User Manual

iQdata

Rack Monitoring Systems

RMS 222

RMS 442

RMS 842+

SCHÄFER IT-Systems

Industriestraße 41 · D-57518 Betzdorf

Phone: +49 (0) 2741/283-770 · sales@schaefer-it-systems.de · www.schaefer-it-systems.de As amended on 16/8/2019 (subject to technical changes)

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CAUTION

These operating instructions must be read carefully in advance and followed when installing and operating the devices.

Retain these operating instructions for the entire usable life of the device.

These instructions correspond to the state of technology at the time of introduction of the product into the market. They are not to be considered as unsuitable only due to the reason that they were not updated following new knowledge regarding design- and manufacturing methods.

SCHÄFER IT-Systems reserves the right to update the product and related documentation without being obligated to similarly amend earlier products and documentation, unless under extraordinary circumstances. Please contact SCHÄFER IT-Systems in order to request or procure the current versions or the related changes, which can be considered part of these operating instructions.

SCHÄFER IT-Systems confirms the conformity of the wall cooling unit RMS to the EC-EMC directive 2004/108/EC. A corresponding declaration of conformity was issued and enclosed with the device.

It is absolutely necessary to follow the measures listed in the chapter with safety instructions.

1. Introduction

This section contains the following topics:

- Product description
- Product overview monitoring
- Quick Start Guide
- Product overview sensors, CAN extensions and accessories

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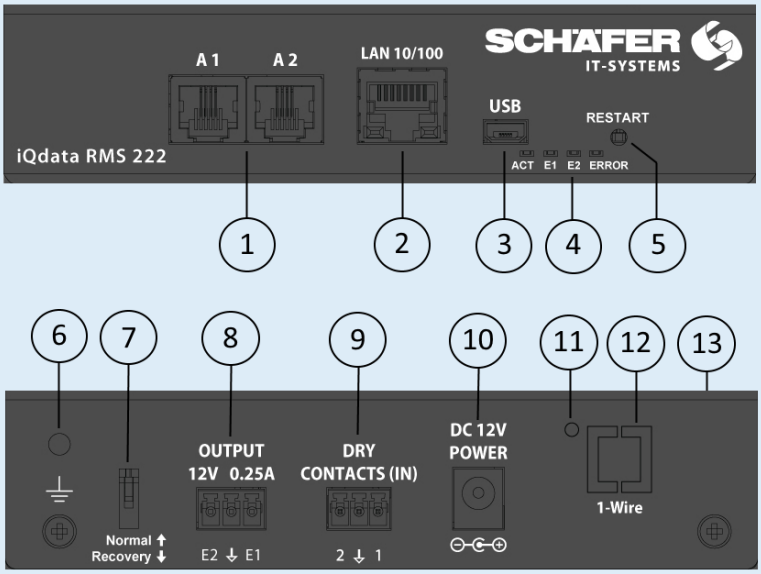
1.1. Product description

The iQdata monitoring units RMS 222, RMS 442 and RMS 842+ are the main modules for environmental monitoring. The RMS 842+ is used to monitor and log larger infrastructures in different buildings, while the RMS 222 and RMS 442 are used for small systems.

The main monitoring systems cannot be interconnected. In order to increase the number of sensors and devices, extension units such as the extension unit, 64DI unit and CAN sensors can be used instead. Each monitoring unit has an integrated software interface and can be connected via an IP address.

1.2. Product overview monitoring

Connections RMS 222



1.	"**A1..A2**"	2x RJ12 analogue & digital sensor inputs with auto-sensing
2.	"**LAN 10/100**"	Ethernet 10/100 Base-T-Port
3.	"**USB**"	to connect a USB camera or reset the device
4.	"LEDs: "**ACT**"	indicates the device status, E1, E2 signal 12V relay status
5.	"**RESTART**"	restarts the device
6.	⏚	external earthing M4 internal thread
7.	"**DIP-SWITCH**"	"Normal" ↑ Off = normal status / "Recovery" ↓ On = factory setting
8.	"**OUTPUT 12V 0.25A**"	2x 12VDC max 0.25A Alarm outputs
9.	"**DRY CONTACTS 1...2**"	potential-free inputs
10.	"**DC 12V POWER**"	Power supply DC 12V 2A via power supply unit
11.	"**1-WIRE STATUS**"	to activate the 1-WIRE bus internal switch to "ON".
	LED lights green	1-WIRE module is switched on
12.	"**1-WIRE**"	serial communication protocol, for communication via data line plus ground reference between Master (RMS 222) and 1-Wire Slave device
13.	"**THERMOSENSOR**"	Internal temperature sensor ± 1.0°C

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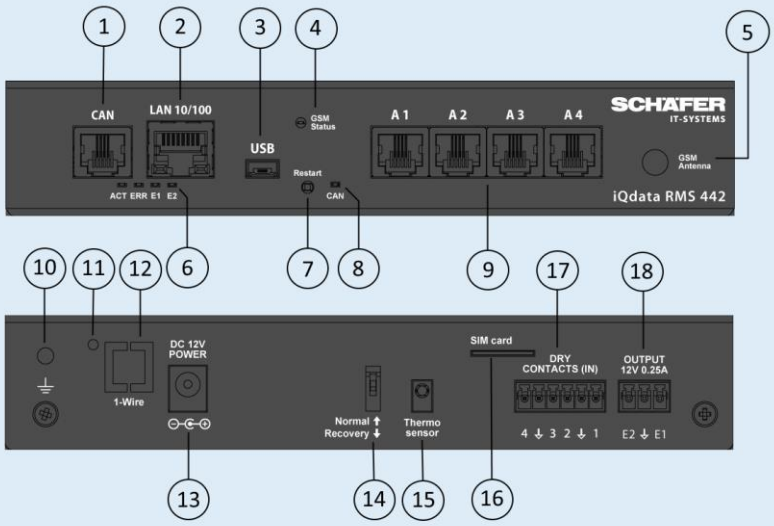
Connections RMS 442



1.	“**CAN**”	Digital contact RJ12 for connection of CAN sensors and CAN extensions on a CAN bus with auto-sensing
2.	“**LAN 10/100**”	Ethernet 10/100 Base-T-Port
3.	“**USB**”	to connect a USB camera or reset the device
4.	“**GSM STATUS**”	displays the GSM SIM card status. Flashing = Status ok (OPTIONAL)
5.	“**GSM ANTENNA**”	Contact for GSM antenna in case of integrated GSM modem (OPTIONAL)
6.	“LEDs: “**ACT**”	indicates the device status, E1, E2 signal 12V relay status
7.	“**RESTART**”	restarts the device
8.	LED: “**CAN**”	displays CAN bus status
	“**CAN**” flashes slowly	No connection
	“**CAN**” flashes fast	Configuration in progress
	“**CAN**” lights up permanently	connected to CAN device
9.	“**A1..A4**”	8x RJ12 analogue & digital sensor inputs with auto-sensing
10.	⏚	external earthing M4 internal thread
11.	“**1-WIRE STATUS**”	to activate the 1-WIRE bus internal switch to "ON".
	LED lights green	1-WIRE module is switched on
12.	“**1-WIRE**”	serial communication protocol, for communication via data line plus ground reference between Master (RMS 442+) and 1-Wire Slave device
13.	“**DC 12V POWER**”	Power supply DC 12V 2A via power supply unit
14.	“**DIP-SWITCH**”	“Normal” ↑ Off = normal status / “Recovery” ↓ On = factory setting
15.	“**THERMOSENSOR**”	Internal temperature sensor ± 1.0°C
16.	“**SIM**”	SIM card slot with ejector for GSM modem (OPTIONAL)
17.	“**DRY CONTACTS 1...4**”	potential-free inputs
18.	“**OUTPUT 12V 0.25A**”	2x 12VDC max 0.25A Alarm outputs

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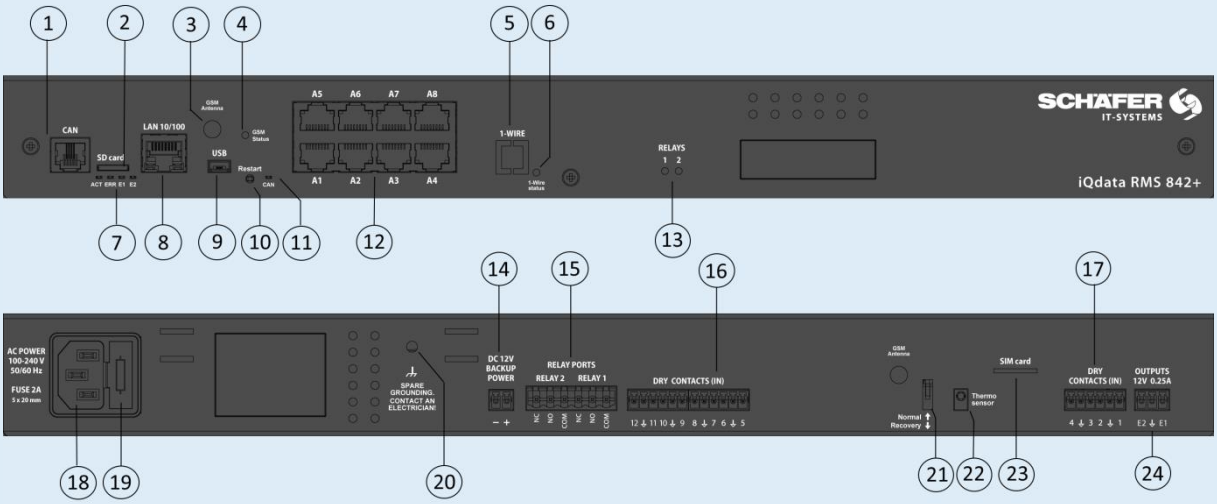
Connections RMS 842+



1. “**CAN**”	Digital contact RJ12 for connection of CAN sensors and CAN extensions on a CAN bus with auto-sensing
2. “**SD**”	SD, MicroSD card slot with ejector, for data storage
3. “**GSM ANTENNA**”	Contact for GSM antenna in case of integrated GSM modem (OPTIONAL)
4. “**GSM STATUS**”	displays the GSM SIM card status. Flashing = Status ok (OPTIONAL)
5. “**1-WIRE**”	serial communication protocol, for communication via data line plus ground reference between Master (RMS 842+) and 1-Wire Slave device
6. “**1-WIRE STATUS**”	to activate the 1-WIRE bus internal switch to "ON".
LED lights green	1-WIRE module is switched on
7. “LEDs: “**ACT**”	indicates the device status, E1, E2 signal 12V relay status
8. “**LAN 10/100**”	Ethernet 10/100 Base-T-Port
9. “**USB**”	to connect a USB camera or reset the device
10. “**RESTART**”	restarts the device
11. LED: “**CAN**”	displays CAN bus status
“**CAN**” flashes slowly	No connection
“**CAN**” flashes fast	Configuration in progress
“**CAN**” lights up permanently	connected to CAN device
12. “**A1..A8**”	8x RJ12 analogue & digital sensor inputs with auto-sensing
13. “LEDs: **RELAYS 1, 2**”	indicates relay status
14. “**DC 12V**”	Additional voltage output
15. “**RELAYS 1, 2**”	Relay outputs
16. “**DRY CONTACTS 5...12**”	potential-free inputs
17. “**DRY CONTACTS 1...4**”	potential-free inputs
18. “**POWER INPUT**”	Power supply 100-240V 50/60Hz IEC C14
19. “**FUSE**”	2A 5x20mm fine wire fuse
20. ⏚	external earthing M4 internal thread
21. “**DIP-SWITCH**”	“Normal” ↑ Off = normal status / “Recovery” ↓ On = factory setting
22. “**THERMOSENSOR**”	Internal temperature sensor ± 1.0°C
23. “**SIM**”	SIM card slot with ejector for GSM modem (OPTIONAL)
24. “**OUTPUTS 12V 0.25A**”	2x 12VDC max 0.25A Alarm outputs

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1.3. Quick Start Guide

The Quick Start Guide describes the initial installation of the iQdata monitoring units RMS 222, RMS 442 and RMS 842+. According to the configuration described in this manual, you can access the system via web browsers such as Firefox, Chrome or Safari and use the possibilities of environment monitoring through additional settings.

The iQdata web interface is based on HTML5. The SVG 1.1 vector format is used for symbols.

Make sure that you always use the latest available browser version.

Vielen Dank

dass Sie sich für das Monitoring System „iQdata RMS“ von SCHÄFER IT-Systems entschieden haben.

Sollten Sie weitere Fragen haben, wenden Sie sich bitte an SCHÄFER IT-Systems.

Bitte geben Sie unseren Mitarbeitern die folgenden Informationen:

1. Genaue Informationen inklusive Informationen über Ihre Systemumgebung
2. Produktname und Seriennummer des Gerätes
3. Installierte Firmwareversion des iQdata RMS

Verbindungsaufbau mit dem Gerät über IP Adresse
Alle SCHÄFER IT-Systems RMS Systeme verfügen über ein integriertes Webinterface. Um eine Verbindung aufzubauen benötigen Sie einen aktuellen Browser.

Geben Sie die IP Adresse des iQdata RMS in der Adresszeile Ihres Browsers ein und bestätigen Sie mit „Enter“.

Alle SCHÄFER IT-Systems RMS Systeme der iQdata Reihe nutzen HTML5. Make sure you have always installed the latest version of the browser.
Bitte verwenden Sie ausschließlich **Chrome, Firefox** oder **Safari** als Browser, um die Geräte zu konfigurieren.

Um auf das RMS zugreifen zu können muss Ihr PC im gleichen Netzwerk sich befinden.
Um dies sicher zu stellen, setzen Sie bitte auf Ihrem PC die Netzmaske auf 255.255.255.0 und die IP Adresse auf 192.168.0.xxx.

Thank you

for choosing the monitoring System “iQdata RMS” from SCHÄFER IT-Systems.

Should you have any further questions, please contact SCHÄFER IT-Systems.

Please provide our employees with the following information:

1. Detailed information including information about your system environment
2. Product name and serial numbers of the device
3. Installed Firmware version of the iQdata RMS

Connection with the device via IP address
All SCHÄFER IT-Systems RMS systems have an integrated web interface. To establish a connection you need a current browser.

Enter the IP address of the iQdata RMS in the address line of your browser and confirm with "Enter"

All SCHÄFER IT Systems RMS systems in the iQdata series use HTML5. Make sure you have always installed the latest version of the browser.
Please use only **Chrome, Firefox** or **Safari** as the browser to configure the devices.

To access the RMS, your PC must be on the same network.
To ensure this, please set the net mask to 255.255.255.0 and the IP address to 192.168.0.xxx on your PC.

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Delivery condition

DHCP:	Off
Host name:	Schäfer RMS
IP address	192.168.0.193
Netmask:	255.255.255.0
Broadcast:	192.168.0.1
Gateway:	192.168.0.255
Primary DNS:	192.168.0.1
User:	guest
Password:	guest

1.4. Sensors, CAN extensions and accessories

The following sensors and extensions are available for the device.

Sensor	Description	Article number
	iQdata RMS temp. probe	7808200
	iQdata RMS humidity probe	7808210
	iQdata RMS door probe	7808220
	iQdata RMS leak probe	7808230
	iQdata RMS leak cable probe	7808240

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	iQdata RMS dry output	7808120
	iQdata RMS vibration probe	7808260
	iQdata RMS IR probe	7808270
	iQdata RMS AC monitor probe	7808280
	iQdata RMS 4-20mA probe	7808620
	iQdata RMS 0-75VDC probe	7808630
	iQdata RMS smoke probe	7808250

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CAN extension	Description	Article number
	iQdata RMS smoke – hum. – temp. probe	7808400
	iQdata RMS pir. – vibr. – temp. probe	7808410
	iQdata RMS humi. & temp. probe	7808420
	iQdata RMS extension unit	7808100
	iQdata RMS 64DI unit	7808110

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Accessories	Description	Article number
	iQdata RMS leak cable 50 (50m)	7808246
	iQdata RMS leak cable 25 (25m)	7808247
	iQdata RMS leak cable 10 (10m)	7808248
	iQdata RMS alarm beacon	7808610
	iQdata RMS GSM Modem	7808640
	iQdata RMS LTE Modem	7808650
	iQdata RMS mounting bracket	7808600

2. Technical data

✓ Available ❍ Not available ● Extendable

Dimensions / weight / Installation	RMS842+	RMS 442	RMS 222
Dimensions: (D x W x H) in mm	440x44x80	180x35x80	95x35x80
Weight:	1.5kg	0.7kg	0.4kg
Installation:	19”	Desktop	Desktop
Ambient conditions	**RMS842+**	**RMS 442**	**RMS 222**
Temperature range (operation): 0 – 60°C	✓	✓	✓
Temperature range (storage): -25 – 85°C	✓	✓	✓
Relative humidity (operating): 0-90%, non-condensing	✓	✓	✓
Relative humidity (storage): 0-90%, non-condensing	✓	✓	✓
I/O ports	**RMS842+**	**RMS 442**	**RMS 222**
Ethernet: 100Mbit	✓	✓	✓
Mini USB AB: USB 2.0 HS	✓	✓	✓

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Analogue port: 6P4C for connecting analogue sensors	8	4	2
CAN bus: 2x 6P6C for connecting CAN sensors	✓	✓	❍
Relay outputs: Bi-stable relay 240V 10A	3	❍	❍
Alarm outputs: 12V	2	2	2
Power supply	**RMS842+**	**RMS 442**	**RMS842+**
Voltage: input	90-230V AC	12V DC	12V DC
Fuse Fine-wire fuse at connection	1A	❍	❍
Max. connected load	10W	10W	6W
Max. power consumption at relay or alarm contact	10A	250mA	250mA
Backup battery connection	✓	❍	❍
Webserver / logs	**RMS842+**	**RMS 442**	**RMS 222**
Web server: Access via internet browser	✓	✓	✓
LAN: Ethernet 10/100 Mbit	✓	✓	✓
Network protocols: DHCP, HTTP, HTTPS, SNMP, SSL, FTP, Syslog	✓	✓	✓
Operating system Linux	v.3.10	v.3.10	v.3.10
RaM:	64Mb	64Mb	64Mb
CPU:	300mHz	300mHz	300mHz
Notification: FTP, Syslog, SMTP, SNMP, SMS (optional)	✓	✓	✓
Pings: Integrated ping function	✓	✓	✓
LEDs: ACT, CN1, CN2, ERR	5	5	4
Clock: Integrated clock with time synchronization	✓	✓	✓
Watchdog: Integrated watchdog timer	✓	✓	✓
External storage	**RMS842+**	**RMS 442**	**RMS 222**
MiniSD card:	✓	✓	❍
Expansions	**RMS842+**	**RMS 442**	**RMS 222**
Extension possibility	“CAN”	“CAN”	“CAN”
Internal Modem	3G/4G	GSM	USB:

3. Installation

The monitoring units can be mounted in the front or rear of a 19" rack and require an RU. The RMS 842+ is equipped with mounting brackets for 19" as standard. The smaller RMS 442 and 222 units can optionally be equipped with 19" mounting brackets such as the 7808600 iQdata RMS mounting bracket on page 12. Each RMS can alternatively be used as a desktop device with the self-adhesive rubber feet supplied with each unit.

The following conditions must be observed before installation:

Do not connect the device until you have checked the earthing of the respective circuit.

Do not connect self-made sensors and devices with unknown functions to the device!

Install the device only in places where the specified ambient conditions are met. The device temperature also depends on the mounting position. Please observe the values of the integrated temperature sensor. Sufficient air circulation must be ensured for optimum functionality.

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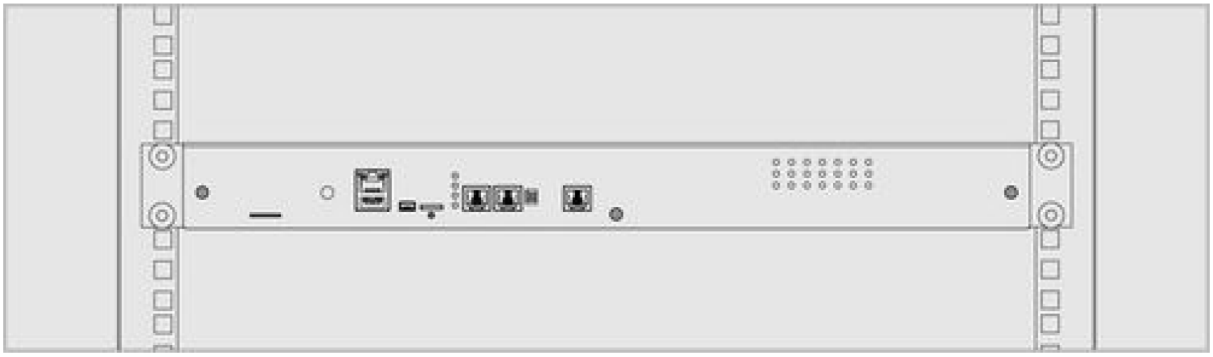
3.1. Rack mounting

Select a suitable installation location for the device in the rack. One height unit is required. Place it in the desired position and tighten the screws on the spacer nuts.

To prevent damage please tighten all screws evenly!



When installing the unit in a 19" rack, ensure that no uneven mechanical stress occurs to prevent damage to the unit

Under no circumstances should the unit be used as a storage area.

3.2. Connection of power supply and network

Before commissioning, observe the specified properties for the power supply!

Do not connect the devices to unearthed sockets. Make sure that the connection has a protective contact.

1. The RMS 842+ is connected to the corresponding AC input using the supplied plug cable.
   The RMS 442 and 222 are connected and supplied with voltage using the power supply unit included in the scope of delivery.

2. The monitoring units have an Ethernet port through which you can connect to the network.

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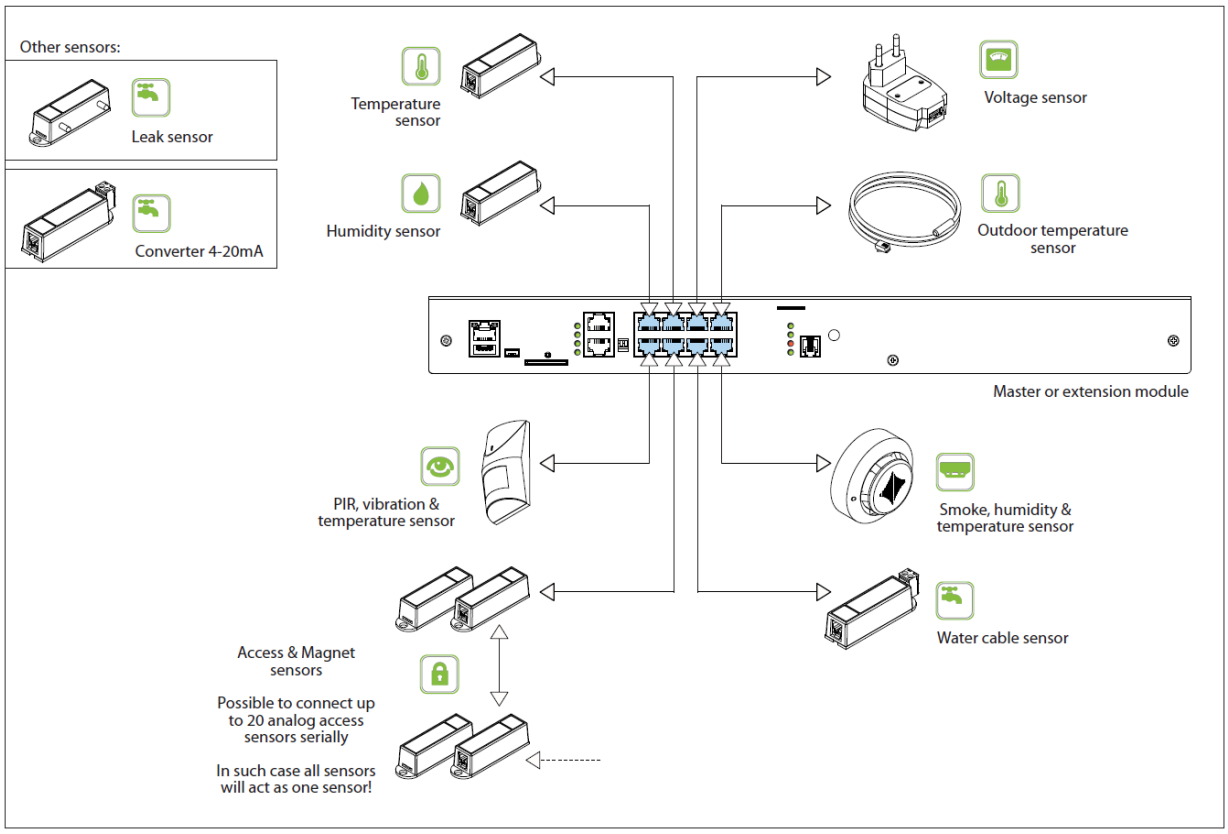
3.3. Analogue sensor connection

Connect analogue sensors to any analogue connection "A1 ..A8" or "sensor" using the supplied RJ-11 (6P4C) cable. The sensor type and connection on the device are determined automatically. The sensor type and connection on the device are determined automatically.



The following sensors are connected to the analogue port of the RMS:

	Analogue sensor	Article number	Cascadable:
1	iQdata RMS temp. probe	7808200	✓
2	iQdata RMS humidity probe	7808210	✓
3	iQdata RMS door probe	7808220	
4	iQdata RMS leak probe	7808230	✓
6	iQdata RMS leak cable probe	7808240	✓
7	iQdata RMS vibration probe	7808260	
8	iQdata RMS IR probe	7808270	✓
9	iQdata RMS AC monitor probe	7808280	✓
10	iQdata RMS 4-20mA probe	7808620	
11	iQdata RMS 0-75VDC probe	7808630	
12	iQdata RMS smoke probe	7808250	

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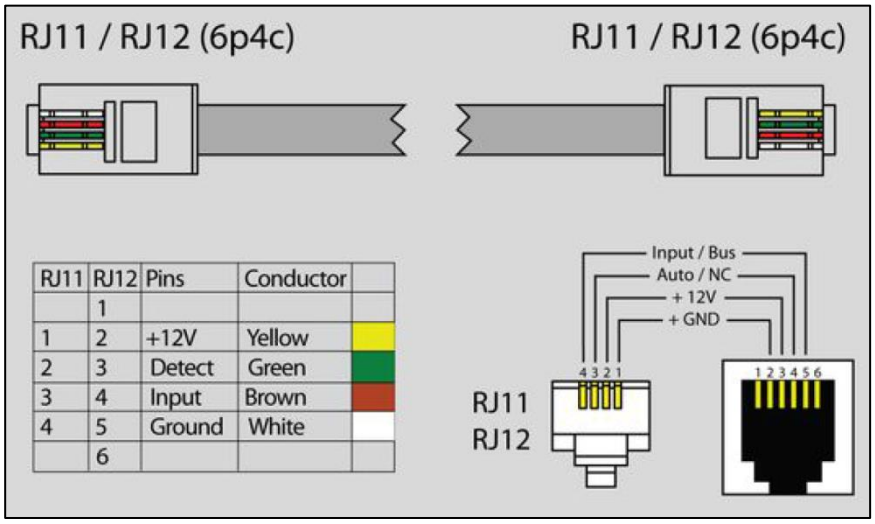
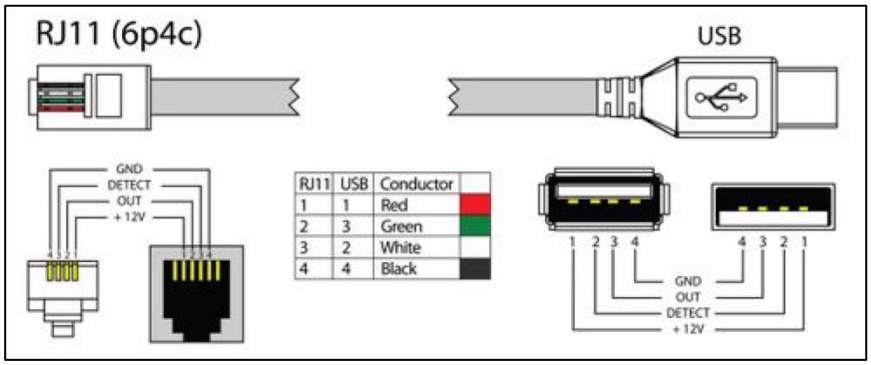
3.3.1. Pin assignment

Analogue sensors in general



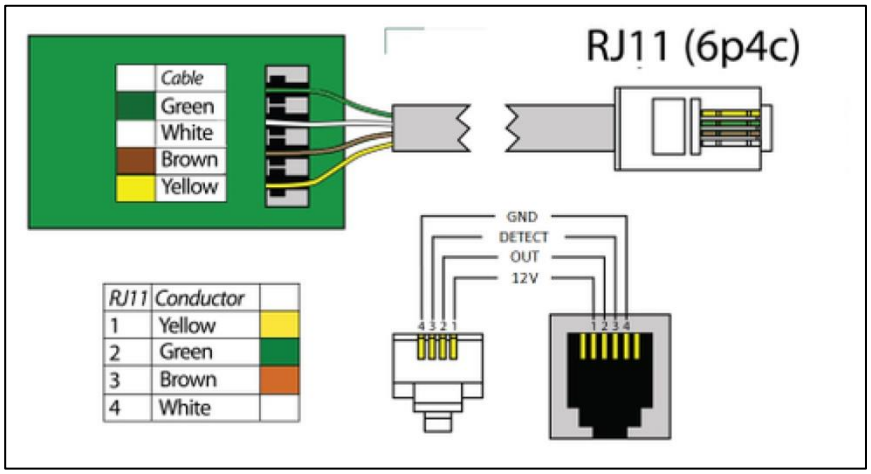
RJ11	RJ12	Pins	Conductor	
	1			
1	2	+12V	Yellow	
2	3	Detect	Green	
3	4	Input	Brown	
4	5	Ground	White	
	6			

3.3.2. AC monitor probe



RJ11	USB	Conductor	
1	1	Red	
2	3	Green	
3	2	White	
4	4	Black	

3.3.3. IR probe



RJ11	Conductor	
1	Yellow	
2	Green	
3	Brown	
4	White	

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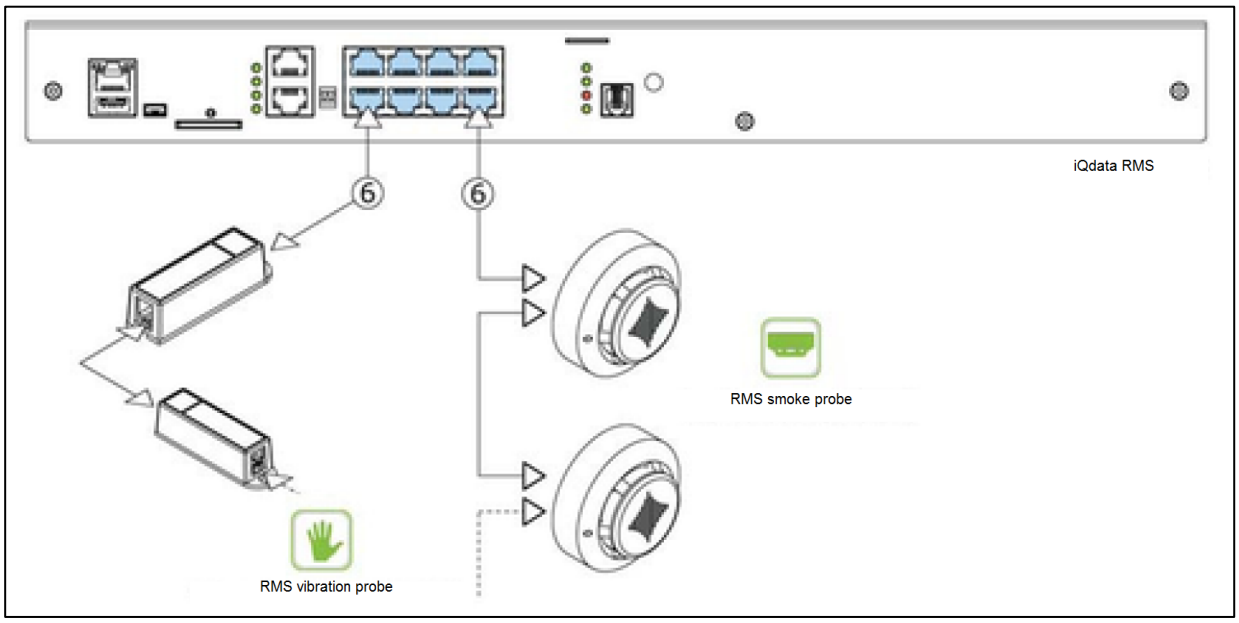
3.4.2. Cascading of analogue sensors

Door probe, vibration probe and smoke probe are the only analogue sensors that enable a non-addressable chain connection. All sensors in cascading are recorded by the system as one sensor. A chain can consist of up to 10 sensors. A chain can consist of up to 10 sensors.

