STEK

Pressure

Digital Differential Pressure Transmitter

P064

High accuracy, anti-interference ability.
For electric power and machinery manufacturing process control.
Measuring liquid, gas, vapor, liquid level.

| Features |

- Advanced monocrystalline silicon differential pressure sensor adopted
- Wide range covering：0.1 ... 25 bar
- Measure liquid, gas, steam, liquid level
- 2-wire, 4 ... 20 mA+HART® protocol digital communication(10.5 ... 36 V, Typical 24 V)
- LCD, backlight display, remote transmission and local zero, span adjustment
- High accuracy, good stability, stainless steel housing
- IP rating：IP65
- Strong resistance to frequency conversion interference
- High static pressure, high overpressure protection
- Diaphragm with patented double overpressure protection design
- Lightning protection circuit design

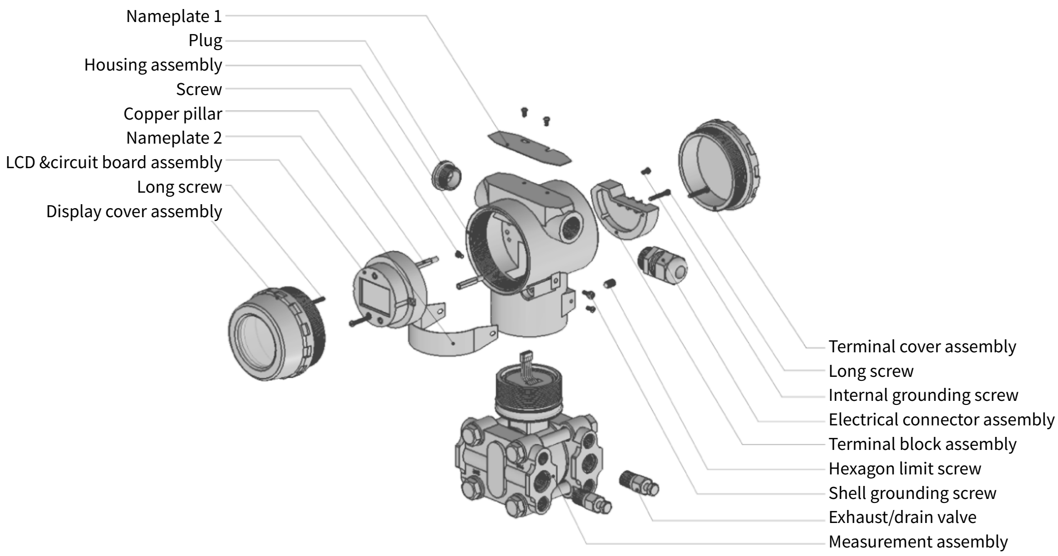
| Introduction |

The P064 digital differential pressure / pressure transmitter is a well-developed high-performance pressure transmitter adopting advanced monocrystalline silicon pressure sensor technology. The product uses a diaphragm with double overpressure protection design and internal circuit with anti-surge protection design. It can accurately measure differential pressure, flow, vacuum, liquid level, and density.

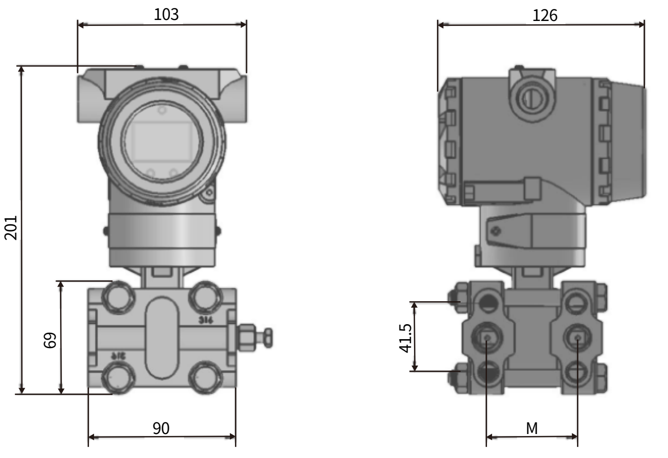
Application :
Process control areas in industries of petroleum / Chemical / Metallurgy / Electric power / Food / Papermaking / Medicine / Machinery manufacturing / Scientific experiments / Aviation and military

