developing solutions

FISCHER
MESS- UND REGELTECHNIK

II 3D Ex tc IIIB T125°C Dc

Operating manual

ME01 ... S

Digital manometer
with remote transmission

for explosion-protected areas
Gas explosion protection Zone 2
Dust explosion protection Zone 22

09015301 • BA_EN_ME01_ATEX • Rev. ST4-D • 12/25

Masthead

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Rev. ST4-A 10/20	Version 1 (first edition)
Rev. ST4-B 08/21	Version 2 (UKCA Declaration of Conformity, REACH)
Rev. ST4-C 01/23	Version 3 (Input variables corrected)
Rev. ST4-D 12/25	Version 4 (EU Conf. Declaration updated. ATEX version Zone 2 discontinued.)

Table of contents

1 Safety instructions

1.1 General

This operating manual contains basic instructions for the installation, operation and maintenance of the device that must be followed without fail. It must be read by the installer, the operator and the responsible specialist personnel before installing and commissioning the device.

This operating manual is an integral part of the product and therefore needs to be kept close to the instrument in a place that is accessible at all times to the responsible personnel.

The following sections, in particular instructions about the assembly, commissioning and maintenance, contain important information, non-observance of which could pose a threat to humans, animals, the environment and property.

The instrument described in these operating instructions is designed and manufactured in line with the state of the art and good engineering practice.

1.2 Personnel Qualification

The instrument may only be installed and commissioned by specialized personnel familiar with the installation, commissioning and operation of this product.

Specialized personnel are persons who can assess the work they have been assigned and recognize potential dangers by virtue of their specialized training, their skills and experience and their knowledge of the pertinent standards.

For explosion-proof models the specialized personnel must have received special training or instruction or be authorized to work with explosion-proof instruments in explosion hazard areas.

1.3 Risks due to Non-Observance of Safety Instructions

Non-observance of these safety instructions, the intended use of the device or the limit values given in the technical specifications can be hazardous or cause harm to persons, the environment or the plant itself.

The supplier of the equipment will not be liable for damage claims if this should happen.

1.4 Safety Instructions for the Operating Company and the Operator

The safety instructions governing correct operation of the instrument must be observed. The operating company must make them available to the installation, maintenance, inspection and operating personnel.

Dangers arising from electrical components, energy discharged by the medium, escaping medium and incorrect installation of the device must be eliminated. See the information in the applicable national and international regulations.

Please observe the information about certification and approvals in the Technical Data section.

The instrument must be decommissioned and secured against inadvertent re-operation if a situation arises in which it must be assumed that safe operation is no longer possible. Reasons for this assumption could be:

- evident damage to the instrument
- failure of the electrical circuits
- longer storage outside the approved temperature range.
- considerable strain due to transport

Repairs may be carried out by the manufacturer only.

A professional single conformity inspection as per DIN EN 61010, section 1, must be carried out before the instrument can be re-commissioned. This inspection must be performed at the manufacturer's location. Correct transport and storage of the instrument are required.

1.5 Unauthorised Modification

Modifications of or other technical alterations to the instrument by the customer are not permitted. This also applies to replacement parts. Only the manufacturer is authorised to make any modifications or changes.

1.6 Inadmissible Modes of Operation

The operational safety of this instrument can only be guaranteed if it is used as intended. The instrument model must be suitable for the medium used in the system. The limit values given in the technical data may not be exceeded.

The manufacturer is not liable for damage resulting from improper or incorrect use.

1.7 Safe working practices for maintenance and installation work

The safety instructions given in this operating manual, any nationally applicable regulations on accident prevention and any of the operating company's internal work, operating and safety guidelines must be observed.

The operating company is responsible for ensuring that all required maintenance, inspection and installation work is carried out by qualified specialized personnel.

1.8 Pictogram explanation

⚠ DANGER

Type and source of danger

This indicates a **direct** dangerous situation that could lead to death or **serious injury** (highest danger level).

1. Avoid danger by observing the valid safety regulations.

⚠ WARNING

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to death or **serious injury** (medium danger level).

1. Avoid danger by observing the valid safety regulations.

⚠ CAUTION

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to slight or serious injury, damage or **environmental pollution** (low danger level).

1. Avoid danger by observing the valid safety regulations.

NOTICE

Note / advice

This indicates useful information of advice for efficient and smooth operation.

