

# Compact Electro-Pneumatic Regulator Series *ITV0000*



## How to Order

For single unit and single unit for manifold

ITV00 1 0 - 3 [ ] [ ] [ ] N - Q

Pressure range

|   |         |
|---|---------|
| 1 | 0.1 MPa |
| 3 | 0.5 MPa |
| 5 | 0.9 MPa |

Power supply voltage

|   |                   |
|---|-------------------|
| 0 | 24 VDC $\pm 10\%$ |
| 1 | 12 to 15 VDC      |

Input signal

|   |                            |
|---|----------------------------|
| 0 | Current type 4 to 20 mA DC |
| 1 | Current type 0 to 20 mA DC |
| 2 | Voltage type 0 to 5 VDC    |
| 3 | Voltage type 0 to 10 VDC   |

Built-in One-touch fittings type

For single unit

| Symbol | SUP <sup>1</sup>         | OUT <sup>2</sup> | EXH <sup>3</sup> |
|--------|--------------------------|------------------|------------------|
| —      | Metric size (Light grey) | $\phi 4$         |                  |
| U      | Inch size (Orange)       | $\phi 5/32$ "    |                  |

For manifold

| Symbol |                             | SUP <sup>1</sup> | OUT <sup>2</sup> | EXH <sup>3</sup> |
|--------|-----------------------------|------------------|------------------|------------------|
| —      | Metric size<br>(Light grey) | ø6               | ø4               | ø6               |
| U      | Inch size<br>(Orange)       | ø1/4"            | ø5/32"           | ø1/4"            |

Cable connector (Option)

|   |                         |
|---|-------------------------|
| N | Without cable connector |
| S | Straight type 3 m       |
| L | Right angle type 2 m    |

CE compliant

Q CE compliant

\* For detailed information on CE marked models, refer to SMC's website.

Bracket/Option for single unit only

|   |                 |
|---|-----------------|
| — | Without bracket |
| B | Flat Bracket    |
| C | L-bracket       |

Base type

|   |                 |
|---|-----------------|
| — | For single unit |
| M | For manifolds   |

Manifold

IITV00 - 02 [ ] - n

Stations

|    |             |
|----|-------------|
| 02 | 2 stations  |
| 03 | 3 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

Option

If a DIN rail longer than the specified stations is required, specify the applicable stations in two digits.  
(Maximum 10 stations)  
Example) IITV00-05-07

One-touch fitting size for supply/exhaust parts (End plate)

|   |                       |
|---|-----------------------|
| — | $\phi 6$ (Light grey) |
| U | $\phi 1/4$ " (Orange) |

Note) A DIN rail with the length specified by the number of stations is attached to the manifold. For dimensions of the DIN rail, refer to the external dimensions.

## How to Order Manifold Assembly (Example)

Indicate the part numbers of electro-pneumatic regulators and options to be mounted below the manifold part number.

Example)

Due to the common supply/exhaust feature, note that different pressure range combinations are not available.

IITV00-03.....1 set (Manifold part no.)

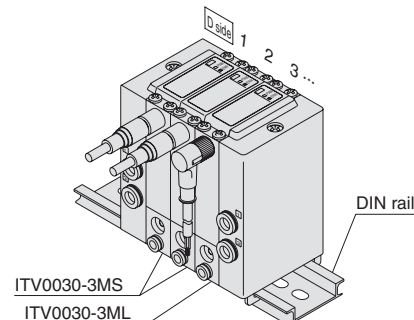
\*ITV0030-3MS.....2 sets (Electro-pneumatic regulator part no. (1, 2 stations))

\*ITV0030-3ML.....1 set (Electro-pneumatic regulator part no. (3 stations))

Indicate part numbers in order starting from the first station on the D side.

