DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

The application-based DULCOTEST sensors for free chlorine deliver precise measured values and a high degree of monitoring and process reliability in any disinfection application.

Technical Details

Free chlorine (hypochlorous acid HOCl)

- CLE 3; pH: 5.5 … 8.0; Temp. 5 … 45 °C
- CLE3.1; pH: 5.5 … 8.0; Temp. 5 … 45 °C
- CLO 1; pH: 5.0 … 9.0; Temp. 5 … 45 °C
- CLO 2; pH: 5.0 … 9.0; Temp. 5 … 70 °C
- CLB1; pH: 5.0 … 9.0; Temp. 5 … 45 °C
- CLB2; pH: 5.0 … 9.0; Temp. 5 … 45 °C
- CBR 1; pH: 5.0 … 9.5; Temp. 5 … 45 °C
- CLR 1; pH: 5.5 … 8.0; Temp. 5 … 45 °C

ProMinent Webshop

DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for Free Chlorine CLE 3-mA

Standard sensor for measuring free chlorine in clear water. For operation on controllers with 4-20 mA input

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Diaphragm-covered sensor (encapsulated) minimises faults caused by changing flow or substances in the water

Measured variable	Free chlorine with a pH value < 8
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine, even if there is not an excess of it
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, disinfectants with organic chlorine, e. g. based on cyanuric acid, are unsuitable
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	D1C, DAC, AEGIS II, AEGIS X
Typical applications	CLE 3-mA-0,5 ppm: potable water; CLE 3-mA-2.0/10 ppm: swimming pools (surfactant-free).
Resistance to	Salts, acids, alkalis. Not surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLE 3-mA-0.5 ppm	0.01…0.5 mg/l	792927
CLE 3-mA-2 ppm	0.02…2.0 mg/l	792920
CLE 3-mA-5 ppm	0.05…5.0 mg/l	1033392
CLE 3-mA-10 ppm	0.10…10.0 mg/l	792919
CLE 3-mA-20 ppm	0.20…20.0 mg/l	1002964
CLE 3-mA-50 ppm	0.50…50.0 mg/l	1020531
CLE 3-mA-100 ppm	1.00…100.0 mg/l	1022786

Chlorine sensors complete with 100 ml of electrolyte

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

ProMinent Group
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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for Free Chlorine CLE 3.1-mA

Sensor for the measurement of free chlorine in clear water with higher selectivity towards combined chlorine. For use on controllers with 4-20 mA input

Your Benefits

- Measured variable: free chlorine, no cross-sensitivity to combined chlorine (chloramines), even if there is an excess of it
- Diaphragm-covered sensor (encapsulated) minimises faults caused by changing flow or substances in the water

Measured variable	Free chlorine (hypochlorous acid HOCl) with high levels of combined chlorine; for determining the combined chlorine with a DAC controller and sensor for total chlorine type CTE 1-mA
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine, even if there is an excess of it
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, disinfectants with organic chlorine, e. g. based on cyanuric acid, are unsuitable
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	D1C
Typical applications	Potable water with higher volumes of combined chlorine, swimming pools. To determine the combined chlorine from the difference: Total chlorine minus free chlorine in the controller DAC.
Resistance to	Salts, acids, alkalis. Not surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLE 3.1-mA-0.5 ppm	0.01…0.5 mg/l	1020530
CLE 3.1-mA-2 ppm	0.02…2.0 mg/l	1018369
CLE 3.1-mA-5 ppm	0.05…5.0 mg/l	1019398
CLE 3.1-mA-10 ppm	0.10…10.0 mg/l	1018368

Chlorine sensors complete with 100 ml of electrolyte

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for Free Chlorine CLE 3-DMT

Standard sensor for measuring free chlorine in clear water. For operation on ProMinent transmitters type DMT

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Diaphragm-covered sensor (encapsulated) minimises faults caused by changing flow or substances in the water

