Low Differential Pressure Sensor

Rated differential pressure range:

0 to 2kPa

Accuracy:

±1% F.S.

LED display to confirm energization

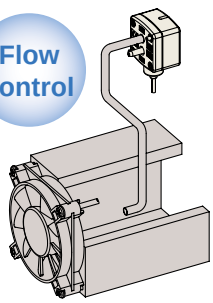
Proof pressure: 65kPa

Output: (Analog output) **1 to 5VDC / 4 to 20mA DC**

Series PSE550

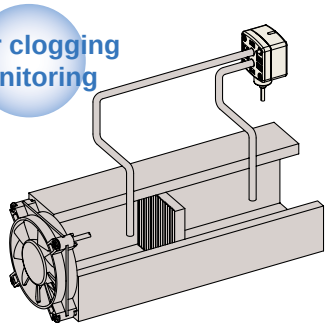
Applications

Flow control



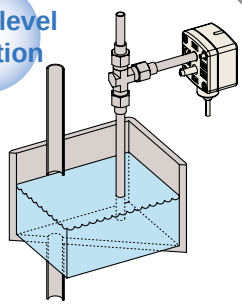
Can control air flow by monitoring the flow rate inside the duct.

Filter clogging monitoring



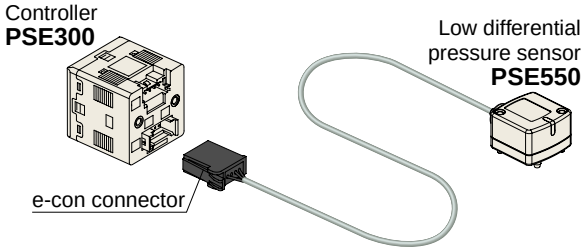
Can control filtration and replacement periods by monitoring the clogging of the filter.

Liquid level detection

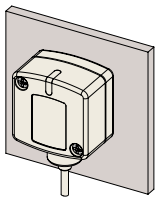


Can detect the liquid level through changes in the purge pressure.

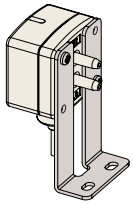
Plug connection



Two mounting methods



Direct mounting



Bracket mounting

Low Differential Pressure Sensor

Series PSE550

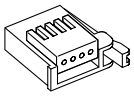
How to Order

PSE550 □ □ □

Output specifications

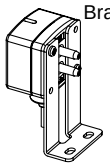
Nil	Voltage output type 1 to 5V
28	Current output type 4 to 20mA

Option 2 (Connector)

Nil	None
C2	Connector for PSE300 multiple channel pressure controller 1pc. 

Note 1) Current output type cannot be connected to the series PSE300.
Note 2) The connector is unassembled in the factory but is included with the shipment.

Option 1 (Bracket)

Nil	None
A	Bracket 

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

Options/Part No.

Description	Part no.	Note
Bracket	ZS-30-A	With M3 x 5L (2pcs.)
Connector for PSE300	ZS-28-C	1pc.

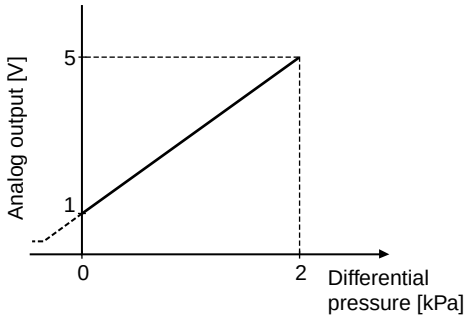
Specifications

Model		PSE550	PSE550-28
Rated differential pressure range		0 to 2kPa	
Operating pressure range		–50 to 50kPa Note)	
Proof pressure		65kPa	
Applicable fluid		Air, non-corrosive gas, non-inflammable gas	
Power supply voltage		12 to 24V DC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption		15mA or less	–
Output specification		Analogue output 1 to 5VDC (within rated differential pressure range) Output impedance: Approx. 1kΩ	Analogue output 4 to 20mADC (within rated differential pressure range) Allowable load impedance: 500Ω or less (at 24VDC) 100Ω or less (at 12VDC)
Accuracy (ambient temperature of 25°C)		±1% F.S. or less	
Linearity		±0.5% F.S. or less	
Repeatability		±0.3% F.S. or less	
Indication light		Orange light is on (when energized)	
Environmental resistance	**Enclosure**	IP40	
	Operating temperature range	Operating: 0 to 50°C, Stored: –20 to 70°C (with no condensation and no freezing)	
	Operating humidity range	Operating/Stored: 35 to 85%RH (with no condensation)	
	Withstand voltage	1000VAC or more, 50/60Hz for 1 minute between live parts and case	
	Insulation resistance	50MΩ or more between live parts and case (at 500VDC)	
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5mm amplitude or 100m/s^2 acceleration, in X, Y, Z directions, for 2 hours each (de-energized)	
	Impact resistance	300m/s^2 in X, Y, Z directions, 3 times each (de-energized)	
Temperature characteristics		±3% F.S. or less (based on 25°C)	
Port size		ø4.8 (ø4.4 in the end) resin piping (applicable to I.D. ø4 air tubing)	
Material of wetted parts		Resin pipe: Nylon, Piston area of sensor: Silicon	
Sensor cable		3 wire oval cable (0.15mm^2)	2 wire oval cable (0.15mm^2)
Weight	**With sensor cable**	75g	
	Without sensor cable	35g	

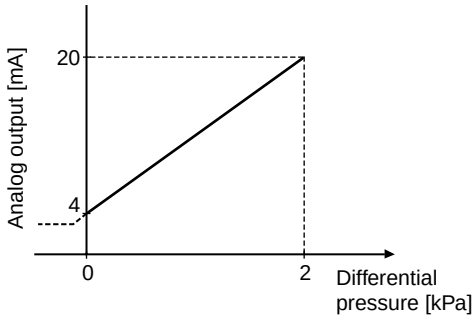
Note) Can detect differential pressure from 0 to 2kPa within the range of –50 to 50kPa.

