KFP01A SERIES Digital Flow and Pressure Sensor

Features

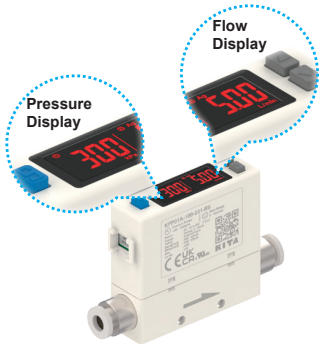
- Flow and pressure dual sensor.
- Flow and pressure 4 digit, 7 segment dual LCD display.
- 7 segment 8 digit LCD display.
  Accumulated flow rate display at a glance.

Patented RS485 MODBUS CONTROL

Features Highlight

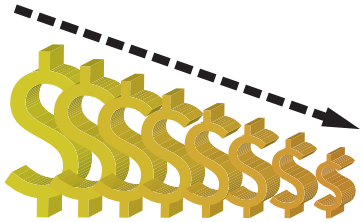
1 2-in-1 Design

- Pressure and flow rate simultaneous monitoring



2 Cost Reduction

- KFP01A series significantly reduces costs comparing with conventional product



3 High Performance

- High Precision

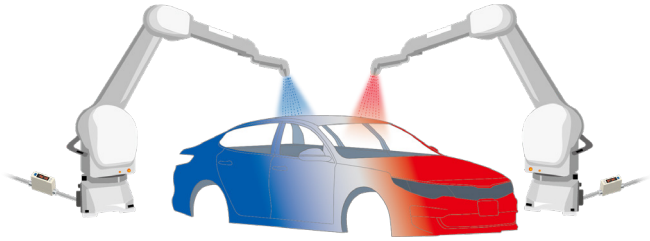
	Pressure	Flow
Indicator accuracy	± 2 % F.S.	± 3 % F.S.
Repeatability	± 0.2 % F.S.	± 1 % F.S.

- Multiple Output Function

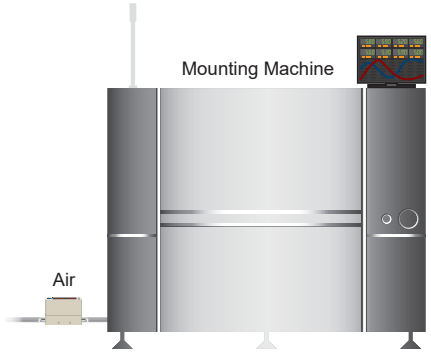
Digital Display	Instantaneous flow value Accumulated flow value Pressure value
Switch Output	NPN output PNP output
Analog output	Voltage output 1~5 V Current output 4~20 mA
Accumulated Pulse Output	50ms pulse output

4 Wide range of applications

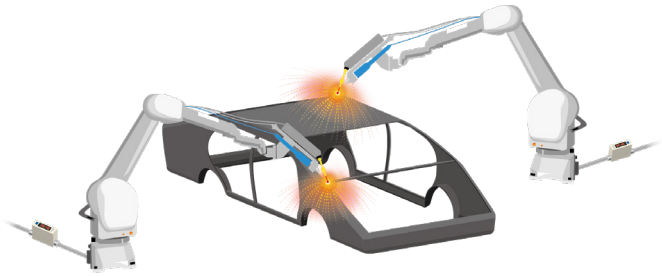
- Painting Robot :
  Air flow and pressure management of paint and coating processes

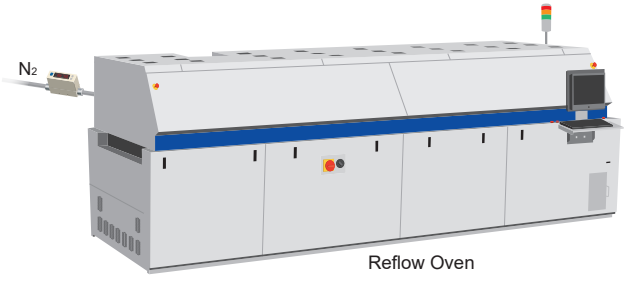


- Reflow Oven / Mounting Machine :
  N_2 & Air consumption of the whole equipment management



