


## Hygienisk Tryckgivare SMP858-TSF-H-G

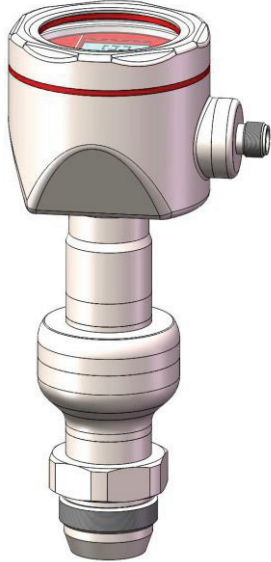
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### Product introduction


### Description



Vertical installation



Horizontal installation



### Hygienic pressure transmitter

Hygienic pressure transmitter, designed for food and pharmaceutical industry, is suitable for CIP/SIP cleaning and sterilization. Smart compact design, the welded process diaphragm medium parts is made of high quality stainless steel 316L, roughness $\leq 0.4\mu\text{m}$ , filling fluid with hygiene standard in line with FDA certification, variety of international standard process connections are available.

### Main parameters

|                    |   |
|--------------------|---|
| Pressure types     | Gauge pressure  |
| Measuring range    | 10kPa-10MPa, please refer to the ordering information chapter |
| Output signal      | 4-20mA, 4-20mA+HART, customer                                 |
| Reference accuracy | $\pm 0.2\%$ URL, $\pm 0.5\%$ URL                              |

### Measuring medium

The fluids which compatible with wetted parts

### Field of application

Pressure, level

### Approvals





# Hygienisk Tryckgivare SMP858-TSF-H-G

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## Technical specifications

### Measuring range and limit

| Nominal value | Smallest calibratable span | Lower range limit ( LRL ) | Upper range limit ( URL ) | Overpressure limit * |
|---------------|----------------------------|---------------------------|---------------------------|----------------------|
| 40kPa         | 10kPa                      | -40kPa                    | 40kPa                     | 25MPa                |
| 250kPa        | 25kPa                      | -100kPa                   | 250kPa                    | 25MPa                |
| 1MPa          | 100kPa                     | -100kPa                   | 1MPa                      | 25MPa                |
| 3MPa          | 300kPa                     | -100kPa                   | 3MPa                      | 25MPa                |
| 10MPa         | 1MPa                       | -100kPa                   | 10MPa                     | 25MPa                |

The unit of the measuring range above can be converted into kg/cm<sup>2</sup>, MPa and kPa. Provide other measuring range according to 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, minimum measuring range ≤ | URV - LRV | ≤ maximum measuring range.

\*Overvoltage value: depending on the pressure value of the weakest parts

### Standard specifications and reference conditions

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

### 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

### Performance specifications

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

Typical accuracy: ±0.2% URL

Stability: ±0.2% URL/ 1 year

### Loading effects

Zero and span change should not be more than ± 0.05% URL/kΩ

### Mounting position effects

Install error less than 1.74kPa, which can be corrected by PV=0 reset

### Reference accuracy

Including linearity(BFSL), hysteresis and repeatability. calibration temperature: 20°C±5°C

| Linear output accuracy | TD≤10 (Note1) | ±0.2%URL | Nominal value: 40kPa , 250kPa<br>1MPa, 3MPa<br>10MPa |
|------------------------|---------------|----------|--|
|                        | Max value     | ±0.5%URL |  |

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

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

### Vibration effects

|                      |   |
|----------------------|---|
| Vibration resistance | According to IEC60068-2-6 , 10g RMS (25-2000HZ) |
| Impact resistance    | According to IEC60068-2-27 , 500g/1ms           |

### Output signal

| Signal      | Type      | Output   |
|-------------|-----------|----------|
| 4-20mA      | Linearity | Two wire |
| 4-20mA+HART | Linearity | Two wire |

### Ambient temperature effects(Typical)

Within the range - 20-80 °C total impact ±0.2%URL/10k

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### Technical Specifications

#### Insulation resistance

≥ 20M Ω@ reference, 100VDC

#### 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: ≤0.2S

Startup after power off: ≤6S

Normal services after data recovery: ≤31S

#### Weight

Net weight: about 1.23kg(without mounting brackets and process connection accessories)

