MFPS series

FLOW & PRESSURE SENSOR

User manual

Selection table



Feature

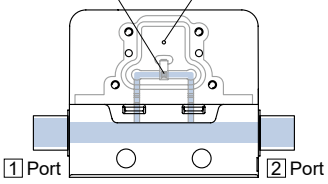
- Simultaneous monitoring of flow and pressure
- Approximate linear analog output of flow
- 3-color indicator
- 2 Analog outputs 1 ~ 5 V
- Response time ≤ 5 ms

Features highlight

2 in 1 design

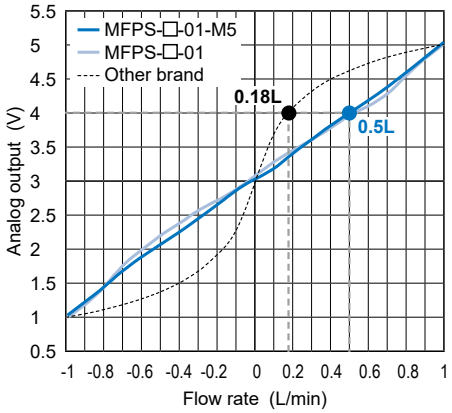
- Pressure and flow rate simultaneous monitoring.

Flow sensor		Pressure sensor
Analog output 1~5 V		Analog output 1~5 V
Bidirectional	1~3~5V -F.S.~0~F.S. (L/min)	1~3~5V -100~0~100 kPa
Unidirection	1~5V 0~F.S. (L/min)	



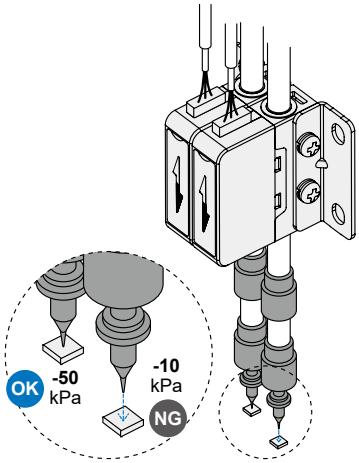
Approximate linear analog output

- Compared to existing flow sensors, it is better at monitoring flow rate for slight changes.



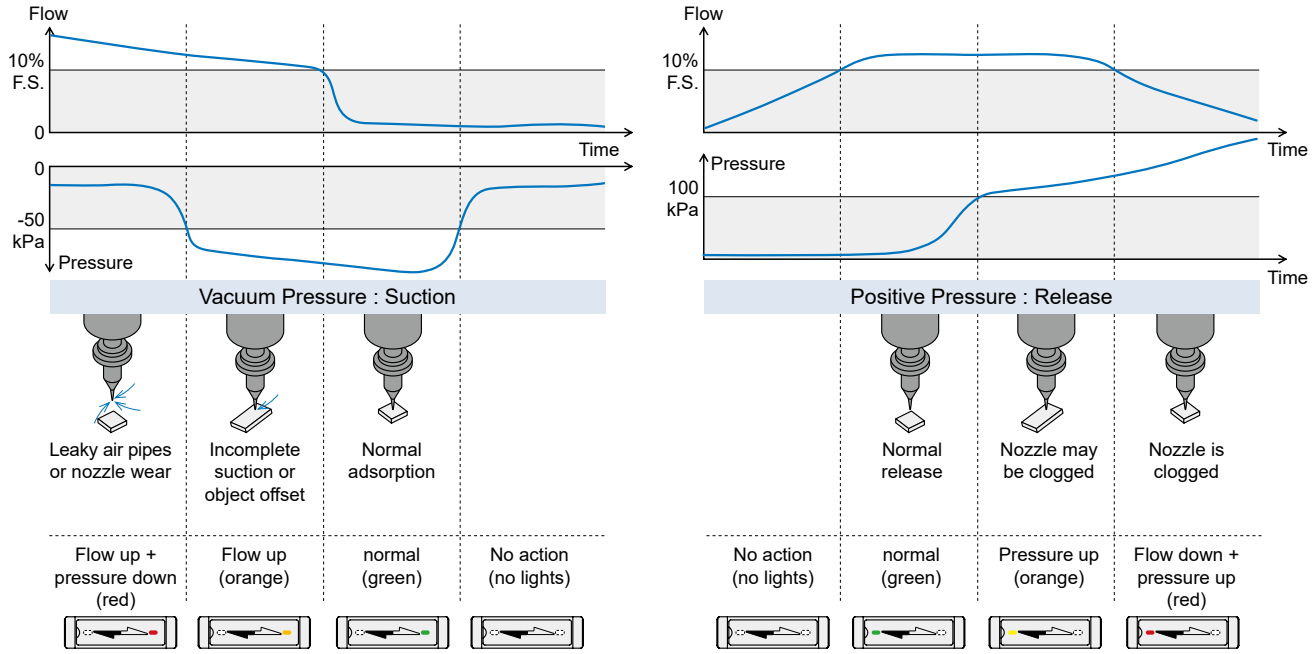
Equipped with pressure sensor

- Manage nozzle between pressure range -100 ~ 100 kPa.



