C391-E079D

SHIMADZU
Excellence in Science

Total Organic Carbon Analyzer

TOC-L

Global Standard for TOC Analyzers

Combustion Catalytic Oxidation/NDIR Detection Method TOC Analyzers with a User-Friendly Design

TOC-V series, the world's top seller, has evolved.

- Easy-to-operate keyboard and easy-to-read TFT color LCD screen (standalone model)
- Output of measurement data to USB memory sticks or conventional PC printer (standalone model)
- A wealth of options, including sea water sample measurement and compatibility with small samples volumes
- Space-saving and energy-saving design

A Full Range of Models and Options Provide Total Solutions to Suit Your Application

- Select from PC models, convenient for processing measurement data, and user-friendly standalone models
- Add options to measure everything from solid samples to gas samples
- TN measurement is also possible with the addition of the TN unit

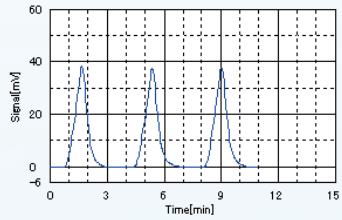
CONTENTS

TOC-L

TOTAL ORGANIC CARBON ANALYZER

Process Control

Effluent treatment process control
Processes
(Plating, etching, washing, water-based cutting)
Ultrapure water recycling and
re-purification processes

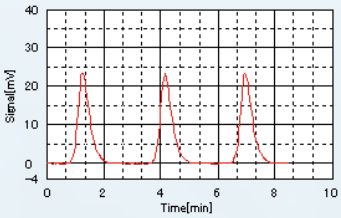


Example of TOC Measurement of Nickel Plating Solution

Analysis instrument: TOC-LCPH
Measurement method: TOC measurement of Nickel Plating Solution,
thousand fold dilution with pure water
(TOC measurement (NPOC measurement) with sample acidification and sparging)
Measurement results: TOC = 12.80 mg/L (C.V. = 0.22 %)
(before dilution TOC = 1.280 %)

Quality Control

Drinking water
Aluminum foil
Electronic components
Water supply equipment
Raw materials
(Sulfuric acid, aqueous ammonia,
hydrogen peroxide solution, etc.)



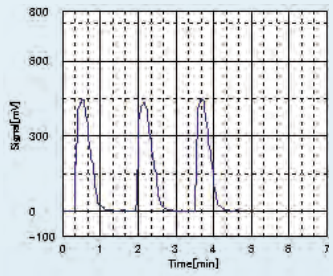
Example of TN Measurement of Ammonium Sulfate Aqueous Solution

Analysis instrument: TOC-LCPH + TNM-L
Measurement method: TN measurement of Ammonium Sulfate Aqueous Solution,
prepared nitrogen concentration = 10 mg/L
Measurement results: TN = 9.91 mg/L (C.V. = 0.30 %)

Shimadzu TOC
Utilized in a

Investigations and Experimental Research

Global environment and eutrophication
River water, lakes and marshes, underground water,
sea water, soil, sludge, sediments, etc.
Biodegradable plastics and cement secondary products



Example of TC (Total Carbon) Measurement of Poultry Manure Compost

Analysis instrument: TOC-LCPH + SSM-5000A (980 °C electric furnace)
Measurement method: direct TC measurement of commercially available
poultry manure compost, pulverized with a mortar
Measurement results: TC = 21.26 %C (C.V. = 2.98 %)

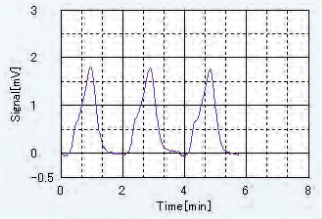
Water Quality Control

Tap water (Drinking water, raw water)

Ultrapure water
(Ultrapure water used in semiconductor manufacturing, Liquid Crystal manufacturing, pharmaceutical manufacturing, and nuclear power generation, as well as used ultrapure water)

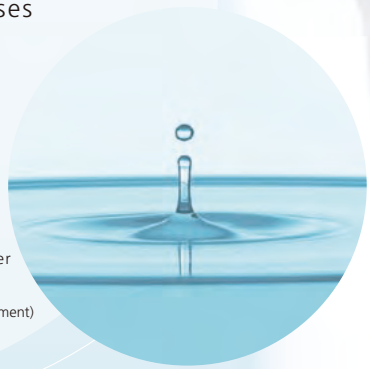
Effluent
(Industrial effluent, water treatment effluent, etc.)

