



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Memosens

New technology for contactless, inductive, digital transmission of pH signals



Application

- Chemical industry and process technology
- Food and pharmaceutical industries, biotechnology
- Water and wastewater treatment

Your benefits

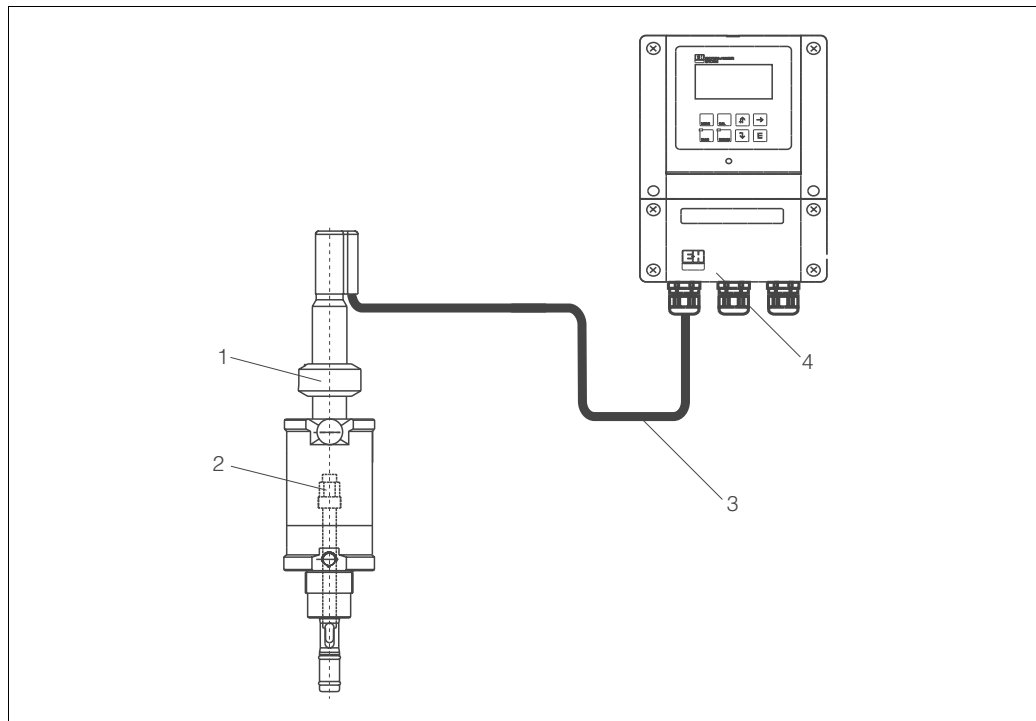
- Maximum process safety through contactless inductive signal transmission
 - No contact corrosion
 - Absolutely watertight
 - No interference potential due to galvanic decoupling of sensor and transmitter
- Data safety through digital data transmission
 - Automatic error message if signal flow is interrupted
 - Increased availability of the measuring point
- Easy handling thanks to storage of sensor-specific data
 - Sensor calibration in laboratory is possible
 - Sensor replacement is unproblematic due to automatic sensor recognition
 - Transmitter can be installed at increased distance from the sensor
- Predictive maintenance possible thanks to registration of sensor load data such as
 - Total operating hours
 - Operating hours at very low and very high pH values (Nernst voltage below -300 mV, above +300 mV)
 - Operating hours at temperatures above 80 °C / 100 °C
 - and many more
- Easy calibration in the laboratory with the Memocal T calibration tool
- Low price thanks to extension with standard data cable
- Autoclavable / sterilisable

Function and system design

Measuring system

A complete measuring system comprises:

- pH electrode with Memosens technology, e.g.:
 - Orbisint CPS11D
 - Ceragel CPS71D
 - Orbipore CPS91D
- Transmitter with Memosens technology, e.g.:
 - Liquisys M CPM223/253 (CPM223/253-MRxxxx, CPM223/253-MSxxxx)
 - Mycom S CPM153 (CPM153-x5xxxxxxx, CPM153-x6xxxxxxx)
- CYK10 Memosens data cable
- Immersion, flow or retractable assembly (example: CPA471/472)



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pH measuring system

- 1 *Retractable assembly Cleanfit P CPA471/472*
- 2 *CPS11D digital sensor*
- 3 *CYK10 Memosens data cable*
- 4 *Mycom S CPM153 transmitter*

Important properties

Maximum process safety

The inductive and non-contacting measured value transfer of Memosens guarantees maximum process safety and offers the following benefits:

- All problems caused by moisture are eliminated.
 - The plug-in connection is free from corrosion.
 - Measured value distortion from moisture is not possible.
 - The plug-in system can even be connected under water.
- The transmitter is galvanically decoupled from the medium. The result: No more need to ask about "symmetrically high-impedance" or "unsymmetrical" or an impedance converter.
- The cable does not act like an antenna. Thus, EMC safety is guaranteed.

Data safety through digital data transfer

The Memosens technology digitalises the measured value in the sensor and transfers it to the transmitter via a contactless connection. The result:

- An automatic error message is generated if the sensor fails or the connection between sensor and transmitter is interrupted
- The availability of the measuring point is dramatically increased by immediate error detection
- The digital signals are suitable for application in hazardous areas; the integrated electronics are intrinsically safe.

Easy handling

Sensors with Memosens technology have integrated electronics that allow for saving calibration data and further information such as total hours of operation and operating hours at very low or very high pH values. When the sensor is mounted, the calibration data are automatically transferred to the transmitter and used to calculate the current pH value: Storing the calibration data in the sensor allows for calibration and adjustment away from the measuring point. The result:

- pH sensors can be calibrated under optimum external conditions in the measuring lab. Wind and weather do neither affect the calibration quality nor the operator.
- The measuring point availability is dramatically increased by the quick and easy replacement of precalibrated sensors.
- The transmitter does not need to be installed close to the measuring point but can be placed in the control room.
- Maintenance intervals can be defined based on all stored sensor load data and calibration and predictive maintenance is possible.
- The sensor history can be documented on external data carriers and evaluation programs at any time. Thus, the current application of the sensors can be made to depend on their previous history.

Storage of measuring system data

Digital sensors are able to store the following system data in the sensor.

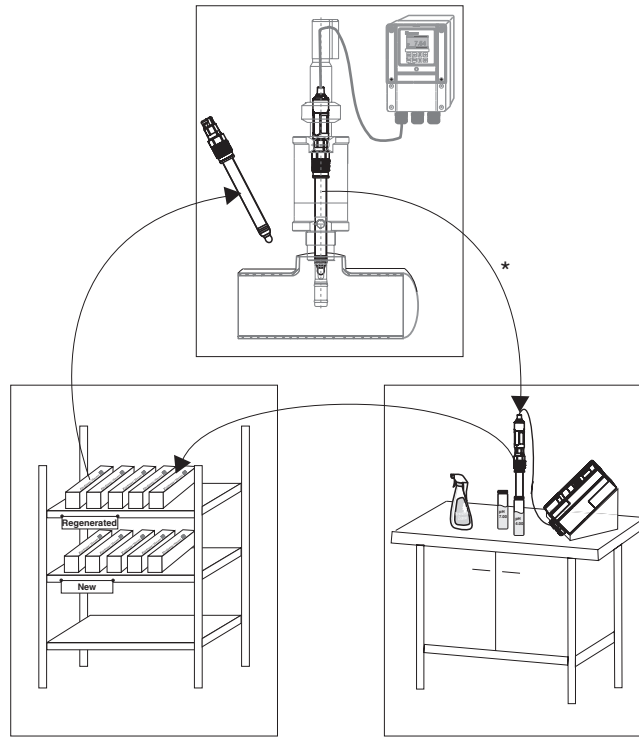
- Manufacturing data
 - Serial number
 - Order code
 - Date of manufacture
- Calibration data
 - Calibration date
 - Calibrated slope at 25 °C / 77 °F
 - Calibrated zero point at 25 °C / 77 °F
 - Temperature offset
 - Number of calibrations
 - Operator's signature for calibration or adjustment
- Application data
 - Temperature application range
 - pH application range
 - Date of first commissioning
 - Maximum temperature value
 - Operating hours at temperatures above 80 °C / 176 °F and 100 °C / 212 °F
 - Operating hours at very low and very high pH values (Nernst voltage below -300 mV, above +300 mV)
 - Number of sterilisations
 - Glass membrane impedance

