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- **RPI000 Series Smart Pressure Transmitter**

RKS
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RP1001-A High Performance Differential Pressure

Transmitter

The High Performance Differential Pressure Transmitter, RP1001-A, is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure, and then outputs a 4~20 mADC HART signal output. The RP1001 can also communicate with RS295 modem for specification setting and process monitoring, etc.

STANDARD SPECIFICATIONS

(The adjustment of measuring range is based on the standard zero setting, Stainless Steel 316L diaphragm and silicon oil filling fluid)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span

(Including terminal-based linearity, hysteresis, and repeatability)

$\pm 0.05\%$

If $TD > 10$ ($TD = URL/SPAN$), $\pm(0.005 \times TD)\%$

The accuracy of square root output is 1.5 times of above Reference Linear Accuracy.

Ambient Temperature Effects

$-25^{\circ} \sim 65^{\circ} \text{C}$: $\pm(0.075 \times TD + 0.025)\% \times \text{Span}$

Every 10°C is $\pm 0.04\% \times \text{Span}$ ($TD=1$)

$-40^{\circ} \sim -25^{\circ} \text{C}$ & $65^{\circ} \sim 85^{\circ} \text{C}$:

$\pm(0.1 \times TD + 0.025)\% \times \text{Span}$

Over Range Effects

$\pm 0.05\% \times \text{Span}$

Static Pressure Effects



$\pm(0.025\%URL + 0.05\%Span) / 10MPa$

Over pressure Effects

$\pm 0.05\% \times \text{Span} / 10MPa$

Stability

$\pm 0.15\%URL / 10 \text{ years}$

Power Supply Effects

$\pm 0.001\% / 10V$ ($12 \sim 36V \text{ DC}$)

Turndown Ratio

1:100

2. FUNCTIONAL SPECIFICATIONS

Span and Range

Span/ Range		kPa	inH ₂ O	mbar	mmH ₂ O
C	Span	0.4 ~ 40	1.6 ~ 160	4 ~ 400	40 ~ 4000
	Range	-40 ~ 40	-160 ~ 160	-400 ~ 400	-4000 ~ 4000
D	Span	2.5 ~ 250	10 ~ 1000	25 ~ 2500	0.25 ~ 25mH ₂ O
	Range	-250 ~ 250	-1000 ~ 1000	-2500 ~ 2500	-25 ~ 25mH ₂ O
F	Span	30 ~ 3000	120 ~ 12000	0.3 ~ 30 bar	3 ~ 300mH ₂ O
	Range	-500 ~ 3000	-2000 ~ 12000	-50 ~ 30bar	-50 ~ 300mH ₂ O

Range Limit

It can be randomly adjusted within the upper and lower limits of range. It is recommended to select the range code with as low as possible range ratio to optimize the performance.

Zero Setting

Zero Point and range can be adjusted to any value within the measure range in the form as long as Calibrating Span \geq Maximum Range.

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90° will cause zero shift up to 0.4 kPa (40 mmH₂O) which can be corrected by the zero adjustment.

Output

2 wires type, 4 ~ 20mADC HART output, digital communication, linear or square root output can be chosen, HART protocol is added on the 4~20mADC signal.

Output Signal Limit: $I_{\min}=3.9\text{mA}$, $I_{\max}=20.5\text{mA}$

Failure Alarm (the mode can be selected)

Low Mode (min): 3.6 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault.

Note: The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1s. The sensor damping constant is 0.1~1.6s. It depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60s by software and added to the response time.

The effect on nonlinear outputs, such as the square root function, depends on this function and can be calculated accordingly.

Preheat Time

< 15s

Ambient Temperature

-40° ~ 85° C

-20° ~ 65° C (with LCD, Fluorine O-ring)

Storage/ Transportation Temperature

-50° ~ 85° C

-25° ~ 85° C (with LCD)

Working Pressure

Rated working pressure is 16MPa, 25MPa & 40MPa

Static Pressure Limit

3.5kPa absolute to maximum working pressure. The protect pressure can be more than 1.5 times rated working pressure and added on both sides of the transmitter.

One-way Overload Pressure Limit

The maximum one-way overload pressure is maximum working pressure.

Explosion Proof Performance

Intrinsic Safe NEPSI: Ex ia IIC T4 Ga Ta = -40° ~ +60° C

Explosion Proof NEPSI: Ex d IIC T4 ~ T6 Gb Ta = -40° ~ +60° C

Dust Explosion Proof NEPSI: Ex tb IIIC T80°/ T95°/ T130° Db Ta = -40° ~ +60° C

Explosion Proof ATEX/ IECEx II 2 G Ex db IIC T4/T5/T6 Gb Ta: -40 ~ +60° C

Intrinsic Safe ATEX/ IECEx II 2 G Ex ia IIC T4/T5/T6 Ga Ta: -40° ~ +85° C/-40° ~ +50° C/-40° ~ +40° C

Dust Explosion Proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/ T90°/ T130° Db Ta: -40° ~ +60° C

Electromagnetic Compatibility (EMC)

Refer below EMC Performance Table.

Item	Test Items	Basic Standard	Test Conditions	Performing Level
1	Radiated interference (Housing)	GB/T 9254-2008 Table5	30MHz ~ 1000MHz	Qualified
2	Conducted interference (DC power port)	GB/T 9254-2008 Table1	0.15MHz ~ 30MHz	Qualified
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF electromagnetic field immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency magnetic field immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500V (line to line) 1kV(line to ground,1.2us/50us)	B
8	Conducted interference immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

3. INSTALLATION

Supply & Load Requirements

Power Supply is 24V, $R \leq (U_s - 12V)/I_{\max}$ kΩ,
 $I_{\max} = 23$ mA, Max. Voltage: Limited: 4.5 VDC,
 Min.Voltage Limited: 9VDC
 (Low voltage type),13.5VDC
 (with LCD backlit or OLED display)
 Overload range of digital communication:
 230 ~ 600Ω

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm².

Process Connection

Flange with fixing thread 7/16 UNF and 1/4 NPT female thread on both sides.

4. PHYSICAL SPECIFICATIONS

Materials

- Measure Membrane: SS316L

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- Isolating Diaphragm: 316L Stainless Steel / Hastelloy C/ Gold plated on 316L/ FEP plated on 316L/Tantalum
- Process Flange: SS316L
- Bolts and Nuts: SS316 (A4)
- Process Connection: 316 Stainless Steel
- Fill fluid: Silicone oil/ Fluorinated oil
- Sealing ring: NBR, FKM, PTFE
- Housing: Aluminum with epoxy resin coat, and stainless steel material can be chosen as well
- Housing Gasket: Perbunan (NBR)
- Name plate and tag: Stainless Steel 304

Weight:

3.3kg (including Aluminum housing, no display, mounting bracket or process connection)

Housing Protection Level:

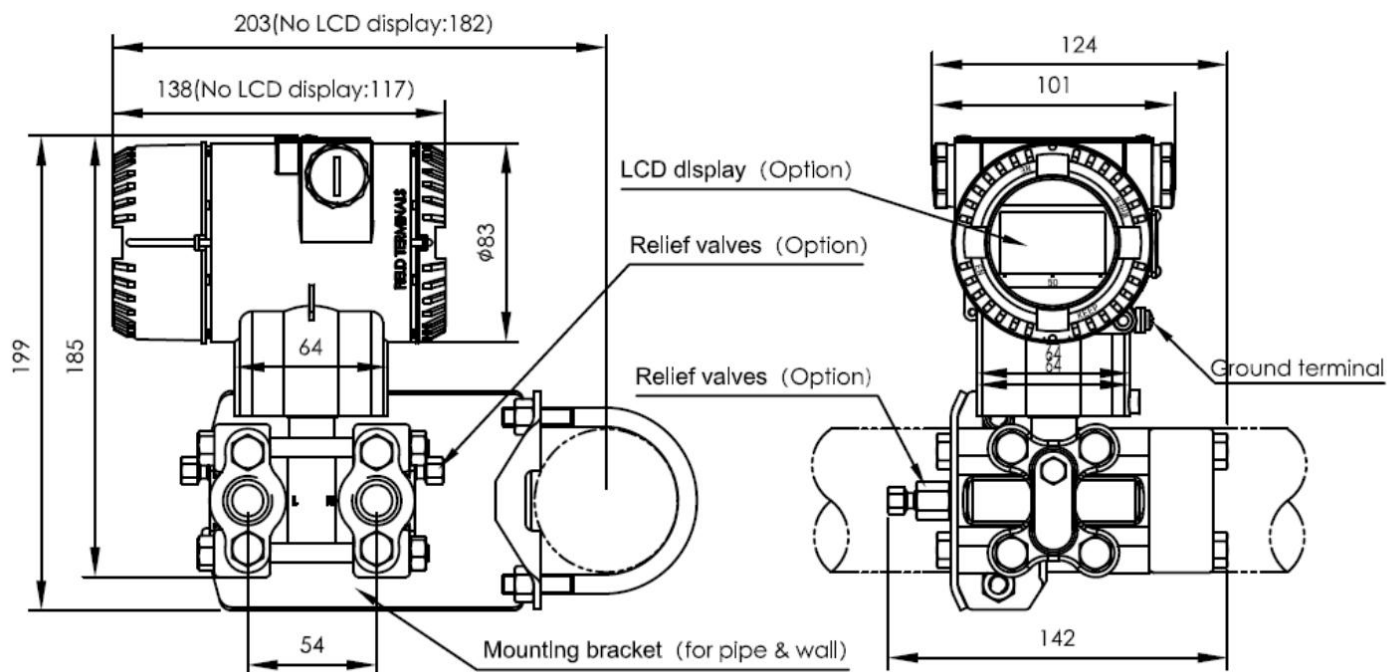
IP67

DIMENSIONS

Unit (mm)

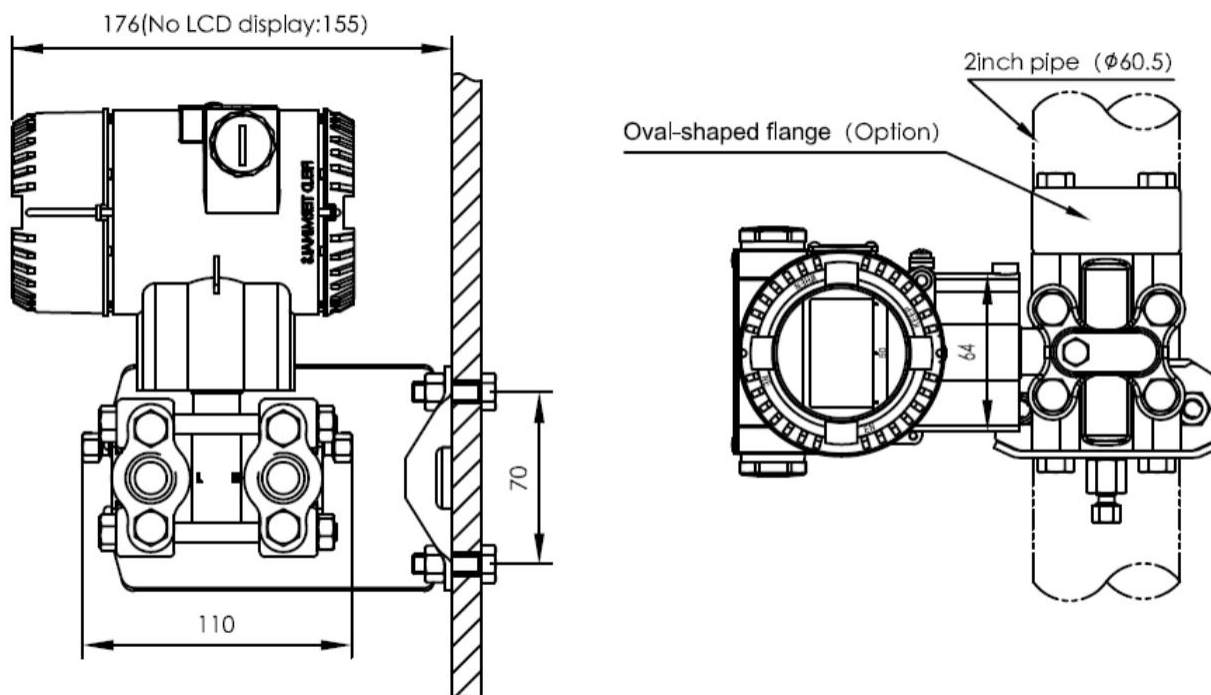
Horizontal Piping Connection Type (Side)

Horizontal Piping Connection (Front)

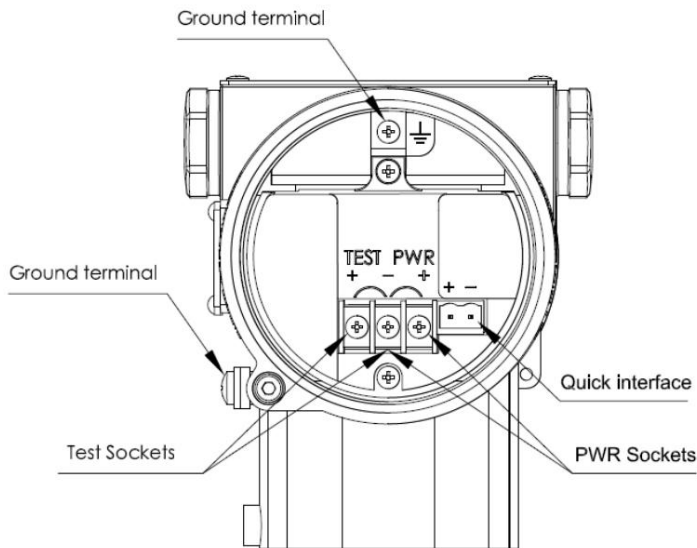


Wall Mounting Connection Type

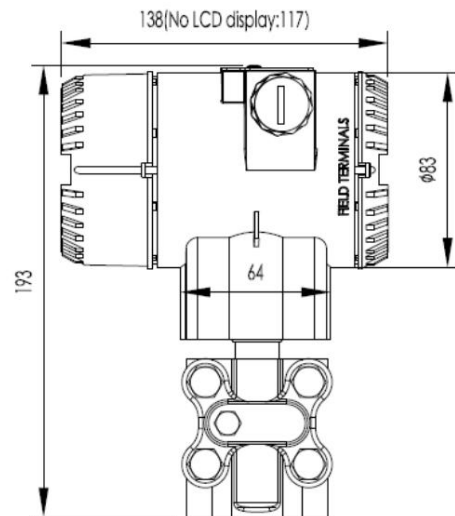
Vertical Piping Connection Type



5. Terminal Configuration



6. Vertical mounting flange (Code V)



7. Process connections Description

Process connections	
<p>Oval-shaped flange with 1/4-18 NPT female thread(code 1)</p> <p>1. Flange 2. O ring 3. Oval-shaped flange 4. Bolt</p>	<p>D-shaped connector with M20x1.5 male thread(code 2)</p> <p>1. Flange 2. D-shaped connector 3. Bolt 4. O ring 5. M20x1.5 Nut 6. Joining pipe</p>

8. Models and Specifications Code Table

High Performance Differential Pressure Transmitter RP1001-					
10	Accuracy				
	A	Basic Accuracy±0.05%			
20	Span				
		C	0-400Pa ~ 40kPa (0-40 ~ 4000 mmH ₂ O) /(0-4 ~ 400mbar)		
		D	0-2.5kPa ~ 250kPa (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)		
		F	0-30kPa ~ 3MPa (0-3 ~ 300 mH ₂ O) /(0-0.3 ~ 30bar)		
30	Static Pressure Sensor				
			1	40Mpa	
40	Diaphragm Fill Fluid				
				A	316L Stainless Steel Silicon oil
				B	316L Stainless Steel Fluorine oil
				C	Hastelloy C Silicon oil

				D	Hastelloy C	Fluorine oil
				E	Gold plated on 316L	Silicon oil
				F	Gold plated on 316L	Fluorine oil
				G	FEP plated on 316L	Silicon oil
				T	Tantalum	Silicon oil
50	Rated Working Pressure					
				1	16MPa	
				2	25MPa	
				3	42MPa	
60	Process Connections					
				N	7/16-20 UNF and 1/4-18 NPT female thread, No relief valve	
				B	7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at end of flanges	
				U	7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at the upper part of the flange side	
				D	7/16-20 UNF and 1/4-18 NPT female thread, Relief valve at the lower part of the flange side	
				V	Vertical mounting flange, 7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at the upper part of the flange side	
70	Process Connection Gasket					
				N	Perbunan (NBR)	
				F	Viton(FKM)	
				P	Teflon (PTFE)	
80	Special Function					
				N	None	
				F	Square Root Output	
				O	Degrease cleansing treatment (Oxygen measurement must be with fluorinated oil filled capsule, Viton (FKM) gasket, <6MPa ,<60° C	
				P	Anti-lightning function	
90	Mounting Bracket					
				N	None	
				1	Stainless steel	
				2	Carbon steel galvanized	
100	Process Connector Accessory					
				N	None	
				1	Stainless steel oval-shaped flange with 1/2 NPT female thread	
				2	Stainless steel D-shaped connector with M20x1.5 male thread	
110	Integral Indicator					
				N	None	
				2	LCD backlit display (-20° C)	
				3	OLED display (-40° C)	
120	Explosion Proof Options					
				N	None	
				A	Intrinsically safe, NEPSI	
				D	Explosion proof, NEPSI	

												B	Intrinsically safe, ATEX
												E	Explosion proof, ATEX
130	Tag Name Plate												
												N	None
												1	Position number marked on the nameplate
												2	Hanging stainless steel plate
140	Manual												
												C	Chinese
												E	English
150	Additional Options (-)												
												S	Stainless Steel Housing
												V	Low Voltage Type
												T	Electrical Connection NPT1/2 (No cable introduction device and blind plug)

Example: RP1001-AC1A1BNF112N1C-SV

[A]: Basic accuracy $\pm 0.05\%$

[C]: The range is 0-400Pa ~ 40kPa (0-40 ~ 4000 mmH₂O)

[1]: Static pressure sensor is 40MPa

[A]: The wetted part is stainless steel 316L diaphragm, and the filling liquid is silicone oil.

[1]: Rated working pressure is 16MPa

[B]: 1/4" NPT process connection interface, 7/16" UNF threaded mounting hole, bleed valve mounted to the rear end of the flange

[N]: The wetted seal is Perbunan rubber (NBR)

[F]: square root output

[1]: Stainless steel mounting bracket

[1]: with 1/2 inch NPT internal thread stainless steel oval flange

[2]: LCD backlight LCD display

[N]: Basic type (no explosion proof options)

[1]: The number is marked on the nameplate

[C]: Chinese manual

[-SV]: Stainless steel housing, low voltage version

RP1002-A High Performance Gauge Pressure Transmitter

RP1003-A High Performance Absolute Pressure Transmitter

The Gauge/ Absolute Pressure Transmitter RP1002/3-A is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure and then output a 4~20 mADC HART signal. The RP1002/3-A can also communicate with RS295 modem for specification setting and process monitoring, etc.



STANDARD SPECIFICATIONS

(The adjustment of measuring range is based on the standard zero setting, Stainless Steel 316L diaphragm and silicon oil filling fluid.)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span

(Including terminal-based linearity, hysteresis, and repeatability)

$\pm 0.05\%$

If $TD > 10$ ($TD = URL/SPAN$), $\pm(0.005 \times TD)\%$

Ambient Temperature Effects

$-25^{\circ} \sim 65^{\circ} \text{C}$: $\pm(0.075 \times TD + 0.025)\% \times \text{Span}$

Every 10°C is $\pm 0.04\% \times \text{Span}$ ($TD=1$)

$-40^{\circ} \sim -25^{\circ} \text{C}$ & $65^{\circ} \sim 85^{\circ} \text{C}$:

$\pm(0.1 \times TD + 0.025)\% \times \text{Span}$

Over Range Effects

$\pm 0.05\% \times \text{Span}$

Stability

$\pm 0.15\% \text{URL}/10 \text{ years}$

Power Supply Effects

$\pm 0.001\% / 10\text{V}$ ($12 \sim 36\text{V DC}$)

2. FUNCTIONAL SPECIFICATIONS

Range Limit

Span and Range (RP1002-A)

Span/ Range		kPa	psi	bar	kgf/cm ²
C	span	2 ~ 40	0.29 ~ 5.8	0.02 ~ 0.4	0.02 ~ 0.4
	range	-40 ~ 40	-5.8 ~ 5.8	-0.4 ~ 0.4	-0.4 ~ 0.4
D	span	2.5 ~ 250	0.3625 ~ 36.25	0.025 ~ 2.5	0.025 ~ 2.5
	range	-100 ~ 250	-14.5 ~ 36.25	-1 ~ 2.5	-1 ~ 2.5
F	span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	range	-100 ~ 3000	-14.5 ~ 435	-1 ~ 30	-1 ~ 30
G	span	0.1 ~ 10MPa	14.5 ~ 1450	1 ~ 100	1 ~ 100
	range	-0.1 ~ 10MPa	-14.5 ~ 1450	-1 ~ 100	-1 ~ 100
H	span	0.21 ~ 21 MPa	30.45 ~ 3045	2.1 ~ 210	2.1 ~ 210
	range	-0.1 ~ 21 MPa	-14.5 ~ 8000	-1 ~ 210	-1 ~ 210
I	span	0.4 ~ 40 MPa	58 ~ 5800	4 ~ 400	4 ~ 400
	range	-0.1 ~ 40 MPa	-14.5 ~ 5800	-1 ~ 400	-1 ~ 400

Span/ Range		kPa	psi	bar	kgf/cm ²
M	Span	10 ~ 250	1.4503 ~ 36.25	0.1 ~ 2.5	0.1 ~ 2.5
	Range	0 ~ 250	0 ~ 36.25	0 ~ 2.5	0 ~ 2.5
O	Span	30 ~ 3000	-4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	Range	0 ~ 3000	0 ~ 435	0 ~ 30	0 ~ 30

Span and Range (RP1003-A)

It can be randomly adjusted within the upper and lower limit of range. It is recommended to select the range code with as low as possible range ratio to optimize the performance.

Zero Setting

Zero Point and range can be adjusted to any value within the measure range in the form as long as: Calibrating Span \geq Maximum Range

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90° will cause zero shift up to 0.25kPa which can be corrected by the zero adjustment. Other ranges have <0.15 kPa range of zero influence which can be adjusted by zero adjustment correction. No range effect.

Output

2 wire type, 4 ~ 20mADC HART output, digital communication, linear or square root output can be chosen, HART protocol is added on the 4~20mADC signal.

Output Signal Limit: $I_{min}=3.9mA$, $I_{max}=20.5mA$

Failure Alarm (Mode Can Be Selected)

Low Mode (min): 3.6 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault.

Note: The standard setting of failure alarm is High Mode.

Responding Time

The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60 sec by software and added to response time.

Preheat Time

< 15s

Ambient Temperature

-40° ~ 85° C

-20° ~ 65° C (with LCD, Fluorine O-ring)

Storage/ Transportation Temperature

-50° ~ 85° C

-25° ~ 85° C (with LCD display)

Pressure Limit

From vacuum to upper range limits

Overload Limit

Span	40kPa	250kPa	3MPa
	(C)	(D/M)	(F/O)
Overload Limit	1MPa	4MPa	15MPa
Span	10MPa(G)	21MPa(H)	40MPa(I)
Overload Limit	20MPa	50MPa	50MPa

Electromagnetic Compatibility(EMC)

See below EMC Performance Table.

Explosion Proof Performance

- Intrinsically Safe NEPSI: Ex ia IIC T4 Ga Ta = -40° ~ +60° C
- Explosion Proof NEPSI: Ex d IIC T4 ~ T6 Gb Ta = -40° ~ +60° C
- Dust Explosion Proof NEPSI: Ex tb IIIC T80°/ T95°/ T130° Db Ta = -40 ~ +60° C
- Explosion Proof ATEX/ IECEx II 2 G Ex db IIC T4/T5/T6 Gb Ta = -40° ~ +60° C
- Intrinsically Safe ATEX/ IECEx II 2 G Ex ia IIC T4/T5/T6 Ga Ta = -40° ~ +85° C/ -40° ~ +50°/ -40° ~ +40° C
- Dust Explosion Proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/ T90°/ T130° Db Ta = -40° ~ +60° C

3. INSTALLATION**Supply & Load Requirements**

Power Supply is 24VDC, $R \leq (U_s - 12V)/I_{\max}$ k Ω , I_{\max} = 23 mA

Max. Voltage Limit: 4.5 VDC

Min. Voltage Limited: 9VDC (Low voltage type), 13.5VDC (with LCD backlit or OLED display)

Overload range of digital communication: 230 ~ 600 Ω .

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm².

Process Connection

Standard NPT $\frac{1}{2}$ Female Thread. It can be transferred to NPT $\frac{1}{2}$, G $\frac{1}{2}$ and M20x1.5 Male Thread, KF16 Vacuum connectors.

4. PHYSICAL SPECIFICATIONS**Materials**

- Isolating Diaphragm: 316L Stainless Steel / Hastelloy C
- Process Connection: Stainless Steel 316
- Fill fluid: Silicone oil/ Fluorinated oil
- Housing: Aluminum with epoxy resin coat and stainless steel material can be chosen as well
- Housing Gasket: Perbunan (NBR)
- Name plate and tag: Stainless Steel 304

Weight

1.6kg (including Aluminum housing, without display, mounting bracket or process connection)

Housing Protection Level:

IP67

EMC Performance Table

Sr. No.	Test Items	Basic Standard	Test Conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008 Table5	30MHz ~ 1000MHz	Qualified
2	Conducted Interference (DC power port)	GB/T 9254-2008 Table1	0.15MHz ~ 30MHz	Qualified
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500V (line to line 1kV (line to ground, 1.2us/50us)	B
8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

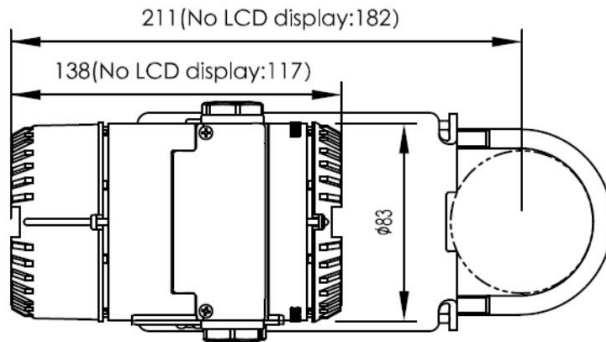
Note:

- (1) Performance level A description: The technical specifications within the limits of normal performance.
- (2) Performance level B description: Temporary reduction or loss of functionality or performance. It can restore itself. The actual operating conditions, storage and data will not be changed.

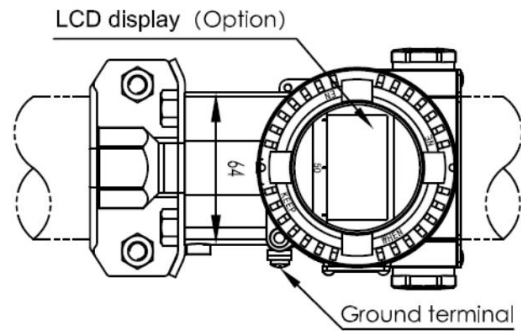
DIMENSIONS

Unit (mm)

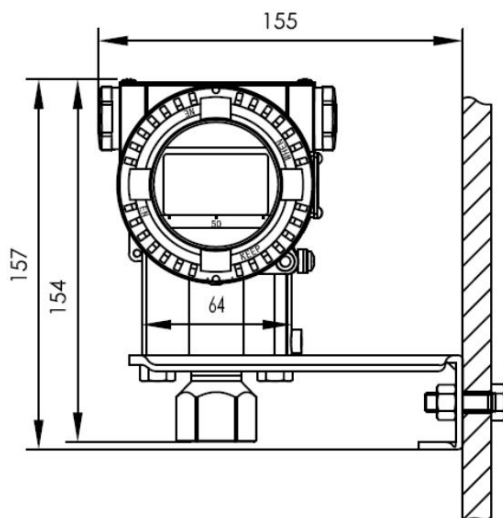
Horizontal Piping Connection Type(Side)



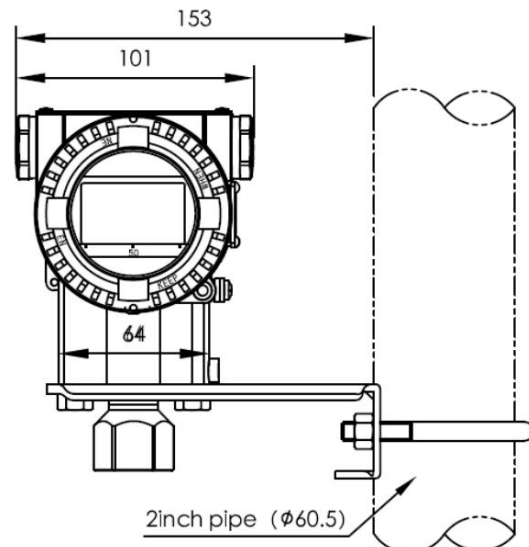
Horizontal Piping Connection (Front)



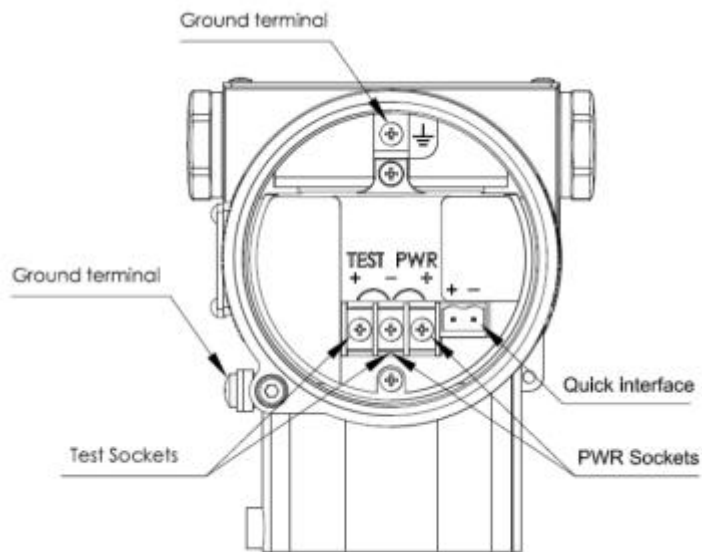
Wall Mounting Connection Type



Vertical Piping Connection Type



5. Terminal Configuration



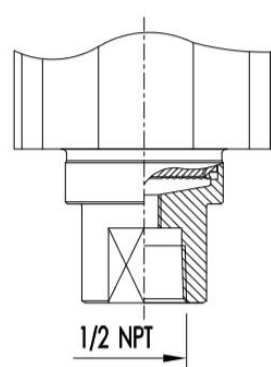
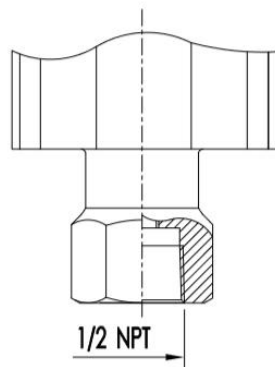
Note: Quick interface functionally equivalent to the signal terminal

6. Process connections Description (Code 1)

6.1 Default Process Connection (Code 1)

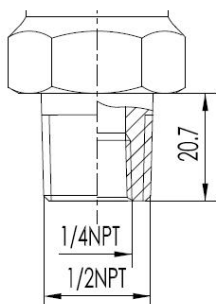
F/G/H/I/O Span

C/S/D/M Span

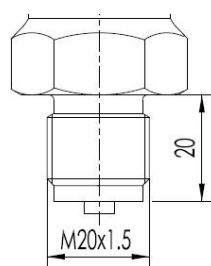


6.2 Other forms of Process connector

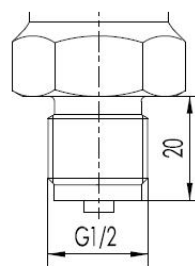
1/2" NPT Male
Thread (Code 2)



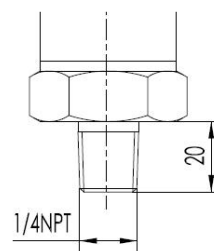
M20x1.5 Male
Thread (Code 3)



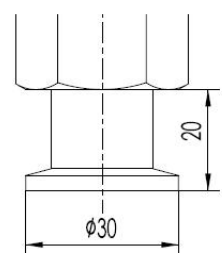
G 1/2 Male
Thread (Code 4)

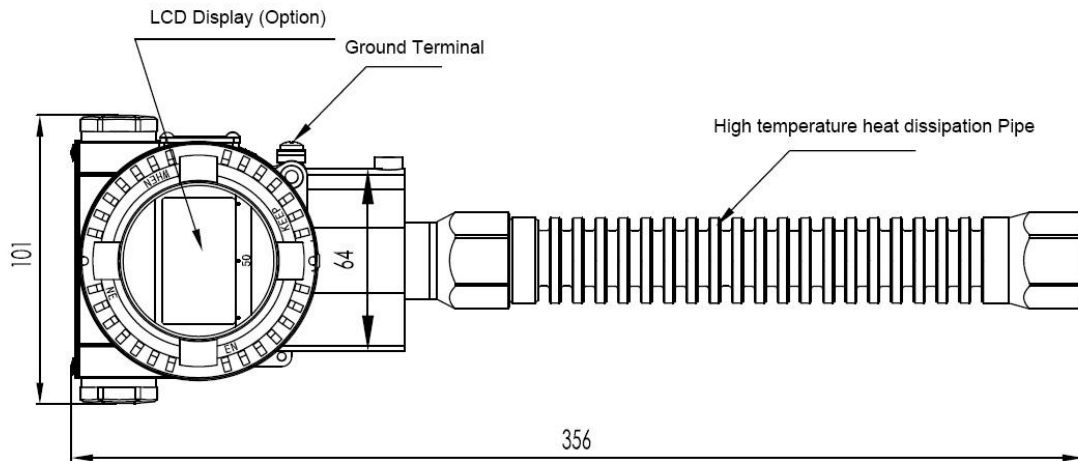


1/4" NPT Male
Thread (Code 6)



Vacuum connector
DIN 28403 KF16
/ISO 2861 (Code 5)

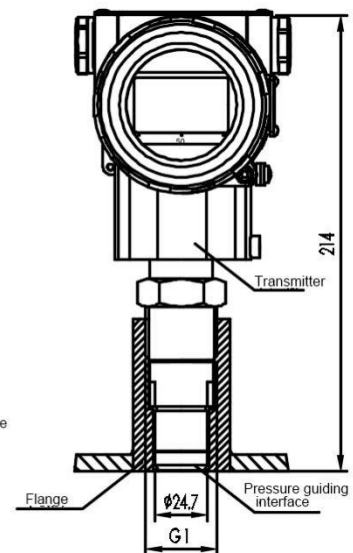
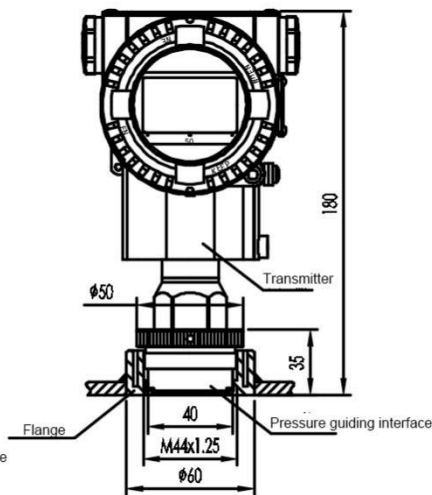
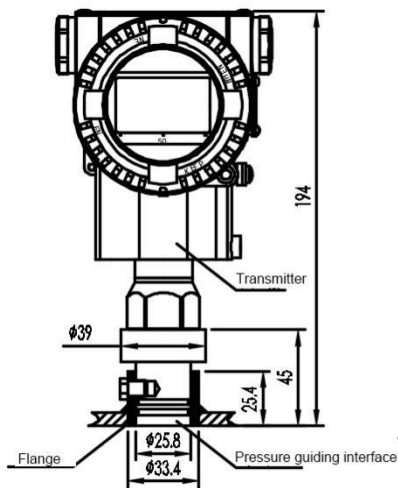




Φ25.8 insert pulp connector
(Code S)

M44*1.25 thread pulp connector
(Code M)

G 1 thread pulp
connector (Code L)



7. Models and Specifications Code Table

High Performance Gauge Pressure Transmitter RP1002-	
High Performance Absolute Pressure Transmitter RP1003-	
10	Accuracy
A	Basic Accuracy $\pm 0.05\%$
20	Span ^[1]
	Gauge Pressure RP1002
C	0-2kPa ~ 40kPa / (0-200 ~ 4000 mmH ₂ O) /(0-20 ~ 400mbar)
D	0-2.5kPa ~ 250kPa / (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)
F	0-30kPa ~ 3MPa / (0-3 ~ 300 mH ₂ O) /(0-0.3 ~ 30bar)
G	0-0.1MPa ~ 10MPa /(0-1 ~ 100bar)
H	0-0.21MPa ~ 21MPa / (0-2.1 ~ 210 bar)
I	0-0.4MPa ~ 40MPa / (0-4 ~ 400 bar)

15

											1	Position number marked on the nameplate
											2	Hanging stainless steel plate
100	Manual											
											C	Chinese
											E	English
110	Additional Options^[3] (-)											
											S	Stainless Steel Housing
											V	Low Voltage Type
											T	Electrical Connection NPT1/2 (No cable introduction device and blind plug)

Note 1: RP1002 corresponds to the selected gauge pressure range code and RP1003 corresponds to the absolute pressure range codes.

