



testo 6681 + Probe series testo 661x

The industrial humidity transmitter

		<p style="text-align: right;">SPECIFICATIONS</p> <p style="text-align: right;">testo 6681 + Probe series testo 661x</p> <p>Industrial humidity measurement demands absolute professionalism. Not only in running the system, but also in the measuring technology used. The industrial humidity transmitter testo 6681, combined with the probe series testo 661x fulfils these high demands. The testo 6681 has a number of additional features, above and beyond the properties and benefits of a conventional transmitter, which will delight practitioners.</p>
---	--	--

	<p style="text-align: right;">SPECIFICATIONS</p> <p style="text-align: right;">testo 6681</p> <ul style="list-style-type: none"> • Optimum adjustment concept thanks to adjustment of the entire signal chain incl. analog adjustment • Profibus, Ethernet, relay and analog outputs allow optimum integration into individual automation systems • Self-monitoring and early warning guarantee high system availability • Calculation and presentation of all relevant humidity parameters • P2A software for parameterization, adjustment and analysis saves time and costs in commissioning and maintenance • Display with multi-language display • Robust, easy-to-clean metal housing
---	--

Probe series testo 661x

<ul style="list-style-type: none"> • Testo humidity sensor guarantees highest long-term stability and accuracy up to ± 1.0 %RH • Digital, exchangeable probes for specific applications: <ul style="list-style-type: none"> testo 6611: Indoor air probes for wall mounting testo 6612: Process climate probes for duct installation testo 6613: Process humidity probes as duct version testo 6614: Humidity probes for high humidity applications testo 6615: Trace humidity probe with self-adjustment testo 6617: Humidity probe with self-monitoring for sensor-damaging media.
--

Areas of application:

Stationary humidity measurement in production/process technology:

- Drying processes:
 - Drying tobacco,
 - Ceramics production
 - Drying roof tiles
- Spray-painting booths
- Food:
 - Maturing cheese
 - Ripening fruit
 - Drying pasta
- Bio research
- Mushroom farming
- Special areas high humidity
- Sterilisation processes in H₂O₂-atmospheres

Stationary measurement of indoor ambient conditions:

- Monitoring comfort levels
- Museums
- Storage of hygroscopic substances
- Storage of electronic components



The industrial humidity transmitter

Technical data testo 6681

Measurement parameters	
Humidity	
Selectable units	Dependent on probe, available are: relative humidity %RH; normed atm. dewpoint in °CtdA (°Ftd); dewpoint in °Ctd (°Ftd); absolute humidity in g/m ³ (gr/ft ³); degree of humidity in g/kg (gr/lb); enthalpy in kJ/kg (BTU/lb); psychrometer temperature in °Ctw (°Ftw); water vapour partial pressure in hPa/H2O; water content in ppmV; mixture dewpoint H ₂ O ₂ in °Ctm/°Ftm; %RH acc. to WMO; temperature in °C/°F
Measuring range	0 to 100 %RH
Trace humidity	
Selectable units	Dewpoint in °Ctd/°Ftd
Measuring range	-60 to +30 °Ctd / -76 to +86 °Ftd (only with testo 6610)
Temperature	
Selectable units	Temperature in °C/°F
Measuring range	Dependent on probe (testo 661x)

General technical data	
Design	
Material	Metal
Dimensions	122 x 162 x 77 mm (without probe)
Weight	1.5 kg (without probe, without Profibus/Ethernet module)
Display	
Display	Optional: 2-line LCD with clear text line and relay status display
Resolution	0.1 %RH / °Ctd / °Ftd / °Ctw / °Ftw or 0.01 °C/°F 1g / kg / g/m ³ / ppm
Operation	
Parameterization	4 operating buttons for display / P2A software
Installation	
Probe connection	Digital probe connection
Miscellaneous	
Protection class	IP65
EMC	2004/108/EG

