High Pressure Coolant Sensor Manifold MSM Series
For Deep Hole Drilling, Reaming, and Machining
Modular Sensor Manifold
MSM Series

High Pressure Coolant Flow Monitoring

TYPICAL APPLICATIONS
- Deep Hole Drilling
- Grinding
- Milling
- Miscellaneous Machining
- Multiple Spindles
- Reaming

Features
- Fast response reduces tool breakage
- Eliminates downtime
- Rugged Compact Manifold Design (combine up to 6 flow sensors)
- Easy to install, operate, and maintain
- Two Programmable Set Points (open collectors) per unit
- LED Set Point Alarm Indicators
- Integral or Remote Digital LCD Rate Indicators
- Type 4 Enclosure, Weatherproof
- Process Connections: SAE, BSPP, ISO 6149
- Standard Operating Pressure to 1000 PSIG (69 BAR). Optional 2000 PSIG (138 BAR)
- Easy, quick field wiring — standard with 5-pin micro style connectors and cable
- Output of 4-20mA
- Subplate mounting design allows fast meter change-out due to tool changes

General Description
Universal offers a reliable flow metering system for machining coolant that is backed by extensive field experience. The shock absorbing design reliably withstands typical flow and pressure surges. The response is fast enough to save tools. Flow set-points are quickly adjustable through the meter display. If a tool change necessitates a new meter, UFM’s new manifold mounted design cuts downtime and spares. Up to six monitors per manifold can be assembled to minimize space while simplifying piping, hosing, and wiring layouts. Linear 4-20mA transmitted signals and open collector outputs are pin connected.

This truly modular Sensor Manifold allows easy replacement and maintenance of the flow metering unit without disturbing the piping. When tooling changes require flow monitor changes, it is now very simple. A tie-rod system holds the manifold sections together, with O-ring seal between each section. Each manifold section has its own flow monitor that is attached using four bolts. To change the flow monitor, simply remove the bolts, and replace the unit.

The flow monitor offers an integral LCD display with optional remote. Display is shown in liters or gallons per minute. Additionally, two open collector outputs are available for configuration of high and low flow alarms. These are set using membrane switches, and have two integral LEDs that show when the flow reaches the preset levels. The full-complement of electronic options offer a range of local and remote control strategies.

The simplicity of this mechanical design provides ease of maintenance, quick replacement, simple capacity modifications, use and stocking of common components, thus reducing inventory of spares and associated costs dramatically.
HOW IT WORKS:
Fluid enters a common manifold and then is divided through separate metering chambers (up to 6 destinations). Each separate flow has its own linear 4-20mA signal, digital display, and 2 programmable alarm points.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Fluid Temperature</td>
<td>200°F (93°C)</td>
</tr>
<tr>
<td>Maximum Ambient Temperature</td>
<td>175°F (80°C)</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>1000 PSIG (69 BAR)</td>
</tr>
<tr>
<td>(Optional 2000 PSIG, consult factory)</td>
<td></td>
</tr>
<tr>
<td>Signal Output (Flow Rate)</td>
<td>4-20mA</td>
</tr>
<tr>
<td>Response Time</td>
<td>250 milliseconds response to 100% of flow</td>
</tr>
<tr>
<td></td>
<td>Output clamped at 21mA</td>
</tr>
<tr>
<td>Alarm Outputs</td>
<td>2 Opto-Isolated Open Collector Transistor Outputs</td>
</tr>
<tr>
<td>Input Power</td>
<td>24 VDC Loop Powered (2-wire transmitter)</td>
</tr>
<tr>
<td>Readout Accuracy</td>
<td>±5% of F.S.</td>
</tr>
<tr>
<td>Approvals</td>
<td>CSA and CE for heavy industrial applications</td>
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</table>

Theoretical Tool Flows

<table>
<thead>
<tr>
<th>Hole Size In Tool</th>
<th>250 PSI (GPM)</th>
<th>500 PSI (GPM)</th>
<th>1000 PSI (GPM)</th>
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<tbody>
<tr>
<td>.055 ID x 12</td>
<td>.065</td>
<td>.082</td>
<td>1.2</td>
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<tr>
<td>.055 ID x 24</td>
<td>.50</td>
<td>.65</td>
<td>.85</td>
</tr>
<tr>
<td>.065 ID x 12</td>
<td>.82</td>
<td>1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>.065 ID x 24</td>
<td>.8</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td>.092 ID x 12</td>
<td>1.2</td>
<td>2.8</td>
<td>4.0</td>
</tr>
<tr>
<td>.092 ID x 24</td>
<td>1.0</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>.115 ID x 12</td>
<td>3.0</td>
<td>4.5</td>
<td>6.0</td>
</tr>
<tr>
<td>.115 ID x 24</td>
<td>2.0</td>
<td>3.0</td>
<td>4.75</td>
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<tr>
<td>.120 ID x 12</td>
<td>4.0</td>
<td>5.8</td>
<td>7.5</td>
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<tr>
<td>.120 ID x 24</td>
<td>3.0</td>
<td>4.1</td>
<td>6.0</td>
</tr>
<tr>
<td>.181 ID x 12</td>
<td>12.6</td>
<td>17.0</td>
<td>20.5</td>
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<td>.181 ID x 24</td>
<td>10.0</td>
<td>13.0</td>
<td>17.5</td>
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Dimensions of MSM Series

Approximate in inches

<table>
<thead>
<tr>
<th>No. of Sensors</th>
<th>Overall Width</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>5.56</td>
</tr>
<tr>
<td>2</td>
<td>9.31</td>
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<tr>
<td>3</td>
<td>13.06</td>
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<tr>
<td>4</td>
<td>16.81</td>
</tr>
<tr>
<td>5</td>
<td>20.56</td>
</tr>
<tr>
<td>6</td>
<td>24.31</td>
</tr>
</tbody>
</table>

Above chart for various hydraulic conditions
How To Order MSM Series

Select the appropriate symbols to build a model code:

Example: MSM-NSFS10GPM-B-32V1.0-GTLI-CC

SERIES
Modular Sensor Manifold
Meter & Transmitter Only
(To order without a manifold, omit the “MSM” portion of the model code)
Meter Only
(To order without a manifold and transmitter, omit the “MSM” portion of the model code and select “GP” under CONTROL BOX selection)

MATERIALS OF CONSTRUCTION
Housing Material
Cast Iron Nickel Plated = N
Internals
Stainless Steel = S
Seal Material
Viton = F

Maximum Flow Rate
5 GPM = 5GPM
10 GPM = 10GPM
20 GPM = 20GPM
20 LPM = 20LPM
40 LPM = 40LPM
75 LPM = 75LPM

FLUID CHARACTERISTICS
32V1.0 = 32 SUS and 1.0 Specific Gravity

PORT
Description
Inlet
Outlet
T = SAE J1926-16 J1926-1-8
B = BSPP ISO-1179-1 ISO-1179-1
I = ISO6149 M33X2 M18X1.5

CONNECTIONS (Electrical)
CC = Conduit Connection
No Symbol = Pin Connection

CONTROL BOX
GTLI = Integral Transmitter w/LCD
(with or without Manifold)
GPLR = Remote Transmitter w/LCD
(with or without Manifold)
GP = No Transmitter
(UT-PM-DTLCD)

Available Accessories - How To Order
Remote 4-20mA two wire transmitter with LCD display and field adjustable open collector alarms = Model UT-PM-DTLCD

Universal Flow Monitors, Inc. reserves the right to change any information contained in this publication, at any time, without prior notice.

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