

TOC Evolution vuv

Complete two-stage measurement of TOC. Detection of organic carbon (OC) with simultaneous and direct measurement of various TOC groups by oxidation and measurement of the produced CO₂ (NDIR).

Reliable and accurate for various applications including potable water per EN DIN 1484.



Quick response time -
5 to 8 minutes per TOC determi-
nation



Easily accessible peristaltic pump
modules and quick tubing renewal



Low maintenance,
low operation cost



Automatic zero-point detection
for highest data integrity



Oxidation and stripping by the
integrated reactor - less than 3
liters of oxidant reagents con-
sumed per month



10 ppb LOD for reliable results in
low measuring ranges

Total Organic Carbon (TOC)

0-2 to 0-5 ppm (LOD = 10 ppb)
0-10 to 0-100 ppm (LOD = 100 ppb)
>100 to 0-1000 ppm (with dilution)

Total Inorganic Carbon (TIC)

0-100 ppm

Total Carbon (TC)

0-5 ppm or 0-30 ppm

Chemical Oxygen Demand (COD)

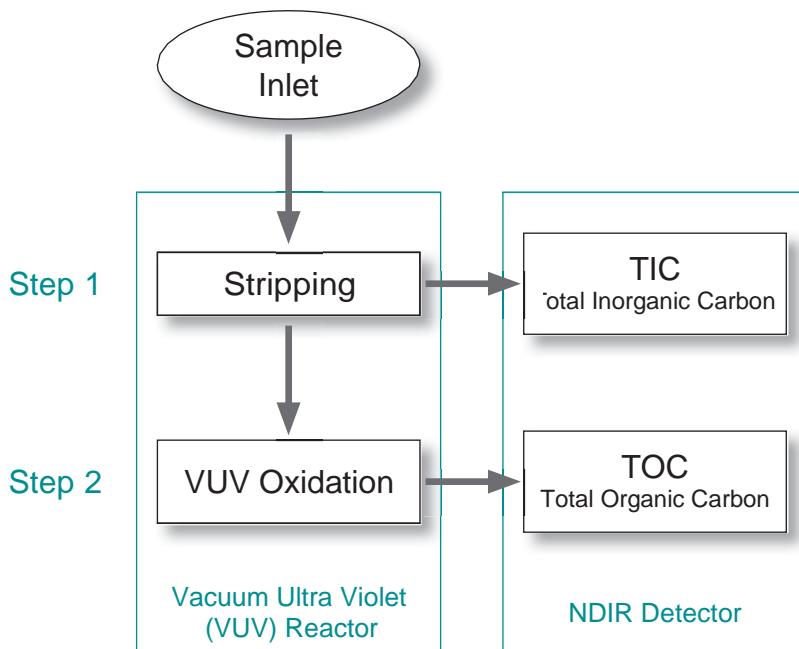
by correlation (optional)



Seres OL

Available in the USA from
Swan Analytical USA
info@swan-analytical-usa.com

TOC Evolution vuv



Range of Applications

Industrial Process Condensate

Early warning for leakages in water steam cycles. Determine contamination reliably to avoid costly system damages.

Potable water treatment and surface water

Accurate and fast detection of natural organic matter (NOM), disinfectants and possible disinfection byproducts (DBPs).

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Complete monitoring system for the automatic, continuous measurement of Total Organic Carbon (TOC) and in potable water and return condensate.

Analyzer TOC Evolution VUV

- Available configurations for specific measuring ranges:

Low-range	0 to 2 ppm	LOD: 0.01 ppm
Mid-range	0 to 10 ppm	LOD: 0.1 ppm
High-range	0 to 100 ppm	LOD: 0.5 ppm
- Complete system including measurement and control electronics, measuring unit, flow indicator, oxidation reactor and reagent dosing system.
- For the continuous online determination of TOC per ISO 8245 and NFEN 1484
- Robust, high quality analyzer cabinet painted stainless steel, 316L.
- Analysis time 5 to 10 minutes, programmable interval
- Determination of chemical oxygen demand (COD) by correlation.
- Automatic, electrical zero measurement prior to each measurement cycle.
- Automatic cell cleaning.
- 2 analog and 4 digital outputs for alarms for process values and diagnostic alarms for each sample stream.



TOC Evolution VUV

Order Nr.	TOC Evolution VUV (0-2 ppm, 0.01 ppm Detection Limit, 110 VAC)	SOL-59.110.010
Order Nr.	TOC Evolution VUV (0-10 ppm, 0.1 ppm Detection Limit, 110 VAC)	SOL-59.110.020
Order Nr.	TOC Evolution VUV (0-100 ppm, 0.5 ppm Detection Limit, 110 VAC)	SOL-59.110.030
Configuration	RS485 Modbus/JBUS Output	SOL-81.420.010
Configuration	Ethernet Interface (TCP/IP) Mention at order: automatic or fixed IP-address	SOL-81.420.020
Configuration	Tangential filtration Requirements: <i>Air supply:</i> 7 bar, clean and dry air <i>Sample flow:</i> 200-500l/h, 0.5 to 1 bar	SOL-82.830.020 Consult Sales
Configuration	Auto-calibration	SOL-83.520.010
Configuration	COD indication on display by correlation	Consult Sales
Configuration	2 nd -channel setup (similar range)	SOL-83.590.010
Option	1-Year Spare Part Package "Basis" (Analyzer + 1 st channel)	SOL-84.110.010
Option	1-Year Spare Part Package "Multi-Channel" (add once if multi-channel config. was selected)	SOL-84.110.020
Option	SS316L reagent shelf	SOL-89.610.010