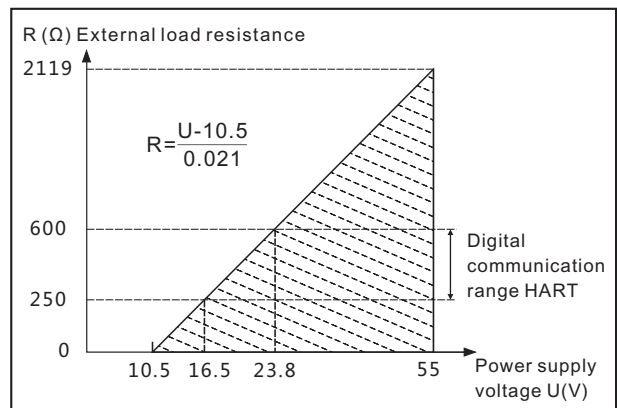
#### Environment condition

| Items                                 | Operational condition                          |
|---------------------------------------|--|
| Working temperature                   | -40-85°C, integrated LCD display:<br>-20-70°C  |
| Storage temperature                   | -40-110°C, integrated LCD display:<br>-40-85°C |
| Media temperature                     | Hygienic fluid filling: -10-125°C              |
|                                       | Silicon oil filling: -40-120°C                 |
| Working humidity                      | 0-95%RH  |
| Protection class                      | IP67   |
| Dangerous condition                   | ExialICT4(GYB16.1965X)*                        |
| *Please consult engineers for details |  |

#### Power supply

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

#### Power supply and load requirements



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### Technical Specifications

#### EMC environment(not RS485 signal output)

| 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)<br>2kV(Line to ground)<br>(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   |
| mmH2O  | Millimeter of water@4°C        |
| mH2O   | Meter of water@4°C             |
| inH2O  | Inches of water@4°C            |
| ftH2O  | Feet of water@4°C              |
| inHg   | Inches of mercury@0°C          |
| mHg    | Meter mercury column@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)                   |

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, used to correct the error caused by static pressure and installation. |
| Zero adjustment         | 4mA re-range with pressure  |
| Span adjustment         | 20mA re-range with pressure   |
| Restore factory setting | Restore backup data when error  |

# Hygienisk Tryckgivare SMP858-TSF-H-G

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## Product selection instruction

### Sensor select instruction

| Code  | Nominal value | Description  |
|-------|---------------|--|
| H403G | 40kPa         | Range -40kPa-40kPa, smallest calibratable span 10kPa   |
| H254G | 250kPa        | Range -100kPa-250kPa, smallest calibratable span 25kPa |
| H105G | 1MPa          | Range -0.1MPa-1MPa, smallest calibratable span 100kPa  |
| H305G | 3MPa          | Range -0.1MPa-3MPa, smallest calibratable span 300kPa  |
| H106G | 10MPa         | Range -0.1Pa-10MPa, smallest calibratable span 1MPa    |

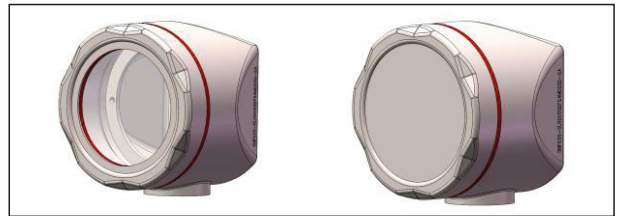
Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range  $\leq |URV - LRV| \leq$  maximum measuring range

| Code | Position    | Instruction                  |
|------|-------------|------------------------------|
| F    | Sensor seal | Stainless steel welding seal |

### Electrical connection

| Code | Item                  | Description   |
|------|-----------------------|---|
| F1   | Electrical connection | Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, vertical mounting   |
| F2   |                       | Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting |

#### Housing(F1)



#### Housing(F2)

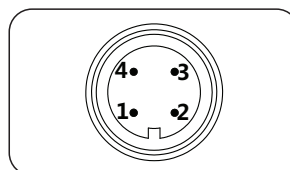


#### Aviation plug, M12\*1, 4 pin(H2)



### Electrical connection

#### Aviation plug, M12\*1, 4 pin(H2)



| Label | Two wires |
|-------|-----------|
| 1     | Power+    |
| 2     |           |
| 3     |           |
| 4     | Power -   |

