

Standard Specifications

Model	Total Organic Carbon Analyzer TOC-310V		
Samples	Water samples with suspended solids (waste water, waste plant water, sea water)		
Method	Oxidative Combustion/NDIR Detection		
Furnace	max. 900°C		
Measurement Items	TC, IC, TOC, NPOC (optional TN)		
Measurement Range	0.1 to 1000mg/L (TC, IC), Auto-dilution for >300mg/L.		
Sample Amount	50 to 500µl		
Measurement Time	TC, IC, TOC, NPOC: 4min or less, TN: 4min or less		
Autosampler	60 positions		
Measurement Accuracy	Concentration TC·IC (mg/L)	Sample amount (µl)	RSD (%) n=5
	1.0	100	<8
	10	100	<5
	100	100	<3
TC: Potassium Hydrogen Phthalate Standard Solution IC: Na ₂ CO ₃ /NaHCO ₃ Standard Solution			
Gas	High purity air or standard air. Oxygen necessary for optional TN measurement (O ₂ >99.7%).		
Power	Main Unit: AC100 to 240V, 500VA Autosampler: AC100 to 240V, 80VA		
Dimensions	750(W) x 530(D) x 1003(H)mm, 66kg		

Optional Unit



Simultaneous Total Nitrogen



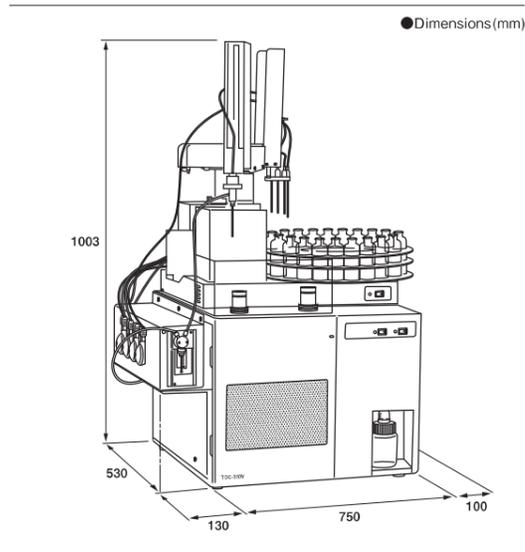
Nitrogen Detector ND-210

Method	Oxidative Combustion/Chemiluminescence Detection (Reduced Pressure Method)
Measuring range	0.01 to 2,000 mg/L
Power	AC 100 to 240V, consumption: 300VA
Dimensions	220(W) x 375(D) x 500(H)mm
Weight	22kg



Nitrogen Detector ND-30

Method	Oxidative pyrolysis-chemiluminescence method (normal pressure method)
Measuring range	0.5 to 1,000 mg/L
Power	AC100 to 230V, consumption: 100VA
Dimensions	220(W) x 310(D) x 400(H)mm
Weight	12kg



Note:

Follow instructions in manuals to correctly install, connect and operate the instruments. Contents of catalogues are subject to change without prior notice when improvements are made in performance. The actual color of the goods may appear different from color printed. All screen images are simulated.

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DIRECT INJECTION therefore TOUGH

TOC-310V

Total Organic Carbon Analyzer



Nittoseiko Analytech Co., Ltd.

Are your current TOC analyzers giving you the TRUE results?
Especially when it comes to samples with high amount of particulates?

We have developed a new TOC analyzer with DIRECT INJECTION METHOD.
This makes our instrument predominantly TOUGH against samples with particulates. Our proficient combustion technology and stable detection technology will also contribute to bring you the TRUE results.

