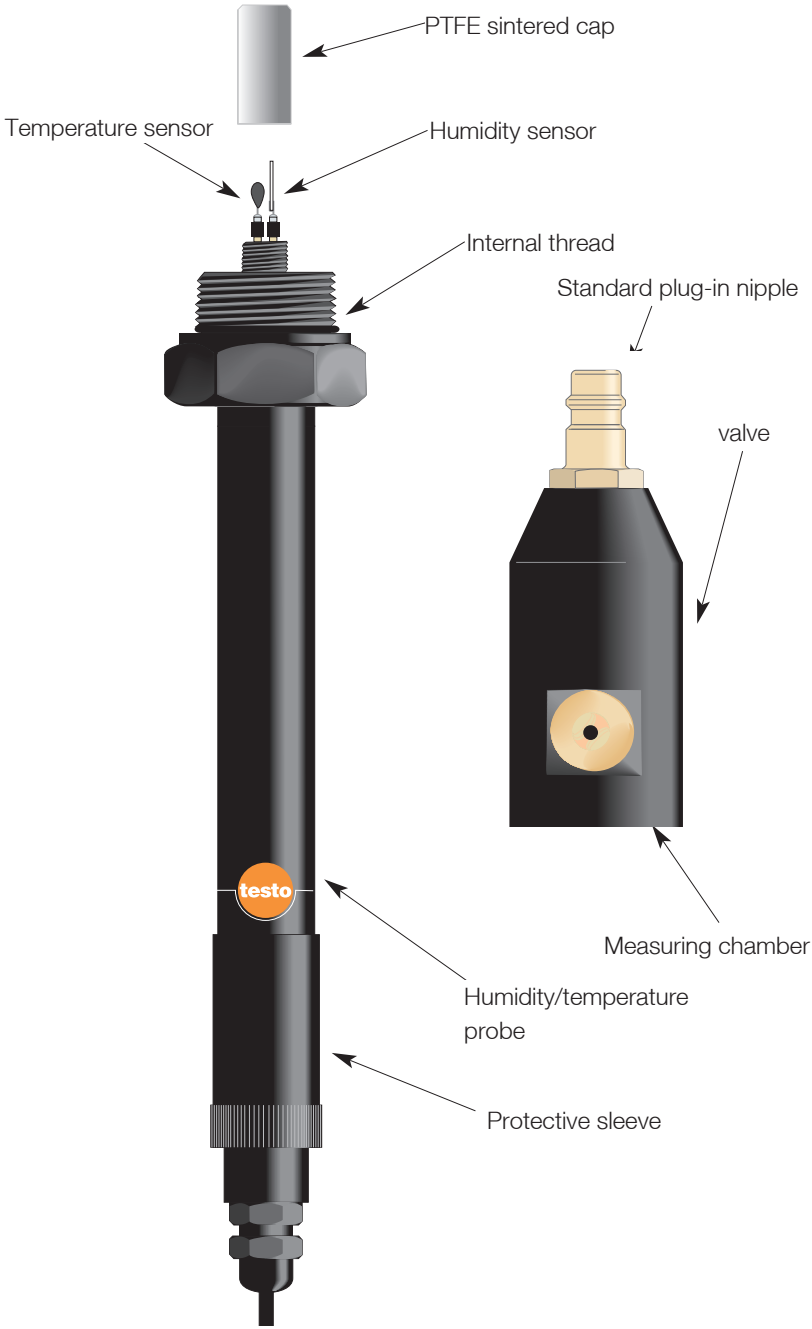
Pressure Dew Point Probe
0636.9835 / 0636.9836

Application Information en

Contents

Measuring instrument conforms with EN 50 081-1 + EN 50 082-1


PTFE sintered cap
Temperature sensor
Humidity sensor
Internal thread
Standard plug-in nipple
valve
Measuring chamber
Humidity/temperature probe
Protective sleeve
testo

The two pressure dew point probes guarantee quick and accurate dew point measurement.

The probe was developed in cooperation with a world market leader in the compressed air engineering sector.

The **standard probe 0636.9835** is sufficient for most measurements in compressed-air piping (e.g. refrigeration dryers in the range from 0 to 2 °C t_{pd}). The **precision probe 0636.9836** is the ideal probe for highly accurate measurements in the remaining humidity range (e.g. in adsorption dryers to -50 °C t_{pd}).

