

In the project tree, select **Network Periphery** under **MiniServer** (1). Open the **Network Periphery** ribbon tab (2), click **Network** (3) and choose **Modbus Server** (4).

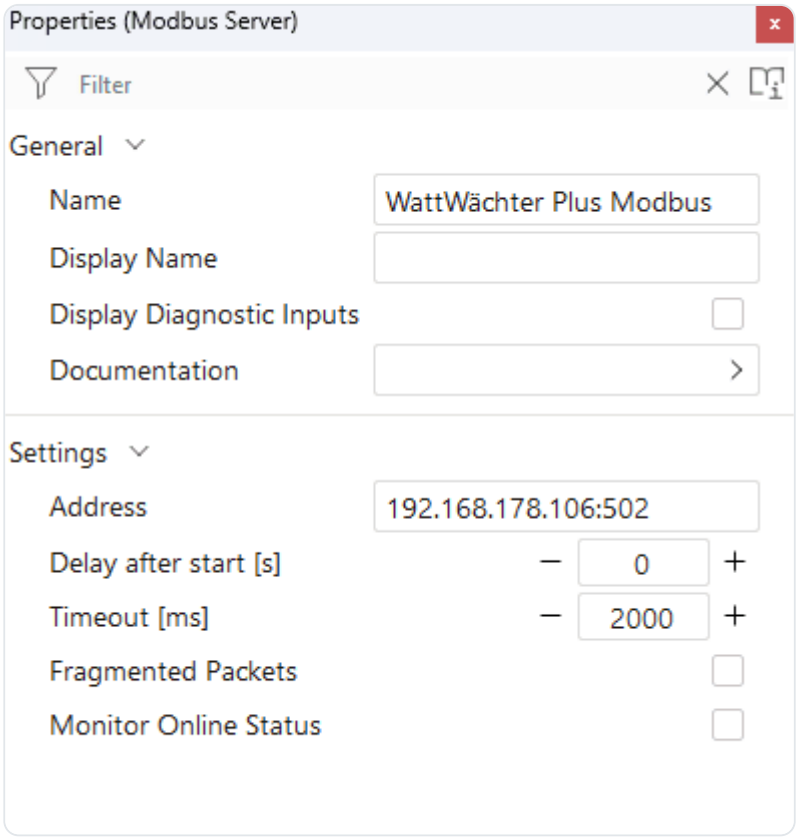


Step 2 — Configure the Modbus server

Select the newly created Modbus server in the project tree (1). The **Properties** panel opens on the right. Enter a **Name** (2) — e.g. `WattWächter Plus Modbus` — and as **Address** the WattWächter's IP address followed by the port, separated by a colon (3):



Field	Value
Name	free choice, e.g. `WattWächter Plus Modbus`
Address	`<IP address>:502` — e.g. `192.168.178.106:502`
Delay after start [s]	`0`
Timeout [ms]	`2000`
Fragmented Packets	off
Monitor Online Status	optional — reports connection drops

