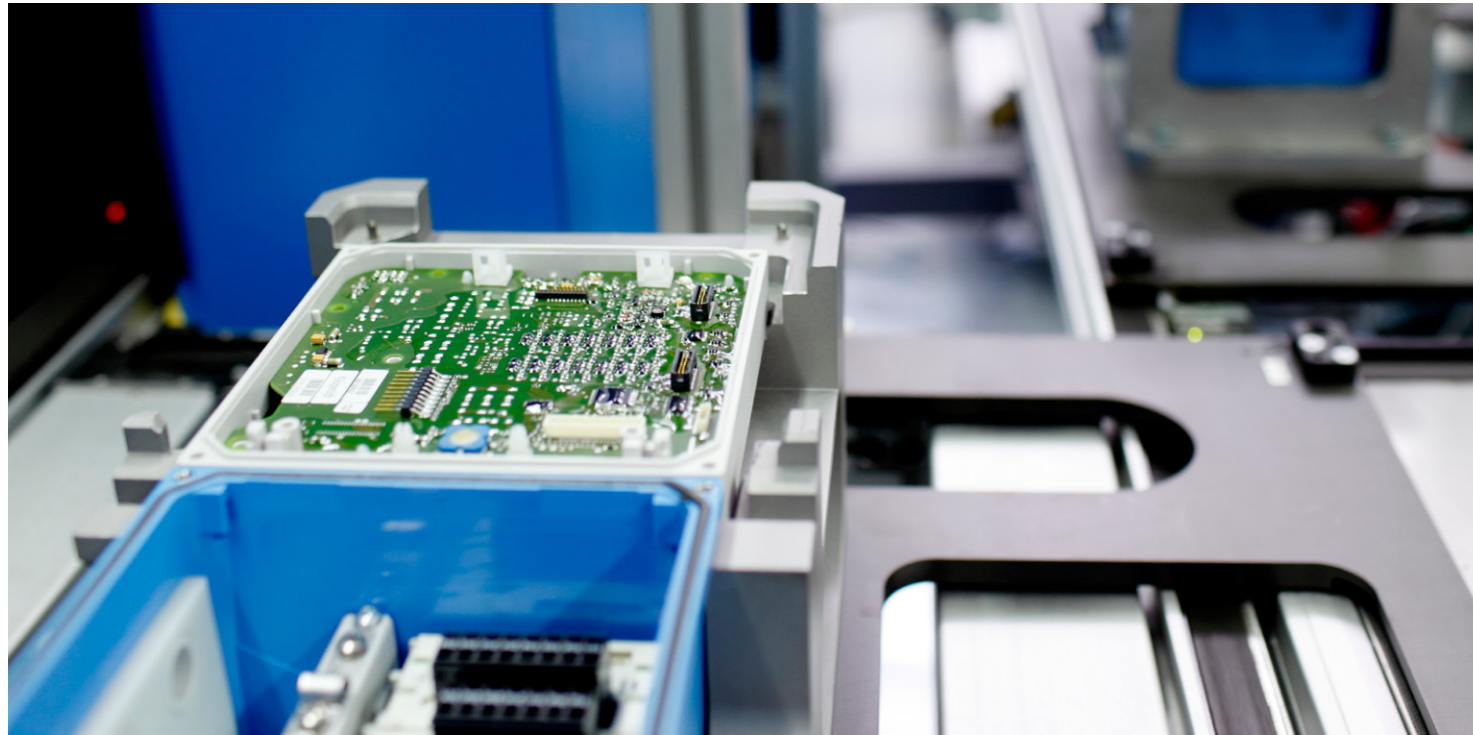


Expertise in liquid analysis

From sensors to complete
turnkey solutions





Endress+Hauser - Your partner

Endress+Hauser supports customers around the globe with a wide range of instruments, services and automation solutions for industrial process engineering. Around half of the 12,000 "People for Process Automation" work in sales. They help customers throughout the world to make their processes safe, economical and environmentally friendly. With sales centers in over 40 countries, Endress+Hauser is always near its customers. In places and locations where Endress+Hauser is not directly present, representatives complete this global network allowing Endress+Hauser to serve its customers quickly, flexibly and individually.

