Technical Information
Orbisint CPS11D and CPS11

pH electrodes, analog or with digital Memosens technology

For standard applications in process and environmental technology, with dirt-repellent PTFE diaphragm, built-in temperature sensor (optional for analog sensor)

Application

- Long-term monitoring and limit value monitoring of processes with stable process conditions
  - Chemical industry: strong acids/bases, plastic, pulp and paper industry
  - Power plants (e.g. flue gas cleaning), oil and gas
  - Incinerator plants
- Water/wastewater treatment
  - Boiler feedwater and cooling water
  - Well water and drinking water
  - All industrial and municipal treatment plants

With ATEX, IECEx, FM, CSA, TIIS and NEPSI approval for use in hazardous areas

Your benefits

- Low-maintenance and robust thanks to large PTFE ring junction
- Can be used at pressures up to 17 bar abs. (246 psi)
- Process glass also for very alkaline applications (BA and BT versions)
- Process glass for applications in media containing hydrofluoric acid (FA version)
- For media with low conductivity (AS version)
- Integrated NTC30K temperature sensor (Memosens) for effective temperature compensation; Pt100 or Pt1000 for analog sensors
- Optional: Poison-resistant reference with ion trap

Other advantages of Memosens technology

- Maximum process safety
- 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

Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

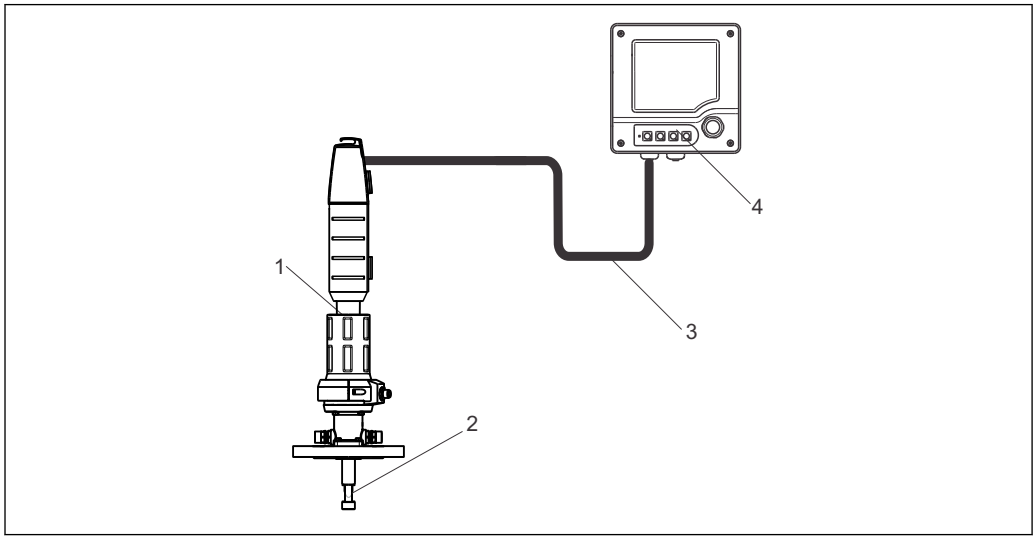
pH measurement

The pH value is used as a unit of measurement for the acidity or alkalinity of a liquid medium. The membrane glass of the electrode supplies an electrochemical potential which is dependent upon the pH value of the medium. This potential is generated by the selective penetration of H^+ ions through the outer layer of the membrane. An electrochemical boundary layer with an electric potential forms at this point. An integrated Ag/AgCl reference system serves as the required reference electrode. The transmitter converts the measured voltage into the corresponding pH value using the Nernst equation.

Measuring system

A complete measuring system comprises at least the following components:

- pH electrode CPS11D or CPS11
- Transmitter, e.g. Liquiline CM42, CM44x, 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



1 Example of a measuring system for pH measurement

1 Retractable assembly Cleanfit CPA871
2 pH electrode CPS11D
3 Memosens data cable CYK10
4 Liquiline M CM42 two-wire transmitter for hazardous area

CPS11D communication and data processing

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
  - Slope at 25 °C (77 °F)
  - Zero point at 25 °C (77 °F)
  - Temperature offset
  - Number of calibrations
  - Serial number of the transmitter used to perform the last calibration
- Operating data
  - Temperature application range
  - pH application range
  - Date of initial commissioning
  - Maximum temperature value
  - Hours of operation under extreme conditions
  - Number of sterilizations
  - Resistance of glass membrane

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

pH value

Temperature

Measuring range

Electrode version AA (for water / wastewater), AS (for boiler feedwater):

pH:	1 to 12
Temperature:	-15 to 80 °C (5 to 176 °F)

Electrode version BA (for process):

pH:	0 to 14
Temperature:	0 to 135 °C (32 to 275 °F)

Electrode version FA (for hydrofluoric acid process):

pH:	0 to 10
Temperature:	0 to 70 °C (32 to 158 °F)

Electrode version BT with ion trap (for chemicals, scrubbers, pulp and paper):

pH:	0 to 14
Temperature:	0 to 135 °C (32 to 275 °F)

Please note the process operating conditions.

Installation

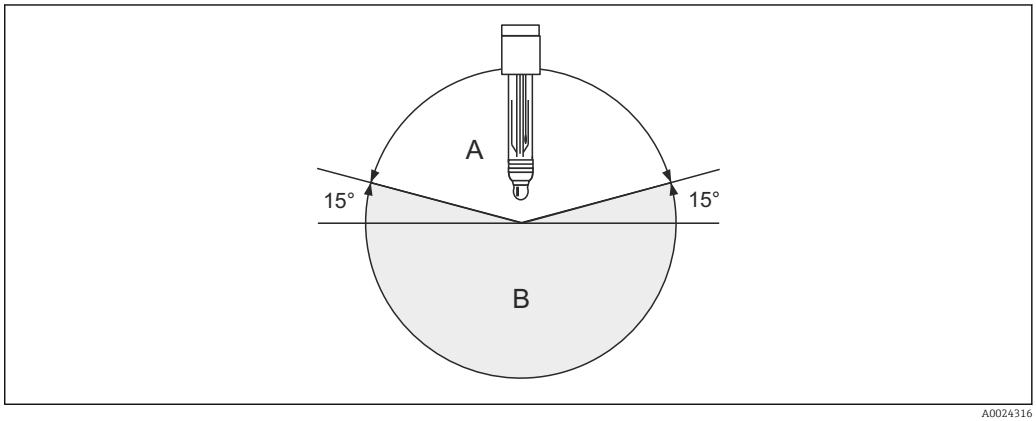
Installation instructions

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 in the glass sphere and prevent the inner electrolyte from completely wetting the pH diaphragm.

