

Ceramic Cell Pressure Transmitters Industrial Degree



Accuracy 0.25%, 0.5%

Throttle Screw in Fitting

Temperature Compensated

Built in Amplifier

Shock and Vibration Resistance

Zero and Span Adjustments

False System Shutdown Prevention

F-PT1 series ceramic cell pressure transmitters and transducers have been designed for most industrial pressure measurement applications when considering the quality performance, reliability and cost.

The ceramic cell and metallic wetted parts can be compatible with majority of aggressive process fluids. The output signal of the sensing bridge is in converted to be a standardized current or voltage signal through surface mount technology circuit board. This high level signal output with very low noise system is packaged in a rugged stainless steel housing to resist the harsh and extreme environment conditions.

Each transmitter is inspected and calibrated to ensure it's 100% quality.



F-PT1 Series

Typical Applications:

- ▲ Industrial Engineering ▲ Hydraulic monitoring systems ▲ Industrial engines ▲ Pneumatic system measurement
- ▲ Vehicle brake system monitoring ▲ Construction and agriculture equipments ▲ Energy and water managements
- ▲ Process control ▲ Plant quality control equipment ▲ Laboratory testing equipment

Specifications

PERFORMANCE

Accuracy at 25 C° (Linearity, Hysteresis, Repeatability):

< ±0.25% F.S.....PT13

< ±0.5% F.S.....PT14

Stability at 25 C°:

< ±0.2% F.S.(PT13), < ±0.4% F.S.(PT14)

Thermal Zero Shift:

< ±0.02% F.S./C°PT13

< ±0.04% F.S./C°PT14

Thermal Span Shift:

< ±0.03% F.S./C°

ENVIRONMENTAL

Operating Temperature Range:

-25.....85 C°

Storage Temperature Range:

-25.....100 C°

Compensated Range:

-40.....135 C°

Weatherproof Rating(Enclosure):

IP65, NEMA4/4X or better

PHYSICAL DATA

Housing(Case):

304 Stainless Steel(316SS Option)

Fitting Materials:

304SS, 316SS, Monel or Hast'C

Ceramic Sensor:

Aluminum Oxide Al₂O₃ (96%)

Seal Material:

FPM(Viton), NBR, Silicone Rubber,

CR(Neoprene),

EPDM(Ethylene Propylene)

Note: The wetted parts including fitting, ceramic sensor and sealing will be contacted with the media directly, please choose the appropriate material complied to your application.

Process Fitting(Connection):

1/2"NPT, 1/4"NPT, G1/2, G1/4, R1/2, R1/4, 7/16-20UNF, M20*1.5, M14*1.0, 9/16-18UNF,

Others on request

Electrical Connector:

Terminal Box to DIN43650(IP 65)

Shutter Type Cable(IP 65)

Flexible Cable(IP 65)

Female 1/2" DIN(IP 65)

M12 Cable(IP 65)

ELECTRICAL DATA Voltage Output

Output Signal(Voltage, 3 Wires):

0-10V, 0-5V,0.5-4.5V, 1-5V, 1-6V

Power Requirement(Voltage):

15-32VDC(Normal 24VDC, Voltage)

Load Resistance(Voltage):

> 10K Ohms

Current Output

Output Signal(Current, 2 Wires):

4-20 mA

Power Requirement(Current):

10-32VDC(Normal 24VDC, Current)

Load Resistance(Current):

≤ Supply Voltage -10V)/(0.02A)Ohms

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Electrical Compatibility

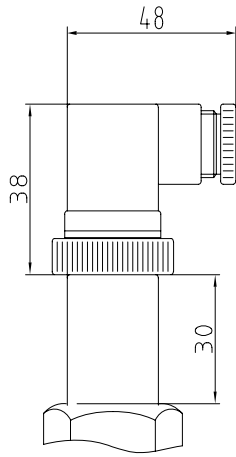
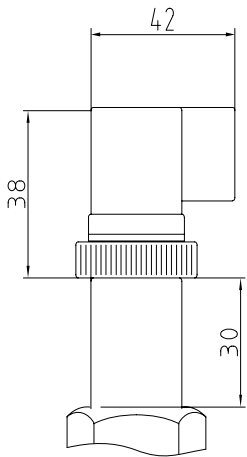
CE-Conformity

