

Remote Type Pressure Sensors/Pressure Sensor Controllers

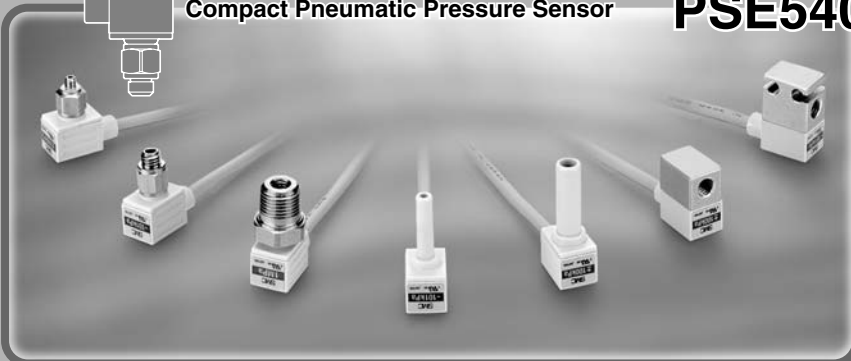
Series PSE



Compact Pneumatic Pressure Sensor **PSE530**



Compact Pneumatic Pressure Sensor **PSE540**



Low Differential Pressure Sensor **PSE550**



Pressure Sensor for General Fluids **PSE560**



Multi-channel Digital Pressure Sensor Controller **PSE200**



2-Color Display Digital Pressure Sensor Controller **PSE300**



Connection type



DIN rail/Terminal block type
Current input specification is added.

- ZSE
- ISE
- ZSP
- PS
- ISA
- PSE**
- IS
- ISG
- ZSM

Remote Type Pressure Sensors/

		Pressure Sensors				Controllers		
Model		PSE530	PSE540	PSE550	PSE560	PSE200	PSE300	
Fluid		Air			General fluids			
Rated pressure range (Minimum display)								
Repeatability % (F.S.)		±1	±0.2	±0.3	±0.2	±0.1		
Voltage		12 to 24 VDC						
No. of outputs for a switch						5	2	
Analog output		1 to 5 V		1 to 5 V 4 to 20 mA			1 to 5 V 4 to 20 mA	
Operating temperature °C		0 to 50			-10 to 60		0 to 50	
Digital display						1-color	2-color	
Enclosure		IP40			IP65		Front face IP65 Others IP40	IP40
Wiring specification		Connector	Grommet			Connector		
Major setting function							Key lock, Peak/Bottom values holding, Auto-preset, Auto-shift, Display calibration, Anti-chattering	
Connection threads		M reducer	M R, NPT reducer	Resin piping	R, NPT, Rc URJ, TSJ*			
Int'l standards		CE	CE, UL/CSA			CE	CE, UL/CSA	
Options	Wiring	e-con	●	●	●	●	●	●
		Flexible cable		●	●	●		●
	Mounting	Direct	●	●	●	●		●
		With bracket			●			●
		Panel mount					●	●
DIN rail						●		

* For URJ, TSJ, refer to Glossary of Terms and Technical Information on pages 878 to 879.

Pressure Sensor Controllers

Pressure Sensors/Series PSE5□□

		Rated pressure range				PSE53□	PSE54□	PSE55□	PSE56□	
		-100 kPa	0	100 kPa	500 kPa	1 MPa				
Vacuum	-101 kPa	0				PSE531	PSE541	—	PSE561	
Compound pressure	-100 kPa	100 kPa				PSE533	PSE543	—	PSE563	
Positive pressure	0	100 kPa				PSE532	—	—	—	
	0	500 kPa					—	—	—	PSE564
	0	1 MPa					PSE530	PSE540	—	PSE560
Low differential pressure	0	2 kPa				—	—	PSE550	—	

Pressure Sensor Controllers/Series PSE200/300

PSE200



Input/Output specifications

- NPN 5 outputs + auto-shift input
- PNP 5 outputs + auto-shift input

PSE300



Input/Output specifications

- NPN 2 outputs + 1-5 V outputs
- NPN 2 outputs + 4-20 mA outputs
- NPN 2 outputs + auto-shift input
- PNP 2 outputs + 1-5 V outputs
- PNP 2 outputs + 4-20 mA outputs
- PNP 2 outputs + auto-shift input

Applicable pressure sensor model				Setting/Display resolution	
PSE531	PSE541	—	PSE561	0.1 kPa	0.1 kPa
PSE533	PSE543	—	PSE563	0.1 kPa	0.2 kPa
PSE532	—	—	—	0.1 kPa	0.1 kPa
—	—	—	PSE564	—	1 kPa
PSE530	PSE540	—	PSE560	0.001 MPa	0.001 MPa
—	—	PSE550	—	—	0.01 kPa

Main Functions (For details, see pages 853 and 854.)

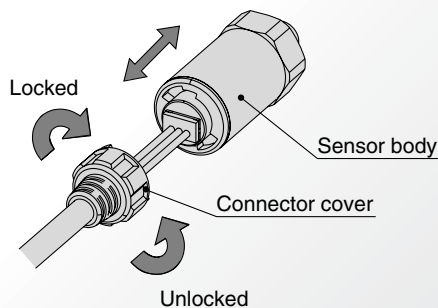
Key lock	Locks the keys from functioning.
Peak/Bottom values holding	Displays the maximum and minimum values being set and can keep those values on the display.
Auto-preset	Able to set the pressure automatically. In the case of adsorption confirmation, it memorizes the pressure when adsorbed and released. By repeating several times, the optimum values are calculated automatically.
Auto-shift	Stable switch output is available even though the supply pressure may fluctuate. Automatically corrects the set value in accordance with the fluctuations in the supply pressure.
Display calibration	Able to adjust the displayed value ($\pm 5\%$) and justify distribution of the values displayed on respective pressure switch.
Anti-chattering	Prevents malfunction due to sharp pressure fluctuations. The detection of momentary pressure fluctuation as abnormal pressure can be prevented by changing the setting of the response time.

Compact Pneumatic Pressure Sensor

Series *PSE530*

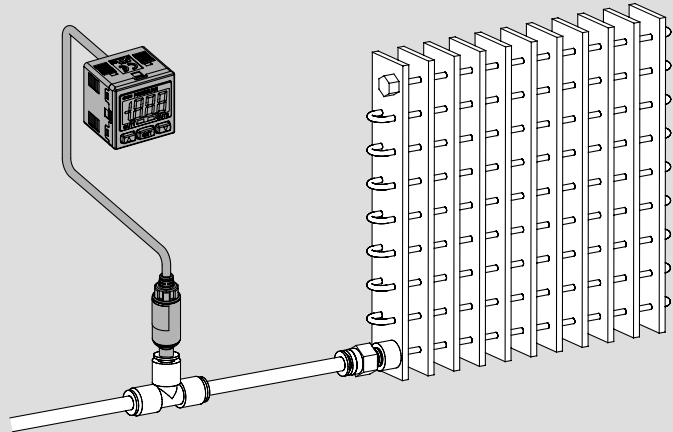
Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
PSE530		0	1 MPa		
PSE531	-101 kPa	0			
PSE532		0	101 kPa		
PSE533	-101 kPa		101 kPa		

Connection



Application examples

Inspection of a radiator Series *PSE532 + PSE300*



Low pressure sensor (PSE532-□) is used to detect minute differentiations. Auto-shift function reduces influence of fluctuations in the supply pressure.

Applications

Pressure Sensor Series PSE530



How to Order



PSE53 0 - M5 -

Sensor range

0	Positive pressure [0 to 1 MPa]
1	Vacuum [0 to -101 kPa]
2	Low pressure [0 to 101 kPa]
3	Compound pressure [-101 to 101 kPa]

Port size

M5	M5 x 0.8
R06	ø6 reducer
R07	1/4 inch reducer

Option

Nil	None
L	Sensor cable (3 m)
	Connector for pressure sensor controller (1 pc.) + Sensor cable (3 m)
C2L	

Note) At the factory, the connector is not attached to the cable, but packed together with it for shipment.

Option

When only optional parts are required, order using the part numbers listed below.

Description	Part no.	Note
Connector for pressure sensor controller	ZS-28-C	1 pc. per set
Sensor cable	ZS-26-F	Cable length: 3 m
Connector for pressure sensor controller + Sensor cable	ZS-26-J	Cable length: 3 m The connector is not attached to the cable at the time of shipment.

Specifications

Model	PSE530 (Positive pressure)	PSE531 (Vacuum)	PSE532 (Low pressure)	PSE533 (Compound pressure)
Rated pressure range	0 to 1 MPa	0 to -101 kPa	0 to 101 kPa	-101 to 101 kPa
Extension analog output range	-0.1 to 0 MPa	10.1 to 0 kPa	-10.1 to 0 kPa	—
Proof pressure	1.5 MPa	500 kPa		
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas			
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)			
Current consumption	15 mA or less (with no load)			
Output specification	Analog output 1 to 5 V (with rated pressure range), 0.6 to 1 V (with extension analog output range), Output impedance: Approx. 1 kΩ			
Accuracy (Ambient temperature at 25°C)	±2% F.S. or less (with rated pressure range), ±5% F.S. or less (with extension analog output range)			
Linearity	±1% F.S. or less			
Repeatability	±1% F.S. or less			
Power supply voltage effect	±1% F.S. or less based on the analog output at 18 V ranging from 12 to 24 VDC			
Environmental resistance	Enclosure	IP40		
	Temperature range	Operating: 0 to 50°C; Stored: -10 to 70°C (No freezing or condensation)		
	Withstand voltage	1000 VAC, 50/60Hz for 1 minute between live parts and case		
	Insulation resistance	5 MΩ or more between live parts and case (at 500 VDC Mega)		
	Vibration resistance	10 to 500 Hz 1.5 mm amplitude or 98 m/s ² acceleration, X, Y, Z directions for 2 hours each (De-energized)		
Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each (De-energized)			
Temperature characteristics	±2% F.S. or less (Based on 25°C)			
Sensor cable/Option	Halogen-free heavy-duty cable, 3 cores, ø2.7, 3 m, Conductor area: 0.15 mm ² , Insulator O.D.: 0.8 mm			
Standards	Compliant with CE marking			

Piping Specifications

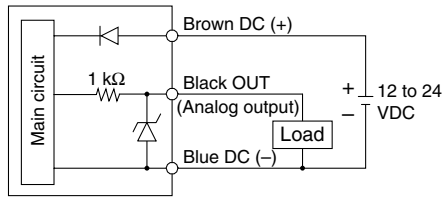
Model	M5	R06	R07
Port size	M5 x 0.8 male thread	ø6 reducer type	1/4 inch reducer type
Wetted parts material	Pressure sensor: Silicon, O-ring: NBR Body: Stainless steel 304		
Mass	With sensor cable (3 m)	41 g	38 g
	Without sensor cable	7 g	3.8 g

ZSE
ISE
ZSP
PS
ISA
PSE
IS
ISG
ZSM

Series PSE530

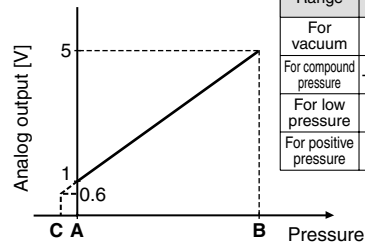
Internal Circuit

PSE53 □
Voltage output type
1 to 5 V
Output impedance
Approx. 1 kΩ



Analog Output

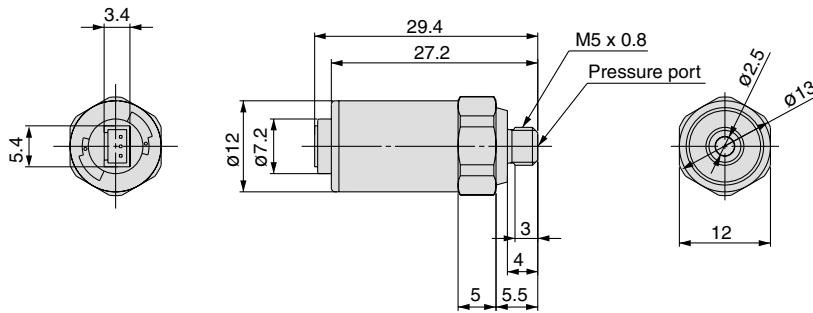
1 to 5 VDC



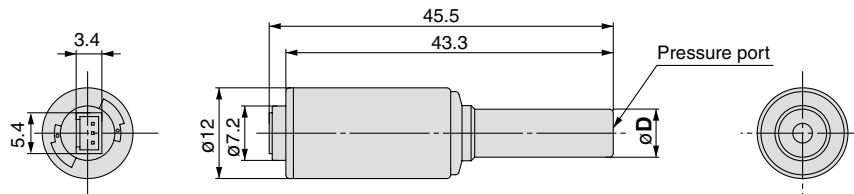
Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-101 kPa to 101 kPa	-101 kPa	101 kPa	—
For low pressure	0 to 101 kPa	0	101 kPa	-10.1 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa

Dimensions

PSE53 □-M5



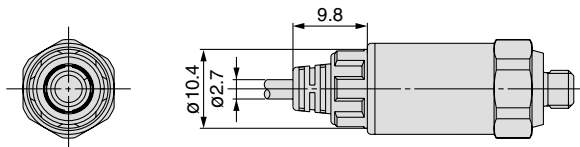
PSE53 □-R06 R07



(mm)

Model	Applicable fitting size (D)
PSE53 □-R06	6
PSE53 □-R07	1/4"

With sensor cable

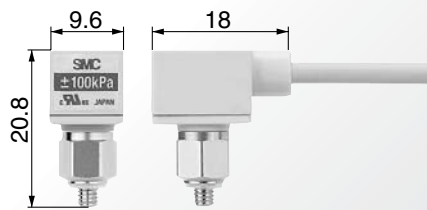


Compact Pneumatic Pressure Sensor

Series *PSE540*

Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
PSE540		0	1 MPa		
PSE541	-101 kPa	0			
PSE543	-100 kPa		100 kPa		

- Mass: 2.9 g
- Head size: 9.6 x 20.8 x 18 mm



ZSE
ISE

ZSP

PS

ISA

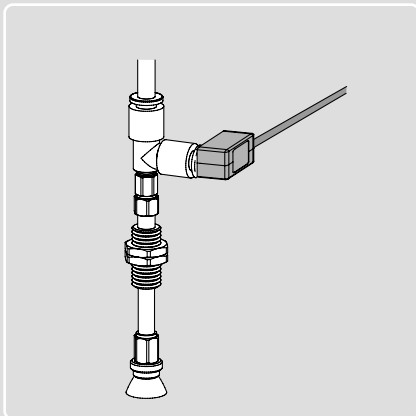
PSE

IS

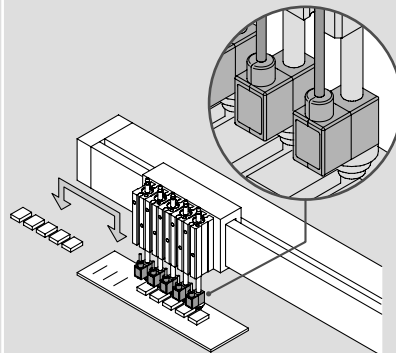
ISG

ZSM

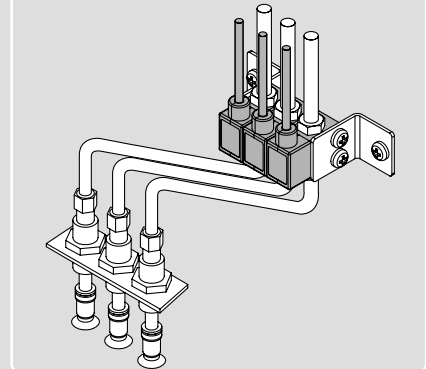
Application examples



Pads can be directly mounted.



Manifolding is possible.



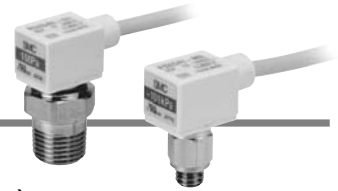
Applications

Compact Pneumatic Pressure Sensor

Series PSE540



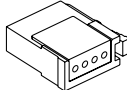
How to Order



Sensor range	
0	Positive pressure [0 to 1 MPa]
1	Negative pressure [0 to -101 kPa]
3	Compound pressure [-100 to 100 kPa]

Accuracy	
Nil	±2% F.S.
A	±1% F.S.







Option (Connector)



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

Note) At the factory, the connector is not attached to the cable, but packed together with it for shipment.

PSE54 1 - M3 -

Port size

Port size	Description	Diagram
M3	M3 x 0.5	
M5	M5 x 0.8	
01	R 1/8 (with M5 female thread)	
N01	NPT 1/8 (with M5 female thread)	
R04	ø4 reducer	
R06	ø6 reducer	

Port size	Description	Diagram
IM5	M5 female thread, through type	
IM5H	M5 female thread, through type (with mounting hole)	

Option

Description	Part no.	Note
Connector for pressure sensor controller	ZS-28-C	1 pc.

