



Product features

- pulse/analog double output
- high pressure (10~400bar)
- high and low temperature resistance (-30°C...120°C)
- various viscous media can be measured
- high precision and repeatability
- range specific width (1:100)
- wide measurement range
- strong anti-corrosion and anti-pollution ability (acid and alkali)

product principle

The FM510 gear flow sensor is built with double gears, which can calculate the volume of medium through the volume of high precision gear wheel and measure the fluid medium with small size. It is a new type of volumetric flow sensor, which is used to measure the flow or instantaneous flow of liquid in a pipe precisely continuously or intermittently.

product application

The FM510 gear flow sensor is widely used for precise low-flow measurement in various industries. It is suitable for media such as additive fuels, flotation cells in water treatment, corrosion inhibitors, catalysts, emulsifiers, oils, fats, fragrances, adhesives, solvents, inks and insecticides, as well as some high-viscosity media. The application industries include automobiles, aviation, mining, power, chemical engineering, pharmaceuticals, food, coatings, petroleum, environmental protection, printing and other industries. It is particularly suitable for heavy oil. Flow measurement of media with high viscosity such as polyvinyl alcohol and resin. (Capable of measuring fluids with viscosity up to 10,000 pa.s) Small in volume, light in weight, low vibration and noise during operation, and stable in operation. It can also be used for measuring the tiny flow rate of small pipe diameters. It has a small starting flow rate, a wide range ratio, and is suitable for measuring the flow of liquids with large fluctuations. The measurement accuracy is not affected by pressure and flow rate changes. It features stable performance, long service life, and large flow capacity.

- Resin and glue measurement
- Measurement of hydraulic oil, lubricating oil and grease
- Fuel oil measurement
- Ink and asphalt measurement
- Measurement of liquid nitrogen, refrigerant and solvent
- Edible oil, fish oil
- Fluid measurement for chemical and anti-corrosion requirements

Technical parameters

◇ Measuring range: See range table

◇ Output signal: 4-20mA, PNP/NPN

◇ Measuring accuracy: 0.5%F.S

◇ Repeatability: 0.1%F.S

◇ Power supply: 16~30VDC

◇ Medium temperature: -30~120°C (high temperature customized 150°C)

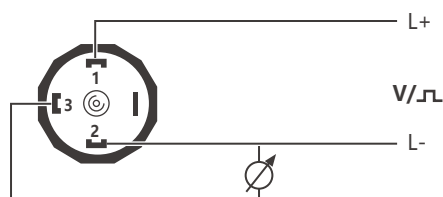
◇ Pressure resistance: Aluminum (40bar),

stainless steel (100bar/250bar/400bar),

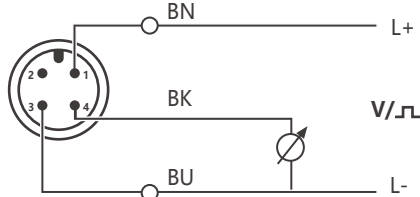
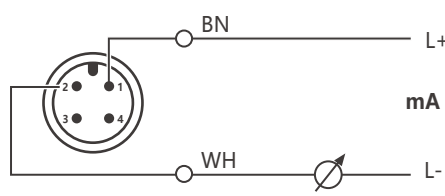
PP (pressure 10bar)

