OPERATING INSTRUCTIONS

WPM CLOUD

2480.00.91.53

Document: Operating instructions

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Language:

In the German language, this document is the original version in the EU language of the manufacturer and is labelled with the German national flag.

In the language of a country of use, this document is a translation of the original version and labelled with the national flag of the country of use.

This document is referred to as "instructions" in the following text.

Number of pages in this manual including the title page: 90

These instructions are valid for the product

2480.00.91.53

WPM Cloud

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Contents

1 INTRODUCTION

Read through these instructions carefully before use and store them.

These instructions contain the following important information on the product:

- Proper use
- Safety
- Use

Proper use also involves

- Reading these instructions
- Complying with the safety information they contain
- Complying with the applicable documents

1.1 Intended use

The product WPM Cloud is part of a WPM System.

A WPM system is a customer-specific combination of hardware and software for wireless pressure monitoring .

In the following text of these instructions, the product WPM Cloud is referred to as Cloud application.

On the IoT device, the WPM software is installed, which only works in conjunction with the associated components.

With the product WPM Cloud, active WPM pressure sensors and data holders in the receiving area of the Gateway can be identified, observed and evaluated or re-parametrised with the corresponding Professional authorisation level.

Any other use of the product WPM Cloud is considered improper.

1.2 Disclaimer of liability

FIBRO GMBH guarantees the described function of the product as stated in advertising and product information.

Further product properties are not confirmed. FIBRO GMBH assumes no liability for efficiency and flawless functioning if the product is used for a purpose other than the one addressed in the chapter “Proper use”. Compensation for damage is generally precluded.

If this product is used in environments for which it is not suitable or which do not fulfil the technical standards, FIBRO GMBH shall not be held responsible for the consequences.

FIBRO GMBH assumes no liability for damage to facilities and systems near the product caused by a defect in the product or an error in these instructions.

FIBRO GMBH is not responsible for the violation of patents and/or the rights of third parties outside of the Federal Republic of Germany.

FIBRO GMBH is not responsible for damage caused by improper operation and failure to follow the instructions provided in this document.

FIBRO GMBH is not liable for lost profit and subsequent damage resulting from failure to comply with safety and warning notes.

The products from FIBRO GMBH are state of the art in science and technology.
FIBRO GMBH continually conducts studies of the products and the market in order to continually improve and further develop its products.

1.3 Purpose of the document

These instructions describe the operation of the product and contain important information on correct use.

Read these instructions before working on or with the product. The instructions contain important information for your personal safety. All persons who work on or with the product at some phase in the product's life must read and understand the instructions.

The instructions must be available at the location where the product is used and throughout its entire lifespan. They must be given to the new owner if the product is sold.

The safety notes in the individual chapters must be observed.

These instructions and the other applicable documents are not subject to an automatic change service.

We reserve the right to make changes to the data and figures mentioned in these instructions due to technical developments. FIBRO GMBH can supply the current issue.

1.4 Target group

These instructions are oriented towards persons who commission, configure, operate and maintain the product WPM Cloud.

1.5 Autor's rights

The technical state at the time of the delivery of the product WPM Cloud and the associated instructions shall be decisive if no other information is provided.

We reserve the right to make technical changes without giving special notice. Earlier instructions shall lose their validity. The general sales and delivery conditions of
FIBRO GMBH apply.

2 PRODUCT DESCRIPTION

2.1 Supplied components

The WPM Cloud product is delivered as a software package (TAR) with an associated installation script.

2.2 Properties

The WPM Cloud gives you the option of centrally managing and controlling your tools equipped with the WPM system across locations. From configuration to predictive maintenance, the WPM Cloud application offers a wide range of possibilities to increase efficiency and quality for your production.

To use the WPM Cloud application, start with these first steps for a quick start.

1) Creating plants
   – Plants are the highest structuring unit and represent geographical locations (see Chapter 2.4 / 2.4.1 "Factories" on page 16).
2) Creating areas
   – Areas are used to further structure the geographical locations. Create one area for each press line. Additional areas can also be created e.g. for storage and maintenance areas. In the next step, 1...x WPM Gateways or WPM Repeaters are assigned to each area. This allows large areas to be combined, for which the Bluetooth range of a single device would not be sufficient (see Chapter 2.4 / 2.4.2 "Areas" on page 17).
3) Adding gateways/repeaters
   – Here you add your existing WPM Repeaters and Gateways to the system and make an assignment to the areas (see Chapter 2.4 / 2.4.3 "IoT gateway" on page 18).

2.3 Overview

In the *Overview* menu, a selection can be made between the plant, tool and sensor categories.

2.3.1 Factories

In the *Plants* submenu, all plants are displayed with their respective areas. The table shows how many sensors are in their respective status.

Open view: *Overview => Plants*

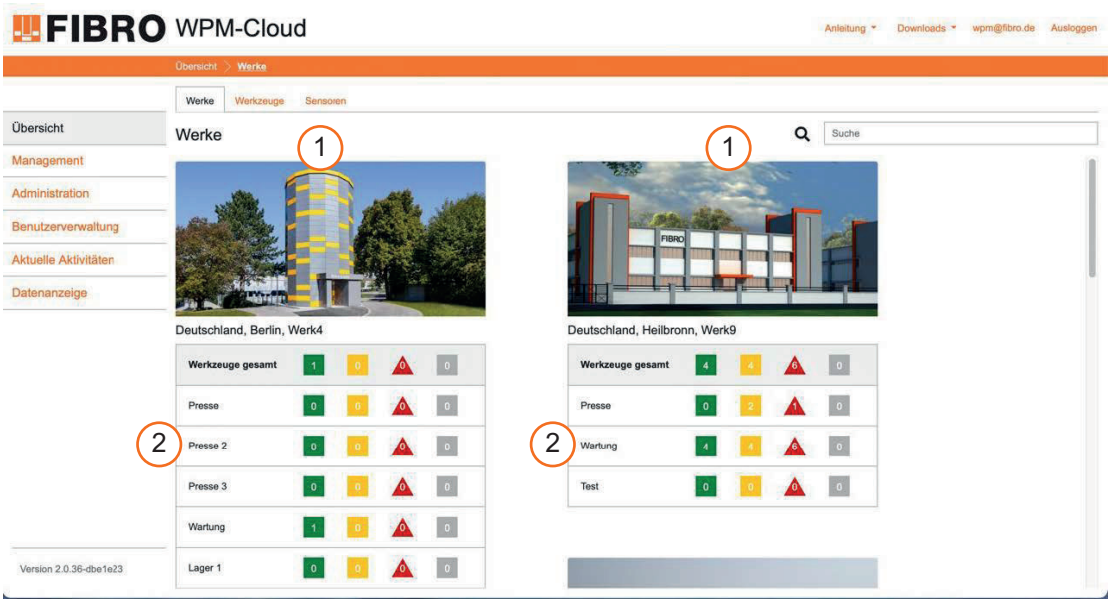


Fig. 2-1 Overview of plants

1 Plants
2 Areas of a plant

If you click on the row of an area, you will be forwarded to the detailed view of the area and see the available data holders and sensors there.

Detailed view of area

Example: Germany, Heilbronn, Plant 9, Press

In the detailed view, the data holders of an area are visible with the current information and status reports.

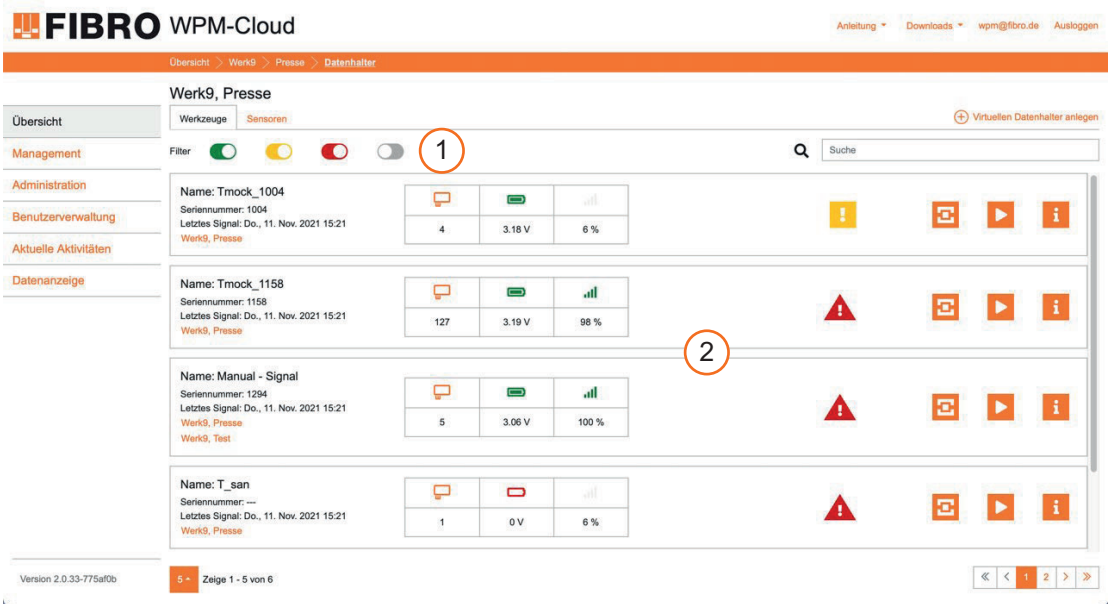


Fig. 2-2 Overview - Plants - Detailed view of an area

1 Filter

2 Data holders are visible with the current information and status reports

Information and status reports

Symbol	Meaning
Filter:	
	Data holder whose sensors comply with all limit values.
	Data holder with at least one sensor for which a warning was triggered due to a limit value violation.
	Data holder with at least one sensor for which an alarm was triggered due to a limit violation.
	Filter is not active.
Information:	
	Number of configured sensors of the data holder.
	Battery charge indicator of the data holder. See section on Battery voltage status in Chapter 7.4 "Changing the battery" on page 75.
	Signal strength of the data holder. See Network signal strength status.
Alarm status of data holder:	
	All sensors of the data holder comply with the respective limit values.
	A warning was triggered for at least one sensor of the data holder due to a limit violation.
	An alarm was triggered for at least one sensor of the data holder due to a limit value violation.
	Data holder has no sensors.
Press mode:	
	Press mode of the data holder is activated. Click to deactivate.
	Press mode of the data holder is deactivated. Click to activate.

Symbol	Meaning
Data holder mode:	
	Data holder is deactivated. Click to activate.
	Data holder is activated. Click to deactivate.
	Open detailed view for data holder.

Creating virtual data holder

The virtual data holder is an instrument for combining one or more free sensors in one tool. This virtual data holder thereby fulfils the function of the WPM data holder. Virtual data holders also support the press mode for tool monitoring.

1. Click on the ⊕ Create virutal data holder button to create a virtual data holder.
2. Give the virtual data holder a name.
3. Click on the Next button
4. Click on the ✎ button and assign sensors.
5. Configure sensors.
6. Click on the Save button.
   a) The new data holder is displayed in the list of data holders.

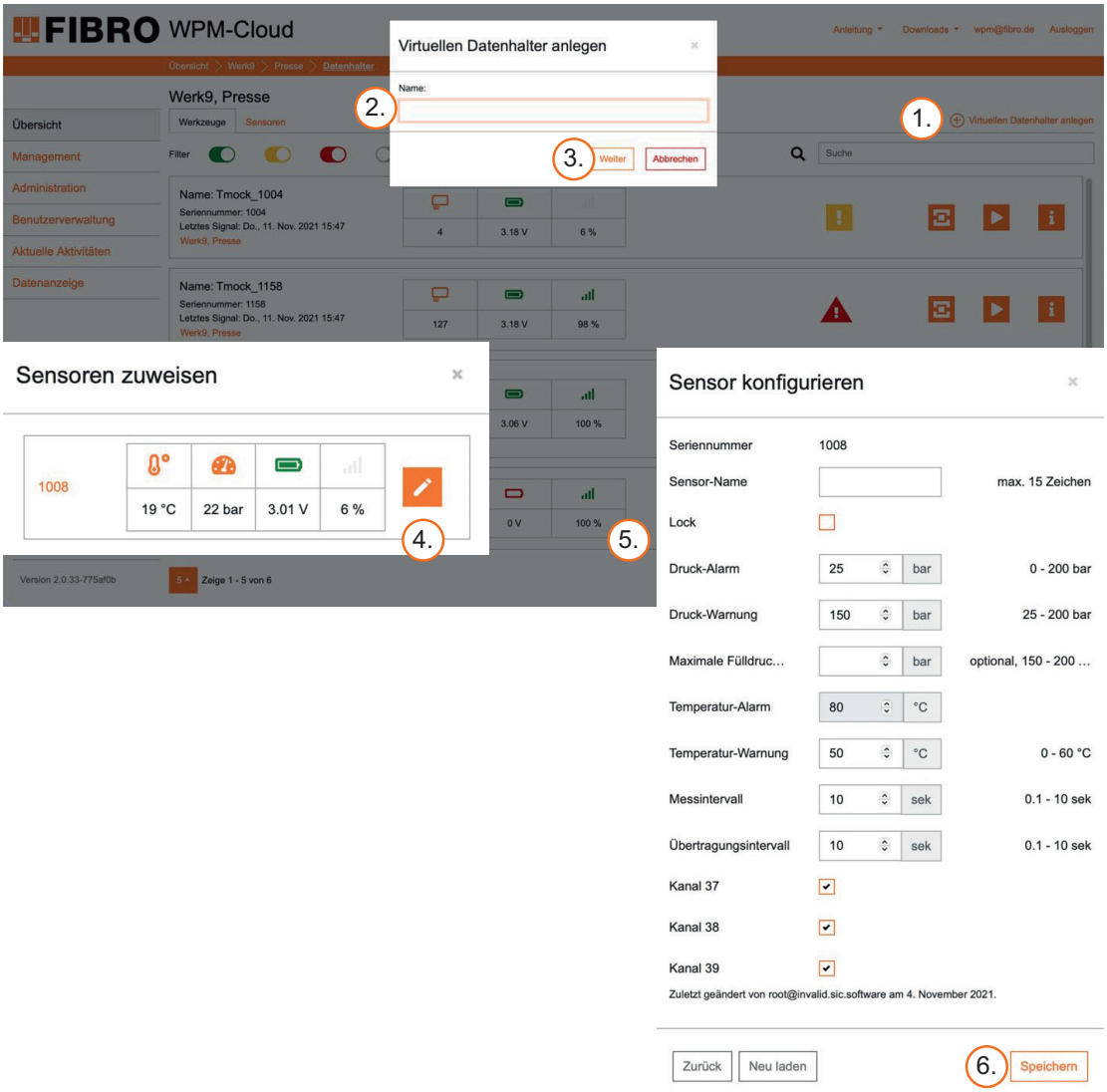


Fig. 2-3 Creation of a virtual data holder

Detailed view of data holder

In the detailed view, a list of all sensors and their statuses that have been assigned to this data holder appears. More information can be read out under the *Diagram, sensor limit values, tool image, configuration* and *firmware* menus.

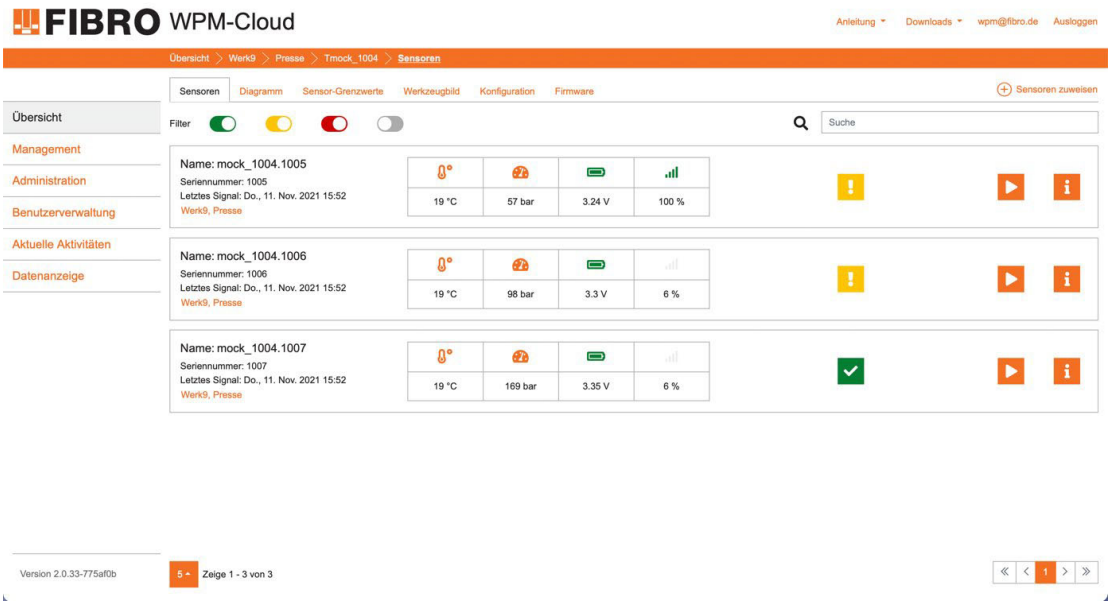


Fig. 2-4 Data holder – Detailed view

2.3.2 Tools

The *Tools* submenu displays all available tools in a list with specification of the respective location and area. The respective statuses and action options are also visible here.

Open view: *Overview* => *Tools*

1. Click the *Location* button to display all data holders of the area.

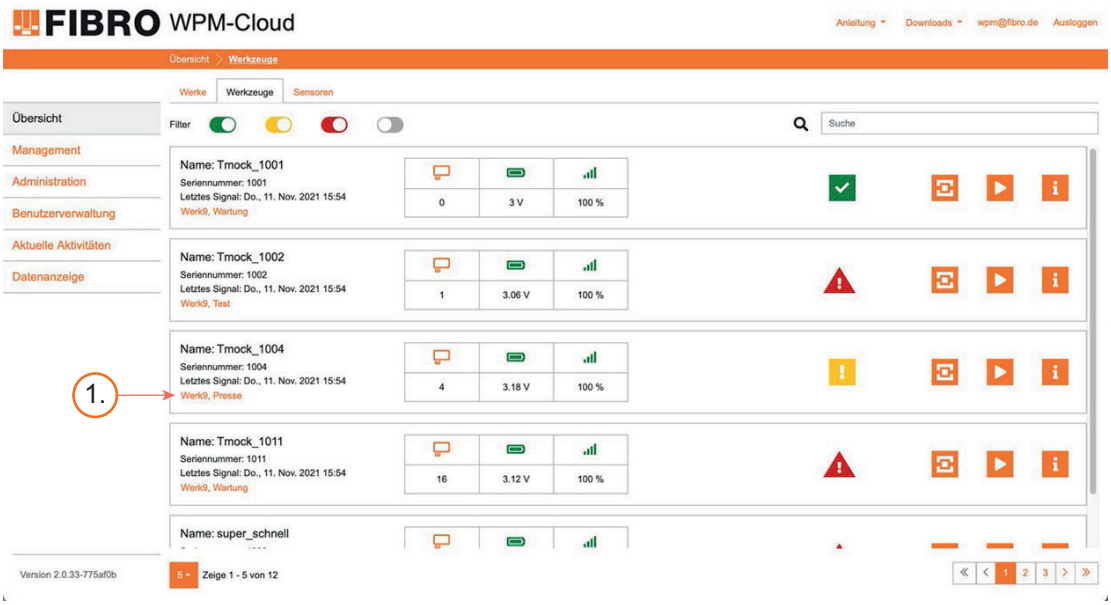


Fig. 2-5 Tools - location

2.3.3 Sensors

The *Sensors* submenu displays all free sensors that are currently not assigned to a data holder.

They can be assigned to a data holder in the overview, but are also fully functional on their own as an alternative. Here you can also see the individual areas that receive this sensor.

Open view: *Overview => Sensors*

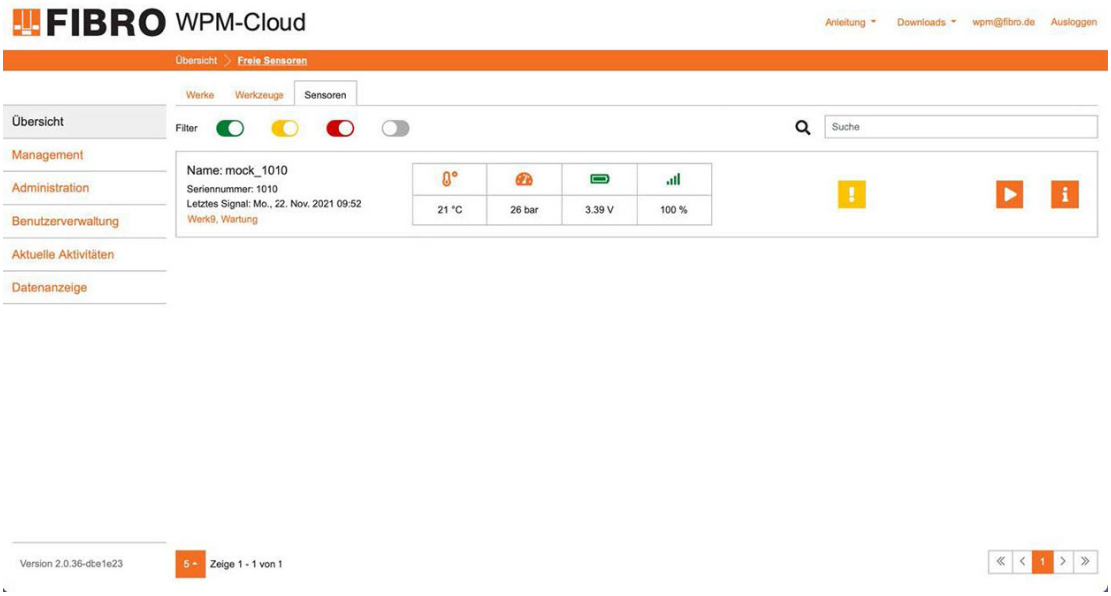


Fig. 2-6 Overview => Free sensors

2.4 Management

In the *Management* menu, plants, areas and IoT gateways can be reconfigured and edited.

