



2-Color Display Digital Pressure Sensor Controller

PSE300 Series



The PSE300 series is to be discontinued as of September 2025. Please select the PSE300A series instead. Click [here](#) for details.

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

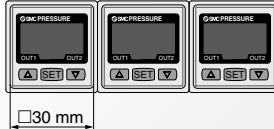
2-color display (Red/Green)

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.

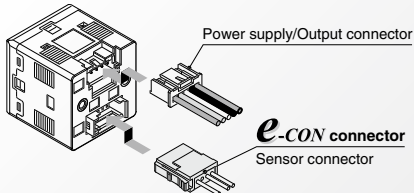
Possible to reduce panel fitting labor.



Response time

1 ms

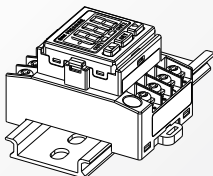
Connector type



● Functions

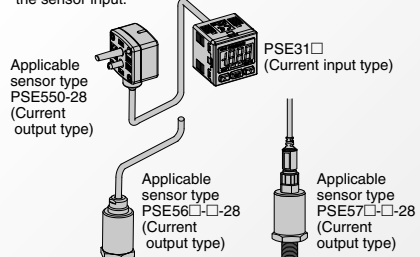
- Auto-shift function
- Auto-preset function
- Display calibration function
- Peak/Bottom values holding/display function
- Keylock function
- Zero-clear function
- Error indication function
- Display unit switching function
- Anti-chattering function

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



The PSE300 series is to be discontinued as of September 2025. Please select the PSE300A series instead. Click [here](#) for details.

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)}

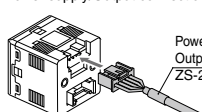
Note 1) Under the New Measurement Law, sales of switches with the unit switching function are not allowed for use in Japan.

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.

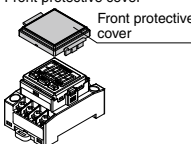
Order DIN rail separately. Refer to page 161.

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 (1 pc. per set)	ZS-28-C	For the PSE300 series (Excludes the PSE570 series)
	ZS-28-CA-4	For PSE570 series
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.

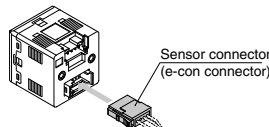
Option

NII	None
E	Front protective cover



Option 3

NII	None
C	Sensor connector

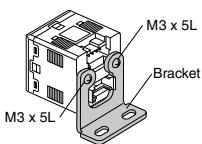
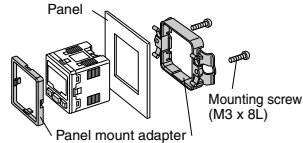
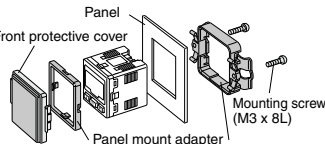


Note) The connector is not attached to the cable, but is included with the shipment.

Note) This connector cannot be used with the PSE570 series.

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 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.					
	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.					
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/UKCA marking, UL/CSA (E216656)						

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

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

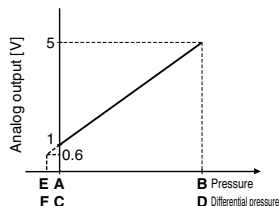
Also, analog output option is not available when auto-shift function is selected.
Extension analog output is not available for the PSE570 series.

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

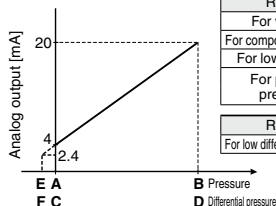
For vacuum & compound pressure: kPa-kgf/cm²-bar-psi-mmHg-inHg
For positive pressure & low pressure: MPa-kPa-kgf/cm²-bar-psi
For low differential pressure: kPa-mmH₂O

Analog Output

1 to 5 VDC



4 to 20 mA DC

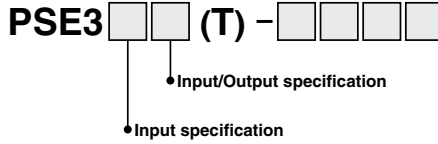


Range	Rated pressure range	A	B	E
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-100 kPa to 100 kPa	-100 kPa	100 kPa	—
For low pressure	0 to 100 kPa	0	100 kPa	-10 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa
	0 to 500 kPa	0	500 kPa	-50 kPa