◇ Material: Shell: aluminum, stainless steel, display: stainless steel

Hersman plug connection method

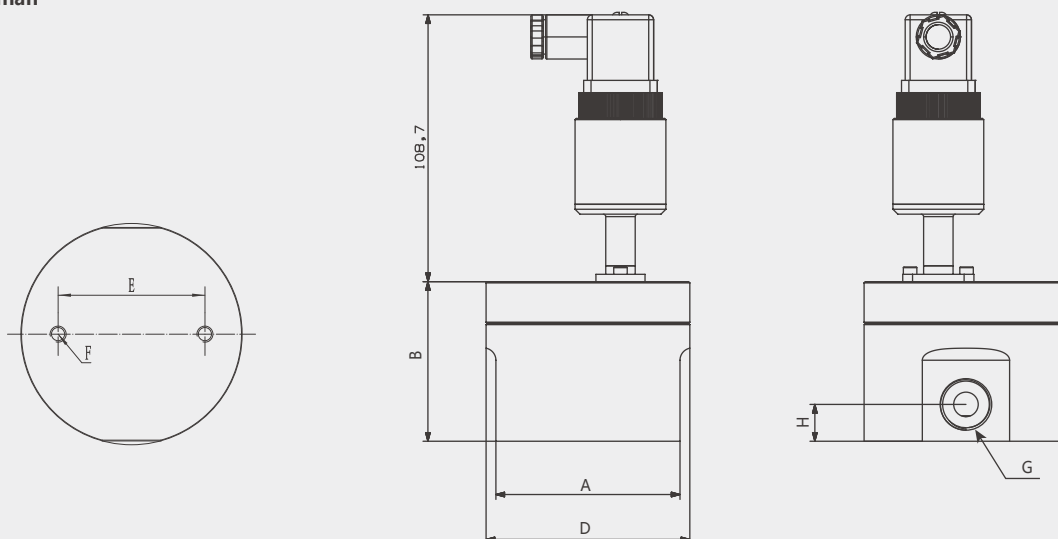


M12 aviation plug connection

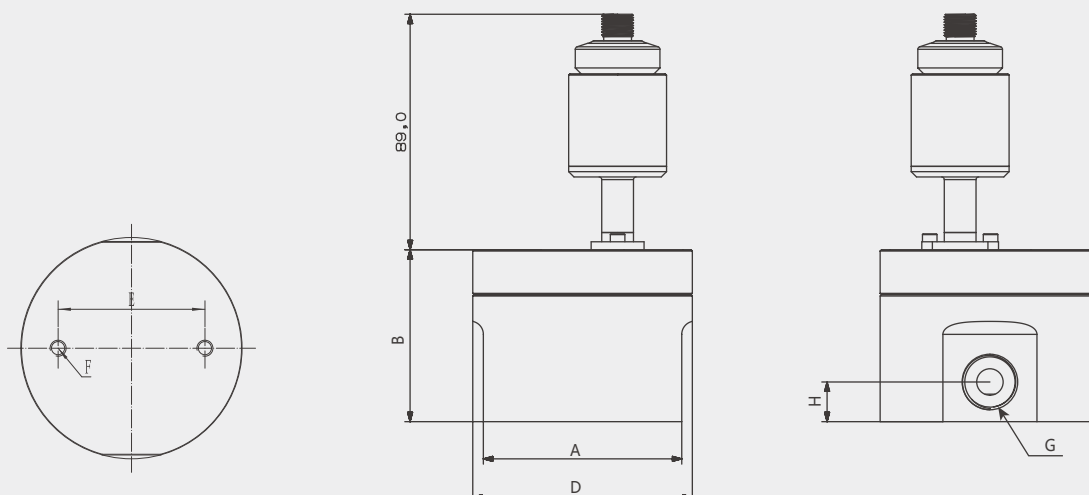


Dimension drawing (mm)

Hersman



Aviation plug



model	A	B	D	H	E	F	G	Measuring range
M2	80	55	83	16	40	2*M6	G1/4	50-2000mL/min
M2S	83	43	88	10	44	2*M5	G1/4	5-2000mL/min
M4	80	55	83	16	55	2*M6	G3/8	0.1-4L/min
M6	80	62	83	14	55	2*M6	G1/2	0.15-8L/min
M10	80	65	83	14	55	2*M6	G1/2	0.5-20L/min
M15	110	65	113	28	90	2*M6	G3/4	2-50L/min
M25	124	70	138	29	100	2*M8	G1"	5-150L/min