2 Product and functional description

2.1 Delivery scope

- Digital manometer ME01
- Operating Manual

2.2 Product summary

ATEX version

Fig. 1: Device versions

2.2.1 Type plate

The rating plate shown serves as an example of the information contained. For further information, please refer to the order code at the end of these instructions.

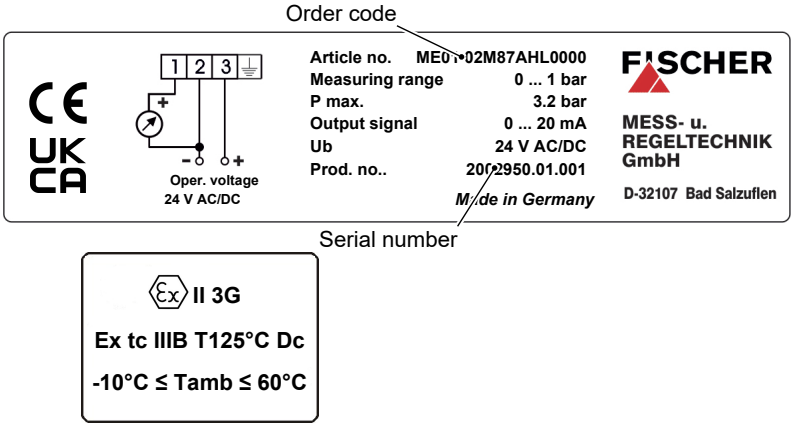


Fig. 2: Type plate

2.3 Intended use

The ME01 is a pressure transmitter with a ceramic measuring cell and is suitable for measuring over-pressure and under-pressure for non-aggressive liquid and gaseous media.

Depending on the model, the device can be used to measure relative pressure or absolute pressure.

Please contact the manufacturer before using this unit with dirty or aggressive media because the media compatibility of the unit needs to be checked.

The device may only be used for the purpose stipulated by the manufacturer. The manufacturer will not be liable for damage arising from incorrect or improper use.

2.3.1 Explosive atmosphere classification

Danger due to dry dusts

The ME01 ## # 87 # HL S#### digital pressure gauges are suitable for use as "electrical equipment for use in potentially explosive atmospheres" Zone 22 – dry dusts.

Designation in accordance with Directive 2014/34/EU:
CE Ex II 3D Ex tc IIIB T125°C Dc

2.4 Function diagram

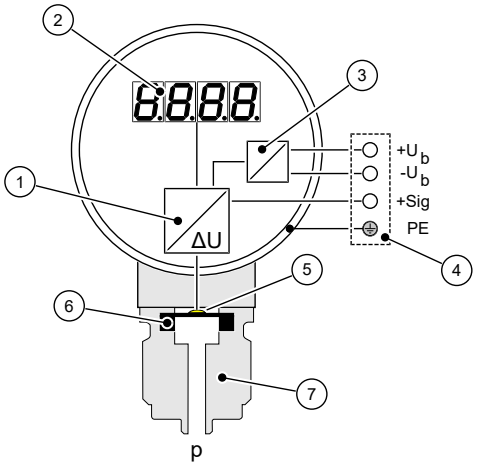


Fig. 3: Function diagram

1	Measurement converter	**2**	Measuring data display
3	Auxiliary energy	**4**	Device plug
5	Resistance bridge	**6**	Ceramic measuring cell
7	Connecting shanks		

2.5 Design and mode of operation

A ceramic measuring cell is used as a pressure sensor. The high resistance of the used ceramic materials also allows use with aggressive media.

There is a resistance measuring bridge attached to the side of the measuring diaphragm that faces away from the medium. When pressure is exerted, the membrane distorts in the elastic range. At the same time, the resistance values of the bridge change proportionally to the measuring pressure. These values are changed by the installed electronics and are displayed.

The electrical unit signals 0/4 … 20 mA and 0 … 10 V in a three-wire design are available for remote transmission.

3 Assembly

3.1 General

If units are used in potentially explosive areas, the personnel must receive additional training or briefings or have a permit to work ion explosion-protected units in potentially explosive systems.

⚠ DANGER

Risk connected to pressure or the medium

Cases or fluids can leak from pressure lines, screw fittings and parts, if handled incorrectly. Steps must be taken to prevent

- ▷ uncontrolled movements of cables and parts.
- ▷ Mechanical or chemical risks emanating from the leaking medium.

