

B 4 Adjustment/calibration and calibration certificates

4.1 Adjustment/calibration for testo 6621, testo 6651 and testo 6681

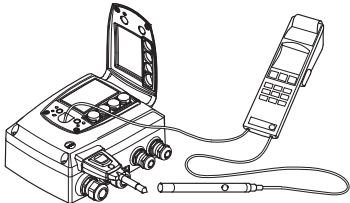
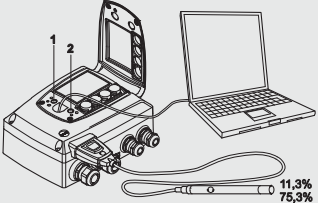
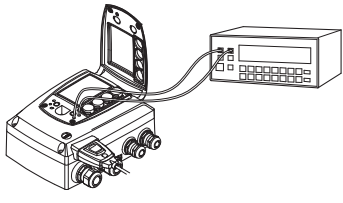
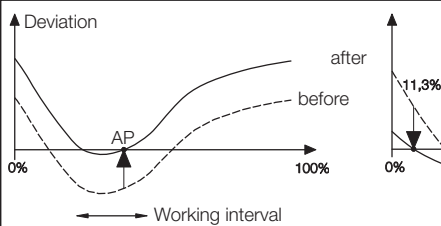
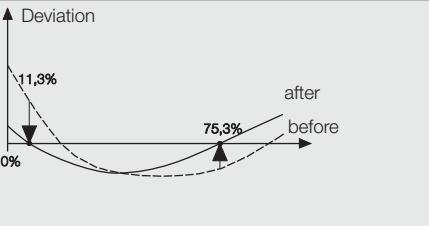
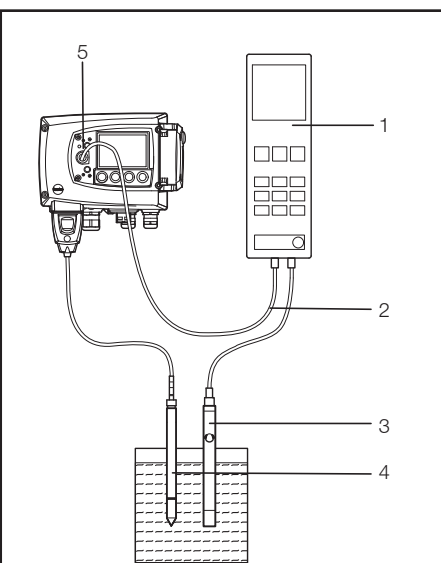
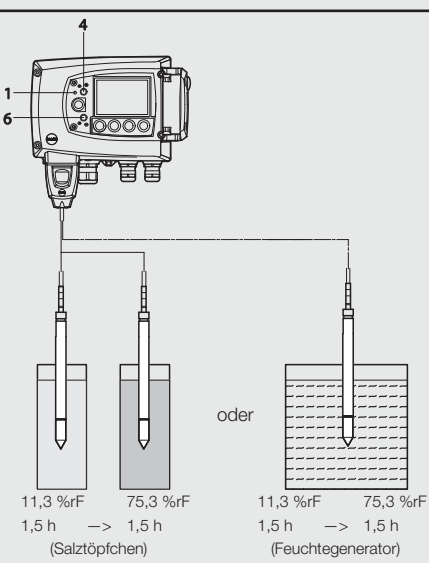
The Testo adjustment concept allows the entire signal chain from the sensor signal (probe) via the digital signal (measurement transmitter internal) to the analog signal (measurement transmitter output signal) to be adjusted. For the adjustment of the signal chain sensor signal to digital signal, a 1-point adjustment (offset correction) or a 2-point adjustment (gradient correction) are available.

The measurement transmitters testo 6651 and 6681 have digital probes whose adjustment information is stored in the internal store of the probe. For this reason, both 1-point and 2-point adjustments can be carried out

on any housing (testo 6651 or 6681), e.g. in a calibration laboratory. Only the respective probe is calibrated.

The adjustment of the analog outputs, however, refers to the housing of the measurement transmitter (testo 6651 and 6681) and is independent of the connected probe.

