



User Manual  
1.4

# WatchDog



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# 1. INTRODUCTION

## 1.1. Documentation WatchDog

The WatchDog documentation consists of the following parts:

1. User Manual WatchDog



Provided components are not described in detail in this documentation. Observe the appropriate manufacturer's documentation.

## 1.2. Presentation of clues

### Safety

These instructions are for safety purposes and **must** be observed.



These indications mean that death or serious injury **is** certain or very likely to occur if precautions are not taken.



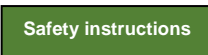
These indications mean that death or serious injury **can** occur if precautions are not taken.



These indications mean that minor injuries **can** occur if precautions are not taken.



These notices mean that property damage **can** occur if precautions are not taken.



Procedures marked with this notice **must** be strictly adhered to.



These notices contain references to safety-related information or general security measures.

This information does not refer to individual hazards or individual precautions.

### Hints

These notes serve to make work easier or contain references to further information.



Note on making work easier or reference to further information.

## 1.1. Terms used

Terms used Concept	Description
IBN	Commissioning

## 2. PURPOSE

### 2.1. Target group

This documentation is intended for the operator and all users.

### 2.2. Intended use

The WatchDog is a device that is to be used exclusively for measuring single- and three-phase 230/400VAC (-+ 10%) systems.

Any other or further use is considered misuse and is not permitted. The manufacturer is not liable for any damage resulting from this. The risk is borne solely by the operator.

The intended use also includes observing the operating and assembly instructions of the individual components and following the maintenance instructions.

#### 2.2.1. Misuse

All applications that deviate from the intended use are considered incorrect applications and are not permitted, including, for example:

1. Incorrect or incomplete parameterization
2. Use outside the permissible operating limits



If the device is not modified, the warranty will expire.

## 3. PRODUCT

### 3.1. System Setup

#### 3.1.1. Overview:

A complete system with WatchDogs consists of the following components:

- WatchDog
- Optional:
  - Network (DHCP-Server, Access Point)
  - Broker SysteS (MQTT)
  - Web clients and servers (e.g. RackportMain)
  - Dashboards

#### 3.1.2. Description:

**WatchDog** is developed for operation in fixed installations as well as for the mobile field of event technology

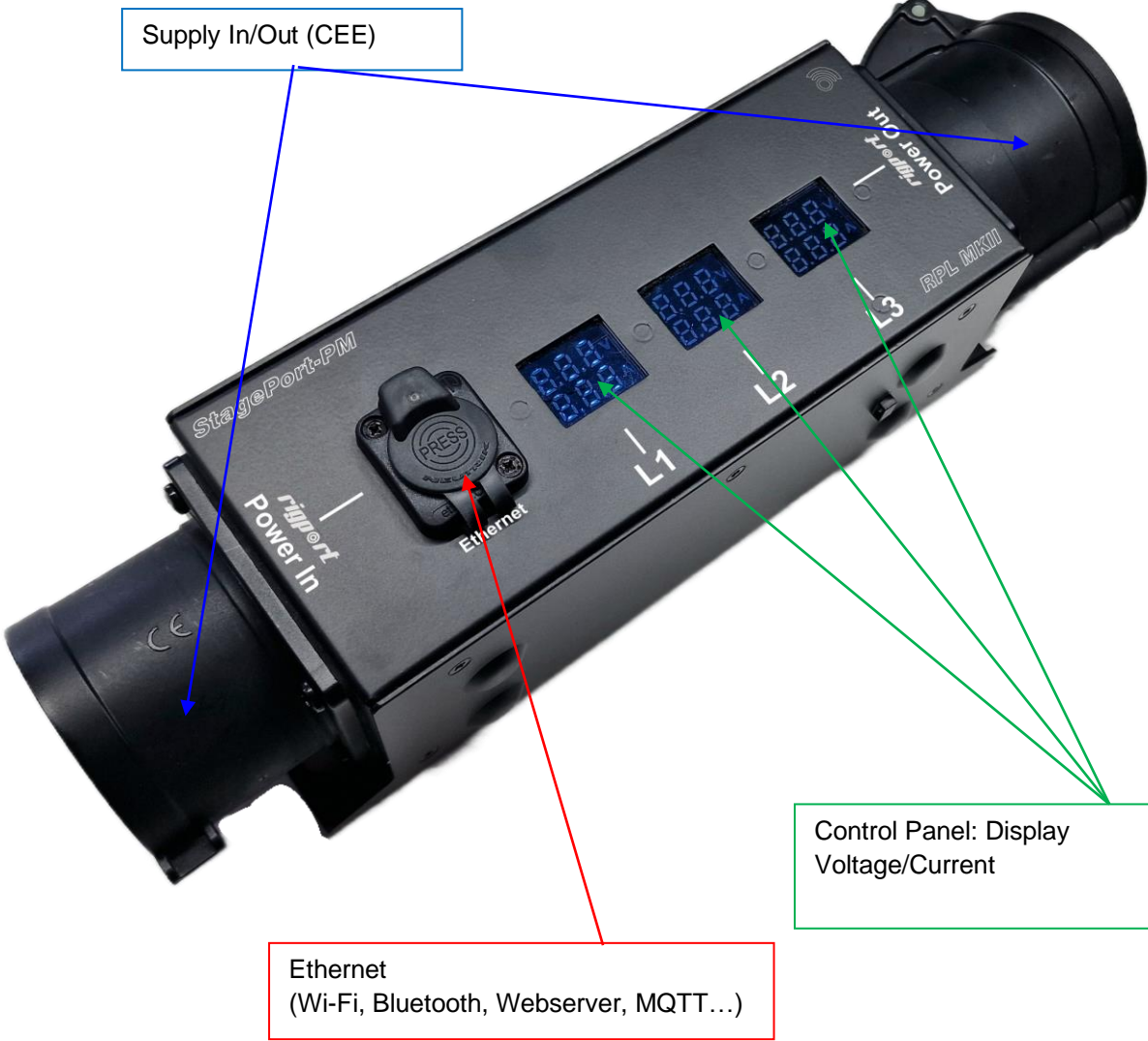
The focus here is on flexibility, compatibility and open architecture as well as extensibility.

The **WatchDogs** are 1 or 3 -phase energy measurement systems for simple up to complex power sourcing environments. It is the logical continuation of the RigPort concept to include active elements to achieve the highest degree of flexibility and cost-effectiveness in event technology. The components are basically designed to be compatible and combinable.

