egnite

egnite 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 6.2

Firmware version 6.0

Contents

Chapter 1: Notes

Notes on the User Guide

Safety Notices

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

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.

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

- Only use the device, cables and power supply in perfect working condition.
- 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.

Declaration of EU Conformity

The manufacturer

egnite GmbH
Erinstr. 18
44575 Castrop-Rauxel

declares that the product ranges

egnite Querx und egnite Querx WLAN

featuring the sensor interfaces

TH, THP, PT100 und PT1000

conform to the following legal guidelines and norms:

EU Guideline 2014/30/EU

EN 61000-6-2:2019-11 Generic standards - Immunity standard for industrial environments

EN 61000-6-3:2011-09 Generic standards - Emission standard for residential, commercial and light-industrial environments

EN 61326-1:2013-07 Electrical equipment for measurement, control and laboratory use - EMC requirements

EU Guideline 2011/65/EU

EN 63000:2019-05 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Applied harmonized standards

EN 55032, EN 61000-3-2 and EN 61000-3-3, EN 61000-4-2 through EN 61000-4-6, EN 61000-4-8, EN 61000-4-11

Castrop-Rauxel, November 22nd, 2020

Ute Kipp, managing director

Chapter 2: 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 these network-compatible devices.

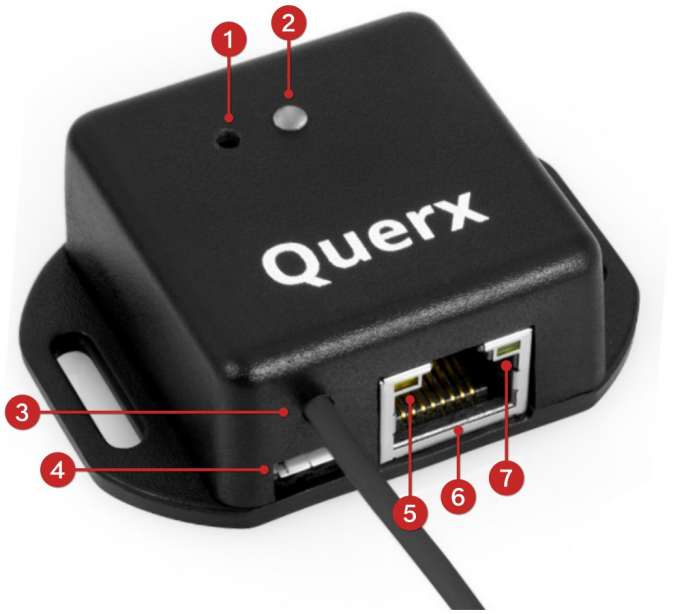
Models and Options

Querx sensors gather climate data and make it accessible via network-interfaces. An alert function automatically transmits notifications via email or SNMP-trap 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, which can be used free of charge, most other IoT clouds can also be used.

egnite Querx



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 PT

egnite Querx PT100 (item number EGN600514)

- egnite Querx PT100
- Simple Pt100 test sensor without pocket sleeve

egnite Querx PT100 Set (item number EGN600414)

Like egnite Querx PT100 (item number EGN600514), but also 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 PT1000
- Simple Pt1000 test sensor without pocket sleeve

egnite Querx PT1000 Set (item number EGN600714)

Like egnite Querx PT1000 (item number EGN600814), but also includes

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

egnite Querx TH

egnite Querx TH (item number EGN600214)

- egnite Querx TH with integrated sensors for temperature and humidity

egnite Querx TH Set (item number EGN600114)

Like egnite Querx TH (item number EGN600214), but also 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 sensors for temperature, humidity and air pressure

egnite Querx THP Set (item number EGN601216)

Like egnite Querx THP (item number EGN601116), but also 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 PT100
- Simple Pt100 test sensor without pocket sleeve

- WiFi antenna

egnite Querx WLAN PT100 Set (item number EGN601315)

Like egnite Querx WLAN PT100 (item number EGN601415), but also 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)

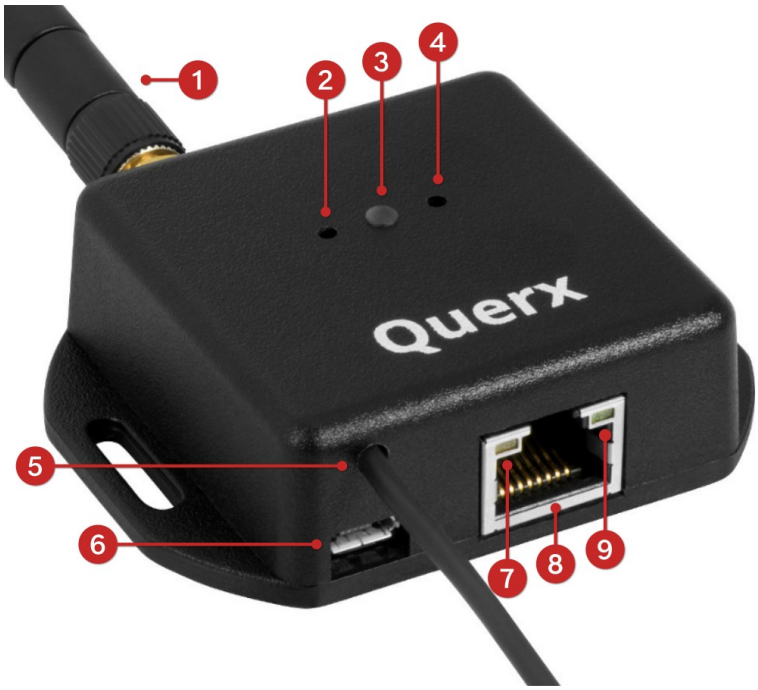
- egnite Querx WLAN PT1000
- Simple Pt1000 test sensor without pocket sleeve
- WiFi antenna

egnite Querx WLAN PT1000 Set (item number EGN601615)

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

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

egnite Querx WLAN



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

egnite Querx WLAN TH

egnite Querx WLAN TH (item number EGN601215)

- egnite Querx WLAN TH with integrated sensors for temperature and humidity
- WiFi antenna

egnite Querx WLAN TH Set (item number EGN601115)

Like egnite Querx WLAN TH (item number EGN601215) but also 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 EGN602217)

- egnite Querx WLAN THP with integrated sensors for temperature , humidity and air pressure
- WLAN-Antenne

egnite Querx WLAN THP Set (item number EGN602117)

Wie egnite Querx WLAN THP (item number EGN602217) but also includes

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

Hardware Accessories and Spare Parts

Accessories and spare parts are available from the manufacturer.

- WiFi antenna
- Ethernet cable
- Micro USB cable
- USB power adapter with micro-USB cable and interchangeable plugs for UK, EU, US and AU outlets
- DAkkS (German accreditation body)and ISO calibration certificates
- Replacement battery

A selection of Pt100 and Pt1000 sensors for the PT models is also available from our web store.

Additional Software

In general, all that is required to run Querx is a current web browser. However, the manufacturer also offers additional free software.

Querx Hub

Configuration tool for Windows, Debian/Ubuntu and MacOS. Also available as a bootable image for Raspberry Pi. This is the successor to the Device Discoverer application and offers additional features.

Querx Panel

Querx Panel can turn an HDMI monitor into a large display for egnite Querx. The current version is available for Windows and as an image for Raspberry Pi.

Palamoa for Android

Free Android app for our IoT cloud Palamoa that lets you monitor Querx data from any location.

FHEM Template

A Querx template for the integration of egnite Querx into the smart home system FHEM.

Nagios Plugin

The monitoring software Nagios can be expanded via so-called plugins. The plugin check_querx is written in the programming language Go.

Chapter 3: Initial Setup

Before the Initial Setup

Check that you have received all the parts listed in chapter 2. Should anything be missing, please contact your dealer.

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.

We recommend that you perform the initial setup at your desk, before installing it at the intended location. You will require the following:

- A PC with a current web browser.
- A power supply: Either the adapter included in the set or a common USB-charger. In most cases, any free USB port on your PC can also be used to supply power.
- An Ethernet cable and a free Ethernet port to connect the device to the network that your PC is using. Alternatively, Querx can be connected to your PC via an Ethernet cable.

Network Connection

Connect the device to your network or directly to your network or directly to the PC that you will use for the configuration via a network cable. This initial step is also required for the WLAN models, which can be connected to a WiFi network at a later time, in order to enter the access data for your network. Alternatively, the devices can be connected to you network via WPS.

Power Supply

Prepare the power supply that is supplied in the set 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!

Alternatively, you can use a common USB charger to power Querx.

Querx can also be connected to a free USB-Port, if no free power outlet is available. In this case, please ensure that the port supplies enough current and does not unexpectedly turn off in power-saving mode. Most USB-hubs without dedicated power adapters will not be suitable to supply sufficient power.

Network Configuration

In the following instructions we presuppose that egnite Querx is in its default state: No static IP has been configured and the sensor values are within the normal range. If you are unsure whether the device is in the default state, you can use the left button to return it to factory settings. This is further detailed in

Chapter 22: *Performing a Hardware Reset*.

In order to successfully connect to a network, Querx requires an IP address and network mask. In most cases, the local network will support DHCP, which enables Querx to configure the network automatically.

Wired Ethernet Connection

After booting the device, the status LED will light up yellow for about 5 seconds. The device will remain in this state for a significantly longer time if the automatic configuration via DHCP fails or it is connected directly to your PC. If this is the case, the IP address will be set to 169.254.111.1 and the network mask 255.255.0.0 will be configured after approximately one minute.

Once this process has been completed, the status LED will flash green approximately every 10 seconds. Brief yellow flashes indicate that the wired connection is not working. In this case, please make sure that the wire is securely plugged into the socket or replace the wire or socket.

Accessing the Web Interface

After successfully configuring the network connection, further settings can be adjusted via the Querx web interface. Open a web browser on your PC and enter the IP address that was previously configured for Querx into the address-bar, if it is known to you.

Alternatively, you can enter the system name, if your PC supports Multicast DNS (mDNS or LLMNR). Enter the following address into your web browser: http://<systemname>.local/

The default system name is querx000000, with the six zeros being placeholders for the last six digits of the MAC address of the device. You can find the MAC address on the sticker located on the back of the casing.

For the example in the image above, the web address is http://querx000000.local/

This name can be changed at a later time. More information on this is available in Chapter 9: *Network Configuration*.

The home screen of the web interface displays a comprehensive overview of the data gathered by Querx. JavaScript must not be deactivated in your browser, for the data to be displayed correctly. For the configuration pages, however, JavaScript is not required.

Installing the Sensor

Querx sensors can be installed securely using the latches on the case.

Querx Sensoren können über ihre Gehäuselaschen fest montiert werden. 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.
- Devices with temperature- and humidity-sensors should be exposed to a sufficient airflow. Measurements can be made in still air, but the results for humidity will be falsified.
- Please ensure that the temperature- and humidity-sensors are not mounted directly above the casing.

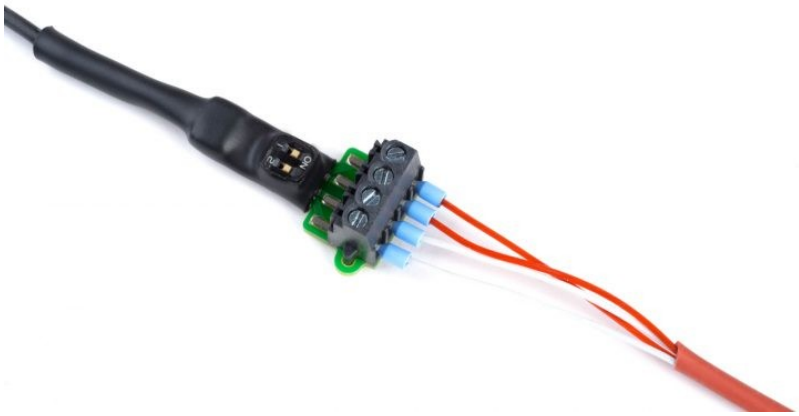
Connecting Pt100- or Pt1000-Sensors

egnite Querx PT measures temperatures via an external platinum-precision resistor. Depending on the exact model, Querx supports Pt100 or Pt1000 sensors. The label on the back of the case will let you know which model you own.

In order to make the setup easier, these devices ship with a simple test-sensor. This sensor is not suitable for regular use. Pt-sensors with a variety of construction types and precision-margins are available from various manufacturers.

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

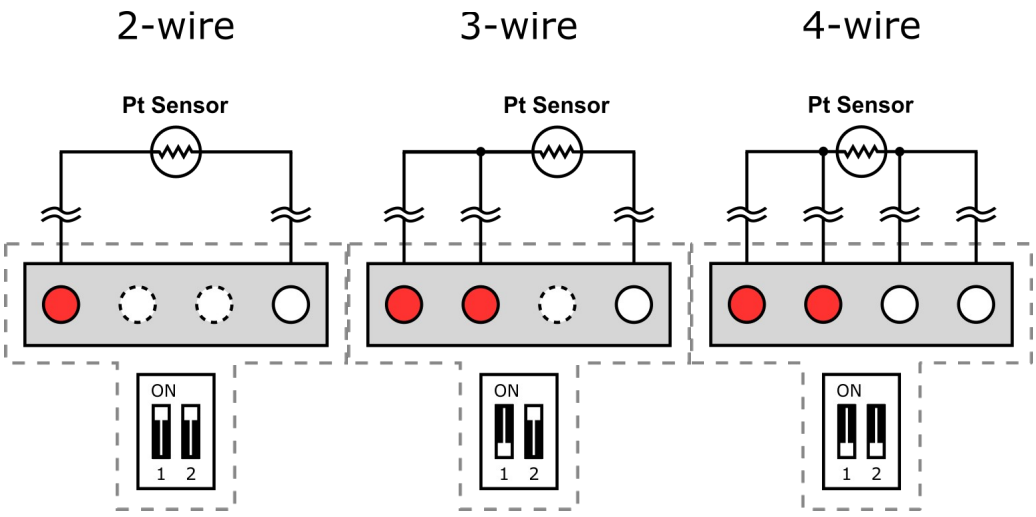
Connecting a Sensor to Screw Terminals



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.

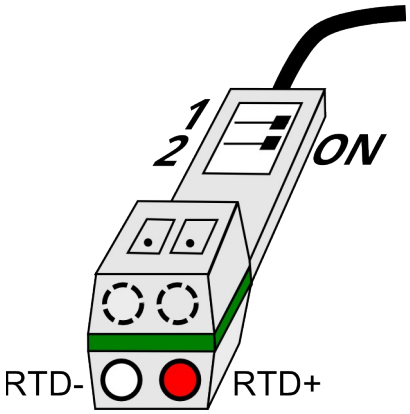
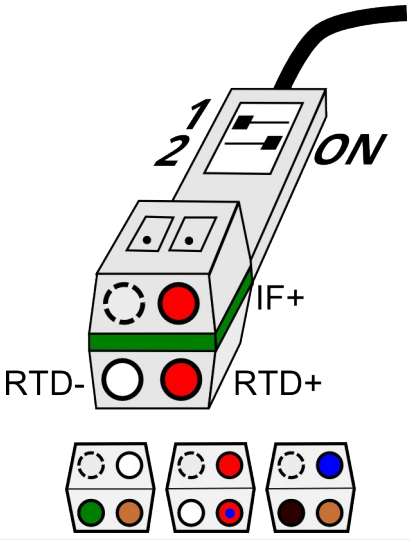
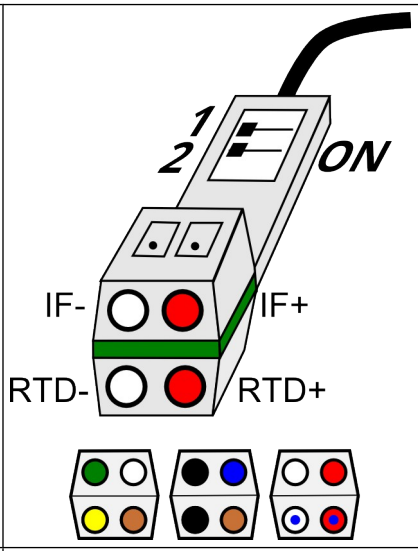
5. Insert the core into the terminal.
6. Tighten the screw by turning it clockwise.
7. Make sure that the core is securely fixed by pulling it with a little force.

Connecting a Sensor to Spring-loaded Terminals

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

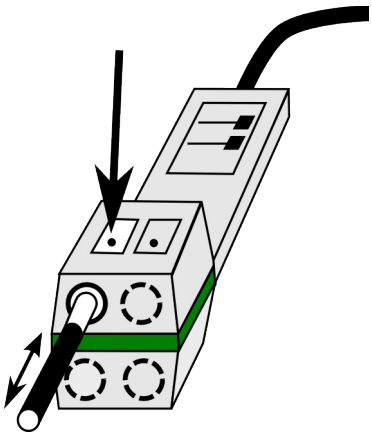
- A tool with a fine tip, e.g. a fine screwdriver or a pair of tweezers
- A ballpoint pen
- Possibly a magnifying glass

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.

		
2-wire sensor	3-wire sensor	4-wire sensor

1. The illustrations provided above detail 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.

Connect the individual cable cores to the terminals as displayed in the images.



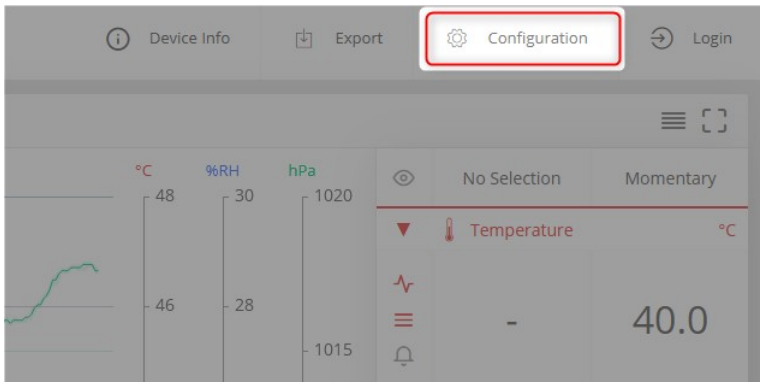
3. Use the biro to depress the fixture corresponding with the terminal to which you want to connect the cable core.
4. Insert the core into the terminal.
5. Release the fixture.
6. Test the connection by lightly pulling at the cable.

