

Electro-Pneumatic Regulator

Series *ITV1000/2000/3000*



How to Order

ITV 3 0 1 0 - 0 1 [] 2 [] S [] - []

Model

1	1000 type
2	2000 type
3	3000 type

Pressure range

1	0.1 MPa
3	0.5 MPa
5	0.9 MPa

Power supply voltage

0	24 VDC
1	12 to 15 VDC

Note) Communication models (CC, DE, PR, RC), 16 points preset input and 10 bit digital input are available only for 24 VDC.

Made to Order Specifications

Refer to pages 816, 832, and 833 for details.

Pressure display unit

Nil	MPa
2 ^(Note)	kgf/cm ²
3	bar
4 ^(Note)	psi
5	kPa

Note) Under Japan's new Measurement Act, this is only for overseas sales (SI units are to be used inside Japan). For the communication models, CC, DE, PR and RC, only "Nil" is available as it does not have a pressure display.

Input signal/

Communication model

0	Current type 4 to 20 mA DC (Sink type)
1	Current type 0 to 20 mA DC (Sink type)
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC
40	4 points preset input
52	16 points preset input (Switch output/NPN output)
53	16 points preset input (Switch output/PNP output)
60	10 bit digital input
CC	CC-Link
DE	DeviceNet™
PR	PROFIBUS DP
RC	RS-232C communication

Monitor output

1	Analog output 1 to 5 VDC
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output 4 to 20 mA DC (Sink type)
Nil	None

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Cable connector type

S	Straight type 3 m
L	Right angle type 3 m
N	Without cable connector

Note) Even when a cable connector is selected, communication cable is not included in the communication models, CC, DE and PR. Please order it separately. Refer to the below.
For 10 bit digital input, right angle type cannot be selected.

Bracket *

Nil	Without bracket
B	Flat bracket
C	L-bracket

* Bracket is included.

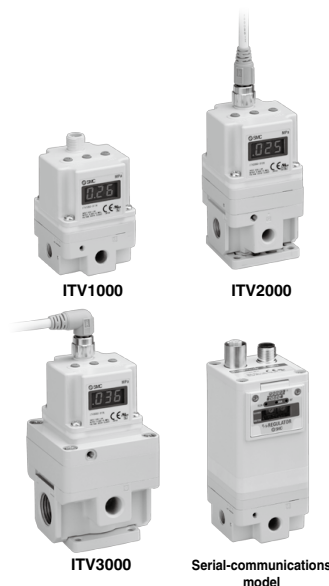
Port size

1	1/8 (1000 type)
2	1/4 (1000, 2000, 3000 type)
3	3/8 (2000, 3000 type)
4	1/2 (3000 type)

For communication cables, use the parts listed below (refer to M8/M12 connector in Best Pneumatics No.1 for details) or order the product certified for the respective protocol (with M12 connector) separately.

Application	Communication cable part number	Note
CC-Link compatibility	PCA-1567720 (Socket type)	Dedicated Bus adapter supplied with the product.
	PCA-1567717 (Plug type)	
DeviceNet™ compatibility	PCA-1557633 (Socket type)	T-branch connector not supplied.
	PCA-1557646 (Plug type)	
PROFIBUS DP compatibility	PCA-1557688 (Socket type)	T-branch connector not supplied.
	PCA-1557691 (Plug type)	

Standard Specifications



Symbol

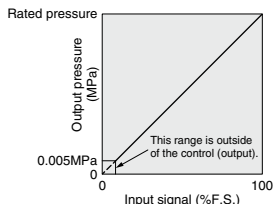
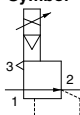


