TARAline CP4.0

indicator	Total chlorine (= free chlorine + bound chlorine) Reduced dependence on pH
Application	Swimming pool water, drinking water, sea water, brine (15% NaCl) Surfactants (tensides) are partially tolerated.
Chlorination agents	inorganic chlorine compounds: NaOCl (=sodium hypochlorite), $Ca(OCl)_2$, chlorine gas, electrolytically generated chlorine
Measuring system	Membrane covered, amperometric potentiostatic 3-electrode system with electronic inside
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	The actual slope of a sensor can vary production-related between 65% and 150% of the nominal slope Note: With a slope > 100% the measuring range is reduced accordingly. (Ex.: 150% slope → 67% of the specified measuring range)
Accuracy after calibration at repeatability conditions (25°C, pH 7.2 in drinking water) of the upper full scale	– Measuring range 2 mg/l: at 0.4 mg/l <2%; at 1.6 mg/l <2% – Measuring range 20 mg/l: at 4 mg/l <1%; at 16 mg/l <3%
Slope drift At repeatability conditions (25 °C, pH 7,2 in drinking water)	approx. -1% 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	Operation without retaining ring:	0.5 bar, no pressure impulses and/or vibrations
	Operation with retaining ring:	3 bar, no pressure impulses and/or vibrations
Flow rate (Incoming flow velocity)	approx. 15-30 l/h (33 – 66 cm/s) in TARAflow FLC, small flow rate dependence is given (see diagram last page of the data sheet “Slope of TARAline CP4 versus flow rate”)	
pH-range	pH 4 – pH 12, reduced dependence on pH-value (see diagram last page of the data sheet “Slope of TARAline CP4 versus pH”)	
Conductivity	10 µS/cm – 200 mS/cm (brine)	
Run-in time	First start-up approx. 2 h	
Response time	T_{90}: approx. 3 min. (brine approx. 5 min.)	
Zero point adjustment	Not necessary	
Slope calibration	At the device, by analytical determination, DPD-4-Method (DPD-1 + DPD-3)	
Cross sensitivities/ interferences	ClO_2: factor 1 O_3: factor 1.3 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: analog-out/digital version: digital-out/digital version: 4-20 mA version:	4-pole plug adapter 4-pole plug adapter 5-pole M12, plug-on flange 2-pole terminal or 5-pole M12, plug-on flange
max. length of sensor cable (depending on internal signal processing)	analog	< 30 m
	digital	> 30 m are permissible Maximum cable length depends on application
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)

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Transport	+5 … +50 °C (Sensor, electrolyte, membrane cap)	
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 the 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 depend on the water quality: Change of the membrane cap: once a year Change of the electrolyte: once a year	
CE	EMC-Testing DIN EN 61326-1, 61326-2-3, 63000 RoHS compliant	

Option 1: **Membrane cap M48.4S**	especially for applications in sea water or brine	

Spare parts

Type	Membrane cap	Electrolyte	Emery	O-ring
All CP4.0	M48.4E Art. No. 11051-E	ECP1.4/GEL, 100 ml Art. No. 11006.1	S1 Art. No. 11908	14 x 1.8 NBR Art. No. 11806
	For sea water or brine applications: M48.4S Art. No. 11051-S			

(Subject to technical changes!)

Technical Data

1. CP4.0 (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.

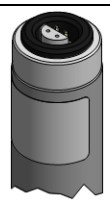
	**Measuring range** **in ppm**	**Resolution** **in ppm**	**Output** **Output resistance**	**Nominal slope** (at pH 7.2) **in mV/ppm**	**Power supply**	**Connection**
CP4.0H	0.005…2.000	0.001	0…-2000 mV 1 kΩ	-1000	±5 - ±15 VDC 10 mA	4-pole screw connector
CP4.0N	0.05…20.00	0.01		-100		
CP4.0Up	0.05…20.00	0.01	0…+2000 mV 1 kΩ	+100	10 - 30 VDC 10 mA	

(Subject to technical changes!)

2. CP4.0 (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**
CP4.0H-An	0.005… 2.000	0.001	analog 0…-2 V (max. -2.5 V)	-1000	9-30 VDC approx. 56-20 mA	4-pole screw connector
CP4.0N-An	0.05… 20.00	0.01	1 kΩ	-100		
CP4.0H-Ap	0.005… 2.000	0.001	analog 0…+2 V (max. +2.5 V)	+1000		
CP4.0N-Ap	0.05… 20.00	0.01	1 kΩ	+100		

(Subject to technical changes!)

3. CP4.0 (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** **in ppm**	**Resolution** **in ppm**	**Output** **Output resistance**	**Power supply**	**Connection**
CP4.0H-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 plug-on flange
CP4.0N-M0c	0.05… 20.00	0.01			

(Subject to technical changes!)