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

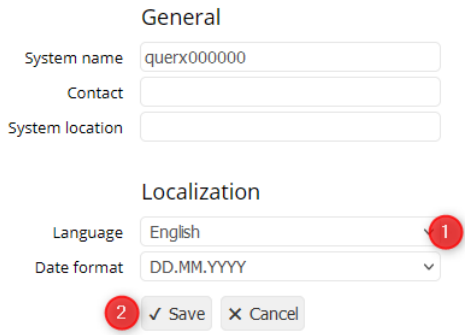
Chapter 4: First Settings

Chapter 3: *Initial Setup* explains how to use a web browser to access the egnite Querx web interface.

If the device is still in default settings, you should first configure some basic settings. Click the button Configuration in the upper right corner of the screen to access the configuration area.



Selecting the Language



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

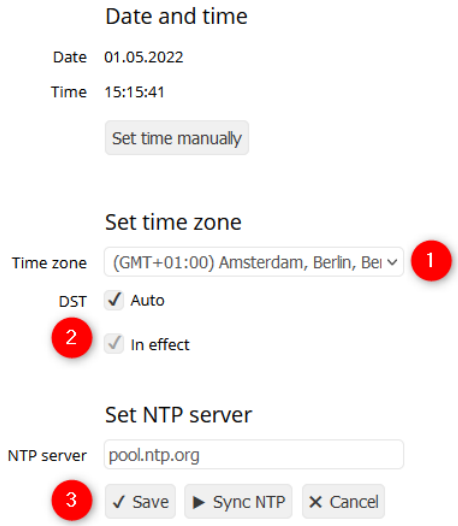
Click *Save* to activate the selected language.

Further information about the settings on this page can be found in chapter *7: General Settings*.

Setting Date and Time

Querx requires the current time, in order to track measurements. In order to make use of the automatic configuration feature, it is advisable to select the appropriate time-zone and daylight-saving time.

Open the page *System* / *Time*.



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:

   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.

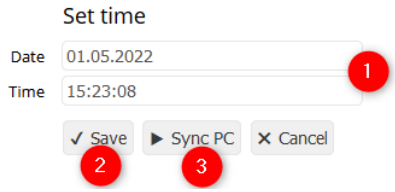
   If your country uses daylight saving time, but the time does not change on the last Sundays of March and October, please deactivate auto in the section DST. You will need to select whether summer time is active manually.
3. Click *Save*, in order to apply your changes.

The following settings are recommended for users in the UK:

- Time zone: (GMT +00:00) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London)
- DST: automatic

The settings for users in the US depend on the time zone you are in.

Please check that date and time are displayed correctly. If this is not the case, click *Set time manually*.

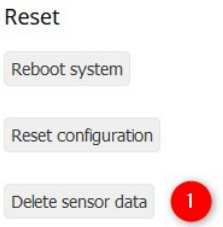


1. The values can be entered into the fields Date and Time manually.

2. Click *Save* to apply your changes.
3. Alternatively, date and time can be synced with your PC. Simply click *Sync PC* to use this feature.

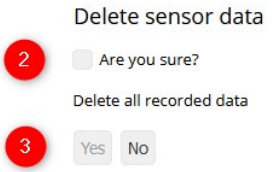
Deleting Logged Data

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 will open.



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.

The Next Steps

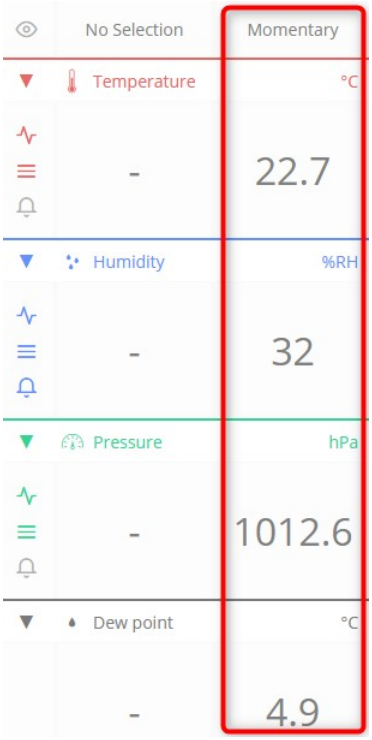
Chapter 9: *Network Configuration* provides instructions on integrating Querx WLAN into a WiFi network.

The settings for monitoring threshold values are detailed in Chapter 12: *Configuring Sensors*.

Chapter 5: Home Page Features

The web interface displays current values and alerts. An interactive diagram on the home page additionally lets you view logged data.

The current values are displayed in the right column in the right sidebar.



If a threshold value is transgressed, the current value is displayed in red alongside a corresponding icon.

↧ Lower threshold transgressed

↥ Upper threshold transgressed

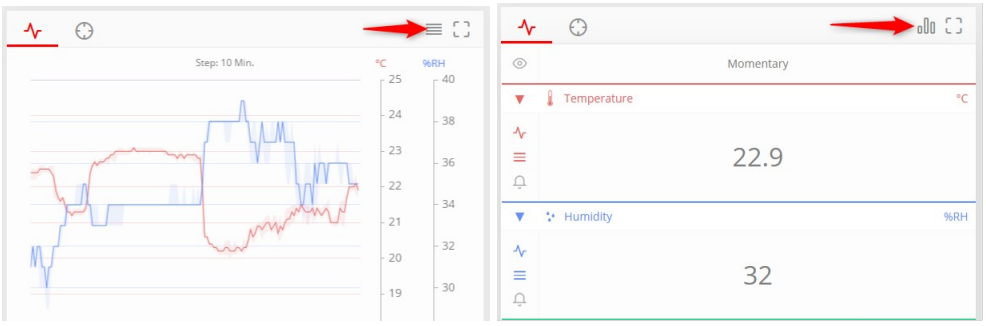
↘ Value falling too rapidly

↗ Value rising too rapidly

✖ Sensor error

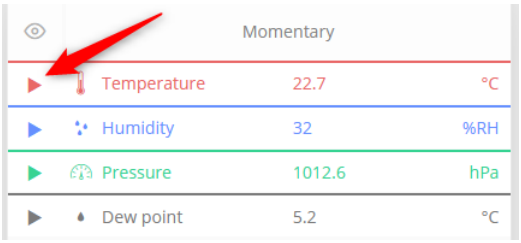
If the sidebar is not displayed, this can have two different causes. The browser window may be under 900 pixels wide or the sidebar may be hidden via the layout button.

In a narrow browser window clicking the layout button will toggle between displaying the graph and the current measurement data.

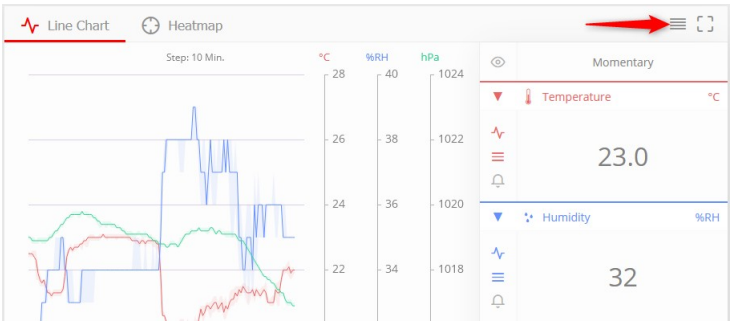


This ensures that the most pertinent data is always displayed clearly.

If you only want to display the current data in a compact way, click the small triangle next to the corresponding display field.

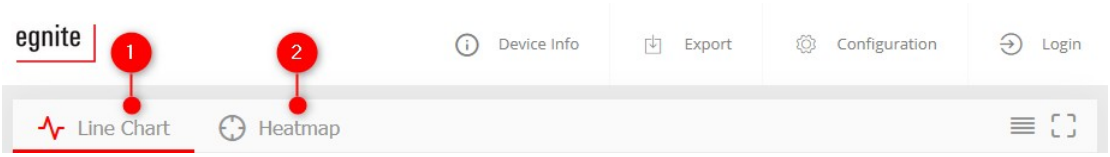


In a wide browser window, clicking the layout button hides or unhides the sidebar.



The right button switches into fullscreen mode, which hides the taskbar at the top and the info bar at the lower edge of the window.

You can select the display modes line graph **(1)** or heat map **(2)**.

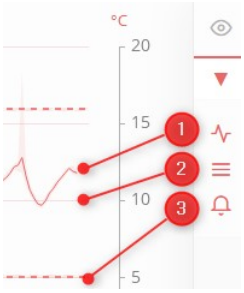


Line Graph

The line graph is the standard display mode when the home page is opened.

Hovering over a point **(1)** in the graph displays the time and corresponding values in the sidebar **(2)**.

Configuring Display Options



The components that are displayed in the graph can be selected in the sidebar. You can select the following settings for each sensor:

1. Display graph. If this option is deselected, the corresponding threshold values and grid lines will also not be displayed.
2. Display grid lines.
3. Display threshold values.

These options let you tailor the line graph to your personal requirements.

The solid lines display the timeline of the average values. The lighter areas that surround the graph indicate the max- and min-values that occured during the corresponding timeframe.

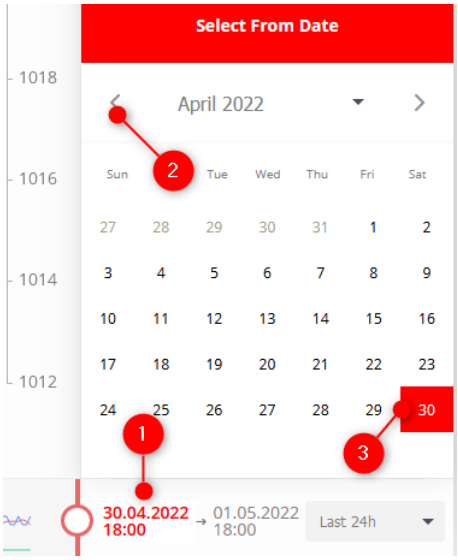
The striped, horizontal bars indicate the threshold values that will trigger alerts. The bars' thickness corresponds to the dead-band. The color indicates which sensor the threshold applies to.

Configuring the Display Period

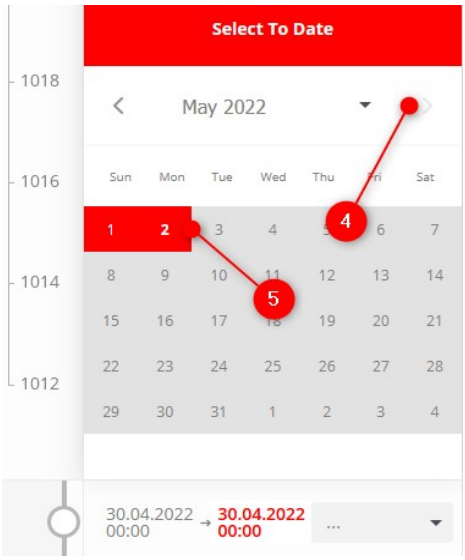
The display period can be set in the lower right corner of the web interface. You can select one of two different modes.

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

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



1. Clicking the left date opens a calendar.
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, "W, M, Y" (“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. Use these two arrows to select the specific week, month or year.
4. Alternatively, you can also select a specific week, month or year from this drop down menu.

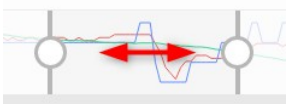
Increasing or Decreasing the Display Period

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 is displayed above the graph.

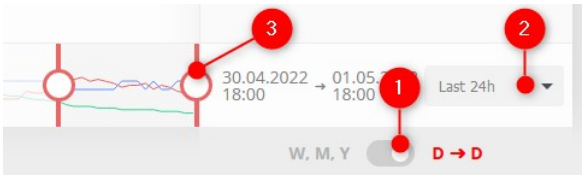
Moving the Display Period

Once you have set the display period’s resolution, you can use your cursor to move the highlighted area, which will move the time period that is displayed.



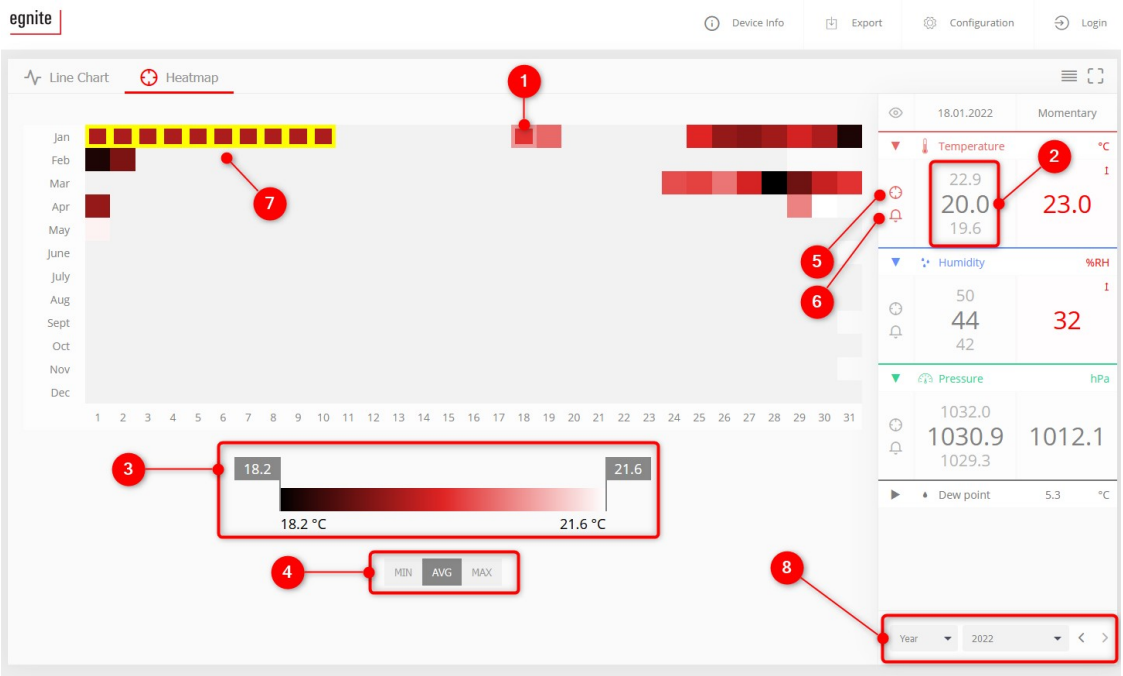
Auto-Update mode

If the graph is set to „D → D“ mode **(1)** and the last 24 hours **(2)** are being displayed, both sliders will turn red **(3)**, when 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.

Heatmap



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

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

Customizing the Display

The heatmap's color settings can be customized using 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 visualization 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.

Exporting Data

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

egnite Querx supports the following formats for data export:

- CSV
  Data exported in the CSV format can be further processed in spreadsheet applications.
- XML
  The file transport format XML is well suited to transferring data to various applications for further processing.

Open the Querx web interface.

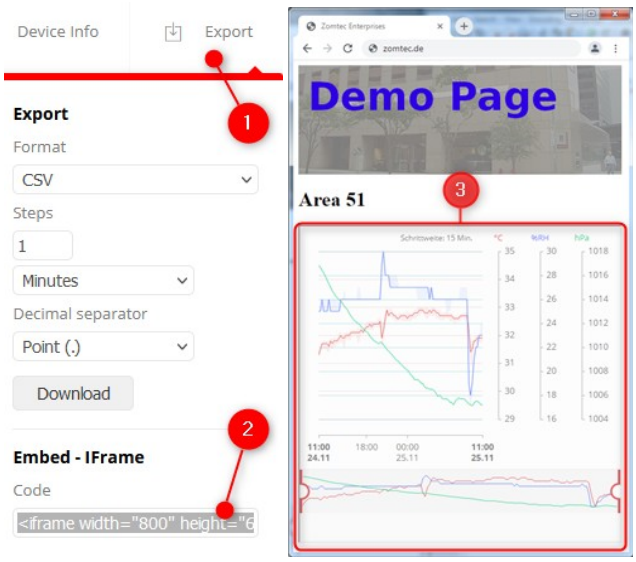
1. Set the timeframe to the period of data that you want to export, as described in the previous section.
2. Click *Export*.
3. Select the format you want to export the data in from the drop down menu *Format*.
4. Set the time interval between individual exported values in the input field *Steps*.
5. The firmware generally uses a period as the decimal separator. Here you can alternatively use a comma.
6. 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.

Embedding Graphs Into Other Sites

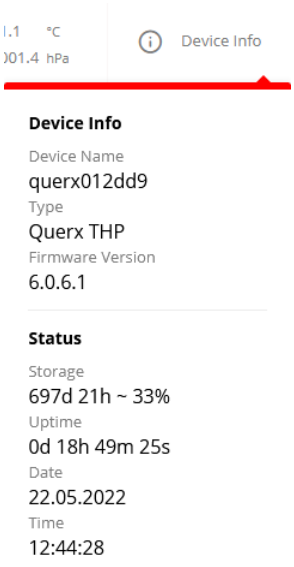
Wherever Querx can be reached via a network, Iframe can be used to embed the graph from the Querx home page into any other site, for instance on your local network.

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.

Viewing Device Information



You can open a field with further general information on this device by clicking the button *Device Info* in the header. The first section displays the device's name, type and the active firmware.

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

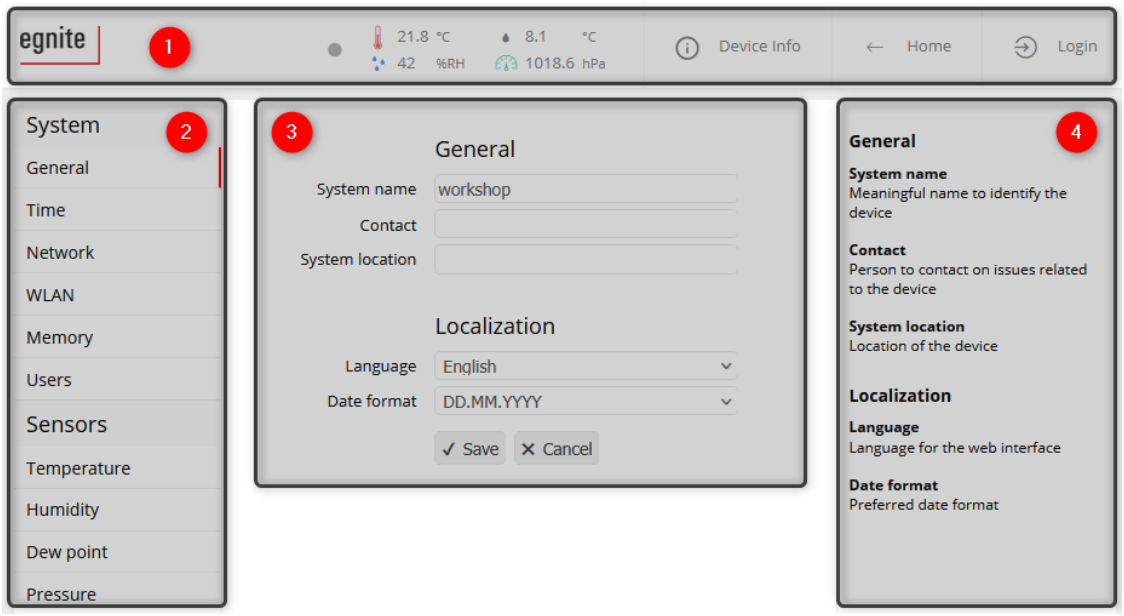
The second section displays the time that has elapsed between the first and last entries in the data logger, as well as the percentage of its memory that has been used. It also shows the system's time of operation since the last system

start and the current date and time.

