

# ITV00❖❖ SERIES

## OPERATIONAL MANUAL

Read this operation manual carefully in order to use the product correctly. And keep this operation manual where accessible for future reference.

### Safety instruction

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. To ensure safety, be sure to observe ISO 4414, JIS B 8370 and other safety regulations.

⚠ Caution: Operator error could result injury or equipment damage.

#### ⚠ Caution Piping

At piping, air blow or clean thoroughly to remove cutting dust, machining oil, refuse from inside pipe.

#### ⚠ Caution Air source

1. Mount an air filter on the supply side near this product. Use a filtration degree of 5 $\mu$ m or less.
2. Compressed air containing large amounts of drain will cause malfunction of this product or other pneumatic equipment.  
To solve this problem install an after cooler, an air dryer or drain catch.
3. Large amounts of carbon occurring from compressor will attach inside of this product and cause malfunction.

## ■ Caution on handling

### ⚠ Caution

1. When the power is turned off due to power failure under operation, the outlet pressure is retained temporarily. Take care that air keeps flowing out when the outlet pressure is open to atmosphere.
2. If pressure supply is stopped while the power is turned on, the built-in solenoid valve will continue to operate generating beating noise. Turn off the power to stop pressure supply.
3. When the monitor output is not used, take care not to contact other cables as it may cause incorrect operation.
4. This product is adjusted according to the specifications before shipping from the factory. Avoid careless disassembling and removing each part as it may cause malfunction.
5. To avoid malfunction due to noise, take the following steps;
  - 1) Eliminate noise by using a line filter on AC power supply line.
  - 2) Install this product and wiring to this product as far away as possible from strong electric fields like motors or power lines to avoid the influence of noise.
  - 3) Be sure to apply load surge protection for an inductive load (solenoid, relay etc.)
6. Do not turn the right angle type connector to avoid breakage of connector pins.
7. On wiring of ITV, Ground of power supply and Common of signal are shorted synchronously. If multiple current type ITV are driven by one PC and D/A unit, there is possibility not to get proper signal due to wiring problem in some circuit of D/A unit. So, before actual operation, consult manufacturer of PC.
8. Special care for use of ITV009%
  - 1) Connect vacuum pump by using "VAC" port side [1].
  - 2) On adjustment of pressure, increasing input signal makes change from atmosphere to vacuum and decreasing input signal makes change from vacuum to atmosphere.
  - 3) ITV009% can be used only for negative pressure, so take care to give positive pressure to it by mistake.
  - 4) If capacity of vacuum ejector is relatively small or inside diameter of piping material is small, variation of setting pressure (degree of pressure variation when the condition is changed from with flow to without flow) may become large. In this case, change vacuum ejector or piping material. And when such a change is impossible, add volume tank to the product. (Volume of the tank is depending on operating condition.)
  - 5) After input signal is changed, response time of vacuum pressure is influenced by content volume (including piping) on setting side. And capacity of vacuum ejector also influences response time. For using this product, keep in mind these points enough.

## ■ Specification

### Specification

Model		ITV001□	ITV003□	ITV005□	ITV009□
Min. SUP. Pressure		Setting Pressure+0.1MPa			Setting Pressure-1kPa
Max. SUP. Pressure		0.2MPa	1.0MPa		-101kPa
Setting Pressure		0.001~0.1MPa	0.001~0.5MPa	0.001~0.9MPa	-1~-100kPa
Max. flow rate		3.5l/min(ANR) (SUP. pressure :at 0.2MPa)	6l/min(ANR) (SUP. pressure :at 0.6MPa)	6l/min(ANR) (SUP. pressure :at 0.6MPa)	2l/min(ANR) (SUP. pressure :at -101kPa)
Power Supply Voltage	Voltage	24VDC±10%、12~15VDC			
	Consumption Current	Power Supply Voltage 24VDC:0.12A or Less			
		Power Supply Voltage12~15VDC:0.18A or Less			
Input Signal	Voltage Type	0~5VDC, 0~10VDC			
	Current Type	4~20mADC, 0~20mADC			
Input Impedance	Voltage Type	About 10kΩ			
	Current Type	About 250Ω			
Output Signal	Analog Output	DC1~5V(Load Impedance:1kΩ or More)			
		Output Accuracy:±6%F. S. or Less			
Linearity		±1%F. S. or Less			
Hysteresis		0.5%F. S. or Less			
Repeatbility		±0.5%F. S. or Less			
Sensitivity		0.2%F. S. or Less			
Temperature Characteristic		±0.12%F. S. /℃ or Less			
Ambient Temperature		0~50℃(Without Condensation)			
Enclosure		IP65 Equivalent			
Connection Type		Built-in One Touch Fitting Type			
Connection Size	Single Type	Millimeter Size	1. 2. 3 :φ4		
		Inch Size	1. 2. 3 :φ5/32"		
	Manifold Type	Millimeter Size	1. 3 :φ6, 2 :φ4		
		Inch Size	1. 3 :φ1/4", 2 :φ5/32"		
Mass	Note1)	100g or Less(Without Option)			

