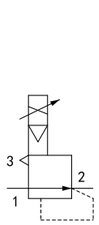
ITV Series Electro-Pneumatic Regulator



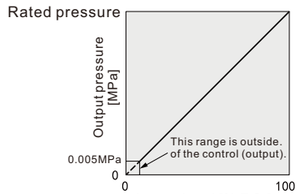


Fig.1 Input/output characteristics chart

Ordering Code

ITV Series Electro-Pneumatic Regulator

ITV 3 0 1 0 - 0 1 □ 2 □ S □ - □

Model
1: 1000 types
2: 2000 types
3: 3000 types

Supply voltage
0: DC24V
1: DC12 to 15V

Pressure range
1: 0.1MPa
3: 0.5MPa
5: 0.9MPa

Input signal model

0	Current type DC4 to 20mA (Sink type)
1	Current type DC0 to 20mA (Sink type)
2	Voltage type DC0 to 5V
3	Voltage type DC0 to 10V
40	4 points preset input
52	16 points preset input (Switch output/NPN output)
53	16 points preset input (Switch output/PIN output)
MB	RS-485 communication

Monitor output

1	Analog output DC1 to 5V
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output DC4 to 20mA (Sink type)
Nil	None

Thread type
Nil: Rc
N: NPT
T: NPTF
F: G

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)

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

Bracket
Nil: Without bracket
B: Flat bracket
C: L-bracket
* The bracket is included.

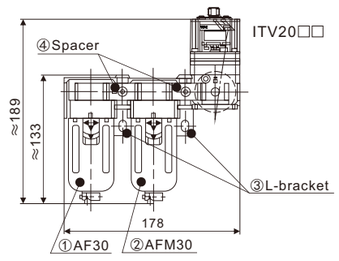
Made to order

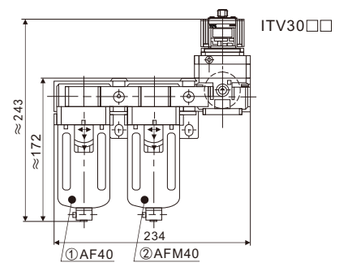
Pressure unit
Nil: MPa
2: kgf/cm²
3: bar
4: psi
5: kPa

Modular Products and Accessory Combinations

Applicable products and accessories	Applicable model	
	ITV20□□	ITV30□□
① Air filter	AF30	AF40
② Mist separator	AFM30	AFM40
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.





ITV Series Electro-Pneumatic Regulator

Specifications

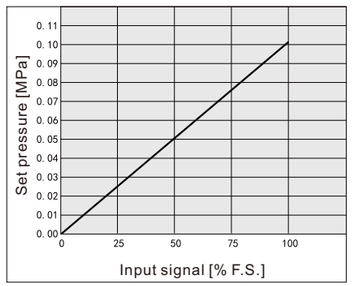
Model		ITV101□ *6)	ITV103□ *6)	ITV105□ *6)
		ITV201□	ITV203□	ITV205□
		ITV301□	ITV303□	ITV305□
Min. supply pressure		Set pressure+0.1MPa		
Max. supply pressure		0.2MPa	1.0MPa	
Set pressure range		0.005 to 0.1MPa	0.005 to 0.5MPa	0.005 to 0.9MPa
Power supply	Voltage	DC24V±10%, DC12 to 15V		
	Current consumption	Power supply voltage DC24V type: 0.12A or less Power supply voltage DC12 to 15V type: 0.18A or less		
Input signal	Current type *1)	DC4 to 20mA, DC0 to 20mA(Sink type)		
	Voltage type	DC0 to 5V, DC0 to 10V		
	Preset input	4 points(Negative common), 16points(No common polarity)		
Input impedance	Current type	250Ω or less *5)		
	Voltage type	Approx. 6.5 kΩ		
	Preset input	Power supply voltage DC24V type: Approx. 4.7 kΩ Power supply voltage DC12V type: Approx. 2.0 kΩ		
Output signal (Monitor output) *2)	Analog output	DC1 to 5V(Output impedance: Approx. 1 kΩ) DC4 to 20mA (Sink type)(Output impedance: 250Ω or less) Output accuracy ±6% F.S. or less		
	Switch output	NPN open collector output : Max.30V, 80mA PNP open collector output: Max.80mA		
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./°C or less		
Output pressure display *3)	Accuracy	±2%F.S.±1 digit or less		
	Min.unit	MPa: 0.001, kgf/cm²: 0.01, bar: 0.01, psi: 0.1 *4), kPa: 1		
Ambient and fluid temperatures		0 to 50°C (No condensation)		
Enclosure		IP65		
Weight	ITV10□□	Approx.250g (Without options)		
	ITV20□□	Approx.350g (Without options)		
	ITV30□□	Approx.645g (Without options)		

*1) 2-wire type DC4 to 20mA is not available. Power supply voltage(DC24V or DC12 to 15V) is required.
*2) 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 DC1 to 5V, if the load impedance is less than 100kΩ, the analog output monitor accuracy of within ±6% (full span) may not be available. The product with the accuracy of within ±6% is supplied upon your request. Output pressure remains unaffected.
*3) Adjustment of numerical values such as the zero/span adjustment or preset input type is set based on the min. units for output pressure display(e.g. 0.001 to 0.500MPa). Note that the unit cannot be changed.
*4) The min. unit for 0.9MPa(130psi) types is 1psi.
*5) 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 350Ω or less for an input current of DC20mA.
*6) The ITV1000 series is a grease-free specification (parts in contact with fluid).
*7) The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.

