# 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 % of adjustable range

### Adjustable range (mbar, kPa, bar, MPa)
-0.9 to 275 bar

### Dead band
Fixed
One SPDT : Approx. 5 % 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)
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 IIIC T85°C Db IP67

## 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. Unused character

| | |
|---|---|
| **B3** | None |

### 4. Process connection

| | |
|---|---|
| **E** | ½" |

### 5. Connection type

| | |
|---|---|
| **E** | NPT (F) |

### 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 |
| **Z** | Monel / Monel |
| **H** | Hastelloy-C / Hastelloy-C |

### 9. Options

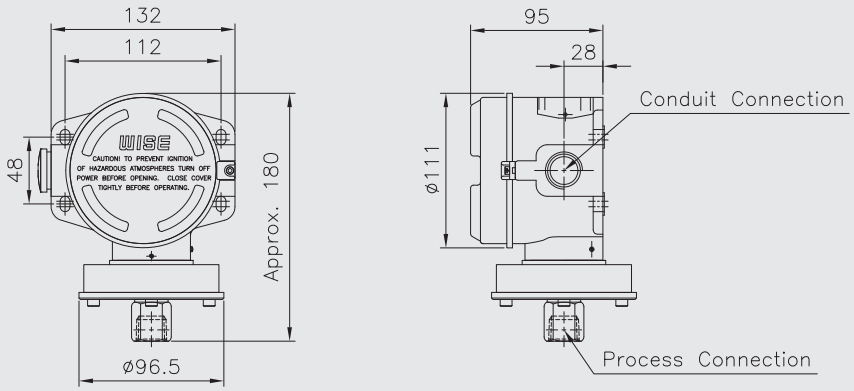
| | |
|---|---|
| **1** | Wall mounting bracket |
| **2** | 2" mounting bracket |
| **4** | ½" NPT(F) conduit connection |

**Sample ordering code**

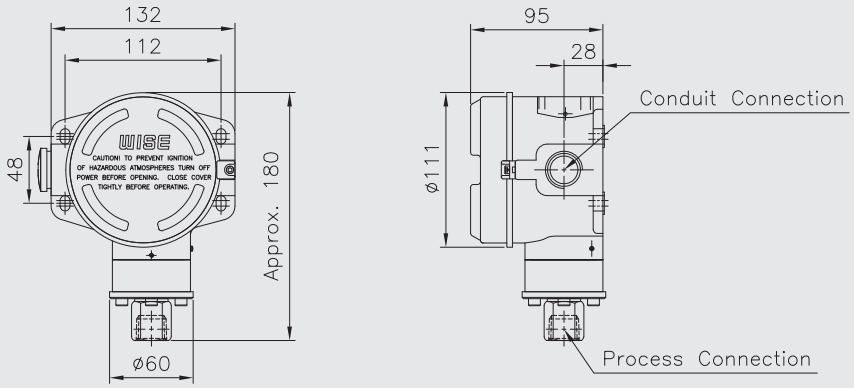
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| **P954** | **1** | **B3** | **E** | **E** | **H** | **XXX** | **3** | **1** |

