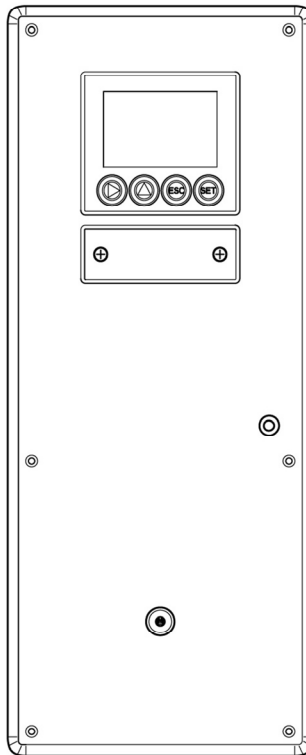




testo 6383 · differential pressure transmitter
testo 6610 · Probes
P2A software · Parameterizing, adjusting and analyzing
software

Instruction manual Volume 2





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6 testo 6610 probes

6.1. Specifications

6.1.1. Functions and use

The plug-in, adjusted probes from the testo 6610 family are used together with the testo 6383 transmitter.

These measuring units are suitable for the following applications, for example:

- Process instrumentation
- Clean rooms
- Test benches
- Drying processes
- Production and storage air quality
- Complex room climate applications.

6.1.1.1. Digital probes:

The probes are adjusted in the factory and transmit their adjustment data to the internal memory of the testo 6383 transmitter. The information is only transmitted between the probes and transmitter digitally. The probes can therefore be disconnected from the transmitter for adjustment or servicing while the transmitter itself can remain at the measuring point.



Hint: We recommend in this case that a probe of the same type be inserted into the transmitter immediately in order to be able to continue measuring with minimal interruption.

The transmitter identifies the probe and records that a probe was connected in the history.



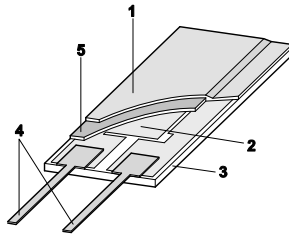
The testo 6383 transmitter can only be used with testo 6610 probes.

6.1.1.2. The Testo humidity sensor

With the Testo humidity sensor, which has been in successful use and continually improved for more than ten years, the focus has from the very beginning been on both accuracy parameters, namely measuring uncertainty and long-term stability.

The capacitive humidity sensor is in principle a plate capacitor consisting of two electrically conductive plates (electrodes **(1)** and **(2)**, see diagram below) opposite each other.

A humidity-sensitive polymer (**5**) serves as the dielectric. The special feature lies in the perfect way the individual layers are matched to each other. This is evident particularly in the top electrode, which has to perform two tasks that, at first glance, appear contradictory: it must be completely permeable to the water vapour that is to be fed into the polymer dielectric, but at the same time it must be impervious, smooth and repellent to condensate, oil and dirt in order to protect the sensor.



- 1 Cover electrode
- 2 Bottom electrode
- 3 Substrate (ceramic substrate for mechanical protection)
- 4 Connections (protected against corrosion)
- 5 Dielectric layer



The humidity sensor cannot be exchanged by the customer (except for 6611). The humidity sensor may not be damaged or touched. Contamination and damage lead to an impairment of the measurement and the measuring accuracy.

6.1.1.3. Self-diagnosis

The probes in the testo 6610 range monitor their functionality themselves and report the following faults:

- Sensor breaks
- Sensor short-circuit
- Condensation

The condensation message is issued at a reading of 100 % RH and deactivated once the readings are within the valid range.

- Error message with drift at the adjustment points
- Value for relative humidity less than 0 % RH.

The trigger threshold is set at -2 % RH. This means that an error message is only issued once a clear effect is discernible.

- Early warning when sensor corrosion is starting to develop
The testo 6617 probe is able to signal the first signs of corrosion. The probe can thus be changed at an early stage without interrupting the machine availability.

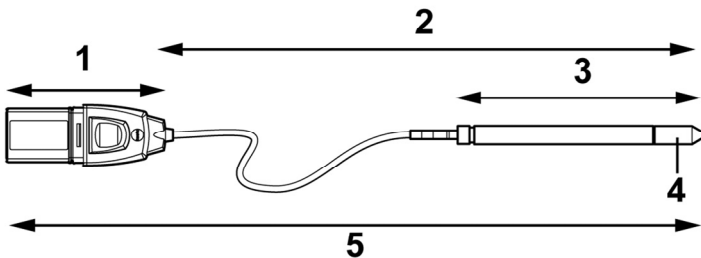
- Self-adjustment (testo 6615 only)
- Excess temperature

Error message if permissible process temperature is exceeded

6.1.2. Design of the probe

The probes of the testo 6610 family are made up of the following components (included in delivery):

- Probe connector
- Probe shaft with protection cap and sensors (% RH and °C or °F)
- Probe cable bend radius minimum \varnothing 50 mm.



- 1 Probe connector
- 2 Probe length
- 3 Probe
- 4 Protection cap, sensor underneath
- 5 Probe

6.1.3. Accessories

The following accessories are available for the probes from the testo 6610 family:

- Filters and protection caps (see Overview of probe and filter types, page 76).
- Calibration certificate in accordance with ISO and DAkkS (see Accessories and spare parts, page 134).

6.2. Product description

6.2.1. Overview of probe and filter types

6.2.1.1. Probe version

A detailed description of the probe versions can be found from see Integrated humidity probe, page 79 onwards.

The following probe versions are available for the testo 6383 transmitter:

| Version | Article no. | Characteristic |
|---------------------------|-----------------------------|--|
| Integrated humidity probe | KMAT option D04 (0636 6610) | Wall probe version; accuracy to ± 1 % RH; temperature range -20 to +70 °C/-4 to +158 °F, plug-on sensor |
| testo 6612 | 0555 6610-L12 | Duct probe version; accuracy to ± 1 % RH; temperature range -30 to +150 °C/-22 to +302 °F, sensor soldered |
| testo 6613 | 0555 6610-L13 | Cable probe version; accuracy to ± 1 % RH; temperature range -70 ... +180 °C / -94...+356 °F, sensor soldered |
| testo 6614 | 0555 6610-L14 | Heated cable probe version; accuracy to ± 1 % RH; temperature range -40 to +180 °C/-40 to 356 °F, sensor soldered |
| testo 6615 | 0555 6610-L15 | Trace humidity cable probe version; accuracy to ± 6 K at -60 °Ctd; temperature range -40 to +120 °C/-40 to +248 °F, sensor soldered |
| testo 6617 | 0555 6610-L17 | Cable with cover electrode monitoring probe version; accuracy to ± 1.2 % RH; temperature range -40 to +180 °C/-40 to +356 °F, sensor soldered |

6.2.1.2. Determining the accuracy/measuring uncertainty

The entries for the measuring uncertainty for the probe are determined in accordance with GUM (Guide to the Expression of Uncertainty in Measurement/DIN V ENV 13005).

All parts that make up the measuring uncertainty given by Testo are listed below. When comparing the measuring uncertainty/accuracy between manufacturers, which components are included is to be taken into account. In many cases, not all elements that contribute to measuring uncertainty are assessed, for example if the error contribution of the production adjustment for some manufacturers is shown separately or not at all.

The measuring uncertainty of the probe includes the sensor and its electronics as well as the output of the digital measuring signal:

- 1 Linearity including scatter Systematic error and scattering of the components (due to manufacturing tolerances)
- 2 Hysteresis Hysteresis indicates the maximum deviation of the readings that are obtained when you set the same value for the parameter, once coming from a smaller value, once coming from a larger value (humidity sensors actually have no hysteresis, but rather very slow adjustment effects that appear to be hysteresis when considered only for a short period.)
- 3 Reproducibility Repeatability (scattering of the readings in the event of the same parameter being entered successively)
- 4 Production adjustment area The measuring uncertainty of the reference instruments of the adjustment area (including the reference instrument) in production
- 5 Uncertainty of the testing Uncertainty of the procedure for determining points 1 and 2

6.2.1.3. Ordering options for testo 6610 probe (0555 6610)

| Order code | Characteristic |
|----------------------------|---|
| Lxx Probe type | |
| L12 | Probe 6612 |
| L13 | Probe 6613 |
| L14 | Probe 6614 |
| L15 | Probe 6615 |
| L17 | Probe 6617 |
| Mxx Protection caps | |
| M01 | Protection cap made of stainless steel |
| M02 | Protection cap made of wire mesh |
| M03 | Protection cap made of PTFE |
| M04 | Metal protection cap (open) |
| M06 | PTFE protection cap with condensate drip hole |

| Order code | Characteristic |
|-------------------------|--|
| M07 | Protection cap made of PTFE with condensate drip hole and condensation protector |
| M08 | Protection cap for H ₂ O ₂ atmospheres |
| Nxx Cable length | |
| N01 | 1 m cable length (testo 6613, 6614, 6615, 6617) |
| N02 | 2 m cable length (testo 6613, 6614, 6615, 6617) |
| N05 | 5 m cable length (testo 6613, 6614, 6615, 6617) |
| N10 | 10 m cable length (testo 6613, 6614, 6615, 6617) |
| N23 | Cable length specifically for duct versions (testo 6612) |
| Pxx Probe length | |
| P12 | Probe length approx. 120 mm (testo 6613) |
| P20 | Probe length approx. 200 mm (testo 6612, 6613, 6614, 6615, 6617) |
| P30 | Probe length approx. 300 mm (testo 6612, 6613) |
| P50 | Probe length approx. 500 mm (testo 6612, 6613, 6614, 6615, 6617) |
| P80 | Probe length approx. 800 mm (testo 6612, 6613) |

6.2.1.4. Protection caps

One of the following protection caps can be used for each probe version:

| Filter* | Article no. ** | Characteristic | Length A (mm) |
|---------|--------------------------|--|---------------|
| M01 | 0554 0647 | Protection cap made of stainless steel | 33 |
| M02 | 0554 0757 | Protection cap made of wire mesh | 40.3 |
| M03 | 0554 0759 | Protection cap made of PTFE | 35 |
| M04 | 0554 0755 | Metal protection cap (open) | 35 |
| M06 | 0554 9913 | PTFE protection cap with condensate drip hole | 35 |
| M07 | 0554 9913 + 0554 0166 | Protection cap made of PTFE with condensate drip hole and condensation protector | 35 55 |
| M08 | 0699 5867/1 | Protection cap for H ₂ O ₂ atmospheres | 35 |

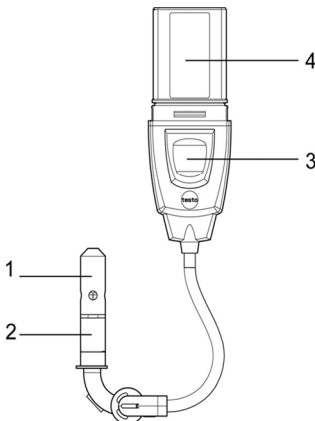
* When ordering the probe, please use this protection cap code, cf. see Ordering options for testo 6610 probes (0555 6610), page **140**.

** When purchasing a replacement (protection cap only), please use this order number.

6.2.2. Integrated humidity probe

The integrated humidity probe is mounted on the wall together with the ready-wired testo 6383 transmitter.

At a glance



- 1 Protection cap
- 2 Probe shaft
- 3 Key
- 4 Connector

Application

- Monitoring and regulating the air quality in clean rooms



Technical data

Parameters

- Humidity (% RH/°C_{td}/°F_{td}) etc.
- Temperature

Measuring range

- Humidity: 0 to 100 % RH
- Temperature: -20 to +70 °C/-4 to +158 °F

Material

- Probe shaft: Stainless steel
- Connector: ABS plastic

Accuracy (at 25 °C/77 °F)*

- Humidity

- $\pm (1.0 \% \text{ RH} + 0.007 \times \text{reading})$ for 0 to 90 % RH
- $\pm (1.4 \% \text{ RH} + 0.007 \times \text{reading})$ for 90 to 100 % RH
- 0.02 % RH/K, dependent upon the process temperature (with a deviation of 25 °C/+77 °F)
- 0.02 % RH/K, dependent upon the electronics temperature (with a deviation of 25 °C/+77 °F)
- Temperature
 - $\pm 0.15 \text{ °C}$ (0.27 °F) with slope PT1000 class AA
 - * Refer to the charts below for the correlation between temperature and accuracy.

