iPERL Smart Water Meter

Electromagnetic Flow Measurement System

Sensus iPERL® smart water meters are designed to capture both lost water and lost revenue. The innovative magnetic technology delivers unmatched low flow registration and minimal pressure loss. With no moving parts, iPERL maintains its accuracy over a 20 year lifetime and is equipped with smart water alarms – delivering the intelligence you need to quickly resolve issues in the field.

Industry Leading Performance

The patented measurement technology of the iPERL water meter provides continuous and enhanced accuracy ranges at both low and high flows and perpetual accuracy over the life of the product. The iPERL meter has a 20-year accuracy warranty and a 20-year battery life guarantee. Over this 20-year lifespan, your iPERL will measure just as accurately as the day it was installed.

Construction

The iPERL meter body is made of composite alloy and contains no metal material. Inside the meter body is an electronic register and a measuring device that is comprised of a composite alloy flow tube.

Electronic Register

The 9-digit hermetically-sealed electronic register with LCD display was designed to eliminate dirt, water, and moisture contamination in pit settings. The large, easy-to-read display includes AMI/AMR digits, direction of flow, units of measure, and empty pipe detection. The AMI/AMR digits and units of measure are fully programmable. The register also provides user configurable data logging.

Solid State Electromagnetic Technology

By avoiding the use of a mechanical measuring element inside the flow tube, metering performance is linear over the entire flow range - ensuring no reduction in accuracy at any flow rate over the life of the meter. The iPERL meter uses our patented remanent magnetic field technology - requiring far less energy and delivering superior accuracy.

Tamperproof

The integrated construction of the iPERL water meter prevents removal of the register to obtain free water. The magnetic tamper and low field alarms will both indicate any attempt to tamper with the magnetic field of the iPERL meter. The meter communication alarm indicates a possible cut cable.

Alarms

Quick resolution of field issues is made possible with smart water alarms including leak detection, reverse flow, empty pipe, magnetic tamper and low battery. When integrated with our FlexNet® communication network, remotely gathering and transmitting data has never been more reliable or profitable.
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#### Smart Alarms

iPERL meters have many configurable smart alarms designed to protect your utility’s investment, enhance customer service, and monitor/optimize distribution systems. These alarms include:

- **Empty Pipe**
  Detects the absence of water in the flow tube and sends an alert. Allows you to identify main breaks downstream and water shortages for quicker resolution to ensure water availability. This alarm can also indicate the water meter has been removed from service, or notify you of potential tamper.

- **Tampering**
  Detect magnetic interference to reduce apparent water losses and protect against unauthorized activities.

- **Customer Leak**
  Detect continual consumption of water over a period of time to indicate downstream leaks. This protects your utility, infrastructure and customers through alarm notifications that can reduce water loss and leak adjustment costs.

- **Low Battery**
  Replace your meters before they stop recording consumption through alerts indicating battery capacity to the meter or valve is running low.

- **Reverse Flow**
  Keep untreated water from re-entering your distribution system and deter tampering attempts through an alarm triggered when reverse flow is detected at the meter.