NOTICE

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

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



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, autoclavable up to 135 °C (275 °F), (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

Version AA, AS:	-15 to 80 °C (5 to 176 °F)
Version BA, BT:	0 to 135 °C (32 to 275 °F)
Version FA:	0 to 70 °C (32 to 158 °F)

Process pressure (absolute)

Version AA, AS, FA:	1 to 7 bar (15 to 101 psi)
Version BA, BT:	1 to 17 bar (15 to 246 psi)

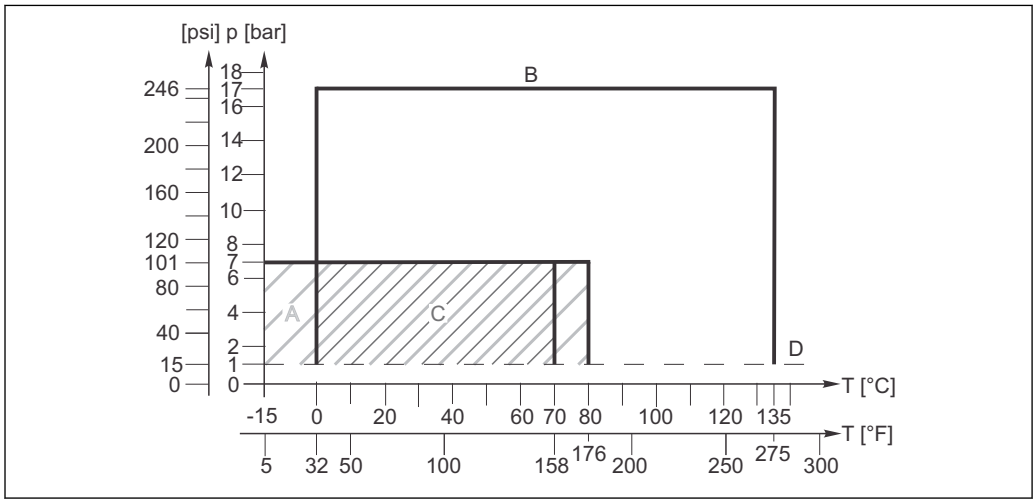
⚠ CAUTION

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 (absolute)



3 *Pressure-temperature ratings*

A Version AA, AS
B Version BA, BT
C Version FA
D Atmospheric pressure

Minimum conductivity

Version AA, BA, BT, FA:	Min. 50 µS/cm (minimum flow; pressure and temperature must be stable)
Version AS:	Min. 0.1 µS/cm (stainless steel flow assembly with grounding; stable and minimum flow; pressure and temperature must be stable)

pH range

Version AA, AS:	1 to 12 pH
Version BA, BT:	0 to 14 pH
Version FA:	0 to 10 pH

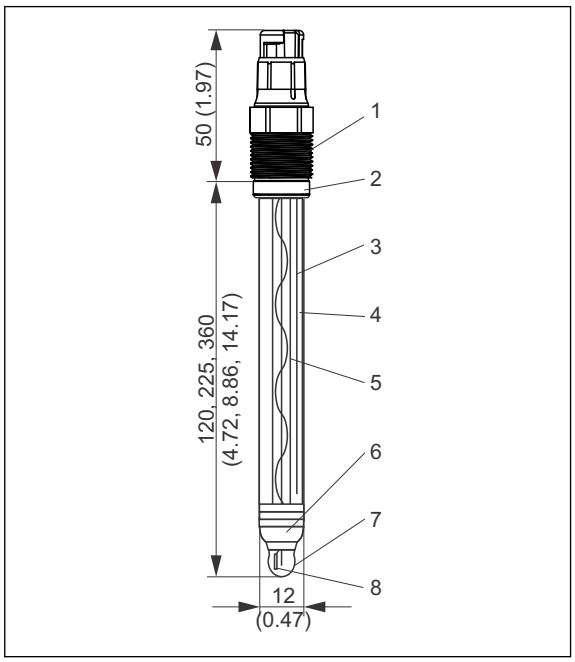
NOTICE

Risk of damage to electrode

- ► Never use the electrode outside of the listed specifications!

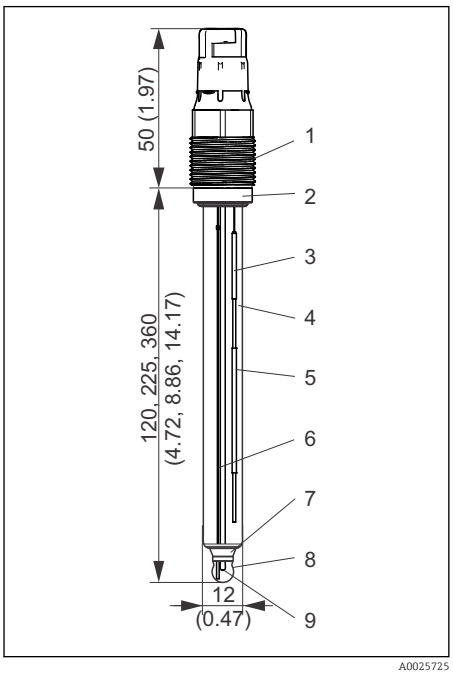
Mechanical construction

Design, dimensions of CPS11D



4 *CPS11D with Memosens plug-in head, temperature sensor*

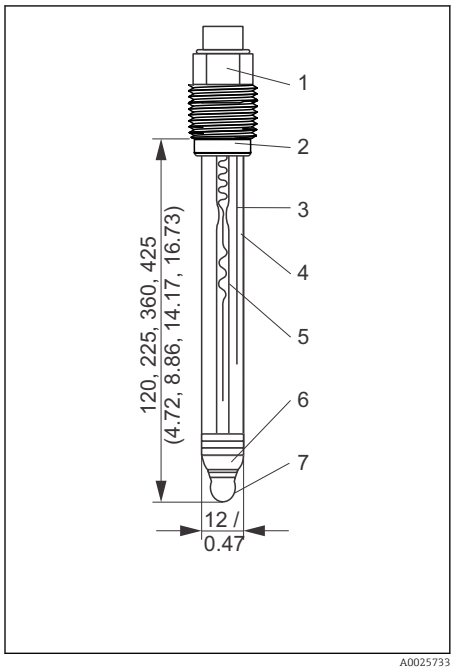
1 *Memosens plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl reference lead - reference*
4 *"Advanced Gel" electrolyte*
5 *Ag/AgCl reference lead - pH*
6 *PTFE diaphragm*
7 *pH glass membrane*
8 *Temperature sensor NTC30K*



