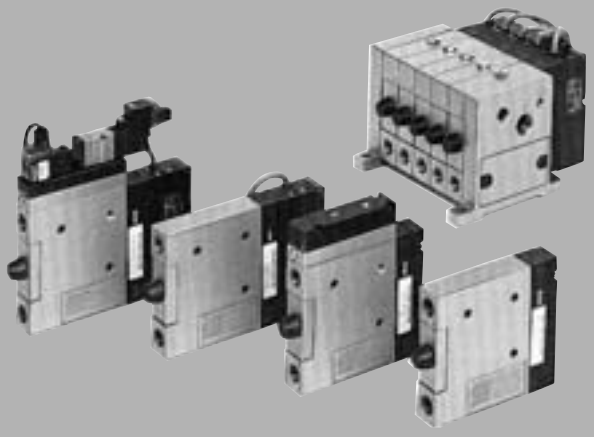
Compact Pressure Switch

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

For General Pneumatics

Can be integrated with ZM ejector system.



Variable hysteresis

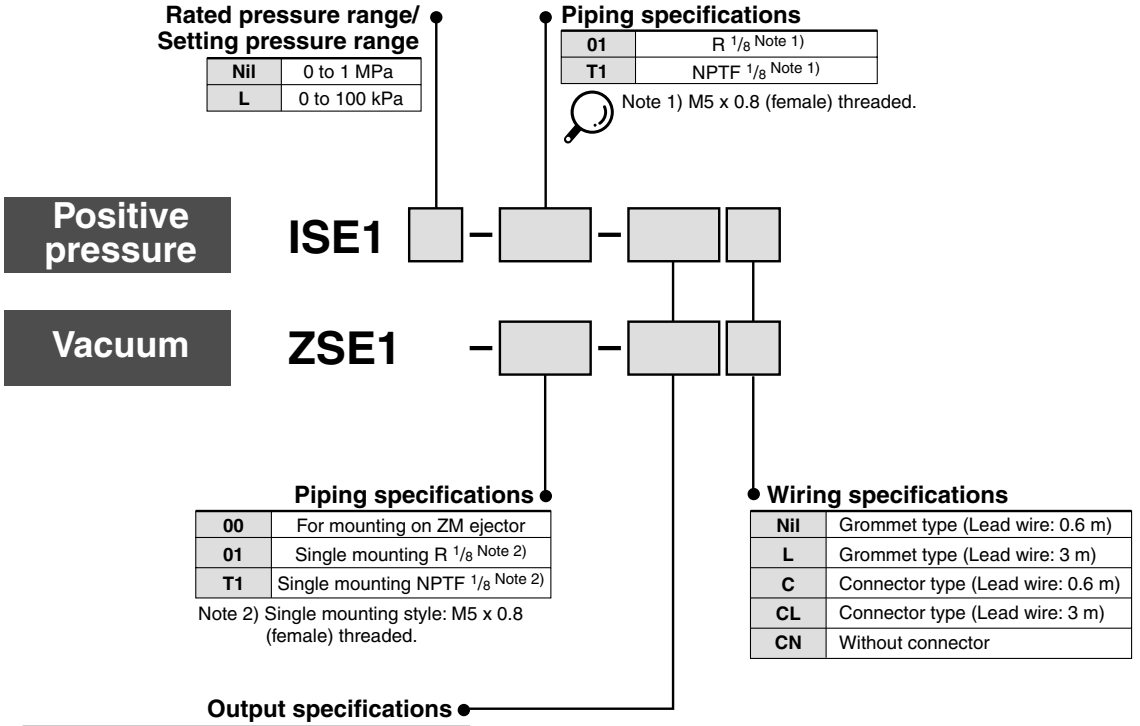
1 to 10% of set pressure (Variable)

