

# SM150

## SmartMeter™

### Intelligent Water Meters

The global meter that delivers sustainable benefits

Based on no moving parts electromagnetic technology, SmartMeter™ is not affected by wear (and the subsequent inaccuracy caused by mechanical wear) even in areas where grit and sand are an issue. The meter's advanced sensing technology also delivers extended operational life with long term accuracy.

Its unique air detection system prevents measurement of air flow, which can occur at high points in the water network and at the start of water delivery.

The robust new Fortron (PPS) base is totally resistant to acid/corrosion attack in all water conditions. The material has excellent properties of tensile strength, hardness and surface integrity. It can be used with brass and other metallic fittings.



# SmartMeter Technology

## SmartMeter Advantages

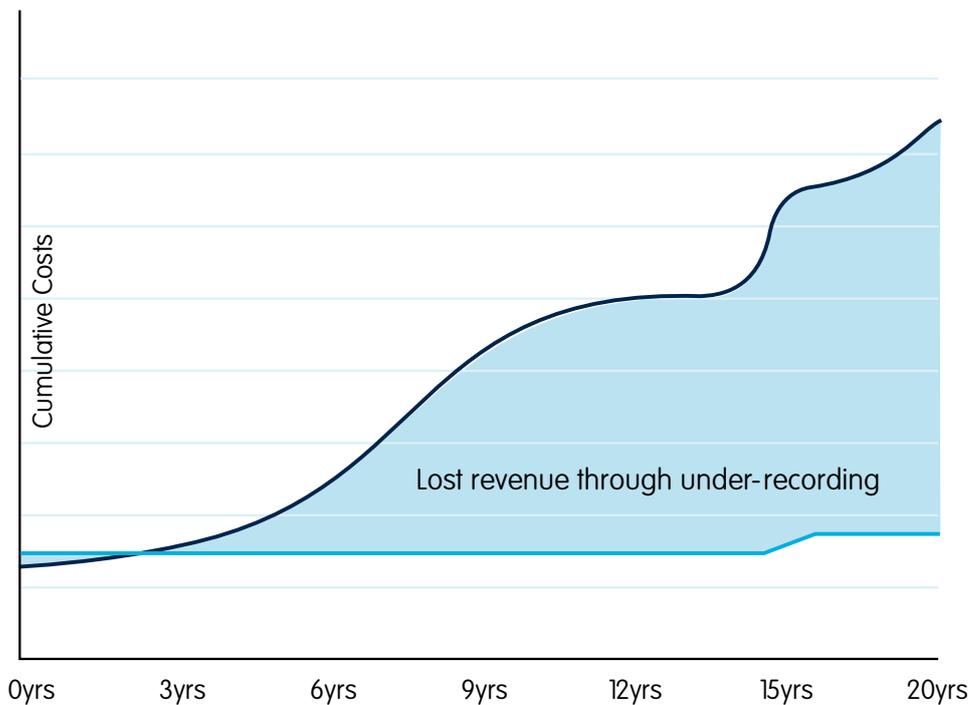
- Unaffected by grit and particulates – retains accuracy throughout the entire product lifetime
- Does not measure air – no overcharging customers
- Smart technology benefits with lifetime accuracy means no lost billing revenue
- Outlasts conventional meters – exceptionally low whole life cost
- Detects leaks and lack of flow – enabling prioritisation of remedial work. Battery status provided
- Visual read, inductive pad or radio options – offering flexibility and migration between AMR systems
- Virtually silent operation
- Available as part of a SmartMeter prepayment water meter system

## Whole Life Cost Savings

- Lifetime accuracy means no lost revenue through meter slowdown
- AMR compatible meters allow actual meter readings to be taken electronically – avoiding estimations and manual errors
- 15 year battery life

## Cumulative Whole Life Cost:

SmartMeter — Vs Typical meter —



Lost revenue through under-recording - SmartMeters show excellent whole life cost savings over mechanical meters. A minor increase in costs at 15 years to replace an expired battery is insignificant compared to the progressive loss of accuracy by mechanical meters with moving parts.

