Our Comprehensive Portfolio of Innovative Measurement Solutions

Reliable Products for your Process

ABB

Expertise in technology
For more than 140 years

ABB stands for technological expertise in process automation. As a leading provider in this field, the company can look back on a long history of success with numerous innovations.

Aztec   **Bailey**   **BOMEM**   Bush Beach Engineering —Limited—   &FISCHER & PORTER

Hartmann & Braun   *K-TEK*   Kent   [L G R] Los Gatos Research A MEMBER OF THE ABB GROUP   Pressductor®

SENSYCON   Schoppe & Faeser   Spirit A MEMBER OF THE ABB GROUP   Taylor   **TBI-Bailey**

TORBAR FLOWMETERS LTD   *TOTALFLOW* MEASUREMENT & CONTROL SYSTEMS

With products and systems for instrumentation as well as extensive application know-how, ABB is always at your disposal on site.

In a worldwide network of locations for production, sales and service as well as our own DAkkS-certified calibration facilities. This is how safety, productivity and energy efficiency of your system is optimized.

Industry focus
Instruments for diverse applications in chemical, oil & gas, refinery, power generation, low-carbon energy and water industries

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01 Chemical
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02 Oil and Gas
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03 Refinery
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04 Power Generation
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05 Water

ABB offers highly accurate, reliable, safety-certified smart measuring devices and asset performance tools enabling safe and efficient operations along the entire industry value chain.

ABB instrumentation solutions deliver continuous performance gathering temperature, pressure, flow data to determine conditions for example in the oil and gas onshore production, petrochemicals, chemicals production, water and water treatment plants, storage tanks, distribution applications such as loading and unloading of oil, gas,

chemicals, and fiscal custody transfer metering. ABB also cover the requirements of future-oriented segments enabling a greener industrial future by shifting conventional fossil fuel power generation to low carbon sources and fuels such low emission hydrogen, green ammonia, biofuels, and e-fuels.

ABB smart instruments are part of the low carbon intensity technologies such as water electrolysis, carbon capture, utilization, and storage solution among others.

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Comprehensive solutions
Tailor-made for every industry

The ABB instrumentation portfolio

- Flow measurement
- Pressure measurement
- Temperature measurement
- Level measurement
- Analytical measurement
- Recorders, controllers and indicators

- Electric control actuators
- Positioner
- Device management, fieldbus, wireless
- Service

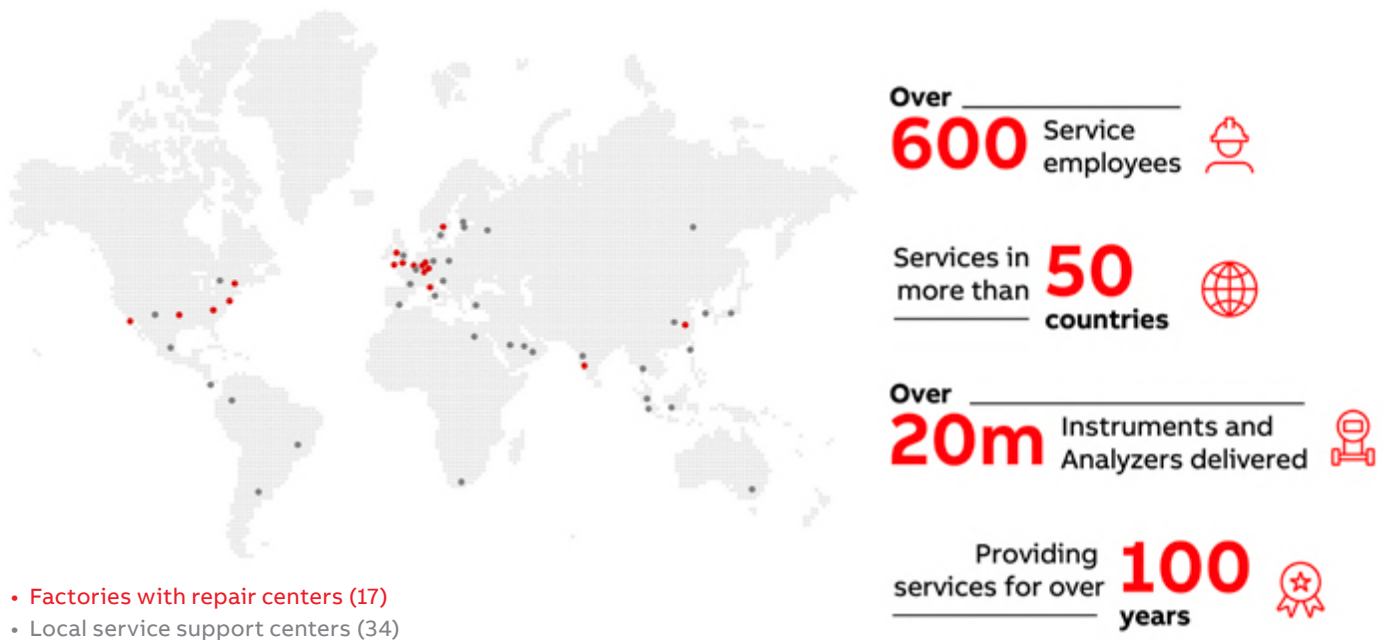### Future-oriented communication and digital solutions

