Highlights 2020
Measurement technology, services and solutions for process automation

New:
Cerabar + Deltabar

Endress+Hauser

People for Process Automation

Contents

Field instrumentation

Level

Moisture

Pressure

Flow

Temperature

Analysis

System components

Automation solutions

Automation

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Services

Endress+Hauser

Industry 4.0:
a smart new approach
from the field

Dear customers and partners of Endress+Hauser,

A successful day begins with a cup of steaming coffee and a quick look at your smartphone! After all, you can already get digital measured values directly on your phone via mobile applications, or check the status of measurement and automation equipment on your app.

Unlock the potential of your field devices!
To find out how easy this is with the Netilion IIoT ecosystem, Heartbeat Technology and the many equipment connectivity options, check out the articles marked #empowerthefield in this brochure from Page 6 onwards. Our promise is to help you improve your processes. We do this by applying our application and industry knowledge to find the best possible solution for your needs and by

Endress+Hauser [EH]

producing valuable process knowledge as a solid basis for your decision-making process. As your reliable partner, we are happy to go the extra mile in the development of our products, automation solutions and services and are constantly expanding and upgrading our portfolio. In this brochure, we are presenting our highlights for 2020.

Cerabar and Deltabar – the new instrument families in pressure measurement – have made it onto the cover for good reason. With a wide variety of digital features, these families are now ready for Industry 4.0.
Other top highlights include the further improved Liquiphant FTL51 limit switch, our extensive product portfolio for flow measurement in gases or the iTHERM ModuLine thermometer family. The Micropilot FWR30 is also breaking new ground as our first cloud-only radar level

measuring device. This instrument delivers your digital measured values directly to the cloud without the need for you to lay a single cable.

How can we help you address your process challenges? Contact us to let us know!

Best wishes

Stefan Menschel
Head of Marketing

#empowerthefield – data is revolutionizing the process industry

Endress+Hauser is turning field data into valuable information for innovative Industry 4.0 applications

Data is the main driver of economic progress. This also holds true for the process industry where plant operation is fully monitored by sensors. 97% of sensor data goes unused, however. As an independent technological pioneer, we can help you unlock this data potential. Begin your journey to Process Industry 4.0 with us.

Innovations like Heartbeat Technology or wireless interfaces make the smart measuring point the bedrock for Industry 4.0. Thanks to a wide range of connectivity solutions for both brownfield and greenfield applications, it is possible to exploit the potential of the field level.

Endress+Hauser is making Process Industry 4.0 a reality: Thanks to our Netilion online services and smart apps, you can already optimize the maintenance and management of your plant in just a few simple steps. Standardized interfaces give you access to documents and device information for over 40 million field devices. A digital twin can be created without any difficulty. These interfaces also allow you to process the information generated by Netilion in third-party systems, such as SAP.

The analysis of field data creates new savings potential, e.g. through predictive maintenance, enabling you to reduce unscheduled downtime by up to 70% and cut your maintenance costs by up to 30%.

Industry 4.0 range from Endress+Hauser

IT security

- Human-machine interface
- Data and analytics platform
- Connectivity
- Process sensor 4.0

Endress+Hauser

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Predict   Health   Library   Analytics   Scanner   Value

W@M

Netilion   ←→   Third party   SAP
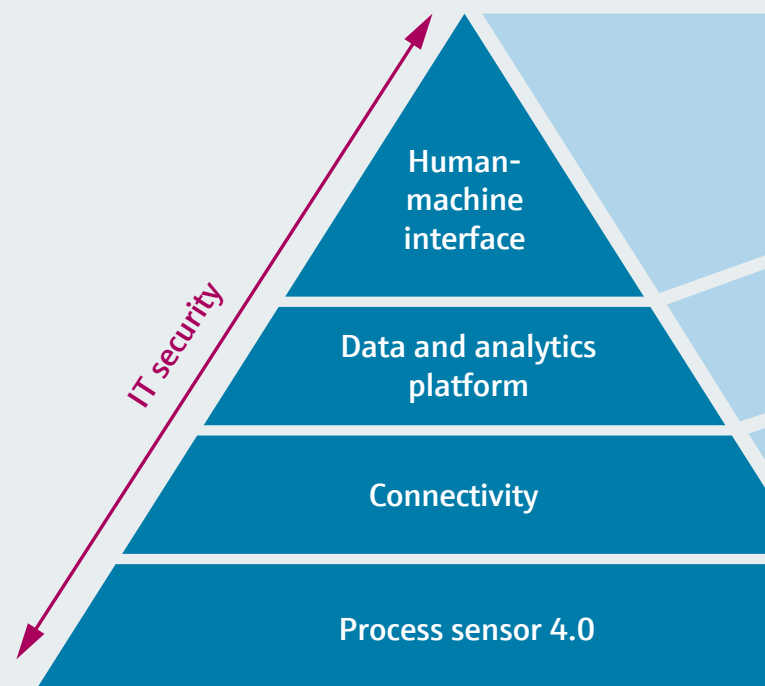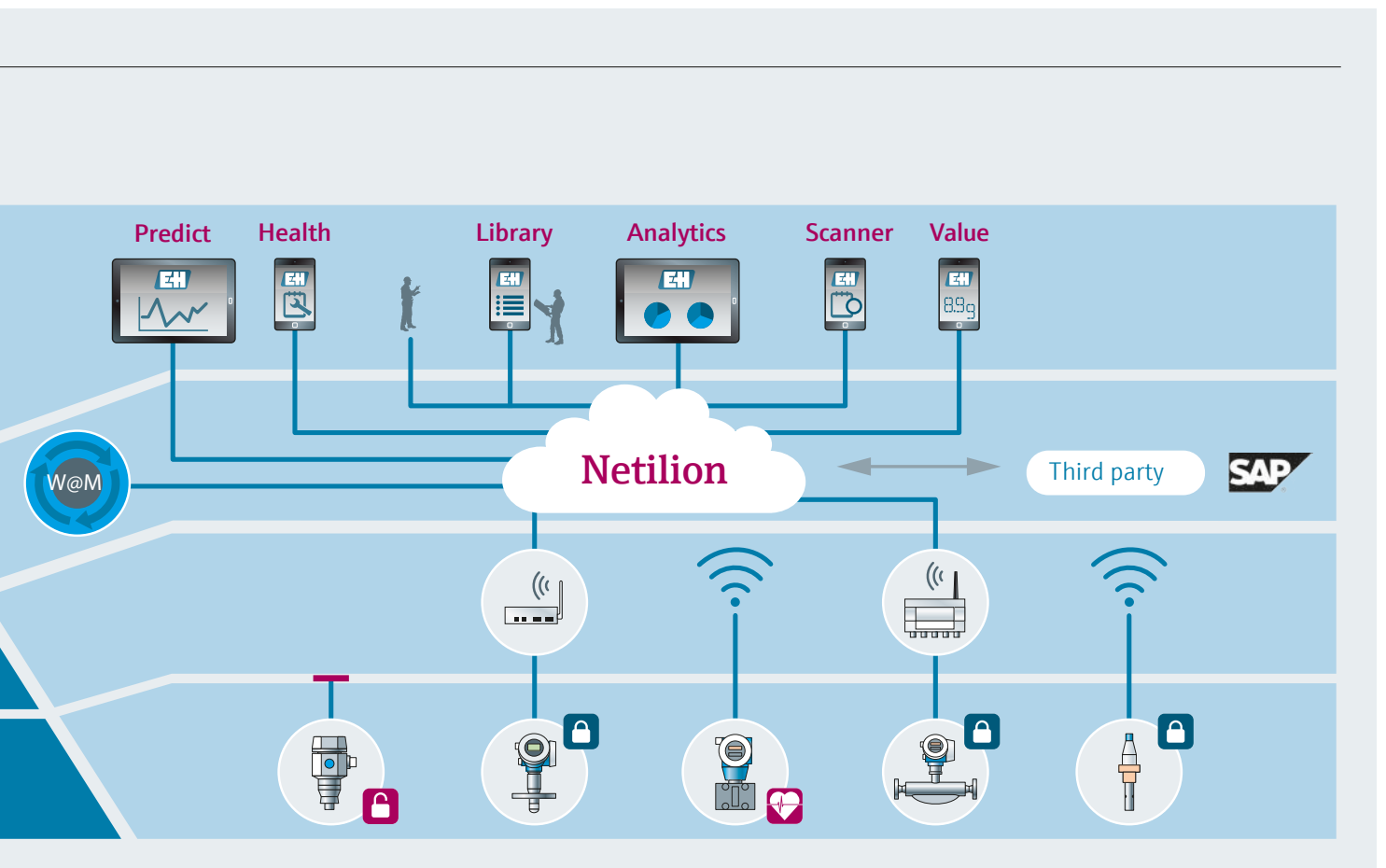
Endress+Hauser

Netilion IIoT ecosystem –
making Industry 4.0 possible

Netilion offers solutions for more plant availability and lower operating costs

With the Netilion IIoT ecosystem, Endress+Hauser has created new pioneering solutions in Industry 4.0. Netilion works in the cloud and offers you flexible services in a secure environment that pay dividends right from day one.

Netilion Scanner app – the simple and easy way to capture and register assets With Endress+Hauser's free Netilion Scanner app, capturing the installed base manually has never been so easy. The key data of the field device can be scanned in using a QR code or an RFID chip. Additional information, such as the location of the measuring point, can be stored quickly and easily.

Netilion Analytics – visibility and transparency over the assets in your plant Practical dashboards in Netilion Analytics allow you to quickly analyze the installed base. You get to experience unparalleled transparency and can make decisions more quickly and confidently on the basis of valid data. Netilion Analytics also displays information about instrument availability. For example, if an instrument is discontinued you immediately see which follow-up product we would recommend.

Netilion Health provides information about the health of your assets. This solution not only displays the error codes but also provides instructions on how to rectify the problem without having to search through extensive operating manuals. If unexpected events occur, this allows you to take effective action immediately and minimize plant downtime.
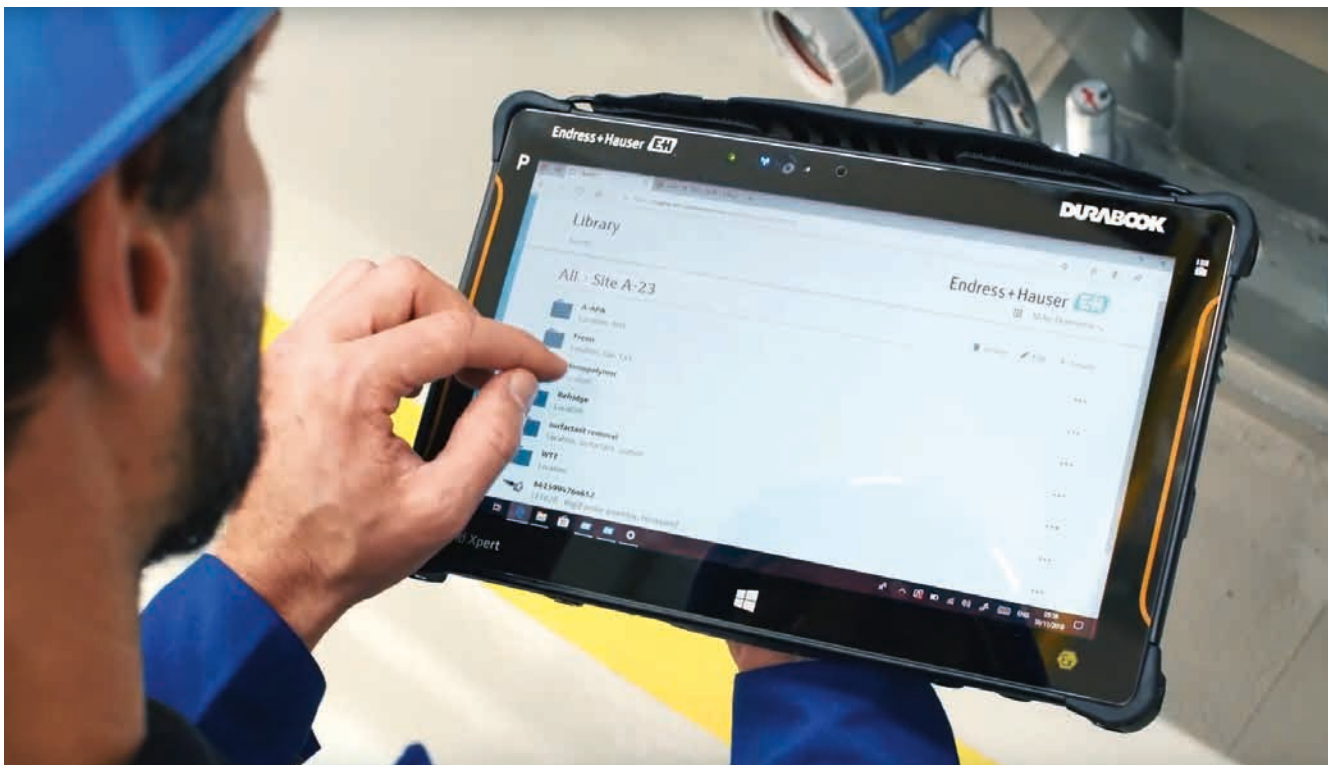
Netilion Library finds all the documents you need without lengthy searches on site.

Endress+Hauser

"With Netilion Health, I know I have all the information needed to solve any problems."

Project Manager
Salzgitter Flachstahl GmbH

Netilion Library is a file sharing and data management service. It saves all documents and automatically assigns them to a digital twin. You can find the right information immediately and share it quickly and easily with colleagues. In a plant with 1000 assets, this means you can save five hours of work per week.
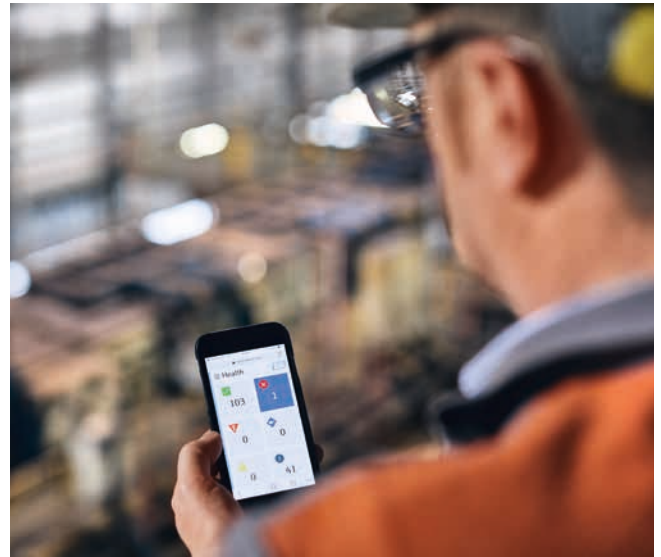
Clear plant overview with Netilion Health: read and understand error messages, take quick action.

Netilion Analytics in use at Salzgitter Flachstahl GmbH.

Netilion Predict identifies the ideal time for the maintenance of your equipment. With predictive maintenance for your field devices, you get to save considerable life cycle costs year on year. Netilion Predict for Flow is available for Coriolis flowmeters. Applications for other fields of application are currently in development.

Netilion Value continuously visualizes process values that previously could only be checked sporadically. This gives you the information you need to ensure your processes always run under optimum conditions and increase the efficiency of your plant for the long term.

Endress+Hauser's cloud-based Industrial Internet of Things has been certified by the independent EuroCloud organization and been awarded a four-star rating for its particularly high protection status. It therefore guarantees a level of security that is customary in the process industry. Now nothing stands in your way to Industry 4.0.

More information available at:
www.netilion.endress.com

Endress+Hauser

Heartbeat Technology –
taking the pulse of your measurement

Smart process sensors are at the heart of a successful digitization strategy

Heartbeat Technology turns process sensors into smart sensors that provide valuable information for predictive maintenance thanks to permanent process and instrument

diagnostics. Furthermore, Heartbeat Technology enables documented field device verification without interrupting the process.

Heartbeat Technology

Diagnostics	Verification	Monitoring
Permanent process and device diagnostics	Documented verification without process interruption	Information for predictive maintenance

Increased plant availability

Safe processes	Reduced verification effort	Optimization of processes and maintenance
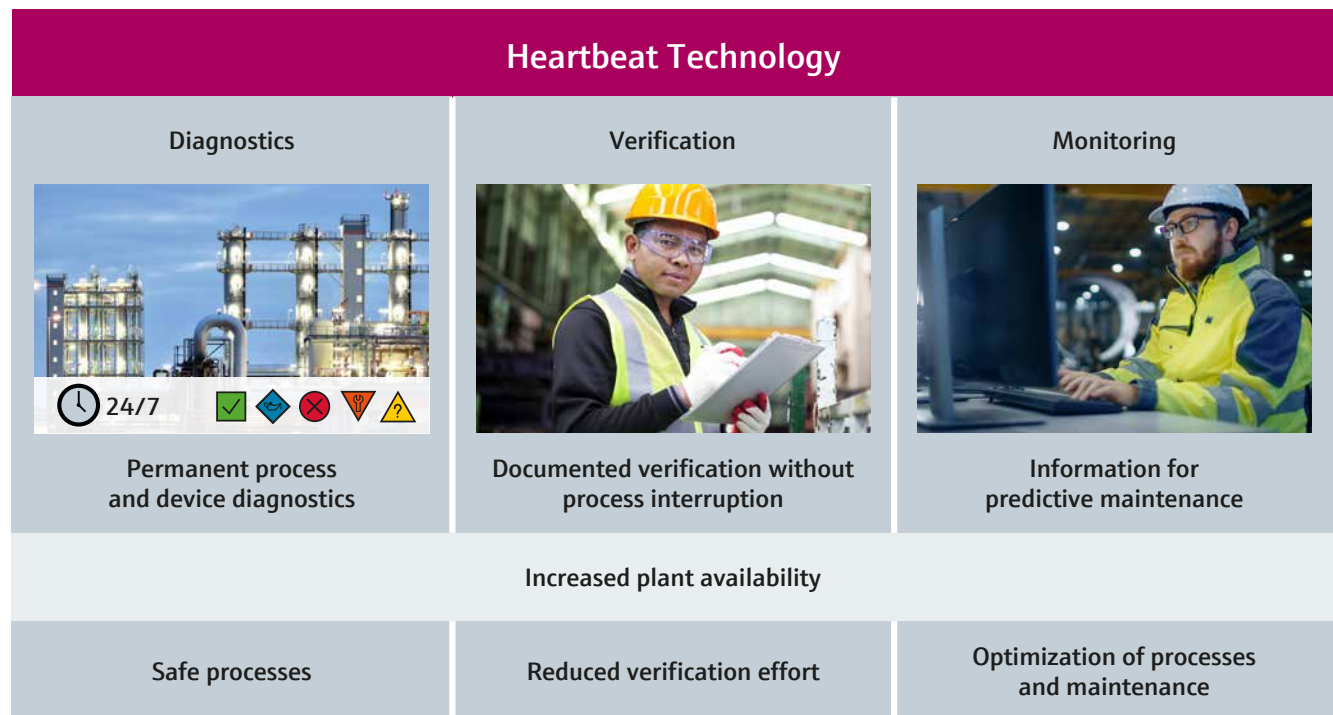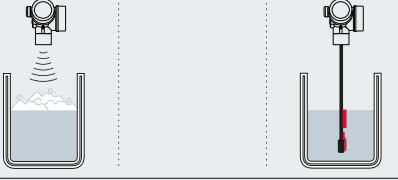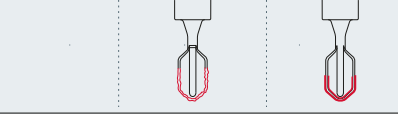
- Clear and standardized **diagnostic messages** with clear **instructions** for efficient and status-based maintenance
- **Permanent device self-diagnostics** increases operational safety and extends test cycles

- The measuring point can be **verified and documented** at any time **even when installed**
- **Clearly documented verification results** are always achieved (SIL/WHG) with a simple guided verification sequence
- The automatically generated **verification report** supports the requirement to demonstrate compliance as set down in regulations, laws and standards

- **Trends can be identified using device and process data**, thereby enabling **predictive maintenance**
- The device and process parameters can be analyzed for **specific process optimizations**

Endress+Hauser [E+H]

Heartbeat Technology product overview

The demand for fast and easy testing is high. Ideally, testing should be of high quality, be very detailed and should not interrupt the process. And this is precisely what Heartbeat Technology offers. A wide variety of

Endress+Hauser devices are available with Heartbeat Technology that combine diagnostics, verification and monitoring functions for process optimization.

Heartbeat Technology with ...

