KFP02 SERIES

Digital Flow and Pressure Sensor

Features

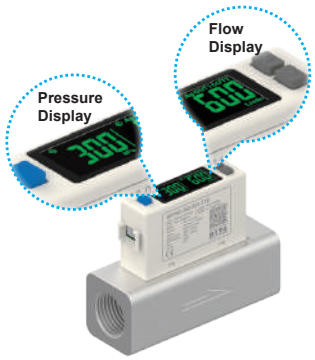
- Design for large flow
- Flow and pressure dual sensor
- Flow and pressure 4 digit, 7 segment dual LCD display.
  7 segment 8 digit LCD display.
- Accumulated flow rate display at a glance
- Real-time monitoring
- 200 : 1 ratio covers a wider flow range

RS485 MODBUS CONTROL

Features Highlight

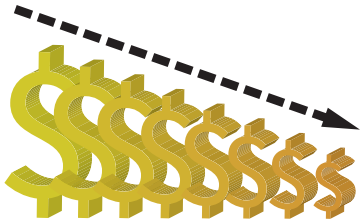
1 2-in-1 Design

- Pressure and flow rate simultaneous monitoring



2 Cost Reduction

- KFP series significantly reduces costs comparing with conventional product



3 High Performance

- High Precision

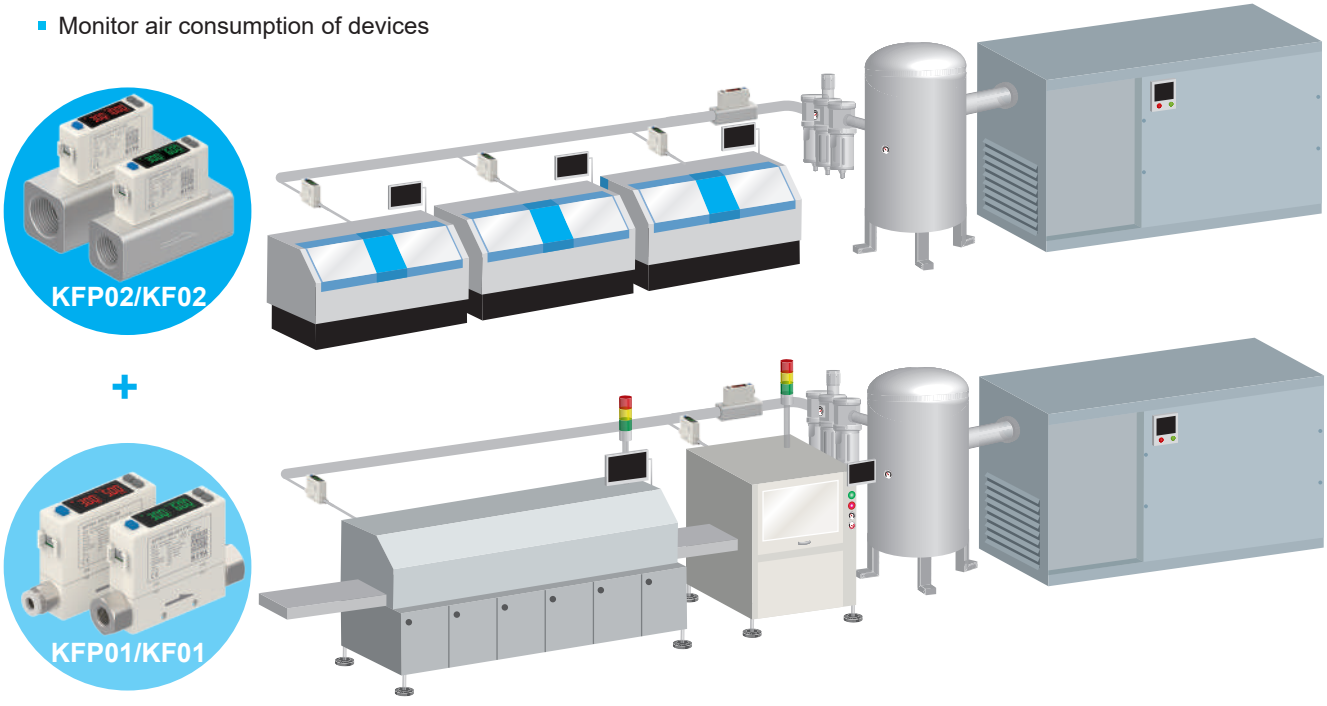
	Pressure	Flow
Indicator accuracy	± 2 % F.S.	± 3 % F.S.
Repeatability	± 0.2 % F.S.	± 1 % F.S.

