MFP01A / 02A series

FLOW & PRESSURE SENSOR

mindman

MFP01A user manual

MFP02A user manual

Selection table

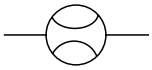


UK CA CE RoHS COMPLIANT c UL us

Feature

- Flow and pressure 4 digit, 7 segment dual LCD display.
- 8 digit accumulated flow rate display.
- Real-time monitoring.
- RS485 Modbus control.

Symbol



MFP01A Specification

Model				005	010	050	100	500	101	201
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		
Switch output 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
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}.

MFP02A Specification

Model				501	102	202
Sensor element	Flow	Measured flow rate range		2 ~ 500 L/min	5 ~ 1000 L/min	10 ~ 2000 L/min
		Flow direction		Unidirection		
	Pressure	Rated pressure range		-90 ~ 1000 kPa		
Display	Display			4 digital × 4 digital, 7 segment LCD display (Red / Green / Orange)		
	Instant flow rate	Display range		0 ~ 525 L/min	0 ~ 1050 L/min	0 ~ 2100 L/min
		Min. setting scale	LPM	1 L/min		
			CFM	0.1 ft^3/min		
	Accumulated Flow	Display range		99999999 L		
		Min. Setting Scale		1 L		
				1 ft^3		
Switch output Accumulated pulse output *1				5 L/Pulse	10 L/Pulse	10 L/Pulse
				20 ft^3/Pulse	40 ft^3/Pulse	40 ft^3/Pulse
Port Size	Rc1/2, F7C / G1/2, F9C			●	●	
	Rc3/4, F10C / G3/4, F12C					●
Weight (without 2 meter lead wire)				Approx. 281.7 g (500 / 1000 L) ; Approx. 344 g (2000 L)		

(Continued)

MFP01A / 02A Specifications

FLOW & PRESSURE SENSOR

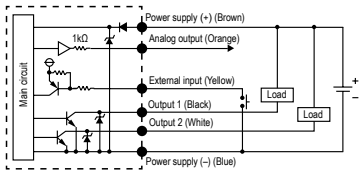
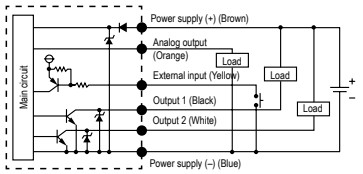
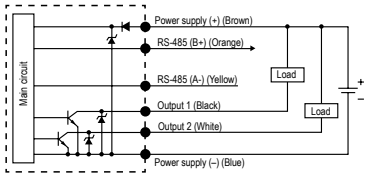
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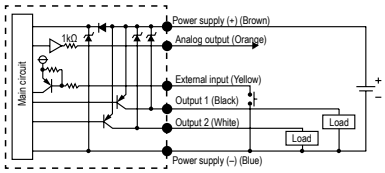
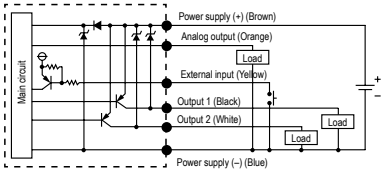
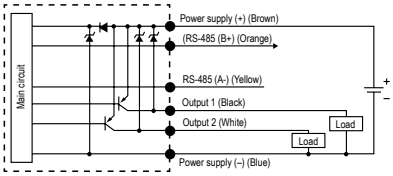
MFP01A / 02A Specification