Analog Output

1 to 5 VDC

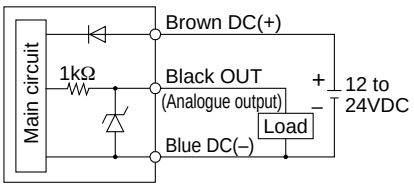


4 to 20 mADC

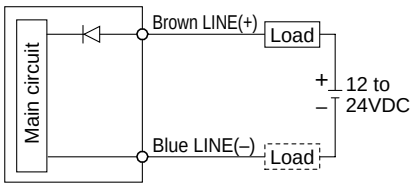


Internal Circuit

PSE550
Voltage output type
1 to 5 V
Output impedance
Approx. 1 kΩ



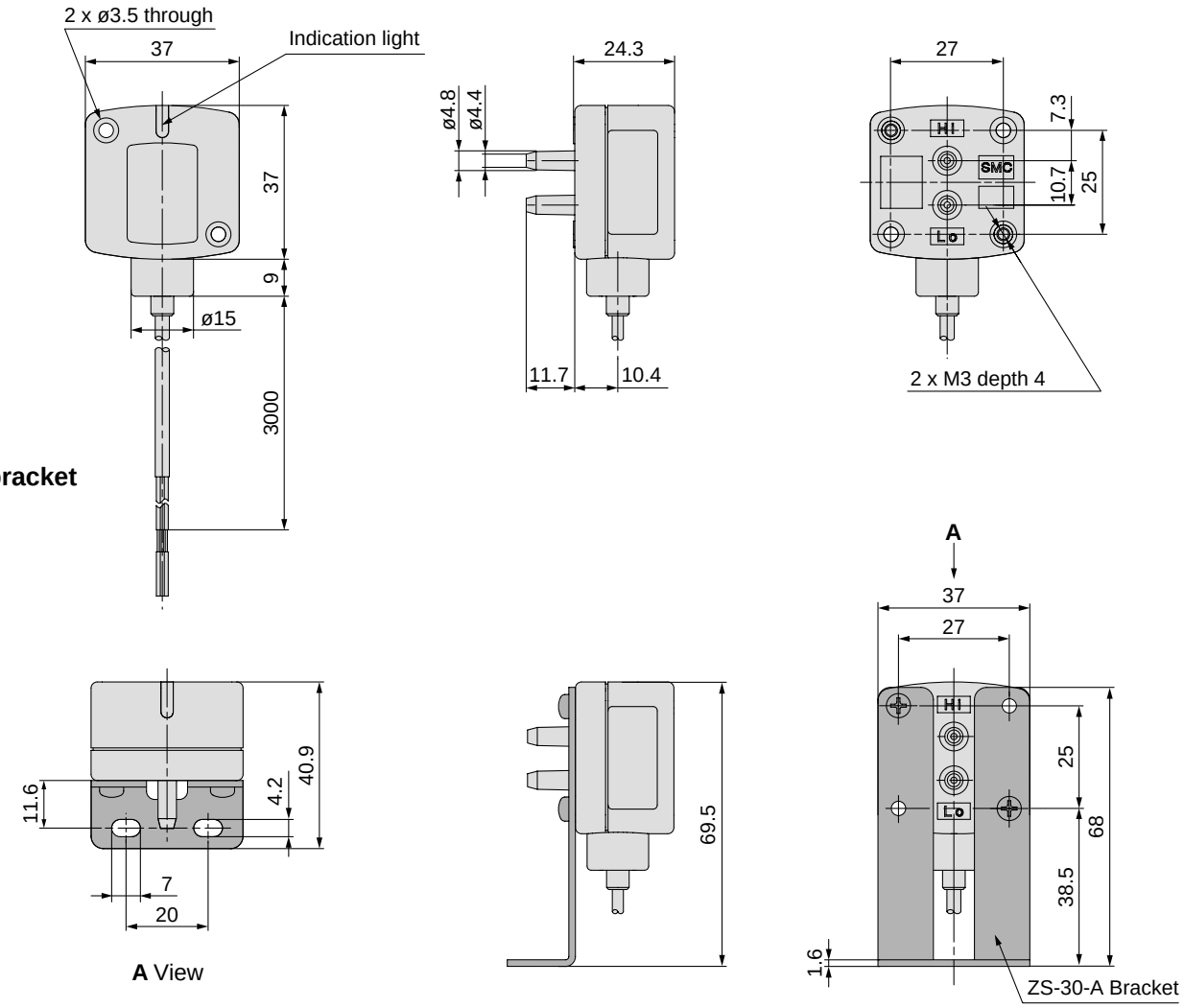
PSE550-28
Current output type
4 to 20 mA
Allowable load impedance
500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



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

Dimensions

With bracket



Pressure Sensor Controller

Series PSE300

How to Order

Input/Output specifications

0	NPN2 output + 1-5 V output
1	NPN2 output + 4-20 mA output
2	NPN2 output + Auto shift input
3	PNP2 output + 1-5 V output
4	PNP2 output + 4-20 mA output
5	PNP2 output + Auto shift input

Unit specifications

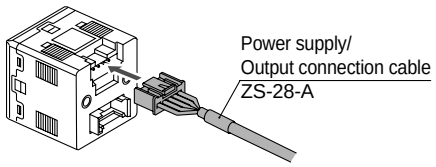
Nil	With unit display switching function
M	Fixed SI unit Note 1)

Note 1) Fixed units
For vacuum & low pressure & low differential pressure & compound pressure: kPa
Positive pressure: MPa (for 1 MPa)
kPa (for 500 kPa)

PSE30 0 — M □ □ □

Option 1

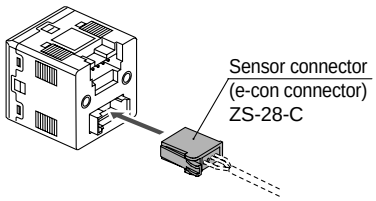
Nil	Without cable
L	Power supply/Output connection cable



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

Option 3

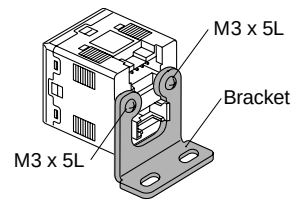
Nil	Without connector
C	Sensor connector

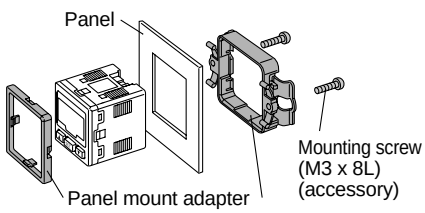


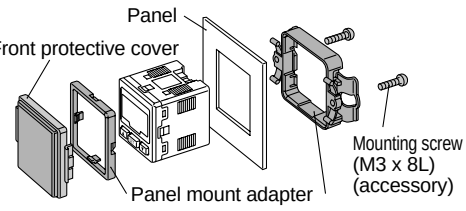
Note) The connector is unassembled in the factory, but is included with the shipment.

Option 2

Nil	Without bracket/panel mount adapter/front protective cover
A	Bracket
B	Panel mount adapter
D	Panel mount adapter + Front protective cover







Note) These options are unassembled in the factory, but are included with the shipment.

Options/Part No.

Description	Part no.	Note
Power supply/Output connection cable	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.)