Reproducibility

- Better than $\pm 0.2 \% \text{ RH}$

Sensor

Response time without protective filter: t 90 max. 15 s

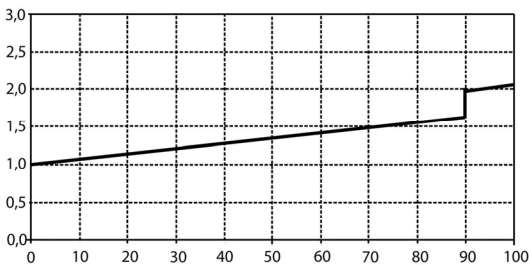
Probe dimensions

- Diameter of probe shaft: 12 mm
- L = approx. 47 mm
- L – A = 32 mm
- A = approx. 32 mm

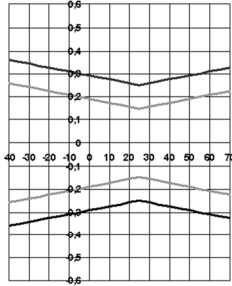
Measuring accuracy of the integrated humidity probe

Humidity error, absolute $|\pm \% \text{ RH}|$ as a factor of process humidity (% RH)

6611, 6612, 6613



Temperature error as a factor of process temperature and temperature of electronics



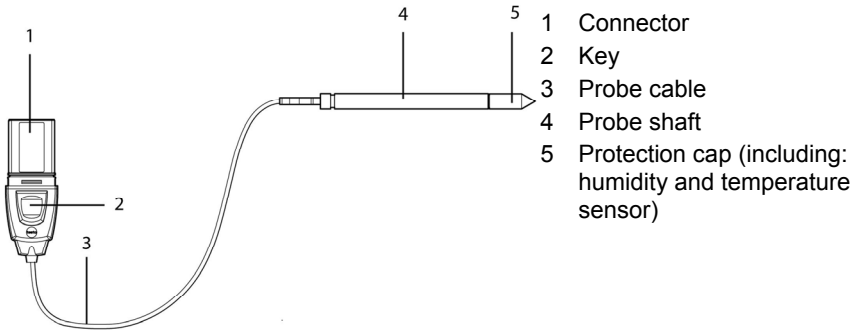
Grey line: System error 6383 + probe, electronics 25 °C/+77 °F

Black line: System error 6383 + probe, electronics -25 to 70 °C/-13 to 158 °F

6.2.3. testo 6613 cable probe

The testo 6613 probe is used when the spatial separation of the transmitter and probe is required.

At a glance



⚠ WARNING

In the event of overpressures, the probe may become a projectile.

> Mount the probe pressure-tight (see pressure resistance under Technical data)

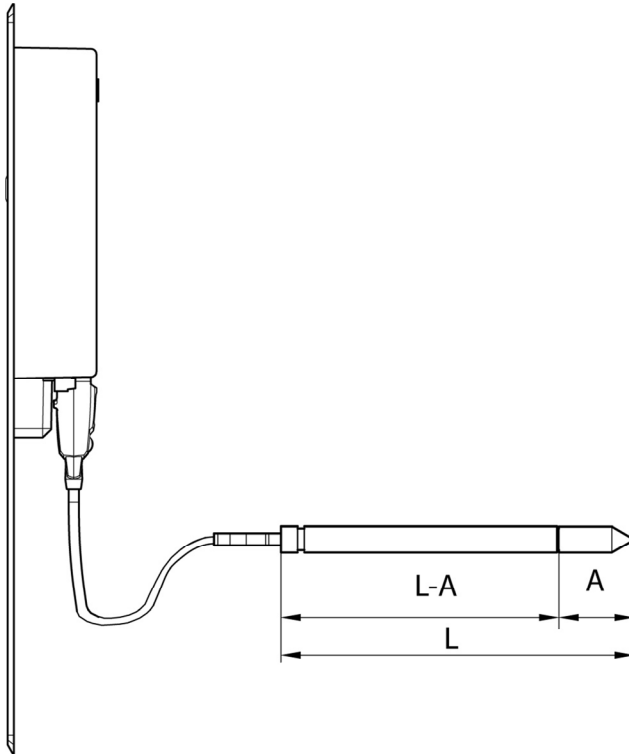
Application

- Monitoring and regulating industrial humidity processes (apart from high-humidity processes), e.g. food production, storing fruit
- Monitoring the production and storage air quality when manufacturing and storing hygroscopic products

- Meeting the top accuracy requirements
- Clean room applications
- Applications for which a sturdy metal housing is required.



Testo recommends that the testo 6614 (heated) probe be used for continuous high-humidity processes.



Technical data

Parameters

- Humidity
- Temperature

Measuring range

- Humidity: 0 to 100 % RH⁷
- Temperature: -70 to +180 °C/-94 to +356 °F

⁷ For constant use in high humidity (> 80% rF at ≤ 30°C for > 12 h, > 60% rF at > 30°C for > 12 h), please contact us via www.testo.com/service-contact

Material

- Probe shaft: Stainless steel
- Line: Sheathed, FEP
- Connector: ABS plastic

Accuracy (at 25 °C/77 °F)*

- Humidity
 - $\pm (1.0 \% \text{ RH} + 0.007 \times \text{reading})$ for 0 to 90 % RH
 - $\pm (1.4 \% \text{ RH} + 0.007 \times \text{reading})$ for 90 to 100 % RH
 - 0.02 % RH/K, dependent upon the process temperature (with a deviation of 25 °C/+77 °F)
 - 0.02 % RH/K, dependent upon the electronics temperature (with a deviation of 25 °C/+77 °F)
 - Temperature
 - $\pm 0.15 \text{ °C}$ (0.27 °F) with slope PT1000 class AA
- * Refer to the charts below for the correlation between temperature and accuracy.

Reproducibility

- Better than $\pm 0.2 \% \text{ RH}$

Sensor

- Response time without protective filter: t 90 max. 15 sec.

Probe dimensions

- Diameter of probe shaft: 12 mm
- L = approx. 120/200/300/500/800 mm
- L – A = 85/165/265/465/765 mm
- A, see Overview of probe and filter types, page 76.

Probe length incl. probe shaft and filter

- 1/2/5/10 m

Pressure resistance**

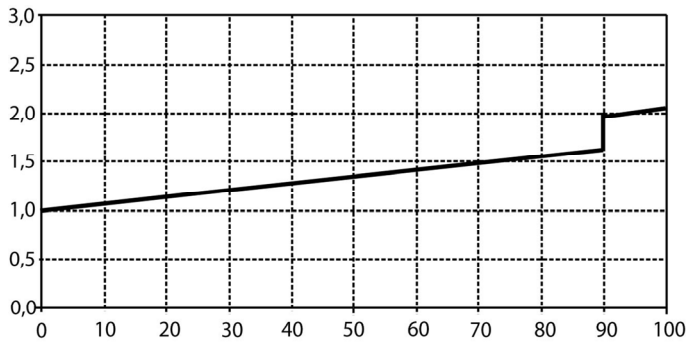
- PN 10 (probe tip)
- PN 1 (if end of probe/cable is involved in process)

** If installing probe under pressure, please use cutting ring screw connection (order no. 0554 1795).

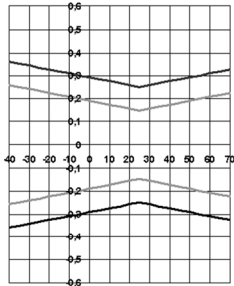
Measuring accuracy of testo 6613 cable probe

Humidity error, absolute $|\pm \% \text{ RH}|$ as a factor of process humidity (% RH)

6611, 6612, 6613



Temperature error as a factor of process temperature and temperature of electronics



Grey line: System error 6383 + probe, electronics 25 °C/+77 °F

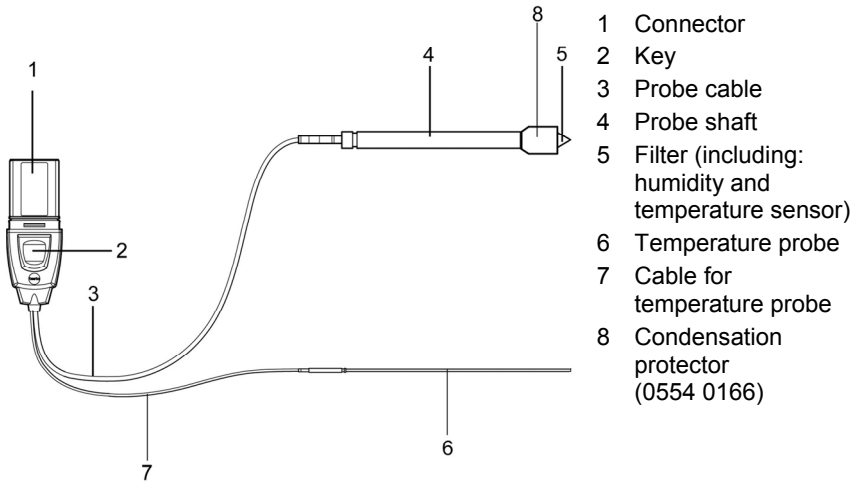
Black line: System error 6383 + probe, electronics -25 to 70 °C/-13 to 158° F

6.2.4. testo 6614 heated cable probe

The testo 6614 heatable probe is suitable for use in high-humidity processes in which there is the possibility of condensation for the probe.

i Also see volume 1, High-humidity adjustment for testo 6614, page 35 for the functional principle of the testo 6614.

At a glance



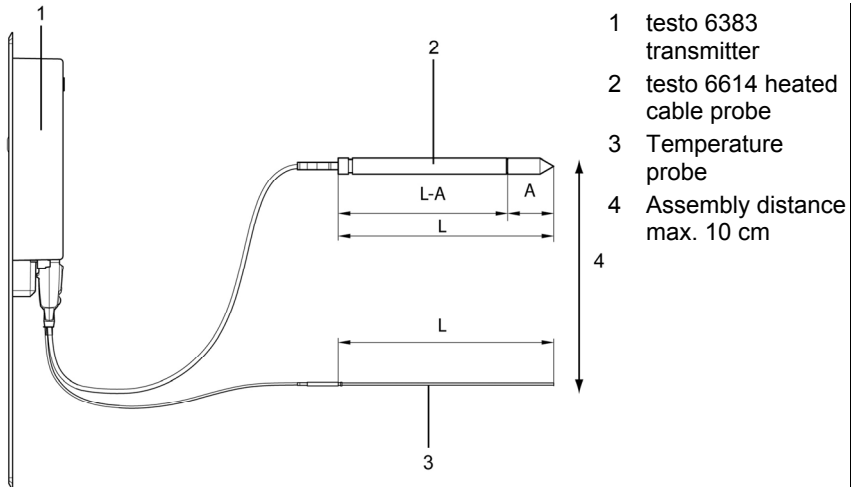
⚠ WARNING

In the event of overpressures, the probe may become a projectile.

> Mount the probe pressure-tight (see pressure resistance under Technical data)

Application

- Monitoring and regulating high-humidity processes, e.g. drying (ceramics, tobacco, wood, food) and maturing (cheese, fruit).
- At flow velocities > 1 m/s, an additional measuring uncertainty, not higher than +1.5 % RH, is to be expected. To prevent this error and ensure the highest measuring accuracy: Use condensation protector 0554 0166.



Technical data

Parameters

- Humidity
- Temperature

Measuring range

- Humidity: 0 to 100 % RH
- Temperature: -40 to + 180 °C/-40 to 356 °F

Material

- Probe shaft: Stainless steel
- Line: Sheathed, FEP
- Connector: ABS plastic

Accuracy (at 25 °C/77 °F)*

- Humidity (values valid when using condensation protector 0554 0166)
 - $\pm (1.0 \% \text{ RH} + 0.007 \times \text{reading})$ for 0 to 100 % RH
 - 0.02 % RH/K, dependent upon the process temperature (with a deviation of 25 °C/+77 °F)
 - 0.02 % RH/K, dependent upon the electronics temperature (with a deviation of 25 °C/+77 °F)
- Temperature
 - $\pm 0.15 \text{ °C} (0.27 \text{ °F})$ with slope PT1000 class AA

* Refer to the charts below for the correlation between temperature and accuracy.

Reproducibility

- $\pm 0.2\%$ RH better

Sensor

- Response time without protective filter: t_{90} max. 15 sec.

Probe dimensions

- Diameter of probe shaft: 12 mm
- Diameter of temp. probe: 3 mm
- L = approx. 200/500 mm
- L – A = 165/465 mm
- A see Overview of probe and filter types, page 76.

Probe length incl. probe shaft and filter

- 1/2/5/10 m

Pressure resistance**

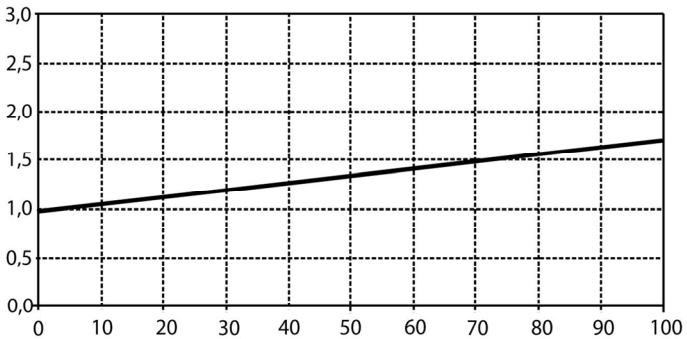
- PN 10 (probe tip)
- PN 1 (if end of probe/cable is involved in process)

** If installing probe under pressure, please use cutting ring screw connection (order no. 0554 1795).

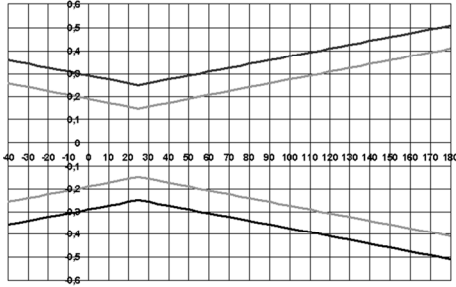
Measuring accuracy of heated testo 6614 cable probe

Humidity error, absolute $|\pm\% \text{RH}|$ as a factor of process humidity (% RH)

6614



Temperature error as a factor of process temperature and temperature of electronics



Grey line: System error 6383 + probe, electronics 25 °C/+77 °F

Black line: System error 6383 + probe, electronics -25 to 70 °C/-13 to 158° F

6.2.5. testo 6615 trace humidity cable probe (self-adjustment)

The testo 6615 probe corrects deviations in measurements by means of self-adjustment. This has a particular significance with low humidity values (in dewpoint range).