	Diagnostics	Verification	Monitoring		
Flow measurement technology					
			Entrained Gas/Foam	Corrosion/Abrasion	Build-up
Proline 100	●	○			
Proline 300/500	●	○			
Proline 200	●	○			
Proline 400	●	○			
Level measurement technology					
			Entrained Gas/Foam	Corrosion/Abrasion	Build-up
FMP5x Levelflex	●	○			
Micropilot 26 GHz, FMR5x	●	○			
Micropilot 80 GHz, FMR6x	●	○			
			Entrained Gas/Foam	Corrosion/Abrasion	Build-up
Liquiphant FTL51	●	○			
Gammapilot FMG50	●	○	Monitoring of radiation source service time and the photomultiplier lifetime		
Pressure measurement technology					
Cerabar	●	○			
Deltabar	●	○			
Analytical measuring technology					
Liquiline CM442, CM444, CM448	●	○			
Liquiline CM44xR	●	○			
CSF48 sampler	●	○			
Temperature measurement					
TrustSens TM371	●	● Calibration			

● Standard ○ Optional

With comprehensive diagnostics and targeted verification concepts for smart field devices, you can organize the safe and cost-effective operation of your plant throughout the entire life cycle.
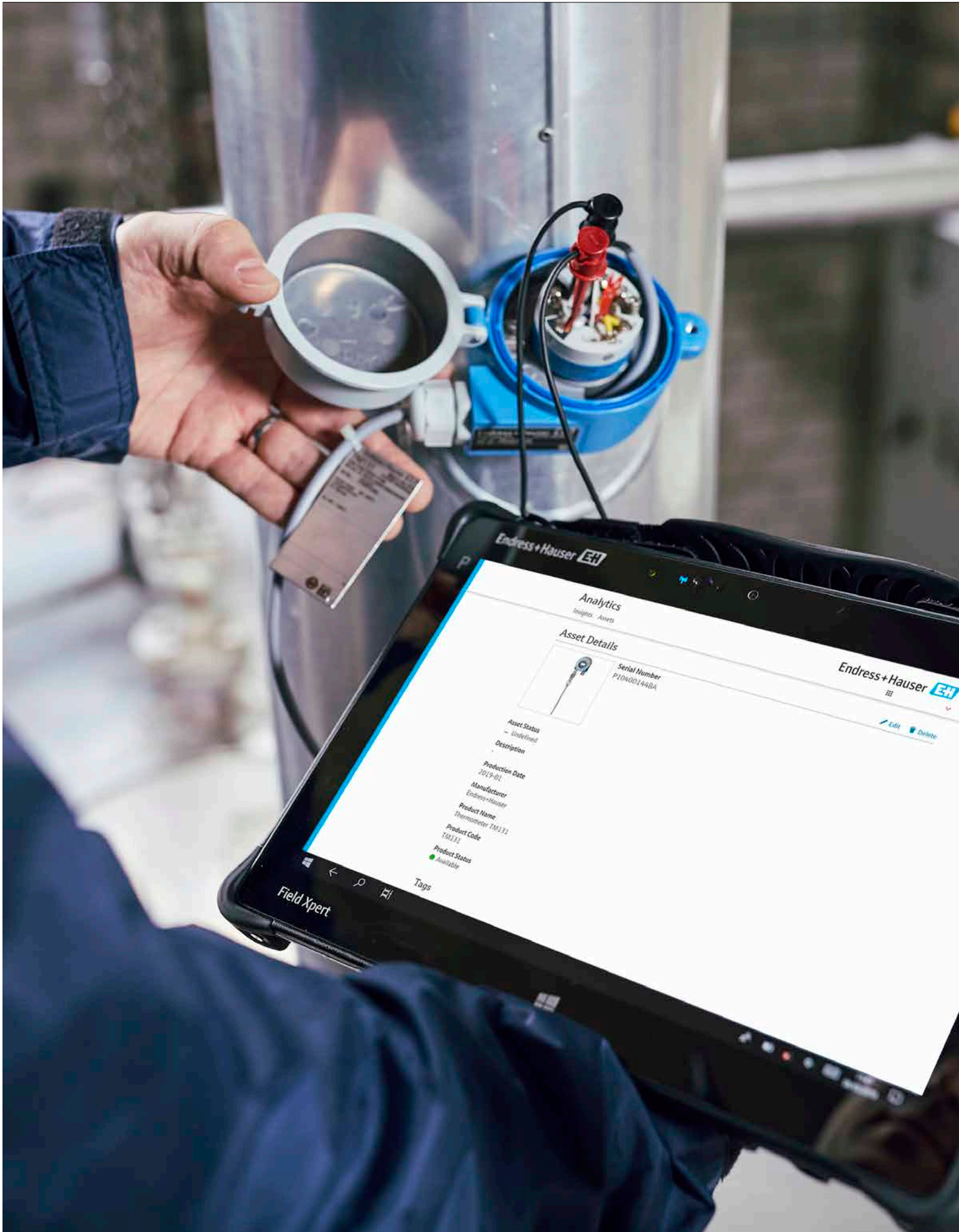
Endress+Hauser [EH]

One for all

Manage all your Endress+Hauser smart devices easily with the SMT70 industry tablet

Unpack, switch on, get started – with pre-installed device drivers for all smart field devices, the SMT70 is ready for immediate use. With its integrated interfaces, the tablet connects to Endress+Hauser field devices via HART, Bluetooth® or WLAN.

No training needed – thanks to the simple user interface, the tablet is so intuitive to use that no additional training is needed. Data exported on-site is automatically synchronized with Netilion. The Netilion IIoT ecosystem can be used directly on the tablet. All information is always up to date and visible for authorized persons.

An integrated update mechanism ensures that the software and device drivers are always kept up to date. Updates run fully automatically in the background – no additional effort is required.

Highlights and advantages
- Integrated NFC RFID reader for on-site device identification
- All process industry communication protocols are supported (HART, Profinet, Profibus, FOUNDATION Fieldbus, Modbus, Endress+Hauser service interfaces)
- Can be used in combination with Profinet directly or ET200 SP Profinet remote I/O for remote access
- Online application support service (one year free, then optionally available)

ℹ️ Technical data

- Hazardous Zone 1 Windows 10 tablet with 10.1" multi-touch, high-resolution display, 2.3 kg, IP65
- Intel N3710 1.6 GHz, 8GB DDR3L/128GB SSD
- USB, Bluetooth®, WiFi, WWAN LTE 4G, camera
- IP65, Class I, Zone 1, AEx ia IIC T4 Gb, $-20°C \leq Ta \leq +50°C$
- Optional HART add-on module (integrated HART modem)

More information available at:
www.endress.com/smt70

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New measuring devices for Industry 4.0

Discover the smart sensors in this brochure

Connectivity for data transmission simultaneously with measure value transmission (NOA)

SMT70/77 – industry tablet PC for device configuration and mobile asset management including in hazardous zones

Electronic nameplate (RFID/QR code) with access to comprehensive real-time measuring point documentation – any time, anywhere

Industry 4.0

40 million data records on installed field devices

Targeted maintenance with Netilion Health – mobile access to 25,000 device diagnostic functions with device status, diagnostics code, cause and remedial action

Heartbeat Technology with smart diagnostic functions and standardized diagnostic messages (NE107), condition monitoring and predictive maintenance

Heartbeat Technology – measuring point verification and documentation without interrupting the process

Liquiphant FTL51
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Gammapilot FMG50
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Micropilot FWR30
on Page 25

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Radar portfolio
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Cerabar, Deltabar
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Prosonic Flow G 300/500
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Promag
W 300/400/500
0 x DN full bore
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iTHERM
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iTHERM
CompactLine TM311
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iTEMP TMT71 and
TMT72 on Page 47

Liquiline CM44x(R)
on Page 53

Liquiline compact
transmitter CM82
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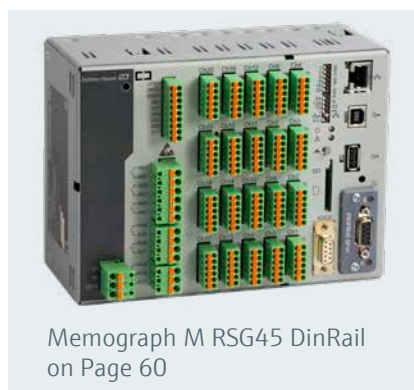
Memograph M RSG45 DinRail
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Endress+Hauser

Guaranteed connectivity

Tapping into data from brownfield and greenfield systems and making it digitally accessible

- Simple and flexible: connectivity solutions for different system architectures
- Secure: Netilion cloud and edge device plug-ins meet strictest and certified security standards
- Universal usability for field devices and actuators from various manufacturers in existing (brownfield) and new (greenfield) systems

Connectivity is the basis of all Industry 4.0 applications. Netilion Connect makes data in brownfield and greenfield systems digitally accessible and comprises a portfolio of edge devices, gateways and an application programming interface (API).

Application

Netilion edge devices
- FieldEdge SGC200/400/500: connection of assets with Netilion (cloud) via a parallel, secure data channel (NOA concept)

Netilion gateways
- SFG250: connection of HART devices with FieldEdge devices
- SFG500: connection of PROFIBUS DP/PA with FieldEdge devices
- SWG70: connection of WirelessHART networks with FieldEdge devices
- SWA50/70: establish a WirelessHART or Bluetooth® connection between assets to the individual gateways/ FieldEdge devices, also retrofittable

API
An API data exchange format based on the REST/JSON standard is available for cloud-to-cloud connection of Netilion to user-specific applications (clouds, ERP systems).

FieldEdge SGC200 – Bluetooth® edge device for connecting measuring technology to the Netilion cloud.

Fieldgate SFG500 – basic mode Ethernet gateway with integrated web server and adaptive PROFIBUS Master Class 2 for communication with PROFIBUS devices.

SWA50 adapter for data transmission with WirelessHART and Bluetooth®: Ex i intrinsically safe, loop-powered, easy to retrofit for all HART devices.

https://developer.netilion.endress.com/netilion-connect

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Mobile management of assets with the SmartBlue app

Commission and manage assets easily and conveniently from a safe distance

With the SmartBlue app, you can commission and manage our next generation instruments easily from a safe distance of up to 20 meters. At hard-to-reach places or in hazardous areas, the ability to use the wireless Bluetooth® interface to connect to the device via a smartphone or tablet is particularly handy. A separate interface driver is not required. The security of the encrypted data communication has been tested and certified by the Fraunhofer Institute.

SmartBlue: analyze, display, send – as a video or image
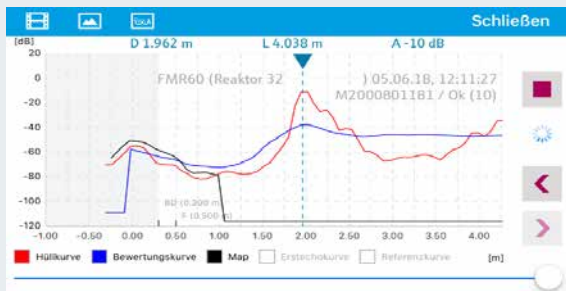
Contactless commissioning with a mobile device and the SmartBlue app

All accessible devices and status information at a glance

Endress+Hauser

The experts for effective safety

Certified product lines and processes for maximum safety and ultimate plant availability

With over 250 certified product lines, Endress+Hauser offers you a comprehensive device portfolio for Ex, SIL and WHG applications. Over 100 product lines have been certified for SIL2/3 and developed according to IEC 61508. In addition, more than 40 device lines are approved according to WHG (German Water Resources Act).

The safety design of our devices has been optimized over decades. Our portfolio has been improved upon continuously to meet the latest requirements, such as NAMUR. Our safety concepts are becoming increasingly efficient. For example, longer testing cycles are also possible for protection and safety equipment, which can be checked without the need to remove the equipment and shut down the plant.

Endress+Hauser

As a partner for complete solutions, Endress+Hauser supports the process industry with a full portfolio of made-to-measure services ranging from consulting and the design of safety circuits through to documented functional testing of safety equipment.

Endress+Hauser can draw on over 65 years of expertise in the production of measuring instruments for the process industry. Certified safety engineers and management systems ensure a consistently high level of safety. We work with testing and certification bodies as well as national and international standardization institutes worldwide. The impressive total of 10 million instruments installed in safety applications around the world is testament to the trust our customers place in our products.

More information available at:
www.endress.com/process_safety

"We help our customers increase the level of safety for people, the environment and process systems and reduce plant downtime."

Dr. Gerold Klotz-Engmann, Department Manager for Technical Safety at Endress+Hauser, explains the brand promise for the chemical industry.
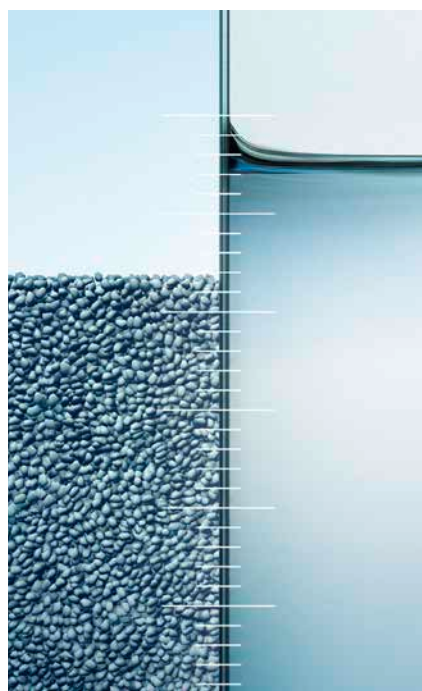
Endress+Hauser

Level measurement

Reliable, precise, efficient

The right measuring principle for any application

	Point level detection	Continuous measurement	Interface measurement	Density/concentration determination
Liquids	Vibronic Conductive Capacitance Float switch Radiometry	Radar Guided radar Ultrasonic Hydrostatic Capacitance Radiometry	Guided radar Capacitance Radiometry	Vibronic Coriolis Radiometry
Bulk solids	Vibronic Capacitance Rotating paddle Microwave barrier Radiometry	Guided radar Radar Ultrasonic Level system Radiometry	Vibronic (solids under water) Radiometry	

Reliable, precise, efficient: In order to perform all specific measuring tasks to the highest standard, both technically and in terms of optimal cost-effectiveness, Endress+Hauser gives you a choice of 14 different measurement methods.

Application Levels in liquids, pastes, bulk solids or liquefied gases are often measured in tanks, silos, transportable containers or pipelines and are divided into four measuring tasks:
continuous measurement, point level detection, density and interface measurement.

Benefits The customer is provided with the optimal solution for their specific measuring task. Endress+Hauser has over 65 years of experience in level measurement, punctuated with a large number of innovations:
- The most comprehensive product range in the world
- Inventors of the vibration measuring principle
- First dust ignition-proof approval in the world
- Inventors of the guided radar measuring principle
- First envelope curve on the display
- First PROFIBUS PA installations
- First devices with SIL locking sequence
- Heartbeat Technology – taking the pulse of your measurement

Plant safety and reliability with Endress+Hauser devices

Safety Integrity Level **SIL** Endress+Hauser

ATEX Certified **Ex** Endress+Hauser

German Water Resources Act **WHG** Endress+Hauser

Heartbeat Technology

→ For more information, see from Page 10 of this brochure and the brochure "Level measurement" (FA00001F)

www.endress.com/level

The right measuring principle for any application

Point level detection The task is to prevent overfilling or excessive emptying of containers or to protect pumps against running dry. Point level detection is essentially concerned with quick, reliable functioning and good reproducibility.

Continuous measurement This involves the continuous measurement of the level of a medium. In addition to direct measurement of the level in meters, the fill volume in a container can also be determined indirectly. This is done based on the container geometry and the properties of the medium.

Interface measurement Liquid mixtures are the focus here. There is a suitable measuring principle for clear interfaces or emulsions and for complex mixtures with solids.

Determination of density/concentration With familiar measuring principles, it is not the fill level, but the quality of the medium that is determined. By recording the density/concentration, other measured variables can also be calculated. Reproduction and quality are the buzzwords here.

! Standardized two-wire device concept

- Perfectly standardized for level and flow rate
- Maximum plant safety while ensuring high plant availability

More at:
www.de.endress.com/zweileiter-geraetekonzept

The wizard: your personal assistant
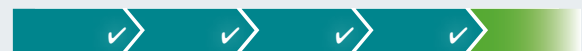
Commissioning finished

✓ Your benefits

- Assistant provides a step-by-step guide to commissioning of the Levelflex FMP5x, Micropilot FMR5x and FMR6x radar level transmitters
- Simple verification or testing of the measuring device while installed and during operation in accordance with SIL/WHG, including automatically generated documentation

More information is available at:
www.endress.com/commissioning-wizard-tof

Endress+Hauser

Optimum device design for level measurement technology – now also available in digital format

Find the right solution for your measuring point
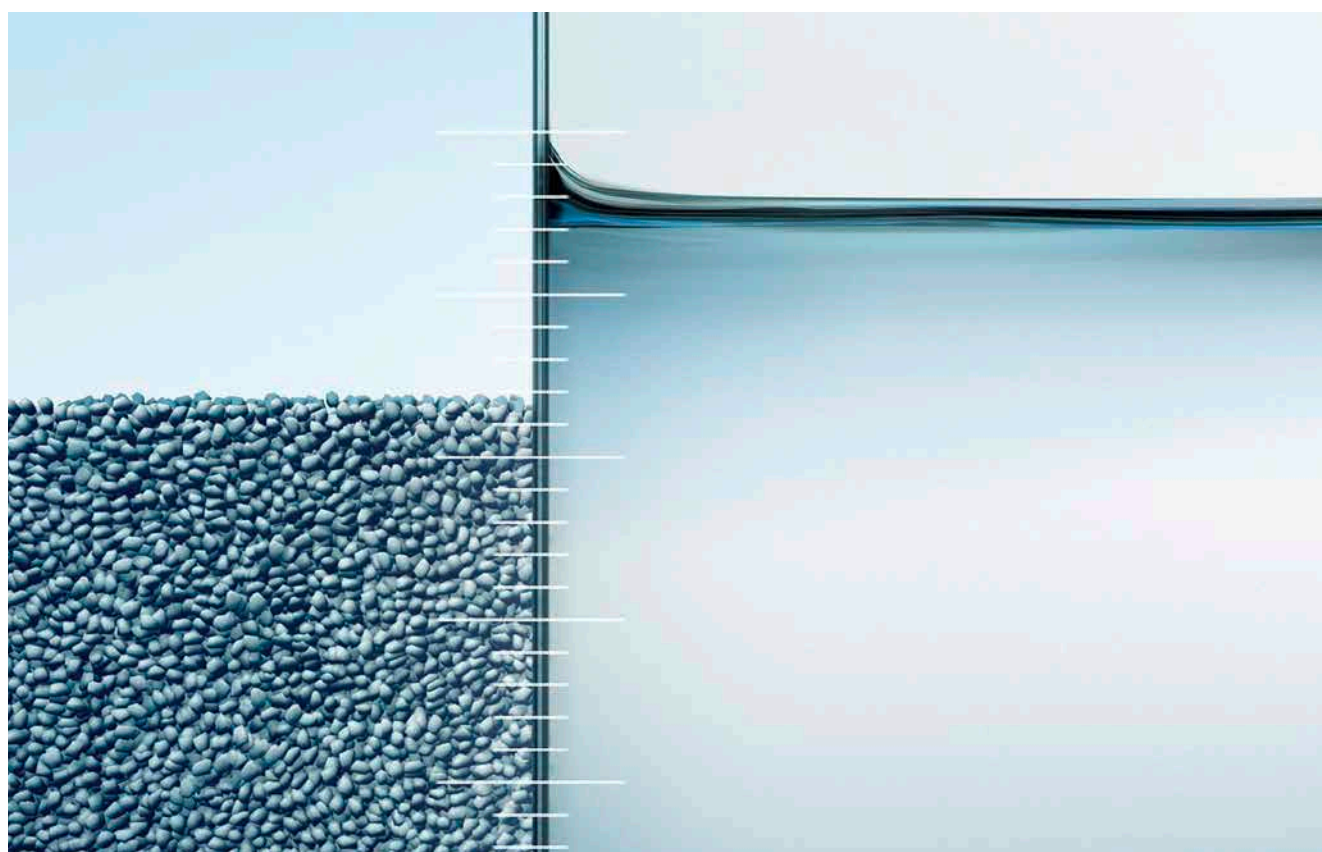
Measuring technology uses many measurement methods and principles From limit detection to continuous measurement, the right choice of instrumentation can be a challenging undertaking. Which measuring principle meets your requirements? With more than 65 years of experience in level measurement technology, we help you make the right choice in the latest edition of our device selection guide.

For product design:
www.yourlevelexperts.com/selection-guide

Advantages
- Overview of complete measuring principles
- Choice of measuring principle with application reference
- Choice of measuring device with application reference

Endress+Hauser

The new Liquiphant.
More safety. More Industry 4.0.