Model				MFP01A	MFP02A
Fluid				Dry air, N_2, Non-corrosive / Non-flammable gas	
Display	Pressure Display	Display range		-100 ~ 1000 kPa	
		Min. Setting Scale	kPa	1	
			kgf/cm²	0.01	
			bar / psi	0.01 / 0.1	
Accuracy	Flow	Guaranteed range		2 ~ 100 % F.S.	
		Indicator accuracy		± 3 % F.S. ± 1 digit *1	
		Analog output accuracy		± 5 % F.S. *1	
		Repeatability		± 1 % F.S. ± 1 digit *2	± 1 % F.S. ± 1 digit (± 2 % F.S. when response time is set to 50 ms) *2
		Linearity		± 3 % F.S. *2	
		Temp. characteristic		± 2 % F.S. (15 ~ 35 °C) ; ± 5 % F.S. (0 ~ 15 °C, 35~ 50 °C) (compare with *2)	± 5 % F.S (compare with *2)
		Pressure characteristic		± 5 % F.S. ± 1 digit *3	
	Pressure	Guaranteed range		0 ~ 100 % F.S.	
		Indicator accuracy		± 2 % F.S. ± 1 digit *4	
		Analog output accuracy		± 2.5 % F.S. *4	
		Repeatability		± 0.2 % F.S. ± 1 digit *4	
		Linearity		± 1 % F.S. *4	
		Temp. characteristic		± 2 % F.S. (compare with *4)	
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	
Analog output	Voltage output			Voltage output range : 1 ~ 5 V *5 ; Output impedance : 1 KΩ	
	Current output			Current output range : 4 ~ 20 mA *5 ; 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 *6,7	
Power		Power supply voltage		12 ~ 24 V DC ± 10 %, Ripple (P-P) ≤ 10 %	
		Current consumption		≤ 50 mA	
Environment	Withstand Pressure			1000 kPa	1.5 MPa
	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)	≥ 2 MΩ (500 V DC, between case and lead wire)
	Withstand Voltage			1000 V AC in 1-min (between case and lead wire)	250 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 mm2) - 6 cores	

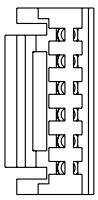
*1. Condition: Inlet Pressure: MFP01A: 300 kPa, MFP02A: 600 kPa , Outlet Pressure: 1 atmospheric pressure, 25 °C
*2. Condition: Outlet Pressure: 1 atmospheric pressure, 25 °C
*3. MFP01A: -90 ~ 800 kPa, MFP02A: 0 ~ 1.0 MPa, Outlet Pressure: 1 atmospheric pressure, 25 °C
*4. Outlet flow rate = 0 L/min, 25 °C
*5. PWM output, corresponding to pressure sensor 0 ~ 1000 kPa
*6. This function only available for Output Specification -02 and -04.
*7. 4 data reading per time.

Output circuit wiring graph

Model	MFP01A/02A-□-010	MFP01A/02A-□-011	MFP01A/02A-□-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	MFP01A/02A-□-030	MFP01A/02A-□-031	MFP01A/02A-□-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.



❶	Brown
❷	Orange
❸	Yellow
❹	Black
❺	White
❻	Blue

Pin no.	Line color	Content
❶	Brown	Power supply (12 ~ 24 V DC)
❷	Orange	Analog voltage output: 1 ~ 5 V Analog current output: 4 ~ 20 mA
		RS485 (B+)
❸	Yellow	External input
		RS485 (A-)
❹	Black	Output 1 (Max. load current: 125 mA)
❺	White	Output 2 (Max. load current: 125 mA)
❻	Blue	0 V (GND)

MFP01A / 02A Order example

FLOW & PRESSURE SENSOR

Order example (MOQ: 100 pcs, except MFP01A-201-02-F4C & MFP02A-501-02-F7C)