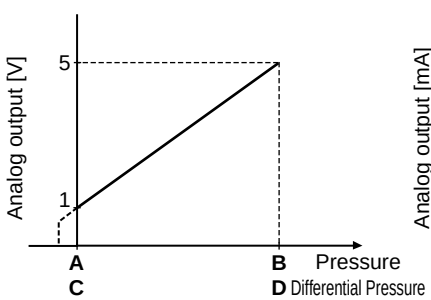
Specifications

Model		PSE30□					
Set (differential) pressure range		–101 to 101kPa	10 to –101kPa	–10 to 100kPa	–0.1 to 1MPa	–50 to 500kPa	–0.2 to 2kPa
Pressure range Note 1)		For compound pressure	For vacuum	For low pressure	For positive pressure		For low difference pressure
Rated (differential) pressure range		–100 to 100kPa	0 to –101kPa	0 to 100kPa	0 to 1MPa	0 to 500kPa	0 to 2kPa
Power supply voltage		12 to 24 VDC, Ripple (p-p) 10% or less (with power supply polarity protection)					
Current consumption		50 mA or less (Current consumption for sensor is not included.)					
Sensor input		1 to 5 VDC (Input impedance: 1 MΩ)					
	No. of inputs	1 input					
	Input protection	With excess voltage protection (up to 26.4 V)					
Hysteresis		Hysterisis mode: Variable, Window comparator mode: Variable					
Switch output		NPN or PNP open collector output: Two outputs					
	Maximum load current	80 mA					
	Maximum load voltage	30 VDC (at NPN output)					
	Residual voltage	1 V or less (with load current of 80 mA)					
	Output protection	With short circuit protection					
Response time		1 ms or less					
	Anti-chattering function	Response time settings for anti-chattering function: 20 ms, 160 ms, 640 ms, 1280 ms					
Repeatability		±0.1% F.S. or less					
Analogue output	**Voltage output** Note 2)	Output voltage: 1 to 5 V (within rated pressure range (Differential pressure)), Output impedance: Approx. 1 kΩ Linearity: ±0.2% F.S. (not including sensor accuracy), Response speed: 150 ms or less					
	Accuracy (to display value) (25°C)	±0.6% F.S. or less				±1.0% F.S. or less	±1.5% F.S. or less
	Current output Note 2)	Output current: 4 to 20 mA (within rated pressure range) Maximum load impedance: 300 Ω (at 12 VDC), 600 Ω (at 24 VDC), Minimum load impedance: 50 Ω Linearity: ±0.2% F.S. (not including sensor accuracy), Response time: 150 ms or less					
	Accuracy (to display value) (25°C)	±1.0% F.S. or less				±1.5% F.S. or less	±2.0% F.S. or less
Display accuracy (ambient temperature of 25°C)		±0.5% F.S. ±2 digits or less	±0.5% F.S. ±1 digit or less				
Display		3 + 1/2 digit, 7 segment indicator, 2-colour display (Red/Green), Sampling frequency: 5 times/sec					
Indication light		OUT1: Lights up when ON (Green), OUT2: Lights up when 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					
Resistance	**Enclosure**	IP40					
	Operating temperature range	Operating: 0 to 50°C, Stored: –10 to 60°C (with no condensation and no freezing)					
	Operating humidity range	Operating/Stored: 35 to 85% RH (with no condensation)					
	Withstand voltage	1000 VAC for 1 minute between live parts and case					
	Insulation resistance	50 MΩ or more between live parts and case (at 500 VDC Mega)					
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s^2 acceleration, in X, Y, Z directions, for 2 hours each (de-energized)					
	Impact resistance	100 m/s^2 in X, Y, Z directions, 3 times each (de-energized)					
Temperature characteristics		±0.5% F.S. or less (based on 25°C)					
Connection		Power supply/Output connection: 5P connector, Sensor connection: 4P connector					
Material		Front case: PBT, Rear case: PBT					
Weight	With power supply/output connection cable	85 g					
	Without power supply/output connection cable	30 g					

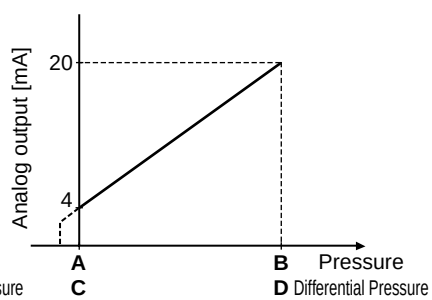
Note 1) Pressure range can be selected during initial setting.
Note 2) Auto shift function is not available when analogue output option is selected.
Also, analogue output option is not available when auto shift function is selected.
Note 3) The following units can be selected with unit conversion function:
For vacuum & compound pressure: kPa·kgf/cm^2·bar·psi·mmHg·inHg
For positive pressure & low pressure: MPa·kPa·kgf/cm^2·bar·psi
For low differential pressure: kPa·mmH$_2$O

Analogue Output

1 to 5VDC



4 to 20mADC

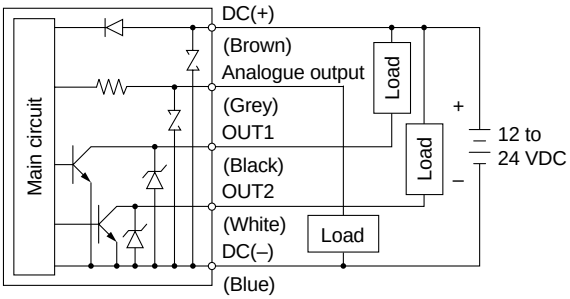


Range	Rated pressure range	A	B
For vacuum	0 to –101kPa	0	–101kPa
For compound pressure	–100kPa to 100kPa	–100kPa	100kPa
For positive pressure	0 to 1MPa	0	1MPa
	0 to 500kPa	0	500kPa

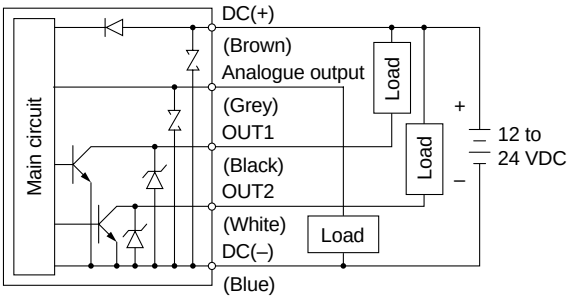
Range	Rated differential pressure range	C	D
For low differential pressure	0 to 2kPa	0	2kPa

