





















Modular humidity measurement system, testo 650

The right probe for every application

		Quick-action immersion/penetration probes To measure liquids and food
	NEW 	Highly accurate immersion/penetration probes With a system accuracy of 0.05 °C in the measurement range from 0 to 100 °C and a resolution of up to 0.001 °C
%RH		Quick-action surface probes To measure surface temperature
td tpd		Precision air probe To measure air temperature
g/m³		Magnetic probes, adhesive force approx. 10 N For measurements on metal surfaces
g/kg		Globe thermometer To measure radiant heat
aW		Current/voltage cable (± 1 V, ± 10 V, 20 mA) For example, to check stationary transducers
°C		CO ₂ probes To determine ambient air quality and monitor the workplace
J/g		Mechanical rpm probes with plug-in head To measure rpm
hPa		Highly accurate reference humidity/temperature probes For highest demands on accuracy ±1 %RH
rpm		Pressure dew point probes To measure pressure dew point to -60 °C tpd in compressed air systems
mA		Robust humidity probes For equilibrium moisture or duct measurements up to 180 °C
V		Flexible humidity probes with mini module For measurements on test rigs, for example
Vol. % CO₂		Sword probes For humidity/temperature measurement in stacked goods
ppm CO		Equilibrium probes To determine equilibrium moisture
		aw value set Pressure-tight precision humidity probes to measure aw value
		Differential (100 Pa / 10 hPa / 100 hPa) and absolute pressure probes To measure pressure
		Refrigerant-proof high pressure probes For maintenance on refrigeration systems/water measurement

Temperature measurement

- The PTB accredited DKD laboratory for temperature guarantees reliable readings
- First PTB accredited DKD laboratory for surface temperature, developed in cooperation with PTB and the University of Ilmenau
- Patented crossband probe for fast surface measurements
- Custom-designed temperature probes for your application
- System accuracy of testo 650 up to 0.05 °C with precision probe 0614 0240

Current and voltage measurement

- Optional connection of external transmitters, such as particle counters and pressure transmitters and scaling of input in instrument

CO and CO₂ measurement

- Long-term stable 2 beam procedure to measure reference and measurement duct for CO₂

rpm measurement

- Mechanical rpm measurement from 20 to 20,000 rpm

Humidity measurement

- The first PTB accredited DKD laboratory for air moisture and dew point temperature guarantees reliable readings
- Worldwide patented (capacitive) Testo humidity sensor
- Inter-laboratory tests in national and international institutes confirm a sensor accuracy of ±1 %RH
- 2 year guaranteed long-term stability of the Testo humidity sensor under normal conditions
- Easy calibration or adjustment of humidity probe (on site) with defined salt solutions (11.3 %RH, 33 %RH and 75.3 %RH)

Pressure measurement

- Very high accuracy in lower measuring range (100 Pa) from +/- (0.3 Pa + 0.5 % of reading)
- Temperature-compensated pressure measurement

Modular humidity measurement system, testo 650

- Upgradable
- Barcode
- Data management
- Prints
- 500,000 readings
- Reference measurement



Attachable printer
Readings can be printed in the matter of seconds on location

Clear graphics display

3 user defined function buttons

Saves or prints at the touch of a button

Data communication with PC, barcode pen

Easy operation with cursor

Power connection/quick battery recharge

2 user defined probe sockets

Precision reference class measuring instruments have everything the professional user needs to complete complicated measurement tasks efficiently, accurately and conveniently.

testo 650 includes the basic parameters temperature, CO₂, rpm, current and voltage. It is also possible to measure humidity and pressure using testo 650. testo 650 can be upgraded to the multi-function measuring instrument testo 400.

The measuring instrument can keep up with the measurement tasks at hand thanks to upgrades. Intelligent electronics ensure the latest technology is used thanks to software updates.

Upgradable and teachable, highly reliable and of the highest quality - they are the properties which guarantee that the customer is equipped for the future.

Useful instrument functions:

- All functions of testo 950
- Calculation of all parameters in the Mollier diagram:
- Relative humidity %RH, dew point and pressure dew point (td, tpd)
- Absolute humidity g/m³, psychrometric wet bulb temperature
- Degree of humidity (g/kg), partial pressure in water vapour in mbar/hPa
- Enthalpy kcal/kg
- aw value measurement with trend display
- Barometric air pressure

testo 650	
Reference humidity measuring instr., incl. battery, Li cell and cal. protocol Used for:	
● Humidity, pressure	
● Temperature	
● CO ₂ , rpm and current/voltage	
Part no.	0563 6501

- %RH
- td
- tpd
- g/m³
- g/kg
- aw
- °C
- J/g
- hPa
- rpm
- mA
- V
- Vol. % CO₂
- ppm CO

testo 650

... guarantees quality

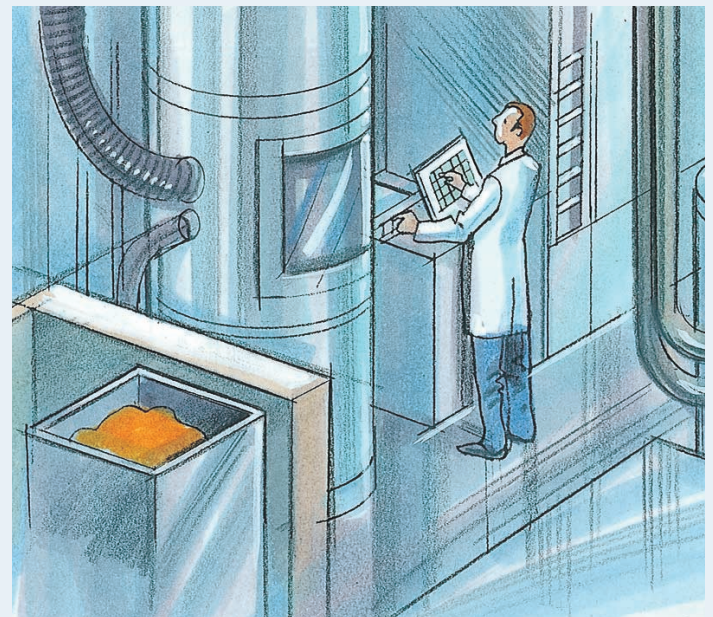


Proof of temperature



Guaranteeing quality usually involves keeping to a certain temperature. This ranges in the food industry from frozen food temperatures to component temperatures in the electronics branch. Easy documentation and filing of this measurement data is possible with testo 650.

Remaining moisture/high-level moisture



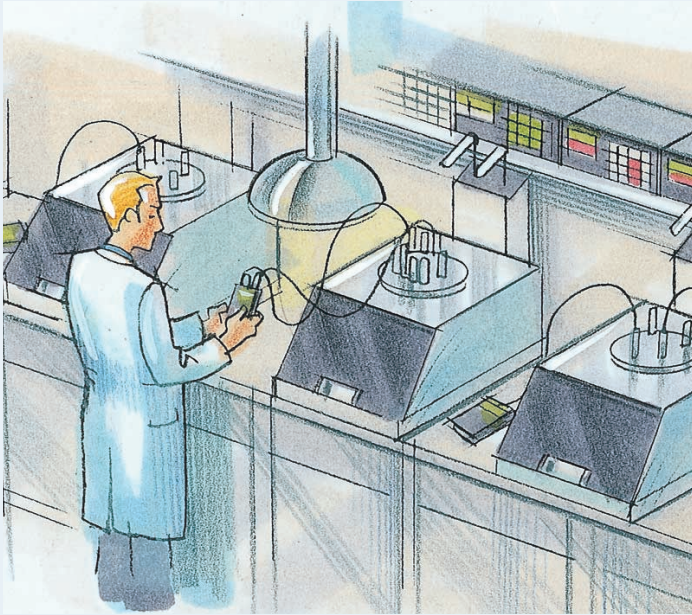
Highly accurate and efficient measurement of humidity and temperature is required in many industrial processes to guarantee continuous quality. testo 650 calculates all the physical parameters in the Mollier diagram.

