


	<h1>TARAline CS4</h1>												
indicator	Free chlorine reduced dependence on pH												
Application	e. g. 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												
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 - output signal: analog (analog-out/analog) <p>Digital version:</p> <ul style="list-style-type: none"> - 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>												
Accuracy after calibration at repeatability conditions (25°C, pH 7.2 in drinking water) of the upper full scale	<table border="0"> <tr> <td>- Measuring range 2 mg/l:</td> <td>at 0.4 mg/l</td> <td><1%</td> </tr> <tr> <td></td> <td>at 1.6 mg/l</td> <td><1%</td> </tr> <tr> <td>- Measuring range 20 mg/l:</td> <td>at 4 mg/l</td> <td><1%</td> </tr> <tr> <td></td> <td>at 16 mg/l</td> <td><3%</td> </tr> </table>	- Measuring range 2 mg/l:	at 0.4 mg/l	<1%		at 1.6 mg/l	<1%	- Measuring range 20 mg/l:	at 4 mg/l	<1%		at 16 mg/l	<3%
- Measuring range 2 mg/l:	at 0.4 mg/l	<1%											
	at 1.6 mg/l	<1%											
- 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												

	<h1>TARAline CS4</h1>
<p>Max. allowed working pressure</p>	<p>Operation without retaining ring: 0.5 bar, no pressure impulses and/or vibrations</p> <p>Operation with retaining ring: 3 bar, no pressure impulses and/or vibrations</p>
<p>Flow rate</p>	<p>approx. 15-30 l/h in TARAflow FLC, small flow rate dependence is given (see diagram last page of the data sheet "Slope of TARAline CS4 versus flow rate")</p>
<p>pH-range</p>	<p>pH 4 – pH 9, reduced dependence on pH-value (see diagram last page of the data sheet "Slope of TARAline CS4 versus pH")</p>
<p>Conductivity</p>	<p>10 µS/cm – 50 mS/cm (sea water)</p>
<p>Run-in time</p>	<p>First start-up approx. 2 h</p>
<p>Response time</p>	<p>T₉₀: approx. 2 min.</p>
<p>Zero point adjustment</p>	<p>Not necessary</p>
<p>Slope calibration</p>	<p>At the device, by analytical determination, DPD-1-Method</p>
<p>interferences</p>	<p>ClO₂: factor 0.75 O₃: factor 0.8 Bound chlorine can increase the measuring value.</p> <p>Corrosion inhibitors can lead to measuring errors. Stabilisers for water hardness can lead to measuring errors.</p>
<p>Absence of the disinfectant</p>	<p>Max. 24 h</p>
<p>Connection</p>	<p>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</p>
<p>material</p>	<p>Microporous hydrophilic Membrane, PVC-U, stainless steel 1.4571</p>
<p>Size</p>	<p>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)</p>

	<h1>TARAline CS4</h1>	
Transport	+5 ... +55 °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	
	EMC-Testing DIN EN 61326-1, 61326-2-3 RoHS compliant	

Option 1: Membrane cap M48.4S	especially for applications in sea water	
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Spare parts

Type	Membrane cap	Electrolyte	Emery	O-ring
All CS4	M48.4E Art. No. 11051-E	ECS2.1/GEL, 100 ml Art. No. 11007	S1 Art. No. 11908	14 x 1.8 NBR Art. No. 11806
	For sea water applications: M48.4S Art. No. 11051-S			

(Subject to technical changes!)

Technical Data
1. CS4 (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
CS4H	0.005...2.000	0.001	0...-2000 mV 1 kΩ	-1000	±5 - ±15 VDC 10 mA	4-pole screw connector
CS4N	0.05...20.00	0.01		-100		
CS4L	0.5...200.0	0.1		-10		
CS4HUp	0.005...2.000	0.001	0...+2000 mV 1 kΩ	+1000	10 - 30 VDC 10 mA	
CS4Up	0.05...20.00	0.01		+100		

(Subject to technical changes!)

2. CS4 (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
CS4H-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
CS4N-An	0.05... 20.00	0.01		-100		
CS4L-An	0.5... 200.0	0.1		-10		
CS4H-Ap	0.005... 2.000	0.001	analog 0...+2 V (max. +2.5 V) 1 kΩ	+1000		
CS4N-Ap	0.05... 20.00	0.01		+100		
CS4L-Ap	0.5... 200.0	0.1		+10		

(Subject to technical changes!)

3. CS4 (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			
CS4H-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
CS4N-M0c	0.05... 20.00	0.01			
CS4L-M0c	0.5... 200.0	0.1			

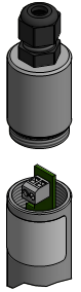
(Subject to technical changes!)

4. CS4 4-20mA (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		
CS4MA2	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
CS4MA5	0.05...5.00	0.01		3.2		
CS4MA10	0.05...10.00	0.01		1.6		
CS4MA20	0.05...20.00	0.01		0.8		
CS4MA-200	0.5...200.0	0.1		0.08		

(Subject to technical changes!)

