FISCHER
MESS- UND REGELTECHNIK

Type DE16

Application

Measuring transmitter for overpressure, partial vacuum and differential pressure.

This series is suitable for various measuring applications in the field of the industrial and sanitary techniques.

Typical applications:

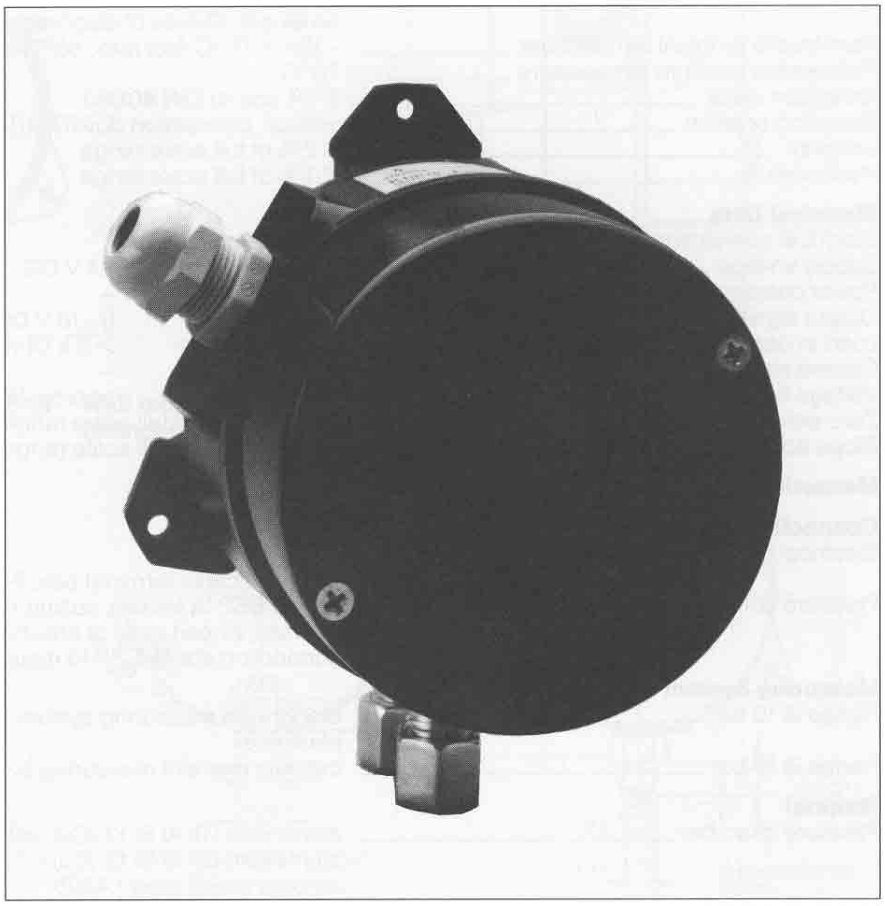
- measurement of differential pressure between the forward- and the return-flow in heating systems
- monitoring of filters, blowers and compressors

Main Features

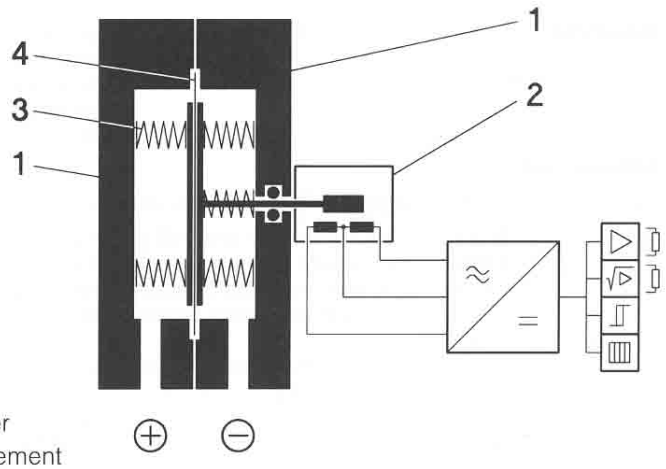
- overpressure protection
- rugged design
- maintenance- and wear-free inductive pick-up
- multiple applications

Construction and Operation

This transmitter is based on a rugged and uncomplicated diaphragm movement, suitable for overpressure-, partial vacuum- and differential pressure measurements. The operating principle of the system is identical in all three applications.
In a state of equilibrium, the forces of the springs on both sides of the diaphragm are balanced. The pressure or differential pressure to be measured creates an unbalanced force at the diaphragm. This force moves the diaphragm system against the force of the springs for the measuring range until a new equilibrium is reached. When subjected to excessive pressure, the diaphragm rests on metal supporting plates.
A centre-mounted tappet transfers the motion of the diaphragm system to the core of an inductive displacement transducer. The subsequent converter circuit converts this motion into an electrical output signal.
The transmitter is protected against wrong-poled connection of the supply-voltage. The output is short circuit proofed.



