DATASHEET

Pressure
Differential Pressure

Intelligent High-precision Monocrystalline Silicon Pressure/Differential Pressure Transmitter

PWP3051 Series

Pressure transmitter PWP3051P

Differential Pressure Transmitter PWP3051DP

Description

PWP3051 series smart pressure/differential pressure transmitter, the central sensing unit adopts the world's leading high-precision silicon pressure sensor technology and packaging process. The single crystal silicon pressure sensor is located at the top of the metal body, away from the medium contact surface, to achieve mechanical isolation and thermal isolation; the glass sintered sensor lead achieves high-strength electrical insulation with the metal substrate, improving the flexibility of the electronic circuit and the ability to withstand transient voltage protection. The circuit design 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.

Using the Hart protocol for communication, remote operation can be performed through the Hart handheld operator or a computer with Hart software installed to complete the measurement information configuration. At the same time, digital compensation technology is used, and the transmitter is compensated through the built-in temperature sensor, which improves the measurement accuracy and reduces the temperature drift. It has the characteristics of good long-term stability and high reliability. The most humanized external one-key zeroing function meets the safety operation requirements in dangerous places. The shortcut menu is convenient for operation and can complete all parameter settings, which comprehensively improves the performance of the transmitter.

Features

- Adopts with advanced monocrystalline silicon pressure sensor technology and packaging process.
- The modular design with microprocessor as the core and assisted with advanced digital isolation technology, makes it with extremely high anti-interference and stability.
- Powerful 24-bit ADC achieves high precision.
- Innovative dual compensation technology, 0.075 high precision

Function Parameters

Range Limit	Can be adjusted arbitrarily within the upper and lower limits of the range. It is recommended to select a range code with the lowest range ratio possible to optimize performance.
Zero Point Setting	Zero point and range can be adjusted to any value within the measuring 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 zero drift effect. If the installation position changes more than 90° from the diaphragm surface, a zero position effect within the range of <0.4kPa will occur. It can be corrected by adjusting the zero adjustment and there is no impact on the range.

Output	Two wires 4-20mA, complied with NAMIR NE43 specification, can coordinate with digital signal HART protocol
Output Signal Limit	Imin=3.9mA Imax=21.0mA
Fault Warning	If the sensor or circuit fails, the auto-diagnosis function automatically outputs 3.9 or 21.0 mA (user can pre-set)
Alarm Current	Low alarm mode(minimum): 3.9mA
High Report Mode (maximum)	21mA
Default Setting of Alarm Current	High alarm mode
Response Time	The damping constant of the amplifier component is 0.1s; the sensor time constant is 0.1~1.6s, depending on the range and range ratio. Additional adjustable time constant: 0~100s
Preheating Time	<15s