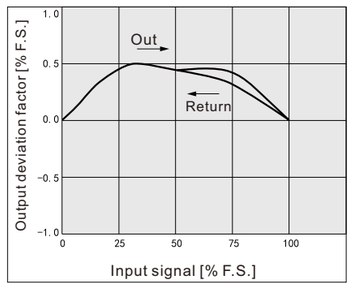
ITV Series Electro-Pneumatic Regulator

ITV101□Series

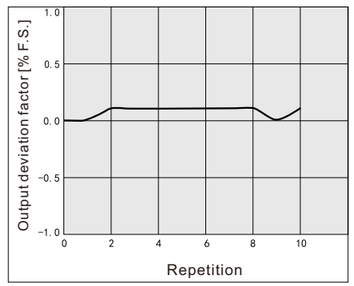
Linearity



Hysteresis

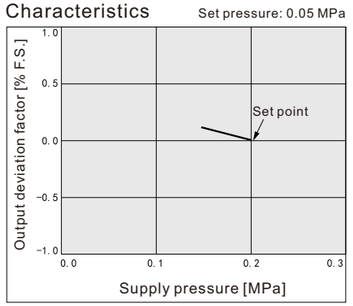


Repeatability



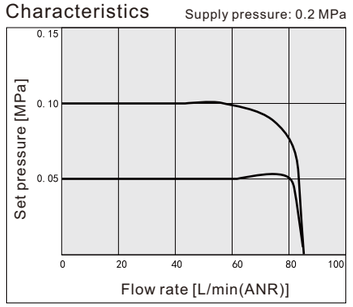
Pressure Characteristics

Set pressure: 0.05 MPa



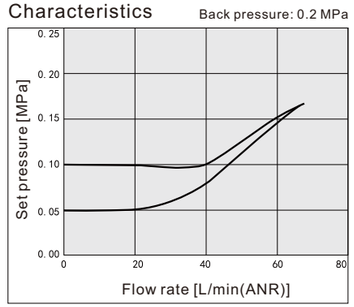
Flow Rate Characteristics

Supply pressure: 0.2 MPa



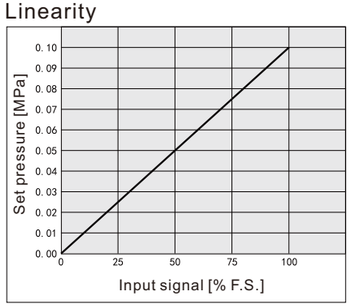
Relief Characteristics

Back pressure: 0.2 MPa

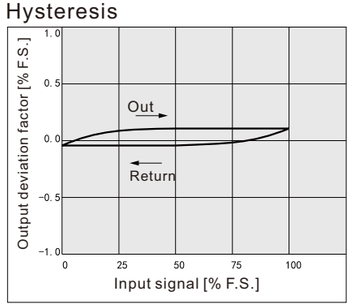


ITV201□Series

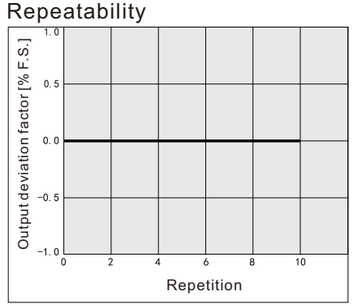
Linearity



Hysteresis

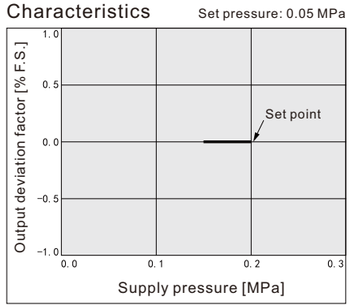


Repeatability



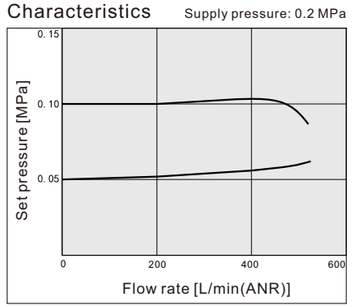
Pressure Characteristics

Set pressure: 0.05 MPa



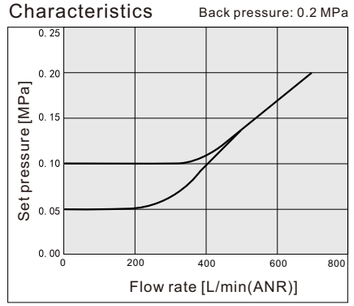
Flow Rate Characteristics

Supply pressure: 0.2 MPa



Relief Characteristics

Back pressure: 0.2 MPa

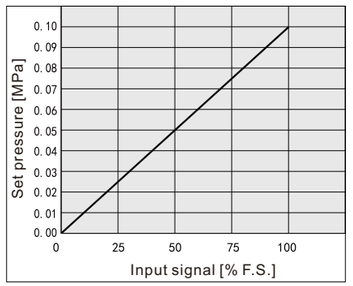


ISO9001 CE

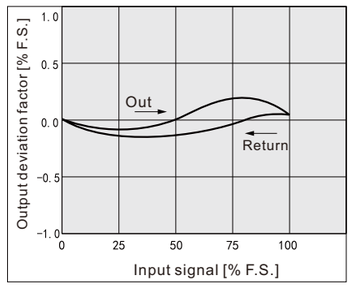
ITV Series Electro-Pneumatic Regulator

ITV301□Series

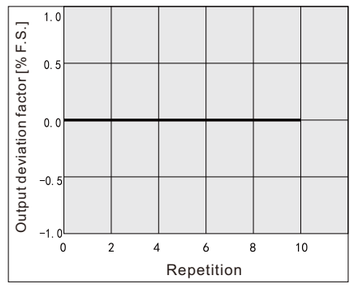
Linearity



Hysteresis

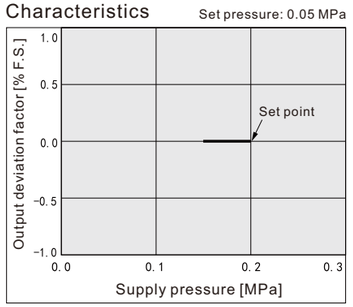


Repeatability



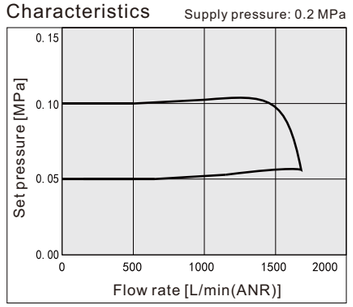
Pressure Characteristics

Set pressure: 0.05 MPa



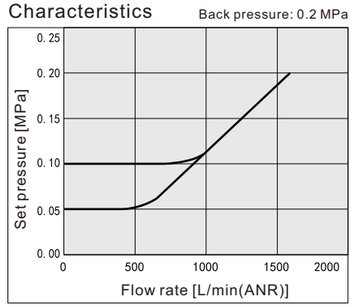
Flow Rate Characteristics

Supply pressure: 0.2 MPa



Relief Characteristics

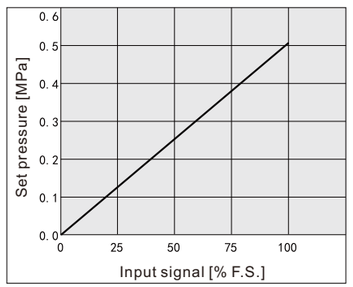
Back pressure: 0.2 MPa



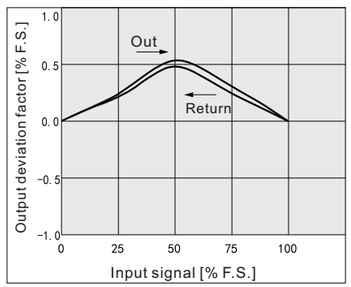
ITV Series Electro-Pneumatic Regulator

ITV103□Series

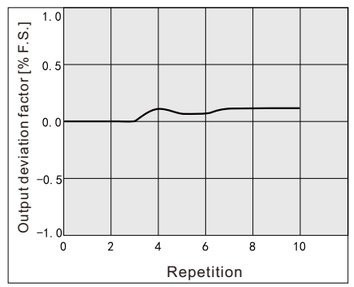
Linearity



Hysteresis

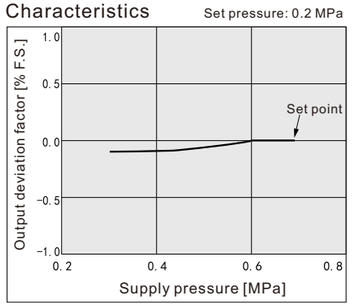


Repeatability



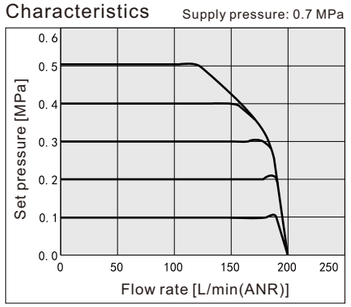
Pressure Characteristics

Set pressure: 0.2 MPa



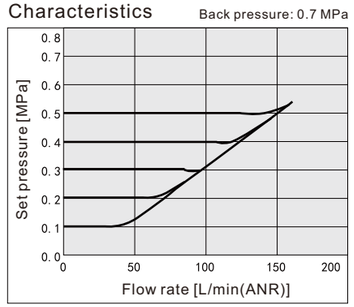
Flow Rate Characteristics

Supply pressure: 0.7 MPa



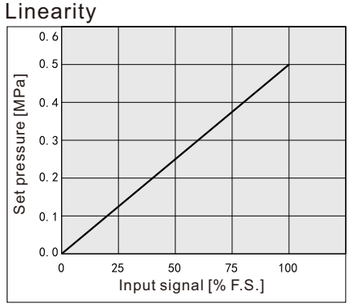
Relief Characteristics

Back pressure: 0.7 MPa

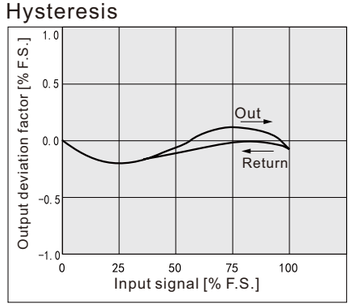


ITV203□Series

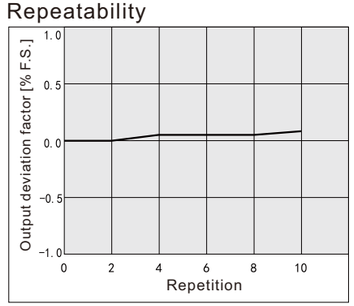
Linearity



Hysteresis



Repeatability



Pressure Characteristics

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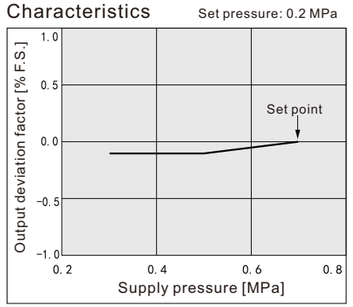
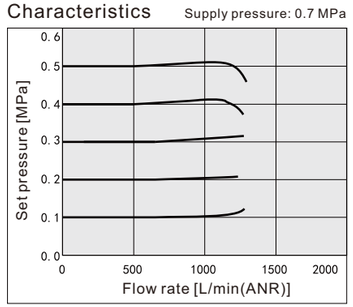


