

Intelligent Monocrystalline Pressure/Differential Pressure Transmitters

P7 Series



Profile

P71/P75/P76/P78 intelligent pressure/differential pressure transmitters adopt the advanced leading high-precision silicon pressure and differential pressure sensor technology.

The single crystal silicon pressure and differential pressure sensor is located at the top of the metal body, away from the contact surface of the medium. To achieve mechanical isolation and thermal isolation; The sensor lead of glass sintering unit realizes high-strength electrical insulation with the metal substrate, which improves the flexibility of electronic circuits and the ability to withstand transient voltage protection. The circuit adopts a modular design with a microprocessor as the core and assisted by advanced digital isolation technology, so that the instrument has extremely high anti-interference and stability.

It uses Hart protocol for communication, which can be remotely operated through a Hart handheld communicator or a computer installed with Hart software to complete the measurement information configuration. Meanwhile the digital compensation technology is used, and the transmitter is compensated through the built-in temperature sensor to improve the accuracy, temperature drift is reduced.

The most user-friendly design of the external one-key reset function meets the requirements of safe operation in hazardous situations. The shortcut menu is convenient for operation, and can complete all parameter settings, which comprehensively improves the performance of the transmitter.

Features

- ◇ Innovative dual compensation technology
- ◇ 0.075% high precision
- ◇ Advanced monocrystalline silicon pressure sensor technology and packaging technology adopted
- ◇ Modularization design with microprocessor as the core and assisted by advanced digital isolation technology, which makes it with high anti-interference and stability
- ◇ 24-bit ADC achieves high precision

Function Parameters

Range limit	Within the upper& lower limits of the measuring range, it can be adjusted arbitrarily. It is recommended to select a range code with the lowest possible turndown ratio to optimize performance
Output	Two-wire system 4-20mA, in line with NAMIR NE43 specification, superimposed digital signal (Hart protocol);Linear or square root output is optional.
Response time	The damping constant of the amplifier component is 0.1s; the time constant of the sensor is 0.1 to 1.6s, depending on the range and the range ratio. The additional adjustable time constant is: 0~100s
Zero point setting	Zero point and range can be adjusted to any value within the measurement range in the table, as long as: calibration range $\geq$ minimum range
Influence of installation location	The change of the installation position perpendicular to the diaphragm surface will not cause the zero drift effect. If the installation position and the diaphragm surface change more than 90°, the zero position in the range of <0.4kPa will be affected. It can be adjusted by adjusting the zero and there is no impact on the range.
Preheating time	<15s
Output signal limit	Imin=3.9mA, Imax=21.0mA
Fault warning	If the sensor or circuit fails, the automatic diagnosis function will automatically output 3.9 or 21.0mA (user can pre-set)
Alarm current	Low alarm mode (minimum): 3.9mA
High report mode (maximum)	21 mA
Alarm current default setting	High alarm mode

Performance Parameters

Measuring medium	Gas, steam, liquid
Accuracy	$\pm 0.2\%, \pm 0.075\%, \pm 0.1\%$ (linearity, hysteresis and repeatability from zero)
Stability	$\pm 0.1\%/3$ years
Ambient temperature influence	$\leq \pm 0.04\%/10^\circ\text{C}$
Influence of static pressure	$\pm 0.05\%/10\text{MPa}$
Power supply	10~36Vdc(24Vdc recommended)
Power influence	$\pm 0.001\%/10\text{V}$ (10~36Vdc), which can be negligible
Ambient temperature	-40°C ~ 85°C
Measuring medium temperature	-40°C ~ 120°C
Storage temperature	-40°C ~ 105°C
Display	LCD, OLED
Module temp. shown on display	-20°C ~ 70°C (LCD), -40°C ~ 80°C (OLED)
Explosion-proof rating	Ex d IIC T6, Ex ia IIC T6
IP Rating for Housing	IP67

Smart Direct-mounted Gauge/Absolute Pressure Transmitter **P71**

Gauge pressure range

Range code	Measuring range(KPa)	Accuracy/Stability
A	-6~6	$\pm 0.075\%$ F.S of the range The maximum error per year is $\pm 0.1\%$ of range
B	-40~40	
C	-100~100	
D	-100~400	
E	-100~4000	
F	-100~16000	



Absolute pressure range and range

Range code	Measuring range(KPa)	Accuracy/Stability
A	0~40	$\pm 0.075\%$ F.S of the range/ The maximum error per year is $\pm 0.1\%$ of range
B	0~250	
C	0~2000	

