



# Digital Pressure Switch Series ZSE6/ISE6

(For Vacuum)

(For Positive Pressure)

## Leakage Rating : $1 \times 10^{-9}$ atm cc/s

Sensor and fitting section are electron-beam welded.

VCR<sup>®</sup> style and Swagelok<sup>®</sup> type fitting connections provide for high integrity sealing.

Applicable for pressure detection of fluids and gases where leakage is unacceptable.

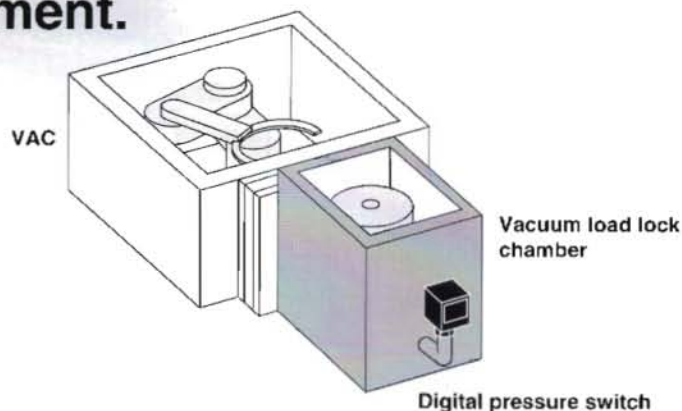
## Stainless Steel Diaphragm and Fitting

Diaphragm design prevents sensor contact directly with fluid media.

Non-corrosive stainless steel is used for diaphragm (SUS630) and fitting (SUS304).



**Atmospheric pressure detection and vacuum pressure measurement for load lock chamber in semiconductor production equipment.**



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(For vacuum)

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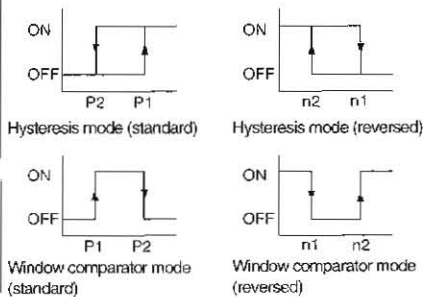
## Multiple display units

Free selection of display units and ease of unit conversion make these switches adaptable for any global user.

(MPa, kPa, kgf/cm<sup>2</sup>, mmHg, bar, PSI)

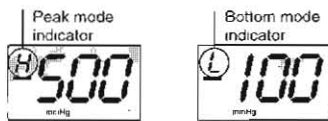
## Variety of switch output modes

Can be programmed for a hysteresis mode, window comparator mode, or reversed output of these respective modes.



## Peak / Bottom hold function

Press the ▲ or ▼ button while pressure is applied and the peak pressure (upper limit) or bottom pressure (lower limit) will be held and displayed. This function is available during programming of setpoints.



## Complete self-diagnosis function

An error code is displayed when overcurrent, excessive pressure, data error, or pressure during 0-clear occurs.

## Exact detection of atmospheric pressure

Atmospheric pressure can be exactly detected after vacuum break pressure is applied.

**2 types of output specifications;  
2 output type (either NPN or PNP)  
and analog output type**

## Model

Model	Switch specifications	Output specifications
ZSE6B-□-26L	Analog output	1~5V(5%F.S.)
ZSE6B-□-27L	Switch · 2 output	NPN open collector 30V, 80mA
ZSE6B-□-67L		PNP open collector 80mA
ISE6B-□-26L	Analog output	1~5V(5%F.S.)
ISE6B-□-27L	Switch · 2 output	NPN open collector 30V, 80mA
ISE6B-□-67L		PNP open collector 80mA