Selection table

FM510-	M2	A	F	L	-	-	Instructions
FM510-							High precision gear flowmeter
	M2						Measurement range: 50-2000mL/min
	M25						Measurement range: 5-2000mL/min
	M4						Measurement range: 0.1-4L/min
	M6						Measurement range: 0.15-8L/min
	M10						Measurement range: 0.5-20L/min
	M15						Measurement range: 2-50L/min
	M25						Measurement range: 5-150L/min
		P					Output signal: pulse output
		A					Output signal: 4-20mA two-wire output
			F				Sealing material: FKM (standard type)
			P				Sealing material: PTFE polytetrafluoroethylene (anti-corrosion)
				L			Body material: Alumina (pressure 40bar)
				S			Body material: 304SS (pressure 100bar)
				S1			Body material: 304SS (pressure 250bar)
				S2			Body material: 304SS (pressure 400bar)
				S3			Body material: 316SS (pressure 100bar)
				S4			Body material: 316SS (pressure 250bar)
				S5			Body material: 316SS (pressure 400bar)
				P			Body material: PP (pressure 10bar)
					-		Medium temperature < 120°C
					T		Medium temperature < 140°C Note: Aluminum /PP material does not support high temperature option
						-	Outlet: Hersman plug (factory default)
						M	Outlet: M12*1 aviation plug

Flow calculation method

The K coefficient (flow coefficient) of the FM510 gear flow sensor accurately defines the number of pulses per liter per unit flow.

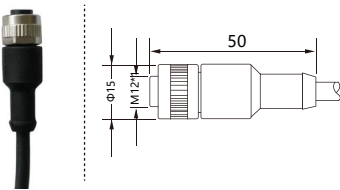
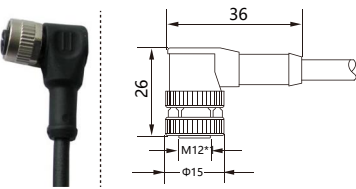
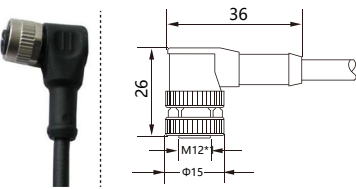
$$Q = f * 60 / K$$

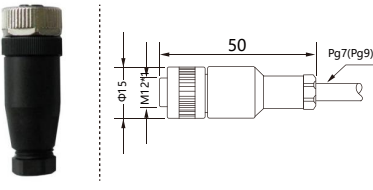
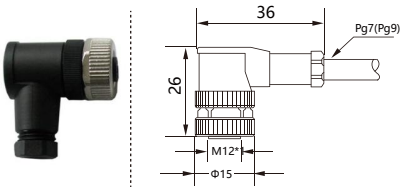
Q= instantaneous flow litres per minute

F= output pulse frequency HZ

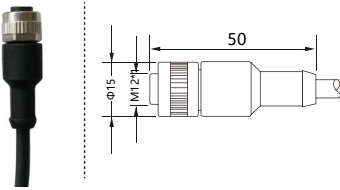
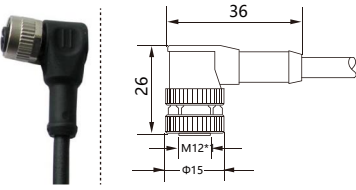
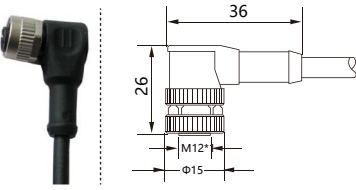
K= coefficient pulse of gear flowmeter/min

