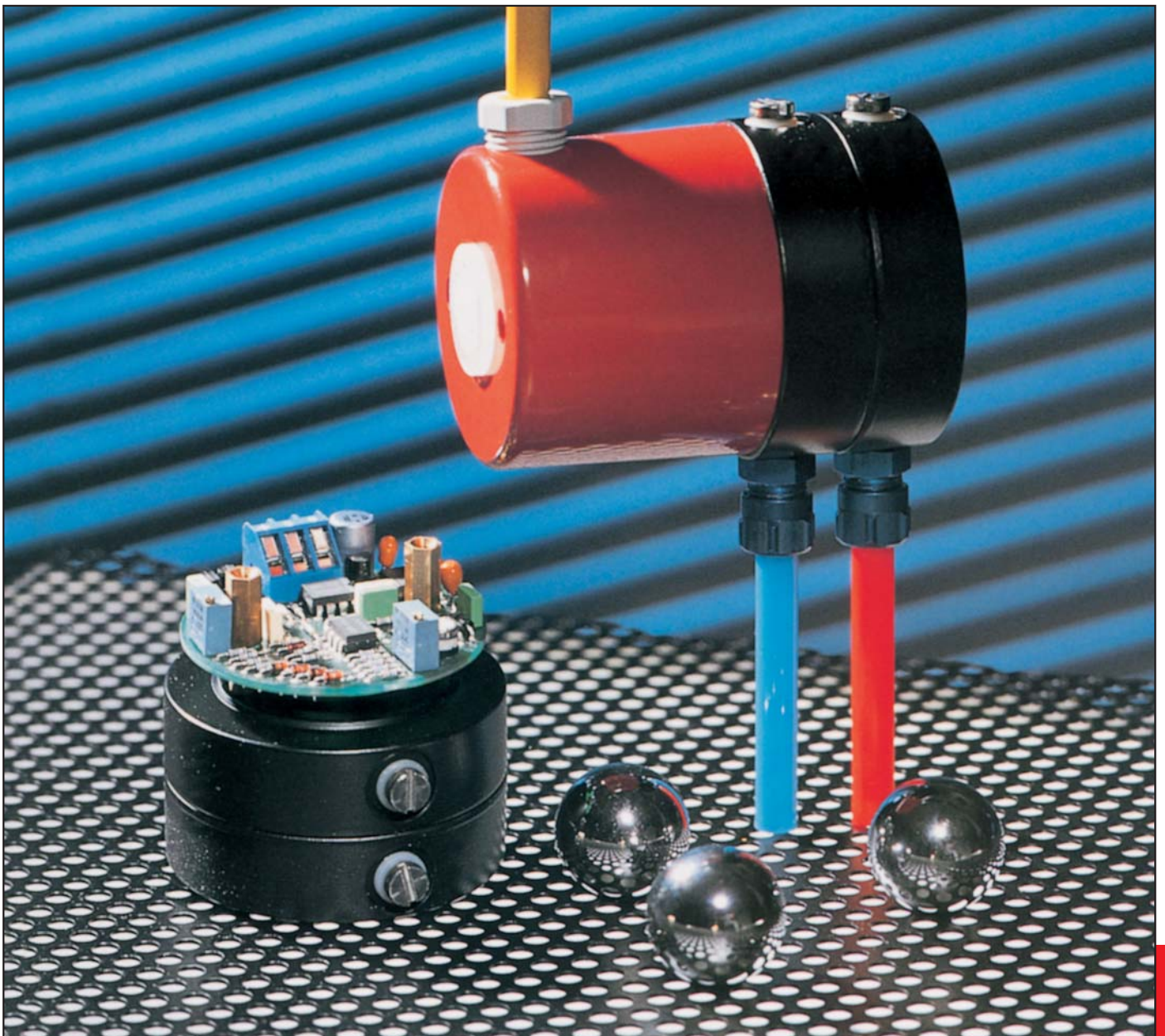


652

Differential pressure,  
vacuum, overpressure,  
transmitter

0 to 1 bar



EDITION 12/2004

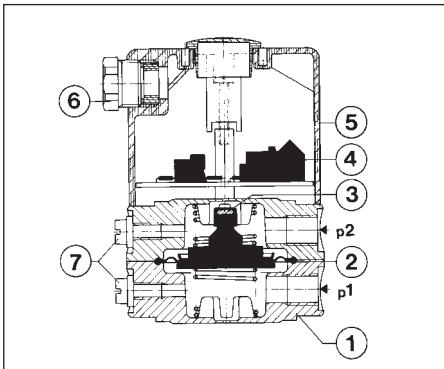


## Technical overview

The differential pressure transmitter of type series 652 are used for the long- and short-distance transmission of electrical pressure-proportional signals. They are specially suited for the continuous level or flow monitoring of neutral and slightly aggressive liquids and gases in heating, ventilation and process technology.

