Temperature and System Products

Next Level Hygienic: Complete offering for the Food & Beverage and Life Sciences industries

For more information please visit
https://eh.digital/next-level-hygienic

Endress+Hauser
People for Process Automation

Endress+Hauser offers innovative temperature sensors and assemblies, system products, accessories, software solutions and related services for hygienic, sterile and aseptic applications in the food & beverage and life sciences industries governed by stringent quality and safety regulations. All products and services are designed to comply with international standards and help reduce costs, increase product safety and plant availability.

Temperature measurement

Spearheading the hygienic portfolio is the globally recognized iTHERM TrustSens TM371 temperature sensor capable of fully-automated inline self-calibration. In combination with the Memograph M RSG45 advanced data manager the bundle offers unprecedented calibration monitoring capabilities.

Modular temperature assemblies such as the iTHERM TM411 feature record-setting performance characteristics and technologies for safe operation and fast and easy maintenance.

The iTHERM CompactLine TM311 provides accurate and fast process temperature measurements in hygienic and aseptic applications.

System Products

The Memograph M RSG45 is an advanced data manager with excellent connectivity for safe, flexible and intuitive handling of process values.

The Ecograph T RSG35 universal data manager is a simple yet highly effective solution for tamper-proof data recording.

The RMA42 universal transmitter and process control unit combines loop power supply, barrier and limit switch in one device.

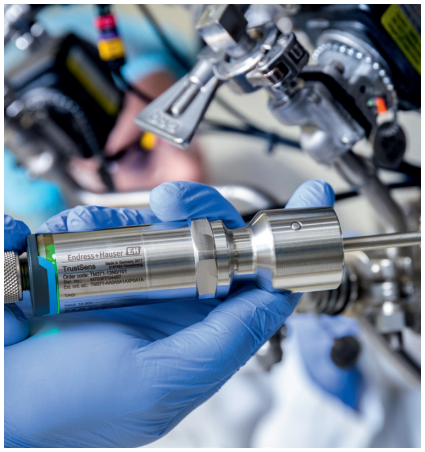
Ideally completing the measurement loop is the RIA15 process indicator capable of handling 4 to 20 mA and optionally HART® values.

Temperature transmitters

The new iTEMP TMT72 HART 7 temperature transmitter offers high accuracy, easy commissioning and valuable diagnostics information.

4 Temperature instruments

Hygienic compact or modular design, innovative features, excellent performance



20 Temperature transmitters

Accurate, stable and reliable signal transmitters, smart diagnostics

24 System products

Seamless connectivity, process integration and powerful data visualization, tamper-proof recording, storage and processing

Temperature instruments

Temperature transmitters

System products

Temperature instruments
Selection guide

Product	Calibration capabilities	Min. response time (t_{90})	Ex	Communication / Output: 4 to 20 mA	HART®	PROFIBUS	FOUNDATION™ Fieldbus	IO-Link	Highlights & features
iTHERM TrustSens TM371	■ ■ ■ ■ ■	■ ■ ■ ■ ■ t_{90} = 5.4 s	✔	✔	✔	-	-	-	Self-calibration Heartbeat Technology
iTHERM TM411	■ ■ ■ ■ ■	■ ■ ■ ■ ■ t_{90} = 0.75 s	✔	✔	✔	✔	✔	-	iTHERM QuickNeck iTHERM QuickSens iTHERM StrongSens
iTHERM TM401	■ ■ ■ ■ ■	■ ■ ■ ■ ■ t_{90} = 9 s	-	✔	✔	-	-	-	Price/performance
iTHERM TM311	■ ■ ■ ■ ■	■ ■ ■ ■ ■ t_{90} = 2 s	-	✔	-	-	-	✔	Device status, diagnostics Compact form factor Price/performance
Easytemp TMR35	■ ■ ■ ■ ■	■ ■ ■ ■ ■ t_{90} = 2 s	-	✔	-	-	-	-	Compact form factor Price/performance

For more information please visit
https://eh.digital/next-level-hygienic

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System products

Data managers, control units and indicators

	Product	Inputs	Display	Data logging	Power supply	Communication				
						4 to 20 mA	HART®	PROFINET	EtherNet/IP	Modbus
	Memograph M RSG45	20 Universal/HART	7″ TFT Web server	✔	✔	✔	✔	✔	✔	✔
	Memograph M RSG45 DIN rail	20 Universal/HART	Web server	✔	✔	✔	✔	✔	✔	✔
	Ecograph T RSG35	12 Universal	5.7″ TFT Web server	✔	✔	✔	-	-	-	✔
	RMA42	2 Universal	5-digit 7 segment backlit	-	✔	✔	-	-	-	-
	RIA15	-	17 mm 5-digit 7 segment	-	Loop	✔	✔	-	-	-

PU01227T/09/EN/03.22

For more information please visit
https://eh.digital/next-level-hygienic

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iTHERM Easytemp TMR3x

Compact hygienic thermometer

Compact, fast and precise

iTHERM Easytemp TMR31 and TMR35 compact temperature probes with best-in-class hygienic design are aimed at applications in the life sciences and the food & beverage industries.

The devices feature outstanding sensor technology for fast, accurate and reliable readings while offering an excellent price/performance ratio and a compact design for optimal use of space, easy installation and commissioning.

Your benefit

Value	Benefit	Feature
Risk and cost reduction	▪ Quick installation and easy commissioning	▪ Small, compact design, M12 connector
Increased process safety and control	▪ Faster detection of temperature changes	▪ Extremely quick sensor response times
100 % compliance	▪ Fit for all hygienic applications ▪ Full device traceability ▪ Time savings during audit preparation	▪ International certifications and approvals ▪ Laser-engraved serial number on each device ▪ Calibration certificate available 24/7 online

Application

- Specially designed for use in hygienic and aseptic applications in the food & beverage and life sciences industries
- International certifications and approvals:
  EHEDG, FDA, 3-A, 1935/2004, 2023/2006 (GMP)
- Large choice of sterile and hygienic process connections as standard

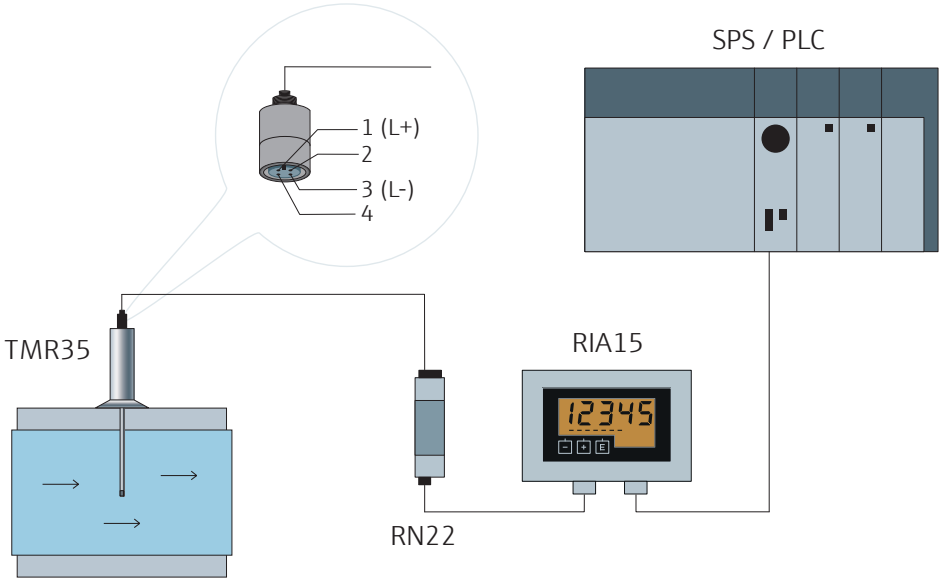
For more information please visit
www.endress.com/tmr31
www.endress.com/tmr35

Endress+Hauser
People for Process Automation

iTHERM Easytemp TMR3x specifications

- Measuring range: -50 to 200 °C (-58 to 392 °F)
- Pressure range: up to 100 bar (1,450 psi)
- Protection class: up to IP69K
- Communication: analog output 4 to 20 mA
- Response time: t_{90} = 2 s

System integration



Integrated offering

System component	Feature
Display unit RIA15	▪ Display of 4 to 20 mA measured values or HART® process variables ▪ Loop-powered; Voltage drop ≤1 V (HART® ≤1.9 V)
Active barrier RN22	▪ Galvanic signal barrier & transmitter power supply RN22 ▪ Front-side HART® connection lugs
Endress+Hauser Service	▪ Commissioning service ensures optimal startup ▪ Technical experts are always on call to support with product queries ▪ Calibration service

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For more information please visit
www.endress.com/tmr31
www.endress.com/tmr35

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iTHERM CompactLine TM311

Digital compact thermometer

Compact, universal and digital

The iTHERM CompactLine TM311 digital compact thermometer with IO-Link is an easy to install, fit for purpose, IIoT ready temperature probe that fulfills the design and performance requirements for the life sciences, food & beverage and general process industries.

The instrument simplifies device specification, system integration, bills of material, drawings and inventory control by offering a self-detecting universal output (IO-Link and 4 to 20 mA) and numerous options for hygienic and industrial process connections in a single device.

