

# Explosion proof type indicating pressure switch (100 mm)

## Model: P980 series

Spec. sheet no. PD09-11

### Service intended

P980 series explosion proof indicating pressure switches measure a corrosive fluid and a high pressure. It is equipped with a micro contact or an electrical contact block, which is suitable for all types of contacts.



### Nominal diameter

100 mm

### Accuracy

Indicator :  $\pm 1.0$  % of full scale

Alarm setting :  $\pm 3.0$  % of full scale

### Repeatability

$\pm 1.0$  % of adjustable range (Micro contact type)

### Adjustable range (MPa, kPa, bar)

-0.1 ~ 0 to 0 ~ 2 MPa

0 ~ 0.1 to 0 ~ 35 MPa

### Working temperature

Ambient : -20 ~ 65 °C

Fluid : Max. 100 °C

### Temperature effect

Accuracy at temperature above and below the reference temperature (20 °C) will be effected by approximately  $\pm 0.4$  % per 10 °C of full scale



## Standard features

### Pressure connection

Stainless steel (316SS)

### Element

C type bourdon tube

Stainless steel (316SS)

### Case and cover

ALDC12.1

Silver gray painted aluminium

Surface mounting

### Contact

#### ■ Micro contact

One SPDT or Two SPDT

#### ■ Electrical contact

One SPST or Two SPST

### Contact rating

#### ■ Micro contact type

AC 125 V, 5 A / 250 V, 3 A and DC 30 V, 4 A

DC 125 V, 0.4 A for resistance load

AC 125 V, 3 A / 250 V, 2 A and DC 30 V, 3 A

DC 125 V, 0.05 A for inductive load

#### ■ Electrical contact

AC 250 V, 1.0 A

### Conduit connection

$\frac{1}{2}$ " NPT(F), Lead wire length (Max. 1 m)

\* Refer to "Switching element" for wiring diagram.

### Process connection

$\frac{3}{8}$ ",  $\frac{1}{2}$ " PT, NPT and PF

Setpoint adjustment

### Certificates

KCS Ex d IIC T6

### Option

Explosion proof type cable gland

● 304SS

●  $\frac{1}{2}$ " NPT(M)

**1. Base model**

- P981** Explosion proof type indicating pressure switch with micro contact
- P982** Explosion proof type indicating pressure switch with electrical contact

**2. Nominal diameter (mm)**

- 4** 100

**3. Mounting**

- B** Bottom connection, case mounting plate

**4. Contact function**

- 1** High alarm
- 2** High and low alarm
- 3** Low alarm
- 4** Two high alarm
- 5** Two low alarm

**5. Process connection**

- D**  $\frac{3}{8}$ "
- E**  $\frac{1}{2}$ "

