3-Screen Display

High-Precision Digital Pressure Switch

While checking the measured value, setting is possible.

- **Main screen**: Measured value (Current pressure value)
- **Sub screen**: Label (Display item), Set value (Threshold value)

**Visualization of Setting Items**
- Set value (Threshold value)
- Peak value
- Hysteresis value
- Bottom value
- Delay time

**Delay Time** Fastest 1.5 ms* or less
*Select from 1.5 ms or less, 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms or 5000 ms.

**Current Consumption** 25 mA* or less
*Reduced by approx. 60% in power saving mode.

**Improved Operability**
With a snapshot function for measured value reading

**3 Setting Modes**
1. 3 Step Setting Mode 2. Simple Setting Mode 3. Function Selection (detailed setting) Mode

**Series** ZSE20(F)/ISE20
Improved Operability

Visualization of Setting Items

Sub screen (label) shows the item to be set.

Mode Examples

<table>
<thead>
<tr>
<th>Mode Example</th>
<th>Display 1</th>
<th>Display 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hysteresis mode</td>
<td>$P_{-1} = 0.500$</td>
<td>$n_{-1} = 0.500$</td>
</tr>
<tr>
<td>Window comparator mode</td>
<td>$P_{IL} = 0.300$</td>
<td>$P_{IH} = 0.600$</td>
</tr>
</tbody>
</table>

Simple 3 Step Setting

When S button is pressed, and the set value ($P_{-1}$) is being displayed, the set value (Trigger level) can be set. When S button is pressed, and the hysteresis ($H_{-1}$) is being displayed, the hysteresis can be set.

Easy Screen Switching

Setting is possible while checking the measured value.

Sub screen can be switched by pressing up/down buttons.

One arbitrary display mode can be added by setting the function. (Refer to page 3.)
### 3 Setting Modes

Setting mode can be selected according to the purpose.

<table>
<thead>
<tr>
<th>Mode selection</th>
<th>Press the button once.</th>
<th>Press the button between 1 and 3 seconds.</th>
<th>Press the button between 3 and 5 seconds.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Output mode selection</td>
<td>Select from • Hysteresis mode • Window comparator mode • Error output • Output OFF.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Selection of normal or reversed</td>
<td>Select from • Normal output • Reversed output.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Set value (Threshold value) setting</td>
<td>Adjust the numerical value.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Hysteresis value setting</td>
<td>Adjust the numerical value.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Delay time selection</td>
<td>Select from • 1.5 ms or less • 20 ms • 100 ms • 500 ms • 1000 ms • 2000 ms • 5000 ms.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Display color selection</td>
<td>Select from • ON • OFF • ON • OFF • Normally • Normally.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Completion of Setting*
**Other Sub Screen Display**

**Peak value or bottom value; or both values can be displayed in one screen!**

*Peak and bottom values are maintained even if the power supply is cut.

- **Output mode/Output type display**
  - Hysteresis mode
  - Window comparator mode

- **Rated range display**
  - Vacuum pressure range
  - Compound pressure range
  - Positive pressure range

- **Pressure unit display**
  - kPa
  - MPa
  - psi
  - bar

*Combination of the displays shown above and the set values can be displayed on the sub screens on both sides.

**Convenient Functions**

- **Secret code setting function**
  - The key locking function keeps unauthorized persons from tampering with buttons.

- **Power saving function**
  - Power consumption is reduced by turning off the monitor. (Reduce power consumption by approx. 90%.)

- **Resolution switch function**
  - It reduces the monitor to flicker.

- **MPa/kPa switch function**
  - Vacuum, compound and/or positive pressure can be displayed in MPa or kPa. (Accuracy is not changed, only the displayed values.)

**Compact & Lightweight**

- **Compact: 17.5 mm shorter** (When M5 female thread is used.)
- **Lightweight: 21 g lighter** (When M5 female thread is used.)
- **13 g lighter** (When R1/8 is used.)
Mounting
Bracket configuration allows mounting in four orientations.

