W&T

www.WuT.de

Manual

Installation, Startup and Applications

Thermo-Hygrometer SPE

valid for models:

#57723	Thermo-Hygrometer SPE
#57723 TB901191	Thermo-Hygrometer SPE

Release 1.12 02/2025

Subject to errors and changes:

As we can make mistakes, none of our statements may be used without verification. Please notify us of any errors or misunderstandings you become aware of so thatwe can identify and correct them as quickly as possible.

Only carry out work on or with W&T products if it is described here and you have read and understood the instructions in full. Unauthorized actions can cause hazards. We are not liable for the consequences of unauthorized actions. If in doubt, please ask us or your dealer again!

Content

1. Legal information

Warning concept

This manual contains instructions that must be followed for your personal safety and to avoid property damage. The instructions are highlighted by a warning triangle. Depending on the level of risk, the warnings are displayed in descending order of priority as follows:

⚠DANGER

indicates a hazard that will result in death or serious injury if proper precautions are not taken.

⚠WARNING

indicates a hazard that could result in death or serious injury if proper precautions are not taken.

⚠CAUTION

indicates a hazard that could result in minor physical injury if proper precautions are not taken.

⚠ATTENTION

indicates a hazard that can result in material damage if appropriate precautions are not taken.

If there are several hazard levels, the warning of the highest level is always used. If a warning notice with a warning triangle warns of personal injury, a warning of property damage may also be included in the same warning notice.

Qualified personnel

The product described in these instructions may only be installed and commissioned by personnel who are qualified for the task in question.

The relevant documentation for the respective task must be observed, in particular

the safety and warning instructions contained therein.

Qualified personnel are able to recognize risks and avoid potential hazards when handling the described products due to their training and experience.

Disposal

Electronic devices must not be disposed of with household waste, but must be disposed of properly.

Symbols on the product

Symbol	Explanation
CE	CE labeling The product complies with the requirements of the applicable EU directives.
	WEEE labeling The product must not be disposed of with household waste, but must be disposed of in accordance with the disposal regulations for electrical waste applicable at the place of installation.

2. Safety information

General information

These instructions are intended for the installer of the Thermo-Hygrometer SPE described in the manual and must be read and understood before starting work. The devices may only be installed and commissioned by qualified personnel.

Intended use

⚠DANGER

The SPE thermo-hygrometers from Wiesemann & Theis are devices for monitoring temperature and humidity with network access via SPE.

Any other use or modification of the devices described is considered improper use.

Electrical safety

⚠WARNING

Before starting any work on the Thermo-Hygrometer SPE, the power supply must be completely disconnected by suitable measures. Make sure that the device cannot be accidentally switched on again!

The Thermo-Hygrometer SPE may only be used in closed and dry rooms.

The device should not be exposed to high ambient temperatures and direct sunlight, and should not be operated near heat sources. Please note the restrictions with regard to the maximum ambient temperature.

The input voltage must not exceed the nominal values of the specification.

During installation, make sure that no stray wires protrude into the interior of the housing. Make sure that no individual wires protrude from strands; the entire strand must be in the terminal.

EMV

⚠ ATTENTION

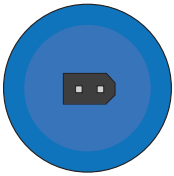
The Thermo-Hygrometers SPE fulfill the industrial interference immunity limits and the stricter emission limits for household and small business. Therefore there are no EMC-based restrictions on the usability of the devices in these environments.

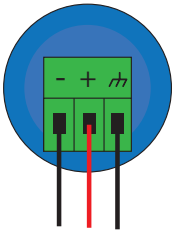
The complete declarations of conformity for the devices described in the instructions can be found on the W&T homepage at http://www.wut.de.

3. Quick commissioning

Power supply

The device is supplied with power via SPoE Class 10. To do this, connect the SPoE plug connector to the M8 socket of the device (57723 TB901191), or use the screw terminal connection (57723):





Assembly

The Thermo-Hygrometer SPE can be mounted using the wall bracket provided.

LED displays

The device has three status displays that indicate the operating status and a large traffic light display that changes from green to red when limit values are exceeded.

blue status LED:	
always on	Reset jumper is set
flashes at 1 Hz	Firmware update is running
flashes at 5 Hz	Calculation of a security key
green status LED:	
on or blinking	network link and data
red status LED:	
flashes at 1 Hz	Data transmission error, or no measured values

4. Product introduction

Hardware features

Network interface:	10BaseT1L Full Duplex
Power supply:	SPoE connection Class 10

The link status, device status and error status are signaled via corresponding LEDs.

Access permissions

The configuration and operation of the SPE thermo-hygrometer are carried out in the browser and are only possible after logging in as an administrator, provided a password has been assigned.