## Standard Specifications

Item	ZSE6B-□-26L	ZSE6B-□-27L	ZSE6B-□-67L	ISE6B-□-26L	ISE6B-□-27L	ISE6B-□-67L
Pressure setting range	-100kPa~100kPa {1.02kgf/cm <sup>2</sup> }			-0.1MPa~1MPa {10.2kgf/cm <sup>2</sup> }		
Unit indications	mmHg, kPa, PSI kgf/cm <sup>2</sup> , bar			MPa, PSI kgf/cm <sup>2</sup> , bar		
Min. display differential	mmHg:10, kPa:2, PSI:0.2 kgf/cm <sup>2</sup> :0.02, bar:0.02			MPa:0.01, PSI:1 kgf/cm <sup>2</sup> :0.1, bar:0.1		
Note 1) Hysteresis	Hysteresis mode		Adjustable (2 digits or more)		Adjustable (3 digits or more)	
	Window comparator mode		Fixed (2 digits)		Fixed (3 digits)	
Indicator lights	ON : Output ON Output 1 : Green Output 2 : Red		ON : Output ON Output 1 : Green Output 2 : Red		ON : Output ON Output 1 : Green Output 2 : Red	
Response frequency	200Hz			200Hz		
Max. operating pressure	200kPa {2.04kgf/cm <sup>2</sup> }			1.5MPa {15.3kgf/cm <sup>2</sup> }		

## Common Specifications

Fluid	Fluids or gases non-corrosive to SUS304 and SUS630
Temp. characteristics	±3%F.S. max.
Repetition accuracy	±1% F.S. max.
Power supply	12~24VDC (Ripple 10% max.)
Consumption current	45mA max.
Fault display	Indication : Red LED flashes / LCD error code displayed
Pressure display	3 1/2 Digit LCD (With backlighting)
Self diagnosis function	Excess pressure / Data error / (Excess current Note 2) / Pressure during 0-clear
Operating temp range	0~50°C
Noise resistance	500Vp~p pulse width 1μS standing 1nS
Insulation resistance	Between whole wires and case 2MΩ (50VDC by megameter)
Vibration resistance	10~500Hz width=1.5mm or acceleration 10G (Choose the smaller vibration) to X, Y, Z direction (2 hours)
Shock resistance	100G to X, Y, Z direction (3 times for each direction)
Weight	126g (Incl. 3m-length lead wire)

Note 1) ※ "1 digit" is the minimum display / setting differential (See table above).

### ●Hysteresis mode

ZSE : When the values of P1 and P2 are equal or when P1>P2 but within 2 digits, the hysteresis will be automatically set to 2 digits for the set value of P1  
ISE : When the values of P1 and P2 are equal or when P1>P2 but within 3 digits, the hysteresis will be automatically set to 3 digits for the set value of P1.

### ●Window comparator mode

ZSE : The hysteresis is 2 digits, so separate P1 from P2 by 5 digits or more when programming.  
ISE : The hysteresis is 3 digits, so separate P1 from P2 by 7 digits or more when programming.

Note 2) Analog output has no overcurrent detection function

## Fitting Specifications

Model	□SE6B-A2-□	□SE6B-B2-□
Port size	URJ 1/4(9/16-18UNF)	TSJ 1/4(7/16-20UNF)

●Applicable tube outside diameter is 1/4" (6.35mm).

Note 1) Union ring joint (URJ) for use with VCR® type fittings.  
Tube swaged joint (TSJ) for use with Swagelok® type fittings

## Option

Description	Part no.	Note
Bracket	ZS-22-D	With 4 pcs. M3 screws

## How to Order

### Vacuum pressure switch

ZSE6B-B2-27 L

#### Fitting type

A2	URJ 1/4
B2	TSJ 1/4

#### Switch type

26	Analog 3-wire
27	2 output (NPN) 4-wire
67	2 output (PNP) 4-wire

#### Wire entry / length

L	Grommet : 3m
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### Positive pressure switch

ISE6B-B2-27 L

#### Fitting type

A2	URJ 1/4
B2	TSJ 1/4

#### Switch type

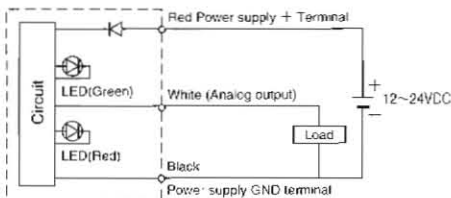
26	Analog 3-wire
27	2 output (NPN) 4-wire
67	2 output (PNP) 4-wire