An example of such a connection:



4. Sensors

4.1. GSM Modem

GSM modem unit with corresponding antenna for retrofitting in iQdata RMS systems
This optional extension enables the alarm and integration of logical connections via SMS notifications.

Article number	
7808640	iQdata RMS GSM Modem

Dimensions / weight	
Width (W):	60.00 mm
Depth (D):	50.00 mm
Height (H):	15.00 mm
Weight:	50 g

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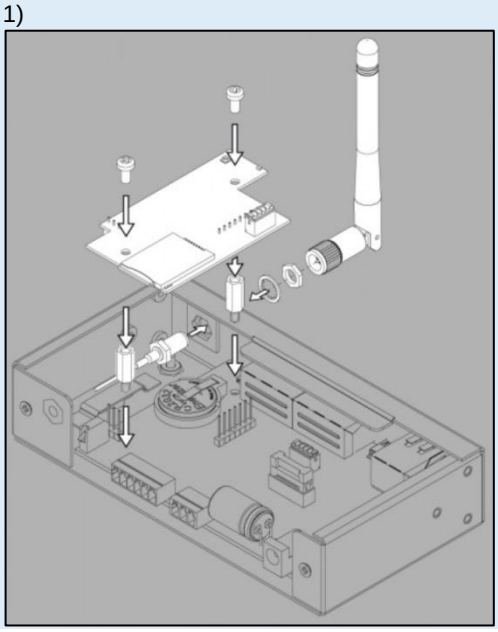
Inputs/ outputs	
Output:	SMA GSM

Status indicator	
LED:	Red=error / Green=ok

4.1.1. Installation

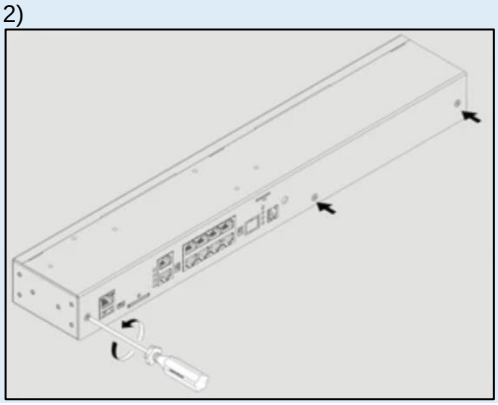
To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

1)



System overview

2)



Carefully loosen three screws holding the cover and open it.

Depending on the monitoring system, components such as 1-wire, antenna, GSM or potential-free contacts or others can be installed inside. Carefully open the box by unplugging all cables leading from the top cover to the bottom cover if necessary.

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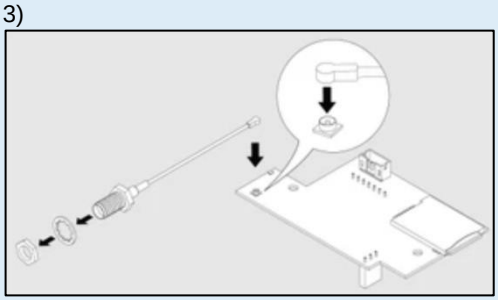
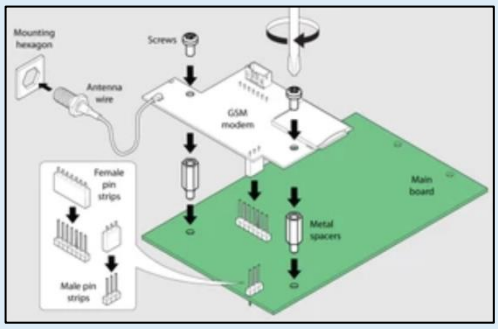
3)



Connect the antenna cable to the modem PCB. Carefully connect the U-FL antenna cable to the U-FL input and gently push it onto the contact.

Unscrew the nut and washer from the antenna cable.

4



The motherboard should already be equipped with two metal spacers. If this is not the case, please request this from the manufacturer.

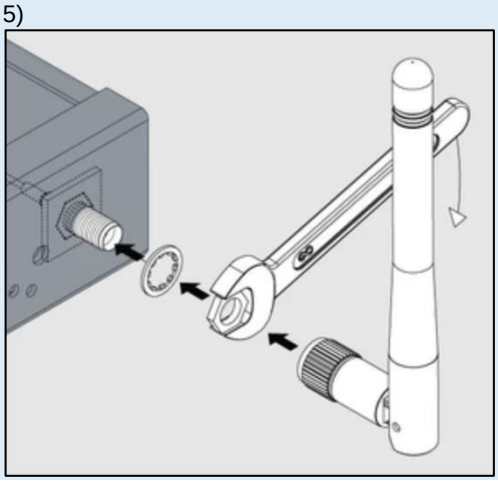
Place the GSM modem over the metal spacers and pin strips on the motherboard. Push the GSM card carefully down so that:

Pin strip on the motherboard (3-pin) is plugged into the socket strip on the GSM PCB (3-pin).
Pin strip on the motherboard (7-pin) is plugged into the socket strip on the GSM PCB (7-pin).
Two holes on the GSM PCB are located directly above the metal spacers and the GSM board touches the metal spacers.

Screw two M3 screws supplied with the modem through the holes in the metal spacers as shown in the figure.

Insert the antenna wire into the hexagonal mounting hole on the front or rear of the device (e.g. RMS 442 has only one front hole SMA).

5)



The antenna wire should now protrude forwards or backwards (e.g. RMS 442 has a front hole), as shown in the figure.

Place the washer on the end of the antenna wire thread.

Screw the nut onto the antenna wire thread manually until it stops.

Tighten the nut with a spanner.

Do not overtighten the nut on the thread!

Screw the antenna at the end of the antenna wire thread.

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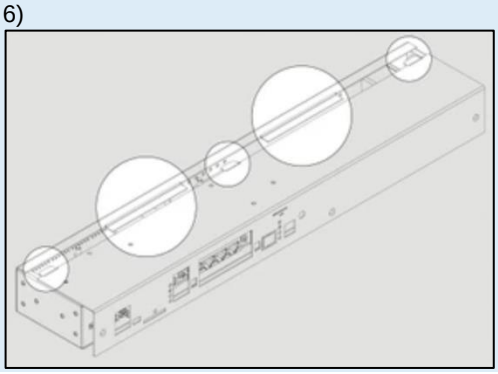
6) 	Carefully insert the top cover so that all sides of the cover fit in and all connections match the panel cut-outs.

4.2. Vibration probe

Vibration sensor for detecting vibrations in critical areas. This sensor can used to monitor network cabinets for vibrations that can damage hard drives, or to detect whether a network cabinet has been tampered with.

The sensor is connected to a free sensor port on the RMS and then automatically detected by the RMS system.

Article number	
7808260	iQdata RMS vibration probe

Dimensions / weight	
Width (W):	18 mm
Depth (D):	60 mm
Height (H):	18 mm
Weight:	50g

Connection:	
RJ11 Port	1x for connection to the RMS
Auto detection:	Yes
Cascadable:	Yes, up to 10 units (will be indicated in the system as sensors)
Extendable:	Up to 100m
Power consumption:	60mW

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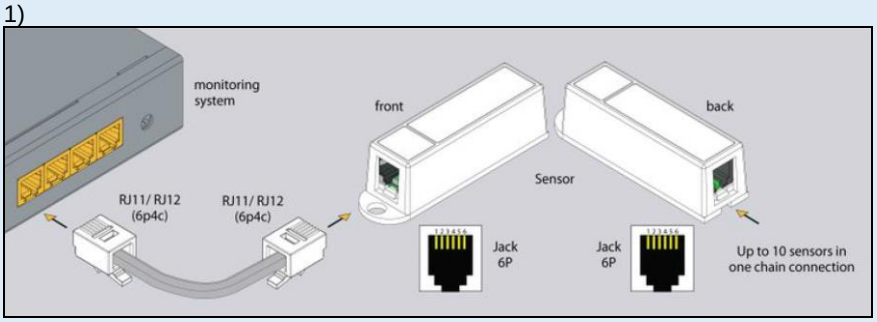
4.2.1 Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

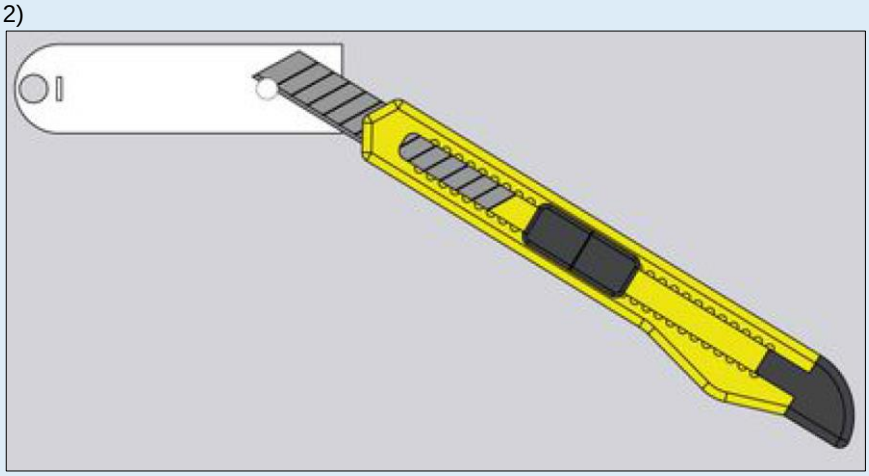
1)



System overview

Up to 10 sensors can be connected in series. These are displayed in the system as one sensor.

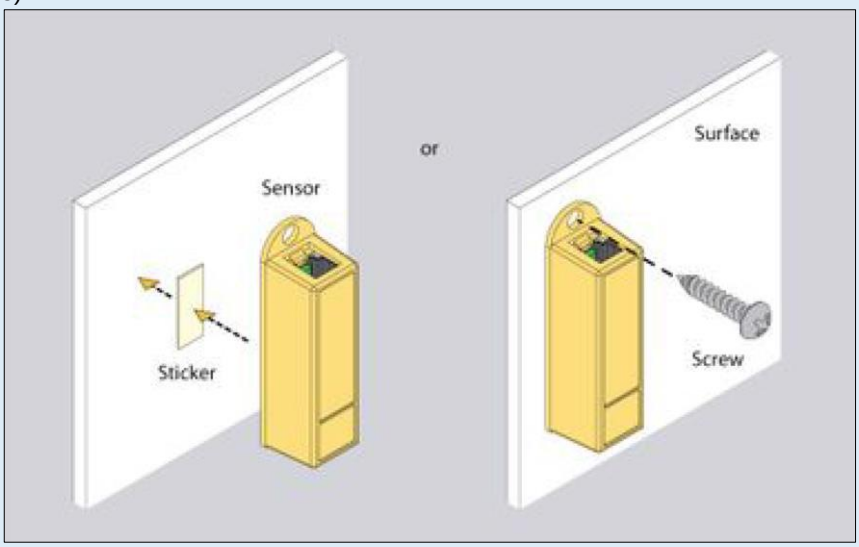
2)



Option 1:

Cut the round pin with a knife so that the bottom of the plastic case is flat.

3)



Option 2:

a) Stick the sensor with the sticker on the surface.

or

b) Secure the sensor to the surface with the screw.

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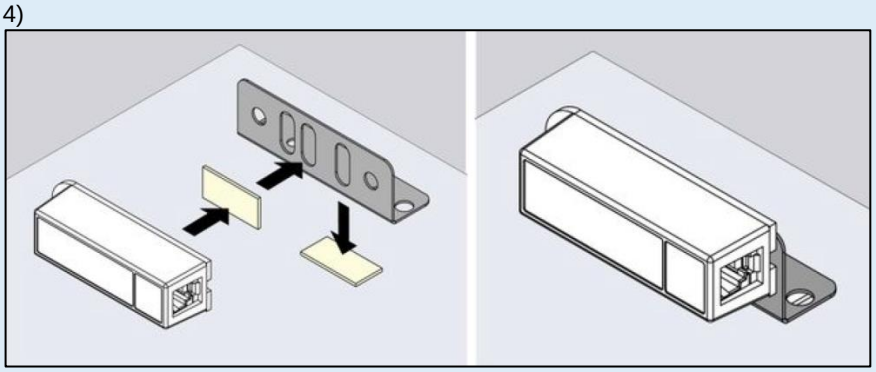
4)



Option 3:

Attach the sensor to the surface using a mounting bracket

4.3. Smoke probe

Smoke/fire detectors for indoor installation for monitoring critical areas such as server rooms or offices.

All detectors can be connected in series and thus a network of up to 10 detectors can be set up with a total length of max. 150 m in chain.

The sensor is detected automatically by the system.

If a fire is detected, the sensor must be reset manually in the WEB GUI.

4.3.1. Safety instructions

- Please observe the applicable regulations for installation in the country in which the smoke sensor is installed and operated, and the national regulations for accident prevention. Please also note internal company regulations, such as work, operating and safety regulations.
- Under no circumstances may the specified technical specifications and limit values be exceeded. This applies in particular to the specified ambient temperature range and the IP protection class.
- If a higher IP protection class is required for a special application, the smoke sensor must be installed in a suitable housing with the required IP protection class.

4.3.2. Location requirements

To ensure that the device functions properly, the conditions specified in the "Technical data" section for the installation location of the device must be observed.

4.3.3. Electromagnetic interference

Interfering electrical installations (high frequency) should be avoided.

Article number	
7808250	iQdata RMS smoke probe

Dimensions / weight	
Ø diameter:	100.00 mm
Height (H):	45.00 mm
Weight:	0.29 kg

Power supply	
Power supply:	via sensor cable

Connections	
Sensor connection:	2x RJ12 Ports
Max. distance:	150m from the RMS system
Cascading:	Up to 10 in a row (maximum 150m length of the message chain)

Status indicators	
LED indicator:	Error LED

Smoke detector spacing			
Ceiling height (m)	**Detection area of a detector**	**Recommended distance between detectors**	**Distance of a detector from the wall**
Up to 3.5m	Up to 85	9.0m	4.5m
From 3.5 to 6.0m	up to 70	8.5m	4.0m
From 6.0 to 10.0m	up to 65	8.0m	4.0m
From 10.0 to 12.0m	up to 55	7.5m	3.5m

4.3.4. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

It is essential to ensure that the smoke sensor is always installed with the sensor head down and that the slots are not covered. In all other positions, the smoke cannot be reliably detected.

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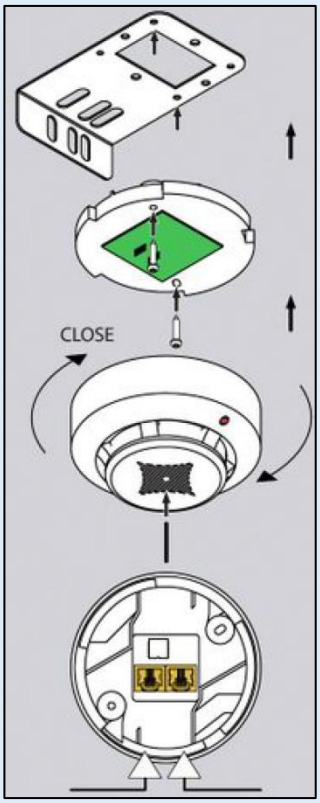
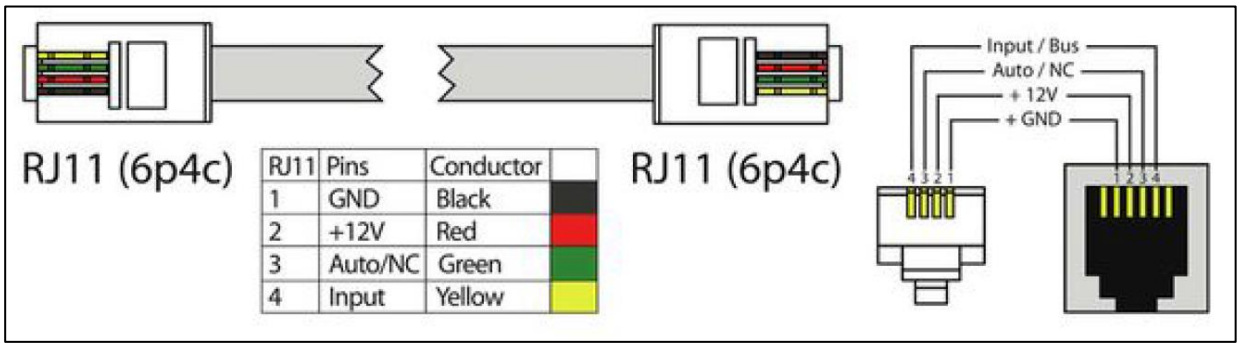
1)



The smoke sensor is installed using the supplied mounting plate.

- Remove the smoke sensor head from the base.
- Attach the smoke sensor base to the mounting plate using the M4 x 10 screws provided.
- Put the sensor head back on the base and secure it by turning it until it clicks into place.
- Attach the mounting plate to the housing frame using the 4.8 x 19 screws.
- Remove the red protective cap!

4.3.5. Connection diagram



RJ11	Pins	Conductor	
1	GND	Black	
2	+12V	Red	
3	Auto/NC	Green	
4	Input	Yellow	

4.3.6. Connect smoke sensor

Connect one end of the RJ11 / RJ12 cable to the monitoring unit and the other end to one of the two inputs of the smoke sensor.

It is possible to connect up to 10 sensors to an analogue port. To do this, connect the second RJ11 cable to a free input on an already connected device.

Smoke sensor and the other end to a next smoke sensor in a chain.

After the system has started and the smoke sensor has been detected, the LED on the smoke sensor flashes weakly once every second.

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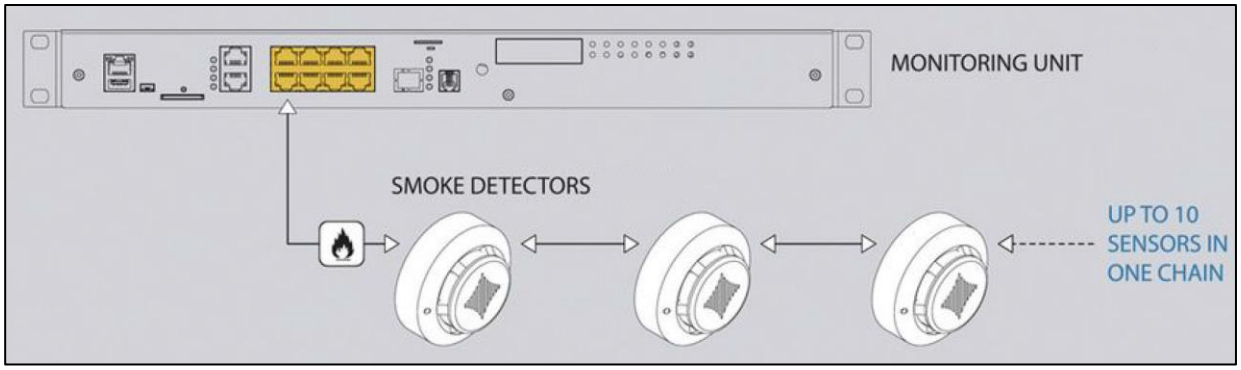

4.3.7. Testing the smoke sensors

While operating the system, take a needle or paper clip and insert it into the hole on the sensor cover.

Hold until the LED flashes. This means that the sensor is ready for operation.

To bring the sensor back to normal, either disconnect it from the system or select the tab Smoke sensors restart in the Web GUI of the RMS.

4.4. Point leak probe

Sensor for selective monitoring of water leakage in critical areas, such as raised floors.

Article number	
7808230	iQdata RMS leak probe

Dimensions / weight	
Width (W):	18 mm
Depth (D):	60 mm
Height (H):	18 mm
Weight:	60g

Connection:	
Connection cable:	1 m for RMS to RJ11 connection
Auto detection:	Yes
Cascadable:	No
Extendable:	up to 100m from the RMS

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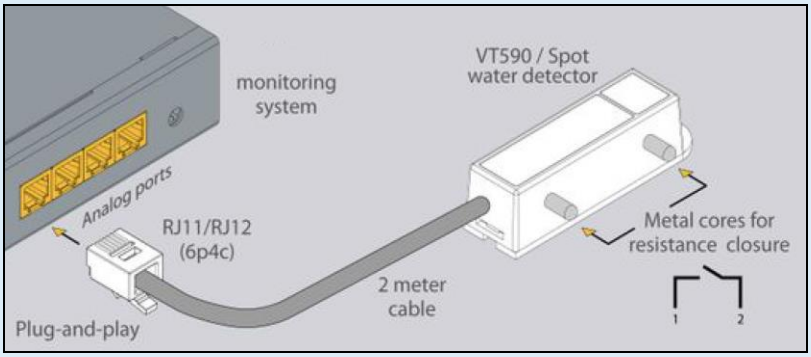
4.4.1. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

CAUTION! Metal fingers must always be mounted pointing downwards and be as close as possible to the monitored surface without actually touching

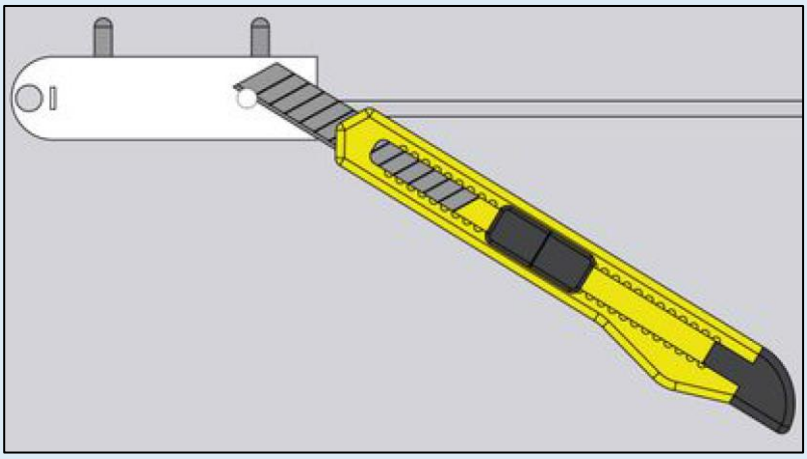
1)



System overview

The module is connected to a free sensor port on the RMS or a sensor extension unit and detected automatically by the system.

2)



Cut the round pin with a knife so that the bottom of the plastic case is flat.

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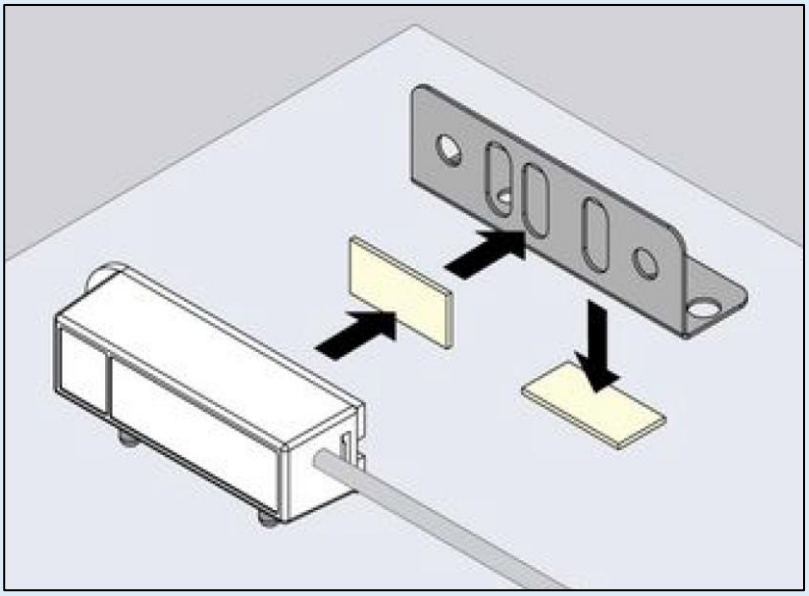
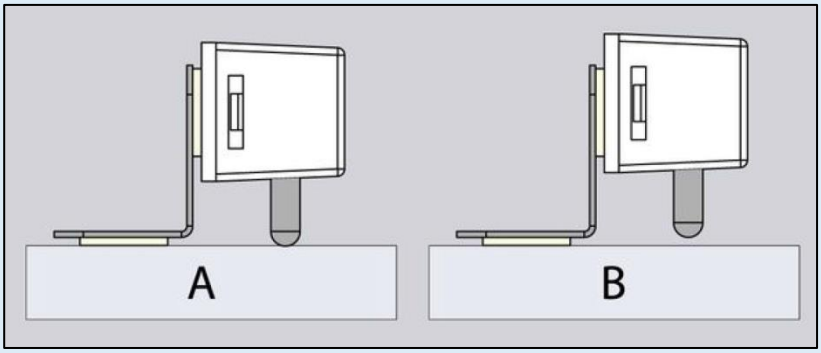
3)



Glue the mounting bracket to the bottom.

Glue the sensor to the mounting bracket by following the rule in the next paragraph.

4)



Depending on the surface on which the sensor is to be installed, follow either A or B.

A) If the surface is not conductive, mount the sensor as close to the surface as possible.
B) If the surface is conductive, then the circuit is bridged between left and right contact. Mount the sensor at a distance from the surface.

