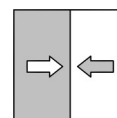


Operation manual

DS34

Differential pressure switch



Masthead

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Subject to technical amendments.



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Version history

Rev. ST4-A 12/15	Version 1 (first edition)
Rev. ST4-B 08/20	Version 2 (corrections)
Rev. ST4-C 07/21	Version 3 (Technical data connection cable)
Rev. ST4-D 03/22	Version 4 (UKCA conformity)
Rev. ST4-E 08/22	Version 5 (micro switch (Z) added)
Rev. ST4-F 02/24	Version 6 (accessories updated)

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1 Product and functional description

1.1 Delivery scope

- DS34 Differential pressure switch
- Operating Manual

1.2 Product summary

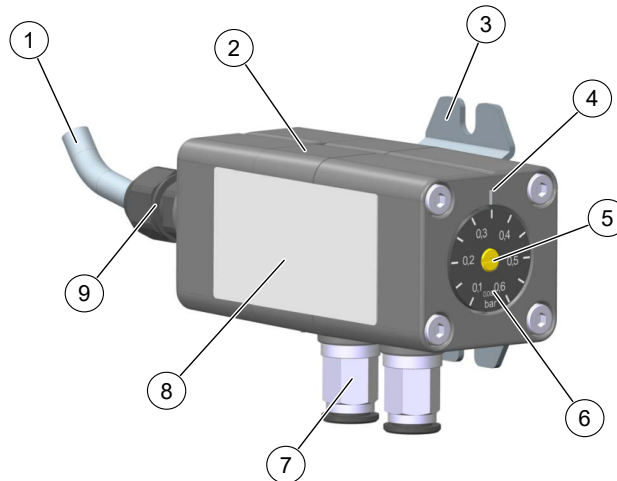


Fig. 1: Product summary

1	Connection cable	2	Housing
3	Mounting foot	4	Setting mark
5	Adjustment spindle	6	Scale plate
7	Pneumatic plug-in connection	8	Type plate
9	Cable screw connection		

1.2.1 Process connection

The device has a process connection G $\frac{1}{8}$ inch internal thread as standard. The device can also be supplied with pneumatic plug connections for 6 or 8 mm hose.



CAUTION

Maximum tightening torque

The maximum tightening torque for the G $\frac{1}{8}$ inch internal thread is 5 Nm.

1.2.2 Type plate

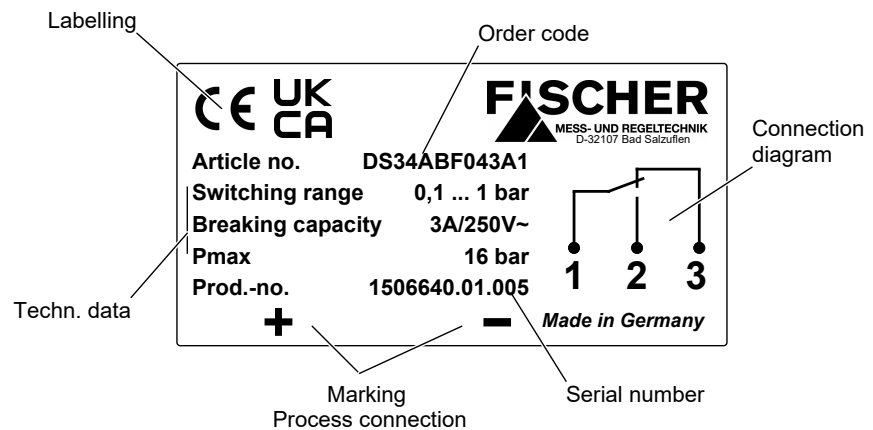


Fig. 2: Type plate

1.3 Intended use

The DS34 is a differential pressure switch for overpressure, underpressure and differential pressure measurements. The uncomplicated and robust membrane measuring mechanism is suitable for all neutral media, such as service water, heating water, neutral gases and oils.