# P954 : Type of mounting (1/3)

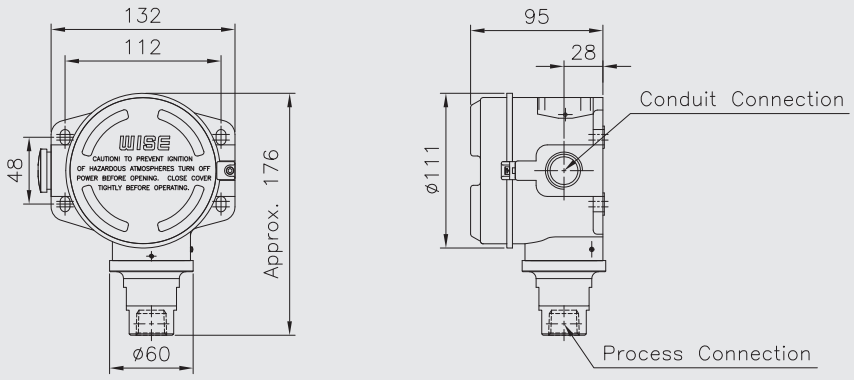
## P954—STANDARD




LOW PRESSURE



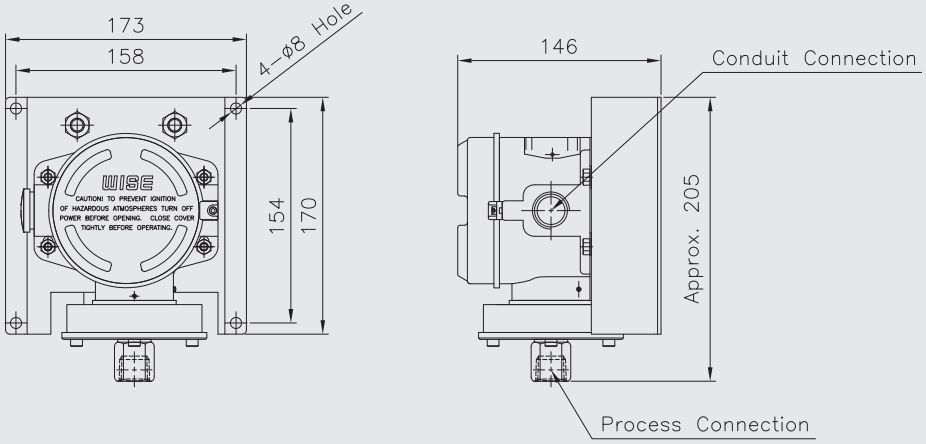

MIDDLE PRESSURE



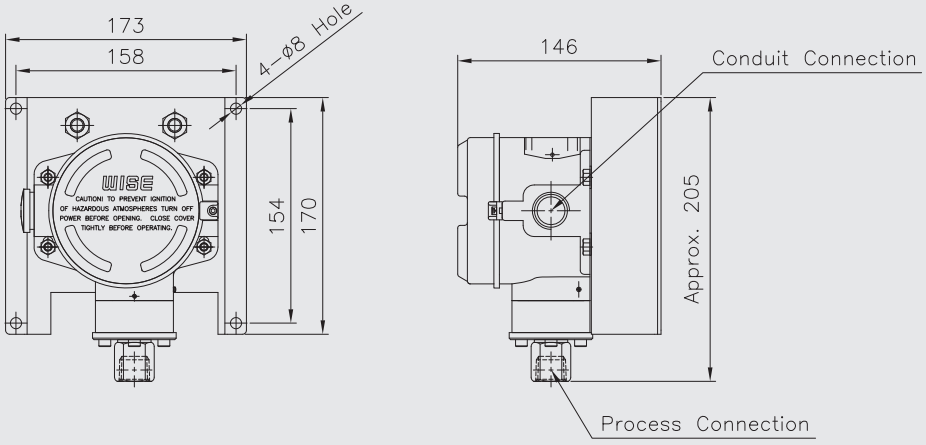

HIGH PRESSURE

## P954 : Type of mounting (2/3)

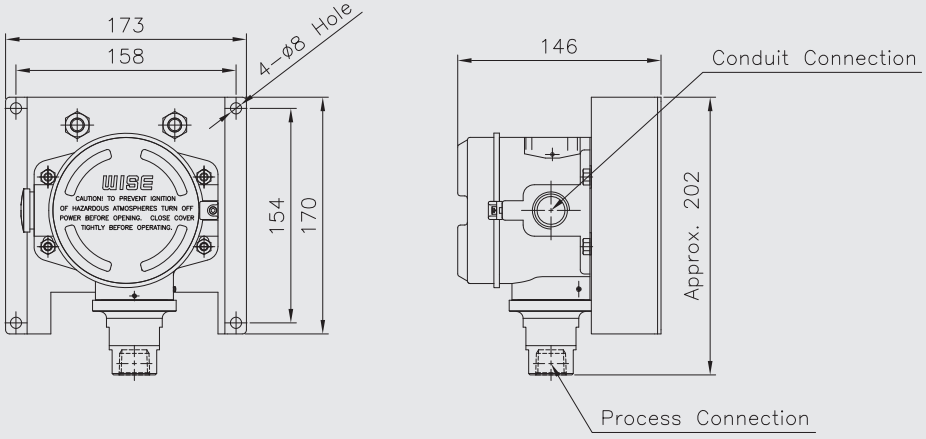
### P954—WALL MOUNTING TYPE




LOW PRESSURE



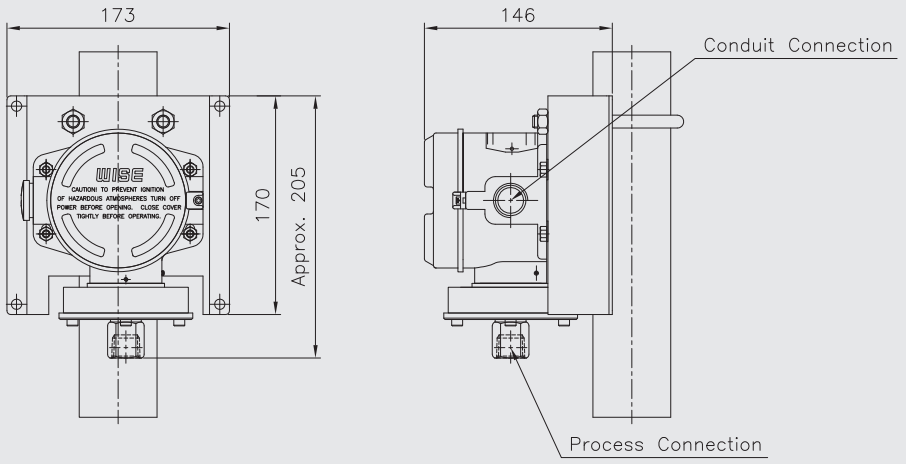

MIDDLE PRESSURE



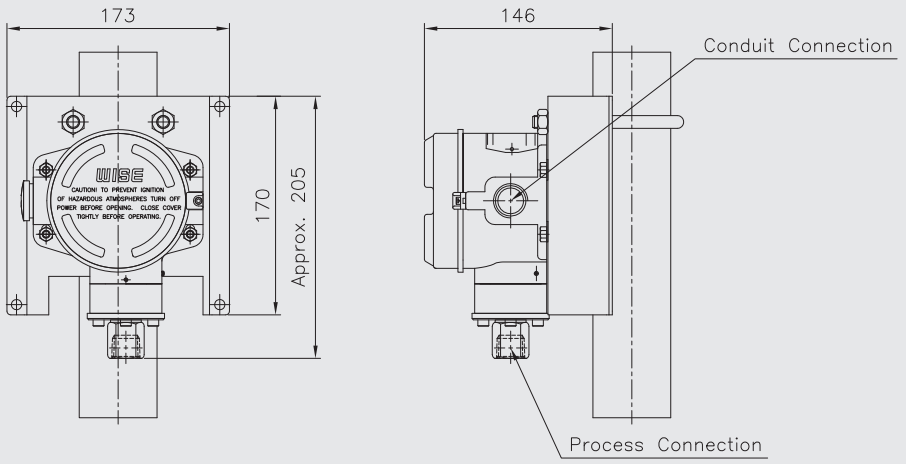

HIGH PRESSURE

# P954 : Type of mounting (3/3)

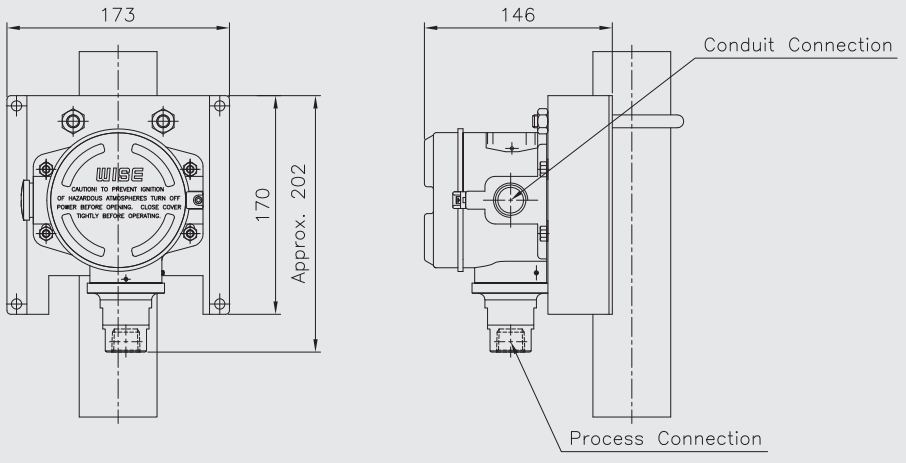
## P954–2”MOUNTING TYPE




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 | Adjustable setting range | Dead band | | Working range | Max. Working pressure |
|---|---|---|---|---|---|