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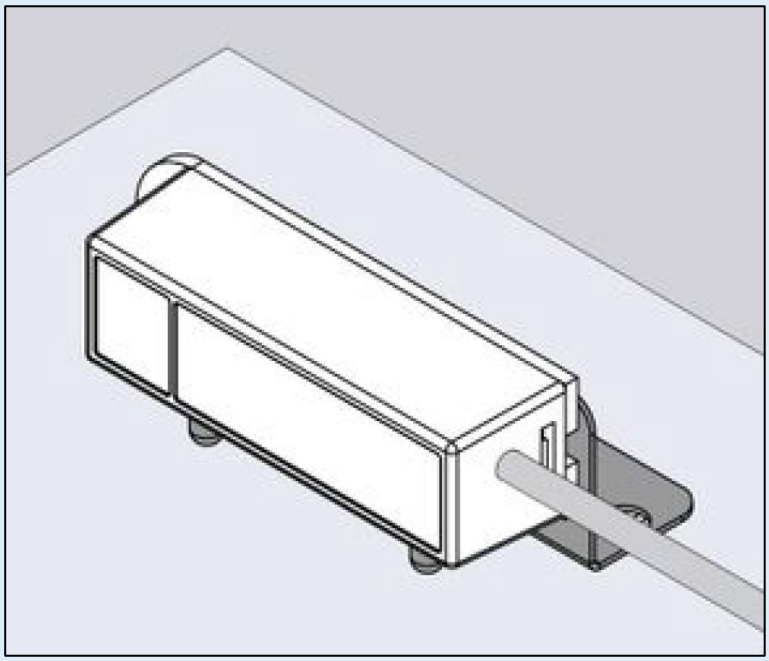
5)		The sensor is installed.

4.5 Leak cable probe

Sensor for monitoring water ingress across the area. The measurement is carried out via a 2-wire sensor cable, which is not included in the scope of delivery. The connection is established via a free sensor port and is detected automatically by the system.

For this sensor different lengths of 2-wire measuring cables are available.

Article number	
7808240	iQdata RMS leak cable probe

Dimensions / weight	
Width (W):	18.00 mm
Depth (D):	60.00 mm
Height (H):	18.00 mm
Weight:	75g

Inputs/ outputs	
RJ11 Port	1x for connection to the RMS

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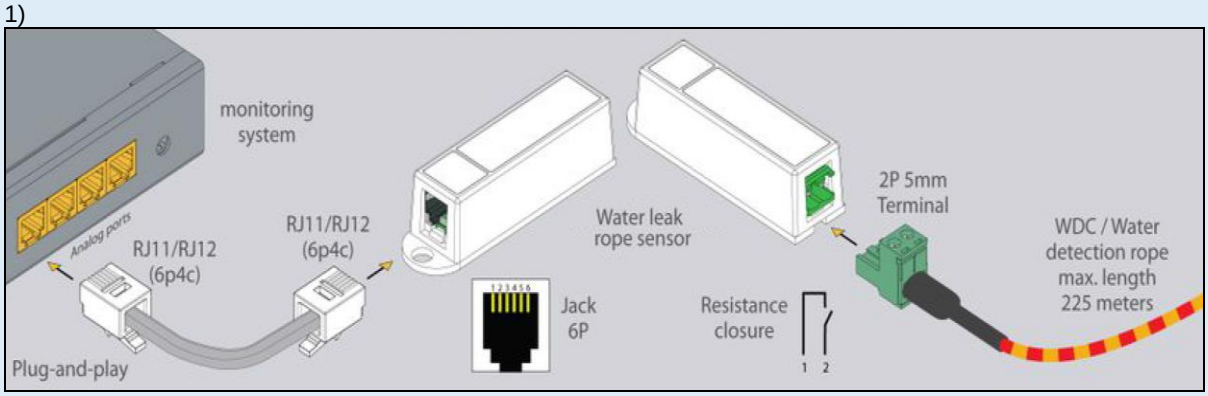
2-pole	1x for connection of a leak cable 50.25 or 10

4.5.1. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

1)



1. The module is connected to a free sensor port on the RMS or a sensor extension unit and detected automatically by the system.

2. Wrap the water leak cable around or under potential leaks to detect leaks.

5. CAN sensors and extensions

Connect CAN devices to any port CAN1 or CAN2 on the monitoring system using the corresponding cable supplied.

CAN sensors can also be connected to the port of another CAN sensor or another CAN unit that is connected to the CAN bus. The devices and their connection are determined via the web interface on the rack monitoring system.

You can connect up to a maximum of 8 CAN sensors and CAN devices to one CAN bus.

The dip switch "TR" should be switched to "ON" for the last sensor on each bus "CAN 1" and "CAN 2". See section "TR" below. See section “TR” further below.

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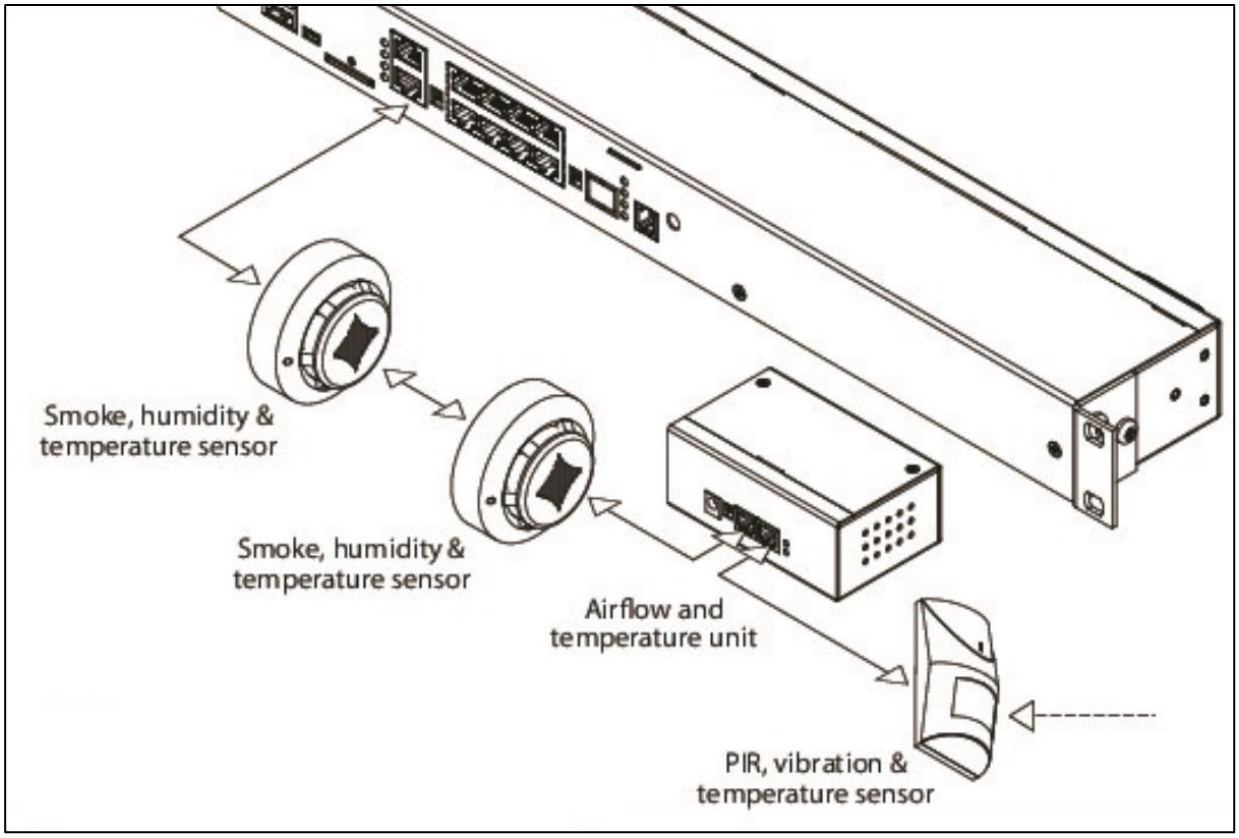

This procedure applies to the following sensors, which are supported by the device and connected to the CAN ports:

	Analogue sensor	Article number
1	iQdata RMS extension unit	7808100
2	iQdata RMS 64DI unit	7808110
3	iQdata RMS smoke- hum. - temp. probe	7808400
4	iQdata RMS pir – vibr. – temp. probe	7808410
6	iQdata RMS humi. & temp. probe	7808420

5.1. CAN connection

5.1.1. Cable and line length

The maximum length of the CAN line of the monitoring systems is 305 m.

It is recommended to use two or three pairs of UTP Cat3.5.6 cables with 24AWG copper wire.

It is also possible to use 4- or 6-wire TRONIC or UTP-CCA cables, however the maximum length of the CAN line is reduced.

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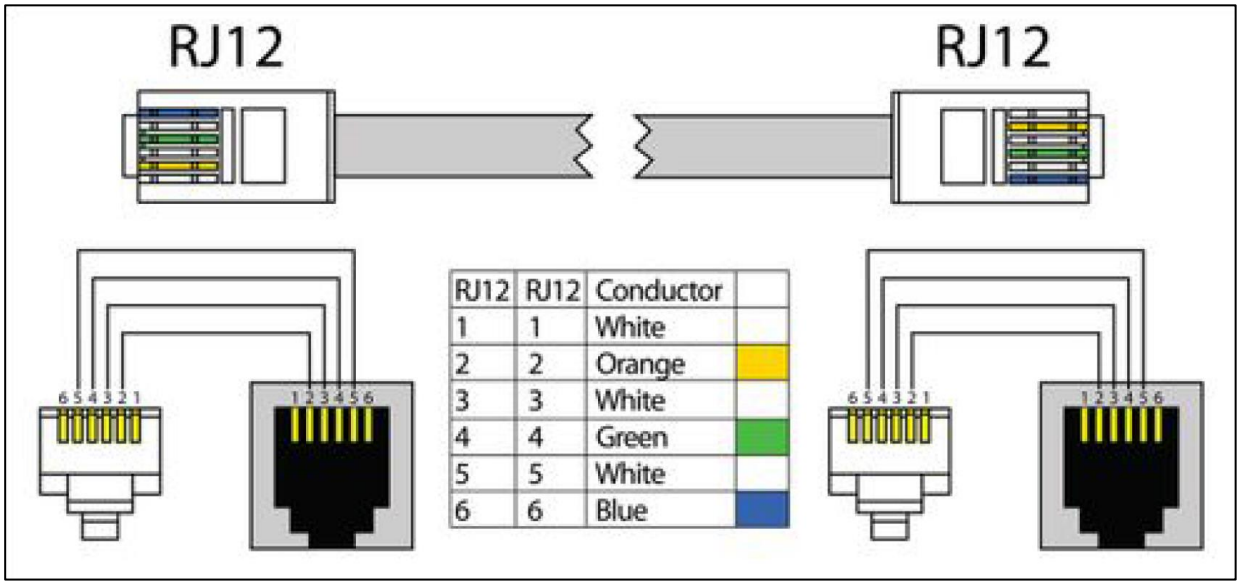
5.1.2 Pin assignment



RJ12	RJ12	Conductor	
1	1	White	
2	2	Orange	
3	3	White	
4	4	Green	
5	5	White	
6	6	Blue	

5.1.3. TR termination switch

The TR switch on the last sensor on a CAN chain must always be terminated ("ON").

On all other sensors in the CAN chain, the TR switch must be set to "OFF".

FR should always be set to "OFF".

The TR switch is always the DP switch that is closest to the CAN bus.

5.1.4. Add CAN modules

To connect the module to the CAN bus of the system, select the interface -> CAN configuration -> select tab CAN1 or CAN2 (select the connected physical CAN1 or CAN2 port on the master module).

Press the "Configure" button and wait. The system starts by querying the CAN bus, displaying the data strings and reporting the successful connection. The connection to the input CAN modules and sensors appears in the tab in the list.

Press the "Apply" button and then the "Restart" button.

Press the "Apply" button and then the "Restart" button.

Update or wait in the "System tree" column until new devices or new sensors appear. The green LED "CAN" lights up on the device.

If the poll is reset to "Refresh" after clicking the "Configure" button, the line is not connected or the terminators on the tyre are not aligned. Check and change the status of the TR terminators on the modules or check and change the connection cabling if necessary.

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5.1.5. LED indicator light

CAN sensors have LEDs that indicate the following states:

- Steady red light, green flickering - no communication with the master module
- Steady red light, green is off - there is a connection to the master unit, but this is not configured in the system.
- Red is off, green is on - function is OK
- All LEDs are off: no voltage or sensor is defective.

5.2. Extension unit

With this module, the number of analogue sensors per RMS is to be increased by 8 ports.

The module is connected to a free RMS CAN port or a CAN sensor and automatically recognised by the RMS system.

The maximum distance on the CAN bus must not exceed 305 metres.

Depending on the type, connected sensors can be between 50 and 100 m apart.

Article number	
7808100	iQdata RMS extension unit

Dimensions / weight	
Width (W):	110.00 mm
Depth (D):	68.00 mm
Height (H):	40.00 mm
Weight:	0.5 kg

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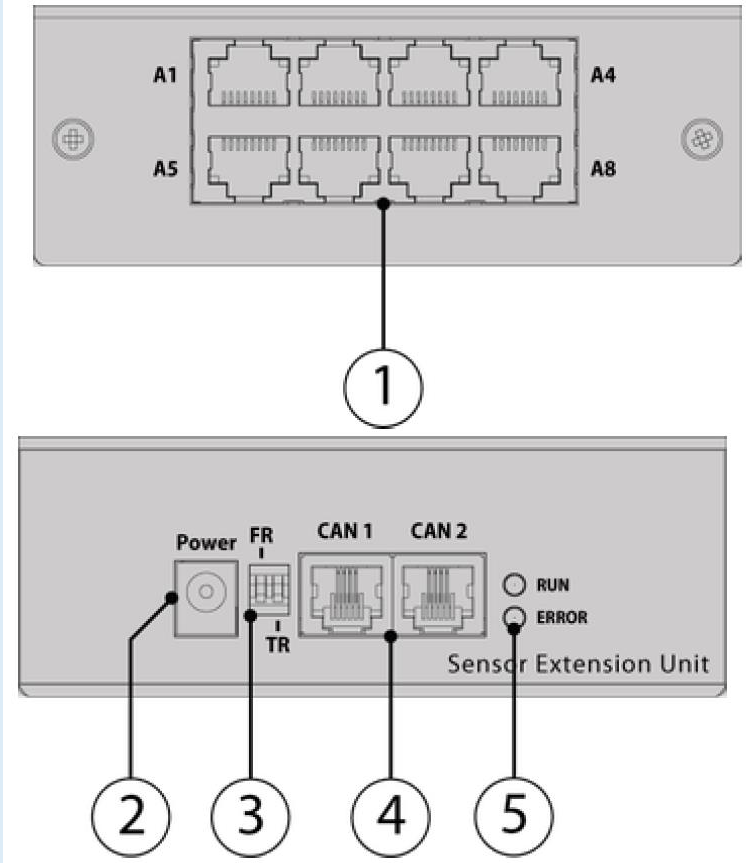
Connections extension unit



1.	**“A1..A8”**	8x RJ12 analogue & digital sensor inputs with auto-sensing
2.	**“POWER”**	for connecting an external power supply 12V
3.	**“TR”**	Termination switch at the end of a CAN chain
	“FR”	Memory switch for reprogramming the module
4.	**“CAN”**	"CAN" - digital connector RJ12 for connection to the master module, CAN sensors or CAN extensions a CAN bus, with auto-sensing.
5.	**LEDs: “RUN”**	shows the connection status of the device to the main module
6.	**LEDs: “ERR”**	"ERR" - indicates that the device has lost the connection to the main module

5.2.1. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

There are two mounting holes on the bottom of the device for mounting on a top hat rail.

There are 4 additional mounting holes on the side for mounting in 19 “with optional mounting accessories.

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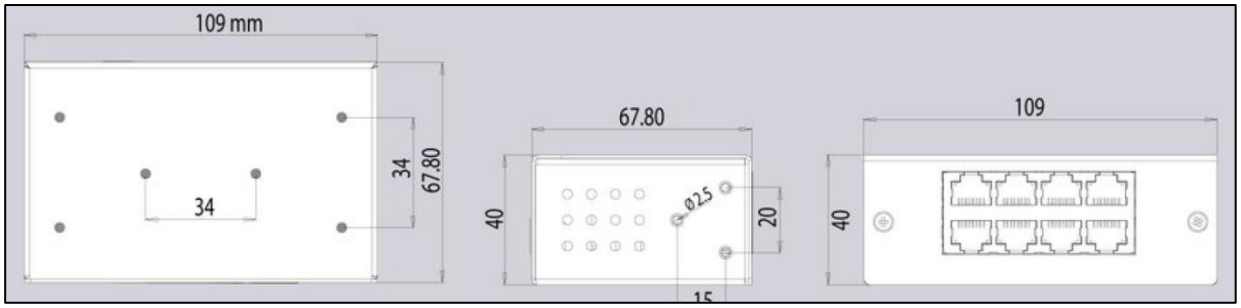

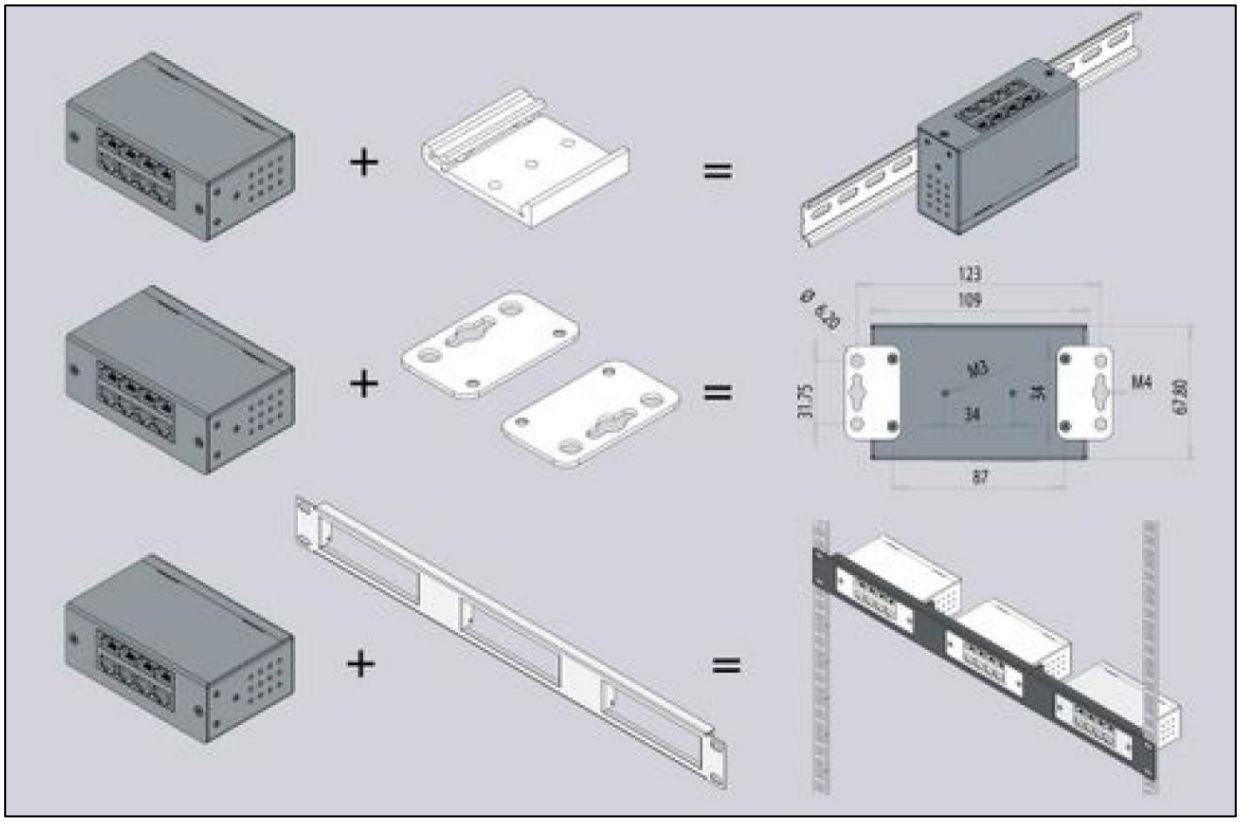

It is possible to use a 19-inch mounting bracket to mount three extension units x3 on one RU in the rack, this is optionally available.

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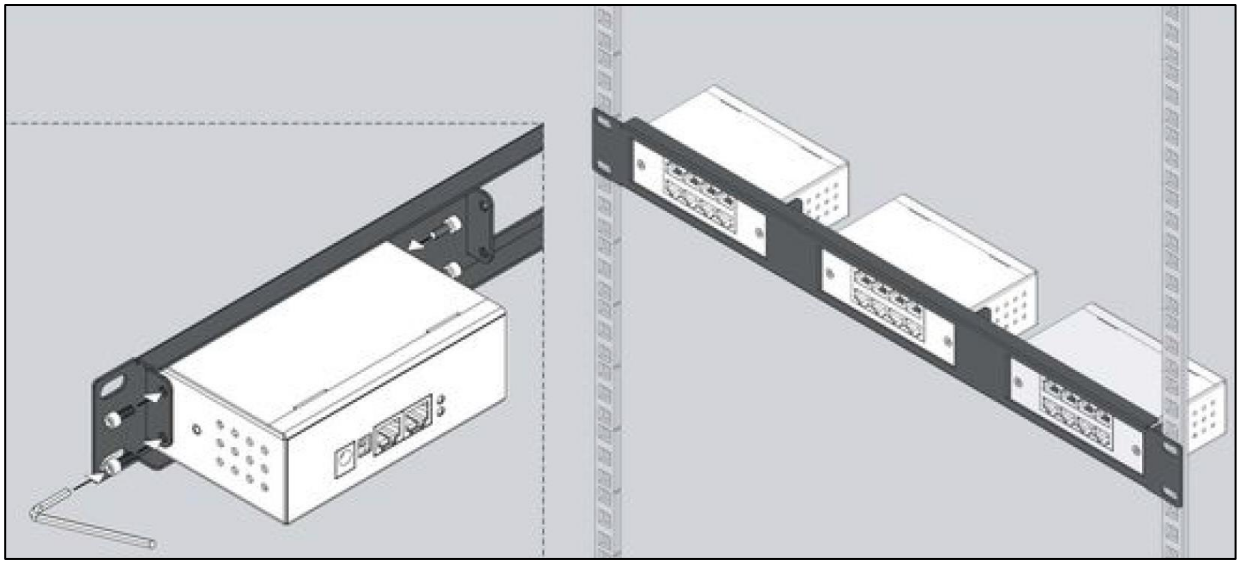

Connect the CAN input of the device with the RJ11 / RJ12 cable that is connected to the CAN input of the previous CAN device or monitoring system.

The red LED lights up. Adjust the TR bus terminations on the connected CAN devices. CAN bus terminations TR should only be in the ON state at the end of the CAN device port and in the OFF state for all intermediate devices (1,2).

A CAN bus cannot have more than 8 CAN units, sensors and / or other CAN devices.

Usually an external 12V 0.5A power supply is connected to the socket marked PWR.

If only one extension unit is connected to the monitoring, it can be supplied with voltage at a distance of up to 10 m via the CAN bus.

In all other cases, the use of an external power supply is necessary.

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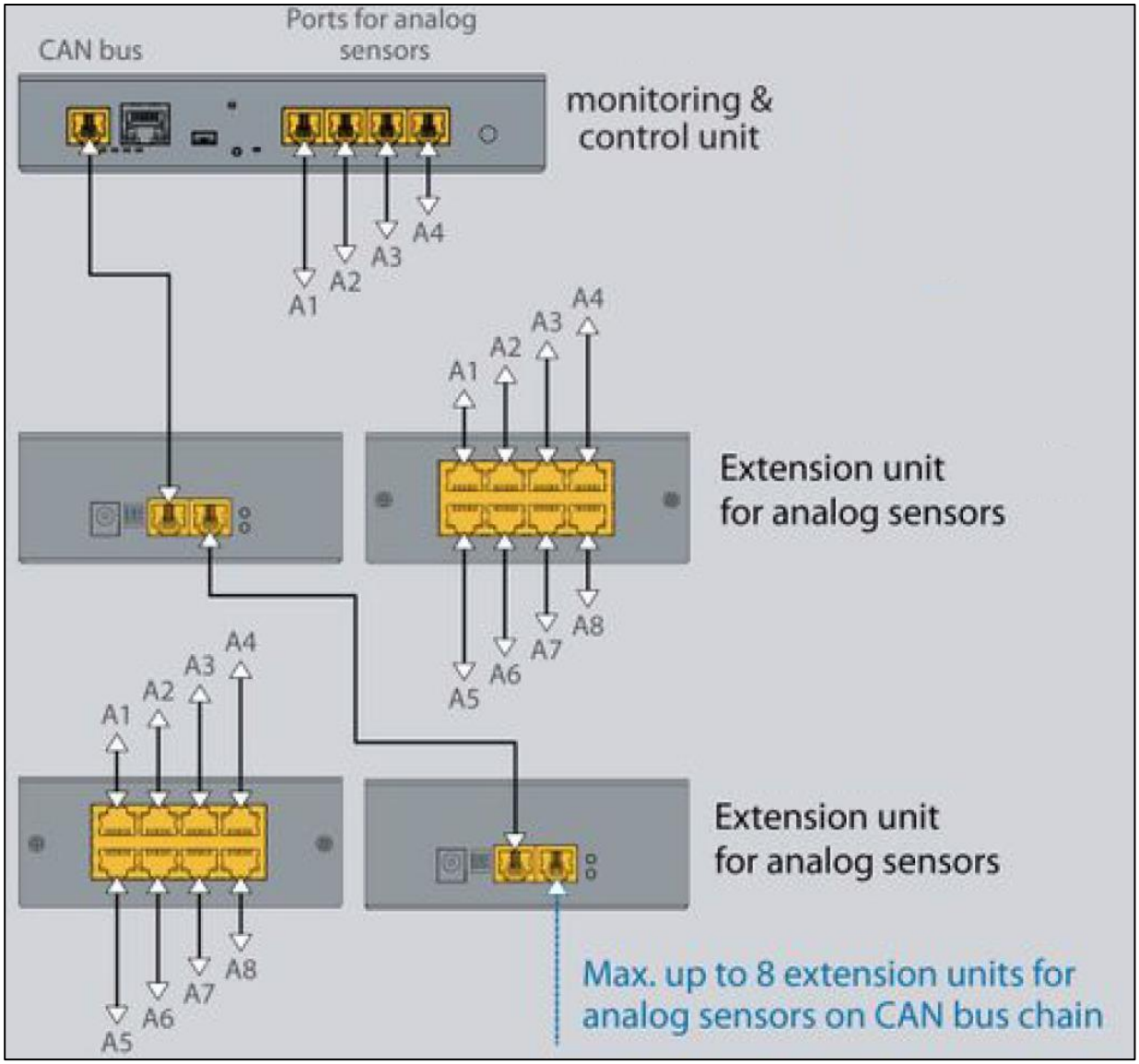

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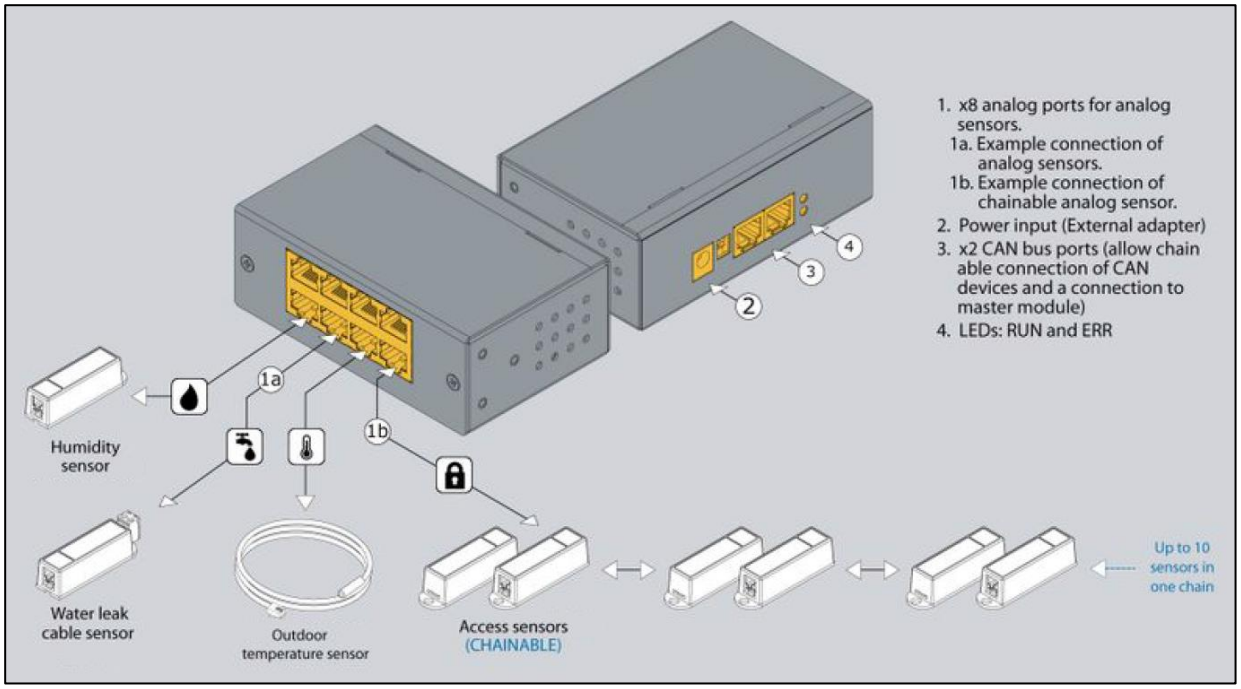
5.2.2. Configuration

To connect the CAN device to the system, follow the steps in point 5.1.4.

