

DATASHEET

Pressure Transmitter AT5020



- SIL2/3 certification
- Accuracy up to 0.05% FS
- 10-year stability of $\pm 0.2\%$ of URL
- -100kPa to 40MPa (minimum range 0 to 1kPa)
- Intuitive interface and built-in buttons for quick commissioning of the device
- 316L/HC/Tantalum/316L coated with PTFE/316 L gold plated/Inconel 625 etc
- HART 7.0/Modbus-RTU and others
- Multiple standard process connections, as well as filler fluids, enabling connection to various forms of piping, connection standards are according to EN, ASME/ANSI, GB, GOST, JIS etc.
- Optional gauge pressure, absolute pressure
- Convenient and user-friendly, wide options in forms and material
- Precision in measurement
- Exploration in our range of state-of-the-art pressure transmitters
- Features, specification, and applications covered in detail
- **SIL, NACE, NEPSI, ATEX, CE PMI, EN1204**

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Specifications and Parameters

Pressure Transmitter
AT5020



Range and Sensor Limits

Nominal Range	Maximum Range Ratio	Minimum Range	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload
6 kPa	6:1	1 kPa	-6 kPa	6 kPa	25 MPa
40 kPa	TG4:1 TA2:1	TG10 kPa TA20 kPa	-40 kPa	40 kPa	1 MPa
250 kPa	10:1	25 kPa	-100 kPa	250 kPa	4 MPa
1 MPa	10:1	100 kPa	-100 kPa	1 MPa	6 MPa
3 MPa	10:1	300 kPa	-0.1 MPa	3 MPa	15 MPa
10 MPa	10:1	1000 kPa	-0.1 MPa	10 MPa	20 MPa
40 MPa	10:1	4 MPa	-0.1 MPa	40 MPa	80 MPa
Nominal Range	Maximum Range Ratio	Minimum Range	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload
0.8702 psi	6:1	0.145 psi	-0.8702 psi	0.8702 psi	3625.94 psi
5.8015 psi	TG4:1 TA2:1	TG 1.4504 psi TA 2.9008 psi	-5.8015 psi	5.8015 psi	145.04 psi
36.2594 psi	10:1	3.6259 psi	-14.5038 psi	36.2594 psi	580.15 psi
145.04 psi	10:1	14.5038 psi	-14.5038 psi	145.04 psi	870.23 psi
435.11 psi	10:1	43.5113 psi	-14.5038 psi	435.11 psi	2175.57 psi
1450.38 psi	10:1	145.04 psi	-14.5038 psi	1450.38 psi	2900.75 psi
5801.51 psi	10:1	580.15 psi	-14.5038 psi	5801.51 psi	11603.02 psi
Nominal Range	Maximum Range Ratio	Minimum Range	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload
611.83 mmH2O	6:1	101.97 mmH2O	-611.83 mmH2O	611.83 mmH2O	2549300 mmH2O
4078.88 mmH2O	TG4:1 TA2:1	TG1019.72 mmH2O TA2039.44 mmH2O	-4078.88 mmH2O	4078.88 mmH2O	101972 mmH2O
25493 mmH2O	10:1	2549.3 mmH2O	-10197.2 mmH2O	25493 mmH2O	407888 mmH2O
101972 mmH2O	10:1	10197.2 mmH2O	-10197.2 mmH2O	101972 mmH2O	611832 mmH2O
305916 mmH2O	10:1	30591.6 mmH2O	-10197.2 mmH2O	305916 mmH2O	1529580 mmH2O
1019720 mmH2O	10:1	101972 mmH2O	-101972 mmH2O	1019720 mmH2O	2039440 mmH2O
4078880 mmH2O	10:1	407888 mmH2O	-101972 mmH2O	4078880 mmH2O	8157760 mmH2O

Upper and lower range value setting requirements: lower range value (LRV) and upper range value (URV) are in the range of upper and lower range limits, if $|URV| \geq |LRL|$, it must be satisfied $|URV| \geq \text{minimum range}$, if $|URV| \leq |LRL|$, it must be satisfied $|LRV| \geq \text{Minimum range}$.

Performance Test Standards and Reference Conditions

- Test standard GB/T28474/IEC60770.
- Reference condition the range is started from zero point.
- Silicone oil filled, 316L stainless steel isolation diaphragm, 4-20mA analog output, terminal-base fine adjusted to set value.

Vibration Testing

Vibration Test

- $5\text{ Hz} \leq f \leq 8.4\text{ Hz}$, displacement 3.5 mm
- $8.4\text{ Hz} \leq f \leq 500\text{ Hz}$, constant acceleration 1.0 g
- One octave per minute ($\pm 10\%$);
- 10 cycles on each of the three mutually perpendicular axes
- The test results conform to the following criterion A.

Shock Test

- Set the peak acceleration 15g.
- Duration is 11 ms/time.
- Pulse waveform is half-sine.
- Three consecutive shocks were applied in each of the three mutually perpendicular directions, that is a total of 18 shocks.
- According to GB/T1827.3/IEC61298-3, it is less than 0.1% upper range limit.
- The test results conform to the following criterion A.

Criterion A

Functions

Power up during the test, the function of the module meets the following requirements before, during and after the test:

- The appearance of the module should be free from corrosion, cracks, coating layer flaking and other damage, plastic parts should be free from bubbles, cracks, deformation and overflow of filling material, and the text and logo should be clear.
- The module LCD display is normal.

Performances

- LCD can display normally before, during and after the test as required.
- HART communication is normal before, during and after the test, without interruption.
- DAC can output the 4 to 20 mA current signal normally, the output accuracy meets the requirements of specification.

Note: since the package and transportation test is not powered during the test, so there is no need to perform relevant tests during the test.

Performance Indicators

- Overall performance includes and is not limited to "Reference accuracy", "Ambient temperature effect", "Static pressure effect", and other effects of the combined error.
- Typical accuracy: $\pm 0.05\%$ upper range limit.
- Annual stability: $\pm 0.2\%$ upper range limit per 10 years.

Reference Accuracy

Based on standards and reference conditions including linearity (BFSL), hysteresis, repeatability. Calibration temperature is $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

linear output accuracy	$\text{TD} \leq 10$ (Note 1)	$\pm 0.075\%$ upper range limit	The ranges are 6 kPa, 40 kPa, 250 kPa, 1 MPa, 3 MPa, 10 MPa, 40 MPa
	$10 < \text{TD} \leq 20$	$\pm 0.00075\text{TD}\%$ upper range limit	

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

Note 1: TD (Turn down) is the range ratio
 $\text{TD} = \text{URL} / |\text{URV} - \text{LRV}|$

Ambient Temperature Effects

Total effect is $\pm (0.1 + 0.1\text{TD})\%$ upper range limit from -20 to 80°C .

Electrical Insulation Resistance

More than $20\text{M}\Omega$, reference condition at 100V DC .

Power Effects

When the supply voltage varies within 12 to 55 V DC , the change of zero and range should not exceed $\pm 0.005\%$ upper range limit per volt.

Mounting Position Effects

The installation of the transmitter may result in a zero deviation, which can be corrected by adjusting the zero positive, no range effect.

Output Signal

Output Signal	Type	Wiring Type
4-20 mA and HART7	Linear	Two-wire
Modbus- RTU/RS485	Linear	Four-wire

Time Index

- Total damping time constant equal to the sum of the damping time constants of the electronic circuit components and the sensor casings.
- Electronic circuit component damping time is adjustable from 0 to 100s.
- Experimentally, the damping time of the sensor capsule (separating the sensor diaphragm and the silicone oil filling liquid) is less than 0.2s.
- Start-up time after power failure is less than 6s.
- Data recovery time to normal use is less than 31s.

