



**TOC**  
DETECTOR

# miniTOC

*online/offline control  
for pure and ultra pure water*





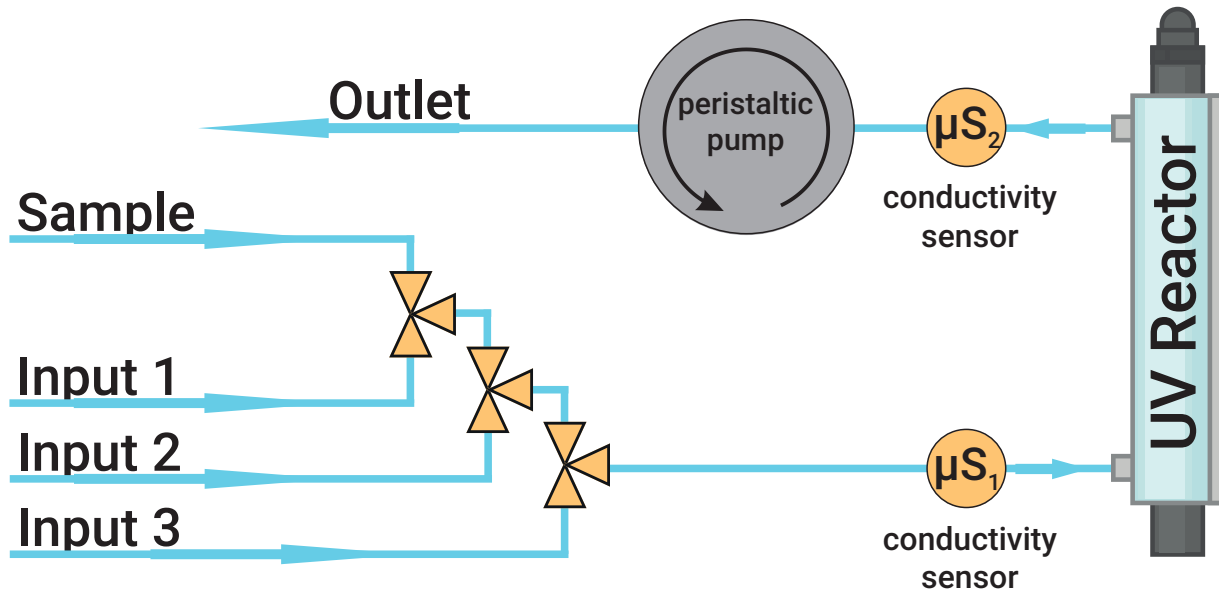
The miniTOC system is designed for total organic carbon (TOC) online/offline monitoring of pure and ultra pure water.

The miniTOC monitoring device uses the high speed flow through concept and the efficient „direct surface“ UV oxidation. In combination with conductivity detection the miniTOC guarantees a fast monitoring of values.

By measuring the conductivity before and after the UV oxidation the TOC value can be calculated.



## Principle of miniTOC



## Technical Specifications



method & detection	UV oxidation & conductivity
sample volume flow	approx.14 mL/min
period of measurement	2 sec (online mode)   1 min + 5 min purging (offline mode)
measurement range	0.5 to 1000 ppb
detection accuracy	± 0.5 ppb or 1 % (whatever is greater)
ports	1 for sample, 1 for SST (basic)   1 for sample, 3 for SST (pro)
related norms	USP <643>, EP 2.2.44, DIN EN 1484
ambient parameters	relative humidity: 10 to 95 %, temperature: 10 to 45 °C
interface ports	analog (0 - 20 mA), according to Namur NE43
dimensions, weight, power	300 x 200 x 500 mm, 14 kg, 110 - 230 V, 50 Hz, 60 Watt

# Sample Requirements

type of sample	pure to ultra pure water
sample input conductivity	< 2 $\mu\text{S}/\text{cm}$ (upgradable to < 10 $\mu\text{S}/\text{cm}$ )
inlet pressure	< 0.5 bar
sample temperature	< 50 $^{\circ}\text{C}$

miniTOC

99,7 % test passed ok

cont.

SST

SST

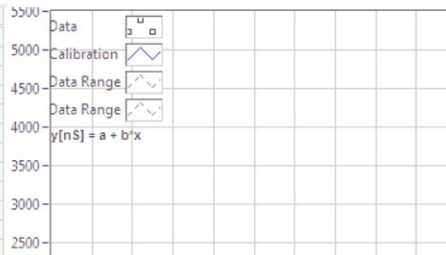
$$\frac{\text{resp. eff. } 99,7}{\text{rl [ppb]} 601,5} = \frac{(572,0 - 8,8)}{(810,0 - 8,8)} \times 100 [\%]$$

Cal

$$y[\text{ns}] = a + b \cdot x$$

a 0,0000 R<sup>2</sup> 0,0000  
b 0,0000

date	time	TOC [ppb]	info	diff. (C2 - C1)
27.03.2019	13:23	0614	Sucrose	3298,1
27.03.2019	13:24	0611	Sucrose	3282,6
27.03.2019	13:25	0607	Sucrose	3262,6
27.03.2019	13:26	0608	Sucrose	3265,7
27.03.2019	13:33	0555	Benzo.	2980,4
27.03.2019	13:34	0568	Benzo.	3050,8
27.03.2019	13:35	0582	Benzo.	3128,5
27.03.2019	13:36	0583	Benzo.	3131,3
27.03.2019	13:43	0009	Water	48,7
27.03.2019	13:44	0008	Water	45,4
27.03.2019	13:45	0009	Water	45,7
27.03.2019	13:46	0008	Water	43,5



## Options

### configuration miniTOC pro

The miniTOC can be ordered as configuration with 4 inputs. This and an additional software upgrade option allows the user to measure up to 3 loops sequentially and configure the duration of the interval.



### heat exchanger

If the medium temperature is higher than 50 °C a heat exchanger is required.



### IP54

The housing protects the miniTOC from dust deposits and water jets.

### check of sample flow

Initiates alarm in case of inlet flow is zero in combination with pressure sensor.

### 21 CFR part 11 software

Software with 21 CFR part11 conformity for pharma applications.

### pressure regulator

If the medium pressure is higher than 1 bar a pressure transducer is required.

### offline version & autosampler

An offline configuration is available for the miniTOC. By using the offline mode of the miniTOC pro the system is also upgradable with an autosampler with 15 positions for 100 mL vials.



## Consumables

Description	Cat. No.
UV reactor	921-0040
tube for peristaltic pump	825-0196
calibration solution for miniTOC, USP traceable	275-0041
SST Kit miniTOC, USP traceable	275-0042
documents for IQ/OQ validation	915-0066
documents for IQ/OQ validation (CFR conform)	915-0067
100 mL vials for autosampler	275-0046
septa for vials for autosampler	275-0060



**TOC**  
DETECTOR

*Made in Germany, more than 25 years...*



**membraPure GmbH**  
Wolfgang-Küntscher-Str. 14,  
16761 Hennigsdorf/Berlin, Germany  
Tel.: +49 3302 - 201 20 0



[info@membrapure.de](mailto:info@membrapure.de)  
[www.membrapure.de](http://www.membrapure.de)