Analogue sensors are connected to the inputs A1..A8 of the module, while the definition and detection of the sensors takes place automatically.

5.2.3. Connection example



5.3. 64DI unit

Can extension unit with 64 digital inputs.

This enables monitoring of 64 digital statuses via network.

Each input can be explicitly equipped with its own alarm or an automatic action can be stored, such as switching a 12 V DC alarm output.

The CAN bus distance must not exceed 305m.

Article number	
7808110	iQdata RMS dry output

Dimensions / weight	
Width (W):	215.00 mm (without 19” kit)
Depth (D):	40.00 mm
Height (H):	40.00 mm

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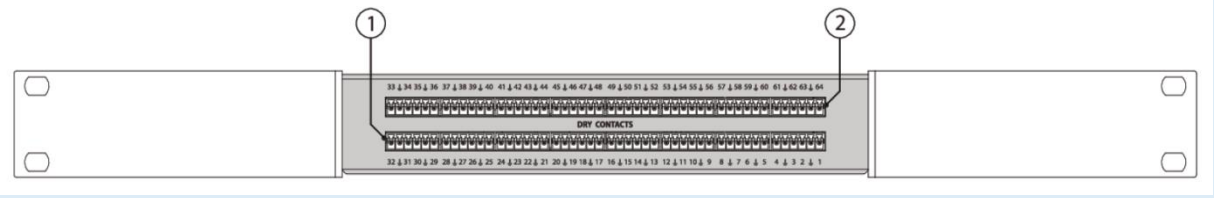
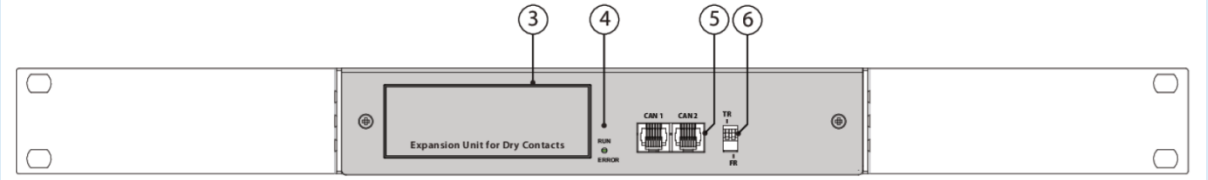
Weight:	0.6kg

Connections 64DI unit





1.	**“1…32”**	32x potential-free inputs
2.	**“33. 64”**	32x potential-free inputs
3.	**"Label"**	Product description
4.	**LEDs: “RUN”**	shows the connection status of the device to the main module
	LEDs: “ERR”	"ERR" - indicates that the device has lost the connection to the main module
5.	**“CAN”**	"CAN" - digital connector RJ12 for connection to the master module, CAN sensors or CAN extensions a CAN bus, with auto-sensing.
6.	**“TR”**	Termination switch at the end of a CAN chain
	“FR”	Memory switch for reprogramming the module

5.4. smoke - hum. - temp. probe

Combination sensor for recording temperature, humidity as well as smoke. Sensor unit for indoor installation for monitoring critical areas such as server rooms or offices.

All detectors can be connected in series and thus a network of up to 10 detectors can be set up. The sensor is detected automatically by the system.
If a fire is detected, the sensor must be reset manually in the WEB GUI.

If a fire is detected, the sensor must be reset manually in the WEB GUI.

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5.4.1. Safety instructions

- Please observe the applicable regulations for installation in the country in which the smoke sensor is installed and operated, and the national regulations for accident prevention. Please also note internal company regulations, such as work, operating and safety regulations.
- Under no circumstances may the specified technical specifications and limit values be exceeded. This applies in particular to the specified ambient temperature range and the IP protection class.
- If a higher IP protection class is required for a special application, the smoke sensor must be installed in a suitable housing with the required IP protection class.

5.4.2. Location requirements

To ensure that the device functions properly, the conditions specified in the "Technical data" section for the installation location of the device must be observed.

5.4.3. Electromagnetic interference

Interfering electrical installations (high frequency) should be avoided.

Article number	
7808400	iQdata RMS smoke – hum. – temp. probe

Dimensions / weight	
Ø diameter:	100.00 mm
Height (H):	45.00 mm
Weight:	0.29 kg

Power supply	
Power supply:	via sensor cable

Connections	
Sensor connection:	2x RJ12 Ports
Max. distance:	150m from the RMS system
Cascading:	Up to 10 in a row (maximum 150m length of the message chain)

Status indicators	
LED indicator:	Error LED

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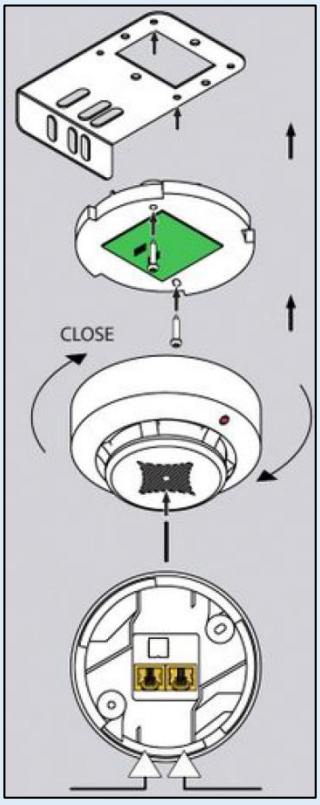
Smoke detector spacing			
Ceiling height (m)	**Detection area of a detector**	**Recommended distance between detectors**	**Distance of a detector from the wall**
Up to 3.5m	Up to 85	9.0m	4.5m
From 3.5 to 6.0m	up to 70	8.5m	4.0m
From 6.0 to 10.0m	up to 65	8.0m	4.0m
From 10.0 to 12.0m	up to 55	7.5m	3.5m

5.4.4. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

It is essential to ensure that the smoke sensor is always installed with the sensor head down and that the slots are not covered. In all other positions, the smoke cannot be reliably detected.

1)



The smoke sensor is installed using the supplied mounting plate.

- Remove the smoke sensor head from the base.
- Attach the smoke sensor base to the mounting plate using the M4 x 10 screws provided.
- Put the sensor head back on the base and secure it by turning it until it clicks into place.
- Attach the mounting plate to the housing frame using the 4.8 x 19 screws.
- Remove the red protective cap!

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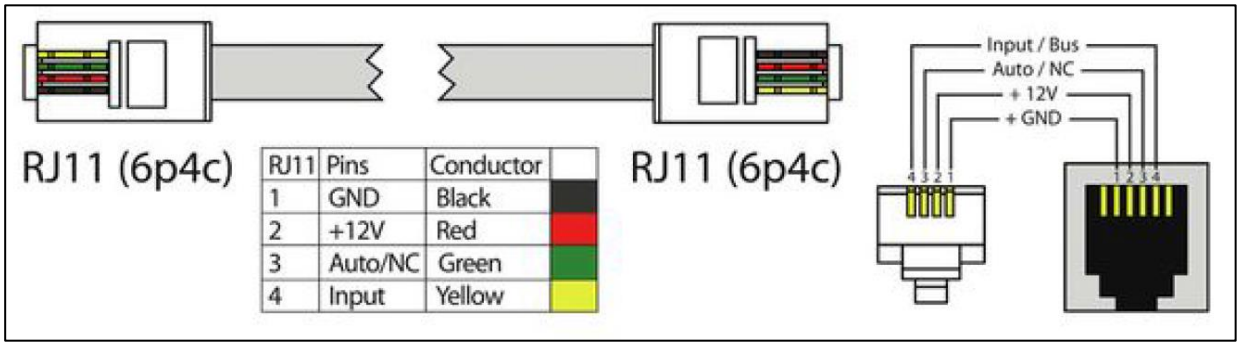
5.4.5. Connection diagram



RJ11	Pins	Conductor	
1	GND	Black	
2	+12V	Red	
3	Auto/NC	Green	
4	Input	Yellow	

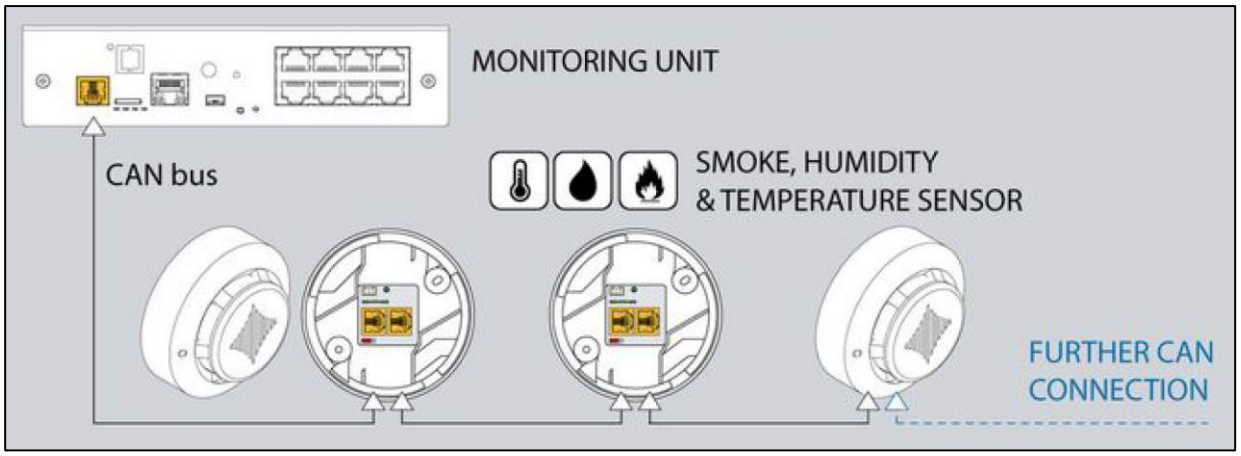
5.4.6. Connect smoke sensor

Connect one end of the RJ11 / RJ12 cable to the monitoring unit and the other end to one of the two inputs of the smoke sensor.

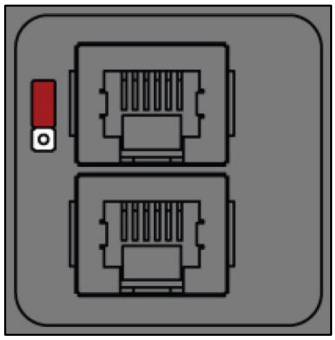
It is possible to connect up to 10 sensors to an analogue port. To do this, connect the second RJ11 cable to a free input on an already connected device.

Smoke sensor and the other end to a next smoke sensor in a chain.

After the system has started and the smoke sensor has been detected, the LED on the smoke sensor flashes weakly once every second.



Jumpers must be set as follows:



a) For all sensors except the last sensor in the chain the jumpers on 1 and 2. TR are ON.

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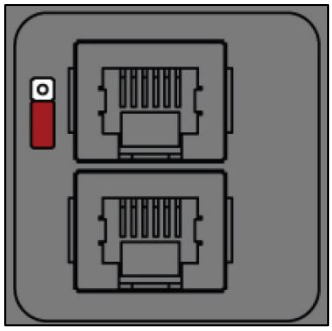


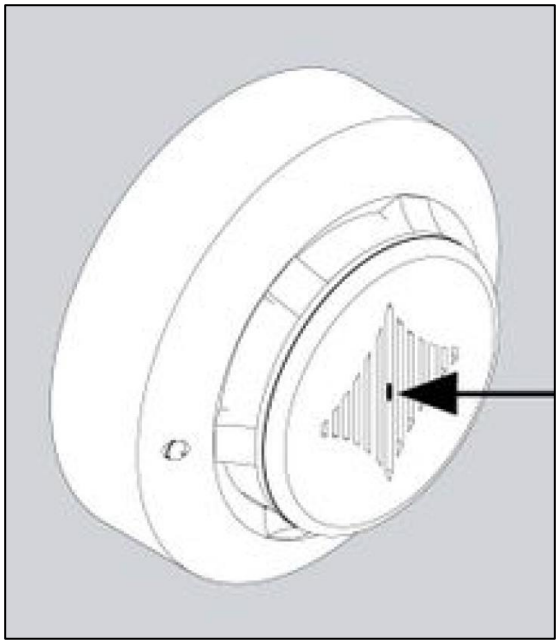
For all sensors except the last sensor in the chain the jumpers on 3 and 4. TR are OFF.

5.4.7. Testing the smoke sensors

While operating the system, take a needle or paper clip and insert it into the hole on the sensor cover.

Hold until the LED flashes. This means that the sensor is ready for operation.

To bring the sensor back to normal, either disconnect it from the system or select the tab Smoke sensors restart in the Web GUI of the RMS.



5.5. pir – vibr. – temp. probe

Combination sensor for recording temperature, vibrations as well as passive infrared motion detector for monitoring critical areas of the company.
This sensor can monitor your rooms 24/7 for unauthorised access or presence and provide optimal protection for your IT.
The connection is established via a free sensor port and is automatically detected by the system.
Freely adjustable alarm settings allow you to send specific alarms via SNMP or e-mail, for example.

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Article number	
7808410	iQdata RMS pir – vibr. – temp. probe

Dimensions / weight	
Width (W):	57 mm
Depth (D):	40 mm
Height (H):	105 mm
Weight:	133g

Connection & technical features	
RJ11 Port	1x for connecting to a free sensor port on the RMS
Auto detection:	Yes
Cascadable:	No
Extendable:	max. 50m
Power consumption:	100mW
Detection angle:	120°
Maximum distance:	12m
Status indication:	LED

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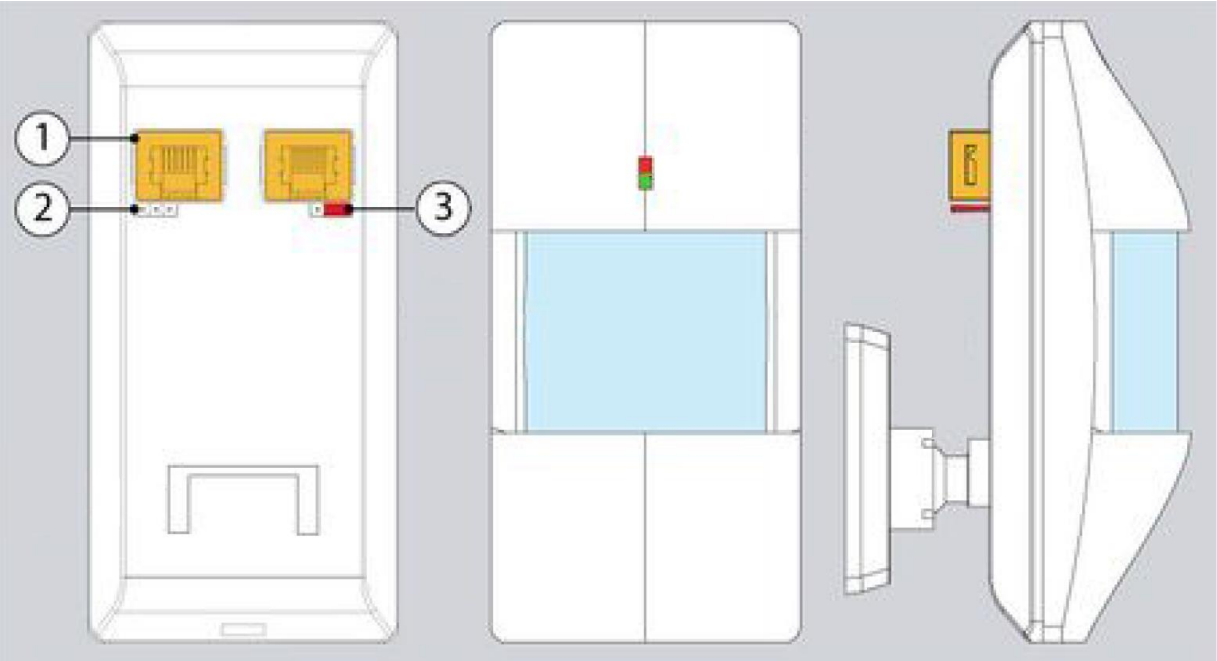
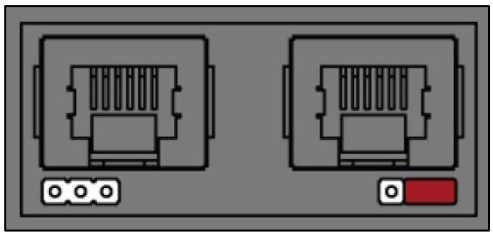
5.5. pir – vibr. – temp. probe



1. **“CAN”**	"CAN" - digital connector RJ12 for connection to the master module, CAN sensors or CAN extensions a CAN bus, with auto-sensing.
2. **“TR”**	Termination switch at the end of a CAN chain
3. **LEDs:**	"Green" - indicates "connected" status with the main module, "Red" - indicates "not connected" status, "Orange" - indicates "alarm" status.

5.5.1. Sensor connection:

Jumpers must be set as follows:



a) For all sensors except the last sensor in the chain the jumpers on 1 and 2 . TR are ON.

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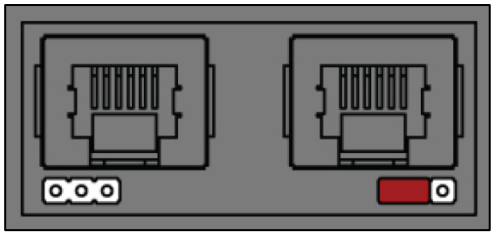

b) For all sensors except the last sensor in the chain the jumpers on 3 and 4. TR are OFF.

5.6. humi. & temp. probe

Combination sensor for temperature and relative humidity for monitoring critical areas such as in technology and server rooms or network racks.

The connection is established via a free CAN bus port and is automatically detected by the system.

Article number	
7808420	iQdata RMS humi. & temp. probe

Dimensions / weight	
Width (W):	47 mm
Depth (D):	68 mm
Height (H):	26 mm
Weight:	160g

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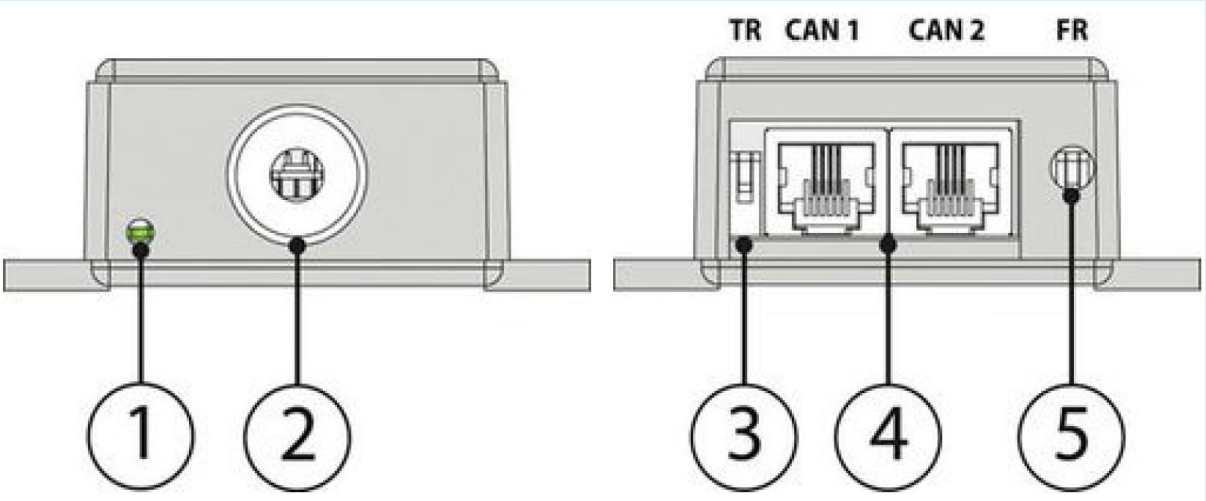
Connection:	
CAN bus:	2x CAN open port (for CAN sensors or extension units)
Cascadable:	Up to 10 sensors on one CAN-
Extendable:	up to 225m max. from the RMS

Connections humi. & temp. probe & temp. probe



1. LEDs: “RUN”	shows the connection status of the device to the main module
2. "Combination sensor"	Operating temperature: -40.... +125°C; RH-working range: : 0 to 100%; T accuracy: ±0.4 ° C in the range of -10 to 85 °C; RH - accuracy: ± 0.4 ° C in the range from 0 to 85 ° C.
3. “TR”	Termination switch at the end of a CAN chain
4. “CAN”	"CAN" - digital connector RJ12 for connection to the master module, CAN sensors or CAN extensions a CAN bus, with auto-sensing.
5. “FR”	Memory switch for reprogramming the module

6. Relay contacts

The RMS 842+ monitoring has the option of connection diagram up to two contacts that are controlled via built-in bi-stable relays

The installed relays have device-independent separate inputs and outputs. The device switches on / off, relays remain in the command position!

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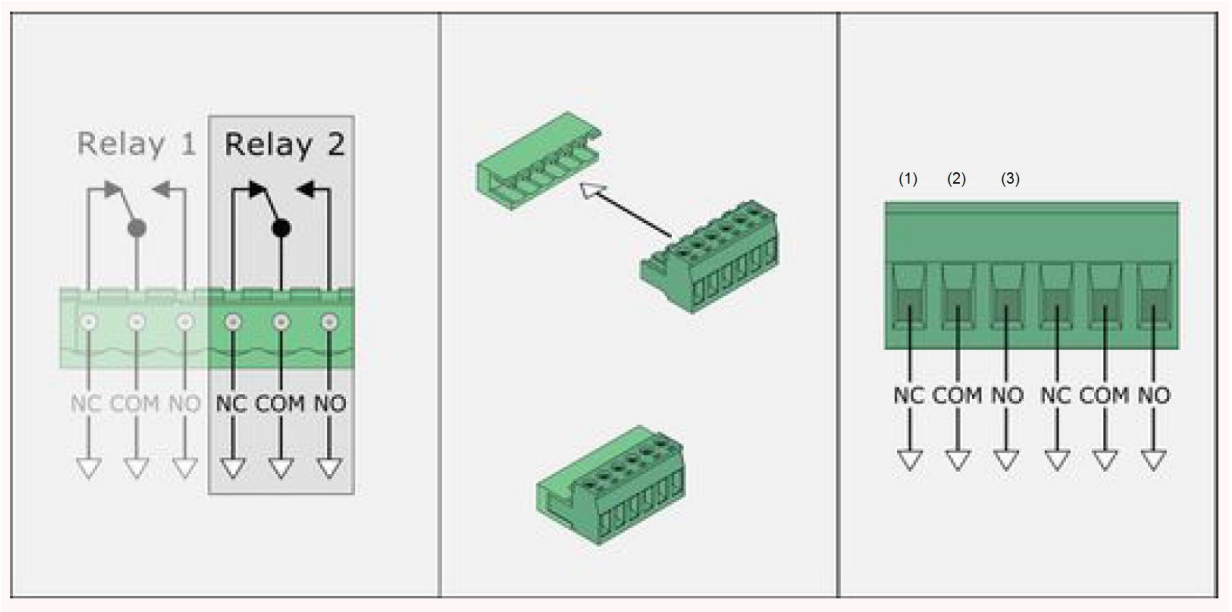
6.1. Installation

To connect an external load, connect the cables from the external power supply to the corresponding connections (2) of the relay terminal block. The load on the left (1) or right (3) of the connections. Plug the relay terminal block into the relay base terminal RLY1 or RLY2. Plug the relay terminal block into the relay base terminal RLY1 or RLY2.

The relay switches the load on or off on command. . The maximum possible power output of the relay is 10A.



7. Dry output

This sensor has a potential-free contact which can be switched by the RMS system, if the alarm or warning values are exceeded.

This makes it possible to activate external systems and switch on an air circulation cooling device via a digital input in the event of excess temperature.

The sensor is mounted on a free 12V DC alarm output on the RMS.

Article number	
7808120	iQdata RMS dry output

Dimensions / weight	
Width (W):	18.00 mm
Depth (D):	60.00 mm
Height (H):	18.00 mm
Weight:	65g

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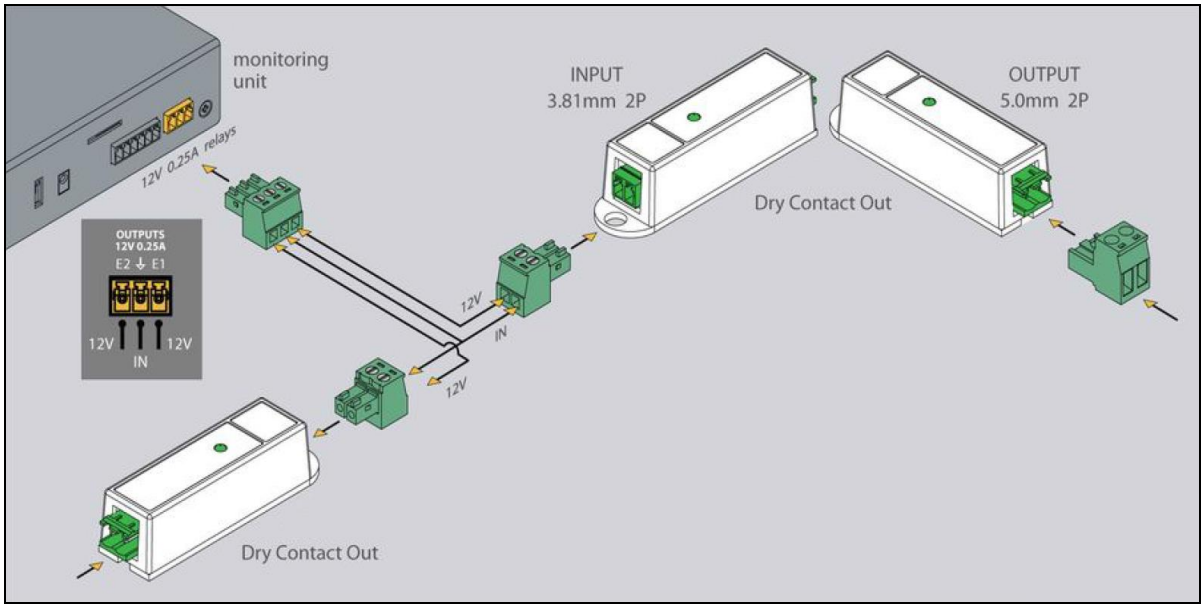
Inputs/ outputs	
RJ11 Port	1x for connection to the RMS
2-pole	1x for connection to an external device with DI

7.1. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

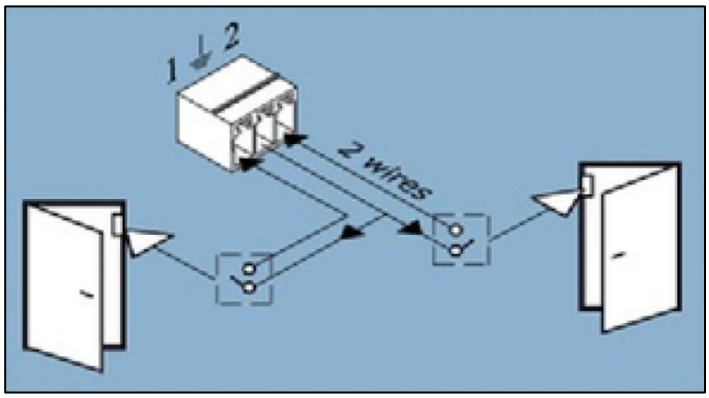
The switchable contact can only be connected to the 12V 0.25A outputs of the monitoring system.

The following diagram shows how two switchable contacts can be connected.



8. Potential-free contacts

Depending on the monitoring, 2 to 12 potential-free contacts are available for connecting door contacts, fault messages from UPS or air conditioning systems, etc.



