SIMPLE TO INSTALL
All transmitters are factory calibrated and ship fully assembled. Simply install the transmitter into your system and apply power.

INDUSTRY STANDARD OUTPUTS
Transmitters provide proportional analog outputs of 4-20mA, 0-5 Vdc and 1-5 Vdc\(^1\), 20-2000 Hz square-wave pulse. These outputs will drive popular data acquisition devices, meters and analog input cards.

DIRECT READING
All transmitters provide a visual indication of flow rate integral to the transmitted output.

WEATHER-TIGHT CONSTRUCTION
The rugged cast aluminum NEMA type 4X enclosure allows installation in outdoor applications and in environments where liquid tight seals are required.

RUGGED AND RELIABLE
Without delicate internal components to break, abrade or corrode, the Lake flow transmitter will provide many years of low-maintenance service.

COMPATIBLE WITH LAKE’S R/T100 AND R100 FLOW ANALYZERS
The Lake flow rate transmitter combines with these Lake analyzers to make a powerful flow instrument capable of remote monitoring of rate and total flows.

\(^1\)The 1-5Vdc output requires an external 249 ohm resistor (not included with transmitter) to be wired at the receiving device.

ENGINEERING SPECIFICATION
THE IN-LINE FLOW RATE MONITOR/TRANSMITTER SHALL:

- Be factory calibrated for 4-20mA, 0-5Vdc, 1-5Vdc, and square wave pulse outputs.
- Use the variable annular orifice technique with compression spring recoil.
- Not require inlet or outlet straight plumbing, or require vertical orientation.
- Have a measuring accuracy of ±2.5% of full scale in the center third of the measuring range, and ±4% in upper and lower thirds.
- Have a stainless steel sharp-edged orifice
- Have a maximum working pressure rating of 3500 or 6000 PSIG for liquids.
- Have a maximum working pressure rating of 600 or 1000 PSIG for gasses.
- Have a weather-tight external construction.
- Be Lake Monitors No. R __ - __ - __.

Ideal for batching, industrial process control, mobile hydraulic equipment and computer/PLC-controlled hydraulic system monitoring applications.

www.lakemonitors.com
**Flow Rate Transmitters**

### MATERIALS OF CONSTRUCTION (WETTED COMPONENTS)

<table>
<thead>
<tr>
<th>Component</th>
<th>Aluminum</th>
<th>Brass</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-pressure casing, end ports and tapered shaft</td>
<td>Aluminum</td>
<td>Brass</td>
<td>#303 Stainless Steel</td>
</tr>
<tr>
<td>Seals</td>
<td>BunaN® (STD), EPR, FKM or FFKM</td>
<td>BunaN® (STD), EPR, FKM or FFKM</td>
<td>FKM with PTFE backup (STD), BunaN®, EPR or FFKM</td>
</tr>
<tr>
<td>Transfer Magnet</td>
<td>PTFE coated Alnico</td>
<td>PTFE coated Alnico</td>
<td>PTFE coated Alnico</td>
</tr>
<tr>
<td>Floating Orifice Disk</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>All other internal parts</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
<td>Stainless Steel</td>
</tr>
</tbody>
</table>

BunaN® is a registered trademark of Chemische Werke Huls.
EPR is a registered trademark of Corning Inc.

### MATERIALS OF CONSTRUCTION (NON-WETTED COMPONENTS)

<table>
<thead>
<tr>
<th>Component</th>
<th>Aluminum</th>
<th>Brass</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure &amp; Cover</td>
<td>Aluminum</td>
<td>Aluminum</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Seals</td>
<td>BunaN®</td>
<td>BunaN®</td>
<td>BunaN®</td>
</tr>
<tr>
<td>Window</td>
<td>Pyrex®</td>
<td>Pyrex®</td>
<td>Pyrex®</td>
</tr>
<tr>
<td>Dm Connector</td>
<td>Polyamide</td>
<td>Polyamide</td>
<td>Polyamide</td>
</tr>
</tbody>
</table>

BunaN® is a registered trademark of Chemische Werke Huls.
Pyrex® is a registered trademark of Corning Inc.