Optional accessories - electrical accessories(Factory standard: ZL02-PC02G-P)

name	Outline drawing/dimension drawing (mm)	material	model
M12*1-4Pin (2m cable)		PUR	ZL02-PU02G-P
M12*1-4Pin (5m cable)			ZL02-PU05G-P
M12*1-4Pin (10m cable)			ZL02-PU010G-P
M12*1-4Pin (2m cable)		PUR	ZL02-PC02G-P
M12*1-4Pin (5m cable)			ZL02-PC05G-P
M12*1-4Pin (10m cable)			ZL02-PC010G-P
M12*1-4Pin (2m cable)		PVC	ZL02-PU02W-P
M12*1-4Pin (5m cable)			ZL02-PU05W-P
M12*1-4Pin (10m cable)			ZL02-PU010W-P
M12*1-4Pin (2m cable)		PVC	ZL02-PC02W-P
M12*1-4Pin (5m cable)			ZL02-PC05W-P
M12*1-4Pin (10m cable)			ZL02-PC010W-P

M12* 1-4pin self-connector/size drawing (mm)	model
	GL04 (4Pin joint)
	WL04 (4Pin joint)

Optional accessories - electrical accessories(Factory standard: ZL03-PC02G)

name	Outline drawing/dimension drawing (mm)	material	model
M12*1-4Pin (2m cable)		PUR	ZL03-PU02G
M12*1-4Pin (5m cable)			ZL03-PU05G
M12*1-4Pin (10m cable)			ZL03-PU010G
M12*1-4Pin (2m cable)		PVC	ZL03-PC02G
M12*1-4Pin (5m cable)			ZL03-PC05G
M12*1-4Pin (10m cable)			ZL03-PC010G
M12*1-4Pin (2m cable)		PUR	ZL03-PU02W
M12*1-4Pin (5m cable)			ZL03-PU05W
M12*1-4Pin (10m cable)			ZL03-PU010W
M12*1-4Pin (2m cable)		PVC	ZL03-PC02W
M12*1-4Pin (5m cable)			ZL03-PC05W
M12*1-4Pin (10m cable)			ZL03-PC010W

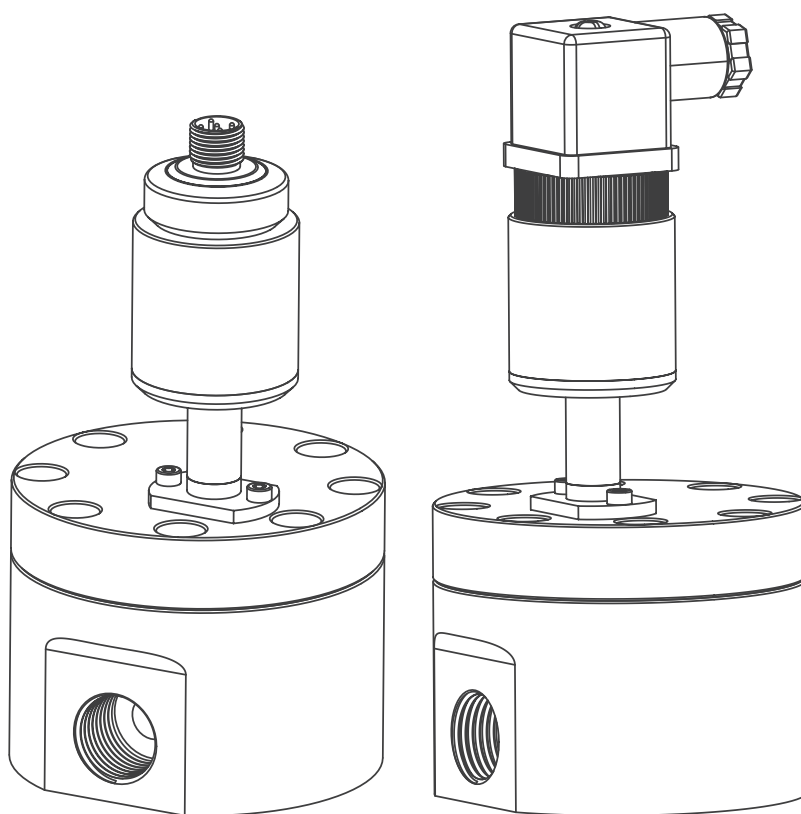
—— Sensor and controller ——
■ Flow ■ pressure ■ temperature ■ level ■ position

KATU 卡图

Operation instruction

High precision gear flowmeter

FM510 Series



Safety statement

- Before installing this device, please read this document to ensure that the product is suitable for your application and is not limited in any way;
- Failure to follow the operating instructions or technical data may result in personal injury or property damage;
- Check the compatibility of the product material with the medium to be tested in all applications;
- The equipment is only used as the medium to be tested, and it must only be ensured that the equipment is used correctly for long-term stable operation.

