



testo 435

# Versatility for Ventilation and Indoor Air Quality

The new measurement technology for air-conditioning systems

NEW!



m<sup>3</sup>/h

m/s

ΔP

CO<sub>2</sub>

%RH

°C

Lux

## Air conditioning parameters

The testo 435 provides the possibility of analysing indoor air. On the one hand, this serves as an indicator of the well-being of the people at their workplace, and on the other hand as an important and deciding factor in storage and production processes.

In addition to this, the indoor air quality indicates whether the air conditioning system is working with optimal energy-efficiency, or whether it needs to be adjusted with the help of testo 435.

The parameters CO<sub>2</sub>, relative humidity and room air temperature are available for evaluating indoor air quality. Additionally, absolute pressure, draughts, lux and surface temperature can be determined.

To determine volume flow, all the possibilities of flow measurement are available, such as thermal probes, vane probes and Pitot tubes.

## The right probe for every application

The new probe for Indoor Air Quality (IAQ) measures the parameters CO<sub>2</sub>, relative humidity and room air temperature in order to evaluate room air quality. Absolute pressure is also available.

People react sensitively to draughts. An objective evaluation of the room air velocity present in the room is made using the degree of turbulence probe.

Bad light conditions affect the quality of work. The new lux probe reliably records the light conditions at the workplace.

The cross-band probe is outstanding for surface measurements. The cross-band assumes the

actual temperature of the object to be measured in a few seconds.

Temperature and humidity measurement have been integrated in the new thermal probe, for measurements in ducts. Flow speed, volume flow, air humidity and air temperature can thus be measured in one measurement sequence.

The vane probe with a diameter of 60 mm is suited to integrated measurements, e.g. at outlets. For duct measurements, a 16 mm vane probe with a broad measurement range from 0.6...40 m/s is available. The Pitot tube measurement is ideal for high air velocities and with contaminated air. A 25 hPa differential pressure probe is integrated into 435-3 and 435-4 for this purpose.



## Versatility through radio probes

In addition to classical probes with a wire, wireless measurement up to a distance of 20 m is possible. Damage to the wire or hindrances in usage are thus eliminated. A maximum of three radio probes can be read and displayed by testo 435. The radio probes are available for the measurement parameters temperature and, depending on the instrument type, humidity. The optional, easily attached radio module can be retrofitted at any time.





## More user comfort

The testo 435 excels through its logical usage and easy-to-follow menus. For measurements at different locations, the testo 435-2/-4 has the advantage that the measurement values are allocated to the respective measurement locations. For the applications duct measurement and IAQ measurement, the instruments can be switched between user profiles.

### User profile duct measurement:

The most important functions of a duct measurement such as timed/multi-point mean calculation and area input are directly accessed by the function buttons. Any area input, (circle,

rectangle, area) is adjustable on location. 5 pre-defined dimensions are stored directly in the function buttons.

### User profile IAQ:

The most important function when monitoring indoor air quality is the long-term measurement. The activation and parametrizing of the measurement program is directly accessible via the function button.

## Absolutely robust instrument concept

The reliability of measuring instruments is a deciding factor. The testo 435 is a robust and reliable measuring instrument with the protection class IP 54. The material used works as a built-in protection against knocks and jars. The large illuminated display is positioned slightly set back in the housing and is thus better protected. The carrying strap on the instrument enables safe transport. Magnets on the back ensure secure attachment at the measuring location.



## Assurance through documentation

The testo 435 documents the measurement results either in the PC using the convenient PC software or on location via the handy testo report printer.

The PC measurement reports presents the customer with data from duct, long-term and degree of turbulence measurement. The company logo can be integrated into the form. The testo 435-2/-4 comes with the relevant software needed to present the data in the PC. Single measurements as well as measurement series are stored in the measuring instrument (10,000 readings), and then presented in tabular or graphic form by PC software.

On location the testo 435 transmits the data to the testo report printer wirelessly by infra-red interface. Date and time as well as the measurement data are documented on the print-out.

With the testo 435-1/-3, measurement data can be printed out on the testo report printer cyclicly with a measurement rate from 1 minute to 24 hours via the function "Cycle printing". In this way, with the testo 435-1/-3, measurement series can be documented on paper even without a data store.