### MONITOR PERFORMANCE

- **Measuring accuracy:** ±2.5% of full-scale in the center third of the measuring range; ±4% in upper and lower thirds
- **Repeatability:** ±1% of full-scale
- **Flow measuring range:** 0.05-150 GPM (0.2-560 LPM); 1.5-1300 SCFM (0.75-610 SLPS)
- **Maximum operating pressure:** Aluminum and brass monitors: 3500 PSIG (240 Bar)
  Stainless steel monitors: 6000 PSIG (410 Bar)
- **Maximum operating temperature:** Media: 170ºF (76ºC), Ambient: 170ºF (76ºC)
- **Pressure differential:** Liquid: see graphs. Gases: see Pneumatic data sheet
- **Standard calibration media:**
  - Oil monitors: DTE 25® @ 110ºF (43ºC), 0.873 sg
  - Water monitors: tap water @ 70ºF (21ºC), 1.0 sg
  - Air monitors: air @ 70ºF (21ºC), 1.0 sg and 100 PSIG (6.8 Bar)
- **Filtration requirements:** 74 micron filter or 200 mesh screen minimum

**Note:** Consult factory for SAE brass monitor requirements.

### ELECTRONIC TRANSMITTER PERFORMANCE

- **Power requirements:** 12-35 Vdc
- **Load driving capacity:**
  - 4-20mA: load resistance is dependent on power supply voltage. Use the following equation to calculate maximum load resistance:
    \[ \text{Max Loop Load} = 50 (\text{Power supply volts} - 12) \]
  - 0-5 VDC: minimum load resistance 1000Ω
  - 1-5 VDC: minimum load resistance 25 KΩ
  - Square Wave Pulse: minimum load resistance 100Ω
- **Transmission distance:** 4-20mA and 1-5 VDC are limited only by wire resistance and power supply voltage. <200 feet recommended for 0-5 VDC and square wave pulse.
- **Over-current protection:** self limiting at 35mA
- **Resolution:** 10 bit (0.1%)
- **Isolation:** inherently isolated from the process
- **Response time:** <100 milliseconds

### MECHANICAL SIZE CODE

<table>
<thead>
<tr>
<th>DIM</th>
<th>SERIES 3</th>
<th>SERIES 4</th>
<th>SERIES 5</th>
<th>SERIES 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6-1/16” (167mm)</td>
<td>7-5/32” (182mm)</td>
<td>10-1/8” (258mm)</td>
<td>12-5/8” (322mm)</td>
</tr>
<tr>
<td>B</td>
<td>2-3/16” (56mm)</td>
<td>2-15/32” (75mm)</td>
<td>3-11/16” (95mm)</td>
<td>3-13/16” (97mm)</td>
</tr>
<tr>
<td>C</td>
<td>3” (76mm)</td>
<td>4-1/2” (114mm)</td>
<td>5-5/16” (138mm)</td>
<td>5-5/16” (138mm)</td>
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<tr>
<td>D</td>
<td>1-7/8” (47mm)</td>
<td>1-7/8” (47mm)</td>
<td>1-7/8” (47mm)</td>
<td>1-7/8” (47mm)</td>
</tr>
<tr>
<td>E</td>
<td>4-1/8” (123mm)</td>
<td>9” (229mm)</td>
<td>6-3/4” (172mm)</td>
<td>6-3/4” (172mm)</td>
</tr>
<tr>
<td>F</td>
<td>2-1/4” (57mm)</td>
<td>2-7/8” (73mm)</td>
<td>3-3/4” (95mm)</td>
<td>3-3/4” (95mm)</td>
</tr>
<tr>
<td>Port Sizes</td>
<td>NPTF: 1/4”, 3/8”, 1/2”</td>
<td>NPTF: 3/4”, 1”</td>
<td>NPTF: 1-1/8”, 1-1/2”</td>
<td>NPTF: 2”</td>
</tr>
<tr>
<td></td>
<td>SAE: #8, #10, #12</td>
<td>SAE: #12, #16</td>
<td>SAE: #20, #24</td>
<td>SAE: #32</td>
</tr>
<tr>
<td></td>
<td>SSP: 3/8”, 1/2”</td>
<td>SSP: 1/4”, 1/2”</td>
<td>BSP: 1/4”, 1/2”</td>
<td>BSP: 2”</td>
</tr>
</tbody>
</table>

**Note:** Consult factory for SAE brass monitor requirements.

[TYPICAL PRESSURE DIFFERENTIALS](#)

For specific differential graphs, refer to Lake data sheet PDG8404.

**SERIES 5 MONITORS**

**SERIES 4 MONITORS**

**SERIES 3 MONITORS**

[www.lakemonitors.com](http://www.lakemonitors.com)

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A TASI Group Company
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800.850.6110

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