

# Remote Type Pressure Sensors/ Pressure Sensor Monitors

Compact Pneumatic Pressure Sensor **PSE530** ▶P.3



Compact Pneumatic Pressure Sensor **PSE540** ▶P.6



Low Differential Pressure Sensor **PSE550** ▶P.9



Pressure Sensor for General Fluids **PSE560** ▶P.12



Pressure Sensor for General Fluids with connector **PSE570** ▶P.15



Multi-Channel Digital Pressure Sensor Monitor

**PSE200**

▶P.18



2-Colour Display Digital Pressure Sensor Monitor

**PSE300**

▶P.24



DIN rail/Terminal block type

3-Screen Display Sensor Monitor

**PSE300AC**

▶P.34



Series **PSE**



CAT.EUS100-56Cc-UK

# Series **PSE** Variations



<b>Basic Specifications</b>	Fluid	Air			General fluids		
	Rated pressure range (Minimum display)						
	Repeatability	±1 % (F.S.)	±0.2 % (F.S.)	±0.3 % (F.S.)	±0.2 % (F.S.) or ±0.5 % (F.S.)		±0.1 % (F.S.)
	Voltage	12 to 24 VDC					
	No. of outputs for switch					5 outputs	2 outputs
	Output	1 to 5 V		1 to 5 V 4 to 20 mA		NPN or PNP	1 to 5 V 4 to 20 mA Select from NPN or PNP
	Operating temp.	0 to 50 °C			-10 to 60 °C		0 to 50 °C

<b>Functions</b>	Digital display				1-colour	2-colour	3-colour		
	Enclosure	IP40			IP65		Front face IP65 Others IP40	IP40	IP65
	Wiring	Connector	Grommet			M12 Connector	Connector		M12 Connector

<b>Connector</b>	Connection threads	M reducer	M R, NPT reducer	Resin piping	R, NPT, Rc URJ, TSJ*	R			
	Standards	CE	CE, UL, CSA			CE	CE	CE, UL, CSA	CE, RoHS
	Wiring	e-con	●	●	●	●	●	●	●
		M12				●			●
		Flexible cable		●	●				
	Mounting	Direct	●	●	●	●	●	●	●
		With bracket			●			●	●
Panel mount						●	●	●	
DIN rail							●	●	

\* URJ (VCR®fitting compliant), TSJ (Swagelok®fitting compliant)

Pressure Sensors/*Series PSE5* □ □

		Rated pressure range						PSE53 □	PSE54 □	PSE55 □	PSE56 □	<sup>New</sup> PSE57 □		
		-100 kPa	0	100 kPa	500 kPa	1 MPa	2 MPa	5 MPa	10 MPa					
Vacuum	-101 kPa	0								PSE531	PSE541	—	PSE561	—
Compound pressure	-100 kPa	100 kPa								PSE533	PSE543	—	PSE563	PSE573
Positive pressure	0	100 kPa								PSE532	—	—	—	—
	0	500 kPa								—	—	—	PSE564	PSE574
	0	1 MPa								PSE530	PSE540	—	PSE560	PSE570
	0	2 MPa								—	—	—	—	PSE575
	0	5 MPa								—	—	—	—	PSE576
	0	10 MPa								—	—	—	—	PSE577
Low differential pressure	0	2 kPa								—	—	PSE550	—	—

Pressure Sensor Monitors/*Series PSE200/300AC*

Applicable pressure sensor model					PSE200	PSE300	PSE300AC
PSE53 □	PSE54 □	PSE55 □	PSE56 □	PSE57 □	Input/Output specifications	Input/Output specifications	Input/Output specifications
PSE531	PSE541	—	PSE561	—	<ul style="list-style-type: none"> <li>NPN 5 outputs + auto-shift input</li> <li>PNP 5 outputs + auto-shift input</li> </ul>	<ul style="list-style-type: none"> <li>NPN 2 outputs + 1-5 V outputs</li> <li>NPN 2 outputs + 4-20 mA output</li> <li>NPN 2 outputs + auto-shift input</li> <li>PNP 2 outputs + 1-5 V outputs</li> <li>PNP 2 outputs + 4-20 mA output</li> <li>PNP 2 outputs + auto-shift input</li> </ul>	<ul style="list-style-type: none"> <li>Select from NPN or PNP open collector output</li> <li>Voltage input: 1 to 5 VDC</li> <li>Current input: 4 to 20 mA DC</li> <li>1 input, OUT1, OUT2</li> </ul>
PSE533	PSE543	—	PSE563	PSE573	0.1 kPa	0.1 kPa	0.1 kPa
PSE532	—	—	—	—	0.1 kPa	0.1 kPa	0.1 kPa
—	—	—	PSE564	PSE574	—	1 kPa	1 kPa
PSE530	PSE540	—	PSE560	PSE570	0.001 MPa	0.001 MPa	0.001 MPa
—	—	PSE550	—	—	—	0.1 kPa	0.001 kPa
—	—	—	—	PSE575	—	—	0.001 MPa
—	—	—	—	PSE576	—	—	0.01 MPa
—	—	—	—	PSE577	—	—	0.01 MPa

Monitor Main Functions (For details, refer to pages 31 to 33 and 37 to 38.)

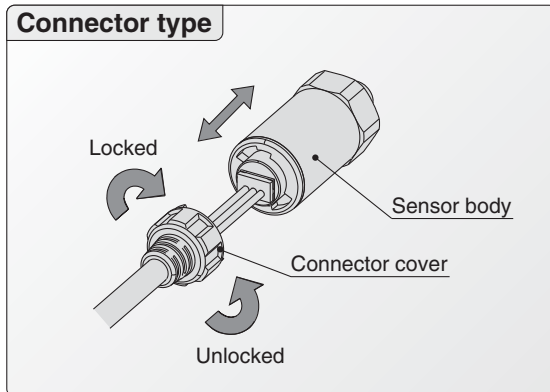
<b>Keylock</b>	Locks the keys from functioning.
<b>Peak/Bottom values holding</b>	Displays the maximum and minimum values being set and can keep those values on the display.
<b>Auto-preset</b>	Able to set the pressure automatically. In the case of suction verification, it memorises the pressure when adsorbed and released. By repeating several times, the optimum values are calculated automatically.
<b>Auto-shift</b>	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.
<b>Display calibration</b>	Able to adjust the displayed value (±5 %) and justify distribution of the values displayed on respective pressure switch.
<b>Anti-chattering</b>	Prevents malfunction due to sharp pressure fluctuations. The detection of momentary pressure fluctuation as abnormal pressure can be prevented by changing the setting of the response time.

# Compact Pneumatic Pressure Sensor

## Series PSE530



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



**Application example**

**Leak test of radiator**  
Series PSE532 + PSE300

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

*Applications*

# Pressure Sensor Series PSE530



## How to Order

PSE53 0 - M5 -

• Sensor range

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

• Port size

M5	M5 x 0.8
R06	Ø 6 reducer
R07	1/4 inch reducer

• Option

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

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

## Option/Part No.

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.

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

## 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 analogue output range	-0.1 to 0 MPa	10.1 to 0 kPa	-10.1 to 0 kPa	—
Proof pressure	1.5 MPa		500 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas			
Power supply voltage	12 to 24 VDC ±10 %, Ripple (p-p) 10 % or less (with reverse connection protection)			
Current consumption	15 mA or less (with no load)			
Output specifications	Analogue output 1 to 5 V (within rated pressure range), 0.6 to 1 V (within extension analogue output range), Output impedance: Approx. 1 kΩ			
Accuracy (Ambient temperature at 25 °C)	±2 % F.S. (within rated pressure range), ±5 % F.S. (within extension analogue output range)			
Linearity	±1 % F.S.			
Repeatability	±1 % F.S.			
Power supply voltage effect	±1 % F.S. based on the analogue output at 18 V ranging from 12 to 24 VDC			
Environment	Enclosure	IP40		
	Temperature range	Operating: 0 to 50 °C; Stored: -10 to 70 °C (No freezing or condensation)		
	Withstand voltage	1000 VAC (in 50 / 60 Hz) for 1 minute between terminals and housing		
	Insulation resistance	5 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing		
Temperature characteristics	±2 % F.S. (25 °C reference)			
Sensor cable/Option	Halogen-free heavy-duty cable, 3 cores, Ø 2.7, 3 m, Conductor area: 0.15 mm <sup>2</sup> , Insulator O.D.: 0.8 mm			
Standards	CE, RoHS			

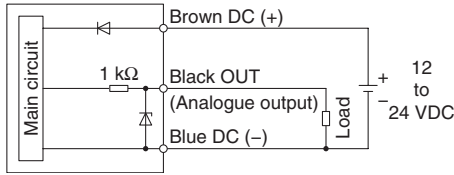
## Piping Specifications

Model	M5	R06	R07
Port size	M5 x 0.8 male thread	Ø 6 reducer type	1/4 inch reducer type
Materials of parts in contact with fluid	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

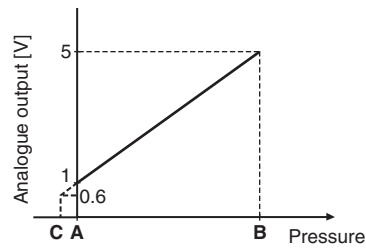
## Internal Circuit and Wiring Example

**PSE53□**  
 Voltage output type  
 1 to 5 V  
 Output impedance  
 Approx. 1 k $\Omega$



## Analogue Output

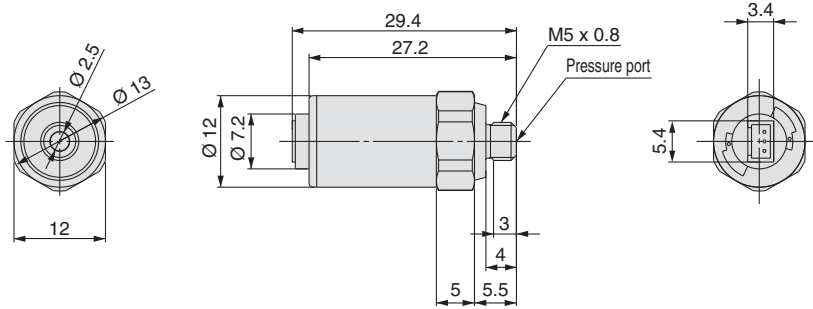
1 to 5 VDC



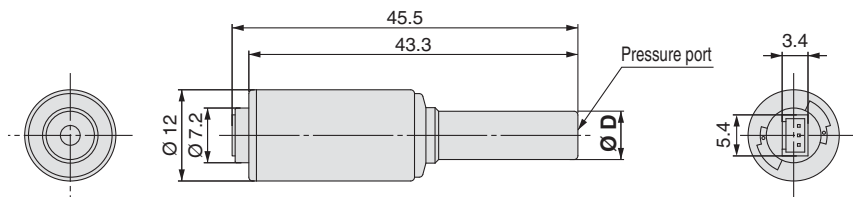
Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-101 kPa to 101 kPa	-101 kPa	101 kPa	—
For low pressure	0 to 101 kPa	0	101 kPa	-10.1 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa

## Dimensions

### PSE53□-M5



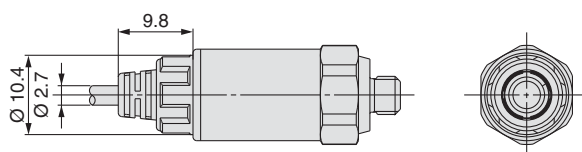
### PSE53□-R06 R07



[mm]

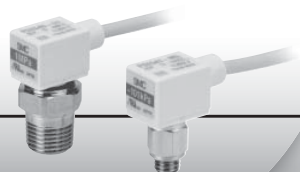
Model	Applicable fitting size (D)
PSE53□-R06	6
PSE53□-R07	1/4"

### With sensor cable



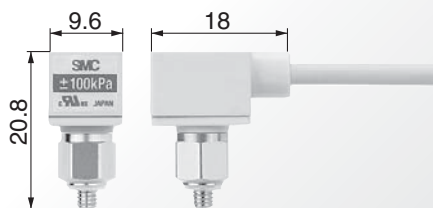
# Compact Pneumatic Pressure Sensor

## Series PSE540



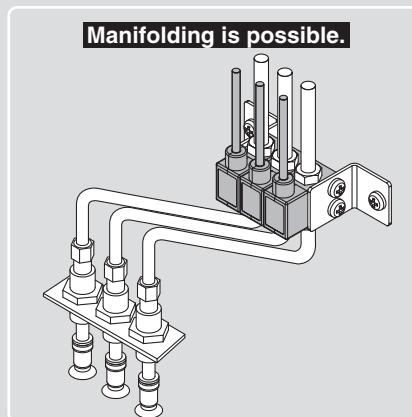
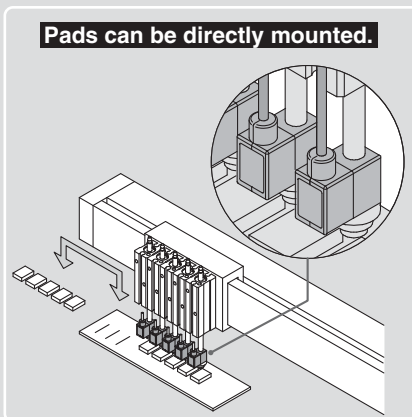
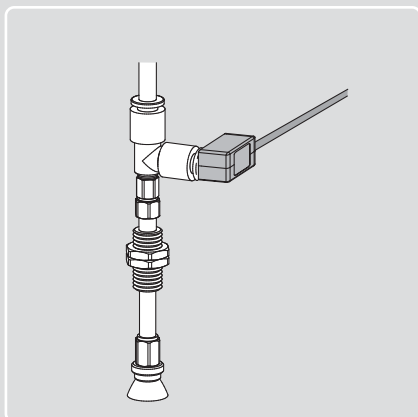
Series	Rated pressure range				
	-100 kPa	0	100 kPa	500 kPa	1 MPa
PSE540		0	1 MPa		
PSE541	-101 kPa	0			
PSE543	-100 kPa		100 kPa		

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



For PSE54□-M3

### Application examples



Applications

PSE530  
PSE540  
PSE550  
PSE560  
PSE570  
PSE200  
PSE300  
PSE300AC

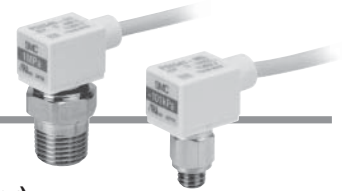
Monitor

# Compact Pneumatic Pressure Sensor

# Series PSE540



## How to Order

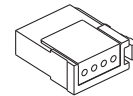


Sensor range	
0	Positive pressure [0 to 1 MPa]
1	Negative pressure [0 to -101 kPa]
3	Compound pressure [-100 to 100 kPa]

Accuracy	
—	±2 % F.S.
A	±1 % F.S.

### Option (Connector)

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



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

PSE54 1 - M3 -

### Port size

M3	M3 x 0.5		IM5	M5 female thread, through type	
M5	M5 x 0.8		IM5H	M5 female thread, through type (with mounting hole)	
01	R 1/8 (with M5 female thread)				
N01	NPT 1/8 (with M5 female thread)				
R04	Ø 4 reducer				
R06	Ø 6 reducer				

### Option/Part No.

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

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

## Specifications

Model	PSE540	PSE541	PSE543
Rated pressure range	0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa
Extension analogue output range	-0.1 to 0 MPa	10.1 to 0 kPa	—
Proof pressure	1.5 MPa	500 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas		
Power supply voltage	12 to 24 VDC ±10 %, Ripple (p-p) 10 % or less (with reverse connection protection)		
Current consumption	15 mA or less		
Output specifications	Analogue output 1 to 5 V (within rated pressure range), 0.6 to 1 V (within extension analogue output range), Output impedance: Approx. 1 kΩ		
Accuracy (Ambient temperature at 25 °C)	PSE54□: ±2 % F.S. (within rated pressure range), ±5 % F.S. (within extension analogue output range) PSE54□A: ±1 % F.S. (within rated pressure range), ±3 % F.S. (within extension analogue output range)		
Linearity	±0.7 % F.S. or less	±0.4 % F.S.	
Repeatability	±0.2 % F.S.		
Power supply voltage effect	±0.8 % F.S.		
Environment	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 (in 50 / 60 Hz) for 1 minute between terminals and housing	
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing	
Temperature characteristics	±2 % F.S. (25 °C reference)		
Sensor cable	Oilproof heavy-duty vinyl cable (ellipse), 3 cores, 2.7 x 3.2, 3 m, Conductor area: 0.15 mm <sup>2</sup> , Insulator O.D.: 0.9 mm		
Standards	CE, UL/CSA (E216656), RoHS		

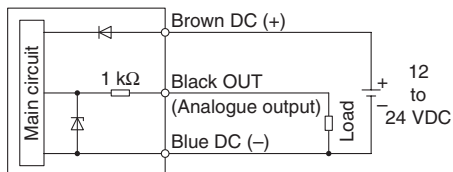
## Piping Specifications

Model	M3	M5	01	N01	R04	R06	IM5	IM5H
Port size	M3 x 0.5	M5 x 0.8	R 1/8 M5 x 0.8	NPT 1/8 M5 x 0.8	Ø 4 reducer	Ø 6 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						
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

