developing solutions

FISCHER
MESS- UND REGELTECHNIK

Data sheet

ME12

Remotely configurable digital pressure transducer

09005481 • DB_EN_ME12 • Rev. ST4-E • 10/22

1 Product and functional description

1.1 Performance characteristics

Important features

- Can be configured
- Robust device model
- Highly precise
- Low hysteresis

Typical applications

- Relative pressure measurements
- Absolute pressure measurements

Application areas

- Procedural engineering
- Process technology
- Environmental technology

1.2 Product overview

The following provide an overview of the possible connectors and process connections. The code stated corresponds to the respective code in the order code.

Electrical plug

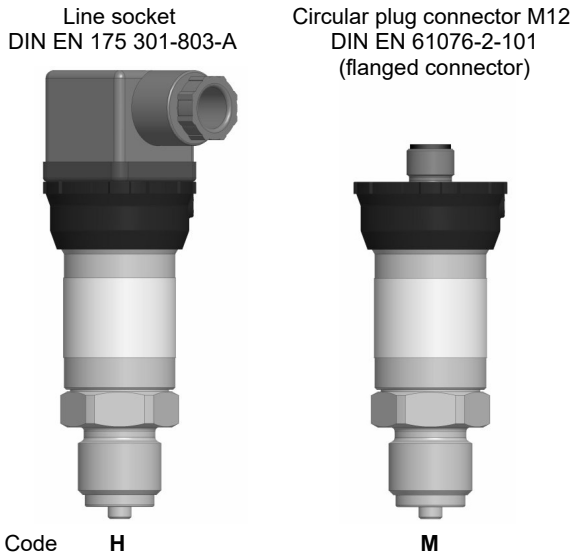


Fig. 1: Electrical plug

Process connections

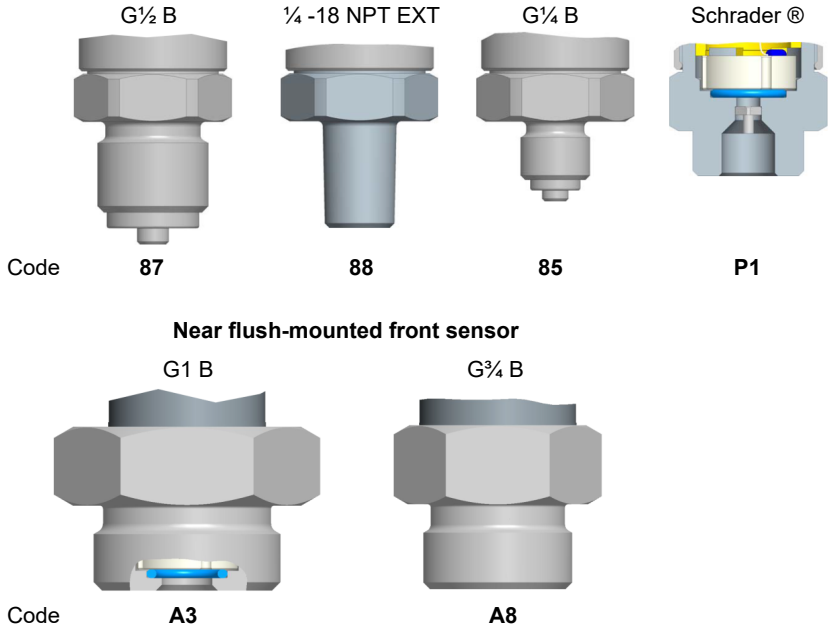


Fig. 2: Process connections

1.3 Use as intended

The ME12 is a pressure transmitter with a ceramic measuring cell for over-pressure and under-pressure and can be used for both relative and also absolute pressure measurements. The pressure transmitter can be used with non-aggressive liquid and gaseous media. Please see the technical data for the respective measuring ranges.