Tried-and-tested in a million applications, the measuring device for safe level measurement is ready for Industry 4.0

- Established and universal measuring principle – for use in all liquids
- Simple commissioning – no need to calibrate to media
- Highest safety thanks to permanent self-monitoring for corrosion or deposits, for example
- Minimized effort – proof-testing without removing the device or interrupting the process

Application The Liquiphant has proven to be highly successful in all industries. It can be used in storage tanks, containers and pipes to measure the level of all kinds of liquids. It is ideal for applications in which float switches, displacers or optical sensors were previously used. The device reliably delivers precise measurement results in areas where other measuring principles reach their limits on account of conductivity, deposits, turbulence, flow profiles or air bubbles.

Advantages

- Increase safety: the new Liquiphant is suitable for SIL2 and SIL3 applications with homogeneous redundancy, as it has been fully developed according to IEC 61508.
- Boost efficiency: mobile access via Bluetooth® boosts the efficiency of maintenance and monitoring processes – smart digitization for your Industry 4.0 strategy.
- Minimize effort: the Liquiphant can be verified at the press of a button at any time when installed without interrupting the process. The SmartBlue app guides the user through the verification process with a wizard and creates full documentation automatically.
- Maximize plant availability: with its pioneering diagnostic and monitoring functions, the innovative Heartbeat Technology enables predictive maintenance for more plant availability and process optimization.

More information available at:
www.endress.com/liquiphant

Technical data

- Process temperature range: -50 to +150℃
- Process pressure: Up to 100 bar
- Viscosity up to 10000 mPa·s
- Extension pipe up to 6 m

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Reliable, efficient and compact

Gammapilot FMG50: two-wire detector in the field of radiometric measuring technology

- Compact transmitter: all measuring tasks can be completed with just a single two-wire device
- Greatest availability, reliability and safety, even in extreme process and environmental conditions
- Minimized effort for installation and commissioning
- Verification and diagnostics including documentation without interrupting the process

Application The Gammapilot FMG50 is a radiometric sensor for the measurement of the level, point level, density and interface. It is used where other measuring principles reach their limits, e.g. in applications involving high pressure, high temperature, corrosiveness, toxicity or abrasion.
Without coming into contact with the medium, the FMG50 Gammapilot reliably takes measurements from outside, through the wall of all kinds of process containers, e.g. reactors, autoclaves, separators, acid cisterns, mixers, cyclones and cupola furnaces.

Advantages
- Developed in accordance with IEC 61508 SIL2 and SIL3 with homogeneous redundancy
- Reliable measurement in high-temperature applications up to 80°C even without water cooling
- Not affected by extraneous radiation, e.g. in non-destructive material testing, thanks to the patented FHG65 gamma modulator
- Heartbeat Technology offers increased safety and reliability in ongoing operation, less effort required for proof-testing (SIL) and essential data for predictive maintenance
- Simple, guided wizard for testing using the SmartBlue app via Bluetooth®
- Bluetooth® connection via mobile end device for identification, determining the status and access to appropriate documentation and information about the device
- Simple, guided wizard for testing using the SmartBlue app via Bluetooth®

Technical data and complete documentation:
www.endress.com/gammapilot

For product design:
www.endress.com/applicator

ℹ️ **Technical data**

- Temperature range up to 80°C
- Detector length: up to 3 m
- Developed in accordance with IEC 61508 SIL2 and SIL3 with homogeneous redundancy
- Compact design
- Output: 4–20 mA HART

Micropilot FWR30 – the cloud-connected level sensor

The world's first battery-operated 80 GHz radar level measuring device for remote monitoring of levels

- Easy commissioning and installation without wiring
- Full transparency in storage and transportation of liquids
- Secure data transmission combined with a flexible, digital service portfolio
- Information access from everywhere at any time

Application Together with the Netilion IIoT ecosystem or SupplyCare, the new IIoT radar level meter offers simple and cost-effective remote monitoring of levels in mobile tanks and containers or at geographically distributed measuring points. The 80 GHz radar sensor can be fitted on the outside of a plastic intermediate bulk container (IBC) and measures reliably without any contact with the medium.

Endress+Hauser's digital services offer simple level monitoring, including a dashboard, measured values, history, alerts and notifications, via a mobile end device and complete inventory management.

Advantages
- Easy commissioning and installation without cabling
- Automatic notification regarding battery life and when defined plan points are reached ensures transparency for maximum availability
- Additional information provided regarding the temperature, battery status, position of the sensor and location
- The Endress+Hauser IIoT platform offers a high degree of security and standardized applications ranging from simple level measurement to needs-oriented inventory management

More information available at:
www.endress.com/micropilot-fwr30

ℹ Technical data

- Measuring range up to 15 m
- Ambient temperature range −20 to +60°C
- Temperature and position measurement, location determination
- Output signal: NB-IoT, LTE-M with 2G fall-back option
- Battery life up to 10 years
- Transmission intervals from 1 hour to up to 24 hours

Endress+Hauser

113 GHz + your wavelength

113 GHz: The right frequency for any application

- Solution optimized for your application using guided or free-space radar
- Cost-effective, customized selection of measurement technology
- Bluetooth®
- Industry 4.0-ready

Application Consistent product quality, plant safety and cost-effectiveness: these are important aspects to consider when fitting equipment to any level measuring point. Thanks to the wide range of measuring principles now available, it is possible to find a tailor-made solution for any task. No principle is equally suitable for all applications. It is therefore important, for instance, to select radar sensors that work reliably in application-specific conditions in liquids and bulk solids yet also measure up to the economic considerations of tomorrow.

Advantages
- **1 GHz** with Levelflex FMP5x guided radar: foam, low dielectric constant, interface measurement, gas phase compensation and bypass
- **6 GHz** with Micropilot FMR54 free-space radar: high level of condensate formation and turbulence, shaft applications, stilling wells
- **26 GHz** with Micropilot FMR50, 51, 52, 56, 57 free-space radar: good focusing, turbulence
- **80 GHz** with Micropilot FMR6x free-space radar: excellent focusing at 3˚, measuring range up to 125 m in bulk solids, accuracy of 0.5 mm and suitable for custody transfer measurement with Micropilot NMR81
- Bluetooth® for wireless commissioning and maintenance

Technical data and complete documentation:
www.endress.com/80GHz
www.yourlevelexperts.com/113ghz

For product design:
www.endress.com/applicator

ℹ **Technical data**

- Process temperature: −196℃ to +450℃
- Process pressure: −1 bar to +400 bar
- Accuracy: 0.5 mm, suitable for custody transfer measurement
- Measuring range: up to 125 m

Radar technology – in a new compact size

Micropilot FMR10/FMR20 – efficient and innovative

- Easy to use – radar with Bluetooth® technology
- Minimum effort – easy to commission, operate and maintain
- Compact design – ideal for confined installation conditions

Application The new Micropilot FMR10 and FMR20 continuously measure the level of liquids by emitting microwaves. The devices have been specially developed for the requirements of the water and wastewater industry and for applications in utilities across a wide range of industries, particularly for carrying out measurements in storage tanks, open basins, pump shafts or sewer systems. These devices are operated via Bluetooth® using an Endress+Hauser app or via a HART connection.

Advantages
- Highly efficient measuring point thanks to innovative high-frequency technology
- Price segmentation in the field of current ultrasonic measurement technology
- Unaffected by environmental conditions such as temperature, gas phases or wind
- Easy, reliable and encrypted wireless remote access via Bluetooth® – ideal for difficult-to-reach installations, even in hazardous areas
- Compact radar measurement device – suitable for use even in extremely confined installation conditions
- Complete PVDF housing for maximum chemical resistance – ensuring a long operating life
- Hermetically sealed wiring and fully potted electronics protect the device against water and enable use under demanding environmental conditions

Modbus interface for Micropilot FMR20
- Micropilot FMR20 with Modbus interface enables simple connection to gateways (e.g. FXA30B) for remote data transmission
- Application: energy-efficient, battery-powered sewer and surface water monitoring
- Commissioning using Modbus RTU or wirelessly using the SmartBlue app (Bluetooth®)

Technical data and complete documentation:
www.endress.com/fmr10
www.endress.com/fmr20

For product design:
www.endress.com/applicator

E**direct**
High Quality – Low Price!

FMR10

FMR20

ℹ Technical data

- Process temperature: −40℃ to +80℃
- Process pressure: −1 bar to +3 bar
- Accuracy: up to +/−2 mm
- Degree of protection up to IP68/Nema6P
- Measuring range: FMR10 up to 8 m, FMR20 up to 20 m

Endress+Hauser

Accurate moisture measurement with radar technology

Solitrend MMP40/MMP41 – precise material moisture measurement for process optimization

- Minimum effort, as no need for recalibration in the process
- Excellent resistance to wear enables long operating times
- Flexible configuration for application-specific processes

Application The new Solitrend MMP40 and MMP41 product family measures the material moisture in bulk solids with high precision. Ideally, the Solitrend is mounted under silo discharge hatches or on conveyor belts with the help of a carriage. A guided radar wave propagates at almost the speed of light. In this way, the sensor measures the material "slice by slice" and layer for layer at a right angle to the sensor surface.

MMP40

Advantages
- Highly accurate measurement of material moisture
- Minimum influence of fluctuations in particle size
- No recalibration necessary if sensor head is worn
- Robust sensor construction possible in a variety of designs
- Remote display for configuration and calibration

More information available at:
www.endress.com/solitrend-mmp40
www.endress.com/solitrend-mmp41

MMP42

i Technical data

- Temperature range: 0 to +120℃
- Compact design
- IP68
- Measuring range: 0-100% moisture

Pressure measurement

Innovative pressure measurement technology from a single source

The right device for every application – simply choose what the process needs

Price

Performance
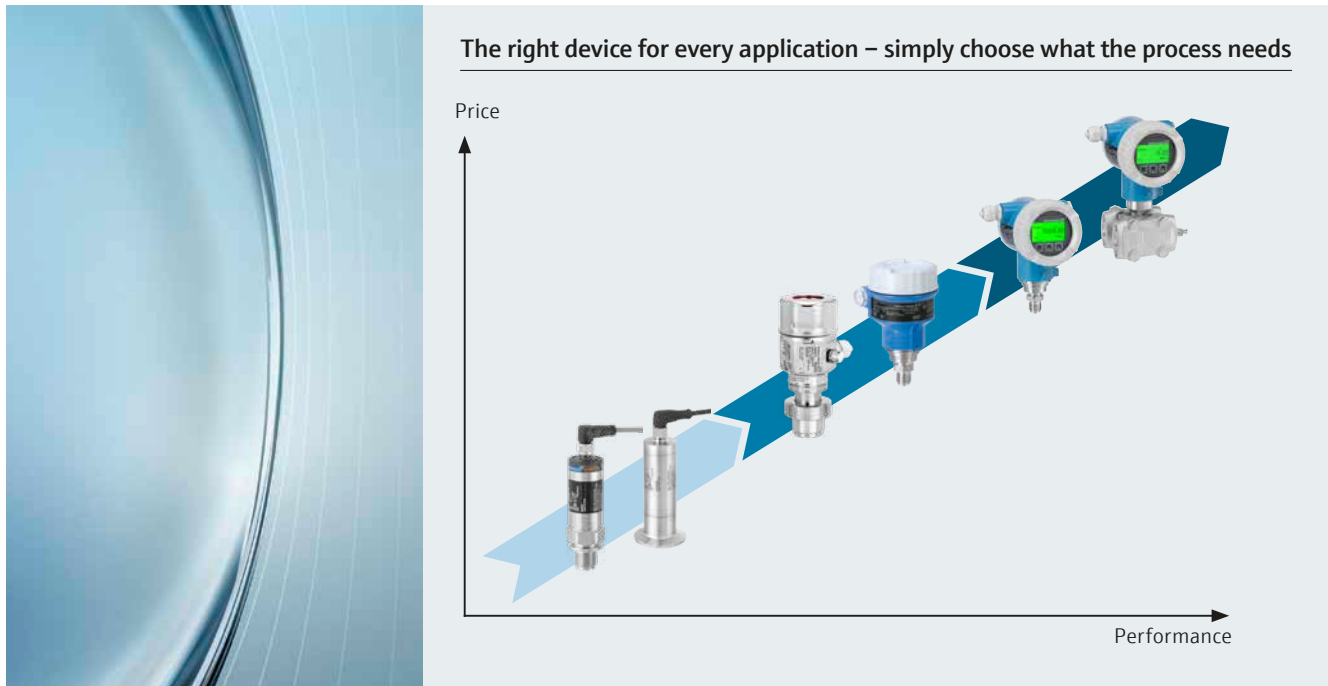
For over 30 years, Endress+Hauser has been promoting pressure measurement technology with intelligent innovations. The several million measuring points installed around the world are an impressive testament to the fact that more and more end customers and plant builders are placing their trust in Endress+Hauser's pressure measurement technology. Sustainable benefits are offered by innovations in the field of sensor technology, operating and spare parts concepts through to software tools for measurement technology design. Customer requirements are always the focus of these innovations.

Application

- Relative and absolute pressure measurement in gases, steam and liquids
- Level, volume and mass measurement of liquids in containers
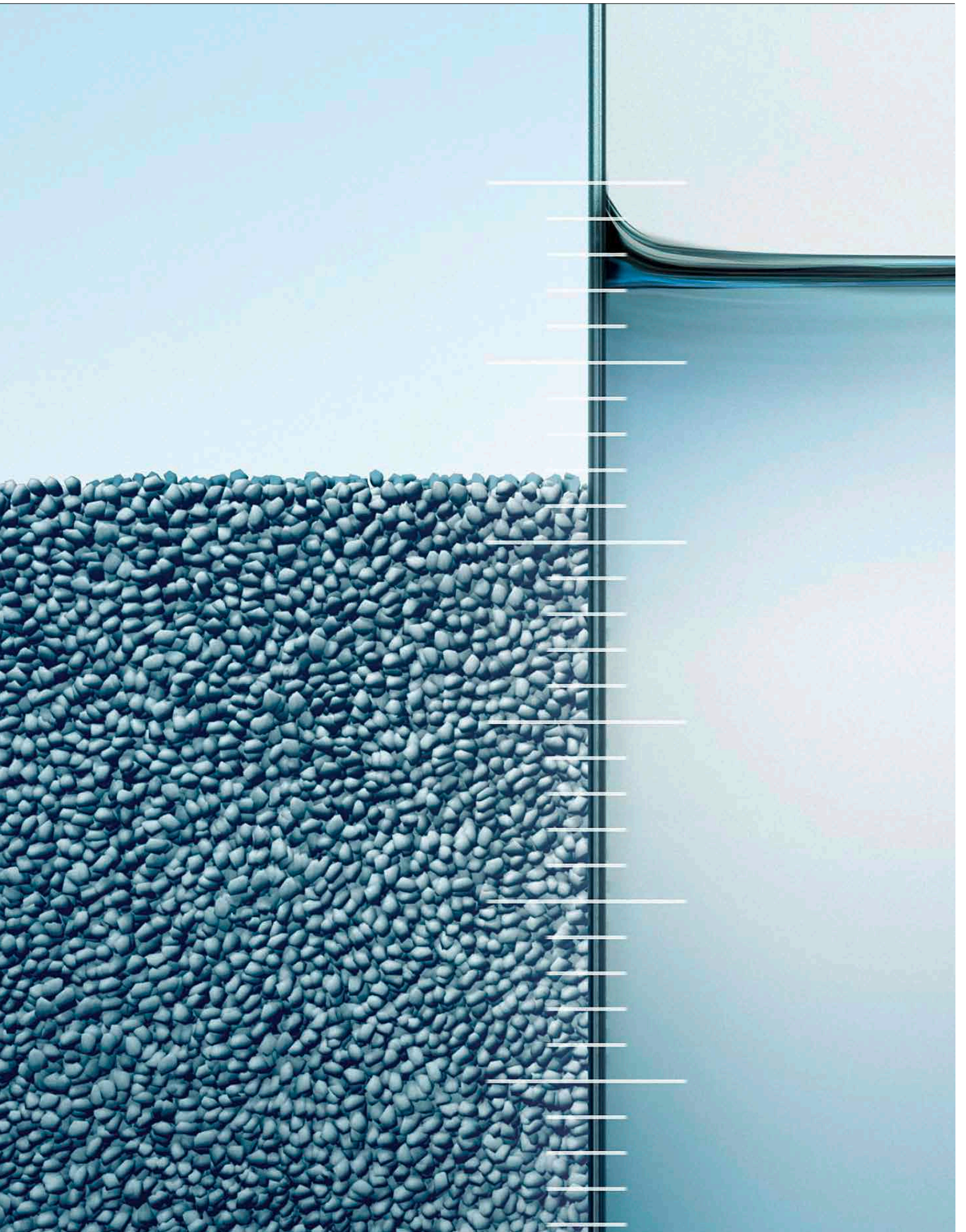- Level measurement by means of rod or rope probes
- Flow measurement in conjunction with differential pressure sensors (e.g. pitot tubes, orifice plates, Venturi or ISA nozzles)
- Differential pressure monitoring of filters and pumps

Pressure measurement technology and everything that goes with it Our product families (T-M-S) always ensure an optimal price/performance ratio.
- S-Class: the utmost precision and maximum reliability
- M-Class: versatile in the face of high demands
- T-Class: low-cost devices for standard applications

Applicator – simple, quick and reliable configuration
- Calculation of total accuracy and long-term stability
- Sizing/optimization of flow measurements with orifice plates, pitot tubes, Venturi etc.
- Calculation of diaphragm seal systems; determination of application limits

Advantages Intelligent pressure measurement technology with beneficial innovations. Adapted sensors that are customized to the application. Clear product segmentation – only pay for what the process actually requires.

→ For more information, see the brochure "Pressure measurement" (FA00004P)

www.endress.com/pressure

www.endress.com/applicator

Endress+Hauser [EH]

Five sensor technologies – countless advantages

Five sensor technologies ensure ideal adaptation to the process

- Ceraphire oil-free, capacitance ceramic sensor: extremely robust and fully vacuum-resistant, with diaphragm break detection. Also suitable for condensate applications
- Piezoresistive measuring cell with metal, welded process isolating diaphragm; seal-free, small flush-mounted process connections. Optionally available with approval in accordance with the Measuring Instruments Directive
- Unique, hermetically sealed CONTITE measuring cell; optimized for cold applications. Minimum influence from temperature shocks
- Fully welded diaphragm seals with or without a capillary; several diaphragm materials and filling oils are available depending on the application. For use in aggressive media or at high temperatures
- Function-monitored differential pressure measuring cell with overload-resistant middle diaphragm; measure very low differential pressures even when one or both sides are overloaded

☑ Your benefits

- Costs under control: only pay for what the process actually needs
- High plant availability and process reliability thanks to sensors that are customized to the application
- Cost saving: complete measuring point, including accessories, from a single source
- Time saving thanks to intelligent software tools that make it easier to select the right device

Ceraphire sensor with ceramic diaphragm

- Pressures
  0 mbar to 42 bar rel./abs.
- Temperatures up to +150℃

Silicon sensor with metal diaphragm

- Pressures up to 770 bar rel./abs.
- Temperatures up to +150℃

CONTITE sensor with Hastelloy diaphragm

- Pressures
  -990 mbar to 10.5 bar rel.
- Temperatures up to +100℃ or +135℃/1 h

Silicon sensor with added diaphragm seal

- Pressures up to 400 bar rel./abs.
- Temperatures −70℃ to +400℃

Differential pressure

- Differential pressures <1 mbar to 44 bar
- Pressure rating up to PN420

New high-performance pressure transmitters Cerabar and Deltabar

The move to Industry 4.0

- Consistent range of devices with standardized components reduces the device variety and storage costs by up to 30%
- Ready for Industry 4.0 – fit for the future with digital interfaces and Heartbeat Technology
- Developed in accordance with IEC 61508, SIL 2/3 for maximum process safety

Application

- Relative and absolute pressure measurement in gases, steam and liquids
- Level, volume and mass measurement of liquids in containers
- Flow measurement in conjunction with differential pressure sensors (e.g. pitot tubes, orifice plates, Venturi or ISA nozzles)
- Differential pressure monitoring of filters and pumps

Advantages

- Intuitive operation without opening the device
- Heartbeat Technology – permanent diagnostics, device verification without interrupting the process and monitoring functions such as the detection of faulty power supply
- Modern access with Bluetooth® technology using the free SmartBlue app according to highest security standards (Fraunhofer AISEC)
- HistoROM – the innovative memory concept enables fast and easy module replacement without reconfiguration
- Wizards – your personal assistants guide you intuitively through the commissioning routine and support you during maintenance through to proof-testing
- The broad range of sensor technologies allows users to optimize the plant in terms of efficiency, availability and safety
- Optimized diaphragm seal systems (e.g. TempC) – increased vacuum-resistance and unparalleled precision thanks to cutting-edge filling processes

PMP71B

PMP71B

PMD75B

PMD78B

→ For more information, see the innovation brochure
IN01155P

For product design
www.endress.com/applicator

ℹ **Technical data**

- Reference accuracy: up to ±0.05%/0.025%
- Measuring range: 0 mbar to 770 bar rel./abs
- Developed according to SIL2/3 IEC 61508
- Process temperature: −70°C to +400°C, depending on sensor, filling oil and capillary

Endress+Hauser

HistoROM
- Innovative memory concept
- Automatic data backup
- Replacement without recalibration

Industry 4.0-ready
- Fit for the future
- Additional process information
- Cutting-edge communication technologies

Bluetooth®
- Time-saving mobile access
- All parameters at a glance
- Data transmission according to the highest security standards

Wizards for
- Commissioning
- SIL locking and proof-testing
- Heartbeat Verification

Coming soon!

