

# Querx

**Network thermometer, hygrometer,  
barometer and data logger**

User Guide

Querx TH

Querx WLAN TH

Querx THP

Querx WLAN THP

Querx PT

Querx WLAN PT

Handbook version 5.6.3

Firmware version 5.0



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# 1 Introduction

The egnite Querx product line comprises smart sensors that gather and monitor temperature- and humidity-values.

This user manual will tell you how to configure, use and maintain the network-compatible devices.

## egnite Querx online

Current and additional information on the Querx range of products can be found at [www.egnite.de](http://www.egnite.de).

## 1.1 Safety Notices

Please read this manual carefully and take note of the following safety notices, in order to minimize the risk of damage or injury.

### Intended purpose

Querx is intended to monitor and analyze climate data and make this data available via various interfaces.

Any other use of the devices is considered contrary to the designated use. The manufacturer takes no responsibility for consequences resulting out of any application that does not comply with the designated use.




### Danger of death caused by electrical shocks

Please follow these safety notes, in order to minimize the risk of electrical accidents:

- Only use the device, cables and power supply in faultless condition.
- Disconnect the device from the power source before maintenance.
- Do not manipulate the device or its accessories.
- Only let qualified personnel carry out maintenance work.
- Do not submerge the device in water or any other liquid.

## 1.2 Symbols

The following symbols will be used throughout this manual:

|   |  |
|---|--|
|  | <b>Danger</b><br>Indicates possible danger of injuries.          |
|  | <b>Attention</b><br>Indicates issues that can damage the device. |
|  | <b>Information</b><br>Points out helpful hints and tips.         |

### 1.3 About egnite Querx

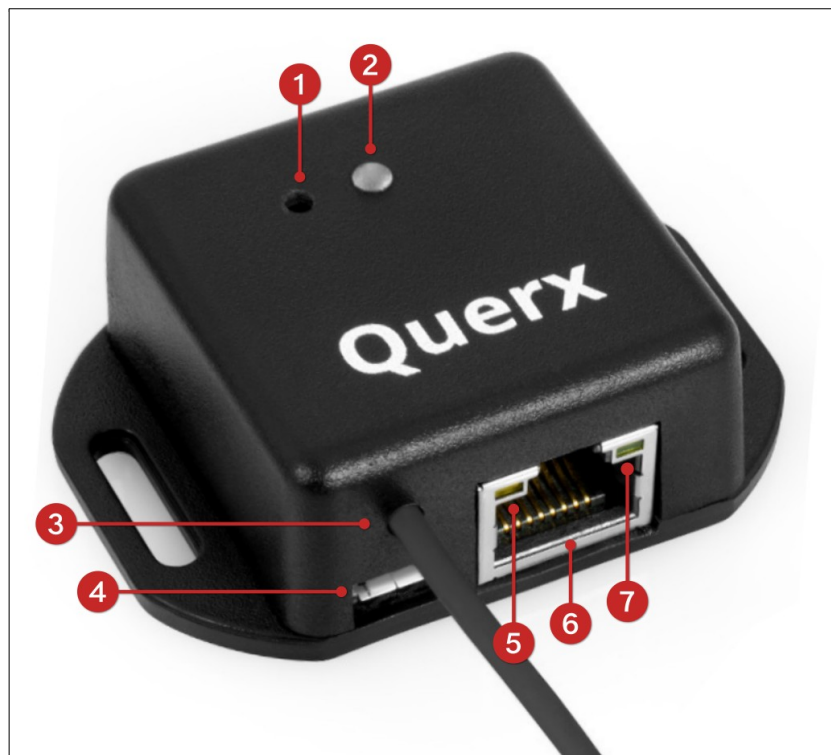
Querx sensors gather climate data and make it accessible via network-interfaces. An alert function automatically transmits notifications via email (TLS / StartTLS), SNMP and Syslog when limit values are exceeded.

The data logger has a capacity of 36 thousand to 4 million entries, depending on the model. This lets the device track data for at least 25 days up to several years. All gathered data is visualized in an interactive graph that can be viewed in any web browser. Furthermore, data can be accessed manually or automatically in various formats and via multiple interfaces such as HTTP, SNMP or Modbus/TCP. This facilitates the integration into existing systems such as network management solutions and the application in the area of industrial process monitoring (SCADA).

Querx can operate as a stand-alone device. A cloud service is not necessary, though it offers simpler, global and central access to all data. In addition to [palamoa.de](https://palamoa.de), which can be used free of charge, most other IoT clouds can also be used.

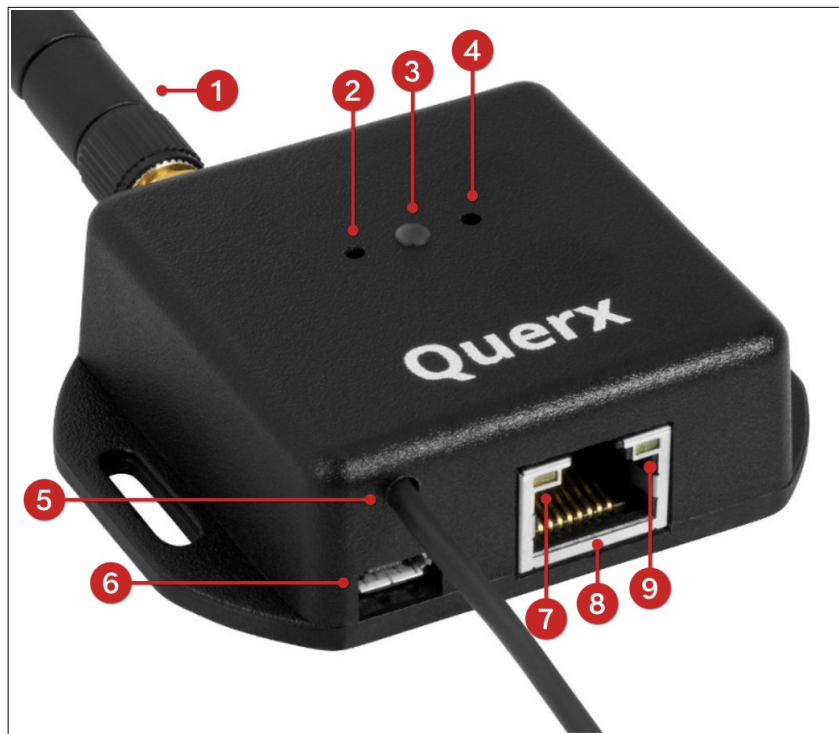
### 1.3.1 egnite Querx at a Glance

egnite Querx TH  
egnite Querx THP  
egnite Querx PT



1. Configuration reset button
2. Status LED
3. Sensor cable
4. Micro-USB socket for power supply
5. Network link LED
6. RJ45-socket for Ethernet connection
7. Network activity LED

egnite Querx WLAN TH  
egnite Querx WLAN THP  
egnite Querx WLAN PT



1. Wireless LAN antenna
2. Configuration reset button
3. Status LED
4. Setup button (currently without function)
5. Sensor-cable
6. Micro-USB socket for power supply
7. Network link LED
8. RJ45-socket for Ethernet connection
9. Network activity LED



### 1.3.2 Ships With

#### egnite Querx TH

**egnite Querx TH** (item number EGN600214)

- egnite Querx TH with integrated temperature- and humidity-sensors

**egnite Querx TH Set** (item number EGN600114)

Like egnite Querx TH (item number EGN600214) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

#### egnite Querx THP

**egnite Querx THP** (item number EGN601116)

- egnite Querx THP with integrated temperature-, humidity- and pressure-sensors

**egnite Querx THP Set** (item number EGN601216)

Like egnite Querx THP (item number EGN601116) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

#### egnite Querx PT

**egnite Querx PT100** (item number EGN600514)

- egnite Querx PT 100
- Simple Pt100-sensor without pocket sleeve

**egnite Querx PT100 Set** (item number EGN600414)

Like egnite Querx PT100 (item number EGN600514) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

**egnite Querx PT1000** (item number EGN600814)

- egnite Querx PT 1000
- Simple Pt1000-sensor without pocket sleeve

**egnite Querx PT1000 Set** (item number EGN600714)

Like egnite Querx PT1000 (item number EGN600814) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

## egnite Querx WLAN TH

**egnite Querx WLAN TH** (item number EGN601215)

- egnite Querx WLAN TH with integrated temperature- and humidity-sensors
- Wireless LAN antenna

**egnite Querx WLAN TH Set** (item number EGN601115)

Like egnite Querx WLAN TH (item number EGN601215) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

## egnite Querx WLAN THP

**egnite Querx WLAN THP** (item number EGN 602217)

- egnite Querx THP with integrated temperature-, humidity- and pressure-sensors
- Wireless LAN antenna

**egnite Querx WLAN THP Set** (item number EGN602117)

Like egnite Querx WLAN THP (item number EGN602217) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

## egnite Querx WLAN PT

### **egnite Querx WLAN PT100** (item number EGN601415)

- egnite Querx WLAN PT 100
- Wireless LAN antenna
- Simple Pt100-sensor without pocket sleeve

### **egnite Querx WLAN PT100 Set** (item number EGN601315)

Like egnite Querx WLAN PT100 (item number EGN601415) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

### **egnite Querx WLAN PT1000** (item number EGN601715)

- egnite Querx WLAN PT 1000
- Wireless LAN antenna
- Simple Pt1000-sensor without pocket sleeve

### **egnite Querx WLAN PT1000 Set** (item number EGN601615)

Like egnite Querx WLAN PT1000 (item number EGN601715) but additionally includes

- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- Ethernet patch cable

### 1.3.3 Accessories

The following accessories and spare parts can be purchased from the manufacturer egnite:

- Wireless LAN antenna
- Ethernet cable
- Micro-USB cable
- USB power adapter with interchangeable plugs for UK, EU, US and AU outlets
- DakkS- (German Accreditation Body) or ISO-calibration certificate

A selection of Pt100- and Pt1000 sensors is available from [shop.egnite.de](http://shop.egnite.de).

## 2 First Use

### 2.1 Before Setup

If the device's temperature differs from the ambient climate, it should be left to acclimatize before setup.

In this case, wait for approximately two hours before connecting Querx to the power supply.



#### Attention

Temperature differences between the smart sensor and its surroundings can lead to condensation, damaging the device.



#### Information

Temperature differences between the smart sensor and its surroundings can lead to inaccurate measurements.

### 2.2 Mounting the Sensor

Querx sensors can be mounted using the latches on the case. They can alternatively be mounted using zip-ties to tie them to piping, for instance.

Please take note of the following points when mounting the device:

- Querx is designed for indoor use.
- Do not mount Querx in locations that are directly exposed to sunlight.
- **TH and THP Models:** The device should be exposed to a sufficient airflow. Measurements can be made in still air, but the results for humidity will be falsified.
- Do not mount Querx with the sensor cable pointing upward. The cable should point downward or toward either side of the device

## 2.3 Model PT: Connecting the Sensor Cable

The Querx PT models support 2-, 3- or 4- wire Pt100 or Pt1000 sensors. Their color coding may vary, depending on the underlying standards.

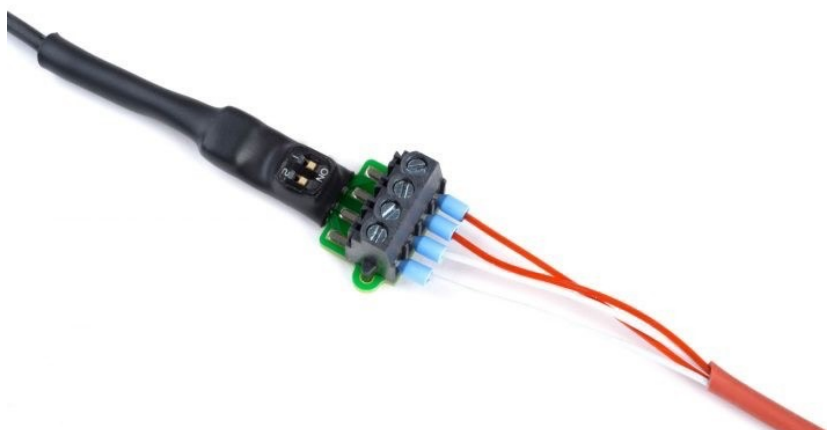
**i**

### Information

Depending on the production standards your sensor conforms with, none of the diagrams displayed below may correspond to the colors of your sensor's wire. In such cases, please refer to the manufacturer's data sheet.

The spring-loaded terminals of older models were replaced with screw terminals in version 1.1.

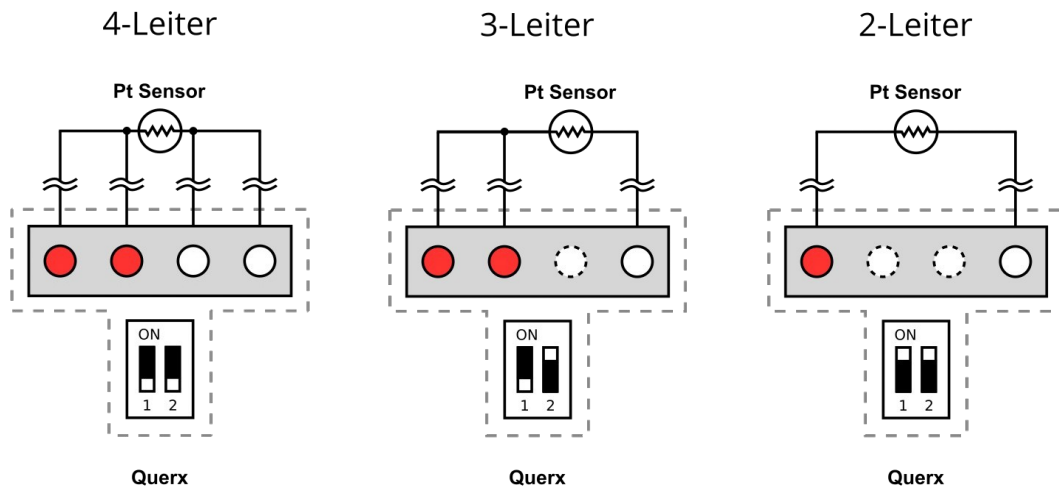
### 2.3.1 Connecting a Sensor to Screw Terminals



You will require the following tools, in order to connect a sensor.

- A tool with a fine tip, e.g. a fine screwdriver or a pair of tweezers
- A flat head screwdriver
- Possibly a magnifying glass

Two DIP switches located above the terminals for the cable cores are used to select whether the sensor is connected to Querx PT using two, three or four cable cores.



1. The above illustrations tell you which switch position your sensor requires.
2. Use a tool with a fine tip to set the DIP switches to the required position. If necessary, use a magnifying glass.
3. Proceed to connect the individual cable cores to the terminals as displayed in the images.
4. In order to connect a core, first loosen the corresponding screw by turning it anti-clockwise.
5. Insert the core into the terminal.
6. Tighten the screw by turning it clockwise.
7. Make sure that the core is securely fixed by pulling it with a little force.

### 2.3.2 Connecting a Sensor to Spring-loaded Terminals

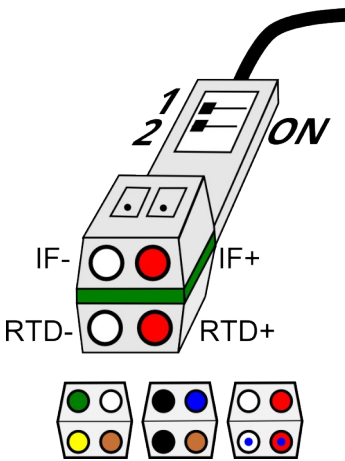
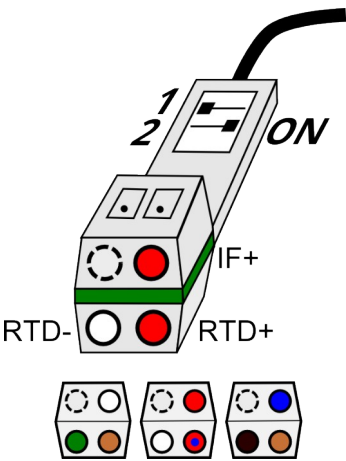
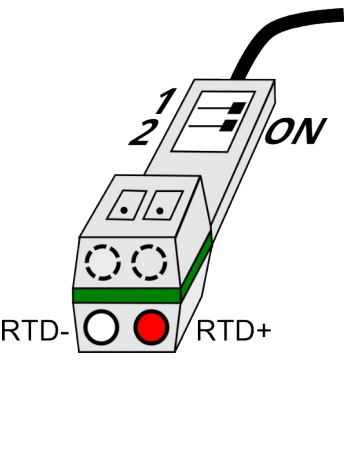


You will require the following tools, in order to connect a sensor:

- A tool with a fine tip, e.g. a fine screwdriver or a pair of tweezers
- A biro
- Possibly a magnifying glass

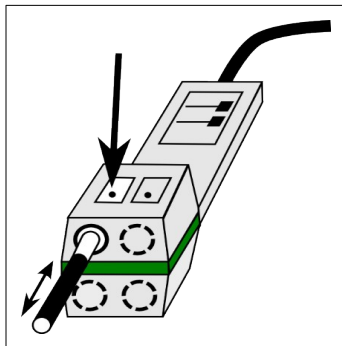
Two DIP switches located above the terminals for the cable cores are used to select whether the sensor is connected to Querx PT using two, three or four cable cores.



|   |   |   |
|---|---|---|
|  |  |  |
| 4-core Sensor   | 3-core Sensor   | 2-core Sensor   |

1. The above illustrations tell you which switch position your sensor requires.
2. Use a tool with a fine tip to set the DIP switches to the required position. If necessary, use a magnifying glass.

Proceed to connect the individual cable cores to the terminals as displayed in the images.



1. Depress the fixture corresponding with the terminal to which you want to connect the cable core.
2. Insert the core into the terminal.
3. Release the fixture.
4. Test the connection by lightly pulling at the cable.

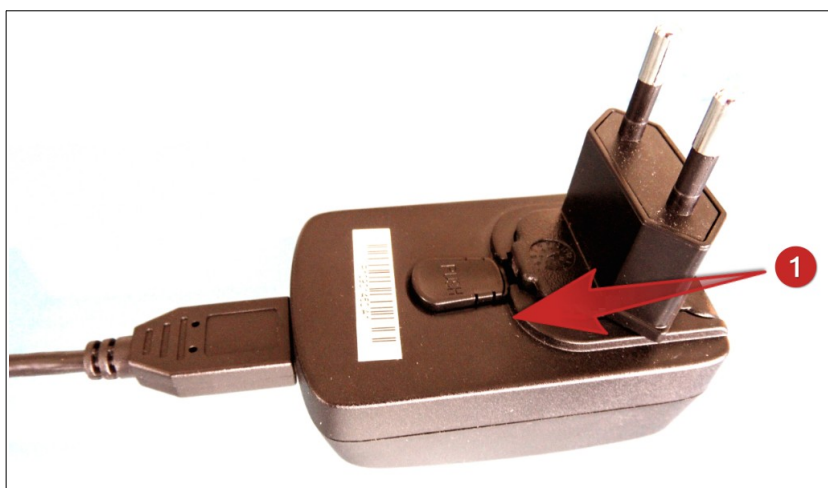
In order to remove the cable, depress the fixture again and pull the cable out.

## 2.4 Establishing the Network Connection

A wired LAN connection is required for the initial setup. This also applies to the wireless network capable WLAN models, as the wireless connection's login data needs to be entered before WLAN can be used.

Therefore, please connect Querx to your network or directly to the computer you intend to use to configure the device, using a network cable.

## 2.5 Power Supply



1. Prepare the power adapter by inserting the plug that is used in your country. An audible click indicates that the connection has been made.

Now connect Querx to the power adapter using a micro-USB cable and plug the power supply into a socket. The Querx status-LED will now light up yellow.



### **Danger**

Never use the device with a defective power adapter! Risk of death from electrical shock!

Querx can alternatively be connected to a free USB-Port, if no free power outlet is available.

## 2.6 Network Configuration

In most cases, the local network supports DHCP, enabling automatic network configuration. After booting the device, the status LED flashes yellow. Once it has received valid settings, the LED will flash green every ten seconds. Once this is the case, you can skip the following sections and continue with chapter 2.7. *Accessing the Web Interface*.

The LED flashes yellow if a network error occurs. In this case, make sure that all wires are connected correctly. The two LEDs located on the LAN interface can also be used for diagnostic purposes. The yellow LED lights up once a 100 Mbit connection has been established and the green LED flashes to indicate network activity. If both LEDs remain dark, the Ethernet cable may be connected incorrectly or defective.

Should the problems persist, please contact your network administrator or connect the device directly to the computer you intend to use for its configuration and continue with the following chapter.

### 2.6.1 Zeroconf

Instead of connecting Querx to the local network, it can also be connected to a computer directly, via an Ethernet cable. Most operating systems support Zeroconf, facilitating such a direct connection.

After booting, the status LED will flash yellow continuously, while Querx is searching for a network that supports DHCP. Should it not succeed, Querx is automatically configured with the IP address 169.254.111.1. This behavior is not ideal, but it suffices for an initial setup.

The status LED should now flash green every ten seconds. If this is the case, you can now continue with chapter 2.6.2. Otherwise, please check the Ethernet connection, as detailed in the previous section. If this does not solve the issue, resetting the factory settings, as described in chapter 11.3.2 *Performing a Hardware Reset*, may help.

## 2.6.2 Manual Configuration

If the automatic network configuration does not function as expected, or if this is not requested, Querx can alternatively be configured manually with a static IP address.



### Information

The steps detailed in this section are not necessary for most users. Please continue with chapter 2.7. *Accessing the Web Interface*.

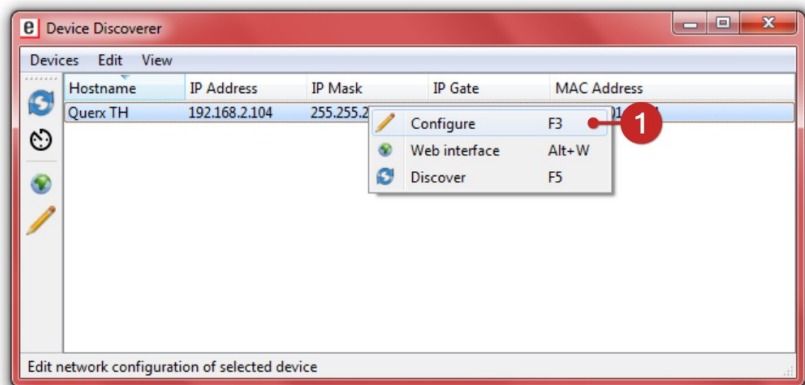
### 2.6.2.1 Installing the Device Discoverer

The **Device Discoverer** application is available for Windows, Linux and OS X and can be downloaded from [www.egnite.de](http://www.egnite.de).

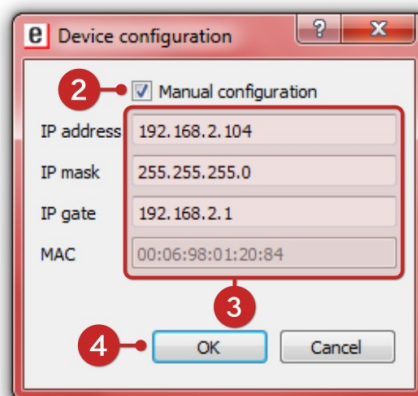
1. Open the **Device Discoverer** installation file.
2. Follow the install wizard's instructions.

