Electro-Pneumatic Regulator
ITV1000/2000/3000 Series

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

∗ The communication models (CC, DE, PR, RC, and IL), 16 points preset input, and 10-bit digital input options are only available for the 24 VDC.

Input signal/ Communication model

0	Current type 4 to 20 mADC (Sink type)
1	Current type 0 to 20 mADC (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
IL	IO-Link

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 mADC (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)

Bracket∗1

Nil	Without bracket
B	Flat bracket
C	L-bracket

∗1 The bracket is included.

Cable connector type

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

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

Pressure display unit

Nil	MPa
2∗1	kgf/cm²
3	bar
4∗1	psi
5	kPa

∗1 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.) For the communication models CC, DE, PR, and RC, only "Nil" is available as it does not have a pressure display.

Made to order
Refer to page 1184 for details.

The simple specials system can be used to change the input and output ranges.
∗ The input and output values are limited to the following ranges.
· Input signal: Current type 0 to 20 mA
Voltage type 0 to 10 VDC
· Output pressure: 0.005 to 0.9 MPa/5-900kPa
Please contact your local sales representative for more details.

For communication cables, use the parts listed below
(Refer to the M8/M12 connector in the **Web Catalog** for details.)
or order a product certified for the respective protocol (with M12 connector) separately.

Application	Communication cable part no.	Note
CC-Link compatibility	PCA-1567720 (Socket type)	A dedicated Bus adapter is included with the product.
	PCA-1567717 (Plug type)	
DeviceNet® compatibility	PCA-1557633 (Socket type)	A T-branch connector is not included with the product.
	PCA-1557646 (Plug type)	
PROFIBUS DP compatibility	PCA-1557688 (Socket type)	A T-branch connector is not included with the product.
	PCA-1557691 (Plug type)	

ITV1000

ITV2000

ITV3000

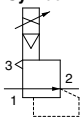
Serial-communications model

Standard Specifications

Model		ITV101□∗7	ITV103□∗7	ITV105□∗7
		ITV201□	ITV203□	ITV205□
		ITV301□	ITV303□	ITV305□
Min. supply pressure		Set pressure + 0.1 MPa		
Max. supply pressure		0.2 MPa	1.0 MPa	
Set pressure range∗1		0.005 to 0.1 MPa	0.005 to 0.5 MPa	0.005 to 0.9 MPa
Power supply	Voltage	24 VDC ±10%, 12 to 15 VDC		
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less∗8 Power supply voltage 12 to 15 VDC type: 0.18 A or less		
Input signal∗8	Current type∗2	4 to 20 mADC, 0 to 20 mADC (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 bits (Parallel)		
Input impedance	Current type	250 Ω or less∗6		
	Voltage type	Approx. 6.5 kΩ		
	Preset input	Power supply voltage 24 VDC type: Approx. 4.7 kΩ Power supply voltage 12 VDC type: Approx. 2.0 kΩ		
	Digital input	Approx. 4.7 kΩ		
Output signal∗3 (Monitor output)	Analog output	1 to 5 VDC (Output impedance: Approx. 1 kΩ) 4 to 20 mADC (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./°C or less		
Output pressure display∗4	Accuracy	±2% F.S. ±1 digit or less		
	Min. unit	MPa: 0.001, kgf/cm²: 0.01, bar: 0.01, psi: 0.1∗5, kPa: 1		
Ambient and fluid temperatures		0 to 50°C (No condensation)		
Enclosure		IP65		
Weight∗8, ∗9	ITV10□□	Approx. 250 g (Without options)		
	ITV20□□	Approx. 350 g (Without options)		
	ITV30□□	Approx. 645 g (Without options)		

∗1 Please refer to Fig. 1 for the relationship between set pressure and input. Because the max. set pressure differs for each pressure display, refer to page 1227.
∗2 2-wire type 4 to 20 mADC is not available. Power supply voltage (24 VDC or 12 to 15 VDC) is required.
∗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 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 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 0.500 MPa). Note that the unit cannot be changed.
∗5 The min. unit for 0.9 MPa (130 psi) types is 1 psi.
∗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 mADC.
∗7 The ITV1000 series is a grease-free specification (parts in contact with fluid).
∗8 Refer to the table below for communication specifications.
∗9 Add 50 g for digital input type, 70 g for 16 points preset input type respectively.
∗ The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.
∗ When using under IP65 conditions, connect the fitting or tube to the solenoid valve EXH before use. (For details, refer to "Specific Product Precautions 4" on page 1225.)

Symbol



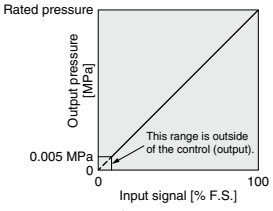
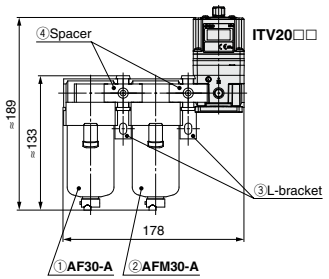


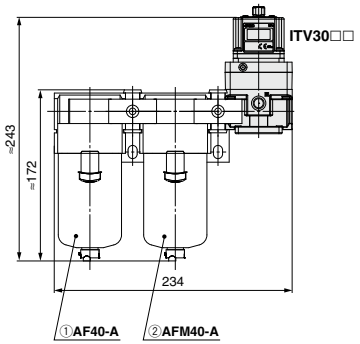
Fig. 1 Input/output characteristics chart

Communication Specifications (CC, DE, PR, RC, IL)

Model		ITV□0□0-CC	ITV□0□0-DE	ITV□0□0-PR	ITV□0□0-RC	ITV□0□0-IL
Protocol		CC-Link	DeviceNet®	PROFIBUS DP	RS-232C	IO-Link (Class A)
Version∗1		Ver. 1.10	Volume 1 (Edition 3.8), Volume 3 (Edition 1.5)	DP-V0	—	Ver. 1.1
Communication speed		156 k/625 k 2.5 M/5 M/10 Mbps	125 k/250 k/500 kbps	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 Mbps	9.6 kbps	230.4 kbps (COM3)
Configuration file∗2		—	EDS	GSD	—	IODD
I/O occupation area (input/output data)		4 words/4 words, 32 bits/32 bits (per station, remote device station)	16 bits/16 bits	16 bits/16 bits	—	4 bytes/2 bytes
Communication data resolution		12 bits (4096 resolution)	12 bits (4096 resolution)	12 bits (4096 resolution)	10 bits (1024 resolution)	12 bits (4096 resolution)
Fail safe		HOLD∗3/CLEAR (Switch setting)	HOLD/CLEAR (Switch setting)	CLEAR	HOLD	HOLD/CLEAR
Electric insulation∗4		Insulation	Insulation	Insulation	Non-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	0.12 A or less
Weight	ITV1000	330	320	350	320	320
	ITV2000	430	420	450	420	420
	ITV3000	730	720	750	720	720

∗1 Please note that versions are subject to change.
∗2 Configuration files can be downloaded from the operation manual page on the SMC website: https://www.smcworld.com
∗3 The output HOLD value when a CC-Link communications error occurs can be set based on the bit area data.
∗4 The insulation between the electrical signal of the communication system and ITV power supply





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-A	B410L-A
④ **Spacer**	Y30-A	Y40-A
⑤ **Spacer with L-bracket (③ + ④)**	Y30L-A	Y40L-A
⑥ **Spacer with T-bracket**	—	Y40T-A

∗ For ITV10□□, use a modular adapter (Refer to the **Web Catalog** for details).

Accessories (Option)/Part Nos.

[Bracket]

Applicable model	Description	Part no.	Weight
ITV10□□	Flat bracket assembly (including mounting screws)	P398010-600	90
ITV20□□, 30□□		P398020-600	
ITV10□□	L-bracket assembly (including mounting screws)	P398010-601	
ITV20□□, 30□□		P398020-601	

[Cable connector]

Input signal/ Communication model	Cable connector (Shipped together)			Weight
	Cable specifications	Power supply	Communication (For signal)	
Current type Voltage type 4 points preset input IO-Link	**Straight type 3 m**	P398020-500-3		180 each
	Right angle type 3 m	P398020-501-3		
16 points preset input RS-232C communication	**Straight type 3 m**	P398020-500-3	P398020-502-3	
	Right angle type 3 m	P398020-501-3	P398020-503-3	
10-bit digital input	**Straight type 3 m**	INI-398-0-59		310
CC-Link PROFIBUS DP DeviceNet®	**Straight type 3 m**	P398020-500-3	**Please order separately. Refer to page 1182.**	180
	Right angle type 3 m	P398020-501-3		

[Bus adapter]

Applicable model	Description	Part no.	Weight
CC-Link	**Bus adapter (Included with the product)**	EX9-ACY00-MJ	35

Made to Order

Made to Order

(Refer to pages 1203 to 1207 for details.)