Functional Diagram



1. Pressure chamber
2. Inductive displacement transducer
3. Measuring springs
4. Measuring diaphragm

115D/2/598E

Technical Data

Measuring ranges	0...400 mbar to 0...25 bar (acc. to ordering code)		
Nominal pressure	25 bar		
Max. static operating pressure	acc. to measuring range		
Max. pressure load	one-sided overpressure protected up to nominal pressure on ⊕- and ⊖-side of diaphragm, partial vacuum protected		
Permissible ambient temperature	–10...+70 °C (but max. 55 °C in case of SEV-approval)		
Permissible medium temperature	70 °C		
Protection class	IP 54 acc. to DIN 40 050		
Mounting position	vertical, connection downwards		
Linearity	< 2 % of full scale range		
Hysteresis	< 1 % of full scale range		

Electrical Data

Electrical connection	2-wire connection		
Supply voltage	24 V DC	24 V DC	24 V DC
Power consumption	approx. 3 VA	–	–
Output signal	0–20 mA	0–10 V DC	4–20 mA
Load in case of nominal voltage	max. 1000 Ohm	> 2 k Ohm	max. 450 Ohm
Current limit	approx. 30 mA	–	approx. 30 mA
Voltage limit	–	approx. 12 V DC	–
Zero-point adjustment	approx. 20 % of full scale range		
Slope adjustment	approx. 20 % of full scale range		

Measuring Indication — 3½-digit LC-display

Connection

Electrical connection	numbered cable, prewired cable terminal box, 7-channel plug
Pressure connection	thread BSP ¼ female, cutting ring connection for 6, 8, 10 and 12 mm tube of brass, zinced steel or chrome nickel steel connection shank BSP ¼ male, DIN 16 288

Measuring System

Range ≦ 10 bar	diaphragm measuring system, diaphragms of fabric back stayed elastomer
Range ≧ 16 bar	capsule element measuring system, capsule element of DURATHERM®

Material

Pressure chamber	aluminium Gk Al Si 12 (Cu), varnished black aluminium Gk Al Si 12 (Cu) HART COAT chrome nickel steel 1.4305
Measuring diaphragm	diaphragm and gaskets of NBR or VITON capsule element of DURATHERM® Ni Cr Co-alloy
Medium-contacted internal parts	noncorrosive steel 1.4310, 1.4305
Dial cover	macrolon
Weight	pressure chamber AL = 1.2 kg, pressure chamber 1.4305 = 3.5 kg

Approval — prototype tested acc. to the instructions of German Lloyd, certificat no. 93 824 HH
approval acc. to the instructions of SEV for low-voltage instruments

Mounting — pipe mounting, pressure connections ≙ ⊕, ⊖-symbols
- by screwed in cutting ring or clamping ring connection
- by screwed in connection shank acc. to DIN 16 288 for nipple fitting acc. to DIN 16 284

