



DMP 305X-TST-S Monosilicon Gauge Pressure Transmitter

Product introduction

Description



Industrial pressure transmitter

DMP305X monosilicon pressure transmitter is a high performance pressure transmitter with international leading technology meticulously designed, using the world's most advanced monosilicon pressure sensor technology and patent encapsulation technology. Monosilicon pressure sensor locates on the top of the metal body and stay away from the medium interface to realizes mechanical isolation and thermal isolation. Glass sintering sensor wire realizes high strength electrical insulation of metal base and improves the capability of flexibility of electronic circuit and transient voltage resistance protection. All these original encapsulation technologies enable DMP305X to easily cope with extreme chemical occasion and mechanical load, and own strong resistance to EMI, sufficient to respond to the most rigorous industrial environment applications, which are the genuine invisible instruments.

Main parameters

| | |
|--------------------|--|
| Pressure types | Gauge pressure |
| Measuring range | 2kPa-40MPa, please refer to the ordering information chapter |
| Output signal | 4-20mA, 4-20mA+HART, customer |
| Reference accuracy | ±0.1% URL, optional ±0.075%URL |

Measuring medium

Liquid, gas, or steam level, density and pressure

Field of application

Pressure, level

Approvals



Disclaimer: all the data used in the product description is not legally binding. Relevant technical details may be changed due to further improve



Technical Specifications

Measuring range and limit

| Nominal value | Smallest calibratable span | Lower range limit(LRL) | Upper range limit(URL) | Overload limit |
|---------------|----------------------------|------------------------|------------------------|----------------|
| 40kPa | 2kPa | -40kPa | 40kPa | 1MPa |
| 250kPa | 12.5kPa | -100kPa | 250kPa | 4MPa |
| 1MPa | 50kPa | -100kPa | 1MPa | 6MPa |
| 3MPa | 150kPa | -0.1MPa | 3MPa | 15MPa |
| 10MPa | 500kPa | -0.1MPa | 10MPa | 20MPa |
| 40MPa | 5MPa | -0.1MPa | 40MPa | 80MPa |

Above measurement range can be replaced by kg/cm², MPa and kPa units .Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span ≤ | URV-LRV | ≤ upper range limit

Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero based-calibration span, Silicon oil filling, 316L stainless steel isolated diaphragm, 4-20mA analog output.

Performance specifications

The overall performance including but not limited to 【reference accuracy】, 【environment temperature effects】 and other comprehensive error

Typical accuracy: ±0.1%URL

Stability: ±0.2% URL/5 years

Reference accuracy

Standard and reference conditions, including linearity (BFSL), hysteresis and repeatability. calibration temperature: 20°C ± 5 °C

| | | | |
|------------------------|--------------|------------|---|
| Linear output accuracy | TD≤10(Note1) | ±0.1%URL | Nominal value: 40kPa, 250kPa 1MPa, 3MPa 10MPa, 40MPa |
| | 10<TD≤20 | ±0.01% URL | |

Note 1: TD is Turn down, TD=URL/ |URV-LRV|

Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

Mounting position effects

Apply to any position. Max value lower than 400Pa can be corrected by zero clearing function.

Vibration effects

According to GB/T 1827.3/IEC61298-3 tests, <0.1%URL

Output signal

4-20mA two wire. Customers can choose linear output or square root output. Digital process variables superimpose on 4-20mA signal and apply to any hosts with HART protocol.

Ambient temperature effects(Typical)

| | |
|--|--------------------|
| Within the range -20-80°C total impact | ±(0.1+0.15TD)% URL |
|--|--------------------|

Insulation resistance

≥ 20M Ω@, 100VDC

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Technical Specifications

Damping time

| |
|---|
| Total damping time constant: equal to the sum of damping time of amplifier and sensor capsule |
| Damping time of amplifier : 0-100S adjustable |
| Diaphragm capsule (isolated diaphragm and silicon oil filling) damping time: $\leq 0.2s$ |
| Startup after power off : $\leq 6S$ |
| Normal services after data recovery : $\leq 31S$ |

Weight

| |
|---|
| Net weight: about 1.56kg (without mounting brackets and process connection accessory) |
|---|

