

# Ultra high purity pressure transmitter

## Model: PT850 series

Spec. sheet no. **PD08-06**

### Service intended

PT850 series are specially designed for the ultra-high purity gas distribution system used in a semiconductor, electronic, medical, biotechnology and pharmaceutical industry. The transmitter has a water resistant, Stainless steel housing for complete protection from harsh environments. The transmitter offers the convenience and easy installation with the full capabilities of a highly accurate 4~20 mA 2-wire system design. The stainless steel surfaces make it compatible with a wide variety of gases, liquids and can be protected from harsh environment. It is extremely versatile and suitable for measuring dynamic or static pressure. The pressure to be measured acts through corrosion resistant stainless steel 630 diaphragm with a MEMS Piezoresistive effect sensors which are connected into a Wheatstone bridge. PT850 series pressure transmitter is electrically temperature compensated.



Model : PT850



Model : PT851

### Technology

MEMS Piezoresistive effect sensor

### Accuracy

±0.25 % of full scale

### Operating temperature range

-20 ~ 80 °C

### Scale range

Refer to range code

### Enclosure rating

IP 65

### Explosion protection

Ex d IIC T6 (Model : PT850)

Ex ia IIC T6...T4 (Model : PT851)

Ex nA IIC T6...T4 (Model : PT852)



Model : PT852



Model : PT853

## Standard features

### Mechanical

#### Pressure connection

Stainless steel 316L electropolished low mount surface finish Ra≤0.15 μm

- 1/4", 3/8", 1/2" (NPT, PT, PF) male thread
- Male or female face seal fitting
- Tube welding
- Flow through type
- Modular surface mount

#### Material wetted by process

Stainless steel 630 (Sensor)

Stainless steel 316L (Connection)

### Electrical

#### Input power

12 ~ 24 VDC

#### Output signal

4 ~ 20 mA

DC 2-wire loop powered technique

#### Load resistance max

500 Ω at 24 V

#### Response time (10 ~ 90 %)

≤20 milliseconds

**WISE®**

| PT850\_01

**1. Base model**

- PT850** Explosion-proof enclosure type pressure transmitter  
**PT851** Intrinsic safety type pressure transmitter  
**PT852** Non sparking non incendive enclosure type  
 (Symbol : 'n') pressure transmitter  
**PT853** General type pressure transmitter

**2. Type of pressure**

- G** Gauge pressure

**3. Connection type**

- A** Straight female (Swivel face seal)  
**B** Straight male (Swivel face seal)  
**C** Flow through female (Swivel face seal)  
**D** Flow through male (Fixed face seal)  
**E** Modular surface mount  
**F** Tube welding  
**G** PT thread  
**H** NPT thread  
**I** PF thread  
**X** Other type available on request

**4. Connection size**

- 1** 9/16"-18 UNF ('A,B,C,D' connection type)  
**2** 1/4" ('G,H,I' connection type)  
**3** 3/8" ('G,H,I' connection type)  
**4** 1/2" ('G,H,I' connection type)  
**5** Other units available on request

**5. Accuracy**

- G** ± 0.25 % full of scale

**6. Unit**

- A** Calibration in MPa  
**B** Calibration in bar  
**K** Calibration in kgf/cm<sup>2</sup>  
**P** Calibration in psi (Standard)  
**Z** Other calibration units available on request

**7. Range (psi)**

- 011** -15 ~ 30  
**012** -15 ~ 60  
**013** -15 ~ 100  
**014** -15 ~ 160  
**015** -15 ~ 200  
**016** -15 ~ 250  
**017** -15 ~ 300  
**018** -15 ~ 350  
**019** -15 ~ 500  
**020** -15 ~ 1000  
**021** -15 ~ 2000  
**022** -15 ~ 3000  
**XXX** Other calibration ranges available on request