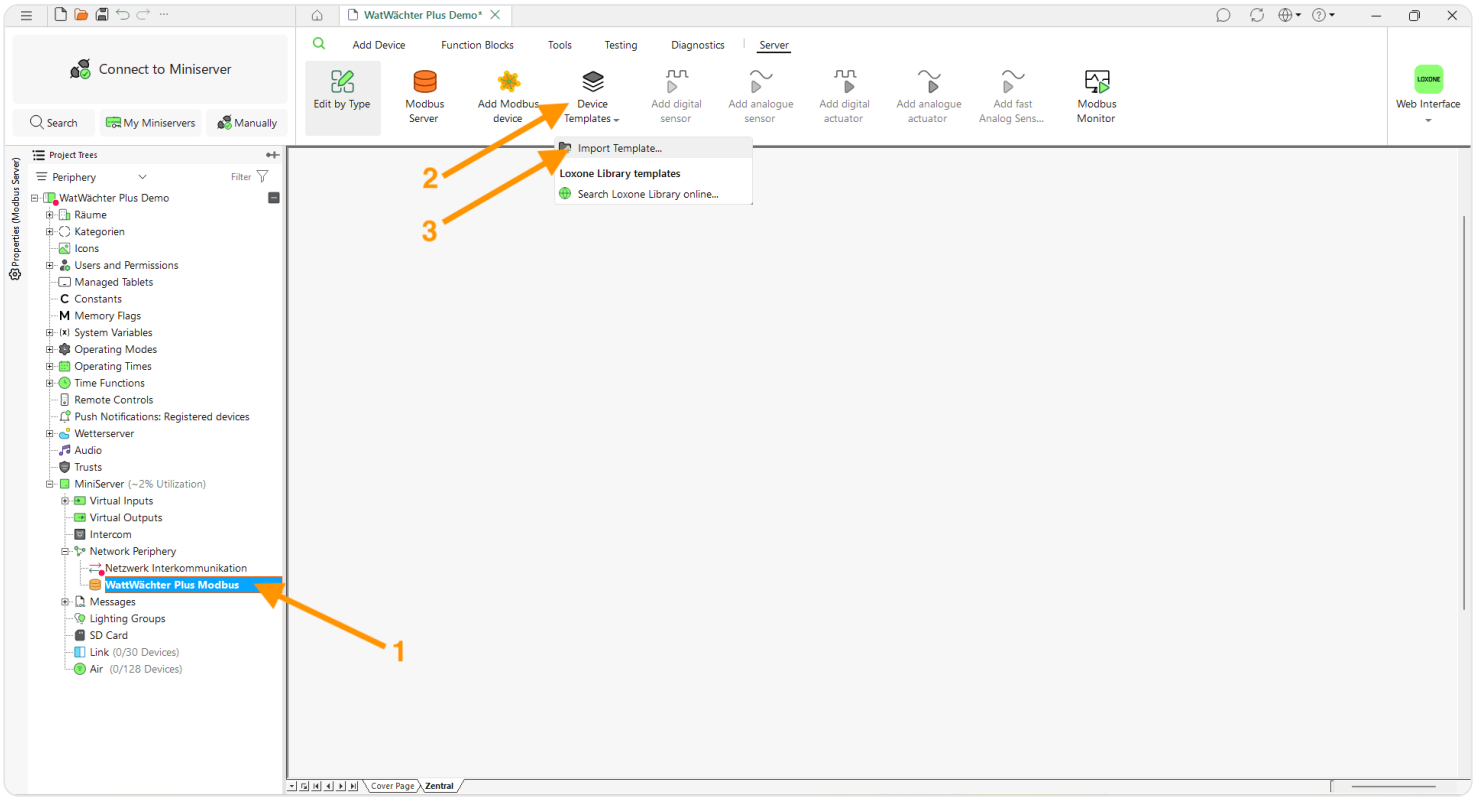


> **The port goes into the same field**
>
> Loxone has no separate port field: port **502** is appended to the IP address. If you configured a different port on the WattWächter, enter that one here.

As long as no device is attached below the server, Loxone shows **"Device not fully configured"**. That disappears with the next step.

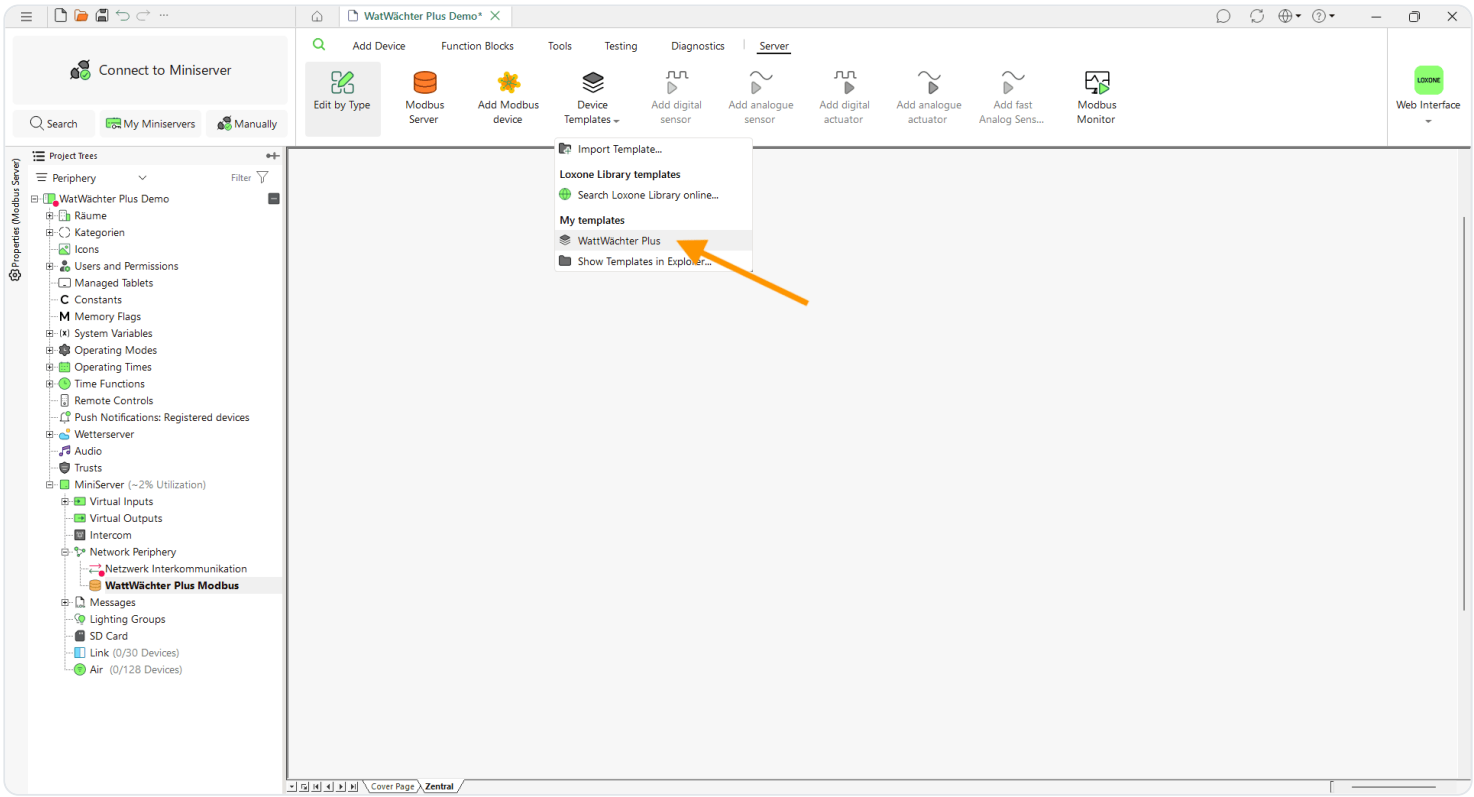
Step 3 — Import the template

Select the Modbus server (1), open **Device Templates** in the ribbon (2) and click **Import Template…** (3). Pick the XML file you downloaded above.



