



Badger Meter Europa

MoniSonic 4500

Ultrasonic transit time flow meter

Description

The flow meters of the MoniSonic 4500 series are transit time ultrasonic flow meters designed for accurate and reliable flow measurement of ultrasonic conductive fluids in pressure pipes from DN 25 to DN 600.

The meter can be programmed at the factory or later in the field via the front keypad.

The strap-on sensors can be installed on either horizontal or vertical pipes. Condition for an accurate flow measurement is a well developed velocity profile, which can be achieved by a full pipe with sufficient straight inlet and outlet pipe length.

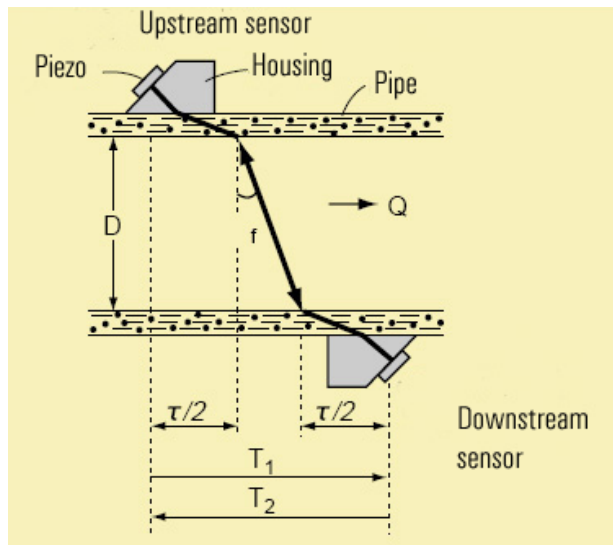
The meter has a 2 line backlit LCD display. Flow, totalization and status are displayed.



Thanks to high performance transit time processors, the response time has been shortened to measure highly dynamic processes.

Measuring principle

The meter is operating according to the ultrasonic transit time method. Ultrasonic waves are transmitted and received diagonally across the flow stream. The flow velocity is calculated from the difference of the transit times. Compared to a Doppler measurement, the transit time method is working more accurate and reliable.



