

Remote Type Pressure Sensors/Pressure Sensor Controllers


PSE Series

Compact Pneumatic Pressure Sensor **PSE530** ▶P.134



The image shows two views of the PSE530 sensor: a side view of the cylindrical metal body with a cable, and a front view of the sensor head with a pressure port and a cable connector.

Compact Pneumatic Pressure Sensor **PSE540** ▶P.137




The image displays several variants of the PSE540 sensor, including different cable lengths and connector types, all featuring a compact cylindrical design.

Low Differential Pressure Sensor **PSE550** ▶P.140



The image shows the PSE550 sensor, which has a rectangular white plastic housing with a cable and a small pressure port on top.

Pressure Sensor for General Fluids **PSE560** ▶P.143



The image shows the PSE560 sensor, a cylindrical metal body with a threaded pressure port and a cable connector.

Pressure Sensor for General Fluids **PSE570** ▶P.146



The image shows the PSE570 sensor, similar to the PSE560 but with a different cable length and connector configuration.

Multi-Channel Digital Pressure Sensor Controller **PSE200** ▶P.149




The image shows the PSE200 controller with a digital display showing '-50.7' and '2 CH'. It has buttons for 'SET' and 'CH' and two output ports labeled 'OUT1' and 'OUT2'.

2-Color Display Digital Pressure Sensor Controller **PSE300** ▶P.155



The image shows the PSE300 controller with a digital display showing '-94.0'. It has buttons for 'SET' and 'CH' and two output ports labeled 'OUT1' and 'OUT2'.








DIN rail/Terminal block type



The image shows the PSE200/PSE300 controller mounted on a DIN rail with terminal blocks for wiring.

- ZSE20 ISE20
- ZSE30 ISE30
- ZSE40 ISE40
- ZSE10 ISE10
- ISE70
- ZSE80 ISE80
- PS
- ISA3
- ISA2
- ISE35
- PSE**
- IS
- ISG
- ZSM1

PSE Series Variations

| Model | Pressure Sensors | | | | | Controllers | |
|-------|--|--|--|--|--|--|---|
| | PSE530  P.134 | PSE540  P.137 | PSE550  P.140 | PSE560  P.143 | PSE570  P.146 | PSE200  P.149 | PSE300  P.155 |

| Basic Specifications | 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.) | ±0.2% (F.S.) PSE570/573/574 ±0.5% (F.S.) PSE575/576/577 | ±0.1 % (F.S.) |
| | Voltage | 12 to 24 VDC | | | | | |
| | No. of outputs for switch | | | | | 5 outputs | 2 outputs |
| | Analog output | 1 to 5 V | | 1 to 5 V 4 to 20 mA | | | 1 to 5 V 4 to 20 mA |
| | Operating temp. | 0 to 50°C | | | -10 to 60°C | | 0 to 50°C |

| Functions | Digital display | | | | 1-color | | 2-color | |
|-----------|------------------------|-----------|---------|--|-----------|-----------|--|------|
| | Enclosure | IP40 | | | IP65 | | Front face IP65 Others IP40 | IP40 |
| | Wiring | Connector | Grommet | | Connector | Connector | | |
| | Major setting function | | | | | | Keylock, Peak/Bottom values holding, Auto-preset, Auto-shift, Display calibration, Anti-chattering | |

| Others | Connection threads | M reducer | M R, NPT reducer | Resin piping | R, NPT, Rc URJ, TSJ* | R | | |
|----------|--------------------|----------------|------------------|--------------|----------------------|----|----|-------------|
| | Int'l standards | CE | CE, UL, CSA | | | CE | CE | CE, UL, CSA |
| | Wiring | e-con | ● | ● | ● | ● | ● | ● |
| | | Flexible cable | | ● | ● | | | ● |
| | Mounting | Direct | ● | ● | ● | ● | | ● |
| | | With bracket | | ● | | | | ● |
| | | Panel mount | | | | | ● | ● |
| DIN rail | | | | | | | ● | |

* URJ: Face seal fitting, TSJ: Compression fitting

Pressure Sensors/*PSE5* Series

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

Pressure Sensor Controllers/*PSE200/300* Series

| PSE200 | PSE300 | Input/Output specifications |
|---|--------|--|
| | | <ul style="list-style-type: none"> • NPN 2 outputs + 1-5 V output • NPN 2 outputs + 4-20 mA output • NPN 2 outputs + auto-shift input • PNP 2 outputs + 1-5 V output • PNP 2 outputs + 4-20 mA output • PNP 2 outputs + auto-shift input |
| Input/Output specifications <ul style="list-style-type: none"> • NPN 5 outputs + auto-shift input • PNP 5 outputs + auto-shift input | | |

| Applicable pressure sensor model | | | | | Set/Display resolution | |
|----------------------------------|--------|--------|--------|--------|------------------------|-----------|
| PSE531 | PSE541 | — | PSE561 | — | 0.1 kPa | 0.1 kPa |
| PSE533 | PSE543 | — | PSE563 | PSE573 | 0.1 kPa | 0.2 kPa |
| PSE532 | — | — | — | — | 0.1 kPa | 0.1 kPa |
| — | — | — | PSE564 | PSE574 | — | 1 kPa |
| PSE530 | PSE540 | — | PSE560 | PSE570 | 0.001 MPa | 0.001 MPa |
| — | — | PSE550 | — | — | — | 0.01 kPa |

Main Functions (For details, refer to pages 162 to 164.)

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

ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

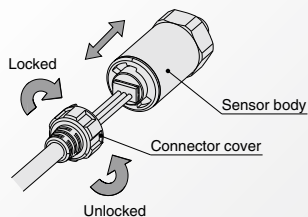
Compact Pneumatic Pressure Sensor

PSE530 Series



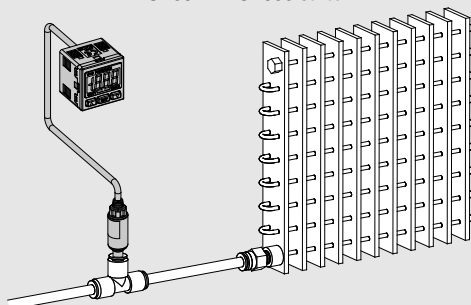
| Series | Rated pressure range | | | | |
|--------|----------------------|---|---------|---------|-------|
| | -100 kPa | 0 | 100 kPa | 500 kPa | 1 MPa |
| PSE530 | | 0 | 1 MPa | | |
| PSE531 | -101 kPa | 0 | | | |
| PSE532 | | 0 | 101 kPa | | |
| PSE533 | -101 kPa | | 101 kPa | | |

Connector type



Application example

Leak test of radiator PSE532 + PSE300 Series



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

Applications

Pressure Sensor **PSE530 Series**



How to Order

PSE53 **0** - **M5** -


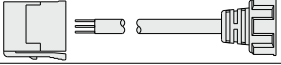
Sensor range

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

Port size

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

Option

| | |
|------------|---|
| Nil | None |
| L | Sensor cable (3 m)  |
| 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. |

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

Specifications

| Model | PSE530 (Positive pressure) | PSE531 (Vacuum) | PSE532 (Low pressure) | PSE533 (Compound pressure) |
|---|---|---|-----------------------|----------------------------|
| Rated pressure range | 0 to 1 MPa | 0 to -101 kPa | 0 to 101 kPa | -101 to 101 kPa |
| Extension analog output range | -0.1 to 0 MPa | 10.1 to 0 kPa | -10.1 to 0 kPa | — |
| Proof pressure | 1.5 MPa | | 500 kPa | |
| Applicable fluid | Air/Non-corrosive gas/Non-flammable gas | | | |
| Power supply voltage | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection) | | | |
| Current consumption | 15 mA or less (with no load) | | | |
| Output specifications | Analog output 1 to 5 V (within rated pressure range), 0.6 to 1 V (within extension analog output range), Output impedance: Approx. 1 kΩ | | | |
| Accuracy (Ambient temperature at 25°C) | ±2% F.S. (within rated pressure range), ±5% F.S. (within extension analog output range) | | | |
| Linearity | ±1% F.S. | | | |
| Repeatability | ±1% F.S. | | | |
| Power supply voltage effect | ±1% F.S. based on the analog 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, ø2.7, 3 m, Conductor area: 0.15 mm ² , Insulator O.D.: 0.8 mm | | | |
| Standards | CE, RoHS | | | |

Piping Specifications

| Model | M5 | R06 | R07 |
|---|--|-----------------|-----------------------|
| Port size | M5 x 0.8 male thread | ø6 reducer type | 1/4 inch reducer type |
| Materials of parts in contact with fluid | Pressure sensor: Silicon, O-ring: NBR Body: Stainless steel 304 | | |
| Weight | With sensor cable (3 m) | 41 g | 38 g |
| | Without sensor cable | 7 g | 3.8 g |

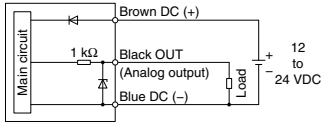
ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

PSE530 Series

Internal Circuit and Wiring Example

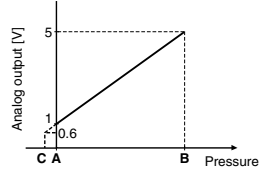
PSE53□

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



Analog Output

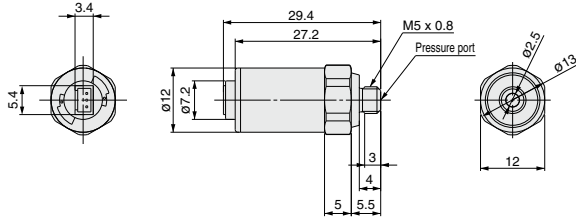
1 to 5 VDC



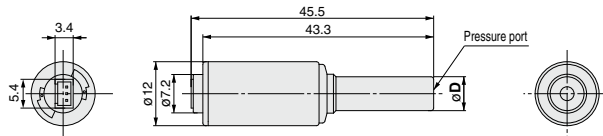
| Range | Rated pressure range | A | B | C |
|-----------------------|----------------------|----------|----------|-----------|
| For vacuum | 0 to -101 kPa | 0 | -101 kPa | 10.1 kPa |
| For compound pressure | -101 kPa to 101 kPa | -101 kPa | 101 kPa | — |
| For low pressure | 0 to 101 kPa | 0 | 101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

Dimensions

PSE53□-M5

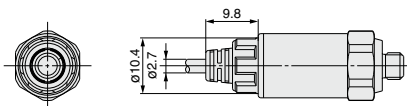


PSE53□-R06 R07



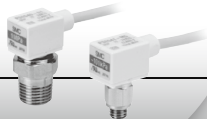
| Model | Applicable fitting size (D) |
|------------|-----------------------------|
| PSE53□-R06 | 6 |
| PSE53□-R07 | 1/4" |

