ROCKSENSOR™

Turbine Flowmeter

RF3501

- Accuracy ±0.5%
- Sensor Material SS304/ SS316L
- Signal Output Pulse, 4~20mA, Alarm
- Protection Class IP65/ IP67

Product Datasheet

ROCKSENSOR AT A GLANCE (ABOUT US)

Rocksensor is one of the global leaders specializing in Process Instrumentation, Research and Development and Designing of Industrial Automation Equipment. We provide highly precise pressure sensors and transmitters, flow metres, level transmitters and temperature transmitters with a prime focus to help our clients efficiently, safely and economically run complex industrial processes.

Rocksensor, headquartered in Switzerland, has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, Morocco, China, Taiwan, Australia, UAE, Brazil and India. Our clients come from some of the major industries such as Oil and Gas, Petrochemicals, Pharmaceuticals, FMCG, Automobiles, Water, Cement, Metal & Mining, and mainly from the Power Industry like Nuclear, Thermal, Hydro, and Solar.

Rocksensor deals in a wide range of highly accurate industrial automation instruments ensuring that even the complex industrial processes happen efficiently.

To fulfill the needs of our clients we make sure that our instruments work in even the harsh environmental conditions offering accurate recordings and communication.

We, at Rocksensor, believe in creating bonds that last a lifetime and create a success story for each and every client. Rocksensor aims to achieve a perfect fit in the global market landscape and establish our footprints across the globe.

CE

International Organization for Standardization ISO 9001

Ex ATEX

Safety Integrity Level SIL

IECEx

HART COMMUNICATION PROTOCOL

FIELDCOMM GROUP MEMBER

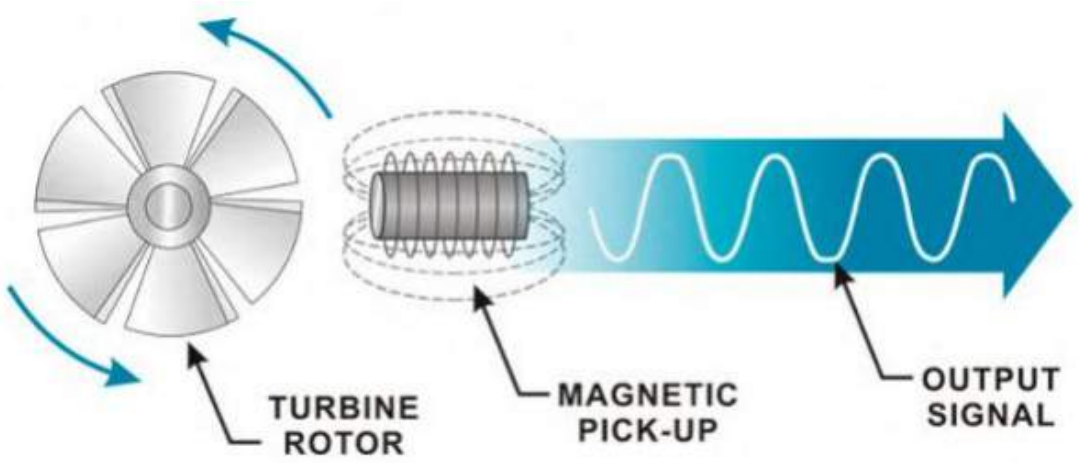
RoHS

RKS ROCKSENSOR

CONTENTS

1. Principle

When liquid flows through the casing of sensor, the impulse of fluid will provide the blade with a rotation moment as there is an angle between the blade of impeller and the flow direction. The blade will rotate as the friction moment and the fluid resistance are overcome and it will reach a stable speed when the moments are at balance. Under certain conditions, the rotation speed of blade will be in direct proportion to the flow velocity. Due to the magnetic conductivity of blade, when located in the magnetic field generated by signal detector (made of permanent magnet steel and coils), the rotating blade will cut the magnetic lines and periodically change the flux through the coil, thereby inducing electrical impulse signals at both ends of the coil. The induced signals, after amplified and rectified by amplifier, will form a continuous rectangular impulse wave with certain amplitude which may be remotely transmitted to display instrument indicating the instant flow and the cumulative flow of fluid. Within a certain range of flow, the impulse frequency f is in direct proportion to the instant flow of fluid flowing through the sensor.



2. Application

- Flow measurement of tap waer, demineralised water and chemicals.
- Fuels, marine engine fuel monitoring, vegetable oil, thermal oil and solvents.
- Special models for refrigerants, pharmaceutical fluids, cryogenic fluids, liquefied gases and high-pressure applications.