5 *CPS11D-7BTxx, with ion trap*

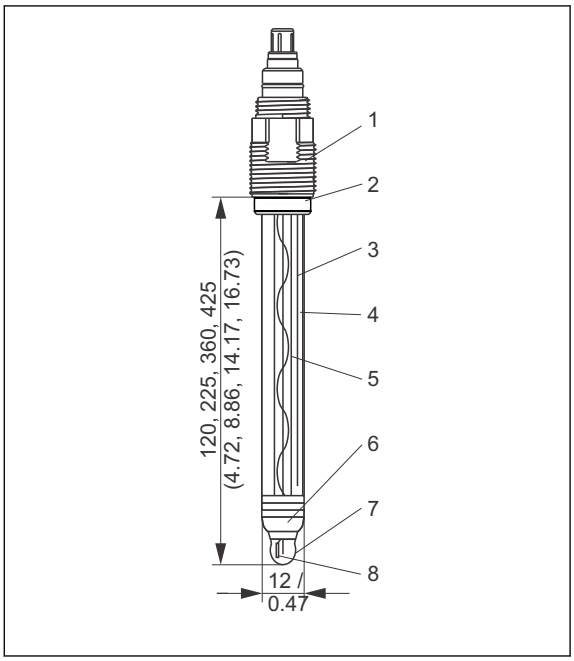
1 *Memosens plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl reference lead - reference*
4 *"Advanced Gel" electrolyte*
5 *Ion trap*
6 *Ag/AgCl reference lead - pH*
7 *PTFE diaphragm*
8 *pH glass membrane*
9 *Temperature sensor NTC30K*

Design, dimensions of CPS11



6 *CPS11 with GSA plug-in head*

1 *GSA plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl reference lead - reference*
4 *"Advanced Gel" electrolyte*
5 *Ag/AgCl reference lead - pH*
6 *PTFE diaphragm*
7 *pH glass membrane*



7 *CPS11 with TOP68 plug-in head, temperature sensor*

1 *TOP68 plug-in head, Pg 13.5*
2 *Viton O-ring with thrust collar*
3 *Ag/AgCl reference lead - reference*
4 *"Advanced Gel" electrolyte*
5 *Ag/AgCl reference lead - pH*
6 *PTFE diaphragm*
7 *pH glass membrane*
8 *Temperature sensor Pt100*

Weight

0.1 kg (0.2 lbs)

Materials

Electrode shaft:	Glass to suit process
pH membrane glasses:	Type A, B, F
Metal lead:	Ag/AgCl
Diaphragm:	Ring-shaped Teflon® diaphragm, sterilizable, not cytotoxic

Process connection

Pg 13.5

Temperature sensor

CPS11D:	NTC30K
CPS11:	Pt100, Pt1000

Plug-in heads

CPS11D:	Memosens plug-in head for digital, non-contact data transmission
CPS11:	
ESA:	Threaded plug-in head Pg 13.5, TOP68 for electrodes with or without temperature sensor, 17 bar abs. (246 psi) overpressure protection (threefold), Ex
GSA:	Threaded plug-in head Pg 13.5 for electrodes without temperature sensor

Reference system

Version AA, BA, FA: Ag/AgCl reference lead with Advanced Gel 3M KCl, AgCl-free

Version AS: Ag/AgCl reference lead with Advanced Gel, saturated KCl (> 3M KCl) with salt rings, AgCl-free

The following are indicative of used salt rings (fixed supply of KCl) under constant process conditions (e.g. stable temperature and flow):
- a continuous upward trend in the pH value (to alkaline pH values)
- a continuous downward trend in the zero point (to acidic pH values) following adjustment during calibration

BT version: Ag/AgCl reference lead with ion trap and Advanced Gel 3M KCl

Certificates and approvals

Ex approval for CPS11D

- ATEX II 1G Ex ia IIC T3/T4/T6 Ga
- 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 marked by a red-orange ring in the plug-in head.

Ex approval for CPS11 (TOP68)

- ATEX II 1G Ex ia IIC T3/T4/T6 Ga
- FM Class I Div. 2, in conjunction with Liquiline M CM42 and Mycom S CPM153 transmitters

Biocompatibility

Cytotoxicity verified in accordance with:
USP 2009, chapter <88> (USP Class VI) for diaphragm

TÜV certificate for Memosens plug-in head

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

TÜV certificate for TOP68 plug-in head

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

CPS11D electromagnetic compatibility

Interference emission and interference immunity as per EN 61326: 2012

Ordering information

Product page

www.endress.com/cps11d

www.endress.com/cps11

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
- Product Configurator on the product page: www.endress.com/cpa871

Technical Information TI01191C

Cleanfit CPA875
- Retractable process assembly for sterile and hygienic applications
- For in-line measurement with standard 12 mm sensors for parameters such as pH, ORP and oxygen
- Product Configurator on the product page: www.endress.com/cpa875

Technical Information TI01168C

Cleanfit CPA472D
- Robust retractable assembly for pH, ORP and other industrial sensors
- Heavy-duty version made of durable materials
- For manual or pneumatic, remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa472d

Technical Information TI00403C

Cleanfit CPA450
- Manual retractable assembly for installing 120 mm sensors in tanks and pipes
- Product Configurator on the product page: www.endress.com/cpa450

Technical Information TI00183C

Cleanfit CPA471
- Compact stainless steel retractable assembly for installation in tanks and pipes, for manual or pneumatically remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa471

Technical Information TI00217C

Cleanfit CPA472
- Compact plastic retractable assembly for installation in tanks and pipes
- For manual or pneumatic, remote-controlled operation
- Product Configurator on the product page: www.endress.com/cpa472

Technical Information TI00223C

Cleanfit CPA473
- Stainless steel process retractable assembly with ball valve shutoff for particularly reliable separation of the medium from the environment
- Product Configurator on the product page: www.endress.com/cpa473

Technical Information TI00344C

Cleanfit CPA474
- Plastic process retractable assembly with ball valve shutoff for particularly reliable separation of the medium from the environment
- Product Configurator on the product page: www.endress.com/cpa474

Technical Information TI00345C

Unifit CPA442
- Installation assembly for food, biotechnology and pharmaceutics
- With EHEDG and 3A certificate
- Product Configurator on the product page: www.endress.com/cpa442

Technical Information TI00306C

Dipfit CPA111
- Immersion and installation assembly made of plastic for open and closed vessels
- Product Configurator on the product page: www.endress.com/cpa111

Technical Information TI00112C

Dipfit CPA140
- pH/ORP immersion assembly with flange connection for very demanding processes
- Product Configurator on the product page: www.endress.com/cpa140

Technical Information TI00178C

Flowfit CPA240
- pH/ORP flow assembly for processes with stringent requirements
- Product Configurator on the product page: www.endress.com/cpa240

Technical Information TI00179C

Flowfit CPA250
- Flow assembly for pH/ORP measurement
- Product Configurator on the product page: www.endress.com/cpa250