### 3.2. Quickstart:

1. Connect WatchDog (mains), and connect consumers.
2. Grid indicators (if available) check for phases current / voltage
3. Connect the bus system (e.g. Ethernet, or Wi-Fi)
4. Online configuration:
  1. Connect your WatchDog Hotspot to a Wi-Fi-enabled device within range (find and connect to your WatchDog's Wi-Fi Hotspot)
  2. Open the hotspot's website with a browser (IP address of the hotspot e.g. 192.168.33.1, see Wi-Fi of the client [connected device: PC / mobile phone])
  3. Configure and reboot Wi-Fi/Ethernet
  4. Configure MQTT Broker Address if required

3.3. Display and control elements & connections:



### 3.4. ASSIGNMENT CONNECTIONS

3.4.1. Power in / Power out (Powercon-[True1], CEE 16A, 32A, 63A, 125A, 5P, 6h)

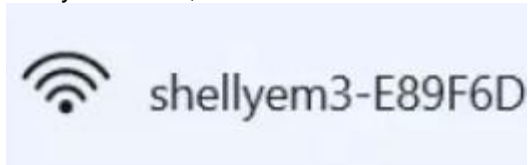
Signal	Connection
L1	L1
L2	L2
L3	L3
N	N
PE	PE

3.4.2. Optional: Ethernet in (RJ45)

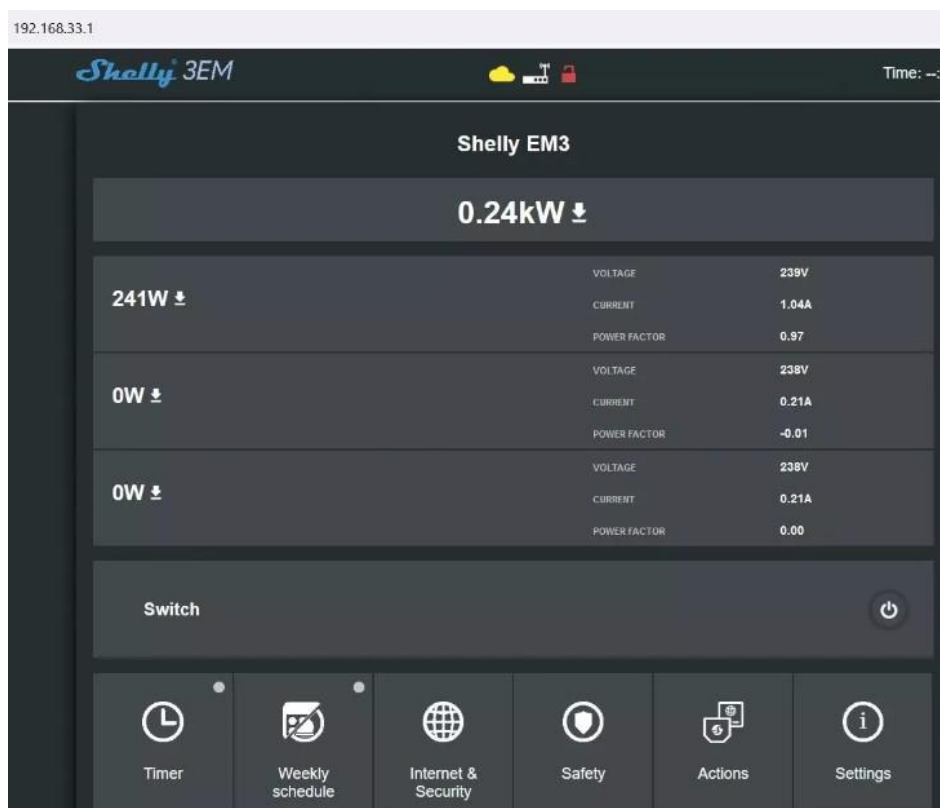
Pair of wires	Pins	IEC
1	4/5	white/blue
2	3/6	red/orange
3	1/2	black/grey
4	7/8	yellow/brown

## 4. DESCRIPTION

- 4.1. the WatchDog generates its own Wi-Fi network in factory settings
- 4.2. Search with a smartphone, notebook, tablet... within range of which a Wi-Fi hotspot called shellyem3-xxxx, or similar

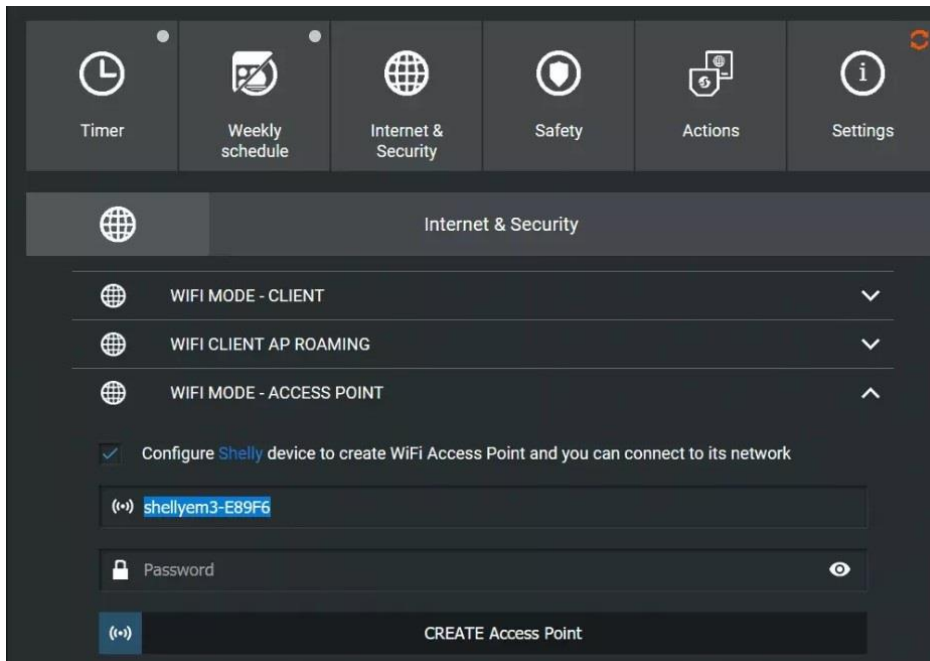


- 4.3. In the browser, go to the user interface of the Shelly 3EM (IP address: 192.168.33.1).

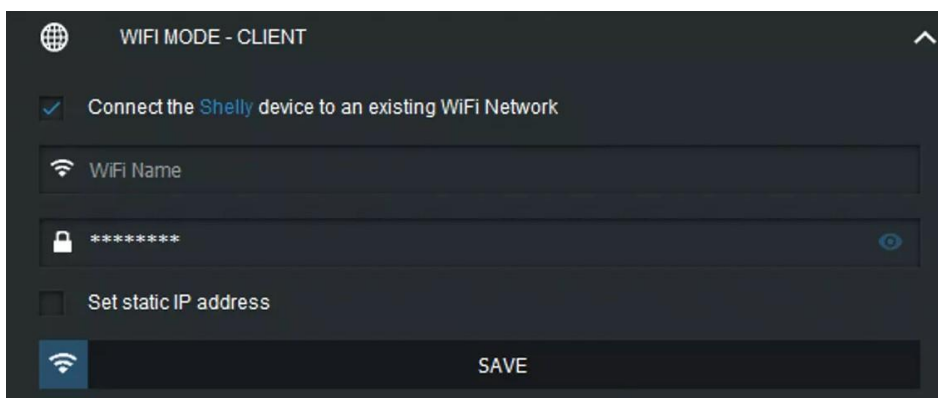




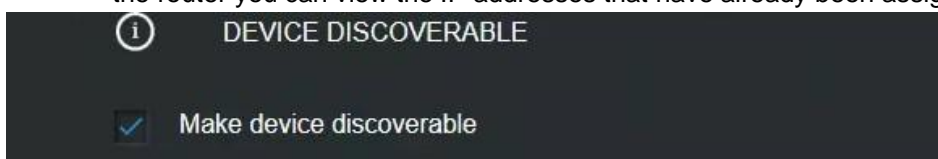
4.4. the name of the Wi-Fi generated by the WatchDog corresponds to the hostname of the device and can be viewed under Internet & Security > WiFi mode - Access Point.



4.5. In the Internet & Security > WiFi mode - Client menu, enable the connection to your existing WiFi network. The name and password of the local network are required here.

