

## The next generation of water metering: The worldwide requirement, answered

SmartFlow's™ unique low power Ultrasonic Flow Measurement Technology, ensures the problems encountered with mechanical meters become a thing of the past. Through its low cost and life-long 100% accuracy the SmartFlow™ meter provides a genuine low cost solution with significant savings, whilst promoting a stable platform of trust between customer and provider.

# SmartFlow™

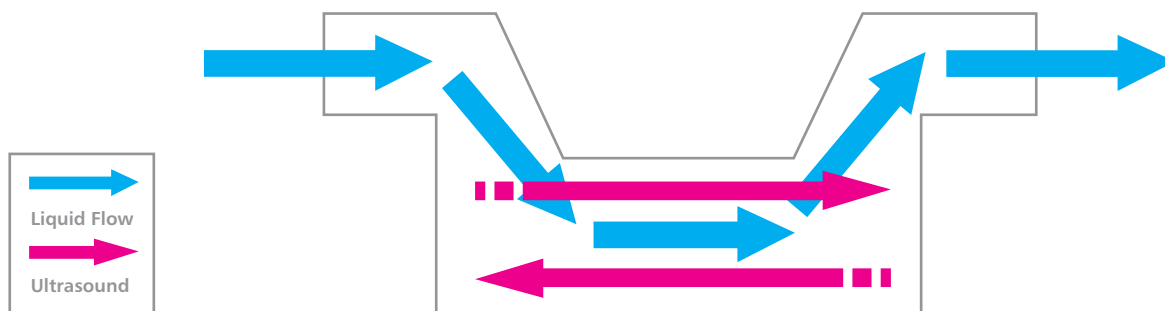
A truly innovative design - maintenance free, with no moving parts and hollow bore technology. The SmartFlow™ water meter is unaffected by sand and grit particles. Guaranteed not to record air, it is the only meter to truly overcome all global network issues, providing 100% accuracy for life.

## Unique Ultrasonics for Domestic metering

Developed from patented Bulk meters, SmartFlow™ is the first inline water meter available, bringing performance improvements and economic benefits to the domestic market.

SmartFlow™ uses an Ultrasonic transit time inline flow cell to measure water with 100% accuracy. Sound transmitted upstream is accelerated by the flow, sound transmitted downstream is decelerated. The resulting time difference is proportional to flow and converted by a microcontroller into an output signal.