Ensure that the tested medium will not cause damage to the tested part of the product;

! The responsibility for determining whether the measurement sensor is suitable for the application lies with the operator, and the manufacturer accepts no responsibility for the consequences of improper use by the operator. Improper installation and use of the sensor results in invalid claims under warranty.

Flow sensors monitor the medium flow of fluids

Precautions: Beware of personal injury, overpressure danger!

Product profile

FM510 gear flow sensor built-in double gear operation, through the high precision gear wheel volume to calculate the medium through the volume, to achieve the micro fluid medium measurement. Is a new type of positive displacement flow sensor, used for precision continuous or intermittent measurement of liquid flow in the pipeline or instantaneous flow.

Product characteristics

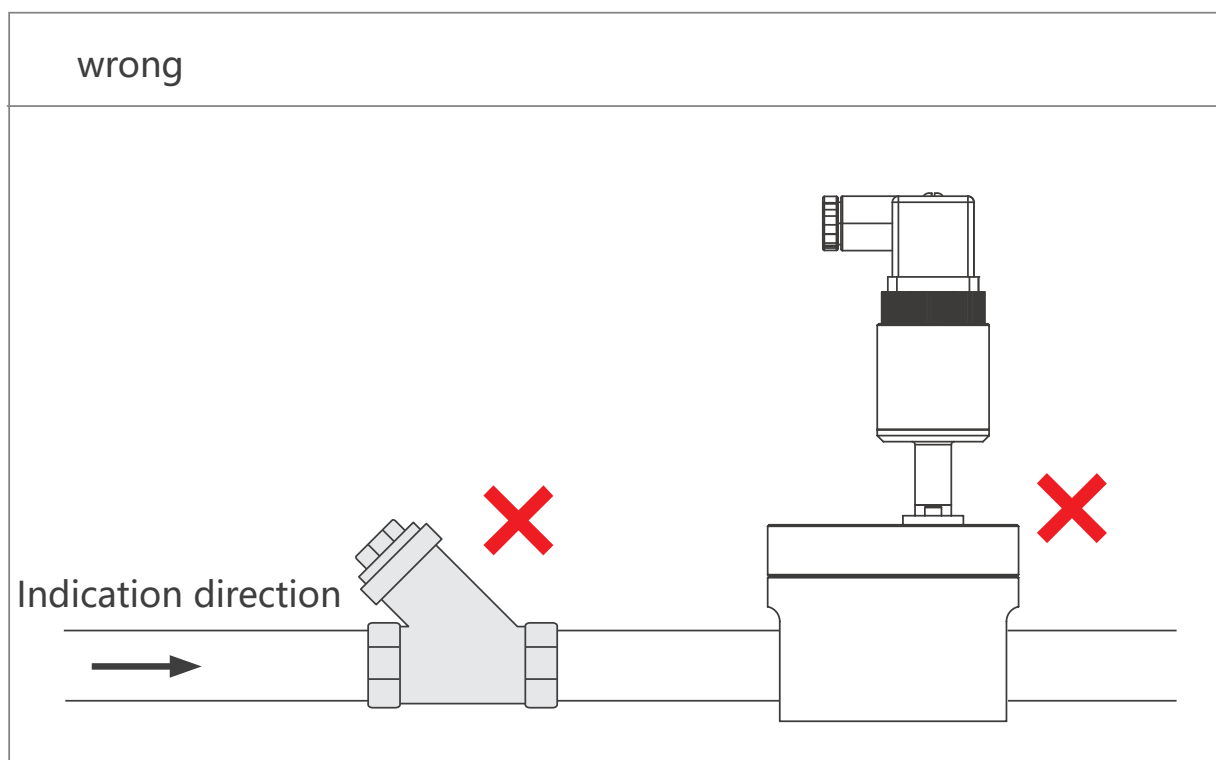
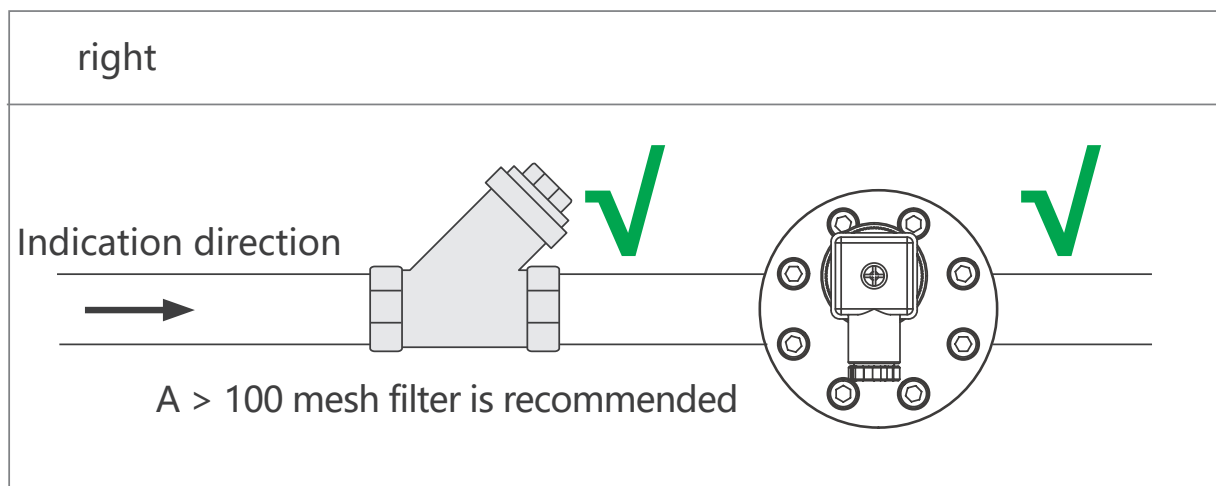
- Pulse/analog dual output
- High pressure resistance (10~400bar)
- High and low temperature resistance (-30°C... 150°C)
- Can measure various viscous media
- High precision and repeatability
- Range width (1:100)
- Wide measuring range
- Strong anti-corrosion and anti-fouling ability (acid and alkali)

