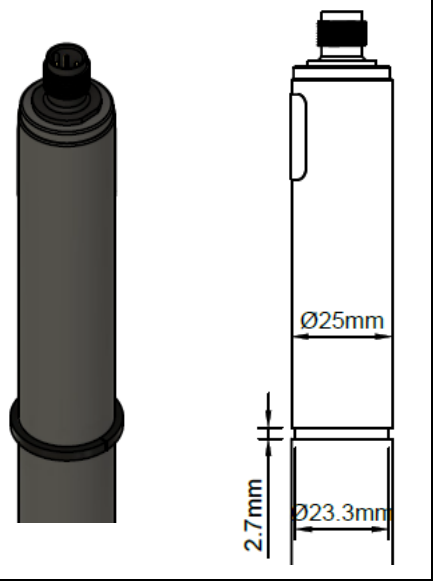
TARAtec CH10

indicator	Free chlorine, pH dependent
Application	especially for high chlorine concentrations, process water pH-value must be constant. The membrane system is mechanical resistant. The membrane system is highly resistant to surfactants (tensides).
Chlorination agents	inorganic chlorine compounds: NaOCl (=sodium hypochlorite), $Ca(OCl)_2$, chlorine gas, chlorine electrolysis with membrane cell
Measuring system	Membrane covered, amperometric 2-electrode system with integrated electronics
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)
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 Response time t_{90} = approx. 8 min. 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 in TARAflow FLC: – 1 bar, – no pressure impulses and/or vibrations (see option 1)

TARAtec CH10

Flow rate (Incoming flow velocity)	approx. 15-30 l/h (15 – 30 cm/s) in TARAflow FLC, small flow rate dependence is given	
pH-range	pH 5 – pH 8, pay attention to the dissociation equilibrium HOCL (see diagram “Slope of TARAtec CH10 versus pH”)	
Run-in time	First start-up approx. 11 h	
Response time	T_{90}: approx. 8 min.	
Zero point adjustment	Not necessary	
calibration	At the device, by analytical chlorine determination - DPD-1 (up to 10 ppm) - iodometry (up to 200 ppm with photometer) - iodometry (up to 2000 ppm titration)	
interferences	ClO_2 O_3 Peracetic acid	
Absence of the disinfectant	Max. 24 h	
Connection	mV version: Modbus version: 4-20 mA version:	5-pole M12, plug-on flange 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
Protection type	5-pole M12 plug-on flange: 2-pole terminal with mA-hood:	IP68 IP65
material	Elastomer membrane, PVC-U, PEEK	
Size	diameter: Length: mV version Modbus version 4-20 mA version	approx. 25 mm approx. 190 mm (analog signal processing) approx.. 205 mm (digital signal processing) approx. 205 mm approx. 220 mm (2-pole-terminal) approx. 190 mm (5-pole-M12)
Transport	+5 … +50 °C (Sensor, electrolyte, membrane cap)	

	**TARAtec CH10**
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: approx. every 3 months
CE	EMC tested RoHS compliant

Option 1: **Retaining ring**	– When operating with pressures >0.5 bar in TARAflow FLC – Dimensions retaining ring 29 x 23.4 x 2.5 mm, slitted, PETP – Different positions for groove selectable (on request)	

Technical Data

1. CH10 (Analog output, analog internal signal processing)

	**Measuring range** (at pH 7.2)	**Resolution** (at pH 7.2)	**Output** **Output resistance**	**Nominal slope** (at pH 7.2)	**Voltage supply**	**Galvanic isolation required in the measuring device/controller ****	**Connection**
CH10-2000-M12	200…2000 ppm	1 ppm	0…-2000 mV 1 kΩ	-1 mV/ppm	±5 - ±15 VDC 10 mA	yes	5-pole M12 plug-on flange Function of wires: PIN1: measuring signal PIN2: +U PIN3: -U PIN4: signal GND PIN5: n. c.
CH10-20%-M12	0.05%...0.2% * (500…2000 ppm *)	100 ppm		-100 mV/% (-0.01mV/ppm)			

* concentration tested and approved up to 0.2% (2000 ppm)
** for further information see brochure ‘Technical information // galvanic isolation’ (in the download area of our website www.reiss-gmbh.com)

(Subject to technical changes!)