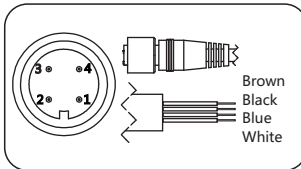
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### Product selection instruction

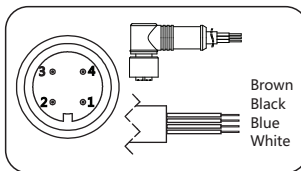
#### Electrical connection accessories

##### Aviation plug straighter(J1)



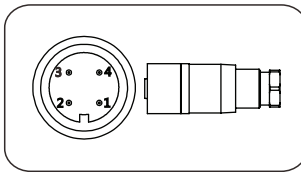
| Label   | Two wires |
|---------|-----------|
| 1/Brown | Power+    |
| 2/White |           |
| 3/Blue  |           |
| 4/Black | Power -   |

##### Aviation plug elbow(J2)



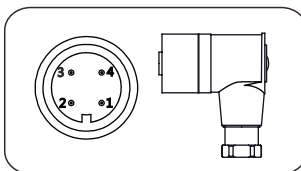
| Label   | Two wires |
|---------|-----------|
| 1/Brown | Power+    |
| 2/White |           |
| 3/Blue  |           |
| 4/Black | Power -   |

##### Aviation plug straighter(J4)



| Label | Two wires |
|-------|-----------|
| 1     | Power+    |
| 2     |           |
| 3     |           |
| 4     | Power -   |

##### Aviation plug elbow(J5)



| Label | Two wires |
|-------|-----------|
| 1     | Power+    |
| 2     |           |
| 3     |           |
| 4     | Power -   |

#### 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 )



#### Process connection select instruction

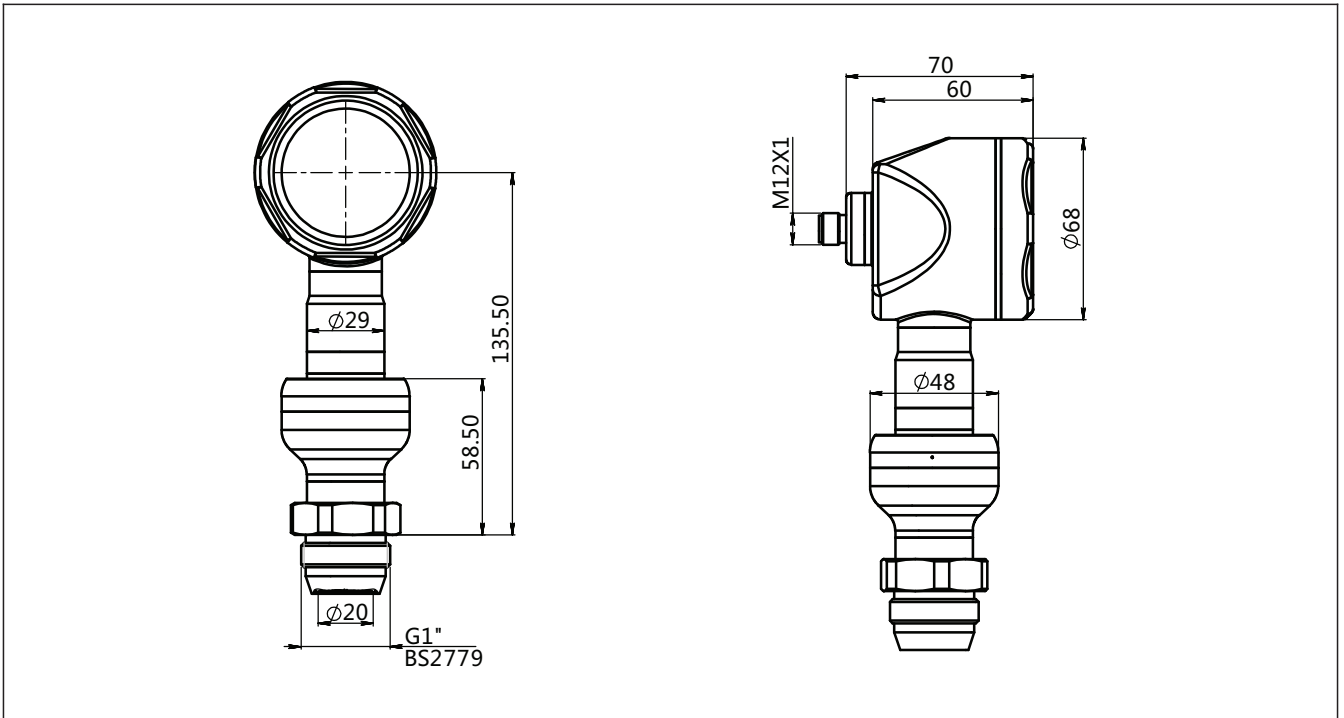
| Code | Items                             | Description   |
|------|-----------------------------------|---|
| 4    | Process connection material       | Stainless steel, SUS304   |
| 6    |                                   | Stainless steel, SUS316   |
| NT   | Connection type                   | Standard connection, medium temperature: -25-150°C                  |
| F    | Isolated filling fluid            | Hygienic fluid filling, Neobee M-20, process temperature: -10-180°C |
| S    |                                   | Silicon oil filling, process temperature: -45-205°C                 |
| S    | Isolated diaphragm material       | Stainless steel, SUS316L  |
| H    |                                   | Hastelloy C   |
| M01  | Process connection specifications | M20*1.5(M), GB/T193-2003, ISO261                                    |
| G01  |                                   | G1/2(M), GB/T7307, ISO228, BS2779                                   |
| G07  |                                   | G1-1/2(M), GB/T7307, ISO228, BS2779                                 |
| G12  |                                   | G1(M), metal seal GB/T7307, ISO228, BS2779                          |