1.4 Function diagram

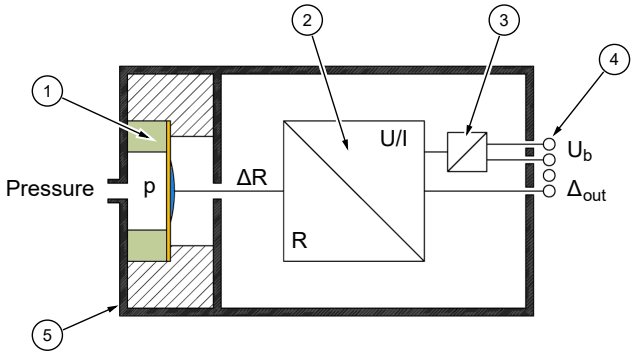


Fig. 3: Function diagram

1	Ceramic sensor	2	Electronics
3	Auxiliary energy	4	Electrical connection
5	Process connection		

1.5 Design and mode of operation

The pressure sensor work on the thick layer technology DMS principle. The measured pressure acts directly onto a ceramic membrane that deforms when under pressure. This changes the resistance of the attached DMS bridge. Electronics integrated into the device convert this bridge signal into an electronic output signal.

Every pressure transmitter is programmed according to the code in the order code on delivery. Also, the electrical connections can be used to configure the pressure transmitter, adapting it ideally to suit the process conditions. You will need a Transmitter PC Interface available as an accessory.

2 Technical data

2.1 Generalities

Reference conditions (acc. to IEC 61298-1)		
Temperature error	+15 … +25 °C	
Relative humidity	45 … 75 %	
Air pressure	86 … 106 kPa	860 … 1060 mbar
Auxiliary energy	24 V DC	
Installation position	User-defined	

2.2 Input variables

Messgröße

Pressure in non-aggressive liquid and gaseous media.

Relative pressure

Measuring		Pressure safety		Characteristic curve deviation	
[bar]	*[kPa]*	*Overpressure*	*Bursting pressure*	*Option*	*Standard*
0 … +0.6	0 ... 60	4 bar	7 bar	---	1.0 %FS
0 … +1	0 ... 100	4 bar	7 bar	0.5%FS	1.0 %FS
0 … +1,6	0 ... 160	4 bar	7 bar	0.5%FS	1.0 %FS
0 … +2.5	0 ... 250	10 bar	15 bar	0.5%FS	1.0 %FS
0 … +4	0 ... 400	10 bar	15 bar	0.5%FS	1.0 %FS
0 … +6	0 ... 600	20 bar	35 bar	0.5%FS	1.0 %FS
0 … +10	0 ... 1000	40 bar	70 bar	0.5%FS	1.0 %FS
0 … +16	0 ... 1600	40 bar	70 bar	0.5%FS	1.0 %FS
0 … +25	0 ... 2500	100 bar	150 bar	---	1.0 %FS
0 … +40	0 ... 4000	100 bar	150 bar	---	1.0 %FS
0 … +60	0 ... 6000	200 bar	250 bar	---	1.0 %FS

Absolutdruck

Measuring		Pressure safety		Characteristic curve deviation	
[bar]	*[kPa]*	*Overpressure*	*Bursting pressure*	*Option*	*Standard*
0 … +1	0 ... 100	4 bar	7 bar	0.5%FS	1.0 %FS
0 … +1.6	0 ... 160	4 bar	7 bar	0.5%FS	1.0 %FS
0 … +2.5	0 ... 250	10 bar	15 bar	0.5%FS	1.0 %FS
0 … +4	0 ... 400	10 bar	15 bar	0.5%FS	1.0 %FS
0 … +6	0 ... 600	10 bar	15 bar	0.5%FS	1.0 %FS
0 … +10	0 ... 1000	20 bar	35 bar	0.5%FS	1.0 %FS
0 … +16	0 ... 1600	20 bar	35 bar	0.5%FS	1.0 %FS

Vakuum und ± Measuringe

Measuring		Pressure safety		Characteristic curve deviation	
[bar]	*[kPa]*	*Overpres-sure*	*Bursting pressure*	*Option*	*Standard*
0 … -1	0 ... -100	4 bar	7 bar	---	1.0 %FS
-1 … 0	-100 … 0	4 bar	7 bar	---	1.0 %FS
-1 … +0.6	-100 … +60	4 bar	7 bar	---	1.0 %FS
-1 … +1.5	-100 … +150	4 bar	7 bar	---	1.0 %FS
-1 … +3	-100 … +300	10 bar	15 bar	---	1.0 %FS
-1 … +5	-100 … +500	20 bar	35 bar	---	1.0 %FS
-1 … +9	-100 … +900	40 bar	70 bar	---	1.0 %FS
-1 … +15	-100 … +1500	40 bar	70 bar	---	1.0 %FS
-1 … +24	-100 … +2400	100 bar	150 bar	---	1.0 %FS