Specifications

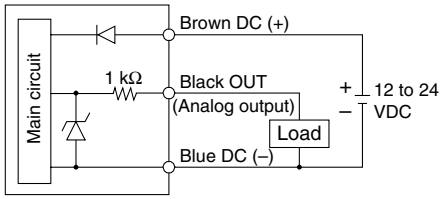
Model	PSE540	PSE541	PSE543
Rated pressure range	0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa
Extension analog output range	-0.1 to 0 MPa	10.1 to 0 kPa	—
Proof pressure	1.5 MPa	500 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas		
Power supply voltage	12 to 24 VDC±10%, Ripple (p-p) 10% or less (with power supply polarity protection)		
Current consumption	15 mA or less		
Output specification	Analog output 1 to 5 V (with rated pressure range), 0.6 to 1 V (with extension analog output range), Output impedance: Approx. 1 kΩ		
Accuracy (Ambient temperature at 25°C)	PSE54□: ±2% F.S. or less (with rated pressure range), ±5% F.S. or less (with extension analog output range) PSE54□A: 1% F.S. or less (with rated pressure range), ±3% F.S. or less (with extension analog output range)		
Linearity	±0.7% F.S. or less	±0.4% F.S. or less	
Repeatability	±0.2% F.S. or less		
Power supply voltage effect	±0.8% F.S. or less		
Environmental resistance	Enclosure	IP40	
	Operating temperature range	Operating: 0 to 50°C, Stored: -20 to 70°C (No freezing or condensation)	
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)	
	Withstand voltage	1000 VAC, 50/60 Hz for 1 minute between live parts and case	
	Insulation resistance	50 MΩ or more between live parts and case (at 500 VDC Mega)	
	Vibration resistance	10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)	
Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each (De-energized)		
Temperature characteristics	±2% F.S. or less (Based on 25°C)		
Standards	Compliant with CE marking, UL (CSA)		

Piping Specifications

Model	M3	M5	01	N01	R04	R06	IM5	IM5H
Port size	M3 x 0.5	M5 x 0.8	R 1/8 M5 x 0.8	NPT 1/8 M5 x 0.8	ø4 reducer	ø6 reducer	M5 female thread, through type	M5 female thread, through type (with mounting hole)
Material	Resin case: PBT Fitting: Stainless steel 303		Resin case: PBT Fitting: C3604BD		PBT		Resin case: PBT Fitting: A6063S-T5	
	Pressure sensing section: Pressure sensor: Silicon, O-ring: NBR							
Sensor cable	Oil proof heavy-duty vinyl cable (ellipse), 3 cores, 2.7 x 3.2, 3 m, Conductor area: 0.15 mm ² , Insulator O.D.: 0.9 mm							
Mass	With sensor cable	42.4 g	42.7 g	49.3 g	41.4 g	41.6 g	43.3 g	44.1 g
	Without sensor cable	2.9 g	3.2 g	9.8 g	1.9 g	2.1 g	3.8 g	4.6 g

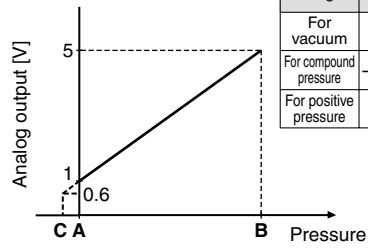
Internal Circuit

PSE54□
Voltage output type
1 to 5 V
Output impedance
Approx. 1 kΩ



Analog Output

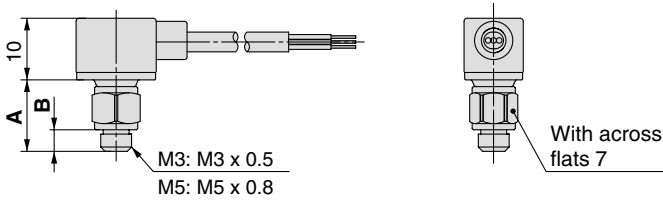
1 to 5 VDC



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

Dimensions

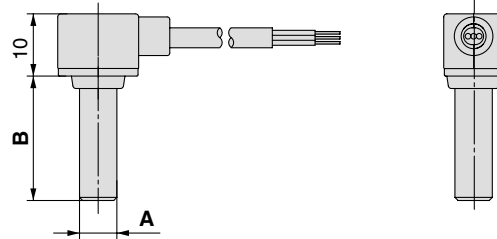
PSE54□-M3
M5



(mm)

	PSE54□-M3	PSE54□-M5
A	10.8	11.5
B	3	3.5

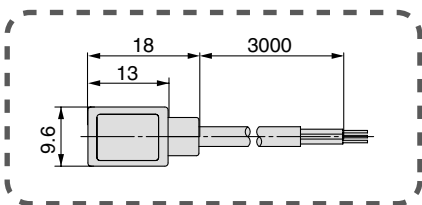
PSE54□-R04
R06



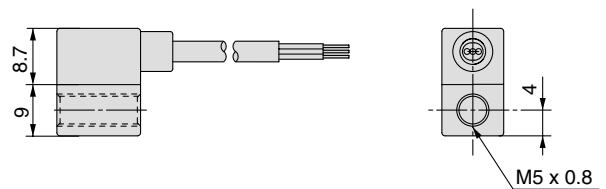
(mm)

	PSE54□-R04	PSE54□-R06
A	∅4	∅6
B	18	20

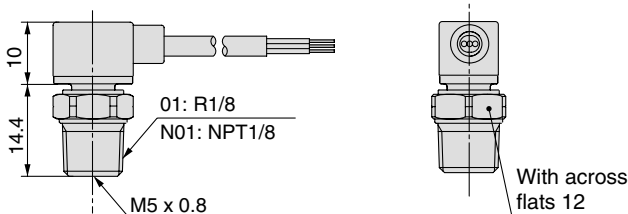
Common Dimensions



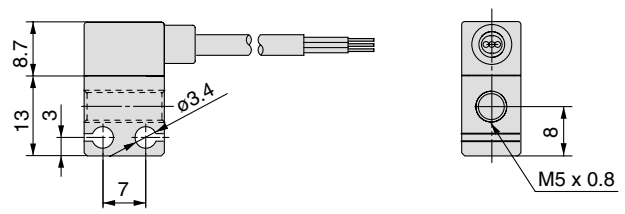
PSE54□-IM5



PSE54□-01
N01



PSE54□-IM5H



Low Differential Pressure Sensor

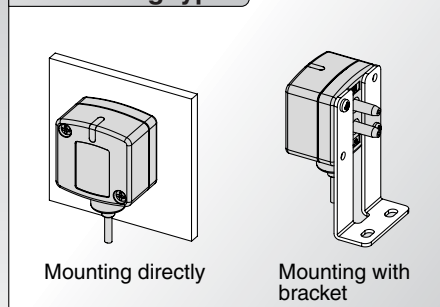
Series *PSE550*

Series	Rated pressure range		
	0	1 kPa	2 kPa
PSE550	0	2 kPa	

With LED display for confirming energization



2 mounting types



Mounting directly

Mounting with bracket

Accuracy

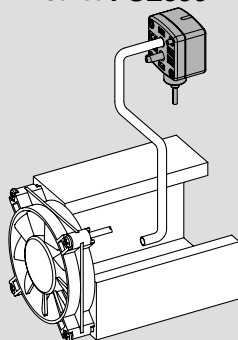
±1% F.S.

Proof pressure

65 kPa

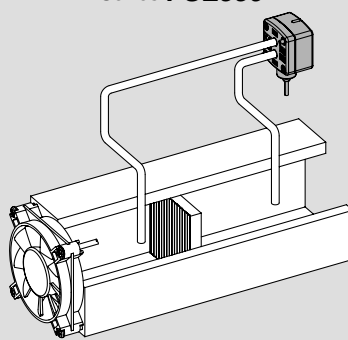
Application examples

Flow control
Series *PSE550*



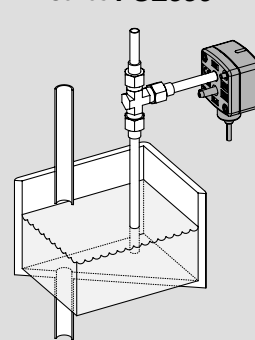
Can control air flow by monitoring the flow rate inside the duct.

Filter clogging monitoring
Series *PSE550*



Can control filtration and replacement periods by monitoring the clogging of the filter.

Liquid level detection
Series *PSE550*



Can detect the liquid level through changes in the purge pressure.

Applications

Low Differential Pressure Sensor

Series PSE550



How to Order

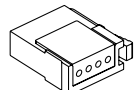
PSE550-□-□-□

Output specifications

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

Option 2 (Connector)

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

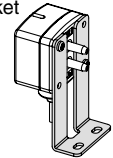


Note 1) Current output type cannot be connected to the PSE 200 and the PSE 300 series.

Note 2) At the factory, the connector is not attached to the cable, but packed together with it for shipment.

Option 1 (Bracket)

Nil	None
A	Bracket



Note) The bracket is not attached in the factory, but packed together for shipment.

Option

Description	Part no.	Note
Bracket	ZS-30-A	With M3 x 5L (2 pcs.)
Connector for pressure sensor controller	ZS-28-C	1 pc.

Specifications

Model	PSE550	PSE550-28
Rated differential pressure range	0 to 2 kPa	
Operating pressure range	-50 to 50 kPa ^{Note)}	
Extension analog output range	-0.2 to 0 kPa	—
Proof pressure	65 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas	
Power supply voltage	12 to 24 VDC±10%, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	15 mA or less	—
Output specification	Analog output: 1 to 5 VDC (within rated differential pressure range) 0.6 to 1 VDC (with extension analog output range) Output impedance: Approx. 1 kΩ	Analog output: 4 to 20 mA DC (within rated differential pressure range) Allowable load impedance: 500 Ω or less (at 24 VDC) 100 Ω or less (at 12 VDC)
Accuracy (Operating temperature at 25°C)	±1% F.S. or less (with rated pressure range), ±3% F.S. or less (with extension analog output range)	
Linearity	±0.5% F.S. or less	
Repeatability	±0.3% F.S. or less	
Indication light	Orange light is turned on. (When energized)	
Environmental resistance	Enclosure	IP40
	Operating temperature range	Operating: 0 to 50°C, Stored: -20 to 70°C (No freezing or condensation)
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)
	Withstand voltage	1000 VAC, 50/60 Hz for 1 minute between live parts and case
	Insulation resistance	50 MΩ or more between live parts and case (at 500 VDC Mega)
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 100 m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)
	Impact resistance	300 m/s ² in X, Y, Z directions, 3 times each (De-energized)
Temperature characteristics	±3% F.S. or less (Based on 25°C)	
Port size	ø4.8 (ø4.4 in the end) resin piping (Applicable to I.D. ø4 air tubing)	
Wetted parts material	Resin pipe: Nylon, Piston area of sensor: Silicon	
Sensor cable	Oil proof heavy-duty vinyl cable (ellipse), 3 cores, 2.7 x 3.2, 3 m Conductor area: 0.15 mm ² , Insulator O.D.: 0.9 mm	Oil proof heavy-duty vinyl cable (ellipse), 2 cores, 2.7 x 3.2, 3 m Conductor area: 0.15 mm ² , Insulator O.D.: 0.9 mm
Mass	With sensor cable	75 g
	Without sensor cable	35 g
Standards	Compliant with CE marking, UL (CSA)	

Note) Can detect differential pressure from 0 to 2 kPa within the range of -50 to 50 kPa.

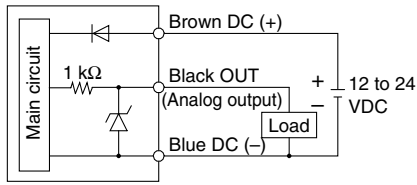
ZSE
ISE
ZSP
PS
ISA
PSE
IS
ISG
ZSM

Series PSE550

Internal Circuit

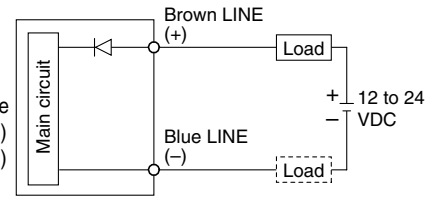
PSE550

Voltage output type
1 to 5 V
Output impedance
Approx. 1 k Ω



PSE550-28

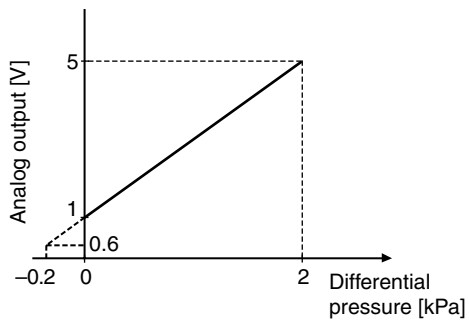
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



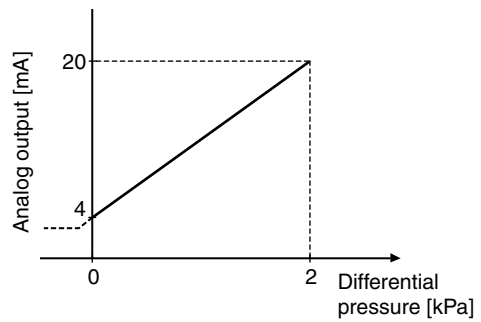
* Install the load either on the LINE (+) or LINE (-) side.

Analog Output

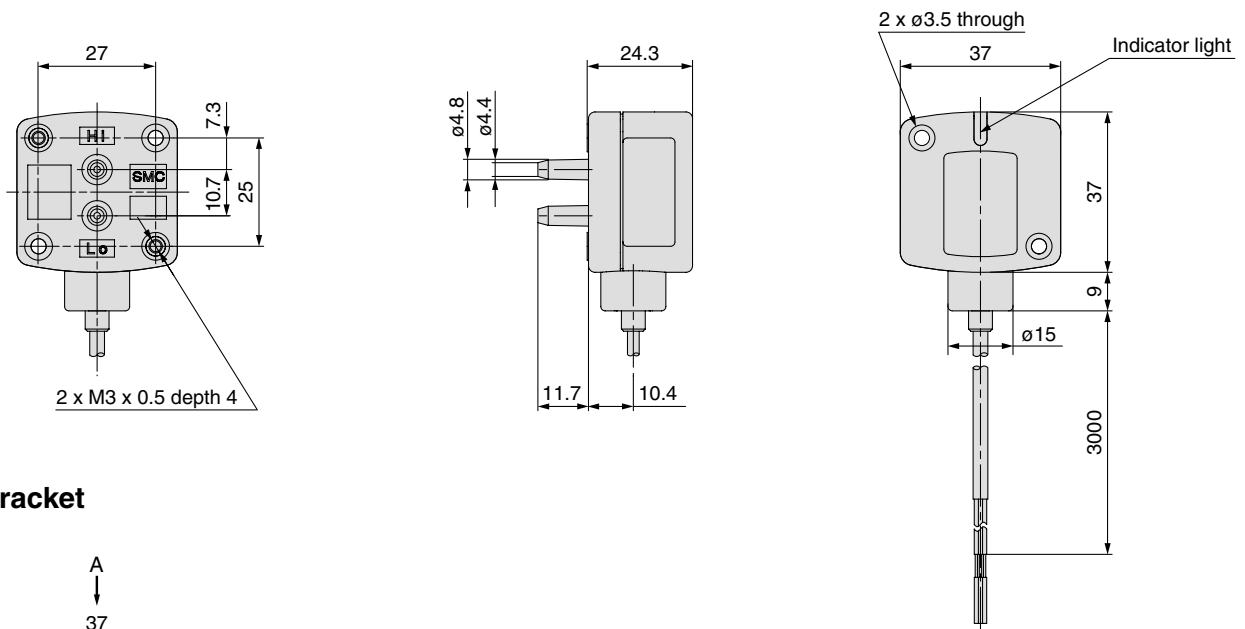
1 to 5 VDC



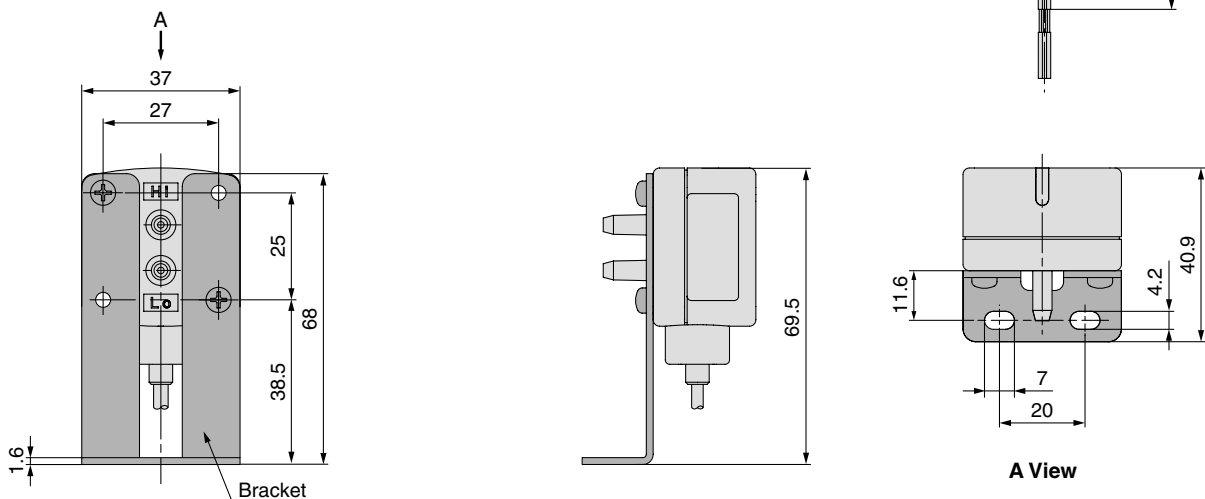
4 to 20 mADC



Dimensions



With bracket



Pressure Sensor For General Fluids

Series PSE560

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

Applicable fluids example

- Argon
- Air-containing drainage
- Ammonia
- Freon
- Nitrogen
- Hydraulic oil
- Silicon oil
- Water
- Carbon dioxide
- Lubricant
- Fluorocarbon
- Air

Wetted parts material
Stainless steel 316L

IP65

**Copper-free
Fluorine-free**

Oil-free
(Single diaphragm construction)

Variation

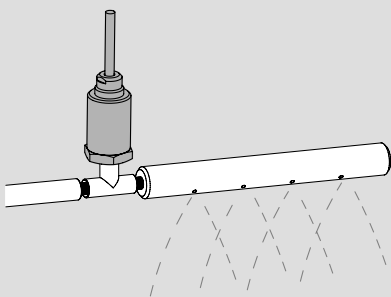
Port type	Thread type	Special fitting type for semiconductors
Port size	R 1/8, R 1/4, Rc 1/8, NPT 1/8, NPT 1/4	URJ 1/4, TSJ 1/4*
Leakage	$1 \times 10^{-5} \text{Pa} \cdot \text{m}^3/\text{s}$	$1 \times 10^{-10} \text{Pa} \cdot \text{m}^3/\text{s}$
Analog output	1 to 5 V voltage output	
	4 to 20 mA current output	

* For URJ1/4, TSJ1/4, refer to Glossary of Terms and Technical Information on pages 878 to 879.

