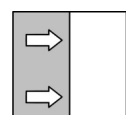




## Operating manual

### ME01

Digital manometer  
with remote transmission



## Masthead

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Subject to technical amendments.



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### Version history

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)

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# 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.

## 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.

## 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



Standard version

Fig. 1: Device versions

#### 2.2.1 Type plate

This type plate serves as an example of the information that is stated. The data shown is purely fictive, but does correspond to the actual conditions. For more information, please see the order code at the end of these instructions.

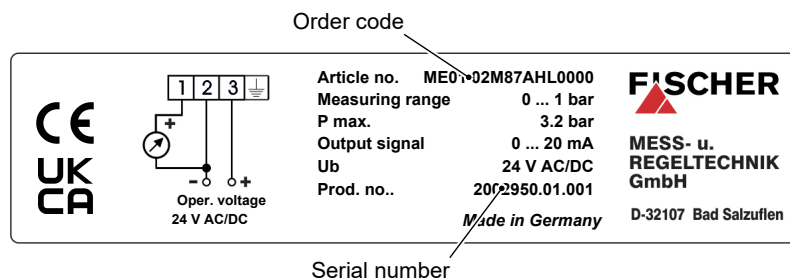


Fig. 2: Type plate

### 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.

## 2.4 Function diagram

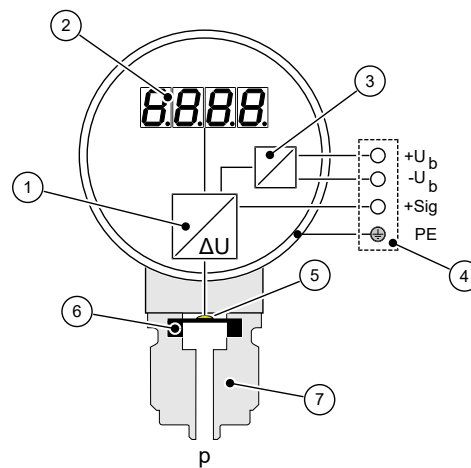


Fig. 3: Function diagram

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



#### **⚠ 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.

The instrument is equipped as standard for connection with a G $\frac{1}{2}$  connection shanks.

Various accessories are available for mounting (see data sheet MZ at [www.fischermesstechnik.de](http://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

- By authorized and qualified specialized personnel only.
- 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.
- Install the consumer-adapted fuses.
- Do not connect the connector if strained.

The admissible load / resistance is stated in the technical data.