**6. Connection type**

- B** PF
- C** PT
- D** NPT

**7. Unit**

- H** bar
- I** MPa
- J** kPa

**8. Range**

- XXX** Refer to pressure unit and range table

**9. Dial color**

- 3** 2 color
- 7** 3 color

**10. Option**

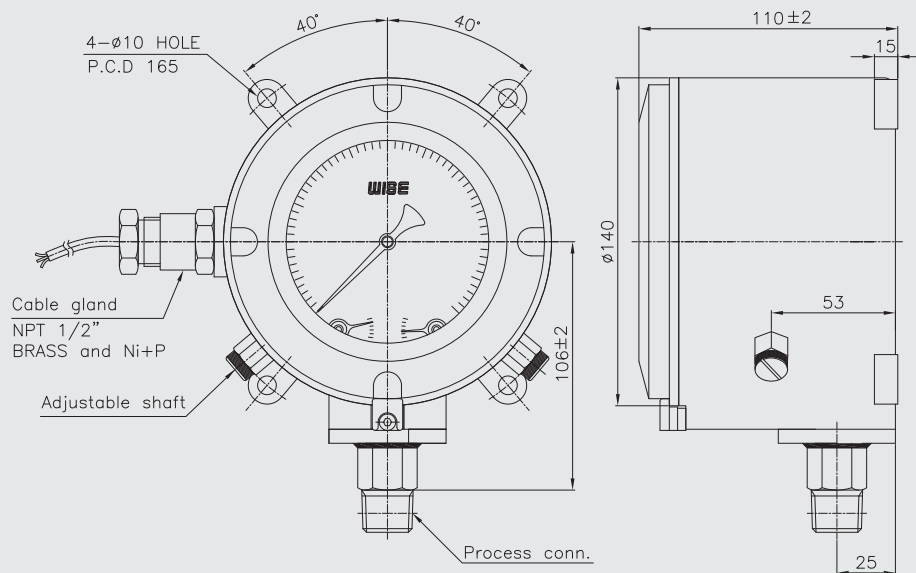
- 0** None
- 1** Accessories
- 2** Explosion proof cable gland / 304SS, NPT  $\frac{1}{2}$ "(M)

1	2	3	4	5	6	7	8	9	10
P981	4	B	1	D	B	H	XXX	3	0

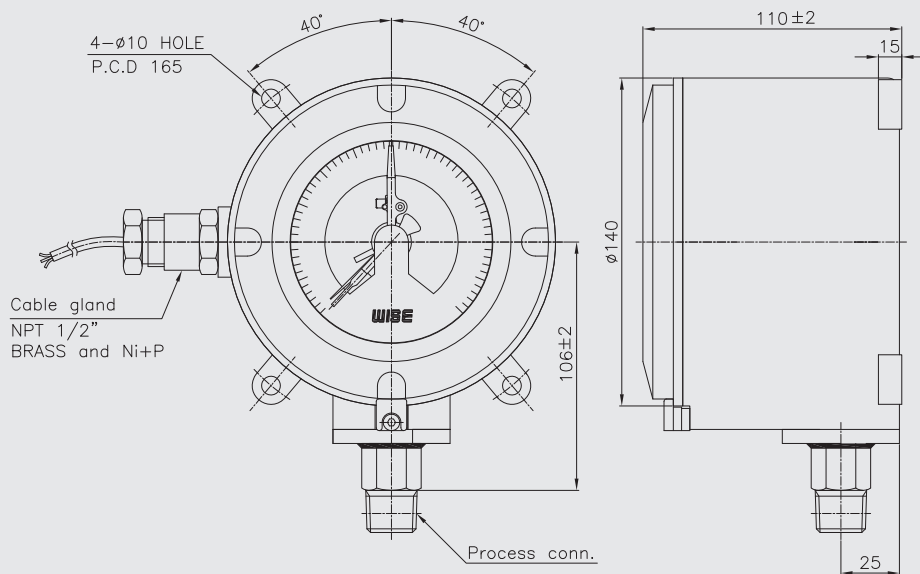
Sample  
ordering code

## P980 : Type of mounting

### < Micro contact type >



### < Electrical contact type >



\* Refer to "Switching element" for wiring diagram.

## Micro contact

### General

The micro contact has a large switching capacity with high repeat accuracy. The contact mechanism is a crossbar type with gold alloy contacts, which ensures highly reliable operations for micro loads.

### Characteristics

Item	Micro switch
Operating speed	0.1 mm to 1 m/s
Mechanical operating frequency	400 operations/min
Insulation resistance	100 MΩ at 500 VDC
Contact resistance	50 MΩ max
Shock resistance	200 m/sec <sup>2</sup> max
Ambient temperature	-25 ~ 80 °C
Ambient humidity	85 % max

