



Instruction Manual

Electro-Pneumatic Regulator

16 point Preset input type

ITV*0*0-5***** Series



The intended use of the electro-pneumatic regulator is to control the flow and pressure of fluid in response to preset input signals.

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^{*)}, and other safety regulations.

^{*)} 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.

	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Danger	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
Min. supply pressure	(Set pressure) + 0.1 MPa		
Max. supply pressure	0.2 MPa	1.0 MPa	
Set pressure range	0.005 to 0.1 MPa	0.005 to 0.5 MPa	0.005 to 0.9 MPa
Supply voltage	24 VDC \pm 10%,		
Current consumption	0.12 A or less		
Input signal	16 points (no common polarity)		
Input impedance	Approx. 4.7 k Ω		
Output signal	NPN – Open collector: 30 V 80 mA PNP – Open collector: 80 mA		
Linearity	\pm 1% F.S. or less		
Hysteresis	0.5% F.S. or less		
Repeatability	\pm 0.5% F.S. or less		
Sensitivity	0.2% F.S. or less		
Temperature characteristics	\pm 0.12% F.S. / $^{\circ}$ C or less		
Ambient and fluid temperature	0 to 50 $^{\circ}$ C (no condensation)		
Pressure display	Accuracy	\pm 3% F.S	
	Min. unit	MPa: 0.001 / kgf/cm ² : 0.01 / bar: 0.01, psi: 0.1 ^{Note 1)} / kPa: 1	
Enclosure rating	Main unit: IP65, Cable connector: IP67		

Note 1) 1 PSI is the minimum display unit on the ITV*050.

2.2 Size / Weight specifications

Model	ITV10*0	ITV20*0	ITV30*0
Size (mm)	50x50x109	50x50x131	66x66x152
Weight (no options)	250 g	350 g	645 g

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 Installation (continued)

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.

4.1 Power supply connector

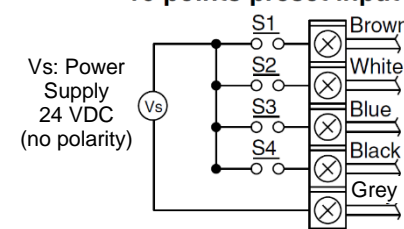
Item	Pin assignment	Wire colour	
Connector for power supply	1	1. +24V	Brown
	2	2. F.G.	White
	3	3. GND	Blue
	4	4. N.C.	-

4.2 Signal connector

Item	Pin assignment	Wire colour	
Connector for input signal	1	1. Input 0 bit (S0)	Brown
	2	2. Input 1 bit (S1)	White
	3	3. Input 2 bit (S2)	Blue
	4	4. Input 3 bit (S3)	Black
	5	5. Input common	Grey

Note: Wire colours shown are when the optional cable is used.

16 points preset input type



5 Settings

Caution

- Turn OFF the power supply before setting the switches.
- When the 'SET' key is operated the minimum / maximum pressure will be present at the outlet port. When primary pressure is applied to the regulator minimum pressure will be present at the outlet port.

5.1 Setting Procedure

- Release 'Key Lock' as explained in section 'Key-Lock Function'
 - After releasing key lock, press the 'Set' key again to move to F-1
 - To set the minimum pressure (display shows F-1) use up/down keys and press the 'Set' key to 'Lock' the setting.
 - To set the maximum pressure (display shows F-2) use up/down keys and press the 'Set' key to 'Lock' the setting.
- Note 1: If the above sequence has been followed correctly, the settings will complete automatically.
- Note 2: If only setting minimum pressure, when pressure is 'Set', pressing the set button once more will 'skip' to the next step.

5.2 Key-Lock function

The keys will be locked and cannot be operated when the power is supplied. 'Loc' is displayed when any keys are pushed.

Key-Lock Release

- Press the 'Down' key for 2 seconds or more.
- Display will flash 'Loc' (locked).
- Press the 'Set' key to unlock.
- Note: To cancel press the 'Up' key.

Key-Lock

- Press the 'Up' key for 2 seconds or more.
- Display will flash 'unL' (unlocked).
- Press the 'Set' key to lock.
- Note: To cancel press the 'Down' key.

5.3 Error Display

If an abnormality is detected by the ITV the LED display will show 'Er' followed by a code number. Isolate the power supply and ascertain the problem and solve. Re-instate the power supply after correcting any fault. Error codes are as shown in the table below.

No	Content	Display
2	EEProm read / write error	Er 2
3	Memory read / write error	Er 3
4	Solenoid valve fault	Er 4
5	Switch output over-current	Er 5
6	Outside of the Zero-clear range	Er 6

5.4 Reset function

- Press the 'Up' and 'Down' keys together for 3 seconds or more.
- Display shows 'RES'.
- Release keys to reset minimum pressure and maximum pressure.

5.5 Zero-clear function

- Press the 'Set' keys together for 2 seconds or more.
- Press the 'Up' and 'Down' keys. Display shows 'F03'.
- Press the 'Set' keys. Display shows 'Ocl' (Flashing).
- Press the 'Up' and 'Down' keys together. Display shows 'Ocl'.
- Press the 'Up' and 'Down' keys together for 3 seconds or more. Display shows 'clr' (1second).
- Zero-clear is complete.

5.6 Initialization

- Press the 'Set' key together for 2 seconds or more.
- Press the 'Up' and 'Down' keys. Display shows 'F99'.
- Press the 'Set' keys. Display shows 'ini' (flashing).
- Press the 'Up' and 'Down' keys together. Display shows 'ini'.
- Press the 'Up' and 'Down' keys together for 5 seconds or more. Display Turns OFF (1 second).
- Initialization is complete.

6 Input state for Preset pressures

Preset pressure	S3	S2	S1	S0
P01	OFF	OFF	OFF	OFF
P02	OFF	OFF	OFF	ON
P03	OFF	OFF	ON	OFF
P04	OFF	OFF	ON	ON
P05	OFF	ON	OFF	OFF
P06	OFF	ON	OFF	ON
P07	OFF	ON	ON	OFF
P08	OFF	ON	ON	ON
P09	ON	OFF	OFF	OFF
P10	ON	OFF	OFF	ON
P11	ON	OFF	ON	OFF
P12	ON	OFF	ON	ON
P13	ON	ON	OFF	OFF
P14	ON	ON	OFF	ON
P15	ON	ON	ON	OFF
P16	ON	ON	ON	ON

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 or 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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 Template DKP50047-F-085M