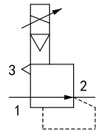
ITV Series Electro-Pneumatic Regulator



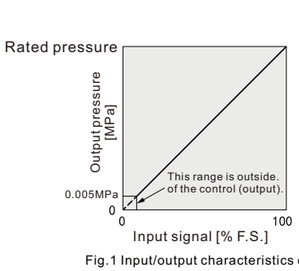


Fig.1 Input/output characteristics chart

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

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/PNP 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

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

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

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

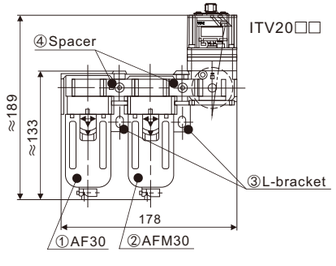
Pressure unit
Nil: MPa
2: kgf/cm²
3: bar
4: psi
5: kPa

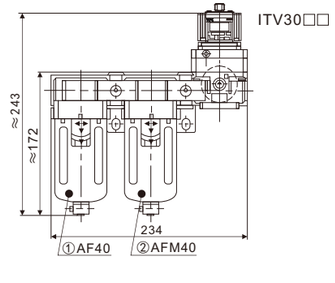
Made to order

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

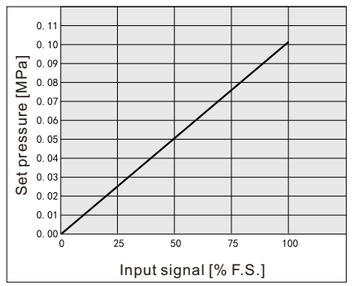
Model		ITV101□ *6)	ITV103□ *6)	ITV105□ *6)
		ITV201□	ITV203□	ITV205□
		ITV301□	ITV303□	ITV305□
Min. supply pressure		Set pressure+0.1MPa		
Max. supply pressure		0.2MPa	1.0MPa	
Set pressure range		0.005 to 0.1MPa	0.005 to 0.5MPa	0.005 to 0.9MPa
Power supply	Voltage	DC24V±10%, DC12 to 15V		
	Current consumption	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./℃ 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℃(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.

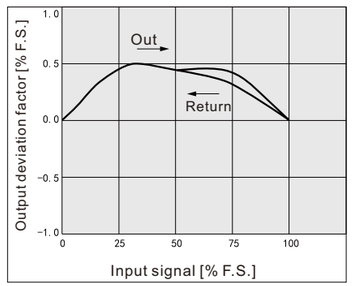
ITV Series Electro-Pneumatic Regulator

ITV101□Series

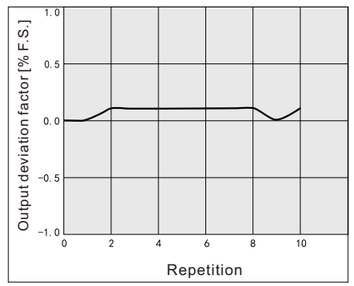
Linearity



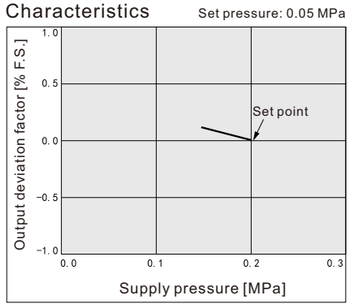
Hysteresis



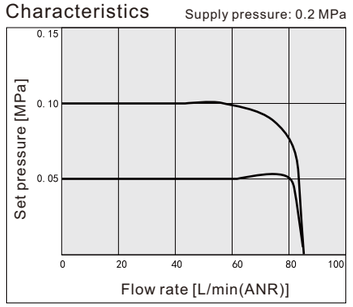
Repeatability



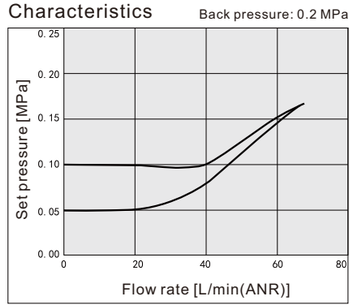
Pressure Characteristics — Set pressure: 0.05 MPa



Flow Rate Characteristics — Supply pressure: 0.2 MPa

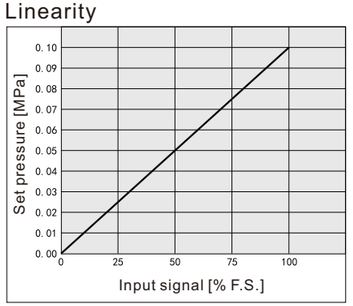


Relief Characteristics — Back pressure: 0.2 MPa

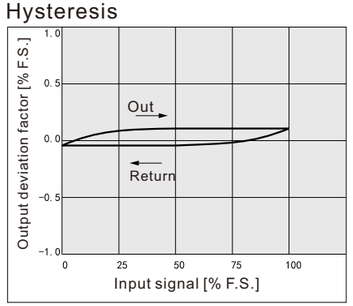


ITV201□Series

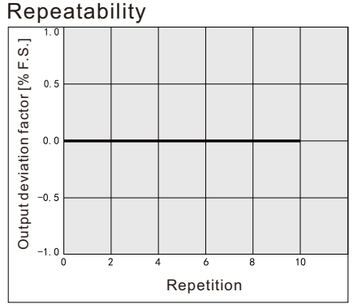
Linearity



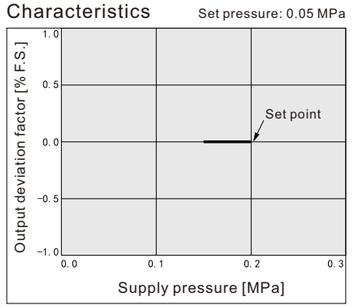
Hysteresis



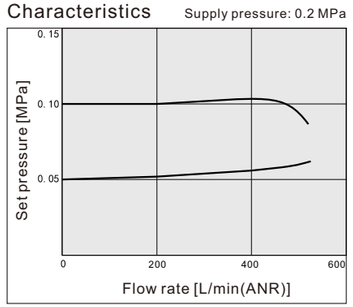
Repeatability



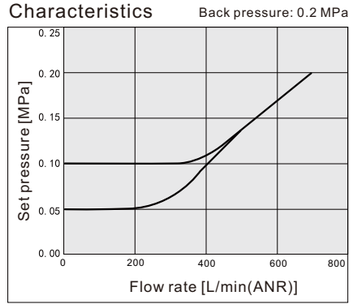
Pressure Characteristics — Set pressure: 0.05 MPa



Flow Rate Characteristics — Supply pressure: 0.2 MPa



Relief Characteristics — Back pressure: 0.2 MPa

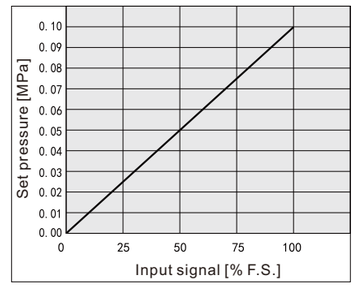


ISO9001 CE

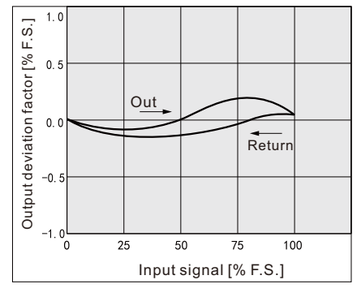
ITV Series Electro-Pneumatic Regulator

ITV301□Series

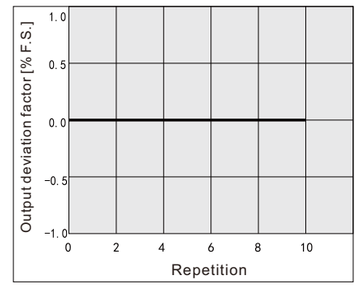
Linearity



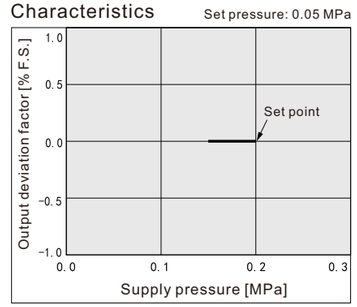
Hysteresis



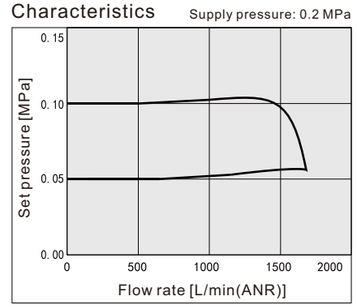
Repeatability



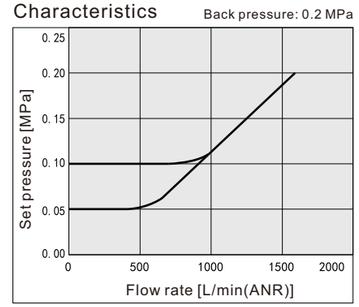
Pressure Characteristics — Set pressure: 0.05 MPa



Flow Rate Characteristics — Supply pressure: 0.2 MPa



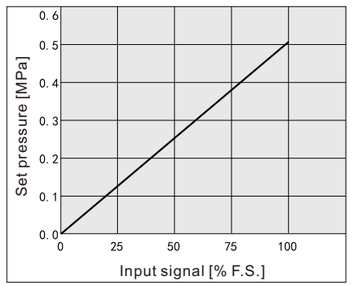
Relief Characteristics — Back pressure: 0.2 MPa



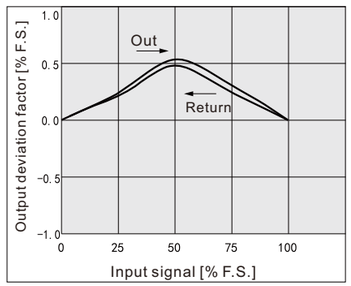
ITV Series Electro-Pneumatic Regulator

ITV103□Series

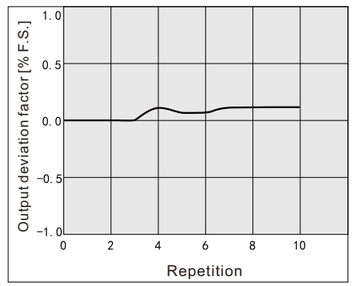
Linearity



Hysteresis

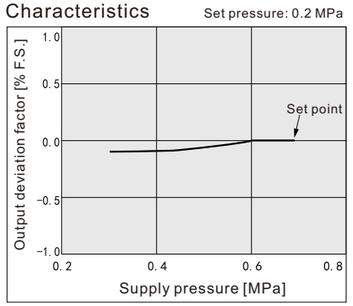


Repeatability



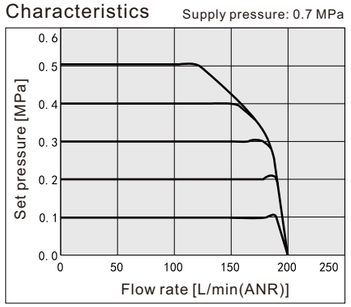
Pressure Characteristics

Set pressure: 0.2 MPa



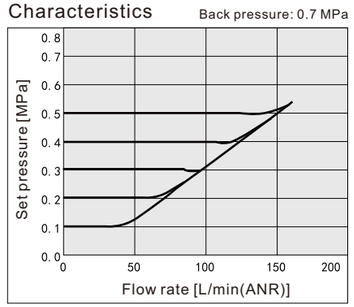
Flow Rate Characteristics

Supply pressure: 0.7 MPa



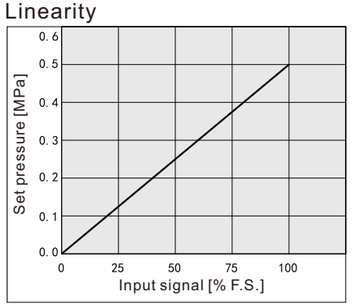
Relief Characteristics

Back pressure: 0.7 MPa

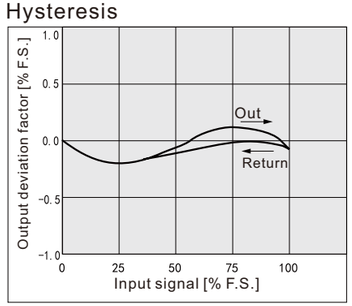


ITV203□Series

Linearity



Hysteresis



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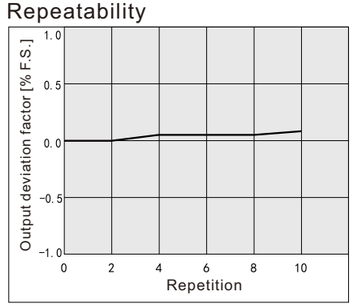
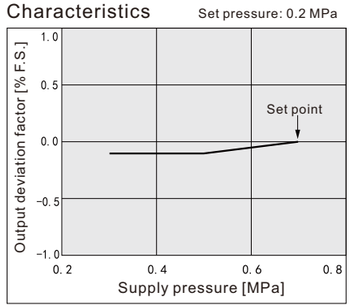