Technical Information TI00041C

Ecofit CPA640
- Set comprising adapter for 120 mm pH/ORP electrodes and sensor cable with TOP68 coupling
- Product Configurator on the product page: www.endress.com/cpa640

Technical Information TI00246C

Flexdip CYA112
- Immersion assembly for water and wastewater
- Modular assembly system for sensors in open basins, channels and tanks
- Product Configurator on the product page: www.endress.com/cya112

Technical Information TI00432C

Buffer solutions

High-quality buffer solutions from Endress+Hauser - CPY20
The secondary buffer solutions have been referenced to primary reference material of the PTB (German Federal Physico-technical Institute) and to standard reference material of NIST (National Institute of Standards and Technology) according to DIN 19266 by a DKD (German Calibration Service) accredited laboratory.
Product Configurator on the product page: www.endress.com/cpy20

Measuring cables

CYK10 Memosens data cable
- For digital sensors with Memosens technology
- Product Configurator on the product page: www.endress.com/cyk10

Technical Information TI00118C

CPK9
- Terminated measuring cable for connecting analog sensors with TOP68 plug-in head
- Selection in accordance with product structure

For more information and to order, please contact your sales office.

CPK1
For pH/ORP electrodes with GSA plug-in head

Ordering information is available from your sales office or at www.endress.com.

www.addresses.endress.com

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Technical Information

Orbisint CPS12/CPS12D/CPS13

ORP electrodes, analog and digital with Memosens technology and reference electrode
Each with dirt-repellent PTFE diaphragm for standard applications in process and environmental technology

Application

- Long-term monitoring and limit monitoring of processes with stable process conditions
  - Paper industry
  - Plastics chemistry
  - Power plants (e.g. flue gas washers)
  - Incineration plants
  - Food industry
  - Breweries
- Water treatment
  - Drinking water
  - Cooling water
  - Well water

With ATEX, FM[1] and CSA[1] approval for application in hazardous areas

Your benefits

- Robust electrode requiring low maintenance thanks to large PTFE ring diaphragm
- Application under pressures of up to 16 bar (232 psi)
- Long service life due to double junction system of metal lead and thus long electrode poison diffusion path
- Various measuring elements for application in oxidising and reducing media
- Three lengths: 120, 225 and 360 mm (4.72, 8.86, 14.17 inches)

Further benefits offered by Memosens technology

- Maximum process safety through contactless inductive signal transmission
- Data safety through digital data transmission
- Easy handling due to storage of sensor-specific data
- Predictive maintenance possible thanks to registration of sensor load data

[1] approval for digital sensors pending

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Endress+Hauser
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Function and system design

Measuring principle

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

General properties

- **Low maintenance**
  The dirt-repellent, sterilisable PTFE ring diaphragm of the CPS12 prevents blocking and assures long-time stability and accuracy.
- **Long service life**
  The double junction system of the metal lead offers better protection from electrode poisons and guarantees a considerably longer service life.
- **Durability**
  Depending on the ordered version, the electrode is pressure proof up to 16 bar / 232 psi and can be applied at temperatures of up to 135 °C / 275 °F.

Important properties CPS12D

Maximum process safety
The inductive and non-contacting measured value transmission 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.
- EMC safety is guaranteed by screening measures for the digital measured value transmission.

Data safety through digital data transfer
The Memosens technology digitalizes 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 high temperatures. When the sensor is mounted, the calibration data are automatically transferred to the transmitter and used to calculate the current redox potential. Storing the calibration data in the sensor allows for calibration and adjustment away from the measuring point. The result:

- The sensors can be calibrated unter 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 and calibration data 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.

Communication with the transmitter
Always connect the digital sensor to a digital transmitter with Memosens technology. Data transmission to an analog transmitter is not possible.

Data storage of CPS12D

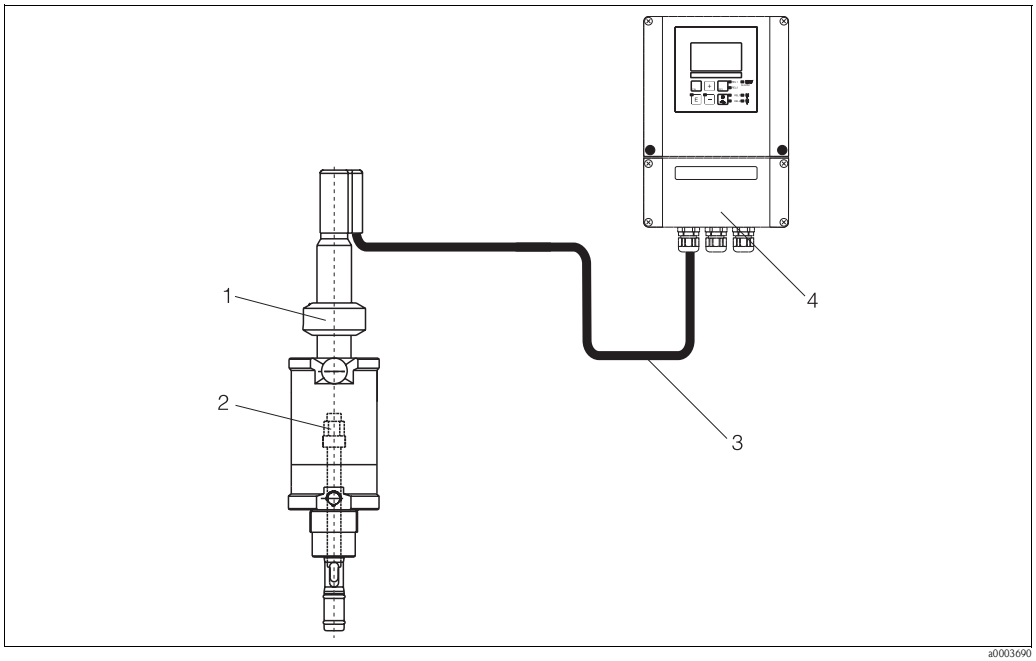
Digital sensors are able to store the following system data in the sensor.

- Manufacturing data
  - Serial number
  - Order code
  - Date of manufacture
- Calibration data
  - Calibration date
  - Calibrated offset (operating mode "mV")
  - % slope (operating mode "%")
  - Number of calibrations
  - Serial number of the transmitter used for the last calibration
- Application data
  - Temperature application range
  - Redox application range
  - Date of first commissioning
  - Operating hours

These system data can be displayed with the Mycom S or the Liquiline M CM42 transmitter.