### Specifications

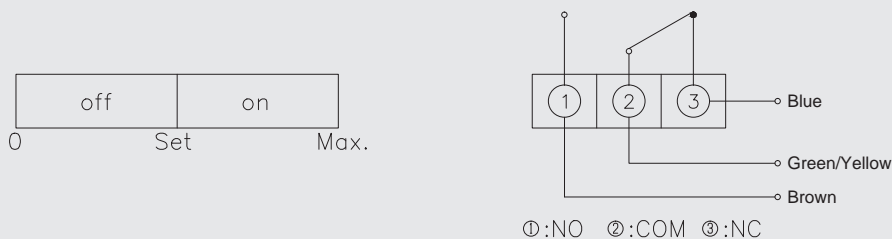
Rated voltage	Resistive load (A)		Inductive load (A)	
	NC	NO	NC	NO
125 V AC	5		3	
250 V AC	3		2	
8 V DC	5		5	4
14 V DC	5		4	4
30 V DC	4		3	3
125 V DC	0.4		0.4	0.4
250 V DC	0.2		0.2	0.2

### SPDT switching element

Single-pole, double throw (SPDT) has three connection : C-common, NO-normally open and NC-normally close, which allows the switching element to be electrically to the circuit NO or NC state.

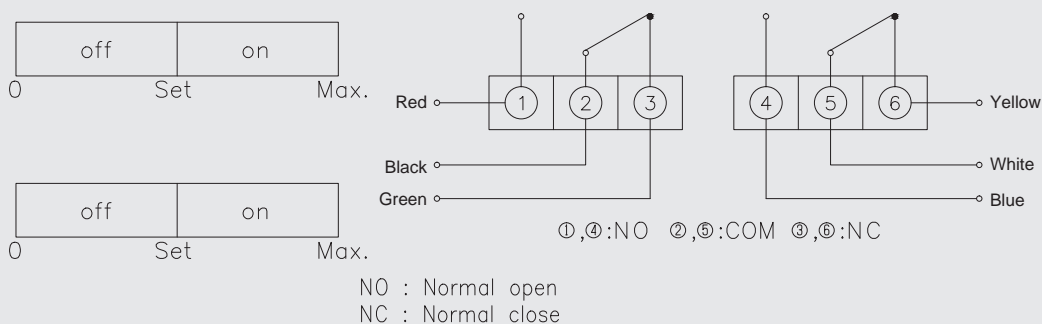
#### One SPDT

Pressure reach the upper or lower limit setpoint, circuit closed and opened.



#### Two SPDT

Pressure reach the upper or lower limit setpoint, two circuit simultaneous closed and opened.



## Snap - action contacts

### General

Electromechanical limit switches in pointer type measuring instruments are auxiliary current switches which open or close electrical circuits at set limit values by means of a contact arm which is moved by the actual value pointer.

The snap action contact is a mechanical contact for switching capacities up to 30 W 50 VA max.

Contact making will be delayed and or advanced in relation to the movement of the actual value pointer.

To closed the circuit, the contact pin of the movable contact arm is attracted in a jump by the permanent magnet fastened to the supporting arm shortly before the set value has been reached.

Due to the retention force of the magnet, snap action contacts are more resistant against shock and vibration.

The switching safety is increased by the increased contact pressure.

When the circuit is opened, the magnet keeps the contact arm in its place until the restoring force of the measuring element exceeds the magnetic force, and the contact opens in a jump.

### Specifications

Maximum contact rating with non-inductive (ohmic) load		Electric contacts type pressure gauge
		Dry gauges
Maximum voltage		250 V
Current ratings	Make ratings	1.0 A
	Break ratings	1.0 A
	Continuos load	0.6 A
Maximum load		30 W 50 VA
Material of contact points		Silver-Nickel alloy (80 % Ag / 20 %Ni / 10 µm) gold-plated
Ambient operating temperature		-20...+70 °C
Max. no. of contacts		2
Voltage test		Circuit / protective earth conductor - 2,000 vac 1 minute
		Circuit /circuit - 2,000 vac 1 minute

### Recommended contact ratings with ohmic and inductive load

Voltage (DIN IEC 38) DC / AC	Electric contacts type pressure gauge		
	Dry gauges		
	Ohmic load		Inductive load
	DC	AC	
			cosØ > 0.7
V	mA	mA	mA
220 / 230	100	120	65
110 / 110	200	240	130
48 / 48	300	450	200
24 / 24	400	600	250

In order to ensure a high switching reliability of the contacts the switching voltage should not be below 24 V, also taking environmental influences in the long term into account.

