



Flow transmitter
0555 4444 / 0699 5100/1...5

Instruction manual

en



Imprint

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Preface

Dear Testo customer,

Congratulations for choosing a Testo product. We hope that you will enjoy many years of using the product and that it will help you in your work.

Please read these operating instructions carefully and familiarise yourself with the operation of the unit before putting it to use.

If problems should occur which you cannot rectify yourself, please consult our service department or your dealer. We will endeavour to provide fast and competent assistance to save you long downtimes.

General notes

Assembly, electrical installation and commissioning should only be carried out by suitably trained authorised personnel.

You must always comply with the regulations applicable in your country to the opening and repair of electrical equipment.

Warnings and particularly important information which you must note when handling the product are identified in this instruction manual as follows:

Pictograms

Warnings are identified by means of a warning triangle. The relevant **signal word!** indicates the degree of risk:



Warning! means: Serious physical injury could occur if you do not take the precautionary measures indicated.

Caution! means: Slight physical injury or material damage could occur if you do not take the precautionary measures indicated.

Pay particular attention to warnings and take the precautionary measures indicated in order to avoid danger.

Signal word!

! Notes on special cases and peculiarities in the handling of your unit are indicated by an exclamation mark.

Standards / Tests



As declared in the certificate of conformity, this unit fulfils the guidelines of 89/336/EEC.

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1. Fundamental safety instructions

Please read the following safety instructions with care:

Avoid electrical hazards:

- ▶ Never make measurements with the unit and its external probes on or near live components unless the unit is expressly approved for current and voltage measurements.
- ▶ Damaged mains cables must only be replaced by authorised personnel.
- ▶ The transmitter should be wired when disconnected.
- ▶ You must always comply with the regulations applicable in your country to the opening and repair of electrical equipment.



Protect the instrument:

- ▶ Note the measuring ranges of the sensor! Overheating will destroy the probes.
- ▶ Keep to the admissible storage and transport temperature and the permitted operating temperature!



Product safety / preserving warranty claims:

- ▶ Operate the instrument only within the parameters specified in the technical data.
- ▶ Handle the instrument properly and according to its intended purpose.
- ▶ Never apply force!
- ▶ Do not use the device for control purposes at the same time as operating or servicing the transmitter.
- ▶ Open the instrument only when this is expressly described in the Operating Instructions for maintenance purposes.
- ▶ Carry out only the maintenance and repair work that is described in the instruction manual. Follow the prescribed steps exactly. For safety reasons, use only original spare parts from Testo.

Any additional work must only be carried out by authorised personnel. Testo will otherwise refuse to accept responsibility for the proper functioning of the instrument after repair and for the validity of certifications.

Installation, setting and calibration work must only be carried out by authorised personnel.



Ensure correct disposal:

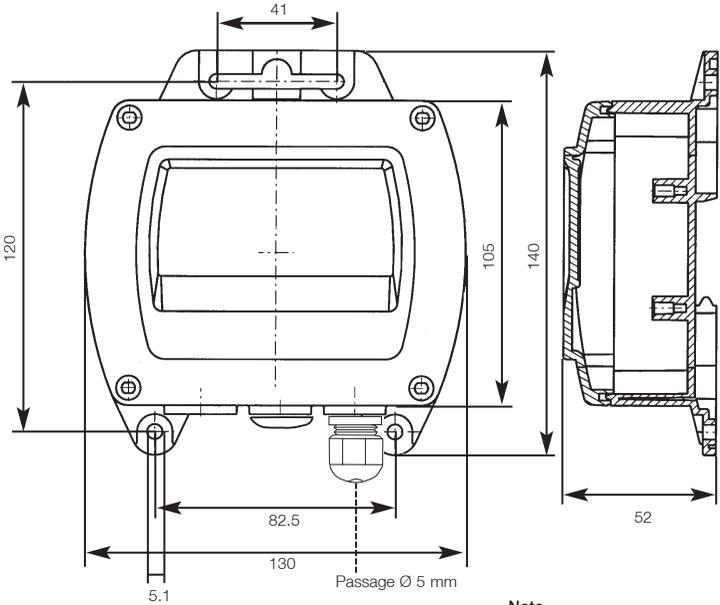
- ▶ Send the instrument directly to us at the end of its useful life. We will ensure that it is disposed of in an environmentally friendly manner.

2. Product description

The low-cost flow transmitter can be combined with the standard flow probes of the reference class (see table on page 8). Vane, hot ball and hot wire probes can be connected. The device will then be configured for all standard applications in heating, ventilation and air-conditioning.

Flexible analogue outputs with current or voltage output permit easy connection to common control units or analysing units.

3. Measuring instrument dimensions in mm



* Fixing dimensions

Note
The cable entries differ from one variant to another.

