

Remote Type Pressure Sensors Pressure Sensor Controllers

 Compact Pressure Sensor for Pneumatics **PSE530**



 Compact Pressure Sensor for Pneumatics **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

Current input specification is added.



Connection type

New



DIN rail/Terminal block type

Series PSE

Remote Type Pressure Sensors/

		Pressure Sensors				Controllers		
Model		PSE530 P. 1	PSE540 P. 4	PSE550 P. 7	PSE560 P. 10	PSE200 P. 13	PSE300 P. 19	
Basic Specifications	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	
Functions	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		
Options	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	
	Wiring	e-con	●	●	●	●	●	●
		Flexible cable		●	●			
	Mounting	Direct	●	●	●	●		●
		With bracket			●			●
		Panel mount					●	●
DIN rail							●	

* For URJ, TSJ, refer to the back of page 3.

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 5 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 page 26.)

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.

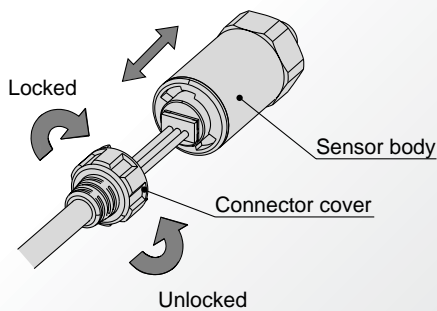
Compact Pressure Sensor For Pneumatics

Series *PSE530*



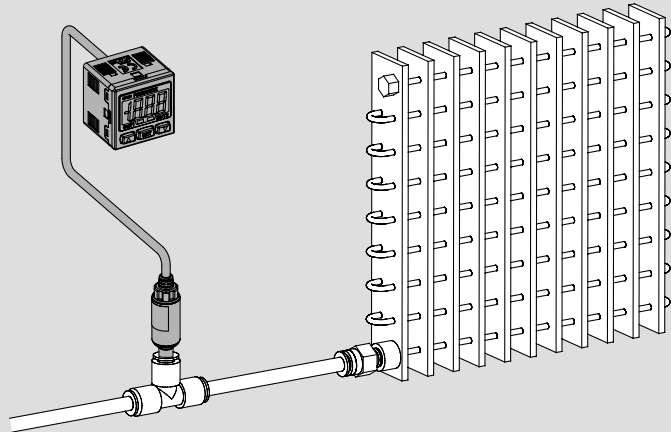
Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
PSE530		0	1 MPa		
PSE531	-101 kPa	0			
PSE532		0	101 kPa		
PSE533	-101 kPa		101 kPa		

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.

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	

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.

Note) At the factory, the connector is not attached to the cable, but packed together with it for 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, 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	Conforming to CE marking			

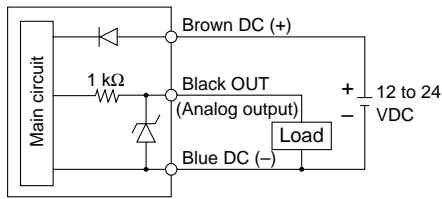
Piping Specifications

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	Body: PBT	
Weight	With sensor cable (3 m)	41 g	38 g
	Without sensor cable	7 g	3.8 g

Series PSE530

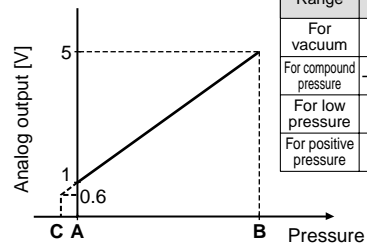
Internal Circuit

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



Analog Output

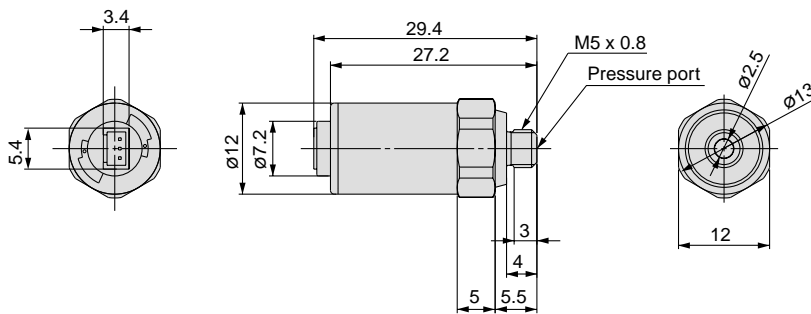
1 to 5 VDC



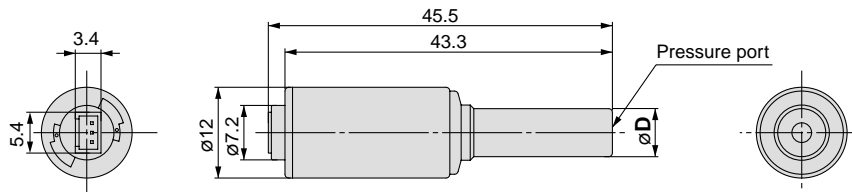
Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-101 kPa to 101 kPa	-101 kPa	101 kPa	—
For low pressure	0 to 101 kPa	0	101 kPa	-10.1 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa

Dimensions

PSE53□-M5



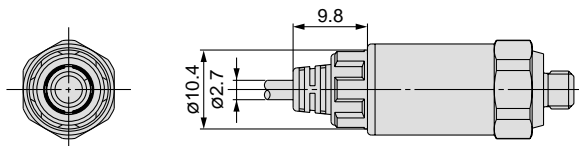
PSE53□-R06 R07



(mm)

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

With sensor cable



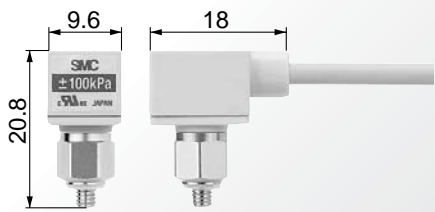
Compact Pressure Sensor For Pneumatics

Series *PSE540*



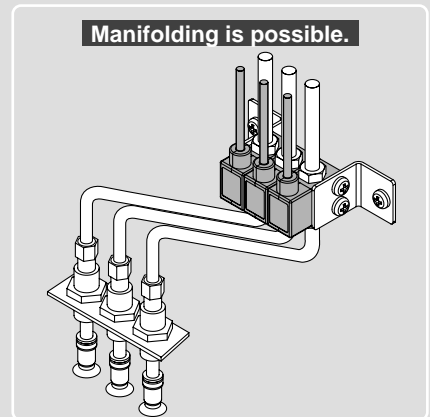
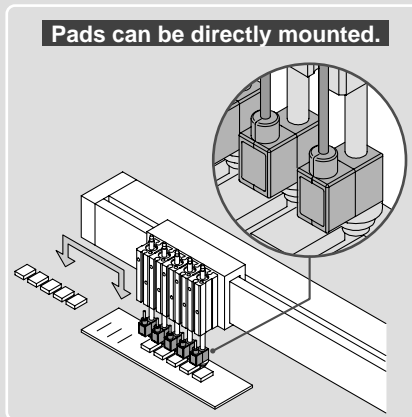
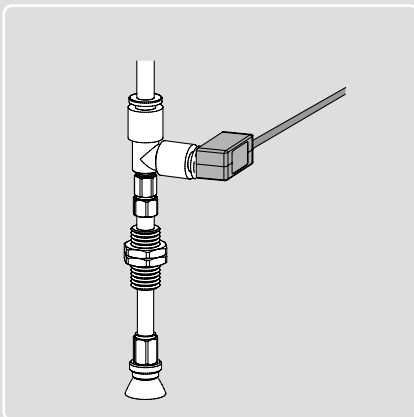
Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
PSE540		0	1 MPa		
PSE541	-101 kPa	0			
PSE543	-100 kPa		100 kPa		

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



In case of PSE54□-M3

Application examples



Compact Pressure Sensor For Pneumatics

Series PSE540



How to Order

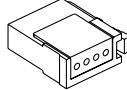
Sensor range

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)

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.

Port size

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	

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

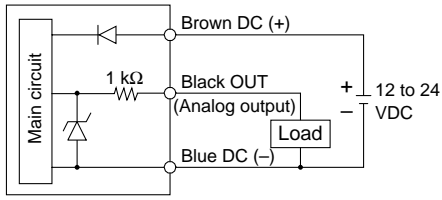
Model	PSE540	PSE541	PSE543
Rated pressure range	0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa
Extension analog output range	-0.1 to 0 MPa	10.1 to 0 kPa	—
Proof pressure	1.5 MPa	500 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas		
Power supply voltage	12 to 24 VDC, Ripple (p-p) 10% or less (with 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	Conforming to 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	R1/8 M5 x 0.8	NPT1/8 M5 x 0.8	ø4 reducer	ø6 reducer	M5 female thread, through type	M5 female thread, through type (with mounting hole)
Material	Case	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							
Weight	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

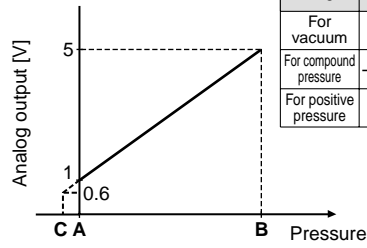
Internal Circuit

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



Analog Output

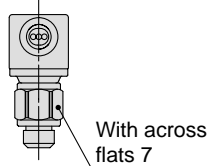
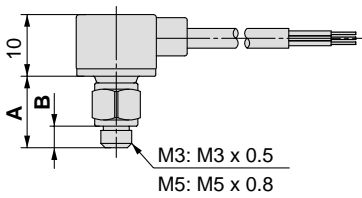
1 to 5 VDC



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

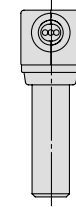
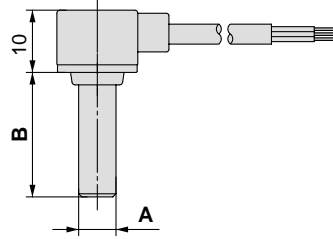
PSE54□-M3
M5



(mm)

