TARAtec CD10.1

indicator	Chlorine dioxide
Application	All kinds of water treatment, also sea water (e. g. bottle washing machine, CIP-plants) The membrane system is mechanical resistant. The membrane system is highly resistant to surfactants (tensides).
appropriate chlorine dioxide production methods	e. g. – Acid/chlorite-method – Chlorine/chlorite-method
Measuring system	Membrane covered, amperometric 2-electrode system.
Electronic	Analog version: - voltage output - not galvanically isolated electronics - analog internal data processing - output signal: analog (analog-out/analog) Digital version: - electronic is completely galvanically isolated - digital internal data processing - output signal: analog (analog-out/digital) or digital (digital-out/digital) mA-version: - current output analog - not galvanically isolated electronics - output signal: analog (analog-out/analog)
Information about the measuring range of sensors with 4-20 mA	Slope of a sensor can vary production-related or application-related between 65% and 150% of the nominal slope -> Recommendation to determine the suitable measuring range or the suitable sensor: Concentration to be measured x factor 1.5 = measuring range of the sensor Example: Concentration to be measured 1.6 ppm x 1.5 = 2.4 -> recommended sensor with a measuring range of 5 ppm
Slope drift At repeatability conditions (25 °C, pH 7,2 in drinking water)	approx. <-1% per month
Working temperature	Measuring water temperature: 0 … +50 °C (no ice crystals in the measuring water)
	Ambient temperature: 0 … +55 °C
Temperature compensation	Automatically, by an integrated temperature sensor Max. change in temperature: 5 °C per hour, sudden temperature changes must be avoided
Max. allowed working pressure	Operation without retaining ring: 0.5 bar, no pressure impulses and/or vibrations
	Operation with retaining ring: 1.0 bar, no pressure impulses and/or vibrations

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Flow rate	approx. 15-30 l/h in TARAflow FLC, small flow rate dependence is given
pH-range	pH 1 – pH 12 or the beginning of decomposition of chlorine dioxide at/over pH 12
Run-in time	First start-up approx. 1 h
Response time	T_{90}: approx. 1 min.
Accuracy after calibration at repeatability conditions (25°C, pH 7.2 in drinking water) of the upper full scale	– Measuring range 2 ppm: at 0.4 ppm <1% at 1.6 ppm <1% – Measuring range 20 ppm: at 1.5 ppm <0.1%
Zero point adjustment	Not necessary
Slope calibration	At the device, by analytical determination
interferences	Cl_2: factor 0.1 O_3: factor 25
Absence of the disinfectant	Max. 24 h
material	PVC-U, stainless steel 1.4571
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
Size	diameter: approx. 25 mm Length: analog-out/analog version approx. 175 mm version analog-out/digital approx. 195 mm version digital-out/digital approx. 205 mm 4-20 mA version approx. 220 mm (2-pole-terminal) approx. 190 mm (5-pole-M12)
Transport	+5 … +50 °C
storage	Sensor: dry and without electrolyte no limit at +5 … +40 °C Electrolyte: in original bottle protected from sunlight at +5 … +35 °C min. 1 year or until specified EXP-Date Membrane cap: in original packing no limit at +5 … +40 °C (used membrane caps can not be stored)
maintenance	Regularly control of the measuring signal, min. once a week The following specifications highly depend on the water quality: Change of the membrane cap: once a year Change of the electrolyte: every 3 - 6 months
CE	EMC-Testing DIN EN 61326-1, 61326-2-3 RoHS compliant

Technical Data

1. CD10.1 (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** **in mV/ppm**	**Voltage supply**	**Connection**
CD10.1H	0.005…2.000	0.001	0…-2000 mV 1 kΩ	-1000	±5 - ±15 VDC 10 mA	4-pole screw connector
CD10.1N	0.05…20.00	0.01		-100		
CD10.1L	0.5…200.0	0.1		-10		
CD10.1HUp	0.005…2.000	0.001	0…+2000 mV 1 kΩ	+1000	10 - 30 VDC 10 mA	
CD10.1Up	0.05…20.00	0.01		+100		
CD10.1LUp	0.5…200.0	0.1		+10		

(Subject to technical changes!)

2. CD10.1 (analog output, digital 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** **in mV/ppm**	**Power supply**	**Connection**
CD10.1H-An	0.005…2.000	0.001	analog 0…-2 V (max. -2.5 V) 1 kΩ	-1000	9-30 VDC approx. 56-20 mA	4-pole screw connector
CD10.1N-An	0.05…20.00	0.01		-100		
CD10.1L-An	0.5…200.0	0.1		-10		
CD10.1H-Ap	0.005…2.000	0.001	analog 0…+2 V (max. +2.5 V) 1 kΩ	+1000		
CD10.1N-Ap	0.05…20.00	0.01		+100		
CD10.1L-Ap	0.5…200.0	0.1		+10		

(Subject to technical changes!)

3. CD10.1 (digital output, digital 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** **in ppm**	**Resolution** **in ppm**	**Output** **Output resistance**	**Power supply**	**Connection**
CD10.1H-M0c	0.005…2.000	0.001	Modbus RTU There are no terminating resistors in the sensor.	9-30 VDC approx. 56-20 mA	5-pole M12 connector
CD10.1N-M0c	0.05…20.00	0.01			
CD10.L-M0c	0.5…200.0	0.1			

(Subject to technical changes!)