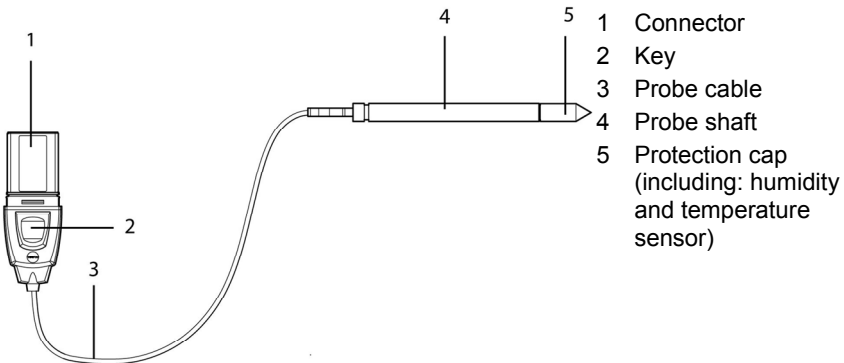


Also see volume 1, **Self adjustment of testo 6615 trace humidity probe**, page 36 for the functional principle of the testo 6615.

Only use testo 6615 with sintered PTFE protection cap (art. no. 0554 0759) or sintered stainless steel protection cap (art. no. 0554 0647).

During the self-adjustment phase the signal values of the analog outputs remain on hold, meaning they are frozen for the duration.

At a glance



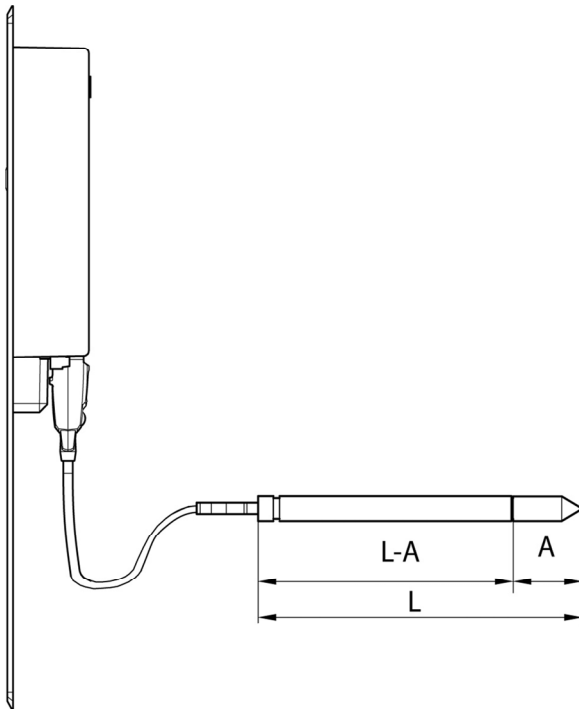
⚠ WARNING

In the event of overpressures, the probe may become a projectile.

- > Mount the probe pressure-tight (see pressure resistance under Technical data)

Application

- Monitoring and regulating trace humidity processes (compressed air with adsorption or membrane driers and plastic granulate driers)
- Used when spatial separation of transmitter and probe is required.



Technical data

Parameters

- Dewpoint
- Temperature

Measuring range

- Dewpoint: -40 to $+30$ °C_{td}/ -148 to $+212$ °F_{td}
- Temperature: -40 to ± 120 °C/ -40 to $+248$ °F
- (Temp. durability up to $+180$ °C/ $+356$ °F)

Material

- Probe shaft: Stainless steel
- Line: Sheathed, FEP
- Connector: ABS plastic

Accuracy (at 25 °C/77 °F)*

- Dewpoint
 - ± 1 K at 0 °C_{td}/ $+32$ °F_{td}
 - ± 2 K at -40 °C_{td}/ -40 °F_{td}
 - ± 4 K at -50 °C_{td}/ -58 °F_{td}
 - ± 6 K at -60 °C_{td}/ -76 °F_{td}
 - Dependent on the process temperature (deviation of 25 °C / 77 °F)
 - ± 0.1 Ktd/K at -40 °C to 25 °C/ -40 °F to $+77$ °F
 - ± 0.2 Ktd/K at 25 °C to 50 °C/ 77 °F to 122 °F
 - ± 0.4 Ktd/K at 50 °C to 120 °C/ 122 °F to 248 °F
 - Temperature
 - ± 0.15 °C (0.27 °F), slope PT1000 class AA
- * Refer to the charts below for the correlation between temperature and accuracy.

Sensor

- Response time without protective filter: t 90 max. 15 sec.

Probe dimensions

- Diameter of probe shaft: 12 mm
- L = approx. 200/500 mm
- L – A = 165/465 mm
- A see Overview of probe and filter types, page 76.

Cable length incl. probe shaft and filter

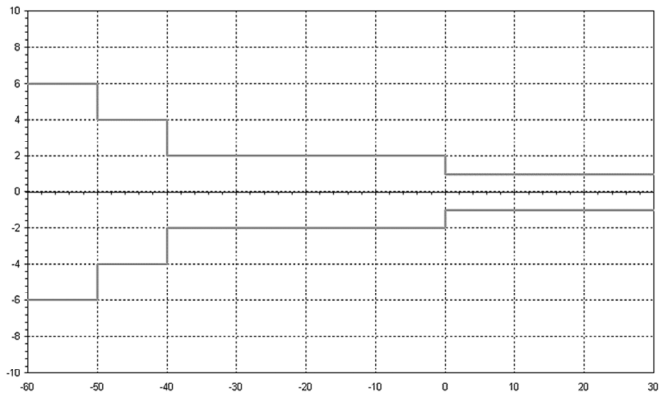
- 1/2/5/10 m

Pressure resistance

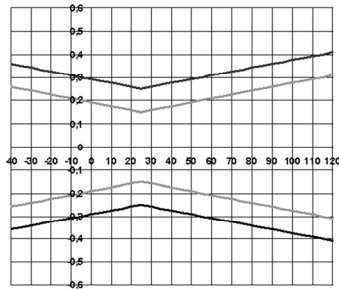
- PN 16 (probe tip)**

** If installing probe under pressure, please use cutting ring screw connection (order no. 0554 1795).

Measuring accuracy of testo 6615 trace humidity cable probe
 Dewpoint error, absolute $|\pm\% \text{ RH}|$ as a factor of process dewpoint ($^{\circ}\text{C}_{\text{td}}$)



Temperature error as a factor of process temperature and temperature of electronics



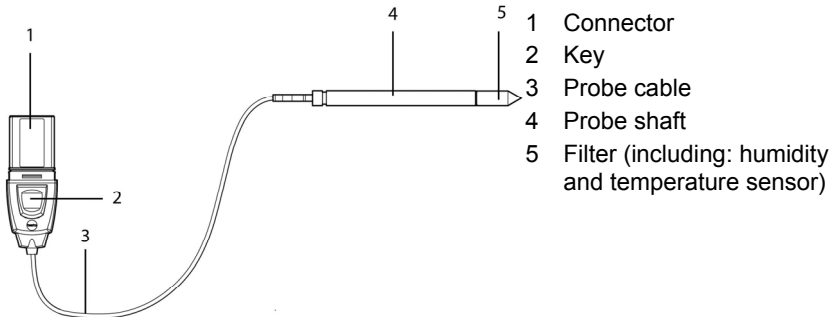
Grey line: System error 6383 + probe, electronics 25 $^{\circ}\text{C}/+77^{\circ}\text{F}$

Black line: System error 6383 + probe, electronics -25 to 70 $^{\circ}\text{C}/-13$ to 158 $^{\circ}\text{F}$

6.2.6. testo 6617 cable probe (self-monitoring)

The testo 6617 probe is used if spatial separation of the transmitter and probe is required, particularly for media (gases, vapours) which can jeopardize/damage the humidity sensor (the testo 6617 has a self-monitoring and early-warning function for such applications).

At a glance



⚠ WARNING

In the event of overpressures, the probe may become a projectile.

- > Mount the probe pressure-tight (see pressure resistance under Technical data)

Application

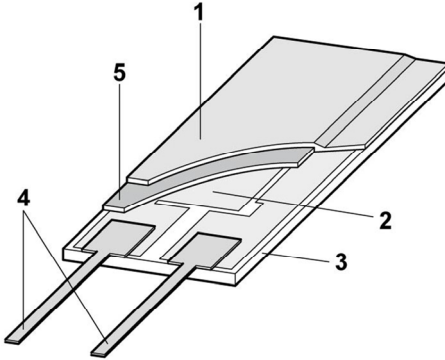
- Monitoring and regulating industrial humidity processes involving corrosive media (apart from high-humidity processes) with the exception of applications with HCL, HF and other acids and acidifiers in larger concentrations (SO₂, SO₃, NO₂)
- Meeting the top accuracy requirements
- Applications for which a sturdy metal housing is required

i This probe does NOT have a longer life with exposure to aggressive media than the testo 6613, for example. However, early warning of damage to the sensor is given so that machine failures can be avoided.

6.2.6.1. Self-monitoring of cover electrode

Use in harsh ambient conditions with aggressive media in some cases incurs the risk of damage to the sensor.

Damage to the sensor is generally reflected by incorrect readings which occur a long time before the sensor is wrecked. If this damage to the sensor is not spotted until too late, high costs can be incurred due to unusable readings or machine shutdowns and waiting times until the sensor is replaced.



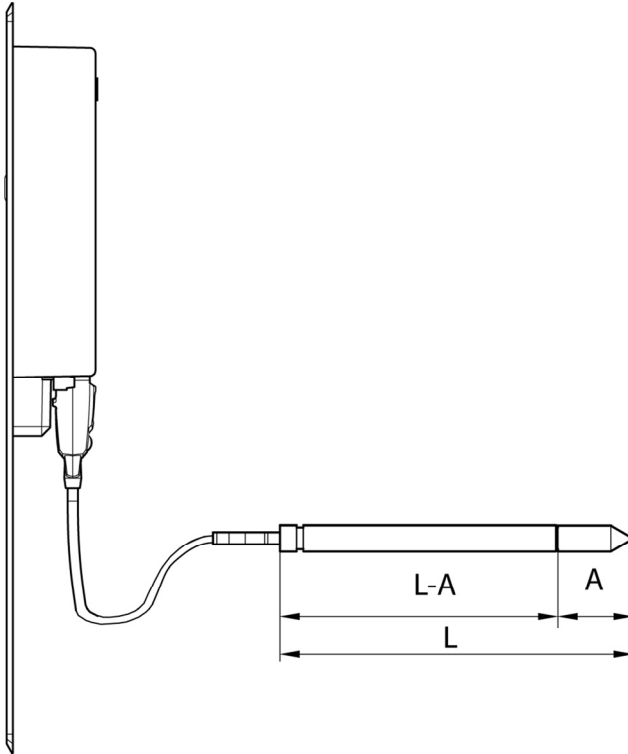
- 1 Cover electrode
- 2 Bottom electrode
- 3 Substrate (ceramic substrate for mechanical protection)
- 4 Connections (protected against corrosion)
- 5 Dielectric layer

The testo 6617 has a unique self-monitoring function.

This allows early detection of damage to the sensor, e.g.:

- Mechanical damage (e.g. scratches)
- Damage from aggressive gases (e.g. acids in aerosol form)
- Swelling or detachment of polymer layer due to effects of solvents

Once the self-monitoring reaches the specific limit value, the probe warning message "Sensor early warning" is issued.

**Technical data****Parameters**

- Humidity (% RH/ $^{\circ}\text{C}_{\text{td}}/^{\circ}\text{F}_{\text{td}}$)
- Temperature

Measuring range

- Humidity: 0 to 100 % RH⁸
- Temperature: -40 to +180 $^{\circ}\text{C}$ / -40 to 356 $^{\circ}\text{F}$

Material

- Probe shaft: Stainless steel
- Line: Sheathed, FEP
- Connector: ABS plastic

⁸ For constant use in high humidity (> 80% rF at $\leq 30^{\circ}\text{C}$ for > 12 h, > 60% rF at > 30°C for > 12 h), please contact us via www.testo.com/service-contact

Accuracy (at 25 °C/77 °F)*

- Humidity
 - $\pm (1.2 \% \text{ RH} + 0.007 \times \text{reading})$ for 0 to 90 % RH
 - $\pm (1.6 \% \text{ RH} + 0.007 \times \text{reading})$ for 90 to 100 % RH
 - 0.02 % RH/K, dependent upon the process temperature (with a deviation of 25 °C/+77 °F)
 - 0.02 % RH/K, dependent upon the electronics temperature (with a deviation of 25 °C/+77 °F)
 - Temperature
 - $\pm 0.15 \text{ °C} (0.27 \text{ °F})$ with slope PT1000 class AA
- * Refer to the charts below for the correlation between temperature and accuracy.

Reproducibility

- Better than $\pm 0.2 \% \text{ RH}$

Sensor

- Response time without protective filter: t 90 max. 15 sec.