Environmental Conditions

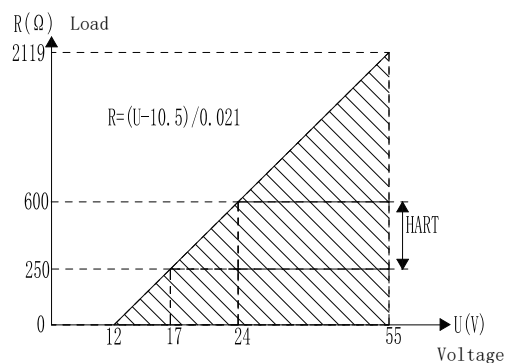
Ambient Temperature	-40 to 85°C , integrated LCD display is -20 to 70°C
Storage Temperature	-40 to 110°C , integrated LCD display is -40 to 85°C
Medium Temperature	Normal temperature silicone oil is -40 to 120°C
	With extralong heat sink: 0 to 315°C
	Impulse line cooling 40°C per meter
Ambient Humidity	5 to 100%RH at 40°C
Protection Class	IP67
Hazardous Situation	ExdIICT6Gb & ExiaIICT4Ga (note 1)

Note 1: consult factory for details.

Power Supply

- Standard/Explosion-proof is 12 to 55V DC.
- HART7 type is 17 to 55 V DC, load resistance at communication 250 Ω.
- Modbus- RTU/RS485 type power is 12 to 30 V DC.
- Load resistance of working condition is 0 to 2119Ω, HART7 250-600 Ω.
- Transmission distance is less than 1000 meters.
- Power consumption is less than 500mW at 24V DC, 20.8mA.

Power and Load Conditions



Electromagnetic Compatibility (EMC) Environment

SN	Test Items	Standard	Test Condition	Performance Level
1	Radiation interference (Enclosure)	GB/T 9254/CISPR22	30 MHz to 1000 MHz	Qualified
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15 MHz to 30 MHz	Qualified
3	Electrostatic discharge (ESD) immunity	GB/T 17626.2/IEC61000-4-2	4 kV (Contact) , 8 kV (Air)	B (Note 2)
4	RF electromagnetic field immunity	GB/T 17626.3/IEC61000-4-3	10 V/m (80 MHz to 1 GHz)	A (Note 1)
5	Power frequency magnetic field immunity	GB/T 17626.8/IEC61000-4-8	30 A/m	A (Note 1)
6	Electrical fast transient pulse group immunity	GB/T 17626.4/IEC61000-4-4	2 kV (5/50ns,100 KHz)	B (Note 2)
7	Surge immunity	GB/T 17626.5/IEC61000-4-5	1 kV (Line to line) 2 kV (Line to ground) (1.2us/50us)	B (Note 2)
8	Conducted interference immunity for RF field sensing	GB/T 17626.6/IEC61000-4-6	3 V (150 kHz to 80 MHz)	A (Note 1)

Note 1: In the case of performance class A, the performance is normal within the limits of the technical specifications

Note 2: In the case of performance class B, the function or performance is temporarily reduced or lost, but it can be restored by itself, and the actual operating condition, storage and its data remain unchanged

Dynamic Performance

HART7 transmitter response time

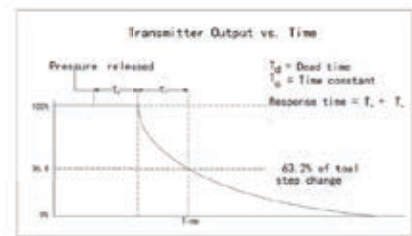
Total response time ($T_d + T_c$)

Range 2 is 200 ms

Range 3 to 7 is 100 ms

Standstill time is $T_D=60$ ms

Refresh rate is 10 times per second



Standstill time and refresh rate for all models and ranges

Standard total response time at 25 reference conditions

Excluding conversion block response time, analog input module execution time

Storage conditions:

It should be stored in a ventilated room with an ambient temperature of $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$ and a relative humidity of not more than 85% RH, and the air does not contain any harmful substances that can corrode the pressure transmitter.

Menu Functions

Pressure Transmitter

Transmission Module Type

Output Signal	Local Control	Remote Control
4-20 mA and HART	LCD/Housing 3 buttons	HART 7
Modbus-RTU/RS485	LCD/Housing 3 buttons	Modbus

Display Screen

- PV: main screen displays process variables, secondary screen displays percentage and progress bar.
- mA: main screen displays current value, secondary screen displays percentage and progress bar.
- %: main screen displays percentage, secondary screen displays percentage and progress bar.

Process Unit

Process Unit	Instruction
kPa	Kilopascal
MPa	Megapascal
bar	Bar
psi	Pounds per square inch
mm Hg	Millimeter(s) of mercury at 0°C
mm H ₂ O	Millimeter of water at 4°C
m H ₂ O	Meter of water at 4 °C
in H ₂ O	Inches of water at 4°C
ft H ₂ O	Feet of water at 4°C
in Hg	Inches of mercury at 0°C
m Hg	Meter mercury column at 0°C
Torr	Torr
mbar	Millibar
g/cm ²	Gram per square centimeter
kg/cm ²	Kilogram per square centimeter
Pa	PA
atm	Standard atmospheric pressure
mm	Millimeter (Note1)
m	Meter (Note1)

Note 1: Length unit, needs to indicate the medium density

Measurement Range Setting

- URV: up range value, 20 mA upper limit value.
- LRV: low range value, 4 mA lower limit value.

Damping Value

- S: 0-100.

Analog Output Type

- mA LINER: linear output.
- mA $\sqrt{\quad}$: square root output.

Fault Alarm Signal

- ALARM NO: when the applied pressure exceeds the upper and lower limits of the range, it is output as normal to the alarm current value, and the lower limit to 3.8 mA, upper at 20.8 mA.
- ALARM H: alarm display when the applied pressure exceeds the upper and lower range limits 20.8 mA.
- ALARM L: alarm display when the applied pressure exceeds the upper and lower range limits 3.8 mA.