Note 2: Vacuum interface DIN 28403 KF16 / ISO 2861 is only for the ranges less than 2.5 bar.

Note 3: The optional N/ F/ P item is only applicable to the range **S** transmitter. It requires selecting the appropriate sealing material according to the measuring medium. The standard specification is NBR. The option **S** can be applied to all specifications of pressure transmitter.

Example: RP1002-ACA1P12N1C-SV

[RP1002-]: Gauge Pressure Transmitter

[A]: Basic error $\pm 0.05\%$

[C]: The range is 0-2kPa ~ 40kPa / (0-200 ~ 4000 mmH₂O)/(0-20 ~ 400mbar)

[A]: The wetted part is stainless steel 316L diaphragm, and the filling liquid is silicone oil.

[1]: Process connection interface for 1/2" NPT internal thread

[P]: With lightning protection

[1]: Stainless Steel mounting bracket

[2]: LCD backlight display

[N]: Basic type (non-explosion-proof transmitter)

[1]: The number is marked on the nameplate

[C]: English instruction manual

[-SV]: Stainless steel housing, low voltage version

RP1001-B Differential Pressure Transmitter
RP1001-C Differential Pressure Transmitter

The Differential Pressure Transmitter RP1001-B/C is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure, and then output a 4~20 mADC HART signal. The RP1001 can also communicate with RS295 modem for specification setting and process monitoring, etc.



STANDARD SPECIFICATIONS

(The adjustment of measuring range is based on the standard zero setting, stainless steel 316L diaphragm and silicon oil filling fluid)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span

(Including terminal-based linearity, hysteresis, and repeatability)

RP1001-B: $\pm 0.075\%$

RP1001-C: $\pm 0.1\%$

- If $TD > 10$ ($TD = URL/SPAN$),

RP1001-B: $\pm(0.0075 \times TD)\%$

RP1001-C: $\pm(0.01 \times TD)\%$

- For Range B:

If $TD > 6$ ($TD = URL/SPAN$),

RP1001-B: $\pm(0.0125 \times TD)\%$

RP1001-C: $\pm(0.0166 \times TD)\%$

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

Ambient Temperature Effects

$-25^{\circ} \sim 65^{\circ} \text{C}$

$\pm(0.15 \times TD + 0.05)\% \times \text{Span}$

Every 10°C is $\pm 0.08\% \times \text{Span}$ ($TD=1$)

$-40^{\circ} \sim -25^{\circ}$ and $65^{\circ} \sim 85^{\circ} \text{C}$:

$\pm(0.2 \times TD + 0.05)\% \times \text{Span}$

Over Range Effects

$\pm 0.075\% \times \text{Span}$

Static Pressure Effects

Reference accuracy: $\pm 0.075\%$

- SPAN B = $\pm(0.35\% \text{URL} + 0.05\% \text{SPAN})/10 \text{MPa}$

- SPANC&D&F =

$\pm(0.075\% \text{URL} + 0.05\% \text{SPAN})/10 \text{MPa}$

Reference accuracy: $\pm 0.01\%$

- SPAN B = $\pm(0.45\% \text{URL} + 0.05\% \text{SPAN})/10 \text{MPa}$

- SPANC&D&F =

$\pm(0.25\% \text{URL} + 0.05\% \text{SPAN})/10 \text{MPa}$

Over Pressure Effects

$\pm 0.1\% \times \text{Span} / 10 \text{MPa}$

Stability

$\pm 0.15\% \text{URL} / 10 \text{ years}$

Power Effects

$\pm 0.001\% / 10 \text{V}$ ($12 \sim 36 \text{V DC}$)

2. FUNCTIONAL SPECIFICATIONS

Span and Range

Span/ Range	kPa	inH ₂ O	mbar	mmH ₂ O

B	Span	0.2 ~ 6	0.8 ~ 24	2 ~ 60	20 ~ 600
	Range	-6 ~ 6	-24 ~ 24	-60 ~ 60	-600 ~ 600
C	Span	0.4 ~ 40	1.6 ~ 160	4 ~ 400	40 ~ 4000
	Range	-40 ~ 40	-160 ~ 160	-400 ~ 400	-4000 ~ 4000
D	Span	2.5 ~ 250	10 ~ 1000	25 ~ 2500	0.25 ~ 25mH ₂ O
	Range	-250 ~ 250	-1000 ~ 1000	-2500 ~ 2500	-25 ~ 25mH ₂ O
F	Span	30 ~ 3000	120 ~ 12000	0.3 ~ 30 bar	3 ~ 300mH ₂ O
	Range	-500 ~ 3000	-2000 ~ 12000	-50 ~ 30bar	-50 ~ 300mH ₂ O

Range Limit

It can be randomly adjusted within the upper and lower limit of range. It is recommended to select the range code with as low as possible range ratio to optimize the performance.

Zero Setting

Zero Point and range can be adjusted to any value within the measure range in the form as long as Calibrating Span ≥ Maximum Range.

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90° will cause zero shift up to 0.4 kPa (40 mmH₂O) which can be corrected by the zero adjustment.

Output

2 wire type, 4 ~ 20mADC HART output, digital

communication, linear or square root output can be chosen, HART protocol is added on the 4~20mADC signal.

Output Signal Limit: $I_{min} = 3.9mA$, $I_{max} = 20.5mA$

Failure Alarm (Mode can be selected)

Low Mode (min): 3.6 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault. Note: The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec. The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60 sec by software and added to response time.

Preheat Time

< 15s

Ambient Temperature

-40° ~ 85° C

-20° ~ 65° C (with LCD, Fluorine O-ring)

Storage/ Transportation Temperature

-50° ~ 85° C

-25° ~ 85° C (with LCD display)

Working Pressure (Silicon Oil)

Rated working pressure options are 16MPa, 25MPa & 40MPa

Static Pressure Limit

3.5kPa absolute to maximum working pressure. The protect pressure can be more than 1.5 times rated working pressure and added on both side of the transmitter.

One-way Overload Pressure Limit

The maximum one-way overload pressure is maximum working pressure.

One-way Overload Pressure Limit

The maximum one-way overload pressure is maximum working pressure.

Electromagnetic Compatibility (EMC)

See below EMC Performance Table.

Explosion Proof Performance

- Intrinsically Safe NEPSI: Ex ia IIC T4 Ga Ta = -40° ~ +60° C
- Explosion Proof NEPSI: Ex d IIC T4 ~ T6 Gb Ta = -40° ~ +60° C
- Dust Explosion Proof NEPSI: Ex tb IIIC T80°/ T95°/ T130° Db Ta = -40° ~ +60° C
- Explosion Proof ATEX/ IECEx II 2 G Ex db IIC T4/ T5/ T6 Gb Ta = -40° ~ +60° C
- Intrinsically Safe ATEX/ IECEx II 2 G Ex ia IIC T4/ T5/ T6 Ga Ta: -40° ~ +85° C/ -40° ~ +50° C/ -40° ~ +40° C
- Dust Explosion Proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/T90°/T130° Db Ta = -40° ~ +60°

3. INSTALLATION**Supply & Load Requirements**

Power Supply Requirement is 24VDC, $R \leq (U_s - 12V)/I_{\max}$ k Ω , $I_{\max} = 23$ mA

Max. Voltage: Limited: 4 5 VDC, Min.

Voltage Limited : 9VDC (Low voltage type), 13.5VDC (with LCD backlit or OLED display)

Overload range of digital communication: 230 ~ 600 Ω

Electrical Connection

The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections 0.5~2.5mm².

Process Connection

Flange with fixing thread 7/16 UNF and 1/4 NPT female thread on both sides.

4. PHYSICAL SPECIFICATIONS**Materials**

- Measure Membrane: SS316L
- Isolating Diaphragm: 316L Stainless Steel / Hastelloy C/ Gold plated on 316L/ FEP plated on 316L/ Tantalum
- Process Flange: SS316L
- Process Connection: 316 Stainless Steel
- Bolts and Nuts: SS316 (A4)
- Fill Fluid: Silicone oil/ Fluorinated oil
- Sealing Ring: NBR, FKM, PTFE
- Housing: Aluminum with epoxy resin coat and Stainless Steel material can be chosen as well
- Housing Gasket: Perbunan (NBR)
- Name Plate and Tag: 304 Stainless Steel

Weight

3.3kg (including Aluminum housing, without display, mounting bracket and process connection)

Housing Protection Level

IP67

EMC Performance Table

Sr. No.	Test Items	Basic Standard	Test Conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008 Table5	30MHz ~ 1000MHz	Qualified
2	Conducted Interference (DC Power Port)	GB/T 9254-2008 Table1	0.15MHz ~ 30MHz	Qualified
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500V (Line to line), 1kV (line to ground), 1.2us/50us)	B
8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

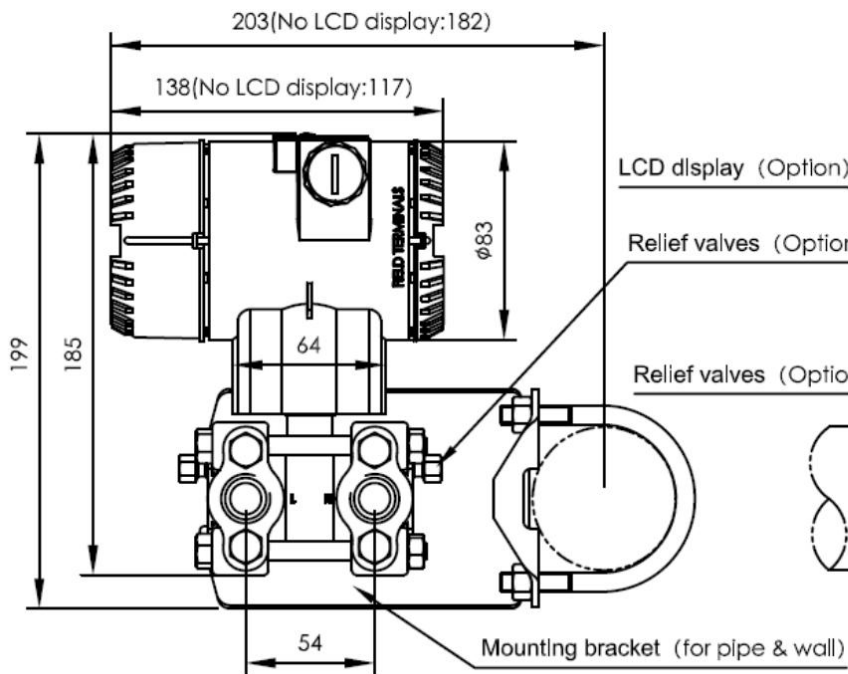
Note:

- (1) Performance level A description: The technical specifications within the limits of normal performance.
- (2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

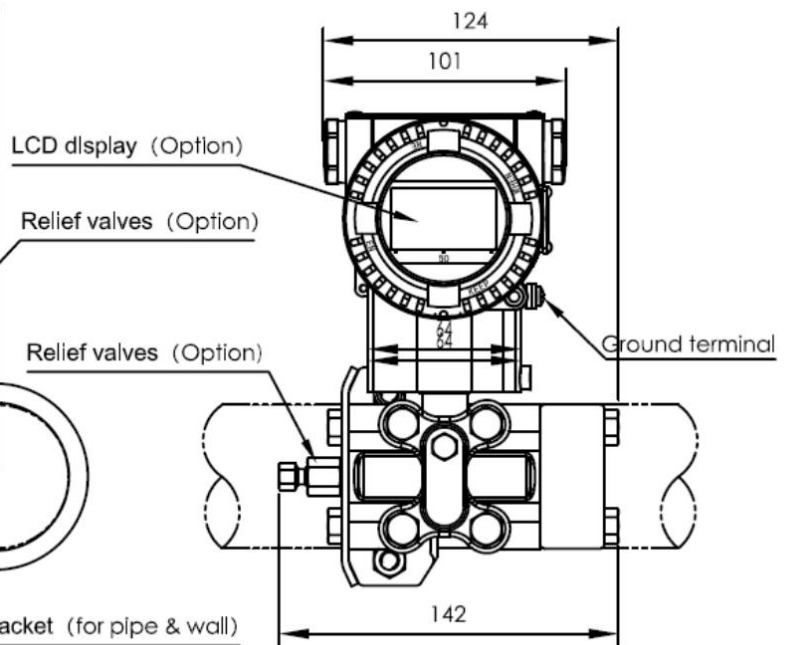
DIMENSIONS

Unit (mm)

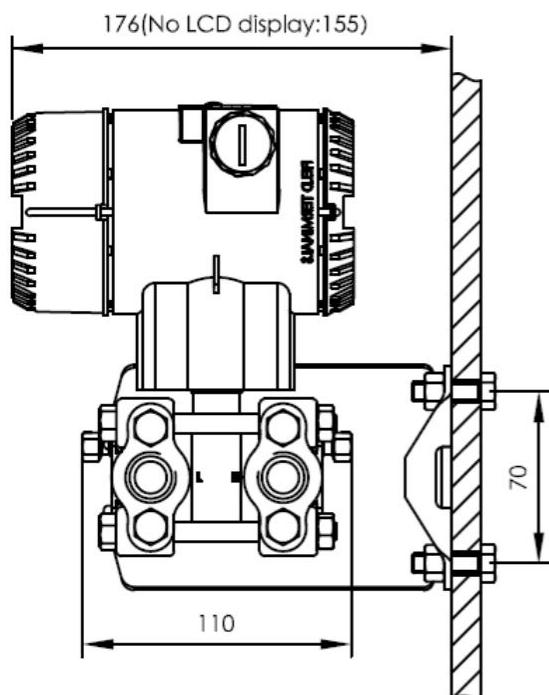
Horizontal Piping Connection Type (Side)



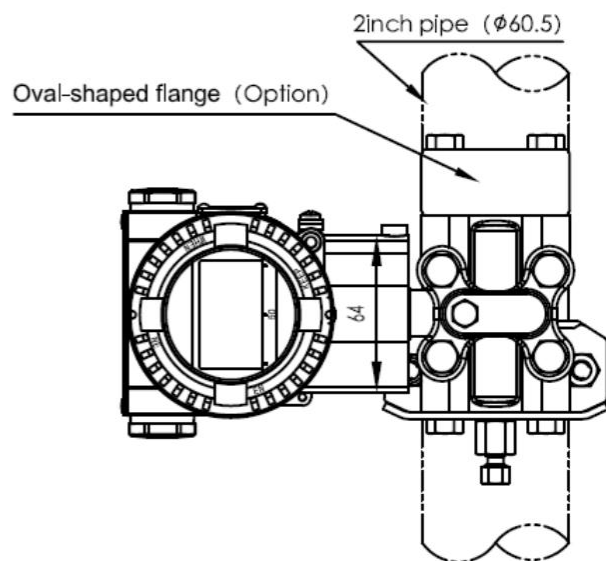
Horizontal Piping Connection (Front)



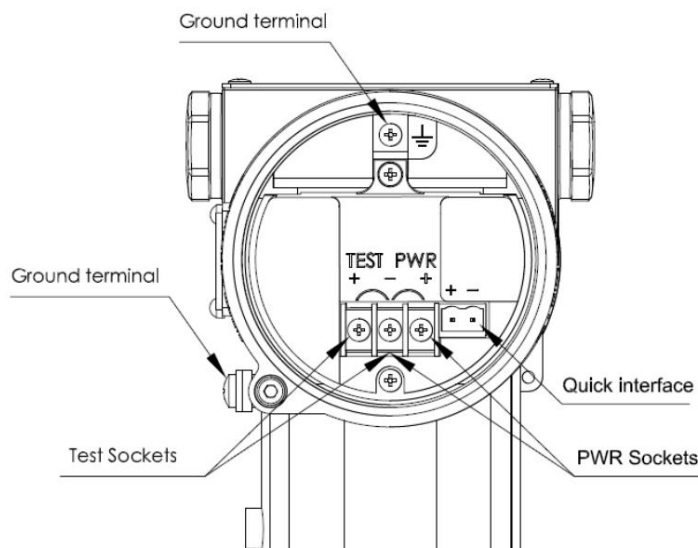
Wall Mounting Connection Type



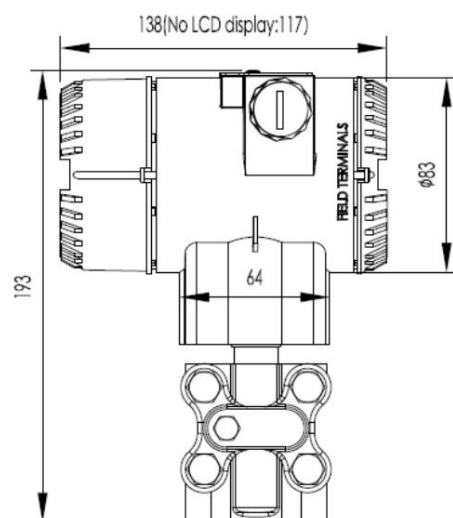
Vertical Piping Connection Type



5. Terminal Configuration



6. Vertical Mounting Flange (Code V)



Note: Quick interface functionally equivalent to the signal terminal.

7. Process Connections Description

Process connections	
<p>Oval-shaped flange with 1/4-18 NPT female thread(code 1)</p> <p>1. Flange 2. O ring 3. Oval-shaped flange 4. Bolt</p>	<p>D-shaped connector with M20x1.5 male thread(code 2)</p> <p>1. Flange 2. D-shaped connector 3. Bolt 4. O ring 5. M20x1.5 Nut 6. Joining pipe</p>

8. Models and Specifications Code Table

Differential Pressure Transmitter RP1001-				
10 Accuracy				
	B	Basic Accuracy ±0.075%		
	C	Basic Accuracy ±0.1%		
20 Span				
	B	0-200Pa ~ 6kPa (0-20 ~ 600 mmH ₂ O) /(0-2 ~ 60mbar)		
	C	0-400Pa ~ 40kPa (0-40 ~ 4000 mmH ₂ O) /(0-40 ~ 400mbar)		
	D	0-2.5kPa ~ 250kPa (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)		
	F	0-30kPa ~ 3MPa (0-3 ~ 300 mH ₂ O) / (0-0.3 ~ 30bar)		
30 Static Pressure Sensor				
		0	None	
40 Diaphragm Fill Fluid				
	A	316L Stainless Steel		Silicon oil

					B	316L Stainless Steel	Fluorine oil
					C	Hastelloy C	Silicon oil
					D	Hastelloy C	Fluorine oil
					E	Gold plated on 316L	Silicon oil
					F	Gold plated on 316L	Fluorine oil
					G	FEP plated on 316L	Silicon oil
					T	Tantalum	Silicon oil
50	Rated Working Pressure						
					1	16MPa	
					2	25MPa	
					3	42MPa	
60	Process Connections						
					N	7/16-20 UNF and 1/4-18 NPT female thread, No relief valve	
					B	7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at end of flanges	
					U	7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at the upper part of the flange side	
					D	7/16-20 UNF and 1/4-18 NPT female thread, Relief valve at the lower part of the flange side	
					V	Vertical mounting flange, 7/16-20 UNF and 1/4-18 NPT female thread, Relief valves at the upper part of the flange side	
70	Process Connection Gasket						
					N	Perbunan (NBR)	
					F	Viton (FKM)	
					P	Teflon (PTFE)	
80	Special Function						
					N	None	
					F	Square Root Output	
					O	Degrease cleansing treatment (Oxygen measurement must be with fluorinated oil filled capsule, Viton (FKM) gasket, <6MPa, <60° C)	
					P	Anti-lightning function	
90	Mounting Bracket						
					N	None	
					1	Stainless Steel	
					2	Carbon Steel Galvanized	
100	Process Connector Accessory						
					N	None	
					1	Stainless Steel oval-shaped flange with 1/2 NPT female thread	
					2	Stainless Steel D-shaped connector with M20x1.5 male thread	
110	Integral Indicator						
					N	None	
					2	LCD backlit display (-20° C)	
					3	OLED display (-40° C)	
120	Explosion Proof Options						
					N	None	

													A	Intrinsically safe, NEPSI	
													D	Explosion proof, NEPSI	
													B	Intrinsically safe, ATEX	
													E	Explosion proof, ATEX	
130	Tag Name Plate														
													N	None	
													1	Position number marked on the nameplate	
													2	Hanging Stainless Steel plate	
140	Manual														
													C	Chinese	
													E	English	
150	Additional Options (-)														
													S	Stainless Steel Housing	
													V	Low Voltage Type	
													T	Electrical Connection NPT1/2 (No cable introduction device and blind plug)	

Example: RP1001-BC0A1BNF112N1C

[B]: Basic error $\pm 0.075\%$

[C]: The range is 0-400Pa ~ 40kPa (0-40 ~ 4000 mmH₂O)

[0]: No Static Pressure Sensor

[A]: The wetted part is stainless steel 316L diaphragm, and the filling liquid is silicone oil.

[1]: Rated Working Pressure is 16MPa

[B]: 1/4" NPT process connection interface, 7/16" UNF threaded mounting hole, bleed valve mounted to the rear end of the flange

[N]: The wetted seal is nitrile rubber (NBR)

[F]: Square Root Output

[1]: Stainless steel mounting bracket

[11]: With 1/2 inch NPT internal thread stainless steel oval flange

[2]: LCD backlight display

[N]: Basic type (non-explosion-proof transmitter)

[1]: The number is marked on the nameplate

[C]: Chinese instruction manual

RP1002-B/C Gauge Pressure Transmitter

RP1003-B/C Absolute Pressure Transmitter

The Gauge/Absolute Pressure Transmitter RP1002/3-B/C is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure and then output a 4~20 mA DC HART signal. The RP1002/3 can also communicate with RS295 modem for specification setting and process monitoring, etc.

STANDARD SPECIFICATIONS

(The adjustment of measuring range is based on the standard zero setting, Stainless Steel 316L diaphragm and silicon oil filling fluid.)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span

(Including terminal-based linearity, hysteresis, and repeatability)

RP1001-B: $\pm 0.075\%$

RP1001-C: $\pm 0.1\%$

- If $TD > 10$ $TD = URL/SPAN$)

RP1001-B: $\pm(0.0075 \times TD)\%$

RP1001-C: $\pm(0.01 \times TD)\%$

- For Span B:

If $TD > 6$ ($TD = URL/SPAN$)

RP1001-B: $\pm(0.0125 \times TD)\%$

RP1001-C: $\pm(0.0166 \times TD)\%$

Ambient Temperature Effects

$-25^{\circ} \sim 65^{\circ} \text{C} = \pm(0.15 \times TD + 0.05)\% \times \text{Span}$

Every $10^{\circ} \text{C} = \pm 0.08\%$ ($TD = 1$)

$-40^{\circ} \sim -25^{\circ} \text{C}$ and $65^{\circ} \sim 85^{\circ} \text{C}$

$\pm(0.2 \times TD + 0.05)\% \times \text{Span}$



Over Range Effects

$\pm 0.075\% \times \text{Span}$

Stability

$\pm 0.15\%$ URL/ 10 years

Power Effects

$\pm 0.001\%$ / 10V (12 ~ 36V DC)

2. FUNCTIONAL SPECIFICATIONS

Span and Range (RP1002-B/C Gauge Pressure)

Span/Range		kPa	psi	bar	kgf/cm ²
B	Span	0.6 ~ 6	0.087 ~ 0.87	6 ~ 60mbar	0.006 ~ 0.06
	Range	-6 ~ 6	-0.87 ~ 0.87	-60 ~ 60mbar	-0.06 ~ 0.06
C	Span	2 ~ 40	0.29 ~ 5.8	0.02 ~ 0.4	0.02 ~ 0.4
	Range	-40 ~ 40	-5.8 ~ 5.8	-0.4 ~ 0.4	-0.4 ~ 0.4
D	Span	2.5 ~ 250	0.3625 ~ 36.25	0.025 ~ 2.5	0.025 ~ 2.5
	Range	-100 ~ 250	-14.5 ~ 36.25	-1 ~ 2.5	-1 ~ 2.5
F	Span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30

	Range	-100 ~ 3000	-14.5 ~ 435	-1 ~ 30	-1 ~ 30
G	Span	0.1 ~ 10MP a	14.5 ~ 1450	1 ~ 100	1 ~ 100
	Range	-0.1 ~ 10MP a	-14.5 ~ 1450	-1 ~ 100	-1 ~ 100
H	Span	0.21 ~ 21 MPa	30.45 ~ 3045	2.1 ~ 210	2.1 ~ 210
	Range	-0.1 ~ 21 MPa	-14.5 ~ 8000	-1 ~ 210	-1 ~ 210
I	Span	0.4 ~ 40 MPa	58 ~ 5800	4 ~ 400	4 ~ 400
	Range	-0.1 ~ 40 MPa	-14.5 ~ 5800	-1 ~ 400	-1 ~ 400

Span and Range (RP1003-B/C Absolute Pressure)

Span/ Range		kPa	psi	bar	kgf/cm ²
L/T	Span	10 ~ 40	1.45 ~ 5.8	0.1 ~ 0.4	0.1 ~ 0.4
	Range	0 ~ 40	0 ~ 5.8	0 ~ 0.4	0 ~ 0.4
M	Span	10 ~ 250	1.4503 ~ 36.25	0.1 ~ 2.5	0.1 ~ 2.5
	Range	0 ~ 250	0 ~ 36.25	0 ~ 2.5	0 ~ 2.5
O	Span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	Range	0 ~ 3000	0 ~ 435	0 ~ 30	0 ~ 30

Range Limit

It can be randomly adjusted within the upper and lower limit of range. It is recommended to select the range code with as low as possible range ratio to optimize the performance.

Zero Setting

Zero Point and range can be adjusted to any value within the measure range in the form as long as Calibrating Span \geq Maximum Range

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90° will cause zero shift up to 0.25kPa which can be corrected by the zero adjustment. Other ranges have <0.15kpa range of zero influence can be adjusted by zero adjustment correction. No range effect.

Output

2 wires type, 4 ~ 20mADC HART output, digital communication, linear or square root output can be choose, HART protocol is added on the 4~20mADC signal. Output Signal Limit: $I_{min}=3.9mA$, $I_{max}=20.5mA$

Failure Alarm (Mode can be selected)

Low Mode (min): 3.6 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault. Note: The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec. The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60 sec by software and added to response time.

Preheat Time

< 15s

Ambient Temperature

-40° ~ 85° C

-20° ~ 65° C (with LCD, Fluorine O-ring)

Storage/ Transportation Temperature

-50° ~ 85° C

-25° ~ 85° C (with LCD display)

Pressure Limit

From vacuum to upper range limits

Overload Limit

Span	6kPa		40kPa	250kPa
	(B)		(C/L)	(D/M)
Overload Limit	0.2MPa		1MPa	4MPa
Span	3MPa (F/O)	10MPa (G)	21MPa (H)	40MPa (I)
Overload Limit	15MPa	20MPa	50MPa	50MPa

Electromagnetic Compatibility (EMC)

See below EMC Performance Table.

Explosion Proof Performance

- Intrinsically Safe NEPSI: Ex ia IIC T4 Ga Ta = -40° ~ +60° C
- Explosion Proof NEPSI: Ex d IIC T4 ~ T6 Gb Ta = -40° ~ +60° C
- Dust Explosion Proof NEPSI: Ex tb IIIC T80°/T95°/T130° Db Ta = -40° ~ +60° C
- Explosion Proof ATEX/ IECEx: II 2 G Ex db IIC T4/T5/T6 Gb Ta = -40° ~ +60° C
- Intrinsically Safe ATEX/ IECEx: II 2 G Ex ia IIC T4/T5/T6 Ga Ta = -40° ~ +85° C/ -40° ~ +50° C/ -40° ~ +40° C
- Dust Explosion Proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/T90°/T130° Db Ta = -40° ~ +60° C

3 INSTALL**Supply & Load Requirements**

Power Supply is 24V, $R \leq (U_s - 12V)/I_{\max}$ kΩ,
 $I_{\max} = 23$ mA,

Max. Voltage: Limited: 4.5 VDC,

Min. Voltage Limited: 9VDC (Low voltage type),
13.5VDC (with LCD backlit or OLED display)Overload range of digital communication:
230 ~ 600Ω.**Electrical Connection**

M20X1.5 or NPT1/2 Male thread. The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections 0.5~ 2.5mm².

Process Connections

Standard NPT1/2 Female Thread. It can be transferred to NPT 1/2, G1/2 and M20x1.5 Male Thread, KF16 Vacuum connectors.

