Thank you for purchasing the SMC PSE200 Series Multi channel Pressure Sensor Controller. Please read this manual carefully before operating this controller and understand the controller, its capabilities and limitations. Please keep this manual handy for future reference.

OPERATOR
• This operation manual has been written for those who have knowledge of machinery and apparatus that use pneumatic equipment and have full knowledge of assembly, operation and maintenance of such equipment.
• Please read this operation manual carefully and understand it before assembling, operating or providing maintenance service to the controller.
SAFETY

The Pressure Sensor Controller and this manual contain essential information for the protection of users and others from possible injury and property damage and to ensure correct handling. Please check that you fully understand the definition of the following messages (signs) before going on to read the text, and always follow the instructions. Please read the operation manuals of related apparatus and understand it before operating the controller.

---

**IMPORTANT MESSAGES**

<table>
<thead>
<tr>
<th>WARNING</th>
<th>Indicates a potentially hazardous situation that could result in death or serious injury if you do not follow instructions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE</td>
<td>Gives you helpful information.</td>
</tr>
</tbody>
</table>

---

**WARNING**

Do not disassemble, remodel (including change of printed circuit board) or repair. An injury or failure can result.

---

Do not operate beyond specification range. Fire, malfunction or controller damage can result. Please use it after confirming the specification.

---

Do not operate in atmosphere of an inflammable, an explosive and corrosive gas. Fire, an explosion and corrosion can result. This controller is not an explosion-proof type.

---

Prepare the double interlock by another system (Mechanical interlock etc.) and check operating normally, when using this controller for an interlock circuit. An accident by a malfunction may potentially result.

---

These instructions must be followed while in maintenance; Turn off the power supply, stop the supplied air, exhaust the residual pressure and verify the release of air before performing maintenance. Otherwise it can cause injury.
SAFETY (continue)

NOTE
Follow the instructions given below when handling your controller. Otherwise, the controller may be damaged or may fail, thereby resulting in malfunction.
• Do not drop it, bring it into collision with other objects or apply excessive shock (980m/s² or more).
• Do not pull the lead wire with force or lift the controller by holding the lead wire. Pulling strength is as follows.
  Power and output lead wire: less than 50N
  Lead wire with connector for sensor: less than 25N
• Do not use in place which oil or chemical splashes.
• Perform wiring and cable correctly.
• Do not perform wire or cable while power is on.
• Do not use wire or cable with power cable or high-voltage cable in the same route.
• Connect Terminal FG to the ground when using a switching regulator obtained on the commercial market.
• Insert a noise filter (line noise filter, ferrite element or other element) between the switching regulator and controller when analog output is used.
• Do not insert and pull pressure sensor (connector) with the power turned on.
• Do not press the buttons with a sharply pointed tool.
• Start measurement three seconds after turning the power on. Measurement output will be OFF for the first three seconds after turning the power on.
• Warm-up for 20 to 30 minutes when detecting fine pressure.
  Initial drift of about ±1%F.S. occurs immediately after turning the power on.

Model Indication Method

PSE20□□□□

Option 2
No Symbol: None
4C: Connector for Sensor Lead Wire (4pcs)

Option 1
No Symbol: None
A: Panel Mount Adapter
B: Panel Mount Adapter
  + Front Face Protective Cover

Unit Specification
No Symbol: Unit selection function provided (NOTE 1)
M: SI units fixed (NOTE 2)

Input / Output Specification
0: NPN open collector 5 outputs + Auto shift Input
1: PNP open collector 5 outputs + Auto shift Input

NOTE 1: The new Measurement Law prohibits use in Japan of controller with a unit selection function.
NOTE 2: Fixed unit for compound, vacuum, low pressure is: kPa
  for positive pressure is: MPa
Name and Functions of Individual Parts

Main Unit
Switch Output Lamp: Lit when OUT1 (CH1 to CH4) and/or OUT2 (CH1 only) is ON.
LCD Display: Displays the current status of pressure, setting mode, selected indication unit and error code.
△ Button: Selects a mode and increases a set ON/OFF value.
▼ Button: Selects a mode and decreases a set ON/OFF value.
SET Button: Changes the mode and sets a set value.
Unit Display (Orange) without unit selection function, the unit is fixed to SI (MPa or kPa).
Unit label: Attach the unit label (kgf/cm², bar, PSI, inHg, mmHg) with a unit selection function.
Channel Indicator: Indicate the channel (1 to 4) that is selected at that time.