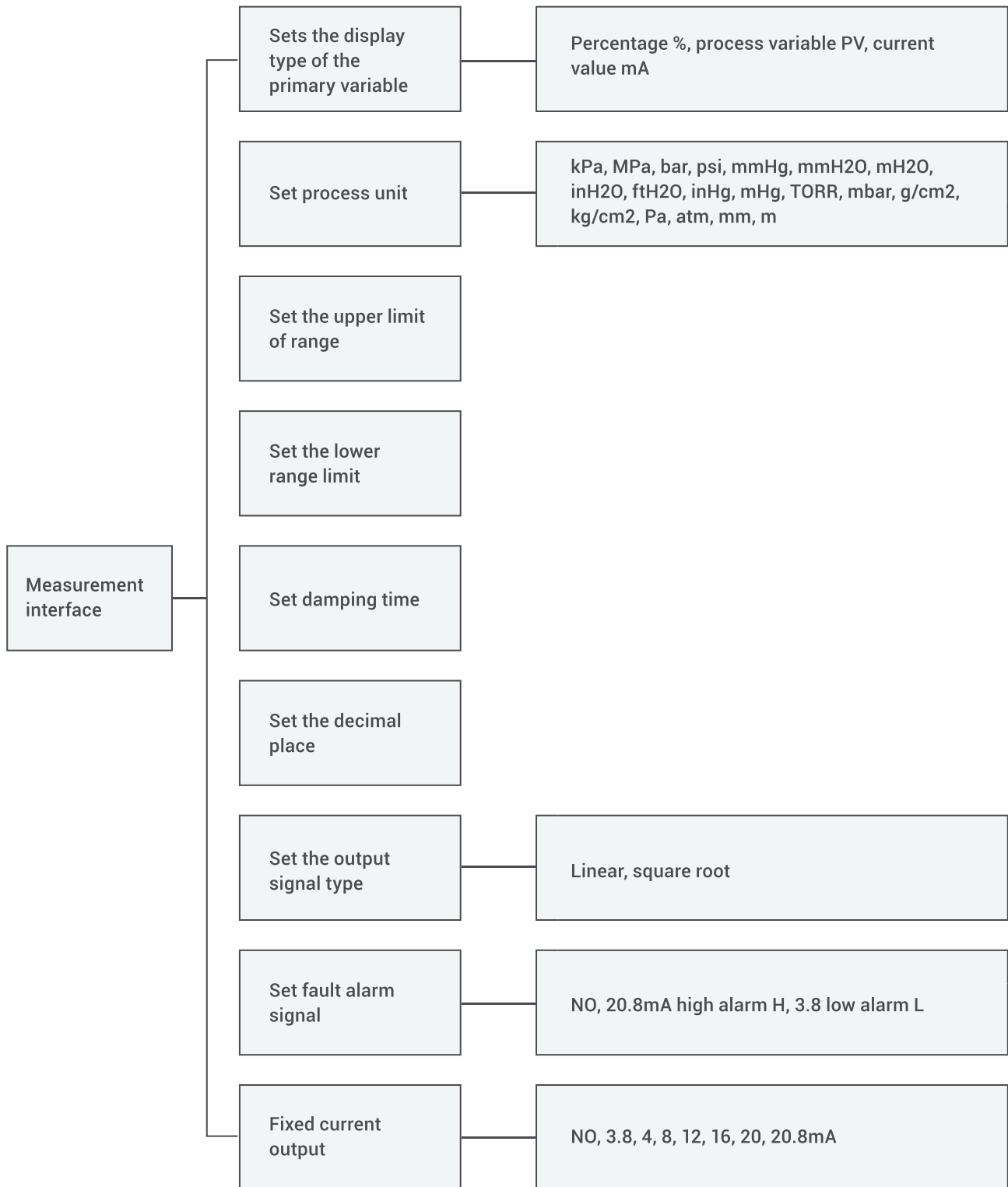
Output Calibration

- FIX/C NO: uncalibrated current outputs.
- 3.8000: 3.8000 mA.
- 4.0000: 4.0000 mA.
- 8.0000: 8.0000 mA.
- 12.000: 12.000 mA.
- 16.000: 16.000 mA.
- 20.000: 20.000 mA.
- 20.800: 20.800 mA.

Quick Operation Menu

- PV Zero: make the current analog output correspond to a zero pressure value gauge .
- Zero Adjustment: actual output is calibrated to 4 mA using the reference pressure.
- Full-point adjustment: actual output is calibrated to 20 mA using reference pressure.
- Restore Factory Settings: restore factory backup data in case of adjustment error.

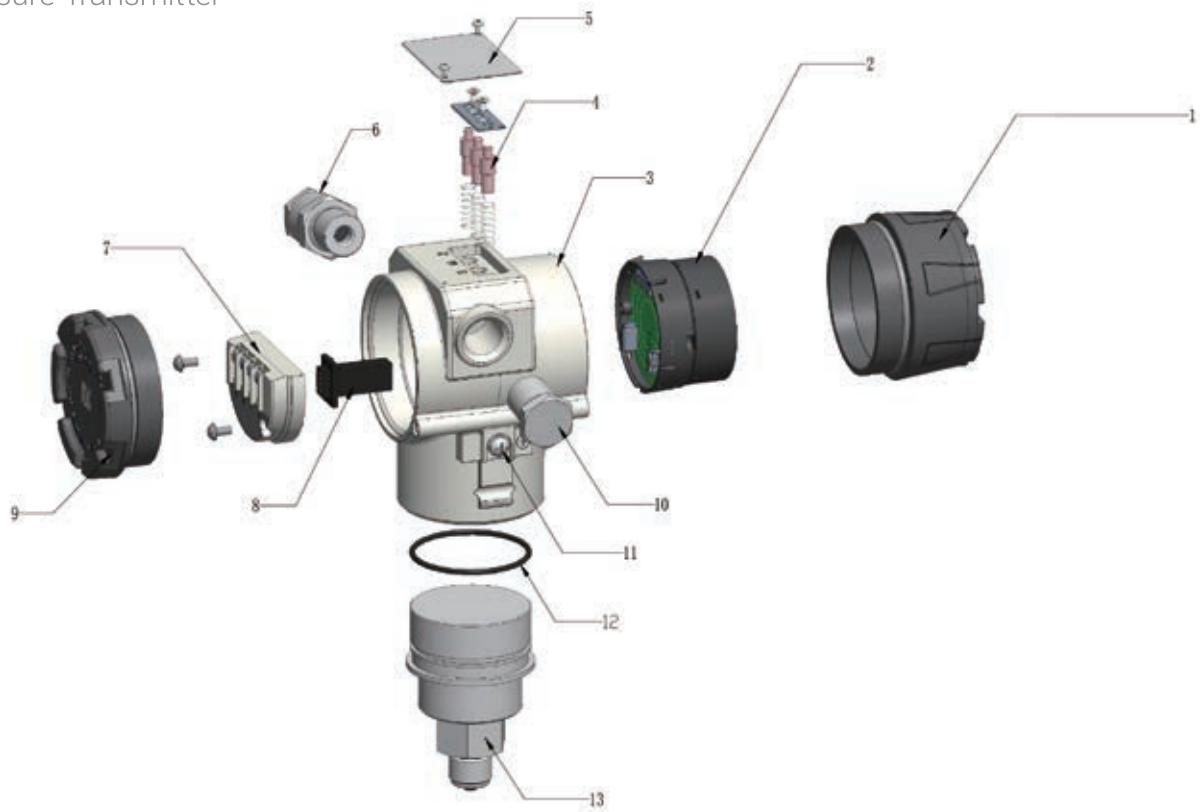
Flow Chart



Note: detailed procedure is shown in the operation manual.

Assembly Diagram

Pressure Transmitter



- | | | |
|--------------------------------|------------------------------|----------------|
| 1. Front cover | 2. LCD display | 3. Housing |
| 4. Local configuration buttons | 5. Stainless steel Nameplate | 6. Cable gland |
| 7. Terminal | 8. Terminal socket | 9. Rear cover |
| 10. Plugs | 11. Ground screws | 12. O-Rings |
| 13. Sensor module | | |

Diaphragm (S/H)



Sealing Method (P)



Housing

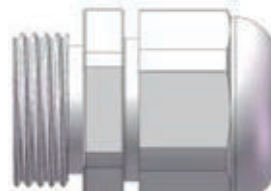


Standard Connector

Plug: M20 x 1.5

Gland :

glands size M20 x 1.5 applicable wire diameter 6 to 8mm (optional 11 to 17mm) with 1/2 NPT threaded connection, applicable wire diameter 6 to 8mm, (optional 11 to 17mm).



Explosion-proof Connector

Plug: M20 x 1.5

Gland :

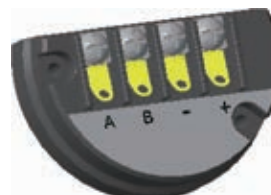
threaded connection, glands size is M20 x 1.5 for wire diameter 6 to 8mm (optional 11 to 17mm) and 1/2NPT threaded connection, applicable wire diameter 6 to 8mm, anti-protection class IP67 (SS316).