| Specification |

Item		Function & Parameter
Measuring range		0.1 ... 25 bar
Pressure type		Differential pressure
Power output		4 ... 20 mA+HART®(10.5 ... 36 V, typical 24 V)
Accuracy		0.2% measuring range≦0.06 bar;0.1%=0.06 bar ... 0.4 bar; 0.075% measuring range≧0.4 bar
Zero Temp. coefficient		±0.25%F.S./55°C
Full scale Temp. effect		±0.5%F.S./55°C
Operating environment Temp.		-30 ... 80°C;LCD:-30 ... 70°C
Medium Temp.		-40 ... 104°C
Storage Temp.		-40 ... 85°C
Insulation resistance		≧100MΩ / DC 500 V(200 MΩ / DC 250 V)
IP rating		IP65
Static pressure range		70 bar, 250 bar, 400 bar
Overvoltage limit		160 bar
Long-term stability		±0.2%F.S./year
Fixed frame		Tube bending bracket / Plate bending bracket / Tube mounting bracket
Structural properties	Diaphragm material	316L
	Exhaust / Drain valve	316 Stainless steel
	O-ring	Nitrile Butadiene Rubber(NBR)(Contact measuring medium)
	Filling oil	Silicon oil
	Flange and fittings	304 Stainless steel
	Housing material	Die-cast aluminum epoxy coating
	Electrical connection	M20x1.5
	Process connection	Outside thread:M20x1.5 with welded pipe、G 1/2 with welded pipe、
		G 1/4、NPT 1/2
		Inside thread:NPT 1/4、NPT 1/2
	Weight	3.5 kg(without accessories)



| Dimension | Unit：mm



| Principle Description |

The airflow forms a local contraction at the orifice plate, so the flow velocity increases and the static pressure decreases, so a pressure difference is generated in front or at the back of the orifice plate.
When the fluid flow getting bigger, the pressure difference getting bigger at the same time, so the flow rate can be measured based on the pressure difference.
This measurement method is based on the Continuity equation(Law of conservation of mass) and the Bernoulli's principle(Conservation of energy) to achieve the purpose of accurate measurement.
As shown in the figure, the red part is the orifice plate installed in the pipeline, which is perpendicular to the flow direction.
Assuming that the fluid fills the pipeline, between the two-point cross section of side P1 and side P2 in the figure , it is according to the Continuity equatio (Law of conservation of mass) and the Bernoulli's principle (Conservation of energy), we can get formula (1) and formula (2)

$\rho 1 v1^2/2+P1=\rho 1 v1^2/2+P2$.......formula(1)

$\rho 1 v1^2 F1=\rho 1 v1^2 F2$................formula(2)

v：Average flow velocity(m/s)

P：Average flow rate(Pas abs)

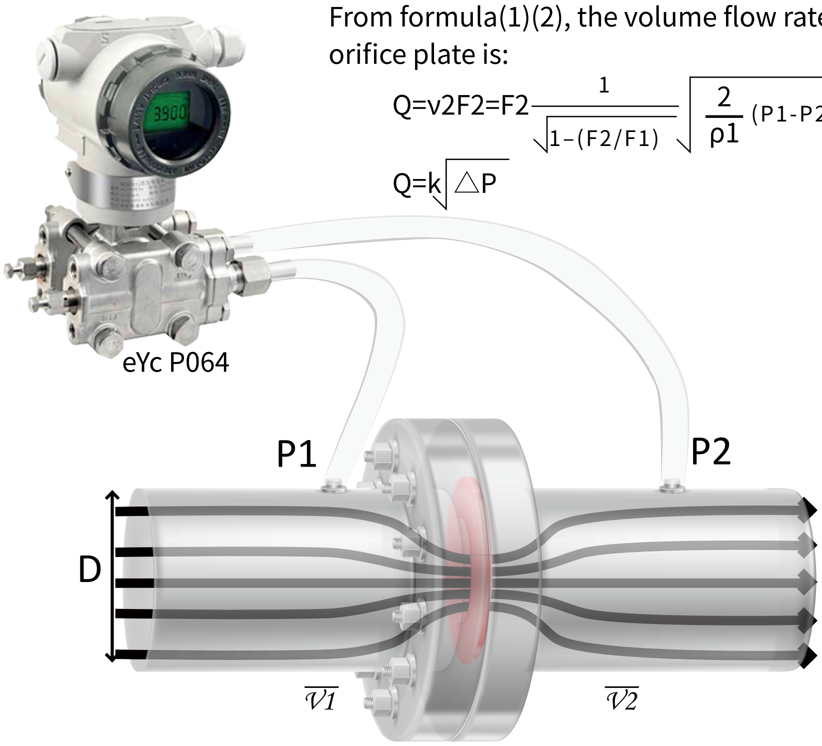
ρ1：Fluid density(kg/m^3)