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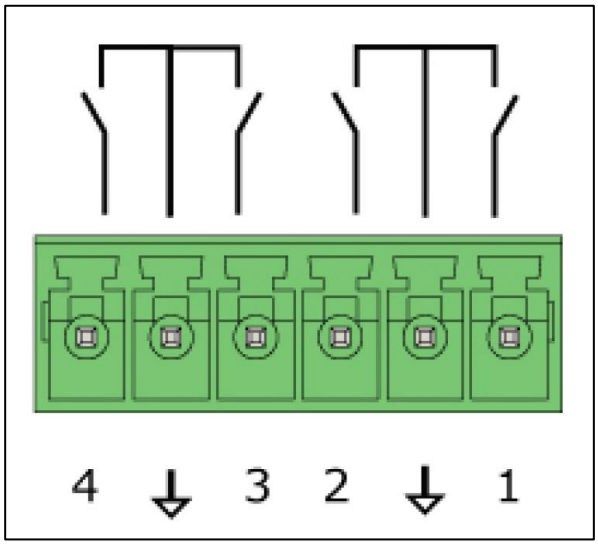
8.1. Installation

To install extensions, switch the device off, disconnect it from the socket or at the voltage input.

Connect the wires of the contacts to the corresponding terminals of the connector, two contacts each have a common ground connection. (GND)

Insert the clamp into the contact socket. After connecting, configure the trigger logic in the system interface.



To avoid damage, do not connect the load when the monitoring unit is on.

9. AC / DC-Measurement

Connect the AC, DC transceiver with any supplied RJ-11 (6P4C) or RJ-12 (6P6C) cable to any analogue port "A1 .. A8 "or" Sensor "port.

The sensor type and connection on the device are determined automatically. Connect the transceivers to AC and DC meters using any 2/4 system.

This procedure applies to the-, which are supported by the device and connected to the appropriate ports:

	Analogue sensor	Article number	Measurement range:	Isolation
1	RMS 4-20mA probe	7808620	4-20 mA	1 kV
2	RMS 0-75VDC probe	7808630	0/-75EC	1 kV

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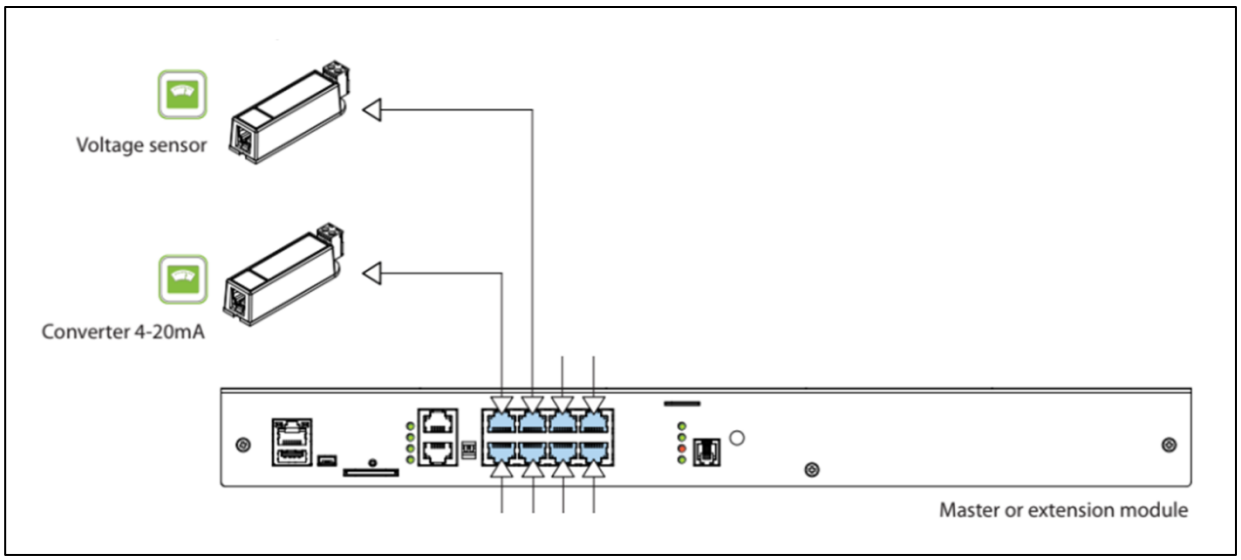
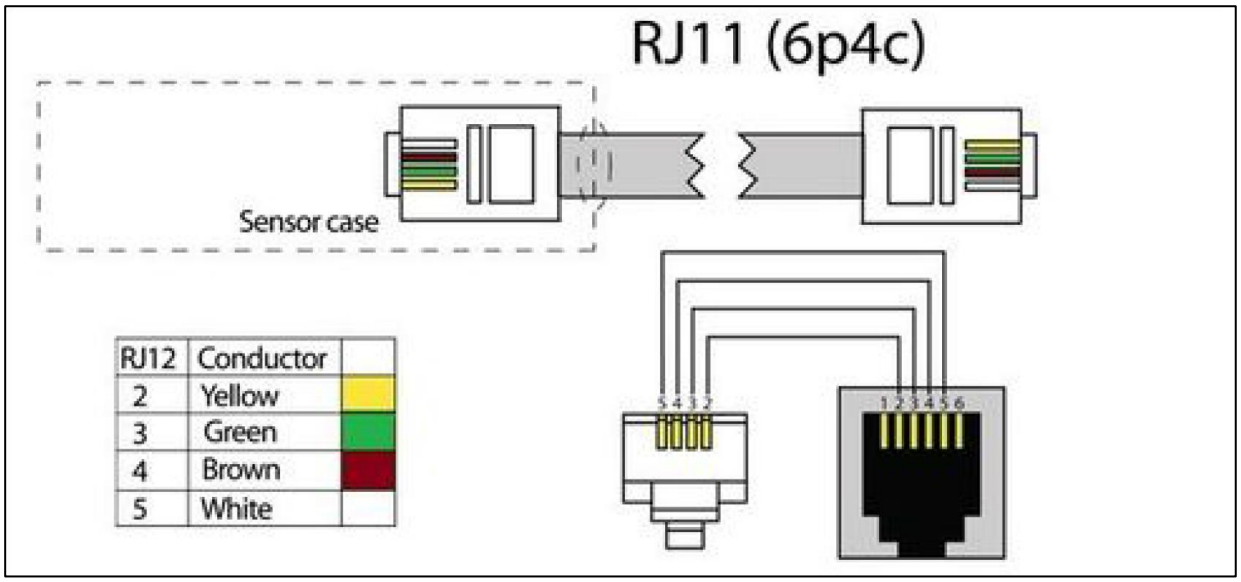


9.1. Connection diagram



10. Initial configuration (web interface)

This section contains the following topics:

- Connecting the device
- Interface overview
- User access and permissions
- Save, cache and import settings

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10.1. Connecting the device

System configuration and monitoring are done via a web interface.

In order to be able to access the web interface, you have to enter an IP address in the command line of your browser that is connected to the system.

The iQdata web interface is based on HTML5. The SVG 1.1 vector format is used for symbols.

Make sure that you always use the latest available browser version.

The exact browser specifications can be found in section 1.3. Quick Start Guide. Quick start guide.

10.1.1. Standard network settings

Delivery condition	
DHCP:	Off
Host name:	Schäfer RMS
IP address	192.168.0.193
Netmask:	255.255.255.0
Broadcast:	192.168.0.1
Gateway:	192.168.0.255
Primary DNS:	192.168.0.1
User:	guest
Password:	guest

To be able to work with the device, your PC must be in the same network as the new device! To do this, apply the following settings on your PC: Subnet mask: 255.255.255.255.255.0 and IP address: 192.168.0.0.XXX

XXX = number from 0 to 192 or from 194 to 254

To configure network settings on your PC, follow these steps:

Start >> System Control >> Network Connections >> Network Connections > >

Right click on your LAN (Local Area Connection) >> Properties >> Double click on Internet Protocol (Internet Protocol (TCP / TCP / IP))

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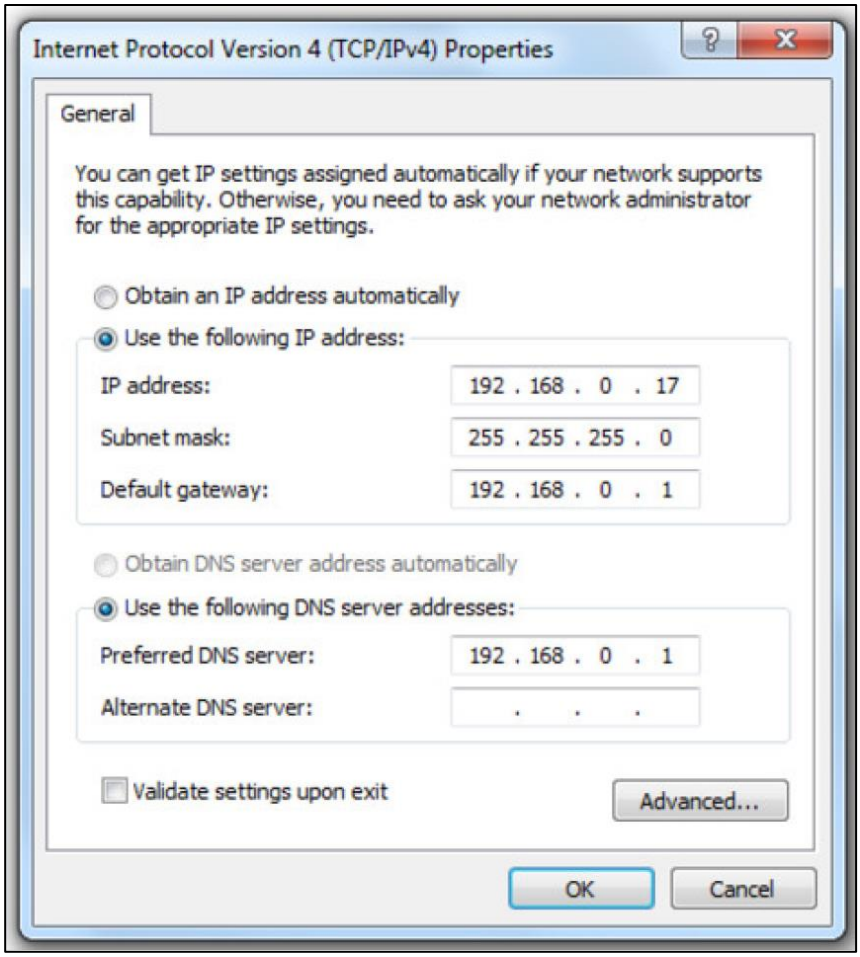
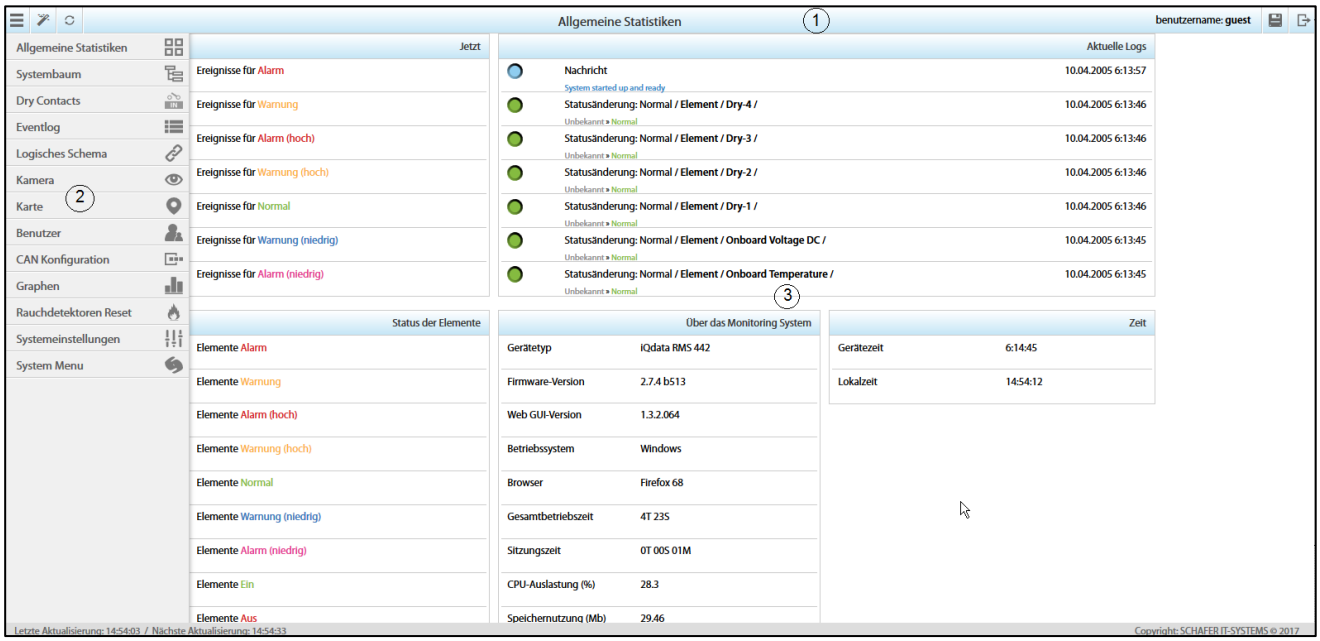


10.2. Interface overview

System configuration and monitoring are done via a web interface. The device is controlled via a web interface.



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1. The overall view of the interface is shown below:

   -  - Menu button
   -  - Save settings
   -  - Quit

2. The "Menu" control panel is opened by pressing the button  . It contains:

   - Overall Statistics - displays general statistics
   - Group tree - shows all sensors and devices in a folder tree (the tree is set up manually by the administrator)
   - System tree - shows all sensors and devices in a system tree (the tree is automatically set up by the system according to sensor groups)
   - Event log - displays the system log
   - Logic diagram- to define automatic actions for events in the system
   - Cameras - shows all cameras connected to the system
   - Map - developed for the visual placement of elements on the plan / map
   - User - to manage user accounts and permissions
   - CAN configuration - for controlling CAN devices
   - Diagrams - for a comparative analysis of the history of the sensor readings
   - Smoke sensor reset - resetting triggered detectors
   - System settings - management of the system
     - Web GUI - interface language, data reload interval, activate sound for warnings
     - Network - network settings
     - Time - time zone, NTP server for time synchronization, current device date and time
     - Syslog - Syslog server settings
     - DynDNS - DynDNS service settings
     - SNMP - SNMP settings
     - Radius - Password storage settings
     - SD card options
   - System menu - information about the device and software
     - Info - firmware version, web GUI version, operating system, browser, system restart
     - Firmware - control panel update
     - Export - export sensor data, export log and export settings;

3. Overall Statistics - shows general statistics
   - Number of elements in the following states at the moment: very low, low, normal, warning, alarm
   - Condition of elements - the number of elements in the following conditions: very low, low, normal, attention, alarm
   - Current log - shows the last 5 syslog events
   - About the system - all about the system, uptime, the browser
   - Time - device time, local time

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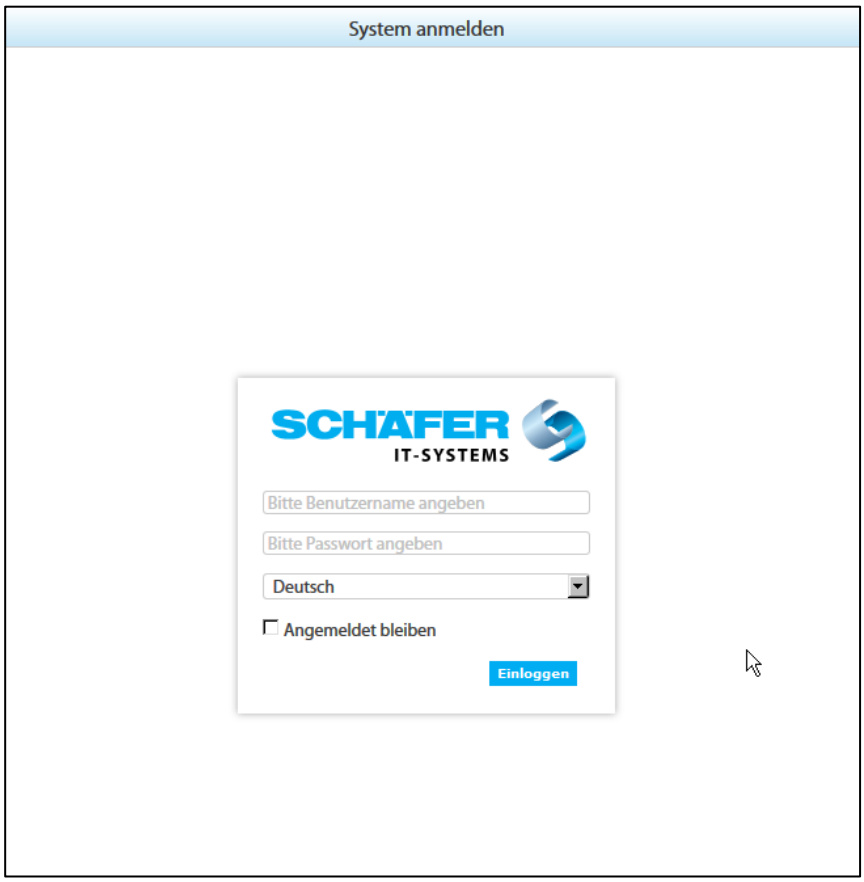
10.3. User access and permissions

By default, the device has a "guest" account with the most extensive access rights (all rights for viewing / writing):

Username: guest

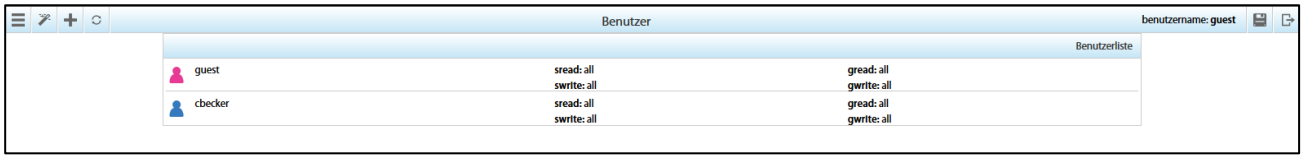
Login: guest



To change the user go to "Menu" >> "User".

10.3.1. Administrator account, username and password

To improve security, it is necessary to create a new user account with the highest access rights (all rights for view / write), and to reduce the access rights of the "guest" account or to remove them completely from the user accounts!



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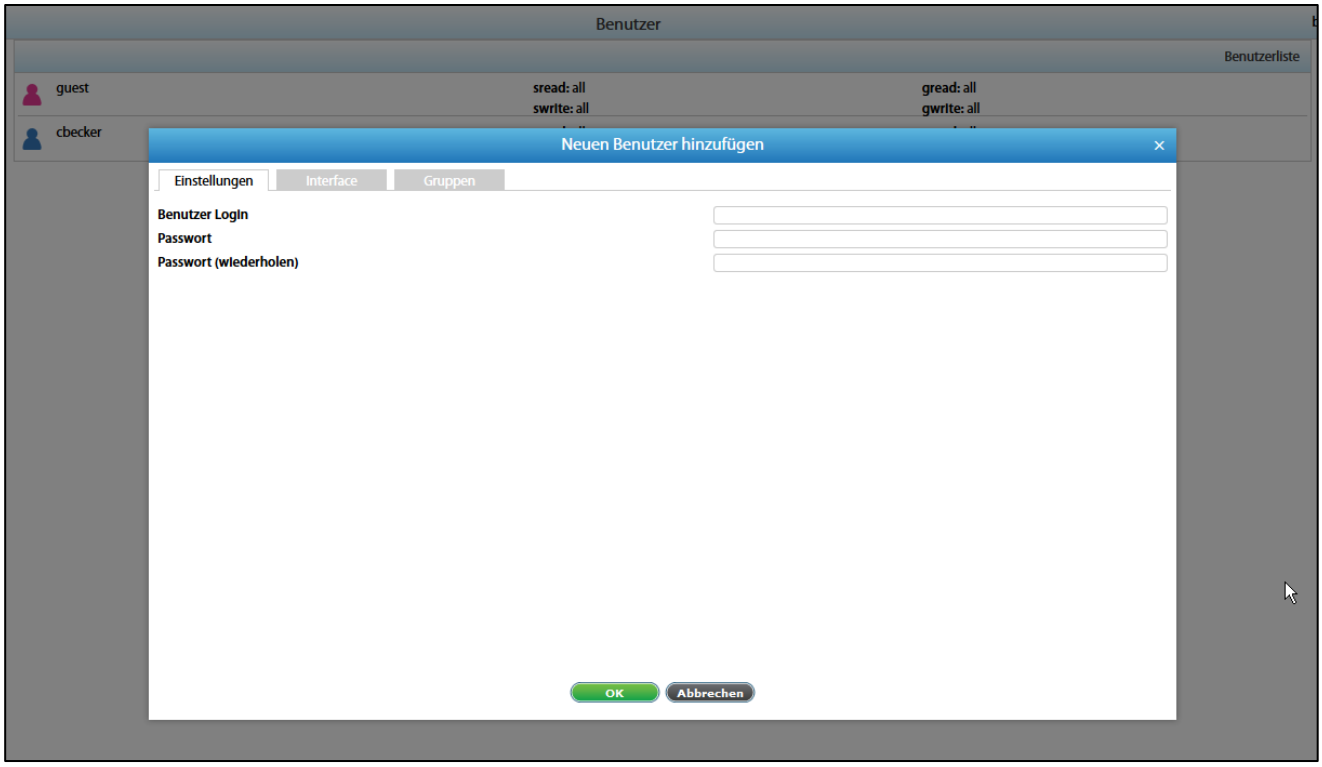

To manage user accounts go to "Menu" >> "User".

To create a new user account, press the "Add" button:

To edit an existing user account, select it from the list of accounts, a window with options opens.

In the window that appears, select User Rights and then click "Apply".

To delete an existing user account, select it from the list of accounts and click "Delete".

10.3.2. User access

To limit user access to the device subsystems, the following sets of access permissions are used.

To prevent the user from seeing other user accounts, it is necessary to deactivate the checkbox ("User")!

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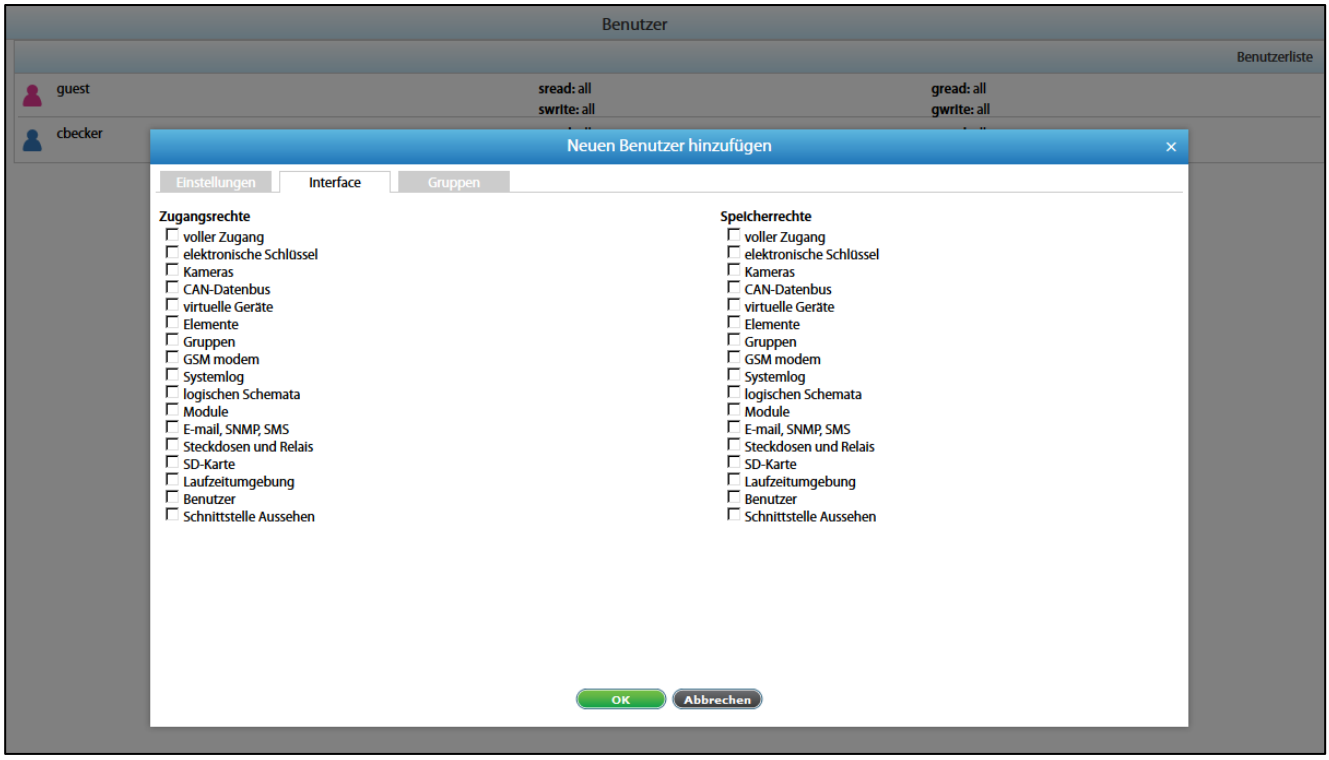

10.3.3. Restore settings

The device has the option of saving settings in a backup file and restoring them later. To save a file with the system settings, proceed as follows

Go to "Menu" >> "System menu" >> "Export" >> "Export current settings" in the device interface.

The file is saved under the name "settings.sit".

To restore, change or copy the settings, copy the "settings.sit" file to the root directory of a USB drive without changing the file.

Insert the USB stick into the USB interface and wait. The update process is indicated on the front with a flashing "ERR" LED. If successful, the "ERR" LED goes out and the "ACT" LED flashes for a while at an increased frequency.

If the attempt is unsuccessful, the "ERR" LED remains lit. Remove the USB flash drive and restart the system. Test the device.

10.3.4. Password recovery

Sometimes, in the event of loss of all data on the device or if you have devices with unknown settings, it may be necessary to restore the password. Use the "resetusers.sit" file, copy this file to the root directory of a USB drive without changing the file name.

Insert the USB stick into the USB interface and wait. The update process is indicated on the front with a flashing "ERR" LED. If successful, the "ERR" LED goes out and the "ACT" LED flashes for a while at an increased frequency.

If the attempt is unsuccessful, the "ERR" LED remains lit. Remove the USB flash drive and restart the system. Test the device.

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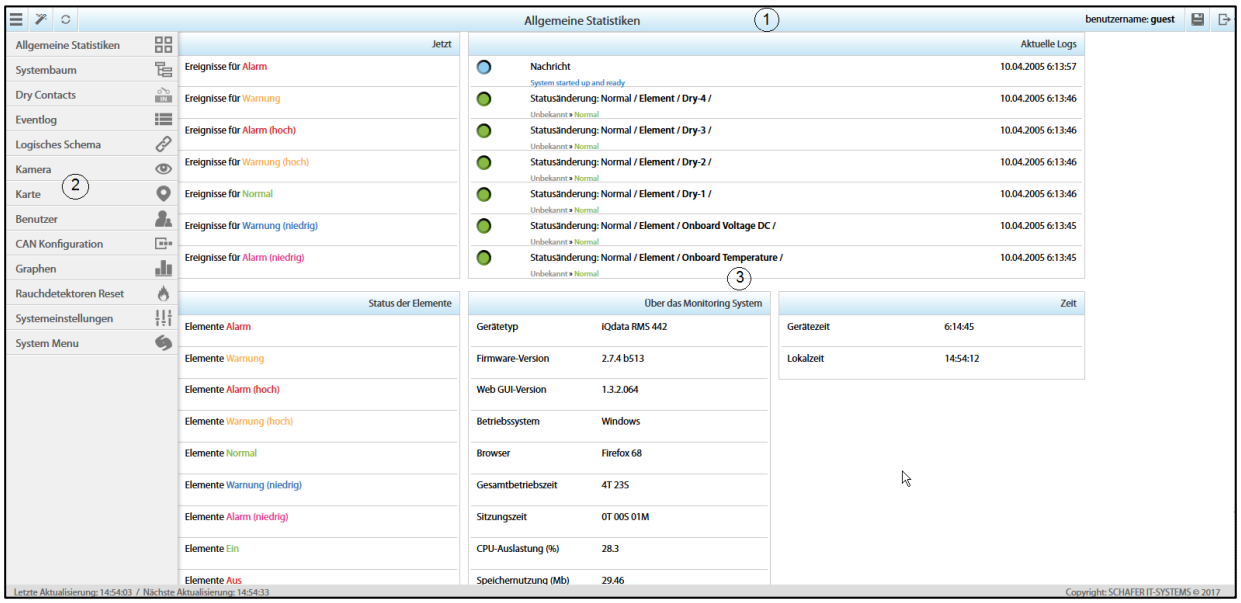
10.4. Save, cache and import settings



10.4.1. Save the current monitoring settings

The monitoring settings are not saved after a restart. Even if you click "OK" or "Apply" in each configuration.

To save after restart, you need to press  to save the current settings in flash memory.

10.4.2. Save the current monitoring settings

To save the current settings in an external file, select "System menu" >> "Export" >> "Export current settings" >> Select which "parameters" should be cached >> Press "OK" >> to get the file "settings.sit".

To be able to perform this process, you must be logged on as an administrator.