Chapter 6: Features of the Configuration Area

Chapter 4: *First Settings* introduces some parts of the configuration area that are used to configure the most basic settings.

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

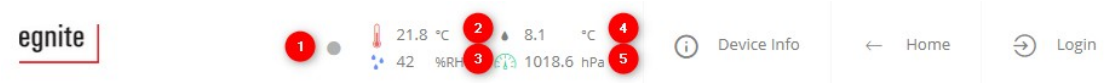


1. Header
   The upper section of each page displays current data, which is automatically updated. More information on this section is available in the following passage.
2. Configuration menu
   Navigate to all the setup options via this menu.
3. Settings

   The central section lets you change the corresponding settings.
4. Help
   The section in the right part of the screen displays short explanations of all the parameters that can be found on each page.

Header

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



1. The update indicator flashes when new data is received
2. Temperature
3. Humidity (TH and THP models)
4. Dew point or dew point spread (TH and THP models)
5. 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

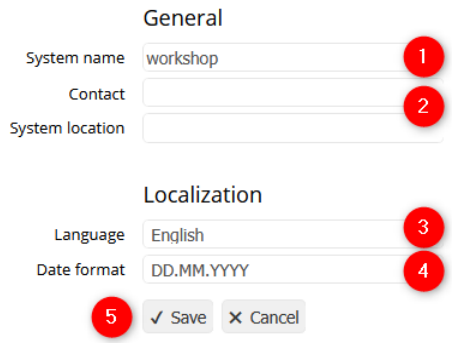
↘ Value falling too rapidly

↗ Value rising too rapidly

✖ Sensor error

Chapter 7: Configuring Basic Settings

The first page of the configuration area is used to configure various basic settings.

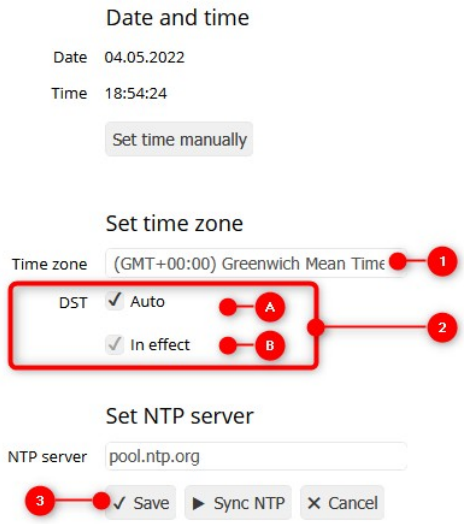


1. On the one hand, the system name identifies the device when alerts occur and when data is accessed via the various interfaces. It also functions as the host name when accessing Querx via a web browser (cf. *Chapter 3: Accessing the Web Interface*). A maximum of 15 letters and digits can be used for the system name. It is advisable to refrain from using special symbols.
2. If you wish, enter the responsible contact person into the input field *Contact* 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 16: Configuring SNMP*.
3. Select the *Language* in which you want the web interface to be displayed.
4. Select the *Date* format for the web interface and exported files.
5. Click *Save* to apply your changes.

Chapter 8: 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 Internet 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 extended power shortages.

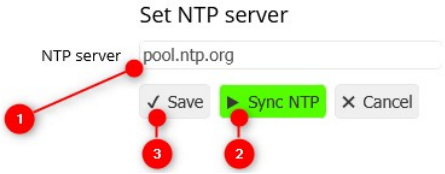


Internally, Querx generally operates on universal time coordinated (UTC). The interface and exported data, however, display the local time. In order to display the correct time, you need to ensure that the correct time zone has been configured.

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 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.

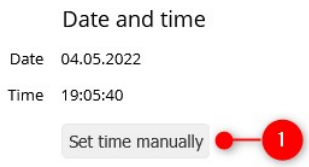


1. Enter the name or IP address of an NTP server.
2. Click *Sync NTP* to test the configuration. If the connection is successful, the button will turn green and the time and date will be updated. If the button turns red, however, the connection to the NTP server was not established successfully. Please ensure that the device is connected to the internet or use a local NTP server.
3. Click *Save* to apply your changes.

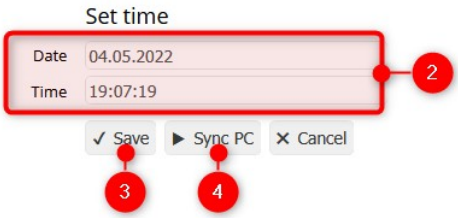
i	**Information** If a valid NTP server has been set up, time and date will be updated automatically once per hour.

Setting Time and Date Manually

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



1. Click *Set time manually*. This will open a new input field for time and date.



2. The values can be manually entered into the fields *Date* and *Time*. Please use the format selected during the initial setup.
3. Click *Save* to apply your changes.

4. Alternatively, time and date can be synced with your PC. In order to do this, click *Sync PC*.

Chapter 9: Network Configuration

egnite Querx can be connected to a network via an Ethernet LAN cable. The WLAN models can additionally 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.

Ethernet Interface

In default settings Querx configures the wired network connection automatically. This is referred to as dynamic configuration, as it is newly configured each time the device is booted, which can change the settings.

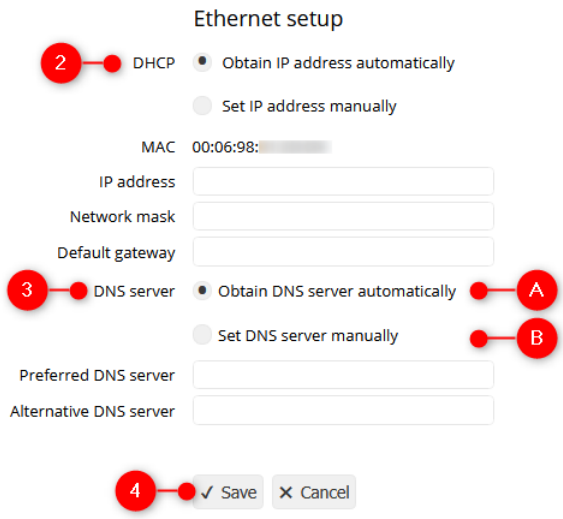
Alternatively, the network settings can be configured manually. Manually assigning a static IP-address to the device will make it boot more quickly and also make it accessible at the same IP-address at all times.

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

Open the configuration page *System / Network* to set up the dynamic or static network configuration.

1. Click the *Edit* symbol next to the entry *Ethernet* to configure this interface.

Dynamic Network Configuration



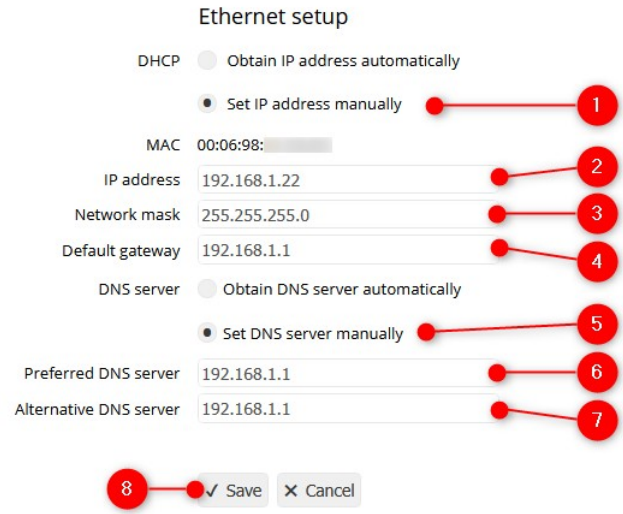
2. Select *Obtain IP address automatically*.
3. Choose whether you want to
   - **A.** *Obtain the DNS server automatically* or
   - **B.** *Set the DNS server manually*.

Although a static DNS server can be set up with a dynamic IP address, this should only be done in very specific scenarios.

4. Click *Save* to apply your settings.

Static Network Configuration

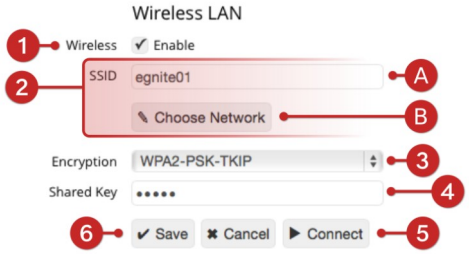
If you prefer a static network configuration, proceed as follows:



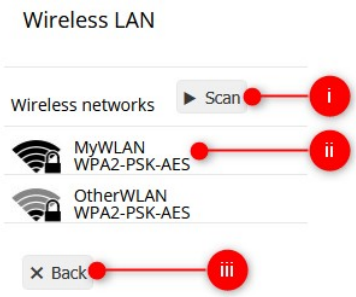
1. Select the option *Set IP address manually*.
2. Enter the *IP address* you want to assign to the device.
3. Enter the *Network mask* for your local network.
4. Connections to external networks, such as the internet, require the *Gateway's* IP address.
5. Select the option *Obtain DNS server automatically*.
6. Enter the *IP address* for the preferred DNS server.
7. You can optionally configure an *alternative DNS server*.
8. Click *Save* to apply your settings.

WiFi Interface

Open the configuration page *System / WiFi* to set up the WiFi interface for an egnite Querx WLAN device.



1. Check *Activate* to activate the WiFi interface.
2. Select your network.
   - **A.** Either enter you network's SSID into the field *SSID*, or
   - **B.** click *Choose Network* to select your network from a list of wireless networks available in the area.



   - **i.** Click *Scan* to scan the area for networks. The mode of encryption is specified and the signal strength is indicated by the dark bars. The image

above includes a network with a strong signal (top) and one with a weak signal (bottom). You can repeat the scan as often as is required.

ii. Select the appropriate network by clicking it.

iii. If the network you want to connect to does not appear in the list, its signal may be too weak or it might be configured to be undiscoverable. Clicking *Back* lets you return to the previous page without connecting to a network, where you can enter the required parameters manually.

3. Select the mode of encryption for the network. If you selected a network from the listed results of a scan, the mode of encryption is automatically configured.
4. Enter the network key into the field *Shared Key*.
5. Click *Connect* to test the connection with the configured settings. If the connection is established successfully, the button will turn green. If no connection is established, it will turn red.
6. Click *Save* to apply your changes.

Network Configuration

Open the configuration page *System / Network* to set up the WiFi interface in client mode.

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

Proceed as detailed in the section *Dynamic Network Configuration* for the Ethernet interface.

Selecting the Active Interface

The network interface is selected depending on whether Querx WLAN detects a wired connection. If the device detects a functioning Ethernet connection, the wired interface is activated. If no such connection is detected or a working connection is interrupted, the device will activate the WiFi interface. In order to switch between the interfaces, Querx WLAN needs to perform a reboot. This process can take a little while.

The status LED indicates which network interface is currently active.

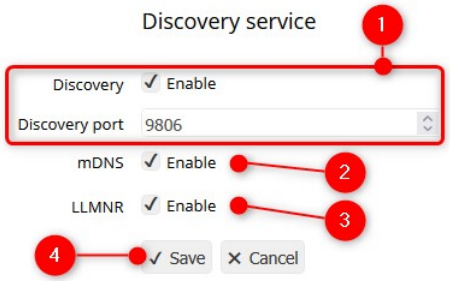
The LED flashes

- green when the Ethernet interface is active
- blue when the WiFi interface is active.

This only applies as long as no alert occurs. Once an alert does occur, the settings specified in Chapter 18: *Configuring the Signalers* will apply.

Deactivating the Discovery Feature

egnite Querx supports several services to detect devices on the local network. They are activated in default settings, but it may be preferable to deactivate them for security reasons. Open the configuration page *System / Network* to deactivate these services.



1. The discovery feature allows Querx Hub to display all devices on the local network. In the case of larger setups, these can be grouped, with each group being assigned a specific port number.
2. mDNS is primarily used on computers running macOS, but sometimes also with Linux devices. If the computer supports this, Querx can be accessed directly by the system name followed by .local.
3. LLMNR is an alternative to mDNS and is available on computers with Windows operating systems by default.
4. Click *Save* to apply your settings.

If the discovery function is deactivated, Querx may no longer be discoverable by some applications.

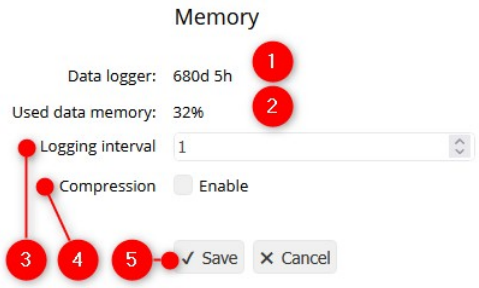
Chapter 10: Configuring the Data Logger

egnite Querx features a data logger that records the following data at a customizable interval:

- Average, minimal and maximal temperature
- Average, minimal and maximal humidity (TH and THP models only)
- Average, minimal and maximal air pressure (THP models only)

Querx THP can record 36.864 entries. Querx TH and PT have enough memory for 73.728 entries. The WLAN Models feature a capacity of 4 million entries. For Querx THP, this equates to a timeframe of 25 days at an interval of one entry per minute. In the case of Querx TH / PT it is sufficient for at least 25 days, while the WLAN models can log data for 7.5 years.

Data tracking can be optimized by compressing the measurements. If this feature is activated, Querx will only log data if the measurement has changed since the last entry. This can expand the period that can be tracked significantly, if the measurements change infrequently. It bears noting that the average, minimal and maximal values need to remain unchanged, in order for an entry to be pared.



1. The number of days between the first and last entry in the memory. This includes periods in which the device was not active.
2. Percentage of the memory that has been used. The memory is designed as a ring memory. Once it has been filled, the oldest entry will be overwritten. In this case, the value will register as 100% continually.
3. Enter the required number of minutes between individual entries in the field *Interval*.
4. Select whether the recorded data is to be compressed. Data compression can cause temporary, negligible errors in the graphic visualization.
5. Click *Save* to apply your changes.

Chapter 11: Creating a New User Account

The default settings include an anonymous user that has unrestricted access and is not password-protected. Three additional, password protected users can be created. The following access privileges can be assigned to a user:

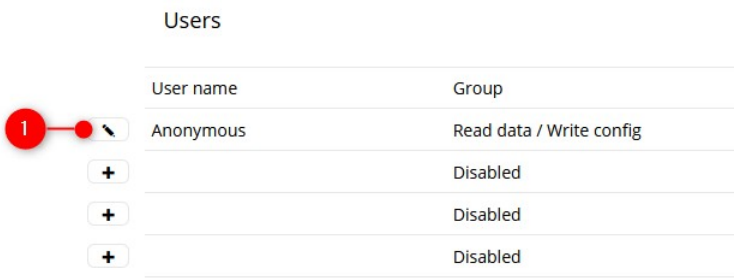
- *Deactivated*
  The user has no access privileges.
- *Read Data*
  The user can read the data gathered by Querx.
- *Read Data / Read Configuration*
  The user can read the data gathered by Querx and the device's configuration.
- *Read Data / Write Configuration*
  The user can read the data gathered by Querx and the device's configuration. They can additionally edit the configuration.

User Administration

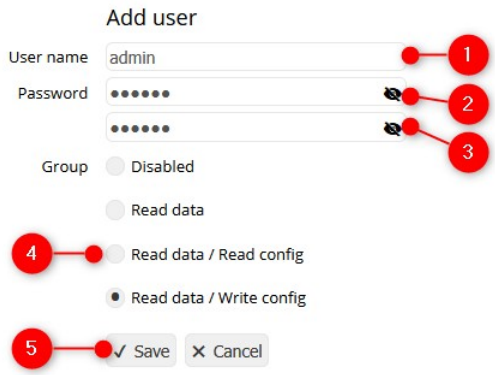
The default settings include no password protected users and the configuration can be edited by any network user. It is therefore advisable to create password protected users and limit the anonymous user's access rights.

Creating a User

Open the configuration page *System / User* to edit the user settings.



1. Click the *Add* button next to an empty line in the section *Users*. This will open a form that is used to edit the user's settings.

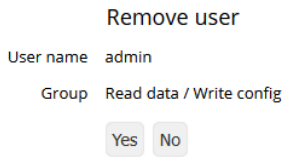


2. Enter a user name into the input field *User name*. You can use up to 15 lower- and upper-case letters, as well as digits and the underscore sign.
3. Enter a password for the new user. The same characters that can be used for the user name can be applied for the password.
4. Assign the user to a *Group* of access rights.
5. Click *Save* to apply your settings and create the user account.

Editing or Deleting a User

Any previously created user can be deleted or edited.

1. Click the *X* symbol next to any user to delete the account. Confirm that you wish to remove this user by clicking *Yes* in the window that will open.



A user with access rights can only be removed if at least one further user with writing access has been set up. The user *Anonymous* can not be deleted, but the account can be deactivated.

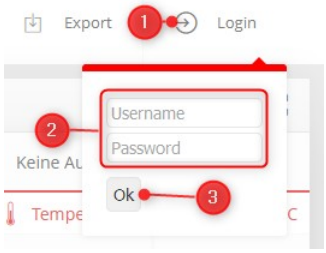
2. The access privileges can only be edited if at least one other user with writing access is set up.

Once a password protected user with writing privileges has been set up, the anonymous access can be limited or deactivated.

