ROCKSENSOR®

Ultrasonic Flow Meter

RUF100

- Accuracy: ±1%
- Size upto DN6000mm
- Strong Anti-Interference
- IP68 Protection Class

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 & temperature transmitters with a prime focus to help our clients efficiently, safely and economically run complex industrial processes.

Rocksensor headquartered in Germany (originated in Switzerland), has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, 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 global market landscape and establish our footprints across the globe.

ROCKSENSOR

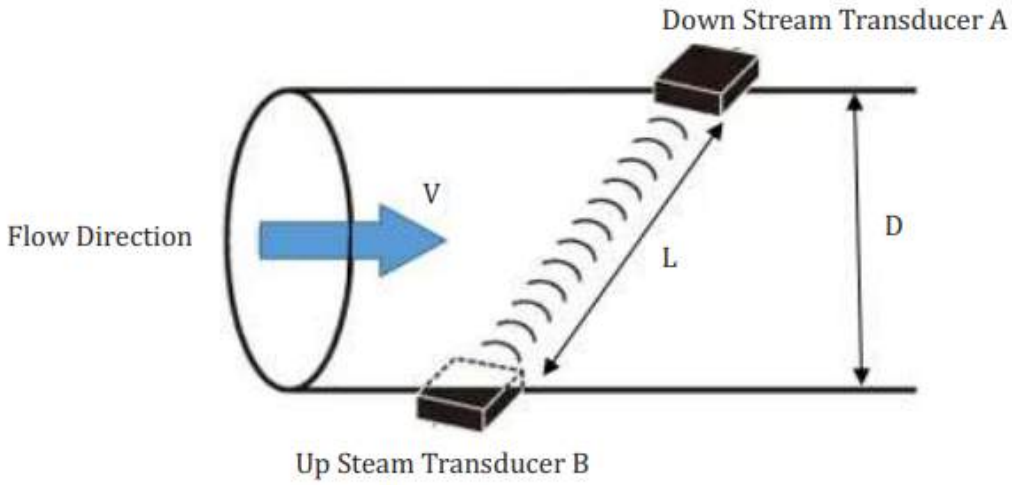
CONTENTS

KEY APPLICATION INDUSTRIES

- Oil and Gas sector
- Cement
- Metal
- Pulp and Paper
- Agriculture
- Textiles
- Chemicals
- Power
- Water
- Pharmaceutical
- Fertilizer
- Plastics and HVAC

1. Introduction

Ultrasonic flowmeters, as the name suggests, are meters that use sound waves to measure flow. These meters are attached around the inside or outside of a pipe, & when activated, transmit untrasonic waves from one side of the meter to the other. These transmitted waves are then collected & measured to determine the flow. There are multiple types of flowmeters, though they operate on the same principle. Some can be inserted into the pipe or attached inline. Some options can even be attached to the ouutside of the pipe using clamps.



V- Flow velocity of the medium , L- length of acoustic path

2. Salient Features

- High accuracy up to 1%
- Wide pipe flow measurement: DN15 ~ DN6000
- High reliability adopting low voltage, multi-pulse radiating circuit
- Anti-interference design with double balanced signal differential transmission
- Powerful memory function up to 10 years with expandable storage card
- Can be used as an Energy Meter by connecting Temperature Sensor
- Available in Clamp-On, Insertion & In-line Sensor Type
- Wall-mount, panel mount & explosion-proof transmitter options

3. Advantages

- No moving parts
- Low maintenance
- Digital and analog options
- High Accuracy

4. Technical Specifications

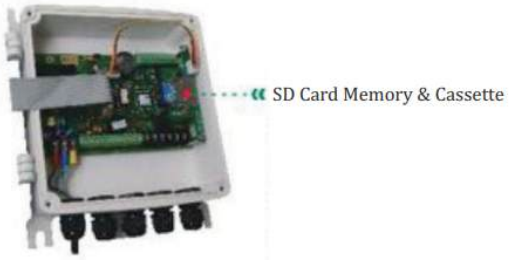
Transmitter	**Principle**	Ultrasonic transit-time principle, Four byte IEEE754 Floating-point arithmetic
	Accuracy	±1%
	Display	LCD
	Output	One 4-20 mADC Output, Impedance 0-1K, 0.1% accuracy
		One OCT Pulse Output (Width 6-1000ms, Default 200 ms)
		One Relay Output
	Input	Three 4-20mADC, Input accuracy 0.1% (Can collect temperature, pressure, level signals, etc.)
		Can connect with three-wire Pt100 RTD to measure Heat Flow
	Data Interface	Isolated RS485 interface, can upgrade Flowmeter through PC, supports Modbus
Signal Transmission		Up to 1000 meters over RS485 Communication/ 4-20 mADC
	Installation	Straight Pipe connection before and after Flowmeter (≥20DN, ≥5DN), respectively
Applicable Pipe Material	**Material**	SS, MS, CS, Copper, Aluminium, PVC, FRP, etc. (Liner allowed)
	Diameter	DN15 ~ DN6000 mm
	Installation	Upstream 10D, downstream 5D, 30D away from the pump outlet (D: Diameter)
Medium	**Fluid**	Water, Sea Water, Acid Liquid, Beer, Alcohol, Oil & any other liquid that can spread sonic
	Temperature	(-)30 ~ 160°C
	Turbidity	10,000 ppm (with limited bubbles)
	Velocity	0 ~ ±32 m/s
Operating Environment	**Temperature**	Transmitter: -20 ~ 60° C; Transducer: -30 ~ 160° C
	Humidity	Transmitter: 85%RH
Transmitter Protection Grade		IP68 (Water depth <2m)
Power Supply		8 ~ 36 VDC or 85 ~ 265 VAC
Power Consumption		1.5W

*For insertion type kindly contact our engineer.

