

# Operating Manual

DS35

Differential pressure switch

## Table of Content

- 1 Safety guidelines
- 2 Intended use
- 3 Description of the product and functional description
- 4 Installation and assembly
- 5 Commissioning
- 6 Maintenance
- 7 Transport
- 8 Service
- 9 Accessories
- 10 Disposal
- 11 Technical data
- 12 Dimensional drawings
- 13 Order Codes
- 14 Manufacturer's Declarations and Certificates

## 1 Safety guidelines

### 1.1 General Information



This operating manual contains instructions fundamental to the installation, operation and maintenance of the instrument that must be observed unconditionally. It must be read by the assembler, operator and the specialized personnel in charge of the instrument before it is installed and put into operation.

This operating manual is part of the product and must be kept close by where it is easily accessible to the responsible specialized personnel.

The subsequent sections in particular the instructions on assembly, commissioning and maintenance contain important safety instructions, non-observance of which can endanger persons, animals, the environment and physical objects.

### 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.

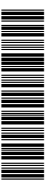
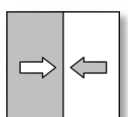
The manufacturer will not be liable for damage claims if this should happen.

### 1.4 Safety Instructions for the Operating Company and the Operator

The safety instructions on correct operation of the device shall 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 instrument must be eliminated. For more information, please see the applicable national and international regulations.

In Germany these are the DIN EN, UVV regulations, specific industrial guidelines such as DVGW, Ex, GL, etc., the VDE- regulations and the regulations of the local energy supply companies.



### 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. Any modifications / alterations required shall be carried out by Fischer Mess- und Regeltechnik GmbH only.

### 1.6 Unintended use

The operational safety of this device can only be guaranteed if it is used as intended. The device model must be suitable for the medium used in the system. The limit values given in the technical data may not be exceeded.

### 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 Explanation of the symbols



**WARNING!**

... indicates a potentially dangerous situation, non-observance of which could endanger persons, animals, the environment or objects.



**INFORMATION!**

... highlights important information for efficient and smooth operation.



**TIP!**

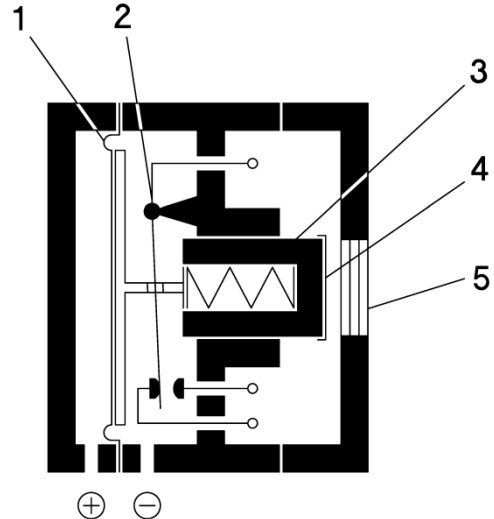
... indicates recommendations that are not specifically necessary in certain situations but which could be useful.

## 2 Intended use

Pressure and differential pressure switches for air and neutral gases. The differential pressure switches of the type DS35 are primarily used for monitoring the filters in the air conditioning and ventilation equipment.

## 3 Description of the product and functional description

### 3.1 Functional Schematic



- 1 Membrane
- 2 Switch mechanism
- 3 Switch point - setting screw
- 4 Switch point – setting scale
- 5 Inspection window

### 3.2 Design and mode of operation

There is a one-sided force which acts on the membrane as a result of the pressure or differential pressure that is to be measured. This measuring force moves the membrane system against the pre-tensioned measuring range spring. A tappet mounted to the membrane activates a micro switch. The switch point is set via a scale.

## 4 Installation and assembly

### 4.1 General points

- By authorized and qualified specialized personnel only.
- The connection may only be made for the intended mechanical process connection (please refer to the instrument order code on the rating plate to determine your model).
- Isolate the pipes before connecting the instrument.
- Appropriate steps must be taken to protect the device from pressure surges.
- Use only with media suitable for operation.
- Observe the maximum pressure.