MFP02A – 501 – 010 – F7C

1 2 3 4

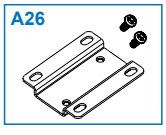
1 MODEL	2 FLOW RATE RANGE	3 OUTPUT METHOD	4 PORT SIZE
MFP01A	**005**: 500 (ml/min) **010**: 1000 (ml/min) **050**: 5 (l/min) **100**: 10 (l/min) **500**: 50 (l/min)	**010**: 2 NPN output + 1 Analog output (1~5V) **011**: 2 NPN output + 1 Analog output (4~20mA) **02** : 2 NPN output + RS485 **030**: 2 PNP output + 1 Analog output (1~5V) **031**: 2 PNP output + 1 Analog output (4~20mA) **04** : 2 PNP output + RS485	**R6**: ø6 mm **F1C**: Rc1/8", with internal threads
	101: 100 (l/min) **201**: 200 (l/min)		**R8**: ø8 mm **F4C**: Rc1/4", with internal threads
MFP02A	**501**: 500 (l/min) **102**: 1000 (l/min)		**F7C**: Rc1/2" **F9C**: G1/2"
	202: 2000 (l/min)		**F10C**: Rc3/4" **F12C**: G3/4"

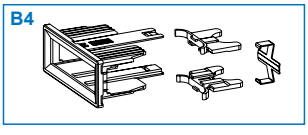
Mounting accessories

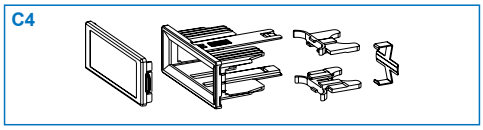
MP – A27

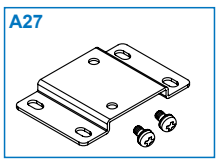
1 2

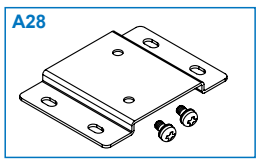
1 MODEL	2 OPTION PARTS
MP (MFP01A)	**A26**: Mounting bracket **B4**: Panel adapter **C4**: Panel adapter + Front protective lid
MP (MFP02A)	**A27**: Mounting bracket, for 501, 102 **A28**: Mounting bracket, for 202