Unit label
Unit Display (Orange)
LCD Display (Orange)
Switch Output Lamp (Red)
Channel Indicator (Red)
△ Button
SET Button
▼ Button

Accessories
Power and Output Lead Wire with Connector (2m): ZS-26-A

Options
Connector for Sensor Lead Wire (1pc): ZS-28-C

Panel Mount Adapter with set screws M3 × 8L (2pcs): ZS-26-B
Panel Mount Adapter with set screws M3 × 8L (2pcs) + Front Face Protective Cover: ZS-26-C
Front Face Protective Cover with waterproof seal: ZS-26-01
□ 48 Conversion Adapter: ZS-26-D
(It is an adapter for attaching PSE200 series in the panel cut size of PSE100 series.)

Waterproof seal (Accessory)
Front Face Protective Cover
□ 48 Conversion Adapter
Panel Mount Adapter
Installation

Mounting by Panel mount adapter

• Fix the panel mount adapter to the controller with the set screws M3 × 8L (2pcs) as attached.

48 Conversion Adapter (ZS-26-D)
Waterproof seal (Accessory)
Front Face Protective Cover (ZS-26-01)
Panel Mount Adapter (ZS-26-B)

Panel thickness: 0.5 to 8mm

Connection

• Make connection after turning the power off.
• Install the lead wire separately from the route for power cable or high-voltage cable. Otherwise, malfunction may potentially result due to noise.
• Be sure to ground Terminal FG when using a switching regulator obtained on the commercial market.

If analog output is performed connecting to a switching regulator obtained on the market, switching noise will be superimposed and product specification can no longer be met. That can be prevented by inserting a noise filter, such as a line noise filter and a ferrite element, between the switching regulator and the controller, or by using a series power supply instead of a switching regulator.

Notice when removing the controller

• The controller with panel mount adapter can be removed from facility after removing two screws as shown in a figure, by making insert the suitable thin card for the hook of both the sides, pull a panel mount adapter to the front, and remove it.

If panel mount adapter is drawn forward with nail caught, the adapter and controller may be damaged.
Installation (continue)

Attaching the connector to the lead wire

- Sensor wire is stripped as shown in the right figure. (Refer to the appended table on page 30.)
- The core of the corresponding color shown in the following table is put into the pin of the number stamped on the connector for sensor connection to the back.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown (DC+)</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>Blue (DC-)</td>
</tr>
<tr>
<td>4</td>
<td>Black (IN : 1 to 5VDC)</td>
</tr>
</tbody>
</table>

- It checks that the above-mentioned preparation work has been performed correctly, and A part shown in right figure is pushed by hand and makes temporary connection.
- A part center is straightly pushed in by tools, such as pliers.
- Re-use cannot be performed once it connects the connector for sensor connection completely.
- When you fail in the connection mistake of a core and a pin, or the plug of wire, please use the new connector for sensor connection.

Example of Internal Circuit and Wiring

Connector

Connector Connecting/Disconnecting

- When connecting the connector, insert it straight onto the pin and lock the connector into the square groove in the housing until connector clicks.
- When disconnecting the connector, push down the lever by thumb to disengage the lever claw from the square groove. Then pull out the connector straight.

