

# SenTec 3051 Smart Sensors

## SenTec

Sensing Technology Since 1998



3051 Industrial capacitive pressure transmitter are designed for pressure measurement, level measurement, density measurement. They are ideal for replacement of rosemount type series products.



Pressure



Level



Density



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# PMD3051 SMART Pressure Transmitter

## Main Features

- Pressure (gauge) / absolute pressure transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

## Principle Structure

Its working principle is that when silicon single crystal material is subjected to very small strain caused by external force, the electronic energy level state of its internal atomic structure will change, which will lead to a sharp change in its resistance, which is called piezoresistive effect. Based on the principle of piezoresistive effect and the integrated technology, the strain resistance is made along the specific crystal direction on the single crystal silicon wafer, and the Wheatstone bridge is formed, and a diffused silicon sensor which integrates force sensitivity and force-electric conversion detection is fabricated.

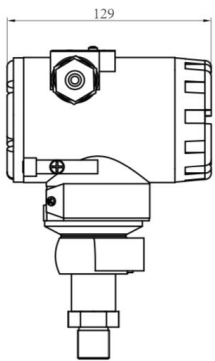
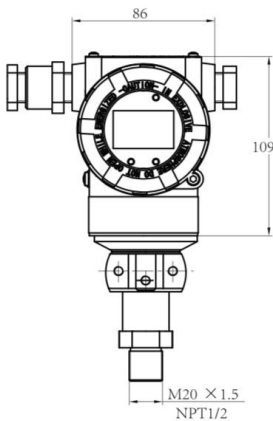
## Specification

Medium	liquid, gas, or steam
Measurement range	0~350Kpa, 0~60Mpa, customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 104 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Thread Connection	Customized

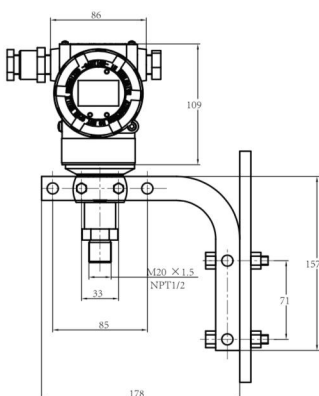


### Dimension

Unit: mm



### Installation example



# PMD3051W Screw Level Pressure Sensor

## Main Features

- Direct screw mounted level (pressure) transmitter, high pressure level
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

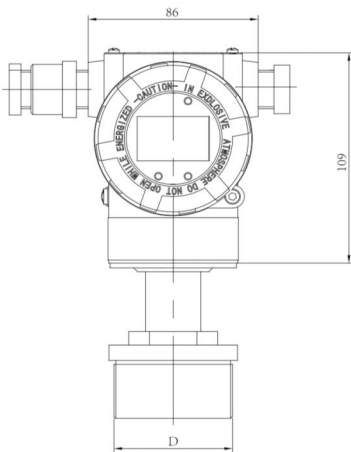
## Principle Structure

PMD3051W direct-mounted liquid level (pressure) transmitter is suitable for measuring conditions with high pressure. It is a pressure signal measured by atmospheric pressure as the reference end, and has a port as a thread to connect with the process pipeline. On the basis of the ordinary pressure transmitter, an isolation diaphragm box is added to measure the liquid contact point. Mainly used to measure high temperature, easy to solidify or crystallize, containing solid suspended matter, too viscous, corrosive or other media that need to maintain sanitary conditions and cannot be polluted.



### Dimension

Unit: mm



For more details, please refer to the parameter table

## Specification

Medium	liquid, gas, or steam
Measurement range	0~3500Kpa (0~350mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Thread connection	G1" , G2" or customized
Wetted material	316L, HC

# PMD3051C Hygienic Clamp Transmitter

## Main Features

- Hygienic level/pressure transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability



## Principle Structure

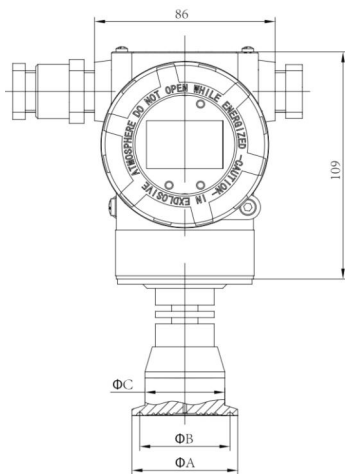
PMD3051C direct-mounted liquid level (pressure) transmitter is a pressure measuring instrument suitable for the sanitary industry. It is suitable for measuring the pressure conditions of tanks or pipelines that require high sanitary conditions.

