Specification Sheet

AquaMaster™ FSM (Fire Service)

FM-Approved Fire Service Meter

Sizes: 3” to 10”

- ❑ FM-Approved
- ❑ Higher accuracy over a broader flow range than mechanical fire service designs
- ❑ No crossover accuracy loss
- ❑ Lightweight, compact design for lower installation cost
- ❑ Sized to replace all AWWA C703 mechanical designs
- ❑ AC-powered with battery back-up or battery- powered option for inaccessible locations
- ❑ Buriable sensor
- ❑ Submersible sensor & electronic display unit
- ❑ AMCO absolute encoder output standard for connection to all AMCO-compatible reading systems.

Description

Description. The AquaMaster FSM (AM-FSM) assembly provides high accuracy, long-life meter performance for services that provide both domestic and fire service flows. The assembly incorporates an electronic water meter and remote or sensor-mounted electronic display.

Operation. A "no-moving-parts" electromagnetic water meter is at the heart of the AM-FSM, providing higher accuracy, longer life and lower maintenance costs than mechanical design fire service meters. Inlet and outlet line reducers direct flow through the sensor flow tube. As water (the conductive liquid) passes through the magnetic field created by the sensor coils, the meter measures the induced current between the electrodes and calculates the fluid flow rate. Total volume is inferred from the known cross section of the flow tube.

Compliance to Standards. The AM-FSM meets or exceeds the performance requirements of American Water Works Association Standard C703, as most recently revised for Type II & III devices (when powered by AC) and Type III (when powered by battery) and has earned Factory Mutual (FM) approval for meters in sizes 3" to 10" inclusive.

Installation. Both the sensor and Electronic Display Unit are fully submersible, enabling installation in flooded meter vaults. In addition, the sensor is buriable, thus eliminating the expense of a meter vault. Installation merely involves excavating to the pipeline, fitting the sensor and reducers, and back filling the hole. The associated electronic display unit is then mounted in the most convenient position for the reading.

Strainers are not required for accuracy or protection of the AM-FSM, but as with all large meter installations, AMCO recommends an in-line strainer to remove large debris from the line that may cause downstream damage to the service.

Five straight pipe diameters in front of the meter and two behind will ensure a fully developed turbulence profile, insuring the meter's accuracy.

Specifications

AC - Powered

	Meter Sizes	3"	4"	6"	8"	10"
	Accuracy		Flow Rates (GPM)			
Q Min Flow	95% - 101.5%	0.5	0.9	1.9	3.3	4.0
$Q_{\pm 1.5\%}$	98.5% - 101.5%	1.0	1.7	3.8	6.5	8.0
$Q_{\pm 0.25\%}$	99.75% - 100.25%	9.0	10	30	60	90
	$Q_{\text{Continuous Duty}}$	500	800	1,760	3,100	4,800
	SMOC	500	850	2,000	3,300	5,300
	Deluge Flow	625	1,050	2,500	4,125	6,600

Battery - Powered

	Meter Sizes	3"	4"	6"	8"	10"
	Accuracy		Flow Rates (GPM)			
Q Min Flow	95% - 101.5%	1.9	2.0	5.5	10	15
$Q_{\pm 1.5\%}$	98.5% - 101.5%	3.8	4.0	11	20	30
$Q_{\pm 0.50\%}$	99.50% - 100.50%	26	40	100	170	260
	$Q_{\text{Continuous Duty}}$	500	800	1,760	3,100	4,800
	SMOC	500	850	2,000	3,300	5,300
	Deluge Flow	625	1,050	2,500	4,125	6,600

Temperature Ranges

Process	14ºF (-10°C) to 158ºF (70°C)
Ambient	-4ºF (-20°C) to 140ºF (60°C)
Storage	-22ºF (-30°C) to 158ºF (70°C)