Configuration changes only take effect when they have been confirmed by clicking on the Save button.

Functionality

The W&T Thermo-Hygrometer SPE includes all the functions needed to capture and display your climate data and make it available on the network using the W&T Cloud, MQTT and ntfy.sh services.

A single value query can be used to retrieve the measurement data in your own applications. This manual contains all the information you need to install, configure and operate the Thermo-Hygrometer SPE.

5. Commissioning

Once the Thermo-Hygrometer SPE has been properly mounted and wired, the power supply can be switched on. The boot phase takes only a few seconds. The green LED indicates the SPE status.

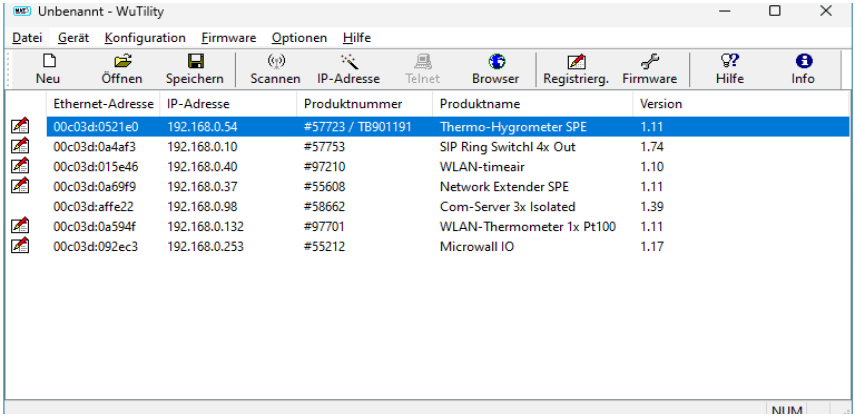
Assigning the IP address

IP assignment via WuTility

If you have connected to an existing LAN in which a Windows computer is also available, you can use our WuTility tool to change the IP parameters, for example, or to perform a firmware update.

The WuTility tool can be found at:

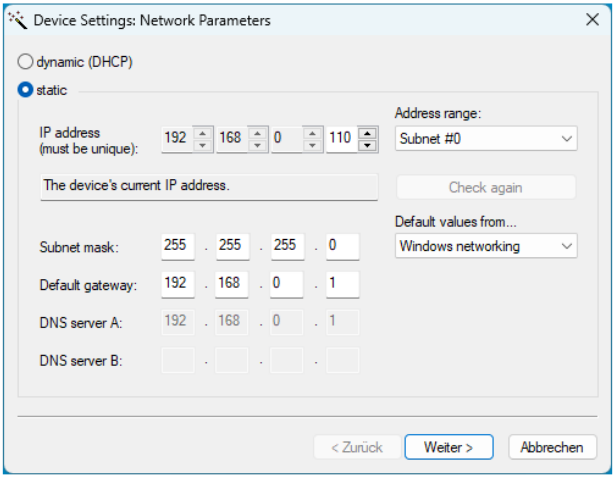
https://www.wut.de/wutility



After starting, *WuTility* automatically searches the local network for connected W&T network devices. You can repeat the search as many times as you want by clicking on the Scan button.

Identify the Thermo-Hgrometer SPE in the inventory list based on its MAC address.

Highlight the Thermo-Hgrometer SPE and click on the IP Address button:



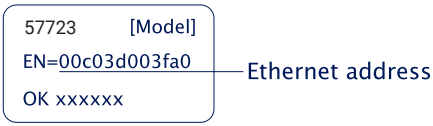
The *static* option allows you to assign fixed IP parameters by simultaneously disabling the DHCP protocol. Enter the desired values for IP address, subnet mask, gateway address and DNS server in the corresponding input fields. The DHCP option activates the DHCP protocol in the Thermo-Hgrometer SPE and operation with a static IP address is no longer possible.

The Next button transfers the entered values to the Thermo-Hgrometer SPE. If assignment is successful, all columns of the *WuTility* inventory list are updated.

Further configuration of the Thermo-Hgrometer SPE is done via Web-Based Management. To do this, click the *Browser* button.

