

# Датчики хлора, кислорода CCS240, CCS241

## Техническая информация

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231  
Ангарск (3955)60-70-56  
Архангельск (8182)63-90-72  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

эл.почта: [ehr@nt-rt.ru](mailto:ehr@nt-rt.ru) || сайт: <https://endcounters.nt-rt.ru/>



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## Technical Information

# CCS240 and CCS241

Sensors for chlorine dioxide

Amperometric, membrane-covered sensors for installation in the CCA250 assembly



### Application

Chlorine dioxide is used for disinfection of water. Its dosing must be carefully controlled to suit the application. Too low a concentration makes the degree of disinfection questionable. Too high a concentration can result in corrosion effects, impairment of taste or skin irritation.

The CCS240 and CCS241 sensors are applied for measurement of chlorine dioxide in the following fields:

- Drinking water treatment
- Pool water treatment
- Industrial water treatment

### Your benefits

- Measurement in the CCA250 flow assembly is almost independent of flow rate in the range above 30 l/h
- No zero point calibration necessary. This means complicated installation of an active carbon filter, as in open chlorine dioxide sensors, is not necessary.
- Measured values are not affected by conductivity fluctuation of the medium.
- The CCS240 sensor is ready for measurement after a polarisation time of approx. 10 ... 30 minutes. The CCS241 sensor requires 45 ... 90 min.
- Easy membrane replacement thanks to ready-made membrane head
- Recalibration intervals approx. 1 ... 4 months under constant operating conditions

## Function and system design

### Function

The CCS240 and CCS241 sensors are used for measurement of chlorine dioxide. The membrane-covered CCS240 / CCS241 sensors consist of a cathode serving as the working electrode and an anode acting as the counter electrode. These electrodes are immersed in an electrolyte. Electrodes and electrolyte are separated from the medium by a membrane. The membrane prevents the loss of electrolyte and the penetration of contaminants.

To calibrate the measuring system, determine the content of chlorine dioxide using the DPD method. You need a photometer with the pertaining reagents. The determined value is the calibration value for the transmitter.

### Measuring principle

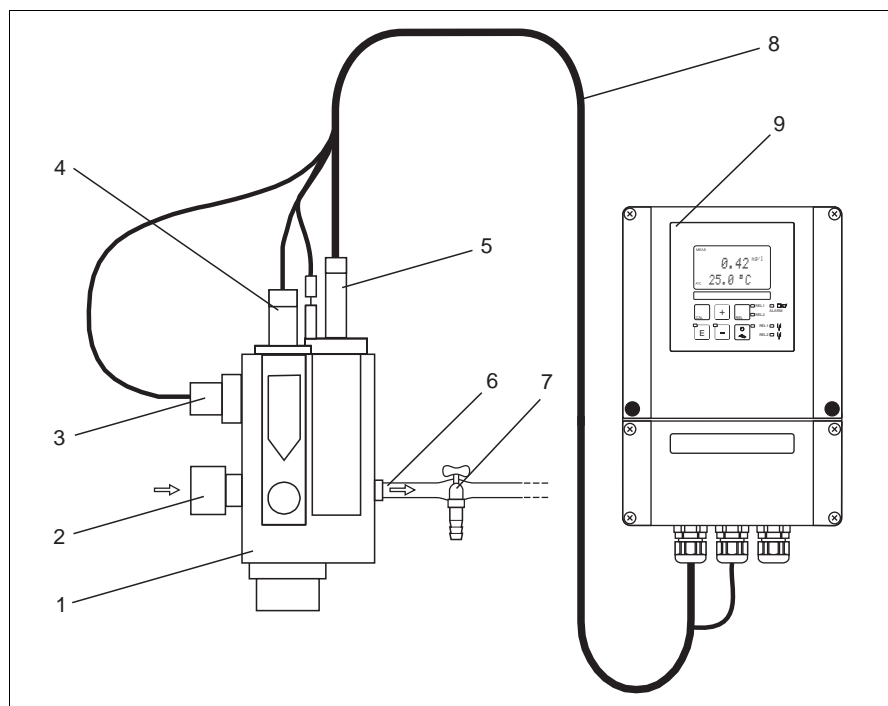
The concentration of chlorine dioxide is determined according to the amperometric measuring principle. The chlorine dioxide ( $\text{ClO}_2$ ) contained in the medium diffuses through the sensor membrane and is reduced to chloride ions ( $\text{Cl}^-$ ) on the gold cathode. On the silver anode, silver is oxidized to silver chloride. The electron release of the gold cathode and electron acceptance on the silver anode result in a current flow which is proportional to the chlorine dioxide concentration in the medium. This process takes place within a wide pH and temperature range.