## 4.2 Installation position

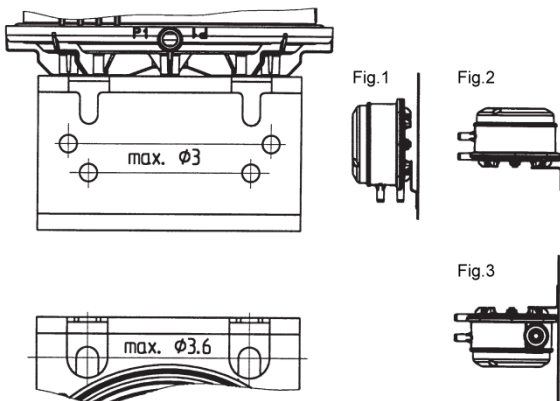


Fig. 1 Recommended installation position vertical (factory calibration)

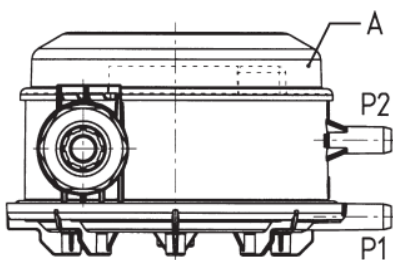
Fig. 2 Horizontal installation, electrical connections at the top. Effective switch points are 0.11 mbar higher than the scale.

Fig. 3 Horizontal installation, electrical connections at the bottom. Effective switch points are 0.11 mbar lower than the scale.

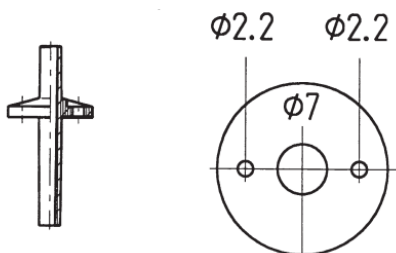
## 4.3 Measuring lines that need to be connected

The pressure connections are marked with P1 (+) and P2 (-) symbols on the device. Pressure lines are to be mounted according to these markings.

|                                    |    |                           |
|------------------------------------|----|---------------------------|
| Differential pressure measurements | P1 | Higher pressure           |
|                                    | P2 | Low pressure              |
| Pressure measurements              | P1 | Pressure connection       |
| Under-pressure measurement         | P2 | Under-pressure connection |



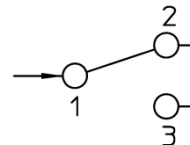
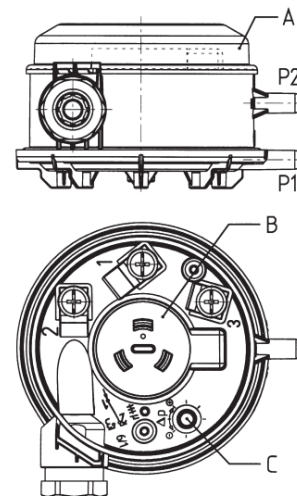
Connection nozzles incl. hose and attachment screws are supplied with the device. Please observe the following dimensions for installation in the flow space.



## 4.4 Electronic connection

- By authorized and qualified specialized personnel only.
- The electrical connection of the device shall be performed according to relevant VDE and local electricity board regulations.
- Disconnect the system from the mains before connecting the device.
- Add a fuse adapted to the energy requirements.

**⚠** Once the protective hood (A) is removed, there is a potentially fatal risk if the terminals 1, 2 and 3 (mains voltage) are touched!



|   |              |       |
|---|--------------|-------|
| 1 | Feed line    | (COM) |
| 2 | Idle contact | (NC)  |
| 3 | Work contact | (NO)  |

## 5 Commissioning

All electrical supply, operating and measuring lines and the pressure connections must have been correctly installed before commissioning. All supply lines are arranged so that there are no mechanical forces acting on the device.

- Check the leak-tightness of the pressure connections.
- Factory-set and painted switches may not be reset (screw B and C).
- Screw C is permanently set and adhered in the factory. It may not be reset. Only reset the switch point with screw B.
- The turntable B (switch point - setting screw) is used to reset the upper and lower switch point.
- For vacuum: Connect P2. Settings as in instructions, however designation pressure =vacuum.

## 5.1 Setting the upper/lower switching point

The setting is made with the turntable B:

For a higher switch point [higher pressure], turn in a clockwise direction.