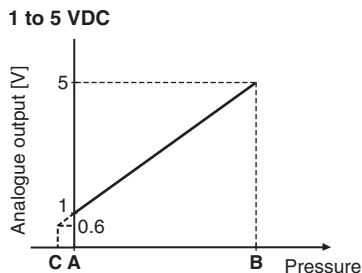


## Internal Circuit and Wiring Example

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



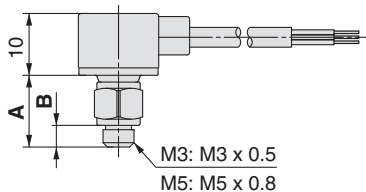
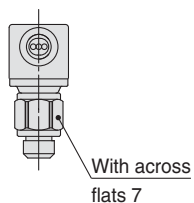
## Analogue Output



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

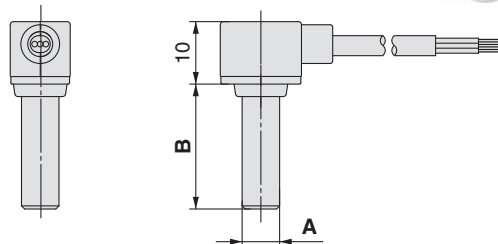
## Dimensions

**PSE54** □-M3  
M5



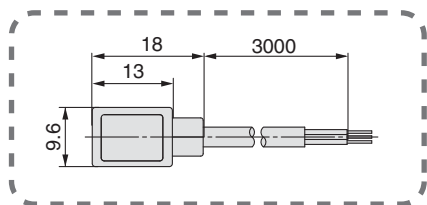
	PSE54 □-M3	PSE54 □-M5
A [mm]	10.8	11.5
B [mm]	3	3.5

**PSE54** □-R04  
R06

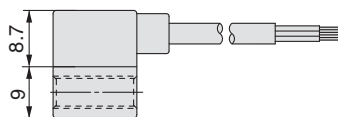
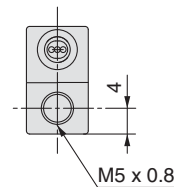


	PSE54 □-R04	PSE54 □-R06
A [mm]	∅ 4	∅ 6
B [mm]	18	20

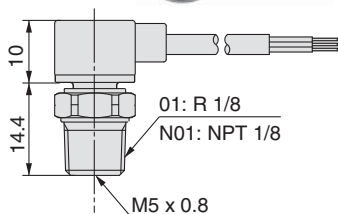
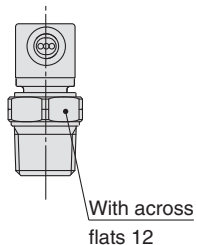
## Common Dimensions



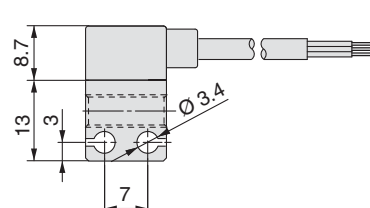
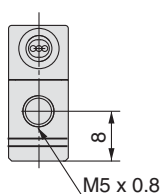
**PSE54** □-IM5



**PSE54** □-01  
N01



**PSE54** □-IM5H



PSE530  
PSE540  
PSE550  
PSE560  
PSE570  
PSE200  
PSE300  
PSE300AC



# Low Differential Pressure Sensor

## Series PSE550

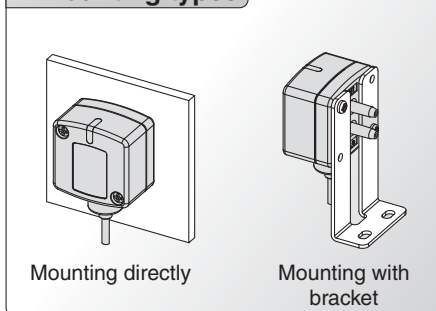


Series	Rated pressure range		
	0	1 kPa	2 kPa
PSE550	0	2 kPa	

### Power LED status indicator



### 2 mounting types

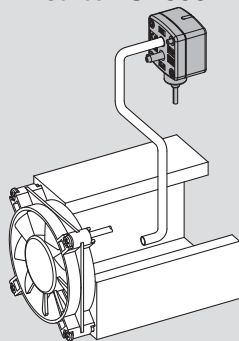


Accuracy  
**± 1% F.S.**

Proof pressure  
**65 kPa**

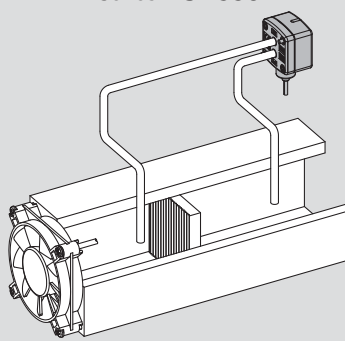
## Application examples

### Flow control Series PSE550



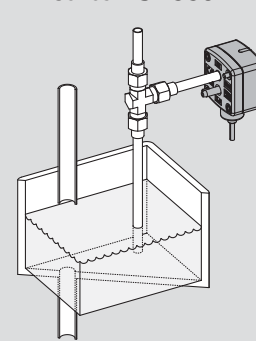
Can control air flow by monitoring the flow rate inside the duct.

### Filter clogging monitoring Series PSE550



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

### Liquid level detection Series PSE550



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

## Applications

# Low Differential Pressure Sensor

# Series PSE550



## How to Order

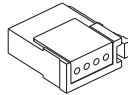
PSE550-□-□-□

**Output specifications**

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

### Option 2 (Connector)

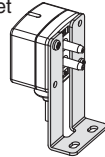
—	None
C2	Connector for pressure sensor controller (1 pc.)



Note 1) Current output type cannot be connected to the PSE 200 series.  
Note 2) The connector is not attached to the cable, but is included with the shipment.

### Option 1 (Bracket)

—	None
A	Bracket



Note) The bracket is not attached to the product, but is included with the shipment.

## Option/Part No.

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

## Specifications

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

Model	PSE550	PSE550-28
Rated differential pressure range	0 to 2 kPa	
Operating pressure range	-50 to 50 kPa <sup>Note)</sup>	
Extension analogue output range	-0.2 to 0 kPa	—
Proof pressure	65 kPa	
Applicable fluid	Air/Non-corrosive gas/Non-flammable gas	
Power supply voltage	12 to 24 VDC ±10 %, Ripple (p-p) 10 % or less (with reverse connection protection)	
Current consumption	15 mA or less	—
Output specifications	Analogue output: 1 to 5 VDC (within rated differential pressure range) 0.6 to 1 VDC (within extension analogue output range) Output impedance: Approx. 1 kΩ	Analogue output: 4 to 20 mA DC (within rated differential pressure range) Maximum 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. (within rated differential pressure range), ±3 % F.S. (within extension analogue output range)	
Linearity	±0.5 % F.S.	
Repeatability	±0.3 % F.S.	
Indicator light	Orange light is turned on. (When energised)	
Environment	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 (in 50 / 60 Hz) for 1 minute between terminals and housing
Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing	
Temperature characteristics	±3 % F.S. (25 °C reference)	
Port size	Ø 4.8 (Ø 4.4 in the end) resin piping (Applicable to I.D. Ø 4 air tubing)	
Materials of parts in contact with fluid	Resin pipe: Nylon, Piston area of sensor: Silicon	
Sensor cable	Oilproof heavy-duty vinyl cable (ellipse), 3 cores, 2.7 x 3.2, 3 m Conductor area: 0.15 mm <sup>2</sup> , Insulator O.D.: 0.9 mm	Oilproof heavy-duty vinyl cable (ellipse), 2 cores, 2.7 x 3.2, 3 m Conductor area: 0.15 mm <sup>2</sup> , Insulator O.D.: 0.9 mm
Weight	With sensor cable	75 g
	Without sensor cable	35 g
Standards	CE, UL/CSA (E216656), RoHS	

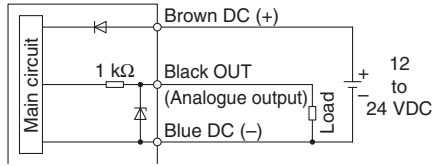
Note) Can detect differential pressure from 0 to 2 kPa within the range of -50 to 50 kPa.

# Series PSE550

## Internal Circuit and Wiring Example

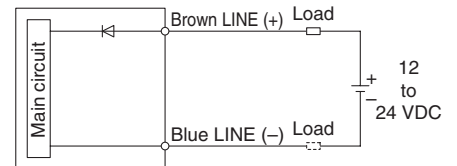
### PSE550

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



### PSE550-28

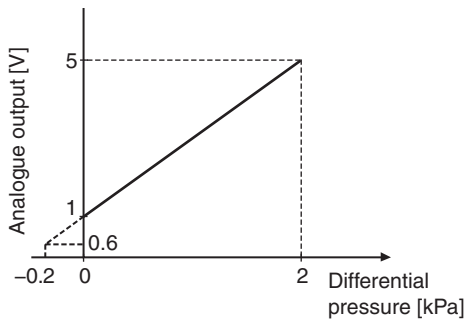
Current output type  
4 to 20 mA  
Allowable load impedance  
500  $\Omega$  or less (at 24 VDC)  
100  $\Omega$  or less (at 12 VDC)



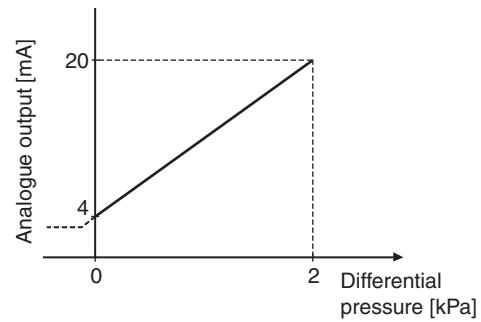
\* Install the load either on the LINE (+) or LINE (-) side.

## Analogue Output

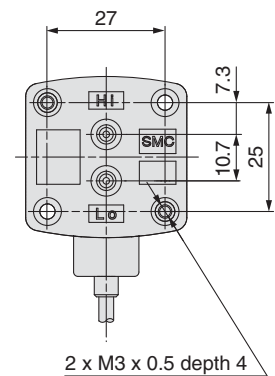
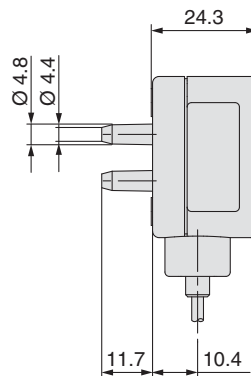
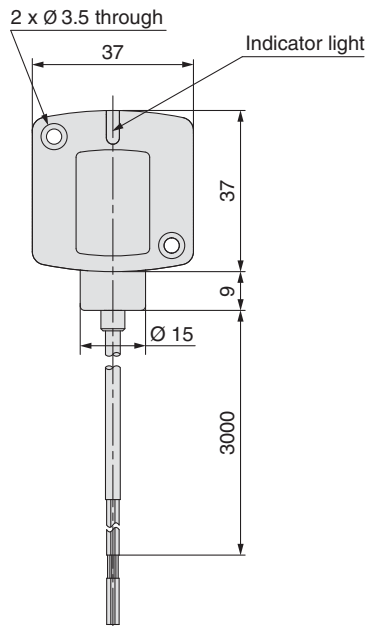
### 1 to 5 VDC



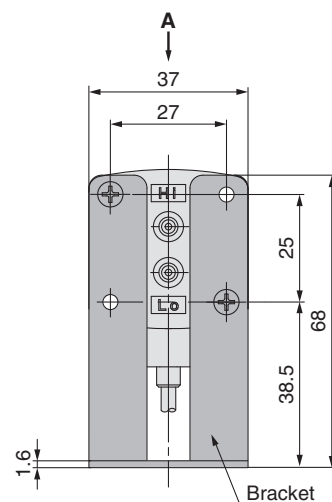
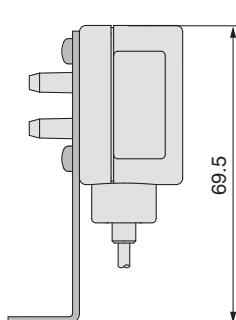
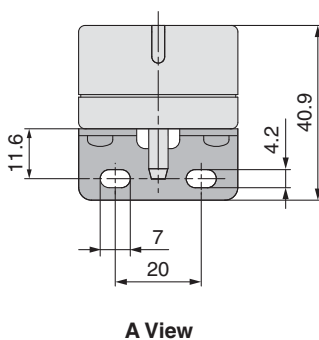
### 4 to 20 mA DC

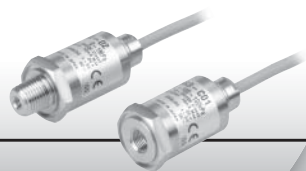


## Dimensions



### With bracket





# Pressure Sensor For General Fluids

Series **PSE560**



PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

Monitor

PSE300

PSE300AC

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

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

**IP65**

**Copper-free  
Fluorine-free**

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

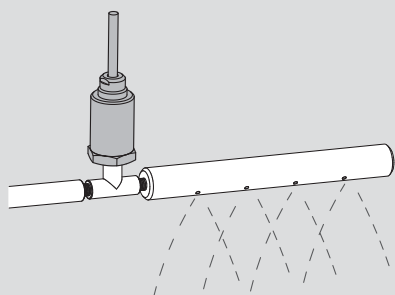
### Variations

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

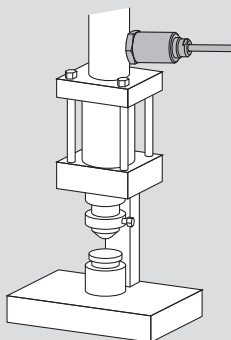
\* For URJ1/4, TSJ1/4, refer to "Glossary of Terms/Technical Information" on SMC website or refer to [www.smc.eu](http://www.smc.eu) website

### Application examples

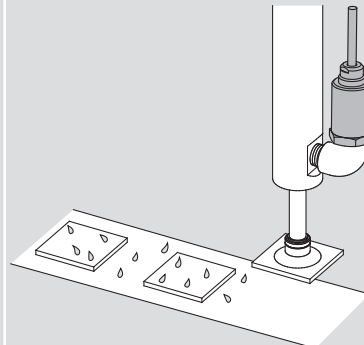
#### Cleaning lines



#### Check for working pressure for hydraulic cylinders



#### Suction verification of workpieces containing moisture

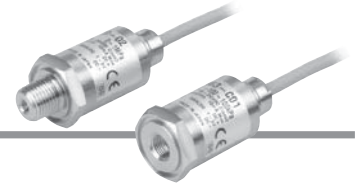


Note: When vacuum is released, take precautions to avoid water collision with inertia force. (An adapter with restrictor (ZS-31-X175) is available to prevent water collision with rush inertia.) (Refer to "NOTE" on the Operation Manual at SMC website for details.)

*Applications*

# Pressure Sensor For General Fluids

# Series PSE560



## How to Order

**Sensor range**

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

**Option (Connector)**

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

Note 1) Current output type cannot be connected to the PSE200 series.  
Note 2) The connector is not attached to the cable, but is included with the shipment.

**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**

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

**Option/Part No.**

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

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

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

## Specifications

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

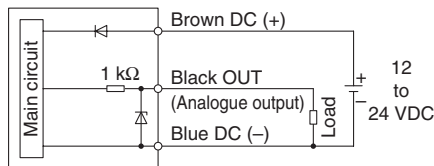
Model	PSE56□-□	PSE56□-□-28
Applicable fluid	Liquid or gas that will not corrode or attack stainless steel 316L	
Power supply voltage	12 to 24 VDC ±10 %, Ripple (p-p) 10 % or less (with reverse connection protection)	
Current consumption	10 mA or less	—
Output specifications	Analogue output: 1 to 5 V (within rated pressure range) 0.6 to 1 V (within extension analogue output range) Output impedance: Approx. 1 kΩ	Analogue output: 4 to 20 mA DC (within rated pressure range) Maximum load impedance: 500 Ω or less (at 24 VDC) 100 Ω or less (at 12 VDC)
Accuracy (Ambient temperature at 25 °C)	±1 % F.S. (within rated pressure range), ±3 % F.S. (within extension analogue output range)	
Linearity	±0.5 % F.S.	
Repeatability	±0.2 % F.S.	
Power supply voltage effect	±0.3 % F.S.	
Environment	Enclosure	IP65
	Operating temperature range	Operating: -10 to 60 °C, Stored: -20 to 70 °C (No freezing or condensation)
	Operating humidity range	Operating/Stored: 35 to 85 % RH (No condensation)
	Withstand voltage	250 VAC for 1 minute between terminals and housing
	Insulation resistance	50 MΩ or more (50 VDC measured via megohmmeter) between terminals and housing
Temperature characteristics	±2 % F.S. (0 to 50 °C: 25 °C reference), ±3 % F.S. (-10 to 60 °C: 25 °C reference)	
Sensor cable	PSE56□-□: Oilproof heavy-duty vinyl cable with air tubing, 3 cores, Ø 5.1, 3 m, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.12 mm PSE56□-□-28: Oilproof heavy-duty vinyl cable with air tubing, 2 cores, Ø 5.1, 3 m, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.12 mm	
Standards	CE, UL/CSA (E216656), RoHS	

## Piping Specifications

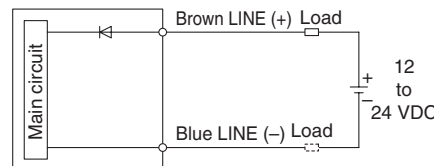
Model	01	02	N01	N02	C01	A2	B2
Port size	R 1/8 M5 x 0.8	R 1/4 M5 x 0.8	NPT 1/8 M5 x 0.8	NPT 1/4 M5 x 0.8	Rc 1/8	URJ 1/4	TSJ 1/4
Material	Case: C3604 + Nickel plating, Piping port/Pressure sensor: Stainless steel 316L						
Weight	With sensor cable	193 g	200 g	194 g	201 g	187 g	203 g
	Without sensor cable	101 g	108 g	102 g	109 g	95 g	101 g

## Internal Circuit and Wiring Example

**PSE56□-□**  
Voltage output type  
1 to 5 V  
Output impedance  
Approx. 1 kΩ



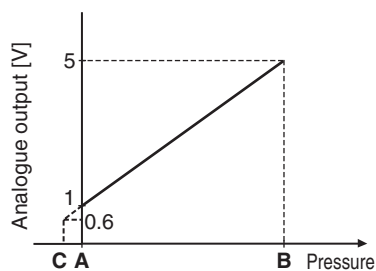
**PSE56□-□-28**  
Current output type  
4 to 20 mA  
Allowable load impedance  
500 Ω or less (at 24 VDC)  
100 Ω or less (at 12 VDC)



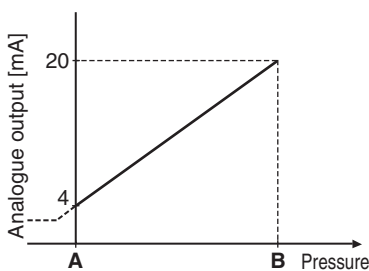
\* Install the load either on the LINE (+) or LINE (-) side.