The reference testo 650...

... sets standards

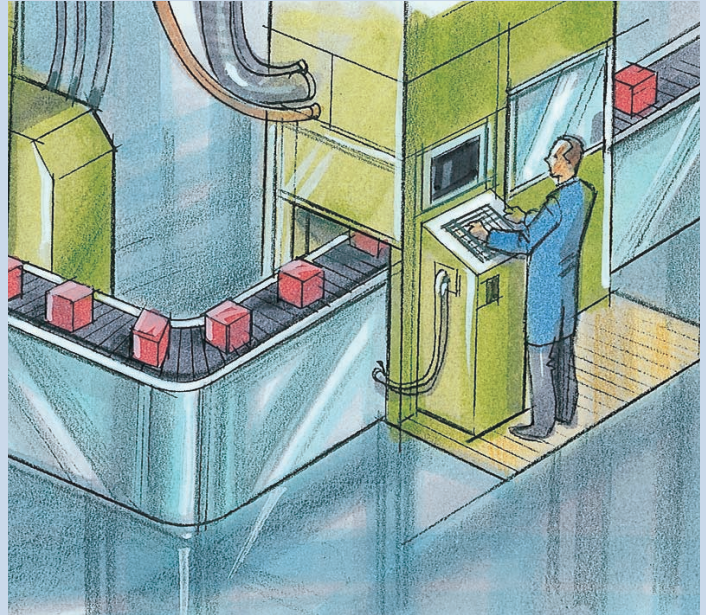
... documents processes

Precision temperature



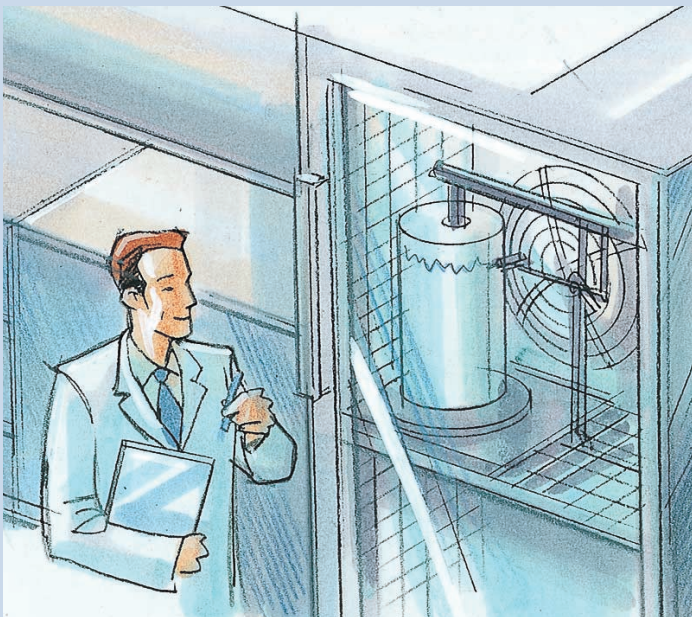
testo 650, when used together with the 0614 0240 precision probe, has a system accuracy of 0.05 °C in the measurement range from 0 to 100 °C and a resolution of up to 0.001 °C. This high accuracy level makes testo 650 ideal as a working standard.

Production unit



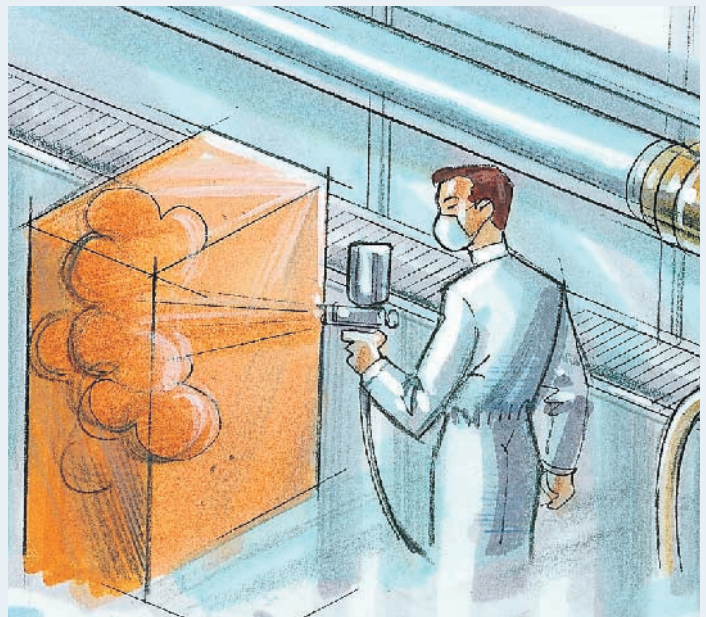
Products and systems are subjected to different temperatures during a production process. testo 650 has extensive monitoring options, for example, a measurement program is started when a temperature value is exceeded.

Reference humidity



testo 650 is setting new standards in accuracy and long-term stability with its worldwide inter-laboratory tests carried out in leading international institutes enabling accurate monitoring of air humidity fluctuations of $\pm 1\%$ RH.

Compressed air unit



Extensive economic damage, depending on the application, could be caused by uncontrolled moisture ingress. It is possible to measure and document readings over a longer period of time using testo 650.

%RH

td
tpd

g/m³

g/kg

aW

°C

J/g

hPa

rpm

mA

V

Vol. %
CO₂

ppm
CO

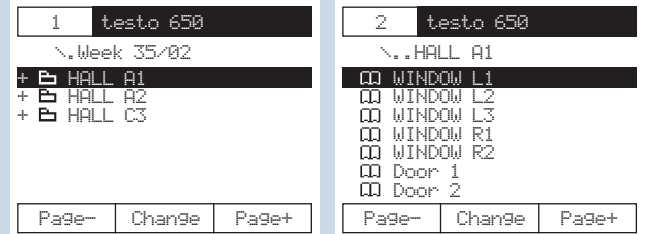


Measurement data with the measuring instrument:

Structure - Measure - Printout on-site

Structuring measurement data:

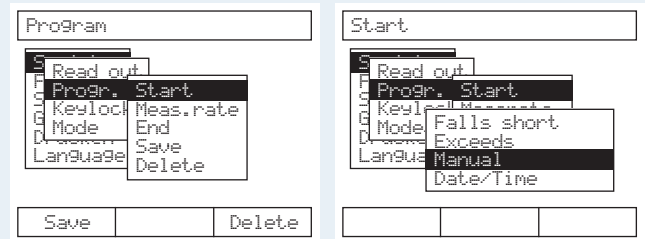
- Readings can be saved at individual locations - with guarantee of refinding.
- The "tree structure" - folders, sub-folders and measurement protocols - guarantees an uncomplicated view.
- Practical additional information such as measurement information or required value input can be saved with the location.
- The locations can be selected via barcode labels using the pen.
- It is easy to draw an effective tour plan using the locations list.



