

LCD Readout
Digital Pressure Switch
Series ZSE4
 (For vacuum)
ISE4
 (For positive pressure)

For General Pneumatics



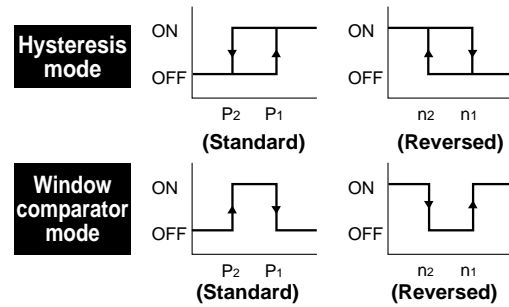
Digital Readout and
 push-button calibration

Choice of display units

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

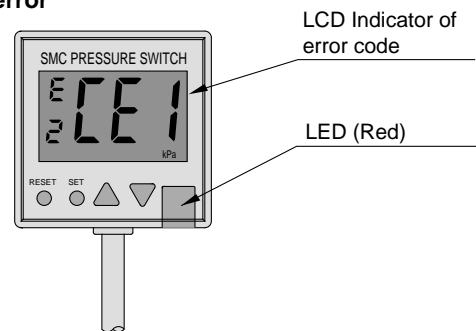
- Vacuum** kPa ↔ mmHg ↔ PSI ↔ bar
- Positive press. (High)** MPa ↔ kgf/cm² ↔ PSI ↔ bar
- Positive press. (Low)** kPa ↔ kgf/cm² ↔ PSI ↔ bar

Variety of switch output modes



Self-diagnostic function

- Over-voltage
- Over-pressure
- Data error



Panel mounting available.

A special adaptor permits panel mounting.

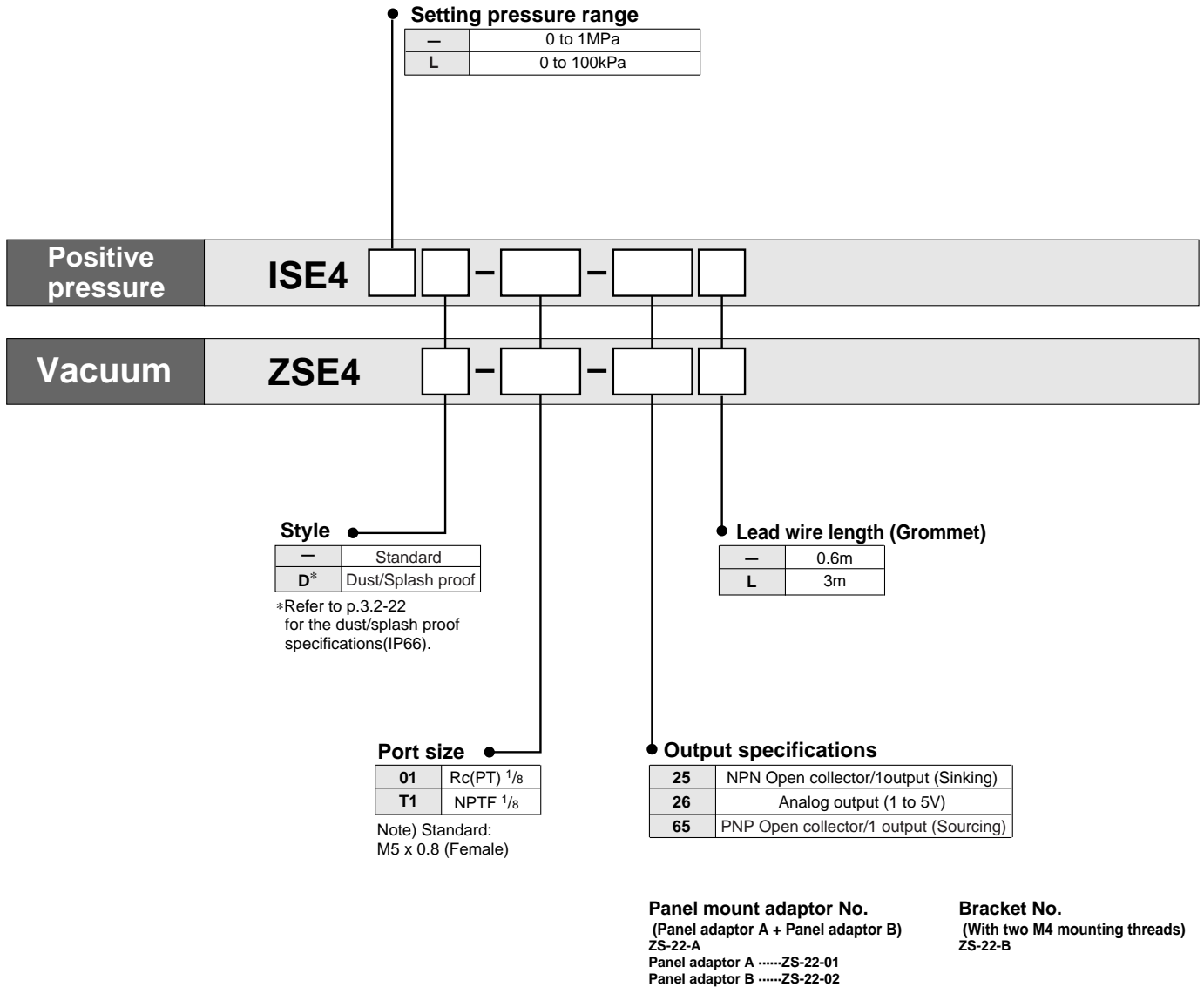
Dust/Splash proof cover (Optional)

