

Datasheet Mass Flow Meter



Datasheet

Mass Flow Meter

Mass Flow Meter is a new type of advanced flow measurement instrument and has been rapidly developed in the world. It has been widely used for process detection and custody transfer measurement in many industries and has been highly valued by the flow research community and welcomed by users at home and abroad. K series Sensors are used in conjunction with BPM Transmitters to provide accurate instantaneous flow, flow totals, and real-time monitoring of density and temperature.

Applications

- Petroleum
- Petrochemical
- Chemical
- Marine
- Pharmaceutical
- Municipal
- Paper
- Food
- Pharmacy
- Energy

Features

- Configurable output: 4-20mA current output and 0-10kHz pulse output
- Standard RS485 interface mode
- Light sensitive explosion-proof buttons and OLED display.
- Temperature and pressure compensation
- To avoid the measurement error caused by the intermediate conversion.
- High reliability, long service life and less daily maintenance.



Coriolis Mass Flow Meter

Principle

Mass Flow Meters are based on the Coriolis principle, using magnets and coil components installed on the measuring tube, under the action of alternating current, the measuring tube is vibration periodically at a fixed frequency. When the fluid medium of the industrial process flows through the measuring

tube, the Coriolis force effect will occur, and torsional vibrations will happen to the two measuring tubes. At this time, the pickoff coils installed at both ends of the measuring tube will generate two signals with different phases, and the phase difference is proportional to the mass of the fluid flowing through the measuring tube of the Sensor. Therefore, the mass value of the fluid can be obtained by measuring the phase difference. In addition, the vibration frequency of the measuring tube is determined by the total mass of the measuring tube and the fluid in the tube. Therefore, when the density of the fluid changes, the vibration frequency will also change accordingly. According to this, the density value of the fluid in the tube can be obtained. The temperature Sensor installed on the measuring tube can monitor the fluid temperature in real time.

Parameters

Accuracy Levels				
	Model	Flange	Mass(kg/h)	Volume(l/h)
Maximum flow	K010	DN10, DN15, DN20, DN25	96	110
	K015	DN10, DN15, DN20, DN25	270	310
	K025	DN15, DN20, DN25	1000	1420
	K050	DN15, DN20, DN25	3000	4200
	K100	DN25, DN32	15200	21600
	K200	DN40, DN50, DN65	52500	75000
	K300	DN80, DN100	155000	220000
	K350	DN100, DN125, DN150	290000	403000
	K400	DN150, DN175, DN200	462000	652000
	K600	DN200, DN225, DN250	900000	1463000
	K800	DN200, DN225, DN250	1604000	2350000
K1200	DN250, DN300, DN350	2380000	3266000	
Mass flow error ①	Within 30: 1 range ratio ②		± 0.1%	
	Within 40: 1 range ratio ②		± 0.15%	
Mass flow repeatability	Within 30: 1 range ratio		± 0.025%	
Volume flow error ③	Within 30: 1 range ratio		± 0.1%	

Zero Stability		
	Model	kg/h
Zero Stability ④	K010	0.0024
	K015	0.00675
	K025	0.025
	K050	0.075
	K100	0.38
	K200	1.31

K300	3.88
K350	7.83
K400	21.95
K600	29.25
K800	64.16
K1200	99.25

① The stated flow error includes the combined effects of repeatability, linearity and hysteresis. All liquid indicators are based on water at 20~25 °C and 0.1~0.2Mpa reference conditions, unless otherwise stated.

② Range ratio is the ratio of maximum flow and minimum flow.

③ The volume flow error is based on the process fluid with a density of 1g / cm³.

④ When the flow value is close to the low end of the flow range, the accuracy of the flow meter begins to deviate from the stated accuracy.