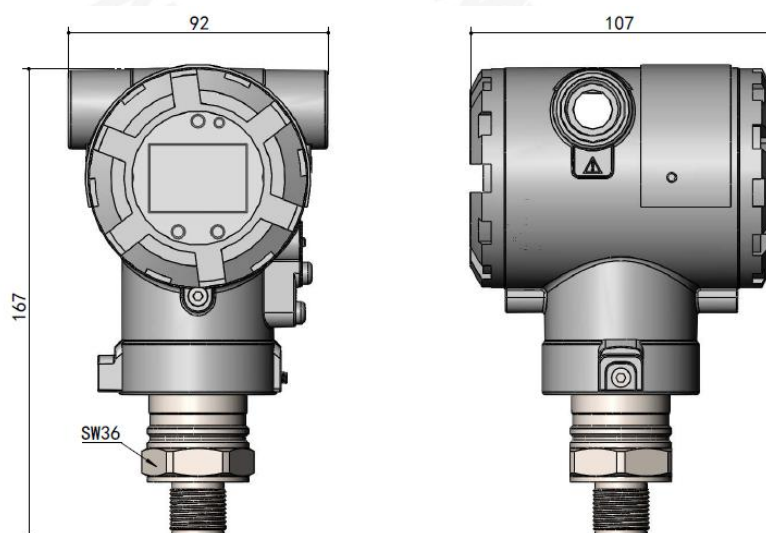
Gauge pressure overload limit

Range	1KPa A	6KPa B	40KPa C	100KPa D	400KPa E	4000KPa F	16000KPa G
Load limit	1MPa	2MPa	5MPa	7MPa	9MPa	10MPa	25MPa

Absolute pressure overload limit

Range	40KPa A	250KPa B	2000KPa C
Load limit	1MPa	4MPa	10MPa

Dimensions



Model Selection

P71			
Code	Type		
GP	Smart Pressure Transmitter		
AP	Smart Absolute Pressure Transmitter		
Code	Gauge Pressure Range (KPa)	Absolute Pressure Range (KPa)	
A	0~1~6	0~6~40	
B	0~6~40	0~40~250	
C	0~40~100	0~250~2000	
D	0~100~400		
E	0~400~4000		
F	0~4000~16000		
	Code	Output signal	
	H	4~20mA	
	S	4~20mA+Hart	
	Code	Accuracy	
	J1	±0.2%	
	J2	±0.1%	
	J3	±0.075%	
	Code	Display	
	M1	LCD	
	M2	OLED(Low temperature resistant -40°C)	

				Code	Structure material																			
					Pressure Connector		Diaphragm																	
			21	316 SS		316 SS																		
			22	316 SS		Hastelloy C alloy																		
			23	316 SS		Monel																		
			24	316 SS		Tantalum																		
			25	316 SS		Tantalum																		
			26	316 SS		With gold plating																		
							Code	Process Connection																
								C1	M20×1.5 male															
								C2	G1/2 male															
								C3	G1/4 male															
								C4	1/2 NPT male															
								C5	1/2 NPT female															
								T	Special request															
												Code	Hazardous location certification											
													E0	No explosion-proof										
													E1	Flame-proof, Ex d IIC T6										
													12	Intrinsically safe, Ex ia IIC T6										
																	Code	Electrical connection						
																		D1	M20×1.5					
																		D2	1/2 NPT female					
																						Code	Filling fluid	
G1	Silicone oil																							
G2	Fluoro oil																							
				Code	Mounting bracket																			
					B0	Without mounting bracket																		
B1	Tube bending bracket																							
GP	A	H J1	M1 21	C1	E1	D1	G1 B0	Model No. example																