Long-term control made easy:

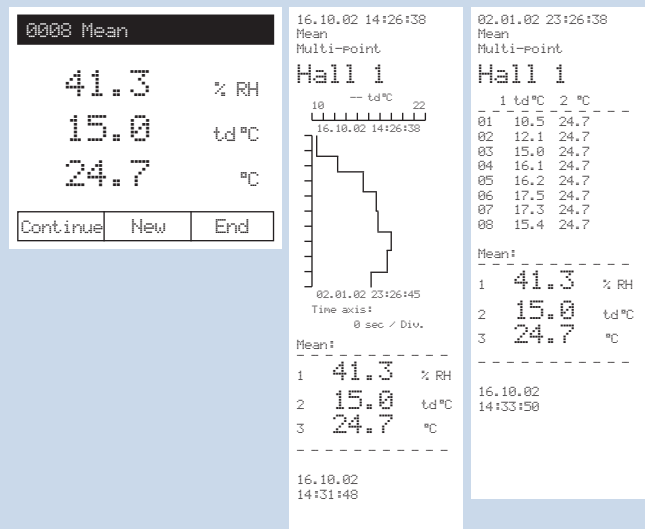
User-friendly data logging, not only for spot checks

- The beginning of the measurement can be...
 - determined manually each time.
 - activated if a user defined limit value is exceeded.
 - set according to date/time.
- The measurement is completed when...
 - the predefined number of readings is reached.
 - date/time is reached.
 - the memory is full.
 - ended manually.
- Non-stop measurement via wrap-around memory...
 - deletes the oldest respective value.
 - is deactivated manually.



Documentation on-site:

- The individual measurement protocol can be either saved or deleted following analysis.
- The printer immediately supplies the documentation required.
- The attachable comfort printer also offers graphical analysis options.
- Thermal paper for long-term legible measurement data documentation of up to 10 years.



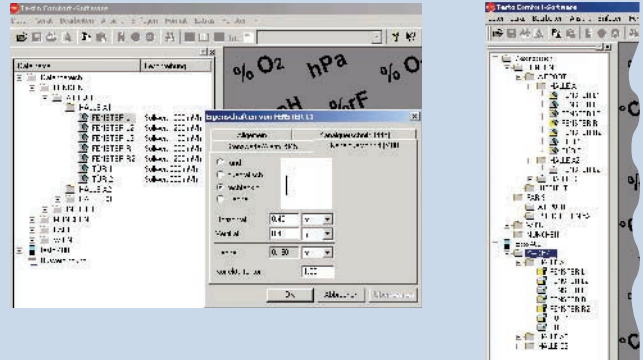
%RH
td
tpd
g/m³
g/kg
aW
°C
J/g
hPa
rpm
mA
V
Vol. % CO₂
ppm CO

Measurements with ComSoft 3 software:

Preparation - Analysis - Filing - Documentation

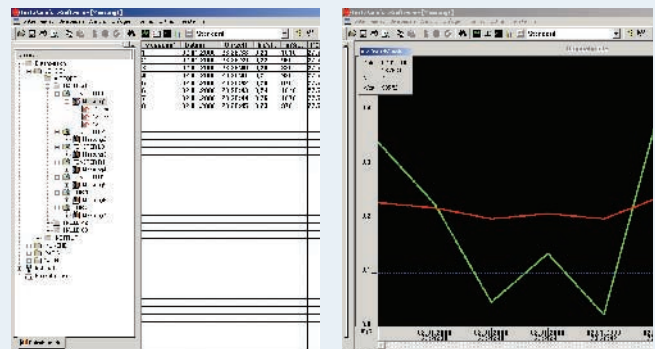
Easy reading management:

- Preparation of the measurement:
 - The measurement program is determined and loaded into instrument
 - Tour plan is drawn up based on locations and is loaded into instrument.
- The measuring instrument is downloaded once measuring is complete:
 - The saved protocols are conveniently filed via the software using "Drag & Drop" or are analysed in Data.
- The readings are determined using the measuring instrument and can also be displayed online using the software.



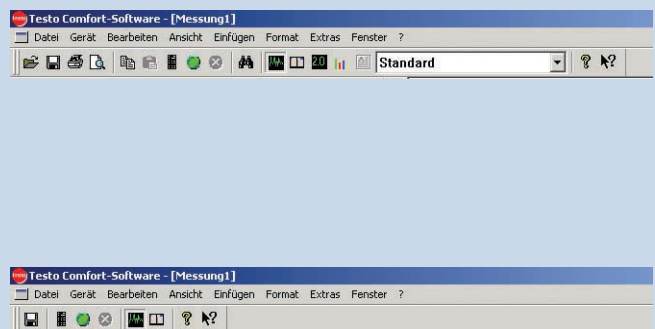
Comprehensive analysis, easy filing:

- Analysis:
 - with calculation functions
 - with crosshairs
 - with mean calculation
 - with calculation of standard deviation
 - taking all conventional refrigerants into consideration (refrigeration module, optional)
- Display:
 - as table or as graphic
 - as digit field or as histogram
 - with analog display
 - Measurement channels can be activated or deactivated at the touch of a button
- Documenting:
 - Data is transferred to Excel table using "Copy and Paste".



Individual configuration options:

- Your company logo can be included on the printouts.
- Functions can be selected from the function list and the finished profile can be saved.
- The online interface is available for LabVIEW software.
- Menu can be individually tailored to your needs.



%RH

tpd

 g/m³

g/kg

aW

°C

J/g

hPa

rpm

mA

V

 Vol. %
CO₂

 ppm
CO



testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol
Part no. 0563 6501



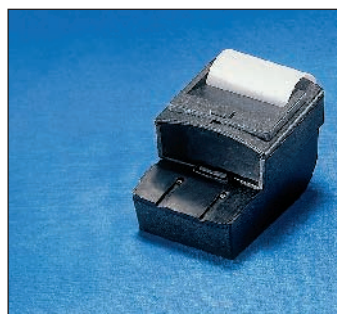
Barcode pen to read in measurement locations
Quick and accurate allocation of reading to location
Part no. 0554 0460



ComSoft 3 - Professional with data management
Incl. database, analysis and graphics function, data analysis, trend curve
Part no. 0554 0830



Velocity module, incl. volume flow, degree of turbulence...
Upgrade via service (upgrades testo 650 to testo 400)
Part no. 0450 4003



Attachable printer (securely attached) with 1 roll of thermal paper and batteries



Testo printer with 1 roll of thermal paper and 4 AA size batteries
Part no. 0554 0545
NEW testo 575 fast printer, incl. 1 roll of thermal paper and batteries
Part no. 0554 1775



SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder
Part no. 0516 0401



System case (plastic)
Part no. 0516 0400
System case (aluminium)
Part no. 0516 0410

Quickly prints readings on location
Part no. 0554 0570

SoftCase for attachable printer (protects printer from dirt/impact)
Part no. 0516 0411

Measuring instrument	Part no.	Softcase for instrument and printer	Part no.
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testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol	0563 6501	SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder	0516 0401
2 channel humidity and temperature meas. instrument with aw value measurement, pressure measurement with option of connecting pressure probes, CO, CO ₂ , rpm, mV/mA transmitters		SoftCase for attachable printer (protects printer from dirt/impact)	0516 0411

Update from testo 650 to testo 400	Part no.
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Velocity module, incl. volume flow, degree of turbulence... Upgrade via service (upgrades testo 650 to testo 400)	0450 4003
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Accessories for measuring instrument	Part no.
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Memory upgrade to 500,000 readings Upgrades memory capacity (via service)	0554 9481
Rechargeable battery set for instrument (4 rechargeables 2.4V/700mAh) Selected for quick recharging in instrument	0554 0196
Mains unit 230 V/ 8 V/ 1 A, for instrument (European plug) For mains operation and battery recharging	0554 1084
Car charging adapter, ready to measure following recharging in car Battery is recharged while travelling in car	0554 0424
Spare Li cell to save RAM data When changing battery or rechargeable battery	0515 0028