2. CH10 (analog output, digital signal processing)

analog-out / digital

	**Measuring range** (at pH 7.2)	**Resolution** (at pH 7.2)	**Output** **Output resistance**	**Nominal slope** (at pH 7.2)	**Power supply**	**Galvanic isolation required in the measuring device/controller ****	**Connection**
CH10-2000-An-M12	200… 2000 ppm	1 ppm	analog 0…-2 V (max. -2.5 V) 1 kΩ	-1 mV/ppm	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 PIN4: signal GND PIN5: n. c.
CH10-20%-An-M12	0.05… 0.2 % * (500… 2000 ppm *)	100 ppm		-100 mV/% (-0.01 mV/ppm)			
CH10-2000-Ap-M12	200… 2000 ppm	1 ppm	analog 0…+2 V (max. +2.5 V) 1 kΩ	+1 mV/ppm			
CH10-20%-Ap-M12	0.05… 0.2 % * (500… 2000 ppm *)	100 ppm		+100 mV/% (+0.01 mV/ppm)			

* concentration tested and approved up to 0.2% (2000 ppm)
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(Subject to technical changes!)

3. CH10 (digital output, digital signal processing)

	**Measuring range** (at pH 7.2)	Resolution (at pH 7.2)	Output Output resistance	Power supply	Galvanic isolation required in the measuring device/controller **	Connection
CH10-2000-M0c	200… 2000 ppm	1 ppm	Modbus RTU There are no terminating resistors in the sensor.	9-30 VDC approx. 7-30 mA	no	5-pole M12 plug-on flange Function of wires: PIN1: reserved PIN2: +U PIN3: power GND PIN4: RS485B PIN5: RS485A
CH10-20%-M0c	0.05… 0.2 % * (500… 2000 ppm *)	100 ppm				

* concentration tested and approved up to 0.2% (2000 ppm)
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(Subject to technical changes!)

4. CH10 4-20 mA (analog output, analog internal signal processing)

4.1 Electrical connection: 2 pole terminal clamp

	**Measuring range** (at pH 7.2)	**Resolution** (at pH 7.2)	**Output** **Output resistance**	**Nominal slope** (at pH 7.2)	**Voltage supply**	**Galvanic isolation required in the measuring device/controller ****	**Connection**
CH10MA-2000	200… 2000 ppm	1 ppm	4…20 mA uncalibrated	0.008 mA/ppm	12…30 VDC R_L 50Ω…R_L 900Ω	yes	2-pole terminal (2 x 1 mm²) Recommended: Round cable ∅ 4 mm 2 x 0.34 mm²
CH10MA-20%	0.05… 0.2% * (500… 2000 ppm *)	100 ppm		0.8 mA/% (0.00008 mA/ppm)			

* concentration tested and approved up to 0.2% (2000 ppm)
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(Subject to technical changes!)

4.2 Electrical connection: 5 pole M12 plug-on flange

	**Measuring range** (at pH 7.2)	**Resolution** (at pH 7.2)	**Output** **Output resistance**	**Nominal slope** (at pH 7.2)	**Voltage supply**	**Galvanic isolation required in the measuring device/controller ****	**Connection**
CH10MA-2000-M12	200… 2000 ppm	1 ppm	4…20 mA uncalibrated	0.008 mA/ppm	12…30 VDC R_L 50Ω…R_L 900Ω	yes	5-pole M12 plug-on flange Function of wires: PIN1: n. c. PIN2: +U PIN3: -U PIN4: n c. PIN5: n. c.
CH10MA-20%-M12	0.05… 0.2% * (500… 2000 ppm *)	100 ppm		0.8 mA/% (0.00008 mA/ppm)			

* concentration tested and approved up to 0.2% (2000 ppm)
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(Subject to technical changes!)