$$\Delta T = T_2 - T_1$$

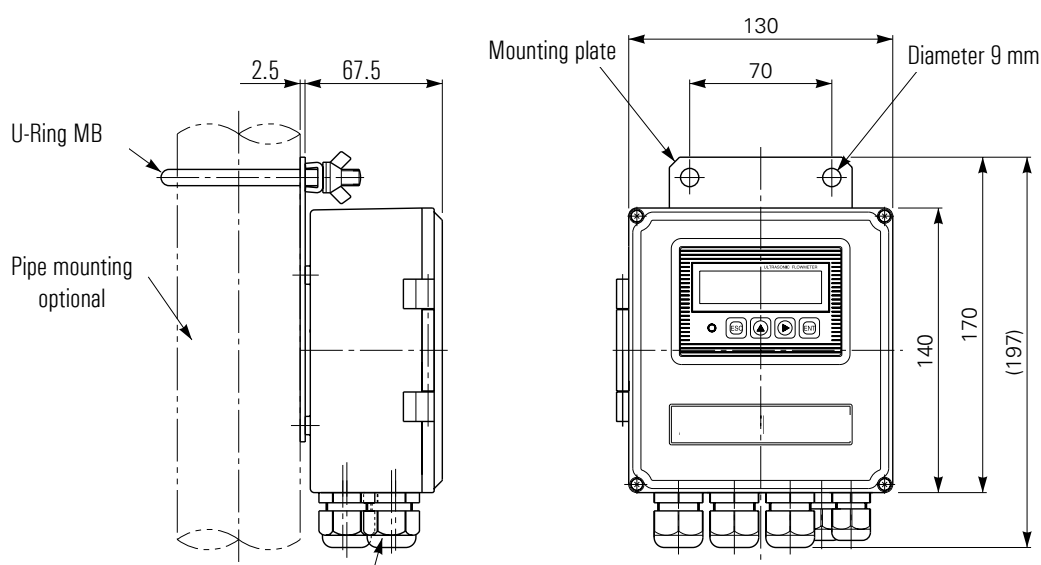
Applications

- Ultra pure water for the semiconductor industry

Technical data

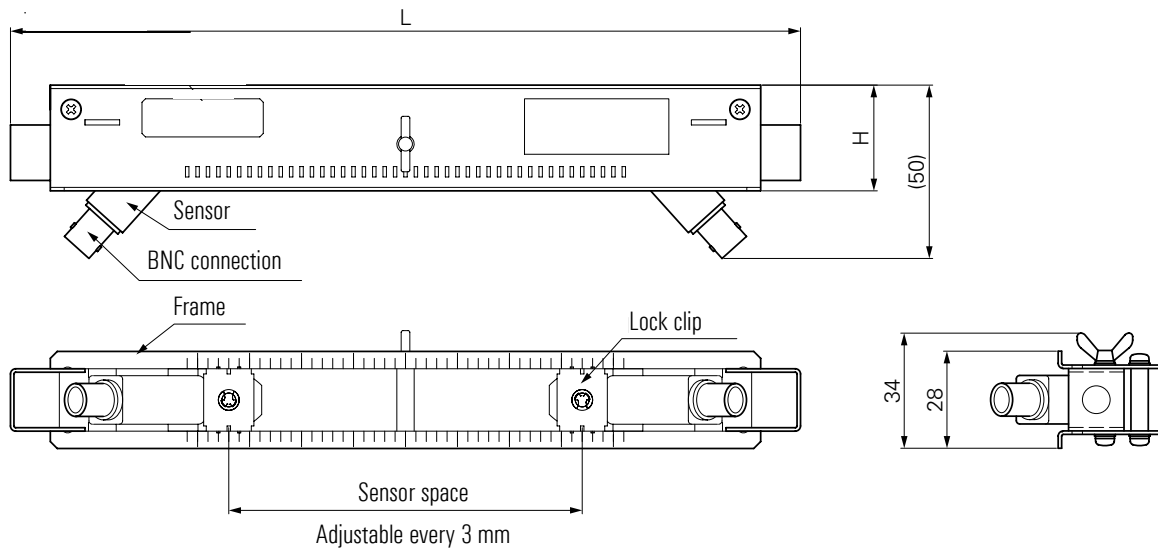
Model	MoniSonic 4500, transit-time 1-path		
Ultrasonic sensors	DN 25 to DN 100, -20 to 100°C (FLSM12) DN 50 to DN 225, -20 to 100°C (FLSM22) DN 50 to DN 300, -20 to 80°C (FLSM31) DN 300 to DN 600, -20 to 80°C (FLSM41)		
Measuring range	Free selectable from 0 to 10 m/s, bidirectional		
Media	All ultrasonic conductive liquids		
Accuracy	Diameter	Velocity	Accuracy
Inlet 10 x D Outlet 5 x D	<50 mm	2 - 10 m/s 0 - 2 m/s	±2,5% of actual V 0,05 m/s
	>50 mm	2 - 10 m/s 0 - 2 m/s	±1,5% of actual V 0,03 m/s
Response time	< =0.2 s		
Display	16 digits, 2 lines (LCD backlit)		
Analog output	4-20 mA / 600 Ω max.		
Digital outputs	1 open collector, 1 relay		
Interface (optional)	RS232C or RS485		
Cable length	5 up to 30 m		
Environmental conditions	Converter: -20° to 50°C Sensor: -20° to 60°C Sensor cable: -20° to 100°C		
Dimensions and weight	140 x 130 x 69 mm / 0,8 kg		
Display function	Actual flow and flow velocity Totalizer for forward / backward Diagnosis LED (normal green, error red)		
Language	English, German, French, Spanish		
Automatic range switch	2-range switches of the analog output		
Temperature/pressure compensation	Sonic velocity measuring system		
Power supply	100 to 120 V AC or 200 to 240 V AC 50/60 Hz ±10% or 20 to 30 V DC		
Housing / sensor	IP65 / IP65, IP67 (optional)		

Converter

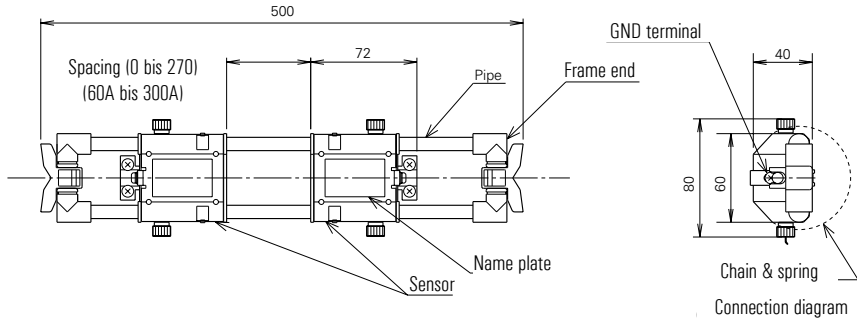


Dimensions

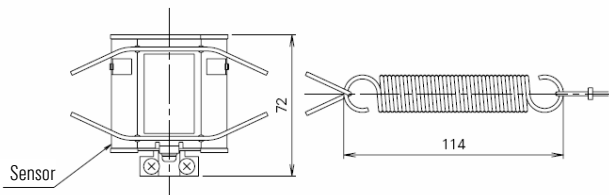
Sensors with mounting frame



Type	Pipe dimension	L	H	Sensor distance	Weight
FLSM12	25 to 100 mm	240	31	21 - 120	0,3 kg
FLSM22	50 to 225 mm	360	30	21 - 240	0,4 kg



FLSM31 (V-shot)



FLSM41 (Z-shot)

Connection diagram

