We measure it. testo

Differential pressure transmitter with humidity/temperature option

testo 6381

- Measurement of differential pressure, flow velocity, volume flow; optional: humidity and temperature
- Automatic zero-point adjustment guarantees high, temperature-independent accuracy and long-term stability
- Low measurement range up to 10 Pa ensures very high precision at lowest pressures
- Ethernet, relay and analog outputs allow optimum integration into individual automation systems
- The P2A software for parameterization, adjustment and analysis saves time and costs in commissioning and maintenance
- Configurable alarm management with adjustable response delay and alarm acknowledgement

hPa

%RH

°C

The differential pressure transmitter testo 6381 was developed specially for monitoring differential pressure in the measuring range from 10 Pa to 1000 hPa. In cleanroom technology, the maintenance of positive pressure prevents the entry of contaminated air. In addition to this, the flow velocity or the volume flow can be calculated from the measurement of the differential pressure in a Pitot tube. Thanks to an optional probe from the probe series 6610, the additional recording of humidity and temperature with one instrument is also possible.

The testo 6381 is particularly outstanding thanks to the automatioc zero-point adjustment which ensures high accuracy and long-term stability.

The integrated self-monitoring and early warning function also guarantees the operator high system availability.

Technical data

Parameters

Differential pressure

Measuring range	0 to 10 Pa 0 to 50 Pa 0 to 100 Pa 0 to 500 Pa 0 to 10 hPa 0 to 50 hPa 0 to 100 hPa 0 to 500 hPa 0 to 1000 hPa	-10 to 10 Pa -50 to 50 Pa -100 to 100 Pa -500 to 500 Pa -10 to 10 hPa -50 to 50 hPa -100 to 100 hPa -500 to 500 hPa -1000 to 1000 hPa
Measurement uncertainty*	±0.5% of measurement range final value ±0.3 Pa Temperature gain drift: 0.02% of measuring range per Kelvin deviaton from nominal temperature 22 °C Zero-point: 0% (thanks to cyclic zero-point adjustment)	
Selectable units	Differential pressure in Pa, hPa, kPa, mbar, bar, mmH_2O, kg/cm^2, PSI, inch HG, inch H_2O calculated parameters: volume flow in m^3/h, l/min, Nm^3/h, Nl/min Flow velocity in m/s, ft/min	
Sensor	Piezoresistive sensor	
Autom. zero-point adjustment	via magnetic valve Frequency adjustable: 15 sec, 30 sec, 1 min, 5 min, 10 min	

Overload	Measuring range	Overload
	0 to 10 Pa	20000 Pa
	0 to 50 Pa	20000 Pa
	0 to 100 Pa	20000 Pa
	0 to 500 Pa	20000 Pa
	0 to 10 hPa	200 hPa
	0 to 50 hPa	750 hPa
	0 to 100 hPa	750 hPa
	0 to 500 hPa	2500 hPa
	0 to 1000 hPa	2500 hPa
	-10 to 10 Pa	20000 Pa
	-50 to 50 Pa	20000 Pa
	-100 to 100 Pa	20000 Pa
	-500 to 500 Pa	20000 Pa
	-10 to 10 hPa	200 hPa
	-50 to 50 hPa	750 hPa
	-100 to 100 hPa	750 hPa
	-500 to 500 hPa	2500 hPa
	-1000 to 1000 hPa	2500 hPa

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

Parameters

Humidity/temperature optional

Probe	testo 6611	testo 6612	testo 6613	testo 6614	testo 6615	testo 6617
Type	Wall	Channel	Channel	Duct heated	Cable trace humidity	Cable with cover electrode monitoring
Parameters	%RH / °C/°F / $°C_{td}$ / $°F_{td}$ / g/kg / gr/lb / g/m3 / gr/ft^3 / ppmV / °Cwb / °Fwb / kJ/kg / mbar / inch H_2O / °Ctm (H_2O_2)/°Ftm (H_2O_2) / % Vol					

Meas. range

Humidity / trace humidity	0 to 100 %RH				-60 to +30 °C td	0 to 100 %RH
Temperature	-20 to +70 °C -4 to +158 °F	-30 to +150 °C -22 to +302 °F	-40 to +180 °C -40 to +356 °F		-40 to +120 °C -40 to +248 °F	-40 to +180 °C -40 to +356 °F

Measurement uncertainty*

Humidity	testo 6611	testo 6612	testo 6613	testo 6614	testo 6615	testo 6617
	±(1.0 + 0.007 * mv) %RH for 0 to 100 %RH / ±(1.4 + 0.007 * mv) %RH for 90 to 100 %RH			±(1.0+ 0.007 * mv) %RH for 0 to 100 %RH		±(1.2 + 0.007 * mv) %RH for 0 to 90 %RH / ±(1.6 + 0007 * mv) %RH for 90 to 100 %RH
	for deviations from media temp. ±25 °C: ±0.02 %RH/K					
Dewpoint					±1 K at 0 °C td ±2 K at -40 °C td ±4 K at -50 °C td	
Temp. at +25°C / +77°F	±0.15 °C/ 32.2 °F Pt1000 Class AA				±0.15 °C/ 32.2 °F Pt100 Class AA	±0.15 °C/ 32.2 °F Pt1000 Class AA

