



Measuring Instruments For Velocity



Measurement and application ranges of the velocity probes

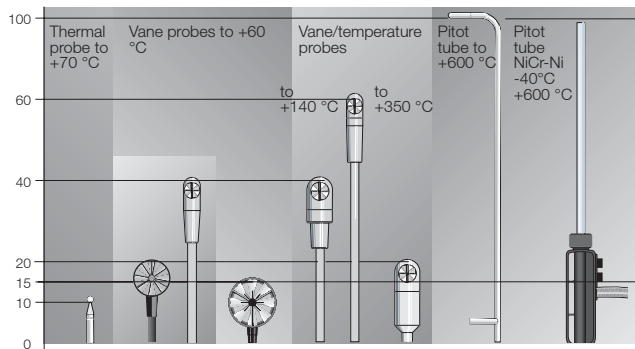
Probe selection

The flow measuring range 0 to 100 m/s can be divided into three sections:

- Low-speed velocity 0 to 5 m/s
- Mid-speed velocity 5 to 40 m/s
- High-speed velocity 40 to 100 m/s.

Thermal probes are used for accurate measurements in the range 0 to 5 m/s. Vane probes are ideal for velocities ranging from 5 to 40 m/s. The measuring range of the Pitot tube depends on the differential pressure probe used. The new 100 Pa probe can therefore be used for the exact measurement of flow speed from approx. 1 m/s to 12 m/s. The Pitot tube yields optimum results in the higher velocity range. An additional criterion when selecting the right velocity probe is the temperature. Thermal sensors can normally be used at up to approx. +70 °C. Special design vane probes can be used to max. +350 °C. Pitot tubes are used for temperatures above +350 °C.

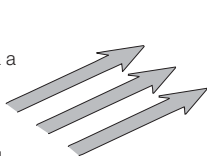
Measurement and application ranges of the velocity probes



Thermal probes

Thermal probes

The principle of the thermal probe is based on a heated element from which heat is extracted by the colder impact flow. Temperature is kept constant via a regulating switch. The controlling current is directly proportional to the velocity. When thermal velocity probes are used in turbulent flows, the measured result is influenced by the flows impacting the heated body from all directions. In turbulent flows, a thermal velocity sensor indicates higher measured values than a vane probe. This can be observed especially during measurements in ducts. Depending on the design of the duct, turbulent flows can occur even at low velocities.



Thermal hot wire probe for measuring velocity, with direction recognition function

Vane probes

Vane probes

The measuring principle of the vane probe is based on the conversion of a rotation into electric signals. The flowing agent makes the vane rotate. An inductive proximity switch "counts" the revolutions of the vane and supplies a pulse sequence which is converted in the measuring instrument and is then indicated as a velocity value. Large diameters (Ø 60 mm, Ø 100 mm) are suitable for the measurement of turbulent flows (e.g. at outlet ducts) at smaller or medium velocities. Small diameters are more suitable for measurements in ducts; in which case the duct cross-section must be 100 times bigger than the probe cross-section being impacted.

The 16mm probe has proven to be very versatile. It is large enough to have good starting qualities and is small enough to withstand velocities of up to 60 m/s.

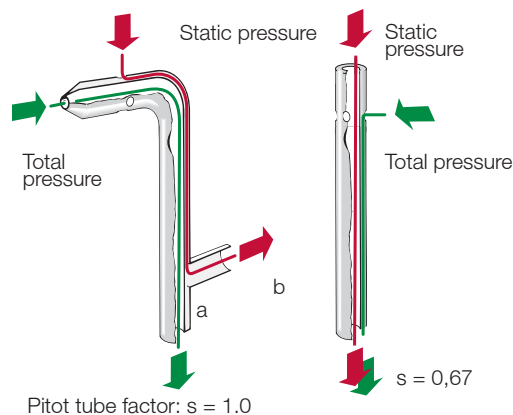


Pitot tube

Pitot tube

The Pitot tube opening takes on total pressure and conducts it to connection (a) in the pressure probe. The pure static pressure is taken up by a lateral slot and conducted to connection (b). The resulting differential pressure is a dynamic flow-dependent pressure which is then analysed and indicated.

As with thermal probes, the Pitot tube is more likely to react to turbulent flows than a vane probe. Therefore, a free inlet and outlet path must also be ensured during Pitot tube measurements.



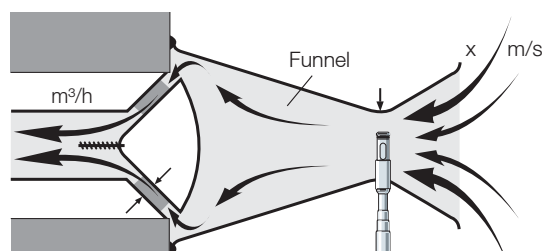
$$v = s \cdot \sqrt{\frac{2 \cdot p}{\rho}}$$

v = Velocity in m/s
s = Pitot tube factor
ρ = Air density in kg/m³
p = Differential pressure in Pascal measured at Pitot tube

Measuring volume flow with a funnel

$$v \left[\frac{\text{m}^3}{\text{h}} \right] = x \left[\frac{\text{m}}{\text{s}} \right] \cdot 22$$

v = Volume
x = Velocity
22 = Funnel factor





Contents

Measuring instruments

Practical measuring instruments for velocity		Page
testo 405-V1	Measure air flow and temperature – Flexibly and easily	4
testo 415	Compact anemometer	4
testo 425	Anemometer with telescopic probe	5
testo 435	Anemometer with probes	6
testo 521-1	Pitot tube reference instrument	8
testo 521-2	Reference service instrument for Pitot tube measurement	8
Mini wind tunnel	Mini wind tunnel	10

Accessories

Printer		Page	Software and Accessories		Page
Testo printer	Versatile infrared printer	11	ComSoft 3 - Professional	Professional Software including Data Filing	12
			Ethernet adapter		Page
			Ethernet adapter	With Testo measuring instruments in Ethernet	14

Measurement systems

testo 445	Service instrument for ventilation/air conditioning systems	Page 15
testo 400	The reference measuring instrument for A/C and ventilation systems	Page 20

testo 405-V1

testo 405-V1 is the first thermal anemometer in this price range which can measure air velocity, volume flow and temperature.

Velocity measurement stick, with channel holder, incl. fixing clip, battery

Part no.
0560 4051

Measure air flow and temperature – Flexibly and easily

- m/s and m³/h (volume flow calculation 0 to 99,990 m³/h)
- Meas. in ducts and at duct outlets
- Duct holder and multi-function clip for quick positioning
- Also suitable for larger duct Ø if length is approx. 300 mm
- User-friendly operation and fast battery change
- Auto-OFF function
- Pocket-size
- Precision micro NTC (hot wire)

One quick twist and the velocity sensor is protected by the captive cap



Technical data	
Meas. range	0 to +10 m/s -20 to +50 °C 0 to +99990 m ³ /h
Accuracy ±1 digit	±(0.1 m/s ±5% of mv) (0 to +2 m/s) ±(0.3 m/s ±5% of mv) (+2.1 to +10 m/s) ±0.5 °C (-20 to +50 °C)
Resolution	0.01 m/s 0.1 °C
Oper. temp.	0 to +50 °C
Storage temp.	-20 to +70 °C
Battery type	3 AAA micro batteries
Battery life	20 h
Weight	180 g
Warranty	2 years

Accessories	Part no.
testovent 410, volume flow funnel, Ø 340mm/330 x 330mm, incl. case	0554 0410
testovent 415, volume flow funnel, Ø 210mm/190x190mm, incl. case	0554 0415
ISO calibration certificate/Velocimetry Two point calibration; calibration points 5m/s and 10m/s	0520 0094
ISO calibration certificate/Velocimetry Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004

testo 415

testo 415, the compact anemometer for measuring ambient air flow and temperature.

testo 415, thermal anemometer, with integrated velocity/temperature probe, battery and calibration protocol

Part no.
0560 4150

Compact anemometer

- Timed or multi-point mean calculation
- Parallel measurement of flow and temperature
- Switch: Hold/Max/Min; °C/°F; m/s/fpm
- Compact with built-in probe for ambient velocity measurement
- Practical accessories: TopSafe (indestructible protection sleeve); protects measuring instrument against impact, dirt, bench stand included
- Accessories set for fast attachment of measuring instrument e.g. to wall, belt etc., probe holder included
- Battery display
- Auto OFF function (can be switched off)
- With calibration protocol



Technical data	
Meas. range	0... +10 m/s 0... +50 °C
Accuracy ±1 digit	±0.05 m/s (0... +10 m/s) ±5% of mv (0... +10 m/s) ±0.5 °C (0... +50 °C)
Resolution	0.01 m/s (0... +10 m/s) 0.1 °C (0... +50 °C)
Oper. temp.	0... +50 °C
Storage temp.	-20... +70 °C
Battery type	Alkali manganese
Battery life	20 h
Auto Off	10 min
Display	LCD, 2 lines
Material/Housing	ABS
Weight	300 g
Warranty	2 years
Dimensions	190 x 57 x 42 mm

Accessories	Part no.
TopSafe (protection case) with bench stand Protects instrument from impact and dirt	0516 0183
Case for instrument and probes For safe and orderly storage	0516 0182
Accessories set (for instrument without TopSafe) includes multi-function clip, carrier loop, probe holder	0554 0550
ISO calibration certificate/Velocimetry Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004

testo 425

testo 425, the anemometer with separate, securely attached telescopic probe.

The telescopic probe facilitates measurement at inaccessible points e.g. in ceiling and wall outlets, in ventilation ducts or diffusers.

testo 425, thermal anemometer with separate velocity/temperature probe incl. telescopic handle, battery and calibration protocol

Part no.
0560 4250

Anemometer with telescopic probe

- Timed or multi-point mean calculation
- Parallel measurement of velocity and temperature
- TopSafe, protects instrument from dirt and impact

Telescopic probe is securely attached



Accessories	Part no.
Transport and Protection	
TopSafe (protection case) with bench stand Protects instrument from impact and dirt	0516 0183
Case for instrument and probes For safe and orderly storage	0516 0182
Accessories set (for instrument without TopSafe) includes multi-function clip, carrier loop, probe holder	0554 0550
Accessories set (for instrument with TopSafe) includes multi-function clip and probe holder	0554 0552
Additional Accessories and Spare Parts	
9V rech. battery for instrument Instead of battery	0515 0025
Recharger for 9V rechargeable battery For external recharging of 0515 0025 battery	0554 0025
Calibration Certificates	
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004
ISO calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 0.8; 1; 1.5 m/s	0520 0024
ISO calibration certificate/Velocity Hot wire, vane anemometer; calibration points 5; 10; 15; 20 m/s	0520 0034
ISO calibration certificate/Velocity All velocity probes, calibration points selectable from 0.3 to 50 m/s at +25°C	0520 0104
DKD calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 2; 5; 10; 15; 20 m/s	0520 0204
DKD calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 1; 2; 5; 10 m/s	0520 0244
DKD calibration certificate/Velocity Hot wire, vane probes, Pitot tube; calibration points selectable from 0.1 to 50 m/s	0520 0214
DKD calibration certificate/Velocity for vane anemometers; calibration points 2.5; 5; 10 m/s	0520 0254

Recommended set
testo 425, Standard Set
- testo 425, thermal anemometer with separate velocity/temperature probe incl. telescopic handle, battery and calibration protocol (Part no. 0560 4250) - Case for instrument and probes (Part no. 0516 0182) - Accessories set (for instrument without TopSafe) includes multi-function clip, carrier loop, probe holder (Part no. 0554 0550)

Technical data	
Meas. range	0 to +20 m/s -20 to +70 °C
Accuracy ±1 digit	±(0.05 m/s ±5% of mv) (0 to 20 m/s) ±0.5 °C (0 to +50 °C) ±0.7 °C (remaining range)
Resolution	0.01 m/s (0 to +10 m/s) 0.1 m/s (+10.1 to +20 m/s) 0.1 °C (-20 to +70 °C)
Oper. temp.	0 to +50 °C
Storage temp.	-20 to +70 °C
Battery type	Alkali manganese
Battery life	20 h
Dimensions	190 x 57 x 42 mm
Weight	300 g
Display	LCD, 2 lines
Material/Housing	ABS
Warranty	2 years

testo 435

testo 435, with volume flow calculation (m^3/h , m^3/min ,...), has all the advantages of thermal and vane anemometers.