Internal Circuit

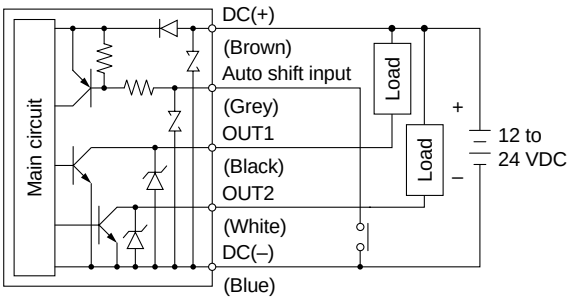
PSE300
NPN open collector output (2 outputs), Max. 30 V or 80 mA, residual voltage 1 V or less
Analogue output: 1 to 5 V
Output impedance: Approx. 1 kΩ



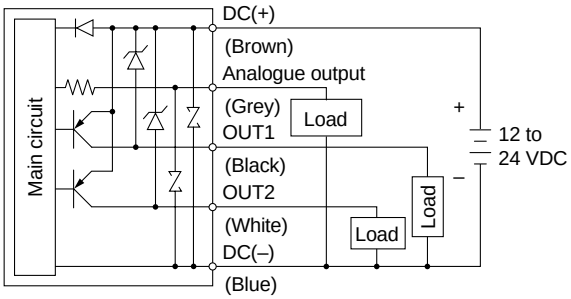
PSE301
NPN open collector output (2 outputs), Max. 30 V or 80 mA, residual voltage 1 V or less
Analogue output: 4 to 20 mA
Maximum load impedance: 300 Ω (12 VDC), 600 Ω (24 VDC)
Minimum load impedance: 50 Ω



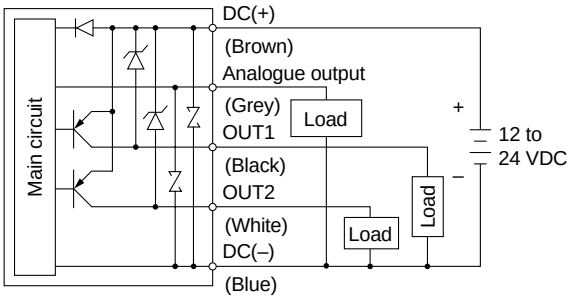
PSE302
NPN open collector output with auto shift input (2 outputs),
Max. 30 V, 80 mA, residual voltage 1 V or less



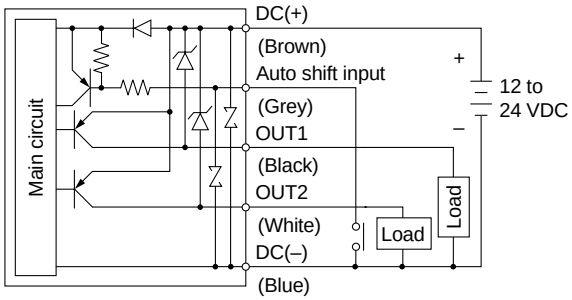
PSE303
PNP open collector output (2 outputs), Max. 80 mA, residual voltage 1 V or less
Analogue output: 1 to 5 V
Output impedance: Approx. 1 kΩ



PSE304
PNP open collector output (2 outputs), Max. 80 mA, residual voltage 1 V or less
Analogue output: 4 to 20 mA
Maximum load impedance: 300 Ω (12 VDC), 600 Ω (24 VDC)
Minimum load impedance: 50 Ω



PSE305
PNP open collector output with auto shift input (2 outputs),
Max. 80 mA, residual voltage 1 V or less



Descriptions

LCD

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

Output (OUT1) Display (Green)

Lights up when OUT1 is ON.

△ button

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

Output (OUT2) Display (Red)

Lights up when OUT2 is ON.

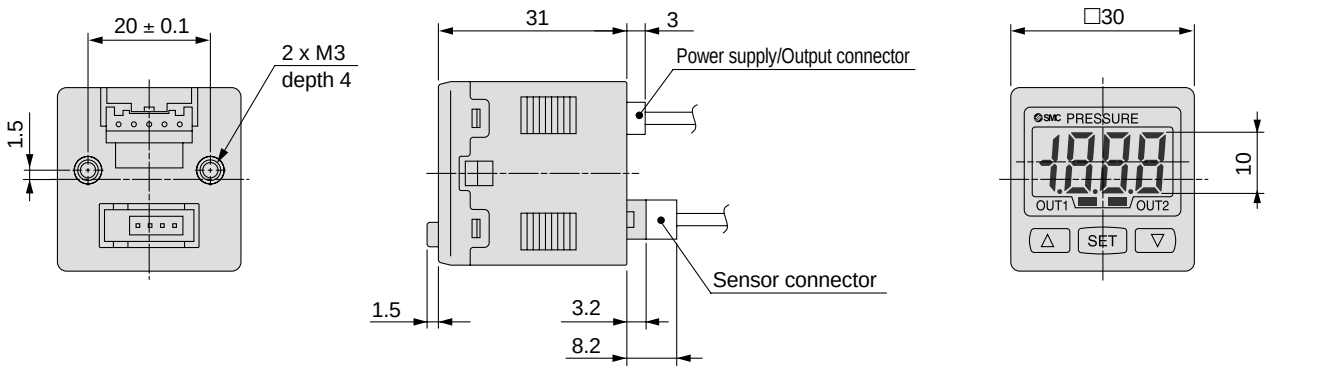
SET button

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

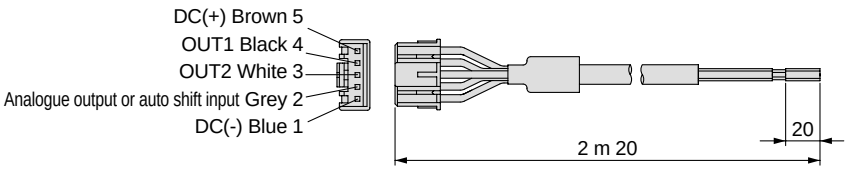
▽ button

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

Dimensions

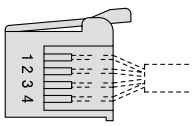


Power supply/Output connection cable (ZS-28-A)