ABB offers more than classic, analog 4 to 20 mA current signal and binary contact instrumentation. The portfolio also includes products with digital communication in accordance with the various standards. From Hart, WirelessHart, Modbus, PROFIBUS, Ethernet, PROFINET and APL to mobile radio and Cloud applications. For these robust and durable products, solutions are also available that offer both analog signals and digital communication, making them a future-proof investment.
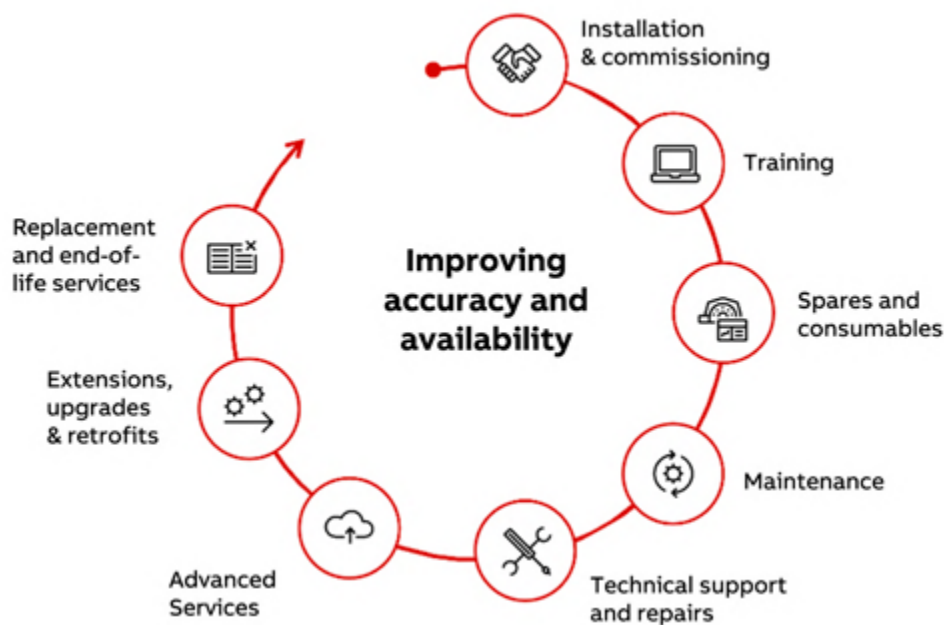
Your dependable service partner
With you where and when you need us

Over **600** Service employees

Services in more than **50** countries

Over **20m** Instruments and Analyzers delivered

Providing services for over **100** years

- Factories with repair centers (17)
- Local service support centers (34)

5 reasons for Instrumentation service

1. Lifecycle plan
2. Certified engineers & repair centers
3. Global reach
4. Advanced digital services
5. 24/7 service support

Improving your accuracy and availability with service

Improving accuracy and availability

- Installation & commissioning
- Training
- Spares and consumables
- Maintenance
- Technical support and repairs
- Advanced Services
- Extensions, upgrades & retrofits
- Replacement and end-of-life services

Flow measurement
Performance for your process

Characterized by expertise and experience in flow measurement technology, ABB has been setting standards in performance, flexibility and precision for decades with one of the most comprehensive portfolios on the market. The requirements of a wide range of applications are taken into account as early as product development.