#### SPECIFICATIONS

|---------|--------------------------------------------------------------------------------------------------|
| **Temperature Ranges** | Water operating: 33 °F (0.55 °C) to 80 °F (26.7 °C)  
Ambient air operating: -22 °F (-30 °C) to 140 °F (60 °C)  
Storage air: -30 °F (-34.4 °C) to 158 °F (70 °C) |
| **Starting Flow** | 5/8" (DN 15 mm) size: 0.03 gpm (0.007 m3/h)  
5/8" x 3/4" (DN 15x20 mm) size: 0.03 gpm (0.007 m3/h)  
3/4" (DN 20 mm) size: 0.03 gpm (0.007 m3/h)  
1" (DN 25 mm) size: 0.11 gpm (0.025 m3/h) |
| **Low Flow Range (±3%)** | 5/8" (DN 15 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)  
5/8" x 3/4" (DN 15x20 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)  
3/4" (DN 20 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)  
1" (DN 25 mm) size: >0.3 gpm (0.068 m3/hr) to <0.4 gpm (0.09 m3/hr) |
| **Normal Water Operating Flow Range (±1.5%)** | 5/8" (DN 15 mm) size: 0.18 to 25 gpm (0.04 to 5.7 m3/hr)  
5/8" x 3/4" (DN 15x20 mm) size: 0.18 to 35 gpm (0.04 to 8.0 m3/hr)  
3/4" (DN 20 mm) size: 0.18 to 35 gpm (0.04 to 8.0 m3/hr)  
1" (DN 25 mm) size: 0.4 to 55 gpm (0.09 to 12.5 m3/hr) |
| **Maximum Operating Pressure** | 5/8", 5/8" x 3/4", and 3/4" size: 200 psi (13.8 bar)  
1" size: 175 psi (12.1 bar) |
| **Measurement Technology** | Solid state electromagnetic flow |
| **Register** | Hermetically sealed, 9-digit programmable electronic register |
| **Capacity** | 10,000,000 gallons, 1,000,000 cubic feet or 100,000 m3 capacity. |
| **Register Resolution** | .01 gallons/imperial gallons, .001 cubic foot, or .0001 m3. |
| **Conformance to Standards** | Meets the requirements of NSF 61, Annex G and NSF 372. Exceeds the most current revision of AWWA Standard C-715. |
| **Materials** | External housing – Thermal plastic  
Flowtube – Polyphenylene sulfide alloy  
Electrode – Silver/silver chloride  
Register cover – Tempered glass |
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DIMENSIONS AND NET WEIGHTS

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Spud Ends</th>
<th>NPSM Thread Size</th>
<th>Width</th>
<th>Net Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot; (DN 15 mm)</td>
<td>7-1/2&quot; (190 mm)</td>
<td>6-1/10&quot; (155 mm)</td>
<td>1-3/4&quot; (44 mm)</td>
<td>5/8&quot; (15 mm)</td>
<td>3/4&quot; (20 mm)</td>
<td>4-1/2&quot; (114 mm)</td>
<td>3.1 lb. (1.4 kg)</td>
</tr>
<tr>
<td>5/8&quot; x 3/4&quot; (DN 15mm x 20 mm)</td>
<td>7-1/2&quot; (190 mm)</td>
<td>6-1/10&quot; (155 mm)</td>
<td>1-3/4&quot; (44 mm)</td>
<td>3/4&quot; (20 mm)</td>
<td>1&quot; (25 mm)</td>
<td>4-1/2&quot; (114 mm)</td>
<td>3.1 lb. (1.4 kg)</td>
</tr>
<tr>
<td>3/4&quot; Short (DN 20 mm)</td>
<td>7-1/2&quot; (190 mm)</td>
<td>6-1/10&quot; (155 mm)</td>
<td>1-3/4&quot; (44 mm)</td>
<td>3/4&quot; (20 mm)</td>
<td>1&quot; (25 mm)</td>
<td>4-1/2&quot; (114 mm)</td>
<td>3.1 lb. (1.4 kg)</td>
</tr>
<tr>
<td>3/4&quot; (DN 20 mm)</td>
<td>9&quot; (229 mm)</td>
<td>6-1/10&quot; (155 mm)</td>
<td>1-3/4&quot; (44 mm)</td>
<td>3/4&quot; (20 mm)</td>
<td>1&quot; (25 mm)</td>
<td>4-1/2&quot; (114 mm)</td>
<td>3.2 lb. (1.45 kg)</td>
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<tr>
<td>1&quot; (DN 25 mm)</td>
<td>10-3/4&quot; (273 mm)</td>
<td>6-1/10&quot; (155 mm)</td>
<td>1-3/4&quot; (44 mm)</td>
<td>1&quot; (25 mm)</td>
<td>1-1/4&quot; (32 mm)</td>
<td>4-1/2&quot; (114 mm)</td>
<td>3.3 lb. (1.5 kg)</td>
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</tbody>
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Head Loss Curves

5/8" iPERL

5/8" x 3/4" and 3/4" Short iPERL

3/4" iPERL

1" iPERL