## Analogue Output

1 to 5 VDC



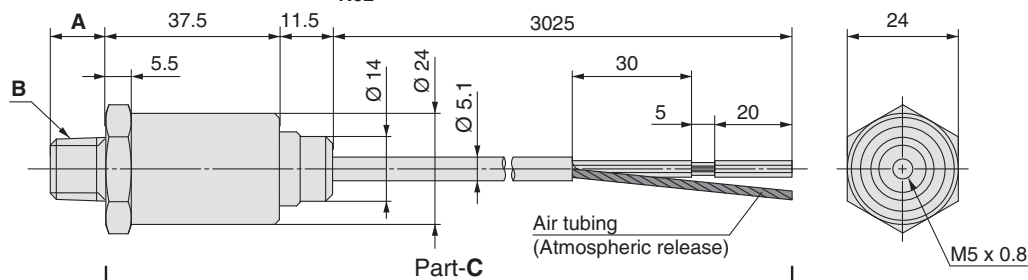
4 to 20 mA DC



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

## Dimensions

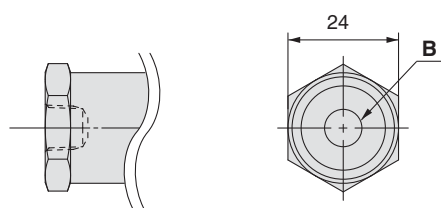
**PSE56□-01, PSE56□-N01**  
**02, N02**



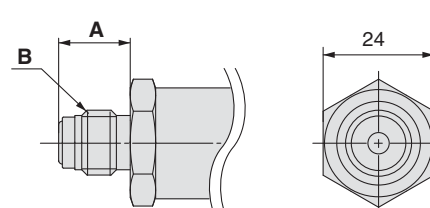
\* The dimensions of part C are common to all PSE56□ models.

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

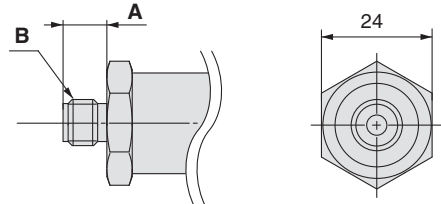
**PSE56□-C01**



**PSE56□-A2**

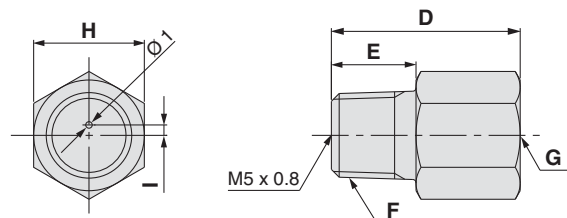


**PSE56□-B2**



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

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



Part no.	D	E	F	G	H	I
ZS-31-X188	20	9	R 1/8	Rc 1/8	14	1.5
ZS-31-X189	20	9	NPT 1/8	NPT 1/8	14	1.5
ZS-31-X175	29	13	R 1/4	Rc 1/4	17	1.6
ZS-31-X186	29	13	NPT 1/4	NPT 1/4	17	1.6

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

PSE530  
 PSE540  
 PSE550  
 PSE560  
 PSE570  
 PSE200  
 PSE300  
 PSE300AC



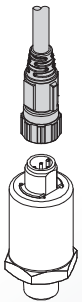
# Pressure Sensor For General Fluids

Series *PSE570*



Series	Rated pressure range							
	-100 kPa	0	100 kPa	500 kPa	1 MPa	2 MPa	5 MPa	10 MPa
PSE570		0	1 MPa					
PSE573	-100 kPa		100 kPa					
PSE574		0	500 kPa					
PSE575		0	2 MPa					
PSE576		0	5 MPa					
PSE577		0	10 MPa					

## Adopted M12 connector.



### Materials of parts in contact with fluid

Piping port*	C3604 + Nickel plating
Pressure sensor*	Al <sub>2</sub> O <sub>3</sub> (Alumina 96 %)
O-ring	FKM + Grease

\* Stainless steel 316L is used for the PSE560.  
For details, refer to page 12.

Withstand voltage

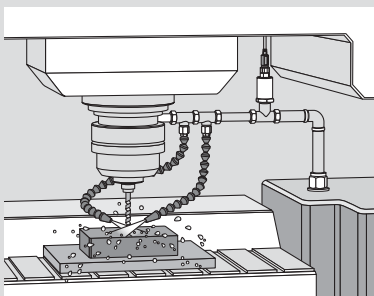
**500 VAC**

<Twice as compared with the PSE560>

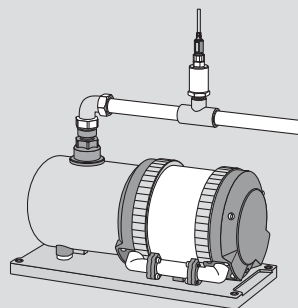
**IP65**

## Application examples

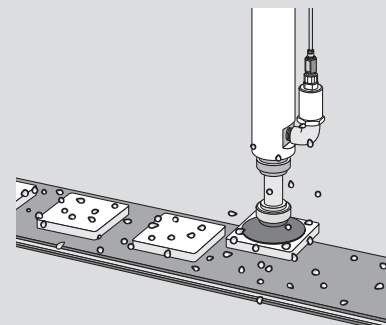
### Liquid coolant pressure control



### Discharge pressure control for compressor



### Suction verification of workpieces containing moisture



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

*Applications*



# Pressure Sensor For General Fluids

# Series PSE57



## How to Order

PSE57  - 01 -

### Sensor range

0	Positive pressure [0 to 1 MPa]
3	Compound pressure [-100 to 100 kPa]
4	Positive pressure [0 to 500 kPa]
5	Positive pressure [0 to 2 MPa]
6	Positive pressure [0 to 5 MPa]
7	Positive pressure [0 to 10 MPa]

### Option (Lead wire)

—	Lead wire and M12 connector (3 m), Straight	
L	Lead wire and M12 connector (3 m), Right angle	
N	None	

\* See page 39 for connection to the PSE300AC.

### Output specifications

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

### Port size

Symbol	Port size	Model					
		PSE570	PSE573	PSE574	PSE575	PSE576	PSE577
01	R 1/8 (with M5 female thread)	●	●	●	—	—	—
02	R 1/4 (with M5 female thread)	●	●	●	●	●	●

## Option/Part No.

Description	Part no.	Note
Lead wire and M12 connector (3 m), Straight	ZS-37-A	1 pc.
Connector for pressure sensor controller	ZS-28-CA-4	1 pc.
Adapter with restrictor Rc 1/4	ZS-31-X175	1 pc.
Adapter with restrictor Rc 1/8	ZS-31-X188	1 pc.

## Specifications

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Model		PSE570	PSE573	PSE574	PSE575	PSE576	PSE577
<b>Fluid</b>	<b>Applicable fluid</b>	Gas or liquid that will not corrode materials of parts in contact with fluid					
<b>Pressure</b>	<b>Rated pressure range</b>	0 to 1 MPa	-100 to 100 kPa	0 to 500 kPa	0 to 2 MPa	0 to 5 MPa	0 to 10 MPa
	<b>Proof pressure</b>	3.0 MPa	600 kPa	1.5 MPa	5.0 MPa	12.5 MPa	30 MPa
	<b>Power supply voltage</b>	12 to 24 VDC ±10 % with 10 % voltage ripple or less					
<b>Electrical</b>	<b>Current consumption</b>	10 mA or less					
	<b>Protection</b>	Reverse connection protection					
<b>Accuracy</b>	<b>Analogue output accuracy (Ambient temperature at 25 °C)</b>	±1.0 % F.S.			±2.5 % F.S.		
	<b>Linearity</b>	±0.5 % F.S.					
	<b>Repeatability (Ambient temperature at 25 °C)</b>	±0.2 % F.S.					
	<b>Temperature characteristics (25 °C reference)</b>	±2 % F.S. (0 to 50 °C) ±3 % F.S. (-10 to 60 °C)	±3 % F.S. (0 to 50 °C) ±4 % F.S. (-10 to 60 °C)			±5 % F.S. (-10 to 60 °C)	
<b>Environment</b>	<b>Enclosure</b>	IP65					
	<b>Withstand voltage</b>	500 VAC for 1 minute between terminals and housing					
	<b>Insulation resistance</b>	100 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing					
	<b>Operating temperature range</b>	Operating: -10 to 60 °C, Stored: -20 to 70 °C (No freezing or condensation)					
	<b>Operating humidity range</b>	Operating/Stored: 35 to 85% RH (No condensation)					
<b>Standards</b>		CE, RoHS					
<b>Materials of parts in contact with fluid</b>		Piping port: C3604 + Nickel plating, Pressure sensor: Al <sub>2</sub> O <sub>3</sub> (Alumina 96 %), O-ring: FKM + Grease			Piping port: C3604 + Nickel plating, Pressure sensor: Al <sub>2</sub> O <sub>3</sub> (Alumina 96 %), Square ring: FKM		
Model		PSE57 <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/>				PSE57 <input type="checkbox"/> - <input type="checkbox"/> - 28	
<b>Analogue output</b>	<b>Output</b>	Voltage output: 1 to 5 V				Current output: 4 to 20 mA	
	<b>Impedance</b>	Output impedance: Approx. 1 kΩ				Maximum load impedance: 500 Ω or less (at 24 VDC) 100 Ω or less (at 12 VDC)	

## Piping Specifications

Part no.		PSE570/573/574-01	PSE570/573/574-02	PSE575/576/577-02
<b>Port size</b>		R 1/8 M5 x 0.8	R 1/4 M5 x 0.8	R 1/4 M5 x 0.8
<b>Materials of parts in contact with fluid</b>		Piping port: C3604 + Nickel plating Pressure sensor: Al <sub>2</sub> O <sub>3</sub> (Alumina 96%) O-ring: FKM + Grease		Piping port: C3604 + Nickel plating Pressure sensor: Al <sub>2</sub> O <sub>3</sub> (Alumina 96%) Square ring: FKM
<b>Weight</b>	Without lead wire and M12 connector	88 g	95 g	103 g
	With lead wire and M12 connector	175 g	182 g	191 g

## Cable Specifications

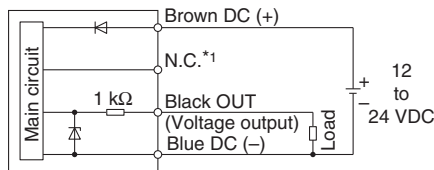
<b>Conductor</b>	Nominal cross section	AWG23
	Outside diameter	0.72 mm
<b>Insulator</b>	<b>Material</b>	Cross-linked vinyl chloride
	Outside diameter	1.14 mm
	<b>Colour</b>	Brown, Blue, Black, White
<b>Sheath</b>	<b>Material</b>	Oil resistant vinyl chloride
<b>Finished O.D.</b>		∅ 4
<b>Length</b>		3 m

# Series PSE570

## Internal Circuit and Wiring Example

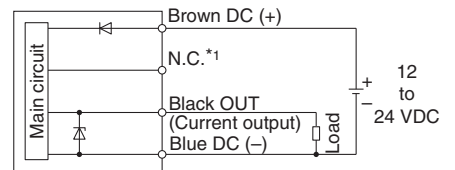
### PSE57□-□

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



### PSE57□-□-28

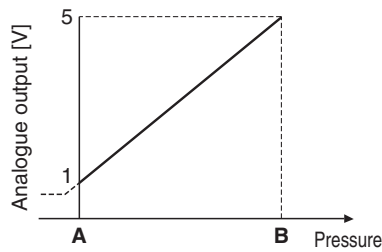
Current output type  
4 to 20 mA  
Allowable load impedance  
500 Ω or less (at 24 VDC)  
100 Ω or less (at 12 VDC)



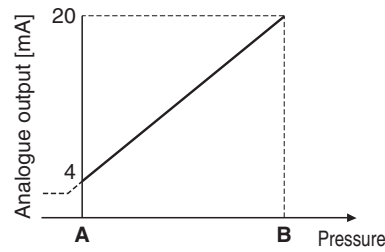
\*1 The unconnected terminals are used in SMC, so please do not connect them.

## Analogue Output

### 1 to 5 VDC

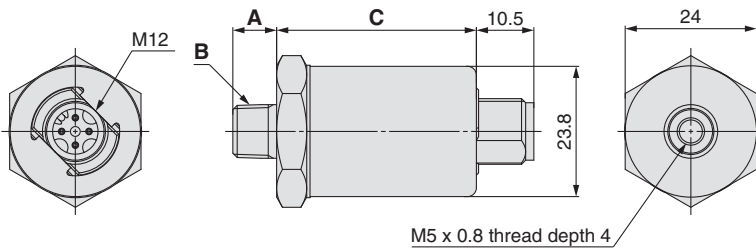


### 4 to 20 mA DC



Model	Rated pressure range	A	B
PSE570	0 to 1 MPa	0 MPa	1 MPa
PSE573	-100 to 100 kPa	-100 kPa	100 kPa
PSE574	0 to 500 kPa	0 kPa	500 kPa
PSE575	0 to 2 MPa	0 MPa	2 MPa
PSE576	0 to 5 MPa	0 MPa	5 MPa
PSE577	0 to 10 MPa	0 MPa	10 MPa

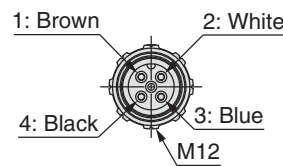
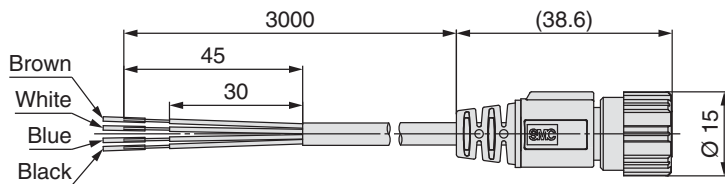
## Dimensions



Part no.	A	B	C
PSE570/573/574-01	8	R 1/8	36.5
PSE570/573/574-02	12	R 1/4	36.5
PSE575/576/577-02	12	R 1/4	39.7

[mm]

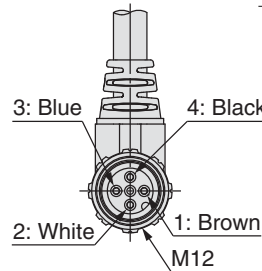
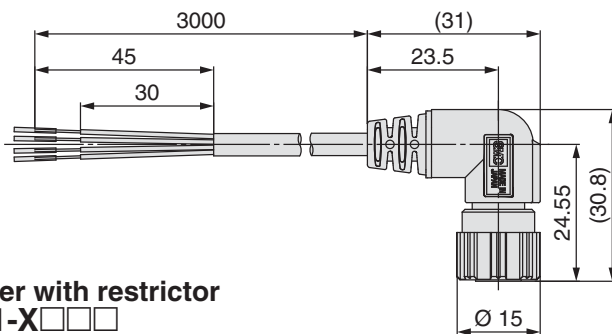
### Lead wire and M12 connector ZS-37-A



Pin no.	Lead wire colour	Description
1	Brown	DC (+)
2	White	N.C.*1
3	Blue	DC (-)
4	Black	OUT1

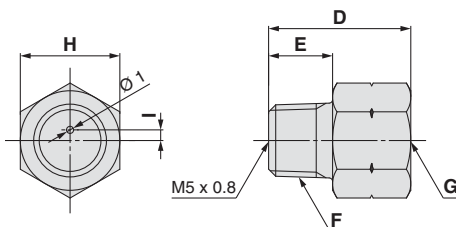
\*1 The unconnected terminals are used in SMC, so please do not connect them.

### ZS-37-B



Part no.	Description
ZS-37-A	Straight type 3 m
ZS-37-B	Right angle type 3 m

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



Part no.	D	E	F	G	H	I
ZS-31-X188	20	9	R 1/8	Rc 1/8	14	1.5
ZS-31-X175	29	13	R 1/4	Rc 1/4	17	1.6

[mm]

\* If it is expected that the pressure, such as the water hammer or surge pressure will fluctuate rapidly, refer to the Precautions in the Operation Manual on the SMC website (<http://www.smc.eu>).