Pin No. of the connector for power and output lead wire
Example of Internal Circuit and Wiring (continue)

Output Specification
When the lead wire with SMC Power and Output Lead Wire (type ZS-26-A) is used, the colors of wire (Brown, Blue, Black, White, Gray, Red, Green, Yellow) will apply as shown on circuit diagram.

PSE200-(M) : NPN Open Collector  Five outputs + Auto shift Input
Max. 30V, 80mA  Residual voltage 1V or less

PSE201-(M) : PNP Open Collector  Five outputs + Auto shift Input
Max. 80mA  Residual voltage 1V or less

Setting

Setting Procedures

Measurement Mode
For connecting at least 1 sensor other than PSE530 series.

Auto identification function resetting
For connecting only PSE530 series.

Initialize
Pressure range, output mode, response time and auto/manual setting.

Pressure Setting
Input a set value for pressure to perform switch output.

Special Setting
Select or Set Fine adjustment of displayed value, Copy setting, Auto shift, Auto identification.

Measurement Mode
Detects pressure, displays values and performs switching. Other functions such as zero clear can also be set if necessary.

Auto identification function resetting
- Press the [ ] button and [SET] button at the same time longer than two seconds to display [FSt].
- Press the [SET] button three times. ([FSt] displays in order of [CPy] [SH1] [Aon].)
- If [Aon] is displayed, press the [ ] or [ ] button to display [AoF], and then press the [SET] button.
- Setting for the Auto identification function is ON when units are shipped from the factory.

(Auto identification ON) Aon ⇔ AoF (Auto identification OFF)
Initialize
Select the setting channel by pressing the \( \text{A} \) button and keep pressing the \( \text{SET} \) button longer than 2 seconds. Initialize can get started.

1. Pressure Range Setting
   • Select the pressure range suitable for the sensor connected. (Refer to the page 29 for the labels printed on the units stuck on the display part)
   • Press the \( \text{A} \) or \( \text{V} \) button and select the pressure range. Press the SET button to set.

\[
\begin{align*}
\text{in0} & \iff \text{in1} \iff \text{in2} \iff \text{in3} \\
(\text{For Compound}) & \iff (\text{For Vacuum}) \iff (\text{For Low Pressure}) \iff (\text{For Positive})
\end{align*}
\]

(For Compound) \( \pm 101 \text{kPa} \)
(For Vacuum) \( -101 \text{kPa} \)
(For Low Pressure) \( 101 \text{kPa} \)
(For Positive) \( 1 \text{MPa} \)
[Default]

Note) When automatic identification mode is set, it is changed to pressure range of connected pressure sensor (Series PSE530) when power is supplied.
When range setting is changed, pressure set value changes. So conduct pressure setting again.

2. Selecting Display Unit
(Only when unit switch function is built in.)
Refer to page 16.

3. Output Method Setting
1) The output style for OUT1 is set.
   • Press the \( \text{A} \) or \( \text{V} \) button and select the normally open or the normally closed. Next, press the SET button to set.

\( \text{Normally open} \) \( 1\text{n0} \iff 1\text{nC} \) (Normally closed)

2) The operating mode and the output style for OUT2 is set. (CH1 only)
   • Press the \( \text{A} \) or \( \text{V} \) button and the SET button to set, as in OUT1.

\( \text{Normally open} \) \( 2\text{n0} \iff 2\text{nC} \) (Normally closed)

Output Mode Selection

Hysteresis Mode
- \( \text{ON} \): High pressure: Compound/For positive
- \( \text{OFF} \): High vacuum: For vacuum

Window Comparator Mode
- \( \text{ON} \): High pressure: Compound/For positive
- \( \text{OFF} \): High vacuum: For vacuum

Hysteresis Mode
- \( \text{ON} \): High pressure: Compound/For positive
- \( \text{OFF} \): High vacuum: For vacuum

• The following is given using OUT1 as an example. The descriptions for OUT2 are the same as those for OUT1, under the conditions that \( [n \_1] \) and \( [n \_2] \) should be replaced by \( [n \_3] \) and \( [n \_4] \), \( [P \_1] \) and \( [P \_2] \) should be replaced by \( [P \_3] \) and \( [P \_4] \).
• If input pressure fluctuates around the set point when hysteresis is set at 2 digits or less in hysteresis mode, switch output may cause chattering
• Hysteresis is fixed at 3 digits in window comparator mode. When the pressure is set, the space of 7 digits at min. needs to be taken.
→ The space below 7 digits doesn’t allow the operation.
Selecting Display Unit
When unit switch function is built in.

