developing solutions

FISCHER
MESS- UND REGELTECHNIK

CE

RoHS III COMPLIANT

Data sheet

ME13

Pressure transmitter

09005204 • DB_en_ME13 • Rev. ST4-A • 03/21

1 Product and functional description

1.1 Performance characteristics

Typical applications

- Hydraulics
- Pneumatics
- Machine construction
- Plant and automation engineering
- Industrial applications

Main features

- High degree of overload pressure safety
- High acceleration and vibration strength
- Excellent long-term stability
- Protection class IP65

1.2 Intended use

The device is for pressure measurement in neutral gaseous media. The designs with a ceramic or stainless steel measuring cell can also be used for non-aggressive liquid media.

1.3 Function diagram

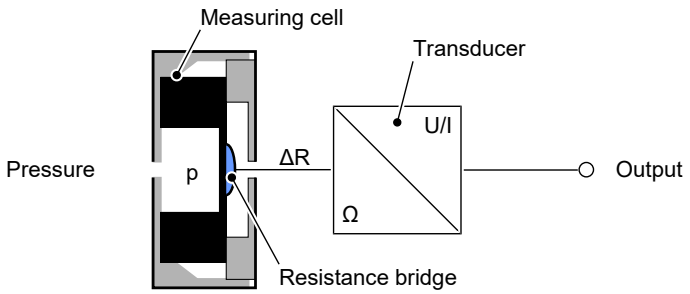


Fig. 1: Function diagram (all designs)

1.4 Design and mode of operation

The pressure acts directly on the measuring membrane, which warps accordingly. An SGS bridge is attached to this membrane. Its bridge signal changes in accordance with the extent of the deformation. The integrated measuring transducer now converts this bridge signal into an electrical output signal.

2 Technical data

2.1 General

General information	
Type designation	ME13
Pressure type	Relative pressure
Measurement principle	SGS
- Silicon measuring cell	Piezoresistive sensor chip
- Ceramic measuring cell	Resistive thick-film technology (SGS)
- Stainless steel measuring cell	Piezoresistive thin-film technology (MEMS)

Media compatibility		
ME13 ## # ## # # 9 0 **L** 0 0	[silicon]	Neutral gases
ME13 ## # ## # # 9 0 **M** 0 0	[ceramic]	Neutral gases and liquids
ME13 ## # ## # # 9 0 **H** 0 0	[stainless steel]	Neutral gases and liquids

Reference conditions (acc. to IEC 61298-1)		
Temperature	+15 … +25 °C	
Relative humidity	45 … 75 %	
Air pressure	86 … 106 kPa	860 … 1060 mbar
Installation position	User-defined	

2.2 Input variables

Design with silicon membrane [L]

Measuring ranges	Overload	Bursting pressure
0 to 10 mbar	50 mbar	150 mbar
0 to 16 mbar	80 mbar	240 mbar
0 to 25 mbar	125 mbar	375 mbar
0 to 40 mbar	200 mbar	600 mbar
0 to 60 mbar	300 mbar	900 mbar

Design with ceramic membrane [M]

Measuring ranges	Overload	Bursting pressure
0 to 100 mbar	2 bar	4 bar
0 to 160 mbar	2 bar	4 bar
0 to 250 mbar	2 bar	4 bar
0 to 400 mbar	2 bar	4 bar

Design with stainless steel membrane [H]

Measuring ranges	Overload	Bursting pressure
0 to 0.6 bar	6 bar	9 bar
0 to 1.0 bar	6 bar	9 bar
0 to 1.6 bar	6 bar	9 bar
0 to 2.5 bar	10 bar	15 bar
0 to 4 bar	10 bar	15 bar
0 to 6 bar	20 bar	30 bar
0 to 10 bar	20 bar	30 bar
0 to 16 bar	40 bar	60 bar

