



Badger Meter Europa

MoniSonic 4800

Ultrasonic transit time flow meter

Description

The flow meter MoniSonic 4800 is a transit time ultrasonic flow meter designed for accurate and reliable flow measurement of ultrasonic conductive fluids in full pressure pipes from DN 13 to DN 6000. Measuring temperatures range from -40°C to +200°C.

The strap-on sensors can be installed on either horizontal or vertical pressure 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 (10xD / 5xD). The measuring accuracy is $< \pm 1\%$ of actual flow. The sonic velocity of the medium is measured permanently and corrected accordingly.

With the use of use of high-speed microprocessor suited for digital signal processing, the fast response time is realized.

LCD and function keys are allowing easy configuration and trouble shooting: LCD with back light, easy mounting of sensor, trouble shooting, easy operation with keypad on outer surface of flow transmitter housing.

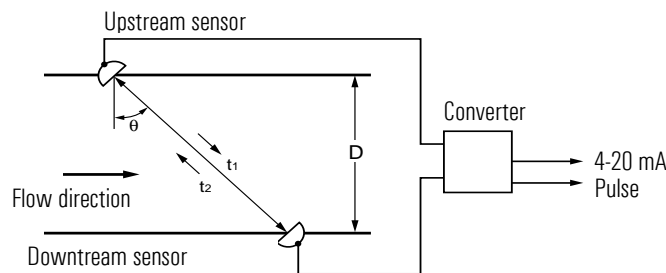
The following languages are supported for display: English, German, French and Spanish

The MoniSonic series keeps being developed and guarantees an accuracy of $\pm 1\%$ of rate. Reynolds' number is calculated and the possibility of entering a correction factor (K-factor) secures best accuracy at all flow velocities. Further fluids which are not automatically configured in the meter can also be metered when entering the sound velocity. Moreover affection from fluid temperature and pressure is negligible (Auto-Temp./Pressure compensation).



Measuring principle

The meters are 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 (Δt) of the transit times. Compared to a Doppler measurement, the transit time method is working more accurate and reliable. Response time: 0,2 sec (high speed mode).



Applications

- Water & waste water
- Waste water treatment
- Acids & toxic liquids
- Heating and cooling water
- Hydrocarbons
- Detergents

Also working with air bubbles up to 12 % of the volume.

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Technical data

Type	MoniSonic 4800
Measuring principle	Transit time 1-path
Housing material	Aluminium
Mounting	Wall mounting
Dimensions HxWxD	170 x 142 x 75
Protection class	IP 66
Operating temperature range	-20°C to +55°C
Analog outputs	4-20 mA, max. load 1k Ω
Digital outputs	2 x open collector, 30 VDC / 0,1 A 1 x open collector, 20 VDC / 1 A
Inputs	1 x (no volt contact)
Display functions	actual Q and V, total for- and backward
Display language	German, English, French
Supply voltage	100 to 240 VAC, 50/60 Hz or 20 to 30 VDC
Programming	Via front keypad
Data logger	----