Panel mount
Mountable side by side without clearance
One opening!
- Reduced panel fitting labor
- Space saving

Introduction of Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated pressure range</th>
<th>Set pressure range</th>
<th>Withstand pressure</th>
<th>Smallest settable increment</th>
<th>Output</th>
<th>Piping</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSE20 (Vacuum pressure)</td>
<td>0.0 to −101.0 kPa</td>
<td>10.0 to −105.0 kPa</td>
<td>500 kPa</td>
<td>0.1 kPa</td>
<td>NPN or PNP open collector 1 output</td>
<td>M5 Female thread, R1/8, NPT1/8</td>
</tr>
<tr>
<td>ZSE20F (Compound pressure)</td>
<td>−100.0 to 100.0 kPa</td>
<td>−105.0 to 105.0 kPa</td>
<td>500 kPa</td>
<td>0.1 kPa</td>
<td>NPN or PNP open collector 1 output</td>
<td>M5 Female thread, R1/8, NPT1/8</td>
</tr>
<tr>
<td>ISE20 (Positive pressure)</td>
<td>−0.100 to 1.000 MPa</td>
<td>−0.105 to 1.050 MPa</td>
<td>1.5 MPa</td>
<td>0.001 MPa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3-Screen Display
High-Precision Digital Pressure Switch
Series ZSE20(F)/ISE20

How to Order

For positive pressure
ISE20 - N - M - M5 -

For vacuum/compound pressure
ZSE20 - N - M - M5 -

Rated pressure range
ISE20 -0.1 to 1 MPa
ZSE20F -100 to 100 kPa
ZSE20 -0 to −101 kPa
ZSE20F -100 to 100 kPa

Output specification
symbol Description
N NPN open collector 1 output
P PNP open collector 1 output

Unit specification
symbol Description
N With unit selection function
M SI unit only
P With unit selection function (initial value psi)

Option 2
Symbol Description
Nil None
A1 Bracket A (Vertical mounting)
A2 Bracket B (Horizontal mounting)
B Panel mount adapter
D Panel mount adapter + Front protection cover

Piping specification
Symbol Description
M5 M5 Female thread
01 R1/8
N01 NPT1/8

Option 3
Symbol Operation Manual Calibration certificate
Nil — —
Y — —
K — —
T — —

Note) All texts in both English and Japanese

*1. Under the New Measurement Law, sales of switches with the unit selection function have not been allowed for use in Japan.
*2. Fixed unit: kPa, MPa

Option 1
Symbol Description
Nil Without lead wire
L Lead wire with connector (Lead wire length 2 m)

Note) All texts in both English and Japanese
## Specifications

### Model

<table>
<thead>
<tr>
<th>Applicable fluid</th>
<th>ZSE20 (Vacuum pressure)</th>
<th>ZSE20F (Compound pressure)</th>
<th>ISE20 (Positive pressure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure range</td>
<td>0.0 to −101.0 kPa</td>
<td>−100.0 to 100.0 kPa</td>
<td>−0.100 to 1.000 MPa</td>
</tr>
<tr>
<td>Set pressure range</td>
<td>10.0 to −105.0 kPa</td>
<td>−105.0 to 105.0 kPa</td>
<td>−0.105 to 1.050 MPa</td>
</tr>
<tr>
<td>Smallest settable increment</td>
<td>0.1 kPa</td>
<td>0.001 MPa</td>
<td></td>
</tr>
<tr>
<td>Withstand pressure</td>
<td>500 kPa</td>
<td>1.5 MPa</td>
<td></td>
</tr>
</tbody>
</table>

### Pressure

<table>
<thead>
<tr>
<th>Power supply voltage</th>
<th>12 to 24 VDC ±10%, Ripple (p-p) 10% or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>25 mA or less</td>
</tr>
</tbody>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Protection</th>
<th>Polarity protection</th>
</tr>
</thead>
</table>

### Accuracy

| Display accuracy | ±2% F.S. ±1 digit (Ambient temperature of 25 ±3°C) |
| Repeatability | ±0.2% F.S. ±1 digit |