# Multi-Channel Digital Pressure Sensor Monitor

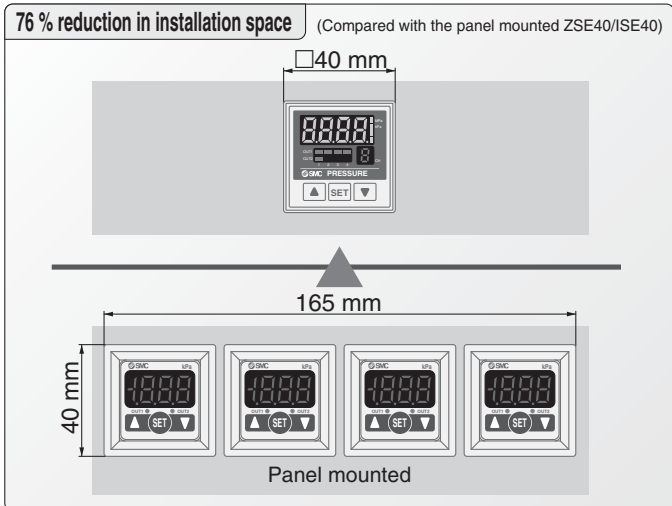
## Series PSE200



Applicable sensors					Rated pressure range				Set/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	PSE57□	-100 kPa	0	100 kPa	1 MPa	
PSE531	PSE541	—	PSE561	—	-101 kPa	0			0.1 kPa
PSE533	PSE543	—	PSE563	PSE573	-101 kPa		101 kPa		0.1 kPa
PSE530	PSE540	—	PSE560	PSE570		0		1 MPa	0.001 MPa
PSE532		—		—		0	101 kPa		0.1 kPa

### ● A single controller monitors up to 4 pressure sensors.

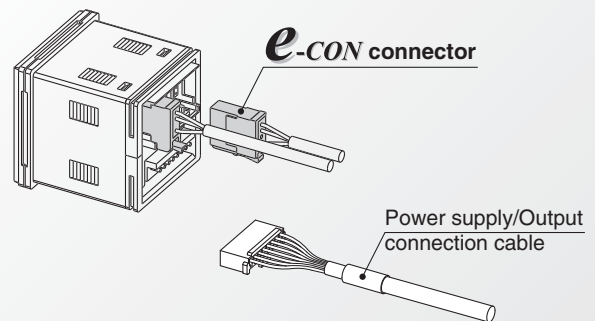
- Sensor input: 4 inputs
- Switch output: 5 outputs (2 outputs for 1ch, 1 output for 2 to 4ch)



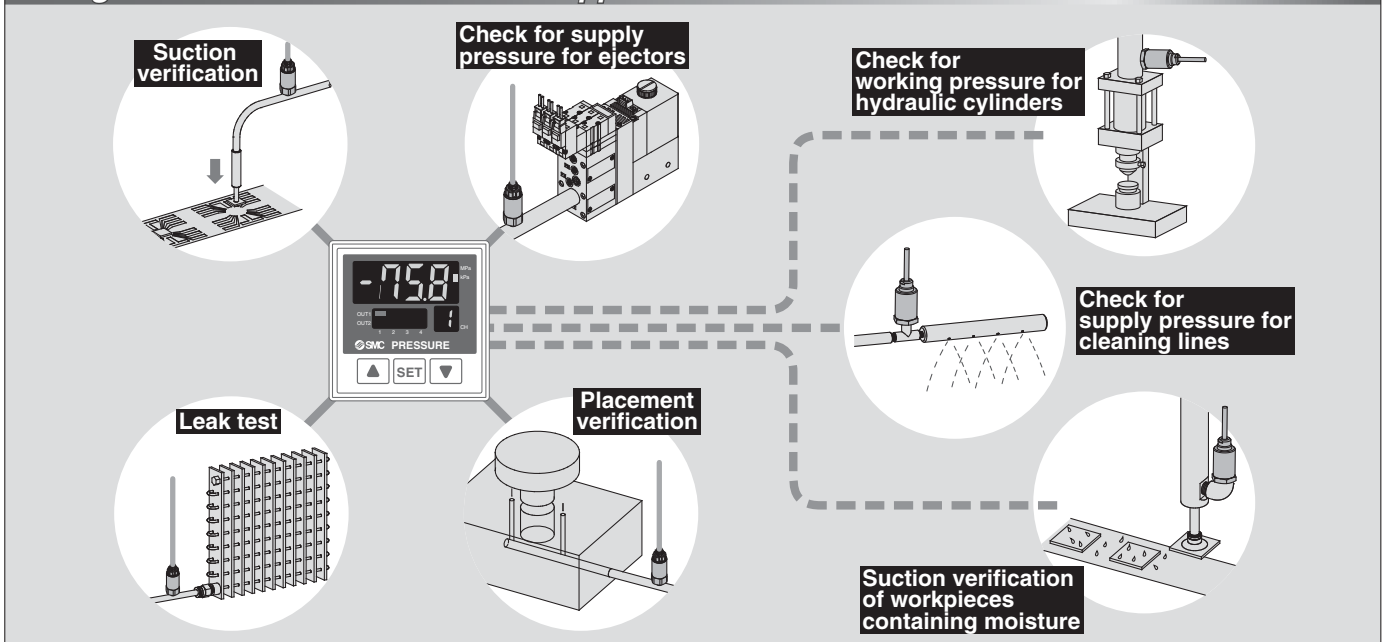
### ● Functions

- Auto-shift function
- Auto-preset function
- Auto-identification function
- Copy function
- Channel scan function
- Zero-clear function
- Keylock function
- Peak/Bottom values holding/display function
- Display unit switching function
- Display calibration function
- Anti-chattering function

### Connector type



### A single controller monitors various applications.



PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

PSE300

PSE300AC

Monitor

# Multi-Channel Monitor Series PSE200



## How to Order

PSE20 **0** - **M** □ □

### Input/Output specifications

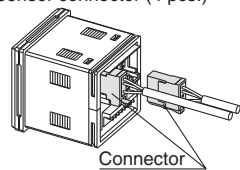
<b>0</b>	NPN 5 outputs + Auto-shift input
<b>1</b>	PNP 5 outputs + Auto-shift input

### Unit specifications

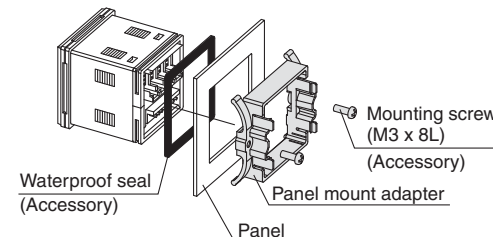
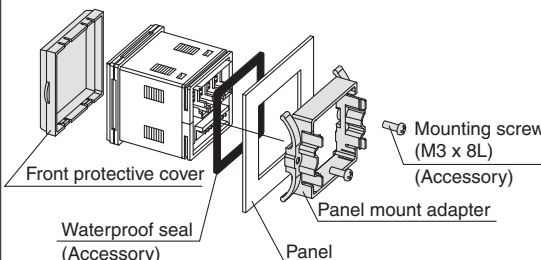
—	With display unit switching function
<b>M</b>	Fixed SI unit <small>Note 1)</small>

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

### Option 2

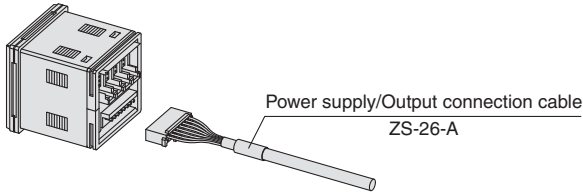
—	None
<b>4C</b>	Sensor connector (4 pcs.)  Connector

### Option 1

—	None
<b>A</b>	Panel mount adapter  Waterproof seal (Accessory) Mounting screw (M3 x 8L) (Accessory) Panel mount adapter Panel
<b>B</b>	Front protective cover + Panel mount adapter  Front protective cover Waterproof seal (Accessory) Mounting screw (M3 x 8L) (Accessory) Panel mount adapter Panel

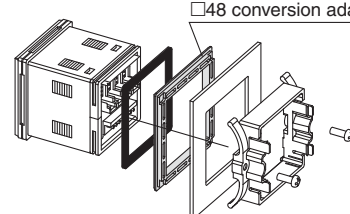
### Accessory: Power supply/Output connection cable (2 m)

Included with the controller.



## Option/Part No.

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, mounting screws M3 x 8L (2 pcs.) included
Front protective cover + Panel mount adapter	ZS-26-C	Waterproof seal, mounting screws M3 x 8L (2 pcs.) included
□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)	

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

## Specifications

Model	PSE200	PSE201
<b>Power supply voltage</b>	12 to 24 VDC $\pm 10\%$ , Ripple (p-p) 10% or less (with reverse connection protection)	
<b>Current consumption</b>	55 mA or less (Current consumption for sensor is not included.)	
<b>Power supply voltage for sensor</b>	[Power supply voltage] -1.5 V	
<b>Power supply current for sensor</b> <small>Note 1)</small>	Maximum 40 mA (100 mA maximum for the total power supply current when 4 sensors are input.)	
<b>Sensor input</b>	1 to 5 VDC (Input impedance: Approx. 800 k $\Omega$ )	
	<b>Number of inputs</b>	4 inputs
	<b>Input protection</b>	With excess voltage protection (Up to 26.4 V)
<b>Switch output</b>	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)	
	<b>Maximum load current</b>	80 mA
	<b>Maximum load voltage</b>	30 V
	<b>Residual voltage</b>	1 V or less (with load current of 80 mA)
	<b>Response time</b>	5 ms or less (Response time selections with anti-chattering function: 20 ms, 160 ms, 640 ms)
<b>Short circuit protection</b>	With short circuit protection	
<b>Repeatability</b>	$\pm 0.1\%$ F.S. $\pm 1$ digit	
<b>Hysteresis</b>	<b>Hysteresis mode</b>	Adjustable (can be set from 0)
	<b>Window comparator mode</b>	Fixed (3 digits)
<b>Display</b>	For measured value display: 4-digit, 7-segment indicator, Display colour: Orange (Sampling frequency: 4 times/sec) For channel display: 1-digit, 7-segment indicator, Display colour: Red	
<b>Display accuracy (Operating temperature at 25 °C)</b>	$\pm 0.5\%$ F.S. $\pm 1$ digit	
<b>Indicator light</b>	Red (Lights up when output is turned ON.)	
<b>Auto-shift input</b>	Non-voltage input (Reed or Solid state), Input 10 ms or more, Independently controllable auto-shift function ON/OFF	
<b>Auto-identification function</b>	With auto-identification function <small>Note 2)</small>	
<b>Environment</b>	<b>Enclosure</b>	Front face: IP65 (when panel-mounted), Others: IP40 <small>Note 3)</small>
	<b>Ambient temperature range</b>	Operating: 0 to 50 °C, Stored: -10 to 60 °C (No freezing or condensation)
	<b>Ambient humidity range</b>	Operating/Stored: 35 to 85 % RH (No condensation)
<b>Temperature characteristics</b>	$\pm 0.5\%$ F.S. (25 °C reference)	
<b>Connection</b>	Power supply/Output connection: 8P connector, Sensor connection: e-con connector	
<b>Material</b>	Housing: PBT; Display: Transparent nylon; Back rubber cover: CR	
<b>Weight</b>	Approx. 60 g (Excluding power supply/output cable)	
<b>Power supply/Output connection cable</b>	Heat resistant heavy-duty cable, 8 cores, $\varnothing$ 4.8, 2 m, Conductor area: 0.15 mm <sup>2</sup> , Insulator O.D.: 0.9 mm	
<b>Standards</b>	CE, RoHS	

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, 560, 570) are not equipped with this function.

Note 3) IP40 when using the □48 conversion adapter.

## Applicable Pressure Sensor

Applicable sensor					Rated pressure range				Set/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	PSE57□	-100 kPa	0	100 kPa	1 MPa	
PSE531	PSE541	–	PSE561	–	-101 kPa	0			0.1 kPa
PSE533	PSE543	–	PSE563	PSE573	-101 kPa		101 kPa		0.1 kPa
PSE530	PSE540	–	PSE560	PSE570		0	§	1 MPa	0.001 MPa
PSE532		–		–		0	101 kPa		0.1 kPa

Monitor

PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

PSE300

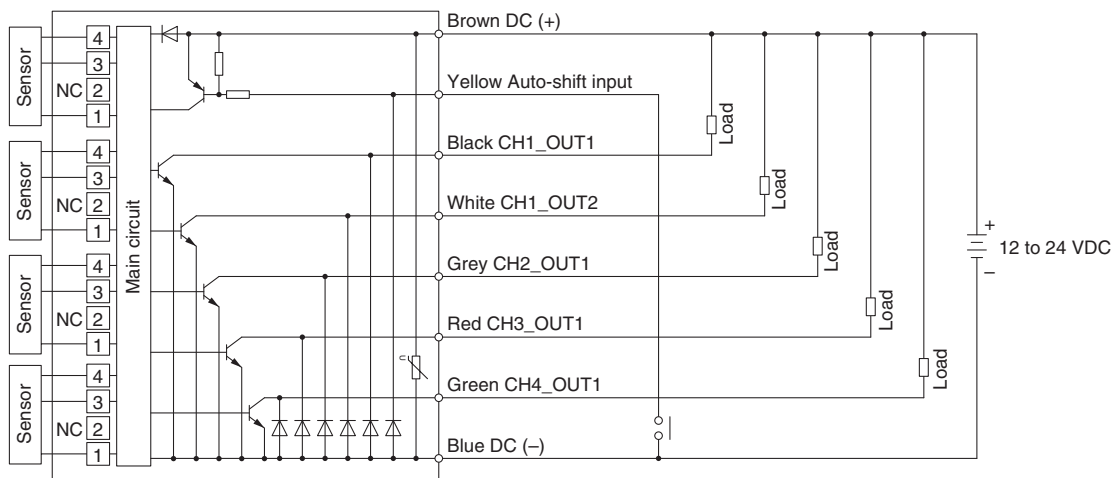
PSE300AC

# Series PSE200

## Internal Circuit and Wiring Example

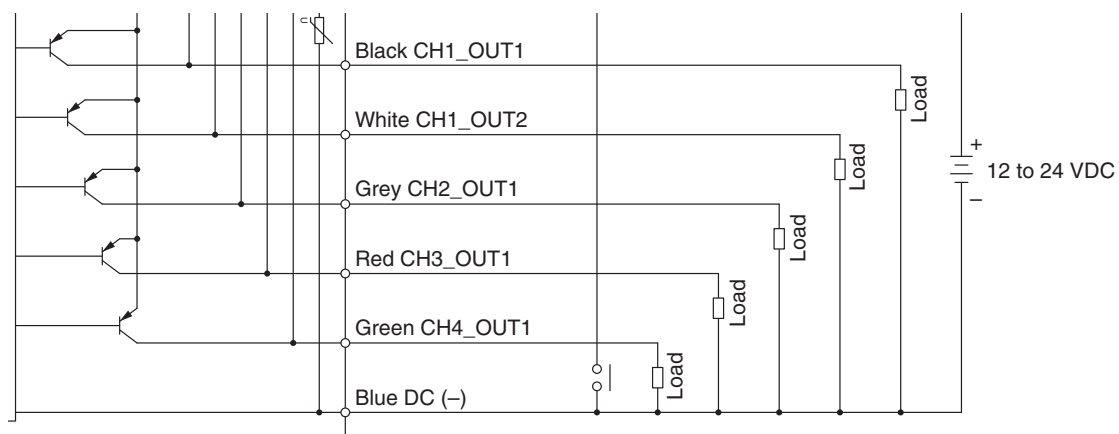
### PSE200-(M) □

· NPN open collector 5 outputs + Auto-shift 1 input



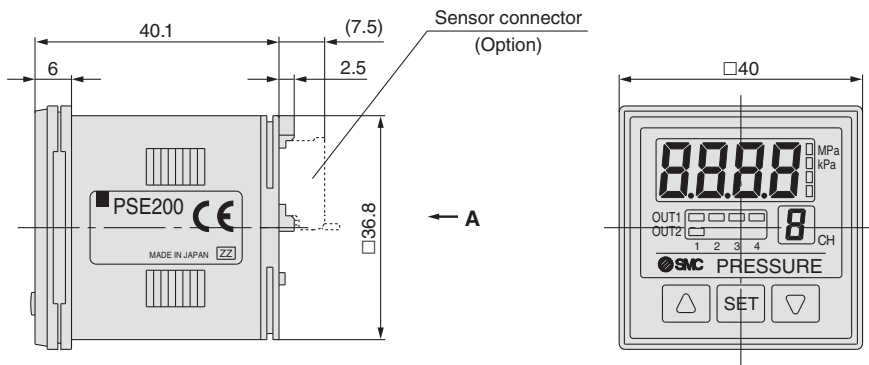
### PSE201-(M) □

· PNP open collector 5 outputs + Auto-shift 1 input

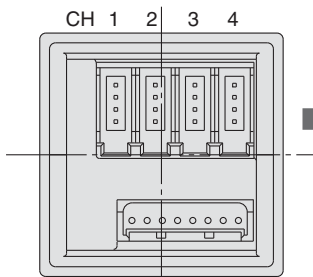


## Dimensions

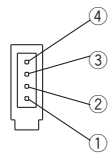
### PSE200/201



**A View**

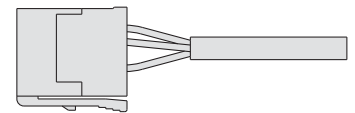


**Sensor connector (4P x 4)**

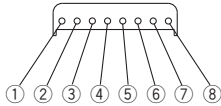


PIN no.	Terminal
①	DC (+)
②	N.C.
③	DC (-)
④	IN (1 to 5 V)