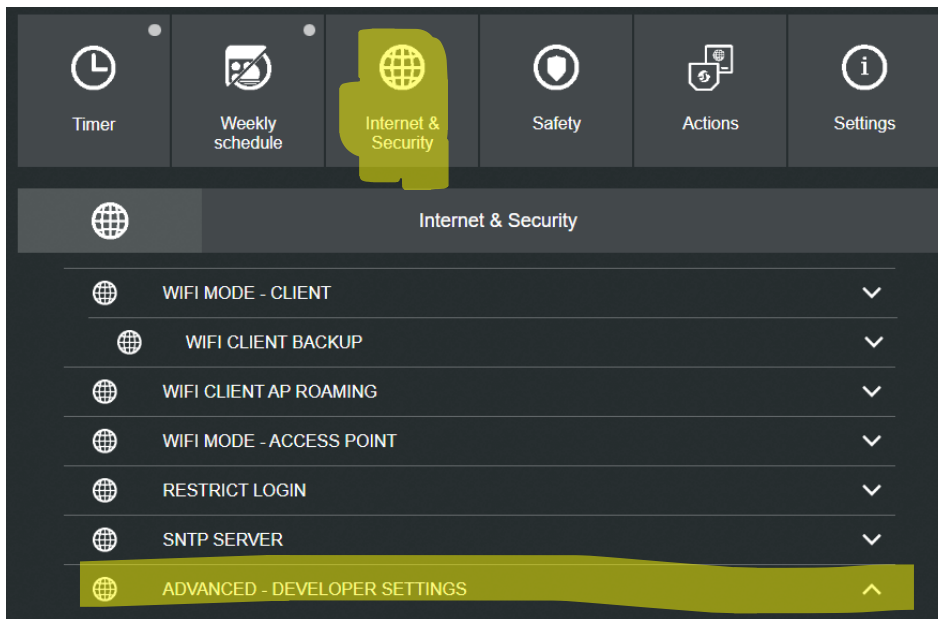


4.6. This assigns the WatchDog a new IP address. For the possible assignment of a static IP address, activate the appropriate check mark and assign IP address (in the user interface of the router you can view the IP addresses that have already been assigned).



4.7. After successful activation and integration into the local network, the WatchDog can be reached at the new IP address.

- 4.8. Further steps, such as integration of cloud systems or local MQTT brokers and automation systems, can be individually designed
- 4.9. MQTT Broker Settings:



Your MQTT Broker IP

Enable MQTT  
WARNING: If you enable MQTT - actions via Cloud connection will be disabled!

Username:

Password:

Server:

Custom MQTT prefix:  
 Use custom MQTT prefix

Min reconnect timeout:  Max reconnect timeout:  Keep alive:

Clean Session  
 Retain

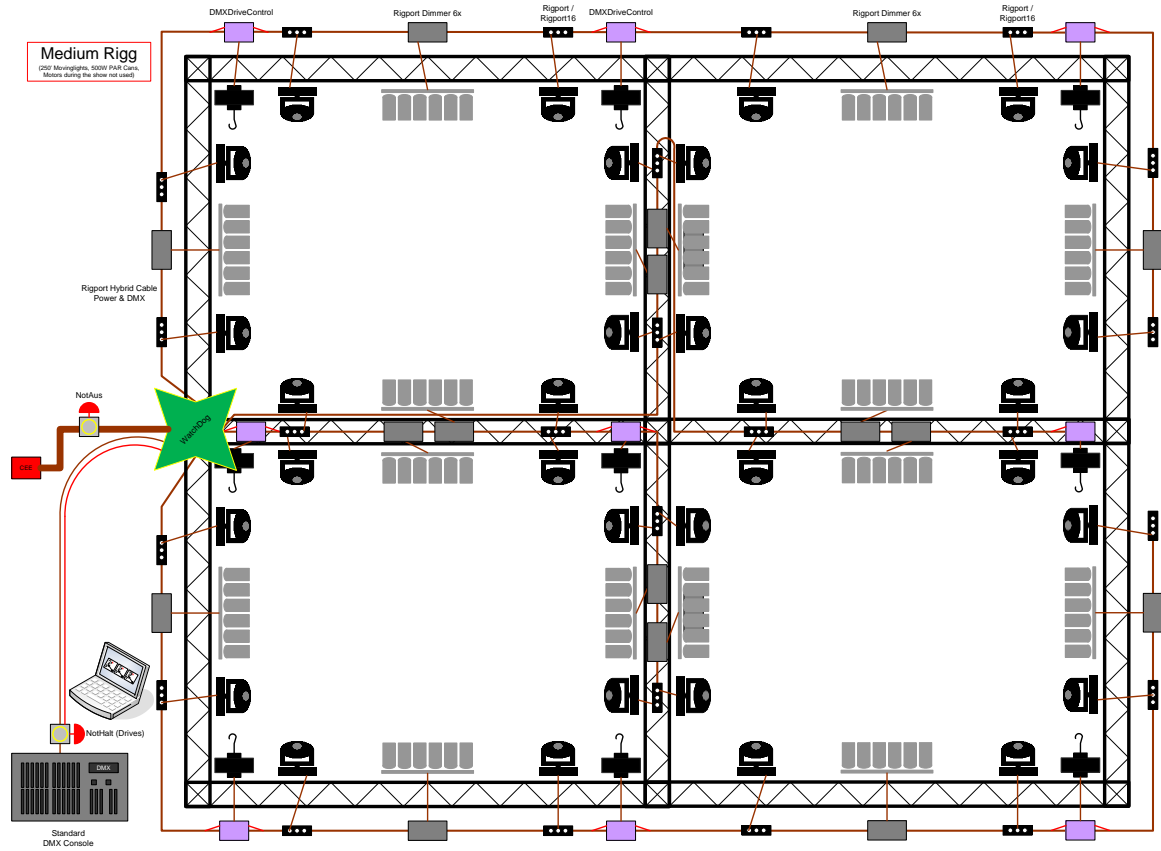
Max QoS

SAVE

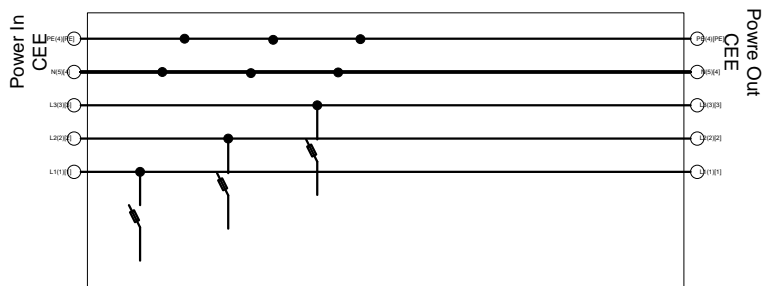
- 4.10. For easy setup, we recommend a Raspberry system with [ioBroker](#) or [Home-Assistant](#), or, [Node-Red](#), [Grafana](#) as further systems. For this purpose, we also provide assistance with installation or prefabricated systems such as the [0599011-RackportMain](#)