Networks with DHCP

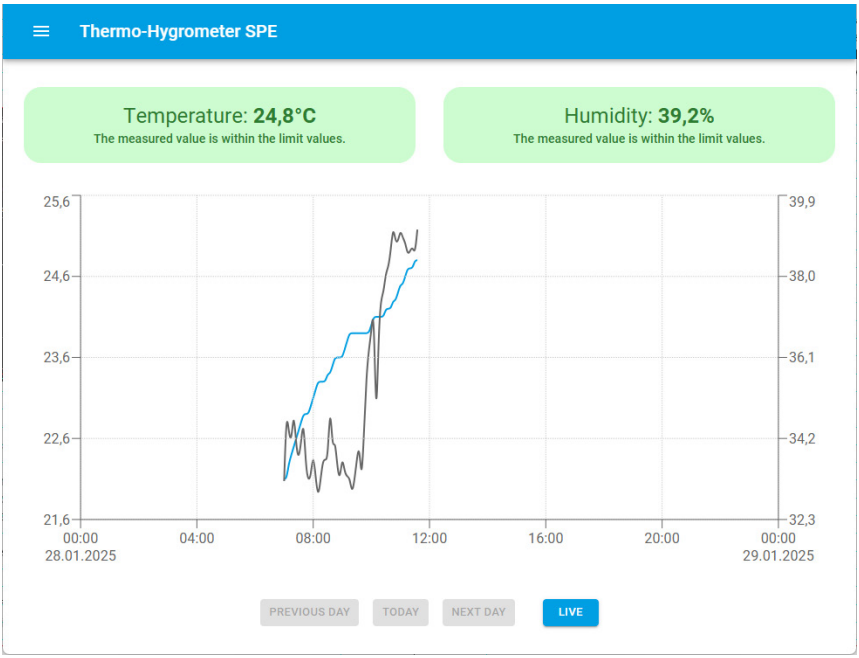
If a DHCP server is active in the network to which the Thermo-Hgrometer SPE is connected, an IP address should be automatically assigned to the device. To be able to address the Thermo-Hgrometer SPE directly, you should configure a reservation in the DHCP server so that the device can always be reached at the same address. The Ethernet address required for this can be found on the white label on the device.



If in doubt, ask the responsible network administrator.

6. Basic settings

After entering the IP address in the web browser, you will reach the start page of the device.



Click on the menu symbol in the top left corner to access the main menu of the device.

Temperature: Configure temperature limit values here for an automatic message.

Humidity: Configure humidity limit values here for an automatic message.

Traffic light: Settings for the LED display regarding limit violations.

Password: Protect the device configuration with a password.

LAN: Configure the network settings for the device here.

Browser access: Select the browser language and if desired the encrypted connection via HTTPS.

MQTT: This is where you configure the settings for MQTT communication.

W&T Cloud: This is where you configure automatic transmission of measurement values to the W&T Cloud.

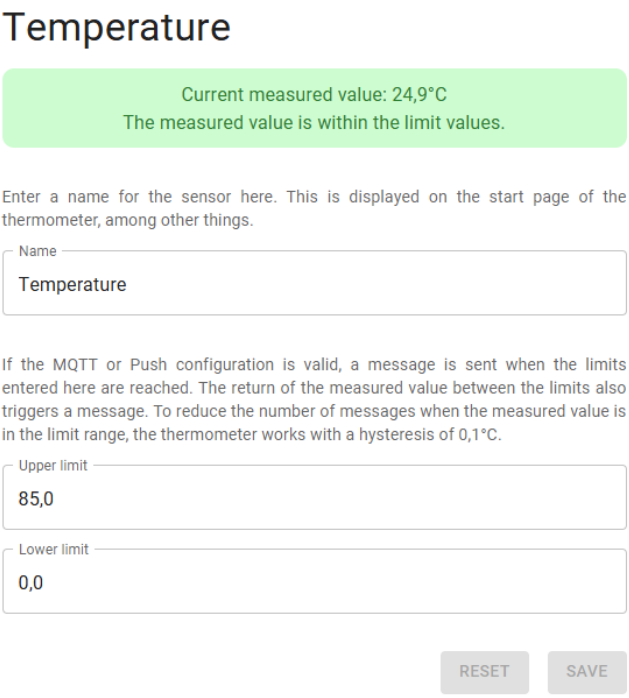
Push: Using the ntfy.sh service, you have the option here of transferring push messages to your smartphone, for example.

API: To perform individual queries via TCP client or browser, enable these services here.

Properties: Here you will find information about the network status and the device version.

Maintenance: Perform a hardware reset or restore the factory settings for the device here.