1.4 Function diagram

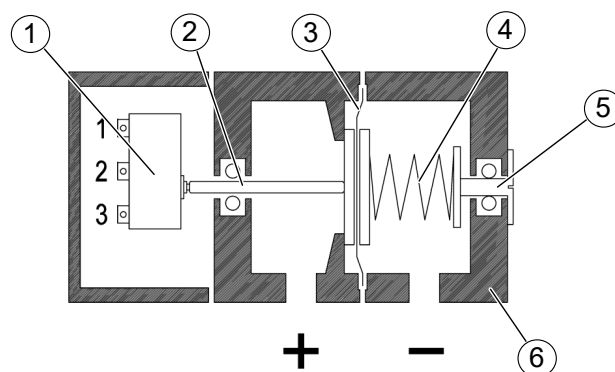


Fig. 3: Functional Schematic

1	Micro-switch	2	Switch tappet
3	Diaphragm	4	Measuring range spring
5	Adjustment spindle	6	Pressure chamber

1.5 Design and mode of operation

Due to the pressure or differential pressure to be measured, a one-sided force acts on the membrane. This force moves the membrane system against the pre-tensioned measuring range spring. A switch tappet mounted on the membrane actuates a micro switch.

The switch point can be set with an adjustment spindle. A scale plate and a setting mark attached to the housing indicate the respective set switch point.

2 Assembly and Starting Operation

2.1 General

The device is intended for installation on flat walls and mounting plates. The device can be equipped with a mounting foot for screwing to the mounting plate.

2.2 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)

The pressure lines must be installed at an inclination so that when fluids are measured no air pockets are created or when measuring gases, no water pockets are created. If the required inclination is not reached, water or air filters must be installed at suitable places.

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

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

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.

The process connections are marked with (+) and (-) symbols on the device. The pressure lines must be mounted according to these symbols.

1. Differential pressure measurement

- ⊕ Higher pressure
- ⊖ lower pressure

2. Pressure measurement

- ⊕ Pressure
- ⊖ open

2.3 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.
- A permanently wired number cable is used for the electrical connection.

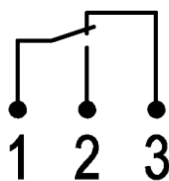


Fig. 4: Electrical connection

2.4 Start-up

2.4.1 General

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



CAUTION

Leak test

The differential pressure lines need to be checked for leaks before commissioning.

In the case of fluid measuring media, the differential pressure lines must be vented because different fluid columns in the lines will distort the measurements.

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

2.4.2 Switch point setting

The desired switch point is set by turning the scale plate with the adjustment spindle. The setting mark is then brought into line with the desired value on the scale.

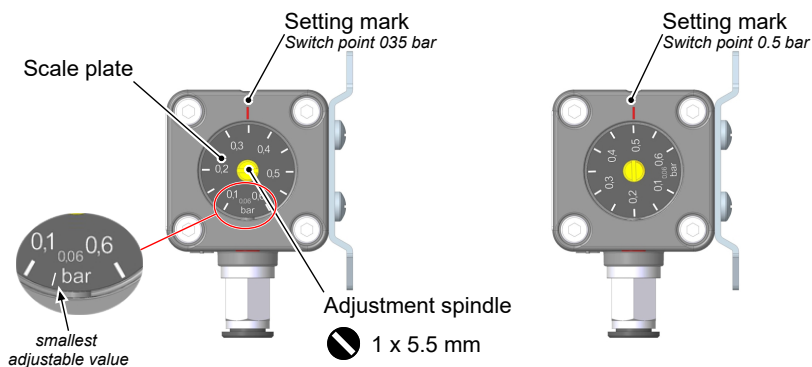


Fig. 5: Switch point setting

3 Servicing

3.1 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.

3.2 Transport

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

3.3 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.

3.4 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.

4 Technical data

4.1 General

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	User-defined	

4.2 Input variables

Pressure range	Adjustment range		Nominal pressure	Bursting pressure
	10 ... 100%	<i>SI unit</i>		
0 to 0.6 bar	0.06 to 0.6 bar	6 to 60 kPa	PN16	64 bar
0 to 1 bar	0.10 to 1.0 bar	10 to 100 kPa		
0 to 1.6 bar	0.16 to 1.6 bar	16 to 160 kPa		
0 to 2.5 bar	0.25 to 2.5 bar	25 to 250 kPa		
0 to 4 bar	0.40 to 4.0 bar	40 to 400 kPa		
0 to 6 bar	0.60 to 6.0 bar	60 to 600 kPa		

4.3 Output parameters

Micro-switch	AC	DC
Max. switching voltage	250 V	30 V
Max. switching current	3 A	0.4 A
Min. switching current	0.1A	0.1A
Max. switching output	250 VA	10 W
Mech. life span	10 ⁶ switching cycles	

4.4 Measuring accuracy

Switching point Adjustment range	10 ... 100 % of the pressure range	
Switching point accuracy	3% of the setting range	
Hysteresis	Switching element (A)	5% of the setting range
	Switching element (Z)	12% of the setting range