Max Operating Pressure 175 psi

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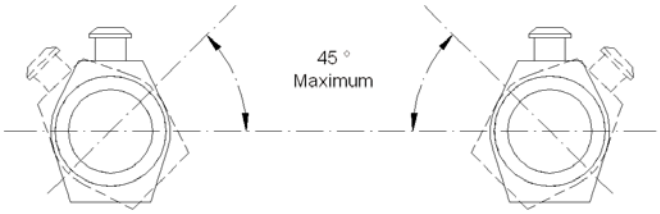
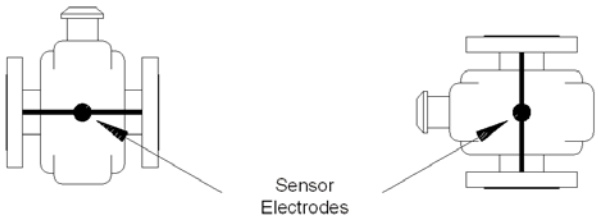
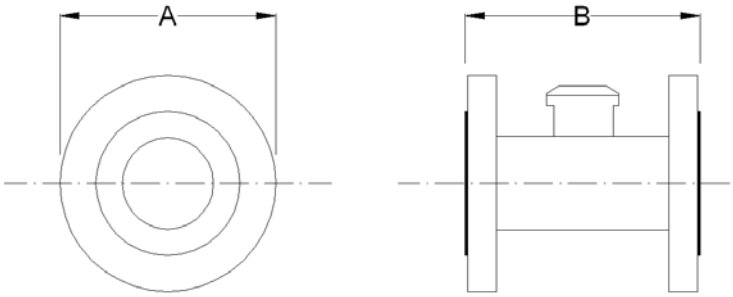
Mounting





Dimensions & Net Weights

Meter Size		Dimensions in. (mm)		Approx. Weight	
in.	mm	A	B	lb	kg
3	80	8.6 (219)	7.9 (200)	40	18
4	100	9.1 (230.5)	9.8 (250)	54	24
6	150	11.1 (281)	11.8 (300)	84	38
8	200	15.8 (402)	13.8 (350)	81	37
10	250	17.3 (440)	17.7 (450)	132	60



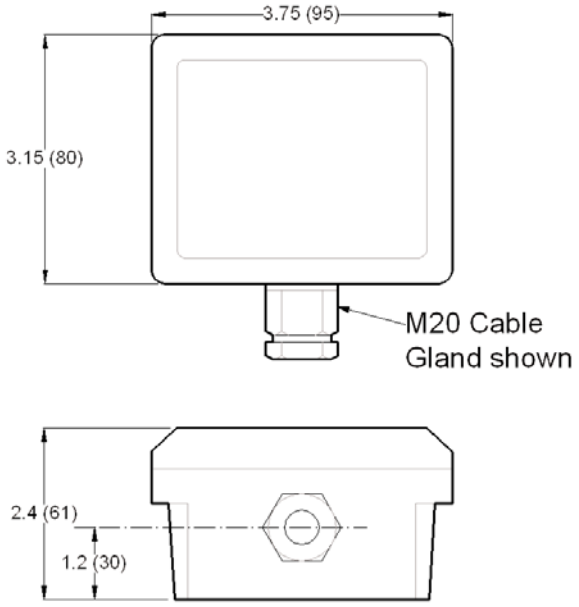
Connections Round flanged-end conforming to ANSI B16.5 1.5 Class 150.

Materials

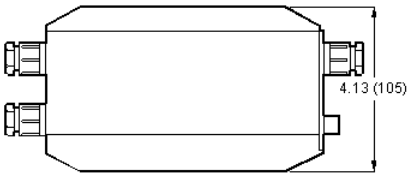
Sensor Body	Stainless Steel
Electrodes	Stainless Steel 316L
Sensor Lining	Approved for potable water
Display Housing	IP68 Aluminum Alloy with Glass Window