#### 4.11. Possible Use Cases:

- Mixed, serial application with other devices



#### 4.12. Wiring diagram WatchDogs:



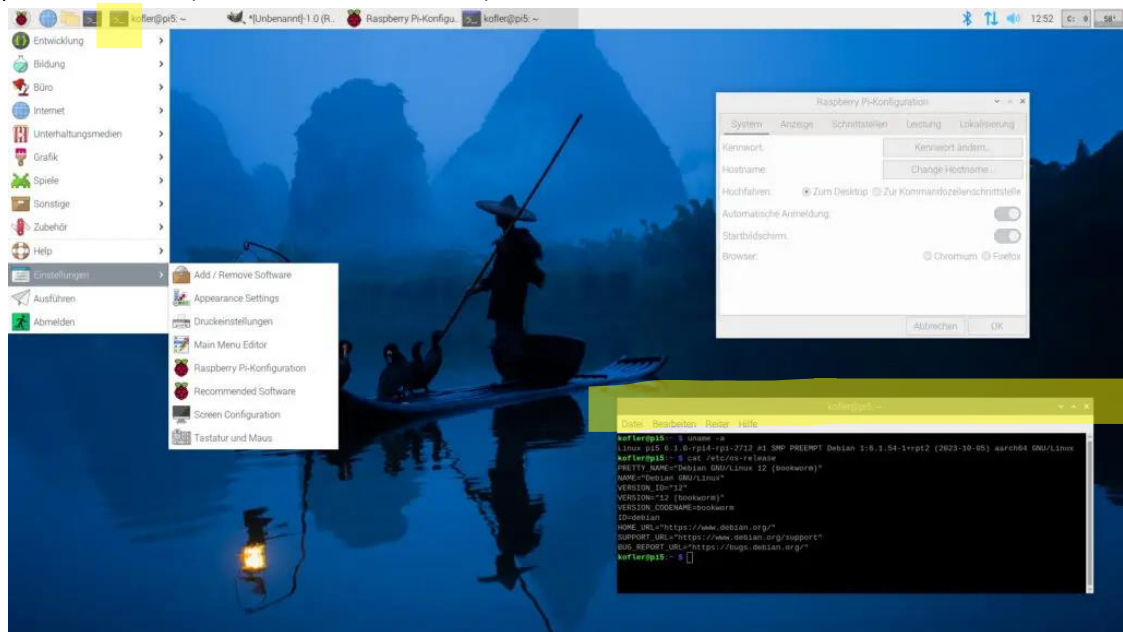
## 5. RACKPORTMAIN CONFIGURATION

### 5.1. System information

- Das gesamte Grundsystem ist aufgrund der flexibleren Erweiterbarkeit auf einem Desktop Linux System aufgesetzt. Damit sind auch lokale Monitore nutzbar.
- Alle Subsysteme sind containerisiert. Somit auch sehr einfach erweiterbar und updatebar. Linux Grundkenntnisse sind zu empfehlen, wenn das System verändert werden soll.
- Auf dem Desktop befindet sich eine Textdatei, welche Grundinformationen beherbergt

### 5.2. Updating the system via internet connection

- open the terminal (command line interface cli)

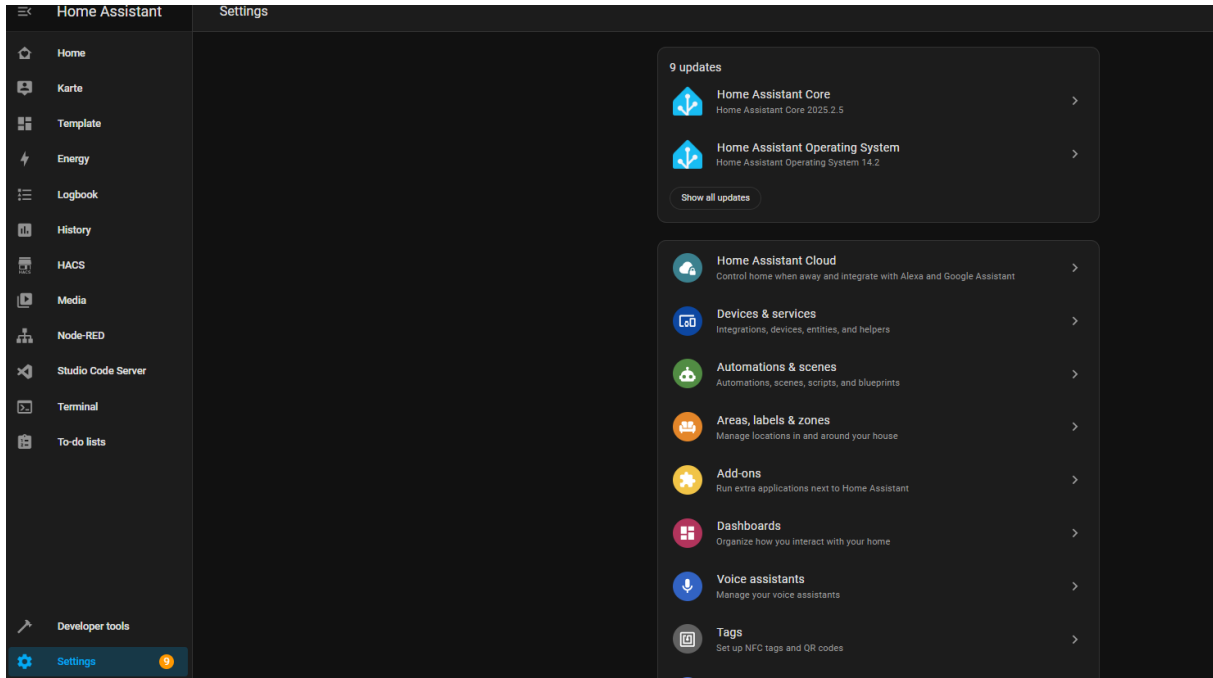


- go to `/opt/stacks/hass`
  - -->by enter in cli `"cd /opt/stacks/hass"`
- enter the following 4 commands one after the other
- **docker compose down**  
stops all container
- **docker compose pull**  
pulling actual updates from every container (may take some minutes!)
- **docker compose up -d**  
restarts all now updated container
- **sudo apt update**  
updates, if wished, the whole linux system (take some minutes)

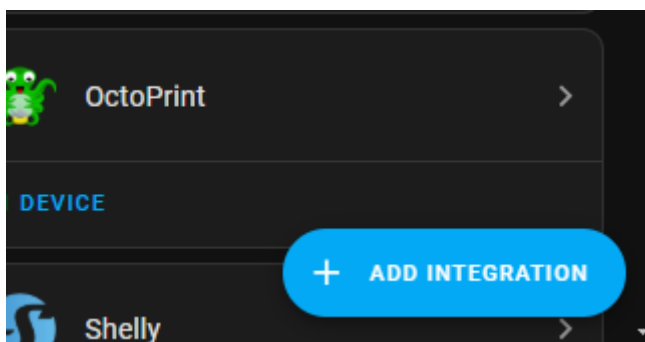
### 5.3. Start Browser

- within localhost:8123
- or IP-Address:8123
  - You'll find Your IP on Taskbar Network information
  - or in Your Router
    - in case of Ethernet plus Wi-Fi connection, The RackPortMain got two different IP Adresses!

