

General analyzers
organic carbon

TOC-L

TOC-V_w

TOC-4200



Fast and accurate determination of total organic carbon content in samples of various nature

Shimadzu offers instruments for both laboratory sample analysis and on-line analysis, including multi-channel measurement with automatic switching of several controlled flows.

Application areas



Ecology

- Monitoring the quality of drinking water.
- Monitoring the condition of natural water sources, studying and monitoring organic pollution of rivers, lakes, ponds and other types of natural waters.
- Monitoring and managing the quality of industrial and domestic wastewater, industrial and municipal wastewater treatment systems, monitoring the quality of purified and recycled water at enterprises.
- Study and monitoring of the degree of contamination of soils, silts and sediments, etc.

Pharmaceutical industry

- Assessment of the quality of pure and ultrapure water for injection.
- Study and monitoring of water used for the possible presence of organic contaminants.
- Validation of cleaning processes for technological equipment.

Chemical industry

- Evaluation of chemical raw materials from the point of view of impurities.

TOC-L

analyzers with a low-temperature thermal catalytic oxidation reactor

- The method of thermal catalytic oxidation at 680°C developed by Shimadzu specialists makes it possible to avoid vitrification of inorganic salts, and thus increase the service life of the catalyst and reaction tube.
- Ultra-wide range of working concentrations from 4 µg/L to 30,000 mg/L – the ability to work with both highly pure and heavily polluted water.
- Fully automated sample preparation ensures removal of inorganic carbon and sample dilution. Multifunctional dosing system. Pre-treatment of the sample in the TOC analyzer prevents atmospheric contamination.



TOC-L

Technical specifications

Model	Highly sensitive model		Standard model	
	TOC-L CPH	TOC-L CSH	TOC-L CPN	TOC-L CSN
Measurement method	680°C catalytic combustion - non-dispersive IR detection			
Control	only from PC	double control	only from PC	double control
Indicators	TC, IC, TOC (=TC-IC), NPOC Option: POC, TOC (=NPOC+POC), TN			
Sample type	Water (optional solid or gaseous)			
Measuring range	TC: 0–30,000 mg/L IC: 0–35,000 mg/L TN: 0–10,000 mg/L POC: 0–500 mg/L		TC: 0–30,000 mg/L IC: 0–30,000 mg/L TN: 0–10,000 mg/L POC: 0–500 mg/L	
Detection limit	TC, IC: 4 µg/L TN: 5 µg/l		TC: 50 µg/l, IC: 4 µg/l, TN: 20 µg/l	
Measurement accuracy	CV 1.5% max.			
Dilution function	Dilution 2–50 times (automatic using a syringe pump)			
Carrier gas	Air of special purity (content of CO, CO ₂ , HC no more than 1 ppm) It is possible to use gaseous nitrogen (except for work with the attachment for determining total nitrogen)			
Measurement time	TC: ~3 min, IC: ~3 min		TC: ~3 min, IC: ~4 min	
Volume of injected sample	10~2000 µl		10~150 µl	
Dimensions, mm	340 (W)×660 (G)×480 (B)			
Weight	35 kg			

Accessories to expand the capabilities of your devices

Auto-dosers of various types to expand the functionality of ASIL, OCT-L devices – for TOC-L models; ASI-V, OCT-1 – for TOC-Vw models



ASI-V



OCT-L

TOC-Vw

analyzers with «wet» sample decomposition

- In TOC-V models of TOC analyzers a conversion method is used that combines chemical oxidation and UV irradiation.
- Oxidation is carried out with a persulfate solution, while the TOC-V analyzer includes automatic function control of possible contamination of the reagent used in order to eliminate the influence of impurities on the parameters being determined and to guarantee the truth of their values.
- TOC-V Analyzer Models can be used to analyze high-purity water samples with a total organic carbon content of 0.5 µg/l.



TOC-VWS



TOC-VWP

Technical specifications

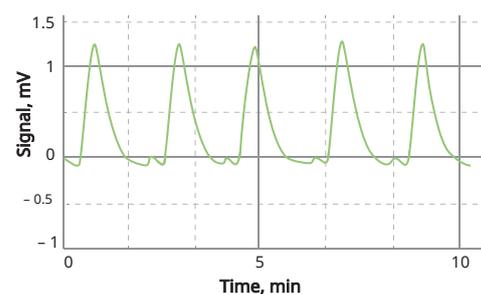
Model	TOC-V WS	TOC-VWP
Measurement method	«Wet» mineralization - dispersive-free IR detection	
Control	built-in keyboard and display	only from PC
Indicators	TC, IC, TOC, NPOC	
Sample type	Water	
Measuring range	TC: 0–3500 mg/l,	
Detection limit	IC: 0–3500 mg/l 0.5 µg/l	
Measurement accuracy	CV 1.5% max; CV 2% max from 1000 mg/l and above	
Dilution function	Dilution 2-50 times for high concentrations	
Carrier gas	High purity nitrogen (pressure of about 300–600 kPa)	
Measurement time	TC: ~4 min, IC: ~4 min	
Volume of injected sample	350–20000 µl	
Dimensions, mm	440 (W)×560 (G)×460 (B)	
Weight	40 kg	

Determination of trace amounts of TOC in ultrapure water

Highly accurate TOC determination at levels as low as 2 µg/L (2 ppb).

Analytical conditions

Analyzer	TOC-Vws
Principle	Determination of TOC by IC removal by oxidation and subsequent purging
Volume of injected sample	20.4 ml
Number of measurements	5



Attachment for determination of total nitrogen by thermal decomposition and chemiluminescent detection for TOC-L models



TNM-L

Solid and Gas Analysis Attachment: SSM-5000A for TOC-L and TOC-Vw Models



SSM-5000A



TOC-4200

streaming multichannel TOC analyzer

TOC-4200 allows you to perform measurements in automatic mode in a flow (up to 6 lines).

Analysis of both ultrapure water and organically loaded samples

- Various samplers allow working with both ultra-pure and heavily polluted water containing undissolved particles.
- The range of working concentrations is 5–20,000 mgC/l. Possibility of carrying out highly sensitive measurements with a working concentration of up to 1 mgC/l.
- The pre-treatment unit for heavily contaminated water includes a unique flushing function and a special sequence of actions to control fouling and biological contamination.

Web Monitoring

- Installing an additional board allows you to connect the device to the network and view measurement results and warnings in real time.

Possibility of determining total nitrogen

Function for converting TOC to COD (Chemical Oxygen Demand)



TOC-4200

Technical specifications

Measurement method	680°C catalytic combustion - non-dispersive IR detection
Control	Color LCD touch screen
Indicators	TC, NPOC. Option: IC, POC, TOC (=TC-IC, =NPOC+POC), TN
Measuring range	From 0-5 to 0-1000 mgC/L (from 0 to 20000 mgC/L with dilution function)
Dilution function	Dilution 2–50 times (automatic with syringe pump). Possibility of constructing a multi-point calibration curve using one standard sample.
Carrier gas	Air of special purity, compressed air. It is possible to use gaseous nitrogen (except for determination of total nitrogen).
Data storage system	The built-in memory allows you to store up to 20,000 measured values, 100 calibration values, and 100 warnings.
Measurement cycle	4 min (NPOC)
Design of the device	Floor standing
Dimensions, mm	550 (W)×383 (G)×1240 (B)
Weight	70 kg



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