

# Turbine Flow Meter

## SenTec

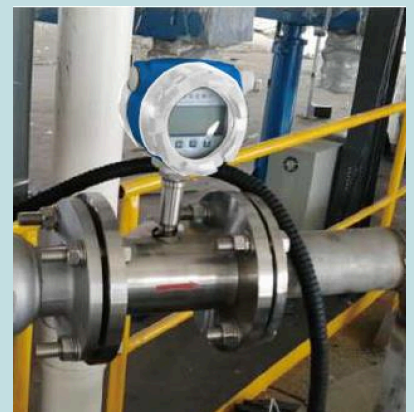
Sensing Technology Since 1998



Turbine flowmeter is the main type of velocity flowmeter. It uses a multi-blade rotor (turbine) to sense the average flow rate of the fluid, and derives the flow or total amount of the meter.

The turbine flowmeter is generally composed of two parts: a sensor and a display instrument, and can also be made into an integral type.

Turbine flow meter can used to measure both liquid or gas. So, the integrated turbine flowmeter is also called an intelligent liquid turbine flowmeter or an intelligent gas turbine flowmeter.



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# FMT800 Turbine liquid flow sensor

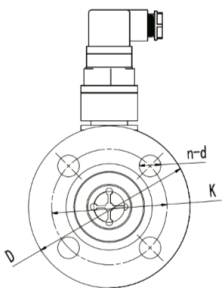
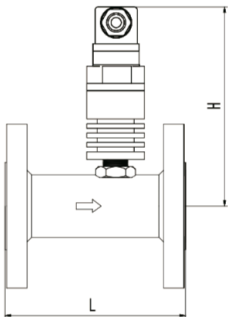
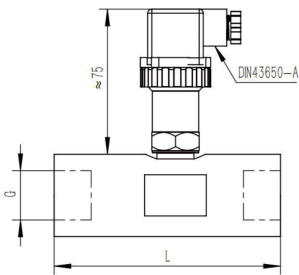
## Main Features



- High voltage
- High and low temperature
- Almost no pressure loss
- Quick response
- Compact size
- High accuracy and repeatability

## Dimension

Unit: mm



Refer more on parameter table

## Principle Structure

The FMT800 turbine flow sensor is composed of a runner and an external pulser. Liquid flows into the turbine, causing the rotor to rotate. The specific inner diameter makes the rotor speed directly proportional to the flow. The detector converts the detected rotor blade rotation into a pulse signal proportional to the flow rate.

## Specification

Measuring range	0.6...650L/min
power supply voltage	12...30VDC
output signal	4...20mA 2 wire
Accuracy	≤2% F.S
Repetitive	< 0.5% F S
No- load current	< 15mA
Pressure	60bar,100bar,250bar,400bar
Medium temperature	-20~90℃
Ambient temperature	-20~70℃
Storage temperature	-40~80℃
Protection grade	IP65(DIN53650-A),IP67 ( straight line), IP67(M12*1 connectors)
Electrical interface	DIN53650-A, Straight line, M12*1 connectors
Material	main body:304SS, runner:304SS, Shaft: hard alloy steel
Measuring the dielectric	Liquid (medium to low viscosity)
Viscosity range	1 100cSt

# FMT830 Electronic turbine flow sensor

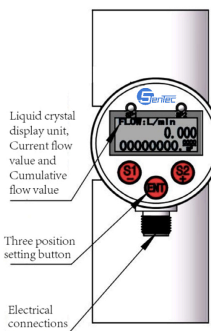
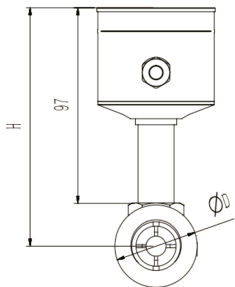
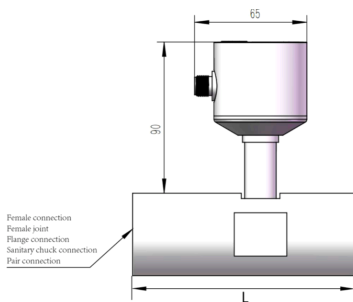
## Main Features

- High voltage
- High and low temperature
- Almost no pressure loss
- Quick response
- Compact size
- High accuracy and repeatability



## Dimension

Unit: mm



Refer more on parameter table

## Principle Structure

FMT830 electronic turbine flow sensor is an intelligent flow switch, is an exquisite type of flow sensor. It has the advantages of small volume, simple setting and so on. The built-in intelligent circuit can set the alarm value of the upper and lower limits of the flow arbitrarily, can monitor the real-time flow status remotely, set the full parameters on the spot arbitrarily, and the turbine measurement medium can be processed by the flow through the sensor functional circuit after arbitrary programming.

