

# UFM-10 Clamp-on Flow Monitor / Switch

## for Doppler flow measurement from outside a pipe

- Flow monitor/switch for dirty and aerated liquids in fully filled pipes
- For commonly used pipe materials and diameters from 30 mm to 350 mm
- Simple and cost-effective solution with continuous outputs and switch points
- Refracted Spread Spectrum Analysis measurement principle for reliable flow indication under difficult flow conditions
- Non-invasive and non-intrusive design
- Robust stainless steel enclosure
- Short signal evaluation time



### Features

- Sturdy and compact stainless steel enclosure for installation in tough environments
- Easy to install and commission through auto-scaled process outputs
- For flow velocities from 0.3 m/s to 4.0 m/s

### Description

The UFM-10 clamp-on flow monitor works on the new innovative Refracted Spread Spectrum Analysis method. This new measurement system is a development of the older Doppler measurement system using the frequency of an emitted sound shifts in relation to a non-moving receiver. This principle is applied in reverse by the UFM-10 which sends an ultrasonic signal into the pipe where it is reflected by suspended particles or gas bubbles (discontinuities). Due to the movement of the liquid, the frequency of the reflected signal is different to the one which has been sent into the pipe. This frequency shift is directly proportional to the flow rate of the liquid.

The UFM-10 is a fixed-installation clamp-on flow indicator and switch for the non-invasive and non-intrusive monitoring of pipes filled with dirty and/or aerated liquids. Since there is no need to open the pipe for installation, there is no pressure drop and no risk of leakage or contamination. The UFM-10 is capable of indicating a flow rate and providing a repeatable switching point on low and high flows for most dirty and/or aerated liquids and slurries with velocities from 0.3 m/s to 4.0 m/s.

Typical process liquids for the UFM-10 are: Activated carbon slurries, aerated liquids, soap solutions, coal slurries, fly ash slurries, limestone slurries, paper slurries, sewage and sludge, domestic and animal waste slurries.

The setup of the UFM-10 has been simplified and improved and now uses a programming / monitoring PC-based software for the configuration of the meter. The new software helps the user setup the UFM-10, providing information on signal confidence and raw data, as well as providing graphical representation of both flow velocity and volumetric flow rate.

### Configuration codes

Standard instrument	UFM-10 - 03 - 0 (velocities 0.3 ... 4.0 m/s)
For larger pipes >350 mm	UFM-10 - 03 - 1 (velocities 0.3 ... 4.0 m/s)

## Specifications

<b>Performance</b>	Measurement principle	:	RSSA - Refracted Spread Spectrum Analysis
	Flow velocity range	:	0.3 ... 4.0 m/s
	Accuracy	:	±5 % (application dependent)
	Pipe outside diameter	:	40 ... 350 mm (standard), up to 1,000 mm (special)
	Pipe wall thickness	:	< 20 mm
	Housing	:	Type 316 stainless steel, investment casing
	Size, weight	:	70 mm (h) x 118 (w) x 65 mm (d), 1.5 kg
	Switch output	:	Volt free relay, programmable, 1 A at 30 V DC, SPCO
	Serial comms	:	RS485 ModBus
	Analogue output	:	4 ... 20 mA scalable
	Power supply	:	18 ... 28 V DC, 120 mA
	Degree of protection	:	IP 67
	Operating temperature	:	-20 ... 70 °C
	CE/EMC approval	:	Complies with BS EN 61326-1:2006 (1992) for emissions and immunity
Accessories	:	Metal strap and clamp, acoustic coupling pad	

## Drawings