Density Accuracy (For Liquid)

Density error②	± 0.0005g/cm ³	± 0.5kg/m ³
Repeatability	± 0.0001g/cm ³	± 0.1kg/m ³
Measuring range	(0.2~2.0)g/cm ³	(200~2000)kg/m ³

② The density error of ± 0.0005g / cm³ (± kg / m³) is based on water under the reference conditions of 20 °C and 0.1~0.2Mpa. Under different operating conditions, accuracy may be reduced.

Temperature Accuracy

Error	± 0.2 °C	① If installed in a hazardous location, the explosion-proof certification shall define the applicable temperature range.
Repeatability	± 0.1 °C	
Temperature limit ①	(-240~204) °C	
Temperature display range	(-240~204) °C	
Ambient temperature	Operating temperature	(-40~60) °C
	Storage temperature	(-40~70) °C

Hazardous Area Classifications

Explosion-proof mark

Explosion-proof grade	Sensor	Ex ib IICT 1~T6 Gb
	Transmitter	Ex d [ib] IIC T4 Gb
Protection level	Sensor	IP 67
	Transmitter	IP 65

General Technical Specifications

Power supply	AC power supply	(85~265) VAC, 50 / 60 Hz
	DC power supply	(18~100) VDC

Pressure resistance and sealing
The compressive strength test was carried out on the pressure part of the flow meter with water, and the test pressure was 1 . 5 times the nominal pressure, which lasted 5 minutes, and there was no leakage at each connection .

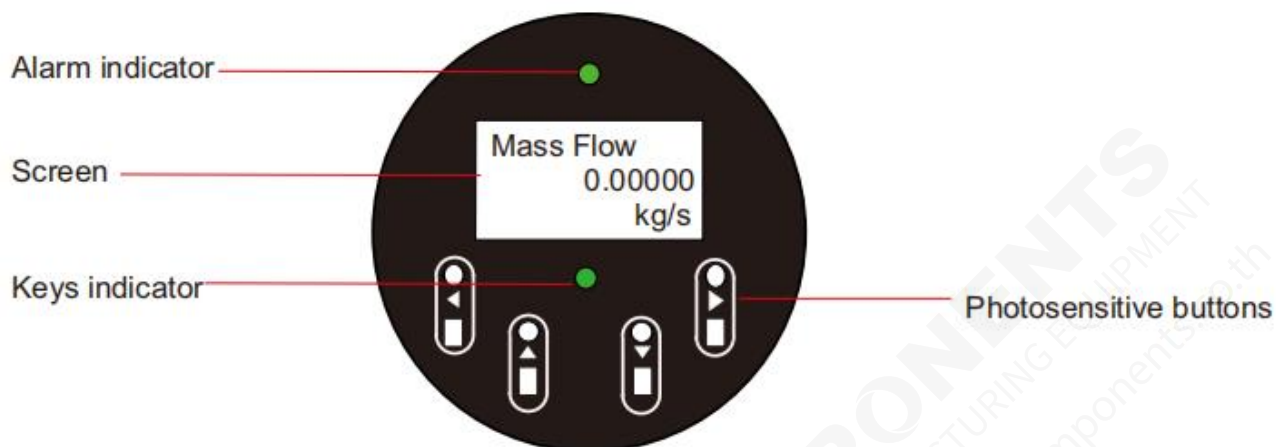
Output Signal and Integration

Analog communication (two optional output channels)	It can be set according to site requirements : two channels current communication, two-way pulse communication or one-way current communication and one-way pulse communication .	
Pulse output	Output range	(0~10) kHz
	Basic error	± 0.01 %
	Temperature influence	± 0.001 % FS / °C
Current output	Output range	(4~20) mA
	Basic error	± 0.05 %
	Temperature influence	± 0.005 % FS / °C
Digital communication	RS 485 interface, Modbus communication protocol ; optional baud rate: 9600, 19200 or 38400, etc .; multi-machine communication and bus connection are available .	
Power consumption	BPM Transmitter maximum power ≤ 11 W	

FACTOCOMPONENTS
 INDUSTRIAL SUPPLIES AND MANUFACTURING EQUIPMENT
 02-384-6060 | info@factocomponents.co.th | www.factocomponents.co.th

