Electro-Pneumatic Regulator

Stepless control of air pressure proportional to an electrical signal

ITV1000
200 l/min (ANR)*

ITV2000
1500 l/min (ANR)*

ITV3000
4000 l/min (ANR)*

200 l/min type is newly introduced to the series.
Oil free specifications (wetted parts)

Series ITV1000/2000/3000

Pressure range: 0.9 MPa, Supply pressure: 1.0 MPa

Sensitivity: \[0.2 \text{ kPa} \] (100 kPa specifications)

Linearity: Within \[\pm 1\% \text{ (F.S.)} \]

Hysteresis: Within \[\pm 0.5\% \text{ (F.S.)} \]

IP65

Approved
Electro-Pneumatic Regulator
Series ITV1000/2000/3000

Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>ITV101</th>
<th>ITV103</th>
<th>ITV105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum supply pressure</td>
<td>0.2 MPa</td>
<td>0.005 to 0.1 MPa</td>
<td>0.005 to 0.5 MPa</td>
</tr>
<tr>
<td>Maximum supply pressure</td>
<td>1.0 MPa</td>
<td>0.005 to 0.5 MPa</td>
<td>0.005 to 0.5 MPa</td>
</tr>
<tr>
<td>Set pressure range</td>
<td>0.005 to 0.5 MPa</td>
<td>0.005 to 0.9 MPa</td>
<td>0.005 to 0.9 MPa</td>
</tr>
</tbody>
</table>

Power supply
- Voltage: 24 VDC ±10%, 12 to 15 VDC
- Current consumption: Power supply voltage 24 VDC type: 0.12 A or less
  Power supply voltage 12 to 15 VDC type: 0.18 A or less

Input signal
- Current type: 4 to 20 mA or 0 to 20 mA (Sink type)
- Voltage type: 0 to 5 VDC or 0 to 10 VDC

Input impedance
- Current: 250 ±5 ohms
- Voltage: Approx. 6.5 kΩ

Preset input
- 4 points

Output signal
- Analog output: 1 to 5 VDC
- Switch output: NPN open collector output or PNP open collector output

Output pressure
- 0.005 MPa
- 0.1 MPa
- 0.5 MPa
- 1.0 MPa
- 0.001 MPa
- 0.01 MPa
- 0.1 MPa
- 1.0 MPa

Accuracy
- ±0.3% (full span)
- ±0.5% (full span)
- ±0.75% (full span)

Repeatability
- ±0.1% (full span)
- ±0.15% (full span)

Sensitivity
- ±0.05% (full span)
- ±0.1% (full span)

Temperature characteristics
- Within ±0.5% (full span)
- Within ±1% (full span)

Hysteresis
- Within ±0.5% (full span)
- Within ±1% (full span)

Ambient and fluid temperature
- 0 to 50°C (no condensation)
- 0 to 60°C (with no condensation)

Pressure display unit
- MPa: 0.01, kgf/cm²: 0.01, bar: 0.01, PSI: 0.1
- kPa: 1

Note 1) Please refer to graph 1, relation to the differences between the set pressure and input.

Note 2) 2-wire type 4 to 20 mA is not available. Power supply voltage (24 VDC or 12 to 15 VDC) is required.

Note 3) Select either analog output or switch output.

Note 4) The minimum unit for ITV205 is 1PSI.

Note 5) The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.

How to Order

- Model: ITV 3 0 1 0 1 2 S Q
- Pressure range: 0.1 MPa, 0.5 MPa, 0.9 MPa
- Input signal: 0 to 20 mA (Sink type)
- Monitor output: None (for preset input) 1 Analog output 1 to 3 V DC 2 Switch output (PNP output) 3 Switch output (PNP output) 4 Analog output 4 to 20 mA (Sink type)

CE compliance
- CE compliant
- CE compliant

Cable connector type
- S: Straight type 3 m
- N: Right angle type 3 m
- Without cable connector

Thread type
- R: Rc
- N: NPT
- T: NPT
- P: G

Port size
- 1/8 (1000 type)
- 1/4 (2000, 3000 type)
- 3/8 (2000, 3000 type)
- 1/2 (3000 type)

Bracket
- Without bracket
- Flat bracket
- L-bracket

Note: Please visit our SMC homepage: http://www.smcworld.com for the latest details on our CE compliant products.
Electro-Pneumatic Regulator Series ITV1000/2000/3000