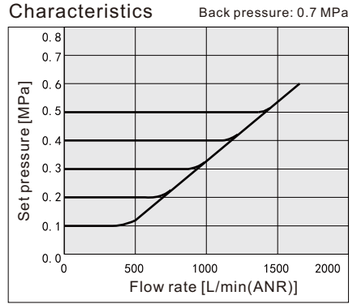
Flow Rate Characteristics

Supply pressure: 0.7 MPa



Relief Characteristics

Back pressure: 0.7 MPa

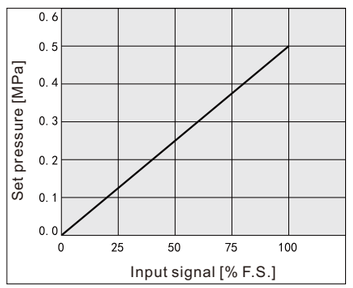


ISO9001 CE

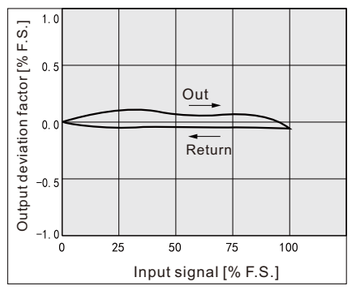
ITV Series Electro-Pneumatic Regulator

ITV303□Series

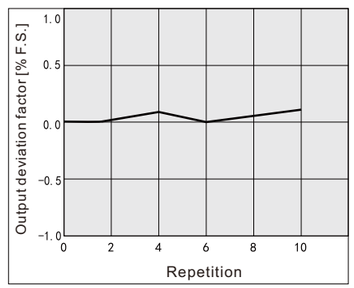
Linearity



Hysteresis

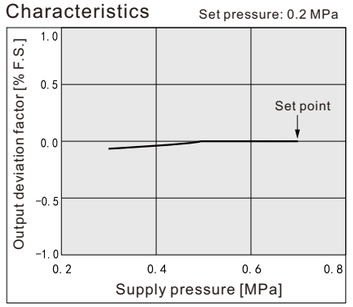


Repeatability



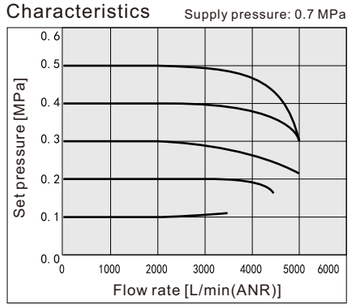
Pressure Characteristics

Set pressure: 0.2 MPa



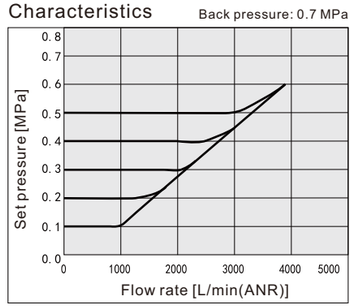
Flow Rate Characteristics

Supply pressure: 0.7 MPa



Relief Characteristics

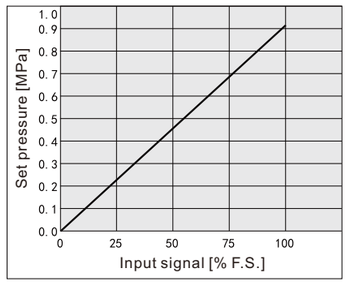
Back pressure: 0.7 MPa



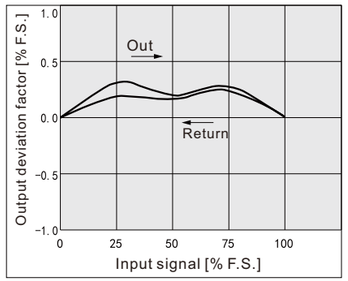
ITV Series Electro-Pneumatic Regulator

ITV105□Series

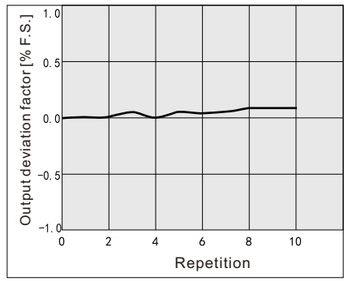
Linearity



Hysteresis

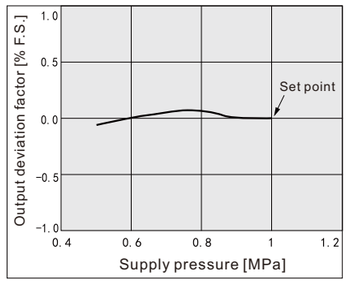


Repeatability



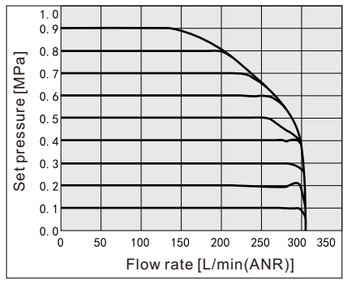
Pressure Characteristics

Set pressure: 0.4 MPa



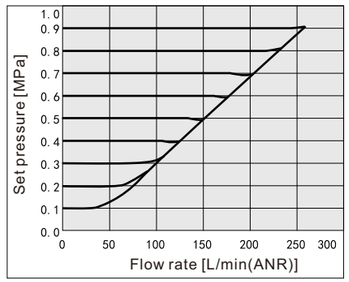
Flow Rate Characteristics

Supply pressure: 1.0 MPa



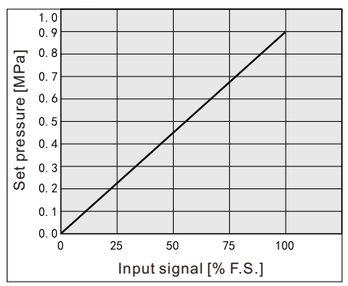
Relief Characteristics

Back pressure: 1.0 MPa

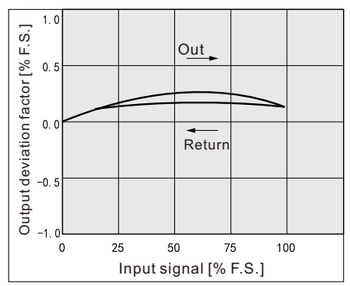


ITV205□Series

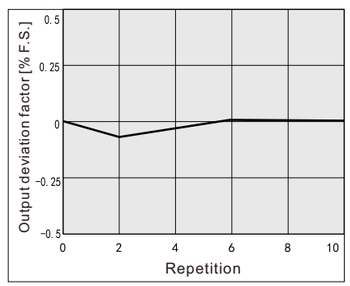
Linearity



Hysteresis

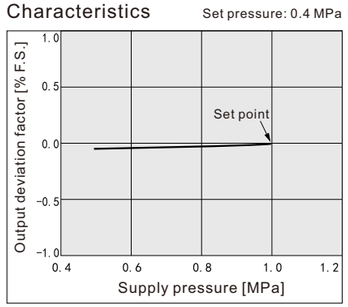


Repeatability



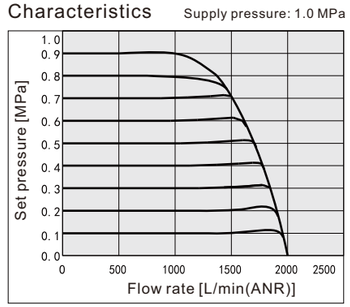
Pressure Characteristics

Set pressure: 0.4 MPa



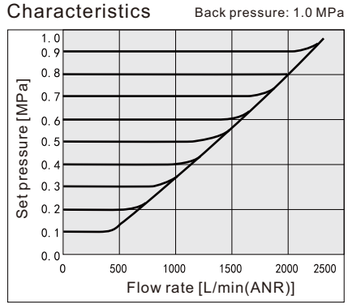
Flow Rate Characteristics

Supply pressure: 1.0 MPa



Relief Characteristics

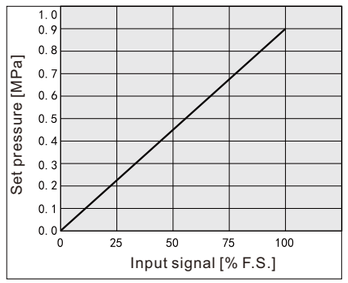
Back pressure: 1.0 MPa



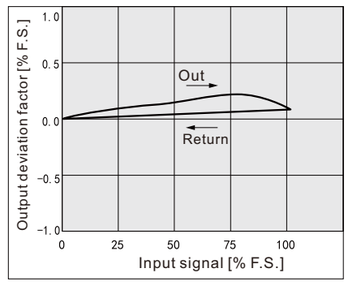
ITV Series Electro-Pneumatic Regulator

ITV305□Series

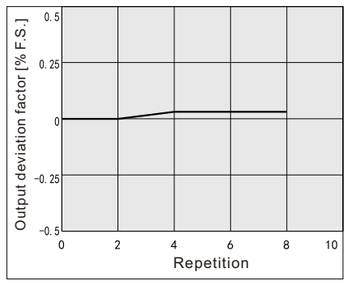
Linearity



Hysteresis

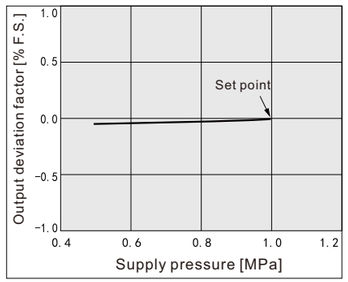


Repeatability



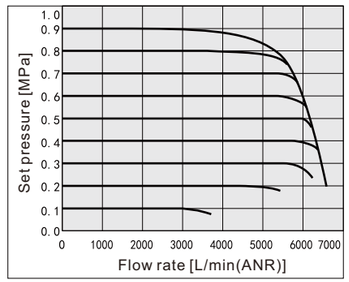
Pressure Characteristics

Set pressure: 0.4 MPa



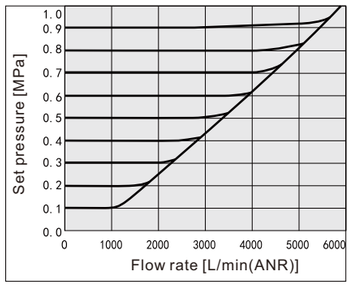
Flow Rate Characteristics

Supply pressure: 1.0 MPa



Relief Characteristics

Back pressure: 1.0 MPa

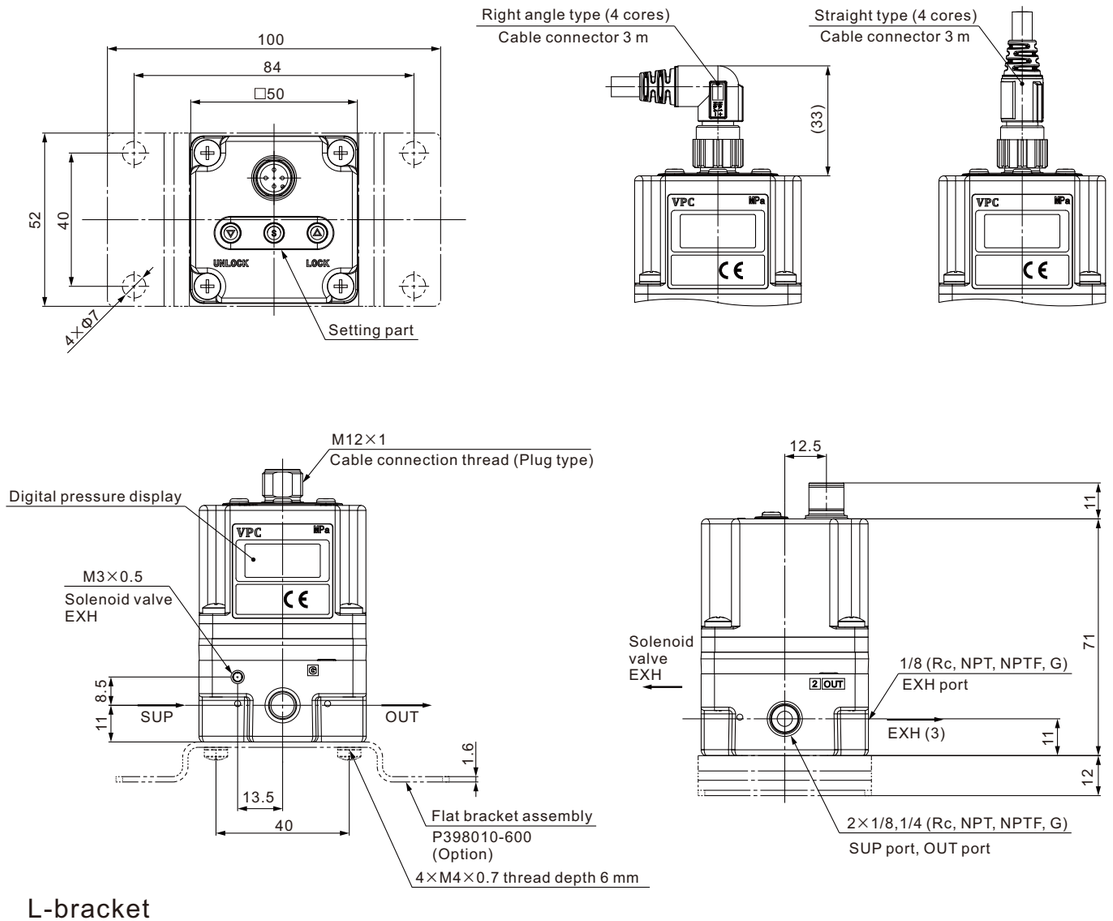


ITV Series Electro-Pneumatic Regulator

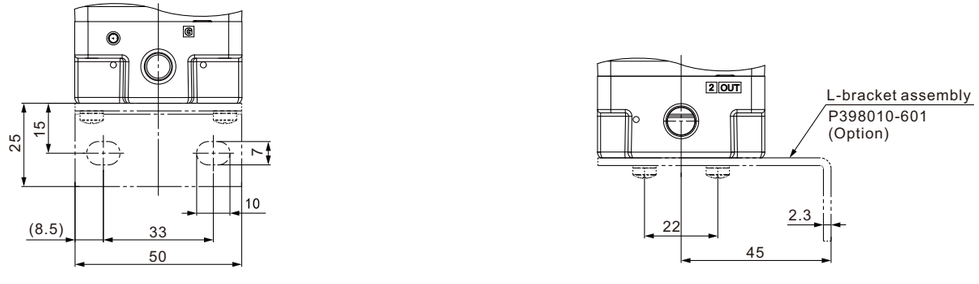
Main Dimensions

ITV10□□ Flat bracket

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



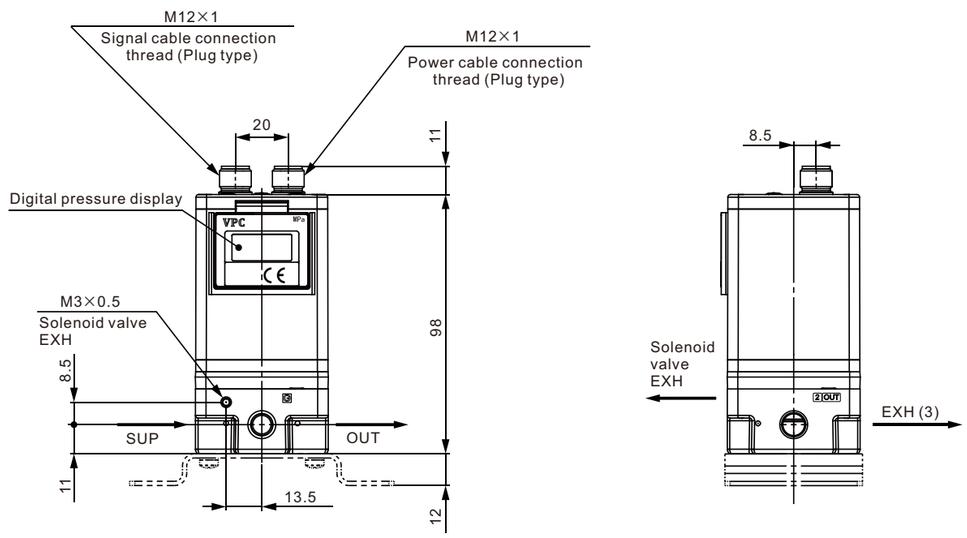
L-bracket



ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV10□□ 16 points preset input

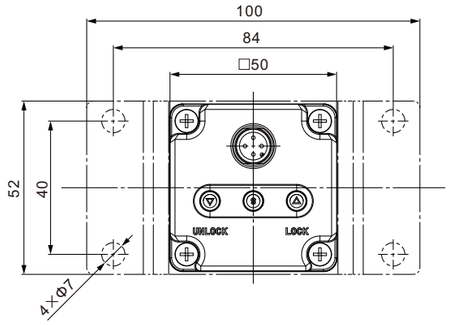


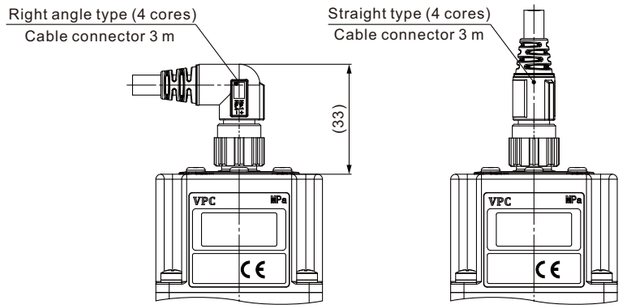
ITV Series Electro-Pneumatic Regulator

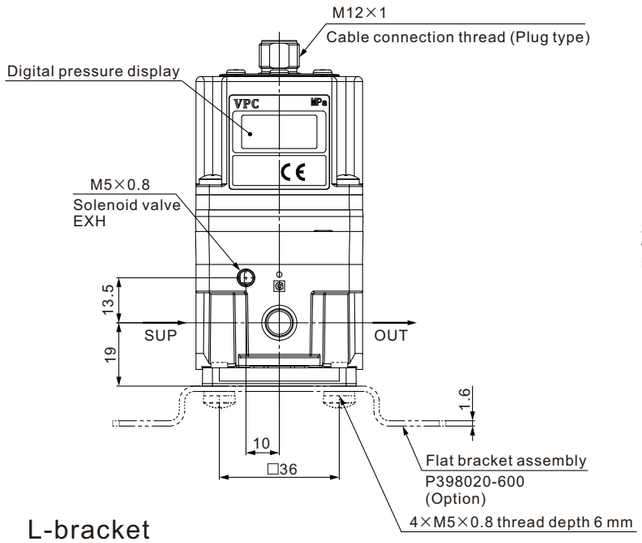
Main Dimensions

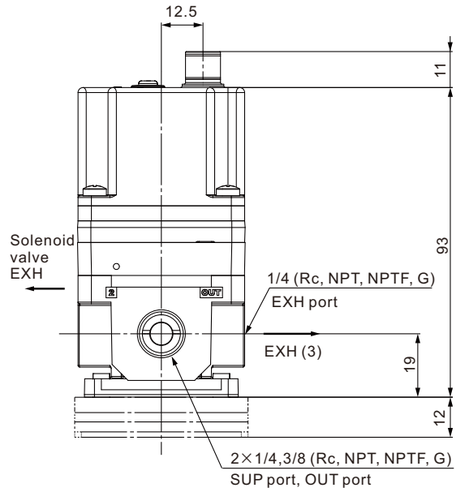
ITV20□□ Flat bracket

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

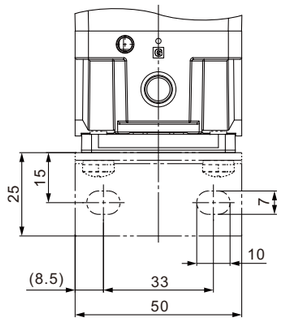


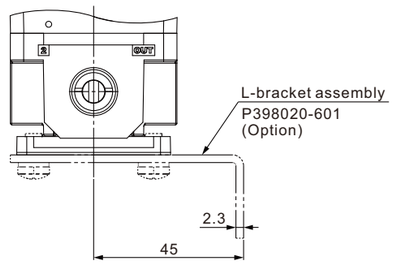






L-bracket



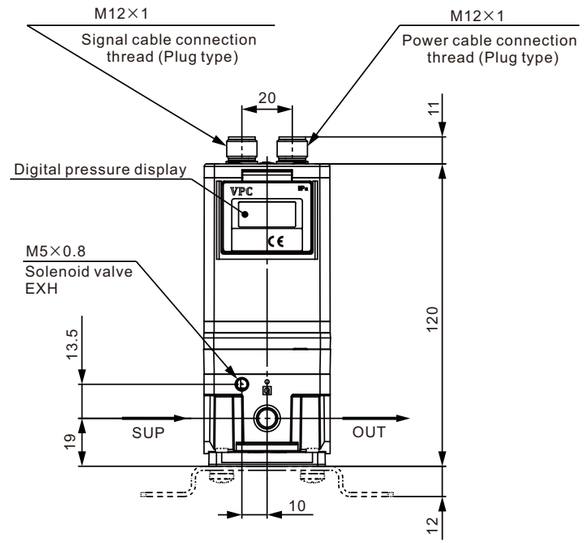


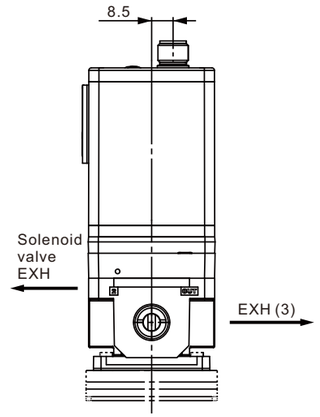
ISO9001 CE

ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV20□□ 16 points preset input





