

Differential pressure indicator – switch Model 180

WIKA data sheet PM 07.73

Applications

- Lube oil filter
- Oil & gas filtration
- Strainers
- Valves

Special features

- Elastomer diaphragm operated
- Single or dual switch option
- Unique magnetic pointer movement
- Media isolated gauge case
- SS case
- 6" dial
- Centre zero range



Fig. Differential pressure indicator, model 180

Description

Model 180, Differential pressure indicator has a rugged design for industrial use to measure the differential pressure in a filtration system which indicates directly on a single gauge dial.

A specially designed magnetic movement allows the instantaneous sensing of both pressures while completely isolating the gauge function from the

pressure chamber without the use of mechanical seals. Unlike ordinary differential pressure gauges, these instruments can be supplied with switching facility through a microswitch or reed switch to initiate an alarm signal or system shutdown. One (microswitch) or two (reed switch) switches can be provided to open or close contacts on either rising or falling differential pressure. Switch setting is easily done through an external adjustment for reed switch option.

Specifications

Basic information	
Case	304 SS
Dial nominal size	150 mm
Dial	Aluminium, white, black lettering
Scale	Non linear
Window material	Toughened safety float glass
Measuring cell	<ul style="list-style-type: none"> ■ 304 SS ■ 316 SS ■ 316L SS
Magnet	Barium ferrite
Sensor element	<ul style="list-style-type: none"> ■ Nitrile diaphragm ■ Viton diaphragm ■ EPDM (for ammonia service)

Accuracy class (includes linearity)	
Accuracy	±2% of FSR ascending
Hysteresis	5% of FSR

Output signal	
Scale ranges	→ See table-1
Maximum working pressure	10 Kg/Cm ² (150 psi)
Response time	<1 second
Pointer travel	90 degree angular
On-off Switching differential	Reed switch: Within 10% of FSR Microswitch: Within 20% of FSR
Switch rating	<ul style="list-style-type: none"> ■ SPDT microswitch for one setpoint ■ Reed switch for two independent setpoint See table-2
Switch setting adjustable	Between 10% (falling) to 90% (raising) FSR
Electrical connection	<ul style="list-style-type: none"> ■ M16 Nylon cable gland to suit 8 mm cable OD ■ 1/2" NPT per ASME B1.20.1 ■ 0.5 meter flying lead – 3 core, 4.5 mm OD, PVC cable for read switch only

Process connection	
Entry	Sides
Size	<ul style="list-style-type: none"> ■ 1/4" NPT(F) per ASME B1.20.1 standard ■ Others through adaptor

Operating condition	
Permissible ambient temperature	-10°C ... +60°C [14 ... 140°F]
Permissible medium temperature	100°C with Buna-N sealing (mandatory to use impulse piping when process temperature is above 80°C)
Mounting	Flush panel (standard)
Ingress protection	IP66 as per IEC 60529 category-2

Table-1: Range

Code	Kg / Cm ²	Code	PSI	Code	kPa	Code	Bar	Code	mmWC
								W147	-100 ... +250
								W010	-250 ... +250
								W009	-350 ... +350
								W008	-500 ... +500
								W012	0 ... 250
								W015	0 ... 400
								W016	0 ... 500
								W083	0 ... 600
								W017	0 ... 640
K008	0 ... 0.07	D001	0 ... 1					W019	0 ... 700
K009	0 ... 0.10							W021	0 ... 1000
K010	0 ... 0.12							W087	0 ... 1200
K011	0 ... 0.15	D002	0 ... 2					W023	0 ... 1500
K012	0 ... 0.20	D003	0 ... 3					W025	0 ... 2000
K013	0 ... 0.25							W026	0 ... 2500
K015	0 ... 0.35	D004	0 ... 5					W028	0 ... 3500
								W031	0 ... 4500
K019	0 ... 0.50	D005	0 ... 8			B090	0 ... 0.5	W032	0 ... 5000
K020	0 ... 0.60					B081	0 ... 0.6	W148	0 ... 6000
K023	0 ... 1.0	D007	0 ... 15	P002	0 ... 100	B004	0 ... 1.0	W036	0 ... 10000
K024	0 ... 1.6	D009	0 ... 25	P003	0 ... 160	B005	0 ... 1.6	W041	0 ... 16000

Table-2: Switch rating

Switch	AC rating				DC rating					
	Resistive load		Inductive load		Resistive load			Inductive load		
	125V	250V	125V	250V	30V	125V	250V	30V	125V	250V
Micro	5A	3A	3A	2A	4A	0.4A	0.2A	3A	0.4A	0.2A
Reed	0.25A Res / 3W, 12V DC									

Ordering matrix

[illegible]

Note: Standard single cable entry for one switch and dual cable entry for two switches
For available other options refer page 5