The transmitter transforms the current signal into the measuring unit concentration in mg/l.

### Measuring system

A complete measuring system comprises at least:

- Chlorine dioxide sensor
- Liquisys M CCM223/253 transmitter
- Special measuring cable
- Flow assembly
- Reference measuring instrument for determination of chlorine dioxide according to the DPD method



Measuring system in the flow mode (example)

- |   |   |   |               |
|---|---|---|---------------|
| 1 | CCA250 flow assembly  | 6 | Medium outlet |
| 2 | Medium inlet  | 7 | Sampling tap  |
| 3 | Inductive proximity switch for flow monitoring                | 8 | Sensor cable  |
| 4 | Monitoring  | 9 | Transmitter   |
| 5 | Mounting places for pH/ORP sensors<br>Chlorine dioxide sensor |   |               |

---

## Input

---

<b>Measured variable</b>	Chlorine dioxide (ClO <sub>2</sub> )	
<b>Measuring range</b>	CCS240 (for industrial water, pool water):	0.05 to 20 mg ClO <sub>2</sub> /l
	CCS241 (for drinking water applications):	0.01 to 5 mg ClO <sub>2</sub> /l

---

## Performance characteristics

---

<b>Response time</b>	T <sub>90</sub> < 2 min T <sub>99</sub> < 5 min	
<b>Polarisation time</b>	CCS240: First polarization: 30 min Repolarization: 10 min CCS241: First polarization: 90 min Repolarization: 45 min	
<b>Drift</b>	typically < 1.5 % per month	
<b>Electrolyte service life</b>	typically 12 months	

---

## Installation

---

<b>Installation instructions</b>	<p>The flow assembly CCA250 is designed for on-site installation of the sensor. In addition to the chlorine or chlorine dioxide sensor, a pH and an ORP sensor can be installed. A needle valve regulates the flow within the range of 30 to 120 l/h (7.9 to 31.7 US.gal/h).</p> <p>When installing the sensor, note the following:</p> <ul style="list-style-type: none"><li>■ The flow must be at least 30 l/h (7.9 US.gal/h). If the flow drops below this value or stops completely, this can be detected by an inductive proximity switch and an alarm signal plus locking of the dosage pumps can be triggered.</li><li>■ If the medium is fed back into a surge tank, pipeline or the like, ensure that the thus generated back pressure on the sensor does not exceed 1 bar (14.5 psi) and remains constant.</li><li>■ Negative pressure at the sensor, e.g. by feedback of medium to the suction side of a pump, must be avoided.</li></ul> <p>For further installation instructions, see the Operating Instructions of the flow assembly.</p>
----------------------------------	---

---

## Environment

---

<b>Storage temperature</b>	Filled with electrolyte: 5 to 50 °C (41 to 122 °F)
	Without electrolyte: -20 to 60 °C (-4 to 140 °F)
<b>Ingress protection</b>	IP 68 (membrane side up to the mounting collar Ø 36 mm (Ø 1.42"))