**8. Output signal**

- C** 4 ~ 20 mA Current output signal  
**X** Other Signals on request

**9. Option**

- 0** None (Standard)  
**1** Accessories

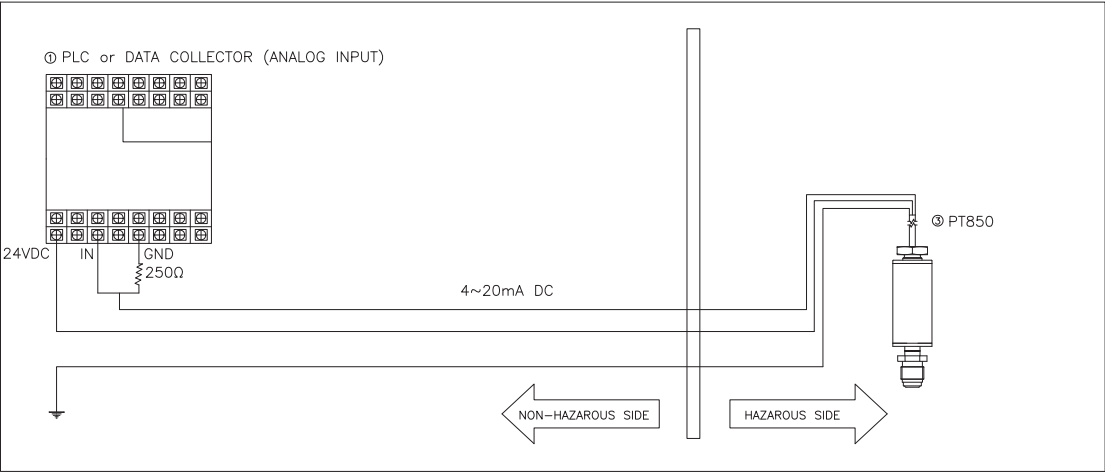
1	2	3	4	5	6	7	8	9
PT850	G	B	1	G	P	015	C	0

