

With Backlight
Digital Pressure Switch
Series ZSE4B
 (For vacuum)
ISE4B
 (For positive pressure)

For General Pneumatics



The backlight display is easy to read even in the dark.

Choice of display units

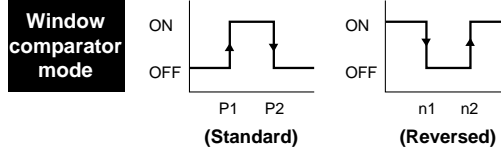
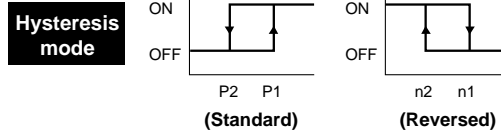
Display units can be easily selected and changed, making these switches globally acceptable.

Vacuum kPa ↔ mmHg ↔ PSI ↔ bar

Positive press. (High) MPa ↔ kgf/cm² ↔ PSI ↔ bar

Positive press. (Low) kPa ↔ kgf/cm² ↔ PSI ↔ bar

Variety of switch output modes

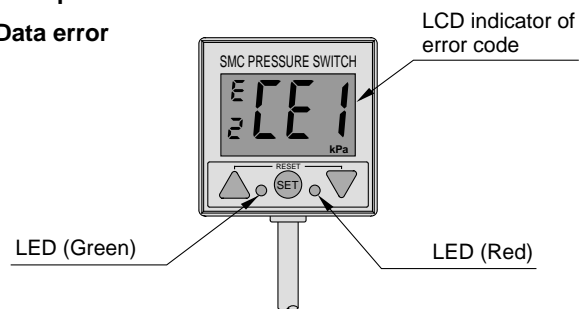


Exact detection of atmospheric pressure (For vacuum)

Atmospheric pressure can be immediately detected after vacuum release pressure is applied.

Self-diagnostic function

- Over-voltage
- Over-pressure
- Data error



Calibration data

The calibration data is stored in an EEPROM. The EEPROM is rated to keep its memory for 100,000 hours (approx. 11 years) without having power supplied.

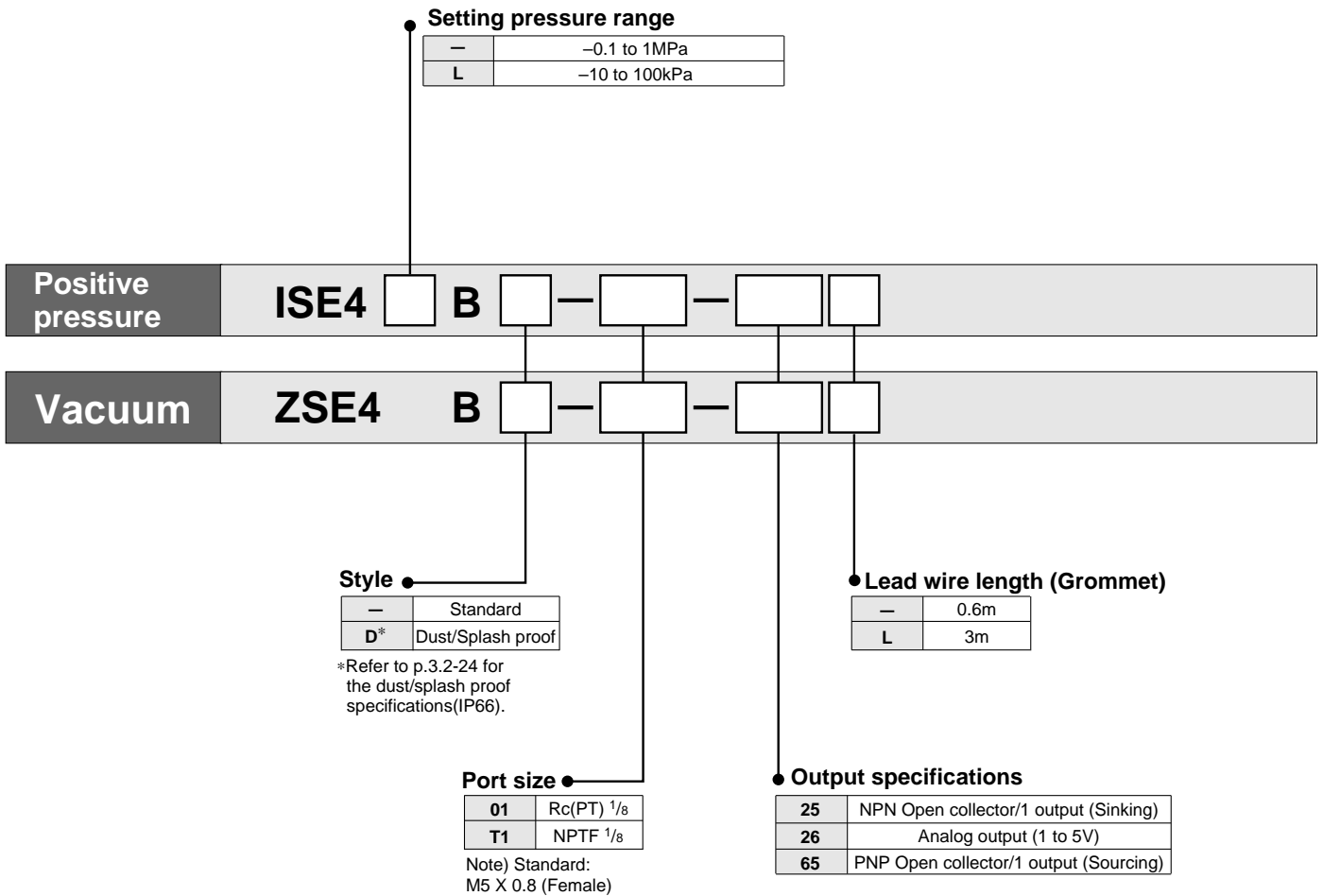
Panel mounting available.