**Connector (Option)**

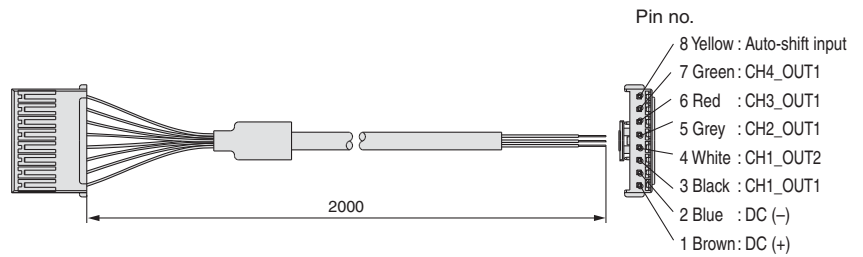


**Power supply/Output connector (8P)**



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 Grey : CH2\_OUT1
  - 4 White : CH1\_OUT2
  - 3 Black : CH1\_OUT1
  - 2 Blue : DC (-)
  - 1 Brown : DC (+)

PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

PSE300

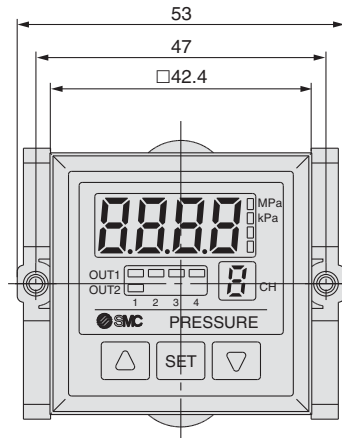
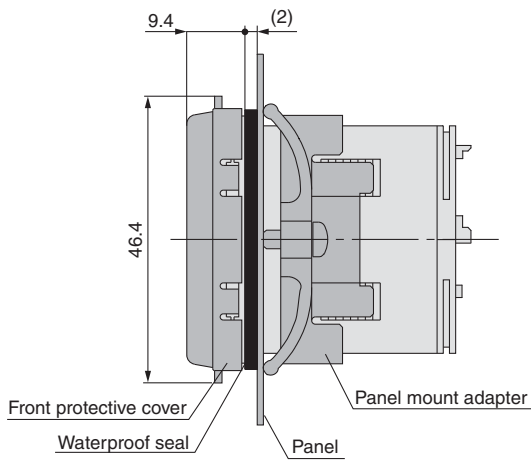
PSE300AC

Monitor

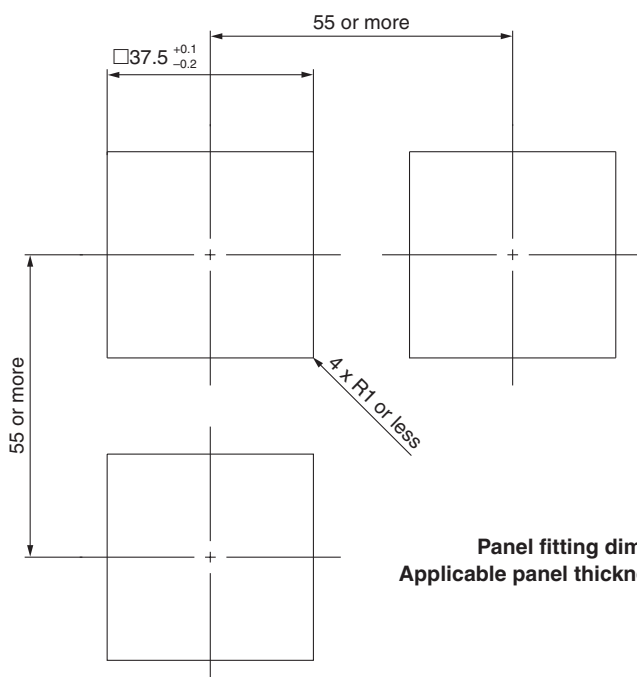
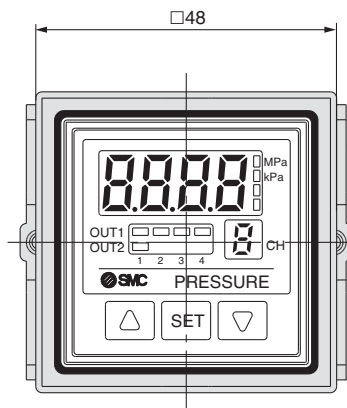
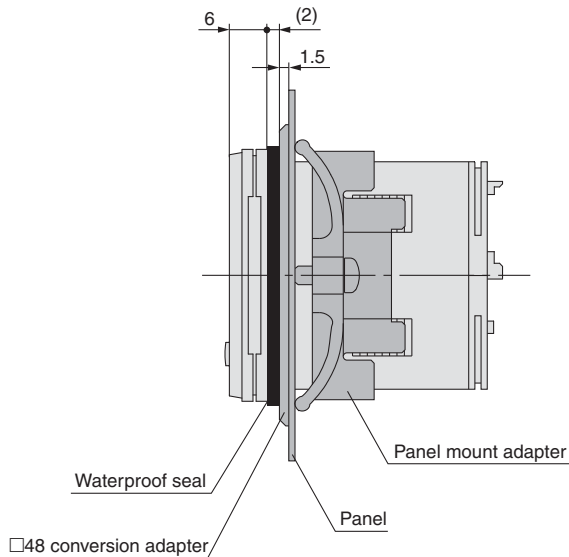
# Series PSE200

## Dimensions

Front protective cover + Panel mount adapter



□48 conversion adapter + Panel mount adapter



Panel fitting dimensions  
Applicable panel thickness: 0.5 to 8 mm





# 2-Colour Display Digital Pressure Sensor Monitor

## Series PSE300



Applicable sensors					Rated pressure range					Set/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	PSE57□	-100 kPa	0	100 kPa	500 kPa	1 MPa	
PSE531	PSE541	—	PSE561	—	-101 kPa	0				0.1 kPa
PSE533	PSE543	—	PSE563	PSE573	-100 kPa	100 kPa				0.2 kPa
PSE530	PSE540	—	PSE560	PSE570		0	1 MPa			0.001 MPa
PSE532	—	—	—	—		0	100 kPa			0.1 kPa
—	—	—	PSE564	PSE574		0	500 kPa			1 kPa
—	—	PSE550	—	—		0	2 kPa			0.01 kPa

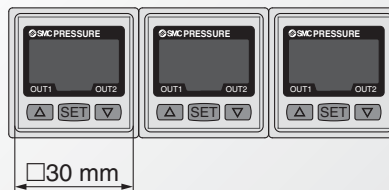
### 2-colour display (Red/Green)

Possible to set 4 patterns of display colour.

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.

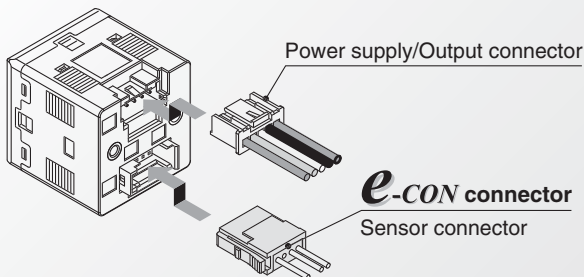
Possible to reduce panel fitting labour.



Response time

**1 ms**

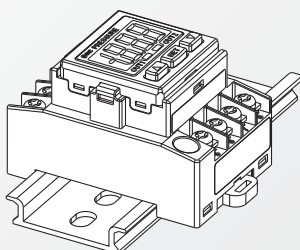
### Connector type



### ● Functions

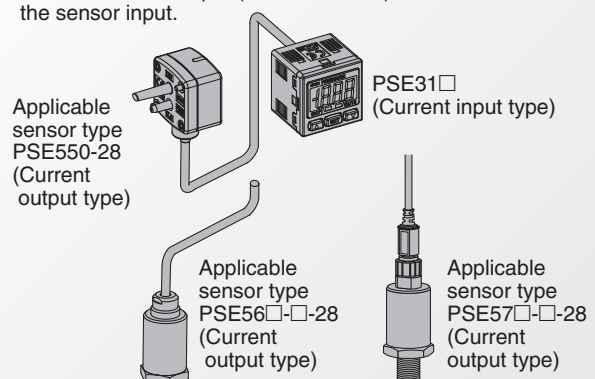
- Auto-shift function
- Auto-preset function
- Display calibration function
- Peak/Bottom values holding/display function
- Keylock function
- Zero-clear function
- Error indication function
- Display unit switching function
- Anti-chattering function

### DIN rail/Terminal block type



### Current input type

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



PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

Monitor  
PSE300

PSE300AC

# Pressure Sensor Monitor

## 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

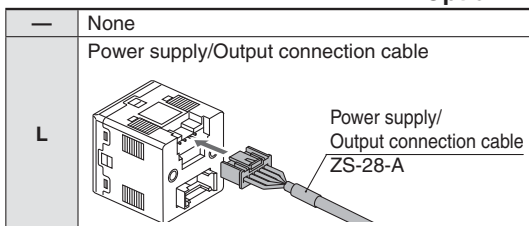
#### Unit specifications

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

#### Note 1) 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

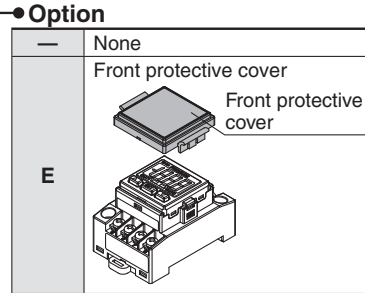


Note) The cable is not attached to the product, but is included with the shipment.

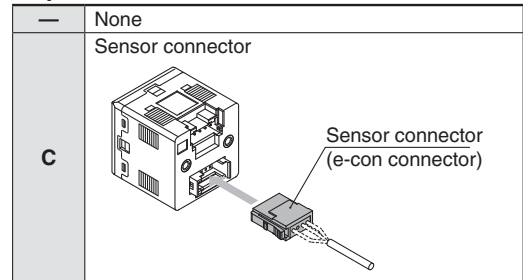
Order DIN rail separately. Refer to page 30.

### Option/Part No.

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.

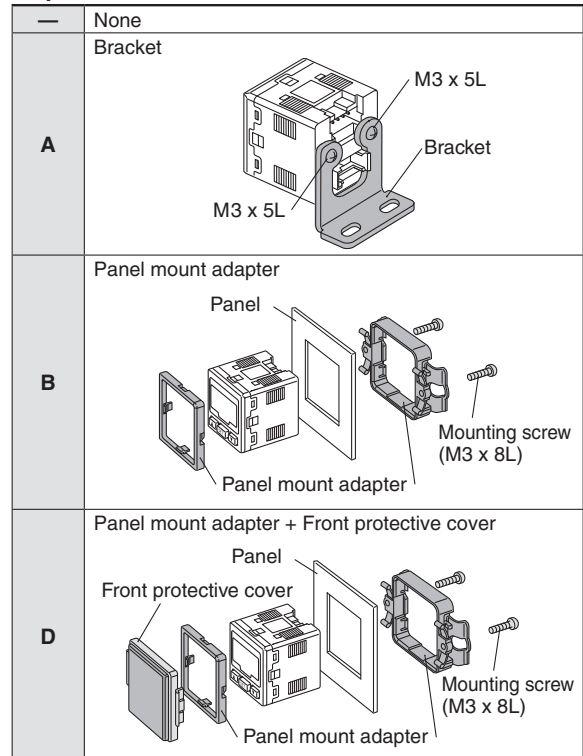


#### Option 3



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

#### Option 2



Note) These options are not attached to products, but are included with the shipment.

# Pressure Sensor Controller *Series PSE300*

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

## Specifications

Model	PSE3□□					
Applicable pressure sensor	PSE533 PSE543 PSE563 PSE573	PSE531 PSE541 PSE561	PSE532	PSE530 PSE540 PSE560 PSE570	PSE564 PSE574	PSE550
Display/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 kPa
Display/Set resolution	0.2 kPa	0.1 kPa	0.1 kPa	0.001 MPa	1 kPa	0.01 kPa
Pressure range <sup>Note 1)</sup>	For compound pressure	For vacuum	For low pressure	For positive pressure		For low differential pressure
Rated pressure (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 analogue output range <sup>Note 2)</sup>	—	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 reverse connection protection)					
Current consumption	50 mA or less (Current consumption for sensor is not included.)					
Sensor input	PSE30□: Voltage input 1 to 5 VDC (Input impedance: 1 MΩ) PSE31□: Current input 4 to 20 mA DC (Input impedance: 100 Ω)					
Number of inputs	1 input					
Input protection	With excess voltage protection (Up to 26.4 V)					
Hysteresis	Hysteresis mode: Variable, Window comparator mode: Variable					
Switch output	NPN or PNP open collector output: 2 outputs					
Maximum load current	80 mA					
Maximum load voltage	30 VDC (at NPN output)					
Residual voltage	1 V or less (with load current of 80 mA)					
Output protection	With short circuit protection					
Response time	1 ms or less					
Anti-chattering function	Response time settings for anti-chattering function: 20 ms, 160 ms, 640 ms, 1280 ms					
Repeatability	±0.1 % F.S.					
Analogue output	Voltage output <sup>Note 2)</sup>	Output voltage: 1 to 5 V (within rated pressure (differential pressure) range), 0.6 to 1 V (within extension analogue 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.		±1.0 % F.S.		±1.5 % F.S.
	Current output <sup>Note 2)</sup>	Output current: 4 to 20 mA (within rated pressure (differential pressure) range), 2.4 to 4 mA (within extension analogue 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.		±1.5 % F.S.		±2.0 % F.S.
Display accuracy (Ambient temperature at 25 °C)	±0.5 % F.S. ±2 digits		±0.5 % F.S. ±1 digit			
Display	3 + 1/2 digit, 7 segment indicator, 2-colour 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 <sup>Note 2)</sup>	Non-voltage input (Reed or Solid state), Low level input: 5 ms or more, Low level: 0.4 V or less					
Environment	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 terminals and housing				
Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing					
Temperature characteristics	±0.5 % F.S. (25 °C reference)					
Connection	PSE30□□: Power supply/Output connection: 5P connector, Sensor connection: 4P connector PSE31□□T: Terminal block					
Material	Front case: PBT, Rear case: PBT (PSE30□□), Modified 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	Oilproof heavy-duty vinyl cable, 5 cores, Ø 4.1, 2 m, Conductor area: 0.2 mm <sup>2</sup> Insulator O.D.: 1.12 mm					
Standards	CE, UL/CSA (E216656), RoHS					

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

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

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

Extension analogue output is not available for the PSE570 series.

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

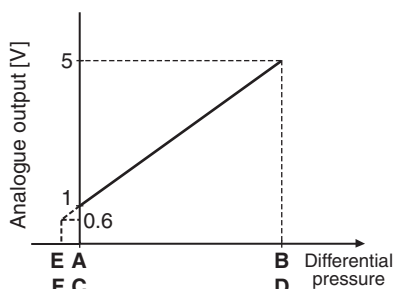
For vacuum & compound pressure: kPa·kgf/cm<sup>2</sup>·bar·psi·mmHg·inHg

For positive pressure & low pressure: MPa·kPa·kgf/cm<sup>2</sup>·bar·psi

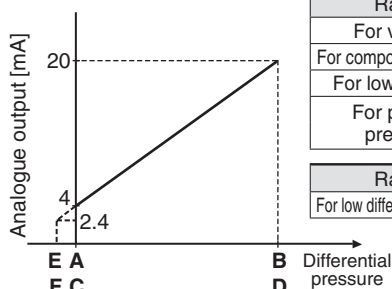
For low differential pressure: kPa·mmHg

## Analogue Output

### 1 to 5 VDC



### 4 to 20 mA DC



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

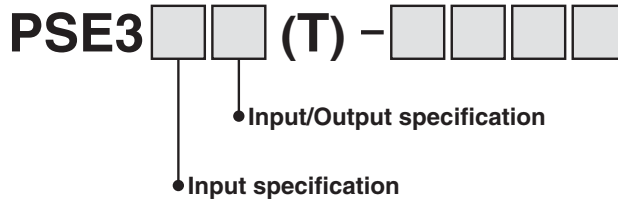
  

Range	Rated pressure range	C	D	F
For low differential pressure	0 to 2 kPa	0	2 kPa	-0.2 kPa

PSE530  
PSE540  
PSE550  
PSE560  
PSE570  
PSE200  
PSE300  
PSE300AC  
Monitor

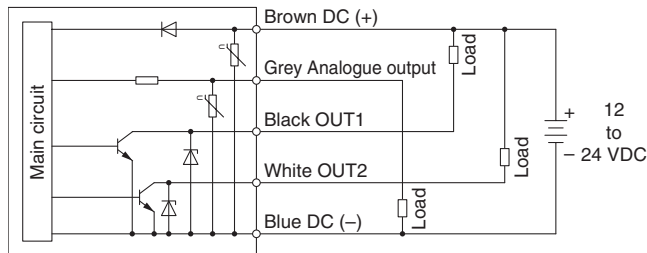
# Series PSE300

## Internal Circuit and Wiring Example



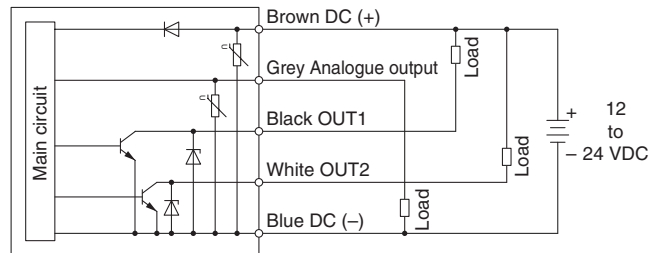
### PSE3  0(T)