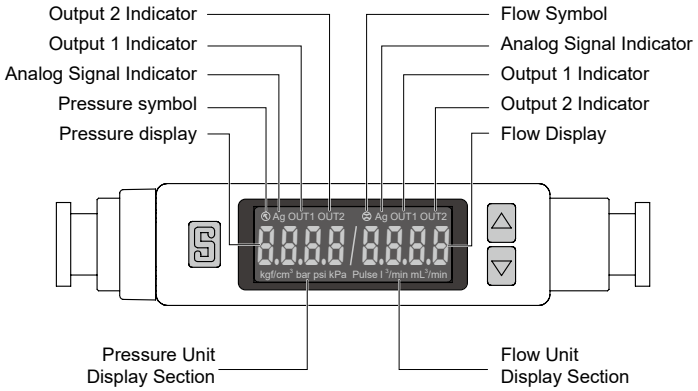




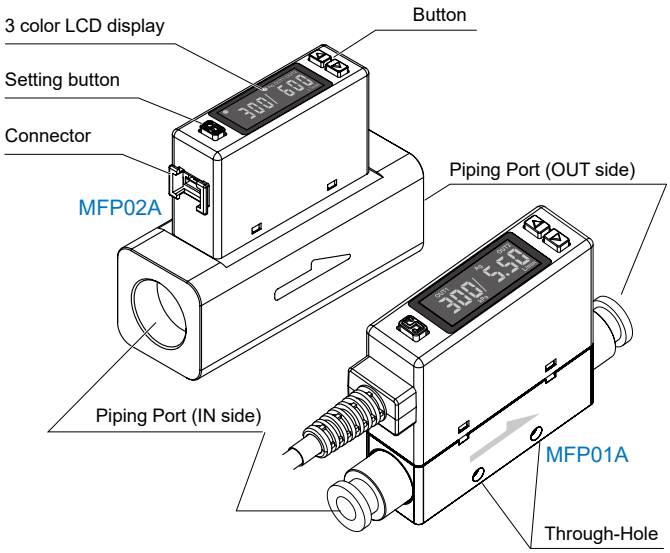


Name and functions of individual parts

Panel description



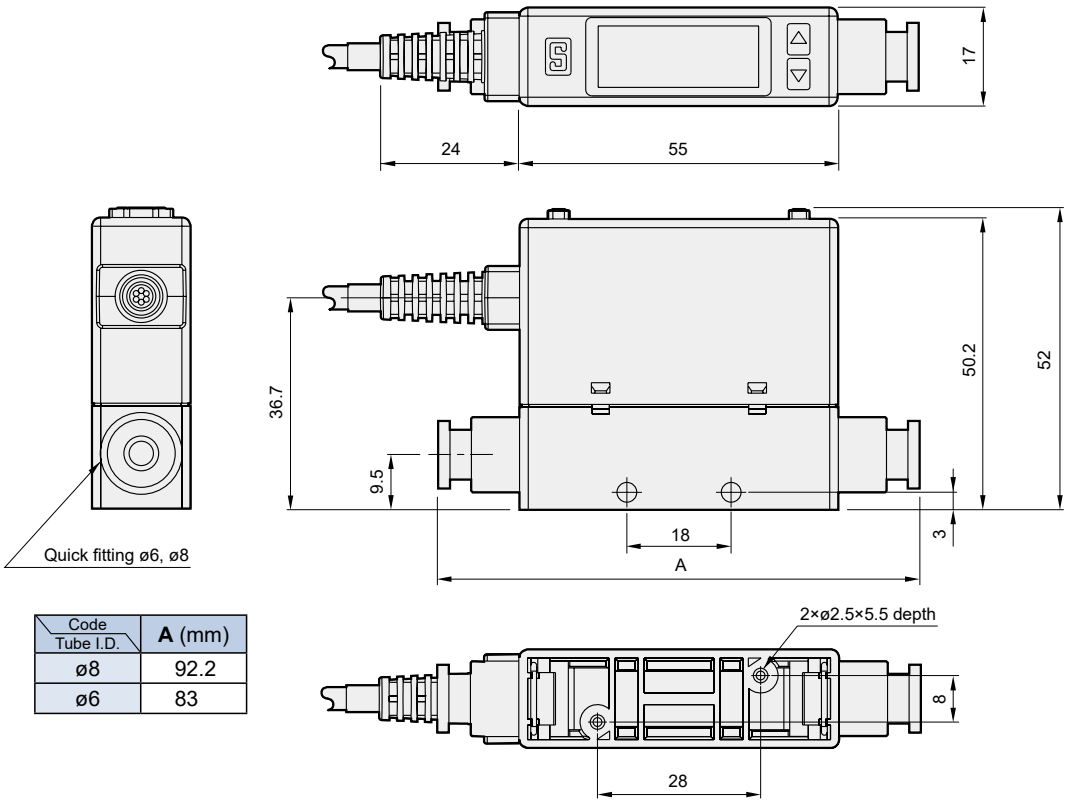
Body description



MFP01A Dimensions

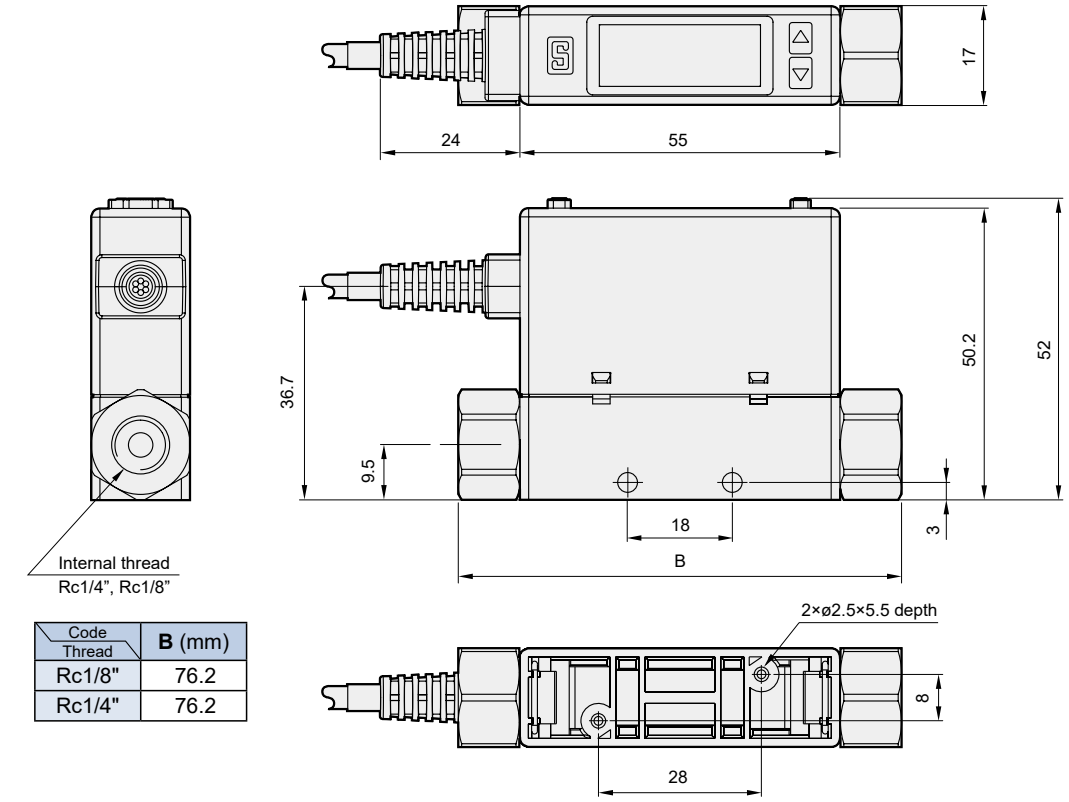