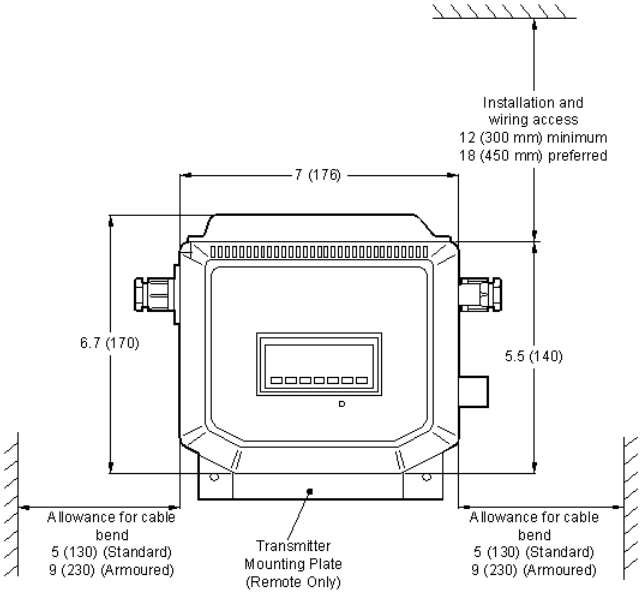
Conductivity >50µS/cm

Terminal Box - Sensor Mounted
Dimensions inches (mm)



IP68/NEMA6P Metal Electronic Display Unit
Dimensions inches (mm)





Note: For Integral mounting, the Electronic Display Unit is supplied mounted on top of the terminal box.

Electronic Display Unit

The AquaMaster FSM Electronic Display Unit provides the most comprehensive range of flow data and information currently available to the water industry. If all the data is not required, the unit can be configured so that only the required values are displayed, thus ensuring simple reading with no superfluous data. Likewise, the display is available for top or side viewing, depending on the location of the meter, for easy reading in all locations.

- ❑ Comprehensive display
- ❑ Submersible for use in flooded pits; rated IP68 (NEMA 6)
- ❑ Resettable or secure totals
- ❑ 5" high displays for totals (exceeding AWWA register digit recommendations)
- ❑ Total security: 2 user security levels
- ❑ 3 outputs (pulses and alarm)

Mounting: Integral with sensor or remote up to 650 feet (200 m).

Electrical Connections: 10/16 mm plastic glands, 20 mm armored, or accepts ½ in. NPT threaded or military style plug and socket.

Sensor Cable: AMCO WMS cable supplied as standard; SWA cable available on application.

Power Supply:

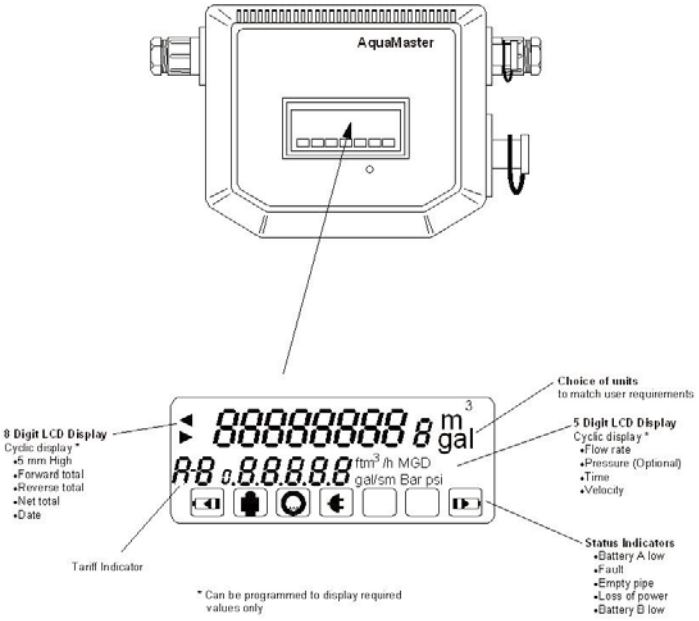
Type	Voltage Range (V) Absolute Rating	Frequency (Hz)	VA
AC	85 to 265	47 to 440	<10
Battery	3.6 Lithium	-	-

Pulse & Alarm Outputs:
Three bi-directional solid-state switches with common isolation ±35V DC 50 MA