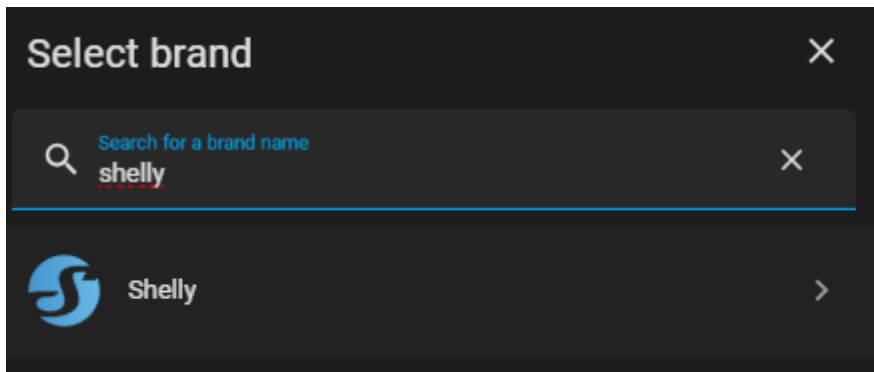
### 5.4. Import Devices Settings → Devices & Services



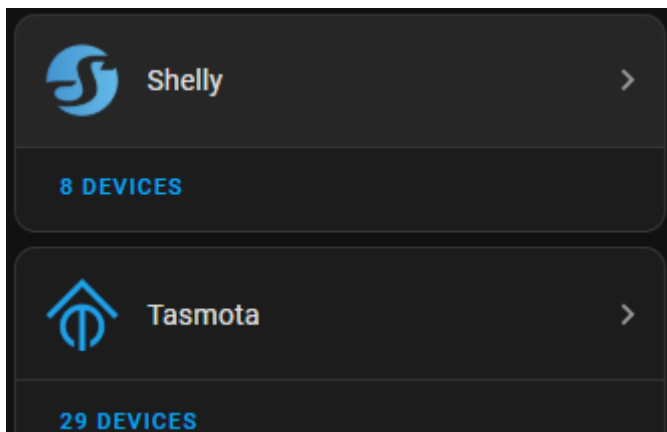
### Add Integration



Give in Shelly and choose

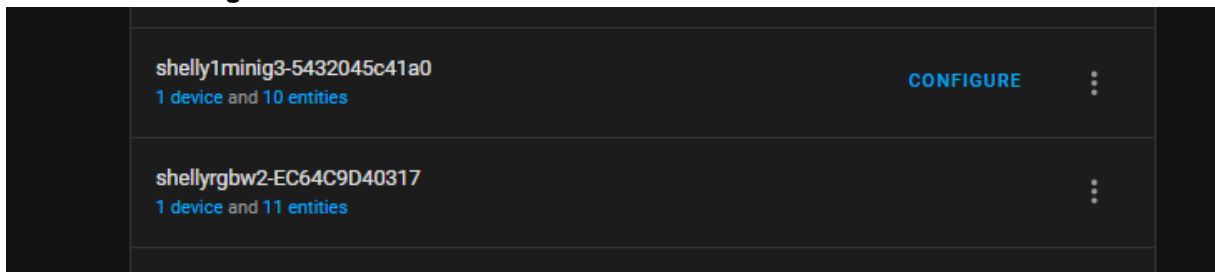


Now it should appear in this integration overview

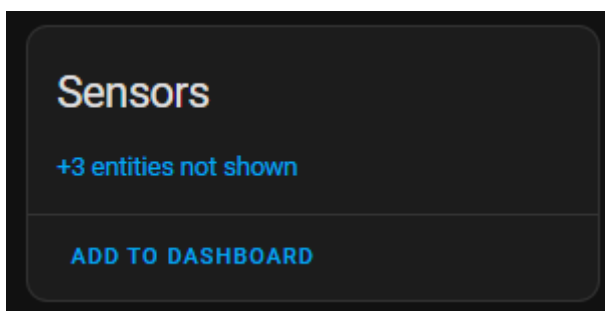


#### 5.5. Rename Devices

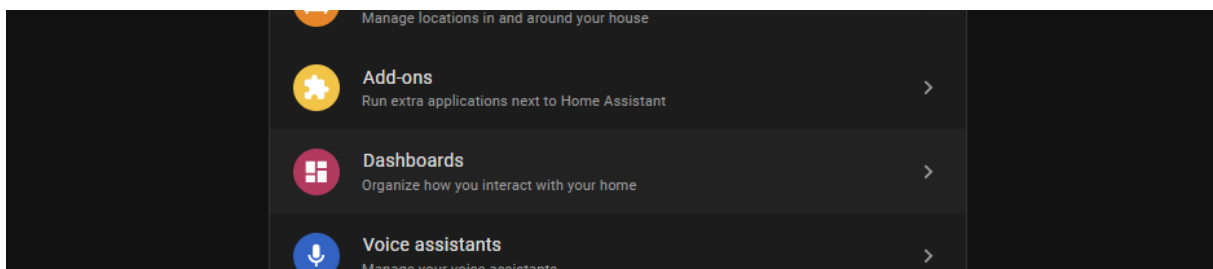
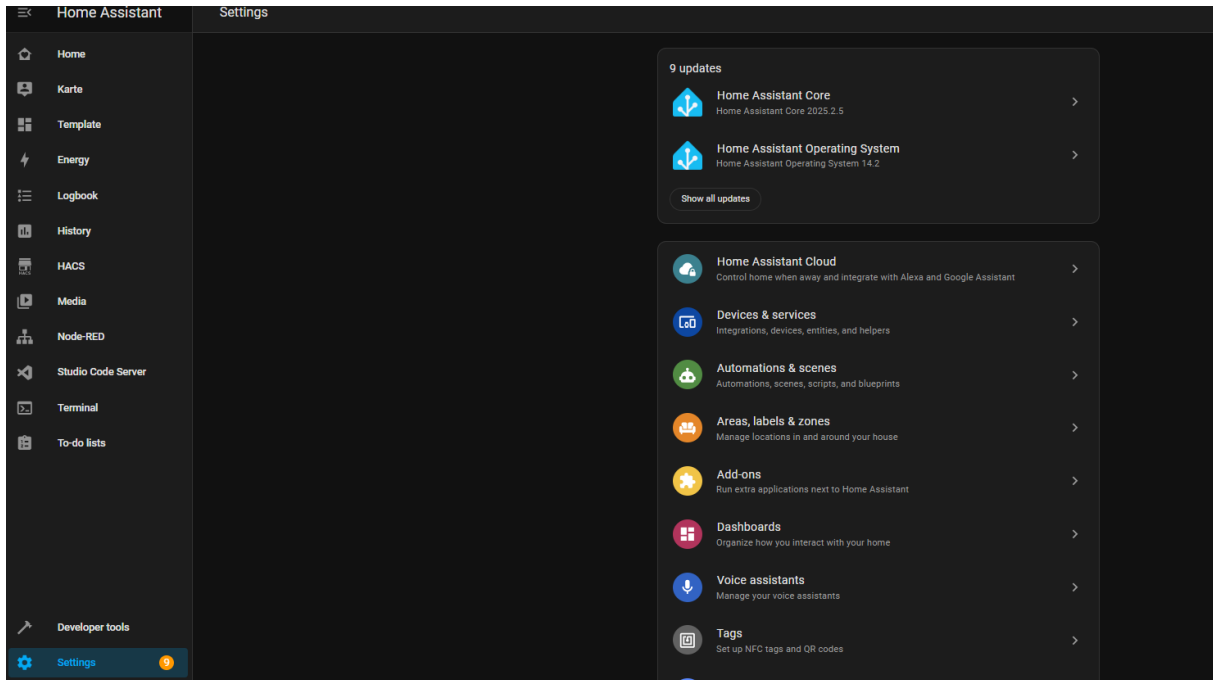
For better handling, it is recommended to rename in good conditions like **Watchdog Main Power Unit**



