

Manual

Web-Graph Air Quality

US 1.13 06/2014



Type
Model
Release

10/100BaseT, 18-48V
57618
1.13 Jun 2014

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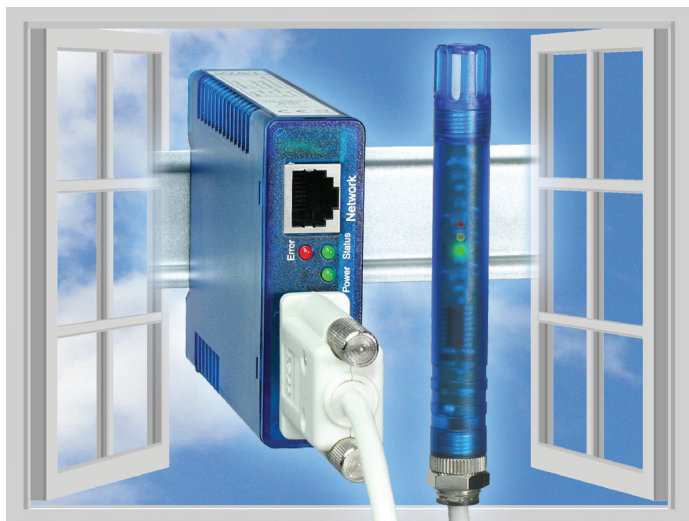
Since we can make mistakes, none of our statements should be used without checking. Please let us know of any mistakes or misunderstandings you are aware of, so that we can recognize and eliminate them quickly.

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Introduction

The W&T Web-Graph Air Quality includes all the functions in one box for measuring, storing and displaying your temperature, humidity and air quality data. Numerous alarm functions are also available which can be custom incorporated into your own applications or into existing systems.

This manual contains all the information you need to install, configure and operate the Web-Graph Air Quality.



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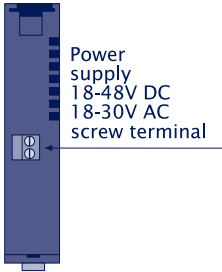
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1 Quick-Start/Commissioning

Just a few steps are required to start up your W&T Web-Graph Air Quality and to make it visible in your network.

1.1 Connecting the power supply

Bottom of 57618



Connect the AC adaptor provided to the terminal provided for the 12-24V AC/DC operating power. Polarity does not need to be observed.

1.2 PoE power supply 57618

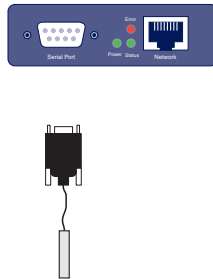
The Web-Graph Air Quality PoE 57618 is designed for use in PoE (Power-over-Ethernet) environments in accordance with IEEE802.3af. Power is provided by the network infrastructure using the RJ45 terminal. The device supports both phantom power using data pairs 1/2 and 3/6 as well as power feed using the unused wire pairs 4/5 and 7/8.

To enable power management for the supplying components, the Web-Graph Air Quality is identified as a Power Class 1 device with a power consumption of 0.44 to 3.84W.

As an alternative to PoE power supply, the Web-Graph Air Quality PoE can also be powered by an external power supply connected to the screw terminals on the underside of the housing. DC voltage of any polarity as well as AC voltage may be used.

! *Use of the model Web-Graph Air Quality PoE is also possible in networks without PoE power supply. In this case simply use an external power supply attached to the screw terminal as described above. No additional configurations or settings are necessary.*

1.3 Connecting the temperature-humidity-air quality sensor



Plug the sensor included in the scope of delivery into the 9-pin IO terminal on the unit.

! The measuring of the VOC value begins after an initialization time of 15 minutes after powering on the device. In this time a VOC value of 450ppm will be displayed.

1.4 Ethernet connection

The Web-Graph Air Quality incorporates an IEEE 802.3-compatible network interface on a shielded RJ45 connector. The pin assignments correspond to an MDI port, so that the connection to the hub or switch is accomplished using a 1:1 shielded patch cable.



Power-over-Ethernet

The Web-Graph Air Quality PoE 57618 can obtain power as defined in IEEE802.3af/Power-over-Ethernet. Either the data pairs or the unused wire pairs in 10/100BaseT may be used (see also the section *PoE power supply 57618*).

1.5 Assigning the IP address using „WuTility“

Once the hardware has been connected to the supply voltage as described above, you must assign the IP address needed for operation in a TCP/IP network. You can obtain the correct value for this parameter from your system administrator.



The IP address must be unique throughout the network.

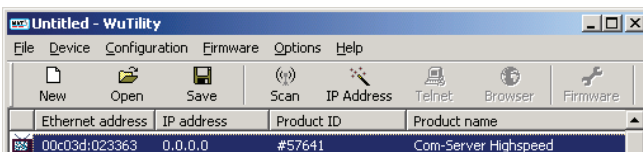
There are various ways of assigning the IP address. To make it as convenient as possible, we have developed the „WuTility“ tool, which you can download from the WuT homepage at <http://www.wut.de>. This procedure is described in the following. A summary of the alternatives can be found in the Appendix to this manual under 8.1.

Be sure that the PC you are using to assign the IP address is located in the same sub-network as the module and that both the PC and the module are connected to the network.

When it starts, *WuTility* automatically searches the local network for connected W&T network devices and generates an inventory list. This search process can be repeated manually as often as desired by clicking the *Scan* button:



Select from the displayed list your Web-Graph Air Quality based on the MAC address:



Click on the „IP address“ symbol:



In the resulting window enter the desired network parameters for the device and confirm by clicking on „Continue“.

A dialog box titled "New Device: Set Network Parameters". It contains fields for "IP address (must be unique)" with a value of 172.16.232.29, "Address range" set to "Subnet #0", and a "Subnet mask" of 255.255.255.0. There is a "Default gateway" field with the value 172.16.232.252. A "Caution" box with a yellow warning triangle states: "On a TCP/IP network, there must never be two devices with the same IP address. Please make sure that the above IP address has not been assigned to someone else, and that it is not part of a DHCP address pool, either. When in doubt about available addresses, ask your network administrator." At the bottom are buttons for "< Back", "Next >", and "Cancel".

The DHCP client of the Web-Graph Air Quality can be activated in the following window.


A dialog box titled "New Device: Advanced Features". It has a section "Automatic address assignment" with three radio buttons: "none" (selected), "BootP", and "DHCP". Below this, text explains: "Automatic address assignment will take place (if at all) every time your device restarts. A BootP or DHCP server can therefore not only assign the device's address for the first time, but can also change it afterwards. When in doubt whether or not you really need this option, you should probably just turn it off." At the bottom are buttons for "< Zurück", "Weiter >", and "Abbrechen".

Clicking on the *Continue* button assigns the network parameters to the Web-Graph Air Quality. All the columns in the device list in WuTility are filled with information. After clicking on the globe in the WuTility menu list your standard browser is opened and you will see the start page for the device.

1.6 IP assignment using DHCP protocol

Many networks use DHCP (Dynamic Host Configuration Protocol) or its predecessor BOOTP described in the following section for centralized, dynamic assignment of network parameters. By default DHCP protocol is activated, so that in network environments with dynamic IP assignment you only need to connect the Web-Graph Air Quality to the network. The following parameters can be assigned using DHCP:

- IP address
- Subnet mask
- Gateway address
- DNS server
- Lease time

 *To prevent undesired address assignment or address changes, we recommend deactivating DHCP, BOOTP and RARP unless these are expressly used in the respective network environment. Web-Thermo-Hygrobarographs with incorrectly assigned IP address can be conveniently found and reconfigured after the fact using the scan function of the WuTility management tool.*

1.6.1 Activating/deactivating DHCP

By default DHCP is activated. The following methods are available for deactivating or later reactivating DHCP protocol.

- **Management tool WuTility**

Select the desired Web-Graph Air Quality from the device list and click on the *IP address* button. In the first dialog window enter the new network parameters and then click on *Next*.

In the following dialog window deactivate the options *BOOTP* and *DHCP*. Click on *Next* to send the new configuration data to the Web-Graph Air Quality.

- **Serial interface**

As part of serial IP assignment you can specify the following options for deactivating/activating the DHCP and BOOTP protocols directly following the address string:

-0 → Deactivates DHCP and BOOTP

-1 → Activates BOOTP/RARP

-2 → Activates DHCP

A detailed description of this procedure can be found in the section *Alternative IP address assignment 7.1*

- **Web Based Management**

In *Config* → *Device* → *Basic Settings* → *Network* you can alternately activate or deactivate both the protocols. Detailed information about this can be found in section *Assigning the basic network parameters 1.5*.

1.6.2 System Name

To support any automated updating of the DNS system by the DHCP server, the Web-Graph Air Quality identifies itself within the DHCP protocol with its system name. The factory setting for this is *WEBIO-* followed by the last three places of the Ethernet address. For example, the default system name of a Web-Graph Air Quality having Ethernet address 00:c0:3d:01:02:03 is *WEBIO-010203*. The system name of the Web-Graph Air Quality can be changed using Web Based Management.

1.6.3 Lease time

The lease time determined and sent by the DHCP server specifies how long the IP address will remain in use. After half the lease time has expired the Web-Graph Air Quality attempts to extend the time for the assigning DHCP server and to update the address. If this is not possible by the time the lease time expires, for example because the DHCP server can no longer be reached, the Web-Graph Air Quality deletes the IP address and starts a cyclical search for alternative DHCP servers in order to assign a new IP address.

Because the clock is missing, the lease time associated with the current IP address is no longer available after a reset. Therefore, after the restart an update query is generated for the original DHCP server. If it is not available at this time, the Web-Graph Air Quality deletes the IP address and starts a cyclical search for alternative DHCP servers.

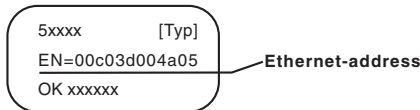
If DHCP is activated, the remaining lease time together with the current IP address is shown in seconds in the menu branch *Home → Doc → Property*.



If after the assigned lease time has expired the DHCP server cannot be reached, the Web-Thermo-Hygrobarograph deletes its IP address. All existing TCP/UDP connections between the Web-Thermograph and other network clients are closed. To prevent disturbances of this kind, we recommend setting the lease time in the DHCP server to infinite.

1.6.4 Reserved IP addresses

The Web-Graph Air Quality provides services which can make use of other clients in the network as needed. To open a connection they of course need the current IP address of the Web-Graph Air Quality, so that in these applications it makes sense to reserve a particular IP address for the Web-Graph Air Quality on the DHCP server. As a rule this is done by joining the IP address to the worldwide unique Ethernet address of the device, which can be found on the sticker on the housing.



1.6.5 Dynamic IP addresses

Fully dynamic IP address assignment, in which the Web-Graph Air Quality gets a different IP address after each restart or after the lease time has expired, is only useful in network environments with automatic cross-connection between the DHCP and DNS services. This means when a new IP address is assigned to the Web-Graph Air Quality, the DHCP server then automatically updates the DNS system as well. The new address is assigned to the respective domain name. For detailed information about your network environment, consult your system administrator if in doubt.

Dynamic, changing IP addresses can also be used for time server queries, sending of e-mails or other client applications in which the device itself searches for active connection to server services located in the network.