IO-Link

Your benefit

Value	Benefit	Feature
Cost reduction	▪ One product for all application requirements ▪ Simple and fast device commissioning ▪ Reduction of stockable items	▪ Self-detecting universal output ▪ Automatable parameter download ▪ TipSens technology drastically reduces the required immersion length
Increased process safety	▪ High precision of digital sensor signal ▪ Availability of diagnostics and remote access	▪ Digital communication in IO-Link ▪ Diagnostics according to NE 107
100 % compliance	▪ Best-in-class hygienic design ▪ Fit for all applications	▪ International certifications and approvals ▪ Large variety of process connections

Application

- Self-detecting universal output in IO-Link and 4 to 20 mA – a perfect device for OEMs to standardize for their business
- Tested and verified integration with systems from Rockwell Automation, Turck and Siemens
- Best-fit-product for hygienic and aseptic as well as industrial applications where size and price/performance matters

For more information please visit:
www.endress.com/tm311

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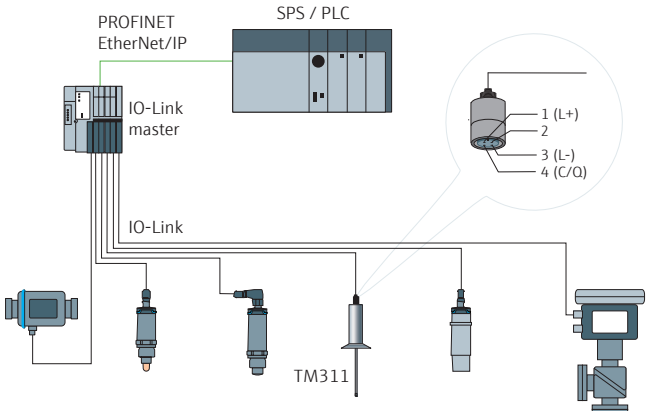
iTHERM CompactLine TM311 specifications

Temperature range:	-50 to 200 °C (-58 to 392 °F)	
Pressure range:	up to 50 bar (725 psi)	
Signal output:	Pt100, analog 4 to 20 mA, IO-Link, switch	
Response time:	t_{90} = 2 s (direct contact)	t_{90} = 3 s (with thermowell)
Accuracy:	≤ 0.48 °C (standard)	≤ 0.14 °C (transmitter-sensor matching)

System integration and services

The iTHERM CompactLine TM311 with integrated transmitter auto-detects connection settings and selects the correct output communication: IO-Link or 4 to 20 mA.

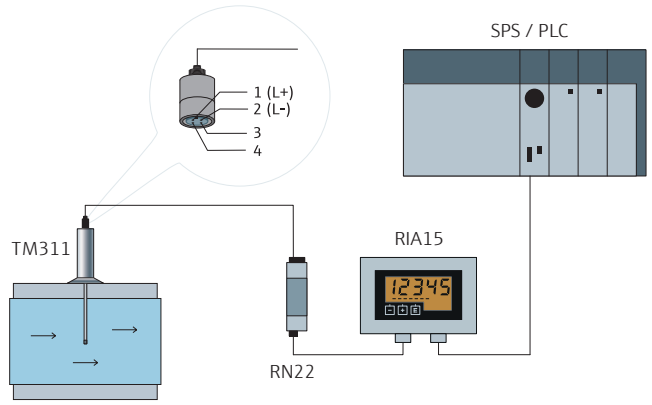


M12 connection with IO-Link communication mode

Related offering

System component	Feature
IO-Link master BL20	▪ Recommened reference component from Turck
FieldPort SFP20	▪ Device configuration with DeviceCare, FieldCare, Field Xpert

Advantages of digital communication
- Digital process value
- Status and diagnostics
- No scaling
- Plug & play device exchange



M12 connection with 4 to 20 mA communication mode

Related offering

System component	Feature
Display unit RIA15	▪ Display of 4 to 20 mA values ▪ Loop-powered
Active barrier RN22	▪ Galvanic signal barrier & transmitter power supply RN22
FieldPort SFP20	▪ Device configuration with DeviceCare, FieldCare, Field Xpert

Endress+Hauser Service
- Commissioning service ensures optimal startup
- Technical experts are always on call to support with product queries
- Calibration service

For more information please visit:
www.endress.com/tm311

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People for Process Automation

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iTHERM TrustSens TM37x

World's first self-calibrating thermometer

Simple & affordable innovation

The world's first self-calibrating compact thermometer iTHERM TrustSens TM371 and TM372 is designed for applications in the life sciences and food & beverage industries that require seamless compliance to FDA regulations and/or GMP rules.

The device's award-winning sensor technology performs fully automated, fully traceable inline self-calibrations, eliminating the risk of undetected non-conformities. Maximize your product safety, process efficiency and plant availability while reducing effort and costs.

Heartbeat Technology

Ex

HERMES AWARD 2018

Winner of the 2018 HERMES AWARD

Your benefit

Value	Benefit	Feature	Supporting documents
Risk and cost reduction	▪ Higher product safety ▪ Reduced plant downtime	▪ Fully automated inline self-calibration at 118 °C (244.4 °F) ▪ Heartbeat Technology	TÜV certificates for long term stability, traceability, measurement uncertainty
100% compliance and audit-proof documentation	▪ Fully traceable calibration ▪ Fully automated documentation	▪ Built-in, traceable fixed-point reference ▪ Print/upload calibration certificate ▪ Memory for 350 calibration points	Calibration certificate of the integrated reference for each thermometer
Elimination of undetected failures	▪ Higher process safety ▪ Higher process transparency	▪ Heartbeat Technology ▪ Drift monitoring ▪ Programmable warning limit, failure limit, calibration counter	Technical documentation

Application

- Specially designed for use in hygienic and aseptic applications in the food & beverage and life sciences industries
- International certifications and approvals:
  EHEDG, ASME BPE, FDA, 3-A, 1935/2004, 2023/2006 (GMP), 10/2011, CE, CRN, TSE, CSA General Purpose, Explosion protection, e.g. ATEX/IECEx
- Permanent automatic device verification without process interruption with Heartbeat Technology

For more information please visit
www.endress.com/trustsens

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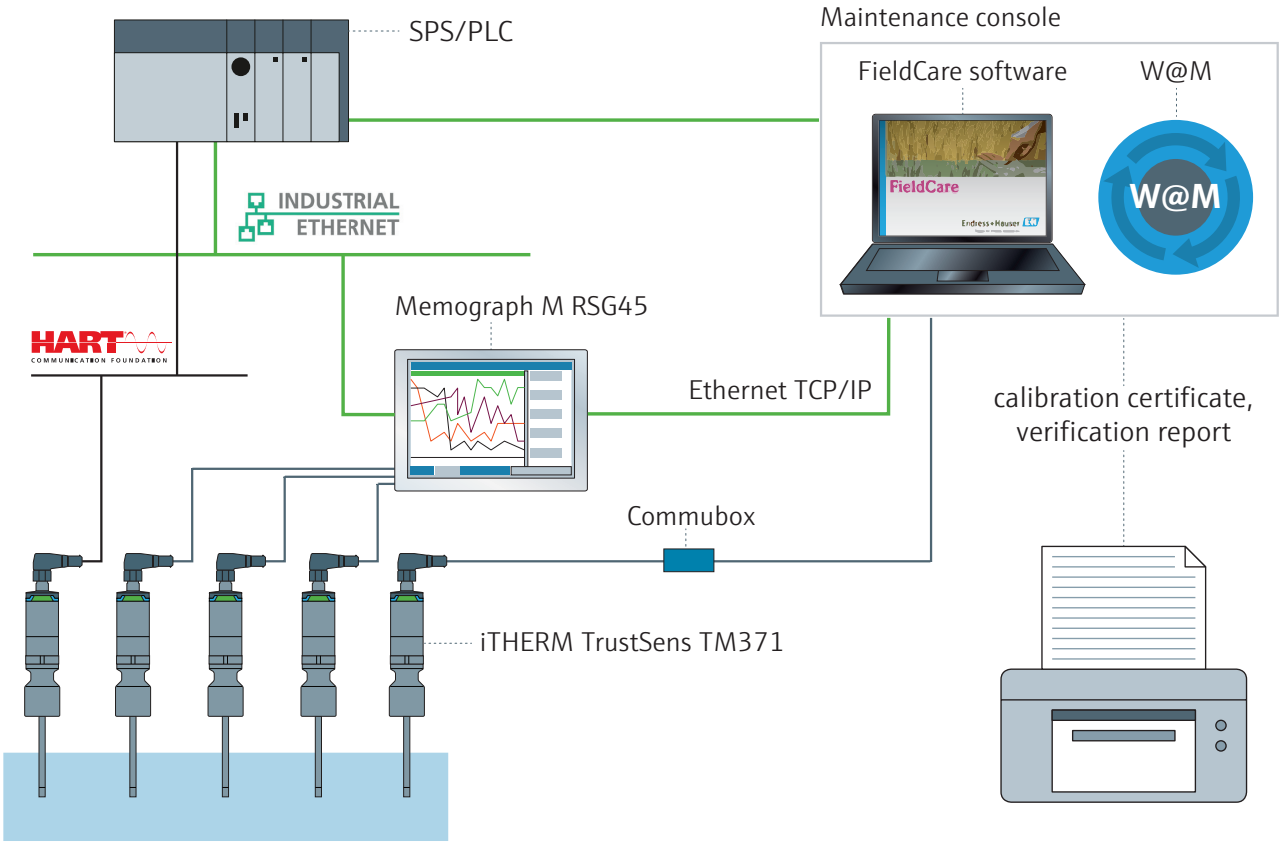
iTHERM TrustSens TM37x specifications

- Measuring range: –40 to 190 °C (–40 to 374 °F)
- Pressure range: up to 50 bar (725 psi)
- Protection class: IP67/68 or IP69K
- Signal output: analog 4 to 20 mA, HART®

System integration



Integrated product and service offering

System component	Feature
Data manager Memograph M RSG45	▪ Tamper-proof data storage, FDA 21 CFR part 11 compliant (via Field Data Manager Software) ▪ iTHERM TrustSens calibration monitoring with time stamp (built-in real-time clock)
Display unit RIA15	▪ Display of 4 to 20 mA measured values or up to four HART® process variables ▪ Loop-powered; Voltage drop ≤1 V (HART® ≤1.9 V) ▪ Displays values such as: temperature, electronics temperature, calibration counter, calibration deviation
Field Data Manager Software MS20	▪ Archiving and real-time visualization of historical measured values, diagnostic events and protocols ▪ Automatic service for report generation and printing, data read out, storing and export
Netilion cloud-based IIoT ecosystem	▪ For secure decentralized process & asset monitoring around the clock ▪ Legally compliant documentation & reporting, including audit- andinspection-proof calibration certificates
FieldPort SWA50	▪ Communication via Bluetooth®/ Wireless HART®

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For more information please visit
www.endress.com/trustsens

Endress+Hauser
People for Process Automation

iTHERM TrustSens Calibration Monitoring

Automated temperature measurement solution

100% compliance, 0% effort

With automated iTHERM TrustSens calibration monitoring, Endress+Hauser offers optimized process verification and higher safety at minimum effort to users in the life sciences and food & beverage industries.