Inputs and outputs	
Analog outputs	
Quantity	2 channels (analog signal type uniform for both channels, decided when ordering), additional 3rd channel (optional)
Output type	0/4 to 20 mA (2-wire/4-wire) 0 to 1/5/10 V (4-wire)
Measurement rate	1/s
Galvanic isolation	Galvanic isolation of the output signals (2-wire and 4-wire), isolation of supply from outputs (4-wire)
Resolution	12 bit
Accuracy of the analog outputs	0/4 to 20 mA ± 0.03 mA 0 to 1 V ±1.5 mV 0 to 5 V ±7.5 mV 0 to 10 V ±15 mV
Max. load	2-wire: 12 VDC: max. 100 Ω / 24 VDC: max. 500 Ω / 30 VDC: max. 625 Ω; 4-wire: 500 Ω
Further outputs	
Ethernet	Optional: module can be fitted as intermediary layer
Profibus-DP	Optional: module can be fitted as intermediary layer, cannot be combined with Ethernet module
Relays	Optional: 4 relays (free allocation to measurement channels or as collective alarm with operating menu/PsA software), up to 250 VDC /3 A (NO/NC)
Other outputs	Mini DIN for Testo P2A software and portable measuring instruments testo 400/650
Supply	
Voltage supply	2-wire: 24 VDC ±10 % 4-wire: 20 to 30 VAC/DC
Current consumption	max. 300 mA

Operating conditions		
	Operating temperature (with integrated relay)	-40 to +60 °C
Without display	Operating temperature	-40 to +70 °C / -40 to +158 °F
	Storage temperature	-40 to +80 °C / -40 to +176 °F
With display	Operating temperature	0 to +50 °C / +32 to +122 °F
	Storage temperature	-40 to +80 °C / -40 to +176 °F
	Measurement medium	Air, nitrogen; more on request: info@testo.co.uk



The industrial humidity transmitter

Technical data probe range testo 6610						
	testo 6611	testo 6612	testo 6613	testo 6614	testo 6615	testo 6617
Type	Wall	Cable	Cable	Heated cable	Cable trace humidity (self-adjustment)	Cable with cover electrode monitoring
Operating range	Room climate probe wall mounting	Process humidity probe duct mounting	Process humidity probe flexible with cable	Humidity probe for high humidity applications / when risk of condensation	Humidity probe for trace humidity / dewpoint (with self-adjustment)	Humidity probe with self-monitoring for sensor-damaging media

Measurement parameters						
Humidity						
Measuring range***	0 to 100 %RH				see trace humidity	0 to 100 %RH
Measurement uncertainty* (+25 °C)**	testo 6611/12/13: $\pm(1.0 + 0.007 * mv)$ %RH for 0 to 100 %RH / $\pm(1.4 + 0.007 * mv)$ %RH for 90 to 100 %RH; testo 6614: $\pm(1.0 + 0.007 * mv)$ %RH for 0 to 100 %RH; testo 6617: $\pm(1.2 + 0.007 * mv)$ %RH for 0 to 90 %RH / $\pm(1.6 + 0.007 * mv)$ %RH for 90 to 100 %RH +0.02 %RH per Kelvin dependent on the process and electronics temperature (for a deviation of 25 °C / 77 °F)					
Selectable units	%RH; °C _{td} /°F _{td} ; g/m ³ / gr/ft ³ ; g/kg / gr/lb; kj/kg; BTU/lb; °C _{tw} /°F _{tw} ; hPa; inch H ₂ O ₂ ; ppm vol %; %vol; °C _{tm} (H ₂ O ₂) / °F _{tm} (H ₂ O ₂)					
Reproduceability	better than ± 0.2 %RH					
Sensor	Testo capacitive humidity sensor, plug-in	Testo capacitive humidity sensor; soldered				
Response time	t90 max. 10 sec.					
Temperature						
Selectable units	°C/°F					
Measuring range	-20 to +70 °C / -4 to +158 °F	-30 to +150 °C / -22 to +248 °F	-40 to +180 °C / -40 to +356 °F		-40 to +120 °C / -22 to +302 °F	-40 to +180 °C / -40 to +356 °F
Measurement uncertainty* (at +25 °C / +77 °F)	± 0.15 °C / 0.27 °F (Pt1000 Class AA)				Pt100 Class AA	Pt1000 Class AA
Trace humidity						
Trace humidity	-60 to +30 °C _{td}					
Measurement uncertainty					± 1 K at 0° C _{td}	± 2 K at -40° C _{td} ± 4 K at -50° C _{td}

General technical data						
Probes						
Probe shaft	Stainless steel					
Cable	FEP coated					
Plug	Plastic ABS					
Probe dimensions (diameter)	12 mm					
Probe dimensions (probe shaft length)	70/200 mm	200/300/500/800 mm	120/200/300/500/800 mm	200/500 mm		
Cable length	—	specially for duct versions	—	1/2/5/10 m		

