Datasheet

Turbine Flow Meter

FLC240

Supmea®

Committed to process automation solutions

E-mail: info@supmea.com

www.supmea.com

Datasheet

Turbine Flow Meter
FLC240

The FLC240 turbine flow meter is connected to the converter through the flow sensor to realize multiple functions such as pulse output, current output, and on-site display. The flow meter has the characteristics of high precision, wide measurement range, long life, and simple operation and maintenance. It can be widely used in food, medicine, petrochemical, metallurgy, papermaking, and other industries. It is an ideal instrument for flow measurement.
The flow meter is suitable for liquids that do not corrode stainless steel 304, 2Cr13, corundum (Al2O3), hard alloy, etc., and are free of impurities such as fibers and particles.

Applications

- petrochemical
- Pharmaceutical
- Paper industry
- Metallurgy
- Electric power
- Environmental protection
- Food and beverage

Features

- hey are of high-accuracy.
- Easy to install and maintain.
- Can handle a wide range of flow rates, from low to high velocities.
- Can provide both digital and analog output signals.
- Can be constructed from various materials, such as stainless steel, brass, or plastic, to accommodate different fluid types

Turbine Flow Meter

Principle

When the liquid to be measured flows through the flow meter sensor, the internal impeller rotates with the kinetic energy of the liquid. At this time, the impeller blades cause the magnetic resistance in the

detection device to change periodically, so the two ends of the detection coil are induced and The electrical pulse signal proportional to the flow rate is amplified by the preamplifier and then sent to the display unit. The single-chip microcomputer system in the display unit performs calculations according to the measured pulse number and the instrument coefficient K of the flow meter and displays the instantaneous flow and the cumulative total.

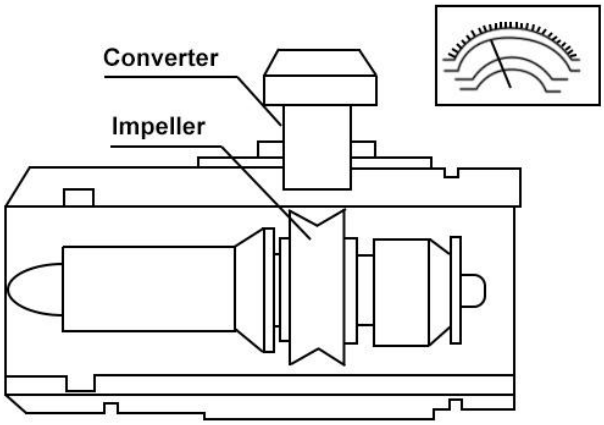


Figure 1

The relationship between the meter coefficient and instantaneous flow rate, frequency, pulse number, and the cumulative total is as follows:

K=f/Q and K=N/V

where:

f—flow signal frequency (Hz)

Q—instantaneous flow rate (m3/s, or /L/s)

N—number of pulses

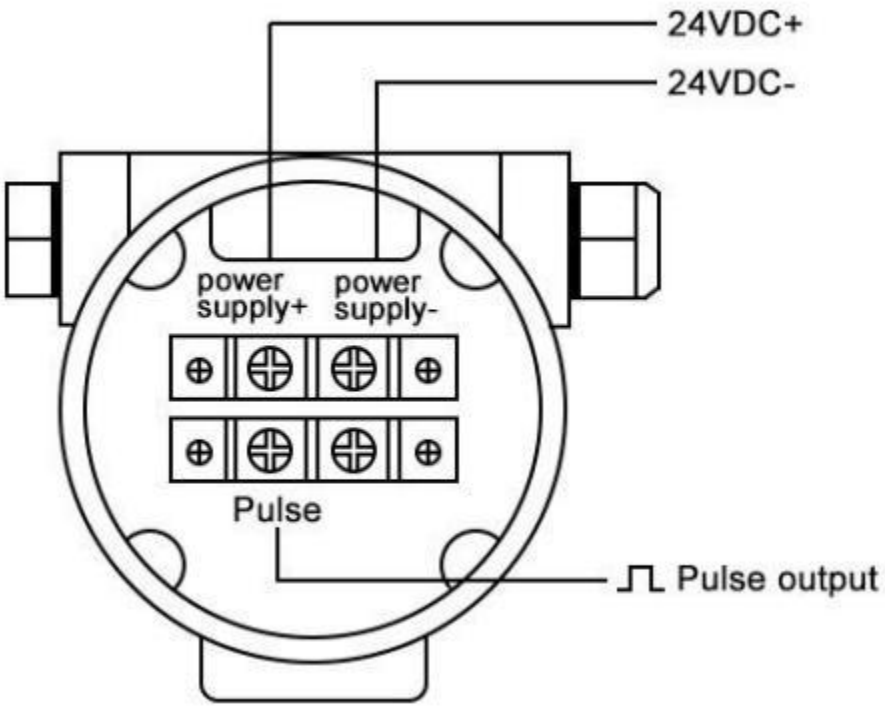
V—total volume (m3)