Inputs/outputs

Analog outputs

Quantity	Standard: 1; with optional humidity probe: 3
Output type	0/4 to 20 mA (4-wire) (24 VAC/DC) 0 to 1/5 to 10 V (4-wire) (24 VAC/DC)
Scaling	Differential pressure: scalable ±50% of measuring range final value; freely scalable within measuring range
Meas. cycle	1/sec
Resolution	12 bit
Max. load	max. 500 Ω
Other outputs	
Ethernet	Optional
Relay	Optional: 4 relays (free allocation to measurement channels or as collective alarm in operating menu/P2A), up to 250 VAC/3A (NO or NC)
Digital	Mini-DIN for P2A software
Supply	
Voltage supply	20 to 30 VAC/DC, 300 mA current consumption, galvanically separate signal and supply line

Technical data / Technical drawings / Connection plan

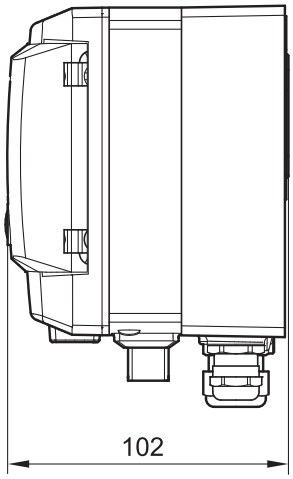
General technical data

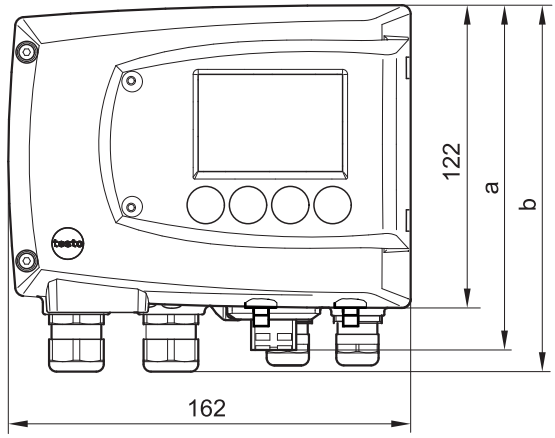
Model		
Material	Metal housing	
Dimensions	162 x 122 x 77 mm	
Weight	1.96 kg; optional: Ethernet intermediary layer 0.61 kg	
Display		
Display	optional: 3-line LCD with multi-language operating menu	
Resolution		
Differential pressure	Measuring range	Resolution
	0 to 10 Pa	20000 Pa
	0 to 50 Pa	20000 Pa
	0 to 100 Pa	20000 Pa
	0 to 500 Pa	20000 Pa
	0 to 10 hPa	200 hPa
	0 to 50 hPa	750 hPa
	0 to 100 hPa	750 hPa
	0 to 500 hPa	2500 hPa
	0 to 1000 hPa	2500 hPa
	-10 to 10 Pa	20000 Pa
	-50 to 50 Pa	20000 Pa
	-100 to 100 Pa	20000 Pa
	-500 to 500 Pa	20000 Pa
	-10 to 10 hPa	200 hPa
	-50 to 50 hPa	750 hPa
	-100 to 100 hPa	750 hPa
	-500 to 500 hPa	2500 hPa
	-1000 to 1000 hPa	2500 hPa
Humidity	0.1 %RH	
Temperature	0.01 °C / 0.01 °F	
Miscellaneous		
Protection class	IP 65	
EMC	EU guideline 2004/108/EC	
Connection nipple	Ø 6 mm --> suitable hoses 4 mm + 4.8 mm	

Operating conditions

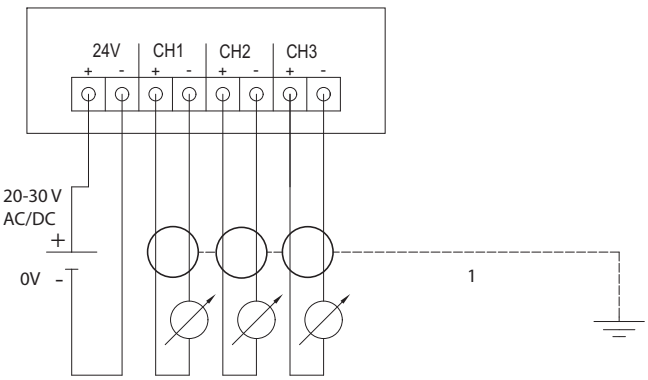
With / without display	Operation temperature	-5 to 50 °C / 23 to 122 °F
	Storage temperature	-20 to 60 °C / -4 to 140 °F
	Process temperature	-20 to +65 °C / -4 to +149 °F