## Specification

Measuring diameter	DN6~DN250
power supply voltage	12..30VDC
output signal	Switching(PNP/NPN), analog(4~20mA), pulse
Output current	< 500mA
Accuracy	≤ ±2% range
Response time	< 10ms
Switching accuracy	< ± 0.5% F S
Current analog output	< ± 0.5% F S
Wiring protection	Inverse phase, overload, short circuit
Display	LCD screen, display range: 000000~999999
Medium temperature	-20~85℃
Ambient temperature	-20~80℃
Storage temperature	-30~80℃
Electrical interface	M12*1 connectors
Material	Case:304SS, turbine: stainless iron
Protection level	IP67

# FMT860 Turbine liquid flow temp. sensor

## Main Features

- High voltage
- High and low temperature
- Almost no pressure loss
- Quick response
- Compact size
- High accuracy and repeatability

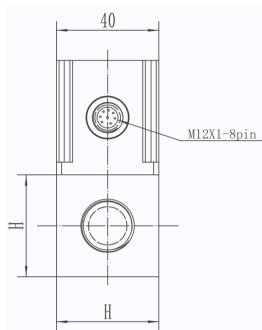
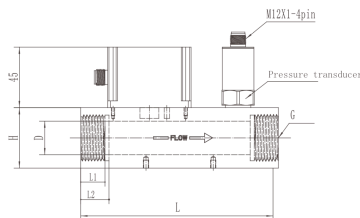
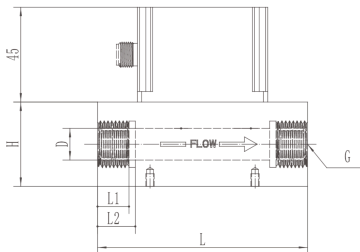


## Principle Structure

FMT860 electronic turbine flow/temperature integrated sensor is an integrated flow/temperature sensor. It has the advantages of small size, high voltage resistance, simple setting, built-in intelligent circuit, support temperature/flow remote analog output, and support temperature/flow alarm function, remote monitoring of real-time flow and temperature data, full parameter field arbitrary setting, range migration function, alarm value arbitrary setting.

### Dimension

Unit: mm



Refer more on parameter table

## Specification

Measuring diameter	DN6~DN250
power supply voltage	16...30VDC
output signal	Switching(PNP/NPN), analog(4~20mA), pulse
Output current	< 500mA
Accuracy	≤ ±1% range
Response time	< 10ms
Switching accuracy	< ± 0.5% F S
Current analog output	< ± 0.5% F S
Wiring protection	Inverse phase, overload, section protection
Display	OLED LCD screen
Pressure	400bar
Temperature range	0~100°C
Ambient temperature	-20~80°C
Storage temperature	-30~80°C
Electrical interface	M12*1 connectors
Material	Case:aluminum oxide, 304 stainless steel Turbine: duplex steel
Protection level	IP67

# FMT810 Digital liquid turbine flow meter

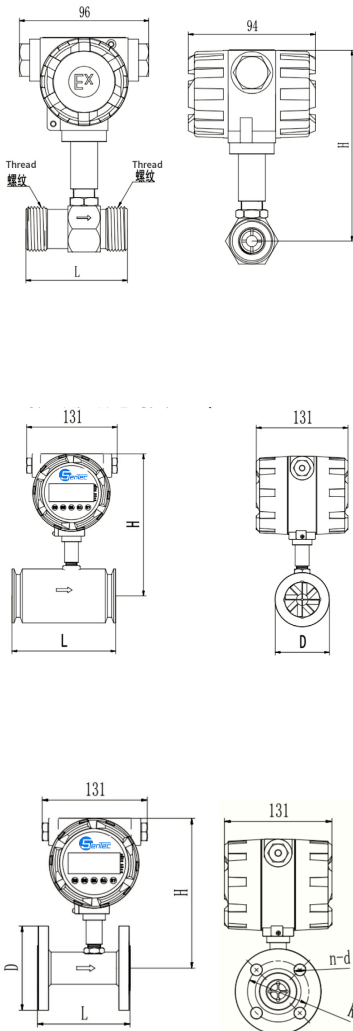
## Main Features



- Multi-unit switching, eight international common units freely switchable from volume cubic m/h, m<sup>3</sup>/min, liter L/h, L/min, gallon Gal/h, Gal/min, to mass kg Kg/h, ton t/h, etc.
- Intelligent low power consumption, US Texas low-power chip 1/3 power consumption
- Intelligent anti-interference, intelligent filter processing to effectively eliminate interference
- Power-off protection, sudden power-off value for 10 years