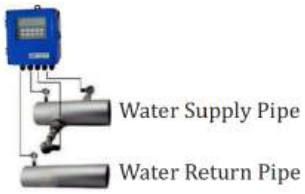
4.1 Transmitter Options

		
Wall Mounted Type	**Panel Mounted Type**	**Explosion-Proof Type**
Used to mount on the wall	Used for meter cabin sets installation	Used in hazardous area
Dimension: 170*180*56 mm	Dimension: 152*76 mm	Dimension: 298*298*110 mm

4.2 SD Memory Card



4.3 Measurement Options

	Flow Measurement	Heat/ Cold Energy Measurement	Feature
Clamp-On Type			* Installation require drying off the pipe * High accuracy, stable & reliable during long-term operation * Mating clamp temperature sensor that can measure the temp. of the outside of tube to achieve heat measurement
Insertion Type			* Installation without drying up, no pressure loss * Easy installation & maintenance * Mating clamp temperature sensor that can measure the temp. of the outside of tube to achieve heat measurement
Pipe Type			* Installation require drying off the pipe * High accuracy, stable & reliable during long-term operation * Mating clamp temperature sensor that can measure the temperature of the outside of tube to achieve heat measurement

4.4 Transducer

Type	Picture	Specification	Model	Pipe Size	Temperature	Dimension
Standard Clamp-On Type		Small	S2	DN15 ~ DN100	(-)30 ~ 90°C	45x25x32mm
		Medium	M2	DN50 ~ DN700	(-)30 ~ 90°C	64x39x44mm
		Large	L2	DN300 ~ DN6000	(-)30 ~ 90°C	97x54x53mm
High Temperature Clamp-On Type		Small	TS-2H	DN15 ~ DN100	(-)30 ~ 160°C	45x25x32mm
		Medium	TM-2H	DN50 ~ DN700	(-)30 ~ 160°C	64x39x44mm
		Large	TL-2H	DN300 ~ DN6000	(-)30 ~ 160°C	97x54x53mm
Insertion Type		Standard	TC-1	DN80 ~ DN6000	(-)30 ~ 160°C	190x80x55 mm
		Longer Type	TC-2	DN80 ~ DN6000	(-)30 ~ 160°C	335x80x55 mm

4.3 Measurement Options

Specification	Model	Measurement Range	Temp. Range	Installation Requirement	Accuracy
Three Wire PT100 Clamp-On Temperature Sensor	CT-1	>DN50	(-)40 ~ 160°C	No need to cut flow line	100°C±0.8°C Temperature difference ≤0.1°C after matching accurately
Three Wire PT100 Insertion Temperature Sensor	TCT-1	>DN50	(-)40 ~ 160°C	No need to cut flow line	
Three Wire PT100 Pressure Installation Insertion Temperature Sensor	PCT-1	>DN50	(-)40 ~ 160°C	No need to cut flow line	
Small size three wire Pt100 Insertion Type Temperature Sensor	SCT-1	>DN50	(-)40 ~ 160°C	No need to cut flow line	

5. Model Selection Table

RUF100	Ultrasonic Flowmeter							
Code	1	2	3	4	5	6	7	8

Transmitter	
Wall Mounted	W
Panel Mounted	S
Explosion-proof	D

Transducer	
Small (Std. Clamp-on type)	TS-2
Medium (Std. Clamp-on type)	TM-2
Large (Std. Clamp-on type)	TL-2
Small (High Temp. Clamp-on Type)	TS-2H
Medium(High Temp. Clamp-on Type)	TM-2H
Large (High Temp. Clamp-on Type)	TL-2H
Standard (Insertion Type)	TC-1
Longer Type (Insertion Type)	TC-2
Customized	X

Diameter
DN 15 ~ 6000

Nominal Pressure
MPa 1.0, 1.6, 2.5, 4.0

Cable Length Between Sensor & Transmitter	
X	5 ~ 100 m

Temperature Sensor	
N	No Temperature Sensor
C	Clamp-On type
I	Insertion Type
12	Insertion Installation with pressure
S	Small size temp. sensor

SD Card Storage	
0	With this function
1	Without this function

Material	
0	Carbon Steel
1	Stainless Steel
2	Cast Iron
3	FRP
4	PVC
5	Cement
6	Others

Example: RUF100-W-TS2H-15-0-1-5-N-1

RUF100 - Ultrasonic Flowmeter

W - Transmitter: Wall Mounted

TS2H - Transducer: Small (Standard Clamp-on type)

15 - Diameter: DN15

0 - Material: Carbon Steel

1 - Nominal Pressure: 1.0 MPa

5 - Cable Length between sensor & transmitter: 5 meter

N - Temperature Sensor: No temperature sensor

1 - SD Card Storage: Without SD Card

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
- 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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