# Differential pressure switch
# Model DPS-301, 303, 361, 363



## Applications

- Power generation
- Waste water management
- Oil and gas
- Petrochemical industries

## Special features

- Adjustable switch differential to realise felxible on/off control
- Robust aluminium enclosure
- Switch point repeatability of ±1% of FSR for reliable switching
- Upto 2 possible positions for electrical connection
- High-quality micro switches with long service life


**Fig.: Differential pressure switch, model 301**

## Description

The model DPS-301, 303, 361, 363 differential pressure switch has been designed for control and monitoring applications. The measuring element is a diaphragm made of SS 316L for a broad range of media used in the process industry

The enclosure made of a high-grade aluminium alloy with which the pressure switch can withstand the harsh operating conditions of the process industry.

High static pressure with diaphragm sensor elements enable to meet a variety of applications in oil, gas, power, steel and petrochemical industries.

The model DPS-301, 303, 361, 363 has a high switch point repeatability of ±1%, which enables reliable switching. The switch point can be specified on site with external adjustment option. Adjustable switch differential enable to realise flexible on/off controls, this wide setting range is often needed for the on/off control mode of cyclic applications.

## Specifications

| Basic information | |
|---|---|
| **Case type** | Weatherproof |
| **Case material** | Die cast aluminium epoxy powder coated enclosure with ABS plastic cover |
| **Environment sealing** | EPDM |

| Output signal | |
|---|---|
| **Number of setpoint** | One |
| **Setting ranges** | → See table "Setting range"<br>External with lock |
| **Switching differential** | ■ 301 - Fixed differential for sensor element B & C<br>■ 303 - Adjustable differential for sensor element B & C<br>■ 361 - Fixed differential for sensor element A<br>■ 363 - Adjustable differential for sensor element A |
| **Swich point repeatability** | ±1% of FSR |
| **Scale accuracy** | ±5% of FSR |
| **Switching function** | ■ 1 x SPDT (single pole double throw)<br>■ 2 x SPDT (single pole double throw), for DPDT action<br>Synchronising error within 2% of FSR |
| **Contact version** | → See table "Contact versions" |

| Electrical connection | |
|---|---|
| **Number of Entries** | ■ 1 x left side<br>■ 2 x left side |
| **Conduit type** | ■ 1/2" NPT(F) per ASME B1.20.1<br>■ 7 pin plug for 1 × left side entry<br>■ 3/4" NPT(F) per ASME B1.20.1 through mild steel adaptor<br>■ M20 × 1.5 (F) per ISO724 through mild steel adaptor |

| Process connection | |
|---|---|
| **Type** | Side mount |
| **Size** | 1/4" NPT(F) Per ASME B1.20.1<br>Other sizes through adaptor → see datasheet AC 10.82 |
| **Material** | As per sensor housing. → see table "Sensor element" |

| Mounting | |
|---|---|
| **Type** | ■ Wall (standard)<br>■ Panel<br>■ Pipe-2" |
| **Material** | ■ SS 316<br>■ Mild steel |

| Operating condition | |
|---|---|
| **Ambient temperature range** | -10°C ... +60°C [14 ... 140°F] |
| **Medium temperature range** | → see table "Sensor element" |
| **Pressure safety with blow out disc** | Yes – standard |
| **Ingress protection** | IP66 per IS/IEC 60529 |
| **Weight** | Approx. 2.2 ... 3 Kg. |

## Setting range

| Code | Range [1], [4] | Sensor element | Maximum working pressure [3] | Switching differential for contact versions [2], [5] | | | |
|---|---|---|---|---|---|---|---|
| | | | | 3, D | 5 | 9, G | W |
| **Unit : mbar** | | | | | | | |
| M042 | 5 ... 120 | B | 110 bar | 5 | 10 | 12 | 55 ... 70 |
| | | C | 40 bar | 5 | 10 | 12 | 55 ... 70 |
| | | A | 15 bar | 12 | 12 | - | 65 ... 70 |
| M048 | 50 ... 350 | B | 110 bar | 12 | 20 | 30 | 80 ... 200 |
| | | C | 40 bar | 12 | 20 | 30 | 80 ... 201 |
| | | A | 15 bar | 20 | 25 | 60 | 95 ... 200 |
| **Unit : bar or Kg/Cm²** | | | | | | | |
| B023 | 0.1 ... 1.5 | B | 110 | 0.06 | 0.085 | 0.12 | 0.35 ... 0.90 |
| | | C | 40 | 0.06 | 0.085 | 0.12 | 0.35 ... 0.90 |
| | | A | 15 | 0.07 | 0.09 | 0.25 | 0.40 ... 0.90 |
| B028 / K051 [6] | 0.2 ... 4 | B | 110 | 0.175 | 0.35 | 0.5 | - |
| | | C | 40 | 0.175 | 0.35 | 0.5 | - |
| | | A | 15 | 0.3 | 0.6 | 0.7 | - |
| B032 / K102 [6] | 0.7 ... 7 | B | 110 | 0.3 | 0.5 | - | - |
| | | C | 40 | 0.3 | 0.5 | - | - |
| B034 / K103 [6] | 1.5 ... 15 | B | 110 | 0.8 | 1.35 | - | - |
| | | C | 40 | 0.8 | 1.35 | - | - |