- 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

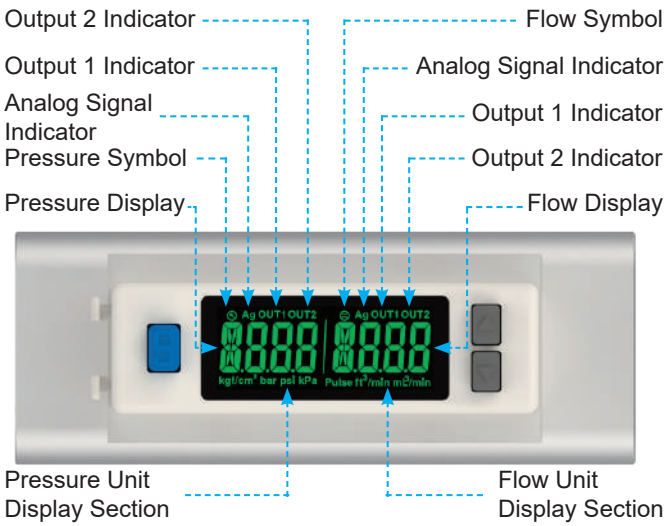
Model				501	102	202
Fluid				Dry air, N_2, Non-corrosive / Non-flammable gas		
Sensor Element	Flow	Measured Flow Rate Range		2 ~ 500 L/min	5 ~ 1000 L/min	10 ~ 2000 L/min
		Flow Direction		Unidirection		
	Pressure	Rated Pressure Range		-90 ~ 1000 kPa		
Display				4 digital × 4 digital, 7 segment LCD display (Red / Green / Orange)		
	Instant Flow Rate	Display Range		0 ~ 525 L/min	0 ~ 1050 L/min	0 ~ 2100 L/min
		Minimum Setting Scale	LPM	1 L/min		
			CFM	0.1 ft^3/min		
	Accumulated Flow	Display Range		99999999 L		
		Minimum Setting Scale		1 L		
				0.1 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 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				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			5 L/Pulse	10 L/Pulse	10 L/Pulse
				20 ft^3/Pulse	40 ft^3/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/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		
Weight (without 2 Meter Lead Wire)				Approx. 281.7 g (500 / 1000 L) ; Approx. 344 g (2000 L)		