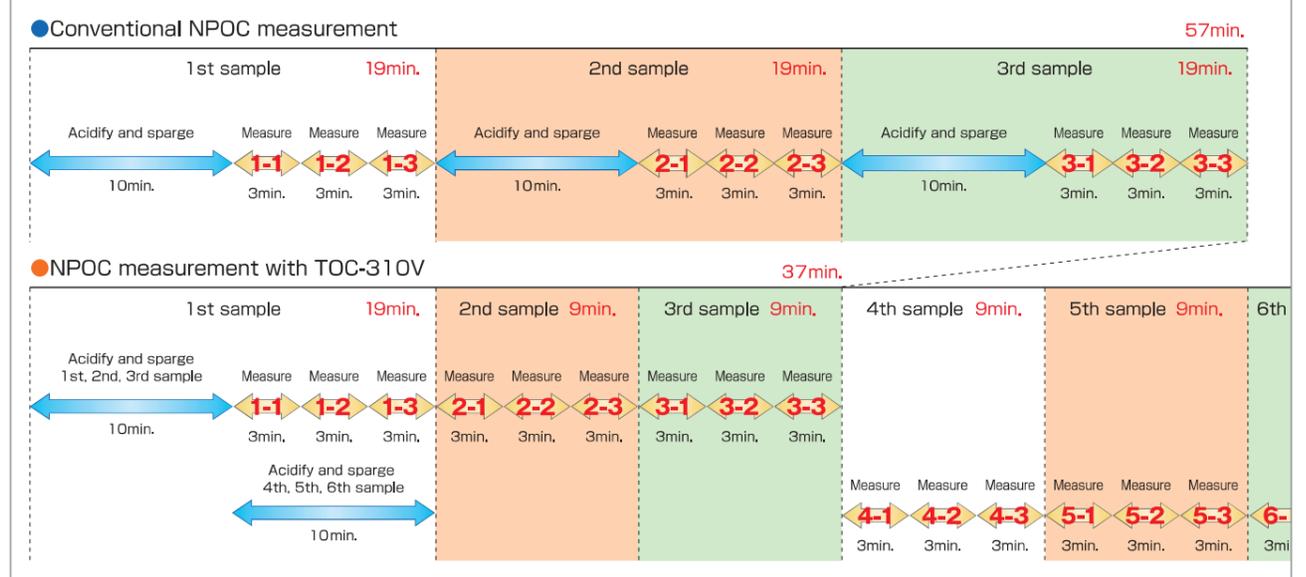
Official Test Methods: ISO 8245 (EN1484), EPA 415.1, EPA 9060A,
Standard Methods 5310, ASTM D7573



TOUGH and FAST for NPOC Measurements

The TOC-310V has achieved the FASTEST NPOC measurement in the industry with the auto acid addition and 3-vial simultaneous pre-treatment.

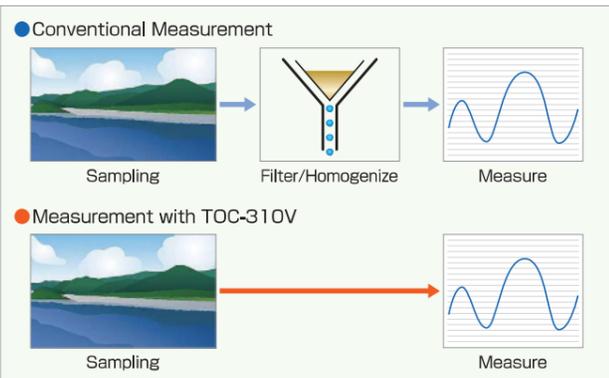
*n=3



Characteristics

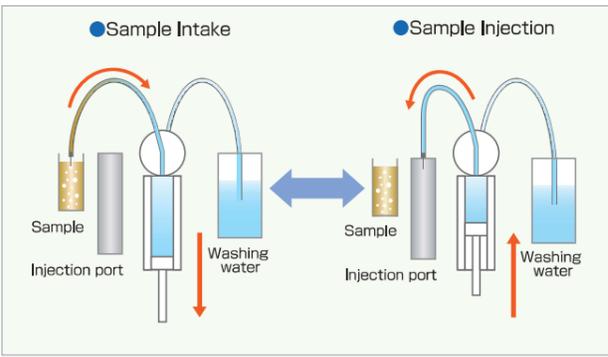
TOUGH therefore FAST

Using the standard equipped autosampler and newly developed DIRECT INJECTION method, samples containing particulates can be measured without any pre-treatment. (patent pending)



TOUGH therefore CLEAN

The complete sample channel is VALVE FREE and the sample never enters the syringe. You are free from worries about clogging and cross contamination.