Measuring ranges	Overload	Bursting pressure
0 to 25 bar	100 bar	150 bar
0 to 40 bar	100 bar	150 bar
0 to 60 bar	200 bar	300 bar
0 to 100 bar	200 bar	300 bar
0 to 160 bar	400 bar	600 bar
0 to 250 bar	750 bar	1000 bar
0 to 400 bar	750 bar	1000 bar
0 to 600 bar	840 bar	1050 bar
0 to 1000 bar	1200 bar	1500 bar
Vacuum ranges		
-1 to 0 bar	6 bar	9 bar
-1 to 0.6 bar	6 bar	9 bar
-1 to 1.5 bar	6 bar	9 bar
-1 to 3 bar	10 bar	15 bar
-1 to 5 bar	20 bar	30 bar
-1 to 9 bar	20 bar	30 bar
-1 to 15 bar	40 bar	60 bar
-1 to 24 bar	100 bar	150 bar

2.3 Measuring accuracy

Design with silicon membrane [L]

Characteristic curve (linearity, hysteresis, repeatability)	±1%
Impact of ambient temperature	≤ ±0.015% FS/K

Design with ceramic membrane [M]

Characteristic curve (linearity, hysteresis, repeatability)	±0.5%
Impact of ambient temperature	≤ ± 0.02% FS/K

Design with stainless steel membrane [H]

Characteristic curve (linearity, hysteresis, repeatability)	±0.5%
Impact of ambient temperature	≤ ±0.025% FS/K

2.4 Electrical parameters

Design with silicon membrane [L]

	0 to 20 mA	4 to 20 mA	0 to 10 V
Type of connection	3-conductor	2-conductor	3-conductor
Operating voltage U_b	9 to 30 V DC	10 to 32 V DC	12 to 32 V DC
Load	Max. 200 Ω	(U_b-10 V)/20 mA	> 5 kΩ
Response time T_{90}	< 1 ms	< 2 ms	< 1 ms

Design with ceramic membrane [M]

	0 to 20 mA	4 to 20 mA	0 to 10 V
Type of connection	Not available	2-conductor	3-conductor
Operating voltage U_b		9 to 30 V DC	15 to 30 V DC
Load		(U_b-9 V)/20 mA	> 10 kΩ
Response time T_{90}		< 200 ms	< 200 ms

Design with stainless steel membrane [H]

	0 to 20 mA	4 to 20 mA	0 to 10 V
Type of connection	3-conductor	2-conductor	3-conductor
Operating voltage U_b	9 to 30 V DC	12 to 30 V DC	12 to 30 V DC
Load	(U_b-9 V)/28 mA	(U_b-12 V)/20 mA	> 5 kΩ
Response time T_{90}	< 1 ms	< 1 ms	< 1 ms

2.5 Operating conditions

Ambient temperature range	-10 to +80 °C
Storage temperature range	-10 to +80 °C
Medium temperature range	-10 to +80 °C
Compensated temperature range	0 to +80°C

2.6 Construction design

Process connection	G¼A as per DIN 3852 or DIN 1179-2
Electrical connection	Standard plug as per DIN EN 175 301-803 A or M12 plug connector as per IEC 61076-2-101
Installation position	User-defined
Protection class	IP65
Dimensions	See dimension drawing
Weight	80-120 g depending on design

2.6.1 Materials

Materials of the parts that come into contact with the medium	
Silicon membrane [L]	Stainless steel 1.4301, NBR seal, aluminium, PA6, silicon
Ceramic membrane [M]	Stainless steel 1.4404, FPM seal, ceramic AL_2O_3, gold-coated
Stainless steel membrane [H]	Stainless steel 1.4542, 1.4301

Casing material	
Silicon membrane [L]	Stainless steel 1.4301
Ceramic membrane [M]	Stainless steel 1.4404
Stainless steel membrane [H]	Stainless steel 1.4301