Easy and simple wiring

Connector type

Compact Pressure Switch
Series ZSE1/ISE1

How to Order



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

Specifications

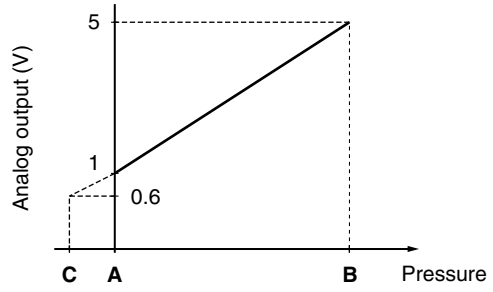
Model			ZSE1	ISE1L	ISE1
			For vacuum	For low pressure	For high pressure
Rated pressure range/Set pressure range			0 to –101 kPa	0 to 100 kPa	0 to 1 MPa
Expanded analog output range			10 to 0 kPa	–10 to 0 kPa	–0.1 to 0 MPa
Proof pressure			500 kPa		1.5 MPa
Fluid			Air/Non-corrosive, non-flammable gas		
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)		
	Vibration resistance		10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z directions for 2 hrs. each (De-energized)		
	Impact resistance		980 m/s² in X, Y, Z directions, 3 times each (De-energized)		
Temperature characteristics (Based on 25°C)			±3% F.S. or less		
Withstand voltage			1000 VAC for 1 min. (between live parts and case)		
Insulation resistance			50 MΩ or more (at 500 VDC by megameter) between live parts and case		
Port size			01: R 8, M5 x 0.8 T1: NPTF 1/8, M5 x 0.8 00: ZM ejector mount type		
Mass			40 g (Including 0.6 m-Long lead wire)		
Lead wire		**Grommet type**	Oil-resistant vinyl cabtire code 3 cores, ø3.4, Cross section: 0.2 mm², Insulator O.D.: 1.1 mm		
		Connector type	Heat-resistant vinyl electric wire, 4-wire, Cross section: 0.3 mm², Insulator O.D.: 1.55 mm		
Standard			Compliant with CE marking		

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 press. (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



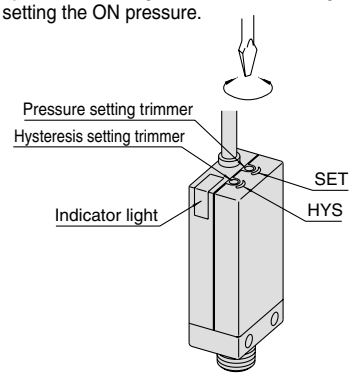
Rated pressure range	A	B	C
For vacuum 0 to –101 kPa	0	–101 kPa	10.1 kPa
For low pressure 0 to 100 kPa	0	100 kPa	–10 kPa
For positive pressure 0 to 1 kPa	0	1 MPa	–0.1 MPa

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.

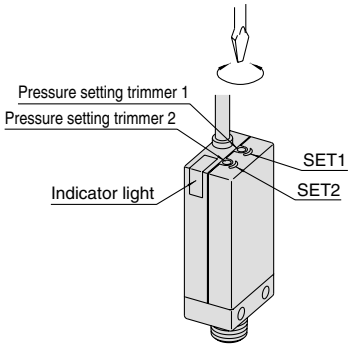
ISE1(L)-□□-14/-15/-18/-19

- 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.

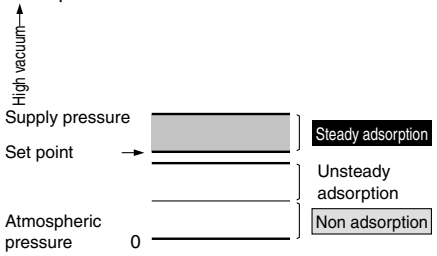


ISE1(L)-□□16/-17

- 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.