Display and Operation Module



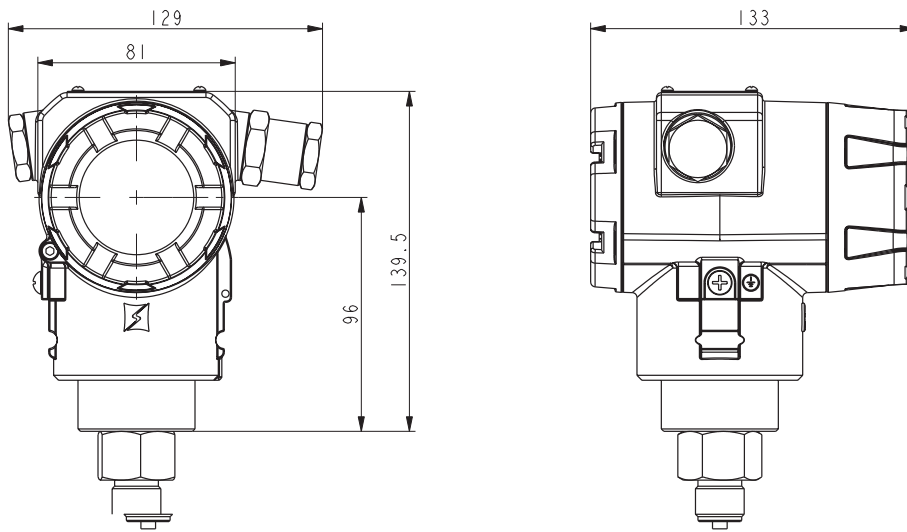
Terminal



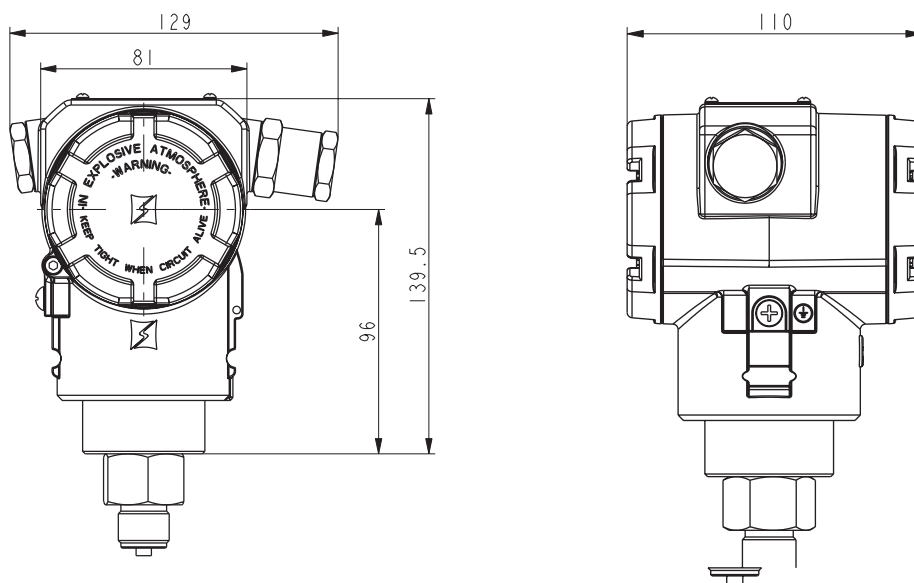
Dimensional Drawing

Pressure Transmitter

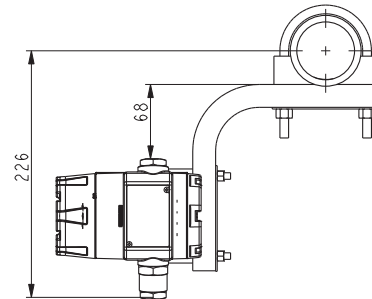
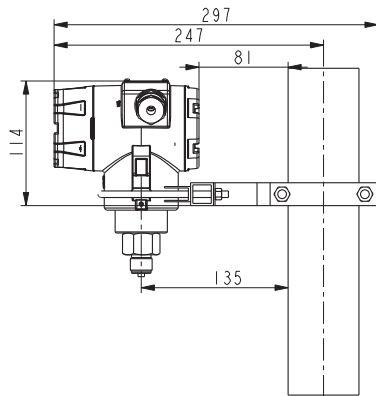
Dimensionals with Display (M5) (in mm), Weight 1.7 kg



Dimensionals Without Display (M0) (in mm), Weight 1.7 kg

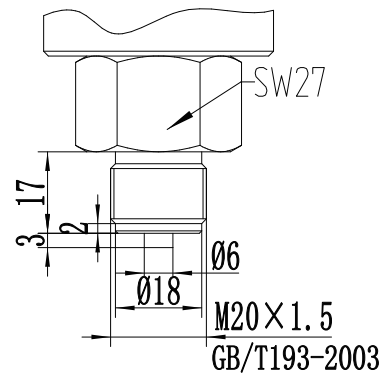


Bracket B04, U + L bracket, 2" pipe, carbon steel bracket



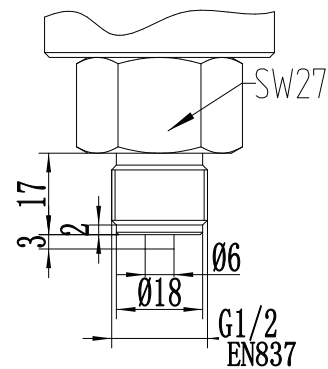
Process connection (M1) (in mm)

Welded pipe with M1, thread M20 × 1.5 M. Φ3 pressure tapping hole, GB/T193-2003.



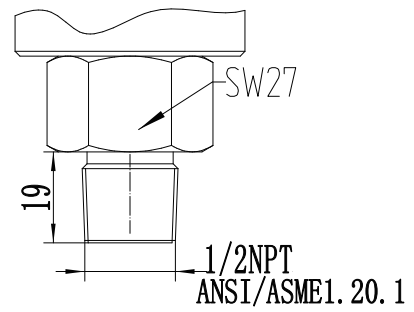
Process connection (G1) (in mm)

Welded pipe with G1, thread G1/2 M. Φ3 pressure tapping hole, EN837.



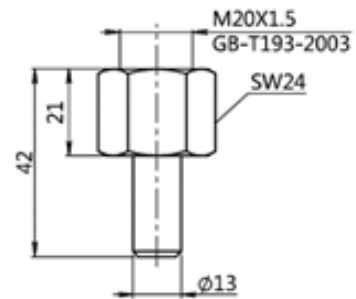
Process connection (R1) (in mm)

Welded pipe with R1, thread 1/2 NPT M. $\Phi 3$ pressure tapping hole, ANSI/ASME1.20.1.



Process connection (Z1) (in mm)

Welded pipe with Z1, weight 0.25kg, internal thread M20 \times 1.5 M. with pressure tapping pipe diameter 14*2*30mm SS304.