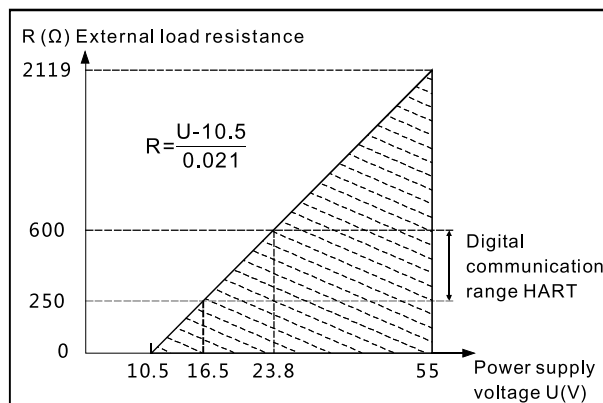
Environment condition

| Items | Operational condition |
|---------------------|---|
| Working temperature | -40-85°C, LCD display unit: -20-70°C |
| Storage temperature | -40-110°C, integrated LCD display: -40-85°C |
| Media temperature | Silicon oil filling: -40-120°C Inert oil filling: -10-80°C |
| Working humidity | 5-100% RH@40°C |
| Protection class | IP67 |

Power supply

| Item | Operating conditions |
|-----------------------|--|
| Standard/flame proof | 10.5-55VDC |
| HART protocol | 16.5-55VDC, communication load resistance 250Ω |
| Load resistance | 0-2119 Ω for working condition, 250-600Ω for HART protocol |
| Transmission distance | <1000m |
| Power consumption | $\leq 500mW@24VDC$, 20.8mA |

Power supply and load requirements



EMC environment

| NO. | Test items | Basic standards | Test conditions | Performance level |
|-----|--|---------------------------|--|-------------------|
| 1 | Radiated interference | GB/T 9254/CISPR22 | 30MHz-1000MHz | OK |
| 2 | Conducted interference (DC power port) | GB/T 9254/CISPR22 | 0.15MHz-30MHz | OK |
| 3 | Electrostatic discharge immunity test (ESD) | GB/T 17626.2/IEC61000-4-2 | 4kV(Contact) , 8kV(Air) | B(Note2) |
| 4 | Immunity to radio frequency EM-fields | GB/T 17626.3/IEC61000-4-3 | 10V/m(80MHz-1GHz) | A(Note1) |
| 5 | Power frequency magnetic field immunity test | GB/T 17626.8/IEC61000-4-8 | 30A/m | A(Note1) |
| 6 | Electrical fast transient / Burst immunity test | GB/T 17626.4/IEC61000-4-4 | 2kV(5/50ns, 100kHz) | B(Note2) |
| 7 | Surge immunity requirements | GB/T 17626.5/IEC61000-4-5 | 1kV(Line to line) 2kV(Line to ground) (1.2us/50us) | B(Note2) |
| 8 | Immunity to conducted disturbances induced by radio frequency fields | GB/T 17626.6/IEC61000-4-6 | 3V(150kHz-80MHz) | A(Note1) |

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

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

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Menu function

Specific menu

Transmission module type

| Output signal | Local control | Remote control |
|---------------|-----------------------|----------------|
| 4-20mA+HART | LCD/3 buttons on body | HART |
| 4-20mA | LCD/3 buttons on body | - |

LCD display unit

| Display mode | Details |
|--------------|--|
| PV | Process variable shows on main screen, percentage and progress bar shows on secondary screen |
| mA | Current shows on main screen, percentage and progress bar shows on secondary screen |
| % | Percentage shows on main screen, percentage and progress bar shows on secondary screen |

Unit

| Unit | Definition |
|---|--------------------------------|
| kPa | Kilopascal |
| MPa | Megapascals |
| bar | Bar |
| psi | Pounds per square inch |
| mmHg | Millimetre(s) of mercury@0°C |
| mmH ₂ O | Millimeter of water@4°C |
| mH ₂ O | Meter of water@4°C |
| inH ₂ O | Inches of water@4°C |
| ftH ₂ O | Feet of water@4°C |
| inHg | Inches of mercury@0°C |
| mHg | Meter mercury column@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) |
| Note1: length unit need mark medium density | |

Measuring menu set

| Mark | State |
|------|-------------------------|
| URV | Upper range value, 20mA |
| LRV | Lower range value, 4mA |

Damping time

| Units | Setting range |
|-------|---------------|
| S | 0-100 |

Analog output type

| Parameters | Output type |
|-------------------|-------------|
| mA LINER | Linearity |
| mA $\sqrt{\quad}$ | Square root |

Alarm signal

| Parameters | Alarm signal |
|------------|--------------|
| ALARM NO | None |
| ALARM H | 20.8mA |
| ALARM L | 3.8mA |