(1) In the absence of customer specification, the switch point will be preset on falling pressure to the mid point of the range [I.e. 50% of span + minimum range value]

(2) The values indicate the maximum achievable limits of switch differential.

(3) Maximum working pressure that the sensor element can withstand without suffering any permanent damage. The instrument might have to be calibrated afterwards.

(4) Set and reset point of the switch should not exceed the upper and lower range limits.

(5) 1.3 multiplication factor shall be considered for arriving minimum differentials of 2 × SPDT contact version. Maximum differential remains same as SPDT contact version.

(6) Not applicable in model DPS-303

## Contact version

| Code [1] | Contact type | Electrical rating AC | | | | | Electrical rating DC | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Resistive load | | | Inductive load | | Resistive load | | | | Inductive load | | | |
| | | 115V | 125V | 250V | 125V | 250V | 28V | 30V | 125V | 250V | 28V | 30V | 125V | 250V |
| 3 | General purpose, silver contatc | - | 15A | 15A | - | - | - | - | - | - | - | - | - | - |
| D | General purpose, silver contact | - | 15A | 15A | 15A | 15A | - | 2A | 0.4A | 0.2A | - | 1A | 0.03A | 0.02A |
| W | Gereral purpose, silver alloy contact | - | 15A | 15A | 10A | 10A | - | 10A | 0.6A | 0.3A | - | 10A | 0.6A | 0.3A |
| 5 | General purpose, silver contact | - | 5A | 5A | 3A | 2A | - | 4A | 0.4A | 0.2A | - | 3A | 0.4A | 0.2A |
| 9 | Hermetically sealed, inert gas filled with silver alloy contact | 1A | - | - | - | - | 3A | - | - | - | 1A | - | - | - |
| G | Hermetically sealed, inert gas filled with gold plated | - | - | - | - | - | 1A | - | - | - | 0.25A | - | - | - |

[1] The code represents switching function 1 × SPDT
For 2 × SPDT, code characters will be doubled (for example DD, WW, etc.)

## Sensor element[1]

| Code | Type | Wetted parts[3] | | Permissible medium temperature |
|---|---|---|---|---|
| A | Diaphragm element with antagonist spring | Diaphragm | Buna-N | - |
| | | Housing | Aluminium with brass process connector | - |
| | | Sealing gasket | PTFE | - |
| | | Sealing ring | Buna-N | -20 .. 110°C [-4 ... 230°F] |
| | | Spring | SS 304 with PTFE coated | - |
| B | Diaphragm element with antagonist spring | Diaphragm | SS 316L | - |
| | | Housing | ■ SS 304 [2]<br>■ SS 316L | - |
| | | Sealing gasket | PTFE | - |
| | | Seal ring | ■ Buna-N [2] | -20 .. 110°C [-4 ... 230°F] |
| | | | ■ EPDM | -20 ... 130°C [-4 ... 266°F] |
| | | | ■ Viton | -20 ... 205°C [-4 ... 401°F] |
| | | Spring | ■ SS 304 [2]<br>■ SS 304 with PTFE coated | |
| C | Diaphragm element with antagonist spring | Diaphragm | Buna-N | - |
| | | Housing | ■ SS 304 [2]<br>■ SS 316L | - |
| | | Sealing gasket | PTFE | - |
| | | Seal ring | Buna-N | -20 .. 110°C [-4 ... 230°F] |
| | | Spring | ■ SS 304 [2]<br>■ SS 304 with PTFE coated | |

[1] Oxygen service available on request

[2] In the absence of customer specification, the sensor element will be selected with these wetted parts as standard combination

[3] Wetted part options are provided to suit the chemical compatibility at customer site

