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

Rated pressure range/
Setting pressure range
Nil 0 to 1 MPa
L 0 to 100 kPa

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.

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/o analog output, 3 turns adjustment
19 NPN open collector 1 output w/o analog output, 200 degrees adjustment
55 PNP open collector 1 output w/o analog output, 200 degrees adjustment

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

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

<table>
<thead>
<tr>
<th>Model</th>
<th>ZSE1</th>
<th>ISE1L</th>
<th>ISE1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure range/Set pressure range</td>
<td>For vacuum 0 to –101 kPa</td>
<td>For low pressure 0 to 100 kPa</td>
<td>For high pressure 0 to 1 MPa</td>
</tr>
<tr>
<td>Expanded analog output range</td>
<td>10 to 0 kPa</td>
<td>–10 to 0 kPa</td>
<td>–0.1 to 0 MPa</td>
</tr>
<tr>
<td>Proof pressure</td>
<td>500 kPa</td>
<td>1.5 MPa</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air/Non-corrosive, non-flammable gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>12 to 24 VDC ±10%, Ripple (P-P)10% or less (With power supply polarity protection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>1 output: 17 mA or less at 24 VDC, 2 output: 25 mA or less at 24 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>5 ms or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±1% F.S. or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>Operating: 0 to 60°C, Stored: –10 to 60°C (With no condensation and no freezing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating humidity range</td>
<td>Operating/Store: 35 to 85% RH (With no condensation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>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)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact resistance</td>
<td>980 m/s² in X, Y, Z directions, 3 times each (De-energized)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature characteristics (Based on 25°C)</td>
<td>±3% F.S. or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>1000 VAC for 1 min. (between live parts and case)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>50 MΩ or more (at 500 VDC by megameter) between live parts and case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td>01: R 8, M5 x 0.8, T1; NPTF 1/8, M5 x 0.8, GO, ZM ejector mount type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>40 g (Including 0.6 m-Long lead wire)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead wire</td>
<td>Grommet type</td>
<td>Oil-resistant vinyl cabtire code 3 cores, ø0.4, Cross section: 0.2 mm², Insulator O.D.: 1.1 mm</td>
<td></td>
</tr>
<tr>
<td>Connector type</td>
<td>Heat-resistant vinyl electric wire, 4-wire, Cross section: 0.3 mm², Insulator O.D.: 1.55 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Compliant with CE marking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Output Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>-14</th>
<th>-15</th>
<th>-16</th>
<th>-17</th>
<th>-18</th>
<th>-19</th>
<th>-55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch output</td>
<td>NPN open collector 30V, 80 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual voltage</td>
<td>1V or less (With load current of 80 mA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of outputs</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hysteresis</td>
<td>1 to 10% of set prss. (Variable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator light</td>
<td>ON: when output is ON (Red)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimmer adjustment</td>
<td>3 turns 200 degrees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog output</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Analog output

1 to 5 VDC

<table>
<thead>
<tr>
<th>Rated pressure range</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>For vacuum 0 to –101 kPa</td>
<td>0</td>
<td>–101 kPa</td>
<td>10.1 kPa</td>
</tr>
<tr>
<td>For low pressure 0 to 100 kPa</td>
<td>0</td>
<td>100 kPa</td>
<td>–10 kPa</td>
</tr>
<tr>
<td>For positive pressure 0 to 1 kPa</td>
<td>0</td>
<td>1 MPa</td>
<td>–0.1 MPa</td>
</tr>
</tbody>
</table>
Series ZSE1/ISE1

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.

\[\text{SE1(L)-14/-15I} \]

- 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.

\[\text{SE1(L)-16/-17I} \]

- 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.

\[\text{SE1(L)-18/-19I} \]

- 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.

\[\text{SE1(L)-55I} \]

- 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.

3. Attaching and detaching lead wires with sockets

**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.

Internal Circuit and Wiring Example
Compact Pressure Switch Series ZSE1/ISE1

Dimensions

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

Indicator light (Red)
Hysteresis setting trimmer
Pressure setting trimmer

2 x M2.5 x 24L Mounting threads

Grommet type: SE1-01-16/-17

Pressure setting trimmer 1
Pressure setting trimmer 2
Indicator light (Red, Green)

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

Indicator light (Red)
Hysteresis setting trimmer
Pressure setting trimmer

2 x M2.5 x 24L Mounting threads

Connector type: SE1-01-16C/-17C

Pressure setting trimmer 1
Pressure setting trimmer 2
Indicator light (Red, Green)