

Memosens 2.0

Simple, safe and connected

Endress+Hauser became a pioneer in the development of digital measuring devices and solutions for liquid analysis with the introduction in 2004 of the first generation of Memosens sensors and successful patent application in 2008. To date, well over one million of these sensors have been produced and have proven their worth in the chemical, life sciences and food industries as well as in the areas of water/wastewater. Memosens 2.0 represents the next, future-proof step in the evolution of Memosens technology while maintaining all of the familiar and well-established advantages. Users can now address Industry 4.0 strategies in real-life liquid analysis applications.

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Memosens technology stands for the digitization of the measured values directly in the sensor head. The data can then be used there for internal sensor diagnostics, stored in the sensor and transmitted via a non-contact connection as a digital signal to the cable and on to the transmitter. This tried-and-tested technology offers many different advantages and thus benefits to the user.

Easy digital data transmission

The advantage of Memosens technology is that digitized measured values and sensor information are transmitted via a non-contact connection from the sensor to the cable and as a digital signal to the transmitter. Selecting the components for a measuring point is easy as Liquiline transmitters automatically recognize the connected sensor type. It is not necessary to select a parameter-specific transmitter. The sensors are also easy to handle when it comes to calibration: Thanks to Memosens technology, field calibration is no longer necessary. Sensors can be easily and safely calibrated in the laboratory or in the factory. This is possible as the relevant data are stored in the sensor head. Precalibrated sensors covering the full range of parameters can thus also be used via 'plug & play'. In general, operation of the Memosens sensors is straightforward and cost-effective as they can be commissioned quickly and are easy to maintain.



Sensors can be calibrated in the laboratory under favorable conditions – for the operators and for precise and accurate results

Ultimate reliability in production and maintenance

Non-contact signal transmission makes Memosens sensors very reliable as problems do not arise due to moisture and EMC thanks to the inductive, digital signal transfer. Furthermore, disruptions to the connection between sensor and transmitter are displayed actively so errors can be eliminated immediately, thereby increasing process safety. This technology also increases operational safety for personnel considerably. Since the sensors can be exchanged quickly, Memosens can significantly help to reduce the time that maintenance staff spend in dangerous environments.



Non-contact, inductive signal transmission eliminates problems due to moisture. Replacing sensors on site is simple and safe

Memosens 2.0 connectivity for the Industrial Internet of Things

Now, after 17 years, Endress+Hauser is launching Memosens 2.0 as the next generation of Memosens technology. While the tried-and-tested features of the first version in relation to ease-of-use and safety have been maintained, version 2.0 is now also ready to meet the future requirements of Industry 4.0. For example, the sensors use internally stored data to diagnose their own condition. Because the new sensors can store the last 8 calibrations/adjustments in the sensor head and data from factory calibration are stored continuously, the digital history is always available. Analysis of these data makes it easier for the user to assess the sensor condition. This also applies if users carry out their own factory calibrations and wish to save these data on the sensor head because other buffers are to be used for calibration for example.

Memosens 2.0 sensors can also be integrated into Endress+Hauser's Netilion IIoT ecosystem in conjunction with Liquiline transmitters or with the help of Field Xpert tablet PCs. Sensor and diagnostic data can be evaluated within this environment using different applications. This information forms the basis for accurate predictions about the sensor condition and any maintenance requirements in the future.

The new Memosens generation is now completely backwards compatible so plant owners/operators are in no way forced to replace existing measurement lines with new ones. New sensors can be used without limitation with previous generation transmitters that have already been installed, protecting past investments.



Netilion Value provides users access to current measured values and status messages via mobile or stationary devices.

Heartbeat Technology determines the sensor status for pH and oxygen sensors

Heartbeat Technology's "sensor status" functionality was adapted in the new pH sensors. The sensor load function enables a detailed analysis of the current condition of the sensor. In addition to other parameters, the sensor diagnosis takes into account the measured pH values, the temperatures the sensor was exposed to and the time factor. The result is a reliable assessment of the sensor condition, making it easier for plant owners to plan maintenance work right up to sensor replacement if necessary.

Heartbeat Technology also offers a significant improvement in the case of amperometric oxygen sensors. The new oxygen sensors now feature an "electrolyte counter", which provides accurate information on the condition of the electrolyte and informs the user about upcoming maintenance requirements in a timely manner.

Tools for easy maintenance and repair

Even without the implementation of Industry 4.0 or IIoT technology, Endress+Hauser offers numerous online tools to help possible maintenance and repair procedures. For example, the Endress+Hauser Operations app for smartphones and tablets can be used for unique identification of a Memosens 2.0 sensor either by reading the DMC (DataMatrix code) lasered onto the sensor or entering the serial number manually. The app can then provide the user with immediate information about the sensor on site in the form of documentation and maintenance instructions or information on required spare parts. The production date, detailed order code and product-specific certificates are also displayed. This information makes on-site maintenance work easier and leads to a successful outcome faster.

Easy to use in hazardous areas

The new Memosens generation also makes instrumentation in hazardous areas easier. Previously the approval was system-based comprising the CYK10 cable and the individual sensors listed in the approval. Expanding the sensor portfolio was always complicated at this point. Now all of the components have an individual approval and the measuring point can be easily and safely configured, calculated and installed based on the corresponding connection characteristic data. This also applies to use in hazardous areas. The on-site installation does not need to be changed. Sensors from both the first and new generation can be connected and operated with the CYK10 cable. This protects the investment made by users of first generation Memosens technology.

Conclusion: Future-proof liquid analysis with Memosens 2.0

The first generation of Memosens technology is widely used for liquid analysis in many different industries thanks to its simplicity, reliability and safety. Memosens 2.0 is now the next logical step in its evolution towards connectivity and Industry 4.0. The sensors themselves are smart, for example, they can communicate digitally and carry out a self-diagnosis depending on the measuring parameter. It is now also possible to integrate them in cloud solutions such as Endress+Hauser's Netilion IIoT ecosystem so that the sensor data can be used for more in-depth analyses and are ready for the future.