Performance Parameters

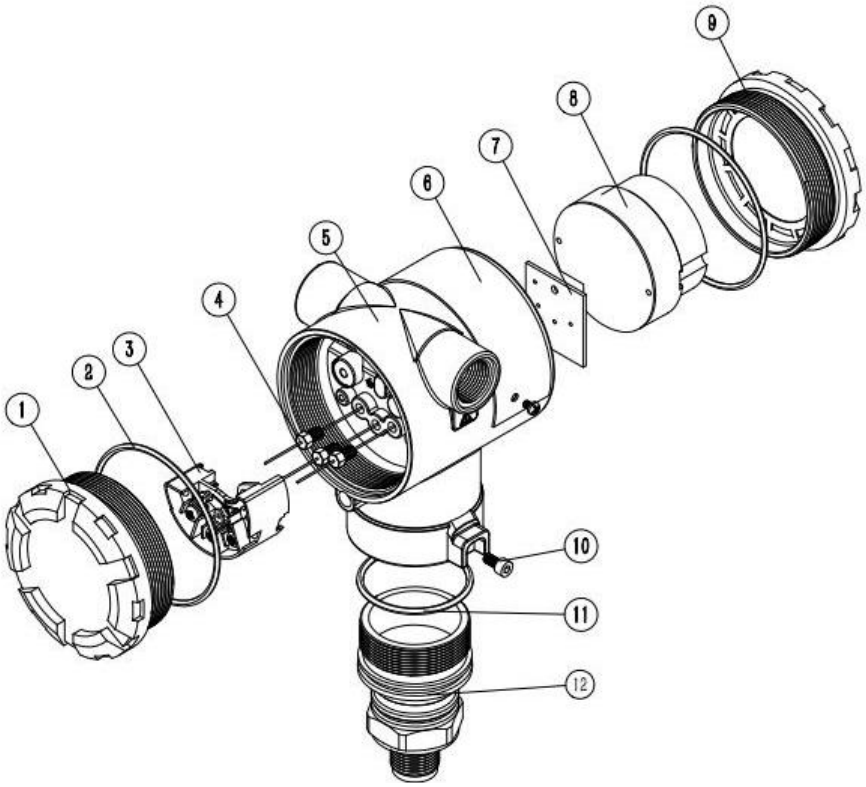
Measuring Medium	Gas, steam, liquid
Accuracy	±0.05%FS, ±0.075%FS, ±0.1%FS (Including linearity, hysteresis and repeatability from zero point)
Stability	±0.1%/3 years
Ambient Temperature Influence	≤±0.04%URL/10℃
Static Pressure Influence	±0.05%/10MPa
Power Supply	12-36VDC (24VDC is recommended)
Power Influence	±0.001% /10V (10~36V DC), which can be negligible
Ambient Temperature	-40℃ ~85℃
Media Temperature	-40℃ ~120℃
Storage Temperature	-40℃ ~105℃
Display	LCD, OLED
Working Temperature for Display	-20℃~70℃(LCD), -40℃~80℃(OLED)

Physical Parameters

Measuring Diaphragm Box	316L stainless steel
Diaphragm Material	316L, Hastelloy C
Flange of Process Connection	SUS304, 316L
Nuts & Bolts	Galvanized carbon steel, stainless steel
Filling Fluid	Silicone oil, fluorine oil, high-temperature silicone oil, etc.
Sealing Ring	Nitrile rubber, fluorine rubber, PTFE
Housing of Transmitter	Aluminum alloy, epoxy resin sprayed on the surface
Housing Sealing Ring	Nitrile rubber
Nameplate	SUS304
Weight	1.2kg for pressure transmitter ,2.8kg for differential transmitter (without: mounting bracket, process connection)
Protection Level	IP67
Explosion Proof	Exd Ⅱ CT6, Exia Ⅱ CT4, Exia Ⅱ CT6

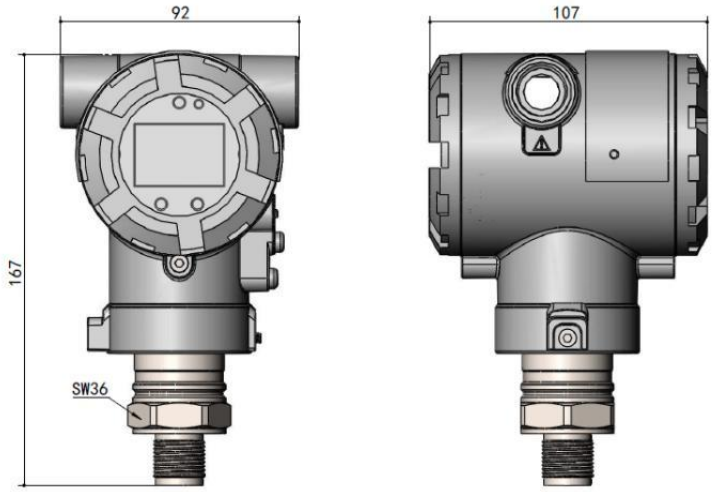
PWP3051P Pressure Transmitter

Assembly Exploded View(Typical Product)