4. CD10.1 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** **in ppm**	**Resolution** **in ppm**	**Output** **Output resistance**	**Nominal slope** **in mA/ppm**	**Voltage supply**	**Connection**
CD10.1MA0.5	0.005…0.500	0.001	4…20 mA uncalibrated	32.0	12…30 VDC R_L 50Ω…R_L 900Ω	2-pole terminal (2 x 1 mm²) Recommended: Round cable ∅ 4 mm 2 x 0.34 mm²
CD10.1MA2	0.005…2.000	0.001		8.0		
CD10.1MA5	0.05…5.00	0.01		3.2		
CD10.1MA10	0.05…10.00	0.01		1.6		
CD10.1MA20	0.05…20.00	0.01		0.8		
CD10.1MA-200	0.5…200.0	0.1		0.08		

(Subject to technical changes!)

4.2 Electrical connection: 5 pole M12 plug-on flange

	**Measuring range** **in ppm**	**Resolution** **in ppm**	**Output** **Output resistance**	**Nominal slope** **in mA/ppm**	**Voltage supply**	**Connection**
CD10.1MA0.5-M12	0.005…0.500	0.001	4…20 mA uncalibrated	32.0	12…30 VDC R_L 50Ω…R_L 900Ω	5-pole M12 plug-on flange Function of wires: PIN2: +U PIN3: -U
CD10.1MA2-M12	0.005…2.000	0.001		8.0		
CD10.1MA5-M12	0.05…5.00	0.01		3.2		
CD10.1MA10-M12	0.05…10.00	0.01		1.6		
CD10.1MA20-M12	0.05…20.00	0.01		0.8		
CD10.1MA-200-M12	0.5…200.0	0.1		0.08		

(Subject to technical changes!)

Spare Parts

Type	**Membrane cap**	**Electrolyte**	**Emery**	**O-ring**
All CD10.1	M10.3N Art. no. 11057	ECD4 ● ECD7/W, 100 ml Art. no. 11030	S2 Art. no. 11906	20 x 1.5 silicone Art. no. 11803

(Subject to technical changes!)

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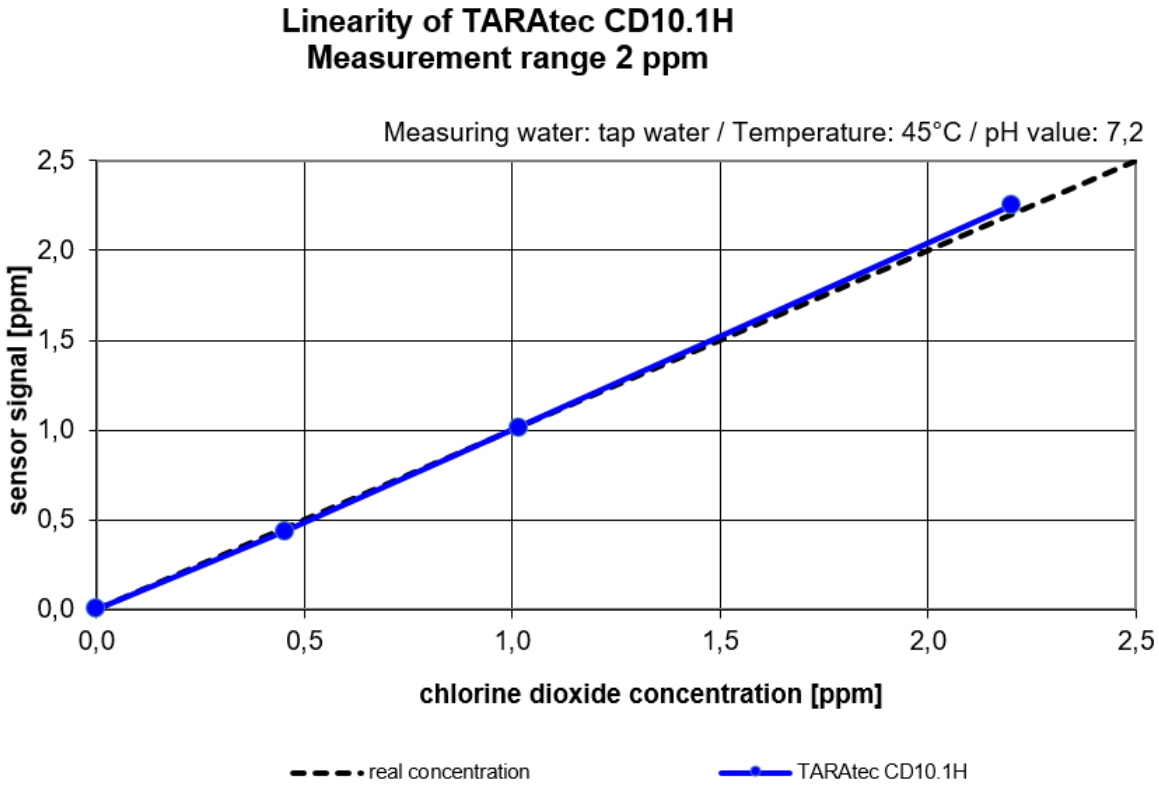
Linearity of TARAtec CD10.1H
Measurement range 2 ppm
Measuring water: tap water / Temperature: 45°C / pH value: 7,2
sensor signal [ppm]
2,5
2,0
1,5
1,0
0,5
0,0
0,0
0,5
1,0
1,5
2,0
2,5
chlorine dioxide concentration [ppm]
real concentration
TARAtec CD10.1H