The bundle consisting of iTHERM TrustSens TM371 self-calibrating temperature sensor, Memograph M RSG45 data manager and FDM Software offers FDA-compliant process verification, automated, audit-proof documentation and enables predictive maintenance.

iTHERM TrustSens
TM371, TM372

Memograph M RSG45
Memograph M RSG45 DIN rail

Your benefit

Value	Benefit	Feature
Risk reduction and elimination of undetected failures	▪ Higher process transparency ▪ Higher product safety	▪ Fully automated inline self-calibration ▪ Heartbeat Technology
100% compliance and audit-proof documentation	▪ Fully traceable calibration with automated documentation ▪ Tamper-proof data storage according to FDA 21 CFR Part 11 ▪ Predictive maintenance ▪ Calibration with timestamp	▪ Built-in fixed point reference ▪ Calibration history ▪ Deviation analysis and forecast ▪ Built-in real time clock (data manager Memograph M RSG45)

Use cases

- Asset management
- Process validation and documentation
- Monitoring of self-calibrations, generating calibration history
- Tamper-proof data storage, fully compliant according to FDA 21 CFR Part 11
- Automated generation of calibration certificates
- Deviation forecast
- Predictive maintenance

Download our whitepaper!
eh.digital/2m6Rjt2 (PDF)

For more information please visit
www.endress.com/trustsens

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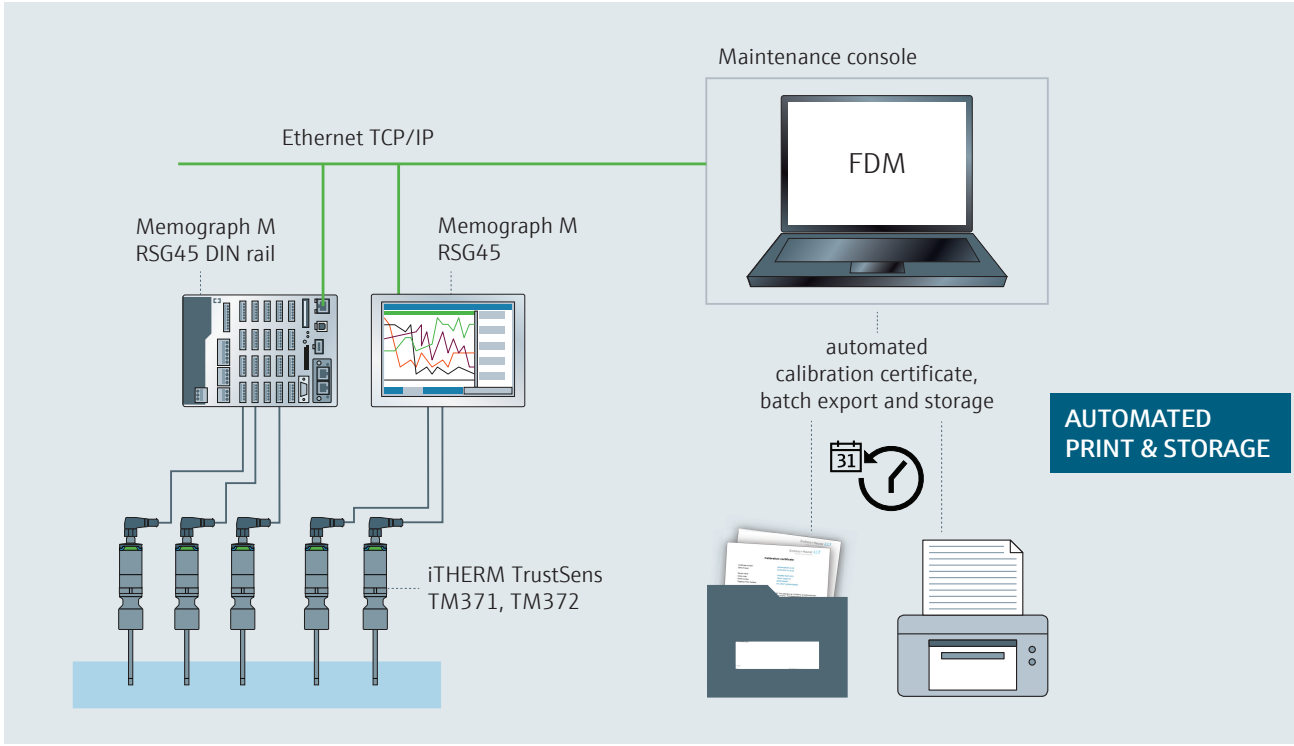
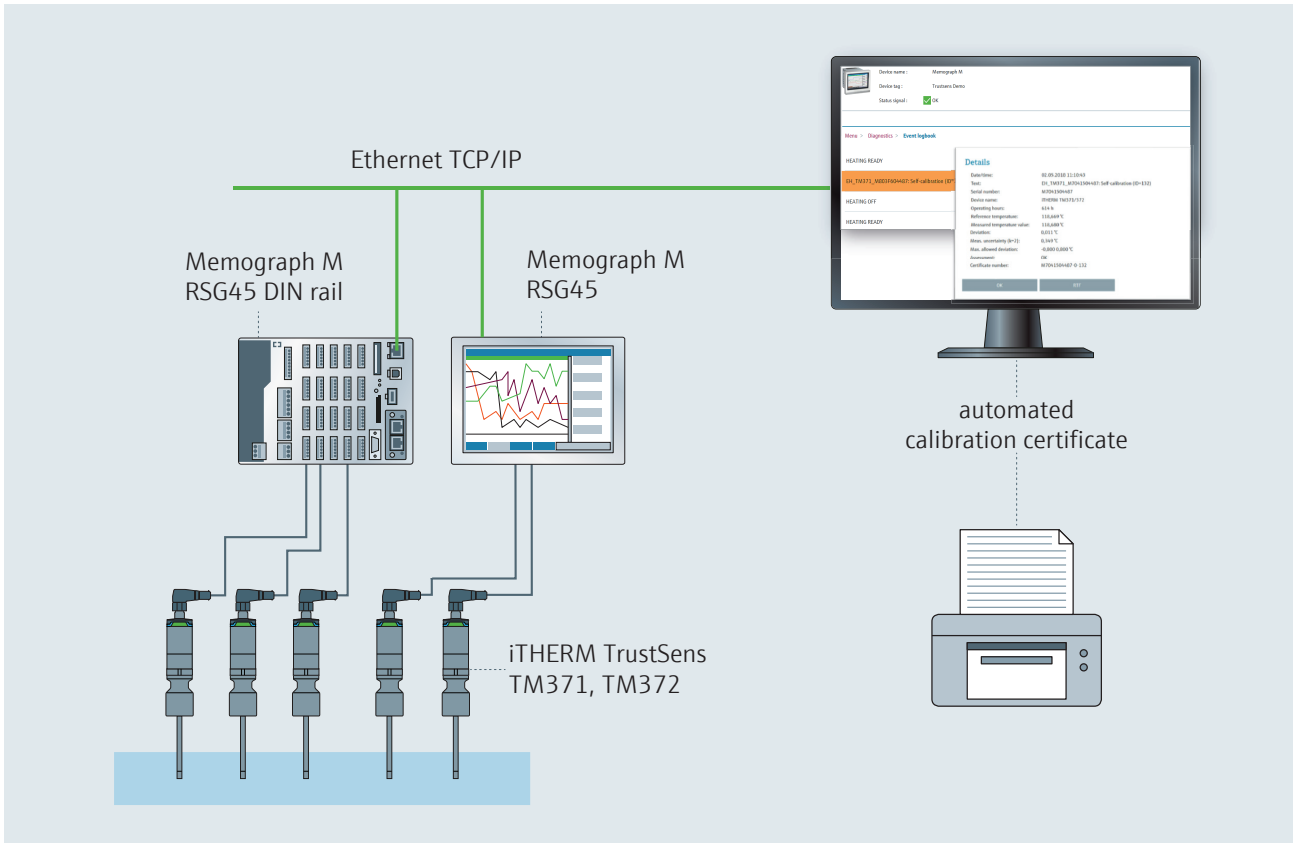
Automated creation and storage of calibration certificates in FDM Software



Web server: Setup/Diagnosis/Print



For more information please visit
www.endress.com/trustsens

Endress+Hauser
People for Process Automation

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iTHERM TM4xx

Innovative modular temperature assemblies

Advanced, modular RTD temperature probes for hygienic and aseptic applications

Our new line of modular hygienic thermometers TM4xx is for users in the Life Sciences and Food & Beverage industries who seek conformity to hygienic standards and efficient process optimization.