Interference emission per EN50081-1 and EN50081-2

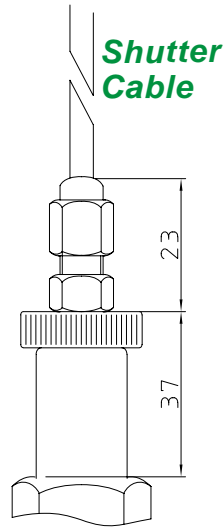
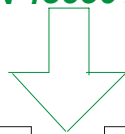
Interference immunity per EN50082-2

Dimensions(mm)

DIN 1/2" Female

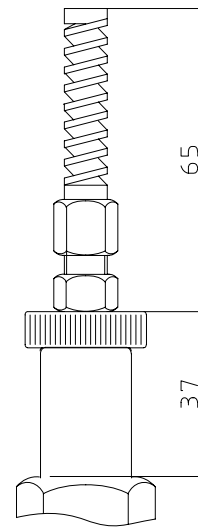
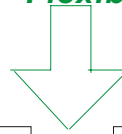


DIN 43650 A

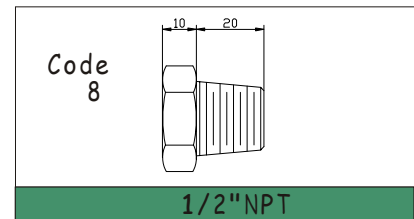
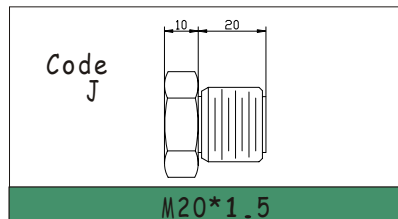
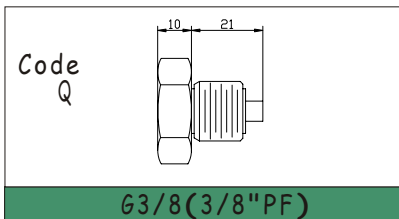
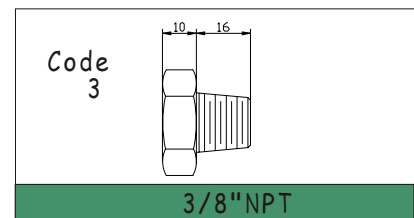
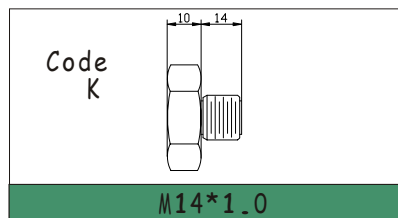
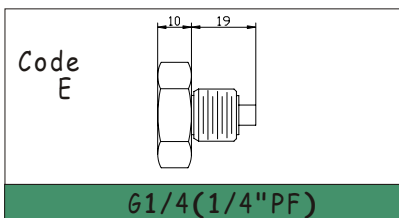
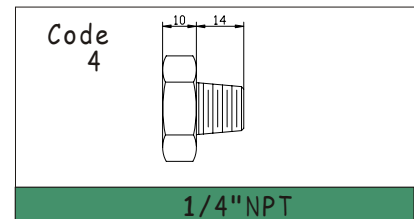
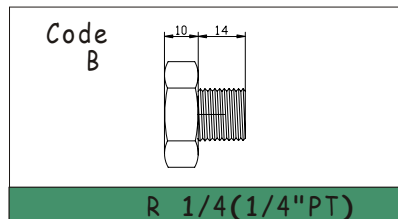
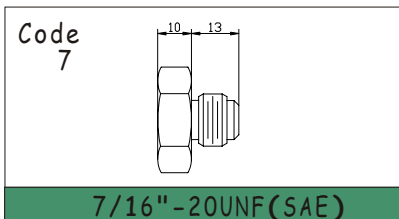
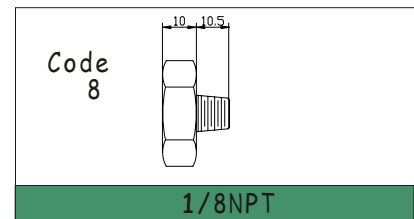
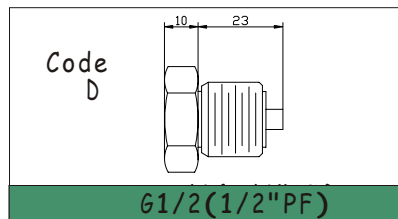
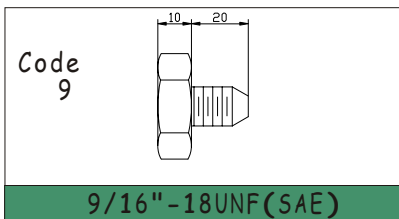
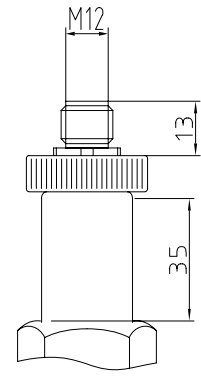