Fix output

| Parameters | Fix output value |
|------------|------------------|
| FIX/C NO | None |
| 3.8000 | 3.8000mA |
| 4.0000 | 4.0000mA |
| 8.0000 | 8.0000mA |
| 12.000 | 12.000mA |
| 16.000 | 16.000mA |
| 20.000 | 20.000mA |
| 20.800 | 20.800mA |

Quick menu

| Parameter | Instruction |
|-------------------------|---|
| PV=0 | Set current output to zero value, (gauge pressure, differential pressure) |
| Zero adjustment | 4mA re-range with pressure |
| Span adjustment | 20mA re-range with pressure |
| Restore factory setting | Restore backup data when error |

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Product selection instruction

Sensor select instruction

| Code | Nominal value | Description |
|-------|---------------|--|
| S403G | 40kPa | Range -40kPa-40kPa, smallest calibratable span 2kPa |
| S254G | 250kPa | Range -100kPa-250kPa, smallest calibratable span 12.5kPa |
| S105G | 1MPa | Range -0.1MPa-1MPa, smallest calibratable span 50kPa |
| S305G | 3MPa | Range -0.1MPa-3MPa, smallest calibratable span 150kPa |
| S106G | 10kPa | Range -0.1MPa-10MPa, smallest calibratable span 500kPa |
| S406S | 40MPa | Range -0.1MPa-40MPa, smallest calibratable span 5MPa |

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span \leq | URV - LRV | \leq URL

| Code | Position | Instruction |
|------|--------------------|---|
| S | Diaphragm material | SUS316L |
| H | | Hastelloy C |
| S | Fluid filling | Silicon oil, temperature limit: -45-205°C |
| D | | Inert oil, temperature limit: -45-160°C |
| F | Sensor seal | Stainless steel welding seal |

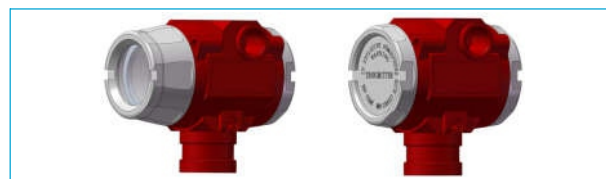
Diaphragm(S/H)



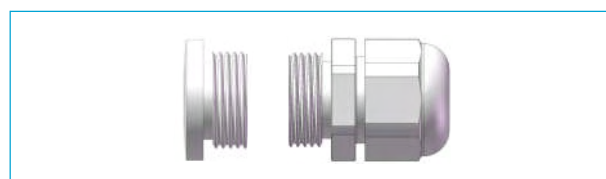
Electrical connection

| Code | Item | Description |
|------|-----------------------|--|
| T1 | Electrical connection | Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover |
| R1 | Cable entry protector | Waterproof connector M20*1.5 one side, blind plug another side, PVC material, 6-8mm diameter cable only, IP67 |
| R2 | | Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67 |
| R3 | | Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67 |

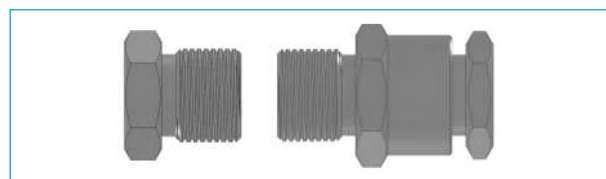
Housing(T1)



Standard cable entry protective adaptor(R1)



Flame proof cable entry protective adaptor(R2/R3)



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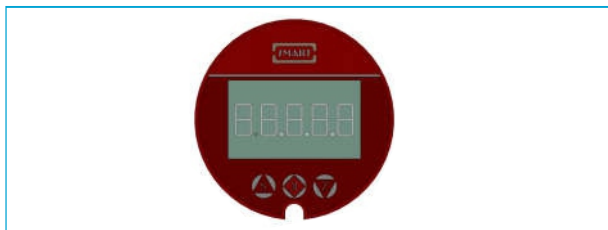


Product selection instruction

Transmission module

| Code | Items | Description |
|------|---------------|--|
| F | Output signal | 4-20mA two wire, power supply: 10.5-55VDC |
| H | | 4-20mA+HART two wire, power supply: 16.5-55VDC |
| A | Display | Without display |
| C | | With LCD display |

Display module(C)



