

Diaphragm seal type pressure Transmitter
Model : P475, P485, P495 (Circular Connector)
P476, P486, P496 (DIN Connector)
P477, P487, P497 (Flying Leads)
P478, P488, P498 (General Head)



Advantages

- Pressure transmitter for corrosive environments
- Measuring ranges from -0.1 ~ 0 to -0.1 ~ 35 Mpa, 0 ~ 0.03 to 0 ~ 35 Mpa
- It is useful in areas with large amount of pulp or sludge.
- Various diaphragm can be selected accordingly to corrosive fluid.

Applications

- Process control and monitoring in corrosive environments
- High corrosion resistant stainless steel diaphragm (316LSS, Monel, Hastelloy-C, Titanium, Tantalum, Nickel)
- With selection of proper filling oil, it can be used in extremely hot environment or below freezing conditions.



Descriptions

P4XX series pressure transmitter has been designed as an advanced device for measuring pressure of corrosive in industrial applications.

They incorporate a fully temperature compensated piezoresistive silicon sensor with great accuracy, excellent long term stability, very low temperature drift, and a strong, durable flush mounted diaphragm.

The transmitter are available as absolute and relative types with either 2-wire current or 3-wire voltage output.

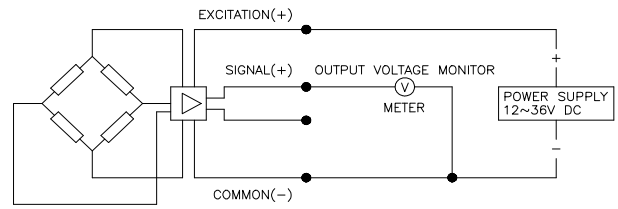
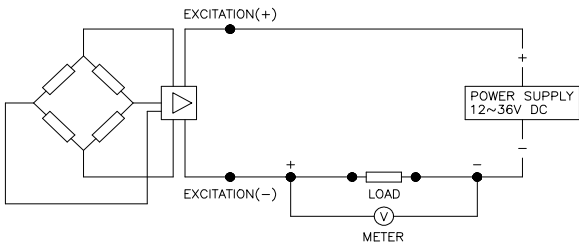
The pressure to be measured acts through thin corrosion resistant stainless steel 316L diaphragm. The pressure transmitter medium is silicon oil. The measuring element contains diffused piezoresistive resistors which are connected into a Wheatstone bridge. The output signal of this bridge is temperature compensated and converted into a standardized current or voltage output signal.

Specification

Input			
Model (Ordering code " Accuracy")	P470(E), P480(E), P490(E) series		P470(H), P480(H), P490(H) series
Technology	High Precision silicon pressure sensor		General silicon pressure sensor
Pressure ranges	0 ~ 0.02 to 35 MPa relative pressure		0 ~ 0.05 to 35 MPa relative pressure
	0 ~ 0.1 to 35 MPa absolute pressure		0 ~ 0.1 to 35 MPa absolute pressure
Pressure reference	Gauge, absolute, vacuum and compound		
Over range protection	130% of Full Scale		
Output			
	Unamplified		Unamplified
Electrical connection type	2-wire technique		3 or 4-wire technique
Full scale output signal	20mA	±0.30%	5V ±0.50%
Zero measured output	4mA	±0.03%	1V ±0.05%
	Other signals available on request		
Electrical Specification			
Excitation voltage	12~36V DC		
Load resistance max @ 24V	500Ω at 24V		
Influence of excitation	0.01% FSO/V		
Power ripple	≤500mV P-P		
Reverse polarity	Protected		
Shock resistance	No change in performance after 10Gs for 11ms		
Response time(10~90%)	≤ 2 milliseconds		
Adjustment	± 10% FSO/zero and span		
Performance Specification			
Accuracy	≤ ± 0.3% FSO		≤ ± 0.5% FSO
Non-linearity	± 0.100 FSO typical		± 0.20 FSO typical
Repeatability	± 0.015 FSO typical		± 0.20 FSO typical
Pressure hysteresis	± 0.010 FSO typical		± 0.20 FSO typical
Long term stability	± 0.3% FSO over 6 month		
Cutoff frequency(-3 d B)	≤2kHz		
Reference temperature	25°C		25°C
Operating temperature range	-20 ~ 60°C		0 ~ 60°C
Storage temperature range	-40 ~ 70°C		-20 ~ 70°C
Thermal sensitivity shift	≤ ± 0.2% FSO in reference to 25°C typical		≤ ± 0.3% FSO /°C typical
Thermal zero shift	≤ ± 0.2% FSO in reference to 25°C typical		≤ ± 0.3% FSO /°C typical
Thermal hysteresis	≤ ± 0.1% FSO in reference to 25°C typical		≤ ± 0.3% FSO /°C typical
Physical Specification			
Process connection	P470 : PT, NPT and others feasible		
	P480, P490 : Flanges to ANSI, JIS or other standard		
	Other connections available on request		
Process media	Compatible with stainless steel 316		
Materials	Diaphragm : 316L SS, Monel, Hastelloy-C, Titanium, Tantalum, Nickel, Alloy20		
	Housing (Body) : Stainless steel 304		
	Process connection : Stainless steel 316		
	Terminal head for P4x8 Model : Aluminium Die-casting (ALDC)		
	Upper flange : Stainless steel (304SS, 316SS, Titanium)		
	Under flange : Stainless steel (304SS, 304L SS, 316SS, 316L SS) Monel, Hastelloy-C, Titanium, Nickel		
Enclosure rating	IP65		
Options	Diaphragm and under flange are available in PTFE coating or PTFE lining		
	Under flange (Process side) are available in purging plug or heating/cooling jacket		

