Датчики pH, ОВП
Orbipore CPS92D, CPS92

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Technical Information
Orbipore CPS92D and CPS92

ORP electrodes, digital with Memosens technology, and analog

With open aperture for very contaminated media

Application

- Chemical processes
- Pulp and paper industry
- Contaminated media:
  - Solids
  - Emulsions
  - Precipitation reactions
  - Dispersions

Your benefits

- Open aperture for use in contaminated media
- Low maintenance thanks to gel filling
- Long service life thanks to new, stabilized gel
- Not affected by fluctuations in pressure and temperature
- Fast response time

Other advantages of Memosens technology

- Maximum process safety thanks to non-contact, inductive signal transmission
- Data security thanks to digital data transmission
- Very easy to use as sensor data saved in the sensor
- Recording of sensor load data in the sensor enables predictive maintenance with the Memobase Plus CYZ71D

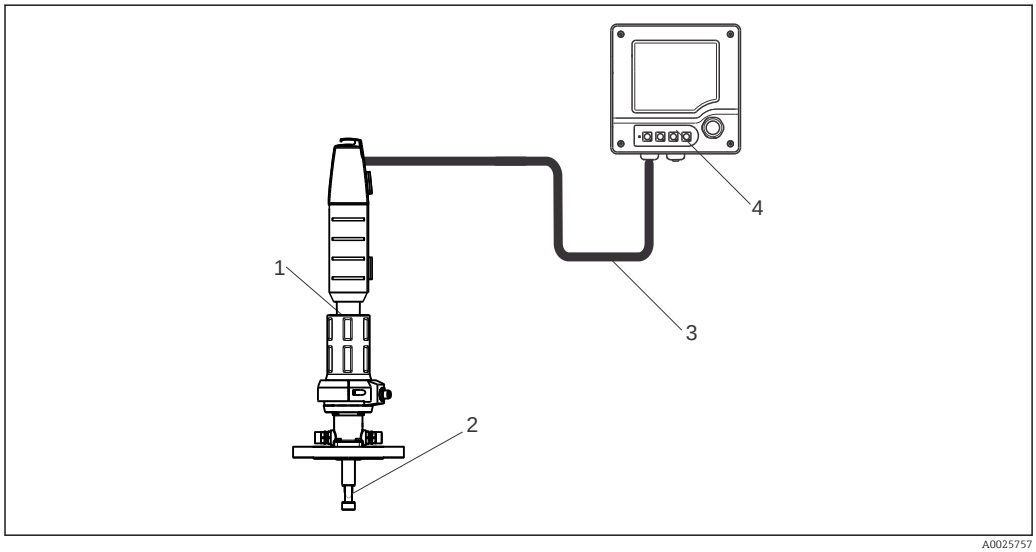
Function and system design

Measuring principle

ORP measurement
The ORP potential is a unit of measurement for the state of equilibria between oxidizing and reducing components of a medium. The ORP is measured using a platinum or gold electrode instead of the pH-sensitive glass membrane. Analog to the pH measurement, an integrated Ag/AgCl reference system is used as a reference electrode.

Measuring system

A complete measuring system consists of the following components at least:
- ORP electrode CPS92D or CPS92
- Transmitter, e.g. Liquiline CM42, CM44x/R, Mycom S CPM153, Liquisys M CPM2x3
- Memosens data cable CYK10 for Memosens sensors or CPK9 for analog sensors
- Immersion, flow or retractable assembly, e.g. Cleanfit CPA871/875



1 Example of a measuring system for ORP measurement

1 Retractable assembly Cleanfit CPA871
2 ORP electrode CPS92D
3 Memosens data cable CYK10
4 Liquiline M CM42 two-wire transmitter for hazardous area

Communication and data processing CPS92D

Communication with the transmitter

Always connect digital sensors with Memosens technology to a transmitter with Memosens technology. Data transmission to a transmitter for analog sensors is not possible.