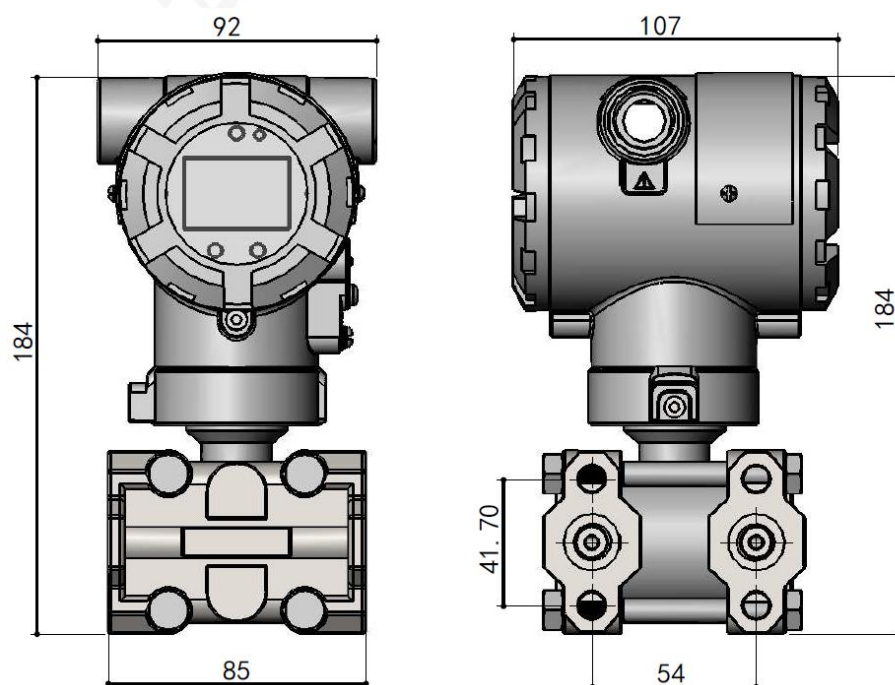
P75 Intelligent High-precision Monocrystalline Differential Pressure Transmitter

Measuring Range

Range code	Measuring range(KPa)	Accuracy/Stability
A	-1~1	±0.075%F.S of the range; The maximum error per year is ±0.1% of range
B	-6~6	
C	-40~40	
D	-100~100	
E	-100~400	
F	-100~4000	



Dimensions



Model Selection

P75				
Code	Type			
DP	Smart Differential Pressure Sensor			
	Code	DP Range (KPa)		
	A	0~0.2~1		
	B	0~1~6		
	C	0~6~40		
	D	0~40~100		
	E	0~100~400		
	F	0~400~4000		
	Code	Output Signal		
	H	4~20mA		
	S	4~20mA+Hart		
	Code	Accuracy		
	J1	±0.2%		
	J2	±0.1%		
	J3	±0.075%		
	Code	Display		
	M1	LCD		
	M2	OLED(Low temperature resistant -40°C)		
	Code	Pressure Connection		
	C0	NPT1/4 pressure connector & rear welded $\varnothing$ 14 pressure connector tube		
	C1	NPT 1/2 tapered female flange with waist-shaped thread		
	C2	T-shaped male connector with M20*1.5		
	C3	Integrated three valve group		
	Code	Filling fluid		
	G1	Silicone oil		
	G2	Fluoro oil		
	Code	Structure material		
		Flange	Drain/exhaust	Diaphragm
	21	304 SS	304 SS	316 SS
	22	316 SS	316 SS	316 SS
	23	316 SS	316 SS	Hastelloy C alloy
	24	316 SS	316 SS	Monel alloy
	25	316 SS	316 SS	Tantalum
	26	Hastelloy C alloy	Hastelloy C alloy	Hastelloy C alloy
	27	Hastelloy C alloy	Hastelloy C alloy	Tantalum
	28	Monel alloy	Monel alloy	Monel alloy
	29	304 SS	304 SS	With gold plating
	Code	Relief valve		
	X0	Vent valve		
	X1	Drain valve		
	Code	Mounting bracket		

							B0	Without mounting bracket		
							B1	Tube bending bracket		
							B2	Board-mounted bending bracket		
							B3	Tube mounted flat bracket		
								Code	Hazardous location certification	
								E0	No explosion-proof	
								E1	Flame-proof, Ex d IIC T6	
								E2	Intrinsically safe, Ex ia IIC T6	
									Code	Electrical connection
									D1	M20×1.5
									D2	1/2 NPT female
DP	A	H J1	M1	C1 G1	21	X0	B1	E1	D1	Model No. Example

P76 Intelligent Monocrystalline Flat Diaphragm/Cylinder Flange Liquid Level Transmitter