Combinations

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Standard specifications</th>
<th>Combination possible</th>
<th>Combination not possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure max. 0.1 MPa</td>
<td>1</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Set pressure max. 0.5 MPa</td>
<td>3</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Set pressure max. 0.9 MPa</td>
<td>5</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection Rc 1/4</td>
<td>02</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection Rc 3/8</td>
<td>03</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection Rc 1/2</td>
<td>04</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bracket</td>
<td>B</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bracket</td>
<td>C</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection NPT1/4</td>
<td>N02</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection NPT3/8</td>
<td>N03</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection NPT1/2</td>
<td>N04</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection G 1/4</td>
<td>F02</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection G 3/8</td>
<td>F03</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Connection G 1/2</td>
<td>F04</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Modular Products and Accessory Combinations

<table>
<thead>
<tr>
<th>Applicable products and accessories</th>
<th>ITV20</th>
<th>ITV30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter</td>
<td>AF30</td>
<td>AF40</td>
</tr>
<tr>
<td>Mist separator</td>
<td>AFM30</td>
<td>AFM40</td>
</tr>
<tr>
<td>L-bracket</td>
<td>Y30</td>
<td>Y40</td>
</tr>
<tr>
<td>Spaced with L-bracket (3 + 4)</td>
<td>Y30L</td>
<td>Y40L</td>
</tr>
</tbody>
</table>

Accessories (Optional)/Part Numbers

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat bracket</td>
<td>P30201L4</td>
</tr>
<tr>
<td>L-bracket</td>
<td>INI-398-0-6</td>
</tr>
<tr>
<td>Cable connector</td>
<td>TM-4DSX3HG4</td>
</tr>
<tr>
<td>Straight type 3 m</td>
<td>TM-4DLX3HG4</td>
</tr>
</tbody>
</table>

Dimensions

Flat bracket

L-bracket

Approved
Series ITV1000/2000/3000

Working Principles

When the input signal rises, the air supply solenoid valve ① turns ON, and the exhaust solenoid valve ② turns OFF. Therefore, supply pressure passes through the air supply solenoid valve ① and is applied to the pilot chamber ③. The pressure in the pilot chamber ③ increases and operates on the upper surface of the diaphragm ④. As a result, the air supply valve ⑤ linked to the diaphragm ④ opens, and a portion of the supply pressure becomes output pressure.

This output pressure feeds back to the control circuit ⑥ via the pressure sensor ⑦. Here, a correct operation functions until the output pressure is proportional to the input signal, making it possible to always obtain output pressure proportional to the input signal.

Working Principle Diagram

Block diagram
Electro-Pneumatic Regulator  Series ITV1000/2000/3000

Series ITV101

**Pressure characteristics**
- Set pressure: 0.05 MPa

**Flow characteristics**
- Supply pressure: 0.2 MPa

**Relief flow characteristics**
- Supply pressure: 0.2 MPa

Series ITV201

**Pressure characteristics**
- Set pressure: 0.05 MPa

**Flow characteristics**
- Supply pressure: 0.2 MPa

**Relief flow characteristics**
- Supply pressure: 0.2 MPa
Series **ITV1000/2000/3000**

**Series ITV301**

### Linearity

![Linearity graph]

- Set pressure: 0.05 MPa
- Supply pressure: 0.2 MPa

### Hysteresis

![Hysteresis graph]

### Repeatability

![Repeatability graph]

### Pressure characteristics

- Set pressure: 0.05 MPa

### Flow characteristics

- Supply pressure: 0.2 MPa

### Relief flow characteristics

- Supply pressure: 0.2 MPa
Series **ITV1000/2000/3000**

**Series ITV303**

### Linearity

[Graph showing linearity characteristics]

- Set pressure: 0.2 MPa
- Input signal: %F.S.
- Output deviation factor: %F.S.

### Hysteresis

[Graph showing hysteresis characteristics]

- Output deviation factor: %F.S.
- Input signal: %F.S.

### Repeatability

[Graph showing repeatability characteristics]

- Output deviation factor: %F.S.
- Repetition

### Pressure characteristics

Set pressure: 0.2 MPa

[Graph showing pressure characteristics]

- Supply pressure: 0.7 MPa
- Set point

### Flow characteristics

Supply pressure: 0.7 MPa

[Graph showing flow characteristics]

- Flow rate: l/min (ANR)

### Relief flow characteristics

Supply pressure: 0.7 MPa

[Graph showing relief flow characteristics]

- Flow rate: l/min (ANR)
Series *ITV1000/2000/3000*

**Series ITV305**

**Linearity**

**Pressure characteristics**
- Set pressure: 0.4 MPa

**Flow characteristics**
- Supply pressure: 1.0 MPa

**Relief flow characteristics**
- Supply pressure: 1.0 MPa

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SMC

Approved
Electro-Pneumatic Regulator Series **ITV1000/2000/3000**

### Dimensions

**ITV10□□**

- **Flat bracket**

![Diagram of Flat bracket dimensions]

Note: Do not attempt to rotate, as the cable connector does not turn.