With sensor cable



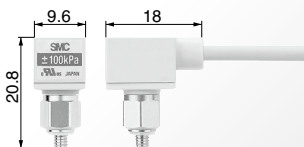
Compact Pneumatic Pressure Sensor

PSE540 Series

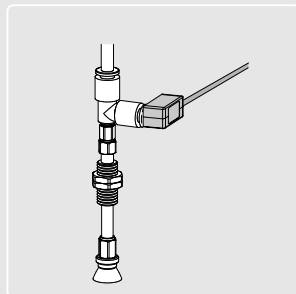


| Series | Rated pressure range | | | | |
|--------|----------------------|---|---------|---------|-------|
| | -100 kPa | 0 | 100 kPa | 500 kPa | 1 MPa |
| PSE540 | | 0 | 1 MPa | | |
| PSE541 | -101 kPa | 0 | | | |
| PSE543 | -100 kPa | | 100 kPa | | |

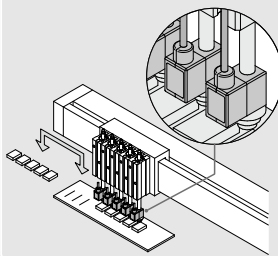
- Weight: 2.9 g
- Head size: 9.6 x 20.8 x 18 mm



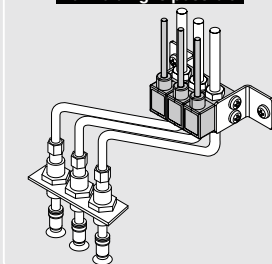
Application examples



Pads can be directly mounted.



Manifolding is possible.



Applications

ZSE20
ISE20

ZSE30
ISE30

ZSE40
ISE40

ZSE10
ISE10

ISE70

ZSE80
ISE80

PS

ISA3

ISA2

ISE35

PSE

IS

ISG

ZSM1

Compact Pneumatic Pressure Sensor

PSE540 Series




How to Order



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

| Accuracy | |
|----------|----------|
| Nil | ±2% F.S. |
| A | ±1% F.S. |









Option (Connector)

| Option (Connector) | |
|--------------------|---|
| Nil | 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 | R1/8 (with M5 female thread) |  | | | |
| N01 | NPT1/8 (with M5 female thread) |  | | | |
| R04 | ø4 reducer |  | | | |
| R06 | ø6 reducer |  | | | |

Option/Part No.

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

Specifications

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

| Model | | PSE540 | PSE541 | PSE543 |
|--|-----------------------------|---|---------------|-----------------|
| Rated pressure range | | 0 to 1 MPa | 0 to -101 kPa | -100 to 100 kPa |
| Extension analog output range | | -0.1 to 0 MPa | 10.1 to 0 kPa | — |
| Proof pressure | | 1.5 MPa | 500 kPa | |
| Applicable fluid | | Air/Non-corrosive gas/Non-flammable gas | | |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection) | | |
| Current consumption | | 15 mA or less | | |
| Output specifications | | Analog output 1 to 5 V (within rated pressure range), 0.6 to 1 V (within extension analog output range), Output impedance: Approx. 1 kΩ | | |
| Accuracy (Ambient temperature at 25°C) | | PSE54□: ±2% F.S. (within rated pressure range), ±5% F.S. (within extension analog output range) PSE54□A: ±1% F.S. (within rated pressure range), ±3% F.S. (within extension analog 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 ² , Insulator O.D.: 0.9 mm | | |
| Standards | | CE, UL/CSA (E216656), RoHS | | |

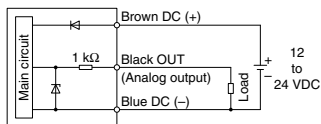
Piping Specifications

| Model | | M3 | M5 | 01 | N01 | R04 | R06 | IM5 | IM5H |
|-----------|--------------------------|---|----------|-------------------------------------|--------------------|------------|------------|---------------------------------------|---|
| Port size | | M3 x 0.5 | M5 x 0.8 | R1/8 M5 x 0.8 | NPT1/8 M5 x 0.8 | ø4 reducer | ø6 reducer | M5 female thread, through type | M5 female thread, through type (with mounting hole) |
| Material | Case | Resin case: PBT Fitting: Stainless steel 303 | | Resin case: PBT Fitting: C3604BD | | PBT | | Resin case: PBT Fitting: A6063S-T5 | |
| | Pressure sensing section | Pressure sensor: Silicon, O-ring: NBR | | | | | | | |
| 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

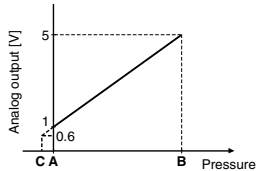
PSE54□

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



Analog Output

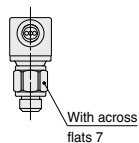
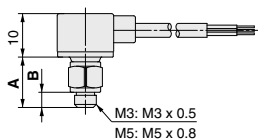
1 to 5 VDC



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

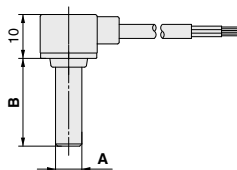
Dimensions

PSE54□-M3 M5



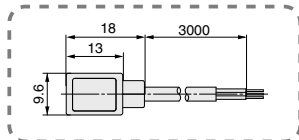
| | PSE54□-M3 | PSE54□-M5 |
|---|-----------|-----------|
| A | 10.8 | 11.5 |
| B | 3 | 3.5 |

PSE54□-R04 R06

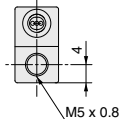
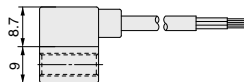


| | PSE54□-R04 | PSE54□-R06 |
|---|------------|------------|
| A | 10 | 11.5 |
| B | 18 | 20 |

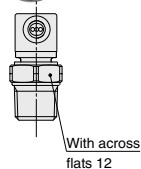
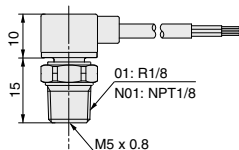
Common Dimensions



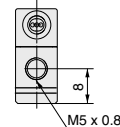
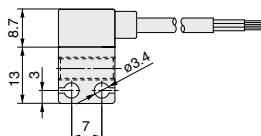
PSE54□-IM5



PSE54□-01 N01



PSE54□-IM5H



ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

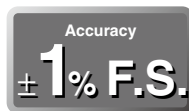
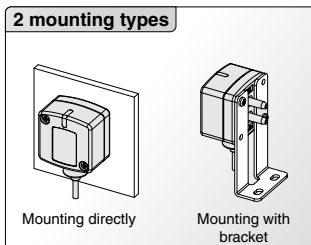
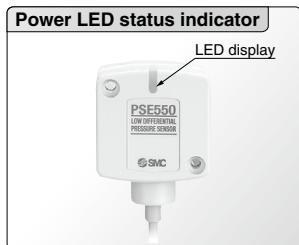


Low Differential Pressure Sensor

PSE550 Series

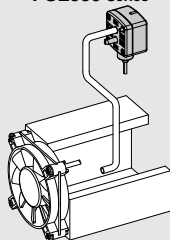


| Series | Rated pressure range | | |
|--------|----------------------|-------|-------|
| | 0 | 1 kPa | 2 kPa |
| PSE550 | 0 | 2 kPa | |



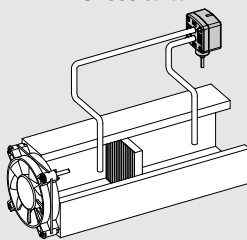
Application examples

Flow control
PSE550 Series



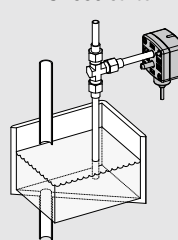
Can control air flow by monitoring the flow rate inside the duct.

Filter clogging monitoring
PSE550 Series



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

Liquid level detection
PSE550 Series



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

Applications

Low Differential Pressure Sensor

PSE550 Series




How to Order

PSE550 - [] - [] - []

Output specifications

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

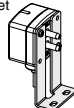
Option 2 (Connector)

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

Note 1) Not applicable to the PSE200 series.

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

Option 1 (Bracket)

| | |
|------------|--|
| Nil | 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. |

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

Specifications

| Model | PSE550 | PSE550-28 |
|--|---|---|
| Rated differential pressure range | 0 to 2 kPa | |
| Operating pressure range | -50 to 50 kPa ^{Note)} | |
| Extension analog output range | -0.2 to 0 kPa | — |
| Proof pressure | 65 kPa | |
| Applicable fluid | Air/Non-corrosive gas/Non-flammable gas | |
| Power supply voltage | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection) | |
| Current consumption | 15 mA or less | — |
| Output specifications | Analog output: 1 to 5 VDC (within rated differential pressure range) 0.6 to 1 VDC (within extension analog output range) Output impedance: Approx. 1 kΩ | Analog 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 analog output range) | |
| Linearity | ±0.5% F.S. | |
| Repeatability | ±0.3% F.S. | |
| Indicator light | Orange light is turned on. (When energized) | |
| 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 | ø4.8 (ø4.4 in the end) resin piping (Applicable to I.D. ø4 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 ² , 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 ² , 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.

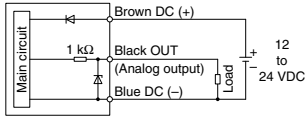
ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

PSE550 Series

Internal Circuit and Wiring Example

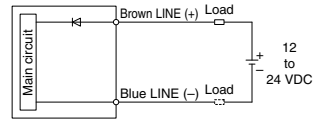
PSE550

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



PSE550-28

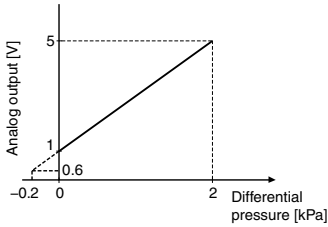
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



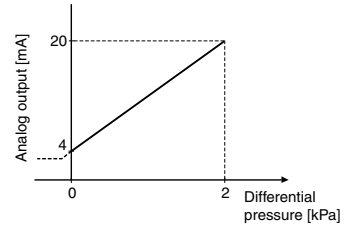
* Install the load either on the LINE (+) or LINE (-) side.