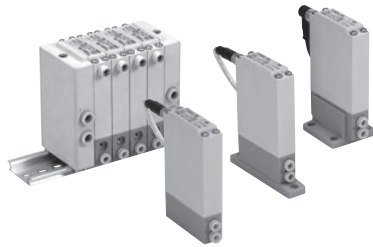
Note) Combination with different pressure ranges is not available due to common supply/exhaust features.

The asterisk (\*) specifies mounting. Add an asterisk (\*) at the beginning of electro-pneumatic regulator part numbers to be mounted.



# Compact Electro-Pneumatic Regulator *Series ITV0000*

## Specifications



| Model                       |                     | ITV001□                                                                                                    | ITV003□                                    | ITV005□                                    |
|-----------------------------|---------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|
| Min. supply pressure        |                     | Set pressure +0.1 MPa                                                                                      |                                            |                                            |
| Max. supply pressure        |                     | 0.2 MPa                                                                                                    | 1.0 MPa                                    |                                            |
| Regulating pressure range   |                     | 0.001 to 0.1 MPa                                                                                           | 0.001 to 0.5 MPa                           | 0.001 to 0.9 MPa                           |
| Maximum flow rate           |                     | 3.5 ℓ/min(ANR)<br>(Supply pressure: 0.2 MPa)                                                               | 6 ℓ/min(ANR)<br>(Supply pressure: 0.6 MPa) | 6 ℓ/min(ANR)<br>(Supply pressure: 0.6 MPa) |
| Power supply                | Voltage             | 24 VDC ±10%, 12 to 15 VDC                                                                                  |                                            |                                            |
|                             | Current consumption | Power supply voltage 24 VDC type: 0.12 A or less<br>Power supply voltage 12 to 15 VDC type: 0.18 A or less |                                            |                                            |
| Input signal                | Voltage type        | 0 to 5 VDC, 0 to 10 VDC                                                                                    |                                            |                                            |
|                             | Current type        | 4 to 20 mA DC, 0 to 20 mA DC                                                                               |                                            |                                            |
| Input impedance             | Voltage type        | Approximately 10 kΩ                                                                                        |                                            |                                            |
|                             | Current type        | Approximately 250 Ω                                                                                        |                                            |                                            |
| Output signal               | Analogue output     | 1 to 5 VDC (Load impedance: 1 kΩ or more)<br>Output accuracy: Within ±6% (Full span)                       |                                            |                                            |
| Linearity                   |                     | Within ±1% (Full span)                                                                                     |                                            |                                            |
| Hysteresis                  |                     | Within 0.5% (Full span)                                                                                    |                                            |                                            |
| Repeatability               |                     | Within ±0.5% (Full span)                                                                                   |                                            |                                            |
| Sensitivity                 |                     | Within 0.2% (Full span)                                                                                    |                                            |                                            |
| Temperature characteristics |                     | Within ±0.12% (Full span)/°C                                                                               |                                            |                                            |
| Operating temperature range |                     | 0 to 50°C (No condensation)                                                                                |                                            |                                            |
| Enclosure                   |                     | Equivalent to IP65 *                                                                                       |                                            |                                            |
| Connection type             |                     | Built-in One-touch fittings                                                                                |                                            |                                            |
| Connection size             | For single unit     | Metric size                                                                                                | [1], [2], [3]: ø4                          |                                            |
|                             |                     | Inch size                                                                                                  | [1], [2], [3]: ø5/32"                      |                                            |
|                             | Manifold            | Metric size                                                                                                | [1], [3]: ø6, [2]: ø4                      |                                            |
|                             |                     | Inch size                                                                                                  | [1], [3]: ø1/4", [2]: ø5/32"               |                                            |
| Weight <sup>Note 1)</sup>   |                     | 100 g or less (without options)                                                                            |                                            |                                            |

Note 1) Indicates the weight of a single unit.