**Cable connector (4 wire)**

- Right angle type
- Straight type

**Mounting hole**

- 4 x ø7

**Setting part**

- 40

**Cable connection threads**

- M12 x 1

**Port size**

- 2 x Rc1/8, 1/4

**Exhaust port**

- Rc1/8

**Solenoid valve**

- EXH

**SUP port, OUT port**

- 2 x Rc1/8, 1/4

**4 x M4 x 0.7 thread depth 6 mm through**

**M3 x 0.5**

- Solenoid valve
- EXH

**2 x R3.5**

**L-bracket**

- INI-398-0-6 (Optional)

- SUP port, OUT port

**Dimensions: 50 x 50**

**Setting part**

- 84 x 100

**Cable connector (4 wire)**

- Right angle type
- Straight type
Series **ITV1000/2000/3000**

### Dimensions

**ITV20**

**Flat bracket**

![Diagram of Flat Bracket]

Note: Do not attempt to rotate, as the cable connector does not turn.

- **Cable connector (4 wire)**
  - Right angle type
  - Straight type

- **Mounting hole**
  - 4 x ø7

**L-bracket**

![Diagram of L-bracket]

- **Solenoid valve**
  - EXH
  - SUP (1)
  - OUT (2)

- **Port size**
  - M12 x 1
  - cable connection threads

- **Thread depth**
  - 6 mm

- **Thread**
  - 4 x M5 x 0.8

- **Dimensions**
  - 100 x 84

- **L-bracket**
  - INI-398-0-6
  - SUP port, OUT port
  - 2 x Rc1/4, 3/8
Electro-Pneumatic Regulator *Series ITV1000/2000/3000*

### Dimensions

**ITV30**

- Flat bracket

![Diagram of Flat bracket with dimensions and notes](attachment:image.png)

**L-bracket**

![Diagram of L-bracket with dimensions and notes](attachment:image.png)

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**Note**

Do not attempt to rotate, as the cable connector does not turn.
Series ITV1000/2000/3000

Made to Order Specifications

Contact SMC regarding detailed dimensions, specifications and delivery times.

1 Ozone Resistant Specifications
Fluoro rubber is used for the rubber parts of seals.

- Standard model number
- Ozone resistant specifications

2 Reverse Type
In compliance with input, inverse proportional pressure is displayed.

- ITV10
- ITV20
- ITV30

Reverse type

Input/output characteristics chart

Note 1) □ in part number is the same model no. for the standard products.
Note 2) Except for preset input type.

3 16 Points Preset Input Type
Able to control 16 point pressure by 4 bit switching input

- ITV10
- ITV20
- ITV30

16 points preset type

Note 1) □ in part number is the same model no. for the standard products.
Note 2) Monitor output is switch output type only.

4 Digital Input Type
Parallel input type with digital 10 bit.

- ITV10
- ITV20
- ITV30

Digital input type

5 DeviceNet Compliant
It is conforming to DeviceNet.

- ITV10
- ITV20
- ITV30

DeviceNet compliant

Note 1) □ in part number is the same model no. for the standard products.
Note 2) The pressure is not indicated.
6 Manifold Specifications (Except Series ITV3000)

2 through 8 station manifold.

How to Order Manifolds

ITV20 02 05

Valve stations

OUT port size

- 2 stations
- 3, 4 stations
- 5, 6 stations
- 7, 8 stations

Connection thread type

- PT
- NPT
- PF

Note) Refer to the table below for possible mixed combination.

<table>
<thead>
<tr>
<th>Model</th>
<th>ITV1001</th>
<th>ITV1003</th>
<th>ITV1005</th>
<th>ITV2010</th>
<th>ITV2013</th>
<th>ITV2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV20-2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TV20-8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note 1) Electro-pneumatic regulators are counted starting from station 1 on the left side with the OUT ports in front.
Note 2) When there is a large number of stations, use piping with the largest possible inside diameter for the supply side, such as steel piping.
Note 3) When mounting a blanking plate and the regulator with different pressure set, please inform SMC of the order of a manifold station beside a purchase order.

ITV1000/2000/3000 Made to Order Specifications

Contact SMC regarding detailed dimensions, specifications and delivery times.

