ONICON insertion turbine flow meters are suitable for measuring electrically conductive water-based liquids. The F-1211 model provides isolated 4-20 mA and 0-10 V analog output signals that are linear with the flow rate.

**APPLICATIONS**
- Closed loop chilled water, hot water, condenser water & water/glycol/brine solutions for HVAC
- Process water & water mixtures
- Domestic water

**GENERAL SPECIFICATIONS**

**ACCURACY**
- ± 0.5% of reading at calibrated velocity
- ± 1% of reading from 3 to 30 ft/s (10:1 range)
- ± 2% of reading from 0.4 to 20 ft/s (50:1 range)

**SENSING METHOD**
Electronic impedance sensing (non-magnetic and non-photoelectric)

**PIPE SIZE RANGE**
2½” through 72” nominal diameter

**SUPPLY VOLTAGE**
24 ± 4 V AC/DC at 100 mA

**LIQUID TEMPERATURE RANGE**
- Standard: 180° F continuous, 200° F peak
- High Temp: 280° F continuous, 300° F peak

Meters operating above 250° F require 316 SS construction option

**AMBIENT TEMPERATURE RANGE**
-5° to 160° F (-20° to 70° C)

**OPERATING PRESSURE**
400 PSI maximum

**PRESSURE DROP**
Less than 1 PSI at 20 ft/s in 2½” pipe, decreasing in larger pipes and lower velocities

**OUTPUT SIGNALS PROVIDED**
- Analog Output (isolated)
  - Voltage output: 0-10 V (0-5 V available)
  - Current output: 4-20 mA
- Frequency Output
  - 0 – 15 V peak pulse, typically less than 300 Hz

(continued on back)

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**CALIBRATION**

Every ONICON flow meter is wet calibrated in our flow laboratory against primary volumetric standards that are directly traceable to N.I.S.T. A certificate of calibration accompanies every meter.

**FEATURES**

**Unmatched Price vs. Performance** - Custom calibrated, highly accurate instrumentation at very competitive prices.

**Excellent Long-term Reliability** - Patented electronic sensing is resistant to scale and particulate matter. Low mass turbines with engineered jewel bearing systems provide a mechanical system that virtually does not wear.

**Industry Leading Two-year “No-fault” Warranty** - Reduces start-up costs with extended coverage to include accidental installation damage (miswiring, etc.) Certain exclusions apply. See our complete warranty statement for details.

**Simplified Hot Tap Insertion Design** - Standard on every insertion flow meter. Allows for insertion and removal by hand without system shutdown.

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**OPERATING RANGE FOR COMMON PIPE SIZES**

<table>
<thead>
<tr>
<th>Pipe Size (Inches)</th>
<th>Flow Rate (GPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ½</td>
<td>2.5 - 230</td>
</tr>
<tr>
<td>3</td>
<td>4 - 460</td>
</tr>
<tr>
<td>4</td>
<td>8 - 800</td>
</tr>
<tr>
<td>6</td>
<td>15 - 1,800</td>
</tr>
<tr>
<td>8</td>
<td>26 - 3,100</td>
</tr>
<tr>
<td>10</td>
<td>42 - 4,900</td>
</tr>
<tr>
<td>12</td>
<td>60 - 7,050</td>
</tr>
<tr>
<td>14</td>
<td>72 - 8,600</td>
</tr>
<tr>
<td>16</td>
<td>98 - 11,400</td>
</tr>
<tr>
<td>18</td>
<td>120 - 14,600</td>
</tr>
<tr>
<td>20</td>
<td>150 - 18,100</td>
</tr>
<tr>
<td>24</td>
<td>230 - 26,500</td>
</tr>
<tr>
<td>30</td>
<td>360 - 41,900</td>
</tr>
<tr>
<td>36</td>
<td>510 - 60,900</td>
</tr>
</tbody>
</table>
## F-1211 SPECIFICATIONS cont.

### MATERIAL
Wetted metal components:
- Standard: Electroless nickel plated brass
- Optional: 316 stainless steel

### ELECTRONICS ENCLOSURE
- Standard: Weather tight aluminum enclosure
- Optional: Submersible enclosure

### ELECTRICAL CONNECTIONS
4-wire minimum for 4-20 mA or 0-10 V output
Second analog output and/or frequency output requires additional wires
- Standard: 10’ of cable with ½” NPT conduit connection
- Optional: Indoor DIN connector with 10’ of plenum rated cable

## ALSO AVAILABLE
- Display Modules
- Btu Measurement Systems

## F-1211 Wiring Information

<table>
<thead>
<tr>
<th>WIRE COLOR</th>
<th>DESCRIPTION</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>(+) 24 V AC/DC supply voltage, 100 mA</td>
<td>Connect to power supply positive</td>
</tr>
<tr>
<td>BLACK</td>
<td>(-) Common ground (Common with pipe ground)</td>
<td>Connect to power supply negative</td>
</tr>
<tr>
<td>GREEN</td>
<td>(+) Frequency output signal: 0-15 V peak pulse</td>
<td>Required when meter is connected to local display or Btu meter</td>
</tr>
<tr>
<td>BLUE</td>
<td>(+) Analog signal: 4-20 mA (isolated)</td>
<td>Use yellow wire as (-) for these signals. Both signals may be used independently.</td>
</tr>
<tr>
<td>BROWN</td>
<td>(+) Analog signal: 0-10 V (isolated)</td>
<td></td>
</tr>
<tr>
<td>YELLOW</td>
<td>(-) Isolated ground</td>
<td>Use for analog signals only</td>
</tr>
</tbody>
</table>

### DIAGNOSTIC SIGNALS
- ORANGE: Bottom turbine frequency
- WHITE: Top turbine frequency

### F-1211 Wiring Diagram
Flow meter in control system (no display or Btu meter)

### Typical Meter Installation
(New construction or scheduled shutdown)

- Acceptable to install in vertical pipe
- Position meter anywhere in upper 240° for horizontal pipe

### Note:
Installation kits vary based on pipe material and application. For installations in pressurized (live) systems, use “hot tap” 1¼” installation kit and drill hole using a 1” wet tap drill.

### Diagram Notes:
- Connect factory wires to field wires in appropriate junction box.
- Minimum Hole Size = 1”
- Must be centered
- Standard Installation Kit for Steel Pipe
- Detail of hot tap adapter with turbine assembly withdrawn
- Typically 30” - 36” depending on pipe size and height of valve assembly.
- CLEARANCE REQUIRED FOR INSTALLATION
- Horizontal Run Pipe
- This area acceptable
- To control system
- Onicon Display or BTU Meter (Optional)