Pool water, spa water, bath water, boiler water, water from industrial processes



Example of TOC Measurement of Tap Water

Analysis instrument: TOC-LCPH
Measurement method: TOC measurement (NPOC measurement) with sample acidification and sparging
Measurement results: TOC = 932 μg/L (C.V. = 0.72 %)

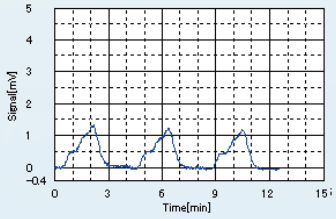


Analyzer Variety of Fields

Pharmaceutical Manufacturing

Pharmaceutical water control

Evaluation of cleaning effectiveness
(Cleaning validation)



Example of TOC Measurement of Purified Water

Analysis instrument: TOC-LCPH
Measurement method: TOC measurement (NPOC measurement) with sample acidification and sparging
Measurement results: TOC = 63.3 μg/L (C.V. = 2.05 %)

Shimadzu 680 °C Combustion Catalytic Oxidation/ NDIR Detection Method

Measurement System Combining Experience and Reliability

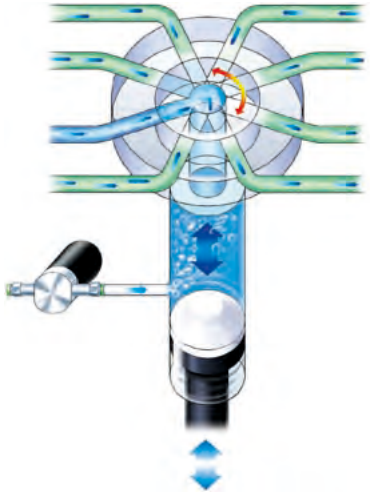
Features

The most important feature of a TOC analyzer is its ability to efficiently oxidize not only easily decomposed, low molecular weight organic compounds, but also hard-to-decompose insoluble and macromolecular organic compounds. The 680 °C combustion catalytic oxidation method, developed by Shimadzu and now used worldwide, can efficiently analyze all organic compounds.

- Extremely wide measurement range from 4 μg/L to 30,000 mg/L, applicable to everything from ultrapure water to highly contaminated water (TOC-LCSH/CPH)
  - Capable of TC, IC, TOC (= TC-IC), and NPOC measurement; options enable POC (volatile organic carbon), TOC via POC + NPOC, and even TN (total nitrogen) measurements
  - The blank check function evaluates system blanks by measuring ultrapure water processed automatically within the instrument
  - The automatic dilution function enables measurements up to 30,000 mg/L
- Reliable sample injection system
  - Automatic sample acidification and sparging
  - The automatic dilution function reduces sample salinity, acidity, and alkalinity, significantly extending the period of use of catalysts and combustion tubes (The period of use depends on the sample and measurement conditions.)
  - Stat or priority samples can be added at anytime to the analysis schedule without interrupting operation even when an autosampler is used
- Select from 4 models to suit your application
  - LCD and keyboard-equipped standalone models, and PC-controlled models
  - High-sensitivity model with a detection limit of 4 μg/L, suitable for a variety of applications including pure water measurements, as well as a standard model designed with cost/performance in mind
- Suitable for aqueous samples, as well as gas and solid samples (with manual injection kit and solid sample combustion unit)
- Compressed air can be used as the carrier gas (with carrier gas purification kit)
- Compatible with small sample volumes (with optional kit)
- Sea water samples can be continuously measured with minimal maintenance (with combustion tubes for high salt samples)

