

YL1800 Series

Differential pressure transmitter



Introduction

YL1800 series is a differential pressure transmitter. This series of products use high-reliability silicon piezoresistive differential pressure sensors as the core components, and output standard industrial signals after temperature compensation, digital circuit correction and signal conditioning.

Each type of product has undergone careful design, component screening, process verification and curing, cyclic loading stress relief, aging, environmental simulation testing and other processes to ensure that each product is stable and reliable.

Features

- Form of pressure: Differential(D)
- Range: -0.1MPa ... 0kPa~10kPa ... 3.5MPa
- Overload capacity: ≤ 2 times
- Electrical connection: Hirschman socket, Aviation socket, cable direct outlet
- Accuracy: $\pm 0.1\%$ FS (customized), $\pm 0.25\%$ FS, $\pm 0.5\%$ FS
- Output signal: 4mA ~ 20mA, 0V ~ 10VDC, I²C, RS485
- Response time: ≤ 3 ms (10%~90%)
- Measuring medium: Fluids compatible with ss304, ss316L

Applications

- Coal Mines
- Oil Field
- Environmental Protection
- Medicine
- Chemical Industry
- Civil Explosion
- Water Affairs
- Shipping

Output signal and supply voltage

Form	Output signal	Supply voltage
Current (2 wire)	4mA ~ 20mA	12V ~ 30V DC
Voltage (3 wire)	0V ~ 5V DC	6V ~ 24V DC
	0V ~ 10V DC	12V ~ 30V DC
I ² C (4 wire)	I ² C	3.3V ~ 5V DC
RS485 (4 wire)	RS485	5V ~ 30V DC

Load resistance (Ω)

Current (2 wire) : $R \leq (U-10) / 0.02-RD$ (U : power supply voltage, RD : internal resistance of the cable)

Total current consumption

Current (2 wire) : The maximum signal current is approximately 23mA

Voltage (3 wire) : < 5mA

I²C (4 wire) : < 1.3mA (low power consumption can be customized < 5μA)

RS485 (4 wire) : < 5mA (low power < 1.1mA)

Product accuracy and performance index

Item	Parameter		
Accuracy	0.1(customized)	0.25	0.5
Non-linearity (%FS)	≤0.1	≤0.2	≤0.4
Hysteresis (%FS)	≤0.05	≤0.05	≤0.1
Repeatability (%FS)	≤0.05	≤0.05	≤0.1
Long-term stability (%FS/year)	≤0.1	≤0.2	≤0.5
Zero-point temperature drift (%FS/°C)	≤0.01	≤0.03	≤0.05
Sensitivity temperature drift (%FS/°C)	≤0.01	≤0.03	≤0.05
Influence of static pressure	≤0.05		

Reference conditions

Temperature: 20°C ~ 25°C

Relative humidity: 45%RH ~ 75%RH

Power supply voltage: 24V± 0.24V; 5V± 0.05V

Environmental conditions

Items	Temperature range
Compensation temperature	0℃~+50℃ (≤200kPa), -10℃~70℃ (> 200kPa)
Operating temperature	-30℃~+80℃ / -10℃~+70℃ (cable type)
Storage temperature	-40℃~+125℃ / -20℃~+80℃ (cable type)
Note: the measured medium icing will cause irrecoverable damage to the product.	

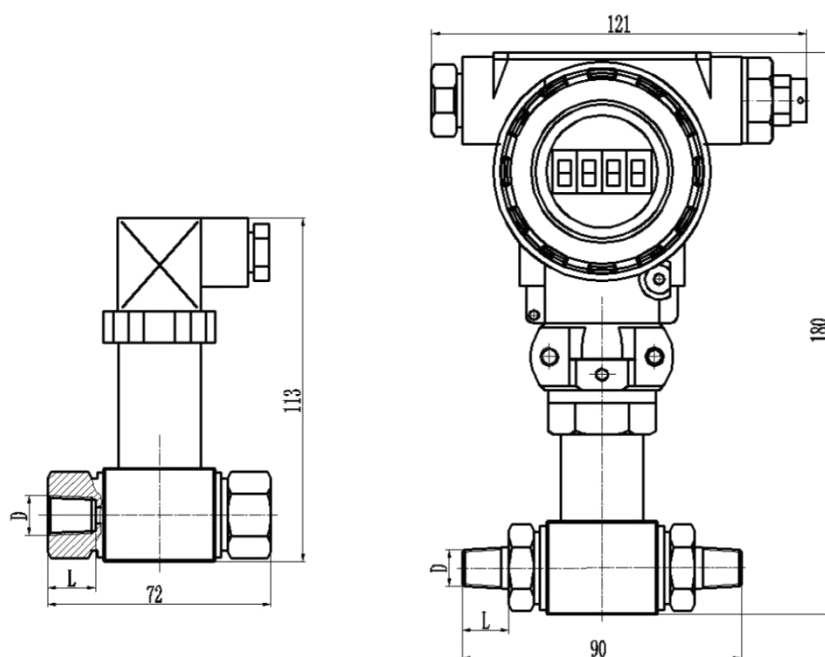
When the pressure transmitter is operating normally, it is required that the measured medium cannot be solidified.

Operating conditions

Items	Temperature range
Protection level	IP65 (can be customized IP67)
Atmospheric pressure	86kPa ~ 106kPa
Vibration environment	20g (@10Hz ~ 2000Hz)
Shock resistance	100g/11ms
Service life	> 10 million cycles of load capacity (within measurement range)
Maximum static pressure	≤20MPa

Typical appearance structure drawing (unit: mm)

⊙ The following figures show the typical product structure. Other structure please contact Huatian for consultation and customization.

