

Local storage and evaluation of the RuuviTag (without internet and cloud connection) with BLE Shelly and MQTT

Version: V1.4 E (RF)

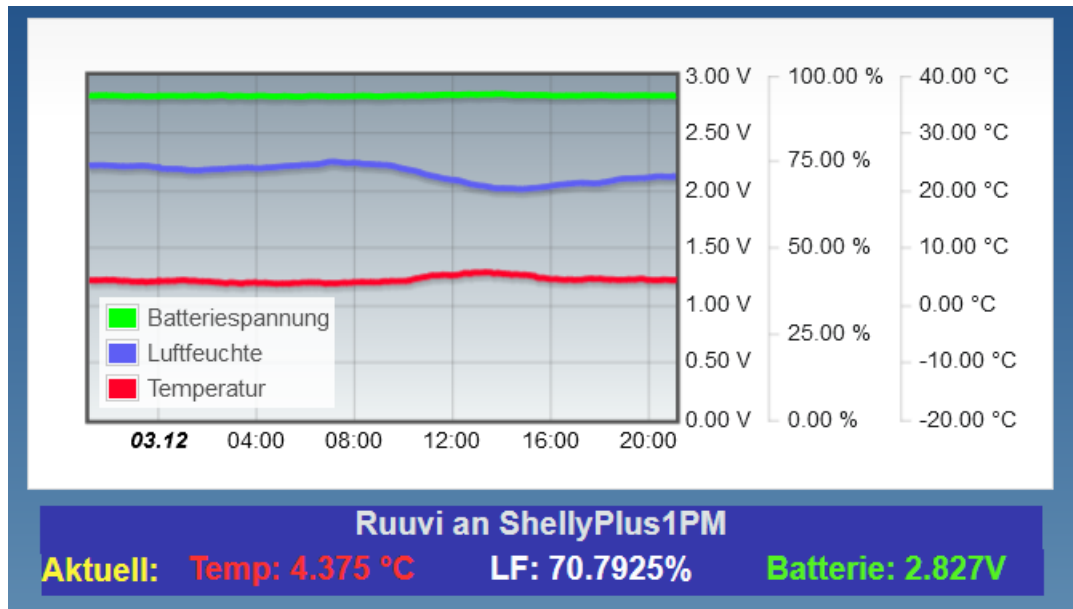
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What is it about?

This guide describes one way to do the [RuuviTag Wireless Sensor](#) to operate locally without using an app and/or cloud and to transfer the data to an MQTT broker. This means that all Ruuvi data is available for further processing in a home automation system (SmartHome) and for visualization



What is needed?

- **WLAN / LAN**
- **Internet** (only for Shelly firmware updates and downloading the script)
- **RuuviTag and Ruuvi App** (only for function control and without account)
- **1 Shelly** of the Plus or the Pro series (I use 1 ShellyPlus1)
- **1 MQTT Broker** (I use the MQTT adapter from ioBroker)
- The **script** provided by **Allterco** (manufacturer of the Shelly products) to process the Ruuvi data. Download link **on Github** (with older versions,too): [please click here](#)

Which way do the data of the Ruuvi go?

RuuviTag → Shelly (via BLE) → MQTT-Broker (via (W)LAN)

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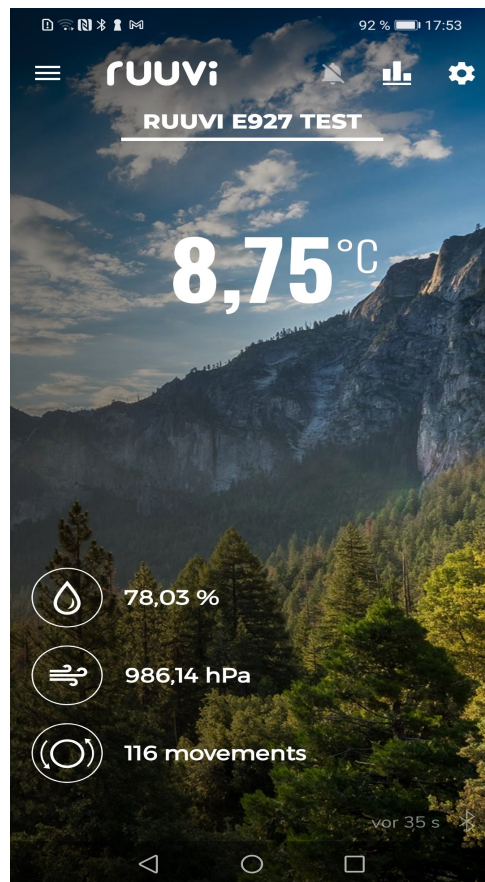
Step 1:

Set Ruuvi Tag into operation

(All you have to do is pull out the factory battery protection strip.)

Functional check

I installed the app (without creating an account) to check the functionality and the tag was found. (Don't forget to turn on Bluetooth on your smartphone)



There is nothing more to do on the Ruuvi side.

Step 2:

Put Shelly into operation

Put Shelly into operation (supply with voltage) and bring it into the (W)LAN (ShellyPlus can only use WLAN, ShellyPro can also use LAN).

To do this, connect to the Shelly's WLAN AP (SSID Shellyxyz....) and call up the address 192.168.33.1 in a browser.

Then the WLAN data have to be entered in the Shelly:

Under SETTINGS WIFI you set the access data for the WLAN (not necessary when using a Pro device with LAN) and set a static IP if necessary.

The screenshot shows the 'WiFi 1 settings' page of a ShellyPlus 1PM Testboard. The interface is dark-themed. On the left is a sidebar with icons for Home, Add-on, Settings, Scripts, and Diagnostics. The main content area shows the following settings:

- WiFi 1 settings** (Title bar with connection status icons)
- Connected at QAT / 192.168.1.81 / RSSI: -52 dBm (Good)
- ☒ Enable WiFi network
- ☐ Manual type SSID
- ☒ Password protected WiFi network
- NETWORKS** section with a dropdown menu showing 'QAT (rssi: -52dBm, password)'
- PASSWORD** section with a text input field containing 'Password' and a toggle icon.
- ☒ Set static IP
- IP ADDRESS** section with a text input field containing '192.168.1.81'
- NETWORK MASK** section with a text input field containing '255.255.255.0'
- GATEWAY** section with a text input field containing '192.168.1.1'
- DNS** section with a text input field containing 'DNS e.g. 192.168.0.1'
- A blue 'Save settings' button at the bottom left.
- Copyright notice '(c) 2022 by 66er' at the bottom center.

After saving, the Shelly connects to the WLAN and can be reached there again either under the assigned IP address or under the address assigned via DHCP.

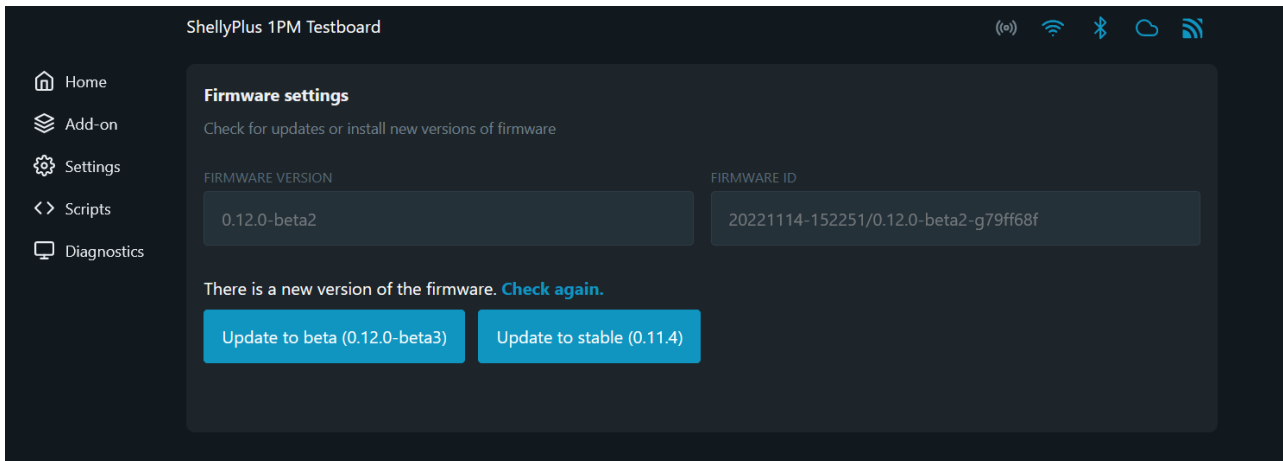
Alternatively, you can set the LAN settings for a Pro device.