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

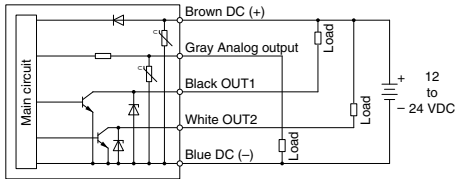
PSE300 Series

Internal Circuit and Wiring Example



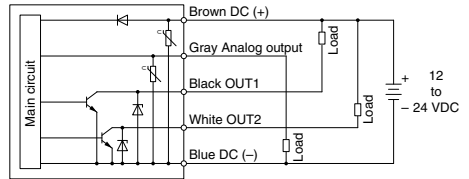
PSE30(T)

NPN (2 outputs) + Analog voltage output



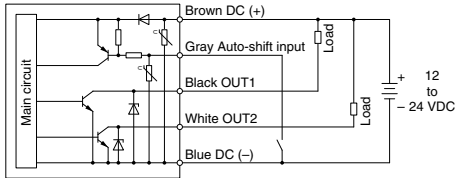
PSE31(T)

NPN (2 outputs) + Analog current output



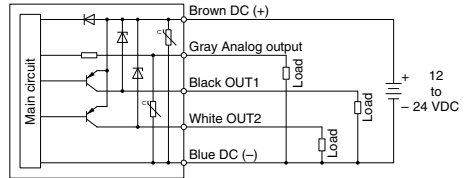
PSE32(T)

NPN (2 outputs) + Auto-shift 1 input



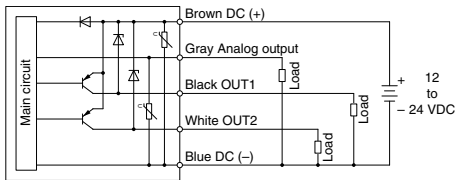
PSE33(T)

PNP (2 outputs) + Analog voltage output



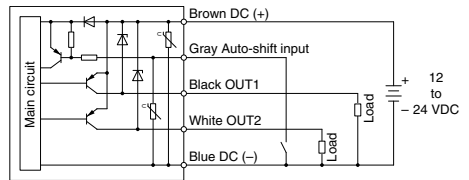
PSE34(T)

PNP (2 outputs) + Analog current output



PSE35(T)

PNP (2 outputs) + Auto-shift 1 input



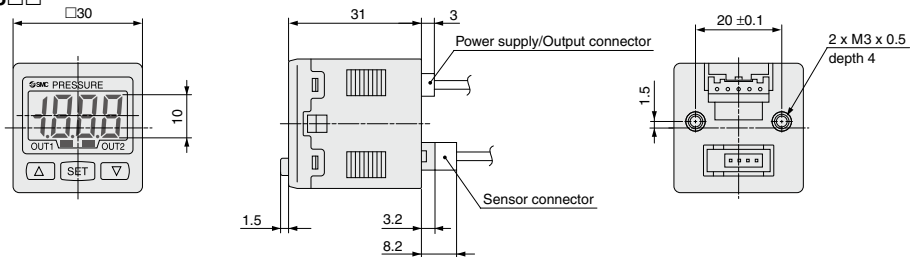
Connector for Sensor Connection

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)

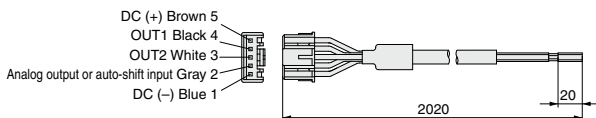
Note: The colors in () indicate the wire color of the PSE5 series.

Dimensions

PSE3□□



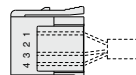
Power supply/Output connection cable (ZS-28-A)



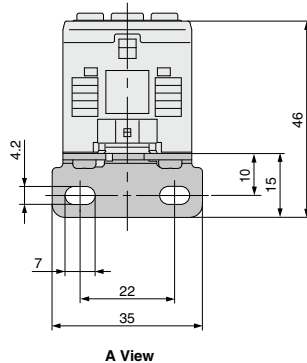
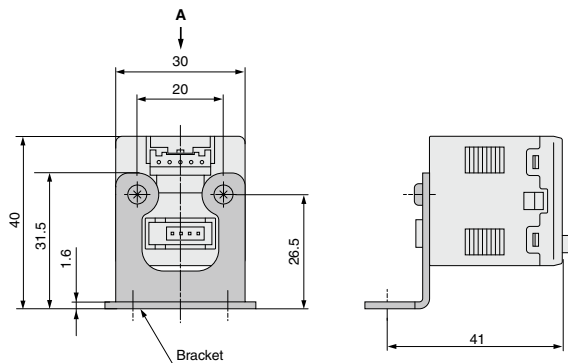
Sensor connector

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)

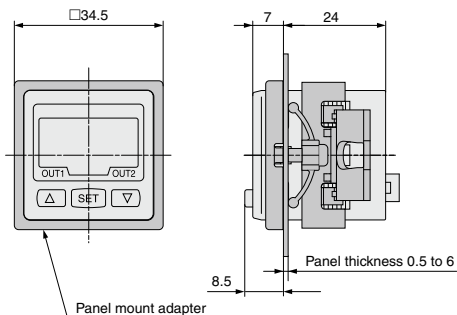
Note: The colors in () indicate the wire color of the PSE5□□ series.