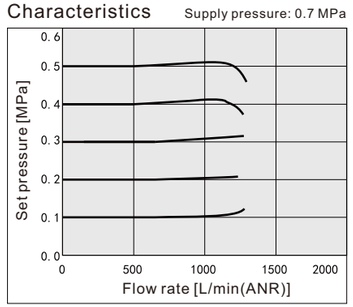
Pressure Characteristics

Set pressure: 0.2 MPa



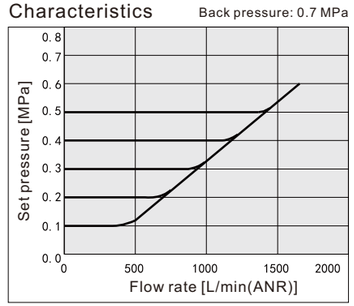
Flow Rate Characteristics

Supply pressure: 0.7 MPa



Relief Characteristics

Back pressure: 0.7 MPa

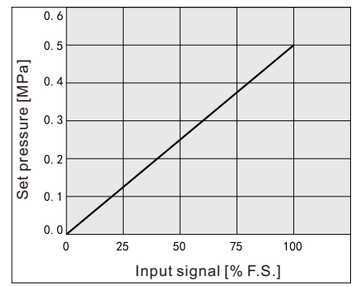


ISO9001 CE

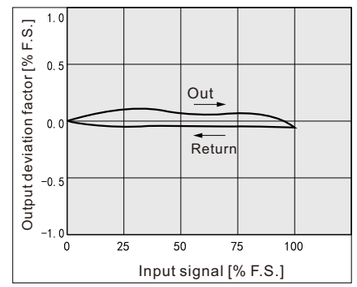
ITV Series Electro-Pneumatic Regulator

ITV303□Series

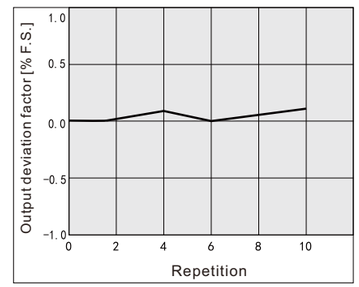
Linearity



Hysteresis

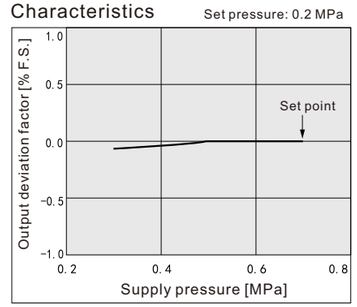


Repeatability



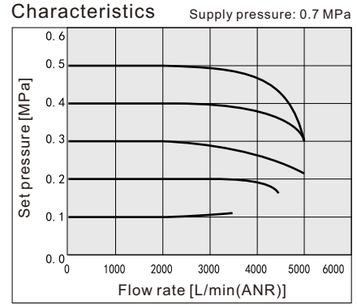
Pressure Characteristics

Set pressure: 0.2 MPa



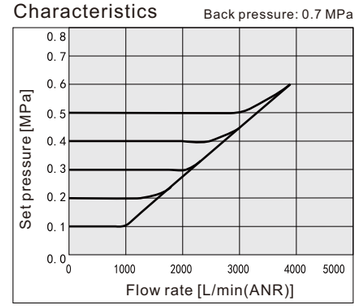
Flow Rate Characteristics

Supply pressure: 0.7 MPa



Relief Characteristics

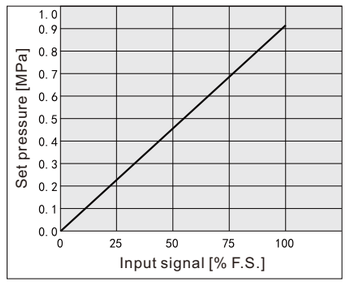
Back pressure: 0.7 MPa



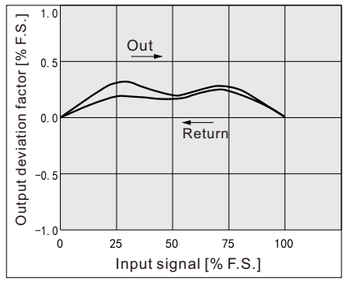
ITV Series Electro-Pneumatic Regulator

ITV105□Series

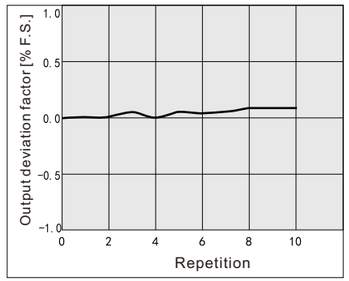
Linearity



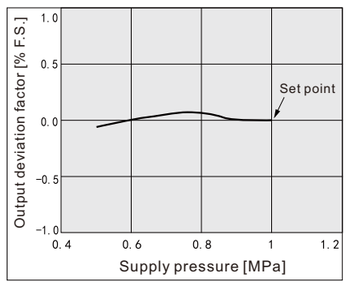
Hysteresis



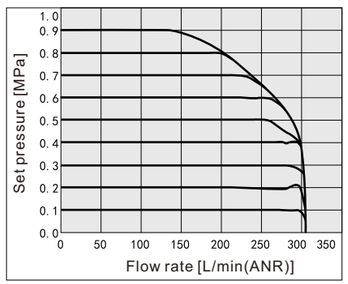
Repeatability



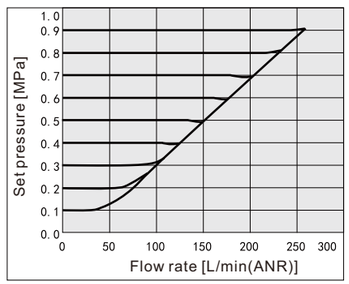
Pressure Characteristics — Set pressure: 0.4 MPa



Flow Rate Characteristics — Supply pressure: 1.0 MPa

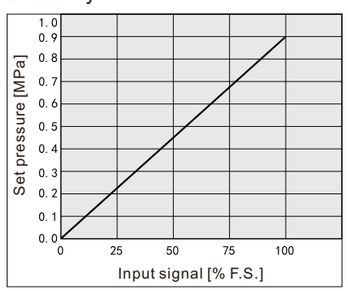


Relief Characteristics — Back pressure: 1.0 MPa

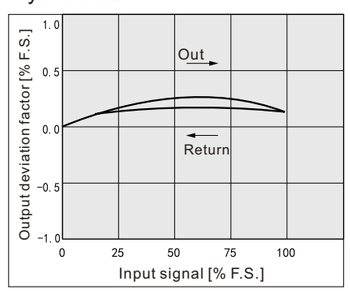


ITV205□Series

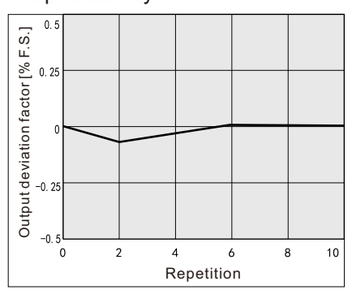
Linearity



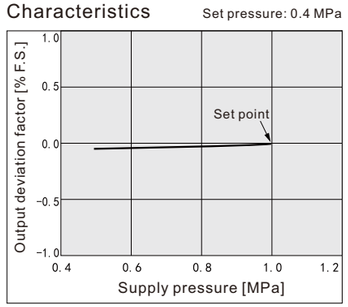
Hysteresis



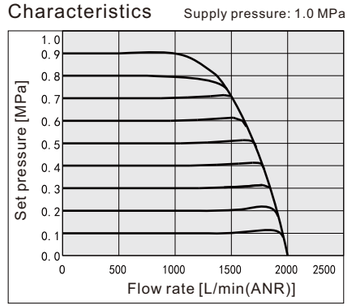
Repeatability



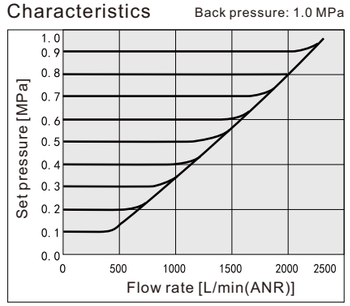
Pressure Characteristics — Set pressure: 0.4 MPa



Flow Rate Characteristics — Supply pressure: 1.0 MPa



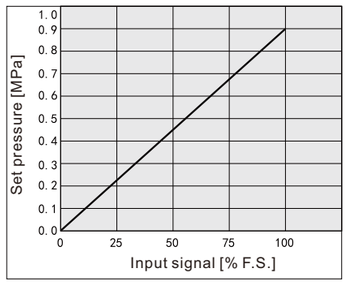
Relief Characteristics — Back pressure: 1.0 MPa



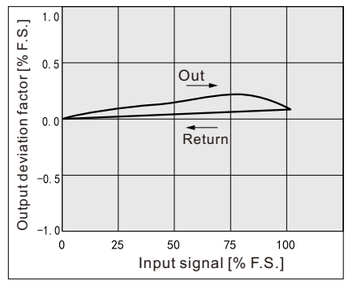
ITV Series Electro-Pneumatic Regulator

ITV305□Series

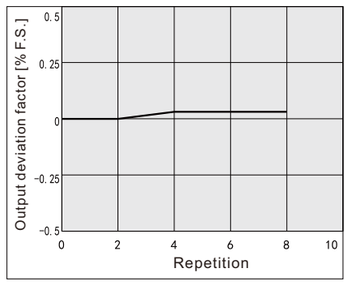
Linearity



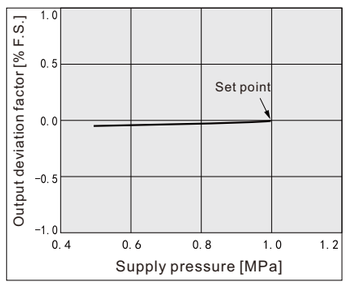
Hysteresis



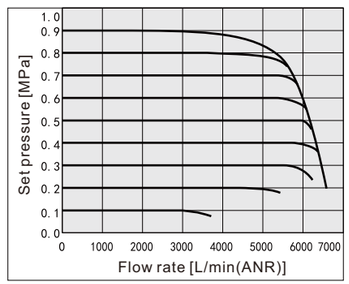
Repeatability



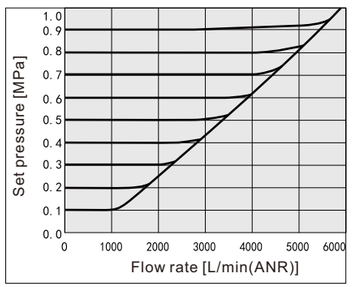
Pressure Characteristics — Set pressure: 0.4 MPa



Flow Rate Characteristics — Supply pressure: 1.0 MPa



Relief Characteristics — Back pressure: 1.0 MPa

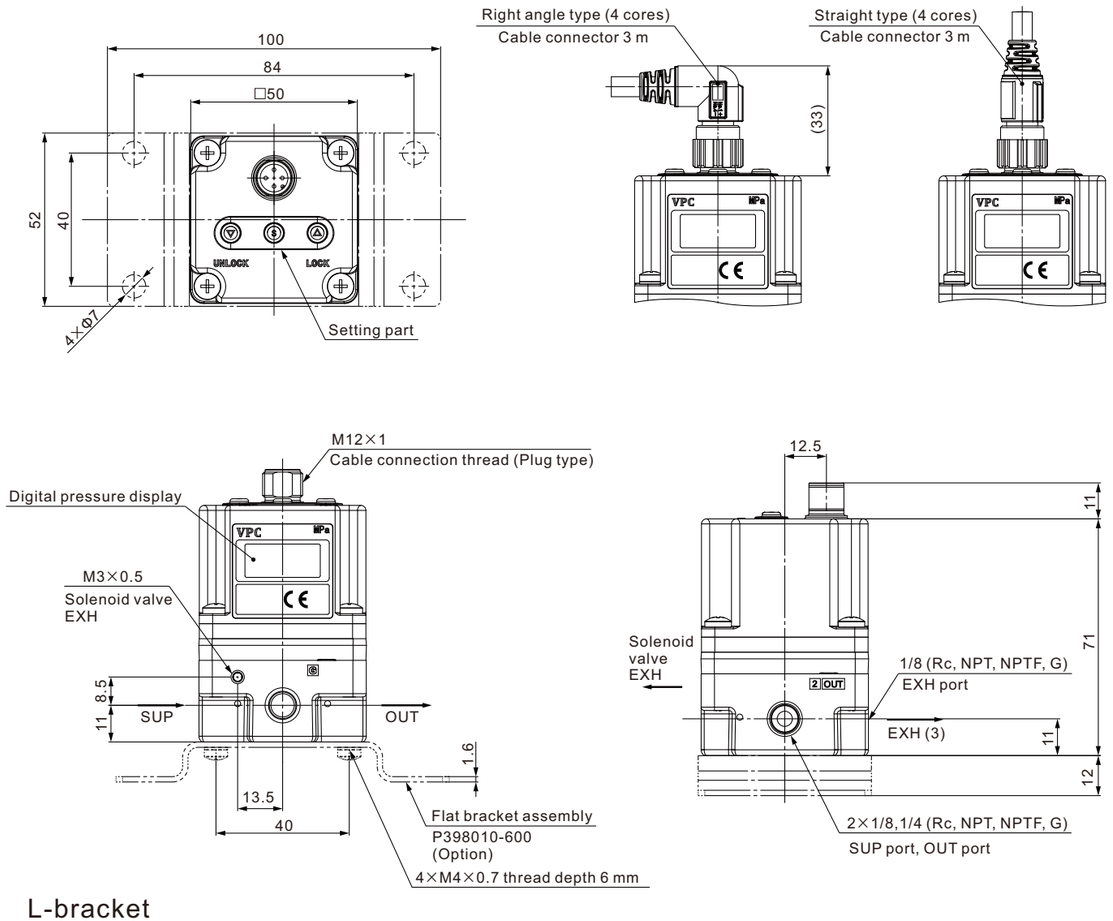


ITV Series Electro-Pneumatic Regulator

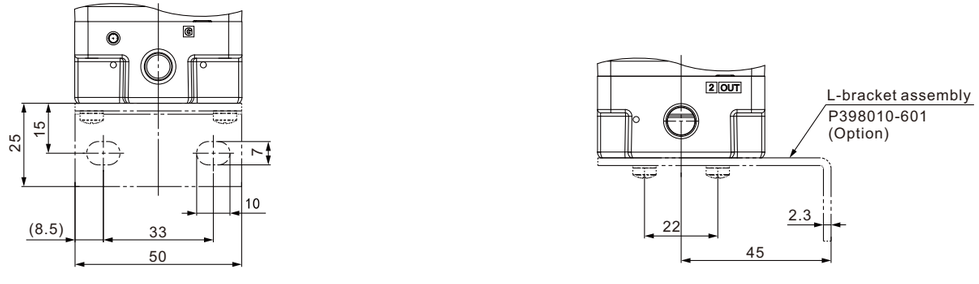
Main Dimensions

ITV10□□ Flat bracket

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



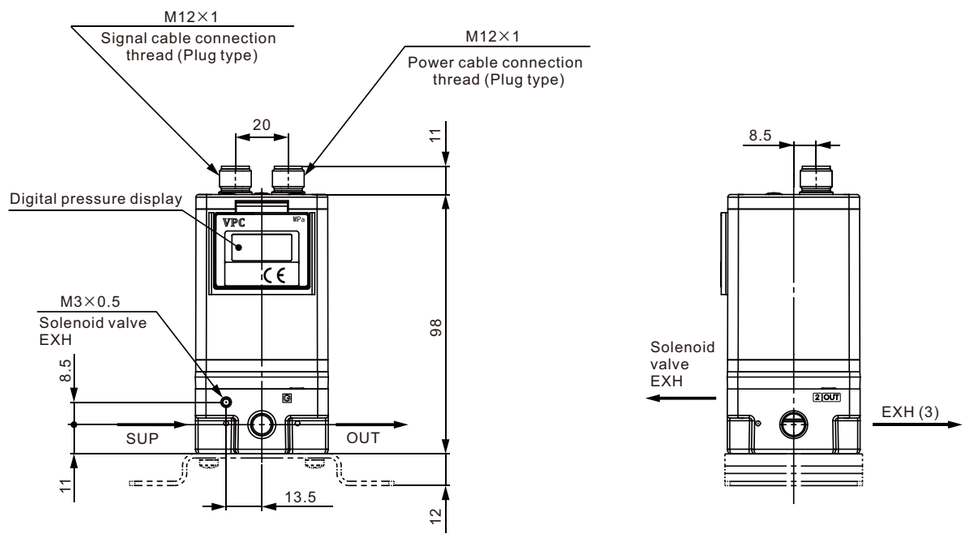
L-bracket



ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV10□□ 16 points preset input