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

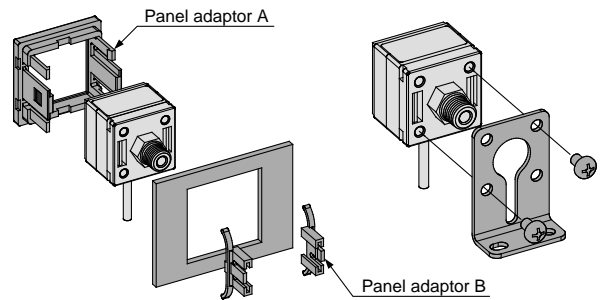
Calibration data

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.

How to Order



- PSE
- ZSE4 ISE4**
- ZSE5 ISE5
- ZSE6 ISE6
- ZSE3 ISE3
- GS
- PS
- ISA
- ZSE1 ISE1
- ZSE2 ISE2
- ZSP
- IS□
- ZSM
- PF□
- IF□



⚠ 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.

ZSE4/ISE4

Specifications

Model	Vacuum ZSE4	Positive pressure: 100kPa ISE4L	Positive pressure: 1MPa ISE4
Operating pressure range	0 to -101kPa	0 to 100kPa	0 to 1MPa
Max. pressure	200kPa		1MPa
Min. display unit	kPa	1	-
	MPa	-	0.01
	mmHg	5	-
	kgf/cm ²	-	0.01
	PSI	0.1	0.1
	bar	0.01	0.01
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	25mA or less		
Error display	Red light blinks. Display the error code on LCD		
Pressure display	3 1/2 digits (10 mm-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	1000Vp-p, Pulse width: 1μ S-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 500 Hz 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 0.2 mm ² 3 core		
Weight	Standard: 40g (including 0.6m-long lead wire), Dust/Splash proof: 110g		
Port size ⁽²⁾	01: 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 p.3.2-24 for the details about the dust/splash proof specifications.

Description

SET key

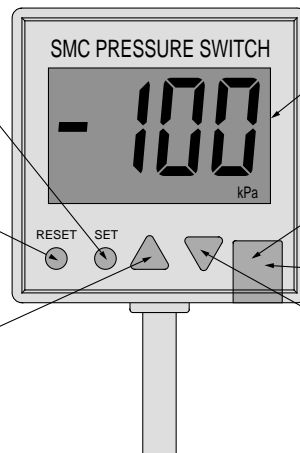
Switches the mode. Used for unit change and output mode change by pressing the button for at least 1 second.

RESET key

Clears abnormalities. Displays "0".

UP key

Increases ON/OFF set point. Switched to peak mode high by pressing the key during normal operation.



LCD

Displays present pressure. Displays ON/OFF setting value. Displays error code. Displays unit.

LED (Green)

Displays OUT1 operation condition.

LED (Red)

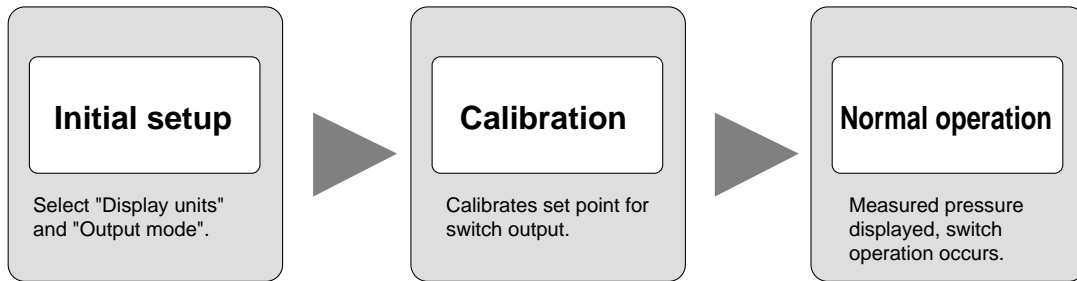
Blinks on and off when an error occurs.