Parameters

Display Interface Description



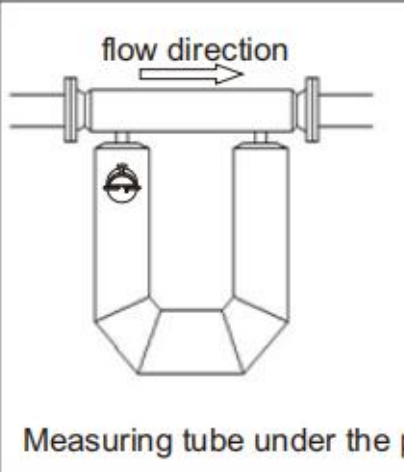
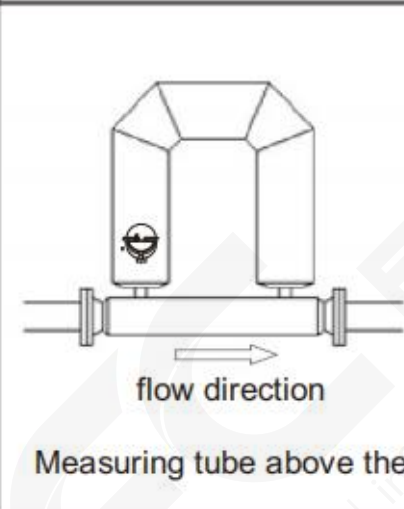
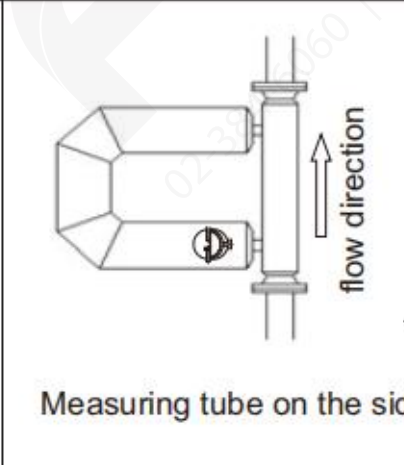
Keys	Menu Switch	Coefficient Input
>	Short press to enter the lower menu ; function switch ; long press (representing symbol '»') to enter the lower menu	Input the next digit
<	Short press to return to the previous menu	Short press to return to the previous numeric input ; long press (Representing the symbol '«') to exit the digital input
^	Short press to page up	Input digit plus 1
∨	Short press to turn page ; function switch	Input digit minus 1

Parameters

Sensor Installation

The flow meter can only work normally when the measuring tube is filled with process fluid. In principle, the flow meter can be installed in any way that will fill the measuring tube with process fluid.

The specific Sensor installation should be determined according to the fluid phase and on-site working conditions. It is mainly divided into the following three type.