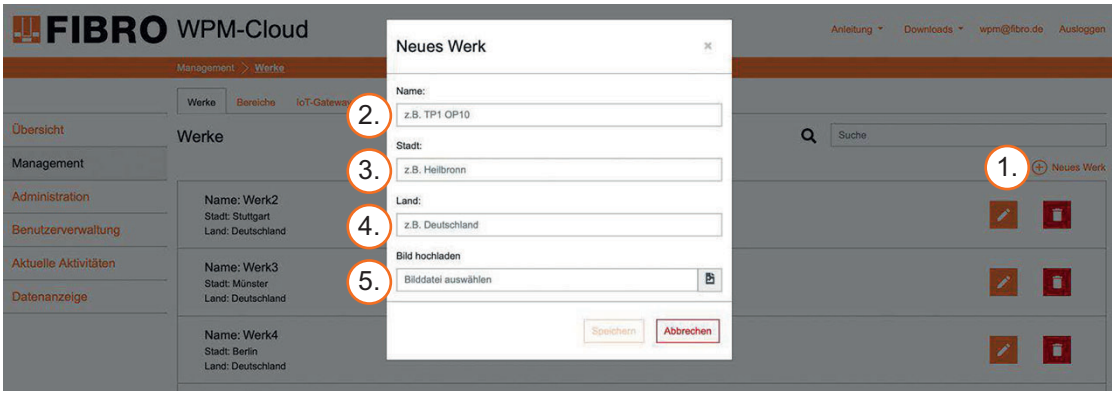
2.4.1 Factories

The *Plants* submenu displays a list with all plants that have already been created.

Open view: *Management => Plants*

Adding new plant

1. Click on the ⊕ New factory button to create a new plant.
2. Give the new plant a name.
3. Enter the city where the plant is located.
4. Enter the country where the plant is located.
5. Upload a picture of the plant.
6. Click on the Save button.
   a) The new plant is displayed in the list of plants.



Editing plant

1. Switches to the input mask for editing the selected plant.
2. Removes the plant after confirmation via a confirmation prompt.

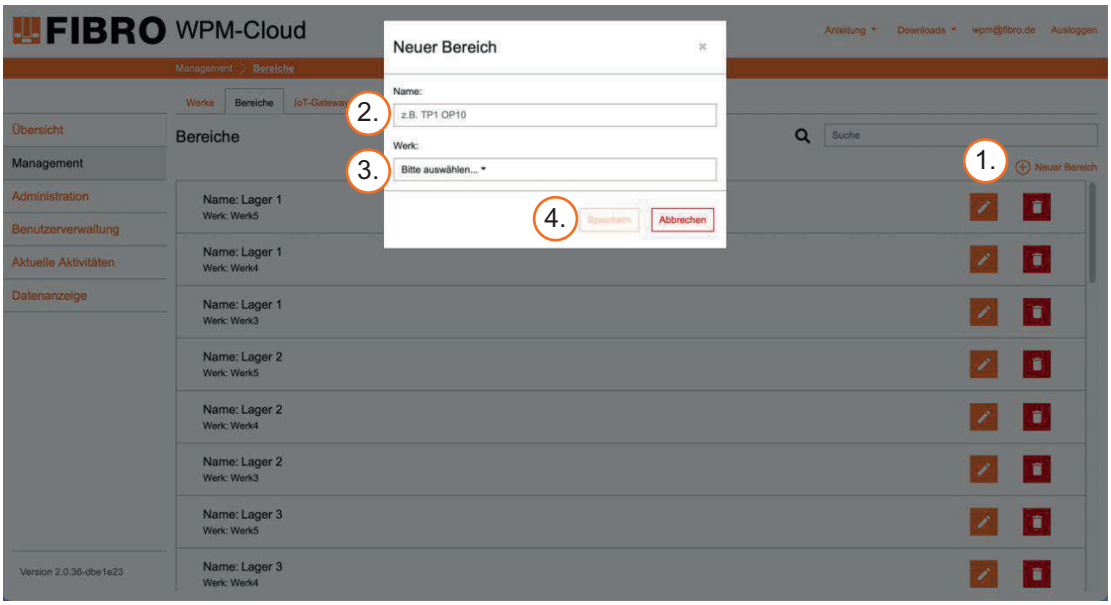
2.4.2 Areas

The *Areas* submenu displays a list with all areas that have already been created.

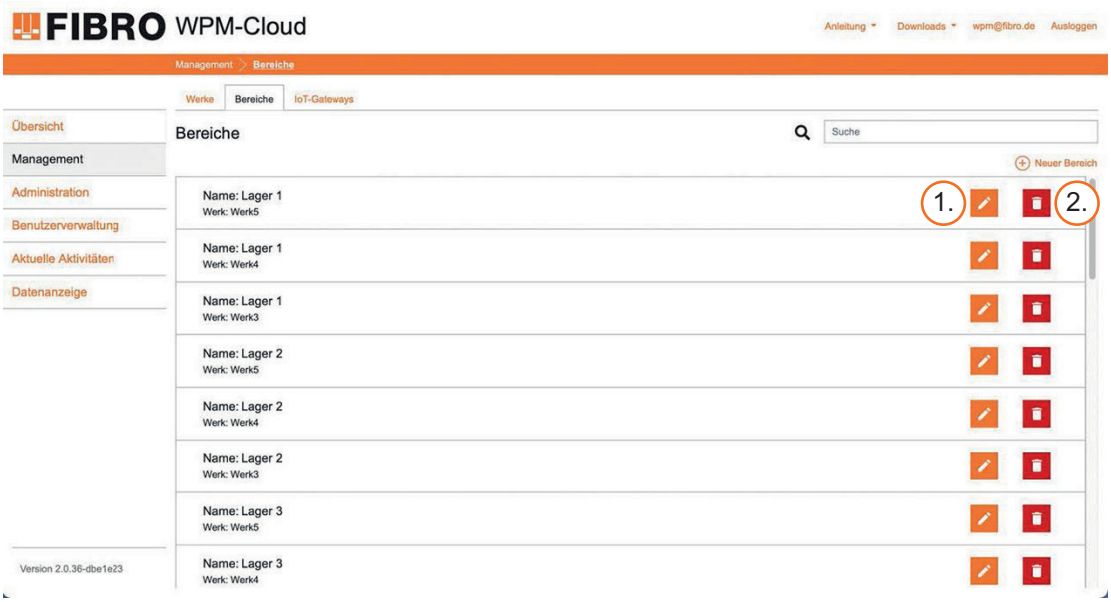
Open view: *Management => Areas*

Adding new area

1. Click on the ⊕ New area button to create a new area.
2. Give the new area a name.
3. Enter the plant where the area is located.
4. Click on the Save button.
   a) The new area is displayed in the list of areas.



Editing an area



1. Switches to the input mask for editing the selected area.
2. Removes the area after confirming via a confirmation prompt.

2.4.3 IoT gateway

The *IoT gateways* submenu displays a list with all gateways that have already been created.

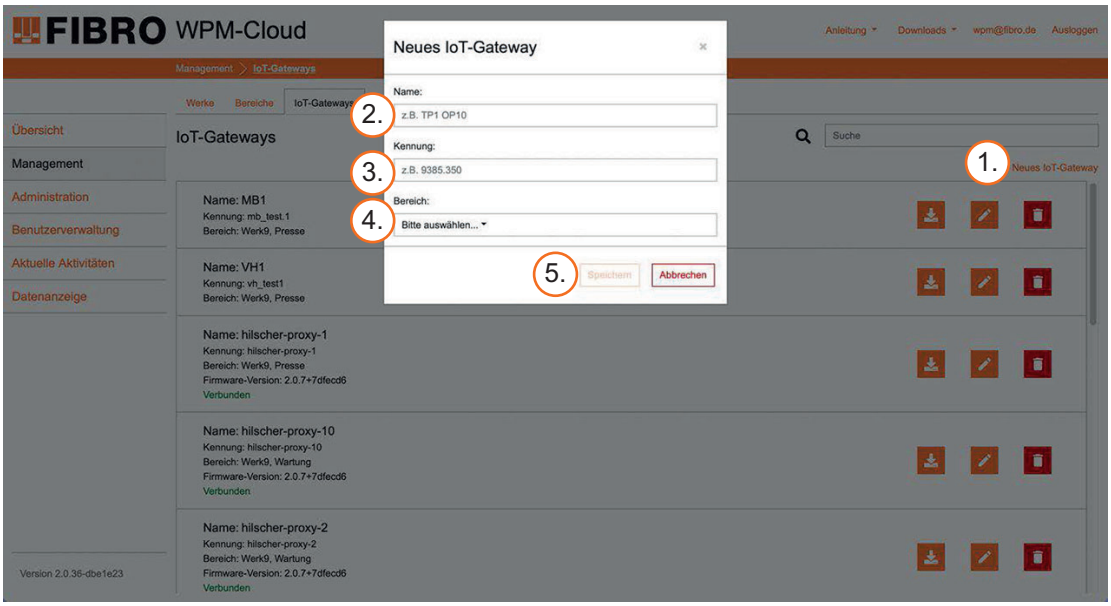
Open view: *Management => IoT gateways*

Adding new IoT gateway

1. Click on the ⊕ New IoT Gateway button to create a new gateway.
2. Give the new gateway a name.
3. Enter the identifier of the gateway.
   a) The identifier to be entered can be found printed or as a scannable QR code on the gateway or the WPM Repeater.

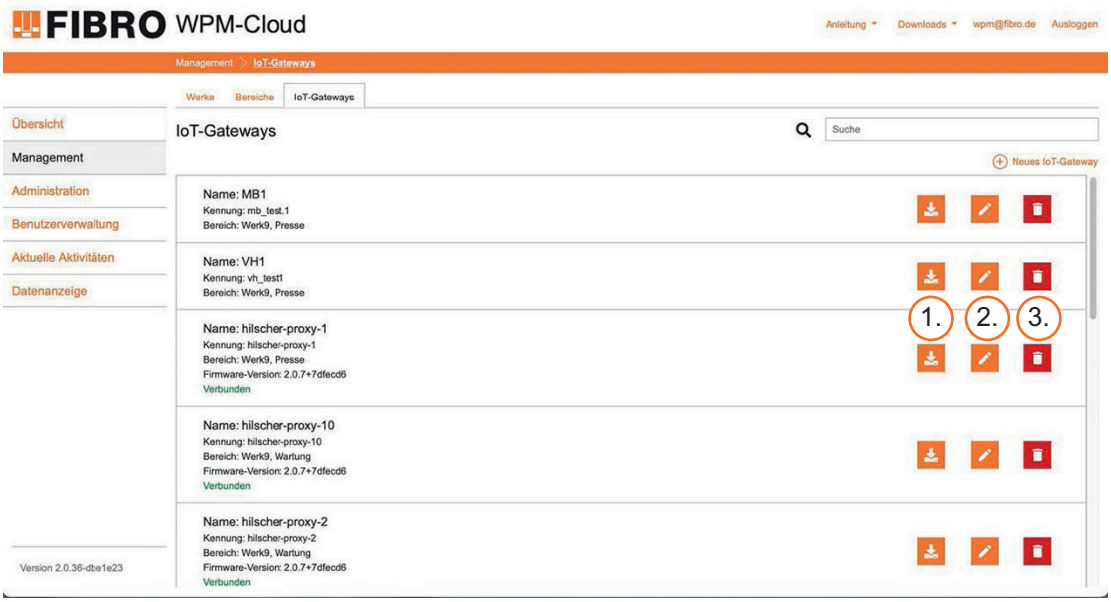
a IoT gateway identifier
b Repeater identifier

4. Select the area in which the gateway is located.
5. Click on the Save button.
   a) The new gateway is displayed in the list of gateways.
   b) When saving, a configuration file is automatically created and downloaded from the browser. Save this file on your PC to use it for configuration of the respective gateway. Further instructions for setting up the WPM Gateway can be found in Chapter 4 "Administration" on page 22.
   For the WPM Repeater, copy this file to the supplied USB stick.



The configuration file can be downloaded again at any time in the gateway overview.

Editing gateway



1. Downloads the gateway configuration. This is needed to connect the gateway/repeater to the WPM Cloud.
2. Switches to the input mask for editing the selected gateway.
3. Removes the gateway after confirming a confirmation prompt.

3 INSTALLATION

3.1 System requirements

The software requires a Linux base system with Docker installed.

A WPM server must meet the following requirements:

- Working memory: at least 4GB, recommended 8GB
- Hard disk space: at least 64GB
- Processor: No special requirements
- Operating system: Ubuntu 20.04 (other distributions are possible, but without support)
- Docker from version 20.10.8
- Internet access via port 443 must be available, at least for the installation
- A network connection between the server, the WPM Gateways and WPM Repeaters must be possible via port 8883

3.2 Installing WPM Cloud

For the initial installation, all necessary files are copied to the home directory on the server. The following is required:

- cloud_environment.sh
- cloud_first_start.sh
- 2022-XX-XXTXX-XX-XX_laepple_wpm_cloud_self_update_SIC.tar

Before installation, the server must be configured so that it can be reached via a fixed IP or a DNS name in the company network. This IP or DNS name is required for installation.

Before installation, the address **10.100.0.87** must be entered in the “cloud_environment.sh” file (see yellow marking).

The contents of the file should look like this:

```
#!/bin/bash

# Docker-Compose Variables
# ========================

# Docker Bridge Network Settings
# ------------------------------
export NETWORK_SUBNET=10.111.1.0/24
export NETWORK_GATEWAY=10.111.1.254
export MQTT_BROKER_IPV4=10.111.1.20

# Manager Service
# ---------------

# Certificate settings
# ********************

# Hostname and IP address are added as DNS and IP [alt_names] to ssl certificats for Webfrontend, Mqtt-Broker and OPCUA-Service.
export MANAGER_HOSTNAME=$(hostname)
export IP_ADDRESS=10.100.0.87

# Core Service
# ------------
# Address to connect Gateways with Cloud.
# Should be $MANAGER_HOSTNAME or $IP_ADDRESS
export CLOUD_ADDRESS=$IP_ADDRESS
export SELF_UPDATE_ENVIRONMENT_DIR=$(pwd)
```

To install, start the “cloud_first_start.sh” script. Check the output on the screen.

You should see the following things at the end of the output:

```
File ../../cloud_environment.sh exists. Load environment variables.
Creating network "cloud_laepplewpm" with driver "bridge"
Creating volume "cloud_web-data" with local driver
Creating cloud_mqtt-broker_1     ... done
Creating cloud_victoriametrics_1 ... done
Creating cloud_manager_1         ... done
Creating cloud_grafana_1         ... done
Creating cloud_telegraf_1        ... done
Creating cloud_core-postgres_1   ... done
Creating cloud_web_1             ... done
Creating cloud_reverse-proxy_1   ... done
Creating cloud_core_1            ... done
Create new last deployment entry
Remove old /root/laepple_wpm/last-deployment
Create new /root/laepple_wpm/last-deployment with deployment id 2022-XX-XXTXX:XX:XX+0000

Remove old deployment folder

Deployment finished!
```

If the information is correct, the installation has been completed successfully. A later update can be carried out via the web interface. After successful installation, users can be created via the web interface
(see Chapter 6 "User management configuration" on page 65).

4 ADMINISTRATION

Administration of the WPM Gateway is only possible for users with the Administrator authorisation level! In this view, settings of the gateway can be managed and statistics can be viewed.

4.1 WPM Gateway Settings

In the *Gateway* view, WPM Gateway general settings can be configured, the license for using the WPM Gateway can be managed and the WPM Gateway software can be updated.

Open view: *Administration => Gateway*

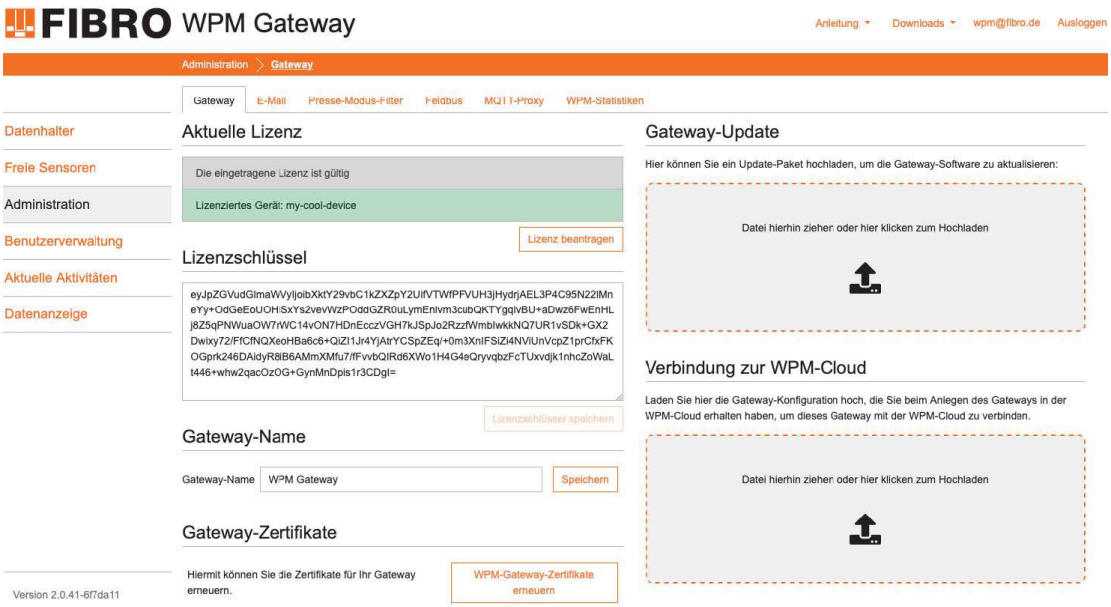


Fig. 4-1 WPM Gateway settings

Fields

Name	Meaning
Current license	In the *Current license* area, you will find all information about the validity, the licensed gateway and the licence period.
License key	In the *License key* area, the current license key is displayed.
Gateway name	In the *Gateway name* area, a new name for the gateway can be entered.
Gateway certificates	In the *Gateway certificates* area, you can renew the Gateway certificates.
Gateway update	In the *Gateway update* area, an update file can be uploaded and installed to update the gateway software.
Connection to WPM Cloud	In the *Connection to WPM Cloud* area, the configuration file that was saved in the cloud when the gateway was created can be loaded on the gateway.

4.1.1 License and license key

Apply for a new license

A new license can be requested in the *Current license* view.

Open view: *Administration* => *Gateway* => *Current license*

1) Click on the Apply for a license button.
2) Follow the link in the dialogue that appears.
   – A new license key will be sent from FIBRO GMBH.
3) Enter the new license key in the *License key* input field.
4) Click on the Save license key button.
   – The new license is displayed in the *Current license* field.

In the WPM Cloud, the number of licensed WPM Gateways/Repeaters is also displayed with the licence. However, there is no licence for the gateway/repeater itself.

If no license is stored in the gateway, the following message is displayed in the main menu:

There is currently no valid license entered.
Therefore some functions are deactivated.

4.1.2 Changing the WPM Gateway name

In the *Gateway name* view, a new name for the gateway can be entered. The name WPM Gateway is entered as the default.

Open view: *Administration* => *Gateway* => *Gateway name*

Enter/change name

Enter new name in the field. Click on the Save button to apply the new name.

4.1.3 WPM Gateway certificates

The SSL certificates provided by the WPM Gateway for secure communication via HTTPS and OPC UA have a limited validity and must be renewed by an Administrator as required (see Chapter 5 / 5.2 "WPM Gateway – Display information" on page 34 and Chapter 4.4.2 "Connection with an OPC UA Client" on page 29).

Certificates can be renewed in the *Gateway certificates* view.

Open view: *Administration* => *Gateway* => *Gateway certificates*

To do this, in the *Gateway certificates* view, click on the Renew WPM Gateway certificates button.

As soon as the certificates have been renewed, a success message is displayed.

If OPC UA Clients have a connection to the WPM Gateway, the clients must each establish a new connection after renewing the OPC UA certificate.

4.1.4 WPM Gateway update

In the *Gateway update* view, a WPM Gateway update can be performed.

Open view: *Administration* => *Gateway* => *Gateway update*

Uploading update file

Upload the gateway software update via the drag & drop field. The update process may take some time (see Chapter 7 , 7.1 "WPM Gateway – Update" on page 72).

4.1.5 Connection to WPM Cloud

In the Connection to WPM Cloud area, the configuration file that was saved in the cloud when the gateway was created can be loaded on the gateway.

Open the file by clicking on the field or drag the configuration file into the grey field. The gateway will then try to connect to the cloud server.

Log in to the cloud server and check in the Management/IoT gateways area whether the gateway is connected.

The web interface of the gateway is now reduced and only contains the functions that are necessary for fieldbus coupling. All sensor data and management can now be done in the cloud.

To disconnect the gateway, click on the *End cloud mode* button.

No data is deleted. You can change the mode at any time.

4.2 Managing email settings

If limit value violations occur, which subsequently trigger a warning or an alarm, a notification via e-mail can be set up for this.

