HR3051-GP Gauge Pressure Transmitter

HR3051-AP Absolute Pressure Transmitter

The HR3051-GP/AP Gauge/Absolute Transmitter is used to measure the liquid level, density, and pressure of a liquid, gas, or vapor, and then convert it to a 4-20 mADC HART current signal output. The HR3051-GP/AP can also communicate with the RST375 handheld terminal or the RSM100 Modem for parameter setting, process monitoring, and more.

Standard

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

1.performance specifications

Adjustment accuracy of the range

± 0.075%(including linearity, hysteresis, and repeatability from zero)± 0.075%

If TD>10 (TD=maximum range/adjustment range), it is

±(0.0075×TD)%

Ambient temperature effect

Range code	-20℃～65℃Total effect value
B/L	±(0.30×TD+0.20)%×Span
other	±(0.20×TD+0.10)%×Span
Range code	-40℃～-20℃和 65℃～85℃Total effect value
B/L	±(0.30×TD+0.20)%×Span
other	±(0.20×TD+0.10)%×Span

Over range effect：±0.075%×Span

Long-term stability

Range code	impact
B/L	±0.2%×Span/1year
other	±0.1%×Span/1year

Power impact

±0.001% /10V (12～42V DC), negligible

2Functional specification

Range and limit (HR3051-GP gauge)

Range/limit		kPa	bar
B	Range	0.6～6	6～60mbar
	limit	-6～6	-60～60mbar
C	Range	2～40	0.02～0.4
	limit	-40～40	-0.4～0.4
D	Range	2.5～250	0.025～2.5
	limit	-100～250	-1～2.5
F	Range	30～3000	0.3～30
	limit	-100～3000	-1～30
G	Range	0.1～10MPa	1～100
	limit	-0.1～10MPa	-1～100
H	Range	0.21～21 MPa	2.1～210
	limit	-0.1～21 MPa	-1～210
I	Range	0.4～40 MPa	4～400

	limit	-0.1～40 MPa	-1～400
J	Range	0.6～60 MPa	6～600
	limit	-0.1～60 MPa	-1～600

Pressure range and limits(**H**R3051-AP Absolute Pressure transmitter)

Range/limit		kPa	bar
L	Range	2～40	0.02～0.4
	limit	0～40	0～0.4
M	Range	2.5～250	0.025～2.5
	limit	0～250	0～2.5
O	Range	30～3000	0.3～30
	limit	0～3000	0～30

Range limit

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

Zero setting

Zero and range can be adjusted to any value within the measurement range in the table, as long as calibrated range ≥ minimum range.

Installation location effect

The change of the mounting position parallel to the diaphragm surface will not cause zero drift. If the mounting position and the diaphragm surface exceed 90°, the range C has a zero drift in the range of <0.25 kPa, and the other ranges have a range of <0.15 kPa. The zero influence can be corrected by adjusting the zero adjustment. No range effect.

Output

2 wire system, 4 to 20mADC, optional HART output digital communication, selectable linear or square root output.

Output signal limit：Imin=3.9mA，Imax=20.5mA

Alarm current

Under report mode(minimum)：3.7 mA

High-report 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.

Warm-up time： < 15s

Environmental temperature

-40～85℃

With LCD and viton sealing ring, the temperature is

-20～65℃

Storage temperature/ transportation temperature

-50～85℃

with LCD display：-40～85℃

Pressure limit

From vacuo to max pressure

Overload limit：

Range	6kPa (B)	40kPa (C/L)	250kPa (D/M)	3MPa (F/O)
Overload limit	0.2MPa	1MPa	4MPa	16MPa
Range	10MPa (G)	21MPa (H)	40MPa (I)	60MPa (K)
Overload limit	20MPa	50MPa	50MPa	70MPa

Electromagnetic compatibility (EMC)

Please refer Electromagnetic Compatibility Schedule on the next page.

3.Installation

Power and load conditions

The power supply voltage is 24V，R≤(Us-12V)/Imax

kΩ among them Imax=23 mA IP67

Maximum supply voltage: 42VDC
Minimum supply voltage：12VDC，15VDC（Backlight liquid crystal display）
Digital communication load range: 230～600Ω

Electrical connections

M20X1.5 cable sealing buckle, terminals are suitable for (0.5~2.5)mm 2 wire.

Process connection

Standard connection:NPT 1/2 male, can be converted to G1/2, M20x1.5 male, KF16 vacuum interface.