TOC-LCSH/CSN Standalone Model

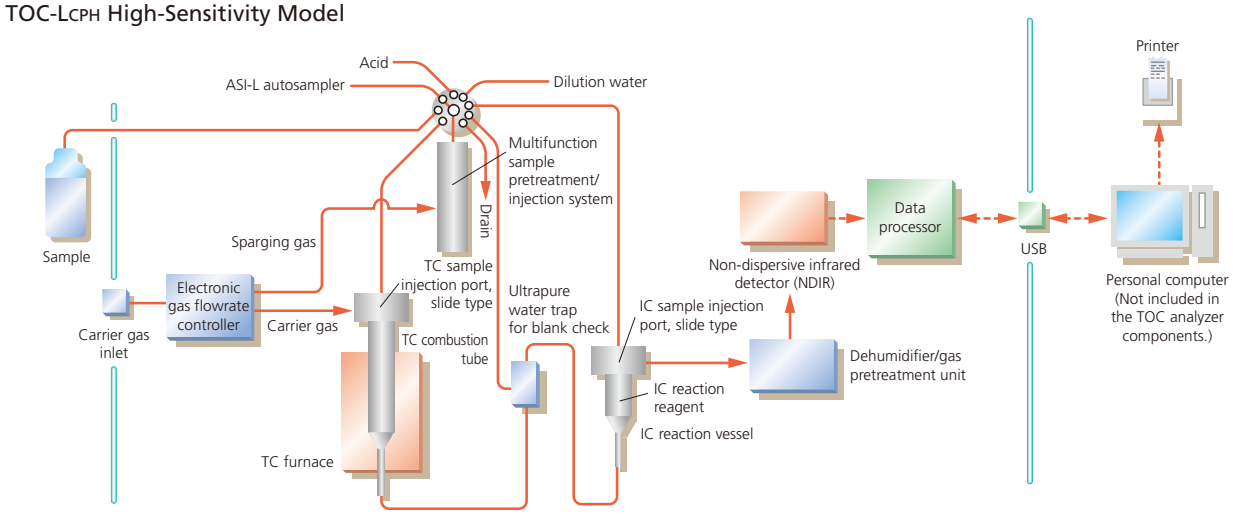
TOC-LCPH/CPN PC-Controlled Model



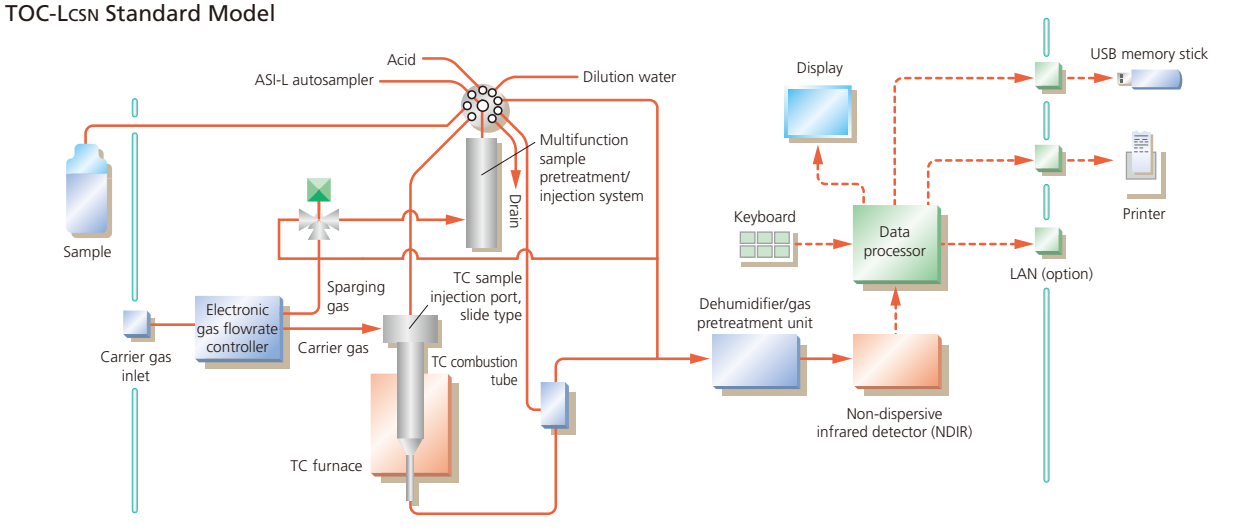
Multifunction Sample Pretreatment Injection System

Flow Line Diagrams

TOC-LCPH High-Sensitivity Model



TOC-LCSN Standard Model



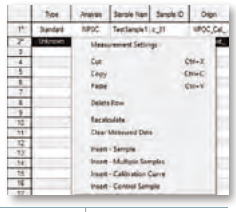
Software Features Intuitive Operability and a Wealth of Functions

TOC-LCPH/CPN PC-Controlled Model Enabling Simple, Intuitive Operation

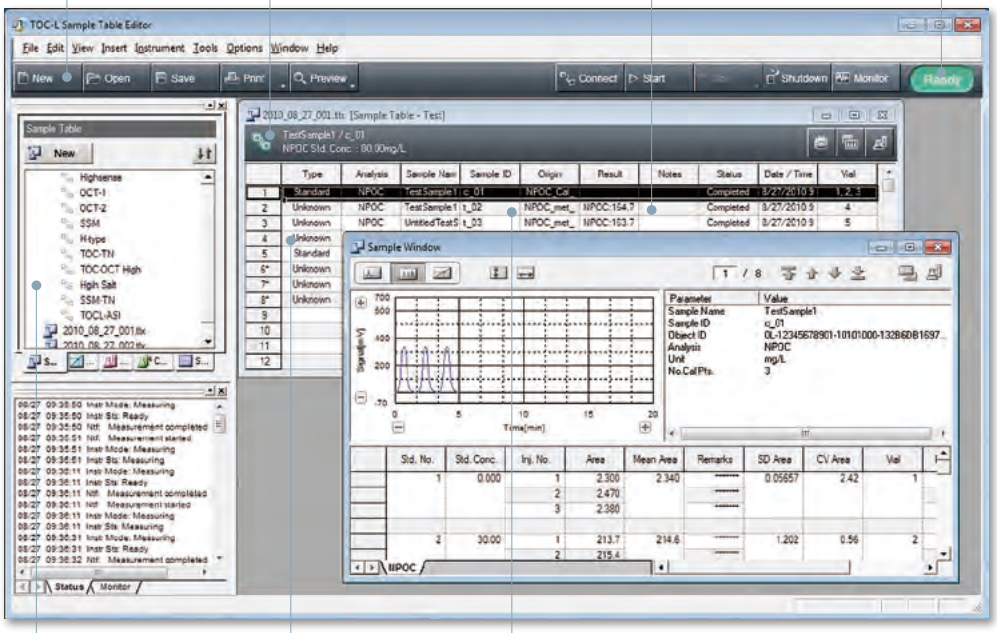
Icons and function names shown on large buttons