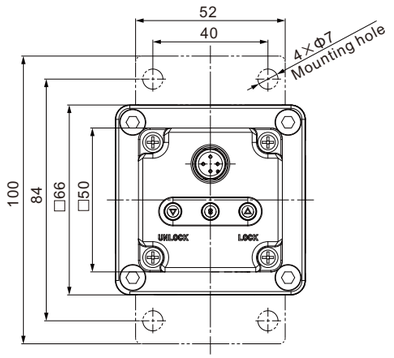
IV

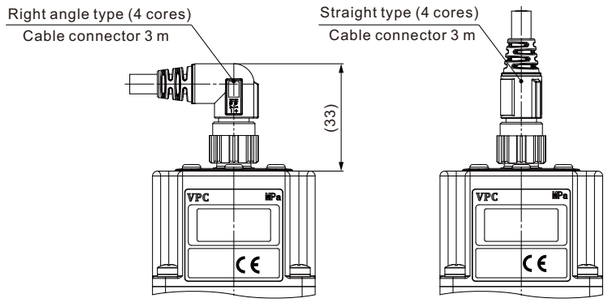
ITV Series Electro-Pneumatic Regulator

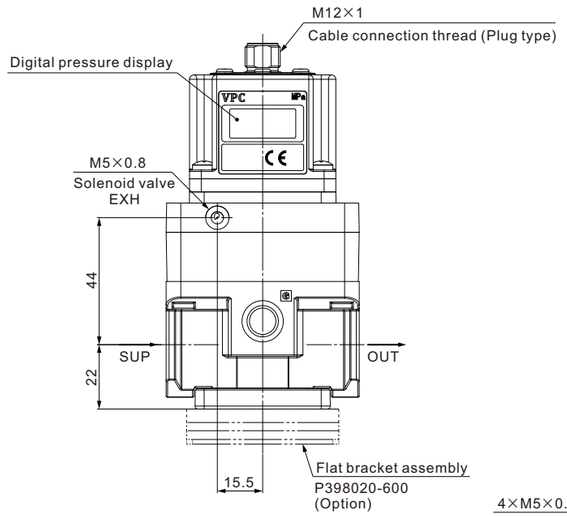
Main Dimensions

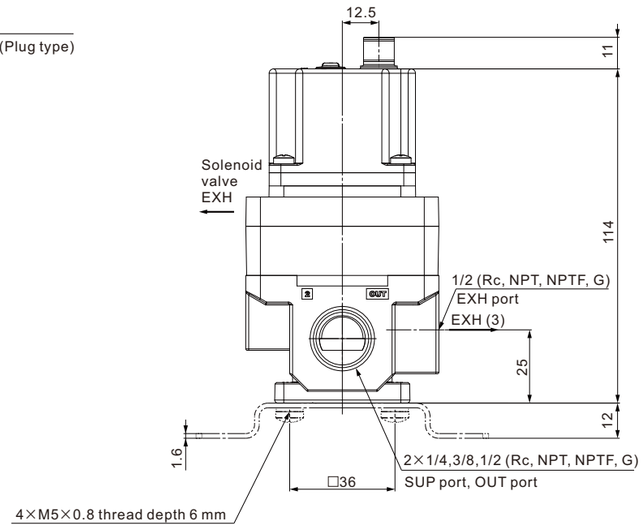
ITV30□□ Flat bracket

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

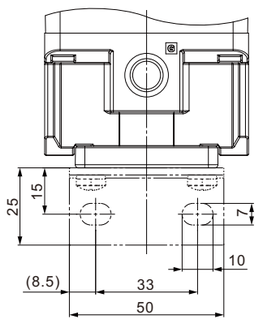


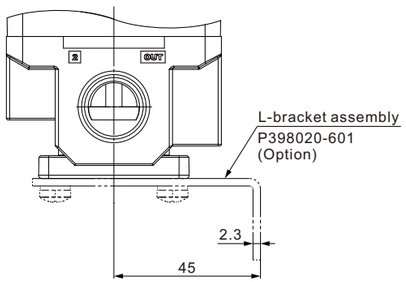






L-bracket

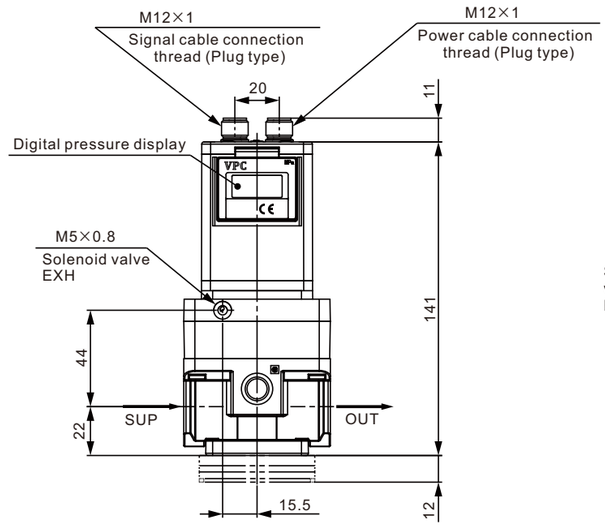


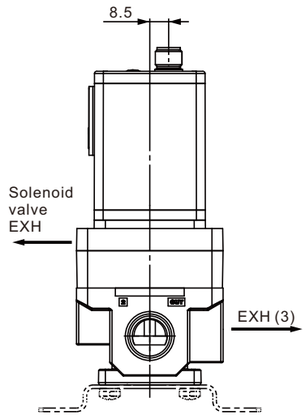


ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV30□□ 16 points preset input

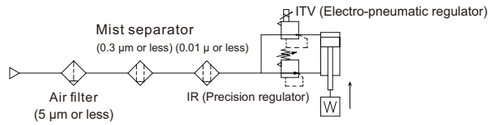




ITV009□ Series Compact Vacuum Regulator

Product Feature

- Linearity: ±1% F.S. or less
- Hysteresis: 0.5% F.S. or less
- Repeatability: ±0.5% F.S. or less
- High-speed response time: 0.1 s (Without load)
- High stability
  Sensitivity: 0.2% F.S. or less



Ordering Code

ITV009□ Series Compact Vacuum Regulator

For single unit and single unit for manifold

ITV00 9 — 0 — 3 — □ — □ — □ — N

Pressure range
9: -100 kPa

Supply voltage
0: DC24V±10%
1: DC12 to 15 V

Input signal

0	Current type DC4 to 20mA (Sink type)
1	Current type DC0 to 20mA (Sink type)
2	Voltage type DC0 to 5V
3	Voltage type DC0 to 10V

Built-in One-touch fittings type

For single unit

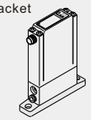
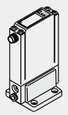
Symbol		VAC[1]	OUT[2]	ATM[3]
Nil	Metric size (Light gray)	Φ4		
U	Inch size (Orange)	Φ5/32"		

For manifold

Symbol		VAC[1]	OUT[2]	ATM[3]
Nil	Metric size (Light gray)	Φ6	Φ4	Φ6
U	Inch size (Orange)	Φ1/4"	Φ5/32"	Φ1/4"

Base type
Nil: For single unit
M: For manifold

Bracket (single unit only)

Nil	Without bracket
B	Flat bracket 
C	L-bracket 

Cable connector
N: Without cable connector
S: Straight type 3 m
L: Right angle type 2 m

Manifold

IITV00 - 02 — □ — - — n

Stations
02: 2 stations
03: 3 stations
⋮ ⋮
10: 10stations

One-touch fitting size for supply/exhaust parts (End plate)
Nil: Φ6 (Light gray)
U: Φ1/4" (Orange)

Option
If a DIN rail longer than the specified stations is required, specify the applicable stations in two digits.
(Max. 10 stations)
Example) IITV00-05-07

* A DIN rail with the length specified by the number of stations is attached to the manifold.
For dimensions of the DIN rail, refer to the external dimensions.

ITV009□ Series Compact Vacuum Regulator

Specifications

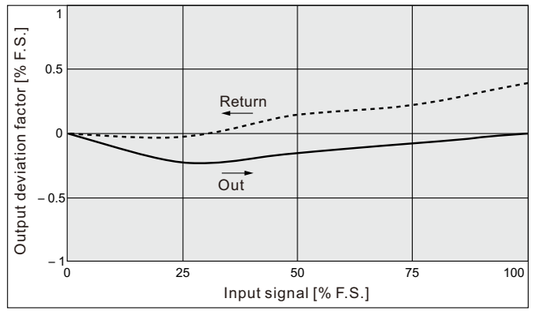
Model			ITV009□
Min. supply pressure			Set pressure -1 kPa
Max. supply pressure			-101kPa
Set pressure range			-1 to -100 kPa
Power supply	Voltage		DC24V±10%, DC12 to 15V
	Current consumption		Power supply voltage DC24 V type: 0.12 A or less Power supply voltage DC12 to 15 V type: 0.18 A or less
Input signal	Voltage type		DC0 to 5V, DC0 to 10V
	Current type		DC4 to 20mA, DC0 to 20mA (Sink type)
Input impedance	Voltage type		Approx. 10 Ω
	Current type		Approx. 250 kΩ
Output signal *2)	Analog output		DC1 to 5 V (Output impedance: Approx. 1 kΩ) Output accuracy ±6% F.S. or less
Linearity			±1% F.S. or less
Hysteresis			0.5% F.S. or less
Repeatability			±0.5% or less
Sensitivity			0.2% F.S. or less
Temperature characteristics			±0.12% F.S./℃ or less
Working temperature			0 to 50℃ (No condensation)
Enclosure			IP65 equivalent *3)
Connection type			Built-in One-touch fittings
Connection size	For single unit	Metric size	[1], [2], [3]: Φ4
		Inch size	[1], [2], [3]: Φ5/32"
	Manifold	Metric size	[1], [3]: Φ6, [2]: Φ4
		Inch size	[1], [3]: Φ1/4", [2]: Φ5/32"
Weight *1)			100 g or less (Without options)

*1) Indicates the weight of a single unit
For IITV00-n
Total weight (g) ⩽ Stations (n) × 100 + 130 (Weight of end block A, B assembly) + Weight (g) of DIN rail
*2) When measuring ITV analog output from 1 to 5 VDC, if the load impedance is less than 100 kΩ, the analog output monitor accuracy of ±6% F.S. or less may not be available.
The product with an accuracy of within ±6% is supplied upon your request.
Output pressure remains unaffected.
*3) When using under the conditions equivalent to IP65, connect the fitting or tube to the breathing hole before use.
*4) When there is a downstream flow consumption, pressure may become unstable depending on piping conditions.
*5) When the power is turned on, a noise may be generated. This noise is normal and does not indicate a fault.

