



ANATEL PAT700

Total Organic Carbon and Conductivity Analyzer

Supports Compliance with Global Pharmacopeia
Requirements: USP, EP

ACCELERATING
answers

 **BECKMAN
COULTER**
Life Sciences

PAT700 Total Organic Carbon & Conductivity Analyzer



Low Cost of Ownership

Minimal Consumables

- No peristaltic pump means no need to change peristaltic pump tubing or pump heads.

No Reagent Needed

- Oxidation of organic matter is ensured by a powerful UV lamp.

Simplified Maintenance

- 12-month service interval maximizes uptime.



Features

Single Analyzer for TOC, Conductivity and Temperature Measurement

- Can measure TOC, temperature-compensated and non-temperature-compensated conductivity, resistivity and temperature.

Single Conductivity Meter to Measure TIC and TC

- TOC is calculated as the difference between TC and TIC.
- Exhibits good specificity as TOC measurements are not affected by ppm levels of TIC

UV Lamp Efficiency Monitoring System

- Equipped with a dual UV lamp system with UV detect feature that monitors the efficiency of the UV lamp. If the main lamp has low UV intensity, the system automatically switches to standby lamp.

Rouge Detection

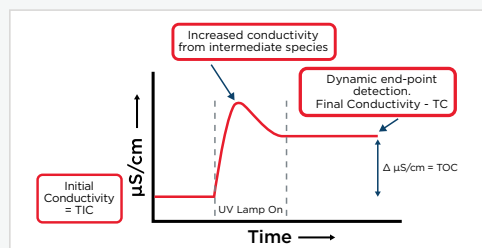
- Automatically alerts you to perform preventive maintenance if the oxidation cell is contaminated from rousing.

Dedicated Clean-In-Place Mode

- Facilitates the integration and the use of the instrument for CIP processes.

Onboard Automated Standards Introduction System (OASIS)

- Facilitates calibration, validation, system suitability tests, grab samples analysis and sample excursion capture. The RFID* technology removes the need for manual data entry and automatically transfers lot number, expiration date and certified value.



TOC is calculated as the difference between TC and TIC



* RFID is not available in all territories



Compliance

USP <643>, USP <645>, and EP 2.2.44 Compliant

- Can be fully validated for TOC, conductivity and temperature to USP and EP requirements.

Compliant with EP 2.2.44 Requirements for Purified Water and Water For Injection Applications

- With a cell that traps an aliquot of water and a dynamic endpoint detection system, it ensures complete oxidation of the organic molecules and discriminates between organic and inorganic carbon.

Supports Root Cause Analysis as Specified in Chapter 6.14 of EU GMP Annex 1

- Excursion mode** captures a sample when a TOC, conductivity or specific alarm occurs. The sample can be used for investigation, root cause analysis and impact assessment on the quality of products and manufacturing processes.

Supports 21 CFR Part 11 Compliance

- Includes multi-user access levels from Active Directory groups, audit trail and secured file export via FTP over Ethernet.*** It also features built-in electronic SOPs for calibration and system suitability with automated calculations and pass/fail decisions.

Load Bottles

1. Open the bottle door
2. Insert the bottles in the order displayed below
3. Close the bottle door
4. Press Next to continue

Bottle 1	Bottle 2	Bottle 3	Bottle 4
Blank		500 ppb Sucrose	500 ppb Benzoquinone

Navigation icons: Lock, Previous, Next, Stop

Load Bottles

1. Open the bottle door
2. Insert the bottles in the order displayed below
3. Close the bottle door
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Bottle 1	Bottle 2	Bottle 3	Bottle 4
		Excursion	Excursion

Navigation icons: Lock, Previous, Next, Stop

Ordering Information

Part Number	Description
D25545	PAT700 TOC Analyzer, Single Stream, RFID, with Quick-Connect connections, US/Japan Power Cord
D25546	PAT700 TOC Analyzer, Single Stream, RFID, with Quick-Connect connections, UK/India Power Cord
D25547	PAT700 TOC Analyzer, Single Stream, RFID, with Quick-Connect connections, EU Power Cord
D25548	PAT700 TOC Analyzer, Single Stream, RFID, with Quick-Connect connections, Swiss Power Cord
D06884	PAT700 TOC Analyzer, Single Stream, with Quick-Connect connections, US/Japan Power Cord
D06885	PAT700 TOC Analyzer, Single Stream, with Quick-Connect connections, UK/India Power Cord
D06886	PAT700 TOC Analyzer, Single Stream, with Quick-Connect connections, EU Power Cord
D06887	PAT700 TOC Analyzer, Single Stream, with Quick-Connect connections, Swiss Power Cord
D25549	PAT700 TOC Analyzer, Single Stream, RFID, with conduit wiring connections, No Power Cord