You can find more tips and help on the Shelly itself, should there be any problems, in the [Shelly-Forum](#) .

Update of the shelly-device

Now you have to update the firmware of the shelly.

Under SETTINGS → FIRMWARE you can check for update and proceed the update:



The needed function is given with firmware \geq 0.12.0 beta 1

Please note:

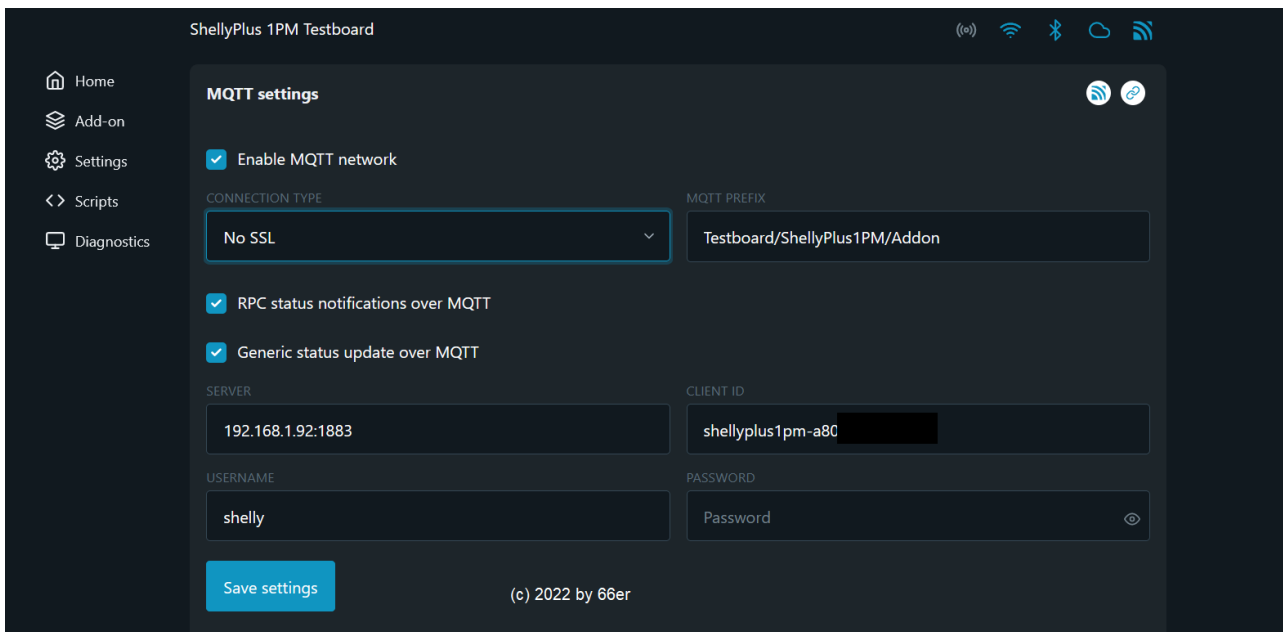
The Shelly must be operated within the reception range of the RuuviTag

Step 3:

MQTT settings in Shelly

You can find the settings for the connection to your MQTT broker in Shelly under SETTINGS – MQTT

If Shelly was previously connected to your MQTT broker, you don't need to change anything in the MQTT settings!