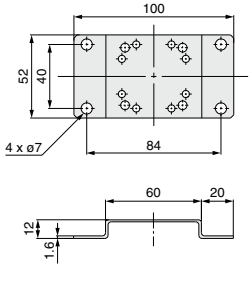
Symbol	Specifications
X102	Reverse type
X224	High-pressure type (SUP 1.2 MPa, OUT 1.0 MPa)
X25	Set pressure range: 1 to 100 kPa (Excludes the ITV3000 series)
X256	Analog output, Current type (Source type)
X88	High-speed response time type (Excludes the ITV3000 series)
X26	For manifold mounting (Excludes the ITV3000 series)
X410	Linearity: ±0.5% F.S. or less
X420	With alarm output

∗ Manifolds are compatible with 2 to 8 stations. Please contact SMC for 9 stations or more.
∗ Products without symbols are also compatible. Please contact SMC separately.
∗ Compliant with CE/UKCA marking

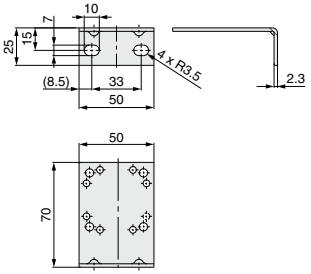
Model	Bracket tightening torque
ITV1000	0.76 ±0.05 N·m
ITV2000/3000	1.5 ±0.05 N·m

Dimensions

Flat bracket



L-bracket

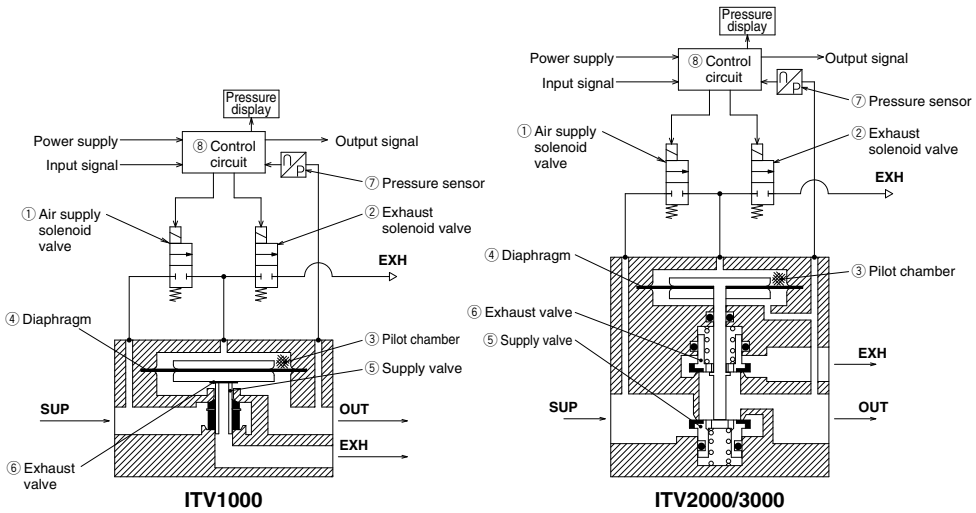


SMC

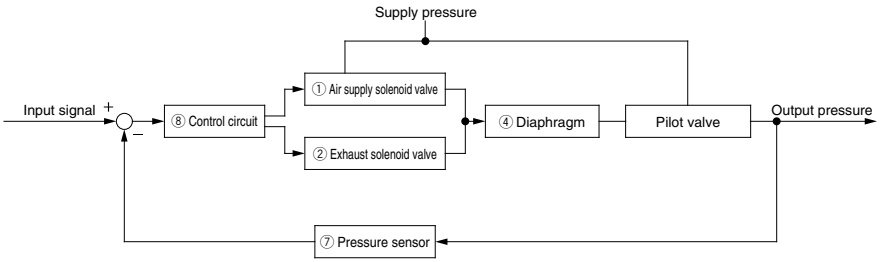
Working Principle

When the input signal rises, the air supply solenoid valve ① turns ON, and the exhaust solenoid valve ② turns OFF. Therefore, supply pressure passes through the air supply solenoid valve ① and is applied to the pilot chamber ③. The pressure in the pilot chamber ③ increases and operates on the upper surface of the diaphragm ④.
As a result, the air supply valve ⑤ linked to the diaphragm ④ opens, and a portion of the supply pressure becomes output pressure.
This output pressure feeds back to the control circuit ⑧ via the pressure sensor ⑦. Here, a correct operation functions until the output pressure is proportional to the input signal, making it possible to always obtain output pressure proportional to the input signal.