01	Rear cover	02	End cover seal
03	Terminal block	04	Through-hole capacitor
05	Housing	06	Nameplate
07	Anti-interference circuit board	08	Circuit meter
09	Cover of display	10	Housing locking screw
11	Sealing ring for housing	12	Sensor

Dimensions



Measuring Range and Accuracy

Gauge Pressure Range		
Range Code	Measuring Range(KPa)	Accuracy/Stability
A	-6~6	±0.075%FS The maximum yearly error is ±0.1%FS of the range
B	-40~40	
C	-100~100	
D	-100~400	
E	-100~4000	
F	-100~40000	

Absolute Pressure Range		
Range Code	Measuring Range(KPa)	Accuracy/Stability
A	0~40	±0.075%FS The maximum yearly error is ±0.1%FS of the range
B	0~250	
C	0~2000	

Gauge Pressure Overload Limit							
Range	1KPa A	6KPa B	40KPa C	100KPa D	400KPa E	4000KPa F	40000KPa G
Load Limit	1MPa	2MPa	5MPa	7MPa	9MPa	10MPa	50MPa

Absolute Pressure Overload Limit			
Range	40KPa A	250KPa B	20000KPa C
Load Limit	1MPa	4MPa	10MPa

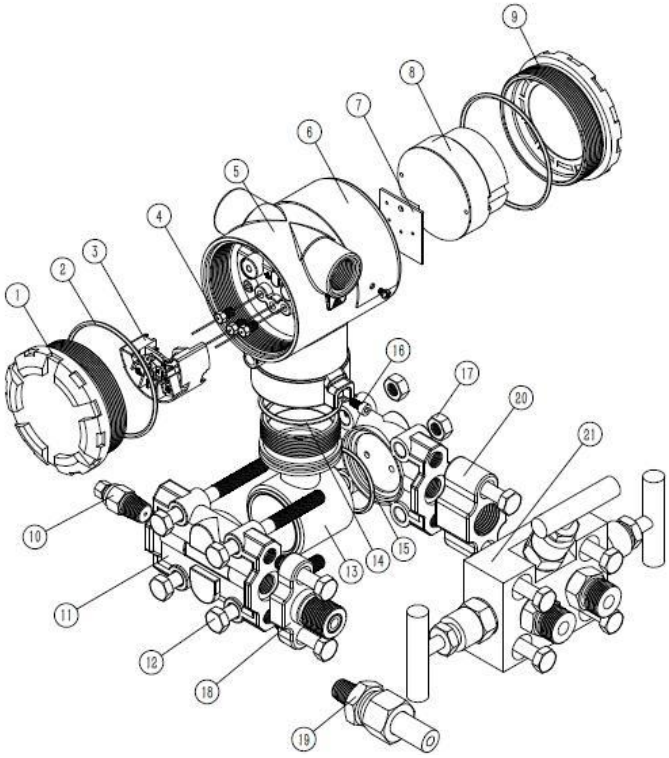
How to Order

Example Part Number: 3051PGPCS2A3D1F1M1C2E1B0d

Model	PWP3051P			3051P
Pressure Type	GP=Smart Gauge Pressure Transmitter AP=Smart Absolute Pressure Transmitter			GP
Pressure range	Code	Gauge Pressure Range (KPa)	Absolute Pressure Range (KPa)	C
	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	0~4000~40000		
Signal Output	S1=4-20mA S2=4-20mA+HART			S2
Accuracy	A1=±0.2% A2=±0.1% A3=±0.075% A4=±0.05%			A3
Display	D1=LCD (-20℃ ~ 70℃) D2=OLED(-40℃ ~ 80℃)			D1
Filling fluid	F1=Silicone oil F2=Fluorocarbon oil			F1
Materials	Code	Pressure thread	Diaphragm	M1
	M1	316L	316L	
	M2	316L	Hastelloy C alloy	
	M3	316L	Monel alloy	
	M4	316L	Tantalum	
	M5	316L	Titanium	
	M6	316L	Gold plated diaphragm	
Pressure Connection	C1=M20*1.5 male C2=G1/2” male C3=G1/4” male C4=1/2NPT male C5=1/2NPT female C0=Customized			C2
Electronic Connection	E1=M20*1.5 (Typical) E2=1/2NPT female			E1
Installation Accessories	B0=No mounting bracket B1=Tube-mounted bent bracket			B0
Explosion Proof	d=Explosion-proof Exd Ⅱ CT6 a=Intrinsically safe Exia Ⅱ CT6			d