Logging In and Out

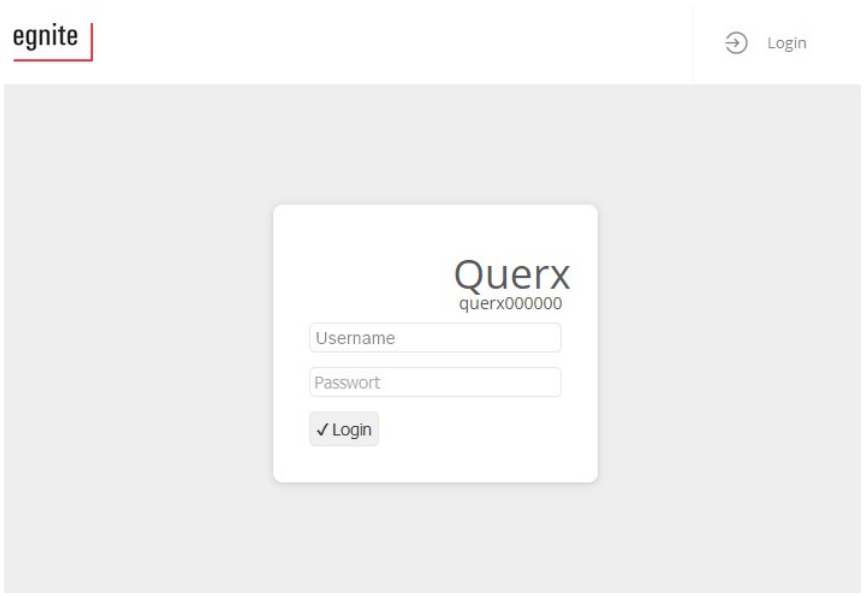
If you have set up a user with access privileges, you will need to log into the web interface.

The login button is located in the upper right corner of the interface's start page.

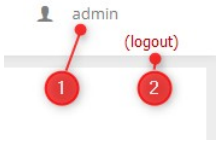


1. Click *Login*.
2. Enter the user name in the field *User Name* and the corresponding password in the field *Password*.
3. Click *OK*.

If the anonymous user is deactivated and no user is logged in, the start page will only display the login window.



Once a user is successfully logged in,



the user name will be displayed on the right side of the header **(1)**. Clicking *(logout)* **(2)** will log the user out of the interface.

Chapter 12: Configuring Sensors

The various models support different sensors. An overview is available in Chapter 2: *Models and Options*.

egnite Querx can inform you if the following critical environmental conditions occur:

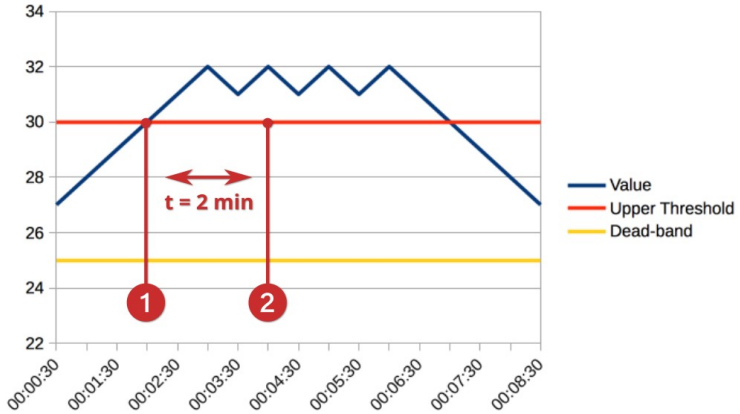
- Lower alert threshold value transgressed
- Lower warning threshold value transgressed
- Upper alert threshold value transgressed
- Upper warning threshold value transgressed
- Values falling too rapidly
- Values rising too rapidly

The configuration iworks identical for all sensors. The only exception are the alerts for falling and rising calculated values, such as the dew point. The following sections explain how to configure the temperature sensor, but are also applicable to the other sensors that are supported by other models.

Monitoring Threshold Values

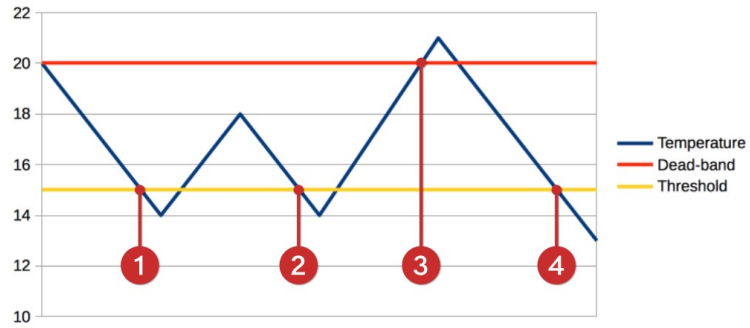
Two upper and lower thresholds can be set up for each sensor. As soon as one of these values is transgressed, the device will switch into alert mode.

In some applications, temporary transgressions of a threshold may be tolerable. When monitoring a refrigerator, for instance, an alert should not be triggered each time the door is opened. Configuring a delay can prevent this from happening by specifying a certain period of time during which the limit needs to be transgressed before an alert is triggered.



In this scenario, a delay of two minutes is set up. The threshold is transgressed after one and a half minutes **(1)**. However, the device only sounds an alarm after the limit has been transgressed for the full two minutes specified as the delay time **(2)**.

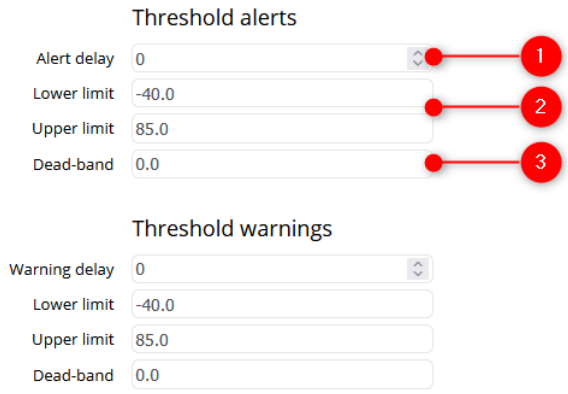
Air movements can cause the readouts for temperature and humidity to fluctuate. If measurements fluctuate around a threshold value, each transgression will trip an alert. This is usually not desirable and can be prevented by defining a dead-band.



The image above shows a lower threshold set to 15°C with a dead-band of 5°C.

An alert is triggered if the value falls below the lower threshold **(1)**. If it normalizes and remains within the range of the dead-band, before falling below the threshold again, this second transgression is ignored **(2)**. Only after the value has normalized far enough to leave the range of the dead-band **(3)** can a new alert **(4)** be triggered.

Open the configuration page for a sensor to configure its alerts.

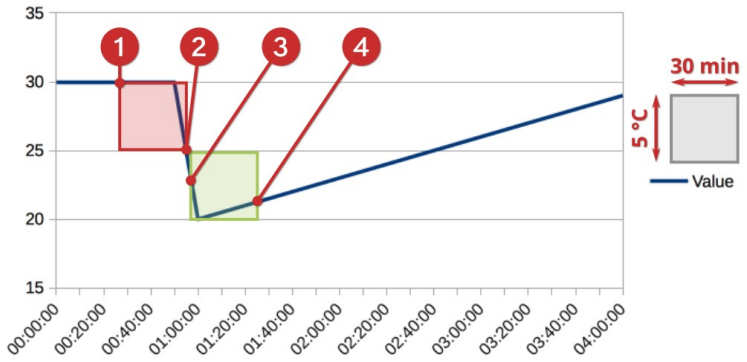


1. If you want to permit temporary transgressions, specify the delay (in seconds) for which a threshold needs to be transgressed, for an alert to be triggered.
2. Enter an *Upper* and *Lower Limit* value.
3. Enter a value for the *Dead-band*, if you wish to use this feature.

The *Save* button is located at the very end of the page.

Monitoring Variations

In some applications, simply monitoring static threshold values is not sufficient. Additionally, it may be necessary to monitor whether measurements fluctuate too greatly within a certain timespan.

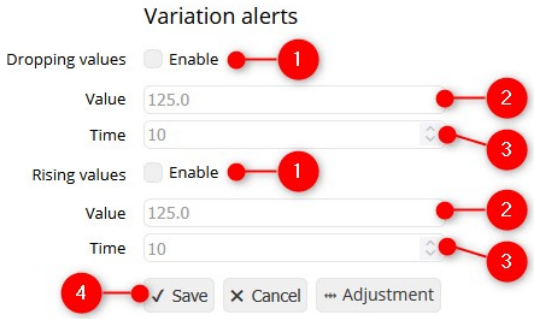


This diagram visualizes how Querx reacts to a window being opened. The maximal fluctuation is set to 5°C within 30 minutes.

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 rapidly. Once the temperature falls below 25°C **(2)**, the device registers that a difference of more than 5°C has occured in the last 30 minutes and triggers an alert.

The device senses that the difference in the last 30 minutes **(3)** is smaller than 5°C and deactivates the alert at about 1:30 **(4)**.

Open the configuration page for a sensor to configure its alerts



1. Variation alerts can be configured for dropping and rising values.
2. Enter the maximal *Value* by which you want to allow the temperature to fluctuate.
3. Enter the *Time* within which the temperature is permitted to fluctuate by the value specified in the previous step.
4. Click *Save* to apply your changes.

Chapter 13: Email Configuration

One of the key features is the ability to send email notifications if a threshold configured for any sensor is transgressed. Querx can also send emails at certain intervals or at specific times, in order to verify its operational status or transmit measured data.

This requires an email account on an email server and the configuration of specific actions that Querx will execute when alerts occur.

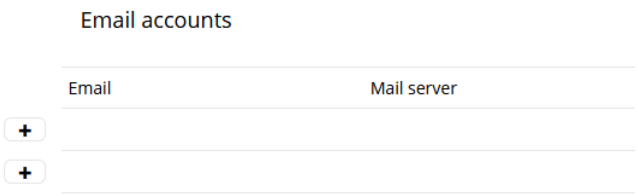
egnite Querx WLAN can also be configured to only activate the email interface at specific times, such as during the day or on weekends.

Managing Email Accounts

The configuration of at least one email account is required for email notifications to be sent. A second account can optionally be configured and may be useful if

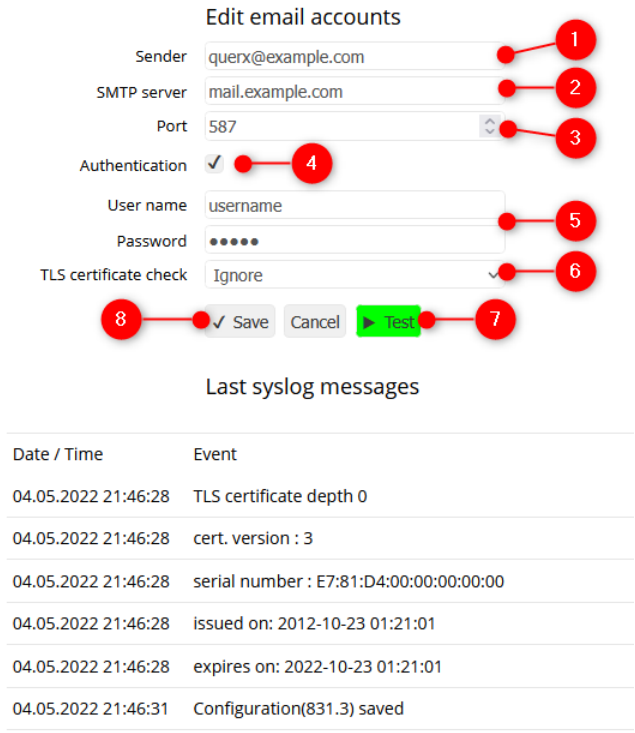
- you want to set up a backup option in case one mail server is temporarily not accessible, or
- you operate a mail server on your local network and wish to distinguish between internal and local emails.

Open the configuration page *Interfaces / Email*.



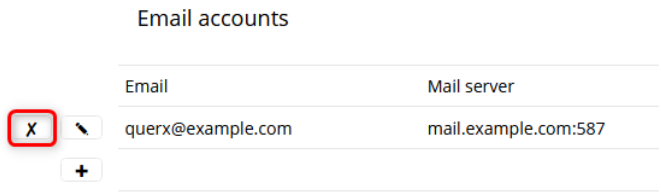
Click the *Add* symbol next to an empty row in the section *Email accounts*. This opens a new page that is used to configure an account.

Click the *Edit* symbol next to the account that you wish to edit in the section *Email accounts*.



1. Enter the mail address for the account that you wish to send email alerts from in the input field *Sender*.
2. Enter the address or IP-address for the mail-server used by the mail account in the input field *SMTP server*.
3. Enter the SMTP *Port* used by the email account. This is usually 587.
4. Most mail servers require user data. In this case, activate the checkbox *Authentication*.
5. Enter the *User name* and *Password* for the email account.
6. 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 *Chapter 20: Installing CA Certificates*. If you have not installed such a certificate, select the setting *Ignore*.
7. 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.
8. Click *Save* to apply your changes.

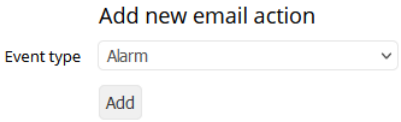
Configured email accounts can also be deleted. Open the configuration page *Interfaces / Email* to do so.



1. Click the *Delete* button next to the account you wish to delete in the section *Email accounts*.
2. Confirm that you want to remove the account by clicking *Yes* on the following page.

Managing Email Actions

Open the configuration page *Interfaces / Email*.



The section *Add new email action* can be used to set up specific actions based on certain types of events.

- Alarm

  Emails will be sent when a threshold is transgressed or the corresponding value returns to its normal range. This feature is commonly used to notify the responsible person.

- Interval

  Emails are sent at specific intervals. This can, for instance, transmit current data.

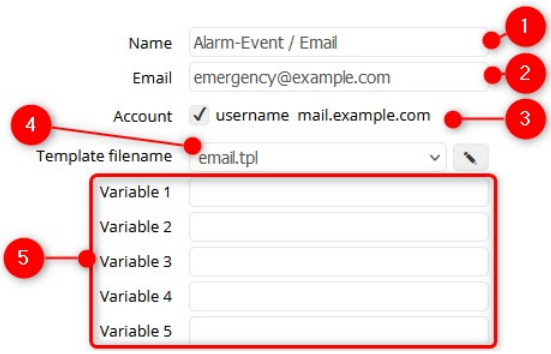
- Time

  Emails are sent at specific times, for instance daily, at a certain time of day, a certain day of the week or monthly. This feature facilitates the generation of a constant log.

- System

  Emails are sent when specific system events occur. This currently works for reboots, for instance after a power outage.

Click *Add* to configure a specific action after selecting an event type. This will open a form that is used to configure additional details for the action. The form is divided into two sections. The first is used for general information on the action.



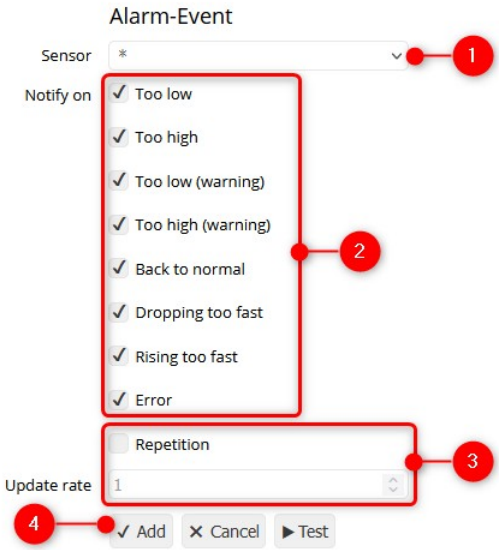
1. Give the action a suitable name, for instance *refrigeration alert*.
2. Enter the recipient's email address in this field.
3. Select which account the email will be sent from. All the configured accounts are listed with the corresponding user name and server.
4. Select a template for the email.

The template specifies the text that the email will contain. Place holders can be used to transmit current data. You can create custom templates at a later time. Until then, select one of the predefined templates, email.tpl for notifications or report.tpl for periodical reports.

5. Variables that are used to define more general templates can be entered here. More detailed information on this can be found in the sections on the various templates. These input fields are of no significance for simple templates.

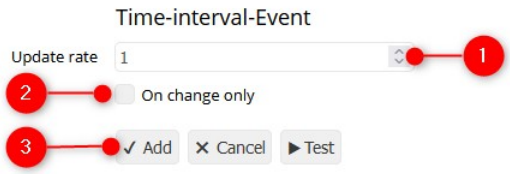
Different information, depending on the selected event type, is required in the second section.

Alarm Event



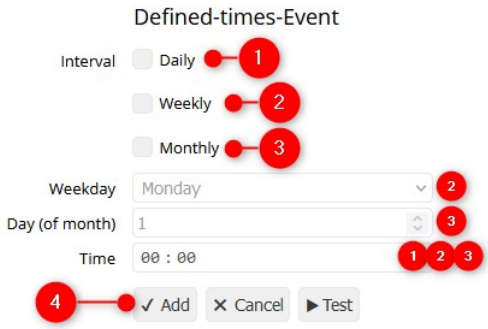
1. Select the sensor that will trigger the email notification. The asterisk means that all sensors can trigger the event.
2. Select the events that will trigger the email notification.
3. Emails can be sent repeatedly, if alarms or sensor errors persist. If you want to activate this feature, select *Repetition* and enter the interval in minutes.
4. Click *Add* to apply your settings. If you click the button *Cancel*, your settings will be discarded.

Time interval Event



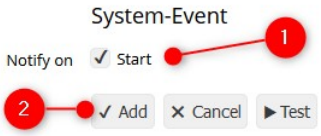
1. Select the interval in minutes by which emails will be sent.
2. You can specify that an email will only be sent if the relevant sensor data has changed since the last email. Please note that this applies not only to the average value, but also the minimal and maximl values.
3. 4. Click *Add* to apply your settings. If you click the button *Cancel*, your settings will be discarded.

Defined times Event



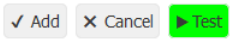
1. If a daily email is required, select daily and enter a time.
2. For weekly emails, please specify the day of the week and the time.
3. Monthly emails require the configuration of a day of the month and a time at which the mail will be sent.
4. Click *Add* to save your settings. Clicking *Cancel* will discard your changes.

System Event



1. The only system event that is currently supported is an email notification after the system boots up.
2. Click *Add* to save your settings. Clicking *Cancel* will discard your changes.

Testing the Email Action



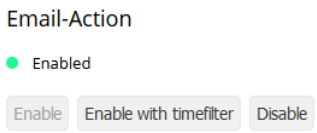
Last syslog messages

Date / Time	Event
05.05.2022 11:43:09	SMTP connecting mail.example.com:587
05.05.2022 11:43:09	Sending email to alerts@example.com
05.05.2022 11:43:09	Email sent - 250 Requested mail action ok, completed: id=xxxx
05.05.2022 11:43:10	Configuration(1029.3) saved

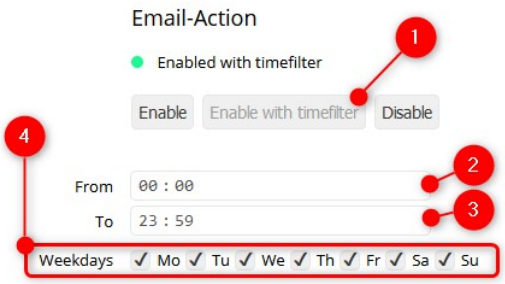
If you would like to test your setup, click the button *Test* to send an email to the recipient immediately. The button should turn green after a few seconds.