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

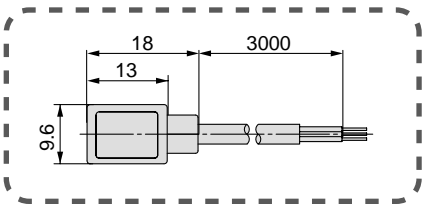
PSE54□-R04
R06



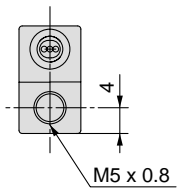
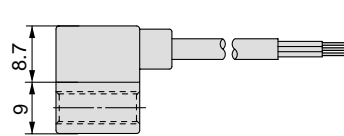
(mm)

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

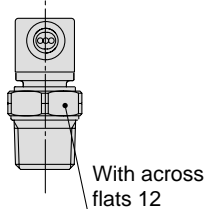
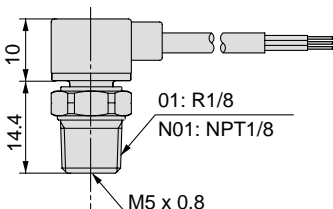
Common Dimensions



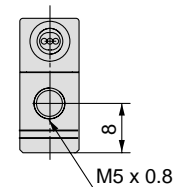
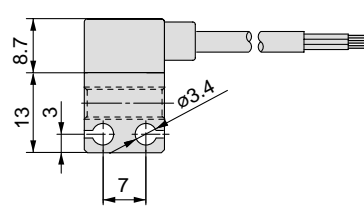
PSE54□-IM5



PSE54□-01
N01



PSE54□-IM5H



Low Differential Pressure Sensor

Series *PSE550*

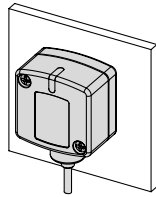


Series	Rated pressure range		
	0	1 kPa	2 kPa
PSE550	0	2 kPa	

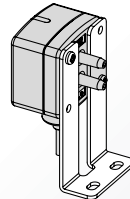
With LED display for confirming energization



2 mounting types



Mounting directly



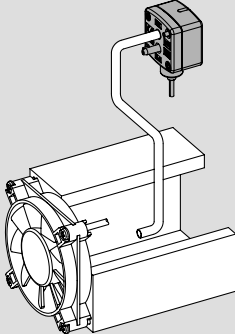
Mounting with bracket

Accuracy
±1% F.S.

Proof pressure
65 kPa

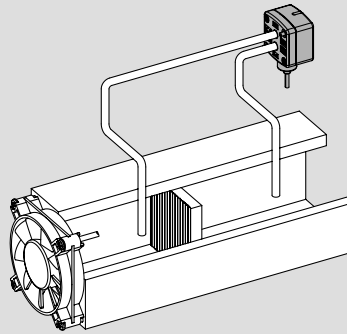
Application examples

Flow control
Series *PSE550*



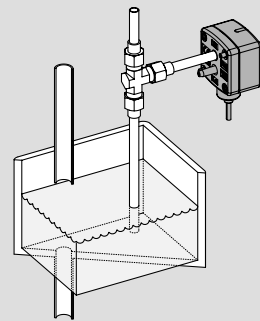
Can control air flow by monitoring the flow rate inside the duct.

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.

Low Differential Pressure Sensor Series PSE550



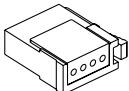
How to Order

PSE550-□-□-□

Output specifications

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

Option 2 (Connector)

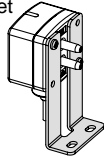
Nil	None
C2	Connector for pressure sensor controller (1 pc.) 

Note 1) Current output type cannot be connected to the PSE200 series.
Note 2) At the factory, the connector is not attached to the cable, but packed together with it 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.

Option 1 (Bracket)

Nil	None
A	Bracket 

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

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, 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
Weight	With sensor cable	75 g
	Without sensor cable	35 g
Standards	Conforming to CE marking, UL (CSA)	

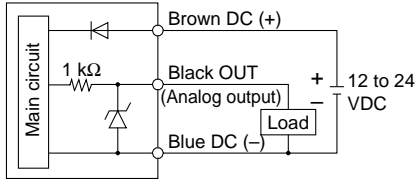
Note) Can detect differential pressure from 0 to 2 kPa within the range of -50 to 50 kPa.

Series PSE550

Internal Circuit

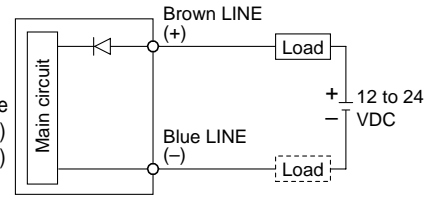
PSE550

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



PSE550-28

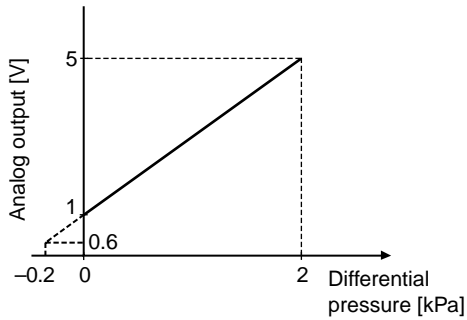
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



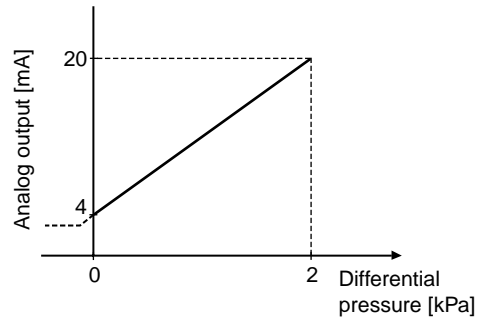
* Install the load either on the LINE (+) or LINE (-) side.

Analog Output

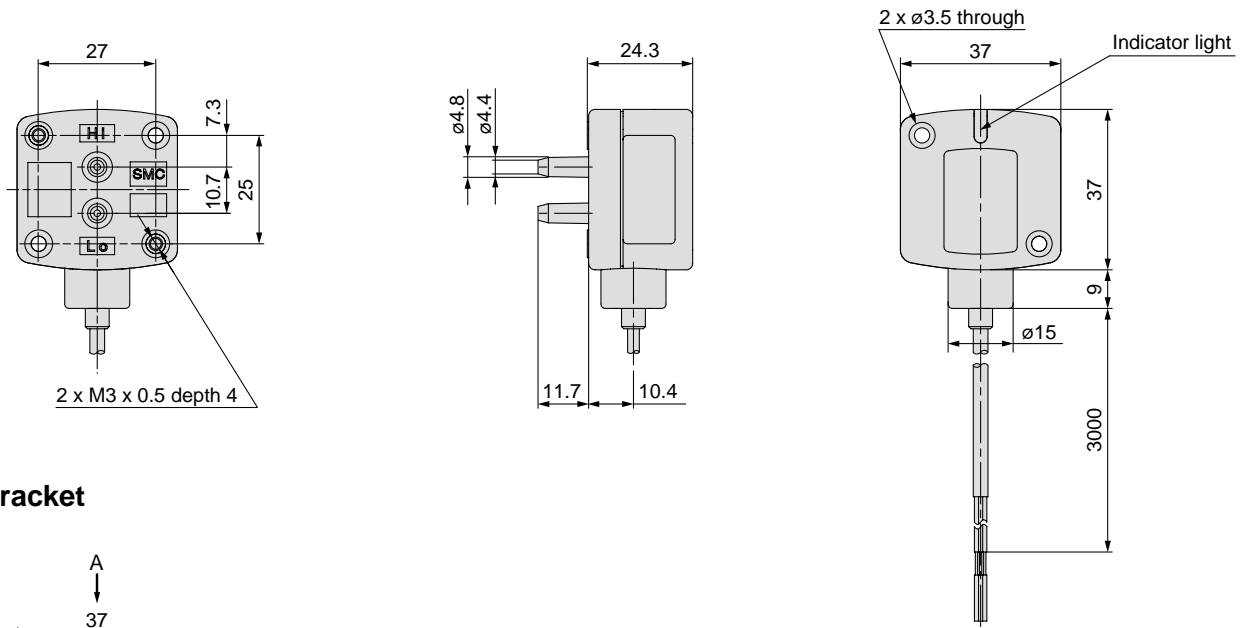
1 to 5 VDC



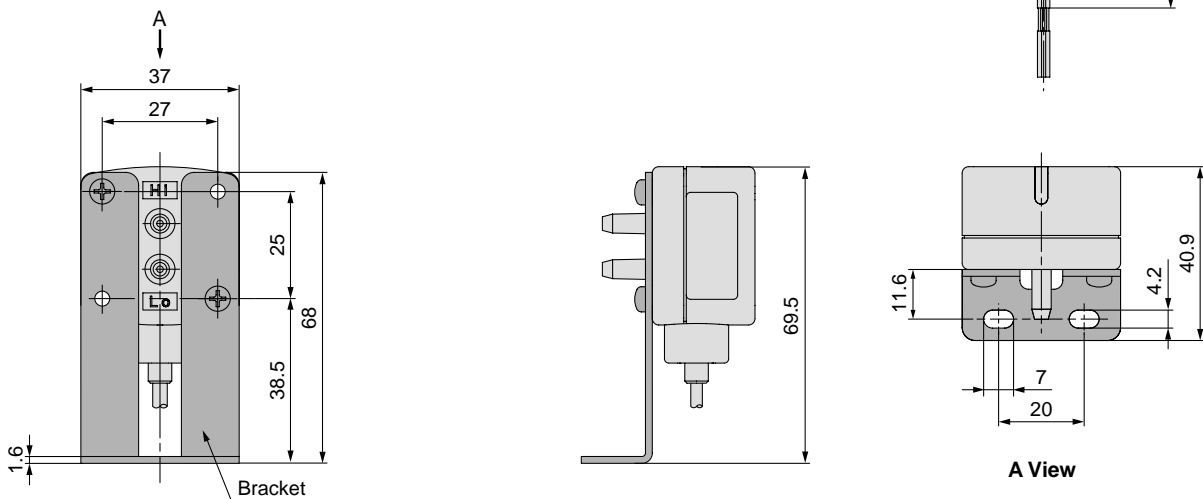
4 to 20 mADC



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
- Water
- Nitrogen
- Hydraulic oil
- Silicon oil
- Air
- Carbon dioxide
- Lubricant
- Fluorocarbon

Wetted parts material
Stainless steel 316L

IP65

**Copper-free
Fluorine-free**

Oil-free
(Single diaphragm construction)

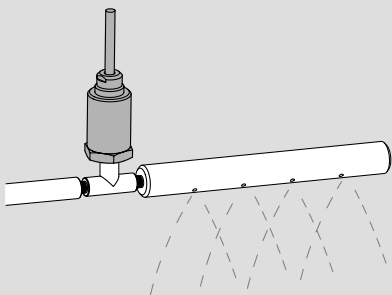
Variation

Port type	Thread type	Special fitting type for semiconductors
Port size	R1/8, R1/4, Rc1/8, NPT1/8, NPT1/4	URJ 1/4, TSJ 1/4*
Leakage	$1 \times 10^{-6} \text{Pa} \cdot \text{m}^3/\text{s}$	$1 \times 10^{-10} \text{Pa} \cdot \text{m}^3/\text{s}$
Analog output	1 to 5 V voltage output	
	4 to 20 mA current output	

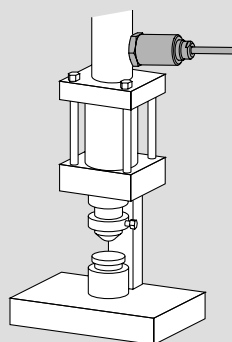
* For URJ1/4, TSJ1/4, refer to the back of page 3.