Factory Settings

Pressure Transmitter

Item	Menu Identification	Factory Setting
Instrumentation station	No menu	0 (no setting value specified)
Analog output type	mA	LINER (no setting value specified)
Display screen	DISP	PV (no setting value specified)
Fault alarm signal	ALARM	No (no setting value specified)

Item	Menu Identification	Factory Setting
Damping value	DAMP	0 (no setting value specified)
4 mA low limit	LRV	Setting by order
20 mA high limit	URV	Setting by order
Process unit	U	Setting by order

Pressure Transmitter

Single Flange Pressure Transmitter
AT5020



Range and Sensor Limits

Nominal Range	Maximum Range Ratio	Minimum Range	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload
40 kPa	4:1	10 kPa	-40 kPa	40 kPa	1 MPa
250 kPa	10:1	25 kPa	-100 kPa	250 kPa	4 MPa
1 MPa	10:1	100 kPa	-100 kPa	1 MPa	6 MPa
3 MPa	10:1	300 kPa	-100 kPa	3 MPa	15 MPa
10 MPa	10:1	1000 kPa	-100 kPa	10 MPa	20 MPa
40 MPa	10:1	4000 kPa	-100 kPa	40 MPa	80 MPa
Nominal Range	Maximum Range Ratio	Minimum Range	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload
5.8015 psi	4:1	TG 1.4504 psi TA 2.9008 psi	-5.8015 psi	5.8015 psi	145.04 psi
36.2594 psi	10:1	3.6259 psi	-14.5038 psi	36.2594 psi	580.15 psi
145.04 psi	10:1	14.5038 psi	-14.5038 psi	145.04 psi	870.23 psi
435.11 psi	10:1	43.5113 psi	-14.5038 psi	435.11 psi	2175.67 psi
1450.38 psi	10:1	145.04 psi	-14.5038 psi	1450.38 psi	2900.75 psi
5801.51 psi	10:1	580.15 psi	-14.5038 psi	5801.51 psi	11603.02 psi
Nominal Range	Maximum Range ratio	Minimum range	Lower Range Limit (LRL)	Upper range limit (URL)	Overloaded
4078.88 mmH2O	4:1	1019.72 mmH2O	-4078.88 mmH2O	4078.88 mmH2O	101972mmH2O
25493 mmH2O	10:1	2549.3 mmH2O	-10197.2 mmH2O	25493 mmH2O	407888 mmH2O
101972 mmH2O	10:1	10197.2 mmH2O	-10197.2 mmH2O	101972 mmH2O	611832 mmH2O
305916 mmH2O	10:1	30591.6 mmH2O	-10197.2 mmH2O	305916 mmH2O	1529580 mmH2O
1019720 mmH2O	10:1	101972 mmH2O	-10197.2 mmH2O	1019720 mmH2O	2039440 mmH2O
4078880 mmH2O	10:1	407888 mmH2O	-10197.2 mmH2O	4078880 mmH2O	8157760 mmH2O

Upper and lower range value setting requirements: lower range value (LRV) and upper range value (URV) are in the range of upper and lower range limits, if $|URV| \geq |LRV|$, it must be satisfied $|URV| \geq \text{minimum range}$, if $|URV| \leq |LRV|$, it must be satisfied $|LRV| \geq \text{Minimum range}$.

*Overpressure limit value depends on the pressure value of the weakest pressure-containing component

Performance Test Standards and Reference Conditions

- Test Standard GB/T28474/IEC60770;
- Reference condition the range is started from zero point.
- silicone oil filling, 316L stainless steel isolation diaphragm, 4 - 20mA mode proposed output, terminal-base fine adjusted to set value.

Vibration Testing

Vibration Test

- $5\text{Hz} \leq f \leq 8.4\text{ Hz}$, displacement 3.5 mm.
- $8.4\text{ Hz} \leq f \leq 500\text{ Hz}$, constant acceleration 1.0 g.
- One octave per minute ($\pm 10\%$).
- 10 cycles on each of the three mutually perpendicular axes,
- The test results conform to the following criterion A.

Shock Test

- Set the peak acceleration 15 g.
- Duration is 11 ms/time.
- Pulse waveform is half-sine.
- Three consecutive shocks were applied in each of the three mutually perpendicular directions, that is a total of 18 shocks.
- According to GB/T1827.3/IEC61298-3, it is less than 0.1% upper range limit.
- The test results conform to the following criterion A.

Criterion A

Functions

Power up during the test, the function of the module meets the following requirements before, during and after the test:

- The appearance of the module should be free from corrosion, cracks, coating layer flaking and other damage, plastic parts should be free from bubbles, cracks, deformation and overflow of filling material, and the text and logo should be clear.
- The module LCD display is normal.

Performances

- LCD can display normally before, during and after the test as required.
- HART communication is normal before, during and after the test, without interruption.
- DAC can output the 4 to 20 mA current signal normally, the output accuracy meets the requirements of specification.

Note: since the package and transportation test is not powered during the test, so there is no need to perform relevant tests during the test.

Performance Indicators

- Overall performance includes and is not limited to "Reference accuracy", "Ambient temperature effect", and other effects of the combined error.
- Typical accuracy: $\pm 0.05\%$ upper range limit.
- Annual stability: $\pm 0.2\%$ upper range per 10 years.

Reference Accuracy

Based on standards and benchmark conditions including linearity (BFSL), hysteresis, repeatability. calibration temperature $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$

Linear output accuracy	TD \leq 10 (Note 1)	0.2% upper range limit	The ranges are 40 kPa, 250 kPa, 1 MPa, 3 MPa, 10 MPa, 40 MPa
	Maximum value	0.5% upper range limit	

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

Note 1: TD (Turn down) is the range ratio
 $\text{TD} = \text{URL} / |\text{URV} - \text{LRV}|$

Ambient Temperature Effects

Total effect is $\pm (0.1 + 0.15\text{TD})$ % upper range limit from -20 to 80°C .

Electrical Insulation Resistance

More than $20\text{M}\Omega$, reference condition is at 100 V DC .

Power Effects

When the supply voltage varies within 12 to 55 V DC , the change of zero and range should not exceed $\pm 0.005\%$ of the upper range limit per volt.

Mounting Position Effects

The installation of the transmitter may result in a zero deviation, which can be corrected by adjusting the zero, no range effect.

Output Signal

Output Signal	Type	Wiring Type
4-20 mA and HART7	Linear	Two-wire
Modbus- RTU/RS485	Linear	Four-wire

Time Index

- Total damping time constant equals to the sum of damping time constants of electronic circuit components and sensor casings.
- Electronic circuit component damping time is adjustable from 0 to 100s.
- Experimentally, the damping time of the sensor capsule (separating the sensor diaphragm and the silicone oil filling liquid) is less than 0.2s.
- Start-up time after power failure is less than 6s.
- Data recovery time to normal is less than 31s.

Environmental Conditions

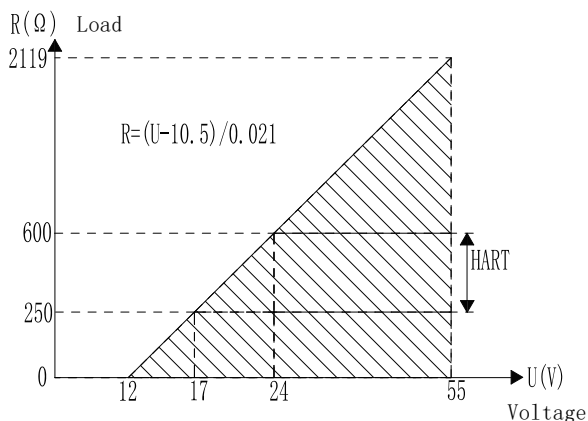
Ambient Temperature	-40 to 85°C, integrated LCD display is -20 to 70°C
Storage Temperature	-40 to 110°C, integrated LCD display is -40 to 85°C
Medium Temperature	Filled with normal temperature silicone oil: -40 to 205°C Filled with high temperature silicone oil: 0 to 315°C
Ambient Humidity	5 to 100%RH at 40°C
Protection Class	IP67
Hazardous Situation	ExdIICT6Gb & ExiaIICT4Ga (note 1)

Note 1: consult factory for details.

Power Supply

- Standard/Explosion-proof is 12 to 55 V DC.
- HART7 type power is 17 to 55 V DC, load resistance for communication is 250 Ω.
- Modbus-RTU/RS485 type power is 12 to 30 V DC.
- Load resistance of working condition is 0 to 2119Ω, HART7 250 to 600Ω.
- Transmission distance is less than 1000 meters.
- Power consumption is less than 500mW at 24VDC, 20.8mA.

