TARAtec P10.1

Indicator	Peracetic acid
Application	All kinds of water treatment, also sea water Conductivity acids are tolerated. (e. g. bottle washing machine, CIP-plants) The membrane system is mechanical resistant. The membrane system is highly resistant to surfactants (tensides).
Measuring system	Membrane covered, amperometric 2-electrode system
Electronics	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 repeat conditions (25 °C, in drinking water) from full scale value	Measuring range 2000 mg/L: at 400 mg/l <2% at 1600 mg/l <3%
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 Response time t_{90}: approx. 8 min.
Max. allowed working pressure	Operation without retaining ring: – 0.5 bar – no pressure impulses and/or vibrations
	Operation with retaining ring in TARAflow FLC: – 1.0 bar, – no pressure impulses and/or vibrations (see option 1)

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Flow rate (Incoming flow velocity)	approx. 15-30L/h (33 – 66 cm/s) in TARAflow FLC, small flow rate dependence is given	
pH-range	pH 1 – pH 8 (see Diagram “Slope of TARAtec P9.3 and P10.1 versus pH“, page 8)	
Run-in time	Measuring range 200 mg/L: First start-up approx. 3 h Measuring range 2000 mg/L: First start-up approx. 1 h Measuring range 20000 mg/L: First start-up approx. 30 min.	
Response time	T_{90}: approx. 3.5 min. at 10 °C T_{90}: approx. 1.5 min. at 45 °C	
Zero point adjustment	Not necessary	
Calibration	At the device, by analytical determination	
Interferences	O_3: increases the measured value strongly ClO_2: increases the measured value H_2O_2: very low influence on the measuring value (reduction of the PAA-signal)	
Influence of conductivity acids	1 % sulfuric acid, 1 % nitric acid or 1 % phosphoric acid in the water have no influence to the measuring behaviour	
Absence of the disinfectant	Max. 24 h	
Connection	mV version: 5-pole M12, plug-on flange Modbus version: 5-pole M12, plug-on flange 4-20 mA version: 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: IP68 2-pole terminal with mA-hood: IP65	
Material	Elastomer membrane, PVC-U, stainless steel 1.4571	
Size	diameter: approx. 25 mm Length: mV version approx. 190 mm (analog signal processing) approx.. 205 mm (digital signal processing) Modbus 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)	

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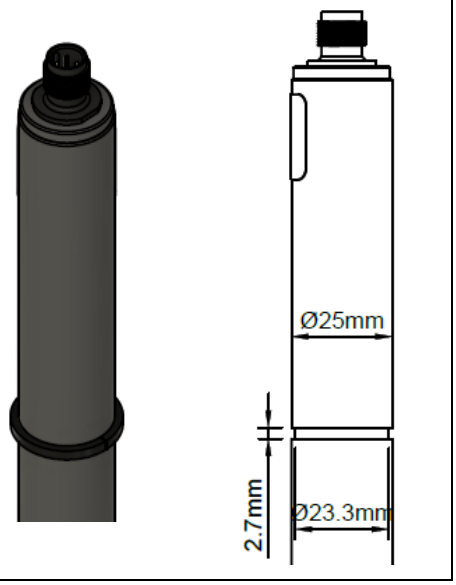
Storage	Sensor:	dry and without electrolyte no limit at +5 … +40 °C
	Electrolyte:	in original bottle protected from sunlight at +5 … +35 °C min. 1 year or until specified EXP-Date
	Membrane cap:	in original packing no limit at +5 … +40 °C (used membrane caps cannot be stored)
Maintenance	Regular control 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 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. P10.1 (Analog output, analog internal signal processing)

A potential-free electrical connection is necessary as the sensor electronic is not equipped with a galvanic.