** Excursion mode requires RFID technology

*** Active directory and secured file export via FTP require RFID technology

Specifications

TOC

Operating Range	0.5 to 2,000 ppb as Carbon
Display Resolution	0.1 ppb
Accuracy	+/-3 ppb or ±5%, whichever is greater
Repeatability	±0.3 ppb or ±1%, whichever is greater
Limit of Detection	0.5 ppb
Conductivity Range for TOC Mode	0.05 - 5.0 µS/cm

Conductivity

Conductivity Range	0.05 to 150 µS/cm (@ 25°C)
Conductivity Accuracy	±2% over full range (uncompensated)
Available Conductivity Reporting Modes	Temperature compensated to 25°C, or uncompensated
Available Resistivity Reporting Mode	Temperature compensated to 25°C only
Resistivity	Resistivity Range 0.2 to 18 MΩ-cm (@ 25°C)

Temperature

Ambient Operating Range	10 to 40°C (50 to 104°F)
Measurement Accuracy	±0.5°C
Sample Water Range	1 to 95°C (34 to 203°F)

Physical Specs

UV Lamps	2, with UV Detect technology
Interface/Display	Color touchscreen
Maximum Altitude	4,000 m (13,125 ft)
User I/O Wiring	Three, ¾-inch conduit openings or quick disconnect fittings
Standards System	Onboard Automated Standards Introduction System (OASIS)
Dimensions (W x D x H)	59.7 X 22.9 X 25.4 cm (23.5 X 9 X 10 in.)
Weight	13.6 kg (30 lb)
Sample Inlet Flow Rate Range	60 mL/min to 300 mL/min
Sample Inlet Pressure Range	69 to 690 kPa (10 to 100 psi)

Communications

Analog output	3 x 4-20mA outputs, user configurable TOC, conductivity (uncompensated) and Sample Temperature
Digital output	4 x digital outputs, user configurable (for alarms, etc.)
Digital input	2 x digital inputs (for remote control)

Compliance

Installation Category	II
Pollution Degree	2
Certifications	CE Certified, certified to US and Canadian standards by CSA
Enclosure Rating	Conduit version: IP56, Quick connect version: IP46
Release tests	USP <643>, USP <645>, EP 2.2.44



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Cleanroom Management International

We care for your compliance



QbD1200 TOTAL ORGANIC CARBON ANALYZER

RELIABLE MEASUREMENT MADE SIMPLE



DISCOVERY
in motion.

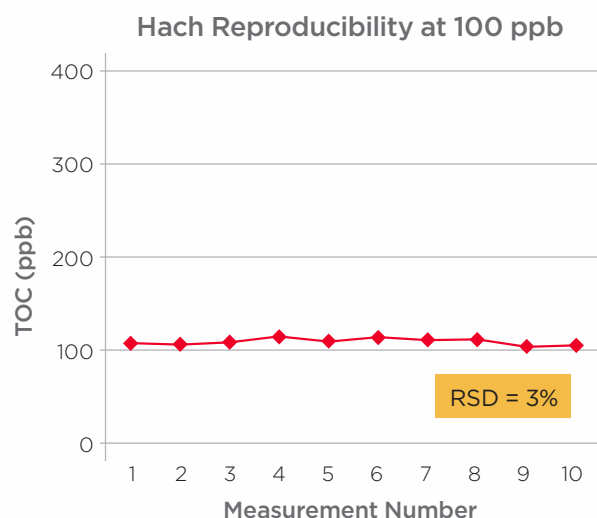
 **BECKMAN
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THE NEW QbD1200

Delivers the highest performance with unparalleled ease of operation and maintenance