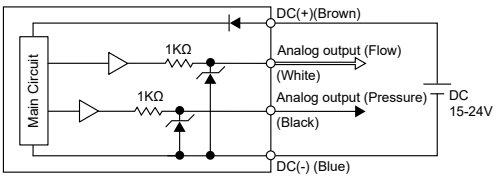
The design of 3-color indicator (signal) helps better monitor changes in flow and pressure

- Detect anomalies in time to reduce loss.



MFPS Specifications

FLOW & PRESSURE SENSOR

Model		003	005	010	050	100	R003	R005	R010	R050	R100
Flow	Measured flow rate range	0 ~ 0.3 L/min	0 ~ 0.5 L/min	0 ~ 1 L/min	0 ~ 5 L/min	0 ~ 10 L/min	-0.3 ~ 0.3 L/min	-0.5 ~ 0.5 L/min	-1 ~ 1 L/min	-5 ~ 5 L/min	-10 ~ 10 L/min
	Flow direction	Unidirection					Bidirectional				
Pressure	Rated pressure range	-100 ~ 100 kPa									
Withstand pressure		300 kPa									
Fluid		Dry air, N_2, Non-corrosive / Non-flammable gas									
Power supply voltage		15 ~ 24V DC ±10%, Ripple (P-P) ≤ 10%									
Current consumption		≤ 30mA									
Flow	Repeatability	≤ ± 2% F.S.									
	Linearity	Non-linearity *1									
	Temp. characteristic *2	≤ ± 0.6% F.S./°C					≤ ± 0.3% F.S./°C				
	Pressure characteristic *3	± 10% F.S.					± 5% F.S.				
Pressure	Repeatability	≤ ± 1% F.S.									
	Linearity	± 0.5% F.S.									
	Temp. characteristic *2	± 2% F.S									
Response time	Flow	≤ 5ms (90% Response time)									
	Pressure	≤ 1ms									
Switch on indicator		Green/ orange/ red									
Analog Output	Flow	Voltage Output Range: 1~5V ±5% F.S. (±0.2V) (Non-linearity), Output Impedance: 1 KΩ									
	Pressure	Voltage Output Range: 1~5V ±1% F.S. (±0.04V) (Linearity), Output Impedance: 1 KΩ									
Environment	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)									
	Withstand voltage	1000V AC in 1-min (between case and lead wire)									
	Insulation resistance	≥ 50MΩ (500V DC, between case and lead wire)									
	Vibration	Total amplitude 1.5mm or 10G, 10 Hz - 55 Hz - 10 Hz scan for 1 minute, 2 hours each direction of X, Y and Z									
	Shock	100m/s^2 (10G), 3 times each in direction of X, Y and Z									
Lead Wire		Ø2.9 PUR - 28 AWG (0.078 mm^2) - 4 cores									
Weight (with 3 meter lead wire)		Approx. 43 g (w/o Port) ; Approx. 47 g (M5 Port)									
Circuit wiring diagrams											

*1. Approximate linearity analog output (±10% F.S.) except 0 ~ 10 L and 10 ~ 10 L.
*2. Benchmark : 25°C (Temperature range : 0 ~ 50°C)
*3. Benchmark : 0 kPa (Pressure range : -90 ~ 200kPa)

Adsorption application table

Flow range (L/min)	Application nozzle size (mm)	Application industry
-0.3 ~ 0.3	≤ ø0.1	Quartz crystal oscillator, solder balls, micro LEDs
-0.5 ~ 0.5	ø0.2	Chip resistors, chip capacitors, optical components, mini LEDs
-1.0 ~ 1.0	ø0.3	
-5.0 ~ 5.0	Inverted pyramid wafer nozzle	Silicon wafer (bonded die), general parts
-10 ~ 10	Inverted pyramid wafer nozzle	

Order example

MFPS – 003 – 01 – M5

MODEL

FLOW RATE RANGE

003: 0 ~ 0.3 L/min
005: 0 ~ 0.5 L/min
010: 0 ~ 1 L/min
050: 0 ~ 5 L/min
100: 0 ~ 10 L/min
R003: -0.3 ~ 0.3 L/min
R005: -0.5 ~ 0.5 L/min
R010: -1 ~ 1 L/min
R050: -5 ~ 5 L/min
R100: -10 ~ 10 L/min