Application examples

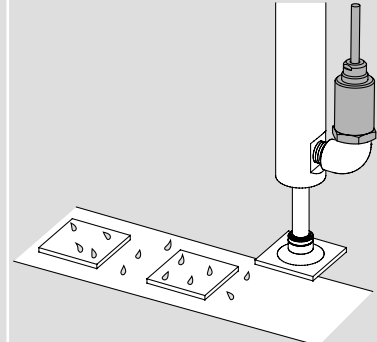
Washing line



Verification of caulking by hydraulic cylinders



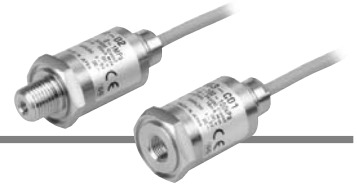
Adsorption confirmation of work pieces with moisture



Note: Please be careful of the inertial force of sudden water irruption at the time of vacuum release. Parts such as the adapter with throttle (ZS-31-X175 etc.) are available as a measure to avoid sudden irruption. Please refer to the back of page 3 (About intrusion of water or drainage) for details.

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

PSE56 **0** - **01** - **□** - **□**

Option

Description	Part no.	Note
Connector for pressure sensor controller	ZS-28-C	1 pc.
Adapter with throttle Rc1/4	ZS-31-X175	1 pc.
Adapter with throttle NPT1/4	ZS-31-X185	1 pc.
Adapter with throttle Rc1/8	ZS-31-X188	1 pc.
Adapter with throttle NPT1/8	ZS-31-X189	1 pc.

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

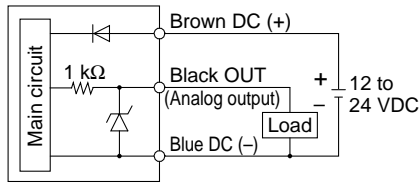
Model	PSE56□-□	PSE56□-□-28
Applicable fluid	Liquid or gas that will not corrode stainless steel 316L	
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	10 mA or less	—
Output specification	Analog output: 1 to 5 V (within rated 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	Conforming to CE marking, UL (CSA)	

Piping Specifications

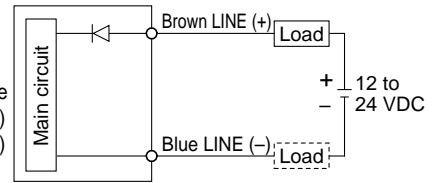
Model	01	02	N01	N02	C01	A2	B2	
Port size	R1/8 M5 x 0.8	R1/4 M5 x 0.8	NPT1/8 M5 x 0.8	NPT1/4 M5 x 0.8	Rc1/8	URJ1/4	TSJ1/4	
Material	Case: C3604 + nickel plated, Piping port/pressure sensor: Stainless steel 316L							
Sensor cable	PSE56□-□: Oil proof heavy-duty vinyl cable with air tube, 3 cores, ø5.1, 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							
Weight	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

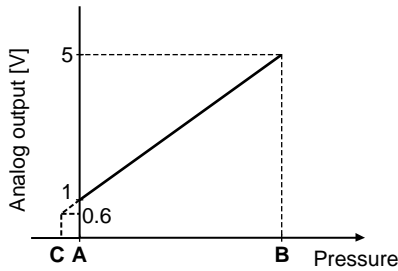


PSE56□-□-28
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)

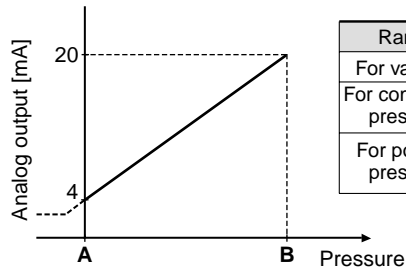


* Install the load either on the LINE (+) or LINE (-) side.

1 to 5 VDC



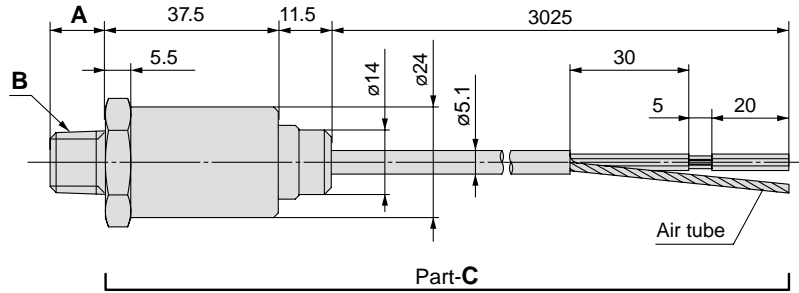
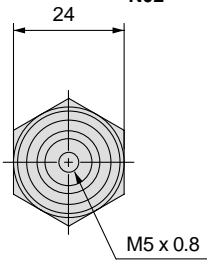
4 to 20 mADC



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

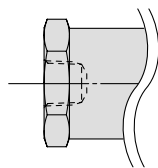
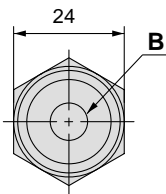
Dimensions

PSE56□-01, PSE56□-N01
02, PSE56□-N02

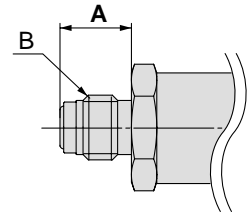
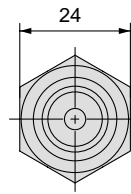


* The dimensions of part C are common to all PSE56□ models.

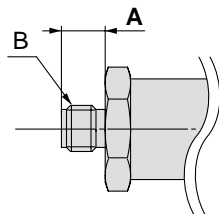
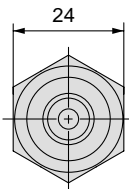
PSE56□-C01



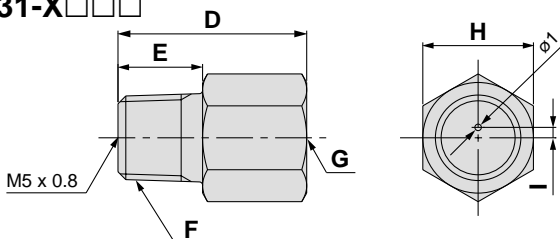
PSE56□-A2



PSE56□-B2



ZS-31-X□□□



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

Model	D	E	F	G	H	I
ZS-31-X188	20	9	R1/8	Rc1/8	14	1.5
ZS-31-X189	20	9	NPT1/8	NPT1/8	14	1.5
ZS-31-X175	29	13	R1/4	Rc1/4	17	1.6
ZS-31-X186	29	13	NPT1/4	NPT1/4	17	1.6



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

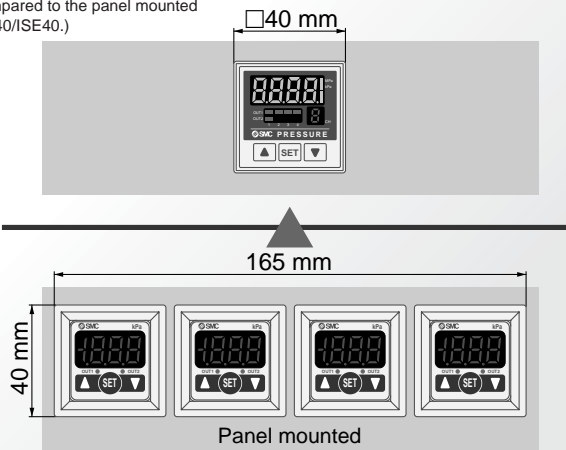
- A single controller monitors up to 4 pressure sensors
- Sensor input: 4 inputs
- Switch output: 5 outputs (2 outputs for 1ch, 1 output for 2 to 4ch)

● Functions

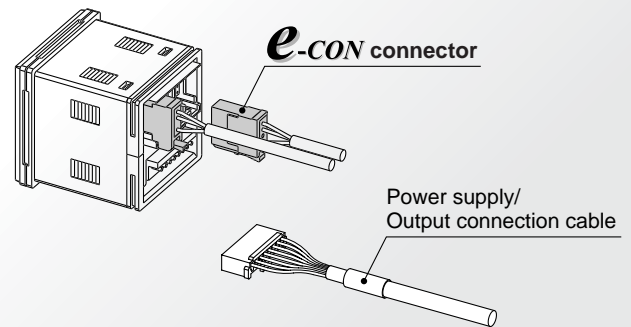
- Auto-shift function
- Auto-preset function
- Auto-identification function
- Copy function
- Channel scan function
- Reset function
- Key lock function
- Peak/Bottom values display function
- Unit display switching function
- Display calibration function
- Anti-chattering function

76% reduction in installation space

(Compared to the panel mounted ZSE40/ISE40.)

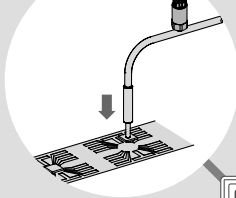


Connection

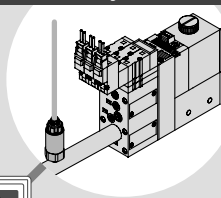


A single controller monitors various applications.

