

# Ameritrol, Inc.

Manufacturer of Industrial Instrumentation

## ELECTRONIC FLOW SWITCHES

### Features

No Moving Parts

Operates in Liquids, Gases and Slurries

Can Detect Increase or Decrease of Flow

316L Stainless Steel Sensor

Lowest Cost, Designed for Industrial OEM and End Users



**FM Series**

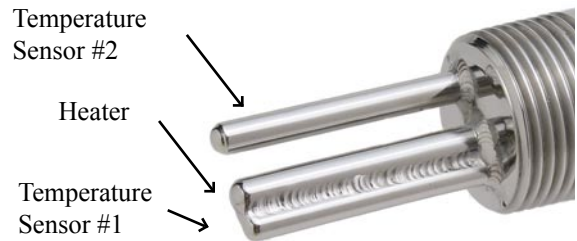
### Applications

- Low Flow Shut Down of Pumps
- Flow Indication/Verification
- Pump or Valve Seal Leakage
- Bearing Lubrication Flow Sensor
- HVAC Flow Monitor
- Safety Shower Flow Switch

The FM series is designed to provide an extremely reliable flow switch at a very cost effective price. This series replaces the standard explosion proof enclosure utilized in our FX series with a general purpose enclosure.

The principle of operation measures a temperature differential between a heated and a reference temperature sensor (see figure 1). The differential varies as flow across the sensor changes. This allows the flow switch to detect the increase or decrease of flow in virtually all liquids, gases and slurries. Flow ranges are shown on the back of this brochure in the set-point range chart. A conversion chart is also provided to convert volume flow to velocity.

The electronics feature a SPDT relay switch output with options for power input of 120 VAC, 24 VDC or VAC, or 240 VAC. Calibration is easily performed by adjusting a potentiometer on the circuit board.

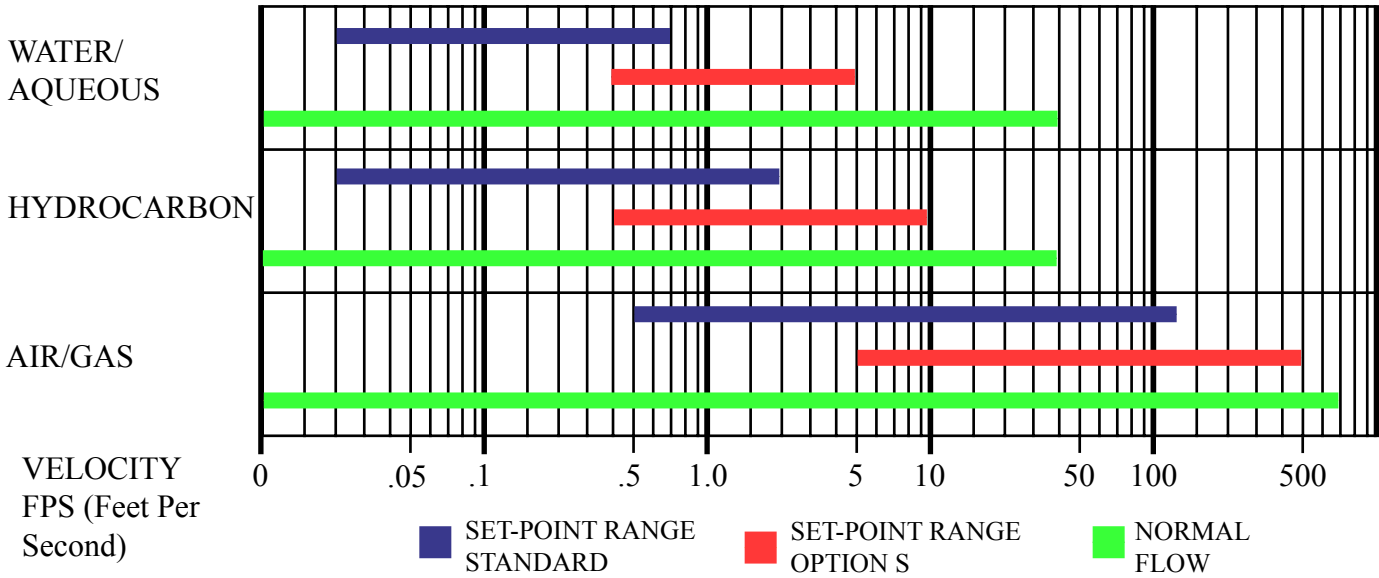


$$\text{Temperature Differential} = \text{Temperature Sensor \#1} \text{ Minus Temperature Sensor \#2}$$

### Part Number/Order Entry Specification

	<b>F</b>	<b>M</b>	-							-			Probe Length
Process Connection	3/4" MNPT	0	7	5	0						0	1	1.2" PROBE
	1" MNPT	1	0	0	0						0	2	1.8" PROBE
Power Input	12 VDC (10.8-18VDC)									B	SPECIAL PROBE LENGTH, SPECIFY LENGTH IN INCHES		
	117 VAC (90-135 VAC)									C			
	24 VDC or VAC (+/- 10%)									D			
	200-240 VAC									E			

# Flow Switch Set-Point Range



## Conversion Table

Volumetric (GPM or CFM) to Velocity (Feet per Second - FPS)

Line Size	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1.25"	1.5"	2"	2.5"	3"	3.5"	4"	5"	6"
Liquid Multiplier	5.65	3.08	1.68	1.06	.602	.371	.215	.158	.096	.067	.0434	.0325	.0252	.0160	.0111
Air Multiplier	42.19	23.06	12.57	7.91	4.50	2.78	1.61	1.18	.716	.502	.325	.243	.188	.120	.083

Line Size	8"	10"	12"	14"	16"	18"	20"	24"
Liquid Multiplier	.0064	.00407	.00287	.00237	.00182	.00143	.00115	.000798
Air Multiplier	.0480	.0304	.0209	.0177	.0136	.0107	.00863	.00597

Examples:  
 1) 100 CFM in 3" Line = 100 x .325 = 32.5 FPS  
 2) 10 GPM in 3" Line = 10 x .0434 = .434 FPS

## Specifications

### Sensor Head

Material of Construction: 316L Stainless Steel Standard  
 Operating Temperature: -50 to 250F (-46 to 121C)

### Operating

Pressure: Vacuum to 4000 PSIG (275 Bar)  
 Response Time: From 3 Seconds  
 Repeatability: +/- 0.5% of Range at Constant Conditions  
 Process Connection: 3/4" MNPT, 1" MNPT  
 Probe Length: 1.8", 1.2"; Option Customer Specified

### Electronics

Housing: Powder Coated General Purpose  
 Temperature: -50 to 150F (-46 to 65C)  
 Power Input: 90-135 VAC, 50/60 Hz, 4 Watts  
 Option 24 VDC/VAC, 200-240VAC  
 Relay Output: SPDT 2 Amps Resistive

Electrical Connection: 1" FNPT  
 Shipping Weight: 4 lbs

# Ameritrol, Inc.

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