The pressure dew point t_{pd} is the temperature at which compressed air reaches the saturation state (100% RH). This value is an important criteria for the perfect running of the compressed air plant.

The probe is connected to the compressed air system via a standard plug-in connector (G1/4" internal thread to ISO 228-1) or via a screw-on adapter for measurements at test points. If required other standard plug-in connectors with thread G 1/4" can be screwed into measuring chamber.

The sensor is positioned in the flow of compressed air being measured, for the duration of the measurement.

The probes can be used, without a measuring chamber, in accordance with the Instruction Manual for the **testo x35** instruments.

By connecting the probe to **testo x35** the user has a portable, mains independent measuring system. The large display enables the
display of the relative humidity or the dew point with the temperature.

Read
before using the instrument

Please read the Instruction Manual belonging to the measuring instrument.

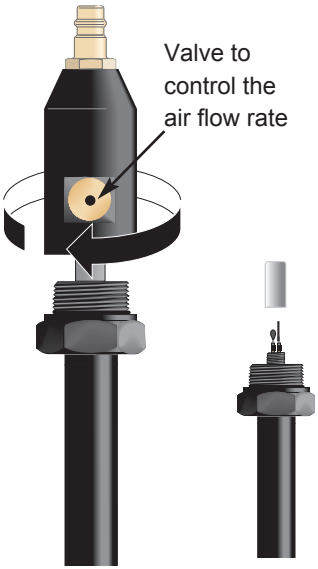
Do not exceed the permissible pressure range.

Observe the measuring range of the sensor.
Overheating can destroy the probe.

Observe the permissible storage and transport temperature
as well as the permissible operating temperature
(e.g. protect the measuring instrument from direct sunlight).

If the instrument is opened, improperly handled of if force is applied,
the warranty will no longer be valid.

The pressure dew point probe



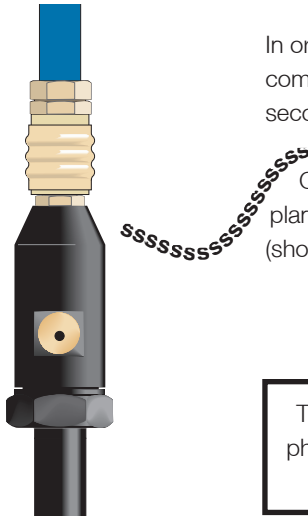
Place the measuring chamber on the humidity probe adapter and screw on tightly by hand.

Make sure that the measuring chamber and the valve are not dirty.

Using the valve you are able to control the air flow rate which flows off to get an optimized response time with the humidity sensor

The humidity probe can also be used without the PTFE sintered cap, in which case the response times are shorter. However, the probes can become dirty or damaged during assembly or application.
If possible always use a sintered cap with the probe. A metal protection cage (Order no. 0554.0755) can be used with absolute oil-free compressed air.

Connect the probe to the instrument



In order to obtain a real measuring value, let compressed air escape from the outlet for about 10 seconds.

Connect the humidity probe to the compressed air plant. Compressed air flows out of the capillary wire (shortening of the response times).

The reduction of pressure at the outlet leads to a physical reduction in the pressure dew point value. See the table in appendix B.

Please read the instrument instruction manual before the switching on the instrument, in order to avoid incorrect measuring results and damage to the instrument.

The storage of the humidity probe in areas with temperature and humidity values which differ considerably from those of the compressed air being measured, and dirty sensors or sintered caps increase the response times.

The response time is 1 to 5 minutes (typically 2 minutes). Wait until the measured values are stable (approx. 60 s without a change in the measured values).

A robust, long-term stable humidity sensor is located in the probe head.

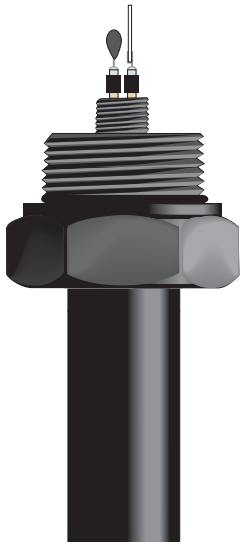
Depending on the application and dirt which has gathered, we recommend a quarterly to yearly control with our **0554.0660** control and calibration set. See the instructions on page 10.

Clean **dirty sensors** with alcohol (isopropanol) or distilled water.
Unscrew the measuring chamber and the PTFE sintered cap.
Dip the sensor in the alcohol, rinse in distilled water and then leave to dry in the air.

