

# Pressure Sensor For General Fluids

Series **PSE560**



Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
<b>PSE560</b>		0			1 MPa
<b>PSE561</b>	-101 kPa	0			
<b>PSE563</b>	-100 kPa		100 kPa		
<b>PSE564</b>		0		500 kPa	

## Applicable fluids example

- Argon
- Hydraulic oil
- Lubricant
- Air-containing drainage
- Silicone oil
- Fluorocarbon
- Refrigerant
- Water
- Air
- Nitrogen
- Carbon dioxide

Material of parts  
in contact with fluid  
**Stainless steel 316L**

**IP65**

**Copper-free  
Fluorine-free**

**Oil-free**  
(Single diaphragm construction)

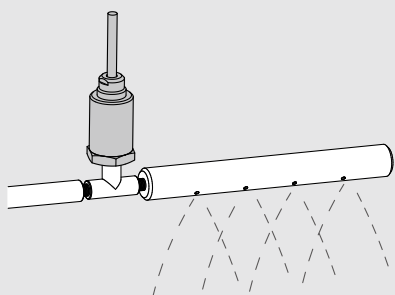
## Variations

Port type	Thread type	Special fitting type for semiconductors
Port size	R1/8, R1/4, Rc1/8, NPT1/8, NPT1/4	URJ1/4, TSJ1/4*
Leakage	$1 \times 10^{-5} \text{ Pa} \cdot \text{m}^3/\text{s}$	$1 \times 10^{-10} \text{ Pa} \cdot \text{m}^3/\text{s}$
Analog output	1 to 5 V voltage output	
	4 to 20 mA current output	

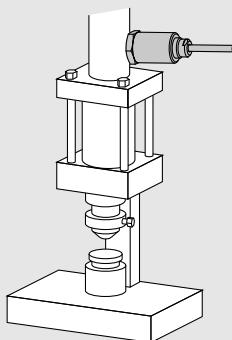
\* For URJ1/4, TSJ1/4, refer to "Glossary of Terms/Technical Information" on SMC website or in the Best Pneumatics No. 6.

## Application examples

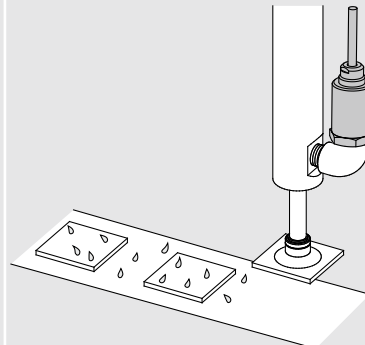
### Cleaning lines



### Check for working pressure for hydraulic cylinders



### Suction verification of workpieces containing moisture

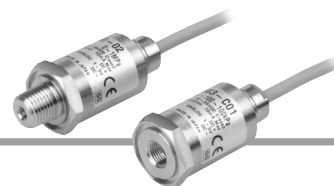


Note: When vacuum is released, take precautions to avoid water collision with inertia force. (An adapter with restrictor (ZS-31-X175) is available to prevent water collision with rush inertia.) (Refer to "NOTE" on the Operation Manual at SMC website for details.)

**Applications**

# Pressure Sensor For General Fluids

## Series PSE560



### How to Order

#### Sensor range

0	Positive pressure [0 to 1 MPa]
1	Vacuum [0 to -101 kPa]
3	Compound pressure [-100 to 100 kPa]
4	Positive pressure [0 to 500 kPa]

#### Option (Connector)

Nil	None
C2	Connector for pressure sensor controller (1 pc.)

Note 1) Current output type cannot be connected to the PSE200 series.

Note 2) The connector is not attached to the cable, but is included with the shipment.

PSE56 0 - 01 - - -

#### Port size

01	R1/8 (with M5 female thread)
02	R1/4 (with M5 female thread)
C01	Rc1/8
N01	NPT1/8 (with M5 female thread)
N02	NPT1/4 (with M5 female thread)
A2	URJ1/4
B2	TSJ1/4

#### Output specifications

Nil	Voltage output type 1 to 5 V
28	Current output type 4 to 20 mA

### Option/Part No.

Description	Part no.	Note
Connector for pressure sensor controller	ZS-28-C	1 pc.
Adapter with restrictor Rc1/4	ZS-31-X175	1 pc.
Adapter with restrictor NPT1/4	ZS-31-X186	1 pc.
Adapter with restrictor Rc1/8	ZS-31-X188	1 pc.
Adapter with restrictor NPT1/8	ZS-31-X189	1 pc.

