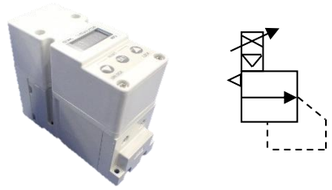
ORIGINAL INSTRUCTIONS

Instruction Manual
Electro-Pneumatic Regulator
Manifold type (Plug-in)
ITV23** Series



The intended use of the electro-pneumatic regulator - manifold type is to control compressed air pressure while connected to the EX600.

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) *1), and other safety regulations.
*1) ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robotics ─ Safety requirements ─ Part 1: Industrial 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.

⚠ **Danger**	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ **Warning**	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Caution**	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate 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 ITV23 specifications Note 1)

Fluid		Air		
Pressure display units		MPa	bar	PSI
Min. supply pressure		Set pressure +0.05 MPa		
Max. supply pressure		1.0 MPa	10 bar	145 PSI
Set pressure range Note 2)		0 to 0.7 / 0.9 MPa	0 to 7 / 9 bar	0 to 100 / 130 PSI
Min. set pressure		0.005 MPa	0.05 bar	1 PSI
Power supply	Voltage	24 VDC ±10%		
	Current consumption	0.12 A or less		
Linearity Note 3)		±0.009 MPa or less	±0.09 bar or less	±1.3 PSI or less
Hysteresis Note 3)		0.0045 MPa or less	0.045 bar or less	0.65 PSI or less
Repeatability Note 3)		±0.0045 MPa or less	±0.045 bar or less	±0.65 PSI or less
Sensitivity		8 / 4095 (12 bit) or more		
Temperature characteristics		±0.00108 MPa/°C or less	±0.0108 bar/°C or less	±0.156 PSI/°C or less
Step response time Note 4)		0.3 sec. or less		
Output pressure display Note 5)	Accuracy	±0.018 MPa ±1digit or less	±0.18 bar ±1digit or less	±3 PSI ±1digit or less
	Minimum unit	0.001 (actual display: .000)	0.01	1
Ambient and fluid temperature		0 to 50°C (no condensation)		
Enclosure rating		IP65		
Weight		Approx. 390 g (without options)		

Note 1) This specification table shows the characteristics at a power supply voltage of 24 VDC, an ambient temperature of 25 ±3°C, and no load applied. Also, it is limited to static conditions, and pressure may fluctuate when air is consumed on the output side.
Note 2) There is residual pressure below the minimum set pressure when the input signal is 0%.
Note 3) Conforms to ISO10094.
Note 4) Characteristics up to 90% of the set pressure when the step amount at the maximum supply pressure is [0 to 100%], [25 to 75%], [45 to 55%].
Note 5) Adjustment of numerical values such as the zero/span adjustment or preset input type is set based on the minimum units for output pressure display. Note that the unit cannot be changed.

⚠ 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.
- If the power supply fails, settings are 'held' for a short period.
- If the air pressure fails with power 'on' the solenoid will 'flutter'. Turn off the power.
- 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.

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 in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

3 Installation - continued

3.3 Piping

⚠ Caution

- Before piping make sure to clean up chips, cutting oil, dust etc.

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 used in the system, refer to catalogue for details.

4 Settings

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.

- Release the 'Key Lock 'as explained in section 'Key-Lock Function'.
- After releasing the key lock, press the 'SET' key again to move to F-1.
- To set the minimum pressure (display shows F-1) use the UP/DOWN keys and press the 'SET' key to 'Lock' the setting.
- To set the maximum pressure (display shows F-2) use the 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 the minimum pressure, when pressure is 'SET', pressing the set button once more will 'skip' to the next step.

4.1 Key-Lock function

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

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.

4.2 Error Display

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

No	Content	Display
1	Input signal is outside the specification	Er 1
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

4.3 Reset function

- Press the 'UP' and 'DOWN' keys simultaneously for 3 seconds min.
- Display will indicate 'RES'.
- Release keys to reset minimum pressure and maximum pressure.

4.4 Zero-clear function

- Press the 'SET' key for 2 seconds or more.
- Press the 'UP' and 'DOWN' keys. Display will indicate 'F03'.
- Press the 'SET' key. Display will indicate 'OcL' (Flashing).
- Press the 'UP' and 'DOWN' keys simultaneously.

4 Settings - continued

Display will indicate 'Ocl'.
- Press the 'UP' and 'DOWN' keys simultaneously for 3 seconds or more. Display will indicate 'clr' (1second).
- Zero-clear is complete.

4.5 Initialization

- Press the 'SET' key for 2 seconds or more.
- Press the 'UP' and 'DOWN' keys. Display will indicate 'F99'.
- Press the 'SET' key. Display will indicate 'ini' (Flashing).
- Press the 'UP' and 'DOWN' keys simultaneously. Display will indicate 'ini'.
- Press the 'UP' and 'DOWN' keys simultaneously for 5 seconds or more. Display Turns OFF (for 1 second).
- Initialization is complete.

These settings can also be handled by communication via the EX600. For details, refer to the EX600 operation manual.

5 How to Order

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

6 Outline Dimensions

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

7 Maintenance

7.1 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.

8 Limitations of Use

8.1 Limited warranty and disclaimer/compliance requirements

Refer to Handling Precautions for SMC Products.

9 Product Disposal

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

10 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL : https:// www.smcworld.com (Global) https:// www.smc.eu (Europe)
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