1.7 Assigning the basic network parameters

Select the menu item „Config“ to the left in the configuration tree.



You are now prompted to enter a password. As shipped, the unit does not require a password, so that you can simply

Config

Password :

[Back to Web-Graph Thermometer Homepage](#)

On the next screen use the profiles to select the configuration path.

Login Rights:
Config
Admin

Navigate with the tree on the left side. Avoid the use of the buttons "Next"and "Back" of your browser, this might cancel your changes of configuration data.

The "profiles" provides an easy way to make the required modifikation step by step.

Select the „Basic network parameters“ profile and click on the „Highlight profile“ button.

- ☐ No profile (expert mode)

Basic configuration:

- ☒ Basic network parameter
- ☐ Configuration of port and device name
- ☐ Local clock settings
- ☐ Automatic clock settings with the network time service
- ☐ Configuration of the data logger
- ☐ Configuration of the graphics settings
- ☐ Calibration

Direct user control:

- ☐ HTTP access

Integration in existing systems:

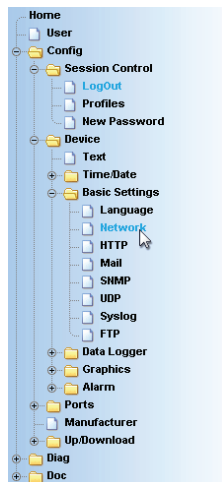
- ☐ Alarm via E-Mail
- ☐ SNMP incl. alarm via trap
- ☐ Alarm via TCP (client mode)
- ☐ Syslog messages incl. alarm
- ☐ Alarm via FTP (client mode)

Access from individual programmes:

- ☐ ASCII command strings via TCP port 80
- ☐ ASCII command strings via UDP



The device now automatically displays the necessary menu points for this profile. Click on „Network“ in the configuration menu.




In the following screen enter all the necessary network parameters and then click on the „Logout“ button.

Config >> Device >> Basic Settings >> Network


IP Addr :


Subnet Mask :

Gateway : 

BOOTP Client : **BOOTP** requires a IP address reservation within the DHCP server. **DHCP** assigns a IP address from a reserved address range.
Direct access is only possible using the 'device name' .
Important: If you are in doubt, check 'STATIC'.

☒ **STATIC**
☐ BOOTP enable
☐ DHCP enable

DnsServer1 : IP address of DNS server (format xxx.xxx.xxx.xxx) 

DnsServer2 : IP address of DNS server (format xxx.xxx.xxx.xxx) 

Free memory: 46261 bytes

By then clicking on the „Save“ button, all your settings are saved in the device and you quit your configuration session. After the network parameters are changed, the unit automatically performs a restart.

Config >> Session Control >> LogOut

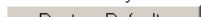
Save new configuration



Exit without saving



Restore Factory Defaults



The device is now ready to operate in your network. For easy handling, use the additional profiles for adapting the device to your needs.

2 Online measurement storage inside the W&T Cloud

With the cloud service W&T offers a comprehensive solution that enables the backup of data in online storage in addition to the long-term documentation of temperature and humidity measurement data in the internal data logger. The measurement data will be sent directly from the measuring point to the cloud, and is available online.

2.1 Auto connect

The cloud functionality is enabled by default on delivery. If the device receives its network parameters via DHCP, or you allow the device Internet access by entering the network parameters, it immediately begins the transmission of the collected values in the cloud.

The measuring data is first not assigned to a user account and will be stored in an enclosed part of the cloud until further use.

2.2 Create a user account

To personalize the measurement data, first a user account for the cloud access must be created. To do this, go to the cloud homepage

<http://cloud.wut.de>

and click on „create user account“.

After entering your e-mail address and a password you will get access to the cloud.

2.3 Assign data by 4-digit access code in the cloud

Log in with your user account to <http://cloud.wut.de> and enter the access code included with the device. The collected data are now associated with your account and are available for you immediately.

Alternative:

After you have created a cloud user account, open the configuration menu of your device and login as admin user. Navigate to the page

Config -> Device -> Basic Settings -> Cloud

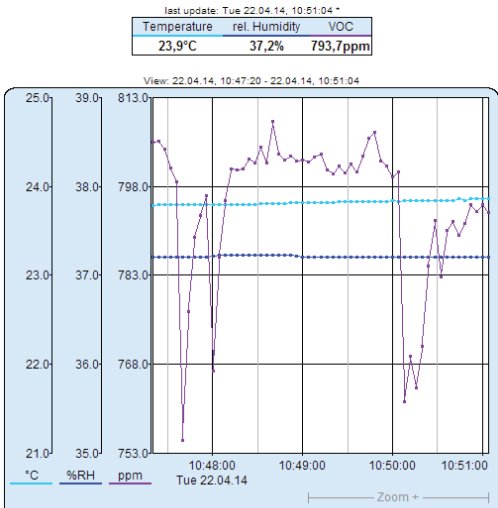
and enter your user data for the cloud access. After clicking on the button „Bind“ all measurement data of this device, from this moment, is stored into your user account.

By clicking on the button „Unbind“ the allocation of the data from this moment is separated and no further values will be stored in your account.

Click again on „Bind“ and a new series of measurements is created in the cloud for your user account that contains all the unassigned values of the sensor.

3 Graph Display of the Measurements

3.1 Basic functions



The device provides a table of the current values and a graph of the stored values.



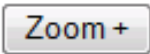
By using the control buttons at the bottom of the page you can do the following.



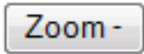
Scroll the graph to right or left by the size of the display interval, to within one



Scroll left or right in the graph in increments of one unit of the X-axis.



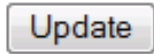
Zoom the area of the graph indicated at the lower right edge.



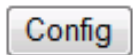
Zooms back to the previous zoom level.



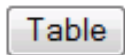
Activates automatic refreshing of the graph.



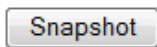
Refreshes the display



Opens the configuration menu beneath the graph



Displays the values currently displayed in the graph in table form.



Opens a new page with the current state of the graphical visualization.

Value visualization:



Large marker: This measured value is stored in the device data logger.



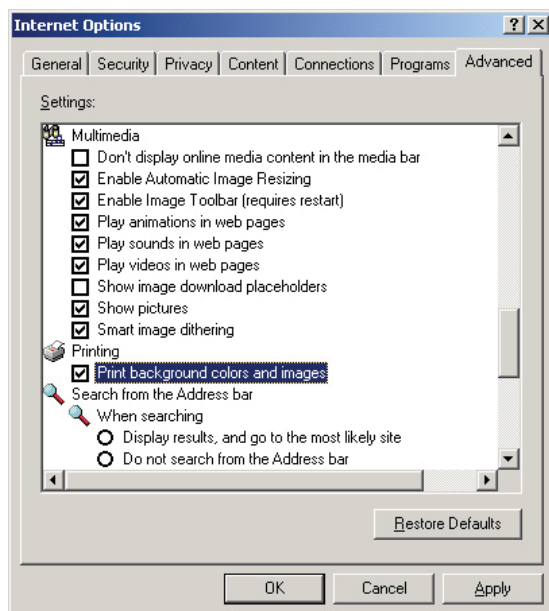
Small marker: This measured value is a volatile value which is used only for display but which is not stored in the data logger.



When exiting the zoom level, these measurements are lost. The connecting lines are only displayed in the zoom level which represents the memory.

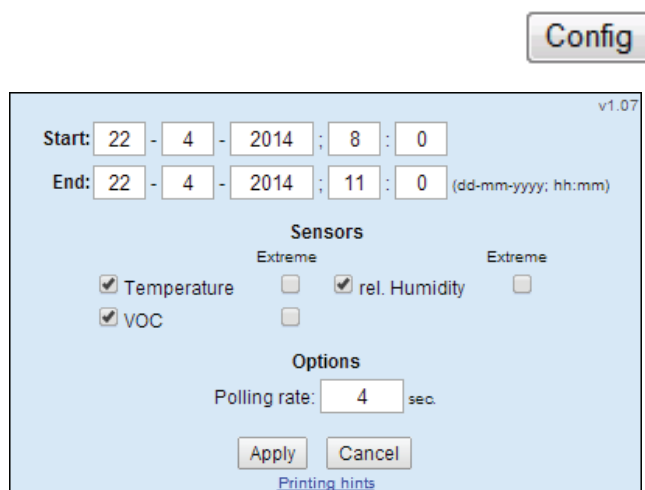
To print out the page containing the graph, it is necessary to activate printing of background colors and images in the Internet options. In Microsoft Internet Explorer this setting is found in

Tools -> Internet options -> Advanced



Design and positioning of the graph is configurable.

3.2 Config menu



The following functions are available from the configuration menu beneath the graph:

Start: Here you specify the starting time for the X-axis.

End: Here you specify the ending time for the X-axis.

Polling Rate: Enter here the desired refresh rate for the graph. The device provides a new value no sooner than after 4 seconds. Entering a value of less than 4 is not useful.

Active: Use this to turn the individual sensors on or off.

Display, Extreme: If a zoom level is selected in the graph in which a display point represents a measuring interval and not an individual measuring point, this function is used to display the maximum and minimum measured in this interval. If the zoom level is selected such that every measured value is displayed, this function has no effect. If the function is deactivated, the average value of the displayed interval is displayed.

Apply changes: Immediately applies the changes made for the graph.

3.3 Table

Table

Report: Tue 22.04.14, 08:00:00 - Tue 22.04.14, 11:00:00

Date, Time		Temperature °C	rel. Humidity %	VOC ppm
Tue 22.04.14, 08:00:00	Max	22,7	37,1	637,0
	Min	22,6	36,8	633,0
	Ø	22,6	37,0	636,0
08:03:13	Max	22,5	37,4	636,9
	Min	22,5	37,3	624,6
	Ø	22,5	37,3	631,8
08:06:26	Max	22,5	37,7	633,8
	Min	22,4	37,6	627,5
	Ø	22,4	37,6	630,3
08:09:39	Max	22,4	37,9	641,2
	Min	22,4	37,7	634,7
	Ø	22,4	37,8	638,1
08:12:51	Max	22,4	37,9	634,2
	Min	22,4	37,8	632,7
	Ø	22,4	37,9	633,5
08:16:04	Max	22,4	38,2	641,1
	Min	22,3	37,9	632,9
	Ø	22,4	38,0	638,0
08:19:17	Max	22,3	38,2	651,6
	Min	22,3	38,2	643,6
	Ø	22,3	38,2	647,1
08:22:30	Max	22,4	38,3	650,9
	Min	22,3	38,3	644,8
	Ø	22,3	38,3	647,0
08:25:43	Max	22,4	38,6	662,0
	Min	22,3	38,4	644,4
	Ø	22,4	38,5	651,6

This function is used to show the currently represented values in table format. As soon as not all stored values can be displayed, the following values are shown in the table for each sensor:

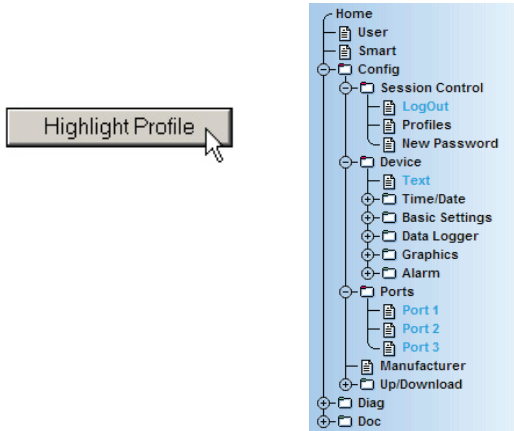
Max: The maximum value in the displayed interval

Min: The minimum value in the displayed interval

Ø: The average value of the displayed interval

4 Additional basic settings

4.1 Configuring port and device name



4.1.1 Text



Enter your personalized names and designations in the screen provided and then click on the „Temporary Storage“ button.