Analog Output

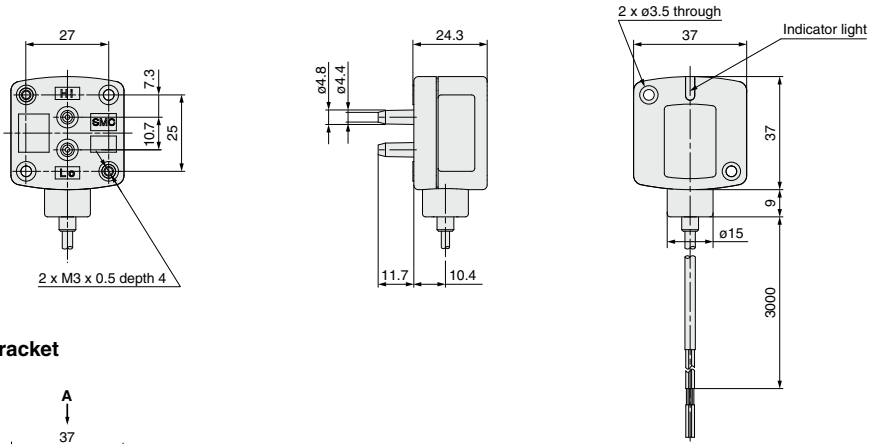
1 to 5 VDC



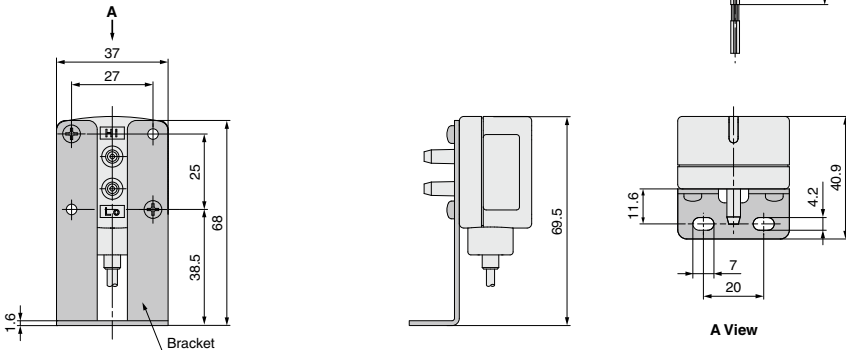
4 to 20 mA DC

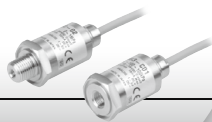


Dimensions



With bracket





Pressure Sensor For General Fluids

PSE560 Series



RoHS

| 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)

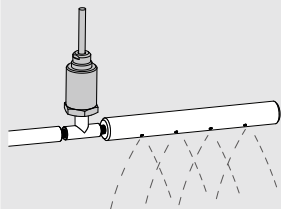
Variations

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

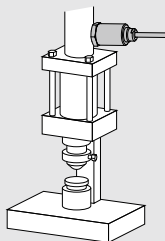
* For URJ1/4, TSJ1/4, refer to "Glossary of Terms/Technical Information" on pages 182 to 196.

Application examples

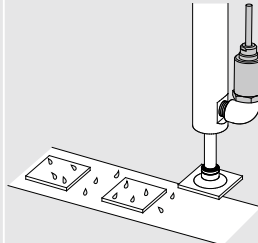
Cleaning lines



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

ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

Pressure Sensor For General Fluids

PSE560 Series



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] |

PSE56 0-01-□-□

Option (Connector)

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

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

Port size

| | |
|-----|--------------------------------|
| 01 | R1/8 (with M5 female thread) |
| 02 | R1/4 (with M5 female thread) |
| C01 | Rc1/8 |
| N01 | NPT1/8 (with M5 female thread) |
| N02 | NPT1/4 (with M5 female thread) |
| A2 | URJ1/4 (Face seal fitting) |
| B2 | TSJ1/4 (Compression fitting) |

Output specifications

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

Option/Part No.

| Description | Part no. | Material | Note |
|--|------------|---------------------|-------|
| Connector for pressure sensor controller | ZS-28-C | — | 1 pc. |
| Adapter with restrictor Rc1/4 | ZS-31-X175 | Stainless steel 304 | 1 pc. |
| Adapter with restrictor NPT1/4 | ZS-31-X186 | | 1 pc. |
| Adapter with restrictor Rc1/8 | ZS-31-X188 | | 1 pc. |
| Adapter with restrictor NPT1/8 | ZS-31-X189 | | 1 pc. |
| Orifice M5 | ZS-48-A | Stainless steel 303 | 1 pc. |

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

Specifications

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

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

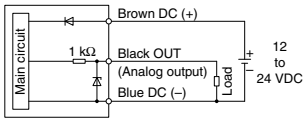
Piping Specifications

| Model | 01 | 02 | N01 | N02 | C01 | A2 | B2 | |
|-----------|---|------------------|--------------------|--------------------|-------|--------|--------|-------|
| Port size | R1/8 M5 x 0.8 | R1/4 M5 x 0.8 | NPT1/8 M5 x 0.8 | NPT1/4 M5 x 0.8 | Rc1/8 | URJ1/4 | TSJ1/4 | |
| Material | Case: C3604 + Nickel plating, Piping port/Pressure sensor: Stainless steel 316L | | | | | | | |
| Weight | With sensor cable | 193 g | 200 g | 194 g | 201 g | 187 g | 203 g | 193 g |
| | Without sensor cable | 101 g | 108 g | 102 g | 109 g | 95 g | 111 g | 101 g |

Internal Circuit and Wiring Example

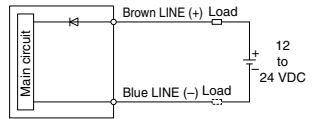
PSE56□-□

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



PSE56□-□-28

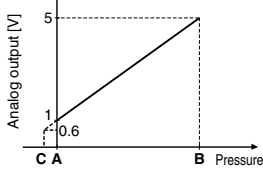
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



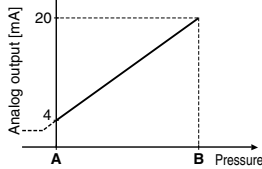
* Install the load either on the LINE (+) or LINE (-) side.

Analog Output

1 to 5 VDC



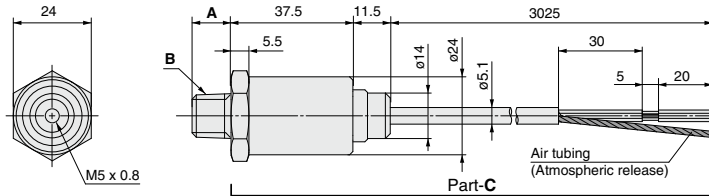
4 to 20 mA DC



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

Dimensions

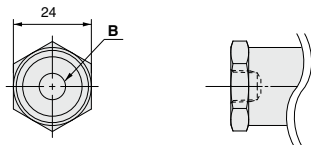
PSE56□-01, PSE56□-N01 02, PSE56□-N02



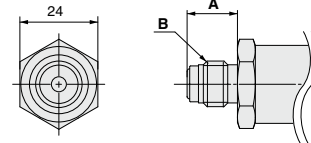
* The dimensions of part C are common to all PSE56□ models.

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

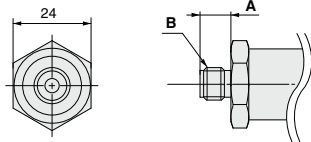
PSE56□-C01



PSE56□-A2



PSE56□-B2

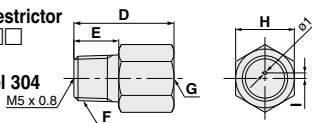


Adapter with restrictor

ZS-31-X□□□

Material:

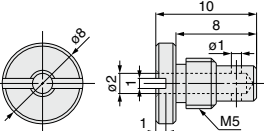
Stainless steel 304



Orifice ZS-48-A

Material:

Stainless steel 303



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

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

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



Pressure Sensor For General Fluids

PSE570 Series



| Series | Rated pressure range | | | | | | |
|--------|----------------------|---------|---------|-------|--------|-------|--------|
| | 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 | | |

M12 connector



Materials of Parts in Contact with Fluid

| | PSE570/573/574 | PSE575/576/577 |
|------------------|--|------------------|
| Piping port* | C3604 + Nickel plating | |
| Pressure sensor* | Al ₂ O ₃ (Alumina 96%) | |
| Seals | O-ring: FKM + Grease | Square ring: FKM |

* Stainless steel 316L is used for the PSE560.
For details, refer to page 143.

**Withstand
voltage**

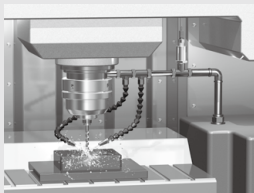
500 VAC

<Twice that of the PSE560>

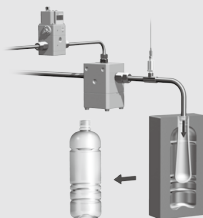
IP65

Application examples

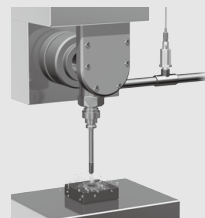
Liquid coolant pressure control



PET bottle molding machines



Liquid pressure control of gun drills



Applications

Pressure Sensor for General Fluids

PSE570 Series



How to Order

PSE57 0 - 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)

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

* See page 164-5 for connection to the PSE300AC.

Output specification

| | |
|-----|--------------------------------|
| Nil | Voltage output type 1 to 5 V |
| 2B | Current output type 4 to 20 mA |

Port size

| Symbol | Port size | Model | | | | | |
|--------|------------------------------|--------|--------|--------|--------|--------|--------|
| | | PSE570 | PSE573 | PSE574 | PSE575 | PSE576 | PSE577 |
| 01 | R1/8 (with M5 female thread) | ● | ● | ● | ● | ● | ● |
| 02 | R1/4 (with M5 female thread) | ● | ● | ● | ● | ● | ● |

Options/Part Nos.

| | Description | Part no. | Material | Note |
|---|--|--------------|---------------------|---|
| ① | Lead wire and M12 connector (3 m), Straight | ZS-37-A | — | 1 pc. |
| ② | Lead wire and M12 connector (3 m), Right angle | ZS-37-B | — | 1 pc. |
| ③ | Assembly-type connector | PCA-1557743 | — | 1 pc. |
| ④ | Adapter with restrictor Rc1/4 | ZS-31-X175 | — | 1 pc. |
| ⑤ | Adapter with restrictor Rc1/8 | ZS-31-X188 | Stainless steel 304 | 1 pc. |
| ⑥ | Orifice M5 | ZS-48-A | Stainless steel 303 | 1 pc. |
| ⑦ | ① + ③ | ZS-37-A-X448 | — | The lead wire and connector are shipped together. (but not assembled) |
| ⑧ | ② + ③ | ZS-37-B-X449 | — | |

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website. Click [here](#) for details.