Concentrated expertise

The headquarters of our production centers focus on production, product management, research and development, as well as logistics. At sites in Germany and Switzerland, we produce core components for our worldwide production. Plants in Brazil, China, the Czech Republic, France, India, Italy, Japan, South Africa, the UK and the United States assemble, test and calibrate instruments and devices mainly for regional markets.

Sustained growth

For us, profit is not the goal but the result of good economic activities. The Group focuses on sustained growth on its own strength. The basis for this endeavor is a sound equity ratio of 68 percent. Profits are predominantly returned to the company – this also ensures the success and independence of the Group. Endress+Hauser was founded by Swiss native Georg H. Endress and German native Ludwig Hauser in 1953. Over the years, the company thrived and is now a global enterprise - wholly owned by the Endress family since 1975.

Expertise in liquid analysis

Within the globally active Endress+Hauser Group, Endress+Hauser Conducta counts among the leading international manufacturers of sensors, transmitters, assemblies, analyzers, samplers and complete solutions for liquid analysis. As a center of excellence, we have worked hard over the last 40 years to achieve a top-ranking position on the international market. Endress+Hauser Conducta has five production plants: in Gerlingen (Germany), Waldheim (Germany), Groß-Umstadt (Germany), Anaheim (USA) and Suzhou (China).



Gerlingen, Germany



Waldheim, Germany



Groß-Umstadt, Germany



Anaheim, USA



Suzhou, China

Memosens - The digital revolution in process analysis

Get the most out of your process thanks to increased quality and reduced operating costs

Memosens technology is revolutionizing liquid analysis. It converts the measured value to a digital signal in the sensor and transfers it to the transmitter via a non-contact connection. This means that moisture and corrosion, which distort the measured value or cause the measuring point to fail, don't stand a chance. Memosens sensors can even be connected under water! In addition, the transmitter actively reports any interruption to the signal flow. The result is maximum reliability in terms of data transmission, a dramatic increase in the availability of your measuring point and a guarantee that your process will run safely.



Memosens offers numerous benefits for managers, system operators and plant personnel.

- Sensor regeneration results in an up to 30% increase in sensor operating life
- Less process downtime, as the sensors are calibrated in a lab
- More accurate process management as sensor maintenance can be scheduled – no unpleasant surprises
- Predictive maintenance as an integral part of the sensor technology, resulting in improved plant management



With Memosens accessories, you can benefit from easy management of your measuring points and sensors

Qualification and maintenance of Memosens measuring points

Correct measurements are the key to ensuring true process reliability. With Memocheck tools, you can rest assured that the measured values will always be transferred correctly. This is due to the fact that these tools simulate measured values for the parameters pH/ORP, oxygen, conductivity or chlorine, in addition to simulating a measuring error for the qualification of digital data transmission. Memocheck establishes if deviant measured values are caused by factors other than the sensor e.g. the cable and coupling, the connection to the process control system or transmitter.

You can use the Memocheck Sim hand-held device to specify your own measured values or value ramps and to simulate all sensors incorporating Memosens technology. Validation, qualification and fault repair made easy!

Using Memobase Plus for measurement, calibration and documentation

Memobase Plus is the all-in-one sensor management tool. With this software, not only can you calibrate the sensor and read out sensor data, but you can also generate reports on the history and status of a sensor, with measuring data, calibration data and the sensor life cycle made visible at a glance. Your process becomes transparent and the concept of traceability is taken to a whole new level. In addition,

Memobase Plus can be used in conjunction with a standard PC as a measuring station in a lab, thus improving the comparability of lab values and process values.