4.5 Electrical connection

Hard-wired, silicone and halogen-free number cable

Core number	3
Conductor nominal cross-section	0,5 mm ²
AWG	21
Outer diameter	6,8 mm

4.6 Operating conditions

Ambient temperature range	-10 to +70 °C
Storage temperature range	-10 to +80 °C
Medium temperature range (for non-freezing media)	-10 to +80 °C
Low-Voltage Directive	EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
RoHS	EN IEC 63000:2018
Protection class	IP 65 acc. to EN 60529
Materials of the parts that come into contact with the surroundings	
Housing	Grivory® GV
Cable screw connection	Polyamide
Connection cable	Silicone and halogen-free polymer
Mounting foot	Stainless steel 1.4301
Materials of the parts that come into contact with the measuring medium	
Pressure chamber	Grivory® GV
Diaphragm, measuring range spring	Stainless steel 1.4310
Adjustment spindle, switch tappet, etc.	Brass CW614N (formerly 2.0402)
Seals	EPDM
Other parts	PTFE

4.7 Construction design

All dimensions in mm unless otherwise stated

Dimension drawing

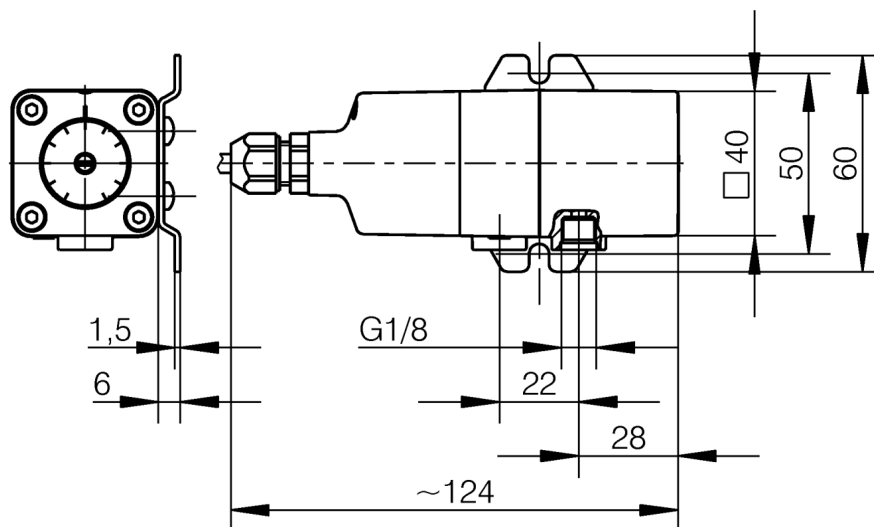


Fig. 6: Dimension drawing

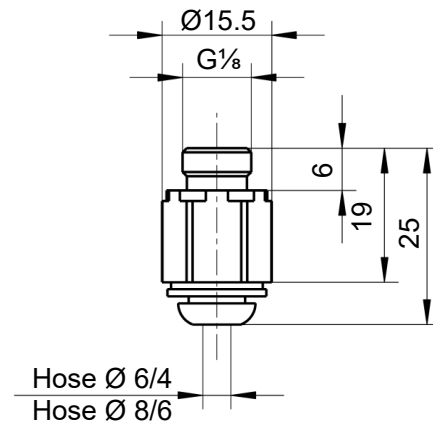


Fig. 7: Pneumatic plug-in connection

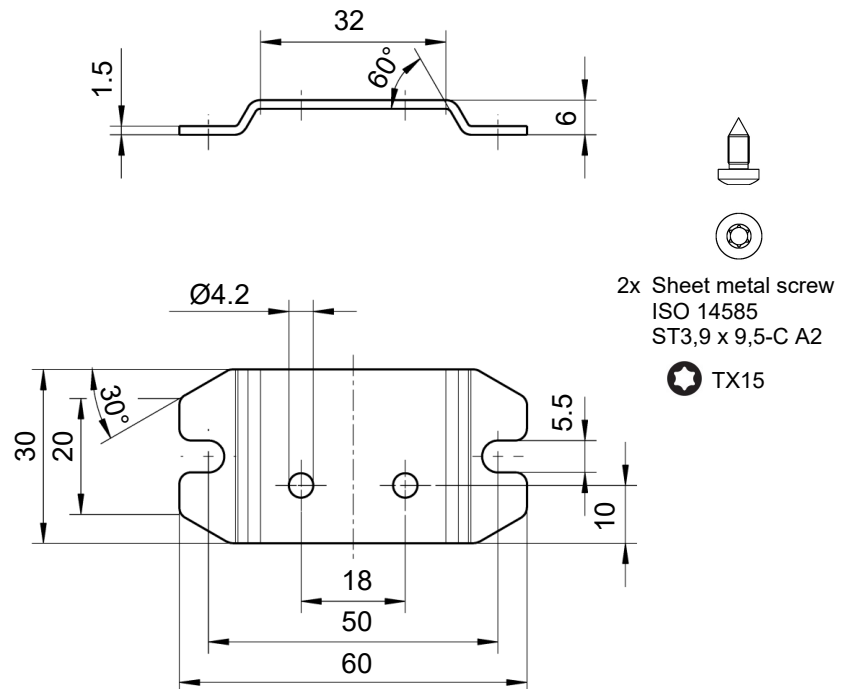
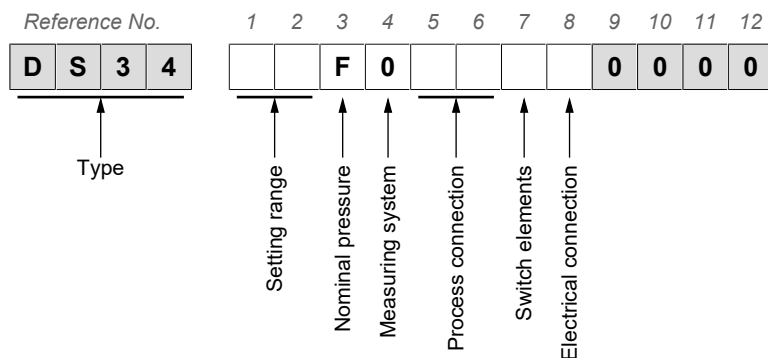
Accessories

Fig. 8: Mounting foot

5 Order codes



[1,2]	Setting range	Measuring range
AA	0.06 ... 0.6 bar	0 ... 0.6 bar
AB	0.10 ... 1.0 bar	0 ... 1 bar
AC	0.16 ... 1.6 bar	0 ... 1.6 bar
AD	0.25 ... 2.5 bar	0 ... 2.5 bar
AE	0.40 ... 4.0 bar	0 ... 4 bar
AF	0.60 ... 6.0 bar	0 ... 6 bar

[3]	Nominal pressure
F	PN16

[4]	Measuring system
0	Standard

[5,6]	Process connection
00	Internal thread G $\frac{1}{8}$
43	Pneumatic plug-in connection for 6/4 mm hose
44	Pneumatic plug-in connection for 8/4 mm hose

[7]	Switching contacts
A	1 adjustable microswitch
Z	1 adjustable microswitch with increased switching hysteresis (12%)

[8]	Electrical connection
1	1.0 m long number cable, hard-wired
2	2.5 m long number cable, hard-wired
5	5.0 m long number cable, hard-wired

5.1 Accessories

Art. No.	Designation
06411853	Assembly foot + fixing screws