#### 3 Conductor circuit

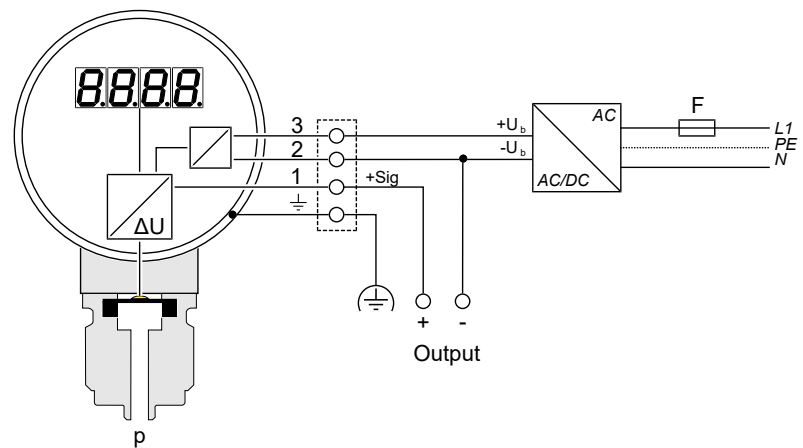


Fig. 4: Electrical connection

#### Device plug

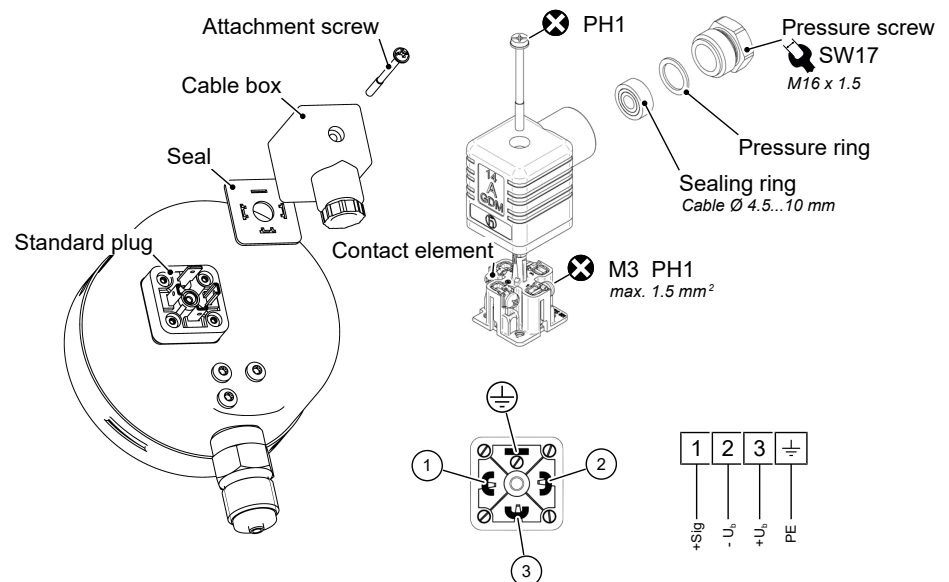


Fig. 5: Assembly and connection of the device plug

## 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 Maintenance

The instrument is maintenance-free. We recommend the following regular inspection to guarantee reliable operation and a long service life:

- Check the function in combination with downstream components.
- Check the leak-tightness of the pressure connection lines.
- Check the electrical connections.

The exact test cycles need to be adapted to the operating and environmental conditions. In combination with other devices, the operating instructions for the other devices also need to be observed.

### 5.2 Transport

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

### 5.3 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.

### 5.4 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	
Pressure type	Absolute pressure Relative pressure	
Measurement principle	Piezoresistive ceramic sensor	
<b>Reference conditions (acc. to IEC 61298-1)</b>		
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

Nominal voltage	24 V AC/DC
Admissible operating voltage	21.6 to 26.4 V AC/DC
Power consumption	Max. 160 mA

## 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
<b>CE</b>	<b>Compliant with:</b>
EMV	EN 61326-1:2013 EN 61326-2-3:2013
RoHS	EN IEC 63000:2018
<b>UKCA</b>	<b>Compliant with:</b>
EMV	BS EN 61326-1:2013-02-28 BS EN 61326-2-3:2013-02-28
RoHS	BS EN IEC 63000:2018-12-10
<b>REACH</b>	<b>Conform</b>
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 <sup>2</sup> Ø 4.5 ... 10 mm
Installation position	vertical
Dimensions (LWH)	138 x 101 x 99 mm
Weight	≈ 620 g

### 6.7.1 Materials

<b>Materials of the parts that come into contact with the medium</b>	
Process connection	Stainless steel 1.4571, 1.4404
Sealant	FKM
Sensor element	Ceramic Al <sub>2</sub> O <sub>3</sub>
<b>Materials of the parts that come into contact with the surroundings</b>	
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