Step 4 — Select the template

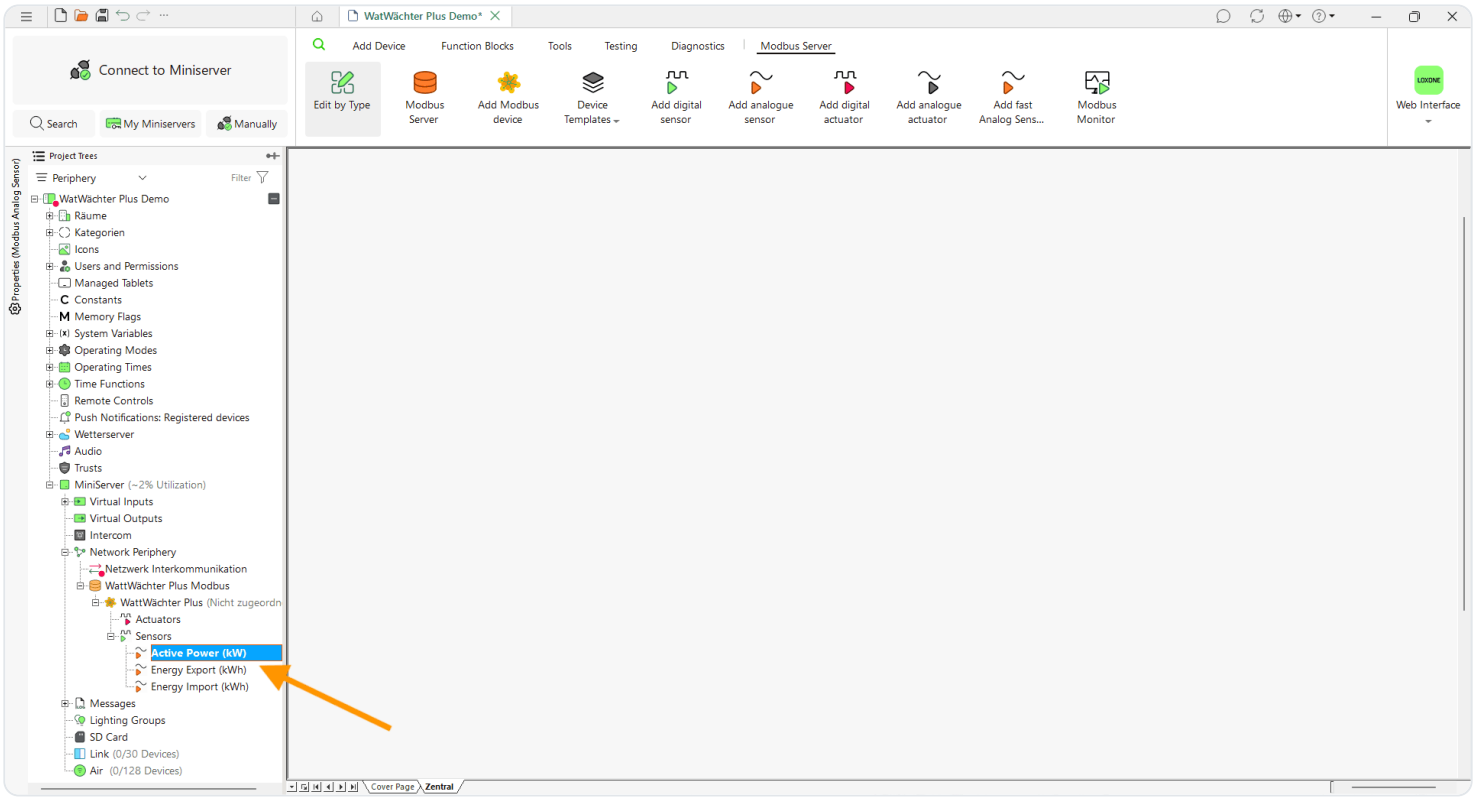
After the import, the template appears under **Device Templates** in the **My templates** section. Click it — Loxone then creates the Modbus device and all its sensors below the Modbus server.



> **Where do the templates live on disk?**
>
> **Show Templates in Explorer…** opens the folder where Loxone Config keeps its Modbus templates. You can also copy the XML files there directly; they must start with `MB_` and are picked up after restarting Loxone Config.

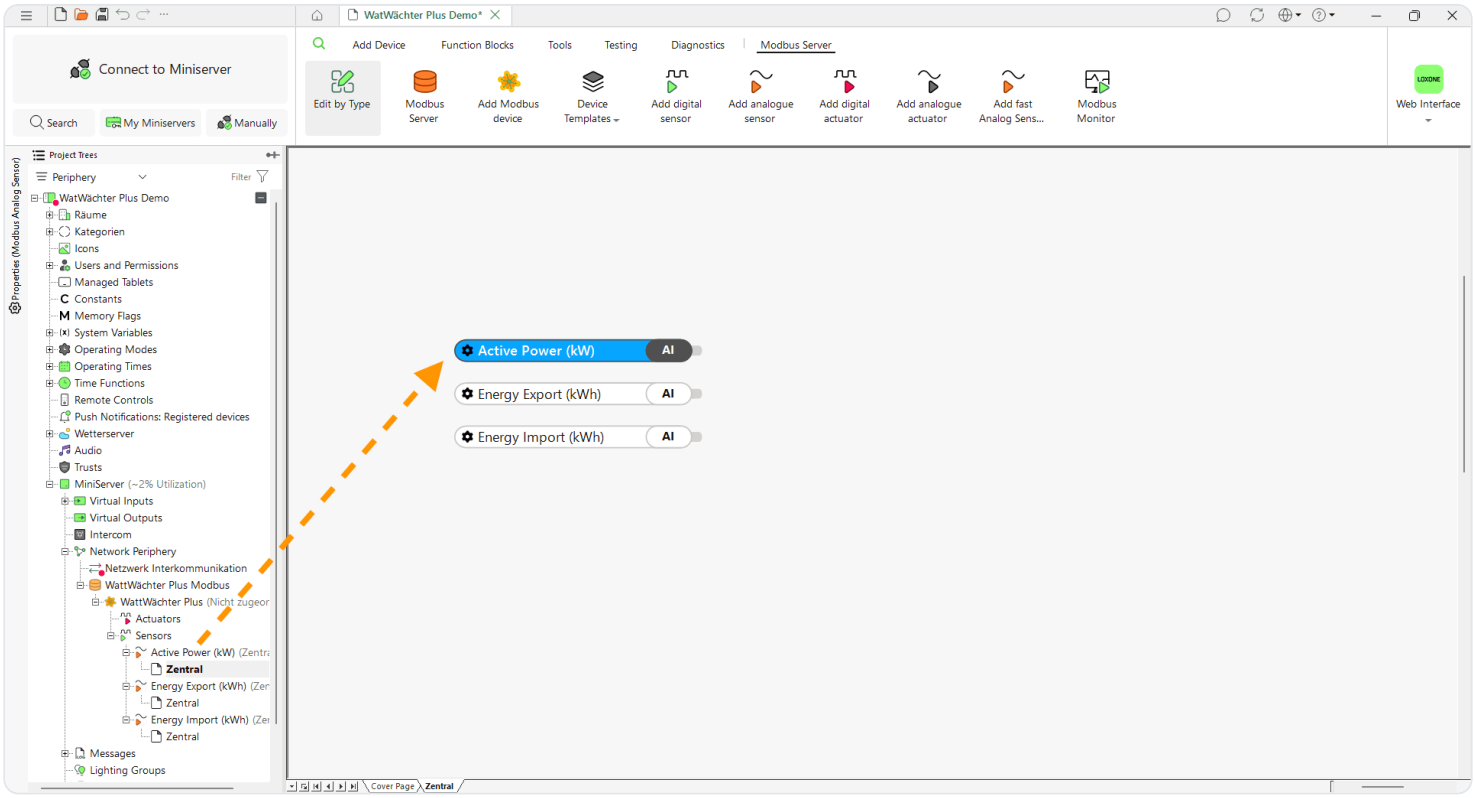
Step 5 — Check the sensors that were created