Open view: *Main menu => E-mail*

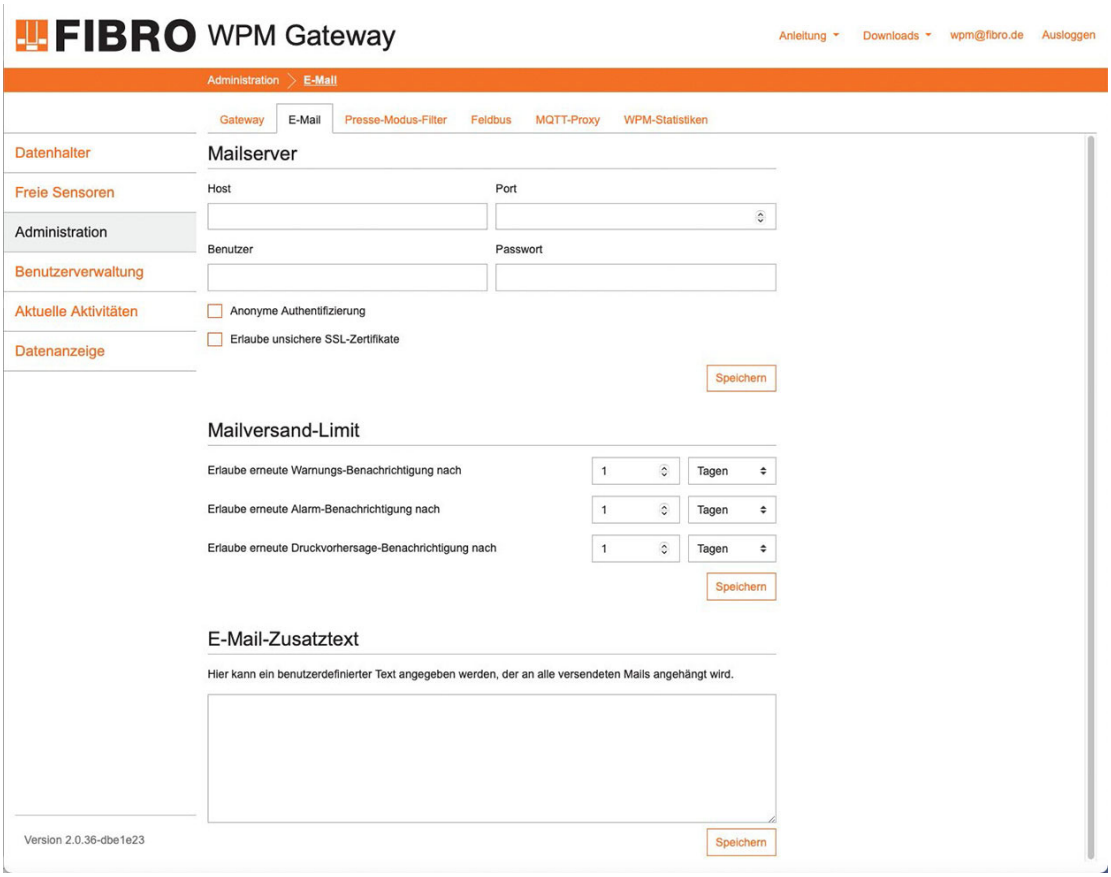


Fig. 4-2 Managing e-mail settings

Mail server

To send e-mails, a mail server must be entered on the gateway.

Fields

Name	Meaning
Host	Address at which the mail server can be reached.
Port	Port of the mail server (default: 587).
Allow unsecure SSL certificates	If active, SSL certificates are not verified, which can be a security risk.
User	User name of the e-mail account. Also used as sender address.
Password	Password to authenticate the user
Anonymous authentication	If active, a separate authentication is not necessary.
Save	Save settings.

Mail delivery limit

The mail delivery limits allow you to restrict the number of notifications for prolonged limit value violations.

- Allow new warning notification after X days/hours/minutes.
  - If a limit value violation occurs at a sensor, which triggers a warning, the next notification for this sensor will only be sent again after the selected time period if the limit value violation has not yet been rectified.
- Allow new alarm notification after X days/hours/minutes.
  - If a limit value violation occurs at a sensor, which triggers an alarm, the next notification for this sensor will only be sent again after the selected time period if the limit value violation has not yet been rectified.
- Allow new pressure forecast notification after X days/hours/minutes.
  - If a notification occurs at a sensor due to a pressure forecast, the next notification for that sensor will not be sent again until after the selected time period if the pressure forecast continues to approach the limit values.

Required action:

- Select limits.
- Click on the Save button to save the selection.

Additional e-mail text

In this area, additional text can be entered, which will be added to every e-mail sent by the WPM Gateway.

Required action:

- Entering additional text
- Click on the Save button to save the entry.

4.3 Setting the filter for Press mode

Various threshold values can be set to compensate for short-term fluctuations in the sensor values.

In this case, an alarm or warning is only issued at the outputs of the gateway when the threshold values have been exceeded.

Open view: *Administration => Press mode filter*

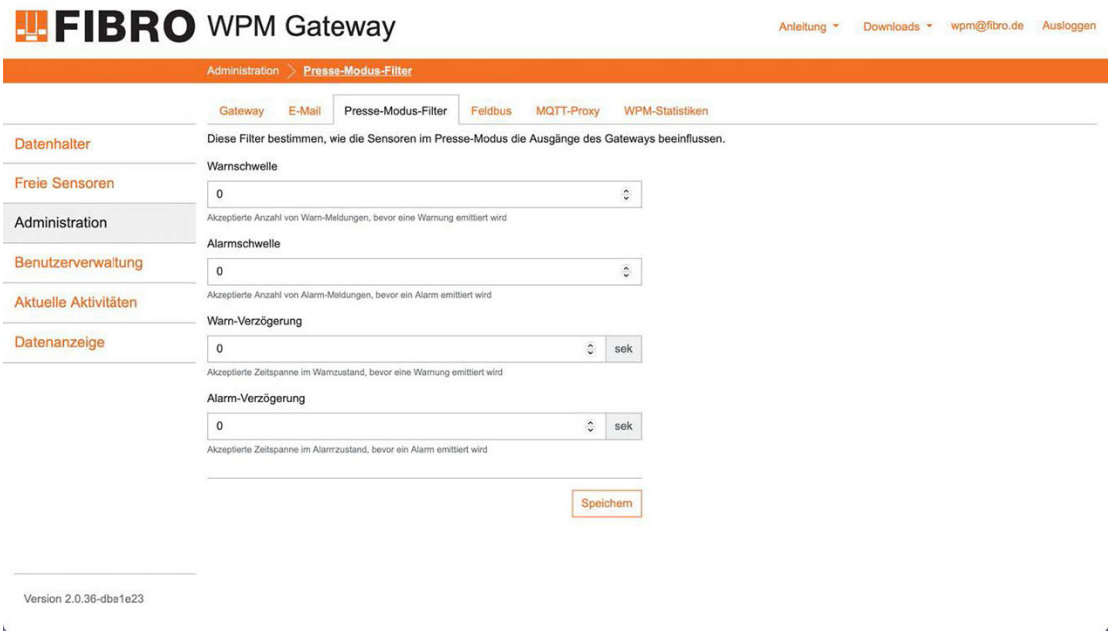


Fig. 4-3 Setting the filter for Press mode

Threshold values based on the number of messages

Name	Meaning
Warning threshold	Accepted number of warning messages before a warning is emitted.
Alarm threshold	Accepted number of alarm messages before an alarm is emitted.

Threshold values based on the number of messages

Name	Meaning
Warning delay	Accepted time period in warning status before a warning is emitted.
Alarm delay	Accepted time period in alarm status before an alarm is emitted.

Actions

Save	Save the set threshold values on the gateway.

4.4 Connecting press control

External devices can be connected to the WPM Gateway via the interfaces of the WPM Gateway for data exchange or control.

4.4.1 Connection via EtherCat or Profinet

Set up connection via a fieldbus interface – EtherCAT or Profinet

The WPM Gateway has a Fieldbus interface, which enables connection to an EtherCat network or a Profinet network.

The fieldbus functions are configured exclusively on the WPM Gateway, which is connected to the press.

Open view: *Administration => Fieldbus*

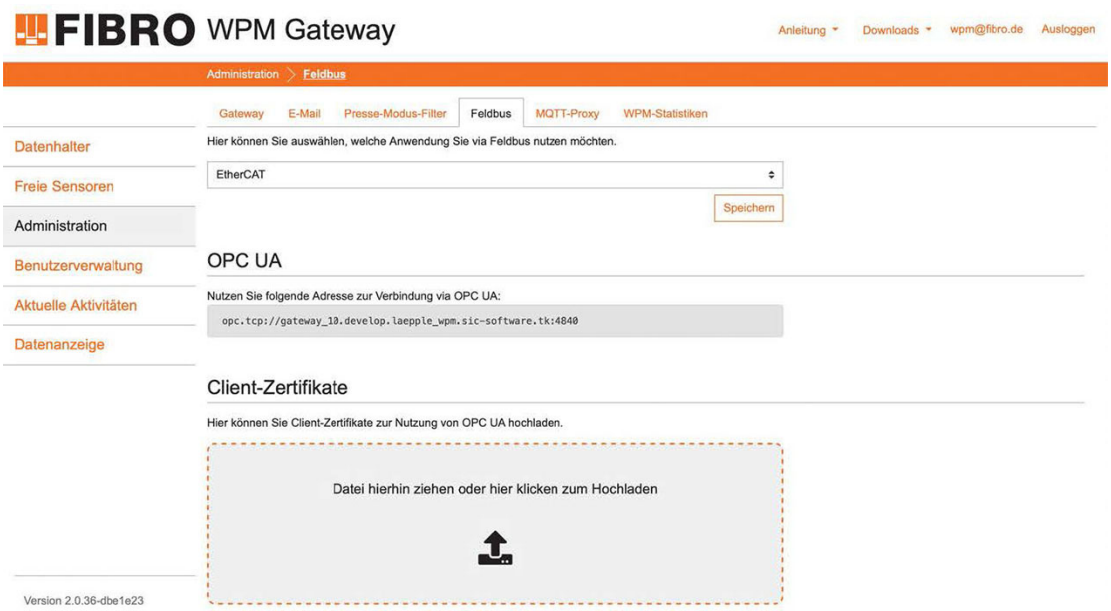


Fig. 4-4 Connection via Fieldbus interface

1) Connect the WPM Gateway to the EtherCAT or Profinet network via the Fieldbus network interface.
2) Select the EtherCAT or Profinet application.
3) Confirm the selection by clicking the Save button.

It is not possible to use both applications at the same time.

The device description files for the EtherCAT or Profinet Fieldbus connection can be downloaded via the Downloads button.

- For EtherCAT, download the file Fieldbus_EtherCAT_Gateway.xml
- For Profinet, download the file Fieldbus_Profinet_Gateway.xml.

For the functional scope of the EtherCAT or Profinet application, contact a representative at FIBRO GMBH.

4.4.2 Connection with an OPC UA Client

Connect an OPC UA Client with the WPM Gateway

On the WPM Gateway, an OPC UA server is executed, which supports the data exchange with OPC UA clients.

Open view: *Administration => Fieldbus*

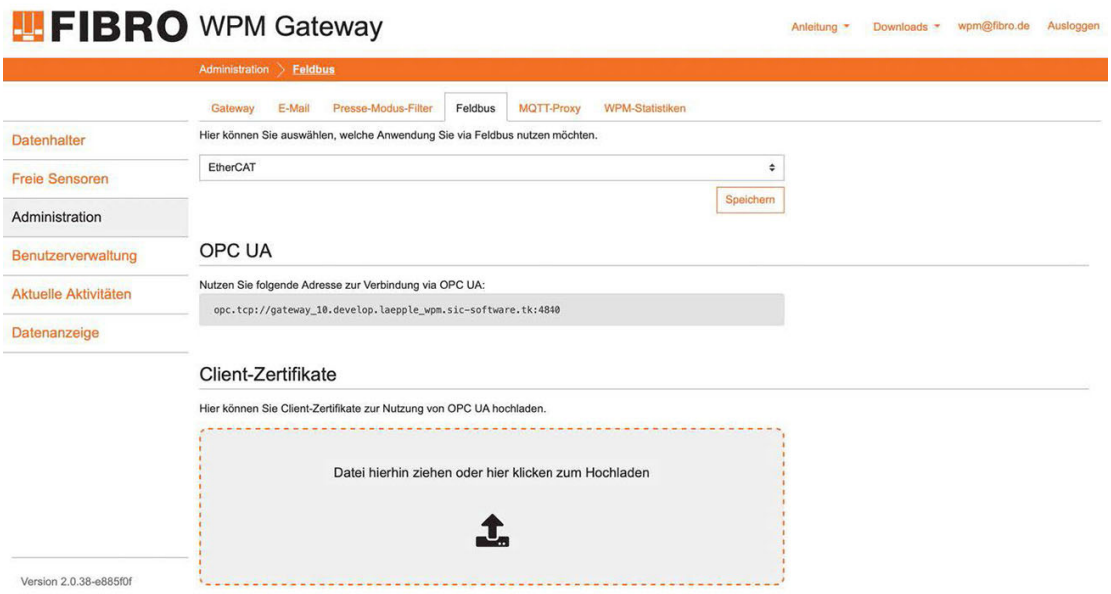


Fig. 4-5 Connecting OPC UA Client

Ensure that the OPC UA Client is in the same network as the WPM Gateway.

The device description files for the OPC UA connection can be downloaded via the Downloads button.

- Download OPC_UA_Gateway.xml

The data connection between an OPC UA Client and the WPM Gateway is generally established via a secure connection. Therefore, the certificate of the OPC UA Client that will be connected to the WPM Gateway must be uploaded to the WPM Gateway.

Upload OPC UA Client certificates to the gateway

To obtain the OPC UA Client certificate, see the documentation for the OPC UA Client.

1) The certificate must be in DER format.
2) Drag and drop the DER file of the certificate into the upload area.
   – Alternatively, clicking in the upload area opens a file selection dialogue.
3) The certificate is automatically imported into the WPM Gateway.

OPC UA Client connection settings

1) Use the specified URL in the OPC UA section to connect the OPC UA client to the WPM Gateway.
2) In the OPC UA Client, select Basic256SHA256 as Security Policy.
3) Authentication takes place via user name and password.
   – To create/change the user or password, see Chapter 6 "User management configuration" on page 65.
   – The authorisations of the respective user are equivalent to the stored authorisation level (see Chapter 6.1 "Authorisation levels" on page 65).

Download the OPC UA certificate for the WPM Gateway

The WPM Gateway provides a self-signed certificate for secure communication via OPC UA.

You can download the SSL Root certificate opc_ua.crt.der via the Downloads button.

For certificate storage in the OPC UA Client, see the OPC UA Client documentation.

4.4.3 Setting up MQTT proxy

The WPM Gateway uses MQTT for inter-service communication. By setting an MQTT proxy, the MQTT events can be forwarded to an external MQTT broker.

The description of the MQTT Topics can be found under the link WPM Gateway MQTT Topics .

Open view: *Administration => MQTT-Proxy*

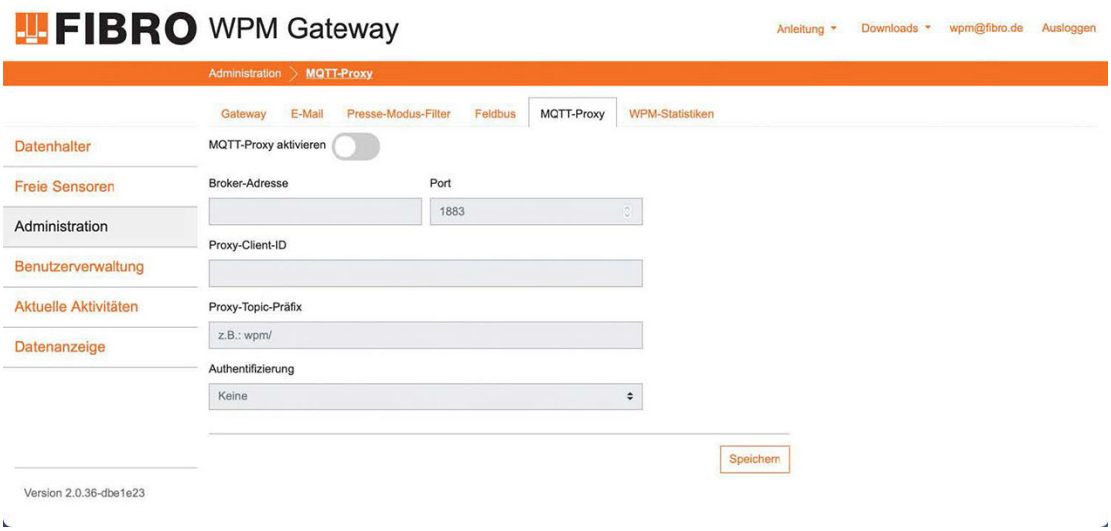


Fig. 4-6 Setting up MQTT proxy

Fields

Name	Meaning
Set up MQTT proxy	
Activating MQTT proxy	Activation/deactivation of the forwarding of the MQTT events to the stored MQTT broker.
Broker address	IP address or DNS name of the MQTT broker and specification of the port. By default, port 1883 is set.
Proxy client ID	Client ID of the gateway used to connect to the external MQTT broker. By default, wpm_proxy is set.
Proxy topic prefix	For grouping all sent MQTT events of the Gateway under a common MQTT topic.
Authentication	Authentication settings of the gateway for the external MQTT broker. See MQTT proxy authentication.
MQTT proxy authentication	
None	Anonymous authentication at the external MQTT broker.
Credentials	Authentication via user name and password for the external MQTT broker.
SSL/TLS client certificate	Authentication via X.509 certificate.
SSL/TLS Client certificate option:	
Root CA	Root CA file from the external broker.
Client certificate	A client certificate authorised by the root CA from the external broker.
Client private key	Private key associated with the client certificate.
Save	Save MQTT proxy settings.

4.5 WPM Gateway – Operating statistics

The software installed on the WPM Gateway consists of various services and is based on Docker container virtualisation. In this view, various statistics on CPU usage, memory usage and network traffic of the individual services as well as for the WPM Gateway itself can be viewed.

The statistics are used by the support team to help clarify problems.

Open view: *Administration => WPM statistics*

Fig. 4-7 WPM Gateway operating statistics

5 WEB INTERFACE

The use of the two web WPM Gateway and WPM Cloud interfaces is almost identical. That means the screenshots explaining these interfaces are also the same unless otherwise mentioned.

5.1 Login

If the WPM Gateway is set up and the URL to the WPM Gateway is called in the web browser at http://GATEWAY-IP-ADDRESS, the Login page appears.

1) Fill out fields.
   – Enter the user e-mail.
   – Enter the user password.
2) Log in by pressing the Sign in button.
   – The display jumps to the main menu.

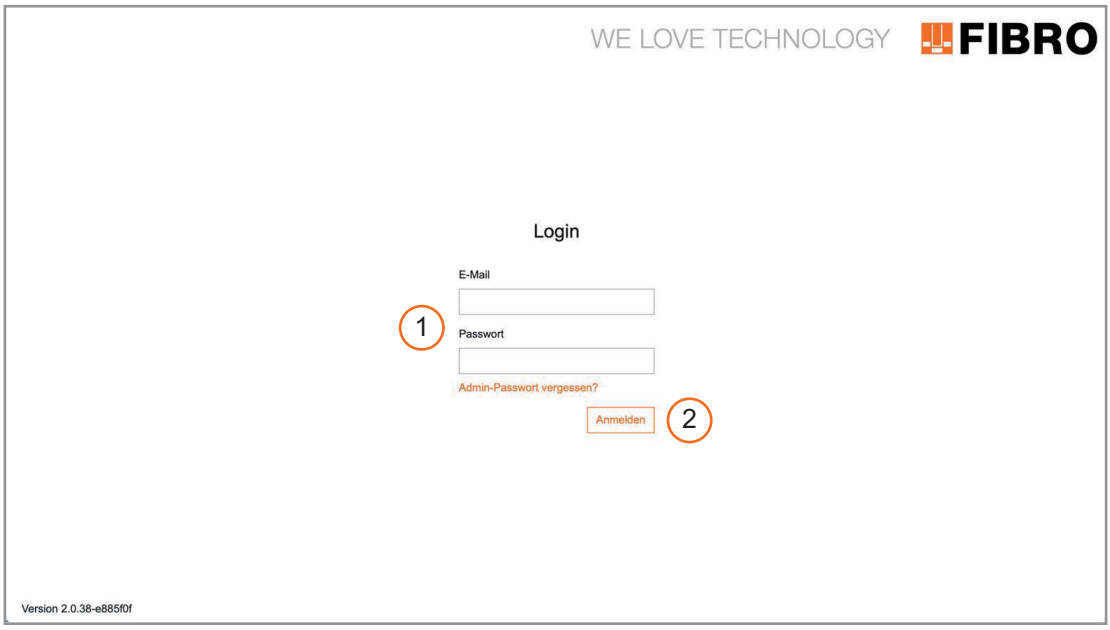


Fig. 5-1 Logging in to WPM Gateway

Fields

Name	Meaning
E-mail	E-mail address of the user for authentication at the gateway.
Password	Password of the user for authentication at the gateway.
Admin password forgotten?	Call up the form for resetting the password of the initial gateway administrator.
Sign in	Logging in to WPM Gateway

5.2 WPM Gateway – Display information

In the upper area in the navigation bar, general information about the WPM Gateway and about the user can be called up.

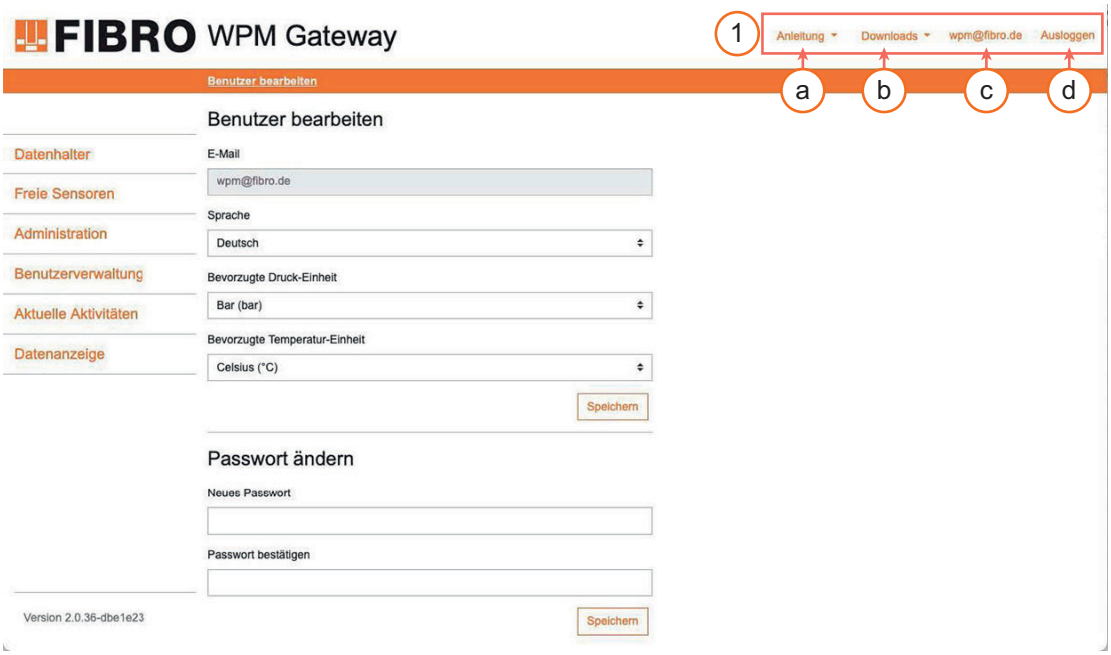


Fig. 5-2 WEB interface navigation bar

1) Navigations bar
   a) Via the Manual button, you can download the operating instructions of the WPM Gateway. The instructions for the WPM Gateway are available in different languages. The languages are displayed in a selection menu.
   b) The Downloads ▼ button can be used to download certificates and documents.
   c) The wpm@fibro.de button can be used to display and edit the user settings of the registered user. Like the input mask in the Edit User Chapter, the password of the registered user can also be changed here.
   d) The Log out button can be used to log a registered user out of the application after confirmation of a confirmation prompt.

