P064
Digital Differential Pressure Transmitter

| 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

Differential Pressure-P064

| Specification |

Input

Pressure type	Differential pressure
Measuring range	0.1 ... 25 bar

Output

Output	4 ... 20 mA+HART®
	(10.5 ... 36 V，typical24 V)
Accuracy	
Measuring range≦0.06 bar	0.2%
Measuring range : 0.06 bar ... 0.4 bar	0.1%
Measuring range≧0.4 bar	0.075%
Electrical connection	M20x1.5

Environmental

Zero Temp. coefficient	±0.25%F.S./55°C
Full scale Temp. effect	±0.5%F.S./55°C
Operating environment Temp.	-30°C ... 80°C
	LCD : -30°C ... 70°C
Medium Temp.	-40°C ... 104°C
Storage Temp.	-40°C ... 85°C

Installation

Fixed frame	Tube bending bracket / Plate bending bracket / Tube mounting bracket
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

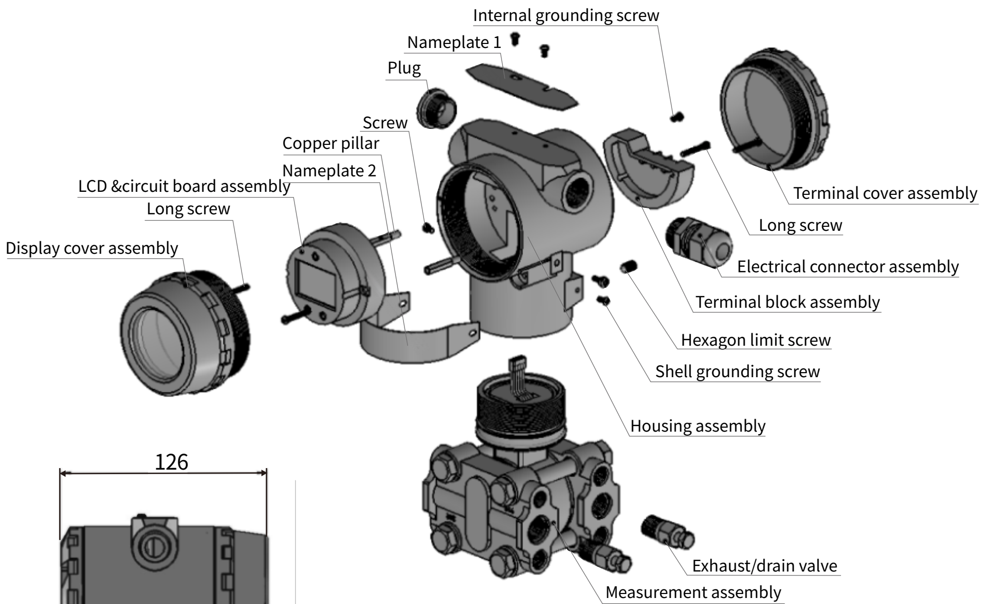
Protection

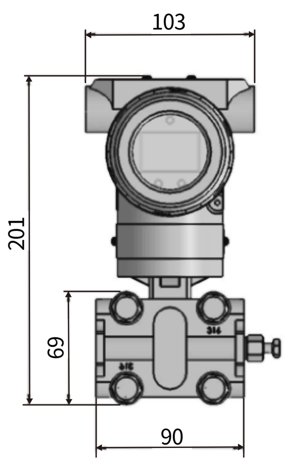
Insulation resistance	≧100 MΩ/DC 500 V(200 MΩ / DC 250 V)
IP rating	IP65
Static pressure range	70 bar、250 bar、400 bar
Overvoltage limit	160 bar
Long-term stability	±0.2%F.S./year

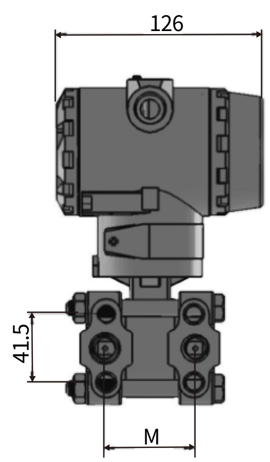
Material

Diaphragm material	316L
Exhaust / Drain valve	316 Stainless steel
O-ring	Nitrile Butadiene Rubber(NBR)(Contact measuring medium)
Filling oil	Silicon oil
Fittings	304 Stainless steel
Housing material	Die-cast aluminum epoxy coating
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)