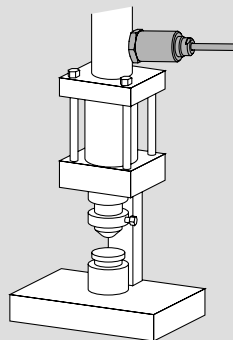
ZSE
ISE
ZSP
PS
ISA
PSE
IS
ISG
ZSM

Application examples

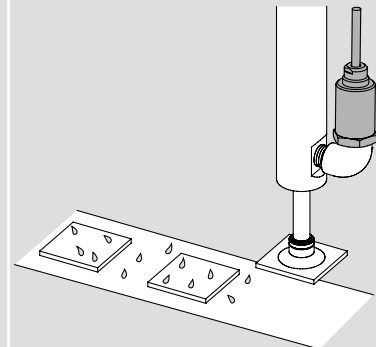
Washing line



Verification of caulking by hydraulic cylinders



Adsorption confirmation of work pieces with moisture

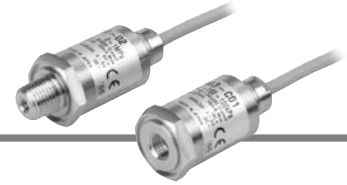


Note: When vacuum is released, take precautions to avoid water collision with rush inertia. (An adapter with throttle (ZS-31-X175) is available to prevent water collision with rush inertia.) (Refer to "About intrusion of water or drainage" on page 857 for details.)

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) At the factory, the connector is not attached to the cable, but packed together with it for shipment.

Port size

01	R 1/8 (with M5 female thread)
02	R 1/4 (with M5 female thread)
C01	Rc 1/8
N01	NPT 1/8 (with M5 female thread)
N02	NPT 1/4 (with M5 female thread)
A2	URJ 1/4
B2	TSJ 1/4

Output specifications

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

Option

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

Example: PSE56 0 - 01 - [] - []

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 stainless steel 316L	
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	10 mA or less	—
Output specification	Analog output: 1 to 5 V (within rated differential pressure range) 0.6 to 1 V (with extension analog output range) Output impedance: Approx. 1 kΩ	Analog output: 4 to 20 mADC (within rated differential pressure range) Allowable 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. or less (with rated pressure range), ±3% F.S. or less (with extension analog output range)	
Linearity	±0.5% F.S. or less	
Repeatability	±0.2% F.S. or less	
Power supply voltage effect	±0.3% F.S. or less	
Environmental resistance	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 live parts and case
	Insulation resistance	50 MΩ or more between live parts and case (at 50 VDC Mega)
Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 20 m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)	
Impact resistance	500 m/s ² in X, Y, Z directions, 3 times each (De-energized)	
Temperature characteristics	±2% F.S. or less (0 to 50°C: Based on 25°C), ±3% F.S. or less (-10 to 60°C: Based on 25°C)	
Standards	Compliant with CE marking, UL (CSA)	

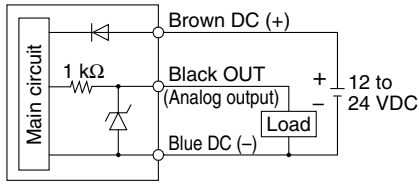
Piping Specifications

Model	01	02	N01	N02	C01	A2	B2	
Port size	R 1/8 M5 x 0.8	R 1/4 M5 x 0.8	NPT 1/8 M5 x 0.8	NPT 1/4 M5 x 0.8	Rc 1/8	URJ 1/4	TSJ 1/4	
Material	Case: C3604 + nickel plated, Piping port/pressure sensor: Stainless steel 316L							
Sensor cable	PSE56□-□: Oil proof heavy-duty vinyl cable with air tube, 3 cores, ø5.1, 3 m, Conductor area: 0.2 mm ² , Insulator O.D.: 1.12 mm PSE56□-□-28: Oil proof heavy-duty vinyl cable with air tube, 2 cores, ø5.1, 3 m, Conductor area: 0.2 mm ² , Insulator O.D.: 1.12 mm							
Mass	With sensor cable	193 g	200 g	194 g	201 g	187 g	203 g	193 g
	Without sensor cable	101 g	108 g	102 g	109 g	95 g	111 g	101 g

Internal Circuit

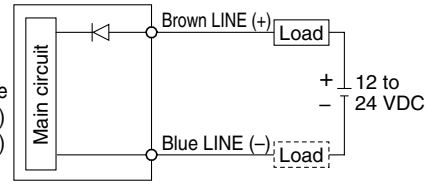
PSE56□-□

Voltage output type
1 to 5 V
Output impedance
Approx. 1 kΩ

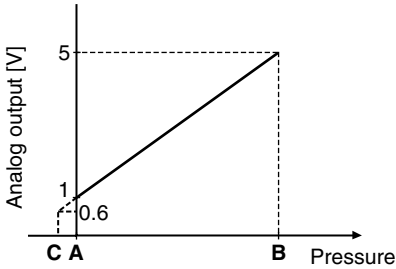


PSE56□-□-28

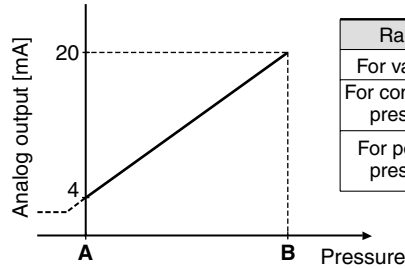
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



1 to 5 VDC



4 to 20 mADC

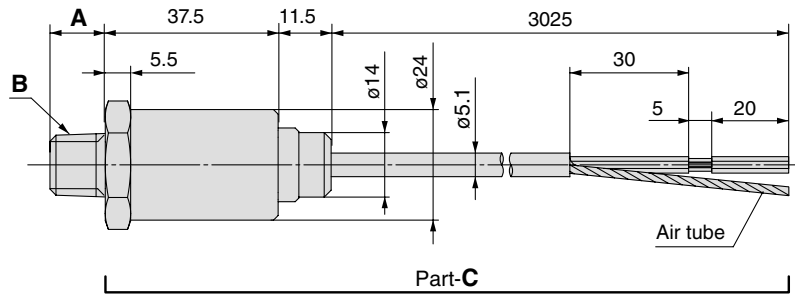
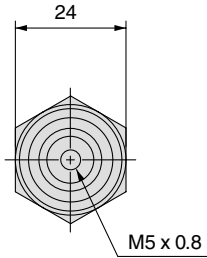


* Install the load either on the LINE (+) or LINE (-) side.

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

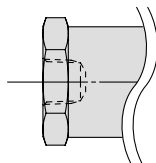
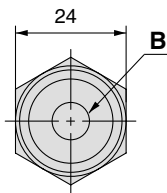
Dimensions

PSE56□-01, PSE56□-N01

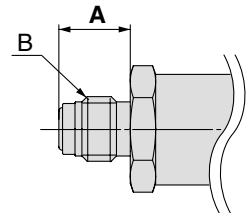
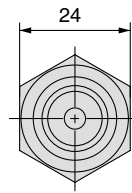


* The dimensions of part C are common to all PSE56□ models.

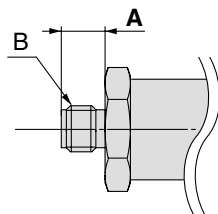
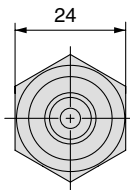
PSE56□-C01



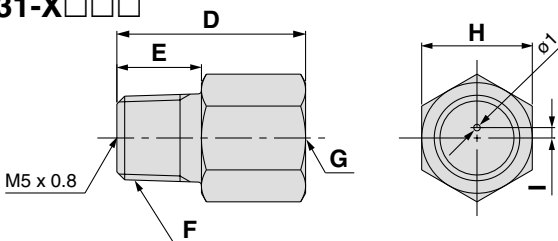
PSE56□-A2



PSE56□-B2



ZS-31-X□□□



Model	A	B
PSE56□-01	8.2	R 1/8
PSE56□-02	12	R 1/4
PSE56□-N01	9.2	NPT 1/8
PSE56□-N02	12.2	NPT 1/4
PSE56□-C01	—	Rc 1/8
PSE56□-A2	15.5	URJ 1/4
PSE56□-B2	9.5	TSJ 1/4

Model	D	E	F	G	H	I
ZS-31-X188	20	9	R 1/8	Rc 1/8	14	1.5
ZS-31-X189	20	9	NPT 1/8	NPT 1/8	14	1.5
ZS-31-X175	29	13	R 1/4	Rc 1/4	17	1.6
ZS-31-X186	29	13	NPT 1/4	NPT 1/4	17	1.6

Multi-Channel Digital Pressure Sensor Controller

Series PSE200

Applicable sensors				Rated pressure range				Setting/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	-100 kPa	0	100 kPa	1 MPa	
PSE531	PSE541	—	PSE561	-101 kPa	0			0.1 kPa
PSE533	PSE543	—	PSE563	-100 kPa	100 kPa			0.1 kPa
PSE530	PSE540	—	PSE560		0	1 MPa		0.001 MPa
PSE532		—			0	100 kPa		0.1 kPa

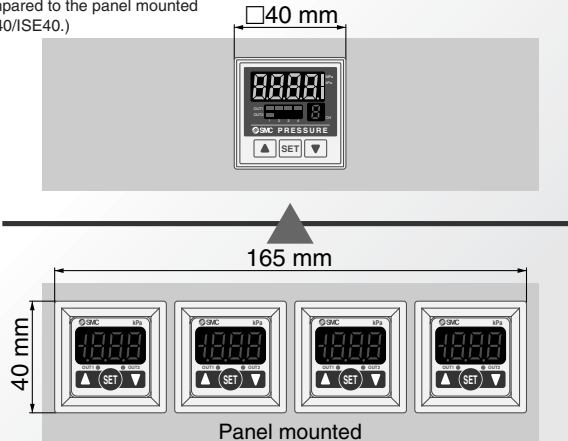
- A single controller monitors up to 4 pressure sensors
- Sensor input: 4 inputs
- Switch output: 5 outputs (2 outputs for 1ch, 1 output for 2 to 4ch)

● Functions

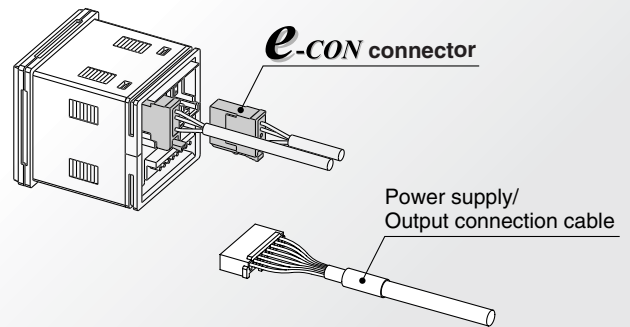
- Auto-shift function
- Auto-preset function
- Auto-identification function
- Copy function
- Channel scan function
- Zero-out function
- Key lock function
- Peak/Bottom values display function
- Unit display switching function
- Display calibration function
- Anti-chattering function

76% reduction in installation space

(Compared to the panel mounted ZSE40/ISE40.)

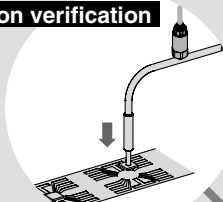


Connection

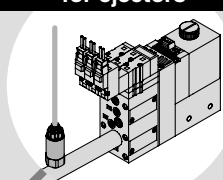


A single controller monitors various applications.

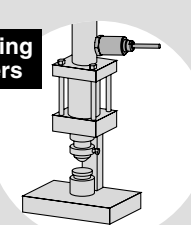
Suction verification



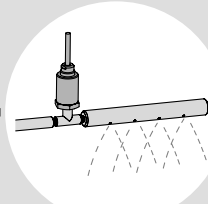
Verification of supply pressure for ejectors



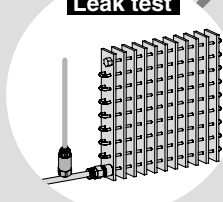
Verification of caulking by hydraulic cylinders



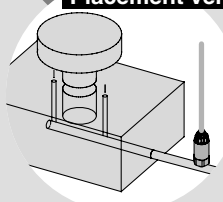
Verification of supply pressure for washing line



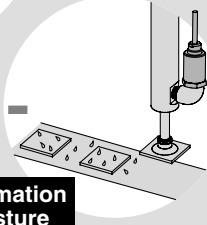
Leak test



Placement verification



Adsorption confirmation of works with moisture



Multi-Channel Controller Series PSE200



How to Order



PSE20 **0** - **M** □ □

Input/Output specifications

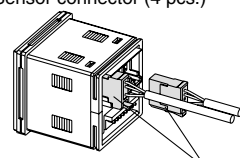
0	NPN 5 outputs + Auto-shift input
1	PNP 5 outputs + Auto-shift input

Unit specifications

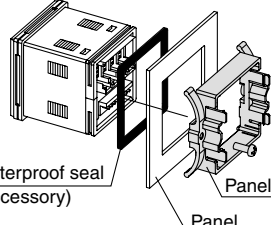
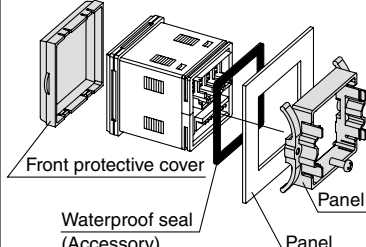
Nil	With unit display switching function
M	Fixed SI unit <small>Note)</small>

Note) Fixed unit
For vacuum, low pressure and compound pressure: kPa
For positive pressure: MPa

Option 2

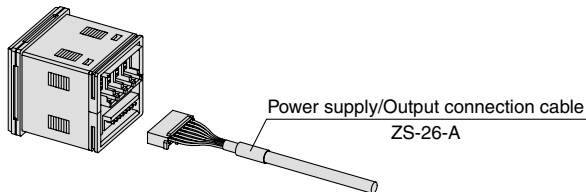
Nil	None
4C	Sensor connector (4 pcs.)  Connector

Option 1

Nil	None
A	Panel mount adapter  Waterproof seal (Accessory) Panel mount adapter Panel Mounting screw (M3 x 8L) (Accessory)
B	Front protective cover + Panel mount adapter  Front protective cover Waterproof seal (Accessory) Panel mount adapter Panel Mounting screw (M3 x 8L) (Accessory)

Accessory: Power supply/Output connection cable (2 m)

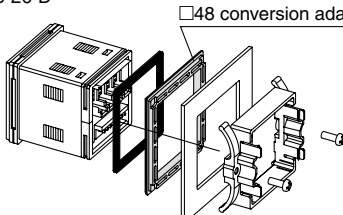
Included with the controller.



ZSE
ISE
ZSP
PS
ISA
PSE
IS
ISG
ZSM

Option

When only optional parts are required, order with the part numbers listed below.

Description	Part no.	Note
Panel mount adapter	ZS-26-B	Waterproof seal, screws included
Front protective cover + Panel mount adapter	ZS-26-C	Waterproof seal, screws included
<input type="checkbox"/> 48 conversion adapter * This adapter is used to mount the PSE200 series on the panel fitting of the PSE100 series.	ZS-26-D  Order panel mount adapter separately.	
Front protective cover	ZS-26-01	
Sensor connector	ZS-28-C (1 pc. per set)	

Series PSE200

Specifications

Model	PSE200	PSE201
Power supply voltage	12 to 24 VDC±10%, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	55 mA or less (Current consumption for sensor is not included.)	
Power supply voltage for sensor	[Power supply voltage] -1.5 V	
Power supply current for sensor ^{Note 1)}	40 mA maximum (100 mA maximum for the total power supply current when 4 sensors are input.)	
Sensor input	1 to 5 VDC (Input impedance: Approx. 800 kΩ)	
Number of inputs	4 inputs	
Input protection	With excess voltage protection (Up to 26.4 V)	
Switch output	NPN open collector output: 5 outputs (Sensor input CH1: 2 outputs, CH2 to 4: 1 output)	PNP open collector output: 5 outputs (Sensor input CH1: 2 outputs, CH2 to 4: 1 output)
Maximum load current	80 mA	
Maximum load voltage	30 V	—
Residual voltage	1 V or less (with load current of 80 mA)	
Response time	5 ms or less (Response time selections with anti-chattering function: 20 ms, 160 ms, 640 ms)	
Short circuit protection	With short circuit protection function	
Repeatability	±0.1% F.S. ±1 digit or less	
Hysteresis	Hysteresis mode	Adjustable (can be set from 0)
	Window comparator mode	Fixed (3 digits)
Display	For measured value display: 4-digit, 7-segment indicator, Display color: Orange (Sampling frequency: 4 times/sec) For channel display: 1-digit, 7-segment indicator, Display color: Red	
Display accuracy (Operating temperature at 25°C)	±0.5% F.S. ±1 digit or less	
Indication light	Red (Lights up when output is turned ON.)	
Auto-shift input	Non-voltage input (Reed or Solid state), Input 10 ms or more, Independently controllable auto-shift function ON/OFF	
Auto-identification function	With auto-identification function ^{Note 2)}	
Environmental resistance	Enclosure	Front face: IP65 (when panel-mounted), Others: IP40
	Ambient temperature range	Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation)
	Ambient humidity range	Operating/Stored: 35 to 85% RH (No condensation)
	Vibration resistance	10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions for 2 hrs. each (De-energized)
	Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each (De-energized)
Temperature characteristics	±0.5% F.S. or less (Based on 25°C)	
Connection	Power supply/Output connection: 8P connector, Sensor connection: e-con connector	
Material	Housing: PBT; Display: Transparent nylon; Back rubber cover: CR	
Mass	Approx. 60 g (Excluding power supply/output cable)	
Power supply/Output connection cable	Oil proof heavy-duty vinyl cable, 8 cores, ø4.8, 2 m, Conductor area: 0.15 mm ² , Insulator O.D.: 0.9 mm	
Standards	Compliant with CE marking	

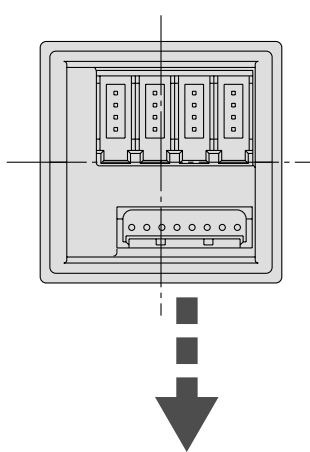
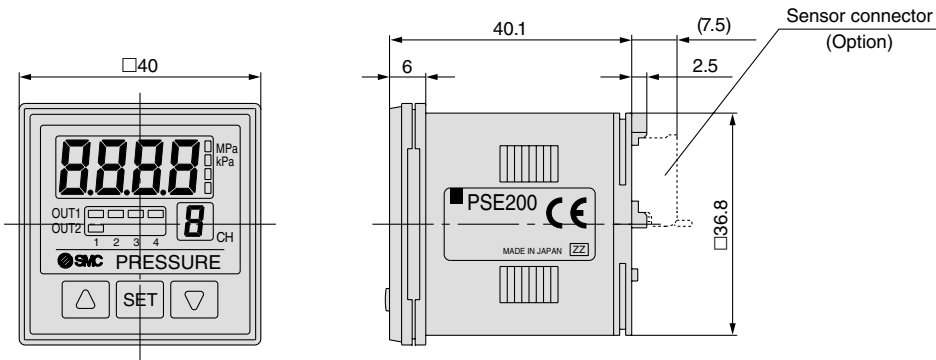
Pressure range	For compound pressure	For vacuum	For low pressure	For positive pressure
Applicable pressure sensor	PSE533 PSE543 PSE563	PSE531 PSE541 PSE561	PSE532	PSE530 PSE560
Set pressure range	-101 to 101 kPa	10 to -101 kPa	-10 to 101 kPa	-0.1 to 1 MPa
Setting/Display resolution	0.1 kPa	0.1 kPa	0.1 kPa	0.001 MPa

Note 1) If the Vcc and 0 V side of the sensor input connector are short circuited, the inside of the controller will be damaged.