User-friendly display of the name, ID, and measurement results for selected samples, all in specific columns

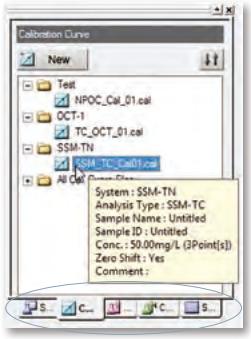
Operations are accessed by right-clicking on the table



User-friendly display of instrument status using text and color

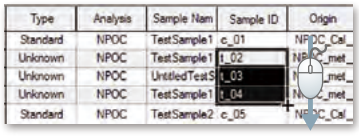


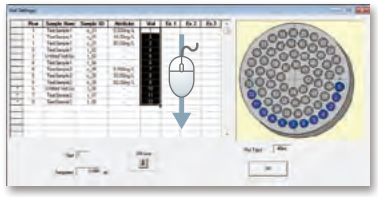
- List of files used by type
- Can be sorted by file name and date created
- File details are displayed with tooltip



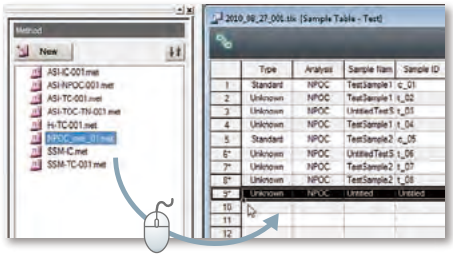
Classification by type

Insert samples by dragging and dropping measurement conditions files





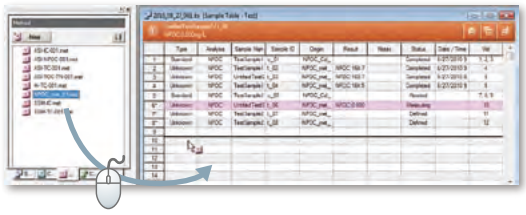
Drag the mouse over cells to batch-enter identical character strings, and sequential IDs and vial numbers



TOC-LCPH/CPN PC-Controlled Model
Convenient Functionality Supports Your Analysis Work

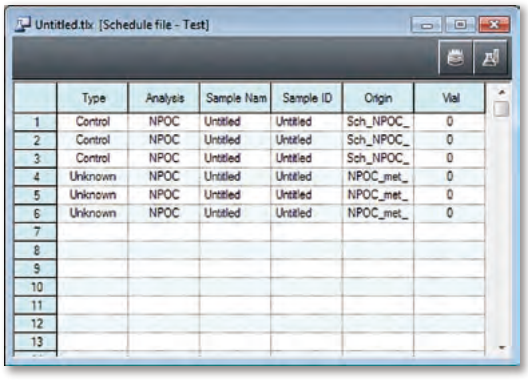
Addition of samples during continuous measurement

Samples can be inserted during continuous measurement by an autosampler.



Creation of schedule files

The measurement of multiple samples, configured by measurement condition and vial number, can be registered as a schedule file. This provides support for routine measurements.



	Type	Analysis	Sample Nam	Sample ID	Origin	Vial
1	Control	NPOC	Untitled	Untitled	Sch_NPOC_	0
2	Control	NPOC	Untitled	Untitled	Sch_NPOC_	0
3	Control	NPOC	Untitled	Untitled	Sch_NPOC_	0
4	Unknown	NPOC	Untitled	Untitled	NPOC_met_	0
5	Unknown	NPOC	Untitled	Untitled	NPOC_met_	0
6	Unknown	NPOC	Untitled	Untitled	NPOC_met_	0
7						
8						
9						
10						
11						
12						
13						

Input/output of text files

Measurement results can be output as text files, which can be loaded by Excel and other applications.
In addition, text files can be loaded as measurement schedules.

USB connectivity

A USB interface is used for connecting the PC and TOC analyzer.

Accuracy control function

For accuracy control, samples can be inserted into a measurement schedule. If the measurement results fall outside of the configured range, re-measurement and other procedures can be performed automatically.

Selection of samples for report output

In addition to outputting batch reports on all samples in a table, reports can also be output for specified samples.

Runtime report output

Sequential reports can be output automatically, each time a sample measurement is completed.

21CFR Part11 compatibility

The system provides user authentication with ID and password, and can log the operational history.
In addition, in combination with Shimadzu CLASS-Agent software (sold separately), it is possible to consolidate measurement results in a database.

