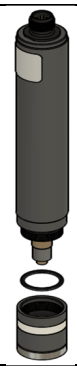


TARAtec PES7

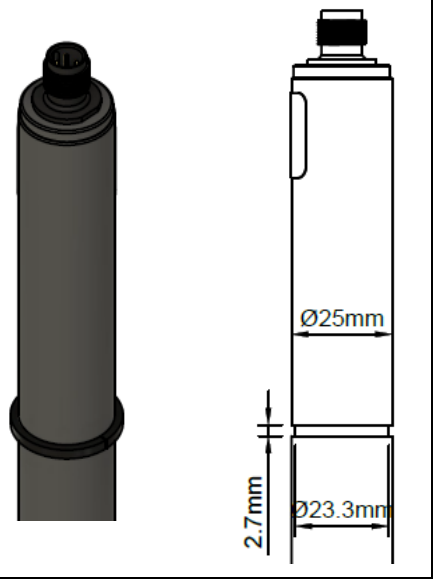
indicator	Peracetic acid
Application	All kinds of water treatment, also sea water Conductivity acids are tolerated. (e. g. bottle washing machine, CIP-plants) The membrane system is mechanical resistant. Surfactants (tensides) are partially tolerated.
Measuring system	Membrane covered, amperometric 2-electrode system
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 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: – 1.0 bar, – no pressure impulses and/or vibrations (see option 1)
Flow rate (Incoming flow velocity)	approx. 15-30L/h (33 – 66 cm/s) in TARAflow FLC, small flow rate dependence is given

TARAtec PES7

pH-range	pH 1 – pH 6	
Run-in time	First start-up approx. 1 … 3 h	
Response time	T_{90}: approx. 3 min.	
Zero point adjustment	Not necessary	
calibration	At the device, by analytical determination	
interferences	O_3: factor 2500 ClO_2: factor 1 H_2O_2: factor 0.005	
influence of conductivity acids	1 % sulfuric acid, 1 % nitric acid or 1 % phosphoric acid in the water have no influence on 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)	

TARAtec PES7

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 depend on the water quality: Change of the membrane cap: once a year (depending on the water quality) 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. PES7 (analog output, analog internal signal processing)

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

	**Measuring range**	**resolution**	**Output Output resistance**	**Nominal slope**	**Voltage supply**	**Connection**
PES7H-M12	0.5…200 ppm	0.1 ppm	0…-2000 mV 1 kΩ	-10 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 PIN5: n. c.
PES7N-M12	5…2000 ppm	1 ppm		-1 mV/ppm		
PES7L-M12	0.005…2 % (20000 ppm)	0.001 % (10 ppm)		-1000 mV/% (-0.1 mV/ppm)		
PES7HUp-M12	0.5…200 ppm	0.1 ppm	0…+2000 mV 1 kΩ	+10 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.
PES7Up-M12	5…2000 ppm	1 ppm		+1 mV/ppm		
PES7Up5000-M12	50…5000 ppm	1 ppm		+0.4 mV/ppm		

(Subject to technical changes!)

2. PES7 (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**
PES7H-An-M12	0.5…200 ppm	0.1 ppm	analog 0…-2 V (max. -2.5 V) 1 kΩ	-10 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 PIN5: n. c.
PES7N-An-M12	5…2000 ppm	1 ppm		-1 mV/ppm		
PES7L-An-M12	0.005…2% (20000 ppm)	0.001% (10 ppm)		-1000 mV/% (-0.1 mV/ppm)		
PES7H-Ap-M12	0.5…200 ppm	0.1 ppm	analog 0…+2 V (max. +2.5 V) 1 kΩ	+10 mV/ppm		
PES7N-Ap-M12	5…2000 ppm	1 ppm		+1 mV/ppm		
PES7L-Ap-M12	0.005…2% (20000 ppm)	0.001% (10 ppm)		+1000 mV/% (+0.1 mV/ppm)		

(Subject to technical changes!)

3. PES7 (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**
PES7H-M0c	0.5…200 ppm	0.1 ppm	Modbus RTU There are no terminating resistors in the sensor.	9-30 VDC approx. 20-56 mA	5-pole M12 plug-on flange Function of wires: PIN1: reserved PIN2: +U PIN3: power GND PIN4: RS485B PIN5: RS485A
PES7N-M0c	5…2000 ppm	1 ppm			
PES7L-M0c	0.005…2% (20000 ppm)	0.001% (10 ppm)			

(Subject to technical changes!)