Terminals



Process connection select instruction

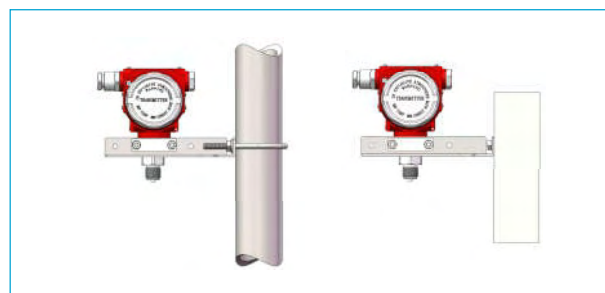
| Code | Items | Description |
|------|----------------|---|
| 6 | Material | Stainless steel, SUS316 |
| M01 | Specifications | M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261 |
| G01 | | G1/2(M), Φ3 pressure lead hole, EN837 |
| G02 | | G1/4(M), Φ3 pressure lead hole, EN837 |

| | | |
|-----|--|---|
| G08 | | G1/4(M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal reference DIN3852-E(back-end seal) |
| R01 | | 1/2-14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 |
| R02 | | 1/4-18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 |
| R03 | | 1/2-14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 |
| R04 | | 1/4-18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 |

Brackets

| Code | Items | Instruction |
|------|----------------|---|
| B4 | Fixed mounting | U-shaped bracket, 2" pipe, apply to T-structure |

Fixed mounting bracket (B4)(DMP305X-TST-S)