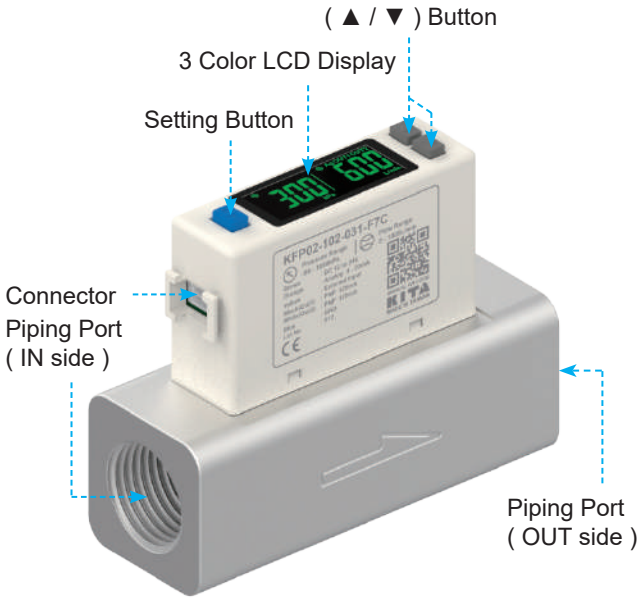
NOTE

※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

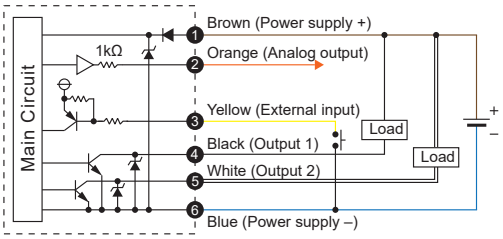
Panel Description



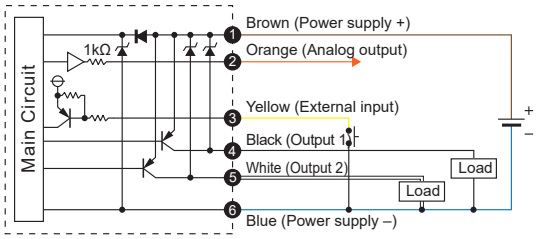


Output Circuit Wiring Diagrams

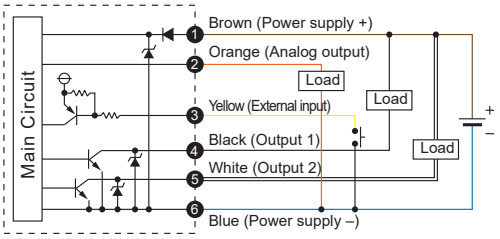
NPN Output / Analog Voltage Output / External Input



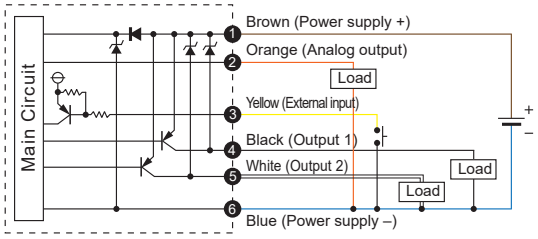
PNP Output / Analog Voltage Output / External Input



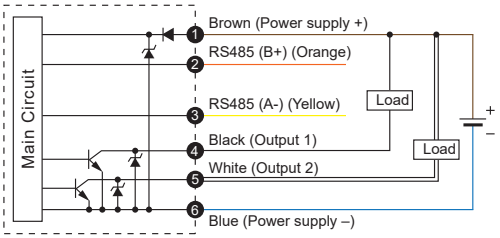
NPN Output / Analog Current Output / External Input



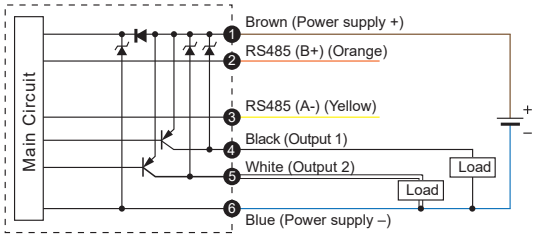
PNP Output / Analog Current Output / External Input

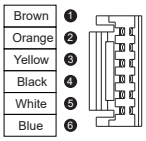


NPN Output / RS485 MODBUS Mode



PNP Output / RS485 MODBUS Mode





Pin No.	Line color	Content
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)

* 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

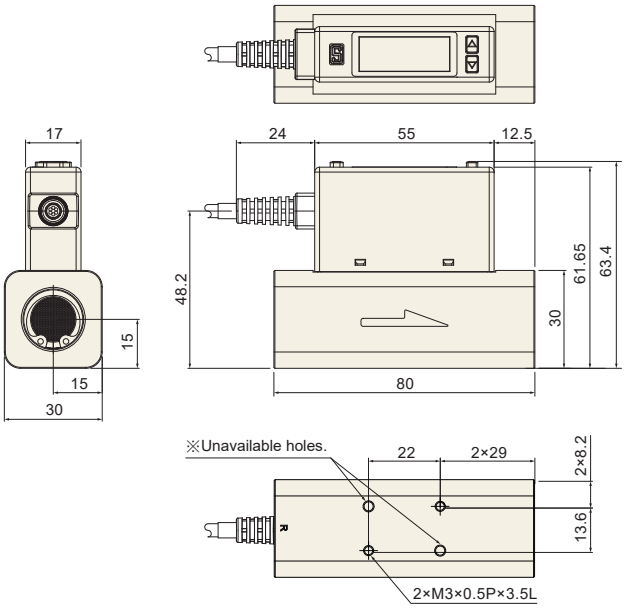
F7C : Rc½, for Flow Rate Range 501/102.
F9C : G½, for Flow Rate Range 501/102.
F10C : Rc¾, for Flow Rate Range 202.
F12C : G¾, for Flow Rate Range 202.