These system data can be displayed with the Mycom S transmitter

Commissioning digital sensors

Process / measuring point

Just exchange the sensor



Store

Laboratory

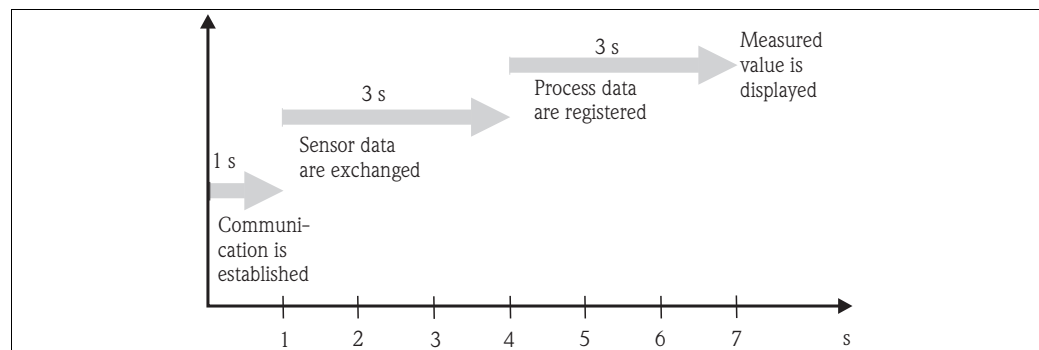
- Clean
- Regenerate
- Calibrate, e.g. with Memocal T

* Of course, you can also calibrate the sensor at the measuring point as usual.

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Switch-on behaviour

After sensor connection and switching on the transmitter, it takes only a few seconds until the communication between sensor and transmitter is established and a real measured value is displayed.



Switch-on behaviour of digital sensors

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Memocal T calibration tool

Memocal T completes the Memosens system. It is the instrument for your laboratory. Memocal T builds on Liquisys M CPM253, whereby all fields not required for calibration are suppressed from the menu. The following can be accessed:

- Measurement
- Wet calibration
- Numeric calibration
- Language selection
- Glass SCS on/off
- Read out all software and hardware version numbers incl. sensor serial number

Installation

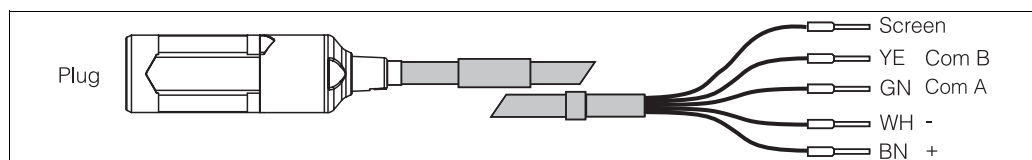
Installation instructions

The general characteristics of sensors with Memosens technology correspond to the standard electrode characteristics. This means installation conditions, e.g. installation position, are identical for Memosens sensors and their standard counterparts.

When installing the sensors make sure that the cable cores are not twisted and not strained.

Cable connection

Digital sensors with Memosens technology are connected via the Memosens data cable CYK10.



