iTHERM CompactLine TM311 - Pt100 temperature sensor

Compact, accurate and fast RTD sensor with IO-Link for sterile applications

Benefits:
- Fast installation and easy commissioning:
  - Compact dimensions for installation in tight spaces
  - Standard M12 connector with IP69 for easy electrical connection
  - Recommended process immersion lengths for optimum measurement
  - Preset temperature range
- Excellent temperature measurement performance:
  - Short response times as low as 1.5 s (t90)
  - High sensor accuracy even with short immersion lengths
  - Improved measuring accuracy with transmitter-sensor matching
- Safe and reliable operation:
  - Device safety to EN 610101-1 and CSA C/US
  - Electromagnetic compatibility (NAMUR NE 21)
  - Device diagnostic information (NAMUR NE 43)
  - Hygienic design manufactured from high-grade stainless steel
  - Marine approval

Specs at a glance
- **Accuracy** class A acc. to IEC 60751
- **Response time** \( t_{50} = 1 \text{ s} \quad t_{90} = 1.5 \text{ s} \)
- **Max. process pressure (static)** at 20 °C: 50 bar (725 psi)
- **Operating temperature range** PT 100: -50 °C ...200 °C (-58 °F ...392 °F)
- **Max. immersion length on request** up to 600,00 mm (23.62”)

Field of application: iTHERM CompactLine TM311 sanitary thermometer provides accurate and fast process temperature measurements in hygienic and aseptic applications. Its temperature
sensor offers a 4-wire connection or feeds into a smart temperature transmitter with 4 to 20 mA, IO-Link (auto-detect) or switch output. Featuring TipSens technology, the RTD (Pt100; Class A) delivers response times as low as 1.5 s (t90) for optimum process control. This versatile device is a great choice to drive plant standardization.

Features and specifications

<table>
<thead>
<tr>
<th>Thermometer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measuring principle</strong></td>
</tr>
<tr>
<td>Resistance Temperature Detector</td>
</tr>
<tr>
<td><strong>Characteristic / Application</strong></td>
</tr>
<tr>
<td>metric and imperial style</td>
</tr>
<tr>
<td>compact temperature probe</td>
</tr>
<tr>
<td>fast response time</td>
</tr>
<tr>
<td>high accuracy</td>
</tr>
<tr>
<td>standard and hygienic design</td>
</tr>
<tr>
<td>hygienic process connection</td>
</tr>
<tr>
<td>threaded process connection</td>
</tr>
<tr>
<td><strong>Thermowell / protection tube</strong></td>
</tr>
<tr>
<td>without</td>
</tr>
<tr>
<td>incl. thermowell</td>
</tr>
<tr>
<td>incl. Tee-/elbow thermowell</td>
</tr>
<tr>
<td><strong>Insert / probe</strong></td>
</tr>
<tr>
<td>pipe version, isolated wires, not flexible</td>
</tr>
<tr>
<td><strong>Outer diameter protection tube / Insert</strong></td>
</tr>
<tr>
<td>3,0 mm (0,12&quot;)</td>
</tr>
<tr>
<td>6,0 mm (0,24&quot;)</td>
</tr>
<tr>
<td><strong>Max. immersion length on request</strong></td>
</tr>
<tr>
<td>up to 600,00 mm (23,62&quot;)</td>
</tr>
<tr>
<td><strong>Material protection tube/ thermowell</strong></td>
</tr>
<tr>
<td>1.4435 Delta-Ferrit &lt; 1%</td>
</tr>
<tr>
<td>316L</td>
</tr>
</tbody>
</table>
Thermometer

**Process connection**
- compression fitting
- Thread
- weld in adapter
- clamp connections acc. to ISO2852
- screwed pipe joint acc. to DIN 11851
- aseptic screwed pipe joint acc. to DIN 11864-1
- metallic sealing system
- thread acc. to ISO 228 for liquiphant adaptor
- Varivent
- SMS 1147
- Tee-/elbow thermowell

**Tip shape**
- straight
- reduced

**Surface roughness Ra**
- 0.76 μm (29.92 μin)
- 0.38 μm (14.96 μin)
- 0.38 μm (14.96 μin) electropolished

**Operating temperature range**
- PT 100:
  - -50 °C ...200 °C
  - (-58 °F ...392 °F)

**Max. process pressure (static)**
- at 20 °C: 50 bar (725 psi)

**Accuracy**
- class A acc. to IEC 60751

**Response time**
- t50 = 1 s
- t90 = 1.5 s
Thermometer

Integration head transmitter
no (4...20mA Signal, IO-Link)

Certification
3A, EHEDG, ASME BPE, FDA, TSE
DNVGL, BV
CSA C/US General Purpose
RCM

More information www.us.endress.com/TM311