Figure 1. Input/output characteristics chart

Model	ITV101□ ^(Note 8)		ITV103□ ^(Note 8)		ITV105□ ^(Note 8)		
	ITV201□		ITV203□		ITV205□		
	ITV301□		ITV303□		ITV305□		
Minimum supply pressure		Set pressure +0.1 MPa					
Maximum supply pressure		0.2 MPa		1.0 MPa			
Set pressure range ^(Note 1)		0.005 to 0.1 MPa		0.005 to 0.5 MPa		0.005 to 0.9 MPa	
Power supply	Voltage	24 VDC $\pm 10\%$, 12 to 15 VDC					
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less ^(Note 9) Power supply voltage 12 to 15 VDC type: 0.18 A or less					
Input signal ^(Note 9)	Current type ^(Note 2)	4 to 20 mA DC, 0 to 20 mA DC (Sink type)					
	Voltage type	0 to 5 VDC, 0 to 10 VDC					
	Preset input	4 points (Negative common), 16 points (No common polarity)					
	Digital input	10 bit (Parallel)					
Input impedance	Current type	250 Ω or less ^(Note 6)					
	Voltage type	Approx. 6.5 k Ω					
	Preset input	Power supply voltage 24 VDC type: Approx. 4.7 k Ω Power supply voltage 12 VDC type: Approx. 2.0 k Ω					
	Digital input	Approx. 4.7 k Ω					
Output signal ^(Note 3) (monitor output)	Analog output	1 to 5 VDC (Output impedance: Approx. 1 k Ω) 4 to 20 mA DC (Sink type) (Output impedance: 250 Ω or less) Output accuracy $\pm 6\%$ F.S. or less					
	Switch output	NPN open collector output: Max. 30 V, 80 mA PNP open collector output: Max. 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./ $^{\circ}\text{C}$ or less					
Output pressure display ^(Note 4)		Accuracy		$\pm 2\%$ F.S. ± 1 digit or less			
Ambient and fluid temperature		MPa: 0.001, kgf/cm 2 : 0.01, bar: 0.01, psi: 0.1 ^(Note 5) , kPa: 1					
		0 to 50 $^{\circ}\text{C}$ (No condensation)					
Enclosure		IP65					
Weight ^(Note 10)	ITV10□□	Approx. 250 g (without options)					
	ITV20□□	Approx. 350 g (without options)					
	ITV30□□	Approx. 645 g (without options)					

Note 1) Please refer to Figure 1 for the relationship between set pressure and input. Because the maximum set pressure differs for each pressure display, refer to page 853.

Note 2) 2-wire type 4 to 20 mA DC is not available. Power supply voltage (24 VDC or 12 to 15 VDC) is required.

Note 3) Select either analog output or switch output.
Further, when switch output is selected, select either NPN output or PNP output.
When measuring ITV analog output from 1 to 5 VDC, if the load impedance is less than 100 k Ω , the analog output monitor accuracy of within $\pm 6\%$ (full span) may not be available. The product with the accuracy of within $\pm 6\%$ is supplied upon your request. Output pressure remains unaffected.

Note 4) 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 (e.g. 0.001 to 0.500 MPa). Note that the unit cannot be changed.

Note 5) The minimum unit for 0.9 MPa (130 psi) types is 1 psi.

Note 6) Value for the state with no over current circuit included. If an allowance is provided for an over current circuit, the input impedance varies depending on the input current. This is 350 Ω or less for an input current of 20 mA DC.

Note 7) The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.

Note 8) The ITV1000 series is a Grease-free specification (Wetted parts).

Note 9) Refer to the table below for communication specifications.

Note 10) Add 50 g for digital input type, 70 g for 16 points preset input type respectively.

