

# Explosion proof pressure switch

## Model: P953 (953 series)

Spec. sheet no. PD09-08

### Service intended

P953 diaphragm type 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)

0.3 kPa to 15 MPa  
-1.0~-0.15 bar

### Dead band

Fixed

One SPDT : Approx. 5 % adjustable range

Two SPDT : Approx. 10 % of adjustable range

### Working temperature

Ambient : -40 ~ 65 °C  
Fluid : Max. 100 °C

### 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 finished aluminium

### Process connection

¼", ⅜", ½" PT, NPT and PF

### Contact

Micro contact type  
One SPDT (P953-1B3)  
Two SPDT (P953-2B3)(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

**1. Base model****P953** Explosion proof 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"
- D** 3/8"
- E** 1/2"

**5. Connection type**

- B** PF
- C** PT
- D** NPT
- E** NPT (F) - 1/2" NPT (F) only

**6. Unit**

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

**7. Range****XXX** Refer to pressure range table**8. Pressure connection and 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. Options**

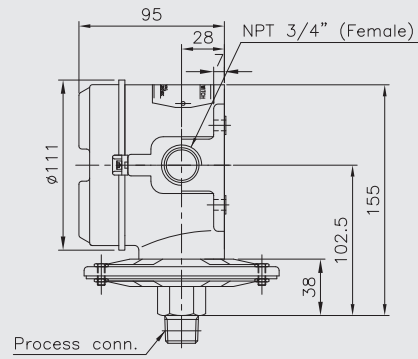
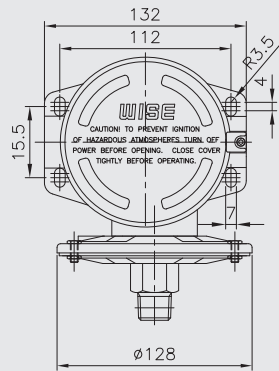
- 0** None
- 2** 2" pipe mounting bracket 304SS
- 3** 2" pipe mounting bracket 316SS

**Sample ordering code**

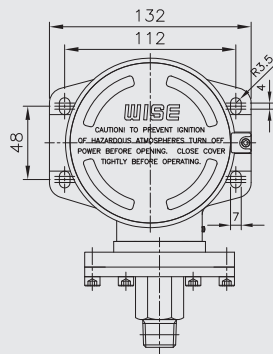
1	2	3	4	5	6	7	8	9
<b>P953</b>	<b>2</b>	<b>B3</b>	<b>C</b>	<b>D</b>	<b>H</b>	<b>XXX</b>	<b>3</b>	<b>0</b>

## P953 : Type of mounting

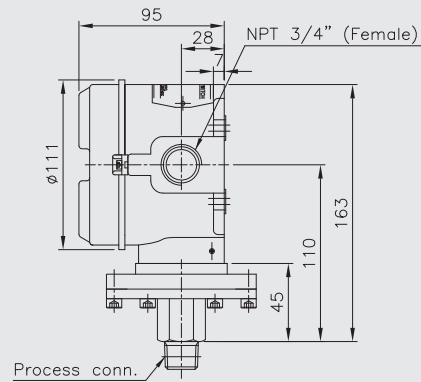
① 0.3 ~ 3 kPa  
(Pmax 2 bar)



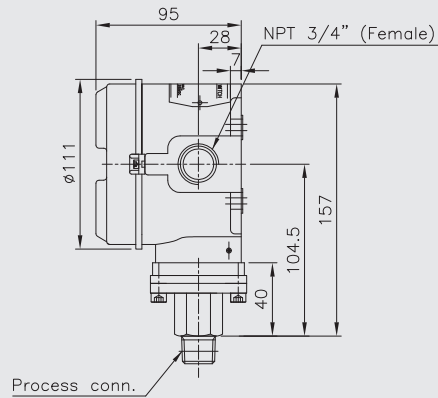
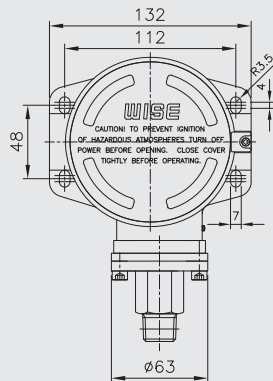
② Nominal diameter  $\phi 113$  : 2 ~ 7 kPa  
(Pmax. 5 bar)



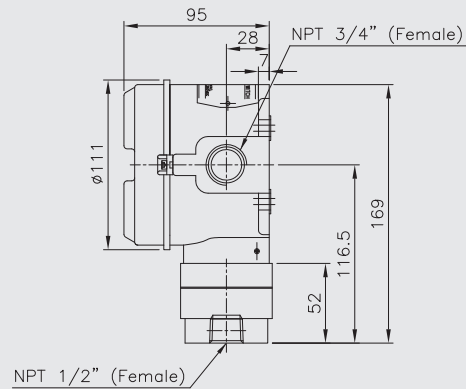
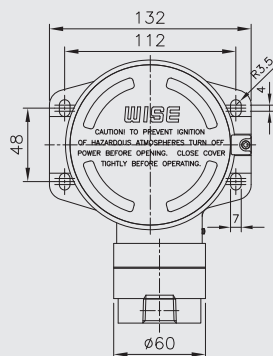
②-1 Nominal diameter  $\phi 88$  ( $\phi 98$ ) : 7.5 ~ 50 kPa  
(Pmax. 10 bar)



