

Instruction Manual

DS31 | Differential Pressure Switch

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 Ordering Code
- 13 Dimensions
- 14 CE-Certificate

1 Safety Instructions

1.1 General information



This operating manual contains detailed information about the installation, operation and maintenance of the instrument.

This information must be observed and read by the installer, operator and other skilled personnel prior to any installation and commissioning of the instrument.

This operating manual forms part of the product and must be kept in the immediate vicinity of the instrument for easy access by the responsible personnel at any time.

The following chapters, especially the instructions on installation, commissioning and maintenance contain important safety information, the non-compliance of which may result in hazards to persons, animals, environment and objects.

1.1 Personnel qualification

Only personnel trained in the installation, commissioning and operation of this product may install and operate the same.

Skilled personnel are persons who are able to judge delegated work and possible hazards based on their technical education, proficiency and experiences, particularly due to their knowledge about the applicable norms.



1.2 Risks of non-compliance with safety instructions

Non-compliance with these safety instructions, inappropriate use of this product, and/or operation of this product outside the limits specified for any of its technical parameters, may result in harm to persons, the environment or the system in which it is installed.

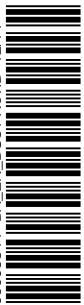
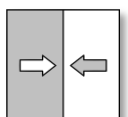
The producer is not liable for any claims for damages in such circumstances.

1.3 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 and/or improper connection of the instrument. Detailed information can be found in the relevant national and/or international rules and regulations.

In Germany DIN EN, UVV apply, for industry-specific applications regulations of DVGW, Ex, GL, as well as the rules of the local authorities (EVUs in Germany).



1.4 Forbidden modifications

Modification or other technical alteration of the device by the customer is not permissible. This also applies for the use of spare parts. Any eventual modifications/ variations will be carried out solely by Fischer Mess- und Regeltechnik GmbH.

1.5 Impermissible operational modes

The operational dependability of the device is guaranteed only if it is used as intended. The device version must be adapted to the medium used in the system. The limiting values stated in the technical data must not be exceeded.

1.6 Safety Considerations during Installation and Maintenance

The safety instructions stated in this manual, existing national regulations on accident prevention and the internal rules and procedures on working, operation and safety of the operator are to be observed.

It is the responsibility of the operator to ensure that only authorised and skilled technical personnel carry out any required maintenance, inspection and installation works.

1.7 Explanation of symbols



WARNING!

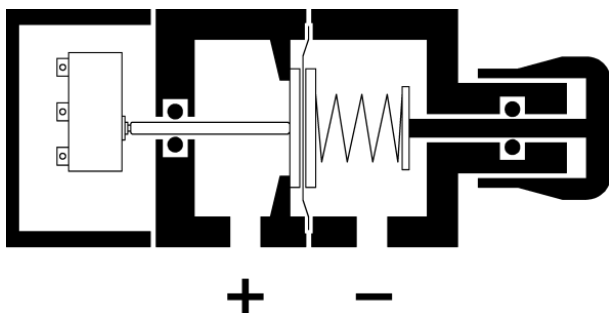
... indicates a possible hazardous situation the non-observance of which might result in hazards to humans, animals, environment and objects.

2 Intended Applications

Differential pressure switch for positive / negative gauge pressure or differential pressure of neutral media such as industrial water, water for heating systems, neutral gases and oils. The product must be used only for applications and under conditions specified by Fischer Mess- und Regeltechnik GmbH.

3 Product Description and Functions

3.1 Block Schematic Diagram



3.2 Principles of Operation

This pressure switch is based on a rugged and uncomplicated diaphragm movement. It is suitable for monitoring positive / negative gauge and differential pressure. The operating principle of the system is identical in all three cases. The monitored pressure or differential pressure creates an unbalanced force on the diaphragm. This force moves the diaphragm system against the force of the range selector springs. A tappet, which is mounted on the diaphragm, actuates the microswitch.

The setpoint can be adjusted by a scaled hand-wheel.

