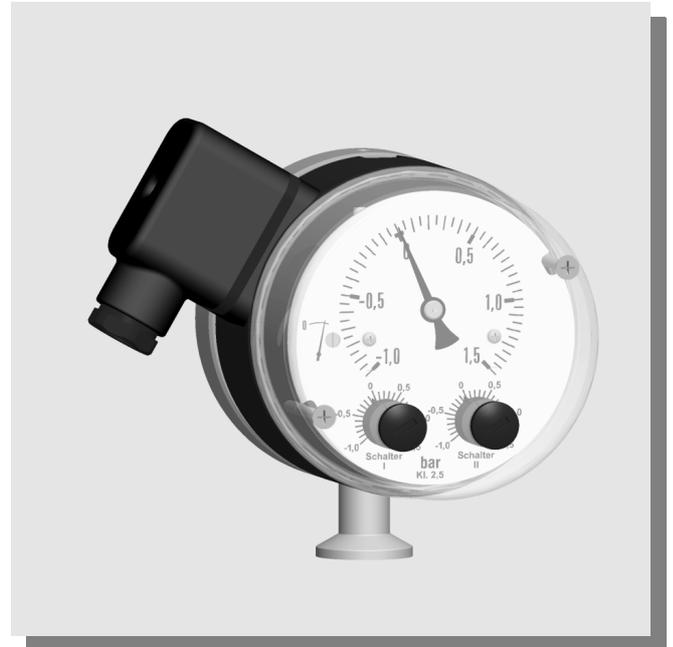


## Instruction Manual

### MS10 || Contact Pressure Vacuum Gauge

#### Table of Contents

1. Safety Instructions
2. Intended Applications
3. Product Description and Functions
4. Installation
5. Commissioning
6. Maintenance
7. Transport
8. Service
9. Accessories
10. Disposal
11. Specifications
12. Dimensions
13. Ordering Code
14. Declaration of Conformity



## 1. Safety Instructions

### 1.1. General



This manual contains detailed information about the product and instructions for its installation, operation and maintenance.

Operators and other technical personnel responsible for the equipment must read this thoroughly before attempting to install or operate this equipment. A copy of this manual must always be kept accessible at the place of work for reference by concerned personnel.

Chapter 1 (sections 1.2 through 1.7) contains general as well as specific safety instructions. Chapters 2 through 10, covering topics ranging from intended purpose of the equipment to its final disposal, also include important points relating to safety. Overlooking or ignoring any of these safety points can endanger humans and animals, and possibly cause damage to other equipment.

### 1.2. Personnel Qualification

Personnel responsible for installation, operation, maintenance and inspection of this product must have the qualifications, training and experience necessary to carry out such work on this type of equipment.

### 1.3. Risks of Disregarding Safety Instructions

Disregarding safety instructions, use of this product for purposes for which it is not intended, and/or operation of this product outside the limits specified for any of its technical parameters, can result in harm to persons, the environment, or the plant on which it is installed. Fischer Mess- und Regeltechnik GmbH will not be responsible for consequences in such circumstances.



#### 1.4. Safety Instructions for Operators

Safety instructions for the proper use of this product must be followed. This information must be available at all times to personnel responsible for installation, operation, maintenance and inspection of this product. Adequate steps must be taken to prevent the occurrence of hazardous conditions that can be caused by electric energy and the convertible energy of the process media. Such conditions can, for example, be the result of improper electrical or process connections. Detailed information is available in relevant published norms (DIN EN, UVW in Germany; and equivalents in other countries), industrial standards such as DVWG, GL-, VDE guidelines, as well as regulations of the local authorities (e.g., EVUs in Germany).

#### 1.5. Modifications Forbidden

Modification or other technical alteration of the product is not permissible. This also applies to the use of unauthorized spare parts for repair / maintenance of the product. Any modifications to this product, if and as necessary, should be done only by Fischer Mess- und Regeltechnik GmbH.

#### 1.6. Operational Restrictions

The operational reliability of the product is guaranteed only when used for intended purposes. The product must be selected and configured for use specifically with defined process media. The limiting values of operating parameters, as given in the product specification sheet, must never be crossed.

#### 1.7. Safety Considerations during Installation and Maintenance

The safety instructions given in this manual, existing national regulations relating to accident prevention and the internal safety rules and procedures of the user organization regarding safety during installation, operation and servicing must all be followed meticulously.