2.3 Output parameters

Voltage output

		3-Conductor
Output range		0 … 10 V DC
Limits		approx. 10.5 V DC
Apparent ohmic resist-ance	15 V ≤ U_b < 20 V 20 V ≤ U_b ≤ 30 V	≥ 5 kΩ ≥ 2 kΩ

Current output

	2-Conductor	3-Conductor
Output range	4 … 20 mA	0 … 20 mA 4 … 20 mA
Limits	ca. 26 mA	ca. 23 mA
Apparent ohmic resist-ance	(U_b-6V)/0.02A	(U_b-10V)/0.02A + 300Ω

2.4 Measurement accuracy

Non-linearity	Maximum	0.5 % FS
	Typical	0.2 % FS
Hysteresis	Maximum	0.5 % FS
	Typical	0.2 % FS
Characteristic curve deviation [2)]	Standard	1.0 %
	Option [1)]	0.5 %
Temperature drift	Zero point	0.07 % FS/K
	Measuring range	0.05 % FS/K

[1)] only possible for certain measuring ranges
[2)] incl. non-linearity and hysteresis

2.5 Auxiliary energy

Voltage output

	3-Conductor
Rated Voltage	24 V AC/DC
Admissible operating voltage	15 … 30 V AC/DC
Power consumption	≤ 1 W (VA)

Current output

	2-Conductor	3-Conductor
Rated Voltage	24 V DC	24 V AC/DC
Admissible operating voltage	6 … 30 V DC	15 … 30 V AC/DC
Power consumption	≤ 1 W	≤ 1.5 W (VA)

2.6 Application conditions

Ambient temperature range	-10 °C … +70 °C
Storage temperature range	-20 °C … +85°C
Medium temperature range	-10 °C … +85 °C
EMV	EN 61326-1:2013 EN 61326-2-3:2013
RoHS	EN IEC 63000:2018
Protection type	IP 65 acc. to EN 60529

Materials of the parts that come into contact with the surroundings	
Housing	CrNi Steel 1.4305
Device plug screw lid	Polypropylene, black
Device plug	Polyamide, brass, zinc
Cable socket	Polyamide, polycarbonate, brass, zinc

Materials of the parts that come into contact with the measuring medium		
Process connection	CrNi Steel 1.4404	
Sensor membrane	Ceramic Al_2O_3	
Seal [1)]	FKM	Fluorinated rubber, Viton®
	CR	Chloroprene rubber, Neopren®
	EPDM	Ethylene propylene diene rubber
	H-NBR	Hydrogenated acrylonitrile butadiene rubber
	FFPM	Perfluorinated rubber, Kalrez®

[1)] see order code

2.7 Parameters

The ME12 pressure transmitter is fully configured on delivery, however it can also be remotely configured on site. A PC, an interface, which is available as an accessory and the PC software **transmitter programmer** are required for configuration.

- The EU13 with a USB interface is used for pressure transmitters with 2-line connections.
- The EU03 with an RS 232 interface is used for pressure transmitters with 3-line connections. Every device is delivered with an RS232/USB adapter to ensure that the interface can be operated on the USB interface.

The following parameters can be set

Characteristic curve	Increasing / decreasing
Attenuation	0 … 200 s
Offset correction	±25 %FS
Margin correction	±25 %FS

Signal limits	**Current output** (settable)	**Voltage output** (not settable)
Upper limit	3.5 … 22.5 mA	approx. 10.5 V
Lower limit	3.5 … 22.5 mA	0V
Error signal	3.5 … 22.5 mA	---

