

Electronic Vacuum Regulator

Series *ITV2090/2091*



How to Order

ITV 209 0 - 0 1 2 S 5

Pressure range

9	-1.3 to -80 kPa
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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.

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

Pressure display unit

5	kPa
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Note) For the communication models, CC, DE, PR and RC, only "Nil" is available as it does not have a pressure display.

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

2	1/4
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Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

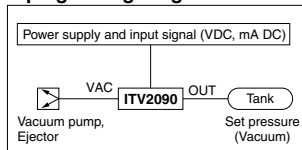
For communications cables, use the parts listed below (refer to M8/M12 connector in Best Pneumatics No.1 for details) or order the product certified for the respective protocol (with M12 connector) separately.

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)	

Stepless control of vacuum pressure proportional to an electrical signal



Piping/Wiring Diagram



Standard Specifications

Model	ITV2090	ITV2091
Minimum supply vacuum pressure ^{Note 1)}	Set pressure -13.3 kPa	
Maximum supply vacuum pressure	-101 kPa	
Set pressure range	-1.3 to -80 kPa	
Power supply	Voltage	24 VDC $\pm 10\%$
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less ^{Note 7)} Power supply voltage 12 to 15 VDC type: 0.18 A or less
Input signal ^{Note 7)}	Current type	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)
Input impedance	Digital input	10 bit (Parallel)
	Current type	250 Ω or less ^{Note 3)}
	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
Output signal ^{Note 4)} (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	Accuracy	$\pm 2\%$ F.S. ± 1 digit or less
	Units	kPa ^{Note 5)} Minimum display: 1
Ambient and fluid temperature	0 to 50 $^{\circ}\text{C}$ (No condensation)	
Enclosure	IP65	
Weight ^{Note 7, 8)}	390 g	

Note 1) The minimum supply vacuum pressure should be 13.3 kPa less than the maximum vacuum pressure setting value.
Note 2) 4 to 20 mA DC is not possible with the 2-wire type. Power supply voltage (24 VDC or 12 to 15 VDC) is required.
Note 3) 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 power supply. This is 350 Ω or less for an input current of 20 mA DC.

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) Either analog output or switch output must be selected. Furthermore, when switch output is selected, either NPN output or PNP output must also be selected. Use caution that the preset input type is not equipped with an output signal function.

Note 5) Please contact SMC regarding indication with other units of pressure.

Note 6) The product characteristics are confined to the static state.

Pressure may fluctuate when air is consumed at the output side.

Note 7) Refer to the table below for communication specifications.

Note 8) Add 50 g for digital input type, 70 g for 16 points preset input type respectively.

Communication Specifications (CC, DE, PR, RC)

Model	ITV0000-CC00	ITV0000-DE00	ITV0000-PR00	ITV0000-RC00
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	ITV2090 470	460	490	460

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.