MFP01 series

FLOW & PRESSURE SENSOR

Feature

- Cost control, User-friendly, High performance.
- Dry air, N_2.
- RS-485 MODBUS control.
- 2-in-1 design: Pressure and flow rate simultaneous monitoring.
- Accumulated flow rate display at a glance.
- Multiple output function: Digital display, switch output, analog output, accumulated pulse output.
- Wide range of flow rates.

Specification

Model				005	010	050	100	500	101	201
Fluid				Dry air, N_2, Non-corrosive / Non-flammable gas						
Sensor element	Flow	Measured flow rate range		0 ~ 500 mL/min	0 ~ 1000 mL/min	0 ~ 5 L/min	0 ~ 10 L/min	0 ~ 50 L/min	0 ~ 100 L/min	0 ~ 200 L/min
		Flow direction		Unidirection						
	Pressure	Rated pressure range		-90 ~ 800 kPa						
Display	Display			4 digital × 4 digital, 7 segment LCD display (Red / Green / Orange)						
	Instant flow rate	Display range		0 ~ 525 mL/min	0 ~ 1050 mL/min	0 ~ 5.25 L/min	0 ~ 10.50 L/min	0 ~ 52.5 L/min	0 ~ 105.0 L/min	0 ~ 210 L/min
		Min. setting scale	LPM	1 mL/min		0.01 L/min		0.1 L/min		1 L/min
			CFM *1	0.01 ft^3/min		0.1 ft^3/min		1 ft^3/min		
	Accumulated Flow	Display range		99999999 mL		999999.99 L		9999999.9 L		99999999 L
		Min. Setting Scale *1		1 mL		0.01 L		0.1 L		1 L
				0.01 ft^3		0.1 ft^3		1 ft^3		
	Pressure Display	Display range		-100 ~ 1000 kPa						
		Min. Setting Scale	kPa	1						
			kgf/cm^2	0.01						
			bar / psi	0.01 / 0.1						
Accuracy	Flow	Guaranteed range		2 ~ 100 % F.S.						
		Indicator accuracy		± 3 % F.S. ± 1 digit *2						
		Analog output accuracy		± 5 % F.S. *2						
		Repeatability		± 1 % F.S. ± 1 digit *3						
		Linearity		± 3 % F.S. *3						
		Temp. characteristic		± 2 % F.S. (15 ~ 35 °C) ; ± 5 % F.S. (0 ~ 15 °C, 35~ 50 °C) (compare with *3)						
		Pressure characteristic		± 5 % F.S. ± 1 digit *4						
	Pressure	Guaranteed range		0 ~ 100 % F.S.						
		Indicator accuracy		± 2 % F.S. ± 1 digit *5						
		Analog output accuracy		± 2.5 % F.S. *5						
		Repeatability		± 0.2 % F.S. ± 1 digit *5						
		Linearity		± 1 % F.S. *5						
		Temp. characteristic		± 2 % F.S. (compare with *5)						

(Continued)