2.8 Construction design

2.8.1 Dimensional picture

All dimensions in mm unless otherwise stated

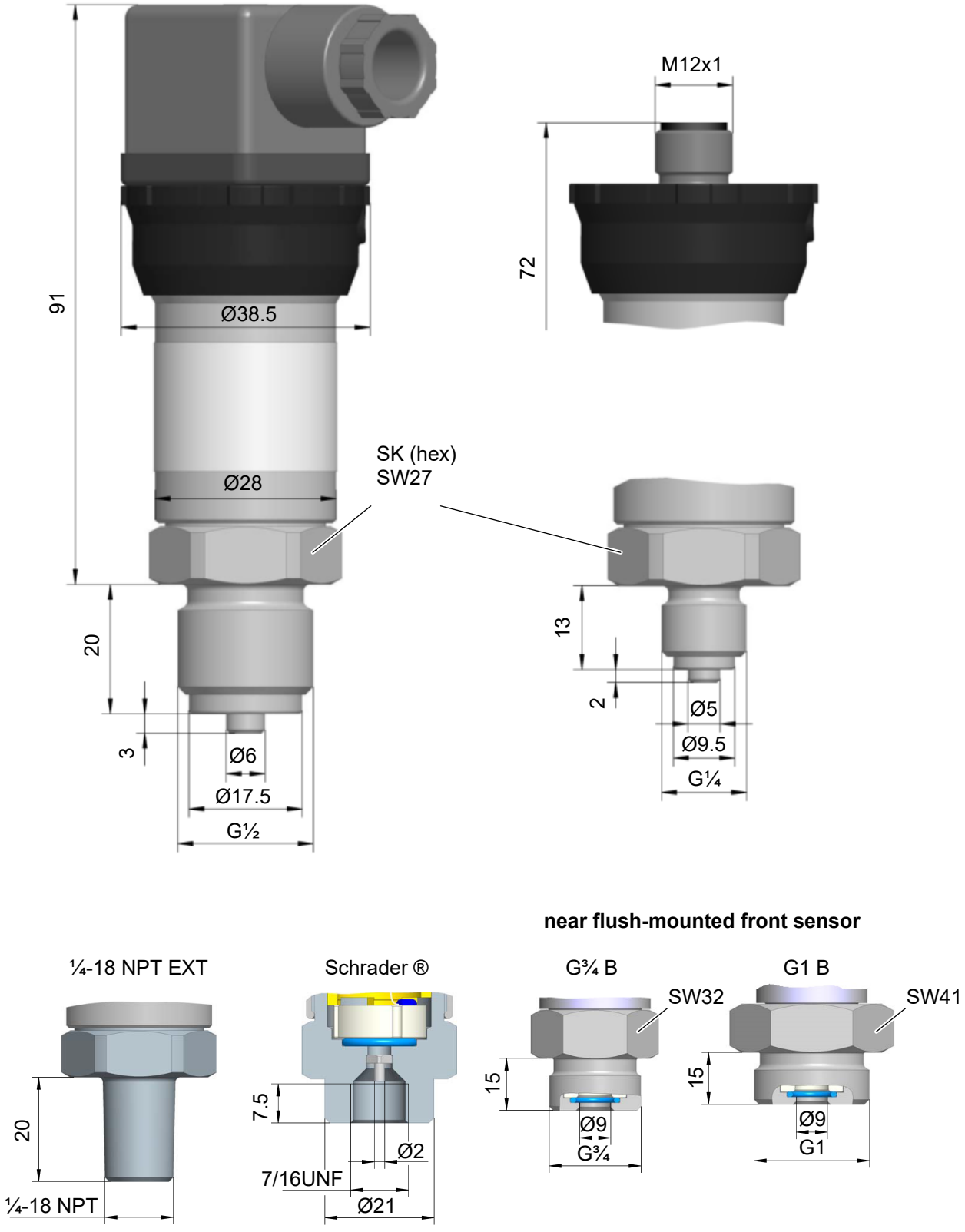


Fig. 4: Dimension drawing housing and process connections

2.8.2 Process connection

Port		Material
G½ B	Connection shanks with external thread	1.4404
G¼ B	Connection shanks with external thread	1.4404
¼-18 NPT EXT	Connection shanks with external thread	1.4404
7/16 UNF	Connection with inner thread for the Schrader®- screw connection >	1.4404
G¾ B	Connection shanks with external thread near flush-mounted front sensor	1.4404
G1 B	Connection shanks with external thread near flush-mounted front sensor	1.4404