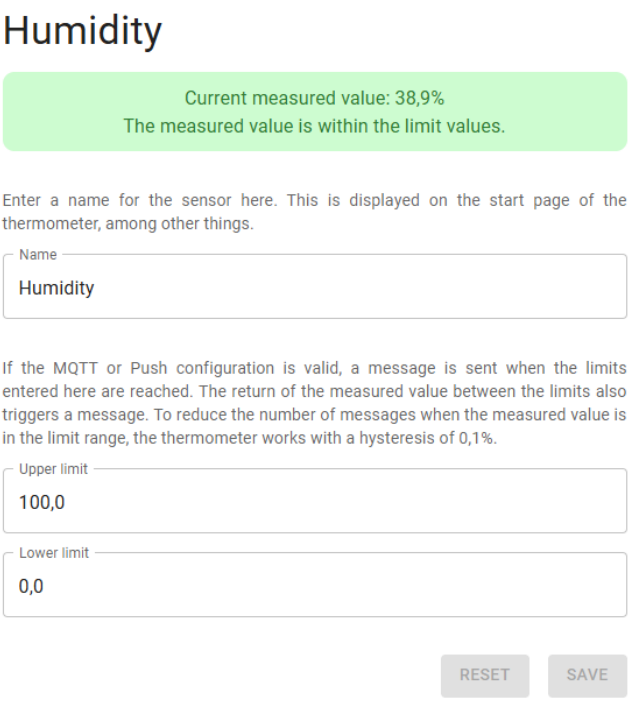
Temperature



Select the display name of the sensor.

Enter the limit values at which a message is to be sent via MQTT and push notification. If you only want to monitor one limit, e.g. a temperature violation, only enter the upper limit value. For a temperature violation, enter the lower limit accordingly.

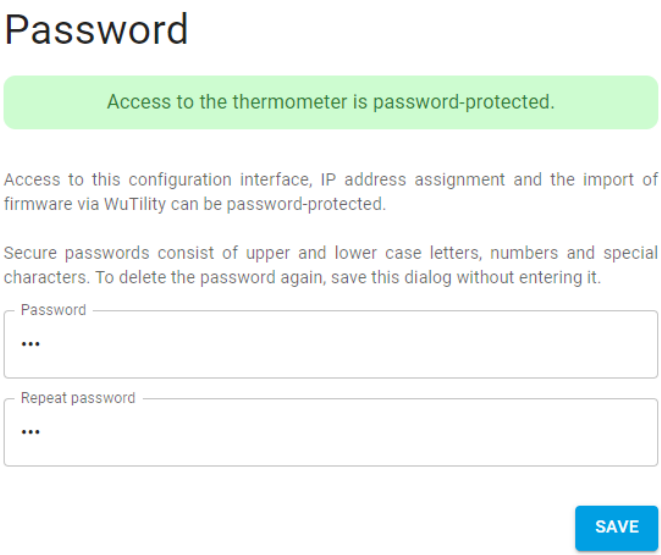
Humidity



Select the display name of the sensor.

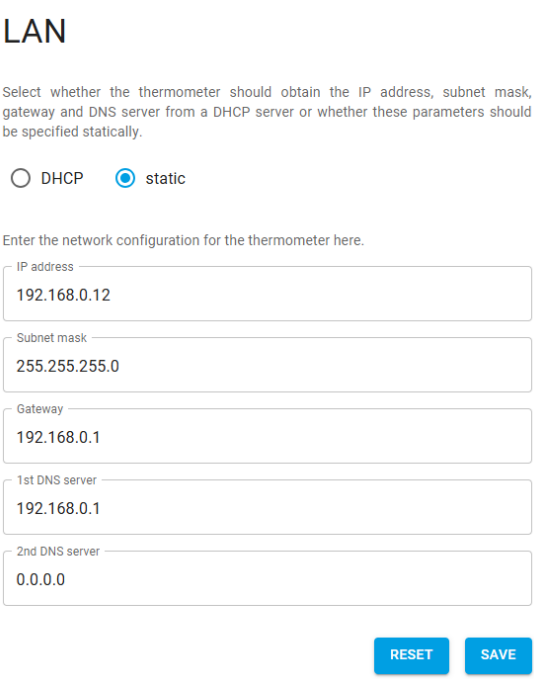
Here, too, you enter the limit values at which a message is to be issued regarding an exceedance or shortfall of the humidity.

Password



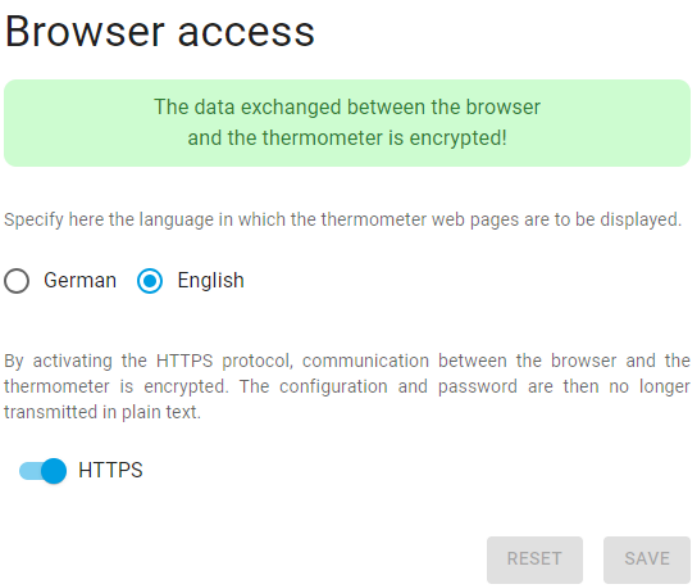
Use this program to set or change the password for protecting the configuration, changing IP parameters and uploading firmware using WuWility.