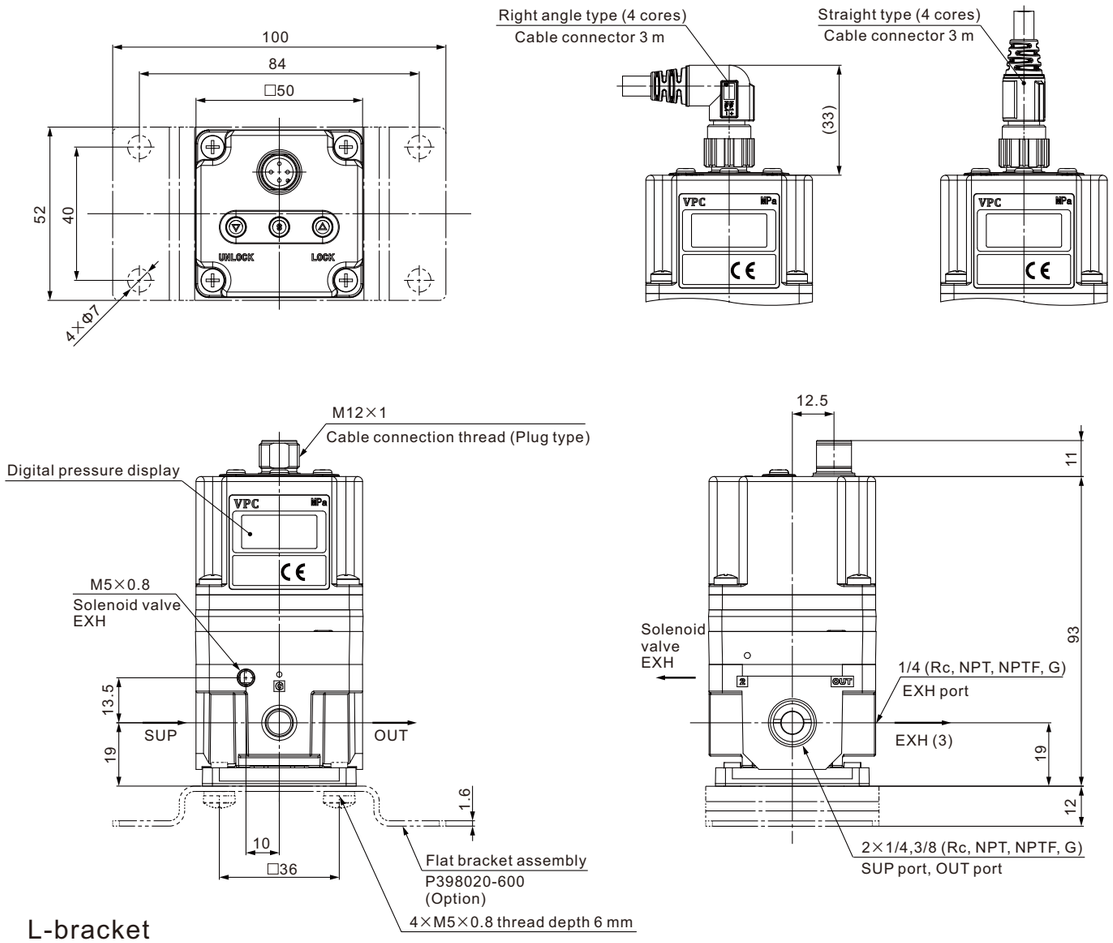


ITV Series Electro-Pneumatic Regulator

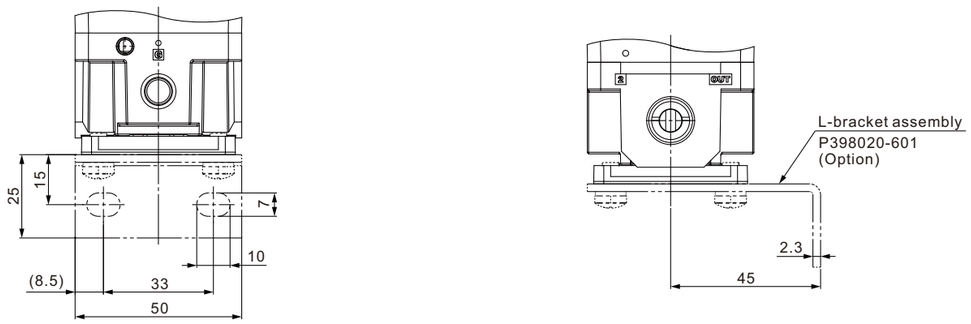
Main Dimensions

ITV20□□ Flat bracket

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



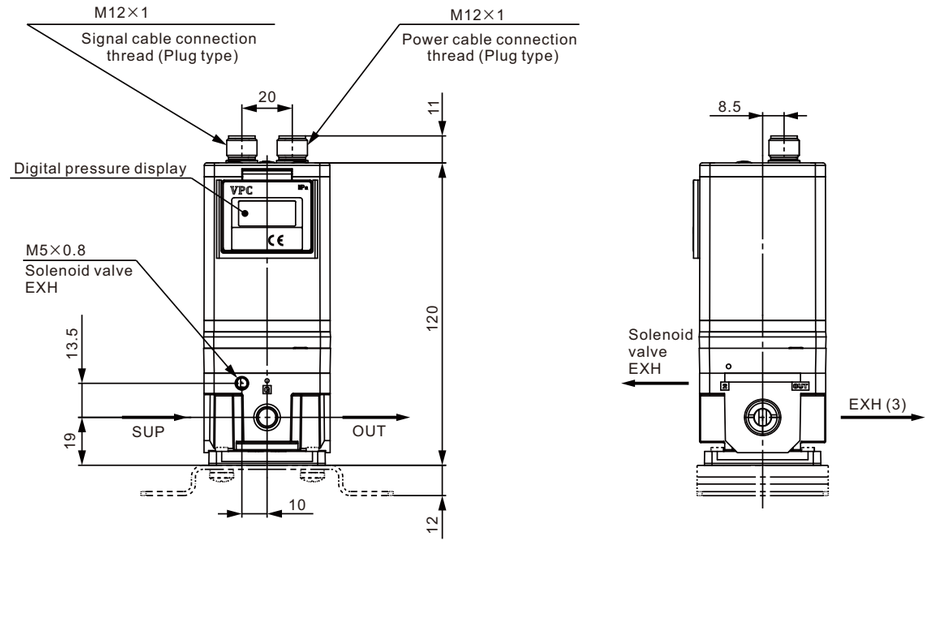
L-bracket



ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV20□□ 16 points preset input

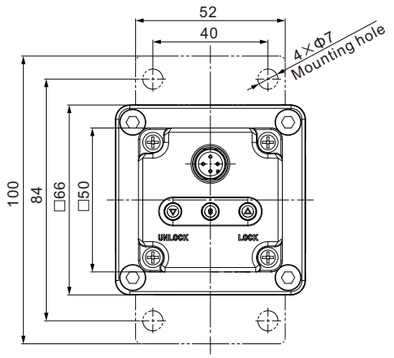


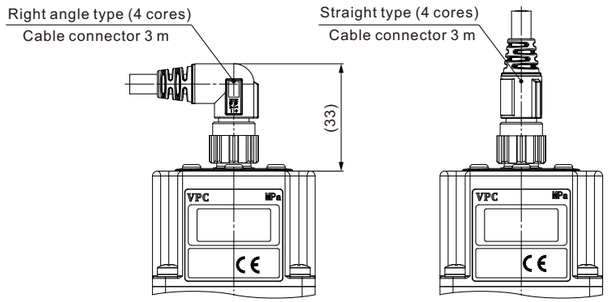
ITV Series Electro-Pneumatic Regulator

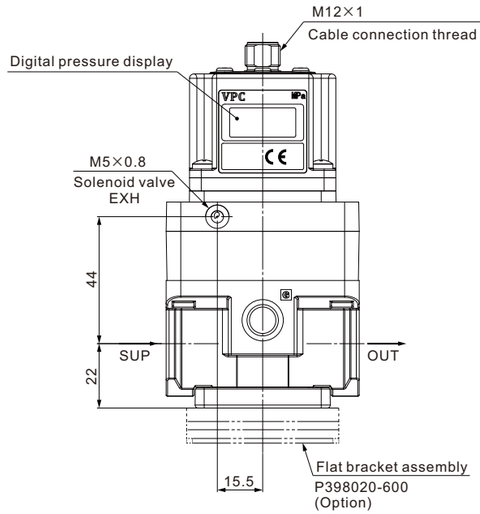
Main Dimensions

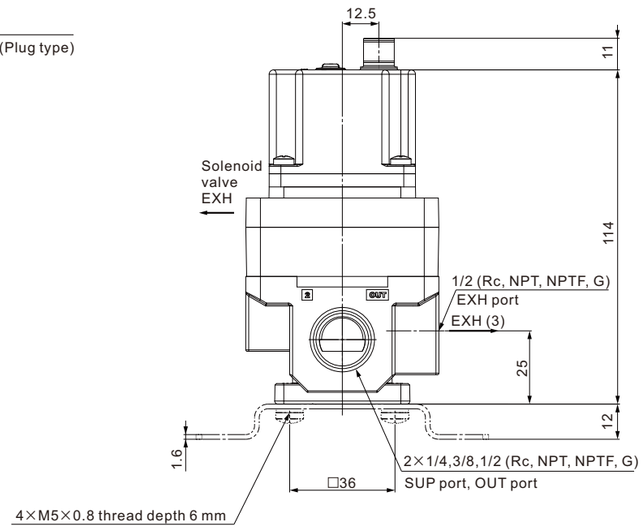
ITV30□□ Flat bracket

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

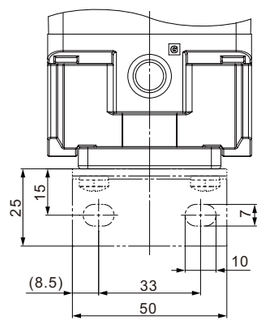


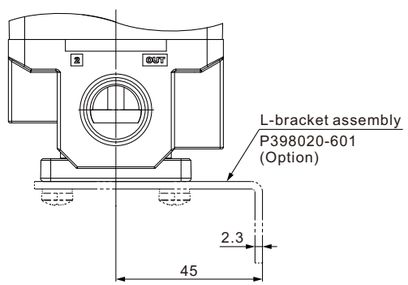






L-bracket

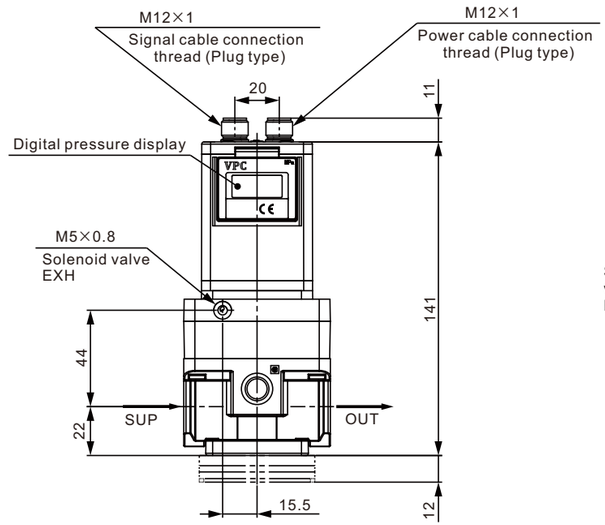


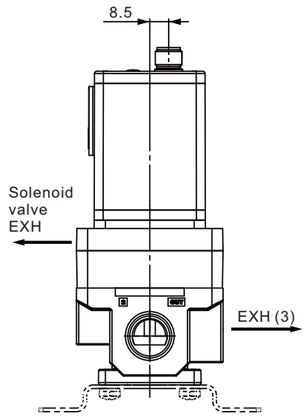


ITV Series Electro-Pneumatic Regulator

Main Dimensions

ITV30□□ 16 points preset input





ZSE30A(F)/ISE30A Series 2-Colour Display High Precision Digital Pressure Switch

Product Feature

- 2-Color Display.
- Can copy to up to 10 switches simultaneously.
- Replaceable One-touch fittings.
- 4-digit display allows easy reading of displayed values.
- Power consumption is reduced by turning off the monitor.
- Vacuum, compound and positive pressure can be displayed in MPa or kPa.

Ordering Code

ZSE30A(F)/ISE30A Series Digital Pressure Switch

ZSE30A - 01 N - M □ □

Rated pressure range

For vacuum pressure	ZSE30A	0.0 to -101kPa
For compound pressure	ZSE30AF	-100.0 to 100kPa
For positive pressure	ISE30A	-0.1 to 1.0MPa

Piping specifications

01	R1/8 (M5 female threaded)	Straight type
N01	NPT1/8 (M5 female threaded)	
C4H	One-touch fitting Φ4 mm, Φ5/32 inch	
C6H	One-touch fitting Φ6 mm	
N7H	One-touch fitting Φ1/4 inch	
C4L	One-touch fitting Φ4 mm, Φ5/32 inch	Elbow type
C6L	One-touch fitting Φ6 mm	
N7L	One-touch fitting Φ1/4 inch	

Option1

Nil	Without lead wire	
L	Lead wire with connector (Lead wire length 2 m)*	
G	Lead wire with connector (Lead wire length 2 m)* With connector cover	Connector cover

* For output types N and P, the number of core of lead wires will be 3, and for other types, it will be 4.

Unit type

Nil: With display unit switching function
M: Fixed SI unit*
P*: With display unit switching function (Initial value psi)

* Made to order.
* Unit: kPa, MPa.

Output specifications

N: NPN open collector 1 output
P: PNP open collector 1 output
A: NPN open collector 2 outputs
B: PNP open collector 2 outputs
C*: NPN open collector 1 output+Analog voltage output
D*: NPN open collector 1 output+Analog current output
E*: PNP open collector 1 output+Analog voltage output
F*: PNP open collector 1 output+Analog current output

* Made to order.

Option2

Nil	None
Al	Bracket A
A2	Bracket B
A3	Bracket C
B	Panel mount adapter
D	Panel mount adapter+ Front protection cover

ZSE30A(F)/ISE30A Series Digital Pressure Switch

Specifications

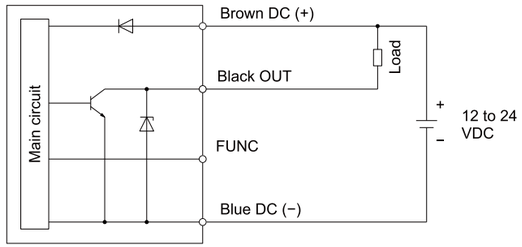
Model			ZSE30A (Vacuum pressure)	ZSE30AF (Compound pressure)	ISE30A (Positive pressure)
Rated pressure range			0.0 to -101.0 kPa	-100.0 to 100.0kPa	-0.1 to 1.0MPa
Display/Set pressure range			10.0 to -105.0kPa	-105.0 to 105.0kPa	-0.105 to 1.05MPa
Withstand pressure			500kPa	500.0kPa	1.5MPa
Display/Minimum unit setting			0.1kPa	0.1kPa	0.001MPa
Working medium			Air, Non-corrosive gas, Non-flammable gas		
Power supply voltage			DC12 to 24 V±10%, Ripple (p-p) 10% or less (with power supply polarity protection)		
Current consumption			40mA or less		
Switch output			NPN or PNP open collector 1 output, NPN or PNP open collector 2 output		
	Max. load current		80mA		
	Max. applied voltage		28V (at NPN output)		
	Residual voltage		1V or less (with load current of 80mA)		
	Response time		2.5ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000 ms)		
	Short circuit protection		Yes		
Repeatability			±0.2%F.S.±1 digit		
Hysteresis	Hysteresis mode		Variable (0 or above)*1)		
	Window comparator mode				
Analog output	*2) Voltage output	Output voltae (Rated pressure)	1 to 5V±2.5%F.S.		0.6 to 5V±2.5%F.S.
		Linearity	±1%F.S.		
		Output impedance	Approx. 1kΩ		
	*3) Current output	Output voltae (Rated pressure)	4 to 20mA±2.5%F.S.		2.4 to 20mA±2.5%F.S.
		Linearity	±1%F.S.		
		Load impedance	Maximum load impedance: 300Ω (Power supply voltage 12V) : 600Ω (Power supply voltage 24V) Minimum load impedance: 50Ω		
Display			4-digit, 7-segment, 2-color LCD (Red/Green)		
Display accuracy			±2% F.S.±1 digit (Ambient temperature of 25 ±3℃)		
Indicator light			Lights up when switch output is turned ON.OUT1: Green, OUT2: Red		
Environment	Enclosure		IP40		
	Working temperature range		Operating: 0 to 50℃, Stored: -10 to 60℃ (No freezing or condensation)		
	Working humidity range		Operating/Stored: 35 to 85% RH (No condensation)		
	Withstand voltage		AC 1000V for 1 minute between terminals and housing		
	Insulation resistance		50 MΩ or more (DC 500V measured via megohmmeter) between terminals and housing		
Temperature characteristics			±2%F.S. (25℃ reference)		
Lead wire with connector			Oilproof heavy-duty vinyl cable, 3 cores Φ3.5, 2m 4 cores Conductor area: 0.15mm² (AWG26), Insulator O.D.: 1.0mm		
Standards			CE/RoHS, UL/CSA (E216656)		

*1) If applied pressure fluctuates near the set value, set the hysteresis above the fluctuation range to prevent chattering.
*2) When analog voltage output is selected, analog current output cannot be used together.
*3) When analog current output is selected, analog voltage output cannot be used together.

