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)

WISE SENSOR

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.

P475 P476 P477 P478

P485 P486 P487 P488

P495 P496 P497 P498

Descriptions

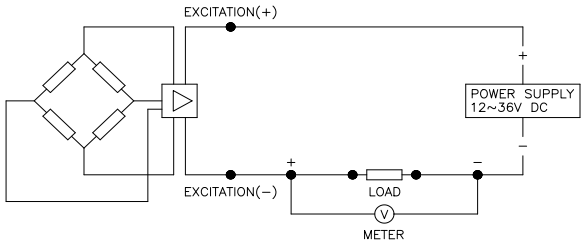
P4XX series pressure transmitter has been designed as an advanced device for measuring pressure of corrosive in industrial applications.
They incorporate a fully temperature compensated piezoresistive silicon sensor with great accuracy, excellent long term stability, very low temperature drift, and a strong, duable 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 sillicon 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

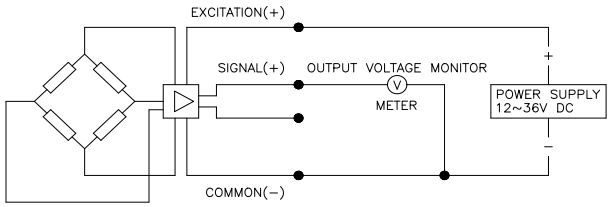
Input				
Model (Ordering code " Accuracy")	P470(E), P480(E), P490(E) series		P470(H), P480(H), P490(H) series	
Technology	High Precision silicon pressure sensor		General silicon pressure sensor	
Pressure ranges	0 ~ 0.02 to 35 MPa relative pressure		0 ~ 0.05 to 35 MPa relative pressure	
	0 ~ 0.1 to 35 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				
	Unamplifide		Unamplifide	
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 (Fixed value by default)			
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℃		25℃	
Operating temperature range	-20 ~ 60℃		0 ~ 60℃	
Storage temperature range	-40 ~ 70℃		-20 ~ 70℃	
Thermal sensitivity shift	≤ ± 0.2% FSO in reference to 25℃ typical		≤ ± 0.3% FSO /℃ typical	
Thermal zero shift	≤ ± 0.2% FSO in reference to 25℃ typical		≤ ± 0.3% FSO /℃ typical	
Thermal hysteresis	≤ ± 0.1% FSO in reference to 25℃ typical		≤ ± 0.3% FSO /℃ 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.

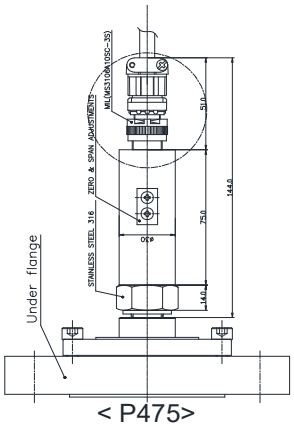
System connection for 2-wire transmitter



System connection for 3-wire transmitter



Dimension (mm)



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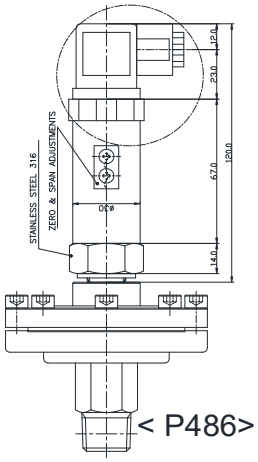

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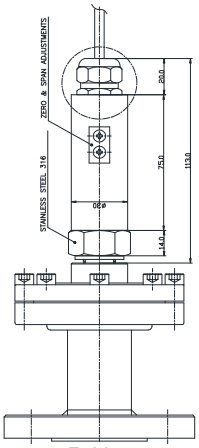

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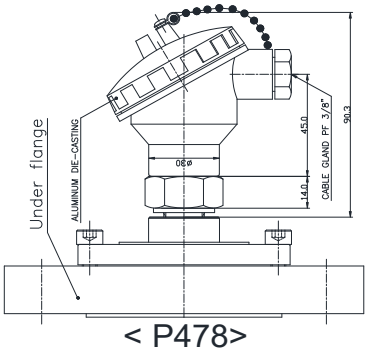

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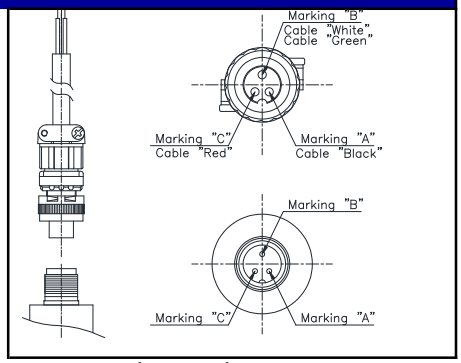
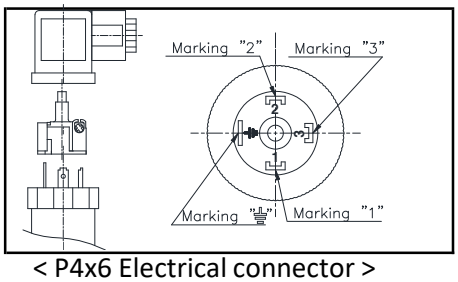
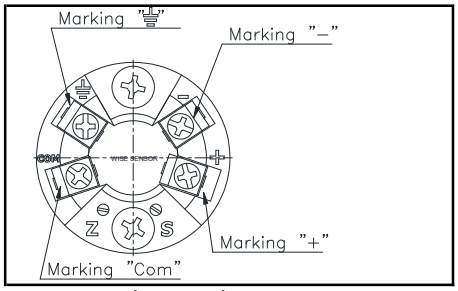
Electrical connection



< P4x5 Electrical connector >



< P4x6 Electrical connector >



< P4x8 Electrical connector >

• Wiring diagrams

E : Excitation
S : Signal
C : Common

	System / Conn.	Wire 2	Wire 3	Wire 4
P4x5	Red	E +	E +	E +
	Black	E -	C -	E -
	Green		S +	S +
	White			S -
	GND	Shielded	Shielded	Shielded
P4x6	1	E +	E +	E +
	3	E -	C -	E -
	4		S +	S +
	GND	Shielded	Shielded	S -

	System	Wire 2	Wire 3	Wire 4
P4x7	Red	E +	E +	E +
	Black	E -	C -	E -
	Green		S +	S +
	White			S -
	GND	Shielded	Shielded	Shielded
P4x8	+	E +	E +	E +
	-	E -	C -	E -
	Com		S +	S +
	GND	Shielded	Shielded	S -

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_2O
02	0 ~ 5000 mmH_2O
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_2O
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 (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

9. Under flange material

XX	Refer to flange type table

10. Process connection type

XXX	Refer to process connection type table

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

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