TARAbase CL4.2

indicator	Free chlorine, pH-dependent
Application	Swimming pool water, drinking water, service water, process water The water must not contain any surfactants (tensides)! pH-value must be constant.
Chlorination agents	inorganic chlorine compounds: NaOCl (=sodium hypochlorite), $Ca(OCl)_2$, chlorine gas, chlorine electrolysis with membrane cell (unsuitable: chlorine electrolysis without membrane cell)
Measuring system	Membrane covered, amperometric 2-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 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
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 <1% at 1.6 mg/l <1%
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: 1.0 bar, no pressure impulses and/or vibrations
Flow rate	approx. 15-30/h in TARAflow FLC, small flow rate dependence is given (see diagram “Slope of TARAbase CL4 versus flowrate”, p. 8)
pH-range	pH 6 – pH 8, pay attention to the dissociation equilibrium HOCL (see diagram “Slope of TARAbase CL4 versus pH, p. 8)
Run-in time	First start-up approx. 1 h
Response time	T_{90}: approx. 30 sec.
Zero point adjustment	Not necessary
Slope calibration	At the device, by analytical determination DPD-1-Method
Interferences	ClO_2: factor 9 O_3 Electrolytically generated chlorine with a cell without membrane can produce trouble
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	Semipermeable membrane, PVC-U, ABS
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)
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)

	# TARAbase CL4.2
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: every 3 - 6 months
CE	EMC-Testing DIN EN 61326-1, 61326-2-3 RoHS compliant

Technical Data

1. CL4.2 (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**
CL4.2N	0.05…20.00	0.01	0…-2000 mV 1 kΩ	-100	±5 - ±15 VDC 10 mA	4-pole screw connector
CL4.2H	0.005…2.000	0.001		-1000		
CL4.2DW	0.005…5.000	0.001		-300		
CL4.2L	0.5…200.0	0.1		-10		
CL4.2HUp	0.005…2.000	0.01	0…+2000 mV 1 kΩ	+1000	10 - 30 VDC 10 mA	
CL4.2Up	0.05…20.00	0.01		+100		

(Subject to technical changes!)

2. CL4.2 (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**
CL4.2H-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
CL4.2N-An	0.05…20.00	0.01		-100		
CL4.2L-An	0.5…200.0	0.1		-10		
CL4.2H-Ap	0.005…2.000	0.001	analog 0…+2 V (max. +2.5 V) 1 kΩ	+1000		
CL4.2N-Ap	0.05…20.00	0.01		+100		
CL4.2L-Ap	0.5…200.0	0.1		+10		

(Subject to technical changes!)

3. CL4.2 (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**
CL4.2H-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
CL4.2N-M0c	0.05… 20.00	0.01			
CL4.2L-M0c	0.5…200.0	0.1			

(Subject to technical changes!)

4. CL4.2 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**	**Voltage supply**	**Connection**
CL4.2MA0.5	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
CL4.2MA2	0.005…2.000	0.001		8.0		
CL4.2MA5	0.05…5.00	0.01		3.2		
CL4.2MA10	0.05…10.00	0.01		1.6		
CL4.2MA20	0.05…20.00	0.01		0.8		
CL4.2MA-100	0.5…100.0	0.1		0.16		
CL4.2MA-200	0.5…200.0	0.1		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**	**Voltage supply**	**Connection**
CL4.2MA0.5-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
CL4.2MA2-M12	0.005…2.000	0.001		8.0		
CL4.2MA5-M12	0.05…5.00	0.01		3.2		
CL4.2MA10-M12	0.05…10.00	0.01		1.6		
CL4.2MA20-M12	0.05…20.00	0.01		0.8		
CL4.2MA-100-M12	0.5…100.0	0.1		0.16		
CL4.2MA-200-M12	0.5…200.0	0.1		0.8		

(Subject to technical changes!)

Spare Parts

Type	Membrane cap	Electrolyte	Emery	O-ring
For all CL4.2	M20.2 Art. no. 11011.1	ECL1, 100 ml Art. no. 11001	S1 Art. no. 11908	14 x 1.8 NBR Art. No. 11806

(Subject to technical changes!)