PWP3051DP Differential Pressure Transmitter

Assembly Exploded View(Typical Product)



01	Rear cover	02	End cover seal
03	Terminal block	04	Through-hole capacitor
05	Housing	06	Nameplate
07	Anti-interference circuit board	08	Circuit meter
09	Cover of display	10	Exhaust and drain valve
11	Clamp	12	M8 screw
13	Sensor	14	Sealing of housing
15	Sealing of sensor	16	Housing locking scew
17	M8 nut	18	T-joint (optional)
19	Welded pipe joint (optional)	20	Waist flange (optional)
21	Integrated three-valve group (optional)		

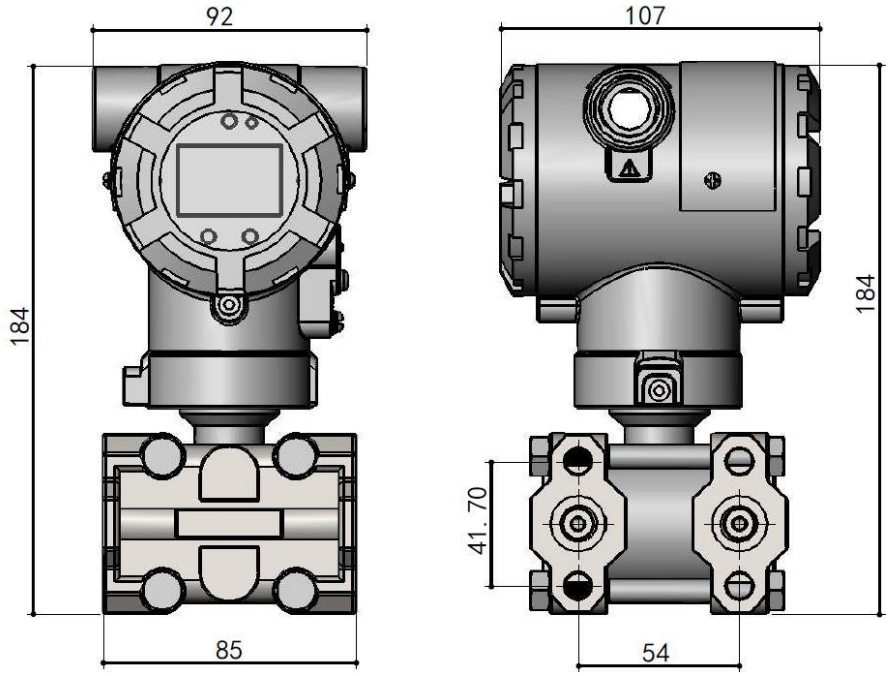
Measuring Range and Accuracy

Range Code	Measuring Range(KPa)	Accuracy/Stability
A	-1~1	±0.075%FS The maximum yearly error is ±0.1%FS of the range
B	-6~6	
C	-40~40	
D	-100~100	
E	-100~400	
F	-100~4000	

Overload and Static Pressure

Code	Range	Unilateral overload (negative end)	Unilateral overload (positive end)	Bilateral static pressure
A	1KPa	16MPa	16MPa	40MPa
B	6KPa	16MPa	16MPa	40MPa
C	40KPa	25MPa	25MPa	40MPa
D	400KPa	25MPa	25MPa	40MPa
E	4MPa	25MPa	25MPa	40MPa