4. CP4.0 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** (at pH 7.2) **in mA/ppm**	**Power supply**	**Connection**
CP4.0MA0.5	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
CP4.0MA2	0.005…2.000	0.001		8.0		
CP4.0MA5	0.05…5.00	0.01		3.2		
CP4.0MA10	0.05…10.00	0.01		1.6		
CP4.0MA20	0.05…20.00	0.01		0.8		

(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** (at pH 7.2) **in mA/ppm**	**Power supply**	**Connection**
CP4.0MA0.5-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
CP4.0MA2-M12	0.005…2.000	0.001		8.0		
CP4.0MA5-M12	0.05…5.00	0.01		3.2		
CP4.0MA10-M12	0.05…10.00	0.01		1.6		
CP4.0MA20-M12	0.05…20.00	0.01		0.8		

(Subject to technical changes!)

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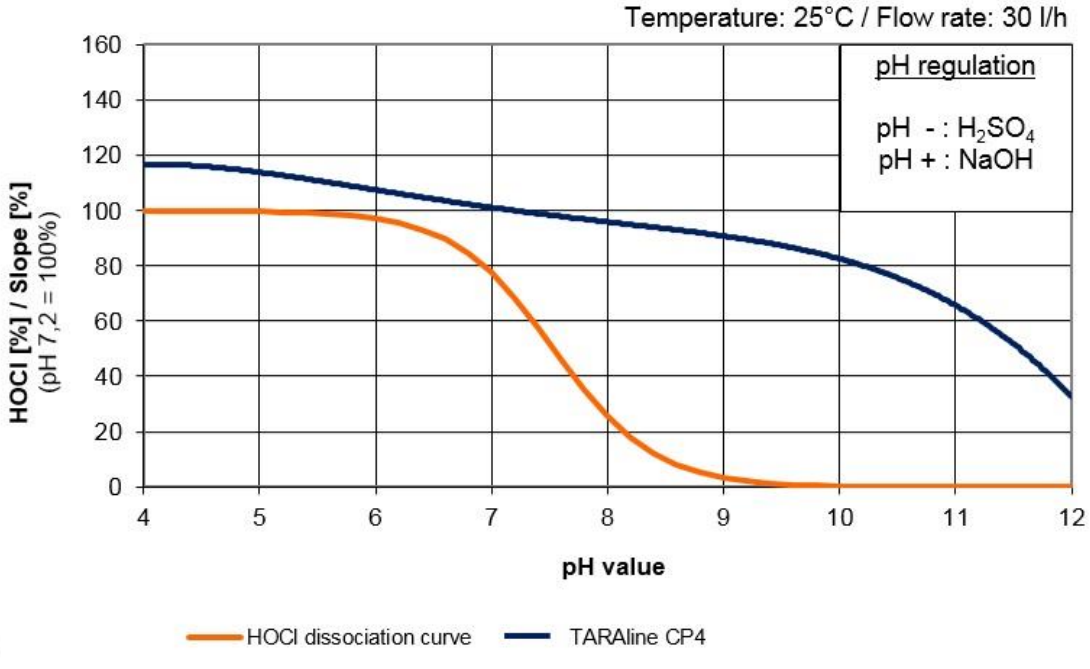
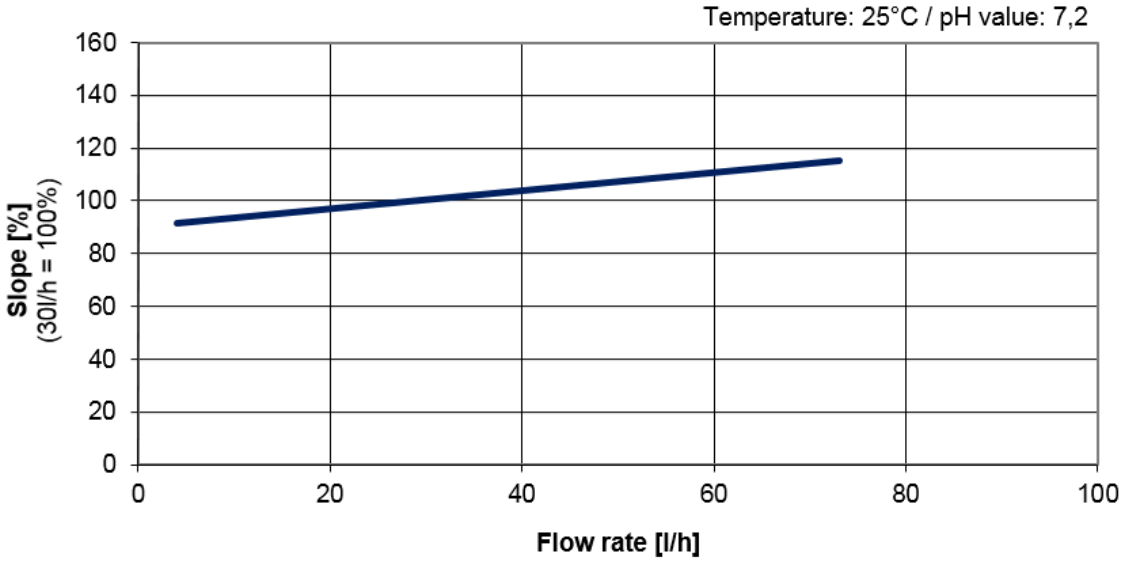
Slope of TARAline CP4 versus pH



Slope of TARAline CP4 versus flow rate



This values are only valid for the probe housing FLC1 / FLC3