Vane probes

Thermal probes

Temperature probes

can be connected to testo 435

testo 435, anemometer, incl. battery and calibration protocol

Part no.

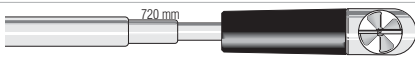
0560 4350

Anemometer with probes

- m/s and m^3/h (volume flow calculation 0 to 999,999 m^3/h)
- Quick documentation of data on location
- Timed and multi-point mean calculation
- More than 10 different probes can be connected



Plug-in probes

Probes	Illustration	Meas. range	Accuracy	Part no.
Affordable vane probe, $\varnothing$ 60 mm, e.g. for measurements at duct outlets		+0.25 to +20 m/s Oper. temp. 0 to +60 °C	$\pm(0.1 \text{ m/s} \pm 1.5\% \text{ of mv})$ (+0.25 to +20 m/s)	0635 9244
Vane probe, $\varnothing$ 60 mm, with telescopic handle max. 754 mm, e.g. for measurements at duct outlets		+0.25 to +20 m/s Oper. temp. 0 to +60 °C	$\pm(0.1 \text{ m/s} \pm 1.5\% \text{ of mv})$ (+0.25 to +20 m/s)	0635 9344
Vane probe, $\varnothing$ 16 mm, with telescopic handle max. 720 mm, e.g. for measurements in ducts		+0.6 to +40 m/s Oper. temp. 0 to +60 °C	$\pm(0.2 \text{ m/s} \pm 1.5\% \text{ of mv})$ (+0.6 to +40 m/s)	0635 9544
Affordable hot wire probe for m/s and °C, $\varnothing$ 12 mm, with telescopic handle max. 675 mm		0 to +20 m/s -20 to +70 °C	$\pm(0.05 \text{ m/s} \pm 5\% \text{ of mv})$ (+0 to +20 m/s)	0635 1044
Quick action hot wire probe for m/s and °C, $\varnothing$ 10 mm, with telescopic handle max. 835 mm, for measurements in the lower velocity range		0 to +20 m/s -20 to +70 °C	$\pm(0.03 \text{ m/s} \pm 4\% \text{ of mv})$ (+0 to +20 m/s)	0635 1043

More probes	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Waterproof immersion/penetration probe		-50 to +150 °C	$\pm 0.5\% \text{ of mv (+100 to +150 °C)}$ $\pm 0.2 \text{ °C (-25 to +74.9 °C)}$ $\pm 0.4 \text{ °C (remaining range)}$	10 s	0613 1211
Waterproof surface probe with widened measuring tip, for flat surfaces		-50 to +150 °C	$\pm 0.5\% \text{ of mv (+100 to +150 °C)}$ $\pm 0.2 \text{ °C (-25 to +74.9 °C)}$ $\pm 0.4 \text{ °C (remaining range)}$	35 s	0613 1911
Robust, affordable air probe to check storage temperatures		-50 to +150 °C	$\pm 0.5\% \text{ of mv (+100 to +150 °C)}$ $\pm 0.2 \text{ °C (-25 to +74.9 °C)}$ $\pm 0.4 \text{ °C (remaining range)}$	60 s	0613 1711

Recommended set
testo 435, Starter Set for measuring velocity in ducts
- testo 435, anemometer, incl. battery and calibration protocol (Part no. 0560 4350) - Affordable hot wire probe for m/s and °C, Ø 12mm, with telescopic handle max. 675 mm (Part no. 0635 1044) - Transport case (plastic) for instrument and accessories (Part no. 0516 0184)

testo 435, Starter Set for measuring velocity at outlets
- testo 435, anemometer, incl. battery and calibration protocol (Part no. 0560 4350) - TopSafe (protection case) with bench stand (Part no. 0516 0183) - Vane probe, Ø 60mm, with telescopic handle max. 754mm, e.g. for measurements at duct outlets (Part no. 0635 9344) - Robust, affordable air probe to check storage temperatures (Part no. 0613 1711) - Transport case (plastic) for instrument and accessories (Part no. 0516 0184)

Accessories	Part no.
Transport and Protection	
TopSafe (protection case) with bench stand Protects instrument from impact and dirt	0516 0183
Accessories set (for instrument without TopSafe) includes multi-function clip, carrier loop, probe holder	0554 0550
Accessories set (for instrument with TopSafe) includes multi-function clip and probe holder	0554 0552
Case for instrument and probes For safe and orderly storage	0516 0182
Transport case (plastic) for instrument and accessories For safe and orderly storage	0516 0184
Additional Accessories and Spare Parts	
9V rech. battery for instrument Instead of battery	0515 0025
Recharger for 9V rechargeable battery For external recharging of 0515 0025 battery	0554 0025
testovent 410, volume flow funnel, Ø 340mm/330 x 330mm, incl. case	0554 0410
testovent 415, volume flow funnel, Ø 210mm/190x190mm, incl. case	0554 0415

Printer and Accessories	
Testo printer with cordless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries	0554 0547
Recharger for printer (with 4 standard rech. batteries) Rechargeable batteries are recharged externally	0554 0110
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls) Measurement data documentation legible for up to 10 years	0554 0568

Calibration Certificates	
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s	0520 0034
ISO calibration certificate/Velocity All velocity probes, calibration points selectable from 0.3 to 50 m/s at +25°C	0520 0104
DKD calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 1; 2; 5; 10 m/s	0520 0244
DKD calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 2; 5; 10; 15; 20 m/s	0520 0204

Technical data	Hot wire	Vane	NTC
Probe type			
Meas. range	0 to +20 m/s	+0.2 to +40 m/s	-50 to +150 °C
Accuracy ±1 digit	See probe data	See probe data	±1% of mv (+100 to +150 °C) ±0.5 °C (-25 to +74.9 °C) ±0.8 °C (remaining range)
Resolution	0.01 m/s (0 to +10 m/s) 0.1 m/s (+10.1 to +20 m/s)	0.01 m/s (0 to +10 m/s) 0.1 m/s (+10.1 to +40 m/s)	0.1 °C

Probe type	Calc. parameter		
Meas. range	0 to +999999 m³/h		
Accuracy ±1 digit			
Resolution			

Oper. temp.	0 to +50 °C	Battery life	
Storage temp.	-20 to +70 °C	Thermal probe: more than 20h	
Display	LCD, 2 lines	Vane probe: more than 100h	
Battery type	Alkali manganese		
Battery life	20 h		
Auto Off	10 min		
Weight	300 g		
Material/Housing	ABS		
Warranty	2 years		

testo 521-1 / testo 521-2

The highly accurate differential pressure meter, testo 521, with an internal pressure sensor from 0 to 100 hPa is ideal for Pitot tube measurements in the range 5 to 100 m/s. testo 521 is available in 2 accuracy classes. testo 521-1 with an internal pressure sensor with Class 0.2, testo 521-2 with an internal pressure sensor with Class 0.1.

In the case of velocity speeds in the range from 1 to 12 m/s, you can carry out accurate measurements using the 100 Pa probe which can be attached externally.

The measurement data can be saved according to location and analysed on your PC or printed on site on your Testo printer.

Pitot tube reference instrument

- Temp. compensated differential pressure sensor in instrument
- Additional 2 probe sockets for measuring pressure and temp.
- Direct calculation of velocity speed and velocity flow
- Multi-point and temporal mean calculation
- Density compensation
- Up to two 4 to 20 mA interfaces connectable to hand-held instr.
- 1 analog signal can be evaluated per interface
- Scaling of analog signal in hand-held instrument
- Transmitter can be supplied with power from testo 521, for example
- 4 to 20 mA interface can be connected to testo 521, 526, 400, 650 und 950 hand-held instruments



1 testo 521-1, differential pressure meter 0 to 100 hPa incl. battery and calibration protocol

Part no.
0560 5210

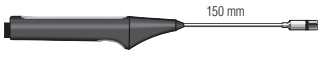
2 testo 521-2, differential pressure meter 0 to 100 hPa incl. battery and calibration protocol

Part no.
0560 5211

Pressure probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Precision pressure probe, 100 Pa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +100 Pa	$\pm(0.3 \text{ Pa} \pm 0.5\% \text{ of mv})$	0638 1347
Pressure probe, 10 hPa, in robust metal housing with impact protection incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +10 hPa	$\pm 0.03 \text{ hPa}$	0638 1447
Pressure probe, 100 hPa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +100 hPa	$\pm 0.5\% \text{ of mv (+20 to +100 hPa)}$ $\pm 0.1 \text{ hPa (0 to +20 hPa)}$	0638 1547
Pressure probe, 2000 hPa, measures absolute pressure, in robust metal housing with impact protection, incl. quick-closing coupling (M8 x 0.5), magnet for fast attachment		Absolute pressure probe	0 to +2000 hPa	$\pm 5 \text{ hPa (0 to +2000 hPa)}$	0638 1847

Prandtl's Pitot tubes	Illustration	Meas. range	Part no.
Pitot tube, 300 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545		Oper. temp. 0 to +600 °C	0635 2245
Pitot tube, 350 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545		Oper. temp. 0 to +600 °C	0635 2145
Pitot tube, 500 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545		Oper. temp. 0 to +600 °C	0635 2045
Pitot tube, 1000 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545		Oper. temp. 0 to +600 °C	0635 2345

Straight Pitot tubes	Illustration	Probe type	Meas. range	Part no.
Pitot tube, stainless steel, 360 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547		Type K (NiCr-Ni)	-40 to +600 °C	0635 2040
Pitot tube, stainless steel, 500 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547		Type K (NiCr-Ni)	-40 to +600 °C	0635 2140
Pitot tube, stainless steel, 1000 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547		Type K (NiCr-Ni)	-40 to +600 °C	0635 2240

Probes	Illustration	Meas. range	Accuracy	t ₉₀	Part no.
Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C	 150 mm Ø 10 mm	-200 to +300 °C	Class 2	3 s	0614 0194
Pipe wrap probe for pipes up to 2" in diameter	 Fixed cable	-60 to +130 °C	Class 2	5 s	0600 4593
Super quick-action immersion/penetration probe for measurements in liquids	 150 mm Ø 1.5 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +600 °C	Class 1	1 s	0604 0493
Highly accurate air probe for air and gas temperature measurements with bare, mechanically protected sensor	 150 mm Fixed cable Ø 9 mm	-40 to +130 °C	To UNI curve	60 s	0610 9714

Accessories	Part no.
Transport and Protection	
TopSafe (protection case) Incl. carrier strap, bench stand and magnet. Protects instrument from dust, impact, scratches	0516 0446
Transport case For measuring instrument, probes, Prandtl Pitot tube, accessories	0516 0527
System case For measuring instrument, probes, straight or Prandtl Pitot tube, accessories	0516 0526
Additional Accessories and Spare Parts	
9V rech. battery for instrument Instead of battery	0515 0025
Plug-in mains unit For mains operation and recharging battery in instrument	0554 0088
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
Connection hose, silicone, 5m long Max. load 700 hPa (mbar)	0554 0440
Printer and Accessories	
Testo printer with cordless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries	0554 0547
Spare thermal paper for printer (6 rolls) Measurement data documentation legible for up to 10 years	0554 0568
Software and Accessories	
ComSoft 3 - Professional with data management Incl. database, analysis and graphics function, data analysis, trend curve (without interface)	0554 0830
RS232 cable Connects instrument to PC (1.8 m) for data transfer	0409 0178
Ethernet adapter, RS 232 - Ethernet incl. software driver, mains unit Facilitates data communication in network	0554 1711
Calibration Certificates	
DKD calibration certificate/Pressure Differential and positive pressure; 11 measuring points distributed over the instrument measuring range	0520 0215
DKD calibration certificate/Pressure Diff. and pos. pressure; 6 meas. points distributed over meas. range (>0.6% of fsv)	0520 0225
DKD calibration certificate/Pressure Absolute pressure; 11 measuring points distributed over meas. range	0520 0212
ISO calibration certificate/Pressure Differential pressure, accuracy 0.1 to 0.6 (% of fsv)	0520 0025
ISO calibration certificate/Pressure Differential pressure; 5 points distributed over meas. range	0520 0005
ISO calibration certificate/Pressure Absolute pressure, accuracy 0.1 to 0.6 (% of full-scale value)	0520 0125

Accurate measurements from 1 m/s

You will achieve accurate measurement results in the range from 5 to 100 m/s using an internal pressure sensor with an accuracy of 0.1 % of fsv:

Accuracy at 5 m/s: 0.32 m/s
Accuracy at 20 m/s: 0.09 m/s
Accuracy at 50 m/s: 0.05 m/s

High accuracy levels are achieved in the velocity range from 1 to 12 m/s when you use the 100 Pa probe which is connected externally. Dependencies on position are completely eliminated thanks to double diaphragm engineering. Changes in position do not influence the measurement result:

Accuracy at 1 m/s: 0.09 m/s
Accuracy at 5-8 m/s: 0.03 m/s

Technical data			
	testo 521-1		
Probe type	Piezoresistive pressure sensor	Current/voltage measurement	Current/voltage measurement
Meas. range	0 to 100 hPa	0 to 10 V	0 to 20 mA
Overload	300 hPa		
Static pressure	2000 hPa		
Accuracy	±0.2 % of fsv	±0.01 V	±0.04 mA
±1 digit			
Resolution	0.01 hPa	0.01 V	0.01 mA

	testo 521-2		
Probe type	Piezoresistive pressure sensor	Pitot tube measurement	
Meas. range	0 to 100 hPa	5 to 100 m/s	
Overload	300 hPa		
Static pressure	2000 hPa		
Accuracy	±0.1 % of fsv	0.05 m/s at 65 m/s	
±1 digit			
Resolution	0.01 hPa		

Common data			
Probe type	Piezoresistive pressure sensor for external pressure probes	NTC	Type K (NiCr-Ni)
Meas. range	0 to 2000 hPa	-40 to +150 °C	-200 to +1370 °C
Accuracy	±0.1 % of mv	±0.2 °C (-10 to +50 °C)	±0.4 °C (-100 to +200 °C)
±1 digit		±0.4 °C (remaining range)	±1 °C (remaining range)
Resolution	0.1 Pa (0638 1347) 0.001 hPa (0638 1447) 0.01 hPa (0638 1547) 0.1 hPa (0638 1847)	0.1 °C	0.1 °C

Oper. temp. (compensated)	0 to +50 °C	Power supply	Battery/Rechargeable battery, Mains unit 12 V
Storage temp.	-20 to +70 °C	Battery life	Continuous operation w/ internal pressure sensor: 30 h With rech. battery: 10 h With carbon battery: 18 h
Display	LCD display with symbol, 7 segment display and point matrix LCD, 2 lines	Other features	Mains connection and battery recharging in instrument Automatic recognition of all connected probes
Battery type	9 V (6LR61)	Material/Housing	ABS
Dimensions	219 x 68 x 50 mm	Warranty	2 years
Weight	300 g		
PC	RS232 interface		
Memory	25,000		

Pitot tube measurement

Straight Pitot tubes or classical Prandtl's Pitot tubes can be used, depending on the application. Pitot tubes are available in different lengths and diameters depending on duct diameters and duct openings.


Straight Pitot tubes

- Built-in temperature measurement
- Higher accuracy on account of Pitot tube factor 0.67


Prandtl's Pitot tube

- Higher velocity range in pressure measurement range used
- Application range from 0 to +600 °C

Mini wind tunnel

You can draw up your own ISO certificates using the wind tunnel and a certified Testo measuring instrument. All of Testo's velocity probes can be checked and calibrated using the mini wind tunnel (except Ø 100 mm vane probes).

Draw up your own ISO calibration certificates! The Testo mini wind tunnel can be used for regular checks on velocity probes and measuring instruments in your company.

You already have a Testo measuring instrument with velocity probe and calibration certificate and you want to calibrate more probes of the same type using the wind tunnel. Mini wind tunnel incl. power connection cable

Part no.
0554 0450

- 3 speed levels can be set: 2.5/5/10 m/s
- The readings are traceable to the PTB standard if Testo's DKD certified testo 400 reference instrument is used
- Accuracy of wind tunnel: $\pm 1\%$ of reading (at least 0.1 m/s) plus calibration uncertainty of the respective reference instrument's certificate



Technical data

Length: 610 mm
 Ø meas. tunnel: approx. 100 mm (inside)
 Velocities: 2.5/5/10 m/s, can be switched
 Range of application: +10 to +40 °C
 Probe holder: For all of Testo's velocity probes except vane probes with Ø 100 mm
 Motor: Direct current fan
 Power supply: 230 V/50 Hz or 110 V
 can be switched, built-in IEC socket
 Warranty: 2 years

Recommended set

Testo mini wind tunnel, affordable set for beginners

- Mini wind tunnel incl. power connection cable (Part no. 0554 0450)
- testo 435, anemometer, incl. battery and calibration protocol (Part no. 0560 4350)
- Vane probe, Ø 16 mm, with telescopic handle max. 720mm, e.g. for measurements in ducts (Part no. 0635 9544)
- DKD calibration certificate/Velocity (Part no. 0520 0254)

Testo mini wind tunnel with reference measuring system

- Mini wind tunnel incl. power connection cable (Part no. 0554 0450)
- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Vane/temperature probe, Ø 16 mm, attachable to handle or telescopic handle (Part no. 0635 9540)
- Cable, 1.5 m long, for connecting vane probes with plug-in head to the measuring instrument (Part no. 0409 0045)
- DKD calibration certificate/Velocity (Part no. 0520 0254)

Testo printer

The versatile printer with IRDA and infrared interface saves time since it saves the data to be printed prior to printing. Data is transmitted within 2 seconds. The instrument is then immediately ready to operate.

The readings are stored black on white with date and time.

Testo printer with cordless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries

Part no.	
0554 0547	

Versatile infrared printer



Technical data	
Printer type	Infrared-controlled thermal printer, adjustable contrast, prints graphics
Reception radius	Max. 2 m
Dimensions	147 x 77 x 47 mm

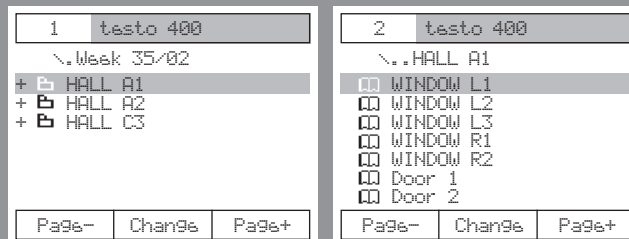
Oper. temp.	0 to +50 °C
Storage temp.	-40 to +60 °C
Power supply	4 round cell batteries, 1.5 V or rechargeable batteries
Weight	430 g

Accessories	Part no.
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls), Measurement data documentation legible for up to 10 years	0554 0568
Recharger for printer (with 4 standard rech. batteries), Rechargeable batteries are recharged externally	0554 0110

structure - measure - print 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:

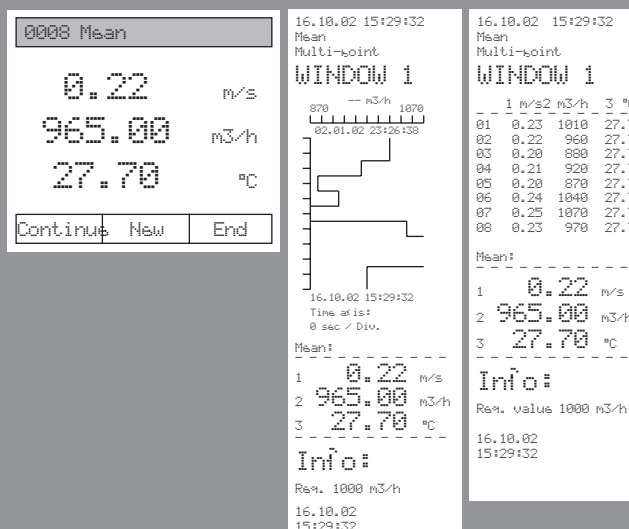
User-friendly data logging, not only for spot checks

- **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:

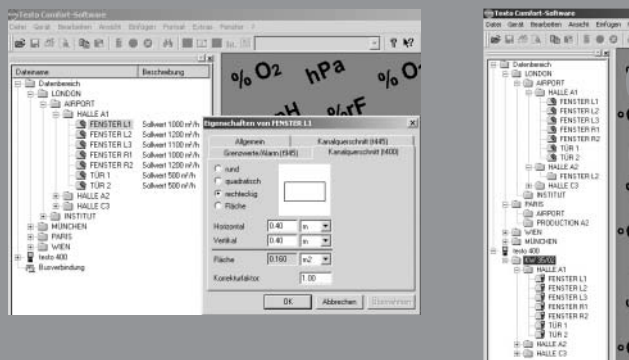
- The individual measurement protocol can be either saved or deleted following analysis.
- The printer immediately supplies the documentation required.
- The attachable comfort printer also offers graphical analysis options.
- Thermal paper for long-term legible measurement data documentation of up to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



prepare - analyse - file - document

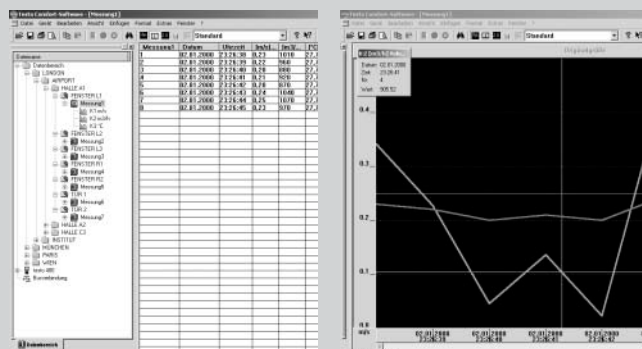
Easy reading management:

- 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.



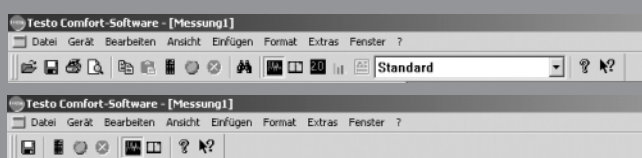
Comprehensive analysis, easy filing:

- 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.



ComSoft 3 - Professional for:

- Data loggers from the testo 175, testo 177 and testostor 171 series
- testo 945, testo 645, testo 445 and testo 545 monitoring instruments
- testo 950, testo 650, testo 400 reference measuring instruments (as version also for

ComSoft 3 - Professional with data management

Incl. database, analysis and graphics function, data analysis, trend curve (without interface)

Part no.
0554 0830

Accessories

RS232 cable
Connects instrument to PC (1.8 m) for data transfer

Part no.

0409 0178

Ethernet adapter

The new Ethernet adapter enables the following:

- On-site measurements, e.g. in production, warehouses, Incoming Goods
- Measuring instrument remains on site, transport not necessary. Data inspection from office or administration
- Centralised filing of measurement data

Ethernet offers:

- Fast transmission of readings
- Use of an existing network without additional cabling
- Long transmission distances
- Identification of measuring instruments in system network

Ethernet adapter, RS 232 - Ethernet incl. software driver, mains unit
Facilitates data communication in network (not for use in Ex-zone)

Part no.
0554 1711

Access Ethernet with Testo measuring instruments

Long-term monitoring of ambient data

The parameters, temperature and humidity, are measured and saved on site by the datalogger. Using the Ethernet adapter, measurement data stored in the logger can be read out and filed via the PC network. The measurement data is then easily analysed and checked on your PC in the office.

The Ethernet adapter therefore has the following advantages:

- Affordable operation since it is no longer necessary to read out data on site or take the logger to the office
- Fast access times because current measurement data can be accessed at any time.



Multi-point checks on site

Testo's handheld measuring instruments are used in production or in Incoming Goods to take spot checks on site. Using an Ethernet adapter, measurement data can be transmitted immediately to a central office which enables fast reaction times, if further actions are required.

Accessories	Part no.
System accessories: testo 400, testo 445, testo 650, testo 950	
ComSoft 3 - Professional with data management, Incl. database, analysis and graphics function, data analysis, trend curve (without interface)	0554 0830
RS232 cable, Connects instrument to PC (1.8 m) for data transfer	0409 0178

Technical data		Management and software configuration	Internet browser e.g. from Netscape or Microsoft Telnet
Dimensions	45 x 48 x 14 mm		
Oper. temp.	+0 to +70 °C	Interface	Serial interface on computer board with terminal program Provision of a local virtual COM port (Windows systems)
Software	Microsoft Windows 2000 / NT 4.0 / ME / 98 / 95		
Power supply	Mains unit, 5 Volt app. 230 mA		
Humidity class	F to DIN 40040		
EMC	Radio interference and interference resistance		
Interface	25 pin RS 232 connection with adapter 25/9pin		
Logs	TCP/IP, LPR, Telnet, SNMP, DHCP DDNS, ARP, BOOTP, ICMP		

testo 445

The testo 445 VAC instrument measures temperature, relative humidity, dew point, absolute humidity, degree of humidity, enthalpy, all types of air velocity (in ducts, duct openings or extractors), volume flow, pressure and indoor air quality.