Shutter Cable

Flexible Cable



M12 Conduit



Note: If you need the other process connections not listed, please contact with our distributors.

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Media Compatibility and applicayions

Media compatibility must be considered when purchasing a pressure transducers and transmitters, Improper selection and application of the pressure transmitters and transducers could possible cause sensor failure and lead to possible damage or personal injury. The media to which the pressure sensor are going to be in contact with, must have compatibility with the Al₂O₃. In particular the data of weight loss found after a dipping pf 80 hours at room temperature in some media have shown a good resistance to Hcl (at 30% wt) and HNO₃(at 60% wt). Therefore the ceramic cell has a very good chemical resistance. But the alumina is instead easily etched by even 1% solution of Fluorine acid(HF). For such applications, you can use the Fayin ceramic pressure sensor combined diaphragm seal or the other Fayin Pressure sensors such as stainless steel thin film sensor or diaphragm micro-machined silicon sensor instead. The wetted parts of the transmitter including pressure fitting, ceramic cell and sealing will contact with the media directly. Selecting the suitable pressure fitting material and sealing material is very important. Please refer to Fayin Corrosion table for detailed information.

Sealing Materials vs Common Applications

Sealing Materials 1=Recommended, 2=Satisfactory, 3=Poor, 4=Marginal, 5=Not Recommended A=Available N/N=Not Available	Common Application Conditions																		
	High Temp Limit C°	Low Temp Limit C°	Steam < 250 (C°)	Steam < 120 (C°)	Permeation/Vacuum	Fluorescent/Sunlight	Weathering/Ozone	Refrigerant/Freon(most)	Wear/Abrasion	Compression Set	Brake Fluids	Transmission Fluids	Steering Fluids	Fuels/Gasoline(most)	Chemicals/Solvents(most)	Petroleum Oils(most)	Dynamic Applications	FDA Compliant	NFS61(Drinking Water)
Buna N(Nitile), NBR	120	-40	5	4	2	4	4	4	2	2	5	2	5	3	4	3	2	A	A
Fluorocarbon(Viton), FPM	200	-15	4	3	1	1	1	3	2	1	4	3	2	2	2	1	1	A	N/A
Ethylene-Propylene(EPDM), P.C	150	-55	4	1	2	1	1	5	2	2	1	3	5	5	2	5	1	A	A
Fluorosilicone, VMQ	180	-60	5	5	4	1	1	1	4	3	3	3	2	1	3	3	3	N/A	N/A
Neoprene, CR	120	-35	5	5	2	2	2	2	2	3	5	3	3	5	5	2	1	N/A	N/A

The materials and applications listed are the most commonly used. There are a lot of compound variations designed for specific applications. For demanding applications,