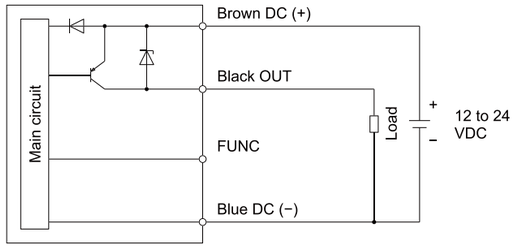
ZSE30A(F)/ISE30A Series Digital Pressure Switch

Internal Circuits and Wiring Examples

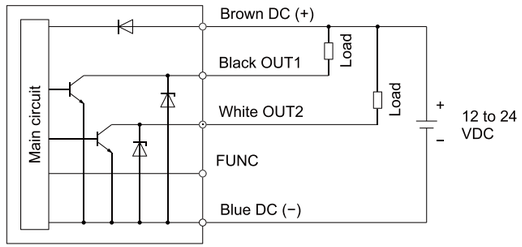
-N
NPN (1 output)



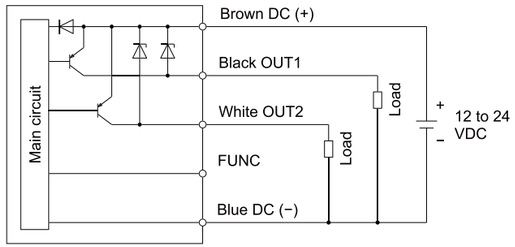
-P
PNP(1 output)



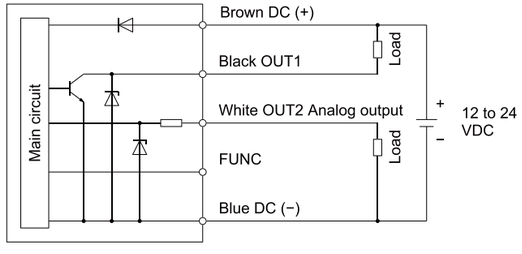
-A
NPN (2 outputs)



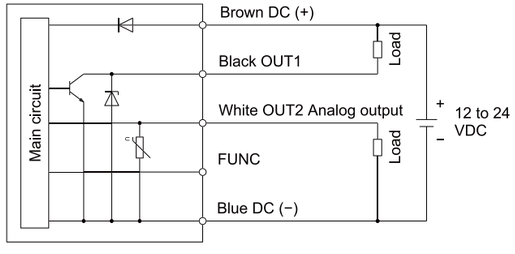
-B
PNP (2 outputs)



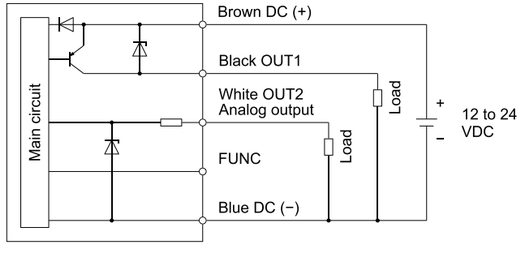
-C
NPN (1 output) + Analog voltage output



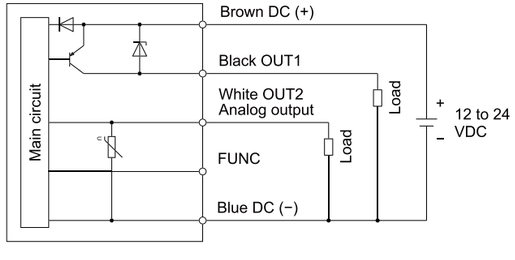
-D
NPN (1 output) + Analog current output



-E
PNP (1 output) + Analog voltage output



-F
PNP (1 output) + Analog current output



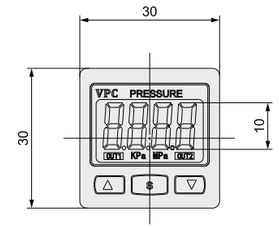
* The FUNC terminal is connected when using the copy function.

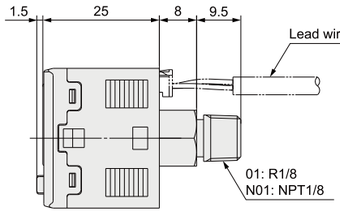
ZSE30A(F)/ISE30A Series Digital Pressure Switch

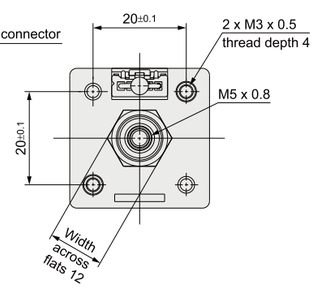
Main Dimensions

ZSE30A(F)/ISE30A − □ − □ − □□□□
Piping specifications

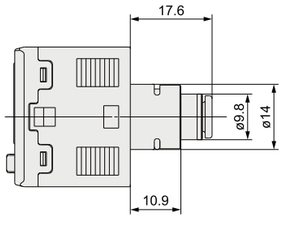
01 / N01



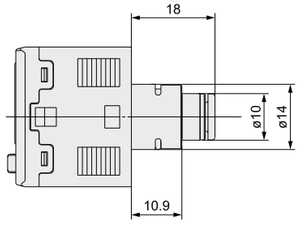




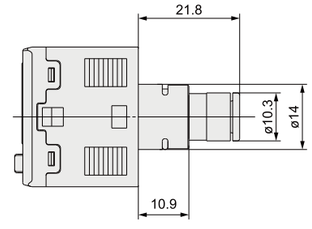
C4H
One-touch fitting ø4 mm
ø5/32 inch straight



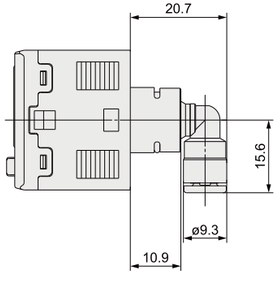
C6H
One-touch fitting ø6 mm
straight



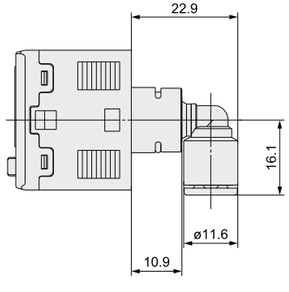
N7H
One-touch fitting ø1/4 inch
straight



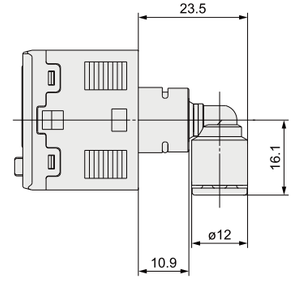
C4L
One-touch fitting ø4 mm
ø5/32 inch elbow



C6L
One-touch fitting ø6 mm
elbow



N7L
One-touch fitting ø1/4 inch
elbow



ZSE30A(F)/ISE30A Series Digital Pressure Switch

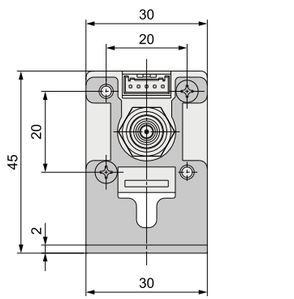
Main Dimensions With bracket

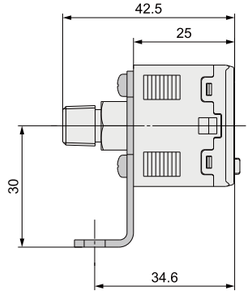
ZSE30A(F)/ISE30A−□−□−□□□□

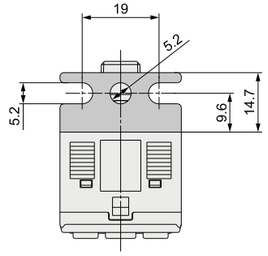
Option 2

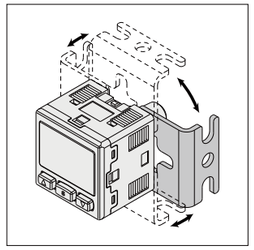
A1

Bracket A
(Option unit part no.: ZS-38-A1)





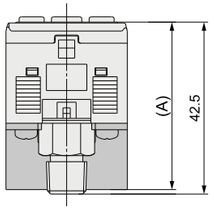


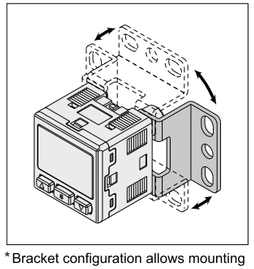


*Bracket configuration allows mounting in four orientations.

A2

Bracket B
(Option unit part no.: ZS-38-A2)

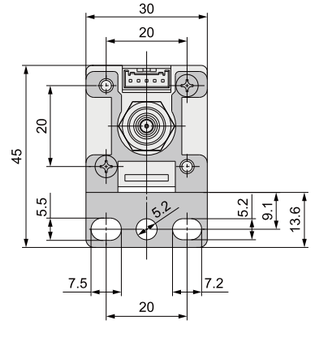


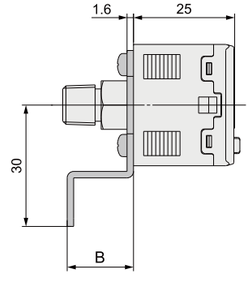


*Bracket configuration allows mounting in four orientations.

A3

Bracket C
(Option unit part no.: ZS-38-A3)





Type / Sign	A	B
Bracket B	41.4	16.4
Bracket C	53	28

* When using the bracket B or C, install it by taking the dimensions of the piping part into consideration.

ZSE30A(F)/ISE30A Series Digital Pressure Switch

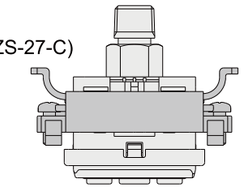
Main Dimensions Panel mount adapter

ZSE30A(F)/ISE30A−□−□−□□□□

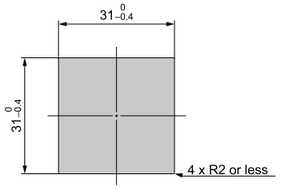
Option 2

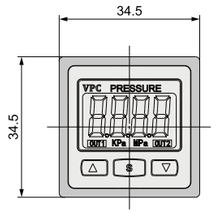
B

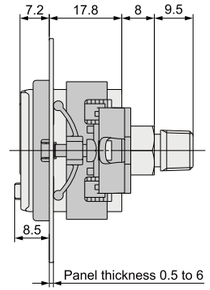
Panel mount adapter
(Option unit part no.: ZS-27-C)

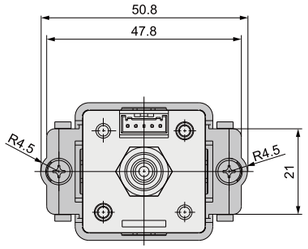


Panel mounting size 1pc.



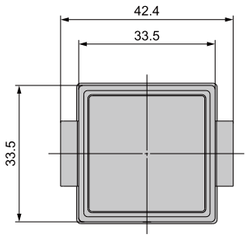


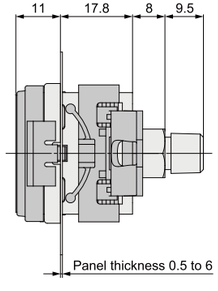




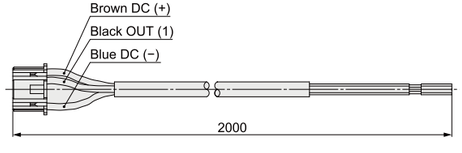
D

Panel mount adapter + Front protection cover
(Option unit part no.: ZS-27-D)

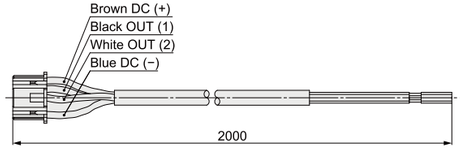




Lead wire with connector
(Option unit part no.: ZS-38-3L)



(Option unit part no.: ZS-38-4L)



ZSE40A(F)/ISE40A Series 2-Colour Display High Precision Digital Pressure Switch

Product Feature

- 2-Color Display.
- Power-saving.Secret code setting function, designated operator while the keys are locked.
- Resolution conversion function. The flickering on the display can be eliminated.
- Vacuum, compound and/or positive pressure can be displayed in MPa or kPa.

