

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)

3 mbar to 275 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

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

ATEX II 2G Ex d IIC T6 Gb

ATEX II 2D Ex tD A21 T85°C Db

IECEX Ex d IIC T6 Gb

IECEX Ex tD A21 T85°C Db

Main order

Ordering information

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

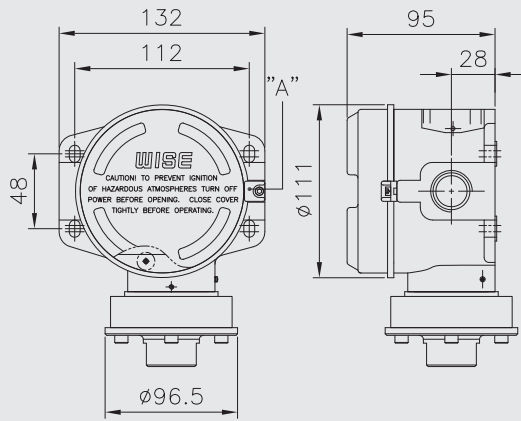
9. Options

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

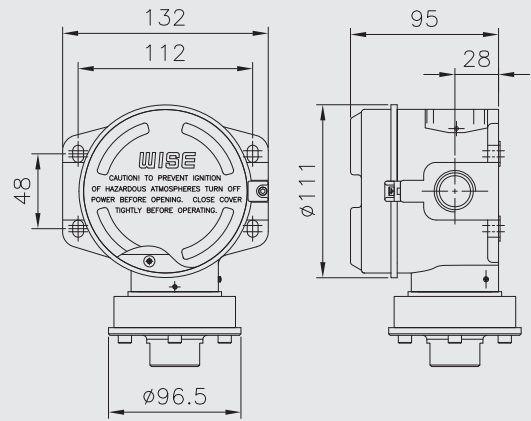
Sample ordering code

| | | | | | | | | |
|------|---|----|---|---|---|-----|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| P953 | 2 | B3 | C | D | H | XXX | 3 | 0 |

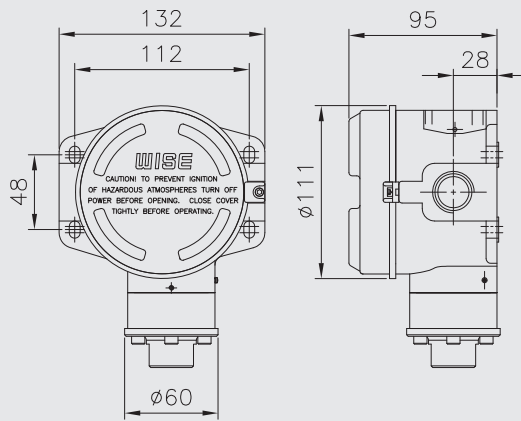
P953 : Type of mounting



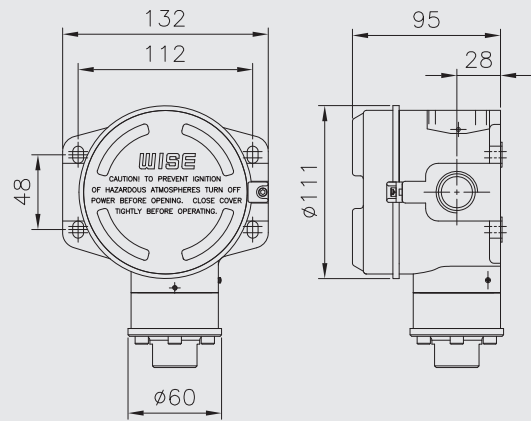
Pressure switch
Low pressure
(3~1000mbar)