MFP01 Specifications

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Specification

Model			005	010	050	100	500	101	201
Switch output	Switch output		2 NPN : open collector 2 outputs Max. Load Current : 125 mA Max. Supply Voltage : 28 V DC Voltage Drop : ≤ 1.5 V			2 PNP : open collector 2 outputs Max. Load Current : 125 mA Max. Supply Voltage : 24 V DC Voltage Drop : ≤ 1.5 V			
	Response time	Flow	800 ms (50 ms, 80 ms, 120 ms, 200 ms, 400 ms, 1500 ms selectable)						
		Pressure	2.5 ms (25 ms, 100 ms, 250 ms, 500 ms, 1000 ms, 1500 ms selectable)						
	Output mode	Flow	Hysteresis Mode, Window Comparator Mode, Accumulated Output, Accumulated Pulse Output						
		Pressure	One Point Set Mode, Hysteresis Mode, Window Comparator Mode						
	Hysteresis		Adjustable						
	Output short circuit proterction		Yes						
	Accumulated pulse output *1		5 mL/Pulse	10 mL/Pulse	0.05 L/Pulse	0.1 L/Pulse	0.5 L/Pulse	1 L/Pulse	2 L/Pulse
			0.02 ft^3/Pulse	0.04 ft^3/Pulse	0.2 ft^3/Pulse	0.4 ft^3/Pulse	2 ft^3/Pulse	4 ft^3/Pulse	7 ft^3/Pulse
Analog output	Voltage output		Voltage output range : 1 ~ 5 V *6 ; Output impedance : 1 KΩ						
	Current output		Current output range : 4 ~ 20 mA *6 ; Load impedance : ≤ 300 Ω						
	Response time		Pressure : ≤ 50 ms ; Flow : ≤ 100 ms						
External input			Non-voltage input, < 0.4 V, ≥ 30 ms						
Communication interface			RS-485 *7,8						
Power	Power supply voltage		12 ~ 24 V DC ± 10 %, Ripple (P-P) ≤ 10 %						
	Current consumption		≤ 50 mA						
Environment	Withstand Pressure		1000 kPa						
	Enclosure		IP40						
	Working Fluid Temp.		0 ~ 50 °C (No condensation or freezing)						
	Ambient Temp. Range		Operation : 0 ~ 50 °C ; Storage : -10 ~ 60 °C (No condensation or freezing)						
	Ambient Humidity Range		Operation / Storage : 35 ~ 85 % R.H. (No condensation)						
	Insulation Resistance		≥ 50 MΩ (500 V DC, between case and lead wire)						
	Withstand Voltage		1000 V AC in 1-min (between case and lead wire)						
	Vibration		Total amplitude 1.5 mm or 10 G, 10 Hz ~ 55 Hz ~ 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z						
	Shock		100 m/s² (10 G), 3 times each in direction of X, Y and Z						
	EMC		IEC 61000-6-2, IEC 61000-6-4						
Lead wire			ø4 Oil-resistance cable (PVC) - 26 AWG (0.15 mm^2) - 6 cores						
Port Size	R6, F1C		●	●	●	●	●		
	R8, F4C							●	●
Weight (with 2 meter lead wire)			Approx. 109.3 g (ø6 port) ; Approx. 112.7 g (ø8 port) ; Approx. 118 g (Rc1/4" port) ; Approx. 128.5 g (Rc1/8" port)						

*1. When the display unit is CFM, ft^3, the actual flow is the display value×10^{-2}.
*2. Condition: Inlet pressure: 300 kPa , Outlet pressure: 1 atmospheric pressure, 25 °C
*3. Condition: Outlet pressure: 1 atmospheric pressure, 25 °C
*4. -90 ~ 800 kPa, Outlet pressure: 1 atmospheric pressure, 25 °C
*5. Outlet flow rate = 0 L/min, 25 °C
*6. PWM output, corresponding to pressure sensor 0 ~ 1000 kPa
*7. This function only available for Output Specification -02 and -04
*8. Read pressure sensor data range 1~4 data number.

MFP01 Order example

FLOW & PRESSURE SENSOR

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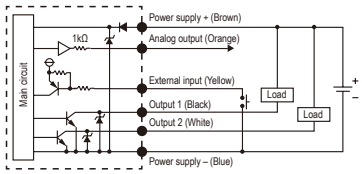
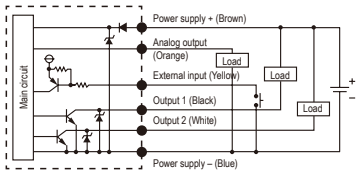
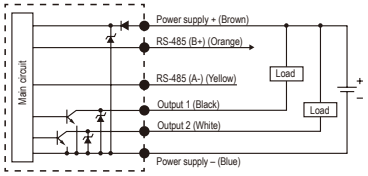
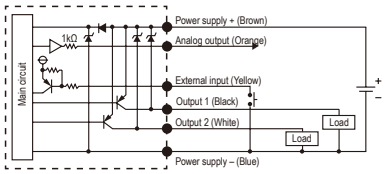
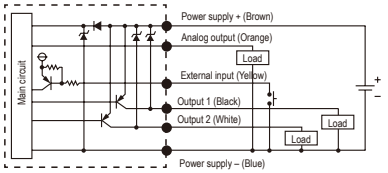
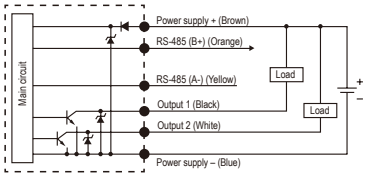
Output circuit wiring graph