The indication unit can be selected freely. Pressing the ▲ or ▼ button will change the unit and will automatically convert set values. Press the SET button to set and to move to setting the output mode.

<table>
<thead>
<tr>
<th>LCD Display</th>
<th>PA</th>
<th>GF</th>
<th>bAr</th>
<th>Psi</th>
<th>inH</th>
<th>nH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>kPa</td>
<td>kgf/cm²</td>
<td>bar</td>
<td>psi</td>
<td>inH</td>
<td>mmHg</td>
</tr>
<tr>
<td>For compound and vacuum</td>
<td>kPa</td>
<td>kgf/cm²</td>
<td>bar</td>
<td>psi</td>
<td>inH</td>
<td>mmHg</td>
</tr>
<tr>
<td>For low pressure</td>
<td>kPa</td>
<td>kgf/cm²</td>
<td>bar</td>
<td>psi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For positive</td>
<td>MPa</td>
<td>kgf/cm²</td>
<td>bar</td>
<td>psi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pressure setting mode (continue)

3. Selection of OUT2 [P_3, P_4] setting mode (CH1 only)
   - Set button or button to change and set the set value as in 1,2.
     Value increases by one digit, per a push on button.
     Value decreases by one digit, per a push on button.
   - Check the corrected value, then press the SET button.

4. Auto shift compensation value setting
   - [C_5]/[C_3] (for CH2 to CH4) and Auto shift corrected value will flicker alternately. Whithout Auto shift input setting, correction value displays Zero.
   - The pressure setting mode will be completed and return to the Measurement mode.

Auto Preset Setting

In case auto preset is selected in Initialize, this function stores in the memory a pressure setting value, which is calculated from a measurement pressure as a reference value. The set value of controller is automatically set to an optimum value by repeating absorption and non-absorption several times with a sample, which is to be set up.

1. Selection of OUT1 auto preset mode
   - Press the button during the Measurement mode to select channel, and then, press the SET button to display [AP1].

2. Preparation of unit for OUT1
   - Prepare a unit for which pressure for OUT1 is to be set.

3. Selection of auto preset value of OUT1 setting
   - Press the button to display [A1L].
   - Operate system so that pressure may change.
   - Detection will be made and a set value will be stored in the memory automatically.
     (In case OUT1 setting is not necessary, press button and button at the same time longer than one second to skip into [AP2].)

4. Selection of OUT2 auto preset mode (CH1 only)
   - Press the SET button to display [AP2].

5. Preparation of unit and setting for OUT2
   - Prepare a unit for which pressure for OUT2 is to be set.
   - Press the SET button to display [A2L] is displayed and detection will be made and a set value will be stored in the memory automatically.
     (In case OUT2 setting is not necessary, press button and button at the same time longer than one second to skip into Measurement mode.)
6. Set up of OUT2 auto preset value
• Press the SET button to finish the auto preset mode. The mode will return to the Measurement mode.

A pressure setting value in auto preset is as follows.

ON = A - (A - B)/4  A = maximum pressure value
OFF = B + (A - B)/4  B = minimum pressure value

---

**Special Setting**

**Fine adjustment function of displayed value**
This makes no dispersion on CH1 to CH4 each output value, and make same displayed value. It is possible to do fine adjustment within ±5%F.S. (For compound only : ±2.5%F.S.) range of the reading data on the displayed value of pressure sensor.