Recommended PC Specifications

Models	DOS/V Compatible Models
OS	Windows XP Professional (32bit version) Windows 7 Professional (32bit version) Windows 7 Professional (64bit version)
CPU	1.5 GHz min. (Windows XP (32bit version)) 2 GHz min. (Windows 7 (32bit version)) 2.5 GHz min. (Windows 7 (64bit version))
Memory	1 GB min. (Windows XP) 2 GB min. (Windows 7 (32bit version)) 4 GB min. (Windows 7 (64bit version))
HDD	40 GB min.
Monitor	1,024 × 768 pixels min.
Other	DVD drive, USB terminals

Standalone Model with a TFT Color LCD Screen Providing Outstanding Visibility

TOC-LCSH/CSN Standalone Model

Color screen and keyboard

Easy-to-read TFT (Thin Film Transistor) color LCD screen and keyboard designed with simplicity and user-friendliness in mind.

Color Screen

Keyboard

Use a general-purpose USB printer

To use a PC printer or portable thermal printer, simply connect it to the USB terminal on the back of the instrument.
(Contact your Shimadzu representative for a list of suitable printers.)

Data output to USB memory stick

Measurement results can be output in CSV format to a USB memory stick.

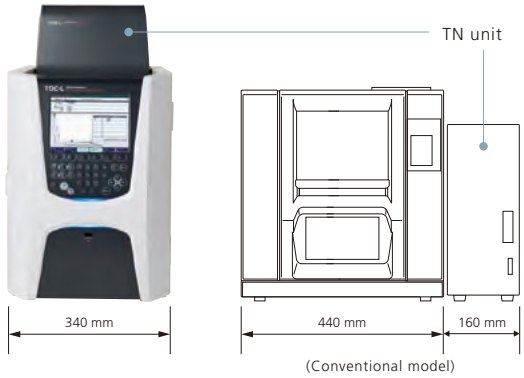
Data output from LAN port (optional)

A LAN terminal is provided on the back of the instrument, enabling output of measurement data via LAN.

Space-Saving and Energy-Saving Design

Space-Saving Design

The width of the instrument is 20 % less in comparison with conventional Shimadzu models. This enables more effective use of laboratory space. The instrument width is unchanged even when the TN unit is added.



Energy-Saving Design

This product conforms to Shimadzu's Eco-labeled designation.
Energy consumption has been reduced by 36 % (100 V) and 43 % (200 V) in comparison with conventional Shimadzu models.
(Assuming 8 hours operation/day × 5 days/week)

Other Functions and Features

Common to PC-Controlled Model and Standalone Model

- Automatic setting of optimal measurement conditions

  When the standard solution concentration for creating the calibration curve is set, the optimal measurement conditions are displayed. Detailed calibration curve information can easily be referenced when setting the measurement conditions.

- Automatic selection of the optimal calibration curve

  Up to three calibration curves can be set for sample measurements. From these, the optimal calibration curve is selected for the sample.

- Automatic changing of conditions and re-measurement of out-of-range samples

  If the sample peak exceeds the calibration curve range, measurement conditions, such as dilution rate and injection volume, are automatically changed, and the measurement is repeated.

- Automatic exclusion of anomalous values and re-calculation at repeated measurements

  The mean value, standard deviation, and coefficient of variation are displayed and printed for repeated analyses. Anomalous values can be automatically eliminated and re-calculated.

- Automatic sleep/restart

  After operations are completed and a certain amount of time has elapsed, the system automatically enters sleep mode. It can be set to automatically restart at a certain time.

* PC software is included as standard with the standalone models. Adding a PC and communication cable allows the operator to use the software on standalone models.

Options for Configuring an Automatic Measurement System

ASI-L Autosampler
Even More Functionality and Convenience, Enabling Samples to Be Added During Continuous Measurement

Features

- Select from three vial types with different capacities to suit your application.

  Combination of vial capacity and number of vials
  - 9 mL vials × 93
  - 24 mL vials × 93
  - 40 mL vials × 68

  Two types of ASI-L units are available, one for 24 mL vials and the other for 9 mL and 40 mL vials.

- Optional magnetic stirrers agitate the sample in the vials to prevent the settling of suspended solids. Magnetic stirrers are installed at the measurement position and subsequent measurement position to thoroughly agitate the samples prior to measurement.

  (Vials for 24mL and 40 mL are available. If 24 mL vials are used, vials No. 1 to No. 85 of the 93 total vials can be stirred.)

OCT-L 8-Port Sampler
The Bridge to Ultra-Simplified Automatic Measurement

Features

- Easy-to-use autosampler does not require special vials.

  Water sample can be measured directly in the collection bottles and thus do not need to be transferred to specific size autosampler vials required with other systems.

- Up to 8 samples can be measured with a single OCT-L unit.

  Up to 16 samples can be measured by adding a second OCT-L.

- Commercially available stirrers can be used. (Stirrers are sold separately.)

- Samples can be added during continuous measurement.