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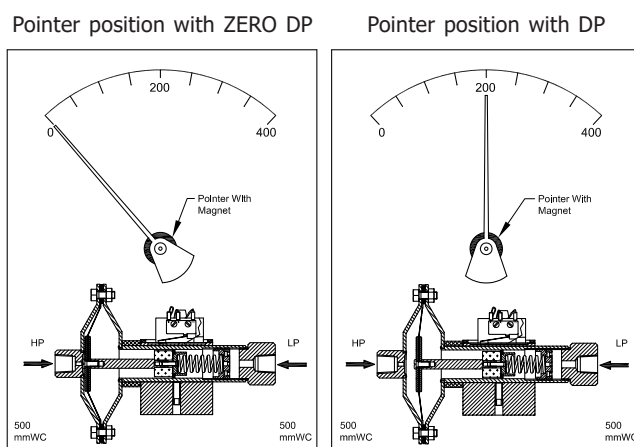
Options for model 120 / 122

- 205°C with Viton® sealing
- 125°C with EPDM sealing
- 316 SS measuring cell
- Model 150 power relay for high electrical rating in reed switch or for DPDT option or wide band adjustable differential
- Wall mounting
- 2" pipe mounting
- 304 SS tag plate
- Wetted parts material conformation with NACE compliance (316L SS)
- Full vacuum withstandability

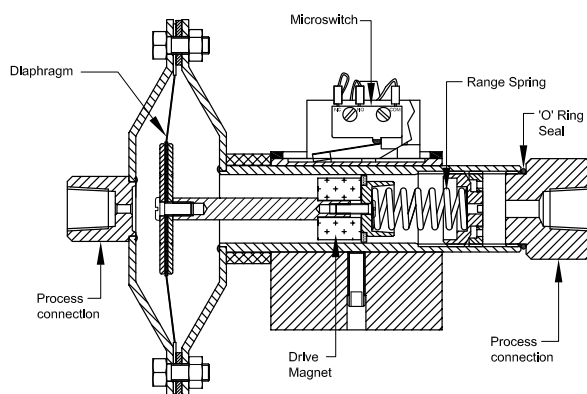
Design and operation

Model 180 Differential pressure instruments work on the difference between two pressures acting on opposite sides of a elastomer diaphragm. Variation in pressure difference will cause the diaphragm and magnet to move linearly in proportion to this change. A rotary pointer magnet, located in separate body cavity, follows the linear movement of the pressure sensor magnet and indicates the differential pressure on the gauge scale.

Switching is achieved by locating Micro Switch and Reed Switch adjacent to the pressure chamber. The switches are activated when the field of the linear magnet interacts at a preset point with the reed switch armature. Switch activation point is adjustable over the top 90% of the gauge range.