Heartbeat Technology
- Diagnostics
- Verification
- Monitoring via SPD (statistical power diagnostics)

Display with
- Background lighting
- Color change if action is required

Simply clever
- Proven 3-key operation
- Operation through glass without opening the device

Endress+Hauser

Complete package: pressure measurement technology

A complete measuring point is far more than just the measuring device

- Cost-efficiency – reduced inventory, fewer variants, lower processing costs
- Time and resources saved – just one point of contact ensures minimum coordination effort
- Plant safety – mutually compatible, tested components

All devices, components and systems are pre-assembled on request and are precisely configured to be compatible with each other. We will support you through the entire life cycle of your system – from correct selection of the measurement to complete assembly with all the required documents through to regular calibration.
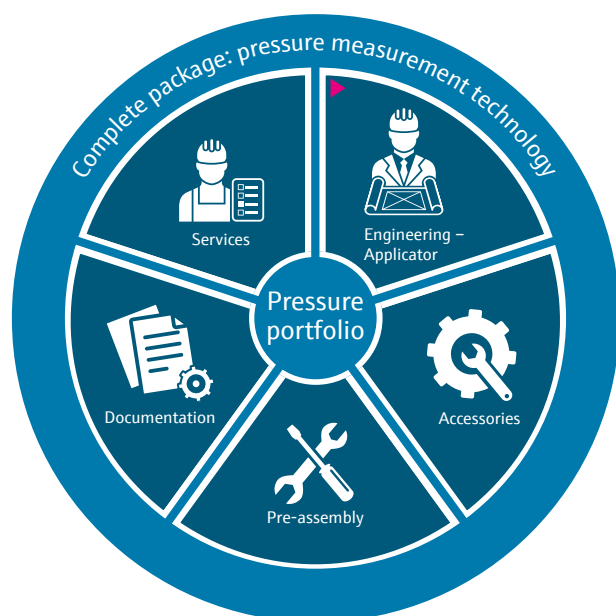
Pressure portfolio
- Only pay for what the process needs (T-M-S)

Engineering – Applicator
- Time-saving and reliable measuring point planning

Qualified accessories
- Valve blocks, protective enclosures etc.

Pre-assembly
- Testing and assembly of all parts

Documentation
- Customized documentation, hook-ups, 2D/3D drawings etc.

Services
- Commissioning, calibration, maintenance, etc.

For more information see:
www.endress.com/pressure

Endress+Hauser

TempC – unique diaphragm seal

Temperature deviations reduced several fold

- Up to five times more accurate: improved quality in production
- Use of smaller process connections translates to greater cost savings
- Greater process safety as no capillaries or impulse lines used

Application Diaphragm seal systems are used wherever it is necessary to separate the process and the measuring device, e.g. due to extreme process temperatures. To get even more accurate measurement results in extreme conditions, and therefore increase process safety, Endress+Hauser has developed the TempC membrane, which is based on a completely revolutionary technology and offers unparalleled performance.

Up to **5x** better measurement performance

Advantages
- Increased accuracy and process safety in diaphragm seal applications thanks to the very low temperature effect of the TempC membrane
- Smaller instrumentation dimensions save money: e.g. DN50 instead of DN80 without any reduction in accuracy
  - Reduces the size and variety of all measuring points (including valves or pipes)
  - Smaller inventories mean lower costs
  - Less space required, enabling a more compact plant design
- Protected TempC membrane. Design minimizes accidental damage during device installation
- Fully flush-mounted process connections available for food and pharmaceutical applications

Technical data and complete documentation:
www.endress.com/tempc-membrane

For product design:
www.endress.com/applicator

Want to learn more?
Watch the video here:

Patented
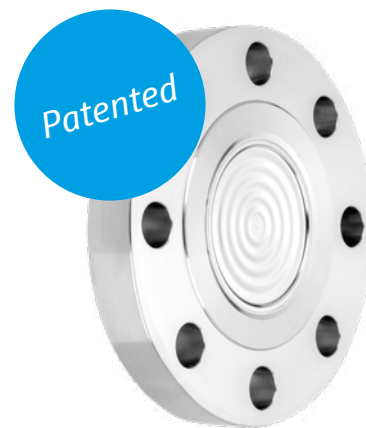
i Technical data

- Membrane available for the following transmitters:
  Pressure: PMP55, PMP75
  Differential pressure: FMD77, FMD78
- Available for the following process connections:
  - Flanges EN1092-1; DN25/DN50/DN80, PN10-40
  - Flanges ASME B16.5; NPS 1"/2"/3" Cl.150- Cl.300
  - Hygienic process connections
- Process temperature: −40℃ to +400℃

Endress+Hauser [EH]

Flow measurement

Proline – continuous redevelopment of tried-and-tested technology

Proline flowmeters have exemplified reliable and robust sensor technology with innovative and standardized transmitter concepts for more than two decades. With these products, Endress+Hauser has repeatedly extended and redefined the boundaries of cutting-edge flowmeter technology. Proline flowmeters increase operational safety and help reduce costs throughout the entire life cycle of your system. We use the experience we gain from each existing device generation to inform the development of the next generation, providing substantial improvements across the entire range of devices.

Evolution instead of revolution – innovative transmitters and device concepts

- Our comprehensive practical experience forms the basis for optimization of the next generation
- Consistent extension of standardization results in outstanding simplification in real-life operations across our wide product portfolio
- Integrating innovation continually provides new opportunities for savings and improves process reliability
- The features required to take advantage of current and future trends are available today

Continual improvements to tried-and-tested sensors

The experience gained from more than three million applications and continual further development of tried-and-tested sensor technologies guarantee maximum quality and measuring performance. The leading technological position of Proline sensors is based on the continuous integration of new requirements, mostly driven by increasing safety standards or new industry requirements. Throughout all these changes, the tried-and-tested sensor design ensures that the high level of robustness, stability of measured values and service life is maintained.

Market launch

1993

Proline 1st generation

Electronics

1993–2001
- Promag 30/33/35
- Promass 60/63/64
- Prowirl 70/77
- Prosonic Flow DMU93
- t-mass 671

Properties
- Standardized operation
- Partly uniform components
- Shared design tool (Applicator)
- Shared operating tool (FieldCare)

Sensors

→ For more information, see the brochure "Flow rate measurement technology for liquids, gases and steam" (CP01095D)

www.endress.com/flow

Endress+Hauser

2000

Proline 2nd generation

2000–2020
- Promag 10/23/50/53/55
- Promass 40/80/83/84
- Prowirl 72/73
- Prosonic Flow 90/91/92/93
- t-mass 65

Properties
- Simple, standardized operation
- Modular device concept for 5x, 8x, 9x
- Uniform components
- A single design tool (Applicator)
- A single operating tool (FieldCare)
- A single testing tool (FieldCheck)
- First two-wire technologies

2012

Proline 3rd generation

2012–tomorrow
- Promag 5x (Proline 100, 200, 300/500, 400, 800)
- Promass 8x (Proline 100, 200, 300/500)
- Prowirl 7x (Proline 200)
- Prosonic Flow 9x (Proline 200, 300, 500)
- t-mass 6x (Proline 150, Proline 300, 500)

Properties
- Transmitters optimized for industrial use
- Simple, standardized operation (Endress+Hauser HMI)
- Uniform components and spare parts
- Industry 4.0-ready, Integrated Industry Safety
- HistoROM data memory concept
- Integrated web server, WiFi
- Applicator, FieldCare, Heartbeat Technology
- Complete uniform two-wire device product portfolio (Proline 200)

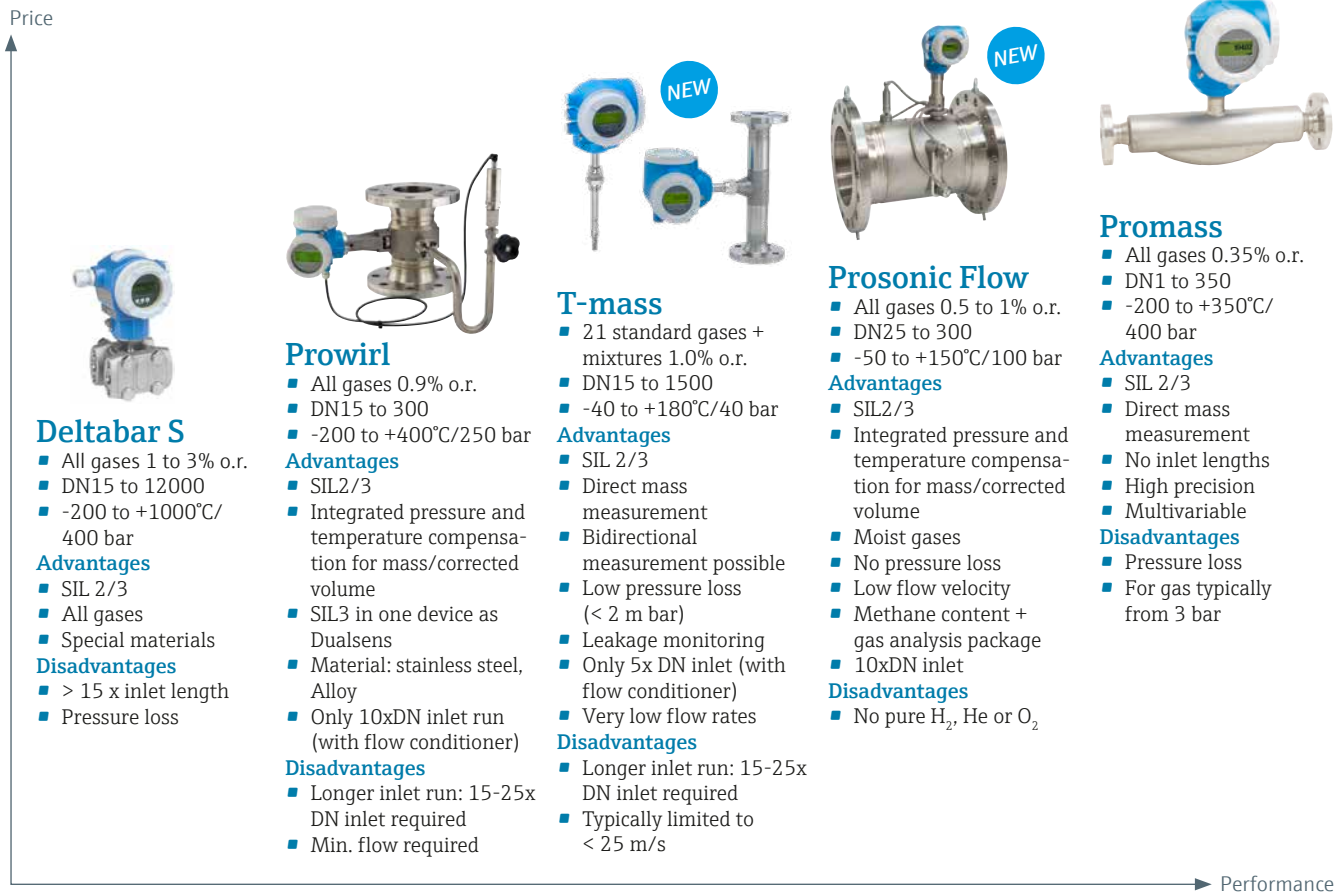Promag W/P/H/L/S/D

Promass E/F/H/I/A/S/P/O/X/C/Q

Prowirl F/O/R/D

t-mass F/I/A/B/T

Prosonic Flow W/P/F/T/B/E/G

Endress+Hauser

Expertise in gas flow measurement

Extensive product portfolio for the measurement of gases

Price

NEW

NEW

Deltabar S
- All gases 1 to 3% o.r.
- DN15 to 12000
- -200 to +1000°C/ 400 bar

Advantages
- SIL 2/3
- All gases
- Special materials

Disadvantages
- > 15 x inlet length
- Pressure loss

Prowirl
- All gases 0.9% o.r.
- DN15 to 300
- -200 to +400°C/250 bar

Advantages
- SIL2/3
- Integrated pressure and temperature compensation for mass/corrected volume
- SIL3 in one device as Dualsens
- Material: stainless steel, Alloy
- Only 10xDN inlet run (with flow conditioner)

Disadvantages
- Longer inlet run: 15-25x DN inlet required
- Min. flow required

T-mass
- 21 standard gases + mixtures 1.0% o.r.
- DN15 to 1500
- -40 to +180°C/40 bar

Advantages
- SIL 2/3
- Direct mass measurement
- Bidirectional measurement possible
- Low pressure loss (< 2 m bar)
- Leakage monitoring
- Only 5x DN inlet (with flow conditioner)
- Very low flow rates

Disadvantages
- Longer inlet run: 15-25x DN inlet required
- Typically limited to < 25 m/s

Prosonic Flow
- All gases 0.5 to 1% o.r.
- DN25 to 300
- -50 to +150°C/100 bar

Advantages
- SIL2/3
- Integrated pressure and temperature compensation for mass/corrected volume
- Moist gases
- No pressure loss
- Low flow velocity
- Methane content + gas analysis package
- 10xDN inlet

Disadvantages
- No pure H_2, He or O_2

Promass
- All gases 0.35% o.r.
- DN1 to 350
- -200 to +350°C/ 400 bar

Advantages
- SIL 2/3
- Direct mass measurement
- No inlet lengths
- High precision
- Multivariable

Disadvantages
- Pressure loss
- For gas typically from 3 bar

Performance

Application Five electric flow measurement technologies enable gas flow measurement in all areas of application: from the smallest DN01 line sizes to large DN12000 exhaust stacks, at high pressures (up to 400 bar) and high temperatures (up to 1000°C) and with high accuracy (up to 0.35% o.r.) for all gases and environments – at custody transfer billing measuring points, in process gas measurement or in utilities for natural gas or compressed air. Thanks to the advantages offered by the Proline 3 device concept, Endress+Hauser's gas flowmeters enable substantial cost savings.

Proline 3 concept – advantages:
- Industry 4.0-ready sensors: enable the easy digitization of process systems
- Integrated Industry Safety: ensures maximum plant safety
- Heartbeat Technology: enables comprehensive diagnostics, simple verification and predictive maintenance
- HistoROM data memory: ensures secure storage of data (cannot be lost) and simplifies repair and maintenance
- Simply clever instrument concept: simplifies the planning, operation and maintenance of devices in the life cycle

Technical data and complete documentation/ additional information at:
https://www.de.endress.com/loesungen-gasmessung

Unparalleled advantages for gas flow measurement:
- Accredited in-situ calibration of gas flowmeters (Promass+Prowirl) with water
- All technologies support SIL2/3, developed according to IEC 61508
- Custody transfer gas flow measurement with Promass
- Bidirectional thermal gas flow measurement
- Ultrasonic gas flow measurement with integrated pressure and temperature compensation and integrated gas analysis
- Vortex gas flow measurement with integrated pressure and temperature compensation and gas calculator

Prosonic Flow G 300/500

Redefining process gas measurement

- Innovative process gas measurement – simple and clever measurement and analysis of gases
- Precise measurements even in demanding processes thanks to robust industrial design
- Integrated pressure and temperature measurement for compact measurement of mass/corrected volume

Application High precision even at low pressures and no pressure loss are the hallmarks of ultrasonic gas flow measurement with the Prosonic Flow G 300/500. Thanks to the integrated gas computer and the option of integrated pressure and temperature measurement, the direct and compact measurement of mass flow/corrected volume flow at a measuring point is possible. Additional process variables, such as the methane content, energy flow or calorific value, can also be calculated. The measuring device meets the relevant industry requirements, such as NACE-compliant materials, NAMUR requirements, Ex, SIL, PED and gas factory calibration in the standard device version.

Advantages

- Developed according to IEC 61508 and TÜV-certified, the device is suitable for use in SIL2 protective systems (homogeneous redundancy SIL3)
- Integrated pressure and temperature measurement for compact measurement of mass flow/corrected volume flow at a measuring point
- Advanced gas analysis for determining the methane content and calculating additional process variables (energy flow, calorific value, Wobbe index, etc.)
- Also able to measure in wet gases as sensor design is unaffected by condensation
- Maximum safety in critical gas applications thanks to dual-seal design with integrated rupture disk
- Groundbreaking diagnostics, test concepts and predictive maintenance with Heartbeat Technology

Technical data and complete documentation/
additional information at:
www.endress.com/9G3B

ℹ Technical data

- Nominal diameters: DN25 to DN300
- Process temperature: -50℃ to 150℃
- Process pressure: from 0.7 bar abs to max. PN100
- Standard measured error 1% (optionally 0.5%)
- Materials: ultrasonic transducer made from titanium, measuring tube cast body 1.4408/1.4409 (CF3M)
- Approvals: ATEX, IECEx, cCSAUs, SIL, PED, CRN, NACE MR0175/MR0103, AGA 9

Endress+Hauser **EH**

t-mass 300/500

Thermal air and gas measurement with unique performance characteristics

- Wide range of applications, very suitable for low pressures
- Use in SIL 2/3 protective systems for selected gases
- Bidirectional measurement in a single device
- Heartbeat Technology: simple verification and monitoring with drift and moisture detection

Application The strengths of the thermal measuring principle lie in the mass flow measurement of gaseous media at very low pressures and quantities – ideal for consumption measurement and leak detection in internal distribution networks (compressed air, natural gas, etc.) and for process gases (nitrogen, oxygen, argon, etc.). Gas properties saved in the device enable flexible use for a wide variety of gas mixtures. Highlights include development according to IEC 61508 for use in SIL protective systems, the drift-free sensor system, bidirectional flow measurement in a single device and Heartbeat Technology.

Advantages

- Developed according to IEC 61508, for use as per SIL 2 and SIL 3 (homogeneous redundancy) in selected gases (air, nitrogen, oxygen, methane, natural gas etc.)
- Wide range of applications with integrated properties of 21 industrial gases and configurable gas mixtures ("gas engine")
- Bidirectional measurement in a single device
- Heartbeat Verification enables traceable verification of the installed device in accordance with ISO 9001 without interrupting the process (confirmed by TÜV certificate)
- Heartbeat Monitoring enables the detection of moisture and process interferences, thereby supporting the concrete implementation of predictive maintenance

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i **Technical data**

- Nominal diameters: inline version DN15 to 100, plug-in version: DN80 to 1500
- Mass flow measured error: 1% (predecessor: 1.5%)
- Process temperature: max. 180°C (predecessor: 130°C)
- Very low pressure loss: <2 mbar
- Process pressure: max. PN40
- Approvals: ATEX, IECEx, cCSAUs, SIL, PED, CRN

Endress+Hauser [EH]

Promag W 300/500/400 0 x DN full bore

Maximum measuring performance even without inlet/outlet run

- The first and only full bore electromagnetic flowmeter with no inlet and outlet runs (0 x DN) and therefore no pressure loss
- Reliable measured values thanks to innovative signal analysis and processing
- Installation directly after pipe bends and T-fittings, perfect for confined conditions and in skids

Application In the water and wastewater industry, high measurement accuracy is indispensable for optimal process control. A variety of influences, such as a close-knit pipeline network or obstacles in the pipe, cause flow turbulences that affect accuracy. With the "0 x DN Full Bore" option, Promag W offers a solution for this challenge that is the only one of its kind in the world: maximum measuring performance even without inlet/outlet runs, with no tube restriction and thus with no pressure loss. This is achieved by using multiple measuring electrodes and with high-precision measurement and compensation of the flow profile.

