FISCHER MESS- UND REGELTECHNIK

# DS21 || Differential Pressure Switch

## Application

These type series instruments are used as flow-operation safety device in heat carrier oil plants acc. to DIN 32 727 and hot water plants acc. to VdTÜV data sheet flow 100. The flow-operation safety devices consist of a differential pressure device, e.g. an orifice plate, differential pressure switch and adequate shut-off valves. Follow mounting instructions in accordance to application. All instruments of this type series meet these demands. Successful structural testing of type series DS21 is confirmed by the following marks of conformity:

- for flow-operated safety devices DIN 32 727 DIN record No. 1B012/07
- acc. to VdTÜV data sheet flow 100 TÜV . SW/SB . 07 - 020

## Construction and Operation

The monitoring and switching instrument is based on a rugged and uncomplicated diaphragm movement suitable for overpressure, partial vacuum and differential pressure measurements. The operating principle of the system is identical in all three applications.

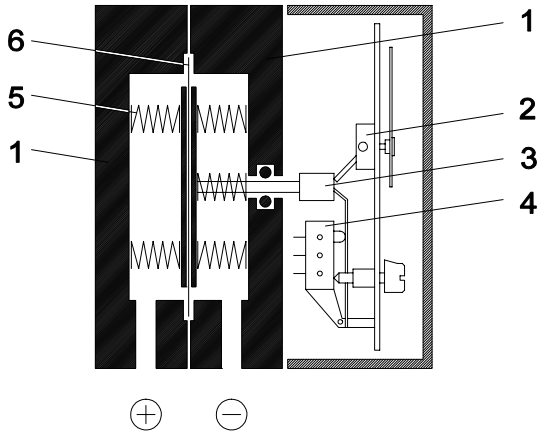
In a state of equilibrium, the forces of the springs on both sides of the diaphragm are balanced. The pressure or differential pressure to be measured creates an unbalanced force at the diaphragm. This force moves the diaphragm system against the force of the springs for the measuring range until a new equilibrium is reached. When subjected to excessive pressure, the diaphragm rests on metal supporting plates.

A centre-mounted tapped transfers the motion of the diaphragm system to the motion work and to the actuating elements of the microswitches.


## Main Features

- High repeatability of switching points
- Long service life
- High overpressure protection
- Structural testing

## Functional Scheme

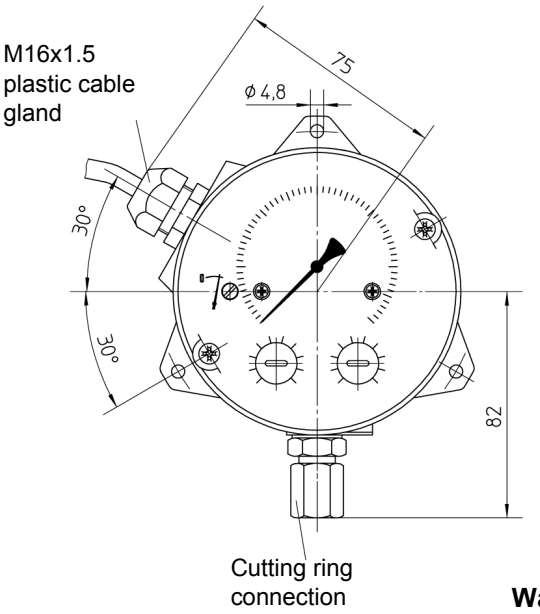



1. Pressure chamber
2. Motion work
3. Tappet
4. Microswitch actuating elements
5. Measuring springs
6. Measuring diaphragm