Power and Load Conditions



Electromagnetic Compatibility (EMC) Environment

SN	Test Items	Standard	Test Condition	Performance Level
1	Radiation Interference (Enclosure)	GB/T 9254/CISPR22	30 MHz to 1000 MHz	Qualified
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15 MHz to 30 MHz	Qualified
3	Electrostatic discharge (ESD) Immunity	GB/T 17626.2/IEC61000-4-2	4 kV (Contact), 8 kV (Air)	B (Note 2)
4	RF electromagnetic field immunity	GB/T 17626.3/IEC61000-4-3	10V/m (80MHz-1GHz)	A (Note 1)
5	Power frequency magnetic field immunity	GB/T 17626.8/IEC61000-4-8	30A/m	A (Note 1)
6	Electrical fast transient pulse group immunity	GB/T 17626.4/IEC61000-4-4	2 kV (5/50ns,100 KHz)	B (Note 2)
7	Surge immunity	GB/T 17626.5/IEC61000-4-5	1 kV (Line to line) 2 kV (Line to ground) (1.2 us/50us)	B (Note 2)
8	Conducted interference immunity for RF field sensing	GB/T 17626.6/IEC61000-4-6	3 V (150kHz to 80 MHz)	A (Note 1)

Note 1: In the case of performance class A, the performance is normal within the limits of the technical specifications

Note 2: When performance level B is reached, functions or performances are temporarily reduced or lost but can recover on their own. The actual operating condition, storage, and data remain unchanged

Dynamic Performance

HART7 transmitter response time

Total response time ($T_d + T_c$)

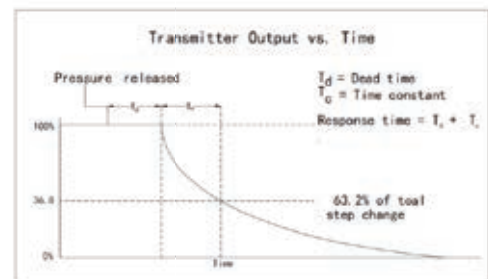
Range 2 is 200 ms

Range 3 to 7 is 100 ms

Standstill time $T_D=60$ ms

Refresh rate is 10 times per second

Standstill time and refresh rate for all models and ranges
Standard total response time at 25 reference conditions.
Excluding conversion block response time, analog input module execution time.



Storage Conditions

It should be stored in a ventilated room with an ambient temperature of -10°C to 55°C and a relative humidity of not more than 85%RH, and the air does not contain any harmful substances that may corrode the pressure transmitter.

Menu Features

Single Flange Pressure Transmitter

Transmission Module Type

Output Signal	Local Control	Remote Control
4 to 20 mA and HART7	LCD/Housing 3 buttons	HART7
Modbus-RTU/RS485	LCD/Housing 3 buttons	Modbus

Display Screen

- PV: Main screen displays process variables, secondary screen displays percentage and progress bar.
- mA: Main screen displays current value, secondary screen displays percentage and progress bar.
- %: main screen displays percentage, secondary screen displays percentage and progress bar

Process Unit

Process Unit	Explanation
kPa	Kilopascal
MPa	Megapascals
bar	Bar
psi	Pounds per square inch
mm Hg	Millimeter(s) of mercury at 0°C
mm H2O	Millimeter of water at 4°C
m H2O	Meter of water at 4°C
inH2O	Inches of water at 4°C
ft H2O	Feet of water at 4°C
in Hg	Inches of mercury at 0°C
m Hg	Meter mercury column at 0°C
Torr	Torr
mbar	Millibar
g/cm2	Gram per square centimeter
kg/cm2	Kilogram per square centimeter
Pa	PA
atm	Standard atmospheric pressure
mm	Millimeter (Note1)
m	Meter (Note1)

Note 1: Length unit, needs to indicate the medium density

Measurement Range Setting

- URV: Up range value, 20 mA high limit value.
- LRV: Low range value, 4 mA low limit value.

Damping Value

- S: 0 to 100.

Analog Output Type

- mA LINER: Linear output.
- mA $\sqrt{\quad}$: Square root output.

Fault Alarm Signal

- ALARM NO: When the applied pressure exceeds the upper and lower limits of the range, it is output as normal to the alarm current value, and the lower limit to 3.8 mA, upper at 20.8mA.
- ALARM H: Alarm display when the applied pressure exceeds the upper and lower range limits 20.8 mA.
- ALARM L: Alarm display when the applied pressure exceeds the upper and lower range limits 3.8 mA.