#### Wire entry / length

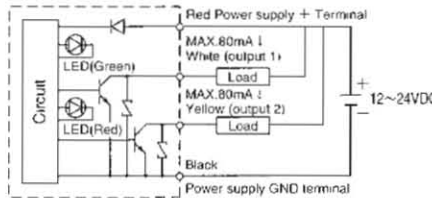
L	Grommet : 3m
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## Internal Circuit and Wiring

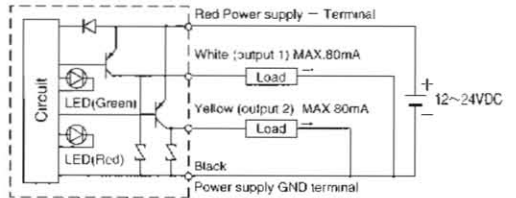
### -26 analog output type



### -27 type NPN open collector



### -67 type PNP open collector



## Precautions

### Installation

- Apply wrench only to the metal hex section (17mm) when piping. Never apply wrench to the resinous section of the main unit.
- Use air to blow out tube fittings to remove any loose metal chips, particles, etc.

### Operating Conditions

This type of switch is not waterproof rated. Protect the switch if exposure to splashing water or oil is expected.

### Wiring

- Avoid wiring together with power or high voltage cables. Signal noise may cause malfunction.
- If induction noise is expected via the piping connection, make a grounding connection for the piping.
- The tensile strength of the cable lead is 49N (5kgf). Avoid damage by always handling the switch by the main housing.

### Leakage Inspection

The welded section is helium leak tested. SMC recommends TSJ type fittings (with ferrule) such as Swagelok<sup>®</sup> fittings or URJ type fittings (with seal, gland, etc.) such as VCR<sup>®</sup> fittings. When using other brand fittings apply the helium leak test at the welded section

#### (Note)

Swagelok<sup>®</sup> is a registered trademark of Crawford Fitting Co. VCR<sup>®</sup> is a registered trademark of Cajon Co.

### Use of Toxic, Corrosive, or Flammable Gas

Pressure sensor and fitting material of this switch is SUS630 and SUS304. Do not use with toxic or corrosive gases. The switch is not rated as explosion proof.

### Fluid Media Use in Explosive Environment

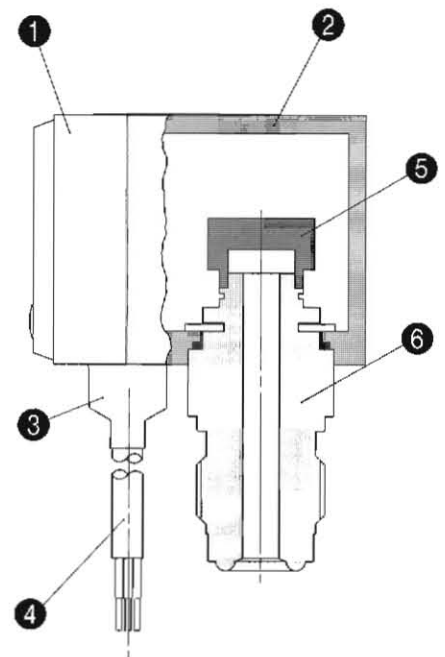
Sections in contact with fluid are made of SUS630 (pressure sensor) and SUS304 (fitting). Use fluid that will not corrode these materials. The corrosion resistance of SUS630 and that of SUS304 are almost the same. For reference, fluid and gas that will not corrode SUS304 are shown below.

Dry air	○
Drain-containing air	○
Hydraulic fluid (JIS-K2213)	○
Silicon oil (JIS-K2213)	○
Lubricating oil (JIS-K6301)	○
Freon	○
Carbon dioxide	○
Ammonia	○
Argon	○
Nitrogen gas	○
Chlorine gas	×

### Voltage Resistance

Voltage resistance between metal fitting and lead wire of the switch is 250V. Do not apply voltage potential in excess of 250V.