4. PES7 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 galvanical isolation.

4.1 Electrical connection: 2 pole terminal clamp

	**Measuring range**	**resolution**	**Output** **Output resistance**	**Nominal slope**	**Voltage supply**	**Connection**
PES7MA-CC	0.5…200 ppm	0.1 ppm	4…20 mA uncalibrated	0.08 mA/ppm	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
PES7MA-D	5…500 ppm	1 ppm		0.032 mA/ppm		
PES7MA-M	5…1000 ppm	1 ppm		0.016 mA/ppm		
PES7MA-MM	5…2000 ppm	1 ppm		0.008 mA/ppm		
PES7MA-5M	50…5000 ppm	1 ppm		0.0032 mA/ppm		
PES7MA-XM	0.005…1 % (10000 ppm)	0.01 % (10 ppm)		16 mA/% (0.0016 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**
PES7MA-CC-M12	0.5…200 ppm	0.1 ppm	4…20 mA uncalibrated	0.08 mA/ppm	12…30 VDC R_L 50Ω…R_L 900Ω	5-pole M12 plug-on flange Function of wires: PIN1: n. c. PIN2: +U PIN3: -U PIN4: n c. PIN5: n. c.
PES7MA-D-M12	5…500 ppm	1 ppm		0.032 mA/ppm		
PES7MA-M-M12	5…1000 ppm	1 ppm		0.016 mA/ppm		
PES7MA-MM-M12	5…2000 ppm	1 ppm		0.008 mA/ppm		
PES7MA-5M-M12	50…5000 ppm	1 ppm		0.0032 mA/ppm		
PES7MA-XM-M12	0.005…1 % (10000 ppm)	0.01 % (10 ppm)		16 mA/% (0.0016 mA/ppm)		

(Subject to technical changes!)

Spare Parts

Type	Membrane cap	Electrolyte	Emery	O-ring
PES7H	M7.1N Art. no. 11014.1	EPS7/W, 100 ml Art. no. 11020	S2 Art. no. 11906	14 x 1.8 silicone Art. no. 11805
PES7HUp				
PES7N				
PES7Up				
PES7L	M7.1L Art. no. 11010.1	EPS7L/W, 100 ml Art. no. 11022		
PES7Up5000				
PES7MA-CC	M7.1N Art. no. 11014.1	EPS7/W, 100 ml Art. no. 11020		
PES7MA-D				
PES7MA-M				
PES7MA-MM				
PES7MA-5M	M7.1L Art. no. 11010.1	EPS7L/W, 100ml Art. no. 11022		
PES7MA-XM				

(Subject to technical changes!)