Measuring system

A complete measuring system comprises:
- CPS12 or CPS12D ORP electrode
- transmitter, e.g. Liquisys M CPM223/253 (with Memosens technology for CPS12D)
- special measuring cable, e.g. CPK9 or Memosens data cable CYK10 for CPS12D
- immersion, flow or retractable assembly, e.g. Cleanfit P CPA472



Measuring system for measurement of redox potential

1 Retractable Cleanfit P CPA472 assembly
2 CPS12 / CPS12D ORP electrode
3 CPK9 special measuring cable (for electrodes with TOP68 plug-in head) / CYK10 for digital sensors
4 Liquisys M CPM253 transmitter

Input

Measured variables

Redox potential

Measuring range

-1500 ... 1500 mV

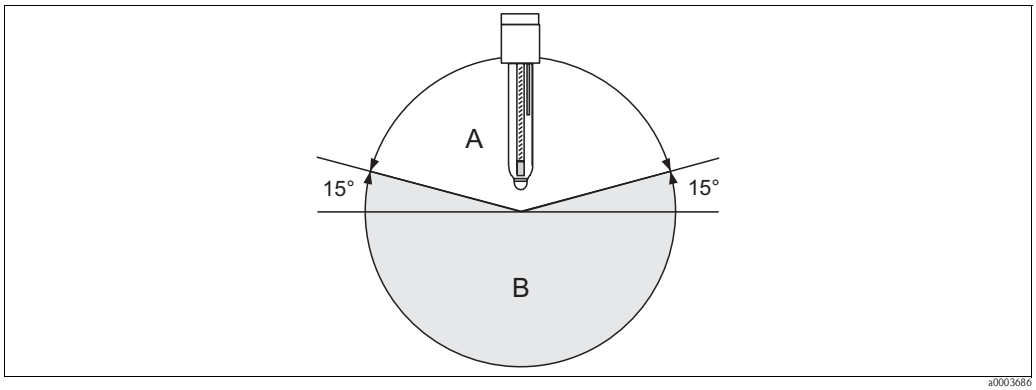
Caution!
Please note the process operating conditions.

Installation

Installation instructions

Do not install the electrode upside down. The inclination angle must be at least 15° from the horizontal. A smaller inclination angle is not permitted as such an inclination results in air cushion forming. This might impair the contact of reference and metal lead.

Caution!
- Make sure that the assembly's threaded connection for the electrode is clean and well running before installing the electrode.
- Hand tighten the electrode (3 Nm)! (Given value only applies to installation in Endress+Hauser assemblies.)
- Make sure to follow the installation instructions in the operating instructions of the used assembly.



Electrode installation; inclination angle min. 15° from the horizontal

A Permitted inclination angle
B Non-permitted inclination angle

Environment

Ambient temperature

Caution!
Danger of frost damage
Do not use the electrode at temperatures below -15 °C / 5 °F.

Storage temperature

0 ... 50 °C / 32 ... 122 °F

Ingress protection

IP 67: GSA plug-in head (with closed plug-in connection)
IP 68: TOP 68 plug-in head (1 m / 3.28 ft water column, 50 °C / 122 °F, 168 h)
IP 68: Memosens plug-in head (10 m / 32.8 ft water column, 25 °C /77 °F, 45 days, 1 M KCl)

Process

Process temperature

-15 ... 135 °C / 5 ... 275 °F

Process pressure

0 ... 16 bar / 0 ... 232 psi

Application

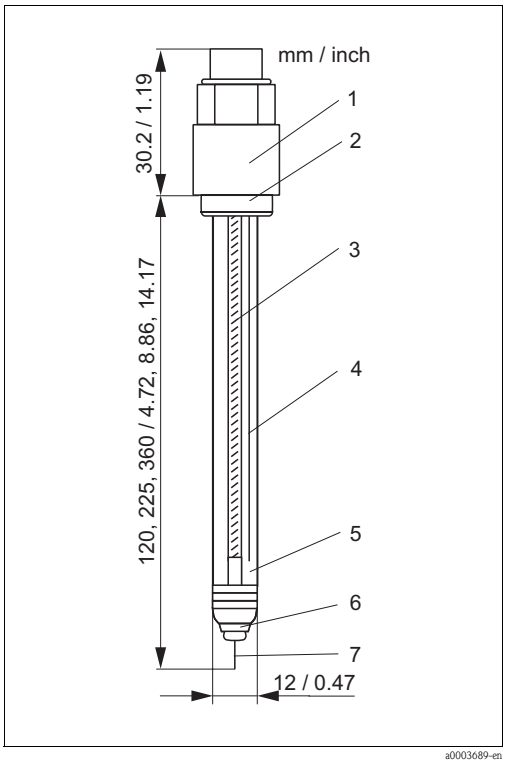
CPS12, CPS12D:
- Gold electrode
  for oxidising media, e.g. cyanide oxidation, nitrite oxidation, ozone measurement, hydrogen superoxide measurement
- Platinum electrode
  for reducing media, e.g. chromate reduction, chlorine dosing in swimming pools

CPS13: Single reference electrode, used in combination with the single pH electrode CPS64

Caution!
Danger of damage to the electrode
Never use the electrode in applications outside the given specifications!