1. You avoid danger by observing the national and international guidelines and safety regulations.
2. Only carry out assembly and repair work when the system is depressurized.
3. Replace faulty parts and equipment immediately.

⚠ WARNING

Falling objects

The operator must ensure that any falling objects cannot collide with the installed unit. Steps must be taken to prevent

- ▷ sparks being generated on impact.
- ▷ invalidation of the protection class of the casing.

1. This can be avoided by attaching protective cover,
2. a protective casing or
3. a similar element.

The instrument is equipped as standard for connection with a G½ connection shanks.

Various accessories are available for mounting (see data sheet MZ at www.fischermesstechnik .de).

3.2 Process connection

- By authorized and qualified specialized personnel only.
- The pipes need to be depressurized when the instrument is being connected.
- Appropriate steps must be taken to protect the device from pressure surges.
- Check that the device is suitable for the medium being measured.
- Maximum pressures must be observed (cf. Tech. data)

To ensure safety during installation and maintenance, we recommend installing a suitable shut-off valve on the system (see accessories). A shut-off valve offers the following advantages:

- The device can be depressurized or decommissioned.
- The device can be disconnected from the power supply within the applicable system for repairs or inspections.
- A function test of the device can be performed on-site.

The pressure line must be kept as short as possible and installed without any tight bends to avoid delays.

The pressurized line must be installed on a gradient so that no air pockets can be created when measuring fluids and that no water pockets are created when measuring gas. If the required inclination is not reached, water or air filters must be installed at suitable places.

The pressure line must be vented with a fluid measuring medium.

If water is used as a measuring medium, the unit must be protected against frost.

Pulsating pressure on the system side can lead to wear and functional problems. To safeguard this, we recommend installing absorption elements in the pressure line.

3.3 Electrical connections

The electrical connection may only be realised by authorised and qualified specialists that have undergone additional training or briefings or have a permit to work on explosion-protected units in potentially explosive systems.

Risks emanating from electrical current of voltage should be prevented by means of suitable action.

- When connecting the unit, the national and international electro-technical regulations must be observed.
- Disconnect the system from the mains, before electrically connecting the device.
- Do not connect the connector if strained.
- A CE-conform mains adapter with a slow 200 mA fuse only may be used in the power supply circuit.
- The supply voltage may not exceed 30 V DC. The admissible load/impedance is stated in the technical data.
- To ensure safe operation of the devices, the supply circuit must comply with local regulations and guidelines for the installation and operation of electrical systems in potentially explosive atmospheres.