The project tree now shows the device below the Modbus server, and below that a **Sensors** branch with the analogue inputs. The small template creates three:



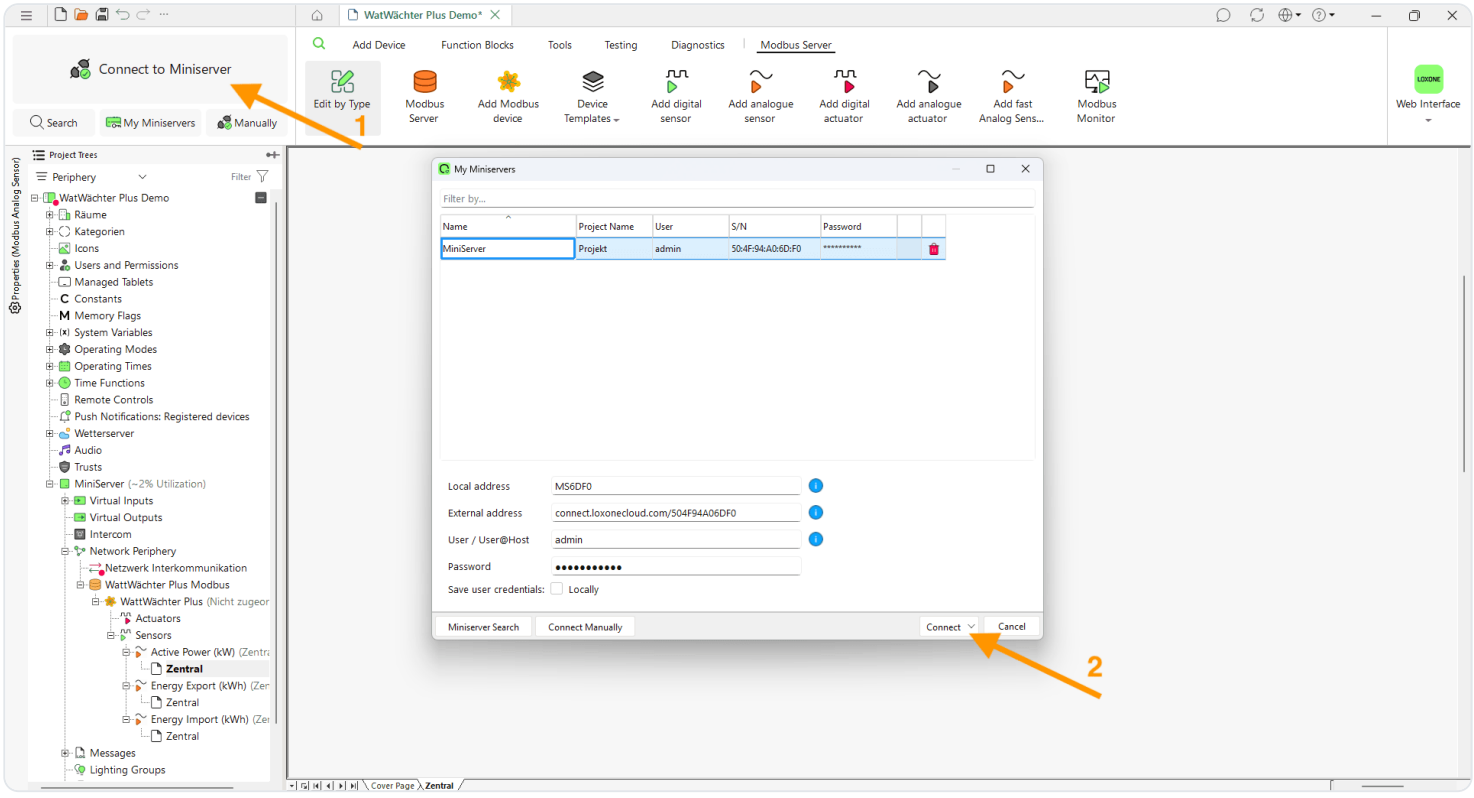
Step 6 — Drag the sensors onto a page

Drag the sensors from the project tree onto a programming page so you can wire them up and watch them in LIVE mode.