Config >> Device >> Text

Device Name : Name of device

Device Text : Description

(For a new line use
)

Location : Location of installation

Contact : Contact address

Free memory: 49421 bytes

4.1.2 Ports



Enter here a name for the sensor and a descriptive text. Then click on „Logout“ and save your configuration.

Port 1 (Temperature):

Config >> Ports >> Port 1

Name :

Text :
(For a new line use
)

Select Sensor : ☐ PT100
☒ PT1000

Port 2 (rel. Humidity):

Config >> Ports >> Port 2

Name :

Text :
(For a new line use
)

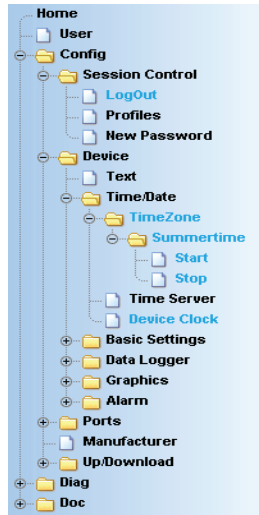
Port 3 (Air quality):

Config >> Ports >> Port 3

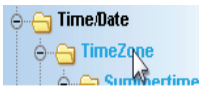
Name :

Text :

4.2 Setting local time



4.2.1 Timezone



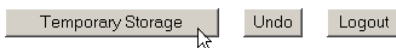
Here is where you define the time zone where the device is located. The settings you make here are referenced to UTC (Coordinated Universal Time). Then click on the „Temporary Storage“ button.

Config >> Device >> Time/Date >> TimeZone

UTCOffset : Offset to UTC
 :

Enable : ☒ Apply Time Zone

Free memory: 48405 bytes



4.2.2 Summertime



If you wish the device to automatically switch to summer time, first enter the offset to UTC. The standard value (for Germany) is two hours. Use „ „Apply Summer time“ to activate this function and save the settings.

Config >> Device >> Time/Date >> TimeZone >> Summertime

UTCoffset :

Offset to UTC

02

:

00

Enable :

☒ Apply Summertime

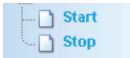
Free memory: 48592 bytes

Temporary Storage

Undo

Logout

Start/Stop



Define when summer time begins and ends. The parameters are already pre-configured:

Start:

Last Sunday in March at 02:00 hours

Stop:

Last Sunday in October at 03:00 hours

Config >> Device >> Time/Date >> TimeZone >> Summertime >> Start

Month : Summer time starts in

Mode : on

Weekday :

Time : :

Free memory: 48592 bytes

4.2.3 Device Clock



If you do not wish to use a time server, you can manually set the clock here. Then click on „Logout“ and save your settings.

Config >> Device >> Time/Date >> Device Clock

Time : :

Day :

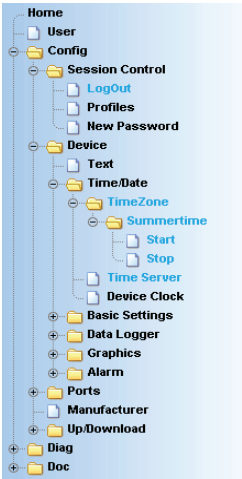
Month :

Year :

Free memory: 48592 bytes

4.3 Automatic time setting using a network service

Highlight Profile



4.3.1 Time Server



If you wish to have a time server adjust the time, enter the necessary information here. The default addresses are only an example and do not have to be used.

Config >> Device >> Time/Date >> Time Server

UTC Server1 : Name or IP address of the time server (format xxx.xxx.xxx.xxx).

de.pool.ntp.org

UTC Server2 : Name or IP address of the time server (format xxx.xxx.xxx.xxx).

europa.pool.ntp.org

Sync.Time : Daily synchronisation time with the time server (hour: 0-23).

0

Enable : ☒ Apply TimeServer

Free memory: 48592 bytes

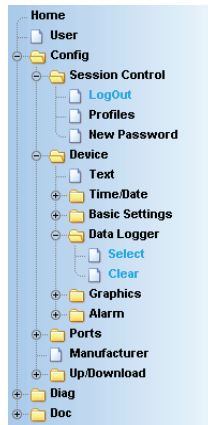
Temporary Storage Undo Logout



If you enter a name as the address, be sure that you have first configured the gateway and DNS server so that the device can resolve the addresses.

Click on the "Logout" button and save your settings.

4.4 Configuration of the the data logger



4.4.1 Select



Make the following settings:

Timebase: Defines at what time intervals the measured data are stored in the data logger. The device will in any case measure once a minute.

Select Sensor: The sensor selected here is used for saving the values in the data logger.

Config >> Device >> Data Logger >> Select

Timebase :

Select Sensor : ☒ Sensor 1
☒ Sensor 2
☒ Sensor 3

Memory size : 63 days, 16 hrs., 48 min.

Free memory: 46261 bytes

Temporary Storage

Undo

Logout



Attention: If you change Timebase or Select Sensor the memory will be erased completely.

4.4.2 Clear



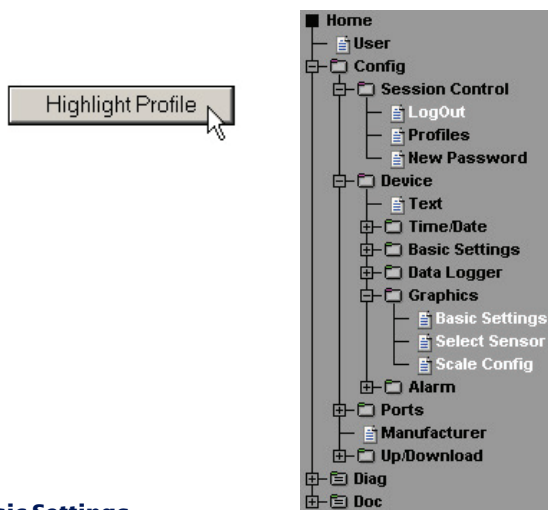
Clicking on the „Clear memory“ button deletes the entire contents of the data logger.

Config >> Device >> Data Logger >> Clear

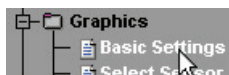
Erase all flash data.

Erase Memory

4.5 Configuration of the graphics settings



4.5.1 Basic Settings



Config >> Device >> Graphics >> Basic Settings

Enable :

- ☒ Auto scroll enable
- ☒ Show table
- ☒ Show graph
- ☒ Show control buttons
- ☒ Show config menu
- ☒ Show Logo

Width :

Height :

Frame Color : 

Background Color : 

Polling Rate : Activ only with **auto scroll**.

Enable:

Auto scroll enable: After opening the graphical representation, the measured values are automatically refreshed. The control buttons are not available when using the Auto Scroll function.

Show table: Shows the current values in table format as well.

Show graph: Activates graph representation of the measured values.

Show control buttons: Shows the control buttons.

Show config menu: Shows the configuration menu for the graph representation below the control buttons.

Show Logo: Shows the W&T logo inside the graph.

Width: Enter here the desired width of the graph display.

Height: Enter here the desired height of the graph display

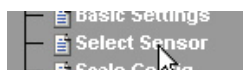
Frame Color: Enter here the desired color for the border of the graph, or select a color from the color selector below:



Background Color: Select here the color for the background of the graph. This color is also used as a background for the table.

Polling Rate: Enter here the desired refresh rate for the graph. The device provides a new value no sooner than after 4 seconds. Entering a value of less than 4 is not useful.

4.5.2 Select Sensor



Config >> Device >> Graphics >> Select Sensor

Graphics selection :

		Color	Show extrem values	Scale	1	2	3
Sensor 1	<input checked="" type="checkbox"/>	00CCFF	<input checked="" type="checkbox"/>		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sensor 2	<input checked="" type="checkbox"/>	0000FF	<input type="checkbox"/>		<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Sensor 3	<input checked="" type="checkbox"/>	9900CC	<input type="checkbox"/>		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Free memory: 46261 bytes

Temporary Storage Undo Logout

Graphics Selection:

You can set the following parameters for each sensor:

Activate/deactivate Sensor X: (Checkbox selected/deselected)

Sensor Color: Enter the desired sensor color, or use the color selector to choose.

Show extreme values: If a zoom level is selected in the graph in which a display point represents a measuring interval and not an individual measuring point, this function is used to display the maximum and minimum measured in this interval. If the zoom level is selected such that every measured value is displayed, this function has no effect. If the function is deactivated, the average value of the displayed interval is displayed.

Scale 1 2 ... x: For multi-channel devices you can show multiple Y-axes at the same time in the graph. These can be for example different temperature areas or measurands. Specify here which scale you want to assign the respective sensor to. For single-channel devices of course only one scale is available.

4.5.3 Scale Config



Config >> Device >> Graphics >> Scale Config

Scale :

	unit	min	max	auto scale	auto fit
Scale 1	<input type="text" value="°C"/>	<input type="text" value="0"/>	<input type="text" value="40"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Scale 2	<input type="text" value="%RH"/>	<input type="text" value="0"/>	<input type="text" value="100"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Scale 3	<input type="text" value="ppm"/>	<input type="text" value="0"/>	<input type="text" value="1000"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Free memory: 43049 bytes

Temporary Storage

Undo

Logout

Scale:

The graph can display four different scales. Each individual scale can be assigned the following parameters:

unit: The unit used for this scale.

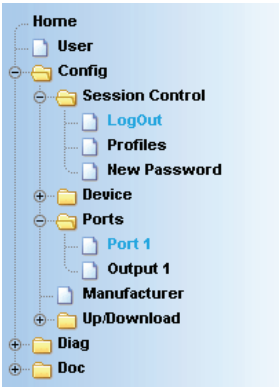
min: The lowest displayed value on this scale

max: The highest displayed value on this scale

auto scale: The lower and upper values for this scale are selected automatically based on the measured values, so that an optimal, dynamic display is achieved. If this function is activated, the existing parameters „min“ and „max“ are ignored.

auto fit: If this function is activated, the scale is corrected so that only whole-number values are shown on the display grid. *Auto fit* automatically activates the *auto scale* function.

4.6 Calibration



You can calibrate the sensor using single-point or two-point reference measurements and corresponding entry of offset values.

In single-point compensation the entered value is added to the measured temperature value, whereas two-point compensation calculates a straight line for compensating the entire measuring range. To remember calibration procedures, the user making the setting can add a comment.