Model	MFP01-□-010	MFP01-□-011	MFP01-□-02
Connect diagram			
Output method	NPN output / Analog voltage output / External input	NPN output / Analog current output / External input	NPN output / RS-485 MODBUS mode

Model	MFP01-□-030	MFP01-□-031	MFP01-□-04
Connect diagram			
Output method	PNP output / Analog voltage output / External input	PNP output / Analog current output / External input	PNP output / RS-485 MODBUS mode

* Procedure to wiring RS485 products : To prevent product damage due to short circuit , MUST do RS485 line conneciton BEFORE power line connection.

Order example

MFP01 – 005 – 010 – R6

MODEL

FLOW RATE RANGE

005: 500 (ml/min)
010: 1000 (ml/min)
050: 5 (l/min)
100: 10 (l/min)
500: 50 (l/min)
101: 100 (l/min)
201: 200 (l/min)

OUTPUT SPEC.

010: 2 NPN output + Analog output 1 ~ 5 V
011: 2 NPN output + Analog output 4 ~ 20 mA
02 : 2 NPN output + RS485
030: 2 PNP output + Analog output 1 ~ 5 V
031: 2 PNP output + Analog output 4 ~ 20 mA
04 : 2 PNP output + RS485

PORT SIZE

R6: ø6 mm, for flow rate range 005, 010, 050, 100, 500.
R8: ø8 mm, for flow rate range 101, 201.
F1C: Rc1/8", with internal threads, for flow rate range 005, 010, 050, 100, 500
F4C: Rc1/4", with internal threads, for flow rate range 101, 201