4. Advantages of the flow transmitter

- Optimal price/performance ratio
- electronics immune to interference thanks to reverse voltage protection, surge protection, EMC to industrial standards
- Electrical isolation between supply voltage and analogue output
- Standard flow sensors can be connected
- Easy to install
- Flexible analogue outputs and scaling
- Two analogue outputs (1 - flow and 2 - temperature (optional))

5. Standard versions



0699 5100/5
(probe permanently connected)



0699 5100/1
(probe attachable)

6. Version options

Art. No.	Designation	Measuring range	Accuracy	Permanent connection possible?
0635 9443*	Vane probe 12 mm	0.6...20 m/s	±(0.2 m/s ±1% of reading)	No
0635 9540*	Vane probe 16 mm with TE type K	0.4...60 m/s -30...+ 140 °C	±(0.2 m/s ±1% of reading)	No
0635 9440*	Vane probe 60 mm	0.25...20 m/s	±(0.1 m/s ±1.5% of reading)	No
0635 9340*	Vane probe 100 mm	0.1...15 m/s	±(0.1 m/s ±1.5% of reading)	No
0635 6045	Vane probe 25 mm with TE type K (high-temp.)	0.6...20 m/s -40...+350 °C	±(0.3 m/s ±1% of end value)	No
0628 0036	Vane probe 16 mm	0.4...60 m/s	±(0.2 m/s ±1% of reading)	Yes
0628 0035	Built-in hot ball probe	0...10 m/s -20...+70 °C	±(0.03 m/s ±5% of reading)	No
0635 1549	Hot ball probe	0...10 m/s -20...+70 °C	±(0.03 m/s ±5% of reading)	No
0635 1049	Telescopic hot ball probe	0...10 m/s -20...+70 °C	±(0.03 m/s ±5% of reading)	No
0635 1041	Telescopic hot wire probe	0...20 m/s -20...+70 °C	±(0.03 m/s ±4% of reading)	No
0635 1047	Telescopic hot ball probe for laboratory flues	0...5 m/s 0...+50 °C	±(0.03 m/s ±4% of reading)	No
0635 9045	Shell anemometer for meteorological flow velocity mesurement	0.7 to 30 m/s	±(0.03 m/s ± 5% of m.v.)	No

* Handle 0430 3545, plug-in head cable 0409 0045 or reference class telescope 0430 0941 required

Special combinations on request

7. Compensation for thermal probes

Testo calibrates the thermal probes at a reference pressure of 1013 hPa. If the ambient or process pressure in the particular application differs from the reference pressure (1013 hPa), the average absolute pressure should be entered for the flow transmitter for automatic pressure compensation. Otherwise the true velocity can be calculated from the following formula:

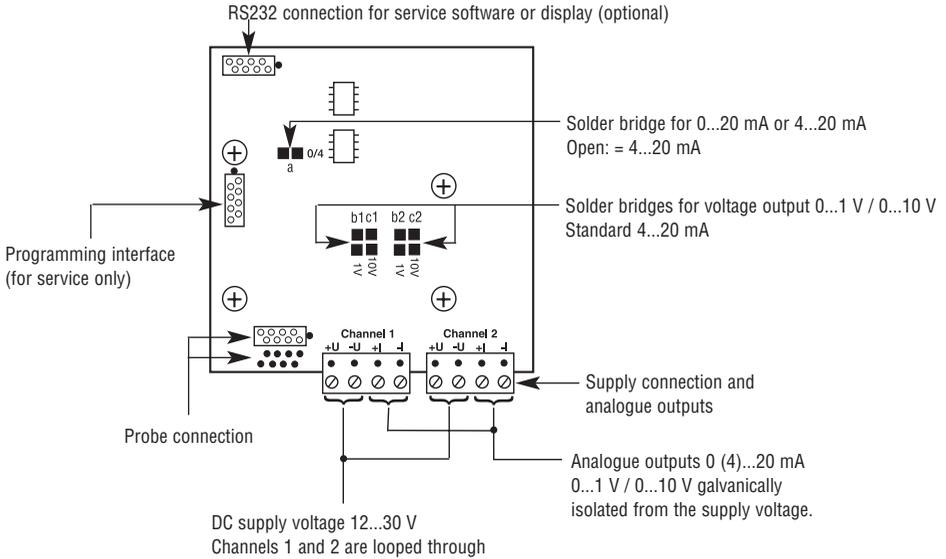
$$v_{\text{true}} = v_{\text{display}} * \text{correction factor}$$

-or-

$$v_{\text{true}} = v_{\text{display}} * \frac{1013 \text{ [hPa]}}{\text{ambient pressure [hPa]}}$$

Local altitude (m)	Average air pressure (hPa)	Correction factor
0	1013	1.00
50	1007.01	1.01
100	1001.04	1.01
150	995.11	1.02
200	989.20	1.02
250	983.32	1.03
300	977.47	1.04
350	971.65	1.04
400	965.86	1.05
450	960.09	1.06
500	954.35	1.06
550	948.64	1.07
600	943	1.074
700	932	1.087
800	921	1.100
900	909	1.114
1000	898	1.127
1100	888	1.141
1150	882	1.148
1200	877	1.155
1250	872	1.162
1300	866	1.169
1350	861	1.177
1400	856	1.184
1450	850	1.191
1500	845	1.198
1550	840	1.206
1600	835	1.213
1650	830	1.221
1700	825	1.228
1750	820	1.236
1800	815	1.244
1850	810	1.251
1900	805	1.259
1950	800	1.257
2000	795	1.275
2050	790	1.283
2100	785	1.291
2150	780	1.299
2200	775	1.307
2250	770	1.315
2300	766	1.323
2350	761	1.332
2400	756	1.340
2450	751	1.348
2500	747	1.357
2550	742	1.365

8. Configuration of connections



Solder bridge configuration

	a	b1/b2	c1/c2
4 to 20 mA	open	open	open
0 to 20 mA	closed	open	open
0 to 1 V	closed	closed	open
0 to 10 V	closed	open	closed

Note

For voltage output 0...1 V or 0...10 V also connect solder bridge 0/4.