3 Conductor circuit

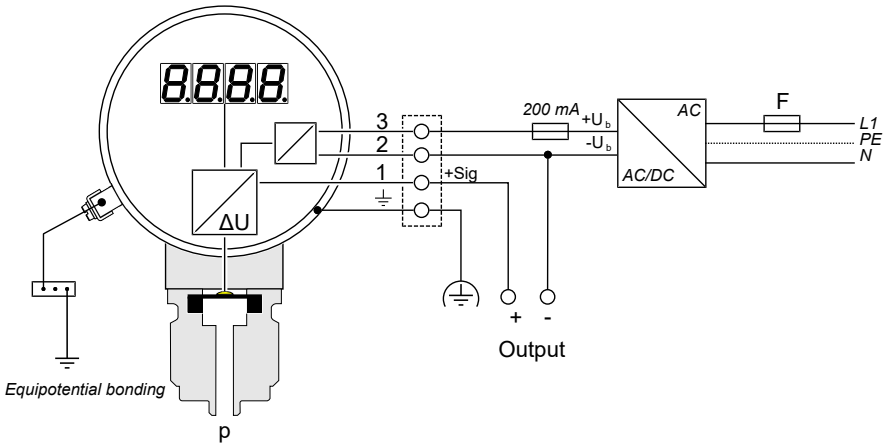


Fig. 4: Electrical connection

Device plug

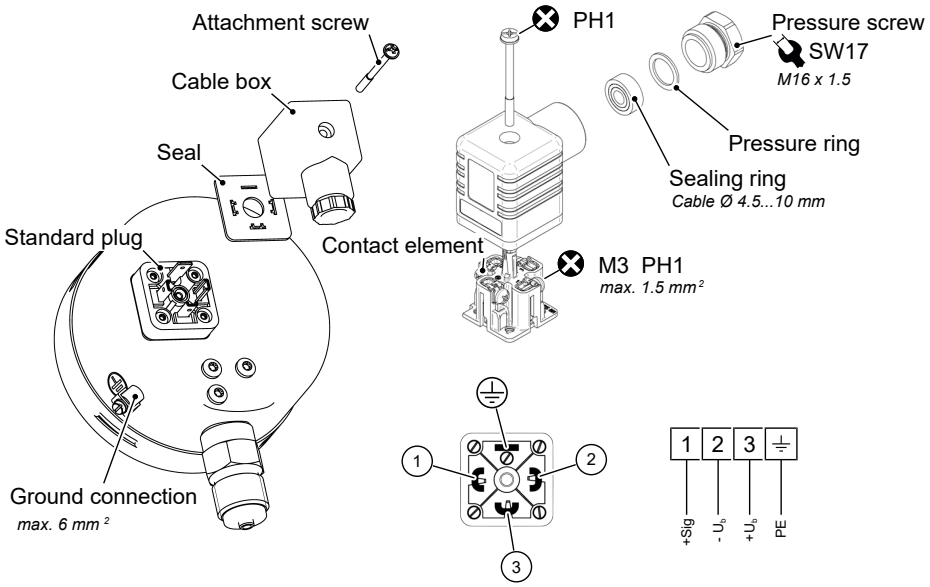


Fig. 5: Assembly and connection of the device plug

4 Start-up

4.1 Generalities

A prerequisite for commissioning is correct installation of all electrical supply lines and the pressure lines. All connections are arranged so that there are no mechanical forces acting on the device.

⚠ CAUTION

Leakage test

The pressurized lines need to be checked for leaks before commissioning.

The enclosure protection type IP 65 is only guaranteed, if a suitable power supply cable is used. In particular, check whether the seal of the standard plug was mounted correctly.

4.2 Function test

As an example, a manometer with a measuring range 00.00 … 06.00 bar and an output signal 0 … 20 mA is used.

▷ The electrical cables are installed correctly.

▷ The pressure lines are mounted according to the specifications and are tight.

1. Switch the system into a depressurized state or close the shutoff valve.
2. Switch on the auxiliary energy for the manometer.
   ➥ The LED display must show the value for the start of the measuring range (*00.00*).
   ➥ The analogue output now needs to transfer the signal value for the zero-point (0 mA) to the overriding process control.
3. Open the shutoff valve.
4. Move the system to the end of the measuring range.
   ➥ The LED display must show the value for the end of the measuring range (*06.00*).
   ➥ The analogue output now needs to transfer the signal value for the end of the measuring range (20 mA) to the overriding process control.

▶ The function test is completed.

If the measuring range end value cannot be achieved due to the system, select a value that is technically possible. The associated analogue signal needs to be calculated in this case.

In case of errors, check the pressure lines and the electrical connections.

5 Servicing

5.1 Transport

The measuring device must be protected against impacts. It should be transported in the original packaging or a suitable transport container.

5.2 Service

All defective or faulty devices should be sent directly to our repair department. Please coordinate all shipments with our sales department.

⚠ WARNING

Process media residues

Process media residues in and on dismantled devices can be a hazard to people, animals and the environment. Take adequate preventive measures. If required, the devices must be cleaned thoroughly.

Return the device in the original packaging or a suitable transport container.

5.3 Disposal

Please help to protect the environment by always disposing of the work pieces and packaging materials in compliance with the valid national waste and recycling guidelines or reuse them.

6 Technical data

6.1 Generalities

Type designation	ME01 … S ####	Zone 22
Pressure type	Absolute pressure Relative pressure	
Measurement principle	Piezoresistive ceramic sensor	

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

6.2 Input variables

Measuring range	Over-pressure safety	Absolute pressure	Relative pressure
0 … 1 bar	2 bar	●	●
0 … 1.6 bar	3.2 bar	●	●
0 … 2.5 bar	5 bar	●	●
0 … 4 bar	8 bar	●	●
0 … 6 bar	12 bar	●	●
0 … 10 bar	20 bar	●	●
0 … 16 bar	32 bar	●	●
0 … 25 bar	50 bar	●	●
0 … 40 bar	80 bar	●	●
0 … 60 bar	120 bar	●	●
-1 … 0 bar	2 bar		●
-1 … 0.6 bar	3.2 bar		●
-1 … 1.5 bar	5 bar		●
-1 … 3 bar	8 bar		●
-1 … 5 bar	12 bar		●
-1 … 9 bar	20 bar		●
-1 … 15 bar	32 bar		●

