

# Explosion proof type differential pressure switch

## Model: P970 (953 series)

Spec. sheet no. PD09-10

### Service intended

P970 diaphragm type differential pressure switch can be used in a variety of process lines. Internal micro switch is operated by pressure of various fluids, such as atmospheric pressure and water pressure. The pressure sensing part is a force balanced and piston actuated assembly.



### Fluid

Gas and oil

### Repeatability

±1.0 % of adjustable range

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

15 kPa to 0.4 MPa

### Dead band

Fixed

One SPDT : Approx. 5 % of adjustable range

Two SPDT : Approx. 10 % of adjustable range

### Working temperature

Ambient : -40 ~ 65 °C

Fluid : Max. 100 °C

### Static pressure

Max. 0.2, 5 MPa

### Degree of protection

EN60529/IEC529/IP67



## Standard features

### Pressure connection

Stainless steel (316SS)

316L SS, Monel and Hastelloy-C

### Element

Stainless steel (316L SS)

Monel, Hastelloy-C

Viton (Up to 4 kPa adjustable range)

### Case and cover

ALDC 12.1

Silver gray painted aluminium

### Process connection

¼" NPT (F)

### Contact

Micro contact type

One SPDT (P970-1B3)

Two SPDT (P970-2B3)(Only available with single setpoint)

### Contact rating

#### SPDT contact rating

AC 125 V / 250 V, 15 A

DC 125 V, 0.4 A for resistance load

DC 125V, 0.03 A for inductive load

### Conduit connection

¾" NPT (F)

### Certificates

KCS Ex d IIC T6

ATEX II 2G Ex d IIC T6 Gb

IECEx Ex d IIC T6 Gb

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## Main order

## Ordering information

### 1. Base model

**P970** Explosion proof type differential pressure switch

### 2. Switch form

- 1 One SPDT
- 2 Two SPDT (Only available with single setpoint)

### 3. Unused character

**B3** None

### 4. Process connection

**C** 1/4"

### 5. Connection type

**D** NPT (F)

### 6. Unit

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

### 7. Range

**XXX** Refer to pressure unit and range table

### 8. Process connection / Element material

- 3** 316SS / 316L SS
- V** 316SS / Viton
- L** 316SS / Hastelloy-C
- K** 316SS / Monel
- Z** Monel / Monel
- H** Hastelloy-C / Hastelloy-C

### 9. Valve options

- 0** None
- 1** 3 way / 5 way manifold valve

### 10. Conduit connection options (Adapter)

- 00** None (S.T.D: 3/4" NPT(F))
- F1** Ex d only (Upon request)\_Ni Plated + Brass

### Sample ordering code

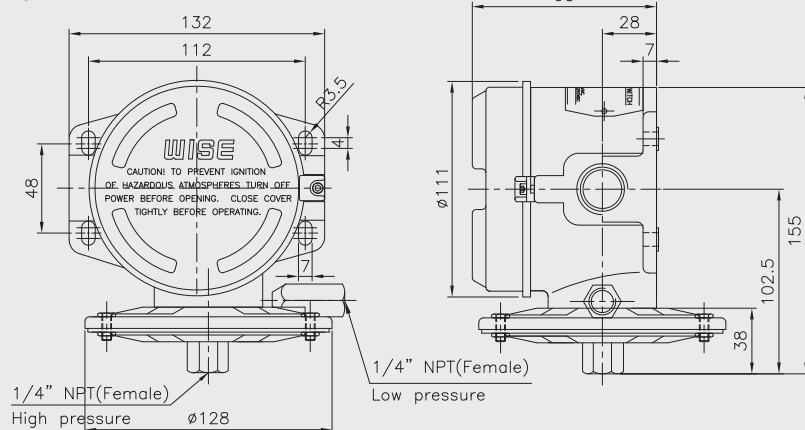
1	2	3	4	5	6	7	8	9	10
P970	1	B3	C	D	H	XXX	3	0	00



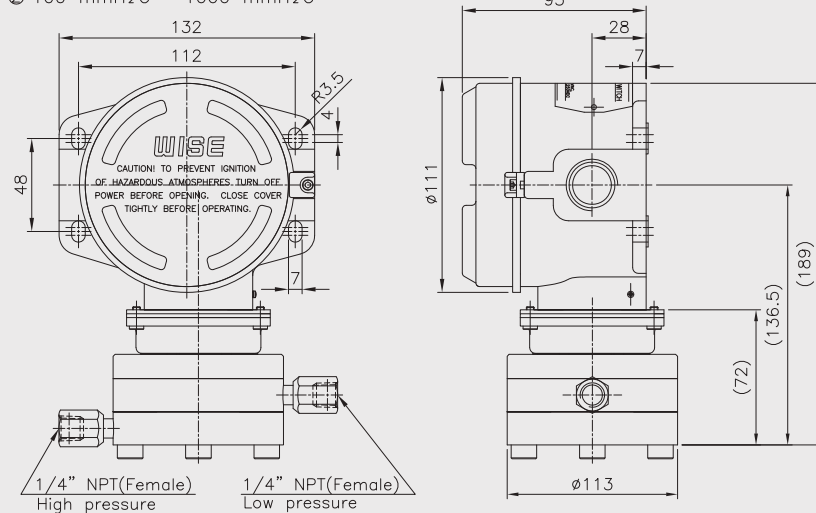
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## P970 : Type of mounting