Working Principle Diagram

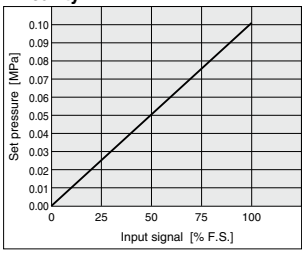


Block Diagram

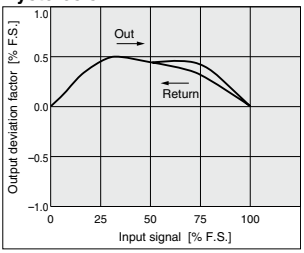


ITV101□ Series

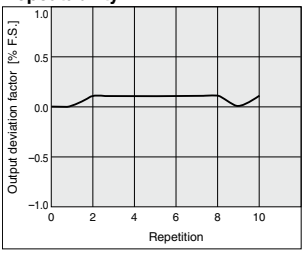
Linearity



Hysteresis

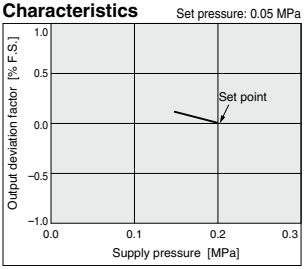


Repeatability



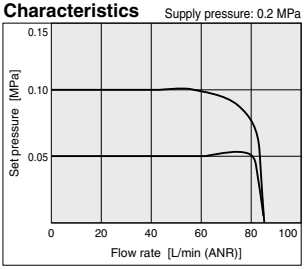
Pressure Characteristics

Set pressure: 0.05 MPa



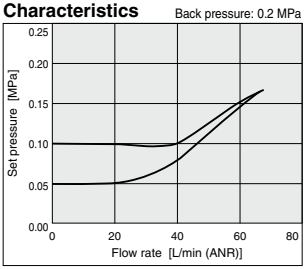
Flow Rate Characteristics

Supply pressure: 0.2 MPa



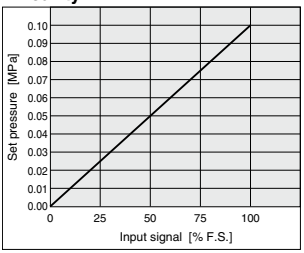
Relief Characteristics

Back pressure: 0.2 MPa

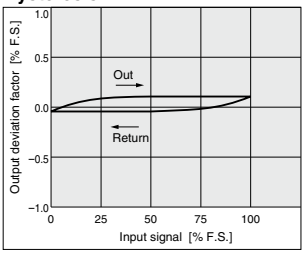


ITV201□ Series

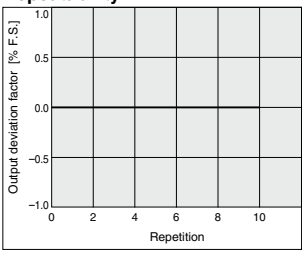
Linearity



Hysteresis

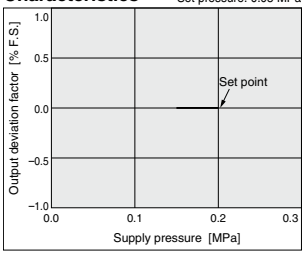


Repeatability



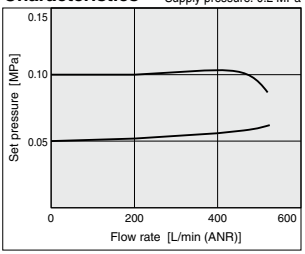
Pressure Characteristics

Set pressure: 0.05 MPa



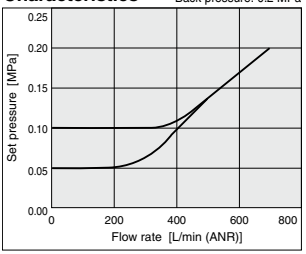
Flow Rate Characteristics

Supply pressure: 0.2 MPa



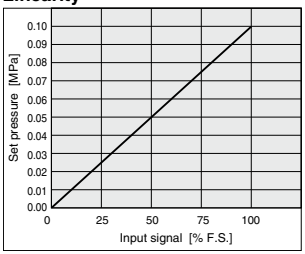
Relief Characteristics

Back pressure: 0.2 MPa

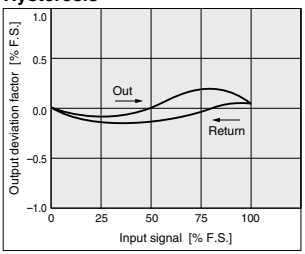


ITV301□ Series

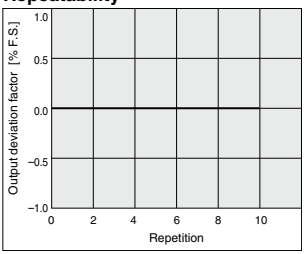
Linearity



Hysteresis

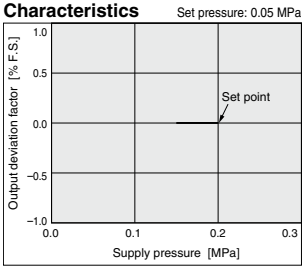


Repeatability



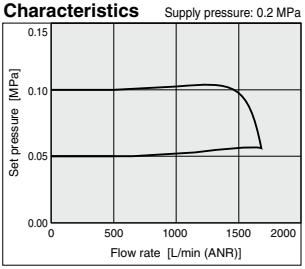
Pressure Characteristics

Set pressure: 0.05 MPa



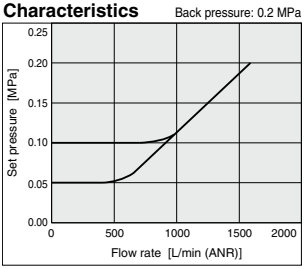
Flow Rate Characteristics

Supply pressure: 0.2 MPa



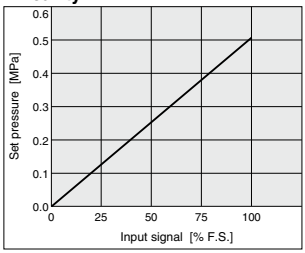
Relief Characteristics

Back pressure: 0.2 MPa

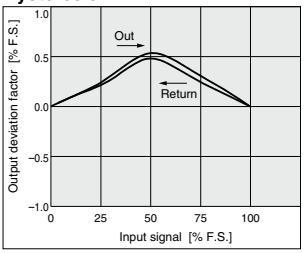


ITV103□ Series

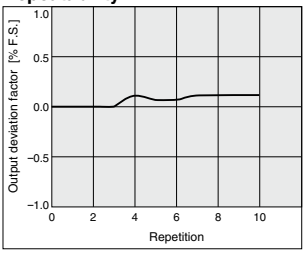
Linearity



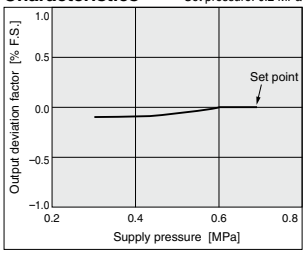
Hysteresis



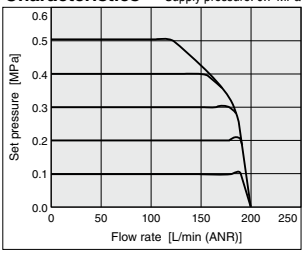
Repeatability



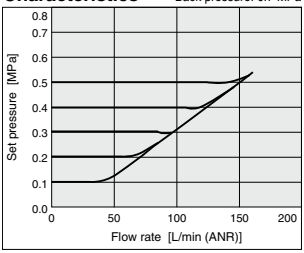
Pressure Characteristics Set pressure: 0.2 MPa



Flow Rate Characteristics Supply pressure: 0.7 MPa

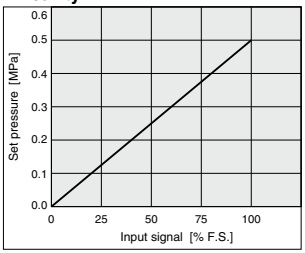


Relief Characteristics Back pressure: 0.7 MPa

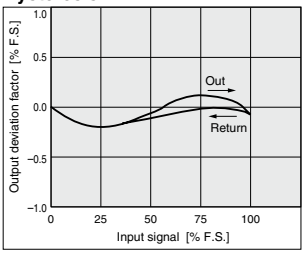


ITV203□ Series

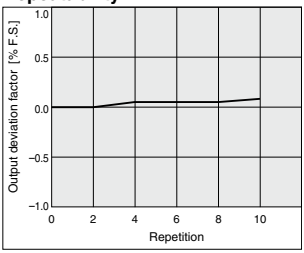
Linearity



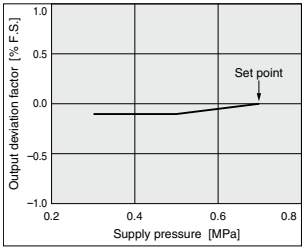
Hysteresis



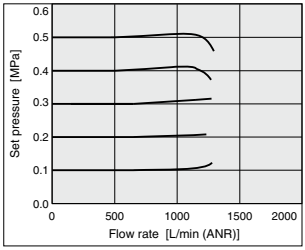
Repeatability



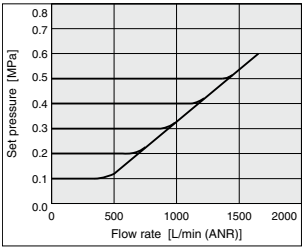
Pressure Characteristics Set pressure: 0.2 MPa



Flow Rate Characteristics Supply pressure: 0.7 MPa

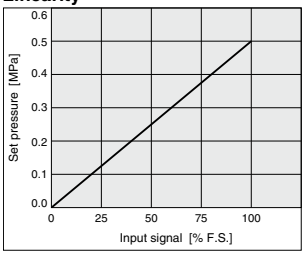


Relief Characteristics Back pressure: 0.7 MPa

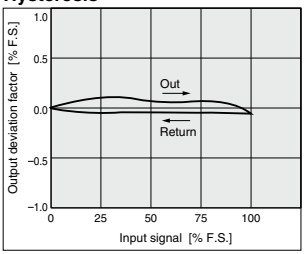


ITV303□ Series

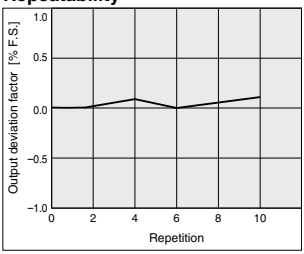
Linearity



Hysteresis

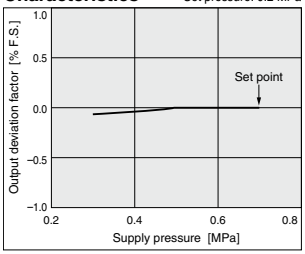


Repeatability



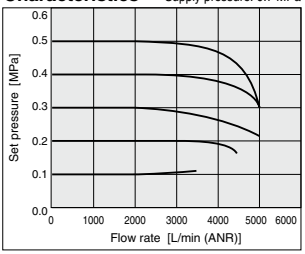
Pressure Characteristics

Set pressure: 0.2 MPa



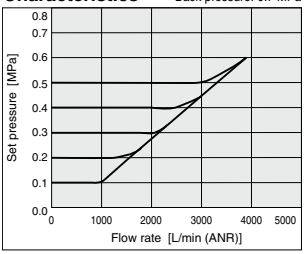
Flow Rate Characteristics

Supply pressure: 0.7 MPa



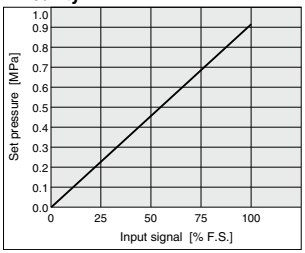
Relief Characteristics

Back pressure: 0.7 MPa

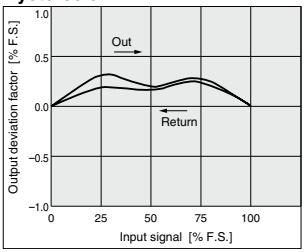


ITV105□ Series

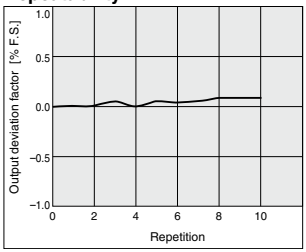
Linearity



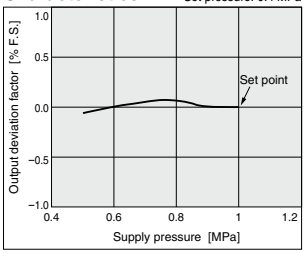
Hysteresis



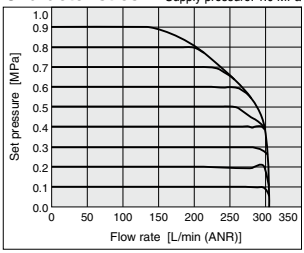
Repeatability



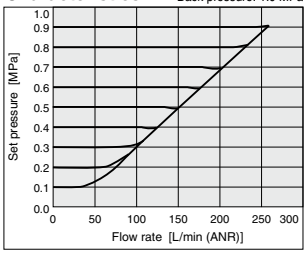
Pressure Characteristics Set pressure: 0.4 MPa



Flow Rate Characteristics Supply pressure: 1.0 MPa

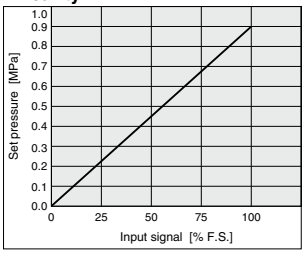


Relief Characteristics Back pressure: 1.0 MPa

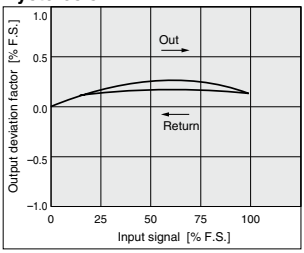


ITV205□ Series

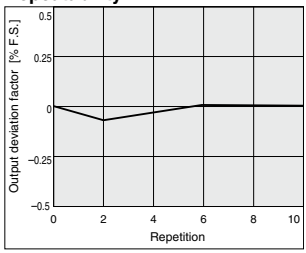
Linearity



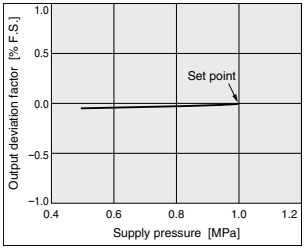
Hysteresis



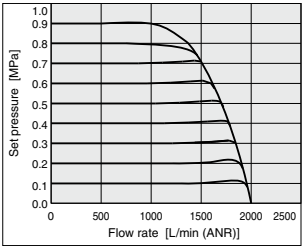
Repeatability



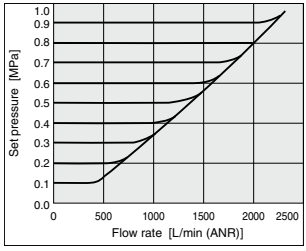
Pressure Characteristics Set pressure: 0.4 MPa



