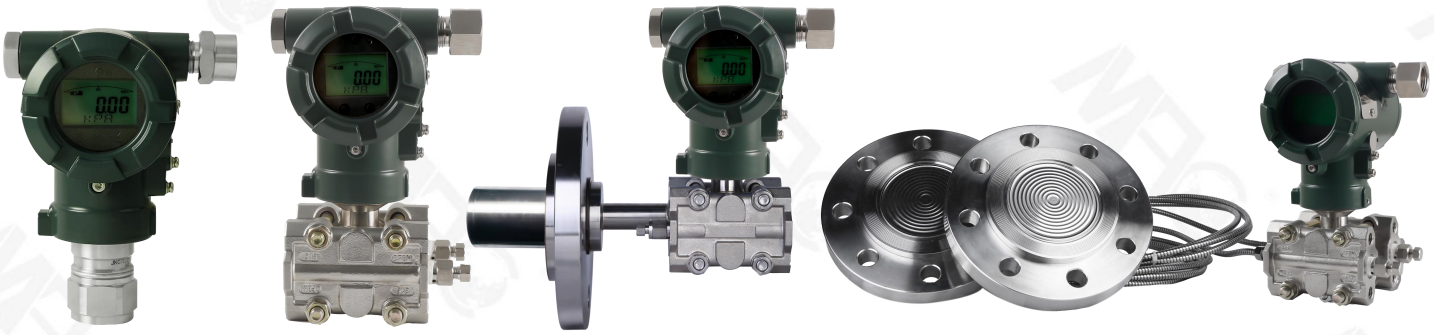
Intelligent Monocrystalline Pressure/Differential Pressure Transmitters

P7 Series



P71 P72 P76 P78

Profile

P71/P72/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 ≥ 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	±0.2%,±0.075%,±0.1%(linearity, hysteresis and repeatability from zero)
Stability	±0.1%/3 years
Ambient temperature influence	≤±0.04%URL/10°C
Influence of static pressure	±0.05%/10MPa
Power supply	10~36Vdc(24Vdc recommended)
Power influence	±0.001%/10V (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	±0.075%F.S of the range The maximum error per year is ±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	±0.075%F.S of the range/ The maximum error per year is ±0.1% of range
B	0~250	
C	0~2000	

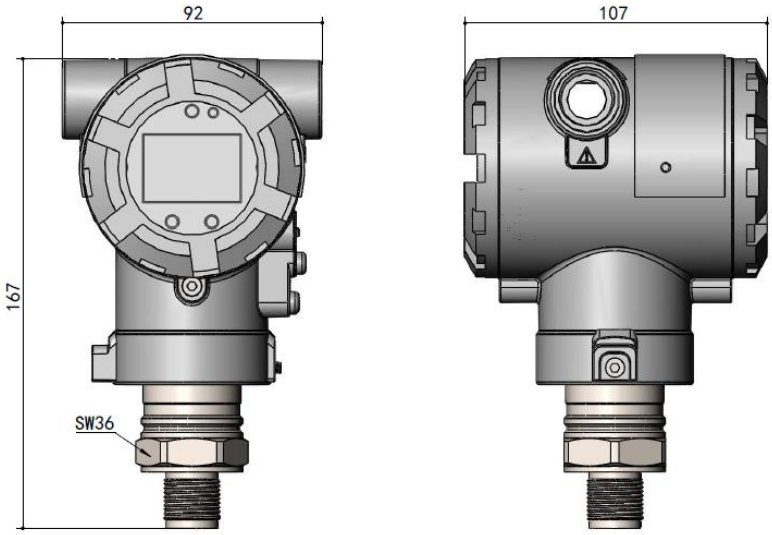
Gauge pressure overload limit

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)	