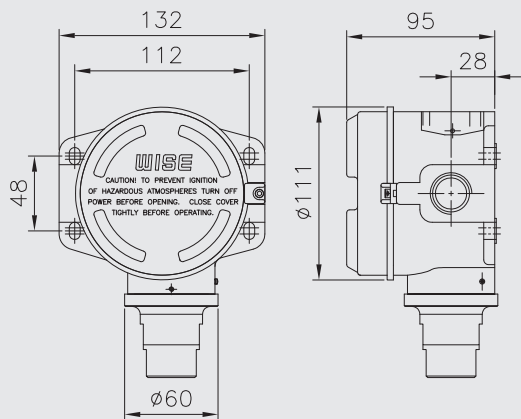
Pressure switch
Low Compound pressure
(-50~+50mbar)
(-100~+100mbar)



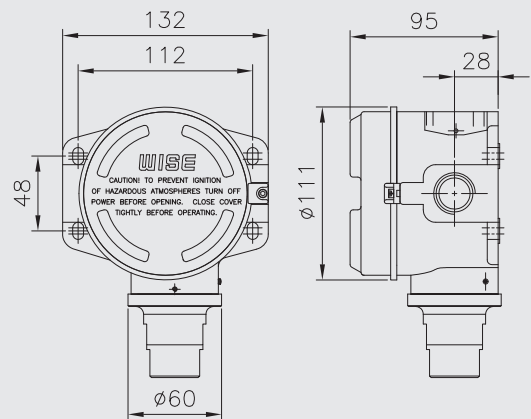
Pressure switch
Middle pressure
(0.2~4bar)



Pressure switch
Middle Compound pressure
(-0.5~+0.1bar)
(-0.9~0bar)



Pressure switch
High pressure
(2~275bar)



Pressure switch
High Compound pressure
(-0.9~+0.5bar)
(-0.9~+4.8bar)

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 | | | | | | |
| 949 | 0.09 ~ 0.6 | 9 ~ 60 | | | | | | |
| 942 | 0.12 ~ 0.8 | 12 ~ 80 | | | 50 | 60 | 70 | 7 |
| 902 | 0.15 ~ 1 | 15 ~ 100 | | | | | | |
| 903 | 0.3 ~ 2 | 30 ~ 200 | | | | | | |
| 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 | 100 | 170 | 17 | 20 | | |
| 912 | 3 ~ 20 | 0.3 ~ 2 MPa | | | | | | |
| 914 | 4.5 ~ 30 | 0.45 ~ 3 MPa | 150 | 200 | 20 | 40 | | |
| 916 | 7.5 ~ 50 | 0.75 ~ 5 MPa | | | | | | |
| 918 | 8.5 ~ 70 | 0.85 ~ 7 MPa | | | | | | |
| 919 | 10.5 ~ 100 | 1.05 ~ 10 MPa | 400 | 40 | | | | |
| 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 ² max |
| Ambient temperature | -25 ~ 80 °C |
| Ambient humidity | 35 ~ 85 % RH |

Specifications

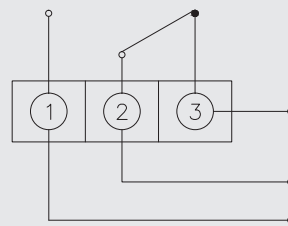
| Rated voltage | Non inductive load (A) | | | | Inductive load (A) | | | |
|---------------|------------------------|----|-----------|------|--------------------|----|------------|------|
| | Resistive load | | Lamp load | | Inductive load | | Motor load | |
| | NC | NO | NC | NO | NC | NO | NC | NO |
| 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

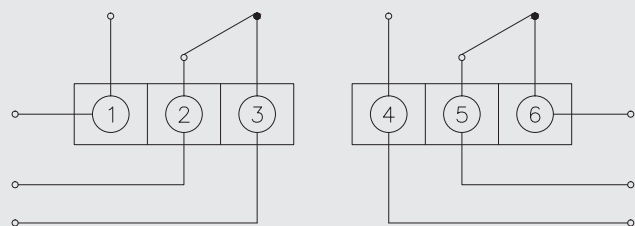
Pressure reach the upper or lower limit setpoint, circuit closed and opened.



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 ² | inH ₂ O | mmHg | inHg | kPa | bar | mmH ₂ 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