Greater Functionality Thanks to a Wealth of Options

TNM-L TN (Total Nitrogen) Unit
Perform Simultaneous TOC and TN Measurements

Features

- 720 °C catalytic thermal decomposition/chemiluminescence methods are adopted for TN measurement.
  There is no interference from metallic ions or bromine in sea water.
- Measurements over a wide range with a detection limit of 5 μg/L for TOC-Lc*h to an upper limit of 10,000 mg/L.

  (In the case of simultaneous TOC/TN measurement, TOC analysis using high-sensitivity catalysts is impossible. TN measurement is not possible in combination with the SSM-5000A.)

SSM-5000A Solid Sample Combustion Unit
Capable of TOC Measurements in Solid Samples

Features

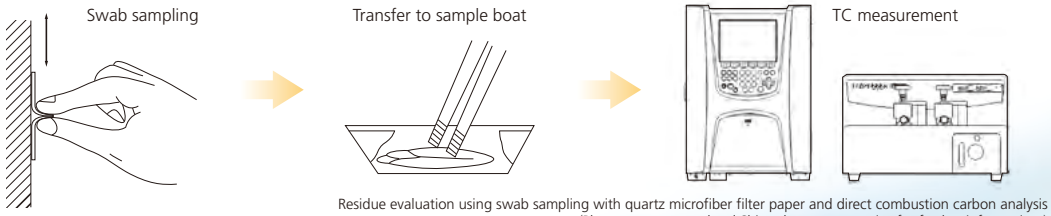
- Measurement of maximum 1 g samples with up to 30 mg carbon content reduces weighing errors, and errors due to uneven distribution of the sample carbon content.

  (The SSM-5000A cannot measure sea water samples and sea bottom sediment samples containing much salt.)
- Measurement of inorganic carbon (carbonate) in solid samples.

  (TN measurement is not available with the SSM-5000A.)
- Measurement of aqueous samples containing large quantities of suspended substances.
- Simply change the onscreen settings to switch between aqueous sample measurement with the TOC-L, and solid sample measurement using the SSM-5000A.

In addition to aqueous samples, carbon measurements can also be performed on soil, sludge, sedimentation, and other solid samples. By swabbing, the carbon in attached residues can be measured for cleaning validation.

【GMP Cleaning Validation Using the Swab Method】



Residue evaluation using swab sampling with quartz microfiber filter paper and direct combustion carbon analysis
(Please contact your local Shimadzu representative for further information.)

Compatibility of Options and Special Accessories

○: Compatible, —: Not compatible

Type	Name		TOC-L$_{CSH/CPH}$	TOC-L$_{CSN/CPN}$	Explanation
Options	ASI-L*1 autosampler 638-93199-58 (for 24 mL vial) 638-93200-58 (for 9 mL / 40 mL vial)	Accessories for 9mL vial 638-92327-41	○	○	See page 12. Vial sets do not include vials. Please purchase separately.
		9 mL vial (100 pcs.) 638-53096	○	○	
		Accessories for 24mL vial 638-92325-41	○	○	
		24 mL vial (100 pcs.) 638-41462	○	○	
		24 mL vial septum (100 pcs.) 038-00165-61	○	○	
		24 mL vial cap (100 pcs.) 638-20074-01	○	○	
		Accessories for 40mL vial 638-92326-41	○	○	
		40 mL vial (with septum, 72 pcs.) 038-00158-01	○	○	
	OCT-L*1 8-port sampler 638-93201-58 (one unit) 638-93202-58 (two units)		○	○	See page 12. Up to two OCT-L units can be connected. Only one can be connected when the POC kit is used.
	TNM-L TN unit 638-91108-58		○	○	See page 13.
	SSM-5000A solid sample combustion unit 638-93210		○	○	See page 13.
Special Accessories	Carrier gas purification kit 638-41447-04		—	○	Carbon dioxide, hydrocarbons and other carbon-containing compounds are removed from compressed air and other pressurized gases, so that they can be used as carrier gas.
	Nitrogen carrier gas kit 638-42054-02		○	○	High-purity nitrogen gas (min. 1 ppm of each CO, CO_2 and HC) can be used as the carrier gas. When this option is used, the measurement range for both TC and IC expands from the conventional range (0 to 500 μg/L) to 0 to 100 mg/L. When using TNM-L, this kit cannot be used.
	Manual injection kit 638-93149-03		○	—	Samples can be injected manually using a micro syringe. Gas samples and aqueous samples can be injected. TC and CO_2 measurements in gas samples can be performed.
	POC measurement kit For TOC-L$_{CPN/CSN}$: 638-42101-01 For TOC-L$_{CPH/CSH}$: 638-42101-02		○	○	This kit enables measurement of the volatile organic carbon (POC) driven from the sample during the sparging process at room temperature.
	Cell switching valve set 638-56239-41		○	○	This option for the SSM-5000A enables high-sensitivity measurement of solid samples.
	Magnetic stirrer For 24 mL vial: 638-67099-41 For 40 mL vial: 638-67100-41		○	○	This option for the ASI-L enables agitation of 24 ml and 40 ml vial samples. (If 24 mL vials are used, vials No. 1 to No. 85 of the 93 total vials can be stirred.)
	Suspended sample kit 638-41586		○	○	This kit changes the sample flow line diameter from 0.5 mm to 0.8 mm, enabling the injection of larger suspended substances into the combustion tubes. (Parts for ASI-L are not included.)
	Suspended sample kit, with ASI parts 638-93151-04		○	○	ASI-L flow line parts are added to the suspended sample kit.
	External sparging kit 638-77183-40		○	○	Sparging can be performed with any sample container.
	External sparging kit, with ASI parts 638-77183-41		○	○	Sparging can be performed inside ASI-L vials.
	Kit for small sample volumes 638-59328		○	—	This kit enables the measurement of smaller volumes of samples. Example of sample consumption: Standard specifications: 8 mL/3 measurements → Using this kit: 5 mL/3 measurements. However, there are some performance limits such as maximum sensitivity range is about 0-1 mg/L, maximum measuring range decreases, ASI-L and external sparging kit need to measure NPOC automatically.
	B-type halogen scrubber 638-52572-03		○	○	This kit effectively removes corrosive gases produced when measuring samples containing salts, thereby easing NDIR cell degradation.
	High-salt sample combustion tube kit For TOC-L$_{CPN/CSN}$: 638-93176-01 For TOC-L$_{CPH/CSH}$: 638-93176-02		○	○	When measuring samples containing salts, this kit extends the lifetime of combustion tubes and catalysts, reducing maintenance frequency. It enables seawater measurement approx. 2,500 times by injecting 40 μL. (It's not a guaranteed value.)
	Air supply pipe set 638-41204		○	○	Includes a 20 m carrier gas pipe.