## Contact function table

Code	Wiring scheme	Contact function		Wiebrock code no.	Remark
		1 <sup>st</sup> contact	2 <sup>nd</sup> contact		
Single Contact					
1	Contact make when pointer reachse setpoint (Normal open - NO)			S/M-1	Normal use high alarm system
3	Contact break when pointer reachse setpoint (Normal close - NC)			S/M-2	Normal use low alarm system
Double Contact - Common Circuit					
4	1 <sup>st</sup> and 2 <sup>nd</sup> contact make when pointer reaches setpoint			S/M-11	Normal use two high alarm system
2	1 <sup>st</sup> contact break 2 <sup>nd</sup> contact make when pointer reaches setpoint			S/M-21	Normal use high and low alarm system
5	1 <sup>st</sup> and 2 <sup>nd</sup> contact break when pointer reaches setpoint			S/M-22	Normal use two low alarm system

## Terminal block arrangement

### 1. High alarm (S/M-1)

- ① Normal open
- ② Common
- ④ Ground

### 2. High and low alarm (S/M-21)

#### Low alarm

- ① Normal close
- ② Common
- ④ Ground

#### High alarm

- ② Common
- ③ Normal open

### 3. Low alarm (S/M-2)

- ① Normal close
- ② Common
- ④ Ground

### 4. Two high alarm (S/M-11)

#### No.1 High alarm

- ① Normal open
- ② Common
- ④ Ground

#### No.2 High alarm

- ② Common
- ③ Normal open

### 5. Two low alarm (S/M-22)

#### No.2 Low alarm

- ① Normal close
- ② Common
- ④ Ground

#### No.1 Low alarm

- ② Common
- ③ Normal close

## Cable identification

Contact function	NO	COM	NC	EARTH
	Brown	Black	Blue	Green

## Range table

Range and code	Unit and code		
	H : bar	I : MPa	J : kPa
026	-1 ~ 0	-0.1 ~ 0	-100 ~ 0
041	0 ~ 1	0 ~ 0.1	0 ~ 100
042	0 ~ 2	0 ~ 0.2	0 ~ 200
043	0 ~ 3	0 ~ 0.3	0 ~ 300
044	0 ~ 4	0 ~ 0.4	0 ~ 400
045	0 ~ 6	0 ~ 0.6	0 ~ 600
047	0 ~ 10	0 ~ 1	0 ~ 1,000
050	0 ~ 15	0 ~ ~ 1.5	X
051	0 ~ 20	2	X
052	0 ~ 25	0 ~ 2.5	X
054	0 ~ 35	0 ~ 3.5	X
055	0 ~ 50	0 ~ 5	X
057	0 ~ 70	0 ~ 7	X
058	0 ~ 100	0 ~ 10	X
059	0 ~ 150	0 ~ 15	X
062	0 ~ 250	0 ~ 25	X
064	0 ~ 350	0 ~ 35	X
027	-1 ~ 1	-0.1 ~ 0.1	-100 ~ 100
028	-1 ~ 2	-0.1 ~ 0.2	-100 ~ 200
029	-1 ~ 3	-0.1 ~ 0.3	-100 ~ 300
030	-1 ~ 4	-0.1 ~ 0.4	-100 ~ 400
031	-1 ~ 6	-0.1 ~ 0.6	-100 ~ 600
032	-1 ~ 10	-0.1 ~ 1	-100 ~ 1,000
033	-1 ~ 15	-0.1 ~ 1.5	-100 ~ 1.5 MPa
034	-1 ~ 20	-0.1 ~ 2	-100 ~ 2 MPa