Flow Rate Characteristics Supply pressure: 1.0 MPa

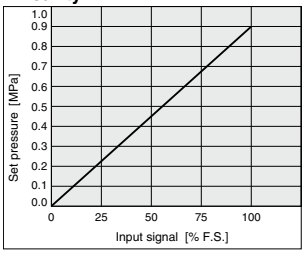


Relief Characteristics Back pressure: 1.0 MPa

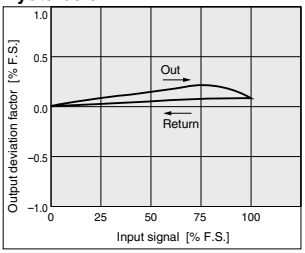


ITV305□ Series

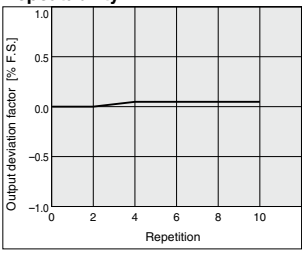
Linearity



Hysteresis

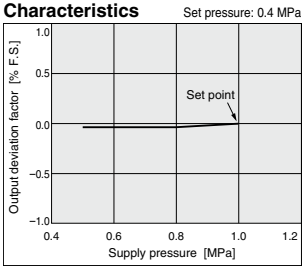


Repeatability



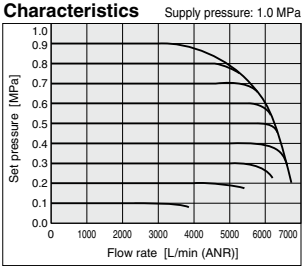
Pressure Characteristics

Set pressure: 0.4 MPa



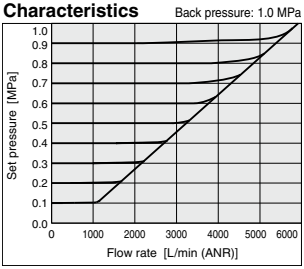
Flow Rate Characteristics

Supply pressure: 1.0 MPa



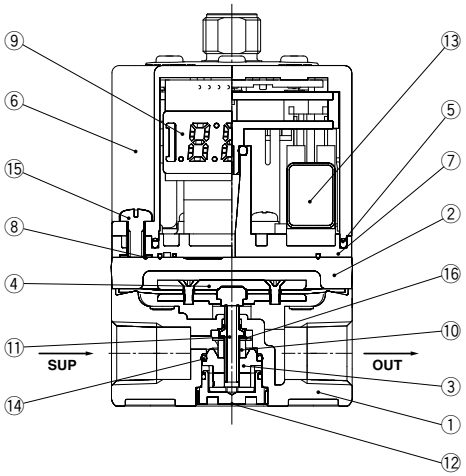
Relief Characteristics

Back pressure: 1.0 MPa



Construction

ITV1000

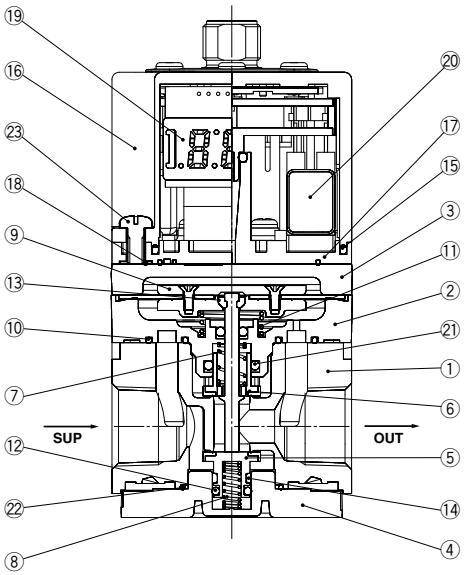


Main Component Parts

	No.	Description	Material
◆	1	**Body**	Aluminum alloy
	2	**Cover**	Aluminum alloy
◆	3	**Valve guide**	Resin
◆	4	**Diaphragm assembly**	Aluminum alloy HNBR 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	**Guide retainer**	Aluminum alloy
	13	**Solenoid valve**	—
◆	14	**O-ring**	HNBR
	15	**Cross recessed round head screw**	Steel
◆	16	**Flat washer**	Stainless steel

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

ITV2000



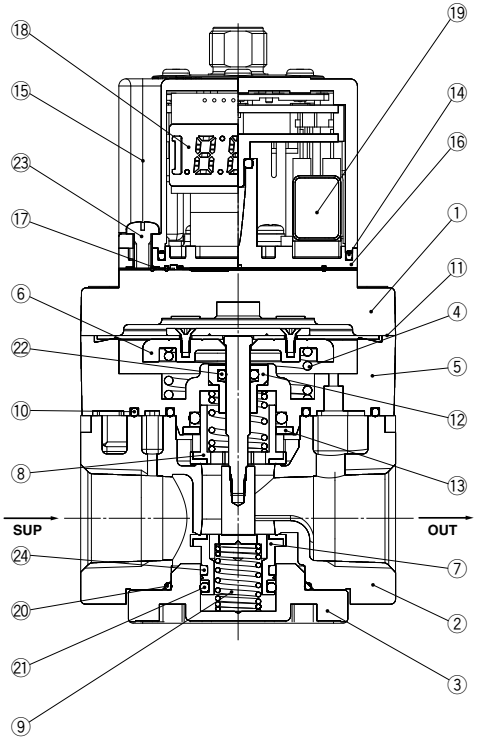
Main Component Parts

	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 HNBR Steel
◆	10	**Seal**	NBR
◆	11	**Bias spring**	Stainless steel
◆	12	**O-ring**	NBR
◆	13	**Cotter**	Stainless steel
◆	14	**Wear ring**	Resin
	15	**Seal**	NBR
	16	**Bowl assembly**	Resin Silicone rubber
	17	**Sub-plate**	Resin
	18	**Seal**	NBR
	19	**Control circuit assembly**	—
	20	**Solenoid valve**	—
◆	21	**O-ring**	NBR
	22	**O-ring**	NBR
	23	**Cross recessed round head screw**	Steel

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

Construction

ITV3000



Main Component Parts

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

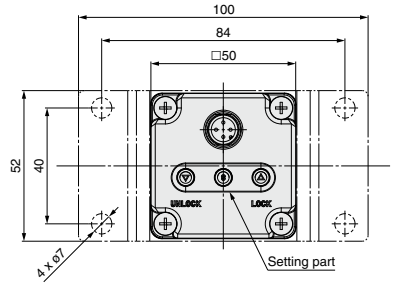
∗ Parts in contact with fluid are indicated with a mark ◆.

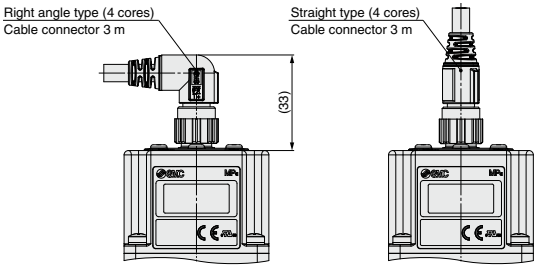
Dimensions

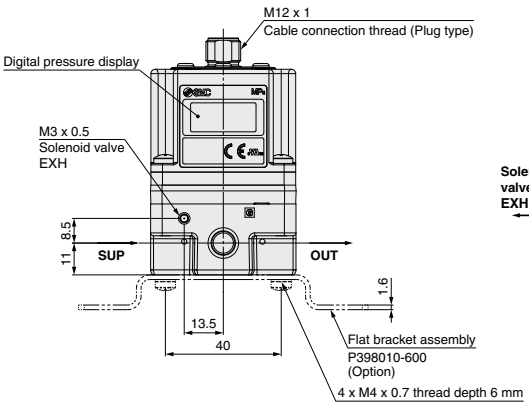
ITV10□□

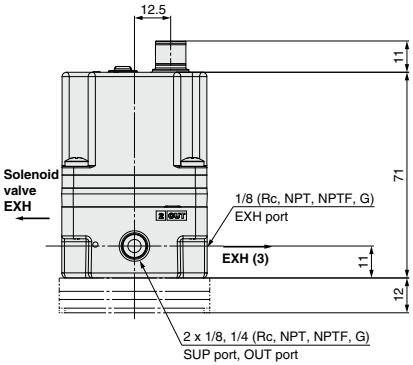
Flat bracket

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

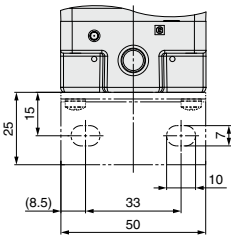


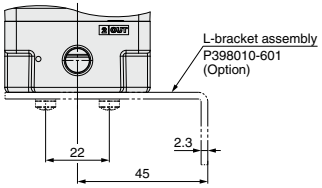






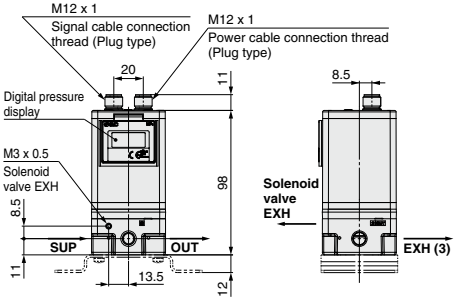
L-bracket



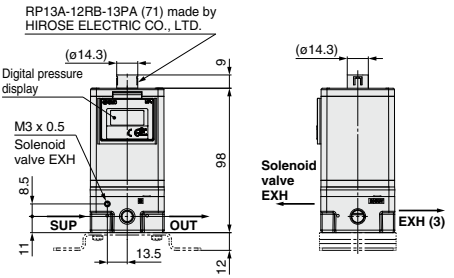


Dimensions (16 points preset input, 10-bit digital input, CC-Link, DeviceNet®)

