

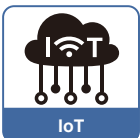
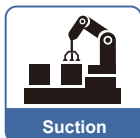
KFP02 SERIES

Digital Flow and Pressure Sensor

Features

- Design for large flow
- 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
- Real-time monitoring
- 200 : 1 ratio covers a wider flow range

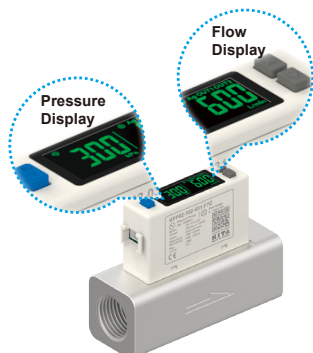
RS485 MODBUS CONTROL



Features Highlight

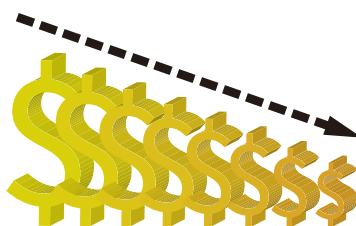
1 2-in-1 Design

- Pressure and flow rate simultaneous monitoring



2 Cost Reduction

- KFP 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

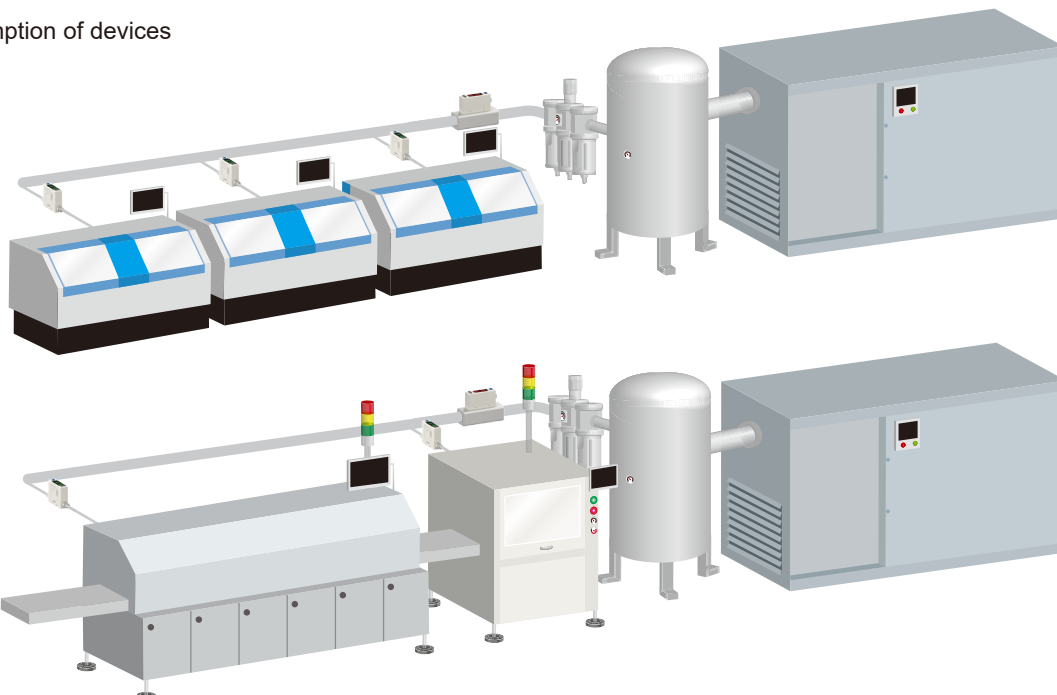
Digital Display	Instantaneous flow value Accumulated flow value Pressure value
Switch Output	NPN output PNP output
Analog output	Voltage output 1~5 V Current output 4~20 mA
Accumulated Pulse Output	50ms pulse output