Allow pressure to rise slowly (observe max. pressure), set the required switch point with turntable (B).

Raise and lower the pressure several times to check the upper and lower switch point, if necessary readjust.

Only set the switch in the setting range within the printed scale.

 **Do not turn the turntable (B) into the black bar range!**

Information for DDS range 0.3...5 mbar:



The switch must be set in the lower range of 0.3 to 0.5 mbar in the installation position! If this is not the case, not only may the switch point be shifted (mass, membrane), but the switch may also malfunction when the position is subsequently changed!

It functions again after returning to the starting position (in which the switch was set)

## 6 Maintenance

The device is maintenance-free.

We recommend regular inspections of the following 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 shall be adapted to the operating and ambient conditions. The operating instructions of any other connected device components shall also be observed.

## 7 Transport

The device must not be exposed to mechanical shocks. It shall be transported only in packaging specifically intended for transport.

## 8 Service

All damaged or faulty devices shall be directly sent to our repair department. Please coordinate all shipments with our sales department.



Process media residues in and on dismantled instruments can be a hazard to people, animals and the environment. Take adequate preventive measures. If required the devices shall be thoroughly cleaned.

## 9 Accessories

Connection set

## 10 Disposal

For the sake of the environment ....

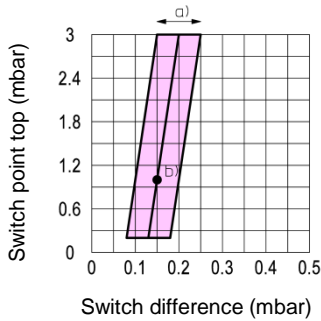


Please help to protect our environment and dispose of or recycle used devices as required by the applicable regulations.

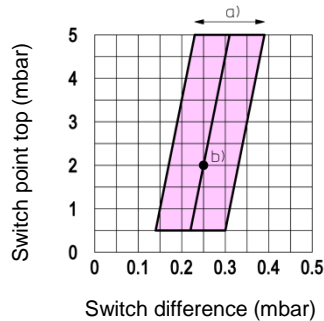
## 11 Technical data

### Setting ranges

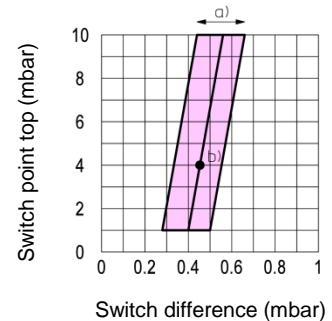
0.2 ... 3 mbar



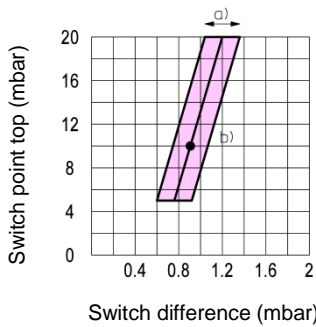
0.5 ... 5 mbar



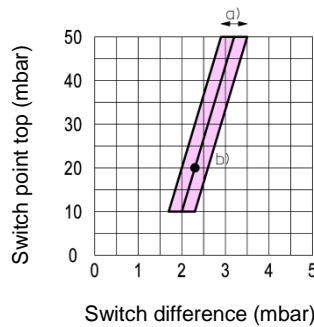
1 ... 10 mbar



5 ... 20 mbar



10 ... 50 mbar



a) Tolerance switch difference  
b) Default setting

|                                |                           |
|--------------------------------|---------------------------|
| Admissible ambient temperature | -30 ... +85°C             |
| Admissible media temperature   | -30 ... +85°C             |
| Admissible storage temperature | -40 ... +85°C             |
| Enclosure protection class     | IP54 with protective hood |

#### General points

|                                |                           |
|--------------------------------|---------------------------|
| Admissible ambient temperature | -30 ... +85°C             |
| Admissible media temperature   | -30 ... +85°C             |
| Admissible storage temperature | -40 ... +85°C             |
| Enclosure protection class     | IP54 with protective hood |

#### Electrical data

|                    |                                    |  |           |
|--------------------|------------------------------------|--|-----------|
| Switching loads    | at 250 VAC                         |  | at 30 VDC |
| resistive load     | 5A                                 |  | 0.8A      |
| inductive load     | 4A                                 |  | 0.7A      |
| Contact system     | Toggle switch                      |  |           |
| mech. service life | > 10 <sup>6</sup> switching cycles |  |           |