Advantages
- Perfectly suited for installation in tight spaces, e.g. directly after 90° pipe bends and T-fittings
- Flexible engineering – sensors with fixed flanges or lap joint flanges
- Convenient device configuration in the field thanks to the latest web server and WiFi technology for saving time during operation
- HistoROM: high plant availability thanks to automatic data storage
- Heartbeat Technology enables traceable device verification in accordance with ISO 9001 without interrupting the process (confirmed by TÜV certificate).
- Numerous communication interfaces (HART, PROFIBUS DP, Modbus RS485, EtherNet/IP, PROFINET)

Technical data and complete documentation/ additional information at:
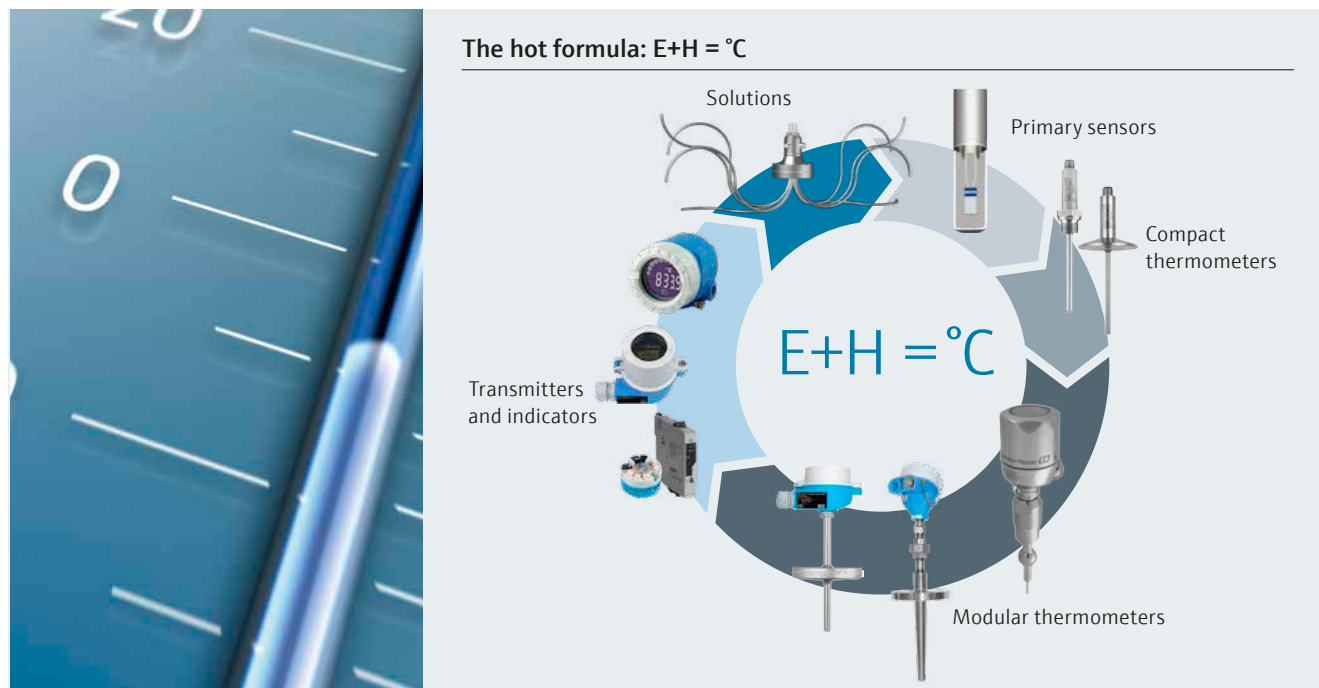www.endress.com/5W4C

Technical data

- Nominal diameters: DN25 to DN300
- Process connections: fixed flange (polyurethane, hard rubber), lap joint flange (PTFE)
- Maximum measured error: 0.5% o.r. with 0 x DN inlet/outlet
- International drinking water approvals: KTW/W270, ACS, NFS61, WRAS

Endress+Hauser

Temperature measurement

From primary sensors to customer-specific solutions

The hot formula: E+H = °C

Solutions

Primary sensors

Compact
thermometers

$$E+H = °C$$

Transmitters
and indicators

Modular thermometers

Temperature measurement technology is the oldest measuring principle with a correspondingly long history. Over time, over 50 important standards have been established worldwide, which must be adhered to in the process industries. These standards ensure that the individual parts of a temperature measuring point, such as inserts, thermowells, terminal heads and transmitters, can be freely combined, meaning that the equipment is easy to install.

Application Endress+Hauser is a complete provider of compact thermometers, modular thermometers, thermowells, inserts, temperature transmitters and accessories for all sectors of the process industry such as oil and gas, chemicals, food, life sciences, metals, primaries and energy generation. Temperature measurement technology determines quality and safety in processes.

Advantages
- Unique sensor technology for high long-term stability and process reliability
- The right components for the entire measuring chain allow for reliable planning
- International approvals/certificates
- Large number of different services and calibrations as standard
- Industry-specific product portfolio
- Production technologies to the highest quality standards
- Graphical configuration software ensures reliable and time-saving product selection
- Easy procurement via the website
- Global presence with production sites and services across the world

→ For more information, see the brochure "Temperature measurement" (FA00006T)

www.endress.com/temperature

Automatic self-calibration for temperature measurement that is always reliable

Unique sensor technology with iTHERM TrustSens TM37x self-calibration function

World first

- Maximum process reliability and plant availability thanks to Heartbeat Technology
- No plant shutdown due to in-line self-calibration; fully automated and traceable
- Automated certificate generation and documentation – audit-proof

The core component of the thermometer is crucially important The core component of the compact transmitter is the reference sensor with physical fixed point. Our new iTHERM TrustSens thermometer is designed for users in the pharmaceutical and food and beverage industries who require absolute compliance with GMP regulations. This product eliminates the risk of non-compliance during production. The iTHERM TrustSens stands out from other thermometers with its fully automated in-line calibration prior to every batch, requiring no additional effort. This results in high product reliability and increases plant capacity. In-line monitoring is already recommended in Good Manufacturing Practice (GMP – Annex 15).

Application
- Life sciences
- Food & beverage

Advantages
- High process reliability and plant availability thanks to Heartbeat Technology
- No plant shutdown due to in-line self-calibration; fully automated and traceable
- Automated certificate generation and documentation – audit-proof
- Maximum measurement accuracy thanks to adjustment to match characteristic curves (sensor-transmitter-matching)
- International certificates and approvals
  - EHEDG, ASME BPE, FDA, 3A, 1935/2004, 2023/2006 (GMP), 10/2011
  - CE CRN, CSA GPus
- Measuring range −40℃ to +160℃
- More than 50 hygienic process connections as standard

Technical data and complete documentation:
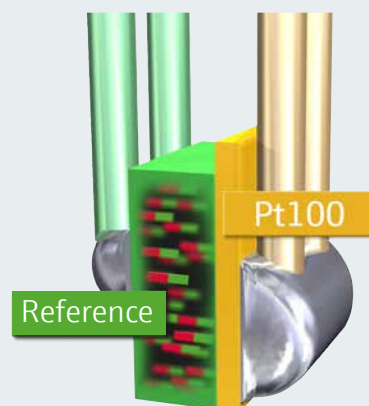www.endress.com/tm371

For product design:
www.endress.com/applicator

iTHERM TrustSens TM37x

Pt100
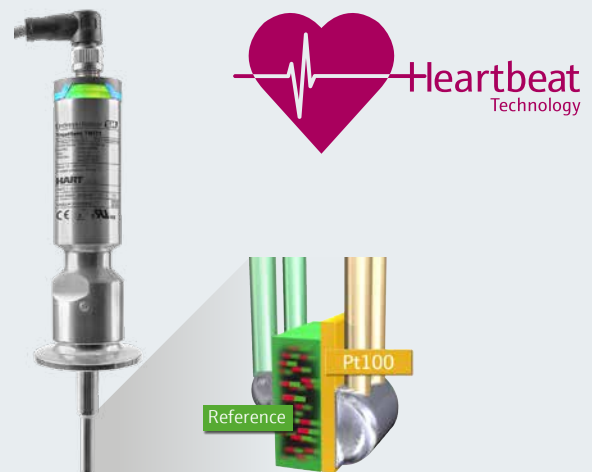
Reference

iTHERM TrustSens – self-calibration

iTHERM TrustSens core component

Pt100

Reference

Internal reference – high precision, long-term stability, completely traceable to the international calibration standard ITS90

Endress+Hauser

Secondary containment detects dangers and prevents leaks during temperature measurement

DUAL-SEAL – reliable sealing of the process side even if a thermowell breaks with iTHERM ModuLine TM131

- Maximum process reliability and plant availability thanks to secondary containment
- Simple and reliable operation using Bluetooth®
- Maximum process reliability owing to response times that are five times faster thanks to innovative thermowell design

The new iTHERM ModuLine TM1xx portfolio consists of modular temperature assemblies for both basic and challenging applications. It can be used wherever reliable, accurate and stable temperature measurement is required, and where valuable additional information needs to be generated and used. The aim is always to improve process monitoring, extend the operating time of the temperature measuring point and therefore increase plant safety and reliability. The secondary containment feature, for example, prevents the medium escaping if there is a leak in the thermowell, while sending a signal to the controller. In the event of a fault, the temperature signal is maintained. The fast-response thermowell up to +400°C is another innovation.

Application
- Chemicals
- Oil and gas
- Energy

Advantages
- Reliable detection of a pressure rise in a thermowell without signal interruption thanks to DUAL-SEAL
- Easy, intuitive operation, including in hazardous zones, with Bluetooth®
- Maximum process reliability thanks to fast-response thermowell

ℹ️ Technical data

- Secondary containment
- TMT71/72 head transmitter, with Bluetooth® configuration via app
- Fast-response thermowell up to +400°C
- SIL for the entire thermometer
- MID, GL, CRN, custody transfer approval
- Global approvals

Measure up to five times faster – fast-response thermowell

Reduce response times with the patented fast-response thermowell in the new iTherm ModuLine TM131 thermometer line

- Increased plant safety
- Optimum and efficient process control
- Consistently high product quality

Application Thermometers with the fastest possible response times are needed for optimum temperature control. With the new fast-response thermowell in the iTherm Moduline TM131 thermometer line, response times when using a thermowell can effectively be up to five times shorter.
Using a patented method, a thermally conductive material is introduced between the insert and the thermowell, driving out the air that has an insulating effect. The thermally conductive material ensures an optimum thermal connection with the process.

Advantages
- Standard 6 mm insert can be replaced at all times
- Permanently effective up to 400℃
- No thermal oil used
- Response time up to five times faster

iTherm TM131 with fast response thermowell

Technical data and complete documentation/ additional information at:
https://www.youtube.com/watch?v=u26oaNmiuL8

www.endress.com/moduline

i Technical data

- Up to 400℃
- For standard 6 mm insert

Endress+Hauser

Digital measured values and status transmission during temperature measurement using IO-Link

iTHERM CompactLine TM311 takes the first step towards Industry 4.0; variable use thanks to IO-Link/4-20 mA and PNP output

- Cost savings owing to easy integration
- Status messages for guaranteed reliability
- Digital communication via IO-Link saves time during commissioning

Application The iTHERM TM311 compact thermometer has been designed for universal use in the food and life sciences industries and as the standard for machine and plant construction.
The compact thermometer measures the process temperature with a Pt100 (Class A 4-wire). The optional integrated transmitter converts the Pt100 signal. The transmitter automatically detects the type of output: IO-Link, 4–20 mA or switch.

Advantages
- Compact stainless steel design
- Fast response times
- Very accurate even with short immersion lengths

Technical data, complete documentation and additional information at:
www.e-direct.endress.com/TM311

ℹ Technical data

- Up to 400℃
- For standard 6 mm insert

Endress+Hauser

Easy to use – temperature transmitter with optional Bluetooth® operation

iTEMP TMT71 and TMT72 universal temperature transmitters – high accuracy, simple operation

- Improved process efficiency and plant availability thanks to accurate temperature measurements and long-term stability
- Simple commissioning thanks to integrated Bluetooth® interface and intuitive menu guidance
- Reduction of plant shutdown through advanced diagnostics including undervoltage detection

Application

- The new iTEMP TMT71 and TMT72 temperature transmitters are single-channel temperature transmitters with 4–20 mA and HART7 communication for converting various input signals into a scalable 4–20 mA output signal
- The optionally integrated Bluetooth® interface for wireless display of measured values and configuration via the Endress+Hauser SmartBlue app makes commissioning extremely simple

TMT71 with TID10 display

Advantages

- Safe operation in hazardous locations due to international approvals
- Reliable operation thanks to sensor and device monitoring
- Diagnostic information in accordance with NAMUR NE 107
- Optional TID10 plug-in measured value display
- Optional integrated Bluetooth® interface for wireless display of measured values and configuration via the Endress+Hauser SmartBlue app

TMT72 installed in the housing

Technical data and complete documentation:
www.endress.com/tmt71
www.endress.com/tmt72

For product design:
www.endress.com/applicator

ℹ️ Technical data

- 1 x universal input for resistance temperature detector (RTD), thermocouples (TC), resistance transmitter (Ω) or voltage transmitter (mV)
- Output 1 x 4–20 mA (TMT71) + 1 HART protocol (TMT72)
- Optimal system integration in existing communication systems – DD, FDT/DM
- Diagnostics in accordance with NAMUR NE 107

Endress+Hauser

Measuring temperature profiles with iTHERM MultiSens

The new iTHERM MultiSens models make it possible to continuously monitor temperature profiles using just a single process connection

- Safety and efficiency thanks to close temperature monitoring (e.g. in fixed-bed reactors)
- Simplified multipoint measurement design using standard models
- Free positioning of measuring points and high number of measuring points despite confined installation conditions
- Maximum plant availability thanks to unique safety concept with up to three process barriers
- Project support from specification to installation

Multipoint standard models

	MultiSens Flex	MultiSens Linear	MultiSens Slim	MultiSens Bundle
Without diagnostic chamber	TMS01	TMS11	TMS21	TMS31
With diagnostic chamber	TMS02	TMS12		

Application The MultiSens iTHERM TMS0x and TMS1x thermometers are specially designed for the requirements of refinery and petrochemical processes. Areas of use include fixed-bed reactors, fluidized bed reactors, distillation columns and storage containers. A version with diagnostic chamber, which provides an additional process barrier, is also available. The iTHERM TMS21 MultiSens thermometer has been developed for use in the chemical industry, particularly in smaller test reactors in pilot plants and tube bundle reactors. The iTHERM TMS31 MultiSens thermometer has been developed for temperature monitoring in silos, specifically for the primaries and food sectors.

Advantages
- Linear or three-dimensional distribution of measuring points
- Optimal use of available process connections
- Application-specific adjustments are possible
- Inserts that can be replaced depending on version
- Complete engineering of the measuring chain
- 2D or 3D drawing
- Trained experts for installing and commissioning

Endress+Hauser [EH]

ProfileSens TS901 – multipoint cable probe for iTHERM MultiSens

Delivering precise and reliable temperature profile information under challenging process conditions

- Saves space in the reactor compared to conventional measuring elements
- Robust, durable device thanks to outer and inner tube
- Ideal for 3D temperature profile measurement

New unique sensor technology The new revolutionary multipoint sensor has been specially developed to measure temperature profiles in the most demanding applications in the oil and gas industry (e.g. in distillation units, cracking and hydrotreating reactors). High temperatures, high pressure and corrosion need to be considered. The new TS901 sensor is not only insulated by mineral insulated powder but also by an internal metal sheath for every single sensor. Even if the outer tube is defective, the thermocouples are not damaged and all measurements continue to be performed without any restrictions. The TS901 enables a dramatic reduction in process invasiveness and therefore more efficient processes for users on site.

Sensors and reactor fittings of every kind play a central role in establishing contact between the catalyst and the product. The uneven distribution of liquid over the catalyst can result in channeling through the catalyst bed, which can lead to excessive deactivation of the catalyst due to coking, the formation of "hot spots" and the inefficient use of the catalyst.

Technical data and complete documentation/ additional information at:
www.endress.com/tms01
www.endress.com/tms02
www.endress.com/tms11
www.endress.com/tms12
www.endress.com/tms21
www.endress.com/tms31
https://eh.digital/TS901

More information available at:
www.endress.com/multipoint

For product design:
www.endress.com/applicator

i **Technical data**

- Resistance thermometer/thermocouple
- Design: straight multipoint, 3D multipoint
- Ex approvals
- Compliance with Pressure Equipment Directive 97/23/EC
- Output signal depends on the transmitter selected (4–20 mA, HART®, PROFIBUS® PA or FOUNDATION Fieldbus™)

Endress+Hauser

Liquid analysis

Reliable, simple, safe, cost-effective

Endress+Hauser develops and produces all components for analytical measurement technology and makes operation of your measuring point easier, more reliable and more cost-effective.

Application
- pH: universally usable, reliable glass electrodes and non-glass electrodes (0–14 pH)
- Conductivity: from ultrapure water to acid measurement – cost-effective range of sensors for all applications
- Oxygen: simple, optical and amperometric sensors for reliable oxygen measurement
- Turbidity: from ultrapure water to sewage sludge applications – cost-effective solutions for your measurements
- Chlorine measurement: reliable chlorine sensors to guarantee the disinfection functions in drinking water, service water and swimming pool water
- Transmitters: simple operation, automatic sensor detection

User-friendly transmitters From simple transmitters to high-end multi-channel transmitters – the reliable transmitters produced by Endress+Hauser are notable for their simple and standardized operation. The Liquiline platform, in particular, uses a navigator to give it unparalleled operating reliability. In addition, it has a modular design so that you can easily add to it. The new PROFINET functions and operability via Bluetooth® with a tablet or smartphone are groundbreaking features.

Sensor technology expertise No other component in a measuring point requires quite so much time and expertise to develop as the sensor system does. The large vertical production range, modular assemblies and a high level of automation guarantee absolutely reliable quality and safety, regardless of the liquid analysis parameters that you want to measure.

"Endress+Hauser provides better support for customers in the area of liquid analysis than any other provider. With Memosens, Endress+Hauser has established an industry standard."

Frost & Sullivan

For more information, see the brochure "Sensors, transmitters, compact devices and assemblies" (FA00007C)

www.endress.com/analysis

In 2017, Telekom and WirtschaftsWoche presented the Digital Champions Award to Endress+Hauser for their Memosens technology.

The perfect combination – over 10 years of Memosens technology and Liquiline transmitters

Digital technology well established in the market

Memosens technology – the inductive and digital transmission of measured values from the sensor to the transmitter – has been firmly anchored in the market for 14 years now, with well over a million of these analytical sensors produced so far and demonstrating their benefits in use. Memosens stands for the digitization of the measured values directly in the sensor head, the non-contact digital signal transmission and the diagnosis and storage of all data relevant to the sensor directly in the sensor.

Memosens sensors are available for the following measuring parameters:

- pH/ORP
- Conductivity, inductive and conductive
- Dissolved oxygen, amperometric and optic
- Turbidity
- Chlorine
- Ultrasonic sludge level
- Ion-sensitive sensors for ammonium and nitrate
- UV sensors for nitrate and SAC

With all the sensors now speaking the same language thanks to Memosens technology, we have been able to develop a completely new transmitter platform with the Liquiline devices. The devices are optimized for the use of digital Memosens sensors.

Liquiline transmitters simplify operation
The stand-out features of the Liquiline devices include their intuitive operation and their ability to connect appropriate sensors and detect them automatically. The measuring parameter is detected by the device and the corresponding software is activated. Within half a minute, the system is ready to measure with the relevant parameter. The sensor parameters are also copied automatically, thus preventing parameterization errors. This means that, regardless of the measuring parameter, only one transmitter type is required. Storage costs are reduced and the ordering process is simplified.

✓ Your benefits

- Reliable signal transmission: no moisture or EMC problems thanks to the inductive digital signal transmission
- Intelligent safety: an active indication is given in the event that there is no connection between the sensor and transmitter
- Simplified installation guaranteed thanks to longer distance of up to 100 m between the sensor and transmitter
- Memosens sensors can also be used in hazardous areas
- Field calibration no longer necessary – easy, reliable calibration in the laboratory is possible because the relevant data is stored in the sensor head
- Quick commissioning and simple maintenance make your measuring point profitable

More information available at:
www.endress.com/memosens
www.endress.com/liquiline

Endress+Hauser

Liquid analysis – pH

Non-glass pH-ISFET electrodes CPS47D, CPS77D, CPS97D

- Unbreakable non-glass sensor for maximum product safety
- Seamless integration into sterile processes thanks to certified, hygienic sensor design
- Long operating life and significantly improved CIP stability

Application

CPS47D –accuracy for the chemical, food and life sciences industries
- Reference filled with potassium chloride liquid electrolyte, ceramic junction and potassium chloride filler connection
- Measurement of media with a high organic solvent content and media that cause blockages

CPS77D – product safety for the food and life sciences industry
- Gel electrolyte with bacteria-proof ceramic junction
- Meets the most stringent hygienic requirements

CPS97D – reliability for heavily contaminating media, e.g. in the chemical industry
- Open junction and specially hardened, chemically stable reference gel
- Measurement in dispersions, precipitation reactions and media with a high solids content and contamination potential

All sensors also available with ATEX approval from Q3/2020.

