

# SM700 Electronic Water Meter

Size 1"



Size	1"	(DN 25mm)
95%-101.5% Accuracy GPM (m3/h)	3/8	(0.08)
97%-101.5% Accuracy GPM (m3/h)	3/4	(0.17)
98.5%-101.5% Accuracy GPM (m3/h)	3-50	(0.7-11.4)
Continuous flow GPM (m3/h)	25	(5.7)
Maximum flow GPM (m3/h)	50	(11.4)
Operating pressure psi (kPa)	150	(1050)
Operating temperature °F (°C)	120	(50)

Minimum Register Display Indication	
US gallons	0.01
Cubic feet	0.001
Cubic metres	0.0001

Capacity of Registers (millions)	
US gallons	10
Cubic feet	1
Cubic metres	0.1

## Register Type

Permanently sealed direct reading

## Materials

Main case  
Bottom plate options  
Bottom plate o-rings  
Bottom plate gasket  
Measuring chamber  
Sensor electrodes  
Connection liner  
Liner o-ring  
Conditioning plate  
Register  
Register lens  
Lockshroud and lid  
Battery

Copper alloy  
Copper alloy  
Neoprene  
EPDM  
PPS  
Hastelloy  
Glass reinforced nylon  
Nitrile  
Acetal  
Acetal  
Polycarbonate  
Acetal  
Lithium Thionyl Chloride

## Operation

The SM700 is a fluidic oscillator type, cold water meter. Water enters the fluidic oscillator through a nozzle that creates a jet. When the jet enters the flow chamber, it will initially be drawn to one of the two diffuser walls and will travel along the wall through the principle of the Coandă effect and then exit the flow chamber. Due to the local pressure being lower by the opposite diffuser wall, the jet will move towards the other wall and therefore starts to oscillate between one diffuser wall and the other. Carefully optimized features within the flow chamber such as a splitter post and feedback channels provide oscillation across a greater flow range.

This oscillation between the diffuser walls continues while flow is present where each oscillation represents a specific volume that has passed through the meter. The oscillation is monitored by electrodes placed next to each diffuser wall, in which an electrical current is induced in the jet by a pair of powerful permanent magnets. Sensing electronics capture when the oscillations occur and totalize the volume passed displaying the registered volume on an liquid crystal display.

## Application

The meter is for use only with potable cold water up to 120°F (50°C) and working pressures up to 150 psi. The meter will register between 98.5% and 101.5% accurate throughout the normal operating range and between 97% and 101.5% at low flow as stated within American Water Works Association Standard C713, latest version. Accuracy tests are made before shipment, so no adjustments need to be made before installation.

## Construction

The construction of the SM700 meters, which complies with requirements of the AWWA Standard C713, latest revision, is certified to NSF-61 (including Annex G). The meter consists of a straight through-flow main case with the connections lined with polymer, a single piece fluidic oscillator measuring chamber with no moving parts, and an electronic register assembly that is mounted onto the measuring chamber.



The main case is cast from a high copper content alloy and has raised characters designating model, size and direction of flow permanently marked onto the outside of the main case. The fluidic oscillator measuring chamber uses patented magnet sensing with insert molded sensor electrodes to monitor flow. The register assembly includes a sealed battery compartment and a clear lens for viewing of the LCD display. The register is secured from tamper with a register cover assembly and a wire security seal.

### Installation

The meter must be installed in a clean pipeline, free from any foreign materials. Install the meter with direction of flow as indicated by the arrow cast in the meter case. The meter may be installed in horizontal, vertical or inclined lines.

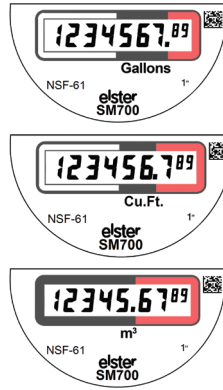
### Register

The register is contained within an advanced engineered polymer casing which is completely potted to eliminate air and any potential condensation. To assure easy reading, the totalizer LCD digits are large and the dial face is color coded to identify billing units and verification units. The applicable size, mode, registration are printed on

the dial face. The LCD includes a low-flow indicator that provides visual indication of plumbing leaks. The register contains a removable Lithium Thionyl Chloride battery pack that has a 20 year battery life.

### Reading options

SM700 meters are available with an Absolute Encoder output (with factory programmable options for output resolution) to provide water usage output to the entire spectrum of meter reading systems, giving flexibility to utilities implementing or upgrading reading technologies.



### AMR/AMI Connectivity

The SM700 meter encoder output uses standard ASCII protocols for communication with AMR/AMI endpoints. For ease of installation in the field, the SM700 meter is available with factory potted connections where standard options include a 12ft cable, a 5ft Itron in-line connector, or a 5ft Nicor connector.

### Connections

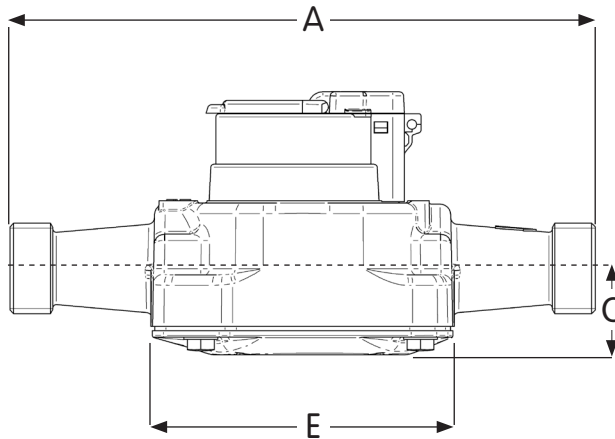
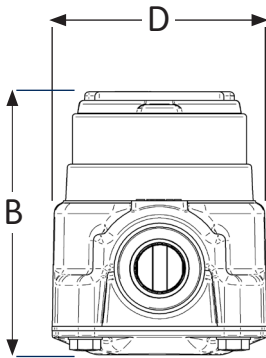
Meter casing spuds have external straight threads conforming to ANSI B.1.20.1 Bronze coupling nuts and tailpieces are available. Tailpieces have external taper pipe threads conforming to ANSI B.1.20.1. Their lengths and thread sizes are as specified by AWWA Standards.

### Battery Pack

The SM700 battery pack contains Lithium cells that must be disposed of correctly, removal of the battery pack allows for the most economic method of disposal of the battery pack separate to the rest of the meter at the end of its service life.

### Dimensions and Net Weight

Meter Size	A		B		C		D		E		Weight	
	in	(mm)	in	(mm)	in	(mm)	in	(mm)	in	(mm)	lbs.	(kg.)
1"	10 3/4	(273.1)	5	(127.6)	1 5/8	(40.2)	3 15/16	(99.9)	5 5/8	(141.6)	5 1/2	(2.52)



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