- Laser Welding Robot :
  Management of shielding gas, flow rate and pressure





Specifications

Model				005	010	050	100	500	101	201
Fluid				Dry air, N_2, CO_2, Ar, 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		-100 ~ 1000 kPa						
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
		Minimum Setting Scale	LPM	1 mL/min	1 mL/min	0.01 L/min	0.01 L/min	0.1 L/min	0.1 L/min	1 L/min
			CFM ※1	0.01 ft^3/min	0.01 ft^3/min	0.1 ft^3/min	0.1 ft^3/min	1 ft^3/min	1 ft^3/min	1 ft^3/min
	Accumulated Flow	Display Range		99999999 mL	99999999 mL	999999.99 L	999999.99 L	9999999.9 L	9999999.9 L	99999999 L
		Minimum Setting Scale ※1		1 mL	1 mL	0.01 L	0.01 L	0.1 L	0.1 L	1 L
				0.01 ft^3	0.01 ft^3	0.1 ft^3	0.1 ft^3	1 ft^3	1 ft^3	1 ft^3
	Pressure Display	Display Range		-100 ~ 1000 kPa						
		Minimum Setting Scale	kPa	1						
			kgf/cm^2	0.01						
			bar	0.01						
			psi	0.1						
Accuracy	Flow ※8	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		± 5 % F.S. ※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. ※5						
Switch Output				2 NPN : open collector 2 outputs Max. Load Current : 125 mA Max. Supply Voltage : 24 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		
	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						
	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 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						
External Input				Non-voltage input, < 0.4 V, ≥ 30 ms						
Communication Interface				RS485 ※7						
Power		Power Supply Voltage		12 ~ 24 V DC ± 10 %, Ripple (P-P) ≤ 10 % (UL class 2)						
		Current Consumption		≤ 50 mA						
Environment	Withstand Pressure			1 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)						
	Withstand Voltage			1000 V AC in 1-min (between case and lead wire)						
	Insulation Resistance			≥ 50 MΩ (500 V DC, 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						
Lead Wire				Ø4 Oil-resistance cable (PVC) - 26 AWG (0.15 mm^2) - 6 cores						
Weight (with 2 meter lead wire)				Approx. 112.1 g (Ø6 port) ; Approx. 116 g (Ø8 port) ; Approx. 122.4 g (Rc1/4" port) ; Approx. 132.4 g (Rc1/8" port)						

NOTE

※1 : CFM ($ft^3/min \times 10^{-2}$) and $ft^3 \times 10^{-2}$
※2 : CONDITION : Inlet Pressure : 300 kPa, Outlet Pressure : 1 atmospheric pressure, 25 °C
※3 : CONDITION : Outlet Pressure : 1 atmospheric pressure, 25 °C
※4 : -100 ~ 1000 kPa, Outlet Pressure : 1 atmospheric pressure, 25 °C
※5 : Outlet flow rate = 0 L/min, 25 °C
※6 : Corresponding to pressure sensor 0 ~ 1000 kPa
※7 : This function only available for Output Specification -02 and -04.
※8 : Accuracy: It is based on dry compressed air and KITA standard flow meter. It is a reference only for other gases.