Specifications

| Model | | PSE570 | PSE573 | PSE574 | PSE575 | PSE576 | PSE577 |
|---|---|---|--|--------------|--|------------|-------------|
| Fluid | Applicable fluid | Gas or liquid that will not corrode materials of parts in contact with fluid | | | | | |
| Pressure | Rated pressure range | 0 to 1 MPa | -100 to 100 kPa | 0 to 500 kPa | 0 to 2 MPa | 0 to 5 MPa | 0 to 10 MPa |
| | Proof pressure | 3.0 MPa | 600 kPa | 1.5 MPa | 5.0 MPa | 12.5 MPa | 30 MPa |
| Electrical | Power supply voltage | 12 to 24 VDC ±10% with 10% voltage ripple or less | | | | | |
| | Current consumption | 10 mA or less | | | | | |
| | Protection | Reverse connection protection | | | | | |
| Accuracy | Analog output accuracy (Ambient temperature at 25°C) | ±1.0% F.S. | | | ±2.5% F.S. | | |
| | Linearity | ±0.2% F.S. | | | ±0.5% F.S. | | |
| | Repeatability (Ambient temperature at 25°C) | ±0.2% F.S. | | | ±0.5% F.S. | | |
| | Temperature characteristics (25°C reference) | ±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) | | |
| Environment | Enclosure | IP65 | | | | | |
| | Withstand voltage | 500 VAC for 1 minute between terminals and housing | | | | | |
| | Insulation resistance | 100 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing | | | | | |
| | 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) | | | | | |
| Standards | CE marking (EMC directive/RoHS directive) | | | | | | |
| Materials of parts in contact with fluid | Model | PSE57□□□ | | | PSE57□□□-2B | | |
| | Output | Voltage output: 1 to 5 V | | | Current output: 4 to 20 mA | | |
| Analog output | Impedance | 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 |
|------------------|---|--|-------------------|--|
| Port size | | R1/8 M5 x 0.8 | R1/4 M5 x 0.8 | R1/4 M5 x 0.8 |
| | Materials of parts in contact with fluid | Piping port: C3604 + Nickel plating Pressure sensor: Al ₂ O ₃ (Alumina 96%) O-ring: FKM + Grease | | Piping port: C3604 + Nickel plating Pressure sensor: Al ₂ O ₃ (Alumina 96%) Square ring: FKM |
| Weight | 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

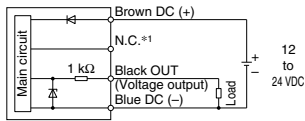
| | | |
|------------------|------------------------------|------------------------------|
| Conductor | Nominal cross section | AWG23 |
| | Outside diameter | 0.72 mm |
| Insulator | Material | Cross-linked vinyl chloride |
| | Outside diameter | 1.14 mm |
| Sheath | Material | Brown, Blue, Black, White |
| | Finished O.D. | Oil resistant vinyl chloride |
| Length | | ø4 |
| | | 3 m |

PSE570 Series

Internal Circuits and Wiring Examples

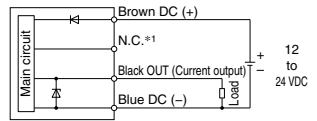
PSE57□-□

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



PSE57□-□-28

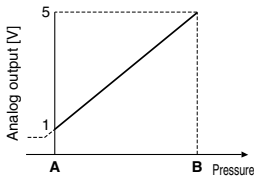
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



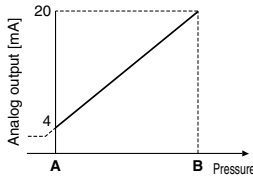
*1 The unconnected terminals are used in SMC, so please do not connect them.

Analog Output

1 to 5 VDC

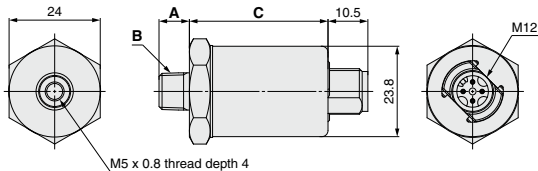


4 to 20 mA DC



| 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 |

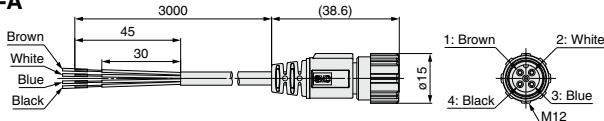
Dimensions



| Part no. | A | B | C |
|-------------------|----|------|------|
| PSE570/573/574-01 | 8 | R1/8 | 36.5 |
| PSE570/573/574-02 | 12 | R1/4 | 36.5 |
| PSE575/576/577-02 | 12 | R1/4 | 39.7 |

Lead wire and M12 connector

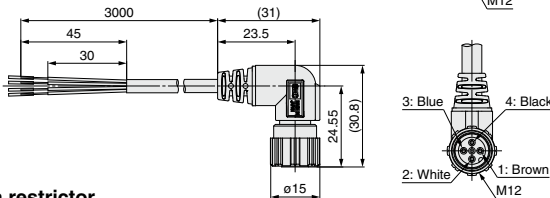
ZS-37-A



| Pin no. | Lead wire color | 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

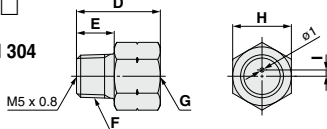


| Part no. | Description |
|----------|----------------------|
| ZS-37-A | Straight type 3 m |
| ZS-37-B | Right angle type 3 m |

Adapter with restrictor

ZS-31-X□□□

Material:
Stainless steel 304

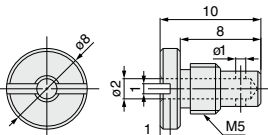


| Part no. | D | E | F | G | H | I |
|------------|----|----|------|-------|----|-----|
| ZS-31-X188 | 20 | 9 | R1/8 | Rc1/8 | 14 | 1.5 |
| ZS-31-X175 | 29 | 13 | R1/4 | Rc1/4 | 17 | 1.6 |

Orifice

ZS-48-A

Material:
Stainless steel 303



* 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.smcworld.com>).

Multi-Channel Digital Pressure Sensor Controller

PSE200 Series



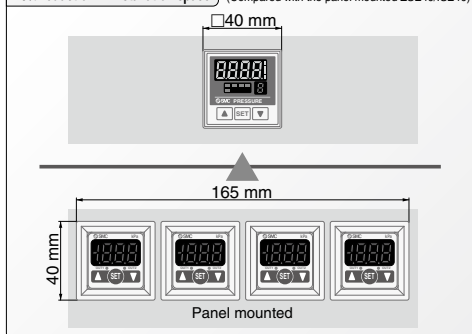
RoHS

| 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)

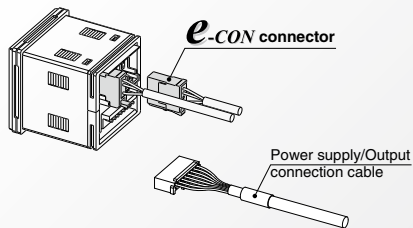
76% reduction in installation space (Compared with the panel mounted ZSE40/ISE40)



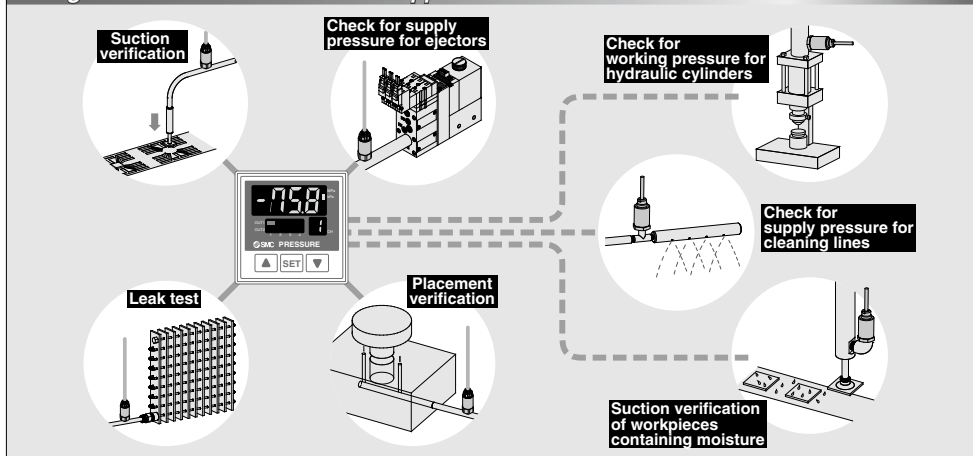
● Functions

- 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.



Multi-Channel Controller

PSE200 Series



How to Order

PSE20 **0** - **M**

Input/Output specifications

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

Unit specifications

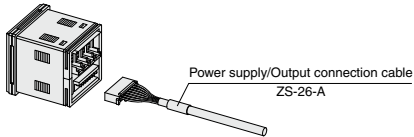
| | |
|------------|---|
| Nil | With display unit switching function <small>Note 1)</small> |
| M | Fixed SI unit <small>Note 2)</small> |

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

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

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

Included with the controller.



Option 2

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

Option 1

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

Option/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 |
| <input type="checkbox"/> 48 conversion adapter * This adapter is used to mount the PSE200 series on the panel fitting of the PSE100 series. | ZS-26-D Order panel mount adapter separately. | <input type="checkbox"/> 48 conversion adapter |
| Front protective cover | ZS-26-01 | |
| Sensor connector | ZS-28-C (1 pc. per set) | |

