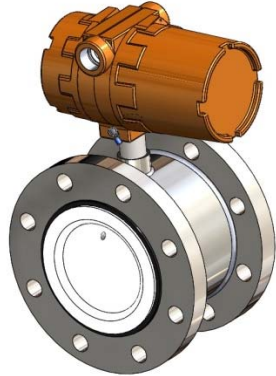


# Product Data Sheet

## FM658

### Electromagnetic

### Flowmeter



#### DESCRIPTION

The Model FM658 is a low-cost electromagnetic flowmeter designed to provide high order of performance, accuracy and reliability for most of the liquid flow applications in a wide variety of industries including water, wastewater, chemical and energy. It is available in diameters of 1/2" to 4".

The FM658 now has the same robust electronics package and sensor as the TigermagEP, but comes with a blind transmitter, that provides an isolated 4-20mA output, scaled pulse and frequency output, with optional Modbus and HART protocols.

The economical price and the lack of moving parts and lower pressure loss makes this meter an ideal alternative to mechanical turbine and paddle wheel flowmeters.

The flow sensor, constructed of stainless steel tube with FEP polyurethane or hard rubber liner provides excellent chemical resistance and temperature rating for tough applications. 316SST electrodes are standard.

#### PRINCIPLE OF OPERATION

The Model FM658 operates in accordance with Faraday's law where a small voltage is created as a conductive liquid flows through the sensor's magnetic field. This voltage is proportional to the flow and is detected by electrodes mounted on either side of the sensor body.

Accuracy is minimally affected by changes in temperature, pressure, viscosity or conductivity.

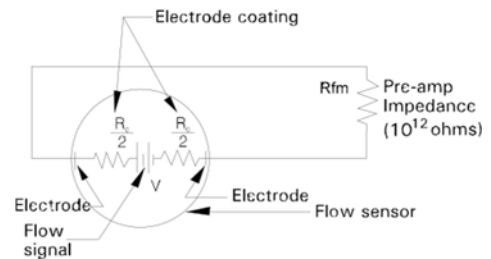
#### APPLICATIONS

Water, wastewater, process water, potable water and additive chemicals.

#### STANDARD FEATURES

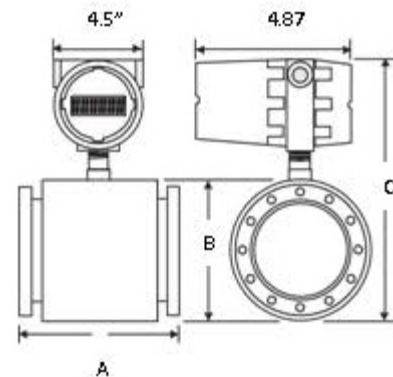
- FEP, Polyurethane or Hard Rubber Lined
- Low Flow Cutoff
- Stainless Steel Electrodes
- Positive Zero Return
- NEMA-4X/NEMA7 Explosion Proof transmitter
- No moving parts
- ±0.5% Accuracy
- Two Year Warranty

#### HI-Z CIRCUITRY ELIMINATES ELECTRODE CLEANING



The Sparling Model FM658 provides superior performance in liquids such as wellwater, wastewater, and cooling water which tend to deposit nonconductive scales and coatings. The meter utilizes Hi-Z circuitry which produces a high input impedance to the transmitter's preamplifier ( $10^{12}$  ohms). This design makes the meter resistant to the effects of nearly all nonconductive coatings.

#### FLOW RATES & DIMENSIONS

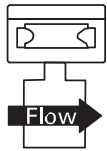


Meter Size		Dimensions			Flow Rates GPM – Full Scale		
Inches	mm	A <sup>1</sup>	B	C	1 fps	3 fps	33 fps
0.5"	15	4.00	3.50	9.50	0.6	1.7	18
1"	25	4.00	4.25	10.2	2	6	66
1.5"	40	4.00	5.00	10.9	5	15	174
2"	50	4.00	6.00	11.7	9	27	303
2.5"	65	6.00	7.00	11.7	14	41	456
3"	80	6.00	7.50	13.0	20	60	664
4"	100	6.00	9.00	14.4	35	107	1182

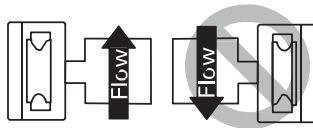
<sup>1</sup> Add 3/16" to 1/4" if grounding rings selected

Note: 0.5" in FEP only; 1" in HR and FEP only

## INSTALLATION



Horizontal Flow



Vertical Flow  
(up-flow preferred to guarantee fu--pipe condition)

The Model 658 flow sensor can be installed in any orientation from vertical to horizontal. The meter must be mounted such that it is always full of process liquid under flowing conditions. A vertical installation, however, with liquid flowing up, is ideal as it assures a full pipe.

The standard wafer style meter can be installed between the following flanges: ANSI 150 or 300 lb., AWWA, DIN PN 10 or 16, JIS or British Standard. A minimum of three diameters of straight pipe length are required from the center of the meter to normal obstructions to obtain specified accuracies.

## STANDARD SPECIFICATIONS

Accuracy:	±0.5% of rate 1–33 fps (0.3–10 mps)
Repeatability:	±0.1% of full scale
Full Scale Ranges:	From 0–3 to 0–33 fps (0–10 mps)
Electrodes:	316 Stainless Steel, Hastelloy C
Liner:	FEP, Polyurethane, Hard Rubber
Outputs:	Isolated analog 4–20mA into 800 ohms 24 VDC scaled pulse 0–1000 Hz freq output
Communications:	MagCommand, HART, Modbus
Conductivity:	Min 20 micromhos/cm
Power Requirements:	77 – 265 VAC / 12 – 60 VDC
Power Consumption:	Less than 20W
Transmitter enclosure:	NEMA-4X/NEMA7
Electrical Rating:	NEMA7
Environmental Rating:	NEMA-4X hose-down proof. Dust-proof.
Ambient Temp:	-20° to 140°F (-34° to 60° C)
Process Temp:	
Hard Rubber	-40° to 180° F (-40° to 80°C)
Polyurethane	-40° to 180° F (-40° to 80°C)
FEP	-40° to 212° F (-40° to 100°C)
Pressure Rating:	Full Vacuum to 150 psi at 180°F
Low Flow Cutoff:	Selectable 0–9% of FS

## HOW TO ORDER A MODEL FM 658

Base Model Number FM658 – (Flanged, Blind Magnetic Flowmeter)
Size OD=.5", OF=1", OG=1.5", O2=2", OH = 2.5", O3=3", O4=4"
Liner Material 1 - Hard Rubber (1" to 4")      5 - Polyurethane (2" - 4")      8 - FEP (0.5" to 4")
Electrode Material 1 - 316SS      2 - Hastelloy C
Flange Rating 1 - AWWA CLD D 150
Transmitter 0 - Integral NEMA-4x/NEMA-7 Enclosure
Power Options 0 - 77-265 VAC    1- 12 – 60 VDC
Options - HART - Modbus