## Smart Investments Pay Dividends

The SmartMeter SM150 brings high accuracy, long life metering at an affordable price. In many parts of the world the presence of sand, grit and air in the water supply causes a constant problem affecting the working life and accuracy of conventional mechanical meters, which undermines customer confidence in metered bills. With no moving parts technology all these problems are eliminated and unlike conventional meters, which tend to under-read with wear, SmartMeter maintains its high accuracy over the meter lifetime to ensure a protected revenue stream for the utility.



- Superior whole life revenue recovery compared to other meter technologies ✓
- Ultra strong PPS base is suitable for connection to brass and other metallic fittings ✓
- Outlasts other meter technologies ✓
- Does not measure air ✓
- Operates virtually silently ✓
- Visual read, inductive pad or radio enabled for migration between different AMR systems ✓
- The first battery powered electronic residential water meter with MID approval ✓
- More than one million SmartMeters installed worldwide to date ✓

# Advanced Data Provision

SmartMeter extended data functionality provides water companies with information on network performance, attempted fraudulent use, leakage detection, consumption patterns and battery status. This enables water utilities to effectively manage resources in addition to providing accurate and reliable billing data.

The data is provided in the form of event counts through the AMR data port, which can be routinely monitored and compared to previous counts, enabling network problems or issues with customer installation to be easily identified.

## Continuous flow/leakage detection

- Financial benefit in the detection of leaks
- Improves customer relations
- Minimises customer complaints

## Continuous no-flow

- Identifies vacant properties
- Detects periods of non-usage
- Identifies alternative "un-metered" source
- Identifies meter bypassing

## Air detection

- Minimises customer complaints
- Ideal with prepayment water meter systems
- Identifies air trapped in the network
- Improves confidence in the billing system

## Tamper counts

- Readings safeguarded in the meter's memory
- Concealed battery compartment

## Battery status

- 12 month warning for battery replacement



## Flexible AMR Solutions

SmartMeter SM150 intelligent water meters are available as encoded, pulse or visual read outputs. Solutions from SmartMeter offer superior flexibility and migration between different meter reading scenarios to allow for growth in meter density.

The encoded meter enables compatibility with a variety of AMR system types including inductive pad reading, walk-by, passive drive-by, fixed networks, M-Bus and Power Line Carrier (PLC) arrangements.

- Improved data collection ✓
- Meter reading in difficult to access locations ✓
- Accurate billing using actual data ✓
- Improved fraud detection ✓
- Multiple meter readings ✓
- Network optimisation ✓

# Technical Data/Specification

SM150E/SM150P Technical Specification										
Model	Thread Size	Distance Across Threads	Weight	Ingress Protection	Ambient Temp	Max Water Temp	Display Resolution	Max Display	Display Orientation	Battery Life
SM150E	G ¾ B	110 +0/-2mm	0.5kg	IP68	-10°C to 85°C	50°C	0.00001m³ to 1m³	9,999 or 99,999 option	90° to flow direction (viewed from inlet)	15 years*
SM150P	G ¾ B	110 +0/-2mm	0.5kg	IP68	-10°C to 85°C	50°C	0.00001m³ to 1m³	9,999 or 99,999 option	90° to flow direction (viewed from inlet)	10 years*

\*Replaceable battery.

A number of options are available for different variations of LCD resolution, pulse output rates and encoded output. All models are available in Class C or Class D versions.