It is the responsibility of the users to ensure that only suitably qualified and experienced technical personnel are used for installation, operation and servicing of this equipment.

## 2. Intended Applications

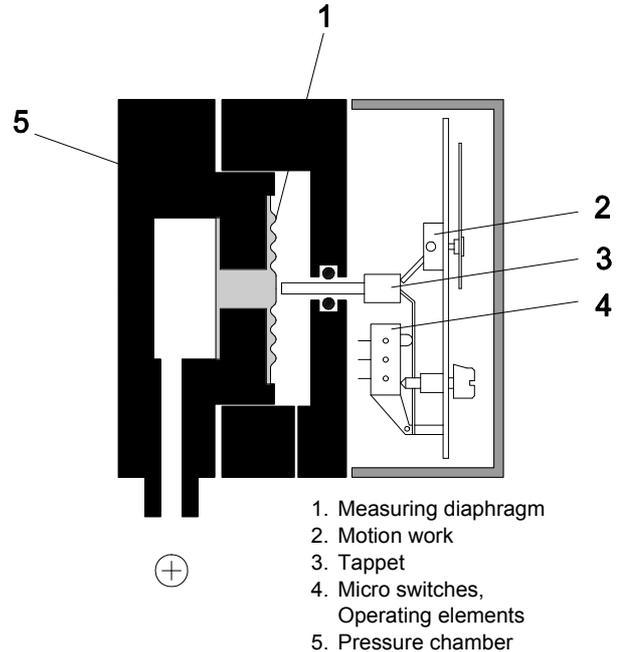
Overpressure and vacuum proof contact pressure gauge for control and supervising purposes in vacuum processes.

The product must be used only for applications and under conditions specified by Fischer Mess- und Regeltechnik GmbH.

Please confer with Fischer Mess- und Regeltechnik GmbH prior to using this instrument along with polluted or aggressive media. For use with this media it needs to be adapted in every part with direct contact to the media.

## 3. Product Description and Functions

### 3.1. Schematic Diagram



### 3.2. Principles of Operation

The measuring system consists of two encapsulated and hydraulically coupled metal diaphragm. When subjected to pressure it causes a deflection proportional to the strength of pressure. Opposite of the medium-touched diaphragm a tappet returns the deflection to a motion work and the operating elements of the micro switches.

When subjected to excessive pressure each metal diaphragm based oneself on the chassis of the capsule. Therefore the device is prevented from damage.

## 4. Installation

The instrument is intended for pipe mounting by KF10 small flange pipe connection per DIN 28403 / ISO 2861. The instrument is factory calibrated while mounted upright, pressure port downward and must be mounted that way.

To ensure safety during installation and maintenance integrate adequate shut-off valves. By recommended accessories the instrument can be

- depressurized or shut down,
- cut off a plant to enable controlling or repairing,
- operational checked on site.

#### 4.1. Process Connection

- Only qualified technicians authorized for this type of work should undertake installation.
- Only for intended mechanical process connection.
- Ensure that process equipment and pressure lines are at atmospheric pressure before making pressure connections.
- The instrument should be provided with suitable protection against pressure surges (e.g., snubber or pulsation damper).
- Ensure that the mechanical configuration and materials of construction of the instrument are compatible with the process media.
- Ensure that process pressure is always less than the specified safe pressure rating.

#### 4.2. Electrical Connection

- Only qualified technicians authorized for this type of work should undertake installation.
- Switch off electrical power to the plant before attempting electrical installation work of any kind.
- Electrical connections must comply with relevant international, national and local regulations and norms relating to electrical and instrumentation installations.
- Make electrical connections to the instrument through a suitable fuse.

### 5. Commissioning

- Power supply and signal cabling as well as process connections to the instrument must be correctly selected to meet operational requirements, and installed in a way that does not cause physical stress to the instrument.
- The pressure line must have a downward gradient throughout, from the pressure instrument to the process vessel / pipe. This is to prevent formation of air / gas pockets (for liquid applications) and liquid plugs (for air / gas applications). If this continuous downward gradient cannot be provided for any reason, then suitable water and / or air separation devices must be inserted in the pressure line.
- The instrument and lines must be protected against frost when used with water.
- The pressure line must be kept as short as possible and must not have short bends to avoid measurement errors induced by pressure line delays.
- Carefully check the pressure-tightness of pressure connection before start-up.

