

## DE16 || Differential Pressure Transmitter

### Application

Measuring transmitter for overpressure, partial vacuum and differential pressure. This series is suitable for various measuring applications in the field of industrial and sanitary techniques.

Typical applications:

- Measurement of differential pressure between forward- and return-flow in heating systems.
- Monitoring of filters, blowers and compressors.

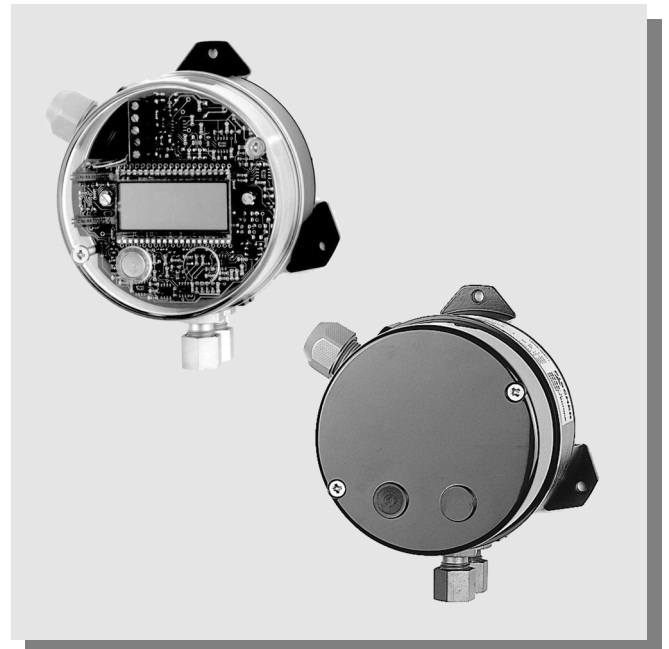
### Main Features

- Overpressure protection
- Rugged design
- Maintenance and wear free inductive pick-up
- Multiple applications

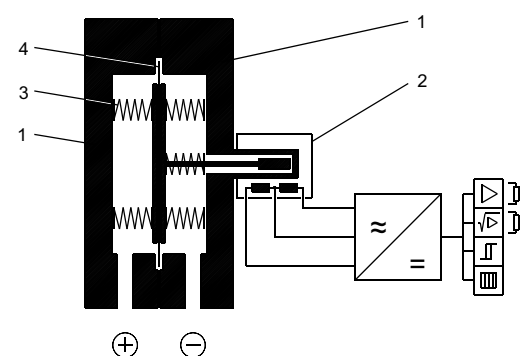
### Construction and Operation

This transmitter is based on a rugged and uncomplicated diaphragm movement, suitable for overpressure, partial vacuum and differential pressure measurement. 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 of the springs for the measuring range until a new equilibrium is reached. A centre-mounted tappet transfers the motion of the diaphragm system to the core of an inductive displacement transducer. The subsequent converter circuit transfers this motion into an electrical output signal. The transmitter is short-circuit and reverse battery protected.



### Block Schematic Diagram



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



## Specifications

<b>General</b>						
Measuring range	0...60 mbar to 0....25 bar (acc. to Ordering Code)					
Nominal pressure	25 bar					
Max. pressure load	one-sided overpressure protected up to nominal pressure, on (+) and (-) side of diaphragm, partial vacuum protected					
Perm. ambient temperature	-10°C..... +70°C					
Perm. medium temperature	70°C					
Protection class	IP 54 per DIN EN 60529					
Mounting position	any direction					
Linearity	< 2% FS					
Hysteresis	< 1% FS					
<b>Electrical</b>		2-wire connection with or without LC-Display 3-wire connection with LC-Display			3-wire connection without LC-Display	
Electrical connection	2-wire	3-wire	3-wire	3-wire	3-wire	
Supply voltage	24 V DC	24 V AC/DC	24 V AC/DC	24 V AC/DC	24 V AC/DC	
Perm. supply voltage	15...30V DC	15...30V DC 20...28V AC	15...30V DC 20...28V AC	18...30V DC 21...27V AC	15...30V DC 21...27V AC	
Power consumption	≤ 1 W	≤ 0.5 W	≤ 1 W	≤ 2 W	≤ 2 W	
Output signal	4-20 mA	0-10 V DC	0-20 mA 4-20 mA	0-10 V DC	0-20 mA 4-20 mA	
Load in case of nominal voltage	max. 600 Ω	> 1 K Ω	max. 900 Ω	> 1 K Ω	max. 380 Ω	
Current limit	max. 23 mA	max. 10 mA	max. 25 mA	max. 15 mA	max. 30 mA	
Voltage limit	---	approx. 12 V DC	---	approx. 11.5V DC	---	
Zero point adjustment	approx. 10% FS					
Slope adjustment	approx. 10% FS					
<b>Measuring Indication</b>	3 ½-digit LC-Display					
<b>Electrical connection</b>	numbered cable, prewired cable terminal box, plug acc. to DIN EN 175 301-803-A					
<b>Pressure connection</b>	female thread G¼, cutting ring connection for 6, 8, 10, 12 mm Ø tube of brass, zinc plated steel or stainless steel, connection shank G¼ DIN EN 837					
<b>Measuring System</b>						
Measuring range ≤ 10 bar	diaphragm measuring system, diaphragms of reinforced elastomere					
Measuring range ≥ 16 bar	capsule element measuring system, capsule element of DURATHERM®					
<b>Materials</b>						
Pressure chamber	aluminium Gk Al Si 12 (Cu), varnished black aluminium Gk Al Si 12 (Cu) HART-COAT® stainless steel 1.4305					
Measuring diaphragm	diaphragm and gaskets of NBR or Viton® capsule element of DURATHERM® Ni Cr Co-alloy					
Materials, media	stainless steel 1.4310, 1.4305					
Materials, housing	makrolon					
Weight	pressure chamber Al = 1.2 kg, pressure chamber 1.4305 = 3.5 kg					
<b>Mounting</b>	pipe mounting, pressure connections acc. to symbols - by screwed in cutting ring or clamping ring connection - by screwed on connection shank acc. to DIN EN 837 wall mounting - 3 fastening elements					

