

Data sheet

DE50 | Differential pressure transmitter

Application

Measuring transducer and switching device for over-pressure, under-pressure and differential pressure of gaseous media.

Fields of application:

- Air-conditioning technology
- Ventilation technology
- Environmental technology

Typical applications

- Stepless fan control unit
- Monitoring of automatic roll filters, extraction systems etc.
- Draft measurement in chimneys
- Flow and control pressure measurements
- Surface technology

Design and mode of operation

The basis of this measuring transducer is a diaphragm capsule measuring system that is suitable for measuring overpressure, under-pressure and differential pressure. The pressure or differential pressure that is to be measured triggers the diaphragm capsule, thereby moving the core of the inductive displacement transducer. This is converted to an electrical output signal in the downstream electronics.

The transformer electronics are available in several models. In addition to the various operating voltages, the output signal can be designed as a current or voltage signal. Flows in gaseous media are often measured according to the effective pressure principle. To achieve a flow-proportional measured value, the effective pressure signal needs to be rooted. There are transformer electronics available to supply the rooted output signals for these applications. In addition to the analogue output signal, the instrument can be equipped with potential-free contact outputs that can be set to each value within the measuring range.

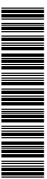
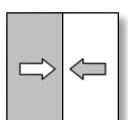
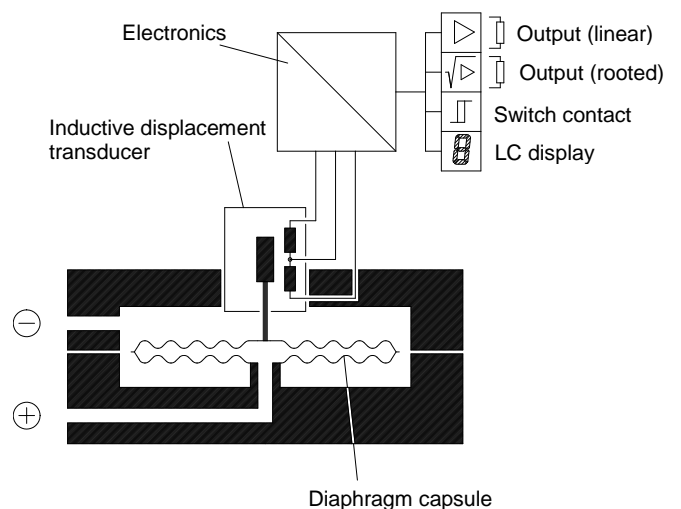
The pressure / differential pressure values can be displayed as linear measured values on site via an installed LC display (optional).



Important features

- Robust and resistant to overpressure
- Maintenance-free through wear-free inductive pickup