Probe dimensions

- Diameter of probe shaft: 12 mm
- L = approx. 200/500 mm
- L – A = 165/465 mm
- A see Overview of probe and filter types, page 76.

Probe length incl. probe shaft and filter

- 1/2/5/10 m

Pressure resistance

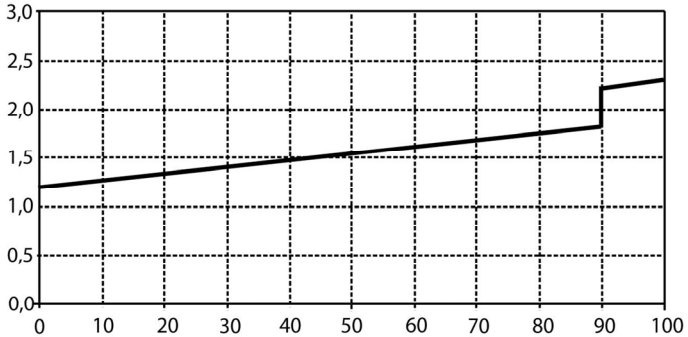
- PN 10 (probe tip)**

** If installing probe under pressure, please use cutting ring screw connection (order no. 0554 1795).

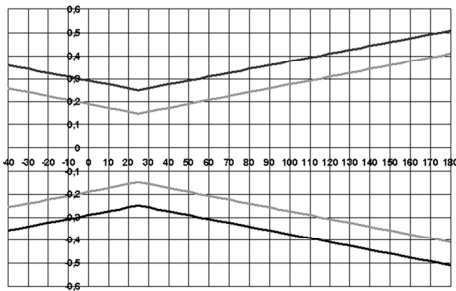
Measuring accuracy of testo 6617 cable probe (self-monitoring)

Humidity error, absolute $|\pm\% \text{ RH}|$ as a factor of process humidity (% RH)

6617



Temperature error as a factor of process temperature and temperature of electronics



Grey line: System error 6383 + probe, electronics 25 °C/+77 °F

Black line: System error 6383 + probe, electronics -25 to 70 °C/-13 to 158 °F

6.3. Commissioning

6.3.1. Installing the probe

6.3.1.1. Installing testo 6613/6614/6615/6617 probes

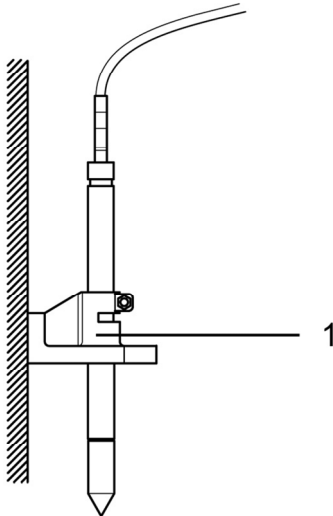
If used with these probes, the testo 6383 transmitter is mounted on the wall, see volume 1, see Commissioning, page 20.

Install probe according to the application and the measuring and spatial conditions, cf. cases A1 to C below



In processes with which condensate forms at the humidity probe, install the probe vertically (filter points downwards).

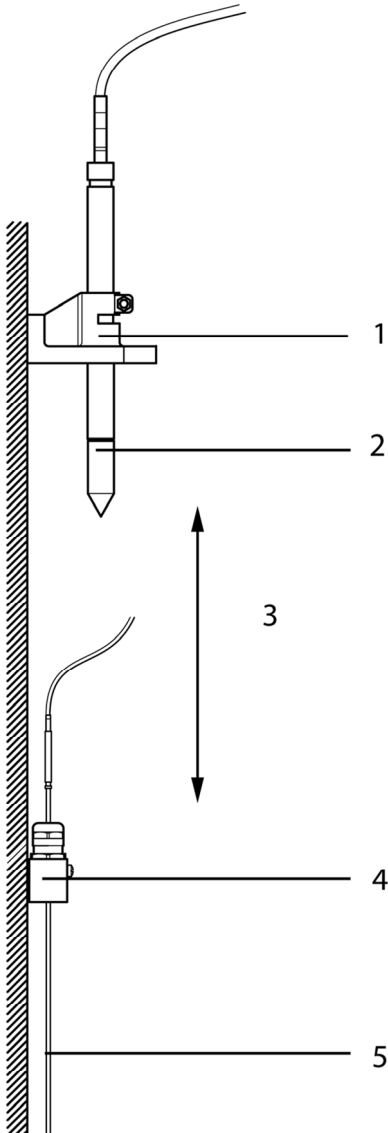
A 1 Wall mounting of probe



1 Wall/duct holder (order no. 0554 6651)

A 2 Wall mounting of testo 6614 heated probe

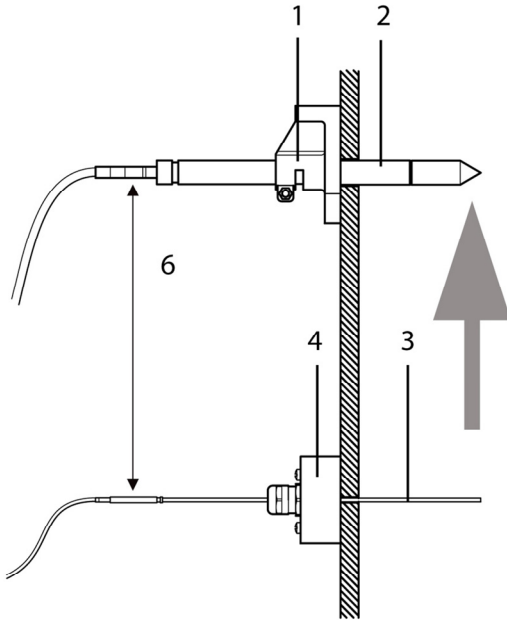
When mounting the testo 6614 heated probe version, the temperature probe must be secured as close to the humidity probe as possible (max. 10 cm). An appropriate assembly tool is supplied with the testo 6614.



- 1 Wall/duct holder (order no. 0554 6651)
- 2 testo 6614
- 3 Distance of probe tips of humidity probe - temperature probe: As close as possible, but without touching (distance between probe tips max. 10 cm)
- 4 Assembly tool, supplied with the wall/duct holder (order no. 0554 6651)
- 5 Temperature probe

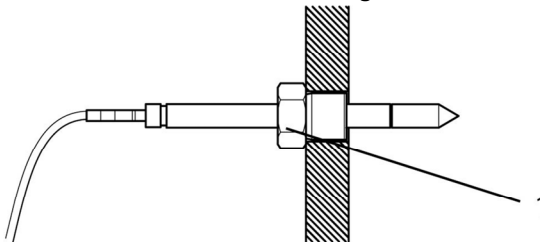
B Duct mounting of testo 6614 heated probe

When mounting the testo 6614 heated probe version, the temperature probe must also be secured at a distance of approximately 10 cm from the humidity probe. An appropriate assembly tool is supplied with the testo 6614.



- 1 Wall/duct holder (order no. 0554 6651)
- 2 testo 6614
- 3 Temperature probe
- 4 Assembly tool, supplied with the wall/duct holder (order no. 0554 6651)
- 5 Direction of flow
- 6 approx. 10 cm distance

C Process mounting



- 1 Cutting ring screw connection (order no. 0554 1795)

During installation, ensure that the probe cannot be damaged during operation.

i For the testo 6614 (heated probe version), please use the cutting ring screw connection, order no. 0400 6193, to assemble the temperature probe.

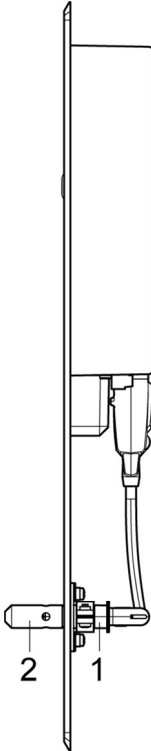
6.3.2. Connecting/removing the probe to/from the transmitter

- Insert probe connector into socket of testo 6383 until it engages. The testo 6383 identifies which probe is connected.
- To remove the probe, the lock release button on the probe must be pressed so that this can be removed.

6.4. Maintenance and cleaning

6.4.1. Replacing filters/protection caps

6.4.1.1. Replacing the filter/protection caps for wall version



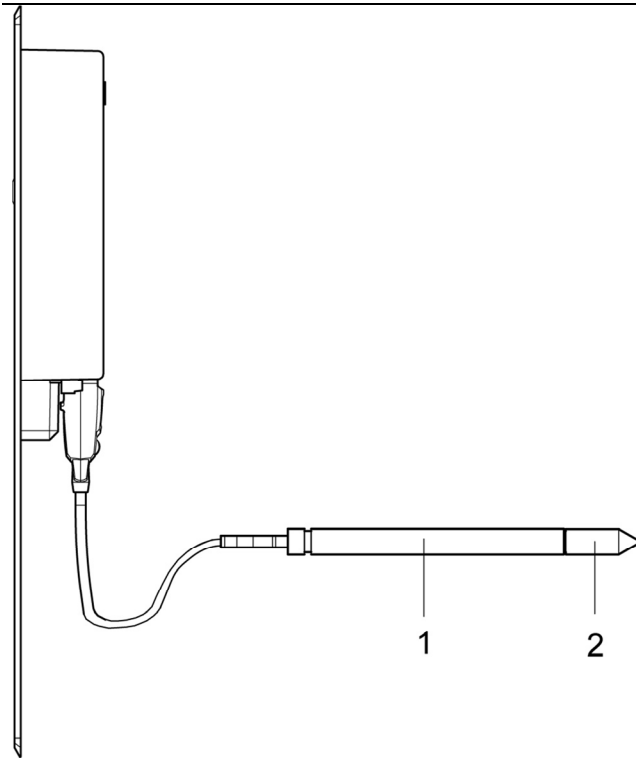
i Do not damage the sensors when exchanging the filter/the protection cap and do not touch their surfaces!

1. Unscrew defective filter/protection cap (2) from probe shaft (1).
 2. Screw new filter/protection cap onto probe shaft.
-

i Screw on protection cap by hand, i.e. do not tighten it using a tool.

6.4.1.2. Replacing the filter/protection cap for duct versions

- i** The following descriptions applies to these probes:
- testo 6613
 - testo 6614
 - testo 6615
 - testo 6617
-



i Do not damage the sensor when exchanging the filter/the protection cap and do not touch its surface!

1. Unscrew defective filter/protection cap (2) from probe shaft (1).
 2. Screw new filter/protection cap onto probe shaft.
-

i Screw on protection cap by hand, i.e. do not tighten it using a tool.

6.4.2. **Cleaning the instrument and filter/protection cap**

- Only clean the instrument carefully with a moist cloth.
- Do not use aggressive cleaning agents.
- Do not use any solvents.
- Unscrew cap or protection cap to clean, clean with compressed air and replace. Take care not to damage the sensor!

6.4.3. **Replacing the sensor**

Thanks to the probe concept (digital, plug-in), all probes can be changed in situ within seconds if necessary, generally without any interruption to the operation of the machine.



To maintain the extremely high accuracy of the testo 6610 probe, it is not possible for customers to change the sensor. Please contact your Testo Service team for this.

7 Parameterizing, adjusting and analyzing software (P2A software)

7.1. Specifications

The P2A software is used for the parameterizing, adjustment and analysis of testo transmitters. The following applies:

- Generally, all newer testo transmitters (as of 2007) are supported.
- For each newly purchased Testo transmitter, a free software upgrade must be installed, containing the instrument drivers for all transmitters which are connectable at that time.
- This upgrade can be downloaded free of charge at any time from the Testo homepage www.testo.com/download-center (requires registration).

The software must only be bought one time, even for owners of several testo transmitters.

7.1.1. Functions and use

In the P2A software, two different file types are used: The instrument and the parameter file.

Instrument file

The parameters of a particular transmitter are stored in its so-called instrument file. Using this file, the parameters can be edited and the instrument can be tested and adjusted.

Instrument files also contain the respective histories in addition to the parameter data, i.e. "log books" are kept for the previous parameterizations, adjustments and messages (see Transmitter history page 129).



Instrument files are ".cfm" format files.

Parameter file

Parameter files are not tied to a specific individual transmitter and contain only parameter data/no history data.

If you use various instruments of the same type, you can create parameter files once (e.g. by saving the appropriate instrument file as the parameter file) and transmit these onto the other instruments.



Parameter files are ".cfp" format files.

7.1.2. System requirements

Operating system

- Windows® XP Home/Professional SP3
- Windows® Vista
- Windows® 7

Computer

The computer must fulfil the requirements of the respective operating system. The following requirements must additionally be fulfilled:

- Interface USB 1.1 or higher
- Graphic resolution min. 1024 x 768



Date and time settings are automatically taken over from the computer. The administrator must ensure that the system time is regularly synchronized with a reliable time source, in order to guarantee the authenticity of the data.

Software

The P2A software must be purchased and installed separately from the transmitter. If it is a new software version, the transmitter is already supported completely. Older P2A software versions can be updated via the P2A software upgrade.

7.1.3. Scope of delivery

Included in the scope of delivery are:

- P2A software
- USB driver



When working with the parameterizing, adjusting and analyzing software (P2A software), previous knowledge of Windows® operating systems is assumed. The description in this instruction manual relates to Windows® XP.

