

## Installation and Maintenance Manual

### Electro-Pneumatic Regulator

ITV1030-01F1BN4-DIU00490



## 1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

<b>Caution</b>	Indicates a hazard with a low level of risk, which if not avoided, could result in minor or moderate injury.
<b>Warning</b>	Indicates a hazard with a medium level of risk, which if not avoided, could result in death or serious injury.
<b>Danger</b>	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

- Electromagnetic compatibility:  
This product is class A equipment intended for use in an industrial environment. There may be potential difficulties in ensuring

electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

### Warning

- **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 can be 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 specific requirements.

- **Only trained personnel should operate pneumatically operated machinery and equipment.**

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced personnel.

- **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 after confirmation of safe locked-out control positions.
- 2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
- 3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Supply air into the system gradually to create back pressure, i.e. incorporate a soft-start valve).

- **Do not use this product outside of the specifications. Contact SMC if it is to be used in any of the following conditions:**

- 1) Conditions and environments beyond the given specifications, or if the product is to be used outdoors.
- 2) Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, 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.

## 1 Safety Instructions (continued)

### Caution

- Ensure that the air supply system is filtered to 5 microns.

- Special Conditions for safe use

The ITV unit should be used within the range of specifications given below. If labelled with X, special conditions for safe use apply:

1. Protect the product from sources of heat which can generate surface temperatures higher than the temperature classification.
2. Protect the product and cables against all impact or mechanical damage.
3. Protect the product from direct sunlight or UV light using a suitable protective cover.
4. Do not disconnect the M12 connector before first switching off the power supply.
6. Use only a damp cloth to clean the product body, to avoid an electrostatic charge.
7. Provide suitable grounding of the product body to avoid electrostatic charging.

## 2 Specifications

### 2.1 Specifications

Model	ITV1030-01F1BN4-DIU00490	
Min. supply pressure	Set pressure + 15PSI	
Max. supply pressure	145PSI	
Set pressure range	0.7 to 70PSI	
Supply voltage	DC24 V±10%	
Current consumption	DC2A or less	
Input signal	Current type	DC4 to 20 mA
Input impedance	Current type	250 Ω or less <sup>Note 5</sup>
Output signal <sup>Note2</sup>	Analogue	1 to 5 VDC (Output impedance: Approx.1kΩ) Output accuracy ±6%F.S. or less
Linearity	±1%F.S. or less	

Hysteresis	0.5%F.S. or less	
Repeatability	±0.5%F.S. or less	
Sensitivity	0.2%F.S. or less	
Temperature characteristics	±0.12%F.S./°C or less	
Operating temperature	0 to 50°C (No condensation)	
Pressure display	Accuracy	±2%F.S.±1 digit or less
	Min. Unit	PSI: 0.1
Protection structure	Unlike standard specification. It is not dustproof or waterproof.	
Weight	Approx. 300g(No accessories)	

Table 1.

Note 1: 0.7psi or less residual pressure might be existed even though 0% input signal should be 0 psi output pressure before shipment.

It is recommended to add 3-ports valve to exhaust at the outlet when 0psi outlet pressure requested completely.

Note 2: The setting (Zero/Span, Preset input, Switch output) can be adjusted by each minimum display unit. The unit cannot be changed.

Note 3: This product is the special that output pressure is exhausted and become 0.7psi or less when power supply is turned off.

Note 4: Controlling so that output pressure is 0.7psi or less when input signal is approx.3.8mA or less. With this condition, if input signal is approx. 4mA or more, it will convert to normal control mode. Therefore, output pressure chattering may occur when input signal is between 3.8 to 4mA.

Note 6: Value for the state with no over current included. If an allowance is provided for an over current circuit, the input impedance varies depending on the input current. This is 350 Ω or less for an input current of 20 mA DC.

### 2.2 Operation Principle

When the input signal increases the supply solenoid valve ① turns on and the exhaust solenoid valve ② turns off. Supply pressure is passed to the pilot valve ③ through the supply solenoid valve. The pilot valve will open

The main valve allowing partial supply pressure to pass to the out port. The pressure sensor ④ will provide output pressure feedback to the control circuit ⑤. The control circuit will balance the input signal and output pressure to ensure that the output pressure remains proportional to the input signal.