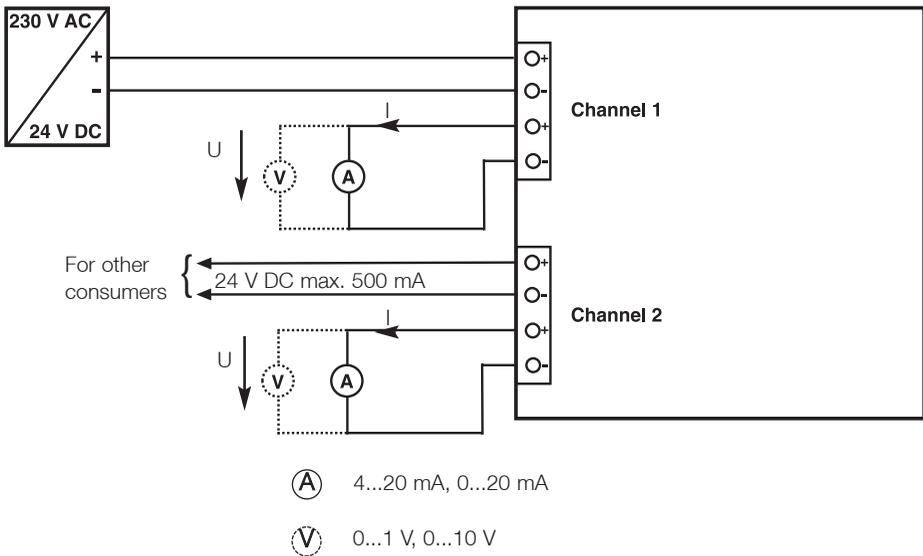
Soldering work must only be carried out when the device is de-energized, otherwise the electronics can get damaged. Watch out for equipotential bonding!

- Channel 2 only supplies a temperature signal if a probe that also contains a temperature sensor is connected.
- The transmitter only has to be supplied with voltage via one channel; the other connections are bridged and serve for looping.
- The scaling data of the analogue output are adapted to the measuring range of the probes as standard.

9.1 Description of the 4-wire system

In the 4-wire system the device is supplied via a separate voltage supply (24 V DC). The outputs then actively supply the respective current or voltage signal.
In the testo flow transmitter the power supply is galvanically isolated from the analogue outputs.

9.2 Current/voltage measurement (4-wire system)



10. Troubleshooting

If faults occur which are not described here, please consult Testo's customer service department (see customer service address).

Faults when switching on:

Fault	Possible causes	Remedy
Currents < 3.8 mA (for 4...20 mA version)	Sensor breaks No probe connected	▶ Have Testo replace the sensor ▶ Connect the probe
Currents >21 mA (for 4...20 mA version)	Sensor faulty Scaling not suitable for flow/temperature	▶ Have Testo replace the sensor ▶ Check measuring range

If we could not answer your question, please contact your dealer or Testo Customer Service. Contact details can be found on the guarantee card or on the Internet under www.testo.com.

11. Technical data

General

Housing:

Material: ABS, grey RAL 7035
Size: 130 x 105 (140) x 52 mm

Screw connections: M 16 x 1.5
Electrical connections 2 x 4-pole screwed plug-in connector

Ambient temp.: 0...+60 °C

Storage temperature: -40...+80 °C

Protection classes: IP 65 (without plug-in connector)
IP 54 (with probe plugged in)

Measuring range: depending on connected probe (see chapter 7 Possible versions)

Analogue outputs

(0) 4...20 mA

Resolution 0.005 mA
Accuracy 0.02 mA
Drift 0,3 μ A/K typical

0...1 V

Resolution 250 μ V
Accuracy 1 mV
Drift 15 μ V typical

0...10 V

Resolution 2.5 mV
Accuracy 10 mV
Drift 150 μ A typical

Outputs are linked by a common earth. Outputs are galvanically isolated from the supply voltage.

Load: max. 500 Ω

Supply voltage: (12...30 V DC) 24 V DC

EMC: as per Directive 89/336/EEC

Current consumption: 50...150 mA (depending on connected probe)

All data relate to an ambient temperature of 22 °C.

12. Accessories

Designation	Art. No.
Desktop mains unit 90...264 V AC - 24 V 800 mA	0554 1748
Top-hat rail mains unit 90...264 V AC - 24 V 3 A	0554 1749
Magnetic probe holder for vane probes	0554 0430



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