Accessing the web interface via HTTPS

The WPM Gateway supports a secured connection via HTTPS using a self-signed SSL certificate created by the WPM software.

The SSL root certificate rootCA.crt can be downloaded via the Downloads ▼ button.

After the download, the certificate must be stored in the web browser as a trusted certificate.

For the steps required to do this, refer to the documentation for the web browser or operating system.

5.3 Main menu

After successfully logging into the WPM Gateway, information on data holders, sensors, users, etc. can be viewed and configured according to the authorisation level of the registered user.

For information on the scope of functions per authorisation level, see Chapter 6.1 "Authorisation levels" on page 65.

The individual areas for displaying/managing the data holders and sensors, as well as the users and for administering the WPM Gateway, can be accessed via the *Main menu*.

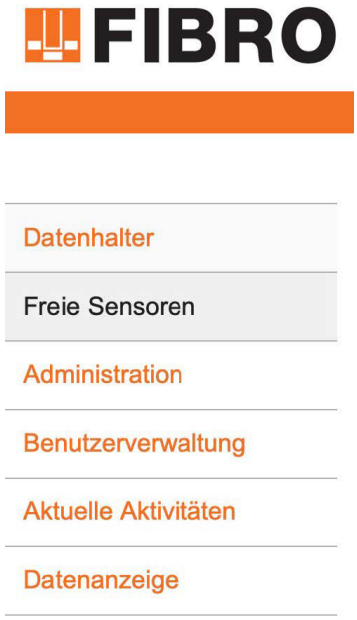


Fig. 5-3 Main menu

Menus

Name	Meaning
Data holder	In the *Data holder* menu, you can manage the individual data holders with assigned sensors.
Free sensors	Display all sensors that are not currently assigned to a data holder.
Administration	Manage WPM Gateway settings; display WPM Gateway statistics. This menu item is only displayed for users with the Administrator authorisation level.
User management	Create, edit or delete users with access to the WPM Gateway.
Current activities	Display all activities currently being performed.
Data display	Previously exported CSV files can be reloaded.

5.4 Data holder

When the *Data holder* menu is opened, a list of all data holders known to the system is displayed.

In the top area, the list can be searched by data holder name and filtered based on the alarm statuses of the data holders.

In the bottom area, you can navigate between the individual pages of the data holder list.

As soon as a data holder has sent data to the gateway, it appears in the data holder list.

Open view: *Main menu => Data holder*

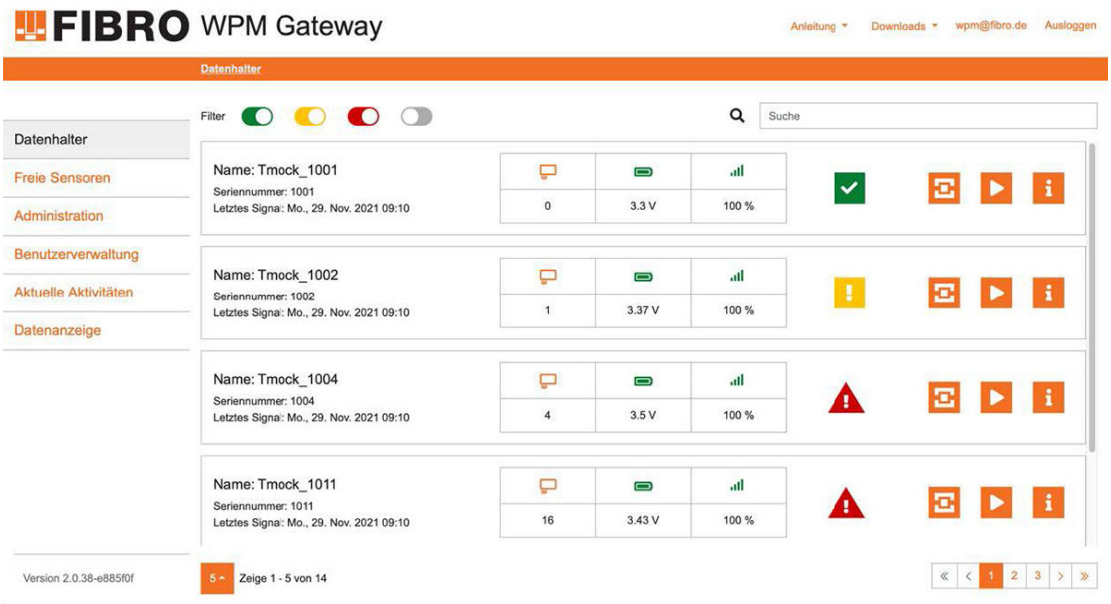


Fig. 5-4 Data holder overview

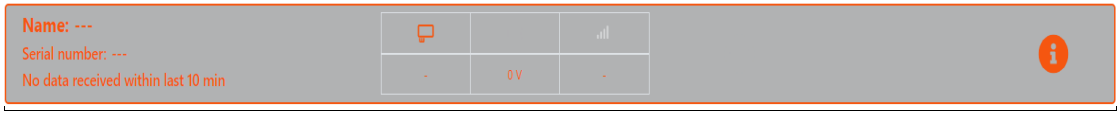
Symbols

Symbol	Meaning
Filter:	
	Data holder whose sensors comply with all limit values.
	Data holder with at least one sensor for which a warning was triggered due to a limit value violation.
	Data holder with at least one sensor for which an alarm was triggered due to a limit violation.
	Filter is not active.
Information:	
	Number of configured sensors of the data holder.
	Battery charge indicator of the data holder (see Chapter 7 / 7.4 "Changing the battery" on page 75).

Symbol	Meaning
	Signal strength of the data holder (see Chapter 7 / 7.6 / 7.6.2 "Network signal strength" on page 76).
Alarm status of data holder:	
	All sensors of the data holder comply with the respective limit values.
	A warning was triggered for at least one sensor of the data holder due to a limit violation.
	An alarm was triggered for at least one sensor of the data holder due to a limit value violation.
	Data holder has no sensors.
Press mode:	
	Press mode of the data holder is activated. Click to deactivate.
	Press mode of the data holder is deactivated. Click to activate.
Data holder mode:	
	Data holder is deactivated. Click to activate.
	Data holder is activated. Click to deactivate.
	Open detailed view for data holder.

Messages

Inactive data holder
Data holders that are known to the WPM Gateway but have not sent any data to the WPM Gateway for a certain time period are marked as inactive in the data holder list.



5.4.1 Setting the data holder/tool to press mode

Press mode is used to monitor a tool with all built-in WPM sensors during a production process. When the mode is activated, the available outputs (GPIO and fieldbus) are actively informed about errors and warning statuses of the tool. This allows a warning light to be controlled or a production plant to receive a corresponding signal via the fieldbus interface.

In the cloud application, the press mode is more extensive and makes it possible to monitor several tools in parallel.

A single WPM Gateway that is not connected to the cloud can only monitor one tool at a time.

In the WPM Cloud, several tools can be monitored in parallel on a connected gateway. Activate all tools that you want to monitor one after the other. In the WPM Cloud, the respective gateway via which the output signals are to be issued must always be selected for activation.

Open view: *Main menu* => *Data holder* =>

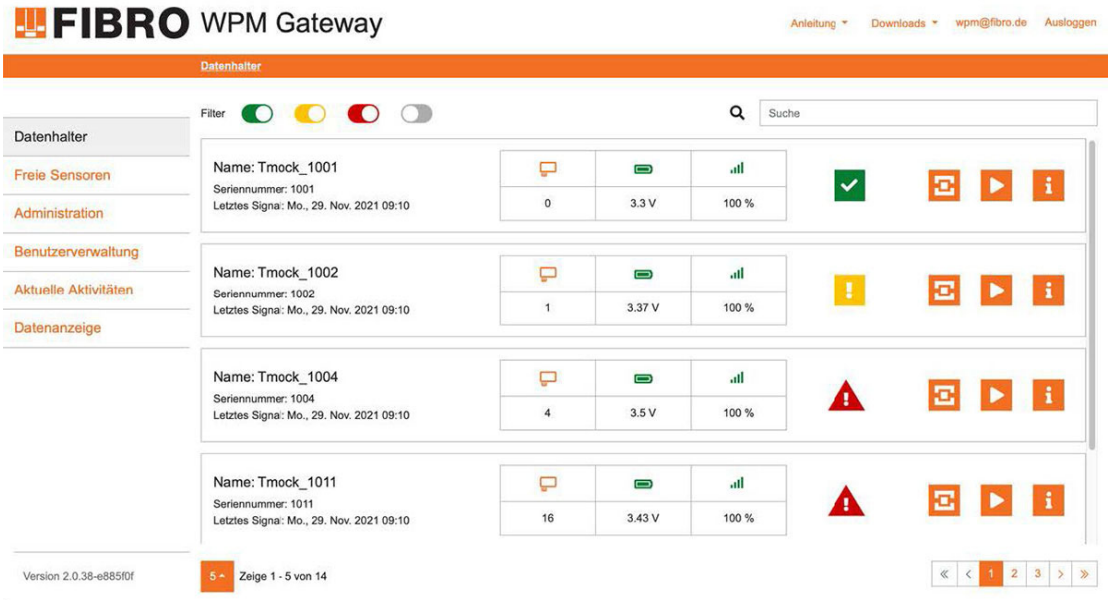


Fig. 5-5 Setting the data holder/tool to press mode

5.4.2 Data holder – Details

5.4.2.1 Data holder – Assigned sensors

Displaying sensors assigned to a data holder

The *Data holder* menu shows an overview of all sensors assigned to the data holder.

In the top area, the list can be searched by the name and serial number of a sensor via a search field, and can be filtered based on the alarm statuses of the sensors.

In the lower area, you can navigate between the individual pages of the sensor list.

Open view: *Main menu* => *Data holder* => ℹ => *Sensors*

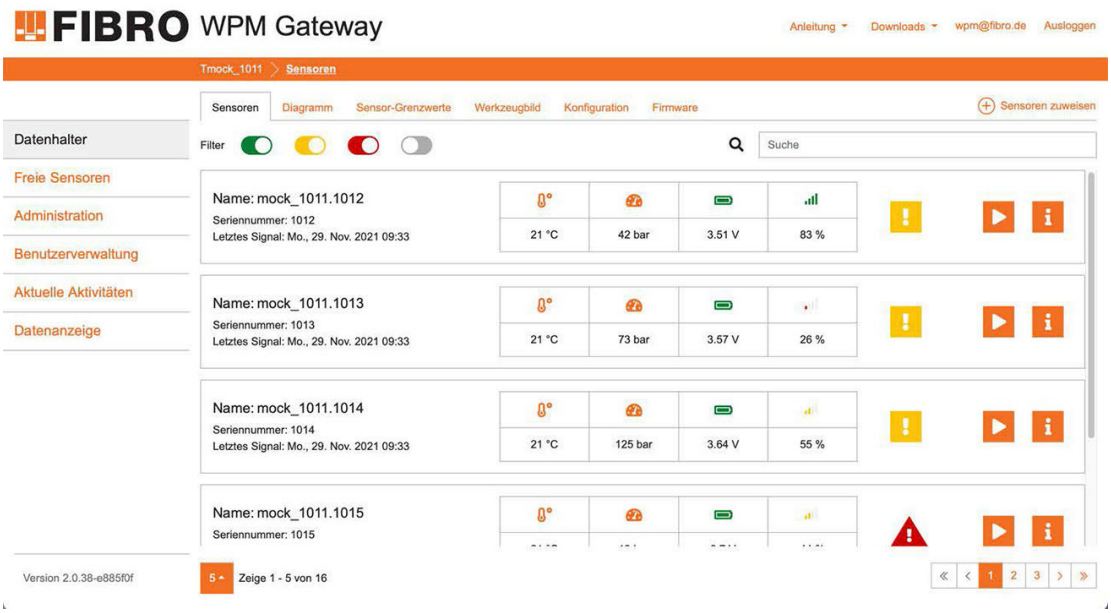


Fig. 5-6 Data holder – Assigned sensors

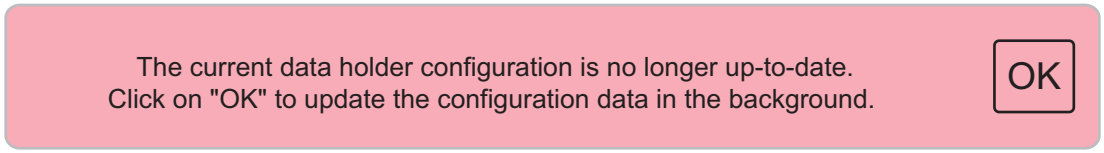
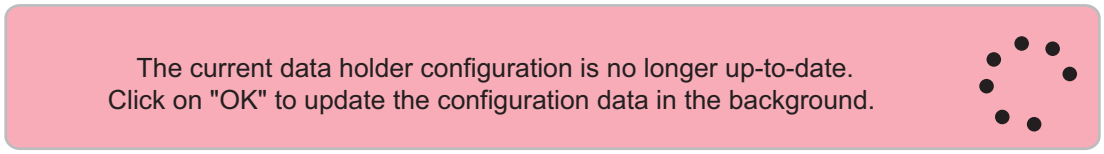
Symbols

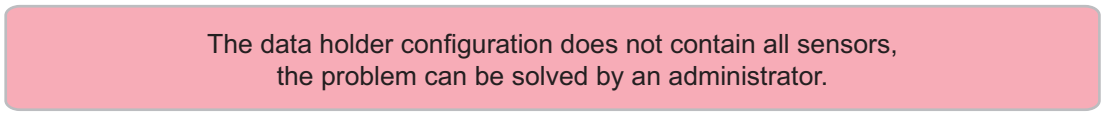
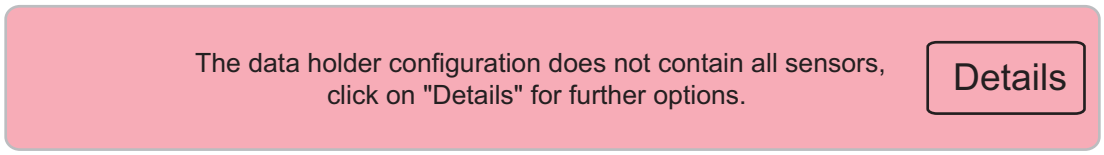
Symbol	Meaning
Filter:	
	Display sensors that comply with all limit values.
	Display sensors for which a warning has been triggered due to a limit value violation.
	Display sensors for which an alarm was triggered due to a limit value violation.
	Filter is not active.

Symbol	Meaning
Actions (professional and administrator):	
⊕ Assign sensors	Open the dialogue for assigning free sensors to the data holder.
Sensor alarm status:	
	The measured values of the sensor comply with all limit values.
	The measured values of the sensor trigger a warning due to a limit value violation.
	The measured values of the sensor trigger an alarm due to a limit value violation.
Information:	
	Sensor temperature
	Sensor pressure
	Battery charge indicator of the sensor (see Chapter 7 / 7.4 "Changing the battery" on page 75).
	Signal strength of the sensor (see Chapter 7 / 7.6 / 7.6.2 "Network signal strength" on page 76).
Sensor mode:	
	Sensor is deactivated. Click to activate.
	Sensor is enabled. Click to deactivate.
	Open the detailed view of the sensor.

Messages

In the Sensor view of a data holder, various messages can be displayed depending on the status of the data holder.

The data holder configuration has not been updated.

This message is displayed if the configuration of the data holder has not yet been loaded. Click *OK* to update the configuration. This may take a moment.

The data holder configuration is currently being updated. After a successful update, this message disappears.

The data holder configuration does not contain all sensors.

This message appears when sensors send data for a data holder that is not yet assigned. This problem can only be fixed by a user with the Administrator authorisation level.

Data holder configuration does not contain all sensors for Professionals or Administrators. If you click the *Details* button, a dialogue appears with all redundant sensors for the data holder.


Actions (professional and administrator):	
✖	Close the dialogue without making any changes.
☐	By clicking on the check box, the sensor can be either selected or deselected.
Clicking the Assign to data holder button assigns all selected redundant sensors to the data holder.	
Clicking the Reset to factory settings button resets all selected sensors to the factory settings and they no longer send data for the data holder.	

The data holder configuration contains inactive sensors.

The data holder configuration contains inactive sensors,
the problem can be solved by an administrator.

This message is displayed when sensors are assigned to the data holder, but no data has yet been received from them.

This problem can only be fixed by a user with an Administrator authorisation level.

The data holder configuration contains inactive sensors,
click on "Details" for further options. Details

Data holder configuration contains inactive sensors for professionals or administrators.

If you click the *Details* button, a dialogue appears with all non-transmitting sensors of the data holder.

Actions (professional and administrator):	
Clicking the Selected sensors are removed from the data holder button assigns all selected sensors from the data holder.	
	Close the dialogue without making any changes.
	By clicking on the check box, the sensor can be either selected or deselected.
	Clicking the button removes all selected non-transmitting sensors from the data holder.

5.4.2.2 Data holder – Sensor readings diagram view

The diagram view for a data holder shows a sensor's measured values for pressure and temperature over time.

In the top area, the time period of the area displayed, as well as the refresh rate for the diagram, can be set.

Open view: *Main menu => Data holder =>* ℹ *=> Diagram*

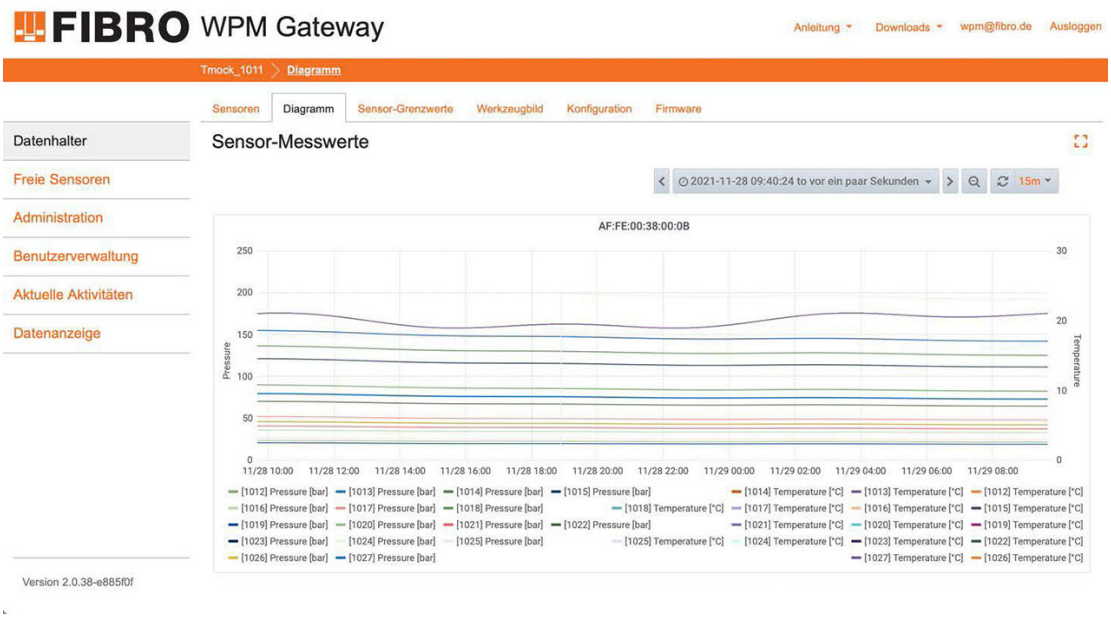


Fig. 5-7 Data holder – Sensor measured value diagram view

5.4.2.3 Data holder – Sensor limit values

Display of all sensor limit values of a data holder

In this view, the respective limit values of the individual sensors assigned to the data holder are displayed.

Open view: *Main menu => Data holder =>* ℹ *=> Sensor limit values*

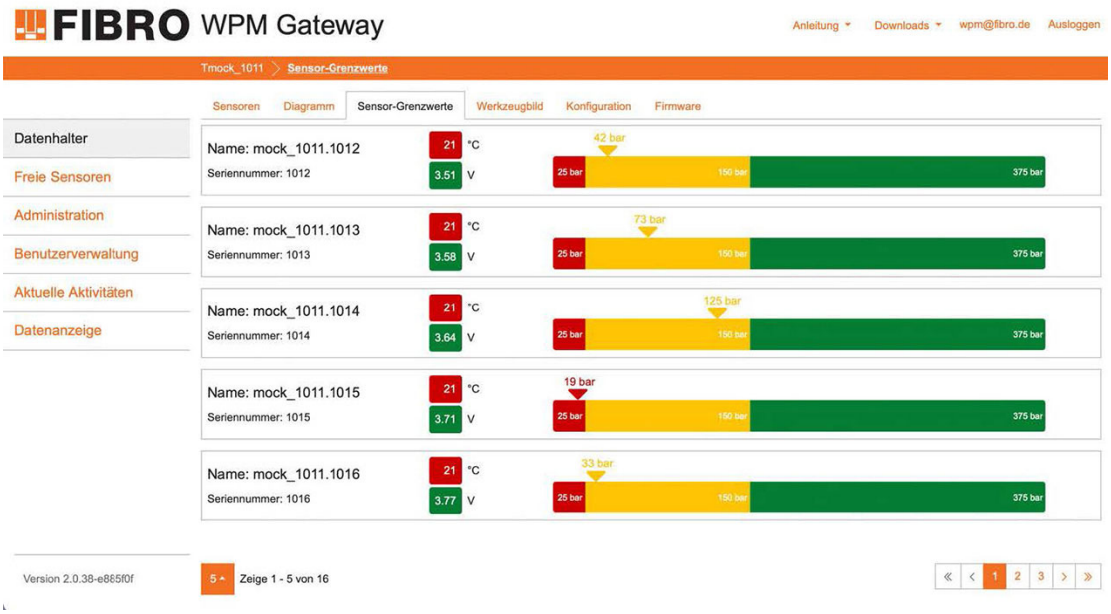
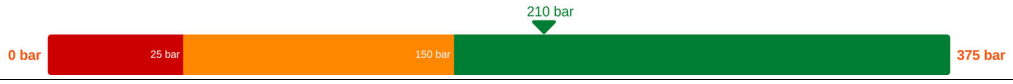


Fig. 5-8 Sensor limit values of a data holder

Displayed limit values per sensor

Symbol	Meaning
Temperature limit values:	
18 °C	Temperature limit value is adhered to.
21 °C	Temperature limit value has been exceeded and a warning has been triggered.
35 °C	Temperature limit has been exceeded and an alarm has been triggered.
Voltage limit values:	
3.5 V	Voltage limit value is adhered to.
3.1 V	The voltage has fallen below the voltage limit value.
2.9 V	The voltage has fallen below the voltage limit values.

