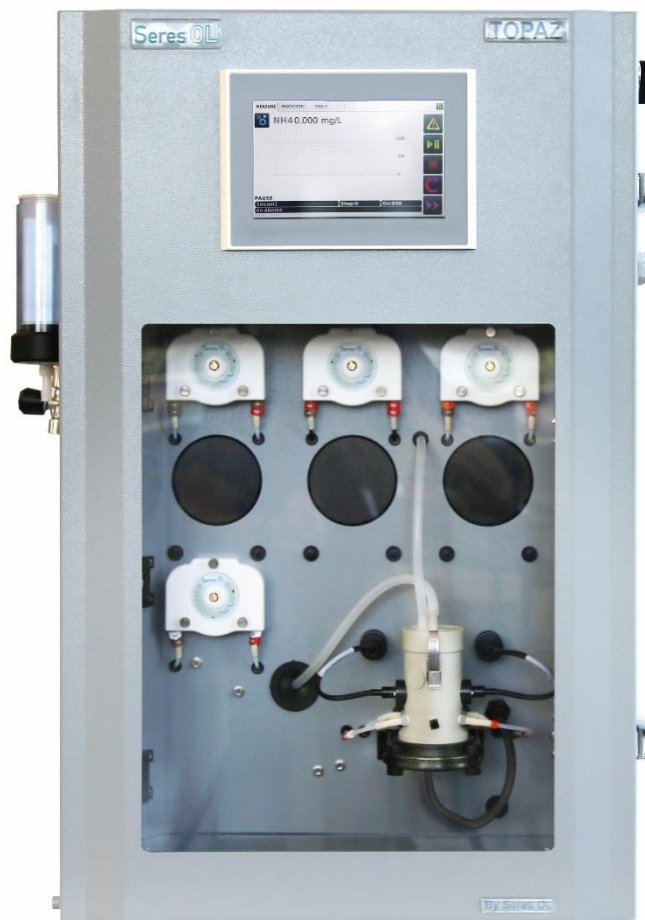


Complete monitoring system for the automatic, continuous measurement of chemical oxygen demand (COD) in surface water.

- For the continuous, titrimetric online determination of COD (Permanganate Index) per **ISO 8467**
- Available in separate measuring ranges:  
**Topaz COD (Permanganate) LR: 0.6 to 10 ppm**  
**Topaz COD (Permanganate) HR: 10 to 200 ppm**
- Complete system including measurement and control electronics, measuring unit, reaction chamber and reagent dosing system.
- Robust, high quality analyzer cabinet painted stainless steel, 316L.
- Automatic, electrical zero measurement prior to each measurement cycle.
- Automatic cell cleaning.
- Automatic blank cycle.
- 5 easily accessible peristaltic pump modules for accurate, automatic dosing of chemical reagents.
- 2 analog and 6 digital outputs for alarms for process values and diagnostic alarms for each sample stream.
- RS485 Modbus/JBUS RTU interface.
- Large back-lit touchscreen color LCD display for the reading of all measured values and status information simultaneously.
- Easy menu-guided operation in English or French.



Seres OL Topaz Series Showcase

Analyzer	<b>Seres OL Topaz COD (Permanganate Index) LR</b> (0.6 - 10 ppm)	<b>SOL-58.331.000</b>
Analyzer	<b>Seres OL Topaz COD (Permanganate Index) HR</b> (10 - 200 ppm)	<b>SOL-58.331.100</b>
Configuration	Ethernet Interface (TCP/IP) Please, inform SERES about automatic or fixed IP-address (give address)	SOL-81.410.020
Options	1-Year Spare Part Package for Topaz COD (Permanganate Index)	SOL-84.110.090
	Reagent shelf in SS316L	SOL-89.610.010



## COD Measurement

### KMnO<sub>4</sub> index by titrimetric method:

Heating at 90°C in presence of sulfuric acid and a known concentration of potassium permanganate. Partial reduction of the permanganate by oxidizing matters in the sample. Reduction of any permanganate excess using sodium oxalate. Titration in return by potassium permanganate of the oxalate excess

Reaction time 30-40 min.

### Sensors/Measurement Equipment

Detection wavelength 530 nm  
Temperature controlled measuring chamber 90°C-95°C

Analyzer	Measuring range
<b>Topaz COD (Permanganate) LR</b>	<b>0.6-10 ppm</b>
Limit of Detection	0.6ppm
Limit of Quantification	1.5ppm
Repeatability	± 3 % FS
Precision	± 5% FS or ±1ppm, (whichever is greater)

<b>Topaz COD (Permanganate) HR</b>	<b>10-200 ppm</b>
Limit of Detection	10ppm
Repeatability	± 3 % FS
Precision	± 5% FS or ±1ppm, (whichever is greater)

Automatic baseline adjustment.