*1: Select either ASI-L or OCT-L. They cannot be used simultaneously.

Specifications

TOC-L Series Total Organic Carbon Analyzer

Items	High-Sensitivity Model		Standard Model	
Model	TOC-L$_{CPH}$	TOC-L$_{CSH}$	TOC-L$_{CPN}$	TOC-L$_{CSN}$
Measurement Method	680 °C combustion catalytic oxidation – non-dispersive infrared detection (NDIR) method			
Operation Method	PC-controlled	Standalone *PC control available	PC-controlled	Standalone *PC control available
Measured Items	TC, IC, TOC (= TC-IC), NPOC (TOC measurement via acidification and sparging) *Option: POC, TOC (= NPOC + POC), TN			
Applicable Samples	Aqueous (optional solid/gas samples)			
Measurement Range	TC: 0 to 30,000 mg/L IC: 0 to 35,000 mg/L (Option) TN: 0 to 10,000 mg/L POC: 0 to 500 mg/L		TC: 0 to 30,000 mg/L IC: 0 to 3,000 mg/L (Option) TN: 0 to 10,000 mg/L POC: 0 to 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	
Reproducibility	TC, IC, NPOC: CV 1.5 % max. or ±4 μg/L max (Optional TN: CV 3.0 % max. or ±5 μg/L max)		TC, NPOC: CV 1.5 % max. or ±50 μg/L max, IC: CV 1.5 % max. or ±4 μg/L max (Optional TN: CV 3.0 % max. or ±20 μg/L max)	
Measuring Time	TC: approx. 3 min, IC: approx. 3 min (Optional TN: approx. 4 min)		TC: approx. 3 min, IC: approx. 4 min (Optional TN: approx. 4 min)	
Sample Injection	Automatic sample injection using a syringe pump and slide type injection mechanism			
Sample Injection Volume	10 to 2,000 μL variable		TC: 10 to 150 μL variable, IC: 10 to 4,500 μL variable	
IC Removal	Automatic addition of acid and sparging			
Sample Dilution	Dilution rate of 2× to 50× (automatic sample dilution by syringe pump), dilution accuracy: ±2 % max. (2× to 20×), ±5 % max. (21× to 50×)			
Display and Operations	Operated by PC	Operation by color LCD screen and keyboard *Operation by PC is also possible	Operated by PC	Operation by color LCD screen and keyboard *Operation by PC is also possible
External Memory (Standalone Type)	—	USB flash memory used	—	USB flash memory used
Printer (Standalone Type)	Portable thermal printer and PC USB printer can be used			
Carrier Gas	High-purity air (CO, CO_2, HC content: Each 1 ppm max., dew point: -50 °C max.) Supply pressure: 200±10 kPa (Additional use of optional carrier gas regulator: 300 to 600 kPa) Optional use of nitrogen gas (not possible in the TN measurement). With the standard model, optional use of pressurized gas.			
Gas Consumption	150 mL/min (230 to 250 mL/min during sparging) (Variable flow rate)		230 mL/min (A separate 100 mL/min is required for sparging with ASI-L. (variable flow rate))	
Power Supply	100 to 240 V AC, 600 VA (Permitted range: 90 to 264 V AC)			
Applicable Regulations	CE			
Ambient Temperature Range	5 to 35 °C			
Dimensions	W340 × D660 × H480 mm (Excluding protrusions. For details, see the External Dimensions Diagram.)			
Weight	Approx. 35 kg			