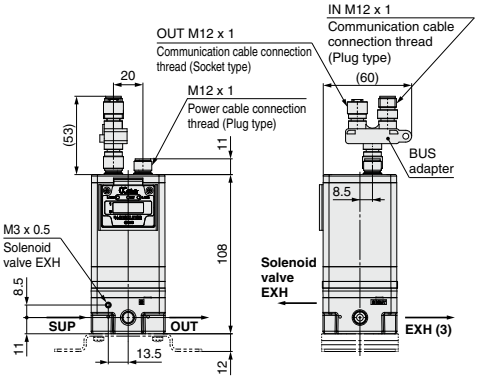
16 points preset input



10-bit digital input

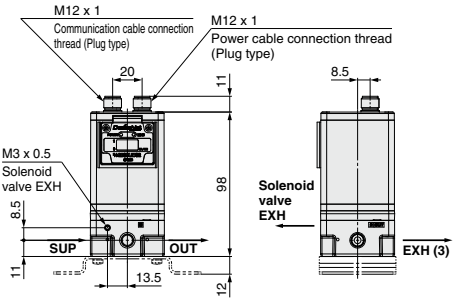


CC-Link: ITV10□0-CC



∗ Dimensions not shown are the same as on page 1194.

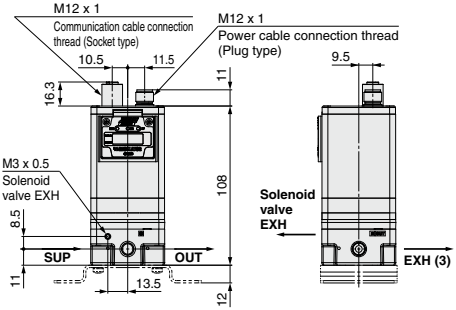
DeviceNet®: ITV10□0-DE



∗ Dimensions not shown are the same as on page 1194.

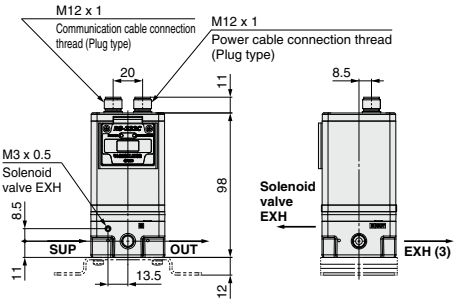
Dimensions (PROFIBUS DP, RS-232C, IO-Link)

PROFIBUS DP: ITV10□0-PR



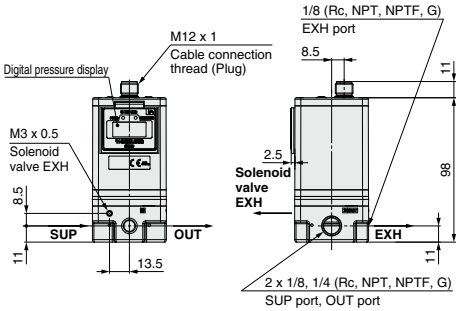
∗ Dimensions not shown are the same as on page 1194.

RS-232C: ITV10□0-RC



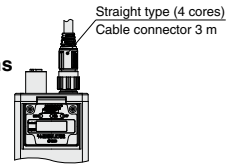
∗ Dimensions not shown are the same as on page 1194.

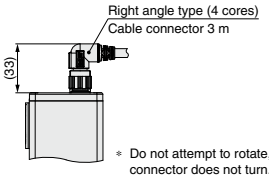
IO-Link: ITV10□0-IL



With power cable connector

∗ **ITV10□0-** **52** **53** **CC** **DE** **PR** **RC** **common dimensions**





∗ Order communication cable (other than 16 points, RS-232C) separately. (Refer to page 1182.)

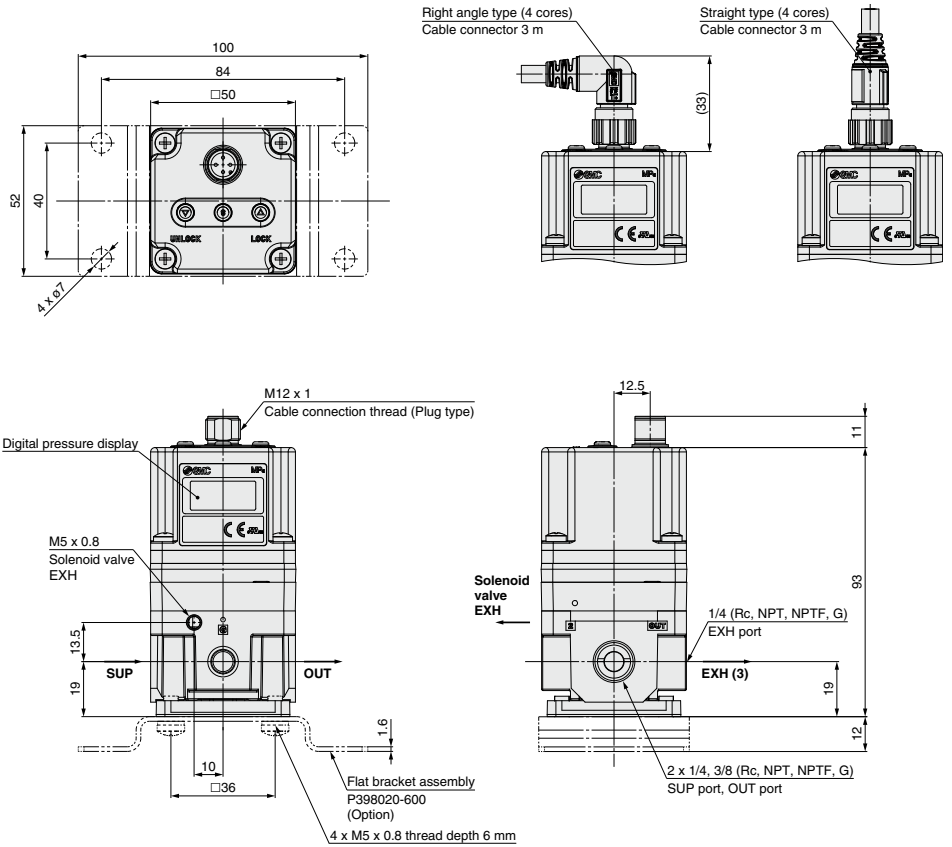
∗ Do not attempt to rotate, as the cable connector does not turn.

Dimensions

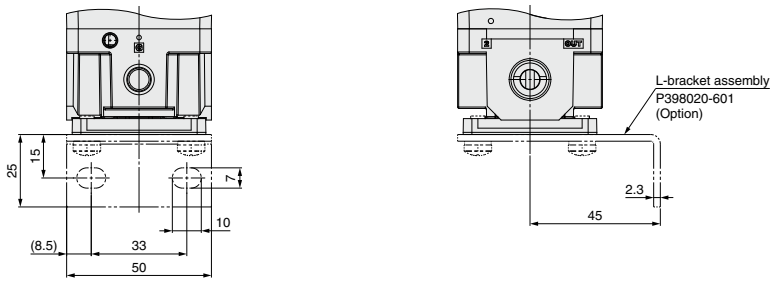
ITV20□□

Flat bracket

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

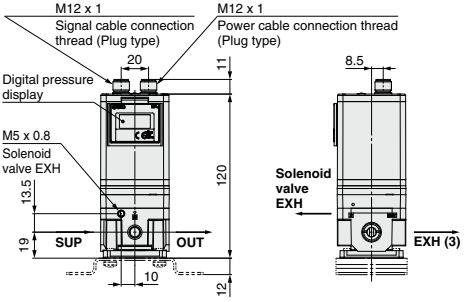


L-bracket

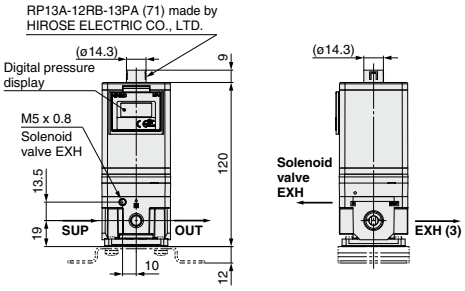


Dimensions (16 points preset input, 10-bit digital input, CC-Link, DeviceNet®)

