FISCHER MESS- UND REGELTECHNIK

Instruction Manual

DS31 || Differential Pressure Switch

Table of Contents

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 by 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, Ex-, GL-, VDE guidelines, as well as regulations of the local authorities (e.g., EVUs in Germany).

1.5. Modifications Forbidden

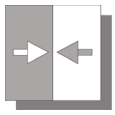
Modification or other technical alteration of the product is not permissible. This also applies to the use of unauthorized spare parts for repair / maintenance of the product. Any modifications to this product, if and as necessary, should be done only by Fischer Mess- und Regeltechnik GmbH.

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 organiza-



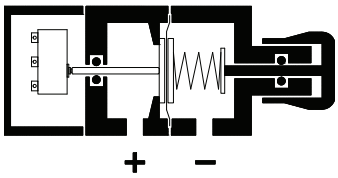
tion regarding safety during installation, operation and servicing must all be followed meticulously.
It is the responsibility of the users to ensure that only suitably qualified and experienced technical personnel are used for installation, operation and servicing of this equipment.

2. Intended Applications

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.

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 chekked 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.

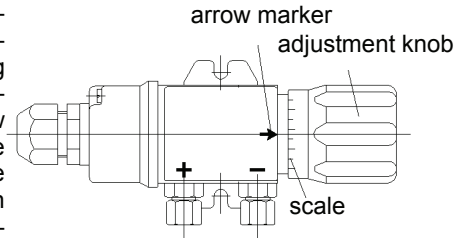
Differential pressure measurement:	+ higher pressure
	- lower pressure
Pressure measurement:	+ pressure port
Negative pressure measurement:	- negative pressure port

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.:Capilliary coil MZ401 M.

5.3. Switching Point Adjustment

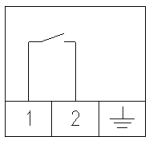
By turning the adjustment knob the designated switching point can be reached. The arrow marker on the type plate indicates the adjusted value on the scale of the adjustment knob.



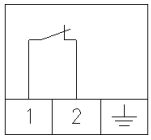
5.4. Electrical Connection

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)



NC contact



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

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

Measuring range	0..0.6 bar up to 0..6 bar
Max. static opreating pressure	16 bar (safe againt 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 wallmounting
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** | | | **F** | | | | | |

Measuring Ranges

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

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 brass for 6 mm tube	>	2	8
Cutting ring fitting in brass for 8 mm tube	>	2	9

Switch

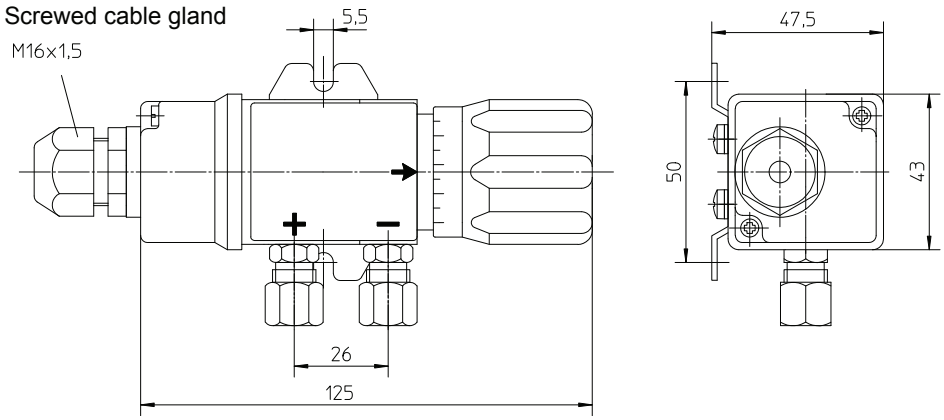
1 adjustable microswitch	>	A

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

FISCHER
MESS- UND REGELTECHNIK

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

Drucktransmitter / Pressure Transmitter
DS31 ############

gemäß gültigem Datenblatt übereinstimmen mit den

specified by the actual data sheet complies with the

EG-Richtlinien

2006/95/EG (NSR)

EC Directives

2006/95/EC (LVD)

Die Produkte wurden entsprechend der folgenden Norm geprüft :

DIN EN 61010-1:2002-08

The instruments have been tested in compliance with the norm

DIN EN 61010-1:2002-08

Die Geräte werden gekennzeichnet mit:

The gauges are marked with:

CE

Bad Salzuflen, 27.11.07
(Ort, Datum / place, date)

(rechtsverb. Unterschrift / authorized signature)

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