6.3 Output sizes

Output signal	0/4 … 20 mA	0 to 10 V
Type of connection	Three-conductor	Three-conductor
Apparent ohmic resistance	500 Ω	> 5 kΩ
Limits	24 mA	10.5 V

6.4 Measuring accuracy

Characteristic curve	Linear
Measurement deviation	1 %
Linearity	< 1% FS
Hysteresis	< 0.5 % FS
Temperature drift (zero-point)	0.4 % FS/10 K
Temperature drift (range)	0.05 % FS/10 K

6.5 Auxiliary energy

NOTICE! Only a CE-compliant mains adapter with a slow 200 mA fuse may be used in the power supply circuit for ATEX devices.

Nominal voltage	24 V DC
Admissible operating voltage	15 … 30 V DC
Power consumption	Max. 160 mA
Effective inner capacity C_i	Max. 270 nF
Effective inner inductivity L_i	Max. 980 µH

6.6 Operating conditions

Ambient temperature range	0 … +60 °C
Storage temperature range	-10 … +70 °C
Medium temperature range	0 … +85 °C
Protection class IP	IP65 acc. to DIN EN 60529
CE	**Compliant with:**
ATEX	EN IEC 60079-0:2018/A11:2024 EN 60079-31:2014
EMV	EN IEC 61326-1:2021 EN IEC 61326-2-1:2021
RoHS	EN IEC 63000:2018
UKCA	**Compliant with:**
ATEX	BS EN IEC 60079-0+A11:2018-07-09 BS EN IEC 60079-31:2024-03-0
EMV	BS EN IEC 61326-1:2021-06-07 BS EN IEC 61326-2-3:2021-06-10
RoHS	BS EN IEC 63000:2018-12-10
REACH	**Conform**
Conflict materials	none

6.7 Construction design

Process connection	Connection shank G1/2 B DIN EN 837
Electrical connection	4-pin standard plug DIN EN 175 301-803-A
Connection cable	Max. 1.5 mm^2 Ø 4.5 … 10 mm
Earthing connection	Fine wire up to 4 mm^2 Single wire up to 6 mm^2
Installation position	vertical
Dimensions (LWH)	138 x 101 x 99 mm
Weight	≈ 620 g

6.7.1 Materials

Materials of the parts that come into contact with the medium	
Process connection	Stainless steel 1.4571, 1.4404
Sealant	FKM
Sensor element	Ceramic Al_2O_3

Materials of the parts that come into contact with the surroundings	
Housing	Stainless steel 1.4301
Front film	PET
Sealant	NBR
Device plug	PA 6 GF
Device plug seal	NBR