Dimensions



How to Order

Example Part Number: 3051DPDS2A3D1F1M3C2E1B1d

Model	PWP3051DP				3051DP
Pressure Range	A	0~0.2~1 KPa			D
	B	0~1~6 KPa			
	C	0~6~40 KPa			
	D	0~40~100 KPa			
	E	0~100~400 KPa			
	F	0~400~4000 KPa			
Signal Output	S1=4-20mA S2=4-20mA+HART				S2
Accuracy	A1=±0.2% A2=±0.1% A3=±0.075% A4=±0.05%				A3
Display	D1=LCD (-20℃ ~ 70℃) D2=OLED(-40℃ ~ 80℃)				D1
Filling fluid	F1=Silicone oil F2=Fluorocarbon oil				F1
Materials	Code	Flange	Exhaust/drain valve	Diaphragm	M3
	M1	SUS304	SUS304	316L	
	M2	316L	316L	316L	
	M3	316L	316L	Hastelloy C alloy	
	M4	316L	316L	Monel alloy	
	M5	316L	316L	Tantalum	
	M6	Hastelloy C alloy	Hastelloy C alloy	Hastelloy C alloy	
	M7	Hastelloy C alloy	Hastelloy C alloy	Tantalum	
	M8	Monel alloy	Monel alloy	Monel alloy	
	M9	SUS304	SUS304	Gold plated diaphragm	
Pressure Connection	C1=NPT1/4 pressure connector and welded pressure pipe Φ14 at rear C2=NPT1/2 tapered tube female thread waist flange C3=T-shaped male thread connector M20*1.5 C4=Integrated 3-valve manifold				C2
Electronic Connection	E1=M20*1.5 (Typical) E2=1/2NPT female				E1
Installation Accessories	B0=No mounting bracket B1=Tube-mounted bent bracket B2=Tube-mounted flat bracket B3=Panel mount bend bracket				B1
Explosion Proof	d=Explosion-proof Exd Ⅱ CT6 a=Intrinsically safe Exia Ⅱ CT6 0=None				d

Intelligent Monocrystalline Flange Mounted Pressure Transmitter

Flat Diaphragm Flange
Pressure Transmitter
PWP3051P-FDF

Cylinder Flange
Pressure Transmitter
PWP3051P-CF

Measuring Range and Accuracy

Range Code	Minimum Measuring Range(KPa)	Maximum Measuring Range(KPa)	Rated Pressure (Maximum)
A	-6~6	0~1~6	Rated pressure of flange
B	-40~40	0~6~40	
C	-100~100	0~40~100	
D	-100~400	0~100~400	
E	-100~4000	0~40~4000	
F	-100~32000	0~4000~3200	