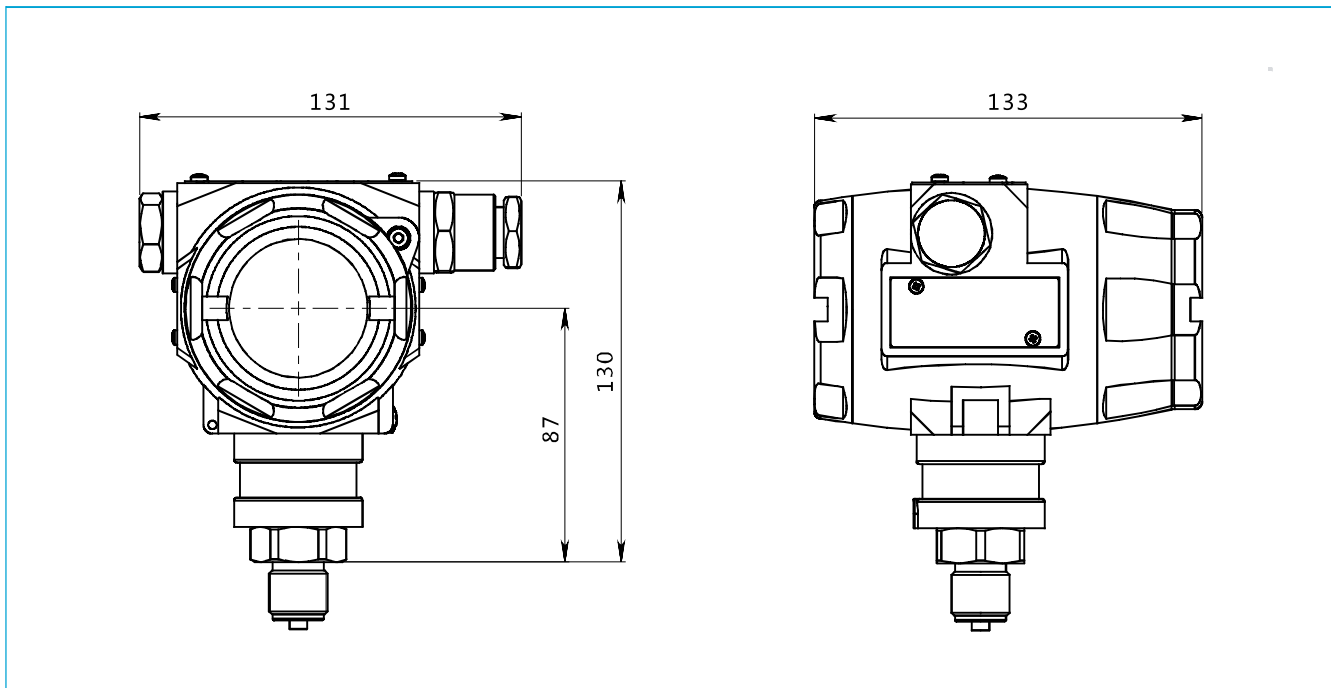


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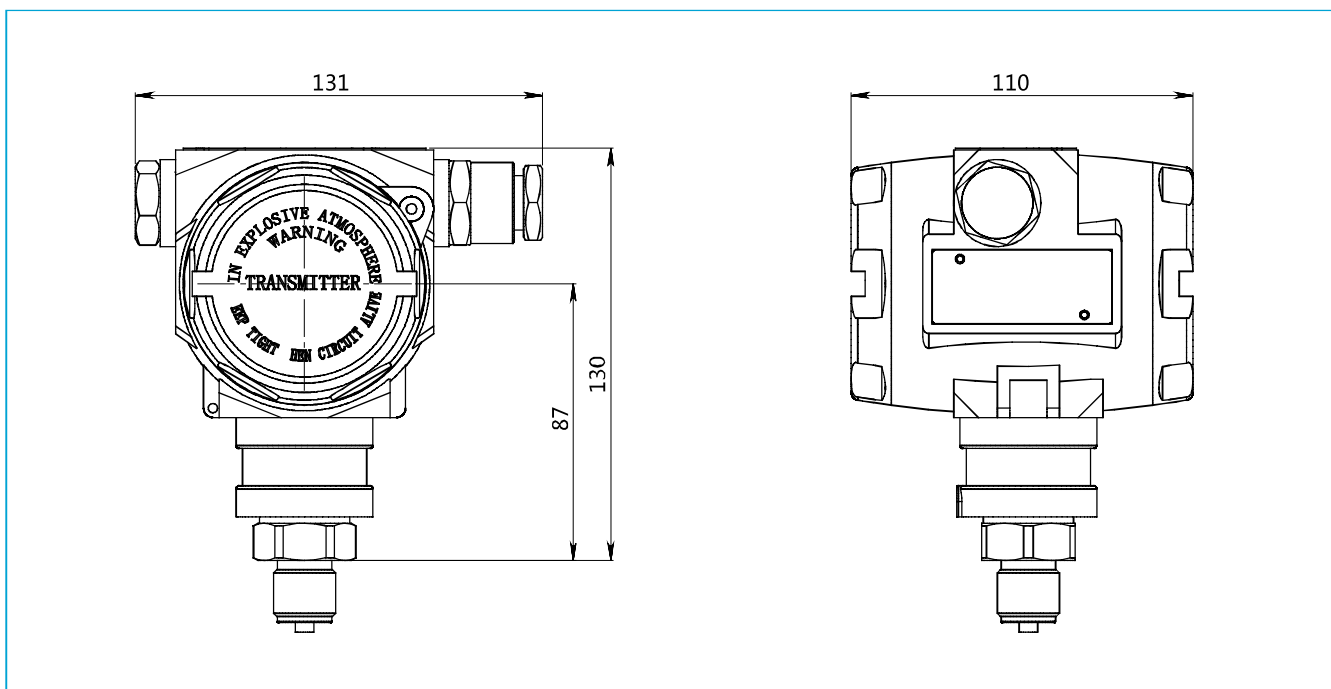


Product drawing and dimension

Drawing and dimension of DMP305X-TST-S with display(C) (unit: mm)



Drawing and dimension of DMP305X-TST-S without display(A) (unit: mm)

