



**Installation and Maintenance Manual**  
**Series ITV3050-X60**  
**(4-20mA Output, Source Type and High Pressure)**  
**Electro-Pneumatic Regulator**



For future reference, please keep this manual in a safe place

This manual should be read in conjunction with the current catalogue

**Safety Instructions**

These safety instructions are intended to prevent a hazardous situation and / or equipment damage. These instructions indicate the level of potential hazard by label 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.

(Note1): ISO 4414: Pneumatic fluid power - Recommendations for the application of equipment to transmission and control systems.  
 (Note 2): JIS B 8370 : Pneumatic system axiom

**CAUTION:** Operator error could result in injury or equipment damage.

**WARNING:** Operator error could result in serious injury or loss of life.

**DANGER:** In extreme conditions, there is a possible result of serious injury or loss of life.

**WARNING**

**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 for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your 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 operators.
- Do not service machinery / equipment or attempt to remove components until safety is confirmed.**
  - Inspection and maintenance of machinery / equipment should only be performed after confirmation of safe locked-out control positions.
  - 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.
  - 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.)
- Contact SMC if the product is to be used in any of the following conditions:**
  - Conditions and environments beyond the given specifications, or if product is used outdoors.
  - Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
  - An application which has the possibility of having negative effects on people, property, or animals requiring special safety analysis.

**CAUTION**

Ensure that the air supply system is filtered to 5 micron

**Specifications**

Model		ITV3050 - X60
Min.Supply Pressure		Setting Pressure + 0.1 MPa
Max.Supply Pressure		1.2 MPa
Setting Pressure Range		0.005-1MPa
Supply voltage		24 VDC±10%: 0.12A or less
Input Signal	Current Type	4-20mADC
Input Impedance	Current Type	250Ω or less
Output signal	Analog Output	4-20mADC Source Type
Linearity		±1% or less (Full Scale)
Hysteresis		0.5% or less (Full Scale)
Repeatability		±0.5% or less (Full Scale)
Sensitivity		0.2% or less (Full Scale)
Temperature Characteristics		±0.12% or less (Full Scale)/ °C
Protection Structure		Main unit: IP65, Cable connector: IP67
Display of Pressure	Accuracy	±3% (Full Scale)
	Min. Unit	MPa: 0.01, kgf/cm <sup>2</sup> : 0.01, bar: 0.01, PSI: 1, kPa: 1
Ambient and fluid temperature		0-50 °C (without condensation)