CYK10 Memosens data cable

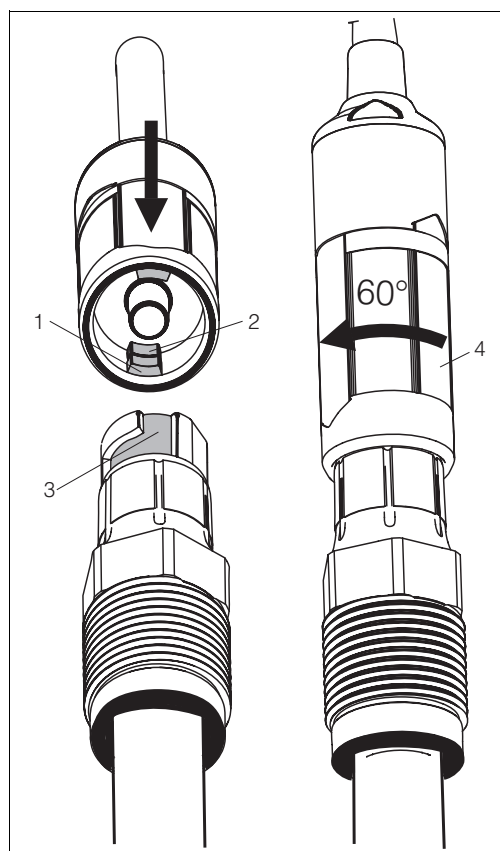
Please refer to the notes on sensor connection in the Operating Instructions of the used transmitter.

The transmitter must be suitable for connection of digital sensors. Transmitters with a standard pH input are not appropriate.

At present, Mycom S CPM153 and Liquisys M CPM223/253 versions with Memosens technology are available. Also, upgrade kits for these transmitters can be ordered (see "Products with Memosens technology").

Handling of sensor plug-in head and cable coupling

To plug the cable coupling onto the sensor plug-in head, proceed as follows:



Handling of sensor plug-in head and cable coupling

1. Rotate the lower part of the coupling in such a way that the two pairs of keys (pos. 1, 2) are located above each other.
2. Plug the coupling onto the plug-in head so that the keys engage in the slots of the plug-in head (pos. 3).
3. Turn the lower part of the coupling (pos. 4) clockwise as far as possible (approx. 60°). Doing so locks the coupling and prevents the connection from opening inadvertently.

Open the connection in the reverse sequence of operations.

Environment

Ingress protection IP 68 (10 m / 32.81 ft water column, 48 days, 1 M KCl, 25 °C / 77 °F)

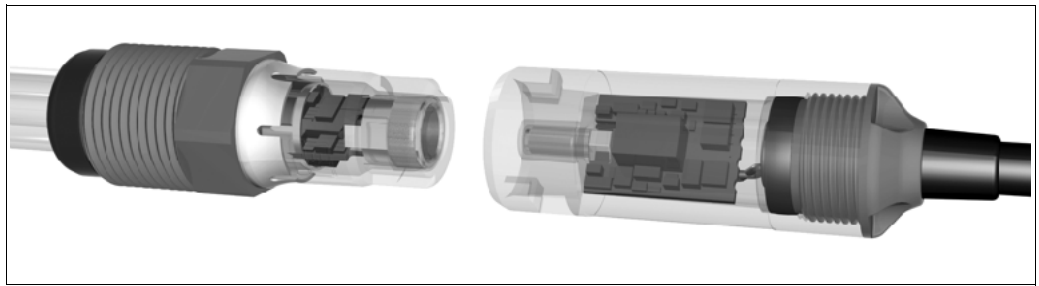
Process

Process temperature depending on the sensor, max. 135 °C / 275 °F

Process pressure Digital sensors with Memosens technology can be operated up to a safety overpressure of 50 bar abs. at 135 °C / 725 psi abs. at 275 °F depending on the used sensor (Technical information of the sensor).