For IITV00-n

Total weight (g) ≤ Stations (n) x 100 + 130 (Weight of end block A, B assembly) + Weight (g) of DIN rail

Note 2) Specifications other than the following are optional. Pressure range: 0.1 MPa, 0.5 MPa, 0.9 MPa, Power supply voltage: 24 VDC, Input signal: 0 to 10 VDC

Note 3) When there is a downstream flow consumption, pressure may become unstable depending on piping conditions.

\* When using under the conditions equivalent to IP65, connect the fitting or tube to the breathing hole prior to use. (For details, refer to "Specific Product Precautions (1)" on back page 3)

## Accessory (Option)

### Bracket

Flat bracket assembly (includes 2 mounting screws)  
P39800022



L-bracket assembly (includes 2 mounting screws)  
P39800023



Tighting torque when assembling is 0.3 N-m.

### Cable connector

Straight type  
M8-4DSX3MG4



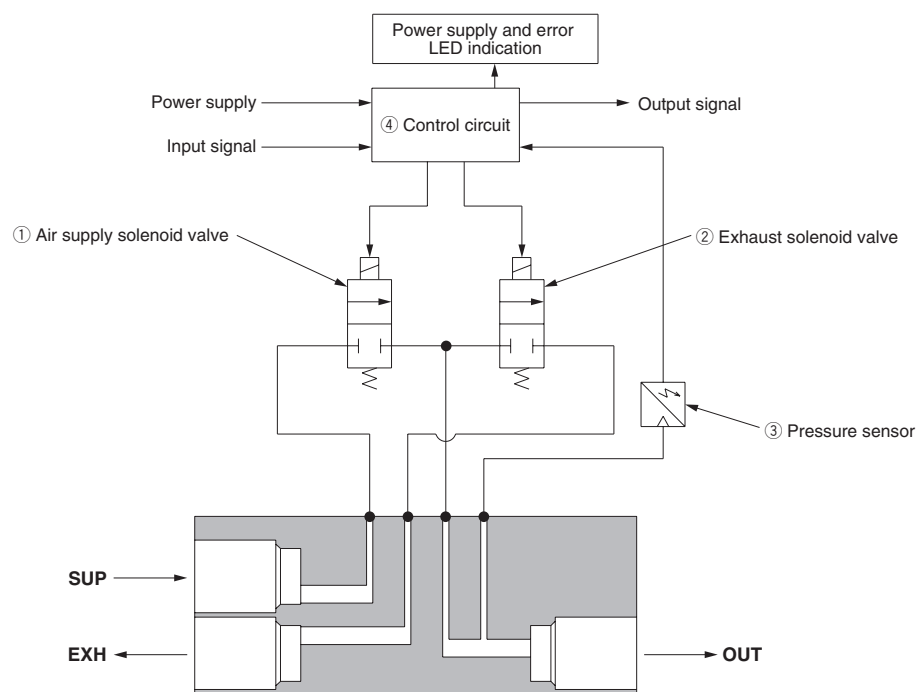
Right angle type  
ELWIKA-KV4408 PVC025 2M