Advantages
- CIP stability up to 10 times higher compared with conventional ISFET pH sensors
- Extremely easy to clean thanks to new sensor design and larger sensor surface
- Glass-free pH sensor and unbreakable plastic shaft (primary processed PEEK)
- Full certification according to EHEDG, 3-A, EU1935/2004, FDA, USP87/88 class VI, USP381/661 and use of FDA-compliant and TSE/BSE-free materials
- Can be used in all insertable and retractable assemblies from Endress+Hauser

Technical data, complete documentation and additional information can be found at:
www.endress.com/cps47d
www.endress.com/cps77d
www.endress.com/cps97d

For product design:
www.endress.com/applicator

Technical data

- Measuring range: 0 to 14 pH
- Temperatures: -15 to +135°C or 110°C (CPS97D)
- Process pressure: 0.8 to 11 bar abs
- Measuring principle: ion-sensitive field effect transistor (ISFET)

Endress+Hauser

Liquid analysis – transmitters

Field devices: Liquiline CM442, CM444, CM448, CM44P
DIN rail: Liquiline CM442R, CM444R, CM448R, CM44P

- Reduces installation costs: a single transmitter for up to 12 measuring parameters
- Fast, user-guided commissioning due to plug & play Memosens sensors
- Heartbeat Technology offers comprehensive self-diagnostics, simple device verification and information for predictive maintenance

Application Liquiline CM44x multi-parameter transmitter for monitoring and controlling industrial and environmental processes with up to eight measuring channels, based on digital Memosens technology

- Chemical and life sciences industry
- Water and wastewater applications
- Food technology
- Power plants
- Plant engineering and construction

Liquiline CM44x

Advantages

- Fast commissioning and maintenance thanks to pre-calibrated Memosens sensors
- Modular design guarantees rapid adjustment to new measuring tasks
- Highly flexible, even for communication with higher-level systems: 0/4–20 mA, HART, MODBUS, Ethernet, PROFIBUS DP (3.02) web server, PROFINET
- Minimal inventory management thanks to modular design
- Very simple installation on a DIN rail; also with optional display
- **NEW:** CM44P for connecting process photometers

Liquiline CM44xR

Technical data and complete documentation:
www.endress.com/cm442
www.endress.com/cm444
www.endress.com/cm448
www.endress.com/cm442r
www.endress.com/cm444r
www.endress.com/cm448r
www.endress.com/cm44p

For product design:
www.endress.com/applicator

i Technical data

- For all digital (Memosens) sensors
- Sensor cable length: up to 100 m
- Logbook functions: data, calibration, operating and diagnostics logbook
- CM44P: for connecting up to two process photometers and up to four Memosens sensors

Liquid analysis – disinfection

CCS50D chlorine dioxide sensor
CCS51D chlorine sensor (free active chlorine)
CCS120D total chlorine

- Sensors for reliable and low-maintenance disinfection monitoring
- Extremely long calibration intervals (up to once a year) and fast response times (t90 < 25s)
- Reliable monitoring of disinfection performance in evaporative cooling systems and scrubbers
- Quality assurance in the food industry thanks to end-to-end disinfection monitoring

Application From trace measurement to concentration measurement, the chlorine dioxide (CCS50D) and chlorine sensors (CCS51D) cover the entire scope of possible disinfection applications. Combined available chlorine can also be measured and quantified with the new digital total chlorine sensor (CCS120D). The sensors' fields of application include drinking water treatment and the monitoring of cooling water plants for biofilm and pathogen growth (in accordance with the 42nd regulation of the German Emissions Control Act [42. BlmSchV], binding since August 2017). The sensors also support quality in the food sector by ensuring reliable and low-maintenance disinfection monitoring.

The sensors are used in
- Coolant/cooling towers – to prevent the growth of biofilms and pathogens (legionella)
- Drinking water to guarantee reliable disinfection in accordance with directives
- Food processing – to guarantee food safety

Advantages
- The right sensor for any application: ranging from trace measurement through to concentrations of 200 mg/l
- The fast response time (t90 < 25 s) provides a clear view of the process and enables immediate responses in order to react to changes
- Flexible installation: can be installed in the CCA151, CCA250 flow cell and in immersion assemblies
- Very long operating times for chlorine dioxide and free chlorine sensors (recommended calibration interval for drinking water: once a year)
- Easily combined with other relevant liquid analysis parameters (Liquiline)

All technical data, the complete documentation, such as technical information (TI), operating instructions (BA), accessories and spare parts, can be found at:
www.endress.com/ccs50d
www.endress.com/ccs51d
www.endress.com/ccs120d

For product design:
www.endress.com/applicator

Endress+Hauser

ℹ️ **Technical data**

- Measuring range
  ClO_2; Free Cl: 0 to 200 mg/l
  Total chlorine: 0.1 to 10 mg/l
- Temperatures
  CCS50D/51D: +0 to 55℃
  CCS120D: +0 to 45℃
- Process pressure
  CCS50D/51D: Max. 1 bar
  CCS120D: 1 to 4 bar
- Amperometric measuring principle

Liquid analysis – compact transmitters

Liquiline compact transmitter CM82

- Reduced installation effort – direct connection to PLC via 4–20 mA or HART
- Maximum reliability and safety thanks to time-tested Memosens technology
- Simple Bluetooth® operation via Endress+Hauser's SmartBlue app with a smartphone or tablet
- Superior data security owing to certified security concept

Application

- Life sciences
- Chemical industry
- Water and wastewater

Advantages

- Saves space: extremely compact design – the focus is on the measuring task alone
- Straightforward installation: directly connected to the PLC/DCS (Scada system)
- Maximum system safety
- Proven-in-use Memosens technology
- Standardized operating concept across all devices in the Liquiline platform
- Quick commissioning and maintenance
- Memosens: lab-calibrated sensors with plug-and-play
- Pre-configured Liquiline compact transmitter via HART or Bluetooth®
- Minimum inventory management: cross-platform concept for all Memosens sensors
- ATEX (1) 2G
- Operation via SmartBlue app possible

Technical data and complete documentation:
www.endress.com/cm82

For product design:
www.endress.com/applicator

Available with ATEX approval from Q3/2020.

Technical data

- For digital Memosens sensors for pH/ORP, oxygen and conductive conductivity
- Ambient temperature -20℃ to +85℃
- Fits all Endress+Hauser standard assemblies

Endress+Hauser

Measurement of turbidity and solids content

Scattered light and absorbance sensor for measurement in liquids

- Turbidity measurement for all applications in process engineering
- All sensors meet the requirements of ISO DIN 7027
- Factory-calibrated turbidity sensors with preconfigured application models

Application Turbimax CUS50D works with the absorption measurement method. Specially for medium and higher turbidities – it ensures reliable measurements and efficient process monitoring even in aggressive media.
- Solids content measurement in process and wastewater sludges, e.g. for monitoring the metering of flocculant
- For process media for concentration measurement in the product, e.g. in titanium dioxide

CUS50D

Application Turbimax CUS51D is a 4-beam alternating light sensor that is ideal for all applications in wastewater treatment.
- Solids content in sludge activation and recirculation
- Solids content in sludge treatment
- Filterable substances in wastewater treatment plant outlet

CUS51D

Application Turbimax CUS52D for applications in drinking water and process water applications – specially designed to determine very low turbidity levels.
- Turbidity measurement in all steps of the water treatment process
- Final turbidity measurement in the outlet of water utilities
- Turbidity measurement in the inlet of water utilities
- Turbidity measurement during filter monitoring and filter backflushing

CUS52d

Advantages
- Quick commissioning of all turbidity sensors thanks to factory calibration and integrated application models in the sensor
- Reduced maintenance effort due to wiper-free cleaning concept
- Selection of plastic and stainless steel sensors
- With the Liquiline transmitter, it is possible to combine other relevant liquid analysis parameters with turbidity measurement

All technical data, the complete documentation, accessories and spare parts can be found at:
www.endress.com/cus50d
www.endress.com/cus51d
www.endress.com/cus52d

For product design:
www.endress.com/applicator

i Technical data

- Measuring range: 0 to 4000 FNU/0.000 to 5000 AU
- Temperatures: -20 to +85℃
- Process pressure: max. 4.5 bar
- Measuring principles: transmitted light and scattered light measuring processes as per ISO 7027

Analyzers for phosphorus, phosphate, ammonium and silicate

CA80 Liquiline Systems family for water pollution control and power stations

- Colorimetric analyzers for precise control of monitoring values
- Cost-effective thanks to low rate of consumption and long operating times
- Reliable adherence to limits in very low concentration range

Application

- Monitoring and optimization of phosphorus and nitrogen elimination in municipal and industrial wastewater treatment plants
- Control of the flocculating agent dosing
- Control for optimization of the biological treatment
- Monitoring of the wastewater treatment plant outlet
- Silicate analyzer now also available for the reliable monitoring of cooling water circuits in power stations

CA80SI silicate analyzer

New: with up to 6 channels

Advantages

- On a par with laboratory analytical methods based on DIN EN colorimetric measuring principles
- Not affected by fluctuating wastewater coloration
- Reliable measurement in the extremely low concentration range
- One device for all measuring ranges with the new kind of multi-range photometer
- Reduced maintenance and operating costs
- Complete integration into the Liquiline and Memosens platform – standardized design, simple operation
- Simple connection and reliable monitoring of the sample preparation
- Measuring station can be expanded by connecting up to four Memosens sensors
- Full integration into higher-level systems by means of bus communication

Technical data and complete documentation:
www.endress.com/ca80ph
www.endress.com/ca80si
www.endress.com/cat820
www.endress.com/cat860
www.endress.com/ca80tp

For product design:
www.endress.com/applicator

> **i** **Technical data**
>
> - Measuring ranges:
>   0.015 to 50 mg/l PO4-P and Ptot
>   with ±2% of the measured value ±0.01 mg/l
>   0.05 to 100 mg/l NH4N
>   with ±2% of the measured value ±0.05 mg/l
>   0.5 to 5000 µg/l SiO2
>   with ± 2% of the measured value or ± 1.0 µg/l (ppb)
> - Single-channel or two-channel (CA80PH+CA80AM)
>   Single-channel to six-channel CA80SI

System components

Feeding, separating, indicating, registering
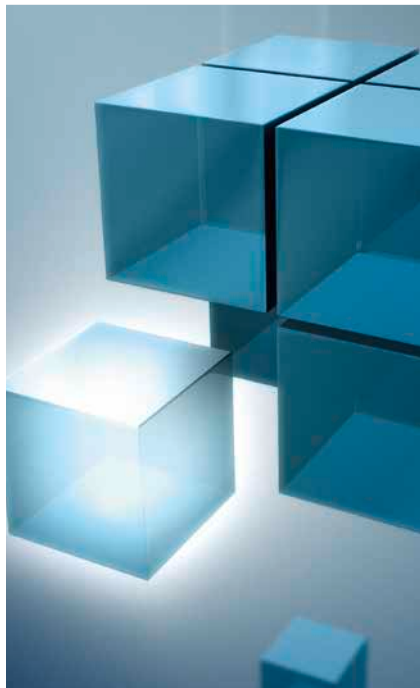
Everything you need for the complete measuring point

Indicators

DIN rail device

Recorders

Application manager
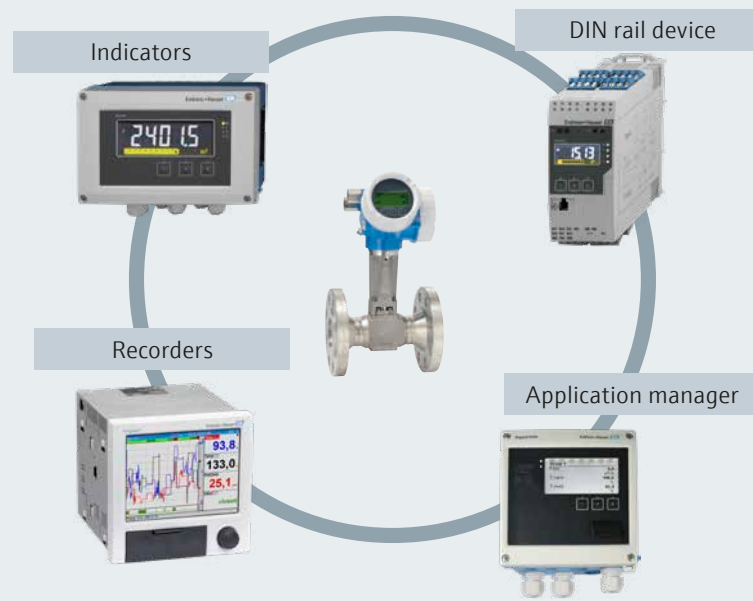
Endress+Hauser system components increase plant availability through integrated diagnostic functions. The system components optimize the control process directly at field level or manage energy consumption with advanced calculation methods.

Application In addition to measurement technology, additional functionality is required in most applications. Measurement devices have to be supplied and protected, the measured value displayed or processed, limits derived and monitored, and data recorded securely. And all this is done by system components that offer the right solutions for control cabinets or in the field.

Advantages Endress+Hauser components help you to save time and money:
- Easy installation and commissioning saves time
- Simple configuration of ready-to-use solutions reduces costs for time-consuming programming
- Time saving through easy integration of the devices via fieldbuses or via OPC servers during commissioning

You not only reduce operating expenditure but also capital expenditure because you receive the complete solution from one source with just one order.

→ For more information, see the brochure "System components and data managers" (FA00016K)

www.endress.com/systemproducts
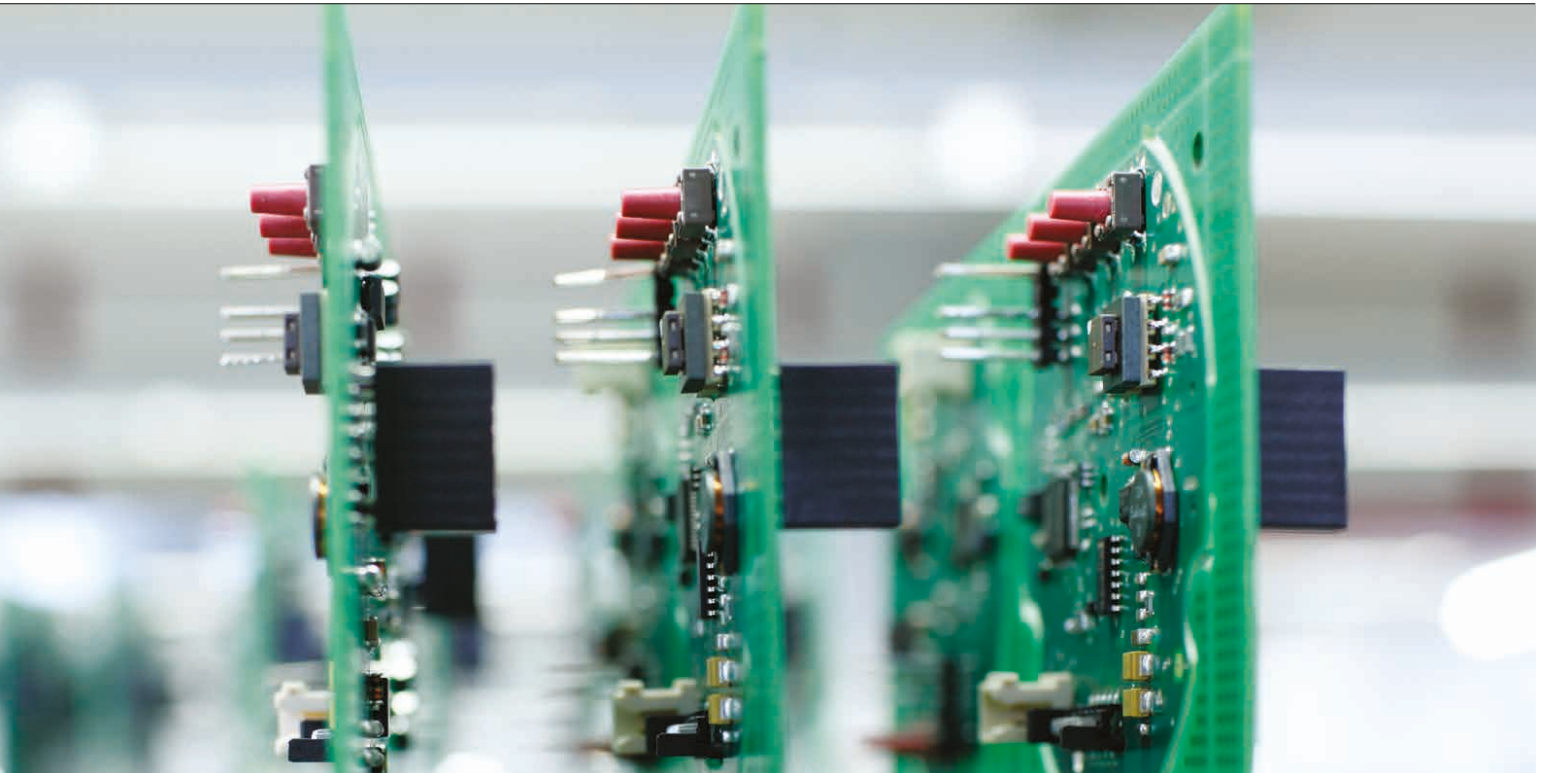
Endress+Hauser

Solutions for complete measuring points

Indicators Keeping a close eye on the measured value with Endress+Hauser indicators: Whether for installation in the field or in a control panel, for hazardous or non-hazardous applications, for fieldbuses or for 4–20 mA loops, we offer something for everyone.

Data recording The perfect solution for secure data recording. From a simple solution with the Ecograph T to the Memograph M universal data manager, which meets even the high data recording requirements of the FDA, we have the right device for every application.

Energy computers The basis for energy savings is measuring energy. With Endress+Hauser energy computers, you always have the right solution, from single-channel to multi-channel measurement.

Analysis on the DIN rail Our DIN rail devices offer a compact design with a wide range of functionalities. These devices are particularly suitable for SIL2 applications.

Feeding, separating, indicating, registering

RIA15 indicator

Memograph M data manager

RMC621 energy computer

RN221N DIN rail device

✓ Your benefits

- Quick and easy to use
- Integration into higher-level systems
- High plant availability thanks to coordinated devices

Endress+Hauser

Easy data integration on DIN rail

Memograph M RSG45 DIN RAIL automation component

- Full data access as far as sensor level via HART input card
- Can transmit up to 40 process values via HART or bus interfaces
- For compact, cost-effective mounting on the DIN rail and simple, time-saving operation via web server

Application The Memograph RSG45 is now available exclusively as a DIN rail device without a display. In addition to the data logging function, Memograph M RSG45 also allows the digital integration of HART sensors into higher-level systems. Not only is the full digital transmission of measured values supported, but measuring device error messages or warnings can also be retrieved online via the gateway functionality. The calibration reports can be saved and visualized together with the TrustSens TM371 thermometer. The new web server offers the option of online trending, transferring the screen functionality to the PC.

Advantages
- Digital communication from the sensor to the control system
- Integration as slave into a variety of bus systems
- Easy DIN rail mounting; easy operation via web server
- Tamper-proof data logging

Technical data and complete documentation:
www.endress.com/rsg45

For product design:
www.endress.com/applicator

Technical data

- Up to 20 HART or universal inputs
- Various bus connections such as PROFINET, PROFIBUS DP, Ethernet/IP, Modbus RTU/TCP
- With HART input cards, full access to the sensor via Ethernet with the HART gateway functionality
- Secure data logging; FDA compliance also possible

Endress+Hauser

Interface portfolio with central power supply via the DIN rail

Active barriers, isolating amplifiers, separators, signal duplicators and output isolating amplifiers

- Central power supply via the DIN rail saves time and money when wiring
- Safety guaranteed with ATEX and IECEx approvals
- Bidirectional HART® transparency and access via HART® connectors enables effective and swift commissioning of the measuring technology

Application The new interface portfolio offers flexibility and versatility for process automation. Compact design, 2 channels on 12.5 mm module width; quick and easy selection of the suitable functions that are optimally tailored to process automation and Endress+Hauser devices; easy device configuration complete the measuring point. The principal functions for powering sensors and transmitters, separating signals even in hazardous areas, NAMUR signal analysis and/or switches and output isolating amplifiers complete the portfolio. Bidirectional HART® transparency and HART® signal tapping for sensor configuration in the active barrier are integrated in the front of the device. In addition to the compact, centrally powered DIN rail family, the RN42 active barrier is also available as a standalone device with a wide-range power supply.