FLOW & PRESSURE SENSOR

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

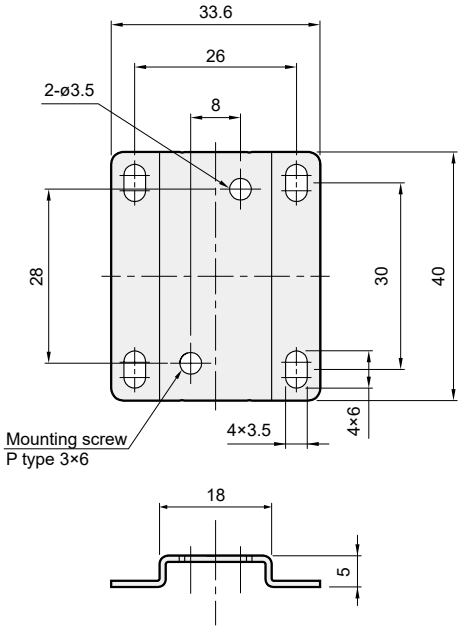
MFP01A Mounting accessories

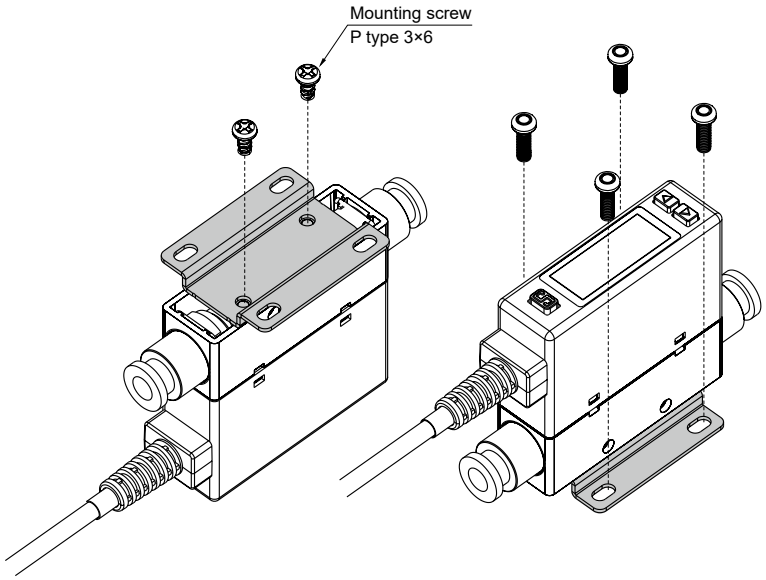
FLOW & PRESSURE SENSOR