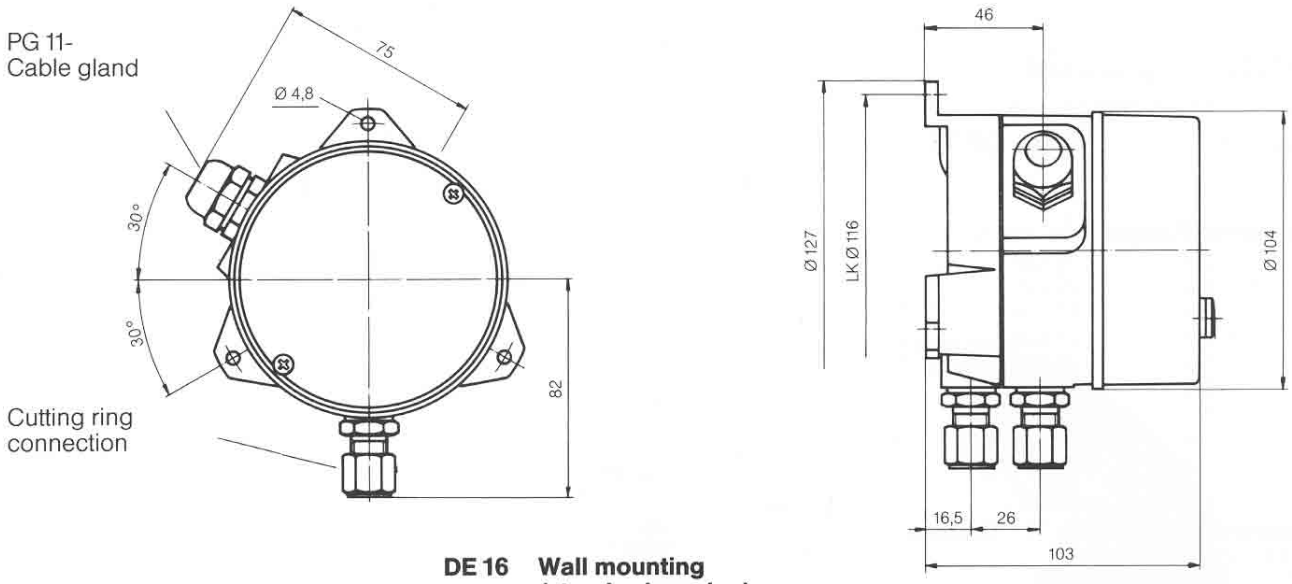
wall mounting – 3 fastening elements

Accessories

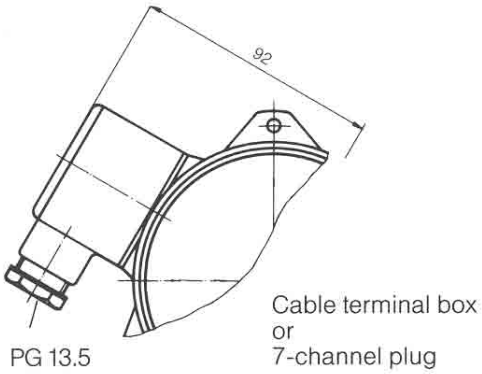
DZ 11 — Panel mounting device 132 mm diam., consisting of front ring, distance pieces and fastening screws

DZ 13/14 — The three- and four-stem shut-off and equalizing valves DZ 13/14 are especially suited for the mounting of differential pressure instruments. For example they are used
- if the installation must be depressurized or stopped,
- in case of repair or system check to devide the differential pressure gauge from the pipe system of the installation,
- as well as an operational check of instruments.

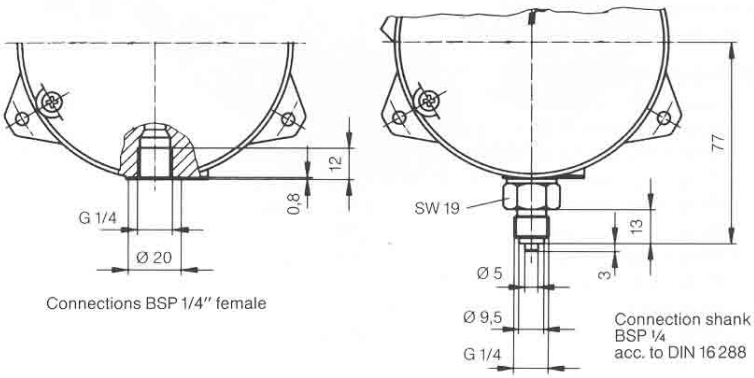
Contrary to type DZ 13, the DZ 14 is provided with a ventilating valve to deventilate the connected pipe system. The nominal pressure of these shut-off and equalizing valves is about PN 40, the case is available in aluminium, brass or chrome nickel steel 1.4301. Several process connections acc. to ordering code are disposable.



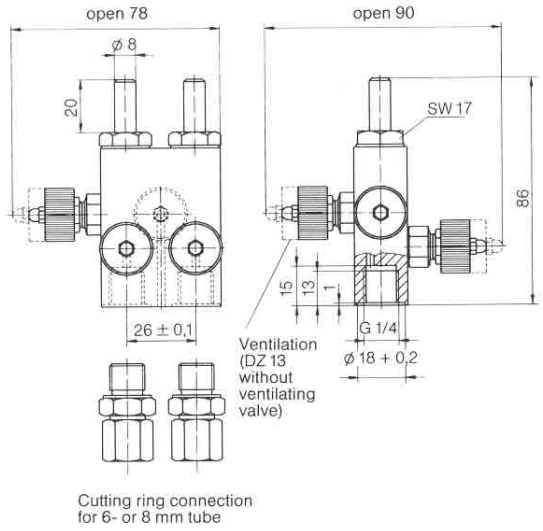
DE 16 Wall mounting (standard version)

