

**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

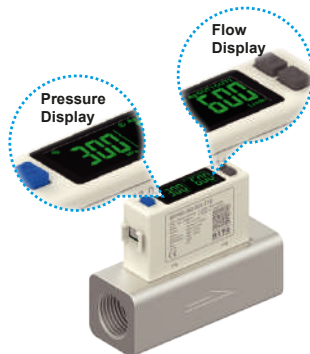
RS485 MODBUS CONTROL



**Features Highlight**

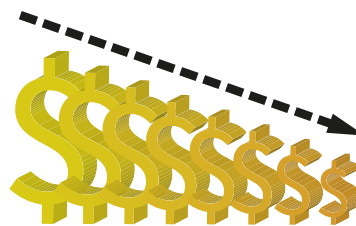
**1 2-in-1 Design**

- 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

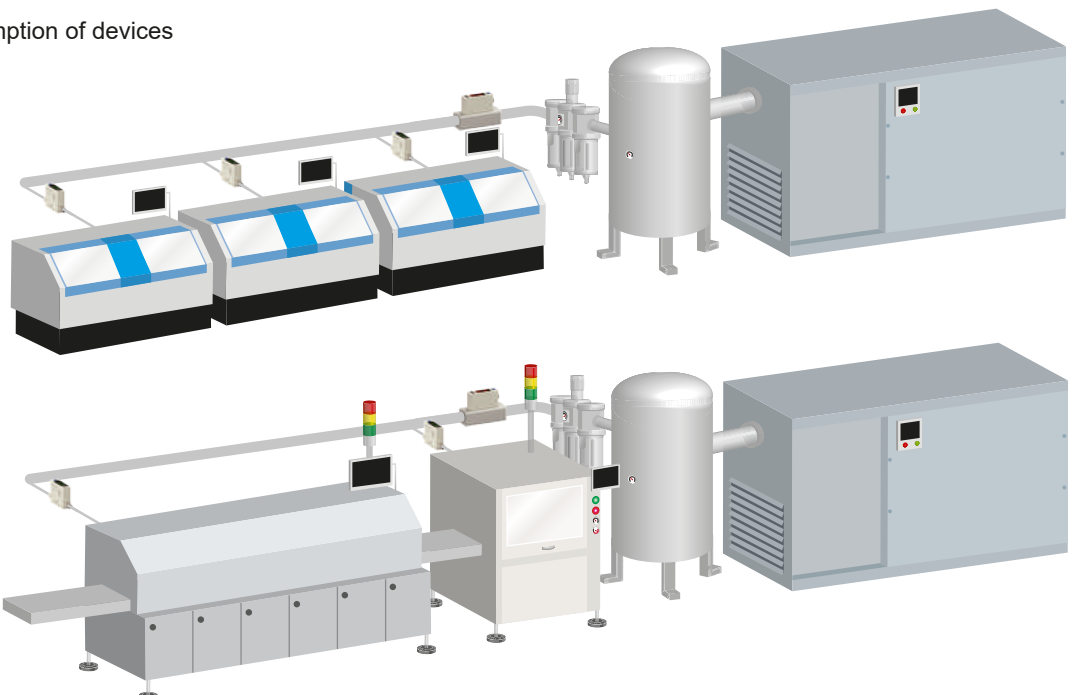
Digital Display	Instantaneous flow value Accumulated flow value Pressure value
Switch Output	NPN output PNP output
Analog output	Voltage output 1~5 V Current output 4~20 mA
Accumulated Pulse Output	50ms pulse output