Communication Specifications (CC, DE, PR, RC)

Model	ITV□□□-CC	ITV□□□-DE	ITV□□□-PR	ITV□□□-RC
Protocol	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
Version	Ver 1.10	Volume1 (Edition3.8), Volume3 (Edition1.5)	DP-V0	—
Communication speed	156 k/625 k 2.5 M/5 M/10 M bps	125 k/250 k/500 k bps	9.6 k/19.2 k/45.45 k 93.75 k/187.5 k/500 k 1.5 M/3 M/6 M/12 M bps	9.6 kbps
Configuration file	—	EDS	GSD	—
I/O occupation area (input/output data)	4 word/4 word, 32 bit/32 bit (per station, remote device station)	16 bit/16 bit	16 bit/16 bit	—
Communication data resolution	12 bit (4096 resolution)	12 bit (4096 resolution)	12 bit (4096 resolution)	10 bit (1024 resolution)
Fail safe	HOLD (Note 3)/CLEAR (Switch setting)	HOLD/CLEAR (Switch setting)	CLEAR	HOLD
Electric insulation	Insulation	Insulation	Insulation	Non-insulation
Terminating resistor	Built into the product (Switch setting)	Not built into the product	Built into the product (Switch setting)	—
Current consumption	0.16 A or less	0.14 A or less	0.16 A or less	0.12 A or less
Weight	ITV1000	330	350	320
	ITV2000	430	420	420
	ITV3000	730	720	720

Note 1) Note that version information is subject to change.

Note 2) Configuration files can be downloaded from the operation manual page on SMC's website: <http://www.smworld.com>

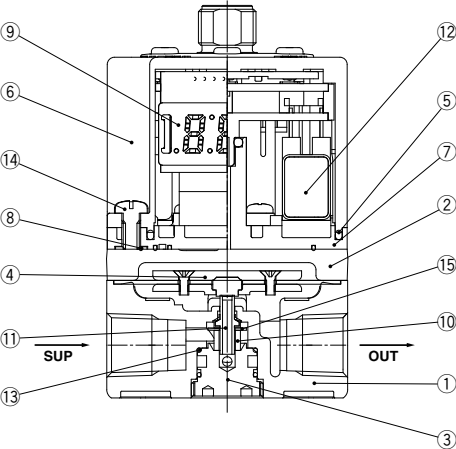
Note 3) The output HOLD value when a CC-Link communications error occurs can be set based on the bit area data.

Note 4) The insulation between the electrical signal of the communication system and ITV power supply.

Series *ITV1000/2000/3000*

Construction

ITV1000

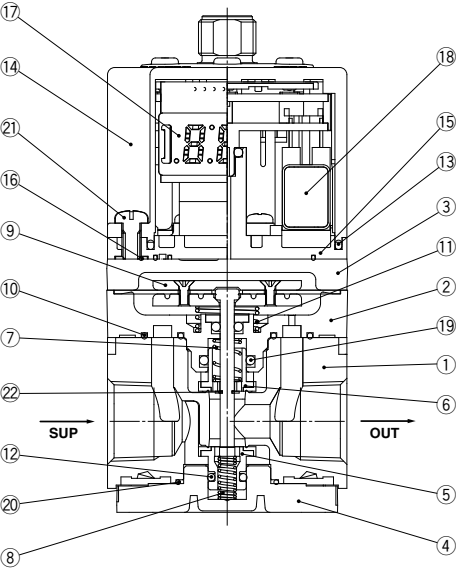


Main Component Parts

No.	Description	Material
◆ 1	Body	Aluminum alloy
2	Cover	Aluminum alloy
◆ 3	Valve guide	Aluminum alloy
◆ 4	Diaphragm assembly	Aluminum alloy Weather resistant NBR Steel
5	Seal	NBR
6	Bowl assembly	Resin Silicone rubber
7	Sub-plate	Resin
8	Seal	NBR
9	Control circuit assembly	—
◆ 10	Bumper	NBR
◆ 11	Valve	Stainless steel HNBR
12	Solenoid valve	—
◆ 13	O-ring	NBR
14	Round head Phillips screw	Steel
◆ 15	Flat washer	Stainless steel

* Parts in contact with fluid are indicated with a mark ◆.