Sealing Materials 1=Recommended, 2=Satisfactory, 3=Poor, 4=Marginal, 5=Not Recommended A=Available N/N=Not Available	Common Application Conditions															
	Gasoline, Naphtha	Benzene, Toluene	Aliphatic Hydrocarbon	Alcohol	Ester	Ketones (MEK)	Ethyl Acetate	Water	Organic Acid	Animal/Vegetable Oil	Aromatic Solvent	Oxidized Solvent	High Consistency Alkali	Low Consistency Alkali	High Consistency Inorganic Acid	Low Consistency Organic Acid,
Buna N(Nitile), NBR	1	3	5	1	4	4	4	1	4	1	3	5	2	2	4	2
Fluorocarbon(Viton), FPM	1	1	2	1	4	2	5	1	5	1	1	5	5	4	1	1
Ethylene-Propylene(EPDM), P.C	5	3	5	1	2	1	1	1	5	2	5	1	1	1	2	1
Fluorosilicone, VMQ	4	4	3	1	4	2	3	2	2	3	5	4	1	1	4	2
Neoprene, CR	2	5	5	1	4	3	5	1	4	2	4	5	1	1	2	1

please supply all detailed to our application engineers for a recommendation information.

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Pressure Range

Scale:psi

Code	P09	P1	P2	P2C	P3	P4	P5	P5A	P6	P7	P7A	P8	P8A
Range	10	15	30	50	60	100	150	160	200	300	400	500	600
Overload	20	30	60	100	120	200	300	320	400	600	800	1000	1200

Code	P9	P9A	P10	P11	P12	P13	P14	P141	P15	P16	PV1	PC1	PC2
Range	750	800	1000	1500	2000	3000	5000	6000	7500	10000	VAC/0	VAC/15	VAC/30
Overload	1500	1600	2000	3000	4000	6000	10000	12000	15000	20000	15	30	60

Code	PC3	PC4	PC5	PC6	PC7	PC8	PC9						
Range	VAC/60	VAC/100	VAC/150	VAC/160	VAC/200	VAC/300	VAC/600						
Overload	120	200	300	320	400	600	1200						

Scale:bar

Code	R1	R09	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
Range	0.4	0.5	0.6	1	1.6	2	2.5	3	3.5	4	5	6	7
Overload	0.8	1	1.2	2	3.2	4	5	6	7	8	10	12	14

Code	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	R24	R25
Range	10	16	20	25	30	35	40	50	60	70	100	160	200
Overload	20	32	40	50	60	70	80	100	120	140	200	320	400

Code	R26	R27	R28	R29	R30	R31	R32	RV1	RC1	RC11	RC2	RC21	RC22
Range	250	300	350	400	500	600	700	-1/0	-1/0.6	-1/1	-1/1.5	-1/2	-1/2.5
Overload	500	600	700	800	1000	1200	1400	-1	1.2	2	3	4	5

Code	RC3	RC31	RC4	RC41	RC5	RC6	RC62	RC7	RC8	RC9			
Range	-1/3	-1/4	-1/5	-1/6	-1/9	-1/15	-1/19	-1/24	-1/30	-1/40			
Overload	6	7	10	12	18	30	38	48	60	80			

Scale:kg/cm²

Code	G1	G09	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
Range	0.4	0.5	0.6	1	0.6	2	2.5	3	3.5	4	5	6	7
Overload	0.8	1	1.2	2	1.2	4	5	6	7	8	10	12	14

Code	G13	G14	G15	G16	G17	G18	G19	G20	G21	G22	G23	G24	G25
Range	10	16	20	25	30	35	40	50	60	70	100	160	200
Overload	20	32	40	50	60	70	80	100	120	140	200	320	400

Code	G26	G27	G28	G29	G30	G31	G32	GV1	GC1	GC11	GC2	GC21	GC22
Range	250	300	350	400	500	600	700	1	-1/0.6	-1/1	-1/1.5	-1/2	-1/2.5
Overload	500	600	700	800	1000	1200	1400	2	-1/1.2	-1/2	-1/3	-1/4	-1/5