### Flow Measurement

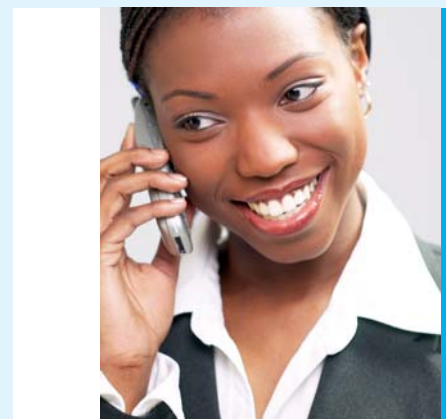
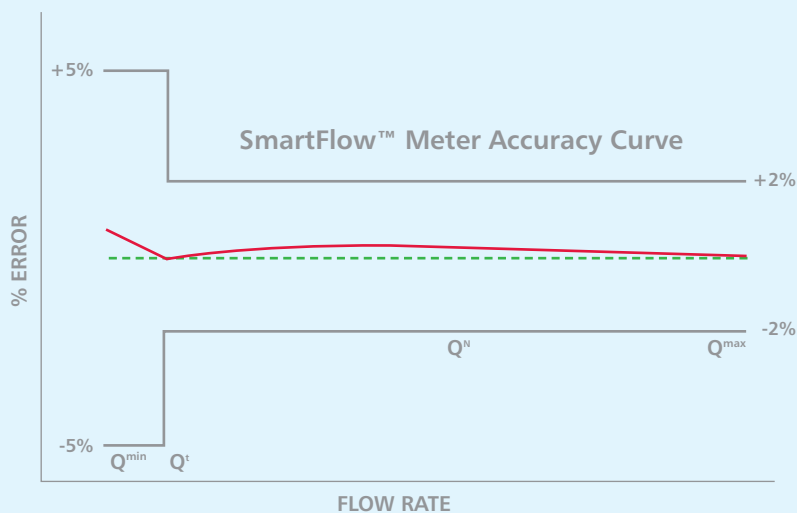
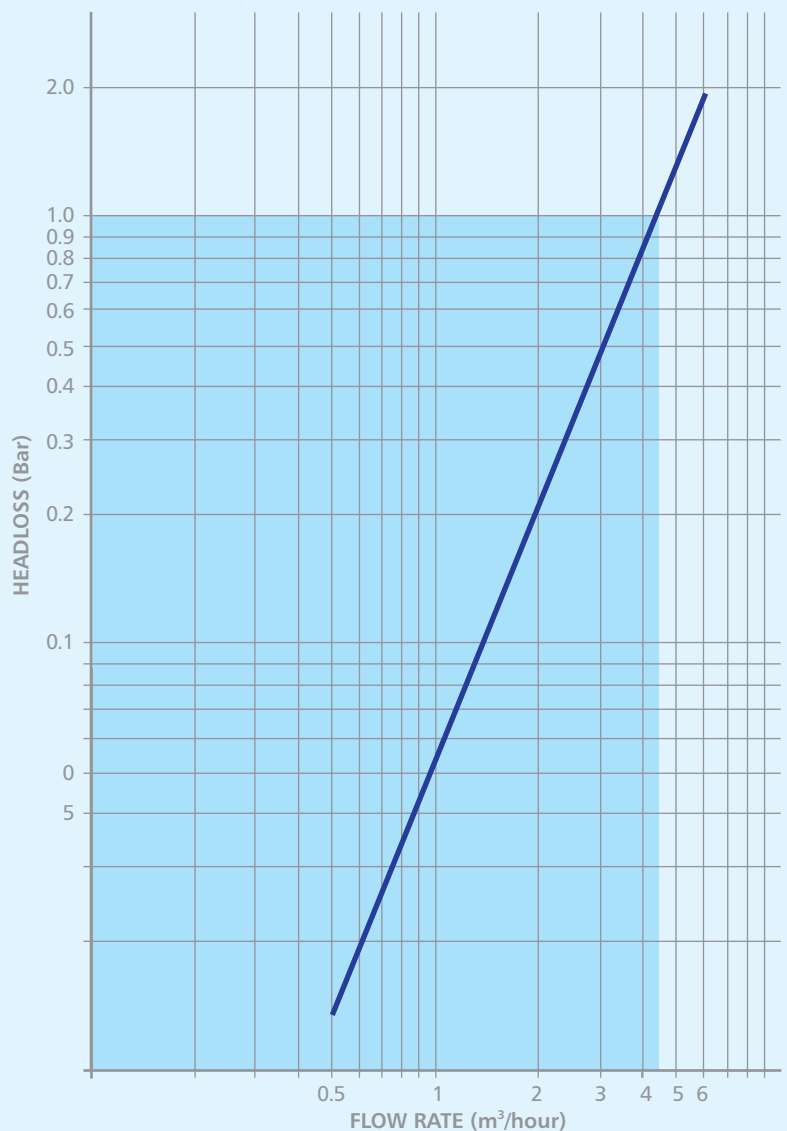


The 1/2", 3/4" and 1" water meters use a low pressure loss inline flow cell measurement chamber while the 1 1/2" and 2" models use a zero pressure loss straight flow tube.

## SmartFlow™ Benefits

- Unaffected by grit or particulates
- Does not measure air
- Accuracy guaranteed for life of meter
- No moving, vibrating or pressure changing parts
- Full bore meter with no reduction in pipe size. No metallic components in contact with water and thus, no corrosion
- Silent operation
- 15 year battery life which can be replaced with zero effect to performance
- Wide temperature specification
- Strainers and non-return valves not required (but can be included)
- No reverse flow measurement
- Tested up to 32 Bar
- AMR compatible, even with old mechanical metering AMR systems
- Automatic viscosity and temperature compensation
- Tamper Resistant
- 10 year warranty