Product application

- Resin, glue measurement
- Hydraulic oil, lubricating oil, grease measurement
- Fuel oil measurement
- Ink, asphalt measurement
- Liquid nitrogen, refrigerant, solvent measurement
- Edible oil, fish oil and food filling measurement
- Chemical and anti-corrosion requirements fluid measurement
- Fluid quantitative control system

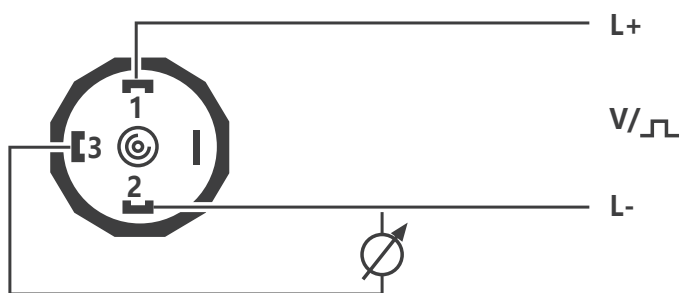
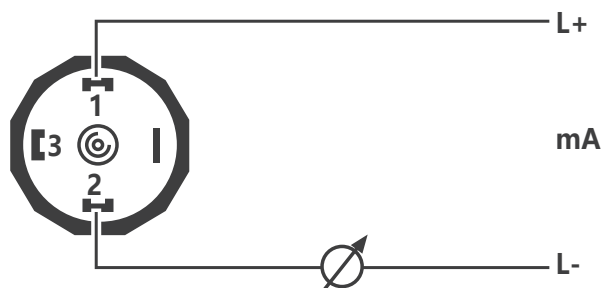
Installation diagram (for reference only)