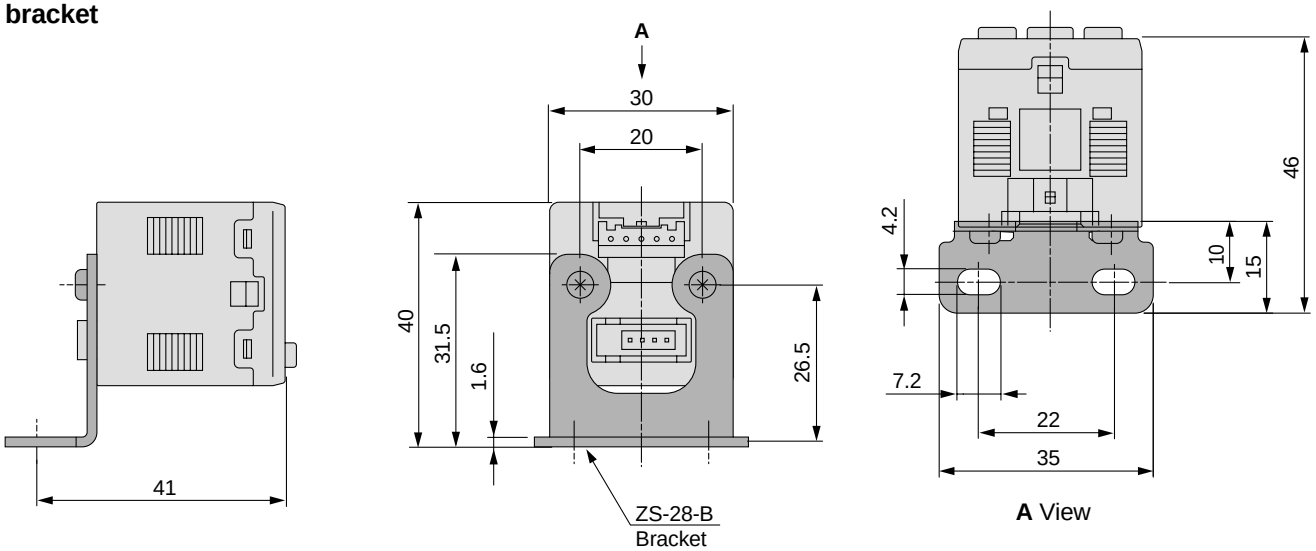


Sensor connector

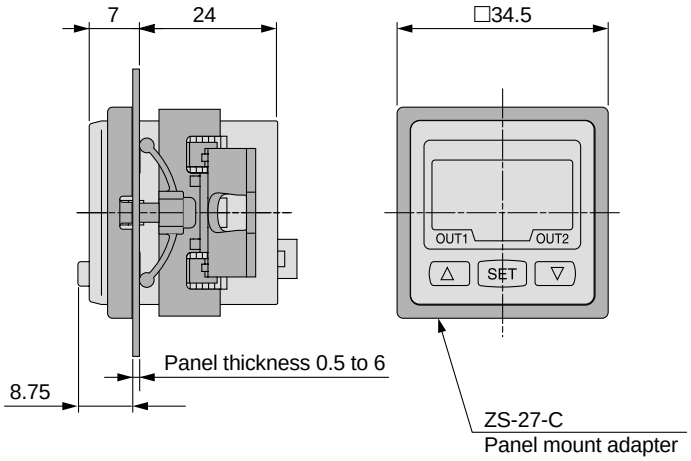
PIN no.	Terminal
1	DC(+)
2	N.C.
3	DC(–)
4	IN (1 to 5 V)



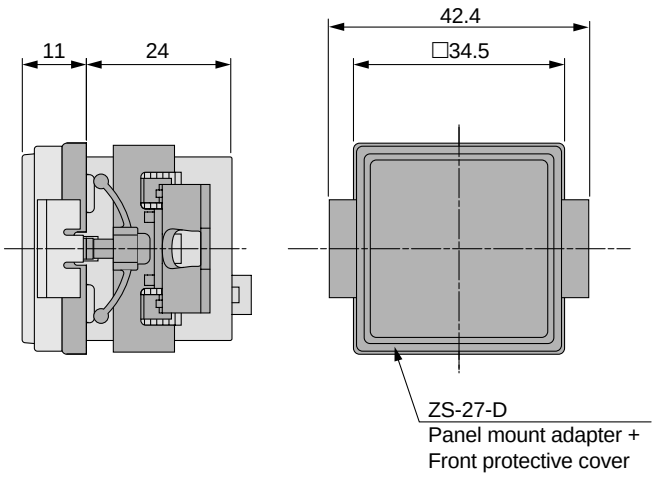
With bracket



With panel mount adapter



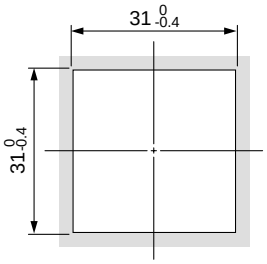
With panel mount adapter + Front protective cover



