



Installation and Maintenance Manual

ITV10*0-X305, ITV20*0-X305, ITV30*0 X305, (CC-Link) Electro-Pneumatic Regulator

EMC Directive 89/336/EEC
EN61000-6-2:2001: Electromagnetic Compatibility (EMC) - Immunity
EN55011 +A1:1998 Electromagnetic Compatibility (EMC) - Emission

1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage. Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use. Keep this manual in a safe place for future reference.

These instructions indicate the level of potential hazard by label of "DANGER", "WARNING" or "CAUTION", followed by important safety information which must be carefully followed.

To ensure safety ISO4414: Pneumatic Fluid power and JIS B 8370: Pneumatic System principles must be observed, along with other relevant safety practices.

⚠ DANGER	In extreme conditions, there is a possibility of serious injury or loss of life.
⚠ WARNING	If instructions are not followed there is a possibility of serious injury or loss of life.
⚠ CAUTION	If instructions are not followed there is a possibility of injury or equipment damage.

⚠ 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.

- 1) Inspection and maintenance of machinery / equipment should only be performed after confirmation of safe locked-out control positions.
- 2) 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.
- 3) Before machinery / equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Bleed 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.

- 1) Conditions and environments beyond the given specifications, or if product is used outdoors.
- 2) 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.
- 3) 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.

2 Specifications

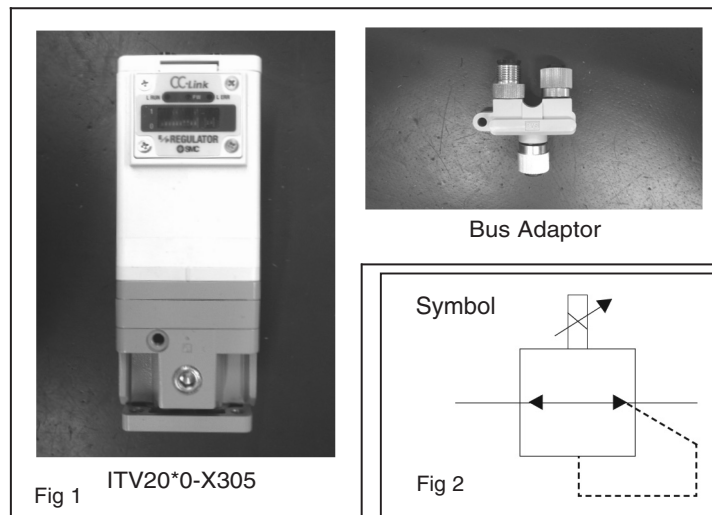


Fig 1 ITV20*0-X305

Fig 2

Model	ITV*010-X305	ITV*030-X305	ITV*050-X305
Max. Supply Pressure	0.2MPa	1.0MPa	
Setting Pressure Range	0.005~0.1MPa	0.005~0.5MPa	0.005~0.9MPa
Supply Voltage	24VDC±10%		
Current Consumption	Max. 140mA		
Input Signal	Indicates input signal by 12bit (0~4095)		
Output signal	Retransmits output pressure by 12 bit (0~4095)		
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. or less / C		
Protection Structure	Main unit: Equivalent to IP65		
Ambient and Fluid Temperature	0~50 C (without condensation)		

Fig 3

3 Operation Principal

When the input signal increase, 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.

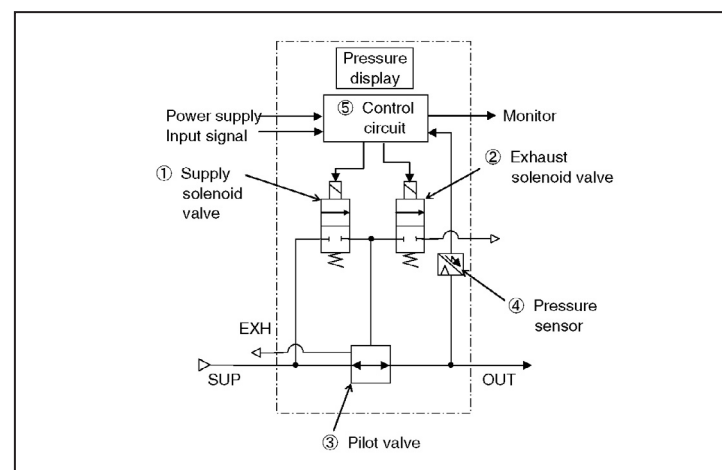


Fig 4

4 Block Diagram

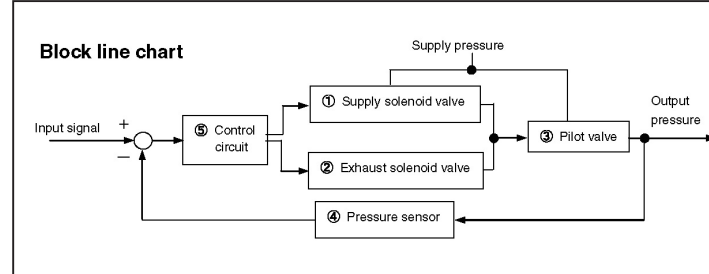


Fig 5

5 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.