It is a pressure signal measured by atmospheric pressure as the reference end, and the height of the liquid can also be reflected by the pressure signal.

### Dimension

Unit: mm

## Specification



For more details, please refer to the parameter table

Medium	liquid, gas, or steam
Measurement range	0~3500Kpa (0~350mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Clamp connection	1 1/2" , 2" or customized

# PMD3051S Hygienic Nut Transmitter

## Main Features

- Direct Mount Nut Level (Pressure Transmitter)
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability



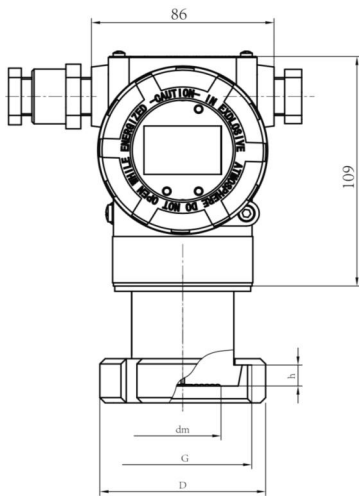
## Principle Structure

PMD3051S direct-mounted liquid level (pressure) transmitter is a pressure measuring instrument suitable for the sanitary industry. It is suitable for measuring the pressure conditions of tanks or pipelines that require high sanitary conditions. It uses atmospheric pressure as the reference end to measure the pressure signal, through the pressure signal can also reflect the height of the liquid, there is a port for flange (or other connection) and process piping connection.

### Dimension

Unit: mm

## Specification



For more details, please refer to the parameter table

Medium	liquid, gas, or steam
Measurement range	0~3500Kpa (0~350mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Connection	DN25, DN40, DN50, DN80, DN100 (DIN, SMS, ISO)

# PMD3051T Flange Pressure Level Sensor

## Main Features

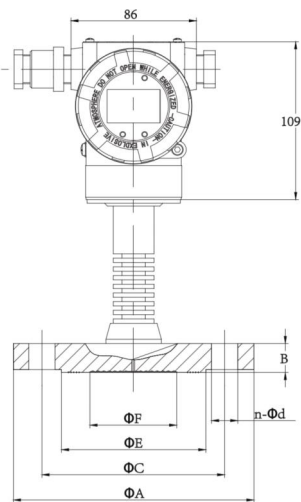
- Liquid level pressure transmitter with high pressure range
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

## Principle Structure

PMD3051T direct-mounted liquid level (pressure) transmitter is suitable for measuring conditions with high pressure. It is a pressure signal measured by atmospheric pressure as the reference end, and has a port as a flange to connect with the process pipeline. On the basis of the ordinary pressure transmitter, an isolation diaphragm box is added to measure the liquid contact point. Mainly used to measure high temperature, easy to solidify or crystallize, containing solid suspended matter, too viscous, corrosive or other media that need to maintain sanitary conditions and cannot be polluted.

### Dimension

Unit: mm



For more details, please refer to the parameter table

## Specification

Medium	liquid, gas, or steam
Measurement range	0~3500Kpa (0~350mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	ExdIIBT5Gb; Intrinsic safety ExiaIICT4/T5/T6Ga;
Flange	DN25, DN40, DN50, DN80, DN100 (ANSI, DIN)
Process pressure	PN16/25, PN40, PN64, PN100

# PMD3051FT Flange Screw Transmitter

## Main Features

- Flange screw mounted level/pressure transmitter, high pressure level
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

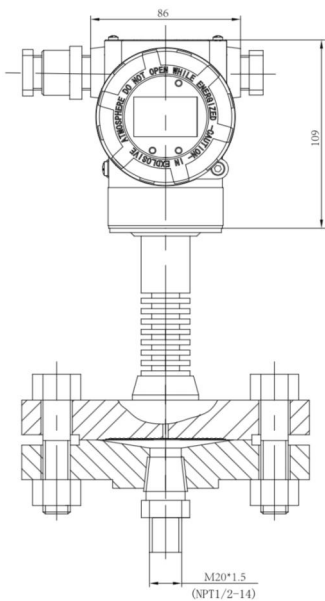
## Principle Structure

PMD3051FT flange screw liquid level (pressure) transmitter is suitable for measuring conditions with high pressure. It is a pressure signal measured by atmospheric pressure as the reference end, and has a port as a flange to connect with the process pipeline. On the basis of the ordinary pressure transmitter, an isolation diaphragm box is added to measure the liquid contact point. Mainly used to measure high temperature, easy to solidify or crystallize, containing solid suspended matter, too viscous, corrosive or other media that need to maintain sanitary conditions and cannot be polluted.