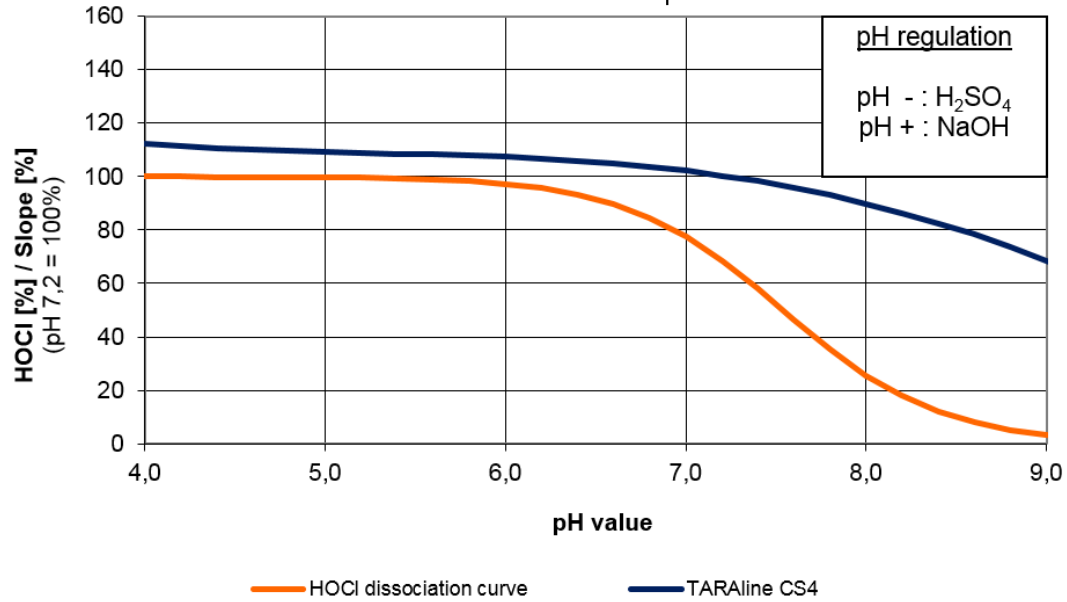
4.2 Electrical connection: 5 pole M12 plug-on flange

	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Connection
	in ppm	in ppm		in mA/ppm		
CS4MA2-M12	0.005...2.000	0.001	4...20 mA uncalibrated	8.0	12...30 VDC R _i 50Ω...R _i 900Ω	5-pole M12 plug-on flange Function of wires: PIN2: +U PIN3: -U
CS4MA5-M12	0.05...5.00	0.01		3.2		
CS4MA10-M12	0.05...10.00	0.01		1.6		
CS4MA20-M12	0.05...20.00	0.01		0.8		
CS4MA-200-M12	0.5...200.0	0.1		0.08		

(Subject to technical changes!)

Slope of TARAline CS4 versus pH

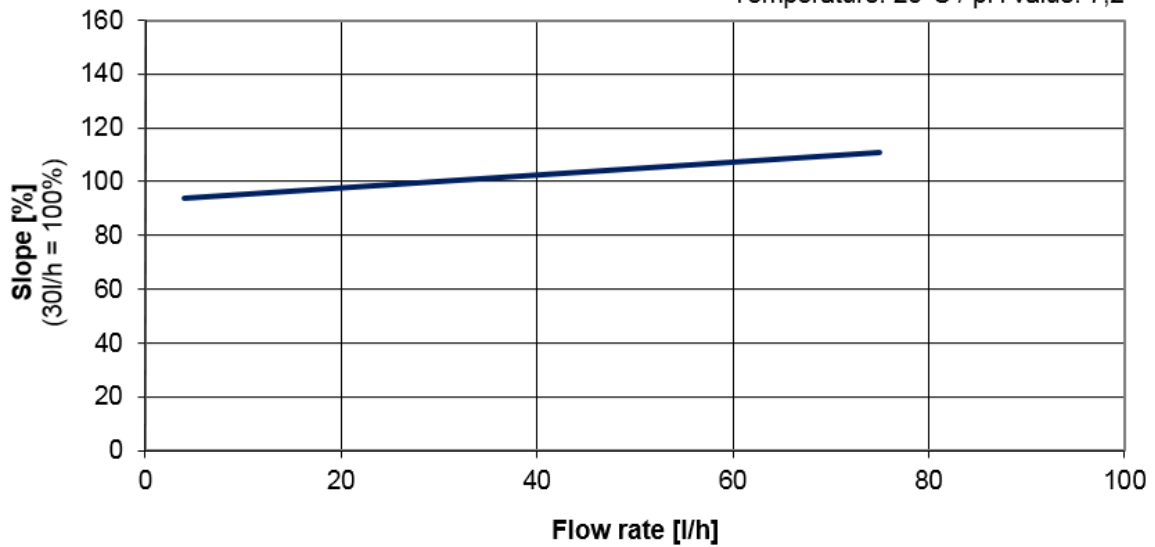
Temperature: 25°C / Flow rate: 30 l/h



CS4_008

Slope of TARAline CS4 versus Flow rate

Temperature: 25°C / pH value: 7,2



CS4_008

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