Carrying out adjustment and Testo accessories:

1-point adjustment	2-point adjustment	Analog adjustment
		
Adjustment via <ul style="list-style-type: none"> - testo 400/650 with adjustment adapter - P2A software - Operating menu 	Adjustment via <ul style="list-style-type: none"> - Djustment buttons (1, 2) - P2A software 	Adjustment using precise multimeter and transfer of analog reference value to <ul style="list-style-type: none"> - P2A software or - Operating menu
 <p>Offset shift with 1-point adjustment</p>	 <p>Offset shift with 2-point adjustment</p>	
	 <p>11,3 %rF 75,3 %rF 1,5 h → 1,5 h (Salztöpfchen) oder 11,3 %rF 75,3 %rF 1,5 h → 1,5 h (Feuchtgenerator)</p>	
1-point adjustment: the most time is saved by adjustment on site with a Testo portable instrument	2-point adjustment with the reference options saline pots (Testo accessory) or a humidity generator	

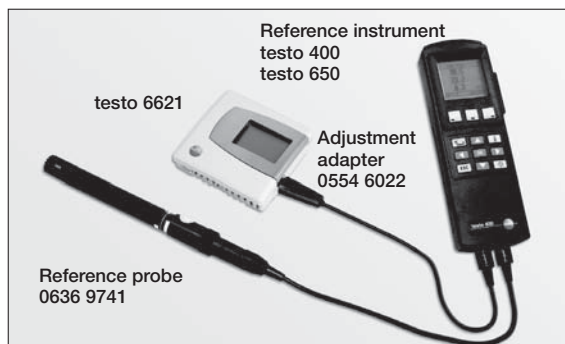
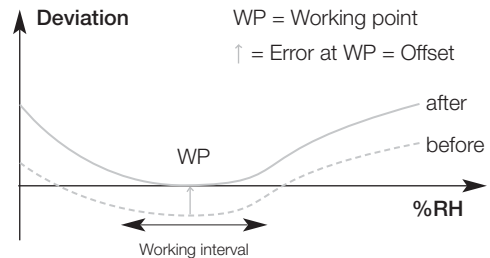
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4.1.1 1-point adjustment

In 1-point adjustment, the measurement value at the working point is adjusted to the reference value by shifting the entire curve by the offset value. There is therefore no deviation, at least at the working point.

The advantage of a 1-point adjustment is the good measurement result in the working interval. However, the deviation can be all the greater, the further the measurement is from the working point. For this reason, the 1-point adjustment should only be used for a narrow measuring range (e.g. cleanroom application, storage conditions etc.). The deviation of the measurement signal from the reference value dependent on the

measurement parameter is shown in this diagram. Since the Testo transmitter has two output channels, an offset can be carried out for each channel. This 1-point adjustment can be carried out with the reference measuring instruments testo 400 or 650, even without the need for software.



III. 1-point adjustment on site, directly with the Testo reference measuring instrument, without P2A software.



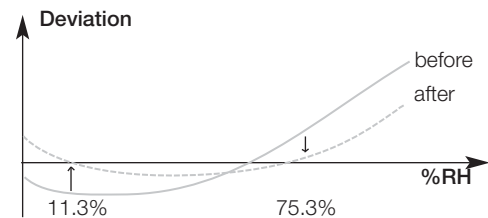
III. 1-point adjustment with the reference measuring instrument and the P2A software.

4.1.2 2-point adjustment

The measurement parameter is adjusted to the reference value at the two standard adjustment points 11.3 %RH and 75.3 %RH

In 2-point adjustment, the error is minimized over the entire humidity range. 2-point adjustment is therefore recommended for large working intervals, e.g. in drying processes.