The pressure or differential pressure to be monitored acts on a diaphragm, which in turn acts against a spring. As a result of the pressure action and the resultant diaphragm movement a permanent magnet fastened on the diaphragm moves in the direction of a hall sensor arranged outside the pressure case.

This sensor emits an electrical signal which is proportional to the magnetic field. The signal is linearized, compensated and amplified.



## Legend to cross-section drawing

- 1 Pressure case
- 2 Diaphragm
- 3 Permanent magnet
- 4 Electronics
- 5 Cover
- 6 PG9 Union
- 7 Vent
- P1 Higher pressure / lower vacuum
- P2 Lower pressure / higher vacuum

## The distinct advantages

- High overpressure safety margin 10/20 bar on P1
- 3 standardized output signals for direct processing in control/monitoring systems
- Functionally simple, rugged mechanics with high operating reliability
- Also for slightly aggressive liquids and gases
- Market-oriented attractive price/performance ratio

## Pressure ranges

See order code selection table

## Overload

Range up to 200 mbar: 10 bar  
Range up to 500 mbar: 20 bar

## Rupture pressure

30 bar

## Accuracy

Linearity < +/- 1.5% fs  
Hysteresis < +/- 1.5% fs  
Zero point offset < +/- 1.0% fs

Higher accuracies on request

## Housing material

Pressure case: Anodized black aluminium, brass or nickel-plated brass

Cover: Plastic

## Diaphragm

A NBR-based	C FPM
E EPDM	F Silicon

Parts coming into contact with the medium, to pressure case and diaphragm:

X 12 CrMoS 17	1.4104
X 5 CrNi 18 9	1.4301
X 12 CrNi 17 7	1.4310

## Temperature influences

Medium temperature

A NBR-based	0 ... + 80 °C
C FPM	- 10 ... + 80 °C
E EPDM	- 10 ... + 80 °C
F Silicon	- 40 ... + 80 °C

## Temperature error

Temperature drift 0.08% fs/degree (20 °C related to zero point)

## Dynamic response

Response time: < 5 ms  
Load charge: < 10 Hz

## Pressure connections

Inside thread G 1/8 P1 > P2

## Weight

Pressure case aluminium	370 g
Pressure case brass / nickel-plated brass	860 g

## Installation arrangement

Unrestricted. The transmitter is calibrated in the factory with the diaphragm positioned vertically. In the case of liquid media vent screw up, i.e. pressure connections down.

## Outputs

0 – 10 V	3-wire cable
0 – 20 mA	3-wire cable
4 – 20 mA	3-wire cable

## Power supply

20 – 30 VDC  
24 VAC

## Load

Current load	≤ 300 Ohm
Voltage load	≥ 10 kOhm

## Current consumption

0 – 10 V	35 mA
0 – 20 mA	max. 55 mA
4 – 20 mA	max. 55 mA

## Electrical connections / Protection standard

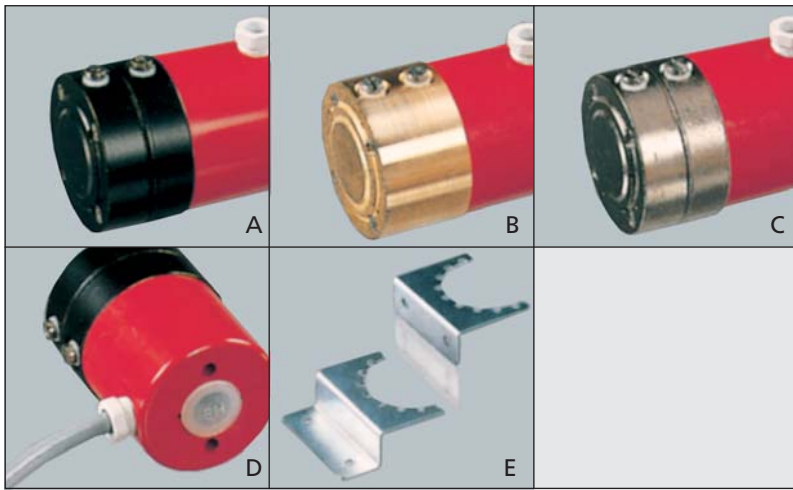
See order code selection table.  
Other connections on request. Short circuit proof and with polarity reversal protection.