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Mounting bracket

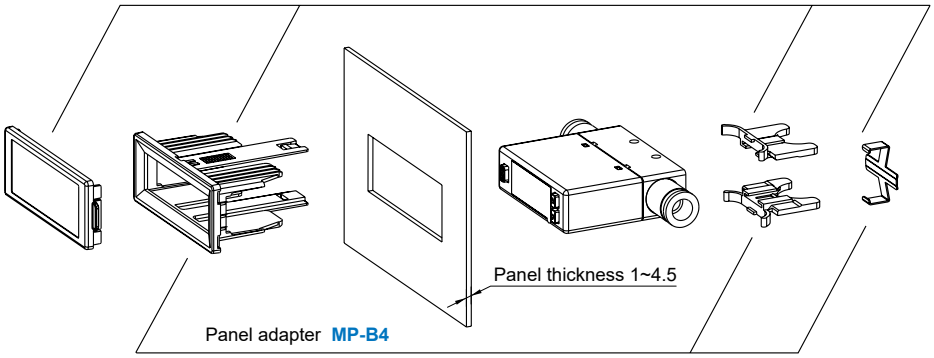
MP-A26



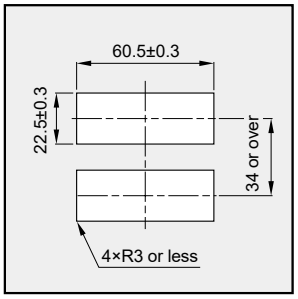


Panel type

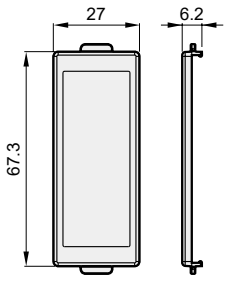
Front protective lid + Panel adapter **MP-C4**