A special adaptor permits panel mounting.

Dust/Splash proof cover (Optional)

Refer to the p.3.2-21 to 3.2-24.

How to Order



PSE

ZSE4
ISE4

ZSE5
ISE5

ZSE6
ISE6

ZSE3
ISE3

GS

PS

ISA

ZSE1
ISE1

ZSE2
ISE2

ZSP

IS

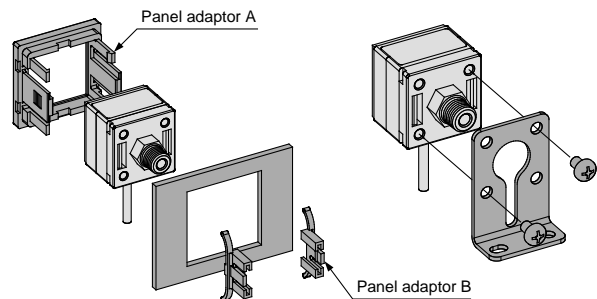
ZSM

PF

IF

Panel mount adaptor No.
(Panel adaptor A + Panel adaptor B)
ZS-22-A
Panel adaptor AZS-22-01
Panel adaptor BZS-22-02

Bracket No.
(With two M4 mounting threads)
ZS-22-B



⚠ Caution

Be sure to read before handling. Refer to p.0-26 and 0-27 for Safety Instructions and common precautions on the products mentioned in this catalog and refer to p.3.0-7 to 3.0-9 for precautions on every series.

