



Installation and Maintenance Manual

Series ITV20*0-X155, ITV30*0-X37

(DeviceNet Compatible Type). 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.

(Note 1): 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

- 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 component 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	ITV2010-X155	ITV2030 - X155	ITV2050-X155
	ITV3010-X37	ITV3030 - X37	ITV3050-X37
Min. Supply Pressure	Setting Pressure + 0.1 MPa		
Max. Supply Pressure	0.2 MPa (2.0 kgf/cm ²)	1.0 MPa (10.2 kgf/cm ²)	
Setting Pressure Range	0.005-0.1MPa	0.005-0.5MPa	0.005-0.9MPa
Max. Flow Rate	1500 l / min (ANR) ITV20** (SUP: at 0.7 MPa) 5000 l / min (ANR) ITV30** (SUP: at 0.7 MPa)		
Supply Voltage	24 VDC ± 10%		
Current Consumption	Max. 012A Note 1		
Input Signal	Indicates Input Signal by 12 bit Note 2		
Output Signal	Retransmits Output Pressure by 12 bit Note 3		
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		
Ambient and fluid temperature	0-50 °C (without condensation)		

- (Note 1) Excludes current consumption of DeviceNet communication line.
 (Note 2) Select Set pressure with 4096 resolution, corresponding to the maximum setting pressure of 100%
 (Note 3) Select monitor pressure with 4096 resolution, corresponding to the maximum output pressure of 100%

Fig 3

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

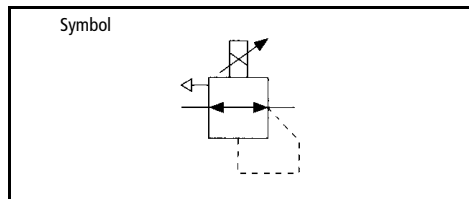


Fig 2

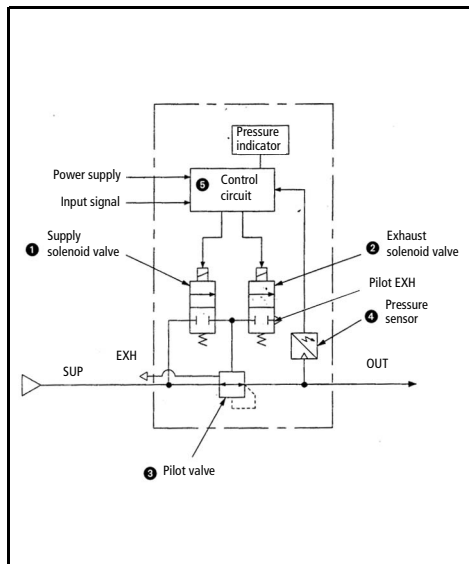


Fig 4

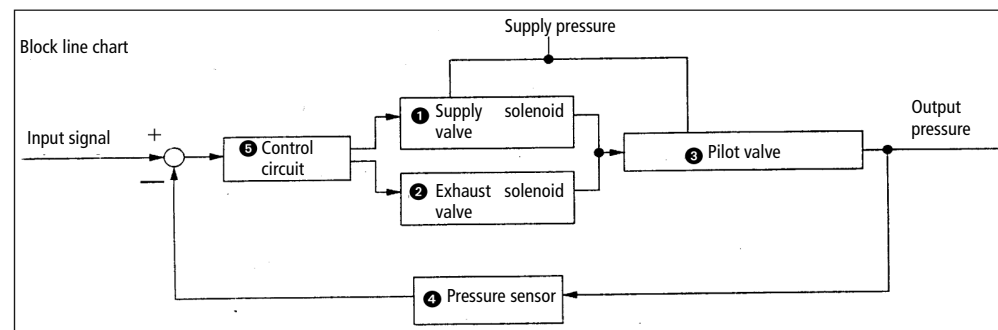


Fig 5

CAUTION

Wiring

Connect the cables to the connectors on the unit as shown in the following diagrams. Take precautions as incorrect wiring will damage the unit. Use a DC power supply capable of supplying the necessary power requirements with minimal ripple.

When 3m straight cable connection is specified, this refers to the power supply cable, the communications cable should be ordered separately.