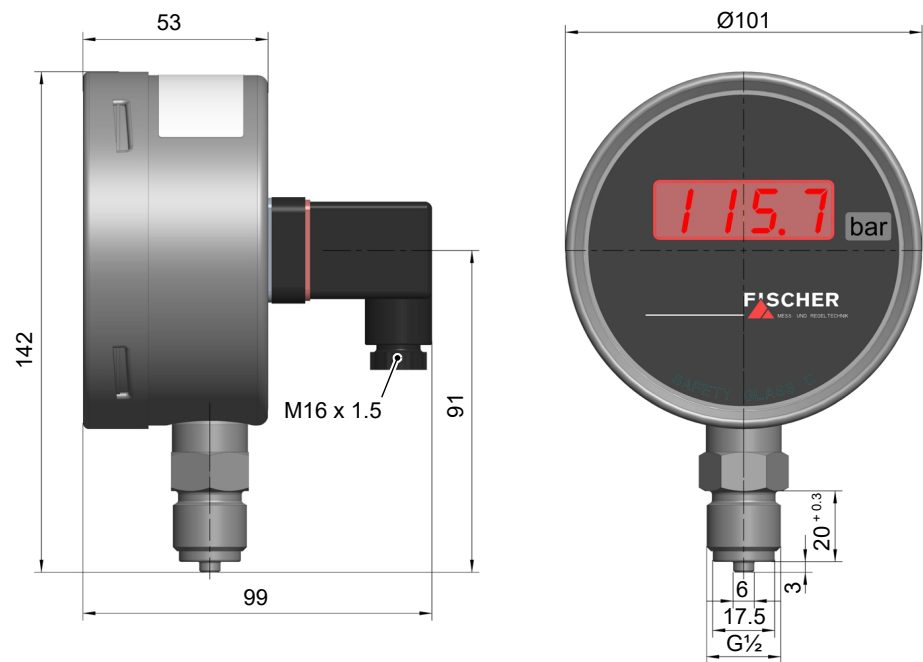


Fig. 6: Dimensional drawing

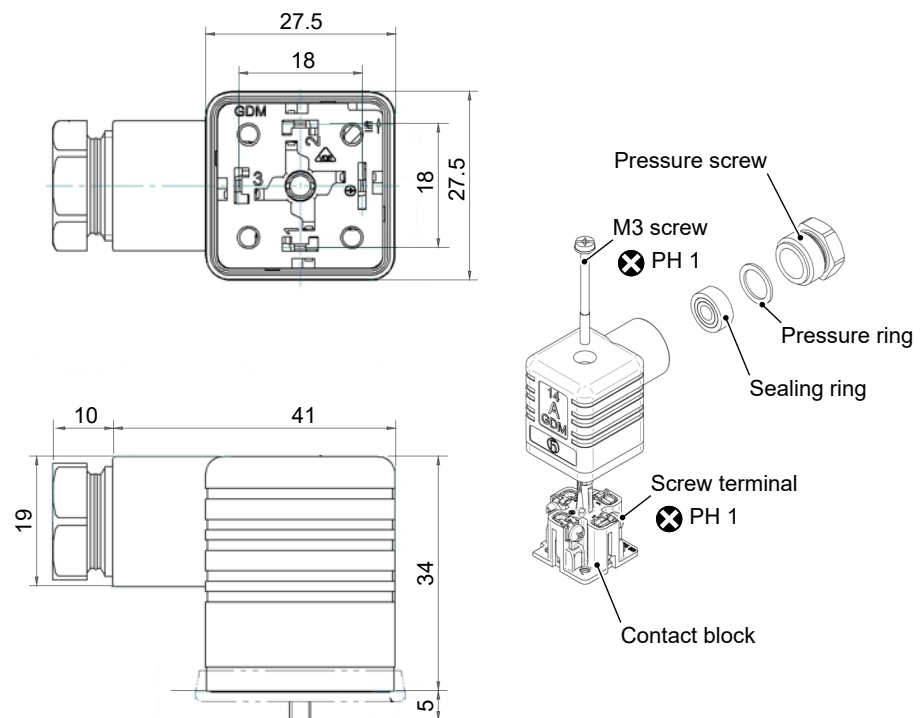
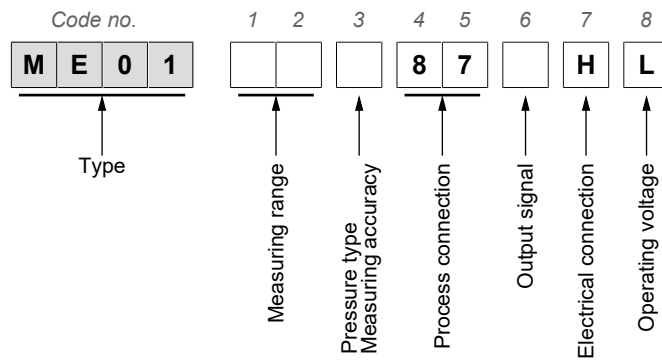


