Type SM39PWB-CY differential pressure transmitter

The SM39PWB-CY differential pressure transmitter is used to measure the liquid level, density, pressure, and flow rate of liquid, gas or steam, and then convert it into 4 mA to 20 mADC HART current signal output. It can also communicate with HART handheld terminal for parameter setting, process monitoring, etc.

standard specifications

(Adjust range on standard zero, stainless steel 316L diaphragm, filling liquid is silicone oil)

1 performance requirement

Reference accuracy of scalrange (including linearity, regression, and repeatability from zero):

± 0.075% If TD> 10 (TD= maximum range / adjusted range) is: ± (0.0075 TD)%

The square root output accuracy is 1.5 times of the above linear reference accuracy.

Quota code	-20℃ to 65℃ for the total effect amount	**Quota code**	-40℃ to-20℃ and 65℃ to 85℃ total effects
A	±(0.45×TD+0.25)%×Span	A	±(0.45×TD+0.25)%×Span
B	±(0.30×TD+0.20)%×Span	B	±(0.30×TD+0.20)%×Span
C/D/F	±(0.20×TD+0.10)%×Span	C/D/F	±(0.20×TD+0.10)%×Span

Over the scope of influence

±0.075%×Span

Static pressure effect

Quota code	influence quantity
A	±(0.5%Span)/4MPa
B	±(0.3%Span)/16MPa
F /G /H/I/J	±(0.1%Span)/16MPa

Overpressure effect

Quota code	influence quantity
A	±0.5%×Span/4MPa
B /C/D/E	±0.2%×Span/16MPa
F /G /H/I/J	±0.1%×Span/16MPa

long term stability

Quota code	influence quantity
A	±0.5%×Span/1 year
B	±0.2%×Span/1 year
F /G /H/I/J	±0.1%×Span/1 year

Power impact

± 0.001% / 10V (12 to 42 VDC), negligible.

2 functional specification

Range and range

Range / range		kPa
A	range	0～1
	scope	-3000～3000
B	range	1～100
	scope	-16000～16000
C	range	100～500
	scope	-16000～16000
	rang	500～3000

D	e	
	scope	-16000～16000
E	range	3000～4000
	scope	-16000～16000
F	range	4000～10000
	scope	-16000～16000
G	range	1～100
	scope	16000～30000
H	range	100～500
	scope	16000～30000
I	range	500～3000
	scope	16000～30000
J	range	3000～4000
	scope	16000～30000

Quantity limit

In the upper and lower limits of the range, can be adjusted.

It is recommended to choose a range code as low as

possible to optimize the performance characteristics.

Zero point setting

The zero and range can be adjusted to any value within the measurement range in the table, as long as the calibration range minimum range

Installation location impact

The change of the installation position in the parallel direction of the membrane will not cause zero drift effect. If the installation position and the one direction of the membrane change more than 90° , the zero position in the range of <0.4 kPa will occur, which can be adjusted by adjustment. There is no quantitative impact.

output

Second-line system, 4 mA ~ 20 mADC, optional HART output digital communication, optional linear or square root output. Output signal limit:

I_{min}=3.9mA，I_{max}=20.5mA

response time

The damping constant of the amplifier component is 0.1s; the sensor time constant is 0.1s~1.6s, depending on the range and the range ratio. The additional adjustable time constant is: 0.1s~60s. The effect on the nonlinear output (e. g., the square root function) depends on that function and can be calculated accordingly.

preheating time

＜15s

ambient temperature

-40℃～85℃

-20℃ ~65℃ with liquid crystal display

and fluorine rubber sealing ring

-50℃ ~85℃; with liquid crystal display:

-40℃ ~85℃ working pressure

The rated working pressure is divided into:

16MPa, 25MPa and 40MPa three gear static

pressure limit

From 3.5kPa absolute pressure to rated pressure, the protection pressure can be 1.5 times the rated pressure and added to both sides of the transmitter. **One-directional overload limit:**

Electromagnetic compatibility (EMC)

See EMcompatibility schedule on the following page

3 install

Power supply and load conditions

The power supply voltage is 24V, R (Us-12V) / $I_{ma\ x}$k Ω among $I_{ma\ x}$=23 m A

Maximum power supply voltage: 42VDC

Minimum power supply voltage: 12VDC, 15VDC (backlit liquid crystal display) digital communication load range: 250 Ω ~600 Ω

Electrical connection

M201.5 cable seal buckle, the wiring terminal is suitable for 0.5m m^2～2.5m m^{2}The wire.procedure linkage

The two sides of the process connection flange have NPT 1 / 4 and UNF 7 / 16 ″ internal threads.

