



ORIGINAL INSTRUCTIONS

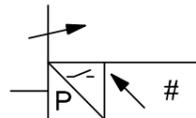


Refer to Declaration of Conformity for relevant Directives

## Instruction Manual

### Digital Pressure Switch

#### Series ZSE20B(F)-L/ISE20B-L



The intended use of this digital pressure switch is to measure, monitor and display the pressure reading. It can output a signal when the desired set pressure is met.

### 1 Safety Instructions

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

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

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- To ensure safety of personnel and equipment the safety instructions in this manual must be observed, along with other relevant safety practices.

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

### Warning

- **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
- Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- **Only personnel with appropriate training should operate machinery and equipment.**  
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
  - 1) The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
  - 2) When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
  - 3) Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

### 1 Safety Instructions - continued

- **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
  - 1) Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  - 2) Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustions and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specification described in the product catalogue.
  - 3) An application which could have negative effects on people, property, or animals requiring special safety analysis.
  - 4) Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.
- **Always ensure compliance with relevant safety laws and standards.**  
All electrical work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

### Caution

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

### 2 Specifications

Product No.	ZSE20B-L (Vacuum pressure)	ZSE20BF-L (Compound pressure)	ISE20B-L (Positive pressure)
Applicable fluid	Air, non-corrosive gas and non-flammable gas		
Pressure spec.	Rated pressure range	0.0 to -101.0 kPa	-100.0 to 100.0 kPa
	Display/Set pressure range	10.0 to -105.0 kPa	-105.0 to 105.0 kPa

Display/Min. setting unit	Display/Min. setting unit	0.1 kPa	0.001 MPa
	Proof pressure	500 kPa	1.5 MPa
Power supply spec.	Used as switch output device	12 to 24 VDC ( $\pm 10\%$ ), ripple max. 10%	
	Used as IO-Link device	18 to 30 VDC, ripple max.10% (p-p)	
Current consumption	Protection	35 mA or less	
	Protection	Polarity protection	
Accuracy	Display accuracy	$\pm 2\%$ F.S. $\pm 1$ digit (at ambient temperature 25 $\pm 3$ °C)	
	Repeatability	$\pm 0.2\%$ F.S. $\pm 1$ digit	
Temperature characteristics	Temperature characteristics	$\pm 2\%$ F.S. (25 °C standard)	
	Output type	Select from NPN or PNP open collector output	
Switch output (During SIO mode)	Output mode	Hysteresis mode, window comparator mode, error output, switch output off	
	Switch operation	Normal output, reversed output	
Maximum load current	Maximum load current	80 mA	
	Maximum applied voltage	30 V (during NPN output)	
Internal voltage drop (Residual voltage)	Internal voltage drop (Residual voltage)	1.5 V or less (Load current 80 mA)	
	Delay time <sup>*1</sup>	1.5 ms or less, Variable at 0 to 60 s/0.01 s step	
Hysteresis mode	Hysteresis mode	Variable from 0 <sup>*2</sup>	
	Window comparator mode	Variable from 0 <sup>*2</sup>	
Short circuit protection	Short circuit protection	Provided	
	Unit <sup>*3</sup>	MPa, kPa, kgf/cm <sup>2</sup> , bar, psi, InHg, mmHg	MPa, kPa, kgf/cm <sup>2</sup> , bar, psi
Display	Display type	LCD	
	Number of displays	3-screen display (Main display, sub display x 2)	
	Display colour	1) Main display: Red/Green 2) Sub display: Orange	

### 2 Specifications - continued

Display	Number of display digits	Main display: 4 digit (7-segments) Sub display: 4 digit (Upper 1 digit 11-segments, 7-segments for other)
	Operation light	LED is ON when switch output is ON (OUT1, OUT2: Orange)
Digital filter <sup>*4</sup>		Variable at 0 to 30 s/0.01 s step
Environment	Enclosure	IP65
	Withstand voltage	1000 VAC for 1 minute between terminals and housing
	Insulation resistance	50 M $\Omega$ or more between terminals and housing (with 500 VDC megger)
	Ambient temperature range	Operation: -5 to 50 °C, Storage: -10 to 60 °C (No condensation or freezing)
	Operating humidity range	Operation, Storage: 35 to 85%RH (No condensation)
Standard	CE, RoHS	
Length of lead wire with connector	2 m	

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

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

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

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

\*5: Any products with tiny scratches, smears, or variations in the display color or brightness, which does not affect the performance of the product, are verified as conforming products.