Technical drawings





Connection plan



Options / Ordering example

The following options can be specified for the testo 6381:

AXX Measuring range
BXX Analog display/supply
CXX Display / menu language
DXX Cable input
EXX Ethernet
FXX Differential pressure/flow velocity unit (pre-set)
GXX Opt. analog output for humidity probe connection (probe series testo 6610) units (pre-set)
HXX Relay
IXX Units channel 3 pre-set (only if opt. humidity probe connection available)

AXX Measuring range

A01 0 to 10 Pa
A02 0 to 50 Pa
A03 0 to 100 Pa
A04 0 to 500 Pa
A05 0 to 10 hPa
A07 0 to 50 hPa
A08 0 to 100 hPa
A09 0 to 500 hPa
A10 0 to 1000 hPa
A21 -10 to 10 Pa
A22 -50 to 50 Pa
A23 -100 to 100 Pa
A24 -500 to 500 Pa
A25 -10 to 10 hPa
A27 -50 to 50 hPa
A28 -100 to 100 hPa
A29 -500 to 500 hPa
A30 -1000 to 1000 hPa

BXX Analog display/supply

B02 0 to 1 V (4-wire, 24 VAC/DC)
B03 0 to 5 V (4-wire, 24 VAC/DC)
B04 0 to 10 V (4-wire, 24 VAC/DC)
B05 0 to 20 mA (4-wire, 24 VAC/DC)
B06 4 to 20 mA (4-wire, 24 VAC/DC)

CXX Display / menu language

C00 without display
C02 with display/English
C03 with display/German
C04 with display/French
C05 with display/Spanish
C06 with display/Italian
C07 with display/Japanese
C08 with display/Swedish

DXX Cable input

D01 Cable input M16 (relay: M20)
D02 Cable entry NPT 1/2“
D03 Cable contact via M-plug connection for signal and supply

EXX Ethernet

E00 without Ethernet module
E01 with Ethernet module

FXX Differential pressure/flow velocity unit*

F01 Pa / min / max
F02 hPa / min / max
F03 kPa / min / max
F04 mbar / min / max
F05 bar / min / max
F06 mmH_2O / min / max
F07 mmH_2O / min / max
F08 inch HG / min / max
F09 kg/cm^2 / min / max
F10 PSI / min / max
F11 m/s / min / max
F12 ft/min / min / max
F13 m^3/h / min / max
F14 l/min / min / max
F15 Nm^3/h / min / max
F16 Nl/min / min / max

*Scaling: 50% of measuring range final value; freely selectable within measuring range

GXX opt. Analog output for humidity probe connection (probe series testo 6610) units (pre-set)

G00 without connection possibility for humidity probe testo 6610
G01 % RH/Min/Max
G02 °C/Min/Max
G03 °F/Min/Max
G04 °Ctd / min / max
G05 °Ftd / min / max
G06 g/kg / min / max
G07 gr/lb /Min/Max
G08 g/m^3 / min / max
G09 gr/ft^3 / min / max
G10 ppmV / min / max
G11 °Cwb / min / max
G12 °Fwb / min / max
G13 kJ/kg / min / max (enthalpy)
G14 mbar / min / max (water vapour partial pressure)
G15 inch H_2O / min / max (water vapour partial pressure)
G16 °Ctm / min / max (mixture dewpoint for H_2O_2)
G17 °Ftm / min / max (mixture dewpoint for H_2O_2)
G18 % Vol
(G01–G18 with connection possibility testo 6610)

HXX Relay

H00 without relay
H01 4 relay outputs, limit value monitoring
H02 4 relay outputs, channel 1 limit values and collective alarm

IXX Units channel 3 (pre-set, only if opt. humidity probe connection available)**

I01 % RH/Min/Max
I02 °C/Min/Max
I03 °F/Min/Max
I04 °Ctd/Min/Max
I05 °Ftd/Min/Max
I06 g/kg / min / max
I07 gr/lb /Min/Max
I08 g/m^3 / min / max
I09 gr/ft^3 / min / max
I10 ppmV / min / max
I11 °Cwb / min / max
I12 °Fwb / min / max
I13 kJ/kg / min / max (enthalpy)
I14 mbar / min / max (water vapour partial pressure)
I15 inch H_2O / min / max (water vapour partial pressure)
I16 °Ctm / min / max (mixture dewpoint for H_2O_2)
I17 °Ftm / min / max (mixture dewpoint for H_2O_2)
I18 % Vol

**only possible when G-Code (from G01) selected

Ordering example

Order code for transmitter testo 6381 with the following options:
- Measuring range -100 to 100 Pa
- Analog output 4 to 20 mA (4-wire, 24 VAC/DC)
- Without display
- Cable contact via M-plug connection for signal and supply
- with Ethernet module
- Differential pressure mbar / min / max
- Opt. analog output for humidity probe connection testo 6610/ units g/kg / min / max
- Without relay
- Unit channel 3% RH / min / max

0555 6381 A23 B06 C00 D03 E01 F04 G06 H00 I01

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