### Joint product advantages testo 435

- **WIDE SELECTION OF PROBES:**
  - IAQ probe for evaluating the indoor air quality via CO<sub>2</sub>, air temperature, indoor air humidity and absolute pressure
  - Thermal probe with integrated temperature and air humidity measurement
  - Vane and hot wire probes
  - Radio probes for temperature
- **EASY USE WITH USER PROFILES**
- **PRINTING ON THE TESTO REPORT PRINTER**

### Further product advantages of the variants

- **INTEGRATED DIFFERENTIAL PRESSURE MEASUREMENT (435-3/-4, not retrofittable)**
  - for flow measurement
  - for monitoring filters
- **EXTENDED INSTRUMENT FUNCTION (435-2/-4, not retrofittable)**
  - Instrument store for 10,000 readings
  - PC software for analysing, archiving and documenting measurement data
  - Humidity probes with radio or wire
  - Lux probe connection possible
  - Comfort level probe connection possible

#### testo 435-1

testo 435-1, multi-function meas. instr., for A/C, ventilation and Indoor Air Quality, with battery and calibration protocol

Part no. 0560 4351

#### testo 435-2

##### EXTENDED INSTRUMENT FUNCTION

testo 435-2, multi-function measuring instrument for air conditioning, ventilation and Indoor Air Quality with readings memory, PC software and USB data transmission cable, incl. battery and calibration protocol

Part no. 0563 4352

#### testo 435-3

##### INTEGRATED DIFFERENTIAL PRESSURE MEASUREMENT

testo 435-3, multi-function measuring instrument with built-in differential pressure measurement for air conditioning, ventilation and Indoor Air Quality, with battery and calibration protocol

Part no. 0560 4353

#### testo 435-4

##### INTEGRATED DIFFERENTIAL PRESSURE MEASUREMENT

##### EXTENDED INSTRUMENT FUNCTION

testo 435-4, multi-function meas. instr. with built-in differential pressure measurement for A/C, ventilation and Indoor Air Quality with readings memory, PC software and USB data transmission cable, with battery and calibration protocol

Part no. 0563 4354

# Probes

435-1/-2/-3/-4					
Multi-function probes	Illustration	Meas. range	Accuracy	Part no.	
IAQ probe to assess Indoor Air Quality, CO <sub>2</sub> , humidity, temperature and absolute pressure measurement		0 to +50 °C 0 to +100 %RH 0 to +10000 ppm CO <sub>2</sub> +600 to +1150 hPa	±0.3 °C ±2 %RH (+2 to +98 %RH) ±(50 ppm CO <sub>2</sub> ±2% of mv) (0 to +5000 ppm CO <sub>2</sub> ) ±(100 ppm CO <sub>2</sub> ±3% of mv) (+5001 to +10000 ppm CO <sub>2</sub> ) ±5 hPa	0632 1535	
Thermal velocity probe with built-in temperature and humidity measurement, Ø 12 mm, with telescopic handle (max. 745 mm)		-20 to +70 °C 0 to +100 %RH 0 to +20 m/s	±0.3 °C ±2 %RH (+2 to +98 %RH) ±(0.03 m/s +4% of mv)	0635 1535	
Flow probe	Illustration	Meas. range	Accuracy	Part no.	
Vane measurement probe, 16 mm diameter, with telescopic handle max. 890 mm, e.g. for measurements in ducts		+0.6 to +40 m/s	±(0.2 m/s +1.5% of mv)	0635 9535	
Vane measurement probe, 60 mm diameter, with telescopic handle max. 910 mm, e.g. for measurements at duct exit		+0.25 to +20 m/s	±(0.1 m/s +1.5% of mv)	0635 9335	
Hot wire probe for m/s and °C, Ø probe head 7.5 mm, with telescopic handle (max. 820 mm)		0 to +20 m/s	±(0.03 m/s +5% of mv)	0635 1025	
Absolute pressure probes	Illustration	Meas. range	Accuracy	Part no.	
Absolute pressure probe 2000 hPa		0 to +2000 hPa	±5 hPa	0638 1835	
Air probes	Illustration	Meas. range	Accuracy	t <sub>99</sub>	Part no.
Efficient, robust NTC air probe	 115 mm 50 mm Ø 5 mm Ø 4 mm	-50 to +150 °C	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	60 s	0613 1712
Surface probes	Illustration	Meas. range	Accuracy	t <sub>99</sub>	Part no.
Fast-action surface probe with sprung thermocouple strip, also for uneven surfaces, measurement range short-term to +500°C, T/C Type K	 115 mm Ø 5 mm Ø 12 mm	-60 to +300 °C	Class 2	3 s	0602 0393
Pipe wrap probe for pipe diameter 5 to 65 mm, with exchangeable measuring head. Measurement range short-term to +280°C, T/C Type K		-60 to +130 °C	Class 2	5 s	0602 4592
Clamp probe for measurements on pipes, pipe diameter 15 to 25 mm (max. 1"), meas. range short-term up to +130°C		-50 to +100 °C	Class 2	5 s	0602 4692
Immers./penetr. probes	Illustration	Meas. range	Accuracy	t <sub>99</sub>	Part no.
Waterproof immersion/penetration probe, T/C Type K	 114 mm 50 mm Ø 5 mm Ø 3.7 mm	-60 to +400 °C	Class 2	7 s	0602 1293
435-2/-4					
IAQ probes	Illustration	Meas. range	Accuracy	Part no.	
Comfort level probe for degree of turbulence measurement with telescopic handle (max. 820 mm) and stand, meets DIN 1946 Part 2 requirements		0 to +50 °C 0 to +5 m/s	±0.3 °C ±(0.03 m/s +4% of mv)	0628 0109	
Lux probe, for measuring light intensity			Accuracy to DIN 5032, Part 6: f1 = 6% = V(Lambda) adjustment f2 = 5% = cos-like weighting	0635 0545	
Humidity probes	Illustration	Meas. range	Accuracy	Part no.	
Humidity/temperature probe	 Ø 12 mm	-20 to +70 °C 0 to +100 %RH	±0.3 °C ±2 %RH (+2 to +98 %RH)	0636 9735	
435-3/-4					
Prandtl's Pitot tubes	Illustration	Oper. temp.	Part no.		
Pitot tube, 350 mm long, stainless steel, measures velocity in connection with pressure probes	 350 mm Ø 7 mm	0 to +600 °C	0635 2145		
Pitot tube, 500 mm long, stainless steel, measures velocity in connection with pressure probes	 500 mm Ø 7 mm	0 to +600 °C	0635 2045		
Pitot tube, 1000 mm long, stainless steel, measures velocity together with pressure probes 0638 1347	 1000 mm Ø 7 mm	0 to +600 °C	0635 2345		