③ 0.45 ~ 50 bar  
(Pmax. 20 bar)



④ 8.5~150 bar  
(Pmax. 50~150 bar)



## 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 range

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

## Max.Working pressure

The maximum input pressure that can be continuously applied to the pressure switch without causing leakage or catastrophic material failure. Permanent change of set point may occur, or the device may be rendered inoperative.

## 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		Dead band		Working range	Flange size (mm)	Max. Working pressure	
			One SPDT Setpoint	Two SPDT Setpoint				
	bar	kPa	bar		bar	bar	bar	MPa
900	-0.1 ~ -1	-10 ~ 100	Within 10 % adjustable range	Within 20 % adjustable range	10	88 ~ 98	35	3.5
927	0.003 ~ 0.03	0.3 ~ 3			2	128	6	0.6
930	0.02 ~ 0.07	2 ~ 7	Within 5 % adjustable range	Within 10 % adjustable range	5	113		
929	0.003 ~ 0.07	0.3 ~ 7			10	88 ~ 98		
901	0.075 ~ 0.15	7.5 ~ 15			20	63		
938	0.045 ~ 0.3	4.5 ~ 30						
941	0.075 ~ 0.5	7.5 ~ 50			50	60	170	17
949	0.09 ~ 0.6	9 ~ 60						
942	0.12 ~ 0.8	12 ~ 80			100	200	200	20
902	0.15 ~ 1	15 ~ 100						
903	0.3 ~ 2	30 ~ 200			150	400	400	40
904	0.45 ~ 3	45 ~ 300						
906	0.9 ~ 6	90 ~ 600						
908	1.5 ~ 10	0.15 ~ 1 MPa						
911	2.25 ~ 15	0.225 ~ 1.5 MPa						
912	3 ~ 20	0.3 ~ 2 MPa						
914	4.5 ~ 30	0.45 ~ 3 MPa						
916	7.5 ~ 50	0.75 ~ 5 MPa						
918	8.5 ~ 70	0.85 ~ 7 MPa						
919	10.5 ~ 100	1.05 ~ 10 MPa						
926	15.5 ~ 150	1.55 ~ 15 MPa						

## 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

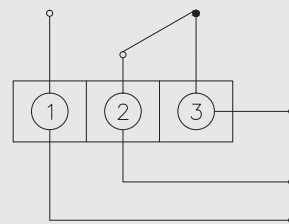
Rated voltage	Non inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 V AC	15		3	1.5	15		5	2.5
250 V AC	15		2.5	1.25	15		3	1.5
8 V DC	15		3	1.5	15		5	2.5
30 V DC	2		2	1.4	1		1	1
125 V DC	0.4		0.4	0.4	0.03		0.03	0.03
250 V DC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

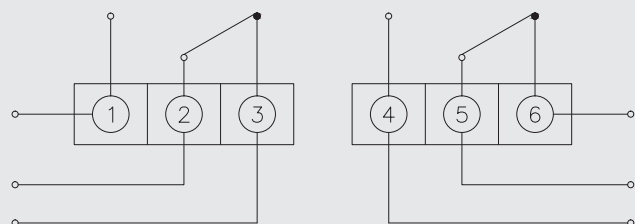
Pressure reach the upper or lower limit setpoint, circuit closed and opened.



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

## Conversion table

### Pressure conversion chart

psi	atm	kgf/cm <sup>2</sup>	inH <sub>2</sub> O	mmHg	inHg	kPa	bar	mmH <sub>2</sub> O
1	0.068046	0.070307	27.7276	51.715	2.03602	6.835	0.06895	704.28104
14.696	1	1.0332	407.484	760	29.921	101.325	1.01325	10350.0936
14.2233	0.96784	1	394.38	735.559	28.959	98.096	0.98067	10,000
0.036092	0.002454	0.00253	1	1.8651	0.07343	0.249	0.00249	25.4
0.019336	0.001315	0.001359	0.53616	1	0.03937	0.1333	0.001333	13.618464
0.491154	0.0033421	0.03453	13.6185	25.4	1	3.3864	0.033864	345.9099
0.145	0.00987	0.010197	4.0186	7.5006	0.2953	1	0.01	102.07244
14.5038	0.98692	1.01972	402.156	750.062	29.53	100	1	10214.7624
0.00142	0.000097	0.0001	0.03937	0.0734	0.0029	0.0098	0.000098	1

## Memo