4 Air Consumption Monitoring

- Monitor air consumption of devices



+



Specifications

Model				501		102		202			
Fluid				Dry air, N ₂ , Non-corrosive / Non-flammable gas							
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	Instant Flow Rate	Display Range		0 ~ 525 L/min		0 ~ 1050 L/min		0 ~ 2100 L/min			
		Minimum Setting Scale	LPM	1 L/min							
			CFM	0.1 ft ³ /min							
		Accumulated Flow	Display Range		99999999 L						
	Minimum Setting Scale		1 L								
			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	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 % F.S. when response time is set to 50 ms) ※2							
Linearity				± 3 % F.S. ※2							
Temp. Characteristic				± 5 % F.S. (compare with ※2)							
Pressure	Pressure Characteristic		± 5 % F.S. ± 1 digit ※3								
	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				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 Protection		Yes									
Accumulated Pulse Output				5 L/Pulse 20 ft ³ /Pulse		10 L/Pulse 40 ft ³ /Pulse		10 L/Pulse 40 ft ³ /Pulse			
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				RS485 ※6							
Power		Power Supply Voltage		12 ~ 24 V DC ± 10 %, Ripple (P-P) ≤ 10 %							
		Current Consumption		≤ 50 mA							
Environment	Withstand Pressure		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		≥ 2 MΩ (50 V DC, between case and lead wire)								
	Withstand Voltage		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/s ² (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							
Weight (without 2 Meter Lead Wire)				Approx. 281.7 g (500 / 1000 L) : Approx. 344 g (2000 L)							

NOTE

※1 : CONDITION : Inlet Pressure : 600 kPa , Outlet Pressure : 1 atmospheric pressure, 25 °C

※2 : CONDITION : Outlet Pressure : 1 atmospheric pressure, 25 °C

※3 : 0 ~ 1.0 MPa, Outlet Pressure : 1 atmospheric pressure, 25 °C

※4 : Outlet flow rate = 0 L/min, 25 °C

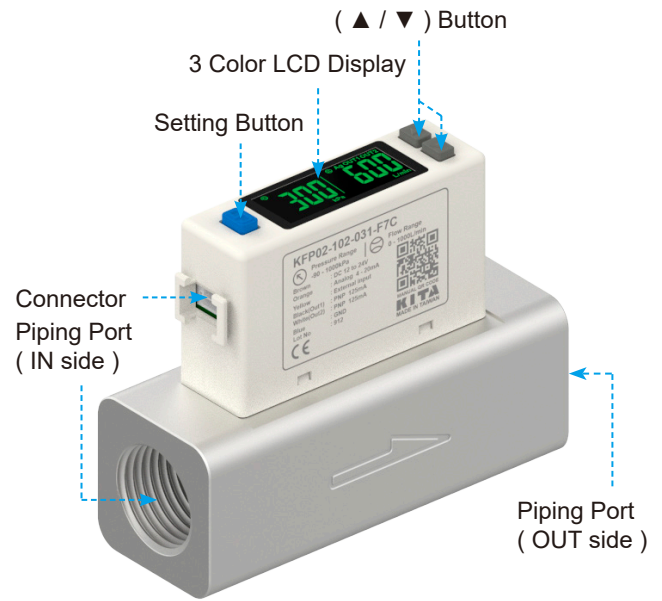
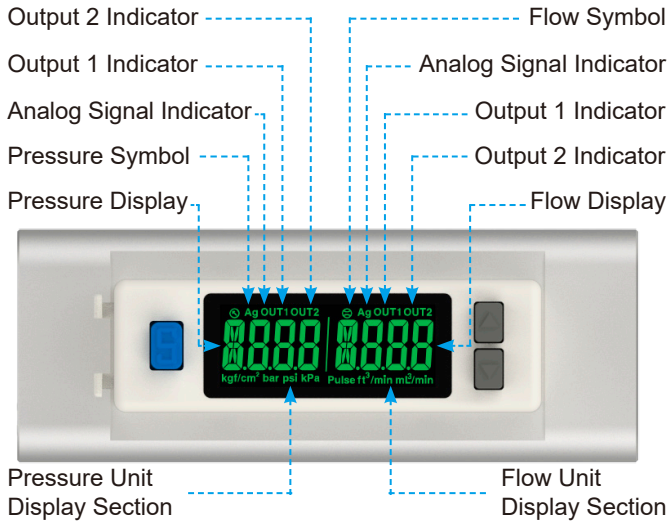
※5 : PWM output, corresponding to pressure sensor 0 ~ 1000 kPa

※6 : This function only available for Output Specification -02 and -04.