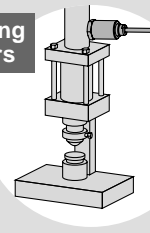
Suction verification



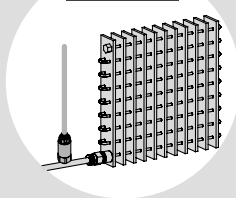
Verification of supply pressure for ejectors



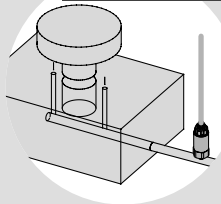
Verification of caulking by hydraulic cylinders



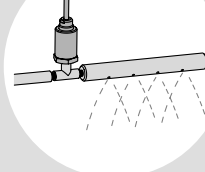
Leak test



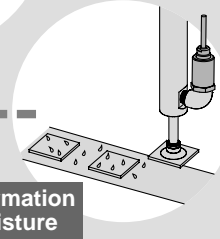
Placement verification



Verification of supply pressure for washing line



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

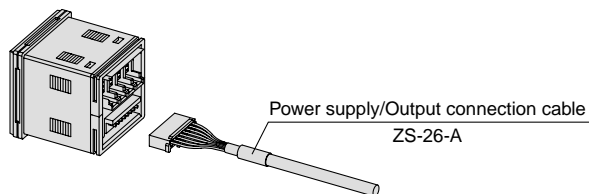
Nil	With unit display switching function <small>Note 1)</small>
M	Fixed SI unit <small>Note 2)</small>

Note 1) Under the New Measurement Law, sales of switches with the unit switching function have not been allowed for use in Japan.

Note 2) Fixed unit
For vacuum, low pressure and compound pressure: kPa
For positive pressure: MPa

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

Included with the controller.



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)

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 □ 48 conversion adapter 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, 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 <small>Note 1)</small>	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 <small>Note 2)</small>		
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		
Weight	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	Conforming to CE marking		

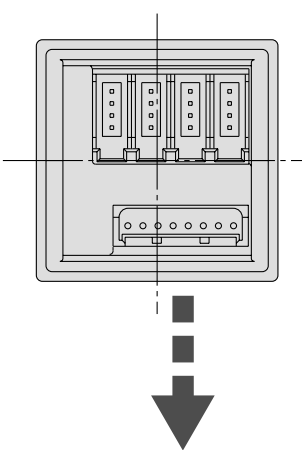
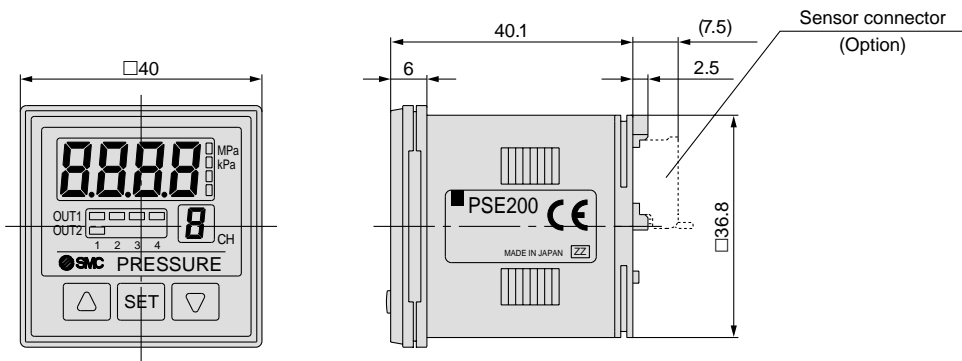
Pressure range	For compound pressure	For vacuum	For low pressure	For positive pressure
Applicable pressure sensor	PSE533 PSE543 PSE563	PSE531 PSE541 PSE561	PSE532	PSE530 PSE560
Set pressure range	-101 to 101 kPa	10 to -101 kPa	-10 to 101 kPa	-0.1 to 1 MPa
Setting/Display resolution	0.1 kPa	0.1 kPa	0.1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

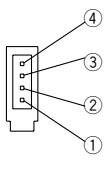
Note 2) Auto-identification function comes with "the PSE53□ series" pressure sensor only. Other SMC series (PSE540 and 560) are not equipped with this function.

Dimensions

PSE200/201

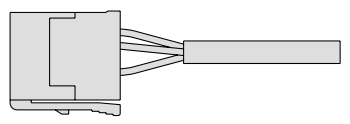


Sensor connector (4P x 4)

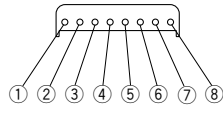


PIN no.	Terminal
①	DC (+)
②	N.C
③	DC (-)
④	IN (1 to 5 V)

Connector (Option)

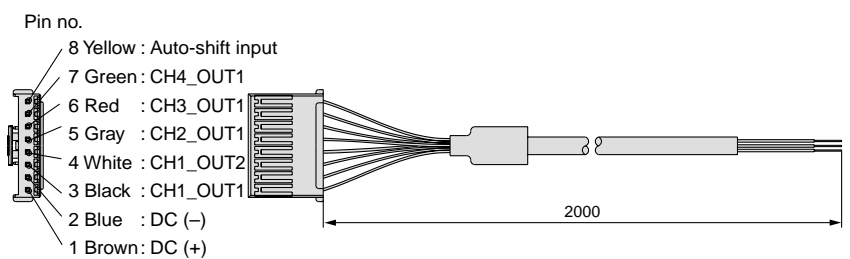


Power supply/Output connector (8P)



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)

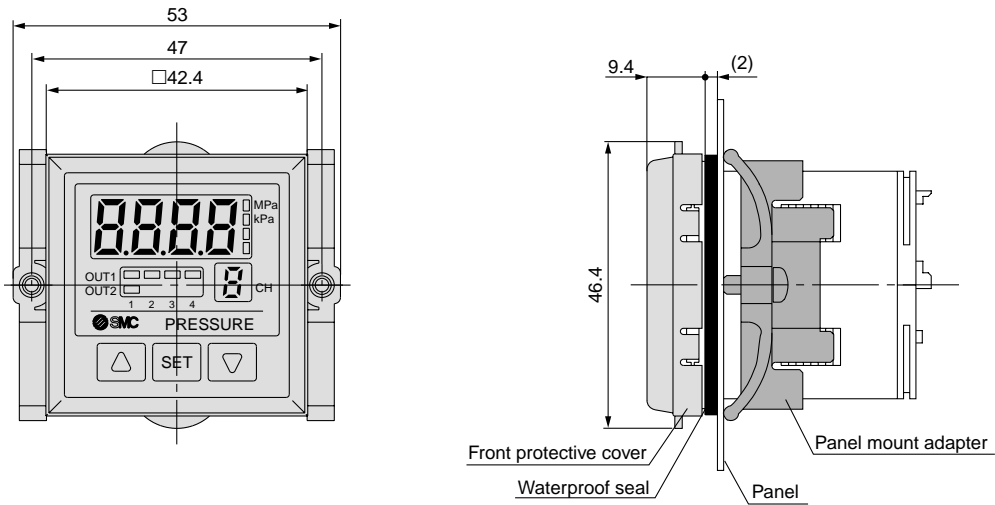


- Pin no.
- 8 Yellow : Auto-shift input
 - 7 Green : CH4_OUT1
 - 6 Red : CH3_OUT1
 - 5 Gray : CH2_OUT1
 - 4 White : CH1_OUT2
 - 3 Black : CH1_OUT1
 - 2 Blue : DC (-)
 - 1 Brown : DC (+)

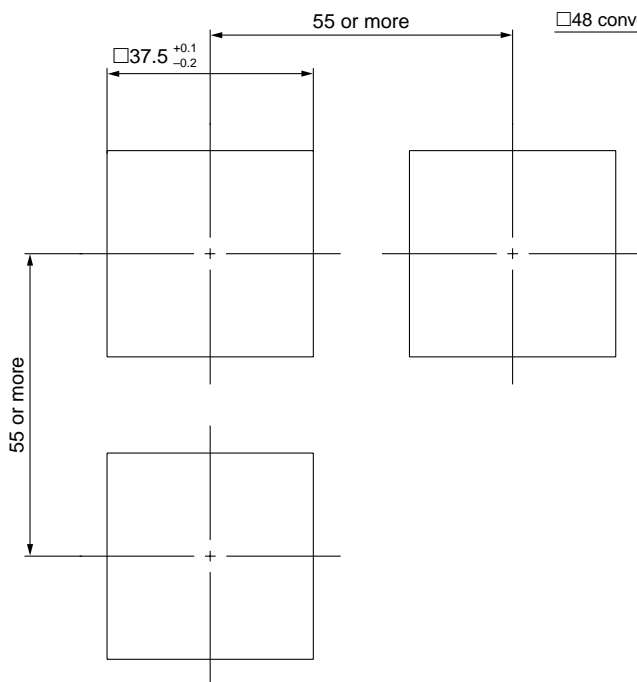
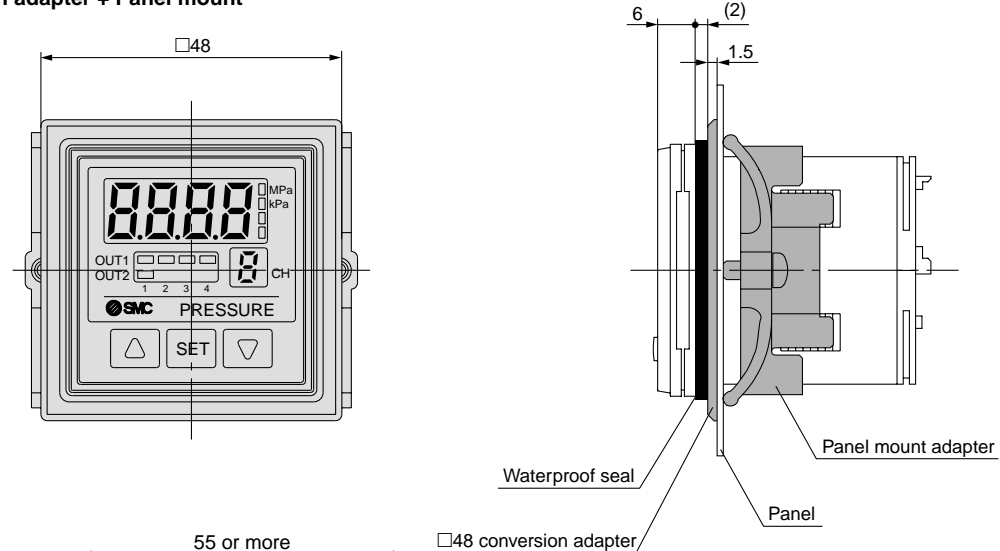
Series PSE200

