


	<h1>CC1</h1>
indicator	Free chlorine based on isocyanuric acid with reduced dependence on ph-value
Application	Swimming pool water, drinking water, sea water Surfactants (tensides) are partially tolerated.
Chlorination agents	inorganic chlorine compounds: NaOCl (=sodium hypochlorite), Ca(OCl) ₂ , chlorine gas, electrolytically generated chlorine and chlorine compounds based on isocyanuric acid (checked until 500 mg/L isocyanuric acid)
Measuring system	Membrane covered, amperometric potentiostatic 3-electrode system with electronic inside
Electronic	<p>Analog version:</p> <ul style="list-style-type: none"> - voltage output - not galvanically isolated electronics - analog internal data processing <p>Digital version:</p> <ul style="list-style-type: none"> - output signal: analog (analog-out/analog) - electronic is completely galvanically isolated - digital internal data processing - output signal: analog (analog-out/digital) or digital (digital-out/digital) <p>mA-version:</p> <ul style="list-style-type: none"> - current output analog - not galvanically isolated electronics - output signal: analog (analog-out/analog)
Information about the measuring range of sensors with 4-20 mA	<p>Slope of a sensor can vary production-related or application-related between 65% and 150% of the nominal slope</p> <p>-> Recommendation to determine the suitable measuring range or the suitable sensor: Concentration to be measured x factor 1.5 = measuring range of the sensor</p> <p>Example: Concentration to be measured 1.6 ppm x 1.5 = 2.4 -> recommended sensor with a measuring range of 5 ppm</p>
Slope drift At repeatability conditions (25 °C, pH 7,2 in drinking water)	approx. <-3% per month
Working temperature	Measuring water temperature: 0 ... +45 °C (no ice crystals in the measuring water)
	Ambient temperature: 0 ... +55 °C
Temperature compensation	Automatically, by an integrated temperature sensor Sudden temperature changes must be avoided


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Max. allowed working pressure	Without retaining ring: 0.5 bar, no pressure impulses and/or vibrations With retaining ring: 0.5 bar, no pressure impulses and/or vibrations
Flow rate	approx. 15-30L/h in DF, small flow rate dependence is given
pH-range	pH 4 – pH 12, highly reduced dependence on pH-value
Run-in time	First start-up approx. 2 h
Response time	T ₉₀ : approx. 2 min.
Zero point adjustment	Not necessary
Slope calibration	At the device, by analytical determination, DPD-1-Method
Cross sensitivities/ interferences	ClO ₂ : factor 1 O ₃ : is measured Corrosion inhibitors can lead to measuring errors. Stabilisers for water hardness can lead to measuring errors.
Absence of the disinfectant	Max. 24 h
Connection	analog-out/analog version: 4-pole plug adapter analog-out/digital version: 4-pole plug adapter digital-out/digital version: 5-pole M12, plug-on flange 4-20 mA version: 2-pole terminal or 5-pole M12, plug-on flange
material	Microporous hydrophilic Membrane, PVC-U, PEEK, stainless steel 1.4571
Size	diameter: approx. 25 mm Length: analog-out/analog version approx. 175 mm analog-out/digital version approx. 195 mm digital-out/digital version approx. 205 mm 4-20 mA version approx. 220 mm (2-pole-terminal) approx. 190 mm (5-pole-M12)
Transport	+5 ... +50 °C (Sensor, electrolyte, membrane cap)

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<p>storage</p>	<p>Sensor: dry and without electrolyte no limit at +5 ... +40 °C</p>
	<p>Electrolyte: in original bottle protected from sunlight at +5 ... +35 °C min. 1 year or until the specified EXP-Date</p>
	<p>Membrane cap: in original packing no limit at +5 ... +40 °C (used membrane caps can not be stored)</p>
<p>maintenance</p>	<p>Regularly control of the measuring signal, min. once a week The following specifications depend on the water quality: Change of the membrane cap: once a year Change of the electrolyte: every 3 - 6 months</p>
	<p>EMC-Testing DIN EN 61326-1, 61326-2-3 RoHS compliant</p>

Technical Data

1. CC1 (analog output, analog internal signal processing) analog-out / analog


A potential-free electrical connection is necessary as the sensor electronic is not equipped with a galvanical isolation.