Printer and accessories	Part no.
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Attachable printer (securely attached) with 1 roll of thermal paper and batteries	0554 0570
Testo printer with 1 roll of thermal paper and 4 AA size batteries Prints readings on location	0554 0545
NEW testo 575 fast printer, incl. 1 roll of thermal paper and batteries Infrared thermal line printer with graph function	0554 1775
Recharger for printer (with 4 standard rech. batt.) Rechargeable batteries are recharged externally	0554 0110
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls)	0554 0568
Measurement data documentation legible for up to 10 years	
Label thermal paper (Testo patent) for testo 575 printer (6 rolls), can be applied directly	0554 0561

Barcode and accessories	Part no.
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Barcode pen to read in measurement locations Quick and accurate allocation of reading to location	0554 0460
Barcode labels, self-adhesive (1200 off)	0554 0411
Location marked with barcode, printed using software	
Adhesive pockets (50 off) for printout, paper barcode labels...	0554 0116

Software and accessories	Part no.
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ComSoft 3 - Professional with data management Incl. database, analysis and graphics function, data analysis, trend curve	0554 0830
RS232 cable Connects instrument to PC (1.8 m) for data transfer	0409 0178
Electrical isolation for RS232 (connects measuring instrument to PC)	0554 0006

Refrigeration module	Part no.
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"Refrigeration technology" update with saved curves of all usual refrigerants	0554 4035
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System case	Part no.
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Transport case (plastic) for measuring instrument, probes For secure and orderly storage	0516 0300
System case (plastic) for measuring instrument, probes and accessories Probes in lid make it easy to find parts in case	0516 0400
System case (aluminium) for measuring instrument, probes and accessories Probes in lid make it easy to find parts in case	0516 0410

%RH

td
tpdg/m³

g/kg

aw

°C

J/g

hPa

rpm

mA

V

Vol. %
CO₂ppm
CO

Calibration certificates

Calibration certificates/Temperature	Part no.
ISO calibration certificate/Temperature For air/immersion probes, calibration points -18°C; 0°C; +60°C	0520 0001
ISO calibration certificate/Temperature Measuring instruments with air/immersion probe; calibration points 0°C; +150°C; +300°C	0520 0021
ISO calibration certificate/Temperature Thermometers with surface probe; calibration points +60°C; +120°C; +180°C	0520 0071
DKD calibration certificate/Temperature Meas. instr. with air/immersion probe; calibration points -20°C; 0°C; +60°C	0520 0211
DKD calibration certificate/Temperature Contact surface temperature probes; calibration points +100°C; +200°C; +300°C	0520 0271

Calibration certificates/Humidity	Part no.
ISO calibration certificate/Humidity Calibration points freely selectable from 5 to 95 %RH +15 to +35 °C (max DP +70 °C/min DP -30 °C) -18 to +80 °C	0520 0106
ISO calibration certificate/Humidity Electronic hygrometers; calibration points 11.3%RH and 75.3%RH at +25°C	0520 0006
ISO calibration certificate/Humidity Pressure dew point measuring instruments; calibration points freely selectable -40 to 0 °C at 6 bar	0520 0116
ISO calibration certificate/Humidity Saturated saline solutions; calibration point 11.3%RH	0520 0013
ISO calibration certificate/Humidity Saturated saline solutions; calibration point 75.3%RH	0520 0083
DKD calibration certificate/Humidity Electronic hygrometers; calibration points 11.3%RH and 75.3%RH at +25°C	0520 0206
DKD calibration certificate/Humidity Calibration points freely selectable from 5 to 95%RH +25°C -18 to +70°C	0520 0216
DKD calibration certificate/Humidity Saturated saline solutions; calibration point 11.3%RH	0520 0213
DKD calibration certificate/Humidity Saturated saline solutions; calibration point 75.3%RH	0520 0283

Calibration certificates/Pressure	Part no.
ISO calibration certificate/Pressure Absolute pressure; 5 pt. distributed over the whole measurement range	0520 0115
ISO calibration certificate/Pressure Differential pressure; 5 points distributed over meas. range (-1 to 250 bar)	0520 0005
DKD calibration certificate/Pressure Differential and positive pressure; 6 measuring points distributed over meas. range (> 0.6% of fsv)	0520 0225
DKD calibration certificate/Pressure Absolute pressure; 11 measuring points distributed over meas. range (0.1 to 0.6% of fsv)	0520 0212
DKD calibration certificate/Pressure Differential and positive pressure; 11 measuring points distributed over the instrument measuring range	0520 0215

%RH

 td
tpd

 g/m³

g/kg

aW

°C

J/g

hPa

rpm



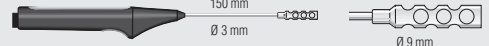






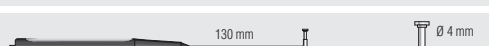

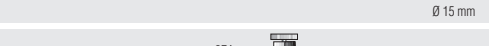
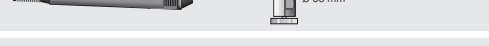






mA

V

 Vol. %
CO₂

 ppm
CO

Suitable probes at a glance

	Air probes	Illustration	Meas. range	Accuracy	t99	Conn.	Part no.
	NTC probes						
	Highly accurate air probe for air and gas temperature measurements with bare, mechanically protected sensor	 150 mm Ø 9 mm	-40... +125 °C	To UNI curve	60 s	Fixed cable	0610 9714
	Pt100 probes						
	Standard air probe	 150 mm Ø 3 mm	-200... +600 °C	Class A	75 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9773
	Precision air probe	 150 mm Ø 3 mm	-100... +400 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	75 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0017 *
%RH	NiCr-Ni probes						
	Super quick-action immersion/penetration probe for measurements in gases and liquids with a low-mass tip	 150 mm Ø 1.4 mm	-200... +600 °C	Class 1	1 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9794 0614 9794 *
td tpd	Thermocouple, made of fibre-glass insulated thermal pipes, pack of 5 Insulation: twin conductor, flat, oval, opposed and covered with fibre-glass, both conductors are wrapped together with fibre-glass and soaked with lacquer, please order adapter 0600 1693	 2000 mm Ø 0.8 mm	-200... +400 °C	Class 1	5 s	Please order adapter 0600 1693	0644 1109
g/m ³	Adapter to connect NiCr-Ni thermocouples and probes with open wire ends					Fixed cable	0600 1693
g/kg	Surface probes						
	NiCr-Ni probes						
aW	Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C	 150 mm Ø 10 mm	-200... +300 °C	Class 2	3 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0194 0614 0194 *
	Super quick-action surface probe, probe tip at 90° angle, with sprung thermocouple strip	 100 mm 50 mm Ø 10 mm	-200... +300 °C	Class 2	3 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0994
°C	Robust surface probe	 150 mm Ø 4 mm	-200... +600 °C	Class 1	25 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9993 0614 9993 *
J/g	Robust surface probe, at 90° angle, suitable for inaccessible places	 130 mm Ø 4 mm	-200... +600 °C	Class 1	25 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9893 0614 9893 *
	Robust surface probe with sprung thermocouple strip for high temperature range up to +700°C	 200 mm Ø 15 mm	-200... +700 °C	Class 2	3 s	Fixed cable, coiled	0600 0394
hPa	Roller surface probe for measurements on rollers and rotating drums, max. circumferential velocity 18 to 400m/min	 274 mm Ø 33 mm	-50... +240 °C	Class 2		Fixed cable, coiled	0600 5093
rpm	Magnetic probe, adhesive power approx. 20 N, with magnets, for measurements on metal surfaces	 35 mm Ø 20 mm	-50... +170 °C	Class 2		Fixed cable	0600 4793
mA	Magnetic probe, adhesive power approx. 10 N, with magnets, for higher temperatures, measures on metal surfaces	 75 mm Ø 21 mm	-50... +400 °C	Class 2		Fixed cable	0600 4893
	Miniature surface probe for measurements on electronic components, small motors...	 270 mm Ø 5 mm	-200... +400 °C	Class 2	3 s	Fixed cable	0600 1494
V	Adhesive thermocouple, pack of 2, carrier material: aluminium foil Is fixed at the measuring point using conventional adhesives or silicone heat paste 0554 0004	 Diameter extension 2 x 0.2 mm, 0.1 mm thick	-200... +200 °C	Class 1		Please order adapter 0600 1693	0644 1607
Vol. % CO2	Adapter to connect NiCr-Ni thermocouples and probes with open wire ends					Fixed cable	0600 1693
ppm CO	Pt100 probes						
	Robust surface probe	 150 mm Ø 4 mm	-50... +400 °C	Class B	40 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9973 0628 0018 *
	Infrared probes						
	Infrared surface probe for fast non-contact temperature measurement on live, inaccessible and rotating parts		-18... +260 °C	±2% of mv (+100... +260 °C) ±2 °C (-18... +100 °C)	2 s	Fixed cable, coiled	0600 0750
	Accessories						
	Silicone heat paste (14g), T _{max} = +260°C Improves heat transfer in surface probes						0554 0004