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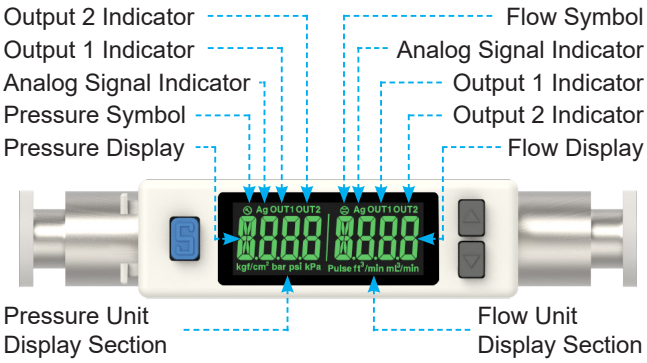
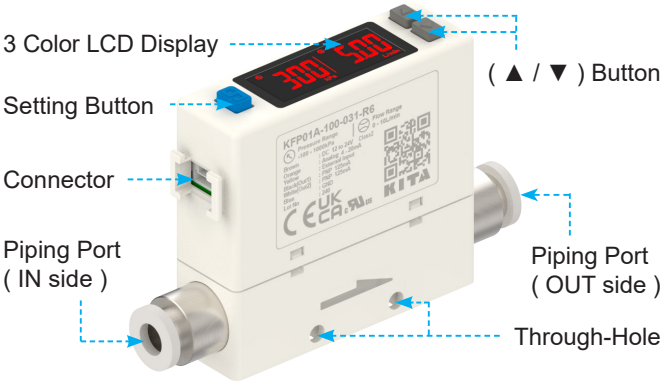
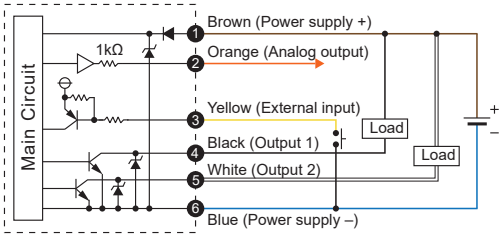
Panel Description



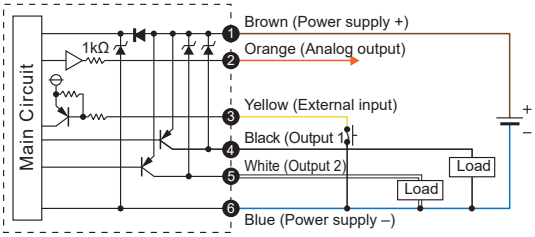


Output Circuit Wiring Diagrams

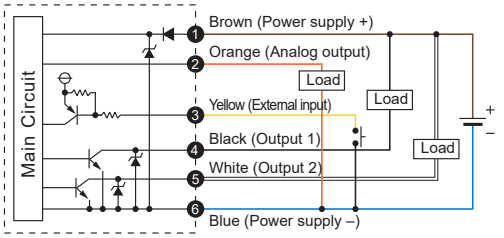
NPN Output / Analog Voltage Output / External Input



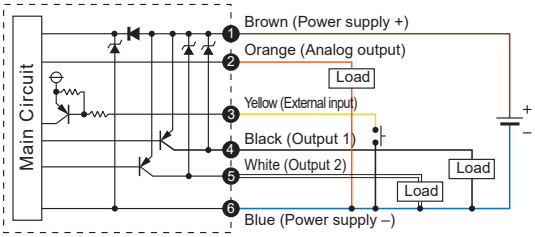
PNP Output / Analog Voltage Output / External Input



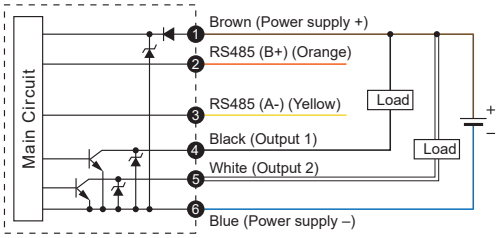
NPN Output / Analog Current Output / External Input



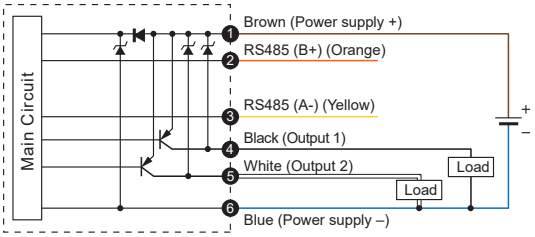
PNP Output / Analog Current Output / External Input



NPN Output / RS485 MODBUS Mode



PNP Output / RS485 MODBUS Mode



※ Wiring for RS485 MODBUS : Please connect RS485 (B+) or (A-) before connecting power supply to avoid short circuit to damage to product.

