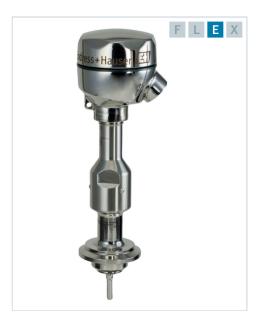# iTHERM TM412 Imperial Hygienic Thermometer, US style

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

F L E X

More information and current pricing:

www.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 ℃: 40 bar (580 psi)
- **Operating temperature range** PT100 WW: -200 ℃ ... 600 ℃ (-328 ℉ ... 1.112 ℉) StrongSens: -50 ℃ ... 500 ℃ (-58 ℉ ... 932

Endress+Hauser [EH]

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

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)

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.endress.com/TM412**