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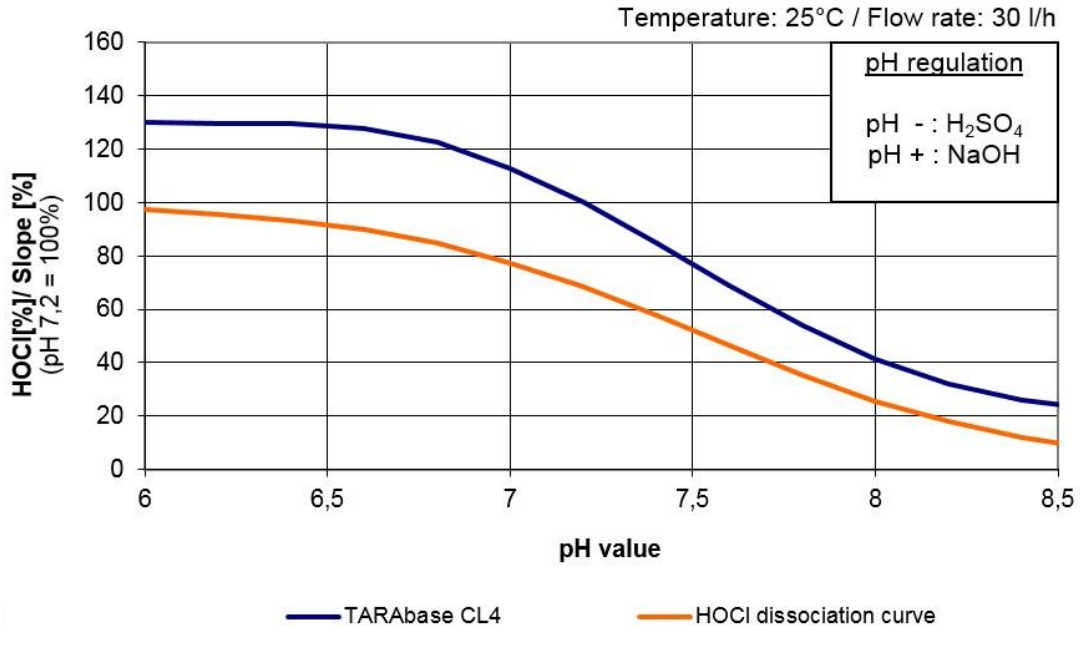
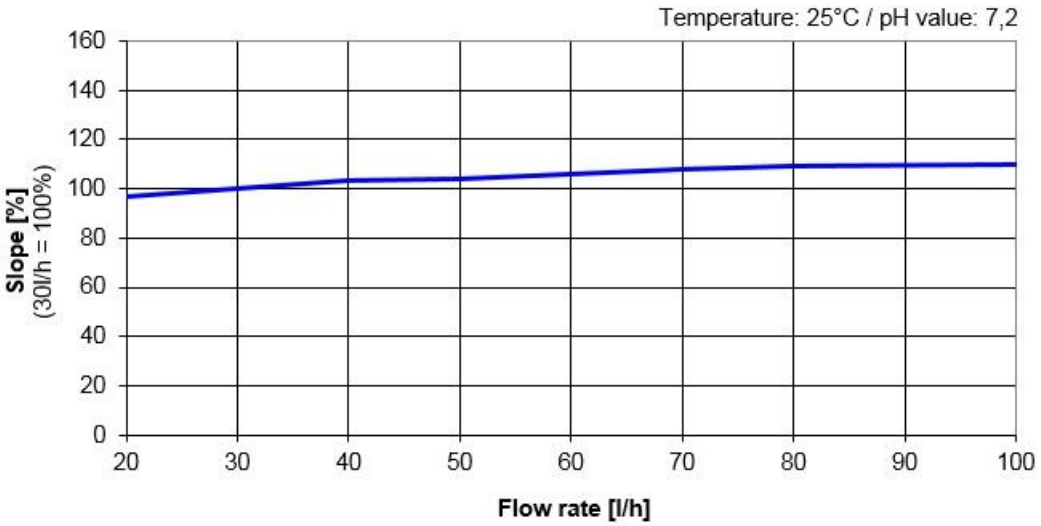
Slope of TARAbase CL4 versus pH



Slope of TARAbase CL4 versus Flow rate



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