

Technical Data

Measurement and Sample Preparation

Type of measurement:	thermal combustion at 1,200°C
Measuring range:	0 - 2,000 ppb
Response time:	< 3 minutes (application dependent)
Reproducibility:	2% ± 10 ppb
Accuracy:	± 2%

Operation and Data Output

Graphic LCD-screen, high resolution, back-lit
Autostart-function
Self-explanatory software (based on Linux/Java)
According to USP Chapter 643 and Ph. Eur. 2.2.44
Industry standard data interface to office PC

Connections

Sample water, in:	stainless steel AD 6mm (Swagelok)
Sample water, out:	PVC tube AD 8mm
Electrical power:	~115 / 230V, 50 / 60 Hz
Analog output:	0/4 - 20 mA
Serial interface:	RS 232 for remote control Malfunction alarm, life-zero
Status output:	4 relais contacts
Remote control:	via TCP/ IP protocol (internet)

Dimensions and Weight

Cabinet:	steel IP 54
Options:	stainless steel, IP 65, ATEX zone 1 and zone 2
Dimensions:	1,060 x 700 x 520 mm (H x W x D)
Weight:	approx. 115 kg (254lb)

The information and the illustrations in this brochure on appearance, service, measure, weight, consumption, maintenance times and so forth, are not binding and only an approximate description. It does not assure guaranteed qualities. This product description corresponds to the state of printing. Deviations in design, tint, as well as changes of the scope of delivery remain reserved.
Version Q TOCpharma-2 E 38 11

If you require more information about our products e.g. for on-line TN_b , TP, COD, BOD, ammonium, respiration or toxicity measurement, please call us.

The TOC Company

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The TOC Company

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**The Consequent Solution
for TOC Determination**

QuickTOCpharma

Fast Continuous On-line
TOC Measuring System

- For Pharmaceutical Water
- According to - USP Chapt. 643
- EP 2.2.44
- Precise, Fast and Accurate

Precise continuous TOC analyses in low ppb ranges for pharmaceutical water

QuickTOCpharma of LAR Process Analysers AG is an on-line measuring system for the detection of total organic carbon (TOC) in pharmaceutical water particularly for "Highly Purified Water" (HPW) and "Water for Injection" (WFI), according to USP Chapter 643 and EP 2.2.44.

The TOC measuring system **QuickTOCpharma** was designed in cooperation with customers from the pharmaceutical industry in consideration of their special requirements. Additional to general requirements the accuracy of the measuring results was especially focused upon. This can be guaranteed by using the patented LAR high temperature method (1,200°C).

With a brand new measuring method patented from LAR easy operation and calibration are considered also.

According to its special applications for "Highly Purified Water" (HPW) and "Water for Injection" (WFI) the **QuickTOCpharma** was optimised for measuring ranges of 500 ppb. But measuring ranges up to 2,000 ppb can be realised as well.

This measuring system focuses of course also on the adjustment to the constantly increasing demands in the market. It provides easily precise and accurate measurements in low level ppb ranges.

• Thermal Combustion Technology

The **QuickTOCpharma** was designed to work without maintenance-intensive catalysts by using a temperature of more than 1,200°C. Regular thermic-catalytic digestion methods only use temperatures of 680° to 1,000°C. The operation with a higher temperature enables the **QuickTOCpharma** to oxidise fast and completely even difficult to decompose substances and mixtures of materials regardless of their composition.

• Fast and Precise Measuring Results

The **QuickTOCpharma** works in a BATCH-Mode and measures every 3 minutes the respective T_{100} values. This guarantees the precise determination of short and transient peaks throughout the day. With the Batch-Mode the analyser is particularly useful for measurements on different measuring points. (Multi-channel operation).

FEATURES AND BENEFITS

- Catalyst-Free Technique
- Highest Combustion Temperature (1,200°C)
- Easiest Calibration and Validation
- Highest Reproducibility
- Fast Response Time of 3 Minutes
- Closed System to Prevent Contaminations
- Lowest Maintenance Costs
- Infrared Detection
- Lowest Operational Costs
- Easiest Operation
- Software according to 21 CFR Chapter 11
- TN_b Detection Simultaneously (Optional)
- Single and Dual Channel Operation
- No Memory effects
- Multi-Channel Measurement (Optional)



CATALYST-FREE



THERMAL OXIDATION

• Measurement Principle

The analytical part of the **QuickTOCpharma** is a closed system and is thereby protected from environmental influences and other contaminants. This enables the **QuickTOCpharma** to perform precise measurements in the low ppb range.

The TOC is measured by injecting small defined sample volumes into the carrier gas stream that circulates continuously through a high-temperature furnace where the water vaporises and all carbon compounds are converted safely to CO_2 . As option the **QuickTOCpharma** can purify ambient air into pure carrier gas so that no bottled air or instrument air is needed.

The injection system is connected with the carrier gas stream through a ventile system. Under normal conditions the sample is directed through the injection-loop by a suction pump to prevent the sample from any contamination during the process.

For the injection the carrier gas stream is shortly directed through the injection-loop which leads to the actual injection into the high temperature furnace. At more than 1,200°C all organic carbon is converted to CO_2 .

• Calibration and Qualification

With the unique calibration method of the **QuickTOCpharma** for which LAR has filed a patent it is now possible to check easily the system for correct functioning at any time. For this a calibration gas is used during the calibration period. It is injected into the measuring system similar to the water sample. With the extremely high combustion temperature of 1,200°C the complete oxidation of all organic compounds is guaranteed. With this easy procedure the system can always be controlled.

The furnace temperature is of course monitored continuously and it is therefore ensured that measurements can only be performed at the specified combustion temperature.

Furthermore it is very easy for the operator to conduct suitability tests with the **QuickTOCpharma**. The necessary standards can be provided by LAR if required.