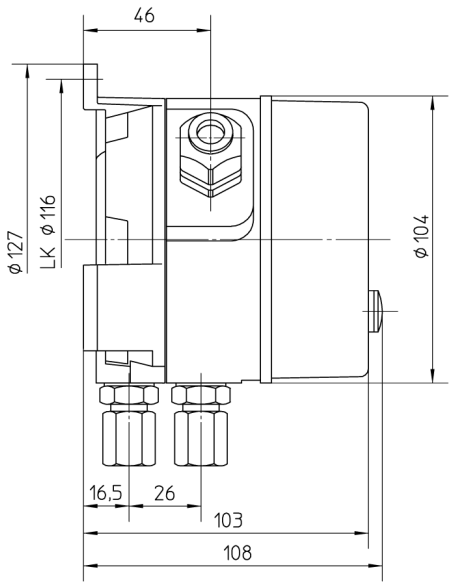
# Specifications

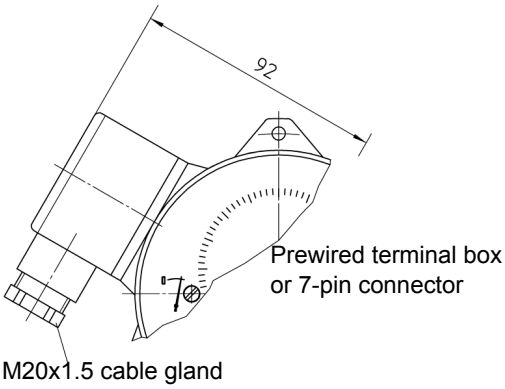
| | |
|---|---|
| **General** | |
| Measuring range | 0... 400 mbar up to 0... 6 bar (see ordering code) |
| Nominal pressure | 25 bar |
| Max. static operating pressure | Acc. to measuring range (see ordering code) |
| Max. pressure load | One-sided overpressure protected up to nominal pressure<br>on (+) - and (–) side of diaphragm, partial vacuum protected |
| Perm. ambient temperature | -10... +70°C |
| Perm. medium temperature | 70°C |
| Protection class | IP 54 acc. to DIN EN 60529 |
| Mounting position | Vertical |
| Measuring accuracy | ± 2.5% FS |
| Zero adjustment | Located in the dial |
| **Switching Elements** | |
| Contact output | 1 or 2 microswitches, 1-channel change-over contacts |
| Adjustment of switching points | External adjustment by standard value scales<br>smallest adjustable value: approx. 5% FS |
| Switching hysteresis | Approx. 2.5% FS |
| Load data / contacts | $U\sim_{max.}$ = 250 V AC, $I_{max.}$ = 5 A, $P_{max.}$ = 250 VA<br>$U=_{max.}$ = 30 V DC, $I_{max.}$ = 0.4 A, $P_{max.}$ = 10 W |
| **Electrical Connection** | Numbered cable, prewired terminal box, 7-channel plug |
| **Pressure Connection** | Thread G1/4 female, cutting ring connection for 6, 8, 10,12 mm ∅ tube<br>of brass, zinced steel or chrome nickel steel<br>connection shank G1/4 male DIN EN 837 |
| **Measuring System** | Diaphragm measuring system, diaphragm of reinforced Viton® |
| **Materials** | |
| Pressure chamber | Aluminium GkAlSi10(Mg), varnished black<br>Aluminium GkAlSi10(Mg) HART-COAT® surface protection<br>Chrome nickel steel 1.4305 |
| Measuring diaphragm | Diaphragm measuring system and gaskets of Viton® |
| Materials: medium | Stainless steel 1.4310, 1.4305 |
| Materials: housing | Macrolon |
| Weight | Pressure chamber of Aluminium = 1.2 kg, pressure chamber of 1.4305 = 3.5 kg |
| **Mounting** | Wallmounting - 3 fastening elements<br>Panel mounting - panel mounting kit DZ11 ø132 mm<br>Pipe mounting, pressure connections = (+), (–) symbols<br>- by screwed-in cutting ring or clamping ring connection<br>- by screwed-in connection shank acc. to DIN EN 837 for nipple fitting acc. to DIN 16284 |

## Dimensions (all units in mm unless otherwise stated)

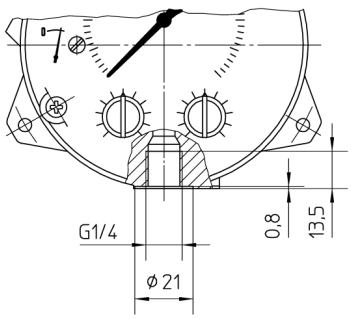



**DS21**
**Wallmounting**
**(standard)**




**Variants of Electrical Connection**




**Variants of Process Connection**

# Ordering Code

## Differential Pressure Switch

**DS21**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | | | | | | # | # | # | 0 |

**Range** / **Max. static pressure**

| | | | |
|---|---|---|---|
| 0 . . . 400 mbar | 6 bar | > | 8 3 |
| 0 . . . 0.6 bar | 10 bar | > | 0 1 |
| 0 . . . 1 bar | 16 bar | > | 0 2 |
| 0 . . . 1.6 bar | 16 bar | > | 0 3 |
| 0 . . . 2.5 bar | 16 bar | > | 0 4 |
| 0 . . . 4 bar | 16 bar | > | 0 5 |
| 0 . . . 6 bar | 16 bar | > | 0 6 |

**Application**

| | | |
|---|---|---|
| Thermal oil DIN 32727 / Hot water / Flow 100 | > | 0 |

**Pressure Chamber**

| | | |
|---|---|---|
| Aluminium | > | A |
| Aluminium HART COAT® | > | D |
| Chrome-nickel-steel 1.4305 | > | W |

**Pressure Connection**

| | | |
|---|---|---|
| Female thread G1/4 | > | 0 1 |
| Cutting ring fitting of steel for 6 mm tube | > | 2 0 |
| Cutting ring fitting of steel for 8 mm tube | > | 2 1 |
| Cutting ring fitting of steel for 10 mm tube | > | 2 2 |
| Cutting ring fitting of steel for 12 mm tube | > | 2 3 |
| Cutting ring fitting of 1.4571 for 6 mm tube | > | 2 4 |
| Cutting ring fitting of 1.4571 for 8 mm tube | > | 2 5 |
| Cutting ring fitting of 1.4571 for 10 mm tube | > | 2 6 |
| Cutting ring fitting of 1.4571 for 12 mm tube | > | 2 7 |

**Switching Elements**

| | | |
|---|---|---|
| 1 adjustable microswitch | > | A |
| 2 adjustable microswitches | > | B |

**Electrical Connection**

| | | |
|---|---|---|
| 1 m numbered cable, prewired | > | 1 |
| 2.5 m numbered cable, prewired | > | 2 |
| 5 m numbered cable, prewired | > | 5 |
| Prewired terminal box | > | K |
| GL approved model, 3 m supply cable H07 RNF | > | Z |



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