Do not touch or knock the sensor.

Put the PTFE sintered cap back on and screw tightly.

Faulty sensors can be replaced, please contact our service department.



Dirty PTFE sintered caps can also be cleaned in alcohol or in distilled water. Impurities can be blown out with compressed air. Always blow out the cap from the inside.

Dirty measuring chambers can also be cleaned in alcohol or in distilled water, or purged with compressed air.

Should the measuring chamber be faulty, please contact our service department.

The control and calibration set (Order no.: 0554.0660) is used to control and calibrate humidity probes. The set consists of two special containers.
With the aid of different saline solutions, air mixtures with defined relative humidities are produced (for additional information see the Instruction Manual “Control and calibration set for humidity sensors”).

As part of the accreditation as a calibration laboratory for the parameters **“Relative humidity”** and **“Dew point”** the values for the relative humidity over the saturated lithium chloride (LiCl) and sodium chloride (NaCl) solutions were newly specified at **testo**.

LiCl 11.3%RH, NaCl 75.3%RH

at rated temperature +25 °C

These improved values also apply to all of the control and calibration sets already delivered. Ignore the values specified up to now.

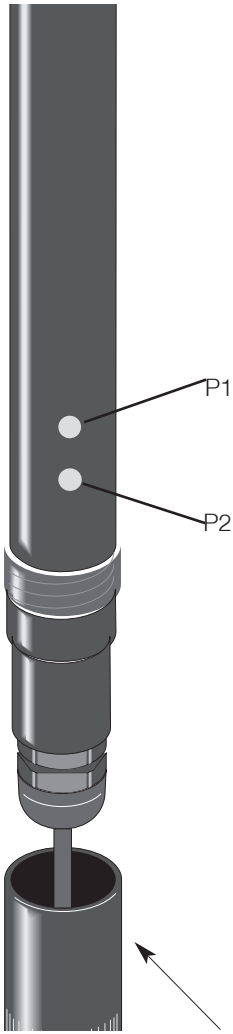
Temperature dependencies

Lithium chloride

Temperature	LiCl Average	Tolerance
10 °C	11.29 %	± 0.41 %
15 °C	11.30 %	± 0.35 %
20 °C	11.31 %	± 0.31 %
25 °C	11.30 %	± 0.27 %
30 °C	11.28 %	± 0.24 %

Sodium chloride

Temperature	NaCl Average	Tolerance
10 °C	75.67 %	± 0.22 %
15 °C	75.61 %	± 0.18 %
20 °C	75.47 %	± 0.14 %
25 °C	75.29 %	± 0.12 %
30 °C	75.09 %	± 0.11 %



General information

The humdity probes 0636.9835 and 0636.9836 undergo a comprehensive calibration procedure at testo. Before control and calibration, the probes must be stored at a constant temperature (+20 to +30 °C) for approximately 12 hours. The minimum adjustment time is 15 minutes in the test container with screwed in probes.

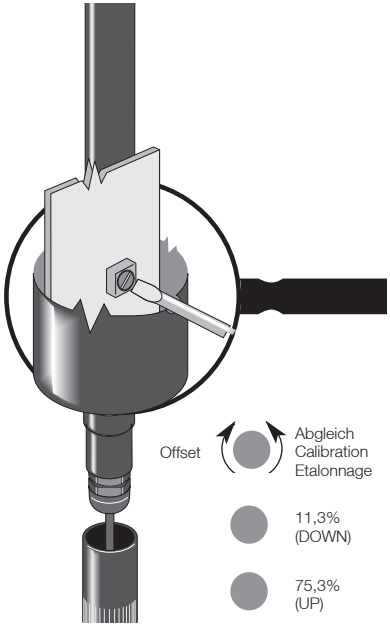
Control and/or calibration

Standard probe 0636.9835

- Carefully screw off the PTFE sintered cap
- Screw off the protective sleeve
- Screw the probe into the test container LiCl (11.3%)
- 15 minute adjustment time
- Control on the hand-held instrument display
- Calibrate, if necessary, by pressing
  P1 = 11.3%RH ± 2%RH
- Screw out the probe from the LiCl test container
- Screw the probe into the NaCl (75.3%) test container
- 15 minute adjustment time
- Control on the hand-held instrument display
- Calibrate, if necessary, by pressing
  P2 = 75.3%RH ± 2%RH
- Screw out the probe from the NaCl test container
- Carefully screw on the PTFE sintered cap
- Screw on the protective sleeve tightly

Precision probe 0636.9836

In addition to the standard calibration the precision probe is subjected to a fine calibration in the factory at -40 °C pressure dew point.
A control with the control and calibration set is possible. The salt containers are not suitable for calibrating the precision probe. A precision calibration can only be carried out at testo or with corresponding highly accurate reference systems (dew point mirror measuring instruments for compressed air).