If it turns red this means that the email was not successfully sent. Some troubleshooting information will appear below the buttons.

Activating Email Actions



After adding an email action, it will initially be inactive. In a manner of speaking, clicking the button *Enable* will „arm“ the operation. It can be „disarmed“ at a later time by clicking the button *Disable*.



On Querx WLAN, the activation can be automated.

1. Click the button *Enable with timefilter*.
2. Specify the time at which the action shall be activated.
3. Specify the time at which the action shall be deactivated.
4. Select the days of the week on which the email action shall be activated during the specified times.

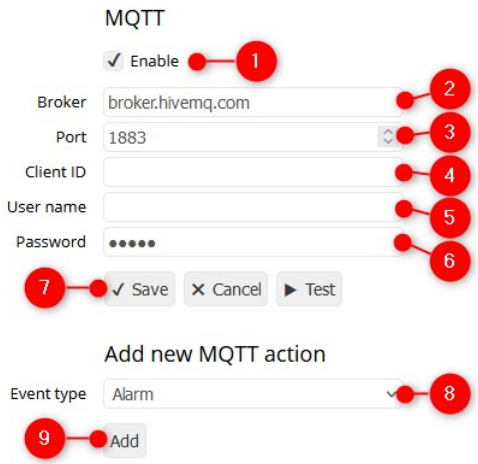
Chapter 14: Configuring MQTT

MQTT is only availalbe on egnite Querx WLAN.

MQTT is an open M2M protocol that is used to transfer notifications and is primarily applied to monitoring and control technical processes with SCADA systems. Querx will operate as a client that will send data on a customizable topic to a broker. Other clients can subscribe to this topic, in order to receive the data sent by Querx for further processing.

Managing MQTT Actions

Open the configuration page *Interfaces / MQTT*.



1. *Enable* MQTT.
2. Enter the MQTT *Broker's* host name.
3. If neccessary, change the MQTT broker's *Port*. The default settings are 1883.
4. Enter a unique *Client ID*.
5. If the MQTT broker requires authentication, enter your *User name*.
6. If necessary, enter the *Password* for the MQTT broker.
7. Click *Save* to apply your settings.
8. Select an event that will trigger the MQTT action.

   Alarm
   An alert for one or all sensors is triggered.

   Interval
   Repeating lapse of an interval in minutes.

Time
Repeating occurence of a specified daily, weekly or monthly point of time.

System
Triggered when a system event occurs.

9. Click the button *Add* to create the selected action.

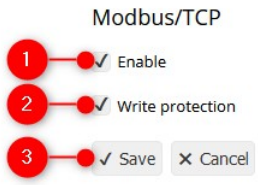
Refer to Chapter 19: *Configuring an MQTT Action* for more detailed information on configuring MQTT actions.

Chapter 15: Configuring Modbus/TCP

egnite Querx supports data transfer via Modbus/TCP, which can be used to integrate the device into industrial process monitoring systems (SCADA).

Activating Modbus/TCP

Open the configuration page *Interfaces / Modbus*.



1. *Enable* Modbus/TCP.
2. If you want to permit changes to the Modbus/TCP configuration, deactivate the *Write protection* checkbox.
3. Click *Save* to apply your changes.

Modbus Register

Read Register			
Address	**Offset**	**Format**	**Contents**
30010	9	int16	Error bits 0x0001: Temperature sensor error 0x0002: Humidity sensor error 0x0004: Dew-point error 0x0008: Air pressure sensor error 0x8000: Battery flat
30011	10	int16	Temperature Centigrade * 10
30012	11	int16	Relative humidity %
30013	12	int16	Temperature Fahrenheit * 10
30014	13	int16	Temperature Kelvin * 10
30015	14	int16	Dew-point Centigrade * 10
30016	15	int16	Dew-point Fahrenheit * 10
30017	16	int16	Dew-point Kelvin * 10
30019	18	int16	Absolute air pressure in hPa * 10
30020	19	int16	Relative air pressure in hPa * 10

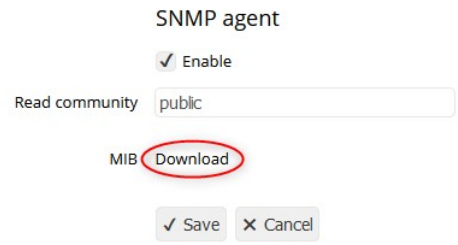
Holding Register			
Address	**Offset**	**Format**	**Contents**
40006	5	int16	Modbus device address
40007	6	int16	Options
40021	20	int16	Lower temperature threshold in Centigrade * 10
40022	21	int16	Upper temperature threshold in Centigrade * 10
40023	22	int16	Temperature dead-band in Kelvin * 10
40024	23	int16	Lower temperature threshold in Fahrenheit * 10
40025	24	int16	Upper temperature threshold in Fahrenheit * 10
40026	25	int16	reserved
40027	26	int16	Lower temperature threshold in Kelvin * 10
40028	27	int16	Upper temperature threshold in Kelvin * 10
40031	30	int16	Lower humidity threshold
40032	31	int16	Upper humidity threshold
40033	32	int16	Humidity dead-band
40051	50	int16	Lower dew-point threshold in Centigrade * 10
40052	51	int16	Upper dew-point threshold in Centigrade * 10
40053	52	int16	Dew-point dead-band in Centigrade * 10
40054	53	int16	Lower dew-point threshold in Fahrenheit * 10
40055	54	int16	Upper dew-point threshold in Fahrenheit * 10
40056	55	int16	Dew-point dead-band in Fahrenheit * 10
40057	56	int16	Lower dew-point threshold in Kelvin * 10
40058	57	int16	Upper dew-point threshold in Kelvin * 10
40061	60	int16	Lower air pressure threshold in hPa * 10
40062	61	int16	Upper air pressure threshold in hPa * 10
40063	62	Int16	Air pressue dead-band in hPa * 10

Chapter 16: Configuring the SNMP-Agent

The Simple Network Management Protokoll makes it easy to integrate egnite Querx into network management systems such as Nagios, OpenNMS or Zabbix.

SNMP MIB

The Management Information Base (MIB) can be downloaded from the manufacturer's website. The corresponding link can be found on the configuration page *Interfaces / SNMP*.

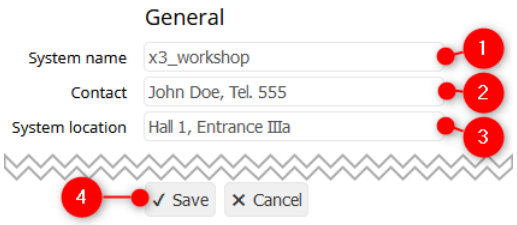


The most important private object identifier defined by Querx are:

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	Air pressure sensor
1.3.6.1.4.1.3444.1.14.2.0.101	Trap code for the normal state
1.3.6.1.4.1.3444.1.14.2.0.102	Trap code for alerts

General System Information

Open the page *System / General*, in order to provide additional system information via SNMP.



1. The system name is valid globally and has previously been configured in Chapter 7: *Configuring Basic Settings*. The setting is saved in the SNMP object *system.sysName.0*.
2. The entry *Contact* can save any desired text with up to 63 characters, which is saved in the object *system.sysContact.0*. It usually contains data about the

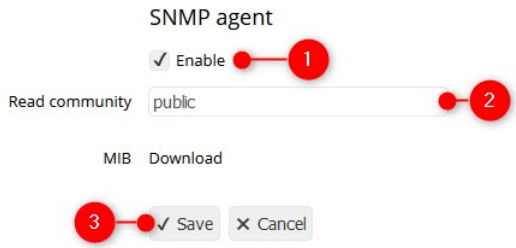
person who is responsible for the system.

3. The description of the location can be up to 63 characters long and is accessible via the SNMP object *system.sysLocation.0*.

The object *system.sysDescr.0* is used by the system to identify the device's model, as well as the active firmware version, e.g. "egnite Querx WLAN THP, Version 6.0.2.0".

Activating the SNMP Agent

Open the page *Interfaces / SNMP*.



1. Activate the agent by setting a check mark.
2. Check the *Read community* and select the settings you require.
3. Click *Save* to apply your changes.

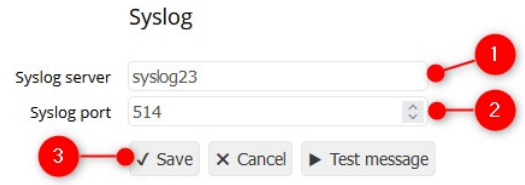
Reboot the device, as explained in *Chapter 22: Rebooting the System*.

Activating SNMP Traps

Querx can report the occurence of specific events via trap. More detailed information on this is available in Chapter 19: *Configuring an SNMP Trap Action*.

Chapter 17: Configuring Syslog

Open the configuration page *Interfaces / Syslog* to transmit error messages and notifications to a syslog server.



1. Enter the *Syslog server's* IP address or its host name.
2. Enter the *Syslog port*. The default setting is 514.
3. Click *Save* to apply your settings.

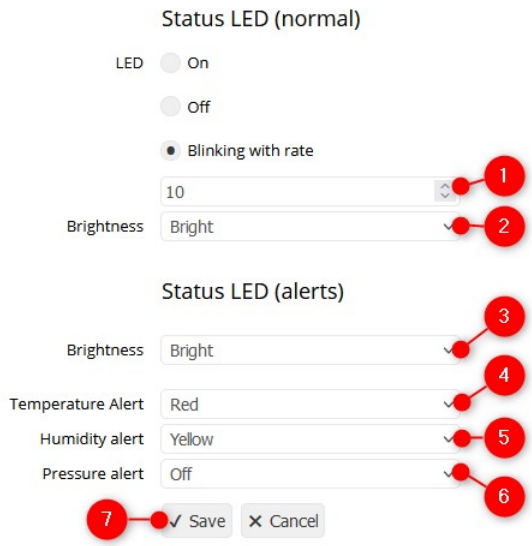
The Querx Hub application features an integrated syslog server that can receive notifications from egnite Querx. Refer to the page *Service / Tutorials* on www.egnite.de for detailed troubleshooting instructions.

Chapter 18: Configuring the Signalers

egnite Querx features an LED and the WiFi version includes an additional sound generator, both of which can indicate occuring alerts.

Optical Signals

Open the page *Interfaces / Signalers* to configure alert notifications on the device.



1. Select the interval in seconds in which Querx will flash in its normal state.
2. WLAN Models: Select the LED's brightness in its normal state.
3. WLAN Models: Select the LED's *Brightness* when signalling alerts.
4. Select the color that will be used to signal *Temperature alerts*.
5. TH and THP models: Select the color that will be used to signal *Humidity alerts*. This includes dew point alerts.
6. THP model: Select the color that will be used to signal *Pressure alerts*.
7. Click *Save*.

Acoustic Signals

The WLAN models feature an additional acoustic signaller. The corresponding configuration is detailed in Chapter 19: *Configuring a Signaler Action*.

Chapter 19: Configuring Actions

The settings that have been explained thus far enable Querx to trigger actions such as sending emails when specific events, such as sensor alerts, occur. This chapter will deal with events and triggered actions in a more general sense.

Configuring an Action

Open the configuration page *Interfaces / Actions*.

1. Select the *Action type*.

   HTTP-Push sends a request to an HTTP server. This operation can, for instance, be used to transmit data to a cloud service.

   Email sends an email to a recipient.

   SNMP trap sends an SNMPv1 or SNMPv2 trap to an SNMP manager.

   Querx WLAN additionally offers the following options:

   Sound generates an acoustic signal via the integrated signaller.

   MQTT sends a message to an MQTT-Broker.

   FTP saves a file on an FTP server.

2. Select the *Event type* that will trigger the action.

   Alarm when a sensor alert occurs.

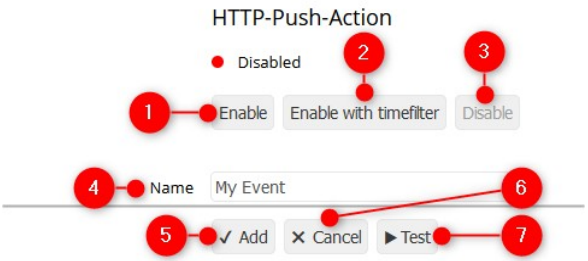
   Interval after a specific recurring time interval.

   Time at a specific daily, weekly or monthly point of time.

   System when system events occur, e.g. system reboot.

3. Click *Add* to create the specific action.

A new page for the configuration of the selected action appears.



The first section is used to select the current state.

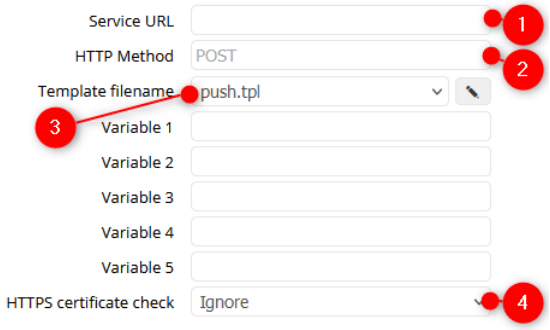
1. *Enable* activates the action permanently.
2. *Enable with timefilter* activates the action during specific times.
3. *Disable* deactivates the action. However, it will be saved, so it can be re-activated at a later time.
4. You can enter an explanatory *Name* for the action.

The lower section of the page lets you

5. save the configuration by clicking *Add*.
6. leave the page without saving the configuration by clicking *Cancel*.
7. test the configuration by clicking *Test*.

The middle section of the page is sub-divided into two further sections. The first configures the action in detail. The second offers various entries, depending on the selected type of event. The following sections will deal with these settings.

Configuring an HTTP Push Action



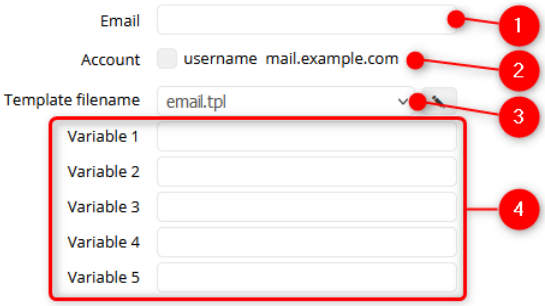
Data can be sent to an HTTP server via HTTP push. This requires the following data:

1. The HTTP endpoint's *Service URL*, e.g. yourcloudservice.cloud/path/to/endpoint.
2. The *HTTP Method* that will be used for queries from the server, usually POST.

3. Name of the *Template file* and possibly one or several parameters. Please refer to Chapter 21: *Custom Templates*.
4. WLAN Models: The interface can verify the server certificates, in order to ensure the mail server's authenticity. A CA certificate needs to be saved on the device, as outlined in Chapter 20: *Installing CA Certificates*. If you have not installed such a certificate, simply select the option *Ignore*.

Continue configuring the event.

Configuring Email Actions



The following data is required, in order to send emails:

1. The recipient's *Email* address.
2. Select the email *Account* that will be used to send the email. All the configured accounts are listed with the corresponding user- and server-names. Instructions for the configuration of email accounts are available in Chapter 13: *Email Configuration*.
3. The name of the *Template file* that defines the email's contents. A template entitled email.tpl is pre-installed, which will suffice for most uses. You can tailor this template to your specific needs or create a custom template later. Refer to Chapter 21: *Custom Templates* for detailed instructions.
4. Some templates require additional parameters. These input fields can remain empty for the standard template email.tpl.

Continue configuring the event.

Configuring a Signaler Action

Acoustic signals are only available on Querx WLAN models.

1. Select one of the pre-configured *Sounds*.
2. Optionally enter the desired sequence of notes in „scientific pitch notation“ for the option *Custom Sound*.

Continue configuring the event.

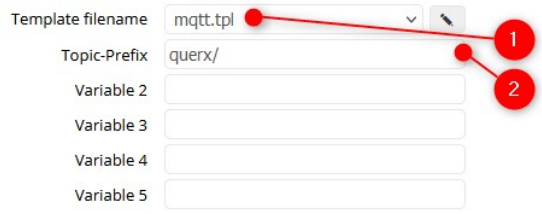
Configuring an SNMP Trap Action

A few details need to be entered to set up trap actions:

1. The *Trap receiver's* IP address or host name.
2. Change the *Trap community*, if it does not correspond to the default settings *public.*

Continue configuring the event.

Configuring an MQTT Action

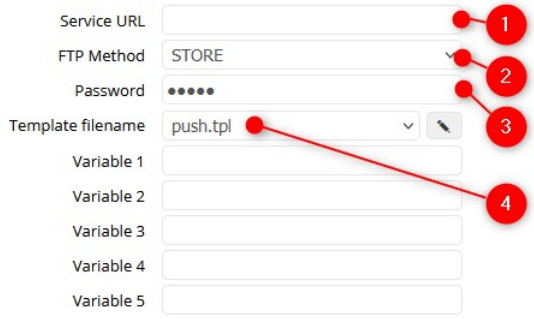


The MQTT network protocol is only supported by egnite Querx WLAN.

1. Name of the template file, refer to Chapter 21: *Custom Templates*. For now we will use the prepared file *mqtt.tpl.*
2. The *mqtt.tpl* template requires a Topic-Prefix. Enter the first part of the MQTT topic that will be visible to other users (subscribers). The system name and the sensor's name will be added to the prefix.

Continue configuring the event.

Configuring an FTP Action

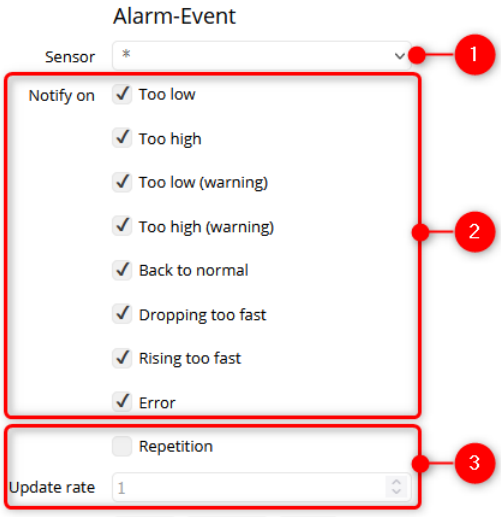


Querx WLAN can transmit data to an FTP server. This requires the following information:

1. The FTP endpoint's *Service-URL*, e.g. yourcloudservice.cloud/path/to/endpoint.
2. The *FTP Method* that the server uses for queries. Typically this is STORE.
3. The *Password* to access the FTP server.
4. Name of the template file and potentially one or more parameters. Refer to Chapter 21: *Custom Templates*.