## Dimension

Unit: mm



Refer more on parameter table

## Principle Structure

The digital turbine flowmeter first converts the flow rate into the rotational speed of the turbine, and then converts the rotational speed into an electrical signal proportional to the flow rate. The induction coil is fixed to the housing together with the permanent magnet. When the ferromagnetic turbine blade passes the magnet, the reluctance of the magnetic circuit changes, thereby generating an induced signal. The signal is amplified and shaped by the amplifier and sent to the counter or frequency meter to display the total accumulated flow.

## Specification

Measuring medium	water, oil, alcohol and other liquids (viscosity <math>< 5 \times 10^{-6} \text{M}^2/\text{S}</math>)
Caliber range	DN4 ~ DN200 (DN4 ~ 80 common threaded connection)
Accuracy	$\pm 1\%R$ , $\pm 0.5\%R$ , $\pm 0.2\%R$ (special customized)
Output signal	Square wave pulse (voltage type), 4-20MA, 0-5V (smart type)
Working environment	-20~90° C, 5%~90%RH
Connection method	External/internal thread, flange, clamp
Communication	RS485 communication, MODBUS-RTU (smart type)
Body material	Stainless steel 1CR18NI9TI, 316L (hygienic)
Protection class	IP65 (common type), IP68 (special customized)

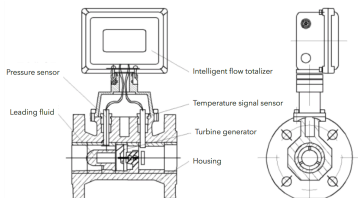
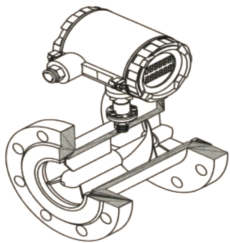
# FMT812 Gas Turbine flow meter

## Main Features



- It is suitable for medium and low flow rate clean gases such as natural gas, nitrogen and compressed air; it is not suitable for liquid or high temperature steam and moisture.
- The pressure loss is small, and the impeller has anti-corrosion function;
- Advanced ultra-low power consumption single-chip microcomputer technology, low power consumption and superior performance.
- Intelligent flow display with nonlinear accuracy compensation function, the correction accuracy is better than  $\pm 0.02\%$
- Using EEPROM to protect the cumulative flow and meter coefficient from power failure, the protection time is more than 10 years

## Structure



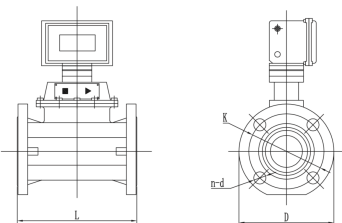
## Principle Structure

The gas vortex flowmeter is a new type of flowmeter that measures fluid flow in closed pipelines based on the Karman vortex principle. Because of its good medium adaptability, it can directly measure the volume flow of steam, air, gas, water and liquid under working conditions without temperature and pressure compensation. Equipped with temperature and pressure sensors, it can measure the volume flow and mass flow under standard conditions.

## Specification

Measured medium	No impurity, medium and low flow gas
Diameter (mm) and connection mode	25, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300 flanged 25, 40, 50 threaded
Accuracy	$\pm 1.5\% R$ ( $\pm 1\% r$ to be specially made)
Range ratio	1: 10; 1: 20; 1: 30
Instrument material	Body: 304 stainless steel or cast aluminum Impeller: anti corrosion ABS or aluminum alloy Converter: cast aluminum
Applicable conditions	Medium temperature: $-20\text{ }^{\circ}\text{C}$ - $+80\text{ }^{\circ}\text{C}$ Ambient temperature: $-30\text{ }^{\circ}\text{C}$ ~ $+60\text{ }^{\circ}\text{C}$
Power supply	Default 24VDC $\pm 15\%$ , ripple $\leq \pm 5\%$
Signal output	Pulse signal, 4-20mA current signal, control signal
Communication	RS485
Electric interface	Internal thread M20 $\times$ 1.5 or other
Explosion proof	ExdII BT6 or ExiaII CT4
Protection level	IP65

## Dimension



Refer more on parameter table