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
kgf/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

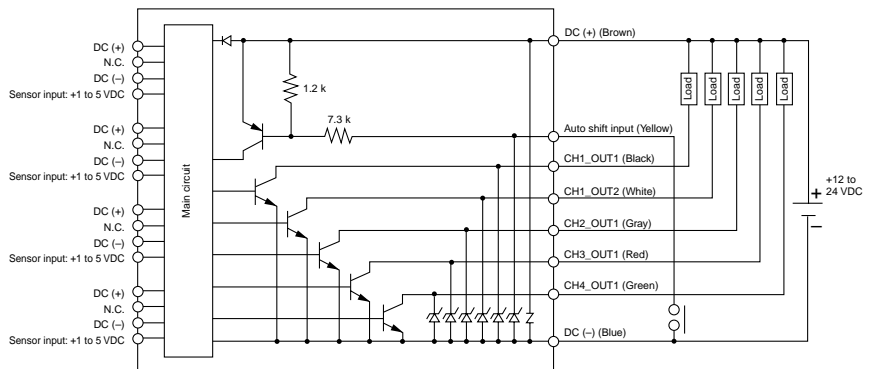
Error name	LED display	Contents	Solution
Overcurrent error	Er 1	Excess current is flowing into the switch output of OUT1.	Shut off the power supply. After eliminating the output factor that caused the excess current, turn the power supply back on.
	Er 2	Excess current is flowing into the switch output 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

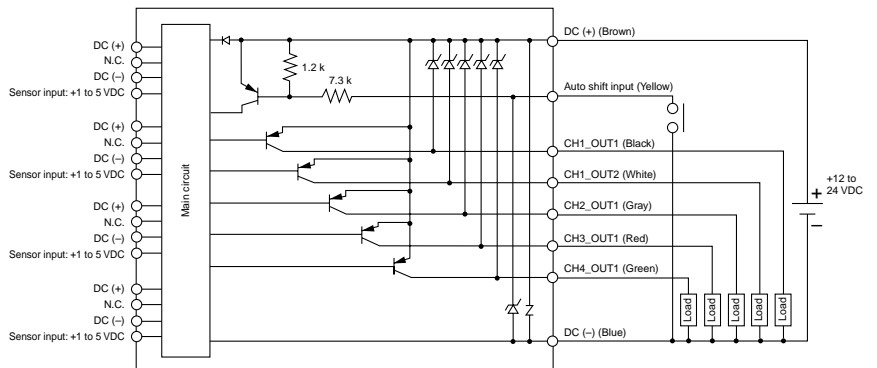
PSE200-(M) □

• NPN open collector 5 outputs + Auto-shift 1 input specification



PSE201-(M) □

• PNP open collector 5 outputs + Auto-shift 1 input specification





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

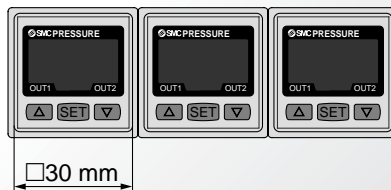
2-color display (Red/Green)

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.

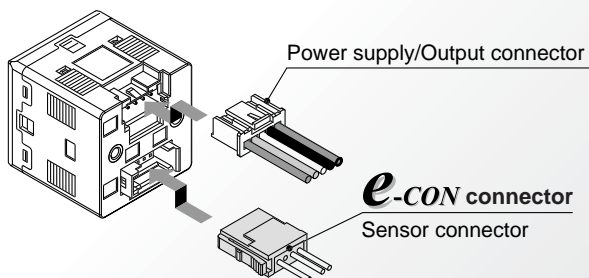
Reduced panel fitting labor



Response time

1 ms

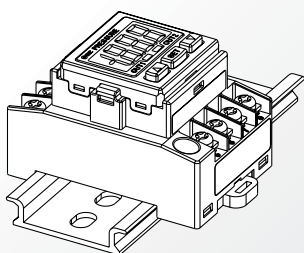
Connection



● Functions

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

DIN rail/Terminal block type

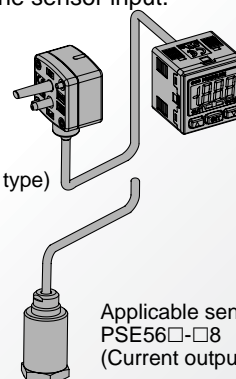


New

Current input

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

Applicable sensor type PSE550-28 (Current output type)



PSE31□ (Current input type)

Applicable sensor type PSE56□-□8 (Current output type)

New

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

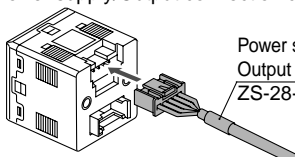
Unit specifications

Nil	With unit display switching function <small>Note 1)</small>
M	Fixed SI unit <small>Note 2)</small>

Note 1) Under the New Measurement Law, sales of switches with the unit switching function have not been allowed for use in Japan.

Note 2) 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  Power supply/Output connection cable ZS-28-A

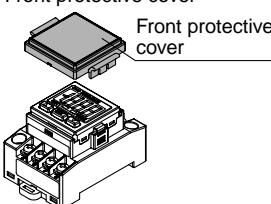
Note) The cable is unassembled in the factory, but is included with the shipment.

Order DIN rail separately. Refer to page 25.

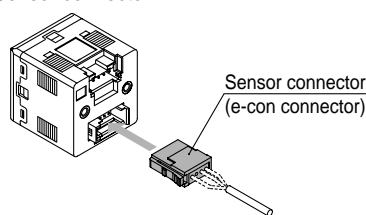
Option

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

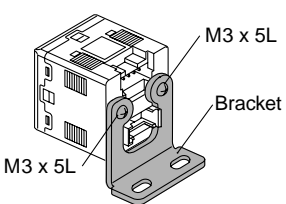
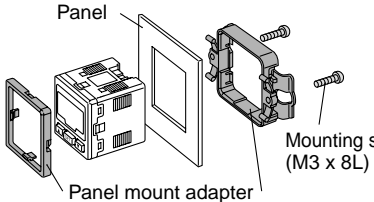
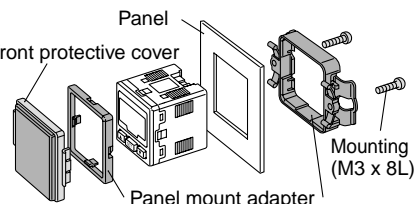
Nil	None
E	Front protective cover  Front protective cover

Option 3

Nil	None
C	Sensor connector  Sensor connector (e-con 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  M3 x 5L Bracket
B	Panel mount adapter  Panel Panel mount adapter Mounting screw (M3 x 8L)
D	Panel mount adapter + Front protective cover  Panel Front protective cover Panel mount adapter Mounting screw (M3 x 8L)

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

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	
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 mADC (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)					
Weight	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	Conforming to 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:

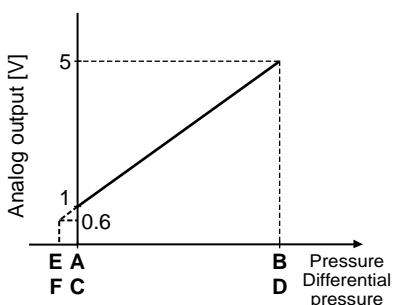
For vacuum & compound pressure: kPa·kgf/cm²·bar·psi·mmHg·inHg

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

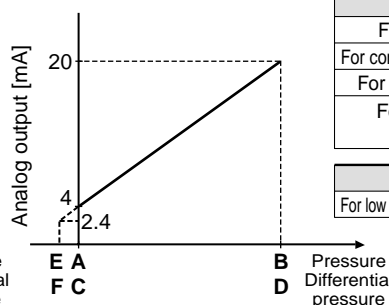
For low differential pressure: kPa·mmH₂O

Analog Output

1 to 5VDC



4 to 20 mADC



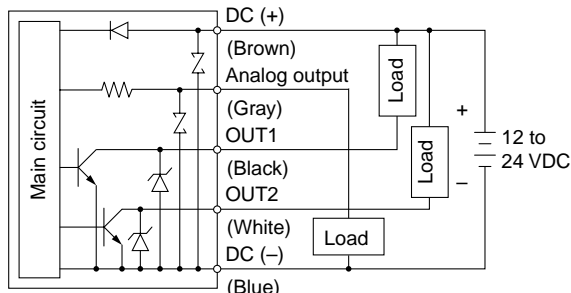
Range	Rated pressure range	A	B	E
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-100 kPa to 100 kPa	-100 kPa	100 kPa	—
For low pressure	0 to 100 kPa	0	100 kPa	-10 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa
	0 to 500 kPa	0	500 kPa	-50 kPa