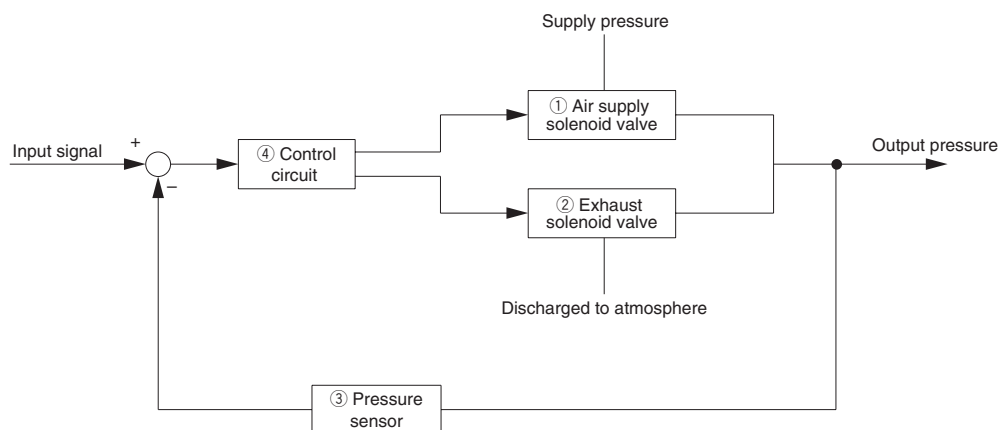
## Working Principle

When the input signal rises, the air supply solenoid valve ① turns ON. Due to this, part of the supply pressure passes through the air supply solenoid valve ① and changes to output pressure. This output pressure feeds back to the control circuit ④ via the pressure sensor ③. Here, pressure corrections continue until output pressure becomes proportional to the input signal, enabling output pressure that is proportional to the input signal.