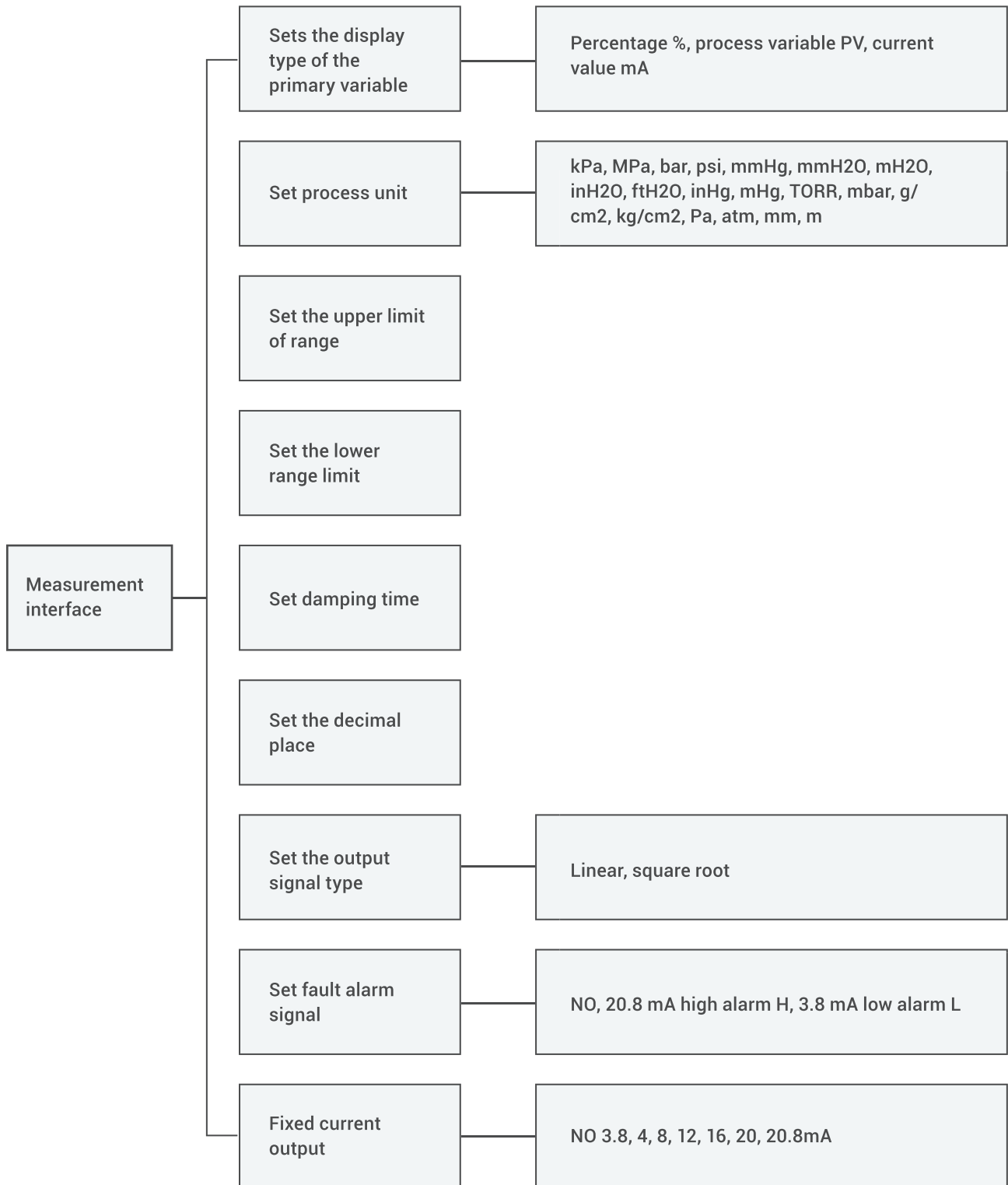
Output Calibration

- FIX/C NO: Uncalibrated current outputs.
- 3.8000: 3.8000 mA.
- 4.0000: 4.0000 mA.
- 8.0000: 8.0000 mA.
- 12.000: 12.000 mA.
- 16.000: 16.000 mA.
- 20.000: 20.000 mA.
- 20.800: 20.800 mA.

Quick Operation Menu

- PV Zero: make the current analog output correspond to a zero pressure value(guage).
- Zero Adjustment: Actual output is calibrated to 4 mA using the reference pressure.
- Full-point adjustment: Actual output is calibrated to 20 mA using reference pressure.
- Restore Factory Settings: Restore factory backup data in case of adjustment error.

Flow Chart

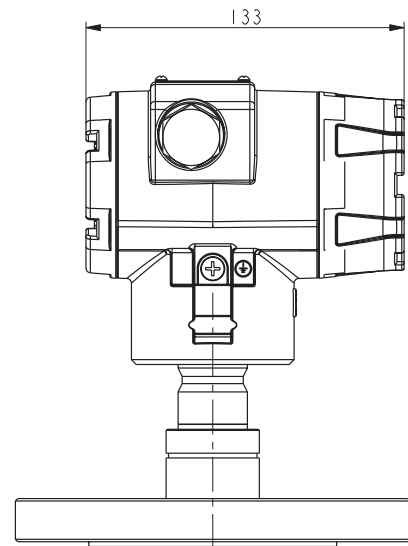
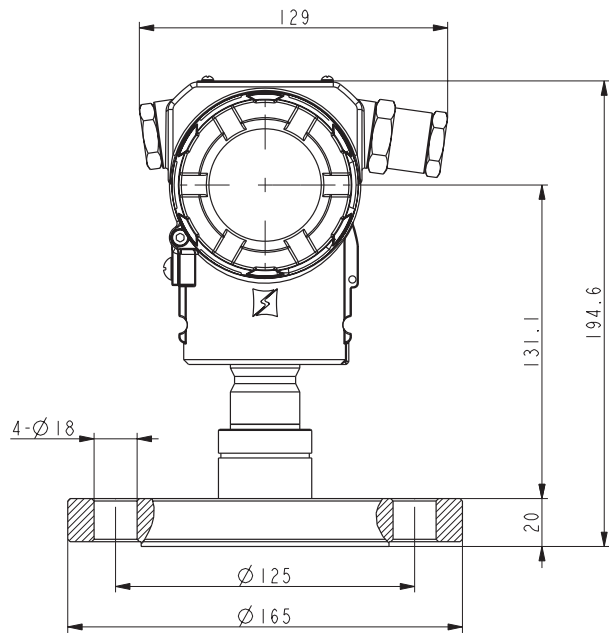


Note: detailed procedure is shown in the operation manual

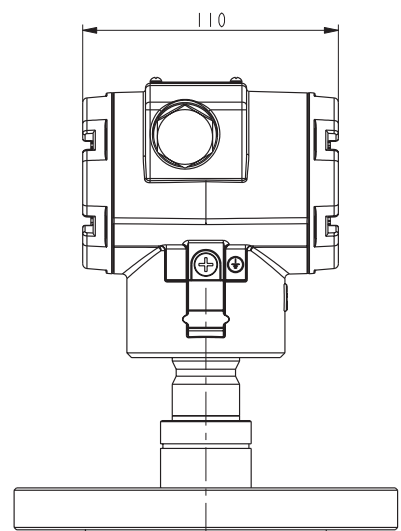
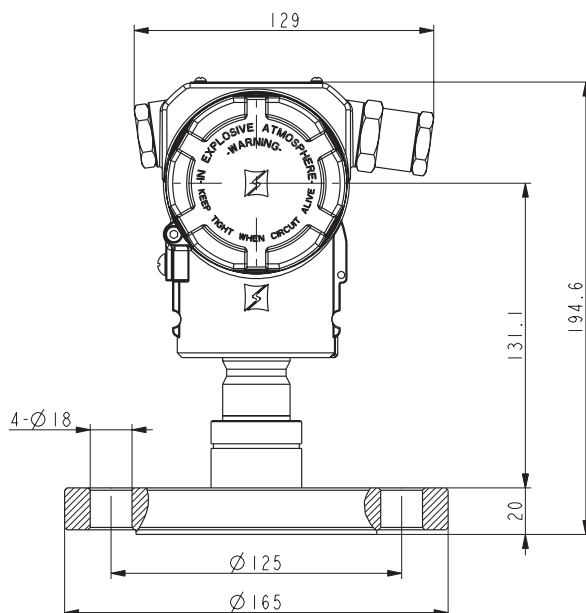
Dimension Drawing

Single Flange Pressure Transmitter

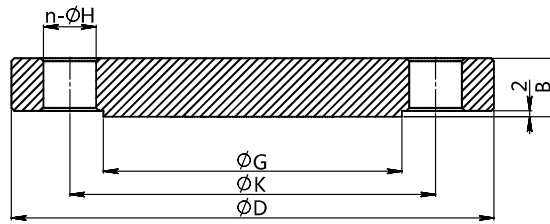
Dimensionals with Display (M5) (in mm)



Dimensionals without display (M0) (in mm)



Dimensional drawings of process connections (H1-H3) (in mm)



Standard	Pipe Size	Outside Diameter (Ø D)	Thickness (B)	Bolt Circle Diameter (Ø K)
HG/T20592-2009	DN25PN10-PN40	115	16	85
HG/T20592-2009	DN50PN10-PN40	165	20	125
HG/T20592-2009	DN80PN10	200	20	160
ASME B16.5	1"Class150	108	12.7	79.2
ASME B16.5	2"Class150	152	17.5	120.6
ASME B16.5	3"Class150	190	22.4	152.4
EN1092	DN25PN10-PN40	115	16	85
EN1092	DN50PN10-PN40	165	19	125
EN1092	DN80PN16	200	19	160
GB/T9124.1-2019	DN25PN10-PN40	115	18	85
GB/T9124.1-2019	DN50PN10-PN40	165	20	125
GB/T9124.1-2019	DN80PN10	200	20	160
GOST 33259-2015	DN25 PN25	115	14	85
GOST 33259-2015	DN50 PN25	165	20	125
GOST 33259-2015	DN80PN10	200	24	160
JIS B2220-2004	DN25 10K	125	14	90
JIS B2220-2004	DN50 10K	155	16	120
JIS B2220-2004	DN80 10K	185	18	150