Sample  
ordering code

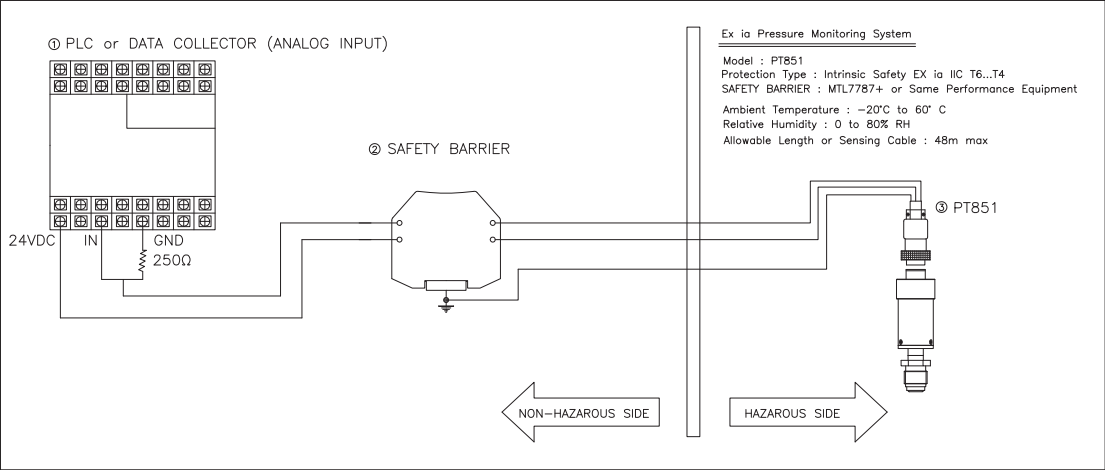
## Technical Data

Input	
Technology	MEMS Piezoresistive effect sensor
Pressure ranges	-15 ~ 30 psi to -15 ~ 3000 psi gauge pressure
Pressure reference	Gauge pressure
Overload	2 x full scale without damage (1.5 x full scale / 3000 psi)
Output	
Output signal	4~20 mA DC 2-wire loop powered technique
Full scale output signal	20 mA $\pm$ 0.25 %
Zero measured output	4 mA $\pm$ 0.25 %
Electrical Specifications	
Excitation voltage	12~40 V DC
Power consumption	0.48 W at DC 24 Volt, 20 mA
Load resistance max@24 V	500 $\Omega$ at 24 V
Influence of excitation	0.01 % FSO / V
Power ripple	$\leq$ 500 mV P-P
Protection	Against reverse polarity and overvoltage
Shock resistance	150 m/s <sup>2</sup> half sign wave/18 times
Vibration	10~500 Hz, 0.14 mm, 39.2 m/s <sup>2</sup>
Response time (10~90 %)	$\leq$ 20 milliseconds
High voltage strength	500 AC V (Wiring versus case)
EMC TEST	EN 61000-6-2(EMS)
	IEC 61000-4-2 (Electrostatic discharge (ESD))
	IEC 61000-4-3 (Electromagnetic field)
	IEC 61000-4-4 (Burst)
	IEC 61000-4-5 (Surge)
	IEC 61000-4-6 (Conducted RF)
	IEC 61000-4-8 (Power frequency magnetic field)
EN 61000-6-4(EMI)	
Performance Specifications	
Accuracy	$\pm$ 0.25 % FSO typical
Non-linearity	$\pm$ 0.2 % FSO typical
Repeatability	$\pm$ 0.1 % FSO typical
Pressure hysteresis	$\pm$ 0.3 % FSO typical
Long term stability	$\leq \pm$ 0.1 % FSO over 1 year
Reference temperature	25 °C
Operating temperature	-20 ~ 80 °C
Compensated temperature	-20 ~ 60 °C
Physical Specifications	
Demension	Refer to "Type of Mounting" in Specification sheet.
Process connection	PT1/4" , PT3/8" , PT1/2" male thread
	NPT1/4" , NPT3/8" , NPT1/2" male thread
	PF1/4" , PF3/8" , PF1/2" male thread
	Swivel male or female face seal fitting
Materials wetted by process	Tube welding, Flow through, IGS
	Sensor : Stainless steel 630, Hastelloy C22
Enclosure rating	Connection : Stainless steel 316L
	IP65 , depending on the electrical wiring
Explosion protection and parameter	PT851 : Ex ia IIC T6...T4 (Ui=28 V, Ii=93 mA, Pi=650 mW, Ci=0.078 nF, Li=48 uH)
Influence of mounting position	Not critical

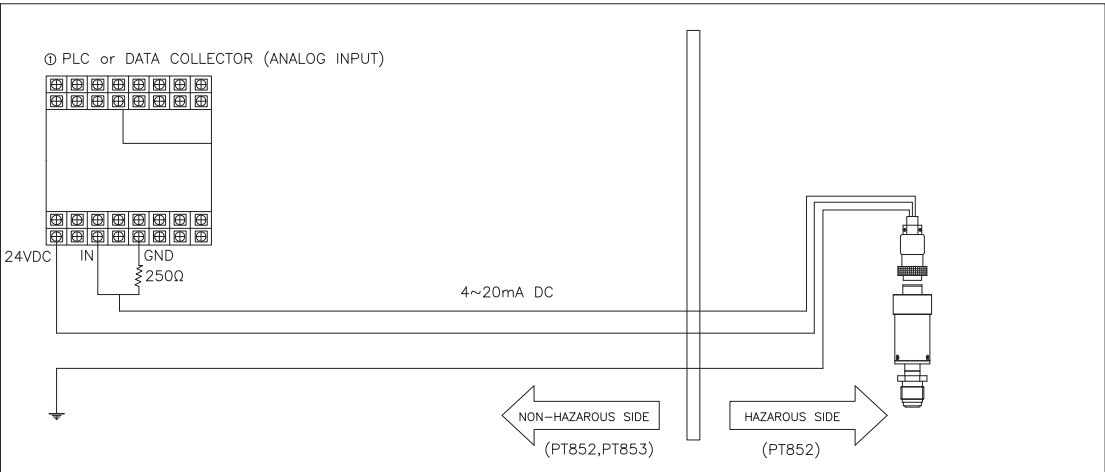
Ex d Pressure Monitoring System Typical Installation (PT850)