7.2. First steps

7.2.1. Installing the software/driver



Administrator rights are required for installation.

7.2.1.1. Installing P2A software

1. Insert CD with P2A software.
 - ✓ If the installation program does not start automatically:
 - > Open Windows Explorer and start the file **Setup.exe** on the product CD.
2. Follow the directions of the installation wizard.

7.2.1.2. Installing USB driver

i Before installing the USB driver, please read the separate documentation that is enclosed with the USB driver CD.

7.2.1.3. P2A software upgrade

1. Download and store P2A software upgrade from www.testo.com/download-center (requires registration).
2. Select folder into which the downloaded Zip file was stored, and unzip the file.
3. Start file **P2A upgrade.exe**.
4. Follow instructions from installation assistant.

7.2.2. Starting the software

7.2.2.1. Starting the program

- > Click on **[Start]** | **Programs** (Windows XP) or **All Programs** (Windows Vista, Windows 7) | **Testo** | **P2A- Software**.

i In Windows Vista/Windows 7 the window **User account control** is opened when starting the software the first time.

- > Click on **Accept**.

- The program window is opened (see User interface page 107).

7.2.2.2. Establishing a connection with the instrument

i The instrument works with limited functionality, if it is only supplied via the service plug. Some settings, which can be parameterized in the P2A software, will only be executed by the instrument, after it has been connected to the electric power supply.

Multiple instruments can be attached, however only one connection is active at all times.

- ✓ USB driver is installed (see Installing USB driver page 106).

1. Start the P2A software.
2. Connect adapter (supplied with the P2A software) to the service interface of the instrument (see volume 1, Service interface page 15).
3. Connect instrument/adapter to the PC via the USB interface.
 - The instrument file of the attached instrument is shown in the file list.

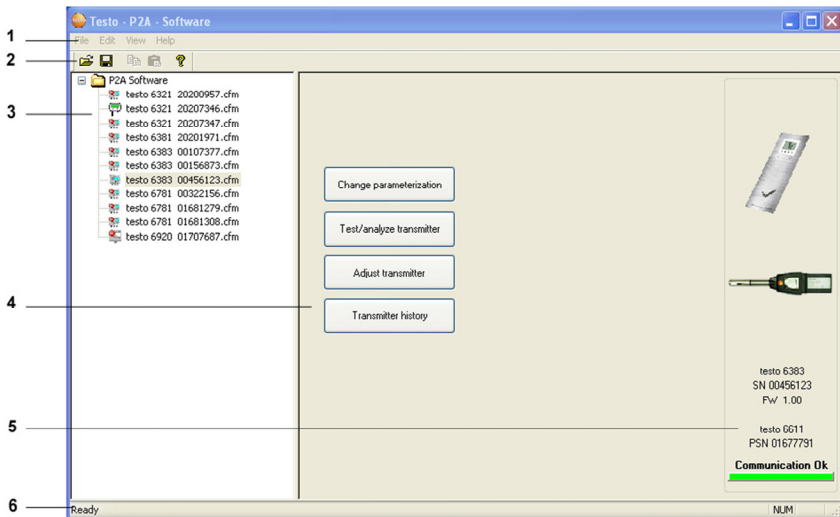
7.2.2.3. Activating the connection with the instrument

- > Click on the desired instrument file.
- The selected file is marked in colour and the connection with the instrument is activated.

If a connection with the instrument is established when the program is started, the corresponding instrument file is marked automatically.

7.3. Using the software

7.3.1. User interface





1 Menu bar:


| Menu | Command | Explanation |
|------|---------|---|
| File | Open | Shows the Windows dialogue for searching and opening files. |

| Menu | Command | Explanation |
|------|------------------------------|--|
| | Save as | Saves the parameters of an instrument or parameter file under a new name. |
| Edit | Copy | Copies the parameters of the marked instrument or parameter file in the cache. |
| | Paste | Pastes the parameters from the cache in the marked instrument or parameter file. |
| View | Toolbar Status bar | Activates/deactivates the toolbar or status bar. |
| ? | Check instrument connections | Checks the connections to a connected instrument without the instrument having to be activated. |
| | Service | A text file with the most important information on the computer and the software is opened via Display service data . |
| | Information | Shows the version number of the P2A software. |

2 Toolbar: Shows the Windows-compliant icons for editing.

3 File:

| Icon | File | Explanation |
|--|-----------------|--|
|  Symbol shows a transmitter | Instrument file | Instrument file Connection to the instrument has been established. <Type> <Serial number>.cfm File name should not be changed. |
|  Symbol shows a transmitter with a red minus sign in the upper left corner | Instrument file | Instrument file Connection to the instrument has not been established. |

| Icon | File | Explanation |
|--|----------------|--|
|  <p>Symbol shows a transmitter with a white P for parameter file in the upper left corner</p> | Parameter file | <p><Type> <Serial number> <Date> <Time>.cfp</p> <p>File name can be changed. The name can be selected freely, but it is recommended that you retain the reference to the instrument.</p> <p>Parameter files are always marked red; the parameter values they contain are only forwarded to the instrument after being transmitted to the instrument file.</p> |

- 4 Function buttons: Dialogues on editing and testing the instrument are opened by means of the buttons.

[Change parameterization] see Changing instrument/parameter file page 110.

[Test/analyze transmitter] see Chapter Analyzing/testing the transmitter page 119.

[Adjusting the transmitter] see Chapter Adjusting the transmitter page 124.

[Transmitter history] see Transmitter history page 129.

- 5 File information:

| Status | Shown in the window |
|--------------------------------|--|
| An instrument file is selected | Type, serial number, firmware version of the instrument. |
| A parameter file is selected | Type, serial number and firmware version of instrument for which the parameter file was created. |
| Connection status | Green = connection is active Red = connection is inactive |

- 6 Status bar: Shows the current status when editing via the menu bar.

7.3.2. Editing instrument/parameter file

7.3.2.1. Changing instrument/parameter file

✓ The desired instrument/parameter file is marked.

1. Click on **[Change parameterization]**.

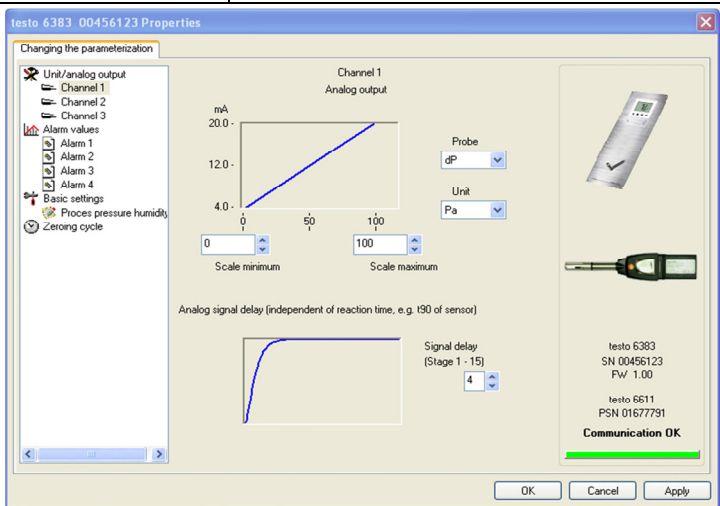
- The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Change parameterization** register.

If the parameters were transmitted from other parameter files into the instrument file, a message is shown with which you can transmit the new parameters to the connected instrument using **[Yes]**.

> If the parameters should not be transmitted, click on **[No]**.

2. Change or enter parameters in the corresponding fields.

| Field | Explanation |
|------------------------|--|
| Unit/ Analog output | All analog outputs are parameterized in this mask. |

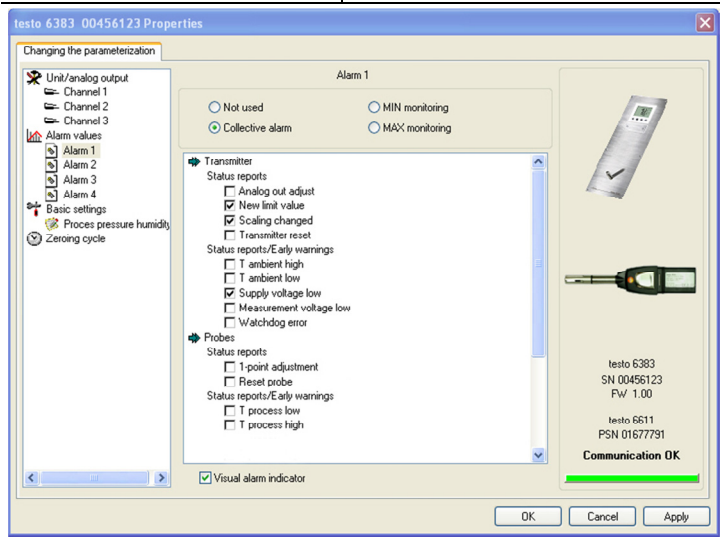


| Field | Explanation |
|------------------------------|--|
| Unit/analog output (graphic) | Unit: 0 to 1 V/5 V/10 V or 0 to 20 mA/4 to 20 mA. Vertical: Current version of the analog output (cannot be changed). Horizontal: Min./max. scale end points of selected unit. The curve changes in accordance with the entered value of scale minimum and maximum. |
| Scale minimum/maximum | The endpoints of the scaling can be selected up to the stored scale minimum and maximum. In the process, scaling can take place beyond the measuring range in order to adjust the analog output to the customer system, see volume 1, Scaling, page 17. |
| Unit | Selection of the physical unit. When changing the unit, standard values are set for scale minimum and maximum. Caution! When changing the phys. unit, the relay limit values are set to the assigned default values. |
| Signal delay (graphic) | Curve changes according to the set signal delay. |
| Signal delay | Time interval in stages 1 – 15: 1 = no delay 15 = longest delay. The signal delay is added to the reaction time of the sensor. The signal delay shows averaging over the time interval of the selected stage in seconds: Example Stage 10 = average of the readings from the last 10 seconds. |



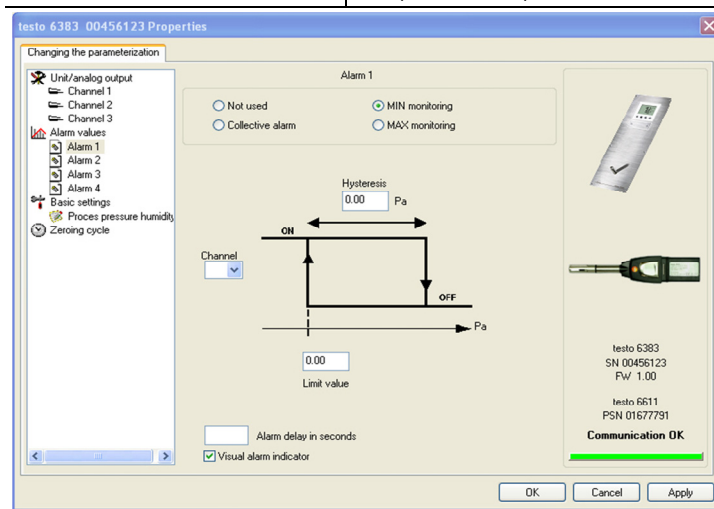
The delay of the signal in relation to the change in the process is also significantly influenced by the selection of the particle filter.

| Field | Explanation |
|---|---|
| Limit values, relay 1 to 4/alarm values, alarm 1 to 4 | In this mask, the relays or display alarms are parameterized. |



| | |
|------------------|--|
| Relay x/alarm x | Four relays or alarm values are available (optional). |
| Not used | Relay is not used. Hysteresis image and input options are hidden. |
| Collective alarm | A relay can be used as a collective alarm detector in the event that selected messages appear. Selection of the messages (OR linkage) by selecting the checkbox. |
| Min control | If switched to ON (NO contact) or OFF (NC contact) under the limit value; in the event of a subsequent exceeding of Limit value plus Hysteresis , it is switched to OFF (NO contact) or ON (NC contact). |

| Field | Explanation |
|-------------|---|
| Max control | If switched to ON (NO contact) or OFF (NC contact) above the limit value; in the event of a subsequent undershooting of Limit value minus Hysteresis , it is switched to OFF (NO contact) or ON (NC contact). |

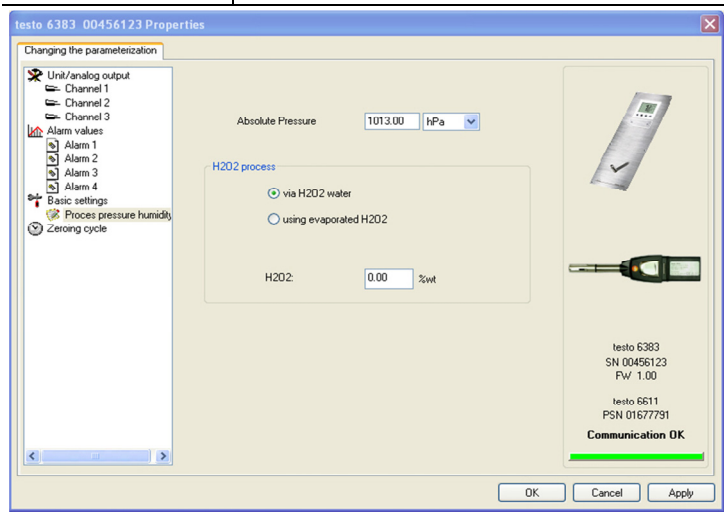


i The graphic display in the centre of the screen refers to the relay wiring as a NO contact (ON).

