

# Compact Pressure Switch

Series **ZSE1** (For Vacuum)/**ISE1** (For Positive Pressure)

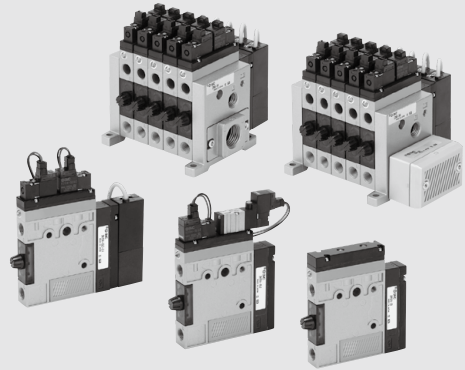
For General Pneumatics



RoHS



Can be integrated  
with ZM ejector system.



## Variable hysteresis

1 to 10% of set pressure (Variable)

## Easy and simple wiring

Connector type



RoHS

# Compact Pressure Switch

## Series ZSE1/ISE1

### How to Order

#### Rated pressure range/ Setting pressure range

Nil	0 to 1 MPa
L	0 to 100 kPa

#### Piping specifications

01	R 1/8 (Note 1)
T1	NPTF 1/8 (Note 1)

Note 1) M5 x 0.8 (female) threaded.

Positive  
pressure

ISE1

Vacuum

ZSE1

#### Piping specifications

00	For mounting on ZM ejector
01	Single mounting R 1/8 (Note 2)
T1	Single mounting NPTF 1/8 (Note 2)

Note 2) Single mounting style: M5 x 0.8 (female) threaded.

#### Wiring specifications

Nil	Grommet type (Lead wire: 0.6 m)
L	Grommet type (Lead wire: 3 m)
C	Connector type (Lead wire: 0.6 m)
CL	Connector type (Lead wire: 3 m)
CN	Without connector

#### Output specifications

14	NPN open collector 1 output w/o analog output, 3 turns adjustment
15	NPN open collector 1 output w/o analog output, 200 degrees adjustment
16	NPN open collector 2 output w/o analog output, 3 turns adjustment
17	NPN open collector 2 output w/o analog output, 200 degrees adjustment
18	NPN open collector 1 output w/analog output, 3 turns adjustment
19	NPN open collector 1 output w/analog output, 200 degrees adjustment
55	PNP open collector 1 output w/o analog output, 200 degrees adjustment

### With Connector/How to Order

● Without lead wire (Connector 1 pc., Socket 4 pcs.) ---ZS-20-A

● With lead wire.....ZS-20-5A-□

Note) When ordering switch with  
5 m long lead wire, indicate  
both part numbers.

Ex.) ZSE1-01-15CN.....1 pc.  
ZS-20-5A-50.....1 pc.

#### Lead wire length

Nil	0.6 m
30	3 m
50	5 m

ZSE30  
ISE30ZSE40  
ISE40ZSE10  
ISE10

ISE70

ZSE80  
ISE80ZSE□  
ISE□

ZSP

PS

ISA2

PSE

IS

ISG

ZSM1

For details about the Pressure Switch Precautions, refer to pages 763 and 764. For details about the Specific Product Precautions, refer to the Operation Manual at SMC website.

Specifications

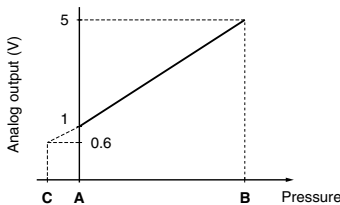
Model		ZSE1	ISE1L	ISE1
		For vacuum	For low pressure	For high pressure
Rated pressure range/Set pressure range		0 to -101 kPa	0 to 100 kPa	0 to 1 MPa
Expanded analog output range		10 to 0 kPa	-10 to 0 kPa	-0.1 to 0 MPa
Proof pressure		500 kPa		1.5 MPa
Fluid		Air/Non-corrosive, non-flammable gas		
Power supply voltage		12 to 24 VDC ±10%, Ripple (P-P)10% or less (With power supply polarity protection)		
Current consumption		1 output: 17 mA or less at 24 VDC, 2 output: 25 mA or less at 24 VDC		
Response time		5 ms or less		
Repeatability		±1% F.S. or less		
Resistance	Enclosure	IP40		
	Operating temperature range	Operating: 0 to 60°C, Stored: -10 to 60°C (With no condensation and no freezing)		
	Operating humidity range	Operating/Stored: 35 to 85%RH (With no condensation)		
Temperature characteristics (Based on 25°C)		±3% F.S. or less		
Withstand voltage		1000 VAC for 1 min. (between terminals and housing)		
Insulation resistance		50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing		
Port size		01: R 8, M5 x 0.8 T1: NPTF 1/8, M5 x 0.8 00: ZM ejector mount type		
Weight		40 g (Including 0.6 m-Long lead wire)		
Lead wire	Grommet type	Oilproof heavy-duty vinyl cable -14, -15, -55 : 3 cores ø3.4, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.1 mm -16, -17, -18, -19: 4 cores ø3.5, Conductor area: 0.14 mm <sup>2</sup> , Insulator O.D.: 1.0 mm		
	Connector type	Heat-resistant vinyl electric wire, 4-wire, Conductor area: 0.3 mm <sup>2</sup> , Insulator O.D.: 1.55 mm		
Standard		CE, RoHS		