Operating conditions				
Pressure tightness	1 bar positive pressure (probe tip)	PN 10 (probe tip) PN 1 (probe tip)	PN 16 (probe tip)	1 bar positive pressure (probe tip)

* Other accuracies apply for wall probe length 70 mm combined with a current output (P07):
Operation: 2 channels at 12 mA, without display illumination, relay off, additional measurement error to above values at +25 °C (+77°F), humidity ± 2.5 % RH

***For continuous applications in high humidity (>80 %RH at ≤ 30 °C for >12 h, >60 %RH at > 30 °C for >12h), please contact us via info@testo.co.uk
testo 6614 is suitable for high humidity applications.

****The determination of measurement uncertainty takes place according to GUM (Guide to the Expression of Uncertainty in Measurement):**

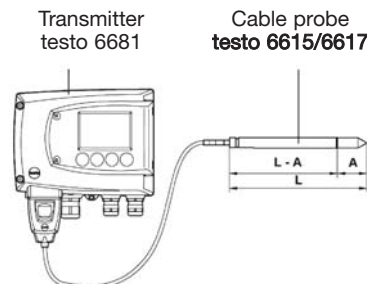
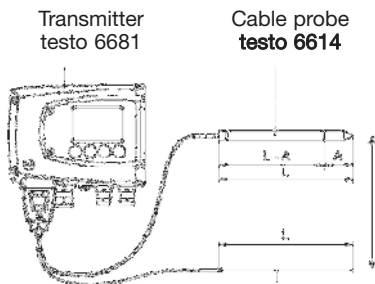
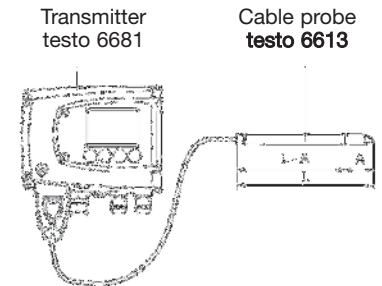
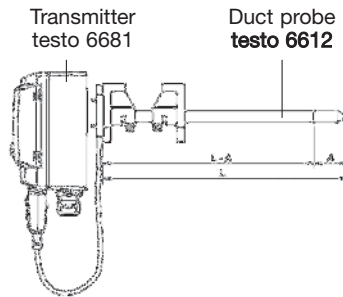
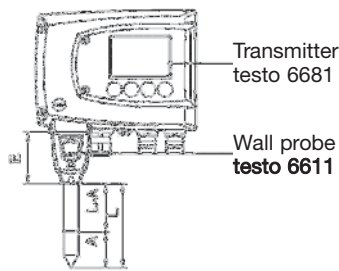
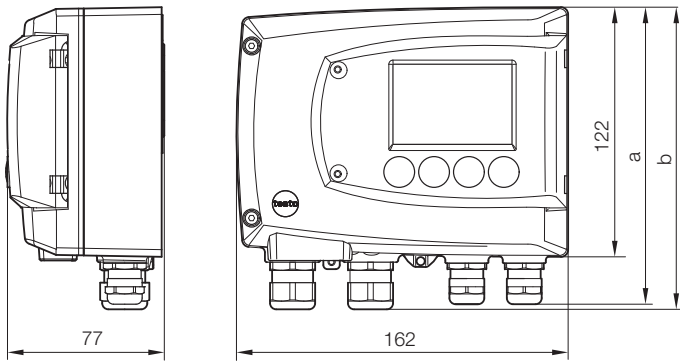
For the determination of measurement uncertainty, the accuracy of the measuring instrument (hysteresis, linearity, reproduceability), the uncertainty contribution of the test site as well as the uncertainty of the adjustment site (works calibration are taken into account. For this purpose, the value of k=2 of the extension factor, which is usual in measurement technology is used as a basis, which corresponds to a trust level of 95%.

Subject to change without notice.



