

LCD Readout Digital Pressure Switch

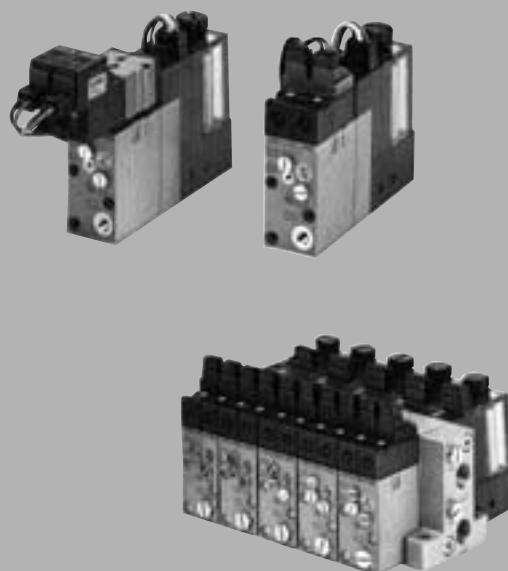
Series **ZSE3** (For Vacuum) / **ISE3** (For Positive Pressure)

For General Pneumatics



Easy pressure setting with the digital display

Can be integrated with a vacuum unit, Series ZX



ZSE
ISE
ZSP
PS
ISA
PSE
IS
ISG
ZSM

Built-in failure prediction output function

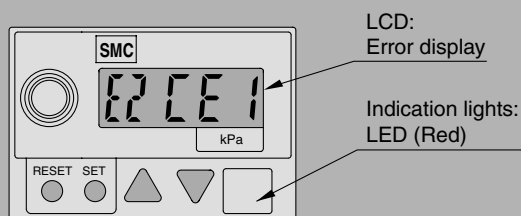
When system performance declines due to filter element clogging, worn vacuum pads, piping leakage, etc., the switch can detect and indicate an oncoming problem before failure occurs.

Two independent outputs

Allows the calibration of two different setpoints e.g. change of vacuum pad size requiring different setpoints, two different supply pressures requiring different pressure confirmation points.

Self-diagnostic function

- Excessive current
- Excessive 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.