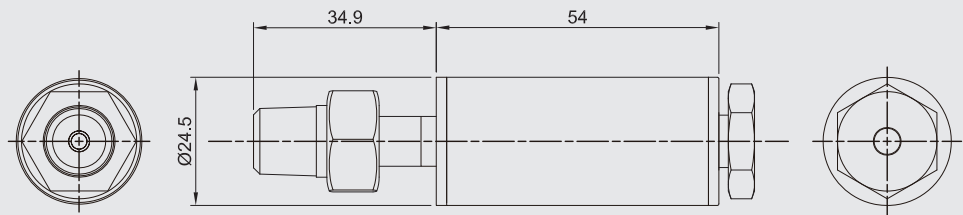
Ex ia Pressure Monitoring System Typical Installation (PT851)



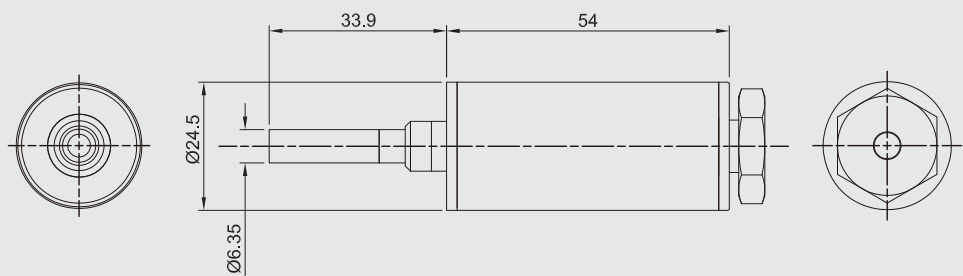
Ex nA Pressure Monitoring System Typical Installation (PT852)  
General Type Pressure Monitoring System Typical Installation (PT853)



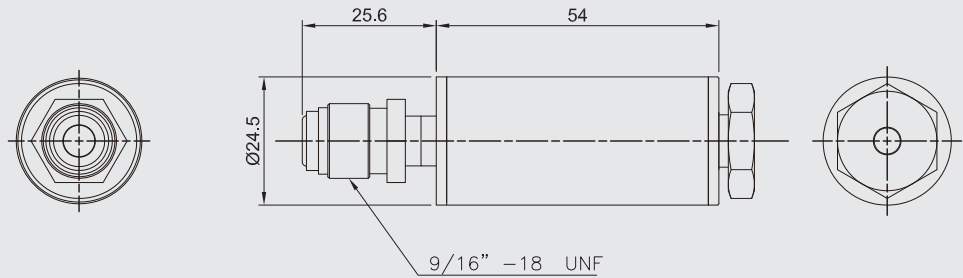
## PT850 : Type of mounting (1/2)