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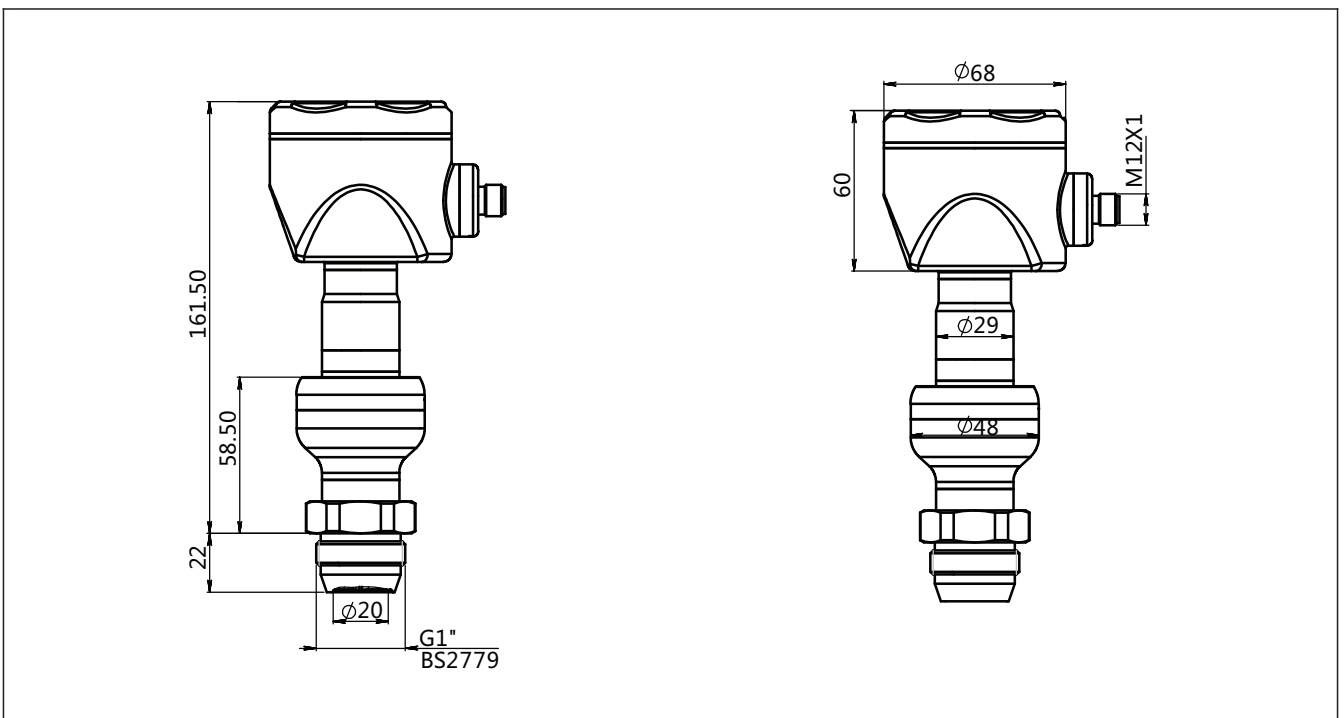
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### Product drawing and dimension