Our innovative offering is highly modular and with best–in-class hygienic design. Its outstanding sensor technology and unique calibration features guarantee highest plant availability and measurement reliability.

Your benefit

Value	Benefit	Feature
Risk and cost reduction	▪ Quick, easy and safe recalibration ▪ Increased process efficiency	iTHERM QuickNeck: Tool-free mounting and dismounting of the sensor insert
Increased process safety	▪ Quicker detection of temperature changes ▪ Increased plant availability	▪ iTHERM QuickSens: Fastest response times ▪ iTHERM StrongSens: High vibration resistance
100% compliance	▪ Best-in-class hygienic design ▪ Fit for all hygienic and aseptic applications	International certifications and approvals
Increased product quality	Extremely accurate temperature measurement	Sensor-transmitter matching, better than Class AA sensors

Application

- Specially designed for use in hygienic and aseptic applications in the Food & Beverage and Life Sciences industries
- International certifications and approvals:
  EHEDG, ASME BPE, FDA, 3-A, 1935/2004, 2023/2006 (GMP), 10/2011, CE, CRN, CSA General Purpose, Ex-approvals
- More than 50 sterile and hygienic process connections as standard
- Outputs and communication protocols: 4 to 20 mA, HART®, PROFIBUS PA, FOUNDATION Fieldbus

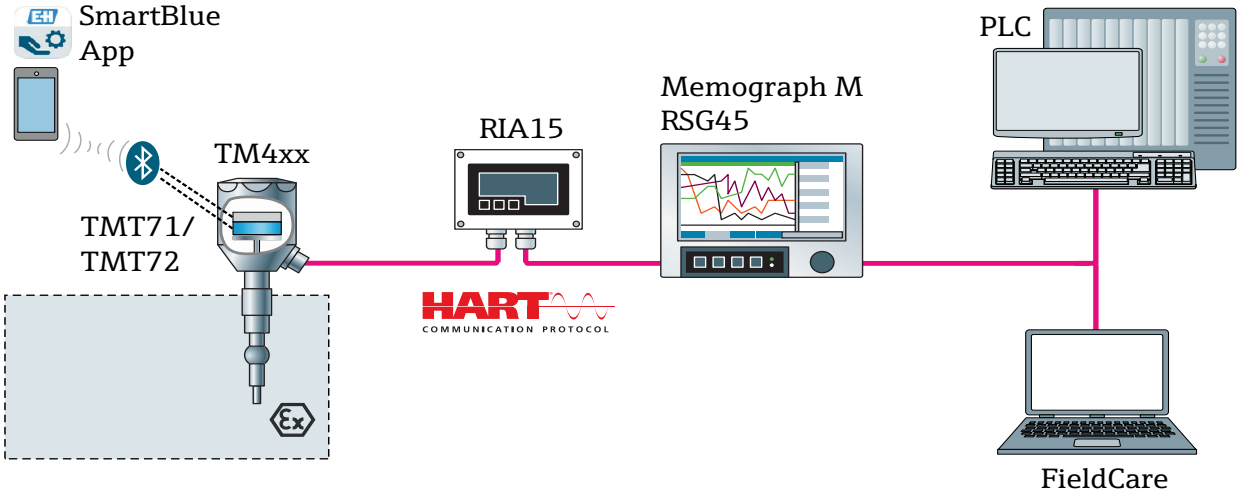
For more information please visit
www.endress.com/tm411
www.endress.com/tm412

Endress+Hauser
People for Process Automation

iTHERM TM4xx specifications

- Measuring range: −200 to +600 °C (−328 to +1112 °F)
- Pressure range: Up to 50 bar (725 psi)
- Protection class: Up to IP69K
- Communication: Analog output 4 to 20 mA, HART®, PROFIBUS PA, FOUNDATION Fieldbus
- Accuracy: Transmitter-sensor matching
- Response time: t_{90} = 0.75 s

System integration and related offering



System component	Feature
Data Management Memograph M RSG45	▪ Tamper-proof data storage and access (FDA 21 CFR 11) ▪ HART® gateway functionality; Up to 40 HART® devices connected at a time ▪ Communication capabilities: Modbus, Profibus DP, PROFINET, EtherNet/IP
Display unit RIA15	▪ Display of 4 to 20 mA measured values or HART® process variables ▪ Loop-powered; Voltage drop ≤1 V (HART® ≤1.9 V)
Field Data Manager Software MS20	▪ Archiving and visualization of historical measured values, diagnostic events and protocols ▪ Automatic service for report generation and printing, data read out, storing and export ▪ Online visualization of instantaneous values (live data)
Endress+Hauser Service	▪ Commissioning service ensures optimal startup ▪ Technical experts are always on call to support with product queries ▪ Calibration service

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For more information please visit
www.endress.com/tm411
www.endress.com/tm412

Endress+Hauser
People for Process Automation

iTHERM TT411, TT412

Innovative thermowell designed for hygienic applications

Advanced tee and elbow thermowells

The new iTHERM TT4xx tee and elbow thermowell elements are ideally suited for applications in the life sciences and food & beverage industries where hygienic design and optimized measurement are key.

A state-of-the-art mechanical engineering process guarantees a construction without welds and dead legs for precise, safe and clean operation.

Your benefit

Value	Benefit	Feature	Supporting documents
Increased product safety	Extremely accurate measurement	Optimized design	Technical documentation
Increased process safety	Best-in-class hygienic design	No dead legs, no welds	CoC ASME BPE
100% compliance	Fit for all hygienic applications	International certifications and approvals	EHEDG, 3-A certificates

Application

- Specially designed for use in hygienic and aseptic applications in the life sciences and food & beverage industry
- International certifications and approvals: EHEDG, 3-A, ASME BPE, TSE
- Large variety of pipe sizes available as standard

For more information please visit
www.endress.com/tt411
www.endress.com/tt412

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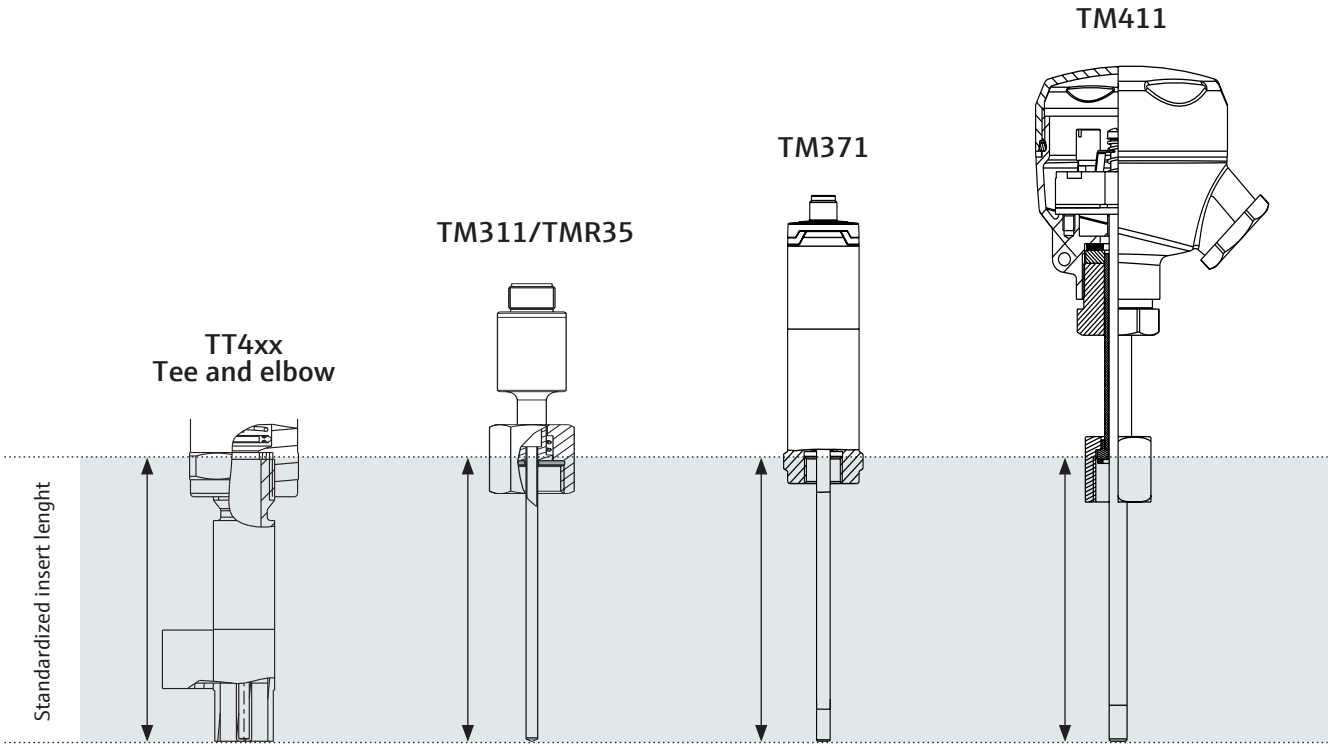
iTHERM TT4xx specifications

- Temperature range: -60 to 200 °C (-76 to 392 °F)
- Pressure range: PN25 acc. DIN11865
- Protection class: up to IP69K
- Material: 1.4435+316L; delta-ferrite content <0,5%
- Pipe sizes: acc. DIN11866 row A, B and C; sizes: DN10...DN38,1; larger sizes available on request

Standardized insertion lengths for all sizes and products



Matching length-options of thermometers

Thermometer	TM311/TMR35	TM371	TM411
Insertion length	83 mm (3.27 in)	85 mm (3.35 in)	85 mm (3.35 in)