### Dimension

Unit: mm



For more details, please refer to the parameter table

## Specification

Medium	liquid, gas, or steam
Measurement range	0~3500Kpa (0~350mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Thread connection	1/2NPT-14 (inner thread), M20*1.5 (outer thread) or customized

# PMD3051 GP/GA Pressure Transmitter



## Main Features

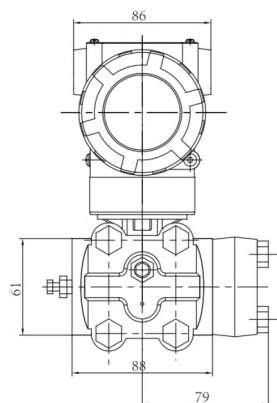
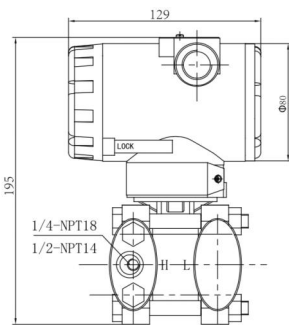
- Pressure (gauge) / absolute pressure transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

## Principle Structure

The working principle of metal capacitive pressure (gauge) / absolute pressure transmitter is that when the pressure acts indirectly on the surface of metal measuring diaphragm (elastic measuring element) of different thickness by isolating diaphragm and conducting pressure, the diaphragm produces small deformation, the maximum shape variable is not more than 0.1 mm, and the high precision measuring circuit converts this small deformation into a voltage signal linearly related to the differential voltage signal. After linearization and temperature compensation, the voltage signal is converted into an industrial standard 4-20mA current signal or  $1 \leq 5V$  voltage signal by using a special chip.

### Dimension

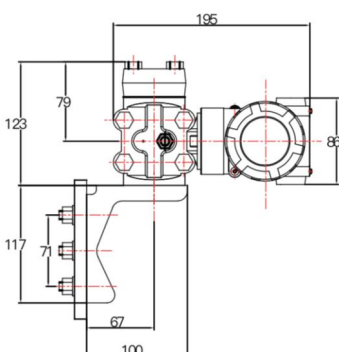
Unit: mm



## Specification

Medium	liquid, gas, or steam
Measurement range	0~7000Kpa (0~70kgf/cm <sup>2</sup> ), 0~41Mpa (0~4100kgf/cm <sup>2</sup> )
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 104 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;

### Installation example





# PMD3051DP/HP Static DP Transmitter



## Main Features

- Differential pressure/static pressure differential pressure transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

## Principle Structure

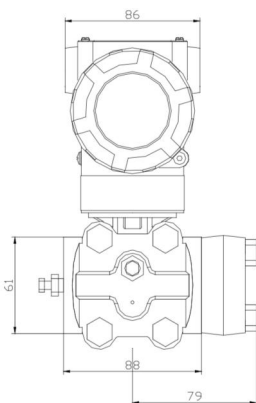
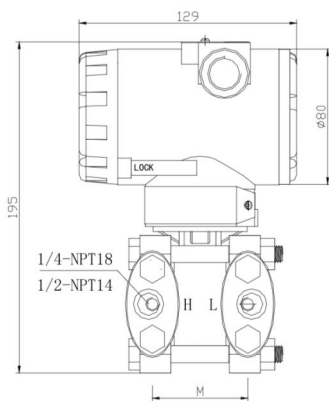
The working principle of metal capacitance differential pressure / high static pressure differential pressure transmitter is that when the pressure acts indirectly on the surface of metal measuring diaphragm (elastic measuring element) of different thickness through isolating diaphragm and conductive medium, the diaphragm produces small deformation, the maximum shape variable does not exceed 0.1mm, and the high precision measuring circuit converts this small deformation into a voltage signal which is linearly related to the differential pressure signal, which is linearized. Temperature compensation, and then use a special chip to convert the voltage signal into an industrial standard 4-20mA current signal or 1-5V voltage signal.