ITV009□ Series Compact Vacuum Regulator

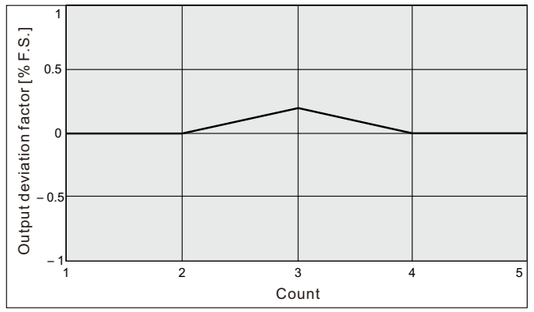
ITV009□ Series

Linearity, Hysteresis



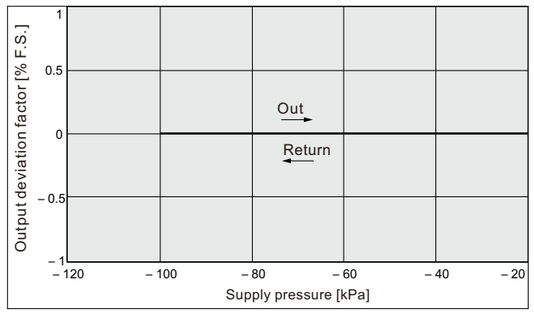
Repeatability

With 50% of signal input

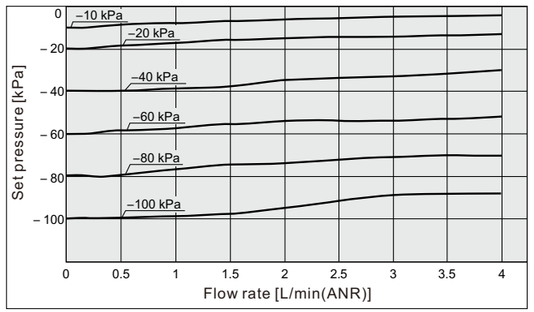


Pressure Characteristics

Set pressure: -10 kPa



Flow Rate Characteristics

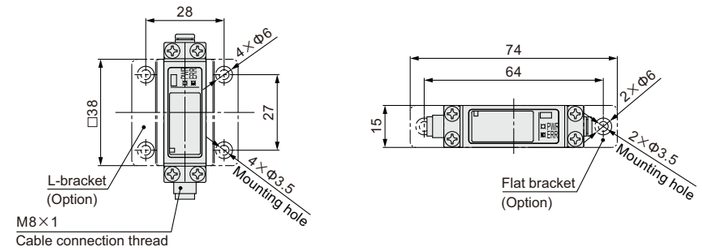


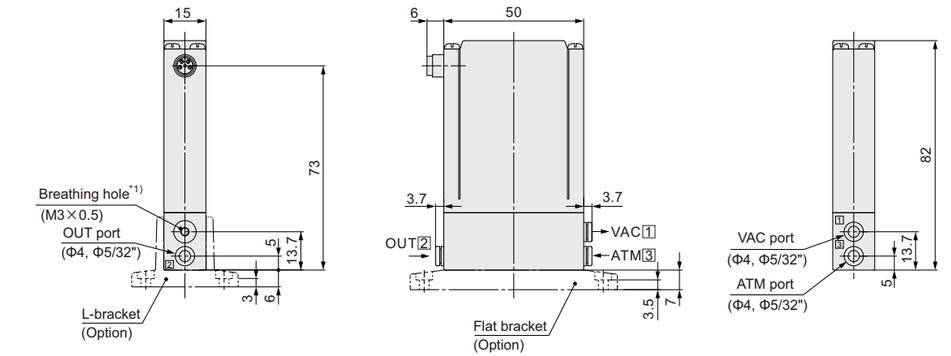
ISO9001 CE

ITV009□ Series Compact Vacuum Regulator

Main Dimensions ITV009□

For single unit

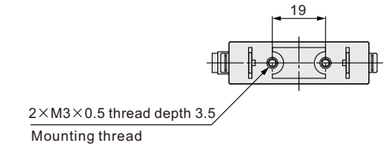


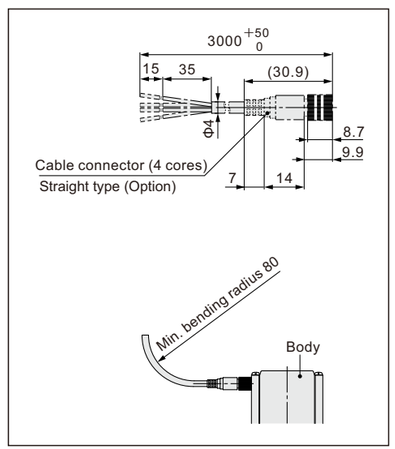


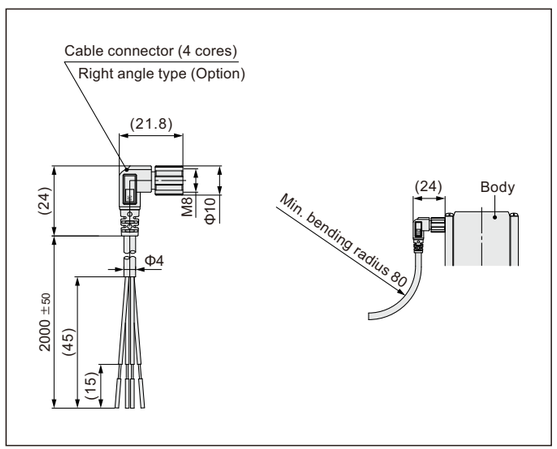
Port Location

No.	1	2	3
ITV009□	VAC	OUT	ATM

*1) When using under the conditions equivalent to IP65,connect the fittings or tube to the breathing hole before use.



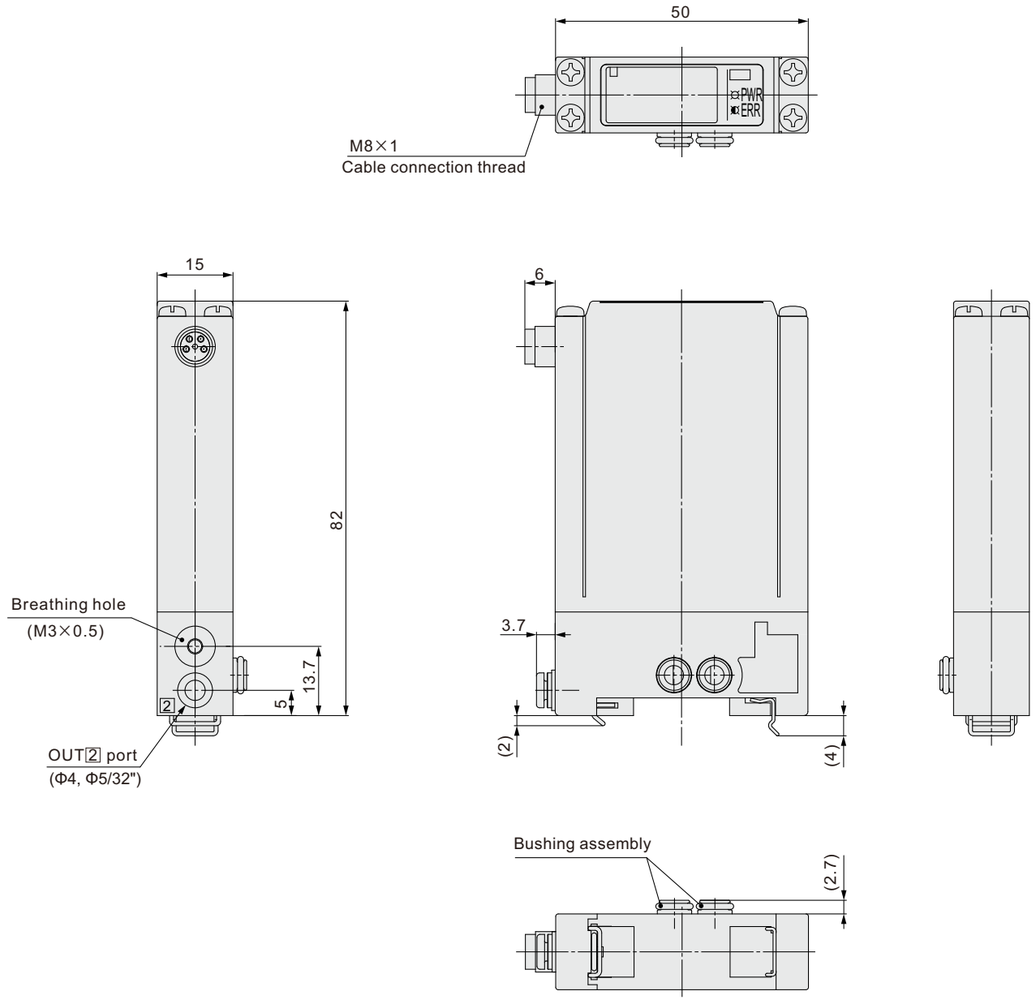




ITV009□ Series Compact Vacuum Regulator

Main Dimensions

Single unit for manifold



*1) When using under the conditions equivalent to IP65,connect the fittings or tube to the breathing hole before use.
*2) For dimensions of the cable connector, refer to **single unit**.

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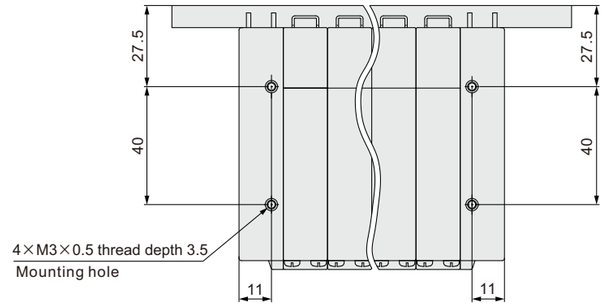
ITV009□ Series Compact Vacuum Regulator

Main Dimensions ITV009□

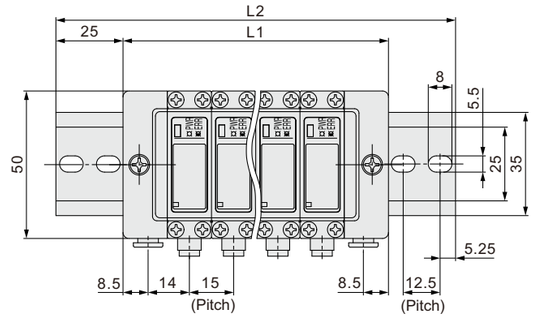
Manifold

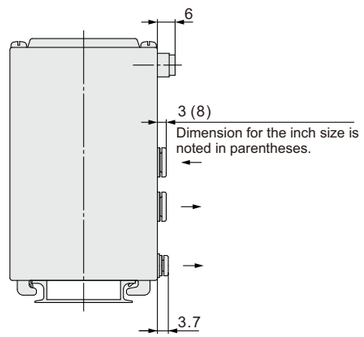


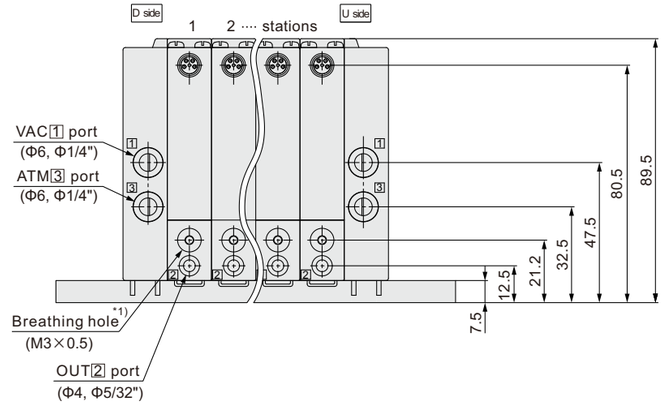
Port Location

No.	1	2	3
ITV009□	VAC	OUT	ATM

* Stations are counted starting from the D side.







* For dimensions of the cable connector, refer to **single unit**.