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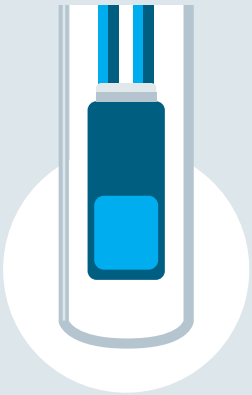
For more information please visit
www.endress.com/tt411
www.endress.com/tt412

Endress+Hauser
People for Process Automation

Sensor technology for thermometers

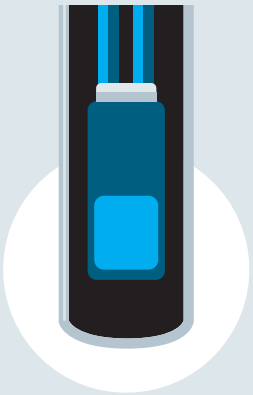
Innovative sensors for every measurement application

Exclus



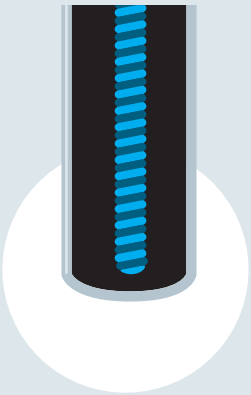
Basic thinfilm
Pt100 (RTD)

- Thinfilm sensor consisting of ceramic substrate with vapor-deposited platinum
- Sensing element and wiring in stainless steel sheath



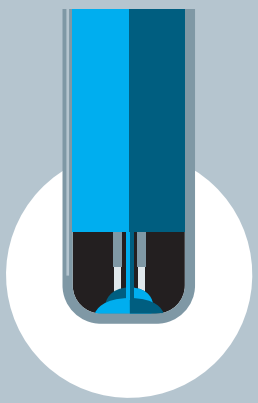
Standard thinfilm
Pt100 (RTD)

- Small sensor consisting of ceramic substrate with vapor-deposited platinum
- Embedded in mineral isolated stainless steel sheath



Wirewound
Pt100 (RTD)

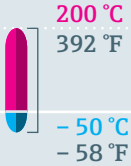
- Ultrapure platinum wire wound around a ceramic core
- Embedded in mineral isolated stainless steel sheath

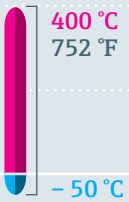


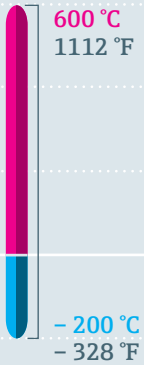
iTHERM QuickSens
Pt100 (RTD)

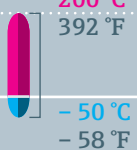
- Pt100 thinfilm sensor with the world's fastest response time
- Sensor-on-tip technology for short immersion length
- Better process control and product quality, optimized efficiency
- Highest accuracy

Measurement range









Properties

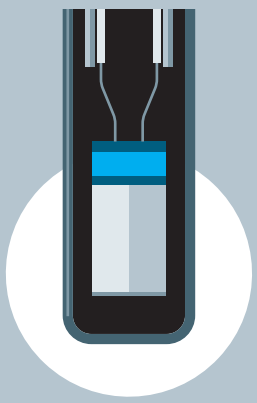
- \+ Measurement performance sufficient for most support processes
- – Limited measurement range

- \+ Long-term stability
- \+ Vibration resistance
- – Limited measurement range

- \+ Long-term stability
- \+ High measurement repeatability
- – Relative cost
- – Susceptible to mechanical stress

- \+ World's fastest response time
- \+ Maximum process safety
- – Limited measurement range

ive Endress+Hauser technology



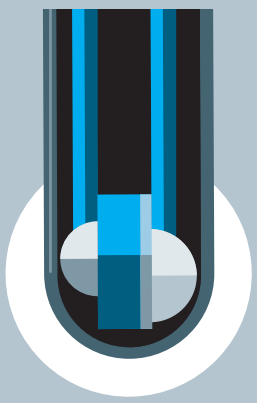
iTHERM StrongSens
Pt100 (RTD)

- Ceramic-encapsulated Pt100 thinfilm RTD with unmatched robustness
- Vibration resistance up to 60g (2,116 oz) for lower life cycle cost
- High long-term stability, high plant availability

500 °C
932 °F

– 50 °C
– 58 °F

- World's highest vibration resistance
- Robust
- Long lifetime and plant availability
- Limited measurement range



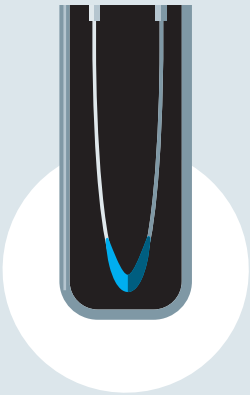
iTHERM TrustSens
Pt100 (RTD)

- Self-calibrating sensor unit
- Pt100 sensor and integrated fixed point reference
- Higher product quality and safety
- Lower risk, cost and effort

190 °C
374 °F

– 40 °C
– 40 °F

- Self-calibrating
- High accuracy
- Reliability
- High degree of automation
- Risk reduction
- Limited measurement range



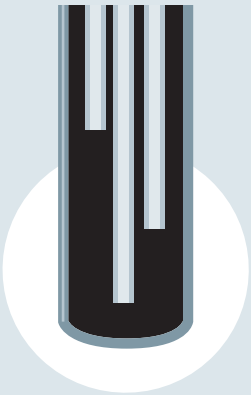
Thermocouple (TC)

- Two dissimilar metals spot welded (hot junction)
- Ideal for high temperatures

up to 1800 °C
3272 °F

– 270 °C
– 454 °F

- Measurement range
- Ideal for high temperatures
- Long-term stability
- Limited accuracy



iTHERM ProfileSens
Thermocouple (TC)

- Minimally invasive multipoint cable sensor profiling system
- Up to six individual thermocouple sensors per probe
- MI cable mineral insulated (MgO powder)
- Robust design with double metal sheathing technology

1100 °C
2012 °F

– 40 °C
– 40 °F

- Robust and reliable
- For high temperatures, pressure, agressive media
- Increased plant safety
- Limited accuracy (compared to RTD)

iTEMP temperature transmitters

Selection guide

	iTEMP product	Sensor inputs	SIL IEC 61508	Measurement performance *	Ex	Output 4 to 20 mA	Communication: HART® version	Communication: PROFIBUS PA	Communication: FOUNDATION™ Fieldbus	Housing style	Bluetooth®	Display
	TMT162	2	✔	■■■■■	✔	✔	7	✔	✔	field	–	integrated
	TMT142B	1	–	■■■■■	✔	✔	7	–	–	field	✔	integrated
	TMT82	2	✔	■■■■■	✔	✔	7	–	–	field, head, DIN rail	–	plug-on (TID10)
	TMT84	2	–	■■■■■	✔	–	–	✔	–	field, head	–	plug-on (TID10)
	TMT85	2	–	■■■■■	✔	–	–	–	✔	field, head	–	plug-on (TID10)

* Measurement performance: Valuation of accuracy input/output, long-term stability, response time

For more information please visit
www.endress.com/temperature-transmitters

Endress+Hauser
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iTEMP temperature transmitters

Selection guide

	iTEMP product	Sensor inputs	SIL IEC 61508	Measurement performance *	Ex	Output 4 to 20 mA	Communication: HART® version	Communication: PROFIBUS PA	Communication: FOUNDATION™ Fieldbus	Housing style	Bluetooth®	Display
	TMT72	1	-	■■■■■	✔	✔	7	-	-	field, head, DIN rail	✔	plug-on (TID10)
	TMT71	1	-	■■■■■	✔	✔	-	-	-	field, head, DIN rail	✔	plug-on (TID10)
	TMT31	1 (RTD only)	-	■■■□□	-	✔	-	-	-	head	-	-
	TMT80	1	-	■■■□□	-	✔	-	-	-	head	-	-

* Measurement performance: Valuation of accuracy input/output, long-term stability, response time

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For more information please visit
www.endress.com/temperature-transmitters

Endress+Hauser
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iTEMP TMT71 and TMT72 HART® 7

Temperature transmitter family for all industries

Superior measurement performance and usability

The iTEMP TMT71 and TMT72 HART® temperature transmitters are designed for use across all industries where applications require accurate temperature measurements and long-term stability.

The devices provide valuable additional diagnostic information and features enabling predictive maintenance, contributing to improve process efficiency and increase plant uptime.