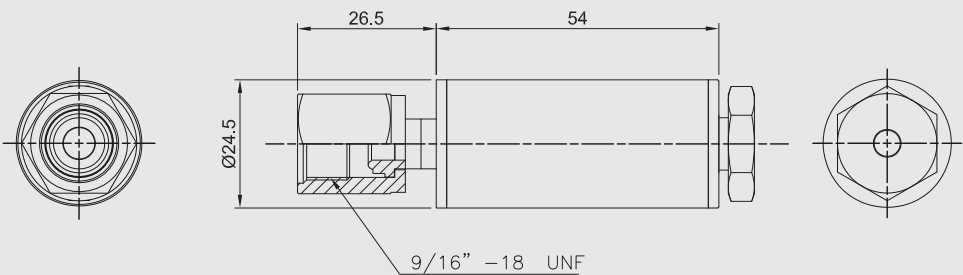
Male Thread Type



Tube Welding Type



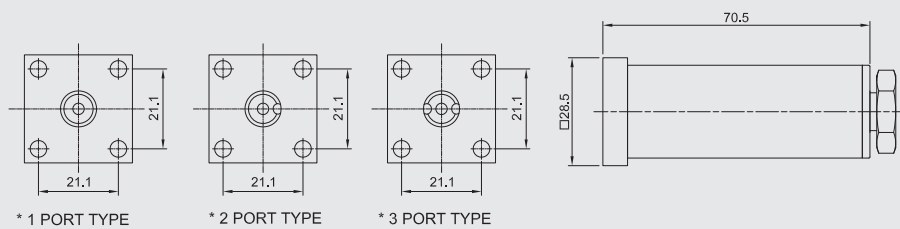
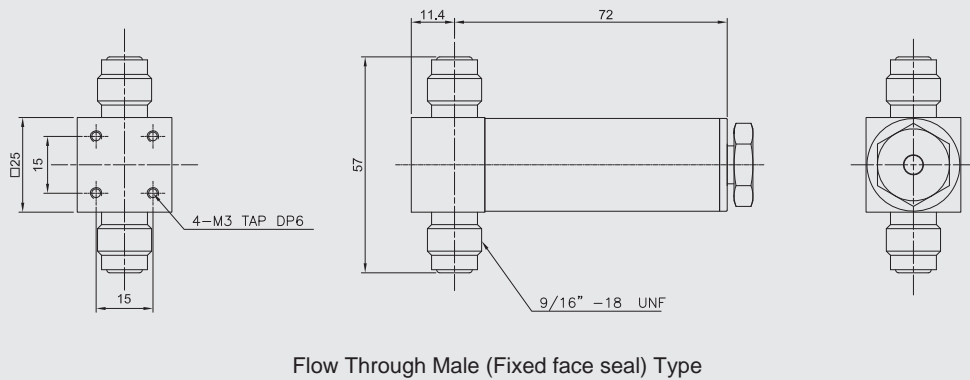
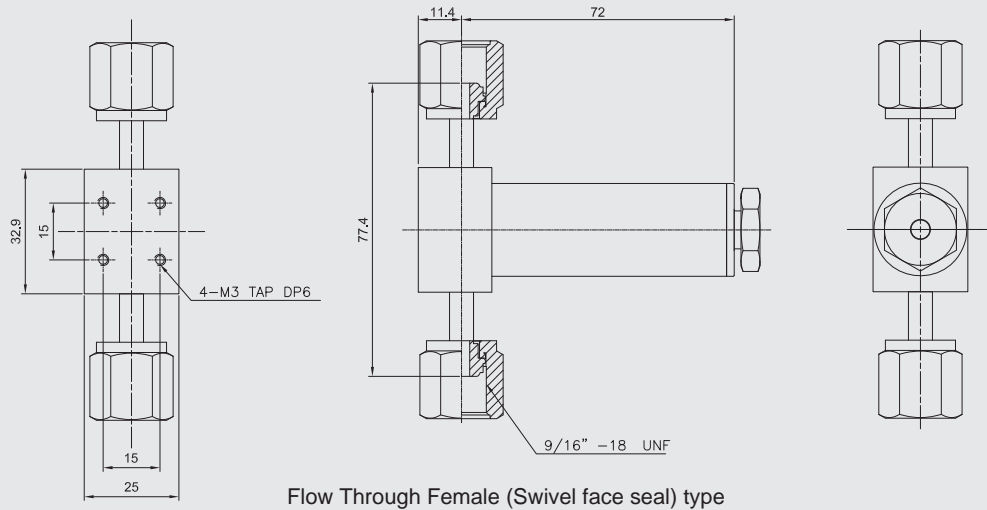
Straight male (Swivel face seal) Type



Straight female (Swivel face seal) Type

\* Note : Specifications subject to change without notice.