---

## Process

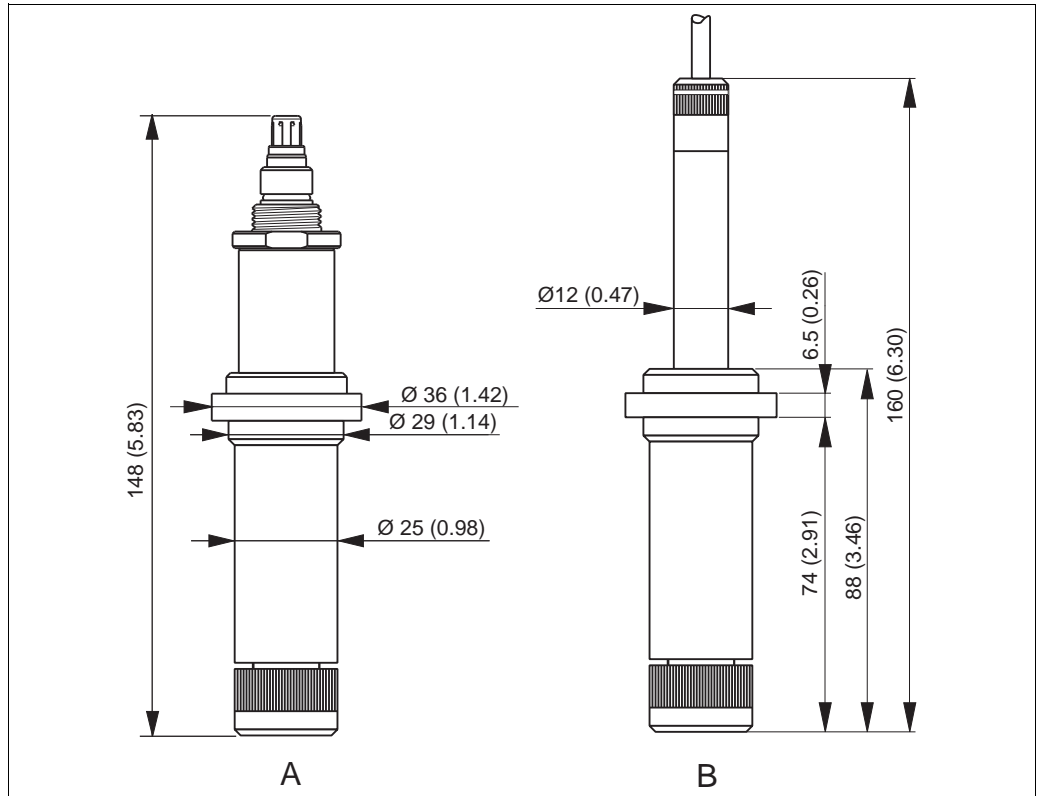
---

<b>Temperature range</b>	2 to 45 °C (36 to 113 °F)
<b>pH range</b>	in stability range of ClO <sub>2</sub> (typical application range pH 4 to 10)
<b>Pressure</b>	Medium in the CCA250 assembly: max. 1 bar (14.5 psi)
<b>Flow</b>	in the CCA250 assembly: min. 30 l/h (8 US.gal./h)
<b>Flow velocity</b>	min. 15 cm/s (0.5 ft/s)

---

## Mechanical construction

### Dimensions



#### Dimensions

- A Version with TOP68 plug head  
 B Version with fixed cable

**Weight** approx. 0.5 kg (1.1 lb.)

**Material**

Sensor shaft:	PVC
Membrane:	PTFE
Membrane cap:	PBT (GF 30), PVDF
Cathode:	Gold
Anode:	Silver / silver chloride

**Cable connection** Version with fixed cable (3 m (9.84 ft)), four cores, double-screened, low noise  
 Version with TOP68: To be used with CPK9-N\*A1B (\* = length of cable)

**Cable length** max. 30 m (98 ft) (cable extension included)

**Temperature sensor** NTC, 10 k $\Omega$  at 25 °C (77 °F)

---

## Accessories

---

### Installation accessories

Flowfit CCA250

- Flow assembly for chlorine, chlorine dioxide, pH and ORP sensors
- Ordering acc. to product structure (-> online Configurator,

Compact measuring station CCE10/CCE11

- Panel mounted ready for connection for holding one transmitter, with flow assembly CCA250
- Ordering acc. to product structure, s. Technical Information TI440C/07/EN

---

### Connection accessories

Junction box VBC

- Metallic junction box for cable extension,
- Dimensions (W x D x H): 125 x 80 x 54 mm / 4.92 x 3.15 x 2.13 inches
- Order no. 50005181

CYK71 measuring cable

- Non-terminated cable for the connection of sensors (e.g. conductivity sensors) or the extension of sensor cables
- Sold by the meter, order numbers:
  - non-Ex version, black: 50085333
  - Ex version, blue: 51506616

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)

---

### Transmitter

Liquisys M CCM223/253

- Transmitter for chlorine, field or panel-mounted housing, Hart® or PROFIBUS available
- Technical Information TI214C/07/EN

---

### Maintenance /calibration

CCM182

- Microprocessor-controlled photometer for determining chlorine and pH value
- Measuring range for chlorine: 0.05 - 6 mg/l
- Measuring range for pH value: 6.5 - 8.4
- Order no.: CCM182-0

Service kit CCS24x

- For chlorine dioxide sensors CCS240/CCS241
- 2 replacement cartridges, filling electrolyte 50 ml, polishing sheets
- Order no. 71076922

Polishing sheets COY31-PF

- 10 pieces for cleaning of the gold cathode
- For oxygen and chlorine sensors
- Order no. 51506973

## По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231  
Ангарск (3955)60-70-56  
Архангельск (8182)63-90-72  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

эл.почта: [ehr@nt-rt.ru](mailto:ehr@nt-rt.ru) || сайт: <https://endcounters.nt-rt.ru/>