KFP02 SERIES

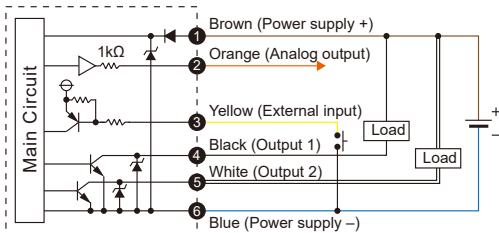
Digital Flow and Pressure Sensor

Panel Description

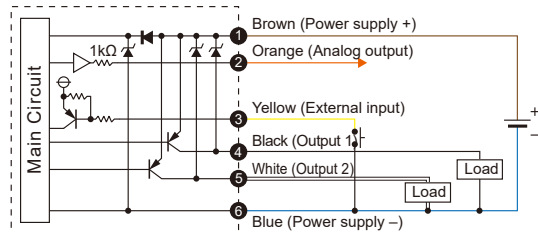


Output Circuit Wiring Diagrams

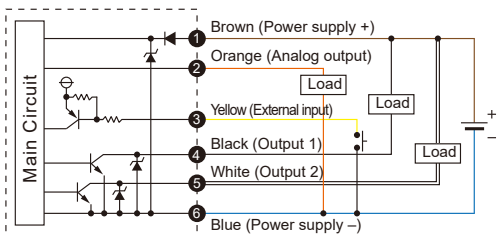
■ NPN Output / Analog Voltage Output / External Input



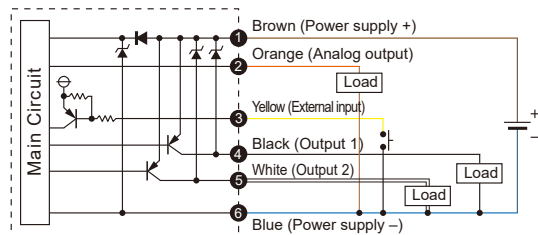
■ PNP Output / Analog Voltage Output / External Input



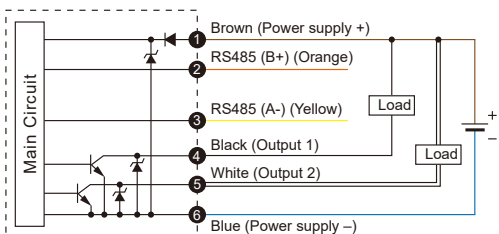
■ NPN Output / Analog Current Output / External Input



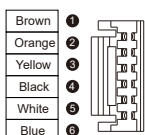
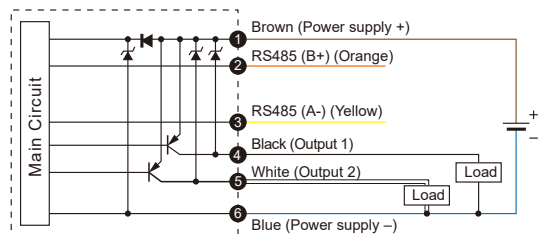
■ PNP Output / Analog Current Output / External Input



■ NPN Output / RS485 MODBUS Mode



■ PNP Output / RS485 MODBUS Mode



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

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

Ordering Information

K F P 0 2 - 5 0 1 - 0 1 0 - F 7 C

Flow Rate Range

501 : 500 L/min
102 : 1000 L/min
202 : 2000 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