4 Physical specifications

material quality

Measurement membrane box: stainless steel 316L

Membrane: stainless steel 316L,

Harbin alloy C process flange:

stainless steel 304

Nuts and bolts: stainless

steel (A4) filling fluid:

silicone oil

Seal ring:, nitrile rubber (NBR), fluorine rubber (FKM),

polytetrafluoroethylene (PTFE) transmitter shell: aluminum

alloy material, exterior spray epoxy resin

Housing sealing ring:

Nitrile rubber (NBR)

nameplate:, Stainless steel

304

weight: 3.3kg (without: LCD display, mounting bracket, process connection)

Housing

protection

class IP67

The EMC schedule

order number	test item	basic criterion	test condition	Performance level
1	Radiation interference (enclosure)	GB / T 9254-2008 Table 5	30MHz～1000MHz	qualified
2	conducted interference (DC power supply port)	GB / T 9254-2008 Table 1	0.15MHz～30MHz	qualified
3	Electrostatic discharge (ESD) immunity	GB/T 17626.2-2006	4kV (contact point) 8kV (air)	B

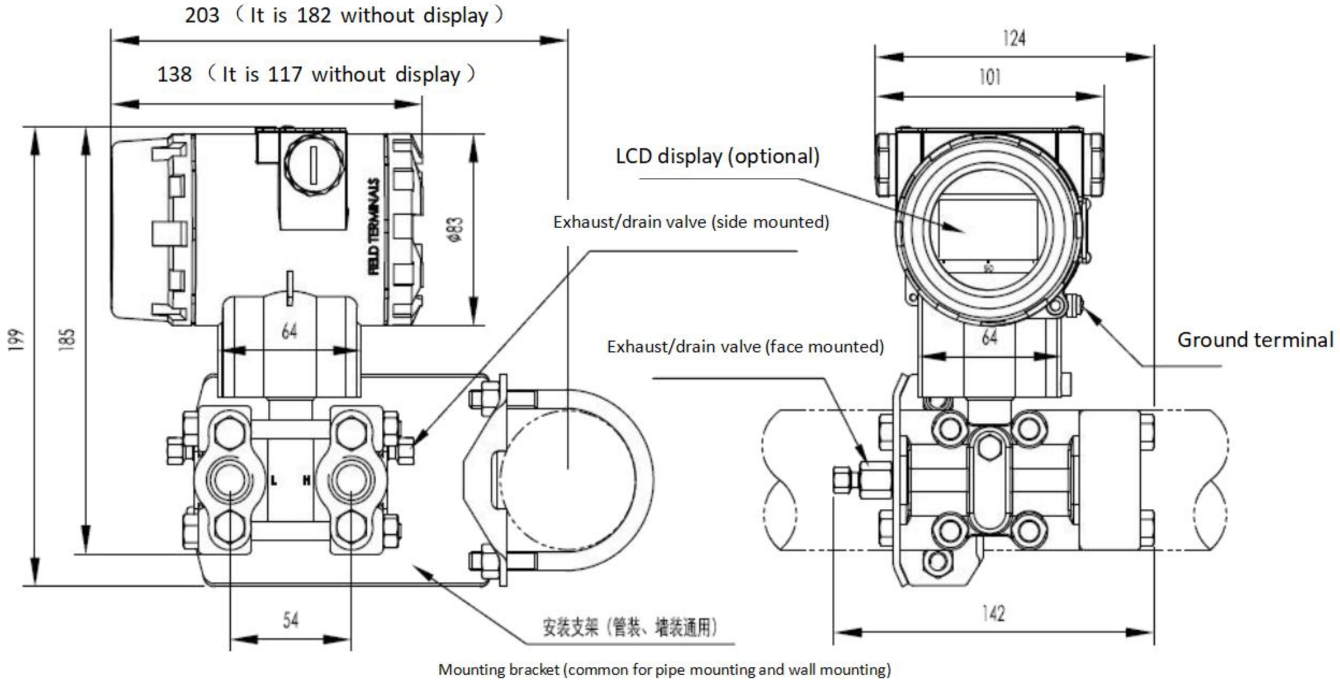
4	RF electromagnetic field immunity	GB/T 17626.3-2006	10V/m (80MHz～1GHz)	A
5	Power-frequency magnetic field immunity	GB/T 17626.8-2006	30A/m	A
6	Electric fast transient pulse group immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B

Note 1: A Performance grade description: normal within the limit of technical specification.