Your benefits

Value	Benefit	Feature
Improved process efficiency and plant availability	Efficient and reliable process control	▪ Long-term stable electronic ▪ Highly accurate sensor input and analog output
	Valuable diagnostic information for (predictive) maintenance	▪ Condensed status according to NAMUR NE 107 ▪ Advanced diagnostic functions such as corrosion monitoring and undervoltage detection
Improved usability and system integration	On-site device setup and local availability of process values	▪ Integrated Bluetooth® interface for remote operation via mobile devices ▪ Excellent readability of plug-on display
	Integrative operation with all Endress+Hauser devices	▪ Uniform and optimized user interface for all tools ▪ User-guided setup wizards ▪ Self-explaining operating structures
	Quick and easy system integration for iTEMP TMT72 HART®	Quality gate: Endress+Hauser integration lab ensures seamless integration into all major control and asset management systems
	Time saving device connection	▪ Push-in terminals for toolless wiring (optional) ▪ Laser-printed connection diagram

Applications

- Universal temperature transmitter with optional HART® communication for the conversion of various input signals into a scalable, analog 4 to 20 mA output signal
- Installation in terminal head form B, mounting on the DIN rail (DIN rail housing style), field housing
- International certifications and approvals: Ex approvals, radion approvals, CE, DNV GL, NAMUR

For more information please visit:
www.endress.com/tmt71
www.endress.com/tmt72

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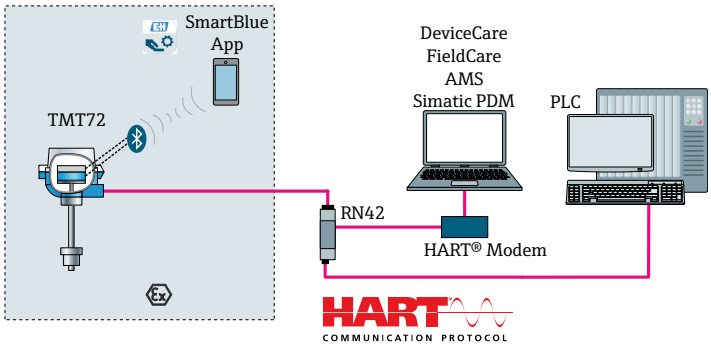
Features and specifications

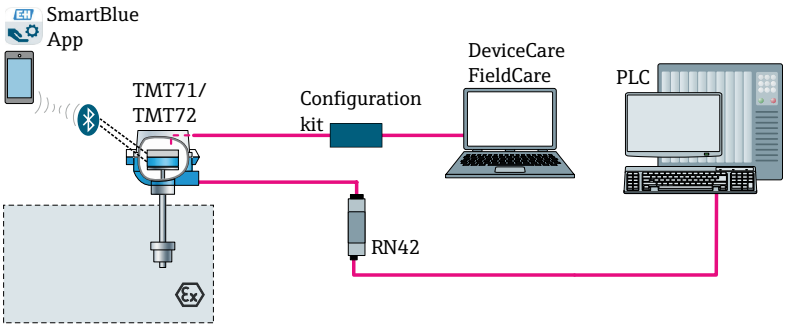
Sensor input:	RTD, TC, Ohm and mV
Operation and commissioning:	SmartBlue App (Android/iOS) via Bluetooth® DTM via CDI DD/DTM via HART®
Output:	4 to 20 mA, HART® 7 protocol (TMT72)
Power supply:	2-wire device, loop powered, 10 V to 36 V_{DC} (head transmitter); 12 V to 36 V_{DC} (DIN rail)
Approvals:	ATEX, $_{C}CSA_{US}$, EAC, IECEx, INMETRO, NEPSI, DNV GL
Operating temperature:	-40 °C to +85 °C

Product integration and system architecture



iTEMP TMT72
System architecture for HART® communication

QR code to SmartBlue APP



iTEMP TMT71, TMT72: System architecture for PC programable transmitter

Related offering

Component	Feature
SmartBlue app	■ Mobile, remote access to your device ■ Diagnostics and real-time process information ■ Encoded and secure data transmission
Active barrier RN42	■ Active barrier with integrated power supply ■ Bidirectional HART® transmission for monitoring and diagnostics ■ Compact, side-by-side DIN rail housing ■ International Ex approvals
Thermometer ModuLine iTHERM TM131	High degree of flexibility, modular design

For more information please visit:
www.endress.com/tmt71
www.endress.com/tmt72

Endress+Hauser
People for Process Automation

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Memograph M RSG45

Advanced data manager family

Memograph M RSG45
Designed for the Industry 4.0

The range of highly flexible advanced data managers for applications across all industries provide secure, intuitive access to your remote instruments and data.

The tamper-proof solution for monitoring and storing measured process values offers predefined application packages and remote administration via webserver, saving time and increasing process transparency.

The devices excel in connectivity for seamless integration into new and existing system architectures, bridging the gap from the field level up to the Ethernet-based control level or cloud infrastructure.

Your benefit

Value	Benefit	Feature
Secure data handling	▪ Protection against unauthorized access ▪ Fulfillment of burden of proof ▪ FDA 21 CFR part 11 compliant	▪ User administration ▪ Tamper-proof data storage ▪ Built-in and removable storage
Time-saving integration into validated systems	▪ Easy setup and intuitive operation ▪ Simplified programming ▪ RSG45 and FDM - harmonized system	▪ IQ/OQ documentation for guided commissioning ▪ Predefined application packages ▪ Fieldbus & protocols: HART, Modbus (RTU/TCP), PROFIBUS DP, EtherNet/IP, PROFINET, OPC
Maximum process transparency, plant safety and availability	▪ Gapless data transfer ▪ Direct access to field device for status information, diagnostics and configuration ▪ Enables predictive maintenance	▪ Webserver ▪ Telealarm, limits, linearization ▪ Real-time clock (NTP synchronization) ▪ iTHERM TrustSens calibration monitoring

Application

Memograph M RSG45 is a flexible and powerful system for organizing process values. With its intuitive operation, the system quickly and easily adapts to nearly any application. Measured process values are clearly presented on the display or webserver, analyzed and safely logged, all while being monitored against programmed limits. The measured and calculated values can be readily communicated to higher-level systems via common communication protocols such as EtherNet/IP, PROFINET or Modbus. Individual plant modules can be easily interconnected.

For more information please visit
www.endress.com/rsg45

Endress+Hauser
People for Process Automation

Specifications & features at a glance

Input / Output

- Up to 20 universal (U, I, TC, RTD) / HART inputs Integration; linearization
- 6 (14) digital inputs
- 6 (12) relays
- 2 analog outputs
- Sensor power supply (24 V DC / 250 mA)

Interfaces

- Ethernet TCP/IP, USB
- Modbus (RTU/TCP), PROFIBUS DP, PROFINET, EtherNet/IP
- Serial RS232, RS485

Data storage

- Internal memory: 256 MB
- SD card, USB drive: up to 32 GB
- Storage cycle: 100 ms

Visualization (n.a. DIN rail)

- 7″ TFT screen; 256 colors, 800 × 480 pixels
- Display modes: Curve, waterfall, bargraph, digital, instrument display, circular chart, process-related graphic

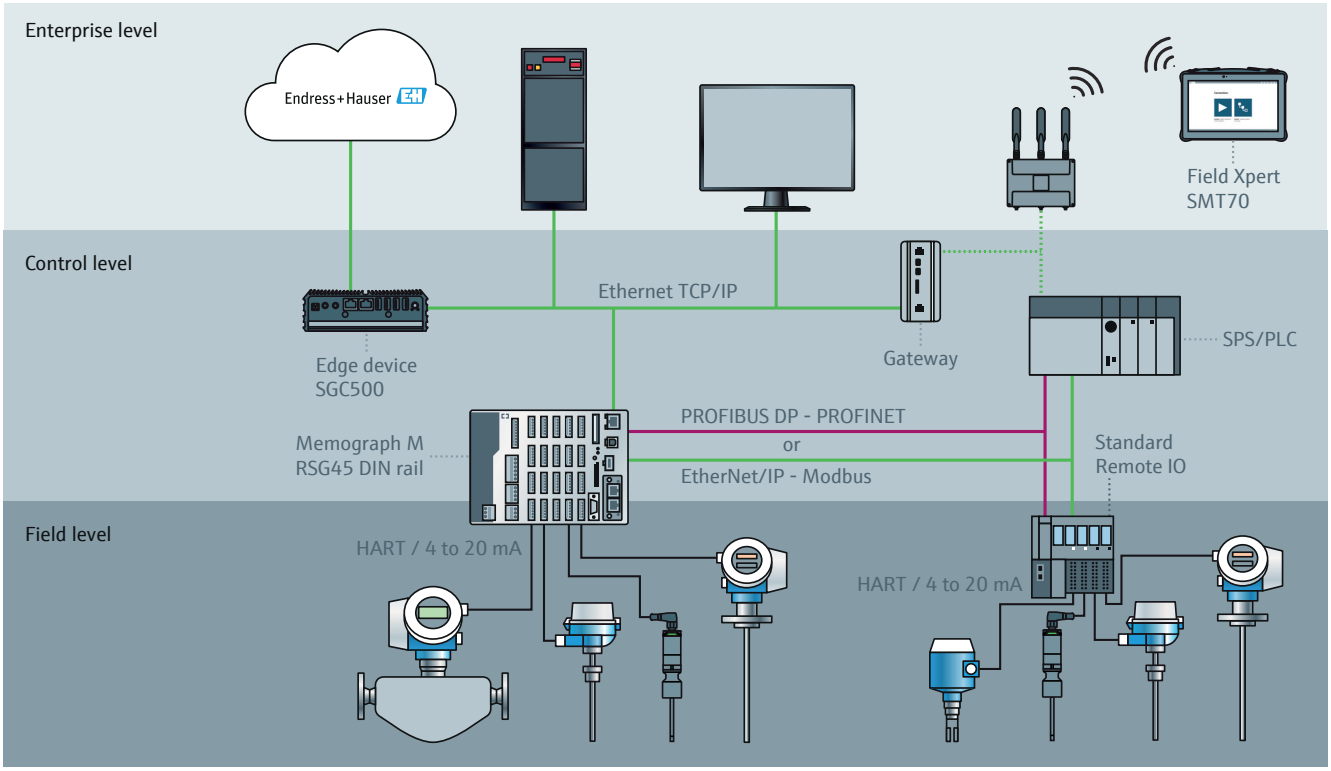
Operation & setup

- Webserver, touch screen or navigator
- Keyboard + mouse (USB)

Software and application packages

- 12 mathematic channels
- Limit switches, integration, linearization
- Tele alarm
- Batch software
- Water & Wastewater, storm overflow
- Energy software
- iTHERM TrustSens calibration monitoring

System integration



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For more information please visit
www.endress.com/rsg45

Endress+Hauser
People for Process Automation

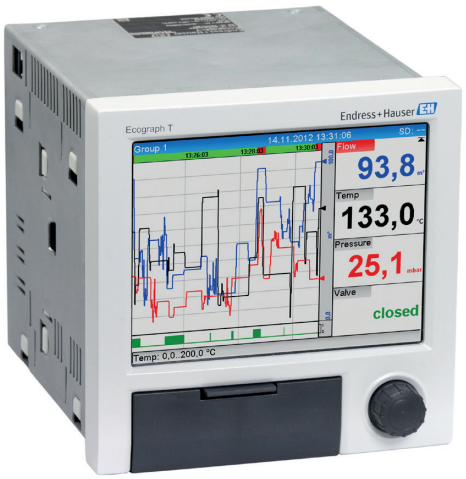
Ecograph T RSG35

Universal data manager

Monitor, visualize, record and communicate process values

The Ecograph T RSG35 data manager is the simple yet highly effective solution to tamper-proof data recording. The smart device perfectly integrates everywhere process parameters need to be visualized, recorded, analyzed and monitored.