2.8.3 Electrical connection

Unit connector and cable socket DIN EN 175 301-803 Form A, 4 pin

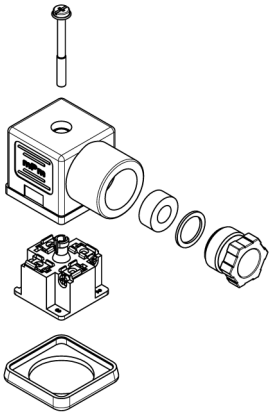
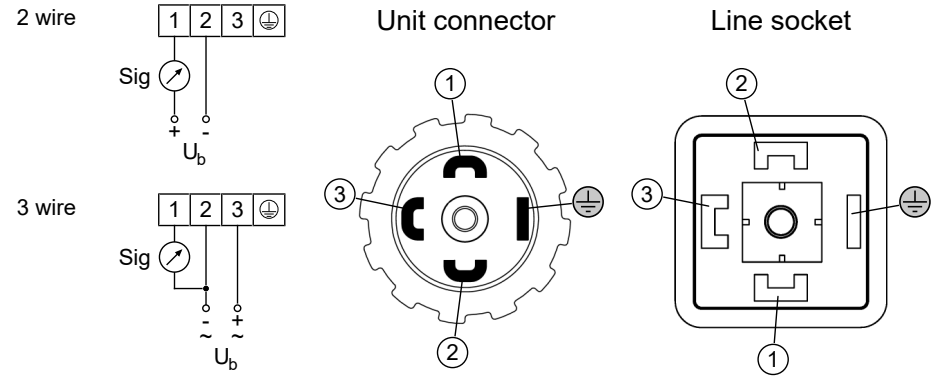


Fig. 5: Line socket DIN EN 175 301-803A



M12 flanged connector DIN EN 61076-2-101 coding A, 4 pin

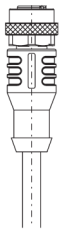
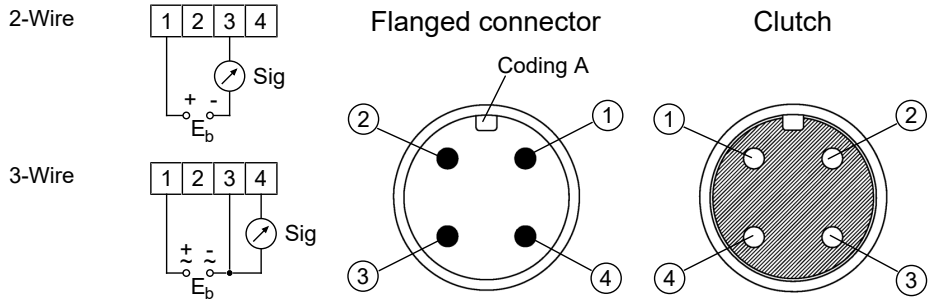
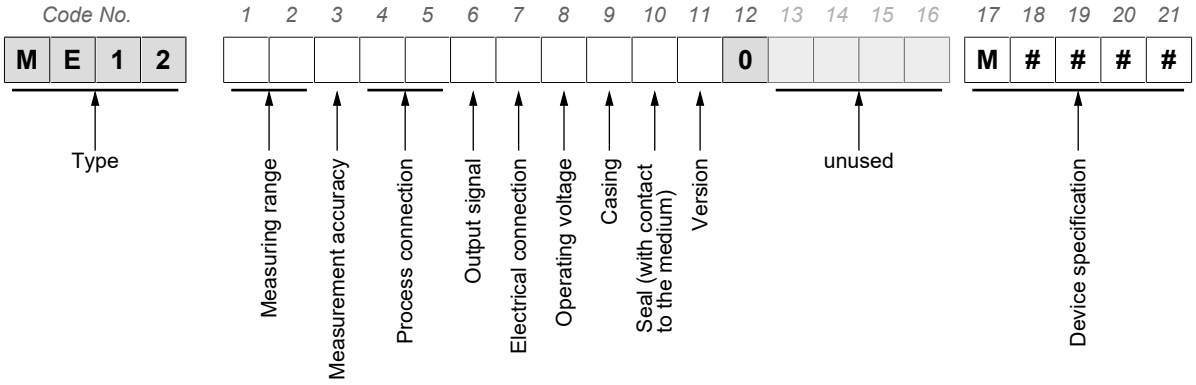