Optional Parts

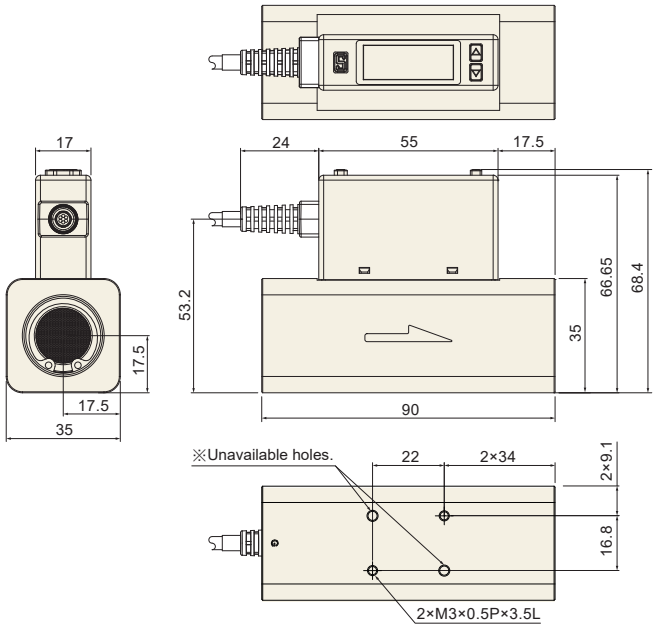
BT-27 : Mounting bracket, for Flow Rate Range 501/102.
BT-28 : Mounting bracket, for Flow Rate Range 202.

Dimensions

■ **Flow Rate Range 501, 102**
(Port Size : Rc½, G½)

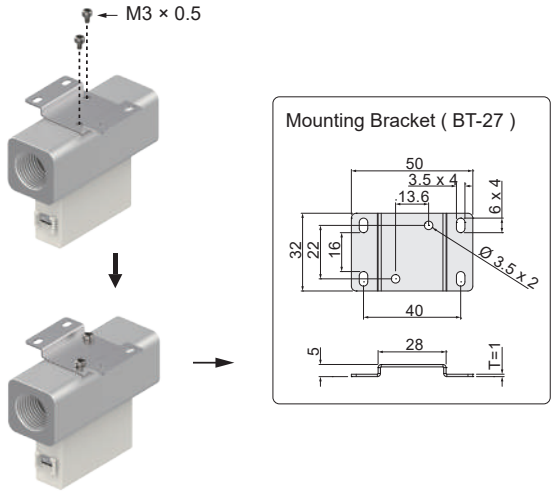


■ **Flow Rate Range 202**
(Port Size : Rc¾, G¾)

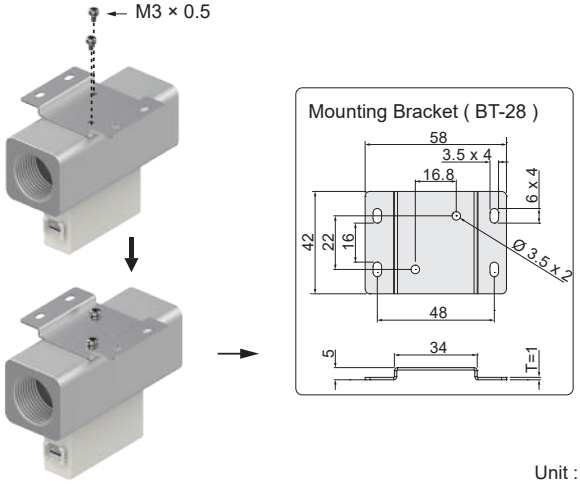


Optional Parts Dimensions

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



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



Unit : mm