#### 2.1 Piping/weight specifications

Product No.	M5	O1	N01
Port size	M5 x 0.8	R1/8	NPT1/8
Materials in fluid contact part	Pressure-sensing part	Silicon	
	Piping port (Common)	PBT, CB156, heat resistant PPS, O-ring: HNBR	
	Piping port	C3604 (Electroless nickel plating), SUS304, NBR	

Weight	Body	24 g	34 g	36 g
	Lead wire with connector	+39 g		

#### 2.2 Cable specifications

Conductor area	0.15 mm <sup>2</sup> (AWG26)	
Insulator	Outside diameter	1.0 mm
	Colour	Brown, Blue, Black, White, Gray (5 core)
Sheath	Finished outside diameter	$\phi 3.5$

#### 2.3 Communication specifications (During IO-Link mode)

IO-Link type	Device
IO-Link version	V1.1
Communication speed	COM2 (38.4 kbps)
Configuration file	IODD file <sup>*6</sup>
Min. cycle time	2.3 ms
Process data length	Input Data: 2 byte, Output Data: 0 byte
On request data communication	Available
Data storage function	Available
Event function	Available
Vendor ID	131 (0x0083)
Device ID	ISE20B-L(-M)-*: 334 (0x014E)
	ISE20B-L-P-*: 335 (0x014F)
	ZSE20B-L(-M)-*: 336 (0x0150)
	ZSE20B-L-P-*: 337 (0x0151)
	ZSE20BF-L(-M)-*: 338 (0x0152) ZSE20BF-L-P-*: 339 (0x0153)

\*6: The configuration file can be downloaded from the SMC website, <https://www.smcworld.com>

### 3 Installation

#### 3.1 Installation

##### Warning

Do not install the product unless the safety instructions have been read and understood.

##### 3.1.1 Mounting

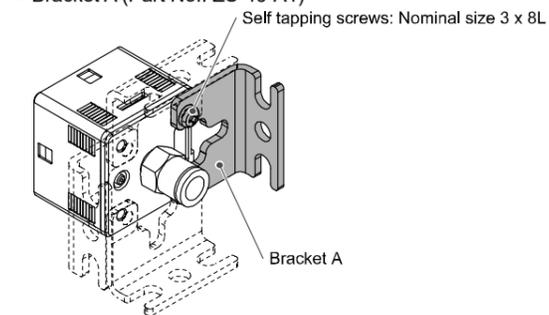
- Mount the optional bracket and panel mount adapter to the pressure switch.
- When the pressure switch is to be mounted in a place where water and dust splashes occur, insert a tube into the atmospheric vent port of the pressure switch. (Refer to "3.3.2 Tube attachment")

##### 3.1.2 Mounting with bracket

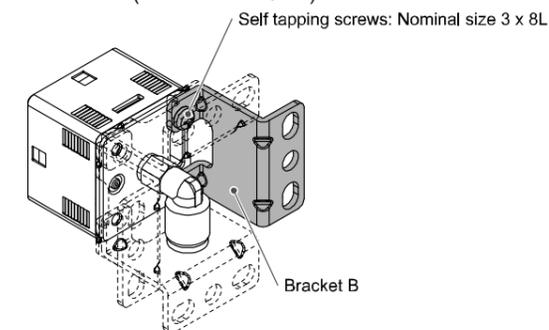
- Mount the bracket to the body with mounting screws (Self tapping screws: Nominal size 3 x 8L (2 pcs)), then set the body to the specified position.

\*: Tighten the bracket mounting screws to a torque of 0.5 $\pm$ 0.05 Nm. Self-tapping screws are used, and should not be re-used several times.