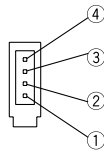
Note 2) Auto-identification function comes with "the PSE53□ series" pressure sensor only. Other SMC series (PSE540 and 560) are not equipped with this function.

Dimensions

PSE200/201

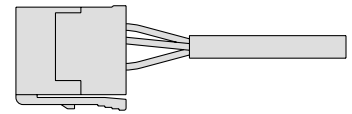


Sensor connector (4P x 4)

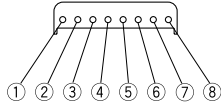


PIN no.	Terminal
①	DC (+)
②	N.C.
③	DC (-)
④	IN (1 to 5 V)

Connector (Option)

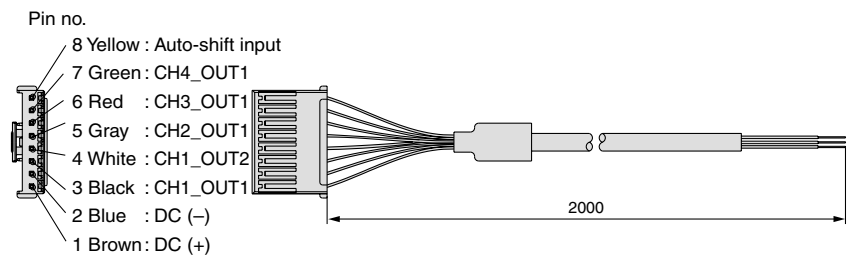


Power supply/Output connector (8P)



PIN no.	Terminal
①	DC (+)
②	DC (-)
③	CH1_OUT1
④	CH1_OUT2
⑤	CH2_OUT1
⑥	CH3_OUT1
⑦	CH4_OUT1
⑧	Auto-shift input

Power supply/Output connection cable (Accessory)

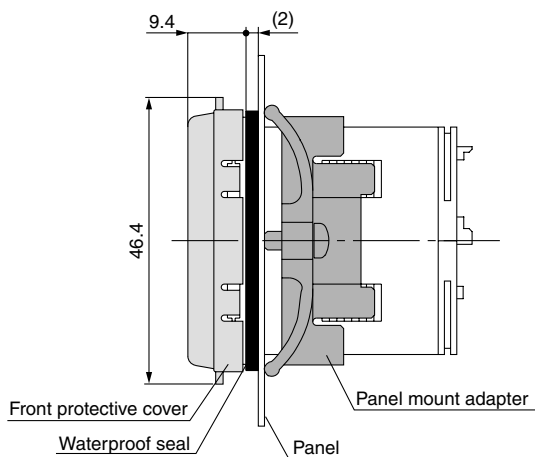
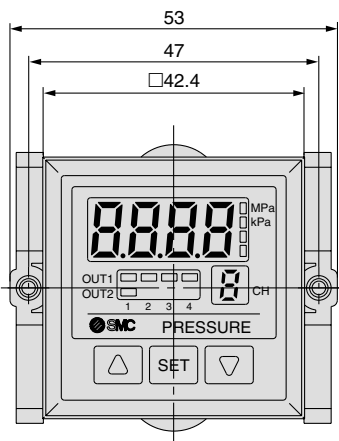


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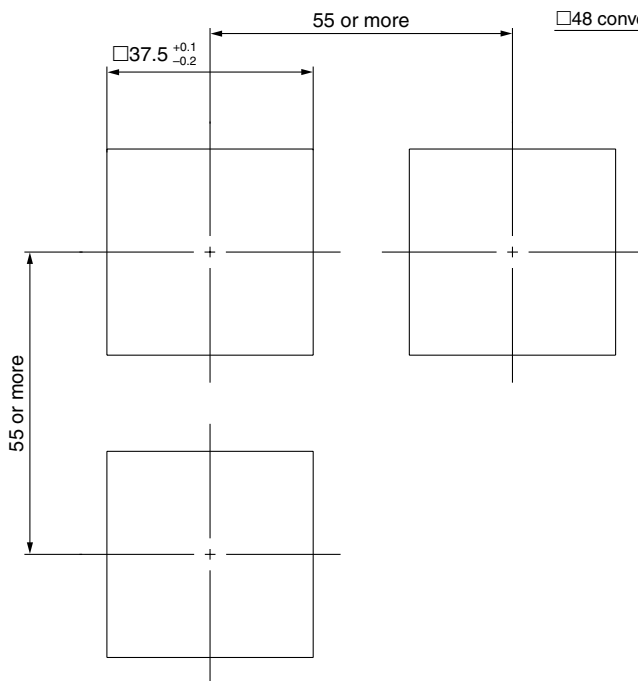
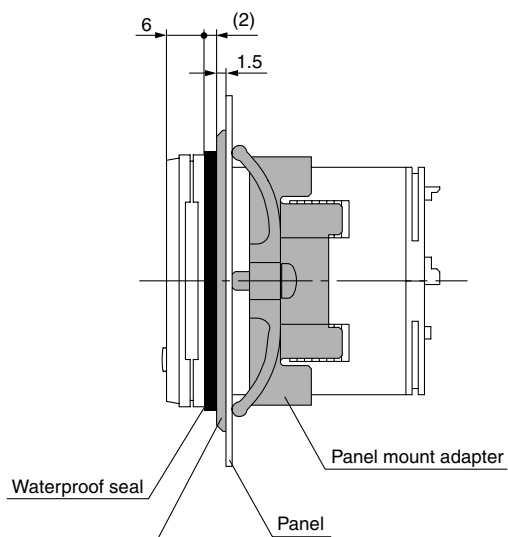
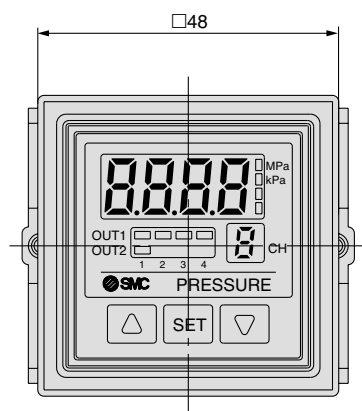
Series PSE200

Dimensions

Front protective cover + Panel mount



□48 conversion adapter + Panel mount



Panel fitting dimension
Applicable panel thickness: 0.5 to 8 mm

Descriptions

4-digit display
Displays the measured pressure value, content for each setting, and error code.

Switch output display
Displays the output status of OUT1 (CH1 to CH4), OUT2 (CH1 only). Lights up when it is turned ON.

UP button
Use this button to change the mode or set value.

SET button
Use this button to set the mode or set value.

Unit display
The selected unit lights up. Use unit labels for units other than MPa and kPa.

Unit labels
kg/cm² bar PSI inHg mmHg

Channel display
Displays the selected channel.

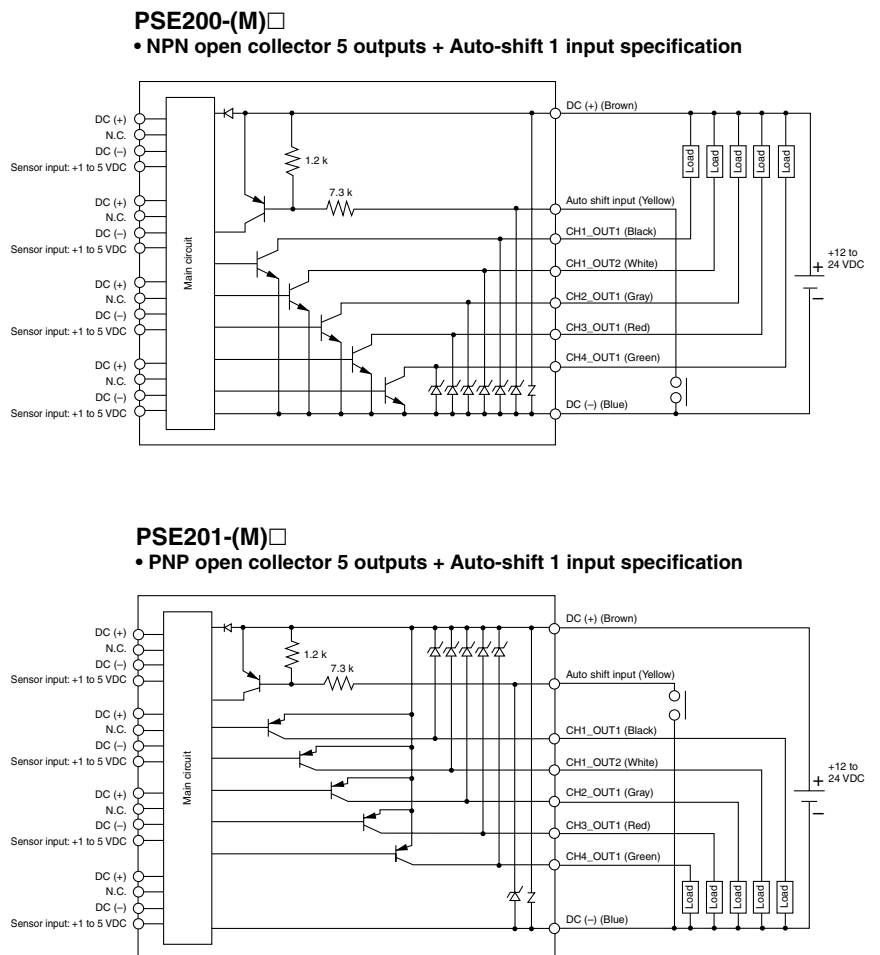
DOWN button
Use this button to change the mode or set value.

Error Code & Solution

Error name	LED display	Contents	Solution
Overcurrent error	Er 1	Excess current is flowing into the switch output of OUT1.	Shut off the power supply. After eliminating the output factor that caused the excess current, turn the power supply back on.
	Er 2	Excess current is flowing into the switch output of OUT2.	
Residual pressure error	Er 3	Pressure is applied to a pressure sensor during the reset operation (a zero point adjustment) as follows: When compound pressure is used: ± 2.5% F.S. or more. When pressure other than compound pressure is used: ±5% F.S. or more. * After displaying for 2 seconds, it will return to the measuring mode.	Bring the pressure back to atmospheric pressure and use the reset function (zero point adjustment) again.
Applied pressure error	---	The DC (-) wire of the sensor may be disconnected, or pressure exceeding the upper limit of the setting pressure range may be applied.	Confirm the connection and wiring of the sensor and get the applied pressure back to within the setting pressure range.
	----	The sensor may be disconnected or mis-wired, or pressure exceeding the lower limit of the setting pressure range may be applied.	
System error	Er 5	Internal data error.	Shut off the power supply and turn it back on.
	Er 6	Internal data error.	
	Er 7	Internal data error.	
	Er 8	Internal data error.	

* In the case where the product cannot be returned to the normal state, even though the described measures were taken, please contact us for investigation.

Internal Circuit and Connection



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2-Color Display Digital Pressure Sensor Controller

Series PSE300

Applicable sensors				Rated pressure range					Setting/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	-100 kPa	0	100 kPa	500 kPa	1 MPa	
PSE531	PSE541	—	PSE561	-101 kPa	0				0.1 kPa
PSE533	PSE543	—	PSE563	-100 kPa		100 kPa			0.2 kPa
PSE530	PSE540	—	PSE560		0			1 MPa	0.001 MPa
PSE532	—	—	—		0	100 kPa			0.1 kPa
—	—	—	PSE564		0		500 kPa		1 kPa
—	—	PSE550	—		0	2 kPa			0.01 kPa

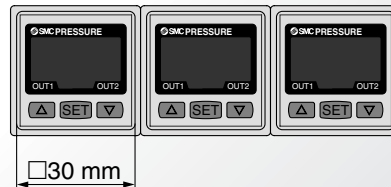
2-color display (Red/Green)

Able to set the 4 patterns of the display color.

Pattern	ON	OFF
①	Red	Green
②	Green	Red
③	Red	Red
④	Green	Green

Can be mounted in close proximity with each other either horizontally or vertically.

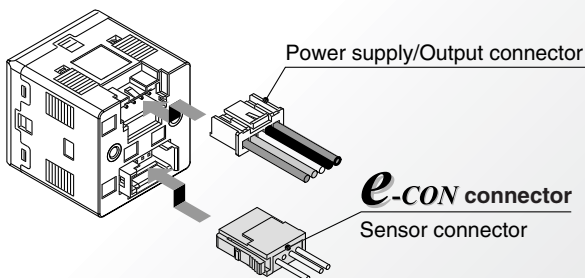
Reduced panel fitting labor



Response time

1 ms

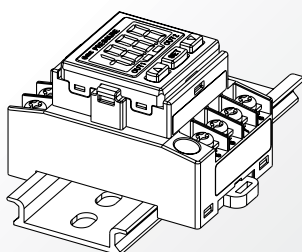
Connection



● Functions

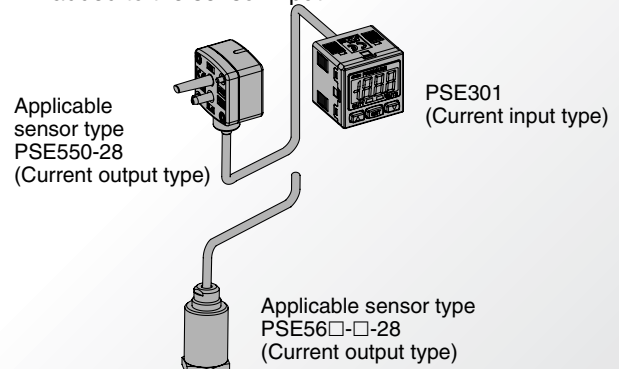
- Auto-shift function
- Auto-preset function
- Display calibration function
- Peak/Bottom values display function
- Key lock function
- Zero-out function
- Error indication function
- Unit display switching function
- Anti-chattering function

DIN rail/Terminal block type



Current input

Electrical current input (4 to 20 mADC) is added to the sensor input.



Pressure Sensor Controller

Series PSE300



How to Order



DIN rail/terminal block type

PSE3 0 0 T - M

Connector type

PSE3 0 0 - M



Input specifications

0	Voltage input
1	Current input

Input/Output specifications

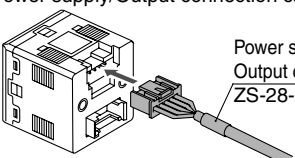
0	NPN 2 outputs + 1-5 V output
1	NPN 2 outputs + 4-20 mA output
2	NPN 2 outputs + Auto-shift input
3	PNP 2 outputs + 1-5 V output
4	PNP 2 outputs + 4-20 mA output
5	PNP 2 outputs + Auto-shift input

Unit specifications

Nil	With unit display switching function
M	Fixed SI unit <small>Note)</small>

Note) Fixed unit
For vacuum, low pressure, low differential pressure and compound pressure: kPa
For positive pressure: MPa (For 1 MPa)
kPa (For 500 kPa)

Option 1

Nil	None
L	Power supply/Output connection cable 

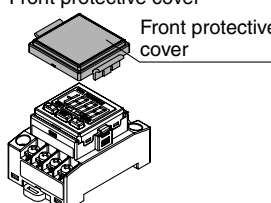
Note) The cable is unassembled in the factory, but is included with the shipment.

Order DIN rail separately. Refer to page 852.

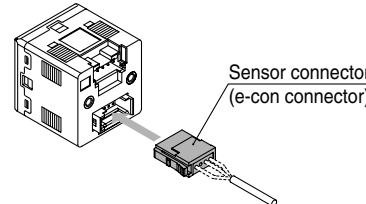
Option

Description	Part no.	Note
Power supply/Output connection cable (2 m)	ZS-28-A	
Bracket	ZS-28-B	With M3 x 5L (2 pcs.)
Sensor connector	ZS-28-C	1 pc.
Panel mount adapter	ZS-27-C	With M3 x 8L (2 pcs.)
Panel mount adapter + Front protective cover	ZS-27-D	With M3 x 8L (2 pcs.)
Front protective cover	ZS-27-01	1 pc.

Option

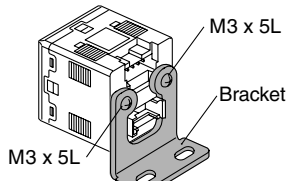
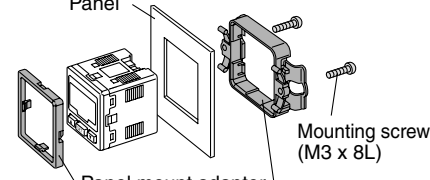
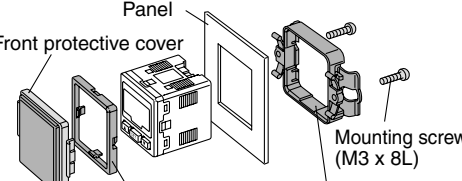
Nil	None
E	Front protective cover 

Option 3

Nil	None
C	Sensor connector 

Note) At the factory, the connector is not attached to the cable, but packed together with it for shipment.

Option 2

Nil	None
A	Bracket 
B	Panel mount adapter 
D	Panel mount adapter + Front protective cover 

Note) These options are not attached in the factory, but packed together with it for shipment.