	**Measuring range**	**Resolution**	**Output Output resistance**	**Nominal slope**	**Voltage supply**	**Connection**
P10.1-20-M12	0…20 ppm	0,01 ppm	0…-2000 mV 1 kΩ	-100 mV/ppm	±5 - ±15 VDC 10 mA	5-pole M12 plug-on flange Function of wires: PIN1: measuring signal PIN2: +U PIN3: -U PIN4: signal GND
P10.1H-M12	0…200 ppm	0.1 ppm		-10 mV/ppm		
P10.1N-M12	5…2000 ppm	1 ppm		-1 mV/ppm		
P10.1L-M12	0.005…2 % (20000 ppm)	0.001 % (10 ppm)		-1000mV/% (-0.1 mV/ppm)		
P10.1Up2000-M12	5…2000 ppm	1 ppm	0…+2000 mV 1 kΩ	+1 mV/ppm	10 - 30 VDC 10 mA	5-pole M12 plug-on flange Function of wires: PIN1: measuring signal PIN2: +U PIN3: power GND PIN4: signal GND PIN5: n. c.
P10.1Up5000-M12	50…5000 ppm	1 ppm		+0.4 mV/ppm		

(Subject to technical changes.)

2. P10.1 (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**	**Resolution**	**Output Output resistance**	**Nominal Slope**	**Power supply**	**Connection**
P10.1-20- An-M12	0…20 ppm	0,01 ppm	analog 0…-2 V (max. -2.5 V)	-100 mV/ppm	9-30 VDC approx. 20-56 mA	5-pole M12 plug-on flange Function of wires: PIN1: measuring signal PIN2: +U PIN3: power GND PIN4: signal GND
P10.1H-An-M12	0…200 ppm	0.1 ppm		-10 mV/ppm		
P10.1N-An-M12	5…2000 ppm	1 ppm		-1 mV/ppm		
P10.1L-An-M12	0.005…2% (20000 ppm)	0.001% (10 ppm)		-1000 mV/% (-0.1 mV/ppm)		
P10.1-20- Ap-M12	0…20 ppm	0,01 ppm	analog 0…+2 V (max. +2.5 V)	-100 mV/ppm		
P10.1H-Ap-M12	0…200 ppm	0.1 ppm		+10 mV/ppm		
P10.1N-Ap-M12	5…2000 ppm	1 ppm		+1 mV/ppm		
P10.1L-Ap-M12	0.005…2% (20000 ppm)	0.001% (10 ppm)		+1000 mV/% (+0.1 mV/ppm)		

(Subject to technical changes.)

3. P10.1 (digital output, digital internal signal processing)

- 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**
P10.1-20- M0c	0…20 ppm	0,01 ppm	Modbus RTU There are no terminating resistors in the sensor.	9-30 VDC	5-pole M12 plug-on flange Function of wires: PIN1: reserved PIN2: +U PIN3: power GND PIN4: RS485B PIN5: RS485A
P10.1H-M0c	0…200 ppm	0.1 ppm			
P10.1N-M0c	5…2000 ppm	1 ppm			
P10.1L-M0c	0.005…2% (20000 ppm)	0.001% (10 ppm)			

(Subject to technical changes.)

4. P10.1 4-20 mA (analog output, analog internal signal processing)

A potential-free electrical connection is necessary as the sensor electronic is not equipped with a galvanic.

4.1 Electrical connection: 2 pole terminal clamp

	**Measuring range**	**Resolution**	**Output** **Output resistance**	**Nominal slope**	**Voltage supply**	**Connection**
P10.1MA20	0…20 ppm	0,01 ppm	4…20 mA uncalibrated	0,8 mA/ppm	12…30 VDC R_L = 50Ω (12V) R_L 900Ω (30V)	2-pole terminal (2 x 1 mm²) Recommended: Round cable ∅ 4 mm
P10.1MA-200	0…200 ppm	0.1 ppm		0.08 mA/ppm		
P10.1MA-500	5…500 ppm	1 ppm		0.032 mA/ppm		
P10.1MA-2000	5…2000 ppm	1 ppm		0.008 mA/ppm		
P10.1MA-5000	50…5000 ppm	1 ppm		0.0032 mA/ppm		
P10.1MA-2%	0.005…2 % (20000 ppm)	0.001 % (10 ppm)		8.0 mA/% (0.0008 mA/ppm)		
P10.1MA-5%	0.05…5 % (50000 ppm)	0.01 % (100 ppm)		3.2 mA/% (0.00032 mA/ppm)		

(Subject to technical changes.)

