



TOC
ANALYZER



miniTOC²

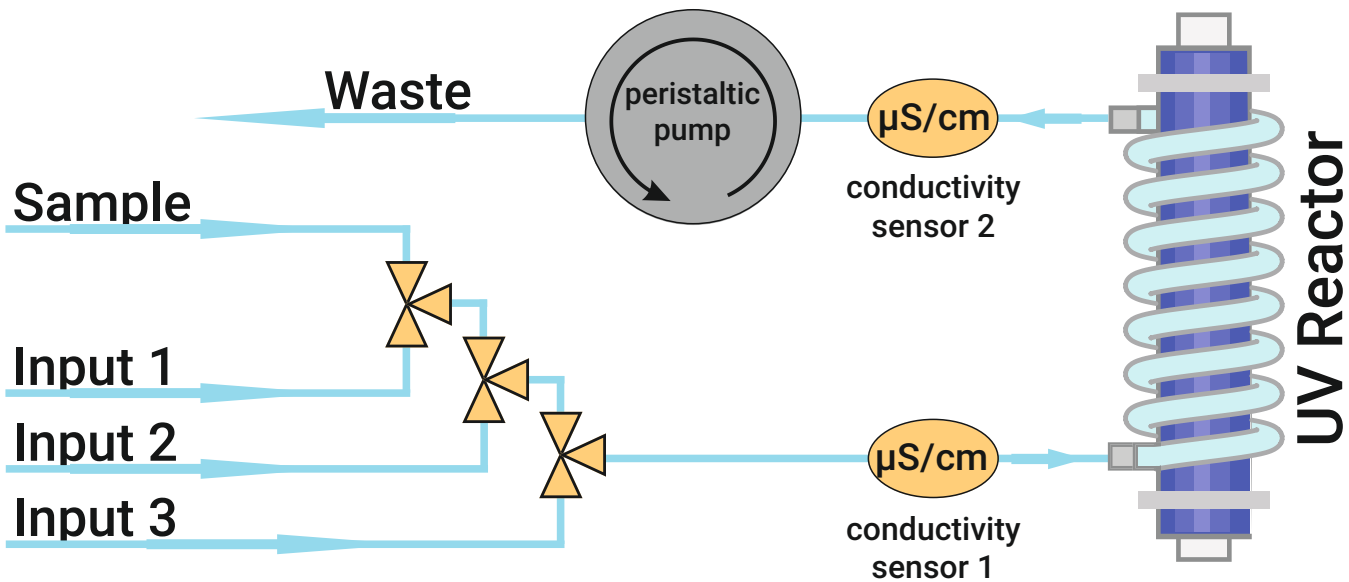
*The next generation TOC analyzer for
ultra pure and pure water application*



The miniTOC² system represents the next generation of miniTOC. Like its predecessor the system has been specifically developed to facilitate the online/offline monitoring of total organic carbon (TOC) in pure and ultra pure water.

The reliability of fast and accurate readings through conductivity detection has been further enhanced through the adaptation of the direct surface UV oxidation geometry and the optimization of fluidics and sensor coordination.





Technical Specifications



method & detection	UV oxidation & conductivity measurement
sample volume flow	approx. 7 mL/min
period of measurement	max. 2 sec (monitor mode) 1 min + 5 min purging (sample mode)
measurement range	0.5 to 1500 ppb (2000 ppb*) (LOD 0.009 ppb ²)
detection accuracy	< 50 ppb ± 0.5 ppb, > 50 ppb ± 1 %
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
interface ports	analog (0 - 20 mA), according to Namur NE43, Ethernet
IP 54	included

* Upon request. Please contact us!

¹ based on ICH Q2 (R1) examined under special measurement

Technical requirements

type of sample	pure to ultra pure water
sample input conductivity	< 2 $\mu\text{S}/\text{cm}$ (upgradable to < 10 $\mu\text{S}/\text{cm}$)
sample inlet pressure	< 0.5 bar (> 0.5 bar pressure reducer is required)
sample temperature	< 50 °C (> 50 °C heat exchanger is required)
ambient parameters	relative humidity: 10 to 95 %, temperature: 10 to 45 °C

Options

sample mode

A sample mode configuration is available and used to measure separate samples offline. This sequence can be customized by the user.



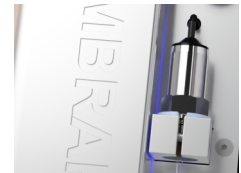
additional pump

The miniTOC² series systems can be equipped with a second pump head, which alternates to handle sample transport, thus extending runtime and halving the associated pump tube replacement.



check of inlet pressure

Initiates alarm in case of inlet flow is zero and system generates a negative pressure.

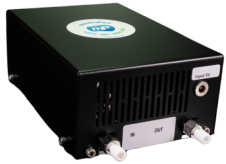


multiline mode

The miniTOC² pro provides 4 different inlets. The additional software upgrade allows the user to measure up to 3 loops sequentially and to configure the duration of each interval measurement separately.