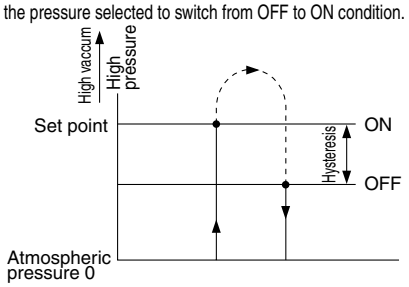
- **Regarding the pressure setting**

⚠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

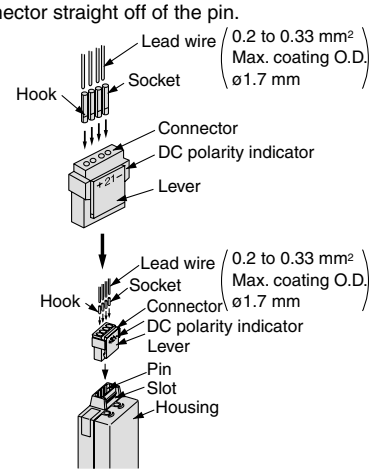
Hysteresis is the pressure difference between the ON and the OFF pressure of the output signal. The set pressure is the pressure selected to switch from OFF to ON condition.



How to Use Connector

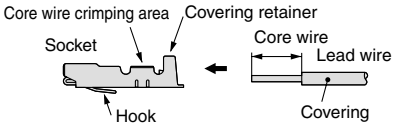
1. Attaching and detaching connectors

- 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.



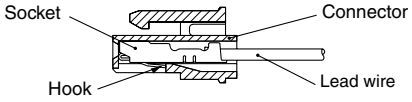
2. Crimping of lead wires and sockets

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)



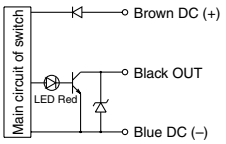
3. Attaching and detaching lead wires with sockets

- 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.

