FISCHER MESS- UND REGELTECHNIK

Data sheet

ME50 | Programmable Pressure Transducer / Pressure Switch

General

The pressure transducer of this series can be used for various measuring tasks in the fields of:

- Process engineering
- Process technology
- Environmental technology
- Renewable energies (biogas etc.)

The available measuring ranges (see ordering code) range from 10 mbar to 40 bar.

The pressure transmitters are delivered, depending on the measuring range, with ceramic measuring cell or with front flush mounted piezo-resistive measuring cell.

Construction and mode of operation

Ceramic measuring cell:

The pressure acts directly on the ceramic diaphragm resulting in distortion. A pressure-dependant change in capacitance is measured at the electrodes of the ceramic carrier and the diaphragm.

Electronics integrated in the pressure transmitter housing now transform this change in capacitance into standard electrical signals.

Piezo-resistive measuring cell:

The pressure acts on the silicon diaphragm of a semi-conductor chip resulting in distortion. The specific resistance of the material changes according to the level of distortion.

Electronics integrated in the pressure transmitter housing now transform this change in resistance into standard electrical signals.

Key features

- digital display of measured values
- 2 switch contacts (3-wire version only)
- high accuracy
- low hysteresis
- parameterisable
  (offset, range, damping, display)
- turn down 5:1
- robust housing design
- high resistance to vibrations
- housing rotatable by 360°
- freely selectable process connection direction
  (axial or radial)

Parameterisation:

The device is supplied as defined in the order code.

However, in order to optimise performance in line with the process conditions it is also possible to configure the pressure transmitter on-site via the connection cables. For this you will require the programming adapter EU13 which is available as an accessory and a PC.

09005260 DB_EN_ME50 Rev.D 04/13

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Technical Data

Measuring range	-20...20 mbar	-40...40 mbar	-100...100 mbar	0...60 mbar	0...100 mbar	0...200 mbar	0...400 mbar	0...600 mbar	0...1 bar	0...1.6 bar	0...2.5 bar	0...4 bar	0...6 bar	0...10 bar	0...16 bar	0..25 bar	0...40 bar	-0.6...0 bar	-1...0 bar	-1...0.6 bar	-1...1.5 bar	-1...3 bar	-1...5 bar	-1...9 bar	-1...15 bar
smallest measuring span (see turn down)	10 mbar	20 mbar	40 mbar	12 mbar	20 mbar	40 mbar	80 mbar	120 mbar	0.20 bar	0.32 bar	0.5 bar	0.8 bar	1.2 bar	2 bar	3.2 bar	5 bar	8 bar	0.12 bar	0.2 bar	0.32 bar	0.5 bar	0.8 bar	1.2 bar	2.0 bar	3.2 bar
Overpressure safety [bar]	4	4	4	4	4	4	1.6	2.4	4	6.4	10	16	24	40	64	80	120	2.4	4	6.4	10	16	24	40	64
	Ceramic measuring cell						Piezo-resistive measuring cell																		

General:

Accuracy	± 0.2 % of measuring range FS (incl. hysteresis and repeat accuracy)
Temperature drift Zero point /measuring range	±0.01% FS/K temperature error band across the compensated temperature range
compensated temperature range	- 10 °C to 70 °C
perm. ambient temperature	without display - 20 °C to 80 °C with display - 20 °C to 70 °C
perm. permanent medium temperature	- 10 °C to 85 °C
Storage temperature	- 40 °C to 90 °C
Display	3 1/2 digit LC display
Protection class	IP65 as per DIN EN 60529
Pressure connection	see ordering code
Material of parts in contact with medium	Chromium-nickel steel 1.4404, Ceramic Al_2O_3, VITON® gasket
Housing material	Chromium-nickel steel 1.4404/1.4571

Electrical data:

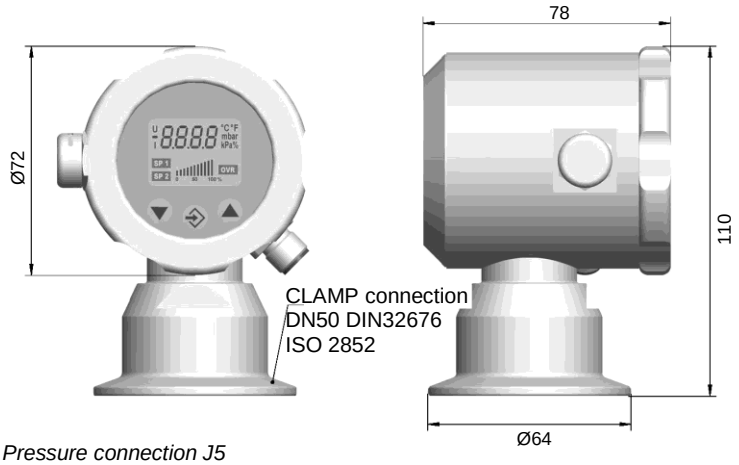
Nominal voltage	24V DC	
Operating voltage range U_b	12...30 VDC	
Electrical connection mode	**Two-wire**	**Three-wire**
Output signal	4...20 mA	0...20 mA / 4...20 mA
Load R_L	$R_L \leq (U_b - 6\ V) / 0.02\ A$	$R_L \leq ((U_b\text{-}10V) \cdot 50\ \Omega) + 300\ \Omega$
Current limit	approx. 26 mA	approx. 26 mA
Plug-in connector M12	5-pole	8-pole
Switch contacts	no	2 Photo MOS relays non short-circuit proof thermically insulated
		U_{max} **I_{max}** **R_{ON}**
floating [AC/DC]		30 V 200mA <1Ω
PNP/NPN-switching [DC]		U_b 200mA <1Ω