Mounting accessories

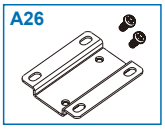
MP – A26

MODEL

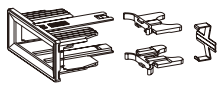
OPTION PARTS

A26: Mounting bracket
B4: Panel adapter
C4: Panel adapter + Front protective lid

A26

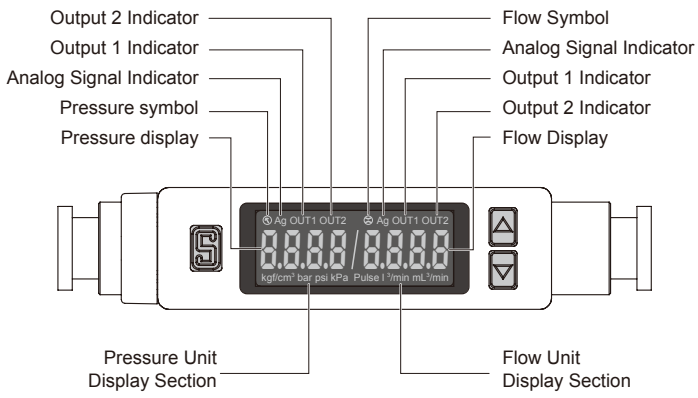


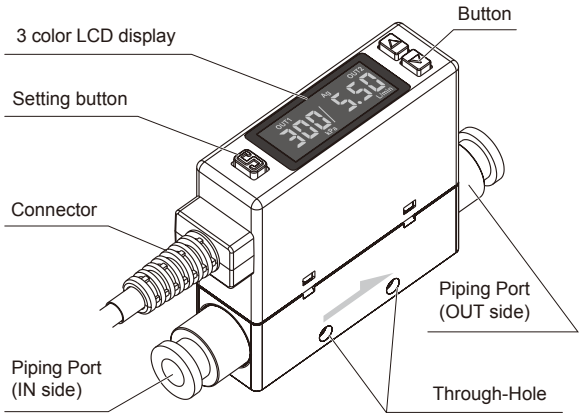
B4



C4

Name and functions of individual parts





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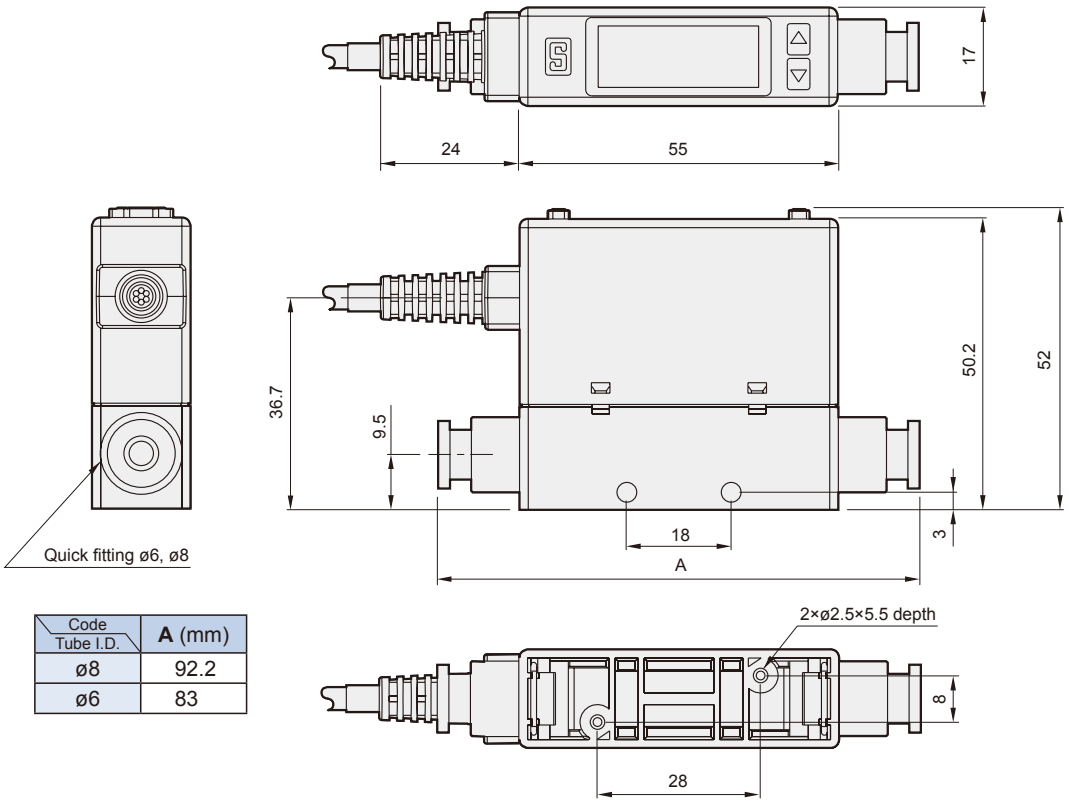
MFP01 Dimensions