Ordering Code ZSE40A(F)/ISE40A Series Digital Pressure Switch

ZSE40A - 01 Y - M □

Rated pressure range

For vacuum pressure	ZSE40A	0 to -101.3kPa
For compound pressure	ZSE40AF	-100.0 to 100kPa
For positive pressure	ISE40A	-0.1 to 1.0MPa

Piping specifications

01	R1/8 (With M5 female threaded)	R1/8, NPT1/8 / M5×0.8
N01	NPT1/8 (With M5 female threaded)	

Option1

—	None
A	Bracket A
B	Bracket B
D	Bracket D

Combination of piping specifications with option 1 and part numbers of options

Option1		Piping specifications							Accessary
Description	Part no.	01	N01	W1	WF1	M5	C4	C6	
Bracket A	ZS-24-A	○	○	○	○	×	×	×	Bracket A, with 2 mounting screws each of M3×5L and M4×5L
Bracket B	ZS-24-B	×	×	○	○	×	×	×	Bracket B, with 2 mounting screws M4×5L
Bracket D	ZS-24-D	○	○	○	○	×	×	×	Bracket D, with 2 mounting screws each of M3×5L and M4×5L
Panel mount adapter	ZS-35-D	×	×	○	○	○	○	○	Panel mount adapter (Piping: For W1/WF1/M5/C4/C6)
Panel mount adapter +Front protective cover	ZS-35-G	×	×	○	○	○	○	○	Panel mount adapter + Front protective cover (Piping: For W1/WF1/M5/C4/C6)

Unit type

Nil: With unit switching function
M: Fixed SI unit*
P: With unit switching function (Initial value psi)

* Fixed unit
For vacuum/compound pressure: kPa
For positive pressure: MPa

Output specifications

R: NPN open collector 2 outputs + Analogue voltage/Auto-shift switching
T: PNP open collector 2 outputs + Analogue voltage/Auto-shift switching
S: NPN open collector 2 outputs + Analogue current/Auto-shift switching
V: PNP open collector 2 outputs + Analogue current/Auto-shift switching
X: NPN open collector 2 outputs + Copy function
Y: PNP open collector 2 outputs + Copy function

ISO9001 CE

ZSE40A(F)/ISE40A Series Digital Pressure Switch

Specifications

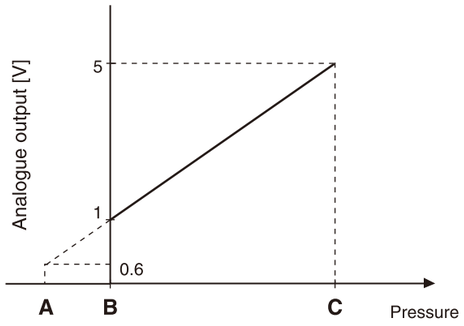
Model			ZSE40A(Vacuum pressure)	ZSE40AF(Compound pressure)	ISE40A(Positive pressure)
Rated pressure range			0 to -101.3kPa	-100.0 to 100.0kPa	-0.1 to 1.0MPa
Display/Set pressure range			10.0 to -105.0kPa	-105.0 to 105.0kPa	-0.105 to 1.05MPa
Withstand pressure			500.0kPa	500.0kPa	1.5MPa
Display/Minimum unit setting			0.1kPa	0.1kPa	0.001MPa
Working medium			Air, Non-corrosive gas, Non-flammable gas		
Power supply voltage			DC12 to 24 V±10%, Ripple (p-p) 10% or less (with power supply polarity protection)		
Current consumption			45mA or less		
Switch output			NPN or PNP open collector 1 output or 2 outputs		
	Max. load current		80mA		
	Max. applied voltage		28V (at NPN output)		
	Residual voltage		1V or less		
	Response time		2.5ms (with anti-chattering function: 20, 100, 500, 1000, 2000 ms)		
	Short circuit protection		Yes		
Repeat accuracy			±0.2%F.S.±1 digit		
Hysteresis	Hysteresis mode		Variable (0 or above)*1)		
	Window comparator mode				
Analog output	*2) Voltage output	Output voltage (Rated pressure range)	1 to 5V±2.5%F.S.		0.6 to 5V±2.5%F.S.
		Linearity	±1%F.S.		
		Output impedance	Approx. 1 kΩ		
	*3) Current output	Output current (Rated pressure range)	4 to 20mA±2.5%F.S.		2.4 to 20mA±2.5%F.S.
		Linearity	±1%F.S.		
		Load impedance	Maximum load impedance: 300Ω (Power supply voltage 12V) : 600Ω (Power supply voltage 24V) Minimum load impedance: 50Ω		
Auto-shift input			Non-voltage input (Reed or Solid state), Low level: 0.4V or less, 5 ms or longer input		
Display			3 1/2-digit, 7-segment, 2-color LCD (Red/Green)		
Display accuracy			±2% F.S.±1 digit (Ambient temperature of 25 ±3°C)		
Indicator light			Lights up when output is turned ON.OUT1, OUT2: Orange		
Environment	Enclosure		IP65		
	Working temperature range *4)		Operating: -5 to 50°C, Stored: -10 to 60°C (No freezing or condensation)		
	Working humidity range		Operating/Stored: 35 to 85% RH (No condensation)		
	Withstand voltage		AC 1000V for 1 minute between terminals and housing		
	Insulation resistance		50 MΩ or more (DC 500V measured via megohmmeter) between terminals and housing		
Temperature characteristics			±2%F.S. (25°C reference)		
Lead wire			Oilproof heavy-duty vinyl cable 5 cores Φ3.5, 2m Conductor area: 0.15mm² (AWG26) Insulator O.D.: 0.95mm		
Standards			CE, UL, CSA, RoHS		

*1) If the applied pressure fluctuates around the set-value, the hysteresis must be set to a value more than the fluctuating width, otherwise chattering will occur.
*2) When the analog voltage output is selected, the analog current output cannot be selected.
*3) When the analog current output is selected, the analog voltage output cannot be selected.
*4) UL temperature rating: The maximum ambient temperature is 50°C.

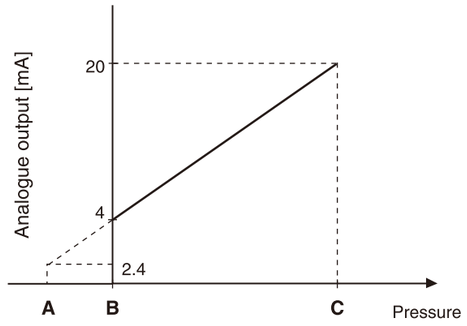
ZSE40A(F)/ISE40A Series Digital Pressure Switch

Analogue Output

Voltage output

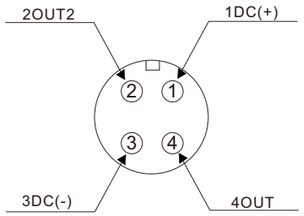


Current output



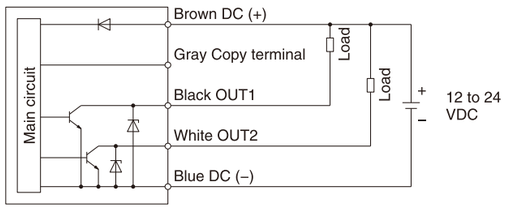
Range	Rated pressure range	A	B	C
For vacuum pressure	0 to -101.3kPa	10.1kPa	0	-101.3kPa
For compound pressure	-100.0 to 100.0kPa	–	-100.0kPa	100.0kPa
For positive pressure	-0.1 to 1.0MPa	-0.1MPa	0	1.0MPa

Pin arrangement: X531
M12 4-pin pre-wired connector

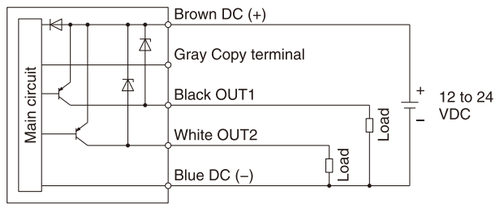


Internal Circuits and Wiring Examples

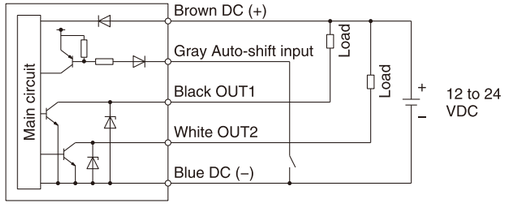
-X
NPN (2 outputs) + Copy function



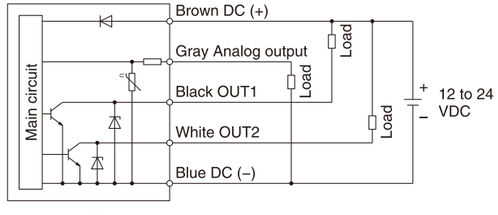
-Y
PNP (2 outputs) + Copy function



-R/-S
NPN (2 outputs) + Auto-shift input



-R/-S
-R: NPN (2 outputs) + Analog voltage output
-S: NPN (2 outputs) + Analog current output



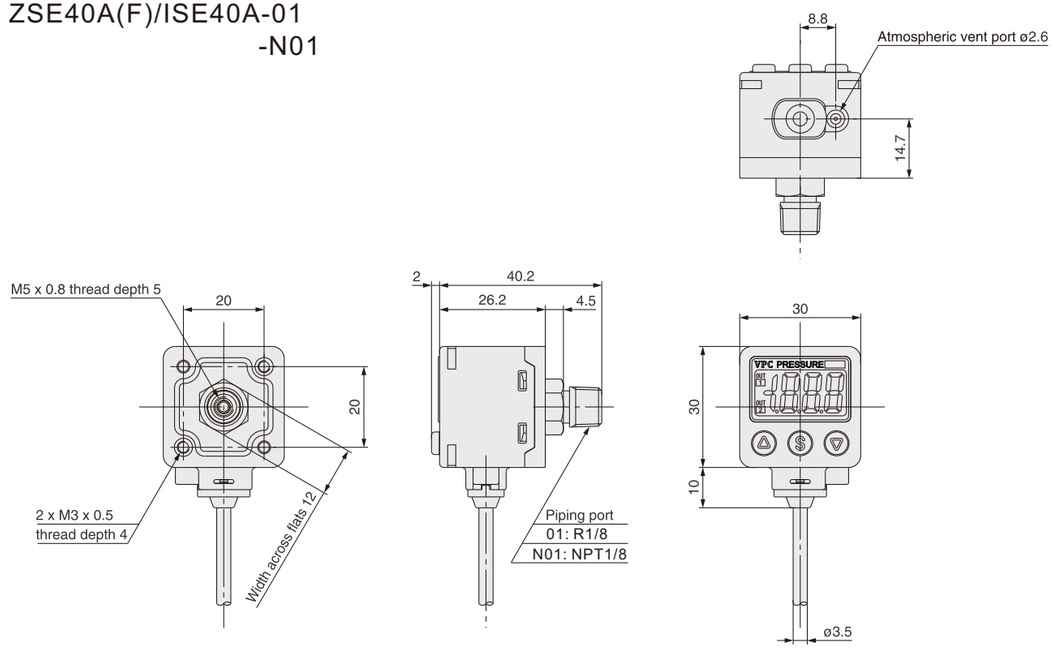
* Maximum 28V, 80mA
Residual voltage less than 1V.

ISO9001 CE

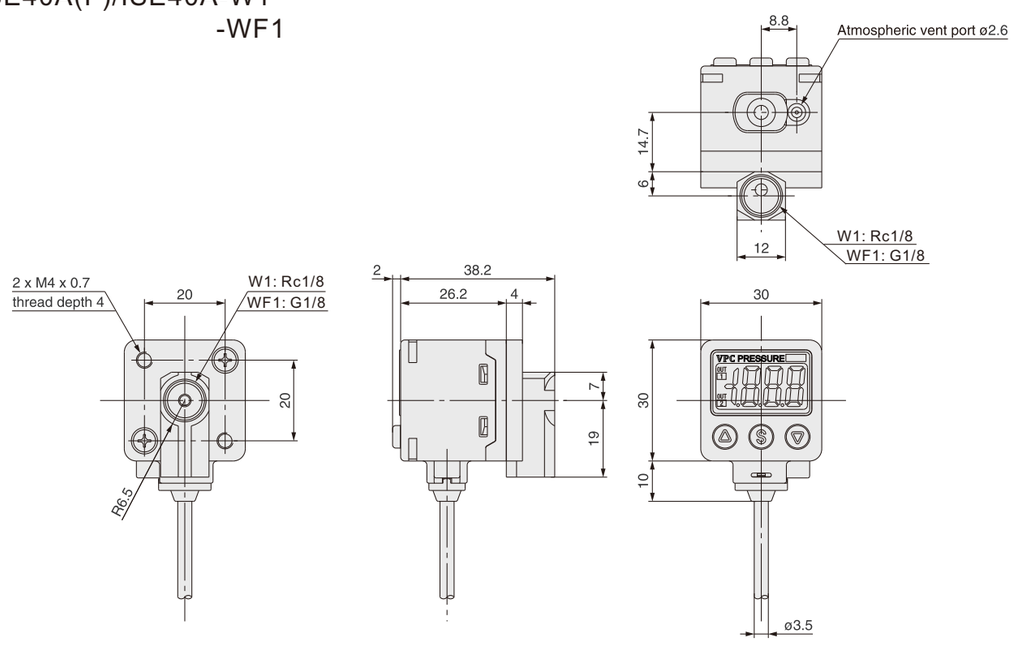
ZSE40A(F)/ISE40A Series Digital Pressure Switch

Main Dimensions

ZSE40A(F)/ISE40A-01
-N01



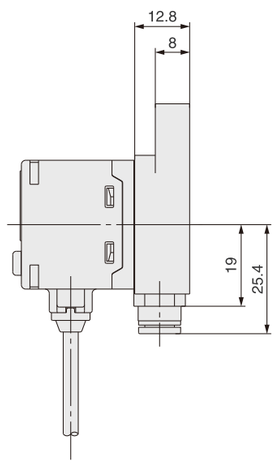
ZSE40A(F)/ISE40A-W1
-WF1

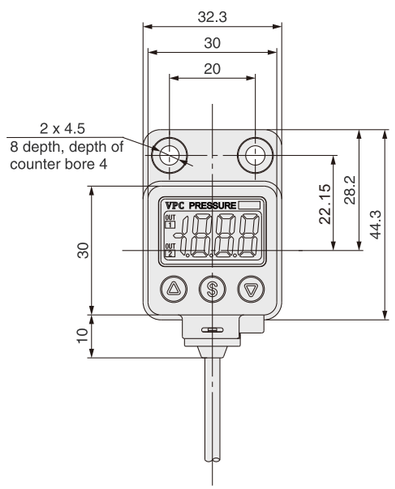


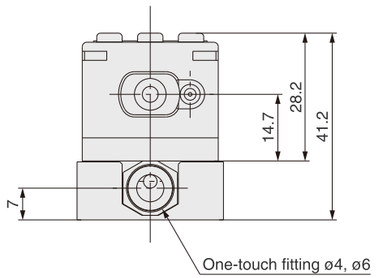
ZSE40A(F)/ISE40A Series Digital Pressure Switch

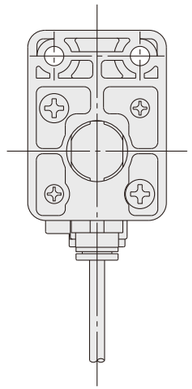
Main Dimensions

ZSE40A(F)/ISE40A-C4
-C6

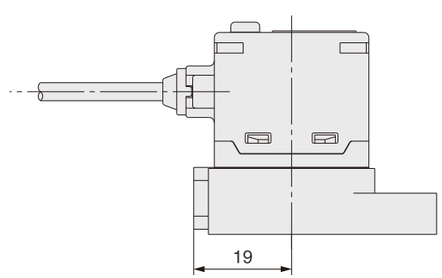


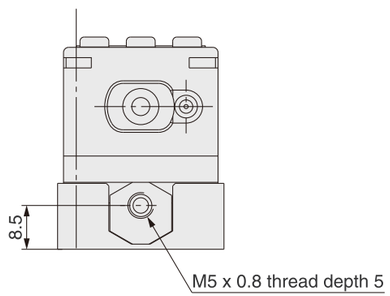






-M5





PS1000 Series Electronic Pressure Switch

Product Feature

- Small volume. Compact/Lightweight electronic pressure switch.
- Easy mounting. Plug-in reducer port for One-touch fittings.
- High visibility. A large LED display for an easily visible switch.
- 2-wire type. Applicable to either NPN or PNP output.

Ordering Code PS1000 Series Electronic Pressure Switch

PS10 00 - R06 L Q

- PS10 00 — Output specifications
  - 10: For positive pressure
  - 11: For vacuum and residual pressure
- R06 — Piping specifications
  - R06: Φ6 reducer
- L — Lead wire length
  - L: 3m
- Q — Option (CE compliant*)
  - Nil: None
  - Q: CE-compliant
  - * The PS1200 series is CE compliant (with Q) only.