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

Internal Circuit

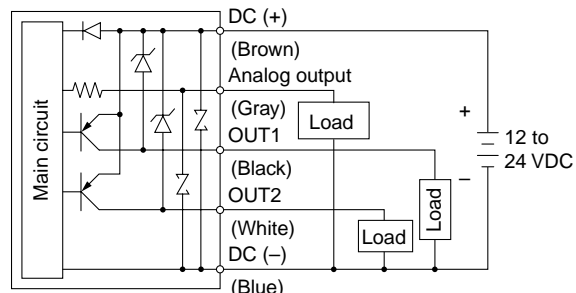
PSE3□0

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 k Ω



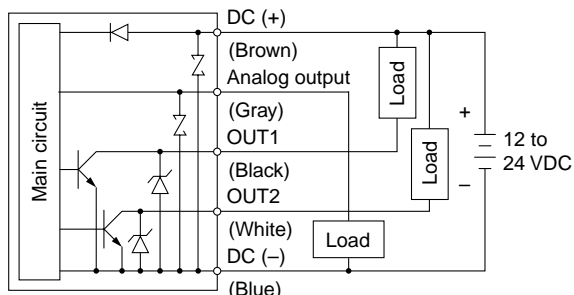
PSE3□3

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 k Ω



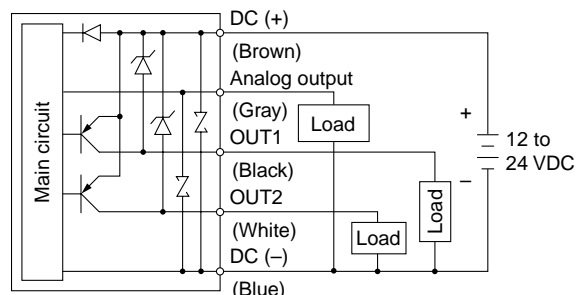
PSE3□1

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



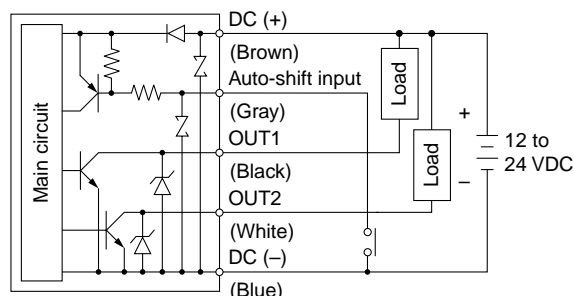
PSE3□4

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



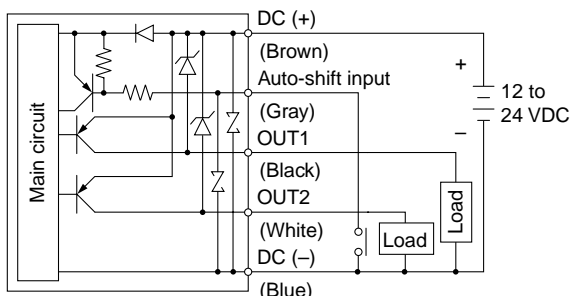
PSE3□2

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).

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)

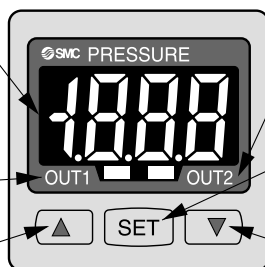
Lights up when OUT2 is turned ON.

SET button

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

Down button

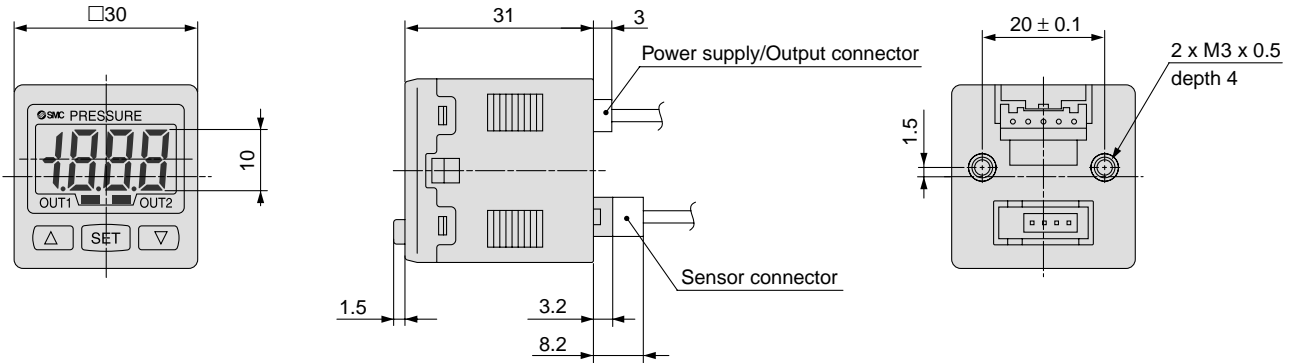
Use this button to select the mode or decrease the ON/OFF set value.
 It is also used for switching to the bottom display mode.



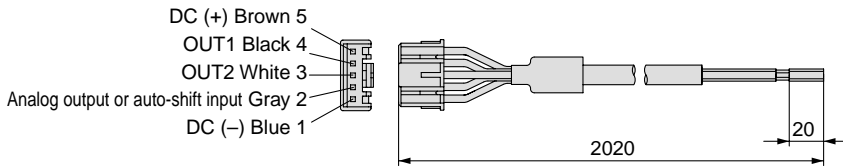
Series PSE300

Dimensions

PSE3□□

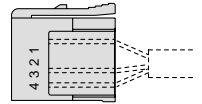


Power supply/Output connection cable (ZS-28-A)

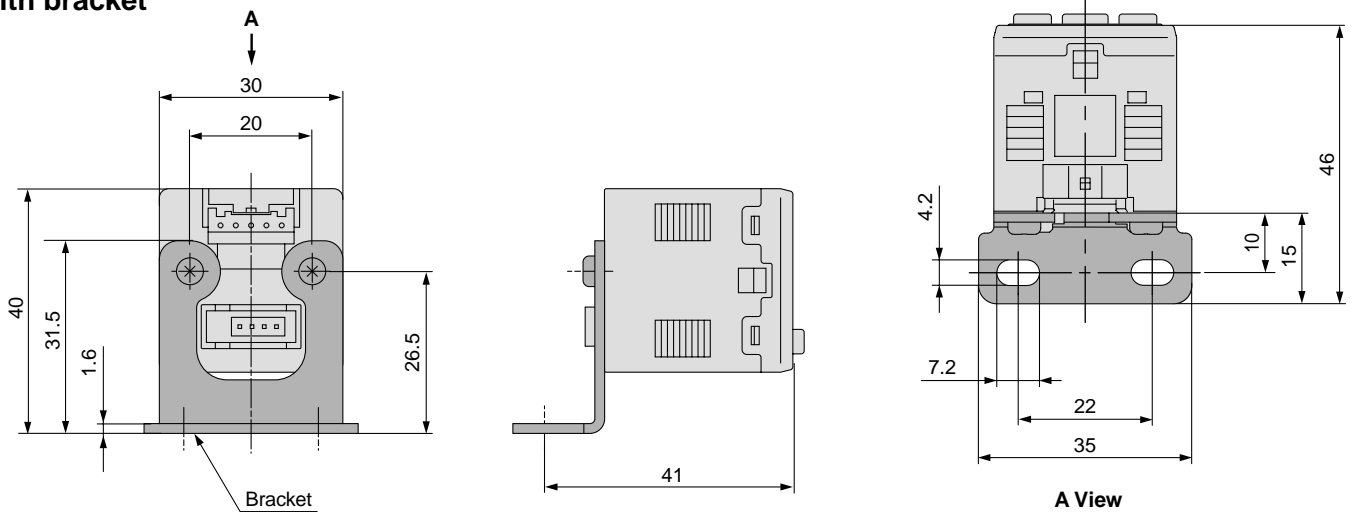


Sensor connector

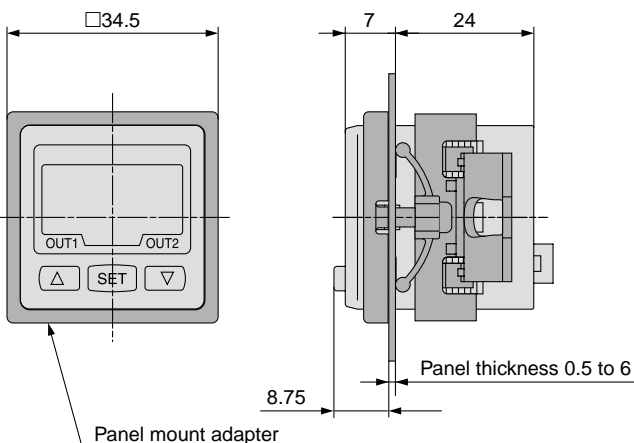
PIN no.	Terminal	
	PSE30□	PSE31□
1	DC (+)	LINE (+)
2	N.C.	N.C.
3	DC (-)	N.C.
4	IN (1 to 5 V)	LINE (-)



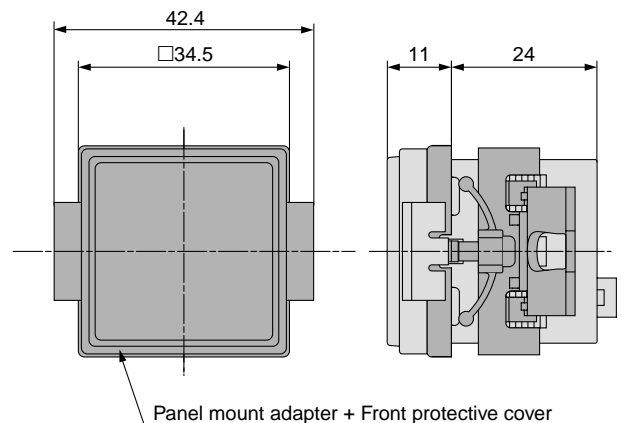
With bracket



With panel mount adapter



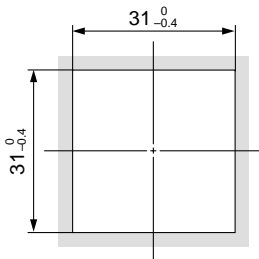
With panel mount adapter + Front protective cover



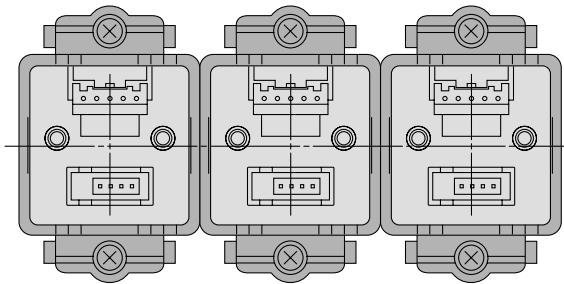
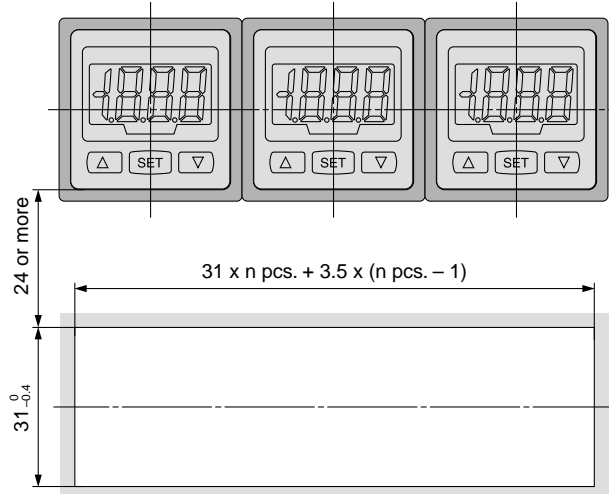
Dimensions