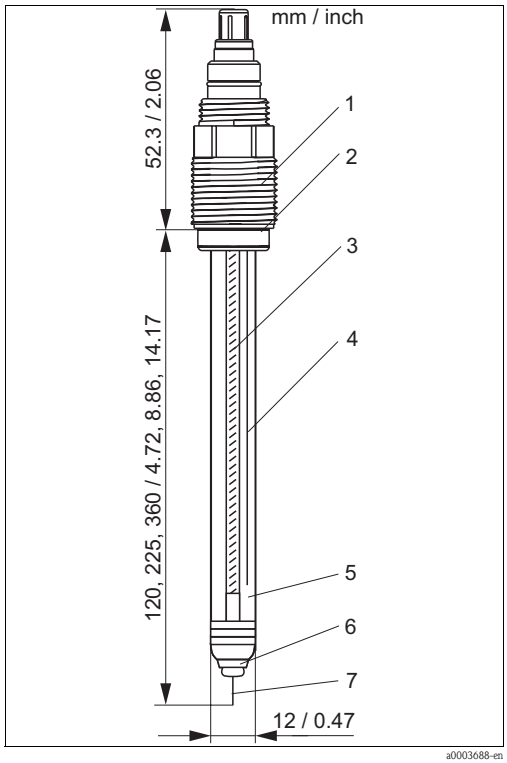
Mechanical construction

Design, dimensions CPS12



CPS12 with GSA plug-in head

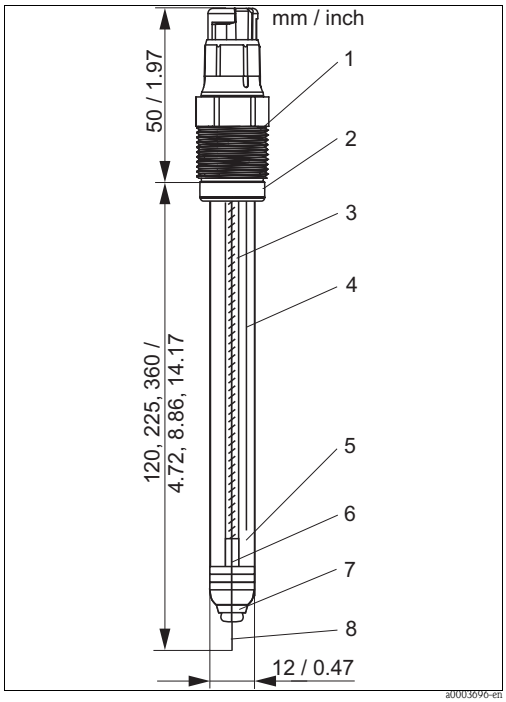
1 GSA plug-in head, PG 13.5
2 Viton O-ring with thrust collar
3 Inner metal lead
4 Ag/AgCl lead for the reference
5 "Advanced Gel" electrolyte
6 PTFE diaphragm
7 Gold pin or platinum ring



CPS12 with TOP68 plug-in head

1 TOP68 plug-in head, Pg 13.5
2 Viton O-ring with thrust collar
3 Inner metal lead
4 Ag/AgCl lead for the reference
5 "Advanced Gel" electrolyte
6 PTFE diaphragm
7 Gold pin or platinum ring

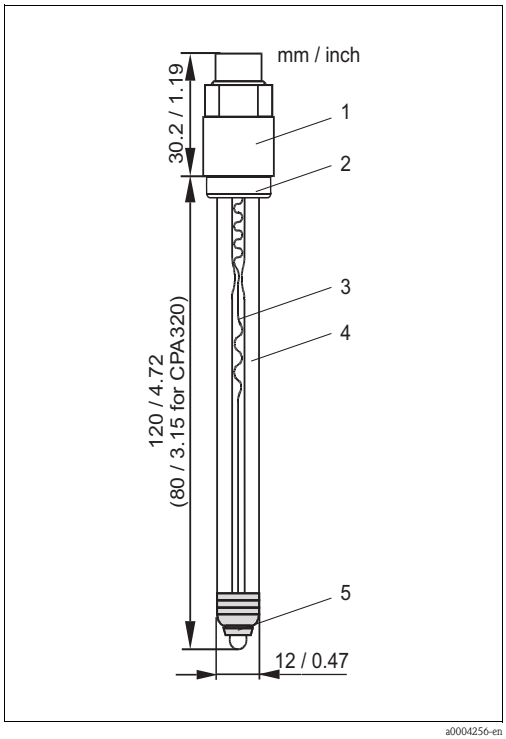
Design, dimensions CPS12D



CPS12D with Memosens plug-in head

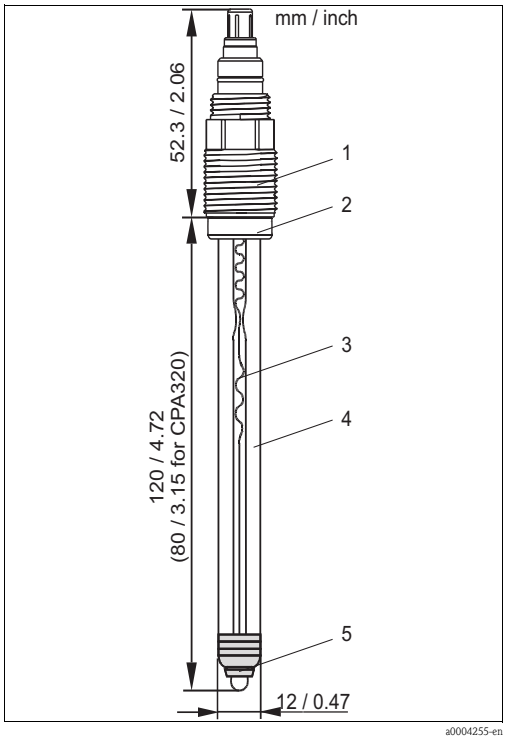
1 Memosens plug-in head
2 Viton O-ring with thrust collar
3 Inner metal lead
4 Ag/AgCl lead for the reference
5 "Advanced Gel" electrolyte
6 NTC 30K temperature sensor
7 PTFE diaphragm
8 Gold pin or platinum ring

Design, dimensions CPS13



CPS13 with GSA plug-in head

1 GSA plug-in head, Pg 13.5
2 Viton O-ring with thrust collar
3 Ag/AgCl reference lead
4 "Advanced Gel" electrolyte
5 PTFE diaphragm



CPS13 with TOP68 plug-in head

1 TOP68 plug-in head, Pg 13.5
2 Viton O-ring with thrust collar
3 Ag/AgCl reference lead
4 "Advanced Gel" electrolyte
5 PTFE diaphragm

Weight	0.1 kg / 0.2 lb.	
Material	Electrode shaft	glass, suitable for processes
	Redox measuring element	platinum ring or gold pin
	Diaphragm	ring-shaped Teflon® diaphragm, sterilisable
Process connection	Pg 13.5	
Plug-in heads	CPS12, CPS13:	
	ESA:	ESA plug-in head Pg 13.5, TOP68, 16 bar / 232 psi, Ex
	GSA:	GSA plug-in head Pg 13.5
	CPS12D:	Memosens plug-in head for digital, contactless data transmission, 16 bar / 232 psi, Ex or non-Ex
Reference system	Ag/AgCl lead with Advanced Gel 3 M KCl, AgCl free	

Certificates and approvals

Ex approval CPS12 (ESA) / CPS13 (ESA)	■ ATEX II 1G EEX ia IIC T3/T4/T6 ■ FM Class I Div. 2, in combination with the Liquiline M CM42 and Mycom S CPM153 transmitters
Ex approval CPS12D	■ ATEX II 1G EEX ia IIC T3/T4/T6 ■ FM[a] / CSA[a] Class I Div. 2, in combination with the Liquiline M CM42 and Mycom S CPM153 transmitters
	Note! Ex versions of digital sensors with Memosens technology are indicated by an orange-red ring in the plug-in head.
Biocompatibility	Biocompatibility validated according to: ■ ISO 10993-5:1993 ■ USP, current revision
TÜV certificate TOP68 and Memosens plug-in head	Pressure resistance 16 bar, min. triple overpressure safety
Electromagnetic compatibility of CPS12D	Interference emission and interference immunity complies with EN 61326: 1997 / A1: 1998

a) approval pending

Ordering information

Product structure CPS12

	Electrode type				
	0	Standard type			
		Measuring surface			
		NA	Gold pin		
		PA	Platinum ring		
			Shaft length		
			2	120 mm / 4.72"	
			4	225 mm / 8.86"	
			5	360 mm / 14.17"	
				Type of head	
				ESA	Plug-in head Pg 13.5, TOP68, 16 bar, Ex
				GSA	Plug-in head Pg 13.5
CPS12-					complete order code