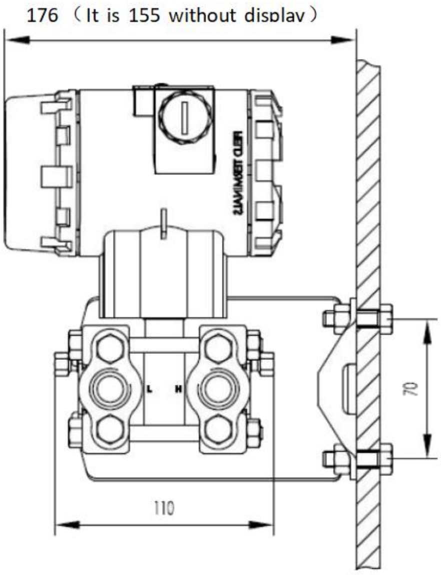
Note 2: B Performance rating description: During the test, the function or performance is temporarily reduced or lost, but it can be restored by itself, and the actual health, storage and data do not change.

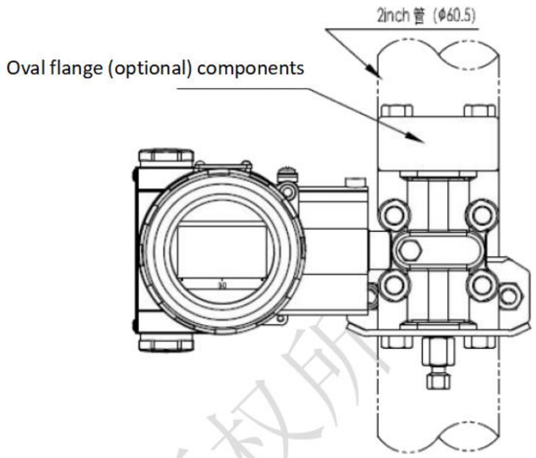
outline dimension

Unit is mm


203（It is 182 without display）
138（It is 117 without display）
199
185
φ83
FIELD TERMINALS
64
L
H
54
124
101
LCD display (optional)
Exhaust/drain valve (side mounted)
Exhaust/drain valve (face mounted)
Ground terminal
64
142
安装支架（管装、墙装通用）
Mounting bracket (common for pipe mounting and wall mounting)

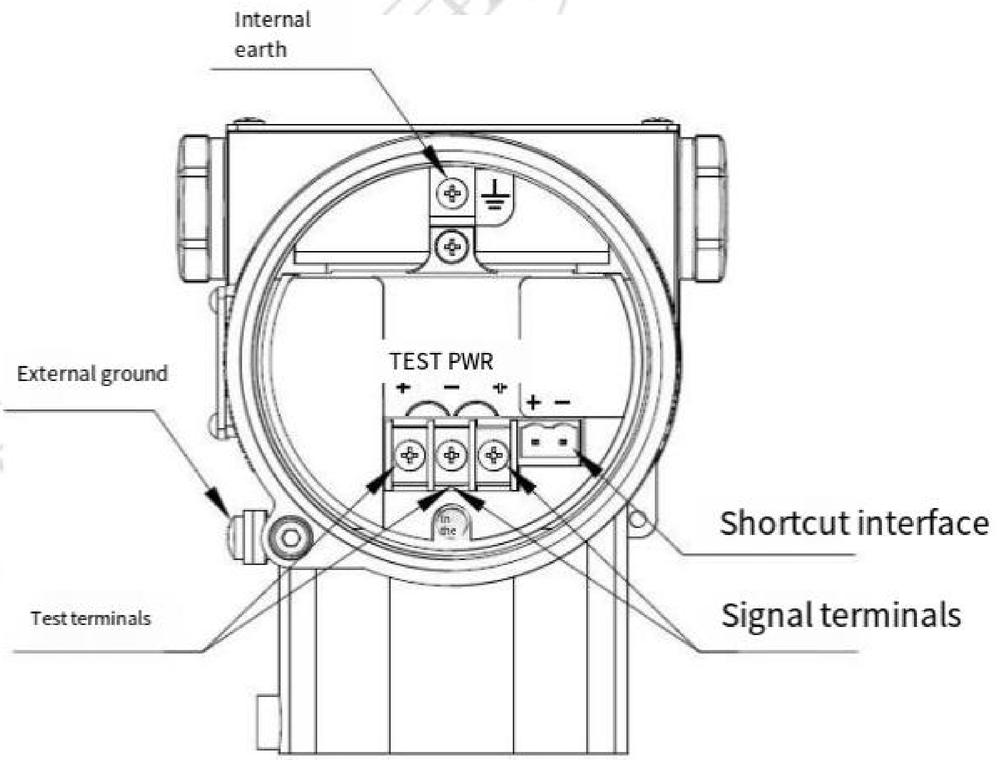
Horizontal pipe connection mode (side)　　*Horizontal piping connection mode (front face)*