ZSE4B/ISE4B

Specifications

Model		Vacuum ZSE4B	Positive pressure: 100kPa ISE4LB	Positive pressure: 1MPa ISE4B
Operating pressure range		10 to -101kPa	-10 to 100kPa	-0.1 to 1MPa
Max. pressure		200kPa		1MPa
Min. display unit	kPa	1	1	-
	MPa	-	-	0.01
	mmHg	5	-	-
	kgf/cm ²	-	0.01	0.1
	PSI	0.1	0.1	1
	bar	0.01	0.01	0.1
Indicator light		ON: When Green LED turns on		
Frequency response		200Hz (5ms)		
Hysteresis ⁽¹⁾	Hysteresis mode	Adjustable (3 digits or more)		
	Window comparator mode	Fixed (3 digits)		
Fluid		Air, Non corrosive gases		
Temperature characteristics		±3% F.S. or less		
Repeatability		±1% F.S. or less		
Supply voltage		12 to 24V DC (Ripple ± 10% or less)		
Output Specification		NPN Open collector 30V, 80mA or less PNP open collector 80mA or less		
Current consumption		45mA or less		
Backlight		Yellow-green		
Error display		Red light blinks. Display the error code on LCD		
Pressure display		3 1/2 digits LCD (10mm-size numerals)		
Self-diagnostic function		(Over current ⁽²⁾), Over pressure, Data error, Pressure during zero out		
Operating temperature range		0 to 50°C (No condensation)		
Noise resistance		1,000Vp-p, Pulse width: 1μS, Standing: 1nS		
Voltage resistance		Between external terminals and housing 1000V AC 50/60Hz for 1 min.		
Insulation resistance		Between external terminals and housing 2MΩ (500V DC by megameter)		
Vibration resistance		10 to 500Hz Pulse width 1.5mm or acceleration 98m/s ² (smaller vibrations) to X, Y, Z direction (2 hrs)		
Shock resistance		980m/s ² to X, Y, Z direction (3 times for each direction)		
Lead wire		Grommet oil-resistant vinyl cable code ø3.4 0.2mm ² 3 core		
Weight ⁽³⁾		Standard: 45g (including 0.6m-long lead wire), Dust/Splash proof: 110g		
Port size		O1: R(PT) 1/8, M5 X 0.8 T1: NPTF1/8, M5 X 0.8		
Protective construction ⁽³⁾		Standard: IP40, Dust/Splash proof: IP66		



Note 1) ●Hysteresis mode: When the values of P1 and P2 are the same or when P1 > P2 within 3 digits, the hysteresis will be automatically 3 digits for the set value of P1.

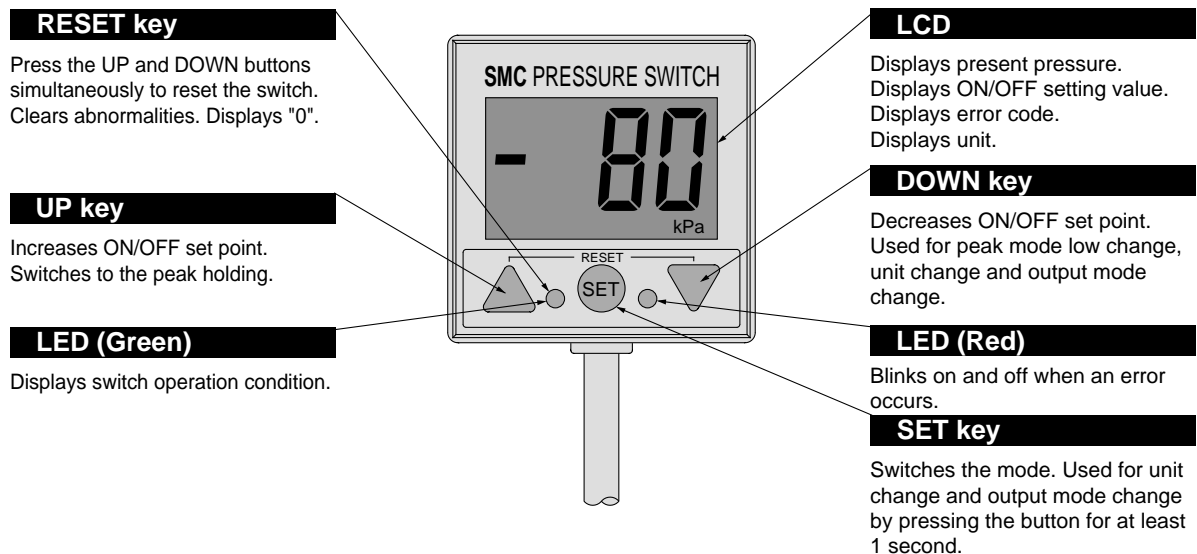
●Window comparator mode: The hysteresis is 3 digits, so separate P1 from P2 by 7 digits or more and set them. 1 digit is the minimum pressure display unit. (See the table above.)