The industrial humidity transmitter

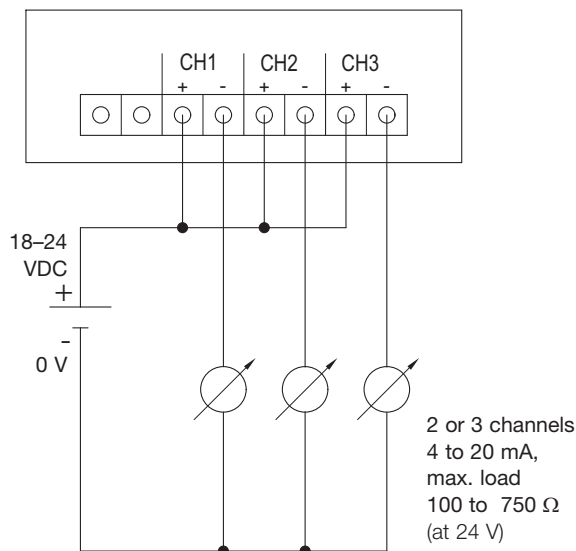
Technical drawings



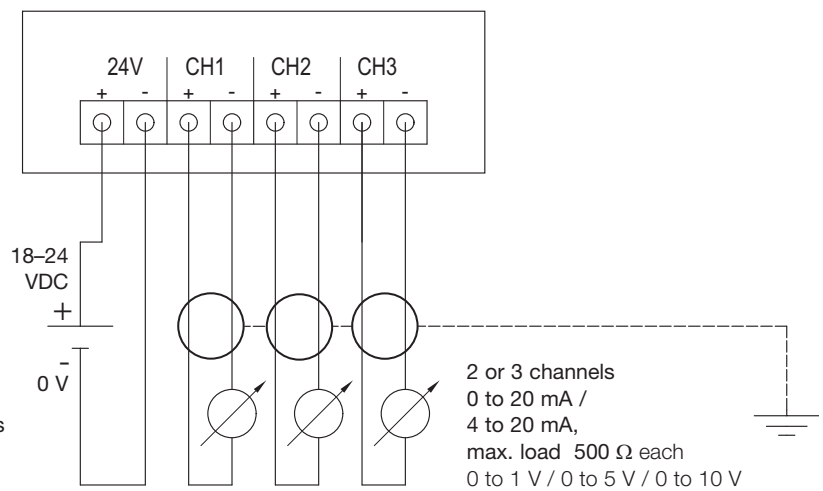
L = Probe length
L-A = Probe length - length protective cal
A = 35 mm

Connection plan

Connection plan 2-wire technology (4 to 20 mA)



Connection plan 4-wire technology (0 to 20 mA / 4 to 20 mA / 0 to 1 V / 0 to 5 V / 0 to 10 V)



Subject to change without notice.



The industrial humidity transmitter

The following options can be specified for the testo 6681:

Bxx Analog output / supply	Bxx Analog output / supply	Gxx Humidity/temperature unit
Cxx Display / menu language	B01 4 to 20 mA (2-wire, 24 VDC), not possible with relay, Ethernet module or probe testo 6614/6615	G01 %RH / min / max
Dxx Cable entry	B02 0 to 1 V (4-wire, 24 VAC/DC)	G02 °C / min / max
Exx Ethernet	B03 0 to 5 V (4-wire, 24 VAC/DC)	G03 °F / min / max
Fxx Humidity / temperature unit	B04 0 to 10 V (4-wire, 24 VAC/DC)	G04 °C _{td} / min / max
Gxx Humidity / temperature unit	B05 0 to 20 mA (4-wire, 24 VAC/DC)	G05 °F _{td} / min / max
Hxx Relay	B06 4 to 20 mA (4-wire, 24 VAC/DC)	G06 g/kg / min / max
Ixx Humidity / temperature unit (optional)	B07 Profibus-DP	G07 gr/lb / min / max
	Cxx Display/menu language	G08 g/m ³ / min / max
	C00 without display / without operating menu	G09 gr/ft ³ / min / max
	C02 with display and operating menu / English	G10 ppmV / min / max
	C03 with display and operating menu / German	G11 °C _{wb} / min / max (wet bulb)
	C04 with display and operating menu / French	G12 °F _{wb} / min / max (wet bulb)
	C05 with display and operating menu / Spanish	G13 kJ/kg / min / max (enthalpy in air)
	C06 with display and operating menu / Italian	G14 hPa / max (water vapour partial pressure)
	C07 with display and operating menu / Japanese	G15 inch H ₂ O / min / max (water vapour partial pressure)
	C08 with display and operating menu / Swedish	G18 %Vol.
	Dxx Cable entry	Hxx Relay
	D01 Cable entry M16 (relay: M20)	H00 Without relay
	D02 Cable entry NPT 1/2"	H01 4 relay outputs, limit value monitoring
	D03 Cable contact via M plug connection for signal and supply (for optional relay: M20 cable entry)	H02 4 relay outputs, limit values Channel 1 + collective alarm
	Exx Ethernet	Ixx Humidity/temperature unit (optional)
	E00 Without Ethernet module	I00 no optional 3rd analog output
	E01 With Ethernet module	I01 %RH / min / max
	Fxx Humidity/temperature unit	I02 °C / min / max
	F01 %RH / min / max	I03 °F / min / max
	F02 °C / min / max	I04 °C _{td} / min / max
	F03 °F / min / max	I05 °F _{td} / min / max
	F04 °C _{td} / min / max	I06 g/kg / min / max
	F05 °F _{td} / min / max	I07 gr/lb / min / max
	F06 g/kg / min / max	I08 g/m ³ / min / max
	F07 gr/lb / min / max	I09 gr/ft ³ / min / max
	F08 g/m ³ / min / max	I10 ppmV / min / max
	F09 gr/ft ³ / min / max	I11 °C _{wb} / min / max (wet bulb)
	F10 ppmV / min / max	I12 °F _{wb} / min / max (wet bulb)
	F11 °C _{wb} / min / max (wet bulb)	I13 kJ/kg / min / max (enthalpy)
	F12 °F _{wb} / min / max (wet bulb)	I14 hPa / min / max (water vapour partial pressure)
	F13 kJ/kg / min / max (enthalpy in air)	I15 inch H ₂ O / min / max (water vapour partial pressure)
	F14 hPa / max (water vapour partial pressure)	I16 °C _{tm} / mixture dewpoint for H ₂ O ₂
	F15 inch H ₂ O / min / max (water vapour partial pressure)	I17 °F _{tm} / mixture dewpoint for H ₂ O ₂
	F18 %Vol.	I18 %Vol.

Example:

Order code for transmitter testo 6681 with the following options:

- Housing with display with menu setting English
- 4 to 20 mA (4-wire)
- Cable entry M16/M20
- Etherne module
- Factory configuration Channel 1: °C_{tpd} with scaling min 0 °C_{td}, max 100 °C_{td}*
- Factory configuration Channel 2: °C with scaling min -10 °C/-14 °F
- max +70 °C/+158 °F*
- with relay
- without 3rd channel

0555 6681 A01 B06 C02 D01 E01 F03 F04 0 100 G02 -10 +70 H01 I00

The following options can be specified for the probe testo 661x:

Lxx Probe version	Lxx Probe version	N00 Without cable (only L11)
Mxx Protective cap	L11 Probe 6611 (wall version)	N01 Probe length 1 m (not for L11, L12)
Nxx Probe shaft length	L12 Probe 6612 (duct version up to 150 °C)	N02 Probe length 2 m (not for L11, L12)
Pxx Probe length / length mm	L13 Probe 6613 (duct version up to 180 °C)	N05 Probe length 5 m (not for L11, L12)
	L14 Probe 6614 (heated cable version)	N10 Probe length 10 m (not for L11, L12)
	L15 Probe 6615 (trace humidity cable version)	N23 Probe length 0.6 m, specially for duct versions (only L12)
	L17 Probe 6617 (self-monitored cable version)	Pxx Probe length / length mm
	Protective cap	P07 Probe length 70 mm (only L11)
	M01 Stainless steel protective cap	P12 Probe length 120 mm (only L13)
	M02 Wire mesh protective filter	P20 Probe length 200 mm
	M03 PTFE protective cap	P30 Probe length 300 mm (only L12, L13, L14)
	M04 Metal protective cap, open	P50 Probe length 500 mm (not with L11)
	M06 PTFE protective cap with condensate drip hole	P80 Probe length 800 mm (only L12, L13)
	M07 PTFE protective cap with condensation protection and condensate drip hole	
	M08 Protective cap for H2O2 atmospheres	
	Nxx Probe length / length mm	

Example:

Order code for probe testo 6613 with the following options:

- Cable probe, -40 to +180 °C
- Sintered stainless steel filter
- Cable length 2 m
- Probe length 300 mm

0555 6610 L13 M01 N02 P30



www.testolimited.com