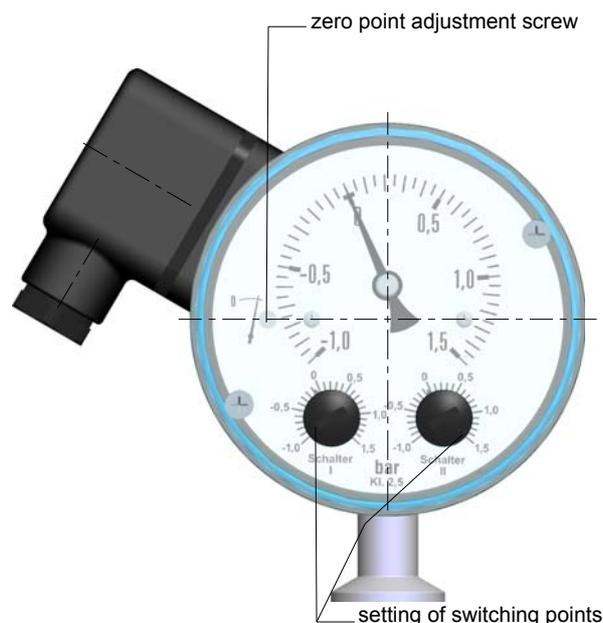
#### 5.1. Pressure Connection

Pressure connection must be installed in a way that does not cause physical stress to the instrument.

#### 5.2. Adjustment of Zero Point

- Vent pressure lines to atmosphere.
- Remove cover.
- Set measuring indicator to zero by zero point adjustment screw (see 5.3.).
- Mount cover.

#### 5.3. Location of Zero Point Adjustment Screw and Setting of Switching Points

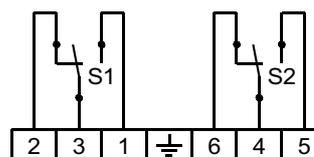


#### 5.4. Setting of Switching Points

- Unscrew plugs from cover.
- Set desired switching points according to marks on reference value scale by screwdriver. Achievable accuracy: 5% FS. More exact settings can be achieved by using accessories like testing manometer, ohmmeter on site or ex factory.
- Screw plugs in.

#### 5.5. Connection Diagram

Instrument pressureless and dead



## 6. Maintenance

The instrument is inherently maintenance-free.

However, to ensure reliable operation and maximize the operating life of the instrument, it is recommended that the instrument, its external electrical and process connections and external connected devices be regularly inspected, e.g.:

- Check the display.
- Check the switching output connections and external devices that are connected to these.
- Check all pressure connections for leak-tightness.
- Check the integrity of all electrical connections of the instruments.

Inspection and test schedules depend on operating and site conditions. The operating manuals of other equipment to which the instrument is connected must be read thoroughly to ensure that all of them work correctly when connected together.

## 7. Transport

The product must be protected against shock and vibration during transport. It must therefore be properly packed, preferably in the original factory packaging, whenever it is to be transported.

## 8. Service

Any defective devices or devices with missing parts should be returned to Fischer Mess- und Regeltechnik GmbH. For quick service contact our service department.



Remaining medium in and on dismantled measuring instruments may cause danger to persons, environment and equipment. Take reasonable precautions! Clean the instrument thoroughly if necessary.

## 9. Accessories

N.A.