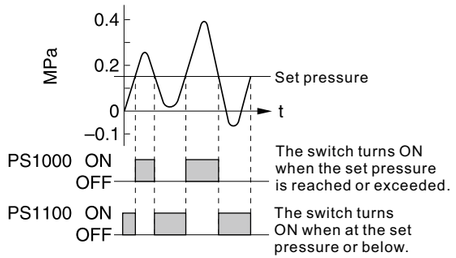
Specifications

Model	PS1000	PS1100
Switch output	Present pres.≥Setting pres.: ON	Present pres.≤Setting pres.: ON
Max. operating pressure	1MPa	
Set pressure range	-0.1 to 0.45MPa	-0.1 to 0.4MPa
Working medium	Air/Non-corrosive gas/Non-flammable gas	
Indicator light	ON: When red LED turns on	
Temperature characteristics	±3%F.S	
Repeatability	±1%F.S	
Hysteresis	4%F.S or less	
Load voltage	DC12 to 24 V±10%, Ripple (p-p) 10% or less	
Load current	5 to 40mA	
Leakage current	1mA or less	
Internal voltage drop	5V or less	
Working temperature	0 to 60°C (No condensation)	
Insulation resistance	2 MΩ or more (DC 500V measured via megohmmeter) between terminals and housing	
Withstand voltage	AC 1000V (in 50/60Hz) for 1 minute between terminals and housing	
Weight	5g (Excluding lead wire)	
Port size	R06: Φ6 reducer	
Enclosure	IP40	
Lead wire	Grommet oilproof heavy-duty vinyl cable 2 cores, Φ2.55, 3m, Conductor area: 0.18mm², Insulator O.D.: 0.96mm	
Wetted parts material	Pressured sensor part: Silicon, Body part: PBT, O-ring: NBR	

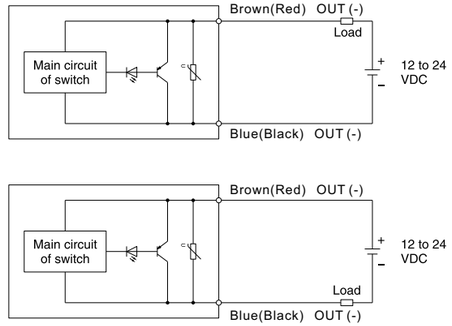
PS1000 Series Electronic Pressure Switch

Swtich Specifications

PS1000, PS1100

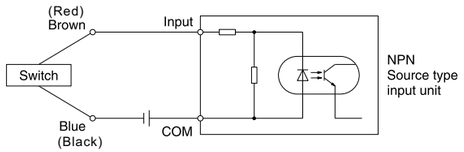


Internal Circuits and Wiring Examples

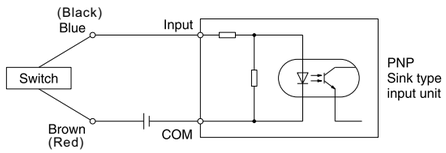


Example of connection with a PLC(Sequence controller)

For source type input unit

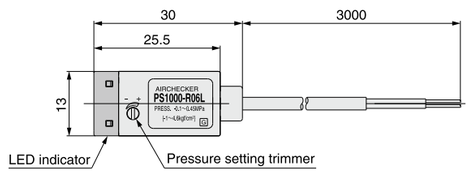


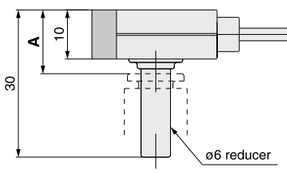
For sink type input unit



Working Principle Diagram

Main Dimensions





Applicable One-touch fittings	A
KQ2H/L/T/S/Y06-M5	16
Other KQ2/KS series	13
KJ series	16

PSE540 Series Compact Pneumatic Pressure Sensor

Product Feature

- Smallest remote vacuum sensor.
- Can monitor any non-corrosive, non-flammable gas.
- Construction optimizes space savings, for tight, constrained spaces.
- The cable is molded into the sensor head and is not replaceable.
- CE and RoHS compliant, with an IP40 enclosure rating.

Ordering Code

PSE540 Series Compact Pneumatic Pressure Sensor

PSE54 1 □ - M3 □

Sensor range

0: Positive pressure (0 to 1MPa)
1: Negative pressure (0 to -101kPa)
3: Compound pressure (-100 to 100kPa)

Accuracy

Nil: ±2%F.S.
A: ±1%F.S.

Port size

M3	M3×0.5	
M5	M5×0.8	
01	R1/8 (with M5 female thread)	
N01	NPT1/8 (with M5 female thread)	
R04	Φ4 reducer	
R06	Φ6 reducer	

IM5	M5 female thread, through type	
IM5H	M5 female thread, through type (with mounting hole)	

Option (Connector)

Nil	None	Port no.
C2	Connector for pressure sensor controller (1 pc.) 	ZS-28-C (1 pc.)

* The connector is not attached to the cable, but is included with the shipment.

Specifications

Model		PSE540	PSE541	PSE543
Rated pressure range		0 to 1MPa	0 to -101kPa	-100 to 100kPa
Proof pressure		1.5MPa	500kPa	
Working medium		Air/Non-corrosive gas/Non-flammable gas		
Power supply voltage		DC12 to 24 V±10%, Ripple (p-p) 10% or less (with reverse connection protection)		
Current consumption		15mA or less		
Output specifications		Analog output 1 to 5V (within rated pressure range), 0.6 to 1V (within extension analog output range), Output impedance: Approx.1kΩ		
Accuracy (Ambient temperatureat 25°C)		PSE54□: ±2%F.S.(within rated pressure range), ±5%F.S.(within extension analog output range) PSE54□A: ±1%F.S.(within rated pressure range), ±3%F.S.(within extension analog output range)		
Linearity		±0.7%F.S. or less	±0.4%F.S.	
Repeatability		±0.2%F.S.		
Power supply voltage effect		±0.8%F.S.		
Environment	Enclosure	IP40		
	Working temperature	Operating: 0 to 50°C, Stored: -20 to 70°C (No freezing or condensation)		
	Working humidity	Operating/Stored: 35 to 85% RH (No condensation)		
	Withstand voltage	AC 1000V (in 50/60Hz) for 1 minute between terminals and housing		
	Insulation resistance	50MΩ or more (DC 500V measured via megohmmeter) between terminals and housing		
Temperature characteristics		±2%F.S.(25°C reference)		
Sensor cable		Oilproof heavy-duty vinyl cable (ellipse), 3 cores, 2.7×3.2, 3m, Conductor area: 0.15mm², Insulator O.D.: 0.9mm		

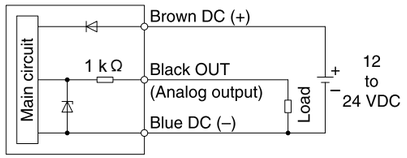
PSE540 Series Compact Pneumatic Pressure Sensor

Internal Circuit and Wiring Example

PSE54□

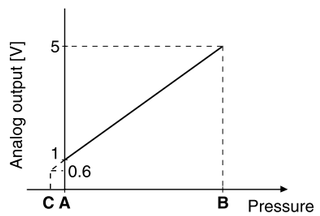
Voltage output type
1 to 5V

Output impedance
Approx.1kΩ



Analogue Output

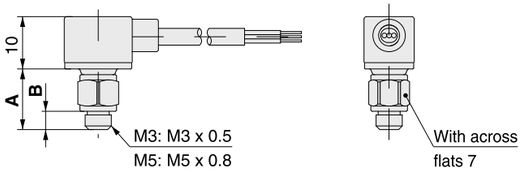
DC1 to 5V



Range	Rated pressure range	A	B	C
For vacuum	0 to -101.0kPa	0	-101.0kPa	10.1kPa
For compound	-100.0 to 100.0kPa	-100.0kPa	100.0kPa	–
For positive	0 to 1.0MPa	0	1.0MPa	-0.1MPa

Main Dimensions

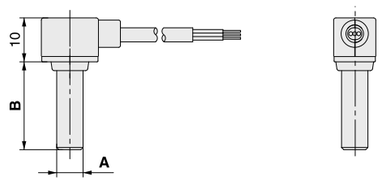
PSE54□-M3
M5



(mm)

	PSE54□-M3	PSE54□-M5
A	10.8	11.5
B	3	3.5

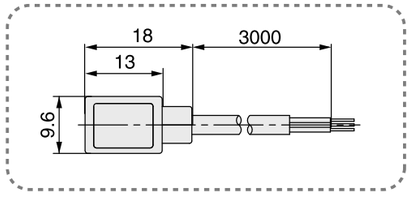
PSE54□-R04
R06



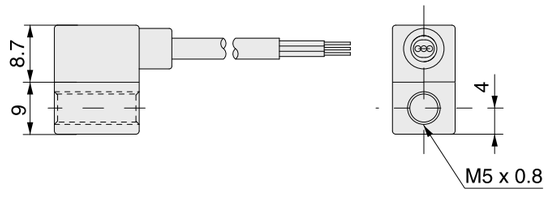
(mm)

	PSE54□-R04	PSE54□-R06
A	Φ4	Φ6
B	18	20

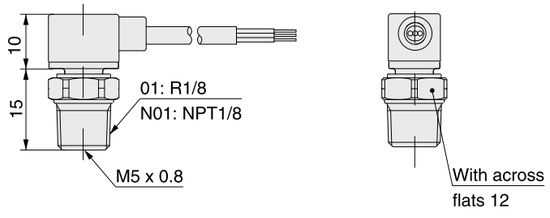
Common Dimensions



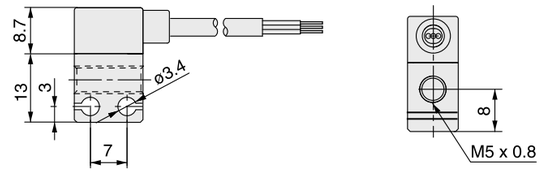
PSE54□-IM5



PSE54□-01
N01



PSE54□-IM5H



PF2A Series Digital Flow Switch for Air

Ordering Code

PF2A Series Digital Flow Switch for Air

PF2A 7 10 - □ 01 - 27 □ - M

- 7: Integrated display type
- Flow rate range: 10: 1 to 10L/min; 50: 5 to 50L/min; 11: 10 to 100L/min; 21: 20 to 200L/min; 51: 50 to 500L/min
- Thread type: Nil: Rc; N: NPT; F: G
- Port size

Symbol	Port size	Flow rate (L/min) 10	50	100	200	500	Applicable model
01	1/8	●	●	–	–	–	PF2A710/750
02	1/4	●	●	–	–	–	
03	3/8	–	–	●	●	–	PF2A711/721
04	1/2	–	–	–	–	●	PF2A751

- Output specifications: 27: NPN open collector 2outputs; 67: PNP open collector 2outputs
- Lead wire: Nil: Lead wire with M12 connector (3m); N: Without lead wire
- Unit specifications: Nil: With unit switching function; M: Fixed SI unit
  * Fixed units: Instantaneous flow rate: L/min; Accumulated flow: L

* Please contact us if you need remote sensor and display separated type.

Analogue Output

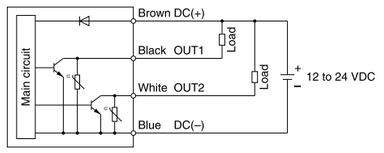
Part No.	Min. rated flow rate value	Max. rated flow rate value
PF2A710	1NL/min	10NL/min
	$3.5CFM\times10^{-2}$	$35.0CFM\times10^{-2}$
PF2A750	5NL/min	50NL/min
	$18.0CFM\times10^{-2}$	$176.0CFM\times10^{-2}$
PF2A711	10NL/min	100NL/min
	$3.5CFM\times10^{-1}$	$35.5CFM\times10^{-1}$
PF2A721	20NL/min	200NL/min
	$7.0CFM\times10^{-1}$	$71.0CFM\times10^{-1}$
PF2A751	50NL/min	500NL/min
	$18.0CFM\times10^{-1}$	$176.0CFM\times10^{-1}$

* When using the analog output of the standard state, please convert according to the following formula.
Base state flow rate value ÷ 0.927 = Standard state flow rate value.

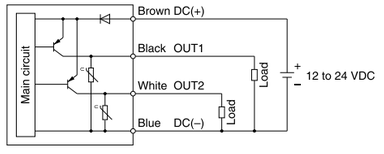
Internal Circuits and Wiring Examples

PF2A7□□

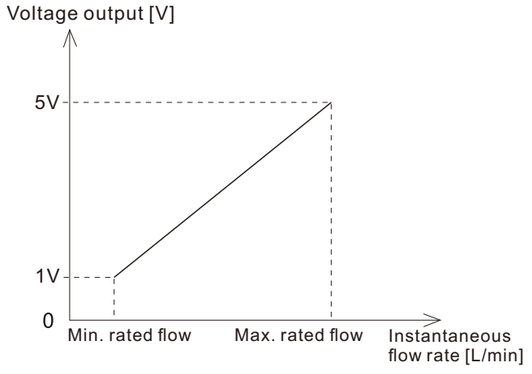
-27
NPN (2 outputs)



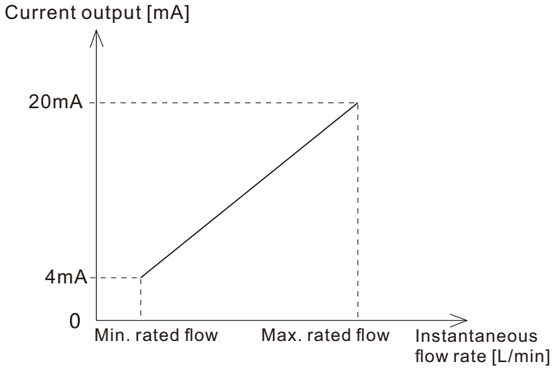
-67
PNP (2 outputs)



Voltage output [V]



Current output [mA]



PF2A Series Digital Flow Switch for Air

Specifications

Model		PF2A710	PF2A750	PF2A711	PF2A721	PF2A751
Working medium		Dry Air, Nitrogen				
Rated flow range		1 to 10L/min	5 to 50L/min	10 to 100L/min	20 to 200L/min	50 to 500L/min
Minimum set unit		0.1L/min	0.5L/min	1L/min	2L/min	5L/min
Accumulated pulse flow rate exchange value(Pluse width: 50ms)		0.1L/pulse	0.5L/pulse	1L/pulse	2L/pulse	5L/pulse
Display units *1,2)	Instantaneous flow rate	L/min, CFM×10^{-2}		L/min, CFM×10^{-1}		
	Accumulated flow	L, ft^3×10^{-1}				
Working temperature		0 to 50℃				
Accuracy *3)		±5%F.S.				
Repeatability		±1%F.S.		±2%F.S.		
Temperature characteristics		±3%F.S. (15 to 35℃, 25℃ reference), ±5%F.S. (0 to 50℃, 25℃ reference)				
Current consumption		150mA or less		160mA or less		170mA or less
Port size (Rc, NPT, G)		1/8, 1/4		3/8		1/2
Detection type		Heater type				
Operating pressure		-50kPa to 0.5MPa		-50kPa to 0.75MPa		
Proof pressure		1.0MPa				
Accumulated flow range *4)		0 to 999999L				
Output *5) specifications	Switch output	NPN open collector	Max. load current: 80mA; Internal voltage drop: 1V or less Max. applied voltage: 30V; 2outputs			
		PNP open collector	Max. load current: 80mA; Internal voltage drop: 1.5V or less; 2outputs			
	Accumulated pulse output	NPN or PNP open collector (same as switch output)				
Status LED's		Lights up when output is turned ON OUT1: Green; OUT2: Red				
Response time		1 sec. or less				
Hysteresis		Hysteresis mode: Variable (can be set from 0), Window comparator mode *6) : 3-digit fixed				
Power supply voltage		DC12 to 24 V±10%				
Environment	Enclosure	IP65				
	Working temperature	Operating: 0 to 50℃, Stored: -25 to 85℃ (with no freezing and condensation)				
	Withstand voltage	AC 1000V for 1 minute between terminals and housing				
	Insulation resistance	50MΩ or more (DC 500V measured via megohmmeter) between terminals and housing				
	Noise resistance	1000V P-P pulse width1μs lasts 1ns				

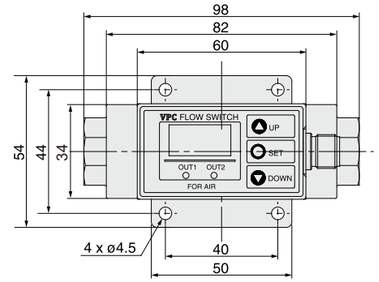
*1) For digital flow switch with unit switching function. (Fixed SI unit [(L/min, or L, m^3 or m^3×10^3)] will be set for switch type without the unit switching function.)
*2) Flow rate display can be switched between the basic condition of 0℃, 101.3 kPa and the standard condition (ANR) of 20℃, 101.3 kPa, and 65% RH.
*3) The piping on the IN side must have a straight section of piping whose length is 8 times the piping diameter or more. If a straight section of piping is not installed, the accuracy may vary by±5% F.S. or more.
*4) Accumulated flow rate is reset when the power supply turns OFF.
*5) Switch output and accumulated pulse output can be selected during initial setting.
*6) Window comparator mode — Since hysteresis will reach 3 digits, keep P_1 and P_2 or n_1 and n_2 apart by 7 digits or more. (In case of output OUT2, n_1, 2 to be n_3, 4 and P_1, 2 to be P_3, 4.)
*7) For details about wiring and thread type, please contact VPC.
*8) Any products with tiny scratches, smears, or display color variation or brightness which does not affect the performance are verified as conforming products.