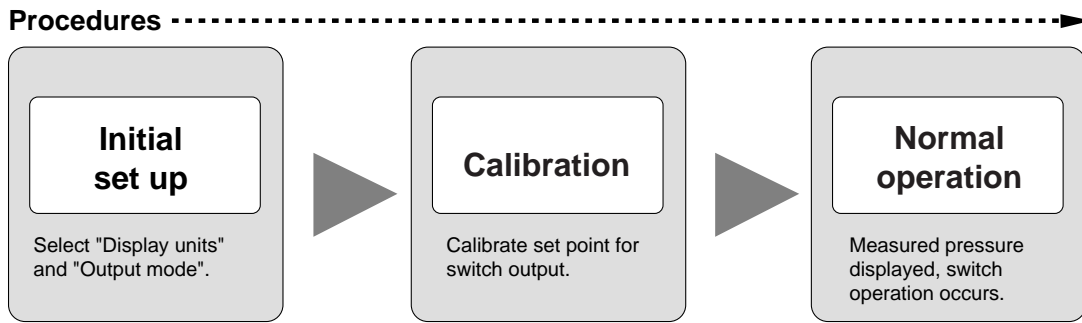
Note 2) ●Analog output has no overcurrent detection function.

Note 3) ●Refer to p.3.2-21 to 3.2-24 for the details about the dust/splash proof specifications.

Description

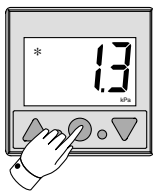


Calibration Procedures



Initial setup

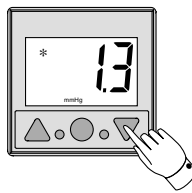
1. Initial setup mode



Press the "SET" button for at least 1 second. "1.3" is displayed and the display blinks.

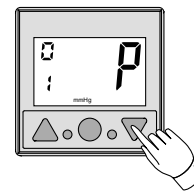
*) "1.3" is a program version of a micro computer.

2. Selection of "Display units"



Select "Display unit" by pressing the ▼ button.
 For High prss. MPa → kgf/cm² → PSI → bar
 Low prss. kPa → kgf/cm² → PSI → bar
 For vacuum kPa → mmHg → PSI → bar

3. Selection of "Output mode"

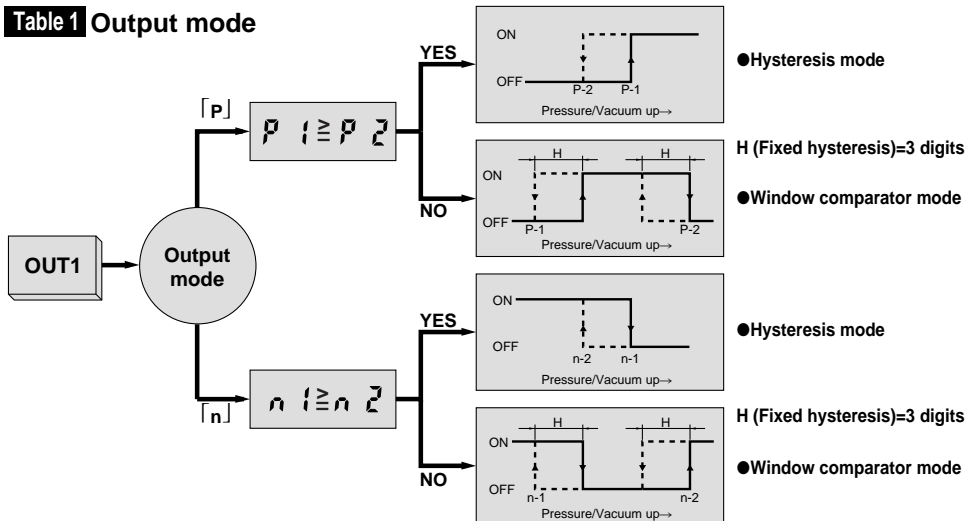


Select "Output mode" by pressing the ▼ button.
 ρ: Normal mode
 α: Reversed output mode
 (Refer to **Table 1** .)

➤ (SET) ➤

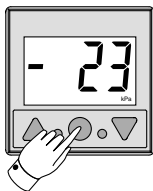
By pressing the "SET" button, the calibration is completed.