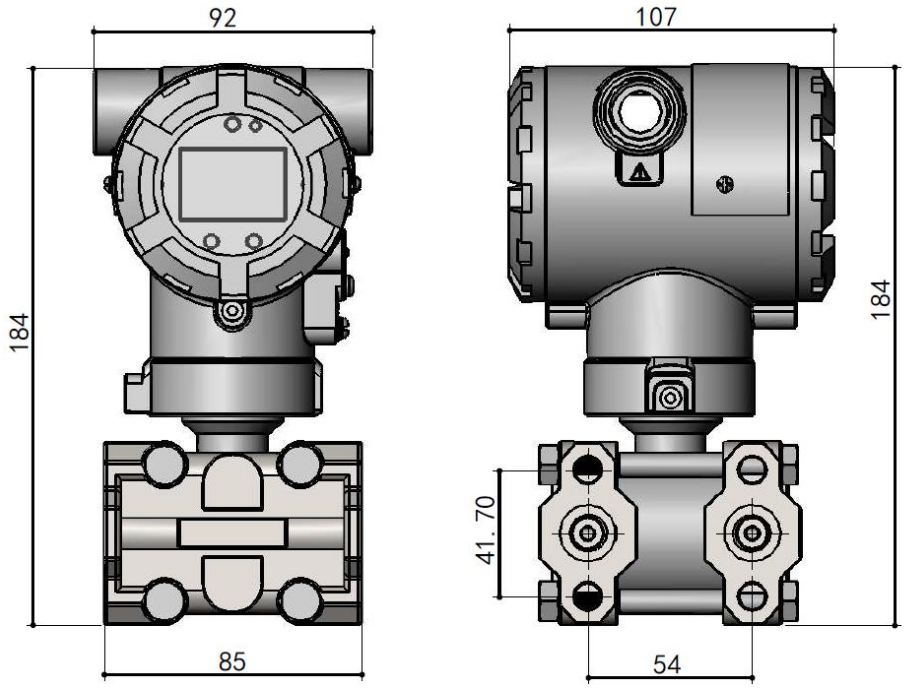
			Code	Structure material				
				Pressure Connector			Diaphragm	
			21	316 SS			316 SS	
			22	316 SS			Hastelloy C alloy	
			23	316 SS			Monel	
			24	316 SS			Tantalum	
			25	316 SS			Tantalum	
			26	316 SS			With gold plating	
				Code	Process Connection			
				C1	M20×1.5 male			
				C2	G1/2 male			
				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

P72 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

P72								
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 ⌀ 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

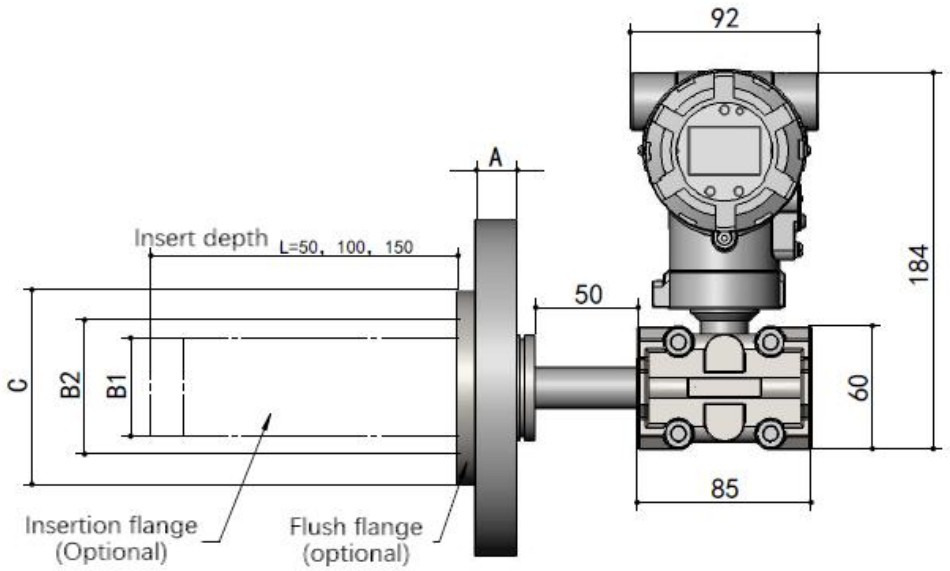
Measuring Range

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°C)							
				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

