**EFERENCES**

- 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

**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 FD 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 NEMA 4X 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 next page of this brochure in the set-point range chart. A conversion chart is also provided to convert volumetric flow to velocity.

The electronics feature a SPDT relay switch output with power input of 24 VDC. Calibration is easily performed by adjusting a potentiometer on the circuit board.

**Part Number/Order Entry Specification**

<table>
<thead>
<tr>
<th>Process Connection</th>
<th>Power Input</th>
<th>Probe Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾” MNPT 0 7 5 0 D</td>
<td>24 VDC (±5%)</td>
<td></td>
</tr>
</tbody>
</table>

Temperature Differential = Temperature Sensor #1 Minus Temperature Sensor #2

**Figure 1**
Flow Switch Set-Point Range

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

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

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: ¾” MNPT
Probe Length: 1.8”, 1.2” Option Customer Specified

Electronics
Housing: Powder Coated NEMA 4X
Temperature: -50 to +150F (-46 to +65C)
Power Input: 24 VDC ± 5%
Relay Output: SPDT 2 Amps Resistive at 24 VDC or 0.5 Amps at 120 VAC
Electrical Connection: ¾” FNPT
Shipping Weight: 2 lbs

Ameritrol, Inc.
1185L Park Center Drive
Vista CA 92081
760-727-7273 Phone
760-727-7151 Fax
1-800-910-6689
Visit our website at www.ameritrol.com

Bulletin FD10-10