K—meter coefficient (1/m3 or 1/L)

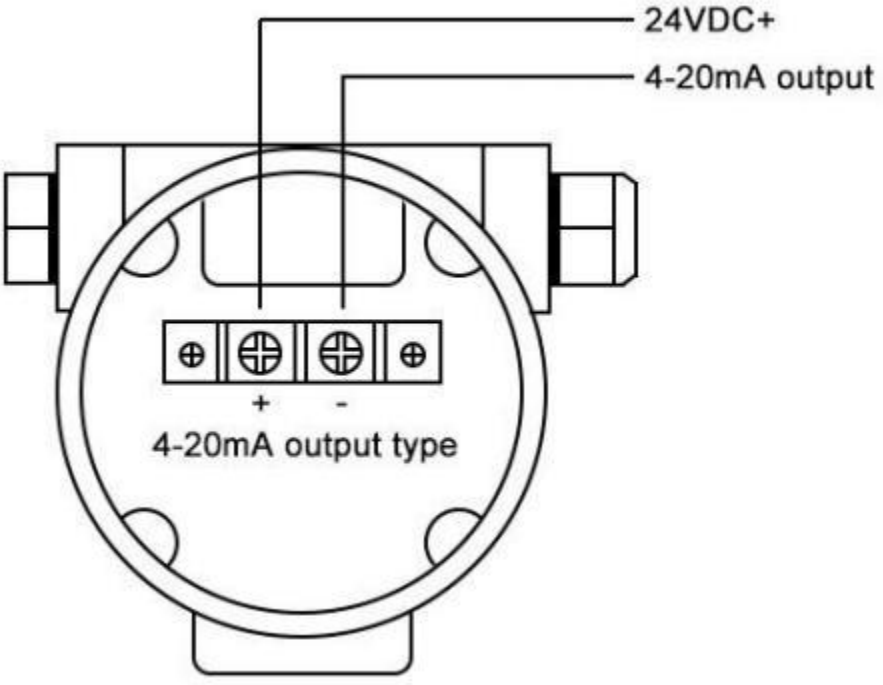
Parameters	
Items	Main parameters
Measuring medium	Liquid (water, liquefied petroleum gas, refined oil, light crude oil, organic liquid, inorganic liquid, and other liquids without fiber and particle impurities)
Nominal diameter	DN4 - DN200mm
Accuracy	0.5%R; 1.0%R
Medium viscosity	Less than 5×10-6m2/s (for liquids larger than 5×10-6m2/s, the flow meter should be calibrated with natural fluid before use)
Medium temperature	-20°C-+120°C (high temperature type); -20°C-+80°C (common type)
Environmental conditions	Ambient temperature: -20℃-＋60℃ Relative humidity: 5%-90%

Atmospheric pressure	86kPa-106kPa
Power supply	3.6V、12VDC、24VDC
Output signal	Pulse signal, (4~20)mA current signal, Modbus communication
Protection grade	IP65 (IP67, IP68 agreement supply, pulse converter probe IP00)
Nominal pressure	1.0Mpa, 1.6Mpa, 2.5Mpa, 4.0Mpa, 6.3Mpa

