

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

WIKA data sheet PV 35.59

Applications

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

Special features

- Adjustable switch differential to realise flexible on/off control
- Robust aluminium enclosure
- Switch point repeatability of $\pm 1\%$ 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 $\pm 1\%$, 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" External with lock
Switching differential	<ul style="list-style-type: none"> ■ 301 - Fixed differential for sensor element B & C ■ 303 - Adjustable differential for sensor element B & C ■ 361 - Fixed differential for sensor element A ■ 363 - Adjustable differential for sensor element A
Switch point repeatability	±1% of FSR
Scale accuracy	±5% of FSR
Switching function	<ul style="list-style-type: none"> ■ 1 x SPDT (single pole double throw) ■ 2 x SPDT (single pole double throw), for DPDT action Synchronising error within 2% of FSR
Contact version	→ See table "Contact versions"

Electrical connection	
Number of Entries	<ul style="list-style-type: none"> ■ 1 x left side ■ 2 x left side
Conduit type	<ul style="list-style-type: none"> ■ 1/2" NPT(F) per ASME B1.20.1 ■ 7 pin plug for 1 x left side entry ■ 3/4" NPT(F) per ASME B1.20.1 through mild steel adaptor ■ M20 x 1.5 (F) per ISO724 through mild steel adaptor

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

Mounting	
Type	<ul style="list-style-type: none"> ■ Wall (standard) ■ Panel ■ Pipe-2"
Material	<ul style="list-style-type: none"> ■ SS 316 ■ 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 contact	-	15A	15A	-	-	-	-	-	-	-	-	-	-
D	General purpose, silver contact	-	15A	15A	15A	15A	-	2A	0.4A	0.2A	-	1A	0.03A	0.02A
W	General 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	<ul style="list-style-type: none"> ■ SS 304 ⁽²⁾ ■ SS 316L 	-
		Sealing gasket	PTFE	-
		Seal ring	<ul style="list-style-type: none"> ■ Buna-N ⁽²⁾ ■ EPDM ■ Viton 	-20 .. 110°C [-4 ... 230°F]
				-20 ... 130°C [-4 ... 266°F]
-20 ... 205°C [-4 ... 401°F]				
Spring	<ul style="list-style-type: none"> ■ SS 304 ⁽²⁾ ■ SS 304 with PTFE coated 			
C	Diaphragm element with antagonist spring	Diaphragm	Buna-N	-
		Housing	<ul style="list-style-type: none"> ■ SS 304 ⁽²⁾ ■ SS 316L 	-
		Sealing gasket	PTFE	-
		Seal ring	Buna-N	-20 .. 110°C [-4 ... 230°F]
		Spring	<ul style="list-style-type: none"> ■ SS 304 ⁽²⁾ ■ 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)

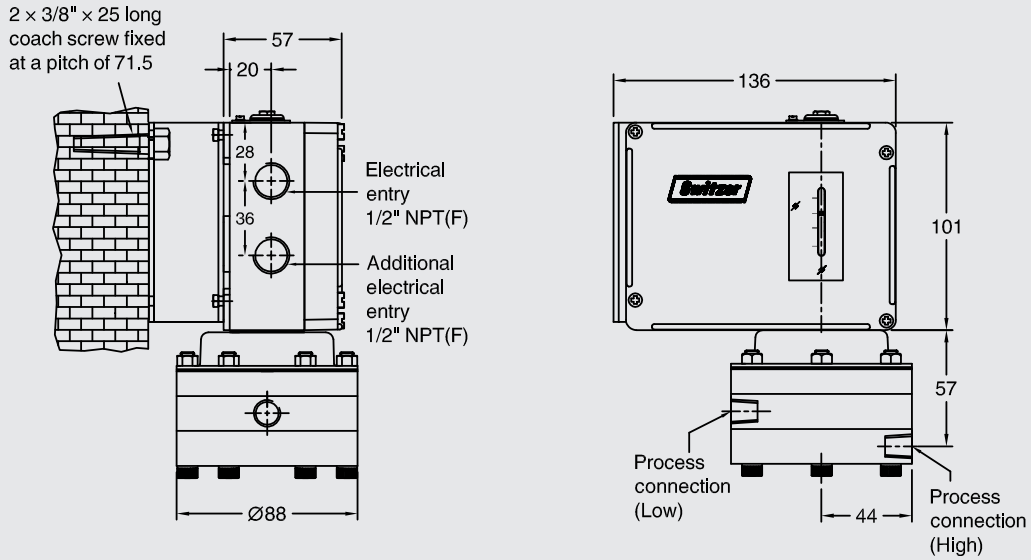
- 2.2 test report per EN 10204
- 3.1 calibration certificate per EN 10204
- 3.1 material restamping certificate per EN 10204
- NACE Compliance per MR0175, MR0103 (for SS 316L sensor housing only)

Accessories

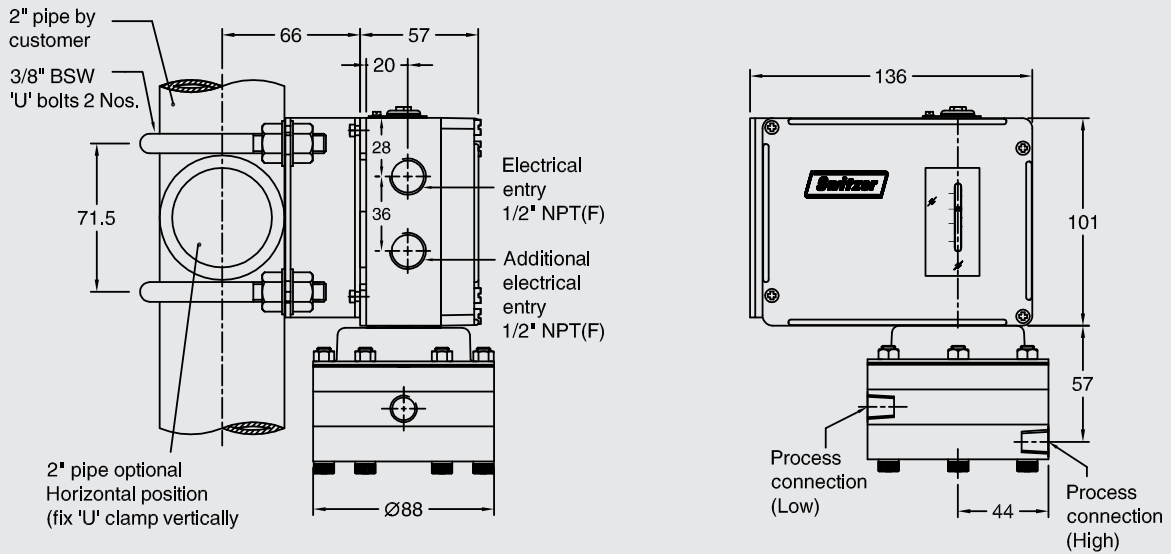
See data sheet AC 10.82

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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