*with EEPROM: Precision adjustment for each probe at a measuring point; measuring range limits are saved in probe; t95 extrapolation; surface allowance in surface probe can be adapted to measuring task

Suitable probes at a glance

Pipe wrap probes

Illustration	Meas. range	Accuracy	t99	Conn.	Part no.
NTC probes					
Pipe wrap probe for pipes with diameter of up to 2", for flow/return temperature measurement in hydronic systems	-60... +130 °C	Class 2	5 s	Fixed cable	0600 4593
Spare meas. head for pipe wrap probe	-60... +130 °C	Class 2	5 s		0602 0092
Pt100 probes					
Velcro probe for pipes with diameter of max. 100 mm	-50... +150 °C	Class B	40 s	Fixed cable	0628 0019

Immers./penetr. probes

Illustration	Meas. range	Accuracy	t99	Conn.	Part no.
NiCr-Ni probes					
Fast response immersion/penetration probe	-200... +400 °C	Class 1	3 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0293 0614 0293
Super quick-action immersion/penetration probe for measurements in liquids	-200... +600 °C	Class 1	1 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0493 0614 0493
Super quick-action immersion/penetration probe for high temperatures	-200... +1100 °C	Class 1	1 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0593 0614 0593
Super quick-action immersion/penetration probe for measurements in gases and liquids with a low-mass tip	-200... +600 °C	Class 1	1 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 9794 0614 9794
Robust immersion/penetration probe made of V4A stainless steel, waterproof and oven-proof, e.g. for the food sector	-200... +400 °C	Class 1	3 s	Fixed cable	0600 2593
Smelting probe for measurements in non-ferrous melting baths, with exchangeable measuring tips	-200... +1250 °C	Class 1	60 s	Fixed cable	0600 5993
Spare measuring tip for smelting probe	-200... +1250 °C	Class 1	60 s		0363 1712
Pt100 probes					
Standard immersion/penetration probe	-200... +400 °C	Class A	20 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0273
Standard immersion/penetration probe	-200... +600 °C	Class A	20 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0604 0274
NEW Highly accurate immersion/penetration probe incl. certificate	-40... +300 °C	±0.05 °C (+0.01... +100 °C) ±(0.05 °C ±0.05% of mv) (-40... 0 °C) ±(0.05 °C ±0.05% of mv) (+100.01... +300 °C)	60 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0614 0240
Highly accurate immersion/penetration probe	-100... +400 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	30 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0015
Flexible precision immersion probe, cable heat-proof up to +300°C	-100... +265 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	80 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0016
Robust immersion/penetration probe with sharpened measuring tip, waterproof and oven-proof	-200... +400 °C	Class A	30 s	Fixed cable	0604 2573

Plug-in measuring tips

Illustration	Meas. range	Accuracy	t99	Conn.	Part no.
Plug-in measuring tip, 750mm long, flexible, for high temperatures, outer casing: stainless steel 1.4541	-200... +900 °C	Class 1	4 s	Please order handle with Part no. 0600 5593	0600 5393
Plug-in measuring tip, 1200 mm long, flexible, for high temperatures, outer casing: stainless steel 1.4541	-330... +900 °C	Class 1	4 s	Please order handle with Part no. 0600 5593	0600 5493
Plug-in measuring tip, 550mm long, flexible, for high temperatures, outer casing: Inconel 2.4816	-200... +1100 °C	Class 1	4 s	Please order handle with Part no. 0600 5593	0600 5793
Plug-in measuring tip, 1030mm long, flexible, for high temperatures, outer casing: Inconel 2.4816	-200... +1100 °C	Class 1	4 s	Please order handle with Part no. 0600 5593	0600 5893
Handle for plug-in measuring tip					0600 5593

*with EEPROM: Precision adjustment for each probe at a measuring point; measuring range limits are saved in probe; t95 extrapolation; surface allowance in surface probe can be adapted to measuring task

%RH

 td
tpd

 g/m³

g/kg

aW

°C

J/g

hPa

rpm

mA







V

 Vol. %
CO₂

 ppm
CO



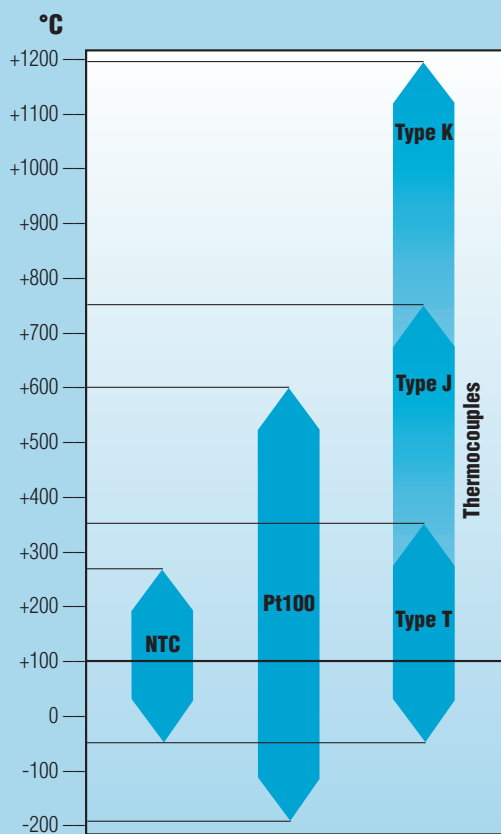
Suitable probes at a glance

Other temperature probes	Illustration	Meas. range	Accuracy	Conn.	Part no.
Globe thermometer to measure radiant heat	 Ø 150 mm	0... +120 °C	±0.5 °C (0... +49.9 °C) ±1 °C (+50... +120 °C)	Fixed cable	0554 0670
More probes					
CO probe to measure CO level in ambient air	 190 mm, Ø 25 mm	0... +500 ppm CO	±5% of mv (+100.1... +500 ppm CO) ±5 ppm CO (0... +100 ppm CO)	Fixed cable	0632 1247
CO2 probe measures indoor air quality and monitors the workplace. With plug-in head, connection cable 0430 0143 or 0430 0145 required		0... +1 Vol. % CO2 0... +10000 ppm CO2	±(50 ppm CO2 ±2% of mv) (0... +5000 ppm CO2) ±(100 ppm CO2 ±3% of mv) (+5001... +10000 ppm CO2)	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0632 1240
Mechanical rpm probe with plug-in head		+20... +20000 rpm	± 1 digit	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0640 0340
Included: 2 probe tips Ø 8 and Ø 12 mm 1 hollow cone Ø 8 mm 1 surface speed disc Ø 19 mm to measure rotational speed: rpm = rotational speed in mm/s					
Current/voltage cable (±1 V, ±10 V, 20 mA)		0... +1000 mV 0... +10 V 0... +20 mA	±1 mV (0... +1000 mV) ±0.01 V (0... +10 V) ±0.04 mA (0... +20 mA)		0554 0007