4.2 Electrical connection: 5 pole M12 plug-on flange

	**Measuring range**	**Resolution**	**Output** **Output resistance**	**Nominal slope**	**Voltage supply**	**Connection**
P10.1MA20-M12	0…20 ppm	0,01 ppm	4…20 mA uncalibrated	0,8 mA/ppm	12…30 VDC R_L = 50Ω (12V) … R_L 900Ω (30V)	5-pole M12 plug-on flange Function of wires: PIN1: n. c. PIN2: +U PIN3: -U PIN4: n c.
P10.1MA-200-M12	0…200 ppm	0.1 ppm		0.08 mA/ppm		
P10.1MA-500-M12	5…500 ppm	1 ppm		0.032 mA/ppm		
P10.1MA-2000-M12	5…2000 ppm	1 ppm		0.008 mA/ppm		
P10.1MA-5000-M12	50…5000 ppm	1 ppm		0.0032 mA/ppm		
P10.1MA-2%-M12	0.005…2 % (20000 ppm)	0.001 % (10 ppm)		8.0 mA/% (0.0008 mA/ppm)		
P10.1MA-5%-M12	0.05…5 % (50000 ppm)	0.01 % (100 ppm)		3.2 mA/% (0.00032 mA/ppm)		

(Subject to technical changes.)

Spare Parts

Type	**Membrane cap**	**Electrolyte**	**Emery**	**O-ring**
P10.1 not: - P10.1L - P10.1MA-2% - P10.1MA-5%	M10.3N Art. no. 11057	EPS9H/W, 100 ml Art. no. 11025	S2 Art. no. 11906	20 x 1.5 silicone Art. no. 11803
P10.1L **P10.1MA-2%** **P10.1MA-5%**		EPS9L/W, 100 ml Art. no. 11024		

(Subject to technical changes.)

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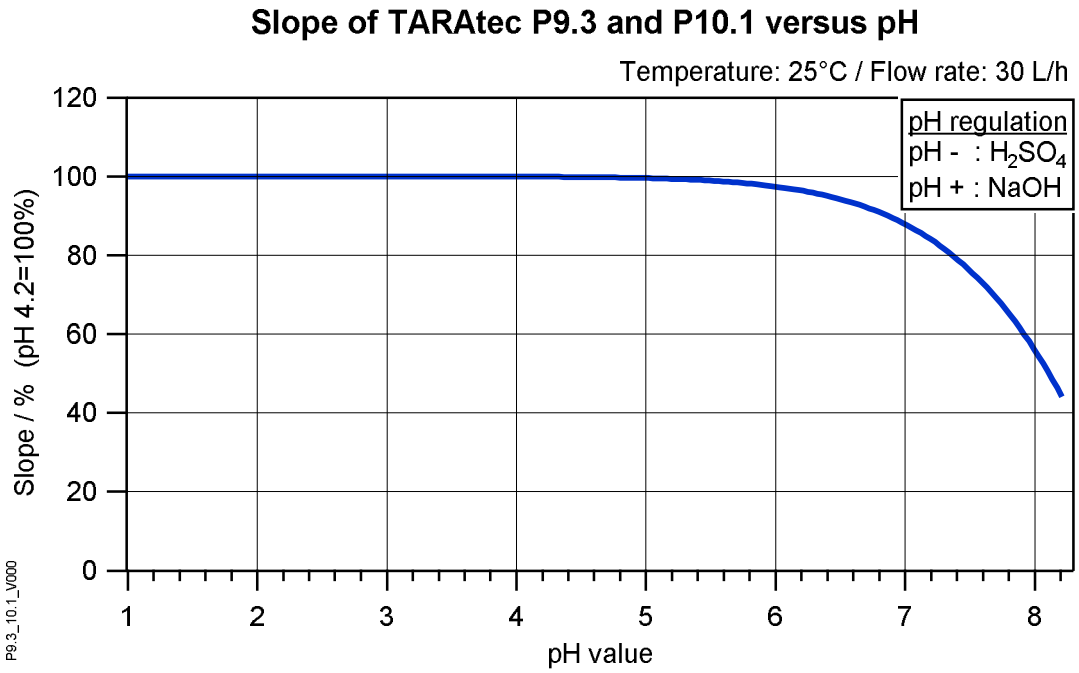
Slope of TARAtec P9.3 and P10.1 versus pH
Temperature: 25°C / Flow rate: 30 L/h
pH regulation
pH - : H2SO4
pH + : NaOH
Slope / % (pH 4.2=100%)
120
100
80
60
40
20
0
1
2
3
4
5
6
7
8
pH value
P9.3_10.1_V000