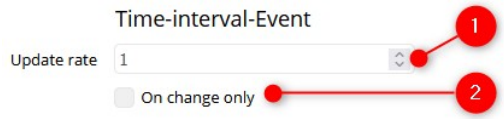
Continue configuring the event.

Cofiguring Sensor Alarm Events



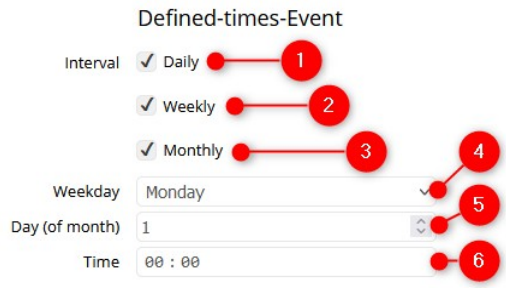
1. Alerts for all sensors (option *) or for one individual sensor can be considered.
2. Select the events that will be taken into account.
3. The event can be triggered repeatedly if transgressions persist. Optionally activate *Repetition* and specify the interval of the repetition in minutes.

Configuring Time interval Events



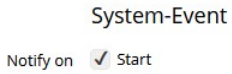
1. Specify the *Update rate* at which the event is triggered.
2. If the option *On change only* is activated, the event will only be triggered if the sensor data has changed since the last event.

Configuring Defined times Events



1. The event is triggered daily at the specified time.
2. The event is triggered weekly at the specified time on the specified weekday.
3. The event is triggered monthly at the specified time on a specific day of each month.
4. Select the *Weekday* for weekly events.
5. Select the *Day (of month)* for monthly events.
6. Specify the *Time*.

Configuring System Events



Currently, the only system event that is supported is booting.

Chapter 20: Installing CA Certificates

CA certificates can only be installed on egnite Qeuerx WLAN.

When establishing an encrypted connection to a configured email server or a cloud server, a certificate is transferred from the server. This is intended to ensure that this is the required server. In order to verify this, however, the certificate of the certification authority (CA) that is listed in the server's certificate is required. PC web browsers have certificates of far more than a hundred certification authorities pre-installed and update these periodically. This would be an unreasonably elaborate process for Querx.

Compared to a web browser, Querx will usually communicate with very few servers. Thus, it will suffice to save the certificates of a small number of certification authorities. These need to be saved in a file in the PEM format and installed as content on Querx. Since this is a text-file, it can be created with any text editor, e.g. Notepad.

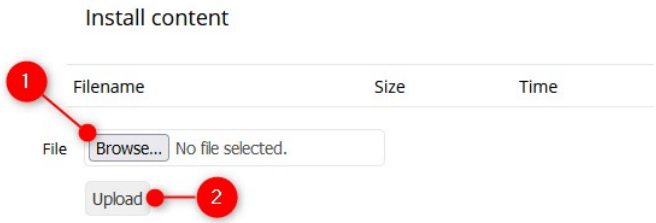
In order for Querx to recognize CA certificates, the first line needs to begin with add=, followed by the file path /ssl/ca.crt. The second line needs to be left blank. The full file might look like this:

```
add=/ssl/ca.crt


-----BEGIN CERTIFICATE-----
MIIFazCCA1OgAwIBA...
...4O3sBc0V2m2TgGI
-----END CERTIFICATE-----
```

Proceed as follows to install the file:

Open the configuration page *Maintenance / Firmware*.

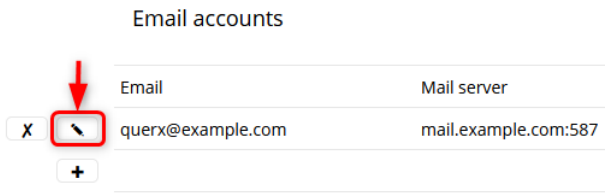


1. Click *Browse* in the section *Install content* to select the file that contains the certificate.
2. Click *Upload* to save the file in the device's internal memory.

After it has been successfully transferred, the file should appear in the list. The device then needs to be rebooted, as certificates are only recognized during the boot process.

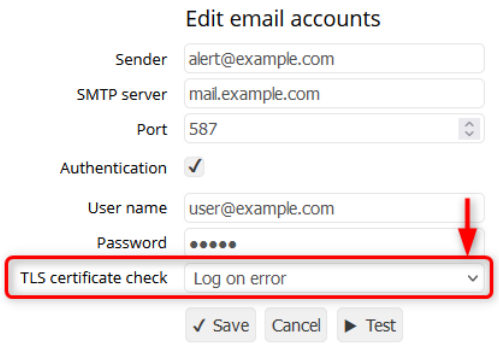
Activating Certificate Verification

Open the page *Interfaces / Email* to activate the certificate verification for the email account.

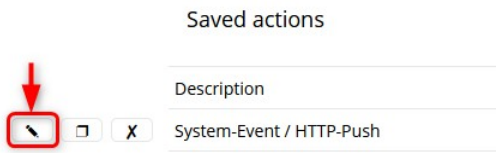


Click the *Edit* symbol next to the account that you want to edit in the section *Email accounts*.

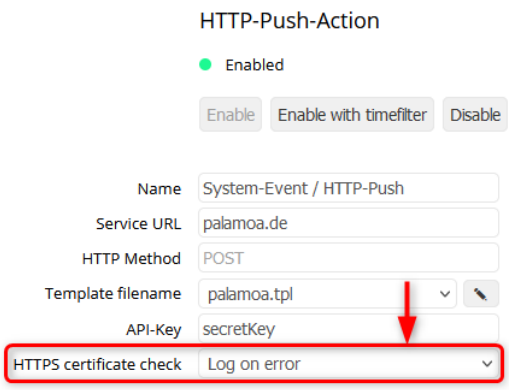
Select how the device will react when a certificate can not be verified. See below for more information.



Open the page *Interfaces / Actions* to activate certificate verification for a cloud server. Click the *Edit* symbol next to the action you want to edit in the section *Saved email actions*.



Select how the device should react when a certificate can not be verified.



You can select one of the following reactions:

- *Ignore*
  The certificate will not be checked.
- *Log Error*
  Faulty certificates trigger a syslog notification, but are tolerated. Additional information on syslog notifications is available in Chapter 17: *Configuring Syslog.*
- *Cancel on Error*
  In this case, faulty certificates will also trigger a syslog notification, but are not tolerated. Instead, the connection to the server will be aborted. Please note that CA certificates have am expiry date. If this option is selected, the certificate will need to be updated on time. Additionally, the server may begin using a certificate from a different CA, which will also prevent Querx from communicating with the server. Hence, you may want to evalute which situation is worse – sending a message to the wrong server or a message not arriving due to a faulty certificate.

Chapter 21: Custom Templates

egnite Querx needs to provide its data in a specific format, in order to communicate with other services, to ensure that they can interpret the information correctly.

In an email, for instance, data will be sent in a format that is readable by a human recipient. When sending data to cloud services, by contrast, some may require the XML format, while others work with the JSON format and in some cases data might need to be exported in the CSV format. Even the pages of the web interface are transmitted in a specific format that can be processed and displayed by the web browser.

egnite Querx can be tailored to suit these various requirements by the use of templates. These are text files that contain specific placeholders, such as *{{hostname}}*. This placeholder is replaced by the name of the current device, e.g. *querx000000*. The name could, of course, simply be entered directly without using a placeholder. However, if the name is ever changed, this would mean that all the templates would need to be updated. The use of placeholders also makes it possible to use identical files on multiple devices. Placeholders for current sensor data are even more useful. The template file

```
Relative humidity: {{sensortab_value.1}}%
```

for instance, will read as

```
Relative humidty: 53%
```

if the last humidity value was 53%. The firmware features a wide range of pre-installed templates. Additional custom templates can be installed on the device, which can be generated by any user or downloaded from the manufacturer's website. Downloaded or pre-installed templates can also be edited.

Output

The examples of placeholders given above, denoted by braces, are merely a simple type of output. Other placeholders can contain mahematical and boolean expressions with variables and constants. The output will be the result in the form of text.

If we use the values 40 and 8 for the variables var1 and var2, for instance, the template line

```
{{var1}} + {{var2}} = {{var1 + var2}}
```

will display

```
40 + 8 = 48
```

as the result.

12345	Constant number
'abc' or "abc"	Constant string
true or false	Boolean constant

Mathematical expressions can contain the following options:

exp1 + exp2	Addition
exp1 - exp2	Subtraction
exp1 * exp2	Multiplication
exp1 / exp2	Division
exp1 % exp2	Remainder

Additionally, various comparisons can be drawn, which will result in either 1 (true) or 0 (false):

exp1 == exp2	Result is 1, if exp1 equals exp2.
exp1 != exp2	Result is 1, if exp1 is unequal to exp2.
exp1 < exp2	Result is 1, if exp1 is smaller than exp2.
exp1 <= exp2	Result is 1, if exp1 is smaller than or equals exp2.
exp1 > exp2	Result is 1, if exp1 is larger than exp2.
exp1 >= exp2	Result is 1, if exp1 is larger than or equals exp2.
var in table	Result is 1, if table contains var

The results of comparisons can be linked logically:

exp1 and exp2	Result is 1, if both expression exp1 and expression exp2 are not zero.
exp1 or exp2	Result is 1, if either expression exp1 or expression exp2 or both are not zero.

Finally, the following two unary operations can also be applied:

-var	Mathematical negation
!var	Logic negation

The operations in combined expressions are listed in the following order:

1. Numeric and logic negations -a and !a.
2. Multiplications and divisions, a*b, a/b and a%b.
3. Addition and subtraction a+b and a-b.
4. Comparisons a==b, a!=b, a<b, a<=b, a>b and a>=b
5. Logic operation a and b and a or b

The usual parentheses can be used to designate a sequence.

Hence

```
-A * B + C == D and E
```

is identical to

```
((((-A) * B) + C) == D) and E
```

Commands

Commands are enclosed by braces with percent signs:

```
{% Kommando %}
```

The following commands can currently be used:

if, *elif*, *else* and *endif*	Skips lines within a template file,
for and *endfor*	Repeats lines within a template file,
use and *enduse*	Selects elements of a table,
set	Sets variables,
escape	Automatically replaces certain characters
option and endoption	Sets additional settings.

The following lines offer more details on the various commands.

if-command

This command makes it possible to skip specific lines within a template file if certain conditions are fulfilled or not fulfilled.

```
{% if expression %}
```

```
{% endif %}
```

The expression can be any required template expression, which is then reduced to true or false. All lines between the if command and endif are ignored if the expression is false.

The expression does not necessarily need to be a comparison. A simple variable, for instance, can suffice.

Value of the expresion	Boolean value.
Only digits, with alegbraic signs, if required	Only *false* if 0, otherwise always *true*.
Contains at least a character or a special sign	Always *true*.
Does not contain characters (empty string)	Always *false*.

There are some additional commands that can only be used between *if* and *endif*:

```
{% elif expression %}
{% else %}
```

elif can be used repeatedly, *else* can only be used in a single instance.

These commands are only executed if the preceding *if* command and all expressions of the preceding *elif* commands were false.

Depending on the contents of the ip variables, the following example outputs the text *localhost*, *broadcast* or *other* as an HTML paragraph.

```
{% if ip == '127.0.0.1' %}
  <p>localhost</p>
{% elif ip == '255.255.255.255' %}
  <p>broadcast</p>
{% else %}
  <p>other</p>
{% endif %}
```

for command

Multiple variables can be combined and organized in tables. A table of all sensors, for instance, might contain their respective names, thresholds and other parameters. The command *for* serves to execute loops for tables.

The table's name needs to be entered after the command *for*. This will execute all lines between *for* and *endfor* for each element of the specified table. Within these

lines, the values of individual elements of a table can be output.

The following example creates a list of all sensors with their current values:

```
<ul>
{% for sensortab %}
  <li>{{ sensortab_name }} {{ sensortab_value }}</li>
{% endfor %}
</ul>
```

use command

This command is similar to the *for* command. However, the lines between *use* and *enduse* are only executed once for a certain index of a table.

The following example will return the customer name in the fifth entry of a table of customers:

```
{% use sensortab[1] %}
  <span>{{ sensortab_name }} {{ sensortab_value }}</span>
{% enduse %}
```

It is also possible to access a value of a specific line in a table by adding a period, followed by a 0-based index to the name of the variable. The example

```
{{sensortab_value.0}}
```

will return the most recent value of the first sensor.

escape command

In some file formats, some characters can hold specific meanings. They need to be replaced by a different text, in order to return these characters as regular text without these meanings. The escape command can achieve this automatically for certain formats.

The following example will return the contact in a JSON document:

```
{%escape json%}
{
  "contact": "{{syscontact}}"
}
```

The JSON document would be invalid, if the web variable *syscontact* contained the character ". Using the *escape* command replaces the " by \".

The *escape* command will execute the current replacements until the next occurence of the *escape* command or until the end of the template. An *if* command can also be used to skip the *escape* command.

The following replacements can currently be used:

Name	Description
none	No characters will be replaced
json	The following escape sequences for JSON strings will be used: \n \r \t \\ \"
html	The symbols & < > " ' will be replaced by HTML entities.
url	URL encoding or percent encoding will be used.

option command

The *option* command can be used to configure additional settings for a template that are not part of the template's output. The *option* command contains the option's name. The *option* command is followed by the value and the *endoption* command.

The template's options depend on its application. Templates for actions can influence the settings page after selecting a template. The option *title1*, for instance, specifies the text that is used for the first variable:

```
{%option title1%}API-Key{%endoption-%}
```

The following options are available for templates for actions:

Name	Description
title1-title5	Returns the name for one respective variable.
num_variables	Specifies the number of variables that the settings page will display. Up to 5 are supported.
method	The HTTP method that is used for HTTP push if no other is specified.
url	The HTTP url that is used for HTTP push if no other is specified.
topic	Topic for MQTT actions.

Comments

All characters between *{#* and *#}* including the braces are ignored. This can be used to add comments to the template.

Omitting the End of a Line

Outputs, commands and comments can optionally include a – at the end. This omits all following spaces up to the end of the line, as well as the line break. Templates can thus be formatted to be more readable without superfluous lines in the output. Example:

{{syslocation-}}

{%if 1-%}

{%endif-%}

{#comment-#}

Functions

arg(argument)

The retrieval parameters of the template loader can be determined with the help of this function.

The parameter *argument* can either be a number that determines which GET parameter will be retrieved. Alternatively, the name of the GET parameter can be specified.

Table of Web Variables

The following tables contain all valid variables that can be used in templates.

The type of variable specifies the possible range of values or the possible number of characters that can be used.

Type	Range / Length
bool	0 or 1
check	"checked" or empty string
int8	-128 to 127
uint8	0 to 255
int16	-32768 to 32767
uin16	0 to 65535
int32	-2147483648 to 2147483647
uint32	0 to 4294967295
fixed	Number with a fixed number of decimal points

Type	Range / Length
char[x]	String with a maximal length of x
char[]	String of up to 128 characters
ts	Time stamp, seconds since 1/1/1970
date	Date in the configured format
time	Time in format hh:mm:ss
ip4	IP-Address in format 1.2.3.4

In general, a distinction is made between simple variables and tables. The prior are simply referenced by their names. Example:

```
{{fw_manufacturer}}
```

is replaced by the string

```
egnite
```

Variables that are organized in tables can additionally include an index, separated by a period. Example:

```
{{sensortab_name.1}}
```

is replaces by the name of the second sensor. The index 0, which can be omitted, is used for the first sensor. Both

```
{{sensortab_name.0}}
```

and

```
{{sensortab_name}}
```

will retrieve the name of the first sensor.

Simple Web Variables

Name	Type	Content
cmnty_read	char[15]	SNMP Community for read-only access
cmnty_write	char[15]	SNMP Community for write access
config_overflow	bool	Configuration memory too small
config_size	int32	The configuration's current size in bytes
config_upgrading	bool	Configuration incompatible with firmware version
config_usage	char[]	The configuration's current size in percent
cookie_ttl	int32	Time in seconds for which an inactive user will remain logged in, 0 for infinite
date_fmt	uint8	The date format's index
dev_type	char[]	Type of device, "CN", "PT", "TH" or "THP"
disc_ena	bool	Discovery feature active
disc_port	uint16	Port number for discovery feature

Name	Type	Content
dst_auto	bool	Automatic DST change active
dst_ena	bool	Summer time active
event_drop	char[15]	Text for state change "dropping"
event_error	char[15]	Text for state change "sensor error"
event_lolim	char[15]	Text for state change "low"
event_ok	char[15]	Text for state change "back to normal"
event_rise	char[15]	Text for state change "rising"
event_uplim	char[15]	Text for state change "high"
event_warn_lolim	char[15]	Text for state change "slightly low"
event_warn_uplim	char[15]	Text for state change "slightly high"
fail_bat	check	Internal battery depleted
fail_time	check	Current time unknown
fw_manufacturer	char[]	Producer of the active firmware
fw_name	char[]	Name of the active firmware
fw_name_type	char[]	Type of the active firmware
fw_version	char[]	Version of the active firmware
gmt_offset	int32	Difference between local time and UTC in seconds, including summer time, if active
histo_compr	bool	Data logger compression active
histo_flags	uint16	Flag for data logger Bit 0: Compression
histo_rate	uin32	Logging rate in seconds (only full minutes)
histo_rate_m	uint32	Loggin rate in minutes
histo_start	ts	Time stamp of the oldest recorded data
histo_time_d	uint32	Full days of the entire time frame of recorded data
histo_time_h	uint32	Hours past full days of the entire time frame of recorded data
histo_time_m	uint32	Minutes past full hours of the entire time frame of recorded data
histo_time_s	uint32	Seconds past full minues of the entire time frame of recorded data
histo_usage	int32	Current percentage of used memory for data
host_redir	char[]	Static IP address or <hostname>.local for HTTP forwarding
hostname	char[15]	Name of the device
http_port	uint16	HTTP port of the internal web server
https_ena	bool	HTTPS activated
https_port	uint16	HTTPS port of the internal web server
ipwatch_ena	bool	IP watchdog activated
lang	int32	Index of language settings 0: English 1: German
led_bra	uint16	Dimming level of LED in alert state
led_brn	uint16	Dimming level of LED in normal state
led_hs	uint8	Color of LED in alert state for sensor 2