Digital sensors can store measuring system data in the sensor. These include the following:

- Manufacturer data
  - Serial number
  - Order code
  - Date of manufacture
- Calibration data
  - Calibration date
  - Offset (operating mode "mV")
  - % slope (operating mode "%")
  - Number of calibrations
  - Serial number of the transmitter used to perform the last calibration
- Operating data
  - Temperature application range
  - ORP application range
  - Date of initial commissioning
  - Hours of operation under extreme conditions

You can display the abovementioned data using the Liquiline CM44x, CM42 and Memobase Plus CYZ71D.

Dependability

Reliability

Easy handling

Sensors with Memosens technology have an integrated electronics unit that stores calibration data and other information (e.g. total operating hours and operating hours under extreme measuring conditions). Once the sensor has been connected, the sensor data are transferred automatically to the transmitter and used to calculate the current measured value. As the calibration data are stored in the sensor, the sensor can be calibrated and adjusted independently of the measuring point. The result:

- Easy calibration in the measuring lab under optimum external conditions increases the quality of the calibration.
- Pre-calibrated sensors can be replaced quickly and easily, resulting in a dramatic increase in the availability of the measuring point .
- Maintenance intervals can be defined based on all stored sensor load and calibration data and predictive maintenance is possible.
- The sensor history can be documented using external storage media and evaluation programs, e.g. Memobase Plus CYZ71D. Thus, the current application of the sensors can be made to depend on their previous history.

Integrity

Data security thanks to digital data transmission

Memosens technology digitizes the measured values in the sensor and transmits the data to the transmitter using a non-contact connection that is free from potential interference. The result:

- Automatic error message if sensor fails or connection between sensor and transmitter is interrupted
- Immediate error detection increases measuring point availability

Safety

Maximum process safety

With inductive transmission of the measured value using a non-contact connection, Memosens guarantees maximum process safety and offers the following benefits:

- All problems caused by moisture are eliminated:
  - Plug-in connection free from corrosion
  - Measured values cannot be distorted by moisture.
  - Can even be connected under water
- The transmitter is galvanically decoupled from the medium. Issues concerning "symmetrical high-impedance" or "asymmetry" or an impedance converter are a thing of the past.
- EMC safety is guaranteed by screening measures for the digital transmission of measured values.
- Intrinsically safe electronics mean operation in hazardous areas is not a problem.

Input

Measured variables

ORP

Measuring range

-1500 mV to +1500 mV

Please note the process operating conditions.

Installation

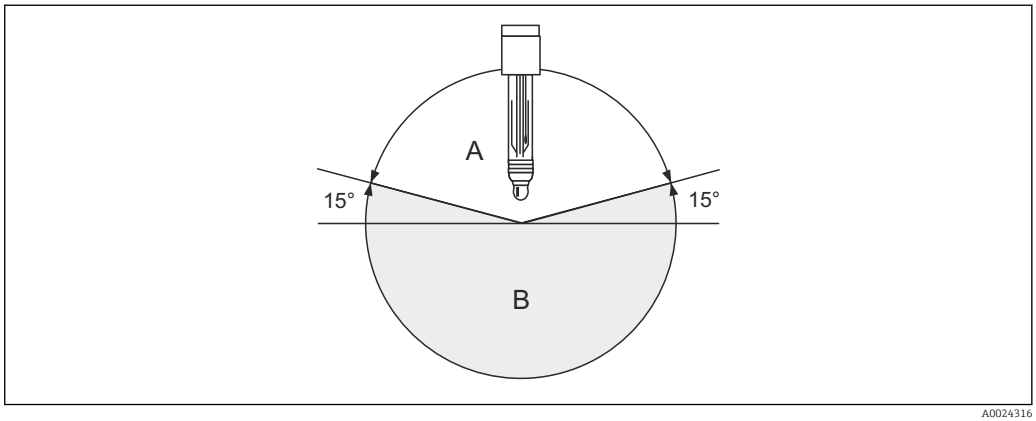
Installation instructions

Do not install the electrodes upside down. The angle of inclination must be at least 15° from the horizontal. A smaller inclination angle is not permitted as it could cause an air bubble to form and prevent contact between the reference and the lead.