Symbol	Meaning
Pressure limit values:	
	The pressure limit value display takes the form of a bar graph with the areas: • Red: The value has fallen below the limit value and an alarm has been triggered. • Yellow: The limit value has been undershot/exceeded and a warning has been triggered. Note: The area for exceeding the limit value is only displayed if a value for the maximum pressure warning has been specified in the corresponding sensor configuration. • Green: Limit value is adhered to. • Blue: If you have defined a maximum pressure warning, this is displayed as a blue line on the bar. The current pressure of the sensor is displayed in colour above the bar together with a triangle, depending on the limit value range.

5.4.2.4 Data holder – Positioning of the sensors

Positioning of the sensors with the help of the tool image

For a data holder, a tool image can be uploaded for the top and bottom side, on which the individual sensors can be positioned.

The view is divided into two sections: a list view with all sensors, and a view for managing the tool images and positioning the sensors.

Open view: *Main menu* => *Data holder* => i => Tool image

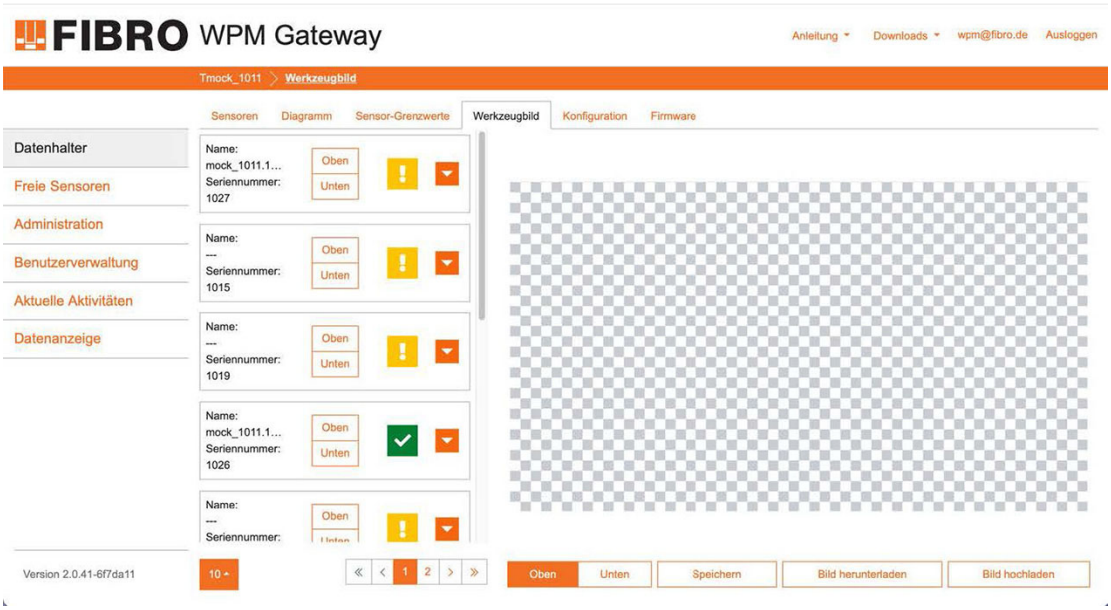
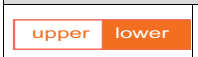
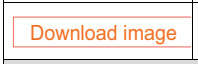


Fig. 5-9 Positioning of the sensors with the help of the tool image

Symbols

Symbol	Meaning
Entries for a sensor:	
Name:	Name of the sensor.
Serial number:	Serial number of the sensor.
	Positioning of the sensor on the tool image in terms of the top or bottom side. In this case, the tool image for the bottom side is selected.
	Alarm status of the sensor.
	Show or hide the Sensor toolbar. The Sensor toolbar shows the current measured values for temperature, pressure, battery charge voltage and reception strength, as well as the time stamp of the last received signal.
	The Sensor toolbar shows the current measured values for temperature, pressure, battery charge voltage and reception strength, as well as the time stamp of the last received signal.
Positioning of the sensor on the tool image:	
	The selected sensor, this is automatically in the foreground.
	Sensor not selected.
(50,50)	Position of the sensor in the tool image as relative (x,y) coordinates, each in the value range between 0...100. Note: When a sensor is placed on the bottom or top of a tool, it is initially displayed in the centre. If several sensors are placed in this way, they are all directly above each other, with the currently selected sensor on top.
Tool image management:	
	Display upper or lower tool image.
	Download selected tool image.
Tool image management (professional and administrator only):	
	Save the positions of the individual sensors.
	Upload a new tool image for the top or bottom.

5.4.2.5 Data holder – Current parameters

Current parameters of a data holder

This view shows the currently configured parameters of a data holder.

Open view: *Main menu* => *Data holder* => ℹ => Configuration

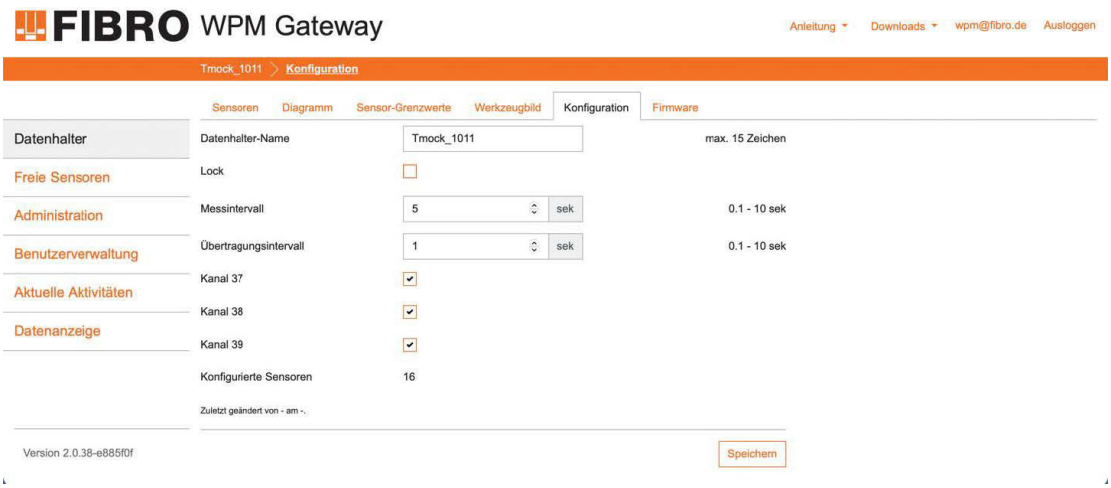


Fig. 5-10 Current parameters of a data holder

Fields

Name	Meaning
Data holder name	Self-assigned name for the data holder (maximum 15 characters).
Lock	If this option is enabled, a change in the configuration of the data holder is only made after confirmation via a confirmation prompt.
Measurement interval	Time interval at which the operating status is to be measured (0.1 to 10 seconds).
Transmission interval	Time interval at which the Bluetooth Low Energy Advertising packets are sent. A high time interval has a positive effect on the energy consumption of the data holder (0.1 to 10 seconds).
Channel 37/38/39	Bluetooth Low Energy Advertising channels to be used for advertising.
Configured sensors	Number of sensors assigned to the data holder.
Save	Saving configuration

5.4.2.6 Data holder – Sensors – Details

All sensors assigned to a data holder are listed in the *Data holder* menu. For additional information, see Chapter 5.4.2.1 "Data holder – Assigned sensors" on page 39.

Open view: *Main menu* => *Data holder* => Sensors

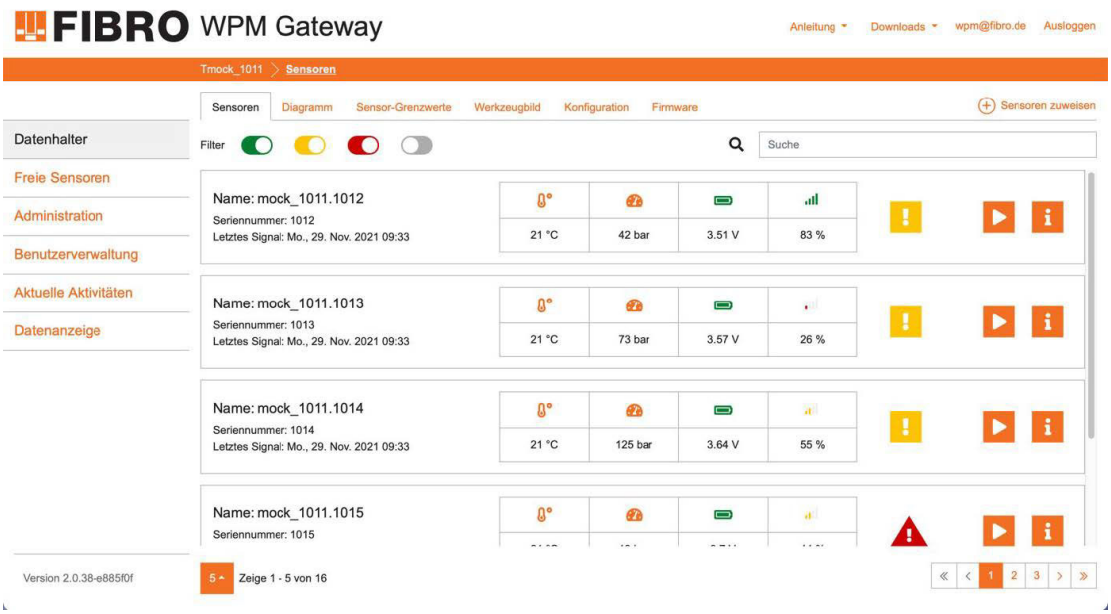


Fig. 5-11 Data holder – Details – Sensors

Clicking on the i button next to the sensor takes you to the detailed view of the respective sensor.

Measured values and pressure forecasts of a sensor

The top diagram, Sensor measured values, shows the temperature and pressure values measured over time together with the limit values for alarms and warnings.

Using the Pressure forecast diagram below, it is possible to estimate when a warning or alarm will be triggered due to a limit value violation.

The most important settings for the sensor are displayed on the right-hand side.

Open view: *Main menu* => *Data holder* => ℹ => *Sensors* => ℹ => *Diagram*

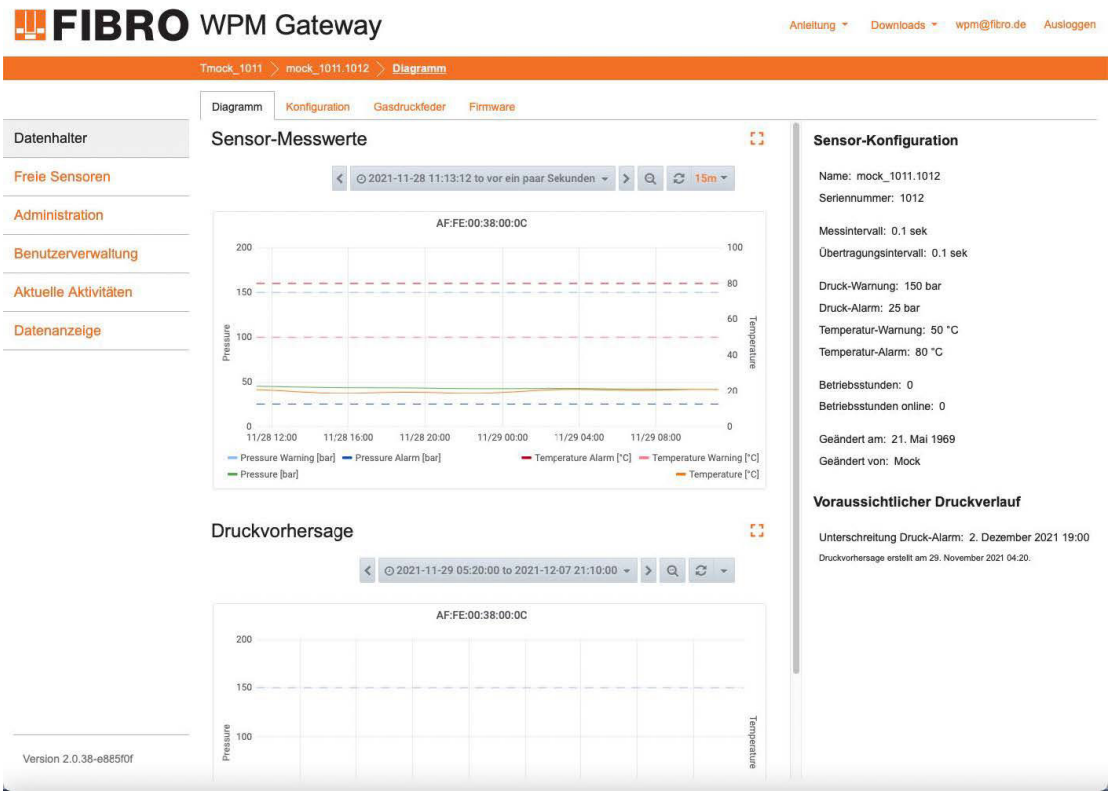


Fig. 5-12 Data holder – Measured values and pressure forecasts of a sensor

Pressure undercut of a sensor

In this view, the undercutting of pressure warning alarm limits is displayed graphically in the diagram for the selected time window.

In addition, it is counted how often the limits were undershot in the time interval and for how long.

Open view: *Main menu* => *Data holder* => ℹ => *Sensors* => ℹ => *Evaluation*

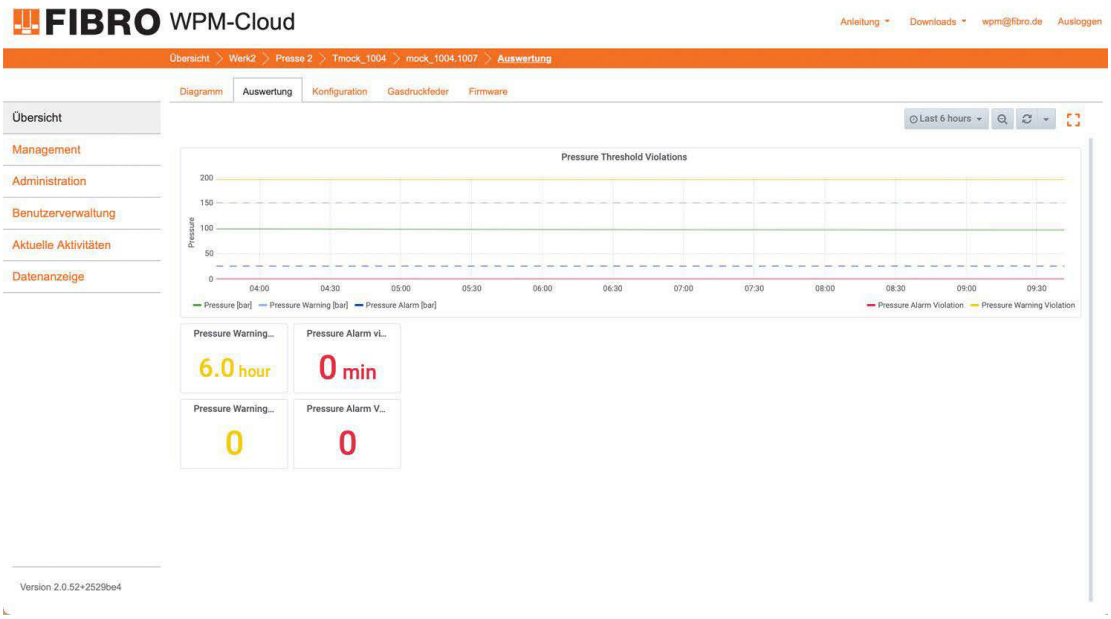


Fig. 5-13 Data holder – Diagram display of undercutting of pressure warning alarm limits

Current parameters of a sensor

In this view, the currently set parameters of a sensor are displayed.

Open view: *Main menu* => *Data holder* => ℹ => *Sensor* => ℹ => *Configuration*

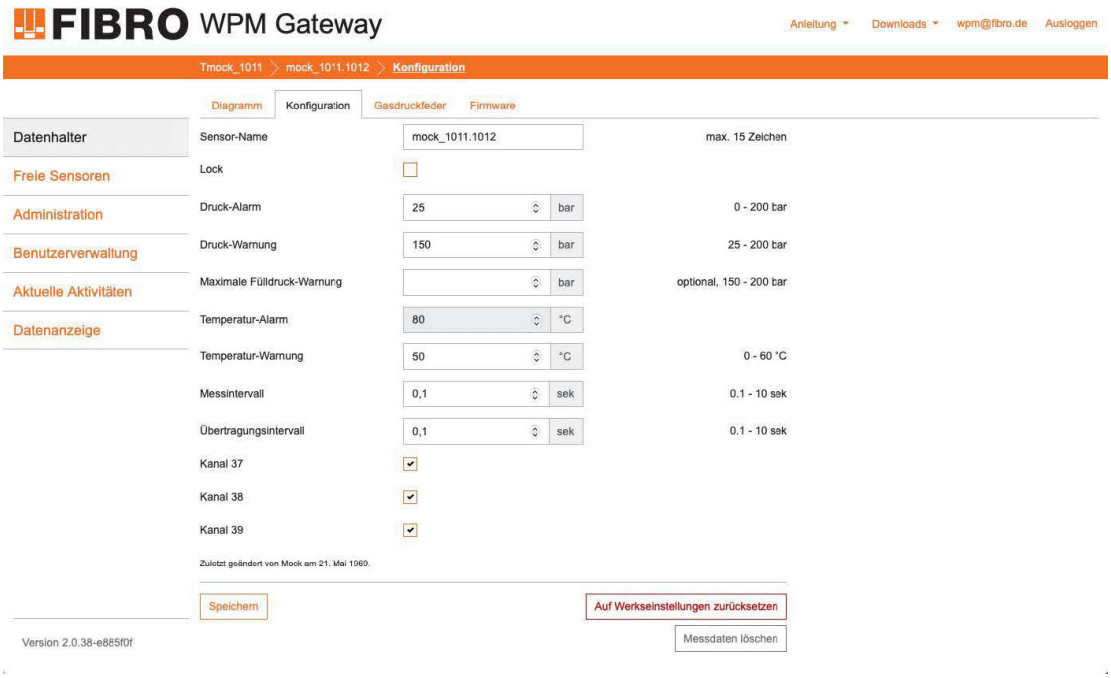


Fig. 5-14 Current parameters of a sensor

Fields

Name	Meaning
Sensor name	Self-assigned name for the sensor (maximum 15 characters).
Lock	If this option is enabled, the configuration of the sensor is only changed after confirmation via a confirmation prompt.
Pressure warning	Limit value that triggers a warning if undercut. (Unit bar or psi, depending on presetting)
Maximum pressure warning	Limit value that triggers a warning if exceeded. (Unit bar or psi, depending on presetting). Nothing is specified as the default value, so, in this case, there is no warning if the maximum pressure is exceeded.
Pressure alarm	Limit value that triggers an alarm if it is undershot. (Unit bar or psi, depending on presetting)
Temperature warning	Limit value that triggers a warning if exceeded. (Unit °C or °F, depending on presetting)
Temperature alarm	Fixed limit value that triggers an alarm if exceeded. (preset to 80°C).
Measurement interval	Time interval at which the sensor should take measurements.
Transmission interval	Time interval (0.1 to 10 seconds) at which the Bluetooth Low Energy Advertising packets are to be sent. A high time interval has a positive effect on the energy consumption of the data holder.
Channel 37/38/39	Bluetooth Low Energy Advertising channels to be used for advertising.
Save	Saving configuration
Reset to factory settings	Reset the configuration of the sensor to the factory settings. The assignment to a data holder is also cancelled.
Delete measurement data	Delete all measurement data of the sensor for the currently assigned data holder.

Assigning gas springs to the sensor

In this view, you have the option of selecting a Fibro gas spring with the article number.

Open view: *Main menu* => *Data holder* => i => *Sensors* => i => *Gas springs*

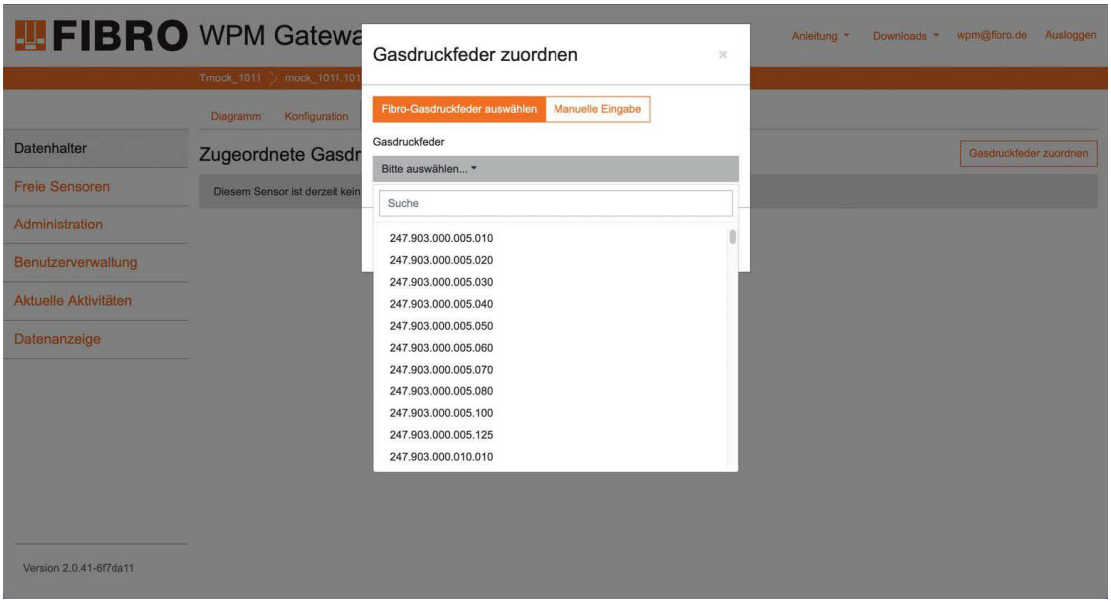


Fig. 5-15 Data holder – Assigning gas springs to a sensor

If you do not use Fibro gas springs, you can alternatively use the diameter of the thrust area of the gas springs you use via Manual input.

