

## Data sheet

testo 6451, testo 6452,  
testo 6453, testo 6454



# Compressed air meter DN 15-50

testo 6451  
testo 6452  
testo 6453  
testo 6454



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Fits all common pipe diameters DN 15 / 25 / 40 / 50

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Four measurement parameters in one instrument:  
Flow-through, totalizer, temperature, operating pressure

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Direct compressed air monitoring with simultaneous display  
of three measurement values thanks to TFT display as  
standard

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Best system integration thanks to two analog outputs  
4 to 20 mA

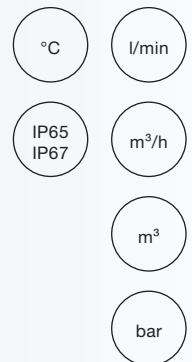
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Highest measurement accuracy, integrated measurement  
section avoids measurement errors

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Easy and cost-effective installation

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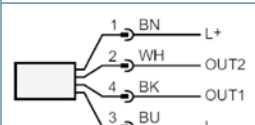
In industrial companies, compressed air is an important source of energy which incurs high consumption costs. Testo compressed air meters allow a highly accurate measurement of compressed air consumption, enabling energy-saving potential to be identified and costs lowered. The compressed air meters can also be used for the targeted implementation of environmental management – e.g. according to ISO 50.001 or ISO 14.001. A further area of application is leakage monitoring in a compressed air system. The compressed air meter can also be used to carry out a peak load analysis in order to

determine whether compressed air of sufficient capacity is being generated. The newly developed “all-in-one sensor” records not only the compressed air consumption and the temperature, but also the pressure, eliminating the need for a separate pressure measurement.

The compressed air meters from the testo 645X family use the calorimetric measurement principle, making any additional pressure and temperature measurement superfluous, and which is not subject to wear on moving parts.

