SM3151GP/AP

Pressure/Absolute Pressure Transmitter

Description

Pressure (gauge pressure transmitter)/absolute pressure transmitter is a pressure signal measured at the reference side of atmospheric pressure/vacuum with only one port connected to the process pipe and the other end connected to the atmosphere.

The working principle of the metal capacitive pressure (gauge pressure)/absolute pressure transmitter is that when the pressure passes through the isolated diaphragm and the pressure conducting medium, it will indirectly act on the surface of the metal measuring diaphragm (elastic measuring element) of different thickness, so that the diaphragm will be slightly deformed and the maximum shape variable will not exceed 0.1mm.A high-precision circuit that measures the deformation of the diaphragm converts this tiny deformation into a voltage signal proportional to the pressure. After linearization and temperature compensation processing, the voltage signal is converted into the industry-standard 4-20ma current signal or 1-5v voltage signal using a dedicated chip.

The high sensitivity of metal capacitive pressure sensor and the high precision integrated circuit used in the measurement diaphragm detection circuit contain linear circuit and temperature compensation circuit, so the whole transmitter can achieve high precision and high stability.

The metal capacitive pressure sensor has extremely high overload resistance and excellent performance in micro-pressure measurement. It is also a must choice product in various complex industrial environments.

Technical Performance

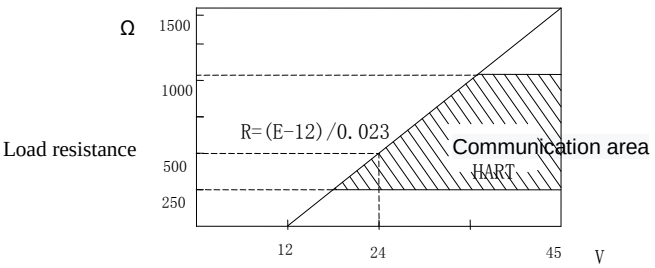
Use object: liquid, gas or steam

Measuring range: see the selection specification table

Output signal: 4-20mA dc. Output, superimposed HART protocol digital signal (two-wire system)

Power source: external power supply 24V dc. Power supply range 12V ~ 45V

Load characteristics:



Installation in dangerous places:

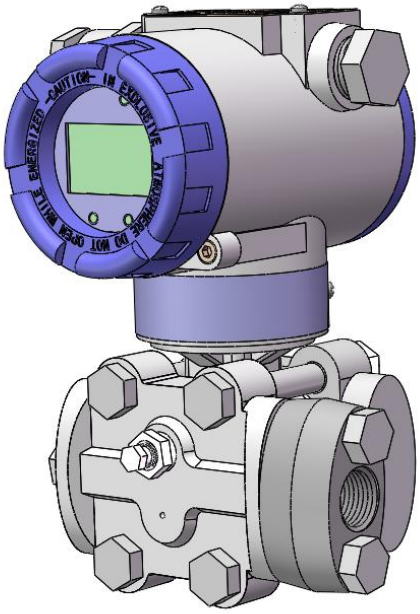
Flameproof ExdIIBT5Gb;(explosion-proof certificate no. :CE16.1163)

Intrinsically safe ExiaIICT4/T5/T6Ga;

（explosion-proof certificate n o. : CE15.2354X） ;

Migration features:

At the minimum range (the range compression ratio is 40:1), the maximum positive transfer zero point is 39/40 times the upper limit of the range, the maximum negative transfer zero point can be the lower limit of the range, the absolute pressure transmitter has no negative transfer.(regardless of the output form, the upper and lower limits of the range shall not exceed the limit of the range after positive and negative migration)



Temperature range:
Electronic circuit board work in: - 40 ~ 85 ℃;
Sensitive components work in: - 40 ~ 104 ℃;
Storage temperature: - 40 ~ 85 ℃;
With digital display: - 25 ~ 75 ℃ (run);
- 40 ~ 85 ℃ (no damage);
Relative humidity: 0 ~ 95% (no dew and frost)
Overpressure limit: add 0(absolute pressure) ~ 13MPa (or the upper limit of 1.5 times the range) pressure transmitter is not damaged; The normal working pressure is from 0kPa(absolute pressure) to the upper limit of the range.
Volume change: less than 0.16cm3
Damping：The time constant is adjustable from 0.2 to 32.0s.
Startup time: 3s, no preheating required.

