NT™ Integrated Flow Controller, Model 6500
For precision flow control in legacy applications

LIQUID FLOW CONTROLLER

Whether it is automation, process control or safety concerns that require accurate flow control of liquid chemicals and CMP slurry, the instrumentation must be clean, accurate and reliable. Using the latest electronic technology and high-purity materials, Entegris has designed a leading-edge liquid flow controller to allow for greater control of your process flow variables.

- PTFE wetted surfaces for high-purity applications
- Nonmetallic components for corrosion resistance
- Integral pressure transducer for additional process information
- One percent (1%) full scale accuracy for critical dispense applications
- Compact footprint for easy field installs with limited space
- Fast response for accurate dispense rates

CONSTRUCTED FOR COMPATIBILITY

The NT™ Integrated Flow Controller (IFC), model 6500 was developed for use in ultra high-purity liquid chemical instruments and slurry applications.

The instrument’s valve seat and diaphragm are designed to minimize dead volume and fluid shear, reducing the possibility of process contamination. Featuring fluoropolymers for wetted parts and inert materials for nonwetted parts, the IFC model 6500 is resistant to harsh chemical environments and external spraydowns.

ADVANCED TECHNOLOGY

The NT IFC, model 6500 utilizes dual PTFE valve diaphragms for fluid containment and contamination protection. Featuring the latest motorized valve and flowmeter technology, encapsulated internal electronics control all aspects of the flow controller. The unit is activated by a setpoint signal (i.e., 4 – 20 mA, 0 – 10 VDC, 0 – 5 VDC) to maintain fluid flow at the desired setpoint.

APPLICATIONS

We are solving today’s flow control challenges using the NT IFC, model 6500. Combined with our differential pressure based flowmeter and leading-edge control valve technology, the closed-loop flow controller is ideal for:

- Continuous flow control for critical dispense applications
- CMP slurry dispense to replace existing peristaltic pumps
- Batch control for chemical spiking and blending
- On-demand chemical mixing applications
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Materials</th>
<th>Wetted parts</th>
<th>Body</th>
<th>PTFE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Diaphragms</td>
<td>PTFE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor interface</td>
<td>PFA or CTFE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Primary O-ring</td>
<td>Perfrez®</td>
</tr>
<tr>
<td>Nonwetted parts</td>
<td>Polypropylene, FEP, PVDF and Viton® (In addition to materials listed above)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process temperature</th>
<th>10 – 65°C (50 – 149°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical input</td>
<td>24 VDC (±10%) @ 1 amp</td>
</tr>
<tr>
<td>Electrical output</td>
<td>Two, 4 – 20 mA electrically isolated outputs, one for flow and one for pressure</td>
</tr>
</tbody>
</table>
| Flow measurement    | ±1% of full scale from 20 – 100% of flow range  
|                     | ±2.5% of full scale from 10 – 20% of flow range  
|                     | (Calibrated using deionized water at 23°C [73°F]) |
| Repeatability      | ±0.5% of full scale from 20 – 100% of flow range  
|                     | ±1% of full scale from 10 – 20% of flow range |
| Pressure measurement range | 0 – 414 kPa (0 – 60 psig) |
| Minimum operating pressure (at the inlet) | 69 kPa (10 psig) |
| Maximum operating pressure | 414 kPa (60 psig) |
| Over-pressure limit | 690 kPa (100 psig) |
| Pressure measurement accuracy | ±1% of full scale (includes combined effects of linearity, hysteresis, and repeatability) |
| Electrical enclosure | IP54 |
| Reliability        | Wetted parts, >3 million cycles |
| Response time      | <3 seconds from 10 to 95% of full scale flow range |
| Setpoint input signal | 4 – 20 mA, 0 – 10 VDC, 0 – 5 VDC |
| Approvals          | CE |

Note: Specifications are subject to change without notice. Please consult the factory for the most current information.
The flow controller is available in the following fitting size and flow range combinations:

<table>
<thead>
<tr>
<th>Fitting size (fitting code)</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
<th>T9</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼&quot; (F02)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>⅛&quot; (F03)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>—</td>
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<tr>
<td>½&quot; (F04)</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>⅜&quot; (F06)</td>
<td>—</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**ORDERING INFORMATION**

**NT Integrated Flow Controller, Model 6500: part number**

6500-____-____-____-____-U3

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- **Primary/secondary seal**  
  U3 = Perfrez PXC Ultra/Viton

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- **Sensor interface**  
  P7 = CTFE (for acid, bases and oxidants, typically)  
  P8 = PFA (for solvents and temperatures >40°C [104°F], typically)*

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- **Setpoint input signal, controller type**  
  A = 4–20 mA, continuous  
  B = 0–10 VDC, continuous  
  K = 4–20 mA, batch  
  L = 0–10 VDC, batch  
  M = 0–5 VDC, batch

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- **Electrical connector type**  
  B12 = FEP-jacketed 12’ pigtail electrical cable  
  D00 = Polypropylene connector (cable not included)  
  D12 = Polypropylene connector and 12’ PVC cable  
  D30 = Polypropylene connector and 30’ PVC cable

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- **Inlet/outlet port connection**  
  F02 = ¼” Flaretek tube fitting  
  F03 = ½” Flaretek tube fitting  
  F04 = ¼” Flaretek tube fitting  
  F06 = ⅜” Flaretek tube fitting

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- **Flow range**  
  T0 = 0–50 mL/min  
  T1 = 0–125 mL/min  
  T2 = 0–250 mL/min  
  T3 = 0–500 mL/min  
  T4 = 0–1250 mL/min  
  T5 = 0–2.5 L/min  
  T6 = 0–5 L/min  
  T7 = 0–10 L/min  
  T8 = 0–20 L/min  
  T9 = 0–40 L/min

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* Selection is dependent on application and chemical media. Please contact Entegris for best selection.  
** Flow ranges are scaled to zero flow, measurement is from 10 to 100% of full scale flow range.  
Product specified with a flared tube connection is packaged with two PVDF nuts. For alternative nut materials, or custom configurations and specifications, please contact the factory. (Note: Specifications are subject to change without notice. Please consult the factory for the most current information.)

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**FOR MORE INFORMATION**

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [entegris.com](http://entegris.com) and select the [Contact Us](http://entegris.com) link to find the customer service center nearest you.

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