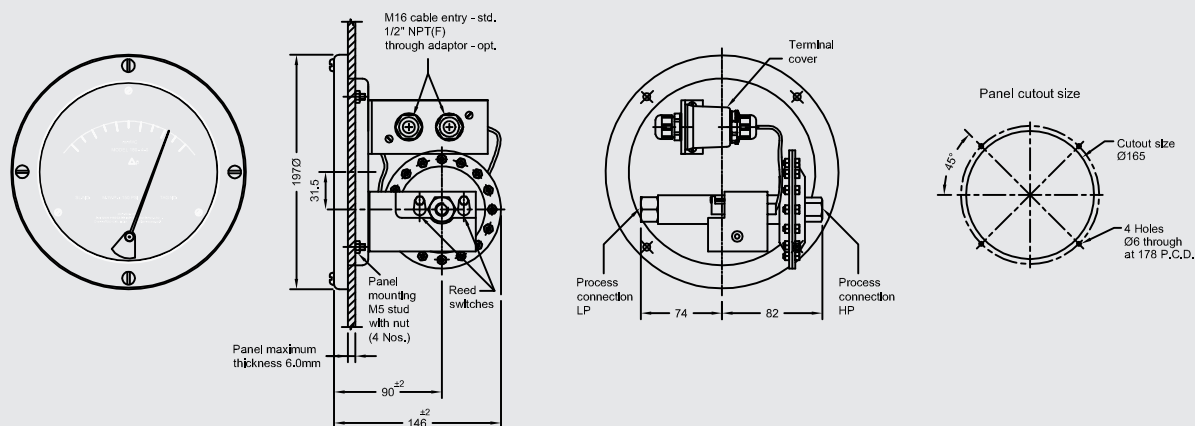
180 Body construction



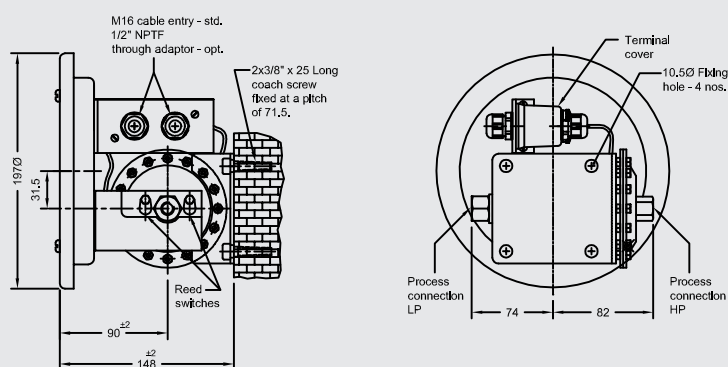
Dimensions in mm

2 SPDT Reed switch

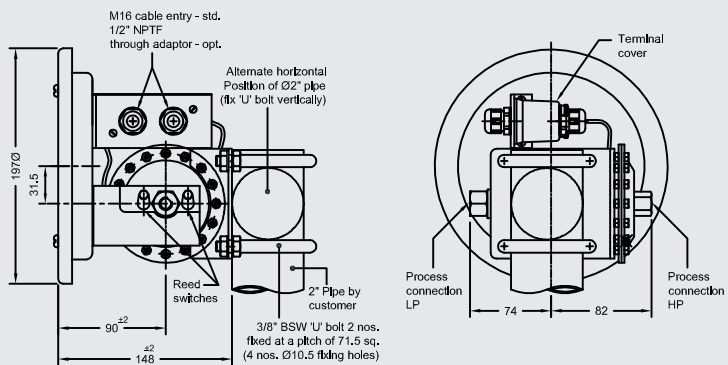
Surface mounting



Wall mounting



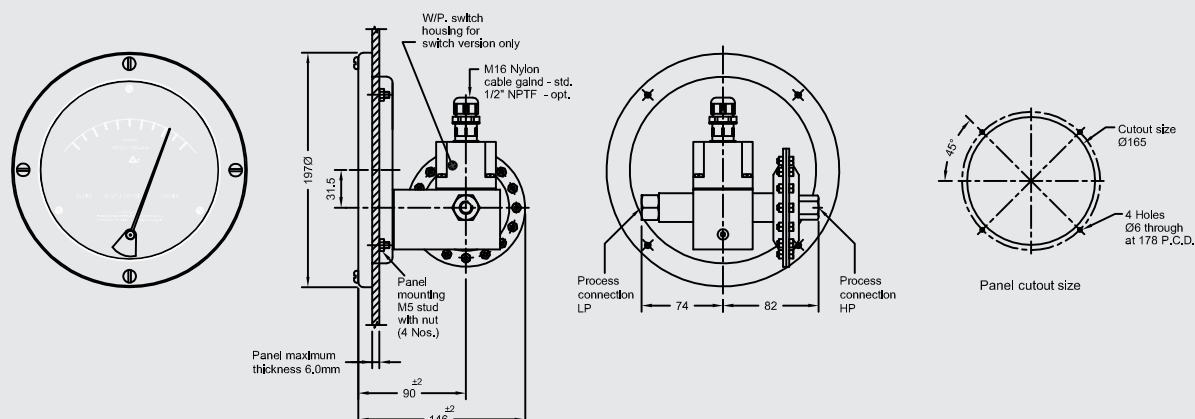
2" pipe mounting



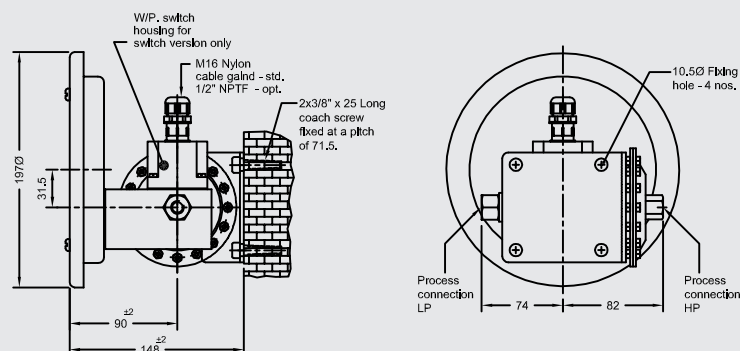
Dimensions in mm

SPDT Microswitch / without switch

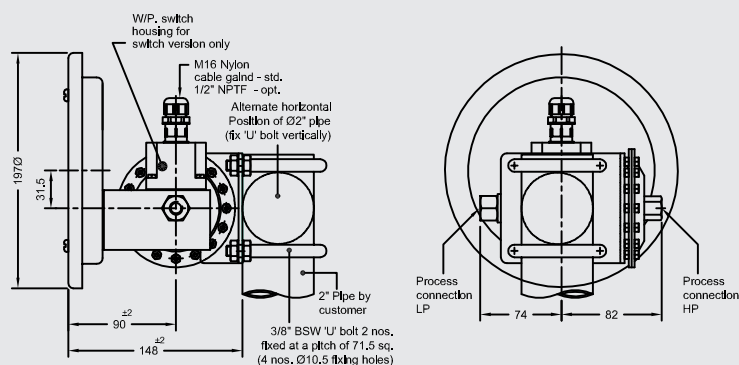
Surface mounting



Wall mounting



2" pipe mounting



Ordering information

Model number / Scale ranges / Dial scale / Measuring cell / Seal material / Switching / Mounting / Mounting material / Electrical entry / Power relay

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