Specifications

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

| Model | | PSE200 | PSE201 |
|---|----------------------------------|--|---|
| Power supply voltage | | 12 to 24 VDC $\pm 10\%$, Ripple (p-p) 10% or less (with reverse connection protection) | |
| Current consumption | | 55 mA or less (Current consumption for sensor is not included.) | |
| Power supply voltage for sensor | | [Power supply voltage] -1.5 V | |
| Power supply current for sensor ^{Note 1)} | | Maximum 40 mA (100 mA maximum for the total power supply current when 4 sensors are input.) | |
| Sensor input | | 1 to 5 VDC (Input impedance: Approx. 800 k Ω) | |
| | Number of inputs | 4 inputs | |
| | Input protection | With excess voltage protection (Up to 26.4 V) | |
| Switch output | | NPN open collector output: 5 outputs (Sensor input CH1: 2 outputs, CH2 to 4: 1 output) | PNP open collector output: 5 outputs (Sensor input CH1: 2 outputs, CH2 to 4: 1 output) |
| | Maximum load current | 80 mA | |
| | Maximum load voltage | 30 V | |
| | Residual voltage | 1 V or less (with load current of 80 mA) | |
| | Response time | 5 ms or less (Response time selections with anti-chattering function: 20 ms, 160 ms, 640 ms) | |
| | Short circuit protection | With short circuit protection | |
| Repeatability | | $\pm 0.1\%$ F.S. ± 1 digit | |
| Hysteresis | | Adjustable (can be set from 0) | |
| | Hysteresis mode | Adjustable (can be set from 0) | |
| | Window comparator mode | Fixed (3 digits) | |
| Display | | For measured value display: 4-digit, 7-segment indicator, Display color: Orange (Sampling frequency: 4 times/sec) For channel display: 1-digit, 7-segment indicator, Display color: Red | |
| Display accuracy (Operating temperature at 25°C) | | $\pm 0.5\%$ F.S. ± 1 digit | |
| Indicator light | | Red (Lights up when output is turned ON.) | |
| Auto-shift input | | Non-voltage input (Reed or Solid state), Input 10 ms or more, Independently controllable auto-shift function ON/OFF | |
| Auto-identification function | | With auto-identification function ^{Note 2)} | |
| Environment | | Front face: IP65 (when panel-mounted), Others: IP40 ^{Note 3)} | |
| | Ambient temperature range | Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation) | |
| | Ambient humidity range | Operating/Stored: 35 to 85% RH (No condensation) | |
| Temperature characteristics | | $\pm 0.5\%$ F.S. (25°C reference) | |
| Connection | | Power supply/Output connection: 8P connector, Sensor connection: e-con connector | |
| Material | | Housing: PBT; Display: Transparent nylon; Back rubber cover: CR | |
| Weight | | Approx. 60 g (Excluding power supply/output cable) | |
| Power supply/Output connection cable | | Heat resistant heavy-duty cable, 8 cores, $\phi 4.8$, 2 m, Connector area: 0.15 mm ² , Insulator O.D.: 0.9 mm | |
| Standards | | 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

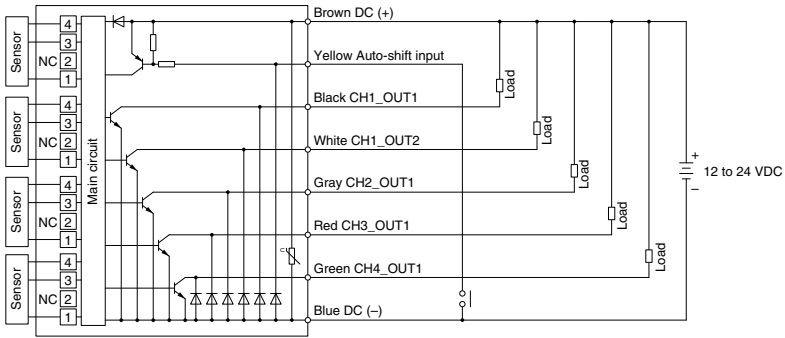
| Applicable sensor | | | | | Rated pressure range | | | | Set/Display resolution |
|-------------------|--------|--------|--------|--------|----------------------|---|---------|-------|------------------------|
| PSE53□ | PSE54□ | PSE55□ | PSE56□ | PSE57□ | -100 kPa | 0 | 100 kPa | 1 MPa | |
| PSE531 | 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 |

PSE200 Series

Internal Circuit and Wiring Example

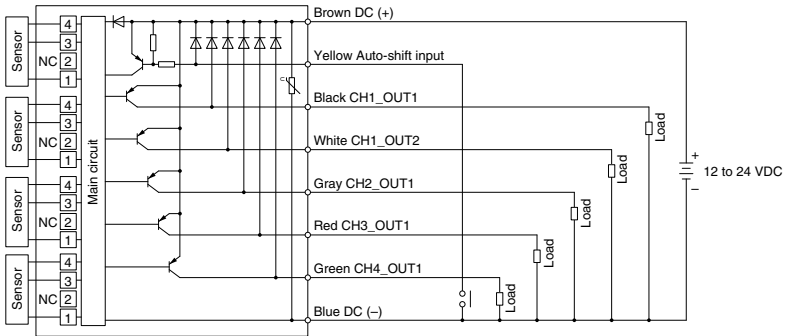
PSE200-(M)□

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



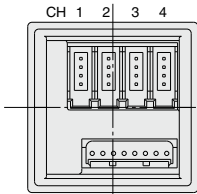
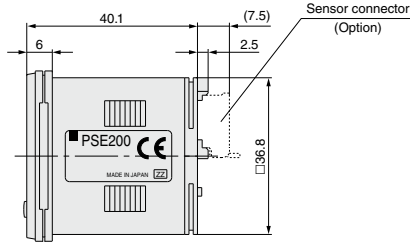
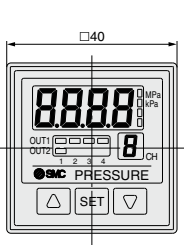
PSE201-(M)□

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

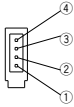


Dimensions

PSE200/201

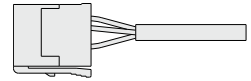


Sensor connector (4P x 4)

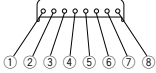


| PIN no. | Terminal |
|---------|---------------|
| ① | DC (+) |
| ② | N.C. |
| ③ | DC (-) |
| ④ | IN (1 to 5 V) |

Connector (Option)

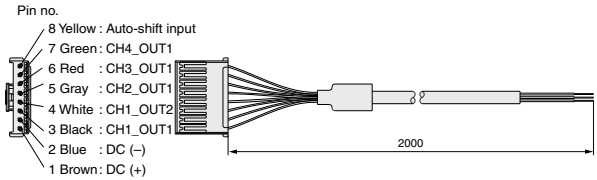


Power supply/Output connector (8P)



| 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)

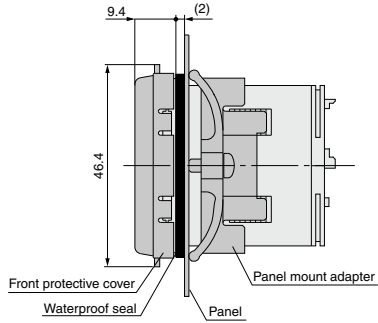
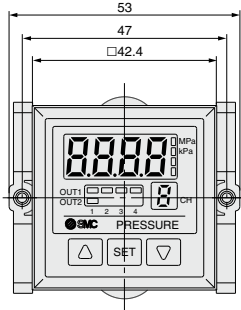


| |
|------------|
| ZSE20 |
| ISE20 |
| ZSE30 |
| ISE30 |
| ZSE40 |
| ISE40 |
| ZSE10 |
| ISE10 |
| ISE70 |
| ZSE80 |
| ISE80 |
| PS |
| ISA3 |
| ISA2 |
| ISE35 |
| PSE |
| IS |
| ISG |
| ZSM1 |

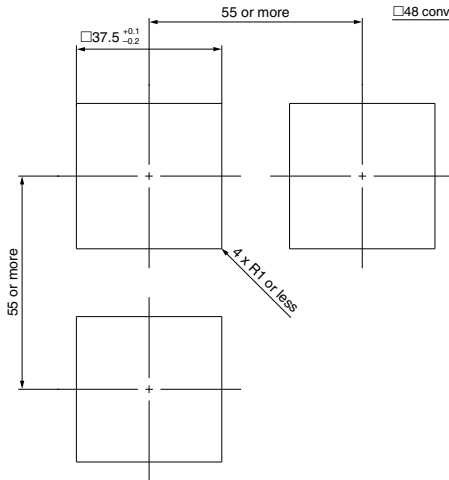
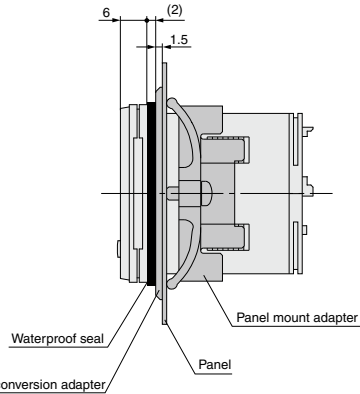
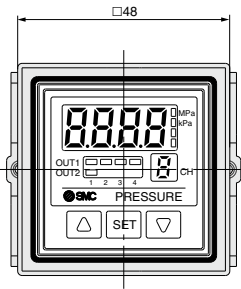
PSE200 Series

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-Color Display Digital Pressure Sensor Controller

PSE300 Series



RoHS

| 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 |

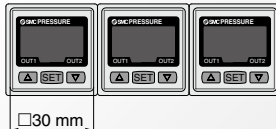
2-color display (Red/Green)

Possible to set 4 patterns of display color.

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

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

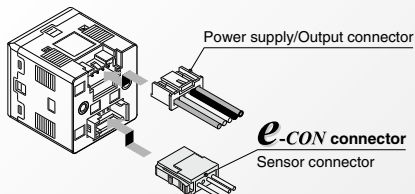
Possible to reduce panel fitting labor.



Response time

1 ms

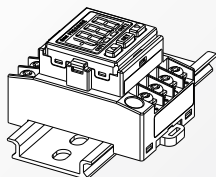
Connector type



● Functions

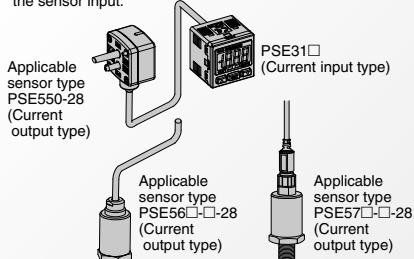
- Auto-shift function
- Auto-preset function
- Display calibration function
- Peak/Bottom values holding/display function
- Keylock function
- Zero-clear function
- Error indication function
- Display unit switching function
- Anti-chattering function

DIN rail/Terminal block type



Current input type

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



ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

Pressure Sensor Controller

PSE300 Series



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

| | |
|-----|---|
| NII | With display unit switching function ^{Note 1)} |
| M | Fixed SI unit ^{Note 2)} |

Note 1) Under the New Measurement Law, sales of switches with the unit switching function are not allowed for use in Japan.
 Note 2) Fixed unit

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

Option 1

| | |
|-----|--------------------------------------|
| NII | None |
| L | Power supply/Output connection cable |

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

Order DIN rail separately. Refer to page 161.