## Accessories

**DZ 11** Panel mounting kit ø 132 mm consisting of front ring, spacer and fastening screws.

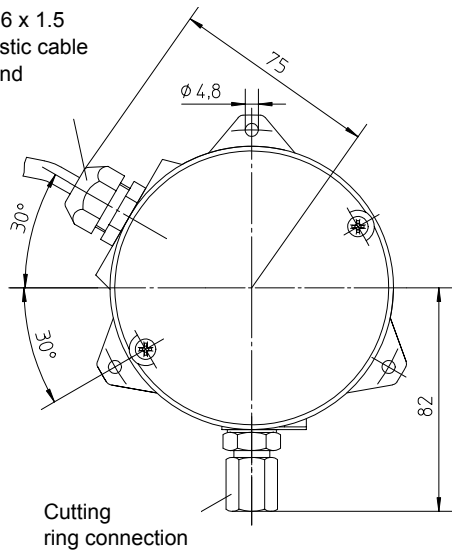
**DZ 13/14** Three- and four-spindle shut-off and equalizing valves DZ13/14 are especially suited for mounting differential pressure instruments. For example they are used for:

- Depressurizing or shutting down of plant.
- Cutting differential pressure instruments off a plant to enable controlling or repairing.
- Shut-off valves may be used for operational checks on site.

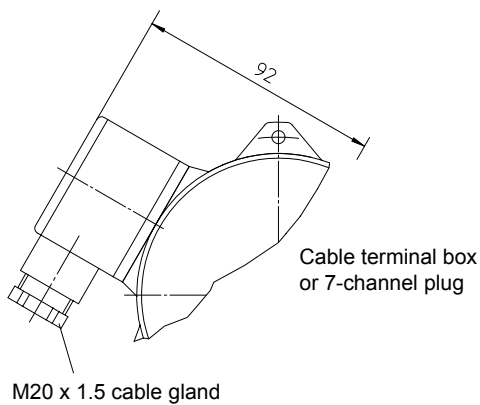
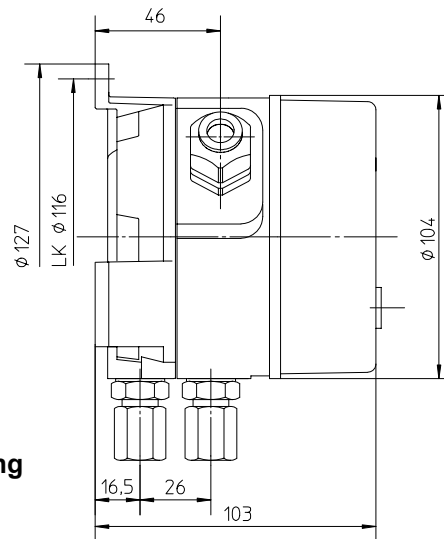
DZ14 - additional to DZ13 - is provided with a venting valve to ventilate the connected pipe system. Nominal pressure of these shut-off and equalizing valves is PN40. Case is available in aluminium, brass or stainless steel 1.4301. Several process connections acc. to Ordering Code are available.