7 High-Speed Response Time Specifications

Pressure response with no load is approx. 0.1 sec.

ITV 2 0 1 0 — 0 1 2 S — X88

Model

1 1000 type
2 2000 type

Pressure range

| 0.1 MPa |
| 0.5 MPa |
| 0.9 MPa |

Input signal

| 0 | Current 4 to 20 mA (Sink type) |
| 1 | Current 0 to 20 mA (Sink type) |
| 2 | Voltage 0 to 5 VDC |
| 3 | Voltage 0 to 10 VDC |

Monitor output

1 Analog output 1 to 5 V DC
2 Switch output/NPN output
3 Switch output/PNP output
4 Analog output 4 to 20 mA (Sink type)

Thread type

Rc
N
NPT
PF

Port size

1 1/8 (1000 type)
2 1/4 (1000, 2000 type)
3 3/8 (2000 type)

Bracket

1 Without bracket
2 Flat bracket
3 L-bracket

Cable connector type

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

Connection thread type

- N
- T
- F
- Rc
- NPT
- PF
- G

Pressure display unit

2 MPa
3 bar
4 PSI
5 kPa

Example

Electro-pneumatic regulator
ITV1001-311S-X26
Blanking plate assembly
P398020-13
Electro-pneumatic regulator
ITV2005-212S-X26
Manifold base
ITV20-02-3

Example

IITV20-02-3 ……………………
∗
ITV1030-311S-X26 …………
∗
P398020-13 …………………
∗
ITV2050-212S-X26 …………
∗

The ∗ is the symbol for mounting. Add the ∗ symbol at the beginning of part numbers for electro-pneumatic regulators, etc. to be mounted on the base.
These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414 Note 1), JIS B 8370 Note 2) and other safety practices.

Clauses:

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.
   Since the products specified here are used in various operating conditions, their compatibility with the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.
   Compressed air can be dangerous if handled incorrectly. Assembly, handling or maintenance of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.
   1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driven object have been confirmed.
   2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
   3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

4. Contact SMC if the product is to be used in any of the following conditions:
   1. Conditions and environments beyond the given specifications, or if product is used outdoors.
   2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuit in press applications, or safety equipment.
   3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

Note 1) ISO 4414: Pneumatic fluid power—General rules relating to systems
Note 2) JIS B 8370: Pneumatic system axiom.
Series ITV1000/2000/3000

Electro-Pneumatic Regulator Precautions

Be sure to read before handling.

Piping

⚠️ Warning

1. Screw piping together with the recommended proper torque while holding the side that has female threads.
Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive. Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc. causing damage or other problems.

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>Torque 1/8</th>
<th>Torque 1/4</th>
<th>Torque 3/8</th>
<th>Torque 1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 to 9 (70 to 90)</td>
<td>12 to 14 (120 to 140)</td>
<td>22 to 24 (220 to 240)</td>
<td>28 to 30 (280 to 300)</td>
</tr>
</tbody>
</table>

2. Do not allow twisting or bending moment to be applied other than the weight of the equipment itself.

Provide separate support for external piping, as damage may otherwise occur.

3. Since excessive moment loads and the propagation of vibrations, etc. can easily result from inflexible piping made of materials such as steel, avoid these problems by using flexible tubing for intermediate connections.

⚠️ Caution

1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

Piping

2. Wrapping of pipe tape

When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealing material do not get inside the piping.

Also, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Operating Environment

⚠️ Warning

1. Do not operate in locations having an atmosphere of corrosive gases, chemicals, sea water, or where there will be contact with the same.

2. Do not operate in locations where vibration or impact occurs.

3. In locations which receive direct sunlight, provide a protective cover, etc.

4. In locations near heat sources, block off any radiated heat.

5. In locations where there is contact with spatter from water, oil or solder, etc., implement suitable protective measures.

⚠️ Caution

In locations where the body is exposed to water, steam, dust, etc., there is a possibility that moisture or dust could enter the body through the EXH (solenoid) ports, thereby causing problems. To overcome this, simply install tubing to each port, using the fittings, and extend the tubing so that the other end is at a location where no water splash, etc. occurs. Make sure not to bend, or block the I.D. of the tubing as this will have a detrimental affect on the pressure control.

Air Supply

⚠️ Warning

1. These products are designed for use with compressed air. Contact SMC if any other fluid will be used.

2. Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.
**Series ITV1000/2000/3000**

Specific Product Precautions 1

**Operating Environment**

⚠️ **Warning**

1. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.
2. Consult SMC when used in power plants, or if instrumentation related.