4. Physical specification

Material

Diaphragm: Stainless Steel 316L, Hast-alloy C
Process connection: Stainless Steel 316L
Filling liquid: silicone oil
Transmitter housing: Aluminum alloy material, epoxy resin glue sprays on the surface
Housing sealing ring: NBR
Nameplate: Stainless steel 304

Weight

1.6kg(not including LCD display, mounting support and process connection)

Housing protection

Electromagnetic compatibility table

No.	Test items	Basic standard	Test Conditions	Performance level
1	Radiation interference (shell)	GB/T 9254-2008 table5	30MHz～1000MHz	qualified
2	Conducted interference （DC power port）	GB/T 9254-2008 table 1	0.15MHz～30MHz	qualified
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	1kV（between 2 wires） 2kV（between wire and ground）(1.2us/50us)	B
8	Radio frequency field induced conducted interference immunity	GB/T 17626.6-2008	3V (150KHz～80MHz)	A

Note：

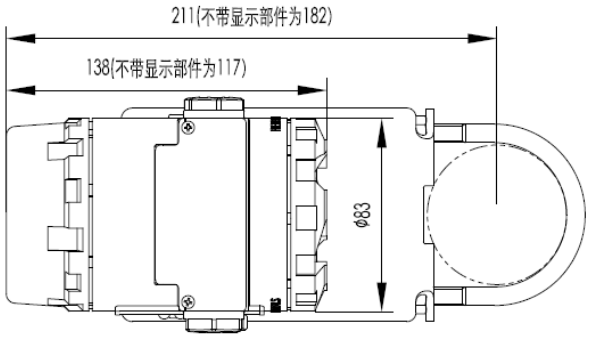
（1）A performance level description: normal performance within the limits of the technical specifications during testing.

（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.

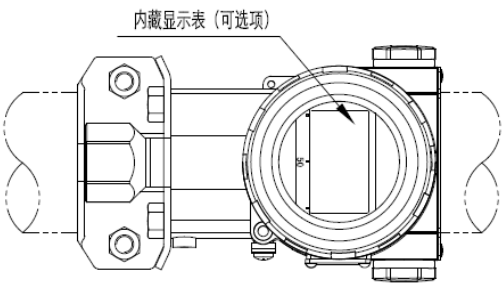
Dimensions

unit（mm）

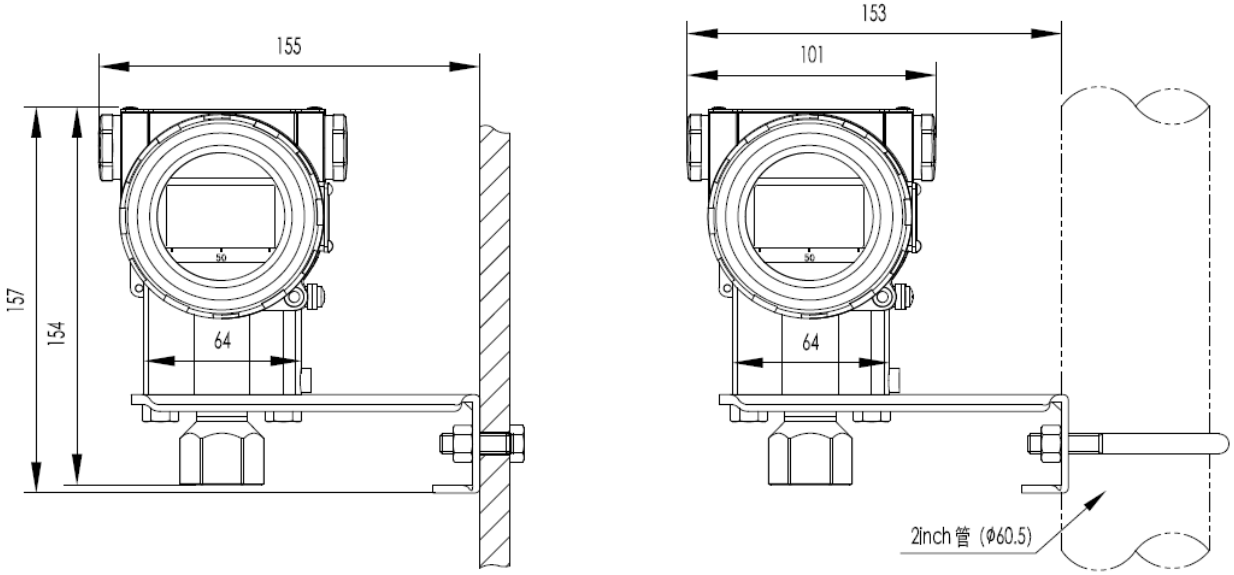
Horizontal piping connection (side)