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01 FEP integral
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02 FEP remote
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03 FEV, FEF, FEW
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04 FSM4000
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05 FER, FEV, FEF
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06 AquaProbe
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07 Electromagnetic-flowmeter in water industry
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08 AquaMaster for accurate recording of water network data

Basic information on flow measurement technology:

Electromagnetic flow measurement
The best solution for conductive liquids
ProcessMaster | FSM4000 | AquaMaster
WaterMaster | AquaProbe

- Meter sizes: DN 3 to DN 2400
- Various liner materials and flange materials
- Medium temperature: −40 to 180 °C
- Approvals: ATEX, FM, CSA, CIP/SwIP, OIML / MID, SIL 2
- Simple commissioning thanks to Easy Set-up
- Extensive diagnosis functions

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Coriolis mass flowmeter
High-precision mass flow measurement
of gases and liquids

- Additional measurement of density, temperature
  and concentration measurement
- Particularly low pressure loss
- Meter sizes: DN 8 to DN 150
- No straight in or outlet sections required
- Innovative diagnosis functions
- Approvals for:
  - Explosion protection
  - Marine and offshore use
  - Custody transfer
  - Hygienic applications
  - Functional safety

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Thermal mass flowmeter
Direct mass measurement of gases
SensyMaster | Sensyflow

- Mass measurement without additional
  pressure or temperature compensation
- High-quality and cost-effective solution
  for precise and dynamic measurements
- Suitable for low flow and low pressure
  applications
- Lowest pressure loss
- Quick response time

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Flow measurement
Performance for your process

Vortex and swirl flowmeters
Measurement of liquids, gases and steam
VortexMaster I SwirlMaster

- Particularly low installation costs, thanks to the shortest inlet and outlet sections
- Smart filter and noise canceling technologies included
- Temperature compensation via integrated temperature measurement
- With integrated measuring computer for mass calculation and energy balancing

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Variable area flowmeters
Measurement of liquids, gases and steam I VA Master

- Wide range of variable area flowmeters, from simple indicators without external power supply to versions with analog and digital output as well as HART communication
- Proven reliable flow measurement with consistently high repeatability
- Compact and inexpensive
- Graphical 2-line display, optional

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Differential pressure flowmeters
Application-specific solutions

- A comprehensive portfolio of compact flow-meters with orifices, averaging pitot tubes and Venturi tubes
- Version for mass flow measurement optionally with integrated temperature sensor
- Extended diagnosis with detection of plugged impulse lines

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Flow Computers and RTUs
Flexible, smart and accurate

ABB is the expert in low power and high-accuracy control devices for the remote production and custody transfer of oil and gas, offering the X-F.A.C.T.O.R. in flow computing. Easy installation, minimal intervention, and years of experience with real-world applica-tions have helped to build greater efficiency into every function of ABB flow computers, remote controllers & RTUs (remote terminal units).

01 FLOW-X

02 µFLO^{G5}

03 XFC^{G5}

04 Flow-X toucscreen cabinet

05 µFlo^{G5} field installation

Flow-X
A powerful and versatile automation platform, especially designed for the custody transfer of liquid and gas

- World-class flow computing with unpre-cedented, uncompromised accuracy
- Credible accounting data with a certified, purpose-built device
- A single flow computer for the safe and hazardous area
- Investment protection by a modern, future-proof ABB device

µFlo^{G5} and XFC
Time tested and field proven

- µFLO is known throughout the industry as an extremely accurate and reliable gas flow com-puter. µFLO^{G5} features the Linux operating system, has persistent memory, and supports linear liquid measurement.
- Backward compatibility is a high priority, and the integrated sensor and electronics are direct replacements for all previous µFLO generations. Single run gas measurement applications are the primary market for µFLO^{G5}, yet the powerful processor and expansion capabilities allow for multiple run gas and liquid measurement as well.