**4 Air Consumption Monitoring**

- Monitor air consumption of devices



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**Specifications**

Model		501	102	202
Fluid		Dry air, N <sub>2</sub> , Non-corrosive / Non-flammable gas		
Sensor Element	Flow	Measured Flow Rate Range	2 ~ 500 L/min	5 ~ 1000 L/min
	Pressure	Rated Pressure Range	Unidirection -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 <sup>3</sup> /min
Accumulated Flow	Display Range	99999999 L		
		Minimum Setting Scale	1 L 1 ft <sup>3</sup>	
Pressure Display	Display Range	-100 ~ 1000 kPa		
		Minimum Setting Scale	kPa 1	
		kgf/cm <sup>2</sup>	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	
	Pressure	Temp. Characteristic	± 5 % F.S. ( compare with ※2 )	
		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	
Switch Output	Response Time	Flow	2 NPN : open collector 2 outputs Max. Load Current : 125 mA Max. Supply Voltage : 28 V DC Voltage Drop : ≤ 1.5 V	
		Pressure	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	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 )	
	Hysteresis	Flow	Hysteresis Mode, Window Comparator Mode, Accumulated Output, Accumulated Pulse Output	
Output Short Circuit Protection	Pressure	One Point Set Mode, Hysteresis Mode, Window Comparator Mode		
Accumulated Pulse Output	Adjustable			
Analog Output	Voltage Output	Yes		
	Current Output	Voltage Output Range : 1 ~ 5 V ※5 Output Impedance : 1 KΩ		
	Response Time	Current Output Range : 4 ~ 20 mA ※5 Load Impedance : ≤ 300 Ω		
External Input	Pressure : ≤ 50 ms ; Flow : ≤ 100 ms			
Communication Interface	Non-voltage input, ≤ 0.4 V, ≥ 30 ms			
Power	Power Supply Voltage	RS485 ※6		
	Current Consumption	12 ~ 24 V DC ± 10 %, Ripple ( P-P ) ≤ 10 % ≤ 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 <sup>2</sup> ( 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 <sup>2</sup> ) - 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

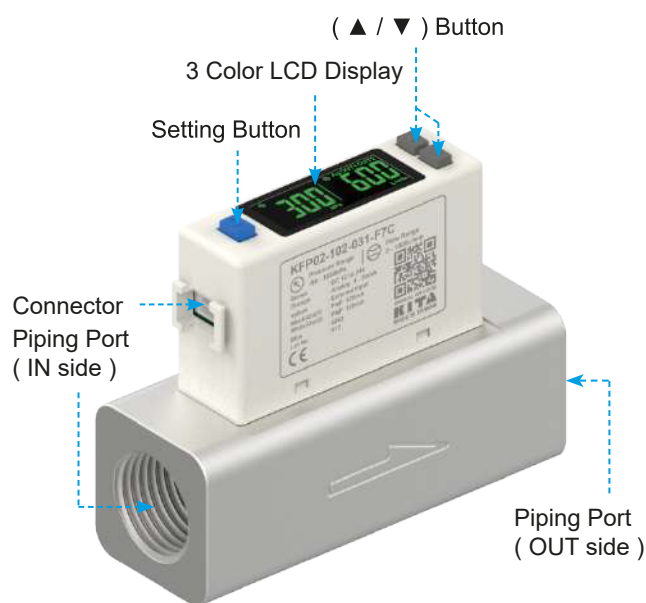
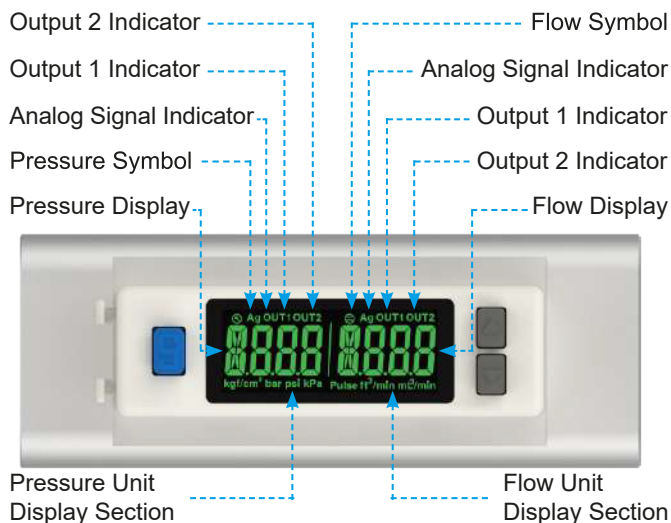
※3 : 0 ~ 1.0 MPa, Outlet Pressure : 1 atmospheric pressure, 25 °C

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

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

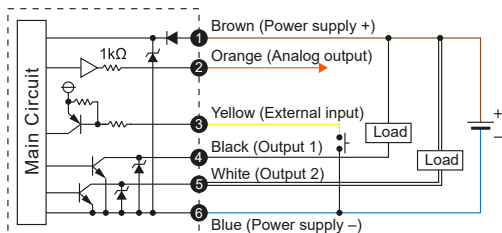
※6 : This function only available for Output Specification -02 and -04.