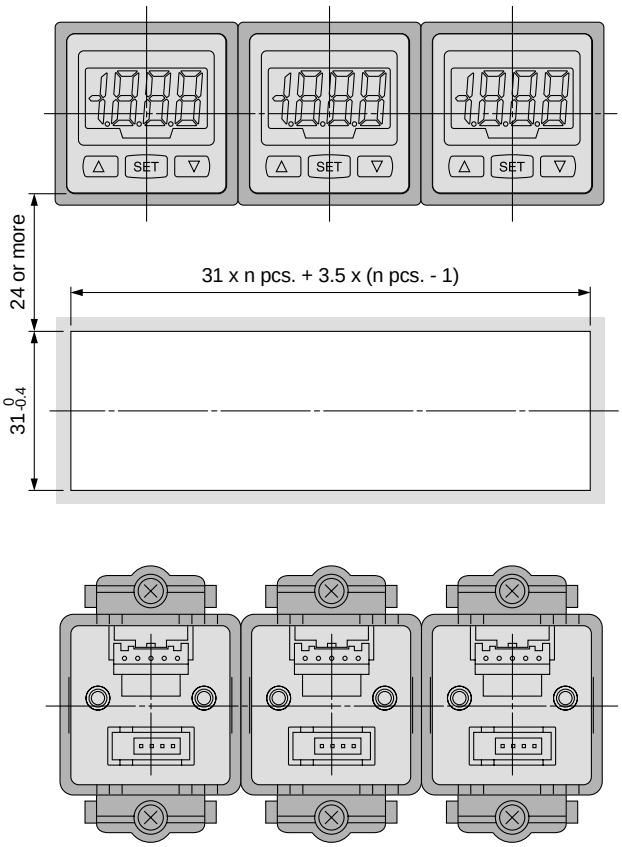
Dimensions

Panel cutout dimensions

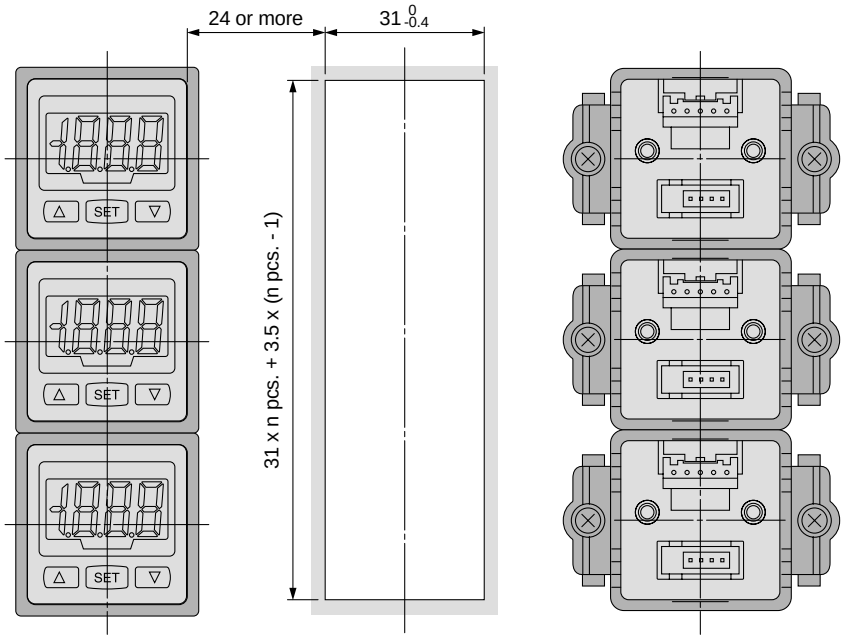
Mount of single unit



Horizontal stacking mount of multiple units (n pcs.)



Vertical stacking mount of multiple units (n pcs.)

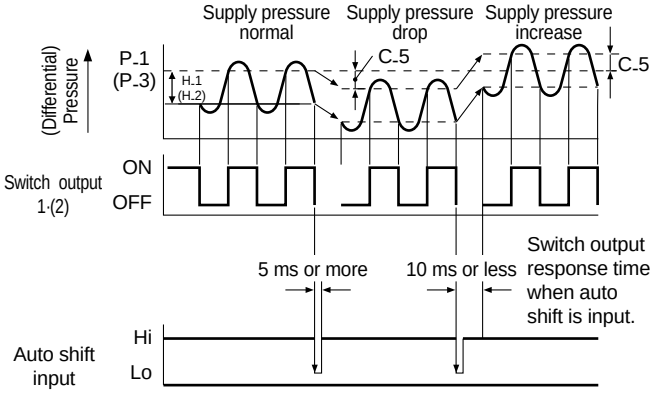


Functions

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



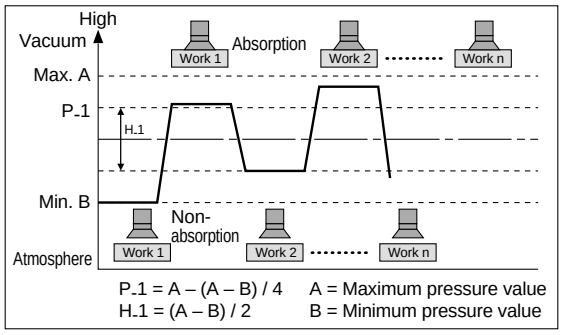
Possible set range for auto shift input

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

B Auto preset function

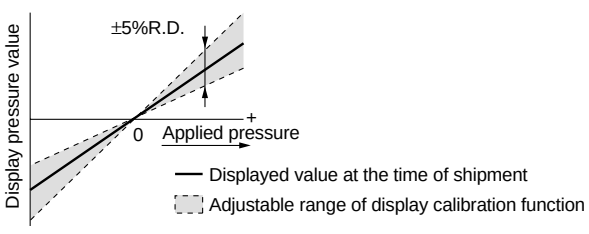
Auto preset function, when selected in the initial setting, calculates and stores the set value from the measured (differential) pressure.
The optimum set value is determined automatically by repeating vacuum and break with the target work piece several times.

Adsorption verification



C Display calibration function

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



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

D Peak and bottom display function

This function constantly detects and updates the maximum and minimum values and allows to hold the display value.

E Key lock function

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

F Reset function

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

G Error indication function

Error name		Error code	Description
Overcurrent error	OUT1	Er 1	Load current of switch output exceeds 80 mA.
	OUT2	Er2	
Residual pressure error		Er3	Pressure applied during the zero reset operation exceeds ±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 unconnected 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		Er4	Internal data error
		Er6	Internal data error
		Er7	Internal data error
		Er8	Internal data error

H Unit display switching function

Display units can be switched with this function.
Units that can be displayed vary depending on the range of the pressure sensors connected to the controller.

Pressure range		For compound pressure	For vacuum	For low pressure	For positive pressure		For low differential pressure
Applicable pressure sensor		**PSE533 PSE543 PSE563**	**PSE531 PSE541 PSE561**	**PSE532**	**PSE530 PSE560**	**PSE564**	**PSE550**
Set (differential) pressure range		–101 to 101 kPa	10 to –101 kPa	–10 to 100 kPa	–0.1 to 1 MPa	–50 to 500 kPa	–0.2 to 2.00 kPa
PA	kPa	0.2	0.1	0.1	–	1	0.01
	MPa	–	–	–	0.001	–	–
GF	kgf/cm²	0.002	0.001	0.001	0.01	0.01	–
bAr	bar	0.002	0.001	0.001	0.01	0.01	–
PSI	psi	0.05	0.02	0.02	0.2	0.1	–
inH	inHg	0.1	0.1	–	–	–	–
mmH	mmHg	2	1	–	–	–	1 mmH₂O

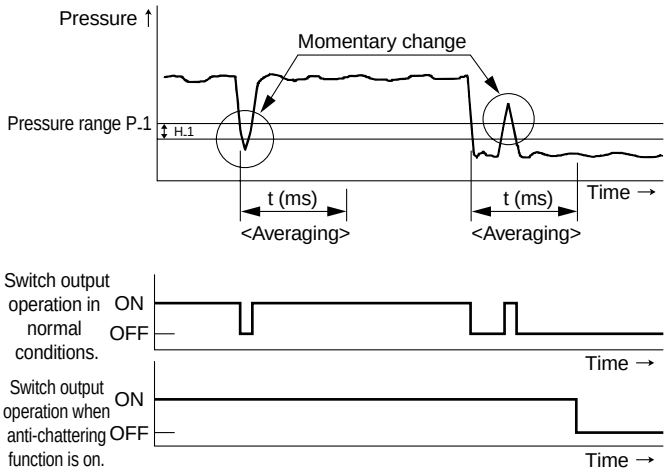
Functions

I 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.

Response time settings: 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.



Series PSE
Safety Instructions

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

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

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

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

Note 1) ISO 4414: Pneumatic fluid power – General rules relating to systems
Note 2) JIS B 8370: Pneumatic system axiom

⚠ Warning

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

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

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

Compressed air can be dangerous if handled incorrectly. Assembly, handling or maintenance of pneumatic systems should be performed by trained and experienced operators.

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

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

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

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

Pressure Switch Precautions 1

Be sure to read before handling.