Standard	Convexity Diameter (Ø G)	Bolt Diameter (Ø H)	Bolt Quantity (n)	Ripple Diameter (Ø M)
HG/T20592-2009	68	14	4	31
HG/T20592-2009	102	18	4	56
HG/T20592-2009	138	18	8	71
ASME B16.5	50.8	16	4	36.8
ASME B16.5	92	19	4	56
ASME B16.5	127	19	4	80.4
EN1092	69	14	4	31
EN1092	102	19	4	56
EN1092	138	19	8	71
GB/T9124.1-2019	68	14	4	31
GB/T9124.1-2019	102	18	4	56
GB/T9124.1-2019	138	18	8	71
GOST 33259-2015	68	14	4	31
GOST 33259-2015	102	18	4	56
GOST 33259-2015	138	18	8	71
JIS B2220-2004	68	19	4	31
JIS B2220-2004	102	19	4	56
JIS B2220-2004	138	19	8	71

Factory Settings

Single Flange Pressure Transmitter

Item	Menu Identification	Factory Setting
Instrumentation station	No menu	0 (no setting value specified)
Analog output type	mA	LINER (no setting value specified)
Display screen	DISP	PV (no setting value specified)
Fault alarm signal	ALARM	No (no setting value specified)
Item	Menu Identification	Factory Setting
Damping value	DAM P	0 (no setting value specified)
4 mA low limit	LRV	Setting by order
20 mA high limit	URV	Setting by order
Process unit	U	Setting by order

Certification

AT5020 Pressure Transmitter

Name	Description
China Explosion Protection Standard NEPSI	NEPSI explosion-proof Ex db IIC T4...T6 Gb Applicable standards: GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021
	NEPSI dust explosion-proof Ex tb IIIC T80 ...T130 Db Applicable standards: GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021
	NEPSI intrinsically safe Ex ia IIC T4 Ga Applicable standards: GB/T 3836.1-2021, GB/T 3836.4-2021, GB/T 3836.20-2010
NACE corrosion protection	NACE composition & Brinell hardness. Applicable standards: NACE MR0175 Standard
	NACE composition & Vickers hardness. Applicable standards: NACE MR0175 Standard
	NACE hydrogen-induced cracking (HIC) Applicable standards: NACE MR0175 standard, NB/T 47010-2017
	NACE sulfide stress corrosion cracking (SSC). Applicable standards: NACE MR0175 standard, NB/T 47010-2017
SIL2/3	Measuring instruments the m can be used as pressure monitoring systems, SIL2/3
HART 7	Measuring system meets HART 7, device can be used with certified devices from other suppliers (interoperability)
Modbus	Modbus - RTU/RS485
CE	Certificate of compliance
ATEX	ATEX Ex d, ATEX Ex ia
IEC Ex	IEC Ex d, IEC Ex ia
PMI	PMI verification and certificate
EN	EN10204

Appendix Manifold and Accessories

Valve manifolds are mainly used for opening, closing, pressure balancing and discharging of input signals of various pressure transmitters, which facilitates on-line installation, maintenance and inspection of the instruments. valve group by function can be divided into two-valve manifold.

The manifolds can be widely used in petroleum, chemical, metallurgy, electric power, liquid, natural gas and other transportation pipelines.

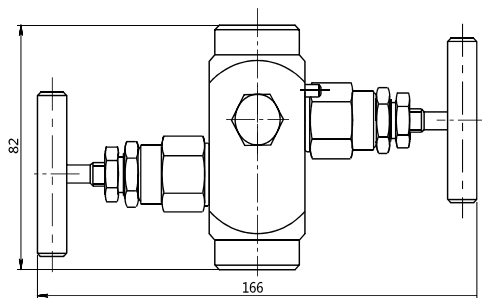
Main Parameters

Safety Stop Pins	Stainless steel pin prevents the seat from vibrating out of the valve body
Valve Body	One-piece structure, high strength and high reliability
Valve Seal	Stainless steel hard seal, safe and reliable
Valve Plug	High-performance bi-directional stainless steel and spherical positioning function improves the sealing and service life of the valve.
Grease	Imported grease is utilized between the sealing washer and the adjusting screw to reduce friction and improve sealing performance.
Structural Material	SS316, SS304
Labeled Cover	Pilot valves, counterbalance valves, drain valves
Sealing Packing	PTFE
Operating Pressure	32 MPa, 42 MPa
Operating Temperature	≤150°C
Ambient Temperature	-30°C to +93°C

Two-way manifold

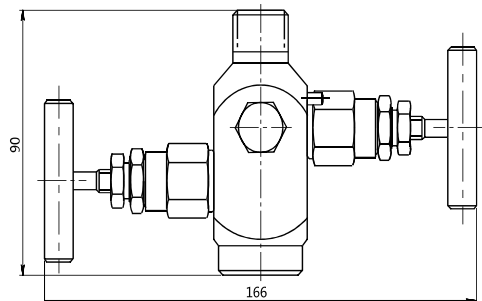
The two-valve manifold is suitable for intelligent pressure transmitter products, its role is to introduce the signal from the pressure point into the pressure transmitter measurement chamber, so that the pressure point and the measurement chamber connected or disconnected, for the indispensable accessories for pressure transmitters. Generally used in the field control instrumentation, to provide multiple paths for the instrumentation, reduce installation efforts, and improve system reliability.

Dimension Drawing (in mm)



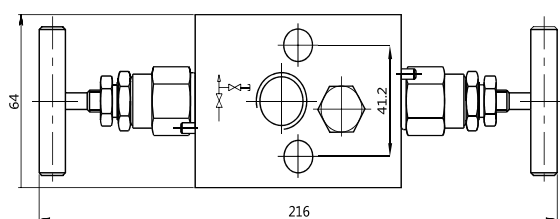
Dimension Drawing of 1/2NPT F at Input and 1/2NPT F at Output

Dimension Drawing (in mm)



Dimension Drawing of 1/2NPT F at Input and 1/2NPT M at Output (unit: mm)

Dimension Drawing (in mm)

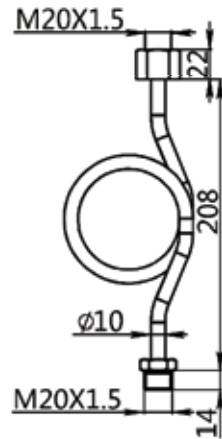


Dimensional Drawing of Coplanar Two-Valve Manifold

Accessories

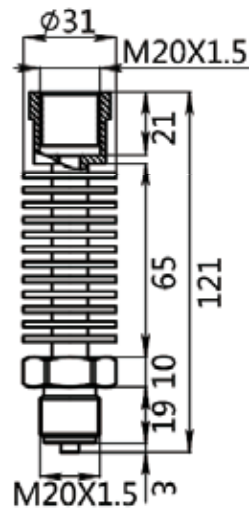
Syphon Connectors (RG) (in mm)

Syphon connection RG, M20 × 1.5 F to M20 × 1.5 M, SS304, applicable to medium temperature range -40 to 150°C.



Heat Sink Connectors (PR) (in mm)

Heat sink connection RP, M20 × 1.5 F to M20 × 1. M, SS304, applicable to medium temperature range -40 to 150°C.






For further inquiries

 sales_international@hollysys.com

For more information

 www.hollysys.com

 HollySys Automation Technologies

 HollySys Asia Pacific

Singapore

Changi Business
Park Crescent, #04-
01/02/03 Plaza 8
@ CBP, Tower A,
Singapore 486025

China

No.2 Di Sheng Middle
Road, Economic-
Technological
Development Area,
Beijing 100176

India

D-84, Ground Floor,
Sector 63, Noida, Uttar
Pradesh 201301

Indonesia

Metropolitan Tower,
10th Floor Unit E Jl. R.A.
Kartini Kav. 14, Jakarta
12430

Uzbekistan

10, Mahmoud Tarabi
Street, Tashkent,
Uzbekistan