## 2 Specifications(continued)

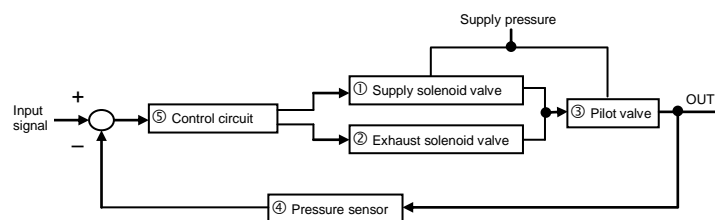


Fig. 1 - Control diagram

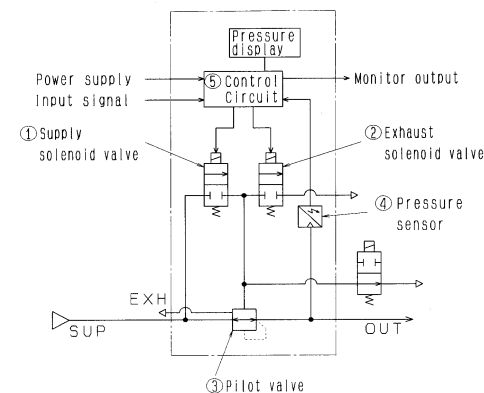


Fig. 2 - Schematic diagram

## 3 Installation

### 3.1 Installation

#### Warning

- Do not install the product unless the safety instructions have been read and understood.
- This product is pre-set at the factory and must not be dismantled by the user. Contact your local SMC office for advice.
- Ensure, when installing this product, that it is kept clear of power lines to avoid noise interference.
- Ensure that load surge protection is fitted when inductive loads are present (i.e. solenoid, relay etc.).
- Ensure precautions are in place if the product is used in a 'free flow output' condition. Air will continue to flow continuously.
- Do not use a lubricator on the input side of this product. If lubrication is necessary, place the lubricator on the 'output' side.
- Ensure all air is exhausted from the product before maintenance.
- The length of the connector cable should be 10 m maximum.

### 3.2 Environment

#### Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- Do not mount in a location exposed to radiant heat.

### 3.3 Piping

#### Warning

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

## 3 Installation(continued)

Thread	Tightening Torque (Nm)
1/8	3 to 5

### 3.4 Lubrication

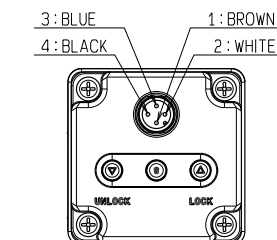
#### Caution

- Do not use a lubricator on the supply side of this product, as this can cause malfunction. When lubrication of terminal equipment is necessary, connect a lubricator on the output side of this equipment.

## 4 Wiring

#### Caution

- Proceed carefully, as incorrect wiring can cause damage.
- Use a DC power supply with sufficient capacity and a low ripple.
- Turn off the power supply to remove and insert the connector.
- Never rotate the right angled type connector as it is not designed to rotate.

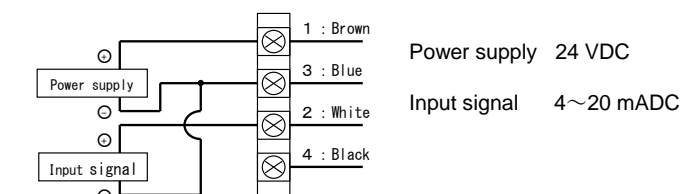


Current / Voltage type		
1	Brown	Power supply
2	White	Input Signal
3	Blue	GND (Common)
4	Black	Monitor output

(Note) The wire colour is shown for when the optional cable is used.