3. Specifications

MATERIALS OF CONSTRUCTION

Body: SS304 (standard) / SS316 (optional)

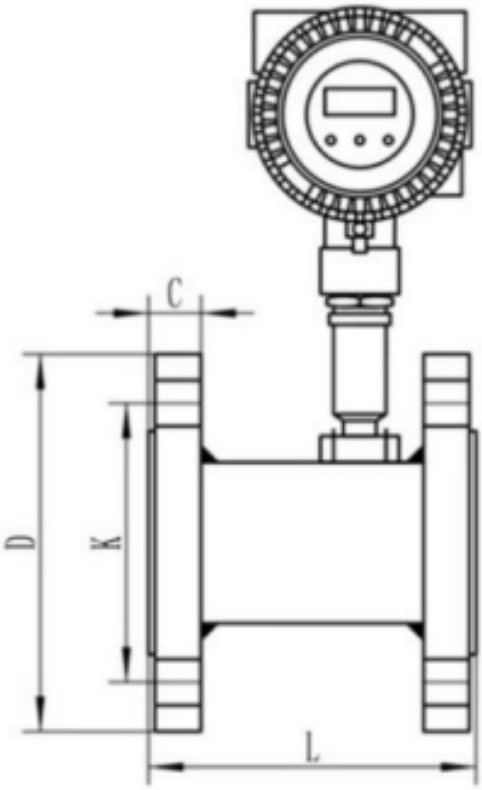
Rotor: AISI 420/X20Cr13/ SUS 420J1/2Cr13 / Duplex Steel (optional)

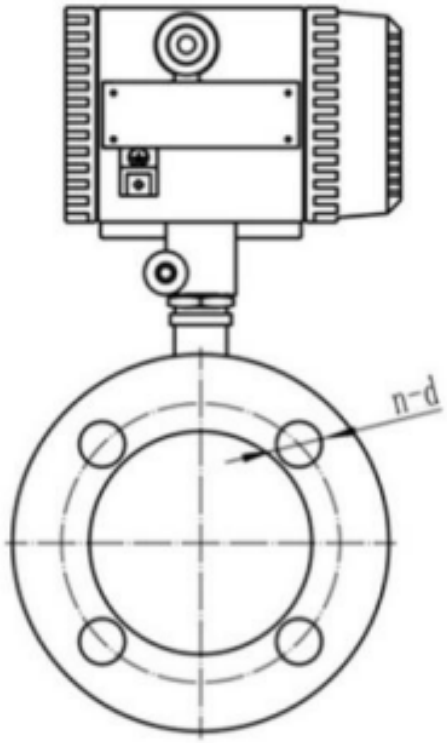
Parameters	Details
Size & Process Connection	Thread connectionn:DN4,6,10,15,20,32,40,50,65,80,100
	Flange connection: DN15,20,32,40,50,65,80,100,125,200
	Clamp connection: DN4,6,10,15,20,32,40,50,65,80,100
Accuracy	±0.5%, ±0.2% optional
Sensor Material	SS304, SS316L optional
Ambient Conditions	Medium temperature: -20°C ~ +150°C
	Atmospheric pressure: 86Kpa ~ 106Kpa
	Ambient temperature: -20°C ~ +60°C
	Relative humidity: 5%-90%
Signal Output	Pulse, 4 ~20mA, Alarm (optional)
Digital Communication	RS485, MODBUS; HART
Power Supply	24VDC/ 3.6VDC Lithium Battery
Cable Entry	M20*1.5; 1/2"NPT
Explosion-Proof Class	Exd IIC T6 Gb
Protection Class	IP65; IP67 optional

4. Size- Flow Range- Connection

Size	Standard Flow Range (m^3/h)	Extended Flow Range (m^3/h)	Common Connection & Pressure	Customized Pressure
DN4	0.04-0.25	0.04-0.4	Thread/6.3MPa	4-42MPa
DN6	0.1-0.6	0.06-0.6	Thread/6.3MPa	
DN10	0.2-1.2	0.15-1.5	Thread/6.3MPa	
DN15	0.6-6	0.4-8	Thread/6.3MPa	
			Flange/4.0MPa	
DN20	0.8-8	0.45-9	Thread/6.3MPa	
			Flange/4.0MPa	
DN25	1-10	0.5-10	Thread/6.3MPa	
			Flange/4.0MPa	
DN32	1.5-15	0.75-15	Thread/6.3MPa	
			Flange/4.0MPa	
DN40	2-20	1-20	Thread/6.3MPa	
			Flange/4.0MPa	
DN50	4-40	2-40	Thread/6.3MPa	
			Flange/4.0MPa	
DN65	7-70	3.5-70	Thread/1.6MPa	
			Flange/1.6MPa	
DN80	10-100	5-100	Thread/1.6MPa	
			Flange/1.6MPa	
DN100	20-200	10-200	Thread/1.6MPa	
			Flange/1.6MPa	
DN125	25-250	12.5-250	Flange/1.6MPa	
DN150	30-300	15-300	Flange/1.6MPa	
DN200	80-800	40-800	Flange/1.6MPa	
Remark: Tri-clamp connection optional (Size DN4-DN80, Pressure-1.6MPa)				