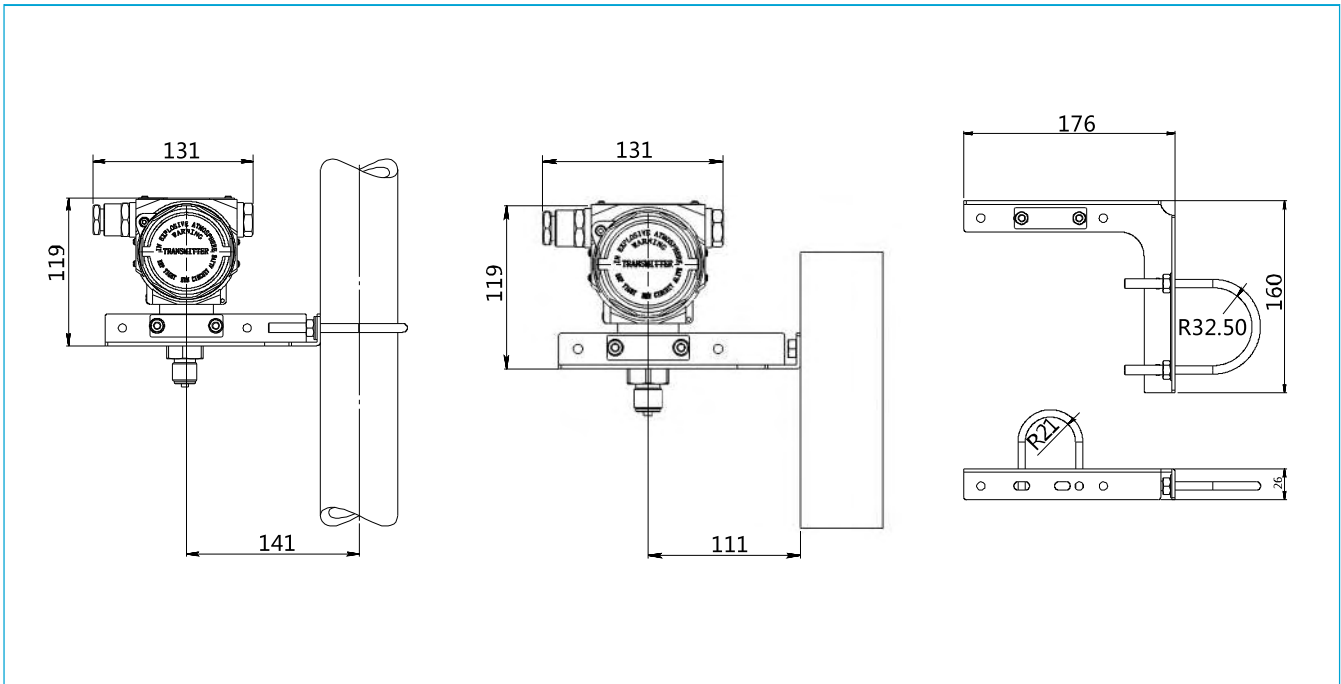


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Product drawing and dimension

Fixed mounting bracket installation dimension of DMP305X-TST-S (B4) (unit: mm)

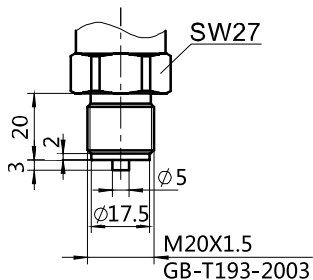


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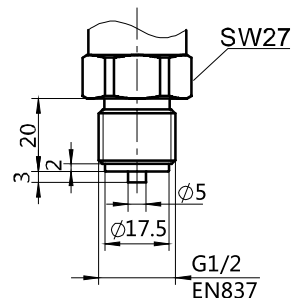


Product drawing and dimension

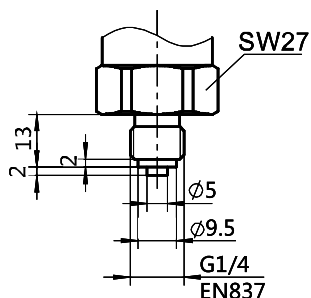
Process connection(M01) (unit: mm)



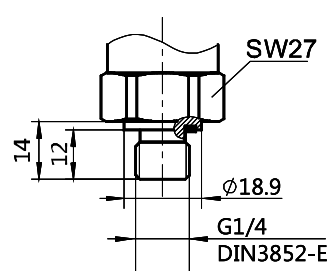
Process connection(G01) (unit: mm)



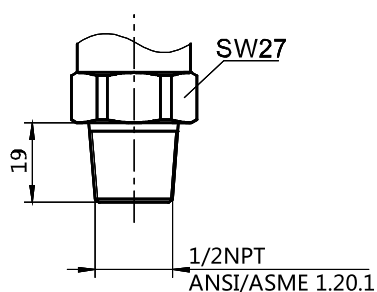
Process connection(G02) (unit: mm)



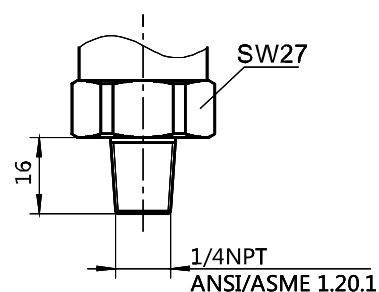
Process connection(G08) (unit: mm)



Process connection(R01) (unit: mm)



Process connection(R02) (unit: mm)