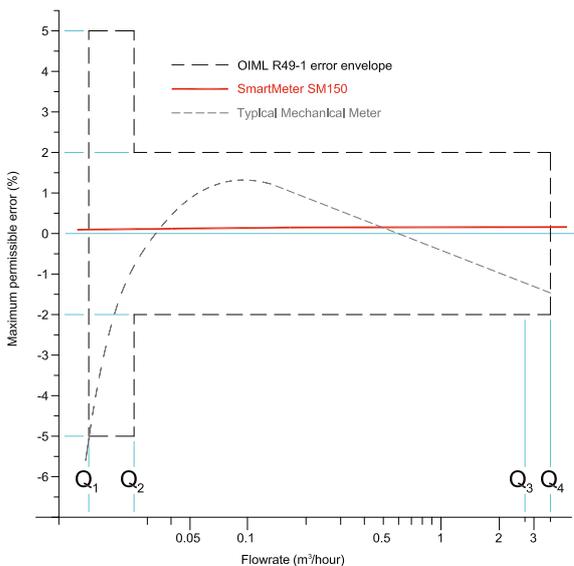
Performance Data SM150E/SM150P British Standard BS:5728/ISO 4064-1:1993		
	Class C	Class D
q min Minimum flowrate (l/h) ± 5%	15	11.25
qt Transitional flowrate (l/h) ± 2%	22.5	17.25
qp Permanent flowrate (m³/h) ± 2%	1.5	1.5
qs Overload flowrate (m³/h) ± 2%	3.0	3.0
Pressure loss at qs	<1 bar	<1 bar
Pressure rating (Working)	16 bar	16 bar
Pressure rating (Max)	20 bar	20 bar

Performance Data SM150E/SM150P OIML R49/ISO 4064-1:2005/BS EN 14154-1			
Q <sub>3</sub> /Q <sub>1</sub> (ratio)	160	200	250
Q <sub>4</sub> (m³/h)	3.125	3.125	3.125
Q <sub>3</sub> (m³/h)	2.5	2.5	2.5
Q <sub>2</sub> (l/h)	25	20	16
Q <sub>1</sub> (l/h)	15.6	12.5	10
Typical Pressure Loss at Q <sub>3</sub> (bar)	<0.65	<0.65	<0.65
Pressure Rating (Working)	16 bar		
Pressure Rating (Max)	20 bar		

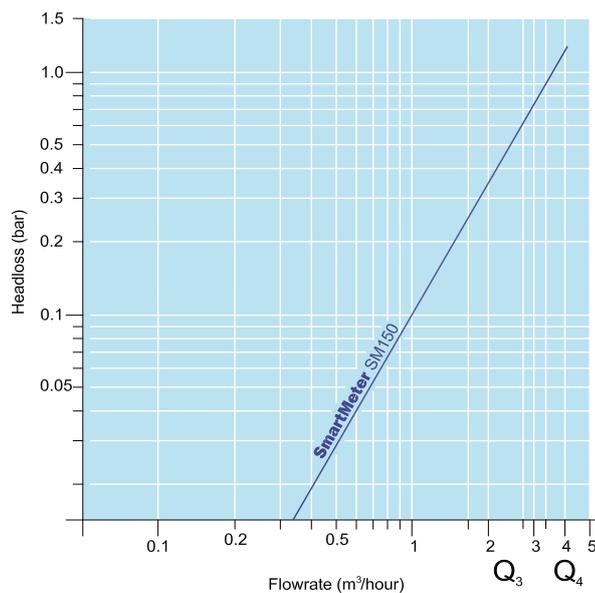
SM150E/SM150P – Output	
Model	Meter Reading
SM150E	Encoded Output
SM150P	Pulse Output

All meters have a direct LCD display, which can be configured to customer requirements. Due to our policy of continual improvement the company reserves the right to change the specification without prior notice.