LAN



Make the necessary settings for your network here.

Browser access



Select the browser language. You can switch between German and English.

If desired, activate encrypted browser access via HTTPS. The device generates a new, self-signed certificate each time the factory settings are restored.

MQTT

MQTT

The thermometer is connected to the MQTT broker.

The thermometer sends MQTT messages when the connection is established and terminated, when the measured values change and in the event of limit value events.

Message format for sending measured values:
Topic: **WEBIO-0521E0/get/sensor/[1, 2]**
Payload example: **24.5**

Message format for limit value events:
Topic: **WEBIO-0521E0/get/sensor/[1, 2]/limit**
Payload: **true / false**

Message format when establishing and terminating a connection:
Topic: **WEBIO-0521E0/get/online**
Payload: **true / false**

activate

Enter the host name or IP address and the port number under which the MQTT broker can be reached.

Host
192.168.0.22

Port
1883

encrypted

Enter the user name and password to be used to log in to the broker.

User name
thermo

Password
•••••••

RESET SAVE

If you want to send messages via MQTT, configure the settings for the MQTT broker here. To do this, you need the IP address and the port number at which your MQTT broker can be reached. If you want an encrypted connection, activate the corresponding switch.

The WLAN thermometer sends the measured value to the MQTT broker each time a connection is established and when a value changes.

The topic used has the following format:

<device name>/get/sensor/1

for temperature and

<device name>/get/sensor/2

for humidity

The payload is specified as a dot-separated measured value. E.g.

24.7

Additional information is also sent:

<device name>/get/limit/1

<device name>/get/limit/2

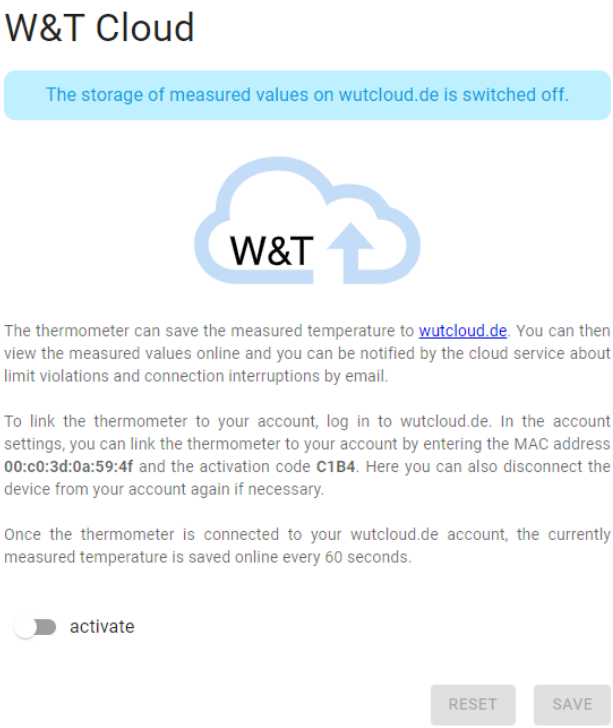
Payload: true / false

As soon as a limit value event occurs, true is sent as the payload if the value exceeds or falls below a limit, and false is sent when it returns to the normal range.

<device name>/get/online

As soon as a connection to the MQTT broker has been established, true is sent as the topic and false is sent when the connection is terminated.

W&T Cloud



With the Cloud service W&T offers a comprehensive solution for backing up data in online storage.

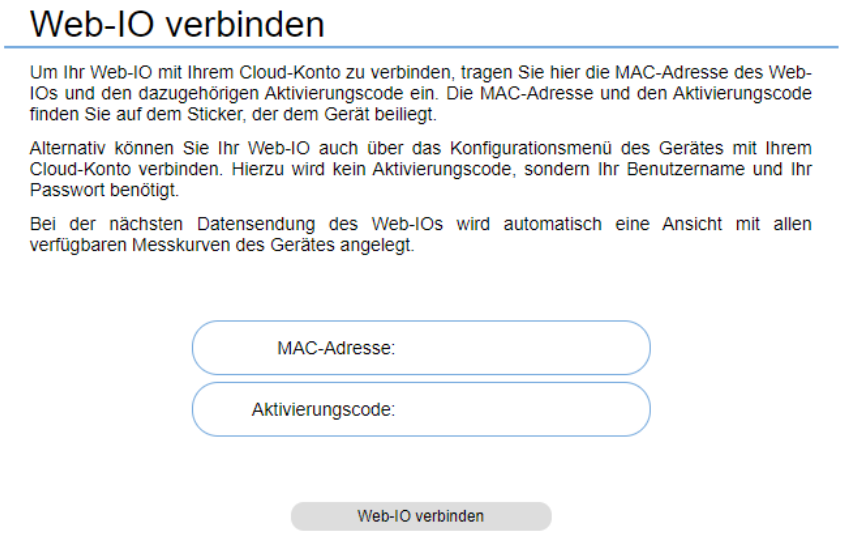
Measurement data is sent directly from the measuring point to the Cloud and is thus available online.