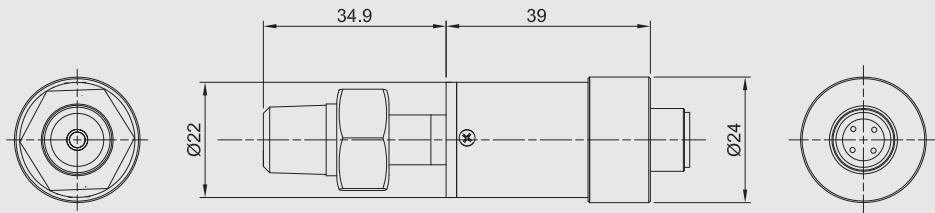
## PT850 : Type of mounting (2/2)



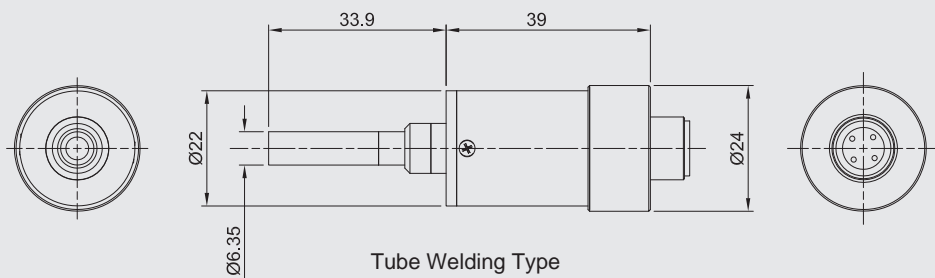
1.125" Modular Surface Mount Type

\* Note : Specifications subject to change without notice.

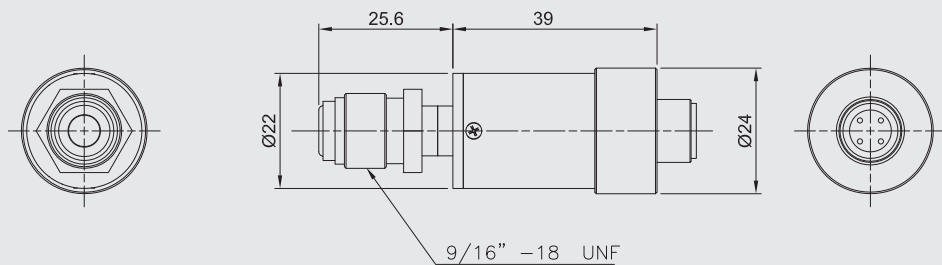
## PT851, PT852, PT853 : Type of mounting (1/2)