DOWN key

Decreases ON/OFF set point. Switched to peak mode low by pressing the key during normal operation. Used for unit change and output mode change.

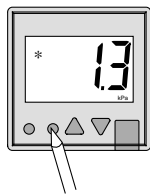
Calibration Procedures

Procedures



Initial setup

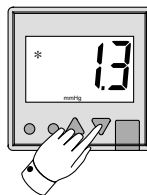
1. Initial setup mode



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

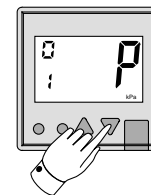
*) "1.3" is a program version of micro computer.

2. Selection of "Display unit"



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

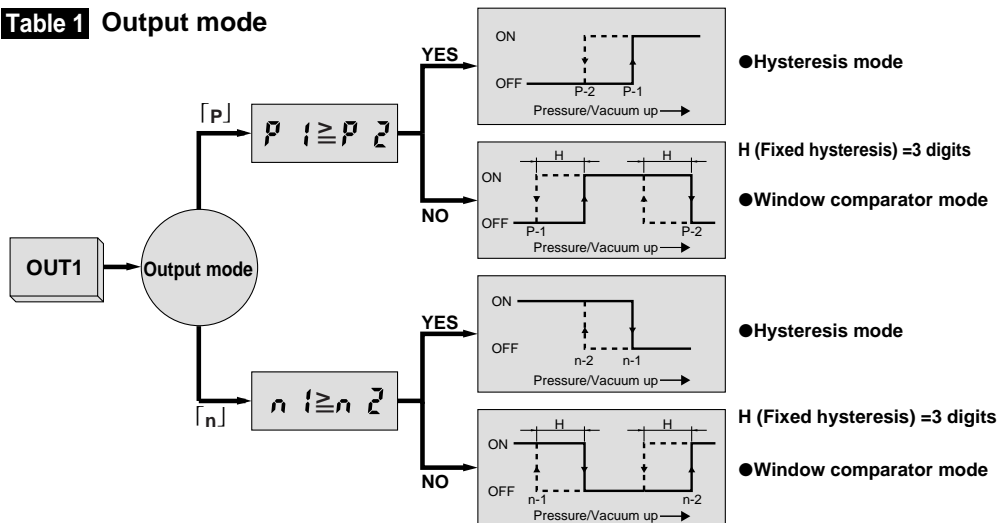
3. Selection of "Output mode"



Select "Output mode" by pressing the ∇ button.
 p : Normal mode
 n : Reversed output mode
 (Refer to **Table 1**.)

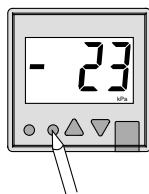
By pressing the "SET" button, the calibration is completed.

Table 1 Output mode



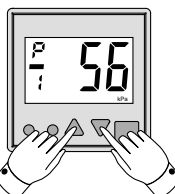
Calibration procedures

1. Set point value input mode



Press the "SET" button.

2. Input set point value (1)



\blacktriangle button: Increase set point value
 \blacktriangledown button: Decrease set point value

3. Input set point value (2)



\blacktriangle button: Increase set point value
 \blacktriangledown button: Decrease set point value

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

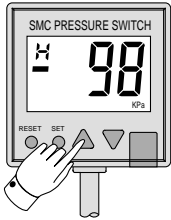
PF

IF

ZSE4/ISE4

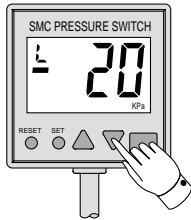
Other Functions

●Peak Mode High



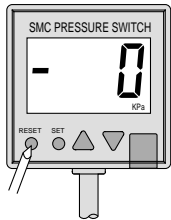
To display the high peak pressure (highest degree of vacuum), press the UP button during normal operation. The LCD displays "H". To return back to normal operation press the UP button again.

●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.

1) Reset will cause the following during normal operation:

- Peak high is cleared.
- Peak low is cleared.
- Zero is reset.

2) 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 RESET to reset all the data.
(1)	Output 1 output current is exceeding 80mA.	Turn off the power and verify the load connected output 1.
	Output 1 (Black wire) could be shorted out.	Verify that the output is not shorted out and 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 $\pm 0.07\text{MPa}$ for ISE4 and $\pm 7\text{kPa}$ for ZSE4 have occurred.	Apply atmospheric pressure and then reset the switch.

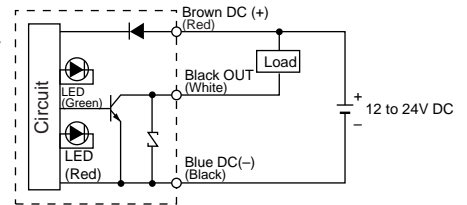
Note 1) Does not apply to Analog output.