## 10. Disposal



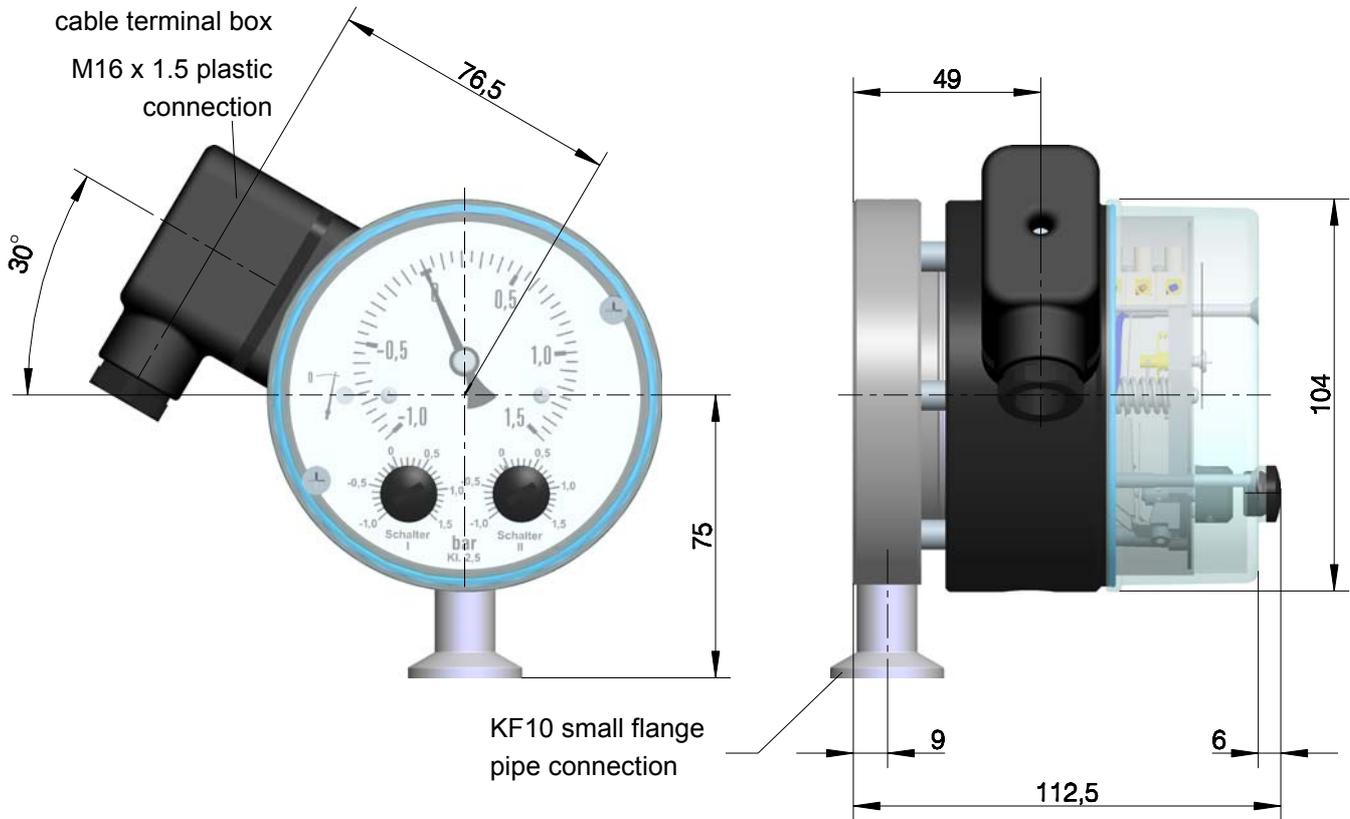
*Protect your environment!*

Use the product in accordance with relevant regulations. Please be aware of environmental consequences of disposal at the end of the product's life, and take care accordingly.

## 11. Specifications

<b>General</b>	
Measuring range	(s. Ordering Code)
Nominal pressure	25 bar
Max. pressure	overpressure proof to nominal pressure (all measuring ranges), vacuum proof up to fine vacuum $10^{-2}$ mbar
Leakage rate	$\leq 10^{-7}$ Pa · m <sup>3</sup> /s $\leq 10^{-6}$ mbar · l/s
Perm. ambient temperature	-10 ... +70°C
Perm. media temperature	70°C
Degree of protection	IP54 per DIN EN 60529
Mounting position	vertical, pressure port downward
Accuracy	± 2.5% FS
Adjustment of zero point	located in the dial
<b>Switching Points</b>	
Output contacts	1 or 2 micro switches, 1-pole changing contacts
Setting of switching points	adjustable by reference value scale smallest adjustable value: approx. 5% FS
Switching hysteresis	approx. 2.5% FS
<b>Load / contact</b>	<b>U ~ max. = 250 V AC, I max. = 5 A, P max. = 250 VA</b> <b>U = max. = 30 V DC, I max. = 0,4 A, P max. = 10 W</b>
<b>Connections</b>	
Electrical Connection	cable terminal box
Pressure Connection	KF10 small flange pipe connection DIN 28403 and ISO 2861
<b>Measuring System</b>	metal diaphragm measuring system, welded
<b>Materials</b>	
Pressure chamber	stainless steel 1.4404
Measuring diaphragm	1.4571, Duratherm®
Materials, wetted inner parts	stainless steel 1.4404, 1.4571
Materials, housing	aluminium, eloxadized in black
Materials, front cover	macrolon
Weight	2,6 kg
<b>Mounting</b>	pipe mounting by KF10 small flange pipe connection per DIN 28403 / ISO 2861