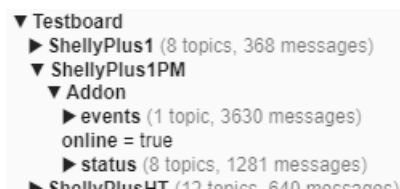


The screenshot shows the 'MQTT settings' page for a 'ShellyPlus 1PM Testboard'. The interface is dark-themed. On the left is a sidebar with icons for Home, Add-on, Settings, Scripts, and Diagnostics. The main content area has a title 'MQTT settings' and a 'Save settings' button at the bottom left. The settings include: 'Enable MQTT network' (checked), 'CONNECTION TYPE' (set to 'No SSL'), 'MQTT PREFIX' (set to 'Testboard/ShellyPlus1PM/Addon'), 'RPC status notifications over MQTT' (checked), 'Generic status update over MQTT' (checked), 'SERVER' (set to '192.168.1.92:1883'), 'CLIENT ID' (set to 'shellyplus1pm-a80'), 'USERNAME' (set to 'shelly'), and 'PASSWORD' (set to 'Password'). At the bottom right, it says '(c) 2022 by 66er'.

Please note:

After each saved change in the MQTT settings, the password must be set again and Shelly must be restarted afterwards.

After restarting Shelly, its data should now arrive in your MQTT broker:



(View in MQTT Explorer)

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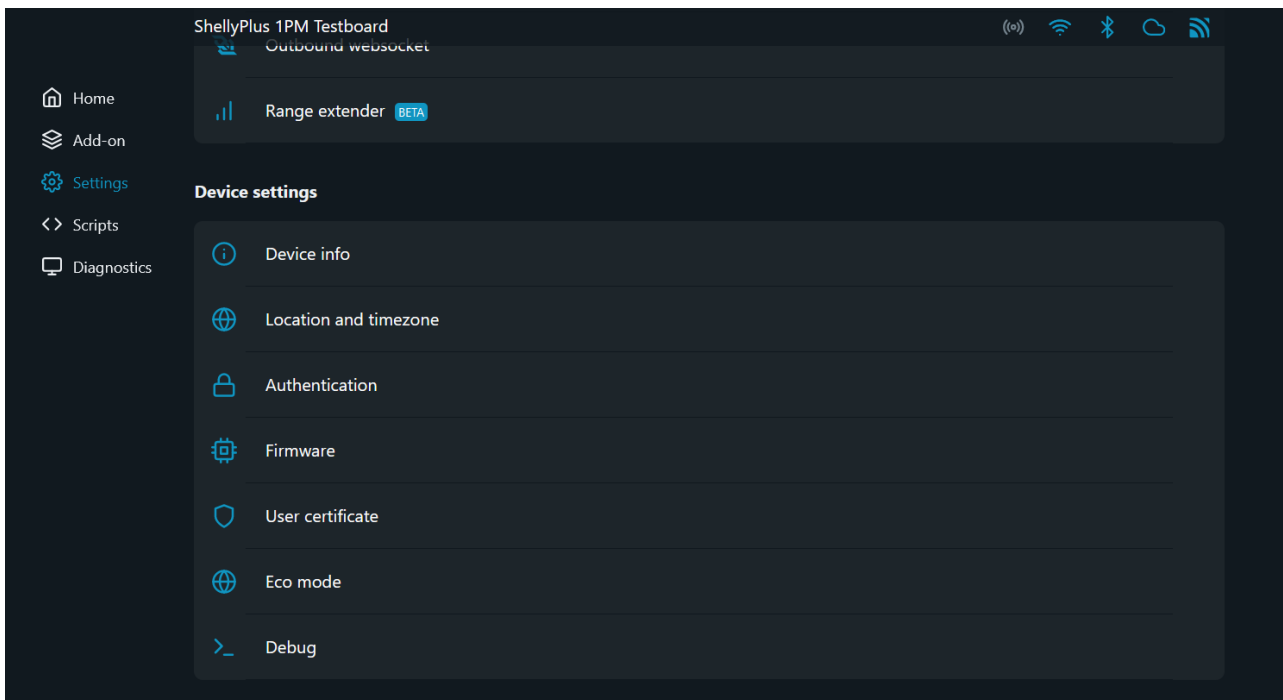
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Step 4:

Establish connection Ruuvi → Shelly

Now let's connect Ruuvi → Shelly → MQTT broker.