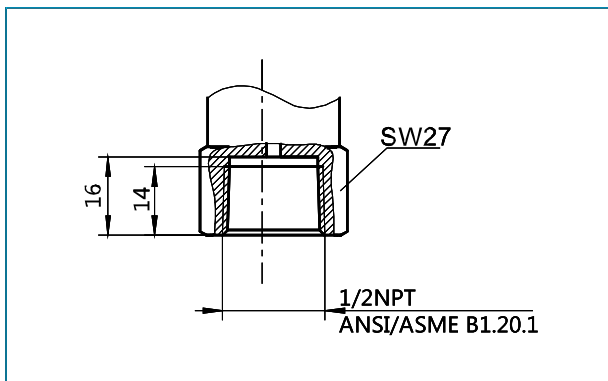


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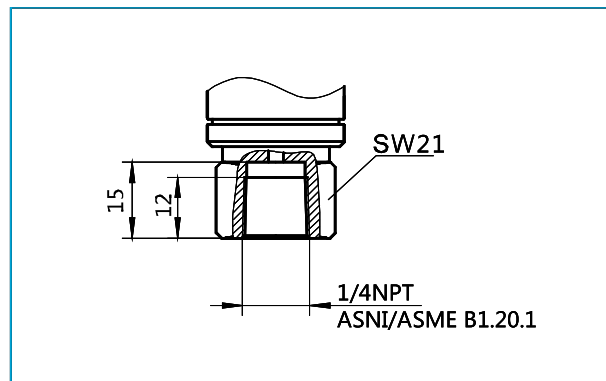


Product drawing and dimension

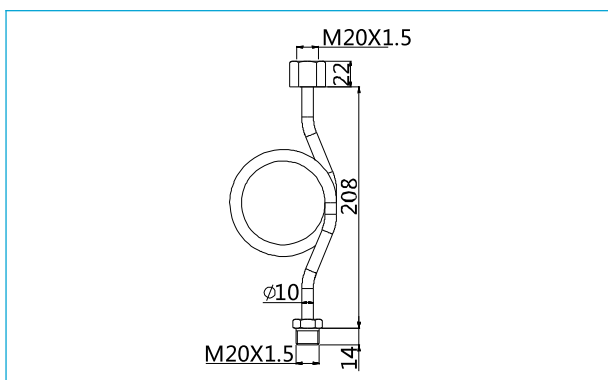
Process connection(R03) (unit: mm)



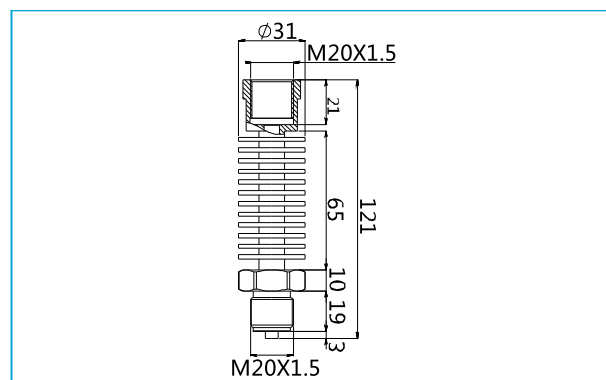
Process connection(R04) (unit: mm)



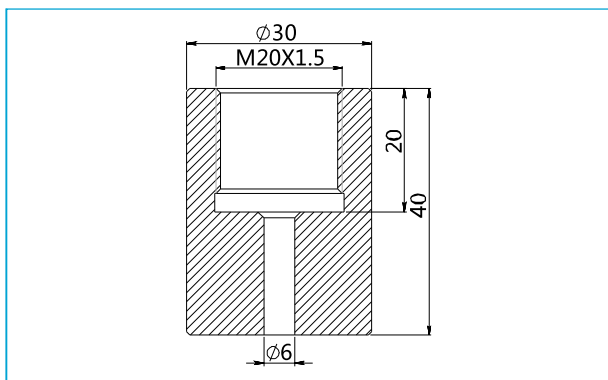
Heat exchange connector(N1) (unit: mm)



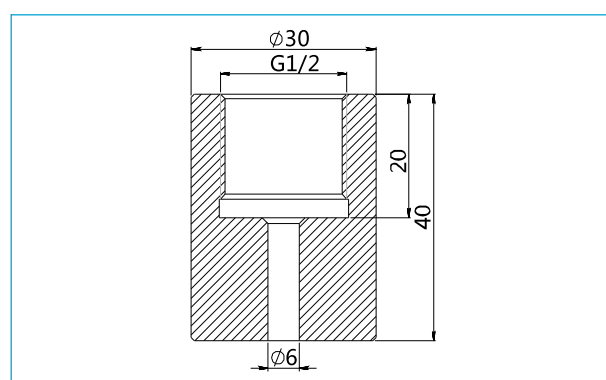
Heat exchange connector(N2)(unit: mm)



Welding adaptor(Z1) (unit: mm)



Welding adaptor(Z2) (unit: mm)