Code	GC3	GC31	GC4	GC41	GC42	GC5	GC51	GC6	GC63	GC7	GC8	GC9	
Range	-1/3	-1/4	-1/5	-1/6	-1/7	-1/9	-1/10	-1/15	-1/20	-1/24	-1/30	-1/40	
Overload	-1/6	-1/8	-1/10	-1/12	-1/14	-1/18	-1/20	-1/30	-1/40	-1/48	-1/60	-1/80	

Note: If you need the other ranges not listed, please contact with our distributors.

Electrical Connection



DIN 43650 A



DIN 1/2" Female



Gland Cable



Flexible Cable



M12 Conduit

Note: If you need the other electrical connections not listed, please contact with our distributors.

Vent Tube



For low pressure use, the vent tube in the cable is recommended to balance the inner and outer pressure of transmitter.

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Wiring

DIN Connection

2-Wires Current 4...20 mA

3-Wires Voltage 0...10 VDC

Cable Connection

RED-SEE TABLE
WHITE-SEE TABLE **BLACK-SEE TABLE**

Output	Red	Black	White
Voltage	+ V Supply	- V Supply	Output
Current	+ V Supply	- V Supply	Grounding

$R_L = (U_s - 10) \times 50 \text{ Ohm}$

The diagram shows the optimum ratio between the load and supply voltage of the 4-20mA transmitter.

For a correct use, any combination of load resistance and supply voltage, choose the slant line area.

Order Information

F-PT1 - 3 - R - S - 2 - A0 - F - K3 - V - Option

Accuracy:	Reference:	Wetted Parts:	Process Connection:	Electrical Connection:	Output Signal:	Pressure Range:	Seal Material:
3-0.25% 4-0.5%	R-Relative A-Absolute S-Sealed	S-316SS M-Monel H-Hast'C L-Others B-Brass A-304SS	2-1/2"NPT 4-1/4"NPT 7-7/16"UNF 9-9/16"UNF D-G1/2 E-G1/4 A-R1/2 B-R1/4 J-M20*1.5 K-M14*1.0 L-Others	A0-DIN 43650 D0-1/2" Female DIN FX-X" Gland Cable PX-X" Protecting Cable MX-X" M12 Cable (X=Length of Cable) L-Others	A-0...10 VDC B-0...5 VDC C-1...5 VDC D-0.5...4.5 VDC E-1...6 VDC F-4...20 mA L-Others	Please refer to the range table and write down the code you need. Vacuum Compound Pressure	B-NBR (Buna Rubber) V-FPM(Viton) S-MVQ(Silicone Polymer) N-CR(Neoprene) E-EPDM (Ethylene Propylene) L-Others

Option

SH- 316SS Housing CL- Customized Logo Label CFO- Cleaned for oxygen service
COC- Certification of calibration UC- Pipe mounting bracket VC- Vent Cable S- Siphon
DS- Diaphragm Seal LM- Laser Marking IEXP- Intrinsically Explosion Proof Request

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Accessories

Diaphragm seal is used to isolate pressure measuring element from the harsh media such as contains suspended solid, highly viscous, high temperature media and so on. Remote diaphragm seal is supplied for the process temperature over 180°C.



The over-pressure protectors are designed to protect the pressure instrument against short pressure peaks which may exceed the max operating pressure range.



Digital indicating can be used with the transmitter for your system. It is ideal for all industrial applications when a local pressure reading and a remote signal transmission to a programmable logic controller or other

Pulsation dampener is designed to reduce the effect of pressure fluctuation and sudden pressure changes



The analog indicating pressure transmitter is developed by using a bourdon tube pressure gauge and a ceramic cell pressure transmitters. It is ideal for all industrial applications when a local pressure reading and a remote signal transmission to a programmable logic controller or other computer-based system are required. The pressure gauge can continue to monitor your system even if an electrical power cut.



Needle valve is a device to shut-off your media system entering the transmitter