• Press the button and SET button at the same time longer than two seconds to display [FSt]. If fine adjustment is unnecessary, press SET button while [FSt] is displayed. Move to copy function.
• Select channel by button or button.
• Press the SET button, and [FSt] and the current value will flicker alternately.
• Increase or reduce value by button or button. (It is possible to increase/reduce within ±5%R.D.)
• Check the value, then press the SET button. [FSC] and the adjusted value(%) will flicker alternately.
• Press the SET button to return display of [FSt]. Perform display of [FSt] setting of other channels like the above by button or button.
• After setting of other channels in [FSt] display is finished, press the SET button there. Move to copy function.

Note) When Fine adjustment mode is conducted, pressure setting value is sometimes changed by ±1digit.
Copy function

1) 5 items such as Pressure setting value, Range setting, Display unit, Output type, Response time are copied.

2) If copied from CH1 → CH2, CH3, CH4, CH1 OUT1 information is copied. CH2, CH3, CH4 information is copied only into OUT1 of CH1 if copied from CH2, CH3, CH4 → CH1.

- [CPy] is displayed.
- In case Copy mode setting is not necessary, press the SET button to skip into Auto shift mode.
- Select channel to be copied displayed in channel indicator by ▲ button or ▼ button.
- Press the SET button so that the channel display of a copied material changes from blink to lighting.
- [CPy] and the channel to be pasted will flicker alternately. Next, select channel to be pasted by ▲ button or ▼ button.

C_1 (CH1) ⇔ C_2 (CH2) ⇔ C_3 (CH3) ⇔ C_4 (CH4)

- Press the SET button, and return to [CPy] display.
- ▲ button or ▼ button is pushed again and the same operation is repeated to copy other channels.
- After setting is finished, moved from [CPy] display to Auto shift mode.

Note) When Copy mode is conducted, pressure setting value is sometimes changed by ±1 digit.

Auto shift function

This function corrects the setting value of each switch output according to change of pressure source. Even if pressure source is changed, this can do correct decision on switch output. Refer to page 24 or 25 for detail.

- Press the ▲ button or ▼ button in the state where [SH1] is displayed, and [CH1] and [on]/[oF] will flicker alternately. Pushing SET button with the indication of [SH1] makes it shifted to the auto identification mode.

(Auto shift ON) on ⇔ oF (Auto shift OFF)

- Select Auto shift mode by ▲ button or ▼ button, and press the SET button.
- Similarly, [CH2], [CH3] and [CH4] press the ▲ button or ▼ button, and select Auto shift mode.
- After Auto shift mode setting of all channels is finished, if the SET button is pressed, it will shift to Auto identification function.

Auto identification function

This function identifies pressure range of pressure sensor connected to this controller. When [Aon] is set at the Auto identification mode, and when re-applied power at [Aon] status, this function actuates. (Special pressure sensor (SMC PSE530 series) is applicable to this function. Other pressure sensor is not applicable.)

- Select Auto identification mode by ▲ button or ▼ button, and press the SET button.
- All the setting mode will be completed and return to the Measurement mode.
**Conditions and explanations for Auto shift function**

- Keep constant pressure for 10ms or more from the close signal of Auto shift input.
- At Auto shift input, display indicates [ooo] for approx. 1 sec. And the pressure at that time is memorized to [C_5] or [C_3] as corrected value. The switch set as Auto shift mode at the time of initial setting operates with the value which applied corrected value [C_5]/[C_3] to setting value.
  - CH1 will operate with Auto shift function.
    The operating value of OUT1, OUT2 applies corrected value [C_5] to the set value [P_1] to [P_4] or [n_1] to [n_4].
  - CH2 to CH4 will operate with Auto shift function.
    The operating value of OUT1 applies corrected value [C_3] to the set value [P_1], [P_2] or [n_1], [n_2].
- Span is 15ms or less until switch output perform soon after Auto shift input.
- When corrected set value exceed the set pressure range with Auto shift input, the value is changed to be within the range of set pressure.
- When Auto shift function is turned off, corrected value becomes zero.
- When Auto shift function of all channels is turned off, even if Auto shift input is Lo (Non Voltage input) does not show [ooo].
- Correct value [C_5] or [C_3] after Auto shift input vanish when off the power.
- Correct value [C_5] or [C_3] for Auto shift input function is reset as zero (Initial value) when re-supplied power.