Output 1	Forward only, or forward plus reverse pulses
Output 2	Reverse pulser or direction indicator
Pulse output	50 Hz maximum, 50% normal duty cycle
Output 3	Alarm indicates any problems with the measurement or unit power

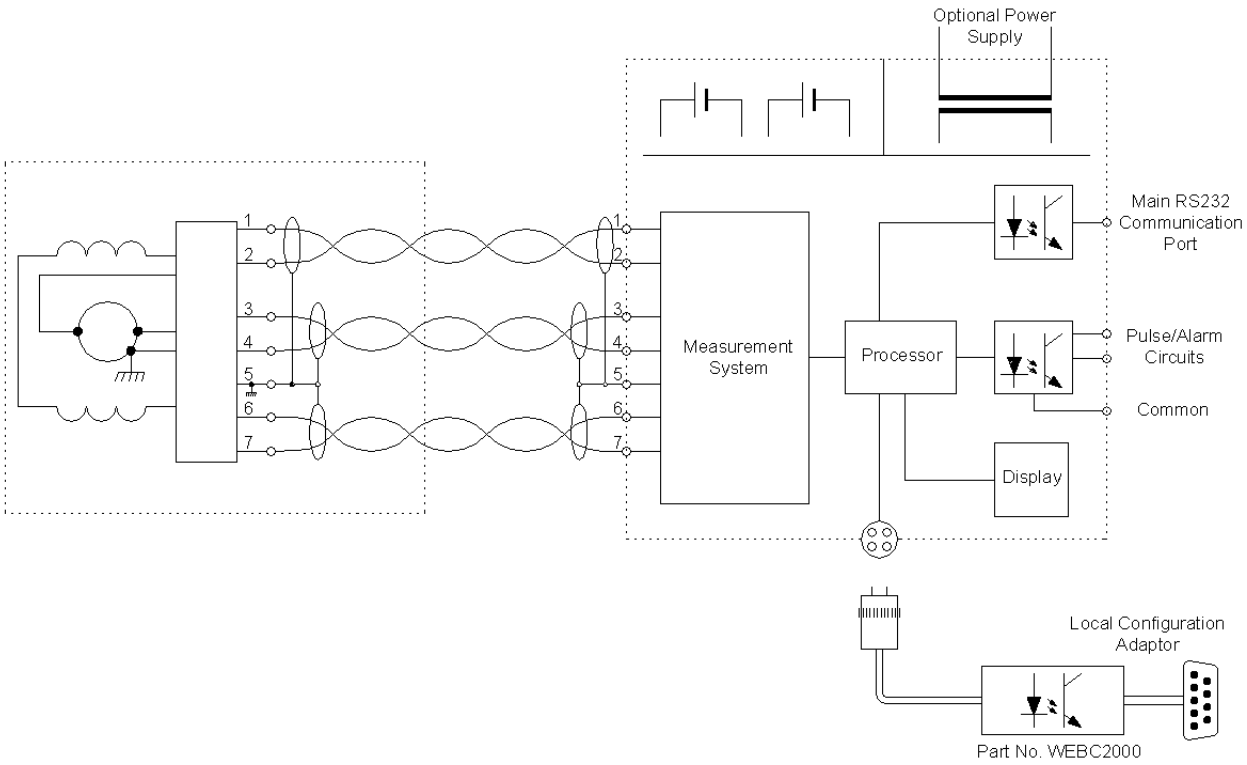
Encoder Interface:

Function	Remote reading of totalizer & ID
Protocol	AMCO Absolute Encoder
Connections	2 wire for inductive reading pads; 3-wire for AMR
Compatible	AMCO T450, VersaProbe, Itron ERTs, Hexagram MTUs



Standard Tariff Setting:
AquaMaster FSM incorporates a multiple tariff feature where the accumulated flow volume is routed to one of two 8-digit signed tariffs, tariff A and tariff B, depending on time and date. The tariff feature is fully programmable by the user for time of day, day of week or date during the year.

Electrical Connections



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