## Option: Radio

435-1/-2/-3/-4


### Radio module for upgrading measuring instrument with radio option

Country versions	Radio freq.	Part no.
Radio module for measuring instrument, 869.85 MHz, approval for the countries: DE, FR, GB, BE, NL, ES, IT, SE, AT, DK, FI, HU, CZ, PL, GR	869.85 MHz FSK	0554 0188
Radio module for measuring instrument, 915.00 MHz FSK, approval for USA	915.00 MHz FSK	0554 0190

### Assembled for you: Radio handles with probe head

Radio handles with probe head for surface measurement	Meas. range	Accuracy	Resolution	t <sub>99</sub>
<b>Radio handle for attachable probe heads with T/C probe head for surface measurement</b> 	-50 to +350 °C Short-term to +500 °C	Radio handle: ±(0.5 °C +0.3% of mv) (-40 to +500 °C) ±(0.7 °C +0.5% of mv) (remaining range) T/C probe head: Class 2	0.1 °C (-50 to +199.9 °C) 1.0 °C (remaining range)	5 s
Country versions	Radio freq.	Part no.		
Radio handle for plug-in probe heads, incl. T/C adapter, approval for the countries: DE, FR, GB, BE, NL, ES, IT, SE, AT, DK, FI, HU, CZ, PL, GR	869.85 MHz FSK	0554 0189		
T/C probe head for surface measurement, attachable to radio handle, T/C Type K		0602 0394		
Radio handle for plug-in probe heads, incl. T/C adapter, approval for USA	915.00 MHz FSK	0554 0191		
T/C probe head for surface measurement, attachable to radio handle, T/C Type K		0602 0394		

435-2/-4

Radio probes incl. humidity probe head	Meas. range	Accuracy	Resolution
<b>Radio handle for attachable probe heads with humidity probe head</b> 	0 to +100 %RH -20 to +70 °C	±2 %RH (+2 to +98 %RH) ±0.5 °C	0.1 %RH 0.1 °C
Country versions	Radio freq.	Part no.	
Radio handle for plug-in probe heads, incl. T/C adapter, approval for the countries: DE, FR, GB, BE, NL, ES, IT, SE, AT, DK, FI, HU, CZ, PL, GR	869.85 MHz FSK	0554 0189	
Humidity probe head, attachable to radio handle		0636 9736	
Radio handle for plug-in probe heads, incl. T/C adapter, approval for USA	915.00 MHz FSK	0554 0191	
Humidity probe head, attachable to radio handle		0636 9736	

### Radio probes: General technical data

Radio handle		Measuring rate	0.5 s or 10 s, adjustable on handle	Radio transmission	
Battery type	2 AAA micro batteries			Radio transmission	Unidirectional
Battery life	215 h (meas. rate 0.5 s) 6 months (meas. rate 10 s)	Radio coverage	Up to 20 m (without obstructions)		
		Oper. temp.	-20 to +50 °C		
		Storage temp.	-40 to +70 °C		