## Panel Description

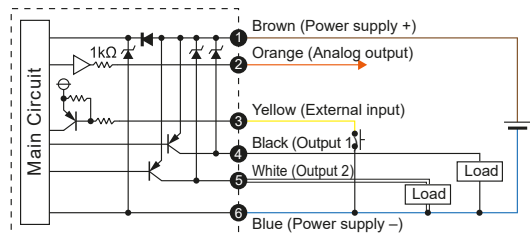


## Output Circuit Wiring Diagrams

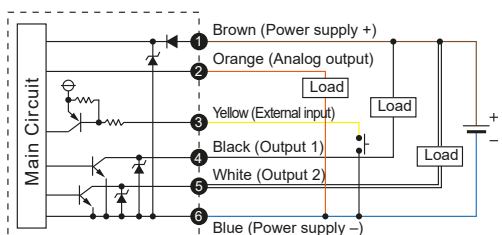
### NPN Output / Analog Voltage Output / External Input



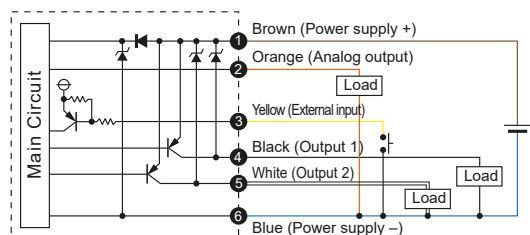
### PNP Output / Analog Voltage Output / External Input



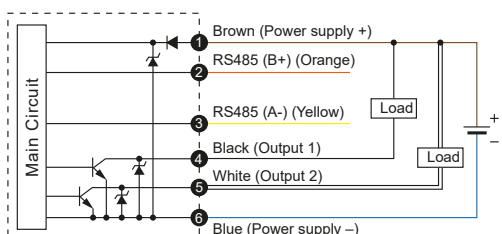
### NPN Output / Analog Current Output / External Input



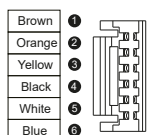
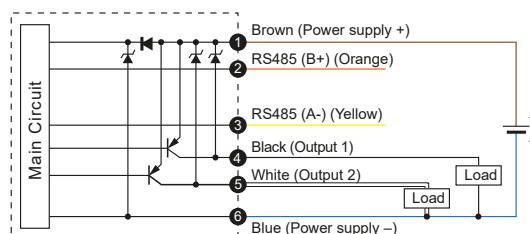
### PNP Output / Analog Current Output / External Input



### 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

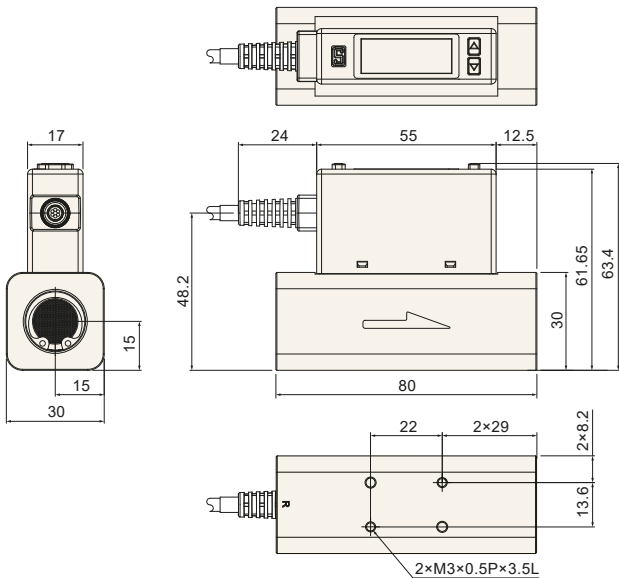
F7C : Rc $\frac{1}{2}$ , for Flow Rate Range 501/102.  
F9C : G $\frac{1}{2}$ , for Flow Rate Range 501/102.  
F10C : Rc $\frac{3}{4}$ , for Flow Rate Range 202.  
F12C : G $\frac{3}{4}$ , for Flow Rate Range 202.