Accessories for temperature probes	Part no.	Accessories for temperature probes	Part no.
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143	Telescopic handle, max. 1 m, for probe with plug-in head	0430 0144
Cable, 5 m long, connects probe with plug-in head to measuring instrument PUR coating material	0430 0145	Cable: 2.5 m long, PUR coating material	
Extension cable, 5 m long, between plug-in head cable and instrument PUR coating material	0409 0063	Glass pipe for immersion/penetration probe to protect from corrosive agents For probes with Part nos. 0604 0273 and 0628 0015	0554 7072

Selecting the right temperature sensor

Measuring range



Accuracy

Select the sensor with the accuracy required for your application from the diagram or table.

Sensor	Temp. range	Class	Maximum tolerances	
			Fixed value	Referred to temperature
Thermocouple	-40...+1200 °C	2	±2.5 °C	±0,0075 x Itl
	Type K (NiCr-Ni)	1	±1,5 °C	±0,004 x Itl
	Type T	1	±0,5 °C	±0,001 x Itl
Pt100	-40...+750 °C	1	±1,5 °C	±0,004 x Itl
	-100...+200 °C	B	± (0,3 + 0,005 • Itl)	
NTC (Standard)	-200...+600 °C	A	± (0,15 + 0,002 • Itl)	
	-50...-25,1 °C -25...+74,9 °C +75...+150 °C	-	±0.4 °C ±0.2 °C ±0.5 % of reading	
NTC (High temp.)	-30...-20,1 °C -20...0 °C +0,1...+75 °C +75,1...+275 °C	- - °C	±1 °C ±0.6 °C ±0.5 °C ±0.5 °C ±0.5 % of reading	

Itl=Measuring temperature

Data for thermocouples to EN 60584-1 (formerly IEC 584-1). Two values are given. One fixed value in °C and a formula. The larger value always applies. Data for Pt100 to EN 60751 (formerly IEC 751). There is no standardization for NTC sensors.

Suitable probes at a glance

Probes	Illustration	Meas. range	Accuracy	t90	Conn.	Part no.
Air probes						
Standard indoor air quality probe up to +70°C		0... +100 %RH -20... +70 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)	12 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 9740
Duct humidity/temperature probe, can be connected to telescopic handle <small>Telescopic handle 0430 9715, see Ordering data for Accessories</small>		0... +100 %RH -20... +70 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)	12 s	Fixed cable	0636 9715
Thin humidity probe incl. 4 attachable protection caps for ambient air measurements, measurements in exhaust air ducts and equilibrium moisture measurements		0... +100 %RH -20... +70 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)	15 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 2130
Highly accurate reference humidity/temp. probe incl. calibration certificate		0... +100 %RH -20... +70 °C	±1 %RH (+10... +90 %RH)* ±2 %RH (0... +9.9 %RH) ±2 %RH (+90.1... +100 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)	12 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 9741
Humidity/temperature probe		-20... +70 °C	±0.4 °C (+0.1... +50 °C) ±0.5 °C (-20... 0 °C) ±0.5 °C (+50.1... +70 °C)		Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 9742
Process humidity						
Standard pressure dew point probe for measurements in compressed air systems		0... +100 %RH -30... +50 °C tpd	±0.9 °C tpd (+0.1... +50 °C tpd) ±1 °C tpd (-4.9... 0 °C tpd) ±2 °C tpd (-9.9... -5 °C tpd) ±3 °C tpd (-19.9... -10 °C tpd) ±4 °C tpd (-30... -20 °C tpd)	300 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 9840
Precision pressure dew point probe for measurements in compressed air systems incl. cert. with test point -40°C tpd		0... +100 %RH -60... +50 °C tpd	±0.8 °C tpd (-4.9... +50 °C tpd) ±1 °C tpd (-9.9... -5 °C tpd) ±2 °C tpd (-19.9... -10 °C tpd) ±3 °C tpd (-29.9... -20 °C tpd) ±4 °C tpd (-40... -30 °C tpd)	300 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 9841
NEW High humidity level probe with heated sensor element, no condensation on sensor		0... +100 %RH -20... +85 °C	±2.5 %RH (0... +100 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +85 °C)	30 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 2142
Robust high temperature/humidity probe up to +180°C		0... +100 %RH -20... +180 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (+0.1... +50 °C) ±0.5 °C (-20... 0 °C) ±0.5 °C (+50.1... +180 °C)	30 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0021
Flexible humidity probe (does not retain shape) for measurements in inaccessible places		0... +100 %RH -20... +180 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (+0.1... +50 °C) ±0.5 °C (-20... 0 °C) ±0.5 °C (+50.1... +180 °C)	30 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0022
Material and equilibrium moisture						
Flexible humidity probe with mini module for meas. e.g. on material testing rigs, module cable length 1500mm, probe tip 50x19x7mm		0... +100 %RH -20... +125 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +125 °C)	20 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0628 0013
Sword probe for measuring humidity and temperature in stacked material		0... +100 %RH -20... +70 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)	12 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 0340
Robust humidity probe e.g. for measuring equilibrium moisture or for measurements in exhaust ducts to +120°C		0... +100 %RH -20... +120 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +120 °C)	30 s	Plug-in head, connection cable 0430 0143 or 0430 0145 required	0636 2140
Material moisture probe					Free scaling, reference measurement, no water level	0636 0365
Material/building moisture cable		0 to 100 k Ohm = 100 to 0 %			Displayed values in instrument mean: 100 to 66 wet; 0 to 1 very dry	0636 0565
aw value						
aw value set: pressure-tight precision humidity probe with certificate, measurement chamber and 5 sample bowls (plastic)		0... +1 aW 0... +100 %RH -20... +70 °C	±0.01 aW (+0.1... +0.9 aW) ±0.02 aW (+0.9... +1 aW) ±0.4 °C (-10... +50 °C) ±0.5 °C (-20... -10.1 °C) ±0.5 °C (+50.1... +70 °C)		Reproducibility of aw value ±0.003	0628 0024