### Switch output

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN or PNP open collector 1 output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output mode</td>
<td>Hysteresis mode, Window comparator mode, Error output, Output OFF</td>
</tr>
<tr>
<td>Switch operation</td>
<td>Normal output, Reversed output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum load current</th>
<th>80 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum applied voltage (NPN only)</td>
<td>28 V</td>
</tr>
<tr>
<td>Internal voltage drop (Residual voltage)</td>
<td>1 V or less (with load current of 80 mA)</td>
</tr>
</tbody>
</table>

### Piping Specifications and Weights

<table>
<thead>
<tr>
<th>Port size</th>
<th>M5 x 0.8</th>
<th>R1/8</th>
<th>NPT1/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials of parts in contact with fluid</td>
<td>PBT, CB156, Heat resistant PPS, O-ring: HNBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piping port (Common)</td>
<td>C964 (Electroless nickel plating), Stainless steel 304, NBR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Body</th>
<th>Lead wire with connector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>22 g</td>
<td>30 g</td>
</tr>
</tbody>
</table>

### Options/Part Numbers

<table>
<thead>
<tr>
<th>Description</th>
<th>Part number</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket A</td>
<td>ZS-46-A1</td>
<td>Tapping screw: Nominal size 3 x 8 L (2 pcs.)</td>
</tr>
<tr>
<td>Bracket B</td>
<td>ZS-46-A2</td>
<td>Tapping screw: Nominal size 3 x 8 L (2 pcs.)</td>
</tr>
<tr>
<td>Panel mount adapter</td>
<td>ZS-46-B</td>
<td>—</td>
</tr>
<tr>
<td>Panel mount adapter + Front protection cover</td>
<td>ZS-46-D</td>
<td>—</td>
</tr>
<tr>
<td>Lead wire with connector</td>
<td>ZS-46-3L</td>
<td>3 cores, 2 m</td>
</tr>
<tr>
<td>Front protection cover</td>
<td>ZS-27-01</td>
<td>—</td>
</tr>
<tr>
<td>R1/8 Piping adapter</td>
<td>ZS-39-N1</td>
<td>—</td>
</tr>
<tr>
<td>NPT1/8 Piping adapter</td>
<td>ZS-39-N2</td>
<td>—</td>
</tr>
</tbody>
</table>
Set Pressure Range andRated Pressure Range

Set the pressure within the rated pressure range.
The set pressure range is the range of pressure that is possible in setting.
The rated pressure range is the range of pressure that satisfies the specifications (accuracy, linearity, etc.) on the switch.
Although it is possible to set a value outside the rated pressure range, the specifications will not be guaranteed even if the value stays within the set pressure range.

<table>
<thead>
<tr>
<th>Switch</th>
<th>Pressure range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>−100 kPa to 0</td>
</tr>
<tr>
<td>For vacuum pressure</td>
<td>−101 kPa to 0</td>
</tr>
<tr>
<td>ZSE20</td>
<td>−105 kPa to 10 kPa</td>
</tr>
<tr>
<td>For compound pressure</td>
<td>−100 kPa to 100 kPa</td>
</tr>
<tr>
<td>ZSE20F</td>
<td>−105 kPa to 105 kPa</td>
</tr>
<tr>
<td>For positive pressure</td>
<td>−100 kPa to 1 MPa</td>
</tr>
<tr>
<td>ISE20</td>
<td>−105 kPa to 1.05 MPa</td>
</tr>
</tbody>
</table>

Sub screen setting function: The display of the sub screen can be selected.
Auto-preset function: This function is to calculate a rough set value automatically based on the on-going operation.
Display value fine adjustment function: Evens out deviations in the displayed value.
Peak value indication function: Can retain the maximum pressure value displayed during measurement.
Bottom value indication function: Can retain the minimum pressure value displayed during measurement.
Key lock function (Selectable secret code): The key board can be locked to prevent any incorrect function of the operation switch.
Zero-clear function: The pressure display can be set at zero when the pressure is open to the atmosphere.
Error indication function: This function is to display error location and content when a problem or error has occurred.
Anti-chattering function: Prevents possible malfunction due to sudden fluctuations in the primary pressure by adjusting the delay time.
Unit selection function: Can convert the display value.
Power saving mode: Reduces power consumption.
Display resolution switch function: Converts display resolution from the normal value of 1/1000 to 1/100.
It reduces the monitor to flicker.
kPa ↔ MPa switch function: Converts the unit between kPa and MPa.