**Using with Auto shift input, accepted set range is like below.**

<table>
<thead>
<tr>
<th>Source</th>
<th>Pressure range</th>
<th>Set pressure range</th>
<th>Accepted set range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum</td>
<td>-101kPa - 101kPa</td>
<td>-101kPa - 101kPa</td>
<td>-101kPa - 101kPa</td>
</tr>
<tr>
<td>Compound</td>
<td>-101kPa - 101kPa</td>
<td>-101kPa - 101kPa</td>
<td>-101kPa - 101kPa</td>
</tr>
<tr>
<td>Low pressure</td>
<td>-10kPa - 101kPa</td>
<td>-10kPa - 101kPa</td>
<td>-10kPa - 101kPa</td>
</tr>
<tr>
<td>Positive</td>
<td>-100kPa - 1MPa</td>
<td>-100kPa - 1MPa</td>
<td>-100kPa - 1MPa</td>
</tr>
</tbody>
</table>

Note) No EEPROM in the memory of corrected value.
Other Functions

Peak and Bottom Hold Display Function
Maximum and minimum values are always detected and updated during measurement. Displayed values can be held.
• Press the button longer than 2 seconds.
• Select Peak/Bottom mode by button or button, and press the SET button.
  • [n_P] (Peak mode) : Flickers the maximum pressure value.
  • [n_b] (Bottom mode) : Flickers the minimum pressure value.
  • [n_n] (w/o Peak/Bottom mode) : Return to the Measurement mode.
  
  \[
  \text{n\_P} \iff \text{n\_b} \iff \text{n\_n}
  \]

  (Peak mode) (Bottom mode) (w/o Peak/Bottom mode)

  • To reset holding, press the button, button, or SET button.

Key Lock Function
This function prevents errors such as changing a set value by mistake. Set [Loc] (lock mode) in order not to accept button operation.

Lock
• Keep pressing the button longer than four seconds.
  • Remove the finger off the button when [UnL] is displayed.
  • Press the button or button to set the display to [LoC].
  • Pushing SET button makes it shifted to the Measurement mode.

Unlock
• Keep pressing the button longer than four seconds.
  • Remove the finger off the button when [LoC] is displayed.
  • Press the button or button to set the display to [UnL].
  • Pushing SET button makes it shifted to the Measurement mode.

Zero Clear Function
For measured pressure in ambient pressure and within the range of ±5%F.S. (For compound pressure only, ±2.5%F.S.), displayed value can be adjusted as zero.
• Press continuously the and buttons simultaneously more than one second to reset to “0” on the display. Please press button before button. In case of pressing button first, channel select function may operate.
• The mode will return to the Measurement mode automatically.

Channel selects Function
• Per one push button, channel selection can be done, like [1 → 2→3→4→1→…]. Display shows pressure value, which is measured at the channel selected.

Channel scans Function
• Keep pressing button for two seconds or more. It changes indicating the channel indicated ever two seconds and measuring pressure corresponding with it.
• To reset this function, press button again for two seconds or more.
Error Display Function
This function displays error location and nature when a problem or an error occurs.