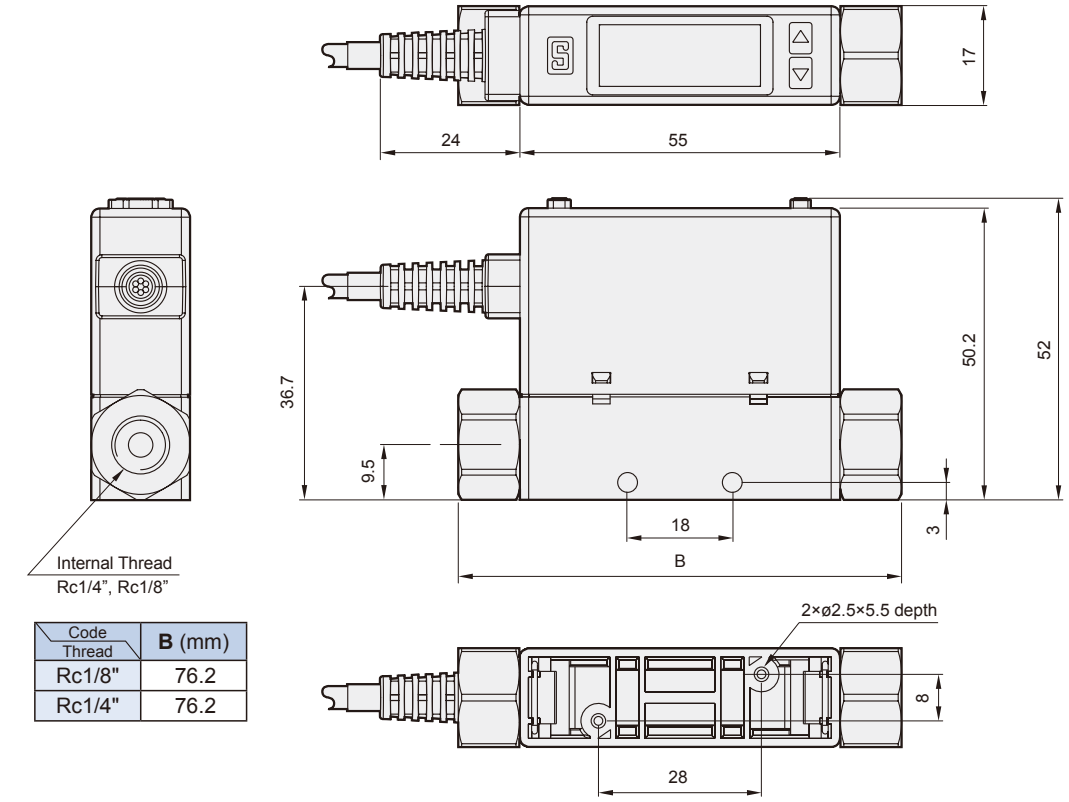
FLOW & PRESSURE SENSOR

Port size
R6 (ø6)
R8 (ø8)



Code / Tube I.D.	**A** (mm)
ø8	92.2
ø6	83

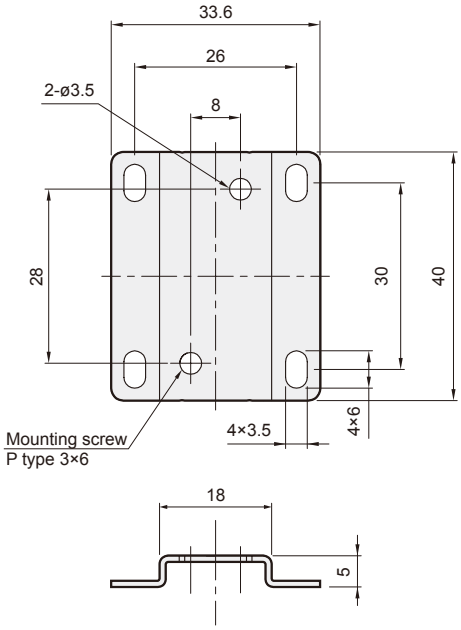
Port size
F1C (Rc1/8")
F4C (Rc1/4")