176（It is 155 without display）
L
H
70
110


2inch管（Φ60.5）
Oval flange (optional) components

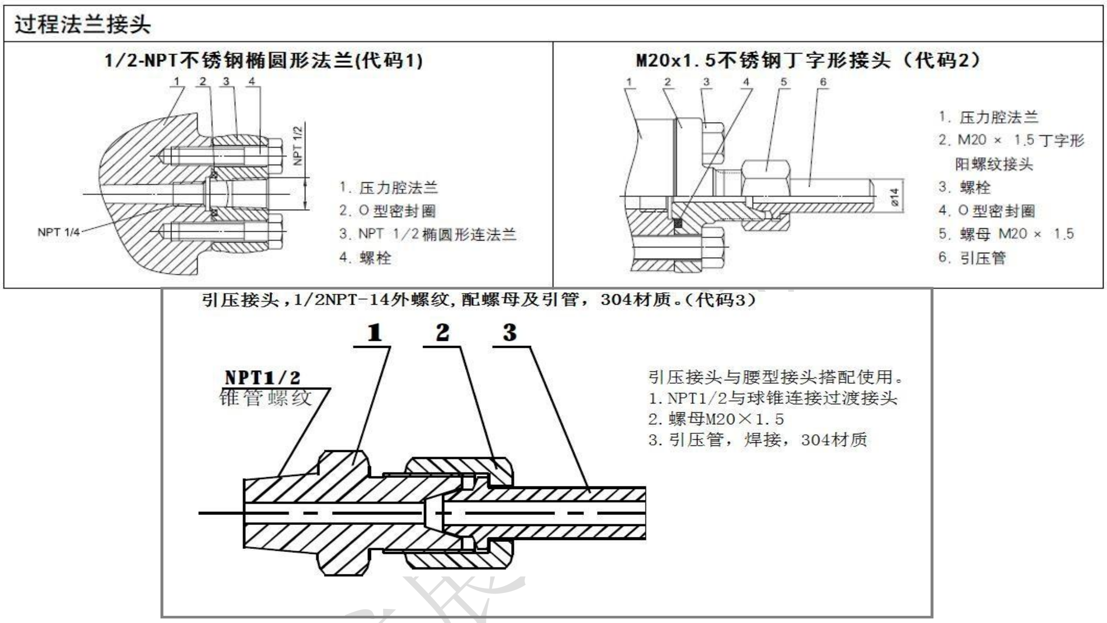
Wall installation connection mode　　　　Vertical piping connection mode