TOC Measurement

UV/VUV + Persulfate advanced oxidation process: By purging the sample after adding acid, the IC is converted to CO₂ and completely extracted from the sample. The sample is injected into the oxidation reactor. UV directly oxidizes the organic matter which turns into CO₂. The CO₂ produced is then detected by an NDIR detector (non-dispersive infra-red).

Reaction time 5-10 min.

Sensors/Measurement Equipment

Oxidation reactor with VUV lamp
NDIR detector

Analyzer Measuring range

Low-range configuration 0-2 ppm

Limit of Detection 0.01 ppm

Repeatability $\pm 2\%$ FS

Accuracy $\pm 3\%$ FS

Mid-range configuration 0-10 ppm

Limit of Detection 0.1 ppm

Repeatability $\pm 2\%$ FS

Accuracy $\pm 3\%$ FS

High-range configuration 0-100 ppm

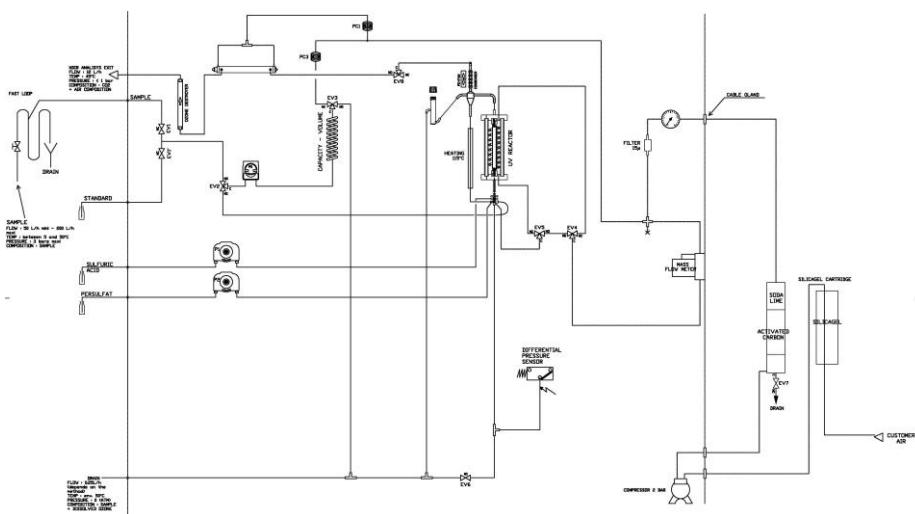
Limit of Detection 0.5 ppm

Repeatability $\pm 2.5\%$ FS

Accuracy $\pm 3\%$ FS

Automatic baseline adjustment.
Sample flow surveillance.

TOC Evolution VUV Measurement Scheme



Alarm Relays

1 summary alarm for "analyzer failure"

Maximum load: 1A / 24 V

Relay Outputs

2 potential-free contacts for each channel programmable as limit switches for measuring values (high/low thresholds)
1 sample flow alarm for each channel

On request only:

1 output "End of cycle indication" of the active sample stream for each channel. Replaces output "Threshold No. 2".

On request only:

1 output for maintenance/calibration indication. For auto-calibration [SOL-83.520.010] only. Replaces output "Threshold No. 2".

Operation

Display: Color LCD, 7", touch-screen

Display of process value, alarm status and time during operation.

Smart and intuitive interface based on separate menu sections: "Measure", "Diagnostic" and "Tools".

User menus in English and French.

Password protection and storage of data records. Storage and graphical display of measurement history.

Analyzer Data

Sample conditions (standard configuration)

Flow rate: min 40 l/h optimum 50 l/h

Temperature: 5 to 50 °C

Inlet pressure_{Abs.} (25 °C): 0.1 up to 3.0 bar

Outlet pressure: pressure-free

Particle size: < 100 µm

Ambient Conditions

Temperature: 5 to 40°C

Humidity 5 to 95% rel. (without condensation)

Sample connections

Sample inlet: 1/4" BSP F

Sample inlet with tangential filtration D 12 pipe

Sample outlet: soft tubing D INT 9

Sample outlet (fast loop): soft tubing D INT 18

Sample outlet waste: soft tubing D INT 12

Sample outlet (Multi-channell): soft tubing D INT 19

Wall cabinet

Dimensions: 993 x 600 x 422 mm

Material: Stainless Steel 316

Total weight: 80 kg

Protection degree: IP 55

Reagent specifications

Type

Sodium Peroxodisulfate 250g/l R0x208G250

Reagent Consumption:

Low-Mid Range 1.5 l/month

High Range 3l/month

Sulfuric Acid 2N (H₂SO₄ 2N) R0x159

Reagent Consumption 1.5l/month