Table 1 Output mode



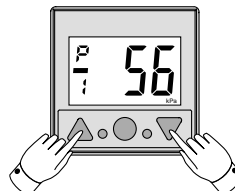
Calibration procedures

1. Set point input mode



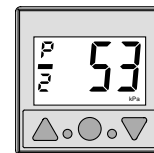
Press the "SET" button.

2. Input set point value (1)



▲ button: Increase set point value
 ▼ button: Decrease set point value

3. Input set point value (2)



▲ button: Increase set point value
 ▼ button: Decrease set point value

➤ (SET) ➤

By pressing the "SET" button, the calibration is completed.

PSE

ZSE4
ISE4

ZSE5
ISE5

ZSE6
ISE6

ZSE3
ISE3

GS

PS

ISA

ZSE1
ISE1

ZSE2
ISE2

ZSP

IS

ZSM

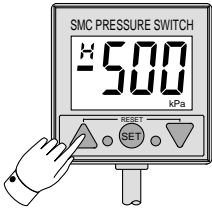
PF

IF

ZSE4B/ISE4B

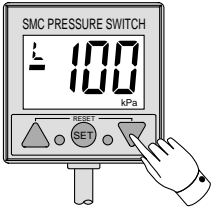
Other Functions

●Peak Mode High



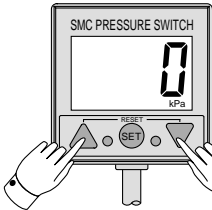
To display the high peak pressure (highest degree of vacuum), press the UP button during normal operation. The LCD displays "H". To return back to normal operation press the UP button again.

●Peak Mode Low



To display the low peak pressure (lowest degree of vacuum), press the DOWN button during normal operation. The LCD displays "L". To return back normal operation, press the DOWN button again.

●Reset Function



Simultaneously pressing the UP and DOWN button will reset the switch.

- Reset will cause the following during normal operation:
 - Peak high is cleared.
 - Peak low is cleared.
 - Zero is reset.
- Reset will cause the following when error has occurred:
 - Switch will assume normal operation (all calibration data has retained).
 - In case of data error, reset the setup mode and then switch will assume normal operation.

Note) In the setup mode, the reset function does not work.

Error Codes

Error codes

Display	Cause	Solution
	Calibration was changed by accident, reason unknown.	Push the Up and Down buttons to reset all the data.
	Output 1 output current is exceeding 80mA.	Turn off the power and verify the load connected output 1.
	Output 1 (Back wire) could be shorted out.	Verify that the output is not shorted out and then reset the switch.
	Max. operating pressure has been exceeded for more than 2 seconds. 1.5 X Max. operating prss. for pressure switch 0.5MPa (72psi) for vacuum switch	Reduce the supply pressure to below the max. pressure rating and then reset the switch.
	When zeroing out the gauge, pressure differences ± 0.07 MPa for ZSE4B and ± 7 kPa for ISE4B have occurred.	Apply atmospheric pressure and then reset the switch.

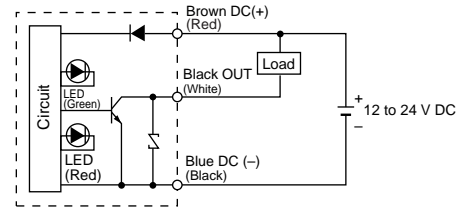
Note 1) Does not apply to Analog output.

Internal Circuit and Wiring

Lead wire colors inside () are those prior to conformity with IEC standards.