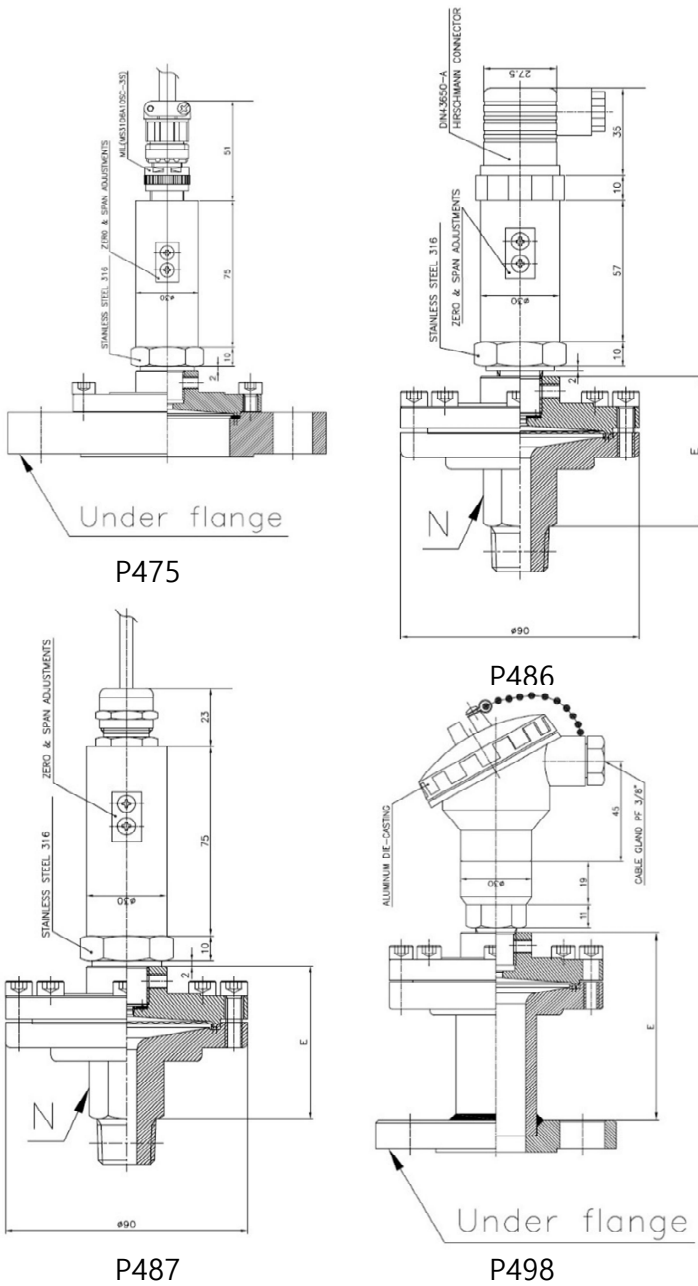
Note : If it is installed in explosive atmosphere, the covers should be kept tight when circuit alive.

System connection for 2-wire transmitter System connection for 3-wire transmitter



Dimension (mm)

Electrical connection



E : Excitation
S : Signal
C : Common

Circular connector

System Color	2-Wire	3-Wire	4-Wire
Red	E +	E +	E +
Black	E -	C -	E -
Green		S +	S +
White			S -
⏚	Shielded	Shielded	Shielded

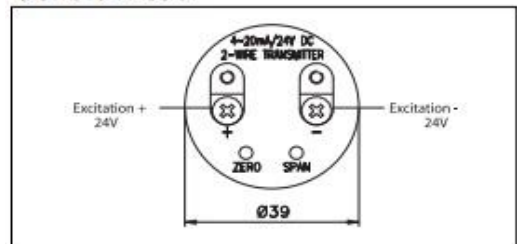
DIN connector

System Color	2-Wire	3-Wire	4-Wire
1	E +	E +	E +
2	E -	C -	E -
3		S +	S +
⏚	Shielded	Shielded	S -

Flying Lead

System Color	2-Wire	3-Wire	4-Wire
Red	E +	E +	E +
Black	E -	C -	E -
Green		S +	S +
White			S -
⏚	Shielded	Shielded	Shielded

General head



Ordering Information

Diaphragm seal type pressure Transmitter

1. Base model

P47									Screwed process connection diaphragm seal
P48									"I" type process connection diaphragm seal
P49									Flat type flange process connection diaphragm seal

