

January 2025 (EN) V7

	TARAline CS4					
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: NaOCI (=sodium hypochlorite), Ca(OCI) <sub>2</sub> , 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/analog)         - digital internal data processing         - output signal:         - or         - digital (digital-out/digital)         - or         - 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 slopeNote:With a slope > 100% the measuring range is reduced accordingly. (Ex.: 150% slope $\rightarrow$ 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	<ul> <li>Measuring range 2 mg/l: at 0.4 mg/l &lt;1% at 1.6 mg/l &lt;1%</li> <li>Measuring range 20 mg/l: at 4 mg/l &lt;1% at 16 mg/l &lt;3%</li> </ul>					
Slope drift At repeatability conditions (25 °C, pH 7,2 in drinking water)						
Working temperature	Measuring water temperature: 0 +45 °C (no ice crystals in the measuring water)					
<b>5</b>	Ambient temperature: 0 +55 °C					
Temperature compensation	Automatically, by an integrated temperature sensor Sudden temperature changes must be avoided					



	TARAline CS4					
Max. allowed working pressure	Operation without retaining ring:         -       0.5 bar         -       no pressure impulses and/or vibrations         Operation with retaining ring in TARAflow FLC:         -       3 bar,         -       no pressure impulses and/or vibrations         (see option 2)					
Flow rate (Incoming flow velocity)	approx. 15-30 l/h (15 – 30 cm/s) in TARAflow FLC, small flow rate dependence is given (see diagram "Slope of TARAline CS4 versus flow rate")					
pH-range	pH 4 – pH 9, reduced dependence on pH-value (see diagram "Slope of TARAline CS4 versus pH")					
Conductivity	10 μS/cm – 50 mS/cm (sea water)					
Run-in time	First start-up approx. 2 h					
Response time	T <sub>90</sub> : approx. 2 min.					
Zero point adjustment	Not necessary					
Slope calibration	At the device, by analytical determination, DPD-1-Method					
interferences	<ul> <li>CIO<sub>2</sub>: factor 0.75</li> <li>O<sub>3</sub>: factor 0.8</li> <li>Bound chlorine can increase the measuring value.</li> <li>Corrosion inhibitors can lead to measuring errors.</li> <li>Stabilisers for water hardness can lead to measuring errors.</li> </ul>					
Absence of the disinfectant	Max. 24 h					
Connection	mV version:5-pole M12, plug-on flangeModbus version:5-pole M12, plug-on flange4-20 mA version:2-pole terminalor5-pole M12, plug-on flange					
max. length of sensor cable	analog < 30 m					
(depending on internal signal processing)	digital > 30 m are permissible Maximum cable length depends on application					
Protection type	5-pole M12 plug-on flange:IP682-pole terminal with mA-hood:IP65					



January 2025 (EN) V7

	TARAline CS4				
material	Microporous hydrophilic Membrane, PVC-U, stainless steel 1.4571				
Size	diameter:approx.25 mmLength:mV versionapprox.190 mm (analog signal processing) approxModbus versionapprox.205 mm (digital signal processing) approx.4-20 mA versionapprox.220 mm (2-pole-terminal) approx.approx.190 mm (5-pole-M12)				
Transport	+5 +55 °C (Sensor, electrolyte, membrane cap)				
storage	Sensor:dry and without electrolyte no limit at +5 +40 °CElectrolyte:in original bottle protected from sunlight at +5 +35 °C min. 1 year or until the specified EXP-DateMembrane 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 tested RoHS compliant				

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



January 2025 (EN) V7

Option 2: Retaining ring	<ul> <li>When operating with pressures &gt;0.5 bar in TARAflow FLC</li> <li>Dimensions retaining ring 29 x 23.4 x 2.5 mm, slitted, PETP</li> <li>Different positions for groove selectable (on request)</li> </ul>		Ø25mm Ø25mm
-----------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	----------------

# Spare parts

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



# **Technical Data**

### 1. CS4 (analog output, analog internal signal processing)

	Measuring range in ppm	Resolution in ppm	Output Output resistance	Nominal slope (at pH 7.2) in mV/ppm	Power supply	Galvanic isolation required in the measuring device/controller *	Connection
CS4H-M12	0.0052.000	0.001		-1000			5-pole M12 plug-on flange
CS4N-M12	0.0520.00	0.01	02000 mV 1 kΩ	-100	±5 - ±15 VDC 10 mA	yes	Function of wires: PIN1: measuring signal PIN2: +U PIN3: -U
CS4L-M12	0.5200.0	0.1		-10			PIN4: signal GND PIN5: n. c.
CS4HUp-M12	0.0052.000	0.001	0+2000 mV 1 kΩ	+1000	10 - 30 VDC		5-pole M12 plug-on flange Function of wires: PIN1: measuring signal
CS4Up-M12	0.0520.00	0.01		+100	10 mA		PIN2: +U PIN3: power GND PIN4: signal GND PIN5: n. c.