Measured variable	free chlorine
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	3.3 V DC (5 P)
Output signal	0…1 V DC, uncalibrated, not temperature-compensated, not electrically isolated
Temperature measurement	About the integrated Pt 1000. The temperature compensation is carried out in DMT.
Selectivity	Free chlorine as against combined chlorine, even if there is not an excess of it
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, disinfectants with organic chlorine, e. g. based on cyanuric acid, are unsuitable
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	DMT
Typical applications	CLE 3-mA-0,5 ppm: potable water; CLE 3-mA-2.0/10 ppm: swimming pools (surfactant-free).
Resistance to	Salts, acids, alkalis. Not surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLE 3-DMT-5 ppm	0.01…5.0 mg/l	1005511
CLE 3-DMT-50 ppm	0.10…50.0 mg/l	1005512

Chlorine sensors complete with 100 ml of electrolyte

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLE 3-CAN

Standard sensor for measuring free chlorine in clear water. For use on controllers with CAN-bus connection

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Diaphragm-covered sensor (encapsulated) minimises faults caused by changing flow or substances in the water
- Operation on the CAN-bus with all the associated benefits

Measured variable	free chlorine
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	Via CAN-interface (11 – 30 V)
Output signal	Uncalibrated, temperature compensated, electrically isolated
Selectivity	Free chlorine as against combined chlorine, even if there is not an excess of it
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, disinfectants with organic chlorine, e. g. based on cyanuric acid, are unsuitable
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	DULCOMARIN
Typical applications	CLE 3-mA-0,5 ppm: potable water; CLE 3-mA-2.0/10 ppm: swimming pools (surfactant-free).
Resistance to	Salts, acids, alkalis. Not surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLE 3-CAN-10 ppm	0.01…10.0 mg/l	1023425

Chlorine sensors complete with 100 ml of electrolyte

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLE 3.1-CAN

Sensor for the measurement of free chlorine in clear water with higher selectivity towards combined chlorine. For use on controllers with CAN-bus connection

Your Benefits

- Measured variable: free chlorine, no cross-sensitivity to combined chlorine (chloramines) even if there is an excess of it
- Diaphragm-covered sensor (encapsulated) minimises faults caused by changing flow or substances in the water
- Operation on the CAN-bus with all the associated benefits

Measured variable	Free chlorine with high levels of combined chlorine; for determining the combined chlorine with a DULCOMARIN and sensor for total chlorine type CTE 1-CAN
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	Via CAN-interface (11 – 30 V)
Output signal	Uncalibrated, temperature compensated, electrically isolated
Selectivity	free chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, disinfectants with organic chlorine, e. g. based on cyanuric acid, are unsuitable
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	DULCOMARIN
Typical applications	Drinking water with higher levels of combined chlorine; swimming pool. To determine the combined chlorine from the difference: Total chlorine minus free chlorine in the controller DULCOMARIN.
Resistance to	Salts, acids, alkalis. Not surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLE 3.1-CAN-10 ppm	0.01…10.0 mg/l	1023426

Chlorine sensors complete with 100 ml of electrolyte

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLO 3-mA

Sensor for the measurement of free chlorine in clear water, as well as in seawater, and when using electrolysis processes for disinfection, up to 45 °C (1 bar) or 8 bar (25 °C). For operation with controllers with 4-20 mA input. Also suitable for use in film-forming water with optional "hydrodynamic cleaning".

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Use when sample water is returned to the process line
- Use at higher pressures
- Avoidance of problems caused by electrolysis systems in which the electrodes are immersed directly into the sample water
- Measurement of free chlorine up to pH 9
- Measurement in seawater possible
- Also suitable for use in film-forming water with optional "hydrodynamic cleaning".

Measured variable	free chlorine
Reference method	DPD1
pH-range	5.0…9.0
Temperature	5…45 °C
Max. pressure	8.0 bar (25 °C)
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, electrolysis without diaphragm with electrodes in the process
Process integration	Bypass: open outlet or return of the sample water into the process line, inline: direct installation into the tubes with the INLI fitting
Sensor fitting	BAMa: up to 7 bar/20 °C DGMa up to 6 bar/30 °C DLG III up to 1 bar/55 °C INLI up to 7 bar/40 °C
Controllers	D1C, DAC, AEGIS II, AEGIS X
Typical applications	Swimming pools, uncontaminated potable water, process water and in seawater, and can also be used together with diaphragm-free electrolysis processes. Can also be used in conjunction with hydrodynamic cleaning even in biofilm-forming water, or water containing lime, iron or manganese.
Resistance to	Surfactants, films with using hydrodynamic cleaning
Measuring principle, technology	Amperometric, 3 electrodes, no diaphragm

	Measuring range	Order no.
CLO 3-mA-2 ppm	0.02…2.0 mg/l	1131658
CLO 3-mA-10 ppm	0.10…10.0 mg/l	1131662

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLO 1-CAN

Sensor for the measurement of free chlorine in clear water even when using electrolysis processes for disinfection, up to 45 °C (1 bar) or 8 bar (25 °C). For use on controllers with CAN-bus connection. Also suitable for use in film-forming water with optional “hydrodynamic cleaning”.