4. PHYSICAL SPECIFICATIONS**Materials**

- Isolating Diaphragm: 316L Stainless Steel/Hastelloy C
- Process Connection: 316 Stainless Steel
- Fill Fluid: Silicone Oil/ Fluorinated Oil
- Housing: Aluminum with epoxy resin coat and stainless steel material can be chosen as well
- Housing Gasket: Perbunan (NBR)
- Name Plate and Tag: 304 Stainless Steel

Weight:

1.6kg (including Aluminum housing, without display, mounting bracket or process connection)

Housing Protection Level:

IP67

EMC Performance Table

Sr. No.	Test Items	Basic Standard	Test Conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008 Table5	30MHz ~ 1000MHz	Qualified
2	Conducted Interference (DC power port)	GB/T 9254-2008 Table1	0.15MHz ~ 30MHz	Qualified
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500V (Line to line), 1kV (line to ground), 1.2us/50us	B
8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

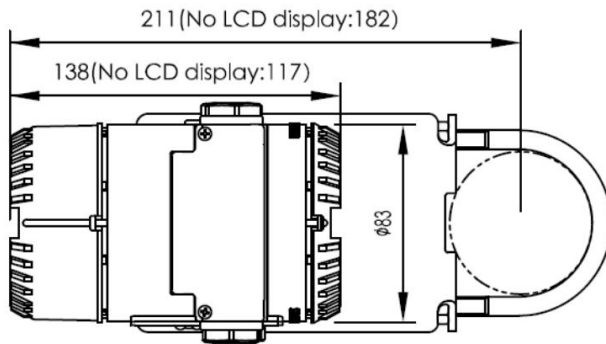
Note:

- (1) Performance level A description: The technical specifications within the limits of normal performance.
- (2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

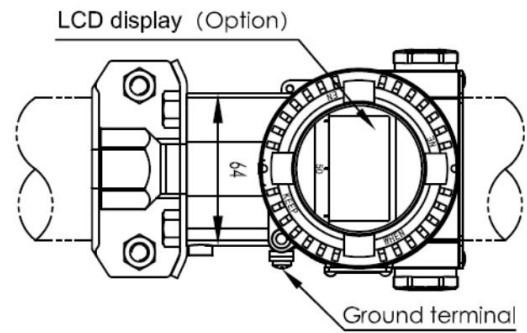
DIMENSIONS

Unit (mm)

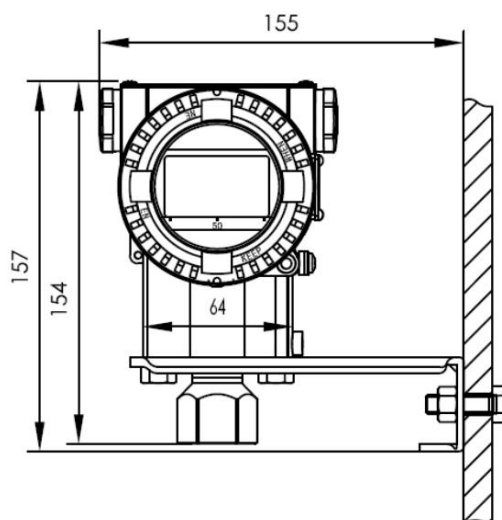
Horizontal Piping Connection Type(Side)



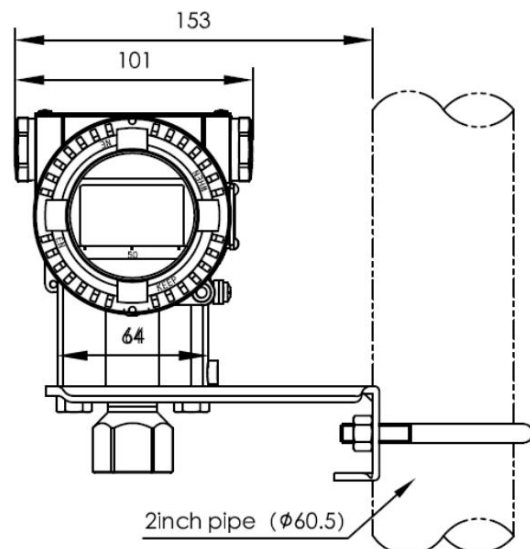
Horizontal Piping Connection (Front)



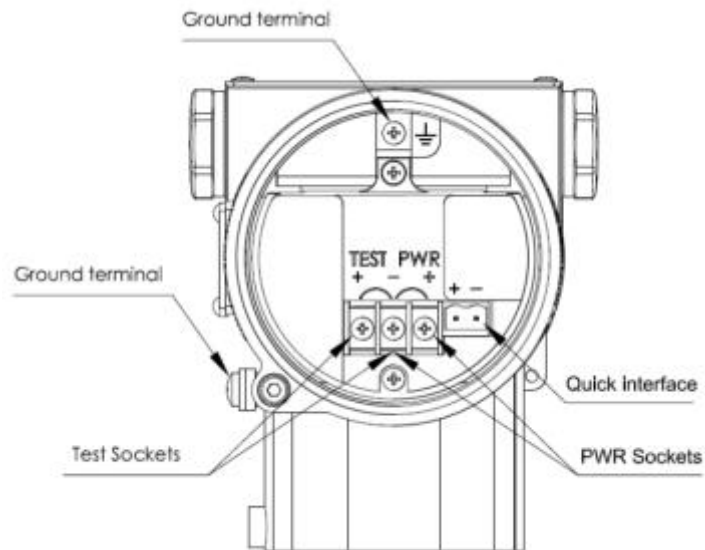
Wall Mounting Connection Type



Vertical Piping Connection Type



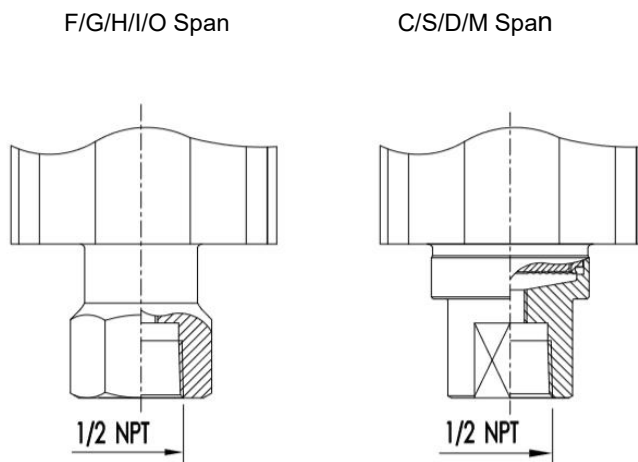
5. Terminal Configuration



Note: Quick interface functionally equivalent to the signal terminal.

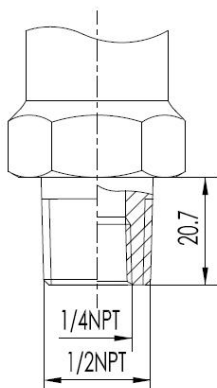
6. Process connections Description (Code 1)

6.1 Default Process Connection (Code 1)

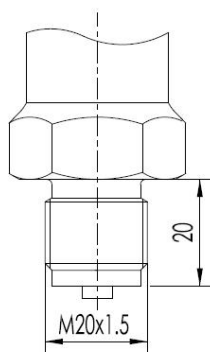


6.2 Other forms of Process connector

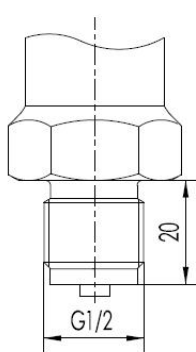
1/2" NPT Male
Thread (Code 2)



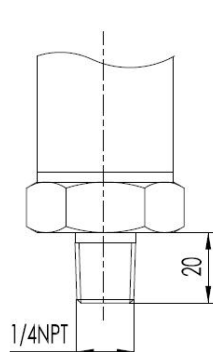
M20*1.5 Male
Thread (Code 3)



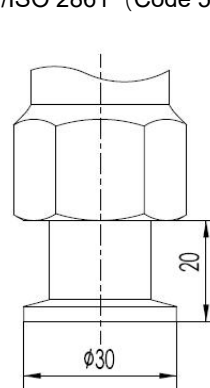
G 1/2 Male Thread
(Code 4)



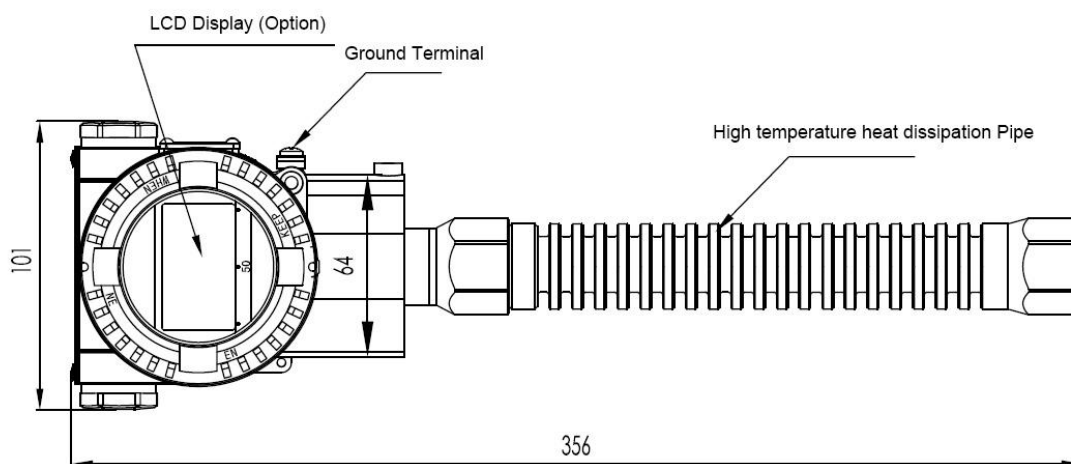
1/4"NPT Male
Thread (Code 6)



Vacuum connector
DIN 28403 KF16
/ISO 2861 (Code 5)



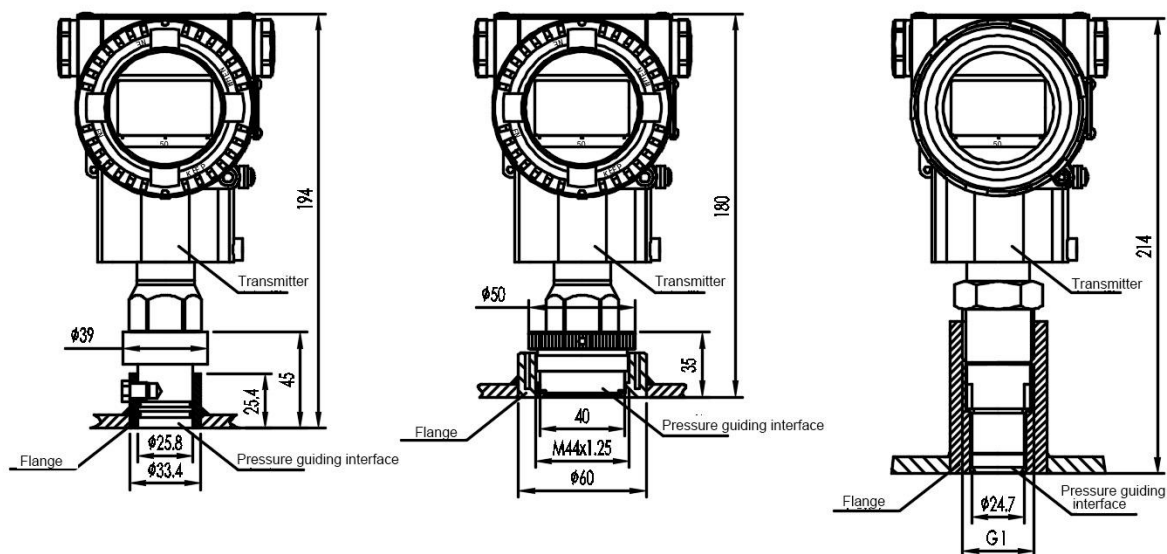
High temperature heat dissipation connector (Code 9)



Φ25.8 insert pulp
connector (Code S)

M44*1.25 thread pulp
connector (CodeM)

G 1 thread pulp
connector (Code L)



7. Models and Specifications Code Table

Gauge Pressure Transmitter RP1002-				
Absolute Pressure Transmitter RP1003-				
10 Accuracy				
	B	Basic Accuracy ±0.075%		
	C	Basic Accuracy ±0.1%		
20 Span ^[1]				
		Gauge Pressure RP1002		
	B	0-0.6kPa ~ 6kPa / (0-60 ~ 600 mmH ₂ O) /(0-6 ~ 60mbar)		
	C	0-2kPa ~ 40kPa / (0-200 ~ 4000 mmH ₂ O) /(0-20 ~ 400mbar)		
	D	0-2.5kPa ~ 250kPa / (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)		
	F	0-30kPa ~ 3MPa / (0-3 ~ 300 mH ₂ O) /(0-0.3 ~ 30bar)		
	G	0-0.1MPa ~ 10MPa /(0-1 ~ 100bar)		
	H	0-0.21MPa ~ 21MPa / (0-2.1 ~ 210 bar)		
	I	0-0.4MPa ~ 40MPa / (0-4 ~ 400 bar)		
		Absolute Pressure RP1003		
	L	0-10kPa ~ 40kPa / (0-1000 ~ 4000 mmH ₂ O) /(0-20 ~ 400mbar)		
	M	0-10kPa ~ 250kPa /(0-1000 ~ 2500mbar)		
	O	0-30kPa ~ 3MPa /(0-0.3 ~ 30bar)		
30 Diaphragm Material & Fill Fluid				
		A	316L Stainless Steel	Silicon oil
		B	316L Stainless Steel	Fluorine oil
		C	Hastelloy C	Silicon oil
		D	Hastelloy C	Fluorine oil
		E	Gold plated on 316L	Silicon oil
		F	Gold plated on 316L	Fluorine oil
		T	Tantalum	Silicon oil
40 Process Connections				
			1	1/2"NPT Female Thread

						2	1/2"NPT Male Thread (Containing 1/4-NPT female thread)
						3	M20x1.5 Male Thread
						4	G 1/2 Male Thread
						5	Vacuum Connector DIN 28403 KF16 / ISO 2861 ^[2]
						6	1/4"NPT Male Thread
						7	1/4"NPT Female Thread
						9	High temperature heat dissipation interface, 1/2"NPT Female Thread
					L		G 1 threaded pulp interface seal device
					M		M44*1.25 threaded pulp interface sealing device
					S		Φ25.8 insert pulp interface sealing device
50	Special Function						
					N		None
					O		Degrease cleansing treatment (Oxygen measurement must be with fluorinated oil filled capsule, Viton (FKM) gasket, <6MPa , <60° C)
					P		Anti-lightning function
60	Mounting Bracket						
					N		None
					1		Stainless Steel
					2		Carbon Steel Galvanized
70	Integral indicator						
					N		None
					2		LCD backlit display (-20° C)
					3		OLED display (-40℃)
80	Explosion Proof Options						
					N		None
					A		Intrinsically safe, NEPSI
					D		Explosion proof, NEPSI
					B		Intrinsically safe, ATEX
					E		Explosion proof, ATEX
90	Tag Plate						
					N		None
					1		Position number marked on the nameplate
					2		Hanging stainless steel plate
100	Manual						
					C		Chinese
					E		English
110	Additional Options^[3] (-)						
					S		Stainless Steel Housing
					V		Low Voltage Type
					T		Electrical Connection NPT1/2 (No cable introduction device and blind plug)

Note 1: RP1002 corresponds to the selected gauge pressure range code and RP1003 corresponds to the absolute pressure range code.

Note 2: Vacuum interface DIN 28403 KF16 / ISO 2861 is only for the ranges less than 2.5 bar.

Note 3: The optional N\F\P item is only applicable to the range R,S and T transmitter. It requires selecting the appropriate sealing material according to the measuring medium. The standard specification is NBR; the option S can be applied to all specifications of pressure transmitter.

Example: **RP1002-BCA1P12N1C**

[RP1002-]: Gauge Pressure Transmitter

[B]: Basic error $\pm 0.075\%$

[C]: The range is 0-2kPa ~ 40kPa

[A]: The wetted part is Stainless Steel 316L diaphragm and the filling liquid is silicone oil.

[1]: Process connection interface for 1/2" NPT internal thread

[P]: With lightning protection

[1]: Stainless steel mounting bracket

[2]: LCD backlight display

[N]: Basic type (non-explosion-proof transmitter)

[1]: The number is marked on the nameplate

[C]: Chinese instruction manual

RP1001 Micro-differential Pressure Transmitter

The RP1001 Differential Pressure Transmitter is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure, and converts it into a 4-20mA DC HART current signal output. It can also communicate with RSM295 Modem for parameter setting and process monitoring, etc.

Standard

(Adjusting the measurement range based on the standard zero point, 316L Stainless Steel diaphragm, filling liquid is silicone oil)

1. PERFORMANCE SPECIFICATIONS

Reference accuracy of the Calibrated range (including terminal-based linearity, hysteresis, and repeatability)

RP1001-C: $\pm 0.1\%$

If $TD > 2.5$ (TD = maximum range/adjustment range)

RP1001-C: $\pm(0.04 \times TD)\%$

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

Ambient Temperature Effects

RP1001-C: $-25^{\circ} \sim 65^{\circ} \text{C}$

$\pm(0.15 \times TD + 0.05)\% \times \text{Span}$

Every 10°C is $\pm 0.08\% \times \text{Span}$ ($TD=1$)

$-40^{\circ} \sim -25^{\circ} \text{C}$ & $65^{\circ} \sim 85^{\circ} \text{C}$:

$\pm(0.2 \times TD + 0.05)\% \times \text{Span}$

Over pressure Effects

$\pm 0.1\% \times \text{Span}$

Static Pressure Effect



When the static pressure sensor is selected as 0

$\text{SPAN A} = \pm(0.5\% \text{URL} + 0.1\% \text{SPAN})/10 \text{MPa}$.

When the static pressure sensor is selected

$\text{SPAN A} = \pm(0.025\% \text{URL} + 0.05\% \text{SPAN})/10 \text{MPa}$

Stability

$\pm 0.25\%$ URL /10 years

Power Supply Effects

$\pm 0.001\%$ /10v ($12 \sim 36 \text{ VDC}$), negligible

2. FUNCTIONAL SPECIFICATIONS

Span and Range limits

Span / Range limits		kPa	inH ₂ O	mbar	mmH ₂ O
A0/ A7	Span	0.1 ~ 1	0.4 ~ 4	1 ~ 10	10 ~ 100
	Range limits	-1 ~ 1	-4 ~ 4	-10 ~ 10	-100 ~ 100

Range Limits

It can be arbitrarily adjusted within the upper and lower limits of the range. It is recommended to select a range code with the lowest possible range to optimize the performance characteristics.

Zero Adjustment Limits

Zero Point and range can be adjusted to any value within the measure range in the form as long as Calibrating Span \geq Maximum Range

Mounting Position Effects

Rotation in diaphragm plane has no effect.
Tilting up to 90 degree will cause zero shifts up to 0.4 kPa, which can be corrected by the zero adjustment.

Output

2 wire, 4~20 mADC output with digital communications, linear or square root programmable. HART FSK protocol are superimposed on the 4~20 mADC signal.
Output signal limit: $I_{\min} = 3.9\text{mA}$, $I_{\max} = 20.5\text{mA}$

Failure Alarm (the mode can be selected)

Low Mode (min): 3.6 mA
High Mode (max): 21 mA
No Mode (hold): Keep the effective value before the fault.
Note: The standard setting of failure alarm is High Mode.

Response time

The amplifier damping constant is 0.1 s. The sensor damping time constant is 0.1 to 1.6 s; it depends on the range and range compression ratio. The additional adjustable time constant is: 0.1~60s. The effect on nonlinear outputs (such as the square root function), depends on this function and can be calculated accordingly.

Preheat time < 15s

Ambient Temperature Limits

-40° ~ 85° C
-20 ~ 65°C with LCD display or fluorine rubber sealing

Storage and Transportation Temperature Limits

-50° ~ 85° C;
-25° ~ 85° C with LCD display

Working Pressure Limits (Silicone Oil)

Rated working pressure options are 16MPa, 25MPa & 40MPa

Static Pressure Limits

From 3.5 kPa abs. to rated pressure, the protection pressure can be greater than 1.5 times the rated pressure and applied to both sides of the transmitter.

One-way Overload Pressure Limit

One-way overload can reach rated pressure.

Electromagnetic Compatibility (EMC)

Look the EMC Performance Table

Explosion-proof performance

- Intrinsically safe NEPSI: Ex ia IIC T4 Ga Ta = -40° ~ +60°C
- Explosion-proof NEPSI: Ex d IIC T4~T6 Gb Ta = -40° ~ +60°C
- Dust explosion-proof NEPSI: Ex tb IIIC T80°/ T95°/ T130° Db Ta = -40° ~ +60°C
- Explosion-proof ATEX/ IECEx: II 2 G Ex db IIC T4/ T5/ T6 Gb Ta = -40° ~ +60° C
- Intrinsically safe ATEX/ IECEx: II 2 G Ex ia IIC T4/ T5/ T6 Ga Ta = -40° ~ +85°C/ -40° ~ +50°C/ -40° ~ +40°C
- Dust explosion-proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/ T90°/ T130° Db Ta = -40° ~ +60° C

3. INSTALLATION**Power and load conditions**

The power supply voltage is 24VDC;
 $R \leq (U_s - 12V) / I_{\max} \text{ k}\Omega$, $I_{\max} = 23 \text{ mA}$
Maximum supply voltage: 36VDC
Minimum supply voltage: 9VDC (low voltage version), 13.5VDC (backlit LCD, OLED display)
Digital communication load range: 230~600 ω

Electrical Connections

M20×1.5 or NPT1/2 internal thread, standard
M20×1.5 nylon cable sealing buckle, terminal
block for 0.5 ~ 2.5 mm² wire.

Process Connection

Flange with fixing thread 7/16-20 UNF and
1/4-18 NPT female thread on both sides.

4. PHYSICAL SPECIFICATIONS**Materials**

Measure Membrane: SS316L

Diaphragm: Stainless Steel 316L, Hastelloy C,
Gold Plated on 316L

Cover Flange: Stainless Steel 316

Nuts And Bolts: Stainless Steel 304

Process Connector: Stainless Steel 316

Filling Liquid: Silicone Oil, Fluorine Oil

Amplifier Housing : Aluminum with epoxy
resin coat stainless steel case optional.

Process Connector Gasket: Perbunan (NBR)/
Viton(FKM)/ Teflon (PTFE)

Housing Gasket: Perbunan (NBR)

Name plate and tag: 304 stainless steel

Weight: 3.3kg (including Aluminum housing,
without display, mounting bracket and process
connection)

Enclosure rating

IP67

Electromagnetic Compatibility Table

Sr. No.	Test Items	Basic Standard	Test Conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008 Table5	30MHz ~ 1000MHz	Qualified
2	Conducted Interference (DC Power Port)	GB/T 9254-2008 Table1	0.15MHz ~ 30MHz	Qualified
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500V (Line to line), 1kV (line to ground), 1.2us/50us)	B
8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

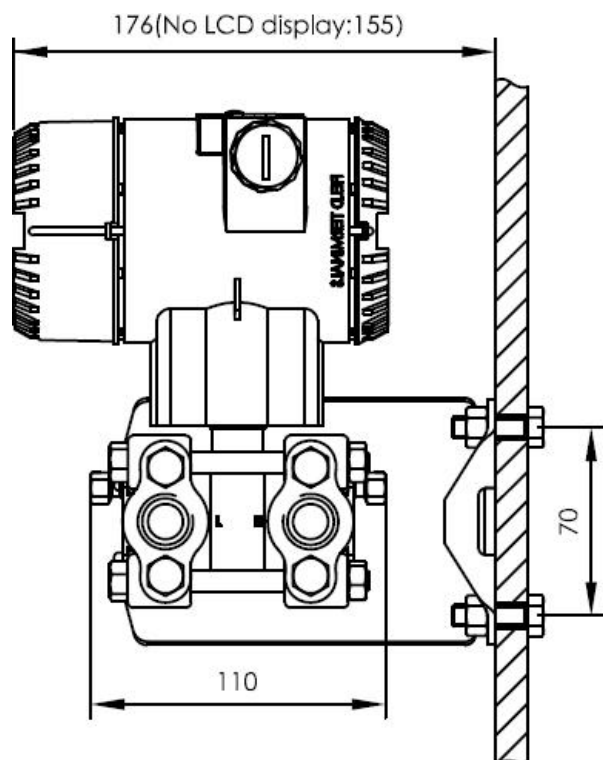
Note: (1) Performance level A description: The technical specifications within the limits of normal performance.

(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

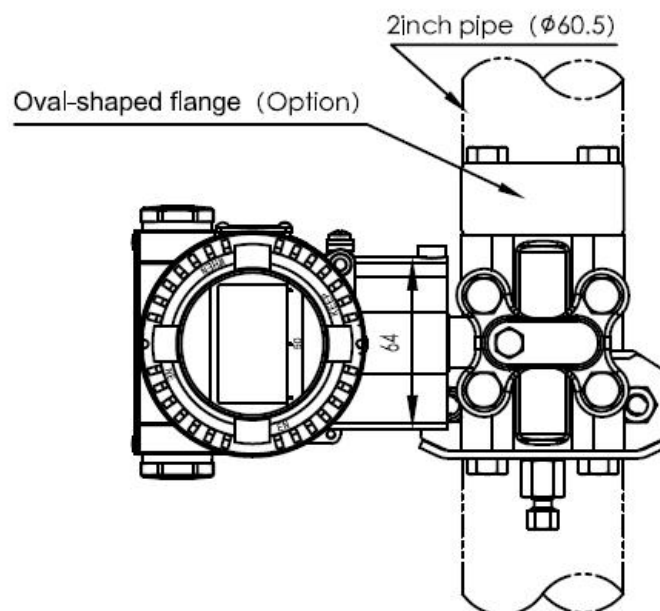
Dimensions

Unit (mm)

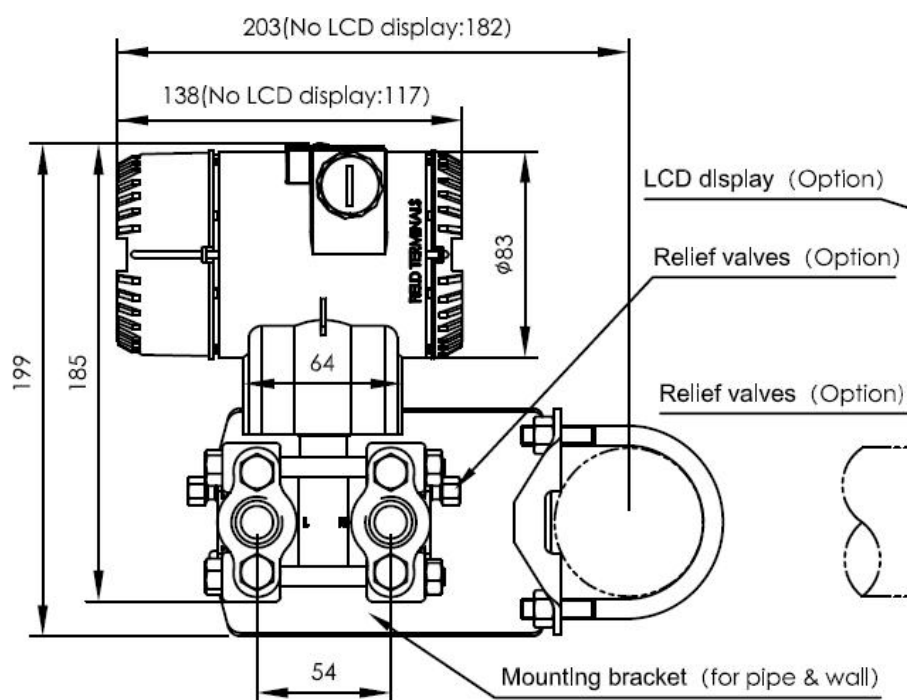
**Horizontal Impulse Piping Type (Side Face)
Type (Front Side)**



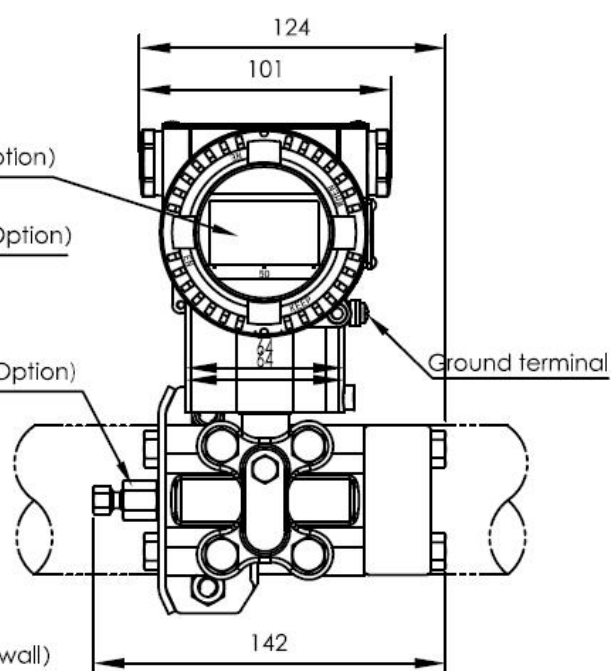
Horizontal Impulse Piping



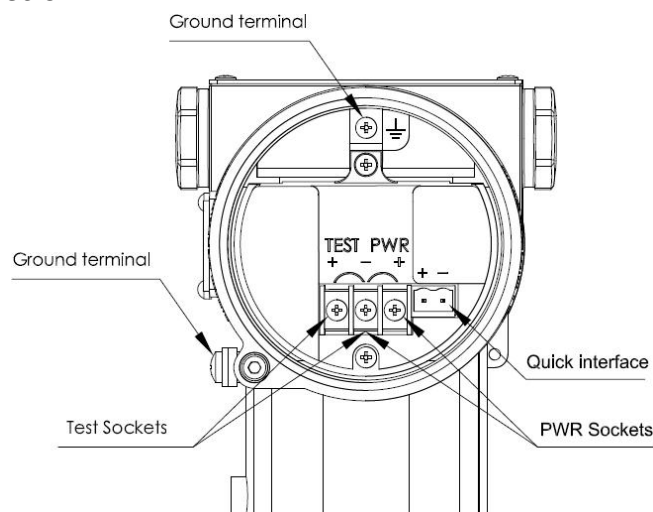
**Horizontal Impulse Wall Mounting Type
Piping Type**



Vertical Impulse

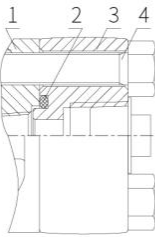
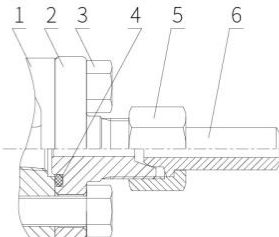


5. Electrical Connection



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

6. Process Connection Instructions

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p>  <p>1/2NPT</p> <ul style="list-style-type: none"> 1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt 	<p>D-shaped connector with M20x1.5 male thread(code 2)</p>  <ul style="list-style-type: none"> 1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe

7 Model and specification codes

Differential Pressure Transmitter Selection RP1001-						
10	Accuracy					
	C	Reference Accuracy ±0.1%				
20	Range					
		A	0-100Pa ~ 1kPa (0-10 ~ 100 mmH ₂ O)			
30	Static Pressure Sensor					
			0	None		
			1	40MPa (only applicable to 7MPa rated working pressure)		
40	Diaphragm Material Filling Fluid					
				A	Stainless Steel 316L	Silicone oil
				B	Stainless Steel 316L	Fluorine oil
				C	Hastelloy C	Silicone oil

					D	Hastelloy C	Fluorine oil	
					E	Gold plated on 316L	Silicone oil	
					F	Gold plated on 316L	Fluorine oil	
50	Working Pressure							
					0	Rated working pressure 0.2MPa		
					7	Rated working pressure 7MPa		
60	Process Connections							
						N	1/4" NPT and 7/16" UNF female thread, No relief valve	
						B	1/4" NPT and 7/16" UNF female thread, Relief valves at end of flanges	
						U	1/4" NPT and 7/16" UNF female thread, Relief valve at the upper part of the flange side	
						D	1/4" NPT and 7/16" UNF female thread, Relief valves at the lower part of the flange side	
70	Process Connector Gasket							
						N	Nitrile rubber (NBR)	
						F	Viton (FKM)	
						P	Teflon (PTFE)	
80	Special Function							
						N	None	
						F	Square root output	
						O	Degrease cleansing treatment (Oxygen measurement must be with Fluorinated oil filled capsule, Viton (FKM) gasket, <6MPa, <60° C)	
						P	Lightning protection	
90	Mounting Brackets							
						N	No	
						1	Stainless Steel	
						2	Carbon Steel Galvanized	
100	Process Connection Accessory							
						N	None	
						1	Stainless Steel oval-shaped flange with 1/2 NPT female thread	
						2	Stainless Steel T-shaped joint with M20x1.5 external thread	
110	Display Options							
						N	No display	
						1	LCD liquid crystal display (-20° C)	
						2	Backlight LCD display (-20° C)	
						3	OLED display (-40 ° C)	
120	Explosion-Proof Option							
						N	Basic type	
						A	Intrinsically safe, NEPSI	
						D	Flameproof, NEPSI	
						B	Intrinsically safe, ATEX	

																		E	Flameproof, ATEX
130	Tag Plate																		
																		N	None
																		1	The position number is marked on the nameplate
																		2	Hanging stainless steel signage
140	Manual																		
																		C	Chinese
																		E	English
150	Additional Options																		
																		S	Stainless steel case
																		V	Low voltage version
																		T	Electrical connection 1/2NPT (no cable entry device and blind plug)

Example: RP1001-CA0A0BNF112N1C[C]: Reference Accuracy: $\pm 0.1\%$ [A]: 0-100Pa~1kPa (0-10~100 mmH₂O) working pressure 0.2MPa

[0]: None static pressure sensor

[A]: The wetted part is stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[0]: Working pressure is 0.2MPa

[B]: 1/4" NPT and 7/16" UNF female thread, Relief valves at end of flanges

[N]: Nitrile rubber (NBR) process connector gasket

[F]: Square root output

[1]: Stainless steel mounting bracket

[1]: With Stainless steel oval-shaped flange with 1/2 NPT female threaded

[2]: LCD backlight display

[N]: Basic type (non-explosion-proof transmitter)

[1]: The position number is marked on the nameplate

[C]: Chinese instruction manual

RP1001 Differential Pressure Level Transmitter

1. APPLICATION

The diaphragm capsule of the Differential Pressure Level Transmitter is used to prevent the medium in the pipeline from directly entering the Pressure Sensor component of the Differential Pressure Transmitter. It uses a filling fluid such as silicone oil to transfer pressure.