<table>
<thead>
<tr>
<th>Error name</th>
<th>Error display</th>
<th>Contents</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over current error</td>
<td>OUT 1</td>
<td>Er 1</td>
<td>Over 80mA load current of switch output flows.</td>
</tr>
<tr>
<td></td>
<td>OUT 2</td>
<td>Er 2</td>
<td>Performing zero reset, ±5%F.S. (For compound : ±2.5%F.S.) or more pressure applied to ambient pressure. *After 2 sec., measurement mode recovers automatically.</td>
</tr>
<tr>
<td>Residual pressure</td>
<td>Er 3</td>
<td></td>
<td>After changing an applied pressure into ambient pressure, re-perform zero reset.</td>
</tr>
<tr>
<td>error</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied pressure</td>
<td>---</td>
<td></td>
<td>Check connection and wiring of a sensor. And set back an applied pressure into within set pressure range.</td>
</tr>
<tr>
<td>error</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System error</td>
<td>Er 5</td>
<td></td>
<td>Off the power, internal data error causes this display.</td>
</tr>
<tr>
<td></td>
<td>Er 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Er 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Er 8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* If the above remedy can’t recover the operation, the error needs to be invetigated at SMC.

Unit Label

How to use the labels printed the units.
In order to display the selected unit, the unit label according to the pressure range or the display unit is attached.

When unit selection function is not provided.
Use the suitable label in the following labels by setup of the pressure range.

<table>
<thead>
<tr>
<th>LCD Display</th>
<th>in0 (Compound)</th>
<th>in1 (Vacuum)</th>
<th>in2 (Low press.)</th>
<th>in3 (Positive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Label</td>
<td>kPa</td>
<td>MPa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When unit selection function is provided.
Use the suitable label in the following labels by setup of the display unit.

<table>
<thead>
<tr>
<th>LCD Display</th>
<th>PA</th>
<th>GF</th>
<th>bAr</th>
<th>PSI</th>
<th>inH</th>
<th>mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Label</td>
<td>kPa</td>
<td>kgf/cm²</td>
<td>bar</td>
<td>psi</td>
<td>inH</td>
<td></td>
</tr>
<tr>
<td>For compound/vacuum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For low pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For positive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Lead Wire Table

<table>
<thead>
<tr>
<th>AWG NO.</th>
<th>Conductor size (mm²)</th>
<th>Overall Diameter (mm³)</th>
<th>Color of cover</th>
<th>SMC Product No. (1pc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-24 (28)</td>
<td>0.14-0.2 (0.08)</td>
<td>φ 0.8 to φ 1.0</td>
<td>Red</td>
<td>ZS-28-C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>φ 1.0 to φ 1.2</td>
<td>Yellow</td>
<td>ZS-28-C-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>φ 1.2 to φ 1.6</td>
<td>Orange</td>
<td>ZS-28-C-2</td>
</tr>
<tr>
<td>22-20</td>
<td>0.3-0.5</td>
<td>φ 1.0 to φ 1.2</td>
<td>Green</td>
<td>ZS-28-C-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>φ 1.2 to φ 1.6</td>
<td>Blue</td>
<td>ZS-28-C-4</td>
</tr>
</tbody>
</table>

