Inline Ultrasonic Flow Meter

V2 SERIES

RAPID CONTROLS

FRUGAL SOLUTIONS BY INNOVATION

Keeping the Indian tradition of frugal invention alive, “RC” introduces a water meter which addresses a long standing problem of sand coming with raw water- a real headache for maintenance team. Sand coming with water is enemy of moving parts in woltman water meters. Here we provide you a water meter which is not only without any moving parts it is economical as well almost at the price of Woltman water meter. This flow meter also helps you measure DM water, Hot water where Electromagnetic flow meter face problems we can offer these water meters with MS/CI/SS304/SS316 body material to make it most versatile flow meter and you can use it for Raw water, Treated water, DM water, Hot water.

INFORMATION POWERHOUSE

It has almost everything in display be it Flow Rate, Totalizer - Forward, Reverse, Net, No of hours meter was installed, worked. Archives have record of Daily reading for 31 days and monthly reading for 32 Months. Communication options include Impulse, RS485, Mod bus Wired, Mod bus Wireless

RAPID CONTROLS

NO PROBLEM METER

- Outdoor installation - NO PROBLEM-IP68 protection
- Low Flow rate - NO PROBLEM-range-ability of 1:125 (Qmin:Qn)
- Communication - NO PROBLEM - lot of options include impulse, RS485, Mod bus Wired, Modbus Wireless, GSM/GPRS, NFC Analog 4 - 20 mA
- Sand / Foreign particles coming with water-NO PROBLEM - Through anything at this meter and it will work tirelessly.

FEATURES

- Less than 0.01 m/s starting velocity
- Multi line 9 digital LCD accumulative flow and 4 digital for instantaneous flow
- Automatic power saving function under the empty pipe or long-term fluid stationary state
- IP68 protection, ensure long-term operation through water in the inside meter
- Date cumulative record and data acquisition function
- Various of Units selected, including Cubic meter, USA gallon, Cubic feet and Liter
- Built-in Lithium battery
- Output: Two way isolated pulse output(pulse equivalent and output pulse can be arbitrary programmed); two-wired system 4-20mA output
- Software online upgrade function
- With the two way PT1000 temperature transducer, which can realize the heat measurement.
- Support MODBUS communication protocol.
- Easy commissioning.

APPLICATION

- Residential water consumption metering (cold and Hot tap water)
- Water consumption metering at industrial enterprises
- Water metering at pipeline Control Points
- Prepayment systems
- Irrigation

TECHNOLOGY

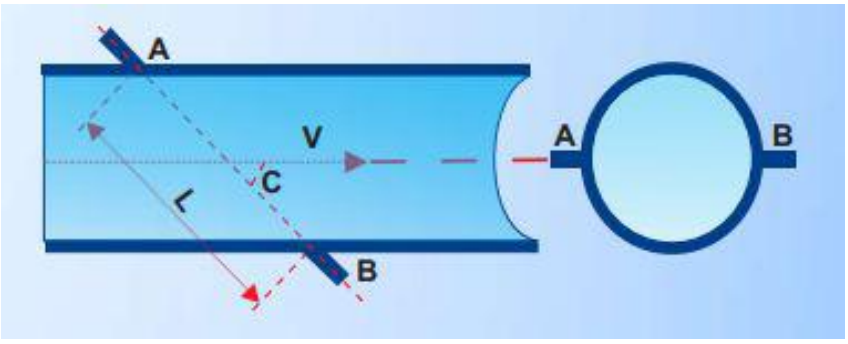
A typical transit-time flow measurement system utilizes two ultrasonic transducers that function as both ultrasonic transmitter and receiver. The flow meter operates by alternately transmitting and receiving a burst of sound energy between the two transducers and measuring the transit time that it takes for sound to travel between the two transducers. The difference in the transit time measured is directly and exactly related to the velocity of the liquid in the pipe. To be more precise, let's assume that T down is the transit-time (or time-of-flight) of a sound pulse travelling from the upstream transducer A to the downstream transducer B, and Tup is the transit-time from the opposite direction, B to A. The following equations hold:

T down = (D / sin ø) / (c + V*cos ø), (1)
Tup = (D / sin ø) / (c - V*cos ø), (2)

Where c is the sound speed in the liquid, D is the pipe diameter and V is the flow velocity averaged over the sound path. Solving the above equations leads to V = (D / sin 2ø) * ΔT / (Tup * T down), (3)

Where ΔT = Tup - T down. Therefore, by accurately measuring the upstream and downstream transit-time Tup and T down, we are able to obtain the flow velocity V. Subsequently, the flow rate is calculated as following, Q = K *A* V, (4)

Where A is the inner cross-section area of the pipe and K is the instrument coefficient. Usually, K is determined through calibration.
From equations (3) and (4), we see that the measurement results, V and Q, are independent of fluid properties, pressure, temperature, pipe materials, etc. The sound speed term does not appear in the final equations. These characteristics, plus large turn-down ratio, no pressure drop, no moving parts, no disturbance to the flow and many other features, make ultrasonic transit-time flow meter extremely attractive.



RAPID CONTROLS

SPECIFICATION

Parameter	Value
Nominal Diameter Of The Pipeline, DN	32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400
Accuracy, %	± 2.0
Flow velocity range, m/s	0.02 - 5
Fluid temperature range, °C:	50 / 130
Ambient temperature range, °C	5 - 65
Maximum pipeline pressure, MPa / bar	2.5 / 25
Protection	IP68
Compliance	ISO 4064
Measurement data logging, number of records: - daily log - monthly log	 31 32
Lithium battery life, Yrs.	>5

THE BASIC TECHNICAL CHARACTERISTICS

Diameter of conditional pass of the pipeline, DN								
50	65	80	100	125	150	200	250	300
The most smaller measured average volume expense, Qmin, m³/h								
0.28	0.48	0.73	1.13	1.17	2.55	4.53	7.08	10.19
The transitive measured average volume expense, Qtrans, m³/h								
1.40	2.40	3.60	5.70	8.80	12.7	22.6	35.4	50.9
The greatest measured average volume expense, Qmax, m³/h								
35.4	59.8	90.6	141.5	221.1	318.4	566.0	884.4	1273.5

OUTPUTS

LCD; Universal output

Analog 4 - 20 mA

RS-485 interface (ModBus)

Wired or wireless M-Bus interface – on request

2023	Inline Ultrasonic Flow Meters Robust												Data Sheet Ver 1.0			
	InlineUFM-II	xxx	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Size	32MM	32														
	40MM	40														
	50MM	50														
	65MM	65														
	80MM	80														
	100MM	100														
	125MM	125														
	150MM	150														
	200MM	200														
	250MM	250														
	300MM	300														
Mounting	Inline		1													
Flow Tube Material	FMT CI / MS			M												
	FMT SS304			S												
	FMT SS316			F												
Flow Sensor Protect	FMT IP67				IP67											
	FMT IP68				IP68											
Structure	Integral					1										
	Remote					2										
Process Connection	SS 304 Flange						M									
	SS 304 Flange						F									
	SS 316 Flange						G									
	SMS Union						S									
	TC End (SS 316)						T									
Pressure Rating	16 Bar							B								
	25 Bar							C								
	40 Bar							A								
Temperature Rating	50 deg C								50							
	130 deg C								130							
Flange Class	ANSI # 150									1						
	PN 10/16									2						
	PN 25									4						
	PN 40									3						
	Tril-clover End									6						
Output	Pulse and RS485										C					
	Pulse/RS485 with Analog 4 - 20mA										A					
Power Supply	24 VDC											V				
	Battery											B				
Matching Flange	MMF Skip													O		
	MMF Mating Flanges													P		
Data Logger	MM Data Logger															P

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