* in the temperature range from +10°C to +30°C

Description	Illustration	Probe type	Meas. range	Accuracy	Conn.	Part no.
Precision pressure probe, 100 Pa, measures differential pressure		Differential pressure probe	0... +100 Pa	±(0.3 Pa ±0.5% of mv) (0... +100 Pa)		0638 1345
Pressure probe, 10 hPa, measures differential pressure		Differential pressure probe	0... +10 hPa	±0.03 hPa (0... +10 hPa)		0638 1445
Pressure probe, 100 hPa, measures differential pressure		Differential pressure probe	0... +100 hPa	±0.5% of mv (+20... +100 hPa) ±0.1 hPa (0... +20 hPa)		0638 1545
Pressure probe, 2000 hPa, measures absolute pressure		Absolute pressure probe	0... +2000 hPa	±5 hPa (0... +2000 hPa)		0638 1645
Low pressure probe, refrigerant-proof stainless steel, without cable		Screw-in thread 7/16" UNF	Low pressure probe	-1... +10 bar ±1% of f.v. (-1... +10 bar) Overload ±32 bar (-1... +10 bar)	Plug-in head, connection cable 0409 1745 required	0638 1740
High pressure probe, refrigerant-proof stainless steel, up to 30 bar, without cable		Screw-in thread 7/16" UNF	High pressure probe	0... +30 bar ±1% of f.v. (0... +30 bar) Overload ±70 bar (0... +30 bar)	Plug-in head, connection cable 0409 1745 required	0638 1840
High press. probe, refrigerant-proof st. steel, up to 40 bar, w/o cable		Screw-in thread 7/16" UNF	High pressure probe	0... +40 bar ±1% of f.v. (0... +40 bar) Overload ±70 bar (0... +40 bar)	Plug-in head, connection cable 0409 1745 required	0638 1940

%RH

 td
tpd

 g/m³

g/kg

aW

°C

J/g

hPa

rpm

mA

V

 Vol. %
CO₂

 ppm
CO



Suitable probes at a glance

Caps for humidity probes Ø 12 and 21 mm	Illustration	For humidity probes:	Part no.
Metal protection cage, Ø 21 mm for humidity probes, material: stainless steel V4A. Quick adjustment time, robust and temperature-proof. Used when measuring velocities of less than 10 m/s	Ø 21 mm	All humidity probes with Ø 21 mm	0554 0665
Metal protection cage, Ø 12 mm for humidity probes, material: stainless steel V4A. Quick adjustment time, robust and temperature-proof. Used when measuring velocities of less than 10 m/s.	Ø 12 mm	0636 9740, 0636 9715	0554 0755
Wire mesh filter, Ø 21 mm, insertable filter for metal protection cage and plastic cap. Material: stainless steel V4A, quick adjustment time, protects from dirt and damage. Applications: meteorology, splashwater, condensation.	Ø 21 mm	All humidity probes with Ø 21 mm	0554 0667
Cap with wire mesh filter, Ø 12 mm		All humidity probes with Ø 12 mm	0554 0757
Teflon sintered filter, Ø 21 mm, PTFE. Not affected by condensation, water-repellent, resistant to corrosive substances. Applications: compressed air measurements, high humidity range (continuous measurements), high velocities	Ø 21 mm	All humidity probes with Ø 21 mm	0554 0666
Teflon sintered filter, Ø 12 mm, PTFE. Not affected by condensation, water-repellent, resistant to corrosive substances. Applications: compressed air measurements, high humidity range (continuous measurements), high velocities	Ø 12 mm	0636 9769, 0636 9740, 0636 9715	0554 0756
Stainless steel sintered cap, Ø 21 mm, made of stainless steel V2A. Highly robust, suitable for penetration, clean with compressed air, mechanical protection of sensor. Applications: high mechanical loads, high velocity speeds.	Ø 21 mm	All humidity probes Ø 21 mm	0554 0640
Stainless steel sintered cap, Ø 12 mm, made of stainless steel V2A. Highly robust, suitable for penetration, should be cleaned with compressed air, mechanical protection of sensor. Applications: high mechanical loads, high velocity speeds.	Ø 12 mm	0636 9740, 0636 9715	0554 0647
Teflon cap, Ø 5 mm, attachable, PTFE material, (5 off). Applications: dust protection, high humidity level measurements, high velocities	Ø 5 mm	0636 2130	0554 1031

Accessories for humidity probes/sensors	Part no.
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143
Cable, 5 m long, connects probe with plug-in head to measuring instrument PUR coating material	0430 0145
Extension cable, 5 m long, between plug-in head cable and instrument PUR coating material	0409 0063
Telescopic handle, max. 1 m, for probe with plug-in head Cable: 2.5 m long, PUR coating material	0430 0144
Telescopic handle, 340 - 800mm long	0430 9715
Adapter for surface humidity measuring, for humidity probes Ø 12mm Locates damp spots on walls, for example	0628 0012
Cap for bore holes, for humidity probe with 12mm diameter Measures equilibrium moisture in bore holes	0554 2140
Control and humidity adjustment set 11.3%RH/75.3%RH incl. adapter for humidity probes	0554 0660
Control and storage humidity (33%RH) for humidity probes	0554 0636

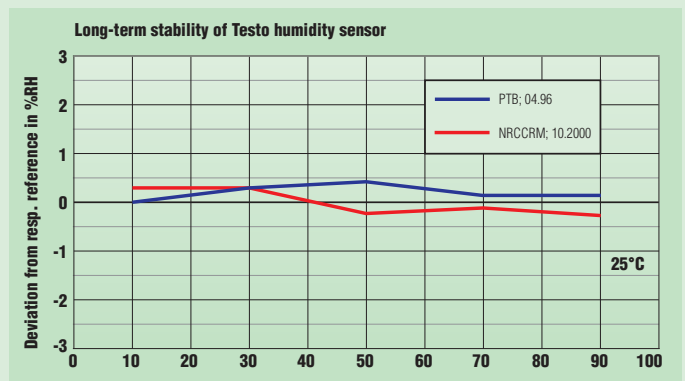
Accessories for pressure probes	Part no.
Connection cable for pressure probes 0638 1740, 0638 1840, 0638 1940	0409 1745
Magnetic holder for pressure probes For pressure probes 0638 1345/..1445/..1545/..1645	0554 0225
Adapter for pressure probes, 1/2" outer thread, 1/4" inner thread	0699 3127

Why you should choose humidity meas. instr. from Testo



Inter-lab. tests

Three precision probes were subjected to extensive inter-laboratory tests at the PTB in Berlin, NIST in the USA, the French national institute CETIAT, the Italian institute IMGC, the English national institute NPL, the Spanish national institute INTA, JQA in Japan, KRISS in Korea, NRCCRM in Peking and in Testo's DKD calibration laboratory. The results confirm an accuracy of ± 1 %RH for the probes, as indicated by Testo.



Reference humidity probes for highest precision

- Accuracy ± 1 %RH
- 2 year guaranteed long-term stability under normal conditions

Results of the worldwide inter-laboratory test on 3 precision humidity probes 1996-2000

The precision set for air humidity measurement

Recommended kit:	Part no.
testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol	0563 6501
2 channel humidity and temperature meas. instrument with aw value measurement, pressure measurement with option of connecting pressure probes, CO, CO ₂ , rpm, mV/mA transmitters	
Highly accurate reference humidity/temp. probe incl. calibration certificate For high accuracy levels $\pm 1\%$ RH, incl. calibration certificate	0636 9741
Attachable printer (securely attached) with 1 roll of thermal paper and batteries	0554 0570
SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder	0516 0401
SoftCase for attachable printer (protects printer from dirt/impact)	0516 0411
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143
System case (plastic) for measuring instrument, probes and accessories Probes in lid make it easy to find parts in case	0516 0400
We recommend: DKD calibration certificate/Humidity Calibration points freely selectable from 5 to 95%RH at +25°C or -18°C to +70°C	0520 0216



Measurements in climatic cabinets with the highly accurate reference humidity/temperature probe. Advantage: accurate monitoring of fluctuations in air humidity with an accuracy of $\pm 1\%$ RH

%RH

 td
tpd

 g/m³

g/kg

aW

°C

The reference set for measuring remaining moisture

Recommended kit:	Part no.
testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol	0563 6501
2 channel humidity and temperature meas. instrument with aw value measurement, pressure measurement with option of connecting pressure probes, CO, CO ₂ , rpm, mV/mA transmitters	
Precision pressure dew point probe for measurements in compressed air systems incl. cert. with test point -40°C tpd	0636 9841
Meas. range -60... +50 °C tpd 0... +100 %RH	
Attachable printer (securely attached) with 1 roll of thermal paper and batteries	0554 0570
SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder	0516 0401
SoftCase for attachable printer (protects printer from dirt/impact) Protects from impact and falls	0516 0411
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143
System case (plastic) for measuring instrument, probes and accessories Probes in lid make it easy to find parts in case	0516 0400
We recommend: DKD calibration certificate/Humidity Calibration points freely selectable from 5 to 95%RH at +25°C or -18°C to +70°C	0520 0216



Pressure-tight precision probe for measuring the remaining moisture in compressed air systems, plastics driers... Advantage: display in g/kg, g/m³, pressure dew point

J/g

hPa

rpm

mA

V

 Vol. %
CO₂

 ppm
CO



The reference set for aw value measurement



%RH

td
tpd

g/m³

g/kg

aW

°C

Quality control monitoring of pharmaceuticals.