4 Installation

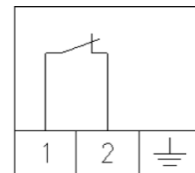
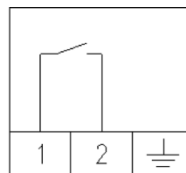
4.1 Process Connections

- By authorized personnel only.
- For suitable mechanical fittings only.
- Ensure that the process equipment and pressure lines are at atmospheric pressure before making pressure connections to the instrument.
- 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 Connections

- By authorized personnel only.
- Electrical connections must conform to relevant international, national and local regulations and norms relating to electrical and instrumentation installations.
- Switch off electrical power to the plant before attempting electrical installation work of any kind.
- Make electrical connections to the instrument through a suitable fuse.
- Depending on your order the device is supplied with Normally Open (NO) or Normally Closed (NC) contact. Standard: NO contact

Operation with NO contact (Standard wiring mode)



5 Commissioning

- Power supply and signal cabling 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.
- Pressure connections must be ventilated to avoid measuring failure. If used with water protect instrument against freezing.
- Prior to commissioning pressure connections must be checked for leaks.

5.1 Pressure Connections

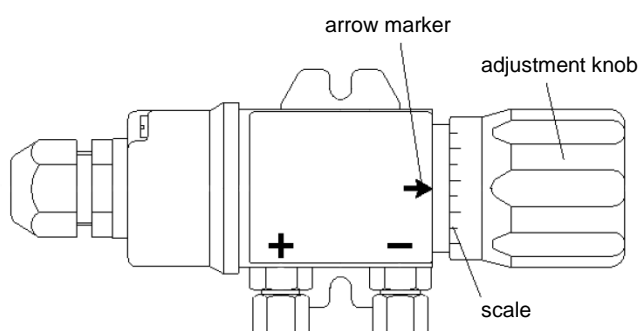
The instruments pressure ports are marked by (+) and (-) symbols. The pressure applications need to be installed according to the label.

- Differential pressure measurement:
 - + Higher pressure
 - Lower pressure
- Pressure measurement:
 - + Pressure port
- Negative pressure measurement:
 - Negative pressure port

5.2 Shock Pressure Damping

Pulsating pressure on the plant may lead to mechanical wear and disturbances in functional capability. To avoid this we recommend installing absorbers into the pressure lines, e.g.: Capillary coil MZ401 M.

5.3 Switching Point Adjustment



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 switching operation in connection to follow-up components.
- Check all pressure connections for leak-tightness.
- Check the electrical connection (screw terminals).

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

Not available.

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

Measuring range	0..0.6 bar up to 0..6 bar
Max. static operating pressure	16 bar (safe against positive and negative pressure)
Permissible ambient temperature	+80°C
Permissible medium temperature	+80°C
Pressure chamber	Brass
Diaphragm	NBR or Viton [®] , depending on application
Pressure connections	G 1/8 female, cutting ring fitting for 6/8mm tube
Mounting	base for wall mounting
Switching point	10..100 % of range, continuously adjustable
Contact type	Microswitch, hysteresis approx. 2%
Electrical connection	numbered cable, prewired
Contact rating of microswitch	U ≈ max 250 V AC; I max 3 A; P max 500 VA U = max 30 V DC; I max 0.4 A; P max 10 W

12 Ordering Code

Differential Pressure Switch

DS31

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Measuring Ranges

0 ... 400 mbar.....>	8	3
0 ... 0,6 bar.....>	0	1
0 ... 1,0 bar.....>	0	2
0 ... 1,6 bar.....>	0	3
0 ... 2,5 bar.....>	0	4
0 ... 4,0 bar.....>	0	5
0 ... 6,0 bar.....>	0	6

Nominal Pressure

16 bar.....>	F
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Measuring System

Pressure chamber, diaphragm, gaskets: Brass/NBR.....>	M
Pressure chamber, diaphragm, gaskets: Brass/Viton [®]>	N

Pressure Connection

G 1/8 female.....>	0	0
Cutting ring fitting in steel for 6 mm tube.....>	2	0
Cutting ring fitting in steel for 8 mm tube.....>	2	1
Cutting ring fitting in brass for 6 mm tube.....>	2	8
Cutting ring fitting in brass for 8 mm tube.....>	2	9