Mechanical construction

Design



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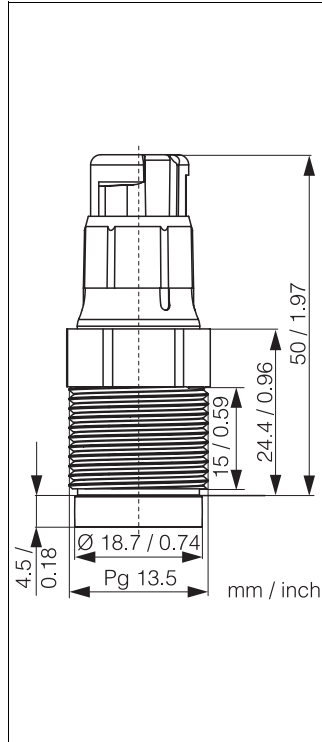
Internal design of Memosens plug-in system



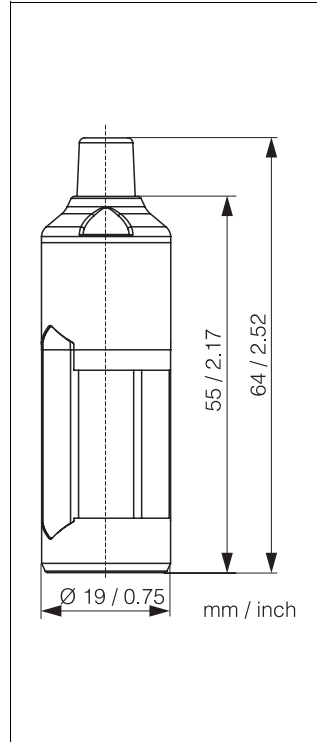
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Memosens coupling, no open contacts

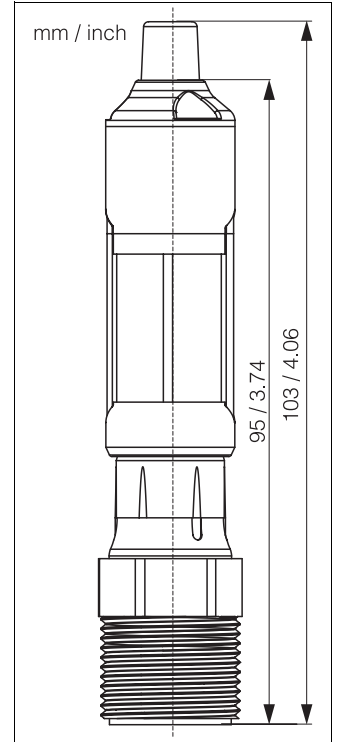
Dimensions



Dimensions of Memosens sensor plug-in head with HDA thrust collar



Dimensions of Memosens cable coupling



Dimensions of Memosens in plugged-in state

Materials

Sensor plug-in head:	PPS-40GF
Cable coupling:	PEEK

Cable specification

Diameter:	6.3 mm / 0.25"
Cores:	2 x 2 cores, twisted pair
Sheath:	TPE, T_{max} 130 °C / 266 °F permanent
Length:	up to approx. 100 m / 328.10 ft

The transmitter provides power supply for the plug-in system's electronics. If the cable is too long, the voltage drops possibly resulting in a system failure. An alarm is triggered.

Disposal

Components with Memosens technology contain electronic components. Please observe local regulations on disposal!