F：Fluid cross-sectional area(m^3)

From formula(1)(2), the volume flow rate Q(m^3/s) through the orifice plate is:

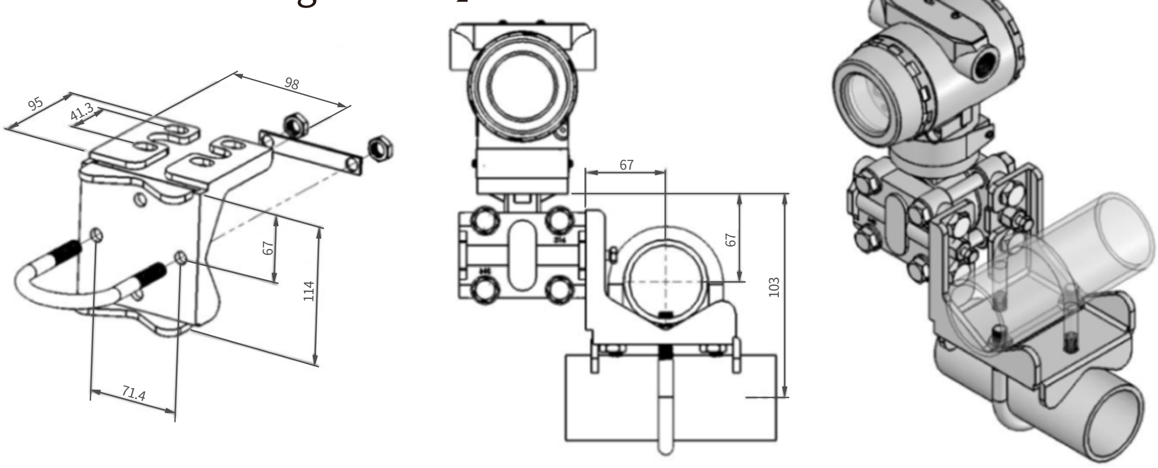
$$Q=v2F2=F2\frac{1}{\sqrt{1-(F2/F1)}}\sqrt{\frac{2}{\rho 1}(P1-P2)}$$