#### Connections

|                    |                         |
|--------------------|-------------------------|
| Process connection | Hose connection Ø 6.2mm |
| electr. connection | Screw clamps            |

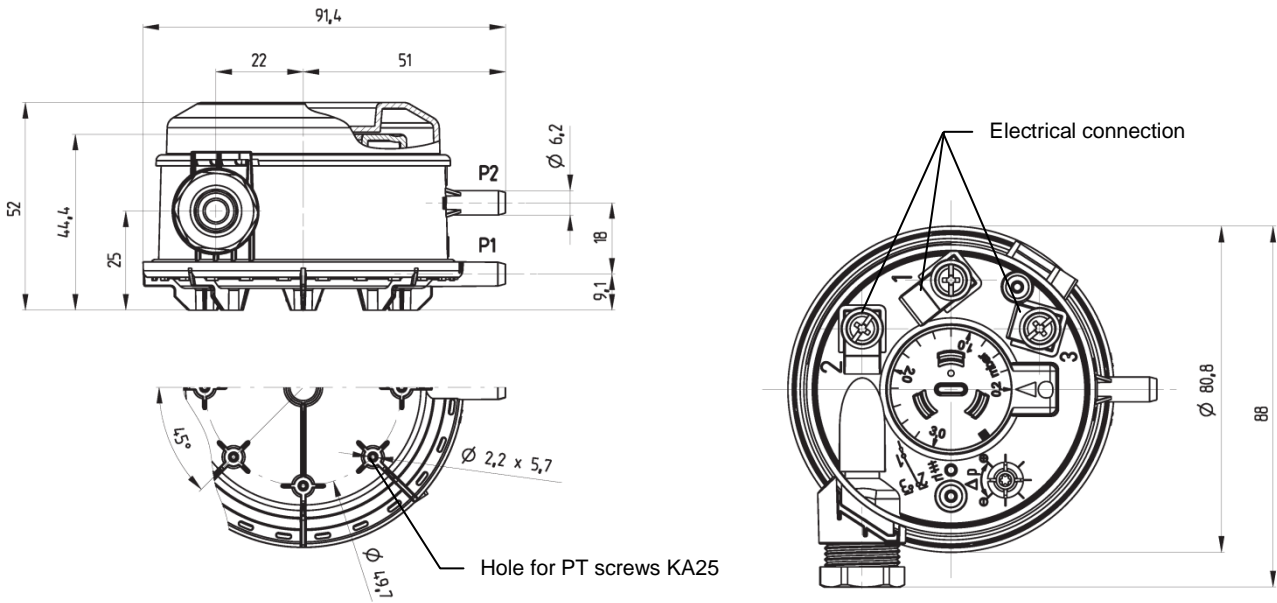
#### Materials

|                   |  |
|-------------------|--|
| Casing            | PC 10% GF                                      |
| Hood              | PC   |
| Measuring element | Silicon LSR (tempered at 200°C, emission-free) |

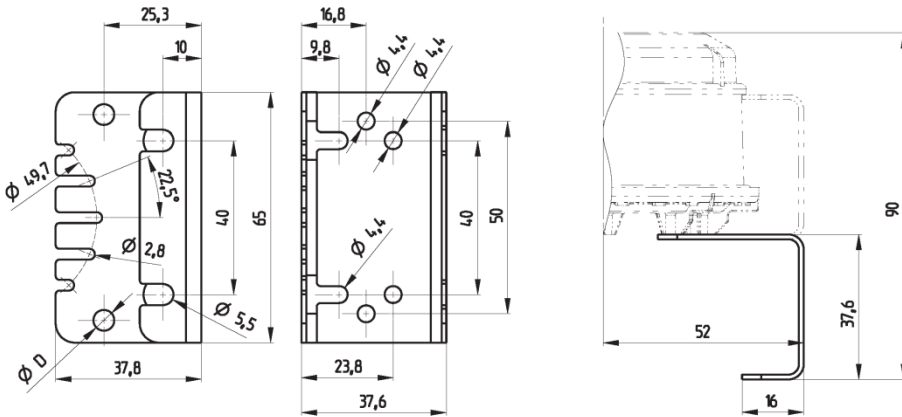
#### Assembly

|            |                          |  |
|------------|--------------------------|--|
| Vertical   | Pressure connections top | Factory calibration  |
| Horizontal | Hood down                | Switch point deviation from scale value approx. 0.11 mbar lower  |
|            | Hood up                  | Switch point deviation from scale value approx. 0.11 mbar higher |