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

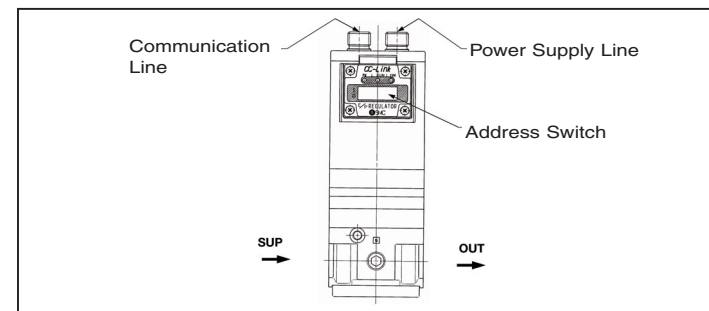


Fig 6

Item	Pin assign	Wire colour (note1)
Connector for Power supply	1. 24[V]	Brown
	2. F.G.	White
	3. 0[V]	Blue
	4. N.C.	Black
Connector for Communication	Please install the bus adaptor (attached).	

Fig 7

Note1) Wire colour when the option cable is used

Item	Type	Pin assign
CC-Link IN		1. SLD
		2. DB
		3. DG
		4. DA
CC-Link OUT		1. SLD
		2. DB
		3. DG
		4. DA
		5. N.C.

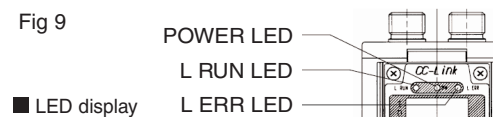
Fig 8

5.1 Communications Protocol

Item	Specification	Note
Field bus	CC-Link	Ver 1.1
Station type	Remote device	-
Device type	Analogue I/O	Code 04H
Occupied station number	1 Station	Fixed
Transmission speed	10M/5M/2.5M/625k/156k bps	Due to the dip switch
Node address	1 to 64	Due to the dip switch
Transmission method	RS-485	-

6 LED Display

Fig 9



Item	Turning ON	Turning OFF	Blinking (0.4s cycle)
Power	Power ON	Power OFF	-
L RUN	Normal	Abnormal	-
L ERR	Communication error	Normal	The switch setting has changed from the setting when reset is released.

7 Address Dip Switch

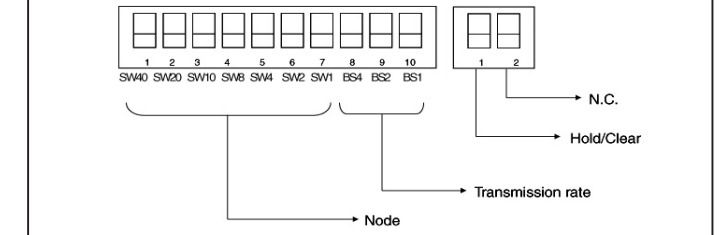


Fig 10

Table 1 the setting of node address

Node address\SW	SW40	SW20	SW10	SW8	SW4	SW2	SW1
1	OFF	OFF	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	OFF	OFF	ON	ON
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
64	ON	ON	OFF	OFF	ON	OFF	OFF

Table 2 the setting of transmission rate

Communication rate\SW	BS4	BS2	BS1
0 (156kbps)	OFF	OFF	OFF
1 (625kbps)	OFF	OFF	ON
2 (2.5Mbps)	OFF	ON	OFF
3 (5.0Mbps)	OFF	ON	ON
4 (10Mbps)	ON	OFF	OFF

Table 3 the setting of Hold/Clear when communication fails

Hold/Clear\SW	Switch 1	Function
Hold	OFF	Hold output pressure
Clear	ON	Clear output pressure

⚠ CAUTION

1. 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.
2. After setting an address, always close and fix the panel securely. Tighten the screws to torque of 0.6 - 1.0 Nm.

8 Installation

⚠ CAUTION

1. This product is pre-set at the factory and must not be dismantled by the user. Contact your local SMC office for advice.
2. Ensure, when installing this product, that it is kept clear of power lines to avoid noise interference.
3. Ensure that load surge protection is fitted when inductive loads are present (i.e. solenoid, relay etc.).
4. Ensure precautions are in place if the product is used in a 'free flow output' condition. All will continue to flow continuously.
5. Do not use a lubricator on the input side of this product. If lubrication is necessary, place the lubricator on the 'output' side.
6. Ensure all air is exhausted from the product before maintenance.
7. Length of connector cable shall be 10m or less.

9 Contacts

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) 207-513 513	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	UNITED KINGDOM	(44) 1908-56 3888

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