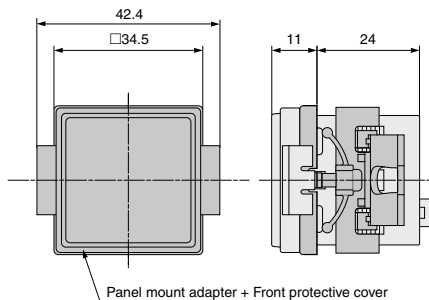
With bracket



With panel mount adapter



With panel mount adapter + Front protective cover

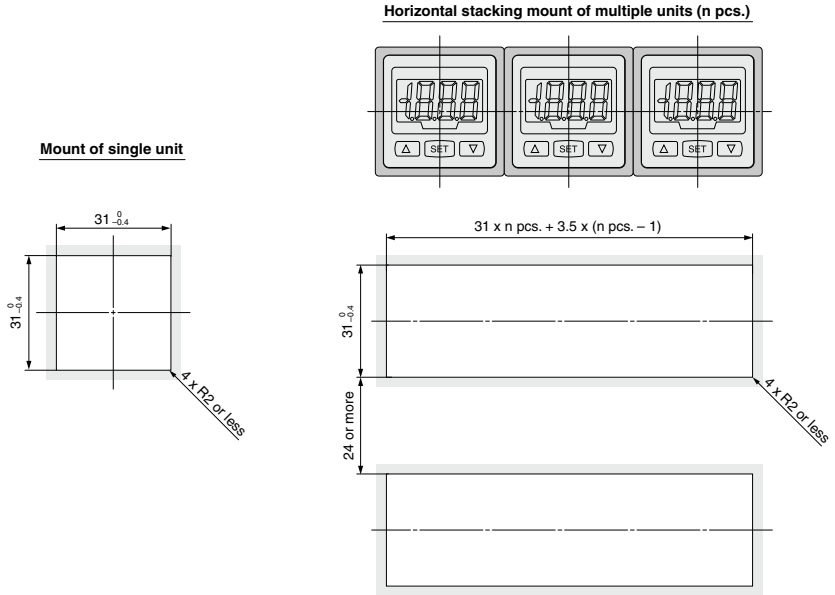


ZSE20
ISE20
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
PS
ISA3
ISA2
ISE35
PSE
IS
ISG
ZSM1

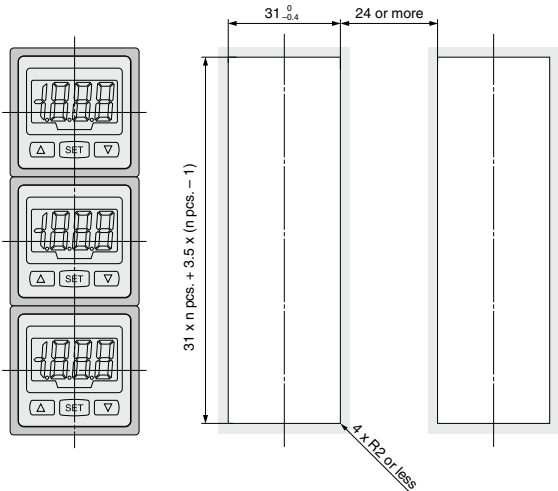
PSE300 Series

Dimensions

Panel fitting dimensions

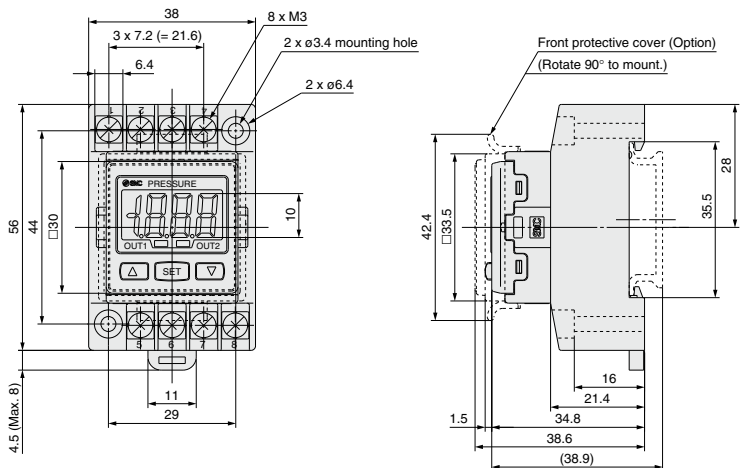


Vertical stacking mount of multiple units (n pcs.)