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Series PSE300

Specifications

Model	PSE3□□					
Applicable pressure sensor	PSE533 PSE543 PSE563	PSE531 PSE541 PSE561	PSE532	PSE530 PSE560	PSE564	PSE550
Set (differential) pressure range	-101 to 101 kPa	10 to -101 kPa	-10 to 100 kPa	-0.1 to 1 MPa	-50 to 500 kPa	-0.2 to 2 kPa
Setting/Display resolution	0.2 kPa	0.1 kPa	0.1 kPa	0.001 MPa	1 kPa	0.01 kPa
Pressure range ^{Note 1)}	For compound pressure	For vacuum	For low pressure	For positive pressure		For low differential pressure
Rated (differential) pressure range	-100 to 100 kPa	0 to -101 kPa	0 to 100 kPa	0 to 1 MPa	0 to 500 kPa	0 to 2 kPa
Extension analog output range	—	10.1 to 0 kPa	-10 to 0 kPa	-0.1 to 0 MPa	-50 to 0 kPa	-0.2 to 0 kPa
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)					
Current consumption	50 mA or less (Current consumption for sensor is not included.)					
Sensor input	PSE30□: Voltage input 1 to 5 VDC (Input impedance: 1 MΩ) PSE31□: Current input 4 to 20 mA DC (Input impedance: 100 Ω)					
Number of inputs	1 input					
Input protection	With excess voltage protection (Up to 26.4 V)					
Hysteresis	Hysteresis mode: Variable, Window comparator mode: Variable					
Switch output	NPN or PNP open collector output: 2 outputs					
Maximum load current	80 mA					
Maximum load voltage	30 VDC (at NPN output)					
Residual voltage	1 V or less (with load current of 80 mA)					
Output protection	With short circuit protection					
Response time	1 ms or less					
Anti-chattering function	Response time settings for anti-chattering function: 20 ms, 160 ms, 640 ms, 1280 ms					
Repeatability	±0.1% F.S. or less					
Analog output	Voltage output ^{Note 2)}	Output voltage: 1 to 5 V (within rated pressure range (Differential pressure)), 0.6 to 1 V (within extension analog output range) Output impedance: Approx. 1 kΩ, Linearity: ±0.2% F.S. (Not including sensor accuracy), Response speed: 150 ms or less				
	Accuracy (To display value) (25°C)	±0.6% F.S. or less		±1.0% F.S. or less		±1.5% F.S. or less
	Current output ^{Note 2)}	Output current: 4 to 20 mA (within rated pressure range (Differential pressure)), 2.4 to 4 mA (within extension analog output range) Maximum load impedance: 300 Ω (at 12 VDC), 600 Ω (at 24 VDC), Minimum load impedance: 50 Ω Linearity: ±0.2% F.S. (Not including sensor accuracy), Response time: 150 ms or less				
	Accuracy (To display value) (25°C)	±1.0% F.S. or less		±1.5% F.S. or less		±2.0% F.S. or less
Display accuracy (Ambient temperature at 25°C)	±0.5% F.S. ±2 digits or less		±0.5% F.S. ±1 digit or less			
Display	3 + 1/2 digit, 7 segment indicator, 2-color display (Red/Green), Sampling frequency: 5 times/sec					
Indicator light	OUT1: Lights up when turned ON (Green), OUT2: Lights up when turned ON (Red)					
Auto-shift input ^{Note 2)}	Non-voltage input (Reed or Solid state), Low level input: 5 ms or more, Low level: 0.4 V or less					
Environmental resistance	Enclosure	IP40				
	Operating temperature range	Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation)				
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)				
	Withstand voltage	1000 VAC for 1 minute between live parts and case				
	Insulation resistance	50 MΩ or more between live parts and case (at 500 VDC Mega)				
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)				
Impact resistance	100 m/s ² in X, Y, Z directions, 3 times each (De-energized)					
Temperature characteristics	±0.5% F.S. or less (Based on 25°C)					
Connection	PSE30□□: Power supply/Output connection: 5P connector, Sensor connection: 4P connector PSE31□□T: Terminal block					
Material	Front case: PBT, Rear case: PBT (PSE30□□), Denaturated PPE (PSE31□□T)					
Mass	With power supply/Output connection cable	PSE30□□: 85 g				
	Without power supply/Output connection cable	PSE30□□: 30 g, PSE31□□T: 50 g				
Power supply/Output connection cable	Oil proof heavy-duty vinyl cable, 5 cores, ø4.1, 2 m, Conductor area: 0.2 mm ² Insulator O.D.: 1.12 mm					
Standards	Compliant with CE marking, UL (CSA)					

Note 1) Pressure range can be selected during initial setting.

Note 2) Auto-shift function is not available when analog output option is selected.

Also, analog output option is not available when auto-shift function is selected.

Note 3) The following units can be selected with unit conversion function:

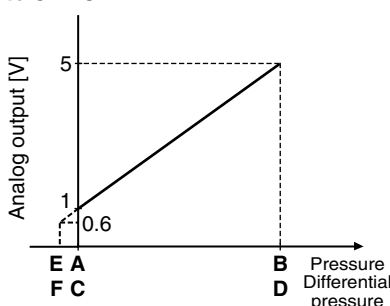
For vacuum & compound pressure: kPa-kgf/cm²-bar-psi-mmHg-inHg

For positive pressure & low pressure: MPa-kPa-kgf/cm²-bar-psi

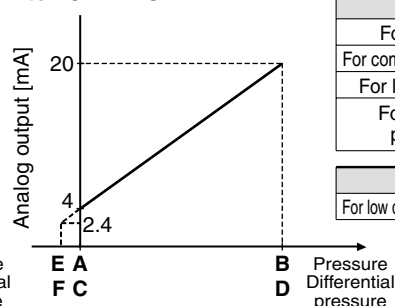
For low differential pressure: kPa-mmH₂O

Analog Output

1 to 5VDC



4 to 20 mA DC



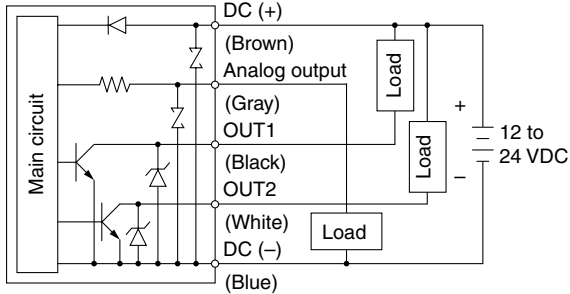
Range	Rated pressure range	A	B	E
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-100 kPa to 100 kPa	-100 kPa	100 kPa	—
For low pressure	0 to 100 kPa	0	100 kPa	-10 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa
	0 to 500 kPa	0	500 kPa	-50 kPa

Range	Rated pressure range	C	D	F
For low differential pressure	0 to 2 kPa	0	2 kPa	-0.2 kPa

Internal Circuit

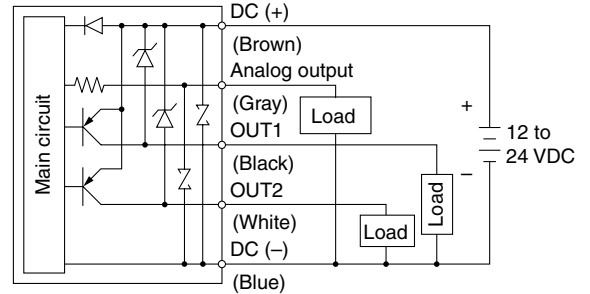
PSE3□0

NPN open collector output (2 outputs), Max. 30 V or 80 mA, residual voltage 1 V or less
 Analog output: 1 to 5 V
 Output impedance: Approx. 1 kΩ



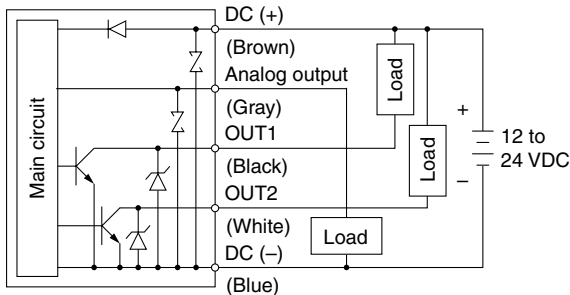
PSE3□3

PNP open collector output (2 outputs), Max. 80 mA, residual voltage 1 V or less
 Analog output: 1 to 5 V
 Output impedance: Approx. 1 kΩ



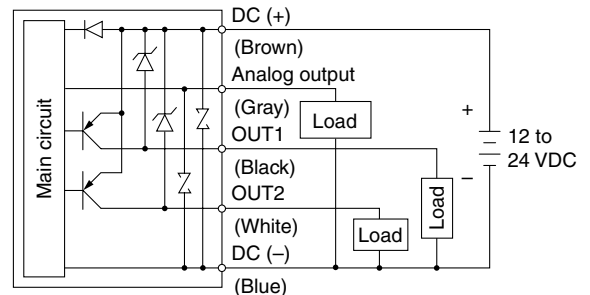
PSE3□1

NPN open collector output (2 outputs), Max. 30 V or 80 mA, residual voltage 1 V or less
 Analog output: 4 to 20 mA
 Maximum load impedance: 300 Ω (12 VDC), 600 Ω (24 VDC)
 Minimum load impedance: 50 Ω



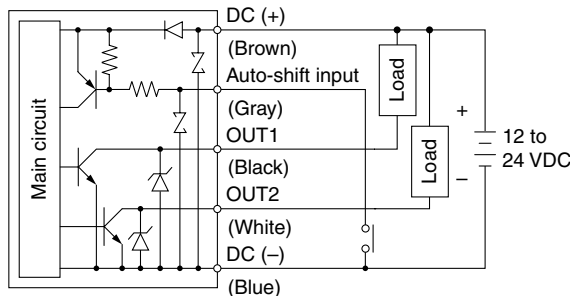
PSE3□4

PNP open collector output (2 outputs), Max. 80 mA, residual voltage 1 V or less
 Analog output: 4 to 20 mA
 Maximum load impedance: 300 Ω (12 VDC), 600 Ω (24 VDC)
 Minimum load impedance: 50 Ω



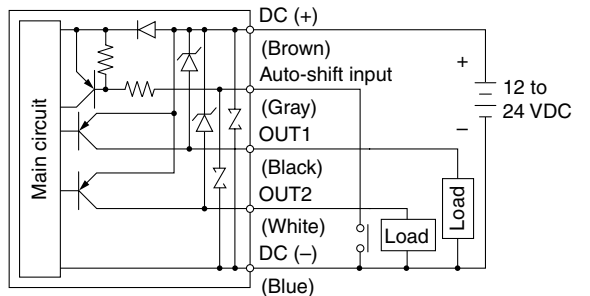
PSE3□2

NPN open collector output with auto-shift input (2 outputs),
 Max. 30 V, 80 mA, residual voltage 1 V or less



PSE3□5

PNP open collector output with auto-shift input (2 outputs),
 Max. 80 mA, residual voltage 1 V or less



Note: The colors in parentheses indicate the color of the lead wire when it is connected to the power supply / output connection cable (ZS-28-A).

- ZSE
- ISE
- ZSP
- PS
- ISA
- PSE
- IS
- ISG
- ZSM

Descriptions

LCD

Displays the current pressure, set mode, selected display unit, and error code. Four different display settings are available. Always use red or green display; or switch between green and red according to the output.

Output (OUT1) display (Green)

Lights up when OUT1 is turned ON.

Up button

Use this button to select the mode or increase the ON/OFF set value.
 It is also used for switching to the peak display mode.

Output (OUT2) display (Red)

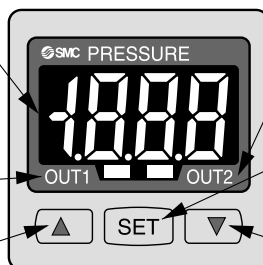
Lights up when OUT2 is turned ON.

SET button

Use this button to change the mode or confirm the set value.

Down button

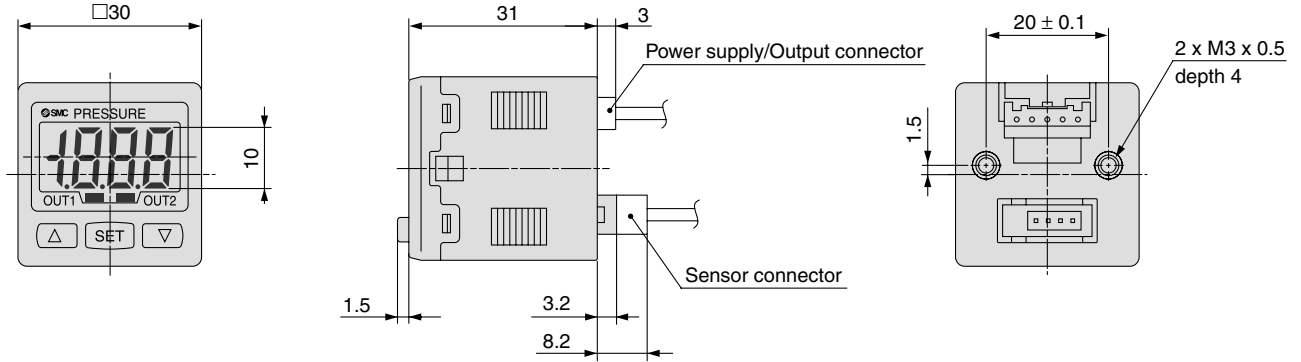
Use this button to select the mode or decrease the ON/OFF set value.
 It is also used for switching to the bottom display mode.



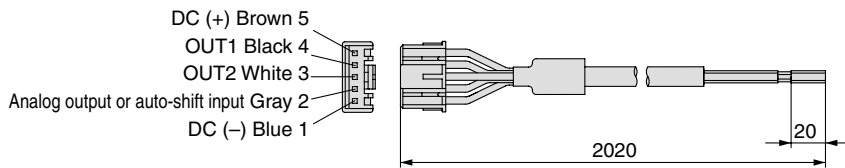
Series PSE300

Dimensions

PSE3□□

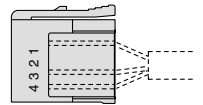


Power supply/Output connection cable (ZS-28-A)

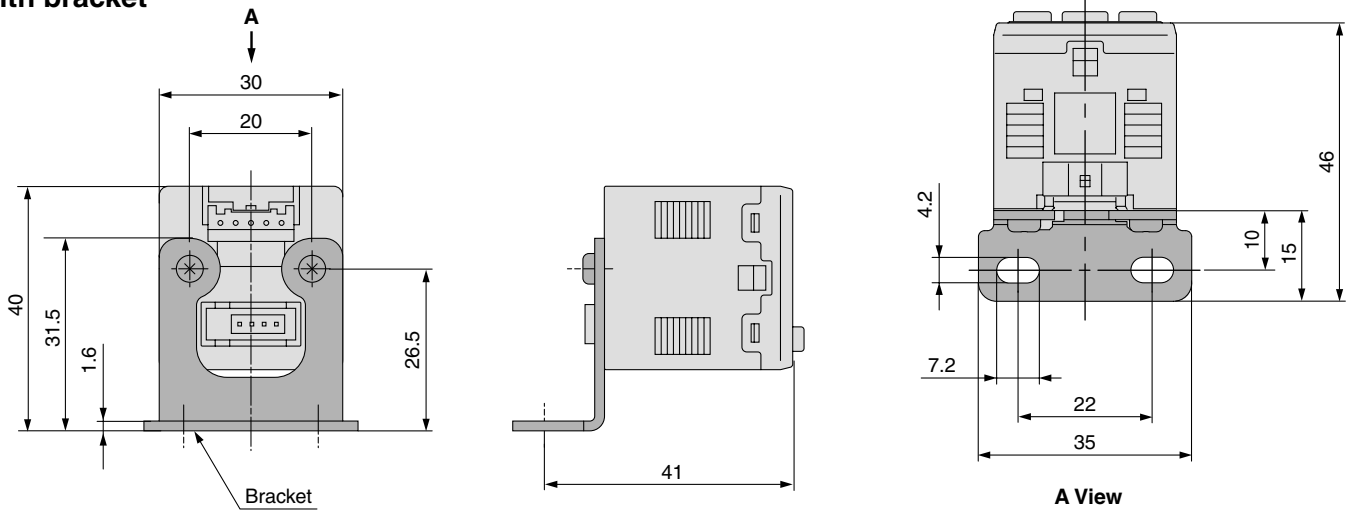


Sensor connector

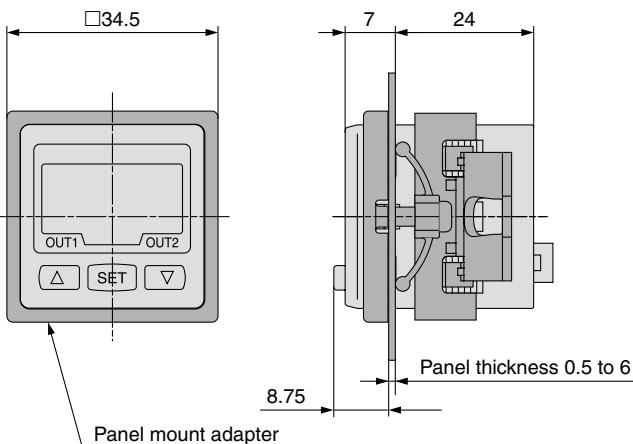
PIN no.	Terminal
1	DC (+)
2	N.C.
3	DC (-)
4	IN (1 to 5 V)



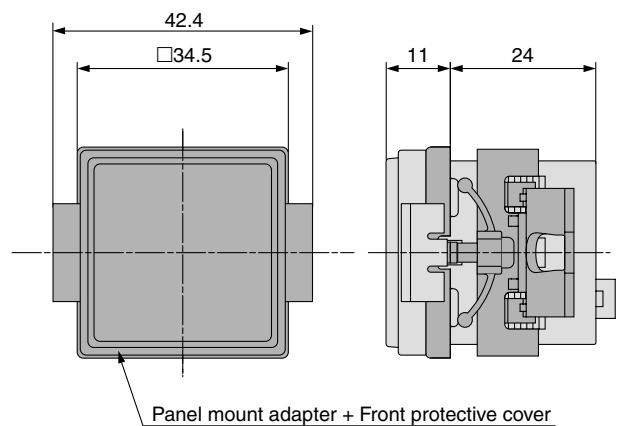
With bracket



With panel mount adapter



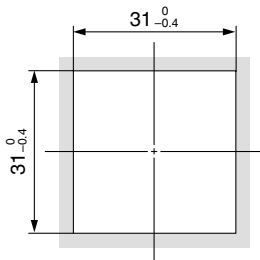
With panel mount adapter + Front protective cover



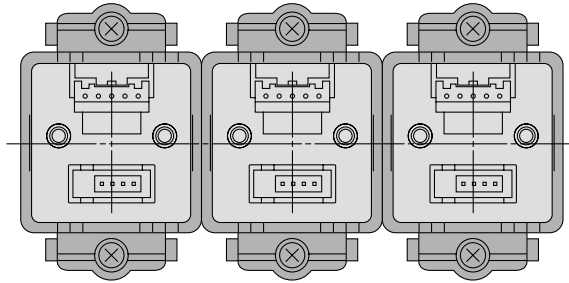
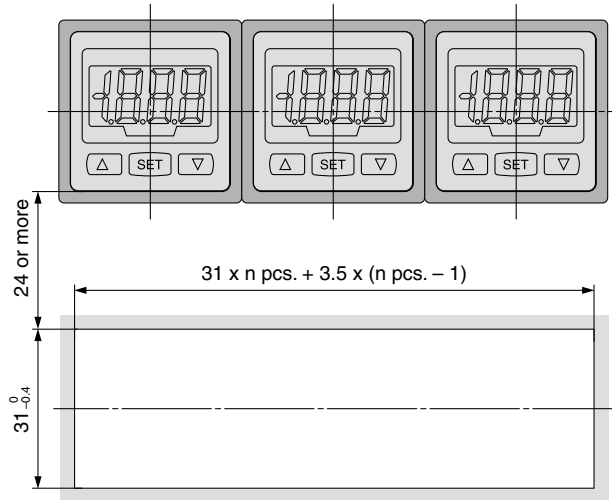
Dimensions

Panel fitting dimensions

Mount of single unit



Horizontal stacking mount of multiple units (n pcs.)