Internal Circuit and Wiring Examples

Z/ISE20(F) – Output specification

NPN (1 Output)

PNP (1 Output)
3-Screen Display
High-Precision Digital Pressure Switch Series ZSE20(F)/ISE20

Dimensions

Z/ISE20(F) - M5 - M5 - M5 -

Piping specification

M5
M5 Female thread

R1/8
NPT1/8

<table>
<thead>
<tr>
<th>Piping specification</th>
<th>Port size</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>R1/8</td>
<td>Width across flats 10</td>
</tr>
<tr>
<td>N01</td>
<td>NPT1/8</td>
<td>Width across flats 12</td>
</tr>
</tbody>
</table>
Series ZSE20(F)/ISE20

Dimensions

With Bracket Z/ISE20(F) — — — — — 

Option 2

A1
Bracket A
(Optional part number: ZS-46-A1)

A2
Bracket B
(Optional part number: ZS-46-A2)

Bracket configuration allows mounting in four orientations.

When using the bracket B, install it by taking the dimensions of the piping part into consideration.
3-Screen Display
High-Precision Digital Pressure Switch Series ZSE20(F)/ISE20

Dimensions

Panel mount adapter
Z/ISE20(F) – □□□□□□

Option 2

B
Panel mount adapter
(Optional part number: ZS-46-B)

D
Panel mount adapter + Front protection cover
(Optional part number: ZS-46-D)
**Dimensions**

**Panel fitting dimensions**

**Individual mounting**

*Horizontal*

![Diagram of individual mounting](image1)

**Multiple (2 pcs. or more) secure mounting**

*Horizontal*

![Diagram of multiple mounting](image2)

*Vertical*

![Diagram of vertical mounting](image3)

**Panel mount example**

*Horizontal*

![Panel mount example](image4)

*Vertical*

![Panel mount example](image5)
Display examples of the main and sub (set value) screens of each mode. (For ISE20 (for Positive pressure))

**Hysteresis mode Normal output**

- Threshold value setting
- Switch ON
- Switch OFF
- Measured value
- Turns ON at the set value or more.
- Set value
- 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 MPa

**Hysteresis mode Reversed output**

- Threshold value setting
- Switch ON
- Switch OFF
- Measured value
- Turns ON at the set value or less.
- Set value
- 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 MPa

**Window comparator mode Normal output**

- Threshold value setting
- Switch ON
- Switch OFF
- Measured value
- Turns ON at the set value or more.
- Set value
- 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 MPa

**Window comparator mode Reversed output**

- Threshold value setting
- Switch ON
- Switch OFF
- Measured value
- Turns ON at the set value or less.
- Set value
- 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 MPa
Series ZSE20(F)/ISE20

Function Details

A Auto-preset function (F4)
Auto-preset function, when selected in the initial setting, calculates and stores the set value from the measured pressure. For example, if this function is used for suction verification, the optimum set value is determined automatically by repeating vacuum and break with the target workpiece several times.

Suction Verification

<table>
<thead>
<tr>
<th>High Vacuum</th>
<th>Suction</th>
<th>Released</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( P_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atmosphere</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Formula for Obtaining the Set Value

\[
P_1 = A - \frac{(A - B)}{4} \\
n_1 = B + \frac{(A - B)}{4} \\
H_1 = \frac{(A - B)}{2}
\]

B Display value fine adjustment function (F6)
Fine adjustment of the indicated value of the pressure sensor can be made within the range of ±5% of the read value. (The scattering of the indicated value can be eliminated.)

C Peak/Bottom value indication function
This function constantly detects and updates the maximum (minimum) pressure when the power is supplied, and allows to hold the maximum (minimum) pressure value.

D Keylock function
Prevents operation errors such as accidentally changing setting values.