- Bracket A (Part No.: ZS-46-A1)



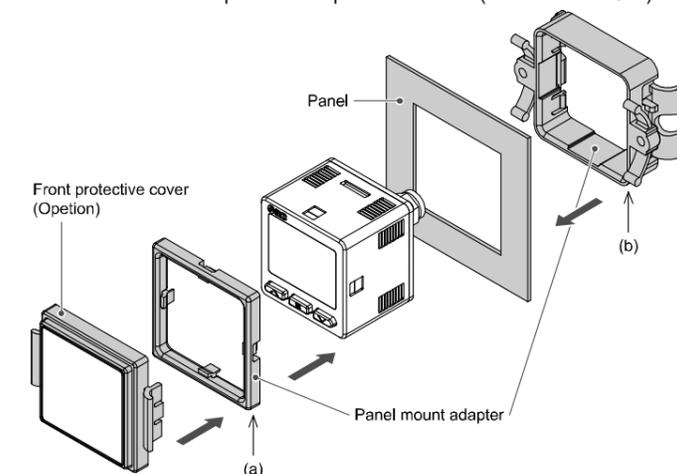
- Bracket B (Part No.: ZS-46-A2)



##### 3.1.3 Mounting with panel mount adapter

- Mount part (a) to the front of the body and fix it. Then insert the body with (a) into the panel until (a) comes into contact with the panel front surface. Next, mount part (b) to the body from the rear and insert it until (b) comes into contact with the panel for fixing.

- Panel mount adapter (Part No.: ZS-46-B)
- Panel mount adapter + Front protective cover (Part No.: ZS-46-D)



\*: The panel mount adapter can be rotated through 90 degrees for mounting.

### 3 Installation - continued

#### 3.2 Environment

##### Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- Do not mount in a location exposed to radiant heat.

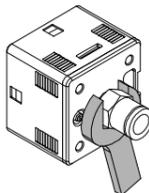
#### 3.3 Piping

##### Caution

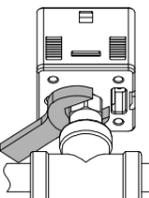
- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

##### 3.3.1 Tightening the connection thread

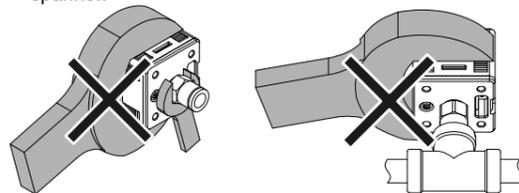
- For connecting to the body (piping specification: -M5) After hand tightening, apply a spanner of the correct size to the spanner flats of the piping body, and tighten with a 1/6 to 1/4 rotation. As a reference, the tightening torque is 1 to 1.5 Nm. (When replacing the piping adapter ZS-46-N\*, tighten it using the same method.)



- Piping specification: -01, -N01 After hand tightening, hold the hexagonal spanner flats of the pressure port with a spanner, and tighten with 2 to 3 rotations. As a reference, the tightening torque is 3 to 5 Nm.



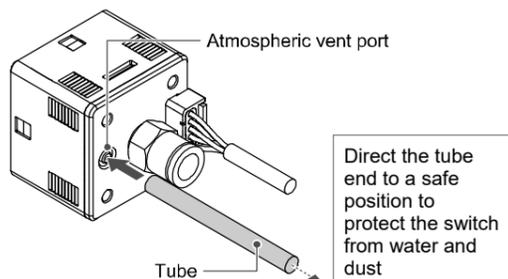
When tightening, do not hold the pressure switch body with a spanner.



##### 3.3.2 Tube attachment

- When the pressure switch is used in a place where water and dust splashes may occur, insert a tube in the atmospheric vent port, and position the other end of the tube at safe position to protect the vent port from water and dust (see the figure bottom).

\*: The tube should be inserted to the end of the atmospheric vent port.  
 \*: SMC TU0425 (polyurethane, O.D φ4, I.D φ2.5) is a suitable tubing.



### 3 Installation - continued

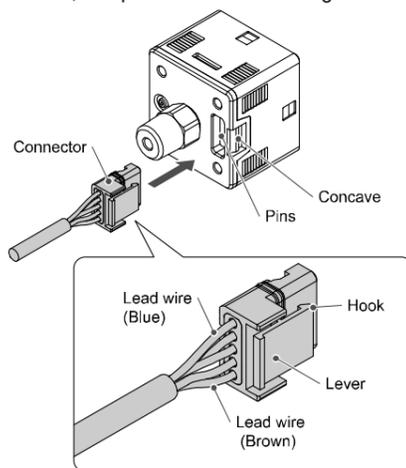
#### 3.3.3 Wiring connections

- Connections should be made with the power supply turned off.
- Use a separate route for the product wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.
- If a commercially available switching power supply is used, be sure to ground the frame ground (FG) terminal. If the switching power supply is connected for use, switching noise will be superimposed and it will not be able to meet the product specifications. In that case, insert a noise filter such as a line noise filter/ferrite between the switching power supplies or change the switching power supply to the series power supply.