ZSE
ISE

ZSP

PS

ISA

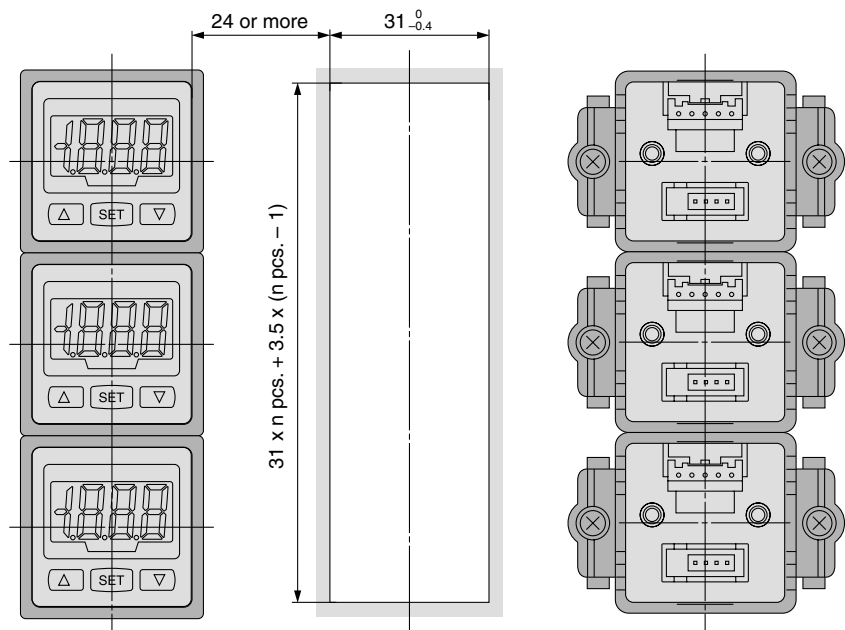
PSE

IS

ISG

ZSM

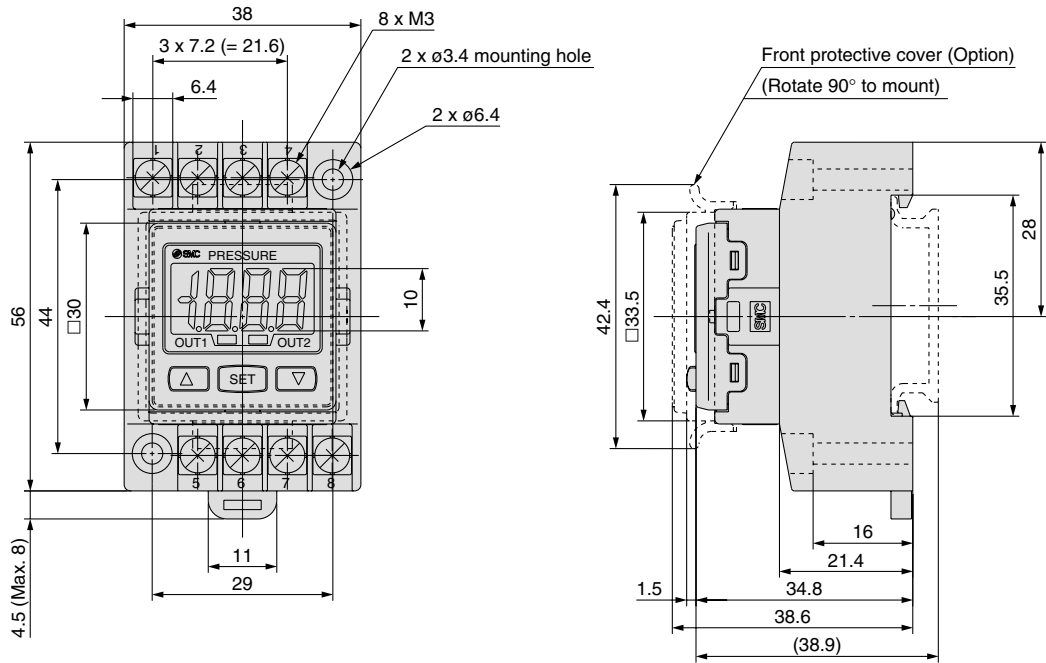
Vertical stacking mount of multiple units (n pcs.)



Series PSE300

Dimensions

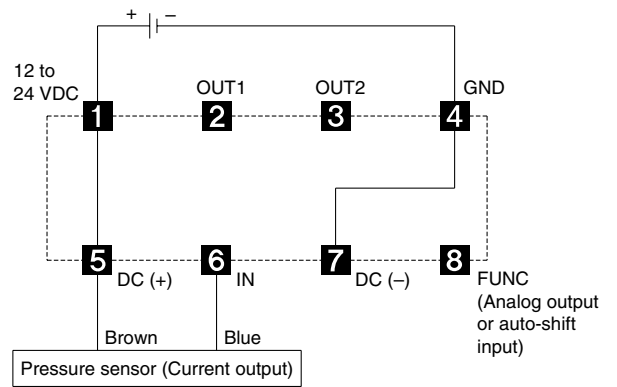
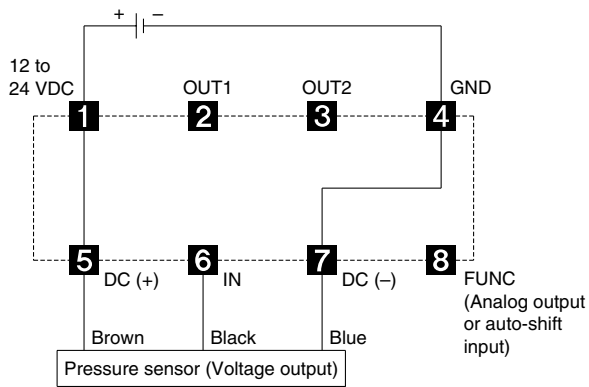
PSE3□□T



Connections

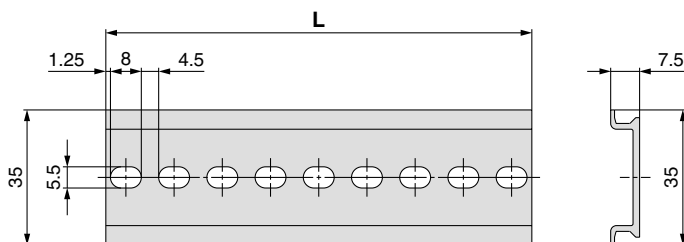
PSE30□T (Pressure input type)

PSE31□T (Current input type)



DIN Rail

ISA-5-□



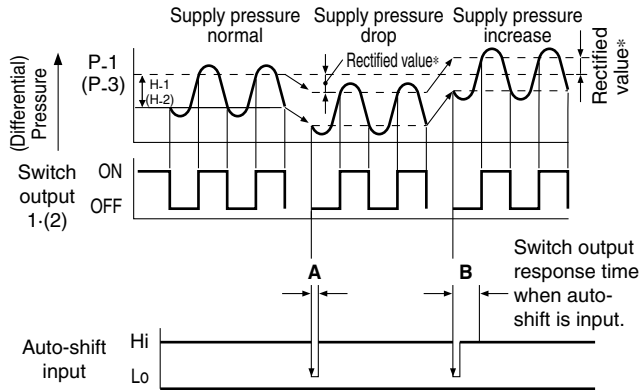
Part no.	L
ISA-5-1	73.0
ISA-5-2	135.5
ISA-5-3	173.0
ISA-5-4	210.5
ISA-5-5	248.0
ISA-5-6	285.5
ISA-5-7	323.0

Function Details

A Auto-shift function

When there are large fluctuations in the supply pressure, the switch may fail to operate correctly. The auto-shift function compensates such supply pressure fluctuations. It measures the (differential) pressure at the time of auto-shift signal input and uses it as the reference (differential) pressure to correct the set value on the switch.

Set value correction by auto-shift function



	A Auto-shift input time	B Switch output response time at time of auto-shift input
PSE200	10 ms or more	15 ms or less
PSE300	5 ms or more	10 ms or less

* Rectified value

When the auto-shift is selected, "ooo" will be displayed for approximately 1 second, and the pressure value at that point will be saved as a rectified value "C_5" (for CH1 of PSE200 and PSE300) or "C_3" (for CH2 to 4 for PSE200). Based on the saved rectified values (Note), the set value "P_1" to "P_4" (for PSE200) or "P_1", "H_1", "P_3", "H_2" (for PSE300) will likewise be rectified.

Note) When an output is reversed, "n_1" to "n_4" (for PSE200) or "n_1", "H_1", "n_3", "H_2" (for PSE300) will be rectified.

Possible Set Range for Auto-Shift Input

PSE200	Regulating pressure (Differential pressure) range	Possible set range
Compound pressure	-101.0 to 101.0 kPa	-101.0 to 101.0 kPa
Vacuum	10.0 to -101.0 kPa	101.0 to -101.0 kPa
Low pressure	-10.0 to 101.0 kPa	-100.0 to 101.0 kPa
Positive pressure	-0.1 to 1.000 MPa	-1.000 to 1.000 MPa
Low differential pressure	—	—

PSE300	Regulating pressure (Differential pressure) range	Possible set range
Compound pressure	-101.0 to 101.0 kPa	-101.0 to 101.0 kPa
Vacuum	10.0 to -101.0 kPa	101.0 to -101.0 kPa
Low pressure	-10 to 100.0 kPa	-100.0 to 100.0 kPa
Positive pressure	-0.1 to 1.000 MPa	-1.000 to 1.000 MPa
	-50 to 500 kPa	-500 to 500 kPa
Low differential pressure	-0.2 to 2.00 kPa	-2.00 to 2.00 kPa

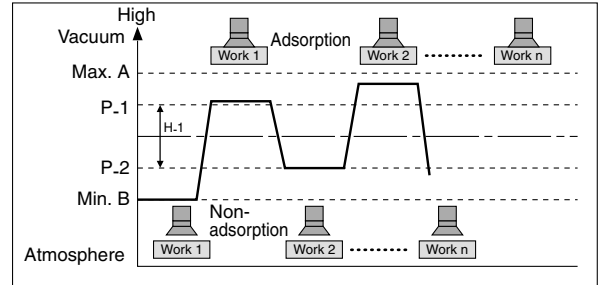
Auto-shift zero (Series PSE300 only)

The basic function of auto-shift zero is the same as the function for auto-shift. Also it corrects values on the display, based on a pressure value of 0, when the auto-shift is selected.

B Auto-preset function

Auto-preset function, when selected in the initial setting, calculates and stores the set value from the measured (differential) pressure. The optimum set value is determined automatically by repeating vacuum and break with the target workpiece several times.

Adsorption Verification

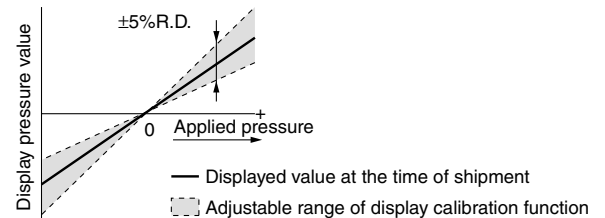


Formula for Obtaining the Set Value

	P_1 or P_3	P_2(H_1) or P_4(H_2)
PSE200	$P_1(P_3)=A-(A-B)/4$	$P_2(P_4)=B+(A-B)/4$
PSE300		$H_1(H_2)=(A-B)/2$

C Precision indicator setting

This function eliminates slight differences in the output values and allows uniformity in the numbers displayed. Displayed values of the pressure sensors can be adjusted to within $\pm 5\%$.



Note) When the precision indicator setting function is used, the set (differential) pressure value may change ± 1 digit.

D Peak and bottom display function

This function constantly detects and updates the maximum and minimum values and allows to hold the display value. For PSE300, when the \triangle ∇ are simultaneously pressed for 1 second or longer, while "holding", the hold value will be reset.

E Key lock function

This function prevents incorrect operations such as accidentally changing the set value.

F Zero-out function

This function clears and resets the zero value on the display of measured (differential) pressure within $\pm 7\%$ F.S. of the factory adjusted value.

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Function Details

G Error indication function

Error name	Error code		Description
	PSE200	PSE300	
Overcurrent error	Er 1	Er 1	Load current of switch output (OUT1) exceeds 80 mA.
	Er 2	Er 2	Load current of switch output (OUT2) exceeds 80 mA.
Residual pressure error	Er 3	Er 3	Pressure applied during the zero reset operation exceeds $\pm 7\%$ F.S. * After displaying the error code for 3 seconds, the switch automatically returns to the measuring mode. Due to individual product differences, the setting range varies ± 4 digits.
Applied pressure error	---	HHH	Supply pressure exceeds the maximum set (differential) pressure or upper limit of the display pressure.
	----	LLL	A sensor may be disconnected or miswired. Or, supply pressure is below the minimum set (differential) pressure or lower limit of the display pressure.
Auto-shift error	/	or	The value measured at the time of auto-shift input is outside the set (differential) pressure range. * After displaying the error code for one second, the switch returns to the measuring mode.
System error	Er 5	Er 4	Internal data error
	Er 6	Er 6	Internal data error
	Er 7	Er 7	Internal data error
	Er 8	Er 8	Internal data error

H Copy function (Series PSE200 only)

Information that can be copied includes the following: ① Pressure set values, ② Range settings, ③ Display units, ④ Output modes, ⑤ Response times.

- When CH1 is copied to CH2, CH3, and CH4, information of OUT1 in CH1 will be copied.
- When CH2, CH3, or CH4 is copied to CH1, information of OUT1 in CH2, CH3, or CH4 will be copied only to OUT1 in CH1.

Note) When the copy function is used, the regulating pressure value of the copied channel may change ± 1 digit.

I Auto-identification function (Series PSE200 only)

This function automatically identifies the pressure range of the pressure sensor that is connected to the multi-channel pressure sensor controller, thus eliminating the need of having to reset the range again after replacing the sensor. This function will be activated either when "Aon" is set in the auto-identification mode or when the power is turned back on in that condition. However, this function only works in conjunction with specific pressure sensors (SMC Series PSE53□). When other pressure sensors are used, this function will not work. When using other types of pressure sensors, first set the auto-identification mode to "AoF", and then proceed to setting the range. Turning the power back on while in the "Aon" setting can cause a malfunction.

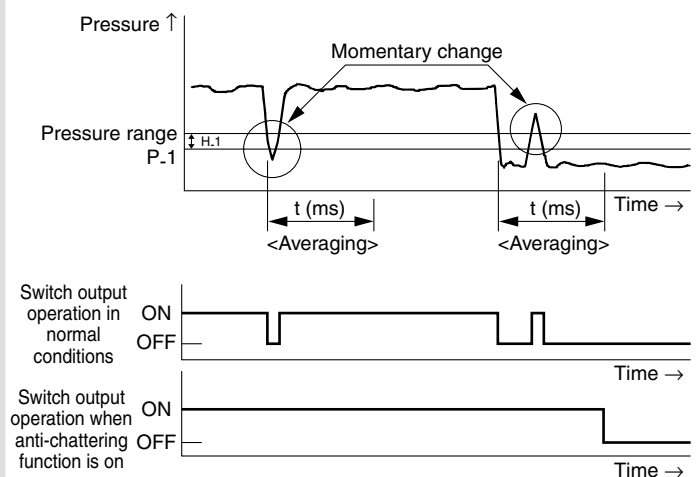
J Anti-chattering function

A large bore cylinder or ejector consumes a large volume of air in operation and may experience a temporary drop in the supply pressure. This function prevents detection of such temporary drops in the supply pressure as an error.

	Available response time settings
PSE200	20 ms, 160 ms, 640 ms
PSE300	20 ms, 160 ms, 640 ms, 1280 ms

<Principle>

This function averages pressure values measured during the response time set by the user and then compares the average pressure value with the pressure set point value to output the result on the switch.



K Channel selection function (Series PSE200 only)

Pressure value for the selected channel is displayed.

L Channel scan function (Series PSE200 only)

Pressure values for each channel are displayed by turns at 2-second intervals.

Function Details

M Unit display switching function

Display units can be switched with this function.

Units that can be displayed vary depending on the range of the pressure sensors connected to the controller.