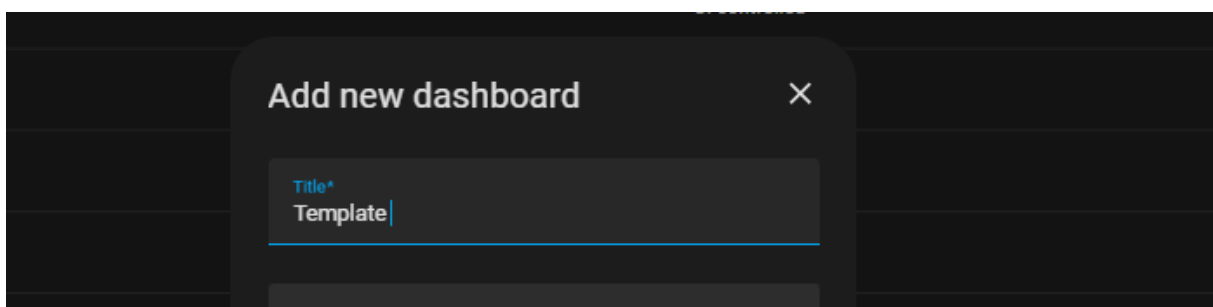
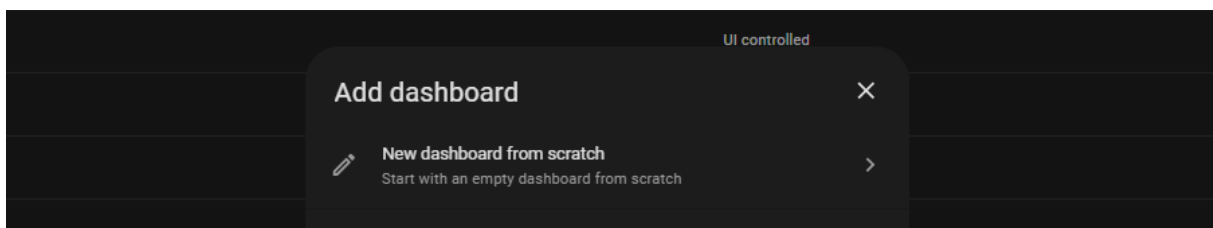
Looking if all sensors are shown, if not activate them



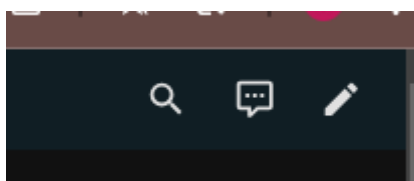
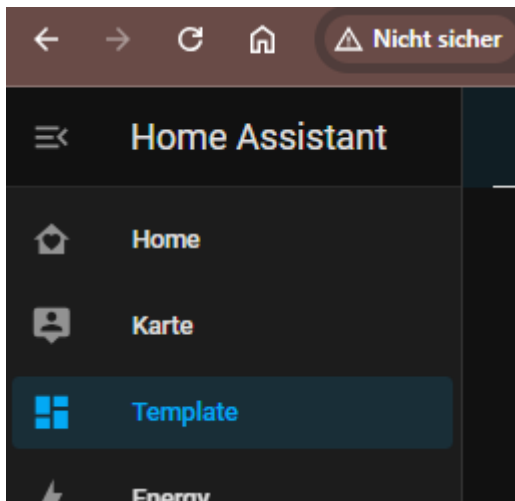
## 5.6. Create new Dashboard



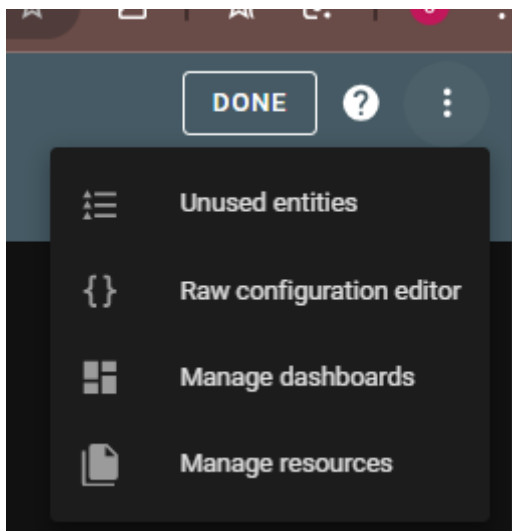
## New Dashboard from Scratch





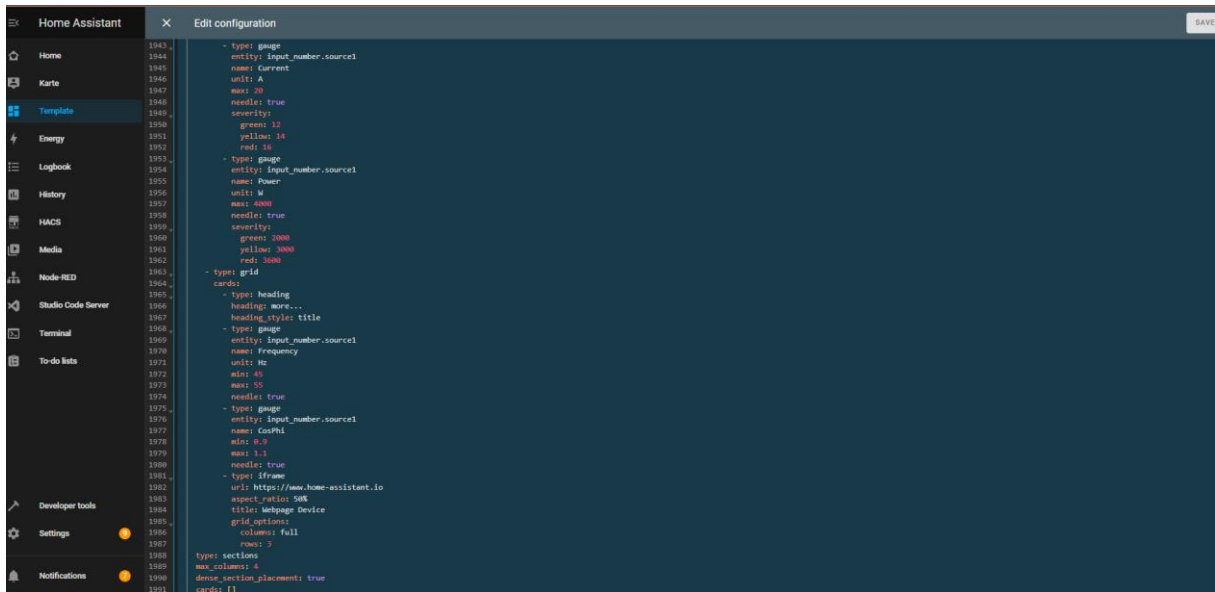


Raw configuration Editor



## 5.7. Import Template

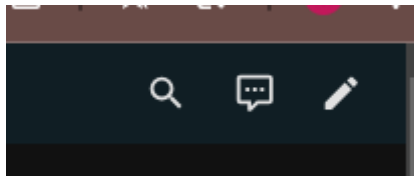
Copy whole template.Yaml containment into and save

