

Turbine flow meter



Turbine Flowmeter – SHMT

I . General Introduction

SHMT liquid turbine flow meters Turbine flow sensor and receiving from the electrical pulse signal composed of intelligent display devices. Used to measure the low-viscosity liquids in closed conduits instantaneous volume flow and volume in petroleum, chemical industry, metallurgy, aviation and scientific research departments have been widely used.



SHMT liquid turbine flow sensor from the turbine body and pre-amplifier. Display Instrument developed and manufactured by our company using SMIT-E-Y01 Intelligent Flow Totalize.

The flow meter JG198-94 tests the implementation of national regulations and Q/12KF3989-2001 SHMT Series Turbine Flow meter enterprise standard.

II. Structure and Operating Principle

2.1 Construction

integrating instrument

A1—operate line

A2--output

A3--display

A4--integrating

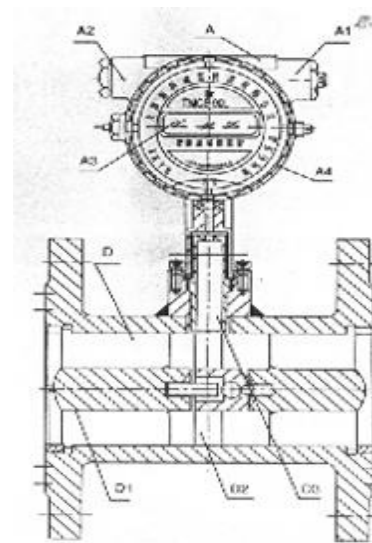
instrument incrustation

D--sensor

D1-- rectifier

D2—vane wheel

D3--wire



2.2. Working principle

Sensor is based on the torque balance theory, when the liquid flows through the sensor, in the special structure of rectifiers (D1) to be rectified under the action and speed, due to turbine blades and fluid flow into a certain angle, in accelerating the fluid under the action of the impeller (D2) produce rotational torque to overcome friction torque and fluid resistance, the turbine begins to rotate, to a certain flow range, the turbine's rotational speed and flow rate is proportional to volume flow. Impeller rotating-cut magnetic lines, periodically changing the coil (D3) in the magnetic flux, so that both ends of the coil sensor and the volume of fluid flow is proportional to the pulse signal, the signal after amplification, filtering, reconstructive surgery into the Flow Totalizer (A) to computing processing, and display on the LCD on the spot.

III. Main technology data

Material: Stainless Steel

DN range (mm): DN8-DN500

Output: pulse/current 4-20mA/RS-485/Hart

Accuracy: 0.2%, 0.5%, 1%

Medium: liquid

Flow range (mm): 0.25-4000

Power supply: 12 \pm 10% VAC / 24 \pm 10% VAC / 24VDC

Medium temperature (centigrade): -20-120

Environment temperature (centigrade): -20-50

Atmospheric pressure: 86-106KPa

Nominal Pressure: 1.6 – 42 MPa

Anti-Explosion Grade: IaIICT4, dIIBT4

Connection type: flange / screw thread / clamping band

2. Measurement range and Working pressure for liquid

Nominal Diameter (mm)	Regular Flow rate (m ³ /h)	Expanding flow rate (m ³ /h)	Regular tolerance pressure(MPa)	Special tolerance pressure(MPa) (flange connection)
DN4	0.04—0.25	0.04—0.4	6.3	12, 16, 25
DN6	0.1—0.6	0.06—0.6	6.3	12, 16, 25
DN10	0.2—1.2	0.15—1.5	6.3	12, 16, 25
DN15	0.6—6	0.4—8	6.3, 2.5(flange)	4.0, 6.3, 12, 16, 25
DN20	0.8—8	0.45—9	6.3, 2.5(flange)	4.0, 6.3, 12, 16, 25
DN25	1—10	0.5—10	6.3, 2.5(flange)	4.0, 6.3, 12, 16, 25
DN32	1.5—15	0.8—15	6.3, 2.5(flange)	4.0, 6.3, 12, 16, 25
DN40	2—20	1—20	6.3, 2.5(flange)	4.0, 6.3, 12, 16, 25
DN50	4—40	2—40	2.5	4.0, 6.3, 12, 16, 25
DN65	7—70	4—70	2.5	4.0, 6.3, 12, 16, 25
DN80	10—100	5—100	2.5	4.0, 6.3, 12, 16, 25
DN100	20—200	10—200	2.5	4.0, 6.3, 12, 16, 25
DN125	25—250	13—250	1.6	2.5, 4.0, 6.3, 12, 16
DN150	30—300	15—300	1.6	2.5, 4.0, 6.3, 12, 16
DN200	80--800	40—800	1.6	2.5, 4.0, 6.3, 12, 16