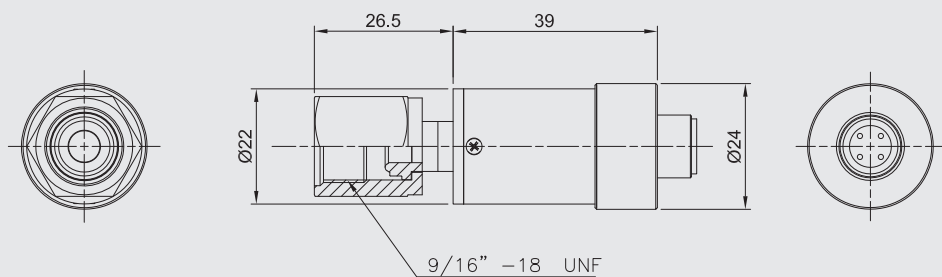
Male Thread Type



Tube Welding Type

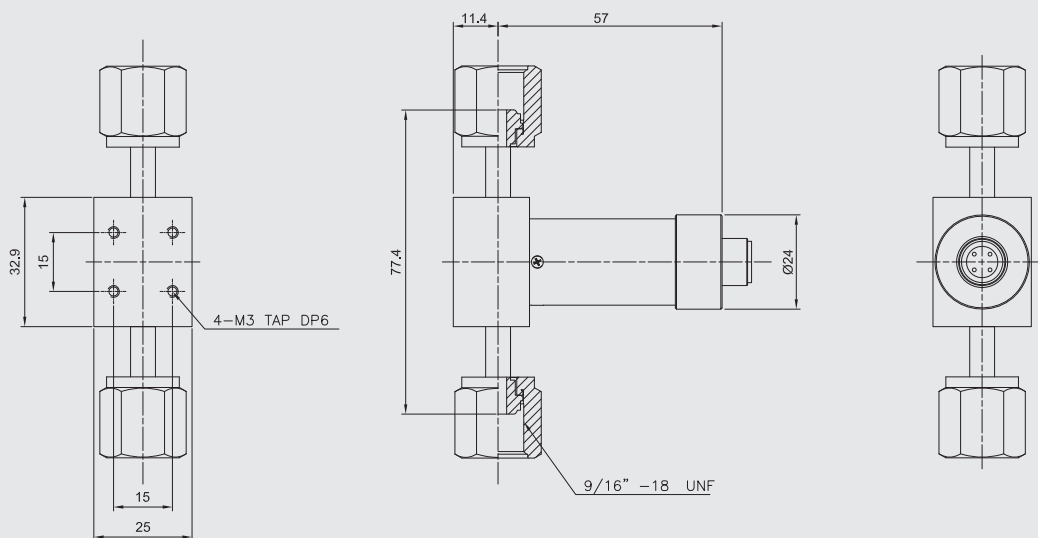


Straight male (Swivel face seal) Type

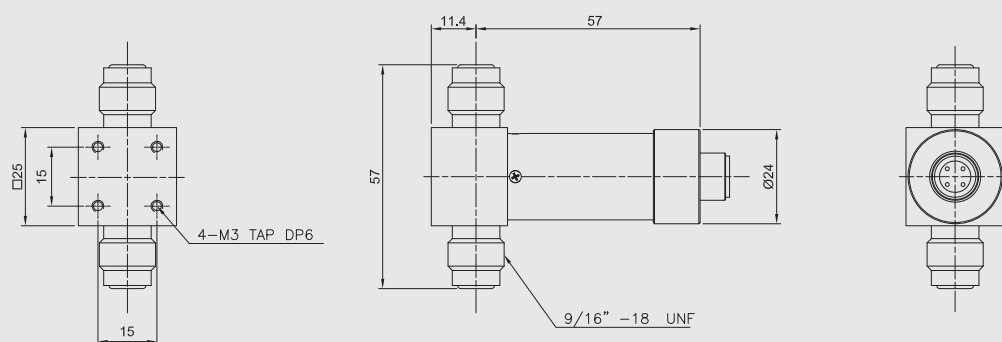


Straight female (Swivel face seal) Type

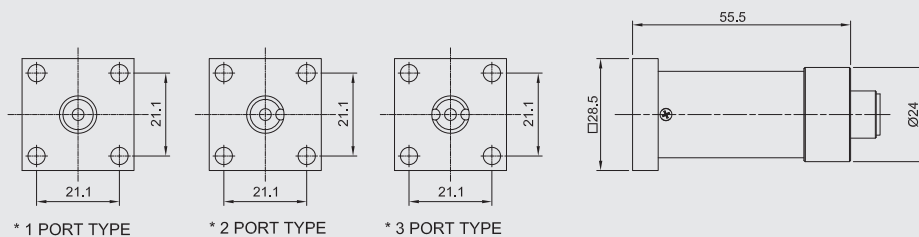
\* Note : Specifications subject to change without notice.



Flow Through Female (Swivel face seal) type



### Flow Through Male (Fixed face seal) Type



### 1.125" Modular Surface Mount Type

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