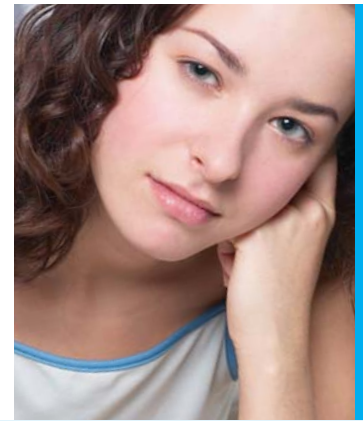
Pressure Headloss Curve



## The Real Cost of Water Metering

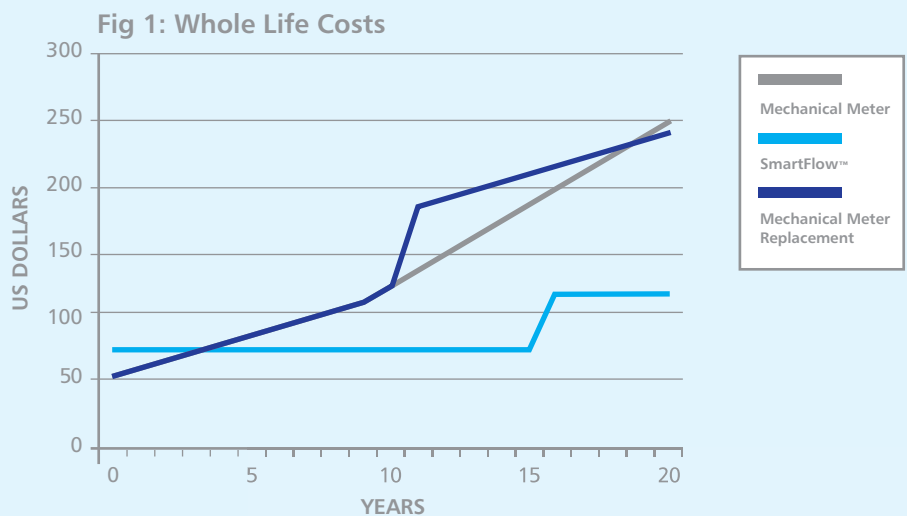
SmartFlow™ clearly illustrates excellent whole life cost benefits in comparison to mechanical meters, which can be as much as five times as expensive over 20 years. In fact, with a minimal cost for the meter and a

relatively insignificant cost for a battery replacement, SmartFlow™ is totally justifiable, as it loses no revenue, and more importantly, becomes completely cost effective in a very short period of time.



**Fig 1: Whole life costs of a Mechanical Meter vs SmartFlow™.**

Meter and installation included in the initial cost. Accuracy error of mechanical meter based on 1.5% pa for the first 10 years and 3% for after 10 years. Lost revenue based on annual water charge of 400 US\$ pa. 15 year battery replacement cost included for SmartFlow™.



## Automatic Meter Reading (AMR Systems)

SmartFlow™ uses an Industry Standard open protocol to interface to a wide range of AMR solutions.

SmartFlow™ is available with established Touchpad AMR, and radio frequency AMR, such as, walk-by, drive-by, and fixed network.

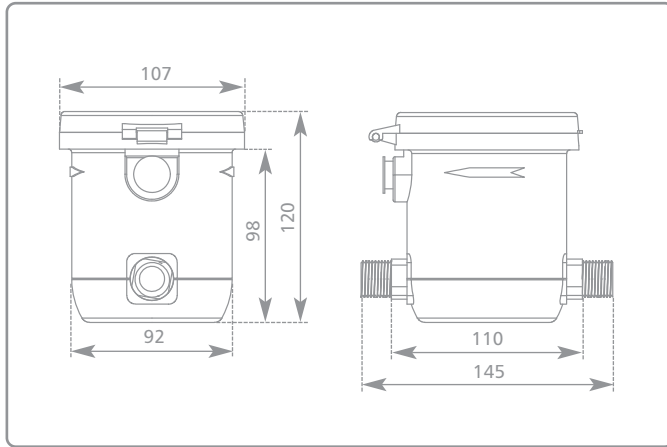
SmartFlow™ is also equipped to meet the demands of the future with SmartConnect™, an RF Mesh Network. The integration of SmartConnect™ into SmartFlow™ makes it the only water meter to offer the next generation

of AMR, worldwide. SmartConnect™ gives 'live' access to each and every meter in an installation by creating a RF network that transfers readings from meter to meter and back.

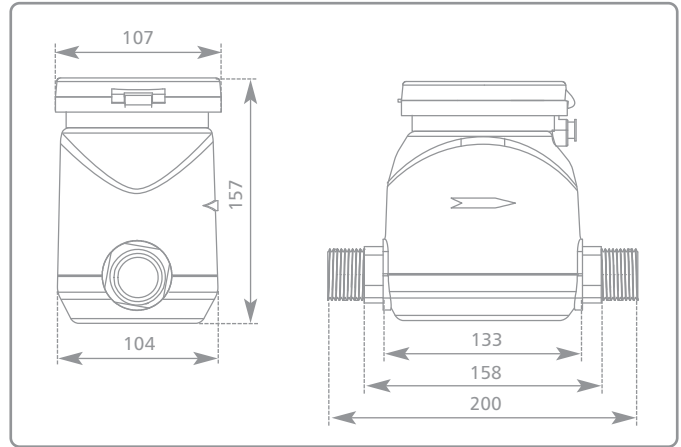


# Technical Specification

SF150 Dimensions (mm)



SF200 and SF250 Dimensions (mm)