### 2.6.2.2 Configuring the Network Connection

Run the application **Device Discoverer**.



1. Right-click the device you wish to configure and click *Configure* in the drop-down menu.



2. Activate the checkbox *Manual configuration*.
3. Enter the *IP address*, the *IP mask* and the *IP gate*.
4. Save the changes by clicking *OK*.

Querx will apply the settings and then reboot. The status-LED will light up yellow. It will flash green as soon as the device is operational.

## 2.7 Accessing the Web Interface

egnite Querx features an integrated web server. Only a web browser is required to configure the device and access tracked data.

The data gathered by the device is visualized in a graph on the home page. JavaScript needs to be activated for the graph to be displayed correctly. It is, however, not required for the configuration process.



### Access via IP address

Boot a web browser on your PC and enter the IP address of your Querx into the address bar, if you know it.

### Access via system name

Alternatively, Querx is accessible via its system name, if your PC supports Multicast DNS (mDNS or LLMNR).

Enter the following web address into your browser's address bar: `http://<systemname>.local/`

The default system name is `querx000000`. The six zeros are placeholders for the six last digits of the device's MAC address. The MAC address is printed on the sticker on the back of the device.



The URL for the example in the illustration is  
`http://querx000000.local/`

The name can be changed later on. Additional info on this topic can be found in chapter 8 *Advanced System Configuration*.

### Access via Bonjour

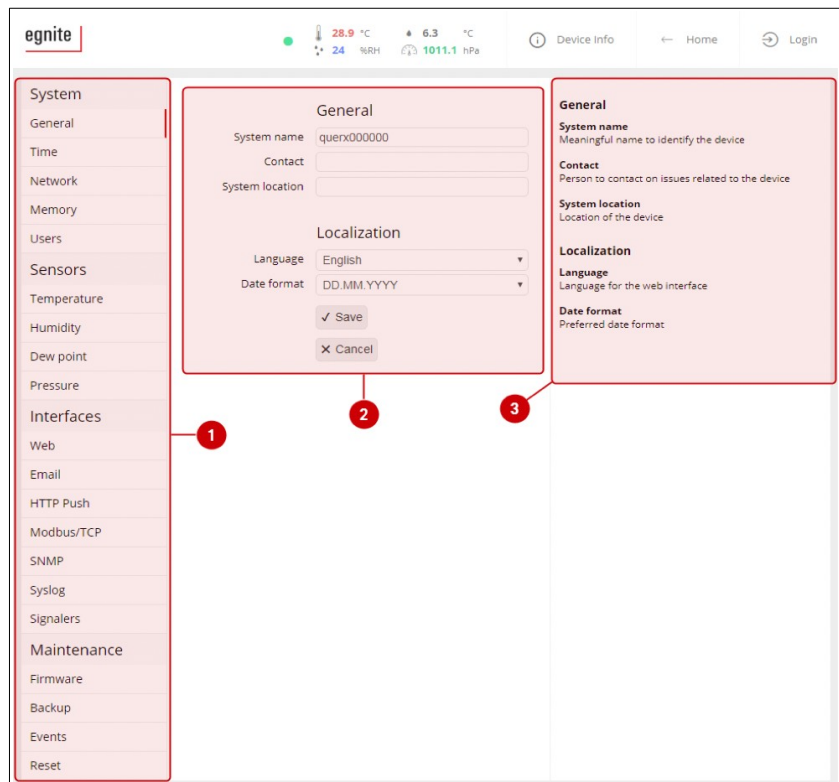
Querx can be accessed directly from the Safari web browser, using the Bonjour menu.

## 2.8 Accessing the Configuration Area



1. Click the button *Configuration* in the upper right corner of the screen.

You are now viewing the main page of the configuration area. This is where all of the device's settings are configured.



Each page of the configuration area is divided into three sections.

**1. Setup menu**

Navigate to all the setup options via this menu.

**2. Settings**

The middle area lets you change the corresponding settings.

**3. Help section**

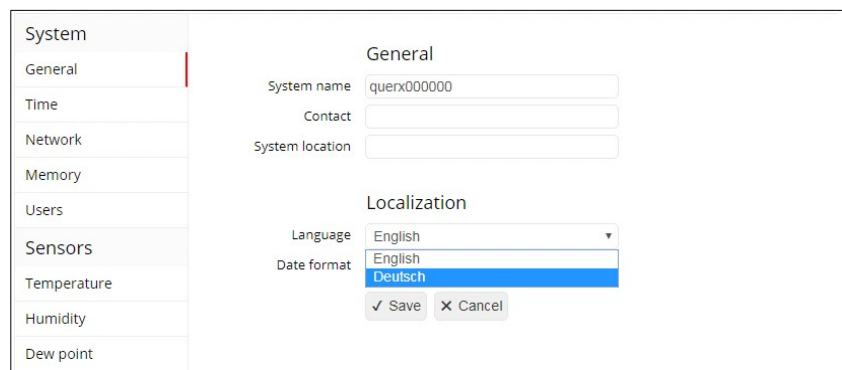
The section on the right of the screen displays short explanations of all the parameters that can be found on each page.

## 2.9 Initial Configuration

The following sections will explain the individual steps that are required for Querx to function correctly.



## 2.9.1 Selecting the Language



The screenshot shows a web interface for system settings. On the left is a sidebar menu with options: System, General, Time, Network, Memory, Users, Sensors, Temperature, Humidity, and Dew point. The 'General' option is selected. The main content area is titled 'General' and contains two sections: 'General' and 'Localization'. The 'General' section has three text input fields: 'System name' (containing 'querx000000'), 'Contact', and 'System location'. The 'Localization' section has two dropdown menus: 'Language' (with 'English' selected) and 'Date format' (with 'English' selected). Below these dropdowns are two buttons: 'Save' (with a checkmark icon) and 'Cancel' (with an 'X' icon). The 'Save' button is highlighted in blue.

The standard settings for the web interface's language is English. If you prefer to view it in German, please open the drop down menu *Localization / Language* in the section *System / General* and select *German*.

Click *Save* to activate the selected language.

Further information about the settings on this page can be found in chapter *8.1 General Settings*.

## 2.9.2 Setting Date and Time

Querx requires the current time, in order to track measurements. It is usually updated automatically via the net or a local time server. The time zone the device is located in only needs to be selected once.

Open the page *System / Time*.

**Date and time**

Date 12.12.2016

Time 11:16:25

Set time manually

**Set time zone**

Time zone (GMT+01:00) Amsterdam, Berlin, ... 1

2 DST ☒ Auto A ☐ In effect B

**Set NTP server**

NTP server pool.ntp.org

3 ☒ Save

1. Select the correct time zone for your country from the drop down menu *time zone*.
2. Now select the settings for daylight saving time:
  - A. If your country uses daylight saving time and the time changes on the last Sundays of March and October, please activate *auto* in the section *DST*.
  - B. If your country uses daylight saving time, but the time does not change on the last Sundays of March and October, please deactivate *auto* in the section *DST*. You will need to select whether summer time is active manually.
3. Click *Save*, in order to apply your changes.

|          |   |
|----------|---|
| <b>i</b> | <p><b>Information</b></p> <p>The following settings are recommended for users in the UK:</p> <p>Time zone: (GMT +00:00) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London)</p> <p>DST: automatic</p> <p>The settings for users in the US depend on the time zone you are in.</p> |
|----------|---|

|          |   |
|----------|---|
| <b>i</b> | <p><b>Information</b></p> <p>The following settings are recommended for users in central Europe: Time zone: (GMT +01:00) Amsterdam, Berlin [...]<br/>DST: automatic</p> |
|----------|---|

Please check that date and time are displayed correctly. If this is not the case, a problem occurred with the automatic update. In this case, click *Set time manually*.

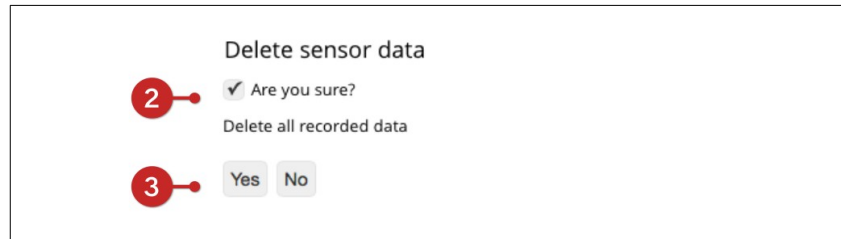
1. The values can be entered into the fields *Date* and *Time* manually.
2. Click *Save* to apply your changes.
3. Alternatively, date and time can be synced with your PC. In order to do this, click *Sync PC*.

### 2.9.3 Deleting Logged Data

Depending on the device's prior usage, the data logger may contain more or less obsolete data. In order to delete it, please open the page *Maintenance / Reset*.

1. Click the button *Delete sensor data*.

A confirmation window opens.



**2.** Confirm that you wish to delete all data saved on the device by activating the button labelled *Are you sure?*

**3.** Click *Yes*.

Please be patient, as this process may take a few minutes. Querx will reboot and begin logging new data once the process is completed.

This concludes the initial setup.

## 3 Configuring Alerts

Querx can notify you of alerts via email, SNMP-trap and Syslog whenever defined value limits are exceeded.

### 3.1 Basic Alert Configuration

Querx can notify you of the following critical ambient conditions:

- Temperature above upper limit value
- Temperature below lower limit value
- Temperature rising too quickly
- Temperature falling too quickly

The **TH and THP models** additionally support the following alerts:

- Humidity above upper limit value
- Humidity below lower limit value
- Humidity rising too quickly
- Humidity falling too quickly
- Dew point above upper limit value
- Dew point below lower limit value

The **THP model** additionally supports the following alerts:

- Pressure above upper limit value
- Pressure below lower limit value
- Pressure rising too quickly
- Pressure falling too quickly



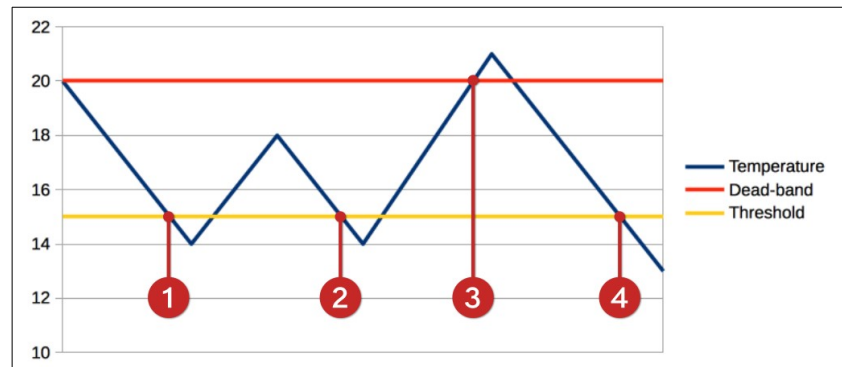
#### Information

Alerts are only triggered when values rise above or fall below the limit values. They are not triggered if the limit values are merely reached.

### 3.1.1 Alerts and Dead-band

A dead-band value can be defined, in order to avoid the repetition of alerts that are based on limit transgressions.

If the dead-band feature is activated, a value that has triggered an alert will have to return towards its normal state by the dead-band value, before a further alert can be triggered.



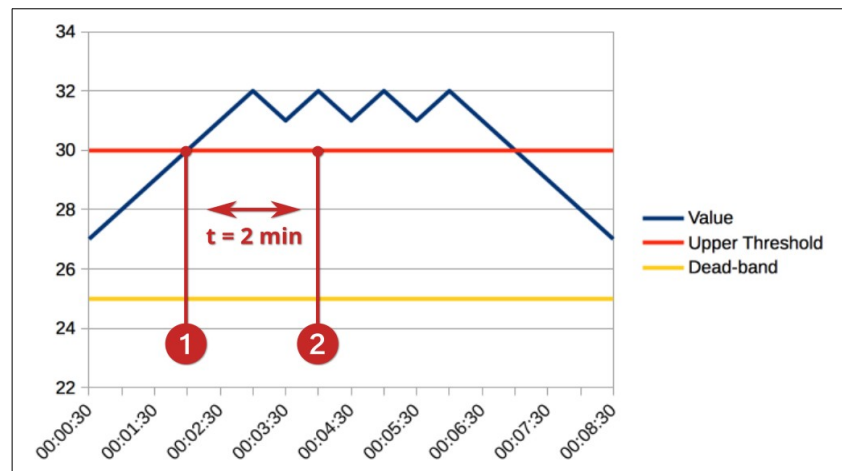
In the example depicted above, the minimum temperature is set to **15°C**. The dead-band is set to **5°C**.

An alert is triggered if the temperature falls below the minimum temperature **(1)**. If the temperature falls below this value again after having returned towards its normal state by less than the value assigned to the dead-band, no further alert is triggered **(2)**. The alert is only re-triggered if the value has returned towards its normal state by more than the value of the dead-band **(3)** and then falls back down below the minimum value **(4)**.

### 3.1.2 Alert Delays

A delay can be configured for alerts that are based on limit value transgressions, if you wish to accept short-term fluctuations. This can, for instance, be useful to allow for a tolerated decline in temperature during ventilation.

This value determines how long a limit needs to be continuously transgressed for, before an alert is triggered.



In this example, a delay of two minutes is configured. The limit value is exceeded at 1:30 **(1)**. The device, however, only triggers an alert once the value is exceeded for the entirety of the configured delay. In this case that value is two minutes **(2)**.

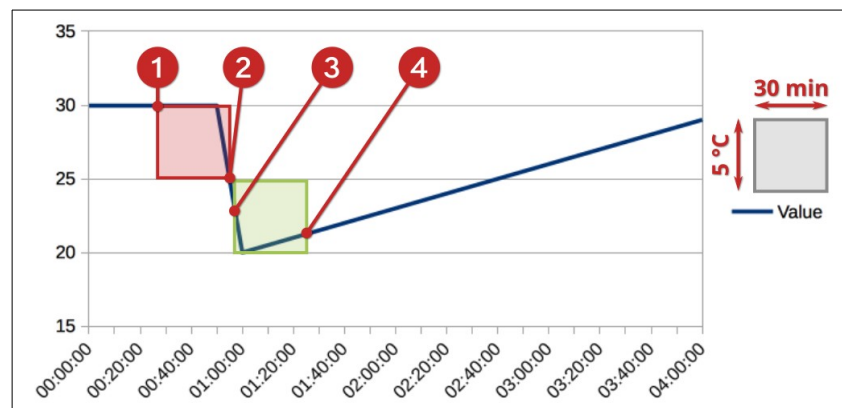
Please be aware that the dead-band also applies to the delay. This means that the value needs to return towards its normal state by the dead-band's value during the delay time, in order to cancel the alert. In this example, the sensor would therefore need to measure a value below 25 °C within two minutes of the first transgression, in order to cancel the alert.

### 3.1.3 Variation Alerts

egnite Querx can notify you if values rise or drop more quickly than usual. In order to set this type of alert up, you will need to enter a value for the maximal accepted fluctuation between the highest and lowest values. Additionally, a value for the timespan, within which the specified fluctuation value is not to be exceeded, is required.

These alerts remain active until the values have become stable again.

Individual values can be entered for falling and rising temperatures.



The graph displayed above shows how Querx reacts to a window being opened. The maximal rate at which the temperature may drop is set to 5 °C and the timespan is set to 30 minutes.

The sensor measures a temperature of 30 °C at 0:20 (1). A window is opened at 0:50, causing the temperature to fall to 20 °C abruptly. The device registers that the temperature has dropped by more than 5 °C within the last 30 minutes, triggering an alert as soon as the temperature falls below 25 °C (2).

The device notices that the difference between the minimal and maximal values has been less than 5 °C in the last 30 minutes (3) by approximately 1:30 (4), causing it to deactivate the alert.



## 3.2 Configuring Alerts

### 3.2.1 Temperature Alerts



#### Information

Please be sure to use a decimal point to separate the decimal digits when entering all the following values.

#### Alerts for limit transgressions

Open the page *Sensors / Temperature*.

Threshold alerts

Alert delay

Lower limit

Upper limit

Dead-band

Variation alerts

Dropping values ☒ Enable

Value

Time

Rising values ☒ Enable

Value

Time

☒ Save

1. Please enter the number of seconds after which an alert is triggered in the input field *Alert delay*, if you wish to allow for short-term transgressions.
2. Enter the *Lower limit* that will trigger an alert if values drop below this it.
3. Enter the *Upper limit* that will trigger an alert if values rise above this it.
4. Enter a reasonable value for the *Dead-band*, for instance 2.
5. Click *Save* to apply your changes.

## Variation alerts

The configuration of variation alerts requires the specification of two values each for dropping and rising temperatures.

The screenshot shows a 'Variation alerts' configuration window. It contains two sections: 'Dropping values' and 'Rising values'. Each section has an 'Enable' checkbox, a 'Value' input field, and a 'Time' input field. At the bottom, there are 'Save' and 'Cancel' buttons. Red numbered circles (1-5) with lines pointing to specific elements indicate the configuration steps: 1 points to the 'Enable' checkbox for 'Dropping values'; 2 points to the 'Value' input field for 'Dropping values'; 3 points to the 'Time' input field for 'Dropping values'; 4 points to the 'Enable' checkbox for 'Rising values'; and 5 points to the 'Save' button.

1. First, activate variation alerts by clicking *Enable*.
2. Enter the maximal *Value* by which the temperature is permitted to drop.
3. Enter the maximal *Time* within which the temperature is permitted to drop by the value specified in the previous step.
4. Repeat steps 1 to 3 for *Rising values*.
5. Click *Save* to apply your changes.

### 3.2.2 TH and THP Models: Humidity Alerts

#### Alerts for limit transgressions

Open the page *Sensors / Humidity* in the configuration area to configure humidity alerts.

Threshold alerts

Alert delay 0

Lower limit 0

Upper limit 100

Dead-band 0

Variation alerts

Dropping values ☒ Enable

Value 100

Time 10

Rising values ☒ Enable

Value 100

Time 10

☒ Save ☐ Cancel

1. Please enter the number of seconds after which an alert is triggered in the input field *Alert delay*, if you wish to allow for short-term transgressions.
2. Enter the *Lower limit* that will trigger an alert if values drop below it.
3. Enter the *Upper limit* that will trigger an alert if values rise above this threshold.
4. Enter a reasonable value for the *Dead-band*, for instance 2.
5. Click *Save* to apply your changes.

## Variation alerts

The configuration of variation alerts requires the specification of two values each for dropping and rising humidity.

The screenshot shows a web form titled "Variation alerts". It contains two main sections: "Dropping values" and "Rising values". Each section has an "Enable" checkbox, a "Value" input field, and a "Time" input field. At the bottom are "Save" and "Cancel" buttons. Red numbered circles (1-5) with leader lines indicate the following steps: 1. Click the "Enable" checkbox for "Dropping values". 2. Enter "100" in the "Value" field for "Dropping values". 3. Enter "10" in the "Time" field for "Dropping values". 4. Repeat steps 1-3 for the "Rising values" section. 5. Click the "Save" button.

| Variation alerts   |  |
|--|--|
| Dropping values  | <input checked="" type="checkbox"/> Enable |
| Value  | 100  |
| Time   | 10   |
| Rising values  | <input checked="" type="checkbox"/> Enable |
| Value  | 100  |
| Time   | 10   |
| <input checked="" type="button" value="Save"/> <input type="button" value="Cancel"/> |  |

1. First, activate variation alerts by clicking *Enable*.
2. Enter the maximal *Value* by which the humidity is permitted to drop.
3. Enter the maximal *Time* within which the humidity is permitted to drop by the value specified in the previous step.
4. Repeat steps 1 to 3 for *Rising values*.
5. Click *Save* to apply your changes.

### 3.2.3 TH and THP Models: Dew Point Alerts

#### Alerts for limit transgressions

Dew point alerts are configured on the page *Sensors / Dew point*.

The screenshot shows a web interface for configuring dew point alerts. It is divided into two main sections: 'Calculated dew point' and 'Threshold alerts'. The 'Calculated dew point' section includes a text input for 'Sensor name' (containing 'Dew point'), a checkbox for 'Extended resolution', and a checkbox for 'Dew point spread'. The 'Threshold alerts' section includes four numeric input fields: 'Alert delay', 'Lower limit', 'Upper limit', and 'Dead-band'. At the bottom are 'Save' and 'Cancel' buttons. Red numbered callouts (1-8) point to specific elements: 1 points to the 'Sensor name' input; 2 points to the 'Extended resolution' checkbox; 3 points to the 'Dew point spread' checkbox; 4 points to the 'Alert delay' input; 5 points to the 'Lower limit' input; 6 points to the 'Upper limit' input; 7 points to the 'Dead-band' input; and 8 points to the 'Save' button.

1. Here you can enter a name for the sensor.
2. The resolution of the displayed values can be extended to two decimal places.
3. If you activate the function *Dew point spread*, Querx will display the difference between the current temperature and the dew point, instead of the absolute dew point.
4. Please enter the number of seconds after which an alert is triggered in the input field *Alert delay*, if you wish to allow for short-term transgressions.
5. Enter the *Lower limit* that will trigger an alert if the dew point drops below it.
6. Enter the *Upper limit* that will trigger an alert if the dew point rises above it.
7. Enter a reasonable value for the *Dead-band*, for instance 2.
8. Click *Save* to apply your changes.

### 3.2.4 THP Models: Pressure Alerts



#### Information

Please be sure to use a decimal point to separate the decimal digits when entering all the following values.

#### Alerts for limit transgressions

Open the page *Sensors / Pressure* in the configuration area to configure humidity alerts.

Threshold alerts

Alert delay 0 1

Lower limit 900.0 2

Upper limit 1300.0 3

Dead-band 0.0 4

Variation alerts

Dropping values ☒ Enable

Value 400.0

Time 10

Rising values ☒ Enable

Value 400.0

Time 10

5

1. Please enter the number of seconds after which an alert is triggered in the input field *Alert delay*, if you wish to allow for short-term transgressions.
2. Enter the *Lower limit* that will trigger an alert if values drop below it.
3. Enter the *Upper limit* that will trigger an alert if values rise above it.
4. Enter a reasonable value for the *Dead-band*, for instance 2.
5. Click *Save* to apply your changes.

## Variation alerts

The configuration of variation alerts requires the specification of two values each for dropping and rising humidity.

The screenshot shows a configuration window with two sections: 'Threshold alerts' and 'Variation alerts'. The 'Threshold alerts' section has four input fields: 'Alert delay' (0), 'Lower limit' (900.0), 'Upper limit' (1300.0), and 'Dead-band' (0.0). The 'Variation alerts' section has two sub-sections: 'Dropping values' and 'Rising values'. Each sub-section has an 'Enable' checkbox (both checked), a 'Value' input field (both 400.0), and a 'Time' input field (both 10). At the bottom are 'Save' and 'Cancel' buttons. Red numbered callouts (1-5) point to the 'Enable' checkbox for dropping values, the 'Value' field for dropping values, the 'Time' field for dropping values, the 'Value' field for rising values, and the 'Save' button respectively.

1. First, activate variation alerts by clicking *Enable*.
2. Enter the maximal *Value* by which the humidity is permitted to drop.
3. Enter the maximal *Time* within which the humidity is permitted to drop by the previously specified value.
4. Repeat steps 1 to 3 for *Rising values*.
5. Click *Save* to apply your changes.

## 4 The Email Interface

Querx can inform up to four email recipients of occurring alerts. Two email accounts from which the notifications are sent can be set up.

