

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***Shimadzu On-line TOC Analyzer TOC-4200***

Manufactured by:

### ***Shimadzu Corporation***

1 Kuwabaracho  
Nishinokyo  
Nakagyoku  
Kyoto  
Japan

Has been assessed by Sira Certification Service  
And for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Water  
Monitoring Systems, On-line Monitors, Version 3.1 dated August 2010**

Certification Ranges :

TOC	0 to 100 mg/L
	0 to 500 mg/L
	0 to 1000 mg/L
	0 to 10,000 mg/L

Project No.: 70053441  
Certificate No: Sira MC160311/00  
Initial Certification: 31 October 2016  
This Certificate issued: 31 October 2016  
Renewal Date: 30 October 2021

Emily Alexander  
Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

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## Approved Site Application

*Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at [www.mcerts.net](http://www.mcerts.net)*

On the basis of the assessment this instrument is considered suitable for use on treated wastewater, untreated wastewater and receiving water applications.

## Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

Sira evaluation and witness test report, dated September 2016

## Product Certified

The TOC-4200 measuring system consists of the following parts:

- Shimadzu Online TOC Analyzer TOC-4200

This certificate applies to all instruments fitted with software version 1.2.0 onwards.

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +1°C to +40°C

Unless otherwise stated the evaluation was carried out on the certification range 0 to 500mg/L

Results are expressed as error % of reading, unless otherwise stated.

Test	Results expressed as % of reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Mean error						
0 to 100 mg/L			1.99			<10.0%
0 to 500 mg/L				3.47		<10.0%
0 to 1000 mg/L				3.08		<10.0%
0 to 10,000 mg/L				3.36		<10.0%
Linearity						
0 to 100 mg/L				-2.23		<5.0%
0 to 500 mg/L				2.60		<5.0%
0 to 1000 mg/L				2.22		<5.0%
0 to 10,000 mg/L				3.74		<5.0%
Repeatability						
0 to 100 mg/L		0.93				<5.0%
0 to 500 mg/L		0.96				<5.0%
0 to 1000 mg/L			1.88			<5.0%
0 to 10,000 mg/L				4.17		<5.0%
Sample Matrix Effects						
TIC carry over	-0.29					<3.0% span
Salt interference		-0.87			Note 1	<3.0% span
Drift				-2.85		<5.0%
Output Impedance (30Ω to 500Ω)	0.00					<2.5%
Supply Voltage (90V to 130V)	0.00					<2.5%
Ambient Temperature (+1°C to +40°C)				2.73		<5.0%
Relative Humidity (+1°C to +40°C)			1.12			<5.0%
Sample Temperature (+1°C to +40°C)	0.26					<5.0%

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Test	Results expressed as % of reading				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Combined Performance Characteristic						
0 to 100 mg/L					6.1%	<12%
0 to 500 mg/L					7.11%	<12%
0 to 1000 mg/L					7.43%	<12%
0 to 10,000 mg/L					8.07%	<12%
Response Time						
0 to 100 mg/L					4 minutes	To be reported
0 to 10,000 mg/L					5 minutes	To be reported

Note 1: Salt interference tested with 5% salt (NaCl)

Note 2: The following tests are not applicable to the analyser:

- 6.3.9 Incident light
- 6.3.11 Sample flow rate
- 6.3.12 Sample pressure

## Field Test Results

The field trial was conducted for > 3 months on an industrial WWTP

The field trial was conducted using the range 0 to 100 mg/L

Test	Results expressed as % of the certification range				Other results	MCERTS Specification
	<0.5	<1	<2	<5		
Initial Warm Up time					15 minutes 37 seconds	To be reported
Error under field conditions					100%	>90% of errors $\leq$ Uc value (12% reading)
Response time (start)					5 minutes	To be reported
Response time (end)					4 minutes	To be reported
Up-time					100%	>95%
Maintenance					Routine maintenance as specified by the manufacturer	To be reported

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## Description

The Shimadzu On-line TOC Analyzer, TOC-4200, is designed for continuous monitoring of TOC. A variety of optional accessories are prepared to support diverse applications. The main features of TOC-4200 are:

1. High oxidative decomposition ability by 680 °C combustion catalytic oxidation.
2. A line up of sample pre-treatment units (optional) designed for diverse sample characteristics.
3. Measurement of up to 6 sample streams (optional).
4. The instrument supports 5 mgC/L to 20,000 mgC/L full-scale (High sensitivity measurements from 0 to 1mgC/L (optional))
5. The instrument also supports IC, POC (VOC) measurement (optional).
6. An automatic dilution function (50x max.) handles acid and alkaline samples.
7. A high-salt sample combustion tube kit (optional) handles samples with high levels of inorganic salt, such as chemical waste waters and seawater samples.
8. Capable of COD monitoring by using an internal conversion function.

## General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC160311/00
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

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