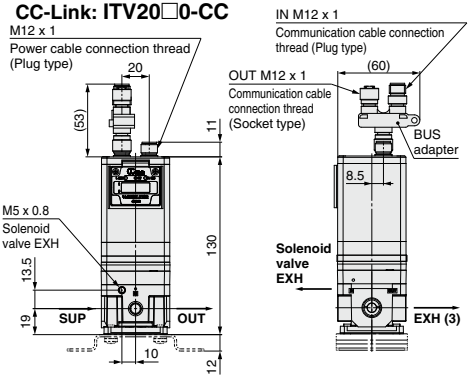
16 points preset input



10-bit digital input

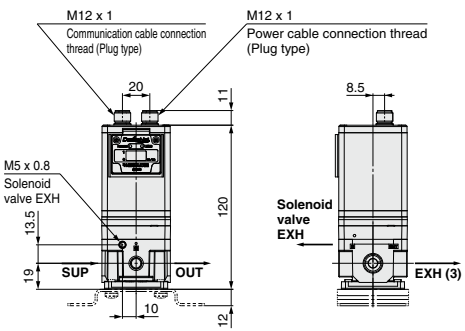


CC-Link: ITV20□0-CC



∗ Dimensions not shown are the same as on page 1197.

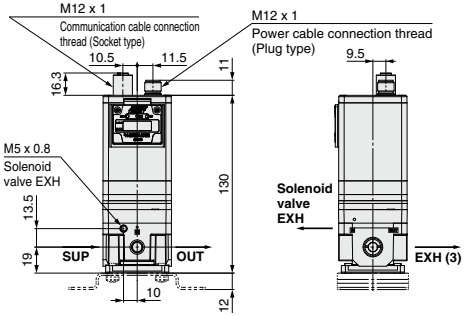
DeviceNet®: ITV20□0-DE



∗ Dimensions not shown are the same as on page 1197.

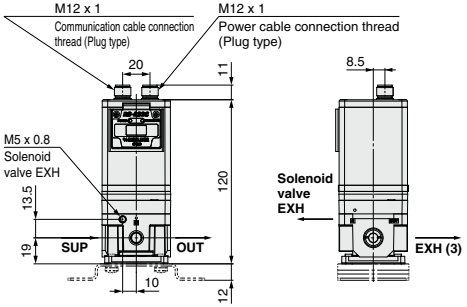
Dimensions (PROFIBUS DP, RS-232C, IO-Link)

PROFIBUS DP: ITV20□0-PR



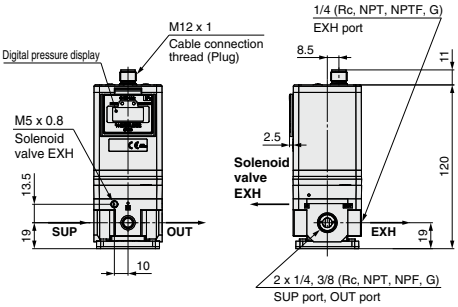
∗ Dimensions not shown are the same as on page 1197.

RS-232C: ITV20□0-RC



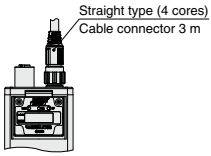
∗ Dimensions not shown are the same as on page 1197.

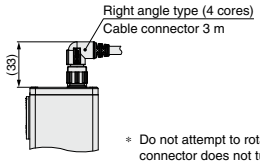
IO-Link: ITV20□0-IL



With power cable connector

∗ **ITV20□0-** **52** **53** **CC** **DE** **PR** **RC** **common dimensions**





∗ Order communication cable (other than 16 points, RS-232C) separately. (Refer to page 1182.)

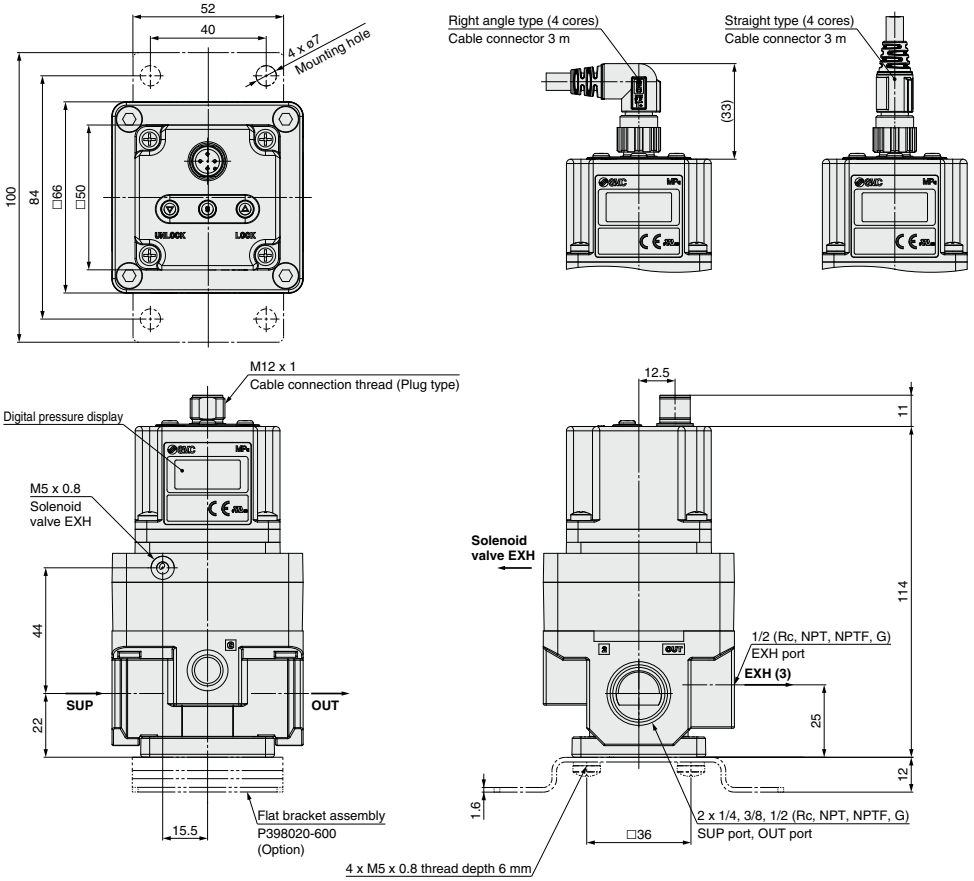
∗ Do not attempt to rotate, as the cable connector does not turn.

Dimensions

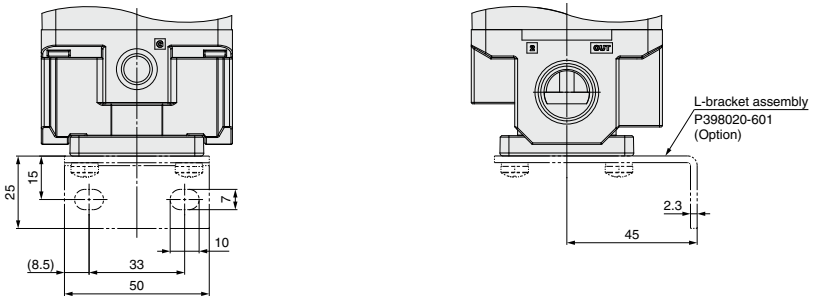
ITV30□□

Flat bracket

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

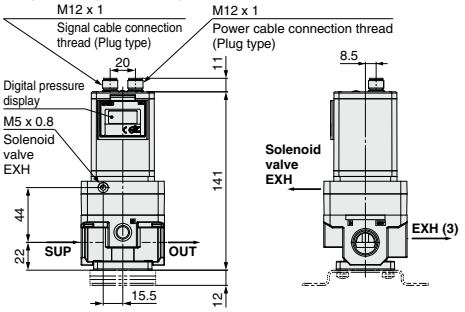


L-bracket

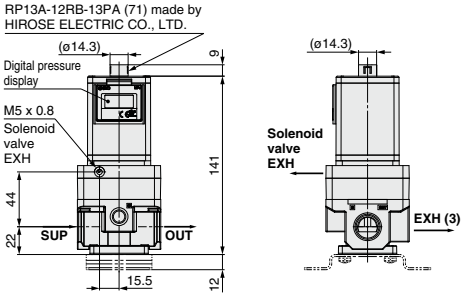


Dimensions (16 points preset input, 10-bit digital input, CC-Link, DeviceNet®)

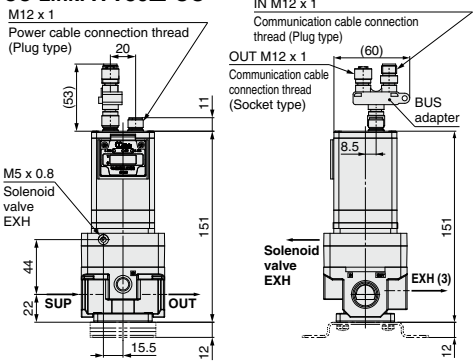
16 points preset input



10-bit digital input

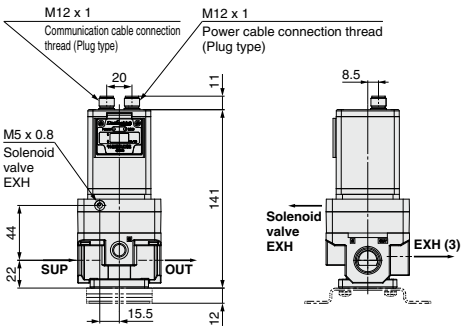


CC-Link: ITV30□-CC



∗ Dimensions not shown are the same as on page 1200.