The RP1001 Differential Pressure Level Transmitter is suitable to measure liquid, gas or steam flow as well as liquid level, density and pressure, and converts it into a 4-20mA HART current signal output. It can also communicate with each other by RSM295 Modem to parameter setting and process monitoring, etc. The RP1001 Series Pressure Level Transmitter (No migration) range limits is 0-1kPa~3MPa and the flange's rated pressure are: 1.6/4MPa, 6.4MPa, 10MPa, 150psi, 300psi or 600psi.

2. Operating Principle and Structure

RP1001 Differential Pressure Level Transmitter is composed of RP1001 Series Differential Pressure Transmitter and the welding installation level flange. The operating principle is same as RP1001 Series Differential Pressure Transmitter (refer RP1001 Series Differential Pressure Transmitter General Specifications). Only the high-pressure side of pressure transmission path is different. The pressure loaded in the high side, pass from the isolation diaphragm and silicone oil in the flange to the sensor.

3. INPUT



Measured Parameter: Differential Pressure, Level

Measuring range

Lower range value: -100% URL (continuously adjustable)

Upper range value: To +100% URL (continuously adjustable)

Spans

Table 1: Span Code And Measuring Range

Span Code	Minimum range	Maximum range	Rated pressure (maximum)
B	1kPa	6kPa	Rated pressure of the liquid level flange
C	4kPa	40kPa	
D	25kPa	250kPa	
F	200kPa	3MPa	

Table 2: Liquid Level Flange and Minimum Measuring Range

Level flange	Nominal diameter	Minimum range
Flat sealing	DN 50/2"	10kPa
	DN 80/3"	2kPa
	DN 100/4"	2kPa
Insert tube sealing	DN 50/2"	16kPa
	DN 80/3"	2kPa
	DN 100/4"	2kPa

The minimum range of the Differential Pressure Level Transmitter shall be the larger value of the minimum range of Tables 1 and 2. The adjusted range must not be lower than the minimum range. The maximum range of the level transmitter should be the minimum of both the maximum range of the transmitter body and the rated pressure of the level flange.

4. OUTPUT

Output Signal

2-wire system, 4~20mADC HART output, digital communication, HART protocol is loaded on 4~20mADC signal.

Output signal limit: $I_{\min}=3.9\text{mA}$, $I_{\max}=20.5\text{mA}$

Failure Alarm (Mode can be selected)

Low Mode (min.): 3.6 mA

High Mode (max.): 21 mA

No Mode (hold): Keep the effective current value before the fault.

Alarm current standard setting: high-report mode

5. Response time

The amplifier damping constant component is 0.1 s. The sensor and level flange time constant is 0.2 to 2 s, it depends on the range and range compression ratio. The additional adjustable time constant is 0.1~60s.

6. GENERAL CONDITIONS

6.1 Installation Conditions

The transmitter can be fixed directly to any position by the level flange preferably in such a position that the process flange axes are vertical. Deviations from this can cause a shift in the zero, which can be corrected. The electronic housing can be rotated through 360° and can be fixed in any position.

6.2 Environmental Conditions

Ambient temperature

Minimum: depending on the filling fluid

Maximum: 85° C

-20 ~ 65°C: with liquid crystal display and fluoro-rubber sealing ring

Storage / Transport Temperature

Minimum: depending on the filling fluid

Maximum: 85 ° C

Relative humidity

0 ~ 100%

Shock Resistance

Acceleration: 50g, Duration: 11ms

Vibration resistance

500Hz on 2g

Electromagnetic Compatibility (EMC)

Refer the EMC Performance Table 3

6.3 Process Media Limits

Medium Temperature Limit: -30° ~ 180° C

Pressure Limit

From 3.5kPa abs. to working pressure. Proof pressure up to 1.5 times the nominal pressure simultaneously on both sides of the transmitter admissible.

Liquid Level Flange Rated Pressure

ANSI : 150 psi to 600 psi

DIN: PN 1.6MPa ~ PN 10MPa

One-way overload limit

The low-pressure side is the rated pressure of the transmitter body, and the high-pressure side is the rated pressure of the flange. Possibly occurring zero offsets can be corrected.

Weight

DN 50/2" is about 7~10kg; DN 80/3" is about 8~11kg; DN 4" is about 9~12kg.

Explosion-proof performance

- Intrinsically safe NEPSI: Ex ia IIC T4 Ga Ta=-40~+60°C
- Explosion-proof NEPSI: Ex d IIC T4~T6 Gb Ta=-40~+60°C
- Dust Explosion-proof NEPSI: Ex tb IIIC T80°C/T95°C/T130°C Db Ta = -40 ~ +60°C
- Explosion-proof ATEX/ IECEx: II 2 G Ex db IIC T4/T5/T6 Gb Ta = -40 ~ +60°C
- Intrinsically safe ATEX/ IECEx: II 2 G Ex ia IIC T4/T5/T6 Ga Ta = -40°C ~ +85°C/ -40°C~+50°C/ -40°C~ +40°C
- Dust explosion-proof ATEX/IECex: II 2 D Ex tb IIIC T80°C/T90°C/T130°C Db Ta = -40° ~ +60° C

6.4 Power And Load Requirements

The power supply voltage is 24VDC,

$R \leq (U_s - 12V) / I_{max}$ kΩ, $I_{max} = 23$ mA

Maximum Voltage Limit: 36VDC

Minimum Voltage Limit: 9VDC (low voltage), 13.5VDC (backlit LCD liquid crystal display, OLED display)

Digital Communication Load Range: 230~600Ω

Wetted Parts Materials

- **Measuring Diaphragm Capsule:** 316L

Stainless Steel

- **Diaphragm:** 316L Stainless Steel, Hastelloy C, Tantalum, PFAP or PTFE plated on 316L
- **Process Flange:** Stainless Steel 304
- **Filling Liquid:** Silicone Oil, Vegetable Oil
- **Process Connector Gasket:** Perbunan (NBR), Viton (FKM), Polytetrafluoroethylene (PTFE)
- **Amplifier Housing:** Aluminum with Epoxy Resin Coat Stainless Steel case optional.
- **Housing Gasket:** Perbunan (NBR)
- **Nameplate:** Stainless Steel 304

Electrical connections

M20×1.5 or NPT1/2 internal thread, standard M20×1.5 nylon cable sealing buckle, terminal block for 0.5 ~ 2.5mm² wire.

Process connection

The low-pressure side of the transmitter has NPT 1/4 and UNF 7/16" internal threads. The liquid level flange on the high-pressure side of the transmitter conforms to ANSI or DIN standards. It can be installed directly, refer to Table 4 of Page 36.

Enclosure rating

IP67

Table 3 Electromagnetic Compatibility Schedule

Sr. No.	Test items	Basic standards	Test conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008	30MHz ~ 1000MHz	OK
2	Conducted Interference (DC Power Port)	GB/T 9254-2008	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field	GB/T 17626.3-2006	10V/m (80MHz ~	A

	Immunity		1GHz)	
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	0.5kV (line to line) 1kV (line to ground) (1.2us/50us)	B
8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

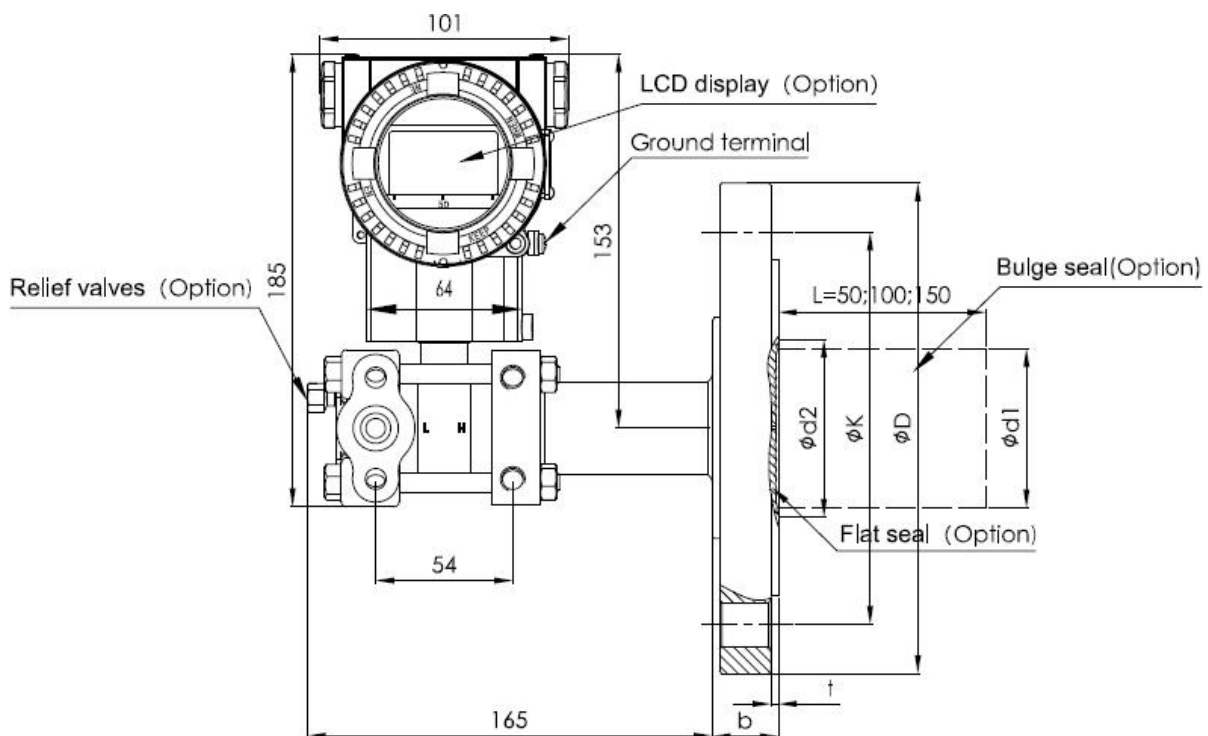
Note:

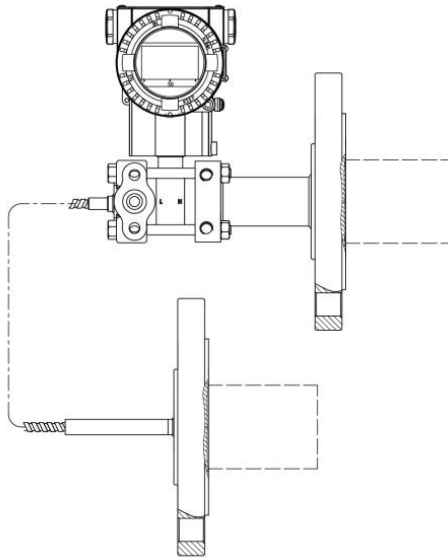
(1) Performance level A description: The technical specifications within the limits of normal performance.

(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be change

Dimensions

Unit (mm)

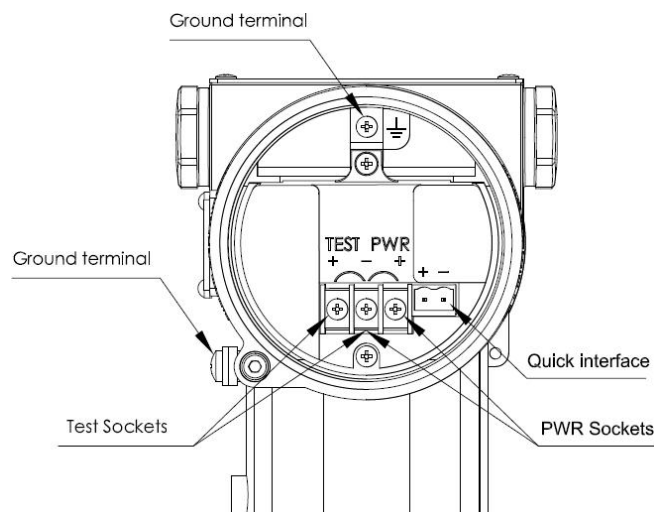



Table 4: Liquid Level Flange Dimensions

Nominal Diameter	Working Pressure	ΦD	ΦK	Φd1 Bulge Seal	Φd2 Flat Seal	Φd3	t	b	Bolt	
DN 50 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4MPa	165	125	48.3	57	102	3+0.5	20	4	M16
	PN 6.4MPa	180	135	48.3	57	102	3+0.5	26	4	M20
	PN 10MPa	195	145	48.3	57	102	3+0.5	28	4	M20
DN 80 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4MPa	200	160	76	75	138	3+0.5	24	8	M16
	PN 6.4MPa	215	170	76	75	138	3+0.5	28	8	M20
	PN 10MPa	230	180	76	75	138	3+0.5	32	8	M24
DN 2" (ANSI B 16.5 RF)	150psi	152.4	120.6	48.3	57	92.1	3+0.5	17.4	4	M18
	300psi	165.1	127.0	48.3	57	92.1	3+0.5	20.6	8	M18
	600psi	165.1	127.0	48.3	57	92.1	6.35	31.75	8	M18
DN 3" (ANSI B 16.5 RF)	150psi	190.5	152.4	76	75	127	3+0.5	22.2	4	M16
	300psi	209.5	168.3	76	75	127	3+0.5	27.0	8	M20
	600psi	209.5	168.3	76	75	127	6.35	38.05	8	M20
DN 4" (ANSI B 16.5 RF)	150psi	229	191	89	89	157	3+0.5	30	8	M18
	300psi	255	200	89	89	157	3+0.5	32	8	M18

Note: The user can choose to install bolts and nuts.

7. Electrical Connection



Note: Quick interface functionally equivalent to the signal terminal

8. Low Voltage Terminal Process Connection

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p> <p>1/2NPT</p> <p>1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt</p>	<p>D-shaped connector with M20x1.5 male thread(code 2)</p> <p>1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe</p>

9. Models and Specification Code^[1]

1 Differential Pressure Level Transmitter Body Selection RP1001-					
10	Accuracy				
	B	Reference accuracy ±0.075%			
	C	Reference accuracy ±0.1%			
20	Span				
		B	0-2kPa ~ 6kPa (0-200 ~ 600 mmH ₂ O) /(0-20 ~ 60mbar)		
		C	0-4kPa ~ 40kPa (0-400 ~ 4000 mmH ₂ O) /(0-40 ~ 400mbar)		
		D	0-2.5kPa ~ 250kPa (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)		
		F	0-30kPa ~ 3MPa (0-3 ~ 300 mH ₂ O) / (0-0.3 ~ 30bar)		
30	Static Pressure Sensor				
			0	None	
40	Diaphragm Material & Filling Fluid				
				A	Stainless steel 316L Silicone Oil
50	Working Pressure				

						1	16MPa											
60	Negative Cavity Process Connection																	
																	LN	1/4" NPT and 7/16" UNF female thread, No relief valve
																	LB	1/4" NPT and 7/16" UNF female thread, Relief valves at end of flanges
																	LU	1/4" NPT and 7/16" UNF female thread, Relief valve at the upper part of the flange side
																	LD	1/4" NPT and 7/16" UNF female thread, Relief valves at the lower part of the flange side
70	Negative Cavity Process Connector Gasket																	
																	N	Nitrile rubber (NBR)
																	F	Viton (FKN)
																	P	Polytetrafluoroethylene (PTFE)
80	Special Function																	
																	N	None
																	O	Degrease cleansing treatment (Oxygen measurement must be with fluorinated oil filled capsule, Viton (FKM) gasket, <6MPa, <60° C)
																	P	Polytetrafluoroethylene (PTFE)
90	Mounting Brackets																	
																	N	None
100	Negative Cavity Process Connection Accessory																	
																	N	None
																	1	Stainless Steel oval-shaped flange with 1/2 NPT female threaded
																	2	Stainless Steel T-shaped joint with M20x1.5 external thread
110	Integral Indicator																	
																	N	No display
																	2	Backlight LCD display (-20 ° C)
																	3	OLED display (-40° C)
120	Explosion Protection Type																	
																	N	Basic type
																	A	Intrinsically safe, NEPSI
																	D	Flameproof, NEPSI
																	B	Intrinsically safe, ATEX
																	E	Flameproof, ATEX
130	Tag Plate																	
																	N	None
																	1	The position number is marked on the nameplate
																	2	Hanging Stainless Steel plate
140	Manual																	
																	C	Chinese
																	E	English

150	Attachment Options													
													S	Stainless steel case
													V	Low voltage version
													T	Electrical connection 1/2NPT (no cable entry device and blind plug)

2 Level Flange Sealing Device Selection of Differential Pressure Level Transmitter

10	Flange sealing device												
	LT-	Level Flange Sealing, No Capillary, + Side											
Process Connection				Nominal Diameter		Sealing Surface Form			Diaphragm/Sealing Surface				
20	Material												
		A	DN50	DIN 2501 / HG20592		E	DN2526		Stainless Steel 316L				
		B	DN50	DIN 2501 / HG20592		E	DN2526		Hastelloy C				
		C	DN50	DIN 2501 / HG20592		E	DN2526		Tantalum (temperature ≤ 200 ° C)				
		H	DN80	DIN 2501 / HG20592		E	DN2526		Stainless Steel 316L				
		I	DN80	DIN 2501 / HG20592		E	DN2526		Hastelloy C				
		G	DN80	DIN 2501 / HG20592		E	DN2526		Tantalum (temperature ≤ 200 ° C)				
		R	DN100	DIN 2501 / HG20592		E	DN2526		Stainless Steel 316L				
		S	DN100	DIN 2501 / HG20592		E	DN2526		Hastelloy C				
		T	DN100	DIN 2501 / HG20592		E	DN2526		Tantalum (temperature ≤ 200 ° C)				
		D	DN2" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Stainless Steel 316L				
		E	DN2" ANSI B 16.5 / HG20615			RF	ANSI B16.5		Hastelloy C				
		F	DN2" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Tantalum (temperature ≤200°C)				
		K	DN3" ANSI B 16.5 / HG20615			RF	ANSI B16.5		Stainless Steel 316L				
		L	DN3" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Hastelloy C				
		M	DN3" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Tantalum (temperature ≤200°C)				
		N	DN4" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Stainless Steel 316L				
		O	DN4" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Hastelloy C				
		P	DN4" ANSI B 16.5 / HG20615			RF	ANSI B 16.5		Tantalum (temperature ≤200°C)				
30	Working Pressure				Flange Pressure Standard								
			1	PN 1MPa/4MPa		DIN 2501/HG20592							
			2	PN 6.4MPa		DIN 2501/HG20592							
			3	PN 10MPa		DIN 2501/HG20592							
			6	Class150		ANSI B 16.5/HG20615							
			7	Class300		ANSI B 16.5/HG20615							
			8	Class600		ANSI B 16.5 (excluding DN4" ANSI B 16.5)							
			4	PN 1MPa/1.6MPa (DN100)		DIN 2501/HG20592							
			5	PN 2.5MPa/4MPa (DN100)		DIN 2501/HG20592							
40	Process Connections												
				F	Flat								
				H	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 50mm								
				I	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 100mm								
				G	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 150mm								

				L	Bulge sealing, Hastelloy C, extended diaphragm seal 50mm
				M	Bulge sealing, Hastelloy C, extended diaphragm seal 100mm
				N	Bulge sealing, Hastelloy C, extended diaphragm seal 150mm
50	Filling Fluid				
				S	Silicone oil -30~200°C
				V	Vegetable oil 0~250°C
				F	Fluorine oil -30~260°C
60	Diaphragm Protection (Multiple Choice)				
				N	None
				22	DN50/2" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
				23	DN80/3" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
				24	DN100/4" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
				32	DN50/2" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
				33	DN80/3" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
				34	DN100/4" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
				42	DN50/2" 316L coated with FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
				43	DN80/3" 316L coated with FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
				44	DN100/4"316L coated FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
				52	DN50/2" 316L coated with PEA (perfluoroalkylate) (temperature ≤ 260 ° C) (only for plug-in)
				53	DN80/3" 316L coated PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for plug-in)
				54	DN100/4"316L coated with PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for plug-in)
				6	Vacuum treatment ^[3] (temperature ≥120°C, working pressure ≤50kPa abs.)
				72	Gold Plating on DN50/2" 316L
				73	Gold Plating on DN80/3" 31L
				74	Gold Plating on DN100/4" 316L
				8	Degrease Cleansing Treatment

3 Level Flange Sealing Device Selection of Differential Pressure Level Transmitter

10	Flange sealing device					
	RT-	With capillary, - Side				
	Process Connection		Nominal Diameter		Sealing Surface Form	
20	Material				Diaphragm/Sealing Surface	
	A	DN50	DIN 2501 / HG20592		E DN2526	Stainless Steel 316L
	B	DN50	DIN 2501 / HG20592		E DN2526	Hastelloy C

		C	DN50	DIN 2501 / HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)
		H	DN80	DIN 2501 / HG20592	E	DN2526	Stainless Steel 316L
		I	DN80	DIN 2501 / HG20592	E	DN2526	Hastelloy C
		G	DN80	DIN 2501 / HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)
		R	DN100	DIN 2501 / HG20592	E	DN2526	Stainless Steel 316L
		S	DN100	DIN 2501 / HG20592	E	DN2526	Hastelloy C
		T	DN100	DIN 2501 / HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)
		D	DN2" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Stainless Steel 316L	
		E	DN2" ANSI B 16.5 / HG20615	RF	ANSI B16.5	Hastelloy C	
		F	DN2" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Tantalum (temperature ≤200°C)	
		K	DN3" ANSI B 16.5 / HG20615	RF	ANSI B16.5	Stainless Steel 316L	
		L	DN3" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Hastelloy C	
		M	DN3" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Tantalum (temperature ≤200°C)	
		N	DN4" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Stainless Steel 316L	
		O	DN4" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Hastelloy C	
		P	DN4" ANSI B 16.5 / HG20615	RF	ANSI B 16.5	Tantalum (temperature ≤200°C)	
30	Working Pressure		Flange Pressure Standard				
			1	PN 1MPa/4MPa	DIN 2501/HG20592		
			2	PN 6.4MPa	DIN 2501/HG20592		
			3	PN 10MPa	DIN 2501/HG20592		
			6	Class150	ANSI B 16.5/HG20615		
			7	Class300	ANSI B 16.5/HG20615		
			8	Class600	ANSI B 16.5 (excluding DN4" ANSI B 16.5)		
			4	PN 1MPa/1.6MPa (DN100)	DIN 2501/HG20592		
			5	PN 2.5MPa/4MPa (DN100)	DIN 2501/HG20592		
40	Process Connections						
			F	Flat			
			H	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 50mm			
			I	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 100mm			
			G	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 150mm			
			L	Bulge sealing, Hastelloy C, extended diaphragm seal 50mm			
			M	Bulge sealing, Hastelloy C, extended diaphragm seal 100mm			
			N	Bulge sealing, Hastelloy C, extended diaphragm seal 150mm			
50	Filling Fluid						
			S	Silicone oil	-30~200°C		
			V	High temperature silicone oil	-10~350°C		
			L	Ultra-low temperature filling liquid	-100~100°C		
			U	Ultra high temperature filling liquid	10~450°C		
			M	Vegetable oil	0~250°C		
			N	Fluorine oil	-30~260°C		
60							
				00	Without Capillary, direct-mounted(RH-)		
				01	1m		
				02	2m		

						03	3m
						04	4m
						05	5m
						06	6m
						07	7m
						08	8m
						09	9m
						10	10m
						11	11m
						12	12m
					
70	Capillary component characteristics						
						N	None
						P	Capillary with PVC protective layer
80	Diaphragm Protection (Multiple Choice)						
						N	None
						22	DN50/2" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
						23	DN80/3" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
						24	DN100/4" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)
						32	DN50/2" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
						33	DN80/3" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
						34	DN100/4" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
						42	DN50/2" 316L coated with FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
						43	DN80/3" 316L coated with FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
						44	DN100/4"316L coated FEP (fluorinated ethylene propylene copolymer) (temperature ≤180 °C) (only for plug-in type)
						52	DN50/2" 316L coated with PEA (perfluoroalkylate) (temperature ≤ 260 ° C) (only for plug-in)
						53	DN80/3" 316L coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C) (only for plug-in)
						54	DN100/4"316L coated with PFA (perfluoroalkylate) (temperature ≤ 260 ° C) (only for plug-in)
						6	Vacuum treatment ^[3] (temperature ≥120°C, working

									pressure ≤50kPa abs.)
								72	Gold Plating on DN50/2" 316L
								73	Gold Plating on DN80/3" 31L
								74	Gold Plating on DN100/4" 316L
								08	Degrease Cleansing Treatment

Note 1: Before level flange sealing device selection, the selection of the RP1001 differential pressure transmitter should be completed, and selected L option in line 60 of the in RP1001 options table;

Note 2: The PTFE membrane (F4 membrane) posted on the diaphragm, it could be applied to the measurement of negative pressure, but it applies only to the flat level flange;

Note 3: When measuring pressure or working static pressure <50kPa (absolute pressure), option 6 should be selected in 60 items to ensure performance.

Order Example:

PR1001-BC0A1LNNNNN2N1C^[4,5], LT-H1FSNN

[B]: Reference Accuracy: ±0.075%

[C]: Span: 0-400Pa ~ 40kPa (0-40 ~ 4000 mmH₂O)

[0]: None Static Pressure Sensor

[A]: 316L stainless steel diaphragm, Silicone oil fill fluid

[1]: Working pressure: 16MPa

[LN]: 1/4" NPT and 7/16" UNF female thread, No relief valve

[N]: Nitrile rubber (NBR) process connector gasket

[N]: No Special Function

[N]: No mounting bracket

[N]: No Negative Cavity Process Connection Accessory

[2]: LCD Backlight display

[N]: Basic type

[1]: The position number is marked on the nameplate

[C]: Chinese manual

[LT-]: Level flange sealing, no capillary, ⊕ Side

[H]: DN80 DIN 2501, E DN2526, 316L stainless steel

[1]: Working pressure PN 1MPa/4MPa DIN 2501

[F]: Flange sealing type is flat sealing

[S]: Fill fluid is silicone oil

[NN]: None diaphragm Protection

Note 4: The differential pressure transmitter selection refers the RP1001 Series Transmitter selection table.

Note 5: The minimum range of the Remote Seal Differential Pressure Transmitter should be the larger of the minimum range in Tables 1 and 2. The adjusted range must not be less than the minimum range. In order to optimize the performance of the Level Transmitter, the range ratio should be <10:1.

RP1001 Remote Seal Differential Pressure Transmitter

1. APPLICATION

The diaphragm capsule of the Remote Seal Differential Pressure Transmitter is used to prevent the medium in the pipeline from directly entering the pressure sensor component of the Differential Pressure Transmitter. It uses a filling fluid such as silicone oil to transfer pressure.

The RP1001 Remote Seal Differential Pressure Transmitter is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure, and converts it into a 4-20mA DC HART current signal output. It can also communicate with each other by RSM295 Modem to parameter setting and process monitoring etc. The RP1001 Series Remote Seal Pressure Transmitter (No migration) range limits is 0-1kPa~3MPa, and the flange's rated pressure are: 1.6/4MPa, 6.4MPa, 10MPa, 150psi, 300psi or 600psi.

2. OPERATING PRINCIPLE AND STRUCTURE

The RP1001 Remote Seal Differential Pressure Transmitter is composed of a RP1001 Series Differential Pressure Transmitter and a welded remote flange with a capillary. Its working principle is the same as RP1001 Series Differential Pressure Transmitter (see RP1001 Series Differential Pressure Transmitter Technical Specification), but the pressure transmission path is slightly different: the pressure acting on the remote flange side is firstly transmitted through the remote flange. The upper diaphragm and



filling liquid pass through the capillary tube and finally reach the corresponding positive and negative sides of the measuring sensor.

3. INPUT

Measurement Value: Differential Pressure, Level

Measuring range

Lower Range Value: -100% URL
(continuously adjustable)

Upper Range Value: Up to +100% URL
(continuously adjustable)

Spans

Table 1 Span Code and Measuring Range

Span Code	Minimum range	Maximum range	Rated pressure (maximum)
B	1kPa	6kPa	The flange's working pressure
C	4kPa	40kPa	
D	25kPa	250kPa	
F	200kPa	3MPa	

Table 2 Flange and Minimum Measuring Range

Flange	Nominal Diameter	Minimum Range	
		One Flange	Two Flange
Flat	DN 50/2"	10kPa	10kPa
	DN 80/3"	6kPa	2kPa
	DN 100/4"	6kPa	2kPa
Insert Tube Sealing	DN 50/2"	16kPa	16kPa
	DN 80/3"	6kPa	2kPa
	DN 100/4"	6kPa	2kPa

The minimum measuring range of the Remote Seal Differential Pressure Transmitter should be the larger value of the minimum range of table 1 and table 2. The adjusted span must not be lower than the minimum range. The maximum range of the Remote Transmitter should be the minimum of both the maximum range of the transmitter body and the rated pressure of the liquid level flange.

4. OUTPUT

Output signal

2-wire system, 4~20mADC HART output, digital communication, HART protocol is loaded on 4~20mADC signal.

Output signal limit: $I_{\min} = 3.9\text{mA}$, $I_{\max} = 20.5\text{mA}$

Failure Alarm (Mode can be selected)

Low mode (min.): 3.6 mA

High mode (max.): 21 mA

No mode (hold): Keep the effective current value before the fault

Alarm current standard setting: High-Report Mode

5. Response time

The amplifier damping constant component is 0.1 s. The sensor and level flange time constant is 0.2 to 2 s, it depends on the range and range compression ratio. The additional adjustable time constant is: 0.1~60s.

6. GENERAL CONDITIONS

6.1 Installation conditions

The transmitter can be fixed directly to any position by the level flange preferably in such a position that the process flange axes are vertical. Deviations from this can cause a shift in the zero, which can be corrected. The electronic housing can be rotated through 360° and can be fixed in any position.

The remote flange is connected to the matching flange that meets the ANSI/ DIN standard. The matching flange should be equipped with soft gaskets and bolts and nuts (user-selectable mounting bolts and nuts).

For bilateral flange remote transmitters, capillary components and remote flanges should only be installed in the same ambient temperature. The minimum bending radius of the capillary is 75mm, and it is strictly prohibited to entangle!

6.2 Environmental Conditions

Ambient temperature

Minimum: depending on the filling fluid

Maximum: 85° C

-20 ~ 65°C: with liquid crystal display and fluoro-rubber sealing ring

Storage/ Transport Temperature

Minimum: depending on the filling fluid

Maximum: 85 ° C

Relative Humidity

0 ~ 100%

Electromagnetic Compatibility (EMC)

Look the EMC Performance Table 4

6.3 Process conditions

Temperature Limit (Medium Temperature)

-40 ~ 450° C

Table 3 Table of filling liquid, working temperature and minimum working static pressure

Fillin g Fluid	Silico ne Oil (S)	High temp. Silicon e oil (h)	Ultra- High Temp. Filling Soluti on (z)	Vege table Oil (v)	Ultra -Low Tem p. Fillin g Solut ion (z)
Den sity 25 ° C	960 kg/m ³	980 kg/m ³	1020 kg/m ³	937 kg/m ³	1020 kg/m ³
Tem p. Limit s	-30 ~ 200°	-10 ~ 350°	10 ~ 600°	0 ~ 250°	-100 ~ 100°
Tem pe	Working pressure range (kPa absolute pressure)				
20°	>10	>10	>5	>25	>10
100°	>25	>25	>10	>50	>25
150°	>50	>50	>20	>75	
200°	>75	>75	>25	>100	
250°	-	>100	>50	>100	
350°	-	>100	>75	-	
600°	-	-	>100	-	

Note: Exceeding the above range of working temperature and static pressure relationship should be specifically pointed out, can be met by special design.

Pressure Limit

From 3.5kPa absolute to working pressure. Proof pressure up to 1.5 times the nominal pressure simultaneously on both sides of the transmitter admissible.

Remote Flange Rated Pressure

ANSI: 150 psi to 600 psi

DIN: PN 1.6MPa~PN 10MPa

One-Way Overload Limit

The low-pressure side is the rated pressure of the transmitter body, and the high-pressure side is the rated pressure of the flange. Possibly occurring zero offsets can be corrected.

Weight

One flange remote seal: DN 50/2" about 7 ~ 10kg; DN 80/3" about 8 ~ 11kg; DN 4" about 9 ~ 12kg;

Two flange remote seal: DN 50/2" about 10 ~ 16.5kg; DN 80/3" about 12 ~ 18kg; DN 4" about 14 ~ 21kg.