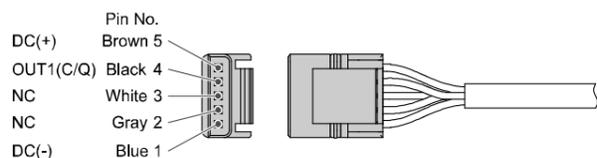
##### 3.3.4 How to use connector

###### Connector attachment/detachment

- When connecting the connector, insert it straight onto the pins, holding the lever and connector body, and lock the connector by pushing the lever hook into the concave groove on the housing.
- To detach the connector, remove the hook from the groove by pressing the lever downward, and pull the connector straight out.



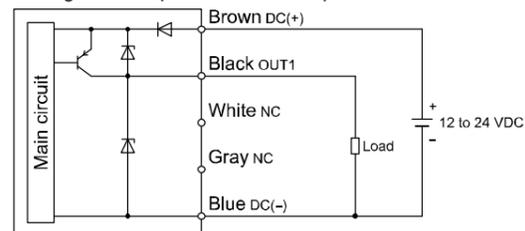
##### Connector pin numbers



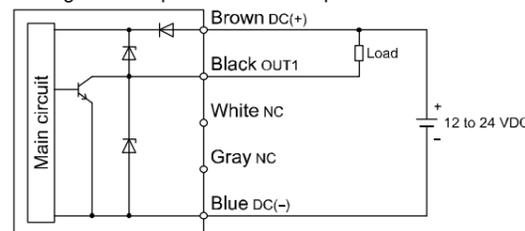
##### 3.3.5 Internal circuit and wiring examples

- Used as switch output device

###### Setting of PNP open collector 1 output

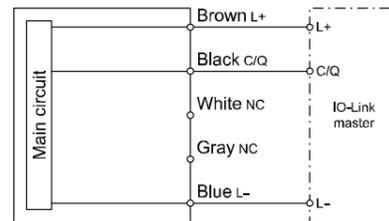


###### Setting of NPN open collector 1 output



### 3 Installation - continued

- Used as IO-Link device



#### 3.4 Lubrication

##### Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, use turbine oil Class 1 (no additive), ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.

### 4 Settings

Power is supplied.

The product code is displayed for approximately 3 sec. after supplying power.

\*: Within approximately 0.2 second after power-on, the switch starts.

#### [Measurement mode]

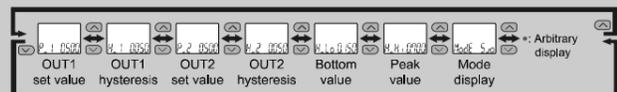
Detects the pressure after power is supplied, and indicates the display and switch operating status. This is the basic mode; other modes should be selected for set-point changes and other function settings.

##### Measurement mode screen



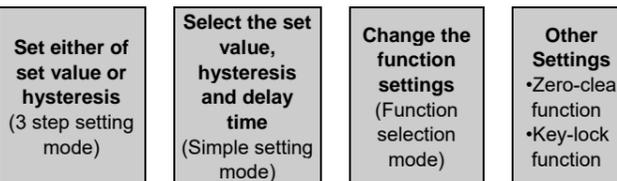
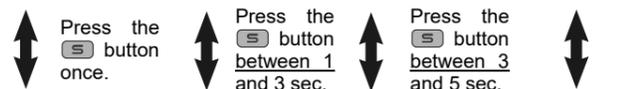
##### Sub display

In measurement mode, the display of the sub display can be temporarily changed by pressing the  $\Delta$  or  $\nabla$  buttons.



\*: One arbitrary display mode can be added to the sub display by setting the [F10] sub display setting.

If the sub display is switched during the arbitrary display setting, the display will be returned to the arbitrary display 30 seconds later. (The default setting does not include arbitrary display.)