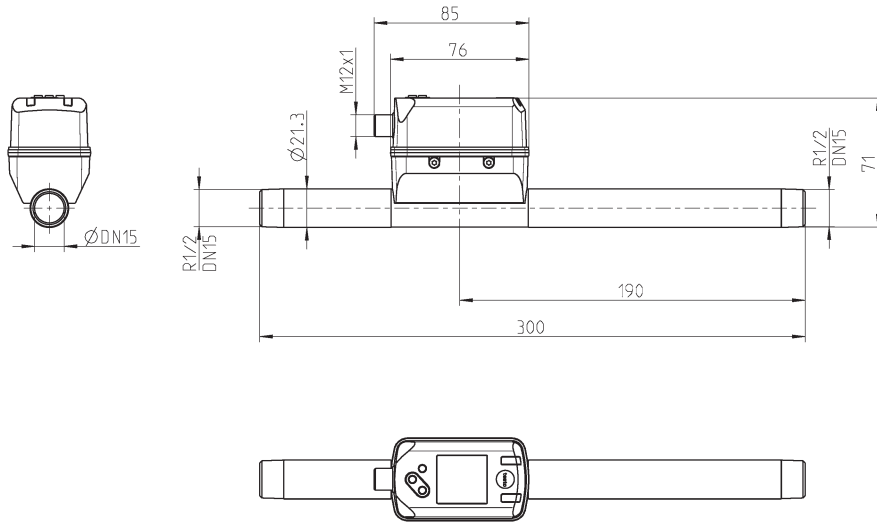
# Technical data

	testo 6451	testo 6452	testo 6453	testo 6454
<b>Product features</b>				
Diameter	DN15	DN25	DN40	DN50
Process connection	Thread connection R ½	Thread connection R 1	Thread connection R 1 ½	Thread connection R 2
<b>Measuring/adjustment range for flow-through</b>				
Measuring range	4 to 1250 l/min 0.3 to 99.8 m/s 0.25 to 75 m³/h	14 to 3750 l/min 0.4 to 103.7 m/s 0.8 to 225 m³/h	20 to 6830 l/min 0.3 to 81 m/s 1.4 to 410 m³/h	40 to 11670 l/min 0.3 to 84 m/s 2.5 to 700 m³/h
Temperature coefficient	±0.07 % m.v. 1/K			
Accuracy (in measuring range)	Class 141: ±(2 % m.v. + 0.5 % f.v.); class 344: ±(6 % m.v. + 0.6 % f.v.); air quality acc. to ISO 8573-1:2010; at medium temperature +23 °C			
Repeat accuracy	0.8 % m.v.+ 0.2 % f.v.			
Display range	0 to 1500 l/min 0 to 119.8 m/s 0 to 90 m³/h	0 to 4500 l/min 0 to 124.4 m/s 0 to 270 m³/h	0 to 8200 l/min 0 to 97.2 m/s 0 to 492 m³/h	0 to 14000 l/min 0 to 100.8 m/s 0 to 840 m³/h
Resolution	1 l/min / 0.1 m/s / 0.05 m³/h	2 l/min / 0.1 m/s / 0.1 m³/h	10 l/min / 0.1 m/s / 0.2 m³/h	10 l/min / 0.1 m/s / 0.5 m³/h
Analog starting point ASP	0 to 1000 l/min 0 to 79.8 m/s 0 to 60 m³/h	0 to 3000 l/min 0 to 83 m/s 0 to 180 m³/h	0 to 5460 l/min 0 to 64.8 m/s 0 to 327.9 m³/h	0 to 9330 l/min 0 to 67.2 m/s 0 to 560 m³/h
Analog end point AEP	250 to 1250 l/min 20 to 99.8 m/s 15 to 75 m³/h	750 to 3750 l/min 20.7 to 103.7 m/s 45 to 225 m³/h	1370 to 6830 l/min 16.2 to 81 m/s 82.1 to 410 m³/h	2330 to 11670 l/min 16.8 to 84 m/s 140 to 700 m³/h
Low flow cut-off LFC	1 to 13 l/min 0.1 to 1.1 m/s 0.09 to 0.8 m³/h	4 to 40 l/min 0.1 to 1.1 m/s 0.3 to 2.4 m³/h	10 to 70 l/min 0.1 to 0.9 m/s 0.5 to 4.4 m³/h	30 to 120 l/min 0.2 to 0.8 m/s 2 to 7 m³/h
Incremental range	1 l/min / 0.1 m/s / 0.01 m³/h	1 l/min / 0.1 m/s / 0.1 m³/h	1 l/min / 0.1 m/s / 0.1 m³/h	1 l/min / 0.1 m/s / 0.1 m³/h
<b>Measuring/adjustment range for flow-through quantity</b>				
Measuring range	0 to 100000000 m³   0 to 353146667.2 scf			
Display range	0 to 100000000 m³   0 to 353146667.2 scf			
<b>Measuring/adjustment range for pressure</b>				
Measuring range	-1 to +16 bar			
Display range	-1 to +20 bar			
Resolution	0.05 bar			
Analog starting point	-1 to +12.8 bar			
Analog end point	2.2 to 16 bar			
In steps of	0.01 bar			
<b>Measuring/adjustment range for temperature</b>				
Measuring range	-10 to +60 °C   +14 to +140 °F			
Display range	-24 to +74 °C   -11.2 to +165.2 °F			
Resolution	0.2 °C   0.5 °F			
Analog starting point	-10 to +46 °C   +14 to +114.8 °F			
Analog end point	+4 to +60 °C   +39.2 to +40 °F			
In steps of	0.1 °C   0.1 °F			
<b>Field of application</b>				
Media	Operational compressed air			
Medium temperature	-10 to +60 °C   +14 to +140 °F			
Min. rupture pressure	64 bar			
Pressure resistance	16 bar			
<b>Electrical data</b>				
Operating voltage	18 to 30 VDC (acc. to EN 50178 SELV/PELV)			
Current consumption	< 80 mA			
Protection class	III.			
Protected against polarity reversal	Yes			