To use the W&T Cloud you need a user account. You can create this on the Cloud websites at:

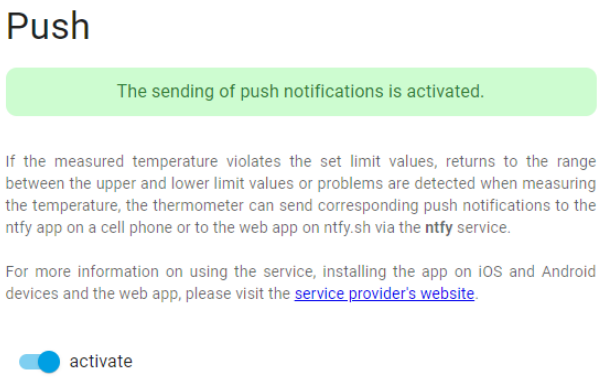
https://wutcloud.de

You will find an activation code for cloud use that matches your device in the device packaging.

To connect the device to your cloud account, go to http://wutcloud.de and enter the MAC address of the device in your user account along with the activation code. The device will now send its data to the cloud cyclically.



Push

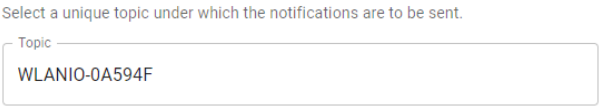


The device can send push notifications via the third-party provider ntfy.sh, which can be received, for example, on a smartphone using the corresponding app.

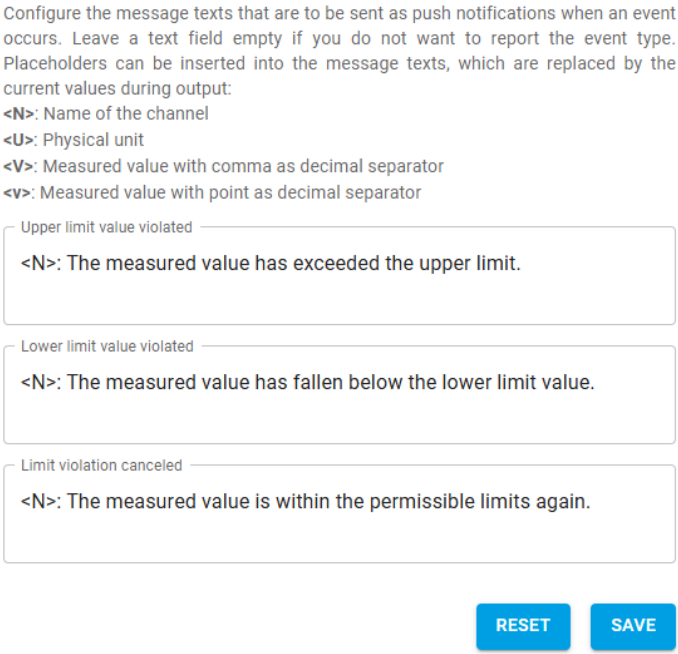
Further information on downloading the apps can be found at

https://ntfy.sh/

For the notification, you must select a “topic” so that the sent data can be assigned to your Thermo-Hygrometer SPE:



Configure message texts for the various events.



In addition to the continuous text, you have the option of using the name of the sensor, the current measurement and the unit in the form of a tag. This is given in angle brackets and can be used anywhere in the text.