Spare Parts

Type	Membrane cap	Electrolyte	Emery	O-ring
All CH10	M10.1D-S with G-holder Art. no. 11054	ECH10/W, 100 ml Art. no. 11055	S2 Art. no. 11906	20 x 1.5 silicone Art. no. 11803

(Subject to technical changes!)

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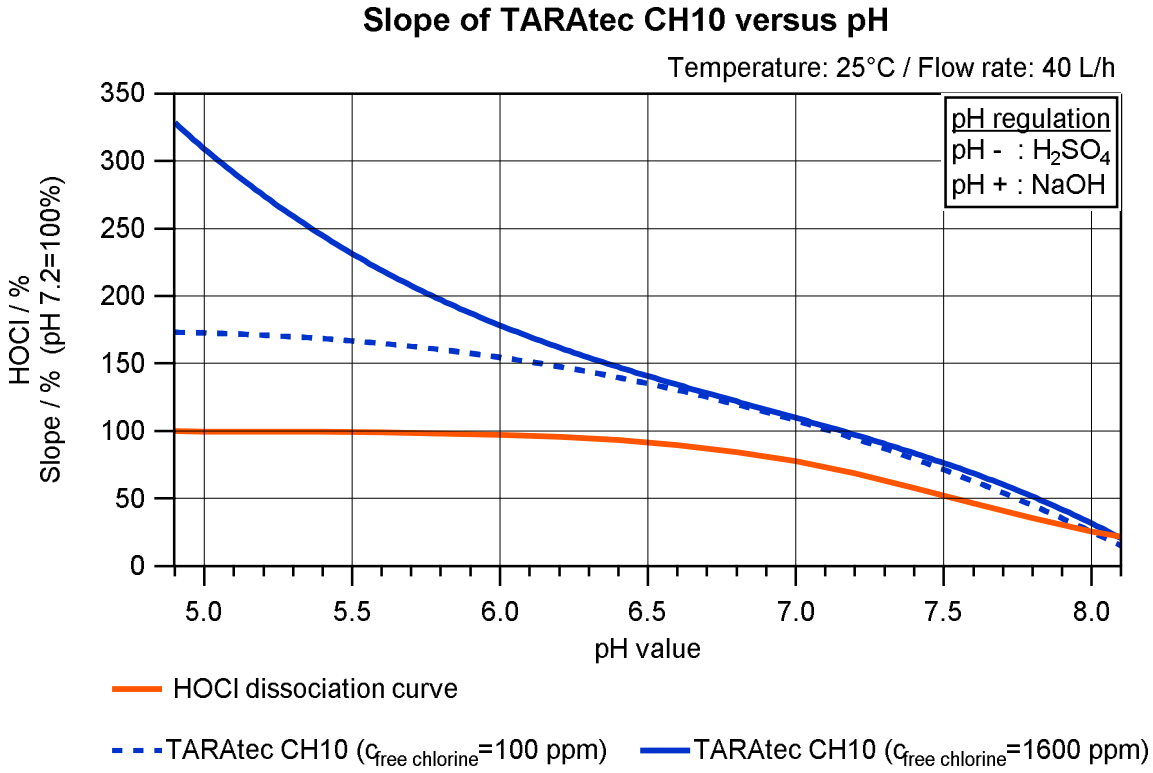
Slope of TARAtec CH10 versus pH
Temperature: 25°C / Flow rate: 40 L/h
pH regulation
pH - : H2SO4
pH + : NaOH
HOCl / %
Slope / % (pH 7.2=100%)
350
300
250
200
150
100
50
0
5.0
5.5
6.0
6.5
7.0
7.5
8.0
pH value
HOCl dissociation curve
TARAtec CH10 (c free chlorine=100 ppm)
TARAtec CH10 (c free chlorine=1600 ppm)