6.7.2 Dimensional drawings

All dimensions in mm unless otherwise stated

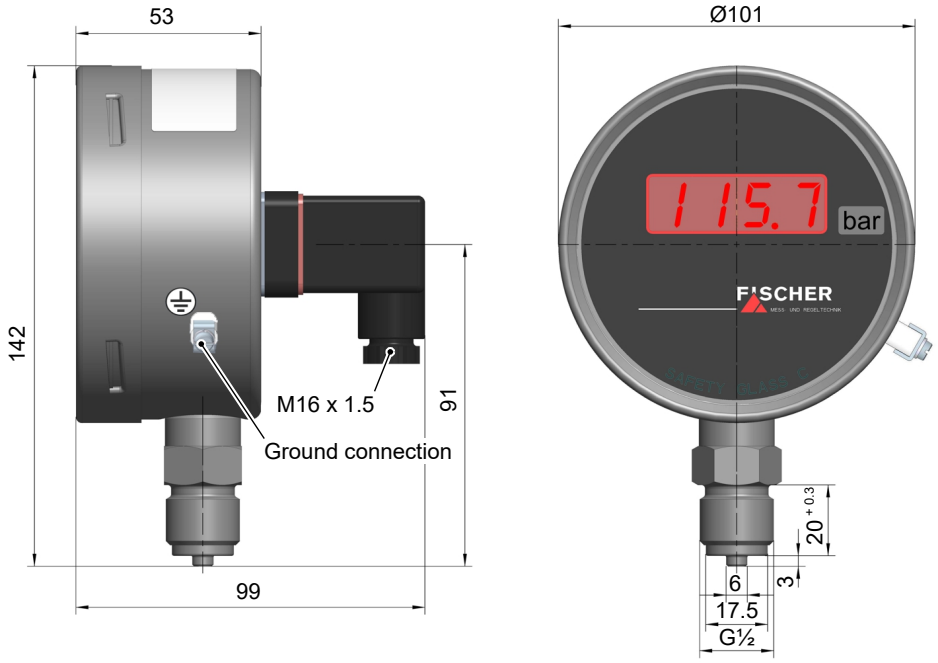


Fig. 6: Dimensional drawing

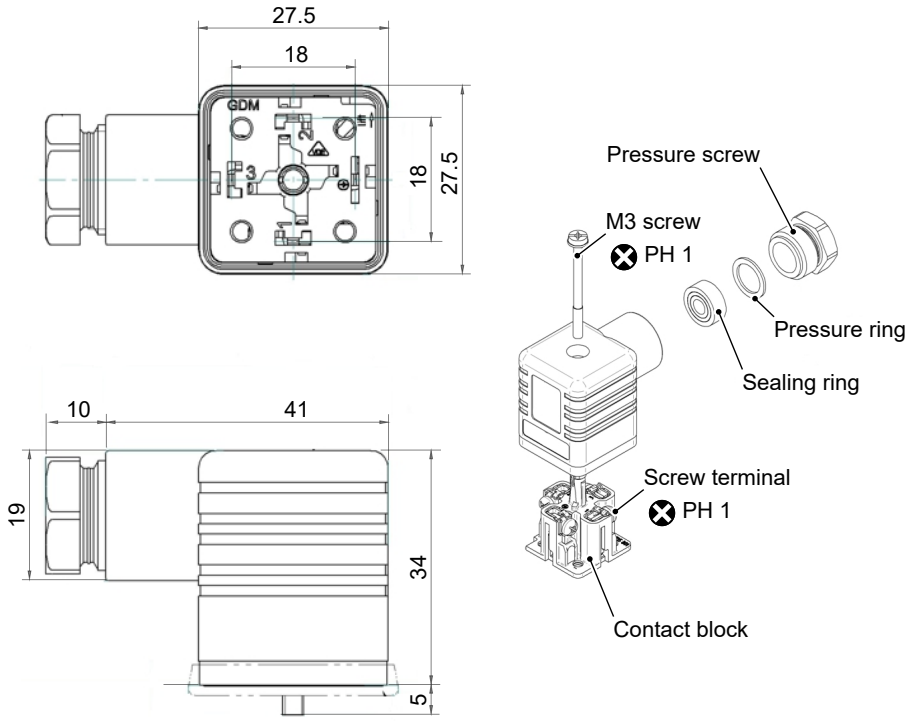
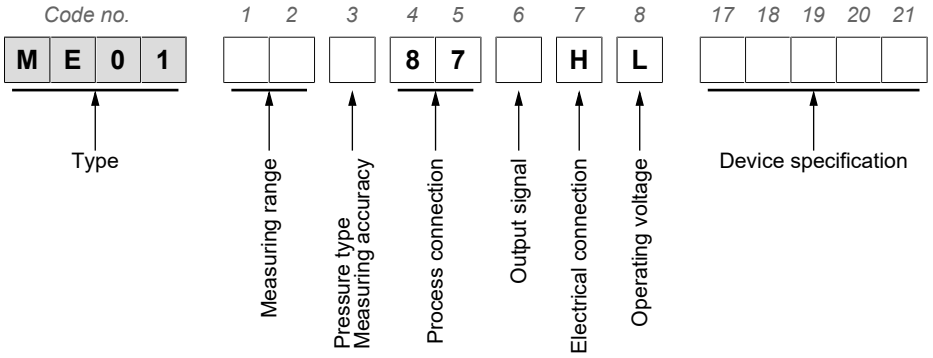


Fig. 7: Cable socket

7 Order code



Measuring range:

[1.2]	*(Code no.)*
02	0 ... 1 bar
03	0 ... 1.6 bar
04	0 ... 2.5 bar
05	0 ... 4 bar
06	0 ... 6 bar
07	0 ... 10 bar
08	0 ... 16 bar
09	0 ... 25 bar
10	0 ... 40 bar
11	0 ... 60 bar
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

Pressure type/measuring accuracy:

[3]	*(Code no.)*
M	Relative pressure (Characteristic curve deviation 1%)
S	Absolute pressure (Characteristic curve deviation 1%)