\* for further information see brochure 'Technical information // galvanic isolation' (in the download area of our website www.reiss-gmbh.com)



## 2. CS4 (analog output, digital internal signal processing)

analog-out / digital

	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Galvanic isolation required in the measuring device/controller *	Connection
	in ppm	in ppm		in mV/ppm			
CS4H-An-M12	0.005 2.000	0.001	analog	-1000			
CS4N-An-M12	0.05 20.00	0.01	02 V (max2.5 V)	-100	9-30 VDC approx. 7-30 mA	no	5-pole M12 plug-on flange Function of wires: PIN1: measuring signal PIN2: +U PIN3: power GND
CS4L-An-M12	0.5 200.0	0.1	1 kΩ	-10			
CS4H-Ap-M12	0.005 2.000	0.001	analog 0+2 V (max. +2.5 V)	+1000			
CS4N-Ap-M12	0.05 20.00	0.01		+100			PIN4: signal GND PIN5: n. c.
CS4L-Ap-M12	0.5 200.0	0.1	1 kΩ	+10			

\* for further information see brochure 'Technical information // galvanic isolation' (in the download area of our website www.reiss-gmbh.com)



### 3. CS4 (digital output, digital internal signal processing)

	Measuring range in ppm	Resolution in ppm	Output Output resistance	Power supply	Galvanic isolation required in the measuring device/controller *	Connection
CS4H-M0c	0.005 2.000	0.001				5-pole M12 plug-on flange
CS4N-M0c	0.05 20.00	0.01	Modbus RTU There are no terminating resistors in the sensor.	9-30 VDC approx. 7-30 mA	no	Function of wires: PIN1: reserved PIN2: +U PIN3: power GND
CS4L-M0c	0.5 200.0	0.1				PIN4: RS485B PIN5: RS485A

\* for further information see brochure 'Technical information // galvanic isolation' (in the download area of our website www.reiss-gmbh.com)



#### 4. CS4 4-20mA (analog output, analog internal signal processing)

#### 4.1 Electrical connection: 2 pole terminal clamp

	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Galvanic isolation required in the measuring device/controller *	Connection
	in ppm	in ppm		in mA/ppm			
CS4MA2	0.0052.000	0.001		8.0			2-pole terminal
CS4MA5	0.055.00	0.01		3.2			(2 x 1 mm <sup>2</sup> ) Recommended:
CS4MA10	0.0510.00	0.01	420 mA uncalibrated	1.6	1230 VDC	yes	
CS4MA20	0.0520.00	0.01		0.8	R <sub>L</sub> 50Ω…R <sub>L</sub> 900Ω		Round cable Ø 4 mm
CS4MA-200	0.5200.0	0.1		0.08			2 x 0.34 mm²

\* for further information see brochure 'Technical information // galvanic isolation' (in the download area of our website www.reiss-gmbh.com)



### 4.2 Electrical connection: 5 pole M12 plug-on flange

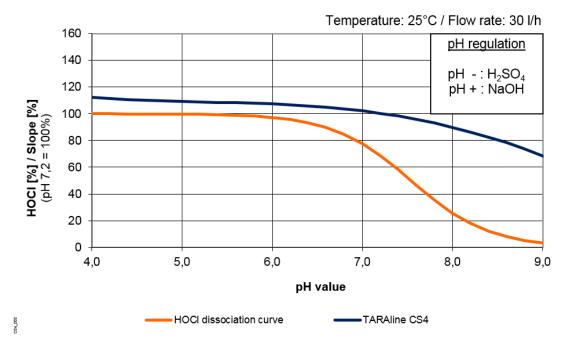
	Measuring range	Resolution	Output Output resistance	Nominal slope (at pH 7.2)	Power supply	Galvanic isolation required in the measuring device/controller *	Connection
	in ppm	in ppm		in mA/ppm			
CS4MA2-M12	0.0052.000	0.001		8.0			5-pole M12 plug-on flange
CS4MA5-M12	0.055.00	0.01		3.2	1230 VDC - R <sub>L</sub> 50ΩR <sub>L</sub> 900Ω	yes	Function of wires: PIN1: n. c. PIN2: +U PIN3: -U PIN4: n c. PIN5: n. c.
CS4MA10-M12	0.0510.00	0.01	420 mA uncalibrated	1.6			
CS4MA20-M12	0.0520.00	0.01		0.8			
CS4MA-200-M12	0.5200.0	0.1		0.08			

\* for further information see brochure 'Technical information // galvanic isolation' (in the download area of our website www.reiss-gmbh.com)

(Subject to technical changes!)

Reiss GmbH Eisleber Str. 5 D – 69469 Weinheim Germany





Slope of TARAline CS4 versus pH

## Slope of TARAline CS4 versus Flow rate