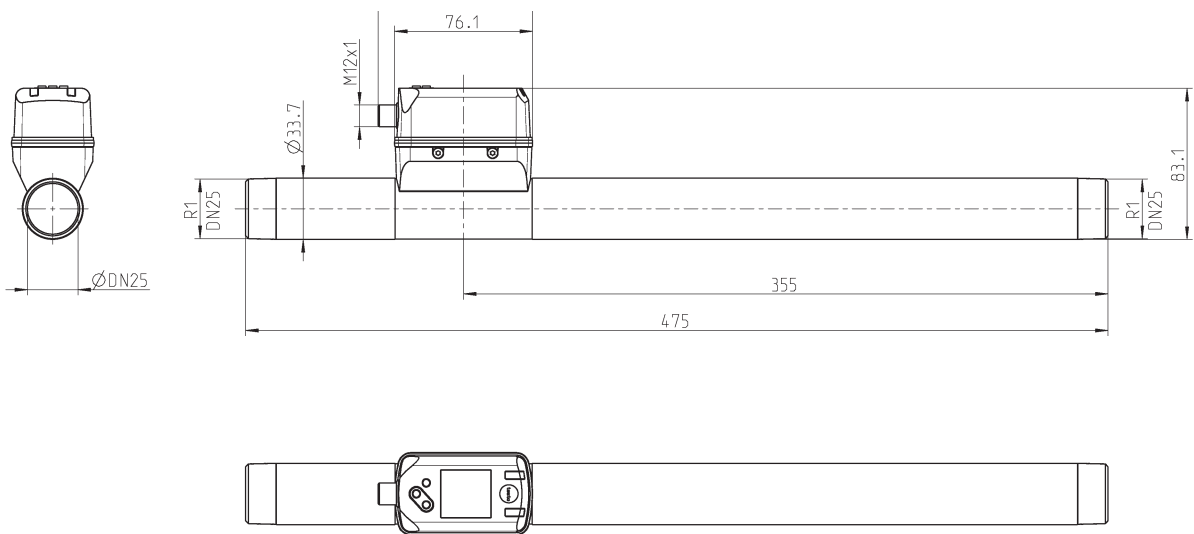
	testo 6451	testo 6452	testo 6453	testo 6454
<b>Outputs</b>				
Output signal	2 x analog output signal; 4 to 20 mA (scalable)			
Max. load	500 Ω			
Short circuit protection	Yes			
<b>Pressure monitoring</b>				
Repeat accuracy	±0.2 % of full scale value			
Characteristic curve deviation	< ±0.5 % of final value; (BFSL = Best Fit Straight Line (smallest value adjustment))			
Greatest TC of the span	±0.15 % f.v. / 10 K			
Greatest TC of the zero point	±0.25 % f.v. / 10 K			
<b>Temperature monitoring</b>				
Accuracy	±0.5 K; (for media flow at the limits of the flow measuring range)			
<b>Reaction times</b>				
Response time	0.1 s; (dAP = 0)			
<b>Pressure monitoring</b>				
Response time	0.05 s			
<b>Temperature monitoring</b>				
Response dynamic	T <sub>09</sub> = 0.5 s			
<b>Ambient conditions</b>				
Ambient temperature	0 to +60 °C			
Storage temperature	-20 to +85 °C			
Humidity	max. permitted relative humidity < 90 %			
Protection class	IP 65; IP 67			
<b>Approvals / tests</b>				
EMC	DIN EN 60947-5-9			
Vibration resistance	DIN EN 68000-2-6   5 g (10 to 2000 Hz)			
<b>Mechanical data</b>				
Weight	728.5 g	1598.5 g	2262 g	2650.5 g
Materials	PBT+PC-GF30; PPS GF40; 1.4301 (stainless steel / 304); 1.4305 (stainless steel / 303); 1.5523 (steel) galvanized; 2.0401 (brass / CW614N); FKM			
Media contact	1.4301 (stainless steel / 304); 1.4305 (stainless steel / 303); FKM; glass-passivized ceramic; PPS GF40; Al <sub>2</sub> O <sub>3</sub> (ceramic); acrylate			
<b>Display / control elements</b>				
Display	Colour display - 1.44"   pixel resolution - 128 x 128			
<b>Comments</b>				
Comments	m.v. = measurement value f.v. = final value of measuring range Measurement, display and adjustment ranges refer to norm volume flow according to DIN ISO 2533. Please see the instruction manual for information on installation and operation.			
<b>Electrical connection</b>				
Plug-in connection				
Connections		1 - 18 to 30 VDC (+) 2 - Analog output pressure, temperature or flow-through 4 - Analog output pressure, temperature or flow-through 3 - GND (-)	brown white black Blue	