Parameterisation:

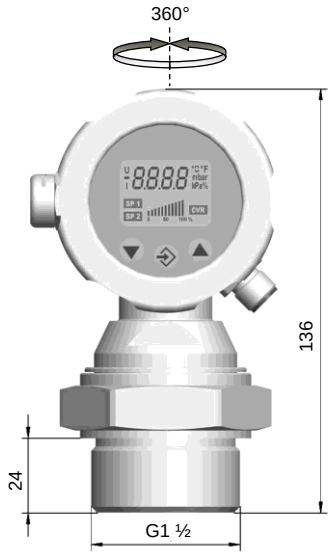
Inverted curve	rising / falling
Damping	0...200 s
Adjustable signal limits	upper current limit 3.5...22.5 mA lower current limit 3.5...22.5 mA error signal 3.5...22.5 mA
Turn down	5:1 Set with parameters 'measuring range start value' and 'measuring range end value' and smallest adjustable measuring span within the measuring range.

Dimension drawings (all dimensions in mm unless stated otherwise)

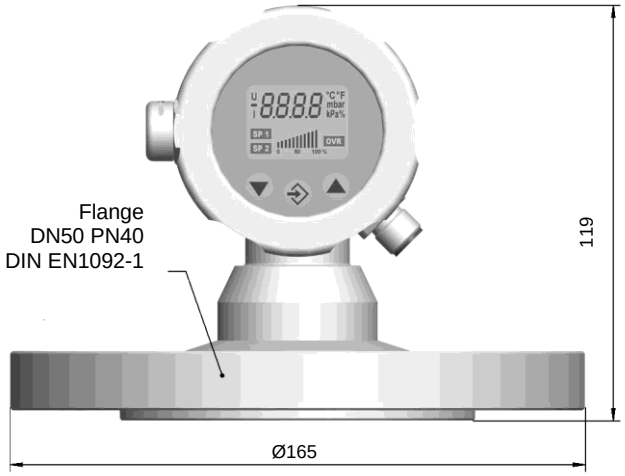
Process connection radial:



Pressure connection J5

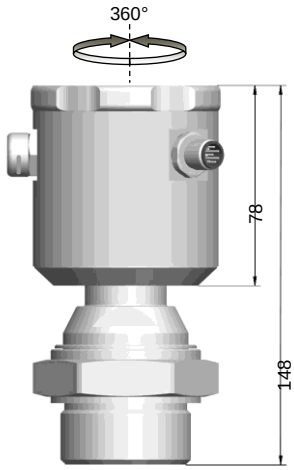


Pressure connection A4



Pressure connection F5

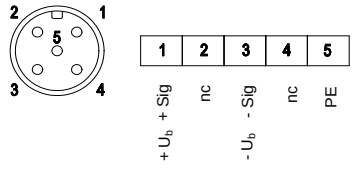
Process connection axial:



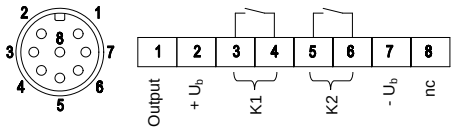
Pressure connection A4
(Connections J5 and F5 are also possible.)

Connection diagram:

5-pole M12



8-pole M12



PNP-switching: PIN 4 and 5 internally bridged to +U_b
NPN-switching: PIN 4 and 5 internally bridged to -U_b

Ordering code

Programmable pressure transducer

Type ME50 | | | | | | | | **M** | **D** | | **0** | **0** |

Measuring range

-20	… 20	mbar	**C**	**7**
-40	... 40	mbar	**C**	**5**
-100	...100	mbar	**P**	**4**
0	... 60	mbar	**5**	**8**
0	...100	mbar	**5**	**9**
0	...200	mbar	**4**	**4**
0	...400	mbar	**8**	**3**
0	...600	mbar	**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	... 40	bar	**0**	**9**
-0.6	... 0	bar	**1**	**0**
-1	... 0	bar	**3**	**0**
-1	... 0.6	bar	**3**	**1**
-1	... 1.5	bar	**3**	**2**
-1	... 3	bar	**3**	**3**
-1	... 5	bar	**3**	**4**
-1	... 9	bar	**3**	**5**
-1	... 15	bar	**3**	**6**
-1	... 0	bar	**3**	**7**

Ceramic measuring cell

piezo-resistive measuring cell

Pressure connection

G1 ½ (360° rotatable)	**A 4**
Clamp flange connection DN50 DIN 32676 / ISO 2852	**J 5**
Flange connection DN50 DIN EN 1092-1	**F 5**

Display

without display	**A**
with display	**P**

Electrical output signal

4 ... 20 mA	2-wire	**P**
0 ... 20 mA	3-wire	**A**
4 ... 20 mA	3-wire	**P**

Switch contacts

without switch contacts	**M**
two floating semiconductor switches [AC/DC] (3-wire only)	**N**
two semiconductor switches PNP-switching [DC] (3-wire only)	**8**
two semiconductor switches NPN-switching [DC] (3-wire only)	**9**

Electrical connection

M12 plug-in connection	**M**

Operating voltage

12 ... 30 VDC	**D**

Process connection

axial	**A**
radial	**P**

Accessories

Art.No.	Description	Number of poles	Length
09001844	Connection line with M12 coupling	8-pole	2m
09001995	Connection line with M12 coupling	5-pole	2m
EU13.F200	PC Interface for 2-wire transmitter incl. software		

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