**12. Dimensions** (all units in mm unless otherwise stated)



### 13. Ordering Code

#### Contact Pressure Vacuum Gauge

MS10 

		E	A	0	K		K	0	0	0	0
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#### Measuring range

-200 ... 200 mbar.....	> B	5
0 ... 400 mbar.....	> 8	3
-1 ... 0,6 bar.....	> 3	2
-1 ... 1,5 bar.....	> 3	3
-1 ... 3 bar.....	> 3	4
-1 ... 5 bar.....	> 3	5
-1 ... 9 bar.....	> 3	6
-1 ... 15 bar.....	> 3	7
-1 ... 24 bar.....	> 3	8
Other ranges upon request.....	> 9	9

#### Wetted Parts

1.4404/1.4571 ..... > E

#### Pressure Chamber

Aluminium, eloxadized in black..... > A

#### Type

Bottom connection, KF small flange pipe connection ..... > K

#### Switching Elements

1 adjustable microswitch ..... > A

2 adjustable microswitches ..... > B

#### Electrical Connection

cable terminal box..... > K

**14. Declaration of Conformity**

					
					
<p><b>EG-Konformitätserklärung</b></p> <p>Wir erklären in alleiniger Verantwortung, dass nachstehend genannte Produkte</p>	<p><b>EC Declaration of Conformity</b></p> <p>We declare under our sole responsibility that the products mentioned below</p>				
<p><b>Druck-Vakuumschalter / Contact Pressure Vacuum Gauge</b></p> <p><b>MS10 #####</b></p>					
<p>gemäß gültigem Datenblatt übereinstimmen mit der</p> <p><b>EG-Richtlinie</b></p> <p>2006/95/EG (NSR)</p> <p>Die Produkte wurden entsprechend der folgenden Norm geprüft:</p> <p>DIN EN 61010-1:2002-08</p> <p>Die Geräte werden gekennzeichnet mit:</p>	<p>specified by the actual data sheet complies with the</p> <p><b>EC Directive</b></p> <p>2006/95/EC (LVD)</p> <p>The instruments have been tested in compliance with the norm</p> <p>DIN EN 61010-1:2002-08</p> <p>The gauges are marked with:</p>				
<p>Bad Salzuffen, 16.01.08 (Ort, Datum / place, date)</p>	<p style="text-align: center;">                      (rechtsverb. Unterschrift / authorized signature)             </p>				
<table border="0" style="width: 100%;"> <tr> <td style="width: 25%;">                     Fischer Mess- &amp; Regeltechnik GmbH                      Bielefelder Strasse 37a                      D-32107 Bad Salzuffen                      USt-IdNr.: DE124602859                      Steuer-Nr.: 313/5729/0559                 </td> <td style="width: 25%;">                     Fon: +49 (0) 52 22-9740                      Fax: +49 (0) 52 22-71 70                       Web: www.fischermesstechnik.de                      Mail: info@fischermesstechnik.de                 </td> <td style="width: 25%;">                     Sparkasse Lemgo                      BLZ 482 501 10                      Konto-Nr.: 11 841                      BIC: WELADED1LEM                      IBAN: DE90482501100000011841                 </td> <td style="width: 25%;">                     Postbank Hannover                      BLZ 250 100 30                      Konto-Nr.: 0201 830 307                      BIC: PBNKDEFF                      IBAN: DE 98 2501 0030 0201 8303 07                 </td> </tr> </table>		Fischer Mess- & Regeltechnik GmbH Bielefelder Strasse 37a D-32107 Bad Salzuffen USt-IdNr.: DE124602859 Steuer-Nr.: 313/5729/0559	Fon: +49 (0) 52 22-9740 Fax: +49 (0) 52 22-71 70  Web: www.fischermesstechnik.de Mail: info@fischermesstechnik.de	Sparkasse Lemgo BLZ 482 501 10 Konto-Nr.: 11 841 BIC: WELADED1LEM IBAN: DE90482501100000011841	Postbank Hannover BLZ 250 100 30 Konto-Nr.: 0201 830 307 BIC: PBNKDEFF IBAN: DE 98 2501 0030 0201 8303 07
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