Offset 1 :

Calibration Optionally, 1-point or 2-point calibration can be chosen.	
1 point compensation	Only Offset 1 is needed: this offset is added to every measured value.
2 point compensation	Offset 1 is the offset at temperature 1, Offset 2 is the offset at temperature 2. From these 2 offsets, a straight line will be interpolated, from which the offset for each measured value is calculated. The difference between the two temperatures entered here must be greater than 40° Celsius.
All values in °C in the form xx.xx.	

Temperature 1 : Offset 2 : Temperature 2 :

Comment : Comments: date, name of operator, reference devices

Free memory: 46261 bytes

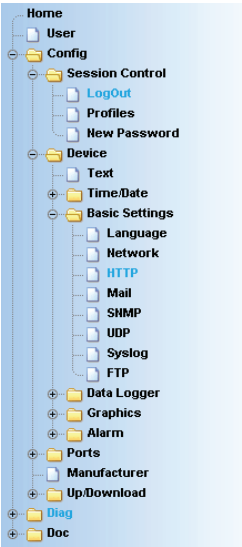
Temporary Storage

Undo

Logout

4.7 Browser access

Highlight Profile



4.7.1 HTTP access



Startup: Specify here which HTML page you want to display when the device is started up.

Config >> Device >> Basic Settings >> HTTP

Startup :

Startup page	
index.htm	Show navigation tree as well as page 'home'.
home.htm	Show page 'home' without navigation tree.
user.htm	Show page 'user' without navigation tree.

☒ index.htm
☐ home.htm
☐ user.htm

Enable : Device will send header with IP address and its name before each reply to any GET requests which do not come from a browser.
☒ GET Header enable

HTTP Port : Default: Port 80

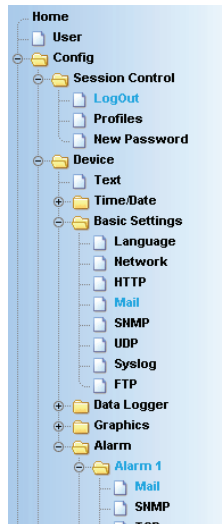
Free memory: 48592 bytes

HTTP Port: You can access the device through this port. The default is standard HTTP Port 80. If you want to use a different port, this may have to be explicitly named when the page is opened:

`http://webgraph:<PortNr>`

4.8 Alarm via E-Mail

Highlight Profile



4.8.1 Basic Settings -> Mail




Here is where you make the basic settings for e-mail sending of alarms.

Config >> Device >> Basic Settings >> Mail

Name :

ReplyAddr :

MailServer : Name or IP address of the mail server (format xxx.xxx.xxx.xxx).
 


Authentication :

- ☐ SMTP authentication off
- ☐ ESMTP
- ☒ SMTP after POP3

User :

Password :

Retype Password :

POP3 Server : Name or IP address of the POP3 mailserver (format xxx.xxx.xxx.xxx) only for 'SMTP after POP3'
 

Enable : ☒ Mail enable

Free memory: 48205 bytes

The e-mail function allows you to send an information or alarm mail to one or more e-mail or SMS recipients.

Name: Enter the name you want to appear at the e-mail recipient.

ReplyAddr: The reply address with which the device is identified

MailServer: In the next step set the IP address of your mail server and its host name (for configured DNS servers) which you want the device to use. If the e-mail port is not the standard Port 25, you can append the port to the address with a colon:

`mail.provider.de:476`

Authentication: If a authentication for mail delivery is needed you can configure the user identification here:

SMTP authentication off: no authentication

ESMTP: a user-name and a password are needed to log in on the mail-server.

SMTP after POP3: for SMTP-sending a access to a POP3 server is necessary to identify the user. For this setting you also need to enter a valid POP3-server.

Plain SMTP after POP3: Same as SMTP after POP3, only that a different logon command is used.

SSL TLS: Provides an encrypted connection to the mail server. Username and password are required.

Enable: Be sure that the „Mail enable“ checkbox for sending e-mail is activated.

4.8.2 Alarm X



Here you configure the desired alarm conditions.

Config >> Device >> Alarm >> Alarm 1

Trigger :

- ☒ Sensor 1: Temperature
- ☐ Sensor 2: rel. Humidity
- ☐ Sensor 3: VOC
- ☐ Timer
- ☐ Cold Start
- ☐ Warm Start
- ☐ Sensor lost

Temperature

Min : Limit in °C.

Max : Limit in °C.

Hysteresis : Hysteresis in °C.

Rate of change : Limit in °C/min (Average over a period of 5 min).

Relative Humidity/Scalar

Min : Limit in %.

Max : Limit in %.

Hysteresis : Hysteresis in %.

Absolute Humidity

Min : Limit in g/m³.

Max : Limit in g/m³.

Delay Time :

The alarm will be send after the alarm condition stay stable during this periode of time (time in minutes).

Interval :

Sending interval in minutes

Timer :

Field	Input [Number *, -]	Range of values
Minute	5,10,15,20	0-59
Hour	*	0-23 (0 is midnight)
Day_of_month	*	1-31
Month	*	1-12
Weekday	1-5	0-6 (0 is sunday)

Enable :

- ☒ Mail enable
- ☐ SNMP Trap enable
- ☐ TCP Client enable
- ☐ Syslog Messages enable
- ☐ FTP Client enable

Free memory: 45936 bytes

Temporary Storage

Undo

Logout

Trigger: Here you define the trigger for the alarm e-mail. Multiple selections are possible.

To send a message without alarm status, activate the „Timer“ checkbox only.

Temperature:

Min./Max.: Specifies the lower and upper limits. The range within these limits is understood to be „valid“.

Hysteresis: You can also specify a hysteresis value which is used to reset the alarm status. This function prevents ‚flickering‘ around the limit value.

Rate of change: Maximum allowed temperature change within five minutes.

Example:

min. 10°C / max. 18°C / Hysteresis 2°C

When a limit is exceeded the alarm status is reset when 16°C (18-2) is reached or when the value falls below 12°C (10+2). If the temperature rises or falls by more than 2°C in five minutes the alarm is also triggered.

Relative Humidity/Scalar / Absolute Humidity:

The settings made here have exactly the same function as the temperature settings.

Delay Time: The alarm is triggered with a delay of this time (in minutes) to compensate for short-term limit value violations.

Interval: Enter here the send interval (in minutes) for sending a message when there is an active alarm. If you want to send just a single message, enter an „E“ here.

Timer: This timer interval is based on the CRON service such as is used in Linux/Unix systems. Valid characters are:

* : stands for all valid values in the respective input field (e.g. all minutes or all hours)

- : specifies a range of from ... to .. For example, weekday „2-4“ stands for Tuesday to Thursday, whereas entering a „*“ triggers the timer on all weekdays.

/ : Interval within the entered range , e.g. minute „0-45/2“ starts the timer in the range between the 0th and 45th minute every two minutes (0, 2, 4, 6 ,8, 10, ... , 44).

, : specifies an absolute value. For example minute 0, 15, 30 starts the timer on the hour, quarter-hour and half=hour.

This function requires that the „Timer“ box be checked.

Enable: Select the type of message. For an e-mail alarm, check the „Mail enable“ box.

4.8.3 Alarm X -> Mail



The actual content of the e-mail is specified under this menu

Config >> Device >> Alarm >> Alarm 1 >> Mail

E-Mail-Addr :

Subject :

Mailtext :

Options :

- ☒ Attach Thermo.csv enable
- ☒ CSV-Data since last report

Alarm Clear Subject : This messages will be send if alarm state is cleared.

Alarm Clear Text :

Free memory: 45584 bytes

E-Mail-Addr: Enter here the recipient's e-mail address. To send the e-mail to multiple recipients, separate the addresses using a semicolon.

Subject & Mailtext: Specify the subject line and the mail-text of the e-mail. In these text fields the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,#)	dot spelling (##.##)	
<T1>	<t1>	<i>Temperature:</i> Displays the current temperature.
<H1>	<h1>	<i>Humidity:</i> Displays the current relative humidity.
<AH>	<ah>	<i>Absolute humidity:</i> Displays the current absolute humidity.
<RC>	<rc>	<i>Rate of change:</i> Displays the rate of change from the last 5 minutes.
<V>	<v>	<i>VOC:</i> Displays the current air quality value.
<AA>		<i>Alarm active:</i> Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		<i>Alarm sensor number:</i> Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		<i>Alarm sensor name:</i> see above, but with sensor names (komma separated)
<DN>		<i>Device Name:</i> Shows the device name.

W&T tag date + time		
<Z>		Displays the actual time and date as a string.
<\$y>		<i>Year (####):</i> Displays the year.
<\$m>		<i>Month (##):</i> Displays the month.
<\$d>		<i>Day (##):</i> Displays the day.
<\$h>		<i>Hour (##):</i> Displays the hour.
<\$i>		<i>Minute (##):</i> Displays the minute.
<\$s>		<i>Second (##):</i> Displays the second.

Attach thermo.csv enable: The „Attach thermo.csv enable“ option allows you to attach the complete contents of the data logger in semicolon-separated CVS format to the e-mail. The time base of the output corresponds to the data logger settings.



The file is generated dynamically in the device, so that when the logger content is large creation of the CSV file may take up to 30 seconds. During this time no other e-mail can be sent. Pending alarms are send directly after the mail with attachment is sent.

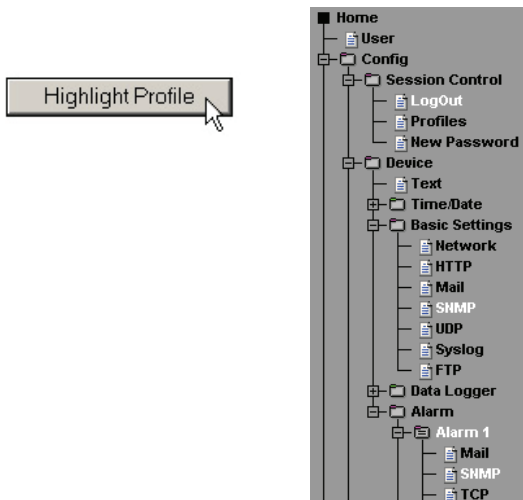
CSV-Data since last report: This option causes that only the data is written into the CSV file, which is measured since the last transmission interval.



This function only works properly if only the timer function is selected and no limit values are configured.

Alarm Clear Text: An Alarm Clear message is also sent when the temperature rises or drops to the valid range. Here you can use the same tags as for the alarm message.

4.9 SNMP incl. alarm via trap



Send alarm messages as an SNMP trap.

4.9.1 Basic Settings -> SNMP



Here you define the basic settings needed for SNMP operation.

Community String: Read: By using this string you can access temperature values in read mode in your SNMP manager.

Community String: Write: By using this string you can access temperature values in both read and write mode in your SNMP manager.

Community String: Trap: This string is set within a SNMP-Trap

Manager IP: Contains the IP address of your SNMP manager.
The device sends the SNMP messages to this address.


System Traps: You can create two system traps.

Cold Start: When power fails or is disconnected

Warm Start: For device reset

SNMP Enable: Check this box to activate SNMP functionality.