Available with multiple communication interfaces such as Ethernet and common automation field bus protocols (e.g. Modbus RTU/TCP), the device is ready for simple system connection and for a versatile and cost-effective integration into existing infrastructure.



Your benefit

Value	Benefit	Feature
Secure data handling and data integrity	Tamper-proof data storage and handling	▪ Internal memory and additionally on SD card ▪ FDM Field Data Manager software
Time saving commissioning and operation	Easy device setup through local operation or remote software tools	▪ Field Care software ▪ Integrated web server ▪ 5.7" TFT display
Higher availability and productivity	Reducing costs and loss of production due to process downtimes	E-mail notifications for critical events such as: limit value violations, faults, alarms

Application

Ecograph T RSG35 offers safe and complete recording, monitoring and visualization of all analog or digital process measurement values. The unit is easy to use and packed with time-saving features to reduce costs and simplify data acquisition. Its variety of communication possibilities allows for simple system integration.

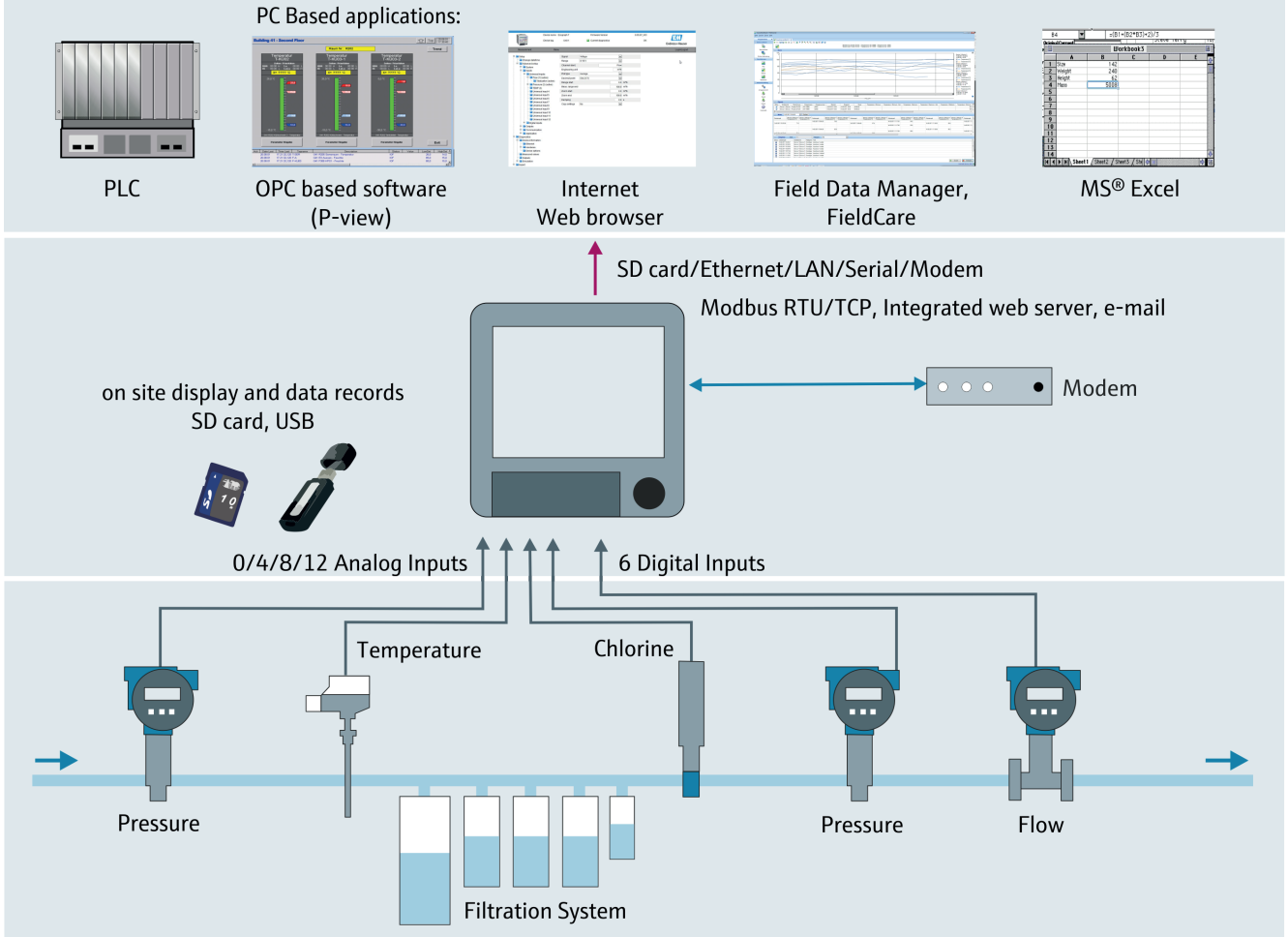
For more information please visit
www.endress.com/rsg35

Endress+Hauser
People for Process Automation

Features at a glance

- **Versatile**: Up to 12 universal inputs compatible with most common measurement signals
- **Clear**: 5.7" TFT display; visualization of measurement values in up to four groups in digital, bar graph and curve presentation modes
- **Fast**: Sampling rate of 100 ms for all channels
- **Compact**: Low installation depth for space- and cost-effective mounting
- **Simple**: Intuitive operation via navigator (rotary/push button) and user-friendly set-up using the integrated web server or FieldCare software
- **Safe**: Reliable archiving with built-in memory and separate SD card
- **Attentive**: Programmable e-mail notifications with alarms and limit value infringements
- **System capability**: Common interfaces such as Ethernet, RS232/485 (optional) and USB
- **Communicative**: Slave function for Modbus RTU/TCP (optional)
- **Intelligent**: Capable of calculations using 4 mathematics channels (optional)
- **Complete**: Ships with the Essential version of the Field Data Manager software for manipulation-free data storage and visualization

Application example of a filtration system



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For more information please visit
www.endress.com/rsg35

Endress+Hauser
People for Process Automation

RMA42

Universal process transmitter and control unit

Universal transmitter, loop power supply, barrier and limit switch in one device

The RMA42 universal process transmitter is a powerful device capable of monitoring, visualizing and calculating of measured values. It is ideally suited for applications in the food & beverage and life sciences industries as it offers a flexible, cost-effective solution for cabinet mounting to ensure safe, reliable and transparent operations.

Your benefit

Value	Benefit	Feature
Time and cost-saving	▪ Multifunctional device unit for reduced inventory ▪ Easy installation and system integration ▪ Designed for comfortable commissioning and operation	▪ Multifunctional device for a wide range of applications and regional specifications ▪ Easy on site configuration (3-key); Remote commissioning from a safe and convenient location ▪ Global availability with international certifications and approvals (ATEX, FM, CSA, NEPSI, UL recognized component)
Added safety and process transparency	▪ Reduced risk of damage related to incorrect power supply ▪ Easy readability in control cabinets ▪ Built-in control functions and features	▪ Control unit for calculation of measured analog signals; Evaluation of limit values; Triggering of alarms ▪ Linearization table with 32 points for each calculated value ▪ 5-digit, 7-segment backlit LC display for indication of measured or calculated values and trend bargraph

