

# Sanitary digital thermometer iTHERM TM411

Hygienic temperature measurement instrument for optimum product quality, process safety and efficiency



More information and current pricing:

[www.endress.com/TM411](http://www.endress.com/TM411)

## Benefits:

- Optimum process control: Fast sensor response times with iTHERM QuickSens technology (t<sub>90</sub>: 1.5 s)
- Up to 75% faster and safer recalibrations with iTHERM QuickNeck – tool-free quick-release for instant insert removal
- High sensor availability under rough conditions: Vibration resistant RTD technology iTHERM StrongSens (> 60g)
- Easy product selection, configuration and maintenance
- Increase productivity and product safety in sanitary applications with highly accurate and reliable measurements
- Thermowells, hygienic process connections and housings expertly manufactured from high-grade materials treated for low surface roughness

## Specs at a glance

- **Accuracy** class A acc. to IEC 60751 class AA acc. to IEC 60751
- **Response time** depending on configuration QuickSens: t<sub>90</sub> = 1,5 s StrongSens: t<sub>90</sub> = 9,5 s
- **Max. process pressure (static)** at 20 °C: 40 bar (580 psi)
- **Operating temperature range** PT100: -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)

**Field of application:** The modular sanitary thermometer iTHERM TM411 with digital display delivers highly accurate, reliable and fast temperature measurements in process lines, vessels, tanks, fermenters and more. The high-performance device is designed for the strictly regulated food and life sciences industries. Configure your hygienic

instruments from a selection of thin film RTDs with QuickSens or StrongSens technology or 2x Pt100 wire wound temperature sensors, smart transmitters and hygienic process connections.

## Features and specifications

### Thermometer

#### Measuring principle

Resistance Temperature Detector

#### Characteristic / Application

metric 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

#### Insert / probe

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

#### Outer diameter protection tube / Insert

6,0 mm (0,24")  
9,0 mm (0,35")  
12,7 mm (0,5")

#### Material protection tube/ thermowell

1.4435 delta-ferrit < 1%  
316L

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## Thermometer

### Process connection

compression fitting  
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 liquid adaptor  
APV Inline  
Varivent  
Ingold  
SMS 1147  
Neumo Biocontrol  
T- and corner pieces

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### Tip shape

straight  
reduced  
tapered

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### Surface roughness Ra

0,76 µm (29,92 µin)  
0,38 µm (14,96 µin)  
0,38 µm (14,96 µin) electropolished

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### Operating temperature range

PT100:  
-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)

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### Max. process pressure (static)

at 20 °C: 40 bar (580 psi)

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## Thermometer

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### Accuracy

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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### Ex - approvals

ATEX II  
ATEX IECEX  
FM  
CSA  
CRN  
JPN  
JPN Ex ia

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### Certification

SIL (transmitter only)

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