ASI-L Autosampler

Vial Types	Select from three types: 9 mL, 24 mL, 40 mL
Number of Vials	9 mL: 93, 24 mL: 93, 40 mL: 68
Vial Septum	With dedicated septum (excluding 9 mL vials)
Sample Sparging	Possible (The optional external sparging kit is required.)
Dimensions	W370 × D540 × H490 mm (excluding protrusions)
Weight	Approx. 14 kg

OCT-L 8-Port Sampler

Number of OCT-L Units Connected	Up to 2 OCT-L units for a single TOC-L
Vial Types	Any sample container can be used
Number of Vials	8 for a single OCT-L 16 for dual OCT-L
Sample Sparging	No sparging with OCT-L; sparging is done in the TOC-L syringe
Dimensions	W245 × D245 × H440 mm (excluding protrusions)
Weight	Approx. 3.5 kg

TNM-L TN (Total Nitrogen) Unit

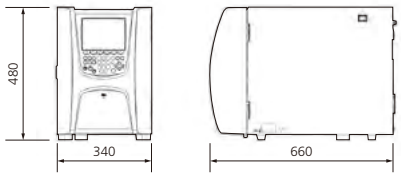
Measurement Method	Chemiluminescence
Measured Items	TN (total nitrogen)
Measurement Range	0 to 10,000 mg/L
Detection Limit	5 μg/L (CPH, CSH) 20 μg/L (CPN, CSN)
Reproducibility	CV 3 % max.
Measuring Time	Approx. 4 min
Ozone Source Gas	Air (compressed air or housing air) 500 mL/min
Dimensions	W270 × D240 × H160 mm (excluding protrusions)
Weight	Approx. 6 kg

SSM-5000A Solid Sample Combustion Unit

TC Oxidation Method	Combustion catalytic oxidation (TC furnace temperature: 900 °C)
IC Reaction Method	Acidification (IC furnace temperature: 200 °C)
Measured Items	TC, IC, TOC
Measurement Range	TC: 0.1 to 30 mg carbon TC: (1 to 20 μg carbon in high-sensitivity measurement) IC: 0.1 to 20 mg carbon
Maximum Sample Amount	1 g (aqueous content: < 0.5 g)
Measuring Time	Normally 5 to 6 minutes
Carrier Gas	99.9 % O_2 at 500 mL/min High-purity O_2 gas is required for high-sensitivity measurement.
Power Requirements	100 to 127 or 220 to 240 V AC as ordered, 700 VA
Dimensions	W450 × D656 × H290 mm
Weight	Approx. 30 kg

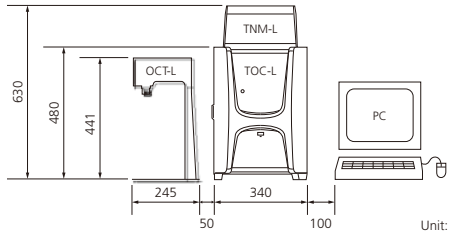
External Dimensions Diagrams

TOC-L



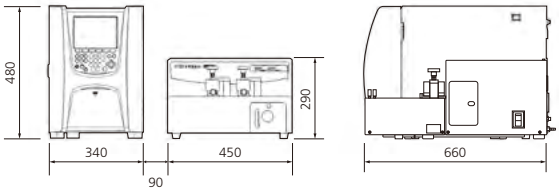
Unit: mm

TOC-L + TNM-L + OCT-L + PC



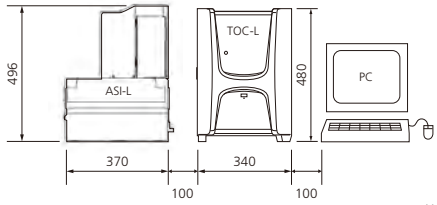
Unit: mm

TOC-L + SSM-5000A



Unit: mm

TOC-L + ASI-L + PC



Unit: mm

Related Products

TOC-V_W Wet Oxidation/NDIR Method

- Wet oxidation/NDIR TOC analyzer, offering truly impressive ultrapure water measurements.
- Designed with a focus on high sensitivity, oxidation performance, and low blanks.

ON-LINE TOC-V_{CSH} Combustion Catalytic Oxidation/NDIR Method Online Model

- TOC analyzer, featuring 680 °C combustion catalytic oxidation/NDIR methods and continuous online measurements.
- Enables automated, high-sensitivity monitoring of pure water and tap water, with minimal maintenance. A pharmaceutical water control program is also available.

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