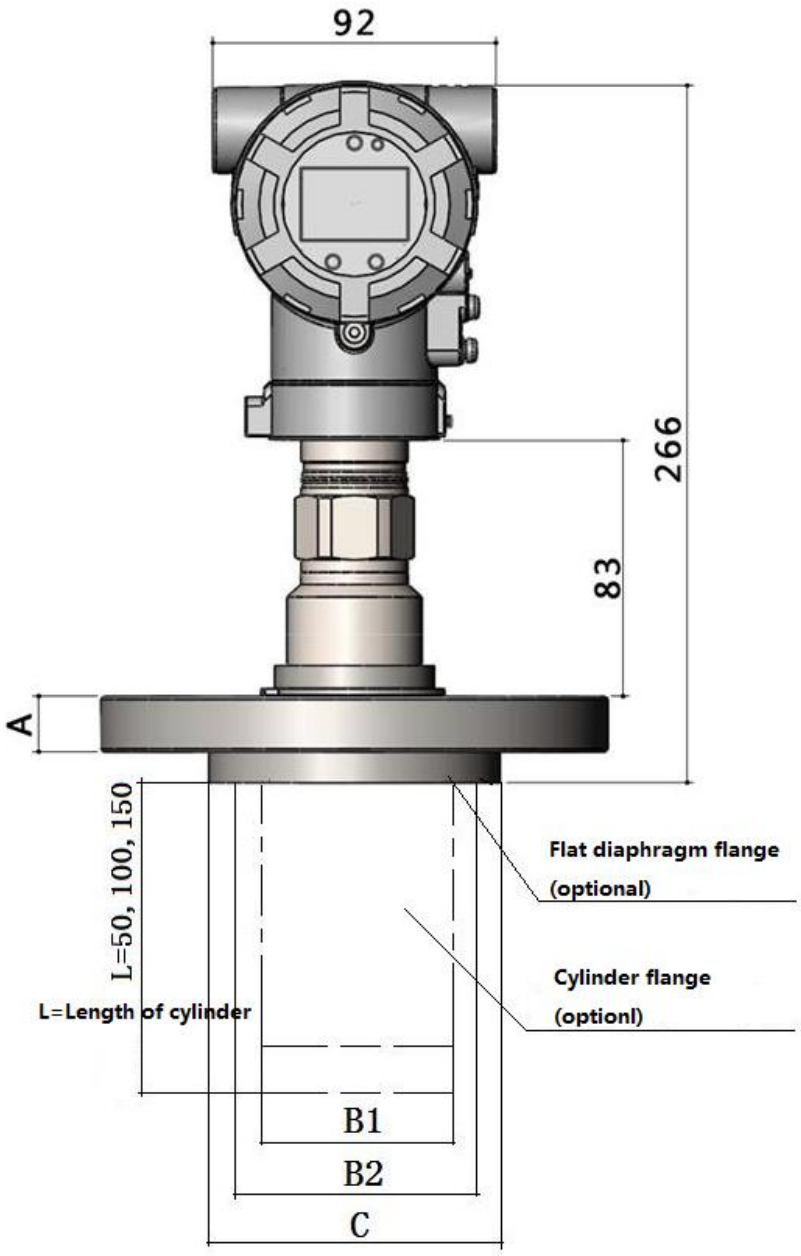
Relation Between Liquid Level Flange and Minimum Range

Flange Type	Nominal Diameter	Minimum Measuring Range
Flat Diaphragm Flange	DN50/2”	1KPa
	DN80/3”	1KPa
	DN100/4”	1KPa
Cylinder Flange	DN50/2”	1KPa
	DN80/3”	1KPa
	DN100/4”	1KPa

Rated Pressure of Flange

PN: PN2.5 ~ PN160
Class: Class150 ~ Class2500
*Exceeding the rated pressure of the flange may result in adjustable zero drift.

Dimensions



How to Order

Example Part Number: 3051P-FDFDS2A3D1F2D1C0S1L0C0F1E1B1d

Model	PWP3051P-FDF: Smart Flat Diaphragm Flange Pressure Transmitter PWP3051P-CF: Smart Cylinder Flange Pressure Transmitter			3051P-FDF
Pressure Range	A	0~1~6 KPa		D
	B	0~6~40 KPa		
	C	0~40~100 KPa		
	D	0~100~400 KPa		
	E	0~400~4000 KPa		
	F	0~4000~32000 KPa		
Signal Output	S1=4-20mA S2=4-20mA+HART			S2
Accuracy	A1=±0.5% A2=±0.2% A3=±0.1% A4=±0.075%			A3
Display	D1=LCD (-20℃ ~ 70℃) D2=OLED(-40℃ ~ 80℃)			D1
Filling Fluid	F1=Silicone oil F2=Fluorocarbon oil			F1
Materials	Flange	Diaphragm	Coating on Diaphragm	F2D1C0
	F1=SUS304	D1=316L	C0=None	
	F2=316L	D2=Hastelloy C alloy	C1=Coated with PTFE	
		D3=Monel alloy		
		D4=Tantalum		
		D5=Titanium		
		D6=Others		
Flange and Cylinder	Flange Size	Length of Cylinder	Material of Cylinder	S1L0C0
	S1=DN50	L0=0(Flat flange)	C0=None	
	S2=DN80	L50=50mm	C1=SUS304	
	S3=DN100	L100=100mm	C2=316L	
	S4=2”	L150=150mm		
	S5=3”	LX=Other length		
	S6=4”			
	S7=Others			
Length of Capillary	F0=No capillary F1=1m F2=2m F3=3m FX=Others			F1
Electronic Connection	E1=M20*1.5 (Typical) E2=1/2NPT female			E1
Installation Accessories	B0=No mounting bracket B1=With mounting bracket			B1
Explosion Proof	d=Explosion-proof Exd Ⅱ CT6 a=Intrinsically safe Exia Ⅱ CT6 0=None			d