Measurement accuracy

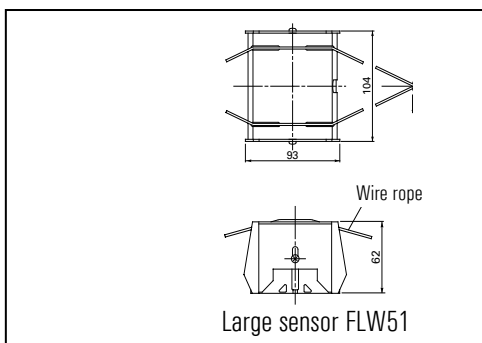
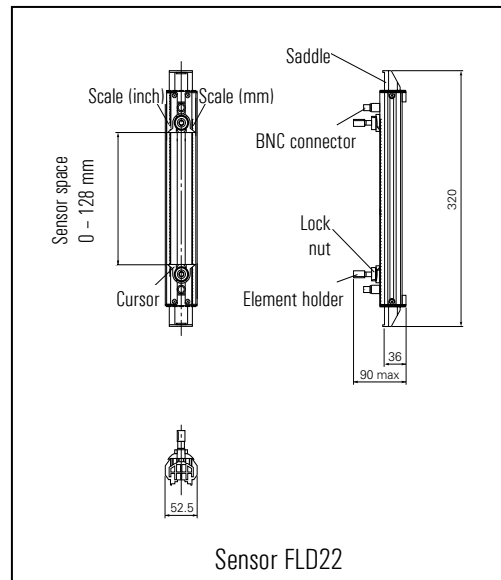
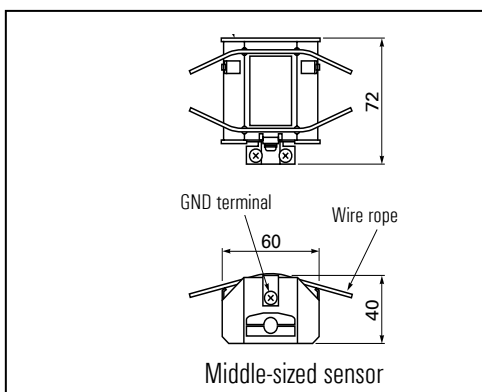
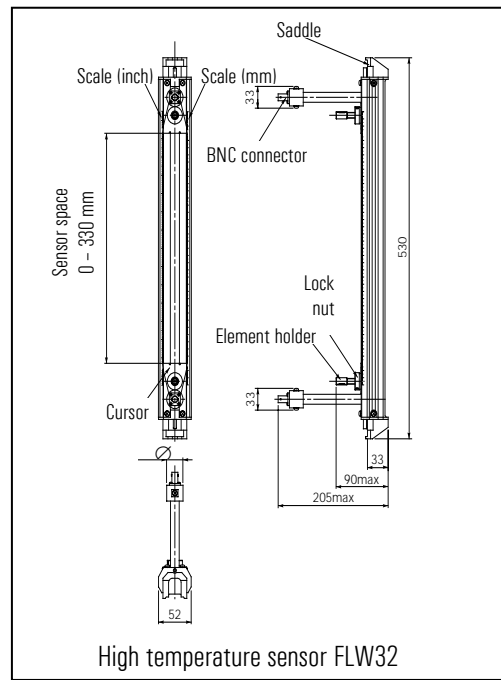
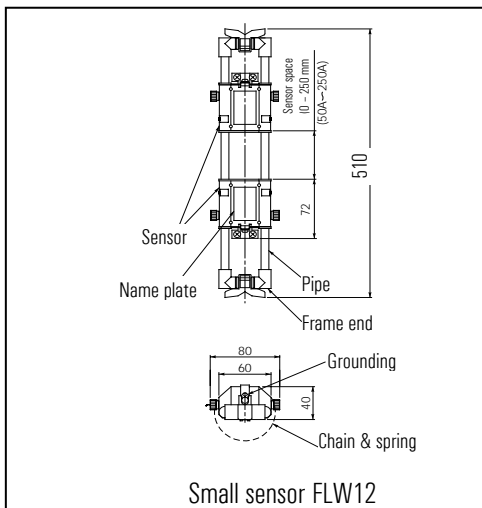
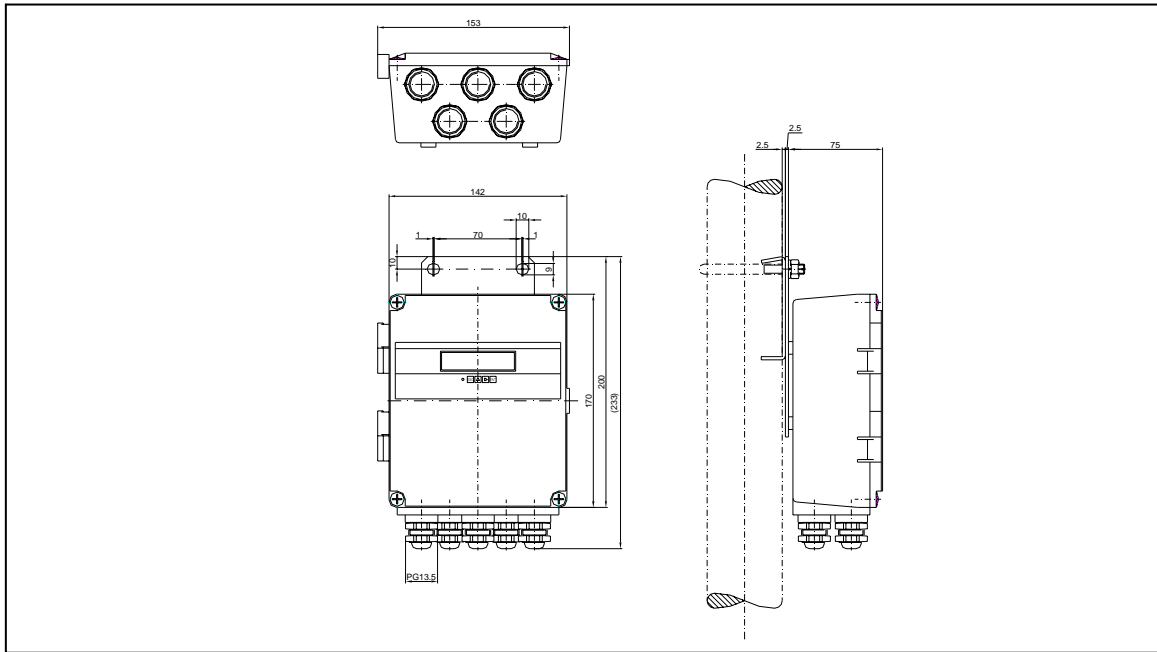
V	DN	MoniSonic 4800
0 – 2 m/s	13 – 50	0,05 m/s
	50 – 300	0,02 m/s
	300 – 6000	0,01 m/s
2 – 32 m/s	13 – 50	2,5 %
	50 – 300	1% according to act. Q
	300 – 6000	1,5% according to act. Q