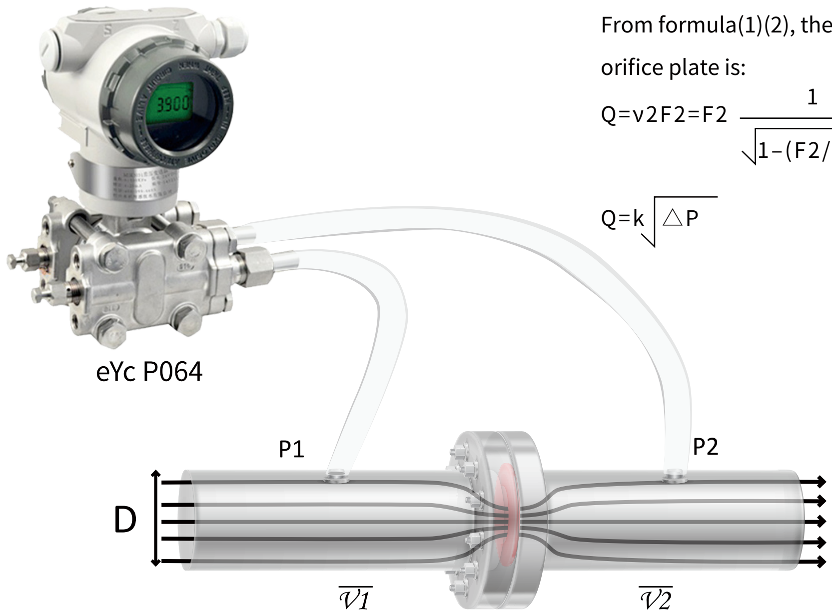
v：Average flow velocity(m/s)　P：Average flow rate(Pas abs)

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:

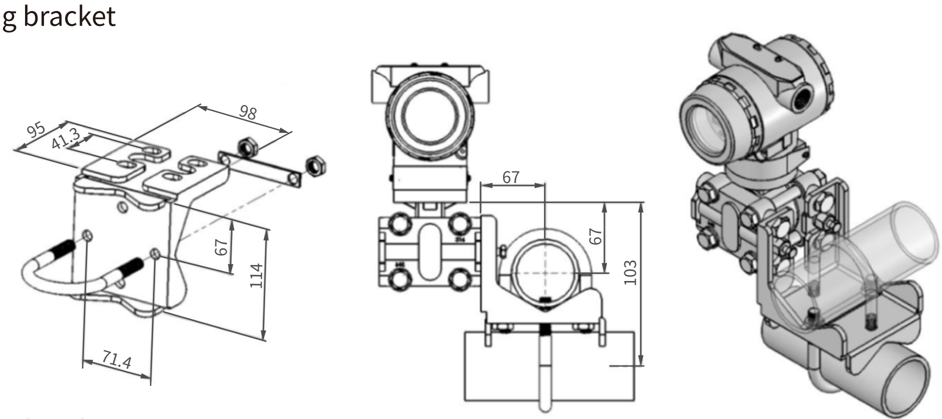
$$Q=v2F2=F2\frac{1}{\sqrt{1-(F2/F1)}}\sqrt{\frac{2}{\rho 1}(P1-P2)}$$