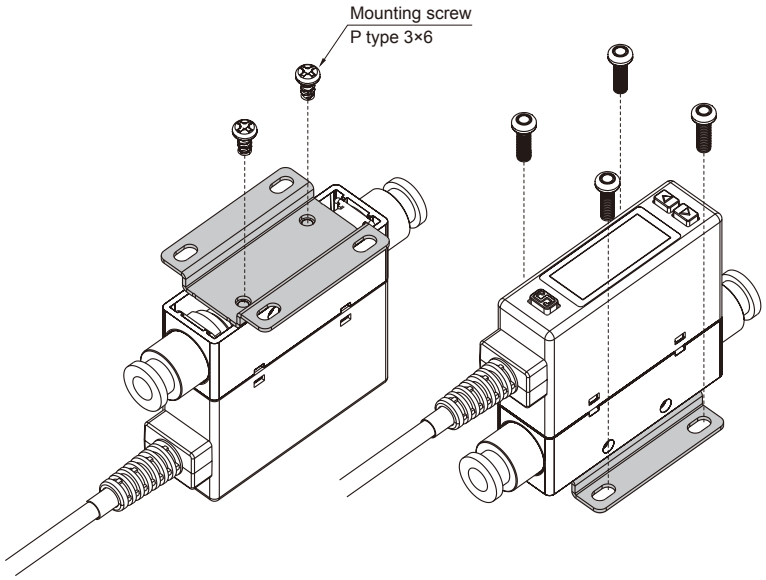


Code / Thread	**B** (mm)
Rc1/8"	76.2
Rc1/4"	76.2

Mounting bracket

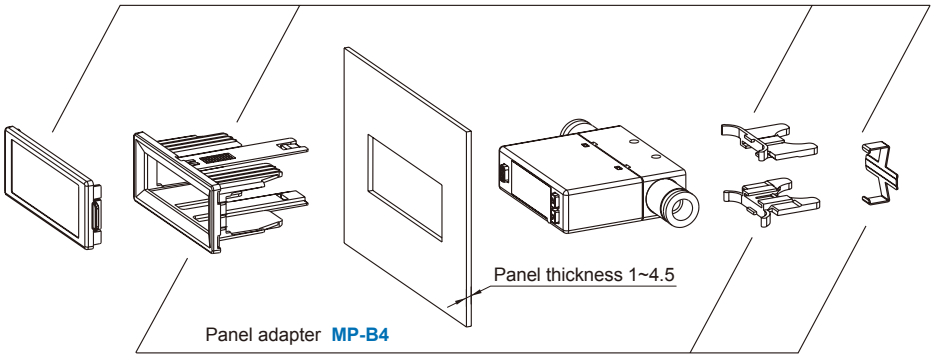
MP-A26



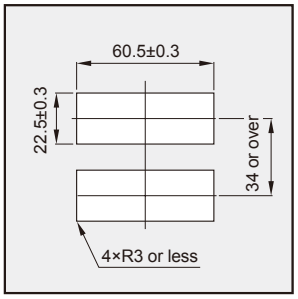


Panel type

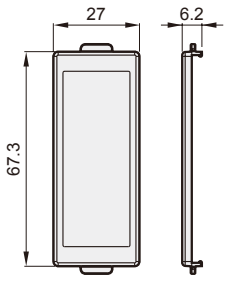
Front protective lid + Panel adapter **MP-C4**



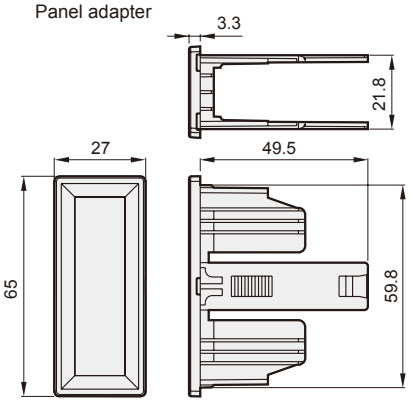
Panel cut dimensions



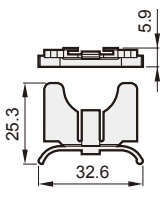
Front protective lid



Panel adapter



Panel adapter



Panel adapter