For Pressure Switch Precautions and Specific Product Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website.

### Specifications

Model	PSE560 (Positive pressure)	PSE561 (Vacuum)	PSE563 (Compound pressure)	PSE564 (Positive pressure)
Rated pressure range	0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa	0 to 500 kPa
Extension analog output range	-0.1 to 0 MPa	10.1 to 0 kPa	—	-50 to 0 kPa
Proof pressure	1.5 MPa	500 kPa	500 kPa	750 kPa

Model	PSE56□-□	PSE56□-□-28
Applicable fluid	Liquid or gas that will not corrode or attack stainless steel 316L	
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection)	
Current consumption	10 mA or less	
Output specifications	Analog output: 1 to 5 V (within rated pressure range) 0.6 to 1 V (within extension analog output range) Output impedance: Approx. 1 kΩ	Analog output: 4 to 20 mA DC (within rated pressure range) Maximum load impedance: 500 Ω or less (at 24 VDC) 100 Ω or less (at 12 VDC)
Accuracy (Ambient temperature at 25°C)	±1% F.S. (within rated pressure range), ±3% F.S. (within extension analog output range)	
Linearity	±0.5% F.S.	
Repeatability	±0.2% F.S.	
Power supply voltage effect	±0.3% F.S.	
Environment	Enclosure	IP65
	Operating temperature range	Operating: -10 to 60°C, Stored: -20 to 70°C (No freezing or condensation)
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)
	Withstand voltage	250 VAC for 1 minute between terminals and housing
	Insulation resistance	50 MΩ or more (50 VDC measured via megohmmeter) between terminals and housing
Temperature characteristics	±2% F.S. (0 to 50°C: 25°C reference), ±3% F.S. (-10 to 60°C: 25°C reference)	
Sensor cable	PSE56□-□: Oilproof heavy-duty vinyl cable with air tubing, 3 cores, ø5.1, 3 m, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.12 mm PSE56□-□-28: Oilproof heavy-duty vinyl cable with air tubing, 2 cores, ø5.1, 3 m, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.12 mm	
Standards	CE, UL/CSA (E216656), RoHS	

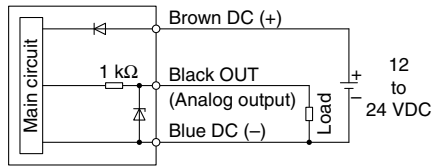
### Piping Specifications

Model	01	02	N01	N02	C01	A2	B2
Port size	R1/8 M5 x 0.8	R1/4 M5 x 0.8	NPT1/8 M5 x 0.8	NPT1/4 M5 x 0.8	Rc1/8	URJ1/4	TSJ1/4
Material	Case: C3604 + Nickel plating, Piping port/Pressure sensor: Stainless steel 316L						
Weight	With sensor cable	193 g	200 g	194 g	201 g	187 g	203 g
	Without sensor cable	101 g	108 g	102 g	109 g	95 g	101 g

## Internal Circuit and Wiring Example

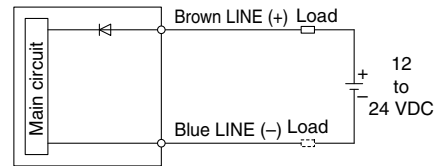
### PSE56□-□

Voltage output type  
1 to 5 V  
Output impedance  
Approx. 1 k $\Omega$



### PSE56□-□-28

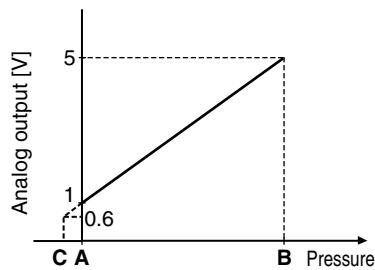
Current output type  
4 to 20 mA  
Allowable load impedance  
500  $\Omega$  or less (at 24 VDC)  
100  $\Omega$  or less (at 12 VDC)



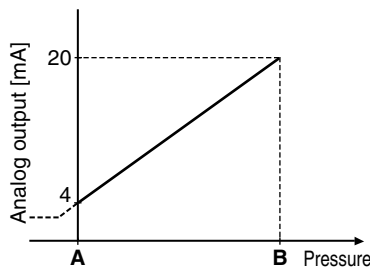
\* Install the load either on the LINE (+) or LINE (-) side.