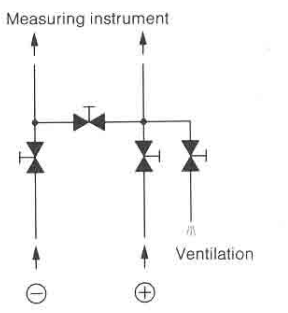


Variants of electrical connection

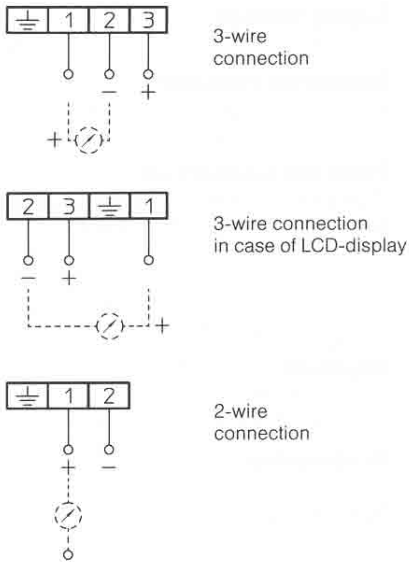


Variants of process connection





Electrical connection



DZ 13/14 Four-spindle shut-off and equalizing valve

Ordering Code

Differential Pressure Switch Type DE16

☐	☐	☐	☐	☐	☐	☐	9	☐	☐	☐	☐

Measuring Ranges (max. stat. oper. pressure)

0 – 400 mbar	6 bar	▷ 8	3
0 – 0.6 bar	10 bar	▷ 0	1
0 – 1 bar	16 bar	▷ 0	2
0 – 1.6 bar	25 bar	▷ 0	3
0 – 2.5 bar	25 bar	▷ 0	4
0 – 4 bar	25 bar	▷ 0	5
0 – 6 bar	25 bar	▷ 0	6
0 – 10 bar	25 bar	▷ 0	7
0 – 16 bar	25 bar	▷ 0	8
0 – 25 bar	25 bar	▷ 0	9

Measuring Diaphragm / Gaskets

NBR	NBR	▷ N
VITON	VITON	▷ V
DURATHERM®	NBR for m. range ≧ 16 bar	▷ D
DURATHERM®	VITON for m. range ≧ 16 bar	▷ E

Pressure Chamber

Aluminium	▷ A
Aluminium HART COAT	▷ D
Chrome nickel steel 1.4305	▷ W

Pressure Connections

Thread BSP ¼ female	▷ 0 1
Connection shank BSP ¼ male of brass	▷ 0 6
Connection shank BSP ¼ male of stainless steel 1.4305	▷ 1 1
Cutting ring connection for 6 mm tube of steel	▷ 2 0
Cutting ring connection for 8 mm tube of steel	▷ 2 1
Cutting ring connection for 10 mm tube of steel	▷ 2 2
Cutting ring connection for 12 mm tube of steel	▷ 2 3
Cutting ring connection for 6 mm tube of stainl. steel 1.4571	▷ 2 4
Cutting ring connection for 8 mm tube of stainl. steel 1.4571	▷ 2 5
Cutting ring connection for 10 mm tube of stainl. steel 1.4571	▷ 2 6
Cutting ring connection for 12 mm tube of steel	▷ 2 7
Cutting ring connection for 6 mm tube of brass	▷ 2 8
Cutting ring connection for 8 mm tube of brass	▷ 2 9
Cutting ring connection for 10 mm tube of brass	▷ 3 0

Electrical Output Signal

0 – 20 mA	3-wire connection	▷ A
4 – 20 mA	2-wire connection	▷ B
0 – 10 V DC	3-wire connection	▷ C
4 – 20 mA	3-wire connection	▷ P

Supply Voltage

24 V DC

Measuring Indication

Without measuring indication	▷ 0
3 ½-digit LC-display	▷ 1

Electrical Connection

Numbered cable, 1 m long, prewired	▷ 1
Numbered cable, 2.5 m long, prewired	▷ 2
Numbered cable, 5 m long, prewired	▷ 5
Cable terminal box	▷ K
7-channel plug acc. to DIN 43650	▷ H
German Lloyd approval	▷ X

Approval

Standard version	▷ O
German Lloyd approval, with numbered cable, 3 m long, prewired	▷ G

Accessories

Without	▷ 0
Special requirements please state in the text	▷ S