## Accessories

Mounting bracket

## Options

± ranges symmetrical and adjustable versions on request

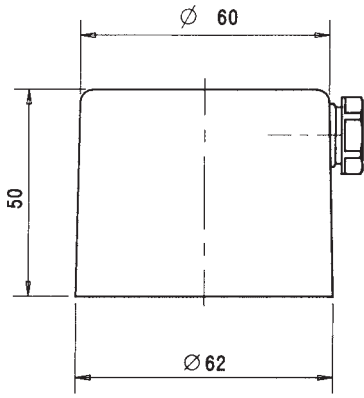


### Versions

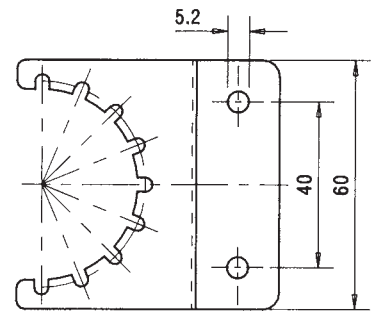
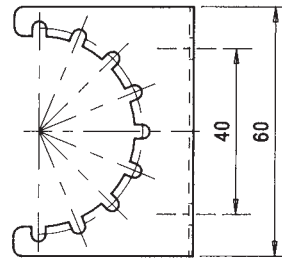
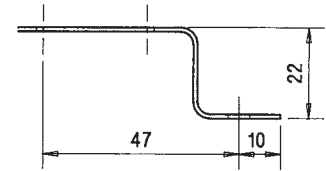
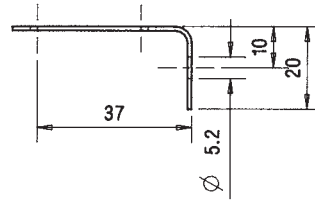
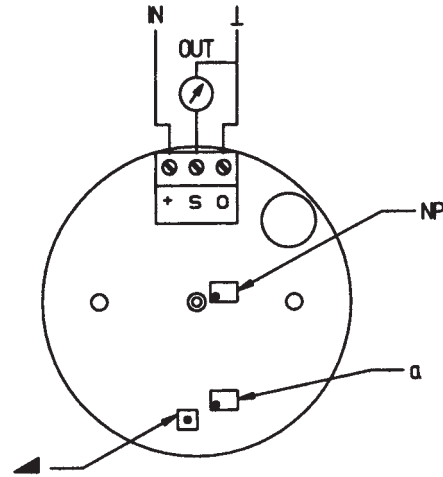
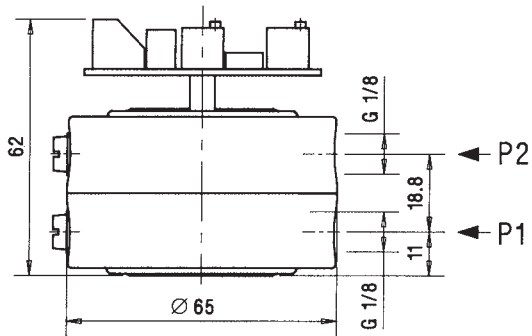
- A – Pressure case, anodized aluminium
- B – Pressure case, brass
- C – Pressure case, nickel-plated brass
- D – Cable connection with cover PG 9
- E – Mounting bracket Type A / Type B

Order code selection table		652.	X	X	X	X	X	X	X	X	X	X	X	X
<b>Pressure ranges (mbar)<sup>1</sup></b>	<b>Operation pressure max.</b>													
0 ... 50	10'000 mbar	9	0											
0 ... 100	10'000 mbar	9	1											
0 ... 200	10'000 mbar	9	2											
0 ... 500	20'000 mbar	9	3											
0 ... 1'000	20'000 mbar	9	4											
<b>Outputs<sup>2</sup></b>	0 – 10 V 0 – 20 mA 4 – 20 mA							0 1 4						
<b>Linearity</b>	+/- 1.5% fs							1						
<b>Power supply (IN)</b>	20 – 30 VDC 24 VAC + 15 / - 10%							0 1						
<b>Electrical connections</b>	Screw terminals (Protection class with cover IP 65)									0				
<b>Pressure connections</b>	Inside thread G 1/8										0			
<b>Pressure case</b>	Anodized aluminium black Brass (CuZn) Nickel-plated brass (CuZn vni)											0 1 2		
<b>Diaphragm</b>	Type A – NBR-based Type C – FPM Type E – EPDM Type F – Q (Silicon)												0 1 2 3	
<b>Mounting</b>	Without mounting bracket With mounting bracket type A With mounting bracket type B													0 0 0 0 1 2

<sup>1</sup> Other pressure ranges on request  
<sup>2</sup> Other output signals on request



P1 > P2



Type A

Type B

**Electromagnetic compatibility:** CE conformity (EMC) by application of harmonized standards: Interference stability EN 61000-6-2 and EN 61326-1, interference emit EN 61000-6-3 and EN 61326-1

Interference stability	Test standard	Effect
Electrostatic discharge (ESD)	EN 61000-4-2	8 kV air, 4 kV contact no effect
High-frequency electromagnetic radiation (HF)	EN 61000-4-3	3 V/m, 80 ... 1000 Mz - 400 - 1000 MHz:< 8% signal influence
Conducted HF interference	EN 61000-4-6	30 V, 0.15 ... 80 MHz no effect
Fast transients (burst)	EN 61000-4-4	4 kV no effect
Surge	EN 61000-4-5	no test
Magnetic fields	EN 61000-4-8	30 A/m, 50 Hz no effect
Interference emit	Test standard	Effect
Conducted interference	EN 55022 (CISPR 22) 0.15... 30 MHz	no emission
Radiation from housing	30...1000 MHz, 10 m	no emission