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Ordering information chapter

| Item | Parameters | Code | Instruction | (*) fast delivery available |
|-----------------------|------------------------|-------------|--|-----------------------------|
| | Model | DMP305X-TST | Monosilicon gauge pressure transmitter | |
| Sensor | Separator | - | Detailed specifications as following | |
| | Pressure range code | S403G | Nominal value(URL): 40kPa | |
| | | S254G | Nominal value(URL): 250kPa | * |
| | | S105G | Nominal value(URL): 1MPa | * |
| | | S305G | Nominal value(URL): 3MPa | * |
| | | S106G | Nominal value(URL): 10MPa | * |
| | | S406S | Nominal value(URL): 40MPa | |
| | Diaphragm material | S | SUS316L | |
| | | H | Hastelloy C | |
| | Isolated filling fluid | S | Silicon oil filling, temperature limit: -45-205°C | |
| | | F | Inert oil filling, temperature limit: -45-160°C | |
| | Sensor seal | F | Stainless steel welding seal | |
| Electrical connection | Separator | - | Detailed specifications as following | |
| | Electrical connection | T1 | Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover | * |
| | Cable entry protector | R1 | Waterproof connector M20*1.5 one side, blind plug another side, PVC material, 6-8mm diameter cable only, IP67 | * |
| | | R2 | Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67 | |
| | | R3 | Flame proof, M20*1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67 | |
| Output | Separator | - | Detailed specifications as following | |
| | Output signal | F | 4-20mA two wire, power supply: 10.5-55VDC | |
| | | H | 4-20mA+HART two wire, power supply: 16.5-55VDC | * |
| | Display | A | Without LCD display | * |
| | | C | LCD display | |
| Process connection | Separator | - | Detailed specifications as following | |
| | Material | 6 | SUS316 | * |
| | Specification | M01 | M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261 | * |
| | | G01 | G1/2 (M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779 | * |
| | | G02 | G1/4(M), Φ3 pressure lead hole, EN837 | |
| | | G08 | G1/4(M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal refers to DIN3852-E (back-end seal) | |

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Ordering information chapter

| | | | | |
|--------------------|---------------------------------------|-----|---|---|
| | | R01 | 1/2 -14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 | * |
| | | R02 | 1/4 -18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 | |
| | | R03 | 1/2 -14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 | |
| | | R04 | 1/4 -18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1 | |
| Additional options | Separator | - | Detailed specifications as following | |
| | Fixed mounting accessory | /B4 | U-shaped bracket, 2" pipe, apply to T-structure | * |
| | Process connection mounting accessory | /N1 | Heat exchange connector, M20*1.5 (F) change to M20*1.5(M), SUS304 | * |
| | | /N2 | Heat exchange connector, M20*1.5 (F) change to M20*1.5(M), SUS304 | * |
| | Process connection accessory | /Z1 | Welding connector, M20*1.5(F), SUS304 | * |
| | | /Z2 | Welding adaptor, G1/2(F), SUS304 | * |
| | Display mode | /D1 | According to your requirements | |
| | Calibration report | /Q1 | Calibration report provided by our company | |
| | Approvals (multiple) | /E1 | Flame proof certificate, ExdIICT6, NEPSI | * |
| | | /I1 | Intrinsic safety certificate, ExiaIICT4, NEPSI (Please consult engineers for details) | * |
| | | /L3 | CE certificate | * |

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Factory settings and parameters

| Item | Menu mark | Factory setting value |
|--------------------|-----------|-----------------------------|
| Tag position | None | 0(No specific settings) |
| Analog output type | mA | LINER(no specific settings) |
| Display mode | DISP | PV(no specific settings) |
| Alarm signal | ALARM | No(no specific settings) |

| Item | Menu mark | Factory setting value |
|------------------------|-----------|-------------------------|
| Damping value | DAMP | 0(No specific settings) |
| 4mA Lower range value | LRV | According to the order |
| 20mA Upper range value | URV | According to the order |
| Process unit | U | According to the order |

Approvals

Factory certificate

| | |
|----------------------------|---|
| Certification organization | Intertek |
| Quality management system | ISO9001-2008 |
| Scope of certification | Design and production of pressure transmitter |
| Registration number | 110804039 |

CE

| | |
|--------------------------|---|
| Certificate organization | ISET |
| license scope | DMP305X•• pressure/ differential pressure transmitter |
| Mark | CE |
| EMC instruction | 2014/30/EU |
| Standard | EN61326-1:2013 |
| Registration number | IT041353LG161207 |

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