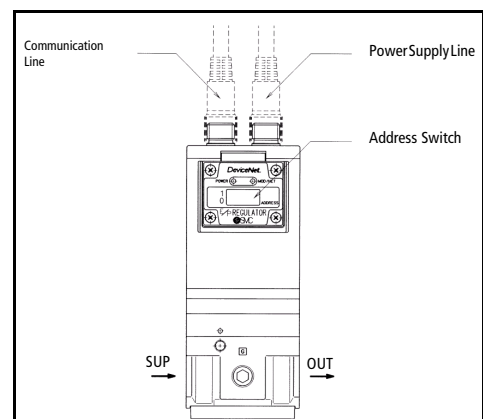


Fig 6

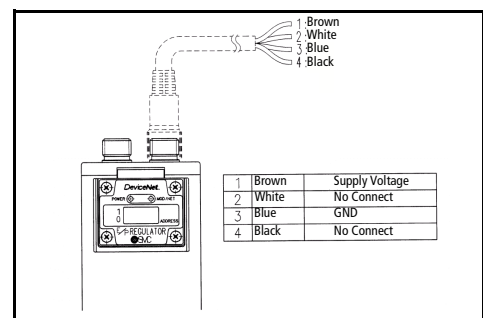
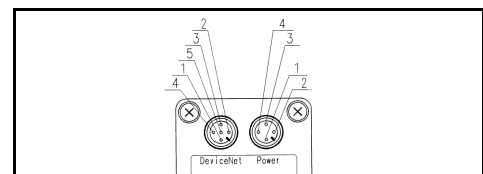


Fig 7



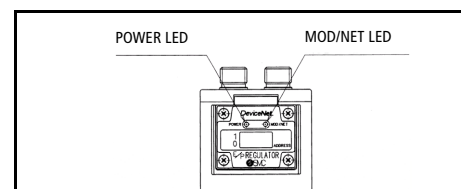
No.	Code	Color	Function
1	Drain	Naked	Device shield for signal line
2	V+	Red	Power supply (+) to communication station
3	V-	Black	Power supply (-) to communication station
4	CAN-H	White	Device Net signal
5	CAN-L	Blue	Device Net signal

Fig 8

Protocol

Protocol	DeviceNet Ver 2.0
Comm Speed	125 k, 250 k, 500 k BPS
Slave type	Group 2 only
Device type	00h (Generic Device)
Connections supported	Explicit, Polled I/O

LED Display



POWER LED	
OFF	Power OFF (interface unit)
GREEN	Power ON (interface unit)

MOD/NET LED (Combined Module/Network Status)	
OFF	The unit is not on-line
FLASHING GREEN	The unit is on-line but not allocated
SOLID GREEN	The unit is on-line and allocated to a master
FLASHING RED	Recoverable fault, the I/O connection has timed out
SOLID RED	Unrecoverable fault, can not recover

Fig 9

Address Dip Switch

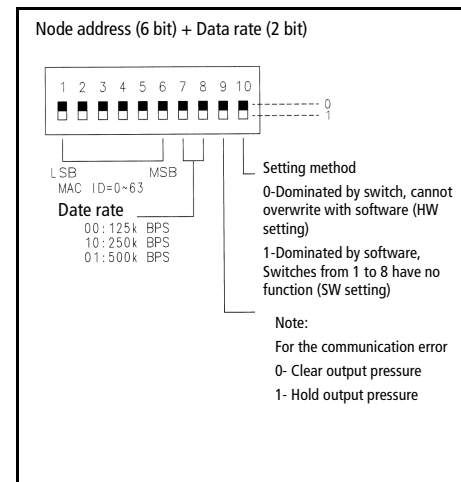


Fig 10

Note: Dip switch 9 is selected to temporarily hold or clear the output pressure, in the event that either of the following occur

- When the DeviceNet line causes a communication error due to disconnection.

- When the power supply to the ITV is switched off or disconnected whilst unit is communicating.

The condition of the output pressure during recovery of either connection depends on the position of the dip switch.

- Output pressure is Cleared
- Output pressure is Held

CAUTION

- The setting of an address switch requires the removal of 4 screws in the front panel of the unit (Fig 6). Take care that the panel hinges to 90 degrees maximum.
- After setting an address, always close and fix the panel securely. Tighten the screws to a torque of 0.6 – 1.0 Nm.

CAUTION

- If the air pressure fails with power 'on' the solenoid will 'flutter'. Turn off the power to stop the pressure supply or make an input signal of 0%

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. All 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.

When you enquire about the product, please contact the following

SMC Corporation:

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