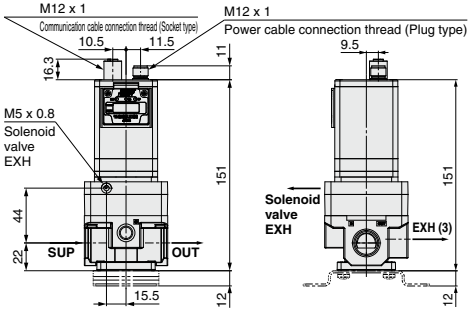
DeviceNet®: ITV30□-DE



∗ Dimensions not shown are the same as on page 1200.

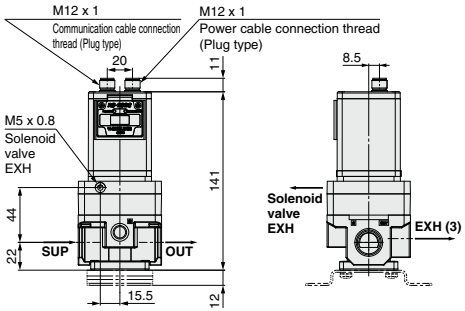
Dimensions (PROFIBUS DP, RS-232C, IO-Link)

PROFIBUS DP: ITV30□-PR



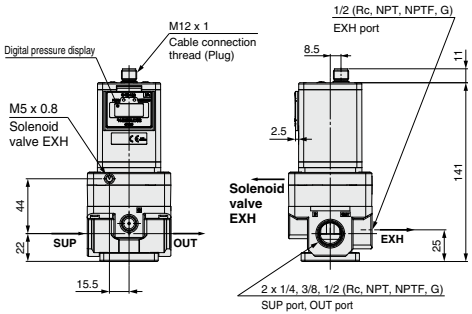
∗ Dimensions not shown are the same as on page 1200.

RS-232C: ITV30□-RC



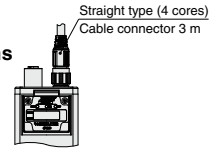
∗ Dimensions not shown are the same as on page 1200.

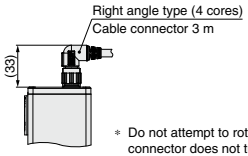
IO-Link: ITV30□0-IL



With power cable connector

∗ **ITV30□0-** 52 53 CC DE PR RC **common dimensions**





∗ Order communication cable (other than 16 points, RS-232C) separately. (Refer to page 1182.)

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

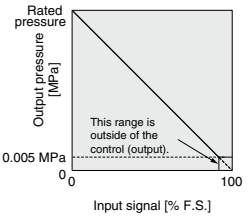
ITV1000/2000/3000 Series
Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.

1 Reverse Type

In accordance with the input signal, the inverse proportional pressure is output.

ITV10□□−□□□□□□□□−X102
ITV20□□−□□□□□□□□−X102
ITV30□□−□□□□□□□□−X102



Input/output characteristics chart

* The □ in the part numbers indicate the model nos. of the standard products.
* Excludes the preset input type and the digital input type
* For communication models, contact SMC for availability.

2 High-Pressure Type (SUP 1.2 MPa, OUT 1.0 MPa)

ITV10 5 □−□□□□□□□□−X224
ITV20 5 □−□□□□□□□□−X224
ITV30 5 □−□□□□□□□□−X224

* For the preset input type, the digital input type, and communication models, contact SMC for availability.

3 Set Pressure Range: 1 to 100 kPa

ITV10 1 □−□□□□□□□□−X25
ITV20 1 □−□□□□□□□□−X25

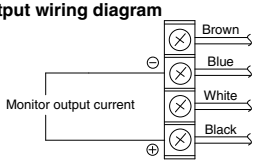
* For the preset input type, the digital input type, and communication models, contact SMC for availability.

4 Analog Output, Current Type (Source Type)

Monitor output is analog output from 4 to 20 mADC (source type).

ITV10□0−□4□□□□□−X256
ITV20□0−□4□□□□□−X256
ITV30□0−□4□□□□□−X256

Monitor output wiring diagram

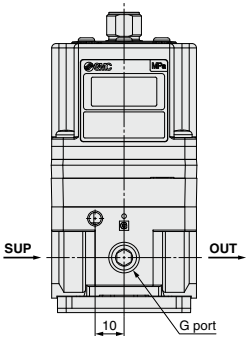


5 With Gauge Port

It is possible to check the outlet pressure when the product is in a de-energized state.

ITV10□□−□□□□□□□□−X400
ITV20□□−□□□□□□□□−X400
ITV30□□−□□□□□□□□−X400

Model	G port (Rc, NPT, NPTF, G)
ITV1000 type	1/8
ITV2000 type	1/8
ITV3000 type	1/4



5 High-Speed Response Time Type

Pressure response with no load is approx. 0.1 s.

* This is not a guaranteed value as it depends on the operating environment.
* When the input signal is at 0%, the exhaust solenoid valve is controlled to reduce the outlet pressure to zero. For this reason, a noise may be generated. This noise is normal and does not indicate a fault.
* When operating for the first time, be sure that the power supply voltage and supply pressure are appropriate in relation to the operating environment and conditions.
* For this product, by conducting the procedure described below (steps A to D), the parameters compatible with the power supply voltage and supply pressure in use can be obtained.
  If the desired output pressure values cannot be reached due to fluctuations in the operating conditions, etc., perform this operation.
  A) Change the power supply voltage in use by ±0.4 VDC or more.
  B) After inputting the supply pressure used on the inlet side of the ITV, adjust the input signal as described below.
  (0% → 100% → 0%) (Change it gradually, waiting 10 s or more between each adjustment.)
  ** Please contact SMC if difficulty inputting signals occurs.
  C) Change the power supply voltage according to the operating conditions/requirements, and repeat step B.
  D) Input the power supply voltage and a 0% signal, and retain for 6 minutes or more. (Supply pressure is not required.)
  When re-obtaining the parameters, we recommend operating with the air sealed in the piping in order to reliably reach the set pressure. In addition, if step A above cannot be carried out, it is possible to conduct an "Initialize" operation as described in the operation manual in order to reset the parameters of the product to those set at the time of shipment. When conducting an "Initialize" operation, the min. set pressure (F_1) and the max. set pressure (F_2) will be reset.
* There is no gain or sensitivity adjustment function.

ITV 2 0 1 0 – 0 1 □ 2 □ S □ – X88

Model

1	1000 type
2	2000 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

Input signal

0	Current type 4 to 20 mADC (Sink type)
1	Current type 0 to 20 mADC (Sink type)
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC

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 mADC (Sink type)

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Port size

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

Bracket∗1

Nil	Without bracket
B	Flat bracket
C	L-bracket

∗1 The bracket is included.

Cable connector type

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

Pressure display unit

Nil	MPa
2∗1	kgf/cm²
3	bar
4∗1	psi
5	kPa

∗1 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

6 Manifold Specifications (Excludes the ITV3000 series)

2 through 8-station manifold

How to Order Manifolds

IITV20 – □ 02 – 5

Stations

2	2 stations
⋮	⋮
8	8 stations

ITV1000, 2000

OUT port size

02	1/4
03	3/8

Connection thread type

Nil	Rc
N	NPT
F	G

How to Order for Manifold Mounting

ITV 1 0 □□ – □□ 1 □□ – X26

ITV 2 0 □□ – □□ 2 □□ – X26

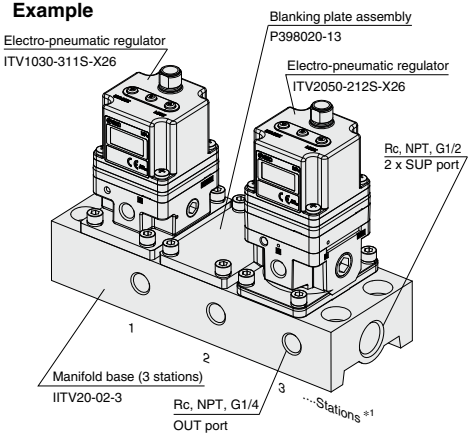
∗ The □ in the part numbers indicate the model nos. of the standard products.
∗ For communication models, contact SMC for availability.
∗ The thread type is Rc only.
∗ For the ITV1000 series, the port size is 1/8 only.
∗ For the ITV2000 series, the port size is 1/4 only.
∗ The bracket accessory cannot be selected.
∗ Not applicable to the ITV3000 series

IITV20-02-3 .....1 set (3-station manifold base part no.)
✻ITV1030-311S-X26 .....1 set (Electro-pneumatic regulator part no.)∗2
✻P398020-13 .....1 set (Blanking plate assembly part no.)
✻ITV2050-212S-X26 .....1 set (Electro-pneumatic regulator part no.)∗2

The asterisk denotes the symbol for the assembly. Prefix it to the part numbers of the electro-pneumatic regulator, etc.