Output Specifications

Model	-14	-15	-16	-17	-18	-19	-55
Switch output	NPN open collector 30V, 80 mA or less						PNP open collector 80 mA or less
Residual voltage	1V or less (With load current of 80 mA)						
Number of outputs	1		2		1		
Hysteresis	1 to 10% of set prss. (Variable)		3% F.S. or less (Fixed)		1 to 10% of set prss. (Variable)		1 to 10% of set prss. (Adjustable)
Indicator light	ON: when output is ON (Red)		ON: when output is ON (OUT1: Red, OUT2: Green)		ON: when output is ON (Red)		
Trimmer adjustment	3 turns	200 degrees	3 turns	200 degrees	3 turns	200 degrees	
Analog output	None				1 to 5 V ±5% F.S. or less (At rated pressure range) 0.6 to 1 V ±7% F.S. or less (At set pressure range) Output impedance: Approx. 1 kΩ		None

Analog Output

1 to 5 VDC



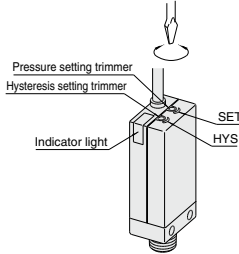
Rated pressure range	A	B	C
For vacuum 0 to -101 kPa	0	-101 kPa	10.1 kPa
For low pressure 0 to 100 kPa	0	100 kPa	-10 kPa
For positive pressure 0 to 1 kPa	0	1 MPa	-0.1 MPa

## Calibration Procedure

- Set the ON-pressure by the pressure setting trimmer. Turning clockwise can set the high pressure/high vacuum pressure.
- In the event of setting, use a flat head screwdriver suited for the groove of a trimmer, and rotate it lightly with a fingertip.

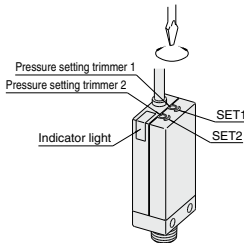
### $\frac{1}{2}$ SE1(L)-□□-14-15-18-19

- Switches with variable hysteresis can be adjusted by means of the HYS potentiometer in the range 1 to 10% of the setting pressure range.
- Readjust the ON-pressure setting when the hysteresis setting trimmer was changed after setting the ON pressure.

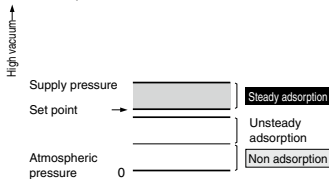


### $\frac{1}{2}$ SE1(L)-□□16-17

- With pressure setting trimmer 1 (SET 1), OUT 1 (Black lead wire, Red LED) can be set.
- With pressure setting trimmer 2 (SET 2), OUT 2 (White lead wire, Green LED) can be set.



- Set the possible min. pressure for adsorption confirmation. If setting the pressure lower than that, switch becomes ON in case that adsorption is not completely done. If setting the pressure higher than that, switch does not become ON even though it may absorb workpieces.



### • Regarding the pressure setting

#### ⚠ Caution

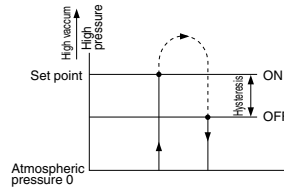
Observe the following precautions for setting the vacuum pressure:

Use your fingertips to gently turn the screwdriver.

Do not use a screwdriver with a large grip or with a tip that does not fit into the trimmer groove because this could strip the groove.

## Hysteresis

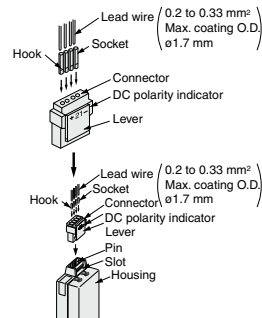
Hysteresis is the pressure difference between the ON and the OFF pressure of the output signal. The set pressure is the pressure selected to switch from OFF to ON condition.



## How to Use Connector

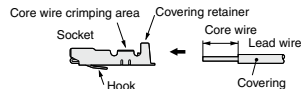
### 1. Attaching and detaching connectors

- When assembling the connector to the switch housing, push the connector straight onto the pins until the lever locks into the housing slot.
- When removing the connector from the switch housing, push the lever down to unlock it from the slot and then withdraw the connector straight off of the pin.



