FAQs for the Web-Thermometer

Commissioning, configuration, troubleshooting

How does the Web Thermometer obtain its IP address?

The following four alternatives are available for first assigning IP addresses to Web Thermometers. Detailed descriptions of all methods are contained in the relevant section of the manual Web-IO 1x / 2x / 8x Thermometer.

Management and inventorying tool WuTility
Using the *Scan* function of *WuTility*, Web Thermometers and Web-IOs located in the local sub-network are automatically searched for and shown in a list. Devices whose current IP address is 0.0.0.0 (= factory default setting) can then be assigned a valid address using the button *Assign IP address*.
Static ARP cache entry
Via a static entry in the ARP cache of a TCP/IP computer located in the same sub-network followed by a ping. In the same way as when using *WuTility*, this method can only be used if the Web Thermometer does not yet have an IP address at this time.
Input example in Windows: *arp -s [IP address] [MAC address]*
Assignment via the serial interface
If during the boot procedure the Web Thermometer receives a continuous data stream (data format 9600, n, 8) having the content "x" (= ASCII 120), a prompt is displayed into which it is possible to enter a new IP address. This method overwrites the current and works irrespective of whether an IP address is already assigned or not.
Assignment via BOOTP / DHCP
In centrally administered networks, the IP address can also be assigned using a DHCP or BOOTP server. This method also offers the advantage that these protocols can also be used for setting the subnet mask and the gateway address. In such centrally administered environments, **before** connecting the Web Thermometer please contact your system administrator and ask him to reserve a fixed IP address in the DHCP system for the Com-Server.

Additional information:
Manual for the Web Thermometer
How are Web Thermometers prevented from being given spurious IP addresses in DHCP environments ?

How does the Web Thermometer obtain the valid subnet mask and gateway address?

In order to be able to communicate beyond the local network, in addition to the IP address, the Web Thermometer also requires the subnet mask and gateway address applicable for the relevant sub-network. The two values must be requested from the network administrator responsible.

Setting via the Telnet configuration menu (57601 only, Web-IO 1x Thermometer)
If the Web Thermometer already has an IP address, then the subnet mask and gateway can be assigned and saved via the Telnet configuration (telnet [IP address] 1111] from a computer located in the same sub-network.
Assignment via the serial interface
For Web Thermometers starting from firmware version 1.37, the subnet mask and gateway address can also be configured via the serial interface. During the serial IP assignment, the values can be specified separated by commas, with no separating spaces. Input example: *172.17.222.10,255.255.255.0, 172.17.222.1*
Assignment via BOOTP / DHCP
In centrally administered networks, the subnet mask and the gateway can also be assigned together with the IP address via the BOOTP or DHCP server.

Additional information:
Manual for the Web Thermometer

How can a Web Thermometer having an unknown IP address be assigned a new one?

The simplest and invariably effective method is to assign a new IP address via the serial port with the aid of a terminal program. This method overwrites the existing setting, i.e. it is completely independent of the current setting of the Web Thermometer.

A second method is to reset the Web thermometer to its factory default settings with the aid of the serial interface. If, during the boot procedure, the Web thermometer receives a continuous data stream (data format 9600, n, 8) having the content "f" (= ASCII 102), the procedure is started for resetting the device to the factory default settings. For this purpose, it is necessary to connect a network cable or else the device will not restart fully. The Web thermometer twice acknowledges the receipt of the sequence and the initiation of the process by repeatedly flashing the "On error http" and "System error" LED. After approx. 20 seconds, the procedure is completed. All network settings also are lost in the process. Reassign the IP address.

Additional information:
Manual for the Web Thermometer
How does the Web Thermometer obtain its IP address?

Why can't I assign an IP address using a static entry in the ARP cache?

This method can only be used if the Web Thermometer does not already have a different IP address. (See also How can a Web Thermometer having an unknown IP address be assigned a new one?)
Some older Windows versions have a defective version of the program arp.exe, which is needed to edit the system-internal ARP cache. Here you can only make a new static entry if at least one other entry already exists. In this case, one remedy is to send a PING request to another TCP/IP station in the network, since this will force a dynamic ARP entry. The desired static entry can then be made immediately following.

Additional information:
How can a Web Thermometer having an unknown IP address be assigned a new one?

Why can't I assign an IP address through the serial port?

1. Regardless of the serial transmission parameters set for normal operation, the Web Thermometer expects for entering the "x" characters (=ASCII 120) on boot-up *always* the transmission format 9600 baud, 8 data bits, no parity.

2. For assigning the IP address, the terminal program used should be configured to "No handshake". Specifically in the case of the Web-IO 1x Thermometer, problems may occur because a measurement input is connected to the DTR pin. You should preferably use a serial cable here for which only the data lines (pins 2.3) and ground (pin 5) are connected through. For serial IP assignment, we recommend using our tools. *Easyterm*. Alternatively, it is of course also possible to use other serial terminal programs, such as e.g. *Hyperterminal* with direct connections to the relevant COM port.

3. The Web Thermometer only reacts to the lowercase letter "x" (=dec 120 = hex 78). Thus, if the CapsLock function is left switched on by mistake, the received characters are ignored.

Additional information:
Manual for the Web Thermometer

In DHCP environments, how are Web Thermometers prevented from being given spurious IP addresses?