To do this, activate and save “Enable Websocket debug” under SETTINGS – DEBUG in the Shelly Web UI



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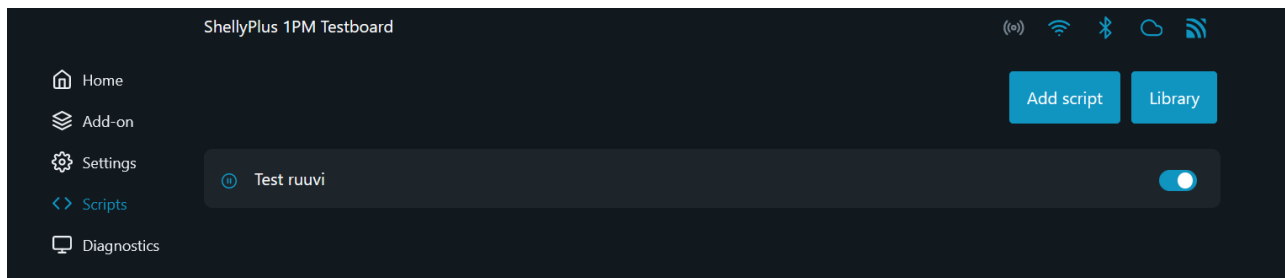
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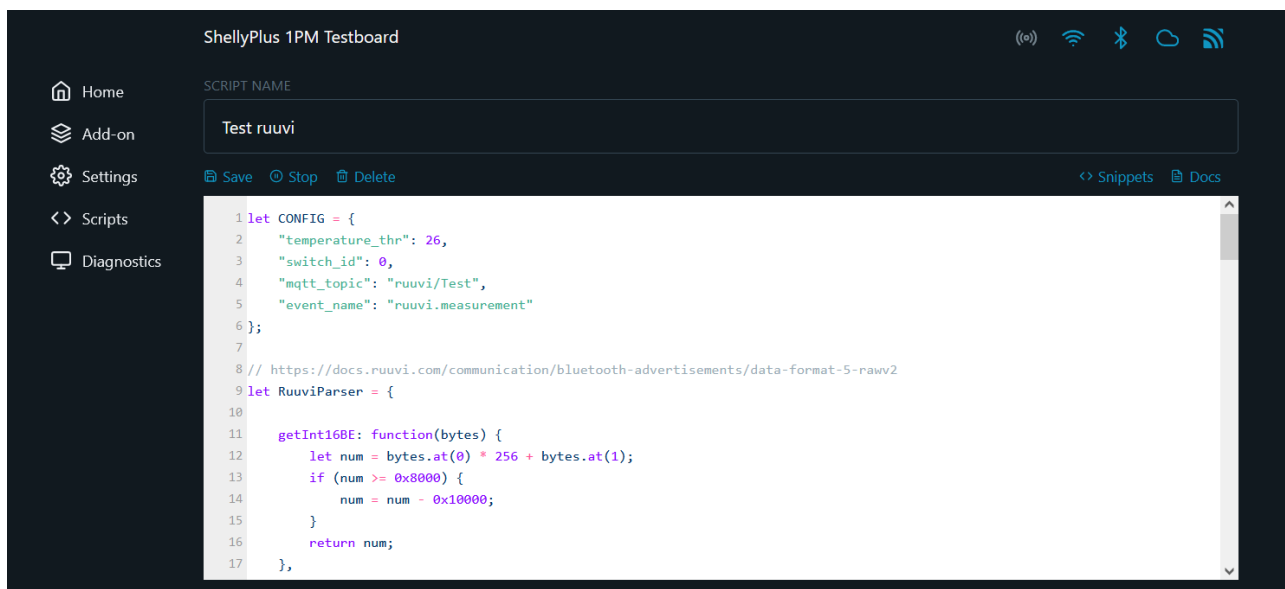
Now click on "Scripts" on the left side.