Diagram of working principle

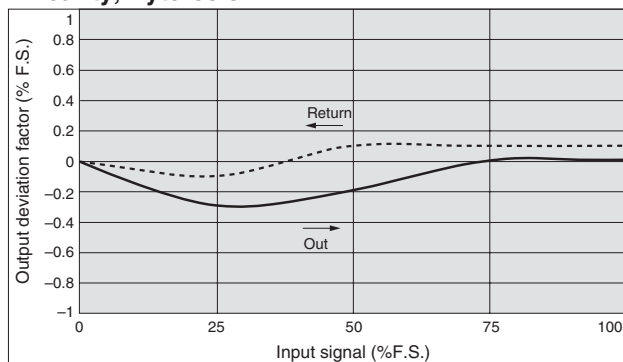


Block diagram



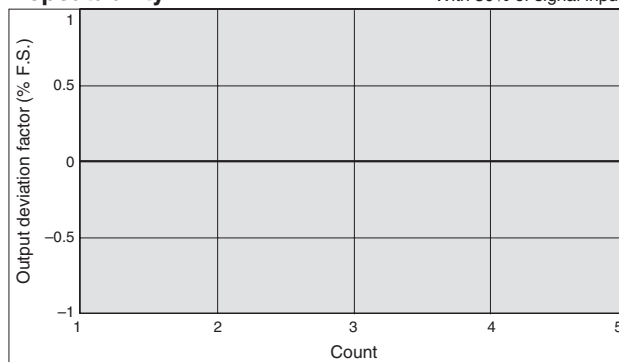
## Series ITV001

### Linearity, Hysteresis



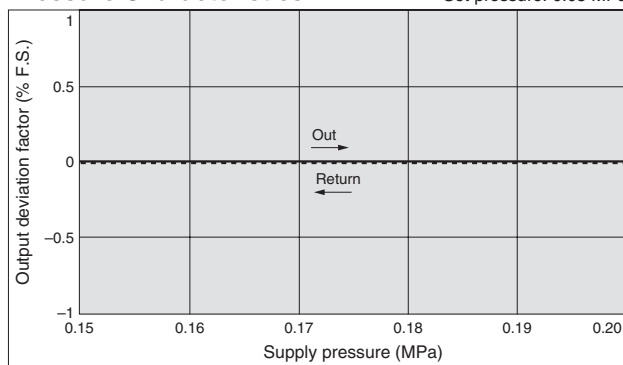
### Repeatability

With 50% of signal input



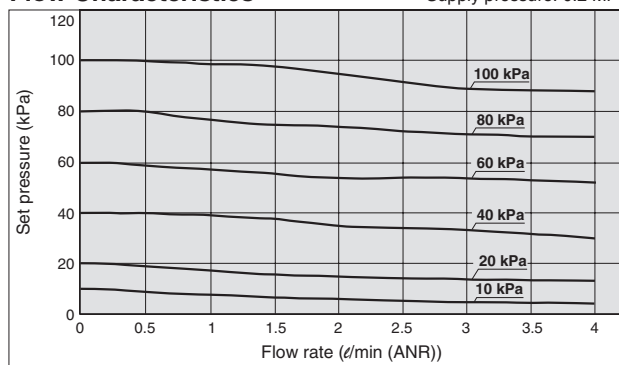
### Pressure Characteristics

Set pressure: 0.05 MPa



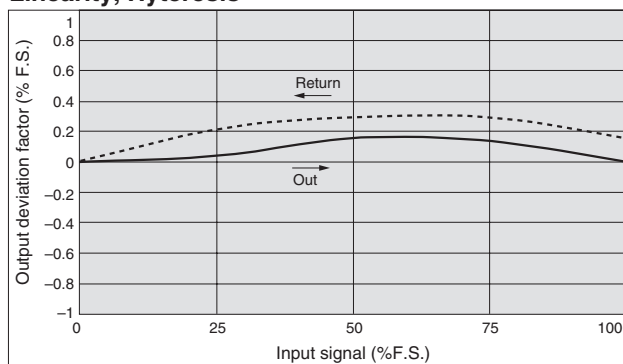
### Flow Characteristics

Supply pressure: 0.2 MPa



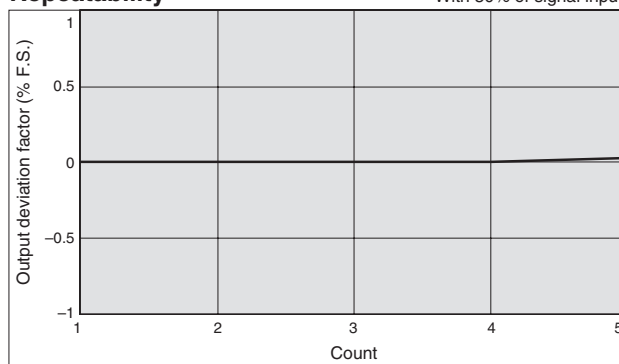
## Series ITV003

### Linearity, Hysteresis



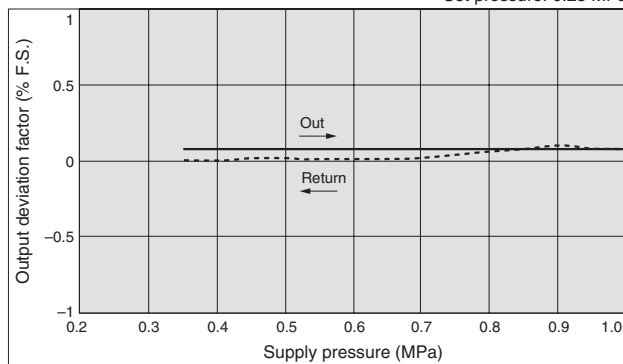