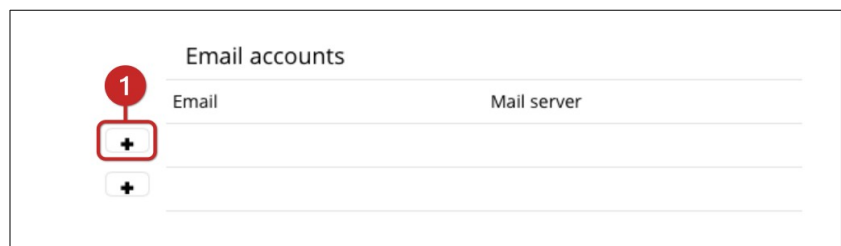
### 4.1 Managing Email Accounts

At least one email account needs to be set up, in order to send emails alerts. Setting a further account up makes sense if you

- wish to have a backup account in case a mail server is not accessible, or
- your network setup features an integrated mail server and distinguishes between internal and external emails.

#### Adding an email account

Open the page *Interfaces / Email* in the configuration area.



1. Click the *Add* symbol next to a blank line in the email section. This will open a page that is used to configure the mail account.



**Edit email accounts**

Sender:  2

SMTP server:  3

Port:  4

Authentication: ☒ 5

User name:  6

Password:  6

TLS certificate errors:  7

10    8

**Last syslog messages** 9

| Date / Time         | Event                                   |
|---------------------|---|
| 29.07.2020 19:41:38 | TLS certificate depth 0:                |
| 29.07.2020 19:41:38 | cert. version : 3                       |
| 29.07.2020 19:41:38 | serial number : E7:81:D4:0F:B0:7A:95:59 |
| 29.07.2020 19:41:38 | issued on : 2012-10-23 15:57:35         |
| 29.07.2020 19:41:38 | expires on : 2022-10-21 15:57:35        |
| 29.07.2020 19:41:40 | Configuration(936.8) saved              |

2. On the next page, enter the mail address for the account that you wish to send email alerts from in the input field *Sender*.
3. Enter the address or IP-address for the mail-server used by the mail account in the input field *SMTP server*.
4. Enter the *Port* used by the email account.
5. If your mail account is password protected, activate the checkbox *Authentication*.
6. Enter the user name in the input field *User name* and the password in the input field *Password*.
7. **WLAN Models:** The server certificate can be verified, in order to ensure the mail server's authenticity. This requires a CA-certificate to be installed, as described in chapter 10.7. If you have not installed such a certificate, select the setting *Ignore*.
8. Click the button *Test* to check your settings. If the test is successful, the button will turn green. If any settings are wrong, the corresponding field will be highlighted in red. Where necessary, correct the data and click *Test* again.

9. This section displays the *Last syslog messages*.

10. Click *Save* to apply your changes.

**i**

**Information**

Passwords are not encrypted on the device. Therefore, it is strongly advised that you do not use any email accounts that are used for sending confidential information or, if possible, to create a dedicated account for Querx.

## Editing an email account

Open the page *Interfaces / Email*.



| Email accounts  |   |                    |
|---|---|--------------------|
|   | Email   | Mail server        |
|  |  | querx@egnite.de    |
|   |   | smtp.egnite.de:587 |
|  |   |                    |

1. In the section *Email accounts*, click the *Edit* symbol next to the account you wish to edit.

Edit email accounts

Sender

querx@enite.de

SMTP server

smtp.egnite.de

Port

587

Authentication

☒

User name


querx@egnite.de

Password


.....

TLS certificate errors

Ignore

 Save

Cancel

 Test

2. Make the required changes on the following page.
3. Click the button *Test* to check your settings. If the test is successful, the button will turn green. If any settings are wrong, the corresponding field will be highlighted in red. Where necessary, correct the data and click *Test* again.
4. Click *Save* to apply your changes.

## Deleting an email account



Open the page *Interfaces / Email* in the configuration area.

A screenshot of the 'Email accounts' configuration page. It features a table with two columns: 'Email' and 'Mail server'. The first row contains the email 'querx@egnite.de' and the mail server 'smtp.egnite.de:587'. To the left of the table, there is a red circle with the number '1' and a red square containing a black 'X', indicating the delete button. Below the table, there is a plus sign icon for adding new accounts.

1. Click the *Delete* button next to the account you wish to delete in the section *Email accounts*.

A screenshot of the 'Remove email account' dialog box. It displays the mail server 'smtp.egnite.de:587' and the user name 'querx@egnite.de'. At the bottom, there are two buttons: 'Yes' and 'No'. The 'Yes' button is highlighted with a red circle and the number '2', indicating the confirmation step.

2. Confirm that you want to remove the account by clicking *Yes*.

## 4.2 Managing Email Recipients

### Adding email recipients

The configured email servers can be used to send email notifications to up to four recipients. You can select which events each recipient is notified of.

Open the page *Interfaces / Email* in the configuration area.

A screenshot of the 'Recipients' configuration page. It shows a list of email addresses with a plus sign icon next to each one. The first plus sign is highlighted with a red circle and the number '1', indicating the add button. Below the list, there are four more plus sign icons for adding additional recipients.

1. Click the *Add* symbol next to a blank line in the *Recipients* section.



The screenshot shows the 'Edit recipient' form with the following elements and numbered callouts:

- 2**: Points to the 'Email' input field containing 'notfall@egnite.de'.
- 3**: Points to the 'Account' section, which includes two radio buttons: 'querx@egnite.de smtp.egnite.de' (checked) and 'alternative smtp.egnite.de'.
- 4**: Points to the 'Notify on' section, which contains a list of notification options for Temperature, Humidity, and Dew-point, each with checkboxes for 'Too low', 'Too high', 'Back to normal', 'Dropping too fast', and 'Rising too fast'. The 'On Alarm' checkbox under the 'Attachment' section is also visible.
- 5**: Points to the green 'Test' button.
- 6**: Points to the 'Save' button.

Other visible elements include 'Select all' and 'Remove selection' links at the top of the 'Notify on' section, and 'Cancel' and 'Test' buttons at the bottom.

2. On the following page, enter a recipient in the input field *Email*.
3. Select which email account to send emails to this recipient from.
  - A. Activate both accounts if you want to use one as a backup account.
  - B. If you have set up several mail servers, for instance because you distinguish internal and external emails, please only activate the required mail server.
4. Select which alerts the recipient is notified of in the *Notify on* section.
5. Activate Attachment On Alarm, if you wish to add a CSV-file containing all data of the last 24 hours to any alert notification.

6. In addition alert notifications, Querx can also transmit status reports in regular intervals.
7. Click *Test* to check your settings. This will send a test email to the recipient.
8. Click *Save* to apply your changes.

## Editing email recipients

Open the page *Interfaces / Email* in the configuration area.



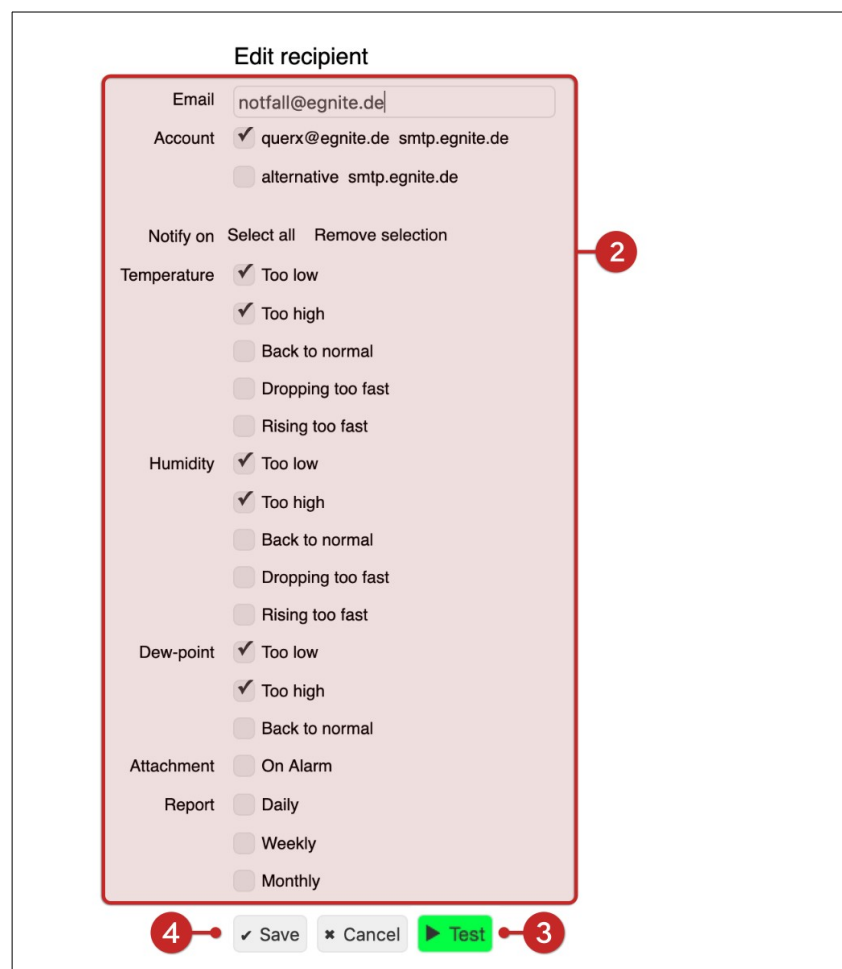
Recipients

Email

☐ ☐ alert@egnite.de



1. In the *Recipients* section, click the *Edit* symbol next to the



Edit recipient

Email

Account ☒ querx@egnite.de smtp.egnite.de  
☐ alternative smtp.egnite.de

Notify on

Temperature ☒ Too low  
☒ Too high  
☐ Back to normal  
☐ Dropping too fast  
☐ Rising too fast

Humidity ☒ Too low  
☒ Too high  
☐ Back to normal  
☐ Dropping too fast  
☐ Rising too fast

Dew-point ☒ Too low  
☒ Too high  
☐ Back to normal

Attachment ☐ On Alarm

Report ☐ Daily  
☐ Weekly  
☐ Monthly

entry for the account you wish to edit.

2. Make the required changes on the following page.

3. Click *Test* to check your settings.

4. Click *Save* to apply your changes.

Open the page *Interfaces / Email* in the configuration area.

## Deleting email recipients



Recipients

Email

alert@egnite.de

+

+

+

1. In the *Recipients* section, click the *Remove* symbol next to the entry for the account you wish to delete.

Remove recipient

Email alert@egnite.de

Account smtp.egnite.de

1 Yes No

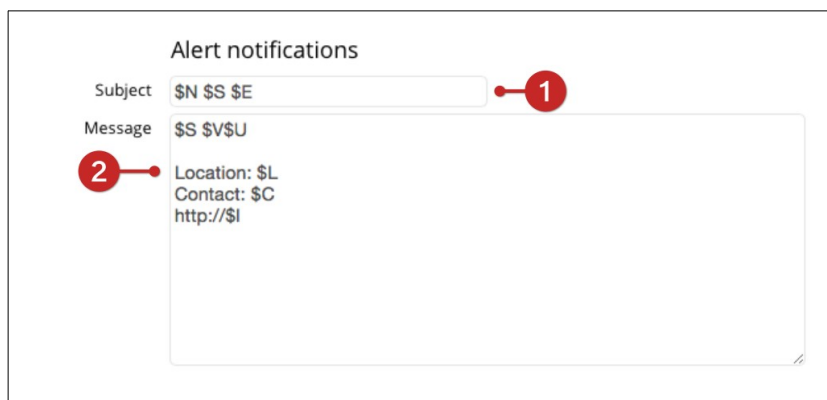
1. Confirm that you want to remove the recipient by clicking Yes.



## 4.3 Email Templates

egnite Querx sends email notifications when alerts occur and when the values return to their normal state.

Open the page *Interfaces / Email* in the configuration area to configure the format of these email notifications.



1. Enter a *Subject* for the email notifications in the section *Alert notifications*.
2. Enter the contents of the email in the input field *Message*.

You can use the following placeholders in the notifications' subject and main body. The placeholders are automatically replaced by the current values when notifications are sent.

|     |   |
|-----|---|
| \$N | Name of the system that triggered the alert               |
| \$S | Name of the sensor that triggered the alert               |
| \$U | The measured value's physical unit                        |
| \$I | The device's IP-address                                   |
| \$L | The device's location                                     |
| \$V | The value measured by the sensor that triggered the alert |
| \$E | Description of the event                                  |
| \$D | The date on which the event occurred                      |
| \$T | The time at which the event occurred                      |
| \$C | The contact person for the device                         |

Enter the event descriptions as described in the following section before saving.

## 4.4 Event Descriptions

You can enter descriptions of occurring events on the page *Interfaces / Email*. These descriptions are also used in the event table, as explained in chapter 5.4. *Viewing Recent Sensor Events*.

The screenshot shows a form titled "Event description" with seven rows of input fields. Each row has a label on the left and a text input field on the right. Red circles with numbers 1 through 7 are placed to the right of each input field, with lines pointing to them. At the bottom left, there is a red circle with the number 7 pointing to a "Save" button. To the right of the "Save" button is a "Cancel" button.

| Event description       |                |
|-------------------------|----------------|
| Value too low           | low            |
| Value too high          | high           |
| Value back to normal    | back to normal |
| Value dropping too fast | dropping       |
| Value rising too fast   | rising         |
| Sensor failure          | sensor error   |

7 Save Cancel

1. Enter a description for the event that values fall *below the lower limit*.
2. Enter a description for the event that values *rise above the upper limit*.
3. Enter a description for the event that values *return to their normal state*.
4. Enter a description for the event that values are *falling too quickly*.
5. Enter a description for the event that values are *rising too quickly*.
6. Enter a description for the event that a *sensor failure* occurs.
7. Click *Save* to apply your changes.

## 5 Accessing Data via the Web Interface

egnite Querx offers various interfaces for manual and automated data access. The web interface displays current values and alerts. An interactive diagram on the home page additionally lets you view logged data.

### 5.1 Current Values

The most recent value a sensor has measured is always displayed on every page of the web interface. In standard configuration, this data is updated once per second. A longer interval can be set up, in order to reduce data transfer, as described in chapter *10.1.1 The Web Interface*.

#### 5.1.1 Values on the Main Page

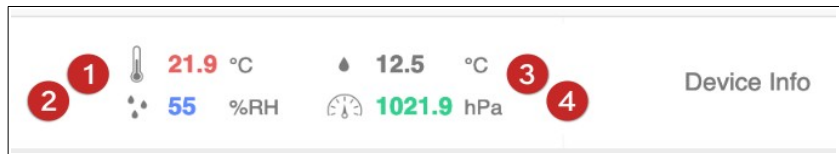
The current values are displayed in the right column of the main page's sidebar.

|  |   |              |                               |
|--|---|--------------|-------------------------------|
|  |   | No Selection | Momentary                     |
|  | ▼ | Temperature  | °C                            |
|  |   | -            | Value too high<br><b>24.2</b> |
|  | ≡ |              |                               |
|  |   |              |                               |
|  | ▼ | Humidity     | %RH                           |
|  |   | -            | 49                            |
|  | ≡ |              |                               |
|  |   |              |                               |
|  | ▼ | Pressure     | hPa                           |
|  |   | -            | 1016.9                        |
|  | ≡ |              |                               |
|  |   |              |                               |

The value is displayed in red and a corresponding message is displayed above the measurement if an alert is active. The left column displays previously gathered data, as described in chapter *5.2 Viewing Logged Data*.

## 5.1.2 Values in the Configuration Area

The configuration area's header displays the current measurements and any occurring alerts.



1. Temperature
2. Humidity (TH and THP models)
3. Dew point or dew point spread (TH and THP models)
4. Air pressure (THP models)

One of the following symbols is displayed next to the corresponding value if an alert occurs.

- ↓ Lower threshold transgressed
- ↑ Upper threshold transgressed
- ↘ Value falling too quickly
- ↗ Value rising too quickly
- ✖ Sensor error

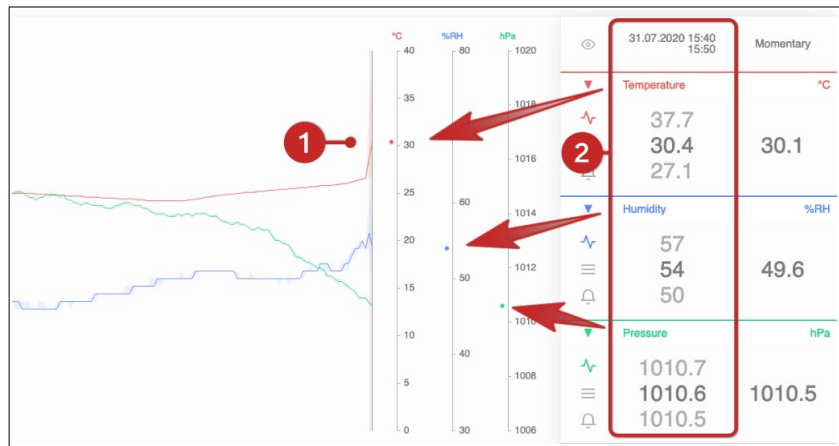
## 5.2 Viewing Logged Data



The chart on the home page displays the tracked data. You can select between two display modes: *Line Chart* (1) and *Heatmap* (2).

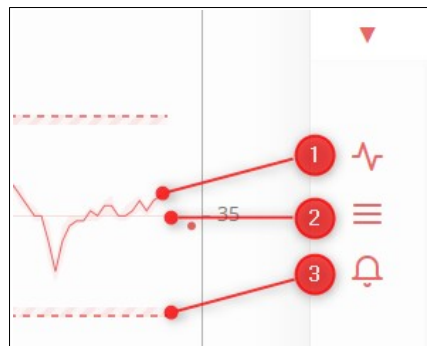
### 5.2.1 Line Chart

The line graph is the standard view when opening the main page.



If you move the cursor along the *graph* (1), the exact values for a specific point of time are displayed in the *side bar* (2) in the upper right corner.

## Display settings



The sidebar offers various display options. The following settings can be selected for each sensor:

1. Display *graph*. If this option is deactivated, the limit values and grid lines will also not be displayed.
2. Display *grid lines*.
3. Display *limit values*.

These options let you customize the line chart to suit your specific requirements.

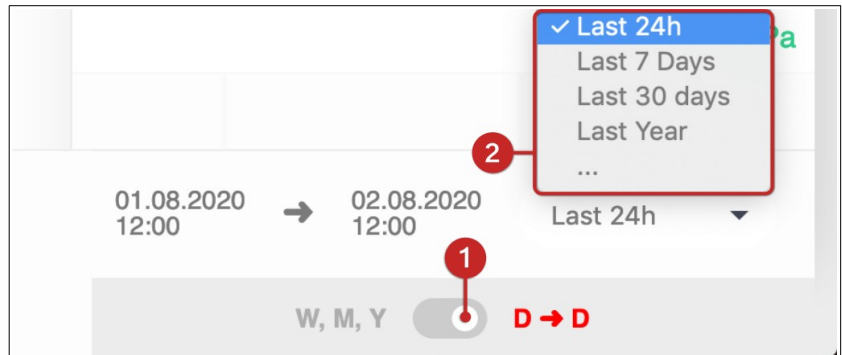
The lines displayed in full color show the logged average values. The lighter areas around the lines represent the minimum and maximum values recorded in the specific timeframe.

The striped, horizontal bars represent the limit values at which alerts are triggered. Their width corresponds to the specified dead-band and the color indicates which sensor they correspond to.

## Setting the display period

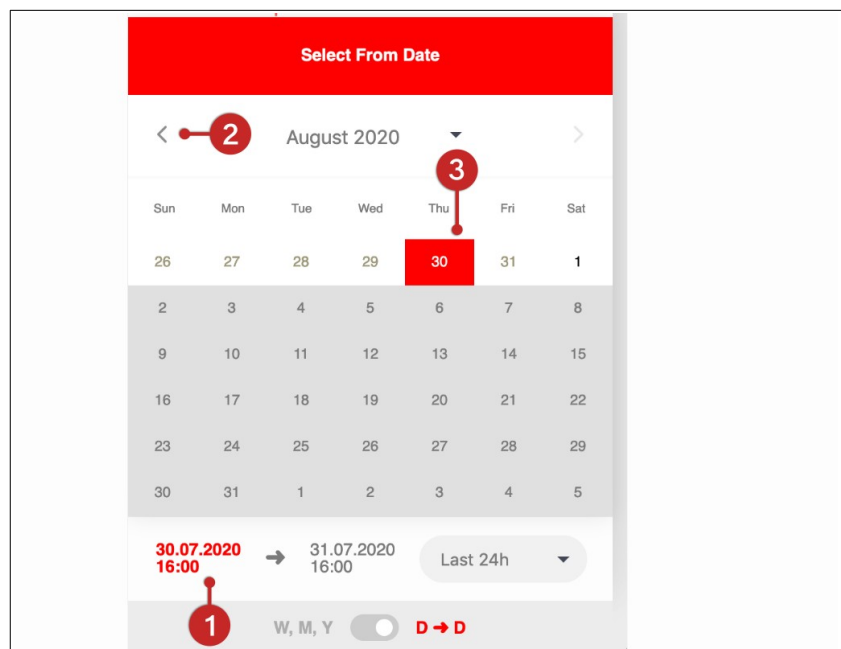
The display period can be set in the lower right corner of the web interface. You can select one of two different modes.

The first mode, “Day → Day”, lets you view the last 24 hours, the last 7 days, the last 30 days or the last year.

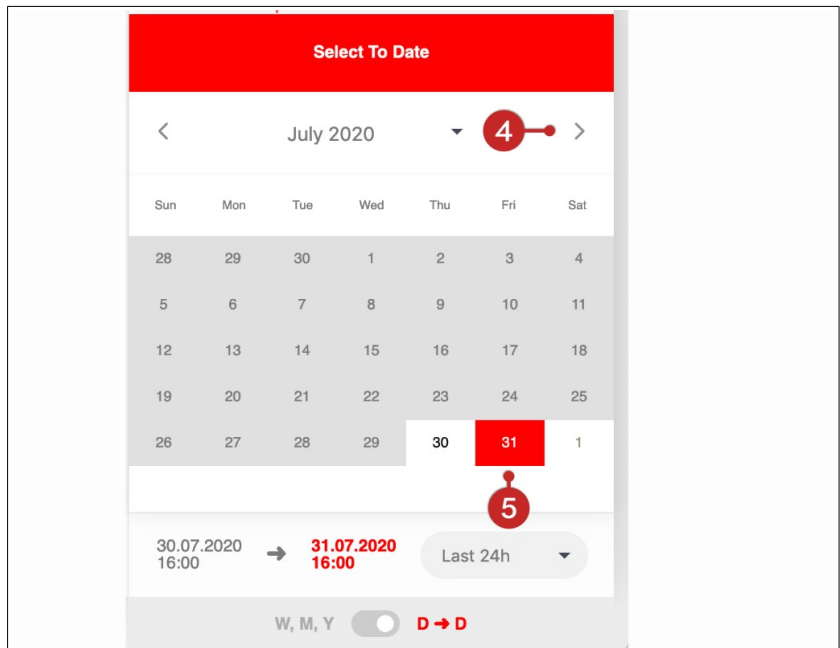


1. Activate the  $D \rightarrow D$  mode.
2. Select the time frame from the *drop down menu*.

Alternatively, you can select a particular start- and end-date.