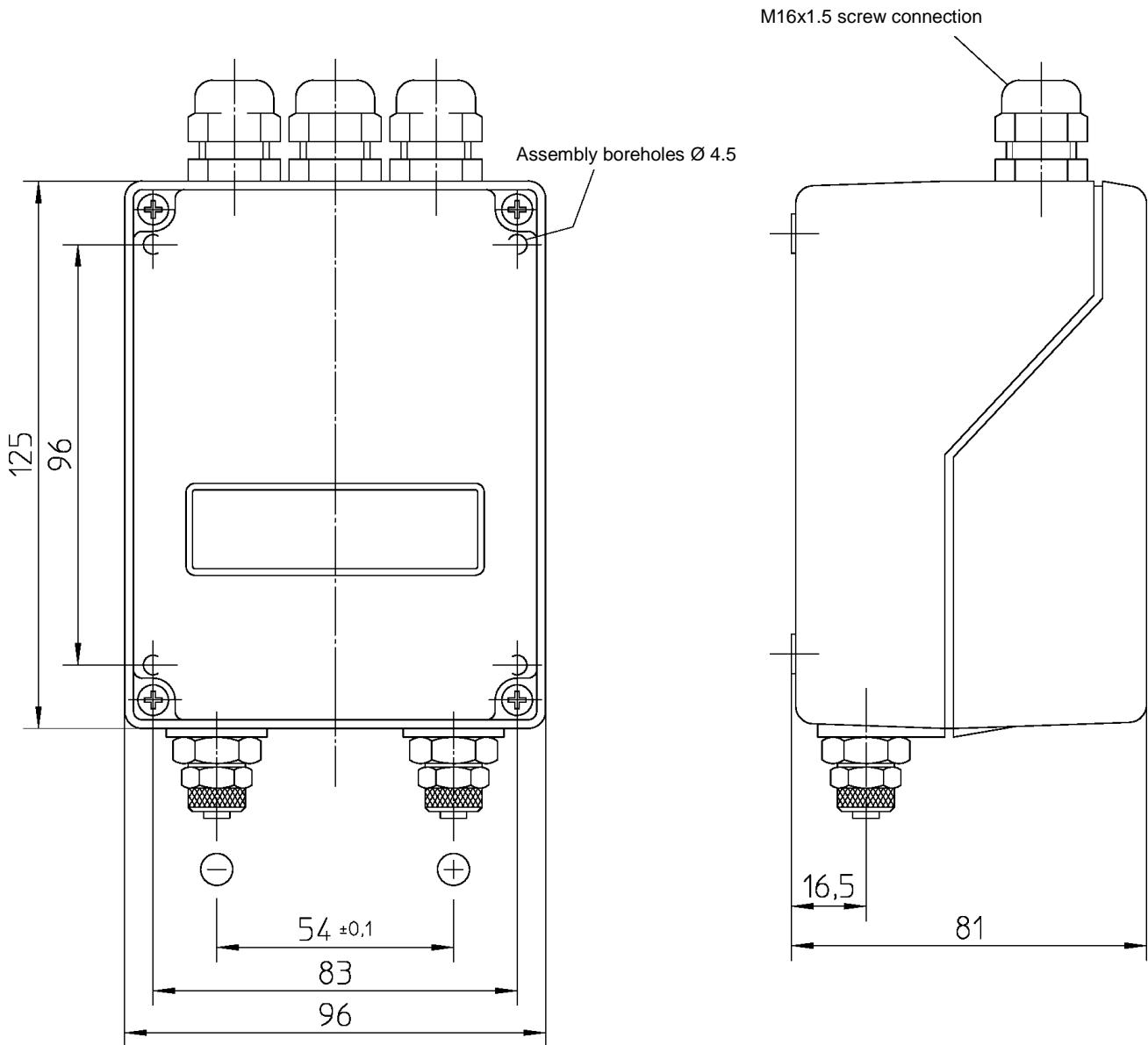
Functional Schematic



Technical Specification

| | | | | | | |
|--|---|------------------|----------------------------------|------------------|----------------------------------|--------|
| | General points | | | | | |
| Measuring ranges | 0 ... 4 mbar to 0 ... 600 mbar | | (see order code) | | | |
| Max. stat. operating pressure | 3 bar | | (see order code) | | | |
| Max. pressure load | Over-pressure-proof up to permissible operating pressure | | | | | |
| Measuring accuracy | ± 1 % of the measuring range | | | | | |
| Temperature drift | 0.5 % /10 K | | | | | |
| Admissible ambient temperature | -10 °C to +60 °C | | | | | |
| Admissible media temperature | -20 °C to +70 °C | | | | | |
| Admissible storage temperature | -25 °C to +80 °C | | | | | |
| Enclosure protection class | IP 54 as per DIN EN 60 529 | | | | | |
| | Electrical data | | | | | |
| Electrical connection type | Four-wire | | Three-wire | | Two-wire | |
| Operating voltage | <i>Rated voltage - tolerance</i> | | <i>Rated voltage - tolerance</i> | | <i>Rated voltage - tolerance</i> | |
| | 230 VAC | +10/-15% | 24 VDC | | ±10% | 24 VDC |
| | 115 VAC | +10/-15% | | | | ±10% |
| | 24 VAC | ±10% | | | | |
| Output signal | 0 ... 20 mA | 0 ... 10V | 0 ... 20 mA | 0 ... 10V | 4 ... 20 mA | |
| Load at rated voltage | max. 800 Ω | > 2 kΩ | max. 800 Ω | > 2 kΩ | max. 500 Ω | |
| Current limiting | approx. 30 mA | approx. 30 mA | approx. 30 mA | approx. 30 mA | approx. 30 mA | |
| Voltage limit | - | approx. 12 V | - | approx. 12 V | - | |
| Power consumption | approx. 3 VA | approx. 3 VA | approx. 3 VA | approx. 3 VA | ≤ 0.75 W | |
| Characteristic curve | | | | | | |