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Use with return of the sample water to the process line
- Use at higher pressures
- Minimisation of faults by electrolysis systems in which the electrodes are immersed directly into the sample water (without diaphragm) by open sensor (no diaphragm) and gold electrodes
- Measurement of free chlorine up to pH 9
- Also suitable for use in film-forming water with optional “hydrodynamic cleaning”.

Measured variable	Free chlorine
Reference method	DPD1
pH-range	5.0…9.0
Temperature	5…45 °C
Max. pressure	8.0 bar (25 °C)
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	11…30 V (via CAN interface)
Output signal	Digital (CANopen), uncalibrated, temperature-compensated, electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, electrolysis without diaphragm with electrodes in the process
Process integration	Bypass: open outlet or return of the sample water into the process line, inline: direct installation into the tubes with the INLI fitting
Sensor fitting	BAMa: up to 7 bar/20 °C DGMa up to 6 bar/30 °C DLG III up to 1 bar/55 °C INLI up to 7 bar/40 °C
Controllers	DULCOMARIN 3, DULCOMARIN II only with hardware after 06.02.2014 from software version 3035 or later
Typical applications	Swimming pools, uncontaminated potable water and process water, and can also be used together with diaphragm-free electrolysis processes. Can also be used in conjunction with hydrodynamic cleaning even in water that forms biofilms, or containing lime, iron or manganese.
Resistance to	Salts, acids, lyes, surfactants, films of dirt, films when using hydrodynamic cleaning
Measuring principle, technology	Amperometric, 3 electrodes, no diaphragm

	Measuring range	Order no.
CLO 1-CAN-10 ppm	0.10…10.0 mg/l	1122057

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLO 4-mA

Sensor for the measurement of free chlorine in clear water, as well as in seawater, and when using electrolysis processes for disinfection, up to 70 °C or 8 bar (25 °C). For operation with controllers with 4-20 mA input. Also suitable for use in film-forming water with optional "hydrodynamic cleaning".

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Use when sample water is returned to the process line
- Use at higher pressures/temperatures
- Avoidance of problems caused by electrolysis systems in which the electrodes are immersed directly into the sample water
- Measurement of free chlorine up to pH 9
- Measurement in seawater possible
- Also suitable for use in film-forming water with optional "hydrodynamic cleaning"

Measured variable	Free chlorine
Reference method	DPD1
pH-range	5.0…9.0
Temperature	5…70 °C
Max. pressure	8.0 bar (25 °C)
Flow	DGMa, DLG III: 30...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, electrolysis without diaphragm with electrodes in the process
Process integration	Bypass: open outlet or return of the sample water into the process line, inline: direct installation into the tubes with the INLI fitting
Sensor fitting	BAMa: up to 3 bar/70 °CDGMa up to 1 bar/60 °CDLG III up to 1 bar/55 °CINLI up to 2 bar/70 °C
Controllers	D1C, DAC, AEGIS II, AEGIS X
Typical applications	Hot water up to 70 °C, combating legionella, uncontaminated potable water, process water and in seawater, can also be used together with diaphragm-free electrolysis processes.
Resistance to	Surfactants, films with using hydrodynamic cleaning
Measuring principle, technology	Amperometric, 3 electrodes, no diaphragm

	Measuring range	Order no.
CLO 4-mA-2 ppm	0.02…2.0 mg/l	1131644

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLB 4-µA

Cost-effective, simple sensor for the measurement of free chlorine in clear water, also in seawater and with a changing media temperature. Can also be used with electrolysis processes for disinfection at up to 45 °C/3 bar. For operation with the Compact controller DCCa