Config >> Device >> Basic Settings >> SNMP

Community string: Read :	<input type="text" value="public"/>
Community string: Read-Write :	<input type="text" value="public"/>
Community string: Trap :	<input type="text" value="public"/>
Manager IP :	<div>SNMP System Traps: Name or IP address of the SNMP manager (format xxx.xxx.xxx.xxx) <input type="text" value="192.178.0.4"/> </div>
System Traps :	<div><input checked="" type="checkbox"/> Cold Start <input checked="" type="checkbox"/> Warm Start <input checked="" type="checkbox"/> Diag Messages</div>
Enable :	<div><input checked="" type="checkbox"/> SNMP enable</div> <div>Free memory: 45584 bytes</div>

4.9.2 Alarm X -> SNMP



The actual content of the SNMP trap is set under this menu point.

Config >> Device >> Alarm >> Alarm 1 >> SNMP

Manager IP :

Name or IP address of the SNMP manager (format xxx.xxx.xxx.xxx)

192.168.4.70

Trap Text :

temperature too high!!! <T1> °C

Alarm Clear Text :

This messages will be send if alarm state is cleared.

temperature ok!

Free memory: 48592 bytes

Temporary Storage

Undo

Logout

Manager IP: Contains the IP address of your SNMP manager. The device sends the SNMP messages to this address.

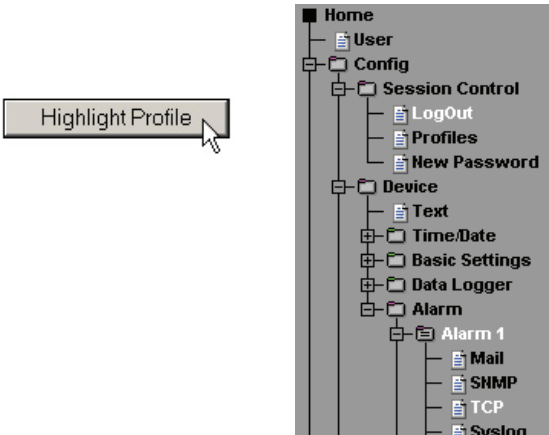
Trap Text: Specifies the text of the trap. In this text field the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,#)	dot spelling (##.##)	
<T1>	<t1>	<i>Temperature</i> : Displays the current temperature.
<H1>	<h1>	<i>Humidity</i> : Displays the current relative humidity.
<AH>	<ah>	<i>Absolute humidity</i> : Displays the current absolute humidity.
<RC>	<rc>	<i>Rate of change</i> : Displays the rate of change from the last 5 minutes.
<V>	<v>	<i>VOC</i> : Displays the current air quality value.
<AA>		<i>Alarm active</i> : Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		<i>Alarm sensor number</i> : Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		<i>Alarm sensor name</i> : see above, but with sensor names (komma separated)
<DN>		<i>Device Name</i> : Shows the device name.

W&T tag date + time		
<Z>		Displays the actual time and date as a string.
<\$y>		<i>Year (####)</i> : Displays the year.
<\$m>		<i>Month (##)</i> : Displays the month.
<\$d>		<i>Day (##)</i> : Displays the day.
<\$h>		<i>Hour (##)</i> : Displays the hour.
<\$i>		<i>Minute (##)</i> : Displays the minute.
<\$s>		<i>Second (##)</i> : Displays the second.

Alarm Clear Text: An Alarm Clear message is also sent when the temperature rises or drops to the valid range. Here you can use the same tags as for the alarm message.

4.10 Alarm via TCP (client mode)



Send the alarm messages as a TCP packet.

4.10.1 Alarm X -> TCP:



IP Addr: The IP address to which you want to send the message.

Port: The recipient must have a TCP server service on this port which can pick up incoming connections.

TCP Text: The text corresponds to the same specifications which apply to the other message types.

Config >> Device >> Alarm >> Alarm 1 >> TCP

IP Addr : Name or IP address of the TCP server (format xxx.xxx.xxx.xxx)

Port :

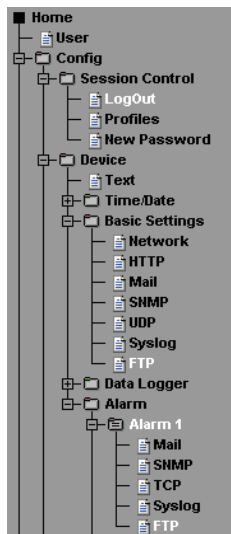
TCP Text :

Alarm Clear Text : This messages will be send if alarm state is cleared.

Free memory: 48592 bytes



4.1.1 Sending alarms via FTP (Client Mode)



Write temperature values directly to an FTP server.

4.11.1 Basic Settings -> FTP



Here you will find the basic settings needed for FTP mode

FTP Server IP: Enter here the IP address or the host name of the FTP server you want to send the data to.

FTP Control Port: This is the port needed for the connection. The standard port for FTP access is 21. This port is already preset and should function on most systems at the first go. If you require a different port, please consult your network administrator.

User: Enter here the user name required for the FTP access.

Password: This is the password assigned to the user.

FTP Account: Some FTP servers require a special Account entry for the login. If this is the case with your server, enter the Account name here.

Options / PASV: If this option is enabled, the server is instructed to operate in passive mode. This means the data connection is opened by the Web-Thermograph. If this option is disabled, the FTP server takes over opening of the data connection. If the server is protected by a firewall, it is recommended that the PASV option be enabled, since otherwise connection attempts could be blocked.

Enable: To use the FTP functionality, check this box.

Config >> Device >> Basic Settings >> FTP**FTP Server IP :** Name or IP address of the FTP server (format xxx.xxx.xxx.xxx)

192.168.0.5

**FTP Control Port :** Port No.: 1...65536 (default 21)

21

User :

user

Password :

password

FTP Account :

account

Options :Switch FTP server into Passiv Mode.
(possibly necessary in a firewall environment)☒ PASV**Enable :**☒ FTP enable

Free memory: 49003 bytes

Temporary Storage

Undo

Logout

4.1.1.2 Alarm X -> FTP

FTP Local Data Port: This is the local data port on the Web-Thermograph. Values between 1 and 65536 are valid. Entering „AUTO“ causes the device to select the port dynamically.

File Name: Enter here the path to the file which the device should access. You can use the same tags as in the FTP Alarm Text:

FTP Alarm Text: Specifies the text of the ftp content. In this text field the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,.)	dot spelling (##.#)	
<T1>	<t1>	<i>Temperature</i> : Displays the current temperature.
<H1>	<h1>	<i>Humidity</i> : Displays the current relative humidity.
<AH>	<ah>	<i>Absolute humidity</i> : Displays the current absolute humidity.
<RC>	<rc>	<i>Rate of change</i> : Displays the rate of change from the last 5 minutes.
<V>	<v>	<i>VOC</i> : Displays the current air quality value.
<AA>		<i>Alarm active</i> : Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		<i>Alarm sensor number</i> : Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		<i>Alarm sensor name</i> : see above, but with sensor names (komma separated)
<DN>		<i>Device Name</i> : Shows the device name.

W&T tag date + time		
<Z>		Displays the actual time and date as a string.
<\$y>		<i>Year (####)</i> : Displays the year.
<\$m>		<i>Month (##)</i> : Displays the month.
<\$d>		<i>Day (##)</i> : Displays the day.
<\$h>		<i>Hour (##)</i> : Displays the hour.
<\$i>		<i>Minute (##)</i> : Displays the minute.
<\$s>		<i>Second (##)</i> : Displays the second.

If you want a line break after each data transmission, enter a CRLF by prssing the RETURN key at the end of the line.

Alarm Clear Text: This message is sent after the alarm state is ended. The same tags as described above may be used.

Options:

STORE: Creates a file and writes the data to it. If this file already exists, it is overwritten.

APPEND: Appends the data to an existing file. If the file does not yet exist, it is created.

Config >> Device >> Alarm >> Alarm 1 >> FTP

FTP Local Data Port : Port No.: 1...65536 or AUTO = assign next free port number.

AUTO

File Name :

/folder/temperature.txt

FTP Alarm Text :

<Z>: <T1>°C

Alarm Clear Text :

This messages will be send if alarm state is cleared.

Options :

☐ STORE

☒ APPEND

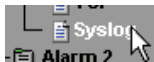
Free memory: 49003 bytes

Temporary Storage

Undo

Logout

4.12 Syslog messages incl. alarm



IP Addr: The IP address you want to send the message to.

Port: On this port the receiver must have a Syslog service installed which can pick up the incoming connections. (Standard: 514)

Syslog Text: The text corresponds to the same specifications as apply to the other message types.

Alarm Clear Text: see above

4.13 Check Alarm



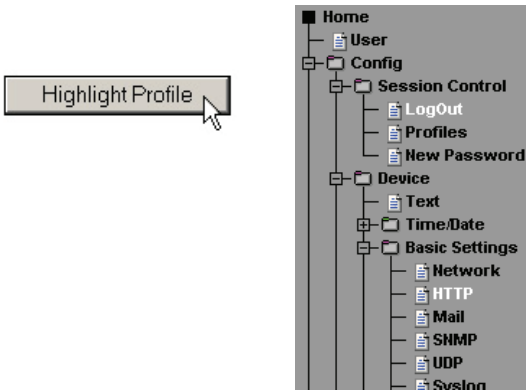
On this configuration page you can test the alarms you set. Clicking on the „Trigger“ button for the respective alarm simulates the presence of an alarm, so that the configured actions can be performed accordingly. Clicking on the „Reset“ button restores the alarm status to normal state.

Test Alarms WEBIO-03FCD4

No	Name	Test	
1	Alarm 1	Trigger	Reset

last update: Tue, kW42,
19.10.2010 07:49:53 (UTC +02)

4.14 ASCII command strings via TCP Port 80



4.14.1 HTTP



When queried by means of an HTTP-Get command, the device can also send a header with IP address and device name in addition to the temperature. To do this, check the appropriate box. Only the temperature is sent if this function is deactivated.

Config >> Device >> Basic Settings >> HTTP

Startup :

Startup page	
index.htm	Show navigation tree as well as page 'home'.
home.htm	Show page 'home' without navigation tree.
user.htm	Show page 'user' without navigation tree.

☒ index.htm
☐ home.htm
☐ user.htm

Enable : Device will send header with IP address and its name before each reply to any GET requests which do not come from a browser.

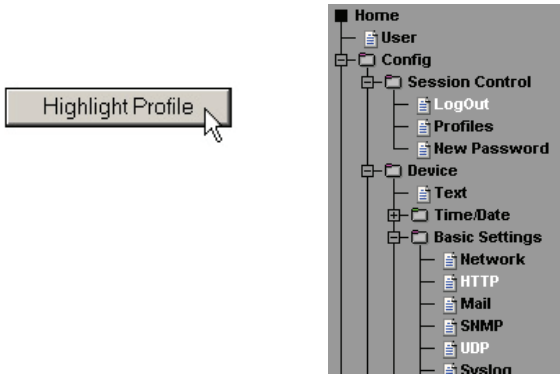
☒ GET Header enable

HTTP Port : Default. Port 80

80

Free memory: 48592 bytes

4.15 ASCII command strings via UDP



In addition to TCP/IP comands, the device can also reply to UDP datagrams. For this you must set the port you want the device to „listen“ to. The default setting is 42279. The enable function activates UDP.