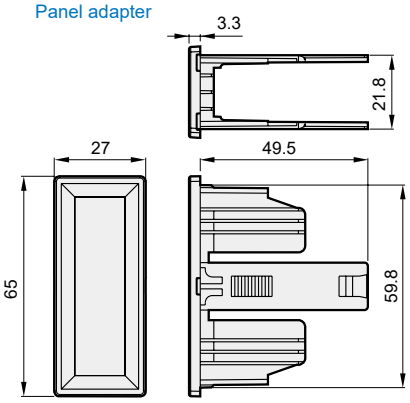
Panel cut dimensions



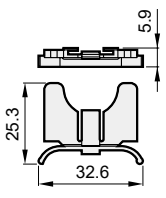
Front protective lid



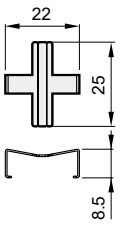
Panel adapter



Panel adapter

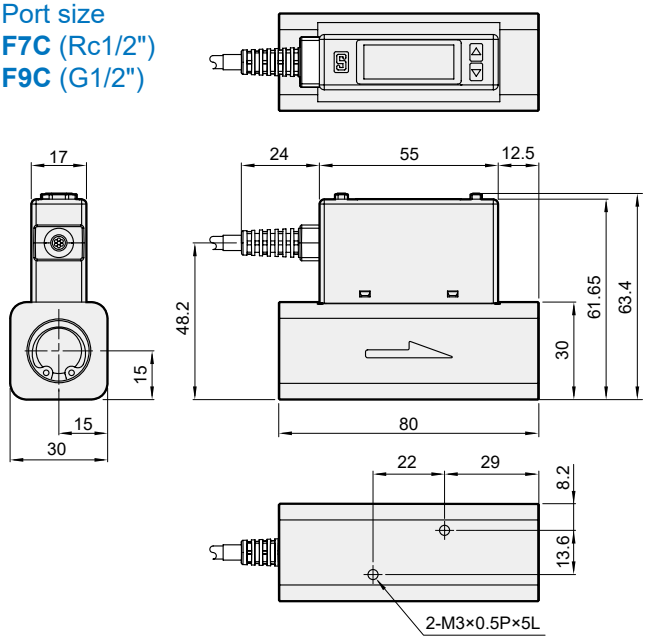


Panel adapter

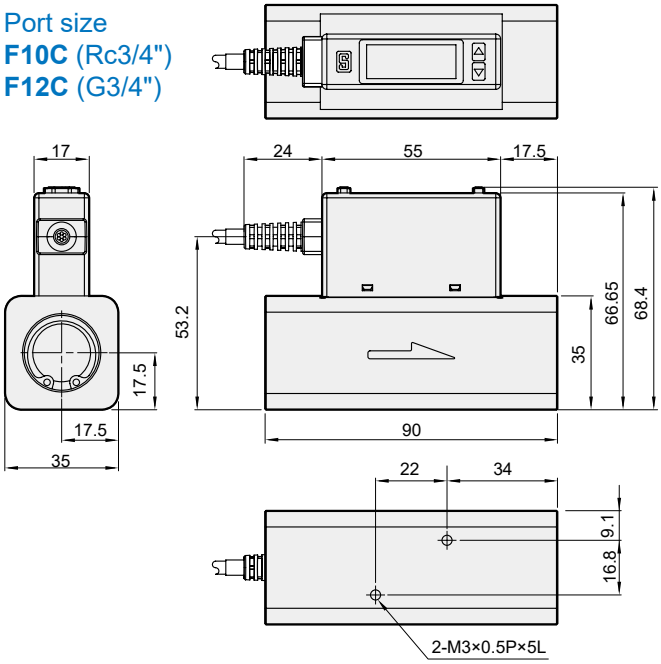


Dimensions

Port size
F7C (Rc1/2")
F9C (G1/2")

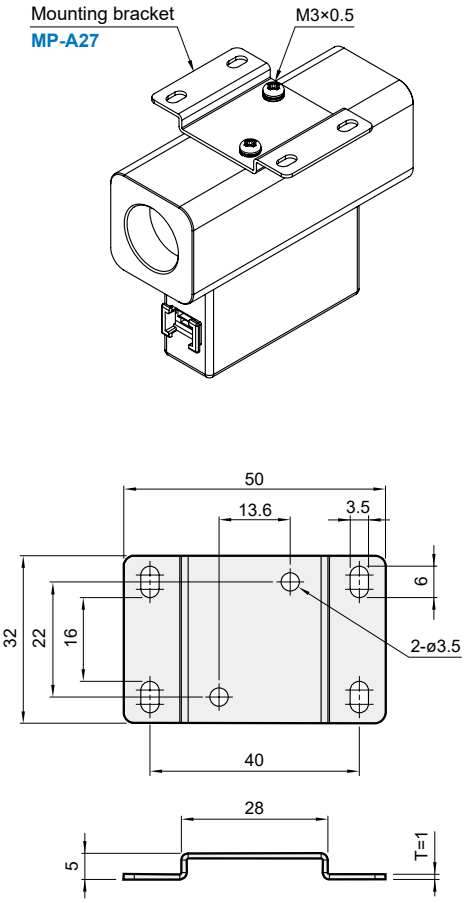


Port size
F10C (Rc3/4")
F12C (G3/4")



Mounting bracket

MP-A27



MP-A28