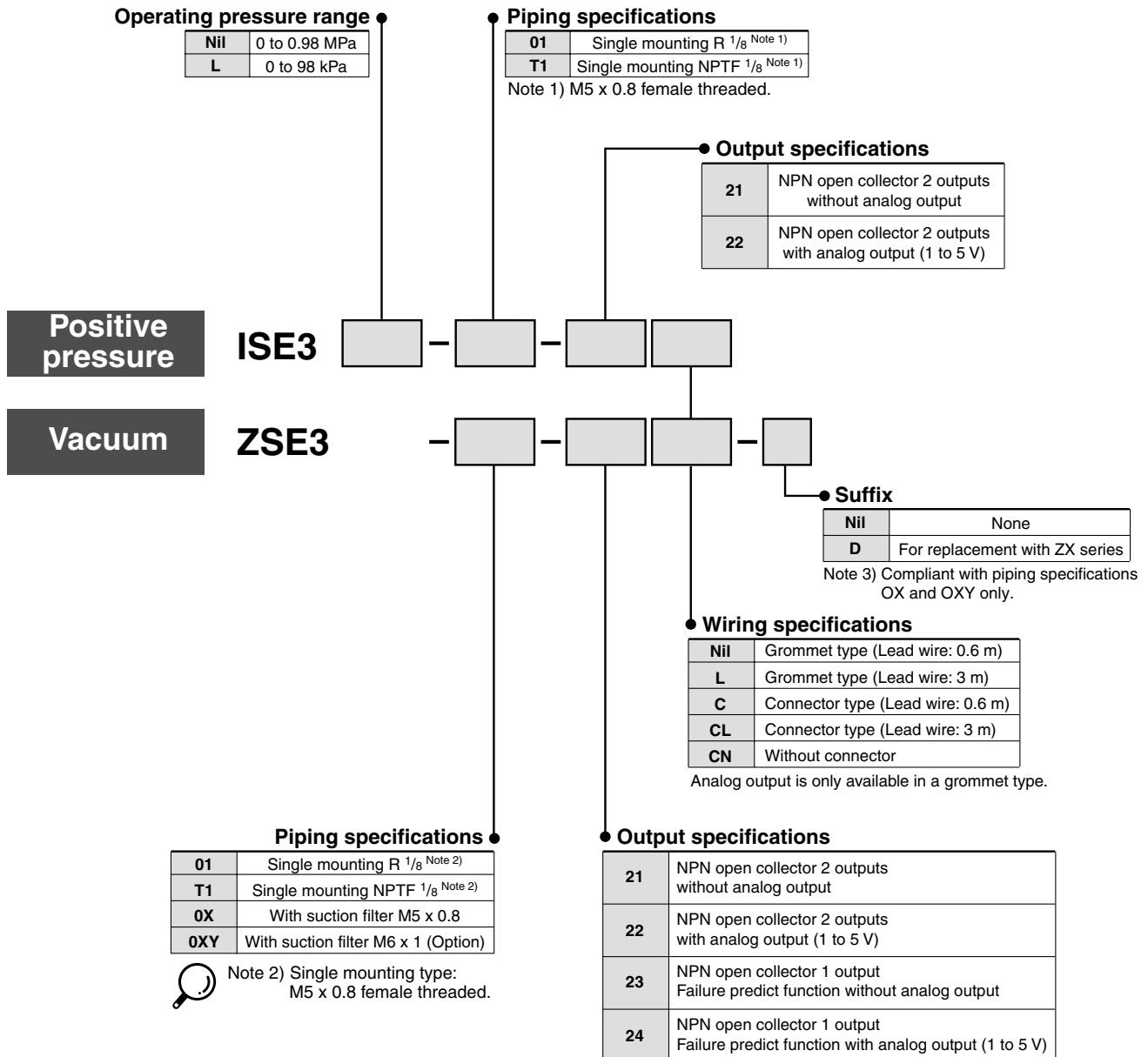
Suction filter comes as standard



LCD Readout Digital Pressure Switch

Series *ZSE3/ISE3*

How to Order



Series ZSE3/ISE3

Specifications

Model		Vacuum ZSE3	Positive pressure 100 kPa ISE3L	Positive pressure 1 MPa ISE3
Operating pressure range		0 to −101 kPa	0 to 98 kPa	0 to 0.98 MPa
Max. operating pressure		200 kPa ⁽¹⁾		1 MPa
Min. display unit	kPa	1	1	—
	MPa	—	—	0.01
Indicator light ⁽²⁾		N: When Green LED (OUT1) or Red (OUT2) turns on		
Frequency response		200 Hz		
Hysteresis ⁽³⁾	Hysteresis mode	Adjustable (Variable from 0)		
	Window comparator mode	Fixed (3 digits)		
Fluid		Air, Non-corrosive gases		
Temperature characteristics		±3% F.S. or less		
Repeatability		±1% F.S. or less		
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)		
Switch output		NPN open collector 30 V 80 mA or less		
Current consumption		25 mA or less		
Error display		Red light blinks. Display the error code on LCD.		
Pressure indication		3 1/2 digits (5 mm-size numerals)		
Self-diagnostic function		Overcurrent, Overpressure, Data error Pressure during 0 clear		
Operating temperature range		0 to 60°C (No dewing)		
Noise resistance		1000 Vp-p, Pulse width 1 μs, Rise time 1 ns		
Withstand voltage		1000 VAC in 50/60 Hz for 1 minute between live parts and case		
Insulation resistance		2 MΩ or more (at 500 VDC by megameter) between live parts and case		
Vibration resistance		10 to 500 Hz Pulse width 1.5 mm or acceleration 98 m/s ² (at the smaller vibration) to X, Y, Z direction (2 hours) (De-energized)		
Impact resistance		980 m/s ² to X, Y, Z direction (3 times for each direction)		
Lead wire	Connector type	Heat-resistant vinyl electric wire, 4-wire, Cross section: 0.31 mm ² , Insulator O.D.: 1.55 mm		
	Grommet type	Oil-resistant vinyl cabtire code -21, -23: 4 cores, ø3.5, Cross section: 0.14 mm ² , Insulator O.D.: 1.0 mm -22, -24: 5 cores, ø3.5, Cross section: 0.15 mm ² , Insulator O.D.: 1.0 mm		
Mass		40 g (including 0.6 m-long lead wire)		
Port size		R 1/8, M5 x 0.8, NPTF 1/8, M5 x 0.8 ZX ejector mounted type: M5 x 0.8	R 1/8, M5 x 0.8 NPTF 1/8, M5 x 0.8	
Enclosure		IP40		
Standard		Compliant with CE marking		



Note 1) • Instant pressure supply of 0.5 MPa has no influence on the switch.