## Certificates (option)

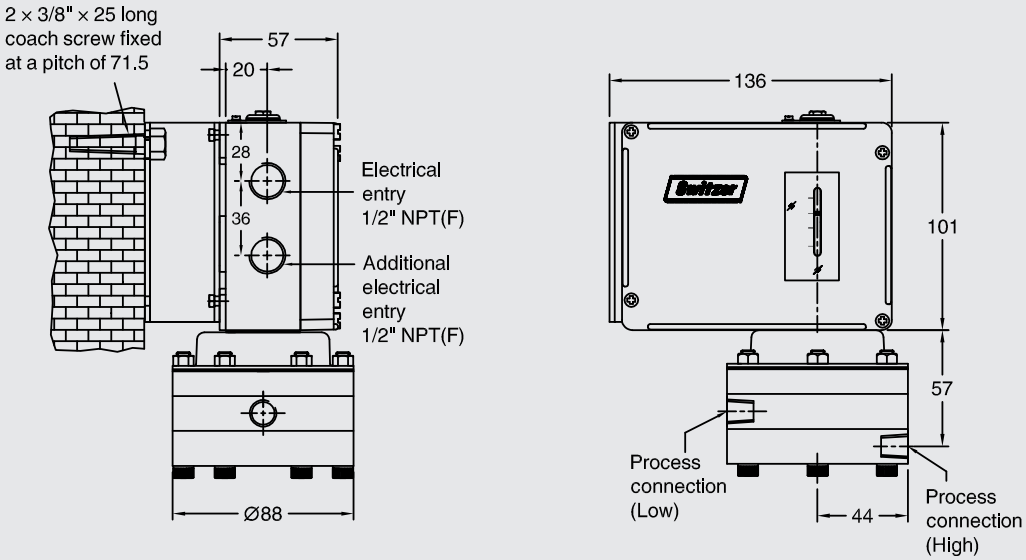
- 2.2 test report per EN 10204
- 3.1 calibration certificate per EN 10204
- 3.1 material restamping certificate per EN 10204
- NACE Compliance per MR0175, MR0103 (for SS 316L sensor housing only)

## Accessories

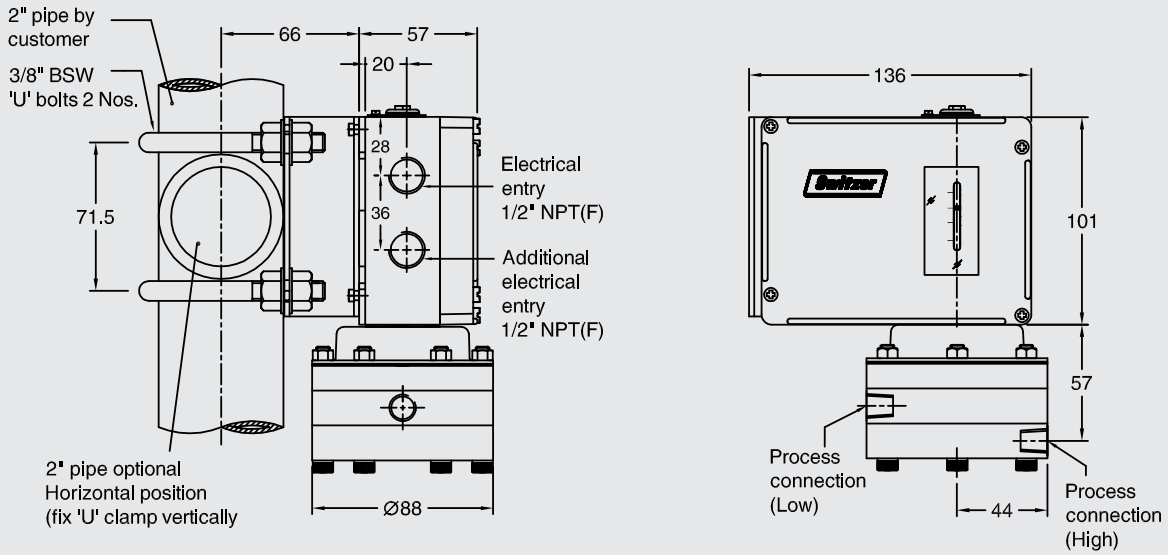
See data sheet AC 10.82

## Dimensions in mm

### Wall Mounting




### Pipe 2" Mounting




### Ordering information

Model / Switching differential / Range / Switching direction / Switch point / Sensor element / Switching function / Electrical connection / Process connection / Mounting





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