Data can be saved according to location and then analysed on PC or printed on the Testo printer on site.

testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol

Part no.

0563 4450

Service instrument for ventilation/air conditioning systems

- Automatic mean calculation and volume flow measurement
- Automatic allocation of duct cross-section to location (max. 99 locations)
- Internal datalogger (3,000 readings)
- Simultaneous measurement of up to 6 parameters



Set

Starter set for flow measurement in ducts (Part no. 0563 4451)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- Vane probe, Ø 16 mm, with telescopic handle, Tmax +60°C (Part no. 0628 0005)
- Transport case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0445)

Set

Starter set for flow/climate measurements in ducts (Part no. 0563 4452)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- Quick-action hot wire probe, Ø 10 mm, with telescopic handle, for measurements in the lower velocity range with direction recognition (Part no. 0635 1041)
- Standard ambient air probe up to +70°C (Part no. 0636 9740)
- Transport case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0445)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)

Set

Starter set for flow/climate measurements in ducts (Part no. 0563 4453)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- Vane probe, Ø 16 mm, with telescopic handle, Tmax +60°C (Part no. 0628 0005)
- Standard ambient air probe up to +70°C (Part no. 0636 9740)
- Transport case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0445)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)

Set

The affordable pro set for velocity/ambient air measurements in ducts and at duct openings. (Part no. 0563 4454)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- Vane probe, Ø 16 mm, with telescopic handle, Tmax +60°C (Part no. 0628 0005)
- Vane probe, Ø 60 mm, with telescopic handle, for integrating velocity measurement (Part no. 0635 9449)
- Standard ambient air probe up to +70°C (Part no. 0636 9740)
- Transport case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0445)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)

Set

The Pro set for convenient monitoring of air conditioning/ventilation units parameters. (Part no. 0563 4455)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- Bendable vane probe (can be bent by 90°), Ø 100 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets (Part no. 0635 9340)
- Vane/temperature probe, Ø 16 mm, attachable to handle or telescopic handle (Best.-Nr.0635 9540)
- Professional telescopic handle for plug-in vane probes, max. 1 m long, extension on request (Part no. 0430 0941)
- Standard ambient air probe up to +70°C (Part no. 0636 9740)
- Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C (Part no. 0604 0194)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Pressure probe, 100 hPa, measures differential pressure and velocities (in connection with Pitot tube) (Part no. 0638 1545)
- Pitot tube, 500 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/.1445/.1545 (Part no. 0635 2045)
- Connection hose, silicone, 5m long (Part no. 0554 0440)
- Magnetic holder for pressure probes (Part no. 0554 0225)
- System case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0400)

Set

Set for monitoring Indoor Air Quality (Part no. 0563 4456)

- testo 445, VAC measuring instrument, incl. TopSafe, battery and calibration protocol (Part no. 0563 4450)
- CO2 probe measures indoor air quality and monitors the workplace. With plug-in head, connection cable 0430 0143 or 0430 0145 required (Part no. 0632 1240)
- 3-function probe for simultaneous measurement of temperature, humidity and velocity. With plug-in head, 0430 0143 connection cable required (Part no. 0635 1540)
- Transport case (plastic) for measuring instrument, probes and accessories (Part no. 0516 0445)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)

Accessories	Part no.
Transport and Protection	
Transport case (plastic) for measuring instrument, probes and accessories Larger version, for safe and clear storage	0516 0445
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
Additional Accessories and Spare Parts	
9V rech. battery for instrument Instead of battery	0515 0025
Plug-in mains unit For mains operation and recharging battery in instrument	0554 0088
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
Printer and Accessories	
Testo printer with cordless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries	0554 0547
Fast testo 575 printer, incl. 1 roll of thermal paper and batteries Infrared thermal line printer with graphics function	0554 1775
Recharger for printer (with 4 standard rech. batteries) Rechargeable batteries are recharged externally	0554 0110
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls) Measurement data documentation legible for up to 10 years	0554 0568
Label thermal paper (Testo patent) for testo 575 printer (6 rolls), can be applied directly	0554 0561
Software and Accessories	
ComSoft 3 - Professional with data management Incl. database, analysis and graphics function, data analysis, trend curve (without interface)	0554 0830
RS232 cable Connects instrument to PC (1.8 m) for data transfer	0409 0178
Ethernet adapter, RS 232 - Ethernet incl. software driver, mains unit Facilitates data communication in network	0554 1711
Calibration Certificates	
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s	0520 0034
DKD calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 1; 2; 5; 10 m/s	0520 0244
DKD calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 2; 5; 10; 15; 20 m/s	0520 0204

Technical data	Type K (NiCr-Ni)	Type J (Fe-CuNi)	NTC
Probe type			
Meas. range	-200 to +1370 °C	-200 to +1000 °C	-50 to +150 °C
Accuracy ±1 digit	±0.5% of mv (-200 to -60 °C) ±0.5% of mv (+60 to +1370 °C) ±0.3 °C (-60 to +60 °C)	±0.5% of mv (-200 to -60 °C) ±0.5% of mv (+60 to +1000 °C) ±0.3 °C (-60 to +60 °C)	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (-50 to -25.1 °C) ±0.4 °C (+75 to +99.9 °C)
Resolution	0.1 °C (-200 to +1370 °C)	0.1 °C (-200 to +1000 °C)	0.1 °C (-50 to +150 °C)

Probe type	Testo humid. sensor, cap.	Vane	Thermal
Meas. range	0 to +100 %RH	0 to +60 m/s	0 to +20 m/s
Accuracy ±1 digit	See probe data	See probe data	See probe data
Resolution	0.1 %RH (0 to +100 %RH)	0.01 m/s (0 to +60 m/s)	0.01 m/s (0 to +10 m/s) 0.1 m/s (+10.1 to +20 m/s)

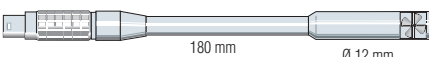
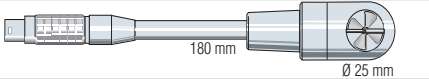
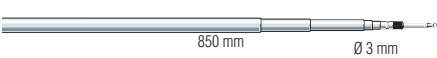
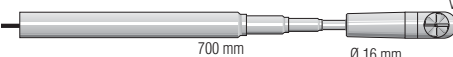
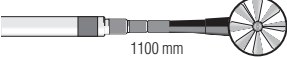
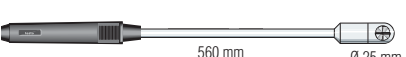
Probe type	Pressure	CO2 probe	CO2 probe
Meas. range	See pressure probes	0 to +1 Vol. % CO ₂	0 to +10000 ppm CO ₂
Accuracy ±1 digit	±0.1% of mv	See probe data	±(100 ppm CO ₂ ±3% of mv) (+5000 to +10000 ppm CO ₂) ±(500 ppm CO ₂ ±2% of mv) (0 to +5000 ppm CO ₂)
Resolution	0.001 hPa (Sonde 0638 1345) 0.001 hPa (Sonde 0638 1445) 0.01 hPa (Sonde 0638 1545) 1 hPa (Sonde 0638 1645)	0 Vol. % CO ₂ (0 to +1 Vol. % CO ₂)	1 ppm CO ₂ (0 to +10000 ppm CO ₂)

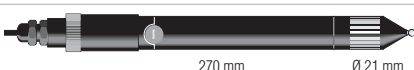
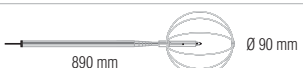
Probe type	CO probe		
Meas. range	0 to +500 ppm CO		
Accuracy ±1 digit	±5% of mv (+100 to +500 ppm CO) ±5 ppm CO (0 to +100 ppm CO)		
Resolution	1 ppm CO (0 to +500 ppm CO)		

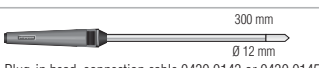
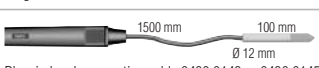
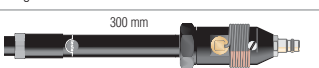
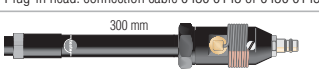
Oper. temp.	0 to +50 °C	Battery life: 6-45 h (depending on probe) Mains conn. and batt. rech. in instr. Calculated humidity parameters: td, g/m ³ , g/kg pressure-compensated, J/g Calculated volume flow: m ³ /h (e.g. 0 to 99999 m ³ /h), m ³ /min, m ³ /s, l/s, cfm Calculated velocity values (density-compensated): 0 to 100 m/s; 0 to 99999 m ³ /h Humidity measurement: Measuring range -50 to 180°C; See Probes for accuracy Accuracy of Type K, J: Additional error via operation temperature 0.2 °C (adjustment point)
Storage temp.	-20 to +70 °C	
Display	LCD, 4 lines	
Battery type	9V block battery	
Battery life	45 h	
PC	RS232 interface	
Weight	255 g	
Material/Housing	ABS	
Warranty	2 years	
Memory	3000	
Dimensions	215 x 68 x 47 mm	

testo 445

Suitable probes at a glance

Probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Vane probe, Ø 12 mm, can be attached to handle or telescopic handle	 180 mm Ø 12 mm	Vane	+0.6 to +20 m/s Oper. temp. -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.6 to +20 m/s)	0635 9443
Vane/temperature probe, Ø 16 mm, attachable to handle or telescopic handle	 180 mm Ø 16 mm	Vane Type K (NiCr-Ni)	+0.4 to +60 m/s -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.4 to +60 m/s)	0635 9540
Vane/temperature probe, Ø 25 mm, can be attached to handle or telescopic handle	 180 mm Ø 25 mm	Vane Type K (NiCr-Ni)	+0.4 to +40 m/s -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.4 to +40 m/s)	0635 9640
Bendable vane probe (can be bent by 90°), Ø 60 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets	 Ø 60 mm	Vane	+0.25 to +20 m/s Oper. temp. 0 to +60 °C	±(0.1 m/s ±1.5% of mv) (+0.25 to +20 m/s)	0635 9440
Bendable vane probe (can be bent by 90°), Ø 100 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets	 Ø 100 mm	Vane	+0.1 to +15 m/s Oper. temp. 0 to +60 °C	±(0.1 m/s ±1.5% of mv) (+0.1 to +15 m/s)	0635 9340
Affordable, robust hot bulb probe, Ø 3 mm, for measurements in the lower velocity range, with handle	 150 mm Ø 4 mm Ø 3 mm	Hot bulb NTC	0 to +10 m/s -20 to +70 °C	±(0.03 m/s ±5% of mv) (0 to +10 m/s)	0635 1549
Robust hot bulb probe, Ø 3 mm, with handle and telescopic handle for measurements in the lower velocity range	 850 mm Ø 3 mm	Hot bulb NTC	0 to +10 m/s -20 to +70 °C	±(0.03 m/s ±5% of mv) (0 to +10 m/s)	0635 1049
Quick-action hot wire probe, Ø 10 mm, with telescopic handle, for measurements in the lower velocity range with direction recognition	 760 mm Ø 10 mm	Hot wire NTC	0 to +20 m/s -20 to +70 °C	±(0.03 m/s ±4% of mv) (0 to +20 m/s)	0635 1041
Vane probe, Ø 16 mm, with telescopic handle, Tmax +60°C	 700 mm Ø 16 mm	Vane	+0.6 to +40 m/s	±(0.2 m/s ±1.5% of mv) (+0.6 to +40 m/s)	0628 0005
Vane probe, Ø 60 mm, with telescopic handle, for integrating velocity measurement	 1100 mm Ø 60 mm	Vane	+0.25 to +20 m/s	±(0.1 m/s ±1.5% of mv) (+0.25 to +20 m/s)	0635 9449
High temperature vane probe, Ø 25 mm, with handle for continuous measurements up to +350°C	 560 mm Ø 25 mm	Vane Type K (NiCr-Ni)	+0.6 to +20 m/s -40 to +350 °C	±(0.3 m/s ±1% of fsv) (+0.6 to +20 m/s)	0635 6045
Precision pressure probe, 100 Pa, measures differential pressure and velocities (in connection with Pitot tube)		Differential pressure probe	0 to +100 Pa	±(0.3 Pa ±0.5% of mv) (0 to +100 Pa)	0638 1345
Pressure probe, 10 hPa, measures differential pressure and velocities (in connection with Pitot tube)		Differential pressure probe	0 to +10 hPa	±0.03 hPa (0 to +10 hPa)	0638 1445

Probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Pressure probe, 100 hPa, measures differential pressure and velocities (in connection with Pitot tube)		Differential pressure probe	0 to +100 hPa	±0.5% of mv (+20 to +100 hPa) ±0.1 hPa (0 to +20 hPa)	0638 1545
Pressure probe, 2000 hPa, measures absolute pressure		Absolute pressure probe	0 to +2000 hPa	±5 hPa (0 to +2000 hPa)	0638 1645
Pitot tube, 500 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/.1445/.1545			Oper. temp. 0 to +600 °C		0635 2045
Pitot tube, 350 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/.1445/.1545			Oper. temp. 0 to +600 °C		0635 2145
Pitot tube, 300 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/.1445/.1545			Oper. temp. 0 to +600 °C		0635 2245
Pitot tube, 1000 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/.1445/.1545			Oper. temp. 0 to +600 °C		0635 2345
3-function probe for simultaneous measurement of temperature, humidity and velocity. With plug-in head, 0430 0143 connection cable required		Hot bulb Testo humid. sensor, cap. NTC	0 to +10 m/s 0 to +100 %RH -20 to +70 °C	±(0.03 m/s ±5% of mv)(0 to 10 m/s) ±2 %RH (+2 to +98 %RH) ±0.4 °C (0 to +50 °C) ±0.5 °C (remaining range)	0635 1540
Comfort level probe for measuring degree of turbulence, with telescopic handle and stand. Fulfills DIN 1946 Part 2 or EN 12 599 requirements		Hot wire NTC	0 to +5 m/s 0 to +50 °C	±(0.03 m/s ±4% of mv) (0 to +5 m/s) ±0.3 °C (0 to +50 °C)	0628 0009
CO2 probe measures indoor air quality and monitors the workplace. With plug-in head, connection cable 0430 0143 or 0430 0145 required		CO2 probe	0 to +1 Vol. % CO ₂ 0 to +10000 ppm CO ₂	±(50 ppm CO ₂ ±2% of mv)(0 to +5000 ppm CO ₂) ±(100 ppm CO ₂ ±3% of mv)(+5001 to +10000 ppm CO ₂)	0632 1240
Ambient CO probe to measure CO level in ambient air		CO probe	0 to +500 ppm CO	±5% of mv (+100.1 to +500 ppm CO) ±5 ppm CO (0 to +100 ppm CO)	0632 1247

More probes	Illustration	Meas. range	Accuracy	t ₉₀	Part no.
Standard ambient air probe up to +70 °C	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9740
Duct humidity/temperature probe, can be connected to telescopic handle	 Fixed cable	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9715
Thin humidity probe incl. 4 attachable protection caps for ambient air measurements, measurements in exhaust air ducts and equilibrium moisture measurements	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +70 °C)	15 s	0636 2130
Highly accurate reference humidity/temp. probe incl. cal. cert.	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±1 %RH (+10 to +90 %RH) ±2 %RH (remaining range) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9741
Flexible humidity probe with mini module for meas. e.g. on material testing rigs, module cable length 1500mm, probe tip 50x19x7mm	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +125 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	20 s	0628 0013
Sword probe for measuring humidity and temperature in stacked material	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +70 °C)	12 s	0636 0340
High humidity level probe w/ heated sensor element, no humidity on sensor	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +85 °C	±2.5 %RH (0 to +100 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +85 °C)	30 s	0636 2142
Robust humidity probe e.g. for measuring equilibrium moisture or for measurements in exhaust ducts to +120 °C	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +120 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	30 s	0636 2140
Robust high temperature/humidity probe up to +180 °C	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +180 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (+0.1 to +50 °C) ±0.5 °C (remaining range)	30 s	0628 0021
Flexible humidity probe (does not retain shape) for measurements in inaccessible places	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +180 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (+0.1 to +50 °C) ±0.5 °C (-20 to 0 °C) ±0.5 °C (+50.1 to +180 °C)	30 s	0628 0022
Standard pressure dew point probe for measurements in compressed air systems	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -30 to +50 °C tpd	±0.9 °C tpd (+0.1 to +50 °C tpd) ±1 °C tpd (-4.9 to 0 °C tpd) ±2 °C tpd (-9.9 to -5 °C tpd) ±3 °C tpd (-19.9 to -10 °C tpd) ±4 °C tpd (-30 to -20 °C tpd)	300 s	0636 9840
Precision pressure dew point probe for measurements in compressed air systems incl. cert. with test point -40 °C tpd	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -60 to +50 °C tpd	±0.8 °C tpd (-4.9 to +50 °C tpd) ±1 °C tpd (-4.9 to 0 °C tpd) ±2 °C tpd (-19.9 to -10 °C tpd) ±3 °C tpd (-29.9 to -20 °C tpd) ±4 °C tpd (-40 to -30 °C tpd)	300 s	0636 9841
Flexible humidity probe (retains shape) for		0 to +100 %RH -20 to +125 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C)	30 s	0628 0014

testo 445
Suitable probes at a glance

Probes	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C	150 mm Ø 10 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +300 °C	Class 2	3 s	0604 0194
Super quick-action immersion/penetration probe for measurements in liquids	150 mm Ø 1.5 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +600 °C	Class 1	1 s	0604 0493
Super quick-action immersion/penetration probe for measurements in gases and liquids with a low-mass tip	150 mm Ø 1.4 mm 20 mm Ø 0.5 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +600 °C	Class 1	1 s	0604 9794
Pipe wrap probe for pipes up to 2" in diameter	Fixed cable	-60 to +130 °C	Class 2	5 s	0600 4593
Spare meas. head for pipe wrap probe	35 mm 15 mm	-60 to +130 °C	Class 2	5 s	0602 0092
Globe thermometer to measure radiant heat	Ø 150 mm Fixed cable	Accuracy corresponds to ISO 7243, ISO 7726, DIN EN 27726, DIN 33403 requirements 0 to +120 °C	±0.5 °C (0 to +49.9 °C) ±1 °C (+50 to +120 °C)		0554 0670

• The measuring instrument inside TopSafe is waterproof with this probe.

See testo 400 for more probes

Accessories for velocity probes, pressure probes	Part no.
Professional telescopic handle for plug-in vane probes, max. 1 m long, extension on request	0430 0941
Extension for telescopic handle, 2 m long Please also order the 0409 0063 extension cable	0430 0942
Handle for plug-in vane probes	0430 3545
Swan neck, flexible connection between probe and connection part	0430 0001
Extension cable, 5 m long, between plug-in head cable and instrument PUR coating material	0409 0063
Magnetic probe holder for vane probes	0554 0430
Connection hose, silicone, 5m long Max. load 700 hPa (mbar)	0554 0440
Magnetic holder for pressure probes For pressure probes 0638 1345/..1445/..1545/..1645	0554 0225
Cover plugs for test holes (50 off)	0554 4001

Accessories for temperature probes	Part no.
Silicone heat paste (14g), T _{max} = +260°C Improves heat transfer in surface probes	0554 0004
• 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	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

Accessories: Humidity, 3-function probe	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
Control and humidity adjustment set 11.3%RH/75.3%RH incl. adapter for humidity probes	0554 0660
Adapter for humidity adjustment of 3-function probe 0635 1540 Order with adjustment set	0554 0661
Control and storage humidity (33%RH) for humidity probes	0554 0636
Metal protection cage, Ø 21 mm for humidity probes For velocities of less than 10 m/s	0554 0665
Metal protection cage, Ø 12 mm for humidity probes For velocities of less than 10 m/s	0554 0755
Wire mesh filter, Ø 21 mm, for metal protection cage and plastic cap Protects from dirt and damage. Applications: meteorology, splashwater, condensation	0554 0667
Cap with wire mesh filter, Ø 12 mm	0554 0757
Teflon sintered filter, Ø 21 mm, for corrosive substances High humidity range (long-term measurements), high velocities	0554 0666
Teflon sintered filter, Ø 12 mm, for corrosive substances High humidity range (long-term measurements), high velocities	0554 0756
Stainless steel sintered cap, Ø 21 mm, can be screwed onto humidity probe Protection in case of high mechanical load and high velocities	0554 0640
Stainless steel sintered cap, Ø 12 mm, is screwed onto humidity probe For measurements at high velocity speeds or in dirt ingressed air	0554 0647
Teflon cap, Ø 5 mm, attachable, PTFE material, (5 off) Dust protection, high humidity measurements, high flow speeds for humidity probe 0636 2130	0554 1031
Teflon sintered filter, Ø 12 mm, for corrosive substances High humidity range (non-stop measurements), high flow speeds	0554 0758

Caps for humidity probes, see page 28

testo 400

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

testo 400 includes the parameters temperature, CO₂, rpm, current, voltage, relative humidity, pressure, velocity and volume flow.

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

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:

- System accuracy up to 0.05 °C and up to a resolution of 0.001 °C
- All functions of testo 650 and testo 950
- Input of cross-sections to volume flow calculation
- Absolute pressure compensation in thermal probes
- Density calculation for velocity measurement with reference to temperature, humidity and absolute pressure
- Turbulence degree measurement to DIN EN 27726, DIN 1946 Teil 2, ISO
- Assessment of volume flow measurements with calculation of total uncertainty of measurement in accordance with EN 12599 with VAC module (optional)

The reference measuring instrument for A/C and ventilation systems

- With VAC module for velocity measurement in m/s, m³/h duct
- Clear graphics display
- 3 user defined function buttons
- Save or print at the touch of a button
- Mains connection/Quick battery recharge
- Attachable printer
- Prints readings on site in the matter of seconds
- Data communication via PC
- Barcode reader
- User friendly operation via cursor



Attachable printer prints readings on site in seconds

Clear graphics display

Data communication by PC, barcode reader

3 user-defined function buttons

Saves or prints at the touch of a button

Easy operation with cursor

Power connection/quick battery recharge

2 user defined probe sockets

testo 400

testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol

Can be used for:

- Velocity, volume flow
- Humidity, pressure
- Temperature
- CO₂, rpm and current/voltage

Part no.

0563 4001

Recommended set

For fast measurements on VAC systems

- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Memory upgrade to 500,000 readings (Part no. 0554 9481)
- VAC module upgrade (Part no. 0450 4010)
- ComSoft 3 – Professional with data management (Part no. 0554 0830)
- VAC module upgrade, PC software, (for ComSoft 3 software) (Part no. 0554 4030)
- RS232 cable (Part no. 0409 0178)
- Bendable vane probe (can be bent by 90°), Ø 100 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets (Part no. 0635 9340)
- Vane/temperature probe, Ø 16 mm, attachable to handle or telescopic handle (Part no. 0635 9540)
- Professional telescopic handle for plug-in vane probes, max. 1 m long, extension on request (Part no. 0430 0941)
- Attachable printer (securely attached) including 1 roll of thermal paper and batteries (Part no. 0554 0570)
- SoftCase (protects instrument from impact) with carrier strap, magnetic holder and probe holder (Part no. 0516 0401)
- SoftCase for attachable printer (protects printer from dirt/impact) (Part no. 0516 0411)
- System case (aluminium) for measuring instrument, probes and accessories (Part no. 0516 0410)

We recommend:

DKD calibration certificate/Temperature 0520 0201
El. resistance thermometer, el. thermometer; cal. points selectable from -80 to +1000°C

testo 400

Additional recommended sets

Recommended set

The pro set for assessing workplaces subjected to heat

- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Wet Bulb Globe temperature probe to assess workplaces subjected to heat, in accordance with ISO 7243 or DIN 33403, incl. WBGT case (Part no. 0635 8888)
- Attachable printer (securely attached) including 1 roll of thermal paper and batteries (Part no. 0554 0570)

We recommend:

ISO calibration certificate/Temperature 0520 0181
For air/immersion probes, calibration points -8°C; 0°C; +40°C

testo 400, the Pro set for comfort level meas. & occupational safety/health

- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Comfort level probe for measuring degree of turbulence, with telescopic handle and stand. Fulfills DIN 1946 Part 2 or EN 12 599 requirements (Part no. 0628 0009)
- Attachable printer (securely attached) including 1 roll of thermal paper and batteries (Part no. 0554 0570)

We recommend:

CO2 probe measures indoor air quality and monitors the workplace. With plug-in head, connection cable 0430 0143 or 0430 0145 required 0632 1240

Cable, 1.5 m long, connects probe with plug-in head to meas. instrument 0430 0143
PUR coating material

Standard ambient air probe up to +70°C 0636 9740
Measures all physical parameters in the Mollier diagram

Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C 0604 0194

Cable, 1.5 m long, connects probe with plug-in head to meas. instrument 0430 0143
PUR coating material

The Pro Set for clean room systems

- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Precision pressure probe, 100 Pa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube) (Part no. 0638 1347)
- Precision air probe (Part no. 0628 0017)
- Highly accurate reference humidity/temp. probe incl. cal. cert. (Part no. 0636 9741)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Quick-action hot wire probe, Ø 10 mm, with telescopic handle, for measurements in the lower velocity range with direction recognition (Part no. 0635 1041)
- Bendable vane probe (can be bent by 90°), Ø 100 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets (Part no. 0635 9340)
- Professional telescopic handle for plug-in vane probes, max. 1 m long, extension on request (Part no. 0430 0941)
- Current/voltage cable (±1 V, ±10 V, 20 mA) (Part no. 0554 0007)
- System case (aluminium) for measuring instrument, probes and accessories (Part no. 0516 0410)
- ComSoft 3 - Professional with data management (Part no. 0554 0830)
- RS232 cable (Part no. 0409 0178)

We recommend:

DKD calibration certificates for temperature, humidity, velocity, pressure (See Calibration)

Recommended set

Laboratory fume cupboard probe

- testo 400, multi-function measuring instrument, incl. battery, Li cell and calibration protocol (Part no. 0563 4001)
- Power unit 230 V/ 8 V/ 1 A, for instrument (European plug) (Part no. 0554 1084)
- Rechargeable battery set for instrument (4 rechargeables 2.4V/700mAh) (Part no. 0554 0196)
- Thermal anemometer, Ø 10 mm, w. telescopic handle, measures air flow in lab fume cupboards to DIN EN 14175 (draft) (Part no. 0635 1047)
- Standard ambient air probe up to +70°C (Part no. 0636 9740)
- Pressure probe, 2000 hPa, measures absolute pressure, in robust metal housing with impact protection, incl. quick-closing coupling (M8 x 0.5), magnet for fast attachment (Part no. 0638 1847)
- Precision pressure probe, 100 Pa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube) (Part no. 0638 1347)
- Cable, 1.5 m long, connects probe with plug-in head to meas. instrument (Part no. 0430 0143)
- Comfort level probe for measuring degree of turbulence, with telescopic handle and stand. Fulfills DIN 1946 Part 2 or EN 12 599 requirements (Part no. 0628 0009)

We recommend:

ComSoft 3 - Professional with data management 0554 0830
Incl. database, analysis and graphics function, data analysis, trend curve (without interface)

RS232 cable 0409 0178
Connects instrument to PC (1.8 m) for data transfer

Attachable printer (securely attached) including 1 roll of thermal paper and batteries 0554 0570

SoftCase (protects instrument from impact) with carrier strap, magnetic holder 0516 0401
and probe holder

SoftCase for attachable printer (protects printer from dirt/impact) 0516 0411
Protects from impact and falls

System case (aluminium) for measuring instrument, probes and accessories 0516 0410
Probes in lid make it easy to find parts in case

DKD calibration certificate/Velocity for laboratory fume cupboard probe

ISO calibration certificate/Velocity for laboratory fume cupboard probe

Accessories	Part no.
Accessories for measuring instrument	
Memory upgrade to 500,000 readings Upgrades memory capacity (by Service)	0554 9481
Rechargeable battery set for instrument (4 rechargeables 2.4V/700mAh) Selected for quick recharging in instrument	0554 0196
Power 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	
Attachable printer (securely attached) including 1 roll of thermal paper and batteries	0554 0570
Testo printer with cordless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries	0554 0547
Fast testo 575 printer, incl. 1 roll of thermal paper and batteries Infrared thermal line printer with graphics function	0554 1775
Recharger for printer (with 4 standard rech. batteries) Rechargeable batteries are recharged externally	0554 0110
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls) Measurement data documentation legible for up to 10 years	0554 0568
Label thermal paper (Testo patent) for testo 575 printer (6 rolls), can be applied directly	0554 0561
Softcase for instrument and printer	
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
Barcode and accessories	
Barcode reader to read in measurement locations Quick and accurate allocation of reading to site	0554 0460
Barcode labels, self-adhesive (1200 off) for labelling site with barcode, printing via software	0554 0411
Adhesive pockets (50 off) for printout, paper barcode labels...	0554 0116
Software and Accessories	
ComSoft 3 - Professional with data management Incl. database, analysis and graphics function, data analysis, trend curve (without interface)	0554 0830
RS232 cable Connects instrument to PC (1.8 m) for data transfer	0409 0178
Ethernet adapter, RS 232 - Ethernet incl. software driver, mains unit Facilitates data communication in network	0554 1711
Electrical isolation for RS232 (connects measuring instrument to PC)	0554 0006
VAC module	
Memory upgrade to 500,000 readings Upgrades memory capacity (by Service)	0554 9481
VAC module upgrade Volume flow calculation in ducts with error calculation function in instrument	0450 4010
VAC module upgrade, PC software, (for ComSoft 3 software) Printout of standard measurement protocols	0554 4030
Refrigeration module	
"Refrigeration technology" update with saved curves of all usual refrigerants	0554 4035
System case	
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

Calibration Certificates	Part no.
Calibration certificates/Temperature	
ISO calibration certificate/Temperature For air/immersion probes, calibration points -18°C; 0°C; +60°C	0520 0001
ISO calibration certificate/Temperature Meas. instr. with air/immersion probe; cal. 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	
ISO calibration certificate/Humidity Cal points freely selectable from 5 to 95%RH at +15 to +35°C or at -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/Pressure dew point Two adjustment points -10/-40 °C tpd	0520 0136
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 Cal. points freely selectable from 5 to 95%RH at +25°C or -20°C to +85°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	
ISO calibration certificate/Pressure Differential pressure; 5 points distributed over meas. range	0520 0005
DKD calibration certificate/Pressure Diff. and pos. pressure; 6 meas. points distributed over meas. range (>0.6% of fsv)	0520 0225
ISO calibration certificate/Pressure Differential pressure; accuracy 0.1 to 0.6 (% of fsv)	0520 0025
DKD calibration certificate/Pressure Differential and positive pressure; 11 measuring points distributed over the instrument measuring range	0520 0215
ISO calibration certificate/Pressure Absolute pressure; accuracy 0.1 to 0.6 (% of full-scale value)	0520 0125
DKD calibration certificate/Pressure Absolute pressure; 11 measuring points distributed over meas. range	0520 0212
Calibration certificates/Velocity	
ISO calibration certificate/Velocity All velocity probes, calibration points selectable from 0.3 to 50 m/s at +25°C	0520 0104
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004
ISO calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s	0520 0034
ISO calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 0.8; 1; 1.5 m/s	0520 0024
DKD calibration certificate/Velocity Hot wire, vane anemometer; calibration points 0.5; 1; 2; 5; 10 m/s	0520 0244
DKD calibration certificate/Velocity Hot wire, vane anemometer, Pitot tube; calibration points 2; 5; 10; 15; 20 m/s	0520 0204
DKD calibration certificate/Velocity Hot wire anemometer; calibration points 0.1; 0.2; 0.5; 0.8; 1 m/s	0520 0224

Technical data					
Probe type	Vane	Thermal	Testo humid. sensor, cap.	Pressure	aw value
Meas. range	0 to +60 m/s	0 to +20 m/s	0 to +100 %RH	0 to +2000 hPa	0 to +1 aW
Accuracy ±1 digit	See probe data for system accuracy	±0.01 m/s (0 to +1.99 m/s) ±0.02 m/s (+2 to +4.9 m/s) ±0.04 m/s (+5 to +20 m/s)	See probe data	Probe 0638 1347 Probe 0638 1447 Probe 0638 1547 Probe 0638 1647 Probe 0638 1747 Probe 0638 1847 ±0.1% of mv Probe 0638 1741 Probe 0638 1841 Probe 0638 1941 Probe 0638 2041 Probe 0638 2141 ±0.2% of mv	See probe data
Resolution	0.01 m/s (for Ø 60/100 mm), 0.1 m/s (for rem. probes)	0.01 m/s (0 to +20 m/s)	0.1 %RH (0 to +100 %RH)	0.001 hPa (Probe 0638 1347) 0.001 hPa (Probe 0638 1447) 0.01 hPa (Probe 0638 1547) 0.1 hPa (Probe 0638 1647) 0.1 hPa (Probe 0638 1747) 0.1 hPa (Probe 0638 1847) 0.01 bar (Probe 0638 1741) 0.01 bar (Probe 0638 1841) 0.01 bar (Probe 0638 1941) 0.01 bar (Probe 0638 2041) 0.01 bar (Probe 0638 2141)	

Probe type	NTC	Pt100	Type K (NiCr-Ni)	Type S (Pt10Rh-Pt)	Type J (Fe-CuNi)
Meas. range	-40 to +150 °C	-200 to +800 °C	-200 to +1370 °C	0 to +1760 °C	-200 to +1000 °C
Accuracy ±1 digit	±0.2 °C (-10 to +50 °C) ±0.4 °C (-40 to -10.1 °C) ±0.4 °C (+50.1 to +150 °C)	±0.1 °C (-49.9 to +99.9 °C) ±0.4 °C (-99.9 to -50 °C) ±0.4 °C (+100 to +199.9 °C) ±1 °C (-200 to -100 °C) ±1 °C (+200 to +800 °C)	±0.4 °C (-100 to +200 °C) ±1 °C (-200 to -100.1 °C) ±1 °C (+200.1 to +1370 °C)	±1 °C (0 to +1760 °C)	±0.4 °C (-150 to +150 °C) ±1 °C (-200 to -150.1 °C) ±1 °C (+150.1 to +1000 °C)
Resolution	0.1 °C (-40 to +150 °C)	0.01 °C (-99.9 to +300 °C) 0.1 °C (-200 to -100 °C) 0.1 °C (+300.1 to +800 °C)	0.1 °C (-200 to +1370 °C)	1 °C (0 to +1760 °C)	0.1 °C (-200 to +1000 °C)

Probe type	CO2 probe	CO probe	Mechanical	Current/voltage measurement	Current/voltage measurement
Meas. range	0 to +1 Vol. % CO ₂ 0 to +10000 ppm CO ₂	0 to +500 ppm CO	+20 to +20000 rpm	0 to +20 mA (0554 0007) 0/4 to 20 mA (0554 0528)	0 to +10 V
Accuracy ±1 digit	See probe data	±5% of mv (0 to +500 ppm CO)	(+20 to +20000 rpm)	±0.04 mA (0 (0554 0007) to +20 mA) See probe (0554 0528) data	±0.01 V (0 to +10 V)
Resolution			1 rpm (+20 to +20000 rpm)	0.01 mA (0 to +20 mA)	0.01 V (0 to +10 V)

Oper. temp.	0 to +50 °C
Storage temp.	-25 to +60 °C
Display	LCD, 4 lines
Battery type	1,5 V AA
Battery life	18 h
PC	RS232 interface
Weight	500 g
Material/Housing	ABS
Warranty	3 years
Memory	45000

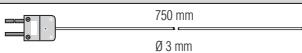
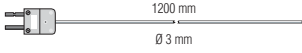
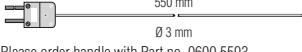
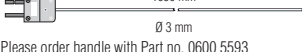
Memory space in basic version: 128 KB
corresponding to approx. 45,000 readings
With memory upgrade: 1 MB corresponding to
approx. 500,000 readings
Other features: automatic probe recognition
Power: Battery/rech. battery, alternatively 8 V
mains unit
Battery life in continuous operation with 2 T/C
probes