| | |
|----------------------|--|
| Hysteresis | To avoid switching cycles. |
| Channel | Selection of the channel that is to be monitored. |
| Limit value | Values for the limits of the unit selected in Unit/analog output ; 4 decimal places. When changing the phys. unit, the relay limit values are set to the default values. |
| Visual alarm display | Checkbox is activated: Upon the appearance of the selected alarm, the background lighting of the display and the corresponding measurement value flashes. |

| Field | Explanation |
|-------------|---|
| Alarm delay | The desired alarm delay for the alarms of the min/max control and the visual alarm is entered in the input field (0 to 3600 seconds possible). The alarm delay has no effect on the collective alarms. |

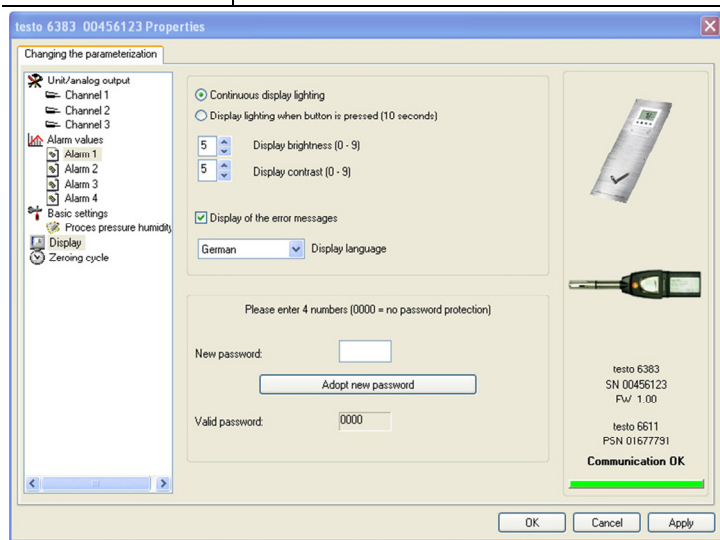
| Field | Explanation |
|----------------|--|
| Basic settings | Setting the absolute pressure and selection of the H ₂ O ₂ evaporation process for the parameter °C _{tm}). |



| | |
|-------------------|--|
| Absolute pressure | The absolute pressure is included in the calculation of the following units: <ul style="list-style-type: none"> • °C_{tdA} or °F_{tdA} • g/kg or gr/lb • ppmV% vol. |
|-------------------|--|

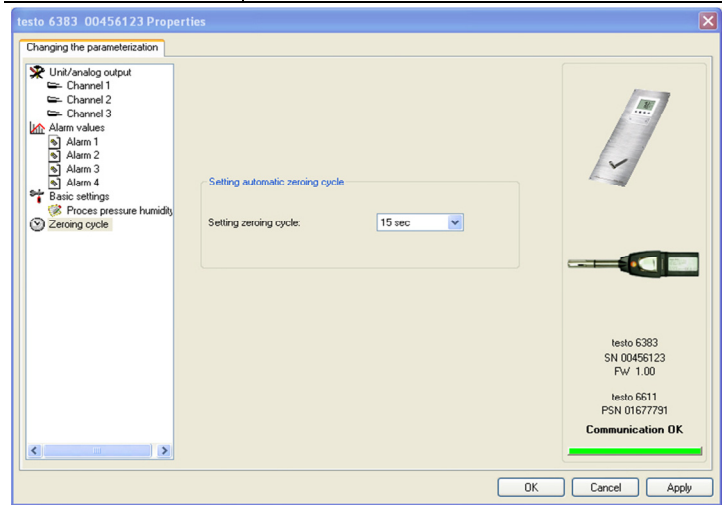
| Field | Explanation |
|---------------------------------------|---|
| H ₂ O ₂ process | <p>The calculation of the mixture dewpoint unit °C_{tm} is dependent upon the type of the evaporation process:</p> <ul style="list-style-type: none"> with passive vaporization: H₂O₂ solution evaporates (with active vaporization) with active vaporization: H₂O₂ solution is evaporated over a heated metal plate (with active vaporization) Input field: Entering the weight proportion of the liquid H₂O₂ compared to water in %. |

| Field | Explanation |
|---------|---|
| Display | Setting the display functions (if a display is available on the transmitter). |



| | |
|--|--|
| Continuous display lighting | Display lighting is permanently switched on. |
| Display lighting when button is pressed (10 seconds) | When a particular button on the instrument is pressed, the display lights up for 10 seconds. |

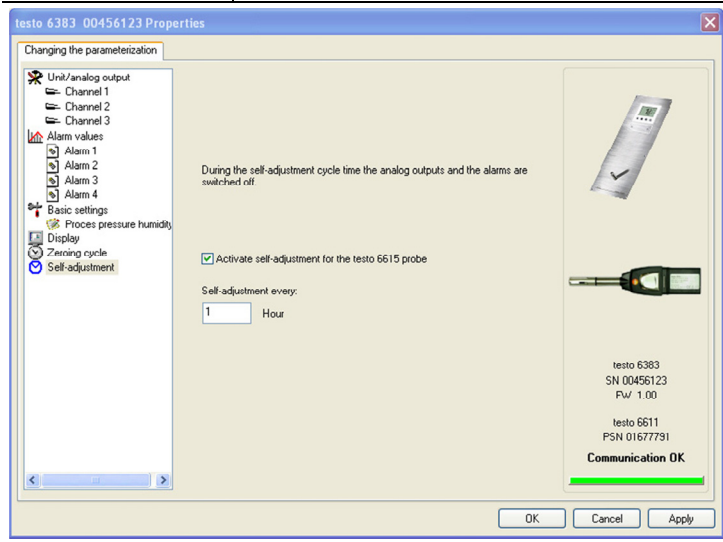
| Field | Explanation |
|-------------------------------|---|
| Display brightness (0 to 9) | Setting the brightness between 0 and 9: 0 = dark 9 = light |
| Display contrast (0 to 9) | Setting the contrast between 0 and 9: 0 = low contrast 9 = high contrast |
| Display of the error messages | Selection of whether the error messages should be shown in the display. |
| Display language | Selection of the language. |
| New password | The password consists of four numbers, each of which must be between 1 and 9. If the password protection is not to be used, the numerical code "0000" must be entered. |
| [Adopt new password] | Button for confirming the new password. |
| Valid password | Display of the current password. |
| Field | Explanation |
| Zeroing cycle | Setting the interval of the automatic zeroing with solenoid valve. |



i The accuracy specifications are only valid for the zeroing cycle of 15 sec set by the factory.

| Field | Explanation |
|-----------------------|---|
| Zeroing cycle setting | Selection of the time interval after which the automatic zeroing cycle is to occur. Recommendation: 15 sec |

| Field | Explanation |
|-----------------|------------------------------|
| Self-adjustment | Setting the self-adjustment. |



| | |
|---|---|
| Activate self-adjustment for the testo 6615 probe | <ul style="list-style-type: none"> • Checkbox is activated: The self-adjustment is performed in the set cycle. • Checkbox is not activated: The self-adjustment is not performed. |
|---|---|

| | |
|-----------------------|--|
| Self-adjustment every | <p>Setting the cycletime in which the self-adjustment is to be performed.</p> <p>i In order to receive reliable readings during the calibration or equalization period of the probe, testo recommends the shortest possible cycle time. A longer cycle time can be set in continuous operation.</p> |
|-----------------------|--|

| | |
|--------------------------------|---|
| [Start self adjustment] | Start self adjustment at a defined time outside the cycle time. |
|--------------------------------|---|

7.3.2.2. Saving parameters

Parameters can be saved in new parameter files.

1. Mark instrument/parameter file.
 2. Click on **File > Save as** in the menu bar.
 3. Select storage location and enter the file name.
 4. Click on **[Save]**.
- The new parameter file is shown in the file list.

Only the parameters are saved from an instrument file; the history data are not adopted.



The original name (Instrument type, Serial number) is suggested with the current date/time as standard, e.g. "testo 6383 01234578 061120 1403.cfp".

For a standard installation, the files are saved under "C:\Documents and Settings\All Users\Shared Documents\P2A Software". The path can differ depending on the version of the operating system.

7.3.2.3. Opening the parameter file

All parameter files stored in the standard directory path are automatically displayed in the file list when the software is started. You can also open parameter files that are stored in other directories.

1. Click on **File > Open** in the menu bar.
 2. Select the storage location and click on the requisite file.
 3. Click on **[Open]**.
- The selected file is opened. This can be changed and saved (see Editing instrument/parameter file page 110).

7.3.2.4. Copying and pasting parameters

The parameters of a parameter file can be transmitted to an instrument file or another parameter file from the same instrument type.

1. Select file from which parameters are to be copied.
2. Click on **Edit > Copy** in the menu bar.
3. Select the file which is to be modified.

4. Click on **Edit > Paste** in the menu bar.
 - The parameters are transmitted to the file.



You can also use the common keyboard shortcuts for copying (CTRL+C) and pasting (CTRL+V).
Parameters can also be transmitted using drag & drop, where you drag the icon of the parameter file onto the icon of the target instrument file.

5. Connect and select corresponding instrument.
6. Click on **[Change parameterization]**.
7. Confirm confirmation request.
 - Parameter data are transferred to the instrument.

7.3.2.5. Deleting instrument/parameter file

Instrument/parameter files can be deleted from the file list.

1. Click on the file that is to be deleted with the right mouse button.
2. Select the command **Delete** in the context menu.
 - The instrument or parameter file is deleted from the list.

7.3.2.6. Creating a new instrument file

It is possible to create an instrument file without restarting the P2A software.

- ✓ Transmitter must be connected.
1. Click on **File > New connection** in the menu bar.
 - Connection to the transmitter is established.

7.3.3. Analyzing/testing the transmitter

In this section, you can test the outputs of the connected instrument, read off the limit values and reset the parameters to the factory settings.

The function is only available for instrument files.

7.3.3.1. Analyzing/testing the instrument

- ✓ The required instrument file is marked.
1. Click on **[Test/analyze transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Test/analyze transmitter** register.

2. Perform action:

| Action | Explanation |
|----------------------------|--|
| Carrying out factory reset | Reset the unit, limit value and hysteresis parameters to factory settings (see below). |
| Testing analog output | Test channel 1/optional 2/3 (see Testing analog output, page 120). |
| Test switch outputs | Manually switch relays 1 to 4 to test for proper function (see Testing switch output relays 1 to 4, page 122). |
| Display min./max. values | Overview of the minimum and maximum values measured since the last reset of the transmitter (see Displaying min./max. values, page 123). |

3. Click on **[OK]** or **[Cancel]** to close the dialogue.

7.3.3.2. Carrying out factory reset

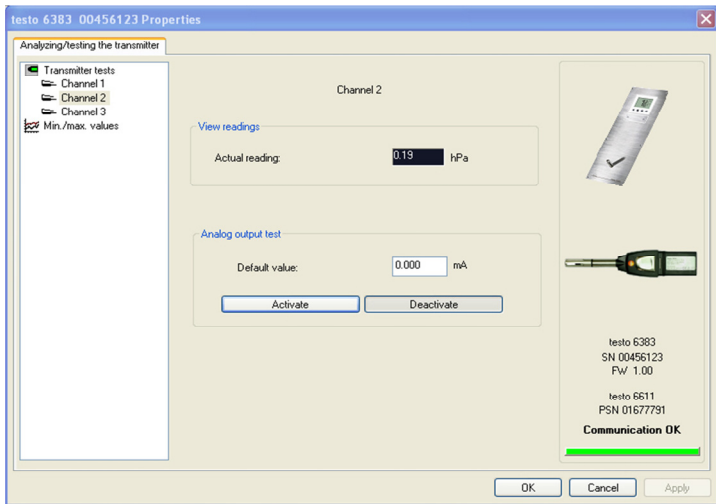
- ✓ The required instrument file is marked.
- 1. Click on **[Test/analyze transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Test/analyze transmitter** register.
- 2. Mark transmitter test.
 - Current operating hours are shown.
- 3. Confirm control query to perform the reset.
 - The values are reset to the customer-specific factory settings.
- 4. Click on **[OK]** or **[Cancel]** to close the dialogue.

7.3.3.3. Testing analog output

- ✓ The required instrument file is marked.
- 1. Click on **[Test/analyze transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Test/analyze transmitter** register.