2. Transmitter type

5									Circular Connector
6									DIN Connector
7									Flying lead(1.5m cable)
8									General Head

3. Pressure reference

R									Relative pressure
A									Absolute pressure

4. Accuracy

E									±0.30% F.S.O (with High Precision silicon cell)
H									±0.50% F.S.O (with General silicon cell)

5. Pressure measuring ranges

01									Measuring range	0 ~ 2000 mmH ₂ O
02										0 ~ 5000 mmH ₂ O
03										0 ~ 1 Bar
04										0 ~ 5
05										0 ~ 10
06										0 ~ 50
07										0 ~ 100
08										0 ~ 350
XX										Other calibration ranges available on request

6. Pressure unit

M										calibration in mmH ₂ O
K										calibration in kgf/cm ²
A										calibration in Mpa
B										calibration in bar
P										calibration in psi
X										Other units available on request

7. Output signal

A1										4~20mA, DC, 2-wire output
A2										4~20mA, DC, 3-wire output
A3										4~20mA, DC, 4-wire output
B1										1~5V, DC, 3-wire output
B2										1~5V, DC, 4-wire output
C1										0~5V, DC, 3-wire output
C2										0~10V, DC, 3-wire output
XX										Other signals available on request

8. Upper flange / Diaphragm material

XX										Refer to flange type table
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9. Under flange material

XX										Refer to flange type table
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10. Process connection type

XXX										Refer to process connection type table
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11. Option

0										None options
1										Accessories
2										Flushing ring
X										Other accessories available on request

P475	R	E	03	B	A1	E	EX	EAB	0	Sample ordering code
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Specifications subject to change without notice

Flange type table

Code - Upper flange / Diaphragm material

B - 304SS / 316L SS
 E - 316L SS / 316L SS
 H - 304SS / 316L SS with PTFE sheet
 I - Alloy 825 / Alloy 825
 J - 316SS / 316L SS
 K - 316SS / Monel
 L - 316SS / Hastelloy-C
 M - 316L SS / Monel
 N - 316SS / Tantalum
 Q - 316SS / 316L SS with PTFE sheet
 R - Titanium / Titanium
 S - 316L SS / Tantalum
 T - 316SS / Nickel
 U - 316SS / Alloy 20
 V - PVC / PTFE
 X - 316L SS / Hastelloy-C
 Y - PVDF / PTFE

Code - Under flange material

7X - Alloy 20
 BX - 304 SS
 DX - 304L SS
 CX - 316 SS
 EX - 316L SS
 LX - Monel
 KX - Hastelloy-C
 MX - Titanium
 51 - 316L SS with PTFE coating (see note1)
 JX - Inconel 600
 RX - 304SS with PTFE coating (see note1)
 PX - 304SS with PTFE lining (see note1)
 SX - 316SS with PTFE coating (see note1)
 QX - 316SS with PTFE lining (see note1)
 50 - 316L SS with PTFE lining (see note1)
 53 - Teflon
 22 - Nickel
 18 - 317SS
 54 - PVC
 55 - CPVC
 39 - Alloy 825
 56 - PVDF
 ZZ - Other

Note1 : PTFE lining and coating is available for the pressure range less than 7 Mpa.

Note2 : Using Plastic as its material, the pressure range is available up to 2 Mpa.

Process connection type table

Code - Connection size

C*	-	1/4"
D*	-	3/8" (10A)
E	-	1/2" (15A)
F	-	3/4" (20A)
G	-	1" (25A)
H	-	1¼" (32A)
J	-	1½" (40A)
K	-	2" (50A)
L	-	2½" (65A)
M	-	3" (80A)
N	-	4" (100A)
P	-	7/16"
Z	-	Other

Code - Connection type

PF	-	PF
AB	-	PT
AA	-	NPT
FF	-	BSPT
GG	-	BSPF
HH	-	NPS
JJ	-	M

Code - Flange rating

KA	-	JIS 5K RF
AC	-	B16.5 Class 150 RF
AE	-	B16.5 Class 150 FF
AD	-	B16.5 Class 150 RFSF
AF	-	B16.5 Class 300 RF
AH	-	B16.5 Class 300 FF
AG	-	B16.5 Class 300 RFSF
AJ	-	B16.5 Class 600 RF
KT	-	JIS 5K FF
AL	-	B16.5 Class 600 FF
AK	-	B16.5 Class 600 RFSF
KL	-	JIS 10K RF
KN	-	JIS 10K FF
KM	-	JIS 10K RFSF
KP	-	JIS 20K RF
KR	-	JIS 20K FF
KQ	-	JIS 20K RFSF
KC	-	JIS 30K RF
KU	-	JIS 30K FF
KJ	-	JIS 30K RFSF
AS	-	B16.5 Class 900 RF
KD	-	JIS 40K RF
KV	-	JIS 40K FF
A8	-	B16.5 Class 150 RTJ
A9	-	B16.5 Class 300 RTJ
AV	-	B16.5 Class 600 RTJ
AT	-	B16.5 Class 1500 RF
AN	-	B16.5 Class 1500 FF
AB	-	B16.5 Class 1500 RFSF
AX	-	B16.5 Class 1500 RTJ
AY	-	B16.5 Class 2000 RTJ
ZZ	-	Other