### Repeatability

With 50% of signal input



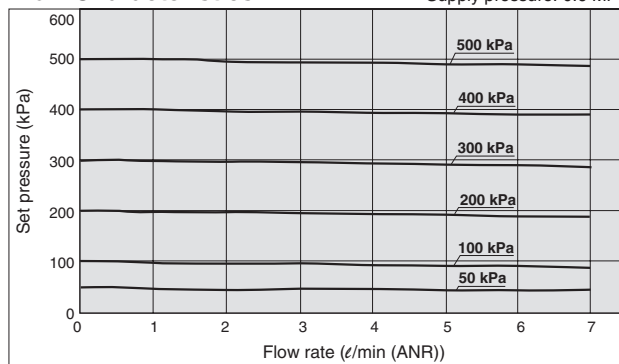
### Pressure Characteristics

Set pressure: 0.25 MPa



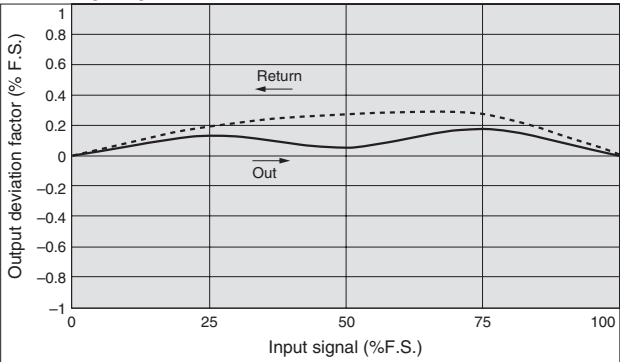
### Flow Characteristics

Supply pressure: 0.6 MPa



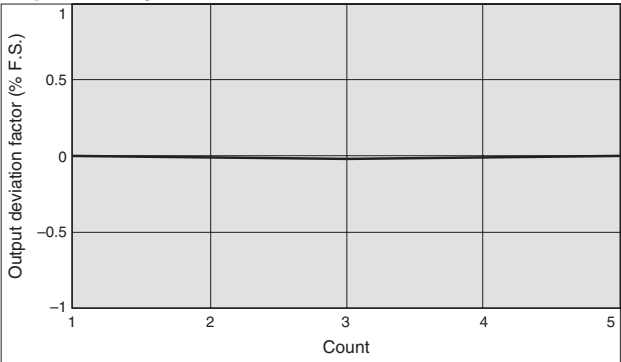
Series ITV005□

Linearity, Hyteresis



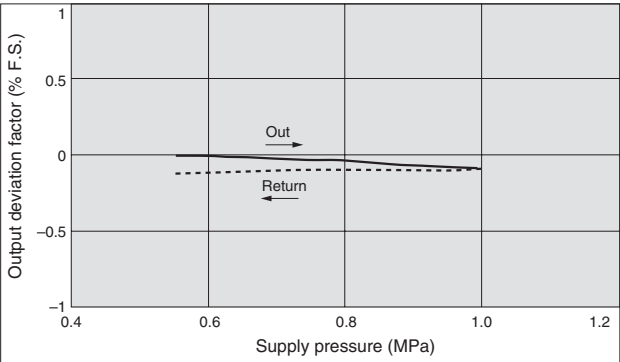
Repeatability

With 50% of signal input



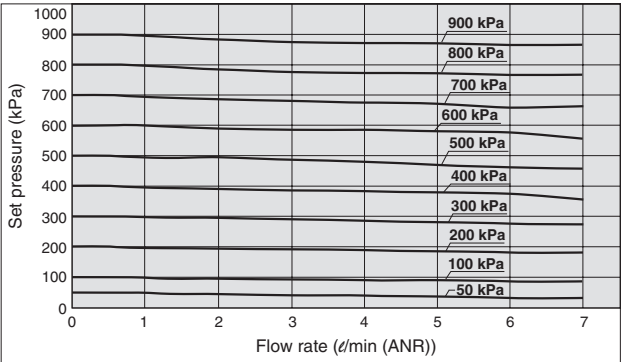
Pressure Characteristics

Set pressure: 0.45 MPa



Flow Characteristics

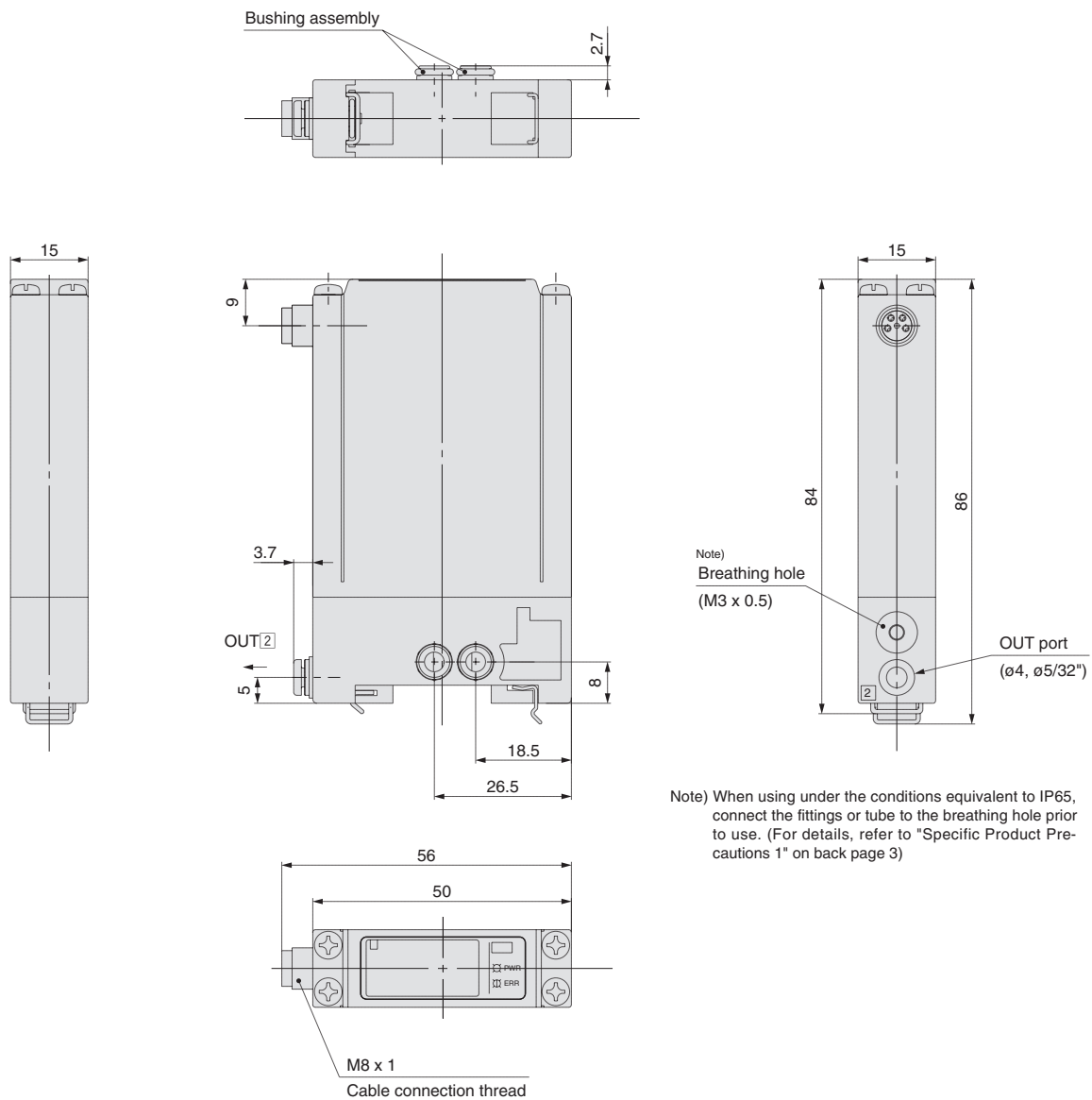
Supply pressure: 1.0 MPa