Name	Type	Content
led_ps	uint8	Color of LED in alert state for sensor 4
led_rate	uint8	LED flash rate in normal state
led_tf	uint8	Color of LED for sensor error
led_ts	uint8	Color of LED in alert state for sensor 1
login_group	uint8	Login group of current user
login_user	char[15]	Name of current user
mac	char[]	Ethernet MAC of the device
mb_ena	check	Modbus activated
mb_wrprot	check	Modbus is read-only
memusage	char[]	Current usage of RAM in percent
mqtt_broker	char[63]	Host name or IP-Adresse of the MQTT broker
mqtt_client_id	char[23]	Client ID, that is sent to the broker
mqtt_ena	check	MQTT activated
mqtt_password	char[31]	Password for MQTT
mqtt_port	uint16	Port of the MQTT broker
mqtt_pub_time	uint16	Rate for MQTT PUBLISH in seconds
mqtt_topic_alert	char[63]	MQTT topic for PUBLISH for events
mqtt_topic_s1	char[63]	MQTT topic for PUBLISH for values of sensor 1
mqtt_topic_s2	char[63]	MQTT topic for PUBLISH for values of sensor 2
mqtt_topic_s3	char[63]	MQTT topic for PUBLISH for values of sensor 3
mqtt_topic_s4	char[63]	MQTT topic for PUBLISH for values of sensor 4
mqtt_user	char[31]	User for MQTT
netif	char[]	Active network interface, "ETH" or "WLAN"
ntp_retry	uint32	Repetition rate after failed SNTP query in seconds
ntp_update	uint32	Cycle time for SNTP queris in seconds
ntpd	char[31]	NTP server's host name or IP address
os_name	char[]	Name of operating system
os_version	char[]	Version of operating system
reg1	int32	Numeric register free usage
reg2	int32	Numeric register free usage
reg3	int32	Numeric register free usage
reg4	int32	Numeric register free usage
reg5	int32	Numeric register free usage
reg6	int32	Numeric register free usage
reg7	int32	Numeric register free usage
reg8	int32	Numeric register free usage
reg9	int32	Numeric register free usage
rega1	char[128]	Alphanumeric register free usage
rega2	char[128]	Alphanumeric register free usage
rega3	char[128]	Alphanumeric register free usage

Name	Type	Content
rega4	char[128]	Alphanumeric register free usage
reset_req	bool	Reboot required
sensor_rate	uint16	Sensor query-rate in seconds
snmp_ena	check	SNMP activated
snmp_port	uint16	SNMP agent's port
snmp_wrprot	check	SNMP is read-only
snmpd	char[]	SNMP server's host name or IP address
support_tpl_options	bool	Always 1 for firmware that supports the template command option
syscontact	char[63]	Content of SNMP OID 1.3.6.1.2.1.1.4
sysdate	date	Current date (local)
sysgmdate	date	Current date (UTC)
sysgmtime	time	Current time (UTC)
syslocation	char[63]	Content of SNMP OID 1.3.6.1.2.1.1.6
syslog	char[31]	Syslog server's host name or IP address
systime	time	Current time (local)
systimestamp	ts	Time stamp of current local time
timezone	char[]	Time zone in hours and minutes
trap_ena	bool	SNMP traps activated
tz_bias	int32	Difference between selected time zone and UTC in seconds
tz_idx	int32	Index of selected time zone
uptime	uint32	Time since boot in days, hours, minutes and seconds
uptime_d	char[]	Full days since last boot
uptime_h	char[]	Hours past full days since last boot
uptime_m	char[]	Minutes past full hours since last boot
uptime_s	char[]	Seconds past full minute since last boot
wlan_dis	bool	WiFI deactivated
wlan_name	char[]	Name of WiFi network (SSID)
wlan_pass	char[]	Passphrase for Wifi network
wlan_secu	int32	Security of WiFi network 0: Unknown 1: WEP-OPEN 2: WEP-PSK 3: WEP-SHARED 4: WPA-PSK-TKIP 5: WPA-PSK-AES 6: WPA2-PSK-AES 7: WPA2-PSK-TKIP 8: WPA2-PSK-MIXED

Table actiontab

The *actiontab* table contains the configured actions. The variables *actiontab_type* and *actiontab_event_type* define the type of action and event. The meaning of other variables depends on these two variables.

Name	Type	Content
actiontab_alarm	uint32	Activated alert ebents: Bit 0: back to normal Bit 1: too low Bit 2: too high Bit 4: falling too rapidly Bit 5: rising too rapidly Bit 6: error Bit 8: too low (warning) Bit 9: too high (warning)
actiontab_alarm_repeat	check	Repetition activated
actiontab_count	uint32	Number of configured actions
actiontab_ena	bool	Action activated
actiontab_event_type	uint32	Type of event
actiontab_event_typedesc	char[]	Type of event as text
actiontab_flags	uint32	Various settings that are accessible via other variables as bits
actiontab_interval_changeonly	check	Time interval event only for changing data
actiontab_ivar1	uint32	Index of sound for sound event SNMP version for SNMP trap event
actiontab_method	char[]	Type of HTTP query, e.g. POST Specific sound for sound event
actiontab_name	char[]	Name of action
actiontab_password	char[]	Password for FTP action
actiontab_rate	uint32	Update rate for the time interval event and repetition of alert event in seconds (only full minutes)
actiontab_rate_m	uint32	Update rate for the time interval event and repetition of alert event in minutes
actiontab_regular_daily	check	Daily timed event activated
actiontab_regular_mday	uint32	Day of the month for timed event
actiontab_regular_monthly	check	Monthly timed event activated
actiontab_regular_time	time	Time of day for timed event
actiontab_regular_weekday	uint32	Day of the week for weekly timed event
actiontab_regular_weekly	check	Weekly timed event activated
actiontab_sensor_filter	uint32	Incex of the sensor for which alert events are active, beginning with 1 or 0 for all sensors
actiontab_smtp1_ena	check	First mail account activated
actiontab_smtp2_ena	check	Second mail account activated
actiontab_systemevent_flags	uint32	Activated system events: Bit 0: System boot
actiontab_timefilter	check	Time filter activated
actiontab_timefilter_from	time	Starting point of time filter
actiontab_timefilter_to	time	Ending point of time filter
actiontab_timefilter_weekdays	uint32	Day of the week for which the time filter is active
actiontab_tls_flags	uint32	Reaction to wrong certificate by server (for HTTP push)
actiontab_tpl	char[]	Name of template
actiontab_type	uint32	Type of action

Name	Type	Content
actiontab_typedesc	char[]	Type of action as text
actiontab_url	char[]	URL / mail address of recipient
actiontab_var1	char[]	First variable for template
actiontab_var2	char[]	Second variable for template
actiontab_var3	char[]	Third variable for template
actiontab_var4	char[]	Fourth variable for template
actiontab_var5	char[]	Fifth variable for template

Caltab Table

The *caltab* table contains the saved configuration.

Name	Type	Contents
caltab_date	date	Date on which the configuration was saved
caltab_gain	fixed	Factor by whcih the measured sensor value is multiplied
caltab_meas_hi	fixed	Sensor value at the upper reference point
caltab_meas_lo	fixed	Sensor value at the lower reference point
caltab_note	char[]	Free text concerning calibration or adjustment
caltab_offset	fixed	Zero offset of sensor values
caltab_ref_hi	fixed	Upper reference point for calibration
caltab_ref_lo	fixed	Lower reference point for calibration
caltab_sensor	uint32	Index of calibrated sensor
caltab_tstamp	ts	Timestamp of calibration (UTC)

Eventtab Table

The *eventtab* table contains the 16 most recent sensor events.

Name	Type	Contents
eventtab_date	date	Date of event (local time)
eventtab_event	char[15]	Event as text
eventtab_gmdate	date	Date of event (UTC)
eventtab_gmtime	time	Time stamp of event (UTC)
eventtab_sensor	uint32	Index of sensor
eventtab_sensorname	char[31]	Name of sensor
eventtab_time	time	Time of event (local time)
eventtab_timestamp	ts	UTC time stamp of event
eventtab_type	uint8	Type of event
eventtab_value	char[]	Sensor value of event with unit
eventtab_value_raw	char[]	Sensor value of event without unit

Filetab table

The *filetab* table contains the installed content files.

Name	Type	Contents
filetab_date	date	Date on which the content file was uploaded
filetab_name	char[]	Name of content file
filetab_path	char[]	Path of content file
filetab_size	uint32	Size of content file in Bytes
filetab_time	time	Time of last change to content file

Fwtab Table

The *fwtab* table contains information about the two firmware buffers.

Name	Type	Contents
fwtab_manufacturer	char[15]	Manufacturer of firmware
fwtab_name	char[15]	Name of firmware
fwtab_requires_config_reset	bool	Firmware uses incompatible configuration
fwtab_valid	check	Buffer contains valid firmware image
fwtab_version	char[]	Firmware version

Histotab Table

The *histotab* table contains the results of the most recently queried history. The table is generated dynamically from the parameters of the query. The calculated dew-point is not saved in the history and is not treated as a sensor. Therefore, sensor 3 in *histotab* corresponds to sensor 4 in *sensortab*.

Name	Type	Contents
histotab_date	date	Date of measurement (local time)
histotab_flags	uint16	Sensor state Bit 0: Sensor 1 lower threshold Bit 1: Sensor 1 upper threshold Bit 2: Sensor 1 alert for falling values Bit 3: Sensor 1 alert for rising values Bit 4: Sensor 3 lower threshold Bit 5: Sensor 3 upper threshold Bit 6: Sensor 3 error Bit 7: Sensor 1 error Bit 8: Sensor 2 lower threshold alert Bit 9: Sensor 2 upper threshold alert Bit 10: Sensor 2 alert for falling values Bit 11: Sensor 2 alert for rising values Bit 12: Sensor 3 alert for falling values Bit 13: Sensor 3 alert for rising values Bit 14: First value after system boot Bit 15: Sensor 2 error
histotab_gmdate	date	Date of measurement (UTC)
histotab_gmtime	time	Time of measurement (UTC)
histotab_s1_avg	fixed	Average value sensor 1
histotab_s1_hi	fixed	Maximal value sensor 1
histotab_s1_lo	fixed	Minimal value sensor 1
histotab_s2_avg	fixed	Average value sensor 2

Name	Type	Contents
histotab_s2_hi	fixed	Maximal value sensor 2
histotab_s2_lo	fixed	Minimal value sensor 2
histotab_s3_avg	fixed	Average value sensor 3
histotab_s3_hi	fixed	Maximal value sensor 3
histotab_s3_lo	fixed	Minimal value sensor 3
histotab_time	time	Time of measurement (local time)
histotab_timestamp	ts	Time stamp of measurement (UTC)

Logtab Table

The *logtab* table contains the 8 most recent syslog notifications.

Name	Type	Contents
logtab_date	date	Date of event
logtab_msg	char[]	Syslog notification
logtab_time	time	Time of event
logtab_timestamp	ts	Time stamp of event

Netiftab Table

The *netiftab* table contains information about the two network interfaces.

Name	Type	Contents
netiftab_cdns_ip	ip4	Configured static IP address of primary DNS server
netiftab_cdns_ip_sec	ip4	Configured static IP address of secondary DNS server
netiftab_cip_addr	ip4	Configured static IP address
netiftab_cip_gate	ip4	Configured static IP address of gateway
netiftab_cip_mask	ip4	Configured static subnet mask
netiftab_dhcp_dis	bool	DHCP deactivated
netiftab_disc_ena	check	Discovery activated
netiftab_disc_port	uint16	Port for Discovery
netiftab_dns_ip	ip4	Current IP address of primary DNS server
netiftab_dns_ip_sec	ip4	Current IP address of secondary DNS server
netiftab_dns_manu	bool	Manual DNS IP address activated
netiftab_flags	uint32	Bit flags for activations Bit 0: Discovery Bit 3: WiFi Bit 4: DHCP Bit 5: MDNS
netiftab_ip_addr	ip4	Current IP address
netiftab_ip_gate	ip4	Gateway IP address
netiftab_ip_manu	bool	Manual IP configuration activated
netiftab_ip_mask	ip4	IP network mask
netiftab_llmnr_ena	bool	LLMR activated
netiftab_mac	char[]	MAC address

Name	Type	Contents
netiftab_mdns_ena	bool	MDNS activated
netiftab_syslog	char[]	Syslog server host name or IP address
netiftab_syslog_port	uint16	Port number of Syslog server

Sensortab Table

The *sensortab* table contains information on up to 4 sensors.

Name	Type	Contents
sensortab_alert	uint32	Bits for activate alerts
sensortab_alert_fd	bool	Alerts for falling values activated
sensortab_alert_hi	bool	Alerts for upper threshold value activated
sensortab_alert_lo	bool	Alerts for lower threshold value activated
sensortab_alert_rd	bool	Alerts for rising values activated
sensortab_alt	int16	Altitude of the device in meters above sea level
sensortab_chart_color	uint32	Index for the graph's colors
sensortab_chart_color_html	char[]	Graph's colors as HTML color string
sensortab_chip	char[]	Sensor type if dynamically detected: Currently SI7021, SHT3X, LPS22 or BME280
sensortab_delay	uint32	Alert delay in seconds
sensortab_fdlim	fixed	Limit for falling sensor values
sensortab_fdtim	int32	Time for falling sensor values in minutes
sensortab_gain	fixed	Factor by which the meausred sensor values are multiplied
sensortab_hyst	fixed	Dead-band for sensor alerts
sensortab_led_color	int32	LED color for this sensor's alerts
sensortab_lim_hi	fixed	Sensor's upper alert threshold
sensortab_lim_lo	fixed	Sensor's lower alert threshold
sensortab_meas_hi	fixed	Sensor value at upper reference point of last calibration
sensortab_meas_lo	fixed	Sensor value at lower reference point of last calibration
sensortab_mode	uint32	Special mode of sensor
sensortab_mode_3wire	bool	Three-wire sensor activated
sensortab_mode_60hz	bool	60Hz filter activated
sensortab_mode_dps	bool	Dew-point difference activated
sensortab_mode_xres	bool	Enhanced resolution activated
sensortab_name	char[]	Name of sensor
sensortab_note	char[]	Notes on last calibration
sensortab_offset	fixed	Offset that is added to the measured sensor values
sensortab_rdlim	fixed	Limit for rising sensor values
sensortab_rdtim	int32	Time for rising sensor values in minutes
sensortab_ref_hi	fixed	Upper reference point of last calibration
sensortab_ref_lo	fixed	Lower reference point of last calibration
sensortab_rngauto	check	Automatically adapt graph if unequal 0

Name	Type	Contents
sensortab_rngmax	fixed	Value range maximum for graph
sensortab_rngmin	fixed	Value range minimum for graph
sensortab_serialnumber	char[]	Serial number of sensor
sensortab_status	int32	Current sensor status Bit 0: Lower limit alarm Bit 1: Upper limit alarm Bit 2: Falling limit alarm Bit 3: Rising limit alarm Bit 7: Sensor error
sensortab_unit	char[]	Unit of value as text with HTML entities. Always %rh for humidity and °C, °F or K for tempertarues, depending on sensortab_userunit.
sensortab_unit_fract	Int32	Exponent of decimal fraction for display, also equals the number of decimal points
sensortab_unit_period	int32	Time factor for time unit in seconds, e.g. 3600 for kWh
sensortab_unit_pulses	int32	Number of pulses per unit
sensortab_unit_utf8	char[]	Unit of measurements as text in UTF8. Always %RH for humidity; for temperatures either °C, °F or K, depending on sensortab_userunit
sensortab_userunit	char[1]	Configurable unit
sensortab_value	fixed	Current value measured by sensor
sensortab_value_ex	fixed	Current value measured by sensor in enhanced resolution
sensortab_warn_delay	uint32	Delay of sensor warning in seconds
sensortab_warn_hyst	fixed	Dead-band for sensor warnings
sensortab_warn_lim_hi	fixed	Upper alert threshold for sensor warnings
sensortab_warn_lim_lo	fixed	Lower alert threshold for sensor warnings

Smtptab Table

The *mailtab* table contains information on both email servers.

Name	Typ	Contents
smtptab_auth	check	Authentication active
smtptab_hostname	char[]	Name of the SMTP server
smtptab_login	char[]	Login name
smtptab_password	char[]	Login password
smtptab_port	uint16	SMTP server port
smtptab_sender	char[]	Sender address
smtptab_tls_flags	uint32	Reaction to invalid server certificate

Usrtab Table

The *usrtab* table contains information on the four users supported by Querx.

Name	Typ	Contents
usrtab_group	uint8	Index of the user's group
usrtab_name	char[]	User name

Name	Typ	Contents
usrtab_password	char[]	Password
usrtab_password_check	char[]	Passwort for verification

Wifitab Table

The *wifitab* table contains information on all discovered WiFi networks.

Name	Typ	Contents
wifitab_level	int32	Signal strength or 0 for blank entry
wifitab_name	char[]	Name of network
wifitab_security	int32	Security type supported by network (also see web variable wifit_secu)

Chapter 22: Maintenance

Adjusting and Calibration

Integrated sensors, as used in the TH and THP models, are usually produced according to high tolerances. In order to achieve the required accuracy, they are calibrated ex works.

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

DakkS (German accreditation body) calibration certificates are available as an accessory for all devices for applications that require sensors whose calibration can be traced for the purposes of quality assurance. Such traceabilty is not required for most applications. For such cases we offer the cheaper factory calibration, which is also referred to as ISO calibration.

Further information on this is available from the product page at www.egnite.de. We will also gladly advise you on this personally.

Please note the difference between calibration and adjustment. Calibration certifies the current state of a device. This does not entail an adjustment or correction. If you send us a device for calibration, the sensor is initially checked. In the case of larger deviations we suggest replacing the sensor instead of adjusting it after further inquiry.

Customers who wish to calibrate a device themselves can, however, also adjust it. The adjustment function serves to correct the values measured by Querx, which do not correspond to the actual values.

A reference device, whose measurements' accuracy you are confident in, is required to determine the actual current values. Ideally this should be a device with a traceable calibration whose deviation you know.

Manual Adjustment with Offset

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

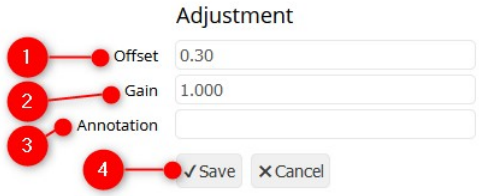
In order to adjust your Querx by this method, please take the following steps:

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*.

Click the *Adjustment* button.



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.

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.

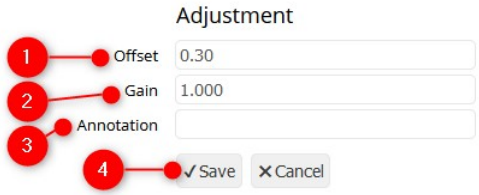
In order to calculate gain and offset, please apply the values of two measurement points to the following formulas:

Gain	(T2 - T1) / (M2 - M1)
Offset	T1 - 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*.