Standard drawing and dimension with display(C) / without display (A) vertical installation(F1) ( unit:mm)



Standard drawing and dimension with display(C) / without display (A) horizontal installation(F2) ( unit:mm)





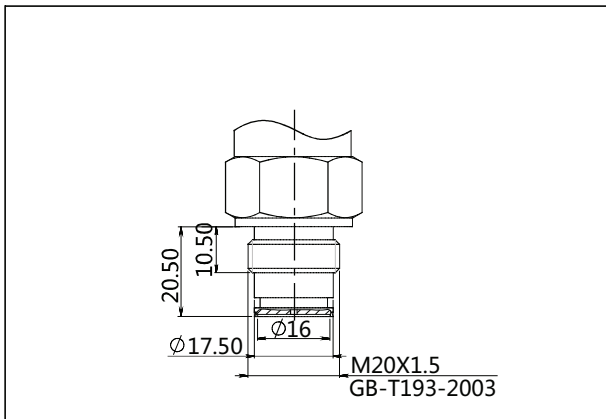


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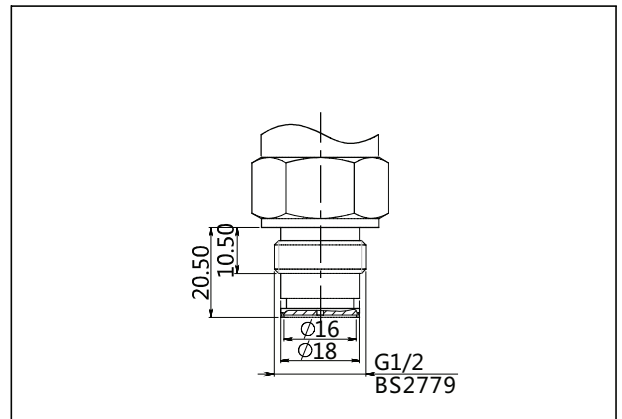
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## Product drawing and dimension

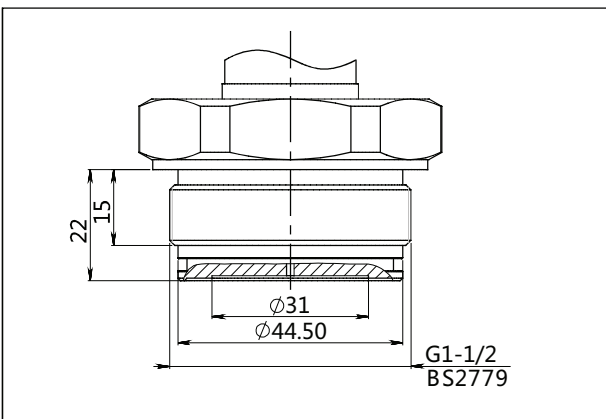
Process connection(M01)(unit:mm)



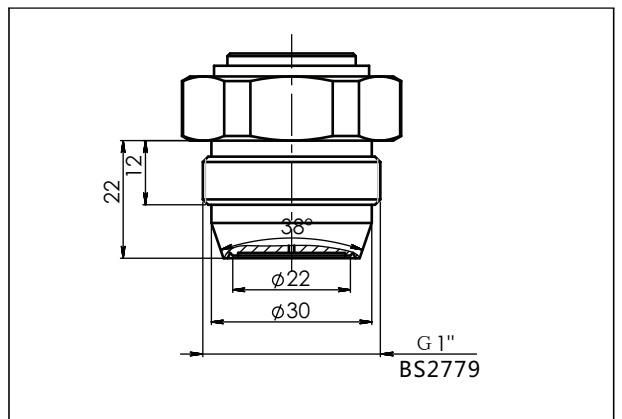
Process connection(G01)(unit:mm)