By clicking on "Add Script" you create a script that I called "Test ruuvi" in the screenshot.



Click on „Test ruuvi“ Script

In the upper window you simply copy the script downloaded from Github **unchanged**:



Save and Run the script.

Note:

While the shelly is online (connect to the internet) you can insert the actual version of the skript with the button „Library“

To do this, scroll through the list, look for the entry "BLE in Scripting - Ruuvi example" and "Insert Code" will automatically create the latest script.

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After saving and starting, the values of the Ruuvi should be displayed in the console and updated cyclically after a short wait. It looks like this:

```
Console
FULL LOG
ruuvi measurement: {"rssi":-79,"addr":"da:6[REDACTED]","sequence":46799,"movement_counter":116,"tx_power":4,"battery_mv":2862,"accel": 21:01:32
{"z":1008,"y":-24,"x":48},"pressure":100294,"humidity":77.792500,"temperature":6.595000}
ruuvi measurement: {"rssi":-79,"addr":"da:6[REDACTED]","sequence":46815,"movement_counter":116,"tx_power":4,"battery_mv":2862,"accel": 21:02:13
{"z":1000,"y":-28,"x":44},"pressure":100300,"humidity":77.790000,"temperature":6.575000}
ruuvi measurement: {"rssi":-78,"addr":"da:6[REDACTED]","sequence":46819,"movement_counter":116,"tx_power":4,"battery_mv":2855,"accel": 21:02:22
{"z":996,"y":-32,"x":44},"pressure":100296,"humidity":77.772500,"temperature":6.530000}
ruuvi measurement: {"rssi":-79,"addr":"da:6[REDACTED]","sequence":46826,"movement_counter":116,"tx_power":4,"battery_mv":2855,"accel": 21:02:40
{"z":1000,"y":-32,"x":44},"pressure":100302,"humidity":77.720000,"temperature":6.545000}
>_ Test your code here e.g. print("Hello World")
```

These values are now also automatically written to the MQTT broker by Shelly...

```
▼ ruuvi
▼ Test
da:6e:ef:93:e9: = {"rssi":-79,"addr":"da:6[REDACTED]","sequence":46949,"movement_counter":116,"tx_power":4,"battery_mv":2862,"accel":{"z":1012,"y":-28,"x":44},"pressure":100295,"humidity":77.860000,"temperature":6.250000}
```

... and can now be further processed as desired.

Note:

The value transmitted with MQTT corresponds to the real, measured value of the Ruuvi tag. Any offset entered in the app is not taken into account here!

A possibly required offset must be made in the data processing system.



Addition:

With the new product **ShellyPlusPlugS**, I was also able to successfully test the script and the data transfer to the MQTT broker.

With ShellyPlusPlugS, a **plug-and-play solution** is available that simplifies the implementation significantly compared to the wired-shelly solution.

The procedure remains the same as described with ShellyPlus1.

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Tested with:

Ruuvi Fw.	Shelly Fw.	Script-Date	Notice
3.31.1	0.12.0 beta 2	08.11.2022	Successful (on ShellyPlus1)
3.31.1	0.12.0 beta 2	27.11.2022	successful, Note: MQTT-fieldnames have changed
3.31.1	0.12.0 beta 3	27.11.2022	successful
3.31.1	0.12.0	27.11.2022	successful
3.31.1	0.12.99-plugsprod1	27.11.2022	Successful (on ShellyPlusPlugS)

Have fun and success with it.

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Document History

Date	Version	Comment
29.11.2022	V1.0	Initial release
30.11.2022	V1.1	New tested combinations of devices firmware Added content, minor corrections
04.12.2022	V1.2	Content additions and image updated
17.12.2022	V1.3	Information about the value in MQTT added new tested firmware added
29.01.2023	V1.4	Plug&Play with new ShellyPlusPlugS

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Publishing this document outside of the Ruuvi-Forum is expressly prohibited. You are welcome to link to this topic here in the forum.

Link address: <https://f.ruuvi.com/t/ruuvitag-shelly-mqtt-local-solution/5930>

The actual version of the document is only available at this address !