10.4.3. Import saved settings

To restore / install the saved settings, go to: "System menu" >> "Firmware" >> "Select file" >> "Browse" "System menu" >> "Firmware" >> "Select file" >> "Browse" >> Select file "settings.sit" >> Press "Load"> > Press  to save the current settings in flash memory.

To be able to perform this process, you must be logged on as an administrator.

Each "parameter" uploaded to the system replaces the current "parameters" in the system.

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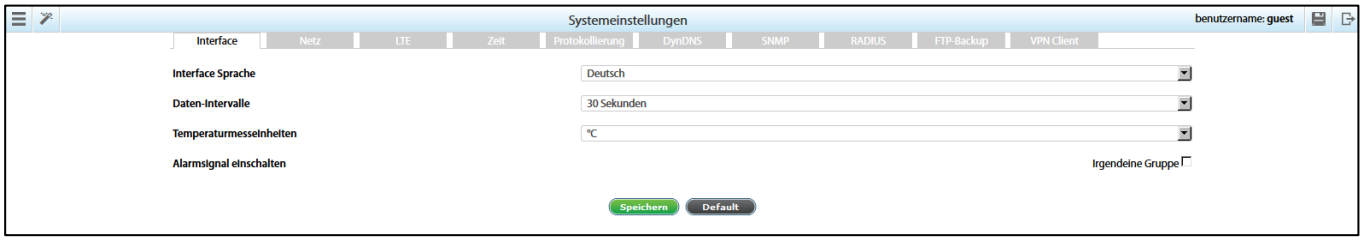
11. Function configuration (web interface)

Turn on the device, set up the network settings, continue configuring other settings and actions.

This section contains the following topics:

- Set up the web interface
- Network settings
- System time
- Create a floor plan
- Sensor configuration
- Create groups of elements
- Create notifications
- Create ping
- Create timer
- Create trigger
- Create Get SNMP elements
- Add an IP-camera
- Add logic diagrams
- Set up the GSM / USB modem
- Set up CAN
- Relay circuit
- Settings for potential-free contacts
- Backup, restore and reset.
- Installation of the SSL certificate

11.1. Set up the web interface



Go to the "System Settings" tab >> Interface.

Change the parameters of the web interface to the required values and click the "Save" button.

Available settings		
1	Interface language	Select the language of the web interface
2	Data intervals	Determine the interval of data updates
3	Temperature measurement units	Select the temperature unit to be displayed
4	Switch on the alarm signal	Set alarm signals for groups

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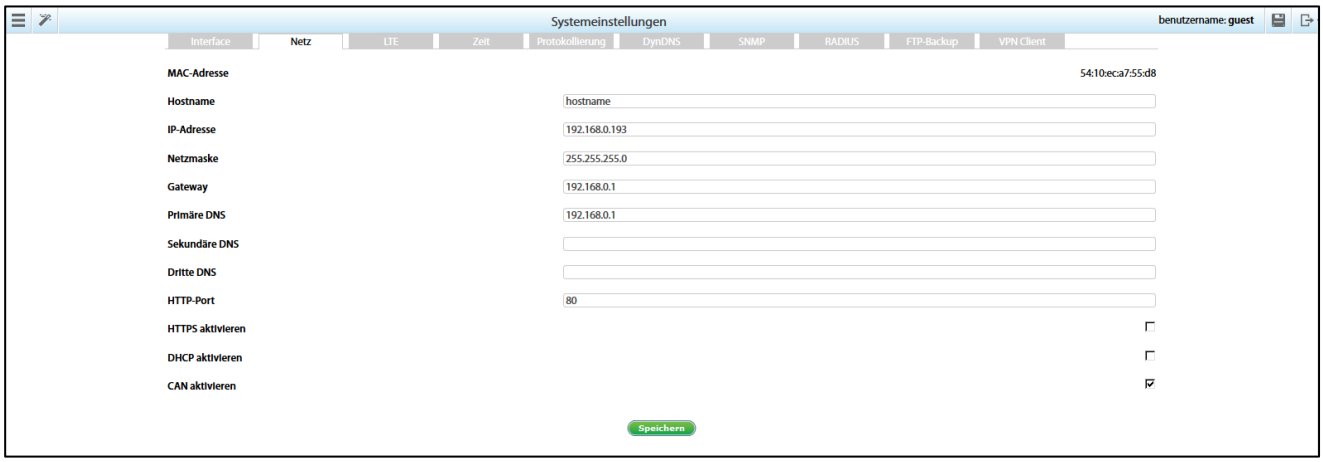
11.2. Network settings

The standard network settings can be found under point 10.1.1.



The standard network settings can be found here: Connection of the device. To configure the network settings, go to "Menu" >> "System Settings" >> "Network">>

Change the settings to the desired values and click "Save".

Change the settings to the desired values and click "Save".

Available settings	
1	MAC address
2	Host name:
3	IP address
4	Netmask
5	Gateway:
6	Primary DNS
7	Secondary DNS
8	Third DNS
9	HTTP port
10	Activate HTTPS
11	Activate DHCP
12	Activate CAN

If the default gateway is not known, use the computer's IP address on the machine's network, which is normally included.

The device uses the standard gateway to test the network with little traffic.

If the user works with the monitoring unit via the HTTPS interface, a self-signed certificate is created.

Please note that when the monitoring system uses encryption codes, the speed of the system drops proportionally to the length of the encryption code!

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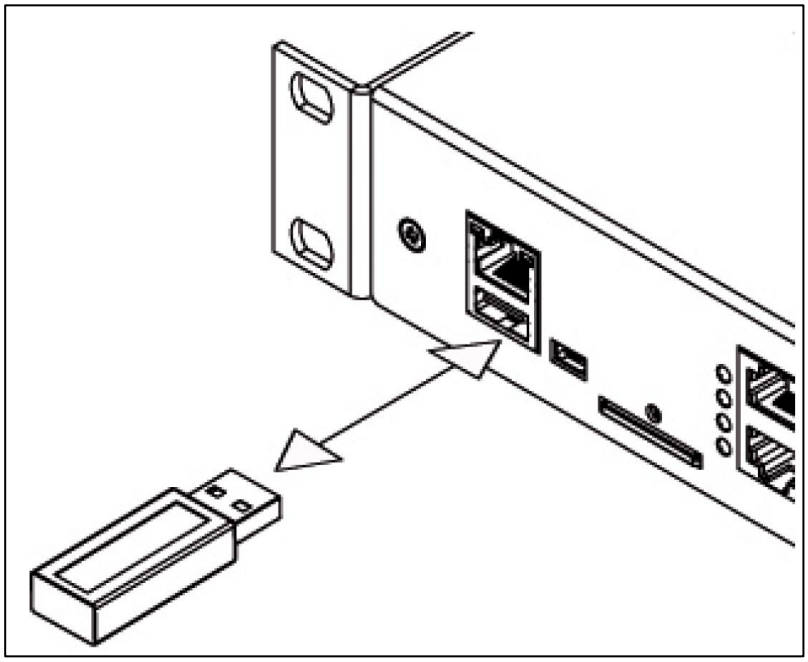
11.2.1. Determination of the IP address

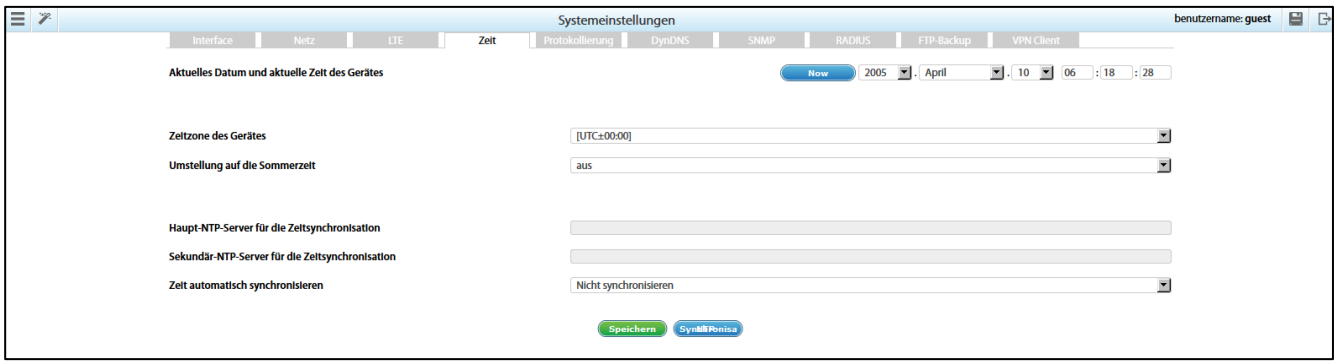


To determine the IP address of the device, insert the USB data storage device into the device as shown in the picture above. The device automatically creates a "system_report.info" file with the current settings (including IP address) in the root directory of the USB data storage device.

Open the "system_report.info" file with a text editor. It looks like this:

```
#
# Date and Time: "Sun Apr 29 10:52:33 2018"
#
# Firmware version: "2.7.3 b103".
# Hostname: "test109", IP: "192.168.0.197", MAC: "54:10:ec:2c:3e:ac"
#
<config><network dhcp_active="false" hostname="test109" mac="54:10:ec:2c:3e:ac" ip="192.168.0.197"
network="192.168.0.0" netmask="255.255.255.0" broadcast="192.168.0.255" gateway="192.168.0.1" dns1="192.168.0.1"
dns2="" dns3="" ssl="false" port="80" syslog_server="" can_count="1" can_active="true" dyndns_active="false"
```

11.3. System time



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11.3.1. Time synchronisation

To configure NTP for time synchronisation, open the "Menu" >> "System Settings" >> "Time" >> "Main NTP server for time synchronisation".

For example: 1.europe.pool.ntp.org

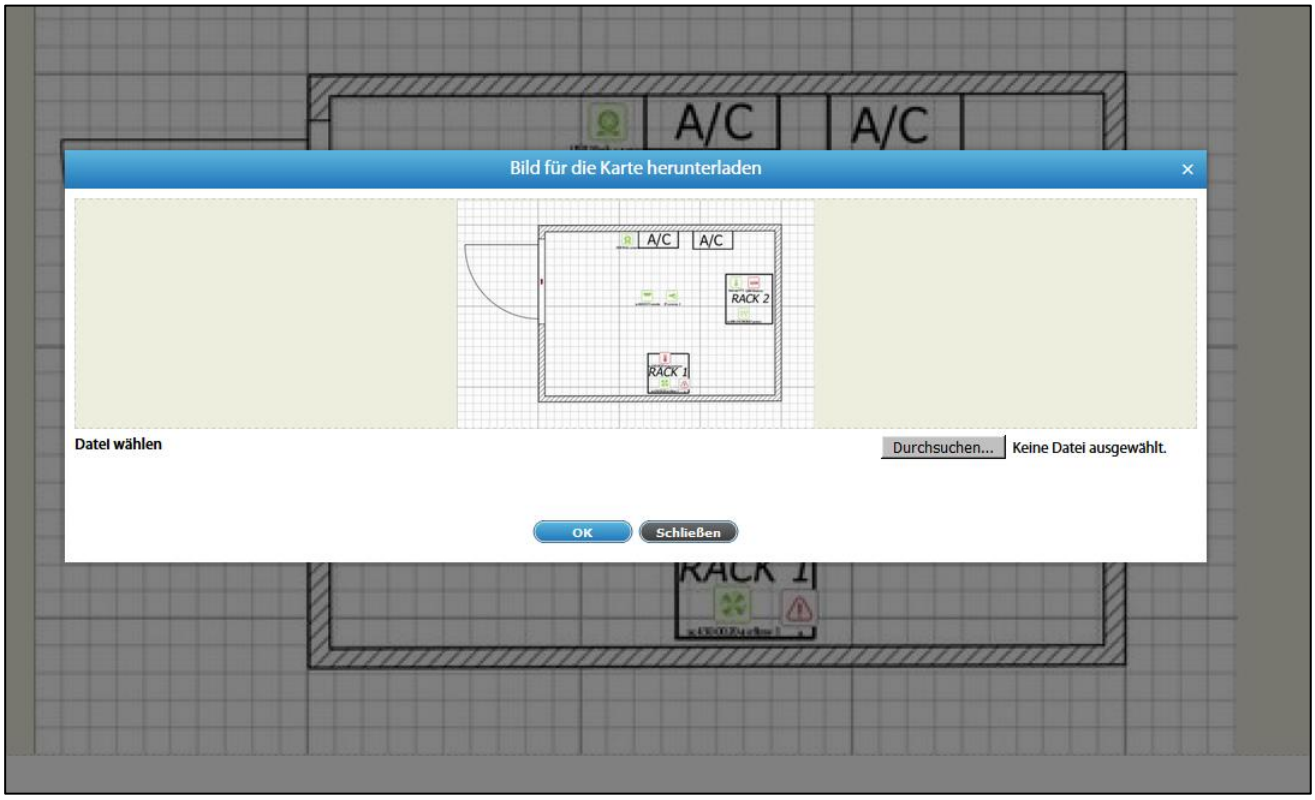
Enter the server NTP (e.g. at http://www.pool.ntp.org), the synchronisation period and the device time zone and click on "Save".

The time zone set must match the time zone of your browser (operating system).

"Current date and time of the device" corresponds to the time set in the system.

11.4. Create a floor plan

To upload a map or a map, go to the "Menu" >> "Map", click on the settings icon: >> "New map" >> "Select file" >> press "New map" >> "Select file" >> press "OK".



To add / remove elements from the map / plan, press >> select the elements you want to show on the map >> press "OK".

Move the elements to the desired position.

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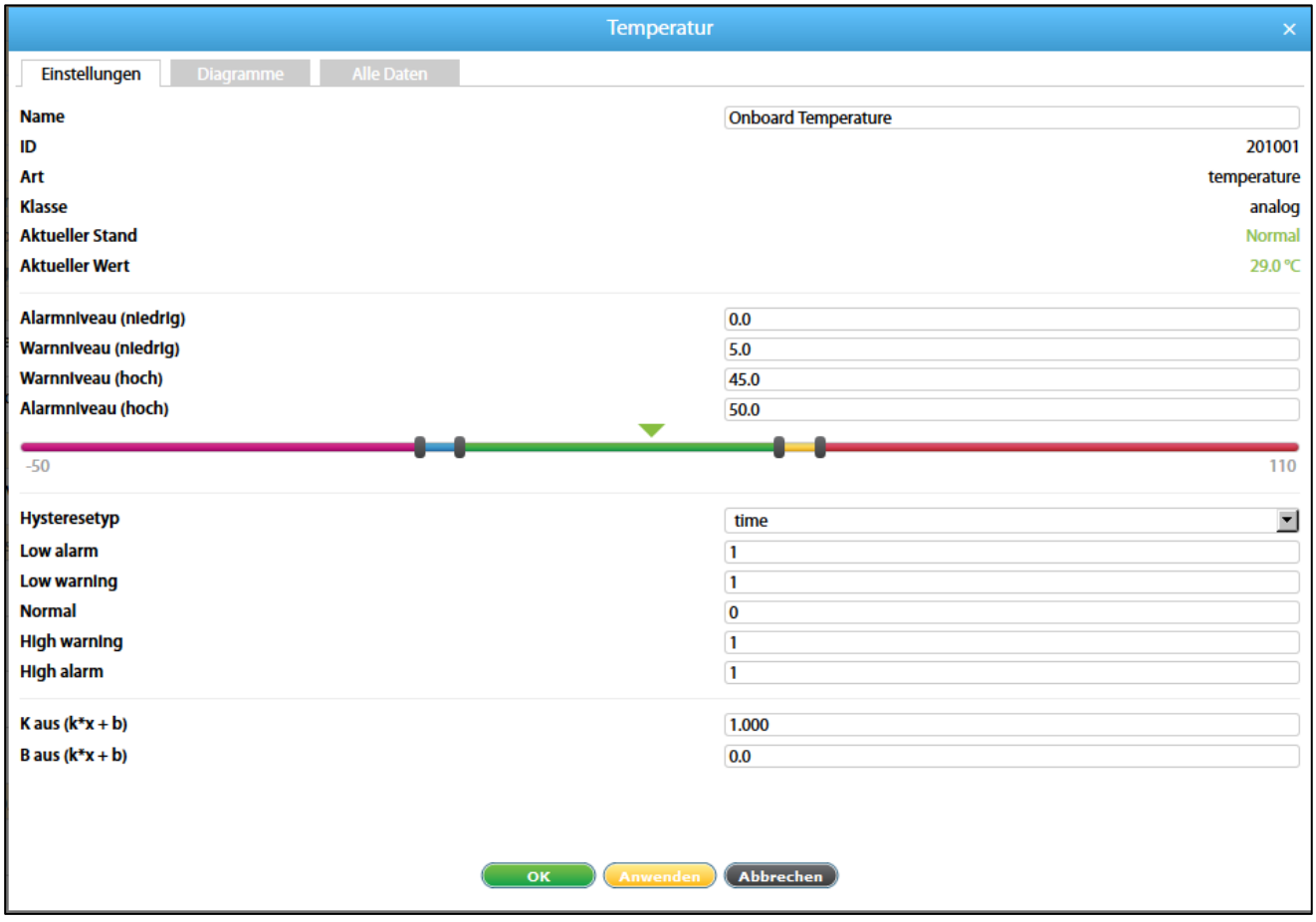
11.5. Sensor configuration

To configure a sensor, go to "Menu" >> "System tree" and click on the sensor element in the tree. A modular window with the sensor properties is displayed.

Change the required settings and click "OK" or "Apply" at the bottom of the window.



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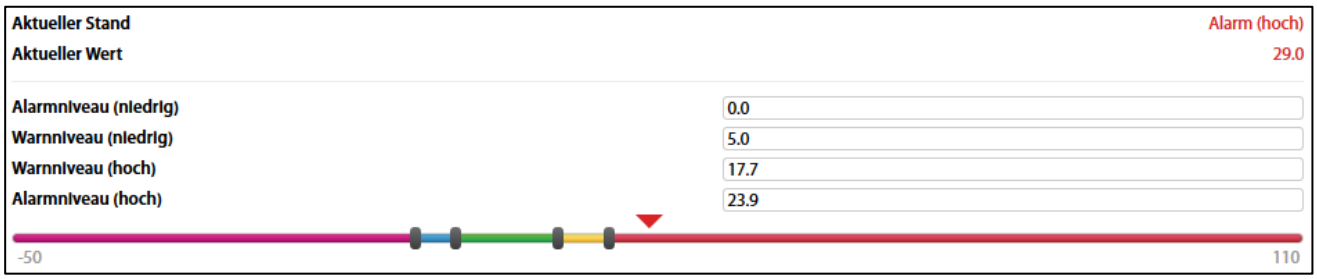
All sensors have the following data:

Sensor Data		
1	Name	The name is automatically assigned by the system and can be changed at any time.
2	ID	System ID of the element
3	Type	Example: temperature, humidity, vibrations
4	Class	Examples: analogue, CAN, discrete

All sensors have threshold settings:



In the picture above, "Current value" corresponds to 29.0 and is represented by the small triangle.

The triangle is currently red because it is above the "Alarm level (high)" area, which corresponds to 23.9.

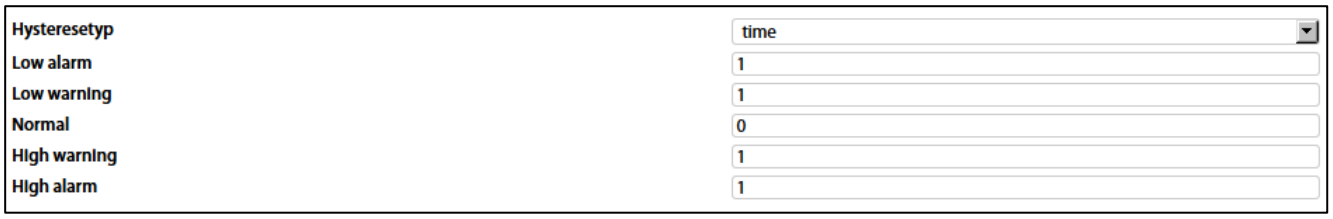
The sensor indicates that the "Current status" is "Alarm (high)".

This value is used by the system's "Logic Diagram" menu to notify the administrator of the status of the sensor

Sensors have the option of setting the hysteresis state. The hysteresis can be a time, a value or a deactivation.

If the hysteresis is set as "time", the sensor changes to a new state in the corresponding field with a delay of the specified number of seconds.

The time count starts from the point in time at which the measured value of the sensor is outside the threshold value range.



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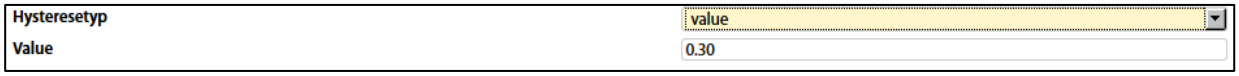
If you set the hysteresis as "value", the sensor changes to a new state if the measured value of the sensor is outside the threshold value range.



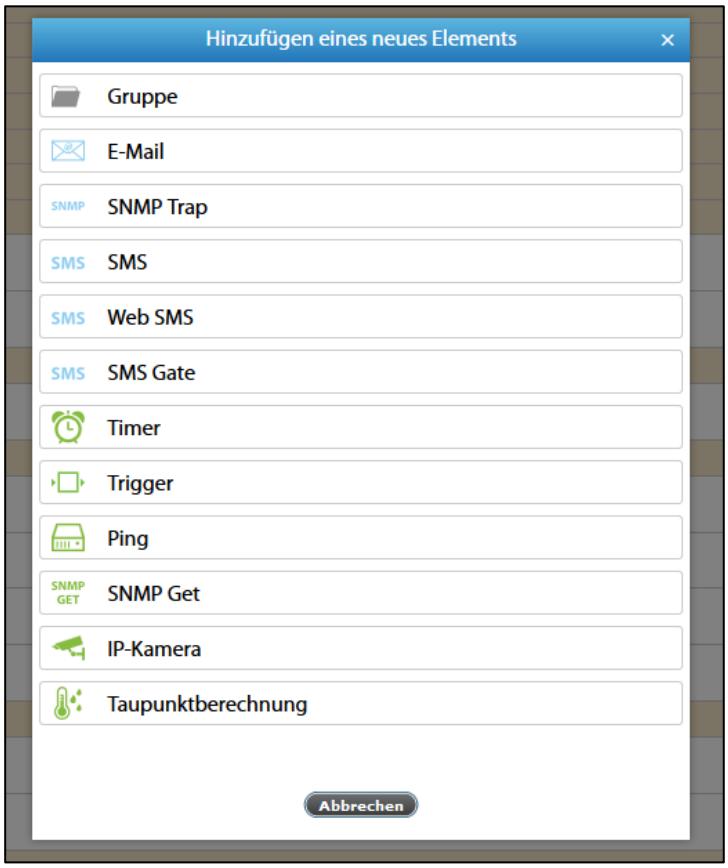
You can calibrate the sensors. Use the K and B coefficients.

After calibration, save the values in the flash memory.

To save the sensor properties in the flash memory of the device, press  to confirm and then "OK".

11.6. Create groups of elements

Groups of elements are formed for the structural organization of the elements in the system.



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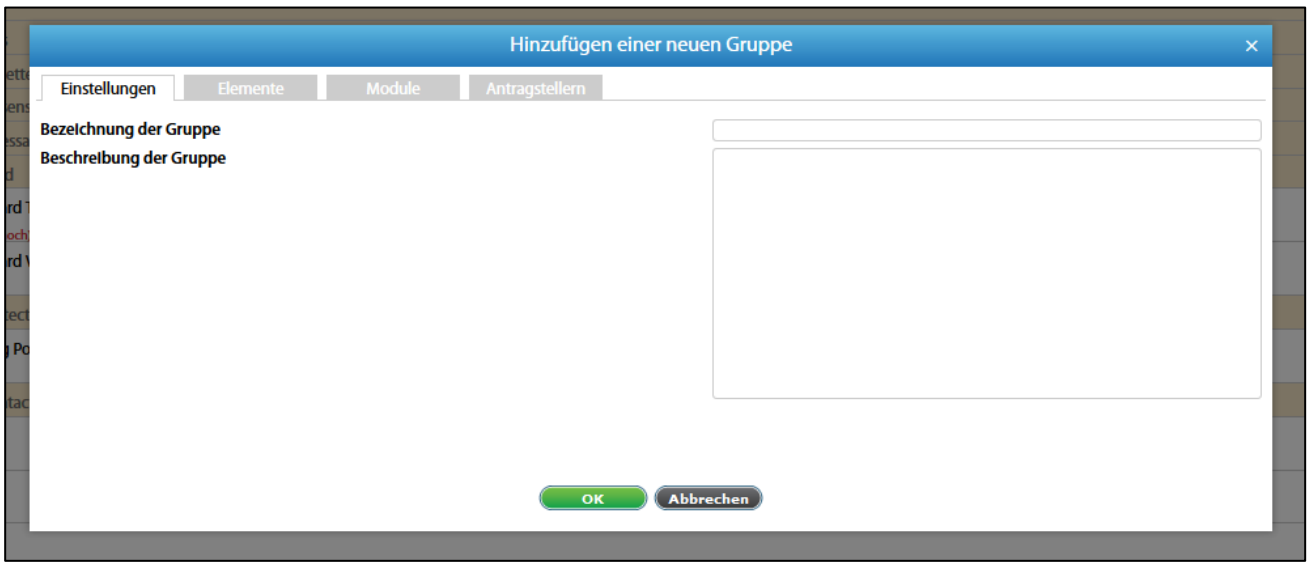
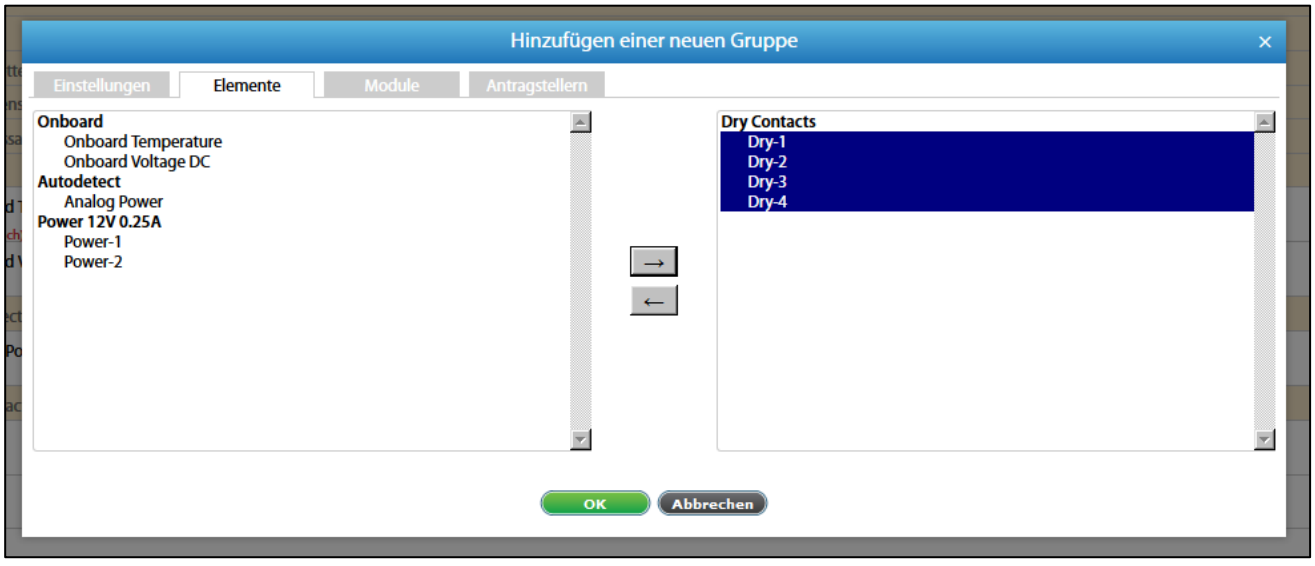
To create a group, press the button  in the menu item "System tree".

Then select "Group". A modular window appears.

Enter the name of the group in the dialogue box and enter the description.



Add the necessary elements and modules to the group and save the new group with "OK".



From version 2.5.0 there is the possibility to receive notifications within the group when the status of elements changes.

Add notifications on the “Submitter“ tab and choose a triggering state to receive a notification.