Product structure CPS12D

	Version				
	7	Basic version, max. 135 °C / 275 °F			
		Measuring surface			
		NA	Gold pin		
		PA	Platinum ring		
			Shaft length		
			2	120 mm / 4.72"	
			4	225 mm / 8.86"	
			5	360 mm / 14.17"	
				Approval	
				1	Non-hazardous areas
				G	ATEX II 1G EEx ia IIC T3/T4/T6
CPS12D-					complete order code

Product structure CPS13

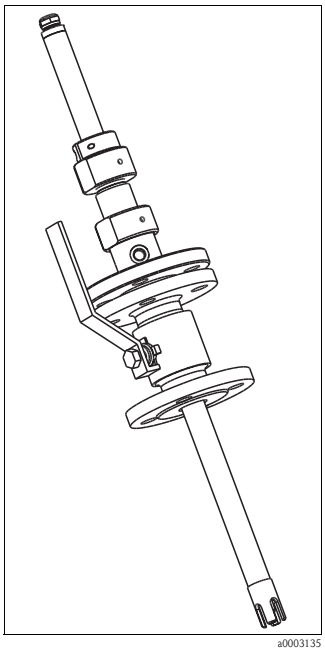
	Electrode type				
	0	Standard type			
		Electrolyte			
		TA	Advanced Gel filling (120 mm / 4.72" only)		
		TD	Advanced Gel filling / double reference (80 mm / 3.15" only)		
			Shaft length		
			1	80 mm / 3.15"	
			2	120 mm / 4.72"	
				Type of head	
				ESA	Plug-in head Pg 13.5, TOP68, 16 bar / 232 psi, Ex
				GSA	Plug-in head Pg 13.5
CPS13-					complete order code

Accessories

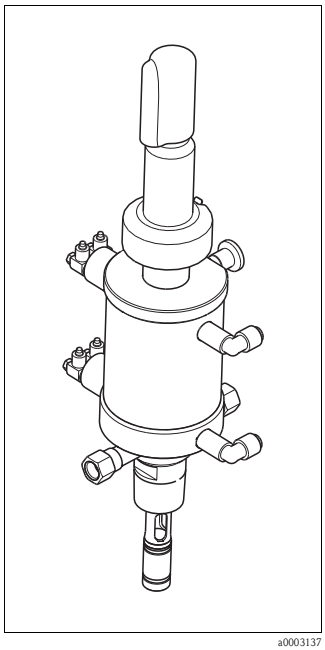
Note!
In the following sections, you find the accessories available at the time of issue of this documentation.
For information on accessories that are not listed here, please contact your responsible service.

Assemblies

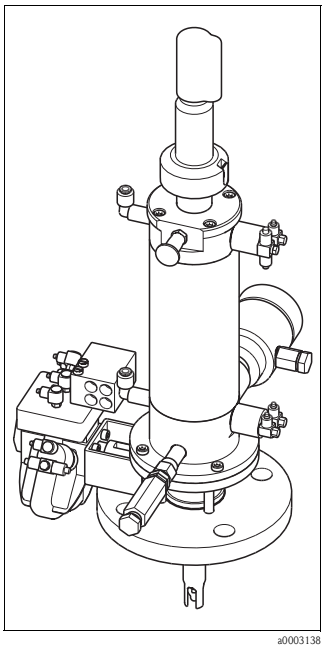
- Cleanfit W CPA450
  Manually operated, retractable assembly for installation of 120 mm / 4.72" pH/ORP electrodes in tanks and pipes,
  Ordering acc. to product structure, see Technical Information (TI183C/07/en)
- Cleanfit P CPA471
  Compact retractable stainless steel assembly for installation in tanks and pipes, manual or pneumatic operation
  Ordering acc. to product structure, see Technical Information (TI217C/07/en)
- Cleanfit P CPA472
  Compact retractable plastic assembly for installation in tanks and pipes, manual or pneumatic operation,
  Ordering acc. to product structure, see Technical Information (TI223C/07/en)
- Cleanfit P CPA473
  Retractable stainless steel process assembly, with ball valve for a particularly safe and reliable separation of the medium from the environment,
  Ordering acc. to product structure, see Technical Information (TI344C/07/en)
- Cleanfit P CPA474
  Retractable plastic process assembly, with ball valve for a particularly safe and reliable separation of the medium from the environment,
  Ordering acc. to product structure, see Technical Information (TI345C/07/en)



Cleanfit W CPA450

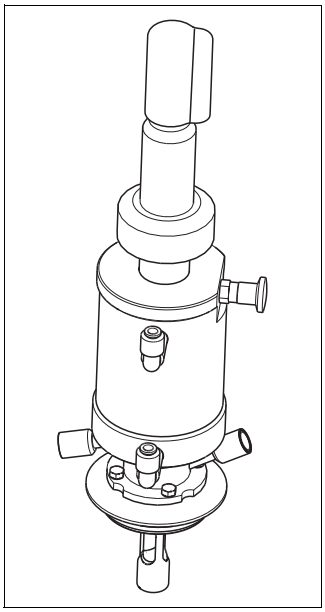


Cleanfit P CPA471 or 472

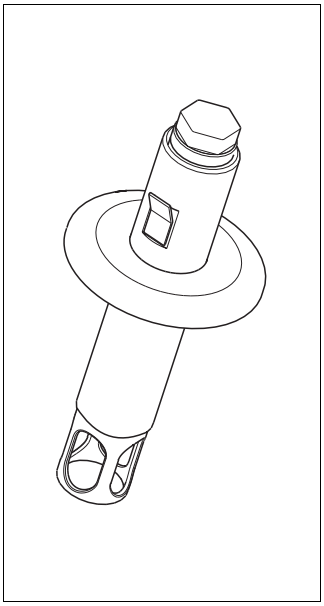


Cleanfit P CPA473 or 474

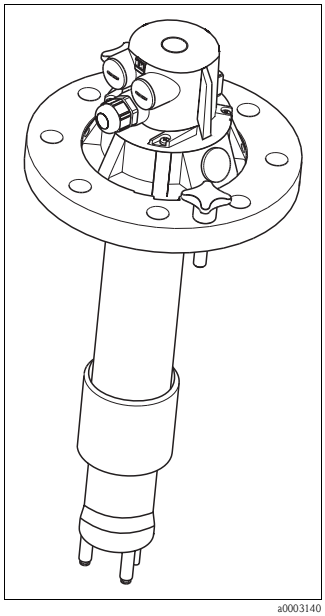
- Cleanfit H CPA475
  Retractable assembly for installation in tanks and pipes under sterile conditions,
  Ordering acc. to product structure, see Technical Information (TI240C/07/en)
- Unifit H CPA442
  Process assembly for the food industry, biotechnology and pharmaceutical industry, with EHEDG and 3A certificates,
  Ordering acc. to product structure, see Technical Information (TI306C/07/en)
- Dipfit W CPA111
  Plastic immersion and installation assembly for open and closed tanks,
  Ordering acc. to product structure, see Technical Information (TI112C/07/en)