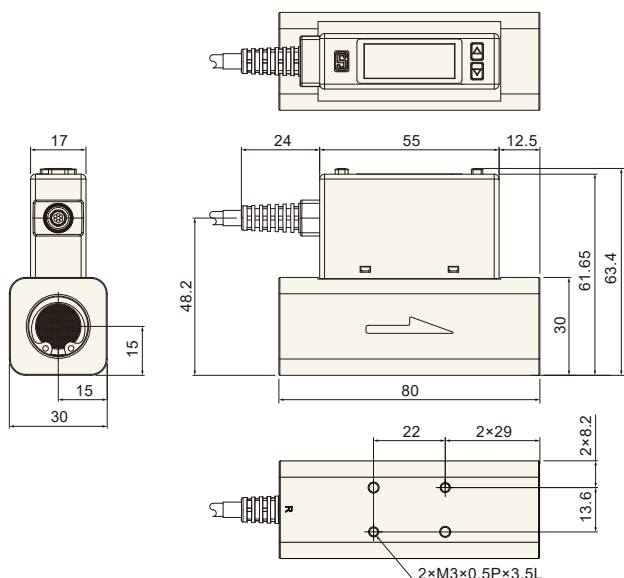
F7C : Rc $\frac{1}{2}$, for Flow Rate Range 501/102.
F9C : G $\frac{1}{2}$, for Flow Rate Range 501/102.
F10C : Rc $\frac{3}{4}$, for Flow Rate Range 202.
F12C : G $\frac{3}{4}$, for Flow Rate Range 202.

Optional Parts

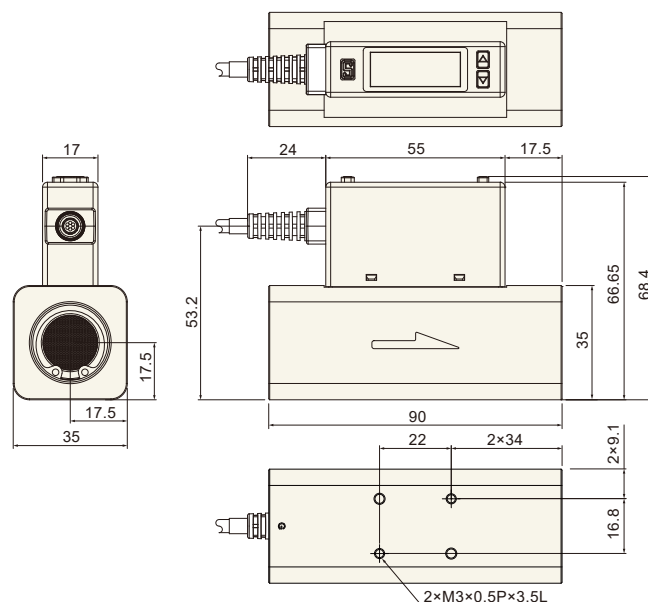
BT-27 : Mounting bracket
BT-28 : Mounting bracket

Dimensions

Flow Rate Range 501, 102 (Port Size : Rc $\frac{1}{2}$, G $\frac{1}{2}$)

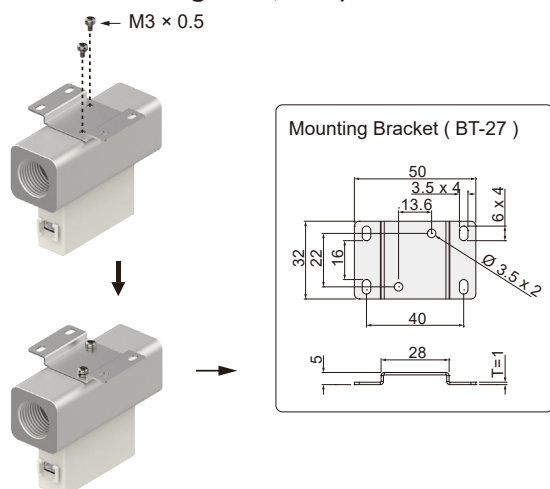


Flow Rate Range 202 (Port Size : Rc $\frac{3}{4}$, G $\frac{3}{4}$)



Optional Parts Dimensions

Mounting Bracket : BT-27 (Flow Rate Range 501, 102)



Mounting Bracket : BT-28 (Flow Rate Range 202)