Fig. 7: Cable socket

## 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 G $\frac{1}{2}$ 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



## 8 Attachments



(Translation) **CE**

### EU Declaration of Conformity

For the product described as follows

**Product designation**                      **Digital pressure gauge**  
**Type designation**                         **ME01**

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)**

<i>DIN EN 61326-1:2013-07</i> <i>EN 61326-1:2013</i>	<i>Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements</i>
<i>DIN EN 61326-2-3:2013-07</i> <i>EN 61326-2-3:2013</i>	<i>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</i>

**RoHS Directive (RoHS 2)**

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

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 Salzufen, Germany  
 Tel. +49 (0)5222 974 0

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

The devices bear the following marking:



**Bad Salzufen**  
**11 Nov 2020**

\_\_\_\_\_  
 G. Gödde  
 Managing director



Fig. 8: CE\_DE\_ME01



(Translation) UK  
CA

## UKCA Declaration of Conformity

For the product described as follows

**Product designation**                    **Digital pressure gauge**  
**Type designation**                    **ME01 ## # ## # ## M#####**

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

<i>Statutory regulation No.</i>	<i>Description</i>
2016 No. 1091	<i>The Electromagnetic Compatibility Regulations 2016</i>
2021 No. 422	<i>The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (Amendment) Regulations 2021</i>

The products have been tested according to the following standards.

### Electromagnetic compatibility (EMC):

<i>BS EN 61326-1:2013-02-28</i>	<i>Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements</i>
<i>BS EN 61326-2-3:2013-02-28</i>	<i>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.</i>

### Restriction of Hazardous Substances (RoHS):

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

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

The devices are  
marked with:



Bad Salzuflen  
06 Sept 2021

\_\_\_\_\_  
G. Gödde  
Managing director



Fig. 9: UKCA\_EN\_ME01



(Translation)

## Manufacturer's declaration SVHC

The manufacturer

**FISCHER Mess- und Regeltechnik GmbH**

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D-32107 Bad Salzufflen

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Fax +49 5222 7170  
www.fischermesstechnik.de

hereby declares for the units of the series described below:

Product designation **Digital pressure gauge**  
Type designation **ME01 ## # ## # ## M#####**

According to Art. 33 of the REACH Regulation (No. 1907/2006), we as a producer are subject to an information obligation if a substance of very high concern (SVHC substance) is contained in a mass concentration above 0.1% in a product supplied by us.

The list of SVHC substances (Annex XIV) is published on the website of the European Chemicals Agency (ECHA) and is continuously updated.

We comply with this information obligation by registering all products that exceed this limit of 0.1% in the SCIP database of the European Chemicals Agency.

According to the current SVHC list and against the background of information from our suppliers, the following SVHC substances are contained in the named product:

SCIP-no.	SVHC-substance	CAS-no.	Classification
2d5906e6-7a0a-4d57-80b7-5148873beec6	Lead	7439-92-1	toxic for reproduction

The lead is present as a bound alloy component (< 3%) in brass components. Therefore, no exposure is to be expected. Additional information on safe use is not necessary.

Bad Salzufflen  
02 Aug 2021

G. Gödde  
Managing director

09010518 • HE\_EN\_ME01\_SVHC • Rev. ST4-A • 08/21

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Fig. 10: HE\_EN\_ME01\_SVHC



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