Ordering Information

K F P 0 1 A - 0 0 5 - 0 1 0 - R 6

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 Specifications

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

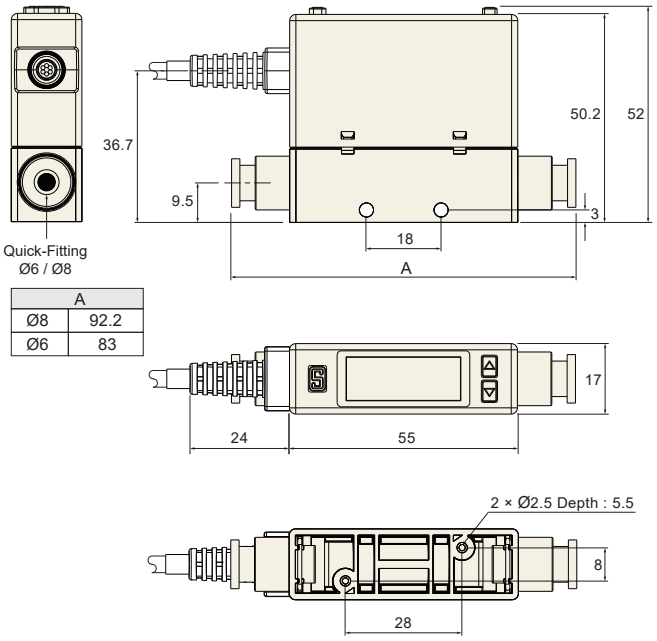
R6 : Ø6 mm, for Flow Rate Range 005, 010, 050, 100, 500
R8 : Ø8 mm, for Flow Rate Range 101, 201
F1C : Rc1/8", with internal threads, for Flow Rate Range 005, 010, 050, 100, 500
F4C : Rc1/4", with internal threads, for Flow Rate Range 101, 201

Optional Parts

BT-26 : Mounting bracket
PA-G : Panel adapter
PA-H : Panel adapter + Front protective lid