PSE200

Pressure range	For compound pressure	For vacuum	For low pressure	For positive pressure	
Applicable pressure sensor	PSE533 PSE543 PSE563	PSE531 PSE541 PSE561	PSE532	PSE530 PSE540 PSE560	
Set pressure (differential pressure) range	-101 to 101 kPa	10 to -101 kPa	-10 to 100 kPa	-0.1 to 1 MPa	
<i>PA</i>	kPa	0.1	0.1	0.1	—
	MPa	—	—	—	0.001
<i>GF</i>	kgf/cm ²	0.001	0.001	0.001	0.01
<i>bar</i>	bar	0.001	0.001	0.001	0.01
<i>PSI</i>	psi	0.02	0.01	0.01	0.1
<i>inHg</i>	inHg	0.1	0.1	—	—
<i>mmHg</i>	mmHg	1	1	—	—

PSE300

Pressure range	For compound pressure	For vacuum	For low pressure	For positive pressure		For low differential pressure	
Applicable pressure sensor	PSE533 PSE543 PSE563	PSE531 PSE541 PSE561	PSE532	PSE530 PSE540 PSE560	PSE564	PSE550	
Set pressure (differential pressure) range	-101 to 101 kPa	10 to -101 kPa	-10 to 100 kPa	-0.1 to 1 MPa	-50 to 500 kPa	-0.2 to 2.00 kPa	
<i>PA</i>	kPa	0.2	0.1	0.1	—	1	0.01
	MPa	—	—	—	0.001	—	—
<i>GF</i>	kgf/cm ²	0.002	0.001	0.001	0.01	0.01	—
<i>bar</i>	bar	0.002	0.001	0.001	0.01	0.01	—
<i>PSI</i>	psi	0.05	0.02	0.02	0.2	0.1	—
<i>inHg</i>	inHg	0.1	0.1	—	—	—	—
<i>mmH₂O</i>	mmHg	2	1	—	—	—	1 mmH ₂ O

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Series PSE5□□

Specific Product Precautions 1

Be sure to read before handling. Refer to pages 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

Pressure Sensors

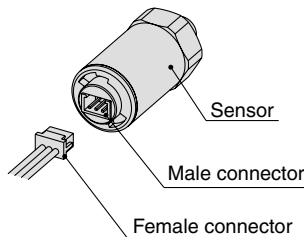
Handling

Warning

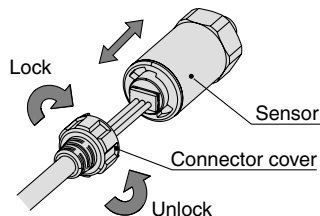
- Do not drop, bump, or apply excessive impact (PSE530, 540: 980 m/s², PSE560: 500 m/s², PSE550: 300 m/s²) while handling. Although the body of the sensor may not be damaged, the inside of the sensor could be damaged and lead to malfunction.
- The tensile strength of the cord is PSE530: 23 N, PSE540, 550, 560: 50 N or less. Applying a greater pulling force to it can cause malfunction. When handling, hold the body of the sensor—do not dangle it from the cord.
- Do not use pressure sensors with corrosive and/or flammable gases or liquids.

(PSE530)

- Do not exceed the screw-in torque of 3.5 N·m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
- Connecting the sensor cable (optional)
Hold the female connector of the sensor cable with your fingers and carefully insert it into the connector.



A connector cover is provided as part of the cable assembly (see the figure below). It is designed to keep the female cover in place, first make sure it is facing in the right direction as you slip it over the female connector, then lock it to the sensor body by turning it clockwise. To remove the cover, first unlock it by turning it counterclockwise, then pull back on it. To remove the female connector, grab it with your fingers and pull back on it. Do not pull on the cable.



(PSE540/550)

- Care should be taken when stripping the outer cable covering as the insulator may be accidentally torn or damaged if incorrectly stripped, as shown on the right.



Wiring

Caution

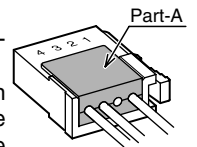
1. Connection of sensor connector

- Cut the sensor cable as illustrated Sheath 20 mm or more to the right.
- Referring to the table below, insert each lead wire of the cable at the position marked with a number corresponding to the color of the lead wire.

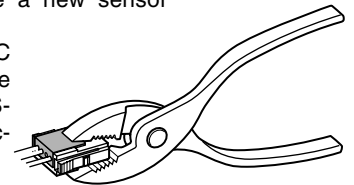
Connector no.	Wire core color
1	Brown (DC (+))
2	Not used
3	Blue (DC (-))
4	Black (OUT: 1 to 5 V)

- Confirm that the numbers on the connector match the colors of the wires and that the wires are inserted to the bottom. Press

- Part A by hand for temporary fixing.
- Press in the central part of Part A vertically with a tool such as pliers.
- A sensor connector cannot be taken apart for reuse once it is crimped. If the wire arrangement is incorrect or if the wire insertion fails, use a new sensor connector.



- For connection to SMC pressure switches, use sensor connectors (ZS-28-C□) or e-con connectors listed below.



Series	Sumitomo 3M Ltd.	Tyco Electronic AMP K.K.	OMRON Corp.
PSE53□	37104-3101-000FL	3-1473562-4	XN2A-1430
PSE54□	37104-3101-000FL	1-1473562-4	XN2A-1430
PSE55□	37104-3101-000FL	1-1473562-4	XN2A-1430
PSE56□	37104-3101-000FL	1473562-4	XN2A-1430

- For details about the e-con connector, contact the respective connector manufacturer.



Series PSE5□□

Specific Product Precautions 2

Be sure to read before handling. Refer to pages 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

Pressure Source

⚠ Warning

1. Use of toxic, corrosive or flammable gas

Do not use **toxic and corrosive gas**.

Also, note that the switch is not explosion-proof.

2. Applicable fluid (PSE530/540/550)

Do not use for corrosive, flammable gases or fluids.

(PSE560)

The fluid contact areas are stainless steel 316L (pressure sensor fittings). Use fluid that will not corrode the materials.

(For corrosiveness of fluid, consult the manufacturer of the fluid.)

3. Helium leakage test (PSE56□-A₂-B₂ only)

Helium leakage test is conducted on the welding parts. Use a ferrule by Swagelok Company (Swagelok® fittings) as the TSJ fittings and packing, ground, etc. by Swagelok Company (VCR® fittings) as the URJ fittings. If a ferrule, packing or ground by other manufacturers are to be used, conduct helium leakage test before using those products.

* Swagelok® and VCR® are trademarks of Swagelok Company.

4. About intrusion of water or drainage (PSE560)

Although the pressure sensor of this switch employs a stainless steel diaphragm that would not be damaged by water, there are cases in which the inertial force of sudden irruption at the time of vacuum release after adsorption confirmation causes water, or drainage contained in the air, to strike the pressure sensor and damage it.

In the case that water or drainage occurs, an intermediate orifice can be set up, or an adapter with external deflection (ZS-31-X175, X186) can be mounted to the fitting part of the main body.

Operating Environment

⚠ Caution

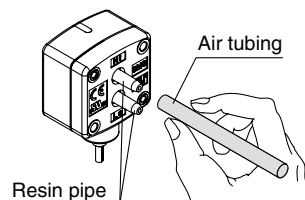
- When resin piping is used, depending on the fluid, static electricity may occur. When connecting the switch and sensor, please take adequate anti-static electricity measures on the equipment side, and do not use with a grounding that is shared with equipment that generates strong electromagnetic noise or high-frequency waves. This can result in a switch or sensor being damaged by static electricity.

Piping Connection

⚠ Caution

(PSE550)

- Cut the air tubing vertically.
- Carefully hold the air tubing and slowly push it into the resin pipe, ensuring that it is inserted by more than 8 mm. For your information, the tensile strength is approx. 25 N when inserted by more than 8 mm.
- Insert the low pressure air tubing into “Lo” pipe, and the high-pressure air tubing into “Hi” pipe.
- In cases where SMC air tubing is not used, make sure the product has similar I.D. accuracy within $\phi 4 \pm 0.3$ mm.
- Make sure that the air tubing is firmly inserted to avoid possible disconnection. (Tensile strength is approx. 25 N when being inserted 8 mm.)



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Series PSE200/300 Specific Product Precautions 1

Be sure to read before handling. Refer to pages 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

Controllers

Handling

Warning

1. Do not drop, bump, or apply excessive impact (PSE200: 980 m/s², PSE300: 100 m/s²) while handling. Although the body of the controller case may not be damaged, the inside of the controller could be damaged and cause malfunction.
2. The tensile strength of the power supply/output connection cable is 50 N; that of the pressure sensor lead wire with connector is 25 N. Applying a greater pulling force than the applicable specified tensile strength to either of these components can lead to malfunction. When handling, hold the body of the controller.

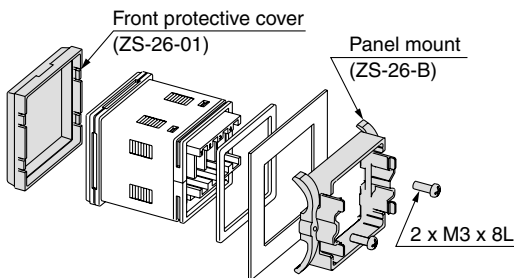
Mounting

Caution

(PSE200)

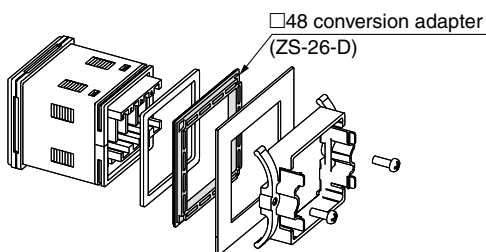
The front face of the panel mount conforms to IP65 (IP40 when using the □48 conversion adapter); however, there is a possibility of liquid filtration if the panel mount adapter is not installed securely and properly. Securely fix the adaptor with screws as shown below.

Standard



Tighten screws 1/4 to 1/2 turn after the heads are flush with the panel.

When using □48 conversion adapter



Handling

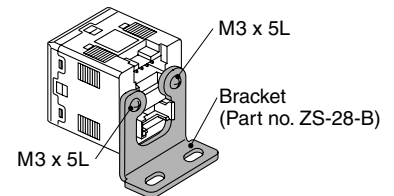
Caution

(PSE300)

1. Mounting with bracket

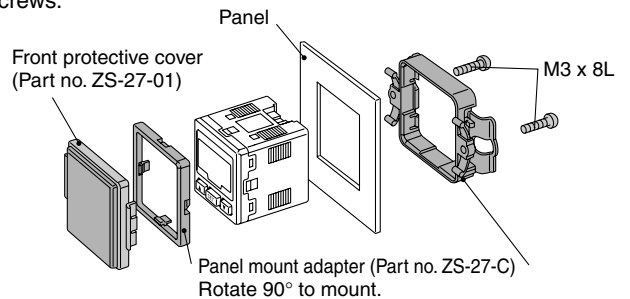
Mount the bracket on the body with two M3 x 5L mounting screws.

Tighten the bracket mounting screws at a tightening torque of 0.5 to 0.7 N·m.



2. Mounting with panel mount adapter

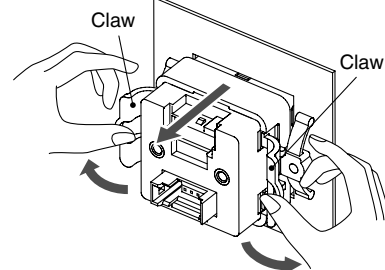
Secure the panel mount adapter with two M3 x 8L mounting screws.



3. Panel mount adapter removal

To remove the controller with panel mount adapter from the equipment, remove the two mounting screws, and pull out the controller while pushing the claws outward.

Failure to follow this procedure can cause damage to the controller and panel mount adapter.



(PSE300T)

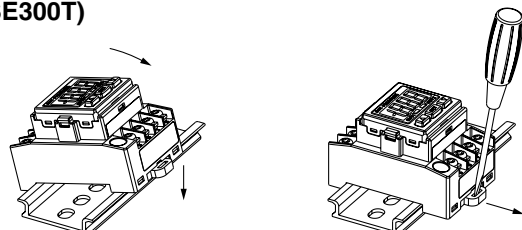


Figure (a)

Figure (b)

1. Please affix the main body by hooking the claws of the lower part over the DIN rail and pressing in the direction of the arrows as shown in Figure (a).

When removing the main body, use a flat head screwdriver or similar tool to pull it in the direction of the arrows as shown in Figure (b).



Series PSE200/300 Specific Product Precautions 2

Be sure to read before handling. Refer to pages 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

Connection

Warning

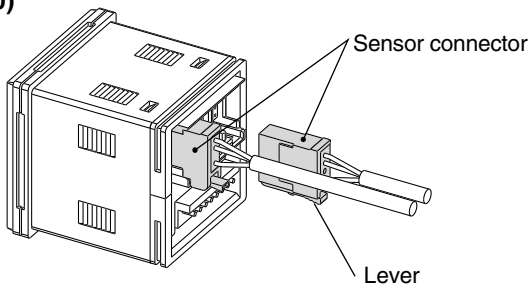
1. Incorrect wiring can damage the switch and cause malfunction or erroneous switch output. Connections should be done while the power is turned off.
2. Do not attempt to insert or pull out the pressure sensor or its connector when the power is on. Switch output may malfunction.
3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these other lines.
4. If a commercial switching regulator is used, make sure that the F.G. terminal is grounded.

Wiring

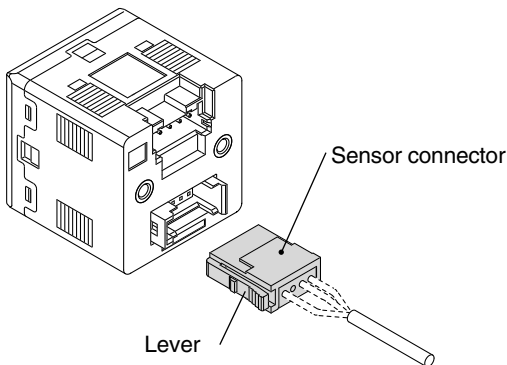
Caution

1. Connection and removal of sensor connector
 - Hold the lever and connector body with two fingers and insert the connector straight into the pin until it is locked with a click sound.
 - To remove the connector, pull it out straight while pressing the lever with one finger.

(PSE200)



(PSE300)



2. Connection of power supply cable and output cable

- Securely connect the power supply cable and the output cable to the body until a click is heard.

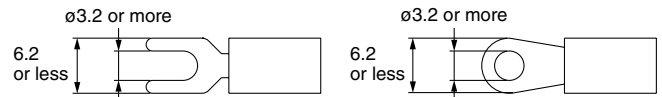
Wiring

Caution

3. Applicable crimping terminal dimensions (PSE300T)

An M3 terminal screw is used.

If employing a crimping terminal, please use the part shown below.



(Unit: mm)

Please tighten the terminal screw with a tightening torque of 0.35 N·m.

Operating Environment

Warning

1. Our pressure sensor controllers are CE marked; however, they are not equipped with surge protection against lightning. Lightning surge countermeasures should be applied directly to system components as necessary.

(PSE200)

- If the product is mounted on a panel, the "IP65" enclosure rating is applicable only to the front parts. Do not use in an environment where oil splashing or spraying are anticipated.

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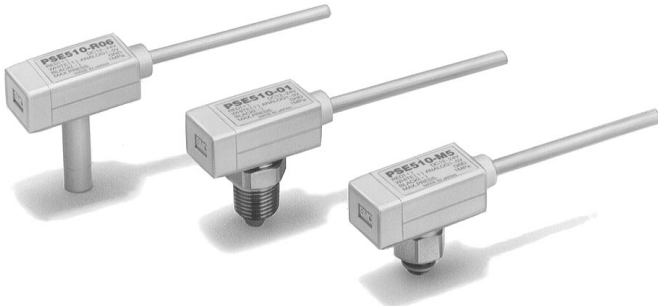
PSE

IS

ISG

ZSM

Pressure Sensor For General Pneumatic Applications Series *PSE 510*



How to Order

PSE51 <input type="checkbox"/> — <input type="checkbox"/>															
Operating pressure ● <table border="1"> <tr> <td>0</td> <td>High pressure (0 to 1 MPa)</td> </tr> <tr> <td>1</td> <td>Vacuum (-101 to 0 kPa)</td> </tr> <tr> <td>2</td> <td>Low pressure (0 to 100 kPa)</td> </tr> </table>	0	High pressure (0 to 1 MPa)	1	Vacuum (-101 to 0 kPa)	2	Low pressure (0 to 100 kPa)	Porting ● <table border="1"> <tr> <td>R06</td> <td>ø6 reducer</td> </tr> <tr> <td>M5</td> <td>M5 X 0.8</td> </tr> <tr> <td>01</td> <td>R(PT) 1/8, M5 X 0.8</td> </tr> <tr> <td>T01</td> <td>NPTF 1/8, M5 X 0.8</td> </tr> </table>	R06	ø6 reducer	M5	M5 X 0.8	01	R(PT) 1/8, M5 X 0.8	T01	NPTF 1/8, M5 X 0.8
0	High pressure (0 to 1 MPa)														
1	Vacuum (-101 to 0 kPa)														
2	Low pressure (0 to 100 kPa)														
R06	ø6 reducer														
M5	M5 X 0.8														
01	R(PT) 1/8, M5 X 0.8														
T01	NPTF 1/8, M5 X 0.8														

Sensor Specifications/General Pneumatic Applications

Model	PSE510-□	PSE511-□	PSE512-□
Operating pressure range	0 to 1 MPa	-101 to 0kPa	0 to 100kPa
Max. pressure	1MPa	200kPa	
Fluid	Air, Non corrosive gases		
Output specification	Analog (1 to 5V, Load impedance: 10kΩ or more)		
Supply voltage	12 to 24V DC (Ripple ± 10% or less)		
Current consumption	10mA or less		
Operating temperature range	0 to 50°C (No condensation)		
Temperature characteristics (25°C standard)	25 ± 10°C	± 1%F.S. or less	
	0 to 50°C	± 1.5% F.S. or less	
Repeatability	± 0.3% F.S. or less		
Voltage resistance	Between external terminal and housing 1000V AC, 50/60Hz for 1 min.		
Insulation resistance	Between external terminal and housing 2MΩ (500V DC by megameter)		
Vibration resistance	10 to 500Hz Pulse width: 1.5mm or acceleration 98 m/s ² (at the smaller vibration) to X, Y, Z direction (2 hours)		
Shock resistance	980 m/s ² to X, Y, Z direction (3 times for each direction)		
Protective construction	IP40		

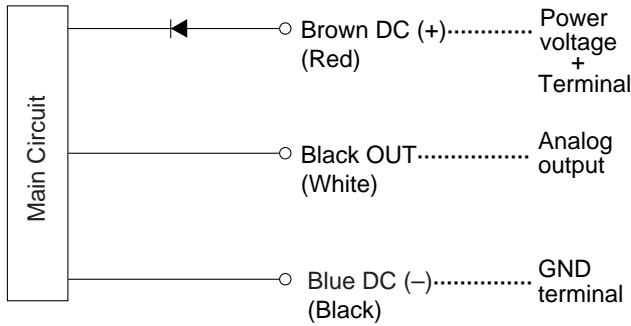
Note) When pressure sensor PSE510 series is connected to controller PSE100 series, display range is as series PSE100.