## Dimensions

### Single unit for manifold

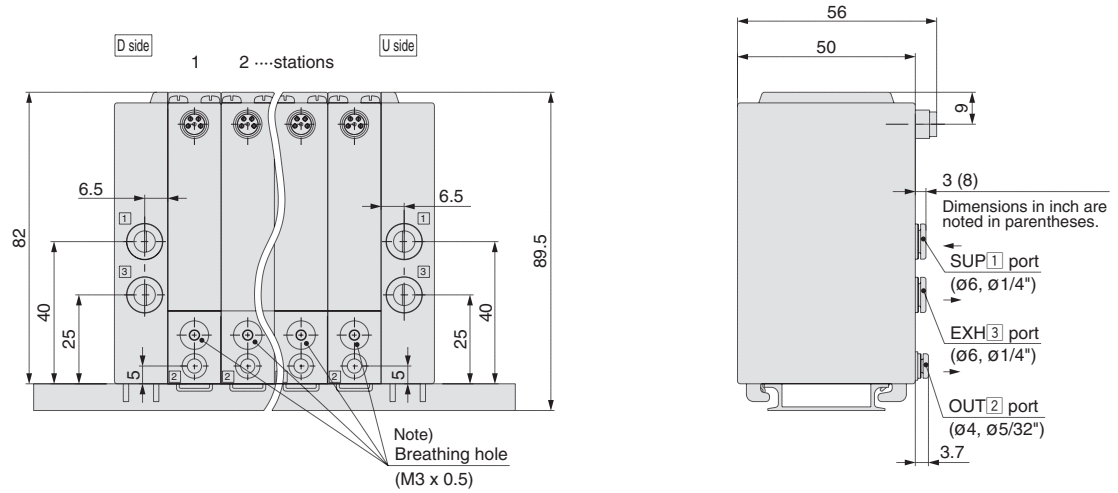


Note) When using under the conditions equivalent to IP65, connect the fittings or tube to the breathing hole prior to use. (For details, refer to "Specific Product Precautions 1" on back page 3)

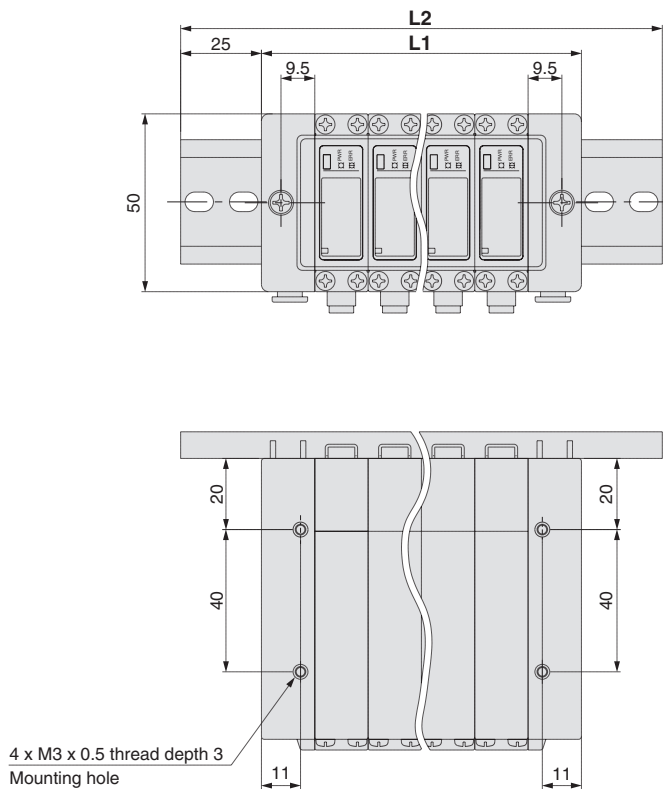
Note) For dimensions of the cable connector, refer to single unit on page 6.

## Dimensions

### Manifold



Note) When using under the conditions equivalent to IP65, connect the fittings or tubing to the breathing hole prior to use. (For details, refer to "Specific Product Precautions 1" on back page 3).



Note) For dimensions of the cable connector, refer to single unit on page 6.

| (mm)                   |       |     |     |       |     |       |     |     |       |
|------------------------|-------|-----|-----|-------|-----|-------|-----|-----|-------|
| Manifold stations n    | 2     | 3   | 4   | 5     | 6   | 7     | 8   | 9   | 10    |
| L1                     | 60    | 75  | 90  | 105   | 120 | 135   | 150 | 165 | 180   |
| L2                     | 110.5 | 123 | 148 | 160.5 | 173 | 185.5 | 198 | 223 | 235.5 |
| Weight of DIN rail (g) | 20    | 22  | 27  | 29    | 31  | 34    | 36  | 41  | 43    |