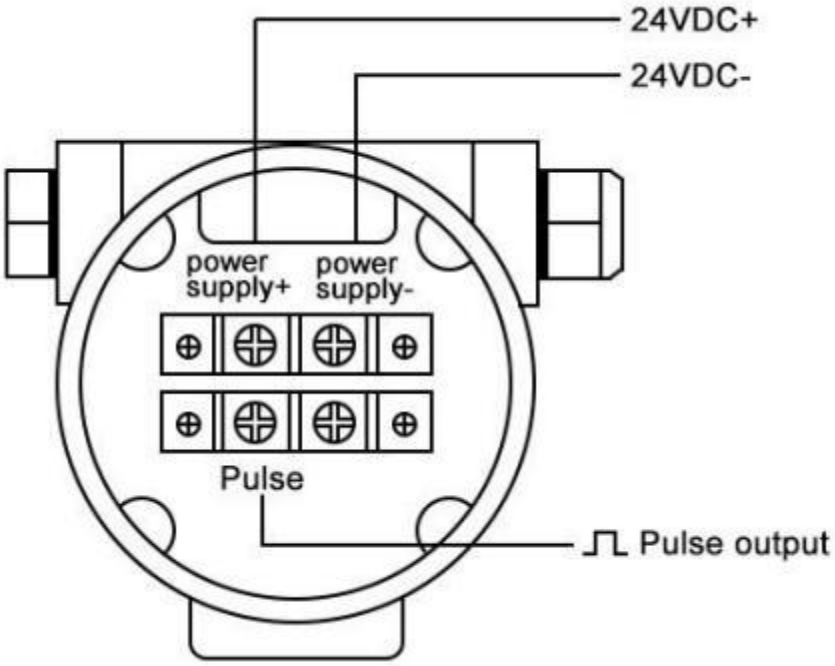
Wiring



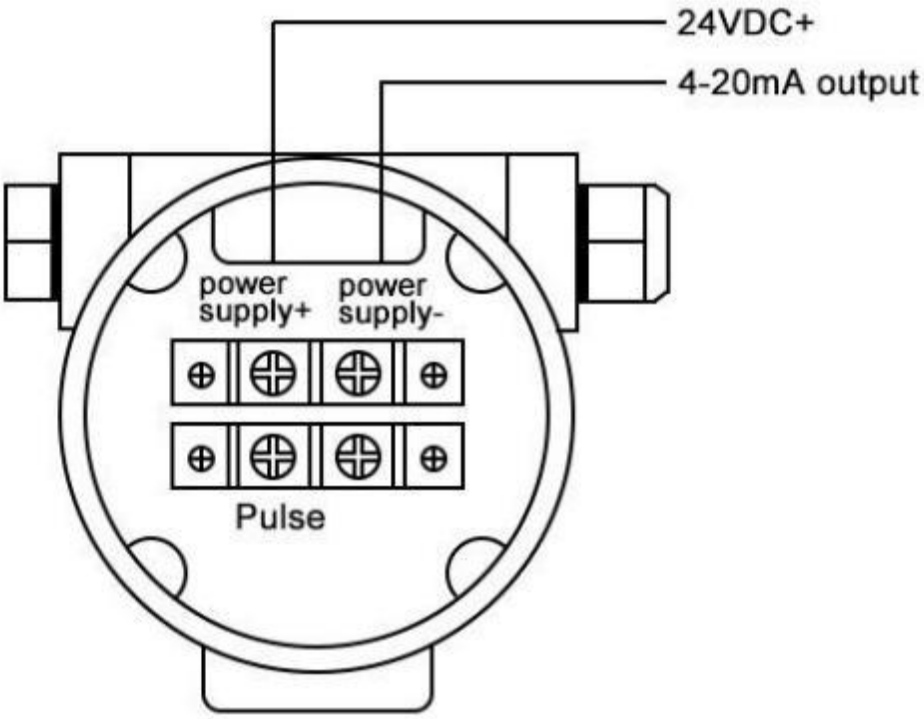
no display pulse output type wiring diagram