Intelligent Monocrystalline Dual-Remote Flange Mounted Liquid Level Transmitter PWP3051-DR

Flat Diaphragm Flange Type

Cylinder Flange Type

Measuring Range and Accuracy

Range Code	Minimum Measuring Range	Maximum Measuring Range	Rated Pressure (Maximum)
B	1KPa	6KPa	Rated pressure of flange
C	6KPa	40KPa	
D	40KPa	400KPa	
E	400KPa	4MPa	

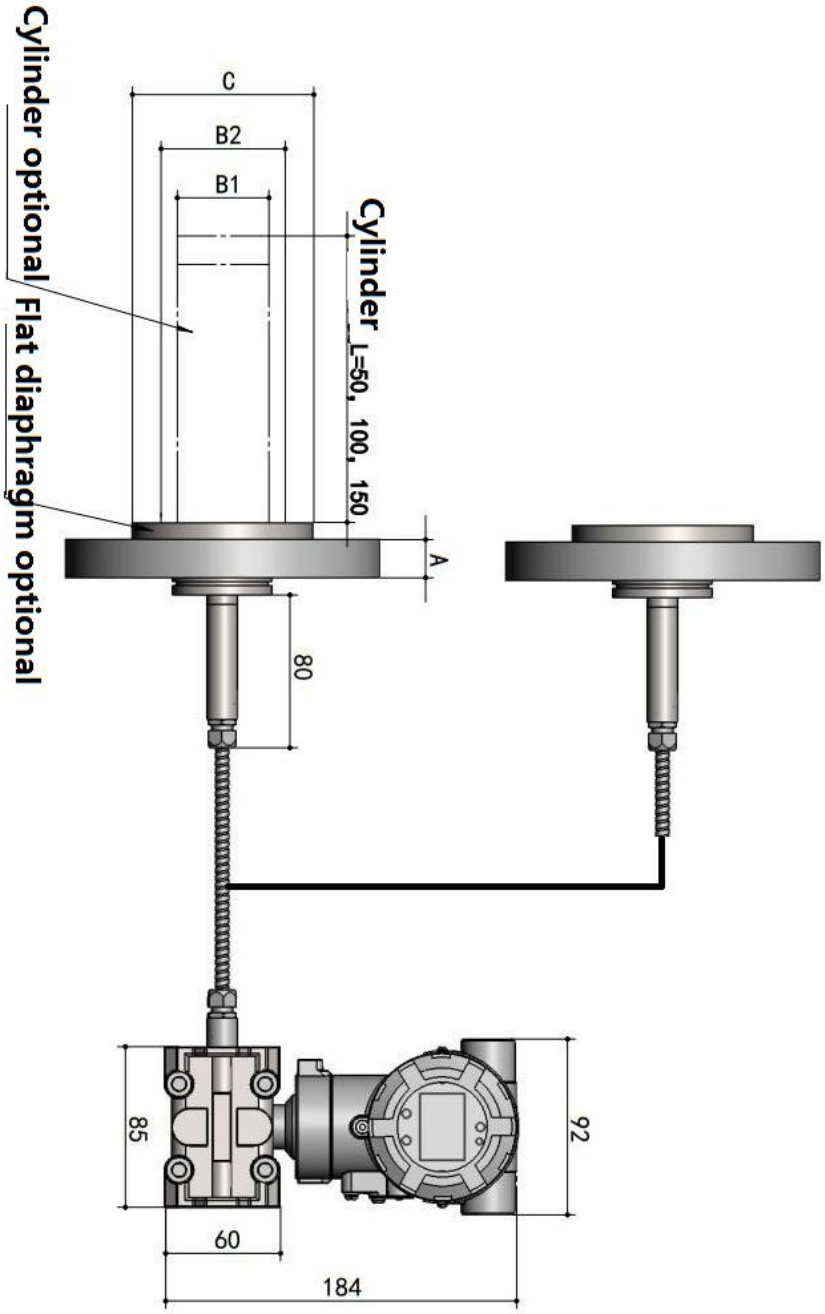
Relation Between Liquid Level Flange and Minimum Range