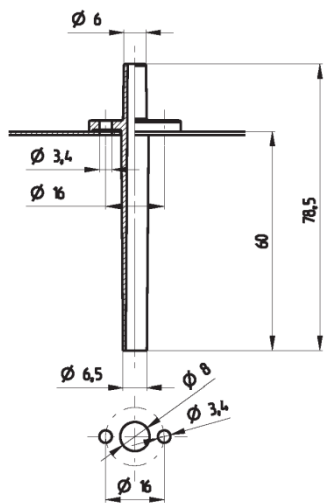
**12 Dimensional drawings** (all dimensions in mm unless otherwise specified)



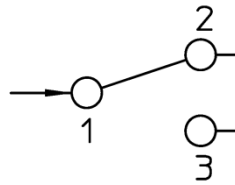
Combi angle



Hose connection



Electrical connection (screw terminals)



|   |              |       |
|---|--------------|-------|
| 1 | Feed line    | (COM) |
| 2 | Idle contact | (NC)  |
| 3 | Work contact | (NO)  |

### 13 Order Codes

#### Differential pressure switch

DS35 

|   |   |  |  |   |   |   |   |
|---|---|--|--|---|---|---|---|
| 9 | 9 |  |  | 0 | 0 | 0 | 1 |
|---|---|--|--|---|---|---|---|

**Setting range**

- 0.2 ... 3 mbar..... > 0
- 0.5 ... 5 mbar..... > 1
- 1 ... 10 mbar..... > 2
- 5 ... 20 mbar..... > 3
- 10 ... 50 mbar..... > 4

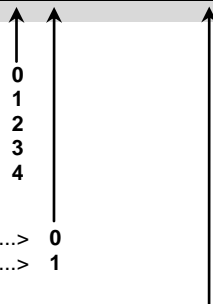
**Pressure connection**

- Hose connection Ø 6.2mm..... > 0
- Inner thread G1/8..... > 1

**Accessories**

- without..... > 0
- Connection set for ventilation channel ..... > 1
- comprising:

- 2m PVC hose 5 x 8 mm
- 2 hose connections
- 4 attachment screws



## 14 Manufacturer's Declarations and Certificates

**EG-Konformitätserklärung**

Für das nachfolgend bezeichnete Erzeugnis

**EC Declaration of Conformity**

For the product described as follows

**Druckschalter  
Pressure switch**

**DS35 # # # # # # #**

gemäß gültigem Datenblatt **DB\_DE\_DS35**

wird hiermit erklärt, dass es den grundlegenden Anforderungen entspricht, die in den nachfolgend bezeichneten Richtlinien festgelegt sind:

in accordance with the valid data sheet **DB\_EN\_DS35**

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

**EG Richtlinien**

2006/95/EG Niederspannungsrichtlinie

NSR

**EC Directives**

Low Voltage Directive

LVD

Die Produkte wurden entsprechend der folgenden Normen geprüft:

The products were tested in compliance with the following standards:

**NSR (LVD)**

DIN EN 60730-2-6

Die Geräte werden gekennzeichnet mit:

The devices bear the following marking:



Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung in Bezug auf die Erfüllung der grundlegenden Anforderungen und die Anfertigung der technischen Unterlagen trägt der Hersteller :

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:

**Fischer Mess- und Regeltechnik GmbH**

Bielefelderstr. 37a

32107 Bad Salzuffen, Germany

Tel. +49 5222 974 0

Bad Salzuffen, 09.08.12  
(Ort, Datum / Place, date)

  
(rechtsverb. Unterschrift / legally binding signature)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsrechtsvorschriften, beinhaltet jedoch keine Zusicherung von Eigenschaften.

This declaration certifies compliance with the specified harmonisation law regulations, but does not include assurance of specific properties.