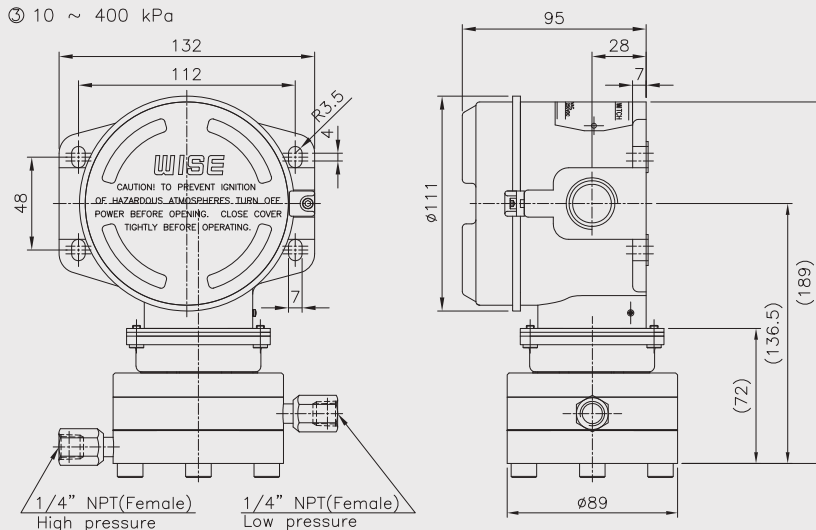
① 30 mmH<sub>2</sub>O ~ 1000 mmH<sub>2</sub>O



② 100 mmH<sub>2</sub>O ~ 1000 mmH<sub>2</sub>O



③ 10 ~ 400 kPa



## Pressure switch

A bi-stable electro mechanical device than actuates/deactuates one or more electrical switching element at a predetermined discrete pressure upon rising or falling.

## Adjustable range

The span of pressure between upper and lower limits within which the pressure switch can be adjusted to actuate/deactuate. It is expressed for increasing pressure.

## Setpoint

That discrete pressure at which the pressure switch is adjusted to actuate/deactuate on rising or falling pressure. It must fall with the adjustable range and be called out as increasing.

## Dead band

The difference in pressure between the increasing set point and the decreasing setpoint.

## Working pressure

The maximum input pressure that can be continuously applied to the pressure switch without causing permanent change of setpoint, leakage or material failure.

## Repeatability

The ability of a pressure switch to successively operate at a set point that is approached from a starting point in the same direction and returns to the starting point over three consecutive cycles to establish a pressure profile.

The closeness of the measures set point values is normally expressed as a percentage of full scale (maximum adjustable range pressure).

## Pressure range table

Code	Adjustable setting range			Working pressure	Flange size
	H : bar	I : MPa	J : kPa	bar	Diameter (mm)
932	0.002 ~ 0.015		0.2 ~ 1.5	2	128
994	0.01 ~ 0.15		1 ~ 15	5	113
907	0.1 ~ 0.25		10 ~ 25		
909	0.2 ~ 0.35		20 ~ 35		
910	0.3 ~ 0.5		30 ~ 50	50	88 ~ 98
922	0.4 ~ 2	0.04 ~ 0.2			
905	1.5 ~ 4	0.15 ~ 0.4			

## 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	0.01 mm to 1 m/s
Mechanical operating frequency	240 operations/min
Insulation resistance	100 MΩ 1 min at 500 VDC
Contact resistance	0.015 Ω max
Shock resistance	100 m/sec <sup>2</sup> max
Ambient temperature	-25 ~ 80 °C
Ambient humidity	35 ~ 85 % RH

### Specifications

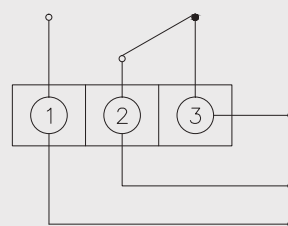
Rated voltage	Non inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 V AC	15		3	1.5	15		5	2.5
250 V AC	15		2.5	1.25	15		3	1.5
8 V DC	15		3	1.5	15		5	2.5
30 V DC	2		2	1.4	1		1	1
125 V DC	0.4		0.4	0.4	0.03		0.03	0.03
250 V DC	0.2		0.2	0.2	0.02		0.02	0.02

### 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

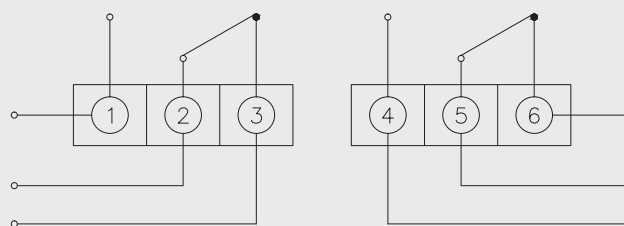
Pressure reach the upper or lower limit setpoint, circuit closed and opened.



①:NO ②:COM ③:NC

#### Two SPDT

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



①,④:NO ②,⑤:COM ③,⑥:NC

NO : Normal open  
NC : Normal close