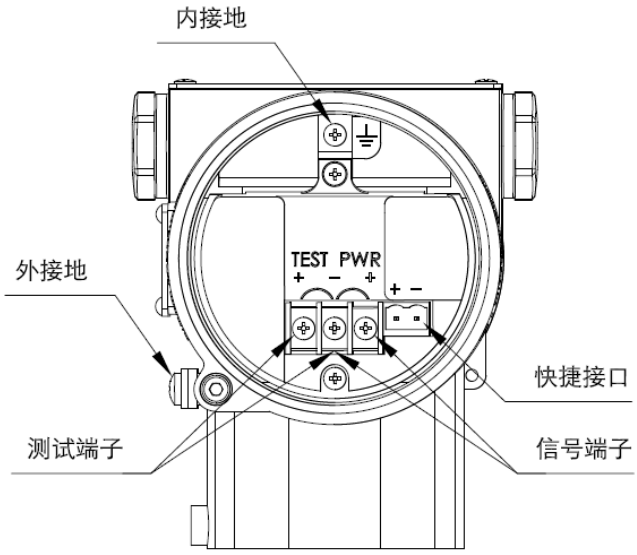
Horizontal piping connection (front)



Wall connection **Vertical piping connection**



5 Electrical connection diagram



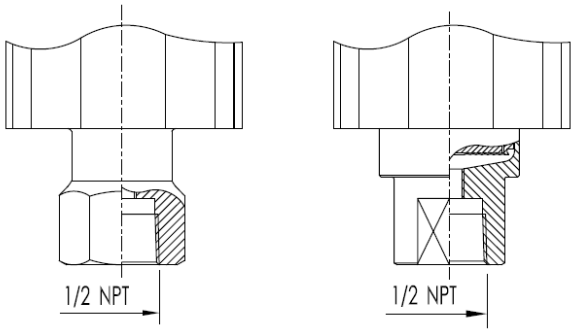
Note: The shortcut interface function is equivalent to the signal terminal