(mm)

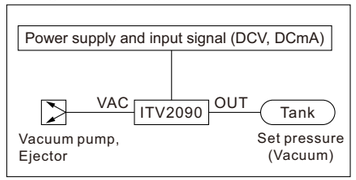
Manifold stations n	2	3	4	5	6	7	8	9	10
L1	60	75	90	105	120	135	150	165	180
L2	110.5	123	148	160.5	173	185.5	198	223	235.5
Weight of DIN rail [g]	20	22	27	29	31	34	36	41	43

*1) When using under the conditions equivalent to IP65, connect the fittings or tubing to the breathing hole before use.

ITV2090/2091 Series Electronic Vacuum Regulator

For the stepless control of vacuum pressure in proportion to electrical signals.

Piping/Wiring Diagram



Ordering Code

ITV2090/2091 Series Electronic Vacuum Regulator

ITV 209 0 - 0 1 □ 2 □ S 5

- Supply voltage: 0: DC24V, 1: DC12 to 15 V
- Pressure range: 9: -1.3 to -80 kPa
- Input signal:

0	Current type DC4 to 20mA (Sink type)
1	Current type DC0 to 20mA (Sink type)
2	Voltage type DC0 to 5V
3	Voltage type DC0 to 10V
40	4 points preset input
52	16 points preset input (Switch output/NPN output)
53	16 points preset input (Switch output/PNP output)

- Monitor output:

1	Analog output DC1 to 5V
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output DC4 to 20mA (Sink type)
Nil	None

- Thread type: Nil: Rc, N: NPT, T: NPTF, F: G
- Port size: 2: 1/4
- Bracket: Nil: Without bracket, B: Flat bracket, C: L-bracket
- Cable connector type: S: Straight type 3 m, L: Right angle type 3 m, N: Without cable connector
- Pressure display unit: 5: kPa

ISO9001 CE

ITV2090/2091 Series Electronic Vacuum Regulator

Specifications

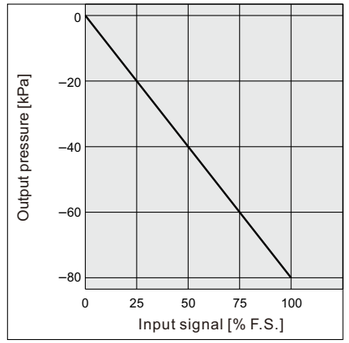
Model		ITV2090	ITV2091
Min. supply vacuum pressure*1)		Set pressure -13.3 kPa	
Max. supply vacuum pressure		-101kPa	
Set pressure range		-1.3 to -80 kPa	
Power supply	Voltage	DC24V±10%	DC12 to 15V
	Current consumption	Power supply voltage DC24 V type: 0.12 A or less Power supply voltage DC12 to 15 V type: 0.18 A or less	
Input signal	Current type*2)	DC4 to 20mA, DC0 to 20mA (Sink type)	
	Voltage type	DC0 to 5V, DC0 to 10V	
	Preset input	4 points (Negative common), 16 points (No common polarity)	
Input impedance	Current type	250Ω or less *3)	
	Voltage type	Approx. 6.5 kΩ	
	Preset input	Power supply voltage DC24 V type: Approx. 4.7 kΩ Power supply voltage DC12 V type: Approx. 2.0 kΩ	
Output signal (Monitor output) *4)	Analog output	DC1 to 5 V (Output impedance: Approx. 1 kΩ) DC4 to 20 mA (Sink type) (Output impedance: 250 Ω or less) Output accuracy ±6% F.S. or less	
	Switch output	NPN open collector output: Max. 30 V, 80 mA PNP open collector output: Max. 80 mA	
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	
Output pressure display	Accuracy	±2% F.S. ±1 digit or less	
	Unit	kPa*5) Min. display: 1	
Working temperature		0 to 50℃ (No condensation)	
Enclosure		IP65	
Weight		390g	

*1) The min. supply vacuum pressure should be 13.3 kPa less than the max. vacuum pressure setting value.
*2) DC4 to 20 mA is not possible with the 2-wire type. Power supply voltage (DC24 V or DC12 to 15 V) is required.
*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 DC20 mA
When measuring ITV analog output from DC1 to 5 V, if the load impedance is less than 100 kΩ, the analog output monitor accuracy of within ±6% (full span) may not be available. The product with the accuracy of within ±6% is supplied upon your request.
Output pressure remains unaffected.
*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.
*5) Please contact VPC regarding indication with other units of pressure.
*6) The product characteristics are confined to the static state. Pressure may fluctuate when air is consumed at the output side.

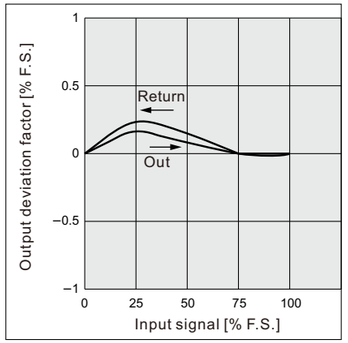
ITV2090/2091 Series Electronic Vacuum Regulator

ITV209□ Series

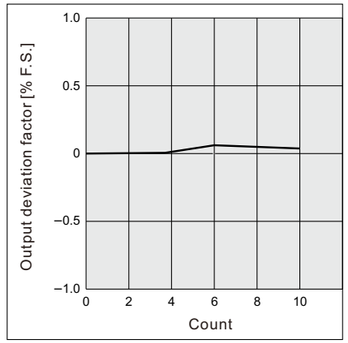
Linearity



Hysteresis

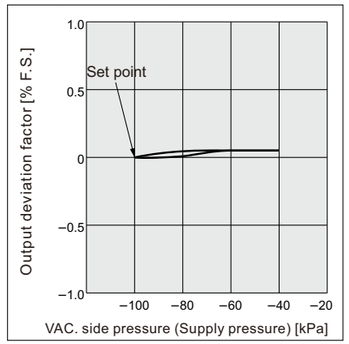


Repeatability



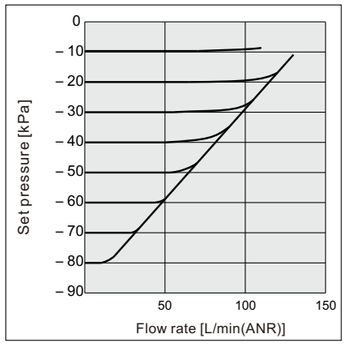
Pressure Characteristics

Set pressure: -20 kPa



Flow Rate Characteristics

Supply vacuum pressure: −100 kPa



Flow rate characteristics measurement conditions

- Exhaust flow rate of the vacuum pump used for measurement: 500 L/min (ANR)
- Inlet vacuum pressure: −100 kPa [When outlet flow rate is 0 L/min (ANR)]
- Max. flow rate: 132 L/min (ANR) (With inlet vacuum pressure at −39 kPa)

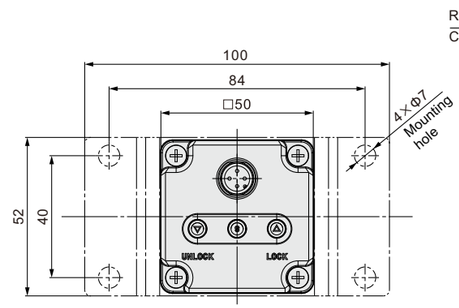
ISO9001 CE

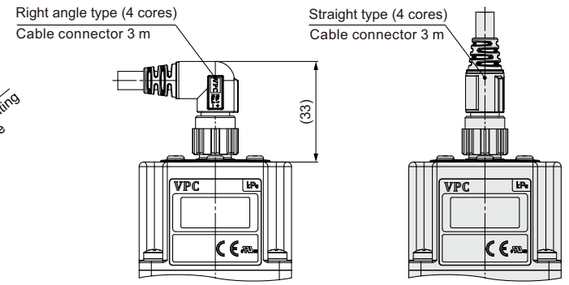
ITV2090/2091 Series Electronic Vacuum Regulator

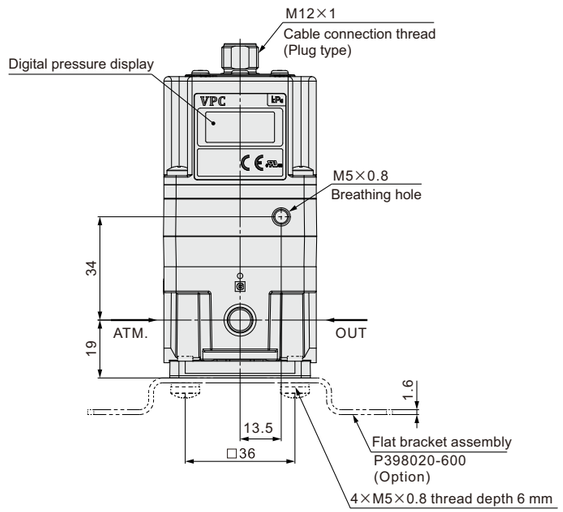
Main Dimensions ITV209□

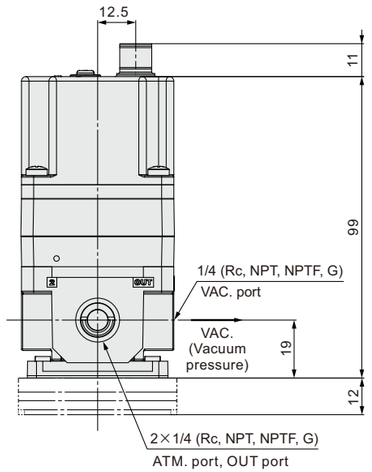
Flat bracket

* Do not attempt to rotate the cable connector, as it does not turn.

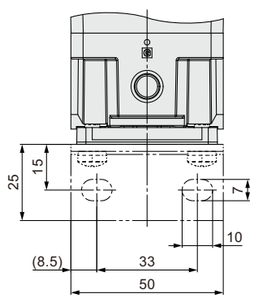


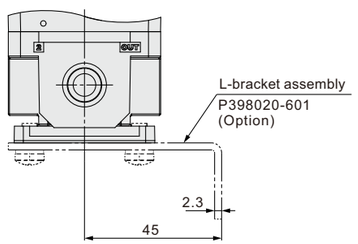






L-bracket

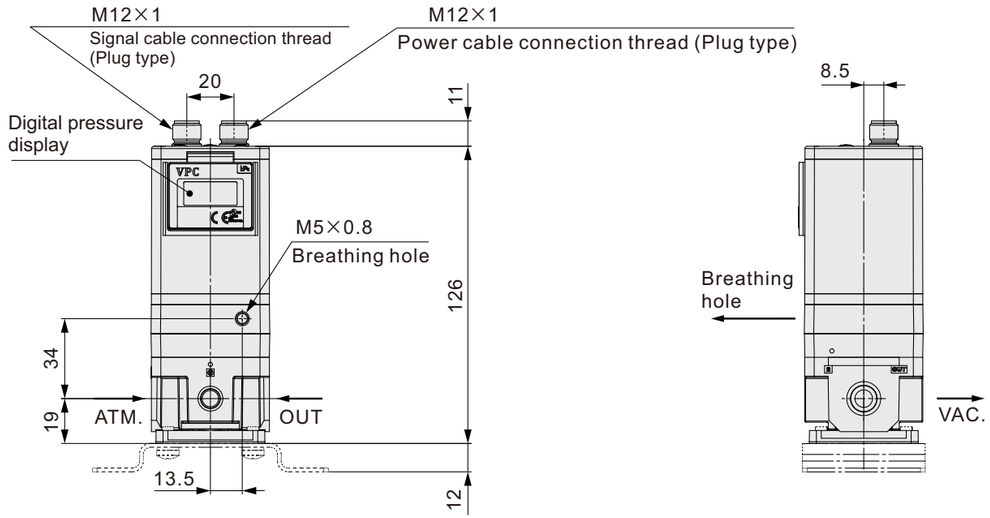




ITV2090/2091 Series Electronic Vacuum Regulator

Main Dimensions

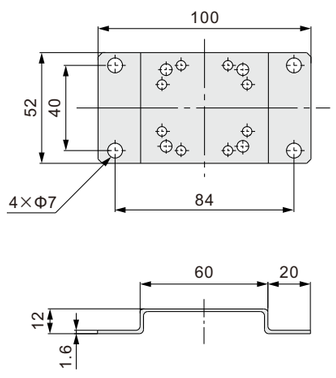
16 points preset input



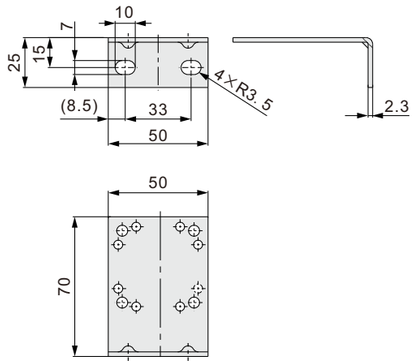
Accessory (Option)/Part Nos.