Advantages
- Space savings of up to 70% thanks to compact device design and 2 channels on 12.5 mm
- Up to SIL2 as per EN 61508; galvanic 3-way isolation
- Plug-in screw or spring cage connection technology (push-in)
- Bidirectional HART® transmission. HART® communication signal tapping for sensor configuration

Technical data and complete documentation/ additional information at:
www.endress.com/systemproducts


ℹ️ Technical data

- Redundant system power supply
  24V DC/2.5 A; Dynamic boost 3.15 A
- Analog isolating amplifier for isolating, filtering, amplifying and converting standard analog signals
- Versions as single-channel and two-channel active barriers, signal duplicators, NAMUR switches and output isolating amplifiers
- Versions for wide-range power supply

Endress+Hauser

Intelligent process automation

Responsibly making projects a success

Complete range of services for your automation project
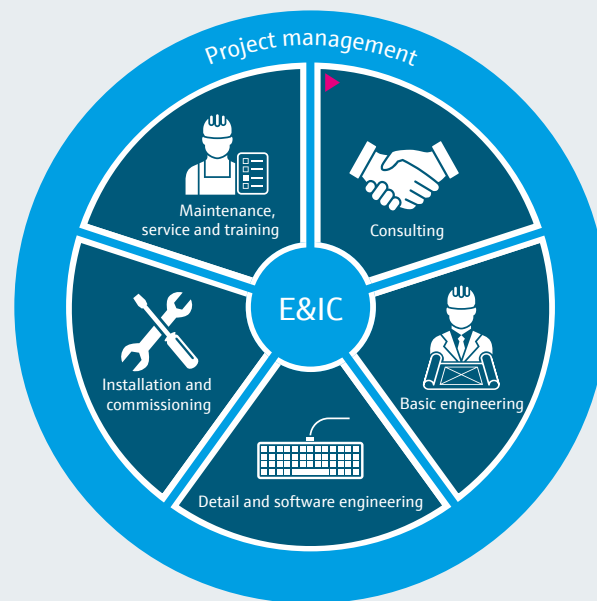
For over 65 years, Endress+Hauser has manufactured high-precision measurement technology for the process industry. From digital bus systems to complex measurement methods through to official requirements for processes in which our technology is used – with Endress+Hauser solutions, you can benefit from our many years of experience in these areas.

Application
- Complete solutions for measuring tasks
- Loading liquids and gases (except for water)
- Quality monitoring of liquids
- Complete solution for overfill prevention systems in accordance with the WHG (German Water Resources Act)
- Customer-specific automation solutions

Advantages
- Local and international presence – wherever your plant is, Endress+Hauser is on site with you
- A single partner for the entire life cycle of your plant
- Broad industry expertise – Endress+Hauser knows your requirements and speaks your language
- Safety and stability of a financially independent family-owned company

☑ **Your benefits**

Our many years of experience in process automation ensure smooth operation of your plant.

▶ Video – integrated automation explained simply:
www.de.endress.com/automatisierung

→ For more information, see the brochure "Automation? For sure!" (CP00050S)

www.endress.com/solutions

Endress+Hauser

Automation services

Everything from a single source, from the field level to the business level. Normally, to implement your automation project, you will require both instrumentation and electrical components such as motors, frequency converters, control cabinets, controllers and many others.

Endress+Hauser offers planning and programming services and provides tailor-made automation solutions for all aspects of EI&C technology.

✓ **Our system expertise:**

- Siemens S5, S7, PCS7
- Siemens WinCC, WinCC flexible
- Rockwell ControlLogix/CompactLogix/MicroLogix, PlantPax
- Rockwell FactoryTalk View, RSView
- WAGO
- Videc atvise, Acron
- Wonderware Intouch
- ePlan P8

Engineering across the entire automation pyramid

Enterprise level

Plant control level

Operating level

Group control level

Field level

Endress+Hauser [EH]
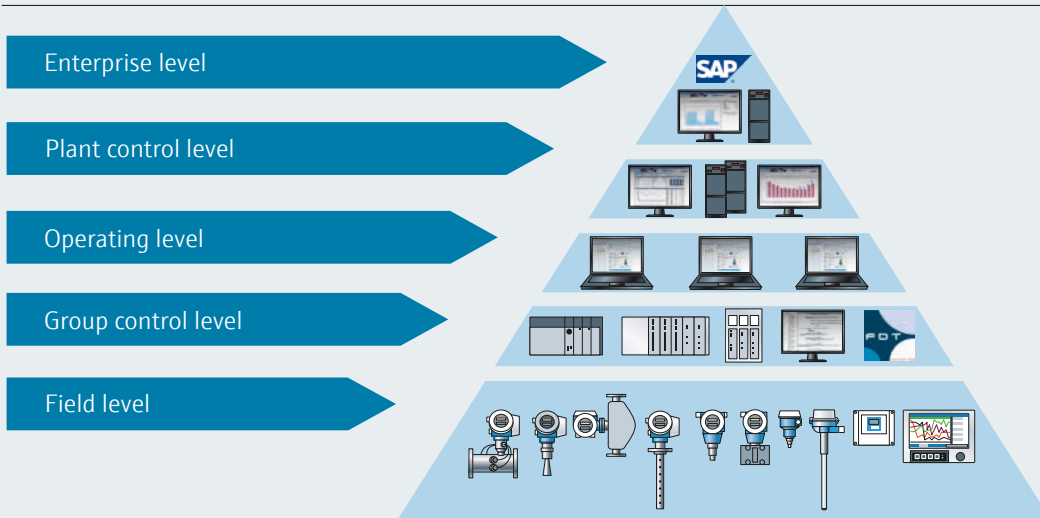
Analytical solutions

Complete turnkey solutions for your analytical measuring requirements

- Single source supplier
- Tailored solutions for your needs
- A full portfolio of state-of-the-art technology

Depending on the measuring task, we develop customized analytical solutions such as monitoring panels, cabinets and stations or control loops for wastewater treatment plants. Together with our partners apf and Brenntag, we are offering the first continuous chlorine dioxide generator that works according to the chlorite peroxodisulfate method for the reliable disinfection of water circuits. With all our analytical solutions, we support you from the conceptual development process through to implementation and commissioning. Furthermore, with our global support network, Endress+Hauser is your reliable partner during the entire life cycle of your solution.

Application
Analytical solutions – analytical panels:
- Single-parameter or multi-parameter panels as a tailor-made solution with standardized process connections, measuring technology and communication interfaces
- Modular, scalable and easy to retrofit
- High plant availability, simple calibration and user-friendly maintenance thanks to Memosens technology

"Clorious2" chlorine dioxide generator – the perfect solution for the reliable disinfection of drinking water, cooling water and process water:
- **Complete solution** for the generation of a chlorine dioxide solution with long-term stability as required. No degradation process after 1–2 days as occurs with commercially available chlorine dioxide
- **Onsite production in line with needs:** minimum costs with maximum availability, no logistics problems
- **Improved workplace safety:** no need to mix the reactants by hand
- **Configurable concentration and dosing of the chlorine dioxide solution:** Suitable concentration available for every application

Analytical panels ensure high process quality and safety

"Clorious2" chlorine dioxide generator for the safe and reliable disinfection of drinking water, cooling water and process water

More information available at:
www.endress.com/analytical-solutions

Endress+Hauser

Complete mechanical solutions for your measurement technology

Devices, components and systems are pre-assembled and precisely configured to be compatible with each other

Finished complete measuring points and instrumentation projects Ready-to-install devices, components and system units save costs and time. Unexpected problems can occur on-site when measurement technology and accessories are ordered. The wrong parts have been ordered, the parts are not compatible, they are delivered to different locations and cannot be found by the technicians or delivery is delayed. To prevent these problems from occurring in the first place and ensure that your project is not delayed,

we take charge of engineering, ex-works preassembly, delivery coordination, on-site installation, construction site management, commissioning and all documentation. That is why many of our customers already rely on the experience of our employees to ensure that complex projects for the mechanical integration of measuring devices are implemented successfully, and with good reason: As a strong partner to industry, Endress+Hauser has a great deal of practical expertise in all sectors.

Overview of our finished complete measuring points

Steam measurement section

Complete measuring point bypass

Flow solutions based on the differential pressure principle

Our range of products and services
- **On-site consultation** In an initial discussion, we will explain the measuring options available to you and identify the requirements for your project
- **Project implementation** Planning and designing of the measuring loop including accessories for all measuring points in accordance with the customer's process data
- **Supply**   Device measurement technology including accessories: coordination, scheduling and logistics
- **Project management** Project management for the overall project and monitoring of the on-site installation and commissioning work
- **Assembly** Mechanical assembly of all components in accordance with the prescribed technical regulations
- **Commissioning** Commissioning of the complete measuring loop with associated signal test
- **Documentation** Compilation of the device documentation (BA, TI, certificates, Ex and SIL approvals, 2D/3D drawings, etc.)

✅ **Your benefits**

Cost and time savings
- Standardization of interfaces
- Concentrate on what matters most to you – we'll take care of the rest
- Delivery of pre-assembled and tested complete measuring points
- On-site assembly of the items supplied, including commissioning and documentation
- Safety: coordinated components ensure optimal commissioning and a reliable process in the long term
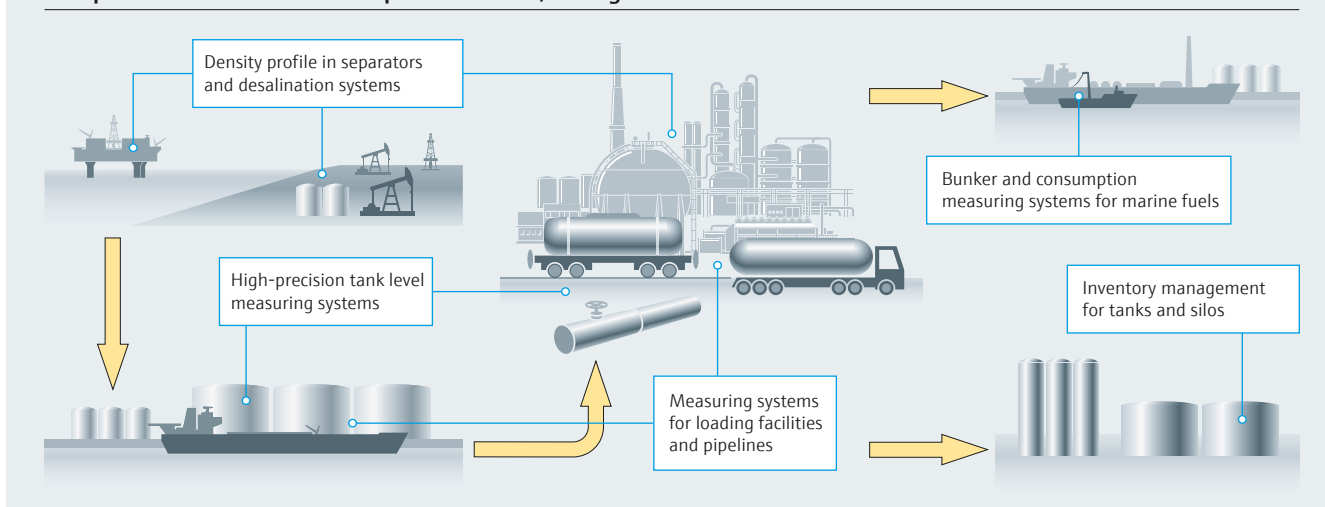
Endress+Hauser [EH]

High-precision measurements beyond supply chains

Transfer, storage and marine solutions

Our expertise
- Monitoring of individual tanks or complete tank farms – including measuring points relevant for invoicing
- Process optimization with continuous monitoring of inventories
- Industry-leading accuracy in loading facilities – including custody transfer
- Tank gauging and consumption measurements in the shipping sector – Endress+Hauser fuel consumption and bunkering solutions

The path of crude oil: An example of transfer, storage and marine solutions from Endress+Hauser

Density profile in separators and desalination systems

Bunker and consumption measuring systems for marine fuels

High-precision tank level measuring systems

Inventory management for tanks and silos

Measuring systems for loading facilities and pipelines

High-precision measuring systems and sensors are needed wherever the storage and admission of raw materials in the process industry must be monitored and controlled. Endress+Hauser provides customized solutions characterized by minimum maintenance and extraordinary operational safety. The measuring systems offered also meet the requirements of European legislation which must be met for custody transfer. In addition to the sensory mechanisms, Endress+Hauser also offers complete solution packages comprising all the necessary components such as dosing control, pipework and inventory management software. Thanks to our many years of experience and extensive industry expertise, Endress+Hauser solutions for transfer, storage and marine applications enable significant optimization of complex processes.

Application
- Density profiles in separators and desalination systems
- High-precision tank level measuring systems
- Solutions for loading facilities and pipelines
- Bunker and consumption measuring systems for marine fuels
- Inventory management for tanks and silos

More information available at:
www.endress.com/fms
www.endress.com/ims

Loading facility with Promass F

✓ Your benefits

- Time and cost savings during the implementation phase and operation
- From engineering to custody transfer approval – everything from a single source
- Certified measuring solutions in accordance with PTB, NMi, OIML R85 and R117
- Highest accuracy and safety for greater control
- Optimum interoperability of the individual components

Endress+Hauser [EH]

Automation solutions

We measure. We automate.

- A single partner for the entire life cycle of your plant
- Years of engineering expertise
- Extensive know-how in measuring device integration

Application Measuring technology, control systems and service: Endress+Hauser delivers complete automation solutions over the entire life cycle of your plant. We offer comprehensive consulting, sophisticated engineering and vendor-neutral integration. We put your system into operation, take care of calibration and maintenance, and train your staff. Find out how you can optimize your interfaces and reduce time, costs and risk in your automation project.

- Measuring technology, control systems and service: innovative complete solutions from a single source
- Design of the entire automation hardware and interfaces
- Connection of components at the field and controller level
- End-to-end data transfer from the controller to the ERP system, e.g. SAP
- A strong partner with years of engineering expertise for the entire life cycle of your plant

More information available at:
www.de.endress.com/automatisierung

Our system expertise:

- Siemens S5, S7, PCS7
- Siemens WinCC, WinCC flexible
- Rockwell ControlLogix/CompactLogix/MicroLogix, PlantPax
- Rockwell FactoryTalk View, RSView
- WAGO
- Videc atvise, Acron
- Wonderware Intouch
- ePlan P8

Endress+Hauser

Your expert service partner

For optimized process plants and reliable operation

"I need assistance"	"I need to complete tasks"	"I need to improve my processes"

Support	Expert service	Optimization
Diagnostics and repair	**Commissioning**	
Technical support	**Maintenance services** &	**Maintenance management**
	Calibration &	**Calibration management**
	Training	
	Engineering	

For safe operation and optimized process plants For more than 65 years, we have supported our customers with all aspects of process plant operations, from planning equipment through to performing maintenance. In so doing, our entire product portfolio is focused on providing outstanding quality and reliability. This is also true for our service range: industry-specific, expert technical support, on-site service wherever you are, unparalleled calibration expertise, helpful maintenance tools and new, attractive services and features to optimize your process plants. Our processes and tools are certified in accordance with OHSAS 18001 and ISO 9001.

Technical support – for quick help Our technical support for all measuring device technologies, software and automation solutions guarantees minimal interruption in production if a fault occurs. Our support services are tailored to your individual requirements:

- 24-hour, worldwide availability by telephone
- Fast reaction time and direct access to technical experts
- Remote access to your plant components
- Workshop service for repair, diagnostics and calibration with short processing times

Expert services for smooth plant operation Do you wish to commission your measuring devices quickly? Maintain the value of your plants over the entire life cycle? Continuously guarantee the quality of your products and relieve the burden on your repair team? To make sure you can achieve all this, we offer an on-site service that is available wherever you are and will support you throughout all the phases of your plant's life cycle. From commissioning through to regular calibration and maintenance:

- Worldwide service network
- Approvals for industry-specific maintenance work
- On-site presence, project and installation site management
- DAkkS-accredited calibration service in accordance with ISO/IEC 17025 for pressure, temperature, flow rate and other parameters
- Calibration of all device types and makes, irrespective of manufacturer
- In-line verification for checking safety equipment
- Online tools for searching for serial numbers and spare parts and for plant management
- Seminars and training sessions to train your employees
- Proof-testing of SIL safety equipment
- Designing, planning, commissioning and proof-testing of measurements as per the German Water Resources Act (WHG)
- Calculated SIL and intrinsic safety documentation as well as commissioning and recurrent function testing of SIL measurements

Endress+Hauser [EH]

Optimization services – for continuous process improvement We offer effective methods and services for optimizing your business processes – from consultation through to managing maintenance work on your installed measurement and control systems. The focus here is on continual process improvements, increased efficiency and support for strategic business decisions:

- Calibration management and test equipment monitoring
- Maintenance management for the coordination and organization of maintenance measures
- Device management irrespective of manufacturer: Data capture, analysis and optimization of the installed measurement and control systems
- Advice on standardization and inventory reduction
- Data management and data integration into your systems
- Metrology consultation

Endress+Hauser offers you the best service package for operation and maintenance in the field of process automation. Let us help you reduce your maintenance work so that you are free to concentrate completely on your core competences in production.

→ For more information, see the brochure "Services success factor" (CP01112H)

◎ www.endress.com/services

☑ **Your benefits**

- Optimized plant efficiency by preventing plant shutdown and waste
- Maximum plant safety resulting from compliance with quality and safety standards
- Documented traceability in line with the requirements to produce supporting documentation
- Reduction in plant operation, maintenance and inventory management costs

Smart start-up

Remote commissioning support with extended warranty period

- Commissioning support via the GotoAssist Seeit app
- Technical support with the GotoAssist Seeit app
- 12 months warranty extension

Making sure your process runs smoothly right from the start. Commissioning with instructions from experienced Endress+Hauser technicians helps you reduce process downtime when replacing devices or installing new ones. With both audio and video commissioning support provided via the GotoAssist Seeit app, you can ensure the optimum operation of your measuring device. At the same time, you reduce the organizational effort involved in having an external service provider at your plant. If technical support is required, the technical support agent uses the GotoAssist Seeit app to resolve the problem faster. In addition, if a device is faulty the warranty extension helps you keep costs in check.

Take advantage of our Endress+Hauser smart start-up service: rely on the expertise of Endress+Hauser technicians for commissioning and support, and protect your measuring device with an additional 12-month warranty. If you are interested or have any questions, please ask our sales office when purchasing a new measuring device.

Note: For commissioning and technical support, you need a smartphone/tablet with the GotoAssist Seeit app installed

and a good internet connection. The GotoAssist Seeit app is available from the App Store for your iPhone and iPad, and from the Google Play store for Android-based devices.

Advantages
- Cost-effective and time-efficient use of know-how and resources
- Live video link for fast and effective commissioning and more efficient support
- Documentation of commissioning and configured parameters
- Fast response times – commissioning arranged within a week

More information available at:
https://go.endress.com/de/StartUp-Termin

Accredited calibration service in accordance with ISO/IEC 17025

Unparalleled calibration service guarantees the highest degree of accuracy for your measuring devices

- Reduction in auditing and coordination costs
- Increase in plant availability
- Completely traceable calibration certificates in accordance with ISO/IEC 17025

((DAkkS
Deutsche
Akkreditierungsstelle
D-K-19095-01-00

Our range of services As one of the leading manufacturers of measuring devices for the process industry, we can call on experience gained from more than one million calibrations – from on-site calibration to high-precision laboratory calibration.   In addition, we offer you a wide range of on-site inspection concepts to check your measuring devices. You alone decide how and to what extent you would like us to ease your burden.

- Calibration of all device types and makes
- Global calibration concept with globally identical high-tech plants
- All calibration rigs are accredited in accordance with ISO/IEC 17025
- The best production calibration rig for flow in the world, with minimal measuring uncertainty of < 0.015% (PremiumCal)
- DAkkS-accredited on-site calibration service for flow, pressure and temperature parameters
- Patent-pending processes for high-precision density, viscosity and level calibration directly in your plant
- Industry-specific trained and experienced calibration technicians

Advantages

- Early detection of set point deviations affecting quality and processes
- Compliance with documentation requirements as part of quality assurance systems (e.g. IATF 16949, ISO 9001, HACCP, IFS Food, ISO 50001, GMP, FDA)
- Minimization of your auditing effort through an accredited, completely traceable calibration service
- Increase in plant availability thanks to innovative in-line calibration process (short calibration times)

For more information and documentation, go to:
www.endress.com/services

Endress+Hauser [EH]

Analysis of measuring performance

Systematic efficiency measurement of maintenance and calibration processes

- Increased process efficiency by regularly measuring all maintenance and calibration activities performed using KPIs
- Continuous identification of potential for improvement (CIP)
- Compliance with the requirements of internal and external regulations and audit trail documentation to meet quality assurance standards

Our range of services Analysis of measuring performance involves the use of KPIs to continuously measure calibration activities with the goal of increasing process efficiency. We continuously identify potential for improvement (KPIs) that can be implemented in the client's business process. The results of the analysis are presented in client workshops, and actions based on these results are identified and implemented together with the client. Reporting is in the form of analysis reports, which contain general overviews of all the calibrations performed in a campaign.