Config >> Device >> Basic Settings >> UDP

Port : Port No.: 1...65535

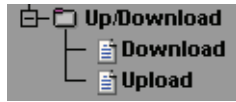
Enable : ☒ UDP enable

Free memory: 48592 bytes



The setting of the header which can be appended to the tem-
perature in messages applies here as well.

4.16 UP-/Download



In the download area you can download the XML configuration as well as the three user pages (home.htm, user.htm, log.htm) for further processing.

With XML-Download you can read out the settings of the Web-Thermo-Hygrograph and make any modifications, and XML Upload allows you to store the settings again in the device.



With some Web browsers the correct code is only output using the path „View-> Display (Frame-) Source text“ after the „XML Download“ button has been clicked.

For XML upload you create or modify a text file with the corresponding parameters and load this file into the device. The configuration of the 8x Thermometer must begin with the expression

```
<io-ANTFB1.3>
```

and end with the expression

```
</io-ANTFB1.3>
```

The sequence of the parameters you set corresponds to the sequence of the configuration menu starting at „Device“.

The syntax for configuring via XML is as follows:

```
<option>
  <parameter1> VALUE </parameter1>
  <parameter2> VALUE </parameter2>
</option>
```

The individual options and parameters correspond to the configuration items in the browser menu.



Please note, especially in the case of mass updates and configurations, that the IP address stored in the XML file is also sent, which only needs to be adapted.

In addition, you can exchange the user pages (user.htm, home.htm, log.htm) in the Upload area.

An example can be found in the Appendix (8.2).

Use the menu point „Upload -> GIF“ to replace the logo displayed in the menu and store it directly in the device.

4.1.7 RSS-Feed



The device supplies a RSS feed, which can be subscribed by feed readers. The configuration can be found under Basic Settings >> RSS..

Config >> Device >> Basic Settings >> RSS

Channel Title :

Channel Link :

Channel Description :

Channel Image :

Image Title :

Image Link :

Item Title :

Item Link :

Item Description :

Item Quantity :

Enable : ☒ RSS enable

Free memory: 47839 bytes

Channel Title: Headline, which will be indicated within the feed.

Channel Link: This link will be called after a clicking the title.

Channel Description: Optional, additional information about the content of the feed.

Channel Image: Path to an image, which will be shown within the feed.

Image Title: Optional title for the image.

Image Link: This link will be called after a clicking the image.

Item Title: Headline for the separate items.

Item Link: This link will be called after a clicking the item.

Item Description: Optional, additional information about the content of the item.

Item Quantity: Quantity of displayed items within the feed. These items are always the last available saved values.

In all textboxes the following tags can be used to display the measured values:

<T1> shows the temperature value.

<Z> shows the time and date information.

<H1> shows the humidity value.

<V> shows the air quality value.

and all W&T-tags for date und time:

<\$d>, <\$m>, <\$y>, <\$h> , <\$i>, <\$s>

5 Single querying of temperatures

5.1 Querying temperature via TCP/IP

It is possible to use a socket connection to manually query the current temperature values in CSV (comma-delineated data). This function is also used to query the individual data without the Web interface.

To do this, send the following string to Port 80:

```
GET /Thermo.csv
```

This expression may also be given additional parameters that determine the content:

```
start=ttmmyyyyThhmmss
```

Start date and time of the desired values.

```
end=ttmmyyyyThhmmss
```

End date and time of the desired values.

```
DTb=x&
```

Desired interval where x =

```
1 -> 1 min.
```

```
2 -> 5 min.
```

```
3 -> 15 min.
```

```
4 -> 60 min.
```

The expression must begin with „?“ after the filename. Each variable must be separated with a „&“ .

Example:

```
http://<ip-address>/thermo.csv?start=01012010T123000&end=30032010T200000&DTb=3&
```

This expression generates a CSV file containing the data from 01.01.2010, 12:30h up to 30.03.2010, 20:00h in 15 minute intervals.

To query the individual, current temperature value, send the string:

```
GET /Single1
```

To query the individual, current rel. humidity value, send the string:

```
GET /Single2
```

To query the individual, current air quality value, send the string:

```
GET /Single3
```

5.2 Temperature querying via UDP

Open a UDP connection to the device IP address or to the Net-ID as a broadcast and Port 42279 (default setting can be changed).

Send the device one of the GET /Single expressions given under 4.1 and the device will return the value to the port you are using.



When using multiple devices, it may be practical for broadcast transmissions to include the name and IP address of the device as well. To do this, activate „GET Header enable“ under „Config >> Device >> Basic Settings >> HTTP“.

5.3 Temperature querying using SNMP

The sensor can be queried directly using SNMP-Get requests. They reach the sensor via the following path:

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.3.1.1.1 = temperature with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.4.1.1.1 = temperature as 3 digit integer value, without comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.8.1.1.1 = temperature with one decimal place and dot separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.3.1.1.2 = relative humidity with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.4.1.1.2 = relative humidity as a 3-digit integer value, without comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.8.1.1.2 = relative humidity with one decimal place and dot separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.3.1.1.3 = air quality with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.4.1.1.3 = air quality as a 5-digit integer value, without comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.35.1.8.1.1.3 = air quality with one decimal place and dot separation.



For querying, specify the configured SNMP Read or Read/Write community.

An MIB for incorporation into management applications can be downloaded from the data sheet page for the device at the WuT homepage <http://www.wut.de>.

If you want to make changes in the device via SNMP (IP address, subnet mask, etc.) you must first start a session on the device using your SNMP manager.

Entering the administrator password in the variable

```
wtWebGraphAirQualitySessCntrlPassword
```

opens a session. By reading out the variable

```
wtWebGraphAirQualitySessCntrlConfigMode
```

you can check whether the session was successfully opened.

- 1 = Session opened, device in configuration mode.
- 0 = Opening of the session failed. Check whether you entered the password incorrectly.

After successfully opening the session, you can use the variables defined in the private MIB to make any configuration changes.

Once you have finished with configuration, write the variable

```
wtWebGraphAirQualitySessCntrlLogout
```

to close the session.

```
wtWebGraphAirQualitySessCntrlLogout =
```

- 1 All changes are saved
- 2 Quit without saving

If no SNMP communication takes place over a period of 5 minutes during an open session, the device unilaterally ends the session and all changes are cancelled.



Opening an SNMP session has priority over an HTTP login. This means: A user with Config or Administrator rights loses his browser access as soon as an SNMP session is opened.

The description for the individual SNMP variables, OIDs etc. can be found in the Private-MIB.

6 Placing the temperature into your own web page

It is possible to use an implemented Java applet to integrate the temperature on your own Web page. The applet is re-freshed every 60s. An example for this applet is already in the device:

`http://172.0.0.10/app.htm`

To incorporate the applet for temperature monitoring into the HTML page, the following HTML tag must be inserted at the point where the applet will be incorporated:

```
<Applet Archive="A.jar" Code="A.class" Codebase="Http://WebTherm/"
Width="width" Height="height">
```

Now the following parameters may be optionally specified:

Background color:

```
<Param Name="BGColor" Value="#RGB-value">
```

Font color:



*The RGB value is given as a 24-bit hex value.
e.g.: Value="#2F3C09" This is not case-sensitive.*

Specifying text alignment:

```
<Param Name="Align" Value="const">
```

const must be one of the following constants:

- Left
- Center
- Right

This is not case-sensitive.

If a parameter is omitted or incorrectly set, the following standard values are used

BGColor	#FFFFFF (white)
FGColor	#000000 (black)
Align	Right

The sensor is selected using the parameter

```
<Param Name="Sensor" VALUE="1">
```

The unit (for example for the humidity sensor) is specified by the parameter

```
<Param Name="unit" VALUE="% rel.">
```

The parameter is a string type. If it is not specified, a „C“ is automatically set.

If you want to use your own Java functions which access multiple device applets, you can use the parameter

```
<Param Name="device" VALUE="0">
```

to number the applets for each device beginning with 0.

Turning polling of the sensors off and on is accomplished using the parameter

```
<Param Name="sensorpolling" VALUE="on">
```

or „off“. The default setting is „on“.

If you use a different polling rate than the default 60 seconds, use the parameter

```
<Param Name="pollingrate" VALUE="60000">
```

in units of ms. Note that no sooner than every 60 seconds for the Web-Thermograph and every 4 seconds for the Web-Thermograph 2x/8x a new value is available.

To output an error message when there are problems opening a connection, use the parameter

```
<Param Name="showerrors" VALUE="on">
```

or „off“ to turn this on or off. The default value is „off“.

Once all the parameters are defined, you must close the HTML tag with `</Applet>`.

Example:

```
<Applet Archive="A.jar" CODE="A.class"
Codebase="http://192.168.0.10" Width="300" Height="100">
<Param Name="unit" VALUE="% rel.">
<Param Name="device" VALUE="0">
<Param Name="BGColor" Value="#0000FF">
<Param Name="FGColor" Value="#FF0000">
<Param Name="Align" Value="Center">
<Param Name="Sensor" Value="2">
</Applet>
```

The font size is automatically determined by the size of the applet.

6.1 Controlling the Java applet with JavaScript

To be able to use control of the Java applet with JavaScript, the addition „mayscript“ must be specified in invoking the applet:

```
<Applet Archive="A.jar" CODE="A.class"
Codebase="http://192.168.0.10" Width="300" Height="100"
mayscript>
```

In order to work with the applet the corresponding JavaScript function must be declared in the header of the Web page.

The following reading function is used for this:

```
function sensorChanged( iDevice, iSensor, iVal )
{ Program code run when there is a change on the inputs
```

The above function is invoked by the applet when a temperature change on the sensors is detected. *iDevice* specifies for which Web-Thermograph a value changed. *iSensor* is used to indicate which sensor changed. The variable *iVal* transmits the current temperature value.