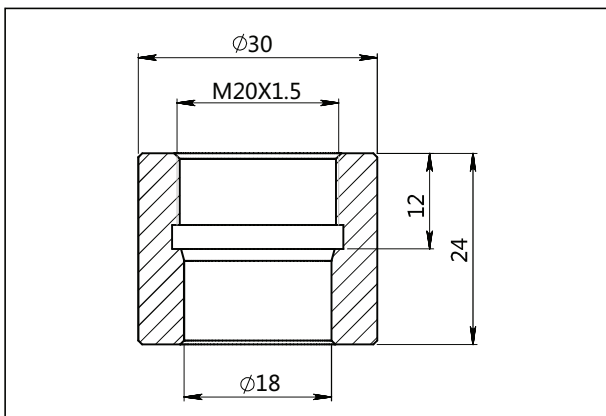
Process connection(G07)(unit:mm)



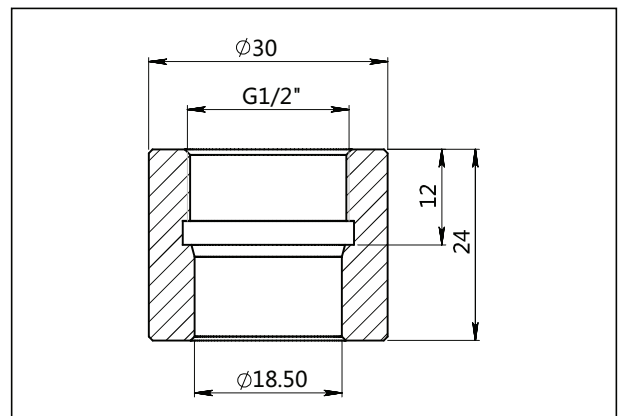
Process connection(G12)(unit:mm)



Welding adaptor(Z3)(unit:mm)



Welding adaptor(Z4)(unit:mm)

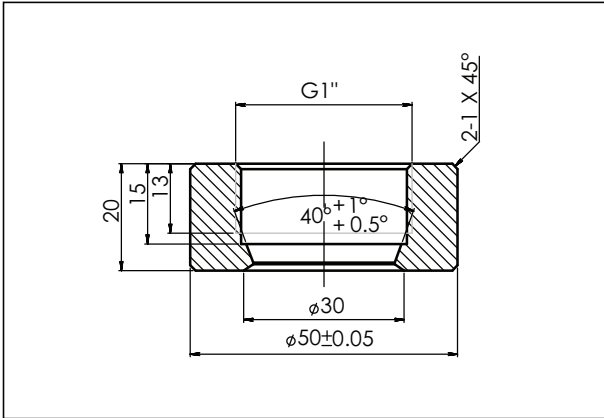


## Hygienisk Tryckgivare SMP858-TSF-H-G

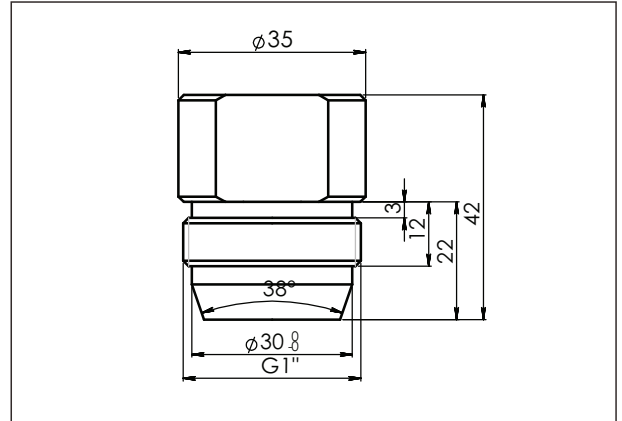
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### Product drawing and dimension

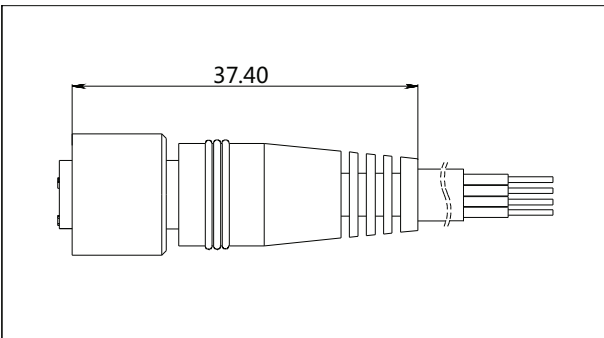
Welding adaptor(Z5)(unit:mm)