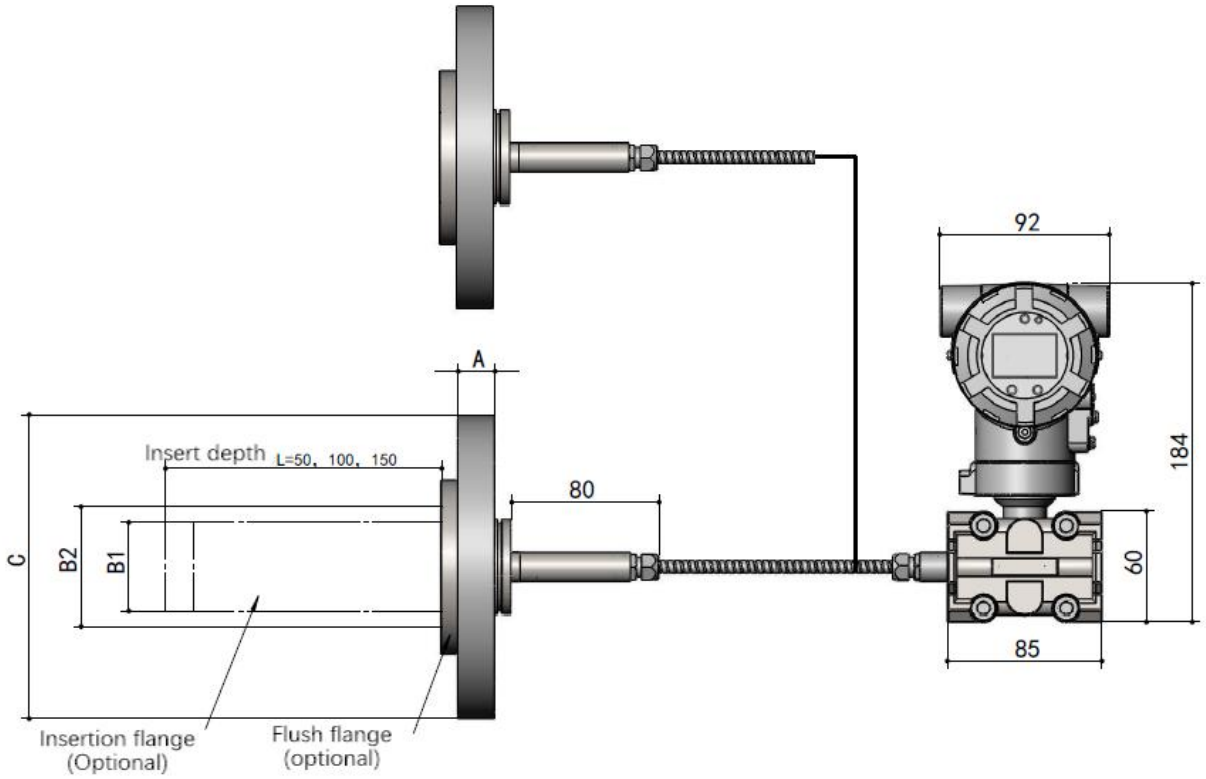
Measuring Range

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

Code	Flange	Code	Diaphragm	Code	Coating
22	304 SS	N1	316L SS	T1	None
23	316 SS	N2	Hastelloy C alloy	T2	PFA
		N3	Monel alloy		
		N4	Tantalum		
		N5	Titanium		

Code	Flange Dimensions		
C1	DN50	C5	3″
C2	DN80	C6	4″
C3	DN100	C7	User specified
C4	2″		

Code	Remote transmission device
Y0	Single flat flange type
Y1	Double flat flange type
Y2	Single cylinder flange type
Y3	Double- cylinder flange type
Y4	One flat one cylinder flange type

Code	Capillary length		
High pressure side		Low pressure side	
XN	None	L0	1m
X0	1m	L1	2m
X1	2m	L2	3m
X2	3m	LX	User specified
X3	User specified		

Code	Filling fluid
G1	Silicone oil
G2	Fluoro oil

Code	Cylinder length(mm)
10	0(Flat flange)
11	50
12	100
13	150
T	User specified

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	Non-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
DY	B	H	M1	22 N1 T1	C1	Y0	X0 L0 G1	10	B0	E0	D1	Model No. Example