2. Mark channel and test values.

| Field/button | Explanation |
|--------------|---|
| | Check the analog outputs (see volume 1, see Editing Main Menu Analysis, page 48). |

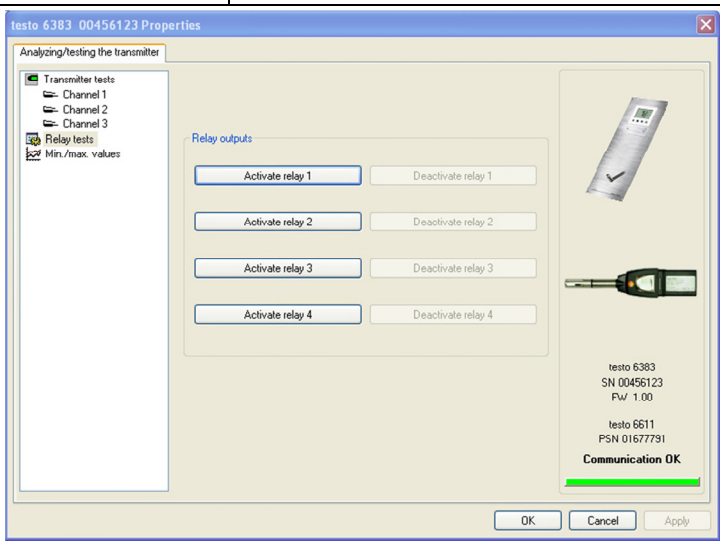


| | |
|---------------------|---|
| Current reading | Readings are updated every second. |
| Unit | Unit according to the type of analog output. |
| Default value | Freely definable output value for the respective type of analog output (V or mA), 1 decimal place. |
| [Activate] | The entered default value is forwarded to the corresponding analog output and to the test contacts by clicking. A warning informs that the value is being transmitted to the connected instrument in the event of existing cabling. Now check the analog output using a precise multimeter. |
| [Deactivate] | Finish entering the electrical variables at the analog output. The analog output returns to the current reading again. |

3. Click on **[OK]** or **[Cancel]** to close the dialogue.
 - The analog output and the relay return to Measuring Mode again.

7.3.3.4. Testing switch output relays 1 to 4

- ✓ The required instrument file is marked.
1. Click on **[Test/analyze transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Test/analyze transmitter** register.
 2. Mark **Relay tests** and test the values.

| Field/button | Explanation |
|---|--|
| | Test the relay function (see volume 1, see Editing Main Menu Analysis, page 48). |
|  | |
| [Activate relay n] | Close contact. A warning informs that the value is being transmitted to a connected PLC, external display, etc. in the event of existing cabling. |
| [Deactivate relay n] | Open contact. A warning informs that the value is being transmitted to a connected PLC, external display, etc. in the event of existing cabling. |

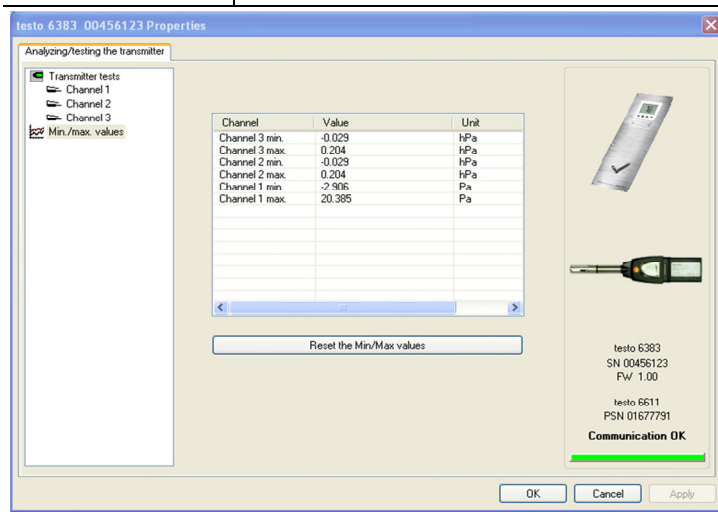
3. Click on **[OK]** or **[Cancel]** to close the dialogue.
 - The analog output returns to Measuring Mode again.

7.3.3.5. Displaying min./max. values

The transmitter saves the minimum or maximum value for each channel (measured since the last voltage supply or since the last manual reset).

- ✓ The required instrument file is marked.
1. Click on [Test/analyze transmitter].
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Test/analyze transmitter** register.
 2. Mark **Min./max. values**.

| Field/button | Explanation |
|------------------|--|
| Min./max. values | View the min./max. values of each channel. Only the values within the measuring range are shown. |



| | |
|---------|--|
| Channel | Min./max. of channel 1/2/3 (optional) |
| Value | Min. or max. value, 1 decimal place. |
| Unit | Unit selected in Unit/analog output . |

3. Reset **Min./max. values**.
4. Click on **[Reset min./max. values]**.

5. Confirm control query to perform the reset.
 - The values are reset to the factory settings.
6. Click on **[OK]** or **[Cancel]** to close the dialogue.

7.3.4. Adjusting the transmitter

This function is used to adjust an attached instrument. The following adjustments may be carried out using the software:

- 1-point adjustment (offset)
- 2-point adjustment (upper and lower adjustment point)
- Analog adjustment (entry via assistant/wizard)
- n-point adjustment (entry via assistant/wizard)

Also see volume 1, see Adjusting the instrument, page 29.

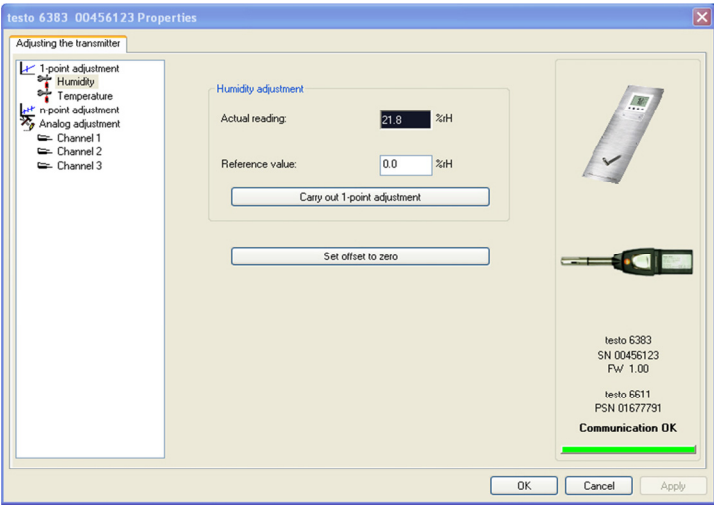
7.3.4.1. 1-point adjustment



The testo 400/650 with precision humidity probe (order no. 0636 9741) is recommended as the reference measuring instrument for 1-point adjustment (offset) (see Adjusting testo 6383 using testo handheld instrument, page 31).

1. Expose the reference measuring instrument and the instrument to be adjusted to the same constant conditions and wait for equalization period to lapse.
2. Mark the instrument file of the connected instrument.
3. Click on **[Adjusting the transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Adjusting the transmitter** register.
4. Enter reference value and click on **[Carry out 1-point adjustment]**.

5. Confirm confirmation request.
 - The adjustment is carried out.

| Field | Explanation |
|---|---|
|  | |
| °C/°F | Selection of the unit; only for temperature adjustment. |
| Current reading | Reading in °C/°F or % RH. Readings are updated every second. |
| Reference value | Entry of the read-off value from the reference measuring instrument. Permissible entries: <ul style="list-style-type: none"> • max. 5 % RH deviation (sum of all 1-point adjustments) • max. 2 K (°C) deviation (sum of all 1-point adjustments) |

- > Click on **[Set offset to zero]** to reset a transmitted reference value.
 - The current reading is used again.
6. Click on **[OK]** or **[Cancel]** to close the dialogue.

7.3.4.2. 2-point adjustment

Also see volume 1, volume 1, see 2-point adjustment (humidity/temperature), page 32.

1. Expose the reference measuring instrument and the instrument to be adjusted to the same constant conditions and wait for equalization period to lapse.
2. Mark the instrument file of the connected instrument.
3. Click on **[Adjusting the transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Adjusting the transmitter** register.
4. Mark **11.3 %**, enter the reference value for the lower adjustment point and click on **[Lower adjustment point]**.
 - The adjustment is carried out.
5. Mark **75.3 %**, enter the reference value for the upper adjustment point and click on **[Upper adjustment point]**.
 - The adjustment is carried out.

| Field | Explanation |
|-----------------|--|
| Current reading | Reading in % RH. Readings are updated every second. |
| Reference value | Entry of the read-off value from the reference measuring instrument. Permissible entries: <ul style="list-style-type: none"> • Lower adjustment point 10.3 to 12.3 % RH • Upper adjustment point 74.3 to 76.3 % RH. |

6. Click on **[OK]** or **[Cancel]** to close the dialogue.

7.3.4.3. n-point adjustment

1. Connect precision pressure sensor (see volume 1, see n-point adjustment (pressure), page 34).
2. Mark the instrument file of the connected instrument.
3. Click on **[Adjusting the transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Adjusting the transmitter** register.
4. Mark **n-point adjustment**.

5. Click on **[Start wizard ...]** and follow the instructions of the wizard.
 - The adjustment is performed when the wizard is closed.

| Field | Explanation |
|-------|-------------|
|-------|-------------|

| | |
|---------------------------------------|---|
| How much pressure is actually applied | Required field: Entry of the value read off at the pressure sensor. |
|---------------------------------------|---|

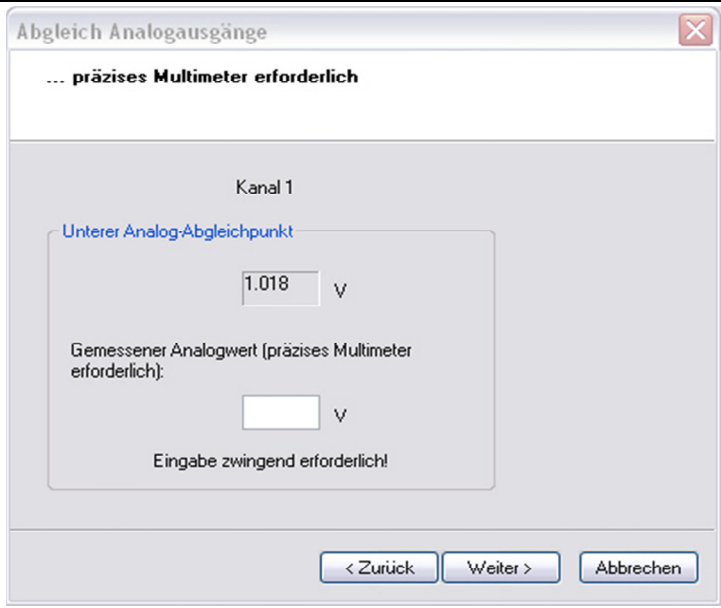
i The n-point adjustment must always be carried out to its full extent and in good time at all selected adjustment points.

i The number of adjustment points (3 to 6) is stored in the user menu of the transmitter and can only be changed via the P2A software.

7.3.4.4. Adjusting the analog output

1. Connect precision multimeter (see volume 1, see Analog output adjustment, page 33).
2. Mark the instrument file of the connected instrument.
3. Click on **[Adjusting the transmitter]**.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Adjusting the transmitter** register.

4. Click on **[Start wizard ...]** and follow the instructions of the wizard.
- The adjustment is performed when the wizard is closed.

| Field | Explanation |
|--|--|
|  | |
| Default value | <p>The analog output value from the last performed adjustment is given at the output. Value of the factory adjustment:</p> <ul style="list-style-type: none"> • Lower adjustment point: approx. 10 % of the max. value • Centre adjustment point: approx. 50 % of the max. value • Upper adjustment point: approx. 90 % of the max. value |
| Measured analog value | Required field: Entry of the value read off at the multimeter. |

7.3.5. Transmitter history

Parameterizations, adjustment processes and messages that have occurred are registered in the transmitter with an operating hours stamp.

In the history overviews (explained later in more detail), past processes and events can be made visible.



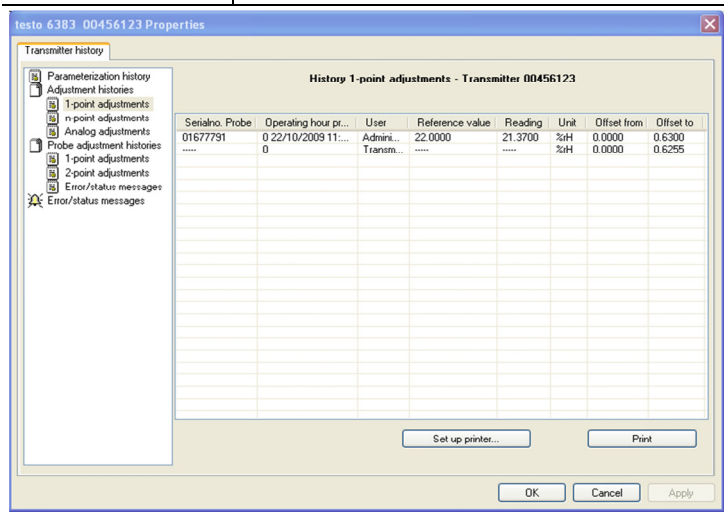
For parameter changes or adjustments that are performed directly at the instrument (via the user menu), "Transmitter" is entered in the User field and only the operating hour is entered in the Date/time field instead of operating hour/date/time.

For entries that are performed using the P2A software, the name of the user logged into Windows appears in the User field, while the date/time and operating hour are shown in the Date/time field.