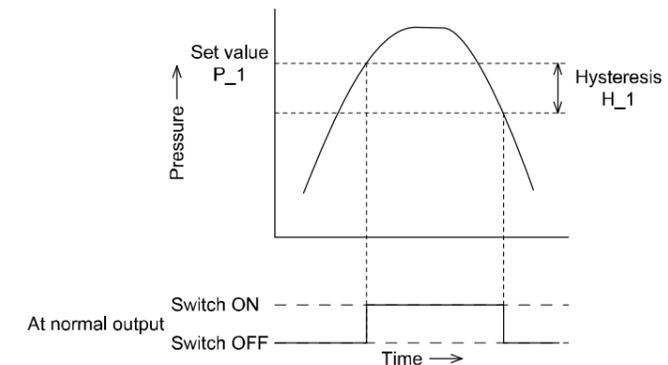


\*: The outputs will continue to operate during setting.  
 \*: If a button operation is not performed for 3 seconds during the setting, the display will flash. (This is to prevent the setting from remaining incomplete if, for instance, an operator were to leave during setting.)  
 \*: 3 step setting mode, simple setting mode and function selection mode settings are reflected each other.

### 4 Settings - continued

#### 4.1 Default settings

When the pressure exceeds the set value, the switch will turn on. When the pressure falls below the set value by the amount of hysteresis or more, the switch will turn off. The default setting is to turn on the pressure switch when the pressure reaches the center of the atmospheric pressure and upper limit of the rated pressure range. If this condition, shown to the below, is acceptable, then keep these settings.



#### 4.2 3 step setting mode

[3 step setting mode (hysteresis mode)] In the 3 step setting mode, the set value (P\_1 or n\_1, P\_2 or n\_2) and hysteresis (H\_1 or H\_2) can be changed. Set the items on the sub display (set value or hysteresis) with  $\Delta$  or  $\nabla$  button. When changing the set value, follow the operation below. The hysteresis setting can be changed in the same way.

- Press the S button once when the item to be changed is displayed on the sub display. The set value on the sub display (right) will start flashing.



- Press the  $\Delta$  or  $\nabla$  button to change the set value. The set value can be increased with  $\Delta$  button and can be reduced with  $\nabla$  button. When the  $\Delta$  and  $\nabla$  buttons are pressed and held simultaneously for 1 second or longer, the set value is displayed as [- -], and the set value will be the same as the current pressure value automatically (snap shot function). Afterwards, it is possible to adjust the value by pressing the  $\Delta$  or  $\nabla$  button.

- Press the S button to complete the setting.

The Pressure switch turns on within a set pressure range (from P1L to P1H) during window comparator mode. Set P1L, the lower limit of the switch operation, and P1H, the upper limit of the switch operation and WH1 (hysteresis) following the instructions given above. (When reversed output is selected, the sub display (left) shows [n1L] and [n1H].)  
 \*: Set OUT2 in the same way. (ex. P\_2, H\_2)  
 Setting of the normal/reverse output switching and hysteresis/window comparator mode switching are performed with the function selection mode [F 1] Setting of OUT1 or [F 2] Setting of OUT2.

## 4 Settings - continued

### 4.3 Simple setting mode

[Simple setting mode (hysteresis mode)]

(1) Press and hold the **[S]** button between 1 and 3 seconds in measurement mode. [SET] is displayed on the main display. When the button is released while in the [SET] display, the current pressure value is displayed on the main display, [P\_1] or [n\_1] is displayed on the sub display (left), and the set value is displayed on the sub display (right) (Flashing).



(2) Change the set value with **[▲]** or **[▼]** button, and press the **[S]** button to set the value. Then, the setting moves to hysteresis setting. (The snap shot function can be used.)

(3) Change the set value with **[▲]** or **[▼]** button, and press the **[S]** button to set the value. Then, the setting moves to the delay time of the switch output. (The snap shot function can be used.)

(4) The delay time of the switch output can be selected by pressing the **[▲]** or **[▼]** button at the ON and OFF point of the switch output. Delay time setting can prevent the output from chattering. The delay time can be set in the range 0.00 to 60.00 sec. in 0.01 sec. increments.

