iTHERM TM412
Imperial Hygienic Thermometer, US style

For use in hygienic and aseptic applications in the Food & Beverages and Life Sciences industries

Benefits:
- User-friendly and reliable from product selection to maintenance
- iTHERM inserts: globally unique, fully-automated production. Full traceability and consistently high product quality for reliable measured values
- iTHERM QuickSens: fastest response times (t90s: 1.5 s) for optimum process control
- iTHERM StrongSens: unsurpassed vibration resistance (> 60g) for ultimate plant safety
- iTHERM QuickNeck – cost and time savings thanks to simple, tool-free recalibration
- iTHERM TA30R: 316L terminal head for easier handling and lower installation and maintenance costs, and with highest IP69K rating
- International certification: explosion protection e.g. ATEX/IECEx/FM/CSA and in compliance with hygiene standards according to 3-A, EHEDG, ASME BPE, FDA, TSE Certificate of Suitability

Specs at a glance
- **Accuracy** class B acc. to IEC 60751 class A acc. to IEC 60751 class AA acc. to IEC 60751
- **Response time** depending on configuration QuickSens: t90 = 1,5 s StrongSens: t90 = 9,5 s
- **Max. process pressure (static)** at 20 °C: 40 bar (580 psi)
- **Operating temperature range** PT100 WW: -200 °C ... 600 °C (-328 °F ... 1.112 °F) StrongSens: -50 °C ... 500 °C (-58 °F ... 932 °F)
Field of application: It has been designed to meet the requirements of the Food & Beverages and Life Sciences industries and complies with the highest quality standards. It offers a variety of versions within a clearly segmented standard product. The result: Time and cost savings by simple and fast product selection. It offers many technical innovations: iTHERM QuickSens, StrongSens or QuickNeck. This leads to distinctive reduction of maintenance costs, improved product quality, process efficiency and safety.

Features and specifications

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<td>Resistance Temperature Detector</td>
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<td><strong>Characteristic / Application</strong></td>
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<td>modular temperature assembly</td>
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<td>suitable for hazardous areas</td>
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<td>QuickSens for fastest response time</td>
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<td>StrongSens for most robust design</td>
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<td>QuickNeck for easy and cost saving recalibration</td>
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<tr>
<td><strong>Thermowell / protection tube</strong></td>
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Thermometer

**Insert / probe**
mineral insulated (MI), flexible pipe version, isolated wires, not flexible

**Outer diameter protection tube / Insert**
- 1/4" (6.35 mm)
- 3/8" (9.53 mm)
- 1/2" (12.7 mm)

**Max. immersion length on request**
- 48"

**Material protection tube / thermowell**
- 316L

**Process connection**
- Weld-in adapter
- Tri-clamp
- Clamp-connections according to ISO2852
- G3/4" Liquiphant
- G1" Liquiphant
- Varivent
- T- and corner pieces

**Tip shape**
- straight
- reduced

**Surface roughness Ra**
- 30 μin (0.76 μm)
- 15 μin (0.38 μm)
- 15 μin (0.38 μm) electropolished
Thermometer

**Operating temperature range**
- PT100 WW: -200 °C ... 600 °C (-328 °F ... 1.112 °F)
- StrongSens: -50 °C ... 500 °C (-58 °F ... 932 °F)
- QuickSens: -50 °C ... 200 °C (-58 °F ... 392 °F)
- PT100 TF: -50 °C ... 200 °C

**Max. process pressure (static)**
at 20 °C: 40 bar (580 psi)

**Accuracy**
class B acc. to IEC 60751
class A acc. to IEC 60751
class AA acc. to IEC 60751

**Response time**
depending on configuration
- QuickSens: t90 = 1,5 s
- StrongSens: t90 = 9,5 s

**Integration head transmitter**
yes (4 ... 20 mA; HART; PROFIBUS PA; FOUNDATION FIELDBUS)

**Ex - approvals**
- ATEX II
- ATEX IECEx
- FM
- CSA

**Certification**
SIL (transmitter only)
More information [www.us.endress.com/TM412](http://www.us.endress.com/TM412)