## Specification

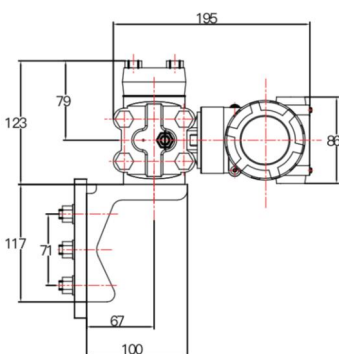
Medium	liquid, gas, or steam
Measurement range	0~7000Kpa (0~70kgf/cm <sup>2</sup> ), 0~41Mpa (0~4100kgf/cm <sup>2</sup> )
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 85 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;

### Dimension

Unit: mm



### Installation example



# PMD3051CH Hygienic clamp sensor

## Main Features

- Clamp-type liquid level (pressure/differential pressure) transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

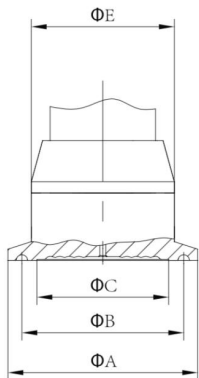
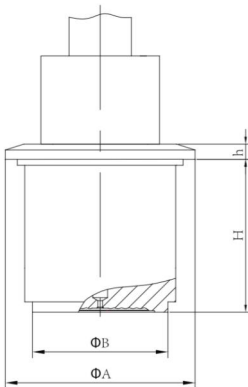


## Principle Structure

The clamp-type liquid level (pressure/differential pressure) transmitter is a pressure measuring instrument suitable for the sanitary industry. It is suitable for measuring the pressure conditions of tanks or pipelines that require high sanitary conditions. It takes the atmospheric pressure (or pressure in the tank) as the pressure (differential pressure) signal measured at the reference end. The pressure signal can also reflect the height of the liquid. One port is a clamp, and the other end can also be a clamp or other connection. way) and process piping connection.

### Dimension

Unit: mm



For more details, please refer to the parameter table

## Specification

Medium	liquid, gas, or steam
Measurement range	0~7000Kpa (0~70kgf/cm <sup>2</sup> ), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdIIBT5Gb; Intrinsic safety ExiallCT4/T5/T6Ga;
Connection	1 1/2" , 2" or customized

# PMD3051F Flange Level Pressure Sensor

## Main Features

- Liquid level (pressure / differential pressure) transmitter
- High sensitivity of the metal capacitance pressure sensor
- Linear and temperature compensation circuit
- high overload resistance and excellent 0.075% accuracy ability

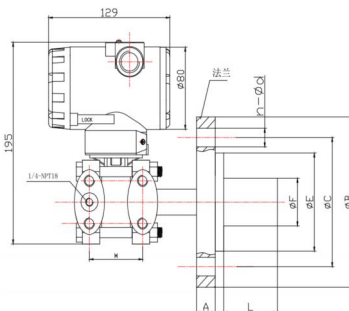
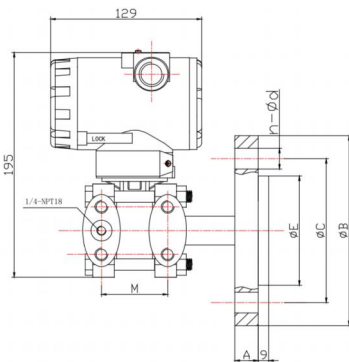
## Principle Structure

PMD3051F liquid level (pressure / differential pressure) transmitter is a pressure signal measured with atmospheric pressure (low pressure side) as the reference end, with one or two ends] as flange (or other connection mode) and process pipe connection. On the basis of ordinary pressure / differential pressure transmitter, one or two isolation film boxes are added to measure the liquid receiving part. It is mainly used to measure high temperature, easy curing or crystallization, containing solid suspended matter, too viscous, corrosive or other need to maintain hygienic conditions