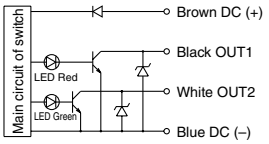


Internal Circuit and Wiring Example

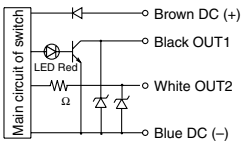
ISE1(L)-□-14, -15



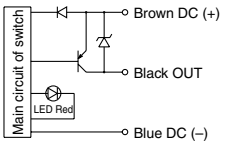
ISE1(L)-□-16, -17



ISE1(L)-□-18, -19



ISE1(L)-□-55

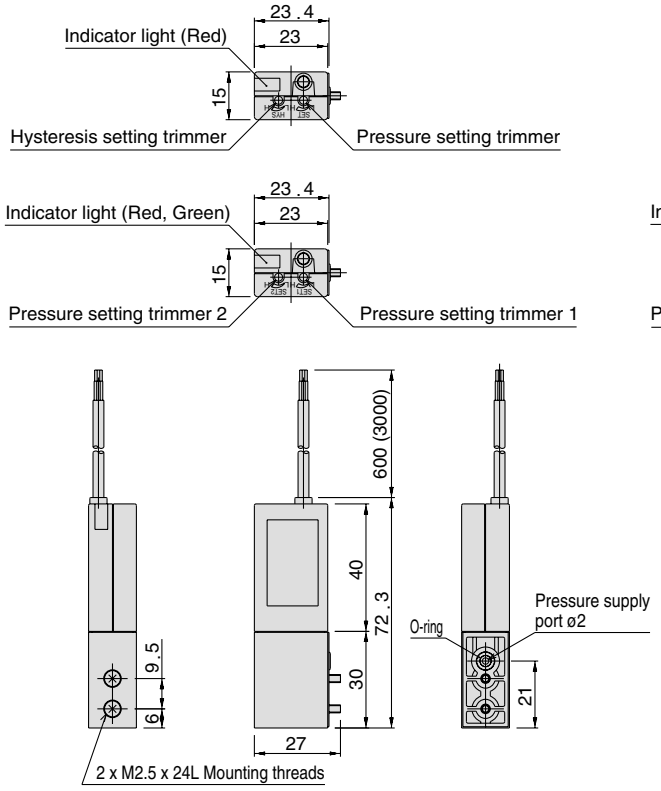


⚠Caution

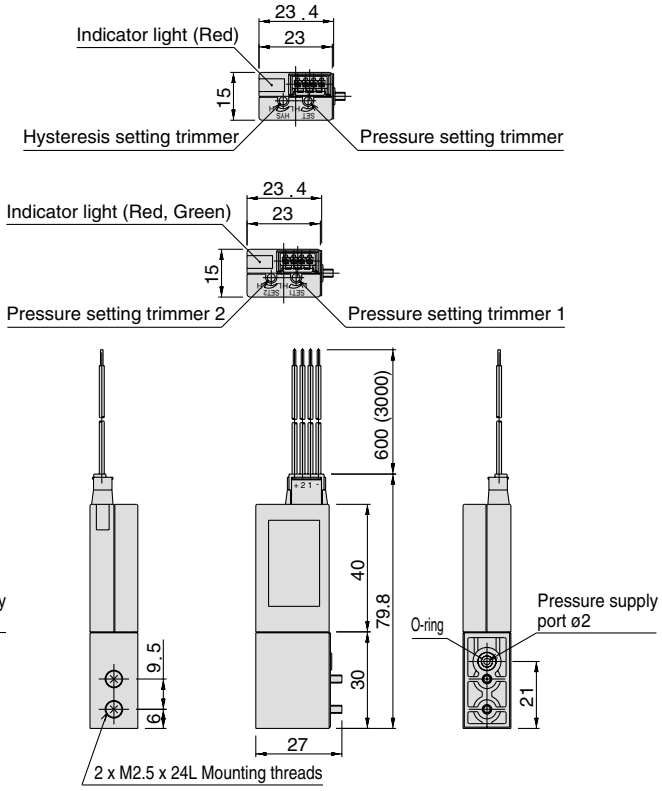
Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

Dimensions

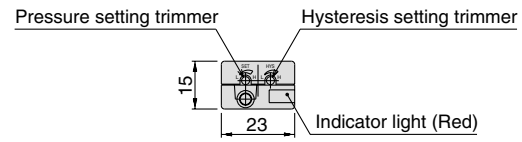
Grommet type:
ZSE1-00-14/-15/-18/-19



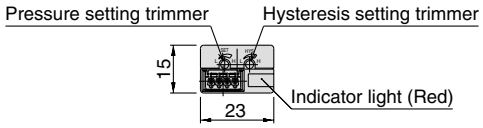
Connector type:
ZSE1-00-14C/-15C/-18C/-19C



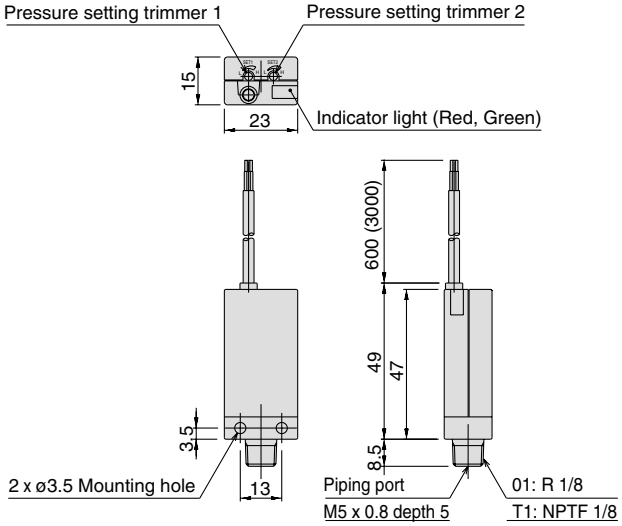
Grommet type:
IZSE1-01T1 -14/-15/-18/-19



Connector type:
IZSE1-01T1 -14C/-15C/-18C/-19C



IZSE1-01-16/-17



IZSE1-01-16C/-17C