



**Instruction Manual**  
**Electro-Pneumatic Regulator**  
**PROFIBUS DP**  
**ITV\*0\*0-RC\*\*\*\* Series**



The intended use of the electro-pneumatic regulator is to control the flow and pressure of fluid while connected to RS-232C communication.

**1 Safety Instructions**

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC<sup>\*)</sup>, and other safety regulations.

<sup>\*)</sup> ISO 4414: Pneumatic fluid power - General rules relating to systems.  
 ISO 4413: Hydraulic fluid power - General rules relating to systems.  
 IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)  
 ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

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

**Warning**

- **Always ensure compliance with relevant safety laws and standards.**  
 All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- 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 or radiated disturbances.

**Caution**

- Ensure that the air supply system is filtered to 5 microns.
- Refer to the SMC website (URL: <https://www.smcworld.com>) for more information about Safety Instructions.

**2 Specifications**

**2.1 General specifications**

Model	ITV*010	ITV*030	ITV*050	ITV2090
Min. supply pressure	(Set pressure) + 0.1 MPa			(Set pressure) -13.3 kPa
Max. supply pressure	0.2 MPa	1.0 MPa		-101 kPa
Set pressure range	0.005 to 0.1 MPa	0.005 to 0.5 MPa	0.005 to 0.9 MPa	-1.3 to -80 kPa
Supply voltage	24 VDC ± 10%,			
Current consumption	0.12 A or less <sup>1)</sup>			
Input / output data	10 bit / 10 bit (data 1023 corresponds to 100% F.S.)			
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			
Ambient and fluid temperature	0 to 50°C (no condensation)			
Enclosure rating	IP65			

Note 1) Excluding current consumption of communication line for PROFIBUS DP.

**2.2 Size / Weight specifications**

Model	ITV10*0	ITV20*0	ITV30*0
Size (mm)	50x50x109	50x50x131	66x66x152
Weight (no options)	320 g	420 g	720 g

**2.3 Communication specifications**

Item	Specification
Communication type	Master / Slave type
Synchronous type	Asynchronous type
Communication speed	9,600 bps
Start bit	1 bit
Data length	8 bits
Stop bit	1 bit
Parity bit	N/A
Flow control	N/A
Command end code	CR • LF
Character code	ASCII

**Warning**

Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

**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.).

**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**

**Caution**

- 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 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

**3.4 Lubrication**

**Caution**

- Do not use a lubricator on the input side of this product. If lubrication is required, place the lubricator on the 'output' side so that it does not enter the product.

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is to be used in the system, refer to the catalogue for details.

**4 Wiring**

**Caution**

Connect the cable to the connector on the main unit as shown in the following diagram. Take precautions, as incorrect wiring will damage the unit. Use a DC power supply capable of supplying the necessary power requirements with minimal ripple.

The 3 m straight cable specified refers to the power supply cable. The communication cable should be ordered separately.

**4.1 Power supply connector**

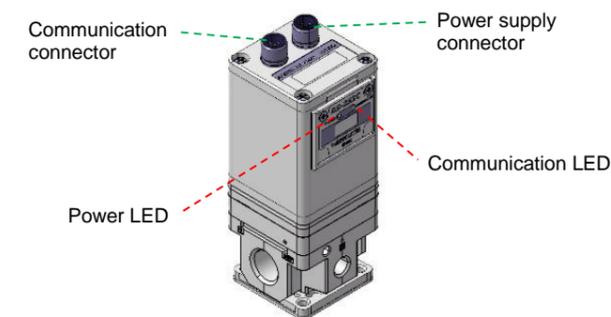
Item	Pin assignment	Wire colour	
Connector for power supply	1	1. +24V	Brown
	2	2. N.C.	White
	3	3. GND	Blue
	4	4. N.C.	Black

**4.2 Communication connector**

Item	Pin assignment	Wire colour	
Connector for communication	1	1. N.C.	Brown
	2	2. TxD	White
	3	3. RxD	Blue
	4	4. GND	Black
	5	5. N.C.	Grey

Note: Wire colours shown are when the optional cable is used.  
 S type: P398020-500-3, -502-3. L type: P398020-501-3, -503-3.

**5 LED Display**



Power LED	Communication LED	Status
Green LED ON	LED OFF	Waiting for Input
Green LED ON	Green LED ON	Receiving
Red LED ON	LED OFF	Waiting for Input / error
Red LED ON	Green LED ON	Receiving / error

**6 Pressure Setting and Output Monitoring**

- Set Output Pressure

Command	Content	Response	Content
SET nn	Set output pressure (0 - 1023)	nn	0 to 1023
		Out of range	1023 < nn <= 9999
		Unknown command	Except 0 <= nn <= 9999

Note) nn is limited to integral values from 0 to 1023.

- Increase setting for output pressure

Command	Content	Response	Content
INC	Adds 2 to the set data of output pressure	mm	Indicates the set data plus 2

Note) When set data nn is >= 1021, the value is set as nn=1023.

- Decrease setting for output pressure

Command	Content	Response	Content
DEC	Subtracts 2 from the output pressure set data.	mm	Indicates the set data minus 2

Note) When set data nn is <= 2, the value is set as nn=0.

- Request for set data

Command	Content	Response	Content
REQ	Request for set data	nn	Displays set data

- Request of output pressure data

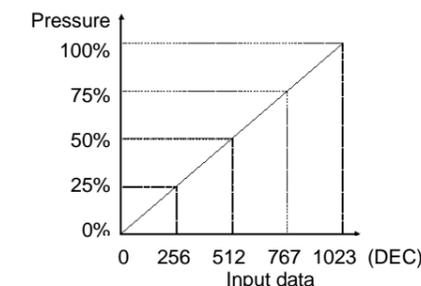
Command	Content	Response	Content
MON	Request for output pressure data	nn	Displays output pressure data

Pressure setting can be done by sending input data using 10 bit as F.S. to the electro-pneumatic regulator through the master PLC.

Set Data	0	1023	(a/F.S.) × 1023 <sub>DEC</sub>
Output pressure	0%×F.S. (=0)	100%×F.S.	a

Ex.) To set pressure at 0.3 MPa with ITV2030 (for 0.5 MPa type)  
 (0.3 MPa / 0.5 MPa) × 1023 = 614<sub>DEC</sub>

A pressure of 0.3 MPa is set by sending input data of "614" to the electro-pneumatic regulator through the master PLC. Send "SET 614".



## 7 How to Order

Refer to the operation manual or catalogue on the SMC website (URL: [http:// www.smcworld.com](http://www.smcworld.com)) for How to order information.

## 8 Outline Dimensions

Refer to the operation manual or catalogue on the SMC website (URL: [http:// www.smcworld.com](http://www.smcworld.com)) for outline dimensions.

## 9 Maintenance

### 9.1 General maintenance

#### 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.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Ensure all air is exhausted from the product before maintenance.

## 10 Limitations of Use

### 10.1 Limited warranty and disclaimer/compliance requirements

Refer to Handling Precautions for SMC Products.

## 11 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

## 12 Contacts

Refer to [www.smcworld.com](http://www.smcworld.com) or [www.smc.eu](http://www.smc.eu) for your local distributor/importer.

## SMC Corporation

URL : [https:// www.smcworld.com](https://www.smcworld.com) (Global) [https:// www.smc.eu](https://www.smc.eu) (Europe)  
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Specifications are subject to change without prior notice from the manufacturer.  
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Template DKP50047-F-085M