Advantage: Results are traceable to national standards.

testo 650 automatically indicates when a sample reaches equilibrium, signalling the end of the test. Constant monitoring is therefore not required.

Different measurement samples can be read by barcode.

Advantage: Additional information such as

min./max. values, mixing ratios... are saved in the barcode.

Calibration on location with control and adjustment set, with DKD calibration certificate if required.

Advantage: This provides additional quality assurance.

Recommended kit:	Part no.
testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol	0563 6501
2 channel humidity and temperature meas. instrument with aW value measurement, pressure measurement with option of connecting pressure probes, CO, CO2, rpm, mV/mA transmitters	
aW value set: pressure-tight precision humidity probe with certificate, measurement chamber and 5 sample bowls (plastic)	0628 0024
Attachable printer (securely attached) with 1 roll of thermal paper and batteries	0554 0570
SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder	0516 0401
SoftCase for attachable printer (protects printer from dirt/impact)	0516 0411
Protects from impact and falls	
We recommend: DKD calibration certificate/Humidity	0520 0216
Calibration points freely selectable from 5 to 95%RH at +25°C or -18°C to +70°C	
We recommend: Control and humidity adjustment set 11.3%RH/75.3%RH incl. adapter for humidity probes	0554 0660

J/g

hPa

rpm

mA

V

Vol. %
CO2

ppm
CO



Measurement in a refrigeration unit, low/high pressure.

testo 650 and pressure probes make it possible to take measurements on either supply or returns of a refrigeration unit. The temperature of the refrigerant on the pipe surface can be measured using the pipe clamp probe. The integrated data memory automatically saves the data for future reporting.

Advantage: The different temperature curves of all conventional refrigerants can be shown

using special software.

The reference refrigeration set

Recommended kit:	Part no.
testo 650, reference humidity measuring instrument with battery, Li cell, calibration protocol	0563 6501
2 channel humidity and temperature meas. instrument with aW value measurement, pressure measurement with option of connecting pressure probes, CO, CO2, rpm, mV/mA transmitters	
Low pressure probe, refrigerant-proof stainless steel, without cable	0638 1740
Screw-in thread 7/16" UNF	
High press. probe, refrigerant-proof st. steel, up to 40 bar, w/o cable	0638 1940
Screw-in thread 7/16" UNF	
Connection cable for pressure probes 0638 1740, 0638 1840, 0638 1940	0409 1745
Connection cable for pressure probes 0638 1740, 0638 1840, 0638 1940	0409 1745
Pipe wrap probe for pipes with diameter of up to 2", for flow/return temperature measurement in hydronic systems	0600 4593
Attachable printer (securely attached) with 1 roll of thermal paper and batteries	0554 0570
SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder	0516 0401
SoftCase for attachable printer (protects printer from dirt/impact)	0516 0411
Protects from impact and falls	
System case (plastic) for measuring instrument, probes and accessories	0516 0400
Probes in lid make it easy to find parts in case	
ComSoft 3 - Professional with data management	0554 0830
Incl. database, analysis and graphics function, data analysis, trend curve	
"Refrigeration technology" update with saved curves of all usual refrigerants	0554 4035

Technical data

Probe type	Testo humid. sensor, cap.	Pressure	aw value		
Meas. range	0... +100 %RH	0... +2000 hPa	0... +1 aW		
Accuracy ± 1 digit	See probe data	Probe 0638 1345 Probe 0638 1445 Probe 0638 1545 Probe 0638 1645 ±0.1% of mv Probe 0638 1740 Probe 0638 1840 Probe 0638 1940 ±0.2% of mv	See probe data		
Resolution	0.1 %RH (0... +100 %RH)	0.001 hPa (0638 1345 probe) 0.001 hPa (0638 1445 probe) 0.01 hPa (0638 1545 probe) 1 hPa (0638 1645 probe) 0.01 bar (0638 1740 probe) 0.01 bar (0638 1840 probe) 0.01 bar (0638 1940 probe)			
Probe type	NTC	Pt100	Type K (NiCr-Ni)	Type S (Pt10Rh-Pt)	Type J (Fe-CuNi)
Meas. range	-40... +150 °C	-200... +800 °C	-200... +1370 °C	0... +1760 °C	-200... +1000 °C
Accuracy ± 1 digit	±0.2 °C (-10... +50 °C) ±0.4 °C (-40... -10.1 °C) ±0.4 °C (+50.1... +150 °C)	±0.1 °C (-49.9... +99.9 °C) ±0.4 °C (-99.9... -50 °C) ±0.4 °C (+100... +199.9 °C) ±1 °C (-200... -100 °C) ±1 °C (+200... +800 °C)	±0.4 °C (-100... +200 °C) ±1 °C (-200... -100.1 °C) ±1 °C (+200.1... +1370 °C)	±1 °C (0... +1760 °C)	±0.4 °C (-150... +150 °C) ±1 °C (-200... -150.1 °C) ±1 °C (+150.1... +1000 °C)
Resolution	0.1 °C (-40... +150 °C)	0.01 °C (-99.9... +300 °C) 0.1 °C (-200... -100 °C) 0.1 °C (+300.1... +800 °C)	0.1 °C (-200... +1370 °C)	1 °C (0... +1760 °C)	0.1 °C (-200... +1000 °C)
Probe type	CO2 probe	CO probe	Mechanical	Current/voltage measurement	Current/voltage measurement
Meas. range	0... +1 Vol. % CO2 0... +10000 ppm CO2	0... +500 ppm CO	+20... +20000 rpm	0... +20 mA	0... +10 V
Accuracy ± 1 digit	See probe data	±5% of mv (0... +500 ppm CO)	(+20... +20000 rpm)	±0.04 mA (0... +20 mA)	±0.01 V (0... +10 V)
Resolution			1 rpm (+20... +20000 rpm)	0.01 mA (0... +20 mA)	0.01 V (0... +10 V)

PC	RS232 interface	Memory space in basic version: 128 kB corresponds to approx. 45,000 readings Memory space, extended: 1 MB, corresponds to approx. 500,000 readings Other features: automatic recognition of all connected probes Power supply: Battery/rech. batt., alternatively 8 V mains unit Battery life in continuous operation with 2 thermocouple probes
Oper. temp.	0... +50 °C	
Storage temp.	-25... +60 °C	
Battery type	1.5 V AA	
Battery life	18 h	
Weight	500 g	
Warranty	3 years	

%RH
**td
tpd**
g/m³
g/kg
aW
°C
J/g
hPa
rpm
mA
V
**Vol. %
CO2**
**ppm
CO**