Internal Circuit and Wiring

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

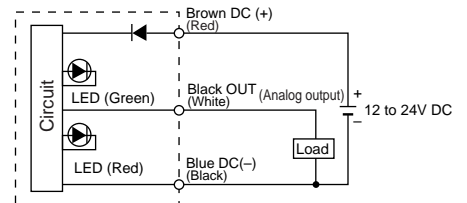
-25 NPN Open Collector

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



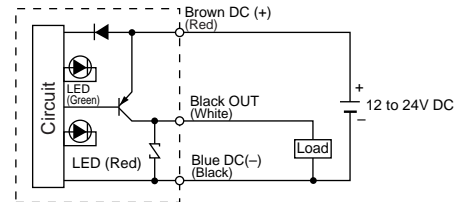
-26 Analog Output

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



-65 PNP Open Collector

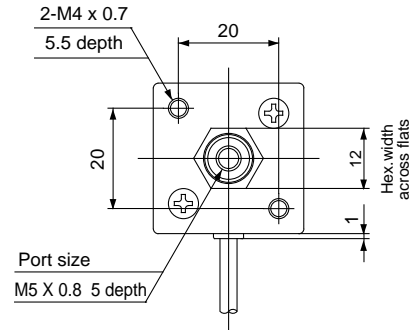
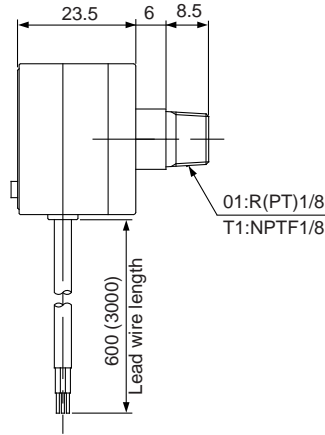
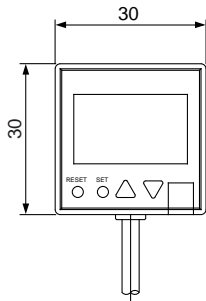
Max.80mA



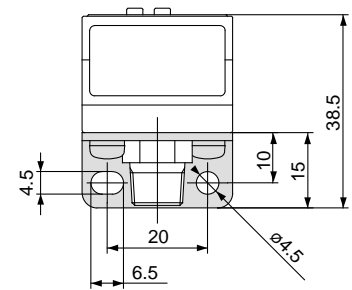
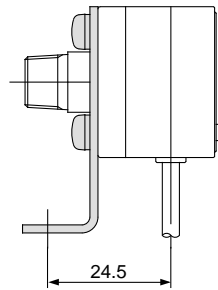
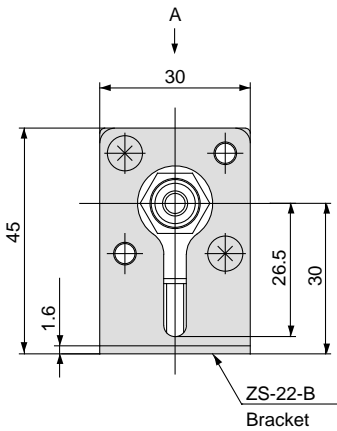
LCD Readout Digital Pressure Switch **ZSE4/ISE4**

Dimensions

Standard

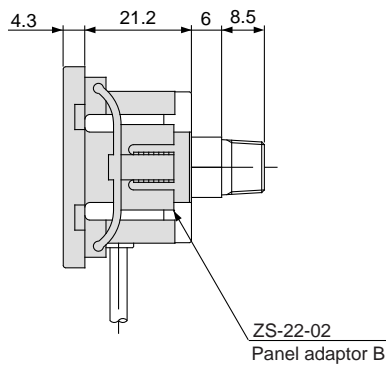
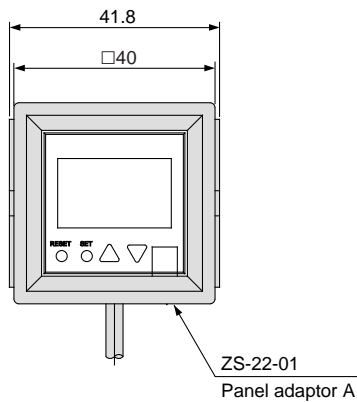


With bracket

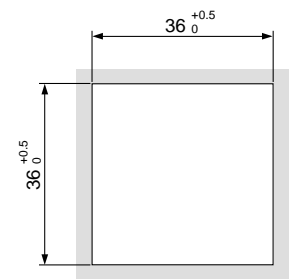


View A

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