

Explosion proof pressure switch

Model: P954

Spec. sheet no. PD09-14

Service intended

P954 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 % or 0.5 % of adjustable range

Adjustable range (mbar, kPa, bar, MPa)

-0.9 to 275 bar

Dead band

Fixed

One SPDT : Approx. 5 % of adjustable range

Two SPDT : Approx. 10 % of adjustable range

Working temperature

Ambient : -25 ~ 65 °C (O-ring material : Viton)

-40 ~ 65 °C (O-ring material : Silicone)

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

½" NPT (F)

Contact

Micro contact type

One SPDT (P954-1B3)

Two SPDT (P954-2B3)(Only available with single setpoint)

Contact rating

SPDT contact rating

AC 125 V / 250 V, 15 A

DC 125 V, 0.5 A for resistance load

DC 125V, 0.03 A for inductive load

Conduit connection

¾" NPT (F)

Certificates

ATEX II 2G Ex db IIC T6 Gb

ATEX II 2D Ex tb IIIC T85°C Db IP67

IECEx Ex db IIC T6 Gb

IECEx Ex tb IIC T85°C Db IP67

KCS Ex db IIC T6 Gb

KCS Ex tb IIIC T85°C Db

WISE®

Main order

Ordering information

1. Base model

P954 Explosion proof pressure switch

2. Switch form

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

3. Repeatability

- A1** $\pm 1.0\%$ of adjustable range
- A5** $\pm 0.5\%$ of adjustable range

4. Process connection

- C** $\frac{1}{4}$ "
- D** $\frac{3}{8}$ "
- E** $\frac{1}{2}$ "

5. Connection type

- B** PF
- C** PT
- D** NPT
- E** NPT(F) - $\frac{1}{2}$ "NPT(F) Only

* Connections except $\frac{1}{2}$ "NPT(F) are unions.

6. Unit

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

7. Range

XXX Refer to pressure range table

8. Pressure connection / Element material

- 3** 316SS / 316L SS
- L** 316SS / Hastelloy-C
- Z** Monel / Monel

9. Options

- 1** Wall mounting bracket
- 2** 2" mounting bracket

10. Conduit connection

- T2** $\frac{1}{2}$ " NPT(F)
- T3** $\frac{3}{4}$ " NPT(F)
- T6** 1" NPT(F)
- T9** M20X1.5(F)

11. Material for cable gland

- 00** None
- M7** Ex-proof Ni plate brass
- MB** Ex proof 316SS

12. Ambient temperature (°C)

- 1** -25~65 °C (O-ring material: Viton)
- 2** -40~65 °C (O-ring material: Silicone)

Sample ordering code

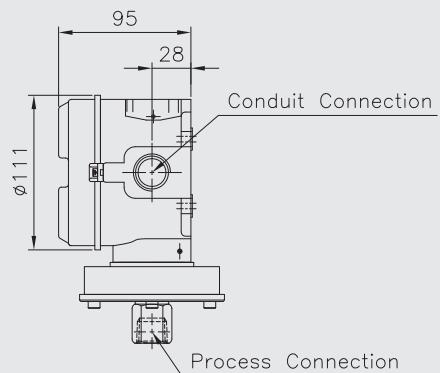
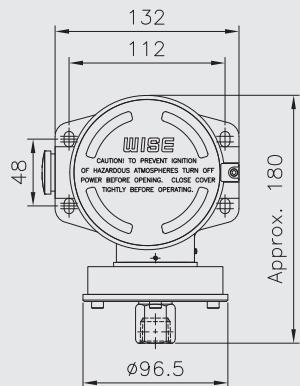
1	2	3	4	5	6	7	8	9	10	11	12
P954	1	A1	C	B	H	XXX	3	1	T2	M7	1