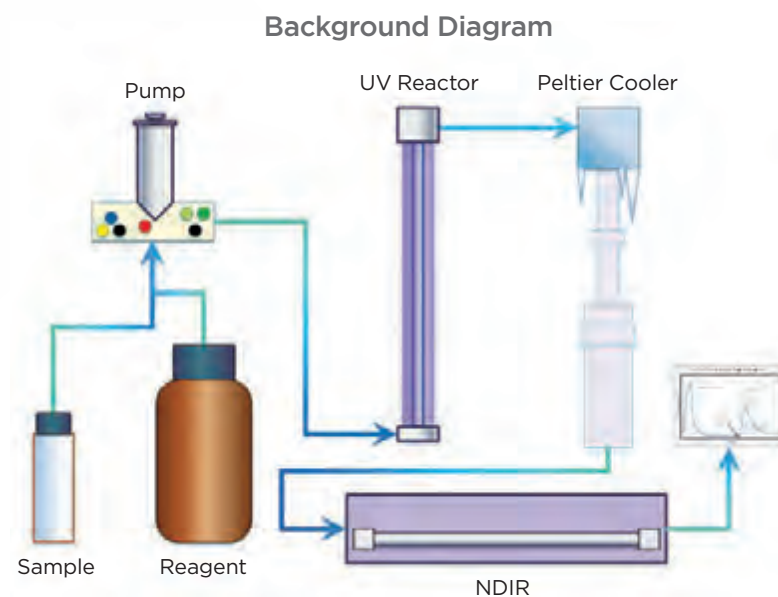
Reliable Data

- Stop throwing away your first sample. QbD1200 has virtually eliminated sample-to-sample carryover
- Outstanding reproducibility means no more inconsistent data
- Dynamic Endpoint Detection provides clear assurance of:
 - Complete oxidation of organics
 - Complete removal of inorganic carbon
- No additional inorganic carbon removal module required
- Digital NDIR detector automatically corrects background and drift for long term stability
- Optimized for pure water, water for injection and cleaning validation with a range up to 100ppm



TOTAL ORGANIC CARBON

Total organic carbon is an indirect measure of organic molecules present in pharmaceutical waters measured as carbon. A number of acceptable methods exist for analyzing TOC. The QbD1200 uses a proprietary technology that oxidizes the organic carbon into carbon dioxide which is measured to determine the organic carbon concentration. The new QbD1200 strictly adheres to the regulatory requirement of discriminating between inorganic carbon and the organic carbon.





Simplify Your Validation and Analysis

- Unbox your QbD1200 and have it up and running in less than an hour
- No external PC required means no extra Computer System Validation for 21 CFR 11 Compliance
- Large 10.4 inch color touch screen display and intuitive user interface
- Automated calibrations, System Suitability Testing, and report generation
- User interface guides operator through steps, no need to refer to a complex manual
- Auto-ranging/auto-dilution means there is no need to know the sample concentration ahead of time
- Only one reagent is needed for ALL analysis



Low Cost of Ownership

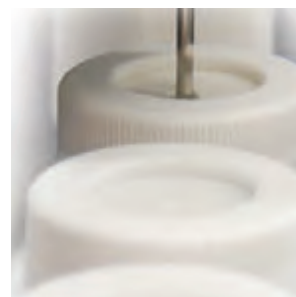
- Say goodbye to frequent maintenance
- Reduced service calls
- Low Reagent cost

Fast Calibration

- Automated calibration in approximately 90 minutes

Unexpected, Over-ranging Samples are No Problem for the QbD1200

- Glass reaction chamber is flushed out effectively after each measurement
- Recover from overload sample (10 X upper limit) on the very next measurement
- No special servicing or cleaning required after over-ranging sample