The Web Thermometer uses the DHCP-compatible BOOTP protocol to avoid this problem. In contrast to DHCP, this is based on fixed (stored in a corresponding database) reservations of certain IP addresses for certain MAC addresses. This means a DHCP server in the network will not assign an IP address without a corresponding entry for the MAC address. Since some DHCP implementations (e.g. Win2000 servers) however use their standard setting to treat BOOTP and DHCP requests the same, we recommend deactivating the BOOTP client of the Com-Server if you want to send the IP address serially or via ARP. There are three ways to turn it off:

- for Web Thermometers which are already operating, via Telnet configuration (#57601 only) or
- via Web-Based Management under Config -> Device -> Network -> BOOTP disable
- serially by appending the characters "-0" behind the IP address.

Additional information:
Manual for the Web Thermometer

Is there a facility for assigning the IP address via the serial interface without a PC?

If you have a handheld PC (e.g. a palm), you have the facility of assigning the IP address via the integral serial interface of the handheld PC. Suitable terminal programs for handheld PCs can be found on the Internet.

Because it has proven difficult to enter the expression 'xxx' with the input pen in the available time, you are recommended to use the macro function which is provided by nearly every program.

How can the Web Thermometer be reset to its factory default settings?

1. The Web-IO 1x Thermometer #57601 can be reset via the Telnet configuration menu using the port number 1111. Following selection of the relevant menu item in the "*System setup*" and confirmation with "Y", the Web Thermometer closes the Telnet session, executes a reset and loads its factory default settings. In the process, the IP address is reset to 0.0.0.0, which enables reassignment with the aid of a static ARP entry (see also note)

   Note: *For a possible check of whether the Com-Server is really switched to its factory settings, the dynamic ARP entry previously generated by the last Telnet session must first be deleted. If this is not done, the Com-Server takes destination IP address contained in the first of the packets directed to its MAC address and stores it as its own. Command for deleting an ARP entry:* arp -d [IP address]

2. In the case of all models, the possibility exists of resetting the relevant device via the serial interface. If, during the boot procedure, the Web Thermometer receives a continuous data stream (data format 9600, n, 8) having the content "f" (= ASCII 102), the procedure is started for resetting the device to its factory default settings. For this purpose, it is necessary to connect a network cable or else the device will not restart fully. The Web thermometer twice acknowledges the receipt of the sequence and the initiation of the process by repeatedly flashing the "On error http" and "System error" LED. After approx. 10 seconds, the procedure is completed. All network settings are also lost in the process. Reassign the IP address.

Additional information:
Manual for the Web Thermometer

Why does the configuration menu of the Web-IO 1x Thermometer not appear when a Telnet connection is established?

The configuration menu of the Web thermometer is only available via the TCP port 1111. If the connection is established from the Telnet client without explicit specification of the port number 1111, the Telnet default port 23 is assumed. In Windows, it is quickest to configure the Web Thermometer via
"Start > Run..." using command line *telnet [IP address] 1111*.
The models 57603 and 57604 can only be configured via the Web browser because no Telnet menu is implemented here.

Additional information:
Manual for the Web Thermometer

Where can I find current versions of the firmware, manuals, tools etc. for the Web Thermometers?

The quickest way is via the insider search available on our homepage. Specify the article number of the relevant Web Thermometer and select the desired item from the menu below that.

How can a record of the network traffic be recorded?

In the case of all terminal equipment that is connected to a network, communications problems can occur for which there would appear to be no reason at first glance. In such cases, it is helpful to record the data traffic of this equipment by means of a network analyzer. Notes on the procedure can be found here.

How can Web Thermometers be inventoried in the network?

WuTility
With the aid of the free-of-charge Web Thermometer management and inventorying tool WuTility for Windows. This automatically detects all Web thermometers and Web-IO devices located in the relevant sub-network (including those not having a valid IP address) and creates a list of their most important basic information. Further functions include the direct starting of the Telnet configuration (#57601), first assignment of IP addresses and software updates.

SNMP
SNMP-based central management is frequently found particularly in large networks. The latest generation of all Web Thermometers and Web-IOs has an SNMP Agent which enables integration in these environments. In addition to the MIB-II, a Web-thermometer-specific MIB (private MIB) is also supported.

Additional information:
Manual for the Web Thermometer

Why, following replacement of a Web Thermometer, is it no longer addressable under the "old" IP address?

The reason for this is often the use at roughly the same time of an identical IP address for 2 devices having different MAC addresses. TCP/IP stations update a dynamically managed ARP table which contains the associations of IP addresses to MAC addresses. If a replacement Web Thermometer is taken into operation with the same IP address as its predecessor, then prior to reestablishing communication, it may therefore be necessary (if appropriate) to delete the "old" ARP entry in the last device evaluating the IP protocol before the Web thermometer.

After a certain time, ARP entries are deleted automatically with no data flow, so that, if a longer interval elapses between device replacement and the reestablishment of communications, it is possible to do without the manual deletion. Above and beyond that, when restarting, the Web Thermometer generates special ARP packages which have the function of updating the ARP cache of newer TCP/IP stacks and switches.

Example 1: A Windows machine communicates without use of a router with a Web Thermometer in the same IP subnet. In this case it is sufficient to use the following command to delete the no longer valid ARP entry: arp -d [IP address]

Example 2: Communication with a Web thermometer runs via one or more routers. After a replacement, the ARP entry of the last router (gateway) situated before the Web Thermometer must be deleted. The specific procedure can be found in the documentation of the relevant manufacturer.

Note: *Since switches also process and save the MAC addresses of the connected devices, these must also be taken into account when replacing a device.*

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