Note 1)Weight for single.

In case of 1ITV00-n

Total weight(g)≤ Number of station (n)×100+130

(Weight of end block A and B Ass'y)

+Weight of DIN rail

Note 2)Pressure range:0.1MPa, 0.5MPa, 0.9MPa

Power supply voltage:24VDC

Input signal:Specification other than 0~10VDC  
is handled as semi-standard.

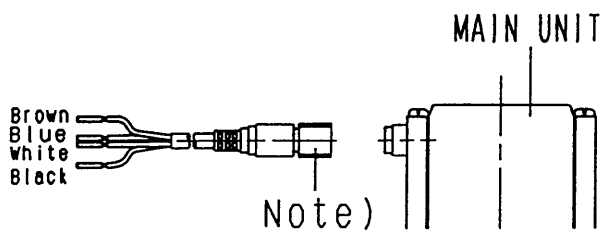
Note 3)If outset flow consumption exists,pressure may not  
keep stable under some piping requirement.

## ■ Wiring method

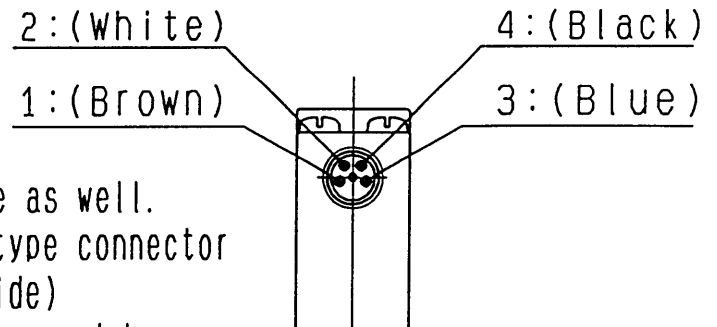
Connect cables to the connector on the main unit and wire them as shown below.

Take care that incorrect wiring may cause damage.

Use DC power supply with sufficient capacity and minimal ripples.



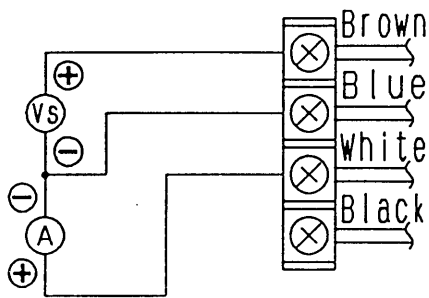
1	Brown	Supply power
2	White	Input signal
3	Blue	GND(COMMON)
4	Black	Monitor output



Note: Right angle type cables are available as well.  
The electrical entry of right angle type connector extends to the down side. (OUT port side)  
Do not turn the connector to avoid breakage of connector pins.

## Wiring diagram

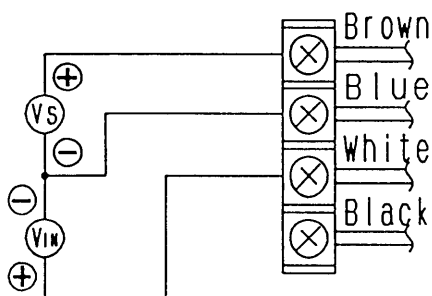
Current type (ITV00\*\*-0\*\*\*\*, ITV00\*\*-1\*\*\*\*)



Vs: Supply power 24VDC (ITV00\*0-\*\*\*\*\*)  
12~15VDC (ITV00\*1-\*\*\*\*\*)

A: Input signal 4~20mADC (ITV00\*\*-0\*\*\*\*\*)  
0~20mADC (ITV00\*\*-1\*\*\*\*\*)

Voltage type (ITV00\*\*-2\*\*\*\*, ITV-00\*\*-3\*\*\*\*)