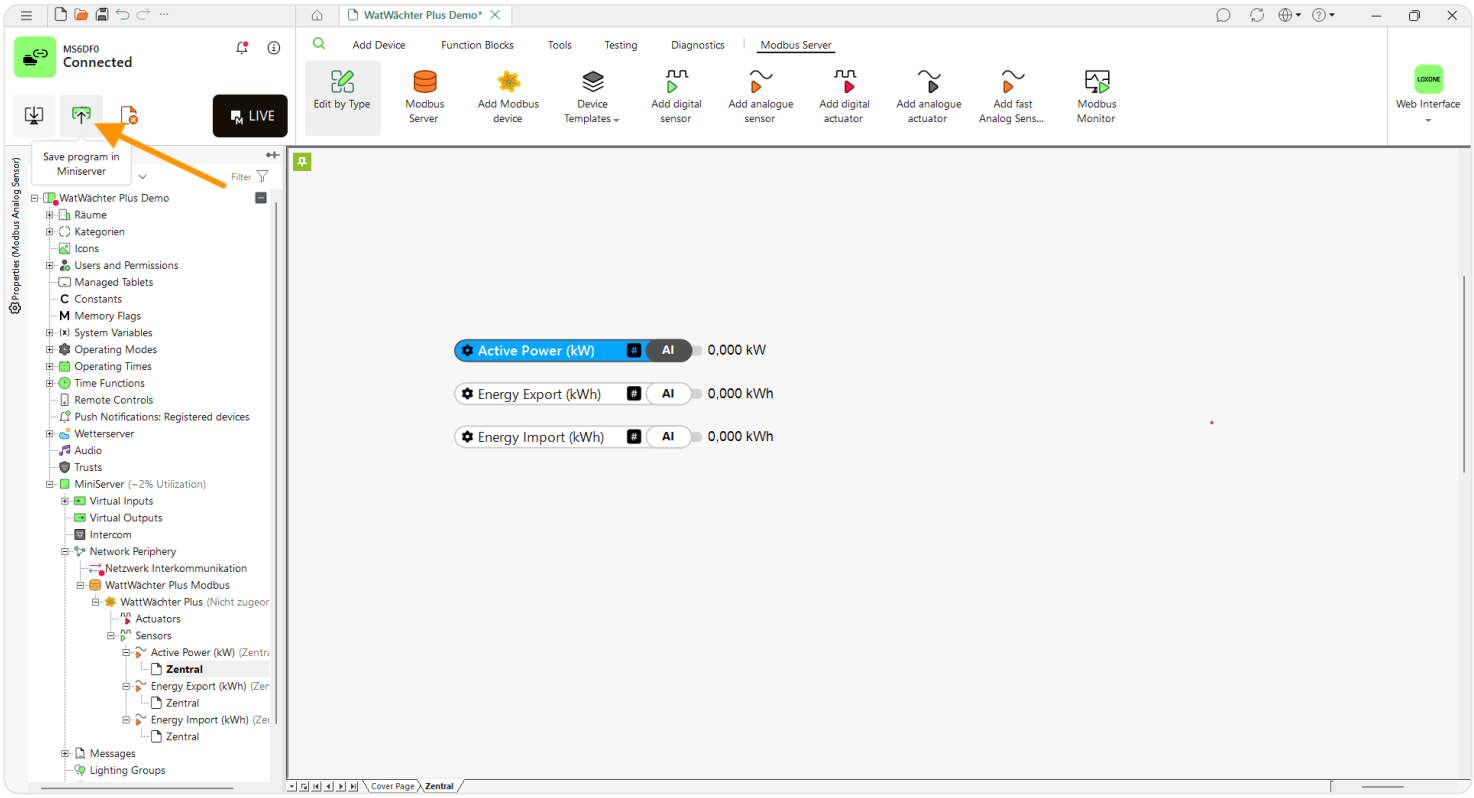


Step 7 — Connect to the Miniserver and save

Click **Connect to Miniserver** (1), pick your Miniserver and confirm with **Connect** (2).