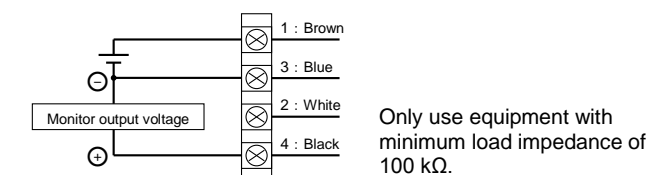
### Wiring diagram

#### Current / Voltage type

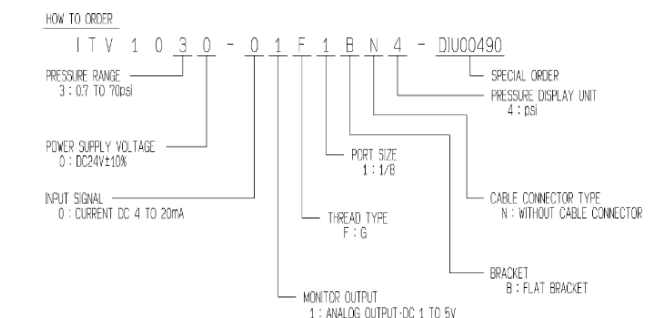


### Monitor output wiring diagram

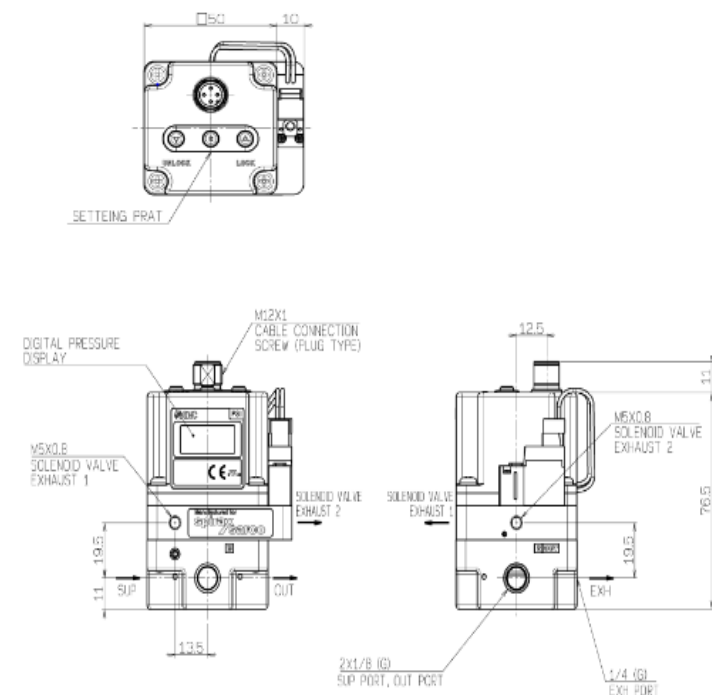
#### Analogue output - Voltage type



## 5 How to Order



## 6 Outline Dimensions (mm)



pressure is generated. Operate the system to shut off the supply pressure when not operating the product.

- The product is adjusted for each specification at the time of shipment from the factory. Do not perform unnecessary disassembly or removal of parts as it will cause failure.

## 7 Maintenance and Inspection

### Caution

- Not following proper maintenance procedures could cause the product to

malfunction and lead to equipment damage.

- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

## 8 Limitations of Use

### Caution

- If the electric power supply is shut off while pressure is being applied, the pressure will be maintained on the output side. However, this output pressure is held only temporarily and is not guaranteed. If exhausting of this pressure is desired, shut off the power after reducing the set pressure, and discharge the air using a residual pressure exhaust valve, etc.
- If power to this product is cut off due to a power failure, etc. when it is in a controlled state, output pressure will be retained temporarily. Handle carefully when operating with output pressure released to the atmosphere, as air will continue to flow out.
- 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. Disconnect the power supply when the supply pressure is shut off, as the life of the product may be shortened.
- Do not block three exhaust ports on this product.
- This product does not have a shut-off valve function. If air pressure is supplied without electric power being applied, the output pressure may increase to a pressure equivalent to the exhaust port when output

## 9 Contacts

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888

## SMC Corporation

URL : [http:// www.smcworld.com](http://www.smcworld.com) (Global) <http:// www.smceu.com> (Europe)

Specifications are subject to change without prior notice from the manufacturer.

© 2016 SMC Corporation All Rights Reserved.