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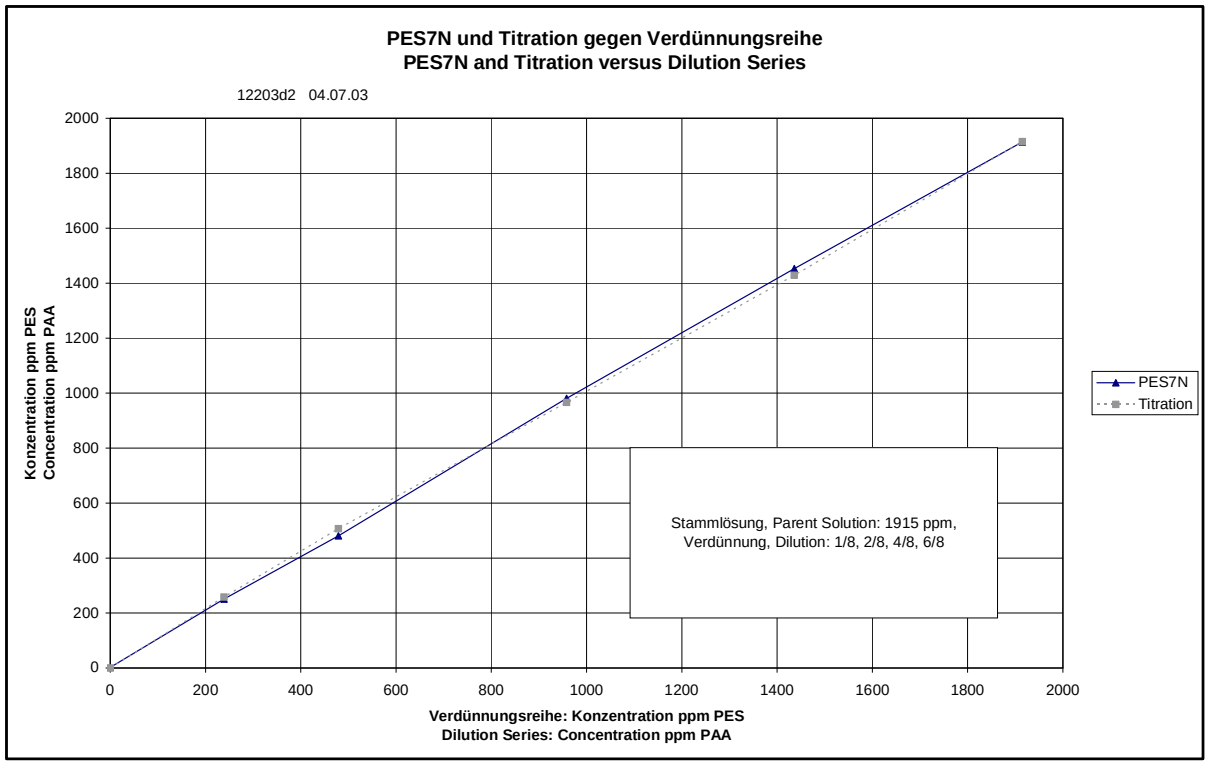
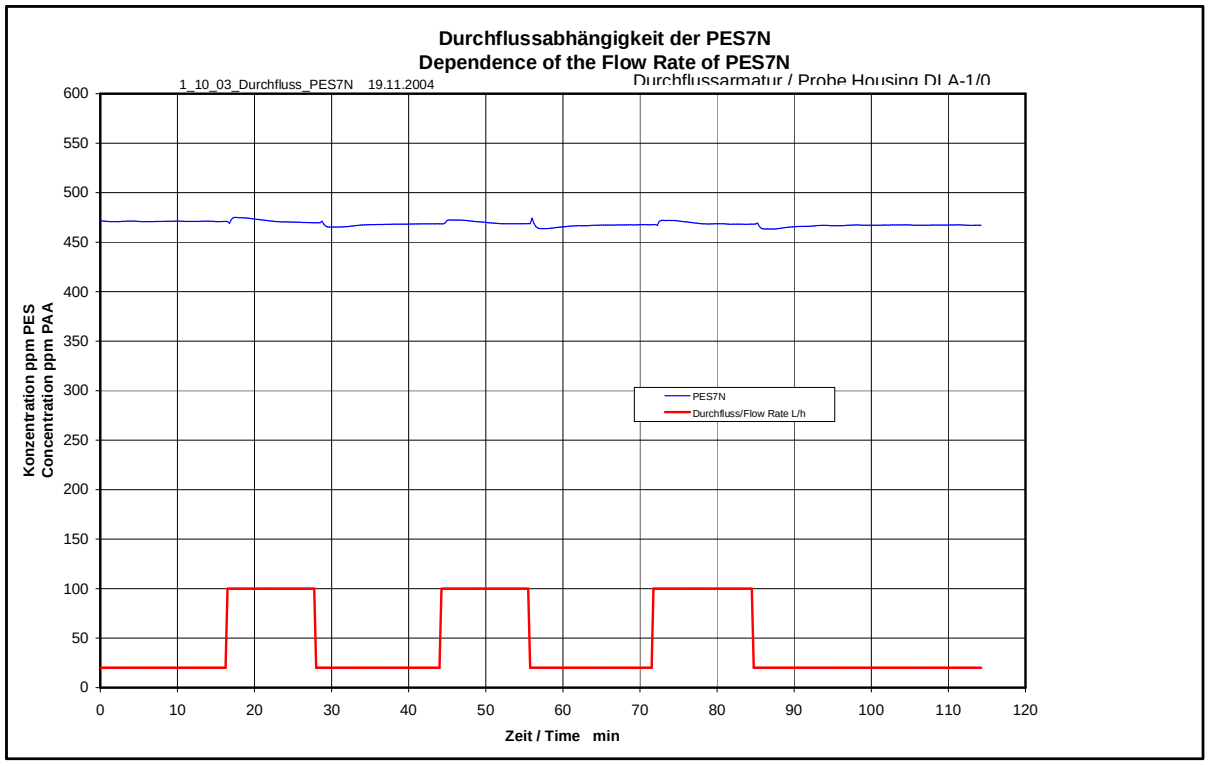

PES7N und Titration gegen Verdünnungsreihe
PES7N and Titration versus Dilution Series
12203d2 04.07.03
Konzentration ppm PES
Concentration ppm PAA
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Stammlösung, Parent Solution: 1915 ppm,
Verdünnung, Dilution: 1/8, 2/8, 4/8, 6/8
PES7N
Titration
Verdünnungsreihe: Konzentration ppm PES
Dilution Series: Concentration ppm PAA


Durchflussabhängigkeit der PES7N
Dependence of the Flow Rate of PES7N
1_10_03_Durchfluss_PES7N 19.11.2004
Durchflussarmatur / Probe Housing DLA-1/0
Konzentration ppm PES
Concentration ppm PAA
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100
110
120
PES7N
Durchfluss/Flow Rate L/h
Zeit / Time min