## Analog Output

### 1 to 5 VDC



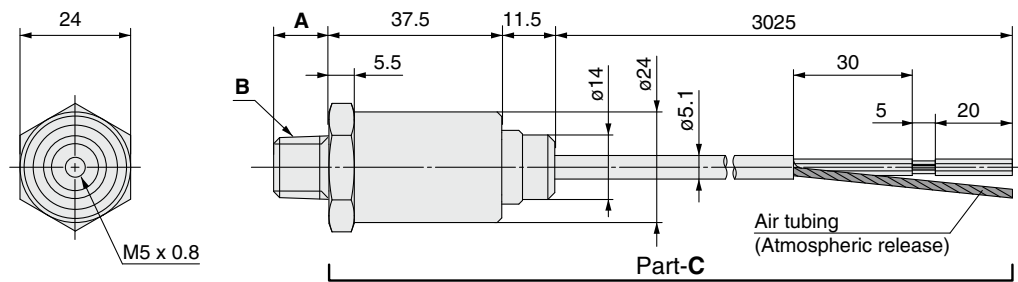
### 4 to 20 mA DC



Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-100 kPa to 100 kPa	-100 kPa	100 kPa	—
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa
	0 to 500 kPa	0	500 kPa	-50 kPa

## Dimensions

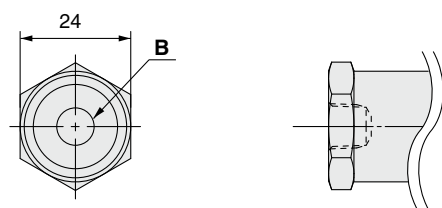
### PSE56□-01, PSE56□-N01 PSE56□-02, PSE56□-N02



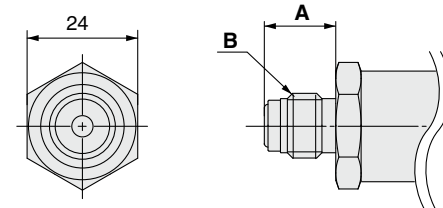
\* The dimensions of part C are common to all PSE56□ models.

Be sure to release the air in the air tubing of the cable to the atmosphere. If the air tubing is restricted, or left in environments where it is exposed to water or oil, it cannot be detected normally.

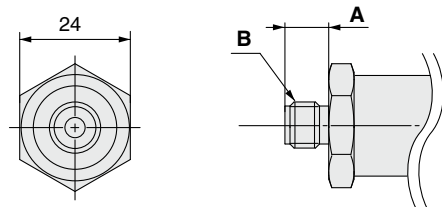
### PSE56□-C01



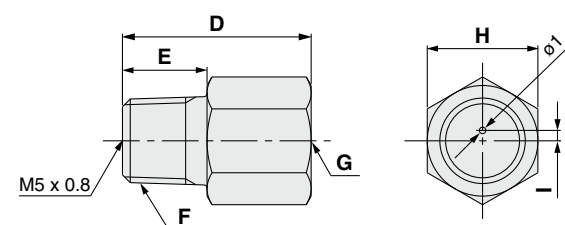
### PSE56□-A2



### PSE56□-B2



### Adapter with restrictor ZS-31-X□□□



Model	A	B
PSE56□-01	8.2	R1/8
PSE56□-02	12	R1/4
PSE56□-N01	9.2	NPT1/8
PSE56□-N02	12.2	NPT1/4
PSE56□-C01	—	Rc1/8
PSE56□-A2	15.5	URJ1/4
PSE56□-B2	9.5	TSJ1/4

Part no.	D	E	F	G	H	I
ZS-31-X188	20	9	R1/8	Rc1/8	14	1.5
ZS-31-X189	20	9	NPT1/8	NPT1/8	14	1.5
ZS-31-X175	29	13	R1/4	Rc1/4	17	1.6
ZS-31-X186	29	13	NPT1/4	NPT1/4	17	1.6

Note) If it is predicted that the pressure, such as the water hammer or surge pressure fluctuates rapidly, refer to the Precautions stated in the Operation Manual at SMC website (<http://www.smcworld.com>).