### Optional Parts

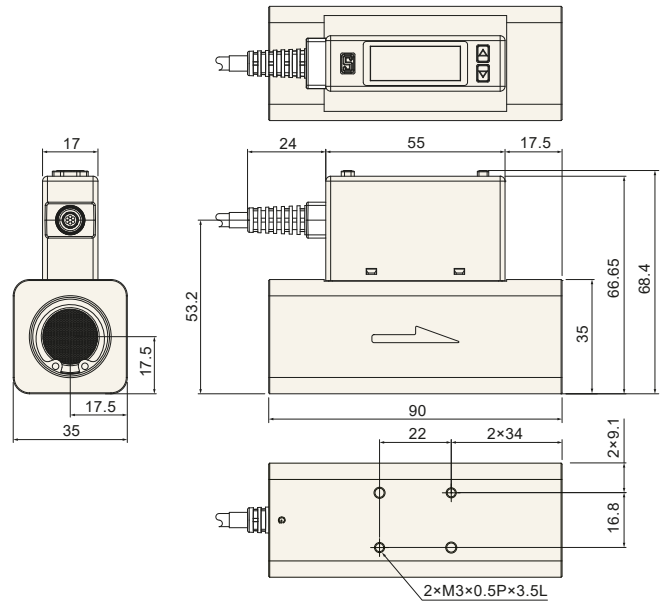
BT-27 : Mounting bracket  
BT-28 : Mounting bracket

## Dimensions

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

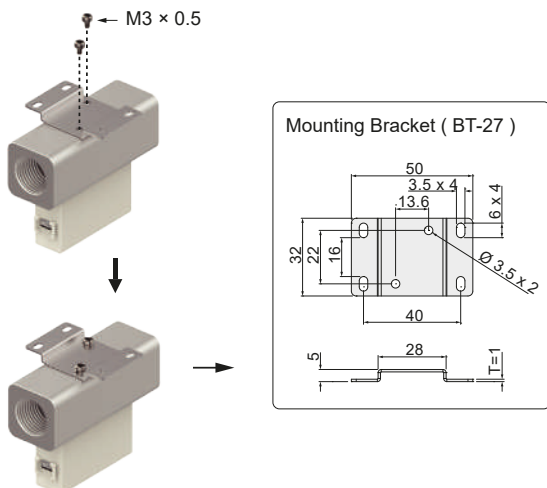


### Flow Rate Range 202 ( Port Size : Rc $\frac{3}{4}$ , G $\frac{3}{4}$ )

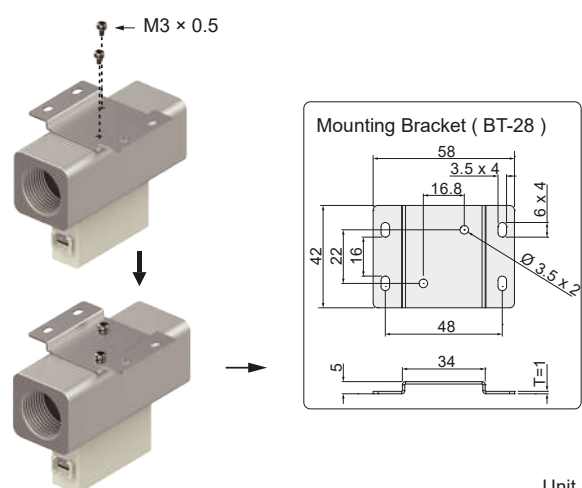


## Optional Parts Dimensions

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



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



Unit : mm