$$Q=k\sqrt{\triangle P}$$

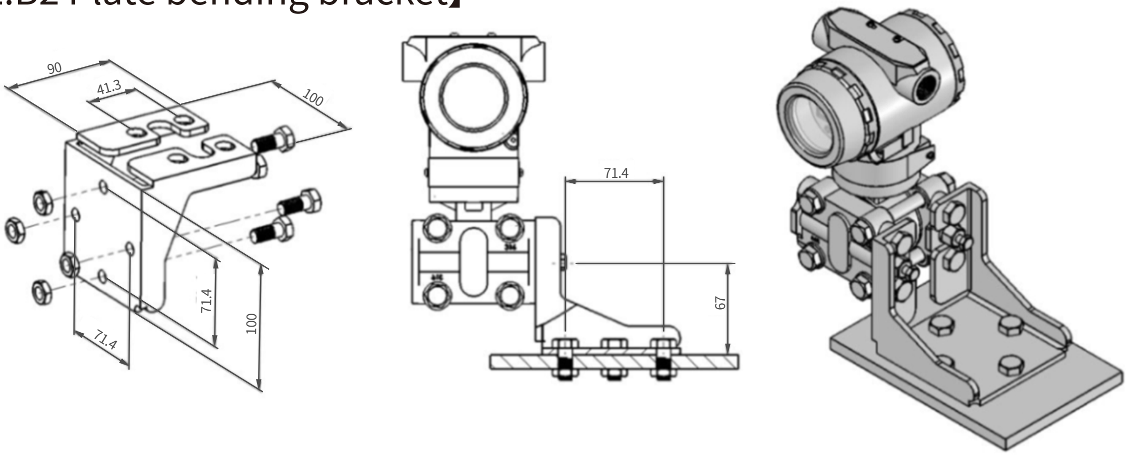


| Optional Accessories |

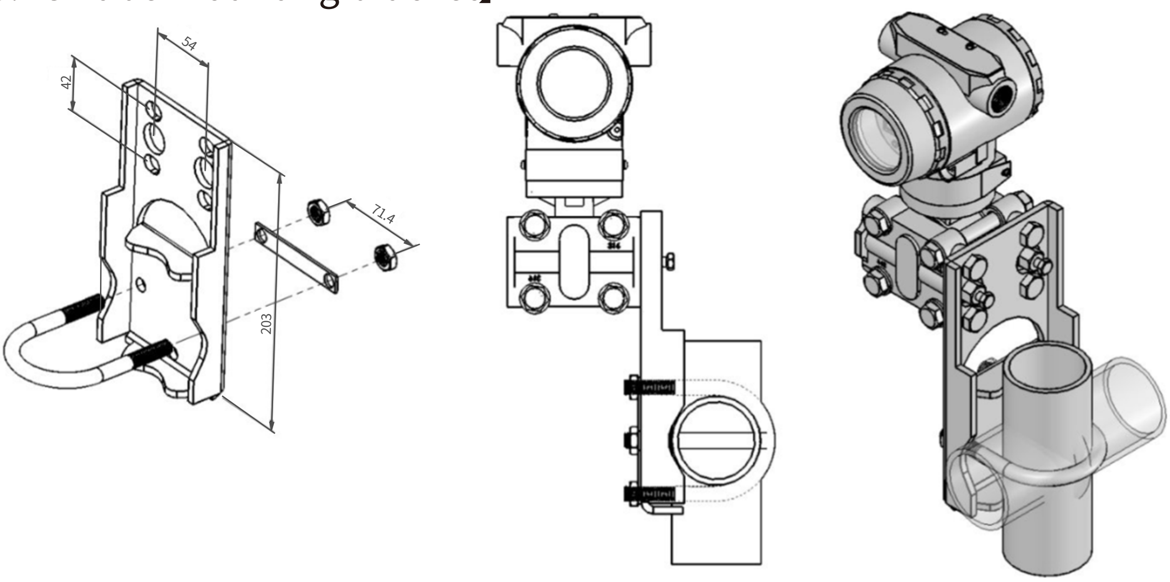
【1.B1 Tube bending bracket】



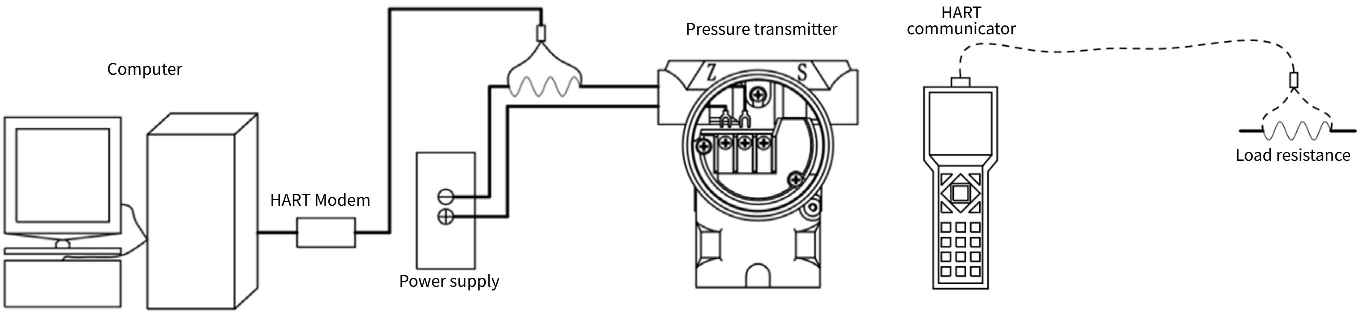
【2.B2 Plate bending bracket】



【3.B3 Tube mounting bracket】



| HART Communication Connection Diagram |



| Ordering Guide |

P064 - 06 (Range) 2 (Output) 2 (Electrical connector)

Range	Output	Electrical connector
01:0.1 bar	1:M20x1.5(Outside thread) with welded pipe	N:No
02:0.2 bar	2:G 1/2(Outside thread) with welded pipe	1:Tube bending bracket
04:0.4 bar	3:G 1/4(Outside thread)	2:Plate bending bracket
06:0.6 bar	4:NPT 1/4(Inside thread)	3:Tube mounting bracket
11:1.0 bar	5:NPT 1/2(Outside thread)	
13:2.5 bar	6:NPT 1/2(Inside thread)	
14:4.0 bar		
16:6.0 bar		
21:10 bar		
22:16 bar		
23:25 bar		