Probes Type K (NiCr-Ni)	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Super quick-action immersion/penetration probe for measurements in gases and liquids with a low-mass tip		-200 to +600 °C	Class 1	1 s	0604 9794 0614 9794 *
Thermocouple, made of fibre-glass insulated thermal pipes, pack of 5		-200 to +400 °C	Class 1	5 s	0644 1109
Quick-action surface probe with sprung thermocouple strip, measuring range short-term to +500°C		-200 to +300 °C	Class 2	3 s	0604 0194 0614 0194 *
Super quick-action surface probe, probe tip at 90° angle, with sprung thermocouple strip		-200 to +300 °C	Class 2	3 s	0604 0994
Robust surface probe		-200 to +600 °C	Class 1	25 s	0604 9993 0614 9993 *
Robust surface probe, at 90° angle, suitable for inaccessible places		-200 to +600 °C	Class 1	25 s	0604 9893 0614 9893 *
Robust surface probe with sprung thermocouple strip for high temperature range up to +700°C		-200 to +700 °C	Class 2	3 s	0600 0394
Roller surface probe for measurements on rollers and rotating drums, max. circumferential velocity 18 to 400m/min		-50 to +240 °C	Class 2		0600 5093
Magnetic probe, adhesive power approx. 20 N, with magnets, for measurements on metal surfaces		-50 to +170 °C	Class 2		0600 4793
Magnetic probe, adhesive power approx. 10 N, with magnets, for higher temperatures, measures on metal surfaces		-50 to +400 °C	Class 2		0600 4893
Miniature surface probe for measurements on electronic components, small motors...		-200 to +400 °C	Class 2	3 s	0600 1494
Adhesive thermocouple, pack of 2, carrier material: aluminium foil Is fixed at the measuring point using conventional adhesives or silicone heat paste 0554 0004		-200 to +200 °C	Class 1		0644 1607
Fast response immersion/penetration probe		-200 to +400 °C	Class 1	3 s	0604 0293 0614 0293 *
Super quick-action immersion/penetration probe for measurements in liquids		-200 to +600 °C	Class 1	1 s	0604 0493 0614 0493 *
Super quick-action immersion/penetration probe for high temperatures		-200 to +1100 °C	Class 1	1 s	0604 0593 0614 0593 *
Super quick-action immersion/penetration probe for measurements in gases and liquids with a low-mass tip		-200 to +600 °C	Class 1	1 s	0604 9794 0614 9794 *
Robust immersion/penetration probe made of V4A stainless steel, waterproof and oven-proof, e.g. for the food sector		-200 to +400 °C	Class 1	3 s	0600 2593
Smelting probe for measurements in non-ferrous melting baths, with exchangeable measuring tips		-200 to +1250 °C	Class 1	60 s	0600 5993
Pipe wrap probe for pipes up to 2" in diameter		-60 to +130 °C	Class 2	5 s	0600 4593
Spare meas. head for pipe wrap probe		-60 to +130 °C	Class 2	5 s	0602 0092

*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

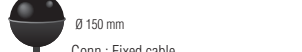
testo 400

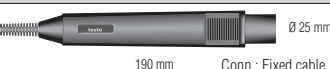
Suitable probes at a glance

Probes Type K (NiCr-Ni)	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Plug-in measuring tip, 750mm long, flexible, for high temperatures, outer casing: stainless steel 1.4541	 750 mm Ø 3 mm Please order handle with Part no. 0600 5593	-200 to +900 °C	Class 1	4 s	0600 5393
Plug-in measuring tip, 1200 mm long, flexible, for high temperatures, outer casing: stainless steel 1.4541	 1200 mm Ø 3 mm Please order handle with Part no. 0600 5593	-200 to +900 °C	Class 1	4 s	0600 5493
Plug-in measuring tip, 550mm long, flexible, for high temperatures, outer casing: Inconel 2.4816	 550 mm Ø 3 mm Please order handle with Part no. 0600 5593	-200 to +1100 °C	Class 1	4 s	0600 5793
Plug-in measuring tip, 1030mm long, flexible, for high temperatures, outer casing: Inconel 2.4816	 1030 mm Ø 3 mm Please order handle with Part no. 0600 5593	-200 to +1100 °C	Class 1	4 s	0600 5893

Probes Pt100	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Standard air probe	 150 mm Ø 3 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200...+600 °C	Class A	75 s	0604 9773
Precision air probe	 150 mm Ø 3 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-100 to +400 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	75 s	0628 0017
Robust surface probe	 150 mm Ø 4 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-50 to +400 °C	Class B	40 s	0604 9973 0628 0018
Velcro probe for pipes with diameter of max. 75 mm	 280 mm Conn.: Fixed cable	-50 to +150 °C	Class B	40 s	0628 0019
Standard immersion/penetration probe	 200 mm Ø 3 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +400 °C	Class A	20 s	0604 0273
Standard immersion/penetration probe	 200 mm Ø 3 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-200 to +600 °C	Class A	20 s	0604 0274
Highly accurate immersion/penetration probe incl. certificate	 295 mm Ø 4 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-40 to +300 °C	±0.05 °C (+0.01 to +100 °C) ±(0.05 °C ±0.05% of mv) (-40 to 0 °C) ±(0.05 °C ±0.05% of mv) (+100.01 to +300 °C)	60 s	0614 0240
Highly accurate immersion/penetration probe	 200 mm Ø 3 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-100 to +400 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	30 s	0628 0015
Flexible precision immersion probe, cable heat-proof up to +300°C	 1000 mm Ø 3.5 mm 50 mm Ø 6 mm Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	-100 to +265 °C	1/10 Class B (0 to 100°C) 1/5 Class B (rem. range) to EN 60751	80 s	0628 0016
Robust immersion/penetration probe with sharpened measuring tip, waterproof and oven-proof	 150 mm Ø 3.5 mm Ø 3 mm Conn.: Fixed cable	-200 to +400 °C	Class A	30 s	0604 2573

*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

Probes NTC	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Highly accurate air probe for air and gas temperature measurements with bare, mechanically protected sensor	 150 mm Ø 9 mm Conn.: Fixed cable	-40 to +130 °C	To UNI curve	60 s	0610 9714
Globe thermometer to measure radiant heat	 Ø 150 mm Conn.: Fixed cable	0 to +120 °C	±0.5 °C (0 to +49.9 °C) ±1 °C (+50 to +120 °C) Accuracy corresponds to ISO 7243, ISO 7726, DIN EN 27726, DIN 33403 requirements		0554 0670

More probes	Illustration	Meas. range	Accuracy	Part no.
Ambient CO probe to measure CO level in ambient air	 190 mm Conn.: Fixed cable	0 to +500 ppm CO	±5% of mv (+100.1 to +500 ppm CO) ±5 ppm CO (0 to +100 ppm CO)	0632 1247
CO ₂ probe measures indoor air quality and monitors the workplace. With plug-in head, connection cable 0430 0143 or 0430 0145 required	 Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +1 Vol. % CO ₂ 0 to +10000 ppm CO ₂	±(50 ppm CO ₂ ±2% of mv)(0 to +5000 ppm CO ₂) ±(100 ppm CO ₂ ±3% of mv)(+5001 to +10000 ppm CO ₂)	0632 1240
Mechanical rpm probe with plug-in head 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	 Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	20 to 20000 rpm	±1 digit	0640 0340
Current/voltage cable (±1 V, ±10 V, 20 mA)		0 to +1000 mV 0 to +10 V 0 to +20 mA	±1 mV (0 to +1000 mV) ±0.01 V (0 to +10 V) ±0.04 mA (0 to +20 mA)	0554 0007
4 to 20 mA interface for connection and intermittent power supply to transmitters (scaling via hand-held instrument), in robust metal housing with impact protection, incl. magnet for fast attachment	 Conn.: Plug-in head, connection cable 0430 0143 or 0430 0145 required	0/4 to 20 mA	±0.04 mA	0554 0528

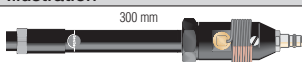
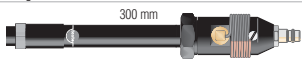
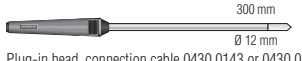
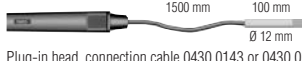
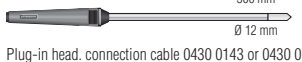
Accessories	Part no.
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument, PUR coating material	0430 0143
Cable, 5 m long, connects probe with plug-in head to measuring instrument, PUR coating material	0430 0145
Extension cable, 5 m long, between plug-in head cable and instrument, 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
Glass shaft for immersion/penetration probe to protect from corrosive agents For probes with Part nos. 0604 0273 and 0628 0015	0554 7072
Adapter to connect NiCr-Ni thermocouples and probes with open wire ends	0600 1693
Handle for plug-in measuring tip	0600 5593
Silicone heat paste (14g), Tmax = +260°C, Improves heat transfer in surface probes	0554 0004
Spare measuring tip for smelting probe	0363 1712

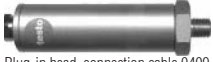
More probes

Humidity probes	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Standard ambient air probe up to +70°C	 Ø 12 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9740
Duct humidity/temperature probe, can be connected to telescopic handle Telescopic handle 0430 9715, see Ordering data/Accessories	 180 mm Ø 12 mm Fixed cable	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9715
Thin humidity probe incl. 4 attachable protection caps for ambient air measurements, measurements in exhaust air ducts and equilibrium moisture measurements	 250 mm Ø 4 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +70 °C)	15 s	0636 2130
Highly accurate reference humidity/temp. probe incl. cal. cert.	 Ø 21 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±1 %RH (+10 to +90 %RH) ±2 %RH (remaining range) * ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	12 s	0636 9741
Humidity/temperature probe	 Ø 21 mm Plug-in head, connection cable 0430 0143 or 0430 0145 required	0... +100 %RH -20 to +70 °C	±2 %RH (+2... +98 %RH) ±0.4 °C (+0.1 to +50 °C) ±0.5 °C (-20 to 0 °C) ±0.5 °C (+50.1 to +70 °C)	12 s	0636 9742

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

testo 400
Suitable probes at a glance

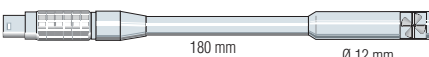
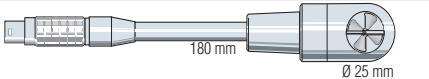
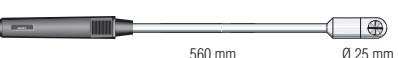
Probes Process humidity	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Standard pressure dew point probe for measurements in compressed air systems	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -30 to +50 °C tpd	±0.9 °C tpd (+0.1 to +50 °C tpd) ±1 °C tpd (-4.9 to 0 °C tpd) ±2 °C tpd (-9.9 to -5 °C tpd) ±3 °C tpd (-19.9 to -10 °C tpd) ±4 °C tpd (-30 to -20 °C tpd)	300 s	0636 9840
Precision pressure dew point probe for measurements in compressed air systems incl. cert. with test point -40°C tpd	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -60 to +50 °C tpd	±0.8 °C tpd (-4.9 to +50 °C tpd) ±1 °C tpd (-9.9 to -5 °C tpd) ±2 °C tpd (-19.9 to -10 °C tpd) ±3 °C tpd (-29.9 to -20 °C tpd) ±4 °C tpd (-40 to -30 °C tpd)	300 s	0636 9841
High humidity level probe w/ heated sensor element, no humidity on sensor	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +85 °C	±2.5 %RH (0 to +100 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +85 °C)	30 s	0636 2142
Robust high temperature/humidity probe up to +180°C	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +180 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (+0.1 to +50 °C) ±0.5 °C (remaining range)	30 s	0628 0021
Flexible humidity probe (does not retain shape) for measurements in inaccessible places	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +180 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (+0.1 to +50 °C) ±0.5 °C (-20 to 0 °C) ±0.5 °C (+50.1 to +180 °C)	30 s	0628 0022
Probes Material and equilibrium moisture	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
Flexible humidity probe with mini module for meas. e.g. on material testing rigs, module cable length 1500mm, probe tip 50x19x7mm	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +125 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	20 s	0628 0013
Sword probe for measuring humidity and temperature in stacked material	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (-20 to -10.1 °C) ±0.5 °C (+50.1 to +70 °C)	12 s	0636 0340
Robust humidity probe e.g. for measuring equilibrium moisture or for measurements in exhaust ducts to +120°C	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 %RH -20 to +120 °C	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)	30 s	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 %		Display values in instrument display mean: 100 to 66 wet; 0 to 1 very dry		0636 0565
Probes aw value	Illustration	Meas. range	Accuracy	t ₉₉	Part no.
aw value set: pressure-tight precision humidity probe with certificate, measurement chamber and 5 sample bowls (plastic)	 Reproducibility of aw value ±0.003	0 to +1 aW 0 to +100 %RH -20 to +70 °C	±0.01 aW (+0.1 to +0.9 aW) ±0.2 aW (+0.9 to +1 aW) ±0.4 °C (-10 to +50 °C) ±0.5 °C (remaining range)		0628 0024
Differential pressure probe	Illustration	Meas. range	Accuracy	Part no.	
Precision pressure probe, 100 Pa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 Pa	±(0.3 Pa ±0.5% of mv)	0638 1347	
Pressure probe, 10 hPa, in robust metal housing with impact protection incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +10 hPa	±0.03 hPa	0638 1447	
Pressure probe, 100 hPa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +100 hPa	±0.5% of mv (+20 to +100 hPa) ±0.1 hPa (0 to +20 hPa)	0638 1547	
Pressure probe, 1000 hPa, measures differential pressure, in robust metal housing with impact protection, incl. quick-closing coupling (M8 x 0.5), magnet for fast attachment	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +1000 hPa	±1 hPa (0 to 200 hPa) ±0.5% of mv (200 to 1000 hPa)	0638 1647	
Pressure probe, 2000 hPa, measures differential pressure, in robust metal housing with impact protection, incl. quick-closing coupling (M8 x 0.5), magnet for fast attachment	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +2000 hPa	±2 hPa (0 to 400 hPa) ±0.5% of mv (400 to 2000 hPa)	0638 1747	
Pressure probe, 2000 hPa, measures absolute pressure, in robust metal housing with impact protection, incl. quick-closing coupling (M8 x 0.5), magnet for fast attachment	 Plug-in head, connection cable 0430 0143 or 0430 0145 required	0 to +2000 hPa	±5 hPa (0 to +2000 hPa)	0638 1847	