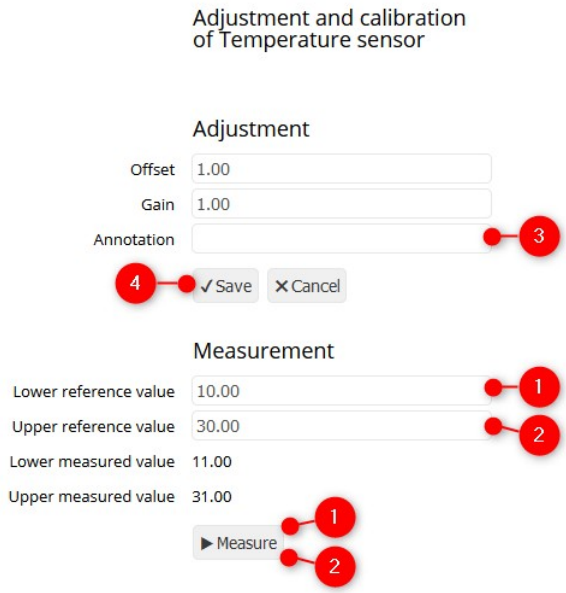
1. Enter the calculated value into the input field *Offset*.
2. Enter the calculated value into the input field *Gain*.
3. Leave the input field *Annotation* empty.
4. Click *Save* to apply the offset and gain to all future measurements.

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, Sensors / Humidity or Sensors / Air Pressure* in the Querx configuration area.



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.

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.

Configuration Backup and Restoration

The configuration can be saved on your PC (export), in order to save it or apply the same settings to several devices either fully or partially (import).

The backup file is a text file that can be edited with a simple text editor (e.g. Notepad). Each line contains a key/value in the shape

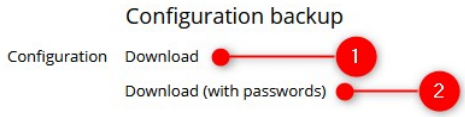
```
key=value
```

The keys correspond to the web variables. A table of all web variables is available in Chapter 21: *Table of Web Variables*.

The file can be exported without including any login data, as it can be viewed by anyone. When such a file is used to restore a configuration, this data will need to be re-entered manually.

Exporting the Configuration

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



1. Click the button *Download* in the *Configuration backup* section, in order to save the configuration without login data.
2. If you wish to download the configuration file including the login data, click the button *Download (with passwords)* instead.

Depending on the web browser you are running, a window that lets you specify a directory on your local drive to which the file will be saved will open. The file name is preset to the system name with the suffix *.qini*.

Restoring the Configuration

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

1. Click the *Backup file* button in the section *Restore configuration* and select the configuration file that you intend to activate from the dialog box. The button's label depends on the browser you are using.
2. Click *Upload*.

Finally, restart Querx via the web interface as detailed in Chapter 22: *Soft Boot*.

Firmware-Updates

The manufacturer occasionally makes new firmware versions 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.

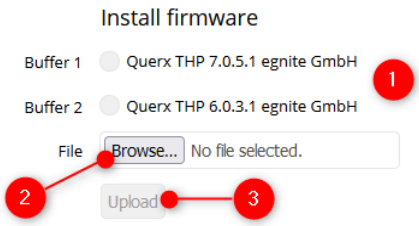
https://www.egnite.de/support-en/firmware/

Querx can store two firmware images in two separate buffers. The software is copied into the internal memory and will be booted, if the corresponding buffers is activated.

Installing Firmware Images

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

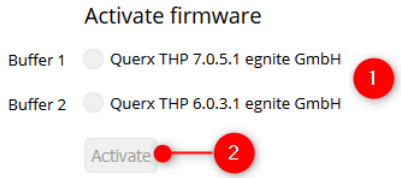
The firmware that your device is currently running is displayed in the *Firmware* field of the section *Version*. An update may be advisable, if this version of the firmware is older than the latest one available from the manufacturer.



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 *Browse* in the field *File* and select the firmware image that you want to install.
3. Click *Upload* to save the firmware image in the selected buffer.

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.

Activating an Alternative 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 require a biro. Some biros' tips are not thin enough to press the button. In such cases, please use a thinner biro or a toothpick.

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.

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*.

In default settings, the events are displayed in English and correspond to the texts specified for emails, as described in Chapter 13: *Email Configuration*.

Rebooting the System

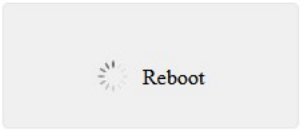
There are two different ways of rebooting egnite Querx – via the web interface (soft boot) or by interrupting the power supply (cold boot).

Please note that Querx logs every reboot along with the data its sensors measures. They are visualized as vertical lines in the line graph (see the section *Line Graph*).

Soft Boot

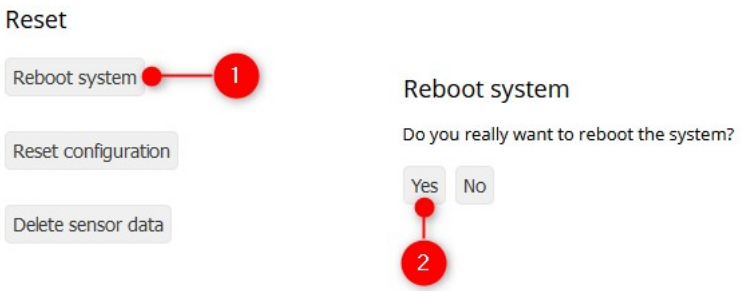
It is sometimes required to reboot the device after changing settings. After saving such changes, the following notification is displayed in the upper part of the configuration area.

If you need to make further changes to the configuration, you can make them before rebooting the system. Once you have made all the required changes, click *Reboot System*, in order to perform the reboot.



After a little while, the connection to the web interface will be re-established automatically. However, this does not always work, for instance after changing from HTTP to HTTPS or changing the IP address. In such cases, please enter the new URL in the web browser.

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.

Reboot when Establishing an Ethernet Connection

egnite Querx can function as a data logger when it is not connected to a network. The tracked data can be retrieved at a later date, when the connection is re-established.

If an Ethernet cable is plugged into a running device, it will reboot. A reboot will also be triggered if the connection is interrupted and re-established at a different point. A further cause for a reboot could also be a temporary loss of power of the connected Ethernet switch.

Resetting the Configuration

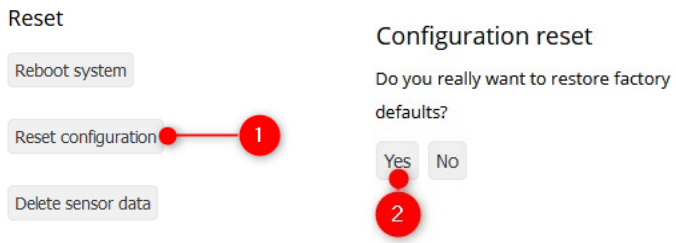
There are two ways of resetting the configuration to the factory settings, via the web interface or a hardware button.

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.

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.

The device will now reboot with the ex works configuration active.

The web browser will try to reach the device via the address previously used. If this does not work, please proceed as detailed in Chapter 3: *Initial Setup* to re-establish the connection.

Performing a Hardware Reset

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

You will require a biro. Some biros' tips are not thin enough to press the button. In such cases, please use a thinner biro or a toothpick.

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.

Querx will now reboot with the factory settings.

Cleaning

Disconnect the device from the power supply before cleaning it. You can carefully wipe the device down with a piece of soft, lint-free cotton cloth.

Should this not suffice, you can slightly damp the cloth with water before wiping the device down. In such a case, please ensure that the device has fully dried before reconnecting it to the power supply.

Please be aware that fumes from solvents can cause lasting damage to the sensors installed on Querx TH and THP. In case your device is heavily stained, we recommend sending it in for servicing.

Changing the Battery

Querx requires the current time and date, in order to log the data it measures. This data is queried from the configured time server after booting the device and then used to update the internal real-time clock.

If the time server can not be reached, for instance due to a network error, Querx is fitted with a battery that is used to operate the internal clock in the case of a power shortage.

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).

Querx WLAN additionally uses the battery for the authentication for SNMPv3. See *Chapter 16: Activating the SNMPv3 Agent* for additional information.

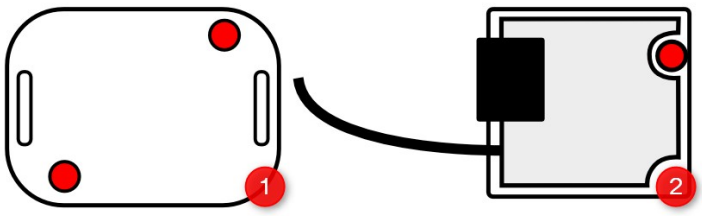
The battery should be changed every five years if the device is not connected to a power source, e.g. during storage. A notification appears in the lower left corner of the web interface if the battery's charge reaches critical levels.

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

In order to change the battery you will need:

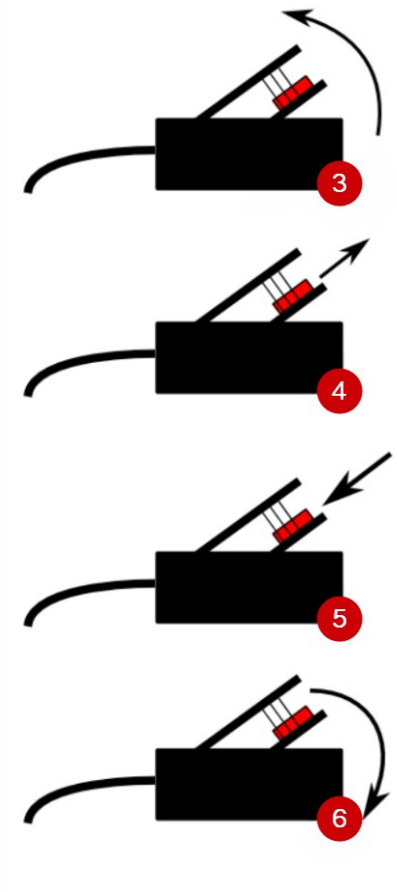
- Two Phillips screwdrivers, sizes PH0 and PH1
- A replacement battery, type Renata CR1225

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.



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.

Chapter 23: Specifications

egnite Querx TH

Temperature sensor	
Measurement range	-40 °F to 185 °F -40 °C to 85 °C
Initial accuracy	±1.8°F (over 32 to 149°F) ±1.0°C (over 0 to 65°C)
Resolution	0.1 °F 0.1 °C
Long-term stability	Typ. ±30 mK / year
Humidity sensor	
Measurement range	0 to 100 % RH at 32 to 140 °F (0 to 60 °C)
Initial accuracy	±3 % RH at 20 to 80 % RH and 77 °F (25 °C) ±1 % RH hysteresis at 77 °F (25 °C)
Resolution	1 % rF
Long term stability	Typ. 0.5 % per year at 10 to 90 % RH and 77 °F (25 °C)
Hardware and interfaces	
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
Security	TLS (limited), user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	73700 entries, sufficient for at least 51 days
M2M interfaces	HTTP, Modbus/TCP, MQTT, SNMPv1
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	Status LED
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via micro-USB
Power consumption	Typ. 120 mA, 0.6 W Max. 200 mA, 1 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.2 x 1.6 x 0.8 in (56 x 40 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.07 lb (35 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting

Certification	
Calibration	DAkkS or ISO certificates for temperature and humidity optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

egnite Querx WLAN TH

Temperature sensor	
Measurement range	-40 °F to 185 °F -40 °C to 85 °C
Initial accuracy	±1.8°F (over 32 to 149°F) ±1.0°C (over 0 to 65°C)
Resolution	0.1 °F 0.1 °C
Long-term stability	Typ. ±30 mK / year
Humidity sensor	
Measurement range	0 to 100 % RH at 32 to 140 °F (0 to 60 °C)
Initial accuracy	±3 % RH at 20 to 80 % RH and 77 °F (25 °C) ±1 % RH hysteresis at 77 °F (25 °C)
Resolution	1 % rF
Long term stability	Typ. 0.5 % per year at 10 to 90 % RH and 77 °F (25 °C)
Hardware and interfaces	
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
WLAN	2.4 GHz IEEE 802.11 b/g/n
Security	WEP, WPA, WPA2, TLS 1.2, provision and verification of certificates, user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	4 million entries, sufficient for at least 7 years
M2M interfaces	HTTP/S, Modbus/TCP, MQTT, SNMPv1/v3, FTP
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	RGB LED, beeper
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via Micro-USB
Power consumption	Typ. 200 mA, 1 W Max. 300 mA, 1,5 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.6 x 2 x 0.8 in (66 x 50 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.2 lb (63 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting

Certification	
Calibration	DAkkS or ISO certificates for temperature and humidity optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
ETSI	EN 300 328, Ver. 1.8.1 EN 301.489 - 17
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

egnite Querx THP

Temperature sensor	
Measurement range	-40 °C to 85 °C -40 °F to 185 °F
Initial accuracy	±1,0°C (0 to 65°C) ±1,8°F (32 to 149°F)
Resolution	0,1 °C 0,1 °F
Long term stability	Typisch ±30 mK / Jahr
Humidity sensor	
Measurement range	0 to 100 % RH at 32 to 140 °F (0 to 60 °C)
Initial accuracy	±3 % RH at 20 to 80 % RH and 77 °F (25 °C) ±1 % RH hysteresis at 77 °F (25 °C)
Resolution	1 % rF
Long term stability	Typ. 0.5 % per year at 10 to 90 % RH and 77 °F (25 °C)
Air pressure sensor	
Measurement range	300 to 1100 hPa
Initial accuracy	±2 hPa at 800 to 1100 hPa and 32 to 149 °F (0 to 65 °C)
Resolution	0.1 hPa
Long term stability	Typ. ±1 hPa per year
Hardware and interfaces	
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
Security	TLS (limited), user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	36800 entries, sufficient for at least 25 days
M2M interfaces	HTTP, Modbus/TCP, MQTT, SNMPv1
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	Status LED
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via micro-USB
Power consumption	Typ. 120 mA, 0.6 W Max. 200 mA, 1 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH

Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.2 x 1.6 x 0.8 in (56 x 40 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.07 lb (35 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting
Certification	
Calibration	DAkkS or ISO certificates for temperature and humidity optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

egnite Querx WLAN THP

Temperature sensor	
Measurement range	-40 °C to 85 °C -40 °F to 185 °F
Initial accuracy	±1,0°C (0 to 65°C) ±1,8°F (32 to 149°F)
Resolution	0,1 °C 0,1 °F
Long term stability	Typisch ±30 mK / Jahr
Humidity sensor	
Measurement range	0 to 100 % RH at 32 to 140 °F (0 to 60 °C)
Initial accuracy	±3 % RH at 20 to 80 % RH and 77 °F (25 °C) ±1 % RH hysteresis at 77 °F (25 °C)
Resolution	1 % rF
Long term stability	Typ. 0.5 % per year at 10 to 90 % RH and 77 °F (25 °C)
Air pressure sensor	
Measurement range	300 to 1100 hPa
Initial accuracy	±2 hPa at 800 to 1100 hPa and 32 to 149 °F (0 to 65 °C)
Resolution	0.1 hPa
Long term stability	Typ. ±1 hPa per year
Hardware and interfaces	
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
WLAN	2.4 GHz IEEE 802.11 b/g/n
Security	WEP, WPA, WPA2, TLS 1.2, provision and verification of certificates, user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	2 million entries, sufficient for at least 3 years
M2M interfaces	HTTP/S, Modbus/TCP, MQTT, SNMPv1/v3, FTP
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	RGB LED, beeper
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via Micro-USB
Power consumption	Typ. 200 mA, 1 W Max. 300 mA, 1,5 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH

Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.6 x 2 x 0.8 in (66 x 50 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.2 lb (63 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting
Certification	
Calibration	DAkkS or ISO certificates for temperature and humidity optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
ETSI	EN 300 328, Ver. 1.8.1 EN 301.489 - 17
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

egnite Querx PT100 / PT1000

Hardware and interfaces	
Sensor port	2-, 3- and 4-wire
Measuring range	-328 to 1382 °F (-200 to 750 °C)
Accuracy	±0.9 °F (±0.5 °C)
Resolution	0.1 °F (0.1 °C)
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
Security	TLS (limited), user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	73700 entries, sufficient for at least 51 days
M2M interfaces	HTTP, Modbus/TCP, MQTT, SNMPv1
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	Status LED
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via micro-USB
Power consumption	Typ. 120 mA, 0.6 W Max. 200 mA, 1 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.2 x 1.6 x 0.8 in (56 x 40 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.07 lb (35 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting
Certification	
Calibration	DAkkS or ISO certificates optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

egnite Querx WLAN PT100 / PT1000

Hardware and interfaces	
Sensor port	2-, 3- and 4-wire
Measuring range	-328 to 1382 °F (-200 to 750 °C)
Accuracy	±0.9 °F (±0.5 °C)
Resolution	0.1 °F (0.1 °C)
Ethernet	10/100 Mbit RJ45, HP Auto-MDIX, static or dynamic IP (DHCP, mDNS)
WLAN	2.4 GHz IEEE 802.11 b/g/n
Security	WEP, WPA, WPA2, TLS 1.2, provision and verification of certificates, user management (3 users / 3 groups)
Firmware updates	Via web interface, recovery feature
Data memory	4 million entries, sufficient for at least 7 years
M2M interfaces	HTTP/S, Modbus/TCP, MQTT, SNMPv1/v3, FTP
Web interface	Interactive diagram, live update, data export
Email	Up to 4 recipients and 2 SMTP servers
Signaller	RGB LED, beeper
Time / Date	Real-time clock with battery backup and SNTP update
Supply voltage	5 V DC via Micro-USB
Power consumption	Typ. 200 mA, 1 W Max. 300 mA, 1,5 W
Ambient conditions	
Operation	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Storage	-40 to 185 °F (-40 to 85 °C) Max. 95 % RH
Mechanical data	
Casing material	ABS plastic, black, RAL 9011
Casing dimensions	2.6 x 2 x 0.8 in (66 x 50 x 21 mm)
Sensor cable	13.4 in (340 mm)
Weight	0.2 lb (63 g)
Connectors	RJ45 (Ethernet), Micro-USB
Installation	Wall mounting
Certification	
Calibration	DAkkS or ISO certificates optionally available
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
Emitted interference	EN 61326-1:2013 Class B EN 55011:2011
ETSI	EN 300 328, Ver. 1.8.1 EN 301.489 - 17
Flammability rating	UL94V-0
Protection class	IP20
RoHS standard	EU Direktive 2011/65/EU

Chapter 24: Miscellaneous

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