### Dimension

Unit: mm

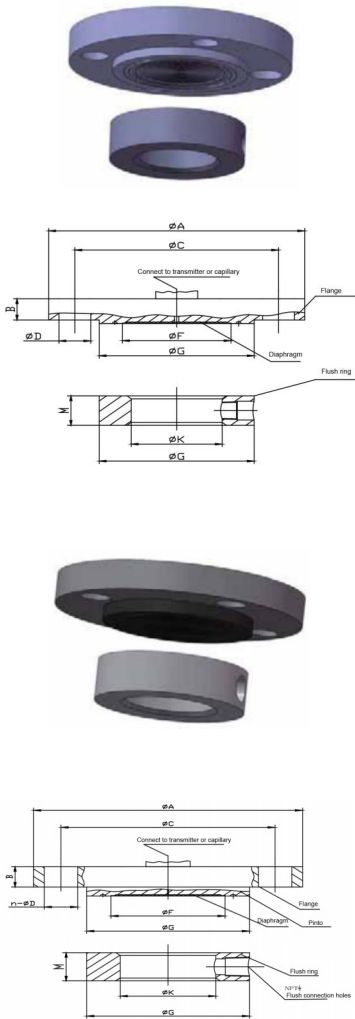


For more details, please refer to the parameter table

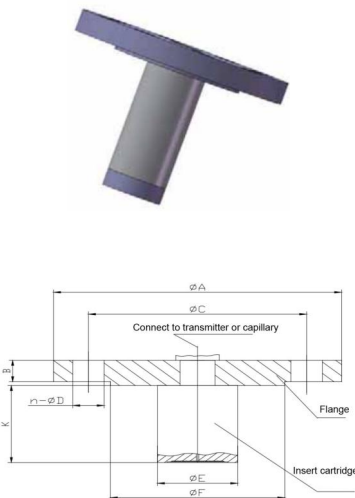
## Specification

Medium	liquid, gas, or steam
Measurement range	0~2100Kpa (0~210mH <sub>2</sub> O), customized as request
Output signal	4 ~ 20mA dc, superimposed HART, RS485
Power supply	24V dc. , power range 12V ~ 45V
Accuracy	+ 0.1%, + 0.075%
Stability	+ 0.2% ≤ 12 months of the maximum range
Temperature range	electronic:-40 ~ 85 ° C,sensitive element:-40 ~ 204 ° C, storage temperature: -40 ~ 85 ° C.
Temperature effect	+ 0.2% ≤ 20 ° C with zero and range temperature error of maximum range
Power effect	less than 0.005% / V of the output range.
Vibration effect	on any axis, the frequency is 200Hz and the error is + 0.05% / g of the maximum range.
Load effect	as long as the voltage of the input transmitter is higher than 12V, there is no load effect in the load working area.
Explosion-proof type	flameproof ExdII BT5Gb; Intrinsic safety Exiall CT4/T5/T6Ga;
Flange	DN25, DN40, DN50, DN80, DN100 (ANSI, DIN)
Process pressure	PN16/25, PN40, PN64, PN100











