

Complete monitoring system for the automatic, continuous measurement of total hardness (TH) in potable water, process water and demin water production.

- For the continuous, colorimetric titration for online determination of total hardness.
- Available in separate measuring ranges:

Topaz Total Hardness LR:

5 to 50 ppm CaCO_3

Topaz Total Hardness HR:

10 to 100 ppm CaCO_3 or

15 to 300 ppm CaCO_3 or

30 to 600 ppm CaCO_3

- Complete system including measurement and control electronics, measuring unit, flow indicator, 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.
- 4 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.



Analyzer	Seres OL Topaz Total Hardness LR	(5-50 ppm CaCO_3)	SOL-58.311.000
Analyzer	Seres OL Topaz Total Hardness HR	(select range from below)	SOL-58.311.100
Range Selection	10-100 ppm CaCO_3	(Topaz Total Hardness HR only)	Specify in order
	15-300 ppm CaCO_3	(Topaz Total Hardness HR only)	Specify in order
	30-600 ppm CaCO_3	(Topaz Total Hardness HR only)	Specify in order
Configurations	2-Channel Setup	(similar range)	SOL-83.590.020
	4-Channel Setup	(similar range)	SOL-83.590.040
	6-Channel Setup	(similar range)	SOL-83.590.060
	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 "Basis" (Analyzer + 1 st channel)		SOL-84.110.120
	1-Year Spare Part Package "Multi-Channel" (add once if multi-channel config. was selected)		SOL-84.110.150
	Reagent shelf in SS316L		SOL-89.610.010



Seres OL Analyzer Topaz Total Hardness

Datasheet No. DenSOL58311x00



Total Hardness Measurement

Colorimetric titration by EDTA method:

Titration at pH 10 with EDTA of the coloration formed between hydroxynaphthol blue and calcium and magnesium.

Reaction time 5-8 min.

Sensors/Measurement Equipment

Detection wavelength 655 nm

Temperature controlled measuring chamber

Analyzer Measuring range

Topaz Total Hardness LR 5-50 ppm CaCO_3
LOD ≤ 5 ppm CaCO_3
Repeatability $< \pm 5$ % FS
Accuracy $< \pm 5$ % FS

Topaz Total Hardness HR (all high ranges)

LOD (10-100 ppm) < 10 ppm
LOD (15-300 ppm) < 15 ppm
LOD (30-600 ppm) < 30 ppm
Repeatability $< \pm 5$ % FS
Accuracy $< \pm 5$ % FS

Automatic baseline adjustment.

Sample flow surveillance.

Specifications and Functionality

Pump type peristaltic
Pump quantity 4

Power supply

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

Operation

Display: Color LCD, 7", touchscreen

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

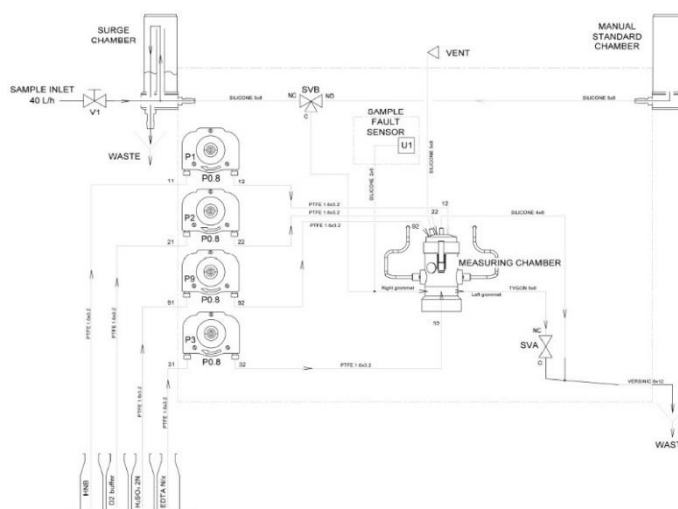
Smart and intuitive interface based on separate menu sections: "Measurement", "Diagnostic" and "Tools".

User menus in English and French.

Password protection and storage of data records.

Storage and graphical display of measurement history.

Seres OL Topaz Total Hardness 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, opt. 40 l/h

Temperature: 5 to 40 °C

Inlet pressure_{abs.} (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

Sample outlet (Multi-ch.) soft tubing D INT 19

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
Hydroxynaphthol blue (HNB)	RXX210
Reagent Consumption	< 2.5 l/month
Buffer D2 pH 10	RXX266
Reagent Consumption	< 3.7 l/month
H2SO4 2 N	RXX159
Reagent Consumption	< 2.5 l/month
EDTA N/200 (50ppm)	RXX220N_005
EDTA N/100 (100ppm)	RXX220N_01
EDTA N/50 (300ppm)	RXX220N_02
EDTA N/20 (600ppm)	RXX220N_05
Concentration of EDTA according to the range	
Reagent Consumption (middle range)	< 20 l/month (< 40 l/month max.)

* storage : dry, cool, well ventilated

07/2022 Subject to changes without notice