OUTPUT

01: 2 Analog output (1 ~ 5V)

PORT SIZE

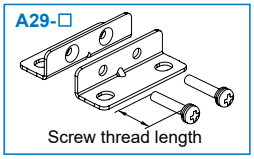
Blank : None
M5: M5 female thread

Mounting accessories (Option)

MP – A29–1

MODEL

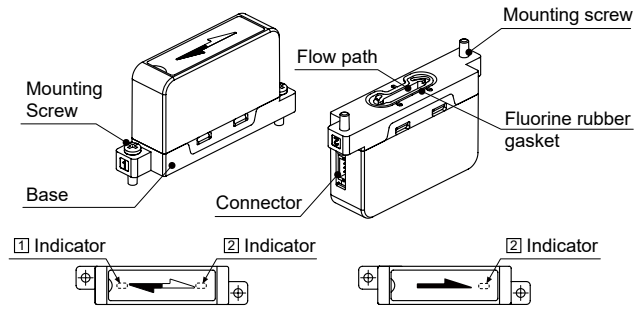
OPTION PARTS



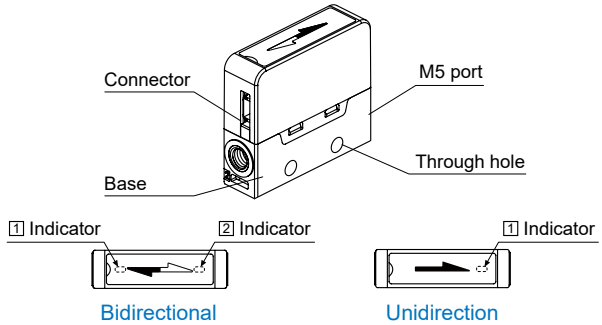
A29-1: fit with 1 sensor (Bracket + M3×0.5×15L screw)
A29-2: fit with 2 sensors (Bracket + M3×0.5×25L screw)
A29-3: fit with 3 sensors (Bracket + M3×0.5×35L screw)
A29-4: fit with 4 sensors (Bracket + M3×0.5×45L screw)
A29-5: fit with 5 sensors (Bracket + M3×0.5×55L screw)

