

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.

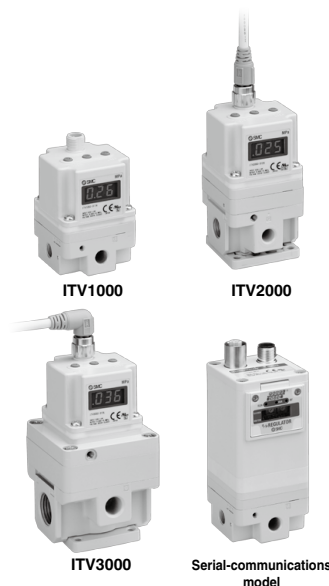
Port size

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

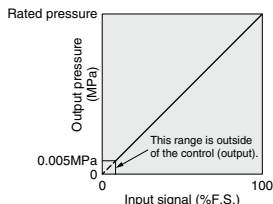
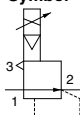


Figure 1. Input/output characteristics chart

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		
Set pressure range Note 1)	0.005 to 0.1 MPa		
Power supply	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		
Current type Note 2)	4 to 20 mA DC, 0 to 20 mA DC (Sink type)		
Voltage type Note 9)	0 to 5 VDC, 0 to 10 VDC		
Preset input	4 points (Negative common), 16 points (No common polarity)		
Digital input	10 bit (Parallel)		
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		
Analog output Note 3)	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)	$\pm 2\%$ F.S. ± 1 digit or less		
Accuracy	MPa: 0.001, kgf/cm 2 : 0.01, bar: 0.01, psi: 0.1 Note 5) , kPa: 1		
Ambient and fluid temperature	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)

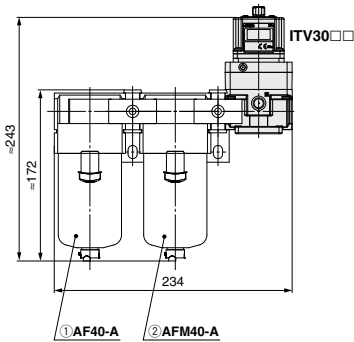
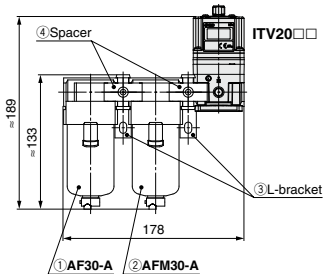
Model	ITV□□□-CC	ITV□□□-DE	ITV□□□-PR	ITV□□□-RC
Protocol	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
Version Note 1)	Ver 1.10	Volume1 (Edition3.8), Volume3 (Edition1.5)	DP-V0	—
Communication speed	156 k/625 k 2.5 M/5 M/10 M bps	125 k/250 k/500 k bps	9.6 k/19.2 k/45.45 k 93.75 k/187.5 k/500 k 1.5 M/3 M/6 M/12 M bps	9.6 kbps
Configuration file Note 2)	—	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 Note 4)	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 ITV2000 ITV3000	330 420 720	320 450 750	320 420 720

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.



Made to Order
(Refer to pages 832 and 835 for details.)

Symbol	Specifications
X102	Reverse type
X224	High pressure type (SUP 1.2 MPa, OUT 1.0 MPa)
X25	Set pressure range 1 to 100 kPa (Except Series ITV3000)
X88	High speed response type (Except Series ITV3000)
X26	For manifold mounting (Except Series ITV3000)
X410	Linearity: ±0.5% F.S. or less
X420	With alarm output

Note 1) Manifolds are compatible with 2 to 8 stations.
Consult with SMC for 9 stations or more.
Note 2) Products without symbols are also compatible.
Consult with SMC separately.
Note 3) Compliant with CE marking

Model	Bracket tightening torque
ITV1000	0.76 ± 0.05 N·m
ITV2000/3000	1.5 ± 0.05 N·m

Modular Products and Accessory Combinations

Applicable products and accessories	Applicable model	
	ITV20□□	ITV30□□
① Air filter	AF30-A	AF40-A
② Mist separator	AFM30-A	AFM40-A
③ L-bracket	B310L	B410L
④ Spacer	Y30	Y40
⑤ Spacer with L-bracket (③ + ④)	Y30L	Y40L
⑥ Spacer with T-bracket	—	Y40T

* For ITV10□□, use a modular adapter (Refer to page 585 for details).

Accessories (Option)/Part No.

[Bracket]

Applicable model	Description	Part No.
ITV10□□	Flat bracket assembly (including mounting screws)	P398010-600
ITV20□□, 30□□		P398020-600
ITV10□□	L-bracket assembly (including mounting screws)	P398010-601
ITV20□□, 30□□		P398020-601

[Cable connector]

Applicable model	Description		Part No.
Current type Voltage type 4 points preset input	Cable connector (4 cores)	Straight type 3 m	P398020-500-3
		Right angle type 3 m	P398020-501-3
16 points preset input	Power cable (4 cores)	Straight type 3 m	P398020-500-3
		Right angle type 3 m	P398020-501-3
	Signal cable (5 cores)	Straight type 3 m	P398020-502-3
		Right angle type 3 m	P398020-503-3
10 bit digital input	Cable connector (13 cores)	Straight type 3 m	INI-398-0-59
CC-Link PROFIBUS DP DeviceNet™	Power cable (4 cores)	Straight type 3 m	P398020-500-3
		Right angle type 3 m	P398020-501-3
RS-232C	Power cable (4 cores)	Straight type 3 m	P398020-500-3
		Right angle type 3 m	P398020-501-3
	Communication cables connector (5 cores)	Straight type 3 m	P398020-502-3
		Right angle type 3 m	P398020-503-3

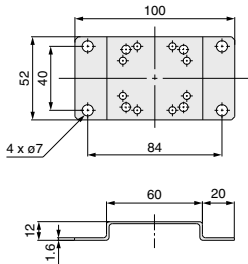
Note 1) For the 10-bit digital type, there is no right angle type cable connector.
Note 2) Even when "with cable connector" is selected the communication cable is not included in the communication model (CC, DE, PR). Please order separately.

[Bus adapter]

Applicable model	Description	Part No.
CC-Link	Bus adapter (Bus adapter supplied with the product.)	EX9-ACY00-MJ

Dimensions

Flat bracket



L-bracket