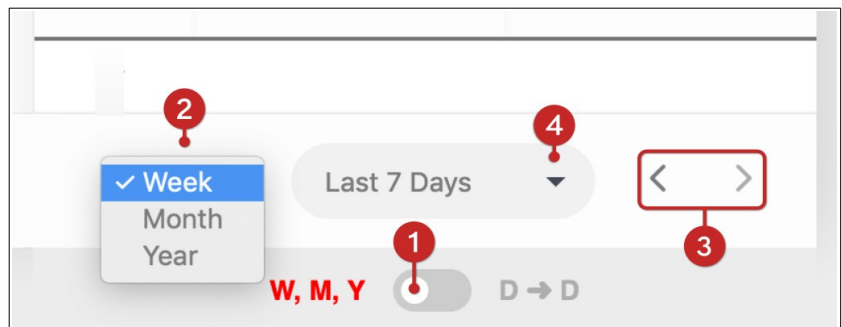
1. A calendar appears when you click the left date.
2. Select the month for the start date.
3. Select the day for the start date.



4. Select the month for the end date.

5. Select the day for the end date.

The second mode, “Week, Month, Year” is particularly useful if you want to quickly browse different time frames.



1. Select the *W, M, Y* mode.

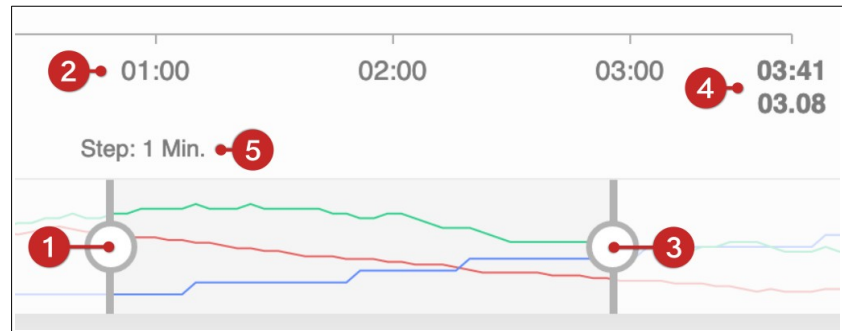
2. Set the time frame to a *week, month or year*.

3. Clicking these *two arrows* lets you select the week, month or year.

4. Alternatively, you can select a specific week, month or year from this *drop down menu*.

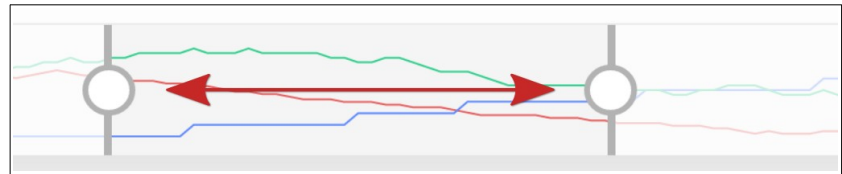
### Increasing or decreasing the display period

A smaller version of the graph with two sliders is displayed below the timeline.



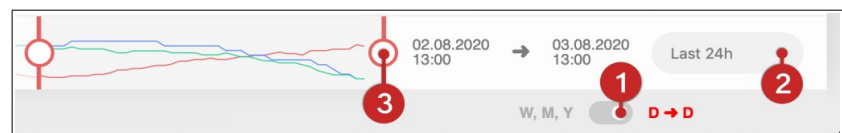
The left slider (1) adjusts the starting time (2) and the right slider (3) adjusts the ending time (4). Decreasing the displayed time period makes it easier to analyze details, as the resolution is automatically adjusted. The applied interval (5) is displayed beneath the timeline.

### Moving the display period



Once you have set the *display period*'s resolution, you can move the highlighted area with your cursor to move the time period you want to display.

### Auto-Update mode

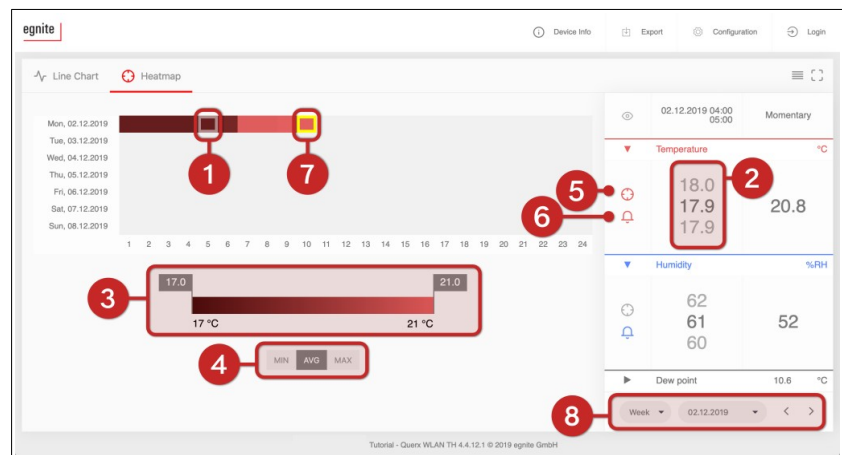


In  $D \rightarrow D$  mode (1) and the last 24 hours (2) are being displayed, both sliders will turn red (3), if the right slider control touches the bar's right edge. This means that *auto-update mode* is activated and the graph will always display the current values.

If the right slider does not touch the bar's right edge, the sliders are grey and the graph will only display the exact time period that is selected.



### 5.2.1.1 Heatmap



The *heatmap* displays an overview of a year or a week in the form of a calendar.

Each day's median values are color-coded. Hovering the cursor over a *date* (1) displays the *maximal*, *minimal* and *median* values (2) for the selected day in the sidebar.

#### Customizing the display

The heatmap's *color settings* can be customized above the *slider* (3) at the screen's lower edge. The shade of color at the left end of the slider corresponds to the year's lowest value and the shade on the right corresponds to the highest value. All values in between are automatically allocated to the corresponding shades. The *buttons* (4) below the slider are used to toggle between minimum, average or maximal values.

You can select which sensor's values you want to view by clicking the corresponding *crosshair button* (5) in the sidebar. The display of alerts that were recorded by the respective sensor can be toggled via the *bell buttons* (6). If this feature is active, all dates on which alerts were triggered are highlighted by a *yellow border* (7). The time frame can be selected at the lower end of the *side bar* (8). You can display a week or an entire year and navigate the history via the two arrows.

## 5.2.2 Customizing the Layout



The home page's *layout* can be customized via two *buttons* (1). The left button toggles the side bar on and off, if the browser window's width is 900 pixels or more. If the window is less than 900 pixels wide, the button toggles between the graph and the side bar. This ensures that the most relevant data is always displayed clearly.

The right button lets you switch to *full screen mode*, which hides the task bar at the top and the info bar at the lower edge of the browser window.

## 5.3 Device Information

You can open a field with further, general information on this device by clicking the button *Device Info* in the header.

| Device Info      |               |
|------------------|---------------|
| Device Name      | Tutorial      |
| Type             | Querx TH      |
| Firmware Version | 4.4.12.1      |
| Status           |               |
| Storage          | 804d 18h ~ 3% |
| Uptime           | 0d 1h 16m 29s |
| Date             | 02.12.2019    |
| Time             | 10:00:35      |

The first section displays the device's name, type and the active firmware.

The device name can be changed in the configuration area. In default settings, the system name is querx000000, where the six zeros are placeholders for the last six digits of the device's MAC-address.

The second section displays the time that has elapsed between the first and last entries in the data logger, as well as the percentage of its memory that has been used. It also shows the system's time of operation since the last system start and the current date and time.

## 5.4 Viewing Recent Sensor Events

The 16 most recent events, such as alerts, values returning to their normal state or sensor failures, can be viewed in the configuration area.

Open the page *Maintenance / Events*.

| Last events           |                          |        |
|-----------------------|--------------------------|--------|
| Date / Time           | Event                    | Value  |
| 14.12.2016 / 09:32:28 | Dew point back to normal | 25.8°C |
| 14.12.2016 / 09:31:37 | Dew point high           | 31.5°C |
| 14.12.2016 / 09:29:26 | Dew point back to normal | 25.6°C |
| 14.12.2016 / 09:29:03 | Dew point high           | 26.4°C |
| 14.12.2016 / 09:23:02 | Humidity dropping        | 50%RH  |

In default settings, the events are displayed in English and correspond to the texts specified for emails, as described in chapter 4.4 *Event Descriptions*.

## 5.5 Exporting Data

The values gathered by Querx can be exported via the web interface.

egnite Querx supports three formats for data export:

- CSV

Data that is exported in the CSV format can be further processed in spreadsheet applications.

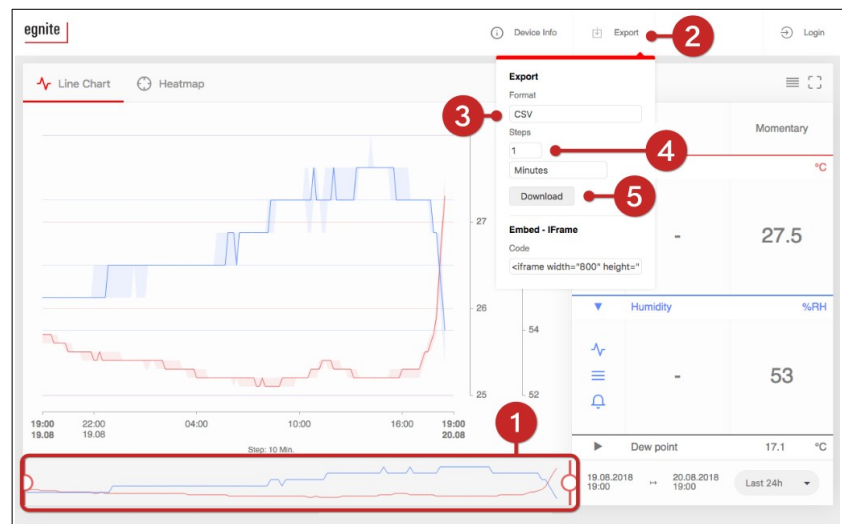
- XML

The file transport format XML is well suited to transmitting and processing data in various applications

- JSON

JSON is a file format that is based on JavaScript. It has been gaining significance, especially with regard to the Internet of Things.

Open the Querx *Web interface*.



1. Set the *Timeframe* to the period of which you want to export the data, as described in the previous section.
2. Click *Export*.
3. Select the format you want to export the data in from the drop down menu *Format*.

4. Set the time interval between individual exported values in the input field *Steps*.
5. Click *Download*.

The exported files include the specified time frame's date and starting time, the average-, minimum- and maximum-values, as well as a timestamp for each measurement of the selected time frame.

## 5.6 Embedding Graphs Into Other Sites

Wherever Querx can be reached via a network, *Iframe* can be used to embed the graph from the Querx home page into any other site, for instance on your local network.

Open the Querx *home page*.



1. Click *Export*.
2. Copy the displayed *HTML source-code* to the clipboard.
3. Paste the HTML source-code into the site on which you want to display the graph.

## 6 The HTTP Interface

The data logged by egnite Querx and the current measurements can be accessed via the HTTP interface.

This lets you integrate the data into existing systems or create your own solutions.

### 6.1 Retrieving Current Values

|                 |  |  |
|-----------------|--|--|
| URL             | http://<IP>/tpl/document.cgi?tpl/j/current.tpl |  |
| URL-parameters: |  |  |
| format          | xml  | Returns the current values in the XML format.  |
|                 | json   | Returns the current values in the JSON format. |
| fname           | Filename                                       | Sets the returned file's name.                 |

| <b>Example: Retrieving current values in the XML format (egnite Querx PT)</b> |  |
|---|--|
| <b>URL</b>  | <b>http://192.168.1.100/tpl/document.cgi?<br/>tpl/j/current.tpl&amp;format=xml</b>   |
| <b>Output</b>   | <pre>&lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;!DOCTYPE querx PUBLIC "-//egnite//DTD Querx 1.0//EN"     "http://www.egnite.de/dtds/querx.dtd"&gt; &lt;querx version="1.0"&gt;   &lt;hostname&gt;querx011f30&lt;/hostname&gt;   &lt;ip&gt;192.168.1.100&lt;/ip&gt;   &lt;port&gt;80&lt;/port&gt;   &lt;date_gmt&gt;Tue, 26 Apr 2016 12:55:48&lt;/date_gmt&gt;   &lt;date_local&gt;Tue, 26 Apr 2016 13:55:48&lt;/date_local&gt;   &lt;contact&gt;&lt;/contact&gt;   &lt;location&gt;&lt;/location&gt;   &lt;sensors&gt;    &lt;sensor id="sensor_1"     name="Temperature"     unit="°C"     status="0"</pre> |

|  |   |
|--|---|
|  | <pre>        uplim="85.0"         lolim="-40.0"/&gt;      &lt;sensor id="sensor_2"         name="Humidity"         unit="%RH"         status="0"         uplim="100"         lolim="0"/&gt;      &lt;sensor id="sensor_3"         name="Dew point"         unit="°C"         status="0"         uplim="26.0"         lolim="0.0"/&gt;  &lt;/sensors&gt; &lt;data&gt;     &lt;record&gt;         &lt;entry sensorid="sensor_1" name="value" value="23.7" trend="0"/&gt;         &lt;entry sensorid="sensor_2" name="value" value="29" trend="0"/&gt;         &lt;entry sensorid="sensor_3" name="value" value="23.7" trend="0"/&gt;     &lt;/record&gt; &lt;/data&gt; &lt;/querx&gt;</pre> |
|--|---|

| Example: Retrieving current values in the JSON format (egnite Querx TH) |  |
|---|--|
| URL   | <code>http://192.168.1.100/tpl/document.cgi?tpl/j/current.tpl&amp;format=json</code>   |
| Output  | <pre>{   "querx":   {     "version": 1.0,     "hostname": "querx011f30",     "ip": "192.168.1.100",     "port": 80,     "date_gmt": "Tue, 26 Apr 2016 12:54:50",     "date_local": "Tue, 26 Apr 2016 13:54:50",     "contact": "",     "location": "location",</pre> |

```

"sensors":
[
  {"sensor":
  {
    "id": "sensor_1",
    "name": "Temperature",
    "unit": "&deg;C",
    "status":"0",
    "uplim":"85.0",
    "lolim":"-40.0"
  }}
,
  {"sensor":
  {
    "id": "sensor_1",
    "name": "Humidity",
    "unit": "%RH",
    "status":"0",
    "uplim":"100",
    "lolim":"0"
  }}
,
  {"sensor":
  {
    "id": "sensor_1",
    "name": "Dew point",
    "unit": "&deg;C",
    "status":"0",
    "uplim":"26.0",
    "lolim":"0.0"
  }}
],
"data":
[
  {"record": {
    "timestamp": "1461675290",
    "date": "26.04.2016",
    "time": "13:54:50",
    "entry": [

```



```

    { "sensorid": "sensor_1",
      "name": "value",
      "value": 23.7,
      "trend":0
    }

    ,

    { "sensorid": "sensor_2",
      "name": "value",
      "value": 33,
      "trend":0
    }

    ,

    { "sensorid": "sensor_3",
      "name": "value",
      "value": 23.7,
      "trend":0
    }

  ]
}
]
}
}

```

## 6.2 Retrieving Logged Data

|                 |   |   |
|-----------------|---|---|
| URL             | http://<IP>/tpl/document.cgi?tpl/j/datalogger.tpl |   |
| URL parameters: |   |   |
| format          | xml   | Returns logged values in the XML format.  |
|                 | json  | Returns logged values in the JSON format. |
|                 | csv   | Returns logged values in the CSV format.  |
| fname           | Filename  | Sets the returned file's name.            |

|              |   |   |
|--------------|---|---|
|              |   |   |
| <b>start</b> | UNIX-Timestamp (e.g. 1459461600 for 04/01/2015, 00:00:00) | Exports data starting from the time specified in the Unix timestamp format        |
|              | Negative whole number (e.g. -3600)                        | Exports data starting from the current time minus the specified number of seconds |
| <b>end</b>   | UNIX-Timestamp (e.g. 1459461600 for 04/01/2015, 00:00:00) | Exports data up until the time specified in the Unix timestamp format             |
|              | Negative whole number (e.g. -60)                          | Exports data up until the current time minus the specified number of seconds      |
|              | 0 or blank  | Exports data up until the current time  |
| <b>step</b>  | Whole number  | Sets the time interval between values   |
|              | 0 or blank  | Sets the time interval between values to 60 seconds                               |

**Example: Retrieving values from the last 24 hours with an interval of 2 hours as "yesterday.csv" (egnite Querx TH)**

|               |   |
|---------------|---|
| <b>URL</b>    | <code>http://192.168.1.100/tp1/document.cgi?tp1/j/datalogger.tp1<br/>&amp;format=csv<br/>&amp;start=86400<br/>&amp;step=7200</code>   |
| <b>Output</b> | Date/Time;Temperature low;Temperature avg;Temperature high;Humidity low;Humidity avg;Humidity high<br>13.04.2016 18:00:00;23.6;23.9;24.0;31;32;32<br>13.04.2016 20:00:00;24.1;24.2;24.2;32;32;32<br>13.04.2016 22:00:00;24.2;24.2;24.3;32;33;33<br>14.04.2016 00:00:00;24.2;24.2;24.3;33;33;33<br>14.04.2016 02:00:00;24.2;24.2;24.3;33;33;33<br>14.04.2016 04:00:00;24.2;24.2;24.3;33;33;33<br>14.04.2016 06:00:00;24.1;24.2;24.2;33;33;33<br>14.04.2016 08:00:00;23.8;24.1;24.2;33;33;34<br>14.04.2016 10:00:00;23.7;23.8;23.9;32;33;33<br>14.04.2016 12:00:00;24.1;24.2;24.3;31;32;33<br>14.04.2016 14:00:00;24.2;24.4;24.7;30;30;31 |

**Example: Retrieving the values from the 5<sup>th</sup> of April 2016 with an interval of one hour in the XML format (egnite Querx PT)**

|            |   |
|------------|---|
| <b>URL</b> | <code>http://192.168.1.100/tp1/document.cgi?tp1/j/datalogger.tp1<br/>&amp;format=xml</code> |
|------------|---|

|               |   |
|---------------|---|
|               | <b>&amp;start=1459854000</b><br><b>&amp;end=1459864800</b><br><b>&amp;step=3600</b>   |
| <b>Output</b> | <pre> &lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;!DOCTYPE querx PUBLIC "-//egnite//DTD Querx 1.0//EN"     "http://www.egnite.de/dtds/querx.dtd"&gt; &lt;querx version="1.0"&gt;   &lt;hostname&gt;querxwlan&lt;/hostname&gt;   &lt;ip&gt;192.168.1.100&lt;/ip&gt;   &lt;port&gt;80&lt;/port&gt;   &lt;date_gmt&gt;Tue, 26 Apr 2016 10:48:41&lt;/date_gmt&gt;   &lt;date_local&gt;Tue, 26 Apr 2016 11:48:41&lt;/date_local&gt;   &lt;contact&gt;&lt;/contact&gt;   &lt;location&gt;&lt;/location&gt;   &lt;sensors&gt;     &lt;sensor id="sensor_1" name="Temperature" unit="&amp;deg;C"&gt;&lt;/sensor&gt;   &lt;/sensors&gt;   &lt;data&gt;      &lt;record timestamp="1459857600" date="05.04.2016" time="13:00:00"&gt;       &lt;entry sensorid="sensor_1" name="minimum" value="25.3"/&gt;       &lt;entry sensorid="sensor_1" name="average" value="25.4"/&gt;       &lt;entry sensorid="sensor_1" name="maximum" value="25.5"/&gt;     &lt;/record&gt;      &lt;record timestamp="1459861200" date="05.04.2016" time="14:00:00"&gt;       &lt;entry sensorid="sensor_1" name="minimum" value="25.3"/&gt;       &lt;entry sensorid="sensor_1" name="average" value="25.4"/&gt;       &lt;entry sensorid="sensor_1" name="maximum" value="25.6"/&gt;     &lt;/record&gt;      &lt;record timestamp="1459864800" date="05.04.2016" time="15:00:00"&gt;       &lt;entry sensorid="sensor_1" name="minimum" value="20.2"/&gt;       &lt;entry sensorid="sensor_1" name="average" value="22.7"/&gt;       &lt;entry sensorid="sensor_1" name="maximum" value="26.3"/&gt;     &lt;/record&gt;    &lt;/data&gt; &lt;/querx&gt; </pre> |

## 6.3 TLS and User-login

The examples provided above work for unencrypted access to the web interface and when no password protection has been set up. In order to retrieve data as an authorized, password-protected user, you need to log into the web interface and save the session.

**WLAN models:** Saving the session is also advisable if you need to repeatedly access data via TLS, as the TLS-initialization only needs to be performed once.

|                 |                        |
|-----------------|------------------------|
| URL             | https://<IP>/login.cgi |
| POST-Parameters |                        |
| login_user      | Username               |
| login_pass      | Password               |

|                            |   |
|----------------------------|---|
| Example: User registration |   |
| URL                        | https://192.168.1.100/login.cgi                           |
| Postdata                   | login_user: <i>querx</i><br>login_pass: <i>verysecure</i> |
| Output                     | Ignore the output but save the session!                   |

## 6.4 Application Examples

Examples for the application with various coding languages can be found in the tutorials section on the product page at [www.egnite.de](http://www.egnite.de).

## 7 Access Privileges

The factory settings include an anonymous user, whose access is not password protected. Three additional, password-protected users can be set up. The following access privileges can be assigned to these users:

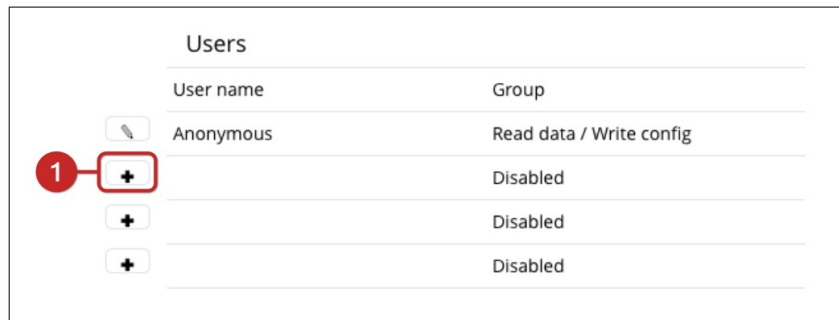
- *Deactivated*: The user can not access the device.
- *Read data*: The user can read the data tracked by Querx
- *Read data / Read config*: The user can read the data tracked by Querx and the device's settings.
- *Read data / Write config*: The user can read the data tracked by Querx and the device's settings. They can also change the settings.





### 7.1 User Administration

The factory settings do not include a password-protected user, making the device's settings accessible to any user on the network. Therefore, it is advisable to set up users with password-protected access and then restrict the anonymous user's access.