**Dimensions** (all units in mm unless stated otherwise)

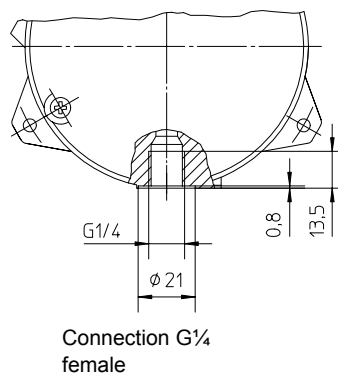
M16 x 1.5  
plastic cable gland



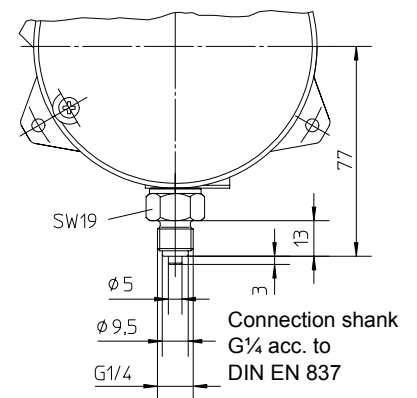
**DE 16 Wall mounting (standard version)**



**Variants of electrical connection**

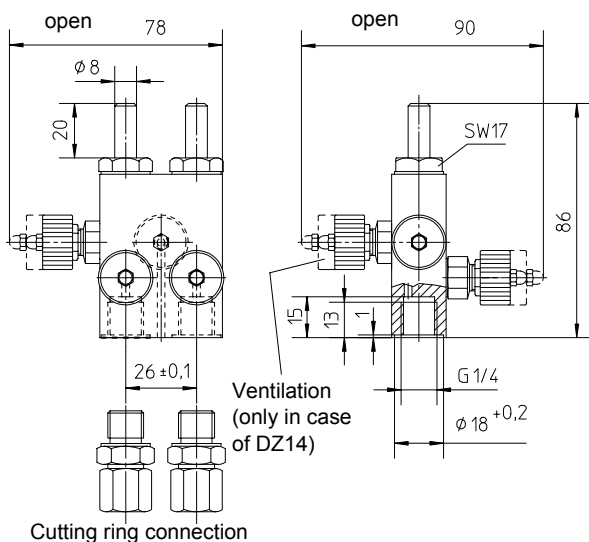


Connection G $\frac{1}{4}$  female

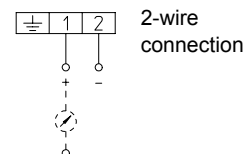
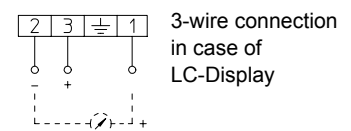
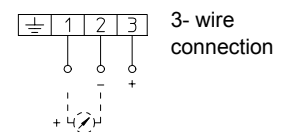
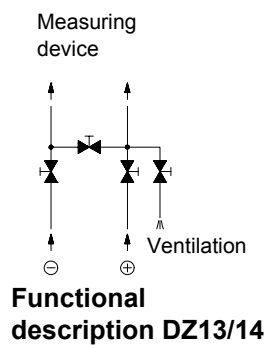


Connection shank G $\frac{1}{4}$  acc. to DIN EN 837

**Variants of process connection**



**DZ13/14 Four spindle shut-off and equalizing valve**



**Electrical connection**

## Ordering Code

**Differential Pressure Transmitter DE16**               9   0 0

### Measuring Range

0 ... 60 mbar	>	5	8
0 ... 100 mbar	>	5	9
0 ... 160 mbar	>	6	0
0 ... 200 mbar	>	4	4
0 ... 250 mbar	>	8	2
0 ... 400 mbar	>	8	3
0 ... 0.6 bar	>	0	1
0 ... 1 bar	>	0	2
0 ... 1.6 bar	>	0	3
0 ... 2.5 bar	>	0	4
0 ... 4 bar	>	0	5
0 ... 6 bar	>	0	6
0 ... 10 bar	>	0	7
0 ... 16 bar	>	0	8
0 ... 25 bar	>	0	9

### Measuring Diaphragm/ Gaskets

NBR	NBR	>	N
Viton®	Viton®	>	V
DURATHERM®	NBR (Range ≥ 16 bar)	>	D
DURATHERM®	Viton® (Range ≥ 16 bar)	>	E

### Pressure Chamber

Aluminium	>	A
Aluminium HART COAT®	>	D
Stainless steel 1.4305	>	W

### Pressure Connections

Female thread G¼	>	0	1
Connection shank G¼ brass, male	>	0	6
Connection shank G¼ stainless steel, male	>	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 6 mm tube of stainless steel 1.4571	>	2	4
Cutting ring connection for 8 mm tube of stainless steel 1.4571	>	2	5
Cutting ring connection for 10 mm tube of stainless steel 1.4571	>	2	6
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	>	A
4 - 20 mA 2-wire	>	B
0 - 10 V DC 3-wire	>	C
4 - 20 mA (3-wire)	>	P

### Supply Voltage

24 V DC ±10% (only for 2-wire)	>	9
24 V DC/AC	>	L

### Measuring Indication

Without measuring indication	>	0
3½-digit LC-Display	>	1

### Electrical Connection

Numbered cable, 1 m, prewired	>	1
Numbered cable, 2.5 m, prewired	>	2
Numbered cable, 5 m, prewired	>	5
Cable terminal box	>	K
4-pin plug acc. to DIN EN 175 301-803-A	>	H