1. Mark the instrument file of the connected instrument.
2. Click on the **[Transmitter history]** button.
 - The **Properties of <Instrument type> <Serial number>** dialogue is opened with the **Transmitter history** register.
3. Click on the required entry in the list to change the display.

| Field | Explanation |
|-----------------------------|--|
| | |
| Operating hours / date/time | Operating hour/time stamp at which the change at the instrument was performed. |

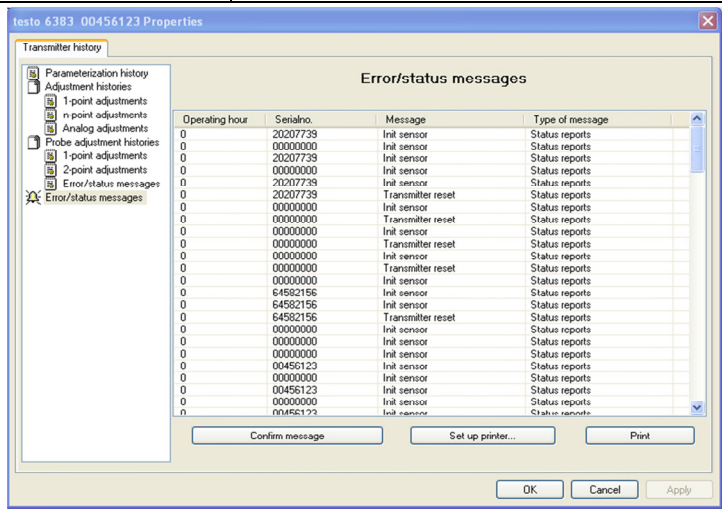
| Field | Explanation |
|----------|---|
| User | Name with which the user is logged into the operating system. "Transmitter" entry if the change was performed at the instrument. |
| Comments | Type of parameter change, e.g. "Unit of channel 1 from Pa to hPa". |



Selection of adjustment histories: **1-point adjustments** / **2-point adjustments** / **Analog adjustments** / **n-point adjustments**.

| | |
|----------------------|---|
| Serial no. Probes | Serial number of the probe. |
| Probe operating hour | Operating hour of the probe at which the change at the instrument was performed. |
| User | Name with which the user is logged into the operating system. "Transmitter" entry if the change was performed at the instrument. |
| Reference value | If no changes were performed, no value is displayed. |
| Unit | Unit during the adjustment. |
| Reading | 1-point adjustment: If no changes were performed, no value is displayed. |

| Field | Explanation |
|-----------------------|---|
| Operating hour probe | Operating hour of the probe at which the change at the instrument was performed. |
| Unit | Unit during the adjustment. |
| Offset from | 1-point adjustment: Value before the adjustment. |
| Offset to | 1-point adjustment: Value after the adjustment. |
| Target value | 2-point adjustment: Reference value. |
| Reading | 2-point adjustment: Value before the adjustment. |
| Difference | 2-point adjustment: Difference determined by instrument between target value and reading. |
| Error/status messages | Error/status messages: The error/status messages assigned to the probe. |



The table is shown only for error and status messages that were generated in the transmitter and were transferred and saved there via the connection to the P2A software.

| | |
|-----------------|--|
| Operating hours | Operating hour at which the message appeared in the instrument. |
| Serial number | Serial number of the instrument to which the message is assigned |

| Field | Explanation |
|-----------------|--|
| Message | e.g. "Scaling changed". The scaling was changed. |
| Type of message | e.g. early warning, status message. |

> To print out the history data, click on **[Print]**.



The printing job is automatically sent to the default printer for the operating system.

With **[Set up printer ...]** a different printer can be selected or the printout can be edited.

4. Click on **[OK]** or **[Cancel]** to close the dialogue.

8 Tips and assistance

8.1. Questions and answers

| Question | Possible causes/solution |
|--|--|
| Connection to instrument cannot be established | Check connection cable/plug contacts |
| A message appears on the display | See volume 1, Status, warning and error messages, page 55 |
| Malfunction (with and without display) | Analysis using the P2A software, see Analyzing/testing the transmitter, page 119 |
| When does a stable current reading appear? | After approx. 20 seconds |

If we could not answer your question, please contact your dealer or Testo Customer Service. For contact details see the rear side of this document or the web page www.testo.com/service-contact

8.2. Accessories and spare parts

i An overview of the probes that can be used with the testo 6383 can be found in volume 1, see Overview of probe and filter types, page 76.

| Description | Article no. |
|---|-------------|
| Spare parts | |
| Integrated humidity probe | 0636 6610 |
| Sealing frame | 0554 6384 |
| Protection Cap for the built-in humidity probe | 0554 6385 |
| Interface and software | |
| P2A software (parameterizing, adjusting, analyzing) incl. USB adapter | 0554 6020 |
| testo 400/650 adapter | 0554 6022 |
| Dewpoint measurement (only with testo 6615) | |
| Preliminary filter to protect measurement chamber and sensors against contamination | 0554 3311 |
| Precision chamber with adjustable inflow | 0554 3312 |

| | |
|---|------------------------------|
| Flow meter for measurement chamber for setting the specified inflow of the sensor | 0554 3313 |
| Cooling coil for process temperatures > 50 °C/122 °F (up to 200 °C/392 °F), only with precision measurement chamber | 0554 3304 |
| 2 m PTFE tube with compressed air connections up to 140 °C/284 °F, max. 9000 hPa, only with precision measurement chamber | 0699 2824 |
| Protection caps | |
| Protection cap made of stainless steel (for integrated probe 0636 6610) | 0170 0263 |
| Protection cap made of stainless steel | 0554 0647 |
| Woven wire filter protection cap | 0554 0757 |
| Protection cap made of PTFE | 0554 0759 |
| Metal protection cap (open) | 0554 0755 |
| PTFE protection cap with condensate drip hole | 0554 9913 |
| Protection cap made of PTFE with condensation protector and condensate drip hole | 0554 0166 |
| Protection cap for H ₂ O ₂ atmospheres | 0699 5867/1 |
| Hoses | |
| Silicone hose ID 4 transparent | 0086 0001, sold by the metre |
| TYGON hose ID 4.8 transparent | 0086 0031, sold by the metre |
| Silicone hose transparent, internal diameter 2 mm, for test pressure connections 6383 | 0086 0003, sold by the metre |
| Supply | |
| Mains unit (desktop, wall-mounted) | 0554 1748 |
| Mains unit (top-hat rail mounting) | 0554 1749 |
| Extension and calibration cable | 0554 6610 |
| External display | |
| Process display for testo 54-2 AC.... | 5400 7553 |
| Process display for testo 54-7 AC.... | 5400 7555 |

| Calibration | |
|--|-----------|
| Standard ISO calibration certificate, transmitter only | 0520 1000 |
| Standard DAkkS calibration certificate, transmitter only | 0520 1200 |
| Standard ISO calibration certificate, transmitter + probes | 0520 0176 |
| Special ISO calibration certificate, transmitter + probes | 0520 0066 |
| Standard DAkkS calibration certificate, transmitter + probes | 0520 0276 |
| Special DAkkS calibration certificate, transmitter + probes | 0520 0236 |
| ISO calibration certificate humidity, probes | 0520 0076 |
| DAkkS calibration certificate temperature, probes | 0520 0261 |

For a complete list of all accessories and spare parts, please refer to the product catalogues and brochures or look up our website at: www.testo.com

8.2.1. Ordering options for testo 6383 transmitter (0555 6383)

| Order code | Characteristic |
|--------------------------------------|---------------------------------|
| Axx Measuring range | |
| A01 | 0 to 50 Pa |
| A02 | 0 to 50 Pa |
| A03 | 0 to 100 Pa |
| A04 | 0 to 500 Pa |
| A05 | 0 to 10 hPa |
| A21 | -10 to 10 Pa |
| A22 | -50 to 50 Pa |
| A23 | -100 to 100 Pa |
| A24 | -500 to 500 Pa |
| A25 | -10 to 10 hPa |
| Bxx Analog output/supply | |
| B02 | 0 to 1 V (4-wire, 24 V AC/DC) |
| B03 | 0 to 5 V (4-wire, 24 V AC/DC) |
| B04 | 0 to 10 V (4-wire, 24 V AC/DC) |
| B05 | 0 to 20 mA (4-wire, 24 V AC/DC) |
| B06 | 4 to 20 mA (4-wire, 24 V AC/DC) |
| Cxx Display | |
| C00 | Without display |
| C02 | With display/English |
| C03 | With display/German |
| C04 | With display/French |
| C05 | With display/Spanish |
| C06 | With display/Italian |
| C07 | With display/Japanese |
| C08 | With display/Swedish |
| Dxx Integrated humidity probe | |
| D00 | No humidity/temperature probe |

| Order code | Characteristic |
|---|--|
| D04 | Humidity/temperature probe integrated in panel |
| D05 | Preparation for external humidity/temperature probe testo 6610 probe |
| Exx Ethernet | |
| E00 | Without Ethernet interface |
| E01 | With Ethernet interface |
| Fxx Differential pressure unit⁹ | |
| F01 | Pa/Min/Max |
| F02 | hPa/Min/Max |
| F03 | kPa/Min/Max |
| F04 | mbar/Min/Max |
| F05 | bar/Min/Max |
| F06 | mmH ₂ O /Min/Max |
| F07 | inchH ₂ O /Min/Max |
| F08 | inch HG/Min/Max |
| F09 | kg/cm ² /Min/Max |
| F10 | PSI/Min/Max |
| Gxx Optional analog output for humidity probe connection testo 6610/units¹⁰ | |
| G01 | % RH/Min/Max |
| G02 | °C/Min/Max |
| G03 | °F/Min/Max |
| G04 | °C _{td} /Min/Max |
| G05 | °F _{td} /Min/Max |
| G06 | g/kg /Min/Max |
| G07 | gr/lb /Min/Max |

⁹ Scaling +/- 50 % of measuring range possible

¹⁰ Only if D04 or D05 is selected

| Order code | Characteristic |
|--|---|
| G08 | g/m ³ /Min/Max |
| G09 | gr/ft ³ /Min/Max |
| G10 | ppmV/Min/Max |
| G11 | °C _{wb} /Min/Max |
| G12 | °F _{wb} /Min/Max |
| G13 | kJ/kg /Min/Max (enthalpy) |
| G14 | mbar/Min/Max (water vapour partial pressure) |
| G15 | inch H ₂ O/Min/Max (water vapour partial pressure) |
| G16 | °C _{tm} (dewpoint for H ₂ O ₂ mixture) |
| G17 | °F _{tm} (dewpoint for H ₂ O ₂ mixture) |
| G18 | % vol |
| Hxx Relay | |
| H00 | Without relay |
| H01 | 4 relay outputs, limit value monitoring |
| H02 | 4 relay outputs, channel 1 limit values and collective alarm |
| Ixx Units, channel 3 (only if optional humidity probe connection is available)¹¹ | |
| I01 | % RH/Min/Max |
| I02 | °C/Min/Max |
| I03 | °F/Min/Max |
| I04 | °C _{td} /Min/Max |
| I05 | °F _{td} /Min/Max |
| I06 | g/kg /Min/Max |
| I07 | gr/lb /Min/Max |
| I08 | g/m ³ /Min/Max |
| I09 | gr/ft ³ /Min/Max |

¹¹ Only if D04 or D05 is selected

| Order code | Characteristic |
|-------------------|---|
| I10 | ppmV/Min/Max |
| I11 | °C _{wb} /Min/Max |
| I12 | °F _{wb} /Min/Max |
| I13 | kJ/kg /Min/Max (enthalpy) |
| I14 | mbar/Min/Max (water vapour partial pressure) |
| I15 | inch H ₂ O/Min/Max (water vapour partial pressure) |
| I16 | °C _{tm} (dewpoint for H ₂ O ₂ mixture) |
| I17 | °F _{tm} (dewpoint for H ₂ O ₂ mixture) |
| I18 | % vol |
| I19 | %RH _m (mixture humidityfor H ₂ O ₂) |

8.2.2. Ordering options for testo 6610 probes (0555 6610)

| Order code | Characteristic |
|----------------------------|--|
| Lxx Probe type | |
| L12 | Probe 6612 |
| L13 | Probe 6613 |
| L14 | Probe 6614 |
| L15 | Probe 6615 |
| L17 | Probe 6617 |
| Mxx Protection caps | |
| M01 | Protection cap made of stainless steel |
| M02 | Protection cap made of wire mesh |
| M03 | Protection cap made of PTFE |
| M04 | Metal protection cap (open) |
| M06 | PTFE protection cap with condensate drip hole |
| M07 | Protection cap made of PTFE with condensate drip hole and condensation protector |
| M08 | Protection cap for H ₂ O ₂ atmospheres |
| Nxx Cable length | |

| Order code | Characteristic |
|-------------------------|--|
| N02 | 1 m cable length (testo 6613, 6614, 6615, 6617) |
| N03 | 2 m cable length (testo 6613, 6614, 6615, 6617) |
| N04 | 5 m cable length (testo 6613, 6614, 6615, 6617) |
| N05 | 10 m cable length (testo 6613, 6614, 6615, 6617) |
| N06 | Cable length specifically for duct versions (testo 6612) |
| Pxx Probe length | |
| P12 | Probe length approx. 120 mm (testo 6613) |
| P20 | Probe length approx. 200 mm (testo 6612, 6613, 6614, 6615, 6617) |
| P30 | Probe length approx. 300 mm (testo 6612, 6613) |
| P50 | Probe length approx. 500 mm (testo 6612, 6613, 6614, 6615, 6617) |
| P80 | Probe length approx. 800 mm (testo 6612, 6613) |