	Measuring range in ppm	Resolution in ppm	Output Output resistance	Nominal slope (at pH 7.2) in mV/ppm	Voltage supply	Connection
CC1N	0.05...20.00	0.01	0...-2000 mV 1 kΩ	-100	±5 - ±15 VDC 10 mA	4-pole screw connector
CC1H	0.005...2.000	0.001		-1000		
CC1Up	0.05...20.00	0.01	0...+2000 mV 1 kΩ	+100	10 - 30 VDC 10 mA	

(Subject to technical changes!)

2. CC1 (analog output, digital internal signal processing) analog-out / digital


- The power supply is galvanically isolated inside of the sensor.
- The output signal is galvanically isolated too, that means potential-free.

	Measuring range in ppm	resolution in ppm	Output Output resistance	Nominal slope (at pH 7.2) in mV/ppm	Power supply	Connection
CC1N-An	0.05... 20.00	0.01	analog 0...-2 V (max. -2.5 V)	-100	9-30 VDC	4-pole screw connector
CC1H-An	0.005... 2.000	0.001	1 kΩ	-1000		
CC1N-Ap	0.05... 20.00	0.01	analog 0...+2 V (max. +2.5 V)	+100	approx. 56-20 mA	
CC1H-Ap	0.005... 2.000	0.001	1 kΩ	+1000		

(Subject to technical changes!)

3. CC1 (digital output, digital internal signal processing)
digital-out / digital

- The power supply is galvanically isolated inside of the sensor.
- The output signal is galvanically isolated too, that means potential-free.


	Measuring range	Resolution	Output Output resistance	Power supply	Connection
	in ppm	in ppm			
CC1N-M0c	0.05... 20.00	0.01	Modbus RTU	9-30 VDC	5-pole M12 plug-on flange
CC1H-M0c	0.005... 2.000	0.001	There are no terminating resistors in the sensor.	approx. 56-20 mA	

(Subject to technical changes!)

4. CC1 4-20 mA (analog output, analog internal signal processing)
Analog-out / analog


A potential-free electrical connection is necessary as the sensor electronic is not equipped with a galvanical isolation.

4.1 Electrical connection: 2 pole terminal clamp

	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Connection
	in ppm	in ppm		in mA/ppm		
CC1MA2	0.005...2.000	0.001	4...20 mA uncalibrated	8.0	12...30 VDC R _L 50Ω...R _L 900Ω	2-pole terminal (2 x 1 mm ²) Recommended: Round cable ∅ 4 mm 2 x 0.34 mm ²
CC1MA5	0.05...5.00	0.01		3.2		
CC1MA10	0.05...10.00	0.01		1.6		
CC1MA20	0.05...20.00	0.01		0.8		

(Subject to technical changes!)

4.2 Electrical connection: 5 pole M12 plug-on flange

	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Connection
	in ppm	in ppm		in mA/ppm		
CC1MA2-M12	0.005...2.000	0.001	4...20 mA uncalibrated	8.0	12...30 VDC R _L 50Ω...R _L 900Ω	5-pole M12 plug-on flange Function of wires: PIN2: +U PIN3: -U
CC1MA5-M12	0.05...5.00	0.01		3.2		
CC1MA10-M12	0.05...10.00	0.01		1.6		
CC1MA20-M12	0.05...20.00	0.01		0.8		

Spare Parts

Type	Membrane cap	Electrolyte	Emery	O-ring
For all CC1	M48.2	ECC1.1/GEL, 100 ml	S1	14 x 1.8 NBR

(Subject to technical changes!)