

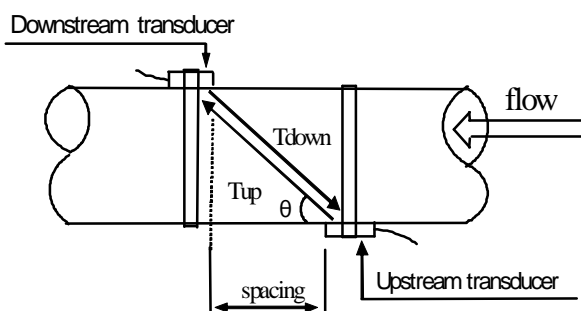
SAFSONIC F FIXED CLAMP-ON ULTRASONIC FLOWMETER



KEY FEATURES

- ⊗ High accuracy. Normally: ±1% When on site calibration available: ±0.5%
- ⊗ Wide flow measurement range 0,01m/s to 32m/s
- ⊗ Bi-directional flow measurement
- ⊗ Pipe size range from DN25 to DN6000
- ⊗ Non-invasive
- ⊗ No moving parts
- ⊗ No pressure drop
- ⊗ Easy and economical to install
- ⊗ Suitable for all commonly used pipe materials
- ⊗ Easy to use menu structure
- ⊗ Velocity, volumetric and totalized flow
- ⊗ GPRS / GSM network capability
- ⊗ Ideal for both clean and opaque liquid flows
- ⊗ Permanent / long term deployment
- ⊗ 4-20mA; relay; pulse; and alarm outputs
- ⊗ Isolated RS-485 interface

The Safsonic F clamp-on flow meter utilises ultrasonic technology for the accurate measurement of clean or opaque liquids in full pipes. The principle of measurement, Ultrasonic Time Difference Correlation, more commonly known as Transit Time or Time of Flight, is based on the theory that sound waves are affected by a flowing medium. Measurements are taken by penetrating the pipe with an ultrasound signal by means of two ultrasonic transducers, each having a turn to act as a transmitter and receiver. The transit time of the sound waves in both upstream and downstream directions of the flow are monitored with the resulting time difference being directly proportional to the flow velocity. This process is controlled and closely monitored by the remote, microprocessor based display unit which returns the calculated data in user selected units of measurement.



$$V = \frac{MD}{\sin 2\theta} \times \frac{\Delta T}{T_{up} \cdot T_{down}}$$

Where :

θ is the sensor angle to the flow direction

M is the number of the ultrasonic beam paths

D is the pipe diameter

T_{up} is the transit time of the beam from the upstream transducer to the downstream transducer

T_{down} is the transit time of the beam from the downstream transducer to the upstream transducer

$\Delta T = T_{up} - T_{down}$

APPLICATIONS

The Safsonic F has been designed to meet the needs of any individual wishing to measure the flow rate of liquids in most closed-pipe applications around the plant in a permanent or long term deployment. The easy to use menu structure allows the user to obtain the required flow data within minutes.

Examples of applications include:

- ☞ Water applications (hot water, chilled water, sea water, irrigation / raw water, potable water, etc)
- ☞ Fire water systems (sensitive to low velocities, helps monitor unauthorised use)
- ☞ Chemicals (including aggressive media)
- ☞ Solvents
- ☞ Beverage and food processes
- ☞ HVAC Hot and cool water / glycol solutions
- ☞ Water and waste water treatment plants
- ☞ Power plants (nuclear, thermal and hydropower plants)
- ☞ Energy consumption and water conservation management
- ☞ Metallurgy and mining applications
- ☞ Marine operation and maintenance
- ☞ Pipeline leak detection, inspection and tracking

SPECIFICATIONS

Accuracy:	Normally 1%, ½% of measured value, with on site calibration	Protection:	IP65 enclosure IP65 sensors, IP68 optional
Units:	English / Metric	Velocity range:	0.01 to 32m/s (bi-directional)
Liquids:	All clean and opaque liquids	Pipe range:	DN15 to DN6000 (see sensors)
Display:	2 x 20 characters (LCD)	Totaliser:	Forward, reverse and net total
Security:	Setup lockout / access	Temperature:	-40°C to +80°C (Transducers) -10°C to +70°C (Converter)
Repeatability:	0.5%	Power supply:	24V dc or 85Vac to 264Vac
Data Storage:	EEPROM, no data loss	Transducer cable:	Standard 5m (max 300m)
Outputs:	4mA to 20mA Pulse / OCT Frequency 1Hz to 9999Hz Isolated RS485 Modbus RTU	Standards:	ISO 12242:2012 CE Approval

SENSOR OPTIONS



Type Clamp-on M2
Medium sensors for pipe
Size: DN50 to DN1000



Type B(45) Medium Insertion
sensor, hot tap valve stainless
steel, weld on
Size: DN80 to DN1000



Type Clamp-on L1
Large sensors for pipe
Size: DN300 to DN6000



Type B(45) Large Insertion
sensor, hot tap valve
stainless steel, weld on
Size: DN400 to DN6000



Type Clamp-on S1
Small sensors for pipe
Size: DN15 to DN100



Type Clamp for Insertion
sensors with polyurethane
seal without welding on
site