Flow meter installation diagram

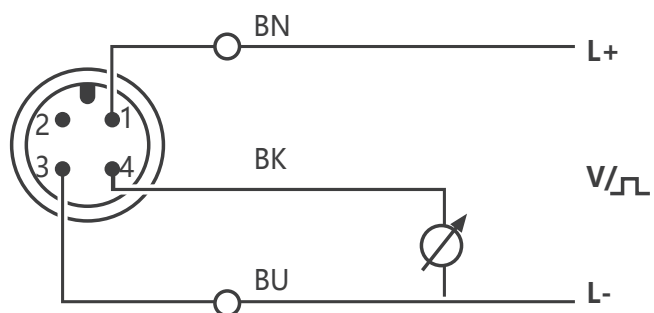
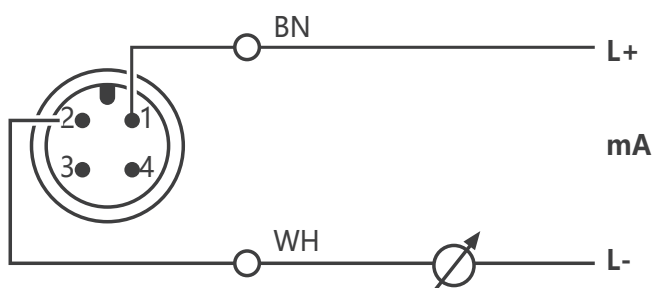


Wiring diagram

Hersman plug connection method



M12 Aviation plug connection method



Fault situation and handling method

Fault phenomenon	Possible cause	Elimination method
There is no output signal after the power is turned on	1. No medium flow in the pipeline or the flow rate is lower than the starting flow rate; 2. The power supply is incorrectly connected to the output cable. 3. The display circuit is damaged	1. Increase the medium flow rate or change to a smaller diameter flowmeter to meet the requirements of the flow range; 2. Connect cables correctly. 3. Replace the flowmeter
The flowmeter has signal output when there is no flow	1. Poor grounding of the flowmeter and interference of strong electricity and other ground lines; 2. The sensitivity of the amplifier is too high or produces self-excitation; 3. The power supply is unstable. Poor filtering and other electrical interference.	1. Connect the ground correctly to eliminate interference; 2. Replace the preamplifier; 3. Repair and replace the power supply to eliminate interference.
The instantaneous flow indicator is unstable	1. The medium flow is unstable; 2. The sensitivity of the amplifier is too high or too low, and there are multiple and missing pulse phenomena; 3. There are debris in the shell; 4. Poor grounding; 5. The flow rate is lower than the lower limit; 6. Foreign matter enters the pipe, forming a disturbance.	1. Test after the flow rate is stable; 2. Replace the preamplifier; 3. Remove dirt; 4. Check the ground cable to ensure that it is normal
The indicated cumulative flow does not match the actual cumulative flow	1. Incorrect input of meter coefficient; 2. The normal flow rate of the user is lower than or higher than the normal flow range of the selected flowmeter; 3. The flow meter itself is out of tolerance	1. Enter the correct instrument coefficient after re-calibration; 2. Adjust the flow rate of the pipeline to make it normal or choose a flowmeter of appropriate specifications; 3. Recalibrate.
Key exception	The converter key is in poor contact or locked.	Replace the display board.

Katu Electronic (Kunshan) Co.,Ltd.



telephone: 400-150-8815



Website: www.katusensor.com



Factory: Building 27B, Jingdong Intelligent Industrial Park,
No.9 Jinjie Road, Huaqiao Economic Development Zone,
Kunshan City, Suzhou