Basic information
Flow Computers
and RTUs

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RMC and XRC

Remote controllers with low-power, highly reliable micro-processor-based unit with a Linux operating system, persistent memory, and multiple connectivity options, combined with a wide range of measure-ment, monitoring, and alarm applications for remote oil and gas systems for upstreams, gathering and transmission applications.

- Multiple hardware options available to meet field installation from small control and auto-mation systems untol over 72 measurement applications in addition to the control logics and multiple IO expasion options.

XIO

A new standard for control, automation, and measurement solutions, for upstream Oil & Gas and multiple other applications.

- The Wi-Fi bridge, Wi-Fi client mode, and USB options provide optimal device management, locally or at a distance.
- 12 and 24 vdc external power eliminates the need for additional components and reduces installation costs.
- 22 hot pluggable IO modules (additions or replacements) can be added to the XIO without power interruption, making it easy for the tech-nician to see a non-working module, quickly replace it, and immediately confirm that a replacement is working.
- New switch capabilities allow the network to expand beyond the RMC and XIO, with each network segment capable of lengths up to 100 meters.
- 4 Ethernet ports allow for different network configurations, and the 8 serial communication ports give the XIO the most serial capacity on any ABB upstream product.
- Auto-discovery services make setup convenient and easy for XIO devices and ap-plications on the network.
- Ethernet to serial passthrough application integrates seamlessly and effortlessly with the RMC and provides the easy addition of more serial ports in the field with minimal configuration steps.

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Pressure measurement
Reliability and safety

The ABB pressure transmitters series offers pressure transmitters for flow, level, differential pressure, absolute pressure and gauge pressure. It meets the highest requirements and is characterized by exceptional safety, reliability, performance and adaptability. The transmitters increase system productivity and help to reduce operating costs.

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01 Differential pressure transmitter with barrel housing 266DSH
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02 Gauge pressure transmitter PGS300
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03 Differential pressure transmitter PDS300
—
04 Digital Diaphragm Seal (DDS)
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05 Pressure measurement in a refinery with pressure transmitter
—
06 Precise pressure measurement up to 600 bar

Basic information on pressure measurement technology:

Pressure transmitter series
Intelligent performance

- Replaceable electronics and terminal block for easy maintenance and quick recommissioning
- Base accuracy of 0.05 % of the calibrated measuring span up to 0.02 %
- Large turn down ratio of up to 100:1
- Comprehensive diaphragm seal selection
- 10-year stability: 0.15 % of URL
- Sophisticated diagnosis function for plugged impulse lines (PILD) to prevent unexpected failures in the control loop
- Optional TTG (Through-The-Glass) button technology for local configuration without opening the housing cover
- TÜV-certified in accordance with IEC 61508 for safety-critical applications (SIL)
- Electronic diaphragm seal with digital communication for faster response times and higher accuracy
- Backlit integral display option for low visibility environment
- H-Shield coating against hydrogen permeation
- Digital Access Diagnostics through dynamic QR Code
- Bluetooth technology to enables quick and easy remote operation

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07 266CSx, PMS500

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08 PGS100, PGF100,
PGD100

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09 Various diaphragm
seal designs

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10 Pressure measure-
ment technology in
the process industry

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11 Pressure transmitter
for repeatable
measurements

Multivariable transmitter series
Compact mass measurement

- Condition-corrected mass flow measurement,
  condition-corrected level measurement for
  gases, vapors, liquids
- High-performance transmitter for measuring
  differential pressure, absolute pressure,
  and process temperature in a single device
- Integrated counter function
- Binary output as pulse/frequency output or
  limit monitor
- Measurement of flow and level using the differ-
  ential pressure procedure

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Pressure transmitter series P-100
The cost-effective alternative

- Base accuracy: up to ± 0.075 %
- Housing made entirely of stainless steel for use
  in harsh ambient conditions
- Wide range of process connections
- Wide range of approvals and certificates for all
  requirements
- Configurable via HART communication or local
  display
- H-Shield diaphragm for hydrogen applications
- Highly abrasion-resistant Diaflex diaphragm
  for abrasive media

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Diaphragm seal series S26
For adaptability in process connections