Flange Type	Nominal Diameter	Minimum Measuring Range	
		Unilateral remote transmission	Bilateral remote transmission
Flat Diaphragm	DN50/2”	10KPa	10KPa
	DN80/3”	6KPa	1KPa
	DN100/4”	6KPa	1KPa
Cylinder	DN50/2”	10KPa	10KPa
	DN80/3”	6KPa	1KPa
	DN100/4”	6KPa	1KPa

Rated Pressure of Flange

PN: PN2.5 ~ PN160
Class: Class150 ~ Class2500
*Exceeding the rated pressure of the flange may result in adjustable zero drift.

Dimensions



How to Order

Example Part Number: 3051-DRDPCS2A3D1F1F2D1C0S1L0C0Y0H0L2E1B1d

Model	PWP3051-DR: Smart Dual-remote Flat Diaphragm/ Cylinder Flange Liquid Level Transmitter			3051-DR
Type	P: Pressure Transmitter DP: Differential Pressure Transmitter			DP
Pressure Range	A	1~6 KPa		C
	B	6~40 KPa		
	C	40~250 KPa		
	D	250~4000 KPa		
Signal Output	S1=4-20mA S2=4-20mA+HART			S2
Accuracy	A1=±0.5% A2=±0.2% A3=±0.1% A4=±0.075%			A3
Display	D1=LCD (-20℃ ~ 70℃) D2=OLED(-40℃ ~ 80℃)			D1
Filling Fluid	F1=Silicone oil F2=Fluorocarbon oil			F1
Materials	Flange	Diaphragm	Coating on Diaphragm	F2D1C0
	F1=SUS304	D1=316L	C0=None	
	F2=316L	D2=Hastelloy C alloy	C1=Coated with PTFE	
		D3=Monel alloy		
		D4=Tantalum		
		D5=Titanium		
		D6=Others		
Flange and Cylinder	Flange Size	Length of Cylinder	Material of Cylinder	S1L0C0
	S1=DN50	L0=0(Flat flange)	C0=None	
	S2=DN80	L50=50mm	C1=SUS304	
	S3=DN100	L100=100mm	C2=316L	
	S4=2”	L150=150mm		
	S5=3”	LX=Other length		
	S6=4”			
	S7=Others			
Remote Transmission Device	Y0=Dual flat diaphragm flange type Y1=Dual cylinder flange type Y2=Cylinder at high-pressure end, flat diaphragm flange at low-pressure end Y3=Flat diaphragm flange at high-pressure end, cylinder at low-pressure end			Y0
Length of Capillary	High-pressure end	Low pressure end		H0L2
	H0= None	L0=None		
	H1=1m	L1=1m		
	H2=2m	L2=2m		
	H3=3m	L3=3m		

	HX=Others	LX=Others	
Electronic Connection	E1=M20*1.5 (Typical) E2=1/2NPT female		E1
Installation Accessories	B0=No mounting bracket B1=Tube-mounted bent bracket B2=Tube-mounted flat bracket B3=Panel mount bend bracket		B1
Explosion Proof	d=Explosion-proof Exd Ⅱ CT6 a=Intrinsically safe Exia Ⅱ CT6 0=None		d

***Tell us medium / which application / measuring range / working temperature / signal output / what you wanna to realize, our sales engineer will recommend suitable model for you.*