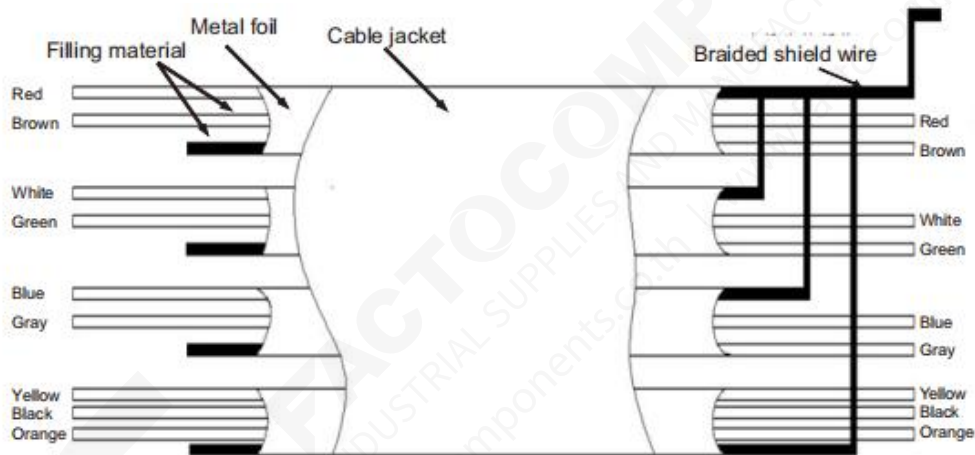
 <p>Measuring tube under the pipeline</p>	<p>Horizontal installation—bottom mounted</p> <p>Generally, the Sensor is installed with the shell facing down to prevent air from accumulating in the Sensor measurement tube, thereby achieving the purpose of accurately measuring the mass flow.</p> <p>Applicable medium: liquid</p>
 <p>Measuring tube above the pipeline</p>	<p>Horizontal installation—top mounted</p> <p>Generally, the Sensor is installed with the shell facing upward to avoid the accumulation of condensate in the measuring tube of the Sensor.</p> <p>Applicable medium: gas</p>
 <p>Measuring tube on the side of the pipeline</p>	<p>Flag installation—side mounted</p> <p>Generally, the Sensor is installed on the vertical pipeline to avoid the accumulation of particles in the measuring tube of the Sensor.</p> <p>Applicable medium: liquid or solid-liquid mixing</p>

Wiring

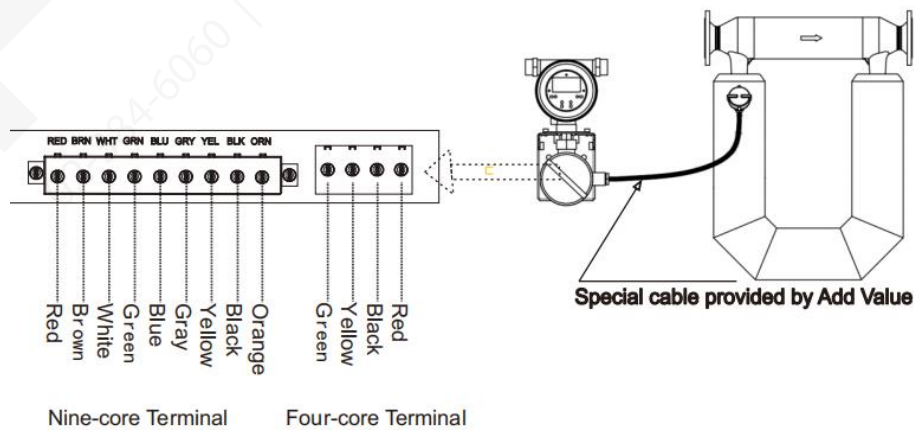
Basic Requirements

Cable type	Cable specification	Maximum length	Remarks
Dedicated nine-wire cable	Dedicated	20 meters	Standard length is 2 meters
Power cable	≥ 1.5 mm 2 shielded cable	500 meters	Separate power and signal cables
RS 485 communication cable	Shielded twisted pair	300 meters	

Transmitter Wiring



Special 9-wire cable wiring



Nine-core Terminal		Four-core Terminal	
Color	Function	Color	Function
Red	drive -	Red	Power +
Brown	drive +	Black	Power -
White	Left pickoff -	Yellow	RS 485-A
Green	Left pickoff +	Green	RS 485-B
Blue	Right pickoff +		
Gray	Right pickoff -		
Yellow	Temperature +		
Black	Temperature -		
Orange	Temperature +		

Signal connection



No operation with charged!