Cleanfit H CPA475

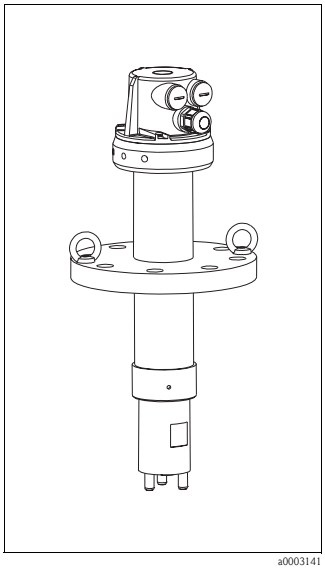


Unifit H CPA442

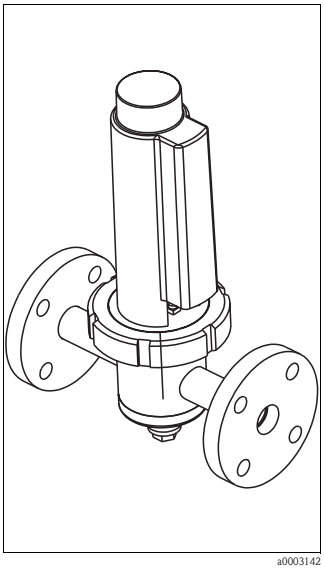


Dipfit W CPA111

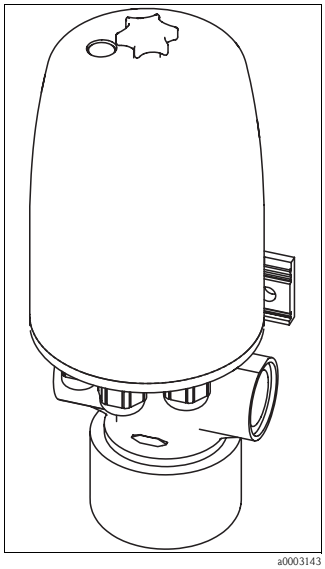
- Dipfit P CPA140
  Immersion assembly for pH/ORP electrodes for demanding processes,
  Ordering acc. to product structure, see Technical Information (TI178C/07/en)
- Flowfit P CPA240
  Flow assembly for pH/ORP electrodes, for demanding processes,
  Ordering acc. to product structure, see Technical Information (TI179C/07/en)
- Flowfit W CPA250
  Flow assembly for pH/ORP electrodes,
  Ordering acc. to product structure, see Technical Information (TI041C/07/en)



Dipfit P CPA140

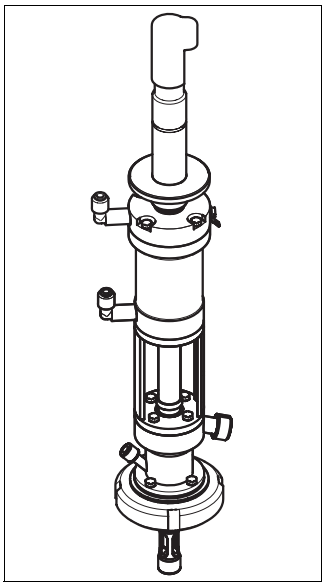


Flowfit P CPA240

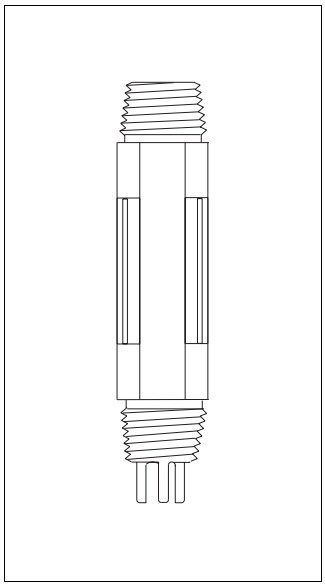


Flowfit W CPA250

- Probfit H CPA465
  Retractable assembly for installation in tanks and pipes under sterile conditions,
  Ordering acc. to product structure, see Technical Information (TI146C/07/en)
- Ecofit CPA640
  Process connection adapter and cable set for 120 mm pH/ORP electrodes,
  Ordering acc. to product structure, see Technical Information (TI264C/07/en)



Probfit H CPA465



Ecofit CPA640

Buffer solutions

Technical buffer solutions for ORP electrodes
- +220 mV, pH 7.0, 100 ml (0.026 US gal.); order no. CPY3-0
- +468 mV, pH 0.1, 100 ml (0.026 US gal.); order no. CPY3-1

Transmitters

- Liquisys M CPM223/253
  Transmitter for pH and redox, field or panel-mounted housing,
  Hart® or PROFIBUS available
  Ordering acc. to product structure, see Technical Information (TI194C/07/en)
- Mycom S CPM153
  Transmitter for pH and redox, one or two channel version, Ex or Non-Ex,
  Hart® or PROFIBUS available
  Ordering acc. to product structure, see Technical Information (TI233C/07/en)
- Liquiline M CM42
  Modular two-wire transmitter for Ex and non-Ex areas
  Hart®, PROFIBUS or FOUNDATION Fieldbus available
  Ordering acc. to product structure, see Technical Information (TI381C/07/en)

Measuring cables

- CPK9 special measuring cable
  For sensors with TOP68 plug-in head, for high-temperature and high-pressure applications, IP 68
  Ordering acc. to product structure, see Technical Information (TI118C/07/en)
- CPK1 special measuring cable
  For pH/redox electrodes with GSA plug-in head
  Ordering acc. to product structure, see Technical Information (TI118C/07/en)
- CYK10 Memosens data cable
  For digital sensors with Memosens technology
  Ordering according to product structure, see below

	Certificates			
	A	Standard, non Ex		
	G	ATEX II 1G EEx 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	
		88	... m length	
		89	... ft length	
			Ready-made	
			1	Wire terminals
CYK10-				complete order code

Note!
Ex versions of CYK10 are indicated by an orange-red coupling end.

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People for Process Automation