Panel fitting dimensions

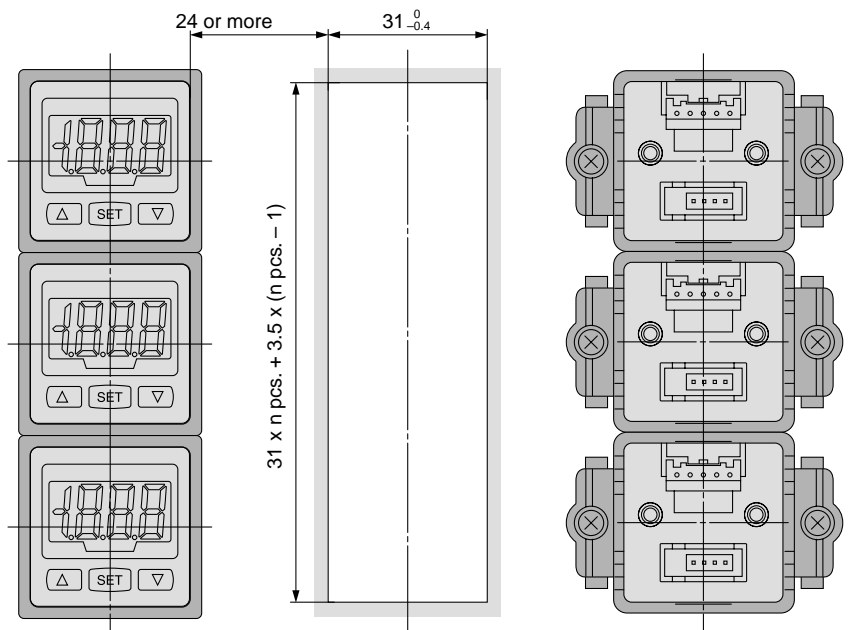
Mount of single unit



Horizontal stacking mount of multiple units (n pcs.)



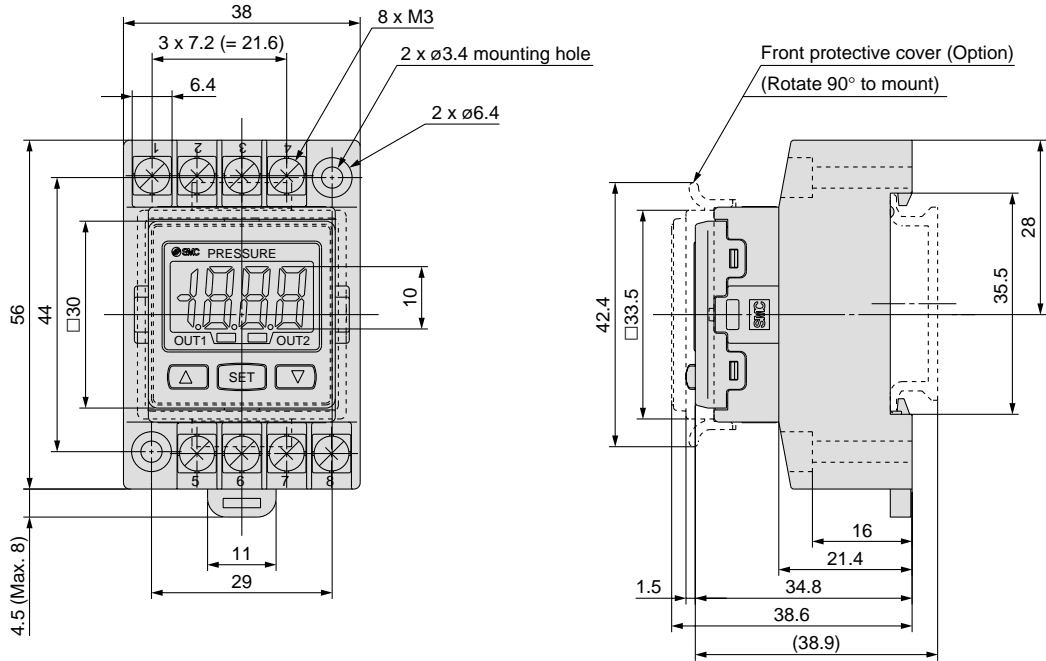
Vertical stacking mount of multiple units (n pcs.)



Series PSE300

Dimensions

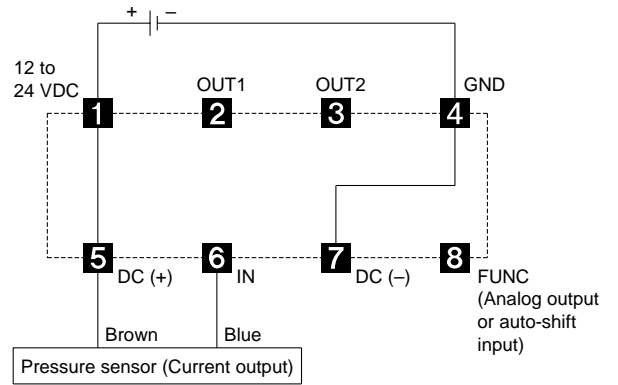
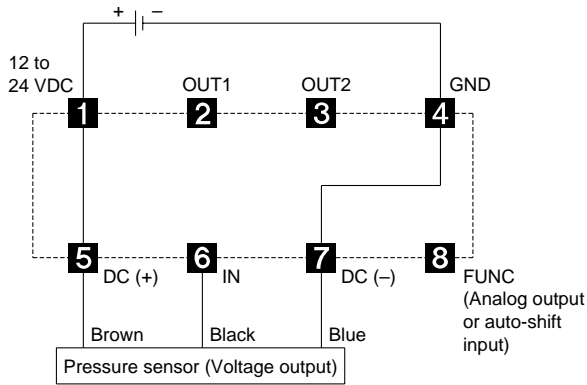
PSE3□□T



Connections

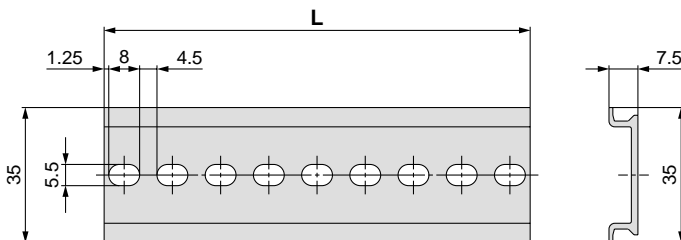
PSE30□T (Pressure input type)

PSE31□T (Current input type)



DIN Rail

ISA-5-□



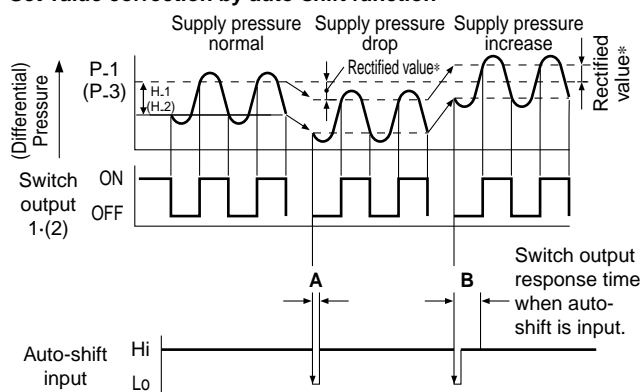
Part no.	L
ISA-5-1	73.0
ISA-5-2	135.5
ISA-5-3	173.0
ISA-5-4	210.5
ISA-5-5	248.0
ISA-5-6	285.5
ISA-5-7	323.0

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

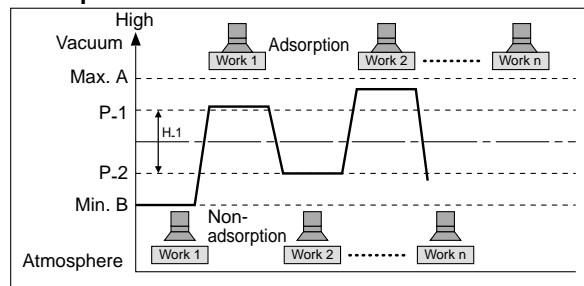
Auto-shift zero (Series PSE300 only)

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

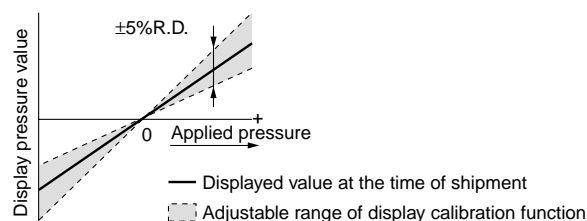


Formula for Obtaining the Set Value

	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 Reset 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.

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.

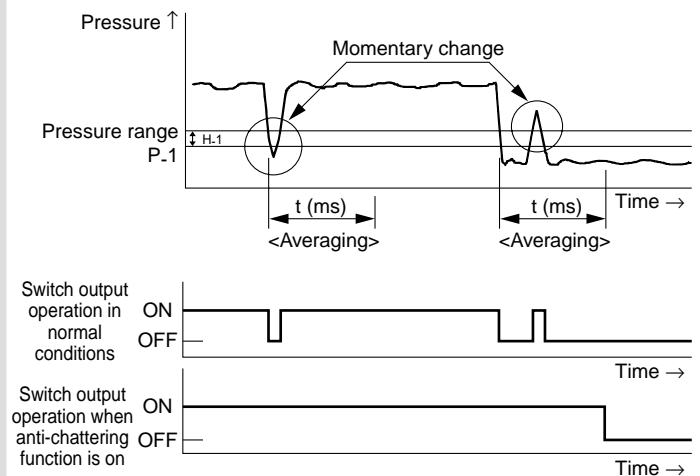
J Anti-chattering function

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 Anti-chattering function (Series PSE200 only)

Pressure value for the selected channel is displayed.

L Anti-chattering 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






Series PSE

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.