2.6.2 Dimension drawings

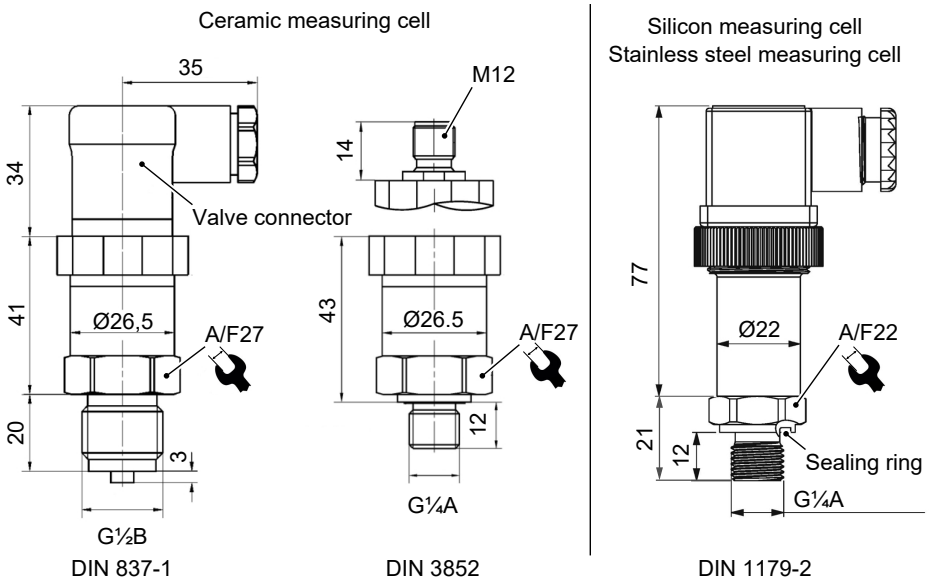
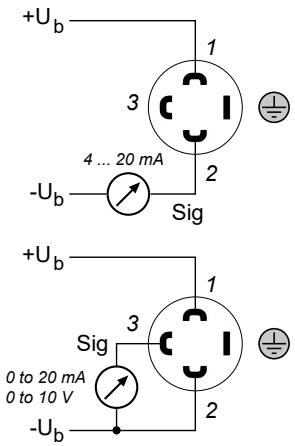


Fig. 2: Dimension drawing, all designs

2.6.3 Electrical connection

Standard plug



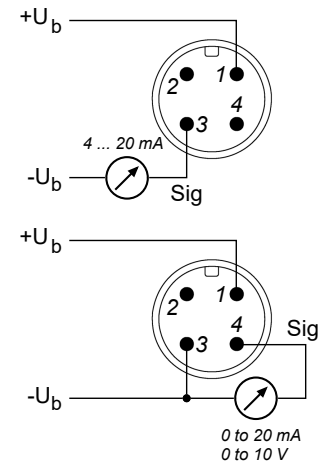
2-conductor	
1	$+U_b$
2	Sig
3	nc
⏚	nc

nc: Not connected

3-conductor	
1	$+U_b$
2	$-U_b$
3	Sig
⏚	nc

Fig. 3: Standard plug

M12 plug



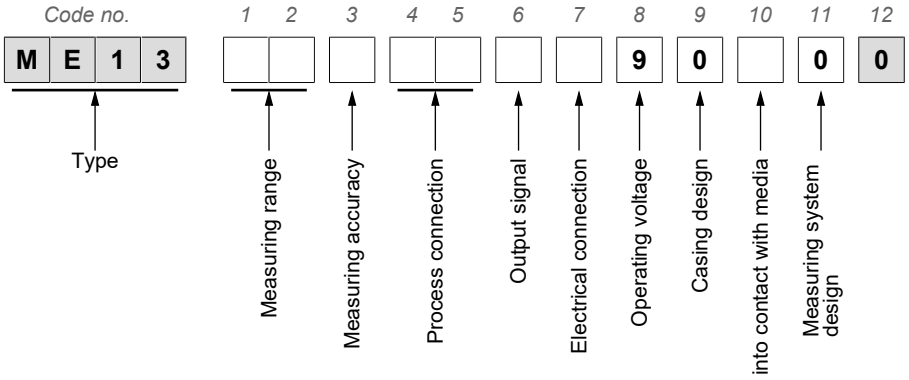
2-conductor	
1	$+U_b$
2	nc
3	Sig
4	nc

nc: Not connected

3-conductor	
1	$+U_b$
2	nc
3	$-U_b$
4	Sig

Fig. 4: M12 plug

3 Order codes



Measurement range:

[1,2]	*(Code no.)*		Sensor type
54	0 to 10 mbar	Only for neutral gaseous media	Silicon
55	0 to 16 mbar		
56	0 to 25 mbar		
57	0 to 40 mbar		
58	0 to 60 mbar		
59	0 to 100 mbar		Ceramic
60	0 to 160 mbar		
82	0 to 250 mbar		
83	0 to 400 mbar		
01	0 to 0.6 bar		Stainless steel
02	0 to 1.0 bar		
03	0 to 1.6 bar		
04	0 to 2.5 bar		
05	0 to 4 bar		
06	0 to 6 bar		
07	0 to 10 bar		
08	0 to 16 bar		
09	0 to 25 bar		
10	0 to 40 bar		
11	0 to 60 bar		
12	0 to 100 bar		
13	0 to 160 bar		
14	0 to 250 bar		
15	0 to 400 bar		
16	0 to 600 bar		
17	0 to 1000 bar		
31	-1 to 0 bar		
32	-1 to 0.6 bar		
33	-1 to 1.5 bar		
34	-1 to 3 bar		
35	-1 to 5 bar		
36	-1 to 9 bar		
37	-1 to 15 bar		

[1,2]	*(Code no.)*	Sensor type
38	-1 to 24 bar	

Measuring accuracy:

[3]	*(Code no.)*	Requirement
0	Characteristic curve deviation ±0.5% FS	Measuring ranges as of 100 mbar
M	Characteristic curve deviation ±1% FS	Measuring ranges to 60 mbar

Process connection:

[4,5]	*(Code no.)*
79	Connection shank with external thread G¼A as per DIN 3852 Form E
87	Connection shank with external thread G½B as per DIN EN 837-1

Output signal:

[6]	*(Code no.)*		Type of connection
A	0 to 20 mA	DC	3-conductor
B	4 to 20 mA	DC	2-conductor
C	0 to 10 V	DC	3-conductor

Electrical connection:

[7]	*(Code no.)*
H	Plug connection as per DIN EN 175 301-803-A
M	M12 plug connection as per IEC 61076-2-101

Auxiliary voltage:

[8]	*(Code no.)*
9	24 V DC

Casing design:

[9]	*(Code no.)*
0	IP65

All parts coming into contact with media:

[10]	*(Code no.)*
L	≤ 60 mbar – 1.4301, PA6, NBR O-ring, silicon membrane
M	≤ 400 mbar – 1.4404, FPM O-ring, ceramic membrane
H	≥ 600 mbar – 1.4542, 1.4301 stainless steel membrane

Measuring system/design:

[11]	*(Code no.)*
0	Standard

Information about the document

This document contains all technical data about the device. Great care was taken when compiling the texts and illustrations; nevertheless, errors cannot be ruled out.

Subject to technical amendments.

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(Translation) CE

EU Declaration of Conformity

For the product described as follows

Product designation **Pressure transmitter**

Type designation **ME13**

it is hereby declared that it corresponds with the basic requirements specified in the following designated directives:

2014/30/EU	*EMC Directive*
2011/65/EU	*RoHS Directive*

The products were tested in compliance with the following standards.

Electromagnetic compatibility (EMC)

DIN EN 61326-1:2013-07 *EN 61326-1:2013*	*Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements*
DIN EN 61326-2-3:2013-07 *EN 61326-2-3:2013*	*Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning*

RoHS Directive (RoHS 2)

DIN EN IEC 63000:2019-05 *EN IEC 63000:2018*	*Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Also they were subjected to the conformity assessment procedure „**Internal production control**".

Sole responsibility for the issue of this declaration of conformity in relation to fulfilment of the fundamental requirements and the production of the technical documents is with the manufacturer.

Manufacturer **FISCHER Mess- und Regeltechnik GmbH**
Bielefelder Str. 37a
32107 Bad Salzuflen, Germany
Tel. +49 (0)5222 974 0

Documentation representative Mr. Torsten Malischewski
B.Sc.
Development department

The devices bear the following marking: CE

Bad Salzuflen
10 March 2021

G. Gödde
Managing director

09010433 • CE_EN_ME13 • Rev. ST4-A • 03/21 1 / 1

Fig. 5:

FISCHER Mess- und Regeltechnik GmbH
Bielefelder Str. 37a
D-32107 Bad Salzuflen

Tel. +49 5222 974-0
Fax +49 5222 7170
www.fischermesstechnik.de
info@fischermesstechnik.de

Technische Änderungen vorbehalten. Subject to technical changes. Sous réserve de modifications techniques.