Vs: Supply power 24VDC (ITV00\*0-\*\*\*\*\*)  
12~15VDC (ITV00\*1-\*\*\*\*\*)

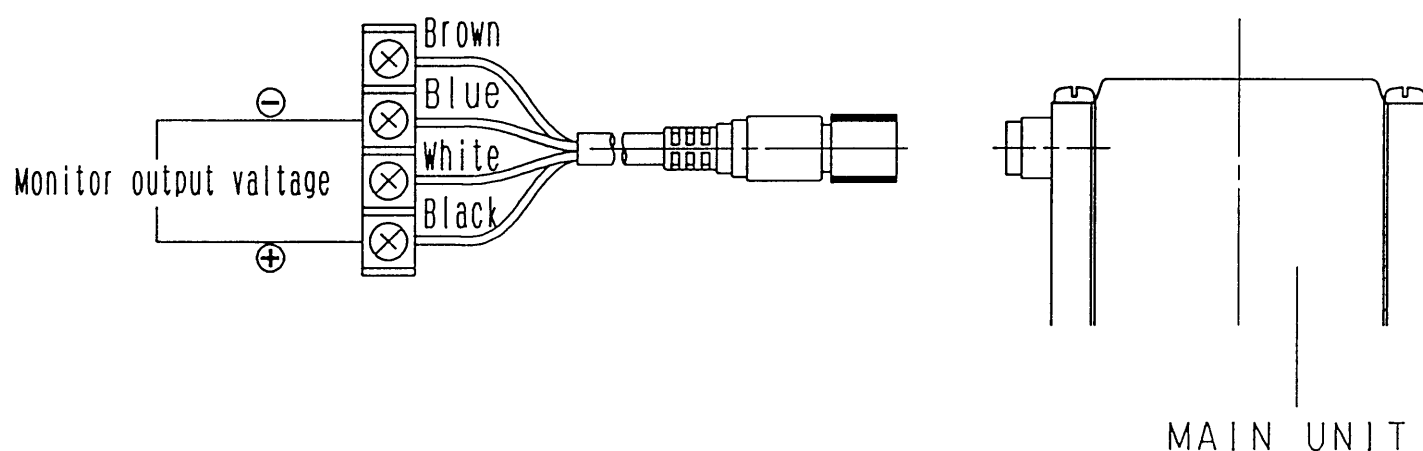
Vin: Input signal 0~5VDC (ITV00\*\*-2\*\*\*\*\*)  
0~10VDC (ITV00\*\*-3\*\*\*\*\*)

## ■ Monitor output

Monitor output voltages are as follows. Connect a measuring instrument whose load impedance is  $1\text{k}\Omega$  or more. When the output voltages are amplified for use, consider load impedance of  $1\text{k}\Omega$  to design.

Model	Output pressure(MPa)	Monitor output voltage(VDC) Note
ITV001※	0.001~0.1	1~5
ITV003※	0.001~0.5	1~5
ITV005※	0.001~0.9	1~5
ITV009※	-0.001~-0.1	1~5

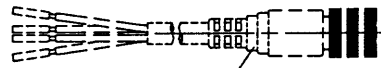
Note) Take care that the output voltages slightly fluctuate depending on characteristics of a built-in pressure sensor, a connected measuring instrument and load impedance of electric circuit.



## ■ Port position

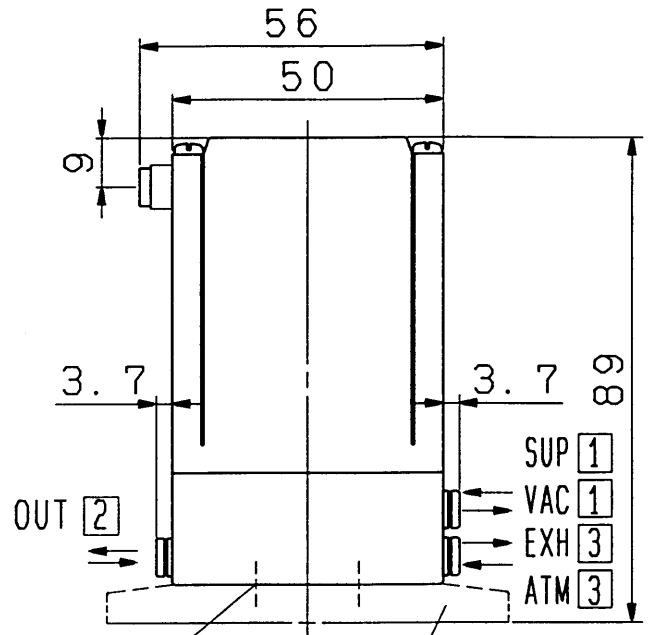
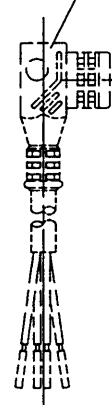
NO.	①	②	③
1 ITV003※	SUP	OUT	EXH
5 ITV009※	VAC		ATM