TOUGH therefore ACCURATE

The system easily passes the so-called 'Cellulose Test' (ISO 8245, Annex B3). Stable recovery of organic carbon in suspended solids (SS) can be achieved without any special treatment.

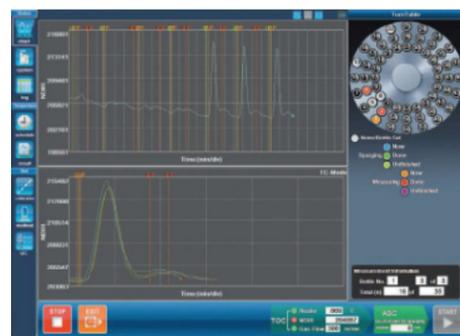
1. Test Suspension
225mg/L Cellulose powder (=100mg/L as TC)

Reps	Recovery
1	95.8
2	96.7
3	95.3
4	96.5
5	96.7
Average	96.2
RSD(%)	0.64

2. Test Criteria
Recovery within ±10%
RSD < 10%

TOUGH therefore FRIENDLY

Simple configuration and icons of the software makes the system easy to use even at first sight. Our environmentally friendly design philosophy has resulted in a small furnace with low electricity consumption.



TOUGH therefore SIMPLE

By simply opening the front door of the main unit, reagents, combustion tube, waste bottle, and tubings are all easily accessible for checking and maintenance.



TOUGH therefore CONVENIENT

Just set your sample and start! The auto-dilution function will automatically dilute your unknown sample in case the initial result exceeds the calibration range.



Applications

Sample	Mode	Reps			Average (mg/L)	RSD (%)
		1	2	3		
River water A	TOC	3.256	3.354	3.211	3.273	2.23
River water B	TOC	1.266	1.232	1.388	1.295	4.99
River water C	NPOC	2.187	2.283	2.214	2.228	1.93
River water D	NPOC	3.541	3.721	3.748	3.670	2.80
Industrial waste water A	NPOC	4.357	4.620	4.452	4.476	2.13
Industrial waste water B	NPOC	1.007	1.115	0.990	1.038	4.92
Potassium Hydrogen Phthalate	TOC	98.54	99.12	99.31	98.99	0.41

*100mg/L

Measurement Principles

Oxidative Combustion-NDIR Detection Method

Organic compounds in the sample are combusted at high temperature in high purity air in the presence of oxidation catalyst. The carbon dioxide resulting from the combustion is detected by NDIR to measure TOC.
TOC = TC - IC

What is NDIR (Non-dispersive Infrared Sensor)?

CO₂ molecules selectively absorb infrared rays with 4.26 micron wavelength. This absorption is proportional to the concentration of CO₂. This characteristic is used to quantify CO₂ with NDIR.

TC (Total Carbon) Measurement

All carbon (organic and inorganic) in the sample is either combusted or decomposed to carbon dioxide (CO₂) by injecting the sample into a high temperature combustion tube filled with oxidation catalyst. The CO₂ is detected by NDIR and detection signal is converted to a peak. The TC concentration in the sample can be obtained by correlating the peak area to a calibration curve created from standard solutions.

IC (Inorganic Carbon) Measurement

Sample is injected into an IC reaction chamber which is filled with IC reaction solution (25% Phosphoric Acid). Due to the acidic environment, only the inorganic carbon in the sample is converted to CO₂. The CO₂ is again detected by NDIR and IC concentration is calculated in the same way as TC concentration.

NPOC (Non-Purgeable Organic Carbon) Measurement

Obtaining TOC by subtracting IC from TC can result in high error, especially for samples containing high amount of IC and relatively low amount of TOC. To avoid this error, NPOC is often used as a substitute and in many cases regarded as 'equivalent' to TOC. To run an NPOC measurement, sample is first treated with acid, then sparged to remove IC, followed by a TC measurement.