Design & Selection

⚠Warning

1. Operate the switch only within the specified voltage.

Use of the switch outside the range of the specified voltage can cause not only malfunction and damage of the switch but also electrocution and fire.

2. Do not exceed the maximum allowable load specification.

A load exceeding the maximum load specification can cause damage to the switch or shorten its service life.

3. Do not use a load that generates surge voltage.

Although surge protection is installed in the circuit at the output side of the switch, damage may still occur if a surge is applied repeatedly. When a surge generating a load such as a relay or solenoid is directly driven, use a type of switch with a built-in surge absorbing element.

4. Since the type of fluid varies depending on the product, be sure to verify the specifications.

The switches do not have an explosion proof rating. To prevent a possible fire hazard, do not use with flammable gases or fluids.

5. Operate the switch within the regulating pressure range and maximum operating pressure.

Malfunction can occur if the pressure sensor is used outside the specified pressure range, and the sensor may be permanently damaged if used at a pressure that is above the maximum operating pressure.

Mounting

⚠Warning

1. If the equipment is not operating properly, do not continue to use it.

Connect air and power after installation, repairs, or modifications, and verify proper installation. The switch should be checked for proper operation and possible leaks.

2. Mount switches using the proper tightening torque.

When a switch is tightened beyond the specified tightening torque, the mounting screws, mounting bracket, or switch may be damaged. On the other hand, tightening below the specified tightening torque may cause the installation screws to come loose during operation.

Nominal thread size	Tightening torque (N·m)
M3	0.5 to 0.7

Wiring

⚠Warning

1. Verify the colour and terminal number when wiring.

Incorrect wiring can cause the switch to be damaged and malfunction. Verify the colour and the terminal number in the instruction manual when wiring.

2. Avoid repeatedly bending or stretching the lead wire.

Repeatedly applying bending stress or stretching force to the lead wire will cause it to break. If you believe the lead wire is damaged and likely to cause malfunctions, replace it.

3. Confirm proper insulation of wiring.

Make sure that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

Operating Environment

⚠Warning

1. Never use in an atmosphere of explosive gases.

The switches do not have an explosion proof rating. Never use in the pressure of an explosive gas as this may cause a serious explosion.

Maintenance

⚠Warning

1. Perform a periodical inspections for proper operation of the switch.

Unexpected malfunction or erroneous operation may lead to failure in ensuring safety.

2. Take precautions when using the switch for an interlock circuit.

When a pressure switch is used for an interlock circuit, devise a multiple interlock system to avoid trouble. Verify the operation of the switch and interlock function on a regular basis so that they operate properly.

Digital Pressure Switch Precautions 2

Be sure to read before handling.

Selection

⚠Warning

1. Monitor the internal voltage drop of the switch.

When operating below the specified voltage, it is possible that the load may be ineffective even though the pressure switch function is normal. Therefore, the formula below should be satisfied after confirming the minimum operating voltage of the load.

Supply voltage − Residual voltage of switch > Operating voltage of load

⚠Caution

1. Data of the controller (Pressure sensor) will be stored even after the power is turned off.

Input data (set pressure, etc.) will be stored in EEPROM so that the data will not be lost after the pressure switch is turned off. (Data will be stored for up to 100,000 hours after the power is turned off.)

Mounting

⚠Warning

1. Operation

Refer to the instruction manual for the button operation of the digital pressure switch.

2. Do not touch the LCD indicator.

Do not touch the LCD indicator face of the pressure switch during operation. Static electricity can change the readout.

3. Pressure port

Do not introduce wire, needles, or similar objects to the pressure port as this may damage the pressure sensor and cause malfunctions.

Wiring

⚠Warning

1. Do not wire in conjunction with power lines or high voltage lines.

Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Control circuits including switches may malfunction due to noise from these other lines.

2. Do not allow loads to short circuit.

(3-wire type)

Although digital pressure switches indicate overcurrent error if loads are short circuited, not all incorrect wiring connections can be protected. Take precautions to avoid incorrect wiring.

As for other pressure switches, the switches will be instantly damaged if loads are short circuited. Take special care to avoid reverse wiring between the brown power supply line and the black output line on 3-wire type switches.

3. Connect a DC(–) wire (blue) as close as possible to the DC power supply GND terminal .

Connecting the power supply away from the GND terminal can cause malfunctions due to noise from devices that are connected to the GND terminal.

Air Supply

⚠Warning

1. Use the switch within the operating fluid and ambient temperature range.

Ambient and fluid temperature range is as follows:

Digital pressure switches: 0° to 50°C

Other pressure switches: 0° to 60°C

Take measures to prevent freezing of moisture in circuits below 5°C, since this may cause damage to the O-ring and lead to malfunction. The installation of an air dryer is recommended for eliminating condensate and moisture. Never use the switch in an environment where there are drastic temperature changes even when these temperatures are within the specified temperature range.

Operating Environment

⚠Warning

1. Do not use in an area where surges are generated.

When there are units that generate a large amount of surge in the area around pressure switches, (e.g., solenoid type lifters, high frequency induction furnaces, motors, etc.) this may cause deterioration or damage to the switch's internal circuitry. Avoid sources of surge generation and crossed lines.

2. Operating environment

In general, the digital pressure switches featured here are not dust or splash proof. Avoid using in an environment where the likelihood of splashing or spraying of liquids exists. If used in such an environment, use a dustproof and splash proof type switch.

Maintenance

⚠Caution

1. Cleaning of the switch body

Wipe off dirt with a soft cloth. If dirt does not come off easily, use a neutral detergent diluted with water to dampen the soft cloth. Wipe the switch only after squeezing the excess water out of the dampened cloth. Then finish off by wiping with a dry cloth.

Specific Product Precautions 1

Be sure to read before handling.

■ Pressure Sensor

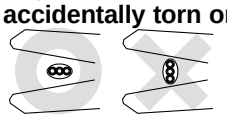
Handling

⚠ Warning

1. Do not drop, bump, or apply excessive impact while handling. Although the body of the sensor may not be damaged, the inside of the sensor could be damaged and lead to malfunction.

2. The tensile strength of the cord is 50 N or less. Applying a greater pulling force to it can cause malfunction. When handling, hold the body of the sensor – do not dangle it from the cord.

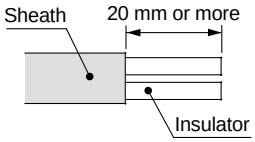
3. Care should be taken when stripping the outer cable covering as the insulator may be accidentally torn or damaged if incorrectly stripped, as shown on the right.



4. Do not use pressure sensors with corrosive and/or flammable gases or liquids.

5. Connection of sensor connector

•Cut the sensor cable as illustrated to the right.