| | bar [mbar] | One SPDT Setpoint | Two SPDT Setpoint | bar | bar |
| Positive Pressure | [3.0 ~ 10] | Within 10 % adjustable range | X | 14 | 28 |
| | [8.5 ~ 100] | Within 5 % adjustable range | Within 10 % adjustable range | | |
| | [80 ~ 300] | | | | |
| | [150 ~ 550] | | | | |
| | [250 ~ 900] | | | | |
| | [200 ~ 1000] | | | 50 | 70 |
| | 1 ~ 3 | | | | |
| | 1.4 ~ 4 | | | | |
| | 3.5 ~ 14 | | | 100 | 170 |
| | 8 ~ 24 | | | | |
| | 11 ~ 38 | | | | |
| | 9 ~ 33 | | | 170 | 410 |
| | 24 ~ 85 | | | | |
| | 35 ~ 120 | | | | |
| | 70 ~ 275 | | | 340 | 410 |
| Compound Pressure | [-30 ~ +30] | Within 10 % adjustable range | X | 14 | 28 |
| | [-50 ~ +50] | Within 5 % adjustable range | Within 10 % adjustable range | | |
| | -0.3 ~ 0.1 | | | 50 | 70 |
| | -0.9 ~ 0 | | | | |
| | -0.9 ~ 0.5 | | | 100 | 170 |
| | -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/sec² max |
| Ambient temperature | -25 ~ 65 ºC (O-ring mat'l:Viton) / -40 ~ 65 ºC (O-ring mat'l:Silicone) |
| 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 |

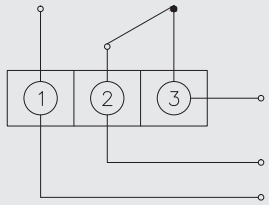
* The DC current ratings marked with an asterisk have been verified by testing and experience.

## 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.

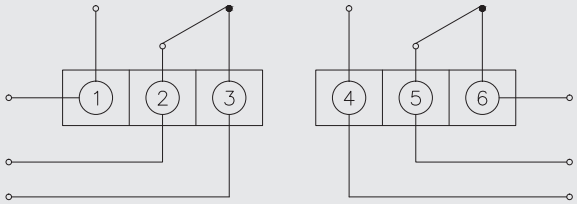




①:NO ②:COM ③:NC

### 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/cm² | inH₂O | mmHg | inHg | kPa | bar | mmH₂O |
|---|---|---|---|---|---|---|---|---|
| 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