Please note that the names of the functions are case-sensitive

The following source text shows a small example for dynamic display of Sensor 1.

```
<html>
<head>
<script language="JavaScript" type="text/javascript">
    function Temp (iVal, iSensor)
    {
        document.getElementById('temptab').firstChild.data = iVal+'°C';
    }


    function sensorChanged( iDevice, iSensor, iVal )
    {
        Temp (iVal, iSensor);
    }
</script>
</head>
<body style="background-color: #79ACDF;
font-family: Arial, Helvetica, sans-serif;">

<div align="center"><noscript> JavaScript is not activated
or not supported </noscript>

<p><applet name="Analog" archive="A.jar" code="A.class"
    codebase="http://192.168.0.5" height="0" width="0" mayscript>
    <param name="device" value="0">
```

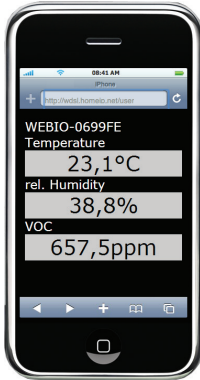
```
<param name="showerrors" value="off">
<param name="sensorpolling" value="on">
<param name="pollingrate" value="4000">
Java is not activated or is not supported
</applet></p>

<table width="200" cellpadding="0" cellspacing="0" bordercolor="#FFFFFF"
align="center">
<tr bgcolor="#CCCCCC">
<td id="temptab" align="center">0</td>
</tr>
<tr bgcolor="#999999">
<td>
<div align="center"><font size="2" color="#FFFFFF">Sensor 1</font></div>
</td>
</tr>
</table>
</div>
</body>
</html>
```

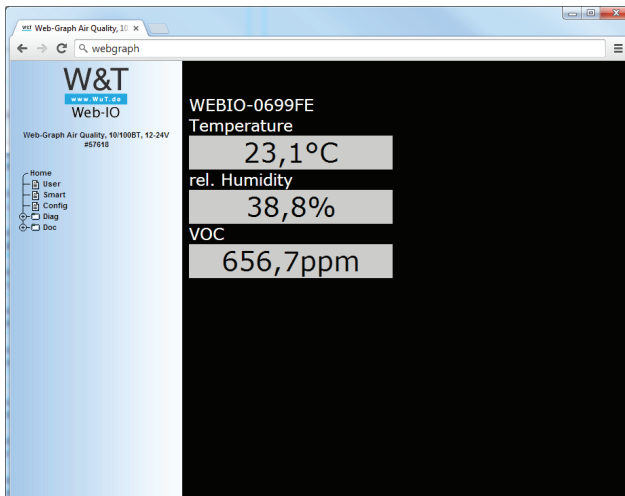
 *A more complete example for use of the Javaapplet is on the Web page `app.htm`, which can be opened in the Web-IO.*

Open: `http://<IP-Address>/app.htm`

7 Display of measured values on smartphones



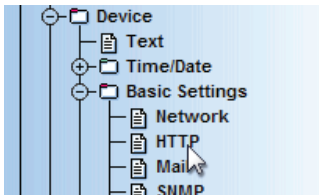
In order to view the values comfortably on mobile phones and smartphones, the device has a preconfigured web page that is adjusted to the specific proportions. This can be directly accessed from the configuration menu via the entry „Smart“.



The right frame now shows the system name of the device. The names of the available sensors are displayed, including their values.

The page can be accessed directly through the browser via `http://<ip-address>/smart.htm`. With this call, the page will be displayed without the configuration menu.

The page `smart.htm` can be set as startup page. To do this, configure it in `Config -> Device -> Basic Settings -> HTTP`.



Config >> Device >> Basic Settings >> HTTP

Startup :

Startup page	
index.htm	Show navigation tree as well as page 'home'.
home.htm	Show page 'home' without navigation tree.
user.htm	Show page 'user' without navigation tree.
smart.htm	Show page 'smart' without navigation tree.

☐ index.htm
☐ home.htm
☐ user.htm
☒ smart.htm

Enable : Device will send header with IP address and its name before each reply to any GET requests which do not come from a browser.

☒ GET Header enable
☐ GET HTTP enable

HTTP Port : Default. Port 80

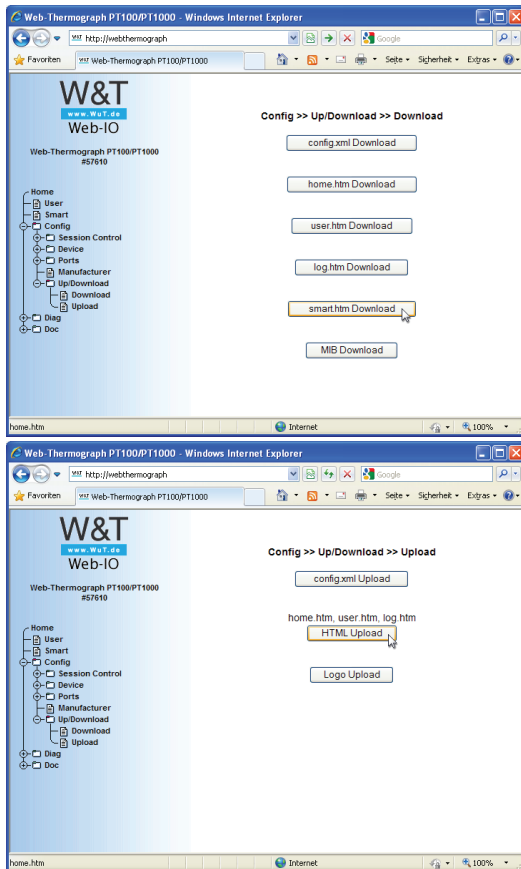
Free memory: 43901 bytes

Temporary Storage

Undo


Logout

The page smart.htm can also be customized to your needs by selecting it via the menu Config -> Up / Download -> Download, editing it and uploading it back into the device via Config -> Up / Download -> Upload.



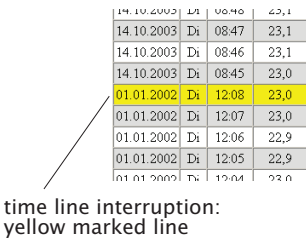
8 Data logger


The Web-Graph Air Quality stores all the measured values in a non-volatile ring memory, so that they are retained even after loss of power or actuating the reset button.

 The measured data in the data logger are recalled through the user page of the device (Home -> User or <http://xxx.xxx.xxx.xxx/user.htm>).

Under *Config -> Device -> Data Logger -> Memory* you can clear the memory.

An interruption of the timeline, caused for example by a reset or subsequent time server synchronization, is shown on the data logger page as a yellow line.



 When alarm limit values are set, temperatures which are not within the valid range are highlighted in red.

9 Appendix

9.1 Alternate methods of assigning the IP address

9.1.1 Using DHCP-/BOOTP protocol

Many network use DHCP (Dynamic Host Configuration Protocol) or BOOTP for centralized and dynamic assigning of the IP addresses. For Web-Graph devices it makes no difference which of the two protocols is used, since DHCP is simply a downward-compatible extension of BOOTP. DHCP servers thus also make use of requests from BOOTP clients.

The following parameters can be assigned to the Web-Thermograph using these protocols:

- IP-Address
- Subnet-Mask
- Gateway-Address


It is not possible to transmit additional parameters or a lease time.


Function

To obtain an IP address, the device sends a corresponding BOOTP request as a broadcast to the network after each restart. The reply then generated by the DHCP/BOOTP server contains the IP address as well as the subnet mask and gateway address. The Web-Thermograph immediately stores this information in its non-volatile memory.

For starting up the device in DHCP/BOOTP networks, please consult with your system administrator. If the address is assigned using DHCP, you must also note that a reserved IP address is needed. To update the respective address database, the administrator will need the Ethernet address of the Web-Graph Air Quality, which can be found on the part label on the housing of the device.

After the necessary entries have been made, the device automatically gets the desired IP address after each reset. To ensure that the Web-Thermograph is also available should the DHCP/BOOTP server fail, the previous IP address is retained if a reply is not forthcoming.

 *In DHCP environments the IP address you assign must be reserved by means of a fixed link to the Ethernet-address of the Web-Thermograph. Under Windows NT this is done in the DHCP Manager under menu item „Reservations“. Linux provides the file „dhcpd.conf“.*

 *If this option will be changed in the web-configuration the system change will first be updated after a device reset.*

9.1.2 ...Using ARP command

The prerequisite is a PC which is located in the same network segment as the Web-Thermograph and which has the TCP/IP protocol installed on it. Read the MAC address from the label on the device (e.g. EN=00C03D0012FF). Under Windows you first ping another network station and then use the command line described below to make a static entry in the ARP table of the computer:

```
arp -s <IP-Address> <MAC-Adresse>
```

e.g. under Windows:

```
arp -s 172.0.0.10 00-C0-3D-00-12-FF
```

e.g. under SCO UNIX:

```
arp -s 172.0.0.10 00:C0:3D:00:12:FF
```

Ping the device again (in our example ping 172.0.0.10). The IP address is now stored in non-volatile memory.



This method works only if no IP address has been assigned to the Web-Graph Air Quality yet, which means the entry is 0.0.0.0. To change an already existing IP address hyou must open the configuration menu using your browser or use the serial method (see below).

9.1.4 ...Using an RARP server (UNIX only)

Working with an RARP server activated under UNIX is based on entries in the configuraiton files `/etc/ethers` and `/etc/hosts`. First expand `/etc/ethers` by one line with the assignment of the Ethernet address of the Web-Thermnograph to the desired IP address. In `/etc/hosts` the link with an alias is then determined. Once you have connected the device in the network segment of the RARP server, you can use the network to assign the desired IP address to the device.

Example:

Your Web-Thermograph has MAC address EN=00C03D0012FF (sticker on the housing). You want to give it IP address 172.0.0.10 and the alias WT_1.

Entry in the file `/etc/hosts`: 172.0.0.10 WT_1

Entry in the file `/etc/ethers`: 00:C0:3D:00:12:FF WT_1

If the RARP daemon is not yet activated, you must start it now using the command „`rarpd -a`“.

9.2 Example for creating your own Web pages

You can freely configure the standard display pages of the device (user.htm, home.htm, log.htm). Special control elements let you insert tags into the page. The following shows an example for creating the „user.htm“ page.

Create an HTML file which must begin with the expression

```
<user.htm> (or log.htm oder home.htm)
```

Then enter the HTML code.

You can display the following parameters on your pages:

```
<w&t_tags=t1>
```

Displays the current temperature (°C)

```
<w&t_tags=h1>
```

Displays the current relative humidity (%)

```
<w&t_tags=ah>
```

Displays the current relative humidity (g/m³)

```
<w&t_tags=rc>
```

Displays the „Rate of change“ over the last 5 minutes (°C)

```
<w&t_tags=v1>
```

Displays the current air quality value (ppm)

```
<w&t_tags=time>
```

Inserts the current time of day.

```
<w&t_tags=steps>
```

Inserts a list box for selecting the times you want to display.

```
<w&t_tags=ok_button>
```

Inserts an „OK“ button which sends the selected parameters to the device.

`<w&t_tag=session>`

Inserts a hidden session control so that the use is not logged out of the device when leaving the page. The expression is only needed if you want to design your own button for sending. In that case insert this expression between `<form action>` and `</form>`.

Background color:

Background colors which vary according to the sensor state can be used for values shown in tables:

`<w&t_tag=bct>`

Describes a background color (BGColor) which varies with the alarm status of the sensor. If there is a limit violation, this color is red. Otherwise the tag does not describe an explicit color. This tag is needed for example to show limit violations in red in the log table. (°C)

`<w&t_tag=bch>`

Background color for the relative humidity value.

`<w&t_tag=bcah>`

Background color for the absolute humidity value.

`<w&t_tag=bcrc>`

Background color for the current „Rate of change“.

`<w&t_tags=sensorx>`

Inserts the name of sensor x (1: Temperature, 2: Humidity, 3: Air Quality) into the page and contains a link for the complete sensor description.

`<w&t_tags=device_name>`

Inserts the assigned device name.

`<w&t_tags=device_text>`

Inserts the freely configurable descriptive text for the device.

`<w&t_tags=location>`

`<w&t_tags=contact>`

inserts the respective text elements, which are configured under Config >> Device >> Text.

`<w&t_tags=reload_button>`

Inserts a „Reload“ button which reloads the current page.

`<w&t_tags=previous_button>`

`<w&t_tags=next_button>`

Inserts a button for moving forward or backward in the measurement table.



The „Previous“ button and the „Next“ button only have a function in the „log.htm“ file.