NPN (2 outputs) + Analogue voltage output



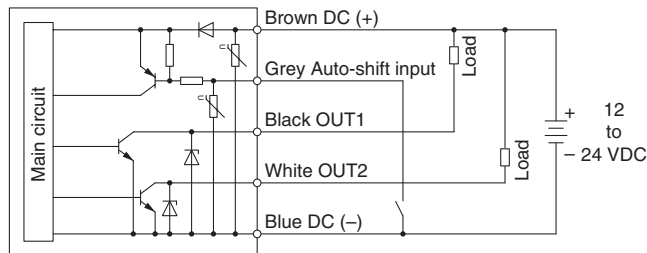
### PSE3  1(T)

NPN (2 outputs) + Analogue current output



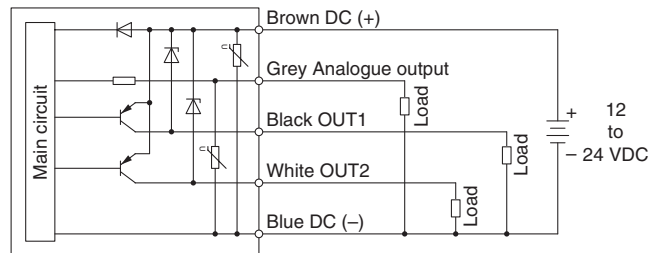
### PSE3  2(T)

NPN (2 outputs) + Auto-shift 1 input



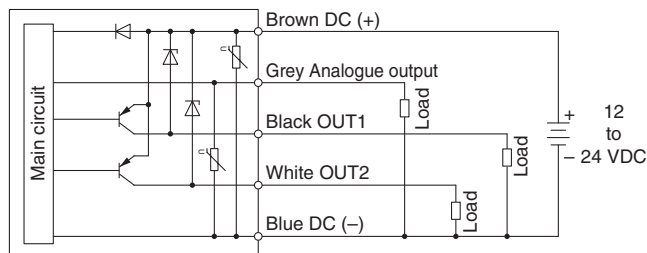
### PSE3  3(T)

PNP (2 outputs) + Analogue voltage output



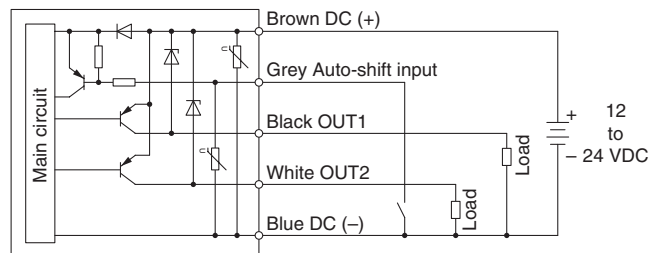
### PSE3  4(T)

PNP (2 outputs) + Analogue current output



### PSE3  5(T)

PNP (2 outputs) + Auto-shift 1 input



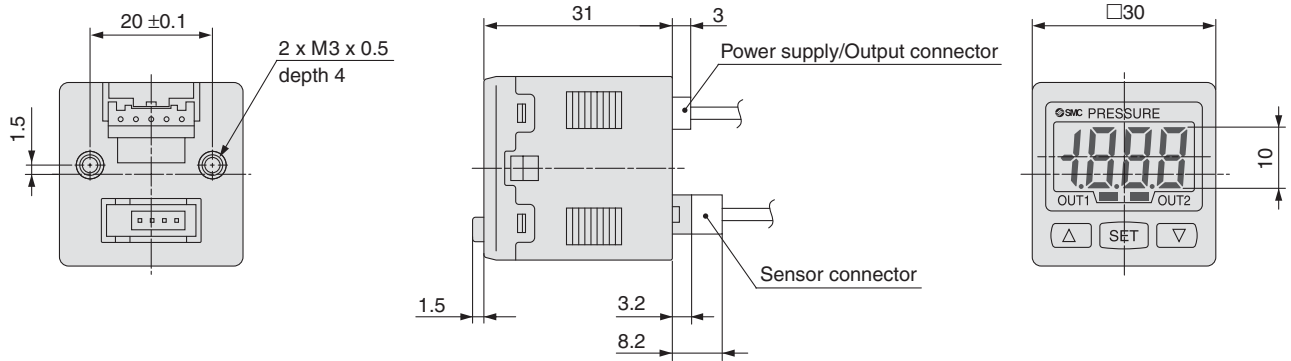
## Connector for Sensor Connection

PIN no.	Terminal		
	PSE30 <span style="border: 1px solid black; padding: 2px;">  </span> (Voltage input)	PSE31 <span style="border: 1px solid black; padding: 2px;">  </span> (Current input)	
		Pressure sensor 2-wire type	Pressure sensor 3-wire type
1	DC (+) (Brown)	DC (+) (Brown)	DC (+) (Brown)
2	N.C.	N.C.	N.C.
3	DC (-) (Blue)	N.C.	DC (-) (Blue)
4	IN (1 to 5 V) (Black)	IN (4 to 20 mA) (Blue)	IN (4 to 20 mA) (Black)

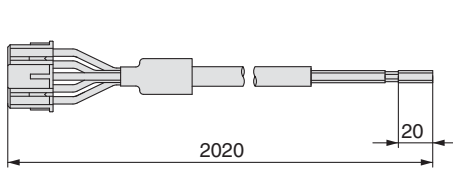
Note: The colours in ( ) indicate the wire colour of the PSE5   series.

## Dimensions

PSE3□□



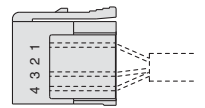
### Power supply/Output connection cable (ZS-28-A)



DC (+) Brown 5  
 OUT1 Black 4  
 OUT2 White 3  
 Analogue output or auto-shift input Grey 2  
 DC (-) Blue 1

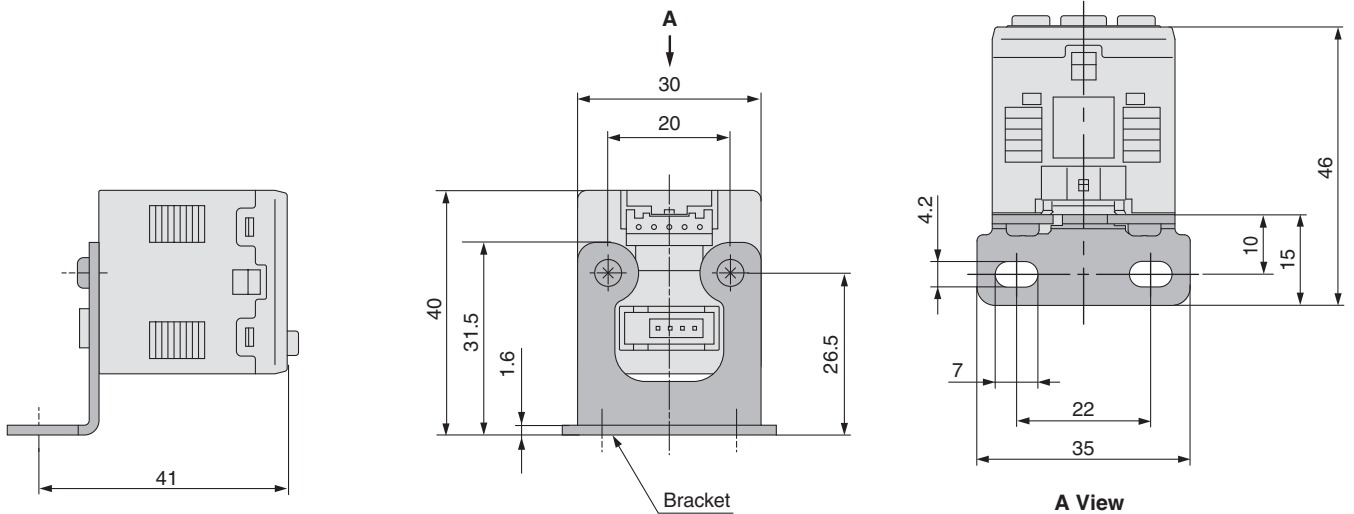
### Sensor connector

PIN no.	Terminal	
	PSE30□	PSE31□
1	DC(+)(Brown)	DC(+)(Brown)
2	N.C.	N.C.
3	DC(-)(Blue)	N.C.
4	IN (1 to 5 V) (Black)	IN (4 to 20 mA) (Blue)



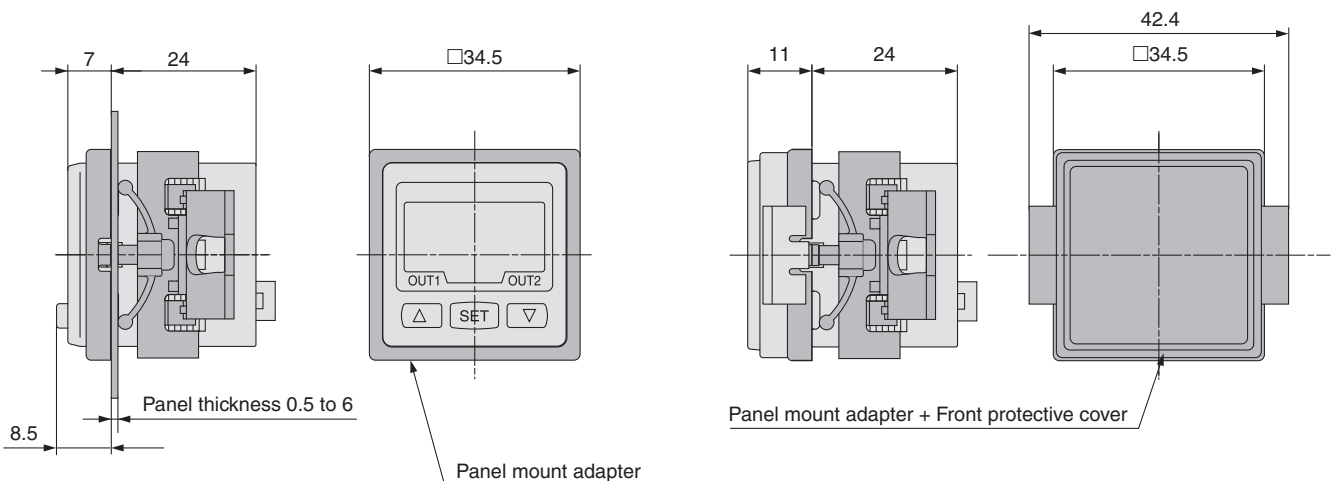
Note: The colours in ( ) indicate the wire colour of the PSE5□□ series.

### With bracket



### With panel mount adapter

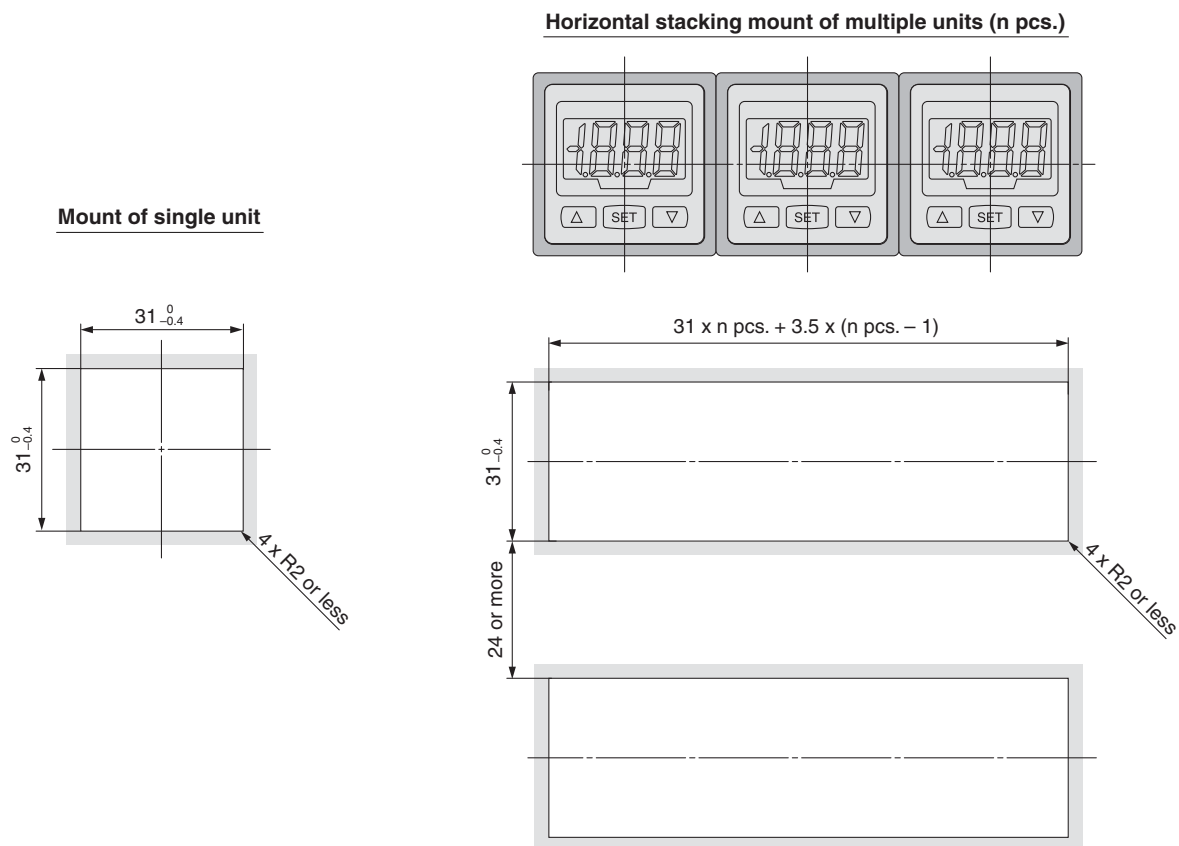
### With panel mount adapter + Front protective cover



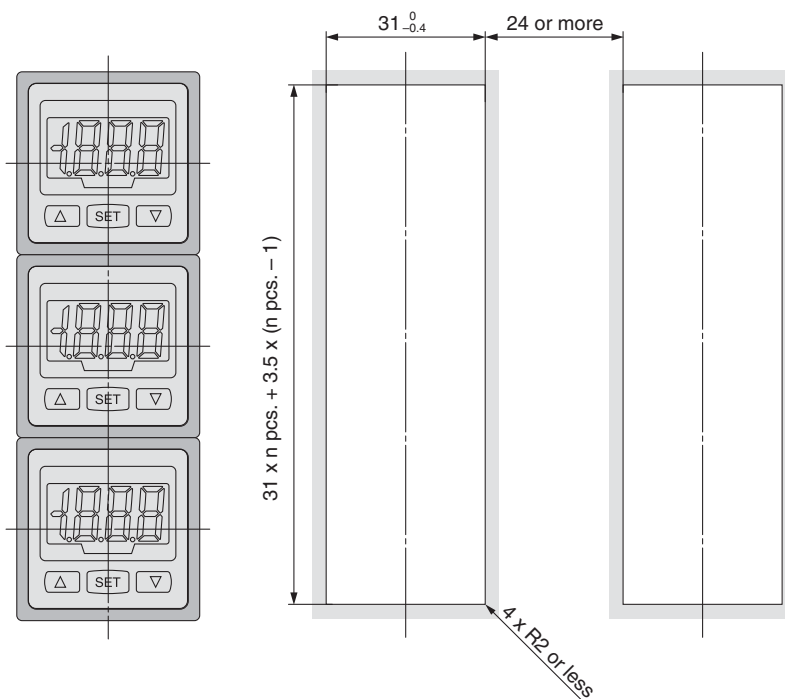
# Series PSE300

## Dimensions

### Panel fitting dimensions

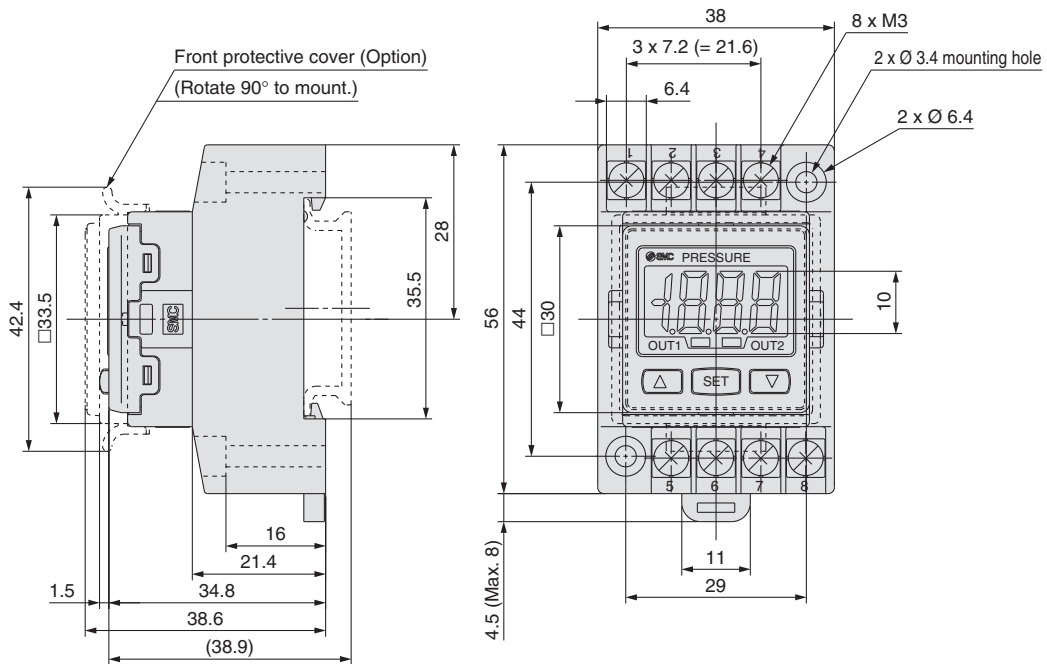


### Vertical stacking mount of multiple units (n pcs.)



## Dimensions

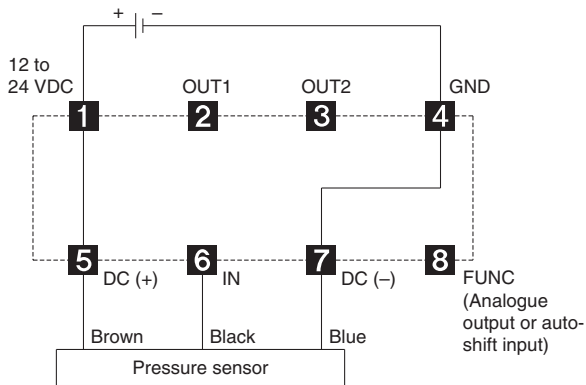
PSE3□□T



## Connections

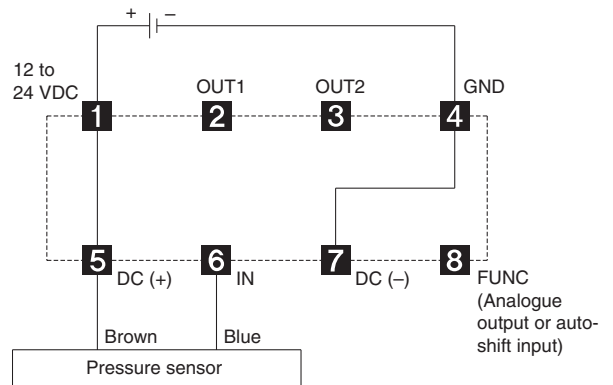
PSE3□□T

(Voltage input, Current input: Pressure sensor 3-wire type)