no display 4-20mA current output type wiring diagram

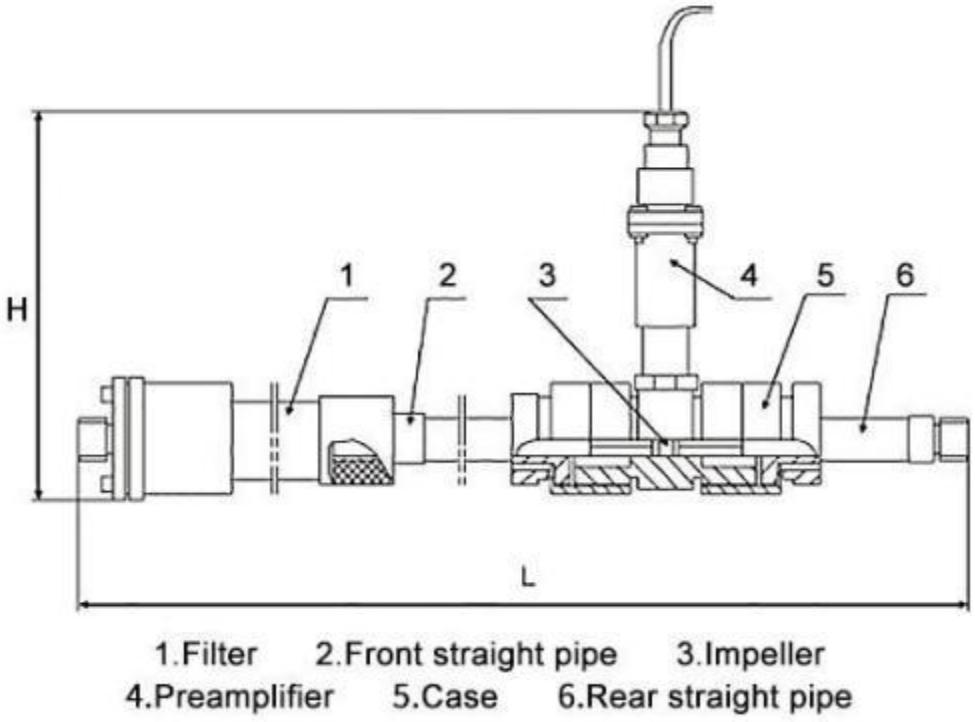


wiring diagram of intelligent display pulse output type

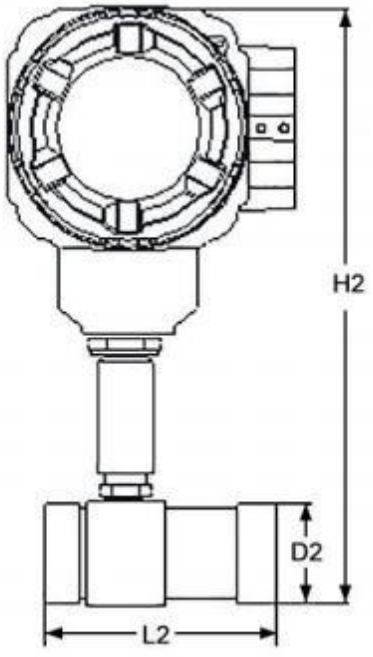


intelligent display 4-20mA current output wiring diagram

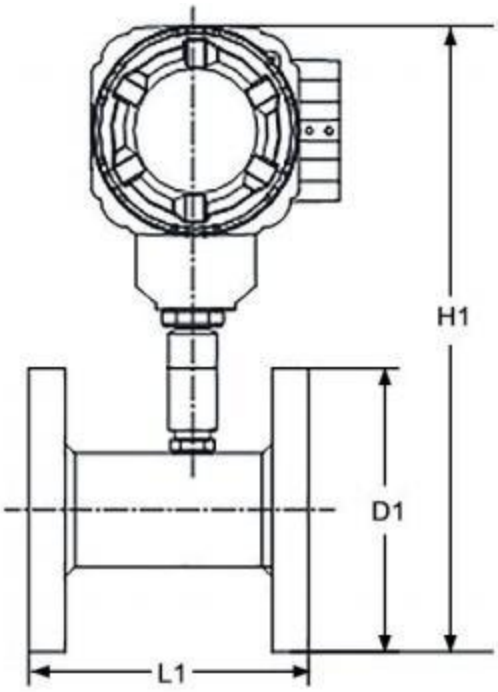
Dimension



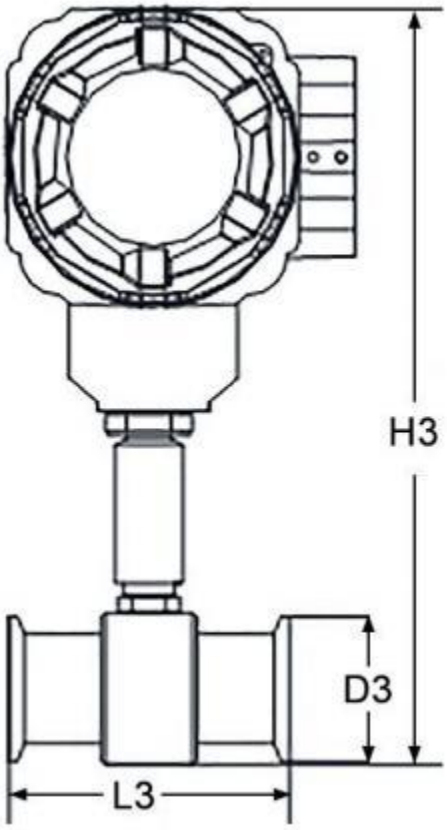
structure of FLC240 turbine flow meter



threaded connection type



flange connection type



hygienic clamp connection type

Table 1 installation dimensions of flange connection type

Flange Connection Type (Pressure Resistance 1.6Mpa)						
Size	Meter body flange diameter D1	Meter body length L1	Flange bolt hole center distance	Flange bolt holes	The maximum height of the whole meter H1	Hassman connector Height of overall meter H1
DN4	DN15 flange 95	310 (Including front and rear straight pipe sections, filter)	65	4-Φ14	295	215
DN6	DN15 flange 95	310 (Including front and rear straight pipe sections, filter)	65	4-Φ14	300	215
DN10	DN15 flange 95	430 (Including front and rear straight pipe sections, filter)	65	4-Φ14	300	215
DN15	95	75	65	4-Φ14	300	215
DN20	105	85	75	4-Φ14	310	225
DN25	115	100	85	4-Φ14	315	230
DN32	140	140	100	4-Φ18	330	245
DN40	150	140	110	4-Φ18	340	255
DN50	165	150	125	4-Φ18	355	270
DN65	185	180	145	4-Φ18	370	285
DN80	200	200	160	8-Φ18	385	300
DN100	220	220	180	8-Φ18	405	320
DN125	250	250	210	8-Φ18	430	345
DN150	285	300	240	8-Φ22	465	380
DN200	340	360	295	12-Φ22	515	430

Note:

1. The length of the flange connection meter body refers to the distance between the outermost end faces of the two flanges of the meter body.

2. The body length of DN4-DN10 includes the front and rear straight pipe sections and the length of the filter; due to a large number of connecting parts, there is a slight deviation in size.

3. Due to the wide variety of amplifiers, the height of the entire meter is the maximum height, and the actual product shall prevail.

Table 2 installation dimensions of threaded connection type

Threaded Connection Type (Pressure Resistance 6.3Mpa)				
Size	Thread type D2	Meter body length L2	The maximum Height of the Whole meter H2	Hassman connector Height of overall meter H2
DN4	G1/2	310 (Including front and rear straight pipe sections, filter)	265	190
DN6	G1/2	310 (Including front and rear straight pipe sections, filter)	265	190
DN10	G1/2	430 (Including front and rear straight pipe sections, filter)	265	190
DN15	G1	75	275	200
DN20	G1	85	275	200
DN25	G1 1/4	100	285	210
DN32	G1 1/2	140	290	215
DN40	G2	140	300	225
DN50	G2 1/2	150	315	240

Note:

1. The length of the threaded connection meter body refers to the distance between the outermost end faces of the two threads of the meter body.

2. The body length of DN4-DN10 is the length including the front and rear straight pipe sections and the filter; due to a large number of connecting parts, there is a slight deviation in size.

3. Due to the wide variety of amplifiers, the height of the entire meter is the maximum height, and the actual product shall prevail.