<N>: channel name

<U>: physical unit

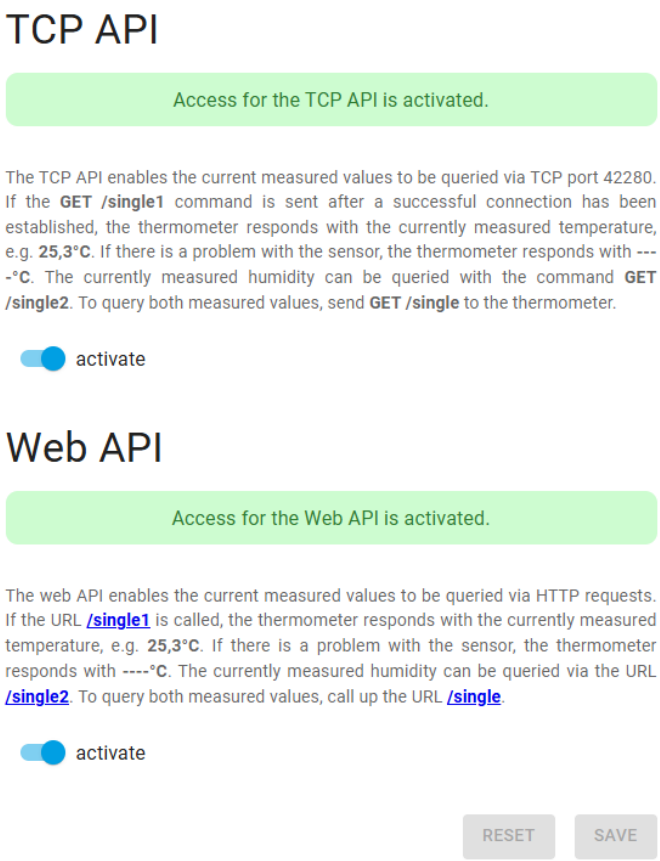
<V>: measurement with point as decimal separator

<v>: measurement with comma as decimal separator

An example of how to send push messages can be found at:

https://www.wut.de/ntfy

7. API



It is possible to request the current measurement values via a socket connection. This function is used to obtain the individual data without the web interface.

Use any TCP client to open a connection to the IP address of the WLAN Thermometer and port 42280.

Then send the device one of the following commands:

```
GET /Single1
```

to output the temperature value, or

```
GET /Single
```

to output the humidity value. or

```
GET /Single
```

without an index to output both measured values separated by a semicolon.

The device then responds with a text string containing the current measured values with the unit. E.g.

```
24.5°C
```

or

```
25.7%
```

or

```
24.7°C;25.7%
```

You can also request the individual measurement values via HTTP(S). Send the request to the device:

```
http(s)://<ip-adresse>/single1
```

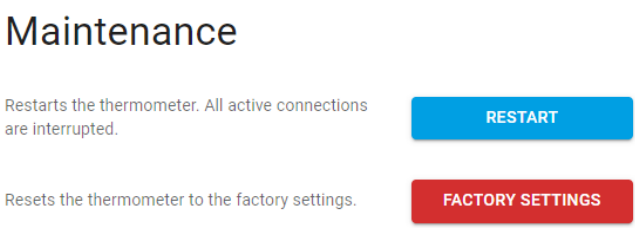
```
http(s)://<ip-adresse>/single2
```

or

```
http(s)://<ip-adresse>/single
```

You will receive the measurement in an HTTP response. The device will respond with the current measurement and unit.

8. Maintenance



Restart the device or reset it to the factory settings. After restoring the factory settings, you can reconfigure the device as described in the *Commissioning* chapter.

9. Security information

The following sections contain information and recommendations relevant to IT security for the commissioning, configuration, operation and maintenance of the Thermo-Hygrometer SPE.

Function and typical application

The Thermo-Hygrometer SPE from Wiesemann & Theis is a device for monitoring temperature and humidity with network access via SPE.

Measurement data is transmitted through the network as a TCP payload and optionally also within higher protocol instances.

The Thermo-Hygrometer SPE is not designed for operation in a secure network environment. The factory settings are focused on the most convenient transmission of measurement data, as well as uncomplicated commissioning and configuration. In unsecure network environments and/or with increased security requirements, additional measures must be taken to prevent unauthorized access.

Requirements for integrators and operators

Depending on the individual network environment and the security requirements, the factory settings for operation must be checked from a security point of view. Changes and/or additional measures may be required by the integrator or operator. These include in particular:

- Choosing a secure password in terms of length and composition.

- Disabling unneeded services and/or restricting access through an external firewall.

Installation location

The installation location of the Thermo-Hygrometer SPE must ensure that no unauthorized physical access can occur (e.g. suitably secured room, control cabinet, etc.). Physical access to the Thermo-Hygrometer SPE entails the following risks, for example:

- Decommissioning of the device (removal of the power supply...) and loss of all

connections to communication partners.

Commissioning

Commissioning of the Thermo-Hygrometer SPE is divided into assigning the IP address (DHCP, WuTility) and the subsequent additional configuration via Web-Based-Management. With the factory setting, all configuration services are freely accessible. Commissioning must therefore be carried out in such a way that no unauthorized access can occur until the system password is assigned and a secure configuration is in place.

IP address assignment

During initial start-up, ensure that no unauthorized access to the Thermo-Hygrometer SPE can take place until a system password has been assigned. One suitable measure, for example, is to carry out the start-up via a point-to-point connection.