Dimensions

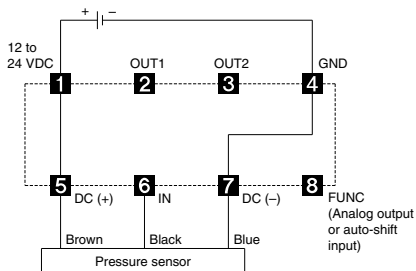
PSE3□□T



Connections

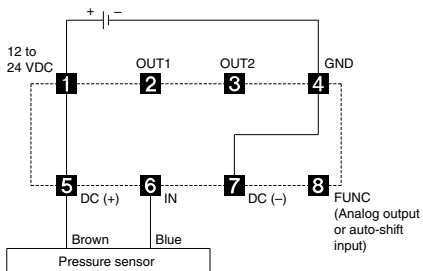
PSE3□□T

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



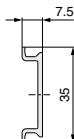
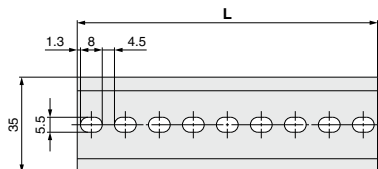
PSE31□T

(Current input: Pressure sensor 2-wire type)



DIN Rail

ISA-5-□



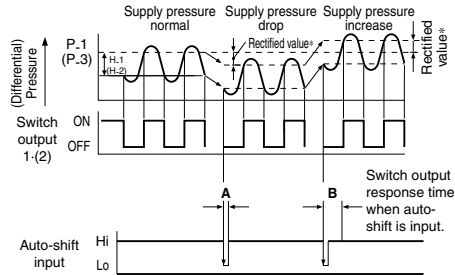
Part no.	L
ISA-5-1	73.0
ISA-5-2	135.5
ISA-5-3	173.0
ISA-5-4	210.5
ISA-5-5	248.0
ISA-5-6	285.5
ISA-5-7	323.0

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

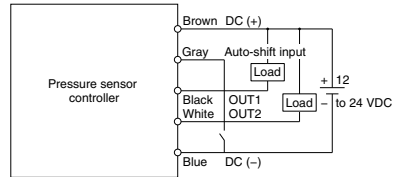
Auto-shift zero (PSE300 series only)

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

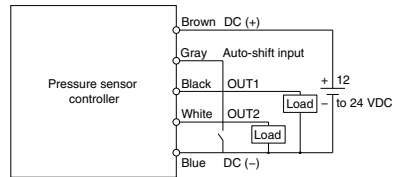
PSE□□2

PNP open collector output: 2 outputs



PSE□□5

PNP open collector output: 2 outputs

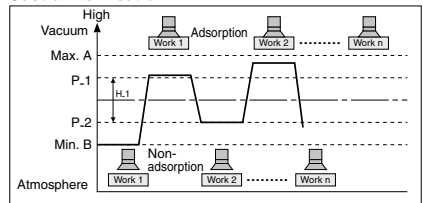


Note) The colors in the circuit diagram indicate the color of the lead wire when it is connected to the power supply/output connection cable (ZS-28-A).

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



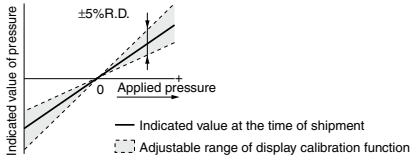
Formula for Obtaining the Set Value

	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.

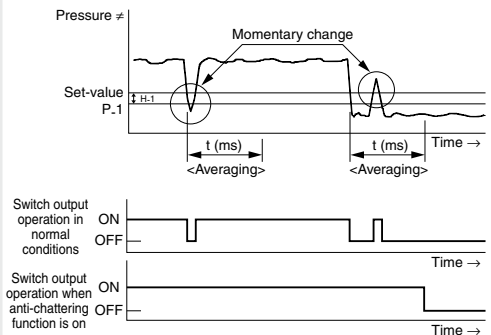
J Anti-chattering function

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