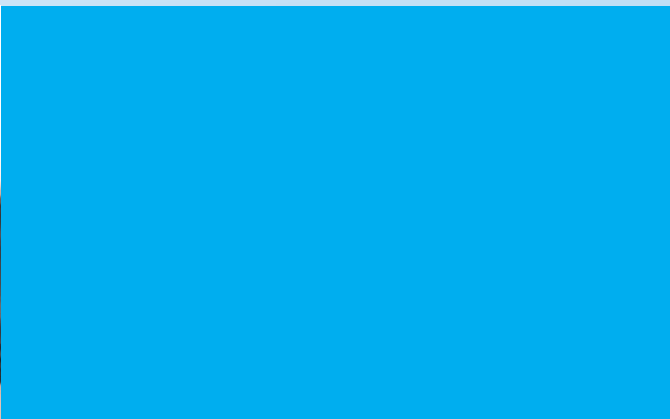


## SmartFlow™ - Metrology Product Summary

PRODUCT	NOMINAL BORE AND FITTING (BSP)	LOW FLOW (l/hr)		TRANSITION FLOW (l/hr)		NOMINAL FLOW (m³/h)	MID RANGE FLOW (m³/h)	HIGH FLOW (m³/h)		HEAD LOSS AT MAX FLOW	DIMENSIONS (mm)		METER WEIGHT (kg)
		Q <sup>min</sup>	Q <sup>1</sup>	Q <sup>1</sup>	Q <sup>2</sup>			Q <sup>n</sup>	Q <sup>3</sup>		Q <sup>max</sup>	Q <sup>4</sup>	
Mid Range Flow													
SF150	15mm (½")	15.0	15.6	22.5	25.0	1.5	2.5	3.0	3.1	<0.5 Bar	145.0	120.0	0.5
SF200	20mm (¾")	25.0	25.0	37.5	40.0	2.5	4.0	5.0	5.0	<0.5 Bar	200.0	164.0	0.6
SF250	25mm (1")	35.0	40.0	52.5	63.0	3.5	6.3	7.0	7.9	<0.5 Bar	200.0	164.0	0.7
SF400	40mm (1½")	100.0	100.0	150.0	160.0	10.0	16.0	20.0	20.0	Zero	245.0	157.0	1.0
SF500	50mm (2")	150.0	156.0	220.0	250.0	15.0	25.0	30.0	31.2	Zero	245.0	157.0	1.0

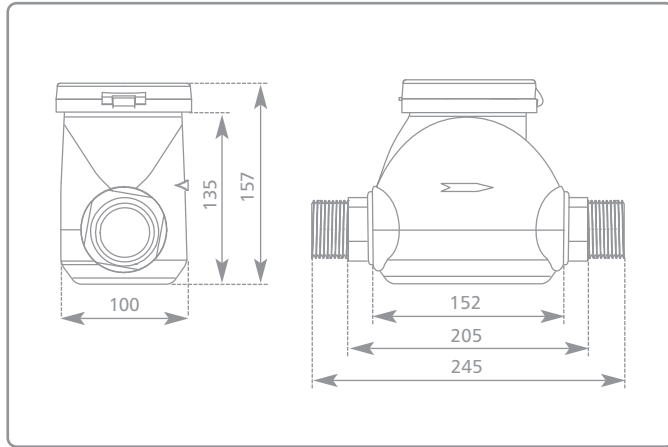
## SmartFlow™ Approvals

- Potable water materials WRAS listed
- ISO:9001 manufacturing certification
- ISO:14001 environmental compliance certification
- EEC conformity
- OIML R49-1



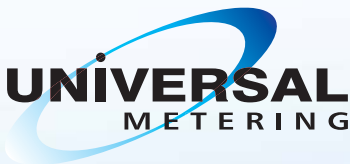
# Technical Specification

## SF400 and SF500 Dimensions (mm)



## SmartFlow™ - Meter Specification

FEATURE	SPECIFICATION
Principle of operation	Ultrasonic transmit time using inline flow cell
Approvals	OIML R49-1
Battery life	15 years
Temperature tolerance	85°C ambient and 60°C water
Pressure rating	20 Bar (Max. Operating Pressure) 32 Bar (Max. Tested Pressure)
Display	9 digit LCD
Enclosure rating	IP68 to BS EN 60529 : 1992
Interfaces	4 pin IP68 rated connector giving: <ul style="list-style-type: none"> <li>• NPN open collector pulse output</li> <li>• Interface to SmartFlow™ Inductive Touch pad</li> <li>• Serial interface for AMR using SmartFlow™ communications protocol</li> </ul>
Materials	Wetted parts: EMS Grivory HTV-4X1 black 9225 (WRAS listed). Other parts: Polycarbonate
Reverse flow	Observed but not registered
Strainers/non-return valves	Not required to protect meter



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