■ Outside dimension  
For single



Straight Type  
Cable Connector  
(4core, Option)

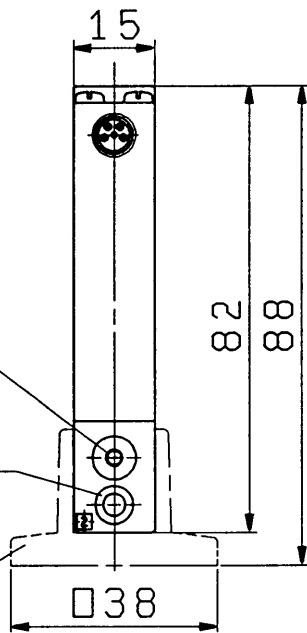
Right Angle Type Cable  
Connector (4core, Option)



Breath hole  
(M3×0.5)

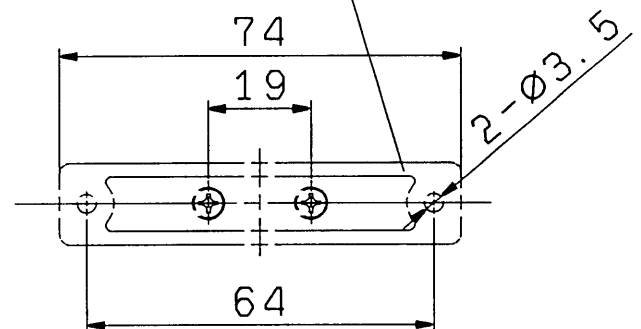
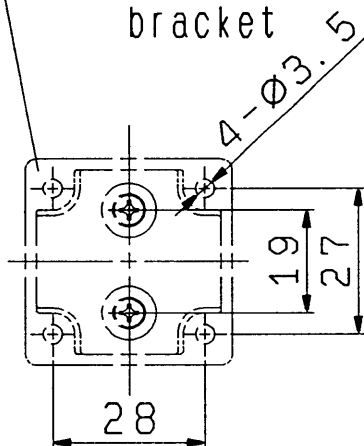
OUT Port  
( $\phi 4, \phi 5/32''$ )

L Type Bracket  
(Option)



2-M3×0.5 DEPTH 3.5mm  
Mounting hole for  
bracket

Flat Bracket  
(Option)