Process connection:

[4.5]	*(Code no.)*
87	Connection shanks with external thread G½ B bottom, rustproof stainless steel

Output signal:

[6]	*(Code no.)*	Type of connection	Operating voltage
A	0...20 mA	3-Conductor	24 V AC/DC
P	4...20 mA	3-Conductor	24 V AC/DC
C	0...10 V DC	3-Conductor	24 V DC

Electrical connection:

[7]	*(Code no.)*
H	Plug 4-pin, standardised plug DIN EN 175 301-803-A

Operating voltage:

[8]	*(Code no.)*
L	24 V AC/DC

Device specification:

[17-21]	*(Code no.)*
S####	Use in Zone 22 - Risk from dust: CE Ex II 3D Ex tc IIIB T125°C Dc

8 Attachments

FISCHER MESS- UND REGELTECHNIK

(Translation) CE

EU Declaration of Conformity

For the product described as follows

Product designation **Digital pressure gauge**

Type designation **ME01 ## # 87 # HL S####** **Zone 22**

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

2014/30/EU	*EMC Directive*
2014/34/EU	*ATEX Directive*
2011/65/EU	*RoHS Directive*
(EU) 2015/863	*Delegated Directive amending Annex II to Directive 2011/65/EU*

The products were tested in compliance with the following standards.

Electromagnetic compatibility (EMC)

DIN EN IEC 61326-1:2022-11 *EN IEC 61326-1:2021*	*Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirement*
DIN EN IEC 61326-2-3:2022-11 *EN IEC 61326-2-3:2021*	*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*

Explosive atmospheres (ATEX)

DIN EN IEC 60079-0:2019-09 *EN IEC 60079-0:2018*	*Explosive atmospheres - Part 0: Equipment - General requirementsn*
DIN EN IEC 60079-0 Berichtigung 1:2021-04 *EN IEC 60079-0:2018/AC:2020-02*	*Correction*
DIN EN IEC 60079-0/A11:2025-12 *EN IEC 60079-0:2018/A11:2024*	*Additional explanations regarding DIN EN 60079-0*
DIN EN 60079-31:2014-12 *EN 60079-31:2014*	*Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"*

RoHS compability (RoHS 3)

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

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The devices bear the following marking:

CE

Ex II 3D Ex tc IIIB T125°C Dc Zone 22

Bad Salzuflen
01 Dec 2025

T. Malischewski
Managing Director

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Fig. 8: CE_EN_ME01_R

FISCHER MESS- UND REGELTECHNIK

(Translation) UK CA

UKCA Declaration of Conformity

For the product described as follows

Product designation **Digital pressure gauge**

Type designation **ME01 ## # ## # ## S####** **Zone 22**

is hereby declared to comply with the essential requirements, specified in the following UK regulations:

Statutory regulation No.	*Description*
2016 No. 1107	*The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016*
2016 No. 1091	*The Electromagnetic Compatibility Regulations 2016*
2021 No. 422	*The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (Amendment) Regulations 2021*
2022 No. 1647	*The Hazardous Substances and Packaging (Legislative Functions and Amendment) (EU Exit) Regulations 2020*

The products have been tested according to the following standards.

Explosive atmospheres (ATEX):

BS EN IEC 60079-0+A11:2018-07-09	*Explosive atmospheres. Equipment. General requirements*
BS EN IEC 60079-31:2024-03-04	*Explosive atmospheres. Equipment dust ignition protection by enclosure "t"*

Electromagnetic compatibility (EMC):

BS EN IEC 61326-1:2021-06-07	*Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements*
BS EN IEC 61326-2-3:2021-06-10	*Electrical equipment for measurement, control and laboratory use. EMC requirements. Particular requirements. Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning*

Restriction of Hazardous Substances (RoHS):

BS EN IEC 63000:2018-12-10	*Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

The sole responsibility for drawing up this declaration of conformity in relation to the fulfilment of the essential requirements and the preparation of the technical documentation lies with the manufacturer.

Manufacturer

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Die Geräte werden gekennzeichnet mit:

UK CA
Ex II 3D Ex tc IIIB T125°C Dc Zone 22

Bad Salzuflen
01 Dec 2025

T. Malischewski
Managing Director

09010522 • UKCA_EN_ME01_ATEX • Rev. ST4-C • 12/25

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Fig. 9: UKCA_EN_ME01_ATEX

Notes

Notes

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