Explosion-Proof Performance

Intrinsically Safe NEPSI: Ex ia IIC T4 Ga Ta : -40° ~ +60°C

Explosion-proof NEPSI: Ex d IIC T4~T6 Gb Ta : -40 ~ +60° C

Dust Explosion-Proof NEPSI: Ex tb IIIC T80°C/T95°C/T130°C Db Ta = -40 ~ +60° C

Explosion-proof ATEX/ IECEx II 2 G Ex db IIC T4/T5/T6 Gb Ta: -40 ~ +60°C

Intrinsically safe ATEX/IECex II 2 G Ex ia IIC T4/T5/T6 Ga Ta : -40° ~ +85°C/ -40°C ~ +50°C/ -40°C ~ +40°C

Dust Explosion-Proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/T90°/T130° Db Ta : -40° ~ +60° C

6.4 Power And Load Conditions

The power supply voltage is 24VDC,

$R \leq (U_s - 12V) / I_{\max}$ kΩ, $I_{\max} = 23$ mA

Maximum Voltage Limit: 36VDC

Minimum Voltage Limit: 9VDC (low voltage).

13.5VDC (backlit LCD display, OLED display)

Digital Communication Load Range: 230~600Ω

Wetted Parts Materials

- **Measuring diaphragm capsule:** 316L Stainless Steel
- **Diaphragm:** 316L Stainless Steel, Hastelloy C, Tantalum
- **Process Flange:** 304 Stainless Steel

- **Filling Liquid:** Silicone Oil, High Temperature Silicone Oil, Ultra High Temperature Silicone Oil, Vegetable Oil
- **Process Connector Gasket:** Nitrile Rubber (NBR), Viton (FKM), Polytetrafluoroethylene (PTFE)
- **Amplifier Housing :** Aluminum with epoxy resin coat Stainless Steel case optional.
- **Housing Gasket:** Nitrile Rubber (NBR)
- **Nameplate:** 304 Stainless Steel

M20×1.5 nylon cable sealing buckle, terminal block for 0.5 ~ 2.5mm² wire.

Process Connection

The low-pressure side of the transmitter has NPT 1/4 and UNF 7/16" internal threads. The liquid level flange on the high-pressure side of the transmitter conforms to ANSI or DIN standards. It can be installed directly, refer to Table 5 of Page.44.

Enclosure rating

IP67

Electrical Connections

M20×1.5 or NPT1/2 internal thread, standard

Table 4 Electromagnetic Compatibility Table

No.	Test items	Basic standards	Test conditions	Performance Level
1	Radiated Interference (Housing)	GB/T 9254-2008	30MHz ~ 1000MHz	OK
2	Conducted Interference (DC Power Port)	GB/T 9254-2008	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	0.5kV (line to line) 1kV (line to ground) (1.2us/50us)	B

8	Conducted Interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A
---	---	----------------------	---------------------	---

Note: (1) Performance level A description: The technical specifications within the limits of normal performance.

(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

7. Dimensions

Unit (mm)

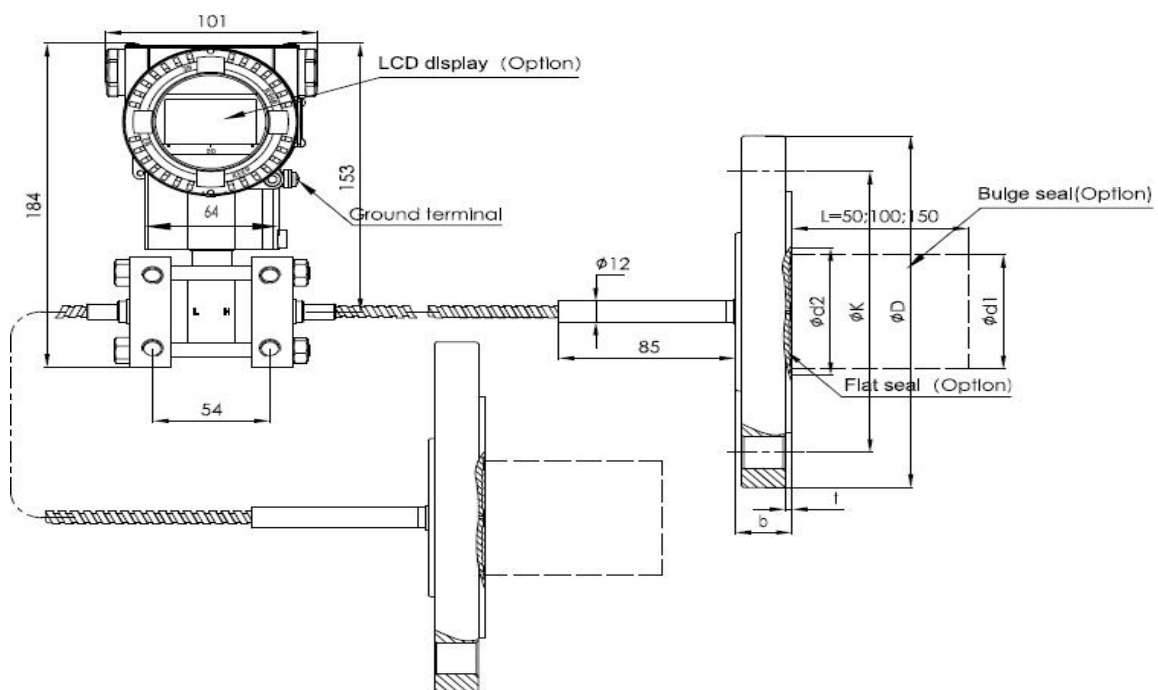
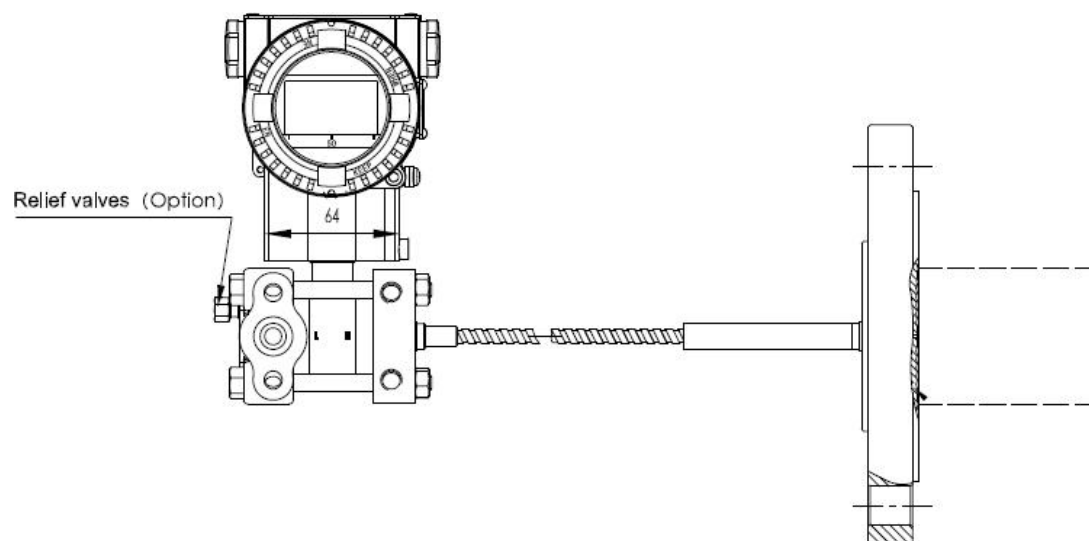


Figure 2 Basic type Single Side Differential Pressure Remote Transmission Sealing Device



Note: (1) The single-sided basic differential pressure remote transmission sealing device can be installed on the high or low pressure side of the transmitter
(2) The transmitter body of the single-sided or two-side differential pressure remote transmission sealing device is installed in the same way as the RP1001 series differential pressure transmitter.

Table 5 Remote Seal Flange Dimensions

Nominal Diameter	Working Pressure	ΦD	ΦK	Φd1 Plug -in	Φd2 Flat	Φd3	t	b	Required Bolt	
									Quantity	Thread
DN 50 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4MPa	165	125	48.3	57	102	3 ^{+0.5}	20	4	M16
	PN 6.4MPa	180	135	48.3	57	102	3 ^{+0.5}	26	4	M20
	PN 10MPa	195	145	48.3	57	102	3 ^{+0.5}	28	4	M24
DN 80 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4MPa	200	160	76	75	138	3 ^{+0.5}	24	8	M16
	PN 6.4MPa	215	170	76	75	138	3 ^{+0.5}	28	8	M20
	PN 10MPa	230	180	76	75	138	3 ^{+0.5}	32	8	M24
DN 100 (Sealing DIN 2526E) (Flange DIN 2501)	PN1/1.6MPa	220	180	89	110	158	3 ^{+0.5}	22	8	M16
	PN2.5/4MPa	235	190	89	110	162	3 ^{+0.5}	26	8	M20
DN 2" (ANSI B 16.5 RF)	150psi	152.4	120.6	48.3	57	92.1	3 ^{+0.5}	17.4	4	M16
	300psi	165.1	127.0	48.3	57	92.1	3 ^{+0.5}	20.6	8	M16
	600psi	165.1	127.0	48.3	57	92.1	6.35	31.75	8	M16
DN 3" (ANSI B 16.5 RF)	150psi	190.5	152.4	76	75	127	3 ^{+0.5}	22.2	4	M16
	300psi	209.5	168.3	76	75	127	3 ^{+0.5}	27.0	8	M20
	600psi	209.5	168.3	76	75	127	6.35	38.05	8	M20
DN 4" (ANSI B 16.5 RF)	150psi	229	191	89	89	157	3 ^{+0.5}	30	8	M16
	300psi	255	200	89	89	157	3 ^{+0.5}	32	8	M20

Note: The user can choose to install bolts and nuts.

Figure 3 Two Side Flange Remote Seal Of Threaded Mount Device

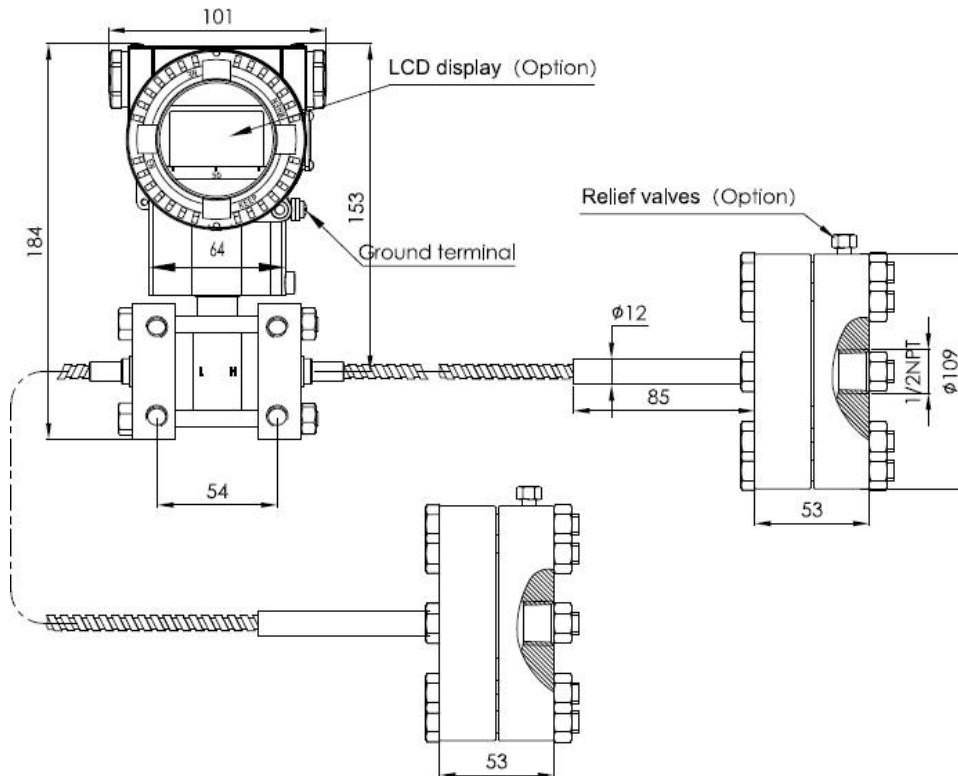
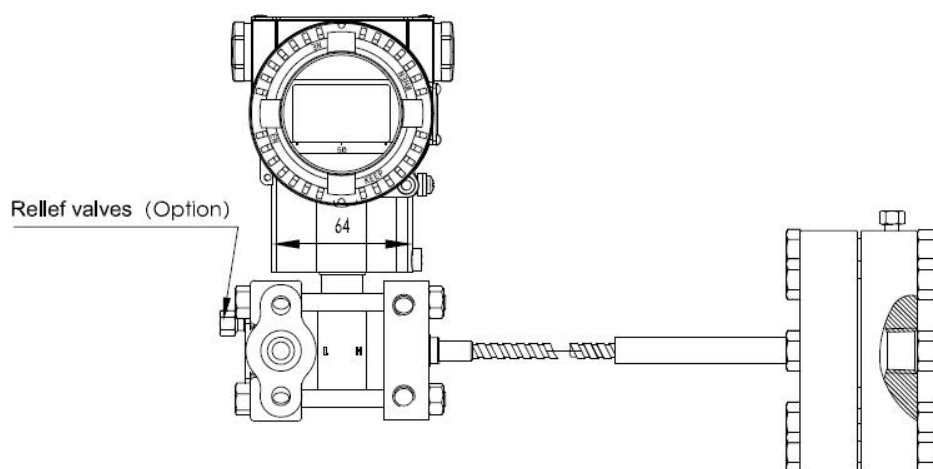


Figure 4 Single-Sided Threaded Type Differential Pressure Remote Transmission Sealing Device

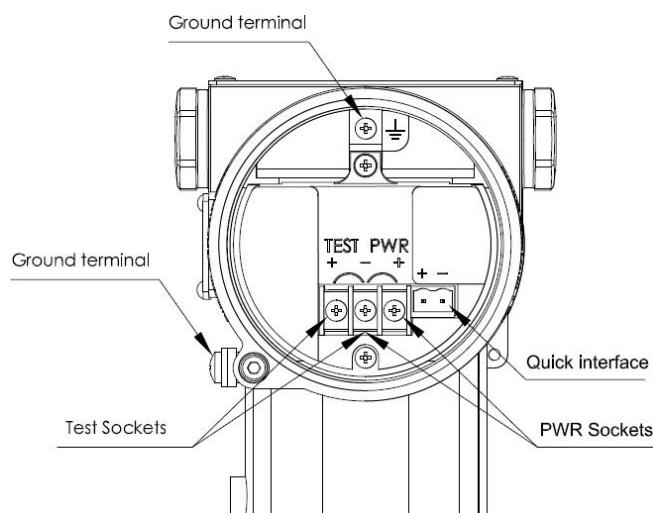


Note: (1) The single-sided thread-mounted differential pressure remote transmission sealing device can be installed on the high-voltage side of the transmitter body or on the low-voltage side of the transmitter.

(2) The transmitter body of the single-sided and double-sided thread-mounted differential pressure remote transmission sealing device is installed in the same manner as the RP1001 Series Differential Pressure Transmitter.

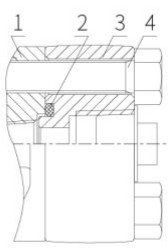
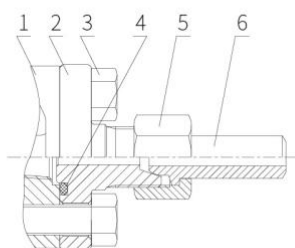
8. Electrical Connection

Figure 5 Electrical Connection Diagram



Note: Quick interface functionally equivalent to the signal terminal

9. Process Connections Description of the No Flange Side

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p>  <p>1/2NPT</p> <ul style="list-style-type: none"> 1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt 	<p>D-shaped connector with M20x1.5 male thread(code 2)</p>  <ul style="list-style-type: none"> 1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe

10. Models and suffix codes ^[1]

1 Remote Seal Differential Pressure Transmitter RP1001 Body Selection			
10 Accuracy			
	B	Reference accuracy ±0.075%	
	C	Reference accuracy ±0.1%	
20 Span			
		B	0-2kPa ~ 6kPa (0-200 ~ 600 mmH ₂ O) /(0-20 ~ 60mbar)
		C	0-4kPa ~ 40kPa (0-400 ~ 4000 mmH ₂ O) /(0-40 ~ 400mbar)
		D	0-2.5kPa ~ 250kPa (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)

		F	0-30kPa ~ 3MPa (0-3 ~ 300 mH2O) / (0-0.3 ~ 30bar)										
30	Static Pressure Sensor												
			0	None									
40	Diaphragm & Filling Fluid												
				A	Stainless steel 316l				Silicone oil				
50	Working Pressure												
					1	16MPa							
60	Process Connections												
							RN	1/4" NPT and 7/16" UNF female thread, No relief valve					
							RB	1/4" NPT and 7/16" UNF female thread, Relief valves at end of the flange					
							RU	1/4" NPT and 7/16" UNF female thread, Relief valves at the upper side of the flange					
							RD	1/4" NPT and 7/16" UNF female thread, Relief valves at the lower side of the flange					
							RR	7/16" UNF threaded hole, Double flange transmission					
70	Process Connector Gasket												
								N	Nitrile rubber (NBR)				
80	Special Function												
								N	None				
								F	Square Root Output				
								P	Lightning Protection				
90	Mounting Brackets												
									N	None			
									1	Stainless Steel			
									2	Carbon Steel Galvanized			
100	Process Connection Accessory												
										N	None		
										1	Oval-shaped flange with 1/2 NPT female thread		
										2	D-shaped connector with M20x1.5 male thread		
110	Integral Indicator												
										N	None		
										2	Backlight LCD display (-20° C)		
										3	OLED display (-40° C)		
120	Explosion Protected Type												
											N	Basic type	
											A	Intrinsically safe, NEPSI	
											D	Flameproof, NEPSI	
											B	Intrinsically safe, ATEX	
											E	Flameproof, ATEX	
130	Tag Plate												
											N	None	
											1	Position number marked on the nameplate	
											2	Hanging stainless steel signage	

140	Manual													C	Chinese
														E	English
150	Attachment option (-)													S	Stainless Steel Case
														V	Low Voltage Version
															Electrical connection NPT 1/2
														T	(no cable entry device and blind plug)

2 Flange Sealing Device Selection Of The Remote Seal Differential Pressure Transmitter RP1001

10	Flange sealing device									
	RH-	With capillary +side								
	RL-	With capillary Ø side								
20	Process Connection, Flange and Diaphragm Material									
		A	DN50	DIN 2501/HG20592	E	DN2526	316L Stainless Steel			
		B	DN50	DIN 2501/HG20592	E	DN2526	Hastelloy C			
		C	DN50	DIN 2501/HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)			
		H	DN80	DIN 2501/HG20592	E	DN2526	316L Stainless Steel			
		I	DN80	DIN 2501/HG20592	E	DN2526	Hastelloy C			
		G	DN80	DIN 2501/HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)			
		R	DN100	DIN 2501/HG20592	E	DN2526	316L Stainless Steel			
		S	DN100	DIN 2501/HG20592	E	DN2526	Hastelloy C			
		T	DN100	DIN 2501/HG20592	E	DN2526	Tantalum (temperature ≤ 200 ° C)			
		D	DN2"ANSI B 16.5/HG20615		RF	ANSI B 16.5	316L Stainless Steel			
		E	DN2"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Hastelloy C			
		F	DN2"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Tantalum (temperature ≤200°C)			
		K	DN3"ANSI B 16.5/HG20615		RF	ANSI B 16.5	316L Stainless Steel			
		L	DN3"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Hastelloy C			
		M	DN3"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Tantalum (temperature ≤200°C)			
		N	DN4"ANSI B 16.5/HG20615		RF	ANSI B 16.5	316L Stainless Steel			
		O	DN4"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Hastelloy c			
		P	DN4"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Tantalum (temperature ≤200°C)			
30	Working Pressure									
			1	PN 1MPa/4MPa		DIN 2501/HG20592				
			2	PN 6.4MPa		DIN 2501/HG20592				
			3	PN 10MPa		DIN 2501/HG20592				
			6	Class150		ANSI B 16.5/HG20615				
			7	Class300		ANSI B 16.5/HG20615				
			8	Class600 ANSI B 16.5	(excluding DN4" ANSI B 16.5)					
			4	PN 1MPa/1.6MPa (DN100)		DIN 2501/HG20592				
			5	PN 2.5MPa/4MPa (DN100)		DIN 2501/HG20592				
40	Process Connections									
				F	Flat					

				H	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 50mm
				I	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 100mm
				G	Bulge sealing, 316L Stainless Steel, extended diaphragm seal 150mm
				L	Bulge sealing, Hastelloy C, extended diaphragm seal 50mm
				M	Bulge sealing, Hastelloy C, extended diaphragm seal 100mm
				N	Bulge sealing, Hastelloy C, extended diaphragm seal 150mm
50	Filling fluid				
				S	Silicone oil -30 ~ 200°C
				H	High temperature silicone oil -10 ~ 350°C
				L	Ultra-low temperature filling liquid -100 ~ 100°C
				Z	Ultra high temperature filling liquid 10 ~ 450°C
				V	Vegetable Oil 0~250°C
				F	Fluorine Oil -30~260°C
60	Capillary Length				
				01	1m
				02	2m
				03	3m
				04	4m
				05	5m
				06	6m
				07	7m
				08	8m
				09	9m
				10	10m
				11	11m
				12	12m
			
70	Capillary Component Characteristics				
				N	None
				P	With PVC protective coating capillary
80	Diaphragm Protection (multiple choice)				
				N	None
				22	DN50/2" coated PFA (perfluoroalkylate) (temp.≤ 260 ° C)
				23	DN80/3" coated PFA (perfluoroalkylate) (temp.≤ 260 ° C)
				24	DN100/4" coated PFA (perfluoroalkylate) (temp.≤ 260 ° C)
				32	DN50/2" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
				33	DN80/3" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)
				34	DN100/4" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200°C)

									52	DN50/2" 316l coated with PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for Bulge sealing)
									53	DN80/3" 316l coated PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for Bulge sealing)
									54	DN100/4" 316l coated with PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for Bulge sealing)
									6	Vacuum treatment ^[3] (temperature ≥ 120°C, working pressure ≤ 50kPa abs.)
									72	Gold plating on DN50/2" 316L
									73	Gold plating on DN80/3" 316L
									74	Gold plating on DN100/4" 316L
									8	Degrease Cleansing Treatment

Note 1: Before flange sealing device selection, the selection of the RP1001 differential pressure transmitter should be completed and selected R option in line 60 of the in RP1001 options table;

Note 2: The PTFE membrane (F4 membrane) posted on the diaphragm, it could be applied to the measurement of negative pressure >50kPa, but it applies only to the flat level flange.

Note 3: When measuring pressure or working static pressure <50kPa (absolute pressure), select option 6 in line 80 to ensure performance.

Example: RP1001-BC2A1RRNNNN2N1C ^[4,5] ,RH-H1FS04PN, RL-H1FS04PN

[B] Reference accuracy: ±0.075%

[C]: Span: 0-400Pa~40kPa (0-40~4000 mmH₂O)

[2]: Static pressure compensation: 10MPa

[A]: Diaphragm & filling fluid: stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[1]: Working pressure: 16MPa

[RR]: Double flange transmission

[N]: Process connector gasket: Nitrile rubber (NBR)

[N]: None special options

[N]: None mounting bracket

[N]: None Process connection accessory

[2]: With backlight LCD display

[N]: Basic type (non-explosion proof)

[1]: Position number marked on the nameplate

[C]: Chinese instruction manual

[RH-]: Flange sealing device of high side

[H]: DN80 (DIN 2501), E DN2526, 316L Stainless Steel diaphragm

[1]: Working pressure PN 1MPa/4MPa (DIN 2501)

[F]: Flange sealing type is flat sealing

[S]: The filling liquid is silicone oil

[04]: Capillary length is 4m

[P]: With PVC protective coating capillaries

[N]: Diaphragm surface without special treatment

[RL-]: Flange sealing device of low side

[H]: DN80 (DIN 2501) ,E DN2526, 316L stainless steel diaphragm

[1]: Working pressure PN 1MPa/4MPa (DIN 2501)

[F]: Flange sealing type is flat sealing

[S]: Fill fluid is silicone oil

[04]: Capillary length is 4m

[P]: With PVC protective capillaries

[N]: Diaphragm surface without special treatment

Note 4: The differential pressure transmitter selection, see the RP1001 series transmitter option table;

Note 5: The minimum range of the remote seal transmitter should be the larger of the minimum range in Tables 1 and 2. The adjusted range must not be less than the minimum range. In order to optimize the performance of the remote transmitter, the range ratio should be <10:1.

3 Threaded Mount Device Remote Seal Of Differential Pressure Transmitter Device Selection ^[6]									
10 Flange Sealing Device									
	TH-	With capillary +side							
	TL-	With capillary ⊖ side							
20 Diaphragm Material									
		U	316L Stainless Steel						
		V	Hastelloy C						
		W	Tantalum ≤200℃						
30 Flush the Spare Hole									
			1	None					
			0	Yes					
40 Filling Fluid									
				S	Silicone oil				-30~200℃
				H	High Temperature Silicone Oil				-10~350℃
				V	Vegetable Oil				0~250℃
				F	Fluorine Oil				-30~260℃
50 Capillary Length									
					01	1m			
					02	2m			
					03	3m			
					04	4m			
					05	5m			
					06	6m			
					07	7m			
					08	8m			
					09	9m			
					10	10m			
					11	11m			
					12	12m			
							
60 Capillary Component Characteristics									
						N	None		
						P	With PVC Protective Coating Capillary		
70 Diaphragm Protection									
						N	None		
						6	Vacuum treatment ^[7] (temperature ≥120℃, working pressure ≤50kPa abs.)		

Note 6: When selecting the thread-mounted remote flange-sealing device, the selection of the body part of the RP1001 Differential Pressure Transmitter should be completed first, and the line in the RP1001 Differential Pressure Transmitter option table should be selected in the 60th line. Pass the option.

Note 7: When measuring pressure or working static pressure <50kPa (absolute pressure), select option 6 in 70 items to ensure performance.

Example: RP1001-BC2A1RRNN112N1C, TH-U1S03NN, TL-U1S03NN

[B]Reference accuracy: $\pm 0.075\%$

[C]: Span: 0-400Pa~40kPa (0-40~4000 mmH₂O)

[2]: Static pressure compensation: 10MPa

[A]: Diaphragm & filling fluid: stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[1]: Working pressure: 16MPa

[RR]: Double flange transmission

[N]: Process connector gasket: Nitrile rubber (NBR)

[N]: None special options

[N]: None mounting bracket

[N]: None Process connection accessory

[2]: With backlight LCD display

[N]: Basic type (non-explosion proof)

[1]: Position number marked on the nameplate

[C]: Chinese instruction manual

[TH-] High side is threaded mount device remote seal

[U]: 316L Stainless steel diaphragm

[1]: No relief valves

[S]: The filling liquid is silicone oil

[03]: Capillary length is 3m

[P]: With PVC protective coating capillaries

[N]: None Diaphragm Protection

[TL-] Low side is threaded mount device remote seal

[U]: 316L Stainless steel diaphragm

[1]: no flushing hole

[S]: The filling liquid is silicone oil

[03]: Capillary length is 3m

[P]: With PVC protective coating capillaries

[N]: None Diaphragm Protection

RP1002 Remote Seal Gauge Pressure Transmitter

RP1003 Remote Seal Absolute Pressure Transmitter

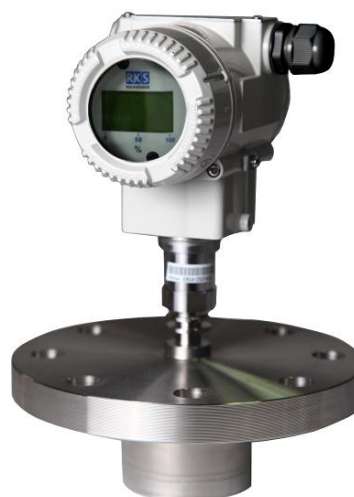
1. APPLICATION

The diaphragm capsule of the Remote Seal Differential Pressure Transmitter is used to prevent the medium in the pipeline from directly entering the pressure sensor component of the differential pressure transmitter. It uses a filling fluid such as silicone oil to transfer pressure.

The Remote Seal Gauge / Absolute Differential Pressure Transmitter RP1002/3 is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure, and converts it into a 4-20mA DC HART current signal output. It can also communicate with each other by RSM295 Modem to parameter setting and process monitoring etc. The Remote Seal Gauge / Absolute Differential Pressure Transmitter RP1002/3 (No migration) range limits is 0-6kPa~25MPa, and the flange's rated pressure are: 1.6/4MPa, 6.4MPa, 10MPa, 150psi, 300psi or 600psi.

2. OPERATING PRINCIPLE & STRUCTURE

RP1002/3 Remote Seal Gauge/Absolute Pressure Transmitter is composed of RP1002/3 Series Gauge/Absolute Pressure Transmitter and the welding installation remote seal flange. The operation theory is the same as RP1002/3 series gauge/absolute pressure transmitter (see RP1002/3 series gauge/absolute pressure transmitter general specifications), only the pressure transmission path is different. The pressure loaded in the high or low side, pass from the



isolation diaphragm and silicone oil in the flange to the sensor.

3. INPUT

Measurement Value: Gauge/ Absolute Pressure, Level

Measuring range

Remote Seal Gauge Pressure Transmitter

Lower range value: -100% URL (continuously adjustable)

Upper range value: up to +100% URL (continuously adjustable)

Remote Seal Absolute Pressure Transmitter

Lower range value: 0~100% URL (continuously adjustable)

Upper range value: up to +100% URL (continuously adjustable)

Span

Table 1 Span Code and Measuring Range

Span Code	Minimum Range	Maximum Range	Working pressure (maximum)
C	6kPa	40kPa	The flange's working
D	25kPa	250kPa	

F	30kPa	3MPa	pressure
G	1MPa	10MPa	
H	2.1MPa	21MPa	
I	4MPa	40MPa	
L	10kPa abs.	40kPa abs.	
M	25kPa abs.	250kPa abs.	
O	30kPa abs.	3MPa abs.	

Table 2 Flange and minimum measuring range

Flange	Nominal Diameter	Minimum/Maximum Range	Longest Capillary Length
Flat Sealing	DN 25/1"	160kPa/25MPa	10m
	DN 50/2"	10kPa/10MPa	12m
	DN 80/3"	6kPa/10MPa	16m
	DN 100/4"	6kPa/3MPa	16m
Bulge Sealing	DN 50/2"	16kPa/10MPa	10m
	DN 80/3"	6kPa/10MPa	16m
	DN 100/4"	6kPa/3MPa	16m
Threaded Mount Sealing	Outer diameter 109mm	160kPa/25MPa	10m

The minimum range of the Gauge/Absolute Remote Transmitter shall be the larger of the minimum range in Tables 1 and 2. The adjusted range must not be less than the minimum range. The maximum range of the Gauge/Absolute Remote Transmitter shall be the minimum of both the maximum range of the transmitter body and the rated pressure of the remote flange.

4. OUTPUT

Output signal

2-wire system, 4~20mADC HART output, digital communication, HART protocol is loaded on 4~20mADC signal.

Output signal limit: $I_{\min} = 3.9\text{mA}$, $I_{\max} = 20.5\text{mA}$

Failure Alarm (Mode can be selected)

Low mode (min.): 3.6 mA

High mode (max.): 21 mA

No mode (hold): Keep the effective current

value before the fault

Alarm current standard setting: High-Report Mode

5. RESPONSE TIME

The amplifier damping constant component is 0.1 s. The sensor and level flange time constant is 0.2 to 2 s, it depends on the range and range compression ratio. The additional adjustable time constant is: 0.1~60s.

6. GENERAL CONDITIONS

6.1 Installation Conditions

The remote seal gauge/absolute transmitters without capillaries can be fixed directly to any position by the level flange preferably in such a position that the process flange axes are vertical. Deviations from this can cause a shift in the zero, which can be corrected. The electronic housing can be rotated through 360° and can be fixed in any position.

The remote flange is connected to the matching flange that meets the ANSI/DIN standard. The matching flange should be equipped with soft gaskets and bolts and nuts (user-selectable mounting bolts and nuts).

For bilateral flange remote transmitters, capillary components and remote flanges should only be installed in the same ambient temperature. The minimum-bending radius of the capillary is 75mm, and it is strictly prohibited to entangle!

6.2 Ambient Conditions

Ambient temperature

Minimum: depending on the filling fluid

Maximum: 85 ° C

-20~65°C: with liquid crystal display and fluoro-rubber sealing ring

Storage/ Transport Temperature

Minimum: depending on the filling fluid

Maximum: 85 ° C

Relative Humidity

0 ~ 100%

Shock Resistance

Acceleration: 50g

Duration: 11ms

Vibration Resistance

2g to 500Hz

Electromagnetic Compatibility (EMC)

See the EMC Performance Table 4

6.3 Process Conditions**Medium temperature**

-40 ~ 600°C

Table 3 Fill fluid, temperature limits and the working pressure range

Filling fluid	Silicone oil (S)	High temp. silicone oil (h)	Ultra high temp. filling solution (z)	Vegetable oil (v)	Ultra-low temp. filling solution (z)
Density 25° C	960 kg/m ³	980 kg/m ³	1020 kg/m ³	937 kg/m ³	1020 kg/m ³
Temp. Limits	-30 ~ 200°	-10 ~ 350°	10 ~ 600°	0 ~ 250°	-100 ~ 100°
Temp.	Working pressure range (kPa abs.)				
20°	>10	>10	>5	>25	>10
100°	>25	>25	>10	>50	>25
150°	>50	>50	>20	>75	
200°	>75	>75	>25	>100	
250°	-	>100	>50	>100	
350°	-	>100	>75	-	
600°	-	-	>100	-	

Note: Exceeding the above range of operating temperature and pressure should be specifically pointed out, can be met by special design.