You will then see the calculated spring force displayed in the sensor overview for the current pressure value. You will also receive an overview of the technical data of the gas springs as well as an option for reordering via the web shop. To do this, click the coloured article numbers.

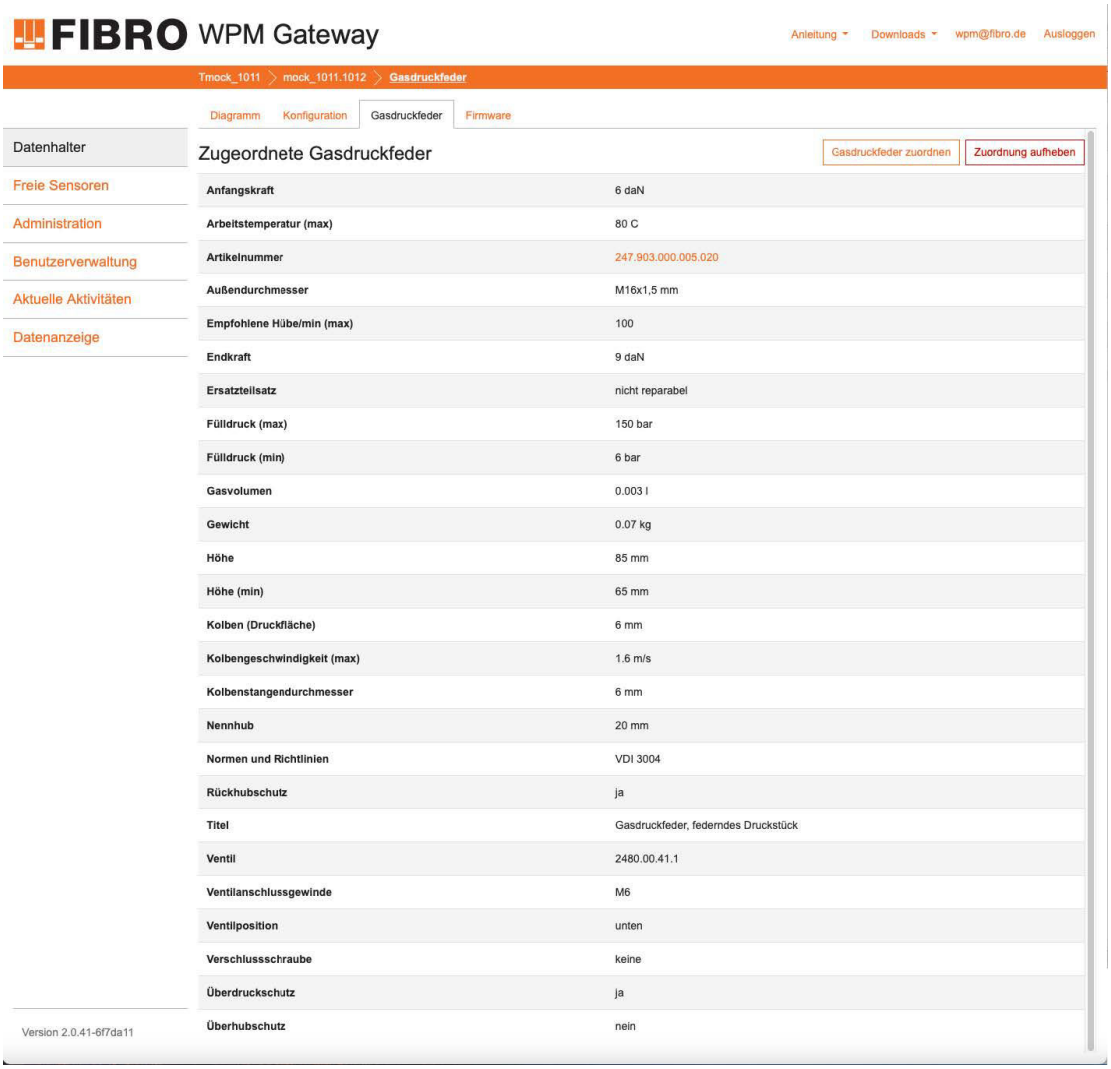


Fig. 5-16 Gas springs assigned to a sensor

5.5 Free sensors – Overview

Free sensors are all sensors that are not currently assigned to a data holder.

Filter settings, navigation in the list and entries for each sensor are equivalent to Chapter 5.4 / 5.4.2.1 "Data holder – Assigned sensors" on page 39.

Open view: *Main menu => Free sensors*

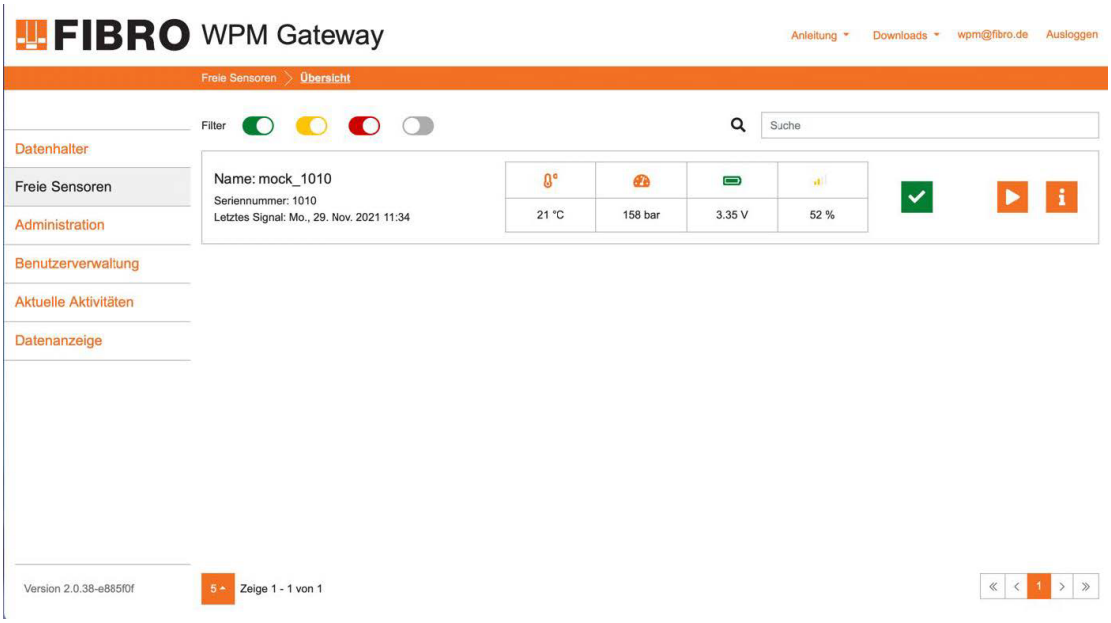


Fig. 5-17 Free sensors – Overview

5.6 Administration

For administration, see Chapter 4 "Administration" on page 22.

5.7 User administration

For administration, see Chapter 6 "User management configuration" on page 65.

5.8 Current activities

This view lists all activities currently performed via Bluetooth. These include:

- Activation or deactivation of a data holder.
- Activation or deactivation of a sensor.
- Reading out and configuring a data holder.
- Reading out, configuring and resetting a sensor.

Open view: *Main menu => Current activities*

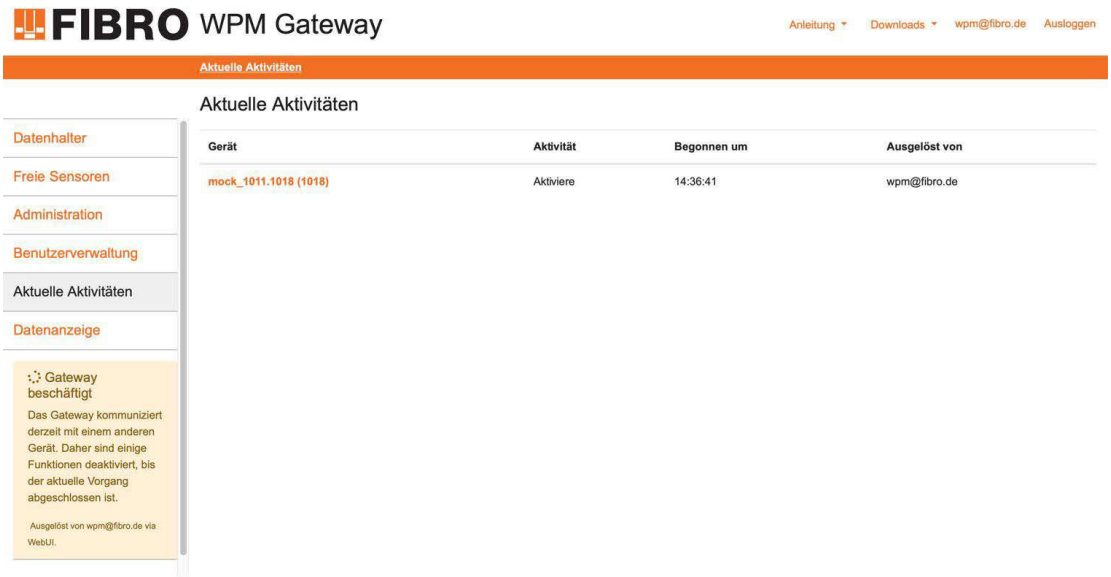
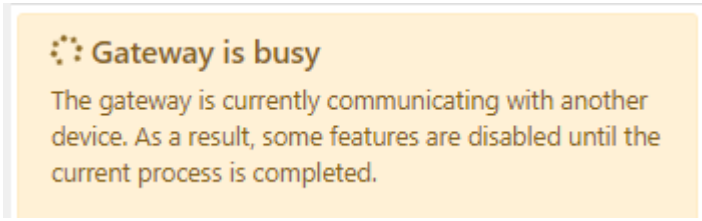


Fig. 5-18 Current activities

While an activity is running, no other activities can be started. The corresponding buttons are then greyed out.

In addition, the following message is displayed in the main menu:



5.9 Data display

Previously exported CSV files can be reloaded.

5.9.1 Export diagram data

Exporting diagram data as a CSV file

The measured values of data holders and sensors shown in the diagrams can be exported as a CSV file.

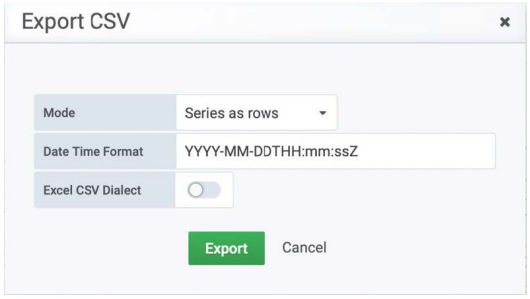
To do this, switch to the diagram view

- of the data holder (see Chapter 5.4.2.2 "Data holder – Sensor readings diagram view" on page 43).
- of the sensor (see Chapter 5.4.2.6 "Data holder – Sensors – Details" on page 48).

Next, click on the title of the diagram with the ID of the data holder / sensor and a menu appears.

Fig. 5-19 Exporting sensor measured values as a CSV file

Click on Export CSV in the menu and the following dialogue appears.



Make the corresponding configuration settings in the dialogue and click on the Export button. Then a dialogue for saving the CSV file appears.

If you adjust too much here, the exported file may no longer be displayed in the data view.

Fields

Name	Meaning
Mode	Save time series in rows or columns.
Date time format	Time stamp date format of the entries.
Excel CSV dialect	If enabled, the time sequences are saved separated by commas. Otherwise, the separation is done with semicolons.
Export	Export data as a CSV file.
Cancel	Close the dialogue without exporting the data as a CSV file.

The time period for exporting the data can be set using the button in the upper part of the diagram.

Fig. 5-20 Setting time period for the sensor measured values to be exported

5.10 Version of WPM software components

The gateway software consists of different services. Clicking on the Version x.x.x-xxxxxxx button in the lower part of the main menu opens a dialogue with all version numbers.

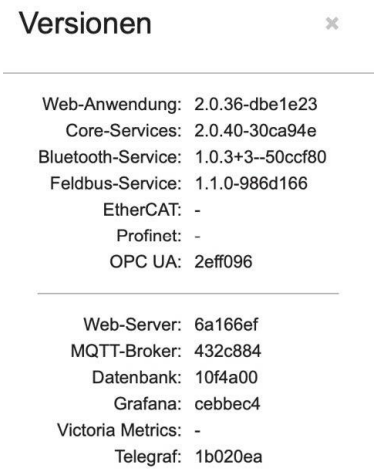


Fig. 5-21 Version dialogue

5.11 Setting up components

The set-up of components such as data holders and sensors can be carried out by users with the *Professional* and *Administrator* authorisation level.

5.11.1 Data holder – Changing parameters

In the *Configuration* view of a data holder, the individual parameters of a data holder can be changed.

Open view: *Main menu* => *Data holder* =>  => *Configuration*

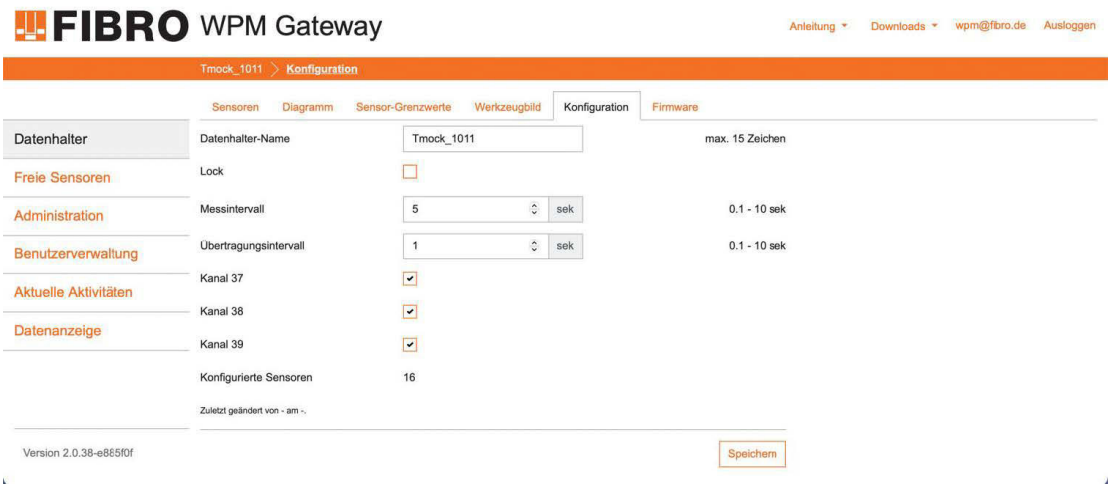


Fig. 5-22 Data holder – Changing parameters

Data holder – Changing name

1) Enter a new data holder name in the *Data holder name* input field (maximum 15 characters).
2) Click the Save button to apply the new data holder name.

Data holder – Locking changes

1) In the *Lock* selection box, activate the lock parameter by checking the check box.
   – If the lock parameter is enabled, data holder parameters can only be changed after confirmation via a confirmation prompt.
2) Clicking on the Save button applies the new status to the lock parameter.

The other parameters of a data holder can be changed in the same way.

Descriptions of the parameters can be found in Chapter 5.4.2.5 "Data holder – Current parameters" on page 47.

5.11.2 Data holder – Assigning free sensors

In the *Sensors* view of a data holder, free sensors can be assigned to a data holder.

Open view: *Main menu* => *Data holder* => Sensors

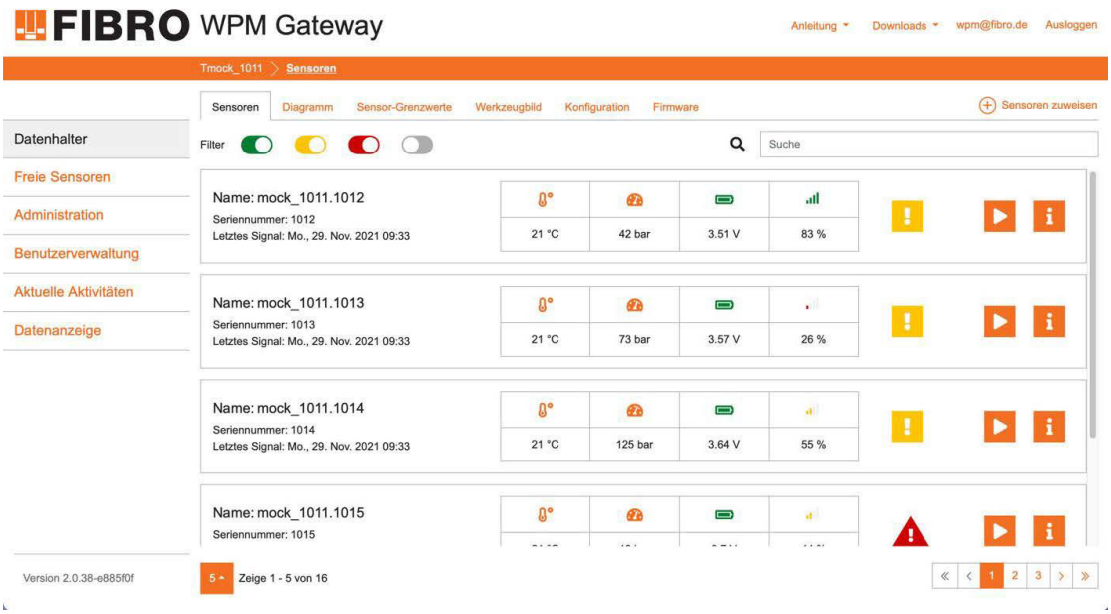


Fig. 5-23 Data holder – Assigning free sensors

Clicking on the ⊕ Assign sensors button displays the dialogue for assigning free sensors.

Fig. 5-24 Data holder – Assigning a free sensor

The dialogue shows a list of all free sensors with the current measured values.

In the following, click on the ✎ button next to a sensor to assign it to the data holder.

After assigning a free sensor to a data holder, the sensor must be parametrised. A parametrisation dialogue is displayed.

Descriptions of the parameters of a sensor can be found in Chapter 5.4.2.6 "Data holder – Sensors – Details" on page 48.

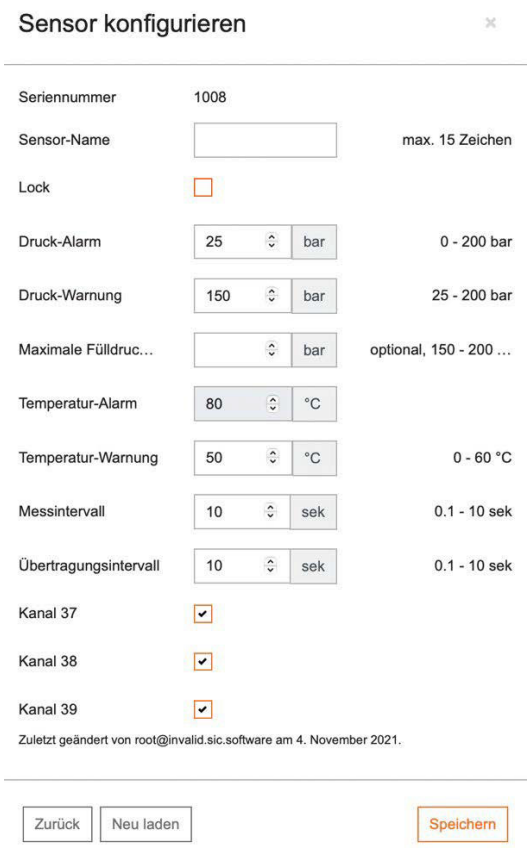


Fig. 5-25 Data holder – Configuring an assigned sensor

Click on the Save button to save the sensor parameters. The dialogue is closed and the sensor appears in the *Sensors* view of the data holder.

5.11.3 Sensors – Changing parameters

In the *Configuration* view of a sensor, the individual parameters of a sensor can be changed.

Open view: *Main menu* => *Data holder* => *Sensors* => i => *Configuration*

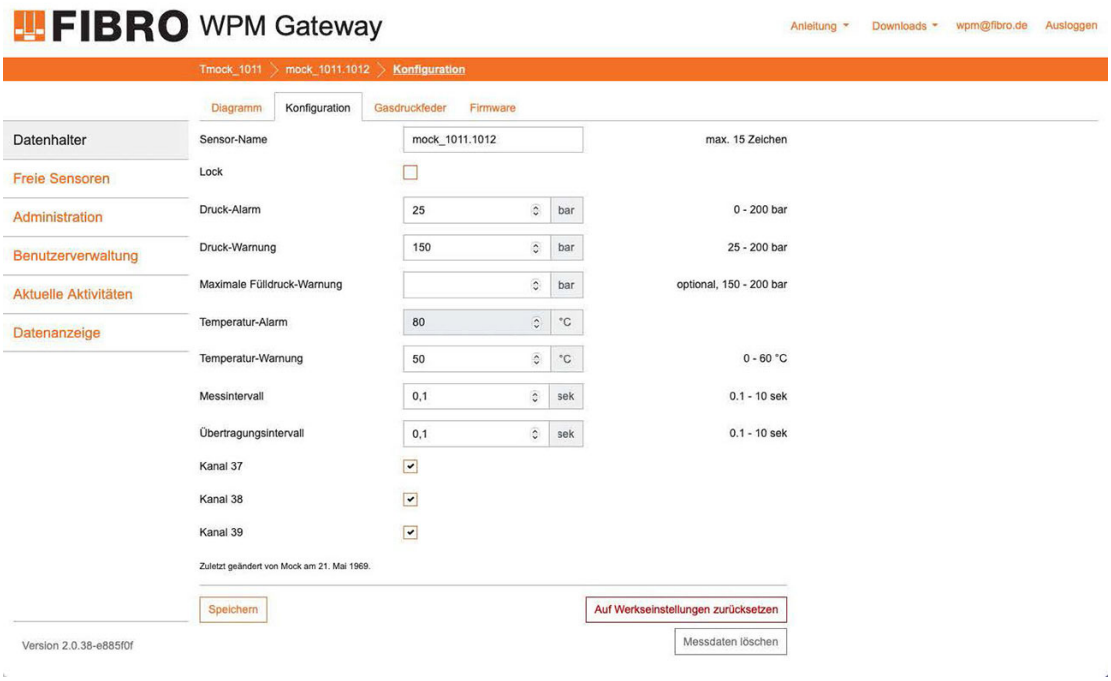


Fig. 5-26 Data holder – Changing parameters

Sensor – Changing name

1) Enter a new sensor name in the *Sensor name* input field (maximum 15 characters).
2) Click on the Save button to apply the new sensor name.