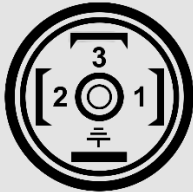
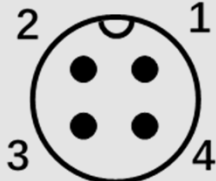
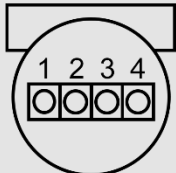
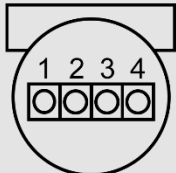


The product process interface, external thread, specific requirements, please contact Huatian for consultation and customization.

Optional connector size description

Optional connector size description			
size D	length L	size D	length L
M22×1.5	15 mm	M20×1.5	15 mm
M18×1.5	15 mm	M16×1.5	15 mm
M14×1.5	15 mm	M12×1	15 mm
M10×1	12 mm	M8×1	12 mm
size D	length L	size D	length L
G1/2	15 mm	G3/8	15 mm
G1/4	15 mm	G1/8	12 mm
size D	length L	size D	length L
1/2NPT	18 mm	1/2 PT	18 mm
3/8NPT	15 mm	3/8 PT	15 mm
1/4NPT	15 mm	1/4 PT	15 mm
1/8NPT	12 mm	1/8 PT	12 mm

Wiring diagram of electrical connection

Hirschman socket					
Structure diagram	Wiring post	Current (2 wire)	Voltage (3 wire)	IIC (4 wire)	RS485 (4 wire)
	1	Vcc	Vcc	Vcc	Vcc
	2	Iout	GND	GND	GND
	3	/	Vout	SCL	RS485A
		PE	PE	SDA	RS485B
Round Aviation socket					
Structure diagram	Wiring post	Current (2 wire)	Voltage (3 wire)	IIC (4 wire)	RS485 (4 wire)
	1	Vcc	Vcc	Vcc	Vcc
	2	Iout	GND	GND	GND
	3	PE	Vout	SCL	RS485A
	4	/	PE	SDA	RS485B
Industrial terminal					
Structure diagram	Wiring post	Current (2 wire)	Voltage (3 wire)	IIC (4 wire)	RS485 (4 wire)
	1	PE	PE	SDA	RS485B
	2	/	Vout	SCL	RS485A
	3	Iout	GND	GND	GND
	4	Vcc	Vcc	Vcc	Vcc
Cable direct outlet					
Structure diagram	Cable color	Current (2 wire)	Voltage (3 wire)	IIC (4 wire)	RS485 (4 wire)
	Red	Vcc	Vcc	Vcc	Vcc
	Green	Iout	GND	GND	GND
	Yellow	/	Vout	SCL	RS485A
	Blue	/	/	SDA	RS485B
	Black	PE	PE	PE	PE

Selection guide

YL1800		Series differential pressure transmitter											
	Range		Measuring range is -0.1MPa ... 0MPa ~ 0.01MPa ... 3.5MPa										
	xxn		In kPa, the first two digits XX value is multiplied by the n-square of 10, and n is the third digit value.										
			Code name	Form of pressure									
			D	Differential pressure									
					Code name	Supply voltage							
					U ₁	24VDC							
					U ₂	12VDC							
					U ₃	5VDC							
					U ₄	3VDC (3.3VDC)							
		U ₅	Other power supply methods										
						Code name	Output signal						
						E ₁	4mA ~ 20mADC						
						V ₃	0VDC ~ 10VDC						
						V ₅	Other voltage output						
						R ₄	RS485 communication interface						
						H	HART [®] protocol communication						
						II	I ² C protocol communication						
								Code name	Interface				
									Electrical interface			Mechanical interface	
								Hirschman socket (LJ ₁)					G¼
Aviation socket (LJ ₂)								G½					
Waterproof connector (LJ ₃)								G1					
Liquid level outlet (LJ ₄)								M20×1.5					
Other (LJ ₅)					Others (direct marking)								
					Code name	Additional features							
						M2	4 Bit LCD digital display meter (only 4mA~20mADC output)						
						M3	4 Bit LED digital display meter (only 4mA~20mADC output))						
						d	Explosion-proof ExdIICT5						
						i	Intrinsically safe explosion-proof ExialICT6						
						QT	Other functions						
YL1800 [102]		D	U ₁	V ₃	LJ ₁ G½	Complete model and specification							

- Note: Order model YL1800 [102] D U₁ V₃ LJ₁ G₁/₂ refers to the product with YL1800, measuring range of 1MPa, differential pressure, 24V power supply, 0 ~ 10V output, Hirschman connector, G1/2 threaded connector.

Precautions

- When the product range is within $-5\sim 5\text{kPa}$, and the product can only measure non-corrosive gases.
- If the product will be immersed or submerged, please order liquid level outlet type products, or consult us.
- Product sealing ring material and tested media compatibility, please contact Huatian for consultation
- The installation interfaces on both sides ensure coaxial, free from excess external stress.
- The maximum static pressure of the product measurement environment needs to be within the range specified by the transmitter.
- Please install a balance valve in an easy single overvoltage measurement systems.
- When installing, the spanner shall be used on the hexagon of the pressure joint close to the thread, and the indicator should not be used as a focal point to prevent the failure of the product from sealing.