Description		Part No.
Flat bracket assembly (including mounting screws)		P398020-600
L-bracket assembly (including mounting screws)		P398020-601
Power cable connector (4 cores)	Straight type 3 m	P398020-500-3
	Right angle type 3 m	P398020-501-3

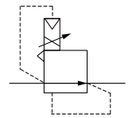
Flat bracket



L-bracket



ITVX2000 Series High Pressure Electro-Pneumatic Regulator



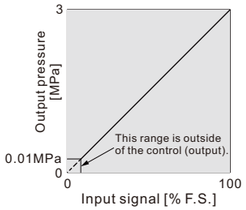


Fig. 2. Input/output characteristics chart

Ordering Code

ITVX2000 Series High Pressure Electro-Pneumatic Regulator

ITVX 2 0 3 0 - 0 1 □ 3 □ S □

Body size
2: ITVX2000

Pilot type
0: Built-in regulator type

Set pressure
3: 0.01 to 3.0MPa

Supply voltage
0: DC24V

Input signal

0	Current type DC4 to 20mA (Sink type)
1	Current type DC0 to 20mA (Sink type)
2	Voltage type DC0 to 5V
3	Voltage type DC0 to 10V

Monitor output

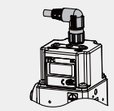
1	Analog output DC1 to 5V
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output DC4 to 20mA (Sink type)

Thread type
Nil: Rc
N: NPT
F: G*
* Complies with ISO1179-1 (2007).

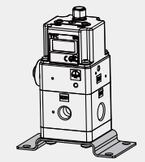
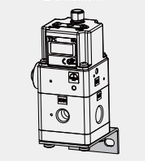
Port size
3: 3/8*
* The exhaust port size is 1/4". The exhaust port sizefor the built-in regulator and the solenoid valve is M5.

Pressure display unit
Nil: MPa
2: kgf/cm²
3: bar
4: psi

Cable connector type

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

Bracket

Nil	Without bracket
B	Flat bracket 
C	L-bracket 

ITVX2000 Series High Pressure Electro-Pneumatic Regulator

Specifications

Model		ITVX2000
Min. supply pressure		Whichever is higher: 0.5 MPa or the set pressure +0.2 MPa
Max. supply pressure		5MPa *2)
Set pressure range *3)		0.01 to 3.0MPa
Power supply	Voltage	DC24V±10%
	Current consumption	0.12A or less
Input signal	Current type *4)	DC4 to 20mA, DC0 to 20mA (Sink type)
	Voltage type	DC0 to 5V, DC0 to 10V
Input impedance	Current type	500Ω or less
	Voltage type	6 to 6.5 kΩ(at ordinary temperature)
Output signal (Monitor output) *5)	Analog output	DC1 to 5 V (Output impedance: Approx. 1 kΩ) Output accuracy: ±6% or less (Full span)
		DC4 to 20 mA (Sink type) Load impedance: 250Ω or less Output accuracy: ±6% or less (Full span)
	Switch output	NPN open collector output: Max. 30 V, 80 mA Hysteresis: ±3% (Full span), Self-diagnosis: ±5% or less (Full span)
		PNP open collector output: Max. 80 mA Hysteresis: ±3% (Full span), Self-diagnosis: ±5% or less (Full span)
Linearity		±1% or less (Full span)
Hysteresis		1% or less (Full span)
Repeatability		±1% or less (Full span)
Sensitivity		±1% or less (Full span)
Temperature characteristics		±0.12% or less (Full span)/℃
Output pressure display	Accuracy	±2% or less (Full span) ±1 digit
	Min. unit *6)	MPa: 0.01, kgf/cm²: 0.1, bar: 0.1, psi: 1
Working medium		Air, N_2, O_2, Ar
Working temperature		0 to 50℃ (No condensation)
Weight		Approx.570g (Without options)

*1) Characteristics shown above are based on the piping conditions of Fig. 1.

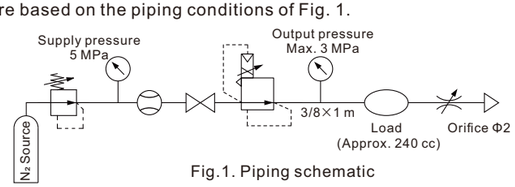


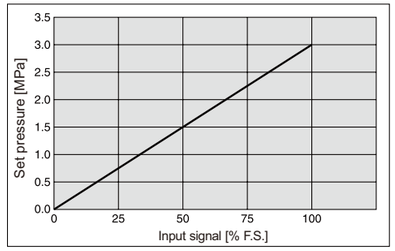
Fig.1. Piping schematic

*2) When oxygen is used as a fluid, the maximum supply pressure must be less than 1 MPa.
*3) Refer to Fig. 2 for the relationship between set pressure and input signal.
*4) 2-wire type DC4 to 20 mA is not available. Power supply voltage DC24 V is required.
*5) Select either analog output or switch output. Further, when switch output is selected, select either NPN output or PNP output. When measuring analog output of DC1 to 5 V with a load impedance less than 100 kΩ, the analog output may not obtain the output accuracy of ±6% or less (F.S.).
*6) Adjustment of numerical values such as the zero/span adjustment is set based on the minimum units for output pressure display. Note that the unit cannot be changed.
*7) This product is only for blowing gas. This product does not have sufficient pressure control for applications other than blowing (driving, sealing, etc.).

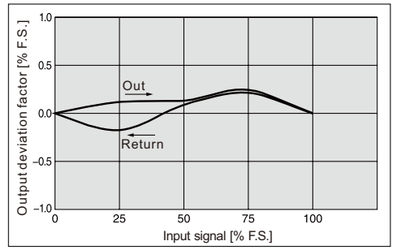
ISO9001 CE
ITVX2000 Series High Pressure Electro-Pneumatic Regulator

ITVX2000 Series

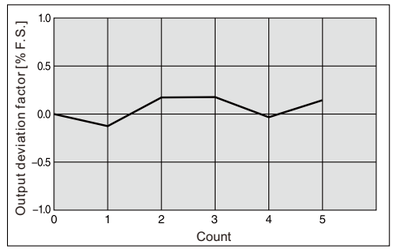
Linearity



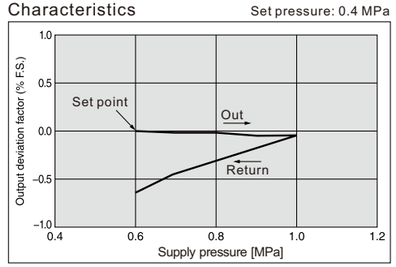
Hysteresis



Repeatability



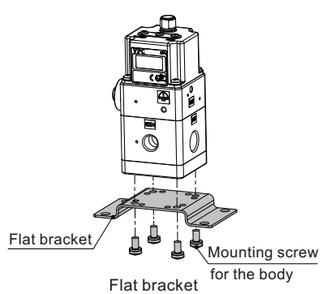
Pressure Characteristics — Set pressure: 0.4 MPa

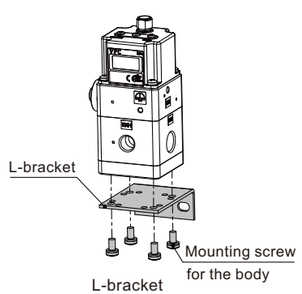


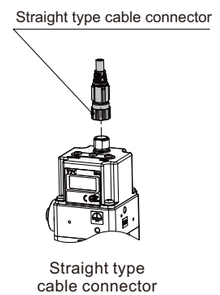
Flow Rate Characteristics — Supply pressure: 1.0 MPa

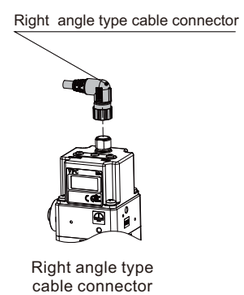
Option/Accessory Type

Description		Part no.
Flat bracket assembly (including mounting screws)		P398020-600
L-bracket assembly (including mounting screws)		P398020-601
Power cable connector	Straight type 3 m	P398020-500-3
	Right angle type 3 m	P398020-501-3



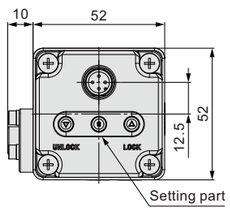


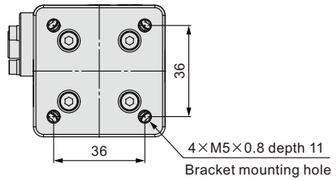


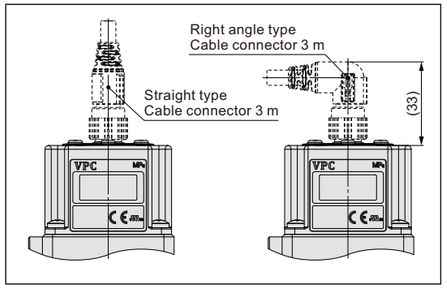


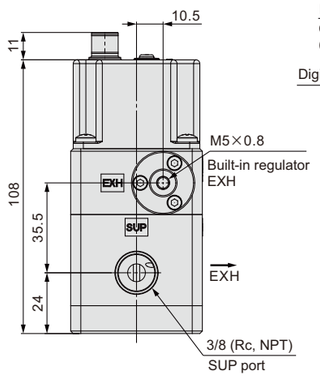
ITVX2000 Series High Pressure Electro-Pneumatic Regulator

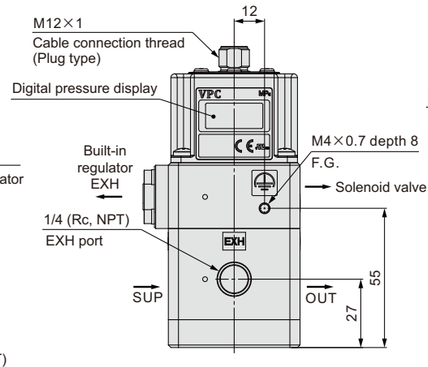
Main Dimensions

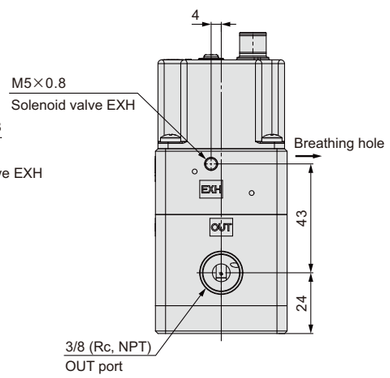




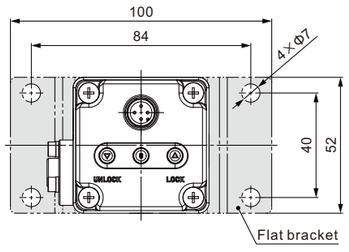


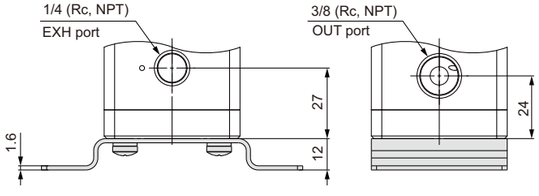




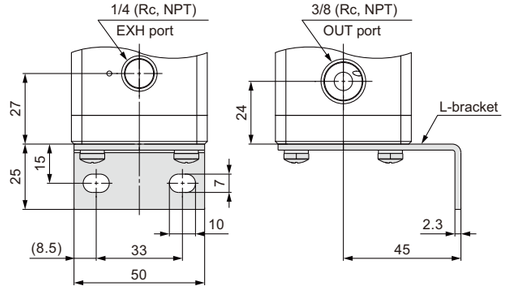


With flat bracket





With L-bracket

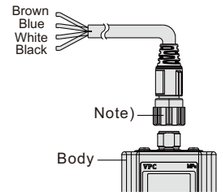


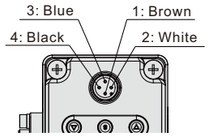
ITVX2000 Series High Pressure Electro-Pneumatic Regulator

Wiring

⚠ Caution

Connect the cable to the connector on the body with the wiring arranged as shown below.
Proceed carefully,as incorrect wiring can cause damage.
Further, use DC power with sufficient capacity and a low ripple.