Process Connection

Model		R06	M5	01	T01
Material	Housing	Resin housing: PBT	Resin housing: PBT Fitting: Stainless steel (SUS303)	Resin housing: PBT Fitting: C3604BD (Electroless nickel plated)	Resin housing: PBT Fitting: C3604BD (Electroless nickel plated)
	Pressure sensor area	Pressure sensor: Silicon, O ring: NBR			
Lead wire	Oil proof vinyl insulation ø2.55, 0.15mm ² X 3 wire (Brown, Blue, Black) 3000mm				
Port size		ø6 reducer	M5 X 0.8	R(PT) 1/8, M5 X 0.8	NPTF1/8, M5 X 0.8
Weight (Excluding lead wire)		Approx. 7g	Approx. 10g	Approx. 12g	

Internal Circuit

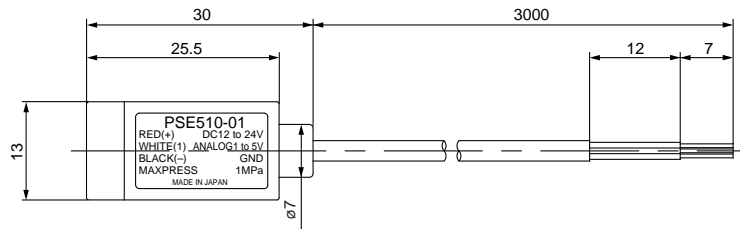
Lead wire colors inside () are those prior to conformity with IEC standards.



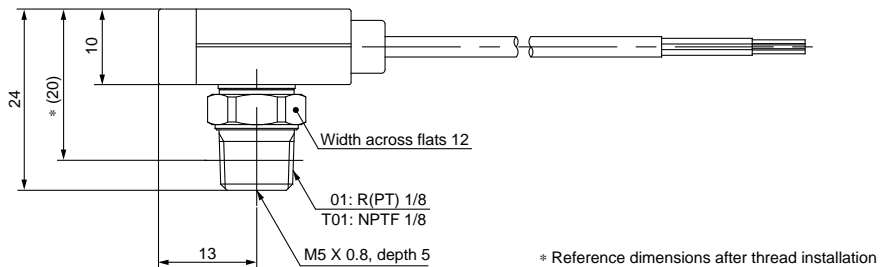
Caution

Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.3.0-7 to 3.0-9 for precautions on every series.

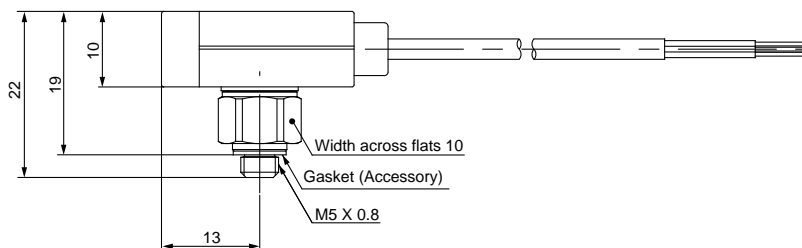
Dimensions



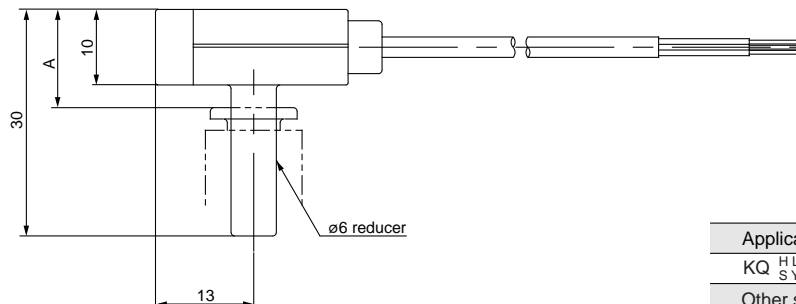
01, T01



M5



R06



Applicable fitting	A
KQ ^{HLT} _{SY} 06-M5	16
Other series KQ, KS	13
KJ Series	14.5
KJ (-X20) Series	16

PSE

ZSE4
ISE4

ZSE5
ISE5

ZSE6
ISE6

ZSE3
ISE3

GS

PS

ISA

ZSE1
ISE1

ZSE2
ISE2

ZSP

IS□

ZSM

PF□

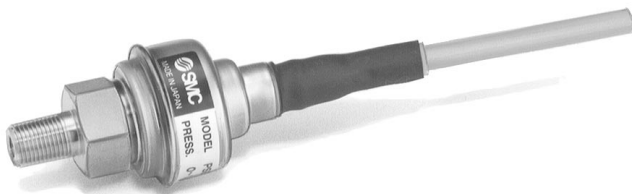
IF□



Pressure Sensor

For General Purpose Fluid Applications

Series *PSE520*



How to Order

PSE52 **0** —

Operating pressure

0 High pressure (0 to 1 MPa)

Porting

01	R(PT) 1/8, M5 X 0.8
02	R(PT) 1/4, M5 X 0.8
T01	NPTF 1/8, M5 X 0.8
T02	NPTF 1/4, M5 X 0.8

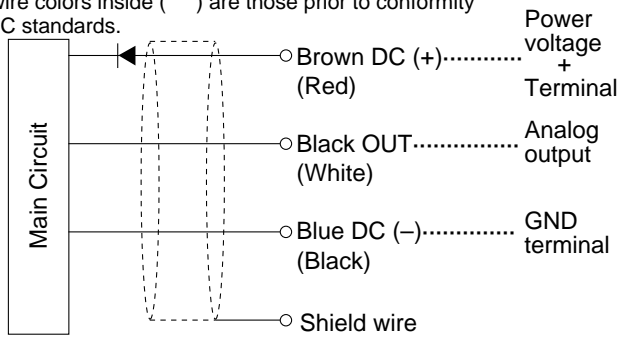
Sensor Specifications/General Purpose Fluid Applications

Model	PSE520-01	PSE520-02	PSE520-T01	PSE520-T02
Operating pressure range	0 to 1 MPa			
Max. pressure	2MPa			
Fluid	Fluid non corrosive to SUS304, SUS630			
Output specification	Analog (1 to 5V, Load impedance: 10kΩ or more)			
Supply voltage	12 to 24 V DC (Ripple ± 10% or less)			
Current consumption	15mA or less			
Operating temperature range	-10 to 70°C (No condensation or frost formation)			
Temperature characteristics (25°C standard)	25 ± 10°C	± 1% F.S. or less		
	-10 to 70°C	± 3% F.S. or less		
Repeatability	± 0.3% F.S. or less			
Voltage resistance	Between GND terminal and housing 250V AC for 1 min.			
Insulation resistance	Between external terminal and housing 100MΩ (50V DC by megameter)			
Vibration resistance	10 to 55Hz Pulse width: 1.5mm to X, Y, Z direction (2 hours)			
Shock resistance	294 m/s ² (11ms or less) to X, Y, Z direction (3 times for each direction)			
Protective construction	IP65			
Material	Housing	Housing: Stainless steel (SUS304), Fitting: Stainless steel (SUS304)		
	Pressure sensor area	Diaphragm: Stainless steel (SUS630)		
Lead wire	Special elastic polyvinyl chloride ø6, 0.34mm ² , 3 wire, 3000mm			
Port size	R(PT)1/8, M5 X 0.8	R(PT)1/4, M5 X 0.8	NPTF1/8, M5 X 0.8	NPTF1/4, M5 X 0.8
Weight	Approx. 220g			

Note) When pressure sensor PSE 520 series is connected to controller PSE100 series, display range is as PSE100 series.

Internal Circuit

Lead wire colors inside () are those prior to conformity with IEC standards.

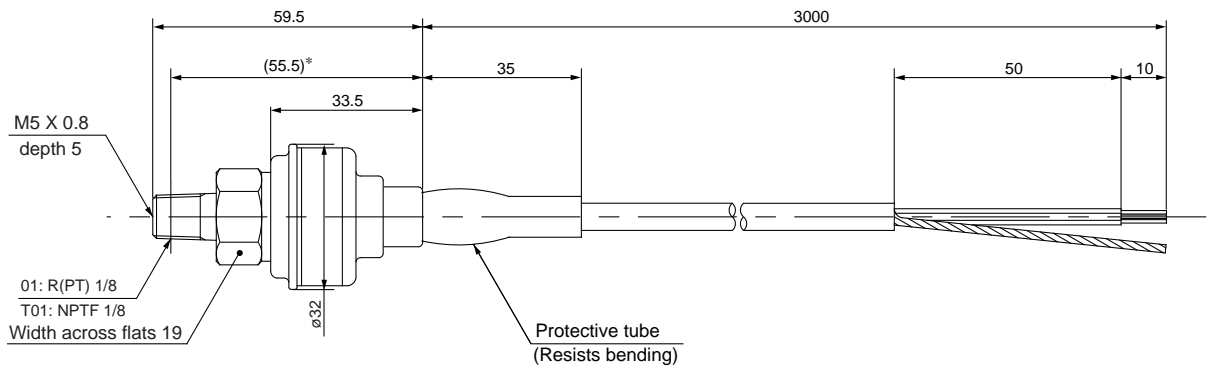


⚠ Caution

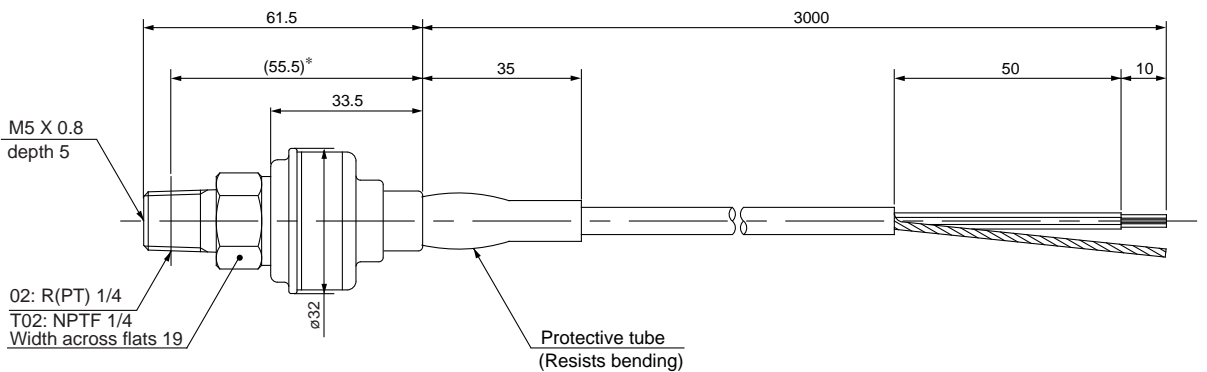
Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.3.0-7 to 3.0-9 for precautions on every series.

Dimensions

PSE520-01, T01



PSE520-02, T02



* Reference dimensions after thread installation

PSE

ZSE4
ISE4

ZSE5
ISE5

ZSE6
ISE6

ZSE3
ISE3

GS

PS

ISA

ZSE1
ISE1

ZSE2
ISE2

ZSP

IS

ZSM


PF


IF




Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414 ^{Note 1)}, JIS B 8370 ^{Note 2)} and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power--General rules relating to systems.

Note 2) JIS B 8370: General Rules for Pneumatic Equipment

Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driver objects have been confirmed.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.



Common Precautions

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

Selection

Warning

1. Confirm the specifications.

Products represented in this catalog are designed for use in compressed air applications only (including vacuum), unless otherwise indicated.

Do not use the product outside their design parameters.

Please contact SMC when using the products in applications other than compressed air (including vacuum).

Mounting

Warning

1. Instruction manual

Install the products and operate them only after reading the instruction manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

2. Securing the space for maintenance

When installing the products, please allow access for maintenance.

3. Tightening torque

When installing the products, please follow the listed torque specifications.

Piping

Caution

1. Before piping

Make sure that all debris, cutting oil, dust, etc., are removed from the piping.

2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Air Supply

Warning

1. Operating fluid

Please consult with SMC when using the product in applications other than compressed air (including vacuum).

Regarding products for general fluid, please ask SMC about applicable fluids.

2. Install an air dryer, aftercooler, etc.

Excessive condensate in a compressed air system may cause valves and other pneumatic equipment to malfunction.

Installation of an air dryer, after cooler etc. is recommended.

3. Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will over flow and allow the condensate to enter the compressed air lines.

If the drain bowl is difficult to check and remove, it is recommended that a drain bowl with the auto-drain option be installed.

For compressed air quality, refer to "Air Preparation Equipment" catalog.

4. Use clean air

If the compressed air supply is contaminated with chemicals, synthetic materials, corrosive gas, etc., it may lead to break down or malfunction.

Operating Environment

Warning

1. Do not use in environments where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibrations and/or shocks.

4. Do not mount the product in locations where it is exposed to radiant heat.

Maintenance

Warning

1. Maintenance procedures are outlined in the operation manual.

Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.

2. Maintenance work

If handled improperly, compressed air can be dangerous.

Assembly, handling and repair of pneumatic systems should be performed by qualified personnel only.

3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

4. Shut-down before maintenance

Before attempting any kind of maintenance make sure the supply pressure is shut of and all residual air pressure is released from the system to be worked on.

5. Start-up after maintenance and inspection

Apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.

6. Do not make any modifications to be product.

Do not take the product apart.

Quality Assurance Information (ISO 9001, ISO 14001)

Reliable quality of products in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards “ISO 9001” and “ISO 14001”, and created a complete structure for quality assurance and environmental controls. SMC products pursue to meet its customers’ expectations while also considering company’s contribution in society.

Quality management system ISO 9001

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.

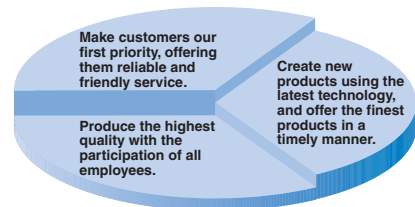


Environmental management system ISO 14001

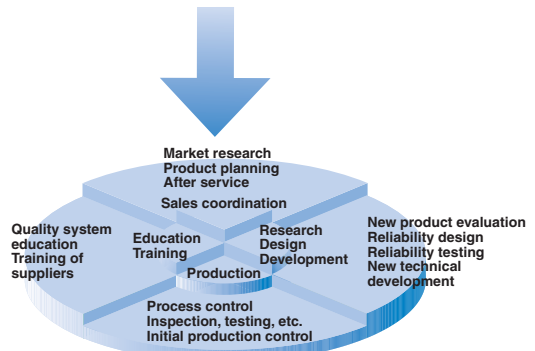
This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.



SMC’s quality control system



Quality policies



Quality control activities

SMC Product Conforming to Inter

SMC products complying with EN/ISO, CSA/UL standards are supporting



The CE mark indicates that machines and components meet essential requirements of all the EC Directives applied.

It has been obligatory to apply CE marks indicating conformity with EC Directives when machines and components are exported to the member Nations of the EU.

Once "A manufacturer himself" declares a product to be safe by means of CE marking (declaration of conformity by manufacturer), free distribution inside the member Nations of the EU is permissible.

■ CE Mark

SMC provides CE marking to products to which EMC and Low Voltage Directives have been applied, in accordance with CETOP (European hydraulics and pneumatics committee) guide lines.

■ As of February 1998, the following 18 countries will be obliged to conform to CE mark legislation

Iceland, Ireland, United Kingdom, Italy, Austria, Netherlands, Greece, Liechtenstein, Sweden, Spain, Denmark, Germany, Norway, Finland, France, Belgium, Portugal, Luxembourg

■ EC Directives and Pneumatic Components

• Machinery Directive

The Machinery Directive contains essential health and safety requirements for machinery, as applied to industrial machines e.g. machine tools, injection molding machines and automatic machines. Pneumatic equipment is not specified in Machinery Directive. However, the use of SMC products that are certified as conforming to EN Standards, allows customers to simplify preparation work of the Technical Construction File required for a Declaration of Conformity.

• Electromagnetic Compatibility (EMC) Directive

The EMC Directive specifies electromagnetic compatibility. Equipment which may generate electromagnetic interference or whose function may be compromised by electromagnetic interference is required to be immune to electromagnetic affects (EMS/immunity) without emitting excessive electromagnetic affects (EMI/emission).

• Low Voltage Directive

This directive is applied to products, which operate above 50 VAC to 1000 VAC and 75 VDC to 1500 VDC operating voltage, and require electrical safety measures to be introduced.

• Simple Pressure Vessels Directive

This directive is applied to welded vessels whose maximum operating pressure (PS) and volume of vessel (V) exceed 50 bar/L. Such vessels require EC type examination and then CE marking.

national Standards

you to comply with EC directives and CSA/UL standards.



■ CSA Standards & UL Standards

UL and CSA standards have been applied in North America (U.S.A. and Canada) symbolizing safety of electric products, and are defined to mainly prevent danger from electric shock or fire, resulting from trouble with electric products. Both UL and CSA standards are acknowledged in North America as the first class certifying body. They have a long experience and ability for issuing product safety certificate. Products approved by CSA or UL standards are accepted in most states and governments beyond question.

Since CSA is a test certifying body as the National Recognized Testing Laboratory (NRTL) within the jurisdiction of Occupational Safety and Health Administration (OSHA), SMC was tested for compliance with CSA Standards and UL Standards at the same time and was approved for compliance with the two Standards. The above CSA NRTL/C logo is described on a product label in order to indicate that the product is approved by CSA and UL Standards.

■ TSSA (MCCR) Registration Products

TSSA is the regulation in Ontario State, Canada. The products that the operating pressure is more than 5 psi (0.03 MPa) and the piping size is bigger than 1 inch. fall into the scope of TSSA regulation.

Products conforming to CE Standard



With CE symbol for simple visual recognition

In this catalog each accredited product series is indicated with a CE mark symbol. However, in some cases, every available models may not meet CE compliance. Please visit our web site for the latest selection of available models with CE mark.

<http://www.smcworld.com>