Table 3 installation dimensions of hygienic clamp connection type

Hygienic Clamp Connection Type (Pressure Resistance 1Mpa)				
Size	Chuck outer diameter size D3	Meter body length L3	The maximum height of the whole meter H3	Hassman connector Height of overall meter H3
DN4	50.5	380 (Including front and rear straight pipe sections, filter)	290	205
DN6	50.5	380 (Including front and rear straight pipe sections, filter)	290	205
DN10	50.5	500 (Including front and rear straight pipe sections, filter)	290	205
DN15	50.5	75	290	205
DN20	50.5	85	290	205
DN25	50.5	100	290	205
DN32	50.5	140	290	205
DN40	63.5	140	300	215
DN50	77	150	315	230
DN65	91	180	330	245
DN80	106	200	345	260

Note:

1. The length of the clamp connecting the meter body refers to the distance between the outermost end faces of the two clamps of the meter body.

2. The body length of DN4-DN10 is the length including the front and rear straight pipe sections and the filter.

3. Due to the wide variety of amplifiers, the height of the entire meter is the maximum height, and the actual product shall prevail.

Installation

(1) The flow meter can be installed horizontally and vertically, and the fluid direction must be upward when installed vertically. The liquid should fill the pipe without air bubbles.

(2) During installation, the liquid flow direction should be consistent with the direction of the arrow indicating the flow direction on the flowmeter housing. There should be at least a straight pipe section of 10 times the diameter at the upstream end, and a straight pipe section of no less than 5 times the diameter at the downstream end.

(3) The flow meter should be far away from the external electromagnetic field. If it cannot be avoided, the necessary shielding measures should be taken.

(4) In order not to affect the normal delivery of liquid during maintenance, a bypass pipeline should be installed at the place where the flow meter is installed

(Fig. 11).

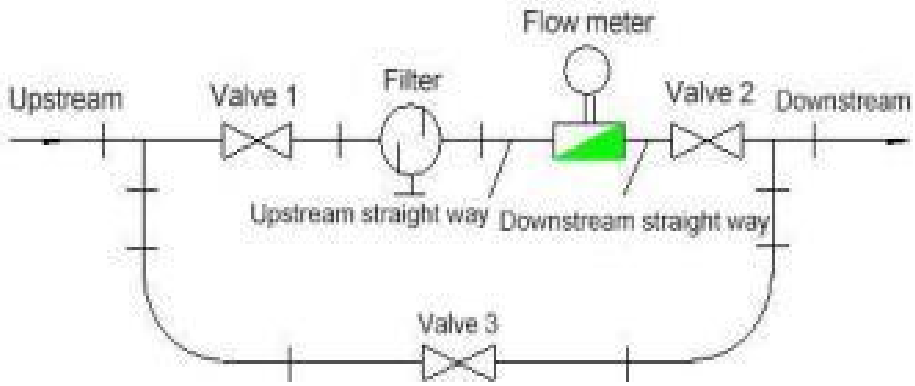


Fig. 11

(5) When the flow meter is installed in the open air, please do the waterproof treatment of the amplifier and plug.

Table 2

Diameter (mm)	Flow Range(m3/h)	Maximum pressure (MPa)	Installation type
4	0.04～0.25	6.3	Thread
6	0. 1～0.6	6.3	Thread
10	0.2～1.2	6.3	Thread
15	0.6～6 / 0.3～6	6.3	Thread
20	0.8~8	6.3	Thread
25	1～10 / 0.5～10	6.3	Thread
		4.0	Flange
		25	Clamp
32	1.5~ 15	6.3	Thread
		4.0	Flange
40	2～20 / 1～20	6.3	Thread
		4.0	Flange

		25	Clamp
50	4～40 / 2～40	2.5	Live Flange
		4.0	Flange
		25	Clamp
65	8～80 / 4～80	4.0	Flange
80	10～100 / 5～100	2.5	Live Flange
		4.0	Flange
		25	Clamp
100	20～200 / 10～200	2.5	Live Flange
		2.5	Flange
		25	Clamp
150	30～300 / 15～300	2.5	Live Flange
		2.5	Flange
		5	Clamp
200	80～800 / 40～800	1.6	Flange
		2.5	Clamp