## Construction / Parts List



### Parts List

No.	Description	Material
1	Indicator panel	Denatured PPO
2	Body	PBT
3	Seal	NBR
4	Lead wire	Vinyl chloride (Vinyl sheath)
5	Pressure sensor	SUS630
6	Fittings	SUS304

# Digital Pressure Switch

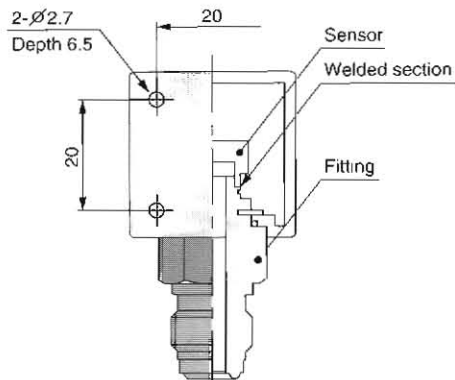
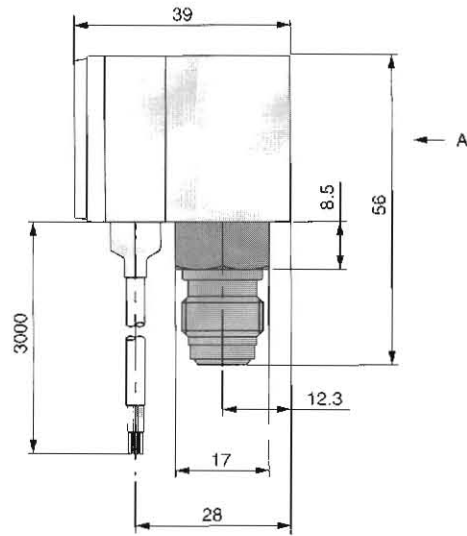
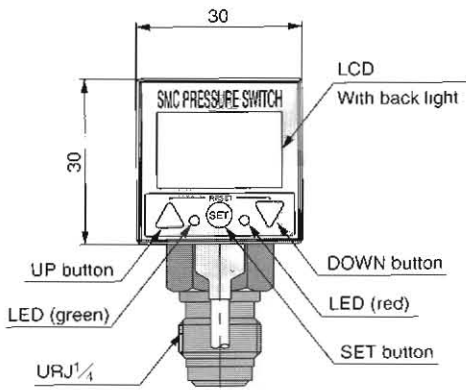
## Series ZSE6/ISE6

### Dimensions

(mm)

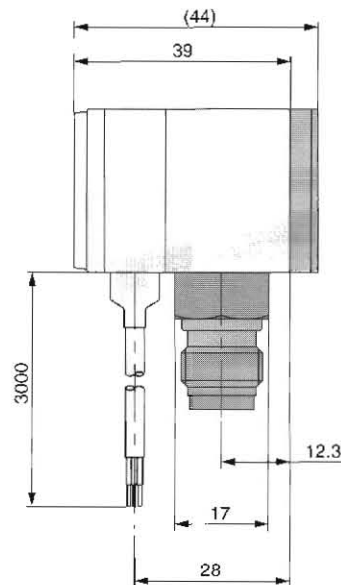
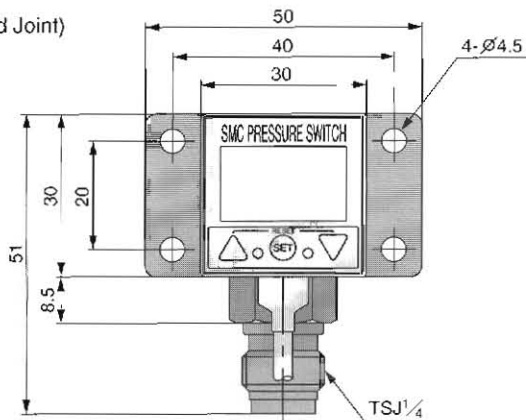
**Scale:75%**

#### URJ<sup>1/4</sup> (Union Ring Joint)



View A

#### TSJ<sup>1/4</sup> (Tube Swaged Joint) With bracket



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