Calibration with quality buffers

Correct calibration is the be all and end all when it comes to the accuracy of a pH measuring point. Our permanent calibration laboratory for quality pH buffers has successfully completed the exacting accreditation procedure laid down by the German calibration authority (DKD) in accordance with DIN EN ISO/IEC 17025:2005. Our customers can rest assured that the pH measuring point they are operating will always be accurate.



Memosens sensors and their assemblies

The Memosens sensor range covers all of the key parameters for liquid analysis, such as

- pH/ORP
- Conductivity
- Oxygen
- Chlorine
- Turbidity
- Nutrients such as nitrate, ammonium
- SAC

The sensors can be connected via plug & play to devices from the Liquiline platform. A range of assemblies is available for custom-fit installation in the process:

- Fixed installation assemblies
- Flow assemblies
- Retractable assemblies
- Immersion assemblies

The Memosens sensor family includes sensors with an inductive plug-in head or a fixed cable. The latter type does not require either regular recalibration or maintenance measures. All sensors use the standardized, digital Memosens protocol which allows for easy and fast operation. In addition, sensors with a plug-in head are fully resistant to corrosion and salt bridges, thanks to the non-contact, inductive transmission of data and energy.



pH/ORP sensors are available as glass electrodes or unbreakable ISFET and enamel sensors, with a ceramic, PTFE or open aperture diaphragm and a reference system based on gel or liquid for the entire range of applications. The ORP-sensitive element is made of gold or platinum.

Chlorine sensors are amperometric sensors with a membrane cover for ultimate reliability and minimum maintenance.



Conductivity sensors are available as conductive and inductive sensors in different designs, to ensure a perfect fit for your process conditions. Conductive sensors offer a high degree of measuring sensitivity. Inductive sensors are not affected by dirt, high temperatures or corrosive media.



Sludge level sensors These ultrasonic sensors continuously monitor the separation and transition zones in clarification and sedimentation tanks and guarantee safe, economic and efficient sedimentation processes.



Turbidity sensors Optical turbidity sensors are used mainly in the treatment of water and wastewater. They offer maximum accuracy in drinking water in accordance with ISO 7027 and robust measurement in wastewater due to compensation for soiling and aging.

Oxygen sensors are available in amperometric or optical versions. The amperometric principle is characterized by stable measurement across a wide measuring range. The optical technology impresses with its high level of availability and low maintenance.



Nitrate and SAC sensors These photometric sensors allow measurement directly in the medium, thereby enabling early detection of load peaks. They are suitable for a wide range of process conditions and require very little maintenance thanks to an automatic compressed air cleaning system.

Nitrate and ammonium sensors These ion-selective sensors offer prompt measurement of concentrations thanks to online measurement directly in the basin. They therefore enable fast, load-dependent aeration control.



Installation assemblies Fixed installations using installation assemblies are found particularly in batch processes, where the users have access to the sensor between two batches. These assemblies are often used in the production of pharmaceuticals and foodstuffs.

Retractable assemblies With retractable assemblies, sensors can be replaced quickly and easily and cleaning carried out without interrupting the current process. They can be installed or removed either manually or automatically

(pneumatic procedure). The pneumatically operated assemblies can be combined with automatic cleaning and calibration, as the sensor is located in a cleaning chamber when in the service position. Retractable assemblies are

particularly suited to hygienic or heavy-duty applications, wherever regular cleaning is required, or in cases where the sensor can come into contact with an aggressive medium for short-term measurements only.



Modular immersion assemblies These types of assembly offer real benefits in immersion applications such as those in the wastewater industry. They are suitable for sensors with different connection threads. This means that they are not only used for 12 mm sensors for the

measurement of pH or dissolved oxygen but are also used for turbidity or nitrate sensors. The system can be installed using different pipes, brackets etc. in almost any location (pipes, rails etc.).



Flow assemblies Flow assemblies are used for installation in process pipes or bypasses. These configurations are often found in waterworks, in the beverage industry, the chemical industry or in analytical cabinets in power plants. Thanks to a range of process

connections, these assemblies ensure optimum adjustment to your pipe system. Different materials make them suitable for all types of applications ranging from hygienic to aggressive.