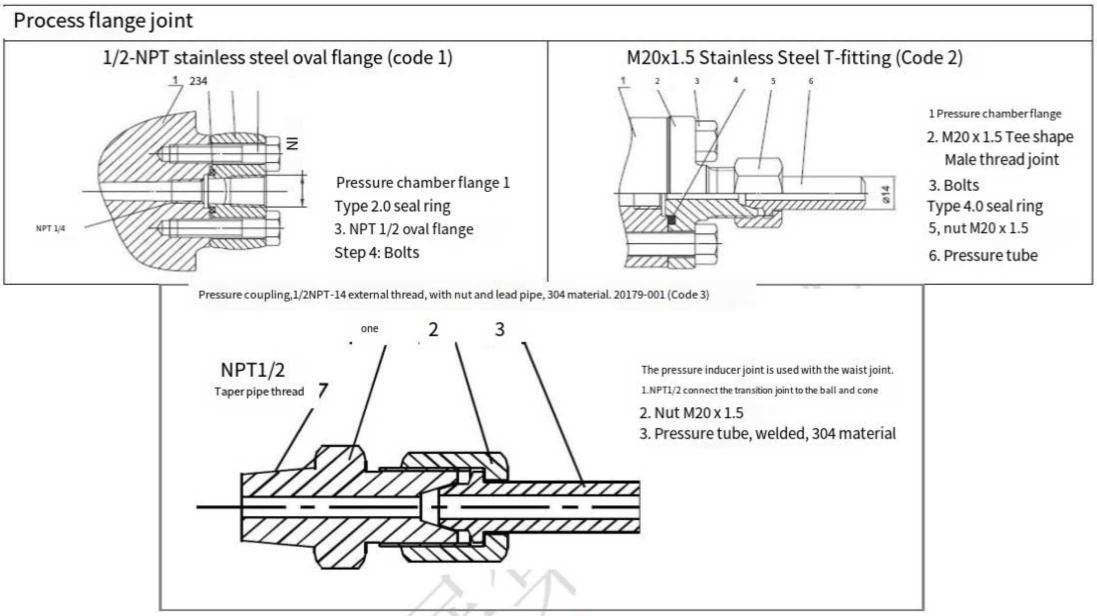
5 Electrical connection diagram


Internal earth
External ground
TEST PWR
+
−
+
+ −
Shortcut interface
Signal terminals
Test terminals

Note: The shortcut interface function is equivalent to the signal terminal.

6 Process connection instructions


过程法兰接头
1/2-NPT不锈钢椭圆形法兰(代码1)
1
2
3
4
NPT 1/2
NPT 1/4
1. 压力腔法兰
2. O 型密封圈
3. NPT 1/2 椭圆形连法兰
4. 螺栓
M20x1.5不锈钢丁字形接头（代码2）
1
2
3
4
5
6
ø14
1. 压力腔法兰
2. M20 × 1.5 丁字形 阳螺纹接头
3. 螺栓
4. O 型密封圈
5. 螺母 M20 × 1.5
6. 引压管
引压接头，1/2NPT-14外螺纹，配螺母及引管，304材质。（代码3）
1
2
3
NPT1/2
锥管螺纹
引压接头与腰型接头搭配使用。
1. NPT1/2与球锥连接过渡接头
2. 螺母M20×1.5
3. 引压管，焊接，304材质


Process flange joint
1/2-NPT stainless steel oval flange (code 1)
1
234
NI
NPT 1/4
Pressure chamber flange 1
Type 2.0 seal ring
3. NPT 1/2 oval flange
Step 4: Bolts
M20x1.5 Stainless Steel T-fitting (Code 2)
1
2
3
4
5
6
ø14
1 Pressure chamber flange
2. M20 x 1.5 Tee shape Male thread joint
3. Bolts
Type 4.0 seal ring
5, nut M20 x 1.5
6. Pressure tube
Pressure coupling,1/2NPT-14 external thread, with nut and lead pipe, 304 material. 20179-001 (Code 3)
one
2
3
NPT1/2
Taper pipe thread
7
The pressure inducer joint is used with the waist joint.
1.NPT1/2 connect the transition joint to the ball and cone
2. Nut M20 x 1.5
3. Pressure tube, welded, 304 material

7 Model and specification code list

SM39PWB-CY differential pressure transmitter

Code output

H 4mA~20mA DC with HART communication

Code range

A 0-100Pa～1kPa（0-10～100 mmH2O）/(0-1～10mbar)

B 0-200Pa～6kPa（0-20～600 mmH2O）/(0-2～60mbar)

C 0-400Pa～40kPa（0-40～4000 mmH2O）/(0-20～400mbar)

D 0-2.5kPa～250kPa（0-0.25～25 mH2O）/(0-25～2500mbar)

F 0-30kPa～3MPa（0-3～300 mH2O）/ (0-0.3～30bar)

Code diaphragm material Filler

A stainless steel 316Lsilicone oil

C. Hartz alloy, C silicone oil

Code-rated working pressure

0 0.2MPa (range A, applicable only)

1 7MPa (range A, applicable only)

2 16MPa

3 25MPa

4 40MPa

Code process connection

N 1 / 4 inch N PT and 7 / 16 inch UNF threaded holes without drain valve

B 1 / 4 inch NPT and 7 / 16 inch UNF, threaded hole drain valve at rear

flange end face

U 1 / 4 inch NPT and 7 / 16 inch UNF, threaded hole drain valve on flange

side top

D 1 / 4 inch NPT and 7 / 16 inch UNF, threaded hole drain valve on the lower flange side

The Code connects the fluid to the sealing material

N Nitrile rubber (NBR)

F-fluorine rubber (FKM)

P Poly (PTFE)

Code process connect attachments

N not have

1 1 / 2 inch NPT internal thread stainless steel waist joint

2 M20x1.5 external stainless steel T-joint

3 1 / 2-14 NPT and rear (stainless steel)

Code for the LCD display

N is not shown

1 Backlit liquid crystal display

2 M20x1.5 external stainless steel T-joint

Selection of the code attachments

N not have

A Benan

D burst + burst isolation cable connector

S 316 stainless steel splint

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