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

| | |
|-----|------------------------|
| NII | None |
| E | Front protective cover |

Option 3

| | |
|-----|------------------|
| NII | None |
| C | Sensor connector |

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

Option 2

| | |
|-----|--|
| NII | None |
| A | Bracket |
| B | Panel mount adapter |
| D | Panel mount adapter + Front protective cover |

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

Specifications

Refer to pages 11 and 12 for Pressure Switch Precautions. For details about the Specific Product Precautions, refer to the Operation Manual on the SMC website, <http://www.smcworld.com> Click [here](#) for details.

| 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 ^{Note 1)} | 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 analog output range ^{Note 2)} | — | 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. | | | | | | |
| Analog output | Voltage output ^{Note 2)} | Output voltage: 1 to 5 V (within rated pressure (differential pressure) range), 0.6 to 1 V (within extension analog output range) Output impedance: Approx. 1 kΩ, Linearity: ±0.2% F.S. (Not including sensor accuracy), Response speed: 150 ms or less | | | | | |
| | Accuracy (To display value) (25°C) | ±0.6% F.S. | | ±1.0% F.S. | | ±1.5% F.S. | |
| | Current output ^{Note 2)} | Output current: 4 to 20 mA (within rated pressure (differential pressure) range), 2.4 to 4 mA (within extension analog output range) Maximum load impedance: 300 Ω (at 12 VDC), 600 Ω (at 24 VDC), Minimum load impedance: 50 Ω Linearity: ±0.2% F.S. (Not including sensor accuracy), Response time: 150 ms or less | | | | | |
| | Accuracy (To display value) (25°C) | ±1.0% F.S. | | ±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-color display (Red/Green), Sampling frequency: 5 times/sec | | | | | | |
| Indicator light | OUT1: Lights up when turned ON (Green), OUT2: Lights up when turned ON (Red) | | | | | | |
| Auto-shift input ^{Note 2)} | Non-voltage input (Reed or Solid state), Low level input: 5 ms or more, Low level: 0.4 V or less | | | | | | |
| 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□□: Terminal block | | | | | | |
| Material | Front case: PBT, Rear case: PBT (PSE30□□), Modified PPE (PSE31□□) | | | | | | |
| Weight | With power supply/Output connection cable | PSE30□□: 85 g | | | | | |
| | Without power supply/Output connection cable | PSE30□□: 30 g, PSE31□□: 50 g | | | | | |
| Power supply/Output connection cable | Oilproof heavy-duty vinyl cable, 5 cores, ø4.1, 2 m, Conductor area: 0.2 mm ² 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 analog output option is selected.

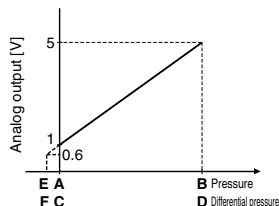
Also, analog output option is not available when auto-shift function is selected.
Extension analog output is not available for the PSE570 series.

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

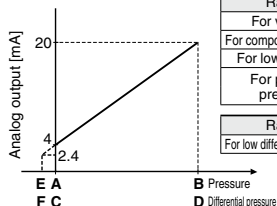
For vacuum & compound pressure: kPa·kgf/cm²·bar·psi·mmHg·in·Hg
For positive pressure & low pressure: MPa·kPa·kgf/cm²·bar·psi
For low differential pressure: kPa·mmH₂O

Analog Output

1 to 5 VDC



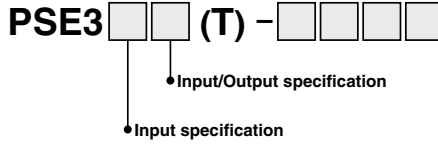
4 to 20 mA DC



| 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 |

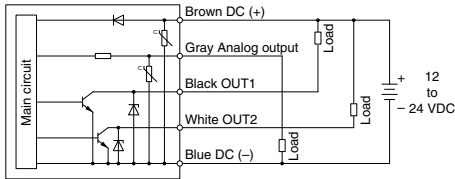
PSE300 Series

Internal Circuit and Wiring Example



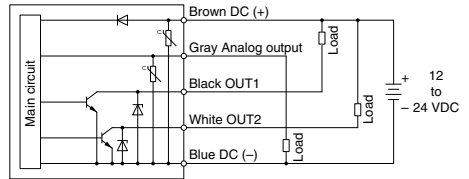
PSE30(T)

NPN (2 outputs) + Analog voltage output



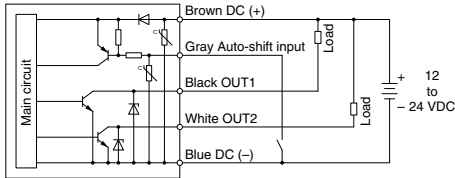
PSE31(T)

NPN (2 outputs) + Analog current output



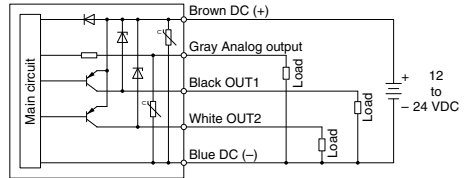
PSE32(T)

NPN (2 outputs) + Auto-shift 1 input



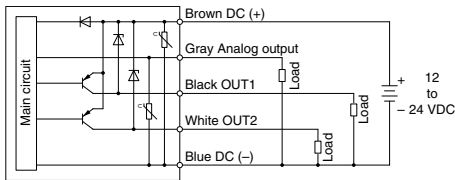
PSE33(T)

PNP (2 outputs) + Analog voltage output



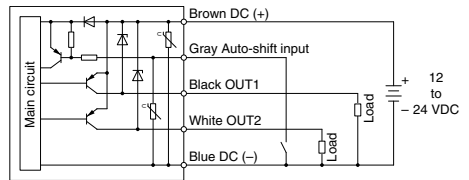
PSE34(T)

PNP (2 outputs) + Analog current output



PSE35(T)

PNP (2 outputs) + Auto-shift 1 input



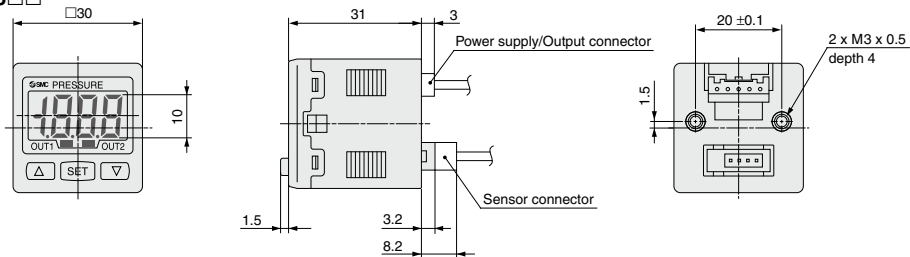
Connector for Sensor Connection

| PIN no. | Terminal | | |
|---------|--|--|-----------------------------|
| | PSE30 <input type="checkbox"/> (Voltage input) | PSE31 <input type="checkbox"/> (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) |

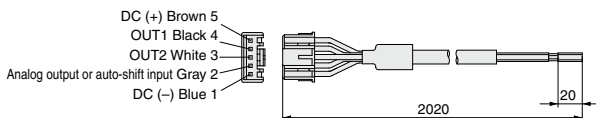
Note: The colors in () indicate the wire color of the PSE5 series.

Dimensions

PSE3□□



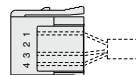
Power supply/Output connection cable (ZS-28-A)



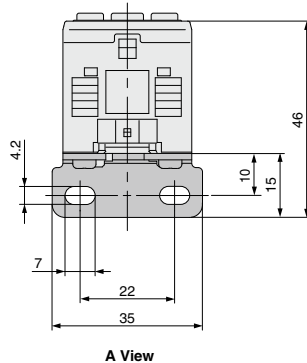
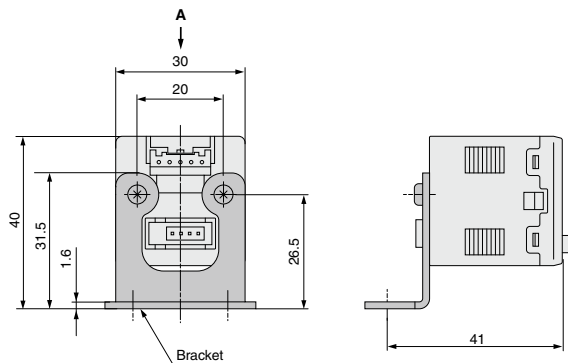
Sensor connector

| 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) |

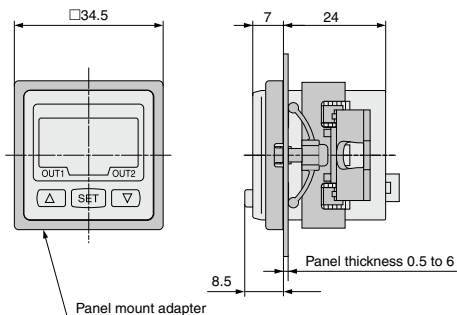
Note: The colors in () indicate the wire color of the PSE5□□ series.



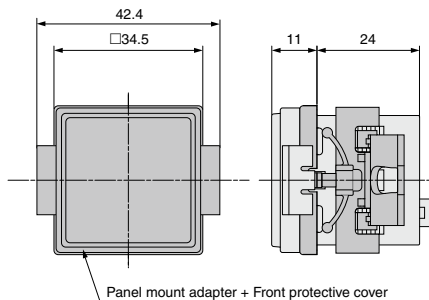
With bracket



With panel mount adapter



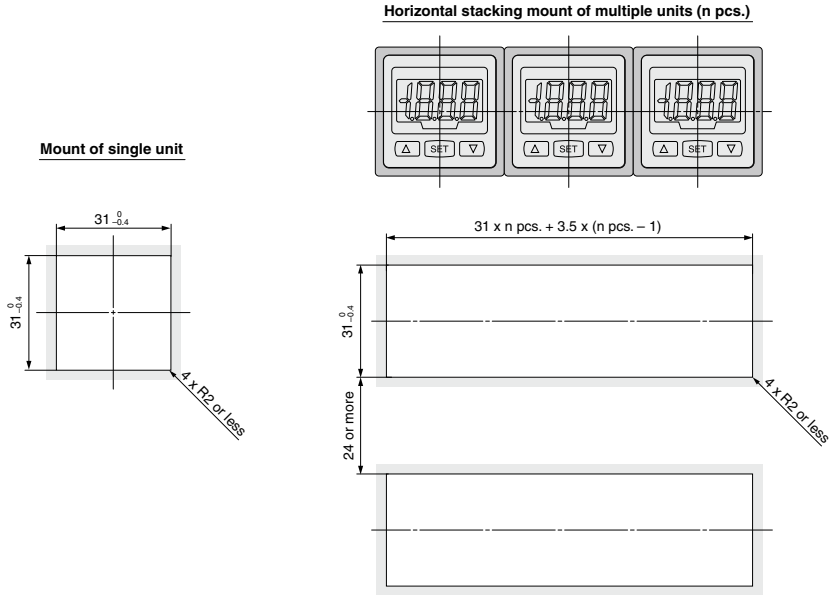
With panel mount adapter + Front protective cover