- Wide range of remote seal types
- Large selection of options, materials and fill fluids
- Fully welded designs
- Tailored for pressure transmitters of series
  2600T and P-Series
- Special designed remote seals for individual
  process solutions

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Temperature measurement
Adaptable and efficient

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01 NINVA TSP341-N

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02 NINVA TSP341-N
in gas pressure
regulator system

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03 NINVA TSP341-N in
test bench application

Non-invasive temperature sensor NINVA TSP341-N
Innovative measuring solution for piping avoiding
contact with the medium

- Simplified project planning, thanks to universal use
- Low project planning effort and no need for a
  thermowell calculation
- Quick and easy installation without process
  intervention
- Measuring accuracy and response time compara-
  ble to or better than classic thermowell sensors
- For nominal piping diameters from DN25 to
  DN 2500
- Suitable for liquids, steam and gases
- Measuring range -40 to 400 °C (higher tempera-
  tures in preparation)
- Tailor-made for temperature measurements of
  abrasive, aggressive and toxic media

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Basic information
on non-invasive
temperature
measurement:

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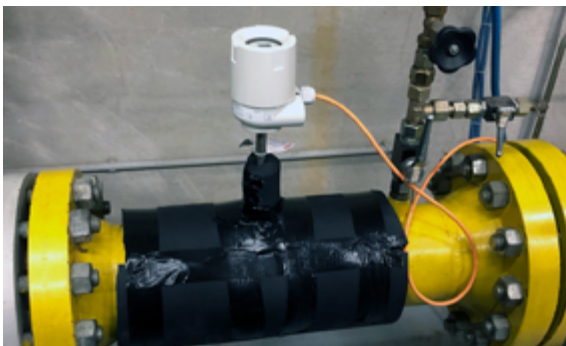
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The most important measured variable for most industrial processes is temperature. For over 140 years, ABB's temperature measurement has proven itself in numerous applications in all industries. Benefit from this extensive experience.

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04 SensyTemp TSP100
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05 SensyTemp TSP100
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06 SensyTemp TSP300
with built-in indicator
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07 SensyTemp TSH200
in different versions
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08 SensyTemp TSC400
in different versions

Temperature sensors for numerous applications
Adaptable, robust and versatile
SensyTemp TSP100, TSP300

- Modular design
- Interchangeable measuring inset
- Transmitter in connection head
- All common sensor types available
- Wide range of approvals and areas of application
- Large variety of process connections and thermowell materials

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High temperature thermometer
Thermocouples for applications
up to 1800 °C SensyTemp TSH200

- Modular design system
- Transmitter in connection head
- Long service life
- Various thermowell materials, matched to the measuring medium and temperature

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Industrial thermometers
For inserting, screwing in
and for surface measurement
SensyTemp TSC400

- short response times
- Wide range of applications, thanks to different jacket materials
- Adaptable installation, thanks to various installation and attachment options
- Individual customization with different electrical connections
- Various Ex approvals available

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Temperature measurement
Adaptable and efficient

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01 TTF300
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02 TTH300
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03 TTR200
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04 SensyTemp TSHY (HY R)
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05 TSW200/300/400 thermowells
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06 Multi-point temperature sensor, 9-stage
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07 Temperature transmitter TTH300 with two inputs
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08 Temperature transmitter TTR200 for rail mounting

Temperature transmitter
For sensor head, field and rail mounting
TTH, TTF, TTR, series 200 and series 300

- Universal sensor input
- Software and hardware with write protection
- Sensor redundancy and drift detection when connecting two sensors
- Multiple diagnosis options
- Directly configurable on the instrument via buttons

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Thermowells with special designs and materials as well as special temperature measurement systems
Unique solutions for specific tasks

- Special materials for special process requirements
- Thermowells with special designs
- Special product qualifications and tests
- Thermowells, sensors, lines and transmitters from a single source

Basic information on general temperature measurement:

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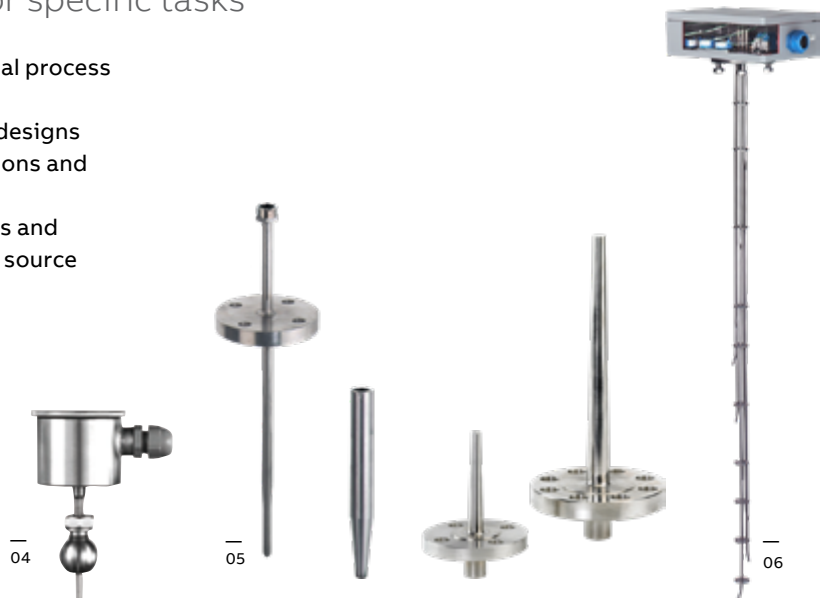
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WirelessHart instrumentation
Simply without cables

The ABB Wireless platform provides users with secure wireless access to important process and production data based on the latest technologies.

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08 WirelessHART differential pressure transmitter with barrel housing 266DSH
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09 TTF300 WirelessHART
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10 TSP300-WirelessHART
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11 AWIN GW120
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12 Wireless measurement technology using WirelessHART
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13 Temperature sensors powered by temperature difference

ABB's wireless devices are extremely efficient, thanks to their unique energy-saving electronics The significantly extended battery life increases the reliability of your network. Thus, it is possible to achieve faster update rates and significantly extend the battery replacement intervals.

- Ten-year battery replacement intervals with update rates of 32 seconds under reference conditions
- Standard lithium D cells
- Residual battery life configurable as dynamic burst variable, thanks to DTM
- ABB battery replacement possible in Class I, Div 2/Zone 1 (intrinsically safe)

Wireless instrumentation networks configuration made easy
- Intuitive, standardized operating concept for easy configuration of network access data, device parameters and diagnosis
- ABB WirelessHART devices can be configured with conventional HART Handheld terminals
- ABB supplies preconfigured wireless measurement technology for your network for a quick, reliable and cost-effective deployment.

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Level measurement
Reliable with proven technology

The level is an important process parameter. ABB offers comprehensive solutions for the most complex level measurement of liquids and solids.
With the comprehensive product range, certifications and approvals, the requirements of the most demanding applications can be met, for example in large process containers, high-pressure boilers or grain silos.

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01 LLT100

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02 LM80

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03 Laser level transmitter LLT100

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04 LM80 Laser, installed in ore refill container

Laser level transmitter
More safety, thanks to non-contact level measurement

- Measuring range up to 190 m for level and 400 m for positioning applications
- Measures every surface at every angle
- Low beam deviation – no false echoes, therefore simple commissioning
- Integrated laser pointer for easy alignment
- CE, ATEX, IECEx, FM, CSA (depending on type)
- Extensive range of accessories available for the perfect process connection
- Class 1 measuring laser

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Basic information on level measurement technology:

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05 MS40
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06 LMS100
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07 KM26
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08 LMT100
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09 LMT200 with
indicator KM26
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10 ABB offers a wide
range of level
transmitters
and indicators
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11 Maximum boiler effi-
ciency, thanks to precise
level measurement

Magnetic level indicator
Intelligent level indicator for measuring liquids

- Magnetic flap indicator in accordance with cus-tomer specifications, modular system
- Clearly visible level indicator, with hermetically sealed magnetic flaps
- Extensive selection of materials enables use with corrosive, toxic, flammable or aggressive media
- Robust design for little or no maintenance effort
- Application range for process temperatures from -196 to 538 °C and pressure ranges up to 344 bar
- Non-invasive limit switch contact assemblies for monitoring min. or max. process levels
- Optional: with heat tracing, cooling, extensive insulation material