QUALITY BY DESIGN APPROACH

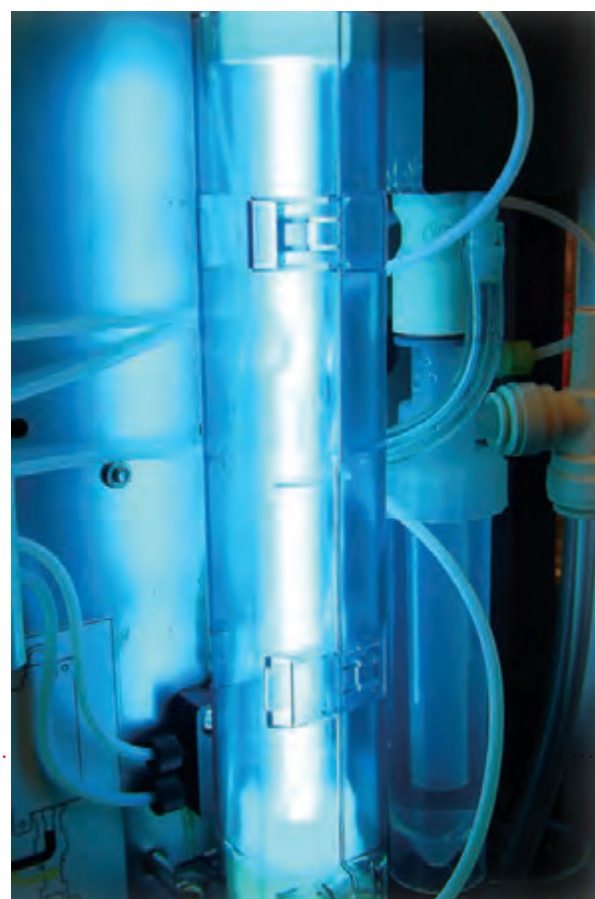
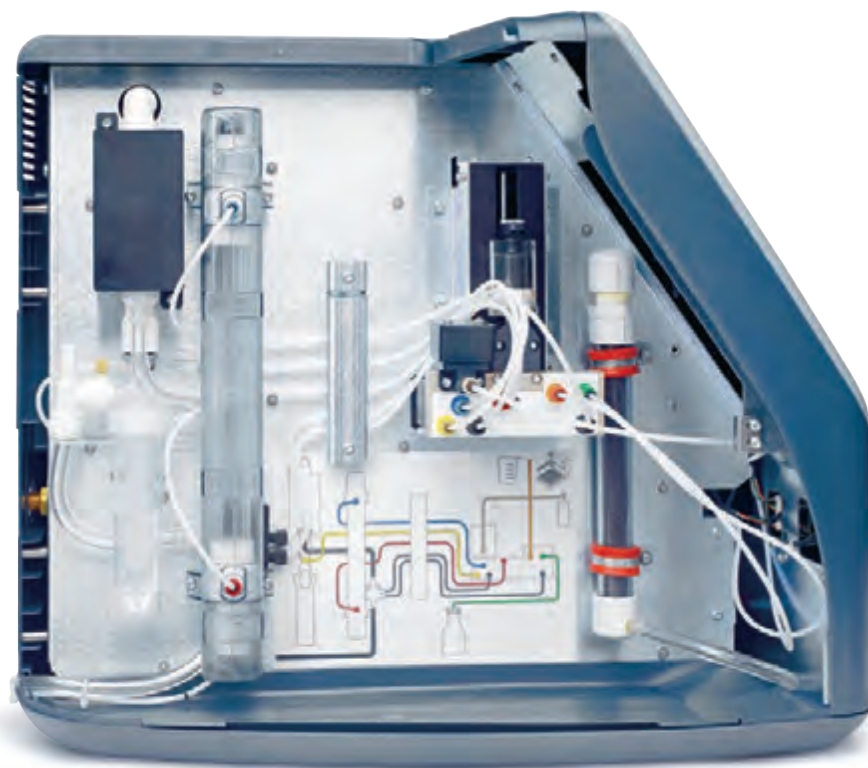
- On demand and automatic self-health check runs each time the instrument is powered on
- Automatic monitoring of pressure, liquid flow, gas flow, UV lamp intensity, temperature and NDIR detector via 7 sensors at 10 points in the instrument
- Communicates proper functioning of all sub-systems ensuring reliable measurement and providing confidence in the test

Ensure Regulatory Compliance with QbD1200

- Fully complies with all global pharmacopoeia regulations: USP, JP, EP, IP, KP, ICH
- Simple IQ/OQ/PQ qualification routine compliant with ICH guidelines
- Convenient automated routines for:
 - USP SST Bulk Water
 - USP SST Sterile Water
 - JP SDBS Validation
 - Calibration with JP compliant KHP

Secure and Easy Data Management

- Designed for 21 CFR part 11 compliance
 - Simply paperless feature allows export of data via FTP over secure ethernet
 - Send data and reports to a single location for centralized record keeping
 - Integrated hard drive encrypts all data with ample storage for lifetime of measurements
 - Create reports with the touch of a button
-