### 7.1.1 Creating a New User Account

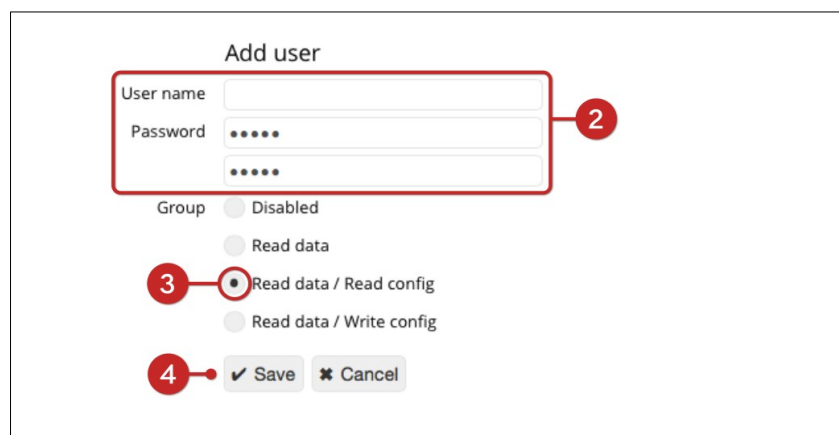
Open the page *System / Users* in the configuration area to change the user settings.



| Users   |                          |
|---|--------------------------|
| User name   | Group                    |
|  Anonymous | Read data / Write config |
|            | Disabled                 |
|            | Disabled                 |
|            | Disabled                 |



1. Click the *Add* button next to an empty line in the section *Users*.



Add user

User name

Password

Group

Read data / Read config

Read data / Write config



Save

Cancel

2. On the following page, enter a user name into the input field *User name* and a password into the input field *Password*.
3. Assign the user to a *Group* of access rights.
4. Click *Save* to apply your settings and create the user account.

## 7.1.2 Editing a User Account

Open the page *System / Users* in the configuration area.



Users

| User name | Group                    |
|-----------|--------------------------|
| Anonymous | Read data / Write config |
| Admin     | Read data / Read config  |
|           | Disabled                 |
|           | Disabled                 |

1. Click the *Edit* symbol in the section *Users*.

Edit user

User name

Admin

Password

.....

.....

Group

☐ Disabled

☐ Read data

☐ Read data / Read config

☒ Read data / Write config

3

2





### Information

The access rights can only be edited if at least one further user with writing access has been set up.


### 7.1.3 Removing a User

Open the page *System / Users* in the configuration area.



| Users   |                          |
|---|--------------------------|
| User name   | Group                    |
| Anonymous   | Read data / Write config |
| Admin   | Read data / Read config  |
|  | Disabled                 |
|  | Disabled                 |

1. Click the *Remove* button next to the user you wish to remove.

| Remove user   |   |
|---|---|
| User name   | Admin   |
| Group   | Read data / Read config   |
|  | <input checked="" type="button" value="Yes"/> <input type="button" value="No"/> |

2. Confirm that you wish to remove this user by clicking *Yes*.








#### Information

A user with access rights can only be removed if at least one further user with writing access has been set up.



### 7.1.4 Deactivating the Anonymous User

Once you have set up a user with writing access, you can restrict the anonymous user's access rights or deactivate this user entirely. To do this, open the page *System / Users* in the configuration area.

| Users   |                          |
|---|--------------------------|
| User name   | Group                    |
| <div>1 </div> Anonymous  | Read data / Write config |
|   Admin | Read data / Read config  |
|    | Disabled                 |
|    | Disabled                 |



1. Click the *Edit* button next to the user *Anonymous*.

#### Edit user

User name Anonymous

Group 

2 ☒ Disabled

☐ Read data

☐ Read data / Read config

☐ Read data / Write config

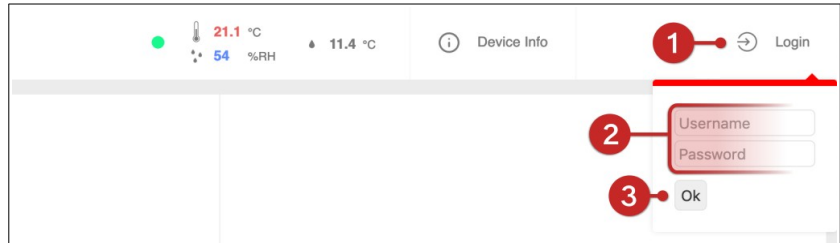
3

2. In order to restrict anonymous access to Querx entirely, assign the group of access rights *Disabled* to the user. To allow all network members restricted access to Querx, select the required group of access rights.
3. Click *Save* to apply your changes.

## 7.2 Logging in

If you have set up users and assigned access rights to them, you will first need to log into the device.

The buttons that let you log in and access the configuration area are located in upper right corner of the home page.



1. Click *Login*.
2. Enter the user name into the input field *User* and the password into the input field *Password*.
3. Click *OK*.

## 8 Advanced System Configuration

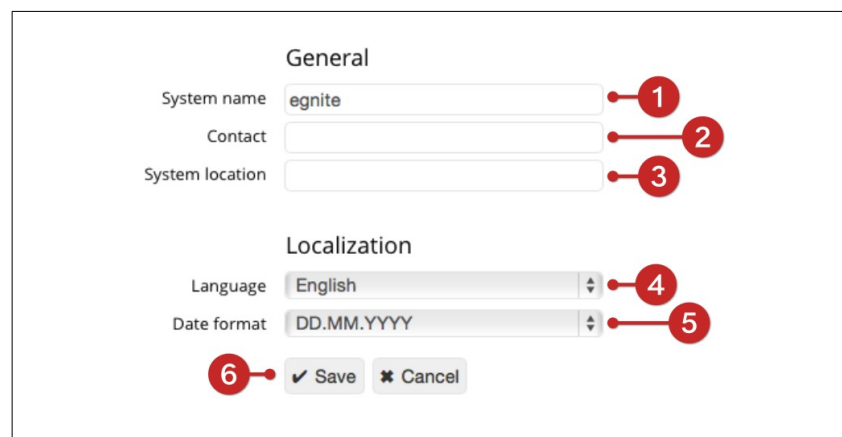
The main settings have already been explained in chapter 2.9 *Initial Configuration*. The following sections describe further possible settings in detail.

### 8.1 General Settings

The configuration area's home page is the sub menu *System / General*. This is where you can enter general information on the device.

The *contact* and *location* parameters can be retrieved via SNMP (cf. Section 10.4 *Configuring SNMP*).

The *language* selection lets you set the web interface's language. The *date format* field is used to select the format in which calendar dates are displayed in the web interface and in exported files.



The screenshot shows the 'General' configuration page. It has two main sections: 'General' and 'Localization'. The 'General' section contains three input fields: 'System name' (containing 'egnite'), 'Contact', and 'System location'. The 'Localization' section contains two dropdown menus: 'Language' (set to 'English') and 'Date format' (set to 'DD.MM.YYYY'). At the bottom are 'Save' and 'Cancel' buttons. Red numbered callouts point to specific elements: 1 points to the 'System name' field, 2 points to the 'Contact' field, 3 points to the 'System location' field, 4 points to the 'Language' dropdown, 5 points to the 'Date format' dropdown, and 6 points to the 'Save' button.

1. The *system name* identifies the device whenever it sends alert notifications and when using various interfaces. It also serves as the host name that can be used to access Querx via a web browser (cf. Section 2.7 *Accessing the Web Interface*). You can use up to 15 letters and digits, but you should refrain from using special characters, in order to ensure compatibility with other systems.
2. If you wish, enter the responsible contact person into the input field *Contact*

3. and enter the device's location into the input field *System Location*. These are both simple information fields that can be queried via SNMP, for instance, as explained in chapter 10.4 *Configuring SNMP*.
4. Select the *Language* in which you want the web interface to be displayed.
5. Select the *Date format* for the web interface and exported files.
6. Click *Save* to apply your changes.

## 8.2 Setting Date and Time

The page *System / Time* displays the current date and time and offers several ways to set date and time manually or automatically.

Querx requires this data, in order to track measurements. It is usually updated automatically via the net or a local time server. Querx also features an internal clock that enables the device to continue tracking data if the network connection fails. The integrated buffer battery can bridge even longer power shortages.

Internally, Querx generally operates on universal time coordinated (UTC). The interface and exported data, however, display the local time. In order to display the correct time, you need to ensure that the correct time zone has been configured.

1. Select the correct time zone for your location from the drop down menu *time zone*.
2. Now select the settings for daylight saving time:
  - A. If your country uses daylight saving time and the time changes on the last Sundays of March and October, please activate *auto* in the section *DST*.
  - B. If your country uses daylight saving time, but the time does not change on the last Sundays of March and October, please deactivate *auto* in the section *DST*. You will need to select whether summer time is active manually.
3. Click *Save*, in order to apply your changes.

### Setting date and time via the network

If the device is not connected to the internet or an internal NTP server is available on the network, it is advisable to configure time and date automatically via SNTP.

1. Enter an *NTP server*.
2. Click *Sync NTP* to update time and date.
3. Click *Save* to apply your changes.



### Information

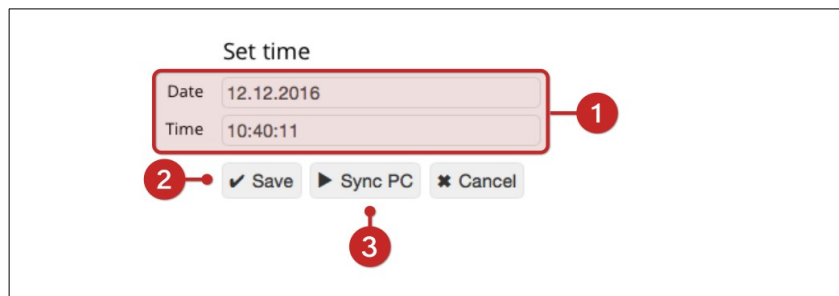
If a valid NTP server has been set up, time and date will be updated automatically once per hour.

## Setting date and time manually

If no NTP server is available, time and date can also be set manually.



1. Click *Set time manually*.



2. The values can be entered into the fields *Date* and *Time* manually.
3. Alternatively, date and time can be synced with your PC. In order to do this, click *Sync PC*.
4. Click *Save* to apply your changes.

## 8.3 Network Configuration

Querx can be connected to a network via an Ethernet LAN cable. The WLAN models can alternatively be connected to wireless networks.

The Ethernet interface needs to detect a network connection, in order to activate the wired network interface. If no Ethernet connection is detected, or an existing one is disrupted, Querx WLAN will activate the wireless network interface.

### 8.3.1 Ethernet Interface

In the default settings Querx configures the wired network connection automatically.

Alternatively, the network settings can be configured manually. Manually assigning a static IP-address to the device will make it boot more quickly and also make it accessible at the same IP-address at all times.

**Information**

Changes to the network settings will only be applied after the device has rebooted.

### 8.3.2 Dynamic Network Configuration

Open the page *System / Network* in the configuration area to select the dynamic network configuration using DHCP or Zeroconf.



| Network interfaces |           |                   |
|--------------------|-----------|-------------------|
|                    | Interface | MAC               |
| 1                  | Ethernet  | 00:06:98:01:1F:7C |
|                    | WLAN      | 00:0B:6C:41:EB:47 |

1. Click the *Edit* symbol next to the entry *Ethernet* to access the settings for this interface.

Ethernet setup

2 DHCP ☒ Obtain IP address automatically  
☐ Set IP address manually

MAC 00:06:98:01:1F:7C

IP address

Network mask

Default gateway

3 DNS server ☒ Obtain DNS server automatically A  
☐ Set DNS server manually B

Preferred DNS server

Alternative DNS server

4 ☒ Save ☐ Cancel

2. Select *Obtain IP address automatically*.
3. Choose whether you want to
  - A. *Obtain the DNS server automatically* or
  - B. *Set the DNS server manually*.
4. Click *Save* to apply your settings.

**i**

#### Information

Changes to the network settings will only be applied after the device has rebooted.



### 8.3.3 WLAN Models: Wireless LAN Interface



Open the page *System / WLAN* in the configuration area to configure the wireless LAN interface.

The screenshot shows the 'Wireless LAN' configuration page. It includes a 'Wireless' section with an 'Enable' checkbox (marked with a red circle 1). Below this is an 'SSID' input field containing 'egnite01' (marked with a red circle 2) and a 'Choose Network' button (marked with a red circle B). The 'Encryption' dropdown menu is set to 'WPA2-PSK-TKIP' (marked with a red circle 3). The 'Shared Key' input field contains six dots (marked with a red circle 4). At the bottom, there are three buttons: 'Save' (marked with a red circle 6), 'Cancel', and 'Connect' (marked with a red circle 5). A red box highlights the 'SSID' field and the 'Choose Network' button.

1. Click *Enable*, in order to activate the wireless interface.
2. Select your network.
  - A. Enter your network's SSID manually in the input field *SSID* or
  - B. click the button *Select network* to select the network from a list of available wireless networks.
3. Select the method of encryption from the drop down menu *Encryption*.
4. Enter the key in the input field *Shared key*.
5. Click *Connect* to test the connection with the entered parameters.
6. Click *Save* to apply your changes.

### 8.3.4 Dynamic and Static Network Configuration

Open the page *System / Network* in the configuration area to select the dynamic network configuration using DHCP or Zeroconf.

| Network interfaces   |                   |
|--|-------------------|
| Interface  | MAC               |
|  <b>Ethernet</b>      | 00:06:98:01:1F:7C |
| <b>1</b>  <b>WLAN</b> | 00:0B:6C:41:EB:47 |



1. Click the *Edit* button next to the entry *WLAN*.

Proceed as described in section 8.3.1 *Ethernet Interface*.

### 8.3.5 WLAN Models: Selecting the Active Network Interface

Querx WLAN switches between the wired and wireless interfaces according to whether it can detect a wired Ethernet connection.

If a wired network connection is detected, Querx WLAN activates the Ethernet interface. If no wired connection is detected or an existing connection is disrupted, the device will activate the wireless interface.

The device needs to reboot, in order to change the active network interface. This process can take a little while.

The status LED indicates which network interface is currently active. The LED flashes

- *green* when the cable interface is active
- *blue* when the wireless network is active.

### 8.3.6 Deactivating the Discovery Function

In standard settings, Querx is accessible via the Discovery Service, in order to facilitate the manual configuration of its network settings using the application **Device Discoverer**. It is advisable to deactivate this service once the device is configured to increase the system's security. For this purpose, open the page *System / Network*.



Discovery service

Discovery ☒ Enable 1

Discovery port 9806

2

1. Deactivate the checkbox *Discovery*.
2. Click *Save* to apply your changes.



#### Information

Querx may no longer be accessible by some applications if the Discovery Service is deactivated.

## 8.4 Configuring the Data Logger

egnite Querx features an integrated data logger that tracks the following data in configurable time intervals:

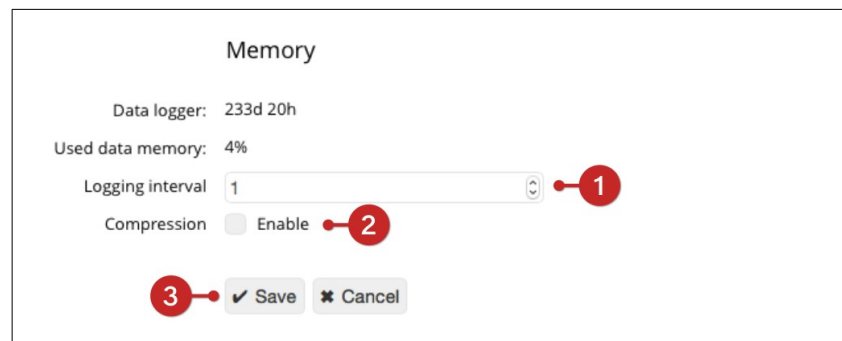
- Peak, minimum and average temperature values
- **TH and THP models:** Peak, minimum and average humidity values
- **THP models:** Peak, minimum and average pressure values

Querx THP can save up to 36,864 entries. Querx TH and PT have a capacity of 73,728 entries. The WLAN models can record 4 million entries. This means that Querx THP can store data for 25 days when logging one entry per minute.

Querx TH and PT can track data for 51 days and the WLAN models can record data for 7.5 years, when using the same settings.

Data compression can be activated, in order to increase the timespan that can be logged. If compression is activated, entries are only saved if any change has occurred since the last entry.

The memory is designed as a ring memory. If the memory's maximum capacity is reached, the oldest entries will be overwritten.



1. Set the interval between logged entries by entering the required number of minutes in the input field *Logging interval*.
2. If required, activate data *Compression*.
3. Click *Save* to apply your changes.

**i**

### Information

Data compression can lead to noncritical display errors in the representation of measurements in the diagram.

## 9 Advanced Sensor Configuration

### 9.1 Temperature Sensor

Open the page *Sensors / Temperature* in the configuration area, in order to configure the temperature sensor.

The screenshot shows the 'Temperature sensor' configuration page. It includes a 'Sensor name' field with the value 'Temperature'. The 'Sensor type' section has three radio buttons: '2/4-wire sensor' (selected), '3-wire sensor', and '1-wire sensor'. The 'Filter' section has two radio buttons: '50Hz filter' (selected) and '60Hz filter'. The 'Unit' section has three radio buttons: '° Celsius' (selected), '° Fahrenheit', and 'Kelvin'. There is an 'Extended resolution' checkbox which is checked. Below these are 'Threshold alerts' with fields for 'Alert delay' (0), 'Lower limit' (-200), 'Upper limit' (85), and 'Dead-band' (0). Then 'Variation alerts' for both 'Dropping values' and 'Rising values', each with 'Enable' checkboxes and fields for 'Value' (950) and 'Time' (10). At the bottom are 'Save', 'Cancel', and 'Adjustment' buttons. Numbered callouts point to: 1. '2/4-wire sensor' radio button, 2. '50Hz filter' radio button, 3. '° Celsius' radio button, 4. 'Extended resolution' checkbox, and 5. 'Save' button.

- 1. PT Models:** Select whether you are going to use a 2-, 3- or 4-wire sensor in the input field *Sensor type*.
- 2. PT Models:** Set the *Filter* to the mains frequency used in your country. In Europe this is 50 Hz.
- 3.** Select the physical *Unit* that you want Querx to use.
- 4.** Activate *Extended Resolution* in order to display measurements with two decimal places instead of one. Keep in mind that this does not increase the accuracy of measurements and that data will still be logged with one decimal place.
- 5.** Click *Save* to apply your changes.

## 9.2 Humidity Sensor

### Humidity sensor

Sensor name

**1** ☐ Extended resolution

### Threshold alerts

Alert delay

Lower limit

Upper limit

Dead-band

### Variation alerts

Dropping values ☐ Enable

Value

Time

Rising values ☐ Enable

Value

Time

**2**

1. Activate *Extended Resolution* in order to extend the display measurements by one decimal place. Keep in mind that this does not increase the accuracy of measurements and that data will still be logged with one decimal place.
2. Click *Save* to apply your changes.

## 9.3 Air Pressure Sensor

### Athmospheric pressure sensor

Sensor name

Pressure

Unit

☒ hPa

☐ mbar

Altitude

0

### Threshold alerts

Alert delay

0

Lower limit

900

Upper limit

1300

Dead-band

0

### Variation alerts

Dropping values

☐ Enable

Value

400

Time

10

Rising values

☐ Enable

Value

400

Time

10

3

✓ Save

\* Cancel

↔ Adjustment

1. Select the physical *Unit* that you want Querx to use.
2. Querx usually displays the absolute air pressure at its location. If you need to monitor the relative air pressure, you will require the location's elevation above sea level.
3. Click *Save* to apply your changes.

## 9.4 Calculated Dew Point

Calculated dew point

Sensor name

1 ☐ Extended resolution

2 ☐ Dew point spread

Threshold alerts

Alert delay

Lower limit

Upper limit

Dead-band

3

1. Activate *Extended Resolution* in order to extend the display measurements by one decimal place. This does not increase the measurements' accuracy.
2. If you activate *Dew point spread*, Querx will display the difference between the current temperature and the calculated dew point.
3. Click *Save* to apply your settings.



## 10 Configuring the Interfaces

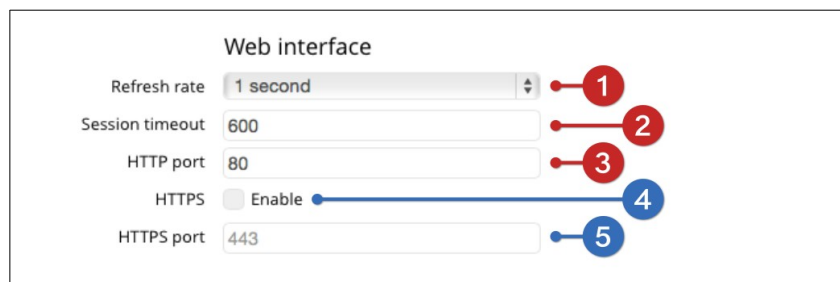
Querx offers a number of different interfaces that can be used to access all measured data and notify you of any critical changes.

### 10.1 The Web Interface

This section explains the basic configuration of the web interface and the diagram on the home page.

#### 10.1.1 Basic Settings for the Web Interface

Open the page *Interfaces / Web* in the configuration area.



The screenshot shows the 'Web interface' configuration page. It contains the following fields and controls:

- Refresh rate:** A dropdown menu currently showing '1 second'. A red circle with the number '1' points to this field.
- Session timeout:** A text input field containing '600'. A red circle with the number '2' points to this field.
- HTTP port:** A text input field containing '80'. A red circle with the number '3' points to this field.
- HTTPS:** A toggle switch currently in the 'Off' position. A blue circle with the number '4' points to this toggle.
- HTTPS port:** A text input field containing '443'. A blue circle with the number '5' points to this field.

1. Enter the rate at which the dynamic values (e.g. the temperature) are to be updated in the web interface in the *Refresh rate* input field.
2. Enter the time after which an inactive user is logged out in the *Session timeout* input field.
3. Enter the *HTTP port* that is to be used for the unencrypted web interface (the standard port is 80).
4. **WLAN models:** Click *Activate* to use HTTPS to encrypt the transmission of the web interface.
5. **WLAN models:** Enter the *HTTPS port* via which the encrypted web interface is to be transmitted.

## 10.1.2 Visualization

The screenshot shows a configuration window for three charts. The 'Temperature chart' is highlighted in red, with callout 1 pointing to the 'Color' dropdown (set to 'Red') and callout 2 pointing to the 'Auto zoom' checkbox (checked) and the 'Minimum'/'Maximum' value range (-40,0 to 85,0 °C). Callout A points to the 'Auto zoom' checkbox, and callout B points to the 'Minimum' and 'Maximum' input fields. The 'Humidity chart' is highlighted in blue, with callout 3 pointing to the 'Color' dropdown (set to 'Blue'). The 'Pressure chart' is highlighted in green, with callout 4 pointing to the 'Color' dropdown (set to 'Green'). Callout 5 points to the 'Save' button at the bottom.

1. Select a *Color* for the temperature chart.
2. Select the value range displayed in the diagram:
  - A. Enable *Auto zoom* to let Querx automatically adjust the displayed range to the tracked values.
  - B. Alternatively, static *Minimal* and *Maximal* values can be assigned to the displayed value range.
3. **TH and THP models:** Repeat steps 1 and 2 for the humidity curve.
4. **THP models:** Repeat steps 1 and 2 for the pressure curve.
5. Click *Save* to apply your changes.

## 10.2 Configuring HTTP-Push

The page *HTTP-Push* in the configuration area lets you set up up to two cloud services to which Querx can transmit the data it tracks simultaneously. The structure in which data needs to be sent to any cloud service depends on the provider. Therefore, Querx features a template system that lets you output and transmit data saved on your device to a cloud service in various structures and file formats (JSON, XML, CSV...).

