

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.



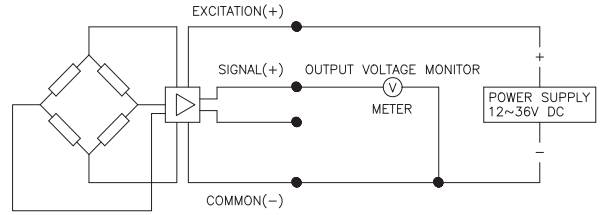
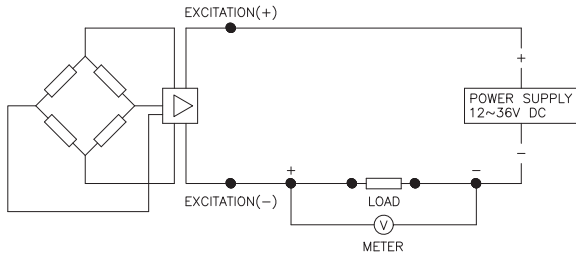
Specification

Input				
Model (Ordering code "Accuracy")	P470(E), P480(E), P490(E) series		P470(H), P480(H), P490(H) series	
Technology	Piezoresistive silicon pressure sensor		Piezoresistive ceramic pressure sensor	
Pressure ranges	0~0.03 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	± 0.25%	5V	± 0.5%
	4mA	± 0.03%	1V	± 0.05%
Zero measured output	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		1.5 milliseconds	
Adjustment	± 10% FSO / zero and span		± 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	35°C		25°C	
Operating temperature range	-40~125°C		-40~125°C	
Compensated temperature range	0~82°C		0~70°C	
Thermal sensitivity shift	≤± 0.2% FSO in reference to 35°C typical		≤± 0.015% FSO / °C typical	
Thermal zero shift	≤± 0.2% FSO in reference to 35°C typical		≤± 0.02% FSO / °C typical	
Thermal hysteresis	≤± 0.1% FSO in reference to 35°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 wetted by process	Diaphragm : 316L SS, Monel, Hastelloy-C, Titanium, Tantalum, Nickel, Alloy20			
	Housing : stainless steel 316			
	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.

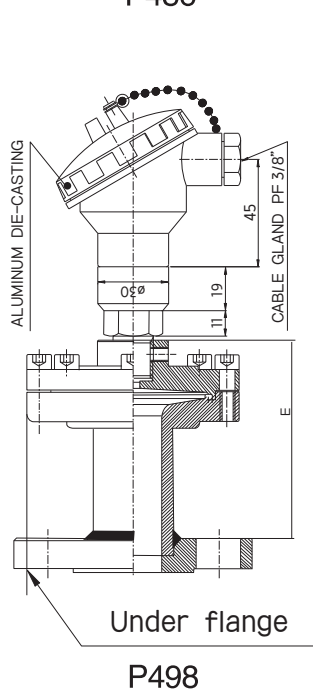
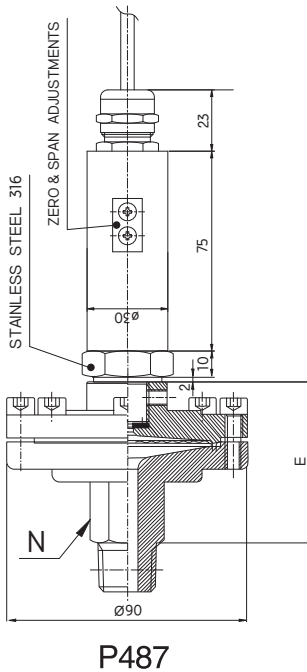
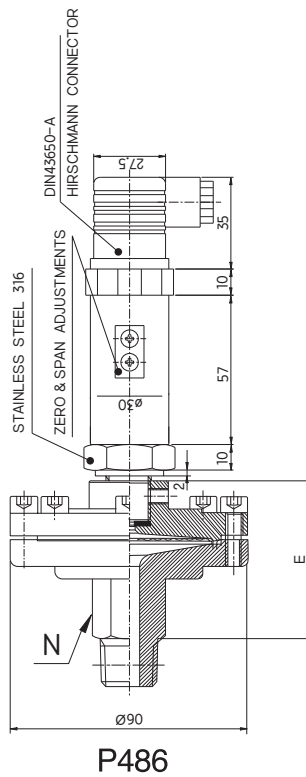
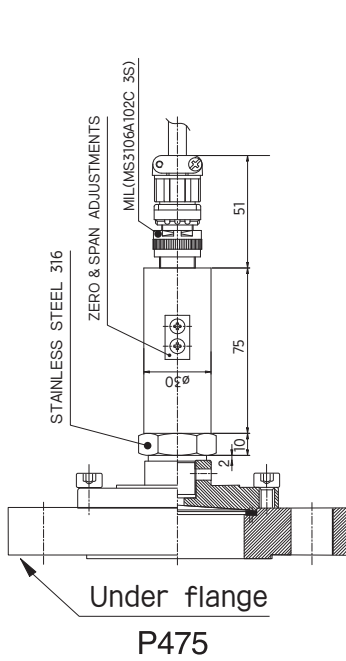
System connection for 2-wire transmitter

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

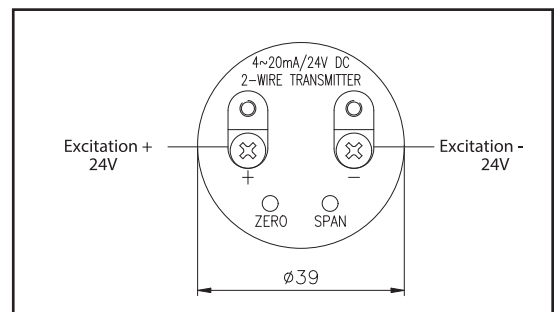
DIN connector

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										Flat type flange process connection diaphragm seal
P48										Screwed process connection diaphragm seal
P49										"I" type 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 silicon cell)
H										± 0.50% F.S.O (with ceramic cell)

5. Pressure measuring ranges

01										0~3000 mmH ₂ O (Only available silicon cell)
02										0~0.5 kgf / cm ² , bar 0~0.05 Mpa
03										0~1 kgf / cm ² , bar 0~0.1 Mpa
04										0~5 kgf / cm ² , bar 0~0.5 Mpa
05										0~10 kgf / cm ² , bar 0~1 Mpa
06										0~50 kgf / cm ² , bar 0~5 Mpa
07										0~100 kgf / cm ² , bar 0~10 Mpa
08										0~350 kgf / cm ² , bar 0~35 Mpa
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
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 (Only available P4X6 and P4X7)
C2										0~10V, DC, 3-wire output (Only available P4X6 and P4X7)
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	04SS / 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	316L SS 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	1 1/4" (32A)
J	1 1/2" (40A)
K	2" (50A)
L	2 1/2" (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