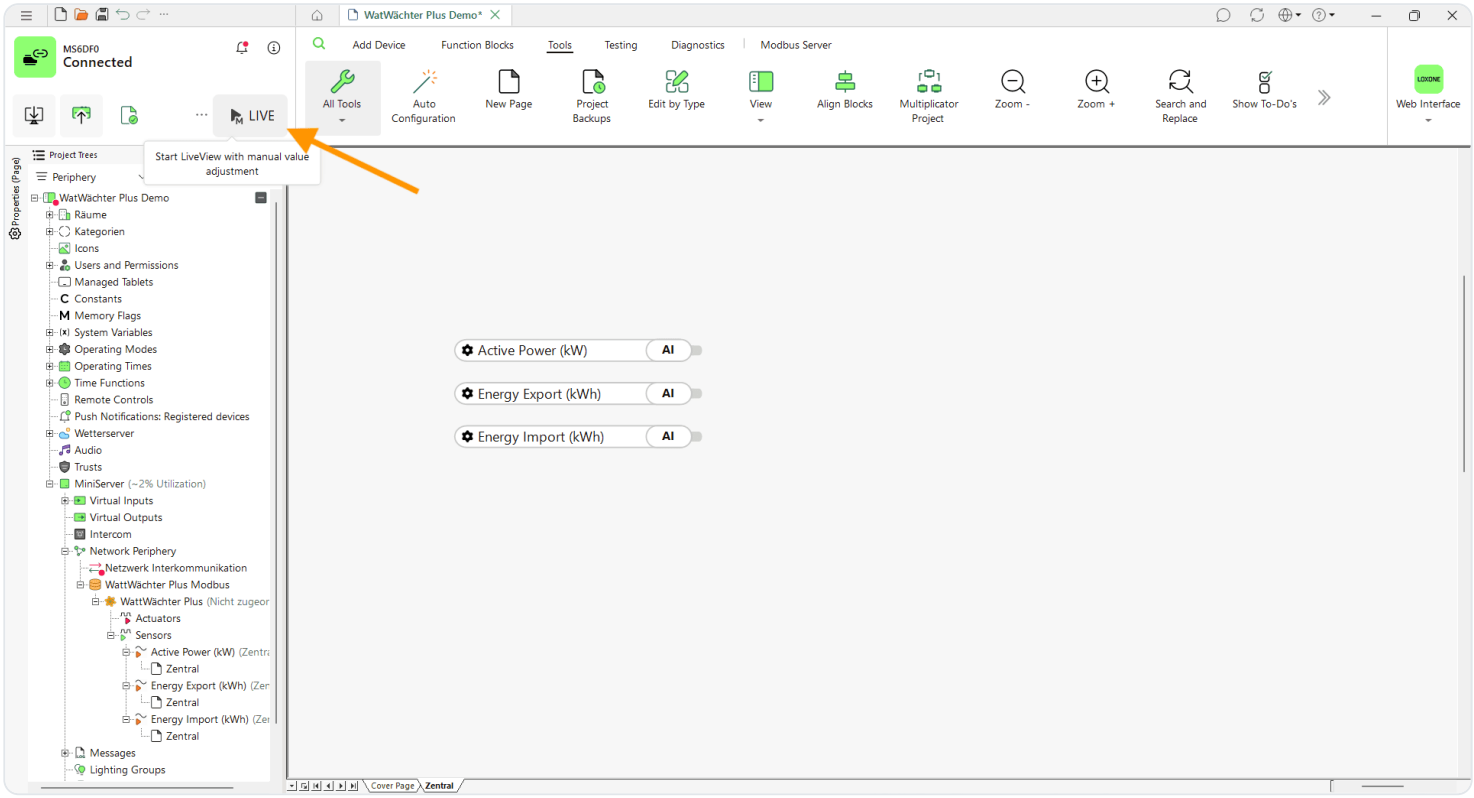


Then transfer the program with **Save program in Miniserver**:

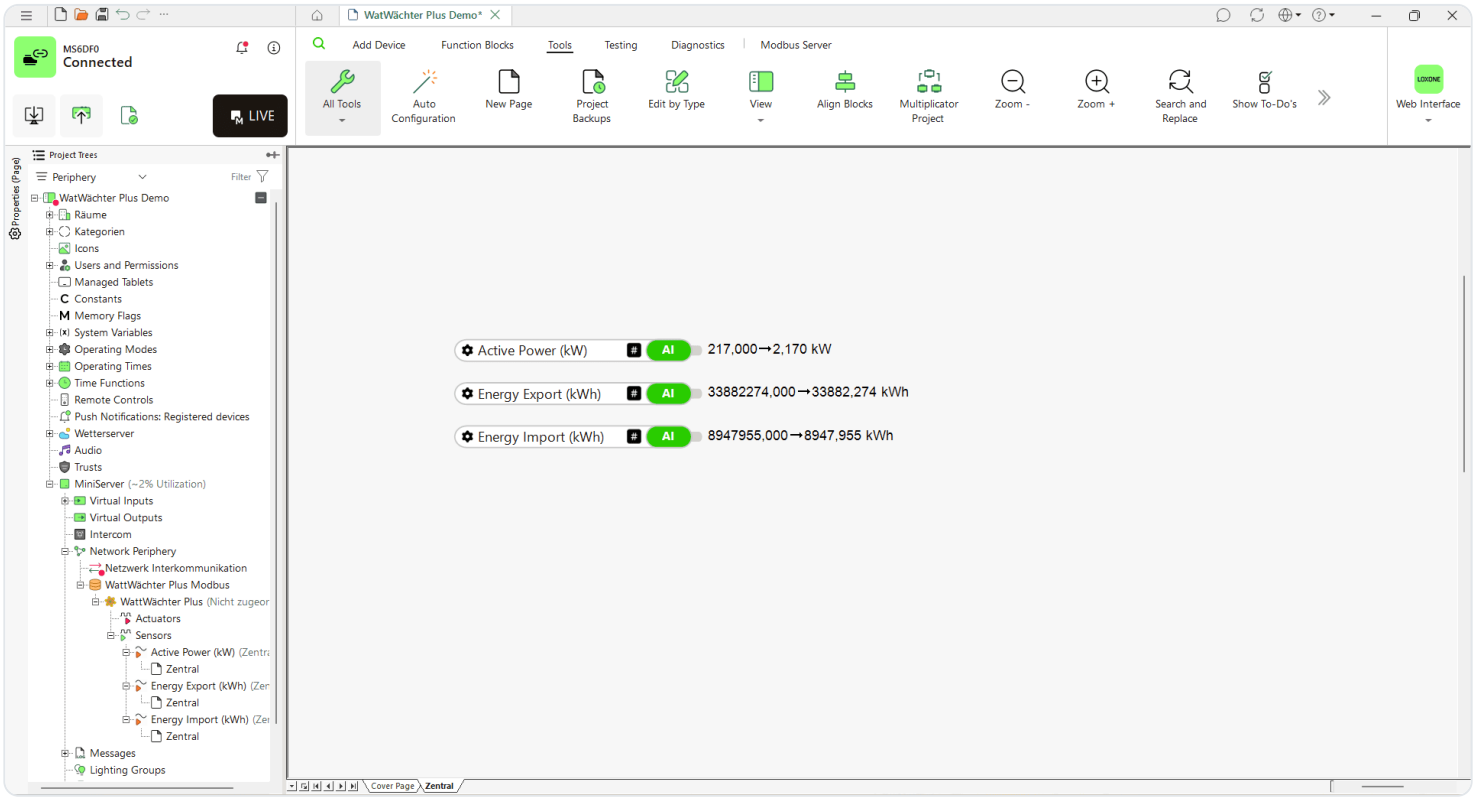


Step 8 — Verify the values in LIVE mode

Start **LIVE** mode:



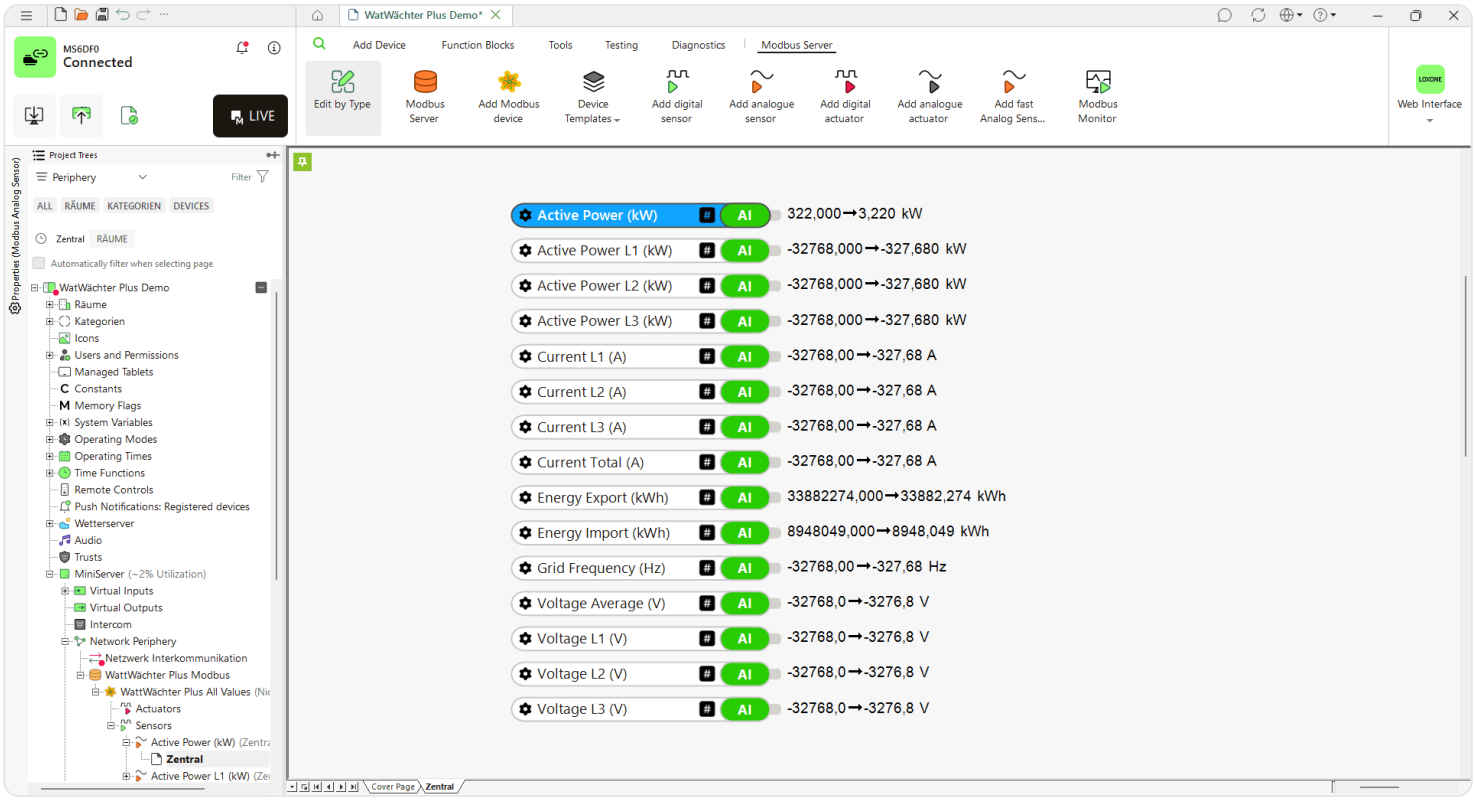
The sensors now show the **raw register value** on the left and the **converted value** with its unit on the right:



In the example, `217,000 → 2,17 kW` means: register 40088 returns the raw value `217`, and the template's correction turns that into 2.17 kW. (The screenshots use German number formatting, where the comma is the decimal separator.)

Removing values your meter doesn't deliver

The "All Values" template creates all 15 registers — whether or not your meter populates them. A register without data returns the SunSpec sentinel `0x8000` (*not implemented*), i.e. the raw value `-32768`. After scaling, LIVE mode shows this:



Reading	Meaning
`-327.68 kW`	the meter does not deliver this power register
`-327.68 A`	the meter does not deliver this current register
`-3276.8 V`	the meter does not deliver this voltage register
`-327.68 Hz`	the meter does not deliver the grid frequency

> **Just delete them instead of filtering**
>
> You don't need a status block to filter these sensors out — **delete them in the project tree**. What your meter doesn't send now, it won't send after a restart either. Only if you deliberately want to keep a value (e.g. because the meter delivers it intermittently) should you filter values ≤ –32000 with a status block.
>
> Which registers your device is currently populating with valid values is shown by the status endpoint — no detour through Loxone needed.