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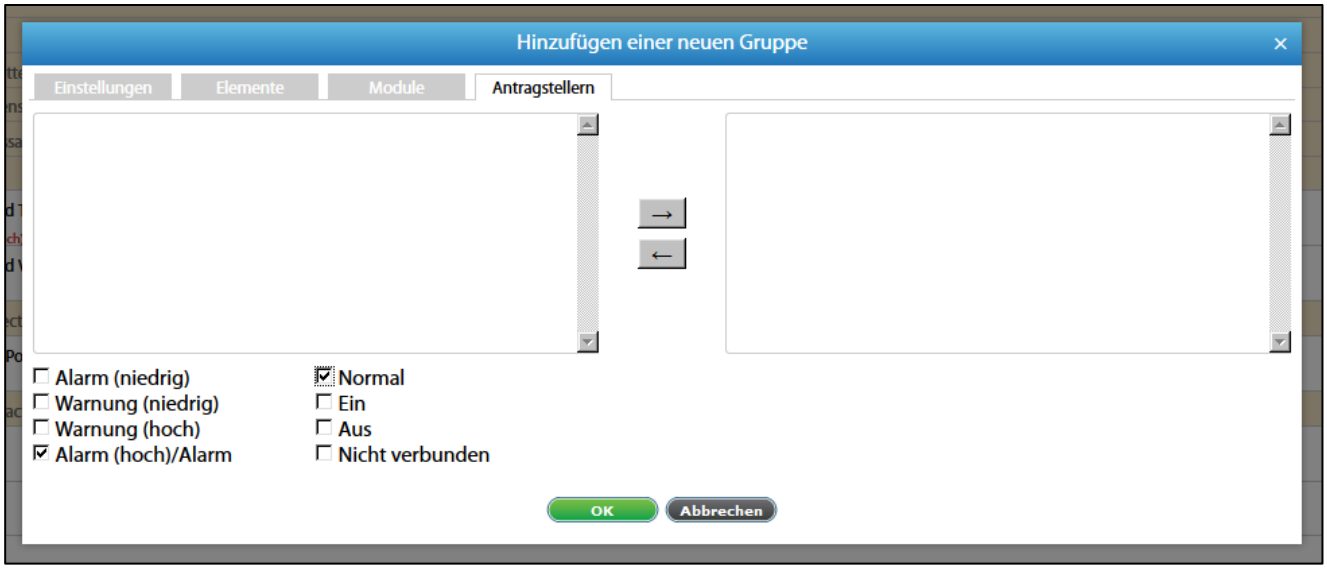
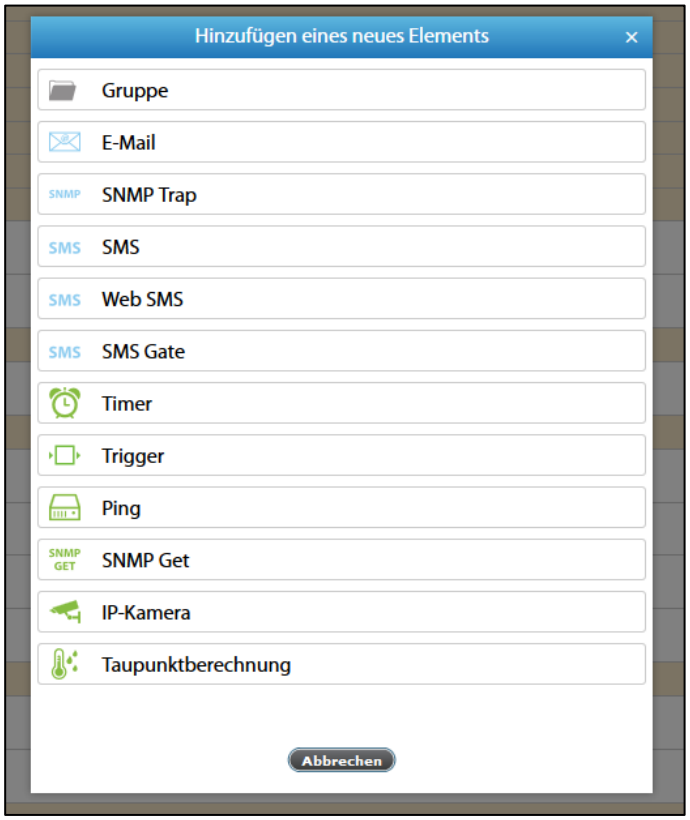


To remove the group, please click on "Delete".

11.7. Create notifications

Notifications are intended to inform the user of events in the monitoring system.

Caution! The notification takes place only via groups of elements or using a logic diagram.



To create a group, press the button  in the menu item "System tree".

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Then select the element to add. It is possible to add the following:

- Email notification
- Notification of SNMP trap
- SMS notification

Caution! Multiple recipients are separated by spaces, commas or semicolons, up to 10 recipients are available in one field.

11.7.1. Email notification

To create an email notification, you need to specify the following parameters:

Available settings		
1	Name	The name of the element in the system
2	SMTP-Server	Name or IP address of the SMTP server (smtp.gmail.com)
3	SMTP port:	SMTP server at the correct port number (e.g. 25, 465, 587 or others)
4	Activate TLS	If TLS SMTP is activated, the session is opened within the encrypted connection (typical port 465).
5	Activate STARTTLS	If STARTTLS is activated, the encrypted connection is opened within the SMTP session (typical port 587, but can be 25, 2525 or another)
6	Login, password	SMTP server user name and password
7	Message from	Email address of the sender (schaefertest@gmail.com)
8	Message to	Email-address of the recipient (schaefertest@gmail.com) Up to 10 addresses Use "spaces", ";" for multiple email addresses or ",". Example 1: test@gmail.com, test2@gmail.com, test2@gmail.com Example 2: test@gmail.com test2@gmail.com test2@gmail.com Example 3: test2@gmail.com; test2@gmail.com
9	Message content	Message text Contains information about the event in the system. The standard code block is: `Logic name:\n%4\n--\nLogic triggered at:\n%3\n--\nLogic triggered by: %5, %8\nState: %6\nValue: %7\n--\nLogic scheme description:\n%1\n--\nAll sensor states on the moment when logic was triggered:\n%2\n--\n` Logic name:\n %4\n --\n Logic triggered at:\n %3\n --\n Logic triggered by:\n %5, %8\n State: %6\n Value: %7\n --\n Logic scheme description:\n %1\n --\n All sensor states on the moment when logic was triggered:\n %2\n --\n

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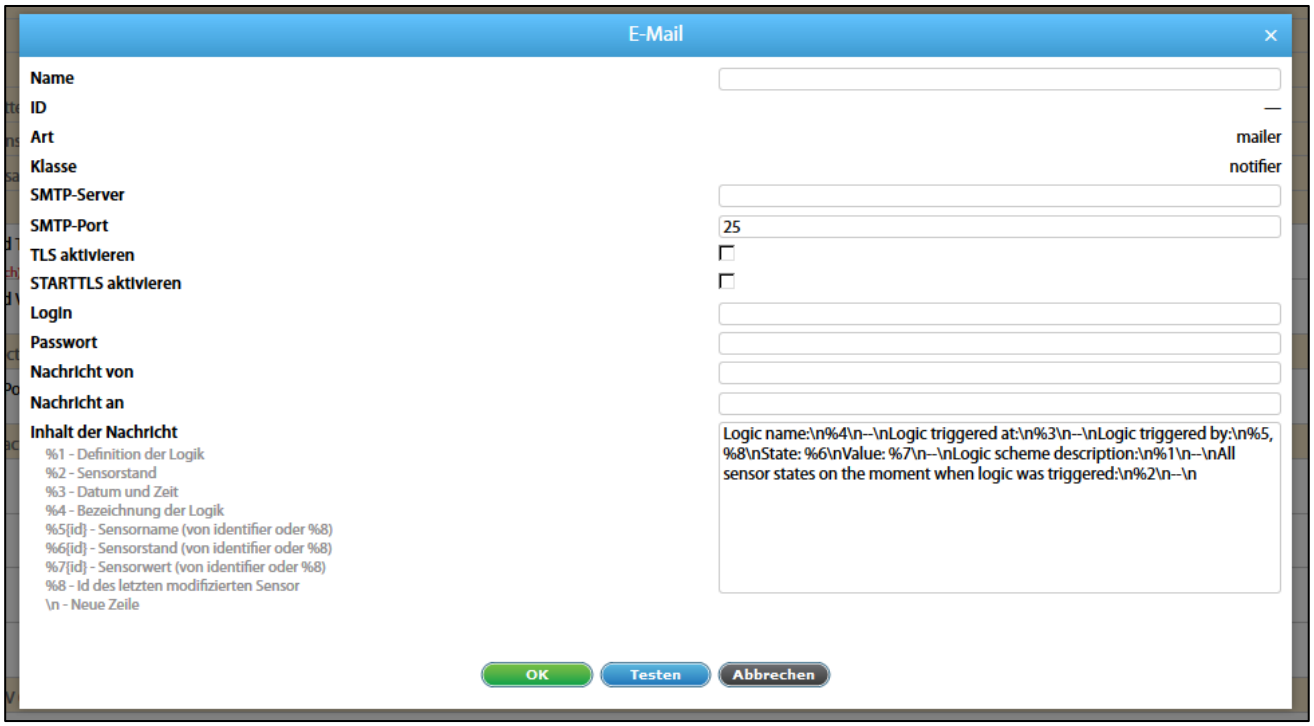

Contact your mail administrator for help configuring SMTP parameters, or the help section of your e-mail provider.

The message subject is generated automatically and contains the device type (e.g. RMS 842+), the name of the device (determined by the field in the menu System Settings-> Network-> Host name), the name of the mail (defined by the field Name when writing the message) and the type of notification (video notification).

Sample configuration	
SMTP-Server	smtp.gmail.com
SMTP port:	587
Activate TLS	Yes
Activate STARTTLS	Yes
Login	Your login with the domain @ gmail.com
Password	Your password
Message from	Your email address
Message to	Recipient mail address, if several addresses (up to 10) are used, they can be separated by spaces, commas or semicolons.

Please make sure that the setting "Allow fewer secure applications" is activated in the settings of your Gmail account:

My Account -> Login & Security -> Account Access Applications -> Allow Less Secure Applications: ON

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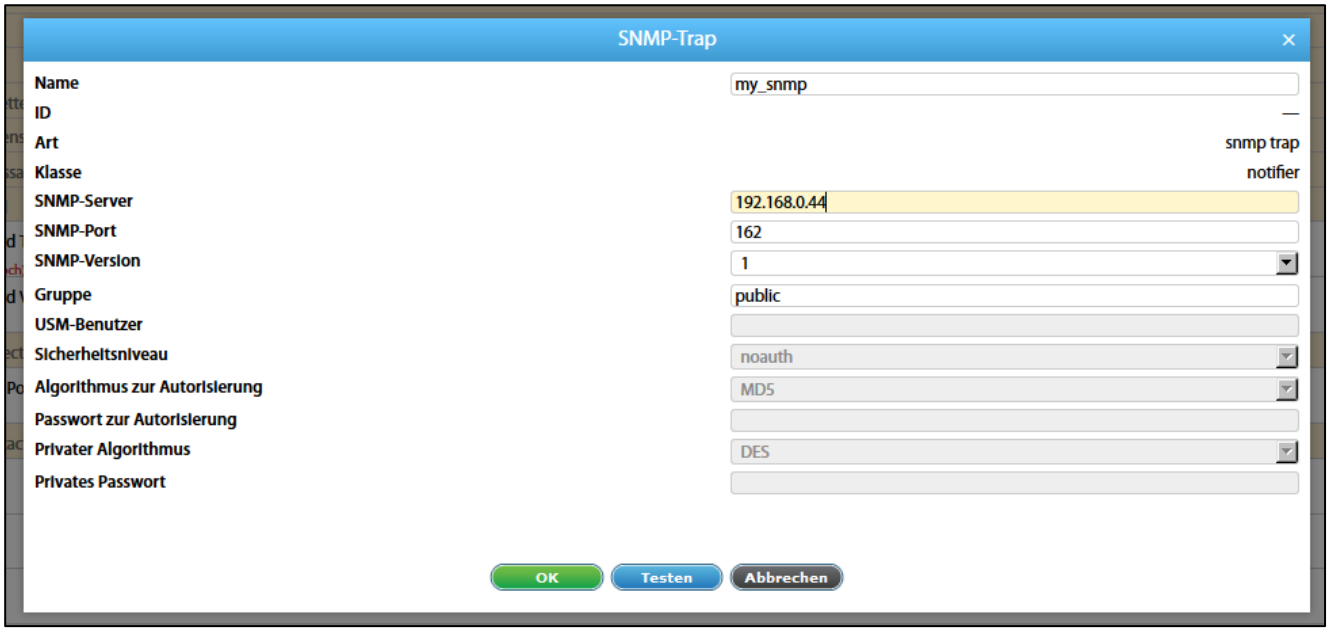
11.7.2. Notification of SNMP trap

To create an email notification via SNMP-Trap, you need to specify the following parameters:

Available settings		
1	Name	The name of the element in the system
2	SNMP-Server	Name or IP-address of the SNMP-server (192.168.1.10)
3	SNMP port:	SNMP server port number. (e.g. 162)
4	Version	Version (v1, v2c or v3)
5	Group	Group name (public)
6	USM users	User name for version v3
7	Security level for version v3, mobile version	Level of security "noauth" - no authorization, only username required "auth" - with Authorisation, must fill in "algorithm for Authorisation" and "password for Authorisation" "priv" - with Authorisation and data encryption, must complete "Authorisation algorithm", "Authorisation password", "private algorithm" and "private password".
8	Authorisation algorithm	Authorisation algorithm for version v3 with security levels "priv" and "auth".
9	Authorisation password	Authorisation algorithm for version v3 with security levels "priv" and "auth".
10	Private algorithm	Authorisation algorithm for version v3 with security levels "priv".
11	Private password	Authorisation algorithm for version v3 with security level "priv".



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Example of SNMP trap content:

```
Name: .1.3.6.1.4.1.39052.2.2.1.1.602001
Value: [Integer] 602001

Name: .1.3.6.1.4.1.39052.1.5
Value: [OctetString] Trap (name: 00011111, ID: 602001) was worked. Time:
12:00:51 2016/10/31 Logic: &apos;4444&apos;, Element: &apos;Onboard
Temperature&apos;, in state: &apos;low alarm&apos;, value:
&apos;27.80&apos;

Name: .1.3.6.1.4.1.39052.1.5.3
Value: [OctetString] 12:00:51 2016/10/31

Name: .1.3.6.1.4.1.39052.1.5.4
Value: [OctetString] 4444

Name: .1.3.6.1.4.1.39052.1.5.5
Value: [OctetString] Onboard Temperature

Name: .1.3.6.1.4.1.39052.1.5.6
Value: [OctetString] low alarm

Name: .1.3.6.1.4.1.39052.1.5.7
Value: [OctetString] 27.80

Name: .1.3.6.1.4.1.39052.1.5.8
Value: [Integer] 201001
```

11.7.3. SMS notification

To create an email notification, you need to specify the following parameters:

Available settings		
1	Name	The name of the element in the system
2	Telephone number:	Telephone number of the recipient (421908315000), up to 10 numbers. For multiple phone numbers use "space", ";" or ",". Example 1: +421908315000 +421908315001 +421908315002 Example 2: +421908315000,+421908315001,+421908315002 Example 3: +421908315000;+421908315001;+421908315002
3	Message content	Message text

Caution! For SMS to display the correct time, make sure that you have set the correct time zone under "System Settings" >> "Network" before sending SMS.

The time zone must match the time zone of your browser.

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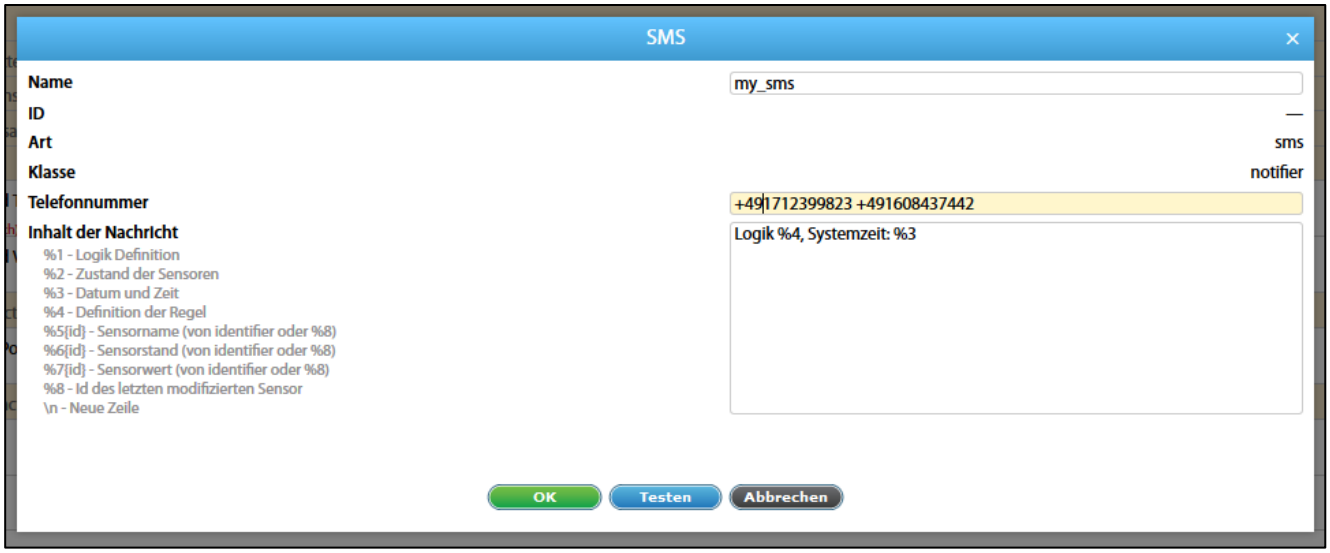

Sending SMS via another iQdata RMS that is equipped with a GSM modem (SMS Gate)

If several RMS are used in the same network and at least one of them has a GSM modem, you can send SMS from other devices that are not equipped with a modem.

To create an email notification via SMS Gate, you need to specify the following parameters:

Available settings		
1	Name	The name of the element in the system
2	Telephone number:	Telephone number of the recipient (421908315000), up to 10 numbers. For multiple phone numbers use "space", ";" or ",". Example 1: +421908315000 +421908315001 +421908315002 Example 2: +421908315000,+421908315001,+421908315002 Example 3: +421908315000 ; +421908315001 ; +421908315002
3	Message content	Message text
4	Login	User login to the device with a GSM modem
5	Password	Password user login to the device with a GSM modem
6	IP address	IP address of the device with GSM modem

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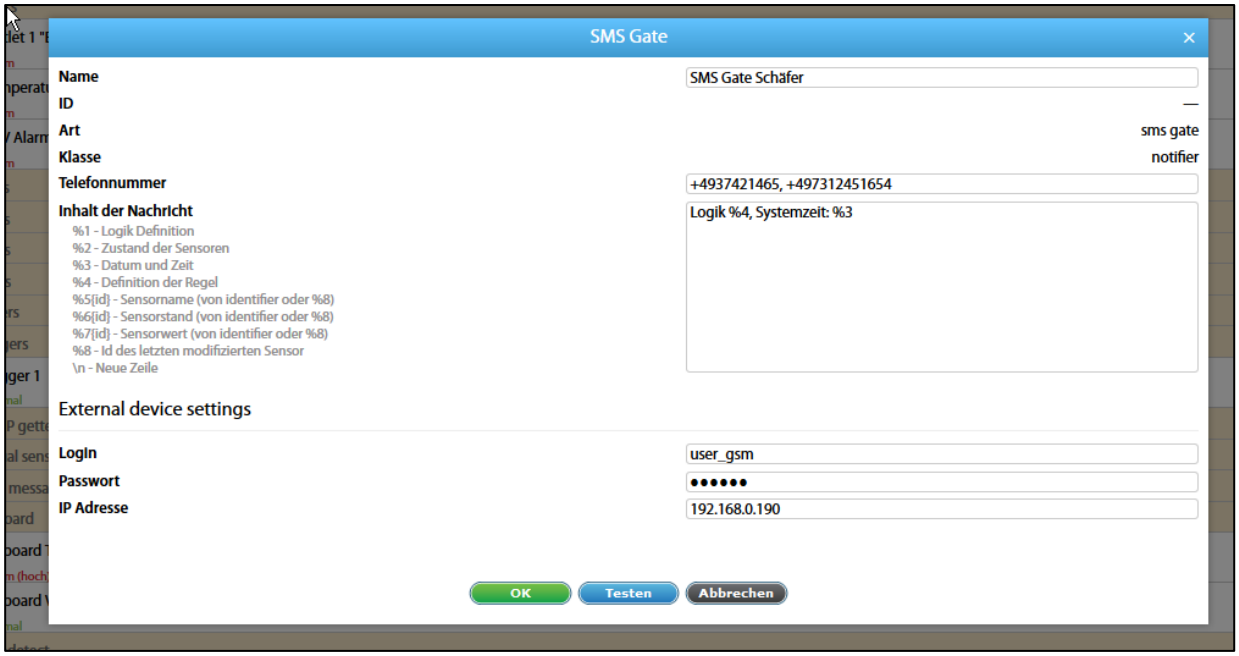

Caution! The user on the device with a GSM modem must have the appropriate read and write rights: GSM modem and e-mail, SNMP, SMS.

Caution! It can make sense to create a user on a device with a GSM modem that only has access to "GSM modem" and "E-Mail, SNMP, SMS".

In this way, other information is not passed on when notifications are created via other monitoring systems without a GSM modem.

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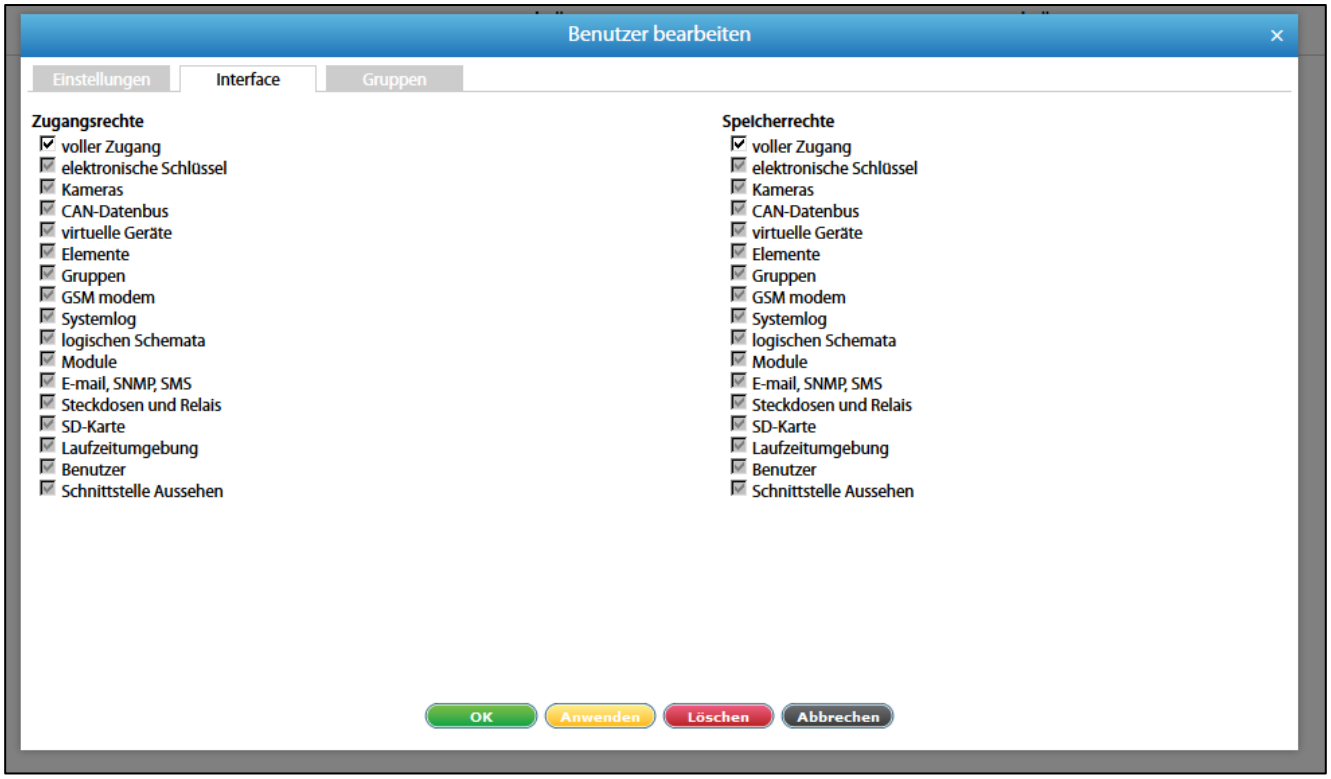

Sending SMS via the Internet service (Web-to-SMS)

If the device has Internet access, you can send messages using special services. The monitoring unit sends a request to such a service, which in return sends an SMS to the recipient, depending on the API in the request.

To create an email notification via "to SMS", you need to specify the following parameters:

Available settings		
1	Name	The name of the element in the system
2	Telephone number:	The recipient's phone number, compiled in accordance with the documentation of the web SMS service
3	Message content	Message text
4	Login	User login to the web-to-SMS service
5	Password	Password for logging in to the web-to-SMS service
6	API string	The API command line created according to the Web-to-SMS service documentation.

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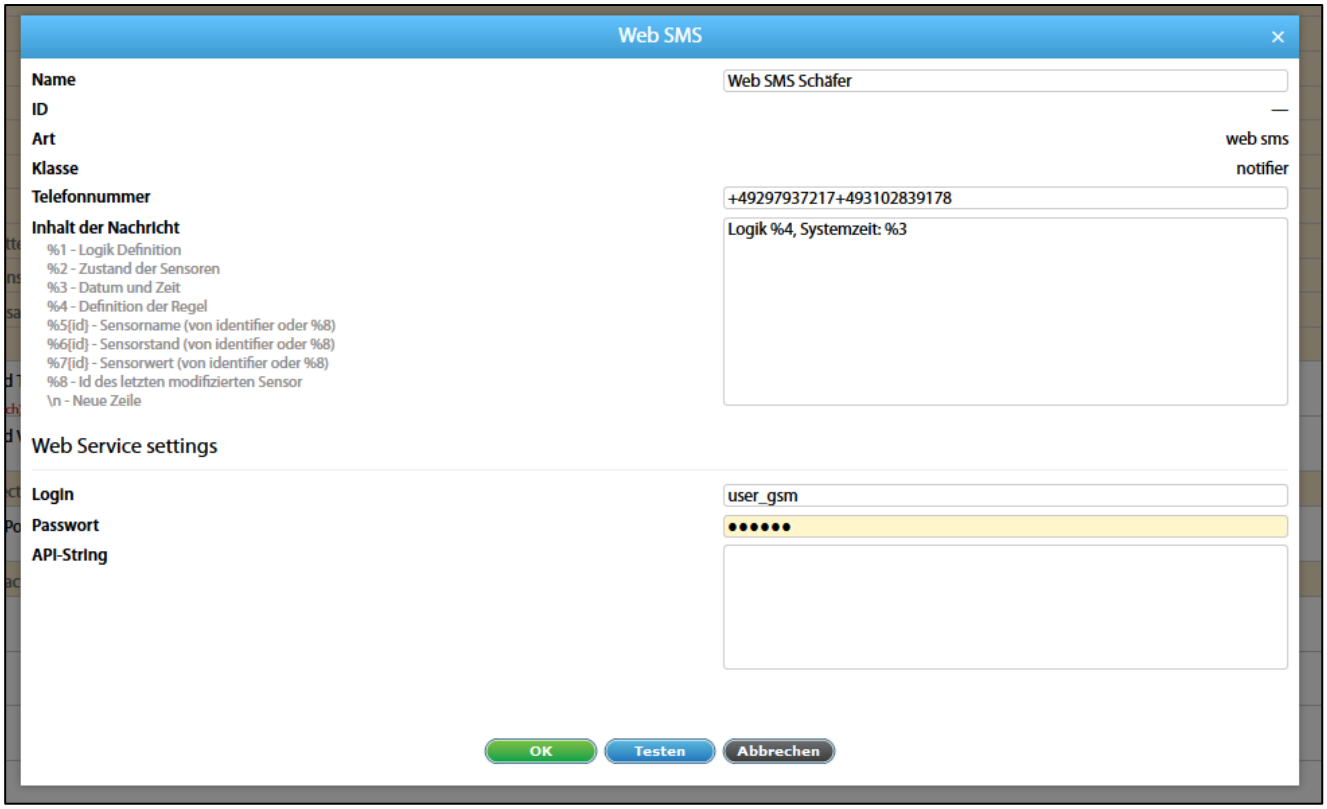

The following macros can be used on the command line:

- $ LOGIN $ - User login (Login field)
- $PASSWORD$ - user password in plain text (field password)
- $PASSWORD_MD5 $ - User password in hash MD5
- $PASSWORD_SHA1 $ - User password in hash SHA-1
- $PHONES$ - recipient phone numbers (field number)
- $MESSAGE$ - Message text (Message text field)

When the command is formed, these macros are replaced by the corresponding values in the form fields and are correctly coded to send the http request.

Parameters that are specified directly in the command must be presented in coded form (Urlencode).

Macros in the notification text

The text of the message can contain macros. Macros have the following form:

% {Macro number}

When creating the notification, the system replaces the macros variables with actual values.

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The following macros are available:

Available macros	
%1	Description of the logic diagram that triggered Example: If the 'on-board temperature' (id = 201001) is in the 'alarm' state. then device5 '(id = 601001) immediately changes the status to' on '.
%2	Description of all sensors in the logic diagram and their sensor status when the logic is triggered. Example: Onboard temperature '(id = 201001) in the' normal 'state. Temperature2 '(id = 201002) in the' normal 'state.
%3	Response time of the logic diagram Example: 08:16:46 2018/09/ 05
%4	Name of the logic diagram Example: 'Logic diagram 3'.
%5	Name of the sensor that triggered the logic diagram
%6	State of the sensor in the logic diagram that triggered the logic at the moment
%7	Value measured by the sensor that triggered the logic diagram at the time
%8	Sensor ID that triggered the operation of the logic circuit.