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Accuracy: ± 0.1%, ±0.075%
Stability: ± 0.1% of the maximum range for 12 months
Temperature: including zero and range for maximum temperature error of ± 0.2% / 20 ℃
Power supply impact: less than 0.005% / V of the output range.
Vibration effect: in any axial direction, the frequency is 200Hz, and the error is ±0.05% / g of the maximum range.
Load effect: as long as the input transmitter voltage is higher than 12V, there is no load effect in the load working area.
Influence of installation location: zero error of no more than 0.25kPa can be generated at the maximum, which can be eliminated by correction without any impact on the range; The measuring body has no influence on relative flange rotation.
(non-removable, 316 stainless steel isolation diaphragm and other standard test conditions.)

Application and type selection：

Common pressure transmitter is the most commonly used test instrument in industrial process control. It is widely used in various automatic control systems, such as aerospace, military, petrochemical, chemical, oil Wells, electric power, ships, building materials, pipelines and many other industries.Generally used in liquid, gas or steam pressure or absolute pressure measurement, medium temperature is not too high, corrosion is not strong, viscosity is not high, not easy to crystallize and other environments.

Attention to type selection:

Before selecting the type, the user shall make clear the temperature, corrosion, measuring range, explosion proof and oil forbidden treatment of the medium under test. For the medium that is easy to crystallize or

thicken, the diaphragm flange connection shall be tested.

SM3151GP/AP Pressure/absolute pressure transmitter selection specification table

Model	Transmitter type			
SM3151GP SM3151AP	Pressure transmitter Absolute pressure transmitter			
Code	Scale range			
2	0-0.10～3.5kPa(0-10～350mmH_2O)			
3	0-0.8～8.0kPa(0-80～800mmH_2O)			
4	0-4.0～40kPa(0-400～4000mmH_2O)			
5	0-20～200kPa(0-2000～20000mmH_2O)			
6	0-70～700kPa(0-0.7～7kgf/cm^2)			
7	0-210～2100kPa(0-2.1～21kgf/cm^2)			
8	0-700～7000kPa(0-7.0～70kgf/cm^2)			
9	0-2.1～21MPa(0-21～210kgf/cm^2)			
0	0-4.1～41MPa(0-41～4100kgf/cm^2)			
Code	Output form			
E	Linear output 4-20mAdc			
SF	Linear output 4-20mAdc+HART signal，Full function buttons on site			
F	MODBUS-485 signal			
Code	Structural materials			
	Flange connector	Exhaust/Drain valve	Isolation diaphragm	Filling liquid
22	316 Stainless steel	316 Stainless steel	316 Stainless steel	Silicone oil
23	316 Stainless steel	316 Stainless steel	Hastelloy C	Silicone oil
24	316 Stainless steel	316 Stainless steel	Monel	Silicone oil
25	316 Stainless steel	316 Stainless steel	Tantalum	Silicone oil
33	Hastelloy C	Hastelloy C	Hastelloy C	Silicone oil
35	Hastelloy C	Hastelloy C	Tantalum	Silicone oil
44	Monel	Monel	Monel	Silicone oil
Code	Shell material		Conduit inlet dimensions	
A	Low copper aluminum alloy polyurethane coating		M20×1.5	
B	Low copper aluminum alloy polyurethane coating		1/2-14 NPT	
C	Stainless steel		M20×1.5	
D	Stainless steel		1/2-14 NPT	
Code	Pressure connection			
L1	1/4NPT-18 Internal thread (excluding waist joint standard)			

L2	1/2NPT-14 Internal thread
L3	M20×1.5 External thread
Code	Optional parts
M4	LCD multi - power digital display head
B1	Pipe bending bracket
B2	Plate bending bracket
B3	Pipe mounting bracket
D0	The discharge valve is at the end
D1	The side discharge valve is on the upper part
D2	The side discharge valve is on the upper part
C02	M20 x 1.5 nut and Φ 14 pressure short tube
C12	1/2NPT-14 external thread and Φ14 pressure short tube
C22	1/4NPT-18 external thread and Φ14 pressure short tube
C32	1/4NPT-18 to M20×1.5 external thread
C42	1/2NPT-14 to M20×1.5 external thread
C43	1/2NPT-14 to 1/4NPT-18 internal thread
C44	1/2NPT-14 to 1/2NPT-14 external thread
C45	1/2NPT-14 to G1/2 external thread
X1	Oil ban
Gd	Measure the gold-plated membrane box
Da	Flameproof ExdIIBT5Gb;(explosion-proof certificate no. : CE16.1163)
Fa	Intrinsically safe ExiaIICT4 / T5 / T6Ga;(explosion-proof certificate no. : CE15.2354X)

Selection example：3151GP4SF22AL1M4B3X1 0～20kPa