Note 2) • ZSE3-□-23: Failure predictive output is Red.

Note 3) • 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.)

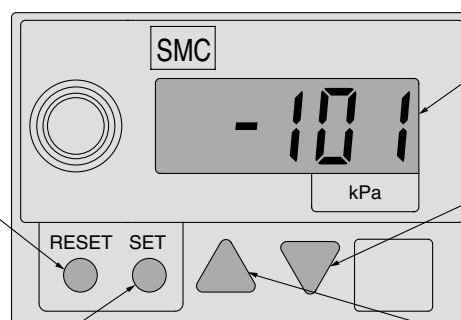
Description

RESET button

This clears the unit when an abnormality occurs.
Displays "0".

SET button

Switches to the setting mode.



LCD

Displays present pressure.
Displays each mode.
Displays error code.

DOWN button

Decreases the ON/OFF set point value.
Used for switch to peak mode low.

UP button

Increases the ON/OFF set point value.
Changed to peak mode high.

Calibration Procedure

Pressure Setting

● 2 output type

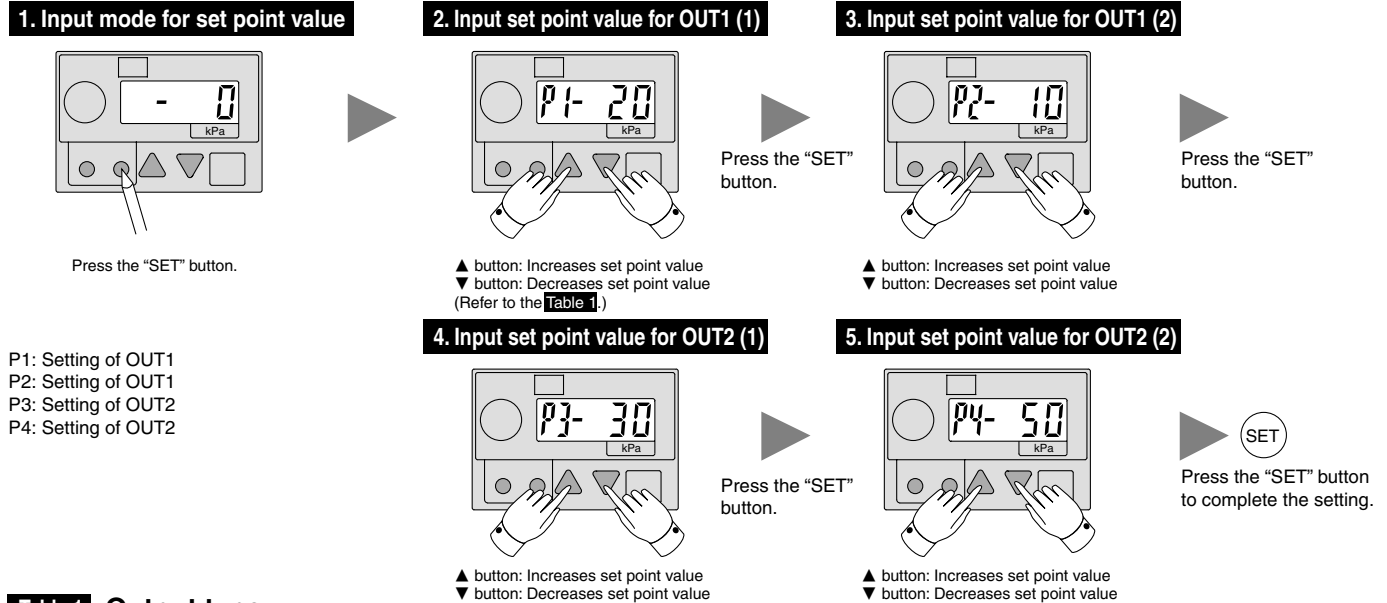
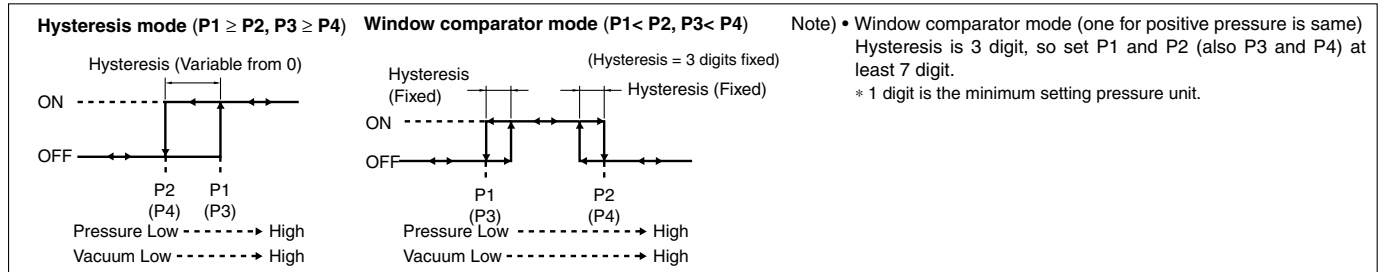