Example: If the text has the following form:

```
%4
--
%1
--
%2
--
%3
```

When the logic is triggered and the notification is sent, the recipient sees a message in the following form:

```
Logic scheme name
--
if 'S/N iButton'(id=13) in state 'alarm',
then
'Email'(id=302) changes to state 'on' immediately
'Relay-0'(id=31) changes to state 'pulse' immediately
--
'S/N iButton'(id=13) in state 'alarm'
--
12:40:36 2012/01/18
```


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We recommend using a more informative form of the message. By default it is written in the following form:

```
Logic %4:
--
Defintion:
%1
Current sensor state:
%2
--
System time: %3
```

The macros %5, %6, % 7 are able to parameterise using the element designation {id}, i.e. the element for which the evaluation is to be made can be specified for these macros.

Example for the evaluation of macros:

```
%5{1018} – print the name of element with id=1018 - 'sc470-0192-internal
T°C';

%6{1018} – print the state of element with id=1018 - 'normal';

%7{1018} – print the value of element with id=1018 - '27.4'.
```

If an element with the specified name is not found in the text of the message, it is inserted -'id = xxxx not found '.

If the {id} parameter is not specified, a calculated value for the element that is triggered by the logic diagram is inserted in the text of the message.

Macro % 8 has been available since version 2.4.4. The % 8 macro is used to determine the identifier of the sensor when the logic diagram is triggered.

The identifier is shown in single quotation marks in the body of the message (example: '302014').

The % 8 macro can be used to determine the identifier of the sensor when the logic diagram is triggered by a change in the state of the group.

Suppose there is a logic diagram that links the group state change to sending the notification.

At the beginning, all elements in the group are in a normal state. The group is also in the normal state. The logic is inactive.

Next, one of the sensors in the group is triggered. Accordingly, the group also goes into the alarm state. The logic circuit is activated according to the operating status of the group. The logic circuit is activated according to the operating status of the group. The text is created according to the template and the notification is sent.

In this case, %5, %6 will be replaced with the name and status of the group when the notification text macros are created. The macro %8 is replaced by the value of the identifier of the triggered sensor within the triggered group.

This means that if the state of the element has changed, the group, module or system in which this element is incorporated also changes the state if the state of the element changes and the state change of the group triggers the logic.

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Macro %8 is replaced by the name of this element in the message template.

Example:

```
1. Logic1 is triggered by a Group1 in state Warning.
2. Groups is in the state Alarm and consists of Sensor1 in state Alarm
3. Sensor2 is in state Warning.
4. Sensor3 is in state Warning
5. Sensor1 goes to state Normal
6. Group1 goes to state Warning and logic is triggered
7. Macros %8 will give identifier of Sensor1
```

The macros %8 can be used as parameters of the macros %5, %6 and %7.

Example:

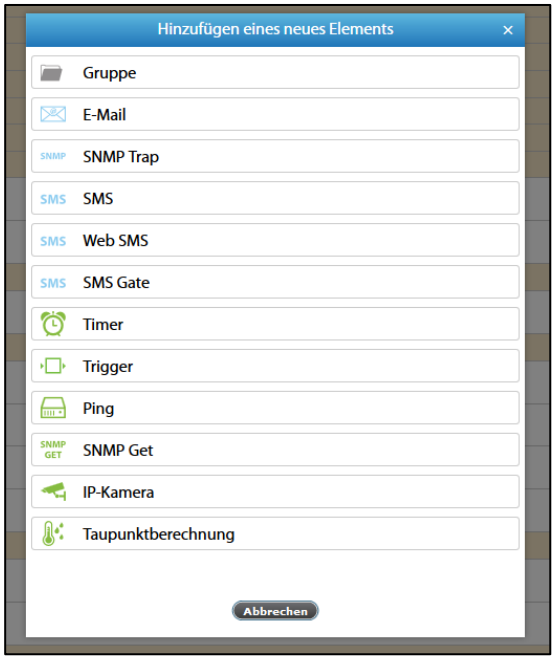
```
%6{%8}  - gives current state of teh sensor
```

11.8. Create pings

Ping is a utility that tests the accessibility of a host and a network.

In the absence of the connection, ping registers are switched from a normal state to an alarm state. After you have reconnected, the ping register returns to normal.

To create a "ping" utility, press the Add button  in the "System Tree" menu. Then select "Ping". A modular window appears:



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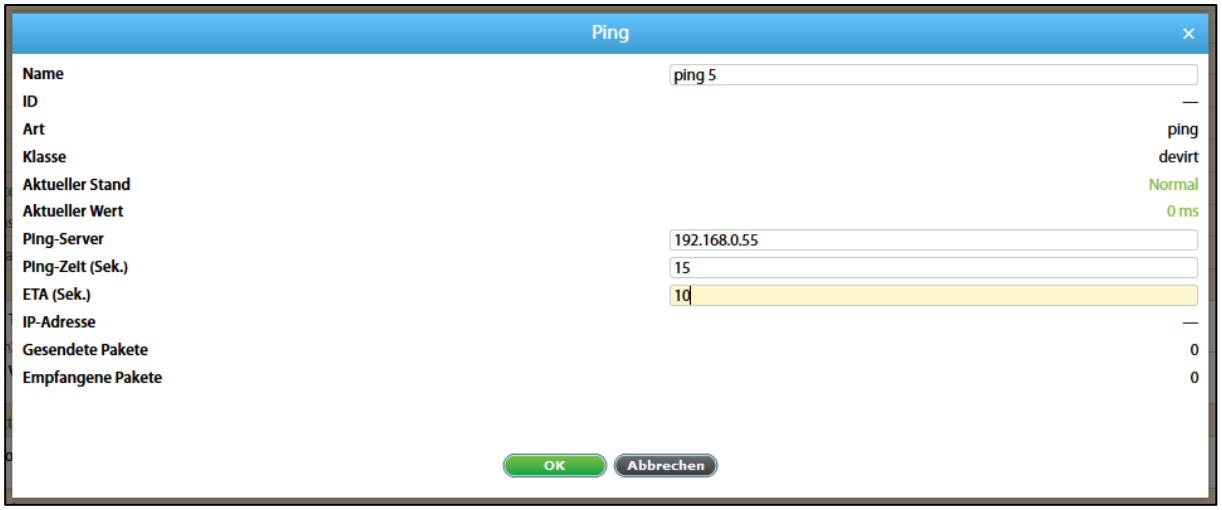


The "ping time" must not be less than 5 seconds.

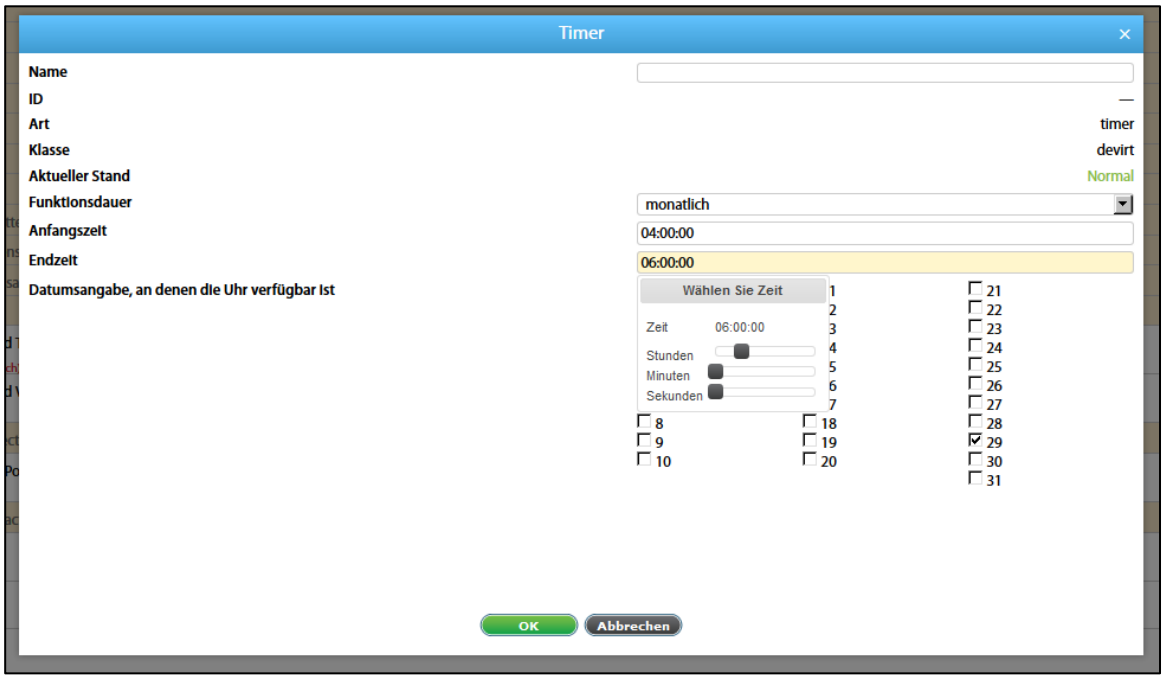
If you get the message: "Element data cannot be updated", check that the "ping time" is not less than 5 seconds. Or try clearing the browser cache and reloading the page.

Enter the server address, the ping time, the estimated return time between sending a request and receiving a response and press "OK".

11.9. Create timers

You can use the timer to plan the events in the system. When the timer is triggered, it changes from the normal state to the alarm state.
When the timer is deactivated, it will return to normal.

To create a "Timer" utility, press the Add button  in the "System Tree" menu. Then select "Timer". A modular window appears:



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Select the timer mode:

- "Once" - one-time event
- "Weekly" - every week
- "Monthly" - every month, set start time, end time, day on which the timer is triggered

Press "OK" to create a timer.

After reaching the time specified in the "Start time", the timer switches to alarm mode.
After reaching the time specified in the "End time", the timer returns to normal mode.

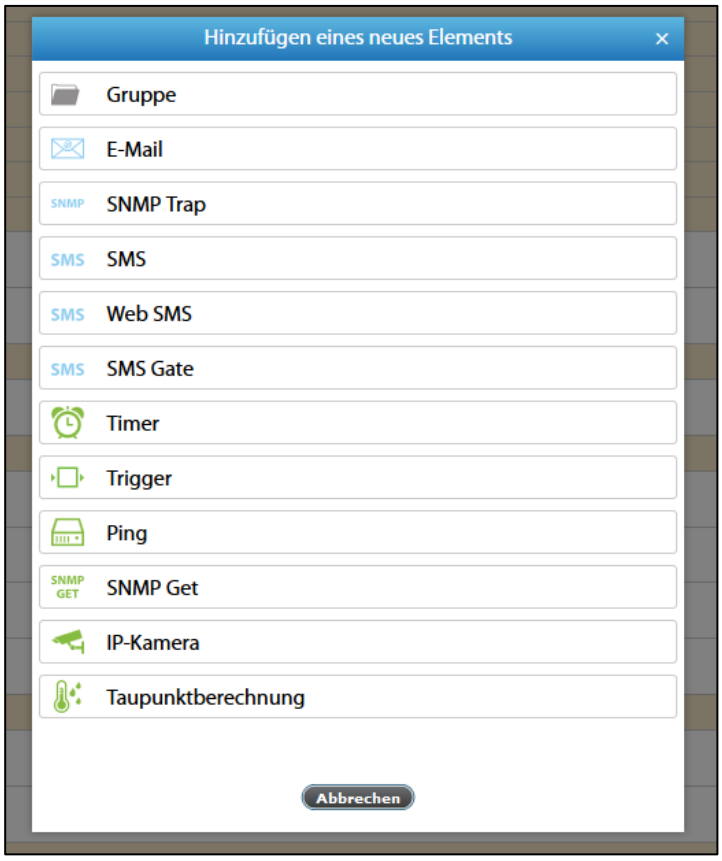
If this is installed as a one-off event, the timer is activated at the specified start date and time. If you set the weekly or monthly operating mode, the timer is activated in the specified times.

11.10. Create triggers

A trigger is designed to generate an event in the system when it is triggered logically or manually.

The trigger has two modes: normal and inverted. In normal mode, the trigger changes state from normal to alarm, and when it is turned off, you return to normal state in reverse.

To create a trigger, press the Add button  in the "System tree" menu. Then select "Trigger". A modular window appears:



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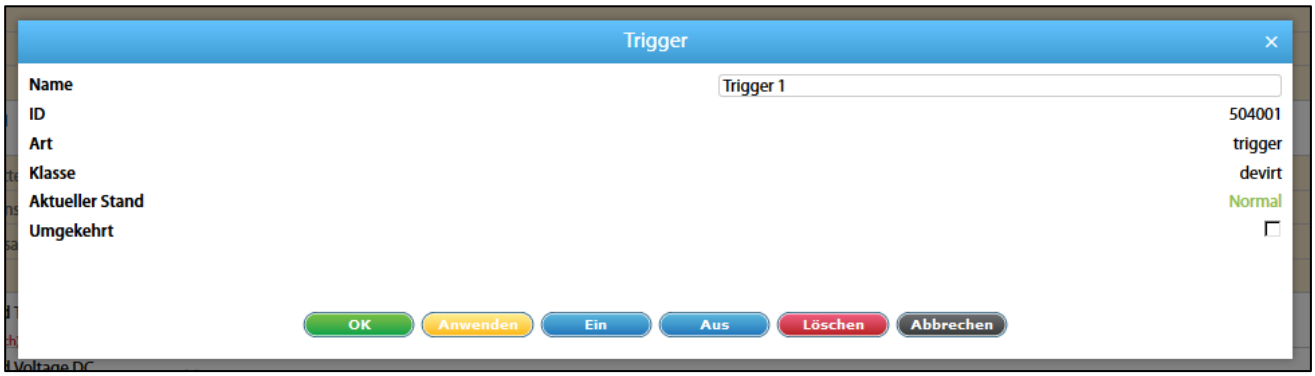
Enter a name for the trigger created. If necessary, select the inversion.

Press "OK" to create a trigger.



When editing a trigger, virtual elements and functions are available in addition to the standard control functions:

"On" - transition to an active state (alarm - for normal and norm - for inverse mode)

"Off" - transition to an inactive state (norm - for normal and alarm - for inverse mode)

11.11. Create Get SNMP elements

The virtual sensor "SNMPGet" is used to read data from external devices via SNMP PDU GET (v2c).

To create “ SNMPGet", press the Add button  in the "System tree" menu. Then select "SNMP Get". A modular window appears:

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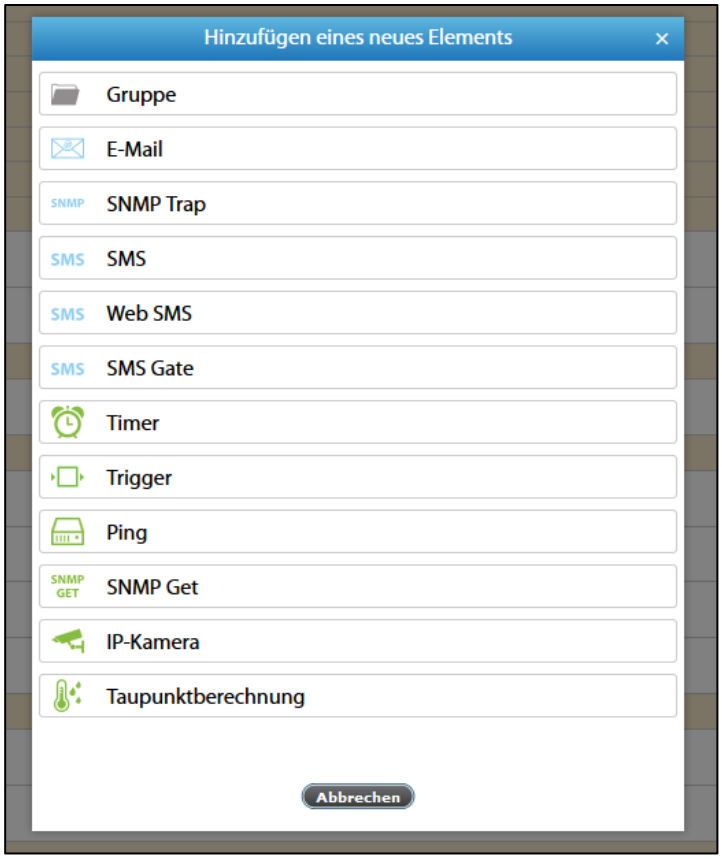
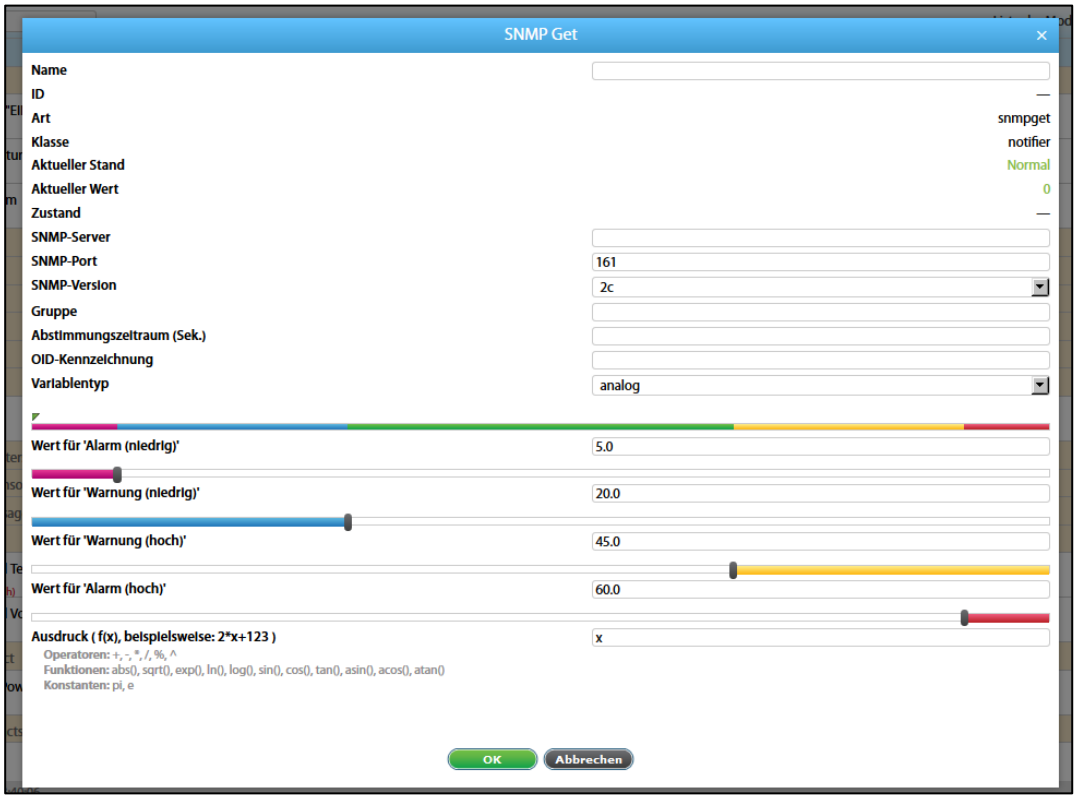


Click on "SNMP Get". The SNMP Get Element form opens:



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Available settings		
1	Name	The name of the element in the system
2	SNMP-Server	SNMP agent address
3	SNMP port:	SNMP agent port
4	Group	Agent read community
5	Coordination period (sec.)	Transmission period SNMP Get in seconds (at least 60 s)
6	OID identifier	The "object identifier" in the system
7	Variable type	Object type: • analogue - object specifies the numerical value (string or integer) that results from a given expression to a real number. The state of the element is specified by the calculated value and a predefined level is defined. • discrete - object specifies any value (string or integer). In this case, the expression must contain the desired substring. If the substring is found, the state of the element changes to "normal", otherwise the element is in "alarm" state
8	Expression	Depending on the object type • analogue - function of the form f (x). The standard value for the sensor is equal to the measured value: "x", i.e. corresponds to the expression "x". To calculate the indirect value of the sensor, it is possible to use any expression that is allowed "(", ")", as well as: ○ operators: "+", "-", "*", "/", "%" (rest of division), "^" (exponentiation); ○ Functions: "abs", "sqrt", "exp", "ln", "log", "sin", "cos", "tan", "asin", "acos", "atan"; ○ Constants: "pi" (3.1415926 ...), "e" (2.718282818 ....) For example: "0.1*x+0.5" • discrete - any substring contained in the response in the normal state of the object

The query frequency is configured in the properties of the SNMP Get element, it is currently limited and cannot be less than 60 seconds.

11.12. Add an IP-camera

11.12.1. IP camera settings

JPEG / MJPEG

The iQdata web interface only supports IP cameras with the compression format JPEG / MJPEG video stream.

Make sure your camera supports "MJPEG" or "JPEG".

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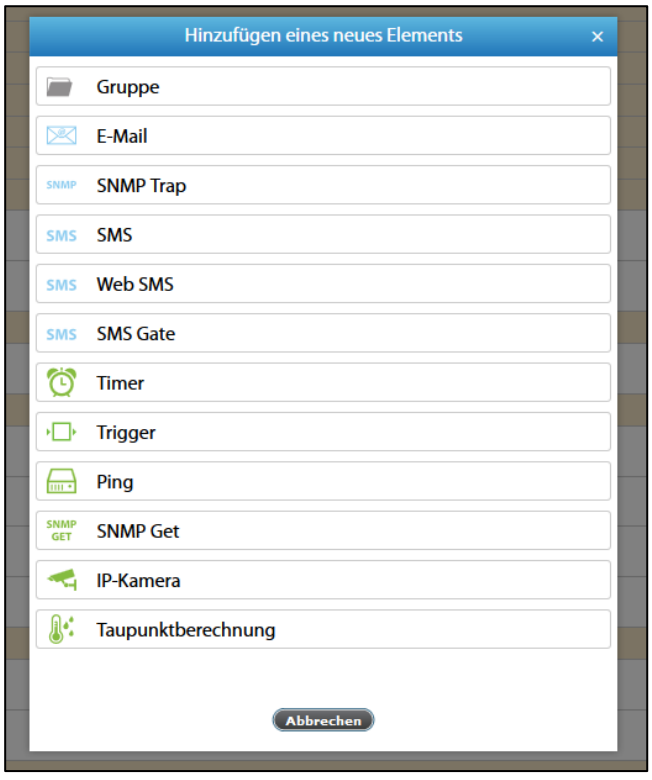
Available settings		
1	Name	The name of the element in the system
2	The URL (IP address)	The URL (IP address) of the camera is required with the protocol type (http: // or https: //) The most common URL format (IP address) is "http: //xx.xx.xx.xx/axis-cgi/mjpg/video.cgi". In general, the URL of the video stream for IP cameras depends on the manufacturer and model. To determine this URL, please contact the manufacturer.
3	Username and password	The video stream authentication of the camera. Optional parameters. It is not permitted to use the name and password as a prefix in the URL (IP address) field.
4	Recommended FPS	The refresh rate of an image to generate a video stream via a JPEG web interface or MJPEG, when streaming directly via an IP camera.

11.12.2. Add an IP camera to the web interface

The IP camera element was developed to display images from monitoring cameras

To create IP-camera, press the Add button  in the "System tree" menu. Then select IP camera. A modular window appears:



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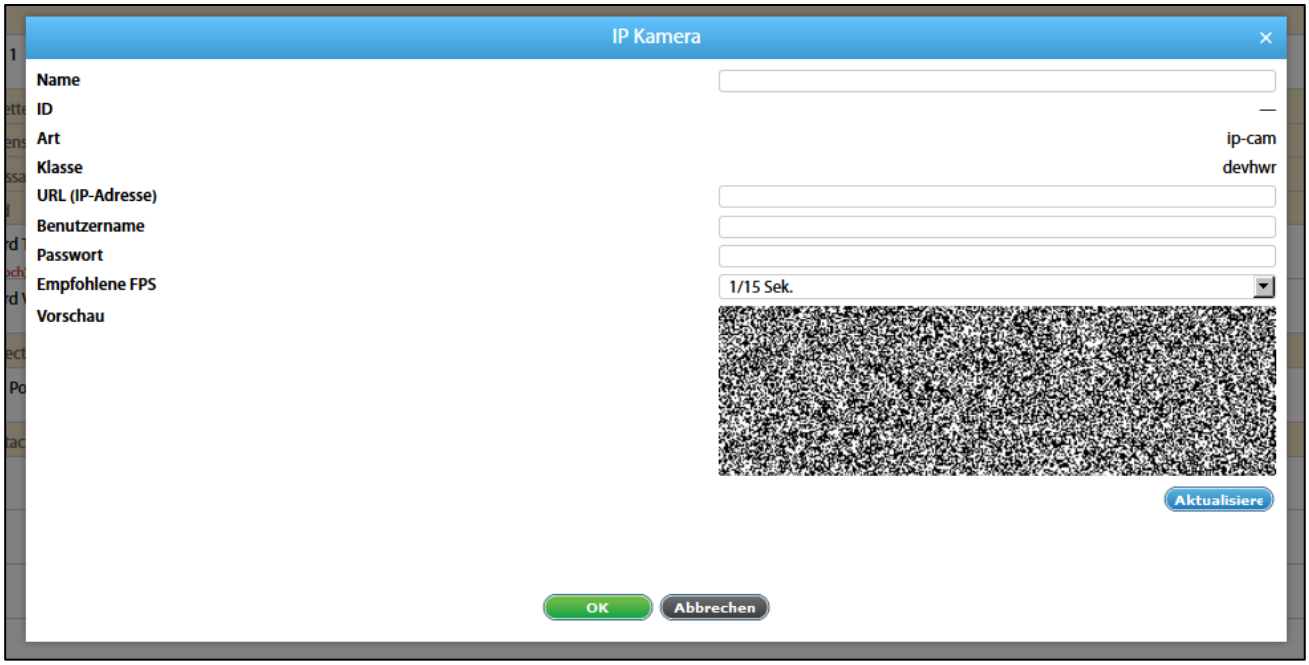


Set the necessary parameters and then click "Refresh", in which case the camera image should appear after a while (usually a few seconds). Then click on "OK".

If the picture is missing, please make sure that the hardware settings are correct (e.g. enter the URL in the address bar of your browser).

To view the images from the cameras, go to the Cameras section in the menu.

11.13. Add logic diagrams

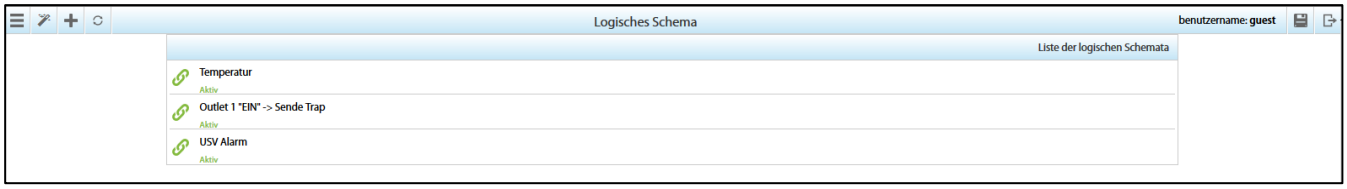
Logic diagrams are used to define automatic actions for events that occur in the system.

Caution! If you need the setup to be informed about changes in more than one item, it makes more sense to use group notification.

Logic diagrams represent a series of conditions "IF" and a series of actions that are executed "THEN". Conditions can be combined

with "AND" and "OR." To perform the actions, it is possible to set the timeout for repeating the desired actions. If the timeout is 0, the action is executed once.

The logic scheme only works if the combination of conditions is true. Otherwise, the logic scheme is deactivated.



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To create a logic diagram, go to Menu >> Logic diagram and press the Add button . A modular window appears:

When you edit or add a logic schema, specify the name of the logic schema.

Create a set of conditions "IF". Select the name of the element in "Element" and the state of the element in "Stand" as condition for the logic.

Add an additional condition with "AND" or "OR" in the "Operator" field.

If a sensor with analogue output changes its state very quickly (e.g. vibration sensor), the state can change from "Low" to "Alarm" and vice versa without going through the "Warning" and "Normal" states.

Create a series of executable actions "THEN". Select the name of the element in "Element" and the state of the element in the columns "condition" into which the element should be inserted.

If necessary, enter the time in seconds in the "Time limit" field to create a pause before the element changes to the new state according to the logic.

If deactivation occurs within the specified timeout logic, the element does not change its state.

11.14. Set up the GSM / USB modem

The GSM modem is used in the system to send SMS notifications and receive SMS commands.

For operation with a modem:

1. Insert the SIM card into the phone and make sure it works, check the PIN code
2. Insert the SIM card into the modem
3. Switch on the monitoring system
4. Configure the modem
5. Add SMS notifications and configure the logic or group notifications

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