## Specifications and Functionality

Pump type peristaltic  
Pump quantity 5

### Power supply

Voltage: 110 - 240 VAC  
Frequency: 50 /60 Hz  
Power consumption: max. 300 VA

### Operation

Display: Color LCD, 7", touch-screen

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

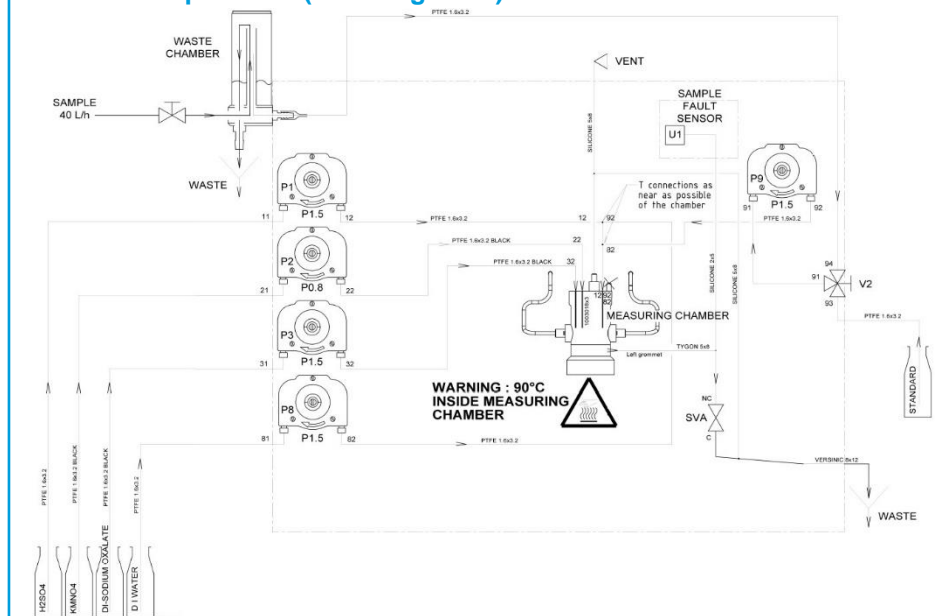
Smart and intuitive interface based on separate menu sections: "Measurement", "Diagnostic" and "Tools".

User menus in English and French.

Password protection and storage of data records.

Storage and graphical display of measurement history.

## Seres OL Topaz COD (Permanganate) 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

1 output for indication of the active sample stream for each channel.

1 output for maintenance indication.

Rated load: 1A / 24 V

### Signal inputs

One input for "stop command end of cycle".

### Signal outputs

2 programmable signal outputs for measured values (freely scalable, linear).

Current loop: 4 - 20 mA

### Communication interface

RS485 interface (galvanically separated) with Modbus/JBUS RTU protocol included in standard.

Ethernet interface (TCP/IP) optional.

## Analyzer Data

### Sample conditions

Flow rate: min 30 l/h  
optimum 40 l/h  
Temperature: 5 to 40 °C  
Inlet pressure<sub>Abs.</sub> (25 °C): 0.1 up to 2.0 bar  
Outlet pressure: pressure-free  
Particle size: < 20 µm

### Ambient Conditions

Temperature: 5 to 40°C  
Humidity: 10 to 80% rel.  
Installation in a closed, protected, tempered room is recommended

### Sample connections

Sample inlet: 1/4" BSP F  
Sample outlet: soft tubing D INT 9  
Sample outlet waste: soft tubing D INT 12

### Wall cabinet

Dimensions: 780 x 570 x 370 mm  
Material: Stainless Steel 316L  
Total weight: 35 kg  
Protection degree: IP 55

## Reagent specifications\*

Type	Code
Di-Sodium Oxalate 5 mmol/l	RXX156
Reagent Consumption	2.3l/month
Potassium Permanganate 2,5 mmol/l	RXX157
Reagent Consumption	2 to 11l/month
Sulfuric Acid 2mol/l (4N)	RXX158
Reagent Consumption	2.8l/month
Deionized water (Dilution and cleaning)	
Reagent Consumption	20 to 40l/month

\* storage : dry, cool, well ventilated