Table 1 Output type



● 1 output type with failure prediction function

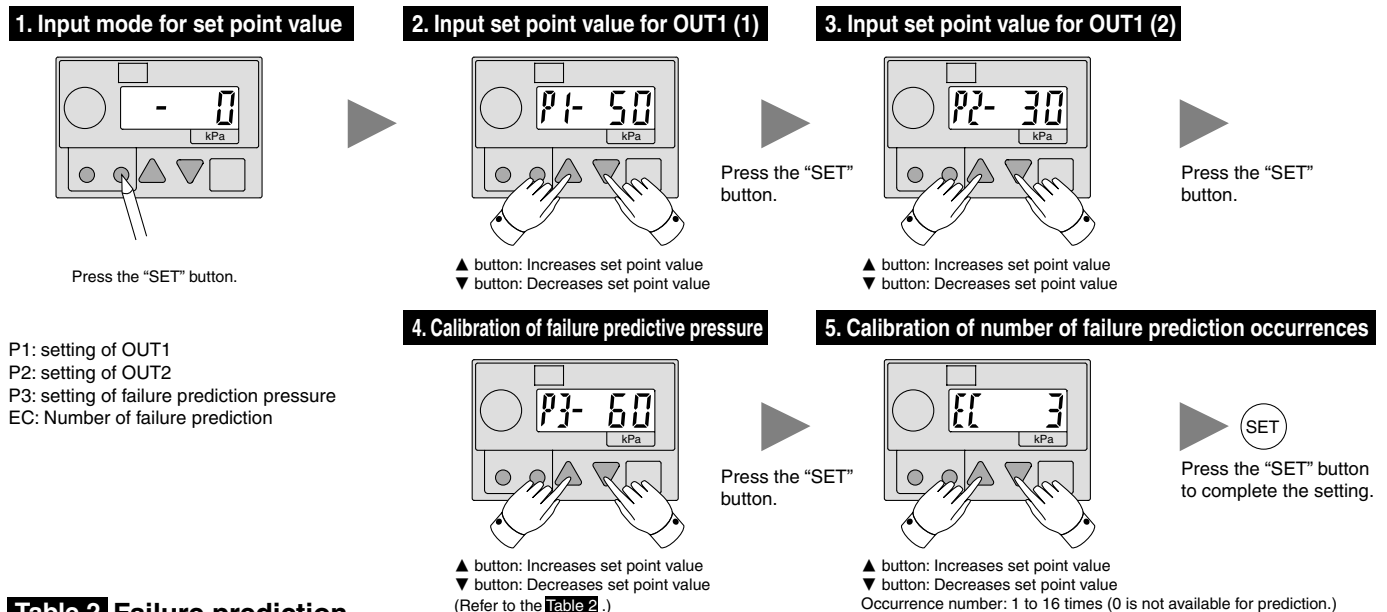
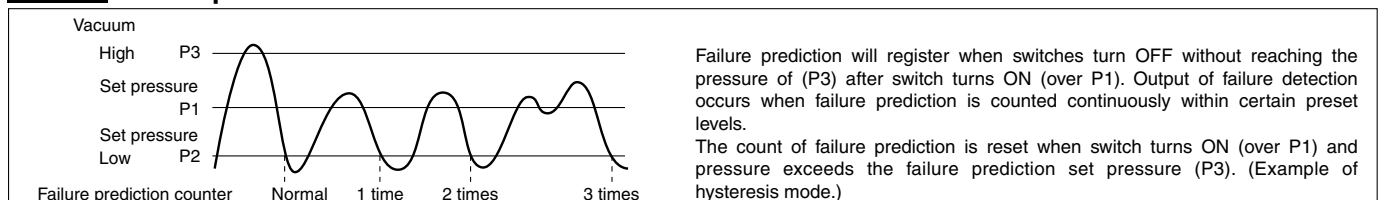