Transmitter Body Pressure Limit

Vacuum to maximum working pressure

Remote Flange Rated Pressure

ANSI: 150 psi to 600 psi

DIN: PN 1.6MPa~PN 10MPa

Weight

DN 50/2" is about 7~10kg, DN 80/3" is about 8~11kg, DN 4" is about 9~12kg.

Explosion Protection Type

- Intrinsically Safe NEPSI: Ex ia IIC T4 Ga Ta = -40 ~ +60° C
- Explosion-proof NEPSI: Ex d IIC T4~T6 Gb Ta = -40 ~ +60°C
- Dust explosion-proof NEPSI: Ex tb IIIC T80°C/ T95°C/ T130°C Db Ta = -40 ~ +60°C
- Explosion-proof ATEX/ IECEx: II 2 G Ex db IIC T4/T5/T6 Gb Ta = -40 ~ +60°C
- Intrinsically safe ATEX/ IECEx II 2 G Ex ia IIC T4/T5/T6 Ga Ta = -40°C ~ +85°C/ -40°C ~ +50°C/ -40°C ~ +40°C
- Dust explosion-proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°/T90°/T130° Db Ta = -40° ~ +60° C

6.4 Power And Load Conditions

The power supply voltage is 24VDC, $R \leq (U_s - 12V)/I_{max}$ kΩ, $I_{max} = 23$ mA

Maximum supply voltage: 36VDC

Minimum supply voltage: 9VDC (low voltage version), 13.5VDC (backlit LCD display, OLED display)

Wetted Parts Materials

- **Measuring Diaphragm Capsule:** 316L Stainless Steel
- **Diaphragm:** 316L Stainless Steel, Hastelloy C, Tantalum
- **Process Flange:** 304 Stainless Steel
- **Filling Liquid:** Silicone Oil, High

Temperature Silicone Oil, Ultra High
Temperature Silicone Oil, Vegetable Oil

- **Amplifier Housing:** Aluminum with epoxy resin coat; Stainless Steel case optional.
- **Housing Gasket:** Nitrile rubber (NBR)
- **Nameplate:** 304 Stainless Steel

block for 0.5 ~ 2.5mm² wire.

Process Connection

The remote flange meets the ANSI standard or DIN standard. It can be installed directly and refer the dimensional drawing.

Electrical Connections

M20×1.5 or NPT1/2 internal thread, standard
M20×1.5 nylon cable sealing buckle, terminal

Enclosure rating

IP67

Table 4: EMC Performance Table

Sr. No.	Test items	Basic standards	Test conditions	Performance Level
1	Radiated interference (Housing)	GB/T 9254-2008	30MHz ~ 1000MHz	OK
2	Conducted interference (DC Power port)	GB/T 9254-2008	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF electromagnetic field Immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency magnetic field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	0.5kV (line to line) 1kV (line to ground) (1.2us/50us)	B
8	Conducted interference Immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

Note: (1) Performance level A description: The technical specifications within the limits of normal performance.

(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

7. Dimensions

Unit (mm)

Figure 1 Gauge/Absolute Remote Seal Device (RS Type)

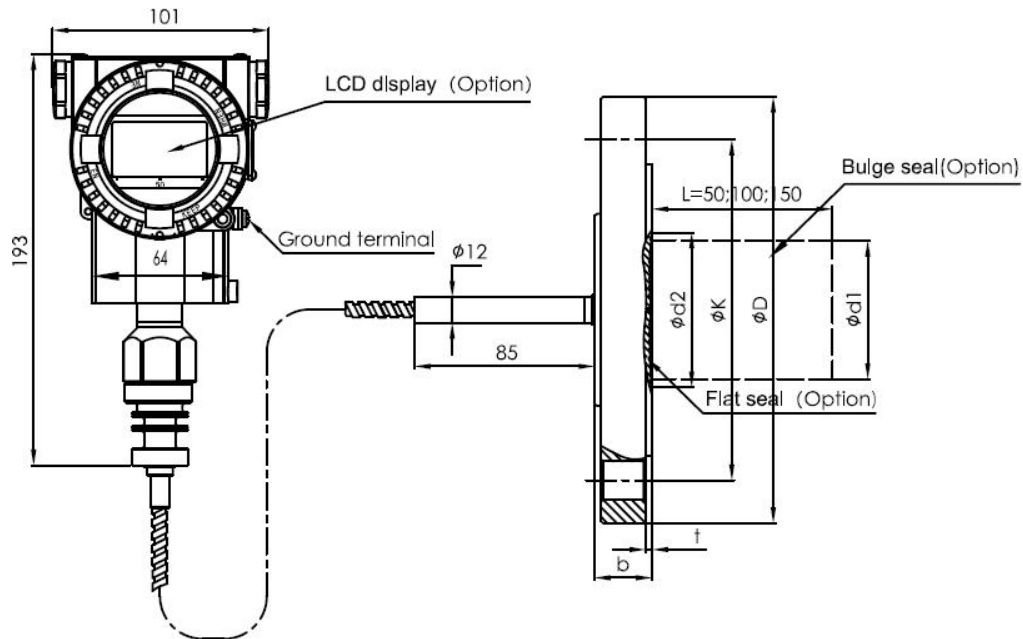


Figure 2 Gauge/Absolute Remote Seal Device Without Capillary (RN Type)

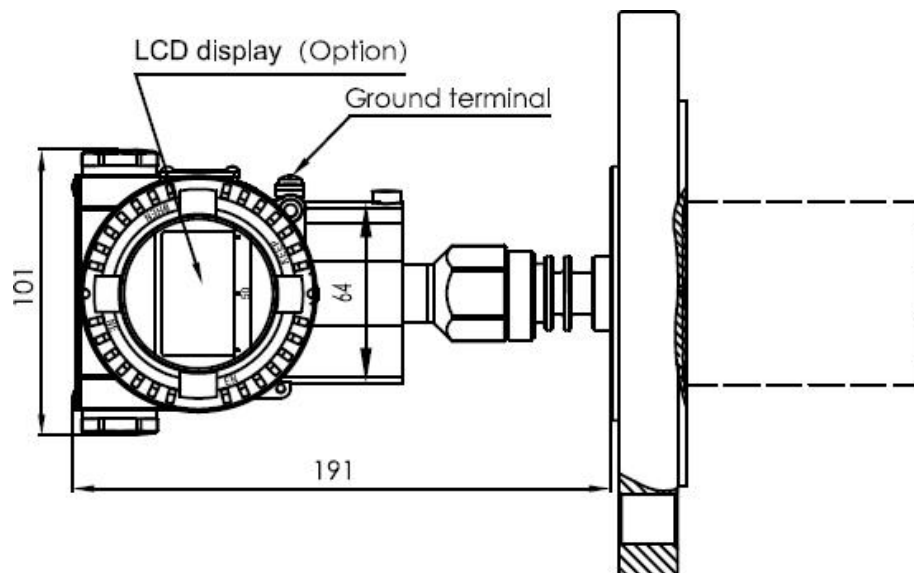
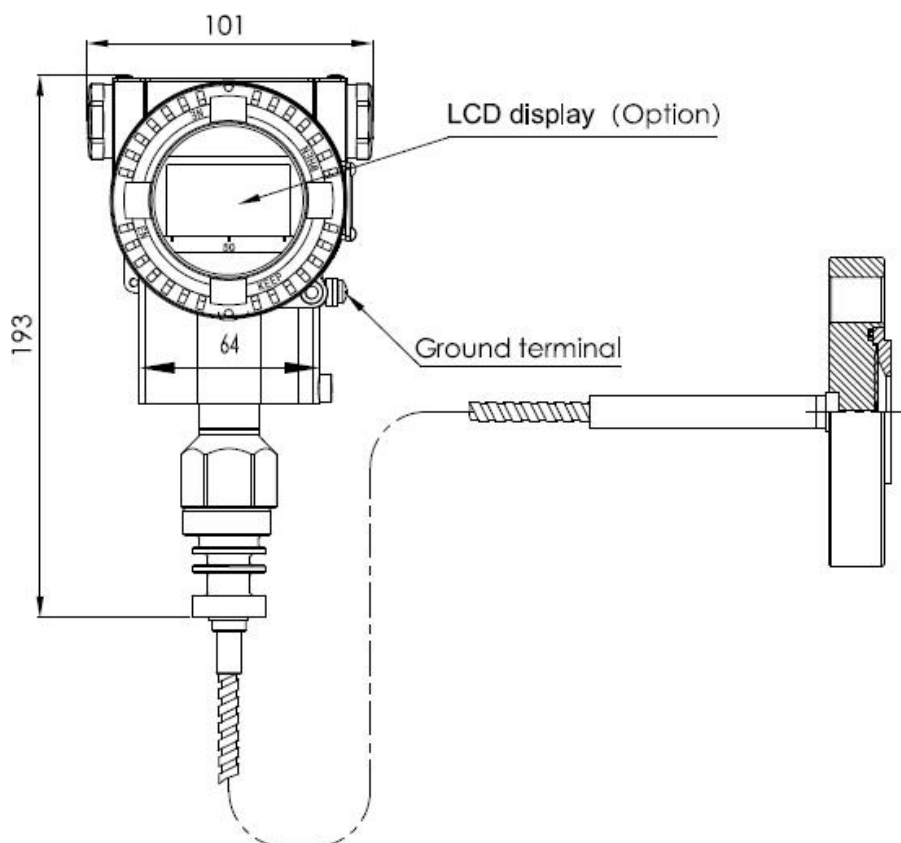
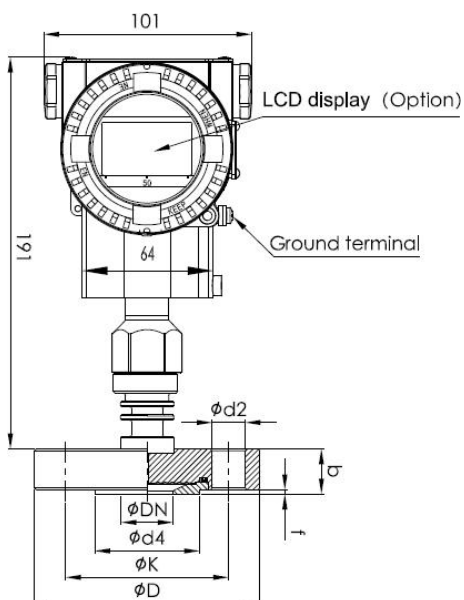


Table 5 Basic Type Remote Transmission Sealing Device Structure Size

Nominal Diameter	Working Pressure	ΦD	ΦK	Φd1 Plug-in	Φd2 Flat	Φd3	t	b	Required bolt	
									Quantity	Thread
DN 50 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4M Pa	165	125	48.3	57	102	3 ^{+0.5}	20	4	M16
	PN 6.4MPa	180	135	48.3	57	102	3 ^{+0.5}	26	4	M20
	PN 10MPa	195	145	48.3	57	102	3 ^{+0.5}	28	4	M24
DN 80 (Sealing DIN 2526E) (Flange DIN 2501)	PN1.6/4M Pa	200	160	76	75	138	3 ^{+0.5}	24	8	M16
	PN 6.4MPa	215	170	76	75	138	3 ^{+0.5}	28	8	M20
	PN 10MPa	230	180	76	75	138	3 ^{+0.5}	32	8	M24
DN 100 (Sealing DIN 2526E) (Flange DIN 2501)	PN1/1.6M Pa	220	180	89	110	158	3 ^{+0.5}	22	8	M16
	PN2.5/4M Pa	235	190	89	110	162	3 ^{+0.5}	26	8	M20
DN 2" (ANSI B 16.5 RF)	150psi	152.4	120.6	48.3	57	92.1	3 ^{+0.5}	17.4	4	M16
	300psi	165.1	127.0	48.3	57	92.1	3 ^{+0.5}	20.6	8	M16
	600psi	165.1	127.0	48.3	57	92.1	6.35	31.75	8	M16
DN 3" (ANSI B 16.5 RF)	150psi	190.5	152.4	76	75	127	3 ^{+0.5}	22.2	4	M16
	300psi	209.5	168.3	76	75	127	3 ^{+0.5}	27.0	8	M20
	600psi	209.5	168.3	76	75	127	6.35	38.05	8	M20
DN 4" (ANSI B 16.5 RF)	150psi	229	191	89	89	157	3 ^{+0.5}	30	8	M16
	300psi	255	200	89	89	157	3 ^{+0.5}	32	8	M20

Note: The user can choose to install bolts and nuts.

Figure 3: Internal Diaphragm Remote Seal (US Type)**Figure 4: Internal Diaphragm Remote Seal Without Capillary (UN Type)****Table 6. Internal Diaphragm Remote Seal Flange Dimensions (DIN 2501)**

DN	PN	Size (mm)						Weight kg	
		D	K	d4	b	f	d2		
25	1MPa/4MPa	115	85	68	22	2	2	14	1.5
25	6.3MPa/10MPa	140	100	68	24	2	2	18	3.2
	16MPa	140	100	68	24	2	2	18	3.6
	25MPa	150	105	68	28	2	2	18	4

Table 7. Internal Diaphragm Remote Seal Flange Dimensions (ANSI B 16.5)

DN	psi	Size (mm)						Weight kg
		D	K	d4	b	f	d2	
1"	150	110	79.5	51	22	2	16	1.4
	300	125	89	51	22	2	18	1.7
1"	600	125	89	51	25	7	18	3.6
	900/1500	150	101.5	51	36	7	26	4.0

Figure 5 Thread-Mounted Remote Transmission Seal Diagram (TS type)

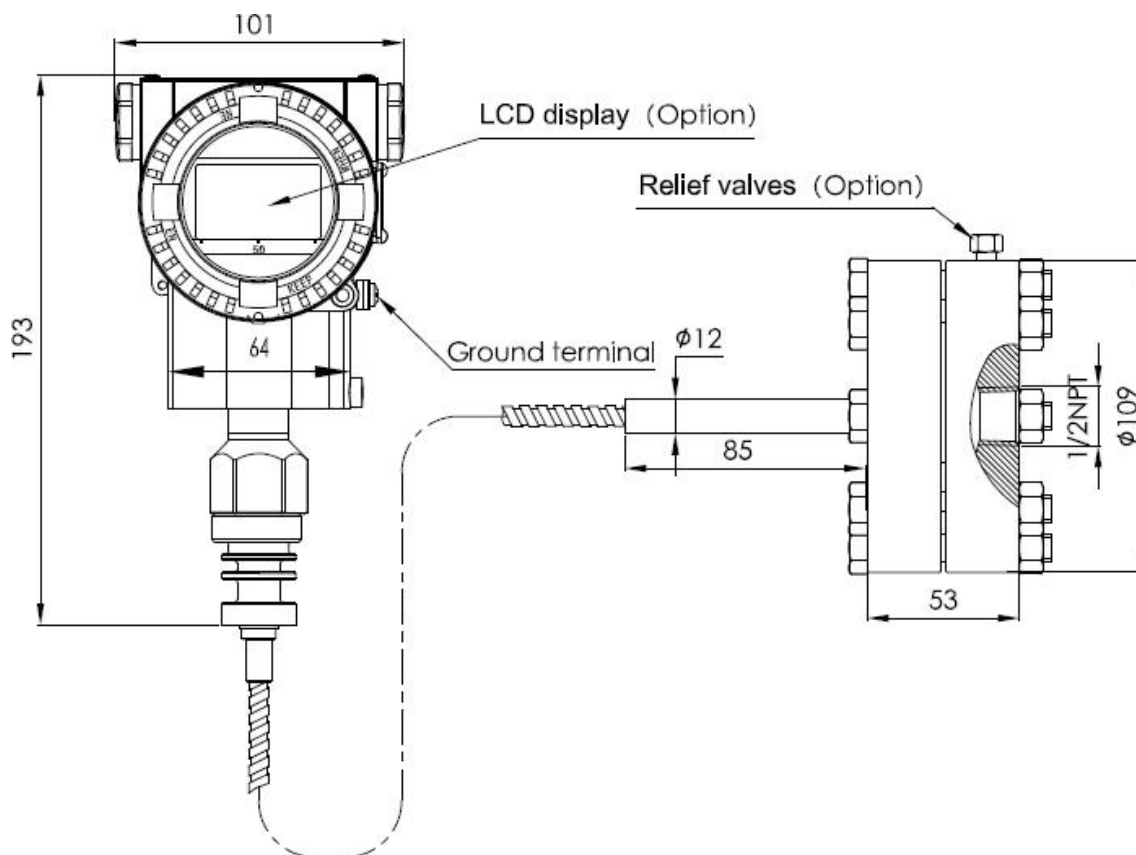
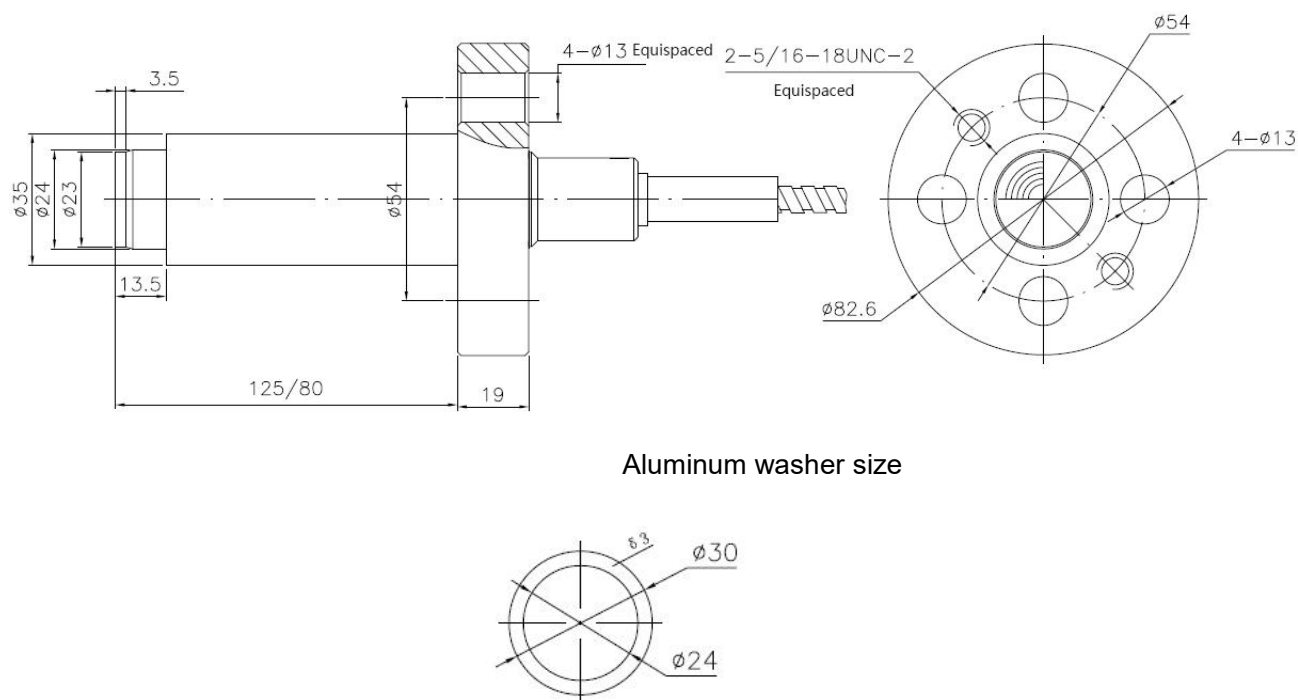
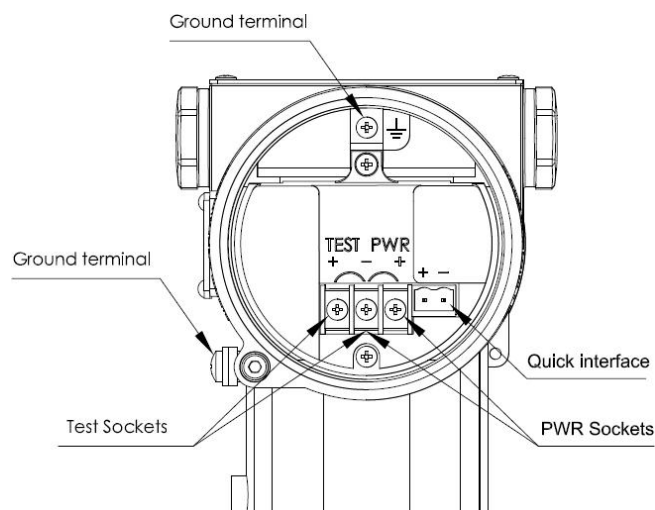


Figure 6 High Temperature Melt Remote Transmission Sealing Device Diagram (PS Type)

Note: The maximum working pressure of the PS type high temperature remote seal transmitter device is 35 MPa, and the maximum working temperature is 400 °C.

8. Terminal Configuration

Figure 7 Electrical Connection Diagram

Note: Quick interface functionally equivalent to the signal terminal

9. Models and suffix codes ^[1]

1 Remote Seal Gauge Pressure Transmitter body selection RP1002-										
1 Remote Seal Absolute Pressure transmitter body selection RP1003-										
10 Accuracy										
	B	Reference accuracy ±0.075%								
	C	Reference accuracy ±0.1%								
20 Span ^[1]										
		Gauge Pressure RP1002								
	C	0-6kPa ~ 40kPa / (0-600 ~ 4000 mmH ₂ O) /(0-60 ~ 400mbar)								
	D	0-25kPa ~ 250kPa / (0-2.5 ~ 25 mH ₂ O) /(0-250 ~ 2500mbar)								
	F	0-30kPa ~ 3MPa / (0-3 ~ 300 mH ₂ O) /(0-0.3 ~ 30bar)								
	G	0-0.1MPa ~ 10MPa /(0-1 ~ 100bar)								
	H	0-0.21MPa ~ 21MPa / (0-2.1 ~ 210 bar)								
	I	0-0.4MPa ~ 40MPa / (0-4 ~ 400 bar)								
		Absolute Pressure RP1003								
	L	0-10kPa ~ 40kPa / (0-1000 ~ 4000 mmH ₂ O) /(0-1000 ~ 400mbar)								
	M	0-25kPa ~ 250kPa /(0-250 ~ 2500mbar)								
	O	0-30kPa ~ 3Mpa/(0-0.3 ~ 30bar)								
	T	0-10kPa~40kPa /(0-1000~4000 mmH ₂ O)/(0-1000~400mbar) 【Overload protection to 7MPa】								
30 Diaphragm Filling Fluid										
			A	316L Stainless Steel			Silicone Oil			
40 Process Connection										
				R	Remote seal connection					
50 Special Function										
					N	None				
					P	Lightning protection				
60 Mounting Brackets										
						N	None			
						1	Stainless Steel			
						2	Carbon Steel Galvanized			
70 Integral Indicator										
							N	None		
							2	Backlight LCD display (-20 ° C)		
							3	OLED display (-40 ° C)		
80 Explosion Protected Type										
								N	Basic type	
								A	Intrinsically safe, NEPSI	
								D	Flameproof, NEPSI	
								B	Intrinsically safe, ATEX	
								E	Flameproof, ATEX	
90 Tag Plate										
								N	None	
								1	Position number marked on the nameplate	
								2	Hanging stainless steel signage	

100	Manual									
									C	Chinese
									E	English
110	Additional Options (-)									
									S	Stainless steel case
									V	Low voltage version
									T	Electrical connection npt1/2 (no cable entry device and blind plug)

2 Basic Type Gauge Pressure / Absolute Pressure Remote Transmitter Flange part selection						
10	Basic Type Gauge/Absolute Pressure Remote Transmitter Sealing Device					
	RN-	Direct mount, without capillary				
	RS-	With capillary				
20	Process Connection		Nominal Diameter		Sealing Surface	Diaphragm Material
		A	DN50	DIN 2501/HG20592	E DN2526	316L Stainless Steel
		B	DN50	DIN 2501/HG20592	E DN2526	Hastelloy C
		C	DN50	DIN 2501/HG20592	E DN2526	Tantalum (temperature ≤ 200 ° C)
		H	DN80	DIN 2501/HG20592	E DN2526	316L Stainless Steel
		I	DN80	DIN 2501/HG20592	E DN2526	Hastelloy C
		G	DN80	DIN 2501/HG20592	E DN2526	Tantalum (temperature ≤ 200 ° C)
		R	DN100	DIN 2501/HG20592	E DN2526	316L Stainless Steel
		S	DN100	DIN 2501/HG20592	E DN2526	Hastelloy C
		T	DN100	DIN 2501/HG20592	E DN2526	Tantalum (temperature ≤ 200 ° C)
		D	DN2"ANSI B 16.5/HG20615		RF ANSI B16.5	316L Stainless Steel
		E	DN2"ANSI B 16.5/HG20615		RF ANSI B16.5	Hastelloy C
		F	DN2"ANSI B 16.5/HG20615		RF ANSI B16.5	Tantalum (temperature ≤200°C)
		K	DN3"ANSI B 16.5/HG20615		RF ANSI B16.5	316L Stainless Steel
		L	DN3"ANSI B 16.5/HG20615		RF ANSI B16.5	Hastelloy C
		M	DN3"ANSI B 16.5/HG20615		RF ANSI B 16.5	Tantalum (temperature ≤200°C)
		N	DN4"ANSI B 16.5/HG20615		RF ANSI B 16.5	316L Stainless Steel
		O	DN4"ANSI B 16.5/HG20615		RF ANSI B 16.5	Hastelloy C
		P	DN4"ANSI B 16.5/HG20615		RF ANSI B 16.5	Tantalum (temperature ≤200°C)
30	Working Pressure					
			1	PN 1MPa/4MPa	DIN 2501/HG20592	
			2	PN 6.4MPa	DIN 2501/HG20592	
			3	PN 10MPa	DIN 2501/HG20592	
			6	Class150	ANSI B 16.5/HG20615	
			7	Class300	ANSI B 16.5/HG20615	
			8	Class600 ANSI B 16.5	(excluding DN4" ANSI B 16.5)	
			4	PN 1MPa/1.6MPa (DN100)	DIN 2501/HG20592	
			5	PN 2.5MPa/4MPa (DN100)	DIN 2501/HG20592	
40	Connection Type					
			F	Flat		
			H	Bulge sealing, 316L stainless steel, extended diaphragm seal 50mm		

					I	Bulge sealing, 316L stainless steel, extended diaphragm seal 100mm			
					G	Bulge sealing, 316L stainless steel, extended diaphragm seal 150mm			
					L	Bulge sealing, Hastelloy C, extended diaphragm seal 50mm			
					M	Bulge sealing, Hastelloy C, extended diaphragm seal 100mm			
					N	Bulge sealing, Hastelloy C, extended diaphragm seal 150mm			
50	Filling Fluid								
					S	Silicone oil		-30~200℃	
					H	High temperature silicone oil		-10~350℃	
					V	Vegetable oil		0~250℃	
					F	Fluorine oil		-30~260℃	
					L	Ultra-low temperature filling solution		-100~100℃ (not applicable to RN-type)	
					Z	Ultra high temperature filling solution		10~600℃ (not applicable to RN-type)	
60	Capillary Length								
					00	None Capillary - direct mount (RN-type)			
					01	1m			
					02	2m			
					03	3m			
					04	4m			
					05	5m			
					06	6m			
					07	7m			
					08	8m			
					10	10m			
					11	11m			
					12	12m			
							
70	Capillary Component Characteristics (Multiple Choices Possible)								
						N	None		
						P	With PVC protective coating capillary		
80	Diaphragm Protection (Multiple Choice)								
						N	None		
						22	DN50/2" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)		
						23	DN80/3" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)		
						24	DN100/4" coated PFA (perfluoroalkylate) (temperature ≤ 260 ° C)		
						32	DN50/2" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200℃)		
						33	DN80/3" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200℃)		
						34	DN100/4" posted diaphragm PTFE film (polytetrafluoroethylene film) ^[2] (temperature ≤200℃)		
						52	DN50/2" 316L coated with PFA (perfluoroalkylate) (temperature ≤ 260 ° C) (only for plug-in)		
						53	DN80/3"316L coated PFA (perfluoroalkylate) (temperature ≤		

									260 °C) (only for plug-in)
								54	DN100/4"316L coated with PFA (perfluoroalkylate) (temperature ≤ 260 °C) (only for plug-in)
								6	Vacuum treatment ^[3] (temperature ≥120°C, working pressure ≤50kPa abs.)
								72	Gold plating on DN50/2" 316L
								73	Gold plating on DN80/3" 316L
								74	Gold plating on DN100/4" 316L
								8	Degrease cleansing treatment

Note 1: When selecting the basic type of gauge/absolute pressure remote flange sealing device, the selection of RP1002/3 gauge/absolute pressure transmitter should be completed first;

Note 2: The PTFE membrane (F4 membrane) posted on the diaphragm, which is not suitable for negative pressure measurement, but only for flat liquid level flanges.

Note 3: When measuring pressure <50kPa (absolute pressure), option 6 should be selected in 80 items to ensure performance.

Note 4: The minimum range of the remote seal transmitter should be the larger of the minimum range in Tables 1 and 2. The adjusted range must not be less than the minimum range. In order to optimize the performance of the remote transmitter, the range ratio should be <10:1.

Example: RP1002-BCARNN2N1C^[4]

RN-H1FS00NN

[B]: Reference accuracy ±0.075%

[C]: The span is 0-400Pa~40kPa (0-40~4000 mmH2O)

[A]: Diaphragm & filling fluid : stainless steel 316L diaphragm, and the filling liquid is silicone oil.

[R]: Remote connection

[N]: None special options

[N]: None mounting bracket

[2]: Backlight LCD display

[N]: Basic type (non-explosion proof)

[1]: Position number marked on the nameplate

[C]: Chinese instruction manual

[RN-]: Direct mounting remote seal pressure transmitter

[H]: DN80 (DIN 2501) flange diameter, E DN2526, 316L stainless steel diaphragm

[1]: Working pressure PN 1MPa/4MPa (DIN 2501)

[F]: Flange sealing type is flat sealing

[S]: The filling liquid is silicone oil

[00]: None Capillary, direct mount

[N]: None

[N]: Diaphragm surface without special treatment

3 Selection Of The Internal Diaphragm Remote Seal Gauge/Absolute Pressure Transmitter RP1002/3^[5]

10 Flange Sealing Device

UN-	Direct mounting without capillary
-----	-----------------------------------

	US-	With capillary						
20	Process Connection, Flange And Diaphragm Material							
		U	DN25	DIN 2501/HG20592	D	DN2526	316L Stainless Steel	
		V	DN3"ANSI B 16.5/HG20615		D	DN2526	Hastelloy C	
		W	DN3"ANSI B 16.5/HG20615		D	DN2526	Tantalum	
		X	DN1"ANSI B 16.5/HG20615		RF	ANSI B 16.5	316L Stainless Steel	
		Y	DN1"ANSI B16.5/HG20615		RF	ANSI B 16.5	Hastelloy C	
		Z	DN1"ANSI B 16.5/HG20615		RF	ANSI B 16.5	Tantalum	
30	Working Pressure							
			1	PN 1MPa/4MPa	DIN 2501			
			2	PN 6.3MPa/10MPa	DIN 2501			
			3	PN 16MPa	DIN 2501			
			4	PN 25MPa	DIN 2501			
			6	Class150	ANSI B 16.5			
			7	Class300	ANSI B 16.5			
			8	Class600	ANSI B 16.5			
			9	Class1500	ANSI B 16.5			
40	Filling Fluid							
			S	Silicone Oil		-30~200°C		
			H	High Temperature Silicone Oil		-10~350°C		
			V	Vegetable Oil		0~250°C		
			F	Fluorine Oil		-30~260°C		
50	Capillary Length							
				00	None Capillary - direct mount (UN-type)			
				01	1m			
				02	2m			
				03	3m			
				04	4m			
				05	5m			
				06	6m			
						
60	Capillary Component Characteristics							
				N	None			
				P	With PVC protective coating capillary			
70	Diaphragm Protection							
				N	None			
				3	Diaphragm attached PTFE film (polytetrafluoroethylene film) (temperature ≤ 200 ° C)			
				6	Vacuum treatment (temperature ≥120°C, working pressure ≤50kPa abs.)			
80	Process Connector Gasket							
				1	PTFE			
				2	316 Stainless steel			
				3	Hastelloy C			

								4	Tantalum
--	--	--	--	--	--	--	--	---	----------

Note 5: Before flange sealing device selection, the selection of the RP1002/3 gauge/absolute pressure transmitter should be completed

Note 6: The minimum range of the remote transmitter should be the larger of the minimum range in Tables 1 and 2. The adjusted range must not be less than the minimum range. In order to optimize the performance of the remote transmitter, the range ratio should be <10:1.

Note 7: When measuring pressure <50kPa (absolute pressure), special remarks should be made, special treatment is required in the manufacturing process to ensure performance.