### 2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area. (Crimping tool: model no. DXT170-75-1)



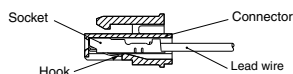
### 3. Attaching and detaching lead wires with sockets

#### • Attaching

Insert the sockets into the square holes of the connector (with +, 1, 2, - indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

#### • Detaching

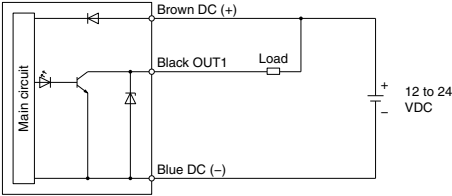
To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (about 1 mm). If the socket will be used again, first spread the hook outward.



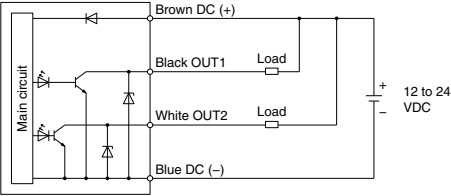
ZSE30
ISE30
ZSE40
ISE40
ZSE10
ISE10
ISE70
ZSE80
ISE80
ZSE□
ISE□
ZSP
PS
ISA2
PSE
IS
ISG
ZSM1

**Internal Circuits and Wiring Examples**

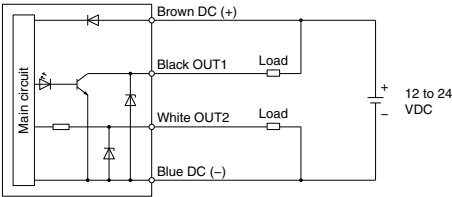
**-14/-15**  
**NPN (1 output)**



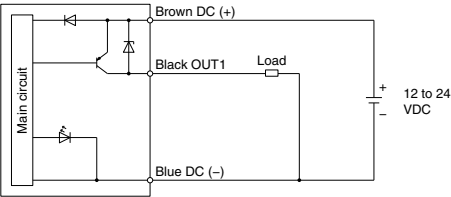
**-16/-17**  
**NPN (2 outputs)**



**-18/-19**  
**NPN (1 output) + Analog voltage output**



**-55**  
**PNP (1 output)**



ZSE30  
ISE30

ZSE40  
ISE40

ZSE10  
ISE10

ISE70

ZSE80  
ISE80

ZSE  
ISE

ZSP

PS

ISA2

PSE

IS

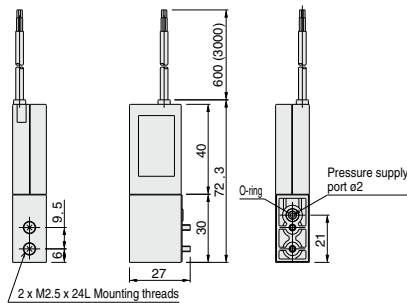
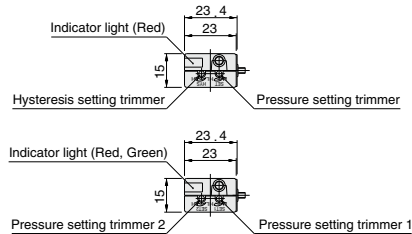
ISG

ZSM1

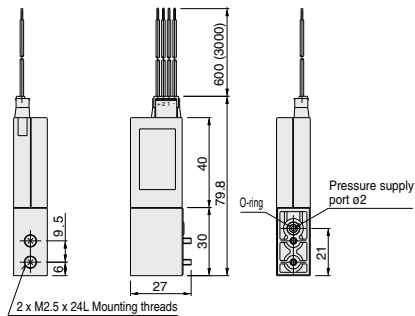
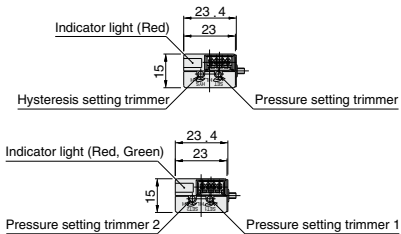
# Series ZSE1/ISE1

## Dimensions

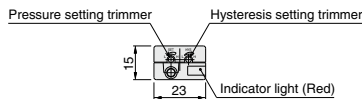
### Grommet type: ZSE1-00-14/-15/-18-19



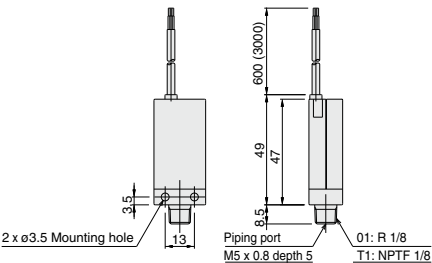
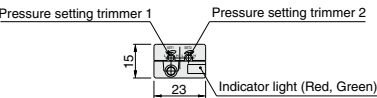
### Connector type: ZSE1-00-14C/-15C/-18C/-19C



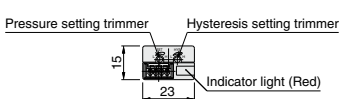
### Grommet type: 1/2 SE1-01-14/-15/-18-19



### 1/2 SE1-01-16/-17



### Connector type: 1/2 SE1-01-14C/-15C/-18C/-19C



### 1/2 SE1-01-16C/-17C