Fine calibration

With the probes 0636.9835 and 0636.9836 you have the option of a fine calibration on any pressure dew point in the range -50 to +25 °C t_{pd} at +25 °C (one point calibration).

Note

A fine calibration is practical only if used with highly accurate reference systems and if the appropriate adjustment times are taken into consideration (at least 15 minutes). The probe 0636.9836 is already optimized in the factory for humidity measurement in compressed air systems.

How to carry out a fine calibration

- Screw off the protective sleeve
- Turn the switch right to “Offset”
- Mark down the measured values via P1 (Down)
- Mark up the measured values via P2 (Up)

The values set last on the hand-held instrument display are saved.

Factory setting

The set fine correction is inactive if the switch is turned to the left (switch position “Calibration”).

Sensor:.....**testo**® ceramic sensor

Measuring range: .....0 to 100 %RH,
Pressure dew point t_{pd}: .....-60 to +50 °C t_{pd}

Pressure range: .....Overpressure to 15 bar

Accuracy, temperature:* .....±0.4 °C

Resolution: .....0.1 %RH / 0.1 °C

Temperature range: .....Probe: -20 to +50 °C
Instrument: 0 to +40 °C

Control point: .....11.3 to 75.3%RH

Measuring air flow rate
at 6.0 bar overpressure: .....1,0 l/min factory set at
.....delivery (relating to 0 bar,
.....+20°C)

Response time: .....1 to 5 min
typically 2 min

Storage/transport temperature: ....-20 to +70°C

Accuracy:

Pressure dew point in °C	Accuracy in °C t_{pd}	
	0636.9835	0636.9836
5	±0.9	±0.8
0	±1	±0.8
-5	±2	±0.9
-10	±3	±1
-20	±4	±2
-30	-	±3
-40	-	±4

* Accuracy referred to a rated temperature of +25 °C.

The Technical data applies in connection with the **testo x35** measuring instrument.

Warranty

Pressure dew point probe .....1 year
Measuring chamber .....1 year

If the instrument is opened, improperly handled or if force is applied, the warranty will be no longer valid.

Description	Order no.
Standard probe Measuring chamber, Instruction Manual	0636.9835
Precision probe Measuring chamber, Instruction Manual	0636.9836
Measuring chamber	0554.3303
Humidity sensor	0420.0023
Temperature sensor	0420.1242
Humidity control and calibration set **11.3%RH, 75.3%RH**, Instruction Manual	0554.0660
PTFE sintered cap	0554.0756
Metal protection cage	0554.0755
Calibration certificate	0520.0306

Necessary pressure dew point values t_{pd}

Depending on the type of application, different requirements can be made on the air quality.
As the speed of corrosion on steel surfaces increases rapidly above approx. 50%RH, this value should never be exceeded.

Field of application	Necessary pressure dew point values t_{pd}
Factory air, internal pipes	10 °C to -10 °C
Paint spraying	10 °C to -25 °C
Instrument air	10 °C to -40 °C
Sand blasting machine	5 °C to 0 °C
Pneumatic tools	5 °C to -25 °C
Pneumatic conveyor belt	5 °C to -60 °C
Transport vehicles (bus, etc.)	-13 °C to -33 °C
Cleaning of optical systems	-17 °C to -33 °C
Drying of electronic components	-20 °C to -40 °C
Factory air, external pipes	-20 °C to -40 °C
Chem. and pharmaceutical plants	-25 °C to -40 °C

The pressure dew point t_{pd} is the temperature at which the compressed air is fully saturated (100 %RH) .

Dew point graph for compessed air

This graph gives information on the change in the pressure dew point at pressure loss. A drop in working pressure from 8 bar to 6 bar is used as an example here. In this case the pressure dew point is reduced from 10 °C to 5 °C. The water content falls from 9 g/m^3 to 7g/m^3.
The values refer to an ambient temperature of +25 °C.