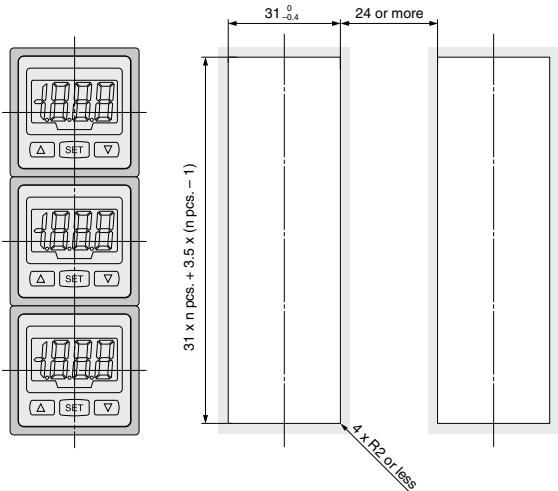
ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

Dimensions

Panel fitting dimensions

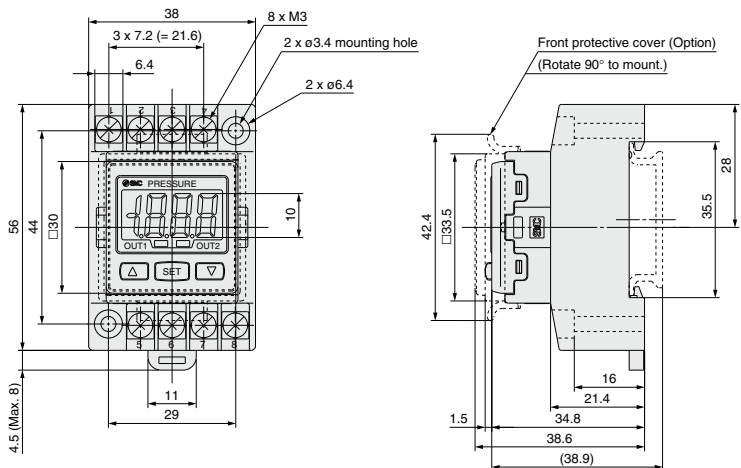


Vertical stacking mount of multiple units (n pcs.)



Dimensions

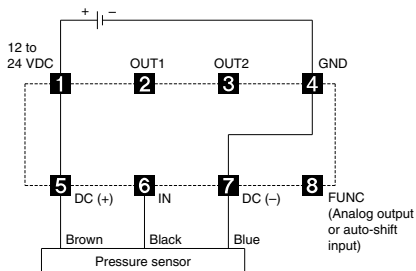
PSE3□□T



Connections

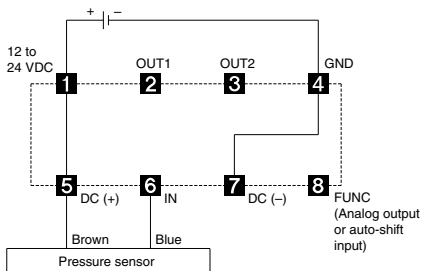
PSE3□□T

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



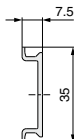
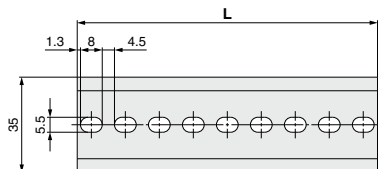
PSE31□T

(Current input: Pressure sensor 2-wire type)



DIN Rail

ISA-5-□



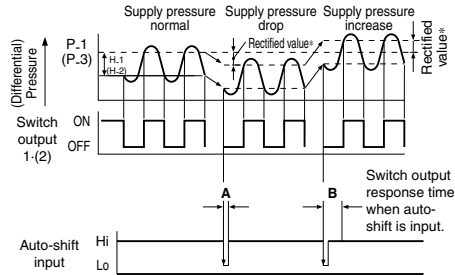
| Part no. | L |
|----------|-------|
| ISA-5-1 | 73.0 |
| ISA-5-2 | 135.5 |
| ISA-5-3 | 173.0 |
| ISA-5-4 | 210.5 |
| ISA-5-5 | 248.0 |
| ISA-5-6 | 285.5 |
| ISA-5-7 | 323.0 |

Function Details

A Auto-shift function

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

Set value correction by auto-shift function



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

* Rectified value

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

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

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 |

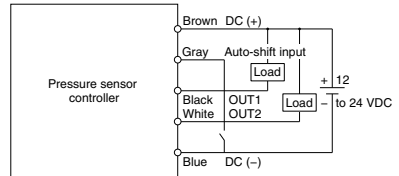
Auto-shift zero (PSE300 series only)

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

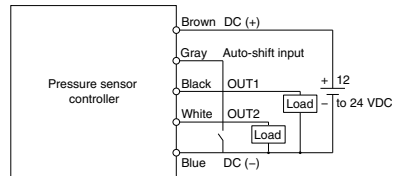
PSE□2

PNP open collector output: 2 outputs



PSE□5

PNP open collector output: 2 outputs

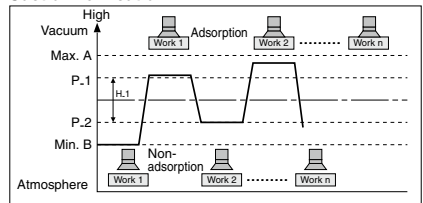


Note) The colors in the circuit diagram indicate the color of the lead wire when it is connected to the power supply/output connection cable (ZS-28-A).

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



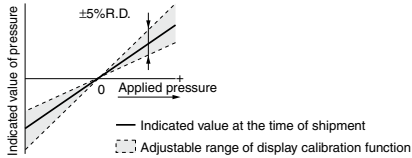
Formula for Obtaining the Set Value

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

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 ± 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 Δ / ∇ 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 ± 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 ± 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.

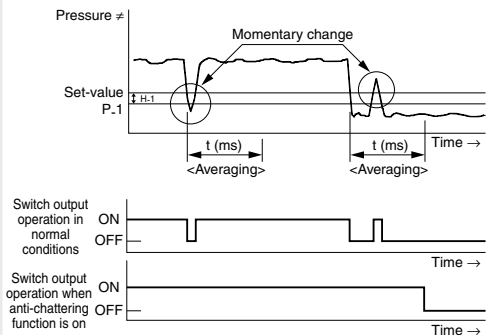
J Anti-chattering function

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.

ZSE20
ISE20

ZSE30
ISE30

ZSE40
ISE40

ZSE10
ISE10

ISE70

ZSE80
ISE80

PS

ISA3

ISA2

ISE35

PSE

IS

ISG

ZSM1

PSE200/300 Series

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 | PSE533 PSE543 PSE563 PSE573 | PSE531 PSE541 PSE561 | PSE532 | PSE530 PSE540 PSE560 PSE570 | |
| Set pressure (differential pressure) range | -101 to 101 kPa | 10 to -101 kPa | -10 to 101 kPa | -0.1 to 1 MPa | |
| P _R | kPa | 0.1 | 0.1 | 0.1 | — |
| | MPa | — | — | — | 0.001 |
| G _F | kgf/cm ² | 0.001 | 0.001 | 0.001 | 0.01 |
| b _R r | bar | 0.001 | 0.001 | 0.001 | 0.01 |
| P _S i | psi | 0.02 | 0.01 | 0.01 | 0.1 |
| i _n H | inHg | 0.1 | 0.1 | — | — |
| n _n H | mmHg | 1 | 1 | — | — |

PSE300

| Pressure range | For compound pressure | For vacuum | For low pressure | For positive pressure | For low differential pressure | | |
|--|--------------------------------------|----------------------------|------------------|--------------------------------------|-------------------------------|------------------|----------------------|
| Applicable pressure sensor | PSE533 PSE543 PSE563 PSE573 | PSE531 PSE541 PSE561 | PSE532 | PSE530 PSE540 PSE560 PSE570 | PSE564 PSE574 PSE550 | | |
| Set pressure (differential pressure) range | -101 to 101 kPa | 10 to -101 kPa | -10 to 100 kPa | -0.1 to 1 MPa | -50 to 500 kPa | -0.2 to 2.00 kPa | |
| P _R | kPa | 0.2 | 0.1 | 0.1 | — | 1 | 0.01 |
| | MPa | — | — | — | 0.001 | — | — |
| G _F | kgf/cm ² | 0.002 | 0.001 | 0.001 | 0.01 | 0.01 | — |
| b _R r | bar | 0.002 | 0.001 | 0.001 | 0.01 | 0.01 | — |
| P _S i | psi | 0.05 | 0.02 | 0.02 | 0.2 | 0.1 | — |
| i _n H | inHg | 0.1 | 0.1 | — | — | — | — |
| n _n H | mmHg | 2 | 1 | — | — | — | 1 mmH ₂ O |

3-Screen Display Sensor Monitor

PSE300AC Series



How to Order



PSE3 **0** **0** OAC - **AB** - **M** - **□**

Input specification

| | |
|---|---------------|
| 0 | Voltage input |
| 1 | Current input |

Output specification

| | |
|----|---|
| AB | 2 output type (NPN or PNP switching type) |
|----|---|

Option (Power supply/output lead wire)

| | |
|----|-----------------------|
| NH | 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. |

* For details on the lead wire with M12 connector and the assembly type connector for connecting to the sensor, refer to page 147.

Unit specification

| | |
|----|--|
| NH | 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. Click [here](#) for details.

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 | 1 kPa | 0.001 MPa | 0.001 MPa | 0.01 MPa | 0.01 MPa |
| Electrical | Power supply voltage | 12 to 24 VDC ($\pm 10\%$) with 10% voltage ripple or less | | | | | | | | |
| | Current consumption | 25 mA or less | | | | | | | | |
| Accuracy | Protection | Reverse connection protection | | | | | | | | |
| | Display accuracy | $\pm 0.5\%$ F.S. \pm Min. display unit (Ambient temperature at 25°C) | | | | | | | | |
| | Repeatability | $\pm 0.1\%$ F.S. \pm Min. display unit (Ambient temperature at 25°C) | | | | | | | | |
| | Temperature characteristics | $\pm 0.5\%$ 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 M Ω), 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 ² , bar, mbar, psi, inHg, mmHg, mmHzO | | | | | | | | |
| | Display type | LCD | | | | | | | | |
| | Number of screens | 3-screen display (Main screen, Sub screen x 2) | | | | | | | | |
| Digital filter | Display color | 1) Main screen: Red/Green, 2) Sub screen: Orange | | | | | | | | |
| | 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 | | | | | | | | |
| Environment | Enclosure | IP65 | | | | | | | | |
| | Withstand voltage | 1000 VAC for 1 minute between terminals and housing | | | | | | | | |
| | Insulation resistance | 50 M Ω 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) | | | | | | | | |
| | Operating humidity range | Operating/Stored: 35 to 85% RH (No condensation) | | | | | | | | |
| Standards | CE (EMC directive/RoHS directive) | | | | | | | | | |
| 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.