Table 3

Diameter (mm)	L (mm)	G	L′ (mm)	D (mm)	K (mm)	d	Holes	Φ (mm)	Y (mm)	F (mm)
4	394	R3/8	194							
6	430	R3/8	230							
10	550	R3/8	350							
15	75	G1								
20	80	G1								
25	100	G1 1/4								
	100			115	85	Φ14	4	Φ57		
	100							Φ50.8	Φ52.4	5
32	140									
	140				Φ100	Φ18	4	Φ65	4	
40	140	G2								
	140			Φ150	Φ110	Φ18	4	Φ75	Φ76	3
	50							Φ73	Φ76.4	5
50	150			Φ160	Φ125	Φ18	4	Φ71	Φ72	3
	150			Φ165				Φ87	Φ88	3
	60							Φ92	Φ93.6	5
65	200			Φ185	Φ145	Φ18	8	Φ118		
80	200			Φ195	Φ160	Φ18	8	Φ103	Φ104	3
	200			Φ200				Φ120	Φ121	3
	80							Φ127	Φ128.6	5
100	220			Φ220	Φ180	Φ18	8	Φ122	Φ123	3
	220			Φ235	Φ190	Φ22	8	Φ149	Φ150	3
	100							Φ157	Φ158.6	5
150	300			Φ300	Φ250	Φ26	8	Φ178	Φ179	3
	300							Φ203	Φ204	3
	150							Φ216	Φ217.5	5

200	360			Φ340	Φ295	Φ22	12	Φ266		
	200							Φ259	Φ260	3.5

Table 4

Diameter(mm)	Installation Type and pressure	The height of different converters H (mm)		
		Battery powered local display	24V Without display	24V Local display
4	G06	254	204	254
6	G06	254	204	254
10	G06	254	204	254
15	G06	254	204	254
25	G06	265	215	265
	F04	300	250	300
	E25	269	219	269
40	G06	280	230	280
	F04	325	275	325
	E25	286	236	286
50	H03	335	285	335
	F04	338	288	338
	E25	304	254	304
65	F04	357	307	357
80	H03	368	318	368
	F04	370	320	370
	E25	336	286	336
100	H03	391	341	391
	F03	398	348	398
	E25	362	312	362
150	H03	456	406	456
	F03	456	406	456
	E05	415	365	415
200	F02	500	450	500
	E03	461	411	461

Ordering code

SUP-FLC240 -04-B0-TG-M7-1-K0-WG-T1-PC										Description
FLC240	-	-		-	-	-	-	-	-	Turbine Flowmeter
Nominal Diameter	04									DN4(1/16")
	06									DN6(1/8")
	10									DN10(3/8")
	15									DN15(1/2")
	20									DN20(3/4")
	25									DN25(1")
	32									DN32(1.25")
	40									DN40(1.5")
	50									DN50(2")
	65									DN65(2.5")
	80									DN80(3")
	1C									DN100(4")
	1E									DN125(5")
	1G									DN150(6")
	2C									DN200(8")
Thread Type		B0								Imperial System G
		G2								GB/T9119 PN40
		G1								GB/T9119 PN16
		I0								ISO2852 Clamp
		XX								Other
Thread Type Material and Body Material			M1							304SS
			M2							316SS
Heat Resistance Temperature				TG						-20-80℃
				TH						-20-120℃
				X						Other
Impeller Material					M7					2Cr13 SS
					MD					Duplex Steel 2205
Measurement Range and Accuracy						1				Standard Range, 1.0 Class
						2				Extended Range, 1.0 Class
						3				Standard Range， 0.5 Class
Output, Display, and Power Supply							K0			Pulse, No Display, 24VDC
							A0			Two-wire 4-20mA, No Display
							S1			No Output, Display, Battery Powered
							K1			Pulse, Display, 24VDC
							A1			Two-wire 4-20mA, Display
							R1			RS485， Display， 24VDC
							K7			4-20mA/RS485，display，24VDC
							XX			Other
Electrical Interface, Housing Material, and Ingress								WG		M20×1.5 Cable Gland, Aluminum

Protection	WF		Alloy, IP65
Accessories		PC	DIN Connector，IP00 Paired with 304SS Flange