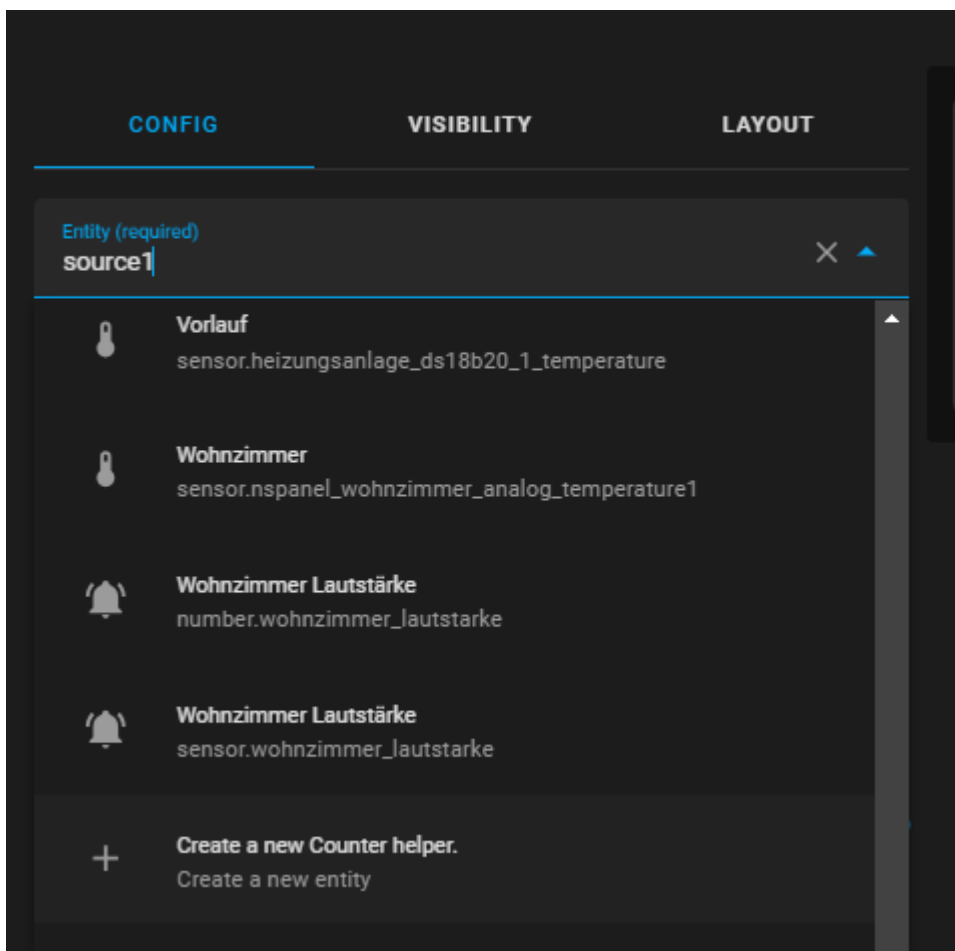
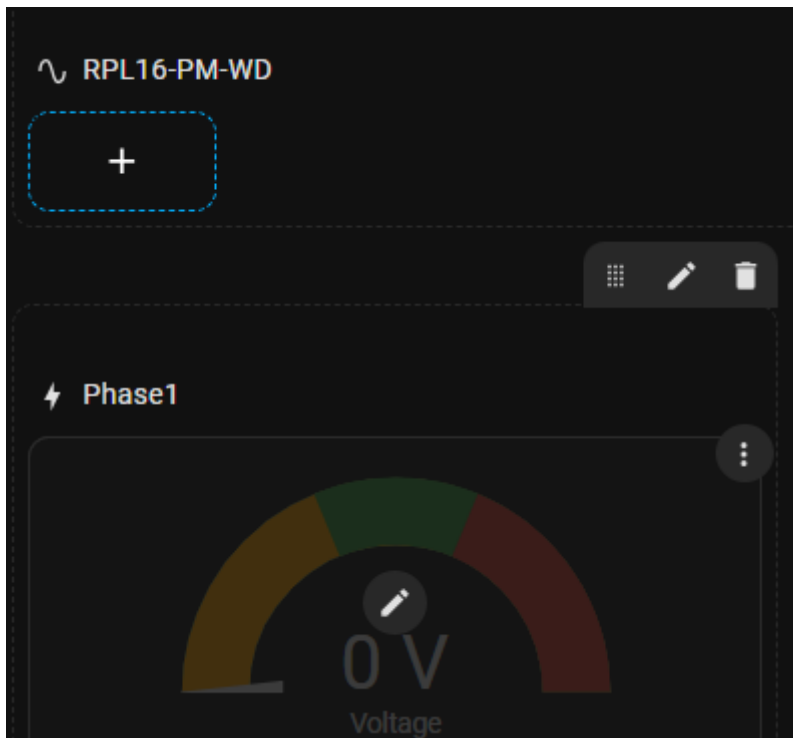


```
1943 - type: gauge
1944   entity: input_number.source1
1945   name: current
1946   unit: A
1947   max: 20
1948   needle: true
1949   severity:
1950     green: 12
1951     yellow: 14
1952     red: 16
1953 - type: gauge
1954   entity: input_number.source1
1955   name: power
1956   unit: W
1957   max: 4000
1958   needle: true
1959   severity:
1960     green: 3000
1961     yellow: 3000
1962     red: 3000
1963 - type: grid
1964   cards:
1965     - type: heading
1966       heading: more...
1967       heading_style: title
1968     - type: gauge
1969       entity: input_number.source1
1970       name: frequency
1971       unit: Hz
1972       min: 40
1973       max: 50
1974       needle: true
1975     - type: gauge
1976       entity: input_number.source1
1977       name: CosPhi
1978       min: 0.9
1979       max: 1.0
1980       needle: true
1981     - type: iframe
1982       url: https://www.home-assistant.io
1983       aspect_ratio: 50%
1984       title: Webpage Device
1985     grid_options:
1986       columns: full
1987       rows: 3
1988   type: sections
1989   max_columns: 4
1990   show_section_placement: true
1991   cards: []
```

### 1.1. Create Dummy Sensor “source1”

Go to 'Home View, search for Template Dashboard and edit it





If Creating new Sensor is not choosable or the dashboard shows much errors, Your HomeAssistant Container needs to be updated. →Got back to chapter 5.2