5. Dimension



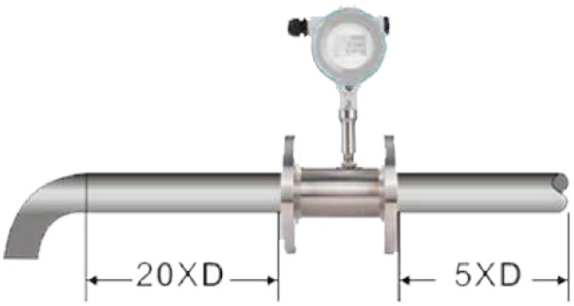


Diameter	Flange Connection					
mm	L(mm)	D(mm)	K(mm)	d(mm)	n(Holes)	Flange Thickness C(mm)
10	345	90	60	14	4	16
15	75	95	65	14	4	16
20	80	105	75	14	4	18
25	100	115	85	14	4	18
32	120	140	100	18	4	18
40	140	150	110	18	4	19
50	150	165	125	18	4	21
65	175	185	145	18	4	21
80	200	200	160	18	8	23
100	220	220	180	18	8	23
125	250	250	210	18	8	25
150	300	285	240	22	8	25
200	360	340	295	22	12	27

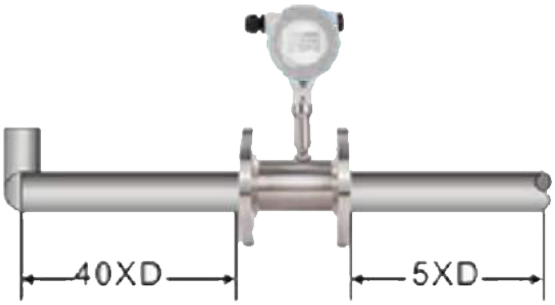
6. Installation Requirement

During installation, the users will need bolts, nuts, washers and appropriate tools for installation. The user needs to keep in mind these three factors while carrying

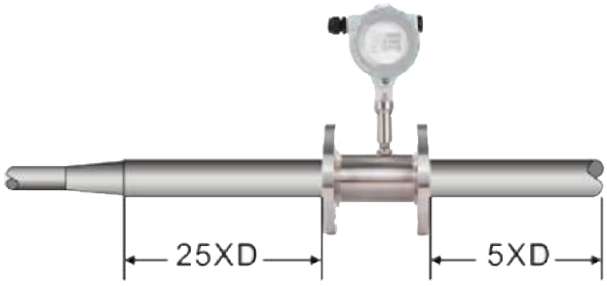
- There should be at least ten pipe diameter lengths of straight pipe upstream of the Turbine Meter and five pipe diameter length of straight pipe length downstream of the Turbine Meter, with the same nominal diameter size.
- Valves and Throttling devices needed to install downstream of the flow meter.
- The arrow indicated on the meter body is the same as the actual flow.