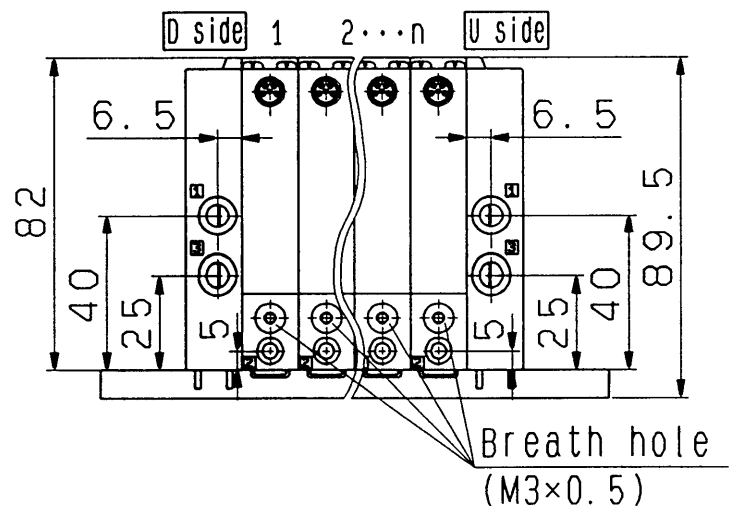
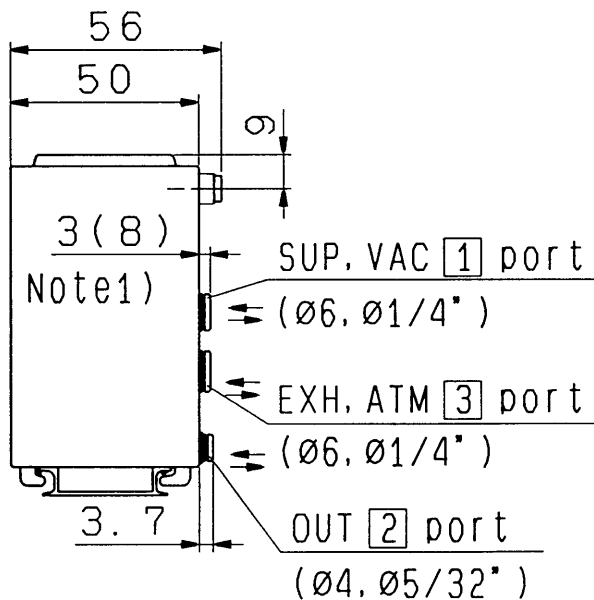
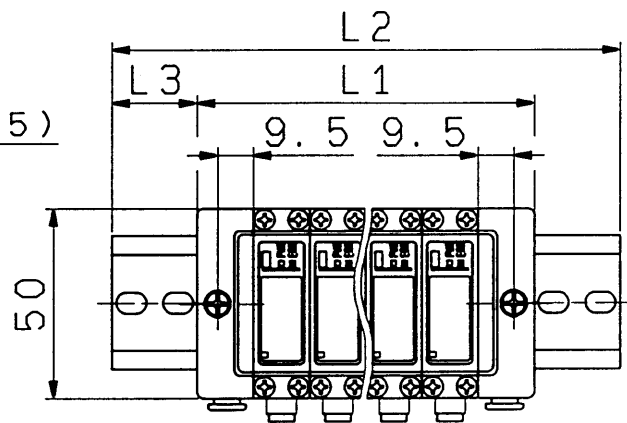
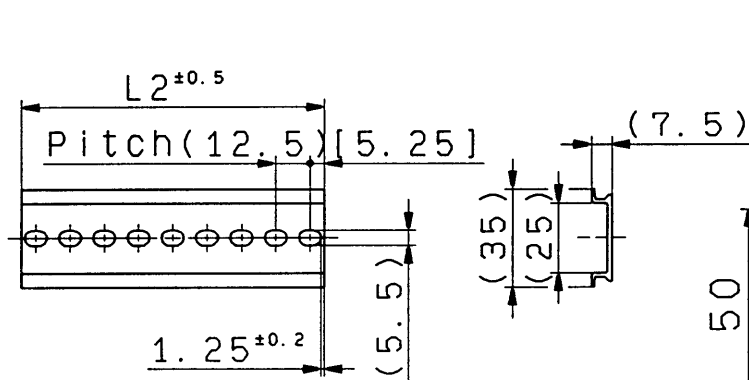
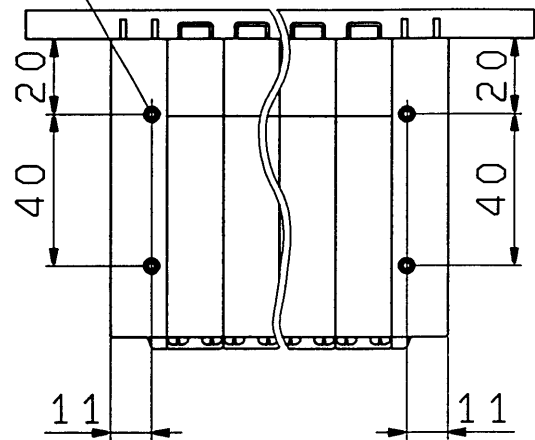
# ■ Outside dimension Manifold

Number of manifold station(n)	2	3	4	5	6	7	8	9	10
L 1 (mm)	60	75	90	105	120	135	150	165	180
L 2 (mm)	110.5	123	148	160.5	173	185.5	198	223	235.5
L 3 (mm)	25±1								

Note) For other part No. of DIN rail and dimension, refer to SMC general catalog.

4-M3×0.5 thread depth 3mm  
Mounting hole for DIN rail

Note1) The figure in parentheses is a size of inch type.



## ■ Error indication function

If input signal out of rated range is given, LED blinks. To release error, turn off power supply temporarily and confirm given input signal is out of range or not.