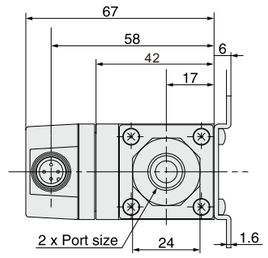
ISO9001 CE

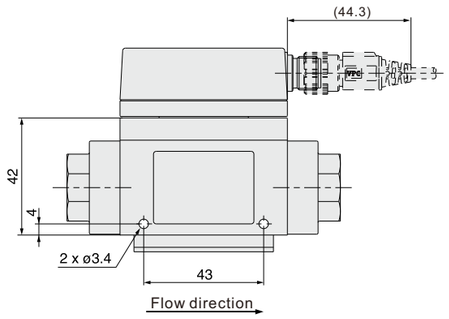
PF2A Series Digital Flow Switch for Air

Main Dimensions

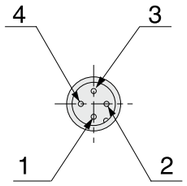
PF2A710,750





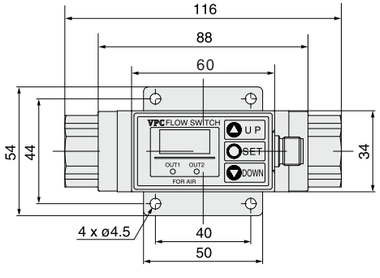


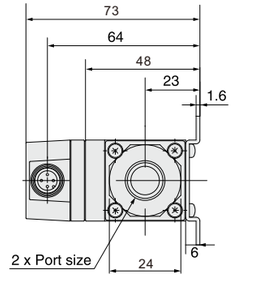
Connector pin numbers

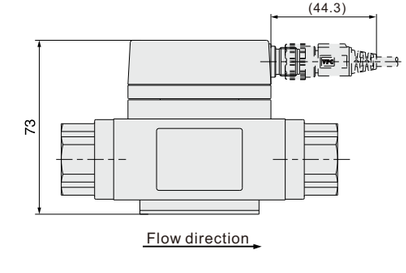


Pin No.	Pin description
1	DC(+)
2	OUT2
3	DC(-)
4	OUT1

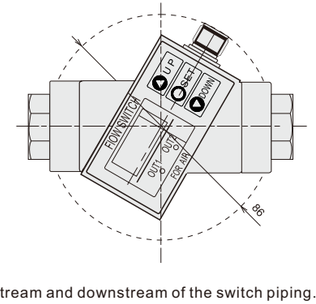
PF2A711,721,751







Rotation display diameter



* Be sure to allow straight pipe length that is minimum 8 times the port size upstream and downstream of the switch piping.

PF2A Series High Flow Rate Type Digital Flow Switch for Air

Product Feature

- High flow rate range: 150 to 12000L/min(ANR).
- Flow rate can be set and detected.
- Digital displays of instantaneous flow rate and accumulated flow rate can be selected.
- Real-time switch output, accumulated switch output, or accumulated pulse output can be selected as an output type.

Ordering Code

PF2A Series High Flow Rate Type Digital Flow Switch for Air

PF2A7 □ H - □ □ - □ □ - M □

Integrated display type

Flow rate range
03: 150 to 3000L/min
06: 300 to 6000L/min
12: 600 to 12000L/min

High flow rate type

Thread type
Nil: Rc
N: NPT
F: G

Port size

Symbol	Port size	Flow rate (L/min) 3000	6000	12000	Applicable model
10	1	●	–	–	PF2A703H
14	1½	–	●	–	PF2A706H
20	2	–	–	●	PF2A712H

Output specifications
28: NPN open collector 1output+ Analog output (1 to 5V)
29: NPN open collector 1output+ Analog output (4 to 20mA)
68: PNP open collector 1output+ Analog output (1 to 5V)
69: PNP open collector 1 output+ Analog output (4 to 20mA)
* Switching of switch output and accumulated pulse output is possible with NPN or PNP open collector outputs.

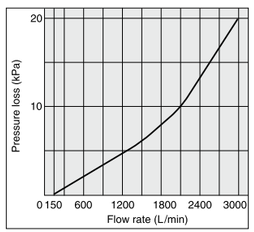
Lead wire
Nil: Lead wire with M12 connector (3m)
N: Without lead wire

Unit specifications
Nil: With unit switching function
M: Fixed SI unit
* Fixed units:
Instantaneous flow rate: L/min
Accumulated flow: L, m³, m³×10³

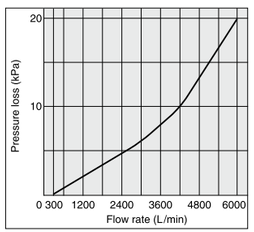
Made to order
X795: Wide range

Flow Rate Characteristics (Pressure Loss)

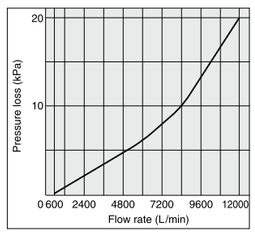
PF2A703H



PF2A706H

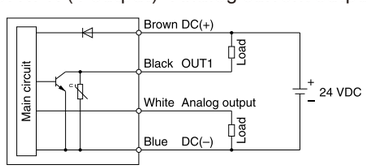


PF2A712H

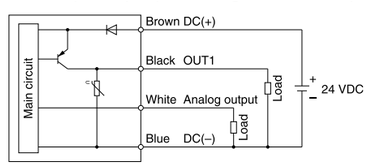


Internal Circuits and Wiring Examples

-28/29
28: NPN (1 output)+Analog voltage output
29: NPN (1 output)+Analog current output



-68/69
68: PNP (1 output)+Analog voltage output
69: PNP (1 output)+Analog current output



PF2A Series High Flow Rate Type Digital Flow Switch for Air

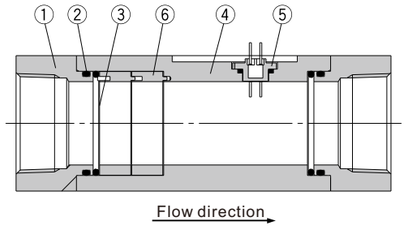
Specifications

Model		PF2A703H	PF2A706H	PF2A712H
Working medium		Dry Air, Nitrogen		
Detection type		Heater type		
Rated flow range*1)		150 to 3000L/min	300 to 6000L/min	600 to 12000L/min
Minimum set unit*1)		5L/min	10L/min	
Display units*2)	Instantaneous flow rate	L/min, CFM		
	Accumulated flow	L, m³, m³×10³, ft³, ft³×10³, ft³×10⁶		
Operating pressure		0.1 to 1.5MPa		
Proof pressure		2.25MPa		
Pressure loss		20kPa (at maximum flow rate)		
Accumulated flow range*3)		0 to 9,999,999,999L		
Accuracy*5)		±1.5%F.S. (0.7MPa, at 20℃)		
Repeatability		±1.0%F.S. (0. 7MPa, at 20℃), ±3.0% F.S. in case of analog output		
Pressure characteristics		±1.5% F.S. (0.1 to 1.5 MPa, 0.7 MPa reference)		
Temperature characteristics		±2.0%F.S. (0 to 50℃, 25℃ reference)		
Output specifications	Switch output*5) NPN open collector	Max. load current: 80 mA; Max. applied voltage: 30 V; Internal voltage drop: 1 V or less (with load current of 80 mA)		
	Switch output*5) PNP open collector	Max. load current: 80 mA; Internal voltage drop: 1.5 V or less (with load current of 80 mA)		
	Accumulated pulse output*5)	NPN or PNP open collector — Flow rate per pulse: 100 L/pulse, 10.0 ft³/pulse; ON time per pulse width: 50 msec/pulse		
	Analog output*6)	Output voltage: 1 to 5 V; Min. load impedance: 100 kΩ (Output impedance: 1 kΩ)		
		Output current: 4 to 20 mA; Max. load impedance: 250 Ω		
Response time		1 sec. or less		
Hysteresis		Hysteresis mode: Variable (can be set from 0); Window comparator mode: Fixed (set from 0 to 3% F.S.)		
Power supply voltage		DC24 V±10%		
Current consumption		450mA or less		
Environment	Enclosure	IP65		
	Working temperature	0 to 50℃ (with no freezing and condensation)		
	Withstand voltage	AC 1000V for 1 minute between terminals and housing		
	Insulation resistance	50MΩ or more (DC 500V measured via megohmmeter) between terminals and housing		
	Noise resistance	1000V P-P pulse width1μs lasts 1ns		
Standards and regulations		CE, RoHS		
Weight		1.1kg (without lead wire)	1.0kg (without lead wire)	2.0kg (without lead wire)
Port size (Rc, NPT, G)		1	1½	2

*1) Flow rate display can be switched between the basic condition of 0°C, 101.3 kPa and the standard condition (ANR) of 20°C, 101.3 kPa, and 65% RH.
*2) For digital flow switch with unit switching function. (Fixed SI unit [(L/min, or L, m³ or m³×10³)] will be set for switch type without the unit switching function.)
*3) Accumulated flow rate is reset when the power supply turns OFF. It is possible to select a function that holds the accumulated value so it is not reset. In such cases, data is written on EEPROM (electrically erasable programmable read-only memory) at approximately four-minute intervals. When using, please take into consideration that the EEPROM writing is guaranteed up to 1 million times (four minutes × 1 million = 4 million ≈ 7.9 years)
*4) The high flow rate type is CE marking compatible; however, the linearity with applied noise is ±5% F.S. or less.
*5) Switch output and accumulated pulse output selections are made using the button controls.
*6) The analog output operates only for instantaneous flow rate, and does not operate for accumulated flow.

PF2A Series High Flow Rate Type Digital Flow Switch for Air

Wetted Parts Construction

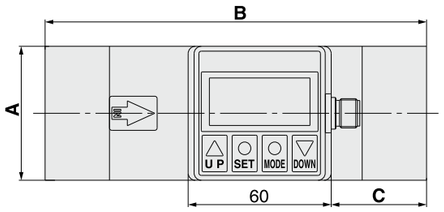


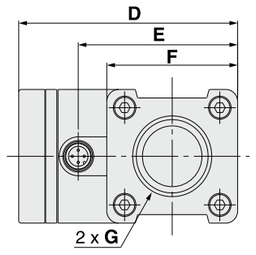
Parts list

NO.	Description	Material	Note
1	Attachment	Aluminum alloy	Anodized
2	Seal	HNBR	–
3	Mesh	Stainless steel	–
4	Body	Aluminum alloy	Anodized
5	Sensor	PPS	–
6	Spacer	PBT	–

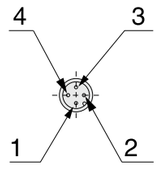
Main Dimensions

PF2A703H,706H,712H

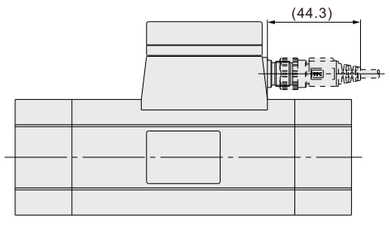


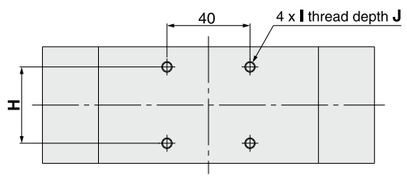


Connector pin numbers



Pin NO.	Pin description
1	DC(+)
2	Analog output
3	DC(-)
4	OUT1





* Be sure to allow straight pipe length that is minimum 8 times the port size upstream and downstream of the switch piping.

(mm)

Model	A	B	C	D	E	F	G	H	I	J
PF2A703H	55	160	40	92	67	55	Rc1, NPT1, G1	36	M5×0.8	8
PF2A706H	65	180	45	104	79	65	Rc1½, NPT½, G1½	46	M6×1	9
PF2A712H	75	220	55	114	89	75	Rc2, NPT2, G2	56	M6×1	9

PF2A Series Digital Flow Switch Brackets

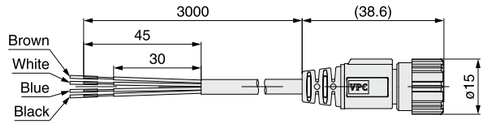
Option/Accessory Type

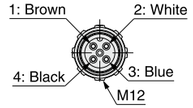
Type	Description	Note	Weight
ZS-37-A	Lead wire with plug (straight type)	Length: 3m	100g
ZS-37-B	Lead wire with plug (L type)	Length: 3m	100g
ZS-39-T	Bracket	With 4 mounting screws (3×12 threaded)	40g

Main Dimensions

Lead wire and M12 connector

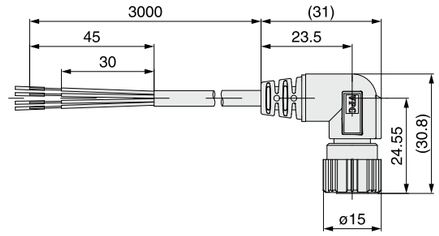
ZS-37-A

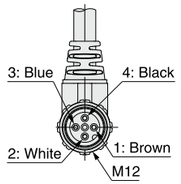




Pin NO.	Description	Lead wire color
1	DC(+)	Brown
2	OUT2	White
3	DC(-)	Blue
4	OUT1	Black

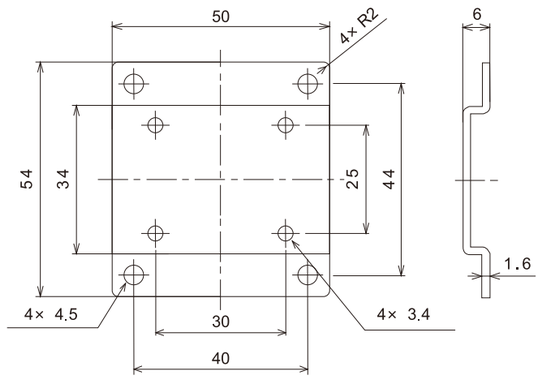
ZS-37-B





Part NO.	Description
ZS-37-A	Straight type 3m
ZS-37-B	Right angle type 3m

Mount bracket: ZS-39-T



PF3W Series 3-Color Display Digital Flow Switch for Water

Product Feature

- 3-color/2-screen display.
- Integrated display type, Separate monitor type, and PVC piping type.
- Reduced required piping space.
- Rotatable display: Counterclockwise 90°, Clockwise 225°.
  Display can be rotated in increments of 45° to suit the installation conditions.
- Easy operation, improved visibility.
- New model PF3W721-14-□-M. (Flow rate set from 20-350L/min).