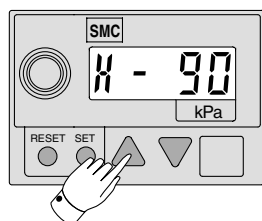
Table 2 Failure prediction



Series ZSE3/ISE3

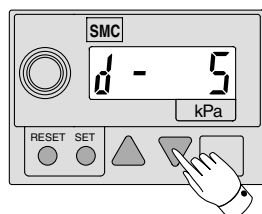
Other Functions

● Peak mode high



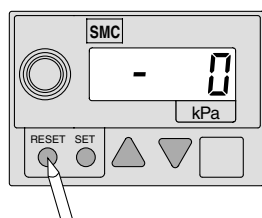
To display the high peak pressure (highest degree of vacuum), press the ▲ button during normal operation. The LCD displays "H". To return back to the normal operation, press the ▲ button again.

● Peak mode low



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

● Reset function



A RESET operation leads to the following results.

- Reset will cause the following during normal operation:
 - Peak high is cleared. Peak low is cleared.
 - Failure prediction counter is cleared.
 - Failure predictive output is reset.
- Reset will cause the following when an error has occurred:
 - Data set in setting mode will remain stored and will return to the same state as when the power is applied. (All calibration data has retained.)
 - In the case of data error, reset the setup mode and then switch will assume normal operation. (All calibration data has retained.)

(Note) Reset Function does not work during setup mode.

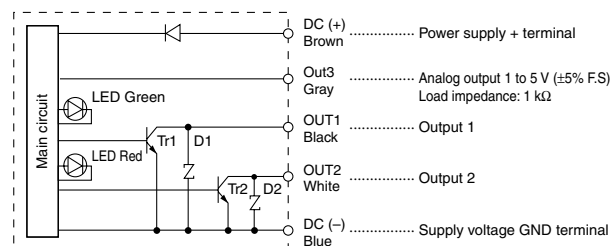
Error Correction

Take the following corrective solutions when errors occur.

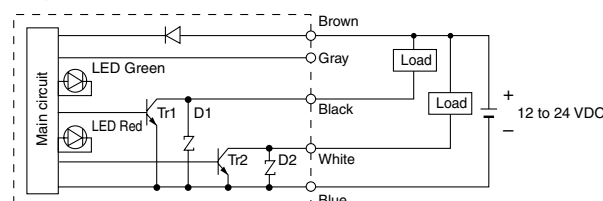
Display	Description	Solution
E1 dE	Set data was changed by accident, reason unknown.	Perform the RESET operation, and reset all data again.
E2 CE1	OUT1 is short-circuited. Overcurrent is being applied to the load.	Turn off the power and replace the load connected with OUT1 (Black wire).
E2 CE2	OUT 2 is short-circuited. Overcurrent is being applied to the load.	Turn off the power and replace the load connected with OUT2 (White wire).
E3 PE	Pressure exceeding 0.5 MPa is being applied. (The pressure over rated pressure is being applied in case of positive pressure.)	Reset the supply pressure less than 0.5 MPa. (Reduce the supply pressure to below rated pressure in case of rated voltage.)
E4 HP	When performing zero clear, compared with the atmospheric pressure, pressure of more than ± 0.07 MPa for 1 MPa and ± 7 kPa for vacuum is being applied.	Apply atmospheric pressure and then reset the switch.

Internal Circuit and Wiring Example

Circuit and connection



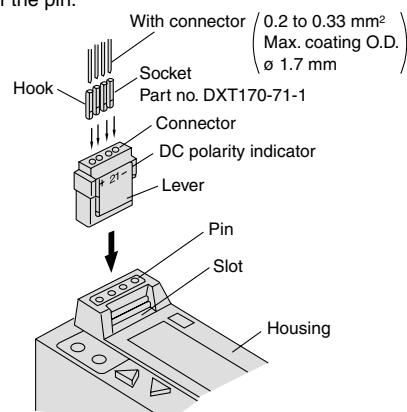
Regular connection



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 that 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 socket