■ Explanation of the Labels

Labels	Explanation of the labels
 Danger	In extreme conditions, there is a possible result of serious injury or loss of life.
 Warning	Operator error could result in serious injury or loss of life.
 Caution	Operator error could result in injury ^{Note 3)} or equipment damage. ^{Note 4)}

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

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

Note 3) Injury indicates light wounds, burns and electrical shocks that do not require hospitalization or hospital visits for long-term medical treatment.

Note 4) Equipment damage refers to extensive damage to the equipment and surrounding devices.

■ Selection/Handling/Applications

1. The compatibility of the 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 post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance are 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 handled incorrectly. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators. (Understanding JIS B 8370 General Rules for Pneumatic Equipment, and other safety rules are included.)

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 driven objects have been confirmed.
2. When equipment is removed, confirm that safety process as mentioned above. Turn off the supply pressure for this equipment and exhaust all residual compressed air in the system, and release all the energy (liquid pressure, spring, condenser, gravity).
3. Before machinery/equipment is restarted, take measures to prevent quick extension of a cylinder piston rod, etc.

4. If the equipment will be used in the following conditions or environment, please contact SMC first and be sure to take all necessary safety precautions.

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, requiring special safety analysis.
4. If the products are used in an interlock circuit, prepare a double interlock style circuit with a mechanical protection function for the prevention of a breakdown. And, examine the devices periodically if they function normally or not.

■ Exemption from Liability

1. SMC, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.

2. SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

3. SMC is exempted from liability for any damages caused by operations not contained in the catalogs and/or instruction manuals, and operations outside of the specification range.

4. SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.



Series PSE5□□

Specific Product Precautions 1

Be sure to read before handling.

Refer to "Precautions for Handling Pneumatic Devices" (M-03-E3A) for Safety Instructions and Pressure Switches Precautions.

Pressure Sensors

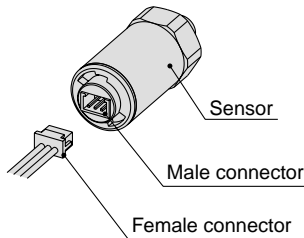
Handling

Warning

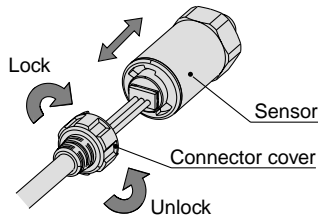
1. Do not drop, bump, or apply excessive impact (PSE530, 540: 980 m/s², PSE560: 500 m/s², PSE550: 300 m/s²) while handling. Although the body of the sensor may not be damaged, the inside of the sensor could be damaged and lead to malfunction.
2. The tensile strength of the cord is PSE530: 23 N, PSE540, 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.
3. Do not use pressure sensors with corrosive and/or flammable gases or liquids.

(PSE530)

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

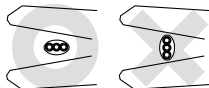


A connector cover is provided as part of the cable assembly (see the figure below). It is designed to keep the female cover in place, first make sure it is facing in the right direction as you slip it over the female connector, then lock it to the sensor body by turning it clockwise. To remove the cover, 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)

1. 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.

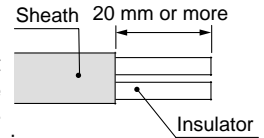


Wiring

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.

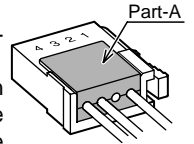


- Confirm that the numbers on the connector match the colors of the wires and that the wires are inserted to the bottom. Press

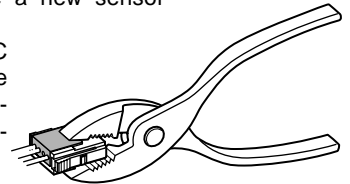
Connector no.	Wire core color	
	PSE30□	PSE31□
1	Brown (DC (+))	Brown (LINE (+))
2	Not used	Not used
3	Blue (DC (-))	Not used
4	Black (OUT: 1 to 5 V)	Blue (LINE (-))

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 “Precautions for Handling Pneumatic Devices” (M-03-E3A) for Safety Instructions and Pressure Switches Precautions.

Pressure Source

Warning

1. Use of toxic, corrosive or flammable gas

Do not use **toxic, corrosive and flammable 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, 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.

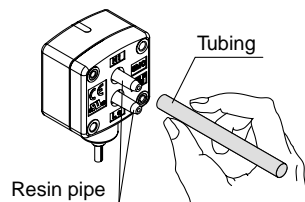
In such cases, an intermediate orifice can be set up, or an adapter with external throttle (ZS-31-X175, X186, X188, X189) can be mounted to the fitting part of the main body.

Piping Connection

Caution

(PSE550)

- Cut the tubing vertically.
- Carefully hold the 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 tubing into “Lo” pipe, and the high-pressure tubing into “Hi” pipe.
- In cases where SMC tubing is not used, make sure the product has similar I.D. accuracy within $\varnothing 4 \pm 0.3$ mm.
- Make sure that the tubing is firmly inserted to avoid possible disconnection. (Tensile strength is approx. 25 N when being inserted 8 mm.)





Series PSE200/300

Specific Product Precautions 1

Be sure to read before handling.

Refer to "Precautions for Handling Pneumatic Devices" (M-03-E3A) for Safety Instructions and Pressure Switches 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.

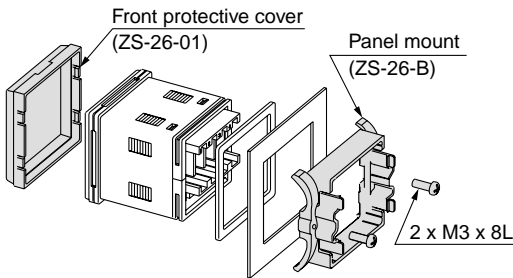
Mounting

Caution

(PSE200)

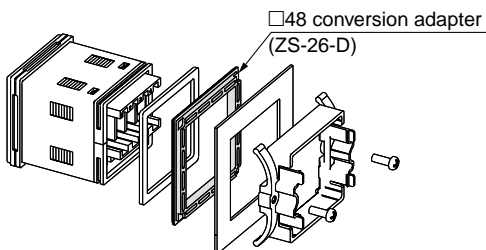
The front face of the panel mount conforms to IP65 (IP40 when using the □48 conversion adapter); however, there is a possibility of liquid filtration if the panel mount adapter is not installed securely and properly. Securely fix the adaptor with screws as shown below.

Standard



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

When using □48 conversion adapter



Handling

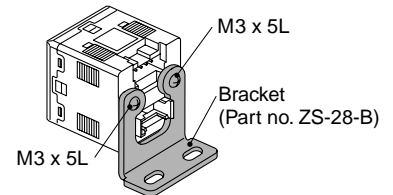
Caution

(PSE300)

1. Mounting with bracket

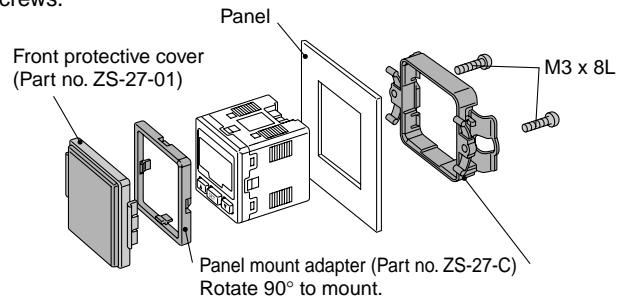
Mount the bracket on the body with two M3 x 5L mounting screws.

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



2. Mounting with panel mount adapter

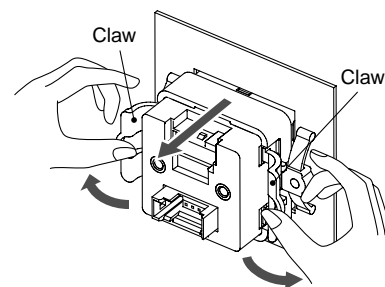
Secure the panel mount adapter with two M3 x 8L mounting screws.



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)

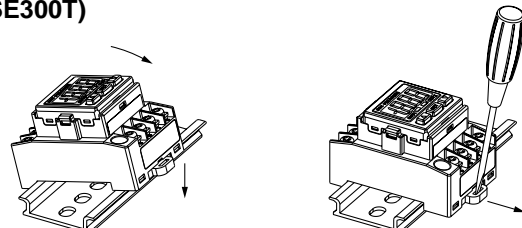


Figure (a)

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 "Precautions for Handling Pneumatic Devices" (M-03-E3A) for Safety Instructions and Pressure Switches 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.

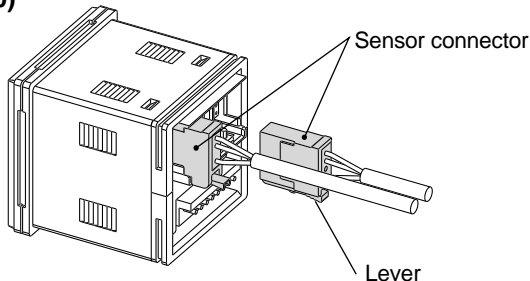
Wiring

Caution

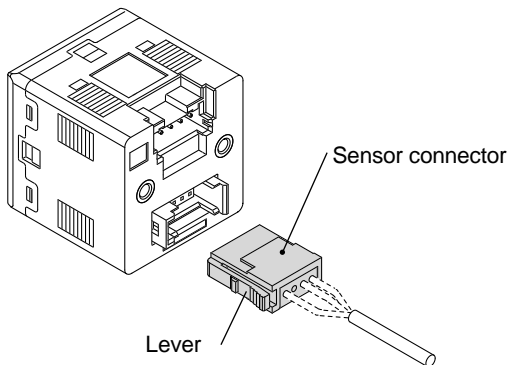
1. Connection and removal of sensor connector

- 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.

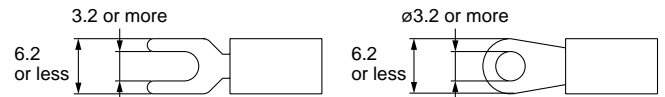
Wiring

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 0.3 to 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. Never use pressure sensor in the presence of flammable or explosive gases.



Record of changes

B edition * Addition of DIN rail/terminal block type and current input specifications to 2-Color Display Digital Pressure Sensor Controller PSE300

LT

 **Safety Instructions** Be sure to read "Precautions for Handling Pneumatic Devices" (M-03-E3A) before using.

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