Table 1

**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.

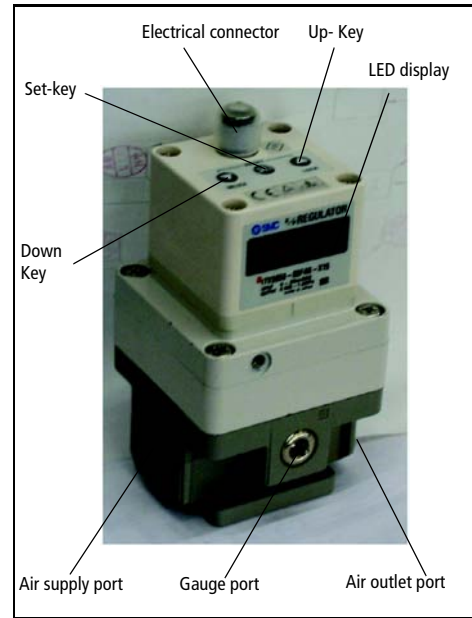


Fig 1 - Key features of an ITV

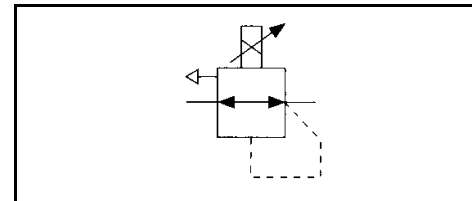


Fig 2 - JIS symbol

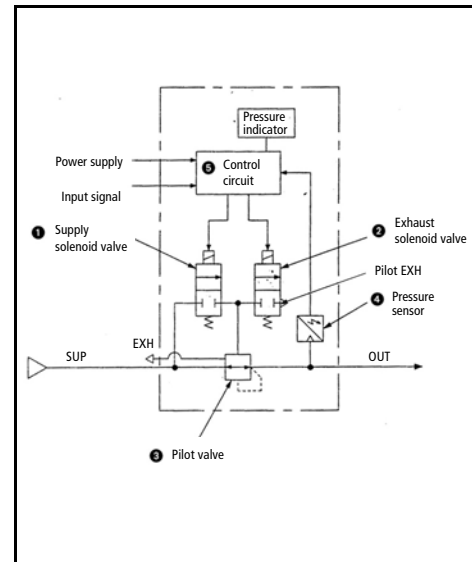


Fig 3 - Schematic diagram

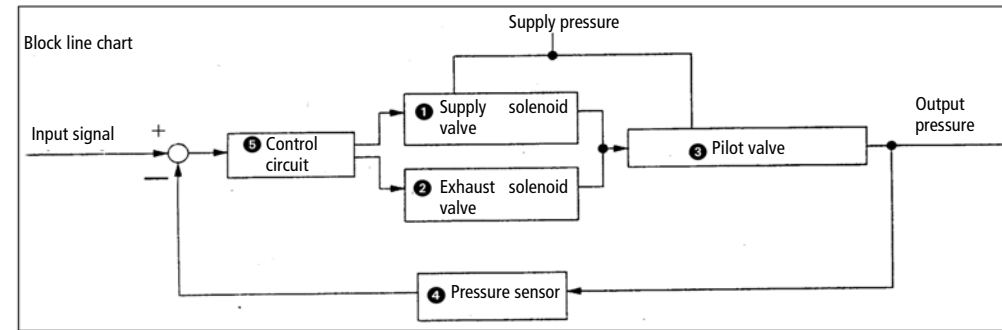


Fig 4 - Control diagram

**CAUTION**

**Wiring**

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.

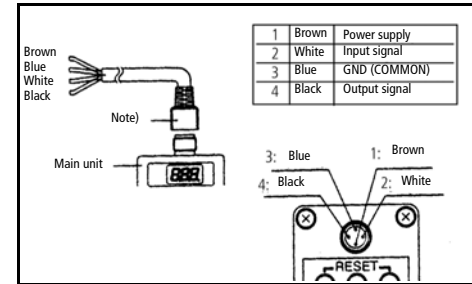


Fig 5 - Connection details

Note: The right angle type connector extends to the left side (over the supply port side)

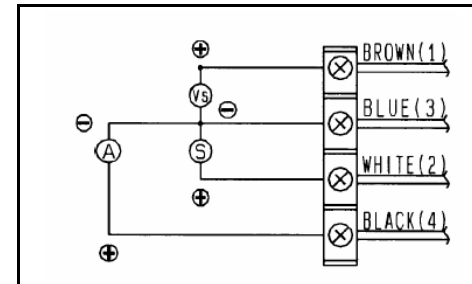


Fig 6 - Wiring diagram

Vs : Power supply 24VDC  
 S : Input Signal 4 to 20mADC  
 A : Output Signal 4 to 20mADC



Fig 7 - Connector types

**Reset Function**

Push 'Up' and 'Down' keys (Fig 1) together for longer than 3 seconds. Display shows 'RES'. Release keys to reset minimum pressure and maximum pressure.

**Installation & Maintenance**

**CAUTION**

- If the electrical 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.
- If the monitor output function is not used, ensure that the wire is totally insulated.

**CAUTION**

- 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.
- Length of connector cable shall be 10m maximum.

When you enquire about the product, please contact the following

**SMC Corporation:**

	Phone		Phone
<b>AUSTRIA</b>	(43) 2262-62 280	<b>ITALY</b>	(39) 02-92711
<b>BELGIUM</b>	(32) 3-355 1464	<b>NETHERLANDS</b>	(31) 20-531 8888
<b>CZECH REP.</b>	(420) 5-414 24611	<b>NORWAY</b>	(47) 67 12 90 20
<b>DENMARK</b>	(45) 70 25 29 00	<b>POLAND</b>	(48) 22-548 50 85
<b>FINLAND</b>	(358) 9-859 580	<b>PORTUGAL</b>	(351) 2-610 89 22
<b>FRANCE</b>	(33) 1-64 76 1000	<b>SPAIN</b>	(34) 945-18 4100
<b>GERMANY</b>	(49) 6103 4020	<b>SWEDEN</b>	(46) 8-603 0700
<b>GREECE</b>	(30) 1-342 6076	<b>SWITZERLAND</b>	(41) 52- 396 3131
<b>HUNGARY</b>	(36) 1-371 1343	<b>TURKEY</b>	(90) 212 221 1512
<b>IRELAND</b>	(353) 1-403 9000	<b>UK</b>	(44) 1908-56 3888

**Function of Key-Lock**

With input signal applied



The keys are locked after connecting power, and can not be operated. 'Loc' is indicated on Display (Fig 1) when any keys are pushed.

- Key-Lock Release**
  - Push 'Down' key (Fig 1) for longer than 2 seconds.
  - Display will flash 'Loc' (locked).
  - Push 'Set' key (Fig 1) to unlock.
- Key-Lock**
  - Push 'Up' key (Fig 1) for longer than 2 seconds.
  - Display will flash 'unL' (unlocked).
  - Push 'Set' key (Fig 1) to lock.

Note: To cancel push 'Down' key (Fig 1).

**Function of the 'Error' Display**

If an abnormality is detected by the ITV3050 the LED display (Fig 1) will show 'Er' followed by a code number. Isolate the power supply and ascertain the problem and solve. Re-instate power supply after correcting fault.

Error codes are as shown in Table 2:

Nº	Content	Display
1	Input Signal Outside Spec.	Er 1
2	EEPROM Reading/Writing Error	Er 2
3	Memory Reading/Writing Error	Er 3
4	Solenoid Valve Fault	Er 4

Table 2