Strip 3.2 to 3.7 mm of the lead wire end, insert each stripped wire into a socket and crimp contact it using special crimping tool. Be careful that the outer insulation of the lead wires does not interfere with socket contact part. (Crimping tool: DXT170-75-1)

3. Attaching and detaching lead wires with sockets

• Attaching

Push the socket 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

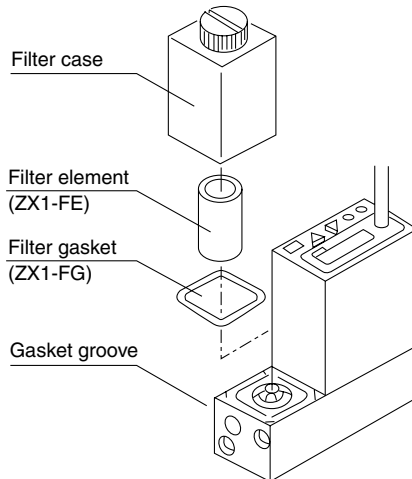
To detach a socket from a connector, pull out lead wire while pressing the socket's hook with a stick having a thin tip (about. 1 mm). If the socket will be used again, first spread the hook outward.

How to Replace Filter Element

Replace the filter element when clogging causes deterioration of the adsorption force or slow response time.

(Element part number: ZX1-FE)

Confirm that the filter gasket is seated in the groove and then reassemble the parts. (Filter gasket part no.: ZX1-FG)



● Regarding the filter case

⚠ Caution

1. The case is made of polycarbonate. Therefore, do not operate it in an environment that is exposed to chemicals such as thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, or water-soluble cutting oil (alkalinic).
2. Operate it away from direct sunlight.