Password

The Thermo-Hygrometer SPE should not be used without a password. The password is the main protection against unauthorized access to the configuration and management of the Thermo-Hygrometer SPE. We recommend using a secure password with a length of at least 15 characters, consisting of upper and lower case letters, numbers and special characters.

The system password is not transmitted in plain text to the Thermo-Hygrometers SPE during normal operation. For password-protected access from supposedly insecure or public networks, additional measures such as the use of a VPN tunnel must be taken.

Registering for security-related information

Using the WuTility inventory tool you can register your devices with W&T. In the event of security-related updates and/or information, we will notify you immediately by email. In addition to the personal data you provide, the device-specific data is also stored when you register.

Operation and configuration

The Thermo-Hygrometers SPE supports the incoming and outgoing services listed in the table below.

Eingehend:

Port number	Application	Password?	Configurable/ Can be switched off?
80 (TCP)	Web-based management Single value temperature query via HTTP	*Configuration only*	no
42280 (TCP)	Single value temperature query via TCP socket	no	no
8002 (TCP)	Initialization firmware update	yes	no
8513 (UDP)	Inventory	no	no
68 (UDP)	WuTility IP assignment	yes	no
69 (UDP)	Firmware update	yes	no
ICMP	Echo request	no	no

Outgoing:

Port number	Application	Password?	Configurable/ Can be switched off?
53 (UDP)	DNS client (activation on demand)	no	no

67 (UDP)	DHCP client (deactivation through static IP assignment)	no	no
1883 (TCP)	MQTT client	yes	yes
443 (TCP)	Cloud transmission Push transmission	no	no/yes
68 (UDP)	WuTility IP assignment	yes	no
69 (UDP)	Firmware update	yes	no
ICMP	Echo request	no	no

Firmware updates

W&T releases firmware updates for the Thermo-Hygrometer SPE to correct functional errors, address any discovered vulnerabilities or to expand functionality. The upload to the device is done using the WuTility management tool.

Update files always contain the entire firmware or the entire system of the Thermo-Hygrometer SPE. For this reason, firmware updates always require a restart of the device and thus also an interruption of operation. Individual configuration data (IP parameters, firewall rules, etc.) are not affected by a firmware update and are retained.

The firmware is uploaded via TFTP (UDP) and the system password is transmitted in plain text on the network side during this process. Additional external measures are therefore required in unsecure networks or in environments with increased security requirements.

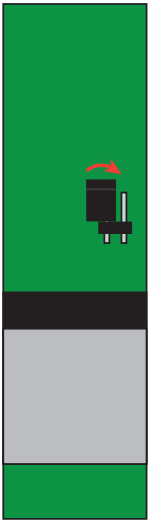
10. Service, maintenance and decommissioning

Despite high quality standards, electronic devices can fail at any time, e.g. due to external events. Depending on the availability requirements of the respective application, we recommend taking appropriate precautions

- Provision of a replacement device if necessary
- Documentation of the procedure for device replacement

When decommissioning, the device should be reset to the factory settings to protect all confidential information stored in the Thermo-Hygrometer SPE (IP ranges, external access data, etc.). This can be done via the web-based management configuration.

Reset



The device can be reset to its factory settings via an internal jumper.

To do this, open the casing by unscrewing the bottom catch and pull the circuit board out of the casing.

Close the jumper located on the circuit board and switch on the device for about 5 seconds.

Open the jumper and reassemble the device.

The device is now set to the factory settings.

11. Technical data

Connections and displays

Thermo-/hygro sensor:	Combined sensor for measuring temperature and humidity
Single Pair Ethernet interface:	10BaseT1L full duplex Connector: IEC63171-5 SPoE connector class 10
Versorgung:	SPoE class 10

Measuring unit

Measuring range:	-40°C...85°C, 0..100% rF
Resolution:	1/10 °C, 1/10% rF
Measurement error:	Temperature: typ. @ 25°C ±0,3°C max. @ -40..85°C ±1,5°C
Humidity	typ. @ -20..60°C (normal range) ±1,8%rH (10-90%rH) max. @ -20..60°C (normal range) ±4%rH (0-100%rH) temporary@ -40..85°C (max range) +3%rH after 60 hours of operation outside of the normal range
Long-term stability:	typ. <0,5%rH / year
Measurement frequency:	5s

Housing and other data

Housing:	Plastic housing, length 187mm, diameter approx. 24.5mm
Protection class:	IP20
Weight:	approx. 80g
Ambient temperature	Storage: -40..+70°C operation: non-contiguous mounting: 0 .. +60°C contiguous mounting: 0 .. +50°C
Permissible relative humidity:	0..95% RH (non-condensing)

Wiesemann & Theis GmbH
Porschestraße 12
D-42279 Wuppertal

Mail info@wut.de
Web www.wut.de

Tel. +49 (0)202 2680-110
Fax +49 (0)202 2680-265