3. Measurement range and Working pressure for gas

Model	Diameter (mm)	Flow Rate (m ³ /h)	Initial Flow Rate (m ³ /h)	Tolerance pressure(Mpa) (flange connection)
SHMT-25A	25 (1")	0.7—7	0.6	4.0 Flange or Thread
SHMT-25B		1.5—15	1.0	4.0 Flange or Thread
SHMT-25C		3—30	2.0	4.0 Flange or Thread
SHMT-40A	40 (1.5")	4—40	2.5	4.0 Flange or Thread
SHMT-40B		8—80	3	4.0 Flange or Thread
SHMT-50A	50 (2")	10—100	3.5	4.0 Flange
SHMT-50B		15—150	4	4.0 Flange
SHMT-80	80 (3")	15—300	4	1.6 Flange
SHMT-100	100 (4")	20—400	5	1.6 Flange
SHMT-150	150 (6")	50—1000	8	1.6 Flange
SHMT-200	200 (8")	100—2000	20	1.6 Flange
SHMT-250	250 (10")	150—3000	30	1.6 Flange
SHMT-300	300 (12")	200—4000	40	1.6 Flange

V Product Category

1. SHMT series can be divided into two categories by function:

- Turbine flow sensor / transmitter
- Intelligent integration Turbine Flowmeter

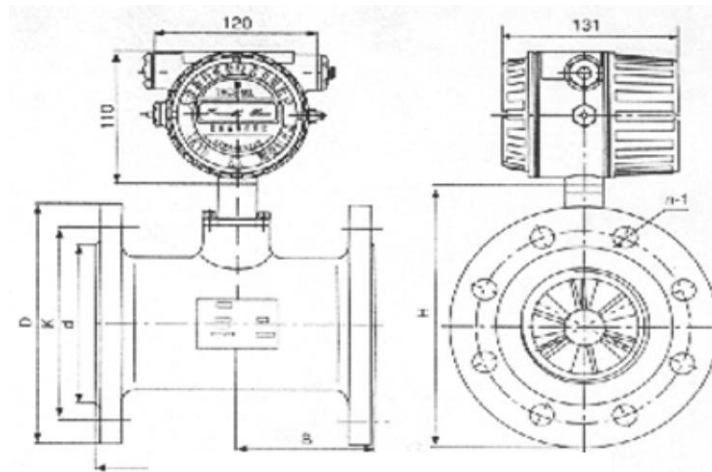
2. Function illustration:

➤ Turbine flow sensor/ transmitter

This kind of products have no scene display function, only produce signals to transmit output to far distance. The flow signals can be divided into pulse or current (4-20ma) signal. This instrument has low price, high assemble, small size, so can be applicable to match second displayer, PLC, DCS so on computer control system to use.

According to different signal outputs, it can be divided into SHMT-N and SHMT-A types.

◇ SHMT—N sensor



3.2 dimension

1	2	3	4	5	6	
inside nominal diameter	counter	pressure	feature	Transmitter	working temperature	explanation
						Turbine flow meter
4						Diameter4mm
6						Diameter6mm
10						Diameter10mm
15						diameter15mm
25						diameter25mm
40						diameter40mm
50						diameter50mm
80						diameter80mm
100						diameter100mm
150						diameter150mm
200						diameter200mm
250						diameter250mm
300						diameter300mm
	W					pulse
	J					Mechanical arithmometer
	E					Electronic arithmometer
	H					Auto Zero arithmometer
		1.6				pressure1.6Mpa
		2.5				pressure2.5 Mpa
		4.0				pressure4.0 Mpa
		6.3				pressure6.3 Mpa
			C304			Rotor is stainless 304
			C316			Rotor is stainless 316
			CC304			Crust and Rotor is stainless 304

			CC316			Crust and Rotor is stainless 316
				F		Pulse output
				I		Currency output
					A	working temperature-20~+80
					B	working temperature-20~+150
					C	working temperature-20~+250
					D	working temperature-20~+350

V.installation

1. Installation of Sensor according to the different specifications, using threaded or flanged connections.

2. Sensors can be horizontal, vertical installation. The flow direction must be down when Vertical installation. Liquid should be filled with pipes, without air bubbles.

3. Installation, the liquid flow direction should be indicated on the flow sensor housing the arrow in the same direction, the upper straight run piping should be at least 20 times reaches of the nominal diameter, the down straight run piping should be at least 5 times reaches of the nominal diameter.

4. Sensors should stay away from the outside electric and magnetic fields, if necessary; shielding should be effective measures to prevent external interference.

5. In order to repair without affecting the normal fluid transport, it is recommended to install by-pass pipeline near sensor.

6. Sensor open-air installation, please do amplifiers and plugs Department waterproofing treatment.