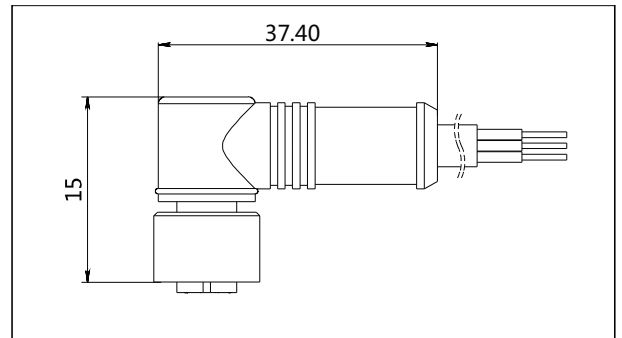
Welding accessory(H1)(unit:mm)



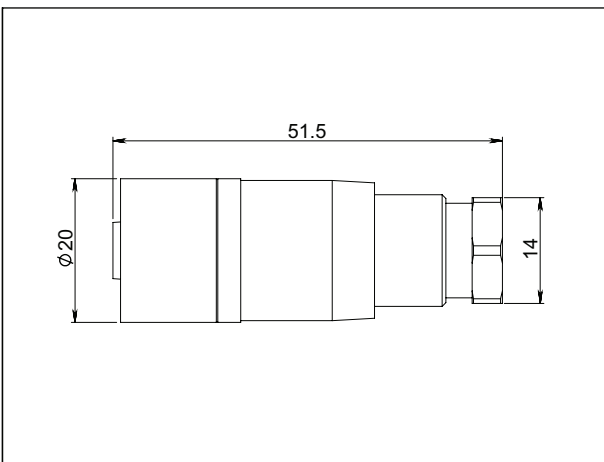
Aviation female plug straighter(J1)(unit:mm)



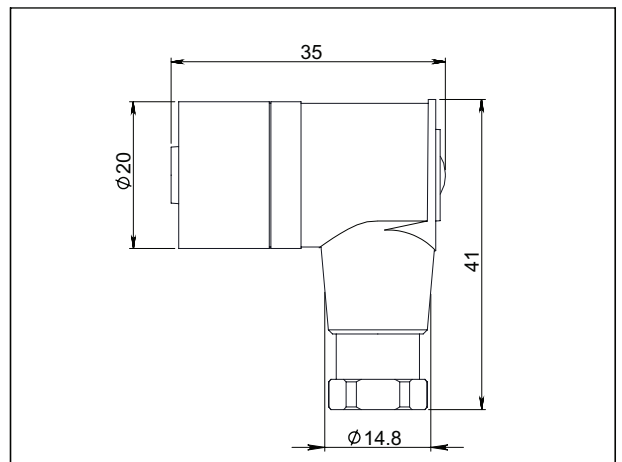
Aviation female plug elbow(J2)(unit:mm)



Aviation female plug straighter(J4)(unit:mm)



Aviation female plug elbow(J5)(unit:mm)



## Hygienisk Tryckgivare SMP858-TSF-H-G

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### Ordering information chapter