Power supply:

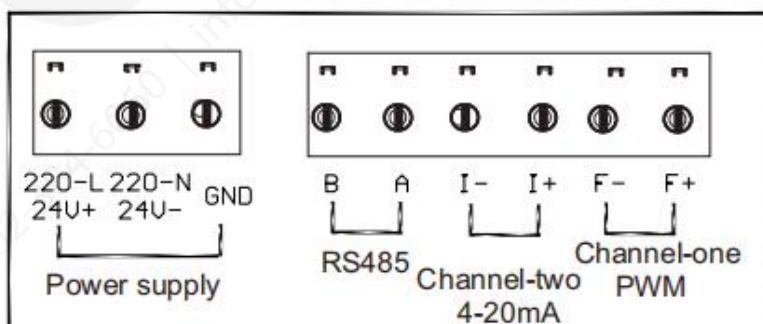
The right position of the power-supply terminal block is for ground connection; the left pair of terminal positions is for power connection, which is compatible for 220VAC and 24VDC(DC wiring is +/- insensitive).

Channel one:

Default frequency output, which can be configured as mA output.

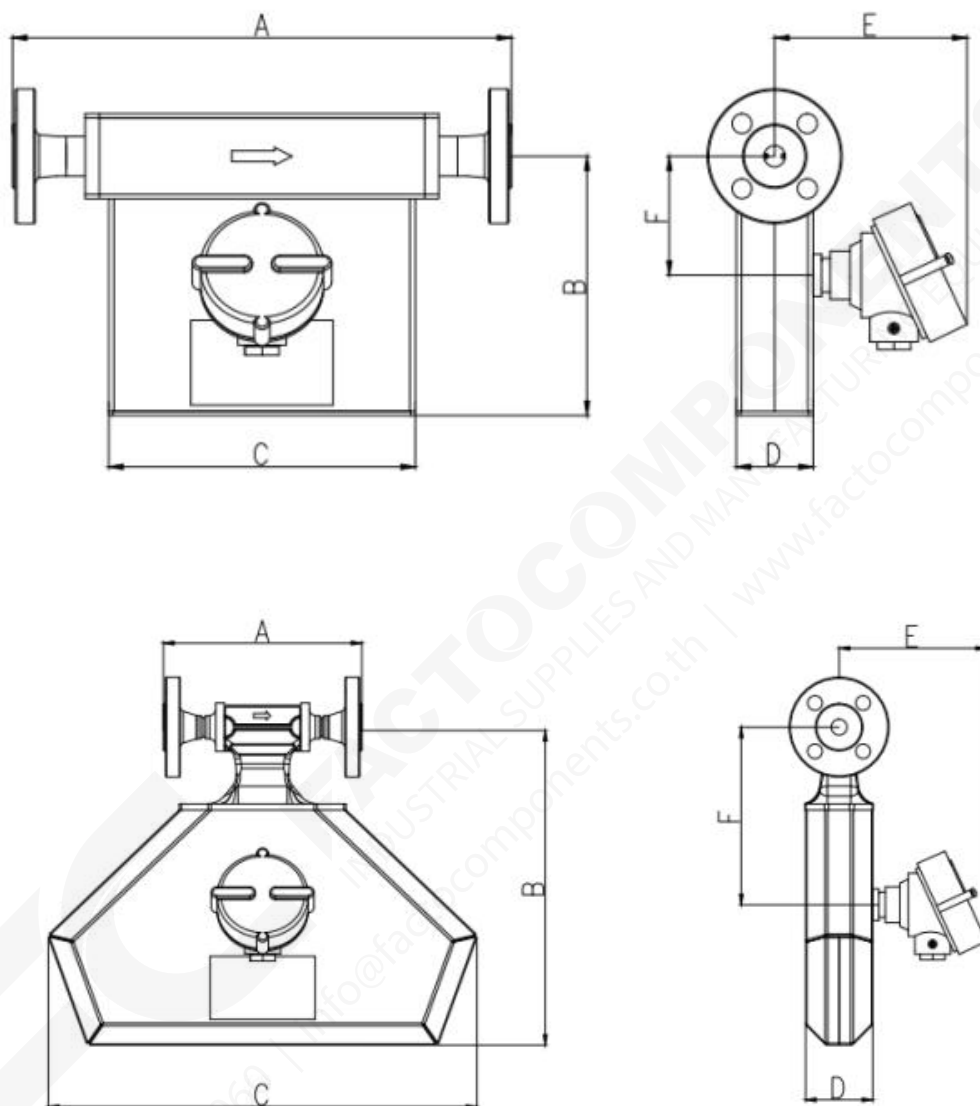
Channel two:

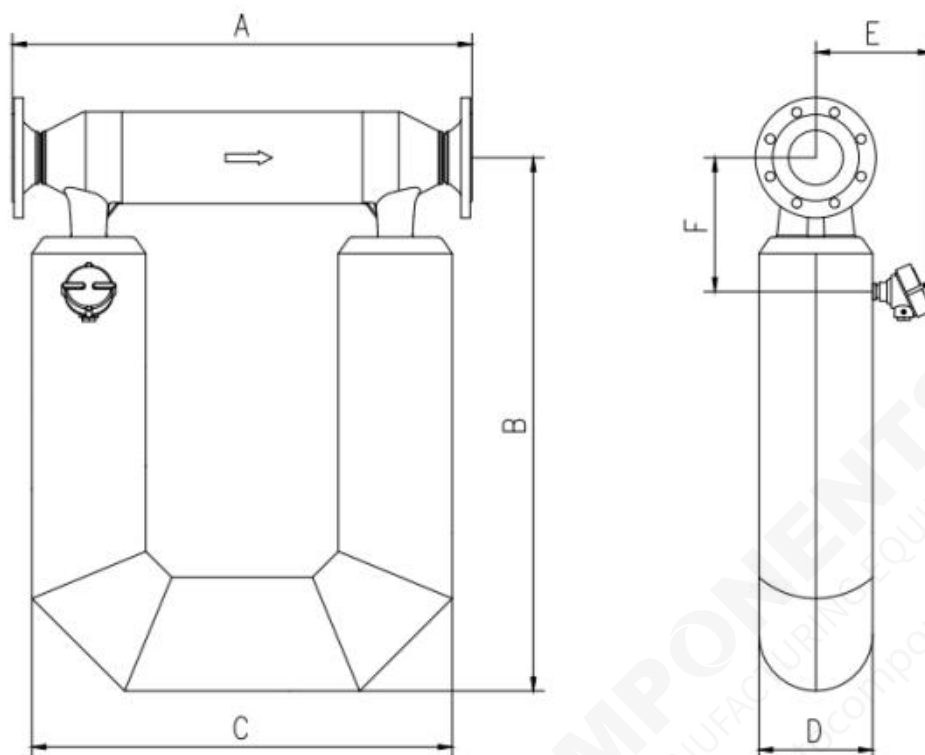
Default mA output, which can be configured as frequency output.



Dimension

K Series Mass Flow Meter Installation Dimensions (Separate Type)