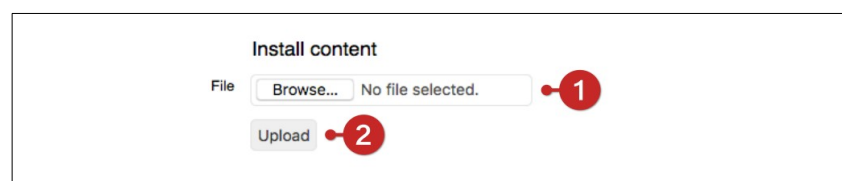
### 10.2.1 Generating Templates

Any text editor can be used to generate template files. A tutorial is available at [www.egnite.de](http://www.egnite.de). Alternatively, you can also download ready-made templates for the most commonly used cloud services by following the same link.

### 10.2.2 Installing Templates

After generating or downloading a template from [www.egnite.de](http://www.egnite.de), it needs to be installed on the device.

Open the page *Firmware* in the configuration area.



1. Select the required template file in the section *Install content*.
2. Click the button *Send*, to save the file in the device's internal memory.

### 10.2.3 Setting up HTTP-Push

Open the page *HTTP-Push* in the configuration area to set up the installed template for use with the HTTP-Push feature.

The screenshot shows the 'HTTP-Push Service' configuration interface. It includes fields for 'Variable 1', 'Variable 2', 'Template filename' (set to 'palamoa.tpl'), 'Service URL' (set to 'palamoa.de/json/-hXWSy9aucieeL08i'), 'HTTP Method' (set to 'POST'), 'Update rate' (set to '1'), and 'TLS certificate errors' (set to 'Ignore'). At the bottom, there are 'Save', 'Cancel', and 'Test' buttons, and a section for 'Last syslog messages' with a table of recent events.

| Date / Time         | Event  |
|---------------------|--|
| 04.08.2020 10:44:11 | Push palamoa.de/json/-hXWSy9aucieeL08i5f66hJ4: HTTP/1.1 200 OK |
| 04.08.2020 10:44:11 | Not saving config after upgrade.                               |

1. Click the button *Enable*.
2. Optionally, specify a custom variable. The value you enter here can be retrieved in the template and the URL as `{{pushtab_var1}}` by entering "\$1".
3. Optionally, specify a custom variable. The value you enter here can be retrieved in the template and the URL as `{{pushtab_var2}}` by entering "\$2".
4. Enter the *Template filename* that is specified in the previously installed template's header line. The `palamoa.tpl` template for the Palamoa cloud is preinstalled.
5. Enter the URL for the HTTP-endpoint of the cloud service to which you want to transfer your data. This is usually specified in the cloud service's online documentation.
6. Select the *HTTP method* that you want to use for data transmission. This is usually specified in the cloud service's online documentation. The most common method is *POST*.

7. Enter the *Update rate*. This value determines how often Querx sends new data to the cloud service (in minutes). If this value is set to 0, Querx will transmit data whenever any values have changed.
8. **WLAN models:** The server certificate can be checked, in order to ensure the cloud server's authenticity. This requires the corresponding CA certificate to be saved, as described in chapter 10.7. *Installing CA certificates*. If you have not installed a certificate, choose the standard configuration *Ignore*.
9. Click the button *Test* to send an initial data set to the cloud. If the transmission is successful, the button will turn green. If any settings are incorrect, it will turn red and the settings causing the problem will be highlighted red. If required, correct the settings and click the *Test* button again.
10. In case any settings are incorrect, check the *Syslog messages*. They usually contain useful information concerning the problem.
11. Click *Save* to apply your configuration and begin data transmission.

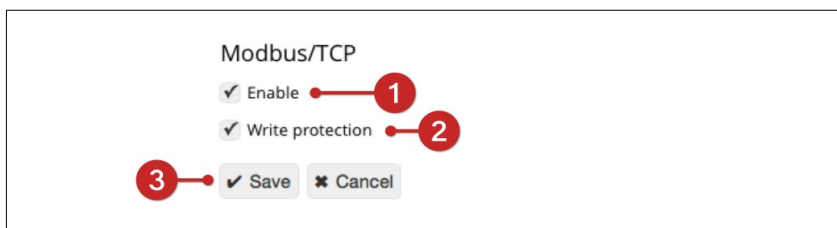
## 10.3 Modbus/TCP

egnite Querx can transfer data via Modbus/TCP, making it suitable for industrial process monitoring (SCADA) amongst other possible applications.

Practical examples of the application of Modbus/TCP can be found on the product page at [www.egnite.de](http://www.egnite.de).

### 10.3.1 Activating Modbus/TCP

Open the page *Interfaces / Modbus* in the configuration area.



1. Activate Modbus/TCP by clicking the checkbox *Enable*.
2. If you want to allow changes to the Modbus/TCP configuration, uncheck the checkbox *Write protection*.
3. Click *Save* to apply your changes.

|          |  |
|----------|--|
| <b>i</b> | <b>Information</b><br>Please note that Querx only supports a single Modbus connection. If you intend to use Querx with several masters, the connection to one master needs to be interrupted, in order to vacate the connection for the other masters. |
|----------|--|

|          |   |
|----------|---|
| <b>i</b> | <b>Information</b><br>The device needs to reboot after activating or deactivating Modbus/TCP. |
|----------|---|

## 10.3.2 Modbus Registers

| Read Registers |        |        |                             |
|----------------|--------|--------|-----------------------------|
| Address        | Offset | Format | Contents                    |
| 30010          | 9      | int16  | Sensor error flags          |
| 30011          | 10     | int16  | Temperature Celsius * 10    |
| 30012          | 11     | int16  | Relative humidity %         |
| 30013          | 12     | int16  | Temperature Fahrenheit * 10 |
| 30014          | 13     | int16  | Temperature Kelvin * 10     |
| 30015          | 14     | int16  | Dew point Celsius * 10      |
| 30016          | 15     | int16  | Dew point Fahrenheit * 10   |
| 30017          | 16     | int16  | Dew point Kelvin * 10       |
| 30019          | 18     | int16  | Absolute pressure hPa * 10  |
| 30020          | 19     | int16  | Relative pressure hPa * 10  |

| Holding Registers |        |        |   |
|-------------------|--------|--------|---|
| Address           | Offset | Format | Contents                                    |
| 40021             | 20     | int16  | Lower temperature limit Celsius * 10        |
| 40022             | 21     | int16  | Upper temperature limit Celsius * 10        |
| 40023             | 22     | int16  | Temperature dead band Kelvin / Celsius * 10 |
| 40024             | 23     | int16  | Lower temperature limit Fahrenheit * 10     |
| 40025             | 24     | int16  | Upper temperature limit Fahrenheit * 10     |
| 40026             | 25     | int16  | Temperature dead band Fahrenheit * 10       |
| 40027             | 26     | int16  | Lower temperature limit Kelvin * 10         |
| 40028             | 27     | int16  | Upper temperature limit Kelvin * 10         |
| 40031             | 30     | int16  | Lower humidity limit                        |
| 40032             | 31     | int16  | Upper humidity limit                        |
| 40033             | 32     | int16  | Humidity dead band                          |
| 40051             | 50     | int16  | Lower dew point limit Celsius * 10          |
| 40052             | 51     | int16  | Upper dew point limit Celsius * 10          |
| 40053             | 52     | int16  | Dew point dead band Celsius * 10            |
| 40054             | 53     | int16  | Lower dew point limit Fahrenheit * 10       |
| 40055             | 54     | int16  | Upper dew point limit Fahrenheit * 10       |
| 40056             | 55     | int16  | Dew point dead band Fahrenheit * 10         |
| 40057             | 56     | int16  | Lower dew point limit Kelvin * 10           |
| 40058             | 57     | int16  | Upper dew point limit Kelvin * 10           |
| 40061             | 60     | Int16  | Lower pressure limit in hPa * 10            |
| 40062             | 61     | Int16  | Upper pressure limit in hPa * 10            |
| 40063             | 62     | Int16  | Pressure dead band in hPa * 10              |

## 10.4 Configuring SNMP

Querx can be integrated into network management systems such as Nagios, OpenNMS or Zabbix via the Simple Network Management Protocol (SNMP). egnite Querx supports SNMPv1.

The Management Information Database (MIB) is saved on the device and can be downloaded from the web interface, as described in section *10.4.4.SNMP MIB*.

Practical examples of the application of SNMP can be found on the product page at [www.egnite.de](http://www.egnite.de).

### 10.4.1 General Data

Open the page *System / General* in the configuration area to enter the data concerning the device's system name, contact person and location.

### 10.4.2 Activating SNMP

Open the page *Interfaces / SNMP*.



1. Activate SNMP by clicking the checkbox *Enable*.
2. Check the *Read community* and make any required changes.
3. Click *Save* at the bottom of the screen to apply your changes.

Restart the device via the web interface as detailed in chapter *11.1.1 Soft Boot*.



#### Information

Please note that Querx needs to reboot after enabling or deactivating the SNMP-agent.



### 10.4.3 Activating SNMP Traps

Open the page *Interfaces / SNMP* in the configuration area.

The screenshot shows the 'SNMP traps' configuration page. It includes the following elements:

- Trap receiver:** An input field with a red circle '1' pointing to it.
- Trap community:** A dropdown menu showing 'public' with a red circle '2' pointing to it.
- Send trap on:** A section with 'Select all' and 'Remove selection' links.
- Temperature:** A list of checkboxes: 'Too low' (checked), 'Too high' (checked), 'Back to normal', 'Drops too fast', and 'Rises too fast'.
- Humidity:** A list of checkboxes: 'Too low' (checked), 'Too high' (checked), 'Back to normal', 'Drops too fast', and 'Rises too fast'.
- Humidity:** A second list of checkboxes: 'Too low' (checked), 'Too high' (checked), 'Back to normal', 'Drops too fast', and 'Rises too fast'.
- Dew-point:** A list of checkboxes: 'Too low' (checked), 'Too high' (checked), and 'Back to normal'.
- Buttons:** At the bottom, there is a 'Save' button with a checkmark and a 'Cancel' button with an 'X'. A red circle '4' points to the 'Save' button.

A large red rectangle with a red circle '3' on its right side highlights the 'Send trap on' section and the event lists.

1. Enter the IP-address or hostname for the host who is to receive the SNMP traps in the input field *Trap receiver* in the *SNMP* section.
2. Check the *Trap community* and make any required changes.
3. Select which events will trigger SNMP traps in the section *Send trap on*.
4. Click *Save* to apply your changes.


## 10.4.4 SNMP MIB

The main SNMP Object Identifiers defined by Querx are:

| OID                             | Description                     |
|---------------------------------|---------------------------------|
| 1.3.6.1.4.1.3444.1.14.1.2.1.5.1 | Temperature sensor              |
| 1.3.6.1.4.1.3444.1.14.1.2.1.5.2 | Humidity sensor                 |
| 1.3.6.1.4.1.3444.1.14.1.2.1.5.3 | Calculated dew point            |
| 1.3.6.1.4.1.3444.1.14.1.2.1.5.4 | Pressure sensor                 |
| 1.3.6.1.4.1.3444.1.14.2.0.101   | Trap-code for normal conditions |
| 1.3.6.1.4.1.3444.1.14.2.0.102   | Trap-code for alerts            |

Please refer to the MIB that is saved on the device for a complete list.

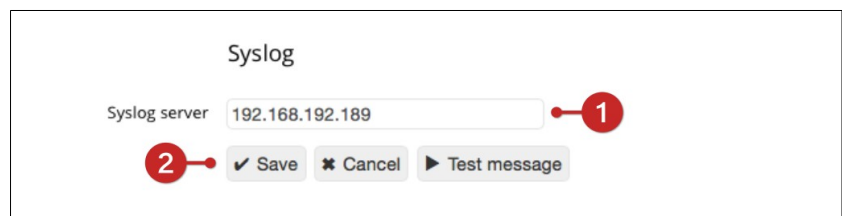
Open the page *Interfaces / SNMP* in the configuration area.



1. Click the *Download* button in the *SNMP agent* section to download the Management Information Database (MIB).

## 10.5 Configuring Syslog

Open the page *Interfaces / Syslog* to send notifications and error reports to a syslog server.



1. Enter the *Syslog server's* IP address or hostname.
2. Click *Save* to apply your settings.

The application **Device Discoverer** includes an integrated Syslog server which can receive error reports from Querx. Detailed troubleshooting instructions can be found in the *Services / Tutorials* section at [www.egnite.de](http://www.egnite.de).

## 10.6 Signalers

egnite Querx is fitted with an LED that can notify you of occurring alerts.

### 10.6.1 Optical Signals

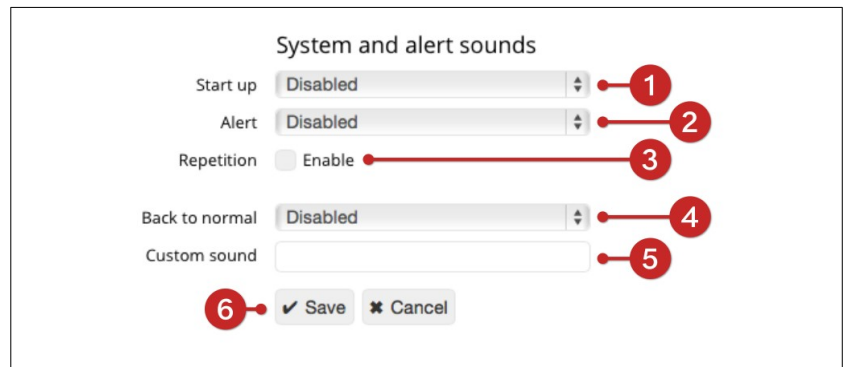
Open the page *Interfaces / Signalers* to configure alerts displayed on the device itself.

The screenshot shows the 'Signalers' configuration interface. It is divided into three main sections: 'Status LED (normal)', 'Status LED (alerts)', and 'System and alert sounds'.  
1. 'Status LED (normal)' section: Contains 'Blink rate' (set to 10) and 'Brightness' (set to Bright).  
2. 'Status LED (alerts)' section: Contains 'Brightness' (set to Bright), 'Temperature Alert' (set to Red), 'Humidity alert' (set to Yellow), and 'Pressure alert' (set to Green).  
3. 'System and alert sounds' section: Contains 'Start up' (set to Disabled), 'Alert' (set to Disabled), 'Repetition' (set to Enable), 'Back to normal' (set to Disabled), and 'Custom sound' (empty field).  
At the bottom, there are 'Save' and 'Cancel' buttons. Numbered callouts (1-7) point to specific elements: 1 points to the 'Blink rate' input, 2 points to the 'Brightness' dropdown in the normal section, 3 points to the 'Brightness' dropdown in the alerts section, 4 points to the 'Temperature Alert' dropdown, 5 points to the 'Humidity alert' dropdown, 6 points to the 'Pressure alert' dropdown, and 7 points to the 'Save' button.

1. Set the number of seconds for the *Rate* at which egnite Querx blinks under normal conditions.
2. **WLAN models:** Select the LED's *Brightness* under normal conditions.
3. **WLAN models:** Select the LED's *Brightness* when signaling an alert.
4. Select the LED's *Color* when signaling a temperature alert.
5. **TH and THP models:** Select the LED's *Color* when signaling a humidity alert. This includes dew point alerts.
6. **THP models:** Select the LED's *Color* when signaling a pressure alert.
7. Click *Save* to apply your settings.

## 10.6.2 WLAN Models: Acoustic Signals

Acoustic signals are only available on **WLAN models**.



1. Select a *Startup* signal sound.
2. Select an *Alert* signal sound.
3. Specify whether the signal for alerts is to be *Repeated*.
4. Select a sound to signal that the values are *Back to normal*.
5. If desired, specify a personalized signal sound using the "scientific pitch notation".  
[https://en.wikipedia.org/wiki/Scientific\\_pitch\\_notation](https://en.wikipedia.org/wiki/Scientific_pitch_notation)
6. Click *Save* to apply your changes.

## 10.7 WLAN Models: Installing CA certificates

When establishing an encrypted connection to a configured mail server or a cloud server, the server will transfer a certificate. Among other things, this is intended to ensure that the server is actually the requested one. In order to do this, however, the certificate of the certification body specified in the server's certificate is required. Web browsers on PCs include certificates of far more than a hundred certification bodies and update these regularly. This approach would be disproportionately time-consuming for Querx.

Compared to a web browser, Querx will usually communicate with very few servers. Therefore, it is sufficient to save fewer certification bodies' certificates. These are saved in a file in the PEM format, which is then installed on Querx. As this is a text file, any text editor like Notepad can be used to create them.

The first line needs to include `"add="`, followed by the file's path, `"/ssl/ca.crt"`, so Querx can recognize the file as a CA certificate. The second line needs to be blank. This could, for instance, look like this:

```
add=/ssl/ca.crt

-----BEGIN CERTIFICATE-----
MIIFazCCA1OgAwIIBA...
...4O3sBc0V2m2TgGI
-----END CERTIFICATE-----
```

The file is installed as follows:

Open the page *Firmware* in the configuration area:

Install content

| Filename  | Size | Time     |
|---|------|----------|
| <div><div>x</div><div>+</div><div>/ssl/ca.crt</div></div> | 98   | 12:25:06 |

File 

Browse... No file selected.

Upload

1. Click *Browse* in the *Install content* section to select the certificate.
2. Click the *Upload* button, to transfer the file to the internal memory of Querx.
3. The file should appear in the list after successful transfer.

## 11 Maintenance

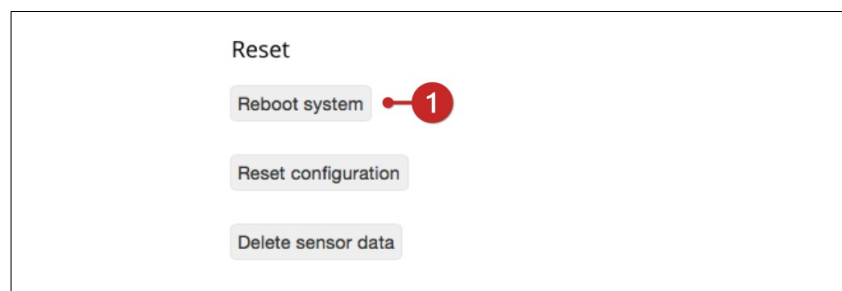
### 11.1 Reboot

Certain changes to the configuration are only applied after the device has rebooted. There are two different ways of rebooting egnite Querx – via the web interface (soft boot) or by interrupting the power supply (cold boot).

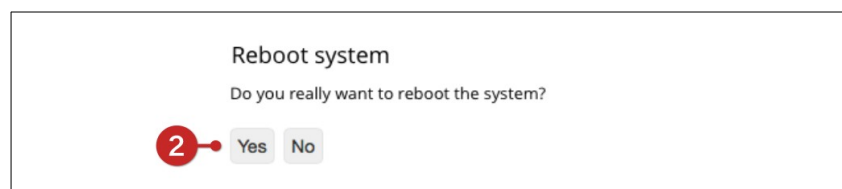
#### 11.1.1 Soft Boot

It is sometimes required to reboot the device after changing settings.

Open the page *Maintenance / Reset* in the configuration area.



1. Click the button *Reboot system*.



2. Confirm the soft boot by clicking *Yes* on the following page.

#### 11.1.2 Cold Boot

A cold boot may be necessary if the device should cease to respond.

1. Disconnect Querx from the power supply.
2. Wait for several seconds.
3. Reconnect Querx to the power supply.

## 11.2 Configuration Backup

The configuration can be exported, in order to save it or apply the same settings to several devices. The following settings are ignored when exporting the configuration:

- Manual network settings
- Email accounts and passwords

### 11.2.1 Exporting the Configuration

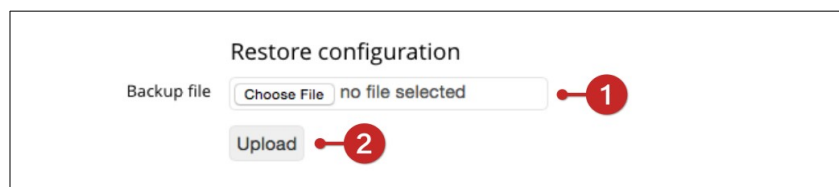
Open the page *Maintenance / Backup* in the configuration area.



1. Click the *Download* link labelled *Configuration* in the *Configuration backup* section.
2. Save the file by clicking *OK*.

### 11.2.2 Restoring the Configuration

Open the page *Maintenance / Backup* in the configuration area.



1. Click the *Choose File* button labelled *Backup file* in the *Restore configuration* section and select the configuration file that you intend to activate in the dialog box.
2. Click *Upload*.

Finally, restart Querx via the web interface as detailed in section 11.1.1 *Soft Boot*.





### Information

Please note that Querx needs to be rebooted after uploading a configuration file.

## 11.3 Resetting the Configuration

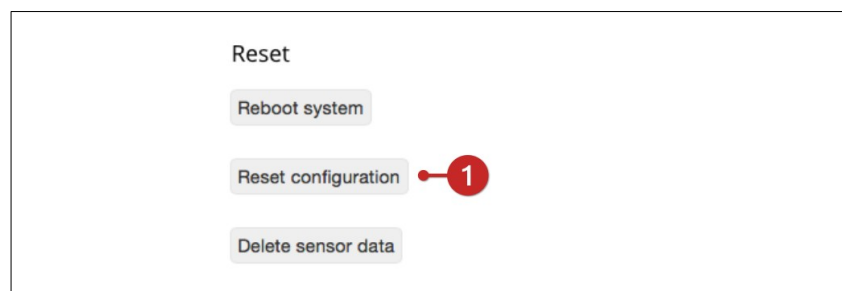
There are two ways of resetting the configuration to the factory settings, via the web interface or a hardware button.

When the configuration is reset via the web interface, the network settings will remain unchanged. This function can be used if any changes to the configuration require a reboot.

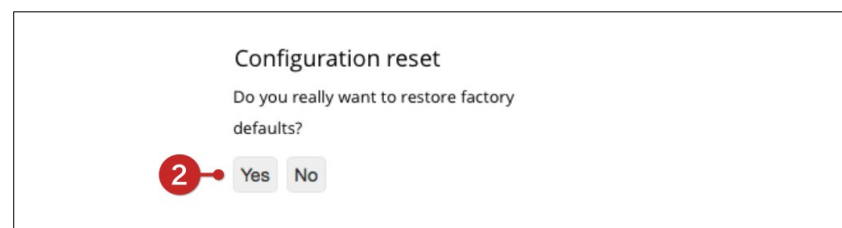
When the configuration is reset via the reset button, all settings, including the network configuration, are reset and the device is returned to factory settings entirely. This function is primarily used if Querx is no longer accessible via the network.

### 11.3.1 Resetting the Configuration Via the Web Interface

Open the page *Maintenance / Reset* in the configuration area.



1. Click the button *Reset configuration*.



2. Confirm that you want to reset the configuration by clicking *Yes* on the following page.

### 11.3.2 Performing a Hardware Reset

Querx can be returned to the factory settings via a hardware reset, if you can not enter the configuration area, for instance because you do not have the access data at hand.

You will need:

- a biro



egnite Querx TH / THP / PT



egnite Querx WLAN TH / THP / PT

1. Use the biro to press the reset switch while the device is turned on (see image). The status LED will start to flash red.
2. Keep the switch pressed until the LED stops flashing.
3. Querx will now reboot with the factory settings.



#### Attention

Do not use a pencil to reset the configuration, as the pencil lead might break and pieces of graphite can damage the device.

## 11.4 Firmware-Updates

The manufacturer occasionally makes new firmware available, in order to expand the functionality of the Querx product range. If required, these firmware updates can be saved on your device and activated.

<http://www.egnite.de/support/querx-firmware/>

Querx can store two firmware images in two separate buffers. The software is copied into the internal memory and implemented when one of the buffers is activated.