Strap-on sensors

DN	Typ	MoniSonic 4800
13 – 100	FLD22	max. 100°C
25 – 100 (plastic pipe)	FLSE12	max. 120°C
50 – 100 (metallic pipe)	FLSE12	max. 120°C
50 – 150 (plastic/metallic pipe)	FLSE22	max. 120°C
50 – 400	FLW12	max. 80°C, Ex-proof optional
50 – 400	FLW32	----
50 – 400	FLD32	max. 200°C
200 – 1200	FLW41	max. 80°C, Ex-proof optional
200 – 6000	FLW51	max. 80°C, Ex-proof optional

MoniSonic 4800	
Sensor material	Plastic, stainless steel, Aluminium
Cable length	5 to 300 m
Temperature range	-40°C to +200°C
Protection class	IP67 / FLD22 and FLD32 IP52

Dimensions in mm

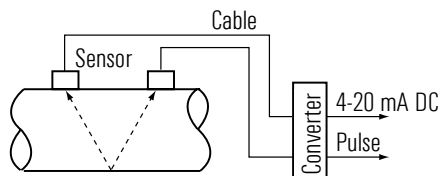


Sensor mounting

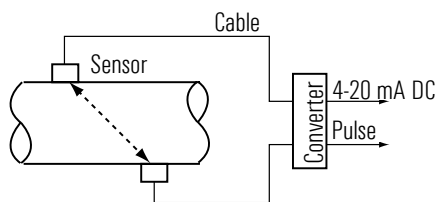
The following methods are available:

- 1.) Prefer the V-method, because the installation is the easiest.
- 2.) Z-method is used if the medium is loaded with a high portion of dirt or air/gas.

Single path system (V method)



1-path system (Z method)



The complete measuring system consists of a converter, 1 pair of ultrasonic sensors, sensor brackets and connection cables from the converter to the sensors.

Suitable ultrasonic penetrable pipe materials are carbon steel, stainless steel, cast iron, PVC, fiber reinforced plastics, asbestos, copper, brass, aluminium, acrylic, etc. Pipe liners can be made of rubber, cement, epoxy or bitumastic .

The analog and digital outputs are free scaleable. Possible assignment of the digital outputs can be a remote totalizer, flow direction, exceeding of measuring range, storage error and receiving signal error.