Advantages
- Clear data analysis of the accuracy and deviation of all tested or calibrated measuring points
- Optimization of the maintenance and calibration process with balanced cost/risk exposure
- Definition of important KPIs to assess the maintenance and calibration process
- Central documentation management platform always available online

More information available at:
www.endress.com/services

Endress+Hauser

Optimization of calibration intervals

The perfect balance between costs and risk

- Extend your calibration intervals to reduce your costs
- Reduce your risk of being outside the tolerance range by shortening your calibration intervals

Our range of services Each year, Endress+Hauser calibrates more than one million measuring devices around the world, proving our expertise and skills on a global scale. In addition to these calibration tasks, Endress+Hauser can help you determine when your measuring devices need to be calibrated. In future, you will no longer have to depend on randomly selected intervals or "rules of thumb". The new calibration interval optimization service from Endress+Hauser calculates the optimal calibration intervals using established scientific models, with an optimum cost/risk balance in mind. These patented models assess previous calibration results in order to predict the future performance of the calibrated measuring devices.

- Kick-off meeting
- Determination of the optimal calibration intervals for calibrations performed by Endress+Hauser for Endress+Hauser devices and devices from other manufacturers, within the framework of a calibration contract
- Application and coordination of the optimized calibration intervals with operational specifications

Advantages
- Our "calibration interval optimization" service has more to offer than just calculated calibration intervals. We discuss significant changes to intervals with you and review underlying assumptions to allow you to make the best possible decision for your calibration intervals.
- Then the set intervals are incorporated into your maintenance specifications, including planned plant shutdown, to create an optimal calibration schedule.
- Ultimately, you benefit from a reduction in calibration costs and can simultaneously reduce the risk of being outside the measuring device tolerance range.

More information available at:
www.endress.com/services

Endress+Hauser

Calibration testing with Coriolis mass flow measurement

Simple testing and calibration of stationary measuring systems

- Save time and money by carrying out calibration during ongoing loading operations
- Reuse of the testing medium avoids disposal costs
- High-precision comparison measurement via the use of tried-and-tested Coriolis technology

Our range of services The use of Coriolis mass flowmeters as a working standard enables efficient calibration testing of loading systems.   Systems can be tested for measuring low viscosity mineral oils, ethanol, biodiesel and aqueous solutions. Calibration can be carried out during normal loading operations. To do so, the working standard is simply installed between the loading system to be tested and a tanker, for instance. The flow rates measured during loading are then compared with each other, enabling calculation of the measuring uncertainty of the device under test. This enables the system to be calibrated without requiring a significant amount of time or product loss.
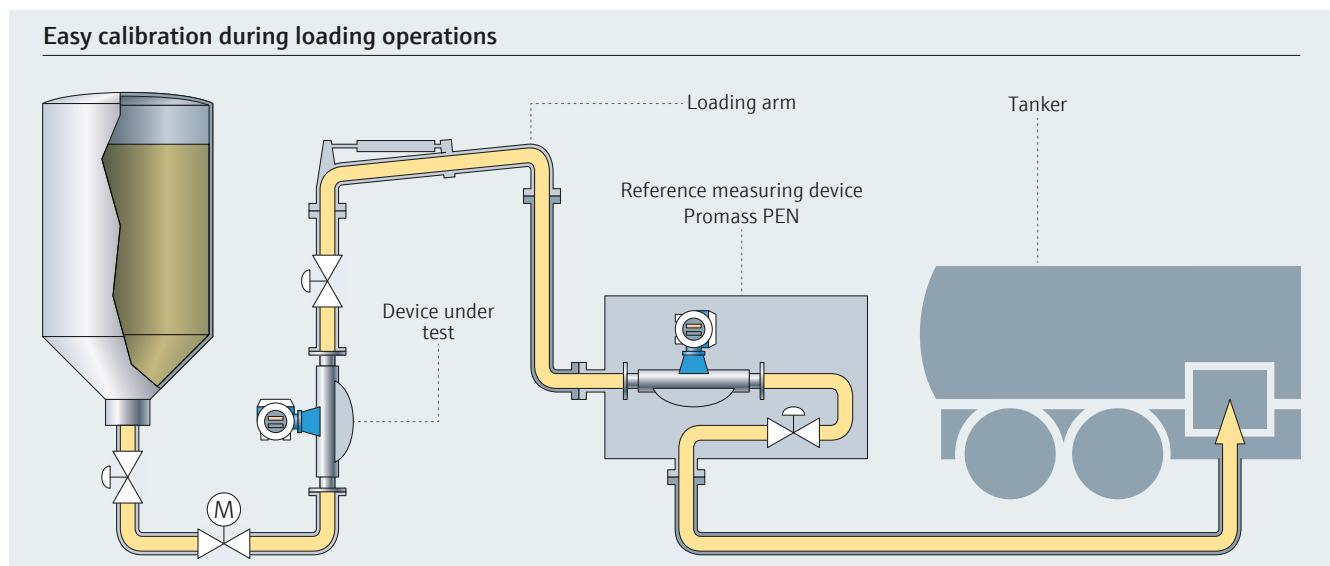
These products have a wide range of possible custody transfer applications in the oil and gas sector and in the chemicals industry:

- Measuring systems for low viscosity mineral oils (fuels, heating oil) and aqueous solutions
- In-house measuring systems
- Tanker truck loading systems
- Airfield refueling systems
- Tank car and ship loading systems
- Veneering systems

Advantages

- Preventing emissions ensures compliance with increasingly stringent environmental requirements
- Direct mass value, density and temperature display
- Short testing times enable multiple loading systems to be calibrated within a very short time
- The reference measuring device is tested and calibrated on accredited in-house calibration rigs
- The planning, organization and implementation of calibration testing is carried out by the calibration service accredited to ISO/IEC 17025

More information available at:
www.endress.com/services

Easy calibration during loading operations

Loading arm

Tanker

Reference measuring device
Promass PEN

Device under test

Endress+Hauser

Services for your plant safety

Your experienced partner for the protection of people, the environment and the plant

- More safety with specially trained technicians
- Superior testing quality and faster plant availability
- High-quality service documentation

Together with quality and efficiency, plant safety is one of the most important business objectives in the process industry. In light of stricter legal requirements and increasing plant complexity, having a partner with experience in the field of safety is indispensable.

We offer services that help you fully comply with even the most stringent safety requirements. These services are provided by our trained and certified service engineers and backed by our decades of experience in safety.

In accordance with the German Water Resources Act (WHG), **overfill prevention systems are mandatory on containers for water-polluting liquids.** These monitor the level and issue an alarm well before the maximum permitted level is reached. We provide consulting, data acquisition, sizing, commissioning and proof-testing according to the requirements of the WHG.

For **SIL**, we offer calculated SIL documentation, commissioning according to SIL, and the inspection of protection circuits. This is a verification service provided directly on site to discover dangerous undetected errors in a safety-instrumented system (SIS) to guarantee more safety in your plant.

When it comes to **explosion protection**, you can rely on us for calculated documentation of intrinsic safety,

suggestions for optimization, advice when selecting and sizing components for safety circuits, commissioning and acceptance.

Advantages

- Over 20 years of WHG-related experience
- Endress+Hauser service technicians are certified every two years by the TÜV
- Comprehensive SIL expertise (measurement technology and services)
- Detailed documentation of tasks and tests

More information available at:
www.endress.com/SIL

Safety Integrity Level **SIL** Endress+Hauser

ATEX Certified **⟨Ex⟩** Endress+Hauser

German Water Resources Act **WHG** Endress+Hauser

Endress+Hauser [EH]

New possibilities, new experiences – digital and personal

www.de.endress.com – the comprehensive information and procurement platform

- Up-to-date information on the complete product range, your prices and delivery times
- Restocking has never been so easy

Discover the new possibilities afforded by comprehensive information collection and efficient transaction management with Endress+Hauser, without having to forgo person-to-person contact.

With e-commerce functions integrated into the Endress+Hauser website, you can gather extensive information on our products and order products directly online. Optimized functionalities, such as the ability to access all business transactions with Endress+Hauser – performed both online and offline – help you optimize your procurement processes and give you a better purchasing experience.

The combination of product information and direct request and purchase options makes your procurement process easier and more efficient than ever before.

Advantages

- All your transactions, including detailed status information on requests, offers, orders and invoices
- Search for devices and spare parts simply using the serial number/order code/material number
- Simply save and manage your standard devices
- Your contacts at Endress+Hauser at a glance

Check out all the advantages online and sign up at:
www.endress.com
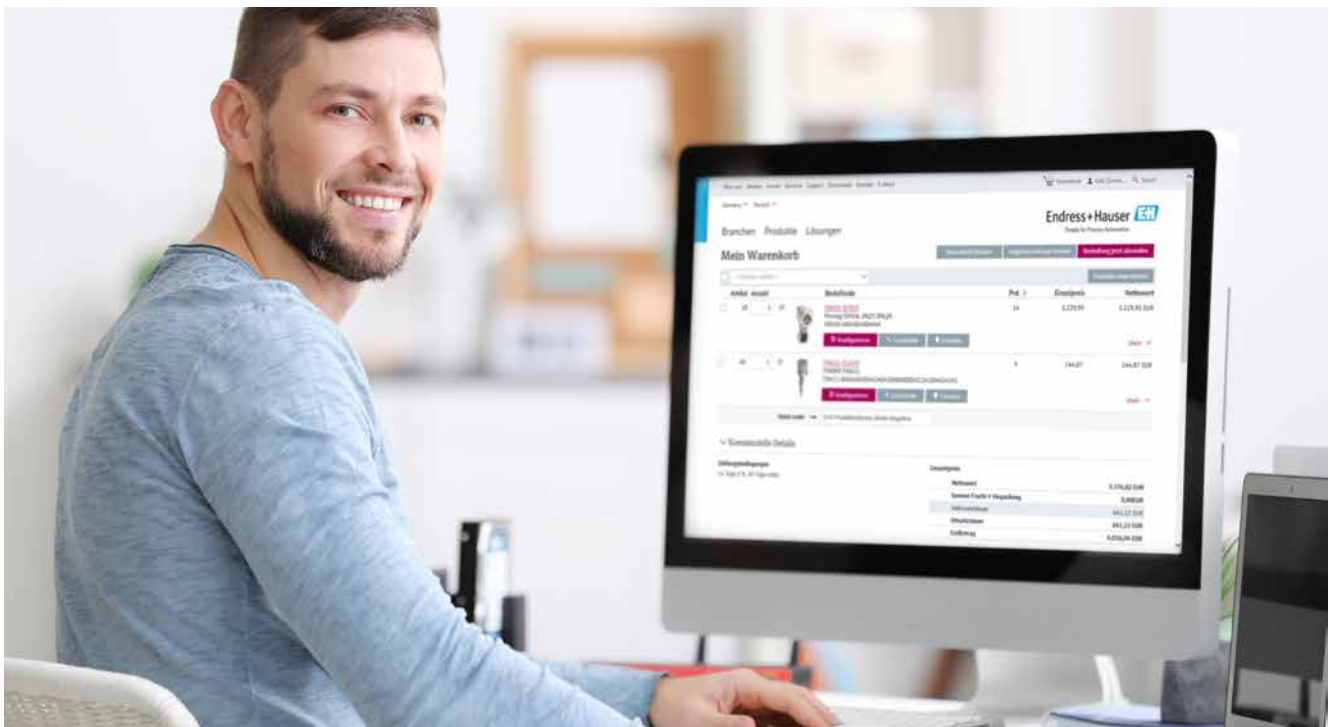
Endress+Hauser

Useful online tools

Information about plant operation

- Find the right device information – at any time
- Reduced procurement effort

Endress+Hauser's Device Viewer
Improve processes with online access to device data
Device Viewer allows you to access current, comprehensive information on your Endress+Hauser installed base using the instrument serial numbers. In addition to product details, such as the order code, date of manufacture, product availability and follow-up products, you can also access documentation, such as operating instructions, technical information and certificates.

More information available at:
www.endress.com/deviceviewer

Device Viewer

Select the type of information you need and enter the required information in the corresponding fields

◉ Device information and technical documentation
○ Device information and technical documentation incl. device-specific documents
○ Selected documents for all devices per order

Serial number [_____] ?

[Find]

Endress+Hauser Operations app
Mobile access to specific device information – anytime, anywhere The free Operations app allows you mobile access to device-specific information and documentation. Simply scan the QR code and download the Endress+Hauser Operations app from the App Store or the Google Play Store.

More information available at:
www.endress.com/operations-app

Spare parts search
Find and re-order spare parts quickly By entering the order code, product root or serial number, you can immediately find the right spare part for your device and order it directly. You can also find helpful installation instructions for replacing and repairing spare parts.
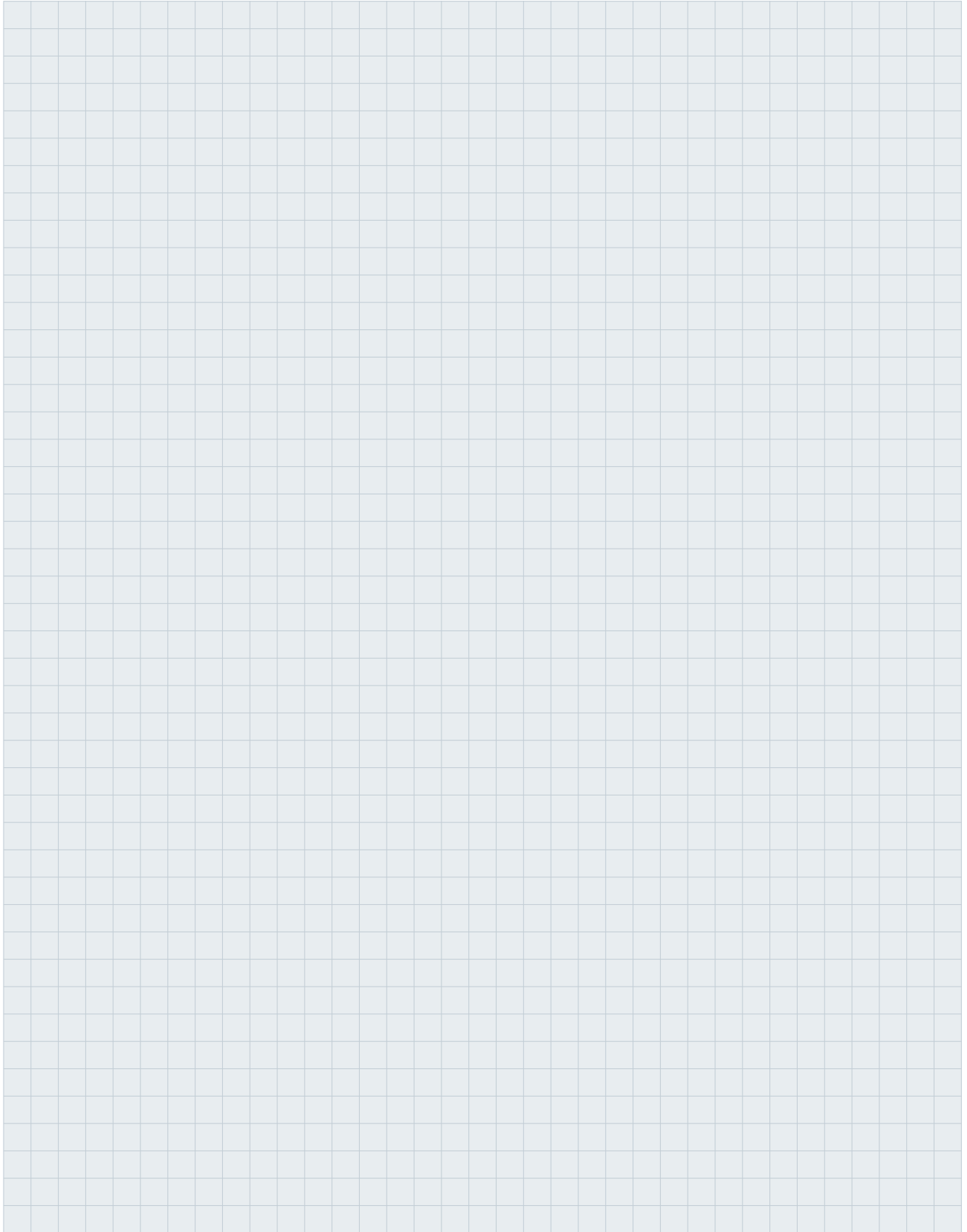
More information available at:
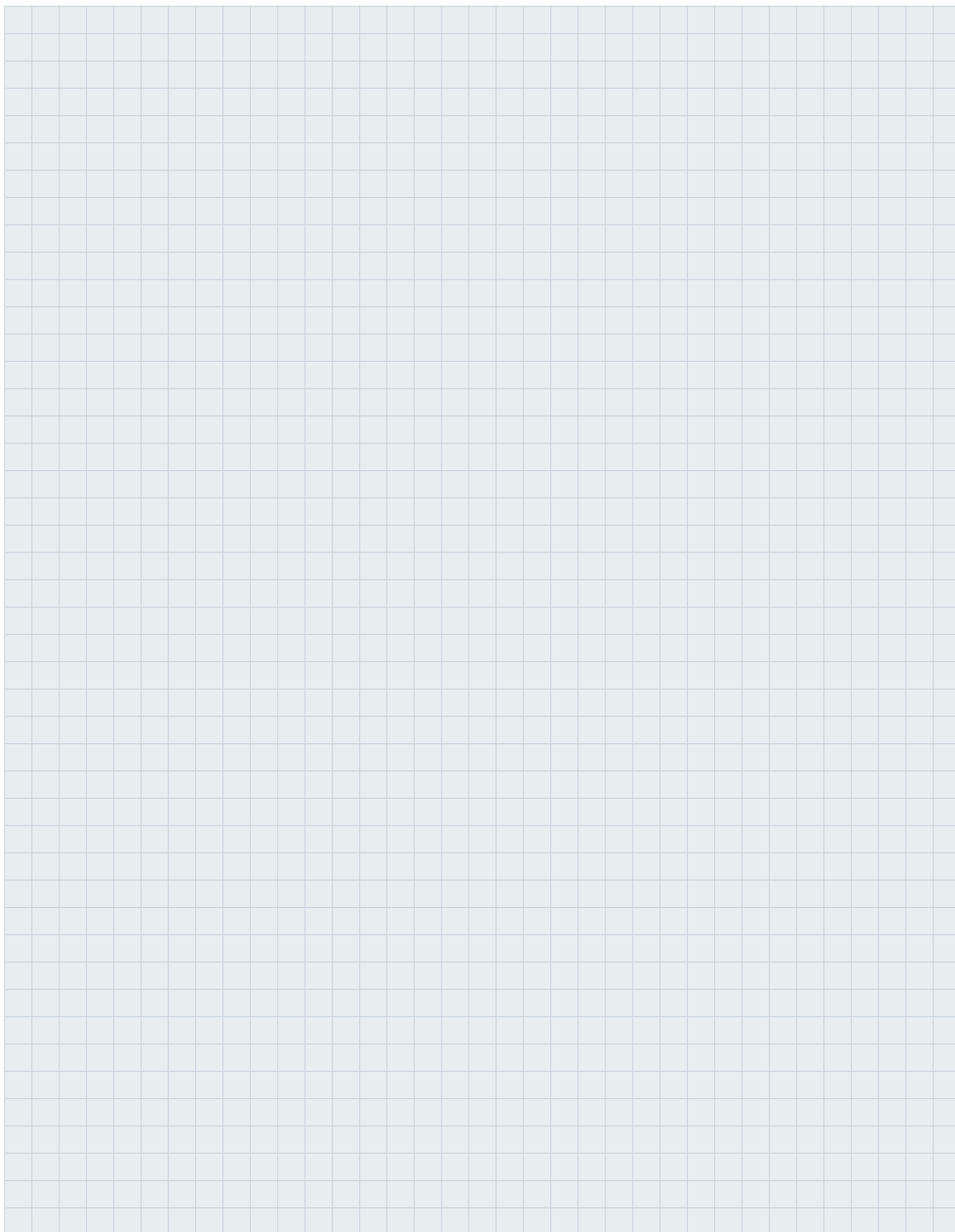www.endress.com/onlinetools

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Spare parts search

Enter the order code / product root / serial number:

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[Find]

Endress+Hauser [EH]

Notes

Notes

www.addresses.endress.com

Endress+Hauser

People for Process Automation