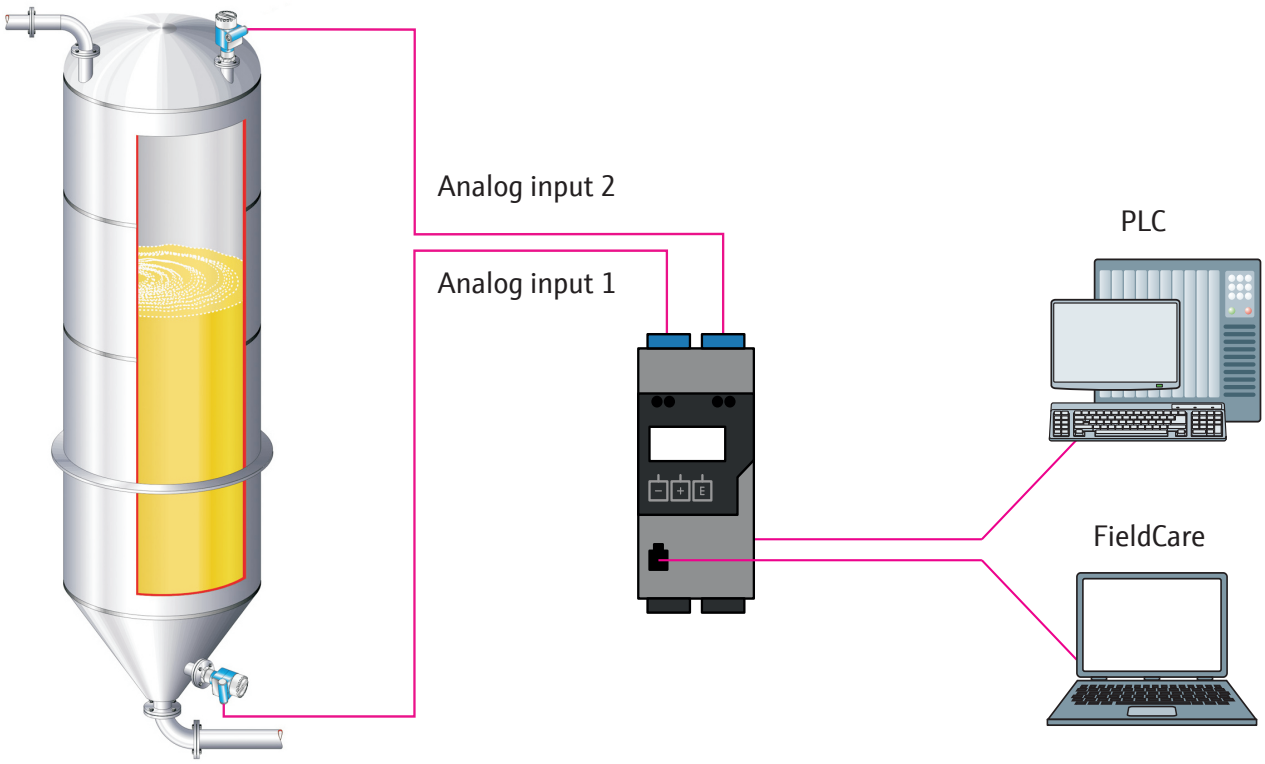
For more information please visit
www.endress.com/rma42

Endress+Hauser
People for Process Automation

RMA42 specifications

- 5-digit, 7-segment backlit LC display
- User-configurable dot matrix display range for bargraph, units and tag name
- Inputs: One or two universal inputs
- Outputs: One or two analog outputs; Two optional relay outputs; Digital status output (open collector)
- On site 3-key operation
- One or two calculated values; Built-in memory for min/max values
- Linearization table with 32 points for each calculated value
- Easy remote configuration from a safe and convenient location (e.g. with FieldCare or DeviceCare software)
- Ambient temperature range –20 to 60 °C (–4 to 140 °F)
- International certifications and approvals: ATEX, FM, CSA, NEPSI, UL recognized component
- Global availability

Exemplary application: Differential pressure monitoring



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For more information please visit
www.endress.com/rma42

Endress+Hauser
People for Process Automation

RIA15

Process indicator

Compact, loop-powered process display for 4 to 20 mA or HART® signals

The capable and highly flexible RIA15 process indicator for analog and HART® values brings crucial transparency to applications in the life sciences and food & beverage industries.

Available globally for panel or field mounting, the device offers an excellent price/performance ratio. Its very low voltage drop, even with optional display backlight, makes it safe for use in Ex-areas.

Your benefit

Value	Benefit	Feature
Time and cost saving	▪ Quick and easy installation ▪ Flexible system integration	▪ Compact housing designed for panel or field mounting ▪ Minimal installation depth ▪ Certified for installation in Ex-areas (field housing) ▪ Very low voltage drop; Low voltage drop with backlight ▪ Loop powered
Added safety and process transparency	Local indication of measurement parameters: 4 to 20 mA signals or up to four HART® values (PV, SV, TV, QV)	▪ Good readability in poor lighting conditions ▪ Bargraph for quick process overview ▪ Large character size ▪ Easily activated backlight (optional) ▪ Control functions (limit-value monitoring, mathematics, differential pressure and linearization, ...)
Ease of use	▪ Excellent usability ▪ Safe and convenient handling	▪ 3-key operation and configuration ▪ Remote commissioning and operation

Application bundles for HART® devices

- **iTHERM TrustSens TM371:** Indicator for temperature, electronics temperature, calibration counter and offset
- **Waterpilot FMX21** and **Micropilot FMR20:** Process display and configuration via HART®
- **Liquiline Compact CM82** transmitter for Memosens sensors: Process display and configuration via HART®

For more information please visit
www.endress.com/ria15

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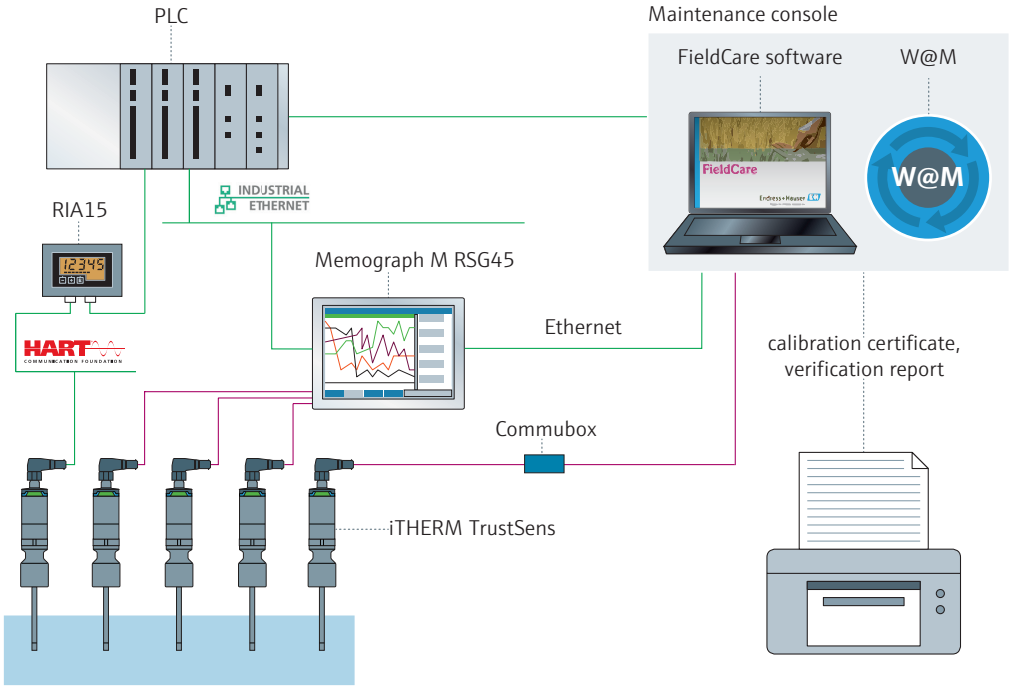
RIA15 specifications

- Display of 4 to 20 mA measured values or HART® process variables; Scalable display values
- Use as primary or secondary HART® master
- Loop powered; Voltage drop ≤ 1 V (HART® ≤ 1.9 V)
- Panel-mount housing or field housing as local process display
- Remote commissioning and operation
- Ambient temperature range: –40 to 60 °C (–40 to 140 °F)
- Protection class: IP67, NEMA4x (aluminium housing)
- International certifications and approvals: ATEX, FM, CSA, IECEx, GL, SIL interference freeness

Integrated product and service offering



System component	Feature
Data management Memograph M RSG45	▪ Tamper-proof data storage and access (FDA 21 CFR 11) in combination with FDM Software MS20, Field Data Manager software by Endress+Hauser ▪ HART® gateway functionality; Up to 40 HART® devices connected at a time ▪ Communication capabilities: Modbus, PROFIBUS DP, PROFINET, EtherNet/IP
Field Data Manager Software MS20	▪ Archiving and visualization of historical measured values, diagnostic events and protocols ▪ Automatic service for report generation and printing, data read out, storing and export ▪ Online visualization of instantaneous values (live data)
Endress+Hauser Service	▪ Commissioning service ensures optimal startup and reliable base for future self-checks ▪ Technical experts are always on call to support with product queries

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For more information please visit
www.endress.com/ria15

Endress+Hauser
People for Process Automation

Endress+Hauser offers a complete and innovative temperature instruments and system products portfolio for hygienic and aseptic applications. The offering is aimed at the food & beverage and life sciences industries regulated by strict quality and safety standards and requirements.

The pulse of life sciences

Trust a reliable partner who helps you achieve operational excellence

In biopharmaceutical manufacturing, we are a reliable partner, who helps support your projects from pilot plant to a fully automated commercial scale. This helps reduce risk and optimize your operational performance simultaneously. We support you with solid processes helping you meet stringent project schedules.

Doing more with less is an opportunity

It is a daily requirement to comply with stringent GMP regulations and productivity goals throughout a product's lifecycle.

You can count on our world-class instruments, designed to ASME-BPE standards and rely on our experienced engineering and support services. We partner with you to help you reach your goals of process optimization, increased plant availability and continuous improvement.

Food & beverage: Trust in quality

We help you to improve quality while reducing operational costs

To fulfill the growing demands of safety, quality and efficiency within the food & beverage industry, a partner with a complete portfolio of instruments, solutions and services is needed.

Your safe choice

Whether you need to upgrade your instrumentation to comply with hygiene regulations and standards, reduce utility costs or monitor critical production parameters - you can rely on Endress+Hauser.

We have gained our expertise collaborating with food & beverage producers from all over the world. Based on this collaboration we have developed our entire instrumentation, solutions and service portfolio to fulfill your industry demands.

www.addresses.endress.com

For more information please visit:
https://eh.digital/next-level-hygienic

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