## Flange connection types



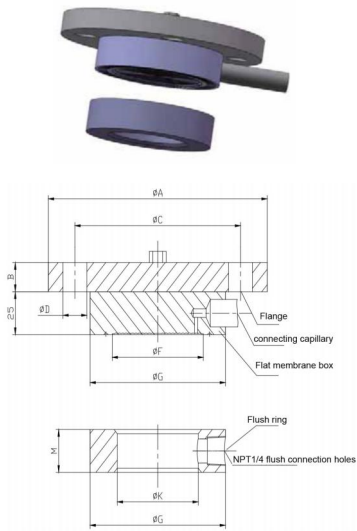
## Insert cartridge device



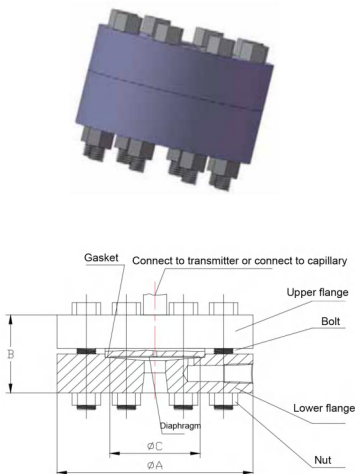
# More Signal Flange transmitter Models

	PMD3051 Flange Remote Pressure Transmitter Pressure transmitter plus an American standard 2:150LB flange type remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection
	PMD3051 Flat Remote Pressure Transmitter Pressure transmitter plus an American standard 2:150 B flat remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection
	PMD3051 Insertion Cartridge Remote Pressure Transmitter Pressure transmitter plus an American standard 2:150LB plug-in remote transmission device, the length of the capillary is 3 meters, and the length of the insertion tube is 100mm. For the specific flange size, please refer to the selection specification table
	PMD3051 Threaded Remote Pressure Transmitter Add a threaded remote transmission device to the pressure transmitter, the capillary length is 3 meters, and the user connection thread specification is 1/2NPT-14. Please refer to the selection specification table for specific dimensions and selection.
	PMD3051 Three-clamp remote pressure transmitter The pressure transmitter is equipped with a three-clamp type remote transmission device. The length of the capillary is 3 meters. When the user connects the clamp specification of 1 1/2, please refer to the selection specification table for specific dimensions and selection.
	PMD3051DP Flange Remote Pressure Transmitter DP Pressure transmitter plus an American standard 2:150LB flange type remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection
	PMD3051DP Flat Remote Pressure Transmitter DP Pressure transmitter plus an American standard 2:150 B flat remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection
	PMD3051DP Insertion Remote Pressure Transmitter DPPressure transmitter plus an American standard 2:150LB plug-in remote transmission device, the length of the capillary is 3 meters, and the length of the insertion tube is 100mm. For the specific flange size, please refer to the selection specification table
	PMD3051DP Threaded Remote Pressure Transmitter Add a threaded remote transmission device to the DP pressure transmitter, the capillary length is 3 meters, and the user connection thread specification is 1/2NPT-14. Please refer to the selection specification table for specific dimensions and selection.
	PMD3051DP Three-clamp remote pressure transmitter DP pressure transmitter is equipped with a three-clamp type remote transmission device. The length of the capillary is 3 meters. When the user connects the clamp specification of 1 1/2, please refer to the selection specification table for specific dimensions and selection.

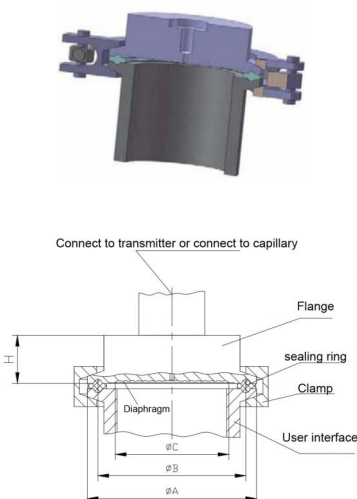
## Flat connection device



## Thread connection



## Three-clamp device



# More Double Flange transmitter Models



PMD3051DF Double Flange Remote Pressure Transmitter  
Pressure transmitter plus an American standard 2:150LB flange type remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection



PMD3051DF Double Flat Remote Pressure Transmitter  
Pressure transmitter plus an American standard 2:150 B flat remote transmission device, capillary length is 3 meters, please refer to the specific flange size and selection



PMD3051DF Double Insertion Cartridge Remote Pressure Transmitter  
Pressure transmitter plus an American standard 2:150LB plug-in remote transmission device, the length of the capillary is 3 meters, and the length of the insertion tube is 100mm. For the specific flange size, please refer to the selection specification table



PMD3051DF Flange Type One Convex One Flat Remote Differential Pressure Transmitter  
On the base table representing the differential pressure transmitter, an American standard 2:150LB plug-in remote transmission device is added on the high pressure side, the length of the capillary tube is 3 meters and the length of the inserted cylinder is 100mm, and the low pressure side is an American standard 2:150LB flange type remote device Transmission device, capillary length is 3 meters, please refer to the specification table for specific dimensions and selection.



PMD3051DF Flat type one convex one flat remote differential pressure transmitter  
On the basis of the base meter of the differential pressure transmitter, an American standard 2:150LB plug-in remote transmission device is added on the high pressure side, the length of the capillary tube is 3 meters and the length of the inserted cylinder is 100mm, and the low pressure side is an American standard 2:150 B flat remote transmission device. Device, capillary length is 3 meters, please refer to the specification table for specific dimensions and selection.



PMD3051DF Three-clamp remote differential pressure transmitter  
On the basis of the pressure transmitter base table, add two three-clamp remote transmission devices, the length of the capillary is 3 meters, and the user connection clamp specification is 13/hour. For the specific size and selection, please refer to the specification table