E Zero-clear function
This function clears and resets the zero value on the display of measured pressure. The indicated value can be adjusted within ±7% F.S. of the pressure when ex-factory. (ZSE20F (for compound pressure) ±3.5% F.S.)

F Error indication function
This function is to display error location and content when a problem or error has occurred.

<table>
<thead>
<tr>
<th>Error name</th>
<th>Error code</th>
<th>Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over current error</td>
<td>( E_1 )</td>
<td>Load current of 80 mA or more is applied to the switch output.</td>
<td>Turn the power off and remove the cause of the over current. Then supply the power again.</td>
</tr>
<tr>
<td>Residual pressure error</td>
<td>( E_3 )</td>
<td>During zero-clear operation, pressure over ±7% F.S. (±3.5% F.S. for compound pressure) is present. Note that the mode is returned to measurement mode automatically 1 second later. The zero clear range varies by ±1% F.S. due to variation between individual products.</td>
<td>Perform zero-clear operation again after restoring the applied pressure to an atmospheric pressure condition.</td>
</tr>
<tr>
<td>Applied pressure error</td>
<td>( E_4 )</td>
<td>Supply pressure exceeds the maximum set pressure.</td>
<td>Reset applied pressure to a level within the set pressure range.</td>
</tr>
<tr>
<td>System error</td>
<td>( E_6 )</td>
<td>Internal data error</td>
<td>Turn off the power supply and then turn on it again. If the failure cannot be solved, please contact SMC for investigation.</td>
</tr>
</tbody>
</table>

If the error cannot be reset after the above measures are taken, or errors other than above are displayed, please contact SMC.
G Anti-chattering function (Simple setting mode or F1)
A large bore cylinder or ejector consumes a large volume of air in operation and may experience a temporary drop in the supply pressure. This function prevents detection of such temporary drops in the supply pressure as an error by changing the delay time setting.

Available delay time settings
- 1.5 ms or less, 20 ms, 100 ms, 500 ms, 1000 ms, 2000 ms, 5000 ms

<Principle>
This function averages pressure values measured during the response time set by the user and then compares the average pressure value with the pressure set point value to output the result on the switch.

H Unit selection function (F0)
Display units can be switched with this function.

<table>
<thead>
<tr>
<th>Smallest settable increment</th>
<th>MPA</th>
<th>kPA</th>
<th>kgf/cm²</th>
<th>bar</th>
<th>psi</th>
<th>inCH</th>
<th>mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSE20 (Vacuum pressure)</td>
<td>0.001</td>
<td>0.1</td>
<td>0.001</td>
<td>0.01</td>
<td>0.01</td>
<td>0.1</td>
<td>1</td>
</tr>
<tr>
<td>ZSE20F (Compound pressure)</td>
<td>0.001</td>
<td>0.1</td>
<td>0.001</td>
<td>0.001</td>
<td>0.02</td>
<td>0.1</td>
<td>1</td>
</tr>
<tr>
<td>ISE20 (Positive pressure)</td>
<td>0.001</td>
<td>1</td>
<td>0.01</td>
<td>0.01</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The ZSE20 (vacuum pressure) and ZSE20F (compound pressure) will have different setting and display resolution when the unit is set to MPA.

I Power saving mode (F80)
Power saving mode can be selected.
It shifts to the power saving mode without button operation for 30 seconds.
It is set to the normal mode (Power saving mode is OFF.) when ex-factory.
(During power saving mode, [ECo] will flash in the sub screen and the operation light is ON (only when the switch is ON).)

J Setting of secret code (F81)
Users can select whether a secret code must be entered to release key lock.
At the time of shipment from the factory, it is set such that the secret code is not required.
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)\(^1\), and other safety regulations.

### Caution

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

### Warning

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

### Danger

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

#### Warning

1. 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 catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The inspection and maintenance of machinery/equipment should only be performed by an operator who is appropriately trained and experienced.

3. 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.

4. 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, combustion 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 specifications described in the product catalog.
   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.

#### Caution

1. 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.

#### 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

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\(^2\)

   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. 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.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

   \(^2\) 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

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

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.

Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.