Measuring Range

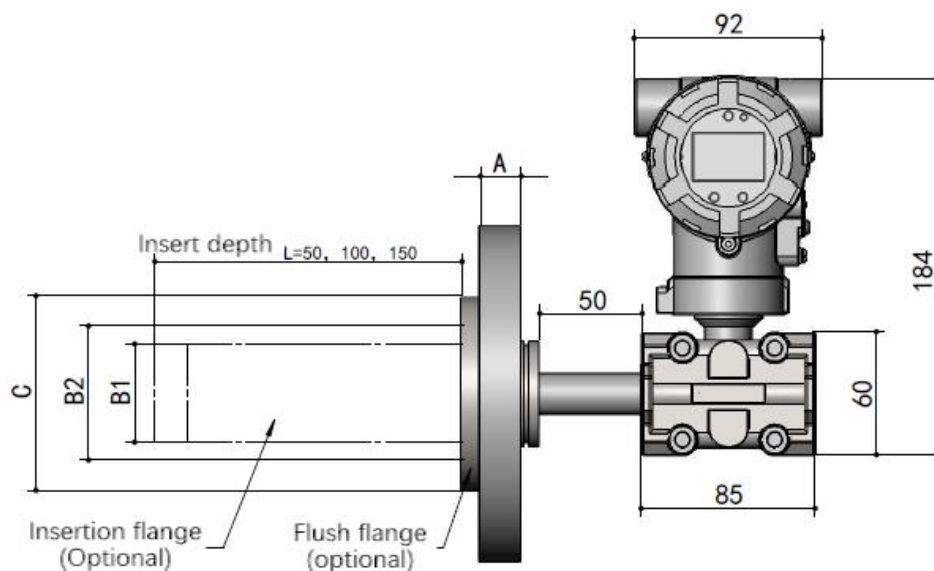


Range code	Min Range(KPa)	Max Range(KPa)	Rated pressure (maximum)
B	1	6	Rated pressure of liquid level flange
C	6	40	
D	40	400	
E	400	4000	

Comparison of relationship between flange and min range

Liquid level flange	Nominal diameter	Minimum range
Flat Diaphragm type	DN 50/2"	10KPa
	DN 80/3"	1KPa
	DN 100/4"	1KPa
Cylinder	DN 50/2"	16KPa
	DN 80/2"	1KPa
	DN 100/4"	1KPa

Dimensions



Model Selection

P76						
Code	Type					
LT	Intelligent Flat Diaphragm Flange Liquid Level Transmitter					
CT	Intelligent Cylinder Flange Liquid Level Transmitter					
	Code	Pressure Measuring Range(KPa)				
	B	1~6				
	C	6~40				
	D	40~400				
	E	400~4000				
	Code	Output Signal				
	H	4~20mA				
	S	4~20mA+Hart				
	Code	Display				
	M1	LCD				
	M2	OLED(Low temperature resistant -40℃)				
	Code	Accuracy				
	J1	±0.5%				
	J2	±0.2%				
	J3	±0.1%				
	J4	±0.075%				
	Structure material					
	Code	Flange	Code	Diaphragm	Code	Coating
	22	304SS	N1	316L SS	T1	None
	23	316SS	N2	Hastelloy C	T2	PFA
			N3	Monel alloy		
			N4	Tantalum		
			N5	Titanium		
	Code	Flange Dimensions				
	C1	DN50				
	C2	DN80				
	C3	DN100				
	C4	2"				
	C5	3"				
	C6	4"				
	C7	User specified				
	Code	Cylinder length(mm)				
	L10	0(Flat flange)				
	L11	50				
	L12	100				
	L13	150				
	LT	User specified				
	Code			Cylinder material		

							Z0	None			
							Z1	304 SS			
							Z2	316L SS			
							Code	Capillary length(m)			
							F0	None			
							F1	1m			
							F2	2m			
							F3	3m			
							F4	User specified			
								Code	Mounting bracket		
								A1	Without mounting bracket		
								A2	Tube bending bracket		
								A3	Board-mounted bending bracket		
								A4	Tube mounted flat bracket		
								Code	Filling fluid		
								G1	Silicone oil		
								G2	Fluoro oil		
									Code	Hazardous location certification	
									E0	No explosion-proof	
									E1	Flameproof, Ex d IIC T6	
									E2	Intrinsically safe, Ex ia IIC T6	
										Code	Electrical connection
										D1	M20×1.5
										D2	1/2 NPT female
LT	B	H	M1	J1 22 N1 T1	C1	L10	Z0 F1	A1 G1	E0	D1	Model No. Example

P78 Intelligent Monocrystalline Dual-remote Flat Diaphragm/Cylinder Flange Liquid Level Transmitter