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Cost-effective due to its simple construction without separate wear parts
- Simple, cost-effective maintenance without handling of the diaphragm caps
- Avoidance of problems caused by electrolysis systems without a diaphragm in which the electrodes are immersed directly into the sample water
- Measurement of free chlorine up to pH 9 and use at high pressure of up to 8 bar thanks to absence of a diaphragm
- Measurement in seawater possible

Measured variable	free chlorine
Measuring range	0.05 – 5.0 mg/l, can be used for short-term shock chlorination up to 10 mg/l
Reference method	DPD1
pH-range	5.0…9.0
Temperature	5…45 °C
Max. pressure	3.0 bar
Flow	DGMa, DLG III: 60...80 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	Only for compact controllers
Output signal	Non-amplified primary current signal, not temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, electrolysis without diaphragm with electrodes in the process
Process integration	Bypass: open sample water outlet, inline: direct installation into the pipework
Sensor fitting	BAMa, DGMa, DLG III
Controllers	Compact controller
Typical applications	Swimming pools, potable water, seawater, can also be used with diaphragm-free electrolysis processes for chlorine generation, also suitable for use with fluctuating medium temperatures.
Resistance to	surfactants
Measuring principle, technology	Amperometric, 3 electrodes, no diaphragm

	Measuring range	Order no.
CLB 4-µA-5 ppm	0.05…5.0 mg/l	1130517

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free chlorine CLB 5-µA

Cost-effective, simple sensor for the measurement of free chlorine in clear water, also in seawater and with a constant media temperature. Can also be used with electrolysis processes for disinfection at up to 45 °C/3 bar. For operation with the Compact controller DCCa

Your Benefits

- Measured variable: free chlorine, no significant cross-sensitivity to combined chlorine (chloramines)
- Cost-effective due to its simple construction without separate wear parts
- Simple, cost-effective maintenance without handling of the diaphragm caps
- Avoidance of problems caused by electrolysis systems without a diaphragm in which the electrodes are immersed directly into the sample water
- Measurement of free chlorine up to pH 9 and use at high pressure of up to 8 bar thanks to absence of a diaphragm
- Measurement in seawater possible

Measured variable	free chlorine
Measuring range	0.05 - 5.0 mg/l: linear, can be used for shock chlorination up to 10.0 mg/l
Reference method	DPD1
pH-range	5.0…9.0
Electrolytic conductivity	0.05...50 mS/cm
Temperature	5…45 °C
Max. pressure	3.0 bar
Flow	DGMa, DLG III: 60...80 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	Only for compact controllers
Output signal	Non-amplified primary current signal, not temperature-compensated, uncalibrated, not electrically isolated
Temperature measurement	None
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, electrolysis without diaphragm with electrodes in the process
Process integration	Bypass: open sample water outlet, inline: direct installation into the pipework; fixed or replaceable (replaceable fitting)
Sensor fitting	BAMa, DGMa, DLG III
Electrical Connection	Fixed cable, 1 m, 4 wires with cable end sleeves
Controllers	Compact controller
Typical applications	Swimming pools, potable water, sea water; also suitable for use with diaphragm-free electrolysis processes for chlorine generation.
Resistance to	surfactants
Measuring principle, technology	Amperometric, 3 electrodes, no diaphragm

	Measuring range	Order no.
CLB 5-µA-5 ppm	0.05…5.0 mg/l	1104626

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for Free Chlorine CBR 1-mA

Sensor for free chlorine and bromine in contaminated water, also suitable for high pH values of up to 9.5. For use with controllers with 4-20 mA input

Your Benefits

- Measured variable: free chlorine, as well as free and combined bromine (bromamines)
- Diaphragm-covered sensor minimises faults caused by changing flow or ingredients in the water
- Resistance to films of dirt and biofilms by electrolyte with antimicrobial effect and large-pore diaphragm
- Use at high pH value of up to 9.5 by optimisation of the electrolyte diaphragm system