NOTICE

Before screwing in the electrode, make sure the assembly threaded connection is clean and runs smoothly.

- ▶ Screw in the electrode finger-tight (3 Nm)! (Data apply only if installing with E assemblies.)
- ▶ Make sure to follow the installation instructions in the Operating Instructions of the assembly used.



2 *Electrode installation; installation angle at least 15° from the horizontal*

A Permitted orientation
B Forbidden orientation

Environment

Ambient temperature

NOTICE

Risk of damage due to frost

- The sensor must not be used if the temperature drops below −15 °C (5 °F).

Storage temperature

0 to 50 °C (32 to 122 °F)

Degree of protection

IP 68:	Memosens plug-in head, (10 m (33 ft) water column, 25 °C (77 °F), 45 days, 1 M KCl)
IP 68:	TOP68 plug-in head, (1 m (3.3 ft) water column, 50 °C (122 °F), 168 h)
IP 67:	GSA plug-in head (with closed connector system)

Process

Process temperature

0 to 110 °C (32 to 230 °F)

Process pressure (absolute)

1 to 14 bar (15 to 203 psi)

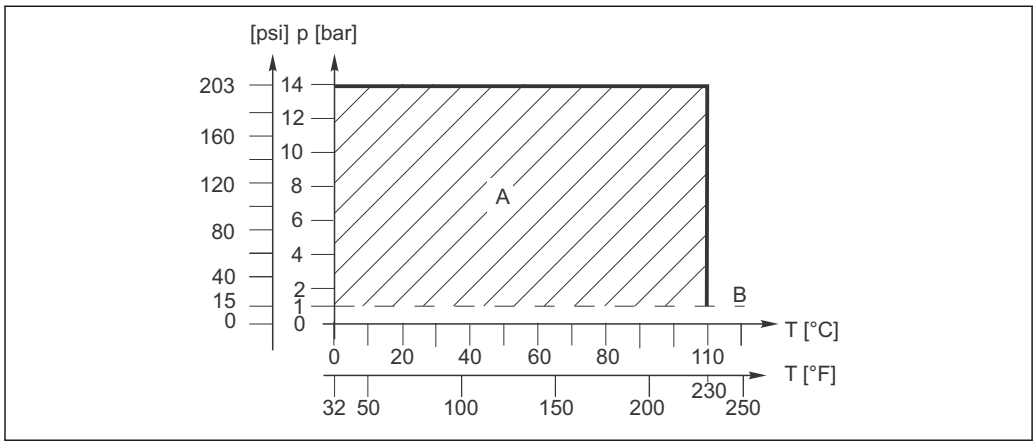
CAUTION

Pressurization of sensor due to prolonged use under increased process pressure

Risk of injury from glass breakage

- Avoid excessive heating of such sensors if using them under reduced process pressure or under atmospheric pressure.
- When handling such sensors, wear protective goggles and suitable gloves.