### 11.4.1 Installing Firmware Images

Open the page *Maintenance / Firmware* in the configuration area.

The firmware that your device is currently running is displayed in the *Firmware* field of the *Version* section. An update may be advisable, if this version of the firmware is older than the one available for download at [sensor.egnite.de](http://sensor.egnite.de).

#### Installing firmware

Download the current version of the firmware from the website. Open the page *Maintenance / Firmware* in the configuration area.



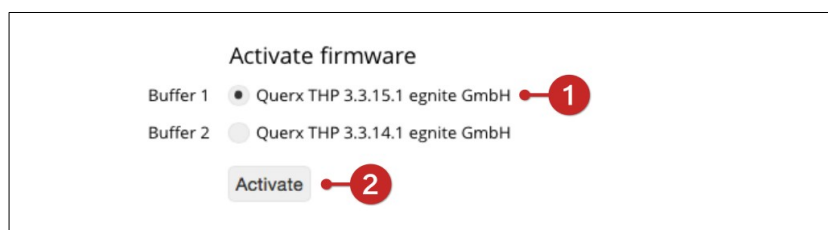
The screenshot shows a web form titled "Install firmware". It contains the following elements:

- Buffer 1:** A radio button is selected, indicated by a red circle with the number 1.
- Buffer 2:** A radio button is unselected. Next to it, the text "Querx THP 3.3.14.1 egnite GmbH" is displayed.
- File:** A text input field with a "Choose File" button and the text "no file selected". A red circle with the number 2 points to the "Choose File" button.
- Upload:** A button labeled "Upload" with a red circle and the number 3 pointing to it.

1. Select the *Buffer* in which you want to save the firmware image in the section *Install firmware*. It is advised to choose either an empty buffer, or the one with the oldest firmware version.
2. Click *Choose File* and select the firmware image that you want to install.
3. Click *Send* to save the firmware image in the selected buffer.

## 11.4.2 Activating a Firmware Image

Once it has been installed, the new firmware version needs to be activated. Open the page *Maintenance / Firmware*.



1. Select the *Buffer* containing the firmware image you want to activate in the section *Activate firmware*.

2. Click the button *Activate* to activate the new firmware.

Querx will now copy the buffer's contents into its internal memory and then reboot.



### Attention

Do not disconnect Querx from the power supply while a firmware image is being activated. If an image is copied incompletely, the device can no longer be used and needs to be sent to the manufacturer to be serviced.

## 11.4.3 Activating an Alternate Firmware Image

Querx can activate the firmware image stored in the second buffer, if you encounter any unexpected problems after updating the firmware.

You will need:

- a biro



egnite Querx TH / THP / PT



egnite Querx WLAN TH / THP / PT

1. Unplug the micro-USB cable to disconnect egnite Querx from the power supply.
2. Use the biro to press the button (see image).
3. Keep the button pressed while reconnecting egnite Querx to the micro-USB cable.
4. The status-LED will start to flash red. It will stop flashing and remain red after a few seconds.
5. The firmware image stored in the secondary buffer will be loaded into the internal memory once you release the button. The device will then reboot with the changed firmware.



#### Attention

Do not use a pencil to reset the configuration, as the pencil lead might break and pieces of graphite can damage the device.




#### Attention

Do not disconnect Querx from the power supply while a firmware image is being activated. If an image is copied incompletely, the device can no longer be used and needs to be sent to the manufacturer to be serviced.

## 11.5 Changing the Battery


Querx is fitted with a battery that is used to operate the internal clock in the case of a power shortage. A notification appears in the lower left corner of the web interface if the battery's charge reaches critical levels.

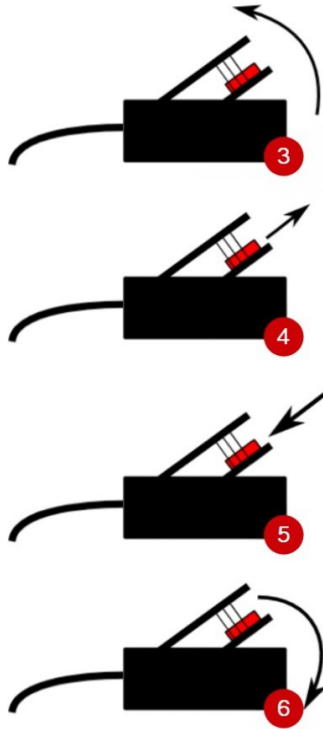
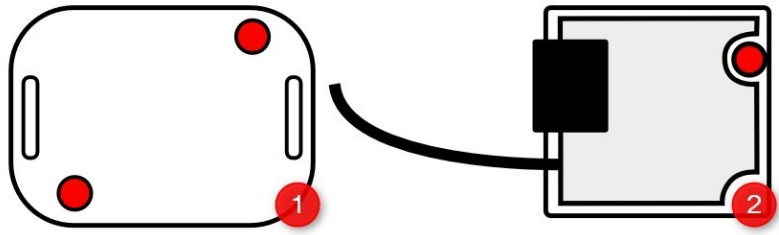
The battery can be changed as detailed in the following section. However, we recommend sending the device in for maintenance.

|   |  |
|---|--|
|  | <p><b>Information</b></p> <p>egnite Querx is operational without a battery. The battery does not need to be changed if the device is in ongoing operation under normal operating conditions (at a temperature of approx. 23 degrees centigrade). The battery should be changed every five years if the device is not connected to a power source, e.g. during storage.</p> |
|---|--|

In order to change the battery you will need:

- Two Phillips screwdrivers, sizes PH0 and PH1
- A replacement battery, type Renata CR1225

|   |  |
|---|--|
|  | <p><b>Attention</b></p> <p>Take care not to touch any electrical contacts while changing the battery. Electrostatic discharges (ESD) can damage the device immediately or in the long run.</p> |
|---|--|



1. Unscrew the screws marked red in the image, using the PH0 screwdriver. Then remove the back cover of the casing.
2. A second screw is located inside the casing. It is marked red in the image. Undo this screw using the PH1 screwdriver.
3. Carefully lift the circuit board up at the edge opposite the sensor cable.
4. Press the old battery out of the fixture using one of the screwdrivers.
5. Press the new battery into the fixture. If required, use the screwdriver to push the battery into place.
6. Place the circuit board back into the casing.

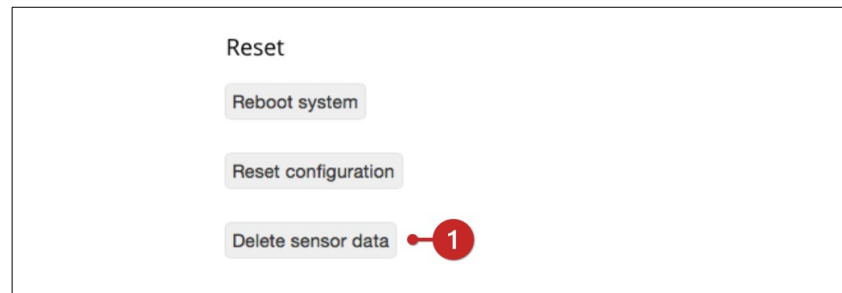
Tighten the screw inside the casing as well as the two screws that fix the back cover.

## 11.6 Resetting the Internal Memory

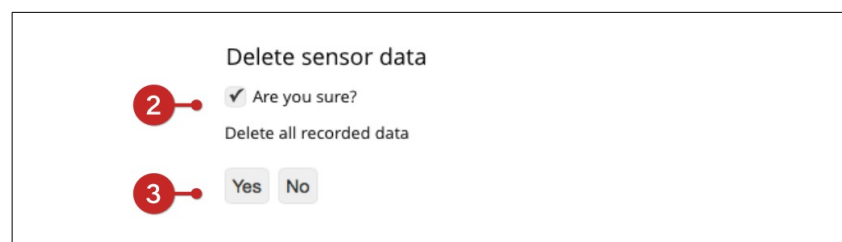
egnite Querx starts logging data as soon as the device is taken into operation.

The previously logged data needs to be deleted, in order to begin logging data according to the basic settings you have configured.

Open the page *Maintenance / Reset*.



1. Click the button *Delete sensor data*.



2. Confirm that you wish to delete the data by clicking the checkbox *Are you sure?*
3. Click *Yes*.

Please be patient, as this process can take a little while. Querx will reboot after completion and then restart logging data in accordance with your specified settings.



## 11.7 Adjustment and Calibration

Integrated sensors, as used in the TH and THP models, are usually produced with high tolerances. These sensors are calibrated at our works, in order to achieve the required accuracy.

Platinum temperature sensors, which are used with the PT models, are produced according to accuracy grades and do not need to be calibrated.

We offer DAkkS calibration certificates as an accessory for all devices for any applications that require traceably calibrated monitoring equipment, for quality management purposes, for instance.

Further information on this is available at [www.egnite.de](http://www.egnite.de). We are also happy to advise you personally.

egnite Querx offers the possibility of calibrating the sensor's measurements, as well as adjusting them, if required.

In common practice, it may occur that Querx does not display the true, current values but diverges from them within certain limits. The feature *Adjustment and Calibration* serves to correct any data gathered by Querx that diverges from the actual values and make it correspond to the real measurements as closely as possible.

In order to determine these actual values, you will require a reference device whose measurements you can trust. Ideally, this should be a calibrated device with a known standard deviation.

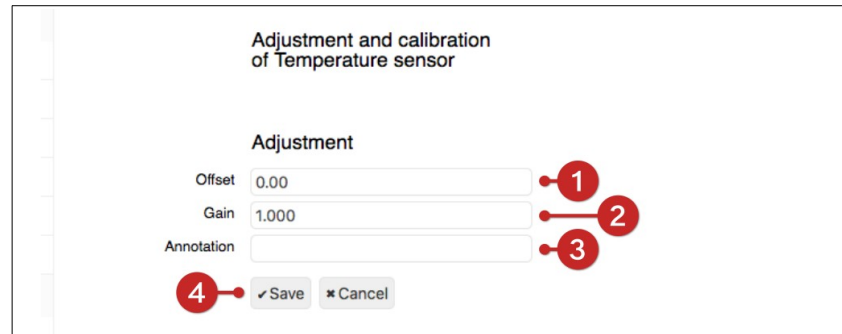
### 11.7.1 Manual Adjustment with Offset

In this case, a fixed correction value, the so-called offset, is determined in the configuration area. The offset is a fixed value that is added to any value measured by the sensor.

In order to adjust your Querx by this method, please take the following steps:

Establish the required offset to correct the measuring error. This value is determined by comparing the value displayed by Querx to that measured by the reference device and generating the difference between the two values (actual value – value displayed by Querx).

Open the page for the corresponding sensor in the Querx configuration area: *Sensors > Temperature / Humidity / Pressure*.



Adjustment and calibration of Temperature sensor

Adjustment

Offset 0.00

Gain 1.000

Annotation

Save Cancel

1. Enter the offset previously determined into the field *Offset*.
2. Leave the *Gain* value at the standard 1.000.
3. Leave the input field *Annotation* empty.
4. Click *Save* to apply the offset to all future measurements.

### 11.7.2 Manual Adjustment with Offset and Gain

In addition to adjusting the offset, a second parameter, gain, can be set. While the offset is a fixed value that is added to every measurement, the gain is a multiplication factor. It describes the ratio between the correct value and the potentially wrong value gathered by the sensor. A gain setting of 2 (for clarity's sake with an offset of 0) thus means that the correct value is always twice as high as the uncorrected, measured value.

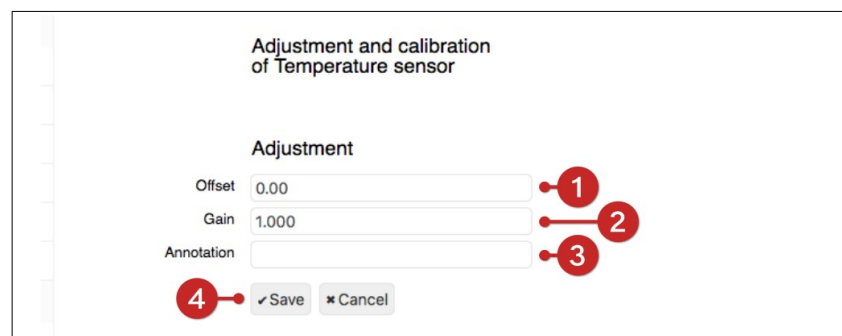
In order to calculate gain and offset, please apply the values of two measurement points to the following formulas:

|        |                         |
|--------|-------------------------|
| Gain   | $(T2 - T1) / (M2 - M1)$ |
| Offset | $T1 - \text{Gain} * M1$ |

The variables are placeholders for the following values:

|    |   |
|----|---|
| M1 | Value measured and displayed by Querx, first measurement        |
| M2 | Value measured and displayed by Querx, second measurement       |
| T1 | Actual value (measured by reference device), first measurement  |
| T2 | Actual value (measured by reference device), second measurement |

After calculating the required values for *Offset* and *Gain*, as described above, open the page for the corresponding sensor in the Querx configuration area: *Sensors > Temperature / Humidity / Air Pressure*.



1. Enter the calculated value into the input field *Offset*.
2. Enter the calculated value into the input field *Gain*.
3. Leave the input field *Annotation* empty.
4. Click *Save* to apply the offset and gain to all future measurements.

### 11.7.3 Automatic Adjustment with Offset and Gain

egnite Querx can calculate offset and gain automatically, if two reference values, i.e. reliable measurements (see above), are known. The device applies the same formulas as detailed in the section *Manual Adjustment with Offset and Gain*.

In order to let Querx adjust offset and gain automatically, please proceed as follows:

Open the page *Sensors > Temperature / Humidity / Air Pressure* in the Querx configuration area.

Adjustment and calibration of Temperature sensor

Adjustment

Offset 0.00

Gain 1.000

Annotation

Save Cancel

Measurement

Lower reference value 0.00

Upper reference value 100.00

Lower measured value 0.00

Upper measured value 0.00

1. Use a calibrated reference device to determine the lower reference value. Enter the measured value into the input field *Lower reference value*. Click the button *Measure*.
2. Raise the value measured by Querx to a higher level by increasing the measured parameter (i.e. temperature, humidity or air pressure) and measure it with the reference device. Enter the reference value into the input field *Upper reference value*. Click the button *Measure*.
3. Leave the input field *Annotation* empty.
4. Click *Save* to apply the offset and gain to all future measurements.

The Querx PT and Querx WLAN PT models can be calibrated without a reference device, if they are fitted with a

waterproof sensor. The freezing point and boiling point of water can be used as reference values instead of determining them with a calibrated device. Dip the sensor into ice water and enter a reference value of 0, in order to adjust the lower reference value. Repeat the measurement after dipping the sensor into boiling water and entering a reference value of 100, in order to calibrate the upper reference value.

**Attention**

This option is only applicable for Querx variants equipped with a waterproof Pt100 sensor!

#### 11.7.4 Calibration History

egnite Querx further offers a history feature that logs past calibrations with the values for offset and gain, the date, as well as an annotation. This data can be saved in the *Calibration history* by entering any string of text into the input field *Annotation* before clicking *Save*. Since Querx can only save the data of up to 30 calibration processes, and it can not be deleted once saved, it is recommended to only use this feature after making sure that you will really require the data in the history permanently. If the calibration history is not used, the adjustment data is nonetheless saved and applied to all future measurements.

## 11.8 Troubleshooting

| Problem  | Solution   | Chapter |
|--|--|---------|
| No network connection  | Configure the network settings manually.   | 2.6.2   |
|  | Or: Determine whether a problem with the network exists. If necessary, talk to the network administrator.                                  |         |
| Querx reacts slowly  | Check the <i>Memory usage</i> value on the page <i>Maintenance / Firmware</i> . If this is above 70%, please close redundant browser tabs. |         |
| Forgotten user password  | Reset the configuration  | 11.3    |
| Network configuration unknown  | Configure the network settings manually.   | 2.6.2   |
|  | Or: Reset the network settings   | 11.3    |
| NTP / Email / Cloud not working  | Ensure that you have configured a valid DNS server   | 8.3.2   |
| I need to log into the web interface regularly to configure the device | Increase the value for <i>Session timeout</i> in the user management section.  | 10.1.1  |
| The system no longer works after a firmware update                     | If you have saved a second firmware image on the device, activate it.  | 11.4.2  |

If you encounter any problems not discussed in this manual, please contact the manufacturer egnite directly. The contact details can be found in chapter *12.9 Manufacturer and Contact Details*.

Furthermore, a tutorial that will help you narrow down possible issues is available at [www.egnite.de](http://www.egnite.de).

## 12 Appendix

### 12.1 Specifications

#### 12.1.1 egnite Querx TH

| Specifications                |  |
|-------------------------------|--|
| Temperature sensor            |  |
| Measurement range             | -40 °C to 85 °C<br>-40 °F to 185 °F  |
| Accuracy                      | ±0,4°C (10 to 85°C) / ±1,0°C ( -40 to -10°C)<br>±0,7°F (14 to 185°F) / ±1,8°F (40°F to 14°F) |
| Resolution                    | 0,1 °C<br>0.2 °F   |
| Long-term stability           | ≤ 0,01 °C / year (typically)   |
| Humidity sensor               |  |
| Measurement range             | 0 % to 95 % rF   |
| Accuracy                      | ±2,0% rF (0 to 80% rF, 30°C/86°F)<br>±4,0% rF (80 % to 95 % rF, 30°C/86 °F)                  |
| Resolution                    | 1 % rF   |
| Long-term stability           | ≤ 0,25 / year (typically)  |
| Sensor type                   | CMOS-IC with polymer film  |
| Hardware and interfaces       |  |
| Interval between measurements | 1 second   |
| Calibration                   | Factory-calibrated, DakkS certificate available (German Accreditation Body)                  |
| Sensor heater                 | Integrated   |
| Ethernet                      | 10/100 Mbit RJ45, HP Auto-MDIX<br>Static or dynamic IP (DHCP client)                         |
| Operating system              | Nut/OS 5   |
| Firmware updates              | Via web interface, rescue function   |
| Logging interval              | Configurable   |
| M2M                           | HTTP (XML, CSV, JSON), Syslog, Modbus/TCP, SNMP  |
| Data logger capacity          | 73,728 entries ±51 days (1 entry/min) to 8.4 years (1 entry/year)                            |
| Web interface                 | Interactive diagram, live update, HTML5, CSS3, JSON und SVG                                  |
| Security                      | StartTLS / TLS, password protection, user management (3 users / 3 groups)                    |
| Email                         | Up to 4 recipients and 2 SMTP servers (StartTLS / TLS)                                       |

|                            |   |
|----------------------------|---|
|                            |   |
| <b>SNMP</b>                | SNMPv1 agent and traps  |
| <b>Status LED</b>          | 3 colors: red, green, yellow                                    |
| <b>Time / date</b>         | Real-time clock with battery backup and SNTP update             |
| <b>Power supply</b>        | 5 V DC to 5.5 V DC  |
| <b>Power consumption</b>   | 120 mA 0.6W (typically), 200 mA 1W (maximally)                  |
| <b>Ambient conditions</b>  |   |
| <b>Operation</b>           | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Storage</b>             | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Mechanical data</b>     |   |
| <b>Casing material</b>     | ABS plastic   |
| <b>Casing color</b>        | Black RAL 9011  |
| <b>Casing dimensions</b>   | 2.2 x 1.6 x 0.8 in (56,3 x 40 x 21 mm)                          |
| <b>Sensor cable length</b> | 13.4 in (340 mm)  |
| <b>Weight</b>              | 0.07 lb (35 g)  |
| <b>Sockets</b>             | RJ45 (Ethernet), Micro-USB                                      |
| <b>Mounting</b>            | Wall mounting   |
| <b>Conformity</b>          |   |
| <b>European Union</b>      | CE-compliant  |
| <b>UL, USA / Canada</b>    | UL94V-0   |
| <b>Protection class</b>    | IP20  |

### 12.1.2 egnite Querx THP

|                            |  |
|----------------------------|--|
| <b>Specifications</b>      |  |
| <b>Temperature sensor</b>  |  |
| <b>Measurement range</b>   | -40 °C to 85 °C<br>-40 °F to 185 °F  |
| <b>Accuracy</b>            | ±0,4°C (10 to 85°C) / ±1,0°C ( -40 to -10°C)<br>±0,7°F (14 to 185°F) / ±1,8°F (40°F to 14°F) |
| <b>Resolution</b>          | 0,1 °C<br>0.2 °F   |
| <b>Long-term stability</b> | ≤ 0,01 °C / year (typically)   |
| <b>Humidity sensor</b>     |  |



|                                      |   |
|--------------------------------------|---|
|                                      |   |
| <b>Measurement range</b>             | 0 % to 95 % rF  |
| <b>Accuracy</b>                      | ±2,0% rF (0 to 80% rF, 30°C/86°F)<br>±4,0% rF (80 % to 95 % rF, 30°C/86 °F) |
| <b>Resolution</b>                    | 1 % rF  |
| <b>Long-term stability</b>           | ≤ 0,25 / year (typically)   |
| <b>Sensor type</b>                   | CMOS-IC with polymer film   |
| <b>Pressure sensor</b>               |   |
| <b>Measurement range</b>             | 300 – 1100 hPa  |
| <b>Absolute accuracy</b>             | ±1 hPa  |
| <b>Relative accuracy</b>             | ±0,12 hPa   |
| <b>Resolution</b>                    | 0,18 Pa   |
| <b>Long-term stability</b>           | ±1 hPa / Jahr   |
| <b>Hardware and interfaces</b>       |   |
| <b>Interval between measurements</b> | 1 second  |
| <b>Calibration</b>                   | Factory-calibrated, DakkS certificate available (German Accreditation Body) |
| <b>Sensor heater</b>                 | Integrated  |
| <b>Ethernet</b>                      | 10/100 Mbit RJ45, HP Auto-MDIX<br>Static or dynamic IP (DHCP client)        |
| <b>Operating system</b>              | Nut/OS 5  |
| <b>Firmware updates</b>              | Via web interface, rescue function  |
| <b>Logging interval</b>              | Configurable  |
| <b>M2M</b>                           | HTTP (XML, CSV, JSON), Syslog, Modbus/TCP, SNMP                             |
| <b>Data logger capacity</b>          | 36864 entries ≅ 25 days (1 entry/min) to 4.2 years (1 entry/h)              |
| <b>Web interface</b>                 | Interactive diagram, live update, HTML5, CSS3, JSON und SVG                 |
| <b>Security</b>                      | StartTLS / TLS, password protection, user management (3 users / 3 groups)   |
| <b>Email</b>                         | Up to 4 recipients and 2 SMTP servers (StartTLS / TLS)                      |
| <b>SNMP</b>                          | SNMPv1 agent and traps  |
| <b>Status LED</b>                    | 3 colors: red, green, yellow  |
| <b>Time / date</b>                   | Real-time clock with battery backup and SNTP update                         |
| <b>Power supply</b>                  | 5 V DC to 5.5 V DC  |
| <b>Power consumption</b>             | 120 mA 0.6W (typically), 200 mA 1W (maximally)                              |
| <b>Ambient conditions</b>            |   |

|                            |   |
|----------------------------|---|
| <b>Operation</b>           | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Storage</b>             | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Mechanical data</b>     |   |
| <b>Casing material</b>     | ABS plastic   |
| <b>Casing color</b>        | Black RAL 9011  |
| <b>Casing dimensions</b>   | 2.2 x 1.6 x 0.8 in (56,3 x 40 x 21 mm)                          |
| <b>Sensor cable length</b> | 13.4 in (340 mm)  |
| <b>Weight</b>              | 0.07 lb (35 g)  |
| <b>Sockets</b>             | RJ45 (Ethernet), Micro-USB                                      |
| <b>Mounting</b>            | Wall mounting   |
| <b>Conformity</b>          |   |
| <b>European Union</b>      | CE-compliant  |
| <b>UL, USA / Canada</b>    | UL94V-0   |
| <b>Protection class</b>    | IP20  |

