

# iTHERM TM412

## Imperial Hygienic Thermometer, US style

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



More information and current pricing:

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

### 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)

°F) QuickSens: -50 °C ... 200 °C (-58 °F ... 392 °F) PT100 TF: -50 °C ... 200 °C (-58 °F ... 392 °F)

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

**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

### Thermometer

#### Measuring principle

Resistance Temperature Detector

#### Characteristic / Application

imperial style

modular temperature assembly

hygienic/aseptic design (3-A®, EHEDG, ASME BPE, FDA)

hygienic process connections

with neck

suitable for hazardous areas

incl. protection tube

QuickSens for fastest response time

StrongSens for most robust design

QuickNeck for easy and cost saving recalibration

#### Thermowell / protection tube

without

incl. thermowell

incl. T-/ellbow thermowell

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**Thermometer****Insert / probe**

mineral insulated (MI), flexible  
pipe version, isolated wires, not flexible

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**Outer diameter protection tube / Insert**

1/4" (6,35 mm)  
3/8" (9,53 mm)  
1/2" (12,7 mm)

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**Max. immersion length on request**

48"

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**Material protection tube/ thermowell**

316L

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**Process connection**

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

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**Tip shape**

straight  
reduced

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**Surface roughness Ra**

30 µin (0,76 µm)  
15 µin (0,38 µm )  
15 µin (0,38 µm) electropolished

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## 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)

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### Max. process pressure (static)

at 20 °C: 40 bar (580 psi)

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### Accuracy

class B acc. to IEC 60751

class A acc. to IEC 60751

class AA acc. to IEC 60751

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### Response time

depending on configuration

QuickSens:  $t_{90} = 1,5 \text{ s}$

StrongSens:  $t_{90} = 9,5 \text{ s}$

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### Integration head transmitter

yes (4 ... 20 mA; HART; PROFIBUS PA; FOUNDATION  
FIELDBUS)

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## 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

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### Certification

SIL (transmitter only)

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