

CheckPoint

Portable/On-Line TOC Sensor

Overview

Measure low level total organic carbon (TOC) *anywhere, anytime*, with the new CheckPoint Portable/On-Line Total Organic Carbon (TOC) Sensor from GE Analytical Instruments. The first and only battery-powered TOC measuring device, the CheckPoint TOC Sensor has redefined portability and flexibility. It can be hand-carried to any point in a water system for rapid diagnostic sampling and troubleshooting or used on-line for continuous monitoring.

The CheckPoint TOC Sensor has a dynamic range of 0.05 to 1,000 ppb, and can measure TOC in water with conductivity up to 1.4 $\mu\text{S}/\text{cm}$. CheckPoint also measures conductivity/ resistivity and temperature.

Key Benefits

Ultra Portability — CheckPoint typically operates four to five hours using the optional battery, or continuously with AC power. Weighing just 3.6 kg (7.9 lb) with battery, CheckPoint gives you the freedom to sample anywhere.

Rapid Analysis — CheckPoint provides the rapid results and fast rinsedown required for time-critical diagnostics and troubleshooting. Featuring a default measurement every 15 seconds, users can adjust output intervals from 15 seconds up to eight hours.

Versatility and Convenience — CheckPoint can be used for continuous on-line monitoring, rapid on-line monitoring or grab sampling. It also features advanced digital communication capabilities including Ethernet (Modbus TCP/IP), and a USB port for easy data download.

Easy to Use with Low Maintenance — The reagentless CheckPoint TOC Sensor is easy to operate and requires minimal maintenance. Calibration is typically stable for six months.



Applications

Pharmaceutical — The CheckPoint TOC Sensor provides pharmaceutical manufacturers with maximum flexibility in process monitoring, process trending, screening potential trouble areas, and diagnosing problems in real time. CheckPoint can be placed at a dedicated point of use or conveniently moved throughout the pharmaceutical manufacturing facility for multi-point water monitoring, diagnostics and troubleshooting.

Hard Disk, Thin Display, Semiconductor — CheckPoint's ultra portability gives microelectronics manufacturers new problem solving and diagnostic capabilities. In addition to providing continuous on-line TOC monitoring to detect critical ultrapure water (UPW) changes, the CheckPoint Sensor makes it possible to quickly check TOC samples from pressurized or non-pressurized sources. CheckPoint can also monitor distribution points and units or fab tools for potential contamination sources. As an added benefit, CheckPoint can be calibrated to a reference TOC instrument, allowing excellent low TOC level sensor-to-sensor matching.

Power (UPW Cation Conductivity Control, Makeup or Cogeneration Condensate Return Water Monitor) — Controlling cation conductivity can be difficult if its source is non-ionic organics. High pressures and temperatures in power plant water cycles can oxidize Cl, S, or N containing non-ionic organics to extremely corrosive hydrochloric, sulfuric, or nitric acids. The CheckPoint TOC Sensor has an enhanced response to these compounds and can rapidly indicate their presence in makeup or condensate water. Rapid detection of other UPW system problems is easy with CheckPoint's ultra portability and diagnostic features.



Options and Accessories

Battery Pack Kit — The battery and charger system typically enable four to five hours of operation. Extra batteries are also available.

I/O Board — The optional I/O board provides two analog outputs (TOC or Conductivity/Resistivity, Standby and Error), one binary input (remote start/stop), two alarms and 24 V supply.

Vial Sampling Kit — The CheckPoint Vial Sampling Kit, which attaches easily to the Sensor, allows users to measure standards and grab samples.

Low-Pressure Sampling Kit — This includes Teflon and stainless steel sampling tubes and a waste bag for collecting zero-pressure samples in the laboratory or fab.

Sample Inlet Filter — The 60 μm sample inlet filter is recommended for on-line monitoring.

System Specifications¹

Total Organic Carbon

Linear Range	0.05 ppb to 1,000 ppb C
Precision	The greater of <1% RSD or 0.05 ppb for on-line measurements (20–40 °C or 68–104 °F); \leq 3.0% RSD at 500 ppb for grab samples
Analysis Modes	On-line (average or timed); grab (with optional Vial Sampling Kit)
Analysis Time	15 seconds on-line; 10 minutes grab
TOC Calibration Stability	Typically 6 months
TOC Conductivity/Resistivity Range	Up to 1.4 $\mu\text{S}/\text{cm}$ (0.7 $\text{M}\Omega\text{-cm}$) assuming CO_2

Conductivity/Resistivity

Conductivity/Resistivity Precision	\pm 0.5% RSD (20–40 °C or 68–104 °F)
Conductivity/Resistivity Accuracy	\pm 2.0%
Conductivity/Resistivity Calibration	Typically 6 months

Sensor Specifications

On-Line Sample Pressure	15–100 psi
Low Pressure Samples	Maximum 0.70 m (2.3 ft) above sample
Required Sample Line Flow Rate	60 mL/min minimum
Power Requirements	100–240 \pm 10% VAC, 60 W, 50/60 Hz, or battery
Temperature	Sample: 10–60 °C (50–140 °F); Ambient: 10–40 °C (50–104 °F)
Normal Operating Environment	Intended for indoor use only
Outputs	Ethernet (Modbus TCP/IP), USB, plus two 4–20 mA, two alarms, and binary input with optional I/O board
Installation/Overtoltage Category	II
Dimensions	H: 25.40 cm (10.0 in); W: 30.48 cm (12.0 in); D: 15.24 cm (6.0 in)
Dimensions with Vial Sampling Kit	H: 25.40 cm (10.0 in); W: 34.87 cm (13.7 in); D: 15.24 cm (6.0 in)
Weight — CheckPoint	2.9 kg (6.4 lb) without battery; 3.58 kg (7.9 lb) with battery
Weight — Vial Sampling Kit	0.6 kg (1.3 lb)
Safety Certifications	CE, ETL listed. Conforms to UL Std. 61010-1. Certified to CSA C22.2 No. 61010-1.

Consumables

UV Lamp	6 months
Pump Tube Kit	6 months

* Trademark of General Electric Company; may be registered in one or more countries.

¹ Stated analytical performance is achievable under controlled laboratory conditions that minimize operator and standards errors.



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