Sensor – Locking changes

1) In the *Lock* selection box, activate the lock parameter by checking the check box.
   – If Lock parameter is enabled, sensor parameters can only be changed after confirmation via a confirmation prompt.
2) Clicking on the Save button applies the new status to the Lock parameter.

The other parameters of a sensor can be changed in the same way.

Descriptions of the parameters can be found in Chapter 5.4.2.5 "Data holder – Current parameters" on page 47.

Sensor – Deleting measurement data

In certain cases, it is useful to delete the collected measurement data of a sensor for the currently assigned data holder.

Example: This is necessary, for example, when a sensor in the WPM Gateway is assigned to another data holder for another press tool, but the sensor is not installed until later. In this case, the data collected from the sensor up until the installation does not match the data holder and should be deleted.

Then click on the Delete measurement data button and confirm the following confirmation prompt.

The measurement data of the sensor for the currently assigned data holder is deleted.

Sensor – Resetting to factory settings

The respective sensor can be reset to its factory settings. This means that the sensor parameters are reset to the default values and that the assignment to the data holder is lost.

Then click on the Reset to factory settings button and confirm the following confirmation prompt.

The sensor is then reset.

Default values of the sensors (factory setting)

- Sensor name: not assigned
- Lock: disabled
- Pressure warning: 150 bar
- Pressure alarm: 25 bar
- Temperature warning: 50°C
- Temperature alarm: 85°C
- Measurement interval: 10s
- Transmission interval: 10s
- Channel 37: enabled
- Channel 38: enabled
- Channel 39: enabled
- Data holder assignment: cancelled
- Tool image position: cancelled

5.11.4 Data holder – Tool screen assignment

Assigning tool image

In the *Tool image view* of a data holder, the positioning of the sensors on the tool can be displayed. In the process, one tool image each for the top and bottom side can be assigned to the data holder.

Open view: *Main menu* => *Data holder* => i => *Tool image*

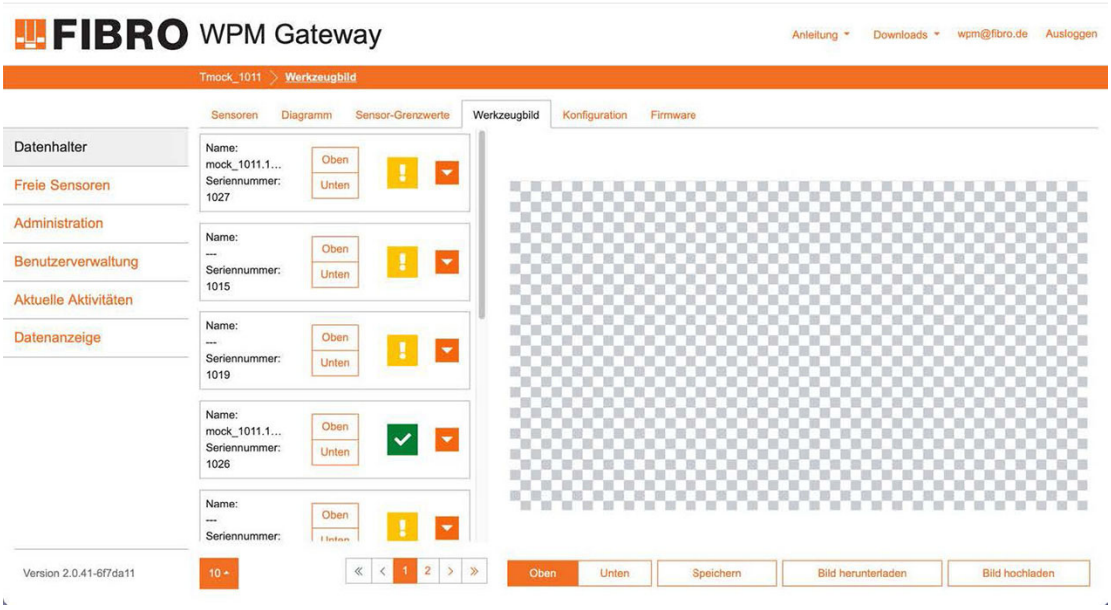


Fig. 5-27 Positioning of the sensors with the help of the tool image

To assign tool images to the data holder, carry out the following steps:

1. Use the upper lower button to select whether the tool image for the top or bottom side should be assigned.
2. Select the Upload image button. A file selection dialogue appears.
3. Select the corresponding image in the file selection dialogue.
4. In the *Tool image* view of the respective data holder, the respective image for the selected page appears.

Positioning sensors on the tool image

Before sensors can be positioned on the tool image, a tool image must be assigned to the data holder for the respective top or bottom side.

To position sensors on the tool image, carry out the following steps:

1. Use the upper lower button to select the top or bottom tool image for the sensor.
2. Select a sensor in the sensor list and set the position to the top or bottom using the top bottom button.
3. An icon for the sensor appears in the middle of the tool image.
4. Drag and drop the icon to the corresponding position within the tool image and save. The position of the sensor in the tool image is shown to you in the sensor image as relative (x,y) coordinates.

5. To accept the position, click on the Save button.

When a sensor is placed on the bottom or top of a tool, it is initially displayed in the centre. If several sensors are placed in this way, they are all directly above each other, with the currently selected sensor on top.

Download tool image

In the Tool image view of a data holder, the Download image button can be used to download the currently selected tool image for the selected top or bottom side.

6 USER MANAGEMENT CONFIGURATION

Only users with the Administrator authorisation level can create additional users, edit existing users, or delete existing users.

The first user of the system has admin rights by default.

Editing the user administration is almost identical in both interfaces, WPM Gateway and WPM Cloud. Only the selection of available areas can be edited on the WPM Cloud interface.

6.1 Authorisation levels

Basic	Allows read access to data holders and sensors.
Professional	Extension of the basic authorisation level with permission for device management.
Administrator	All authorisations to manage the WPM software on the WPM Gateway.

Tab. 6-1 Authorisation levels

6.2 Managing users

Users with the Administrator authorisation level can create additional users and edit or delete existing users.

The following overview shows an example of all users already created.

Open view: *Main menu => User administration*

Fig. 6-1 User administration

Actions:

Create user	Switches to the input mask for creating a new user.
	Switches to the input mask for editing the selected user.
	Removes the user after confirmation via a confirmation prompt.

6.3 Create users

Creating new user

1. Open the *User administration* menu.
2. Confirm the ⊕ Create user button.
3. Fill out fields.
4. Select messages.
   a) Selection via check boxes of the events for which a notification should be generated by e-mail.
5. Confirm the entries by pressing the Create button.
   - The display then jumps back to the *User administration* menu.
   - The newly created user is displayed.

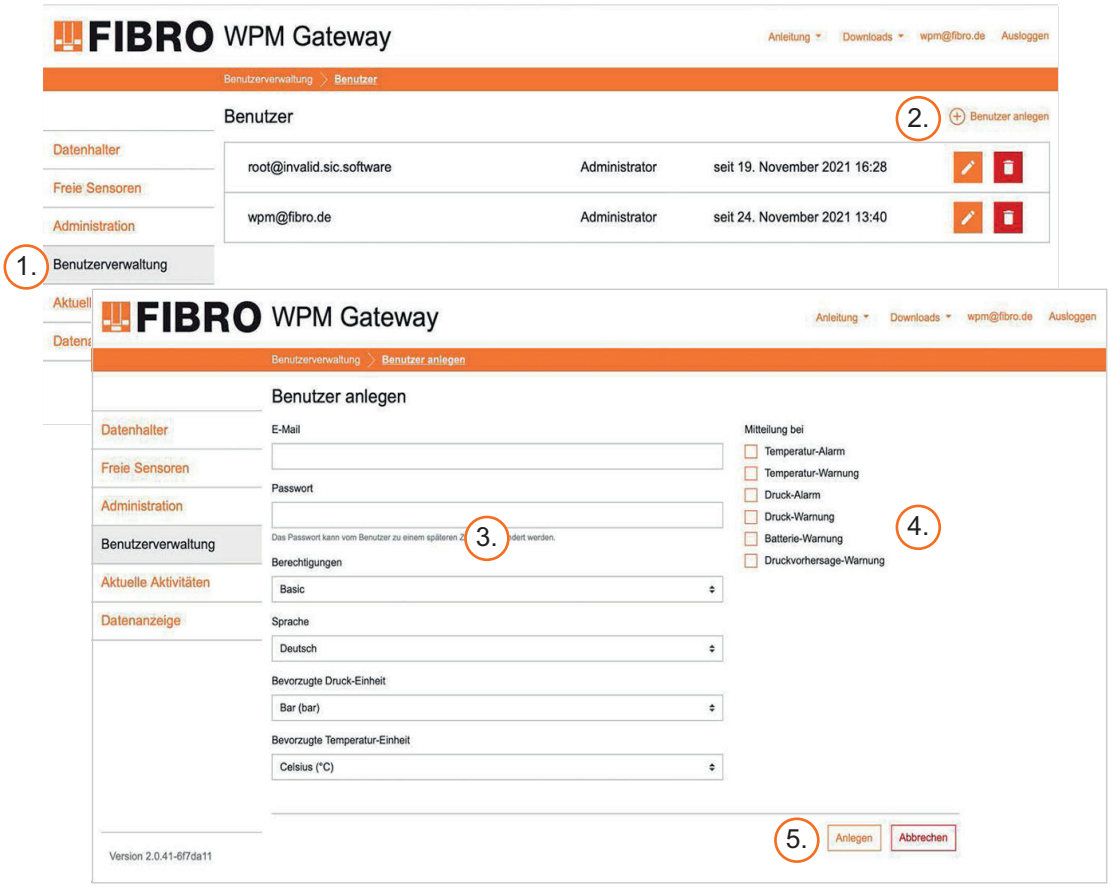


Fig. 6-2 Creating users

Fields

Name	Meaning
E-mail	E-mail address of the user. This is used to log the user into the WPM Gateway and for e-mail notifications.
Password	The user's password for logging into the WPM Cloud (minimum length 8 characters) . Passwords must be specified when a user is created and can then only be changed by the user themselves. The password set by the administrator is for start-up only and should be changed by the user when logging in for the first time.
Authorisations	Selection of the user's authorisation levels.
Language	Selection of the display language in the WPM Gateway for the user.
Preferred pressure unit	Selection of the pressure unit between bar (bar) and pound per square inch (psi)
Preferred temperature unit	Selection of temperature unit between Celsius (°C) and Fahrenheit (°F)
Areas	Available areas / Assigned areas (only in the WPM Cloud interface).

Messages

The following notifications are only active if an e-mail server has been correctly set up to send e-mails (see Chapter 4.2 "Managing email settings" on page 25).

Temperature alarm notification

Notifies the user by e-mail when temperature alarms occur.

Temperature warning notification

Notifies the user by e-mail when temperature warnings occur.

Pressure alarm notification

Notifies the user by e-mail when pressure alarms occur.

Pressure warning notification

Notifies the user by e-mail when pressure warnings occur.

Battery warning notification

Notifies the user by e-mail when battery warnings occur.

Pressure forecast warning notification

Notifies the user by e-mail when pressure forecast warnings occur.

Actions

Name	Meaning
Create	The user is created and the input mask is closed.
Abort	The input mask is closed without accepting the changes.

6.4 Editing a user

In this view, a user who has already been created can be edited.

Open view: *Main menu => User administration*

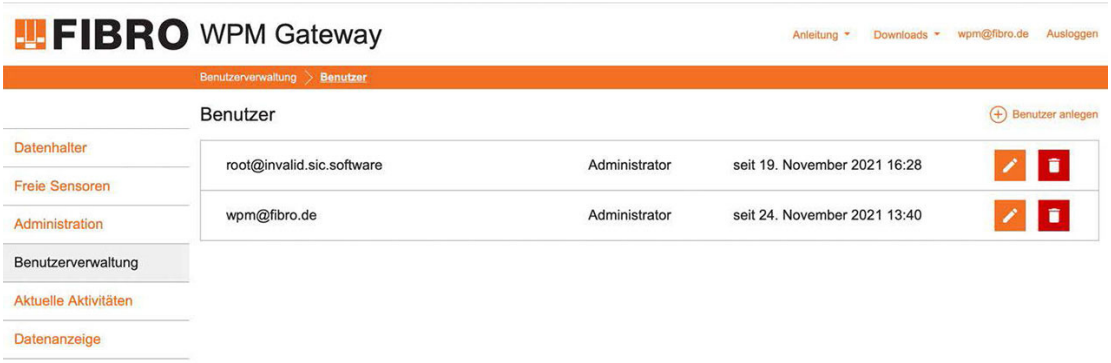


Fig. 6-3 Editing a user

1. Confirm the button next to the user to be edited.
   a) The input mask for editing the user is displayed. This input screen is similar to the basic structure of the Create user input screen with the exception that the password field is not displayed, as passwords can only be changed by the respective user.
2. Edit the corresponding fields and apply the changes by clicking on the Save button.
   a) You are then automatically returned to the user administration and the changes for the respective user are displayed

6.5 Deleting a user

In this view, a user who has already been created can be deleted.

Open view: *Main menu => User administration*

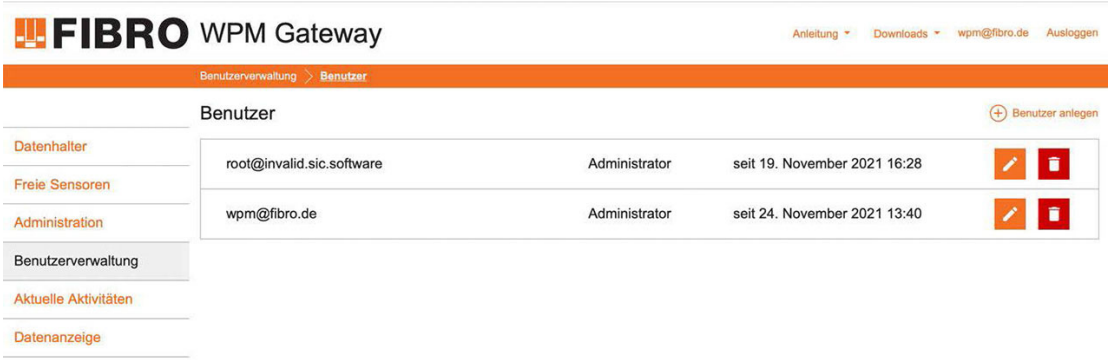


Fig. 6-4 Deleting a user

1. Confirm the button next to the user to be edited.
2. Confirm the following confirmation prompt with OK.

Fig. 6-5 Confirmation prompt for deleting a user

a) You will then automatically return to the user administration. The deleted user is no longer displayed.

6.6 Changing a user password

In general, user passwords can only be changed by the respective user themselves.

If the password of a user is no longer known, an Administrator can delete the user via the User administration and create a new one.

1. Log in to the WPM Gateway as a user with your own password.
2. Click on the registered user in the main menu.

   - The **Edit user** input screen with the additional option to change your own password will open.
3. Enter the new password and confirm it by entering it again.
4. Save the new password by pressing the Save button.

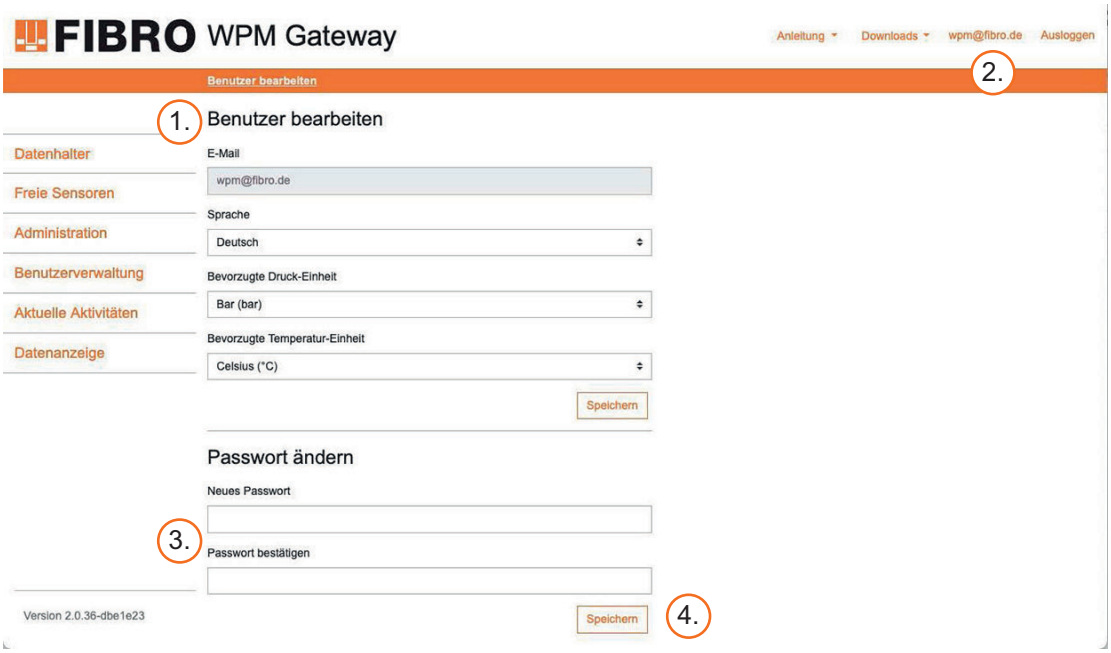


Fig. 6-6 Changing a user password

6.7 Reset Administrator password

If the access data of the WPM administrator is no longer available, a reset key must FIBRO GMBH be requested.

1) Log into the web browser with the e-mail address of the WPM Gateway administrator.
   – If users are already logged in, they must be logged out to access the login page.
2) Click on the Forgot admin password? button.
   – A page for requesting a reset key is displayed.
3) Request a reset key via the displayed link.
4) Enter the reset key received in the input window.
5) Confirm the Next button.
   – A form for creating a new or changing the existing WPM Gateway administrator is displayed.

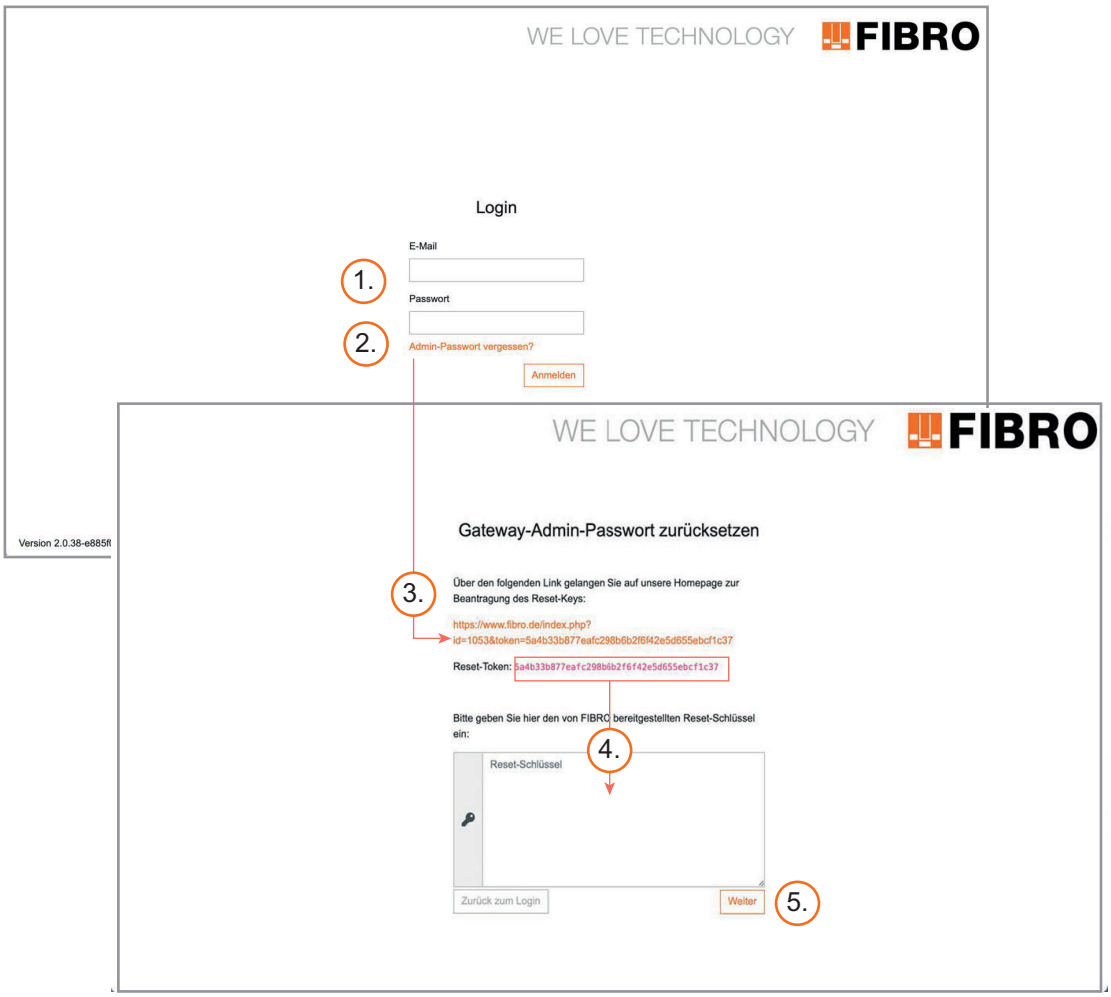


Fig. 6-7 Reset admin password

7 MAINTENANCE

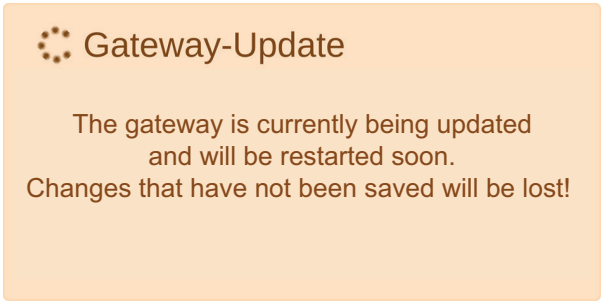
7.1 WPM Gateway – Update

A WPM Gateway update can be performed by an administrator.