Ordering Code

PF3W Series 3-Color Display Digital Flow Switch for Water

PF3W7 **04** - **□** **03** - **AT** **□** - **M** **□**

Flow rate range

Symbol	Rated flow rate
04	0.5 to 4L/min
20	2 to 16L/min
40	5 to 40L/min
11	10 to 100L/min
21	50 to 250L/min (With metal piping)
	50 to 250L/min (With PVC piping)

Thread type

Nil: Rc
N: NPT
F: G

Port size

Symbol	Port size	Rated flow rate 04	20	40	11	21
03	3/8	●	●	–	–	–
04	1/2	–	●	●	–	–
06	3/4	–	–	●	●	–
10	1/1	–	–	–	●	–
12	1 1/4	–	–	–	–	●
14	1 1/2	–	–	–	–	●
25	25A	–	–	–	●	–
30	30A	–	–	–	–	●

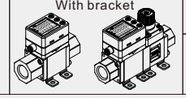
Type

7: Integrated display

Unit

Symbol	M
Instantaneous flow	L/min
Accumulated flow	L
Temperature	℃

Bracket

Symbol	Bracket type	Rated flow rate 04	20	40	11	21
Nil	None	●	●	●	●	●
R	With bracket 	●	●	●	●	–

* Bracket is not available for 250 L/min type.
* The flow adjustment valve of this product is not suitable for applications which require constant adjustment of flow rate.

Lead wire (Option)

Nil	N
With lead wire with M8 connector (3 m) 	Without lead wire with M8 connector 

Output specifications/Temperature sensor

Symbol	OUT1 Flow rate	OUT2 Flow rate	OUT2 Temperature	Temperature sensor
A	NPN	NPN	–	None
B	PNP	PNP	–	
C	NPN	Analog 1 to 5V	–	
D	NPN	Analog 4 to 20mA	–	
E	PNP	Analog 1 to 5V	–	
F	PNP	Analog 4 to 20mA	–	
AT	NPN	(NPN) ←*1→ NPN		With temperature sensor
CT	NPN	(Analog 1 to 5V) ←*1→ Analog 1 to 5V		
DT	NPN	(Analog 4 to 20mA) ←*1→ Analog 4 to 20mA		

*1) For units with temperature sensor, only OUT2 can be set as either temperature output or flow rate output. Setting when shipped is for temperature output.

* Order Example: 2 NPN switch outputs, port size Rc3/8, with temperature sensor----Model: NPF3W704-03-AT-M.

ISO9001 CE

PF3W Series 3-Color Display Digital Flow Switch for Water

Specifications

Model		PF3W704	PF3W720	PF3W740	PF3W711	PF3W721
Working medium		Water and ethylene glycol aqueous solution (with viscosity of 3MPa·s [3 cP] or less)				
Detection method		Karman vortex				
Rated flow range		0.5 to 4L/min	2 to 16L/min	5 to 40L/min	10 to 100L/min	50 to 250L/min
Display flow range *1)		0.35 to 5.5L/min	1.7 to 22.0L/min	3.5 to 55.0L/min	7 to 140.0L/min	20 to 350.0L/min
Set flow range		0.35 to 5.5L/min	1.7 to 22.0L/min	3.5 to 55.0L/min	7 to 140.0L/min	20 to 350.0L/min
Smallest settable increment		0.01L/min	0.1L/min		1L/min	2L/min
Conversion of accumulated pulse (Pulse width: 50ms)		0.05L/pulse	0.1L/pulse	0.5L/pulse	1L/pulse	2L/pulse
Fluid temperature		0 to 90°C (No freezing or condensation)				0 to 70°C (No freezing or condensation)
Display unit		Instantaneous flow: L/min, Accumulated flow: L				
Accuracy		Display value: ±3% F.S. Analog output: ±3% F.S.				
Repeatability		±2% F.S.*2)				
Temperature characteristics		±5% F.S. (25°C standard)				
Operating pressure		0 to 1MPa				
Proof pressure		1.5MPa				
Pressure loss (Without flow adjustment valve)		45 kPa or less at the maximum flow				60 kPa or less at the maximum flow
Accumulated flow range *3)		999,999,99.9L		999,999,999L		
		By 0.1L	By 0.5L	By 1L		
Switch output		NPN or PNP open collector output				
	Max. load current	80mA				
	Max. applied voltage	DC 28V				
	Internal voltage drop	NPN: 1V or less (at load current of 80 mA) PNP: 1.5V or less (at load current of 80 mA)				
	Response time *2,4)	0.5s/1s/2s				
	Output protection	Short-circuit protection				
	Output mode: Flow rate	Select from Hysteresis, Window comparator, Accumulated output, or Accumulated pulse output modes.				
	Output mode: Temperature	Select from Hysteresis mode or Window comparator mode				
Analog output	Response time *5)	0.5s/1s/2s (linked with the switch output)				
	Voltage output	Output voltage: 1 to 5V Output impedance: 1 kΩ				
	Current output	Output current: 4 to 20 mA Max. load impedance: 300 Ω for DC 12V, 600 Ω for DC 24V				
Hysteresis		Variable				
External input		Voltage free input: 0.4V or less (Reed or Solid state), input for 30ms or longer				
Display method		2-screen display (Main screen: 4-digit, 7-segment, 2-color, Red/Green Sub screen: 6-digit, 11-segment, White)				
Indicator light		Output 1, Output 2: Orange				
Power supply voltage		DC12 to 24 V ±10%				
Current consumption		50 mA or less				
Environment	Enclosure	IP65				
	Working temperature	0 to 50°C (No freezing or condensation)				
	Working humidity	Operation, Storage: 35 to 85% R.H. (No condensation)				
	Withstand voltage *6)	AC 1000V for 1 minute between terminals and housing				
	Insulation resistance	50 MΩ or more (DC 500V measured via megohmmeter) between terminals and housing				
Standards and regulations		CE, RoHS				
Wetted parts material		PPS, FKM, SCS13, SUS304				
		Non-grease				
Piping port size *7)		3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1 1/4, 1 1/2

PF3W Series 3-Color Display Digital Flow Switch for Water

Specifications Note

*1) When the actual flow rate is less than the minimum display flow range, the display will show "0.00", "0.0" or "0 ".
*2) If 0.5s is selected for the response time of the switch output, the repeatability will be ±3% F.S.
*3) Cleared when the power supply is turned off. The hold function can be selected. (Intervals of 2 or 5 minutes can be selected.)
If the 5-minute interval is selected, the life of the memory element (electronic parts) is limited to 1 million times.
(If energized for 24 hours, life is calculated as 5 minutes × 1 million = 5 million minutes = about 9.5 years.)
Therefore, if using the hold function, calculate the memory life for your operating conditions, and use within this life.
*4) The response time when the set value is 90% in relation to the step input (The response time is 7 s when it is output by the temperature sensor.)
*5) The response time until the set value reaches 90% in relation to the step input (The response time is 7 s when it is analog output by the temperature sensor.)
*6) When the temperature sensor is used, it will be AC 250V.
*7) When the piping diameter or piping passage is restricted, the specifications may not be satisfied.
*8) Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

Option/Accessory Type

When only optional parts are required, order with the part numbers listed below.

Description	Part NO.	Qty.	Note	
Bracket*	ZS-40-K	1	For PF3W704/720	With 4 tapping screws (3×8)
	ZS-40-L	1	For PF3W740	With 4 tapping screws (3×8)
	ZS-40-M	1	For PF3W711	With 4 tapping screws (4×10)
Lead wire with M8 connector	ZS-40-A	1	Lead wire length: 3m	

* For units with flow adjustment valve, 2 brackets are required.

Flow rate/Analog output

(PF3W704/720/740)

	A	B	C
Voltage output	1V	1.5V	5V
Current output	4mA	6mA	20mA

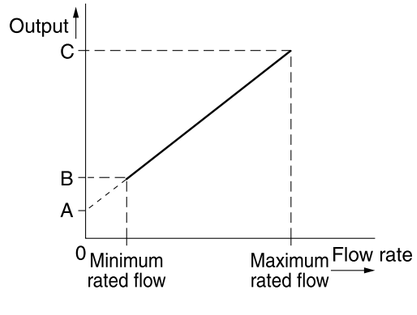
(PF3W711)

	A	B	C
Voltage output	1V	1.4V	5V
current output	4mA	5.6mA	20mA

(PF3W721)

	A	B	C
Voltage output	1V	1.8V	5V
current output	4mA	7.2mA	20mA

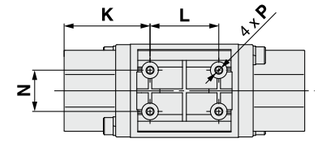
Model	Rated flow [L/min]	
	Mini.	Max.
PF3W704	0.5	4
PF3W720	2	16
PF3W740	5	40
PF3W711	10	100
PF3W721	30	250

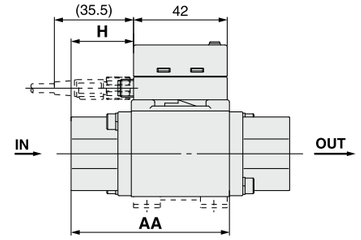


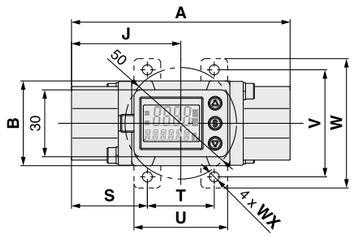
PF3W Series 3-Color Display Digital Flow Switch for Water

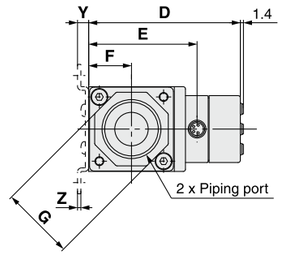
Main Dimensions

PF3W704/720/740/711/721

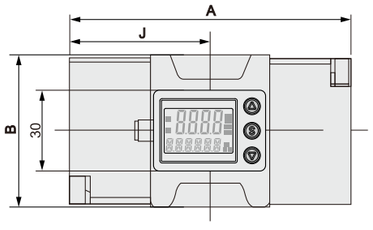


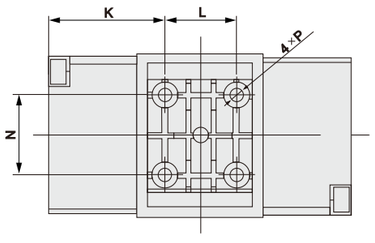


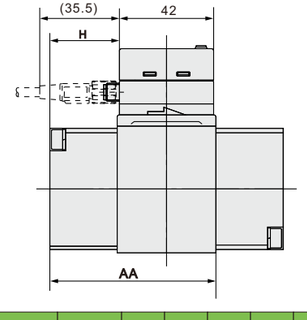


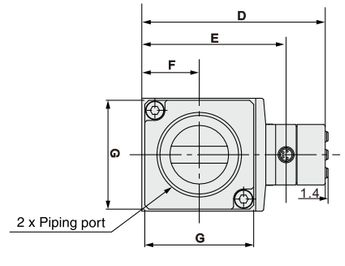


PF3W721









Model \ Sign	Port Size	A	AA	B	D	E	F	G	H	J	K	L	N	P	Bracket dimensions S	T	U	V	W	WX	Y	Z
PF3W704	3/8	70	50	30	60	40.6	15.2	24	14	35	26	18	13.6	Φ2.7 deepth 14	24	22	32	40	50	4.5	5	1.5
PF3W720	3/8, 1/2	78	54	30	60	40.6	15.2	27	18	39	30	18	13.6	Φ2.7 deepth 12	28	22	32	40	50	4.5	5	1.5
PF3W740	1/2, 3/4	98	71	38	68	48.6	19.2	32	28	49	35	28	16.8	Φ2.7 deepth 12	34	30	42	48	58	4.5	5	1.5
PF3W711	3/4,1	124	92	46	77	57.6	23	41	42	63	48	28	18	Φ3.5 deepth 14	44	36	48	58	70	5.5	7	2
PF3W721	1 1/4, 1 1/2	104	74	56	91	71.6	28.5	54	31	52	39.5	25	27.5	Φ3.5 deepth 14	—							
	G1 1/4	108	76						33	54	41.5											
	G1 1/2	112	78						35	56	43.5											

PF3W Series Digital Flow Switch Brackets

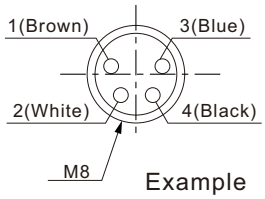
Lead Wiring Methods

Installation and removal of lead wire should be done after the power is disconnected.
Please use a separate wiring path. If you use the same wiring as the power line and high voltage line, the signal may be interfered with and cause misoperation.
When using a commercially available switching power supply, be sure to ground the FG terminal. If a commercially available switching power supply is connected, the product specifications may not be met due to overlapping switching interference signals. In this case, be sure to connect the FG terminal to a commercially available switching power supply. In this case, insert an interference filter such as a mains interference filter or ferrite between the switching power supply and the switching power supply, or change the power supply from a switching power supply to a linear power supply.

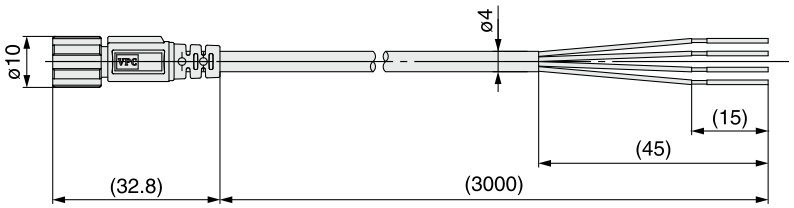
ZS-40-A

Lead wire with M8 connector

Connector pin number



Example



* 4-wire type lead wire with M8 connector used for the PF3W series

Pin NO.	Description	Lead wire color
1	DC(+)	Brown
2	OUT2	White
3	DC(-)	Blue
4	OUT1	Black