Pressure-temperature ratings

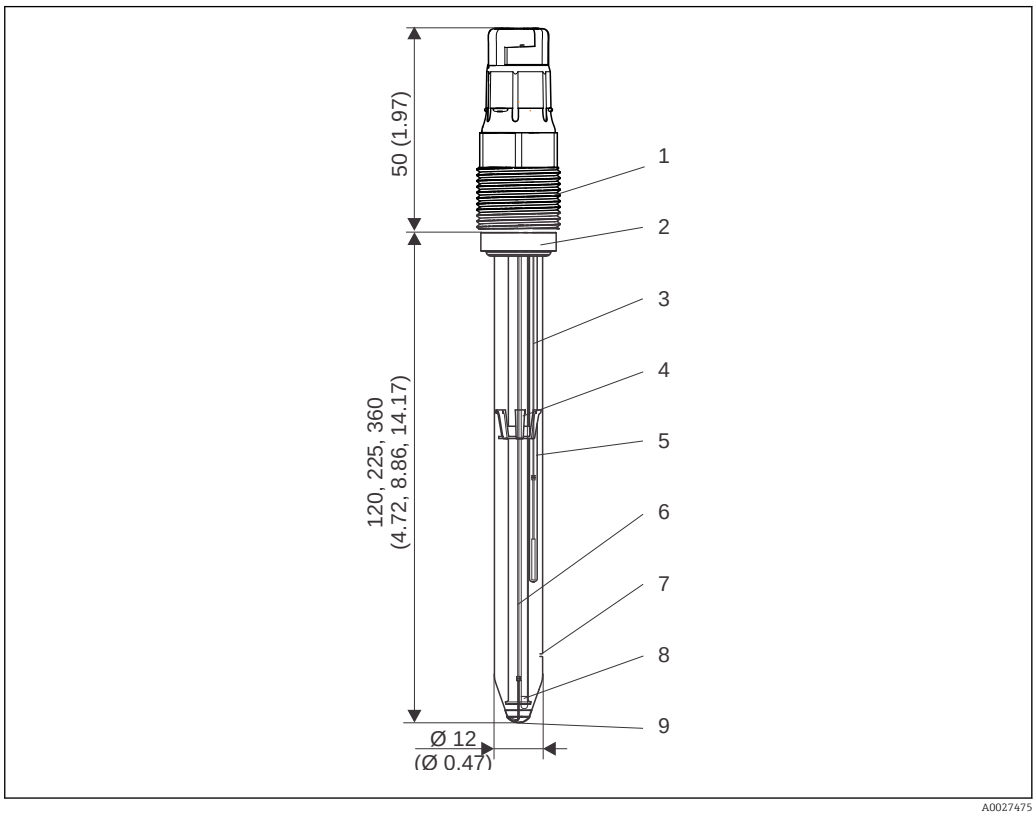


3 Pressure-temperature ratings

A Application CPS92(D)
B Atmospheric pressure

Mechanical construction

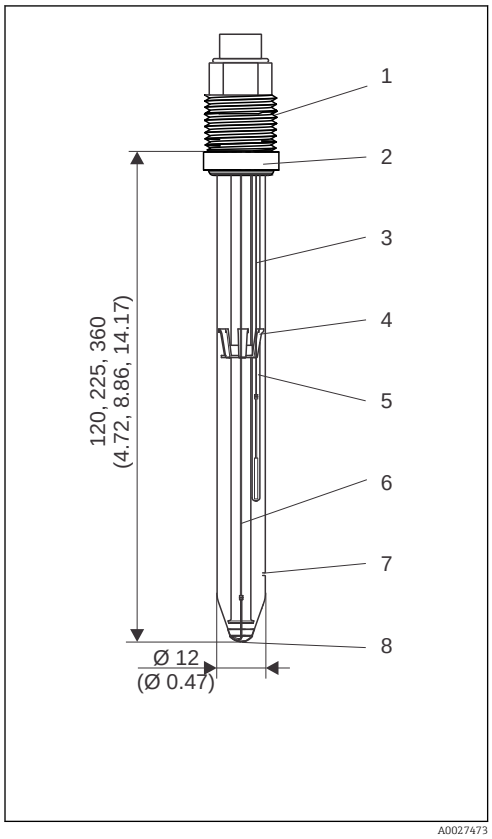
Design, dimensions CPS92D



4 *CPS92D with Memosens plug-in head*

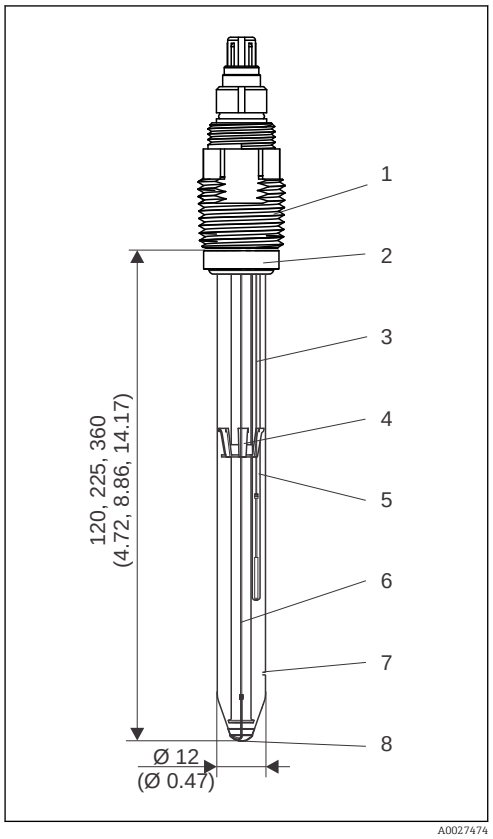
1 *Memosens plug-in head*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl external reference lead*
4 *Spacer*
5 *"Advanced Gel" electrolyte*
6 *Metal internal reference lead*
7 *Open aperture*
8 *Temperature sensor NTC 30K*
9 *Platinum cap*

Design, dimensions CPS92



5 CPS92 with GSA plug-in head

1 *GSA electrode plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl external reference lead*
4 *Spacer*
5 *"Advanced Gel" electrolyte*
6 *Metal internal reference lead*
7 *Open aperture*
8 *Platinum cap*



6 CPS92 with TOP68 plug-in head (ESA)

1 *TOP68 plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl external reference lead*
4 *Spacer*
5 *"Advanced Gel" electrolyte*
6 *Metal internal reference lead*
7 *Open aperture*
8 *Platinum cap*

Weight

0.1 kg (0.22 lbs) for a length of 120 mm (4.72 inch)

Materials

Electrode shaft	Glass to suit process
ORP measuring element	Platinum cap
Junction	Open aperture

Process connection

Pg 13.5

Plug-in heads

CPS92D:	Memosens plug-in head for digital, non-contact data transmission, 17 bar abs. (246 psi), Ex or non-Ex
CPS92:	
ESA:	Threaded plug-in head Pg 13.5, TOP68, 17 bar abs. (246 psi), Ex
GSA:	Threaded plug-in head Pg 13.5

Reference system

Ag/AgCl reference lead with Advanced Gel 3 M KCl, AgCl-free

Certificates and approvals

Ex approval

CPS92D