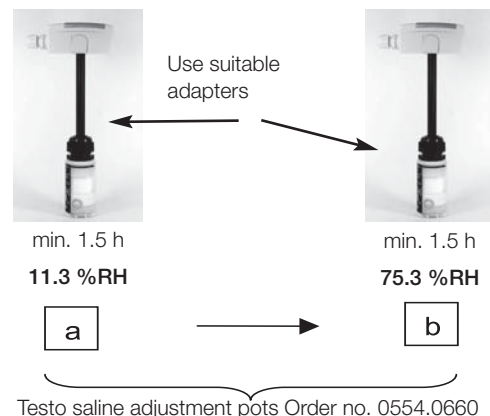
The reusable Testo saline solutions 11.3 % and 75.3 %RH (0554 0660) are very suitable for 2-point adjustment, alternatively, a humidity generator can be used for humidity adjustment



The deviation of the measurement signal from the reference value dependent on the air humidity is shown in this diagram



III. 1- or 2-point adjustment with the Testo Huminator (humidity generator) and the P2A software.



4.2 Calibration certificates

4.2.1 Certificates

Testo offers calibration in accredited testo laboratories.

If requirements from the field of quality assurance are in the foreground (ISO 9001, QS9000, GMP, FDA, HACCP,...), ISO calibration (laboratory accredited according to ISO 17025) offers the ideal solution. If highest reliability is required, for instance in production norms, for assessors, official bodies and critical applications, DKD calibration is recommended

If the measuring instrument has a DKD certificate, you are entitled to carry out internal ISO calibrations in the works with this DKD calibrated reference instrument. The testo 6651 and testo 6681(with DKD certificate and 1%RH measurement inaccuracy), for example, are thus suitable for an internal works calibration laboratory.

testo 6651 and testo 6681 are delivered with a factory adjustment certificate confirmation of the test on delivery). for higher certification requirements, ISO and DKD certificates are also available.



ISO certificate



DKD certificate

For ISO/DKD certificates, the difference is made between (see also table below)

- Standard certification:
prescribed calibration points
- Selective certification:
freely selectable calibration points
- Individual certification:
freely selectable calibration points and repair service

	Pre-determined calibration points	Freely selectable calibration points	Pre-determined certificate layout	Individual certificate layout	Pre-determined calibration label	Individual calibration label	Transport service	Express service	Instrument loan service	Repair after accepted quote	Repair without quote
ISO standard	●		●		●		○	○	○	●	
ISO selective		◎		◎		◎	○	○	○	●	
ISO individual		◎		◎		◎	○	○	○		◎
DKD standard	●		●		●		○	○	○	●	
DKD selective		◎	●		●		○	○	○	●	
DKD individual		◎	●		●		○	○	○		◎

● fixed component ○ additionally selectable (by customer) when ordering ◎ alternatively selectable (by customer) when ordering

4.2.2 Temperature calibration

The calibration takes place as a comparative measurement in suitable thermostats/temperature cabinets instead of with highly accurate resistance thermometers or thermocouples.

	Calibration point/range	Order no.
DKD	Selective -30 to +120°C	0520.0281
	Standard -20/0/+60°C	0520.0261
ISO	Selective -40 to +180°C	0520.0141
	Standard -18/0/+60°C	0520.0151
	Standard -8/0/+40°C	0520.0171
	Standard -18/0°C	0520.0441
	Standard 0/+60°C	0520.0442
	Standard -18/+60°C	0520.0443
	Standard -18°C	0520.0461
	Standard 0°C	0520.0462
	Standard +60°C	0520.0463

4.2.3 Humidity calibration

The calibration takes place in a two-pressure temperature-humidity generator or in a temperature cabinet/humidator as a comparative measurement with a highly accurate dewpoint mirror/humidity probe

	Calibration point/range	Order no.
DKD	Selective 5 to 95 %RH at +25 °C	0520.0236
	Selective 5 to 95 %RH at -18 to +70 °C	0520.0236
	Selective 5 to 95 %RH at +70 to +90 °C	0520.0236
	Standard 11.3/75.3 %RH at 25 °C	0520.0246
	Standard 11.3/50.0/75.3 %RH at 25 °C	0520.0276
ISO	Selective 5 to 95 %RH at +15 to +35 °C	0520.0066
	Selective 5 to 95 %RH at -20 to +15 and +35 °C to +80 °C	0520.0066
	Standard 11.3/75.3 %RH at 25 °C	0520.0076
	Standard 11.3/50.0/75.3 %RH at 25 °C	0520.0176