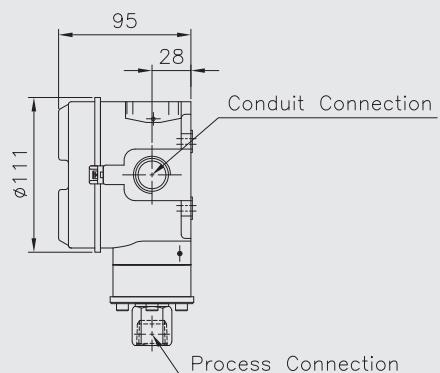
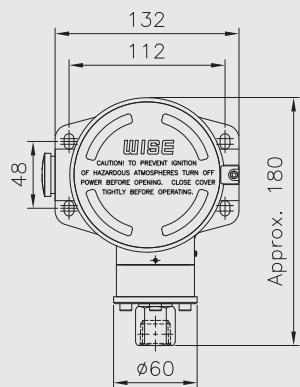
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P954 : Type of mounting (1/4)

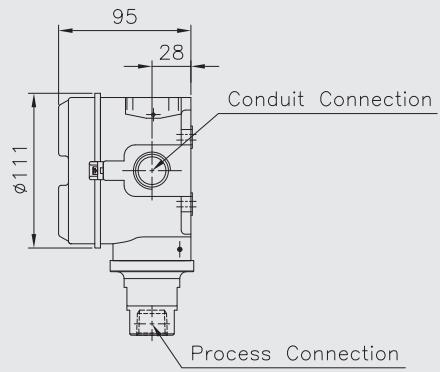
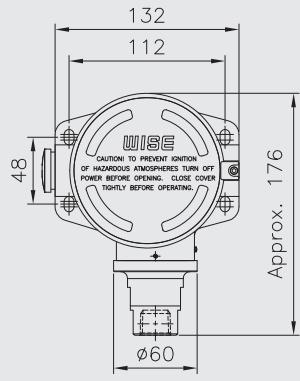
P954-STANDARD



LOW PRESSURE



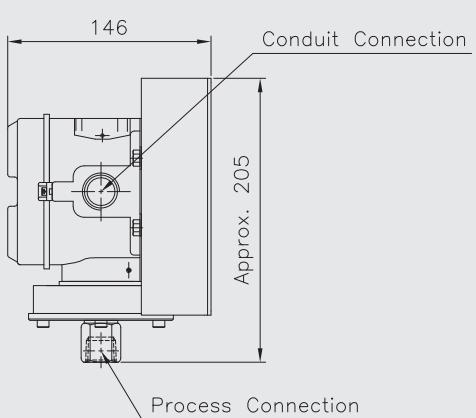
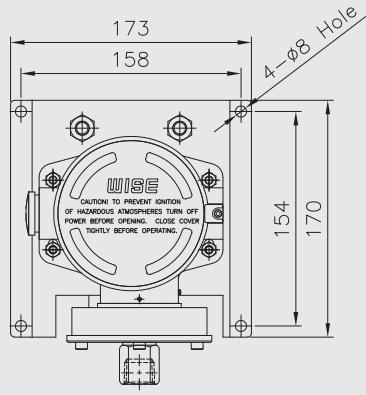
MIDDLE PRESSURE



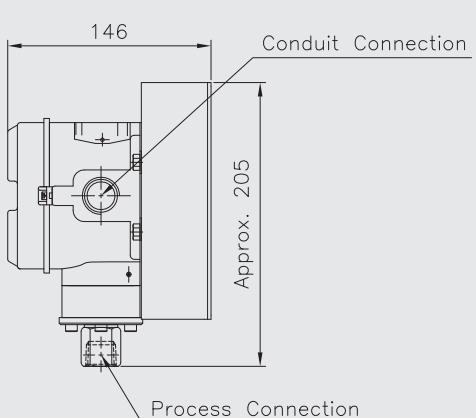
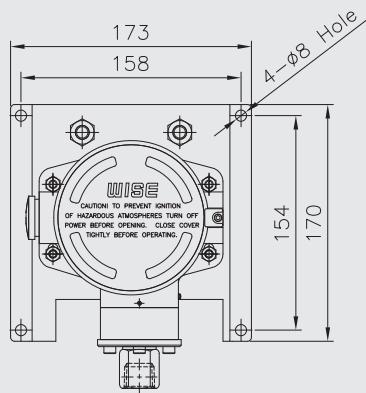
HIGH PRESSURE

P954 : Type of mounting (2/4)