| Root extraction of the output with slow-feed suppression | ±0.5 % | | | | | |
| Steepness adjustment | 2% is set | | | | | |
| Zero-point adjustment | approx. 10 % of the measuring range | | | | | |
| | approx. 10 % of the measuring range | | | | | |
| | Measured value display / contact elements | | | | | |
| Display | 3 ½-digit LC-Display | | | | | |
| Switch point setting | The digital display can be switched between the actual differential pressure value and the switch point settings by means of a selector switch. The Output I or Output II can be selected. The digital display now shows the applicable set target value. The target values can be set over the entire measuring range. | | | | | |
| Switch point hysteresis | approx. 2% | | | | | |
| Switching output | 1 or 2 potential-free changeover contact | | | | | |
| Load data of the contacts | AC | DC | | | | |
| U _{max} | 250V | 30V | | | | |
| I _{max} | 2 A | 2 A | | | | |
| P _{max} (resistive load) | 250 VA | 60 W | | | | |
| | Connections | | | | | |
| Process connection | Inner thread G 1/4, Hose screw connections made of Al, 6/8 mm | | | | | |
| Electr. connection | Cutting ring screw connections made of MS for 6 or 8 mm pipes | | | | | |
| | Internal terminal strip, cable opening with M16 x 1.5 | | | | | |
| | Plug connections on request | | | | | |
| | Materials | | | | | |
| Casing | Cast aluminium, painted | | | | | |
| Hood | ABS – self-extinguishing | | | | | |
| Measuring element | Diaphragm capsule made of CuBe 2 | | | | | |
| | Assembly | | | | | |
| | Install vertically if mounted to walls | | | | | |
| | Zero-point correction recommended if installed in a different position | | | | | |