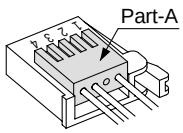


•Referring to the table below, insert each lead wire of the cable at the position marked with a number corresponding to the colour of the lead wire.

Connector no.	Wire core colour For PSE300 (ZS-28-C)
1	Brown (DC(+))
2	Not connected
3	Blue (DC(–))
4	Black (OUT: 1 to 5 V)

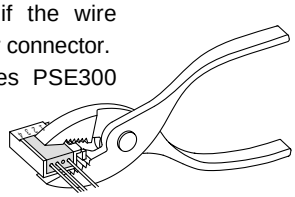
•Confirm that the numbers on the connector match the colours of the wires and that the wires are inserted to the bottom. Press Part A by hand for temporary fixing.

•Press in the central part of Part A vertically with a tool such as pliers.



•A sensor connector cannot be taken apart for reuse once it is crimped. If the wire arrangement is incorrect or if the wire insertion fails, use a new sensor connector.

•For connection to SMC Series PSE300 pressure switches, use sensor connectors (ZS-28-C) or e-con connectors listed below.



Manufacturer	Part No.
Sumitomo 3M	37104-3101-000FL
Tyco Electronics AMP	1-1473562-4
OMRON Corporation	XN2A-1430

•For detailed information about e-con connectors, please consult the manufacturers of the respective connectors.

•When piping, increase the length of the air tubing to allow for any possible warping, increased tension or moment load or increased tension, etc.

•In cases where SMC air tubing is not used, make sure the product has similar I.D. accuracy within ø4±0.3mm.

Handling

•Make sure that the air tubing is firmly inserted to avoid possible disconnection. (Tensile strength is approx. 25N when being inserted 8mm.)

•Consult SMC if you intend to use with fluids other than air, non-corrosive gas and non-inflammable gas.

Operating Environment

⚠ Warning

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

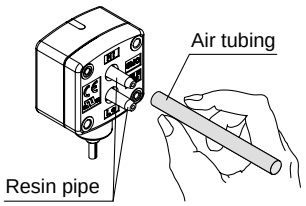
2. The pressure sensors do not have an explosion proof rating. Never use pressure sensors in the presence of flammable or explosive gases.

Piping Connection

⚠ Caution

•Cut the air tubing vertically.

•Carefully hold the air tubing and slowly push it into the resin pipe, ensuring that it is inserted by more than 8mm. For your information, the tensile strength is approx 25N when inserted by more than 8mm.



•Insert the low-pressure tubing into "Lo" pipe, and the high-pressure tubing into "Hi" pipe.

■ Controller

Handling

⚠ Warning

1. Do not drop, bump, or apply excessive impact (100 m/s^2) while handling. Although the body of the controller case may not be damaged, the inside of the controller could be damaged and cause malfunction.

2. The tensile strength of the power supply/output connection cable is 50 N; that of the pressure sensor lead wire with connector is 25 N. Applying a greater pulling force than the applicable specified tensile strength to either of these components can lead to malfunction. When handling, hold the body of the controller.

Specific Product Precautions 2

Be sure to read before handling.

■ Controller

Connection

⚠ Warning

1. Incorrect wiring can damage the switch and cause malfunction or erroneous switch output. Connections should be done while the power is turned off.

2. Do not attempt to insert or pull out the pressure sensor or its connector when the power is on. Switch output may malfunction.

3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these other lines.

4. If a commercial switching regulator is used, make sure that the F.G. terminal is grounded.

Operating Environment

⚠ Warning

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

2. Our pressure sensor controllers do not have an explosion proof rating. Never use pressure sensors in the presence of flammable or explosive gases.

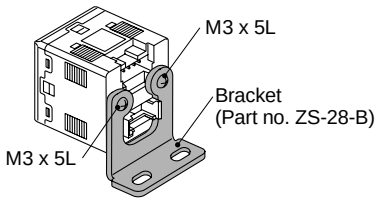
Mounting

⚠ Caution

1. Mounting with bracket

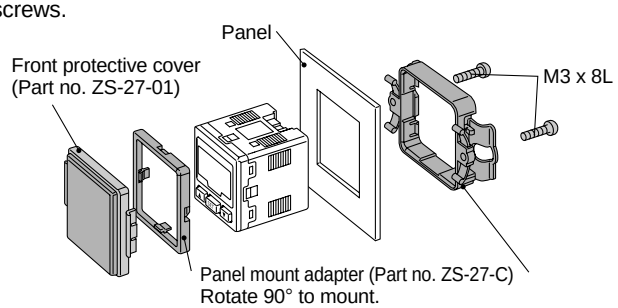
Mount the bracket on the body with two M3 x 5L mounting screws.

Tighten the bracket mounting screws at a tightening torque of 0.5 to 0.7 Nm.



2. Mounting with panel mount adapter

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

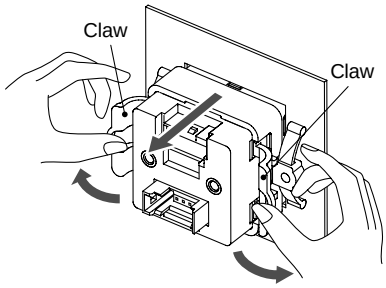


Mounting

3. Panel mount adapter removal

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

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

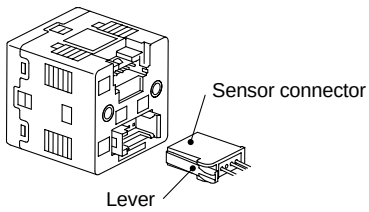


Wiring

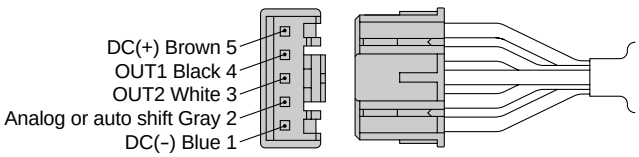
⚠ Caution

1. Connection and removal of sensor connector

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



2. Connector pin numbers for power supply/output cable



Series ***PSE***

Specific Product Precautions 3

Be sure to read before handling.

Set differential pressure range & Rated differential pressure range

⚠ Caution

Set the pressure within the rated differential pressure range.

The set differential pressure range is the range of differential pressure that can be set on the controller.
The rated differential pressure range is the range of differential pressure that satisfies the specifications (accuracy, linearity, etc.) of the sensor.
Although it is possible to set a value outside the rated differential pressure range, the specifications will not be guaranteed even if the valve stays within the set differential pressure range.

Sensor		Pressure range				
		-2kPa	0	2kPa	5kPa	10kPa
For low differential pressure	**PSE550**		0 2kPa -0.2kPa 2kPa			

Rated differential pressure range of sensor
Set differential pressure range of controller

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