6 Process Connection Instructions (Code 1)

6.1 Standard form (code 1)

D/M/F/G/H/I/K/O Range interface diagram

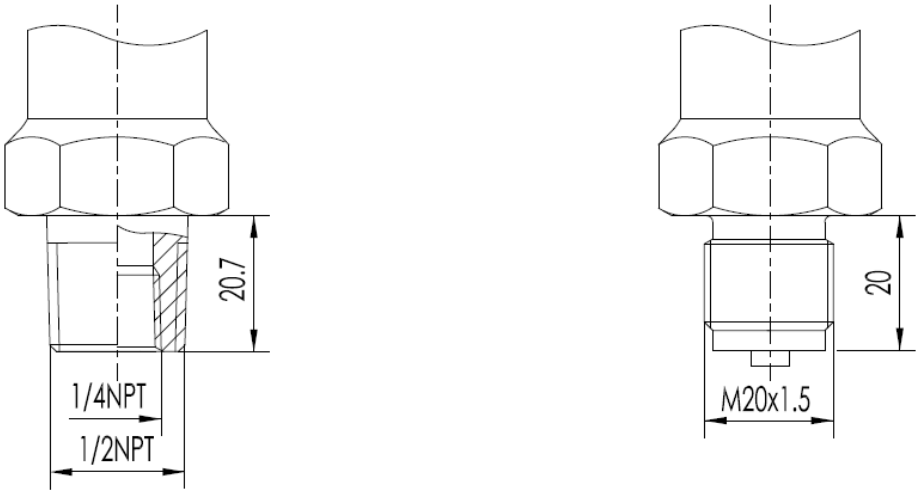
B/C/L Range interface diagram



6.2 Derived interface form

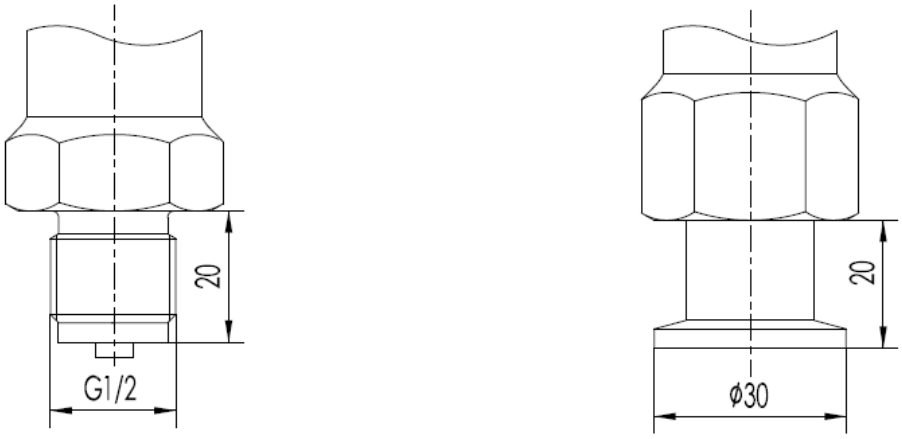
1/2" NPT male thread (code 2)

M20x1.5 male thread (code 3)

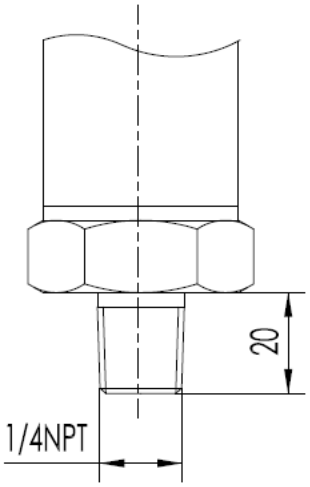


G 1/2 male (code 4)

DIN 28403 KF16 / ISO 2861 Vacuum interface DIN 28403 KF16 / ISO 2861 (code 5)



1/4" NPT male thread (code 6)



7 Model and specification code table

Gauge pressure transmitter Order Guide HR3051-GP		
Absolute pressure transmitter HR3051-AP Order guide		
10	Precision	Output
		±0.04%Basic error ±0.04%
	U	4-20mA with Hart communication
		Basic error ±0.075%
	B	4-20mA with Hart communication
		Basic error ±0.05%
	A	4-20mA with Hart communication
		Basic error ±0.01%
	C	4-20mA with Hart communication
	N	4-20mA analog output
20	[1]Range	
		Gauge RP2002
	B	0-0.6kPa～6kPa /（0-60～600 mmH_2O）/(0-6～60mbar)
	C	0-2kPa～40kPa /（0-200～4000 mmH_2O）/(0-20～400mbar)
	D	0-2.5kPa～250kPa /（0-0.25～25 mH_2O）/(0-25～2500mbar)
	F	0-30kPa～3MPa /（0-3～300 mH_2O）/(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）
	J	0-0.6MPa～60MPa /（0-6～600 bar）
		Absolute pressure RP2003
	L	0-2kPa～40kPa /（0-200～4000 mmH_2O）/(0-20～400mbar)

		M	0-2.5kPa～250kPa /(0-25～2500mbar)								
		O	0-30kPa～3MPa /(0-0.3～30bar)								
30	Diaphragm material Filling fluid										
			Stainless steel 316L								
		A	Silicone oil								
			Stainless steel 316L Fluorine								
		B	oil								
			Hastelloy C								
		C	Silicone oil								
			Hastelloy C								
		D	Fluorine oil								
40	Process connection										
				1	1/2" NPT male						
				2	1/2" NPT male (includes 1/4" NPT)						
				3	M20x1.5 male						
				4	G 1/2 male						
				5	口 Vacuum interface DIN 28403 KF16 / ISO 2861[2]						
				6	1/4" NPT male						
50	Special function										
					N	None					
					P	Lightning protection					
						Oil-free treatment (oxygen measurement limit fluorine oil filling liquid,					
					0	fluorine rubber sealing ring, <6MPa, <60°C)					
60	Mounting brackets										
						N	None				
						1	SS				
						2	Galvanized carbon steel				
70	LCD										
							N	No LCD display			
								LED backlit LCD display			
							2	(-20 ° C)			
								3	OLED display (-40 ° C)		
80	Explosion-proof treatment										
								N	Basic type		
								A	Intrinsic，NEPSI		
									Flameproof,NEPSI		
									（excl.explosion-proof cable		
								D	connector）		
9											
0	Additional options										
									D	Flameproof cable introduction device	
									E	Increased cable introduction device	
									V	Low voltage version	
									S	All stainless steel case	

Note 1: HR3051-GP corresponds to the selected gauge pressure range code, HR3051-AP corresponds to the absolute pressure range code.

Note2: Vacuum interface DIN 28403 KF16 / ISO 2861, only for ranges less than 2.5 bar.