## Specification

<table>
<thead>
<tr>
<th></th>
<th>PSE 20※</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure range</td>
<td>-0.1 to 1MPa 10 to -101kPa -10 to 101kPa -101 to 101kPa</td>
</tr>
<tr>
<td>Pressure range *1</td>
<td>For positive For vacuum For low press. For compound</td>
</tr>
<tr>
<td>Rated pressure range</td>
<td>0 to 1MPa 0 to -101kPa 0 to 101kPa -101 to 101kPa</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>12 to 24VDC, ripple (p-p) 10% or less (Protected against inverse connection)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>55mA or less (Except for consumed current of sensor part)</td>
</tr>
<tr>
<td>Power supply voltage for sensor</td>
<td>[Power supply voltage] -1.5V</td>
</tr>
<tr>
<td>Power supply current for sensor</td>
<td>Max. 40mA or less (Max. total consumed current is 100mA for inputting 4 sensors.) *2</td>
</tr>
<tr>
<td>Input signal</td>
<td>1 to 5VDC (Input impedance : Approx. 800kΩ)</td>
</tr>
<tr>
<td>Number of input</td>
<td>4 inputs</td>
</tr>
<tr>
<td>Input protection</td>
<td>With over voltage protection (Max. 26.4V)</td>
</tr>
<tr>
<td>Auto identification</td>
<td>Provided *3</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Hysteresis Mode : Variable Window Comparator Mode : fixed (3digits)</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN or PNP open collector output</td>
</tr>
<tr>
<td>Number of output</td>
<td>5 outputs (2 points for sensor input CH1, and 1 point for each CH2 to CH4)</td>
</tr>
<tr>
<td>Max. load current</td>
<td>80mA</td>
</tr>
<tr>
<td>Max. applied voltage</td>
<td>30VDC (@ NPN output)</td>
</tr>
<tr>
<td>Residual voltage</td>
<td>1V or less (@ 80mA load current)</td>
</tr>
<tr>
<td>Output protection</td>
<td>Short circuit protection is provided</td>
</tr>
<tr>
<td>Response time</td>
<td>5ms or less</td>
</tr>
<tr>
<td>Chattering-proof function</td>
<td>20, 160, 640ms selected</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.1%F.S. or less</td>
</tr>
</tbody>
</table>

## Appended Table

The connector, which suits the lead wire used, is shown in following Tables.
### Specification (continue)

<table>
<thead>
<tr>
<th>Indicator accuracy (Ambient Temp. 25°C)</th>
<th>±0.5% F.S. ±1 digit</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD display</td>
<td>Display for measured value: 4 digits 7-segment (Orange)  Display for channel: 1 digit 7-segment (Red)  Sampling rate: 4 times/1sec.</td>
</tr>
<tr>
<td>Operation display</td>
<td>Output illuminates at ON (Red)</td>
</tr>
<tr>
<td>Auto shift input</td>
<td>Non-Voltage input (reed/solid state), Input: 10ms or more,  Channel independent ON/OFF is possible</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Front part: IP65 (@ Mounted panel), Others: IP40</td>
</tr>
<tr>
<td>Operating temp. range</td>
<td>Operation: 0 to 50°C, Storage: -10 to 60°C  (No condensation, no freezing)</td>
</tr>
<tr>
<td>Operating humidity range</td>
<td>Operation/Storage: 35 to 85% RH (No condensation)</td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>1000VAC, 1 min. (between live parts and case)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>50MΩ or more (500VDC M) (between live parts and case)</td>
</tr>
<tr>
<td>Vibration proof</td>
<td>10 to 500Hz smaller one 1.5mm or 98m/s² double amplitude, each in directions of X, Y and Z for 2 hours</td>
</tr>
<tr>
<td>Impact proof</td>
<td>980m/s², 3 times each in directions of X, Y and Z respectively</td>
</tr>
<tr>
<td>Temp. Characteristic</td>
<td>±0.5% F.S. or less (25°C)</td>
</tr>
<tr>
<td>Connection</td>
<td>Power supply and output connection: 8P connector,  Sensor connection: e-con</td>
</tr>
<tr>
<td>Lead wire</td>
<td>Oil proof cabtire cable with 8 cores (0.15mm²)</td>
</tr>
<tr>
<td>Material</td>
<td>Body: PBT, Display: Transparent nylon,  Rubber cover for the back: CR</td>
</tr>
<tr>
<td>Mass (Weight)</td>
<td>113g (Power and output lead wire included)  55g (Power and output lead wire not included)</td>
</tr>
</tbody>
</table>

*1 Select pressure range by the initialization.
*2 Over current on Vcc side and 0V side of sensor input connector results in breakage of internal parts of controller.
*3 Pressure sensor that auto identification can be applied is only "PSE530 series". Refer to page 13 and 23 "Auto identification function" for detail.