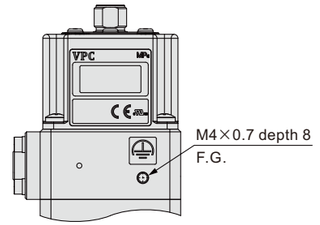




Note) The cable is also available in a right angle type. A right angle type connector is attached facing left (toward the SUP port).
Do not attempt to rotate, as the connector does not turn.

F.G. (Grounding)

Ground the frame ground (F.G.) terminal at the front of the main body. If the F.G. terminal port is not used, this product may not operate properly due to the noise.

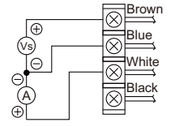


Current Signal Type
Voltage Signal Type

1	Brown	Power supply
2	White	Input signal
3	Blue	GND (COMMON)
4	Black	Monitor output

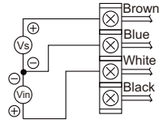
Wiring diagram

Current signal type



Vs: Power supply DC24V
A: Input signal DC4 to 20 mA
DC0 to 20 mA

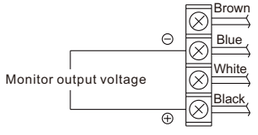
Voltage signal type



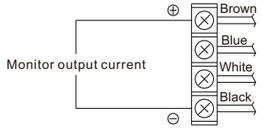
Vs: Power supply DC24V
A: Input signal DC0 to 5 V
DC0 to 10 V

Monitor output wiring diagram

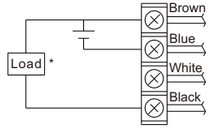
Analog output: Voltage type



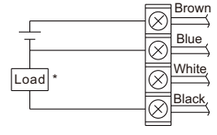
Analog output: Current type (Sink type)



Switch output: NPN type

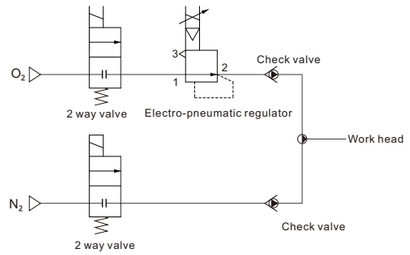


Switch output: PNP type



* When DC80 mA or more is applied, detecting device for overcurrent starts activating and then emits an error signal. (Error number “5”)

ITV-JG Laser Cutting Integrated Module



Ordering Code

ITV-JG Laser Cutting Integrated Module

ITV-JG 1000 - 05 05 G - 3

- ITV-JG: Type code — ITV-JG: Laser Cutting Integrated Module
- 1000: Electro-pneumatic regulator — 1000: ITV1000 type; 2000: ITV2000 type
- 05: O_2 line port size — 5: Φ5
- 05: O_2 line port size — 5: Φ5
- G: Thread type

Nil	PT
G	G
N	NPT

- 3: Port size — 3: 3/8

Note: For detailed selection methods of the Electro-Pneumatic Regulator, please refer to the ITV Electro-Pneumatic Regulator catalog.

Specifications

Integrated Module

Model	Specifications
Port size	Inlet/Outlet: 3/8 Exhaust port: 1/4
Working medium	N_2, O_2
Working pressure	N_2 Line: 0 to 3MPa O_2 Line: 0.005 to 0.9MPa
Working temperature	0 to 50℃ (No freezing)
Piping diameter	Φ5mm
Enclosure	IP65

ITV-JG Laser Cutting Integrated Module

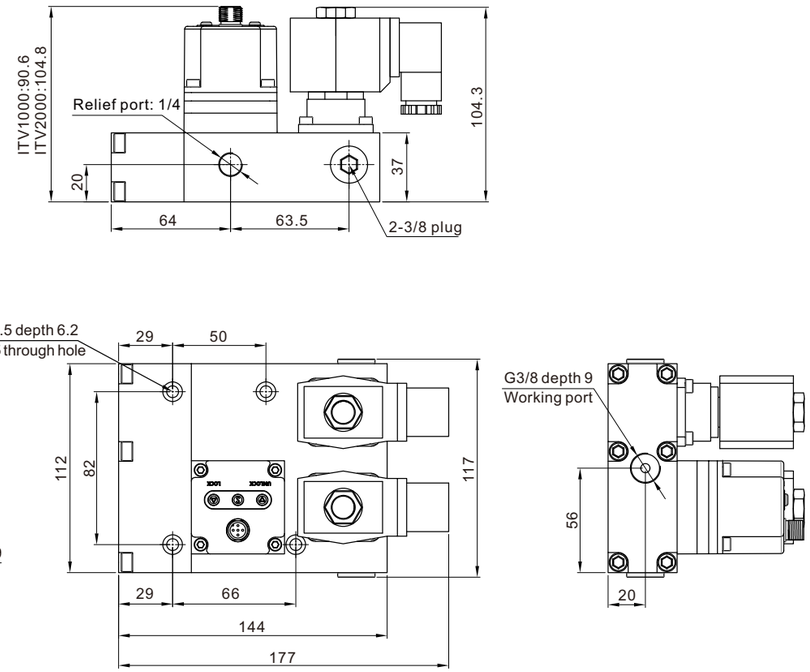
Two Way Valve

Model	Specifications
Power supply voltage	DC24V±10%
Power	18W
Electrical entry	Terminal type
Valve type	2 Position 2 Port, Normally Closed

Check Valve

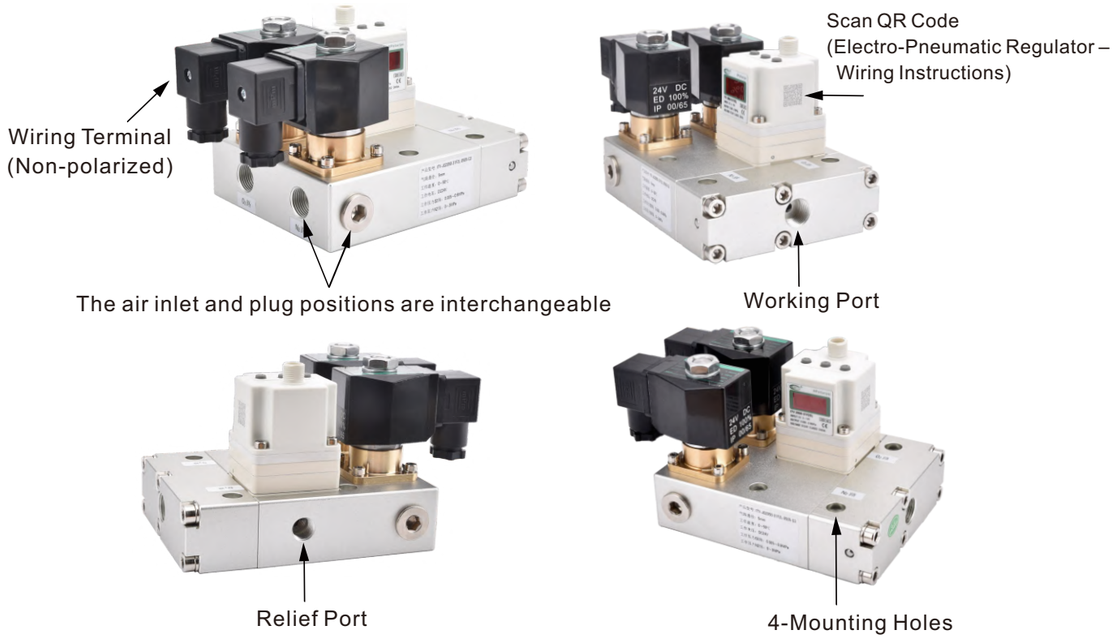
Model	Specifications
Body material	Brass
Cracking pressure	<0.01MPa

Main Dimensions



ITV-JG Laser Cutting Integrated Module

Installation Diagram



Troubleshooting Guide

ITV Electro-Pneumatic Regulator

No.	Common troubleshooting items	Possible cause		Remedy
1	Regulator outlet leakage	Improper operation	Input signal wire (white) not connected; Internal circuit interference causing leakage.	Check wiring, re-wire.
		Product malfunction	High-frequency valve or main valve stuck.	Return for factory repair, or clean impurities and check air source to prevent re-clogging.
2	Regulator no display when powered on	Improper operation	Wiring not according to requirements.	Check wiring, re-wire.
		Product malfunction	Regulator PCB board damaged or power pins damaged.	Return for factory repair, and check wiring toavoid burning out the regulator again.
3	Regulator output pressure fluctuation	Improper operation	Unstable control signal.	Check wiring, re-wire.
		Product malfunction	High-frequency valve failure or regulator aging leading to reduced accuracy and sensitivity.	Return for factory repair.
4	Regulator abnormal noise	Improper operation	Set output pressure is greater than input pressure.	Re-set input or output pressure.
		Product malfunction	High-frequency valve or PCB board malfunction.	Return for factory repair.
5	Regulator error	Improper operation	Power supply voltage or input signal exceeds rated range, incorrect input signal.	Ensure power supply voltage and input signal are within the rated range and input correct signal.
		Product malfunction	High-frequency valve or PCB board malfunction.	Return for factory repair.

Note: For details on other faults and troubleshooting methods of the electro-pneumatic regulator, please refer to the ITV Electro-Pneumatic Regulator catalog.

ISO9001 CE

ITV-JG Laser Cutting Integrated Module

Troubleshooting Guide - Two Way Valve

No.	Common troubleshooting items	Possible cause		Remedy
1	Two way valve no action when powered on	Improper operation	Power supply voltage exceeds rated range, poor wiring or loose wire.	Ensure power supply voltage is within rated range, open terminal box, re-wire.
		Product malfunction	Coil damaged.	Replace coil.
2	Two way valve leakage	Product malfunction	Foreign object stuck, seals aged or damaged.	Replace seals or clean impurities, check air source to prevent re-clogging.
3	Two way valve coil overheating	Improper operation	Long-term operation, circuit malfunction.	Check wiring, re-wire.
		Product malfunction	Coil damaged.	Replace coil.

Troubleshooting Guide – Check Valve

No.	Common troubleshooting items	Possible cause		Remedy
1	Check valve cannot close	Product malfunction	Foreign object stuck, spring failure, seals aged or damaged.	Replace seals or clean impurities, check air source to prevent re-clogging.
2	Check valve cannot open	Product malfunction	Foreign object stuck, spring failure, seals aged or damaged.	Replace seals or clean impurities, check air source to prevent re-clogging.
3	Check valve leakage	Product malfunction	Seals aged or damaged.	Replace seals.
4	Check valve medium backflow	Product malfunction	Foreign object stuck, seals aged or damaged.	Replace seals or clean impurities, check air source to prevent re-clogging.

Complete Unit Packing List

1. Proportional valve cable: 1 PC
2. Proportional valve manual: 1 PC
3. Complete assembly: 1 Set (includes integrated module / Two Way Valve / Check Valve / Electro-Pneumatic Regulator)

⚠ Important Safety and Operation Precautions

1. Supply pressure must pass through an air filter with a filtration accuracy of 5μm or less.
2. When installing pipe fittings, prevent thread debris and sealing materials from entering the pipeline, which could block the inlet of the 2 way valve.
3. Compressed air with condensed water entering the product may cause malfunction; please perform corresponding air path drying.
4. If power is suddenly cut during the product's pressurization phase, the "OUT" output of the electro-pneumatic regulator will be in a power-off protection state, maintaining pressure briefly.
5. This product has undergone various index tests before leaving the factory. Unauthorized disassembly is strictly prohibited, as it may lead to product instability.
6. The 4-core cable for the electro-pneumatic regulator can only be assembled in one direction. Rotation is strictly prohibited after assembly, otherwise, the connector joint may be damaged.
7. Product air supply and power supply sequence: Power On → Air Supply → Air Shut-off → Power Off.
8. When using this product in strong electric field environments, wiring should be kept as far away as possible to avoid external interference affecting product operation.
9. The product may produce the sound of a solenoid valve operating during use, but it does not affect parameter settings or product usage.
10. When the 4-core cable of the electro-pneumatic regulator is not used for monitoring output, it should be kept away from other cables to avoid malfunction.