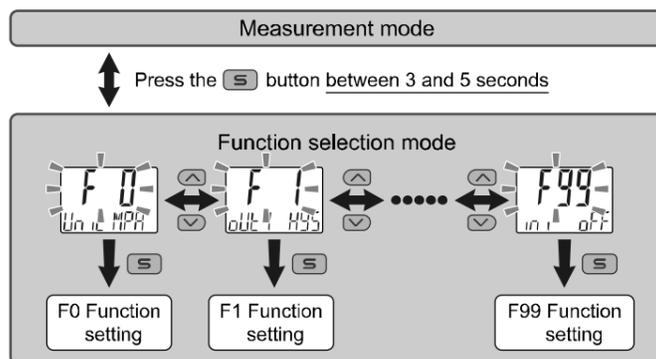
(5) Press the **[S]** button for 2 seconds or longer to complete the setting. (If the button is pressed for less than 2 seconds, the setting will move to the OUT2 setting.)

In the window comparator mode, set P1L, the lower limit of the switch operation, and P1H, the upper limit of the switch operation, WH1 (hysteresis) and dt1 (delay time) following the instructions given above. (When reversed output is selected, the sub display (left) shows [n1L] and [n1H].)

\*: Set OUT2 in the same way.

### Function selection mode

In measurement mode, press the **[S]** button between 3 and 5 seconds, to display [F 0]. Select to display the function to be changed [F□]. Press and hold the **[S]** button for 2 seconds or longer in function selection mode to return to measurement mode.



\*: Some products do not have all the functions. If no function is available or selected due to configuration of other functions, [- -] is displayed on the sub display (right).

## 4 Settings - continued

### 4.4 Default setting

The default setting is as follows.

If no problem is caused by this setting, keep these settings.

- [F 0] Display units, switch output specifications and diagnostic information selection function

Units specification	Pressure range	Default setting
"Nil" or M	ISE20B	MPa
	ZSE20B(F)	kPa
P	ISE20B	psi
	ZSE20B(F)	

Item	Default setting
Switch output specifications	PNP
Diagnostic information	ALL

- [F 1] Setting of OUT1

Item	Default setting
Output mode	Hysteresis mode
Reversed output	Normal output
Pressure setting	ISE20B : 0.500 MPa
	ZSE20B : -50.0 kPa
	ZSE20BF: 50.0 kPa
Hysteresis	ISE20B : 0.050 MPa
	ZSE20B : 5.0 kPa
	ZSE20BF: 5.0 kPa
Delay time	1.5 ms or less
Display colour	OUT1 ON: Green/OUT1 OFF: Red

- [F 2] Setting of OUT2  
Same setting as [F 1] OUT1.

- Other parameter settings

Item	Default setting
[F 3] Digital filter setting	0.00 s
[F 4] Auto-preset function	Not used
[F 6] Fine adjustment of display value	0%
[F10] Sub display setting	std (Standard)
[F11] Display resolution setting	1000-split
[F14] Zero cut-off setting	0.0
[F80] Power saving mode	OFF
[F81] Security code	OFF
[F90] Setting of all functions	OFF
[F96] Number of pressurizing errors	-
[F98] Output check	N/A (normal output)
[F99] Reset to default settings	OFF

### 4.5 Other settings

#### 4.5.1 Peak/bottom value indication

The maximum (minimum) pressure when the power is supplied is detected and updated.

The value can be displayed on the sub display by pressing **[▲]** or **[▼]** button in measurement mode.

#### 4.5.2 Snap shot function

The current pressure value can be stored to the switch output ON/OFF set point.

When the set value and hysteresis are set, press the **[▲]** and **[▼]** buttons for 1 second or longer simultaneously. Then, the set value of the sub display (right) shows [- -], and the values corresponding to the current pressure values are automatically displayed.