ITV2000



Main Component Parts

No.	Description	Material
◆ 1	Body	Aluminum alloy
◆ 2	Intermediate body	Aluminum alloy
3	Cover	Aluminum alloy
◆ 4	Valve guide	Aluminum alloy
◆ 5	Valve (Supply valve)	HNBR/Brass
◆ 6	Valve (Exhaust valve)	HNBR/Brass
◆ 7	Valve spring	Stainless steel
◆ 8	Valve spring	Stainless steel
◆ 9	Diaphragm assembly	Stainless steel Aluminum alloy Weather resistant NBR Steel
◆ 10	Seal	NBR
◆ 11	Bias spring	Stainless steel
◆ 12	O-ring	NBR
13	Seal	NBR
14	Bowl assembly	Resin Silicone rubber
15	Sub-plate	Resin
16	Seal	NBR
17	Control circuit assembly	—
18	Solenoid valve	—
◆ 19	O-ring	NBR
20	O-ring	NBR
21	Round head Phillips screw	Steel
◆ 22	Retaining ring	Stainless steel

* Parts in contact with fluid are indicated with a mark ◆.

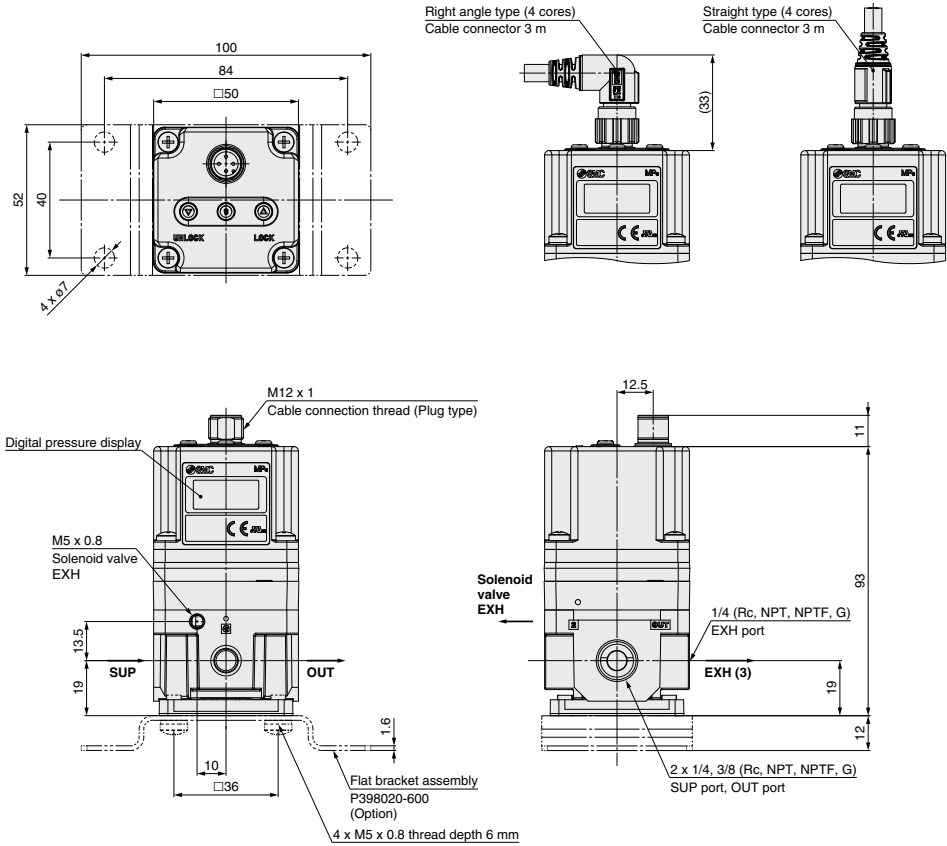
Series *ITV1000/2000/3000*

Dimensions

ITV20□□

Flat bracket

Note) Do not attempt to rotate, as the cable connector does not turn.



L-bracket