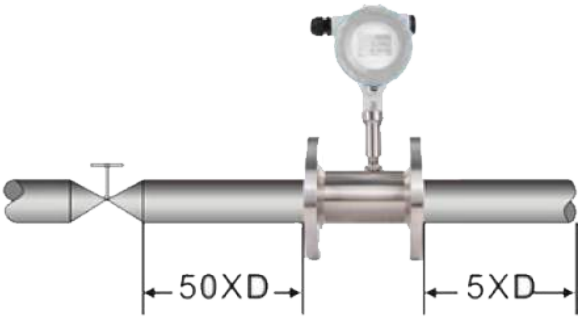
One 90° elbow



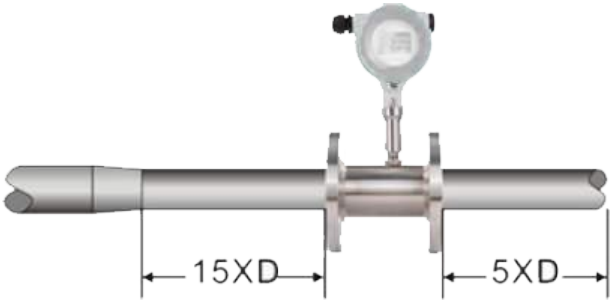
Two 90° elbows for two planes



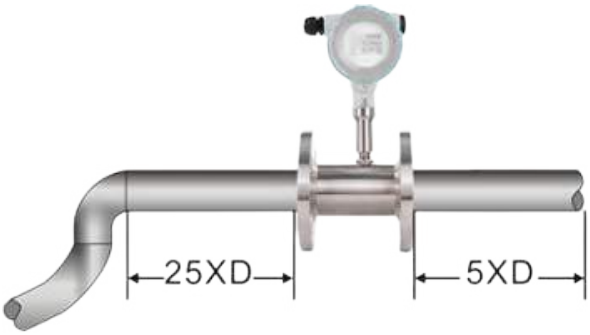
Conncentric expander



Control valve half-open



Conncentric shrinkage wide openvalve



Two 90° elbows for one plane

7. Model Selection Table

RF3501	Turbine Flowmeter									
Code	1	2	3	4	5	6	7	8	9	10

Diameter
Three Digitals; for examples: 010: 10mm; 015: 15mm; 080: 80mm; 200: 200mm

Converter	
No display; 24VDC; Pulse Output	N
No display; 24VDC; 4-20mA Output	A
Local display; Lithium Battery Power; No Output	B
Local display; 24VDC Power; 4-20mA Output	C
Local display; 24VDC Power; 4-20mA Output; MODBUS RS485 Communication	C1
Local display; 24VDC Power; 4-20mA Output; HAT Communication	C2

Accuracy	
0.5% of Rate	05
0.2% of Rate	02

Flow Range	
Standard Range	S
Wide Range	W

Body Material	
SS304	S
SS316L	L

Explosion Rating	
N	None
E	ExdIIBT6

Pressure Rating	
E	Standard
H(X)	Customized Pressure Rating (Max. 40MPa)

Connection		
DX	DXX	DO6, D10, D16, D25, D40-D06: DIN-PN6; D10: DIN-PN10-D16: DIN-PN16; D25: DIN-PN25-D40: DIN-PN40
AX	AX	A1, A3, A6
	A1	ANSI-150#
	A3	ANSI-300#
	A6	ANSI-600#
TH	Thread	DN4 ~ DN50

Fluid Temperature	
T1	-20°C~+80°C
T2	-20°C~+120°C
T3	-20°C~+150°C

IP protection	
1	IP65
2	IP67

Example: RF3501-015C05SS1T1A1EN

RF3501 - Turbine Flowmeter

015 - Diameter: 15mm

C - Converter: Local display; 24VDC Power; 4-20mA Output

05 - Accuracy: 0.5%

S - Flow Range: Standard 0.6-6 m3/h

S - Body Material: SS304

1 - IP Protection: IP65

T1 - Fluid Temperature: -20°C~+80°C

A1 - Connection: ANSI-150#

E - Pressure Rating: Standard - 4.0MPa

N - Explosion Rating: None

*For any customisation, contact our sales team

ROCKSENSOR™
Sensing Beyond the Vision

Field Instrumentation Range

Pressure Measurement

- Smart Differential Pressure Transmitter
- Smart Gauge Pressure Transmitter
- Smart Absolute PressureTransmitter
- Miniature Pressure Transducer without display
- Sanitary Gauge/ Absolute Pressure Transmitter
- Submersible Pressure Transmitter
- Remote Seal Differential P.T. with capillary
- Remote Seal Differential P.T. Direct Mount
- Remote Seal Gauge/Absolute P.T. with capillary
- Remote Seal Gauge/Absolute P.T. Direct Mount

Flow Measurement

- Coriolis Mass Flowmeter
- Thermal Gas Mass Flowmeter
- Positive Displacement Flowmeter
- Electromagnetic Flowmeter
- Vortex Flowmeter
- Turbine Flowmeter
- Variable Area Flowmeter
- Clamp On Ultrasonic Flowmeter
- Inline Ultrasonic Flowmeter
- Portable Ultrasonic Flowmeter

Level Measurement

- RADAR Level Transmitter Horn Antenna
- Compact RADAR Level Transmitter
- RADAR Level Transmitter Sanitary
- RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- RADAR Level Transmitter Lens Antenna
- RADAR Level Transmitter Rod Antenna
- Ultrasonic Level Transmitter
- Microwave Barrier Level Switch
- Admittance Level Switch Series
- Vibrating Rod Level Switch Series
- Tuning Fork Level Switch Series

Temperature Measurement

- Head Mount Temperature Transmitter
- Temperature Transmitter for Sanitary Applications
- DIN Rail Temperature Transmitter
- Field Mount Temperature Transmitter

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