Accessories



heat exchanger

If the temperature of the sample is higher than 50 °C, a heat exchanger is required*.



pressure regulator

If the inlet pressure of the sample is higher than 0.5 bar a pressure regulator is required*.



bottle kit

Set of empty glass bottles of 500 mL with colour coated caps for easy connection. Facilitates the process for calibration and system suitability test. In the case of USP traceable standards, we are pleased to provide a set of the corresponding colourless and uncoded lids with the corresponding connectors.



bottle holder kit

We also offer a bottle holder kit for the commercially available USP traceable standards with a volume of 500 mL. This enables the user to carry out a calibration or SST if there is insufficient space (e.g. wall mounting without storage space). The bottles are inserted into the colour-coded holders, which have an integrated fluidic connection.

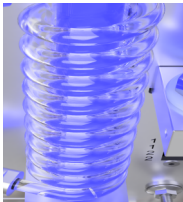
*Both pressure reducer and heat exchanger are equipped with the corresponding connectors. This enables the customer to work with a pre-fixed solution from the pressure reducer onwards, which ensures a simple connection between the accessories and the TOC analyser.

Features / Hardware



conductivity sensors

Shielded sensors reduce the impact of external factors such as temperature fluctuations, thereby enhancing measurement stability while delivering performance comparable to certified conductivity meters, ensuring compliance with industry standards.



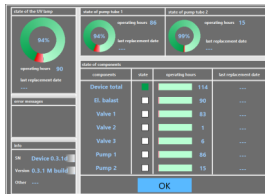
UV reactor

The improved and complete new reactor design incorporates a glass filament barrier, ensuring that the liquid does not come into direct contact with the UV lamp. With no cooling effect from the fluid, the UV lamp operates at an optimal temperature of 60-65°C with reduced thermal losses. This leads to much higher oxidation efficiency.



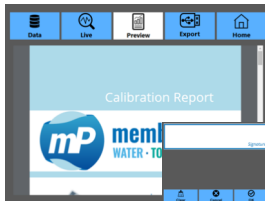
IP54

The vent cover, the rotary power switch, the elastic USB socket and the screen of the miniTOC² is supplied with IP54 protection as standard. It is providing increased resistance against dust and water splashed, ensuring reliable operation even in challenging environments. What used to be a screen cover and was available as an option is now always integrated into a new complete PC.



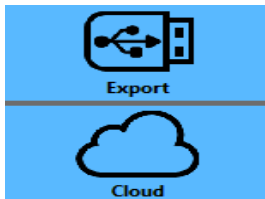
system status

A complete software overhaul delivers a detailed status overview, presenting general information about the device's status in a clear and concise manner. This includes operating hours for individual sensors, pumps and the UV lamp.



Software Data Viewer

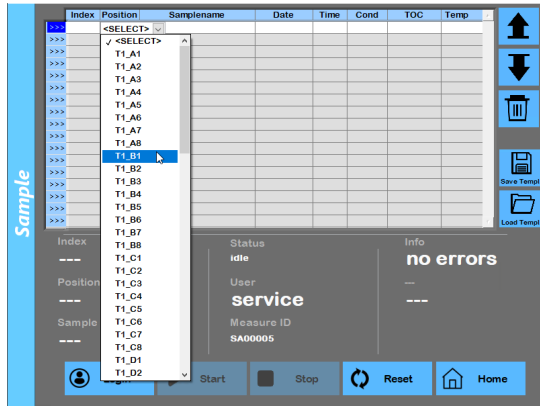
As an integral part of the miniTOC² software, the newly developed Software Data Viewer allows users to zoom in and out of graphical data. Reports can be compressed for easier archiving and email transmission. The report design can be customized. With the electronic signature function authorized users can sign documents on the touchscreen.



data export

Measurement data can be exported to an external storage device in various formats like pdf, csv or html. Additionally, customers have the option to send the data to a cloud via a network connection, enabling them to provide it to the membraPure customer support, for instance for error diagnosis purposes. After a certain period of time, the temporarily stored data is automatically deleted from the cloud.

Autosampler



With the software option sample mode, the miniTOC² can also be operated with a new type of autosampler, which has a range of new configurations and functions. The autosampler is equipped with two identical trays.

Customers choose between the two configurations at the time of purchase, with the option of changing the configuration at a later date and even using both.

Configuration 1 includes two racks, each providing 40 sample positions for 40 mL vials for applications requiring a higher number of sample positions.

Configuration 2 features two racks, each providing 35 sample positions for 40 mL vials, a dedicated wash port and space for five 100 mL bottles, which can be used for reference solutions.



Configuration 1
2x 40 rack, 40 mL



Configuration 2
2x 35 rack, 40 mL
5x bottles, 100 mL

Consumables & Spare parts

Description	Cat. No.
UV lamp	827-0129
tube for peristaltic pump	827-0130
calibration solution for miniTOC, USP traceable	275-0041
SST Kit miniTOC, USP traceable	275-0042
documents for IQ/OQ/PQ	278-0003/04/05
documents for IQ/OQ/PQ (CFR conform)	278-0009/10/11

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