### 12.1.3 egnite Querx WLAN TH

| Specifications                |  |
|-------------------------------|--|
| Temperature sensor            |  |
| Measurement range             | -40 °C to 85 °C<br>-40 °F to 185 °F  |
| Accuracy                      | ±0,4°C (10 to 85°C) / ±1,0°C ( -40 to -10°C)<br>±0,7°F (14 to 185°F) / ±1,8°F (40°F to 14°F) |
| Resolution                    | 0,1 °C<br>0.2 °F   |
| Long-term stability           | ≤ 0,01 °C / year (typically)   |
| Humidity sensor               |  |
| Measurement range             | 0 % to 95 % rF   |
| Accuracy                      | ±2,0% rF (0 to 80% rF, 30°C/86°F)<br>±4,0% rF (80 % to 95 % rF, 30°C/86 °F)                  |
| Resolution                    | 1 % rF   |
| Long-term stability           | ≤ 0,25 / year (typically)  |
| Sensor type                   | CMOS-IC with polymer film  |
| Hardware and interfaces       |  |
| Interval between measurements | 1 second   |
| Calibration                   | Factory-calibrated, DakkS certificate available (German Accreditation Body)                  |
| Sensor heater                 | Integrated   |
| Ethernet                      | 10/100 Mbit RJ45, HP Auto-MDIX<br>Static or dynamic IP (DHCP client)                         |
| Wireless network              | 2.4 GHz IEEE 802.11 b/g/n  |
| Wireless network encryption   | WEP, WPA, WPA2   |
| Operating system              | Nut/OS 5   |
| Firmware updates              | Via web interface, rescue function   |
| Logging interval              | Configurable   |
| M2M                           | HTTP (XML, CSV, JSON), Syslog, Modbus/TCP, SNMP  |
| Data logger capacity          | At least 7.5 years of internal memory (4 million entries)                                    |
| Web interface                 | Interactive diagram, live update, HTML5, CSS3, JSON und SVG                                  |
| Security                      | StartTLS / TLS, password protection, user management (3 users / 3 groups)                    |
| Email                         | Up to 4 recipients and 2 SMTP servers (StartTLS / TLS)                                       |
| SNMP                          | SNMPv1 agent and traps   |

|                            |   |
|----------------------------|---|
| <b>Status LED</b>          | RGB   |
| <b>Acoustic signaler</b>   | Beeper  |
| <b>Time / date</b>         | Real time clock with battery backup and SNTP update             |
| <b>Power supply</b>        | 5 V DC to 5.5 V DC  |
| <b>Power consumption</b>   | 200 mA 1 W (typically) / 300 mA 1,5 W (maximally)               |
| <b>Ambient conditions</b>  |   |
| <b>Operation</b>           | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Storage</b>             | -40 °C to 85 °C, max. 95 % rF<br>-40 °F to 185 °F, max. 95 % rF |
| <b>Mechanical data</b>     |   |
| <b>Casing material</b>     | ABS plastic   |
| <b>Casing color</b>        | Black RAL 9011  |
| <b>Casing dimensions</b>   | 2.6 x 2 x 0.8 in (66,3 x 50 x 20 mm)                            |
| <b>Sensor cable length</b> | 13.4 in (340 mm)  |
| <b>Weight</b>              | 0.2 lb (63 g)   |
| <b>Sockets</b>             | RJ45 (Ethernet), micro-USB                                      |
| <b>Mounting</b>            | Wall mounting   |
| <b>Conformity</b>          |   |
| <b>European Union</b>      | CE-compliant  |
| <b>UL, USA / Canada</b>    | UL94V-0   |
| <b>Protection class</b>    | IP20  |

## 12.1.4 egnite Querx PT100 / egnite Querx PT1000

| Specifications                |   |
|-------------------------------|---|
| Temperature sensor            |   |
| Measuring range               | Sensor-dependent<br>-200 °C to 750 °C<br>-328 °F to 1382 °F               |
| Accuracy                      | Sensor-dependent<br>0,5 °C<br>0.9 °F                                      |
| Resolution                    | 0,1 °C<br>0.2 °F Pt   |
| Pt100/Pt1000-connection       | 2-, 3- and 4-core   |
| Hardware and interfaces       |   |
| Interval between measurements | 1 second  |
| Calibration                   | DakKS-calibration available (German Accreditation Body)                   |
| Ethernet                      | 10/100 Mbit RJ45, HP Auto-MDIX<br>Static or dynamic IP (DHCP client)      |
| Operating system              | Nut/OS 5  |
| Firmware updates              | Via web interface, rescue function  |
| Data logger capacity          | 73,728 entries $\approx$ 51 days (1 entry/min) to 8.4 years (1 entry/h)   |
| Logging interval              | Configurable  |
| M2M                           | HTTP (XML, CSV, JSON), Syslog, Modbus/TCP, SNMP                           |
| Web interface                 | Interactive diagram, live update, HTML5, CSS3, JSON and SVG               |
| Security                      | StartTLS / TLS, password protection, user management (3 users / 3 groups) |
| E-Mail                        | Up to 4 recipients and 2 SMTP servers (StartTLS / TLS)                    |
| SNMP                          | SNMPv1 agent and traps  |
| Status LED                    | 3 colors: red, green, yellow  |
| Time / date                   | Real time clock with battery-backup and SNTP-update                       |
| Power supply                  | 5 V DC ... 5.5 VDC via Micro-USB  |
| Power consumption             | 120 mA 0.6W (typically), 200 mA 1W (maximally)                            |
| Ambient conditions            |   |
| Operation                     | -40 °F bis 185 °F, max. 95 % rF<br>-40 °C bis 85 °C, max. 95 % rF         |
| Storage                       | -40 °C bis 85 °C, max. 95 % rF<br>-40 °F bis 185 °F, max. 95 % rF         |
| Mechanical data               |   |

|                            |  |
|----------------------------|--|
| <b>Casing material</b>     | ABS plastic                            |
| <b>Casing color</b>        | Black RAL 9011                         |
| <b>Casing dimensions</b>   | 2.2 x 1.6 x 0.8 in (56,3 x 40 x 21 mm) |
| <b>Sensor cable length</b> | 13.8 in (340 mm)                       |
| <b>Weight</b>              | 0.07 lb (35 g)                         |
| <b>Sockets</b>             | RJ45 (Ethernet), Micro-USB             |
| <b>Mounting</b>            | Wall mounting                          |
| <b>Conformity</b>          |  |
| <b>European Union</b>      | CE-compliant                           |
| <b>UL, USA / Canada</b>    | UL94V-0                                |
| <b>Protection class</b>    | IP20                                   |

### 12.1.5 egnite Querx WLAN PT100 / egnite Querx WLAN PT1000

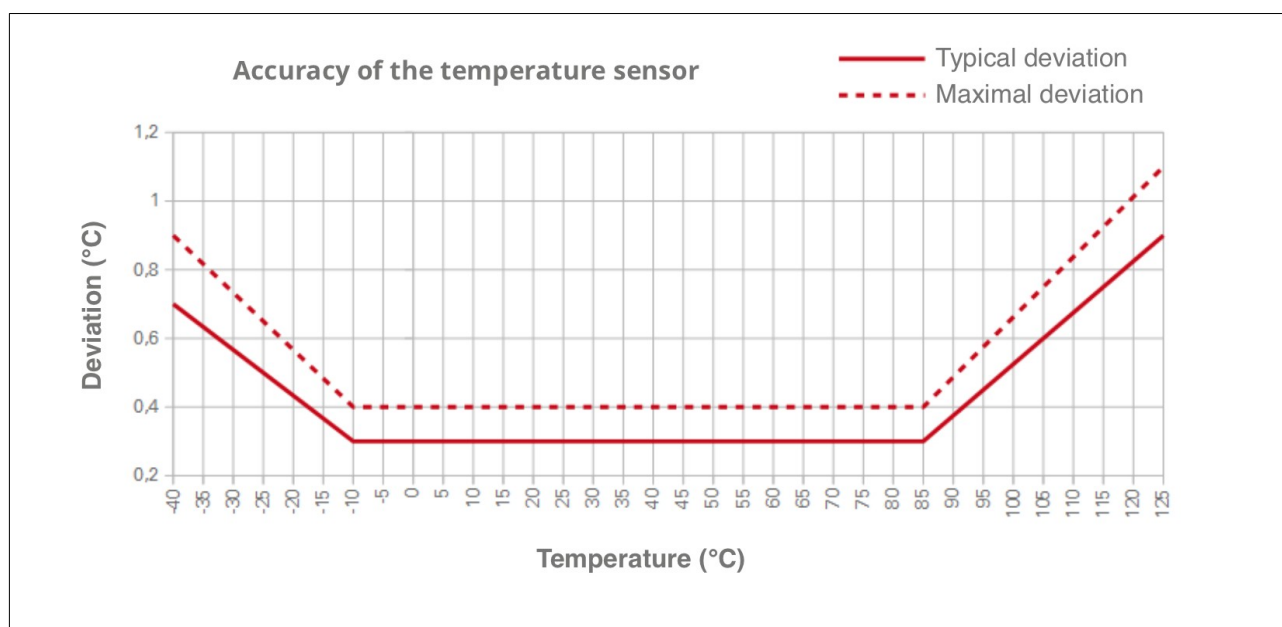
|                                      |  |
|--------------------------------------|--|
| <b>Specifications</b>                |  |
| <b>Temperature sensor</b>            |  |
| <b>Measuring range</b>               | Sensor-dependent<br>-200 °C bis 750 °C<br>-328 °F bis 1382 °F        |
| <b>Accuracy</b>                      | Sensor-dependent<br>0,5 °C<br>0.9 °F                                 |
| <b>Resolution</b>                    | 0,1 °C<br>0.2 °F Pt  |
| <b>Pt100/Pt1000-connection</b>       | 2-, 3- and 4-core  |
| <b>Hardware and interfaces</b>       |  |
| <b>Interval between measurements</b> | 1 second   |
| <b>Calibration</b>                   | DakKS-calibration available  |
| <b>Ethernet</b>                      | 10/100 Mbit RJ45, HP Auto-MDIX<br>Static or dynamic IP (DHCP client) |
| <b>Wireless network</b>              | 2.4 GHz IEEE 802.11 b/g/n  |
| <b>Wireless network encryption</b>   | WEP, WPA, WPA2   |
| <b>Operating system</b>              | Nut/OS 5   |
| <b>Firmware updates</b>              | Via web interface, rescue function                                   |
| <b>Data logger capacity</b>          | At least 7.5 years of internal memory (4 million entries)            |
| <b>Logging interval</b>              | Configurable   |
| <b>M2M</b>                           | HTTP (XML, CSV, JSON), Syslog, Modbus/TCP, SNMP                      |

|                            |   |
|----------------------------|---|
| <b>Web interface</b>       | Interactive diagram, live update, HTML5, CSS3, JSON and SVG               |
| <b>Security</b>            | StartTLS / TLS, password protection, user management (3 users / 3 groups) |
| <b>E-Mail</b>              | Up to 4 recipients and 2 SMTP servers (StartTLS / TLS)                    |
| <b>SNMP</b>                | SNMPv1 agent and traps  |
| <b>Status LED</b>          | 3 colors: red, green, yellow  |
| <b>Time / date</b>         | Real time clock with battery-backup and SNTP-update                       |
| <b>Power supply</b>        | 5 V DC ... 5.5 VDC via USB  |
| <b>Power consumption</b>   | 200 mA 1 W (typically) / 300 mA 1,5 W (maximally)                         |
| <b>Ambient conditions</b>  |   |
| <b>Operation</b>           | -40 °F bis 185 °F, max. 95 % rF<br>-40 °C bis 85 °C, max. 95 % rF         |
| <b>Storage</b>             | -40 °C bis 85 °C, max. 95 % rF<br>-40 °F bis 185 °F, max. 95 % rF         |
| <b>Mechanical data</b>     |   |
| <b>Casing material</b>     | ABS plastic   |
| <b>Casing color</b>        | Black RAL 9011  |
| <b>Casing dimensions</b>   | 2.6 x 2 x 0.8 in (66,3 x 50 x 20 mm)                                      |
| <b>Sensor cable length</b> | 13.8 in (340 mm)  |
| <b>Weight</b>              | 0.2 lb (63 g)   |
| <b>Sockets</b>             | RJ45 (Ethernet), Micro-USB  |
| <b>Mounting</b>            | Wall mounting   |
| <b>Conformity</b>          |   |
| <b>European Union</b>      | CE-compliant  |
| <b>UL, USA / Canada</b>    | UL94V-0   |
| <b>Protection class</b>    | IP20  |

## 12.1.6 Sensor Details

### 12.1.6.1 TH Models: Temperature Sensor

|                            | Measuring range | Typical          | Maximal | Unit      |
|----------------------------|-----------------|------------------|---------|-----------|
| <b>Accuracy</b>            | -10 – 85        | ± 0.3            | ± 0.4   | °C        |
|                            | -40 – 100       | See illustration |         | °C        |
|                            | 14 – 185        | ± 0.54           | ± 0.7   | °F        |
|                            | -40 – 212       | See illustration |         | °F        |
| <b>Long-term stability</b> |                 | ≤ 0.01           |         | °C / year |
|                            |                 | ≤ 0.02           |         | °F / year |



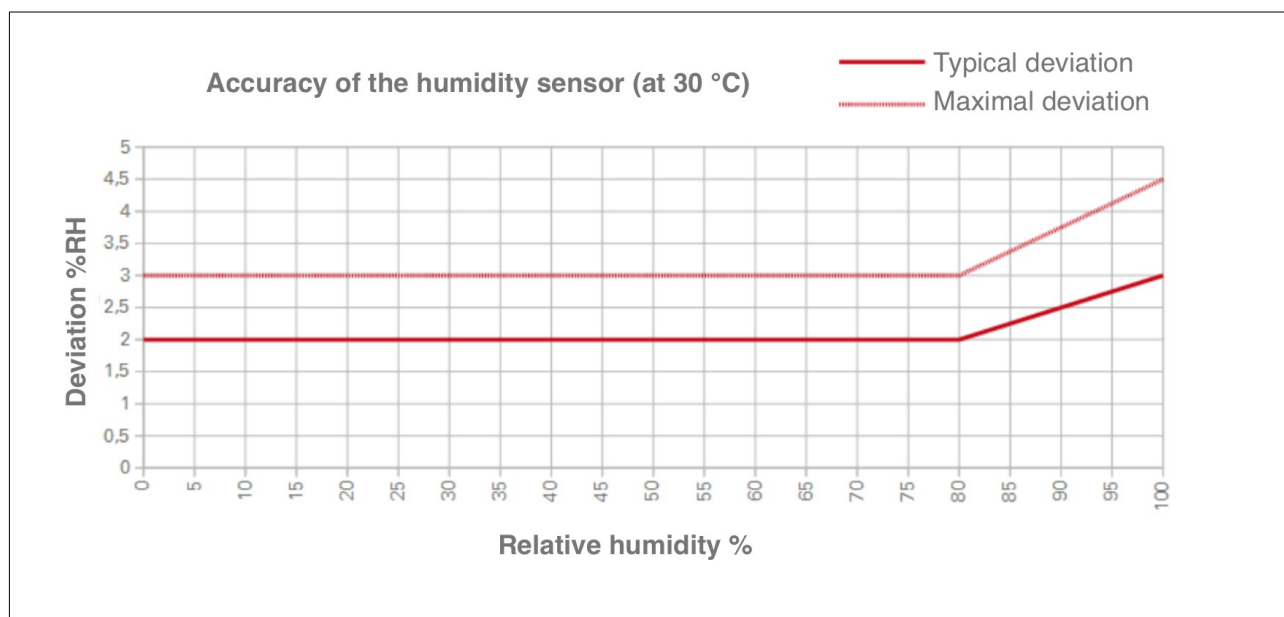
### 12.1.6.2 THP Models: Temperature Sensor

|                 | Measuring range | Typical | Unit |
|-----------------|-----------------|---------|------|
| <b>Accuracy</b> | 25              | ± 0.5   | °C   |
|                 | 0 – 65          | ± 1.0   | °C   |



### 12.1.6.3 TH Models: Humidity Sensor

|                     | Measuring range | Typical          | Maximal | Unit     |
|---------------------|-----------------|------------------|---------|----------|
| Accuracy            | 0 – 80          | ± 2              | ± 3     | %        |
|                     | 80 – 100        | See illustration |         | %        |
| Long-term stability |                 | ≤ 0.25           |         | % / year |



### 12.1.6.4 THP Models: Humidity Sensor

|                     | Measuring range       | Typical | Unit       |
|---------------------|-----------------------|---------|------------|
| Accuracy            | 20 – 80               | ± 3     | %rH        |
| Long-term stability | at 10 – 90 %rH, 25 °C | 0.5     | %rH / year |

### 12.1.6.5 THP Models: Pressure Sensor

|                     | Measuring range | Typical | Unit       |
|---------------------|-----------------|---------|------------|
| Accuracy            | 300 – 1100      | ± 1     | hPa        |
| Long-term stability | at 0 - 60 °C    | ± 1     | hPa / year |

## 12.2 Inaccuracies in Extreme Conditions

The capacitive humidity sensor is made of a thin polymer film that is located between two electrodes. Depending on the humidity, the polymer absorbs or releases vapor contained in the surrounding air. This changes the polymer film's dielectric properties and thus the sensor's capacitance. This has the following advantages over other types of sensors:

- quick response
- wide measuring range with an almost linear characteristic curve
- high accuracy and long-term stability

If the sensors are continuously exposed to extreme conditions such as high temperatures, high aridity or high humidity, the sensor film can become too dry or too moist.

This will lead to a temporary inaccuracy in the humidity and dew point values.

## 12.3 Dew Point Calculation

The dew point is calculated by applying the following formula to the current temperature and humidity values:

$$T_{DC} = (T_c - (14.55 + 0.114 * T_c) * (1 - (0.01 * RH))) - ((2.5 + 0.007 * T_c) * (1 - (0.01 * RH)))^3 - (15.9 + 0.11 * T_c) * (1 - (0.01 * RH))^{14}$$

Cf.: H. Dean Parry, 1969: "The semiautomatic computation of rawinsondes", *Technical memorandum WBTM EDL 10, U.S. Department of Commerce, Environmental Science Services Administration, Weather Bureau, Silver Spring, MD (October)*, page 9 and page ii-4, line 460.

Please note that inaccuracies in the temperature and humidity values influence the accuracy of the dew point calculation.

## 12.4 Conformity

Querx fulfills the following EU-regulations:

### **Interference immunity:**

- EN 61326-1:2013 Class A
- EN 61000-4-2:2009
- EN 61000-4-3:2011
- EN 61000-4-4:2013
- EN 61000-4-6:2009
- EN 61000-4-8:2010

### **Interference emission:**

- EN 61326-1:2013 Class B
- EN 55011:2011

### **RoHS:**

- EU Directive 2011/65/EU

### **WLAN Models:**

### **ETSI:**

- EN300 328, Ver. 1.8.1
- EN301.489 – 17

The EC-conformity declaration can be requested from the manufacturer. Technical changes reserved.

## 12.5 Technical Support

If you encounter any problems with one of our products, the team at egnite will be glad to assist and advise you.

Please keep the following information at hand when contacting us, in order to make it as easy as possible for us to help you:

- Name and model number of your product
- Serial number or MAC address
- Currently activated firmware
- If readily available: Date of purchase and the distributor who you purchased the product from

You can also find instructions that will help you narrow down the causes for your problem using a Syslog application in the *Querx Tutorials* section at [www.egnite.de](http://www.egnite.de).

Please work through this manual and send us the recorded log files.

## 12.6 Notes on Storage

Do not store the devices in polyethylene bags. The emitted gasses can harm the sensor.

Substances that contain bleach, hydrogen peroxide or ammonia can also be harmful.

## 12.7 Environmentally Appropriate Disposal

Please dispose of the devices in accordance with the valid laws and environmental regulations.

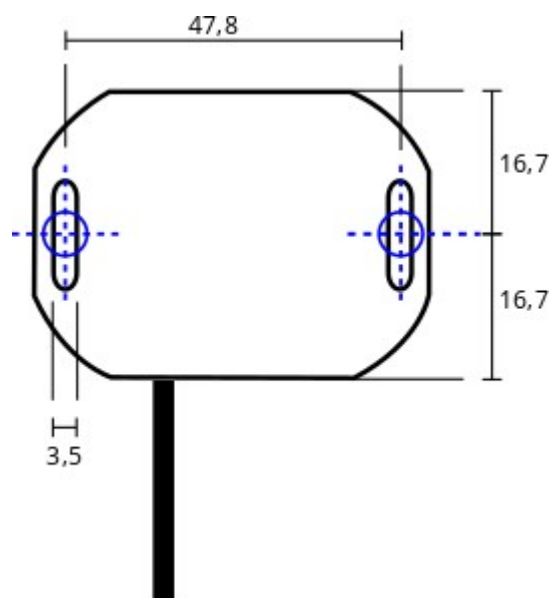
The devices contain electrical components as well as a battery and must therefore be disposed of separately from household waste. Hand the devices in at an official collection point.

## 12.8 Drill Templates

egnite Querx TH

egnite Querx THP

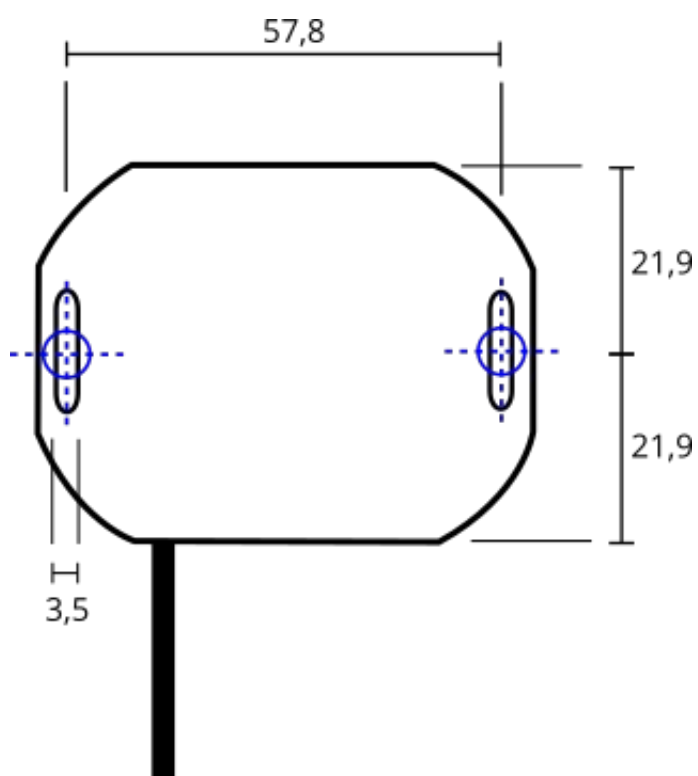
egnite Querx PT



egnite Querx WLAN TH

egnite Querx WLAN THP

egnite Querx WLAN PT



## 12.9 Manufacturer and Contact Information

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## 12.10 Disclaimer

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