The Liquiline platform

Reduce storage costs, save on installation time and increase operational safety.

Liquiline is the platform for all liquid analysis applications. It forms the basis of our ultra-modern transmitters, samplers and analyzers and has many benefits to offer.

- Uniform operation for greater comfort and safety during operation
- Fast commissioning and automatic sensor detection thanks to true plug & play functionality
- Standardized components for reduced storage costs and longterm availability of spare parts
- Based on Memosens digital sensor technology, for increased efficiency and quality in the field of liquid analysis
- Wide range of fieldbus protocols for seamless integration into your process control systems: 0/4 to 20 mA, HART, PROFIBUS DP, Modbus TCP, Modbus RS485, EtherNet/IP
- Web server for easy remote access
- Complete flexibility from single-channel to 8-channel devices, and can be extended at any time

Liquiline transmitters for wide-ranging customer requirements



Liquiline CM44 is the most flexible transmitter for all Memosens sensors. It measures twelve different parameters and allows up to eight sensors to be connected. Liquiline CM44 is available as a field device and also for mounting in control cabinets and on DIN rails.

Liquiline M CM42, the two-wire transmitter for the parameters pH/ORP, conductivity and oxygen, impresses with reliable data transmission and easy operation. It can be used in all areas of process automation, including hazardous areas and hygienic applications.

Liquiline CM14, the four-wire transmitter for pH/ORP, conductivity and oxygen, is an instrument used for straightforward measuring tasks. The compact design of the Liquiline CM14 makes it suitable for use in panels or control cabinets, and it is a particularly attractive solution for plant manufacturers

Liquistation and Liquiport for safe sampling in all bodies of water.



The stationary and portable samplers enable the automatic extraction, distribution and preservation of liquid samples. Regardless of whether they are used in wastewater treatment, for the monitoring of water bodies or in drinking water, the sampling process complies with all international legislation.

- Safe handling of samples: Failsafe temperature monitoring prevents corruption of the sample.
- Easy commissioning: Open communication standards make for easier integration into your process.

- Easy operation: One standardized menu for all devices, be it in the sampler or in the Liquiline field device, prevents you from making operating errors.
- Easy adjustment: Thanks to modular hardware and flexible software, you can adapt the sample to all applications and sampling conditions with just a few hand movements.
- Simply complete: Simultaneous sampling and measurement of different parameters for modern environmental monitoring

Liquiline System guarantees high-precision measurement of nutrients, sum parameters and industrial parameters

Analyzers don't need to be complicated. Here again, plug & play with Memosens technology and the user-friendly Liquiline operating concept make for easier commissioning and operation. In addition, the analyzers offer advanced diagnostic options that can be availed of easily by remote access. Low reagent consumption and tool-free maintenance ensure that customers save money. Our analyzers guarantee reliable, legally compliant measurements in accordance with standard methods for:

- **Sum parameters**
To assess the organic load in water and wastewater, the four main parameters measured are TOC, SAC, BOD, COD.

- **Nutrients**
Modern wastewater treatment plants remove not only carbon but also nitrogen and phosphate. Online measurement of nutrient parameters plays a key role here.
- **Metals, other water treatment parameters**
The requirements vary between industrial sectors. However, most process water is softened, and almost all manufacturing processes require corrosion-free water that does not exhibit turbidity, has no color and does not contain iron or manganese.



Process photometers

Modern photometers enable accurate and reproducible concentration measurement by determining UV absorption, color, NIR absorption, turbidity and cell growth. Due to their simple measuring principle, fast response time, low maintenance requirements and low dependence on or cross-sensitivity with other process parameters, they can be used in a huge variety of applications. Their hygienic design means that these process photometers are ideally suited for use in the food and life sciences industries. With an approval for use in hazardous areas, they can also be

used in the chemical and oil & gas industries. Inline measurement replaces time- and labor-intensive sampling and measurement in a lab and also prevents product contamination. This saves the customer time and money. All process photometers are connected to a Memograph CVM40, which offers measured value acquisition and data management with FDA-compliant data security. Thanks to numerous communication protocols and interfaces, it can be seamlessly integrated into process control systems.