Optional parts dimensions

MFPS-*-01

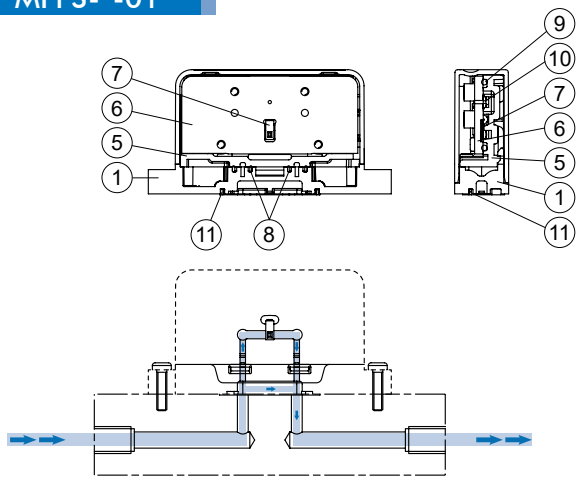


MFPS-*-01-M5

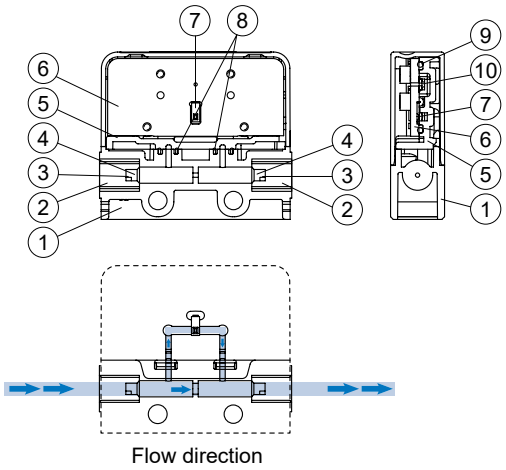


Wetted parts

MFPS-*-01



MFPS-*-01-M5



Material

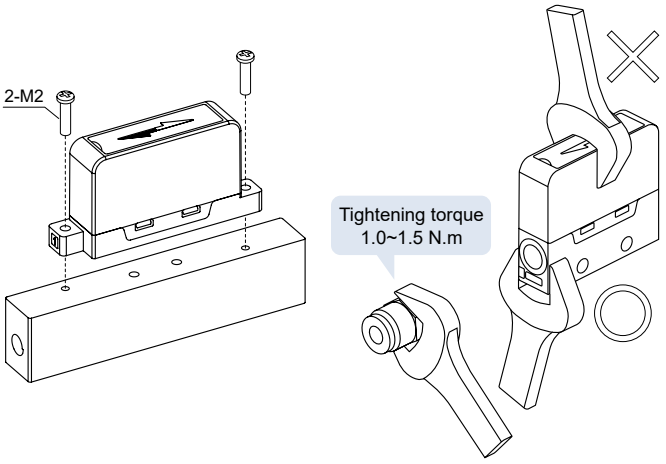
No.	Description	Material
1	Base	PBT
2	Fitting for piping	SUS 303
3	Mesh holding screw	POM
4	Mesh	SUS 316
5	PCB-Holder	PBT
6	Sensor Board	GE4F
7	Sensor	Si
8	Gasket	Viton
9	Gasket	Viton
10	Sensor	Si
11	Gasket	Viton

Installation precautions

1. This product can be installed in any direction; top, bottom, left, or right.
2. MFPS-☐-01can be installed with 2 through holes (ø2).

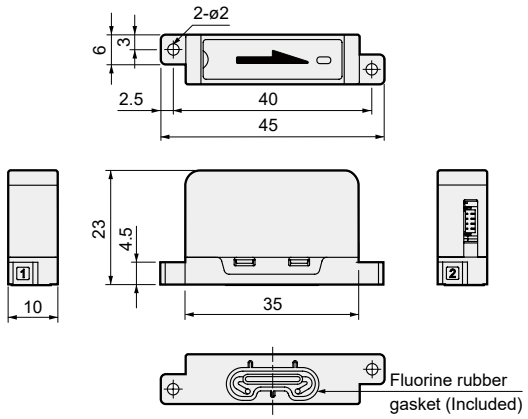
Port thread	Tightening torque N.m
M2	0.2~0.3

3. When mounting, please use wrench on specified position as below.
   Using on other parts of the product with a wrench may damage the product.
4. Please ensure the size of fittings are within the width of MFPS-☐-01-M5 while connecting multiple sensors side by side.
5. Please be aware the tightening torque when mounting.
6. After installing, please take a leakage test to ensure the installation is appropriate.