## Technical data

435-1/-2/-3/-4								435-3/-4	435-2/-4
Probe type	NTC (Air, humidity, multi-purpose probe)	Type K (NiCr-Ni)	Testo humid. sensor, cap.	Vane	Hot wire	CO <sub>2</sub> (IAQ probe)	Absolute pressure probe	Differential pressure probe, internal	Lux
Meas. range	-40 to +150 °C	-200 to +1370 °C	0 to +100 %RH	0 to +60 m/s	0 to +20 m/s	0 to +10000 ppm CO <sub>2</sub>	0 to +2000 hPa	0 to +25 hPa	0 to +100000 Lux
Accuracy ±1 digit	±0.2 °C (-25 to +74.9 °C) ±0.4 °C (-40 to -25.1 °C) ±0.4 °C (+75 to +99.9 °C) ±0.5% of mv (remaining range)	±0.3 °C (-60 to +60 °C) ±0.5% of mv (remaining range)						±0.02 hPa (0 to +2 hPa) 1% of mv (remaining range)	
Resolution	0.1 °C	0.1 °C	0.1 %RH	0.01 m/s (60 vane) 0.1 m/s (16 vane)	0.01 m/s	1 ppm CO <sub>2</sub>	0.1 hPa	0.01 hPa	1 Lux
Oper. temp.	-20 to +50 °C				Battery life	200 h (typical vane measurement)			
Storage temp.	-30 to +70 °C				Dimensions	225 x 74 x 46 mm			

## Ordering data

Measuring instrument	Part no.	Accessories	Part no.
testo 435-1, multi-function meas. instr., for A/C, ventilation and Indoor Air Quality, with battery and calibration protocol	0560 4351	testovent 410, volume flow funnel, Ø 340mm/330 x 330mm, incl. case	0554 0410
testo 435-2, multi-function measuring instrument for air conditioning, ventilation and Indoor Air Quality with readings memory, PC software and USB data transmission cable, incl. battery and calibration protocol	0563 4352	testovent 415, volume flow funnel, Ø 210mm/190x190mm, incl. case	0554 0415
testo 435-3, multi-function measuring instrument with built-in differential pressure measurement for air conditioning, ventilation and Indoor Air Quality, with battery and calibration protocol	0560 4353	Connection hose, silicone, 5m long, Max. load 700 hPa (mbar)	0554 0440
testo 435-4, multi-function meas. instr. with built-in differential pressure measurement for A/C, ventilation and Indoor Air Quality with readings memory, PC software and USB data transmission cable, with battery and calibration protocol	0563 4354	Handle for plug-in humidity probe head for connection to testo 635 and testo 435, probe cable included, measures/calibrates humidity probe head	0430 9735
		Control and humidity adjustment set 11.3%RH/75.3%RH incl. adapter for humidity probes, Quick checks or calibration of humidity probe	0554 0660
		Teflon sintered filter, Ø 12 mm, for corrosive substances, High humidity range (long-term measurements), high velocities	0554 0756
		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
Accessories for measuring instrument	Part no.	Calibration Certificates	Part no.
External recharger incl. 4 Ni-MH rechargeable batteries with built-in, international mains adapter - 100-240 V, 300 mA, 50/60 Hz, 12 VA/instrument	0554 0610	ISO calibration certificate/Temperature, Meas. instr. with surface probe; calibration points +60°C; +120°C; +180°C	0520 0071
Plug-in mains adapter for testo 735, testo 635, testo 435, 5 VDC 500 mA with European adapter	0554 0447	ISO calibration certificate/Humidity, Electronic hygrometers; calibration points 11.3%RH and 75.3%RH at +25°C	0520 0006
System case	Part no.	ISO calibration certificate/Pressure, Differential pressure, accuracy 0.1 to 0.6 (% of fsv)	0520 0025
Service case for basic equipment of measuring instrument and probes, dimensions: 400 x 310 x 96 mm	0516 0035	ISO calibration certificate/Velocity, Hot wire, vane anemometer; calibration points 0.5; 0.8; 1; 1.5 m/s	0520 0024
Service case for measuring instrument, probes and accessories, dimensions: 490 x 420 x 110 mm	0516 0135	ISO calibration certificate/Velocity, Hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004
Printer and Accessories	Part no.	ISO calibration certificate/Velocity, Hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s	0520 0034
Testo printer with wireless IRDA and infrared interface, 1 roll of thermal paper and 4 round cell batteries, For printout of reading on site	0554 0547	ISO calibration certificate/Light, Lux probes; calibration points 500; 1000; 2000 Lux	0520 0010
Spare thermal paper for printer (6 rolls), Measurement data documentation legible for up to 10 years	0554 0568	ISO calibration certificate/CO2, CO2 probes; calibration points 0; 1000; 5000 ppm	0520 0033
Spare thermal paper for printer (6 rolls)	0554 0569		

### Adjusting an indoor air system

To determine volume flow, all the possibilities of flow measurement are available, such as thermal probes, vane probes and Pitot tubes.