`<w&t_tags=logtable>`

Inserts a table with the current measured values. This table can be navigated only on the „log-page“ using the „Next“ and „Previous“ buttons (see above). Only the current temperature values can be displayed on the two other pages (user.htm and home.htm).

Example for setting a background color in a table:

```
<tr>
  <td colspan="3" align="center">
    <table border="2">
      <tr>
        <th><w&t_tags=sensor1></th>
      </tr>
      <tr>
        <td <w&t_tags=bct>><w&t_tags=t1> &deg;C</td>
      </tr>
    </table></td>
</tr>
```

If there is a limit violation, the temperature is shown on a red background.

To specify the output format of the data, insert the following line in your document:

```
<form action="log.htm" method="POST" >
....
</form>
```

You can specify CSV output by using the expression

```
<form action="thermo.csv" method="POST" >
....
</form>
```



Resetting the device to its factory default values restores the original HTML pages.

Sample user.htm:

```
<user.htm>
<html>
<head>
<title>Untitled Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

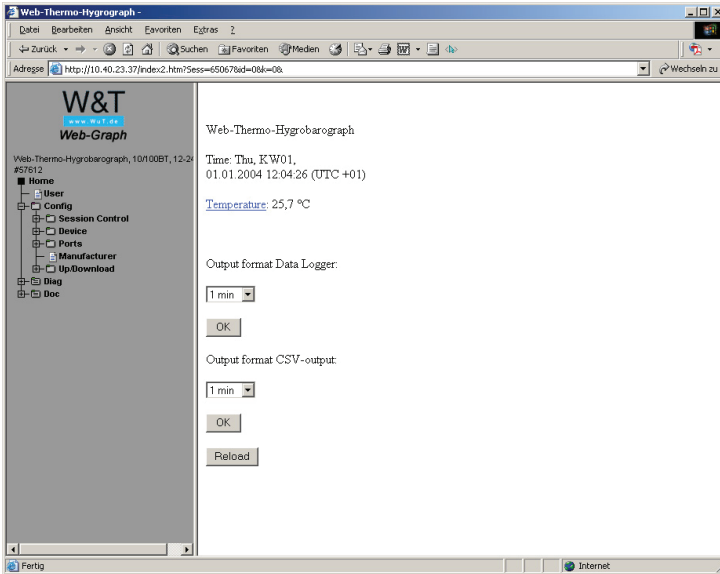
<body bgcolor="#FFFFFF" text="#000000">
<p>Web-Graph Air Quality</p>
<p>Time: <w&t_tags=time></p>
<p><w&t_tags=sensor1>: <w&t_tags=t1> °C</p>
<p>&nbsp;</p>

<form action="log.htm" method="POST">
  <p>Output format Data Logger:</p>
  <p><w&t_tags=steps></p>
  <p><w&t_tags=ok_button></p>
</form>

<form action="thermo.csv" method="POST">
  <p>Output format CSV-output:</p>
  <p><w&t_tags=steps></p>
  <p><w&t_tags=ok_button></p>
</form>

<form action="user.htm" method="GET">
  <p><w&t_tags=reload_button></p>
</form>
</body>
</html>
```


The Web-Graph Air Quality displays this page in the Web browser as follows:



Sample log.htm:

```
<log.htm>
<html>
<head>
<title>Untitled Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body bgcolor="#FFFFFF" text="#000000">

<form action="log.htm" method="POST">
  <w&t_tags=previous_button>
</form>

<w&t_tags=logtable>

<form action="log.htm" method="POST">
  <w&t_tags=next_button>
</form>
</body>
</html>
```

The Web-Graph Air Quality displays this page in the Web browser as follows:

W&T

www.W&T.de

Web-IO

Web-Graph Air Quality, 10/100BT, 12-24V

#57618

Home

User

Smart

Config

Diag

Doc

Temporary Storage

Date	Day	Time	Temperature	rel. Humidity	VOC
28.04.2014	Mon	11:05	23,4	38,9	548,5
28.04.2014	Mon	11:04	23,4	38,9	544,8
28.04.2014	Mon	11:03	23,4	38,9	547,7
28.04.2014	Mon	11:02	23,4	39,0	553,9
28.04.2014	Mon	11:01	23,4	38,9	550,2
28.04.2014	Mon	11:00	23,4	38,7	547,0
28.04.2014	Mon	10:59	23,4	38,6	555,4
28.04.2014	Mon	10:58	23,4	38,4	544,3
28.04.2014	Mon	10:57	23,4	38,4	546,9
28.04.2014	Mon	10:56	23,4	38,3	537,5
28.04.2014	Mon	10:55	23,4	38,2	543,9
28.04.2014	Mon	10:54	23,4	38,2	554,4
28.04.2014	Mon	10:53	23,4	38,2	566,3
28.04.2014	Mon	10:52	23,5	38,2	565,6
28.04.2014	Mon	10:51	23,5	38,0	563,2
28.04.2014	Mon	10:50	23,5	38,0	571,2
28.04.2014	Mon	10:49	23,5	37,9	580,8
28.04.2014	Mon	10:48	23,6	37,9	591,6
28.04.2014	Mon	10:47	23,6	37,8	596,6
28.04.2014	Mon	10:46	23,6	37,8	604,0
28.04.2014	Mon	10:45	23,6	37,8	614,1
28.04.2014	Mon	10:44	23,6	37,8	622,9
28.04.2014	Mon	10:43	23,6	37,7	643,9
28.04.2014	Mon	10:42	23,7	37,6	672,3

Temporary Storage

9.3 Firmware Update

The Web-Graph Air Quality firmware is under continuous development. The following section describes the procedure for uploading new firmware as it becomes available.

- Where to I obtain the current firmware?
- Firmware update over the network using Windows

9.3.1 Where do I obtain the current firmware?

The most up-to-date firmware including the necessary update tools and a revision history are published on our Web pages under the following address: <http://www.wut.de>

Before downloading, write down the 50digit type number for the Web-Graph Air Quality found on the part label. From the homepage you go to the product overview, which is sorted by article number and from which you can get directly to the data sheet for your unit. From there follow the link to the current firmware version.

9.3.2 Firmware-Update over the network using Windows

The prerequisite is a PC running under Windows 9x/NT/2000/XP with a network connection and activated TCP/IP stack. For the update process you will need twofiles whych, as already described, can be downloaded from the homepage <http://www.wut.de>.

- The executable update tool for sending the firmware to the Web-Graph Air Quality
- The file with the new firmware which you want to send to the Web-Graph Air Quality

No special preparation of the Web-Graph Air Quality is neces-

sary to perform the firmware update.

The *WuTility* used for the update detects all the WuT devices in your network and is essentially self-explanatory. If you do have any questions or if anything is unclear, please use the associated documentation or our online help.



Never intentionally interrupt the update process by disconnecting the supply voltage or pressing the Reset button. After an incomplete update the Web-Graph Thermo-Hygrometer will be incapable of functioning.

Never mix files having different version numbers in the file name. This will result in malfunction of the device.

The Web-Graph Air Quality automatically recognizes when transmission of the new firmware is complete and automatically performs a reset.

9.3.3 LED indicators

- Power-LED: Indicates presence of supply voltage. If the LED does not come on, please check that the power supply is properly connected.
- Status-LED: Flashes whenever there is network activity of the Web-Thermo-Hygrometer. Periodic flashing indicates that the unit is ready.
- Error-LED: The Error LED uses various flash codes to indicate error conditions on the device or network port.

1x flashing of the Error-LED = Check network connection. The Web-Thermo-Hygrograph is not receiving a link pulse from a hub or switch. Check the cable or the hub/switch port.

2x bzw. 3x flashing of the Error-LED = Perform a reset by interrupting power. If the error cannot be cleared, reset the device to its factory defaults. Since this resets all network settings, you should first write down the existing network settings.

`Config -> Session Control -> LogOut -> Restore Defaults`

After a reset the device is restored to its factory defaults. Reconfigure your network settings.

Power-LED +Status-LED +Error-LED an = Self-test error

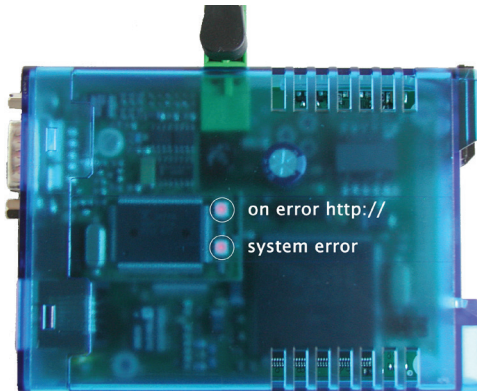
The self-test which is performed after every start or reset of the Web-Graph Air Quality could not be correctly finished, for example due to an incomplete update of the firmware. When in this state the device is no longer operational. Please return the unit for service.

Auxiliary LEDs (internal)

- on error <http://xxx.xxx.xxx.xxx/diag> -LED: Indicates internal configuration errors. For troubleshooting, please open the page <http://xxx.xxx.xxx.xxx/diag> in the device.
- system error: Serious hardware error. Attempt to start the device up again by interrupting supply voltage. If the condition persists, please return the unit for inspection.



If the Web-Graph Air Quality has no IP address or Address 0.0.0.0, the on error and system error LEDs remain on! The system error LED flashes 3x after a brief time. The LEDs do not turn off until an IP address has been assigned.



9.4 Technical Data

Prod. No.:	57618
Thermo-Hygro Probe:	I2C connection
VOC probe:	I2C connection
Network:	10/100BaseT autosensing
Power supply:	Power-over-Ethernet (PoE) or via screw terminal with DC 18V .. 48V (+/-10%) or AC 18Veff .. 30Veff (+/-10%)
Measuring unit	
Measuring range:	0°C...85°C, 5..95% rF, 450-2000ppm VOC/CO2 Equivalent
Resolution:	1/10 °C, 1/10% rH
VOC sensor, detected substances:	Alcohols Aldehydes aliphatic hydrocarbons Amines Aromatic hydrocarbons CO, CH4, LPG Ketones Organic acids
Measuring error:	Temperature: typ. @ 25°C ±0.3°C max. @ 0..50°C ±1.2°C Relative humidity: typ. @ 25°C ±3%rH max. @ 0..50°C ±7%rH (0-100%rH) Long-term stability typ. <0.5%rH / year
Measuring frequency:	4 Seconds
Storage frequency:	1, 5, 15, 60 min
Memory depth (832kB):	min. 10 weeks, max. 8 years
Deviation of the internal clock:	max. 4.32 min. / month (without time server calibration) max. 3 sec. (with time server calibration)
Other data:	
Electrical isolation:	Measurement inputs to network: min. 500 volts
E-mail function:	Mail for sending alarms or as reporting function
Power supply:	Power-over-Ethernet (PoE) or via screw terminal with DC 18V .. 48V (+/-10%) or AC 18Veff .. 30Veff (+/-10%)
Current consumption:	AVG: 200mA @12VDC, 100mA @24VDC, 100mA @20VAC, Max: 240mA @12VDC PoE Class 1 (0,44 - 3,84W)
Housing:	Plastic compact housing, 105x75x22mm
Weight:	approx. 200g
Ambient storage temperature:	-25+50°C
Ambient operating temperature:	0 .. +50°C