Example: RP1002-BCARNN2N1C UN-U1S00NN1

[B]: Reference accuracy $\pm 0.075\%$

[C]: The span is 0-400Pa~40kPa (0-40~4000 mmH₂O)

[A] : Diaphragm & filling fluid: stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[R]: Remote connection

[N]: None special options

[N]: None mounting bracket

[2]: Backlight LCD display

[N]: Basic type (non-explosion proof)

[1]: Position number marked on the nameplate

[C]: Chinese instruction manual

[UN-]: Direct mount, none capillary

[U]: DN25 DIN2501 D DN2526, 316L stainless steel

[1]: Working pressure PN 1MPa/4MPa DIN 2501

[S]: The filling liquid is silicone oil

[00]: None capillary

[N]: none

[N]: Diaphragm surface without special treatment

[1]: Process connector gasket is PTFE

4 Selection Of The Threaded Mount Remote Seal Gauge/Absolute Pressure Transmitter RP1002/3 ^[8]						
10 Flange Sealing Device						
	TS-	With capillary				
20 Diaphragm Material						
		U	316L Stainless Steel			
		V	Hastelloy C			
		W	Tantalum (temperature ≤ 200 ° C)			
30 Flush The Spare Hole						
			1	None		
			0	Yes		
40 Filling Fluid						
				S	Silicone oil	-30~200℃
				H	High Temperature Silicone Oil	-10~350℃
				V	Vegetable oil	0~250℃
				F	Fluorine oil	-30~260℃
50 Capillary length						
					01	1m
					02	2m
					03	3m

						04	4m
						05	5m
						06	6m
						07	7m
						08	8m
					
60	Capillary Component Characteristics						
						N	None
						P	With PVC protective coating capillary
70	Diaphragm Protection						
						N	None
							Vacuum treatment (temperature $\geq 120^{\circ}\text{C}$, working pressure $\leq 50\text{kPa}$ abs.)
						6	abs.)

Note 8: When selecting the thread-mounted remote flange-sealing device, the body part of the RP1002/3 gauge/absolute pressure transmitter should be selected first.

Selection example:

Example: RP1002-BCARNN2N1C TS-U1S03NN

[B]: Reference accuracy $\pm 0.075\%$

[C]: The span is 0-400Pa~40kPa (0-40~4000 mmH₂O)

[A]: Diaphragm & filling fluid: stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[R]: Remote connection

[N]: None special options

[N]: None mounting bracket

[2]: Backlight LCD display

[N]: Basic type (non-explosion proof)

[1]: Position number marked on the nameplate

[C]: Chinese instruction manual

[TS-]: Threaded mount device remote seal

[U]: 316L Stainless steel diaphragm

[1]: None Flush the spare hole

[S]: The filling liquid is silicone oil

[03]: Capillary length is 3m

[N]: None Capillary component characteristics

[N]: None Diaphragm Protection

5 High Temperature Melt Remote Seal pressure Transmitter device selection

10 High Temperature melt remote transmission sealing device

PS- With capillary

20 **Diaphragm Material**

U 316L Stainless Steel

V Hastelloy C

30 **Filling Fluid**

			S	Silicone oil	-30~200°C
			H	High temperature silicone oil	-10~350°C
40	Capillary Length				
				01	1m
				02	2m
				03	3m
				04	4m
				05	5m
				06	6m
				07	7m
				08	8m
			
50	Capillary Component Characteristics				
				N	None
				P	With PVC protective coating capillary

Note 11: When selecting the high temperature melt remote transmission-sealing device, the body part of the RP1002/3 gauge/absolute pressure transmitter should be selected first.

RP1002-A Differential Pressure Mounted High Accuracy Gauge Pressure Transmitter

RP1003-A Differential Pressure Mounted High Accuracy Absolute Pressure Transmitter

The RP1002/3-A high accuracy differential pressure mounted gauge/absolute transmitter is used to measure the level, density and pressure of liquids, gases or vapors and then converts them into 4-20mA DC HART current signal outputs. The RP1002/3-A can also communicate with the RSM295 Modem for parameter setting, process monitoring, and more.

STANDARD

(Adjust the measurement range based on the standard zero point, Stainless Steel 316L diaphragm, filling liquid is silicone oil)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of the range

(Including linearity, hysteresis, and repeatability from zero) = $\pm 0.05\%$

If $td > 10$ (td = maximum range/adjustment range), then: $\pm(0.005 \times TD)\%$

Ambient temperature effect

The total impact from -25°C to 65°C is:

$\pm(0.075 \times TD + 0.025)\% \times \text{Span}$

$\pm 0.04\%$ per 10°C (when $TD=1$)

The total influences at $-40^{\circ}\text{C} \sim -25^{\circ}\text{C}$ and $65^{\circ}\text{C} \sim 85^{\circ}\text{C}$ are:

$\pm(0.1 \times TD + 0.025)\% \times \text{Span}$

Over-range Effect



$\pm 0.05\% \times \text{Span}$

Stability

$\pm 0.15\%$ URL / 10 years

Power Supply Impact

$\pm 0.001\%$ / 10v ($12 \sim 36\text{v dc}$), negligible

2. FUNCTIONAL SPECIFICATIONS

Range limit

It can be adjusted freely within the upper and lower limits of the range. It is recommended to select a range code with the lowest possible range to optimize performance characteristics.

Span and range (RP1002-A High Precision Gauge)

Span Range		kPa	psi	bar	Kgf/cm ²
1C	Span	2 ~ 40	0.29 ~ 5.8	0.02 ~ 0.4	0.02 ~ 0.4
	range	-40 ~ 40	-5.8 ~ 5.8	-0.4 ~ 0.4	-0.4 ~ 0.4
1D	Span	2.5 ~ 250	0.3625 ~ 36.25	0.025 ~ 2.5	0.025 ~ 2.5
	range	-100 ~ 250	-14.5 ~	-1 ~ 2.5	-1 ~ 2.5

			36.25		
1F	Span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	range	-100 ~ 3000	-14.5 ~ 435	-1 ~ 30	-1 ~ 30
1G	Span	0.1 ~ 10MP a	14.5 ~ 1450	1 ~ 100	1 ~ 100
	range	-0.1 ~ 10MP a	-14.5 ~ 1450	-1 ~ 100	-1 ~ 100
1H	Span	0.21 ~ 21 MPa	30.45 ~ 3045	2.1 ~ 210	2.1 ~ 210
	range	-0.1 ~ 21 MPa	-14.5 ~ 8000	-1 ~ 210	-1 ~ 210
1I	Span	0.4 ~ 40 MPa	58 ~ 5800	4 ~ 400	4 ~ 400
	range	-0.1 ~ 40 MPa	-14.5 ~ 5800	-1 ~ 400	-1 ~ 400

Range and range (RP1003-A high precision absolute pressure)

Span / range		kPa	psi	bar	Kgf/c m ²
1 M	span	2.5 ~ 250	0.362 5 ~ 36.25	0.02 5 ~ 2.5	0.025 ~ 2.5
	range	0 ~ 250	0 ~ 36.25	0 ~ 2.5	0 ~ 2.5
1 O	span	30 ~ 3000	-4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	range	0 ~ 3000	0 ~ 435	0 ~ 30	0 ~ 30

Zero Setting

Zero and span can be adjusted to any value

within the measurement range in the table as long as: calibrated range \geq minimum range.

Installation Location Impact

The change of the mounting position in the direction parallel to the diaphragm surface does not cause zero drift. If the mounting position and the diaphragm surface exceed 90°, there is a zero position in the range of <0.4 kPa, which can be adjusted by adjusting the zero adjustment. There is no effect in the range.

Output

2-wire system, 4~20mADC HART output, Digital Communication. HART protocol is loaded on 4~20mADC signal.

Output Signal Limit: $I_{\min} = 3.9\text{mA}$, $I_{\max} = 20.5\text{mA}$

Alarm Current

Underreport mode (minimum): 3.6 mA

Highlight mode (maximum): 21 mA

No report mode (hold): Maintain the effective current value before the fault

Alarm current standard setting: High-Report mode

Response Time

The amplifier component has a damping constant of 0.1 s; the sensor time constant is 0.1 to 1.6 s, depending on the range and turndown ratio. The additional adjustable time constant is: 0.1~60s.

Preheat Time

< 15s

Ambient Temperature

-40 ~ 85°C

With LCD (liquid crystal display), fluoro-rubber sealing ring: -20 ~ 65°C

Storage/ Transport Temperature

-50 ~ 85°C

With LCD: -25~85°C

Pressure Limit

From vacuum to maximum range

Electromagnetic Compatibility (EMC)

See "Electromagnetic Compatibility Schedule" on the next page.

Explosion-Proof Performance

- Intrinsic Safe NEPSI: Ex ia IIC T4 Ga Ta=-40~+60°C
- Explosion-proof NEPSI: Ex d IIC T4~T6 Gb Ta=-40~+60°C
- Dust explosion-proof NEPSI: Ex tb IIIC T80°C/T95°C/T130°C Db Ta=-40~+60°C
- Explosion-proof ATEX/ IECEx II 2 G Ex db IIC T4/T5/T6 Gb Ta: -40~+60°C
- Intrinsic Safe ATEX/ IECEx II 2 G Ex ia IIC T4/T5/T6 Ga Ta:-40°C ~ +85°C/ -40°C ~ +50°C/ -40°C ~ +40°C
- Dust explosion-proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°C/ T90°C/ T130°C Db Ta: -40°C ~ +60°C

3. INSTALLATION

Power and Load Conditions

The power supply voltage is 24V, $R \leq (U_s - 12V)/I_{max}$ kΩ, where $I_{max} = 23$ mA

Maximum Supply Voltage: 36VDC

Minimum Supply Voltage: 9VDC (low voltage version), 13.5VDC (backlit Liquid Crystal Display, OLED display)

Digital Communication Load Range: 230~600Ω

Electrical Connections

M20×1.5 or NPT1/2 internal thread, standard M20×1.5 nylon cable sealing buckle, terminal block is suitable for 0.5 ~ 2.5mm² wire.

Process Connection

The end face of the process connection flange has NPT 1/4 and UNF 7/16`` internal threads.

4. PHYSICAL SPECIFICATIONS

Material

- Diaphragm: SS316L, Hastelloy C
- Process Connection: SS316
- Filling Liquid: Silicone Oil, Fluorine Oil
- Transmitter Housing: Aluminium Alloy; optional Epoxy Resin Stainless Steel Housing.
- Shell Seal: Nitrile Rubber (NBR)
- Nameplate: Stainless Steel 304

Weight

1.6kg (refers to Aluminum Alloy Casing without liquid crystal display, mounting bracket & process connection)

Enclosure rating

IP67

EMC Performance Table

No.	Test items	Basic standard	Test Conditions	Performance level
1	Radiation Interference (shell)	GB/T 9254-2008 Table 5	30MHz ~ 1000MHz	OK
2	Conducted Interference (DC power port)	GB/T9254-2008 Table 1	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) immunity	GB/T 17626.2-2006	4kV (contact) 8kV (air)	B
4	Radio Frequency 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	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500v (between lines) 1kV (between lines and ground) (1.2us/50us)	B
8	Conducted Interference Immunity of RF Field Induction	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

Note:

(1) A performance level description: During the test, the performance is normal within the limits of the technical specifications.

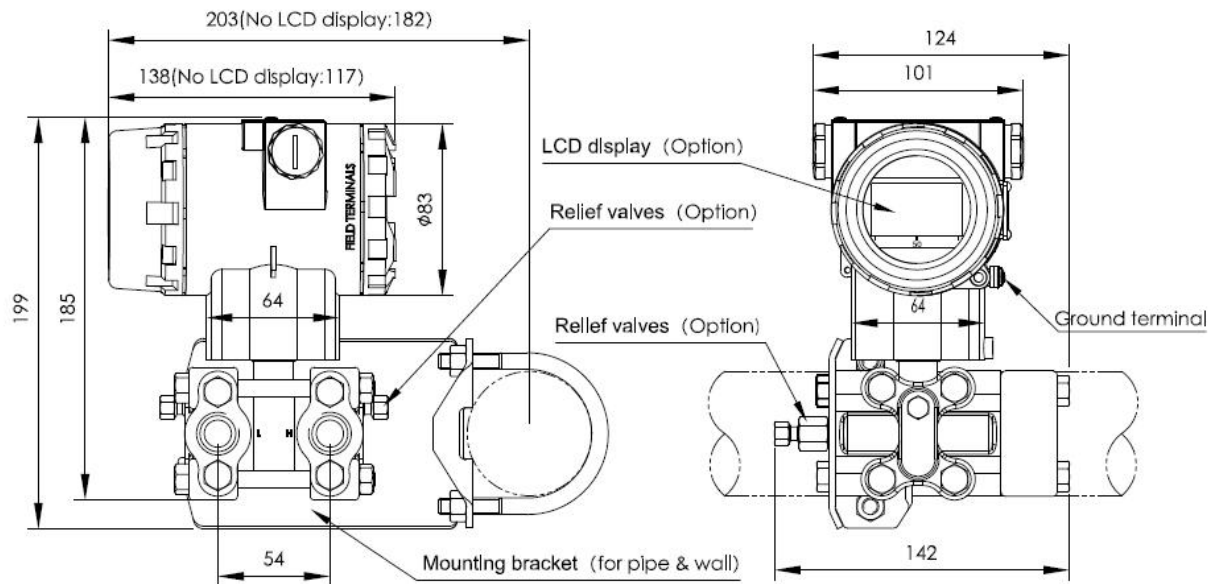
(2) B performance level description: During the test, the function or performance is temporarily reduced or lost, but can recover itself, the actual operating conditions, storage and the data does not change.

Dimensions

Unit (mm)

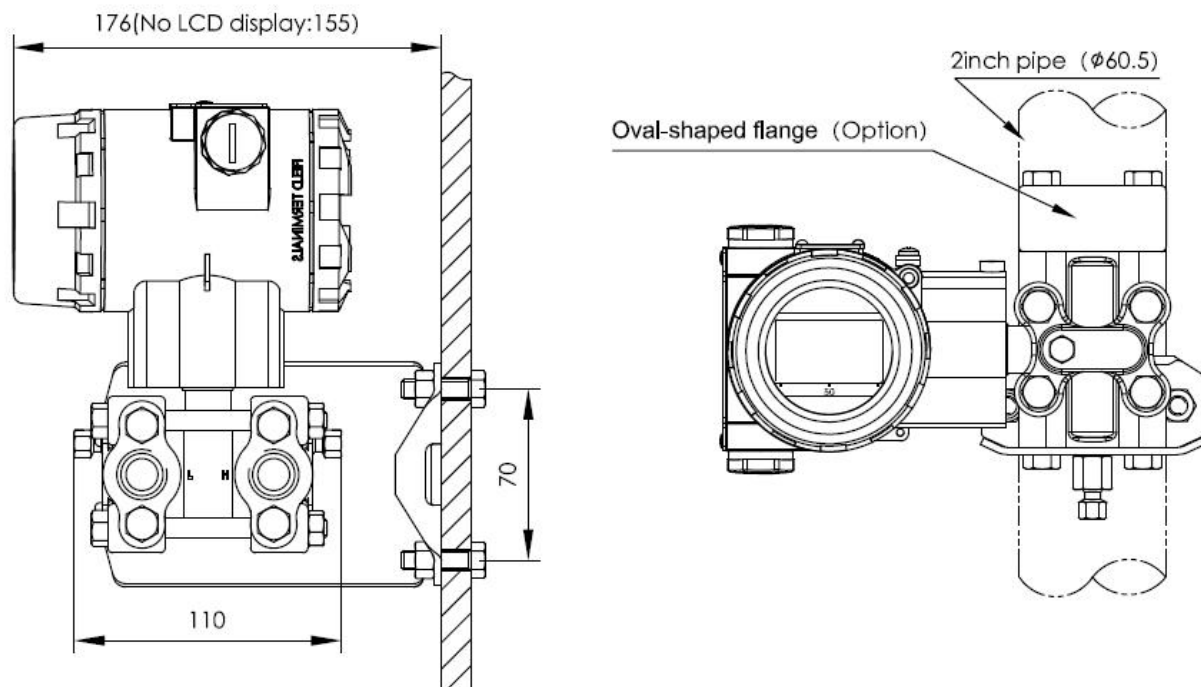
Horizontal piping connection (side)

Horizontal piping connection (front)

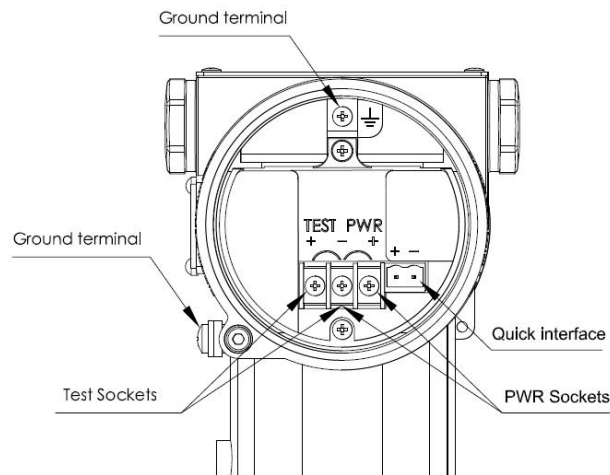


Wall connection

vertical piping connection



5. TERMINAL CONFIGURATION



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

6. PROCESS CONNECTION DESCRIPTION

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p> <p>1/2NPT</p> <p>1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt</p>	<p>D-shaped connector with M20x1.5 male thread(code 2)</p> <p>1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe</p>

7. MODELS AND SPECIFICATION CODE TABLE

Gauge Pressure Transmitter selection: RP1002-		
Absolute Pressure Transmitter selection: RP1003-		
10	Precision	
	A	Basic error $\pm 0.05\%$
20	Range^[1]	
	Gauge Pressure RP1002	
	1C	0-2kPa ~ 40kPa / (0-200 ~ 4000 mmH ₂ O) /(0-20 ~ 400mbar)
	1D	0-2.5kPa ~ 250kPa / (0-0.25 ~ 25 mH ₂ O) /(0-25 ~ 2500mbar)
	1F	0-30kPa ~ 3MPa / (0-3 ~ 300 mH ₂ O) /(0-0.3 ~ 30bar)
	1G	0-0.1MPa ~ 10MPa /(0-1 ~ 100bar)
	1H	0-0.21MPa ~ 21MPa / (0-2.1 ~ 210 bar)
	1I	0-0.4MPa ~ 40MPa / (0-4 ~ 400 bar)
	Absolute pressure RP1003	
	1M	0-10kPa ~ 250kPa /(0-25 ~ 2500mbar)
	1O	0-30kPa ~ 3MPa /(0-0.3 ~ 30bar)

30 Diaphragm Material Filling Fluid											
			A	Stainless Steel 316L				Silicone oil			
			B	Stainless Steel 316L				Fluorine oil			
			C	Hastelloy C				Silicone oil			
			D	Hastelloy C				Fluorine oil			
			E	Gold-plated on 316L				silicone oil			
			F	Gold-plated on 316L				Fluorine oil			
			G	FEP plated on 316L				silicone oil			
40 Process connection											
				N	1/4" NPT and 7/16" UNF tapped holes without bleed valve						
				B	1/4" NPT and 7/16" UNF threaded hole relief valve mounted to the rear end of the flange						
				U	1/4" NPT and 7/16" UNF threaded hole relief valve mounted on the upper side of the flange						
				D	1/4" NPT and 7/16" UNF threaded hole relief valve mounted on the lower side of the flange						
50 Wet seal material											
					N	Nitrile rubber (NBR)					
					F	Fluororubber (FKM)					
					P	Polytetrafluoroethylene (PTFE)					
60 Special Function											
					N	None					
						Oil-free treatment (oxygen measurement limit fluorine oil filling liquid, fluorine					
					O	rubber sealing ring, <6MPa, <60°C)					
					P	Lightning Protection					
70 Mounting Brackets											
							N	No			
							1	Stainless Steel			
							2	Galvanized Carbon Steel			
80 Process Connection Accessory											
								N	No		
								1	1/2" NPT female threaded stainless steel oval flange		
								2	M20x1.5 external thread stainless steel T-shaped joint		
90 Display Options											
								N	No display		
								2	LCD backlight display (-20 ° C)		
								3	OLED display (-40 ° C)		
100 Explosion-Proof Option											
									N	Basic type	
									A	Intrinsically safe, NEPSI	
									D	Flameproof, NEPSI	
									B	Intrinsically safe type, ATEX	
									E	Flameproof type, ATEX	
110 Tag Sign											
									N	No	
									1	The number is marked on the nameplate	
									2	Hanging stainless steel signage	

120 Manual												
											C	Chinese
											E	English
130 Attachment Options												
											S	Stainless Steel Housing
											V	Low Voltage Version
											T	Electrical Connection NPT1/2 (no cable entry device and blind plug)

Note 1: RP1002 corresponds to the selected gauge pressure range code, and RP1003 corresponds to the absolute pressure range code.

Example: RP1002-A1CANP11N1CN-1D

[RP1002-]: Gauge Pressure Transmitter

[A]: Basic error $\pm 0.05\%$

[1C]: Differential pressure type sensor with a range of 0-2kPa~40kPa / (0-200~4000 mmH₂O) / (0-20~400mbar)

[A]: The wetted part is stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[N]: Process connection interface: 1/4" NPT and 7/16" UNF tapped holes, no relief valve

[P]: with lightning protection

[1]: Stainless Steel mounting bracket

[1]: LCD liquid crystal display

[N]: Basic type (non-explosion-proof transmitter)

[1]: The number is marked on the nameplate

[C]: Chinese instruction manual

[-1D]: 1/2" NPT internal thread oval flange, flameproof cable entry device

[N]: No additional options

RP1002-B/C Differential Pressure Mounting Gauge Pressure Transmitter

RP1003-B/C Differential Pressure Mounting Absolute Pressure Transmitter



The RP1002/3-B/C Differential Pressure Mounted Gauge/Absolute Transmitter is used to measure the level, density and pressure of a liquid, gas or vapor and then convert it to a 4-20mA DC HART current signal output. The RP1002/3 can also communicate with the RS295 Modem for parameter setting, process monitoring and more.

STANDARD

(Adjust the measurement range based on the standard zero point, Stainless Steel 316L diaphragm, filling liquid is silicone oil)

1. Performance Specifications

Reference Accuracy of the range

(Including linearity, hysteresis, and repeatability from zero)

RP1001-B: $\pm 0.075\%$

RP1001-C: $\pm 0.1\%$

If $TD > 10$ ($TD = \text{maximum range} / \text{adjustment range}$): RP1001-B: $\pm(0.0075 \times TD)\%$

RP1001-C: $\pm(0.001 \times TD)\%$

For range 1B: If $TD > 6$ ($TD = \text{maximum range} / \text{adjustment range}$):

RP1001-B: $\pm(0.0125 \times TD)\%$

RP1001-C: $\pm(0.0166 \times TD)\%$

Ambient Temperature Effect

The total impact from -25°C to 65°C is:

$\pm(0.15 \times TD + 0.05)\% \times \text{Span}$

$\pm 0.08\%$ per 10°C (when $TD=1$)

The total influences at $-40^\circ\text{C} \sim -25^\circ\text{C}$ and $65^\circ\text{C} \sim 85^\circ\text{C}$ are:

$\pm(0.2 \times TD + 0.05)\% \times \text{Span}$

Over-range Effect

$\pm 0.075\% \times \text{Span}$

Stability

$\pm 0.15\%$ URL / 10 years

Power Supply Impact

$\pm 0.001\% / 10\text{V}$ ($12 \sim 36\text{VDC}$), negligible

2. FUNCTIONAL SPECIFICATIONS

SPAN (RP1002-B/C Gauge)

Span/ range		kPa	psi	bar	Kgf/cm ²
1B	Span	0.6~6	0.087~0.87	6~60mbar	0.006~0.06
	range	-6~6	-0.87~0.87	-60~60mbar	-0.06~0.06
1C	Span	2~40	0.29~5.8	0.02~0.4	0.02~0.4

	range	-40 ~ 40	-5.8 ~ 5.8	-0.4 ~ 0.4	-0.4 ~ 0.4
1D	Span	2.5 ~ 250	0.3625 ~ 36.25	0.025 ~ 2.5	0.025 ~ 2.5
	range	-100 ~ 250	-14.5 ~ 36.25	-1 ~ 2.5	-1 ~ 2.5
1F	Span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	range	-100 ~ 3000	-14.5 ~ 435	-1 ~ 30	-1 ~ 30
1G	Span	0.1 ~ 10MPa	14.5 ~ 1450	1 ~ 100	1 ~ 100
	range	-0.1 ~ 10MPa	-14.5 ~ 1450	-1 ~ 100	-1 ~ 100
1H	Span	0.21 ~ 21MPa	30.45 ~ 3045	2.1 ~ 210	2.1 ~ 210
	range	-0.1 ~ 21MPa	-14.5 ~ 8000	-1 ~ 210	-1 ~ 210
1I	Span	0.4 ~ 40 MPa	58 ~ 5800	4 ~ 400	4 ~ 400
	range	-0.1 ~ 40MPa	-14.5 ~ 5800	-1 ~ 400	-1 ~ 400

Span (RP1003-B/C Absolute)

Span/ range		kPa	psi	bar	Kgf/cm ₂
1L	Span	2 ~ 40	0.29 ~ 5.8	0.02 ~ 0.4	0.02 ~ 0.4
	range	0 ~ 40	0 ~ 5.8	0 ~ 0.4	0 ~ 0.4

1M	Span	2.5 ~ 250	0.3625 ~ 36.25	0.025 ~ 2.5	0.025 ~ 2.5
	range	0 ~ 250	0 ~ 36.25	0 ~ 2.5	0 ~ 2.5
1O	Span	30 ~ 3000	4.35 ~ 435	0.3 ~ 30	0.3 ~ 30
	range	0 ~ 3000	0 ~ 435	0 ~ 30	0 ~ 30

Range Limit

It can be arbitrarily adjusted within the upper and lower limits of the range. It is recommended to select a range code with the lowest possible range to optimize performance characteristics.

Zero Setting

Zero and span can be adjusted to any value within the measurement range in the table, as long as: calibrated range \geq minimum range

Installation Location Impact

The change of the mounting position in the direction parallel to the diaphragm surface does not cause zero drift. If the mounting position and the diaphragm surface exceed 90°, there is a zero position in the range of <0.4 kPa, which can be adjusted by adjusting the zero adjustment. There is no effect in the range.

Output

2-wire system, 4~20mADC HART output, digital communication, linear or square root output selectable, HART protocol loaded on 4~20mADC signal.

Output signal limit: $I_{\min}=3.9\text{mA}$, $I_{\max}=20.5\text{mA}$

Alarm Current

Underreport mode (minimum): 3.6 mA

Highlight mode (maximum): 21 mA

No report mode (hold): Maintain the effective

current value before the fault

Alarm current standard setting: high-report mode

Response Time

The amplifier component has a damping constant of 0.1 s; the sensor time constant is 0.1 to 1.6 s, depending on the range and turndown ratio. The additional adjustable time constant is: 0.1~60s.

Preheat Time

< 15s

Ambient Temperature

-40 ~ 85°C

With LCD (Liquid Crystal Display), Fluoro-rubber sealing ring: -20 ~ 65°C

Storage / Transport Temperature

-50 ~ 85°C

With LCD: -25~85°C

Pressure Limit

From vacuum to maximum range

Overload Limit

Range	6kPa (B)	40kPa (C/L)	250kPa (D/M)	
Overload limit	16MPa	16MPa	16MPa	
Range	3MPa (1F/1O)	10MPa (1G)	21MPa (1H)	40MPa (1I)
Overload limit	16MPa	20MPa	25MPa	45MPa

Electromagnetic Compatibility (EMC)

See "Electromagnetic Compatibility Schedule" on the next page.

Explosion-Proof Performance

- Intrinsic Safe NEPSI: Ex ia IIC T4 Ga Ta = -40 ~ +60°C
- Explosion-Proof NEPSI: Ex d IIC T4~T6 Gb

Ta = -40 ~ +60°C

- Dust explosion-Proof NEPSI: Ex tb IIIC T80°C/T95°C/T130°C Db Ta = -40 ~ +60°C
- Explosion-Proof ATEX/ IECEx: II 2 G Ex db IIC T4/T5/T6 Gb Ta: -40 ~ +60°C
- Intrinsic Safe ATEX/ IECEx: II 2 G Ex ia IIC T4/T5/T6 Ga Ta: -40°C ~ +85°C/ -40°C ~ +50°C/ -40°C~ +40°C
- Dust explosion-proof ATEX/ IECEx: II 2 D Ex tb IIIC T80°C /T90°C/T130°C Db Ta: -40°C ~ +60°C

3. INSTALLATION

Power and Load Conditions

The power supply voltage is 24V, $R \leq (U_s - 12V)/I_{max}$ kΩ, where $I_{max} = 23$ mA

Maximum supply voltage: 36VDC

Minimum supply voltage: 9VDC (low voltage version), 13.5VDC (backlit Liquid Crystal Display, OLED)

Digital Communication Load Range: 230~600Ω

Electrical Connections

M20×1.5 or NPT1/2 internal thread, standard M20×1.5 nylon cable sealing buckle, terminal block for 0.5~2.5mm² wire.

Process Connection

The end face of the process connection flange has NPT1/4 and UNF 7/16" internal threads.

4. PHYSICAL SPECIFICATIONS

- Material: SS316L Diaphragm, Hastelloy C Diaphragm
- Process Connection: SS316L
- Filling Liquid: Silicone Oil, Fluorine Oil
- Transmitter Housing: Aluminum Alloy, Epoxy coated on the outside; Stainless Steel housing optional.
- Shell Seal: Nitrile Rubber (NBR)
- Nameplate: Stainless Steel 304

Weight

1.6kg (refers to Aluminum Alloy Casing without liquid crystal display, mounting bracket & process connection)

Enclosure Rating

IP67

EMC Performance Table

Sr. No.	Test items	Basic standard	Test Conditions	Performance level
1	Radiation Interference (Shell)	GB/T9254-2008 Table 5	30MHz ~ 1000MHz	OK
2	Conducted Interference (DC Power Port)	GB/T 9254-2008 Table 1	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV (contact) 8kV (air)	B
4	Radio Frequency 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	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns, 5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500v (between lines) 1kV (between lines and ground) (1.2us/50us)	B
8	Conducted Interference Immunity of RF Field Induction	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

Note:

(1) A performance level description: During the test, the performance is normal within the limits of the technical specifications.

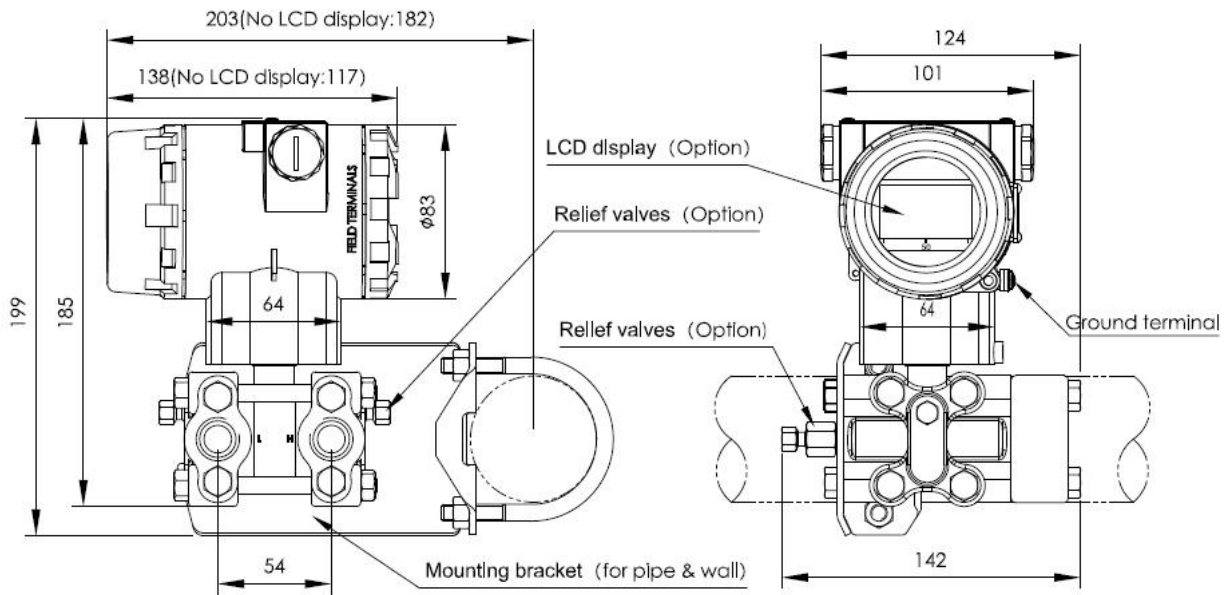
(2) B performance level description: During the test, the function or performance is temporarily reduced or lost, but can recover by itself, the actual operating conditions, storage and data do not change.