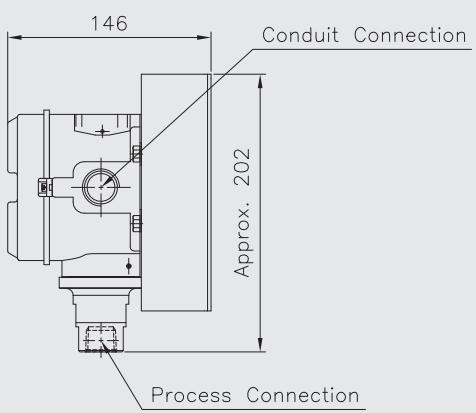
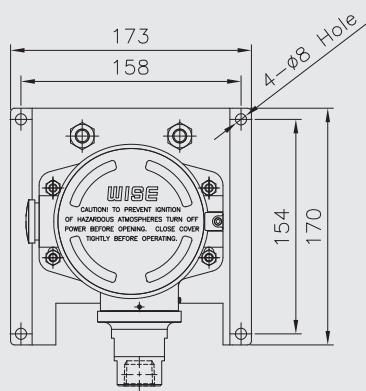
P954-WALL MOUNTING TYPE



LOW PRESSURE



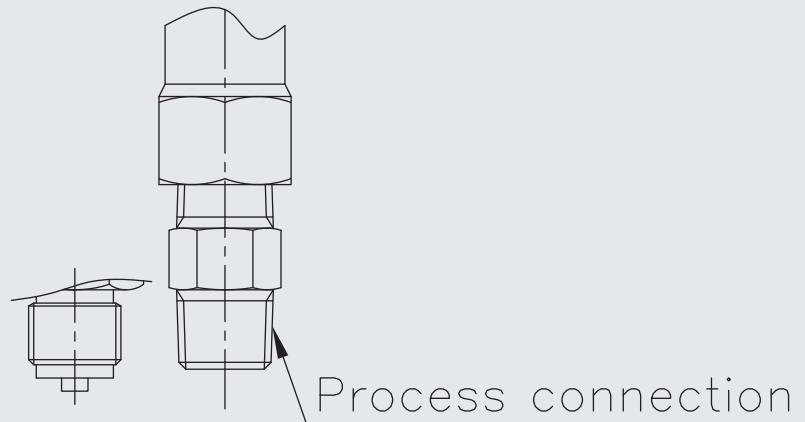
MIDDLE PRESSURE



HIGH PRESSURE

P954 : Type of mounting (3/4)

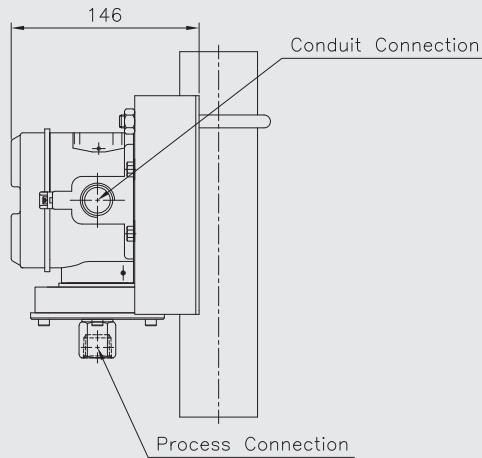
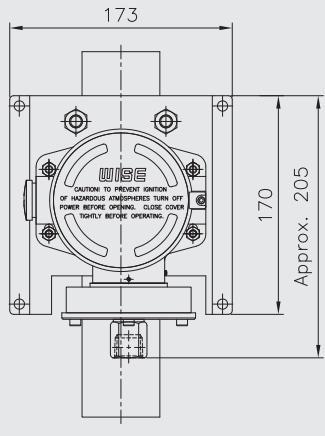
* Connection except 1/2" NPT(F) are Unions.



