

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

Analyzer Topaz Total Hardness

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

Topaz Total Hardness LR:

10 to 50 ppm CaCO₃

Topaz Total Hardness HR:

10 to 100 ppm CaCO₃ or

30 to 300 ppm CaCO₃ or

60 to 600 ppm CaCO₃

- 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 7 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.

Topaz Series Showcase

Analyzer	Topaz Total Hardness LR (10-50 ppm CaCO ₃)	SOL-58.311.000
Analyzer	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
Range Selection	30-300 ppm CaCO ₃ (Topaz Total Hardness HR only)	Specify in order
Range Selection	60-600 ppm CaCO ₃ (Topaz Total Hardness HR only)	Specify in order
Configuration	2-Channel Setup (similar range)	SOL-83.590.020
Configuration	4-Channel Setup (similar range)	SOL-83.590.040
Configuration	6-Channel Setup (similar range)	SOL-83.590.060
Configuration	Ethernet Interface (TCP/IP)	SOL-81.410.020
Option	1-Year Spare Part Package "Basis" (Analyzer + 1 st channel)	SOL-84.110.120
Option	1-Year Spare Part Package "Multi-Channel" (add once if multi-channel config. was selected)	SOL-84.110.150
Option	Reagent shelf in SS316L	SOL-89.610.010

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 10-50 ppm CaCO₃
LOD ≤ 10ppm CaCo3
Repeatability ± X % FS
Accuracy ± X % FS or ± X ppm
(whichever is greater - to be determined)

Topaz Total Hardness HR (all high ranges)

LOD (to be determined)
Repeatability ± X % FS
Accuracy ± X % FS or ± X ppm
(whichever is greater - to be determined)

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: Typical 150 VA, 300 max.

Operation

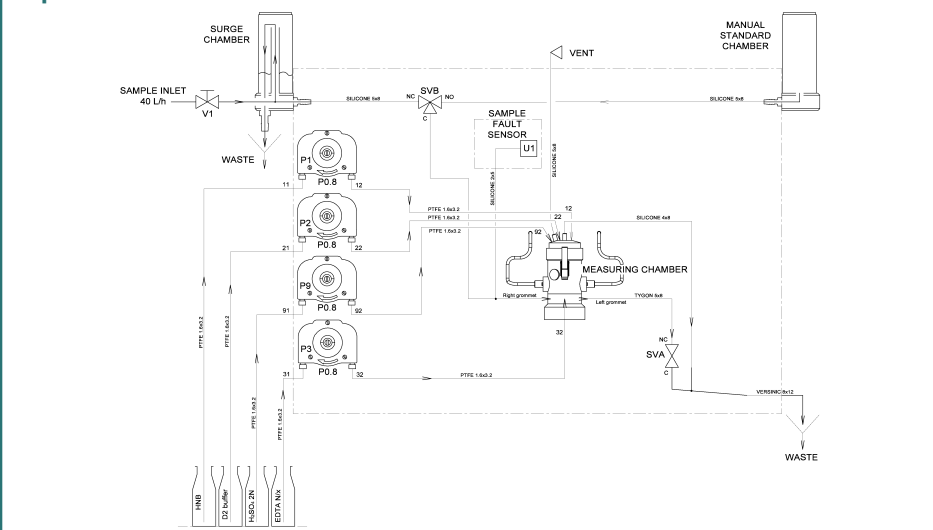
Display: Color LCD, 7", touchscreen
Display of process value, alarm status and time during operation.

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.

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 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_{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.

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	3.0 /month
Buffer D2 pH 10	RXX266
Reagent Consumption	4.5 /month
H2SO4 2 N	RXX159
Reagent Consumption	3.0 /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	36l/month max.