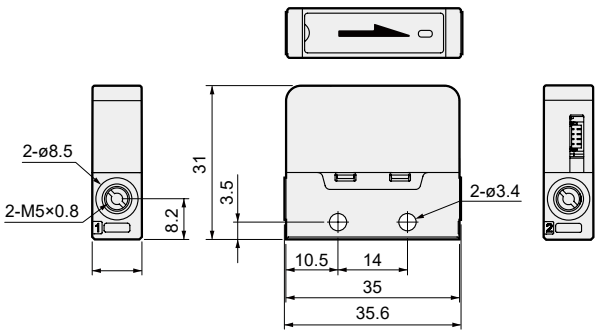


Dimensions

MFPS-*-01

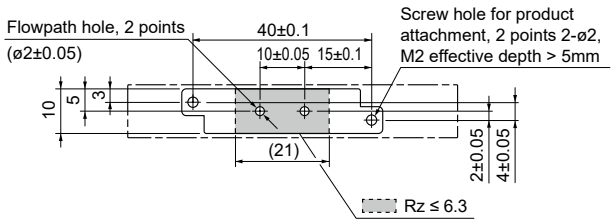


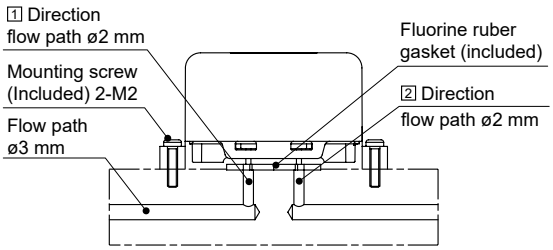
MFPS-*-01-M5



Installation

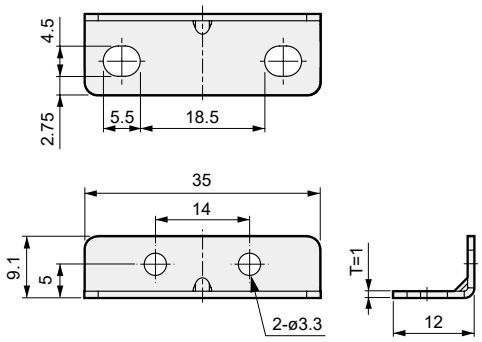
MFPS-*-01



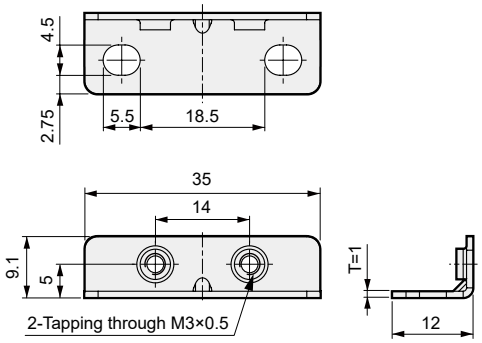


Mounting accessories

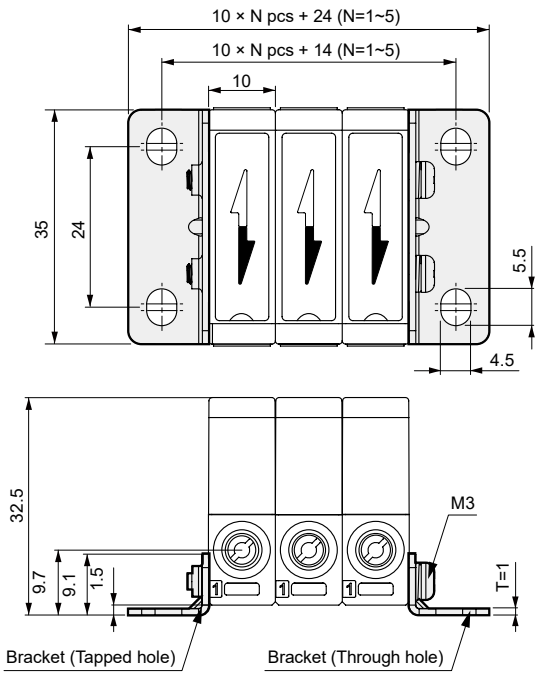
Bracket (Through hole) **MP-A29***



Bracket (Tapped hole)

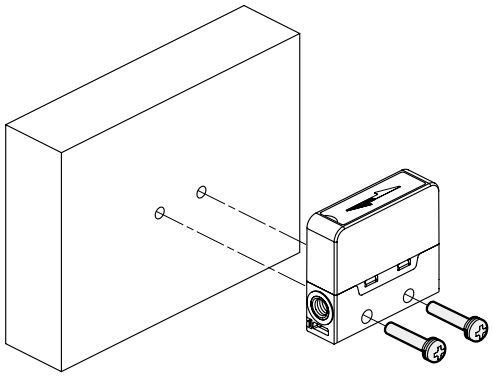


Installation dimension of bracket

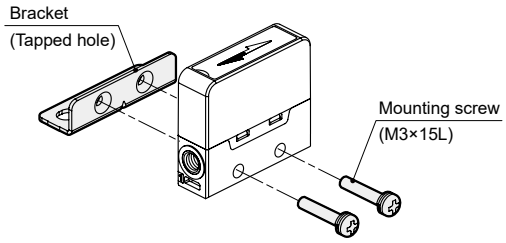


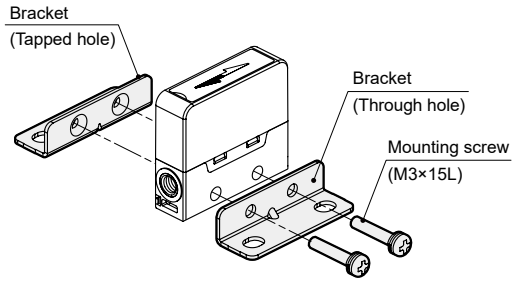
Mounting bracket

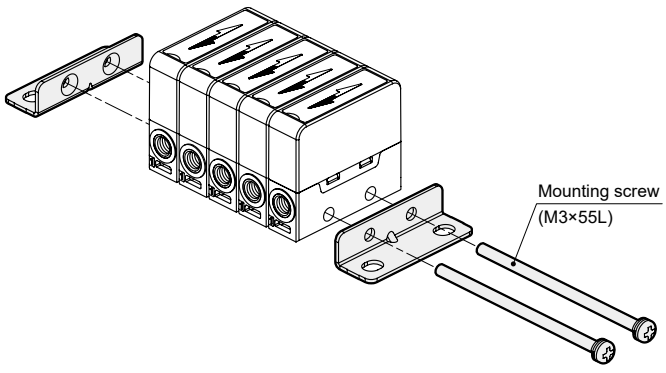
Horizontal mounting



Bracket mounting







Port thread	Tightening torque N·m
M3	0.2 ~ 0.3