Fig. 6: M12 plug DIN EN 61076-2-101



3 Order Codes



[1,2]	Measuring range	[1,2]	Measuring range	Abs.	Rel.
01	0 … 0.6 bar	**F1**	0 ... 60 kPa		●
02	0 … 1 bar	**F2**	0 ... 100 kPa	●	●
03	0 … 1.6 bar	**F3**	0 ... 160 kPa	●	●
04	0 … 2.5 bar	**F4**	0 ... 250 kPa	●	●
05	0 … 4 bar	**F5**	0 ... 400 kPa	●	●
06	0 … 6 bar	**F6**	0 ... 600 kPa	●	●
07	0 … 10 bar	**F7**	0 ... 1000 kPa	●	●
08	0 … 16 bar	**F8**	0 ... 1600 kPa	●	●
09	0 … 25 bar	**G1**	0 ... 2500 kPa		●
10	0 … 40 bar	**G2**	0 ... 4000 kPa		●
11	0 … 60 bar	**G3**	0 ... 6000 kPa		●
31	-1 … 0 bar				●
32	-1 … 0.6 bar				●
33	-1 … 1.5 bar				●
34	-1 … 3 bar				●
35	-1 … 5 bar				●
36	-1 … 9 bar				●
37	-1 … 15 bar				●
38	-1 … 24 bar				●
39	0 … -1 bar				●

Abs. = absolute pressure measurement
Rel. = relative pressure measurement.

[3]	Measurement accuracy
M	1.0 % Characteristic curve deviation (relative pressure measurement)
0	0.5 % Characteristic curve deviation (relative pressure measurement)
S	1.0 % characteristic curve deviation (absolute pressure measurement)
T	0.5 % characteristic curve deviation (absolute pressure measurement)

[4,5]	Process connection	Material
85	Connection shanks with external thread G¼ B	1.4404
87	Connection shanks with external thread G½ B	
88	Connecting port with outer thread ¼ -18 NPT EXT	
S1	Schrader® screw connection inner thread 7/16 UNF	
A3	Near flush-mounted front sensor outer thread G1 B	
A8	Near flush-mounted front sensor outer thread G¾ B	

[6]	Output signal	
A	0 … 20 mA	3-wire version
P	4 … 20 mA	3-wire version
C	0 … 10 V	3-wire version
D	1 … 5V	3-wire version
B	4 … 20 mA	2-wire version

[7]	Electrical connection
H	Cable socket DIN EN 175 301-803
M	M12 coupling device DIN EN 61076-2-101

[8]	Operating voltage	
9	24 V DC	2-wire version
L	24 V AC/DC	3-wire version

[9]	Casing	Protection class (DIN EN 60 529)
0	Standard casing	IP65
V	Standard casing, cast version	

[10]	Seal (with contact to medium)	
V	FKM	Fluororubber, Viton®
C	CR	Chloroprene rubber (Neopren®)
E	EPDM	Ethylene propylene diene rubber
H	H-NBR	Hydrogenated acrylonitrile butadiene rubber
K	FFPM	Perfluorinated rubber (Kalrez®)

[11]	Version	
0	Standard	
3	Suitable for O_2 measurement	O-ring with BAM approval (test for reactivity with oxygen)
A	Silicone-free	

3.1 Accessories

Order no.	Planned measures	No. of Poles	Length
06401993	PUR cable with M12-coupling	4-pin	2m
06401994	PUR cable with M12-coupling	4-pin	5m
06401563	PUR cable with M12-coupling	4-pin	7m
06401572	PUR cable with M12-coupling	4-pin	10m

MZ1###	Siphons
MZ400#	Capillary throttle coil
MZ410#	Settable damping reactor
MZ5###	Manometer shutoff valve acc. to DIN 16270/16271
MZ6###	Manometer shutoff valve acc. to DIN 16272
EU03	3-wire transmitter PC Interface incl. PC software
EU13	2-wire transmitter PC Interface incl. PC software

A data sheet is available on our website www.fischermesstechnik.de or on request.

3.2 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.

Notes

Notes

Notes

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