6 Attachment

(Translation) **CE**

EU Declaration of Conformity

For the product described as follows

Product designation **Differential pressure switch**
Type designation **DS34**

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

2014/35/EU	Low Voltage 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.

	Low Voltage Directive (LVD)
<i>DIN EN 61010-1:2020-03</i>	<i>Safety requirements for electrical equipment for measurement, control, and laboratory use -</i>
<i>EN 61010-1:2010 + A1:2019 + A1:2019/</i>	<i>Part 1: General requirements</i>
<i>AC:2019</i>	

	RoHS Directive (RoHS3)
<i>DIN EN IEC 63000:2019-05</i>	<i>Technical documentation for the assessment of electrical and electronic products with re-</i>
<i>EN IEC 63000:2018</i>	<i>spect 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**
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Documentation representative Torsten Malischewski
General Manager R&D

The devices bear the following marking:



Bad Salzuflen
17 Aug 2022

G. Gödde
Managing director



Fig. 9: CE_EN_DS34



(Translation) **UK
CA**

UKCA Declaration of Conformity

For the product described as follows

Product designation **Differential pressure switch**
Type designation **DS34**

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. 1101	<i>The Electrical Equipment (Safety) 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.

Low Voltage Directive (LVD):

<i>BS EN 61010-1+A1:2017-03-31</i>	<i>Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements</i>
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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>
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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**
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The devices are
marked with:

**UK
CA**

Bad Salzufen
04 Mar 2022

G. Gödde
Managing Director

09010654 • UKCA_EN_DS34 • Rev. ST4-A • 03/22



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Fig. 10: UKCA_EN_DS34

Notes



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