# Technical drawings

## testo 6451

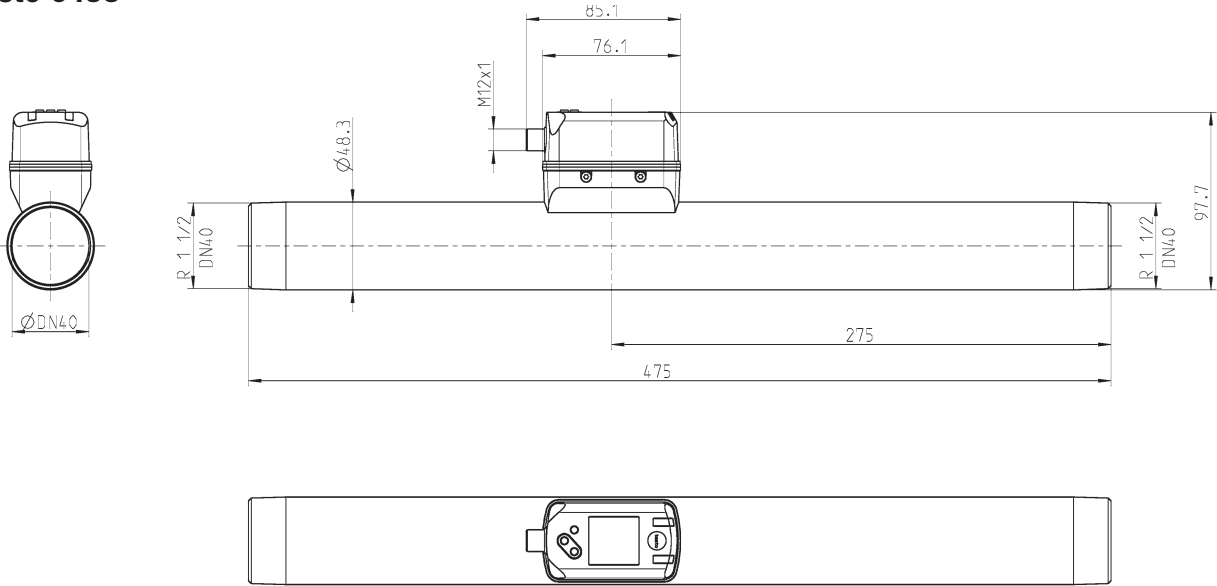


## testo 6452

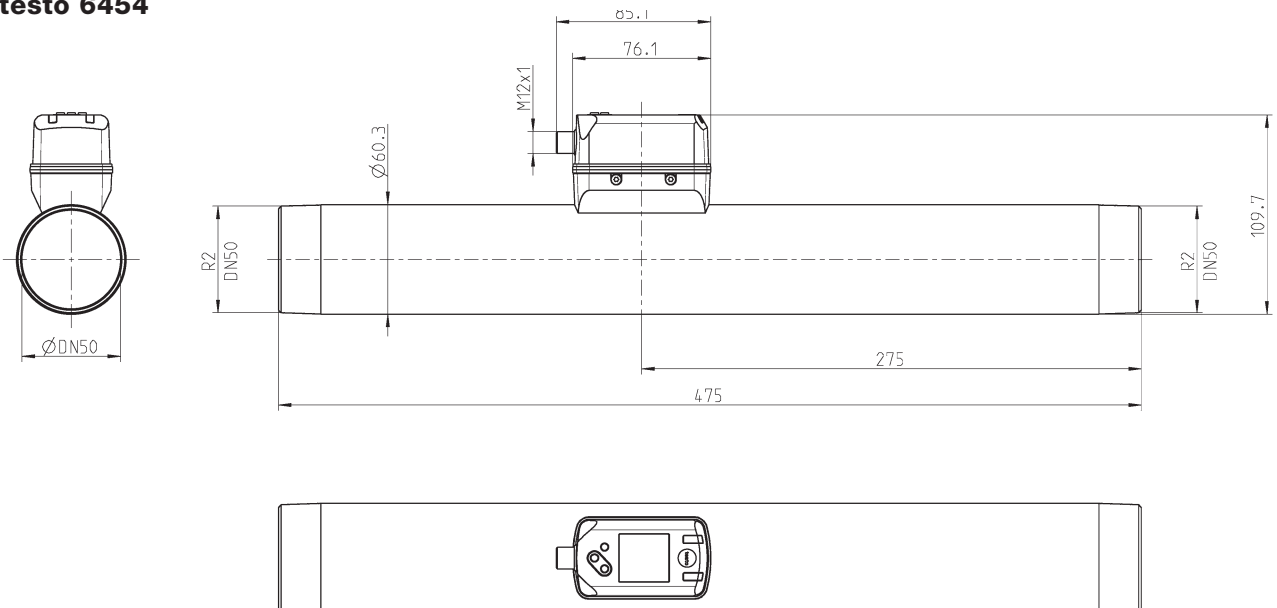


# Technical drawings

## testo 6453




## testo 6454



## Ordering data

**testo 6451**


testo 6451 compressed air meter including inflow/outflow section, diameter DN15 (½"), analog output and integrated pressure measurement \*



Order no. 0555 6451

**testo 6452**


testo 6452 compressed air meter including inflow/outflow section, diameter DN25 (1"), analog output and integrated pressure measurement \*



Order no. 0555 6452

**testo 6453**


testo 6453 compressed air meter including inflow/outflow section, diameter DN40 (1½"), analog output and integrated pressure measurement \*



Order no. 0555 6453

**testo 6454**




testo 6454 compressed air meter including inflow/outflow section, diameter DN40 (2"), analog output and integrated pressure measurement \*



Order no. 0555 6454

\* a connection cable, e.g. order no. 0699 3393 is required for operation

## Accessories

Connections		Order no. 0699 3393
	Connections	1 Supply connection 18 to 30 VDC (+) 2 Analog output pressure, temperature, or flow-through (4 to 20 mA) 3 Supply connection GND (-) brown white black Blue
	Cable length	5 metres
	Plug-in connection	M12 plug connection
Mains unit (desktop appliance)		Order no. 0554 1748
	Input	110 to 240 VDC
	Output	24 VDC/ 350 mA
Mains unit (top-hat rail mounting)		Order no. 0554 1749
	Input	85 to 264 VAC   110 to 300 VDC
	Output	24 VDC/ 2.5 A

mSP/02.2020

Subject to change, including technical modifications.