## Meter Accuracy

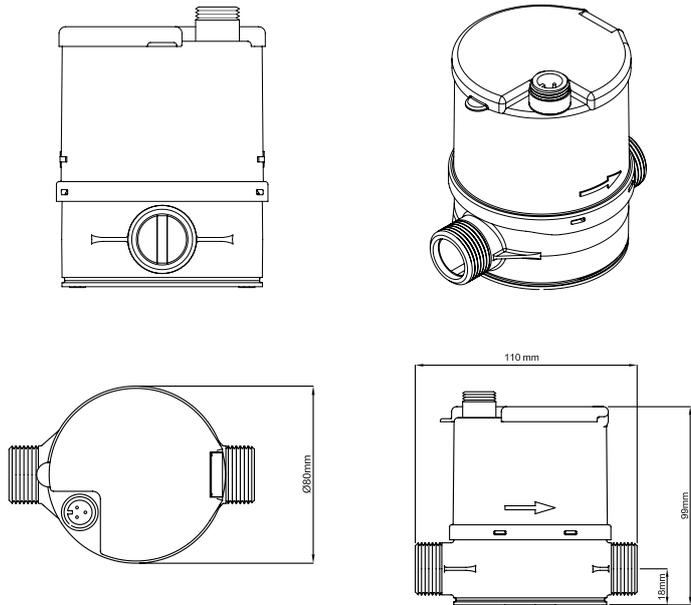


## Head loss curve



More than one million SmartMeters installed globally

# SM150 Dimensions



## Approvals and Product Development

SmartMeter is the first manufacturer of battery powered electronic residential water meters to have been awarded Measuring Instruments Directive (MID) approval. The SmartMeter programme of continual development ensures that a complete range of approved meters are available to our customers.

Approval/Certification	Product/Service	Website Address
UK Pattern Approval	SM150E/P	<a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
UK Pattern Approval	SM250E/P	<a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
Australian Pattern Approval	SM150E/P	<a href="http://www.measurement.gov.au">www.measurement.gov.au</a>
Australian Pattern Approval	SM250E/P	<a href="http://www.measurement.gov.au">www.measurement.gov.au</a>
OIML R49 Approval	SM150E/P	<a href="http://www.oiml.org">www.oiml.org</a>
OIML R49 Approval	SM150VR+	<a href="http://www.oiml.org">www.oiml.org</a>
OIML R49 Approval	SM250E/P	<a href="http://www.oiml.org">www.oiml.org</a>
MID Approval	SM100E/P	<a href="http://www.ptb.de/index_en.html">www.ptb.de/index_en.html</a> <a href="http://europa.eu/">http://europa.eu/</a> <a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
MID Approval	SM150E/P	<a href="http://www.ptb.de/index_en.html">www.ptb.de/index_en.html</a> <a href="http://europa.eu/">http://europa.eu/</a> <a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
MID Approval	SM150VR+	<a href="http://www.ptb.de/index_en.html">www.ptb.de/index_en.html</a> <a href="http://europa.eu/">http://europa.eu/</a> <a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
MID Approval	SM250E/P	<a href="http://www.ptb.de/index_en.html">www.ptb.de/index_en.html</a> <a href="http://europa.eu/">http://europa.eu/</a> <a href="http://www.nwml.gov.uk">www.nwml.gov.uk</a>
Materials WRAS listed	All potable water contact meter materials	<a href="http://www.wras.co.uk/directory">www.wras.co.uk/directory</a>
NSF61 (National Sanitary Foundation – USA)	SM700E/P	<a href="http://www.nsf.org">www.nsf.org</a>
ISO 9001 – Manufacturing Certification	SmartMeter, CRN	<a href="http://www.iso.ch/iso/en/ISOOnline.frontpage">www.iso.ch/iso/en/ISOOnline.frontpage</a>
ISO 14001 – Environmental Compliance	SmartMeter, CRN	<a href="http://www.iso.ch/iso/en/ISOOnline.frontpage">www.iso.ch/iso/en/ISOOnline.frontpage</a>

Elster is one of the world's largest electricity, gas and water measurement and control providers. Our offerings include distribution monitoring and control, advanced smart metering, demand response, networking and software solutions, and numerous related communications and services – key components for enabling consumer choice, operational efficiency and conservation. Our products and solutions are widely used by utilities in the traditional and emerging Smart Grid markets.

Elster has one of the most extensive installed revenue measurement bases in the world, with more than 200 million metering devices deployed over the course of the last 10 years. It sells its products and services in more than 130 countries across electricity, gas, water and multi-utility applications for residential, commercial and industrial, and transmission and distribution applications.

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