## 4 Settings - continued

### 4.5.3 Zero-clear function

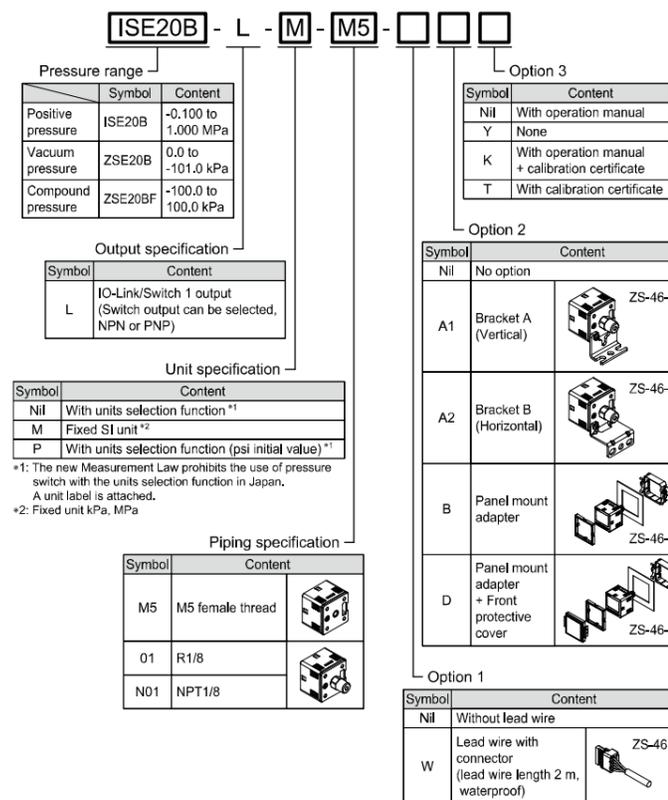
In measurement mode, when the **[▲]** and **[▼]** buttons are pressed for 1 second or longer simultaneously, the main display shows [- -], and the reset to zero. The display returns to measurement mode automatically.

### 4.5.4 Key-lock function

The key-lock function is used to prevent errors occurring due to unintentional changes of the set values. If the **[S]** button is pressed while the keys are locked, [LoC] is displayed on the sub display (left) for approximately 1 second.

(Each setting and peak/bottom values are displayed with **[▲]** and **[▼]** buttons. In that case, the sub screen will return after 30 seconds.)

## 5 How to Order



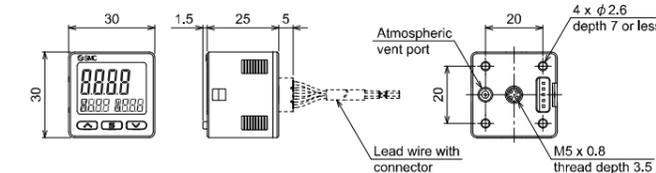
### 5.1 Accessories/Part numbers

If an option is required independently, order with the following part numbers.

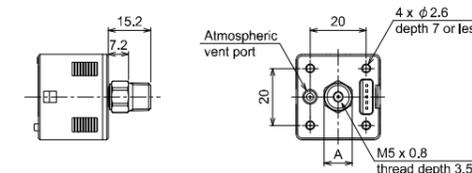
Items	Part No.	Remarks
Bracket A	ZS-46-A1	Self-tapping screws: Nominal size 3 x 8L (2 pcs)
Bracket B	ZS-46-A2	Self-tapping screws: Nominal size 3 x 8L (2 pcs)
Panel mount adapter	ZS-46-B	-
Panel mount adapter + Front protective cover	ZS-46-D	-
Lead wire with connector	ZS-46-5F	5 cores, 2 m, waterproof
Front protective cover	ZS-27-01	-
R1/8 piping adapter	ZS-46-N1	-
NPT1/8 piping adapter	ZS-46-N2	-

## 6 Outline Dimensions (mm)

### 6.1 M5 type



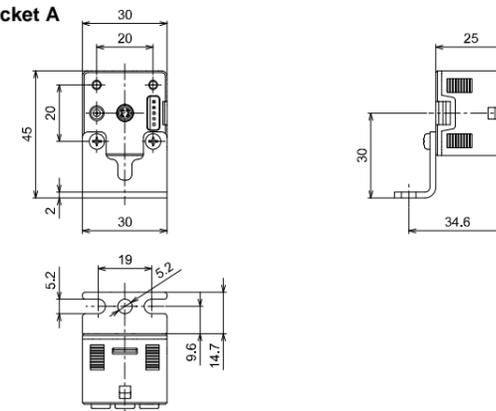
### 6.2 01/N01 type



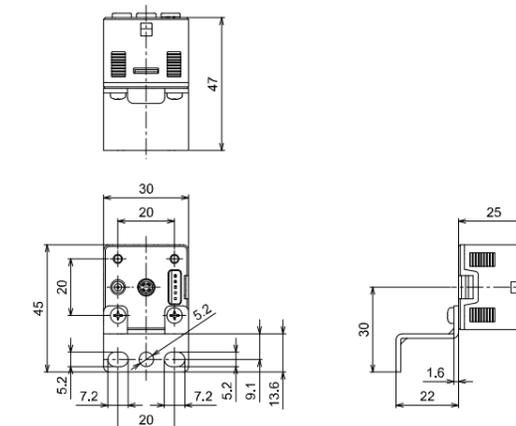
Piping specifications	Port size	A
01	R1/8	Width across flats 10
N01	NPT1/8	Width across flats 12