Relative pressure probes	Illustration	Meas. range	Accuracy		Part no.
Low pressure probe, refrigerant-proof stainless steel, up to 10 bar	 Plug-in head, connection cable 0409 0202 required	-1 to +10 bar	±1% of fsv Overload 25 bar	Screw-in thread 7/16" UNF	0638 1741
High pressure probe, refrigerant-proof stainless steel, up to 30 bar	 Plug-in head, connection cable 0409 0202 required	-1 to +30 bar	±1% of fsv Overload 120 bar	Screw-in thread 7/16" UNF	0638 1841
High press. probe, refrigerant-proof st. steel, up to 40 bar	 Plug-in head, connection cable 0409 0202 required	-1 to +40 bar	±1% of fsv Overload 120 bar	Screw-in thread 7/16" UNF	0638 1941
High pressure probe, refrigerant-proof stainless steel, up to 100 bar	 Plug-in head, connection cable 0409 0202 required	-1 to +100 bar	±1% of fsv Overload 250 bar	Screw-in thread 7/16" UNF	0638 2041
High pressure probe, refrigerant-proof stainless steel, up to 400 bar	 Plug-in head, connection cable 0409 0202 required	-1 to +400 bar	±1% of fsv Overload 600 bar	Screw-in thread 7/16" UNF	0638 2141

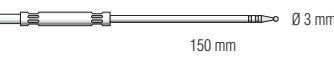
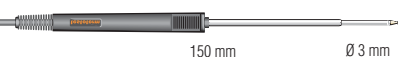
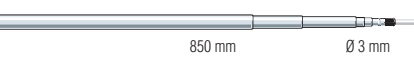
Caps for humidity probes Ø 12mm and 21mm	Illustration		Part no.
Metal protection cage, Ø 21 mm for humidity probes, material: stainless steel V4A. Quick adjustment time, robust and temperature-proof. Used when measuring velocities of less than 10 m/s		Ø 21 mm	All humidity probes with Ø 21 mm 0554 0665
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
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	0628 0021, 0628 0022, 0636 2140, 0636 2142 0554 0758
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 21 mm	All humidity probes Ø 21 mm 0554 0640
Stainless steel sintered cap, Ø 12mm, 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: Humidity probes	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 Ø 12 mm 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: Pressure probes	Part no.
Connection cable, 2.5 m long, for pressure probes 0638 1741/1841/1941	0409 0202
Adapter for pressure probes, 1/2" outer thread, 1/4" inner thread for pressure probes 0638 1741/1841/1941/2041/2141	0699 3127
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
Connection hose, silicone, 5m long Max. load 700 hPa (mbar)	0554 0440
Connection hose set, 2 x 1 m, coiled, incl. 1/8" screw connection Pressure-tight up to 20 bar, for probe 0638 1647/1747/1847	0554 0441

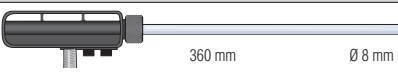
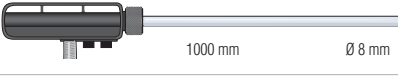
Vane probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Vane probe, Ø 12 mm, can be attached to handle or telescopic handle	 180 mm Ø 12 mm	Vane	+0.6 to +20 m/s Oper. temp. -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.6 to +20 m/s)	0635 9443
Vane/temperature probe, Ø 16 mm, attachable to handle or telescopic handle	 180 mm Ø 16 mm	Vane Type K (NiCr-Ni)	+0.4 to +60 m/s -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.4 to +60 m/s)	0635 9540
Vane/temperature probe, Ø 25 mm, can be attached to handle or telescopic handle	 180 mm Ø 25 mm	Vane Type K (NiCr-Ni)	+0.4 to +40 m/s -30 to +140 °C	±(0.2 m/s ±1% of mv) (+0.4 to +40 m/s)	0635 9640
Bendable vane probe (can be bent by 90°), Ø 60 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets	 Ø 60 mm	Vane	+0.25 to +20 m/s Oper. temp. 0 to +60 °C	±(0.1 m/s ±1.5% of mv) (+0.25 to +20 m/s)	0635 9440
Bendable vane probe (can be bent by 90°), Ø 100 mm, attachable to handle or telescopic handle, for measurements on ventilation outlets	 Ø 100 mm	Vane	+0.1 to +15 m/s Oper. temp. 0 to +60 °C	±(0.1 m/s ±1.5% of mv) (+0.1 to +15 m/s)	0635 9340
Vane probe, Ø 16 mm, for stationary assembly, 3 m cable (PVC)	 250 mm Ø 16 mm		+0.4 to +60 m/s Oper. temp. 0 to +70 °C	±(0.2 m/s ±1% of mv) (+0.4 to +60 m/s)	0628 0036
High temperature vane probe, Ø 25 mm, with handle for continuous measurements up to +350°C	 560 mm Ø 25 mm	Vane Type K (NiCr-Ni)	+0.6 to +20 m/s -40 to +350 °C	±(0.3 m/s ±1% of fsv) (+0.6 to +20 m/s)	0635 6045

Accessories: Vane probes	Part no.	Accessories: Vane probes	Part no.
Professional telescopic handle for plug-in vane probes, max. 1 m long, extension on request	0430 0941	Swan neck, flexible connection between probe and connection part	0430 0001
Extension for telescopic handle, 2 m long Please also order the 0409 0063 extension cable	0430 0942	Magnetic probe holder for vane probes	0554 0430
Handle for plug-in vane probes	0430 3545		

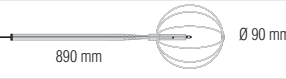
Thermal probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Robust hot bulb probe, Ø 3 mm, for measurements in the lower velocity range, 2m cable (PVC)	 150 mm Ø 3 mm	Hot bulb NTC	0 to +10 m/s -20 to +70 °C	±(0.03 m/s ±5% of mv) (0 to +10 m/s)	0628 0035
Affordable, robust hot bulb probe, Ø 3 mm, for measurements in the lower velocity range, with handle	 150 mm Ø 3 mm	Hot bulb NTC	0 to +10 m/s -20 to +70 °C	±(0.03 m/s ±5% of mv) (0 to +10 m/s)	0635 1549
Robust hot bulb probe, Ø 3 mm, with handle and telescopic handle for measurements in the lower velocity range	 850 mm Ø 3 mm	Hot bulb NTC	0 to +10 m/s -20 to +70 °C	±(0.03 m/s ±5% of mv) (0 to +10 m/s)	0635 1049
Quick-action hot wire probe, Ø 10 mm, with telescopic handle, for measurements in the lower velocity range with direction recognition	 760 mm Ø 10 mm	Hot wire NTC	0 to +20 m/s -20 to +70 °C	±(0.03 m/s ±4% of mv) (0 to +20 m/s)	0635 1041
Thermal anemometer, Ø 10 mm, w. telescopic handle, measures air flow in lab fume cupboards to DIN EN 14175 (draft)	 760 mm Ø 10 mm	Hot wire NTC	0 to +5 m/s 0 to +50 °C	±(0.02 m/s ±5% of mv) (0 to +5 m/s)	0635 1047

Differential pressure probes	Illustration	Probe type	Meas. range	Accuracy	Part no.
Precision pressure probe, 100 Pa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +100 Pa	±(0.3 Pa ±0.5% of mv)	0638 1347
Pressure probe, 10 hPa, in robust metal housing with impact protection incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +10 hPa	±0.03 hPa	0638 1447
Pressure probe, 100 hPa, in robust metal housing with impact protection, incl. magnet for fast attachment, to measure differential pressure and velocity speeds (in connection with Pitot tube)		Differential pressure probe	0 to +100 hPa	±0.5% of mv (+20 to +100 hPa) ±0.1 hPa (0 to +20 hPa)	0638 1547

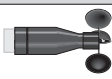
Prandtl's Pitot tubes	Illustration	Accuracy	Part no.
Pitot tube, 300 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545	 300 mm Ø 4 mm	Oper. temp. 0 to +600 °C	0635 2245
Pitot tube, 350 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545	 350 mm Ø 7 mm	Oper. temp. 0 to +600 °C	0635 2145
Pitot tube, 500 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545	 500 mm Ø 7 mm	Oper. temp. 0 to +600 °C	0635 2045
Pitot tube, 1000 mm long, stainless steel, measures flow speed when used with pressure probes 0638 1345/..1445/..1545	 1000 mm Ø 7 mm	Oper. temp. 0 to +600 °C	0635 2345

Straight Pitot tubes	Illustration	Probe type	Meas. range	Part no.
Pitot tube, stainless steel, 360 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547	 360 mm Ø 8 mm	Type K (NiCr-Ni)	-40 to +600 °C	0635 2040
Pitot tube, stainless steel, 500 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547	 500 mm Ø 8 mm	Type K (NiCr-Ni)	-40 to +600 °C	0635 2140
Pitot tube, stainless steel, 1000 mm long, measures flow speed and temperature, for pressure probes 0638 1347/..1447/..1547	 1000 mm Ø 8 mm	Type K (NiCr-Ni)	-40 to +600 °C	0635 2240

Accessories: Pressure probes	Part no.
Connection hose, silicone, 5m long Max. load 700 hPa (mbar)	0554 0440
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143

Comfort level measurement	Illustration	Probe type	Meas. range	Accuracy	Part no.
3-function probe for simultaneous measurement of temperature, humidity and velocity. With plug-in head, 0430 0143 connection cable required	 270 mm Ø 21 mm	Hot bulb Testo humid. sensor, cap. NTC	0 to +10 m/s 0 to +100 %RH -20 to +70 °C	±(0.03 m/s ±5% of mv)(0 to 10 m/s) ±2 %RH (+2 to +98 %RH) ±0.4 °C (0 to +50 °C) ±0.5 °C (remaining range)	0635 1540
Comfort level probe for measuring degree of turbulence, with telescopic handle and stand. Fulfills DIN 1946 Part 2 or EN 12 599 requirements	 890 mm Ø 90 mm	Hot wire NTC	0 to +5 m/s 0 to +50 °C	±(0.03 m/s ±4% of mv) (0 to +5 m/s) ±0.3 °C (0 to +50 °C)	0628 0009
Wet Bulb Globe temperature probe to assess workplaces subjected to heat, in accordance with ISO 7243 or DIN 33403, incl. WBG case	 Ø 150 mm		0 to +120 °C	In accordance with ISO 7243 or DIN 33403	0635 8888 ID No. 0699 4239/1

Accessories: 3-Function probe	Part no.
Adapter for humidity adjustment of 3-function probe 0635 1540 Order with adjustment set	0554 0661
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument PUR coating material	0430 0143

Other features	Illustration	Probe type	Meas. range	Accuracy	Part no.
Shell anemometer, 3 m cable, for meteorological wind measurement		Vane	+0.7 to +30 m/s	±(0.3 m/s ±5% of mv) (+0.7 to +30 m/s)	0635 9045