- ATEX II 1G EEX ia IIC T4/T6
- FM / CSA Class I Div. 2, in conjunction with Liquiline M CM42 and Mycom S CPM153 transmitters

Hazardous area versions of the digital sensors with Memosens technology are indicated by a red-orange ring in the plug-in head.

CPS92

- ATEX II 1G EEX ia IIC T4/T6
- FM Class I Div. 2, in conjunction with Liquiline M CM42 and Mycom S CPM153 transmitters

TÜV certificate for Memosens and ESA plug-in head

Pressure resistance 16 bar rel. (232 psi), minimum three times the safety pressure

Electromagnetic compatibility

Interference emission and interference immunity as per EN 61326: 2012

Ordering information

Product page

Product Configurator

The navigation area is located on the right of the product page.

1. Under "Device support" click "Configure your selected product".
   ↳ The Configurator opens in a separate window.
2. Select all the options to configure the device in line with your requirements.
   ↳ In this way, you receive a valid and complete order code for the device.
3. Export the order code as a PDF or Excel file. To do so, click the appropriate button at the top of the screen.

Scope of delivery

The scope of delivery includes:
- Sensor in the version ordered
- Technical Information

Accessories

The following are the most important accessories available at the time this documentation was issued. For accessories not listed here, please contact your service or sales office.

Assemblies

Cleanfit CPA871
- Flexible process retractable assembly for water, wastewater and the chemical industry
- For applications with standard 12mm sensors
-

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