What the templates contain

All sensors read with function code `0x03` (Read Holding Registers). The **Correction** column is the factor the template stores in the sensor — it already contains both the SunSpec scale factor **and** the conversion to the target unit.

Sensor	Register	Type	Cycle	Correction	Unit	Template
Active Power	40088	int16	5 s	×0.01	kW	both
Energy Import	40116	acc32	30 s	×0.001	kWh	both

Sensor	Register	Type	Cycle	Correction	Unit	Template
Energy Export	40108	acc32	30 s	×0.001	kWh	both
Active Power L1	40089	int16	5 s	×0.01	kW	All Values
Active Power L2	40090	int16	5 s	×0.01	kW	All Values
Active Power L3	40091	int16	5 s	×0.01	kW	All Values
Current L1	40073	int16	10 s	×0.01	A	All Values
Current L2	40074	int16	10 s	×0.01	A	All Values
Current L3	40075	int16	10 s	×0.01	A	All Values
Current Total	40072	int16	10 s	×0.01	A	All Values
Voltage L1	40078	int16	10 s	×0.1	V	All Values
Voltage L2	40079	int16	10 s	×0.1	V	All Values
Voltage L3	40080	int16	10 s	×0.1	V	All Values
Voltage Average	40077	int16	10 s	×0.1	V	All Values
Grid Frequency	40086	int16	10 s	×0.01	Hz	All Values

The complete register map (all SunSpec fields, data types, OBIS codes) is in the Modbus TCP reference.

The scaling is hard-coded in the template

Loxone cannot evaluate the SunSpec SF registers at runtime. The templates therefore write the factor straight into the sensor correction — matching the current scale factors (`W_SF = 1` , `A_SF = −2` , `V_SF = −1` , `Hz_SF = −2` , `TotWh_SF = 0`).

`W_SF` changed from `0` to `1` in firmware **1.2.0**: the power registers have counted tens of watts since then, so that connections above 32.7 kW are covered. Older firmware therefore reports values off by a factor of 10 — the templates are not meant for it. After a firmware update, check the SF registers (`40092` , `40076` , `40085` , `40087` , `40124`) and re-import the current template if needed.

Splitting import and export

Total power `W` (40088) is **signed**: positive on import, negative on export. For the Loxone energy monitor, split the value via a status block into two quantities:

- **Import** = `MAX(W, 0)`
- **Export** = `MAX(-W, 0)`

The energy counters `TotWhImp` (import) and `TotWhExp` (export) live in separate registers anyway — wire those up directly.

Adding registers manually

If you need a register that isn't in either template, or you want to work without one: add a device below the Modbus server via **Add Modbus device**, and one **analogue sensor** per value below that (**Add analogue sensor**).

Value	Address	Count	Data type	Scaling (SF register)
Total active power	40088	1	int16 (signed!)	40092 (W_SF)
Active power L1 / L2 / L3	40089 / 40090 / 40091	1	int16	40092 (W_SF)
Current L1 / L2 / L3	40073 / 40074 / 40075	1	int16	40076 (A_SF)
Voltage L1 / L2 / L3	40078 / 40079 / 40080	1	int16	40085 (V_SF)
Frequency	40086	1	int16	40087 (Hz_SF)
Total import	40116	2	uint32 (acc32)	40124 (TotWh_SF)
Total export	40108	2	uint32 (acc32)	40124 (TotWh_SF)

Per sensor, set:

- **Function code** `0x03` (Read Holding Registers)
- **Data type** as listed above — the 16-bit values are **signed**
- **Correction**: `value = raw × 10^SF`, times the conversion to your target unit if needed. Read the current factor from the respective SF register instead of guessing it.
- **Sentinel filter**, or delete the sensor — see Removing values your meter doesn't deliver

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Troubleshooting

All sensors stay at 0 / no connection

- Is Modbus enabled on the WattWächter? Check `/api/v1/modbus/status` → `enabled: true`, `running: true`.
- Does the **Address** field contain an IP address with port (`192.168.178.106:502`) and **not** a `.local` name?
- Did you save the program to the Miniserver after making the change?
- The WattWächter allows a maximum of **2** concurrent Modbus connections. If a test with `modpoll` or Home Assistant is still running, disconnect it first.

Values were there and are now frozen

A classic sign of a DHCP address change: Loxone holds the last value instead of showing an error. Check the WattWächter's current IP and set up a DHCP reservation.

A sensor reads –327.68 / –3276.8

That is the SunSpec sentinel `0x8000` — your meter does not deliver this OBIS code. See Removing values your meter doesn't deliver.

The **power registers** have a second cause: values outside ±327.67 kW do not fit into an int16 and are reported as the sentinel too, rather than being clamped to the maximum. This only affects connections beyond 327 kW.

Values are off by a factor of 10

Then the correction in the sensor no longer matches the device's scale factor — usually after a firmware update. Read the SF registers (`40092` for power) and fix the factor, or re-import the current template.

More items in the Modbus TCP troubleshooting section.

Further documentation

Topic	Link
Modbus TCP reference — full SunSpec register map	https://docs.xn--wattwchter-u5a.de/en/plus/interfaces/modbus/
This guide online (always current)	https://docs.xn--wattwchter-u5a.de/en/plus/integrations/loxone/
REST API reference	https://docs.xn--wattwchter-u5a.de/en/plus/interfaces/api-reference/
MQTT interface	https://docs.xn--wattwchter-u5a.de/en/plus/interfaces/mqtt/
Home Assistant integration	https://docs.xn--wattwchter-u5a.de/en/plus/integrations/home-assistant/
Downloads (templates, firmware, tools)	https://download.xn--wattwchter-u5a.de/

Support

SmartCircuits GmbH · info@smartcircuits.de · www.wattwächter.de
When reporting an issue, please include the device firmware version, your Loxone Config version and the output of `/api/v1/modbus/status` .

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