⚠️ **Caution**

1. Install an air filter near this product on the supply side. Select a filtration degree of 5 µm or less.
2. Compressed air containing large amounts of drainage can cause malfunction of this product and other pneumatic equipment. As a countermeasure, install an aftercooler, air dryer or Drain Catch, etc.
3. If large amounts of carbon dust are generated by the compressor, it can accumulate inside this product and cause malfunction. For details on the above compressed air quality, refer to SMC’s “Best Pneumatics catalog vol. 4”.

**Handling**

⚠️ **Caution**

4. If supply pressure to this product is interrupted while the power is still on, the internal solenoid valve will continue to operate and a humming noise may be generated. Since the life of the product may be shortened, shut off the power supply also when supply pressure is shut off.
5. In this product, the output side pressure cannot be completely relieved within the range of 0.005 MPa or less. If it is desired to reduce the pressure completely to 0 MPa, install a 3 way valve or other device on the output side to exhaust the pressure.
6. This product is adjusted for each specification at the time of shipment from the factory. Avoid careless disassembly or removal of parts, as this can lead to malfunction.
7. The optional cable connector is a 4 wire type. When the monitor output (analog output or switch output) is not being used, keep it from touching the other wires as this can cause malfunction.
8. Please note that the right angle cable does not rotate and is limited to only one entry direction.
9. Take the following steps to avoid malfunction due to noise.
   1) Remove power supply noise during operation by installing a line filter, etc. in the AC power line.
   2) For avoiding the influence of noise install this product and its wiring as far as possible from strong electric fields such as those of motors and power lines, etc.
   3) Be sure to implement protective measures against load surge for induction loads (solenoid valves, relays, etc.).
   4) Install or remove the connector after shutting off the power supply to avoid the influence of chattering of the power supply.
10. Due to the large volume of the output side, a loud exhaust noise will be produced when being used for the purpose of a relief function. Therefore, install a silencer (SMC Series AN200 or AN400) on the exhaust port (EXH port). The port sizes are Rc1/8, Rc1/4 and Rc1/2.
11. Specifications on page 1 is in case of static environment. Pressure may fluctuate when air is consumed at the output side.
12. For details on the handling of this product, refer to the instruction manual which is included with the product.
Wiring

Connect the cable to the connector on the body with the wiring arranged as shown below. Proceed carefully, as incorrect wiring can cause damage. Further, use DC power with sufficient capacity and a low ripple.

Caution

Note) A right angle type cable is also available. The entry direction for the right angle type connector is to the left (SUP port side). Never turn the connector as it is not designed to turn.

Current signal type

<table>
<thead>
<tr>
<th>Voltage signal type</th>
<th>Preset input type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brown: Power supply</td>
<td>1 Brown: Power supply</td>
</tr>
<tr>
<td>2 White: Input signal</td>
<td>2 White: Input signal</td>
</tr>
<tr>
<td>3 Blue: GND (COMMON)</td>
<td>3 Blue: GND (COMMON)</td>
</tr>
<tr>
<td>4 Black: Monitor output</td>
<td>4 Black: Monitor output</td>
</tr>
</tbody>
</table>

Note) The wiring diagram shows the correct connection for each terminal.

Monitor output wiring diagram

| Analog output, voltage type |
| Switch output, NPN type |
| Switch output, PNP type |

Analog output, current type (sink type)

* When 30 mA DC or more is applied, detecting device for overcurrent starts activating and then emits an error signal. (Error number "5")

Set Pressure Range

The regulating pressure range, by unit of standard measured pressure, is shown in the table below.

Regulating pressure range, by unit of standard measured pressure

<table>
<thead>
<tr>
<th>Unit</th>
<th>ITV_61</th>
<th>ITV_62</th>
<th>ITV_63</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPa</td>
<td>0.005 to 0.1</td>
<td>0.005 to 0.1</td>
<td>0.005 to 0.1</td>
</tr>
<tr>
<td>kgf/cm²</td>
<td>0.05 to 1</td>
<td>0.05 to 1</td>
<td>0.05 to 1</td>
</tr>
<tr>
<td>bar</td>
<td>0.05 to 1</td>
<td>0.05 to 1</td>
<td>0.05 to 1</td>
</tr>
<tr>
<td>PSI</td>
<td>0.7 to 15</td>
<td>0.7 to 15</td>
<td>0.7 to 15</td>
</tr>
<tr>
<td>kPa</td>
<td>5 to 100</td>
<td>5 to 100</td>
<td>5 to 100</td>
</tr>
</tbody>
</table>

* For safety reasons, it is recommended that one of the preset pressures be set to 0 MPa.