Dimensions

Unit (mm)

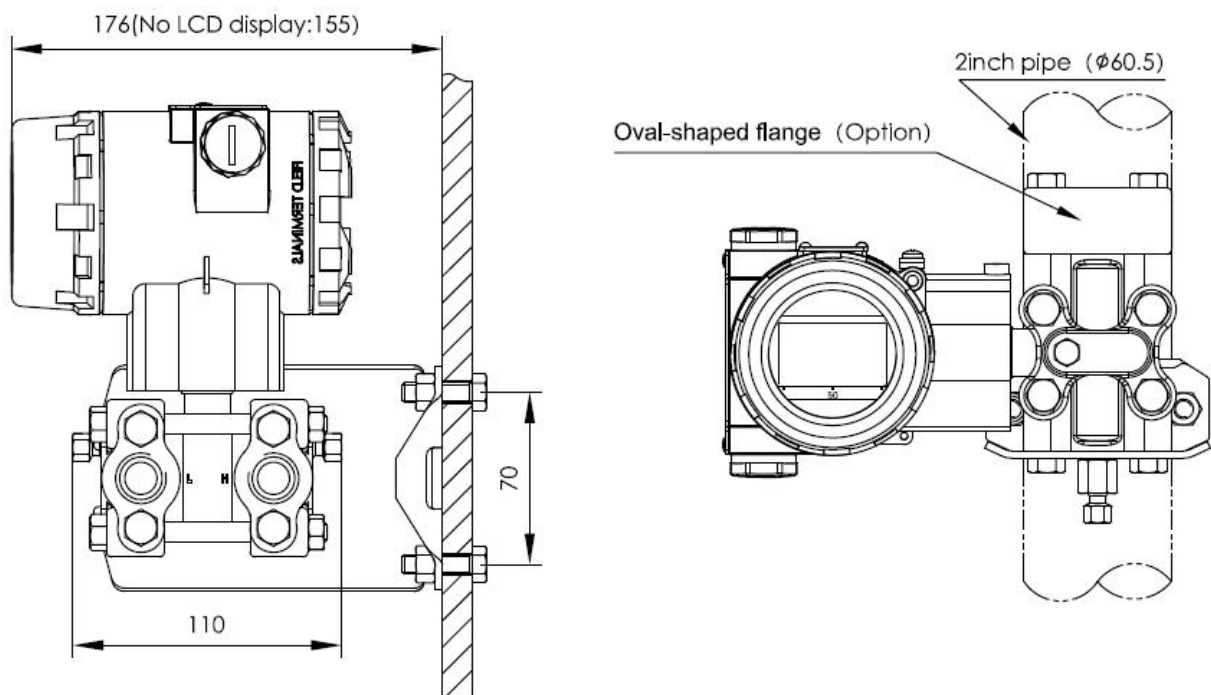
Horizontal Piping Connection (Side)

Horizontal Piping Connection (Front)

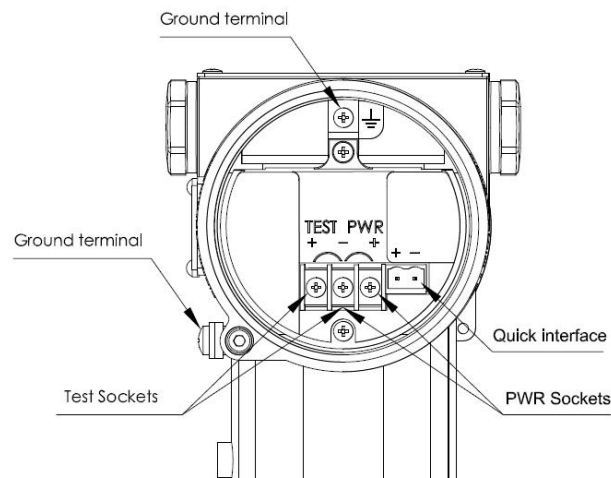


Wall Connection

Vertical Piping Connection



5. TERMINAL CONFIGURATION



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

6. PROCESS CONNECTIONS DESCRIPTION

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p> <p>1/2 NPT</p> <ul style="list-style-type: none"> 1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt 	<p>D-shaped connector with M20x1.5 male thread(code 2)</p> <ul style="list-style-type: none"> 1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe

7. MODELS AND SPECIFICATION CODE TABLE

Gauge Pressure Transmitter Selection RP1002-		
Absolute Pressure Transmitter Selection RP1003-		
10	Precision	
	B	Basic error $\pm 0.075\%$
	C	Basic error $\pm 0.1\%$
20	Range^[1]	
		Gauge Pressure RP1002
	1B	0-0.6kPa ~ 6kPa/ (0-60 ~ 600mmH ₂ O)/ (0-6 ~ 60mbar)
	1C	0-2kPa ~ 40kPa/ (0-200 ~ 4000 mmH ₂ O)/ (0-20 ~ 400mbar)
	1D	0-2.5kPa ~ 250kPa/ (0-0.25 ~ 25 mH ₂ O)/ (0-25 ~ 2500mbar)
	1F	0-30kPa ~ 3MPa/ (0-3 ~ 300 mH ₂ O)/ (0-0.3 ~ 30bar)
	1G	0-0.1MPa ~ 10MPa/ (0-1 ~ 100bar)
	1H	0-0.21MPa ~ 21MPa/ (0-2.1 ~ 210 bar)

			1I	0-0.4MPa ~ 40MPa/ (0-4 ~ 400 bar)
				Absolute Pressure RP1003
			1L	0-10kPa ~ 40kPa/ (0-200 ~ 4000 mmH ₂ O)/ (0-20 ~ 400mbar)
			1M	0-10kPa ~ 250kPa/ (0-25 ~ 2500mbar)
			1O	0-30kPa ~ 3MPa/ (0-0.3 ~ 30bar)
30	Diaphragm Material Filling Fluid			
			A	Stainless Steel 316L Silicone Oil
			B	Stainless Steel 316L Fluorine Oil
			C	Hastelloy C Silicone Oil
			D	Hastelloy C Fluorine Oil
			E	Stainless Steel 316L Gold-Plated Silicone Oil
			F	Stainless Steel 316L Gold-Plated Fluorine Oil
			G	Stainless Steel 316L Coated With FEP Silicone Oil
			T	Tantalum Fluorine Oil
40	Process Connection			
			N	1/4" NPT and 7/16" UNF tapped holes without bleed valve
			B	1/4" NPT and 7/16" UNF threaded hole relief valve mounted to the rear end of the flange
			U	1/4" NPT and 7/16" UNF threaded hole relief valve mounted on the upper side of the flange
			D	1/4" NPT and 7/16" UNF threaded hole relief valve mounted on the lower side of the flange
50	Wet Seal Material			
			N	Nitrile Rubber (NBR)
			F	Fluororubber (FKM)
			P	Polytetrafluoroethylene (PTFE)
60	Special Function			
			N	No
			O	Oil-free treatment (oxygen measurement limit fluorine oil filling liquid, fluorine rubber sealing ring, <6MPa, <60°C)
			P	Lightning Protection
70	Mounting Brackets			
			N	No
			1	Stainless Steel
			2	Galvanized Carbon Steel
80	Process Connection Accessory			
			N	No
			1	1/2" NPT female threaded stainless steel oval flange
			2	M20x1.5 external thread stainless steel T-shaped joint
90	Display options			
			N	No display
			2	LCD backlight LCD display (-20 ° C)
			3	OLED display (-40 ° C)
100	Explosion-Proof option			
			N	Basic Type
			A	Intrinsically Safe, NEPSI
			D	Flameproof, NEPSI

RP1005 Multi-parameter Differential Pressure Transmitter

The RP1005 Multi-parameter Differential Pressure Transmitter is used to measure the mass flow and differential pressure of liquid, gas or steam and then convert it into a 4~20mA DC current signal output or RS485 signal output.



STANDARD SPECIFICATIONS

(Adjust the measurement range based on the standard zero point, diaphragm Stainless Steel 316L, filling liquid is Silicone oil)

1. PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span

(Includes terminal-based linearity, hysteresis, and repeatability)

RP1005-B: $\pm 0.075\%$

RP1005-C: $\pm 0.1\%$

If $TD > 10$ ($TD = URL/SPAN$):

RP1005-B: $\pm(0.0075 \times TD)\%$

RP1005-C: $\pm(0.01 \times TD)\%$

Ambient Temperature Effect

The total effect from -25°C to 65°C is:

$\pm(0.15 \times TD + 0.05)\% \times \text{Span}$

$\pm 0.08\%$ per $10^{\circ}\text{C} \times \text{Span}$ ($TD=1$)

The total effect at $-40^{\circ}\text{C} \sim -25^{\circ}\text{C}$ and $65^{\circ}\text{C} \sim 85^{\circ}\text{C}$ is: $\pm(0.2 \times TD + 0.05)\% \times \text{Span}$

Over-range Effect

$\pm 0.075\% \times \text{Span}$

Static Pressure Effect

$\pm(0.05\% \text{URL} + 0.075\% \text{Span}) / 10\text{MPa}$

Overpressure Effect

$\pm 0.1\% \times \text{Span} / 10\text{MPa}$

Stability

$\pm 0.15\%$ URL / 10 years

Power Supply Effects

$\pm 0.001\%$ / 10V (12 ~ 36VDC), negligible.

2. FUNCTIONAL SPECIFICATIONS

Span and Range Limits of DP sensor

Span	Min of Span	Max of Span	Working Pressure
B	200Pa	6kPa	0.25/2/10/40MPa
C	1kPa	40kPa	2/10/40MPa
D	2.5kPa	250kPa	2/10/40MPa
F	30kPa	3000kPa	2/10/40MPa

Span of Static Pressure Sensor

	Span	Working pressure
1	0.25MPa	0.25/2/10/40MPa
2	2MPa	2/10/40MPa
3	10MPa	2/10/40MPa
4	40MPa	2/10/40MPa

Range Limit

It can be arbitrarily adjusted within the upper and lower limits of the range.

It is recommended to select a range code with the lowest possible range to optimize performance characteristics.

Zero Setting

Zero and span can be adjusted to any value within the measurement range in the table, as long as: calibrated range \geq min range

Mounting Position Effects

The change in the mounting position parallel to the diaphragm surface does not cause zero drift. If the mounting position and the diaphragm surface exceed 90°, a zero influence in the range of <0.4 kPa occurs, which can be adjusted by adjusting the zero adjustment. No range effect.

Output

2-wire 4~20 mADC & HART output, HART protocol is loaded on 4~20mADC signal.

Output signal limit: $I_{\min}=3.9\text{mA}$, $I_{\max}=20.5\text{Ma}$

4-wire pulse output, RS485 digital signal output;

Failure Alarm

Low Mode (min): 3.6 mA

High Mode (max): 21 mA

No Mode (hold): Keep the effective value before the fault.

Standard setting: High Mode

Response Time

The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1 to 1.6 sec, it depends on the range and turndown ratio. The additional adjustable time constant is: 0.1 ~ 60sec.

The effect on nonlinear outputs, such as the square root function, depends on this function and can be calculated accordingly.

Preheat time

<15s

Ambient temperature

-40~85°C

With LED display, Viton process connector gasket -20 ~ 65°C

Storage Transportation Temperature

-50~85°C; with LCD display: -25 ~ 85°C

Working Pressure (Silicone oil)

Max. working Pressure: 3MPa, 10MPa, 40MPa

Static Pressure Limit

3.5 kPa abs. to max working pressure, the protection pressure can be greater than 1.5 times the rated pressure and applied to both sides of the transmitter.

One-way Overload Pressure Limit

The max one-way overload pressure is working pressure

Electromagnetic Compatibility (EMC)

Refer the EMC Performance Table.

3. INSTALLATION**Power and Load Requirements**

24V DC supply, $R \leq (U_s - 12V) / I_{\max}$ kΩ, $I_{\max}=23$ mA

Max supply voltage: 36VDC

Min supply voltage: 9VDC (low voltage version), 13.5VDC (backlit LCD, OLED)

Digital Communication Load Range: 230~600Ω

Electrical Connection

M20×1.5 or NPT1/2 female thread, standard M20×1.5 nylon cable sealing buckle, terminal block is suitable for 0.5~2.5mm² wire.

Process Connection

Flange with fixing thread NPT1/4 and UNF7/16" female threads.

Mass Flow Calculation

Need to use the Rocksensor dedicated configuration software to set the fluid characteristics and throttle parameters. All coefficients used for mass flow calculations are dynamically compensated to the optimal values. In the automatic mode, high-precision mass flow can be measured. The flow coefficients that are automatically compensated are the outflow coefficient, the diameter of the throttling

device, and the diameter of the upstream pipe section, the coefficient of gas expansion, the density, and the viscosity.

Throttling Device

Support a variety of differential pressure throttling devices, such as orifice plate, nozzle, venturi and so on. The outflow coefficient and the gas expansion coefficient are calculated dynamically.

- Process Flange: SS 316
- Nuts and Bolts: Stainless Steel (A4)
- Process Connection: Stainless Steel 316
- Filling Liquid: Silicone Oil, Fluorine Oil
- Process Connection Gasket: Nitrile rubber (NBR), Viton (FKM), Teflon (PTFE)
- Transmitter Housing: Aluminum with epoxy resin coat
- Housing Gasket: Nitrile rubber (NBR)
- Nameplate: Stainless Steel 304

4. PHYSICAL SPECIFICATIONS

Material

- Measuring Membrane: SS 316L
- Diaphragm: SS 316L, Hastelloy C, Gold plated SS 316L, SS 316L coated FEP, Tantalum

Weight

- 3.3kg (Without display, mounting bracket, process connection)

Degrees of Protection:

- IP67

EMC Performance

No.	Test items	Basic Standard	Test Conditions	Performance Level
1	Radiation Interference (Housing)	GB/T 9254-2008 Table 5	30MHz~1000MHz	OK
2	Conducted Interference (DC Power Port)	GB/T 9254-2008 Table 1	0.15MHz~30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV (Line) 8kV (Air)	B
4	RF Electromagnetic Field Immunity	GB/T 17626.3-2006	10V/m (80MHz~1GHz)	A
5	Frequency Magnetic Field Immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	500v (line to line) 1kV (line to ground) (1.2us/50us)	B
8	Conducted Interference Immunity induced of RF Field	GB/T 17626.6-2008	3V (150KHz~80MHz)	A

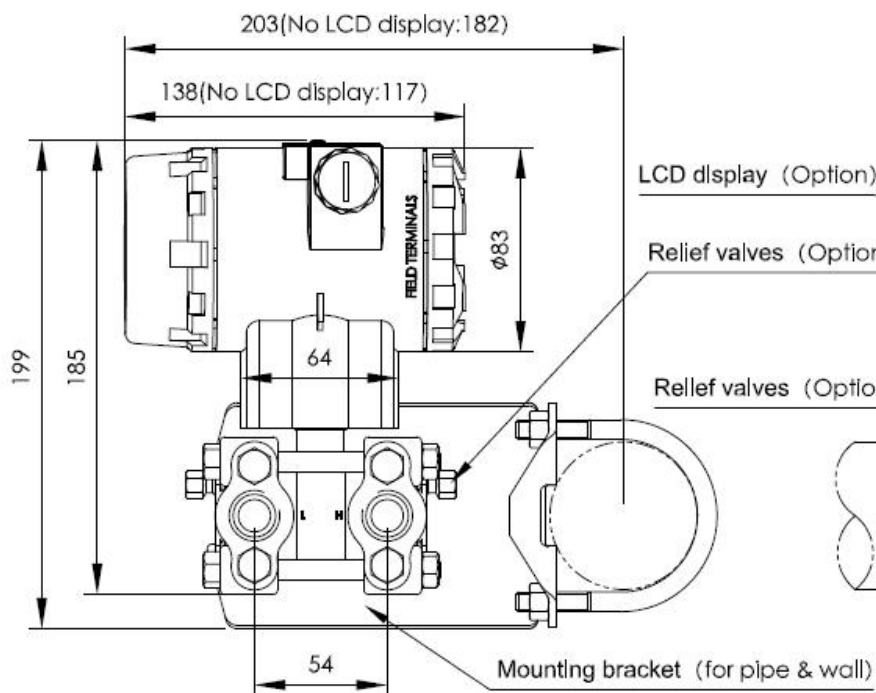
Note: (1) Performance level A description: During the testing, the technical specifications within the limits of normal performance.

(2) Performance level B description: During the testing, temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.

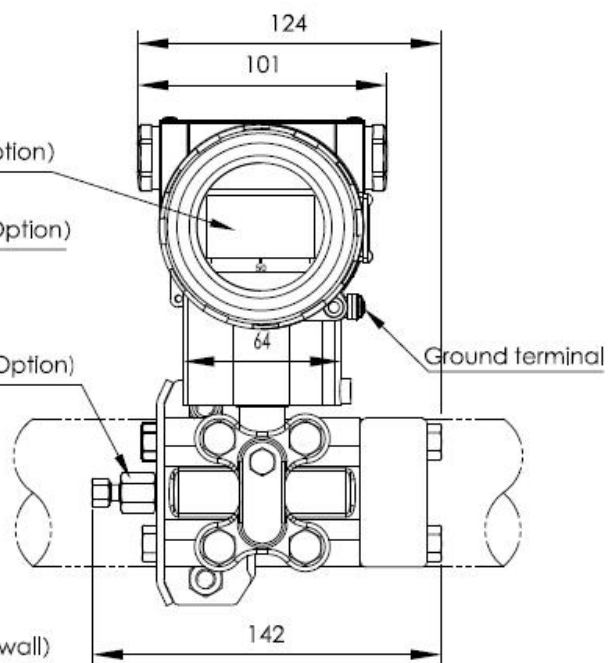
DIMENSIONS

Unit (mm)

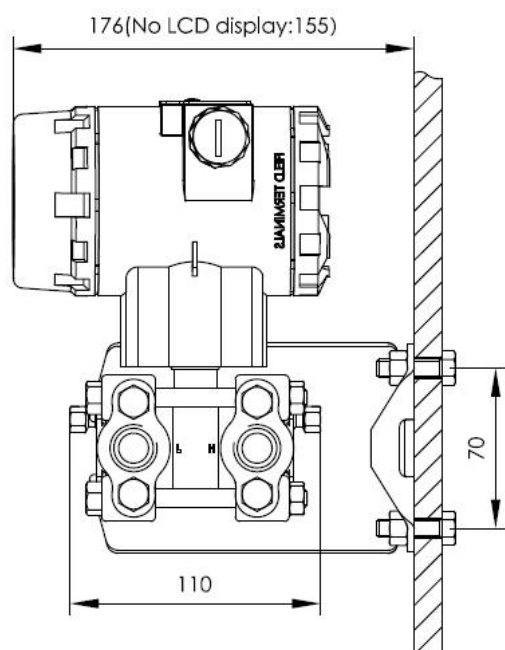
Horizontal Impulse Piping Type (Side)
(Front)



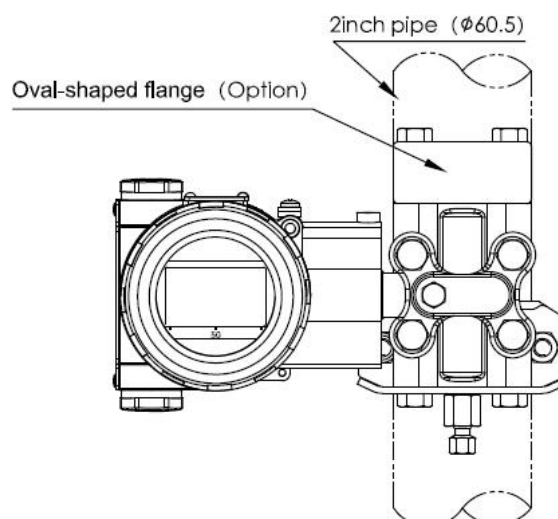
Horizontal Impulse Piping Type



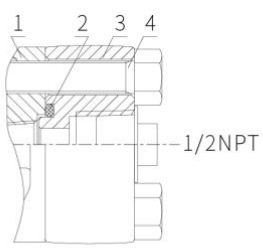
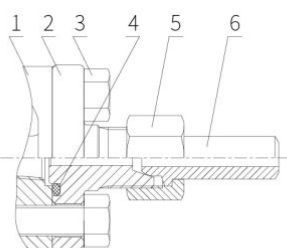
Horizontal Impulse Wall Mounting Type



Vertical Impulse Piping Type



5. PROCESS CONNECTIONS DESCRIPTION

Process connections	
<p>Oval-shaped flange with 1/2 NPT female thread(code 1)</p>  <p>1/2 NPT</p> <p>1.Flange 2.O ring 3.Oval-shaped flange 4.Bolt</p>	<p>D-shaped connector with M20x1.5 male thread(code 2)</p>  <p>1.Flange 2.D-shaped connector 3.Bolt 4.O ring 5.M20x1.5 Nut 6.Joining pipe</p>

6. MODELS AND SPECIFICATION CODE TABLE

Multi-parameter Differential Pressure Transmitter Selection RP1005-						
10	Accuracy					
	B	±0.075%				
	C	±0.1%				
20	Range					
	B	0-200Pa~6kPa (0-20~600 mmH ₂ O/ (0-2~60mbar)				
	C	0-1kPa~40kPa (0-100~4000 mmH ₂ O)/ (0-100~400mbar)				
	D	0-2.5kPa~250kPa (0-0.25~25 mH ₂ O)/ (0-25~2500mbar)				
	F	0-30kPa~3MPa (0-3~300 mH ₂ O)/ (0-0.3~30bar)				
30	Static Pressure Sensor					
			1	40MPa		
			2	10MPa		
			3	3MPa		
			4	0.25MPa		
40	Diaphragm Material - Filling Fluid					
				A	Stainless steel 316L	Silicone oil
				B	Stainless steel 316L	Fluorine oil
				C	Hastelloy C	Silicone oil
				D	Hastelloy C	Fluorine oil
				E	Stainless Steel 316L Gold plated	Silicone oil
				F	Stainless Steel 316L Gold plated	Fluorine oil
				G	Stainless Steel 316L coated FEP	Silicone oil
				T	Tantalum	Silicone oil
50	Process Connection					
					N	1/4" NPT and 7/16" UNF tapped holes - No bleed valve
					B	1/4" NPT and 7/16" UNF tapped holes - The relief valve is mounted on the rear end of the flange
					U	1/4" NPT and 7/16" UNF tapped holes - The relief valve is mounted on the upper

[illegible]

																		E	English	
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Example: RP1005-BC2ABNN112NNN1C

[B]: Basic error $\pm 0.075\%$

[C]: The range is 0-1kPa~40kPa (0-100~4000 mmH₂O)

[2]: Static pressure sensor is 2MPa

[A]: The wetted part is stainless steel 316l diaphragm, and the filling liquid is silicone oil.

[B]: 1/4" NPT process connection interface, 7/16 inch UNF Threaded mounting hole, bleed valve mounted

on the rear end of the flange

[N]: The wetted seal is nitrile rubber (NBR)

[N]: None

[1]: Stainless steel mounting bracket

[1]: with 1/2" NPT internal thread stainless steel oval flange

[2]: LCD backlight display (-20 ° C)

[N]: External 24V power supply

[N]: Output 4-20 mA

[N]: Customer Configuration

[1]: The number is marked on the nameplate

[C]: Chinese manual

Appendix I:

Product Accessories List (RA-)		
10	Pressure Connector	
	101	1/2 inch NPT external thread to Φ14 welded pipe
	102	Condensation elbow size 16x3 Material 304 stainless steel
	103	Condensation elbow size 14x2 Material 304 stainless steel
20	Differential Pressure Fittings	
	201	Condensation elbow (double) size 16x3 material 304 Stainless Steel
	202	Condensation elbow (double) specification 16x2 Material 304 Stainless Steel
30	Valve Block	
	301	Two valve manifold (Stainless Steel 304 material)
	302	Two valve manifold (Stainless Steel 316 material)
	303	Three valve manifold (Stainless Steel 304 material)
	304	Three valve manifold (Stainless Steel 316 material)
40	Hart Communicator	
	40A	H05 Chinese Communicator
	40C	Rst1000 Chinese and English Communicator
	40D	H06-375 English Communicator
50	Cable Connector	
	50D	Explosion-proof cable entry device (M20x1.5)
	50N	Explosion-proof cable entry device (NPT1/2)

Note 1: All product accessories enjoy the same RKS quality assurance and after-sales guarantee as standard products.

Note 2: The specifications of the accessories may change without any notice in the case of quality assurance and most on-site application requirements. For detailed parameters, please consult the pre-sales engineer.

Note 3: When selecting accessories, each accessory is selected separately. If there are multiple accessories, the items are listed separately.

Example: RA-201

[201]: Condensation elbow (double) specification 16x3 Material 304 Stainless Steel

Appendix II:

Corrosion-Resistant Medium Reference Table (A-Best, B-Available, X-Not Available, - -Not Recommended)							
Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Ammonium chloride	100	25	-	B	B	B	A
		100	-	B	B	B	A
Sodium chloride	< 30	25	B	B	B	A	A
		100	X	B	B	B	A
Potassium chloride	< 30	25	A	B	B	B	A
		100	A	B	B	B	A
Aluminum chloride	0~100	25	B	A	A	A	A
		100	A	A	A	X	A
Ammonium acetate	0~100	25	A	A	A	A	-
		100	A	A	A	A	-
Sodium acetate	< 60	25	A	B	B	A	A
		100	A	B	B	A	A
Ammonium sulfite	< 30	25	B	B	B	X	A
		100	B	B	B	X	A
Sodium sulfate	< 40	25	A	A	A	A	A
		100	A	A	A	A	A
Aluminum sulfate	< 30	25	A	A	A	B	A
		100	A	A	A	X	A
Magnesium sulfate	< 50	25	A	A	A	A	A
		100	A	A	A	A	A
Potassium sulfate	< 20	25	A	A	A	A	A
		100	A	A	A	A	A
Sodium carbonate	10	25	A	A	A	A	A
		100	A	A	A	A	A
	100	25	B	B	B	B	A
		100	B	B	B	B	A
Sodium bicarbonate	< 30	25	A	B	B	B	A
		100	X	B	B	B	A
Potassium carbonate	< 50	25	B	B	B	B	-
		100	B	B	B	B	X
Sodium hypochlorite	< 20	25	X	B	B	X	A
		100	X	B	B	X	A
Sodium nitrite		25	A	A	A	B	A
		100	A	A	A	B	A
sodium benzoate	< 60	25	B	B	B	B	B
		100	B	B	B	B	B
Potassium nitrate	< 100	25	A	B	B	B	A
		100	A	B	B	B	A

Appendix II

Magnesium nitrate		25	B	-	B	B	A
		100	B	-	B	B	A
Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Potassium perchlorate	10	25	B	B	B	B	-
		100	B	B	B	B	-
Potassium bromide	< 30	25	B	B	B	B	A
		100	B	B	B	B	A
Potassium complex	< 30	25	B	A	A	B	A
		100	B	A	A	B	A
Potassium permanganate	10	25	B	B	B	B	-
		100	B	B	B	B	-
Magnesium chloride	< 40	25	B	A	A	B	A
		100	B	A	A	B	A
Calcium sulfate	10	25	A	B	B	B	A
		100	A	B	B	B	A
	100	25	B	B	B	B	A
		100	B	B	B	B	A
Sodium carbonate	100	25	B	B	B	B	A
		100	-	B	B	B	A
Calcium carbonate	10	25	B	B	B	B	A
		100	B	B	B	B	A
Calcium chloride	< 80	25	B	A	A	A	A
		100	B	A	A	A	A
Chlorine	Dry gas	25	B	A	A	B	A
		100	B	B	B	B	A
	moisture	25	X	B	B	X	A
		100	X	X	X	X	A
Bromine	dry	25	X	A	A	A	A
		100	X	B	B	X	A
	wet	25	-	-	A	X	A
		100	-	-	A	X	A
Phosphorus		25	A	A	A	X	-
		100	A	-	-	X	-
Sodium		370	A	A	A	A	A
Hydrogen chloride	100	25	A	A	A	A	A
		100	A	A	A	A	A
Sulfur dioxide	10	25	A	A	A	X	-
		100	A	A	A	X	-
	90~100	25	B	B	B	X	-
		100	B	B	B	X	-
Sodium peroxide	10	25	A	B	B	B	-
		100	A	B	B	B	-

Appendix II

Methanol		25	A	A	A	A	A
		100	A	A	A	A	A
Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Ethanol		25	A	A	A	A	A
		100	A	A	A	A	A
Formaldehyde	< 70	25	A	B	B	A	A
		100	A	B	B	A	A
Acetaldehyde		25	A	-	A	A	A
		100	A	-	-	B	A
(2) Methyl ether		25	B	B	B	B	A
		100	A	B	B	A	A
(two) ether		25	A	B	B	A	A
		100	A	B	B	A	A
Acetone		25	A	A	A	A	A
		100	A	A	A	A	A
Butanone	< 100	25	B	B	B	B	A
		100	B	B	B	B	A
Methyl formate	< 30	25	B	B	B	B	B
		100	B	B	B	B	B
Ethyl acetate		25	A	B	B	A	A
		100	B	B	B	A	A
Methane		25	A	A	A	A	A
		100	A	A	A	A	A
Benzene		25	B	B	B	A	A
		100	B	B	B	A	A
Toluene		25	A	A	A	A	A
		100	A	A	A	A	A
Phenol		25	B	A	A	B	A
		100	B	A	A	B	A
Urea	90	25	B	B	B	B	A
		100	B	B	B	B	A
Seawater	< 50	25	A	A	A	A	A
		100	A	A	A	-	A
Brine		25	B	A	A	A	A
		100	B	A	A	-	A
Sulfuric Acid	20	25	B	A	A	X	A
		100	X	A	X	-	A
	98	25	B	A	A	X	A
		100	-	A	A	X	A
Fuming Hydrochloric Acid		25	X	A	X	X	X
		100	X	X	B	X	X

Appendix II

Nitric Acid	70	25	A	X	A	X	A
		100	-	X	-	X	A
Hydrochloric Acid	20	25	X	A	A	X	A
		100	X	B	X	X	A
Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Phosphate	20	25	A	A	A	X	A
		100	A	A	A	X	A
	90	25	X	B	B	X	A
		100	X	B	B	X	A
Hydrofluoric acid	40	25	X	A	A	A	-
		100	X	X	X	A	-
	90	25	X	B	B	-	-
		100	X	-	-	-	-
Hydrobromic Acid	< 60	25	X	B	-	X	A
		100	X	B	-	X	A
Nitrine		25	B	B	B	B	A
		100	B	B	B	B	A
Argon sulfuric acid		25	B	B	B	X	A
		100	B	B	B	X	A
Carbonic acid	10	25	B	A	A	A	A
		100	X	-	-	A	A
	100	25	A	A	A	B	A
		100	A	-	-	A	A
Acid	< 50	25	X	-	B	X	A
		100	X	-	B	X	A
	> 50	25	X	-	B	X	A
		100	X	-	-	X	A
Chloric acid	10	25	X	-	B	X	A
		100	X	-	-	X	A
Hypochlorous Acid		25	X	-	A	X	A
		100	X	-	-	X	A
Boric acid	0~100	25	A	A	A	B	A
		100	A	A	A	B	A
Chlorosulfonic Acid	10	25	X	B	B	X	A
		100	X	-	-	X	A
Wang Shui	100	25	X	X	X	X	A
		100	X	X	X	X	-
Formic acid	10	25	-	A	A	-	A
		100	-	A	A	X	A
	100	25	-	A	A	X	A
		100	-	A	A	X	A
Acetic Acid	< 100	25	A	A	A	X	A

Appendix II

		100	A	A	A	X	A
	100	25	B	A	A	B	A
		100	B	A	A	B	A
Propionic Acid	60~90	25	B	A	A	B	A
		100	B	A	A	B	A
Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Butyric Acid		25	A	A	A	B	A
		100	A	A	A	B	A
Butenoic Acid		25	B	B	B	B	A
		100	B	B	B	B	A
Stearic Acid		25	A	A	A	B	A
		100	A	A	A	-	A
Fatty Acid		25	A	A	A	B	A
		100	A	A	A	B	A
Glycolic Acid		25	B	B	B	B	A
		100	B	B	B	B	A
Pyrophyllin	10	25	A	B	B	B	A
		100	A	-	-	B	A
	100	25	B	A	A	B	A
		100	-	-	-	B	A
Monochloro acetic Acid	< 70	25	X	B	B	B	A
		100	X	B	B	B	A
	100	25	B	A	A	B	A
		100	-	A	A	B	A
Lactic Acid	< 20	25	A	B	B	X	A
		100	B	B	B	X	A
	> 70	25	A	B	B	X	A
		100	B	B	B	X	A
Oxalic Acid		25	B	B	B	B	A
		100	X	B	B	B	A
Succinic Acid	< 50	25	B	B	B	B	A
		100	B	B	B	B	A
	100	25	B	B	B	B	A
		100	B	B	B	B	A
Benzoic Acid	< 70	25	B	A	A	B	A
		100	B	A	A	B	A
Citric Acid	0~100	25	A	A	A	B	A
		100	A	A	A	B	A
Aminobenzoic Acid		25	B	B	B	B	A
		100	B	B	B	B	A
Naphthalenesulfonic Acid	100	25	B	A	A	B	X
		100	-	A	A	B	X

Appendix II

Sodium hydroxide	10	25	A	A	A	A	X
		100	A	A	A	A	X
	70	25	A	A	A	A	X
		100	B	A	A	A	X

Media Name	Concentration /%	Temperature / °C	316L	Hastelloy B	Hastelloy C	Monel	Tantalum
Potassium hydroxide	< 60	25	A	B	B	A	X
		100	A	B	B	A	X
	100	25	A	B	B	A	X
		100	B	A	A	A	X
Ammonium hydroxide	0~100	25	B	B	B	B	A
		100	B	B	B	B	A
Calcium hydroxide	< 50	25	A	B	B	X	A
		100	A	B	B	X	A
Magnesium hydroxide	100	25	A	A	A	A	A
		100	A	A	A	A	A
Lithium hydroxide	10	25	B	B	B	B	-
		100	B	B	B	B	-
Aluminum hydroxide	10	25	A	B	B	B	A
		100	A	B	B	B	A
Ammonium sulfate	< 40	25	X	X	X	-	A
		100	X	X	X	-	A
Ammonium nitrate	10	25	A	B	B	X	A
		100	A	B	B	X	A
Ammonium carbonate	100	25	B	B	B	B	A
		100	B	B	B	B	A

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