Schaltglied

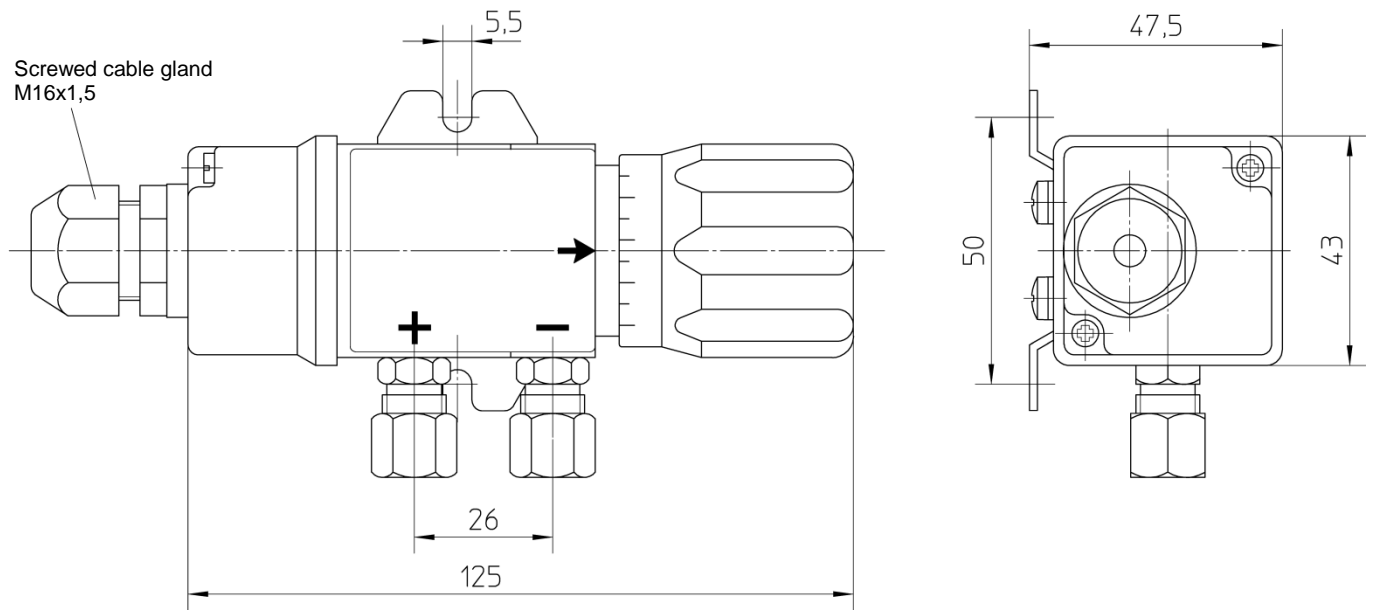
1 adjustable microswitch, normally closed.....>	A
1 adjustable microswitch, normally open.....>	B

Electrical Connection ^{*)}

1m numbered cable, prewired.....>	1
2.5m numbered cable, prewired.....>	2
5m numbered cable, prewired.....>	5

^{*)} Please state switching function with your ordering: NO or NC.

13 Dimensions



14 CE-Certificate

developing solutions



EG-Konformitätserklärung

Wir erklären in alleiniger Verantwortung, dass nachstehend genannte Produkte

EC Declaration of Conformity

We declare under our sole responsibility that the products mentioned below

Differenzdruck Schaltgerät / Differential Pressure Switch

DS31#####

gemäß gültigem Datenblatt übereinstimmen mit den

as specified by the current data sheet complies with

EG-Richtlinien

EC-directives

2006/95/EG (NSR)

2006/95/EC (LVD)

Die Produkte wurden entsprechend der folgenden Normen geprüft:

The products were tested in compliance with the following standard:

DIN EN 61010-1:2002-08

DIN EN 61010-1:2002-08

Die Geräte werden gekennzeichnet mit:

The devices bear the following marking:

CE

Bad Salzufen, 08.09.10
(Ort, Datum / place, date)

(rechtsverb. Unterschrift / legally authorized signature)