| Item                  | Parameters                        | Code       | Instruction   | (*) fast delivery available |
|-----------------------|-----------------------------------|------------|---|-----------------------------|
|                       | Model                             | SMP858-TSF | Monosilicon gauge pressure transmitter  |                             |
| Sensor                | Separator                         | -          | Detailed specifications as following  |                             |
|                       | Pressure range code               | H403G      | Nominal value(URL): 40kPa   | *                           |
|                       |                                   | H254G      | Nominal value(URL): 250kPa  | *                           |
|                       |                                   | H105G      | Nominal value(URL): 1MPa  | *                           |
|                       |                                   | H305G      | Nominal value(URL): 3MPa  | *                           |
|                       |                                   | H106G      | Nominal value(URL): 10MPa   |                             |
| Electrical connection | Separator                         | -          | Detailed specifications as following  |                             |
|                       | Electrical connection             | F1         | Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, vertical mounting   | *                           |
|                       |                                   | F2         | Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting | *                           |
|                       | Cable entry protector             | R0         | None  |                             |
| Output                | Separator                         | -          | Detailed specifications as following  |                             |
|                       | Output signal                     | H          | 4-20mA+HART two wire, power supply: 16.5-55VDC  | *                           |
|                       |                                   | F          | 4-20mA two wire, power supply: 10.5-55VDC   |                             |
|                       | Display                           | C          | LCD display   | *                           |
|                       |                                   | A          | Without LCD display   |                             |
| Process connection    | Separator                         | -          | Detailed specifications as following  |                             |
|                       | Process connection material       | 4          | Stainless steel SUS304  |                             |
|                       |                                   | 6          | Stainless steel SUS316  | *                           |
|                       | Connection type                   | NT         | Standard connection, suitable for medium temperature -25-150°C                        | *                           |
|                       | Isolated filling fluid            | F          | Hygienic filling fluid, Neobee M-20, process temperature: -10-180°C                   | *                           |
|                       |                                   | S          | Silicon oil, process temperature: -45-205°C   | *                           |
|                       | Isolated diaphragm material       | S          | SUS316L stainless steel   | *                           |
|                       |                                   | H          | Hastelloy C   |                             |
|                       | Process connection specifications | M01        | M20*1.5(M), GB/T193-2003, ISO261, suitable range:250kPa-40MPa                         |                             |
|                       |                                   | G01        | G1/2(M), GB/T7307,ISO228, BS2779, suitable range:250kPa-40MPa                         |                             |
|                       |                                   | G07        | G1-1/2(M), GB/T7307,ISO228, BS2779, suitable range:10kPa-40MPa                        |                             |
|                       |                                   | G12        | G1(M), metal seal GB/T7307, ISO228,BS2779, suitable range:10kPa-10MPa                 | *                           |



## Hygienisk Tryckgivare SMP858-TSF-H-G

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### Ordering information chapter

| Additional options              | Separator | - | Detailed specifications as following                                |   |
|---------------------------------|-----------|---|---|---|
| Electrical connection accessory | /J1       |   | Aviation female plug (straighter) with 2m cable, 4 pin, M12*1, IP67 |   |
|                                 | /J2       |   | Aviation female plug (elbow) with 2m cable, 4 pin, M12*1, IP67      |   |
|                                 | /J4       |   | Aviation female plug (straighter) without cable, 4 pin, M12*1, IP67 | * |
|                                 | /J5       |   | Aviation female plug(elbow) without cable, 4 pin, M12*1, IP67       |   |
| Process connection accessory    | /Z3       |   | Welding adaptor, M20*1.5 (F), SUS316                                |   |
|                                 | /Z4       |   | Welding adaptor, G1/2 (F), SUS316                                   |   |
|                                 | /Z5       |   | Welding adaptor, G1 (F), SUS316                                     |   |
| Welding accessory               | /H1       |   | Adapter plug for welding adaptor, G1 (M), material: copper          |   |
| Calibration report              | /Q1       |   | Calibration report provided by our company                          | * |
| Approvals (multiple)            | /I1       |   | Intrinsic safety certificate, ExialICT4, NEPSI                      |   |
|                                 | /F3       |   | CE certificate  |   |
| Wetted parts treatment          | /G1       |   | Ungrease treatment  |   |
|                                 | /G2       |   | Electropolishing treatment  |   |

## Hygienisk Tryckgivare SMP858-TSF-H-G

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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                   |
| Display mode       | DISP      | PV                      |
| Alarm signal       | ALARM     | No                      |

| 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

|                           |   |
|---------------------------|---|
| Certificate 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            | SMP858 series pressure transmitter |
| Mark                     | CE                                 |
| EMC instruction          | 2014/30/EU                         |
| Standard                 | EN61326-1: 2013                    |
| Registration number      | IT051353LG161207                   |

#### Intrinsic safety certificate

|  |  |
|--|--|
| Certification organization name          | NEPSI  |
| License scope                            | SMP858 series pressure transmitter               |
| Explosion-proof mark                     | ExiaIICT4  |
| Ambient temperature                      | -40-+60°C  |
| Medium maximum temperature               | +120°C   |
| Registration number                      | GYB16.1965X                                      |
| Intrinsically safe parameter description | Maximum input voltage: 28VDC                     |
|  | Maximum input current: 100mA                     |
|  | Maximum input power: 0.7w                        |
|  | Maximum internal equivalent parameters Ci(uF): 0 |
|  | Maximum internal equivalent parameters Li(mH): 0 |