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><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 elbow thermowell

**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
(-58 °F ... 392 °F)

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)
Thermometer

**Ex - approvals**
ATEX II 3 G Ex nA IIC T6, II3D  
CSA General Purpose, CSA C/US  
CSA C/US IS, NI I/1+2/A-D  
CSA NI I/2/A-D  
CSA IS, NI I/1+2/A-D  
FM NI I / 2/A-D  
FM IS, NI I/1+2/A-D  
ATEX IECEx II1G Ex ia IIC T6 Ga  
FM+CSA IS, NI I/1+2/A-D  
ATEX IECEx II1/2D Ex tb IIIC Da/Db  
ATEX IECEx II1/2G Ex ia IIC T6 Ga/Gb  
ATEX IECEx II1/2D Ex ia IIIC Da/Db

**Certification**
SIL (transmitter only)

More information [www.us.endress.com/TM412](http://www.us.endress.com/TM412)