How to Order Manifold Assemblies

Example



∗ Refer to the table below for possible mixed combination.

Model	ITV101□	ITV103□	ITV105□	ITV201□	ITV203□	ITV205□
ITV101□	●	—	—	●	—	—
ITV103□	—	●	●	—	●	●
ITV105□	—	●	●	—	●	●
ITV201□	●	—	—	●	—	—
ITV203□	—	●	●	—	●	●
ITV205□	—	●	●	—	●	●

∗1 Electro-pneumatic regulators are counted starting from station 1 on the left side with the OUT ports in the front.
∗2 The port size for mounted electro-pneumatic regulators is Rc1/8 (ITV1000), Rc1/4 (ITV2000) only.
∗ When there is a large number of stations, use piping with the largest possible inside diameter for the supply side, such as steel piping.
∗ The use of the straight type cable connector is recommended. To mount right angle type, be certain to check that no possible interference occurs.
∗ When mounting a blanking plate and the regulator with a different pressure set, please inform SMC of the order of a manifold station beside a purchase order.

7 Linearity: ±0.5% F.S. or Less

Application examples: Polishing equipment and peripheral equipment for wafers, LCD glasses, color filters, etc.

ITV 3 0 1 0 – 0 1 □ 2 □ S □ – X410

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

Input signal

0	Current type 4 to 20 mADC (Sink type)
1	Current type 0 to 20 mADC (Sink type)
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC

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 mADC (Sink type)

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Bracket∗1

Nil	Without bracket
B	Flat bracket
C	L-bracket

∗1 The 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)

Linearity:
±0.5% F.S. or less

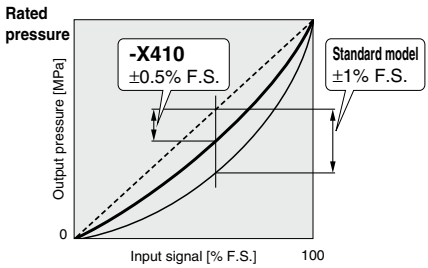
Pressure display unit

Nil	MPa
2∗1	kgf/cm²
3	bar
4∗1	psi
5	kPa

∗1 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

Cable connector type

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



The graph shown above is a typical example. (This graph shows that the output pressure curve is in a negative range when compared to the ideal line.)

Specifications

Fluid		Air
Min. supply pressure		Set pressure + 0.1 MPa
Max. supply pressure		1.0 MPa (Pressure range 0.1 MPa type: 0.2 MPa)
Proof pressure	**(Supply side)**	1.5 MPa (Pressure range 0.1 MPa type: 0.3 MPa)
	(Output side)	1 MPa (Pressure range 0.1 MPa type: 0.2 MPa)
Set pressure range		1: 0.005 to 0.1 MPa, 3: 0.005 to 0.5 MPa, 5: 0.005 to 0.9 MPa
Power supply voltage		0: 24 VDC ±10%, 1: 12 to 15 VDC
Current consumption		0.12 A or less (24 VDC ±10% type) 0.18 A or less (12 to 15 VDC type)
Input signal		0: 4 to 20 mA, 1: 0 to 20 mA, 2: 0 to 5 VDC, 3: 0 to 10 VDC
Input impedance		Voltage type: Approx. 6.5 kΩ, Current type: 250 Ω or less
Output signal		Analog output: 1 to 5 VDC/4 to 20 mADC, Switch output (NPN/PNP)
Linearity		±0.5% 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	**Accuracy**	±2% F.S. ±1 digit or less
	Min. unit	MPa: 0.001, kgf/cm²: 0.01, bar: 0.01, psi: 0.1, kPa: 1
Ambient and fluid temperatures		0 to 50°C (No condensation)
Enclosure		IP65
Weight		ITV10□□: Approx. 250 g, ITV20□□: Approx. 350 g, ITV30□□: Approx. 645 g (Without brackets)

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

8 With Alarm Output

Alarm is output if the set pressure is not reached or maintained for 5 seconds or more.

Application examples: Pressure management for thrust control, etc.

ITV 3 0 1 0 – 0 2 □ 2 □ S □ – X420

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

Input signal

0	Current type 4 to 20 mADC (Sink type)
1	Current type 0 to 20 mADC (Sink type)
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC

Monitor output

2	Alarm output/NPN output
3	Alarm output/PNP output

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)

Bracket∗1

Nil	Without bracket
B	Flat bracket
C	L-bracket

∗1 The bracket is included.

Cable connector type

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

With alarm output

Pressure display unit

Nil	MPa
2∗1	kgf/cm²
3	bar
4∗1	psi
5	kPa

∗1 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

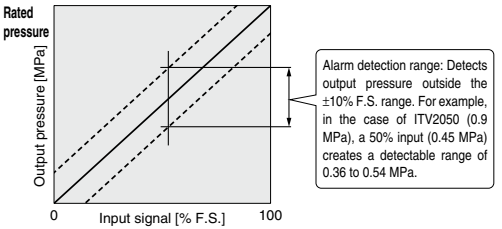


Fig. 1 Alarm output range

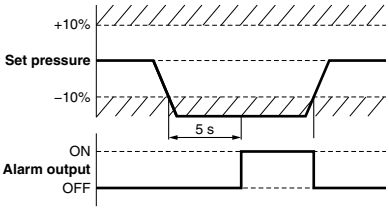


Fig. 2 Relationship between output pressure and alarm output

Specifications

Fluid		Air
Min. supply pressure		Set pressure + 0.1 MPa
Max. supply pressure		1.0 MPa (Pressure range 0.1 MPa type: 0.2 MPa)
Proof pressure	(Supply side)	1.5 MPa (Pressure range 0.1 MPa type: 0.3 MPa)
	(Output side)	1 MPa (Pressure range 0.1 MPa type: 0.2 MPa)
Set pressure range		1: 0.005 to 0.1 MPa, 3: 0.005 to 0.5 MPa, 5: 0.005 to 0.9 MPa
Power supply voltage		0: 24 VDC ±10%, 1: 12 to 15 VDC
Current consumption		0.12 A or less (24 VDC ±10% type) 0.18 A or less (12 to 15 VDC type)
Input signal		0: 4 to 20 mA, 1: 0 to 20 mA, 2: 0 to 5 VDC, 3: 0 to 10 VDC
Input impedance		Voltage type: Approx. 6.5 kΩ, Current type: 250 Ω or less
Output signal		Alarm output (NPN/PNP)
Linearity		±1.0% 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	**Accuracy**	±2% F.S. ±1 digit or less
	Min. unit	MPa: 0.001, kgf/cm²: 0.01, bar: 0.01, psi: 0.1, kPa: 1
Ambient and fluid temperatures		0 to 50°C (No condensation)
Enclosure		IP65
Weight		ITV10□□: Approx. 250 g, ITV20□□: Approx. 350 g, ITV30□□: Approx. 645 g (Without brackets)

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

Accessories (Option)

Accessories (Option)/Part Nos.

[Bracket]

Description	Part no.	Weight
Flat bracket assembly (including mounting screws)	P398020-600	90
L-bracket assembly (including mounting screws)	P398020-601	

[Cable connector]

Applicable model	Description		Part no.	Weight
Current type Voltage type 4 points preset input IO-Link	**Cable connector (4 cores)**	**Straight type 3 m**	P398020-500-3	180
		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	310
CC-Link PROFIBUS DP DeviceNet®	**Power cable (4 cores)**	**Straight type 3 m**	P398020-500-3	180
		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 cable (5 cores)	**Straight type 3 m**	P398020-502-3	
		Right angle type 3 m	P398020-503-3	

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

[Cable connector specifications]

P398020-500-3, P398020-501-3

Conductor	Nominal cross section	4 x AWG21
	Outside diameter	Approx. 0.9 mm
Insulator	Outside diameter	Approx. 1.7 mm
Sheath	**Material**	PVC
Finished outside diameter		ø6 mm
Min. bending radius		60 mm

P398020-502-3, P398020-503-3

Conductor	Nominal cross section	5 x AWG21
	Outside diameter	Approx. 0.9 mm
Insulator	Outside diameter	Approx. 1.7 mm
Sheath	**Material**	PVC
Finished outside diameter		ø6 mm
Min. bending radius		60 mm

INI-398-0-59

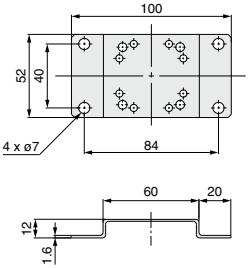
Conductor	Nominal cross section	16 x AWG24
	Outside diameter	Approx. 0.75 mm
Insulator	Outside diameter	Approx. 1.21 mm
Sheath	**Material**	PVC
Finished outside diameter		ø8 mm
Min. bending radius		60 mm

[Bus adapter]

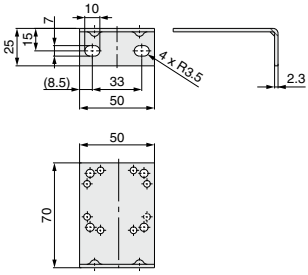
Applicable model	Description	Part no.	Weight
CC-Link	**Bus adapter (Included with the product)**	EX9-ACY00-MJ	35

Dimensions

Flat bracket



L-bracket



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