Open view: *Administration* => *Gateway* => *Gateway update*

1) WPM Gateway updates are each provided as a TAR file.
2) Drag & drop the TAR file into the upload area.
   – Alternatively, clicking in this area opens a file selection dialogue.
3) The upload of the TAR file starts automatically. The update process then begins.
   – Do not close the browser window during the upload!
   – An update can take between 30–40 minutes, depending on the network connection.

While the update is in progress, the following message appears in the main menu:



7.2 Data holder – Updating firmware

A data holder firmware update can be performed by a user with the authorisation level Professional or Administrator.

View information about the installed firmware on the data holder and update the firmware.

Open view: *Data holder => Firmware*

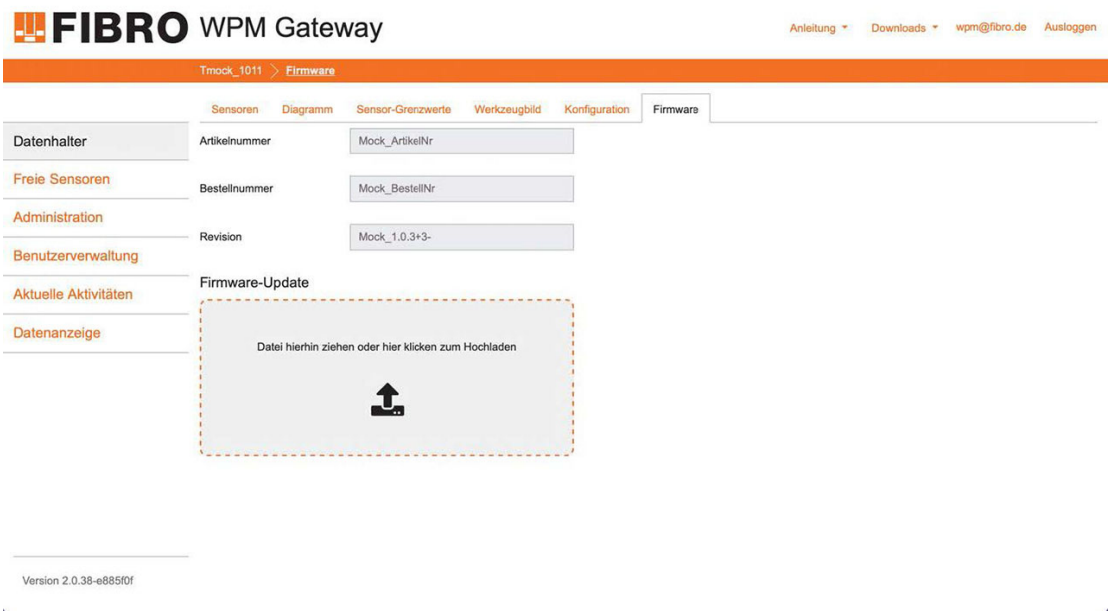


Fig. 7-1 Data holder – Updating firmware

1) Drag and drop the firmware file to the firmware upload area to update.
   – Alternatively, clicking in this area opens a file selection dialogue.
   – Firmware update starts automatically.

Fields

Name	Meaning
Article number	Article number of the data holder.
Order number	Order number of the data holder.
Revision	Version of the firmware.

7.3 Sensor – Updating firmware

A sensor firmware update can be performed by a user with the authorisation level Professional or Administrator.

Switch to the detailed view of the affected sensor and select the Firmware menu item. The view shows you the current revision of the firmware installed on the sensor.

Open view: *Data holder => Sensors => Firmware*

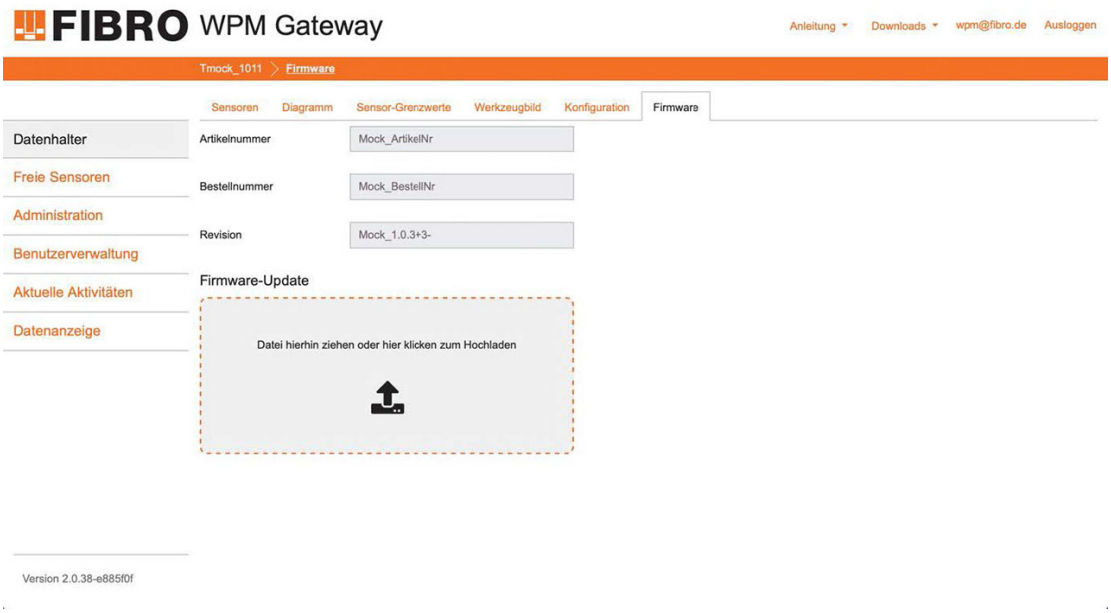


Fig. 7-2 Sensor – Updating firmware

1) Drag and drop the firmware file to the firmware upload area to update.
   – Alternatively, clicking in this area opens a file selection dialogue.
   – Firmware update starts automatically.

Fields

Name	Meaning
Article number	Article number of the sensor.
Order number	Order number of the sensor.
Revision	Version of the firmware.

7.4 Changing the battery

The products of the WPM series from FIBRO GMBH are equipped with batteries.

If the WPM Monitor indicates a lower battery voltage for a WPM component, the battery needs to be replaced.

The documentation for the WPM component concerned describes how to replace batteries.

The used battery must be properly disposed of (see the chapter 7.5 "Disposing of the battery" on page 75).

Battery voltage status

Symbol	Meaning
	Battery is charged.
	Battery is half charged.
	Battery voltage is low. Battery needs to be replaced.
	Battery voltage is unknown. The battery must be checked and replaced if necessary.

Tab. 7-1 Battery voltage status

7.5 Disposing of the battery

NOTICE

Dispose of the battery properly

The battery consists of lithium metal cells. Lithium is a valuable raw material and a hazardous material. Improper disposal may cause environmental damage and may be prosecuted.

- ▶ The battery must be removed from the device.
- ▶ The battery must be disposed of according to the pertinent, customary national and regional laws and guidelines.
- ▶ The local regulations on proper waste recovery or removal must be complied with.

7.6 Miscellaneous

7.6.1 IP address of the WPM Gateway

As default, the WPM Gateway is preset with the static **IP address 10.10.10.10** . This IP address can be changed by a network administrator when integrating the WPM Gateway into the company IT infrastructure. If the IP address of the WPM Gateway has changed, contact your network administrator.

7.6.2 Network signal strength

Symbol	Meaning
	Signal strength > 80%.
	Signal strength < 80%.
	Signal strength < 60%.
	Signal strength < 40%.
	Signal strength < 20%.

Tab. 7-2 Network signal strength

7.6.3 NetFIELD Device Manager

The Device Manger is an interactive web front-end for the administration of the IoT device.

Normally no settings for the operation of the WPM Gateway have to be configured in the netFIELD Device Manager.

A manual for the netFIELD Device Manager can be obtained from the manufacturer of the WPM Gateway.

The manual can also be downloaded via the following link:

https://www.hilscher.com/fileadmin/cms_upload/en-US/Resources/pdf/netFIELD_Connect_UM_02_EN.pdf.

Fig. 7-3 QR code for instructions netFIELD Device Manager

8 APPENDIX

8.1 WPM Gateway MQTT Proxy Topics

Here you will find an overview of the MQTT topics of the WPM Gateway for inter-process communication.

8.2 General

All data is in JSON format. Exceptions to this are deletions with an empty payload.

8.3 Time series

Pure measurement data of data holders and sensors. Contains the topic tree under ts/#.

8.3.1 Data holder measurement data

Topic:

ts/tools/:mac_address

Payload:

- u (number): Battery voltage [V]
- rssi (number): Signal strength

Example:

# Topic: ts/tools/00:00:00:38:01:2D
{
“u”: 3.051974,
“rssi”: -59
}

8.3.2 Sensor measurement data

Topic:

ts/tools/:tool_mac_address/sensors/:sensor_mac_address

Sensors without data holders appear under ts/tools/00:00:00:00:00:00/#

Payload:

- t (number): Temperature [°C]
- p (number): Pressure [bar]
- u (number): Battery voltage [V]
- rssi (number): Signal strength

Example

# Topic: ts/tools/00:00:00:38:01:2D/sensors/00:00:00:38:01:0B
{
“t”: 18.957628,
“p”: 35.245373,
“u”: 3.1462061,
“rssi”: -68
}

8.4 Events

Topic tree under evt/#.

8.4.1 Data holder

Topic tree under evt/tools/#

8.4.1.1 Advertising

Regularly from the information published by the data holders.

Topic:

evt/tools/:mac_address

Payload:

- ts (string): Time stamp (ISO 8601)
- batt (number): Battery voltage [V]
- rssi (number): Signal strength
- SCnt (number): Number of assigned sensors
- SNo (number): Serial number
- name (string): Display name
- LOCK (boolean): Configuration locked
- ACTIVE (boolean): Data holder is activated (fast advertising)
- WrnU (boolean): Data holder has permanently stored the battery warning limit value in the firmware and cannot be changed
- MEASURE (boolean): RESERVED
- action (string): Current action. Possible values: [“none”, “LogInActive”, “CheckActive”, “CheckOk”, “CheckWarn”, “CheckAlarm”, “CheckMissing”, “LogInOk”]

Example:

```
# Topic: evt/tools/00:00:00:38:00:02
{
"ts": "2020-11-06T15:02:01.901Z",
"batt": 3.3035872,
"rssi": -46,
"SCnt": 1,
“SNo": 1002,
"name": “Display name”,
"LOCK": false,
"ACTIVE": false,
"WrnU": false,
"MEASURE": false,
"action" : "none"
}
```

8.4.1.2 Configuration

Settings published when changing data holder configurations.

Topic:

evt/tools/:mac_adresse/config

Payload:

- ts (string): Time stamp (ISO 8601)
- id (string): MAC address of the data holder
- serialNumber (number): Serial number
- deviceName (string): Device name, not currently used.
- toolID (number): Fixed value, always -1
- name (number): Part name (display name) of the data holder
- xPos (number): Horizontal position on the tool image [%]
- yPos (number): Vertical position on the tool image [%]
- measurementInterval (number): Measurement interval in activated mode [s] (sleep mode fixed at 120s)
- transmissionInterval (number): Data transmission interval in activated mode [s] (sleep mode fixed at 2s)
- transmitStay (number): Deactivation interval until data holder changes to sleep mode after activation
- advertisementChannel37 (boolean): Use Bluetooth LE Advertising channel 37
- advertisementChannel38 (boolean): Use Bluetooth LE Advertising channel 38
- advertisementChannel39 (boolean): Use Bluetooth LE Advertising channel 39
- operatingHours (number): Current operating hours (read-only)
- sensorCount (number): Number of assigned sensors (read-only)
- locked (boolean): Configuration locked
- measuring (boolean): RESERVED
- updatedAt (string): Date of the last change (YYYY-MM-DD or “0000-00-00”)
- updatedBy (string): Originator of the last change (user name)

Example:

```
# Topic: evt/tools/00:00:00:38:00:01/config
{
"ts": "2020-11-05T14:25:23.731Z",
"id": "00:00:00:38:01:2C",
"serialNumber": 1300,
"name": “Display name”,
"toolID": -1,
"deviceName": "",
"xPos": 0,
"yPos": 0,
"measurementInterval": 5,
"transmissionInterval": 1,
"transmitStay": 2,
"advertisementChannel37": true,
"advertisementChannel38": true,
"advertisementChannel39": true,
"operatingHours": 0,
"sensorCount": 0,
"locked": false,
"measuring": false,
```

"updatedAt": "2020-10-10",
"updatedBy": "1#user1@example"
}

8.4.1.3 Configured sensors

List of assigned sensors stored in the data holder configuration with their respective configurations. Published when assigning or resetting sensors.

Topic:

evt/tools/:mac_address/configured_sensors

Payload:

- serialNumber (number): Serial number
- sensorID (number): Sensor ID assigned by the data holder
- name (string): (Display) name of the sensor
- xPos (number): Horizontal position on the tool image [%]
- yPos (number): Vertical position on the tool image [%]
- pressureWarning (number): Upper limit for pressure warning [bar]
- pressureAlert (number): Upper limit for pressure alarm [bar]
- temperatureWarning (number): Upper limit for temperature warning [°C]
- updatedAt (string): Date of the last change (YYYY-MM-DD or “0000-00-00”)
- updatedBy (string): Originator of the last change (user name)

Example:

Topic: evt/tools/00:00:00:38:00:01/configured_sensors
[
{
"serialNumber": 1005,
"sensorID": 1,
"name" : “Display name”,
"xPos": 0,
"yPos": 0,
"pressureWarning": 150,
"pressureAlert": 25,
"temperatureWarning": 50
"updatedAt": "2020-10-10",
"updatedBy": "1#user@example",
}
]

8.4.1.4 Tool images

For each data holder, a tool image each can be uploaded for the top and bottom.

Topic:

evt/tools/:mac_address/images/:position (Positions: [top, bottom])

Payload:

- image (string): Image data coded in Base64

Example:

```
# Topic: evt/tools/00:00:00:38:00:01/images/top
{
"image" : "base64"
}
```

8.4.1.5 Tool image coordinates

Contains the coordinates for the tool images configured per device.

Topic:

evt/tools/:mac_address/coordinates

Payload:

- [:sensor_mac_address] (object): MAC address of a sensor on the tool image
  - x (number): Horizontal position on the tool image [%]
  - y (number): Vertical position on the tool image [%]
  - position (string): Top/bottom [“top”, “bottom”]

Example:

```
# Topic: evt/tools/00:00:00:38:00:02/coordinates
{
"00:00:00:38:00:03": {
"x": 57.90355,
"y": 49.12954,
"position": "top"
},
"00:00:00:38:00:04": {
"x": 27.12345,
"y": 33.12924,
"position": "bottom"
}
}
```

8.4.2 Sensors

Topic tree under evt/sensors/#

8.4.2.1 Advertising

Information published regularly by sensors, including current measurement data.

Topic:

(Free sensors): evt/sensors/:mac_address

(Assigned sensors): evt/tools/:tool_mac_address/sensors/:sensor_mac_address

Payload:

- ts (string): Time stamp (ISO 8601)
- temp (number): Temperature [°C]
- press (number): Pressure [bar]
- batt (number): Battery voltage [V]
- rssi (number: Signal strength
- SNo (number): Serial number
- SId (number): Sensor ID assigned by the data holder
- ts_rtc (string): Realtime time stamp (YY-MM-DD_hh:mm:ss)
- LOCK (boolean): Configuration locked
- ACTIVE (boolean): Sensor is activated (fast advertising)
- MEASURE (boolean): RESERVED
- AlmT (boolean): Sensor has temperature alarm
- AlmP (boolean): Sensor has pressure alarm
- WrnU (boolean): Sensor has permanently stored the battery warning limit value in the firmware and cannot be changed
- WrnT (boolean): Sensor has temperature warning
- WrnP (boolean): Sensor has pressure warning

Example:

```
# Topic: evt/tools/00:00:00:38:00:9E/sensors/00:00:00:38:01:10
{
"ts": "2020-11-06T15:02:01.936Z",
"temp": 18.941765,
"press": 39.868786,
"batt": 2.9628665,
"rssi": -92,
“SNo": 1272,
"SId": 114,
"ts_rtc": "20-11-06_15:01:31",
"LOCK": false,
"ACTIVE": false,
"MEASURE": false,
"AlmT": false,
"AlmP": false,
"WrnU": true,
"WrnT": false,
"WrnP": true
}
```

8.4.2.2 Configuration

Settings published when changing sensor configurations.

Topic:

(Free sensors): evt/sensors/:mac_address/config

(Assigned sensors): evt/tools/:tool_mac_address/sensors/:sensor_mac_address/config

Payload:

- ts (string): Time stamp (ISO 8601)
- toolID (string): Data holder MAC address (for free sensors: “00:00:00:00:00:00”)
- serialNumber (number): Serial number
- sensorID (number): Sensor ID assigned by the data holder
- name (string): (Display) name of the sensor
- xPos (number): Horizontal position on the tool image [%]
- yPos (number): Vertical position on the tool image [%]
- pressureWarning (number): Upper limit for pressure warning [bar]
- pressureAlert (number): Upper limit for pressure alarm [bar]
- temperatureWarning (number): Upper limit for temperature warning [°C]
- temperatureAlert (number): Upper limit for temperature alarm (read-only) [°C]
- measurementInterval (number): Measurement interval in activated mode [s] (sleep mode fixed at 120s)
- transmissionInterval (number): Data transmission interval in activated mode [s] (sleep mode fixed at 10s)
- transmitStay (number): Deactivation interval until sensor changes to sleep mode after activation
- advertisementChannel37 (boolean): Use Bluetooth LE Advertising channel 37
- advertisementChannel38 (boolean): Use Bluetooth LE Advertising channel 38
- advertisementChannel39 (boolean): Use Bluetooth LE Advertising channel 39
- operatingHours (number): Current operating hours (read-only)
- operatingHoursOnline (number): Current operating hours in activated mode (read-only)
- locked (boolean): Configuration locked
- measuring (boolean): RESERVED
- updatedAt (string): Date of the last change (YYYY-MM-DD or “0000-00-00”)
- updatedBy (string): Originator of the last change (user name)

Example:

```
# Topic: evt/tools/00:00:00:38:00:0B/sensors/00:00:00:38:00:18/config
{
22
"ts": "2020-11-05T16:25:44.097Z",
"toolID": "00:00:00:38:00:0B",
"serialNumber": 1024,
"sensorID": 13,
"name": “Display name”,
"xPos": 0,
"yPos": 0,
"pressureWarning": 150,
"pressureAlert": 25,
"temperatureWarning": 50,
"temperatureAlert": 80,
"measurementInterval": 10,
```

"transmissionInterval": 10,
"transmitStay": 0,
"advertisementChannel37": true,
"advertisementChannel38": true,
"advertisementChannel39": true,
"operatingHours": 0,
"operatingHoursOnline": 0,
"locked": false,
"measuring": false
"updatedAt": "2020-10-10",
"updatedBy": "1#user1@example"
}

8.4.3 Press mode

Contains information on the current press mode, if active.

Topic:

evt/press_mode

Payload:

- tool (string): MAC address of the data holder in press mode
- initiatedVia (string): Platform via which the press mode was started, if known
- initiatedBy (number): ID of the triggering user; 0 = system (e.g. via key switch)

Example:

# Topic: evt/press_mode
{
"tool": "00:00:00:38:00:02",
"initiatedVia": "webui",
"initiatedBy": 1
}

8.4.4 GPIO input ports

Mirrors the inputs (GPIO ports) of the gateway.

Topic:

evt/gpio/in/:port

Payload:

- 0: Keyswitch of the gateway
- 1: Not used
- 2: Not used
- 3: Not used
- 4: Error pin (short-circuit on I/O card)

Example:

# Topic: evt/gpio/in/0
{
"value": false
}

8.5 Licence

Contains information on the licence stored on the gateway. Published when this is changed.

Topic:

evt/license

Payload:

- currentLicense (object): Information on the licence currently entered, if present
- currentLicense (string): Entered licence code
- validFrom (string): Start date of the validity period (ISO 8601), if present
- validTo (string): End date of the validity period (ISO 8601), if present
- deviceIdentifier (string): Identifier of the licensed gateway
- deviceIdentifier (string): Identifier of the gateway itself
- valid (boolean): Whether or not a valid licence is entered

A valid licence is present when a valid, signed licence code is entered, for which the licensed gateway identifier matches the internal identifier of the device. In addition, a licence only applies as valid within the specified validity period.

Example:

```
# Topic: evt/license
{
"currentLicense" : {
"key" : “Signed key",
"validFrom" : null,
"validTo" : "2022-07-02T00:00:00Z",
"deviceIdentifier" : "device-identifier"
},
"deviceIdentifier" : "device-identifier",
"valid" : true
}
```

8.6 WPM Gateway update

Specifies whether or not an update of the WPM software is currently being carried out.

Topic:

evt/gateway_update

Payload:

- running (boolean): Whether or not an update is currently being carried out

Example:

```
# Topic: evt/gateway_update
{
“running": true
}
```

8.7 Personal notes

9 INDEXES

9.1 Glossary

Term	Explanation
Operator	Person or organisation that uses the product or system responsibly.
User	Users are generally persons who can use the product.
Basic	Basic users generally have read access. Additionally, data holders, sensors and press mode may be enabled/disabled.
Professional	Professional users have more device management authorisations than the Basic user. Data holders, as well as sensors, can be configured, assigned and reset.
Administrators	Administrators have all authorisations to manage the Gateway.

9.2 Index of figures

9.3 Index of tables

10 INDEX

More information at

www.fibro.de/downloads-springs-gas springs/

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