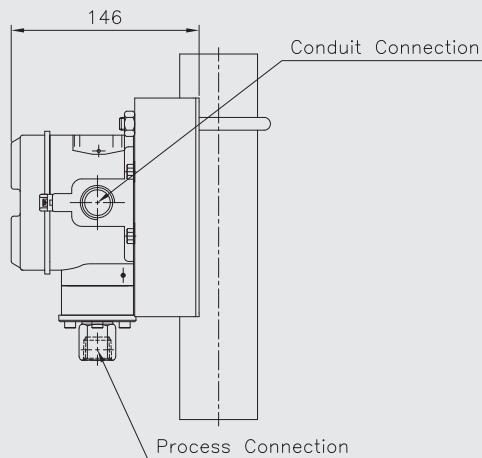
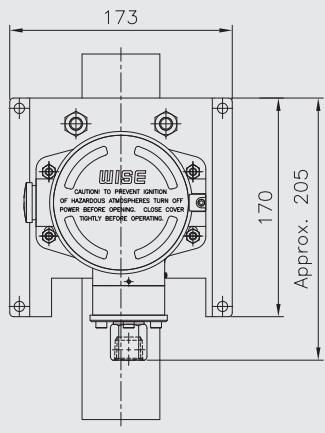
Process connection	
NPT	1/4"
PT	3/8"
PF	1/2"

P954 : Type of mounting (4/4)

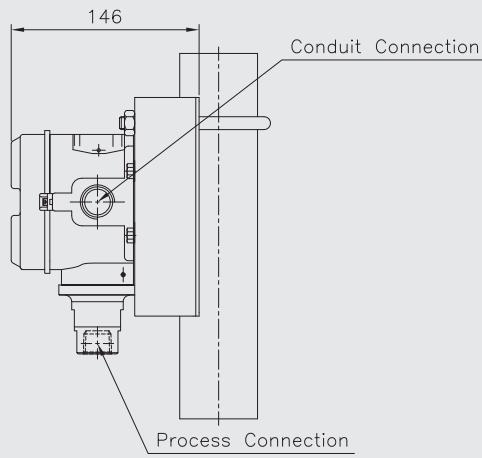
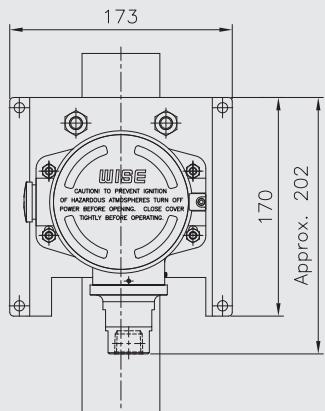
P954-2" MOUNTING TYPE



LOW PRESSURE



MIDDLE PRESSURE



HIGH PRESSURE

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

List	Code	Adjustable setting range	Dead band		Working range	Max. Working pressure	
		bar [mbar]	One SPDT Setpoint	Two SPDT Setpoint	bar	bar	
Positive Pressure	100	[3.0 ~ 10]	Within 10 % adjustable range	X	14	28	
	110	[8.5~100]					
	120	[80~300]					
	130	[150~550]					
	140	[250~900]	Within 5 % adjustable range	Within 10 % adjustable range	50	70	
	150	[200~1000]			100	170	
	160	1~3					
	170	1.4~4					
	180	3.5~14	Within 10 % adjustable range		170	410	
	190	8~24			340	410	
	200	11~38					
	210	9~36					
Compound Pressure	220	24~85	Within 5 % adjustable range	Within 10 % adjustable range	14	28	
	230	35~120			50	70	
	240	70~275			100	170	
	250	[-30~30]		X	100	170	
	260	[-50~50]					
	300	-0.3~0.1					
	310	-0.9~0					
	320	-0.9~0.5					
	330	-0.9~4					

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 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	0.5*	0.5*	0.5*		0.03		0.03	0.03
250 V DC	0.2	0.2	0.2		0.02		0.02	0.02

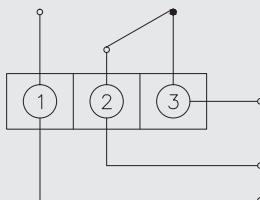
* The DC current ratings marked with an asterisk have been verified by testing and experience.

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

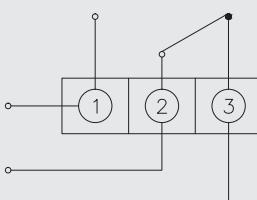
Pressure reach the upper or lower limit setpoint, circuit closed and opened.



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

Memo