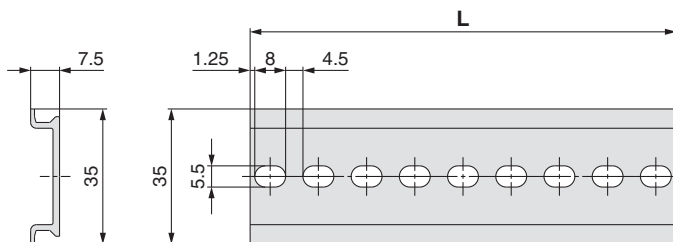
PSE31□T

(Current input: Pressure sensor 2-wire 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

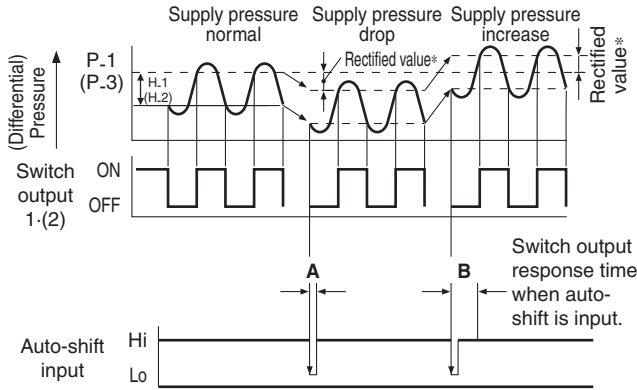
PSE530  
 PSE540  
 PSE550  
 PSE560  
 PSE570  
 PSE200  
 PSE300  
 PSE300AC  
 Monitor

## 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
<b>PSE200</b>	10 ms or more	15 ms or less
<b>PSE300</b>	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.

#### Settable Range for Auto-Shift Input

PSE200	Set pressure (differential pressure) range	Settable 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	Set pressure (differential pressure) range	Settable 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

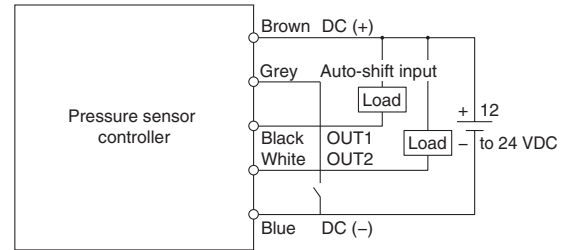
#### Auto-shift zero (PSE300 series only)

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.

### Auto-shift circuit

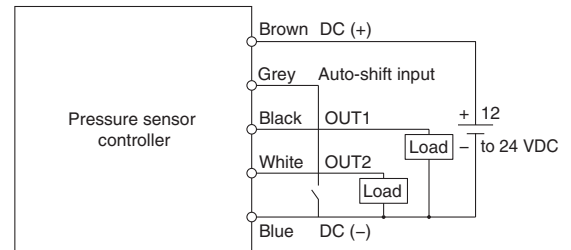
#### PSE3□2

NPN open collector output: 2 outputs



#### PSE3□5

PNP open collector output: 2 outputs

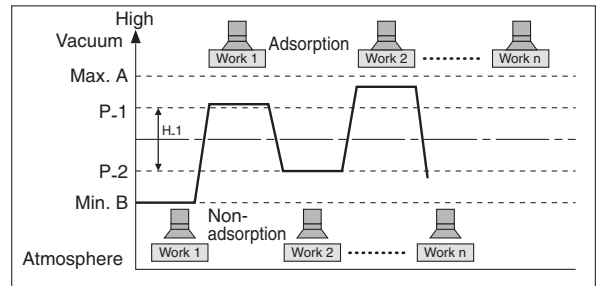


Note) The colours in the circuit diagram indicate the colour of the lead wire when it is connected to the power supply/output connection cable (ZS-28-A).

### 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.

#### Suction Verification



#### Formula for Obtaining the Set Value

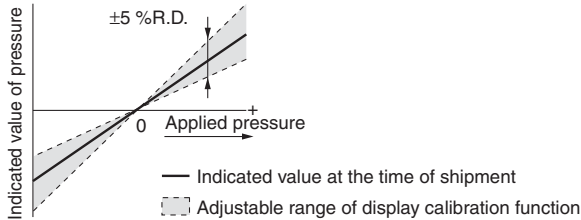
	P_1 or P_3	P_2(H_1) or P_4(H_2)
<b>PSE200</b>	P_1(P_3)=A-(A-B)/4	P_2(P_4)=B+(A-B)/4
<b>PSE300</b>		H_1(H_2)=(A-B)/2



## Function Details

### C Display calibration function

Fine adjustment of the indicated value of the pressure sensor can be made within the range of  $\pm 5\%$  of the read value. (The scattering of the indicated value can be eliminated.)



Note) When the display calibration function is used, the set pressure value may change  $\pm 1$  digit.

### D Peak/Bottom values holding/display function

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

### E Keylock function

Prevents operation errors such as accidentally changing setting values.

### F Zero-clear 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.

### G Error indication function

Error name	Error code		Description
	PSE200	PSE300	
Overcurrent error	Er 1	Er 1	Load current of 80 mA or more is applied to the switch output (OUT1).
	Er 2	Er 2	Load current of 80 mA or more is applied to the switch output (OUT2).
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 $\pm 4$ 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 mis-wired. 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 (PSE200 series 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  $\pm 1$  digit.

### I Auto-identification function (PSE200 series 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 PSE53□ series). When other pressure sensors are used, this function will not work. When using other types of pressure sensors, first set the auto-identification mode to “AoF”, and then proceed to setting the range. Turning the power back on while in the “Aon” setting can cause a malfunction.

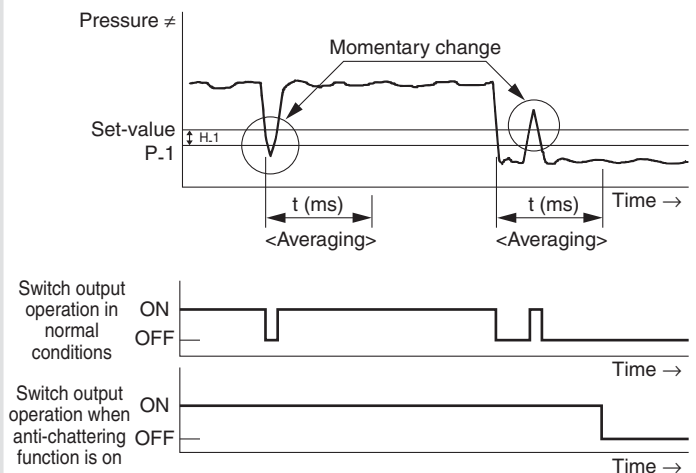
### J Anti-chattering function

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

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

<Principle>

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



### K Channel selection function (PSE200 series only)

Pressure value for the selected channel is displayed.

### L Channel scan function (PSE200 series only)

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

PSE530

PSE540

PSE550

PSE560

PSE570

PSE200

PSE300

PSE300AC

Monitor

# Series PSE200/300

## Function Details

### M Display unit 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		<b>PSE533</b> <b>PSE543</b> <b>PSE563</b> <b>PSE573</b>	<b>PSE531</b> <b>PSE541</b> <b>PSE561</b>	<b>PSE532</b>	<b>PSE530</b> <b>PSE540</b> <b>PSE560</b> <b>PSE570</b>
Set pressure (differential pressure) range		-101 to 101 kPa	10 to -101 kPa	-10 to 101 kPa	-0.1 to 1 MPa
<b>PA</b>	kPa	0.1	0.1	0.1	—
	MPa	—	—	—	0.001
<b>GF</b>	kgf/cm <sup>2</sup>	0.001	0.001	0.001	0.01
<b>bar</b>	bar	0.001	0.001	0.001	0.01
<b>PSI</b>	psi	0.02	0.01	0.01	0.1
<b>inHg</b>	inHg	0.1	0.1	—	—
<b>mmHg</b>	mmHg	1	1	—	—

#### PSE300

Pressure range		For compound pressure	For vacuum	For low pressure	For positive pressure	For low differential pressure
Applicable pressure sensor		<b>PSE533</b> <b>PSE543</b> <b>PSE563</b> <b>PSE573</b>	<b>PSE531</b> <b>PSE541</b> <b>PSE561</b>	<b>PSE532</b>	<b>PSE530</b> <b>PSE540</b> <b>PSE560</b> <b>PSE570</b>	<b>PSE564</b> <b>PSE574</b> <b>PSE550</b>
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
<b>PA</b>	kPa	0.2	0.1	0.1	—	1
	MPa	—	—	—	0.001	—
<b>GF</b>	kgf/cm <sup>2</sup>	0.002	0.001	0.001	0.01	0.01
<b>bar</b>	bar	0.002	0.001	0.001	0.01	0.01
<b>PSI</b>	psi	0.05	0.02	0.02	0.2	0.1
<b>inHg</b>	inHg	0.1	0.1	—	—	—
<b>mmH<sub>2</sub>O</b>	mmH <sub>2</sub> O	2	1	—	—	1 mmH <sub>2</sub> O



# 3-Screen Display Sensor Monitor

## Series PSE300AC



Applicable sensors					Rated pressure range								Set/Display resolution
PSE53□	PSE54□	PSE55□	PSE56□	PSE57□	-100 kPa	0	100 kPa	500 kPa	1 MPa	2 MPa	5 MPa	10 MPa	
PSE531	PSE541	—	PSE561	—	-101 kPa	0							0.1 kPa
PSE533	PSE543	—	PSE563	PSE573	-100 kPa		100 kPa						0.1 kPa
PSE532	—	—	—	—	0		100 kPa						0.1 kPa
—	—	—	PSE564	PSE574	0		500 kPa						1 kPa
PSE530	PSE540	—	PSE560	PSE570	0		1 MPa						0.001 MPa
—	—	PSE550	—	—	0	2 kPa							0.001 kPa
—	—	—	—	PSE575	0		2 MPa						0.001 MPa
—	—	—	—	PSE576	0		5 MPa						0.1 MPa
—	—	—	—	PSE577	0		10 MPa						0.1 MPa

### Simple 3 Step Setting

When S button is pressed, and the set value (P\_1) is being displayed, the set value (threshold value) can be set.  
When S button is pressed, and the hysteresis (H\_1) is being displayed, the hysteresis can be set.

**1**

Push

**2**

Adjust to the set value by the or button.

**3**

Push Completion of setting

**With a snapshot function for set value reading**

Pressing the and buttons for a minimum of 1 second will make the set value (threshold value) the same as the current pressure value.

**Snap shot function**

Release the button after "---" is displayed on the right side sub screen.

### Easy Screen Switching

Setting is possible while checking the measured value.

**Main screen**

Measured value (Current pressure value)

**Sub screen/Left side**

Label (Display item)

**Sub screen/Right side**

Set value (Threshold value)

The sub screen can be switched by pressing up/down buttons.

\* One arbitrary display mode can be added by setting the function.

Response time

# 1 ms

### NPN/PNP Switch Function

Reduced number of stock items.

Select NPN or PNP

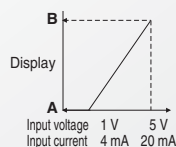
**NPN**                      **PNP**

### Input Range Selection (for Pressure/ Flow rate)

Sensor input range can be set to required value and displayed.

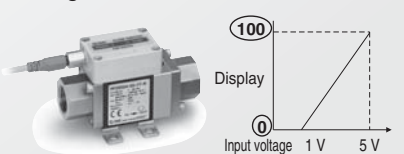
(Voltage input: 1 to 5 V/Current input: 4 to 20 mA)

Pressure switch/Flow switch can be displayed.



A is displayed for 1V (or 4 mA).  
B is displayed for 5V (or 20 mA).  
The range can be set as required.

For Digital Flow Switch for Water/PF3W511



	A	B
PF3W504	0	4
PF3W520	0	16
PF3W540	0	40
PF3W511	0	100

Set A and B to the values shown in the table above.

PSE530  
PSE540  
PSE550  
PSE560  
PSE570  
PSE200  
PSE300  
PSE300AC  
Monitor

# 3-Screen Display Sensor Monitor

# Series PSE300AC



## How to Order



PSE3 **0** 0AC - **AB** - **M** - **□**

### Input specification

0	Voltage input
1	Current input

### Output specification

AB	2 output type (NPN or PNP switching type)
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### Option (Power supply/output lead wire)

—	Straight lead wire
L	Right angle lead wire
N	None

### Options/Part Nos.

Description	Part no.	Note
Power supply/output lead wire	ZS-31-B	Straight (5 m) 1 pc.
	ZS-31-C	Right angle (5 m) 1 pc.
Assembly type connector	PCA-1557743	1 pc.

### Unit specification

—	With unit selection function*1
M	SI unit only*2
P	With unit selection function (Initial value psi)*1

\*1 Under the new Measurement Act, sales of switches with the unit selection function have not been allowed for use in Japan.

\*2 Fixed unit: Pa, kPa, MPa

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

## Specifications

### M12 Connector Type

Series		PSE300AC								
Applicable SMC pressure sensor	PSE550	PSE531/PSE541 PSE561	PSE533/PSE543 PSE563/PSE573	PSE532	PSE564 PSE574	PSE530/PSE540 PSE560/PSE570	PSE575	PSE576	PSE577	
Rated pressure range	0 to 2 kPa	0 to -101 kPa	-100 to 100 kPa	0 to 100 kPa	0 to 500 kPa	0 to 1 MPa	0 to 2 MPa	0 to 5 MPa	0 to 10 MPa	
Display/Set pressure range	-0.2 to 2.1 kPa	10 to -105 kPa	-105 to 105 kPa	-10 to 105 kPa	-50 to 525 kPa	-0.105 to 1.05 MPa	-0.105 to 2.1 MPa	-0.1 to 5.25 MPa	-0.1 to 10.5 MPa	
Display/Smallest settable increment	0.001 kPa	0.1 kPa	0.1 kPa	0.1 kPa	0.1 kPa	1 kPa	0.001 MPa	0.01 MPa	0.01 MPa	
Electrical	Power supply voltage	12 to 24 VDC (±10 %) with 10 % voltage ripple or less								
	Current consumption	25 mA or less								
	Protection	Reverse connection protection								
Accuracy	Display accuracy	±0.5 % F.S. ±Min. display unit (Ambient temperature at 25 °C)								
	Repeatability	±0.1 % F.S. ±Min. display unit (Ambient temperature at 25 °C)								
	Temperature characteristics	±0.5 % F.S. (Ambient temperature of 0 to 50 °C, 25 °C reference)								
Switch output	Output type	Select from NPN or PNP open collector output.								
	Output mode	Select from hysteresis mode, window comparator mode, error output or switch output OFF.								
	Switch operation	Select from normal output or reverse output.								
	Max. load current	20 mA								
	Max. applied voltage (NPN only)	30 VDC								
	Internal voltage drop (Residual voltage)	1 V or less (with load current of 20 mA)								
	Delay time *1	1 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000, 5000 ms)								
Sensor input	Hysteresis	Variable from 0*2								
	Protection	Over current protection								
	Input type	Voltage input: 1 to 5 VDC (Input impedance: 1 MΩ), Current input: 4 to 20 mA DC (Input impedance: 51 Ω)								
	Number of inputs	1 input								
Display	Connection method	M12-4 pin connector								
	Protection	Over voltage protection (up to a voltage of 26.4 VDC)								
	Unit *3	MPa, kPa, Pa, kgf/cm <sup>2</sup> , bar, mbar, psi, inHg, mmHg, mmH <sub>2</sub> O								
	Display type	LCD								
	Number of screens	3-screen display (Main screen, Sub screen x 2)								
	Display colour	1) Main screen: Red/Green, 2) Sub screen: Orange								
Digital filter *4	Number of display digits	1) Main screen: 4-digit (7-segment), 2) Sub screen: 4-digit (Upper 1-digit 11-segment, 7-segment for other)								
	Indicator light	Lights up when switch output is turned ON. OUT1/OUT2: Orange								
	Response time	0, 10, 50, 100, 500, 1000, 5000 ms								
Environment	Enclosure	IP65								
	Withstand voltage	1000 VAC for 1 minute between terminals and housing								
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing								
	Operating temperature range	Operating: 0 to 50 °C, Stored: -10 to 60 °C (No freezing or condensation)								
Standards	Operating humidity range	Operating/Stored: 35 to 85 % RH (No condensation)								
	Weight	55.4 g (without power supply or output lead wires)								

\*1 Value without digital filter (at 0 ms)

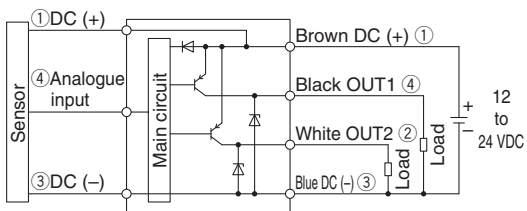
\*2 If the applied pressure fluctuates around the set value, the hysteresis must be set to a value more than the amount of fluctuation, or chattering will occur.