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

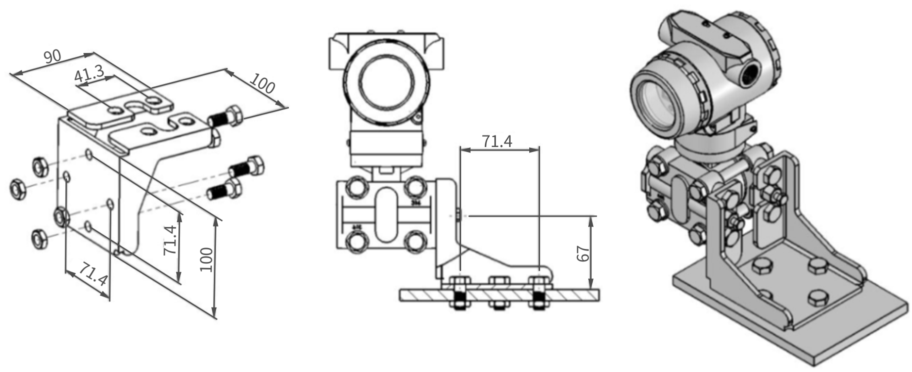


| Optional Accessories |

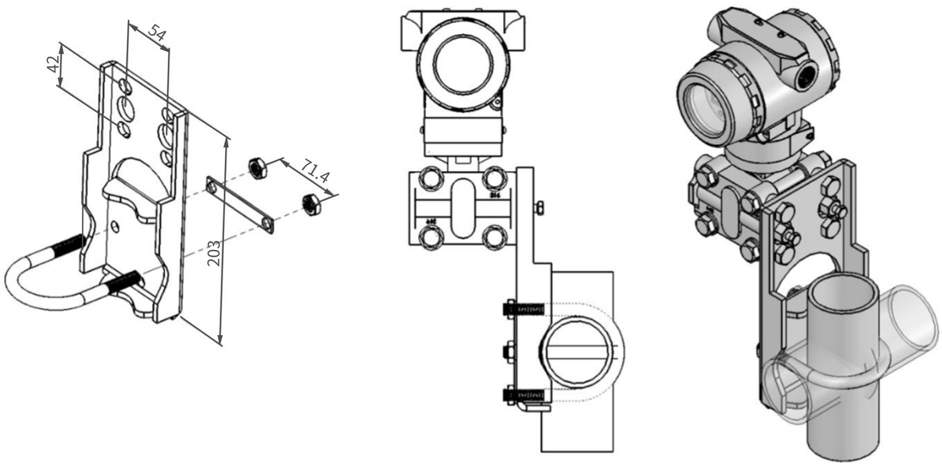
1.B1 Tube bending bracket



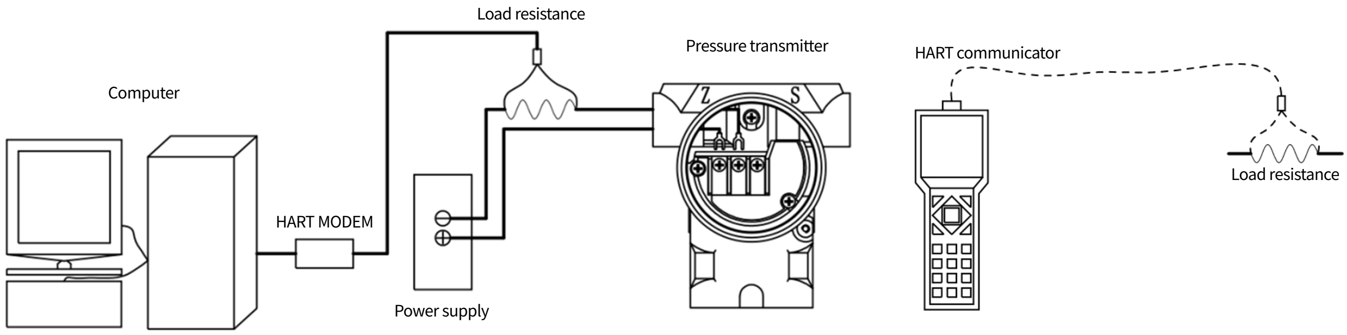
2.B2 Plate bending bracket



3.B3 Tube mounting bracket



| HART Communication Connection Diagram |



| Ordering Guide |

P064 — 02 — 1 — 1

Range

- 01 : 0.1 bar
- 02 : 0.2 bar
- 04 : 0.4 bar
- 06 : 0.6 bar
- 11 : 1.0 bar
- 13 : 2.5 bar
- 14 : 4.0 bar
- 16 : 6.0 bar
- 21 : 10 bar
- 22 : 16 bar
- 23 : 25 bar

Output

- 1：M20x1.5(Outside thread) with welded pipe
- 2：G 1/2(Outside thread) with welded pipe
- 3：G 1/4(Outside thread)
- 4：NPT 1/4(Inside thread)
- 5：NPT 1/2(Outside thread)
- 6：NPT 1/2(Inside thread)

Electrical connector

- N : None
- 1：Tube bending bracket
- 2：Plate bending bracket
- 3：Tube mounting bracket

| Additional Option Test Report |

For more detailed information please contact us.

■ISO 9001

Project	Measurand level or range
Pressure	Differential pressure：0 ... 500 Pa / 0 ... 1000 Pa / 0 ... 10000 Pa