Measured variable	free chlorine, free bromine, combined bromine, DBDMH (1,3-dibrom-5,5-dimethyl-hydantoin)
Reference method	DPD1
pH-range	5…9.5
Temperature	1…40 °C
Max. pressure	1.0 bar
Flow	DGMa: 20...80 l/h DLG III: 40...100 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, bromide + hypochlorite, DBDMH
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	D1C, DAC, AEGIS II, AEGIS X
Typical applications	Cooling water, process water, wastewater, water with higher pH values (stable pH), contaminated swimming pool water. In swimming pools to determine the combined chlorine from the difference: Total chlorine minus free chlorine. Raw water for drinking water treatment.
Resistance to	Salts, acids, alkalis, surfactants, dirt films
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CBR 1-mA-0.5 ppm	0.01…0.5 mg/l *	1038016
CBR 1-mA-2 ppm	0.02…2.0 mg/l *	1038015
CBR 1-mA-5 ppm	0.05…5.0 mg/l *	1052138
CBR 1-mA-10 ppm	0.10…10.0 mg/l *	1038014

* Measuring range based on chlorine. When measuring bromine, the lower and upper limit of the measuring range are increased by the factor 2.25, therefore for example CBR 1-mA-0.5ppm: 0.02 ...1.1 ppm.

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for free and combined bromine CBR 1-CAN

Sensor for free chlorine and bromine in contaminated water, also suitable for high pH values of up to 9.5. For use on controllers with CAN-bus connection.

Your Benefits

- Measured variable: free chlorine as well as free and combined bromine (bromamines)
- Diaphragm-covered sensor minimises faults caused by changing flow or ingredients in the water
- Resistance to films of dirt and biofilms by electrolyte with antimicrobial effect and large-pore diaphragm
- Use at high pH value of up to 9.5 by optimisation of the electrolyte diaphragm system

Measured variable	free chlorine, free bromine, combined bromine, DBDMH (1,3-dibrom-5,5-dimethyl-hydantoin)
Reference method	DPD1
pH-range	5…9.5
Temperature	1…40 °C
Max. pressure	1.0 bar
Flow	DGMa: 20...80 l/h DLG III: 40...100 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	11…30 V DC (via CAN interface)
Output signal	Digital (CANopen), uncalibrated, temperature-compensated, electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm, bromide + hypochlorite, DBDMH
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	DULCOMARIN 3, DULCOMARIN II only with hardware after 06.02.2014 from software version 3035 or later
Typical applications	Cooling water, process water, wastewater, water with higher pH values (stable pH), contaminated swimming pool water. In swimming pools to determine the combined chlorine from the difference: Total chlorine minus free chlorine. Raw water for drinking water treatment.
Resistance to	Dirt films, biofilms, surfactants
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CBR 1-CAN-10 ppm	0.01…10.0 mg/l	1122056

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DULCOTEST sensors for free chlorine

Reliable online measurement of free (effective) chlorine – with DULCOTEST sensors.

Sensor for Free Chlorine CLR 1-mA

Sensor for free chlorine above 10 ppm in contaminated washing water for use with controllers with 4-20 mA input

Your Benefits

- Measured variable free chlorine for high concentrations of up to 1,000 ppm
- Diaphragm-covered sensor prevents faults caused by changing flow or ingredients in the water
- Resistance to films of dirt by pore-free diaphragm

Measured variable	free chlorine
Reference method	DPD1
pH-range	5.5…8.0
Temperature	5…45 °C
Max. pressure	1.0 bar
Flow	DGMa, DLG III: 40...60 l/h BAMa: 5...100 l/h (depending on design)
Supply voltage	16...24 V DC (2-wire)
Output signal	4-20 mA ≈ measuring range, temperature-compensated, uncalibrated, not electrically isolated
Selectivity	Free chlorine as against combined chlorine
Disinfection process	Chlorine gas, hypochlorite, electrolysis with diaphragm
Process integration	Bypass: open sample water outlet
Sensor fitting	BAMa, DGMa, DLG III
Controllers	D1C, DAC
Typical applications	Salad, vegetable and poultry washing water, contaminated process and wastewater.
Resistance to	Salts, acids, alkalis, surfactants, dirt films
Measuring principle, technology	Amperometric, 2 electrodes, diaphragm-covered

	Measuring range	Order no.
CLR 1-mA-200 ppm	10.0…200 mg/l	1047978

Important note: Measuring range from 10.0 ... 1,000 mg/l on request

A mounting kit, order no. 815079, is required for initial fitting of the chlorine sensors in the in-line probe housing DLG III.

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