**ZSE
ISE**

ZSP

PS

ISA

PSE

IS

ISG

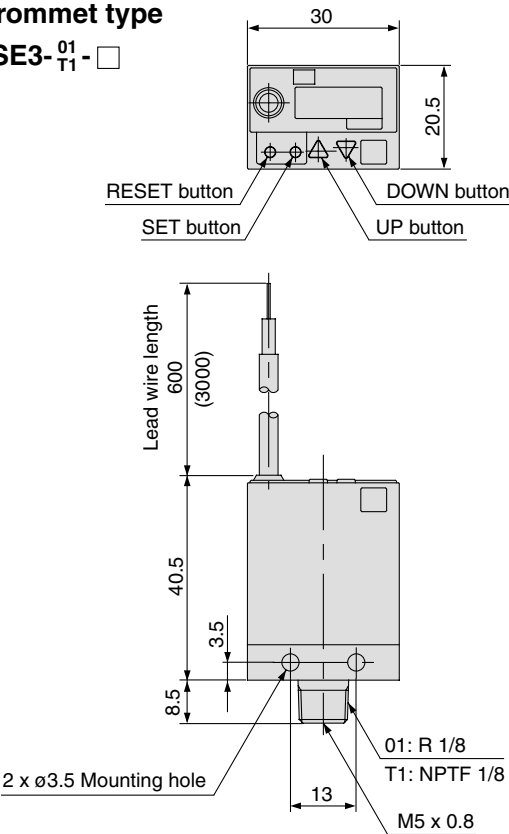
ZSM

Series ZSE3/ISE3

Dimensions/Switch Only

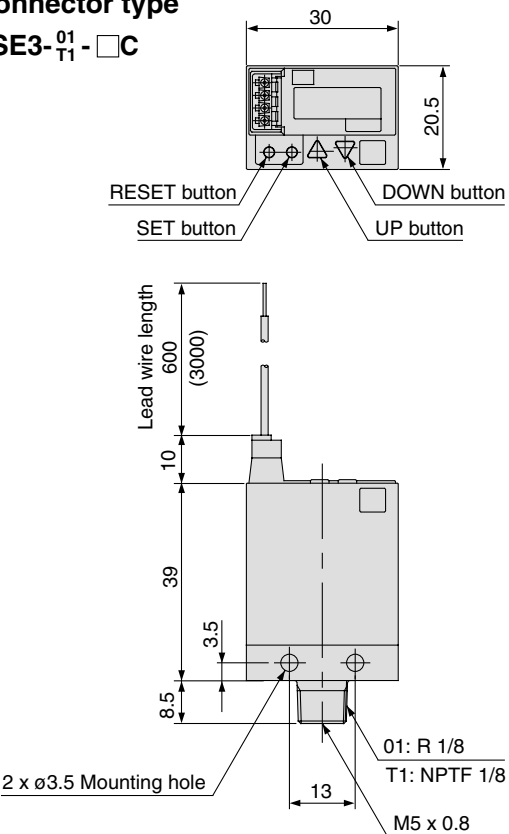
Grommet type

$\frac{1}{2}$ SE3- $\frac{01}{T1}$ - □



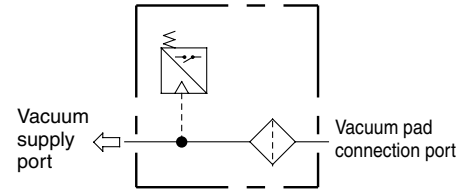
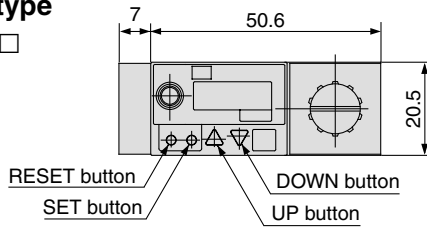
Connector type

$\frac{1}{2}$ SE3- $\frac{01}{T1}$ - □C

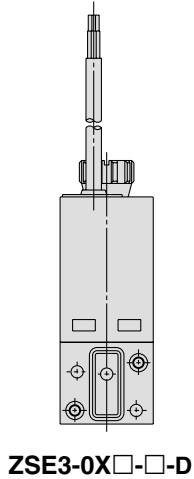


Grommet type

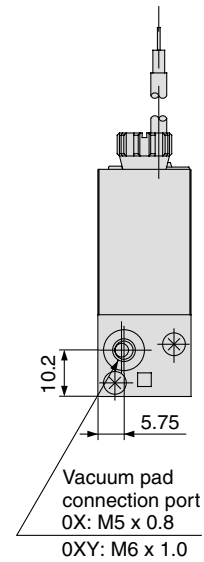
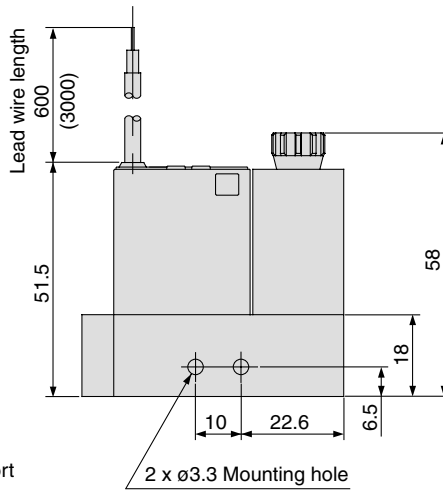
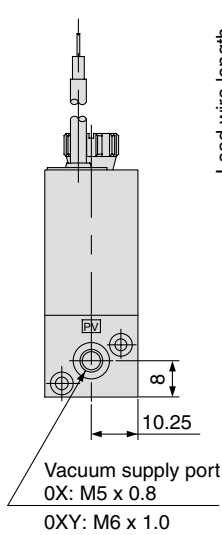
ZSE3-0X□-□



Pneumatic circuit

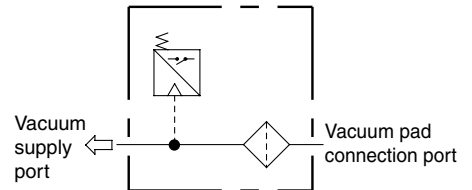
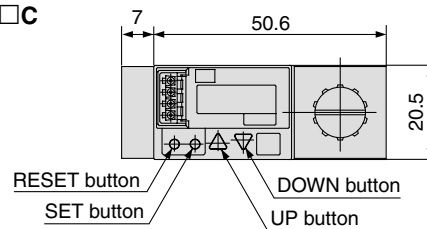


ZSE3-0X□-□-D

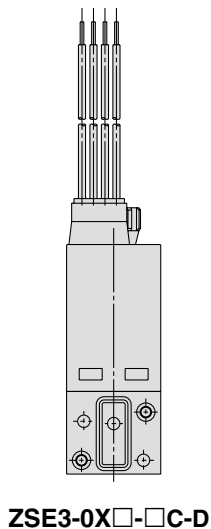


Connector type

ZSE3-0X□-□C



Pneumatic circuit



ZSE3-0X□-□C-D