## Create Counter

Name\*  
source1

Icon

Minimum value

Maximum value

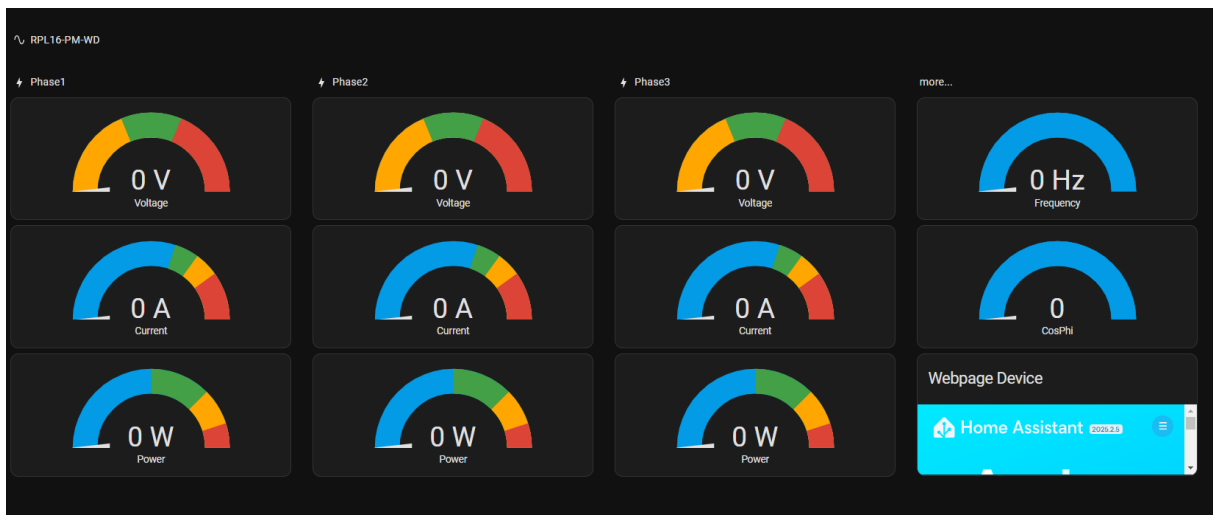
Initial value  
0

Step size  
1

Restore the last known value when Home Assistant starts











CREATE

### 1.2. Dashboard is done



### 1.3. Now just redefine all sensors to real sensors

## 2. SAFETY REGULATIONS

1. When working on the device, observe the national safety and accident prevention regulations.
2.   **DANGER** If the safety regulations are not observed, death, serious bodily injury or high property damage can be the result!
3.  **NOTE** Commissioning, assembly, modification and retrofitting may only be carried out by a qualified electrician!  
De-energize the device before starting work!
4.  **NOTE** The device is designed exclusively for the event show technology sector and may only be operated by technically instructed personnel.
5.  **DANGER** In emergency stop applications, an automatic restart of a machine must be prevented by a higher-level control system!
6.  **DANGER** During operation, parts of the electrical switchgear are under dangerous voltage!
7.  **NOTE** Protective covers must not be removed from electrical switchgear during operation! Keep the instructions for use!
8.  The device is an "associated equipment" and must not be installed in potentially explosive atmospheres. Comply with the safety regulations applicable to the construction and operation of associated equipment.
9. The device must not be exposed to mechanical or thermal stresses that exceed the limits described in the operating instructions. To protect against mechanical or electrical damage, installation must be carried out in an appropriate housing with a suitable degree of protection (e.g. IP54) in accordance with IEC 60529/EN 60529. In the presence of dust, the device must be installed in a suitable housing (at least IP64) according to EN 61241.
10. Installation must be carried out in accordance with the instructions described in the operating instructions. Access to the electrical circuits inside the device is not permitted during operation.
11.  **NOTE** The equipment cannot be repaired by the user and must be replaced by an equivalent device. Repairs can only be carried out by the manufacturer.
12.  **WARNING** In the event of unexpected behavior or damage, the system must be taken out of operation immediately.

13.



The main supply must be made quickly accessible and disable. This is a product for Environment A (Industry). In environment B (household), this device may cause unwanted radio interference; in this case, the user may be obliged to take appropriate measures.

## 2.1. Standards and regulations applied

Name	Definition	Edition
<b>2014/35/EU</b>	<b>Niederspannungsrichtlinie</b> Richtlinie 2014/35/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung elektrischer Betriebsmittel	2014
<b>2014/35/EU</b>	<b>EMV Richtlinie:</b> Richtlinie 2014/30/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit behandelt die elektromagnetische Verträglichkeit von Betriebsmitteln	2014

## 5. WARRANTY AND DISCLAIMER



Both the adherence to these instructions and the conditions and methods during installation, operation, use and maintenance of the equipment, the manufacturer are not monitored. Improper execution of the installation can lead to property damage and consequently endanger people.

Therefore, we do not accept any responsibility and liability for losses, damages or costs resulting from incorrect installation, improper operation misuse and maintenance, or in any way related to this.

Likewise, we do not accept any responsibility for patent infringements or infringement of other rights of third parties arising from the use of these devices result.

The manufacturer reserves the right to make changes without prior notice. regarding the product, the technical data or the user manual

If it is apparent that safe operation is no longer possible (e.g. in the event of visible damage), disconnect the device from the power supply immediately.

The warranty is the statutory 2 years

In the event of any modification or use other than the intended purpose, the warranty expires immediately. From then on, the manufacturer no longer assumes any liability.

Since this is a safety-oriented device, any repair is only permitted by the manufacturer, in the case of self-repair the warranty expires and the manufacturer assumes no liability for damage incurred and consequential damage.

A periodic inspection by experts must be carried out (BGV A3...), if this does not expire, warranty and liability of the manufacturer expires

## 6. TROUBLESHOOTING

- No reaction, display off.
  1. No tension applied
  2. Internal fuse defective due to overvoltage



# 7. MAINTENANCE AND CLEANING

## 7.1. Maintenance

### Description

The operator must set intervals at which the equipment is monitored and calibrated. As a rule, this is carried out by the operator

### Prerequisite

- Maintenance only by authorized personnel
- Unplug before opening the appliances.
- Only approved components may be used.

### Procedure

The system must be subjected to a BGV A3 test on a regular basis

The electrical installation and function of the protective devices must be checked regularly

### Maintenance table

The following maintenance work must be carried out at regular intervals:

Frist	Tätigkeit
daily	<ul style="list-style-type: none"><li>• Backups</li><li>• RCD</li><li>• Emergency stop / emergency stop</li></ul>
6 monthly	The following functions must be checked for functionality: <ul style="list-style-type: none"><li>• Emergency stop / emergency stop</li></ul>

A visual inspection must be carried out regularly with the following points:

- Cabling for damage
- Screw connections on tight fit
- All equipment and system components for wear and damage
- Check for expired calibration dates



After maintenance and repair work, the system must always be inspected and tested. Death, serious injuries, or considerable property damage can otherwise be the result.

## 7.2. Cleaning

- **Prerequisites**
  - Device must be de-energized.
  - Power supply line removed.
  - Work according to ESD guidelines.
  
- **Work rules**
  - When cleaning work, follow the instructions in the manufacturer's documentation of the individual components.
  - The penetration of cleaning agents into electrical components must be prevented.
  - Do not use compressed air for cleaning.
  
- **Procedure**
  - Loosen and vacuum dust deposits.
  - Clean appliances with solvent-free detergent and a suitable cloth.
  - Clean pipes and plastic parts with solvent-free cleaning agent.
  - Replace or add damaged or missing lettering and signs.

## 8. SPECIFICATIONS

### General data

Power dissipation min./max.	1 W / 5W
Mains frequency	50/60 Hz
Ambient temperature range	
Operating-5	°C to +55 °C
Transport,	storage-10 °C to +80 °C
Installation position	vertical & horizontal
Basic Function	Measurement Current and Voltage Optional: Switch Operation

### specific data

Material	Steel
	Polyamid
Connection Plugs	CEE in / Out 16, 32 ,63 ,25
	Powercon PowerconT1

# EC Declaration of Conformity

According to the Niederspannungsrichtlinie 2014/35/EU

The manufacturer / distributor

Protec GmbH  
Schimmelweg 3  
86424 Dinkelscherben

hereby declares that the Product

<b>Product Name:</b>	<b>WatchDog</b>
<b>Type/Modell:</b>	<b>RigPort-PM-WD, RackPort-PM-WD, StagePort RPL-PM-WD</b>

complies with the requirements of the Low Voltage Directive 2014/30/EU and also complies with the following directives:

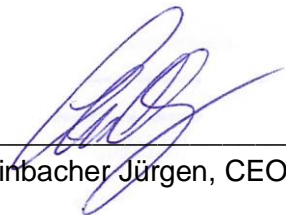
## **EC EMC Directive 2014/35/EU**

The following harmonised standards have been applied:

Authorised representative for the preparation of technical documentation:

**Protec GmbH, Schimmelweg 3, 86424 Dinkelscherben**

Dinkelscherben, 01.08.2024

  
Steinbacher Jürgen, CEO