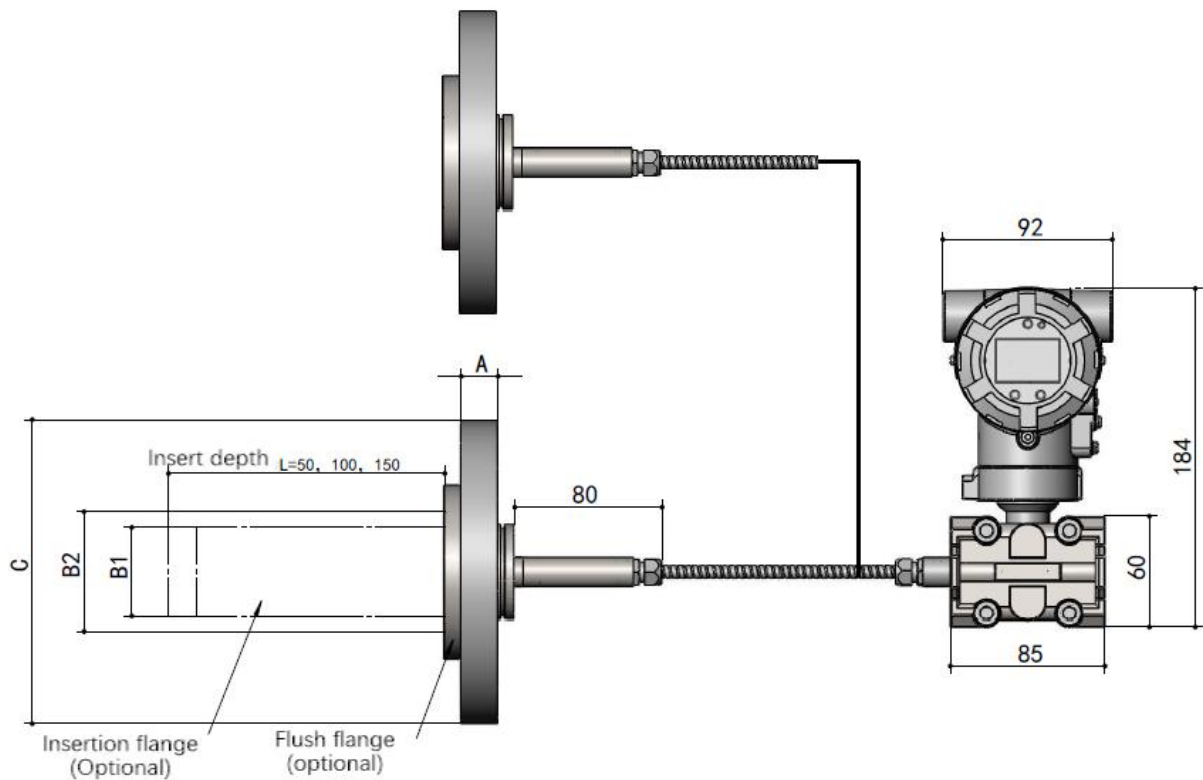
Measuring Range

Range code	Min Range(KPa)	Max Range(KPa)	Rated pressure (max)
B	1KPa	6KPa	Rated pressure of liquid level flange
C	6KPa	40KPa	
D	40KPa	400KPa	
E	400KPa	4MPa	

Comparison of relationship between flange and min range

Flange	DN	Min range	
		Unilateral remote transmission	Bilateral remote transmission
Flat Diaphragm	DN 50/2"	10KPa	10KPa
	DN 80/3"	6KPa	1KPa
	DN 4"	6KPa	1KPa
Cylinder	DN 50/2"	10KPa	10KPa
	DN 80/2"	6KPa	1KPa
	DN 4"	6KPa	1KPa

Dimensions



Model Selection

P78			
Code	Type		
DY	Intelligent remote differential pressure transmitter		
GY	Intelligent remote pressure transmitter		
	Code	Pressure measurement range(KPa)	
	B	1~6	
	C	6~40	
	D	40~250	
	E	250~4000	
	Code	Output	
		H	4~20mA
		S	4~20mA+Hart
	Code	Accuracy	
		J1	±0.2%
		J2	±0.1%
		J3	±0.075%
		Code	Display
		M1	LCD
		M2	OLED(Low temperature resistant -40°C)
			Structure material

											E2	Intrinsically safe, Ex ia IIC T6	
												Code	Electrical connection
												D1	M20×1.5
												D2	1/2 NPT female
DY	B	H	M1	22 N1 T1	C1	Y0	X0 L0 G1	10	B0	E0	D1	Model No. Example	