\*3 This setting is only available for models with the unit selection function. Only MPa, kPa or Pa is available for models without this function.

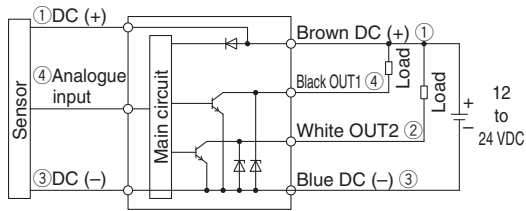
\*4 The response time indicates when the set value is 90 % in relation to the step input.

## Internal Circuits and Wiring Examples

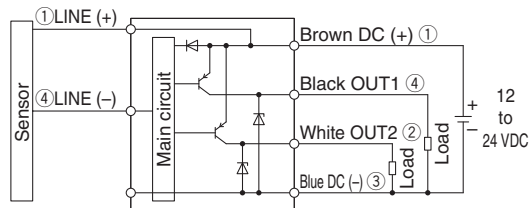
Setting of PNP open collector 2 outputs: Pressure sensor 3-wire type



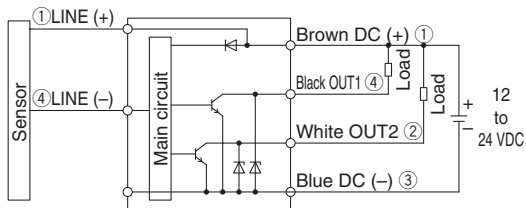
Setting of NPN open collector 2 outputs: Pressure sensor 3-wire type



Setting of PNP open collector 2 outputs: Pressure sensor 2-wire type



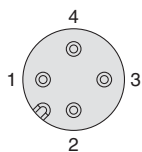
Setting of NPN open collector 2 outputs: Pressure sensor 2-wire type



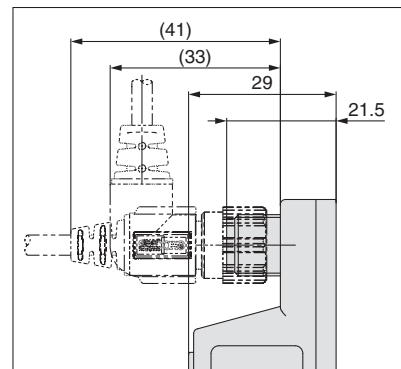
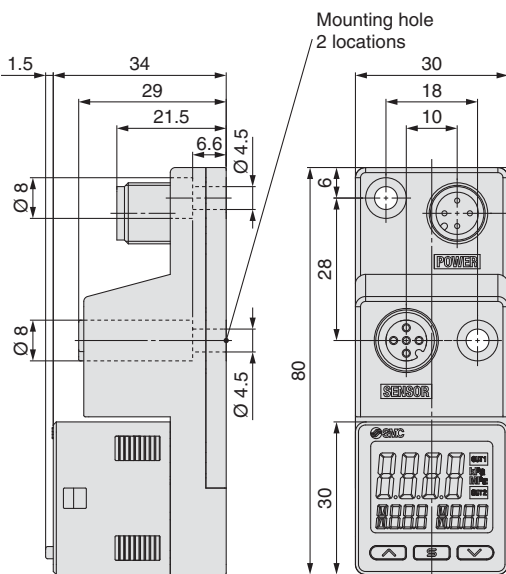
\* The output type can be changed in the function selection mode.  
\* Numbers in the figures show the connector pin layout.

## Dimensions

### Power supply/output connector pin no.

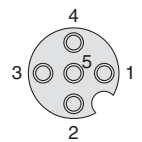


Pin no.	Description
1	DC (+)
2	OUT2
3	DC (-)
4	OUT1



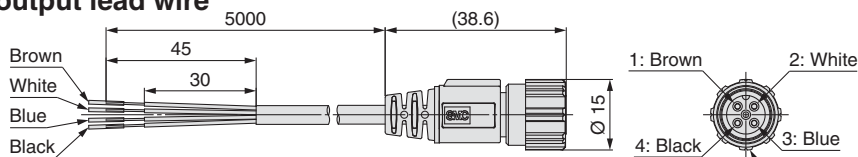
For power supply/output lead wire

### Sensor connector pin no.

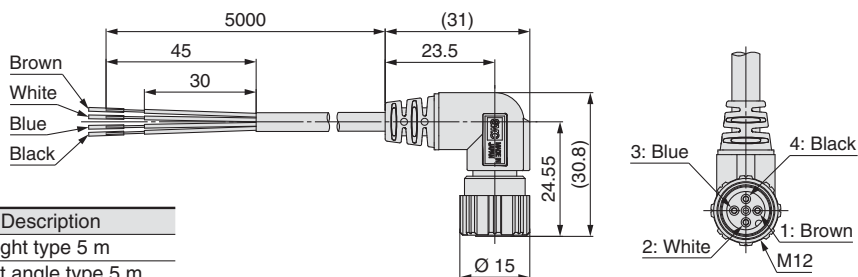


Pin no.	Description
1	DC (+)
2	N.C.
3	DC (-)
4	Sensor input (1 to 5 V, 4 to 20 mA)
5	N.C.

### Power supply/output lead wire ZS-31-B



### ZS-31-C



Pin no.	Lead wire colour	Description
1	Brown	DC (+)
2	White	OUT2
3	Blue	DC (-)
4	Black	OUT1

Part no.	Description
ZS-31-B	Straight type 5 m
ZS-31-C	Right angle type 5 m

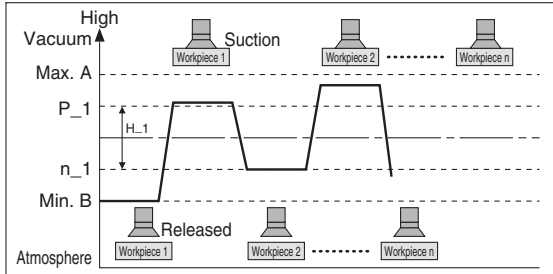
PSE530  
PSE540  
PSE550  
PSE560  
PSE570  
PSE200  
PSE300  
PSE300AC

## Function Details

### A Auto-preset function (F4)

Auto-preset function, when selected in the initial setting, calculates and stores the set value from the measured pressure. For example, if this function is used for suction verification, the optimum set value is determined automatically by repeating vacuum and break with the target workpiece several times.

#### Suction Verification

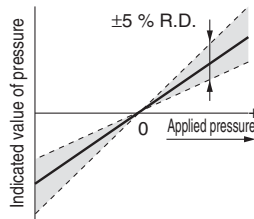


#### Formula for Obtaining the Set Value

P <sub>1</sub> or P <sub>2</sub>	H <sub>1</sub> or H <sub>2</sub>
$P_1 (P_2) = A - (A-B)/4$	$H_1 (H_2) =  (A-B)/2 $
$n_1 (n_2) = B + (A-B)/4$	

### B Display value fine adjustment function (F6)

Fine adjustment of the indicated value of the pressure sensor can be made within the range of ±5 % of the read value. (The scattering of the indicated value can be eliminated.)



— Indicated value at the time of shipment  
 [Shaded Area] Adjustable range of display value fine adjustment function

Note) When the display value fine adjustment function is used, the set pressure value may change ±1 digit.

### C Peak/Bottom value indication function

This function constantly detects and updates the maximum (minimum) pressure when the power is supplied, and allows to hold the maximum (minimum) pressure value.

The held value is maintained even if the power supply is cut. When the buttons are simultaneously pressed for 1 second or longer, while “holding”, the held value will be reset.

### D Keylock function

Prevents operation errors such as accidentally changing setting values.

### E Zero-clear function

This function clears and resets the zero value on the display of measured pressure. The indicated value can be adjusted within ±7 % F.S. of the pressure when ex-factory. (±3.5 % F.S. for compound pressure)

### F Error indication function

This function is to display error location and content when a problem or error has occurred.

Error name	Error code	Description	Action
Over current error		Load current of 20 mA or more is applied to the switch output.	Turn the power off and remove the cause of the over current. Then supply the power again.
Residual pressure error		During zero-clear operation, pressure over ±7 % F.S. (±3.5 % F.S. for compound pressure) is present. Note that the mode is returned to measurement mode automatically 1 second later. The zero clear range varies by ±1 % F.S. due to variation between individual products.	Perform zero-clear operation again after restoring the applied pressure to an atmospheric pressure condition.
Applied pressure error		Supply pressure exceeds the maximum set pressure.	Reset applied pressure to a level within the set pressure range.
		Supply pressure is below the minimum set pressure.	
System error	  	Internal data error	Turn off the power supply and then turn on it again. If the failure cannot be solved, please contact SMC for investigation.

If the error cannot be reset after the above measures are taken, or errors other than above are displayed, please contact SMC.

## Function Details

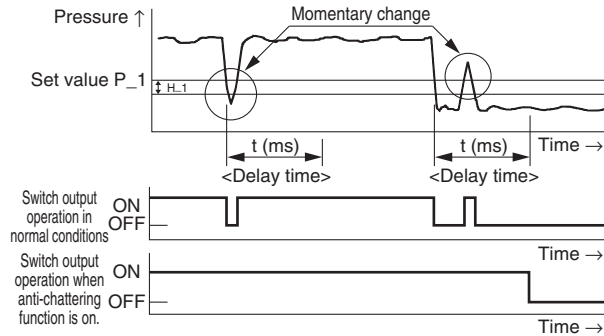
### G Anti-chattering function (Simple setting mode or F1)

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 by changing the delay time setting.

Available delay time settings
1 ms or less, 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms, 5000 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.



### H Unit selection function (F0)

Display units can be switched with this function.

Smallest settable increment	Display unit	Rated pressure range	MPa	kPa	Pa	kgf/cm <sup>2</sup>	bar	mbar	psi	inHg	mmHg	mmH <sub>2</sub> O
			MPa*1	kPa	Pa	kgf/cm <sup>2</sup>	bar	mbar	psi	inHg	mmHg	mmH <sub>2</sub> O
Applicable SMC pressure sensor	PSE550	0 to 2 kPa		0.001	1			0.01	0.001			0.1
	PSE531 PSE541 PSE561	0 to -101 kPa	0.001	0.1		0.001	0.001		0.01	0.1	1	
	PSE533 PSE543 PSE563 PSE573	-100 to 100 kPa	0.001	0.1		0.001	0.001		0.02	0.1	1	
	PSE532	0 to 100 kPa	0.001	0.1		0.001	0.001		0.01			
	PSE564 PSE574	0 to 500 kPa	0.001	1		0.01	0.01		0.1			
	PSE530 PSE540 PSE560 PSE570	0 to 1 MPa	0.001	1		0.01	0.01		0.1			
	PSE575	0 to 2 MPa	0.001	1		0.01	0.01		0.2			
	PSE576	0 to 5 MPa	0.01			0.1	0.1		1			
	PSE577	0 to 10 MPa	0.01			0.1	0.1		1			

\*1 The PSE5□1 (vacuum pressure), PSE5□2 (low pressure), and PSE5□3 (compound pressure) will have different setting and display resolution when the unit is set to MPa.

### I Power saving mode (F80)

Power saving mode can be selected.

It shifts to the power saving mode without button operation for 30 seconds.

It is set to the normal mode (Power saving mode is OFF.) when ex-factory.

(During power saving mode, [ECo] will flash in the sub screen and the operation light is ON (only when the switch is ON).)

### J Setting of secret code (F81)

Users can select whether a secret code must be entered to release key lock.

At the time of shipment from the factory, it is set such that the secret code is not required.

PSE530

PSE540

PSE550

PSE560

PSE570

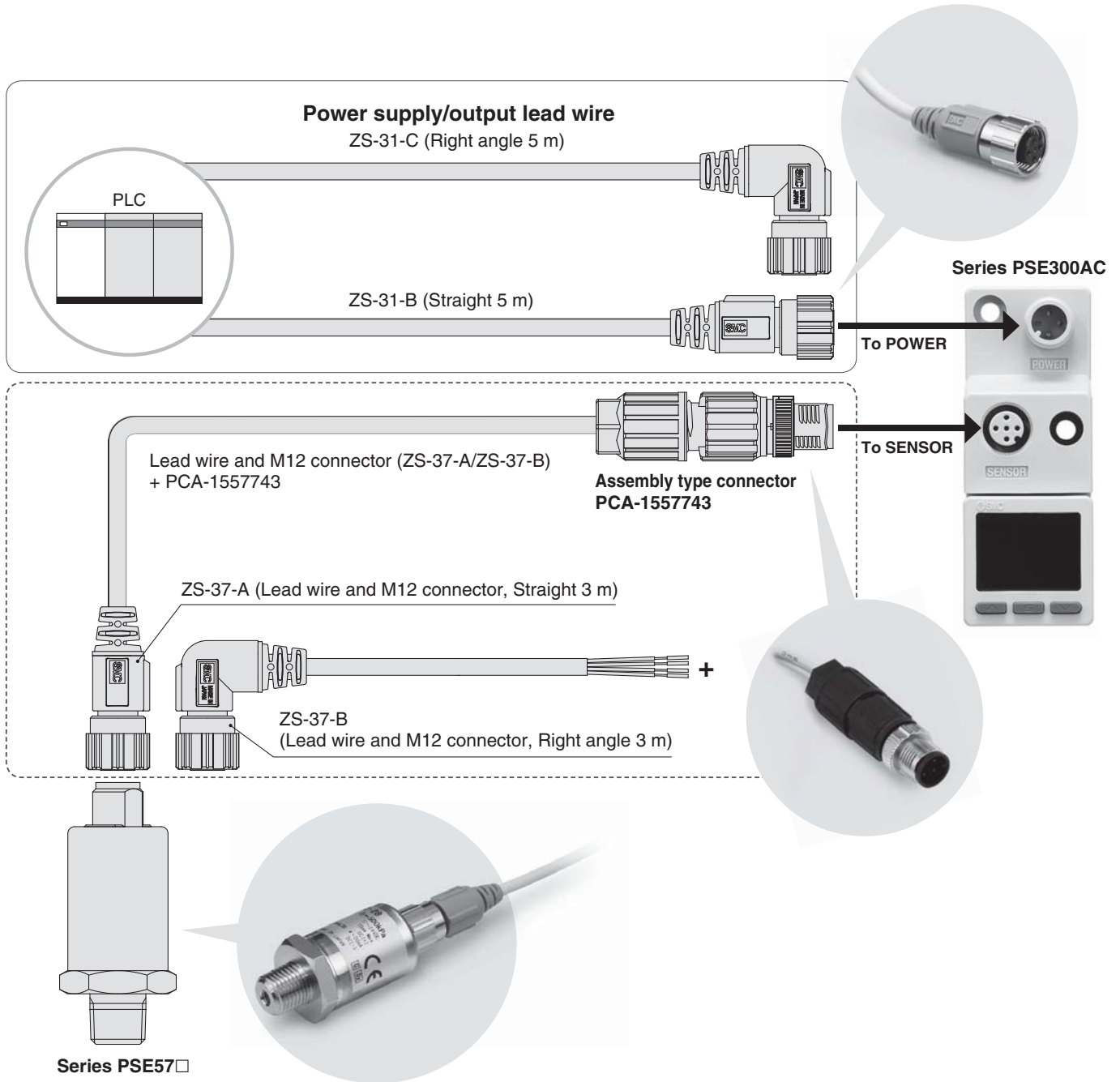
PSE200

PSE300

PSE300AC

Monitor

## Options / Connection Examples










## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

-  **Caution:** Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- \*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
- ISO 4413: Hydraulic fluid power – General rules relating to systems.
- IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots - Safety. etc.

### Warning

- The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**  
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- Only personnel with appropriate training should operate machinery and equipment.**  
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
  - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
  - When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
  - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
  - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
  - An application which could have negative effects on people, property, or animals requiring special safety analysis.
  - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

## Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.  
Read and accept them before using the product.

### Limited warranty and Disclaimer

- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

\*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

### Caution

- The product is provided for use in manufacturing industries.**  
The product herein described is basically provided for peaceful use in manufacturing industries.  
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.  
If anything is unclear, contact your nearest sales branch.

### Caution

#### SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

## Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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