### 6.3 Bracket mounting dimensions

#### 6.3.1 Bracket A

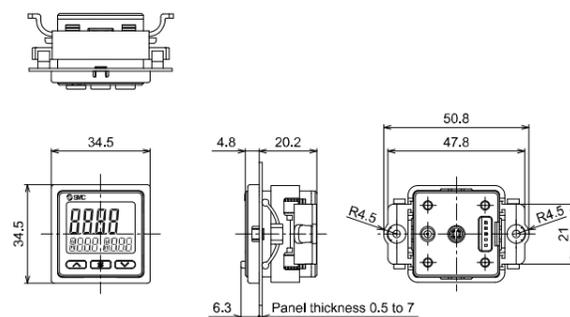


#### 6.3.2 Bracket B

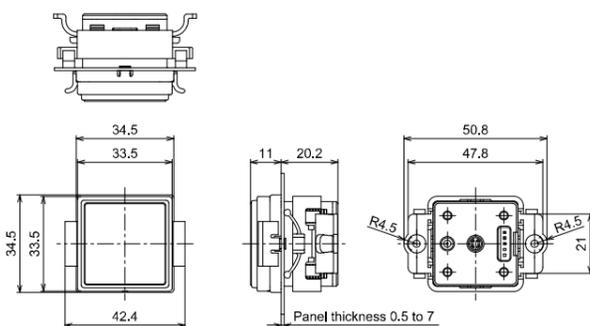


## 6 Outline Dimensions (mm) - continued

### 6.4 Mounting dimensions of panel mount adapter

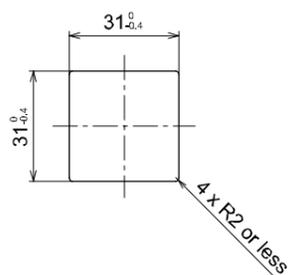


### 6.5 Mounting dimension of panel mount adapter + Front protective cover



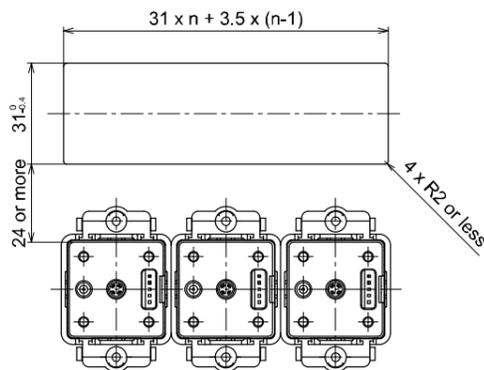
### 6.6 Panel cutout dimensions

#### 6.6.1 Mount individually



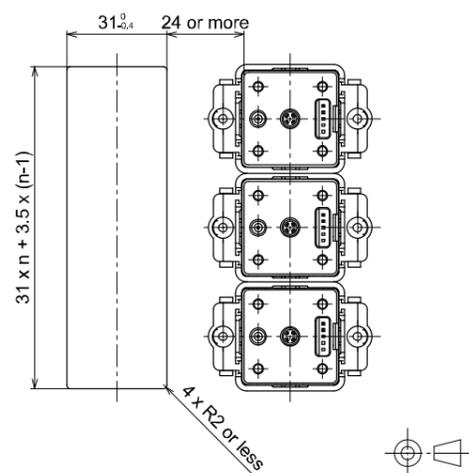
#### 6.6.2 More than 2 pcs. (n pcs.) close mounting

- Horizontal



## 6 Outline Dimensions (mm) - continued

- Vertical



## 7 Maintenance

### 7.1 General Maintenance

#### Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and

power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.

- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

## 8 Limitations of Use

### 8.1 Limited warranty and Disclaimer/Compliance Requirements

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

<sup>(1)</sup> Vacuum pads are excluded from this 1 year warranty.

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

#### Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

## 8 Limitations of Use - continued

2) The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

#### Caution

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

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

## 9 Contacts

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