Certificates and approvals

Ex approval

ATEX II 1G EEX ia IIC T3/T4/T6

EMC compatibility

Interference emission and interference immunity complies with EN 61326: 1997 / A1: 1998

Products with Memosens technology

Orbisint CPS11D

Digital pH combination electrode with Memosens technology

- Dirt-repellent PTFE diaphragm
- Robust
- Advanced Gel
- Built-in temperature sensor
- Pressure max. 6 bar / 87 psi
- pH 0 ... 14, 0 ... 135 °C / 32 ... 275 °F (-15 ... 80 °C / 5 ... 176 °F)
- For application in hazardous and non-hazardous areas
- CYK10 measuring cable

Ceragel CPS71D

Digital pH combination electrode with Memosens technology

- Double junction reference system and integrated bridge electrolyte
- Hygienic, suitable for CIP and SIP, EHEDG and 3A certificates
- Acrylamide-free gel
- Built-in temperature sensor
- Pressure max. 13 bar / 188.5 psi
- pH 0 ... 14, 0 ... 135 °C / 32 ... 275 °F, 3 diaphragms
- For application in hazardous and non-hazardous areas
- CYK10 measuring cable

Orbipore CPS91D

Digital pH electrode with Memosens technology

- Open aperture
- Fast response, insensitive to pressure and concentration variation
- Built-in temperature sensor
- Pressure max. 13 bar / 188.5 psi
- pH 0 ... 14, operating temperature 0 ... 110 °C / 32 ... 230 °F
- For application in hazardous or non-hazardous areas
- CYK10 measuring cable

Liquisys M CPM223/253

Version	
...	...
MR	pH measurement with digital pH sensors (Memosens)
MS	pH measurement with digital pH sensors (Memosens), with additional functions (Plus package)
...	
...	...
CPM253-	complete order code
CPM223-	

Mycom S CPM153

Approvals	
A	Basic equipment: non-Ex
G	With ATEX approval, ATEX II (1) 2G EEx em ib[ia] IIC T4
...	...
Sensor input	
...	...
5	1 measuring circuit for digital pH sensors (Memosens), pH and temperature
6	2 measuring circuits for digital pH sensors (Memosens), pH and temperature
...	
...	...
CPM153-	complete order code

Upgrade kit for Liquisys M and Mycom S

Upgrade kit for Liquisys M (vers. 2.0 and higher) and Mycom S Kit MKD 1 universal transmitter, digital

Consists of:

- Transmitter board
- Terminal block
- Label

Order no.: 51514966

Memosens data cable CYK10

Certificates	
A	Standard, non Ex
G	ATEX II 1G EEx ia IIC T6/T4
O	FM Cl.I Div. 1 AEx ia IIC T6/T4
S	CSA IS Cl.I Ex ia IIC T6/T4
Cable length	
03	Cable length: 3 m / 9.84 ft
05	Cable length: 5 m / 16.41 ft
10	Cable length: 10 m / 32.81 ft
15	Cable length: 15 m / 49.22 ft
20	Cable length: 20 m / 65.62 ft
25	Cable length: 25 m / 82.03 ft
Ready-made	
1	Wire terminals
CYK10-	complete order code

Memocal T

- Calibration tool for digital sensors field housing IP 65, 230 VAC, incl. CYK10-A03 cable, 3 m / 9.84 ft order no. 51515945
- Calibration tool for digital sensors field housing IP 65, 115 VAC, incl. CYK10-A03 cable, 3 m / 9.84 ft order no. 51515946
- Calibration tool for digital sensors field housing IP 65, 100 VAC, incl. CYK10-A03 cable, 3 m / 9.84 ft order no. 51515947
- Calibration tool for digital sensors field housing IP 65, 24 VAC/DC, incl. CYK10-A03 cable, 3 m / 9.84 ft order no. 51515948



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Documentation

Digital sensors with Memosens technology

- Orbisint CPS11/CPS11D, Technical Information TI 028C/07/en; order no. 50054649
 - Ceragel CPS71/CPS71D, Technical Information TI 245C/07/en; order no. 51505837
 - Orbipore CPS91/CPS91D, Technical Information TI 375C/07/en; order no. 51513127
-

Transmitters with Memosens technology

- Liquisys M CPM223/253, Technical Information TI 194C/07/en; order no. 51500277
- Mycom S CPM153, Technical Information TI 233C/07/en; order no. 51503788



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