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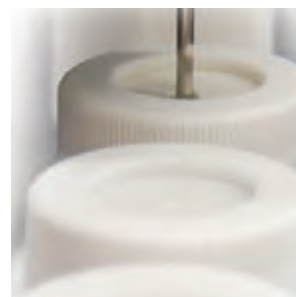
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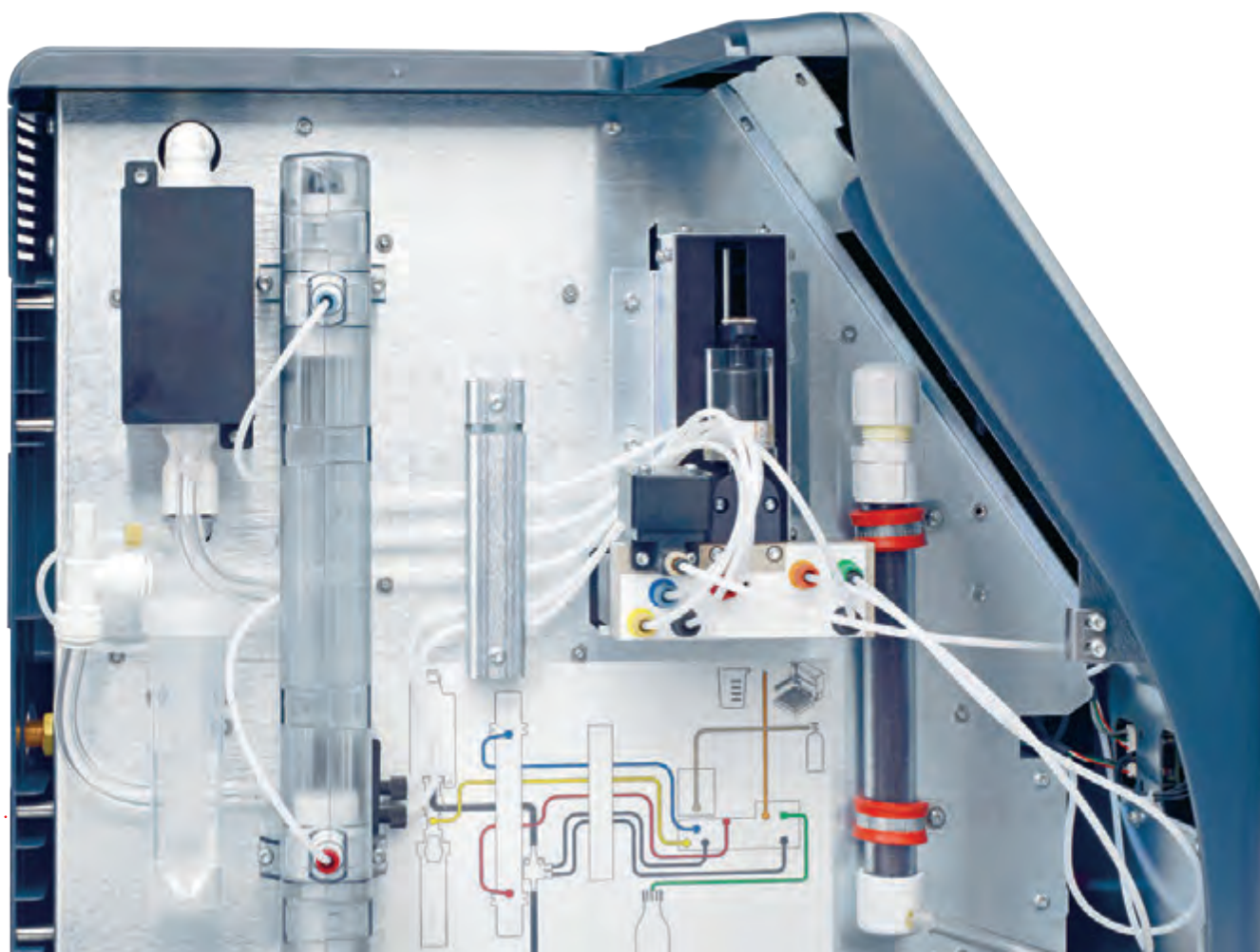
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PERFORMANCE	
Range	0.4 ppb – 100,000 ppb
Detection Limit	0.4 ppb
Precision	< 2% or 3 ppb (whichever is greater)
Accuracy	± 2%
Calibration Time	90 minutes
Analysis Time	~5 minutes
Sample-to-sample Carryover (from 500 ppb to blank)	< 0.2%
Overload Recovery (from 1,000 ppm to 1 ppm)	1 measurement