The OUSAF44 UV sensor delivers fast and reliable process information that is fully consistent with laboratory results.



The OUSAF12/OUSAF22 absorption sensors allow the concentration or the quality of products and processes to be accurately determined.



The OUSBT66 sensor monitors cell growth, biomass processes and algae systems.



The OUSTF10 scattered light turbidity sensor delivers highly sensitive measurements of undissolved solids, emulsions and immiscible media.



The OUSAF11 is a glass-free sensor for inline detection of changing phases and solids.

Analytical solutions

Complete turnkey solutions for your analytical measuring tasks

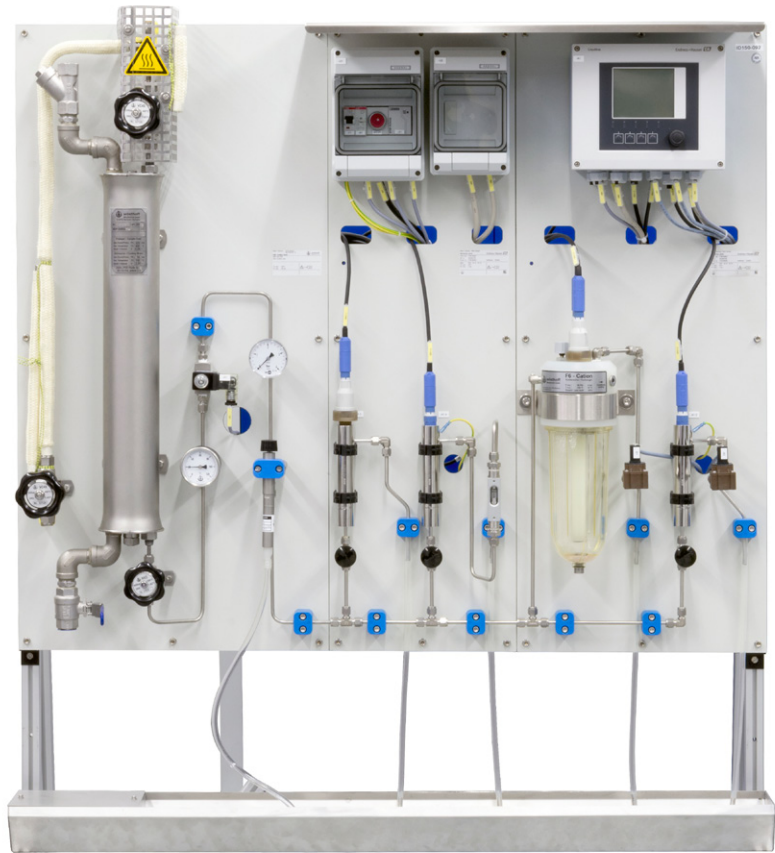
Depending on the measuring task in question, we develop customer-specific analytical solutions such as monitoring panels, cabinets or stations as well as automation systems. We will support you from the concept development stage to implementation and commissioning. What's more, with our global support network, you can rely on Endress+Hauser as your partner throughout the entire life cycle of your solution.

Monitoring

Our monitoring stations are supplied in turnkey condition and contain all of the components required from sample preparation right through to the transfer of data to higher-level systems. This guarantees easy installation, operation and calibration. These monitoring solutions are individually adapted to the customer's specific ambient conditions as well as communication and service requirements.

Automation

Our automation solutions support you in optimizing your processes, be this aeration control or phosphate dosing in a wastewater treatment plant or the automatic cleaning and calibration of pH measuring stations in the chemical or life sciences industries.



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