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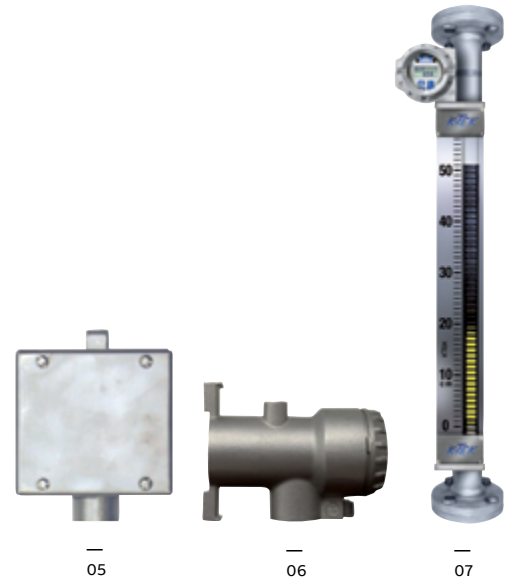
Magnetostrictive level transmitter
High-precision detection of level and interface in liquids

- 4-in-1 technology; a transmitter for level, inter-face, temperature and void measurement
- Graphic display shows the measurement signals (oscilloscope function)
- Approved for extreme pressures and process temperatures; 165 bar and -196 to 425 °C
- Unique accuracy: 0.01 % on MB or +1.27 mm
- Output: 4 to 20 mA HART 7, FF, PA, Modbus
- Sensor length up to 22 m
- Digital communication; STM, DTM, EDD, FDI and TTG (Touch-Through-Glass)
- Available with a wide range of approvals and certificates
- Adaptable and customizable design to meet all mounting requirements

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Level measurement
Reliable with proven technology

Ultrasonic level measurement LST200 and LST300
For the perfect measurement of bulk solids and liquids

- Highest precision of ± 2 mm or 0.2 % over the entire measuring span
- Measuring range up to 8 or 10 m
- Graphic illustration of the measured values
- LST200 as a cost-effective entry-level model for standard applications
- LST300 also for flow measurement on Venturi flumes and weirs

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Guided wave radar level transmitter LWT300
Highly accurate measurements even under demanding process conditions

- Software algorithm, LevelExpert™ supports commissioning
- Graphic LCD display with waveform indicator provides additional support
- For process conditions up to 204 °C and 207 bar (extension in preparation)
- Available with a wide range of approvals and certificates
- No moving parts, also as a remote sensor, for level and interface measurement
- Output: 4 to 20 mA HART 7, FF, PA, Modbus
- Sensor length up to 60 m
- Accuracy +/- 2 mm or 0.03 % of the MB, resolution 1 mm
- Sampling frequency 5x/sec.

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Actuators and positioners
Reliable valve automation

Valve automation products play a major role in a wide range of applications. Benefit from ABB's precise, energy-efficient actuators and positioners, which have proven themselves in numerous industries for many years.

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01 Linear actuator RSD

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02 Rotary actuator RHD

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03 EDP300

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04 TZIDC

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05 Actuator for combustion air control

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06 Actuator for feed water control

Basic information on actuators

Electric control actuators
Reliable valve automation
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- Hysteresis-free control for precise, continuous positioning
- Extreme longevity
- Robust design, suited for harsh ambient conditions
- 100 % power-up duration at full nominal torque

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Digital positioner
Flexible and economical control of valves EDP300, TZIDC series

- Universally applicable, for rotary actuators
- Suited for all valves, manufacturer-independent
- High shock and vibration resistance
- Extensive print-based diagnosis functions (EDP300)
- High air output (EDP300)
- Non-contact position sensor (EDP300)
- Remote version available
- Energy-saving, thanks to reduced pressure loss during operation
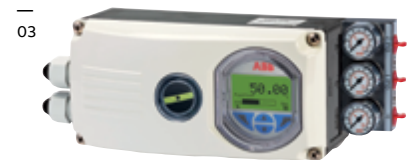
Basic information on positioners:

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Digital solutions
Comprehensive and adaptable

My Measurement Assistant
Smarter, personalized and easier self service

My Measurement Assistant is an advanced web application for measurement device support that:
- Saves you time
- Increases your knowledge and expertise
- Helps you when and where you need it the most
- Enables you to be more sustainable
- Find spare parts, and request quote

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Measuring device verification
ABB Ability™ Verfication for measuring devices
Simple and versatile

- Standardized software for the verification of a variety of measuring devices
- Device check when installed
- Menu-guided and automated device maintenance
- Wide range of communication options
- Intuitive menu navigation
- Cyber security tested in accordance with ABB standard
- Free basic version
- Standard version with maintenance certificate, history as well as import and export functions
- Premium (IDM) highly accurate traceable test of the inputs and outputs as well as the transmitter and sensor
- Verification of third-party devices from standard

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Verification tool and condition monitoring platform
ABB Ability™ SmartMaster
Innovative and comprehensive

- Remote verification of accuracy and diagnosis Status of measuring devices
- Numerous communication pillars (DCS FIM and mobile radio)
- Statement on accuracy
- Cyclical, automatic verification
- Compatible with numerous ABB flow, pressure, temperature and level meters and positioners

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Device management
Configuration of existing devices, regardless of technology and protocol

ABB's uniform product spanning operating concept
Uniquely simple device parameterization

- Guided commissioning Easy-Setup
- Standardized menu structure
- Dynamic keyboard layout
- Plain text error messages
- Diagnosis messages in accordance with Namur NE 107

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Configuration software
Field Information Manager (FIM)

- Easy to install
- Automatic device scan
- intuitive user interface
- FDI and EDD support
- Download of device packages within the software (automatic import for ABB products)
- PROFIBUS DP/PA and HART communication interfaces

FIM is a manufacturer-independent device management tool that uses the latest and most powerful technology standard.

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Latest generation handheld terminal configurator
Smart Device Manager (SDM)

- Simple configuration
- Universally applicable for all field devices that use FDI technology
- Diagnosis and verification tool for field devices
- Optionally also for use in explosion protection zone 1/DIV 1

The Smart Device Manager (SDM) is a universally applicable portable configurator based on a robust industrial tablet with a 10.1" display. With the help of FDI technology, the Smart Device Manager (SDM) is used for simple configuration, commissioning, diagnosis and maintenance of field devices. With up to 14 hours of battery life, IP rating IP65 and drop-tested for a drop height of 1.2 m, it is the ideal tool for service technicians in the field. With the Smart Device Manager (SDM), field devices provided by different manufacturers can be configured. Special device drivers can easily be installed later. Complete maintenance and diagnosis documentation is therefore easy to manage.

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Measurement made easy
Complete service for the entire lifecycle

Solutions and support from experts

Service for the entire product lifecycle
ABB offers a wide range of services for its measurement technology solutions. It covers the following areas: Flow, pressure, level and temperature measurement, force measurement technology, valve automation, liquid and gas analysis.

All services at a glance
- Engineering, planning and consulting
- Training
- Commissioning
- Field service
- Maintenance including calibration
- Repair and spare parts service
- Upgrades and retrofits
- End-of-life service
- Advanced service
- Service agreements / contracts

My Measurement Assistant
ABB support with easy access around the clock

The WEB app for practical support in case of questions about ABB measuring devices

- Checklists for commissioning and troubleshooting
- Intuitive tutorials and step-by-step videos
- Identification of error codes with remedy description
- Spare parts catalog by product
- Easy contact with the ABB service partner – worldwide

Solutions and support anytime, anywhere

Optimizing the productivity and performance of products and personnel used in your plant is the top priority for all our services. Our experts are always at your disposal to solve any problem. ABB's Visual Remote Service solutions use augmented reality with the aid of a smartphone. This means the ABB expert is virtually right there at the measuring point, in real-time, supporting you with troubleshooting or commissioning.

Direct connection to My Measurement Assistant:

—
ABB Measurement and Analytics

You can find your ABB contact person at:
www.abb.com/contacts

Additional product information is available at:
www.abb.com/measurement