INORGANIC CARBON HANDLING	
Extra Inorganic Carbon Removal Module needed for samples with high levels of Inorganic Carbon?	NO
Dynamic Endpoint Detection to assure complete Inorganic Carbon removal?	YES

INSTRUMENT SELF-DIAGNOSTICS TO ENSURE DATA INTEGRITY	
Will Instrument report TOC value IF:	
Lamp intensity too low	NO
Carrier gas insufficient / tank runs out	NO
Reagent insufficient / bottle empty	NO
Sample volume insufficient / vial empty	NO

REAGENTS	
Reagent Supply	Purchase or make your own
Option to prepare own reagents	YES
Total number of reagents (acid, oxidizer, dilution water)	One (1)

MEASUREMENT METHOD AND ASSURANCE	
Oxidation	UV lamp + persulfate
UV Lamp Confirmation	Broadband silicate photodiode sensor
Detector	Digital NDIR
Detector Stability	Continuously verified against reference
Pre-Detector moisture removal	Peltier cooler with continuous current monitoring
Dispense Module	Syringe pump, accurate to +/- 1% volume
Flow Sensor	Dynamic fluid detector (ensures accurate sample and reagent volume)
Carrier Gas Options	CO ₂ free air, O ₂ , or N ₂
Carrier Gas Pressure Confirmation	Dual orifice pressure sensor
Carrier Gas Valve Shutoff	When measurement complete, valve closes to avoid wasting gas
Autorange Capability	Yes
Analysis Mode	NPOC (Non Purgeable Organic Carbon)

DATA STORAGE AND RETRIEVAL	
Regulatory	21 CFR, part 11 all measurements recorded to encrypted database
Paperless Reporting	Secure FTP over Ethernet
IO	5 USB, 1 Ethernet
Data Export Formats	PDF, CSV

USER INTERFACE	
Display	10.4 inch Hi-Res color touch screen
External PC	No external hardware / PC required
External keyboard / mouse	Optional, not required
Ease of Operation	Intuitive user interface, guides operator through measure setup

QUALIFICATION ROUTINES	
Calibration	Automated routine: 18 point calibration using KHP (6 concentrations, 3 replicates each)
Calibration Standard	5ppm KHP (single 125mL bottle), diluted to achieve 1, 2, 3, 4, 5 ppm concentrations; reagent is used as blank
Verification Tests / System Suitability	Automated routines: • USP SST Bulk Water (blank, 500ppb as C: sucrose, benzoquinone) • USP SST Sterile Water (blank, 8ppm as C: sucrose, benzoquinone) • JP-16 <2.59> validation (blank, 500ppb as Carbon SDBS)

REGULATORY COMPLIANCE	
USP <643> (including Sterile Water SST), JP-16 <2.59>, EP <2.2.44>, IP, CP, KP, US EPA 5310c	YES
21 CFR, part 11	YES
ICH guidelines for instrument validation including: accuracy, precision, LOD, LOQ, linearity, range, specificity, robustness	YES, included in IQ / OQ

AUTOSAMPLER	
Capacity	64 sample vials (standard 40mL glass TOC vials)
Style	XYZ, septum piercing
Sample tray material	Anodized Aluminum

GENERAL TECHNICAL DATA	
Instrument dimensions	W 320 x D 507 x H 410 mm
Power	100-240 VAC, 47-63 Hz
Weight	10 kg (22 lbs)
Auto sampler dimensions	W 366 x D 537 x H 457 mm
Power	100-240 VAC, 47-63 Hz
Weight	21 kg (45 lbs)
Operating temperature & humidity	10-35°C; up to 90% relative humidity, non-condensing
Reporting units	µg/L (ppb)

In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

A global presence. Focused on individuals.

Our innovations improve outcomes behind the scenes. Yet we touch people the world over by developing, manufacturing and marketing discovery systems and products that improve human health.

For over 75 years, we've been building a global reputation in hospitals, labs, and universities, where our life science research instruments perform vital roles day in and day out. Whether helping to solve complex biological problems, investigate the cause of disease, or find potential new cures, Beckman Coulter is focused on innovations that ultimately lead to healthier lives.



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