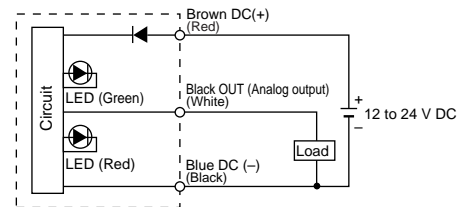
-25 NPN Open Collector

Max.30V, 80mA
Residual voltage:
1V or less



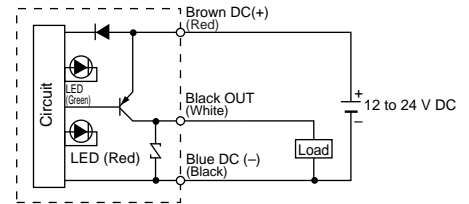
-26 Analog Output

1 to 5V ($\pm 5\%$ F.S.)
Load impedance: 1k Ω



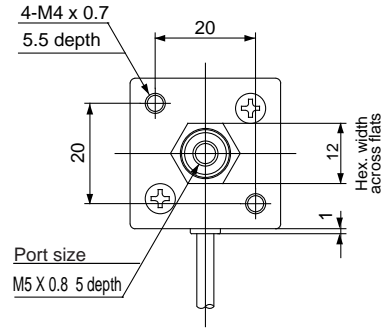
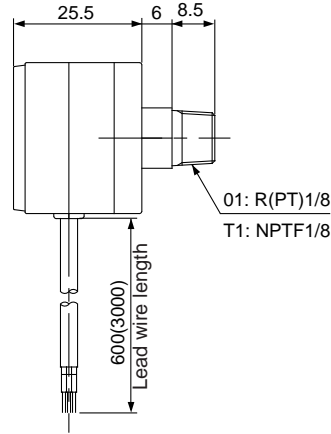
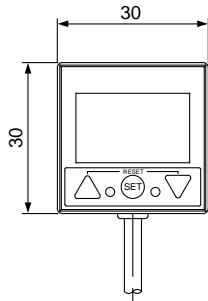
-65 PNP Open Collector

Max.80mA

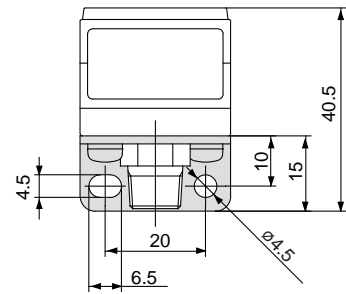
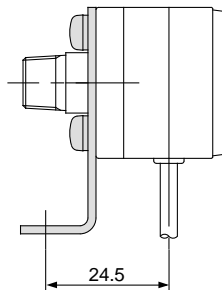
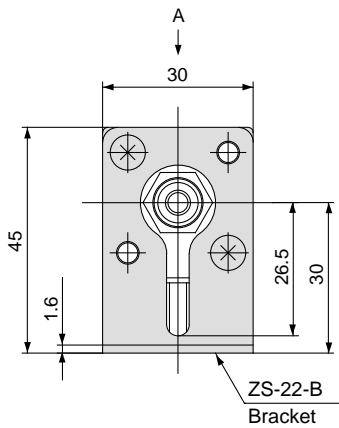


Dimensions

Standard

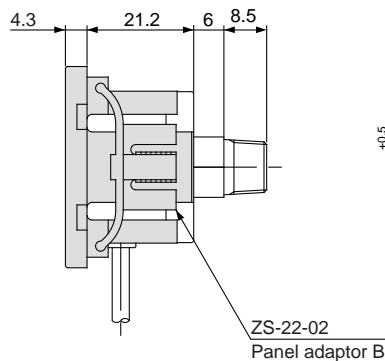
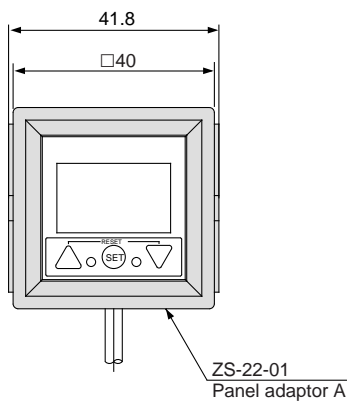


With bracket

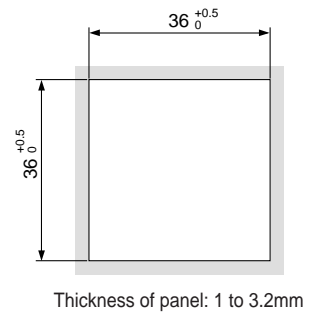


View A

Panel mounting



Cutout dimensions for panel mounting



Thickness of panel: 1 to 3.2mm

PSE

ZSE4
ISE4

ZSE5
ISE5

ZSE6
ISE6

ZSE3
ISE3

GS

PS

ISA

ZSE1
ISE1

ZSE2
ISE2

ZSP

IS□

ZSM

PF□

IF□