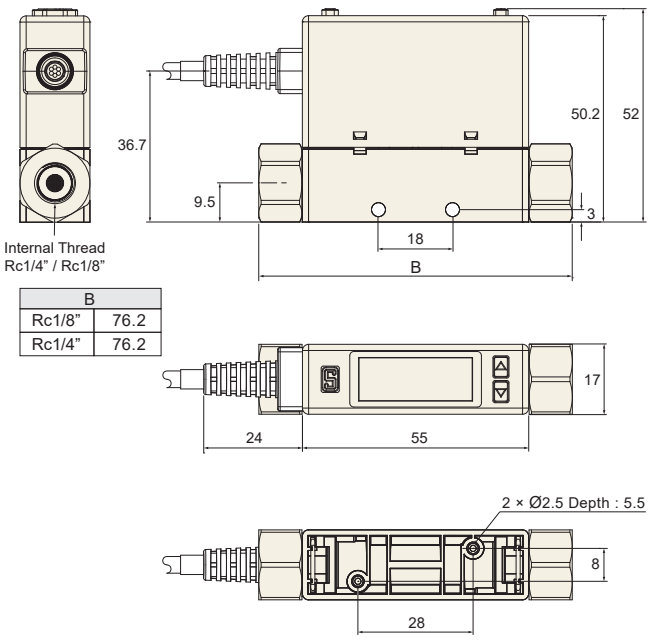
Dimensions

Port Size : Ø6, Ø8



A	
Ø8	92.2
Ø6	83

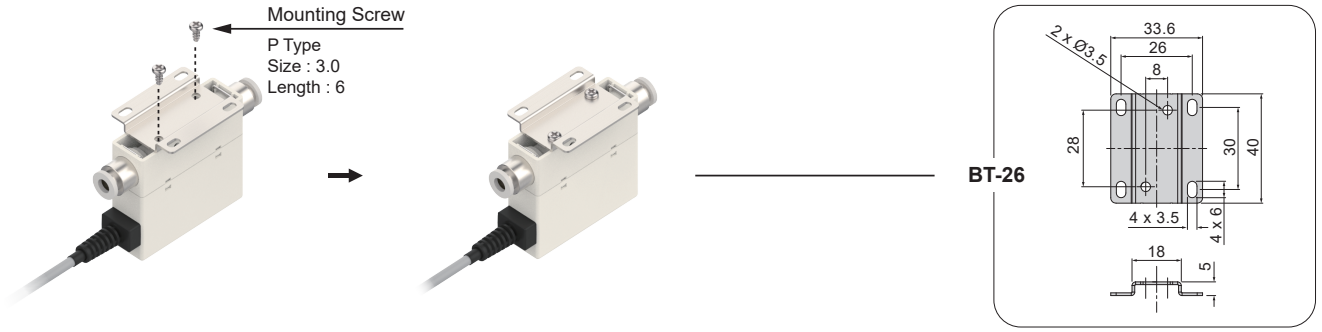
Port Size : Rc1/8”, Rc1/4”



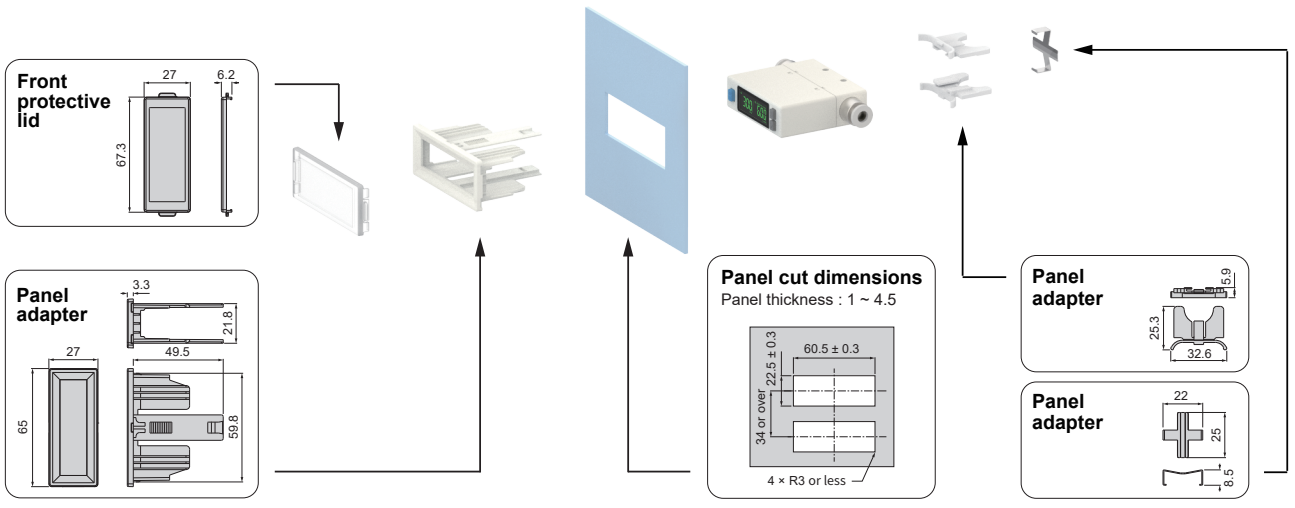
B	
Rc1/8”	76.2
Rc1/4”	76.2

Optional Parts Dimensions

1 Mounting Bracket



2 Panel Mount Adapter + Front Protective Lid



Unit : mm