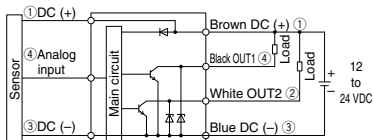
*3 This setting is only available for models with the unit selection function.

Only MPa, kPa or Pa is available for models without this function.

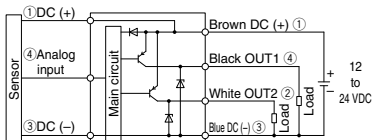
*4 The response time indicates when the set value is 90% in relation to the step input.

Internal Circuits and Wiring Examples

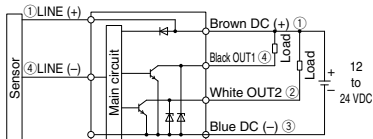
Setting of NPN open collector 2 outputs: Pressure sensor 3-wire type



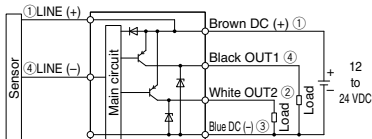
Setting of PNP open collector 2 outputs: Pressure sensor 3-wire type



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



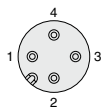
Setting of PNP open collector 2 outputs: Pressure sensor 2-wire type



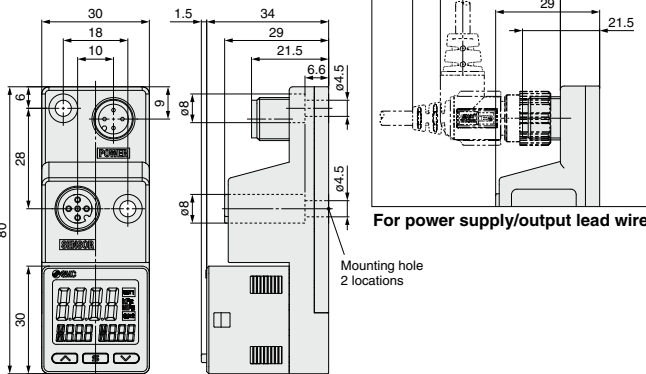
- * The output type can be changed in the function selection mode.
- * Numbers in the figures show the connector pin layout.

Dimensions

Power supply/output connector pin no.

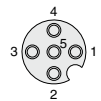


| Pin no. | Description |
|---------|-------------|
| 1 | DC (+) |
| 2 | OUT2 |
| 3 | DC (-) |
| 4 | OUT1 |



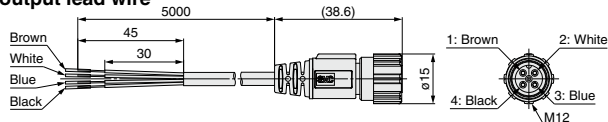
For power supply/output lead wire

Sensor connector pin no.



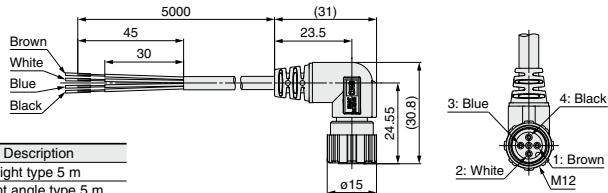
| Pin no. | Description |
|---------|-------------------------------------|
| 1 | DC (+) |
| 2 | N.C. |
| 3 | DC (-) |
| 4 | Sensor input (1 to 5 V, 4 to 20 mA) |
| 5 | N.C. |

Power supply/output lead wire
ZS-31-B



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

ZS-31-C



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

| |
|-------|
| ZSE20 |
| ISE20 |
| ZSE30 |
| ISE30 |
| ZSE40 |
| ISE40 |
| ZSE10 |
| ISE10 |
| ISE70 |
| ZSE80 |
| ISE80 |
| PS |
| ISA3 |
| ISA2 |
| ISE35 |
| PSE |
| IS |
| ISG |
| ZSM1 |

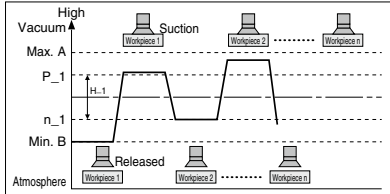
PSE300AC Series

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

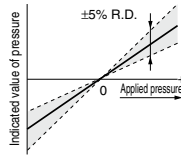


Formula for Obtaining the Set Value

| | |
|---------------------------|-------------------------|
| P_1 or P_2 | H_1 or H_2 |
| $P_1 (P_2) = A - (A-B)/4$ | $H_1 (H_2) = [(A-B)/2]$ |
| $n_1 (n_2) = B + (A-B)/4$ | |

B Display value fine adjustment function (F6)

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



— Indicated value at the time of shipment
 - - - 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 $\pm 7\%$ F.S. of the pressure when ex-factory. ($\pm 3.5\%$ 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 $\pm 7\%$ F.S. ($\pm 3.5\%$ 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 $\pm 1\%$ 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

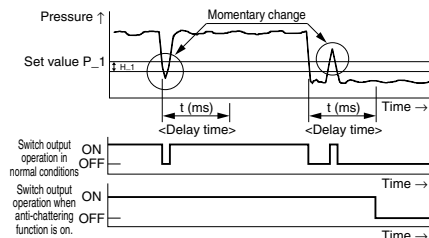
G Anti-chattering function (Simple setting mode or F1)

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 ² | bar | mbar | psi | inHg | mmHg | mmH ₂ O |
|--------------------------------|--------------|----------------------|-------|-------|------|---------------------|-------|------|-------|------|------|--------------------|
| | | | MPa*1 | kPa | Pa | kgf/cm ² | bar | mbar | psi | inHg | mmHg | mmH ₂ O |
| Applicable SMC pressure sensor | PSE550 | 0 to 2 kPa | | 0.001 | 1 | | | 0.01 | 0.001 | | | 0.1 |
| | PSE531 | 0 to -101 kPa | 0.001 | 0.1 | | 0.001 | 0.001 | | 0.01 | 0.1 | 1 | |
| | PSE541 | | | | | | | | | | | |
| | PSE561 | | | | | | | | | | | |
| | PSE533 | -100 to 100 kPa | 0.001 | 0.1 | | 0.001 | 0.001 | | 0.02 | 0.1 | 1 | |
| | PSE543 | | | | | | | | | | | |
| | PSE563 | | | | | | | | | | | |
| | PSE573 | | | | | | | | | | | |
| | PSE532 | 0 to 100 kPa | 0.001 | 0.1 | | 0.001 | 0.001 | | 0.01 | | | |
| | PSE564 | 0 to 500 kPa | 0.001 | 1 | | 0.01 | 0.01 | | 0.1 | | | |
| PSE574 | | | | | | | | | | | | |
| PSE530 | 0 to 1 MPa | 0.001 | 1 | | 0.01 | 0.01 | | 0.1 | | | | |
| PSE540 | | | | | | | | | | | | |
| PSE560 | | | | | | | | | | | | |
| PSE570 | | | | | | | | | | | | |
| 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).)

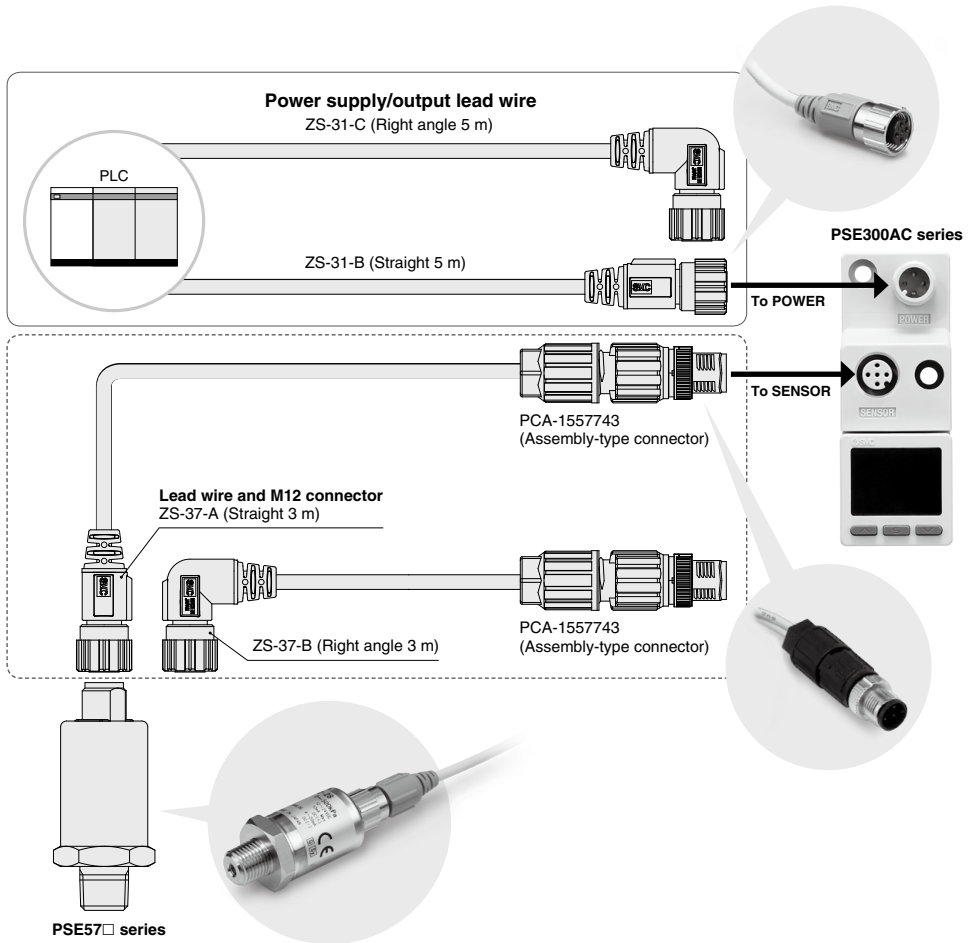
J Setting of secret code (F81)

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.

ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

Options / Connection Examples



Lead wire and M12 connector + Assembly-type connector Set part no.

| | | |
|--------------|-----------------|--|
| ZS-37-A-X448 | Straight 3 m | One lead wire with M12 connector and one assembly type connector are shipped together. (but not assembled) |
| ZS-37-B-X449 | Right angle 3 m | |