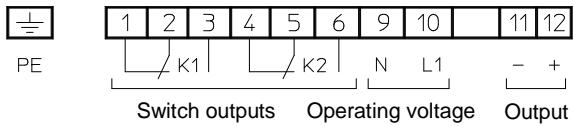
Dimensional drawings (All dimensions in mm unless otherwise stated)



Wiring diagrams

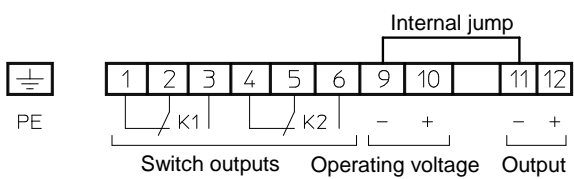
4-wire connection

Operating voltage 230 VAC / 115 VAC / 24 VAC



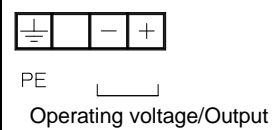
3-wire connection

Operating voltage 24 VDC



2-wire connection

Operating voltage 24 VDC



Order Codes

Differential pressure transmitter

DE50

| Measuring range | stat. operating pressure | | | | | | |
|--|--------------------------|---|---|--|--|--|--|
| 0 ... 1.6 mbar | 8 mbar (Cl.:2.5).....> | 9 | 7 | | | | |
| 0 ... 2.5 mbar | 8 mbar (Cl.:2.5).....> | 9 | 8 | | | | |
| 0 ... 4 mbar | 20 mbar.....> | 5 | 2 | | | | |
| 0 ... 6 mbar | 30 mbar.....> | 5 | 3 | | | | |
| 0 ... 10 mbar | 50 mbar.....> | 5 | 4 | | | | |
| 0 ... 16 mbar | 80 mbar.....> | 5 | 5 | | | | |
| 0 ... 25 mbar | 125 mbar.....> | 5 | 6 | | | | |
| 0 ... 40 mbar | 200 mbar.....> | 5 | 7 | | | | |
| 0 ... 60 mbar | 300 mbar.....> | 5 | 8 | | | | |
| 0 ... 100 mbar | 500 mbar.....> | 5 | 9 | | | | |
| 0 ... 160 mbar | 800 mbar.....> | 6 | 0 | | | | |
| 0 ... 250 mbar | 1200 mbar.....> | 8 | 2 | | | | |
| 0 ... 400 mbar | 2000 mbar.....> | 8 | 3 | | | | |
| 0 ... 600 mbar | 3000 mbar.....> | C | 1 | | | | |
| -1 ... 0.6 mbar | 5 mbar.....> | C | 2 | | | | |
| -1 ... 5 mbar | 30 mbar.....> | C | 3 | | | | |
| -4 ... 6 mbar | 50 mbar.....> | 5 | 0 | | | | |
| -10 ... 6 mbar | 80 mbar.....> | 6 | 3 | | | | |
| -20 ... 40 mbar | 300 mbar.....> | 6 | 8 | | | | |
| -40 ... 60 mbar | 500 mbar.....> | 7 | 0 | | | | |
| -100 ... 60 mbar | 800 mbar.....> | 7 | 3 | | | | |
| -250 ... 150 mbar | 2000 mbar.....> | 7 | 7 | | | | |
| 0 ... 160 Pa | 800 Pa.....> | D | 5 | | | | |
| 0 ... 250 Pa | 1250 Pa.....> | D | 6 | | | | |
| 0 ... 400 Pa | 2000 Pa.....> | D | 7 | | | | |
| 0 ... 600 Pa | 3000 Pa.....> | D | 8 | | | | |
| 0 ... 1000 Pa | 5000 Pa.....> | D | 9 | | | | |
| 0 ... 1600 Pa | 8000 Pa.....> | E | 1 | | | | |
| 0 ... 2.5 kPa | 10 kPa.....> | N | 3 | | | | |
| 0 ... 4.0 kPa | 20 kPa.....> | N | 4 | | | | |
| 0 ... 6.0 kPa | 30 kPa.....> | N | 5 | | | | |
| 0 ... 10 kPa | 50 kPa.....> | E | 5 | | | | |
| 0 ... 16 kPa | 80 kPa.....> | E | 6 | | | | |
| 0 ... 25 kPa | 120 kPa.....> | E | 7 | | | | |
| 0 ... 40 kPa | 200 kPa.....> | E | 8 | | | | |
| 0 ... 60 kPa | 300 kPa.....> | F | 1 | | | | |
| Pressure connection | | | | | | | |
| Inner thread G 1/4.....> | | 0 | 1 | | | | |
| Cutting ring screw connection in brass for 6 mm pipe.....> | | 2 | 8 | | | | |
| Cutting ring screw connection in brass for 8 mm pipe.....> | | 2 | 9 | | | | |
| Cutting ring screw connection in brass for 10 mm pipe.....> | | 3 | 0 | | | | |
| Aluminium screw connection for 6 / 4 mm hose.....> | | 4 | 0 | | | | |
| Aluminium screw connection for 8 / 6 mm hose.....> | | 4 | 1 | | | | |
| Electrical output signal | | | | | | | |
| 0 – 20 mA 3-wire (STANDARD).....> | | A | | | | | |
| 4 - 20 mA 2-WIRE, only 24 V DC, without contacts, without root extraction.....> | | B | | | | | |
| 0 – 10 V DC 3-wire (STANDARD).....> | | C | | | | | |
| 0 - 20 mA rooted, 3-wire connection.....> | | E | | | | | |
| 4 - 20 mA rooted, 3-wire connection.....> | | F | | | | | |
| 0 - 10 V DC rooted, 3-wire connection.....> | | G | | | | | |
| 4 – 20 mA 3-wire (STANDARD).....> | | P | | | | | |
| Operating voltage | | | | | | | |
| 230 VAC +10%/-15%.....> | | 1 | | | | | |
| 115 VAC +10%/-15%.....> | | 2 | | | | | |
| 24 VAC ±10%.....> | | 4 | | | | | |
| 24 VDC ±10%.....> | | 9 | | | | | |
| Measuring value display/switching elements | | | | | | | |
| Without measuring value display/switching elements.....> | | 0 | | | | | |
| 3½-digit measured value display.....> | | 1 | | | | | |
| 3½-digit measured value display with a potential-free contact.....> | | 2 | | | | | |
| 3½-digit measured value display with two potential-free contacts.....> | | 5 | | | | | |
| Electrical connection | | | | | | | |
| Inner terminal strip.....> | | E | | | | | |
| M12 plug connection (only for 24 V AC/DC).....> | | M | | | | | |