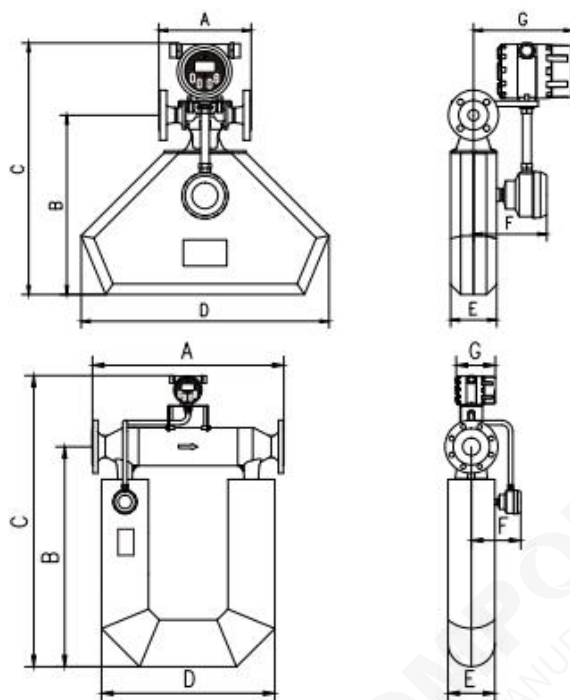




Unit: mm

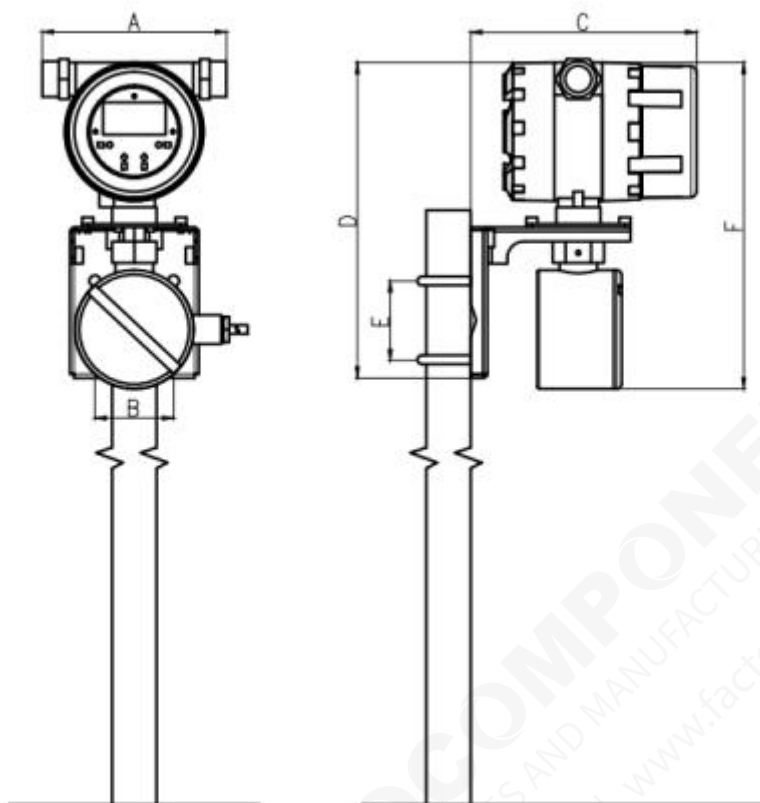
Model	Specification, pressure level	A(Customizable)	B	C	D	E	F
K025	DN15/ DN20/DN25	161~165	219	279	53	135	107
K050	DN15/DN20/DN25	189~193	303	408	64	140	169
K100	DN25/DN32	212~216	412	568	106	167	185
K010	DN10/DN15/DN20/DN25	345~355	183	216	54	137	84
K015	DN10/DN15/DN20/DN25	345~355	183	216	54	137	84
K200	DN40/DN50/DN65	582~596	727	496	140	186	204
K300	DN80/DN100	836~866	976	768	208	220	245
K350	DN100/DN125/DN150	830~876	841	718	212	222	226
K400	DN150/DN175/DN200	990~1056	1095	860	300	260	300
K600	DN200/DN225/DN250	1004~1090	1211	850	379	305	245
K800	DN200/DN225/DN250	1004~1090	1326	850	410	321	245
K1200	DN250/DN300/DN350	1090~1130	1641	850	506	369	245

Installation Dimensions (Integral Type)



Unit: mm

Types	Model	A(Customizable)	B	C	D	E	F	G
K100	DN25/DN32	212~216	412	578	568	106	167	229
K200	DN40/DN50	582~596	727	1003	496	140	186	174
K300	DN80/DN100	836~866	976	1292	768	208	220	174
K350	DN100	830~876	841	1150	718	212	222	174
K400	DN150/DN200	990~1056	1095	1391	860	300	260	174
K600	DN200/DN225/DN250	1004~1090	1211	1578	850	379	305	174
K800	DN200/DN225/DN250	1004~1090	1326	1693	850	410	321	174
K1200	DN250/DN300/DN350	1090~1130	1641	2008	850	506	369	174



Unit: mm

Transmitter model	A	B	C	D	E	F
BPM-E	166	71	204	284	71	294