

QUAKELOGIC

SIMULTANEOUS ICP-OES SPECTROMETER

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QL-SpectraMax Pro 6500

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Simultaneous ICP-OES Spectrometer



PRECISION MULTI-ELEMENT ANALYSIS FOR HIGH-SALINITY MATRICES

The QL-SpectraMax Pro 6500 is a simultaneous full-spectrum ICP Optical Emission Spectrometer built for rapid, precise multi-element analysis of high-TDS aqueous matrices, including produced water, lithium brines, and DLE process streams. Engineered for environmental, industrial, mining, energy, and research laboratories, it pairs dual-view plasma observation with an intelligent high-matrix sample introduction system to deliver reliable performance on challenging high-salinity samples without repeated dilution.

- Dual-view plasma observation and signal attenuation measure trace and major elements simultaneously, eliminating repeated dilution and cutting analysis time per sample.
- High-salt sample introduction package and vertical quartz torch minimize salt deposition, extending consumable life during continuous high-salinity brine analysis.
- Simultaneous full-spectrum CCD detection with a linear range exceeding 10^5 captures all elements at once for higher throughput and reproducibility.
- 180+ position autosampler and programmable rinse protocols enable unattended, high-throughput operation while minimizing carryover between concentrated matrices.

STANDARD FEATURES »

- Simultaneous CCD Detector
- Fixed Echelle Optics
- Dual-View Plasma
- Vertical Quartz Torch
- Digital RF Generator
- Automatic RF Tuning
- Water-Cooled RF
- High-TDS Nebulizer
- Cyclonic Spray Chamber
- Argon Online Dilution
- 12-Roller Peristaltic Pump
- Mass Flow Control
- 180+ Position Autosampler
- Recirculating Cooling Unit
- Auto Wavelength Calibration
- Programmable Rinse Protocols
- 50,000-Line Spectral Library
- Control Workstation
- Analytical Software Suite
- Audit Trail & Records

Key Features

- Simultaneous full-spectrum direct-reading architecture captures qualitative, semi-quantitative, and quantitative multi-element data in a single acquisition for maximum throughput.
- Fixed echelle optical system in a thermostatically controlled chamber delivers ≤ 0.007 nm resolution and outstanding long-term wavelength stability.
- Dual-view plasma observation supports axial, radial, bi-directional, and simultaneous dual-view modes, matching sensitivity to each element concentration.
- Vertical quartz torch configuration minimizes salt deposition and extends consumable lifetime during sustained high-salinity sample analysis.
- Fully digital 27.12 MHz RF generator with automatic tuning and water cooling maintains stable plasma through continuous production runs.
- Intelligent axial and radial signal attenuation analyzes trace and major elements together, removing the need for repeated sample dilution.
- Argon online dilution system enables direct analysis of concentrated high-salinity samples, reducing manual preparation and dilution error.
- Large-area thermoelectrically cooled CCD with automatic wavelength calibration provides simultaneous acquisition and reliable real-time drift correction.
- Analytical software supporting 21 CFR Part 11 delivers audit trails, secure records, and automated method development for regulated laboratories.

PRODUCT FEATURES

Optical System

Fixed echelle spectrometer, 160–900 nm coverage ·
Thermostatically controlled optical chamber · Resolution ≤ 0.007 nm (FWHM) at 200 nm

RF Generator

Fully digital, 27.12 MHz · Adjustable 500–1600 W, water-cooled ·
Automatic tuning; RF stability $\leq 0.1\%$

Plasma Observation

Dual-view: axial, radial, bi-directional · Simultaneous dual-view
measurement mode · Vertical quartz torch configuration

Detection

Thermoelectrically cooled large-area CCD · Simultaneous full-
spectrum acquisition · Linear dynamic range exceeding 10^5

Sample Introduction

High-TDS nebulizer and cyclonic spray chamber · HF-resistant,
high-salinity sampling system · Argon online dilution system

Fluidics

12-roller, 4-channel peristaltic pump · Programmable speed
control · Multi-channel mass flow control

Automation

180+ position high-capacity autosampler · Programmable
automatic rinse protocols · Rapid sampling system

Software & Compliance

>50,000-line spectral library · Audit trail, electronic records,
user management · 21 CFR Part 11 support; remote diagnostics

**For more information about the features, specifications, and
available configurations of the QL-SpectraMax Pro 6500,
please contact QuakeLogic.**

MACHINE CONFIGURATION

COMPONENT	CONFIGURATION
Spectrometer	Simultaneous full-spectrum ICP-OES, direct-reading
Optical System	Fixed echelle, thermostatically controlled chamber
Wavelength Range	160–900 nm full coverage
Detector	Large-area thermoelectrically cooled CCD
RF Generator	Fully digital, water-cooled, 27.12 MHz
Plasma Observation	Dual-view (axial / radial / bi-directional)
Torch	Vertical quartz, high-salinity configuration
Nebulizer	Quartz concentric high-TDS nebulizer
Spray Chamber	Quartz cyclonic
Peristaltic Pump	12-roller, 4-channel, programmable
Autosampler	High-capacity, 180+ positions
Cooling	Closed-loop recirculating cooling unit

CAPACITY

SPECIFICATION	VALUE
Wavelength Coverage	160–900 nm
Optical Resolution	≤ 0.007 nm (FWHM) at 200 nm
RF Power Range	500–1600 W
Linear Dynamic Range	$>10^5$
Analytical Precision	$\leq 0.5\%$ RSD
Long-Term Stability	$\leq 1\%$ RSD over 8 hours
RF Power Stability	$\leq 0.1\%$
Autosampler Positions	180+ positions
Spectral Library	$>50,000$ emission lines

OPTIONAL FEATURES & ACCESSORIES

HIGH-CAPACITY AUTOSAMPLER

Automated 180+ position sample handling for unattended, high-throughput operation across standards, blanks, QC, and diluted brine samples.

RECIRCULATING COOLING UNIT

Closed-loop cooling system delivering stable instrument operation and precise RF temperature control during continuous analytical runs.

ARGON ONLINE DILUTION

Integrated gas dilution enables direct analysis of concentrated high-salinity samples, reducing manual preparation and dilution-related error.

HF-RESISTANT SAMPLING KIT

HF-resistant sample introduction configuration extends compatibility to aggressive chemical matrices and acid-digested geological samples.

TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Instrument Type	Simultaneous full-spectrum ICP-OES
Detection Architecture	Direct-reading, simultaneous acquisition
Analysis Modes	Qualitative, semi-quantitative, quantitative
Wavelength Range	160–900 nm
Optical System	High-resolution fixed echelle
Optical Chamber	Thermostatically controlled
Optical Resolution	≤ 0.007 nm (FWHM) at 200 nm
Plasma Observation	Axial, radial, bi-directional, simultaneous dual-view
Torch Configuration	Vertical quartz, anti-salt-deposition
Signal Attenuation	Intelligent axial and radial
RF Generator Type	Fully digital, water-cooled
RF Frequency	27.12 MHz
RF Power	500–1600 W, continuously adjustable
RF Tuning	Automatic, intelligent plasma optimization
RF Power Stability	$\leq 0.1\%$
Analytical Precision	$\leq 0.5\%$ RSD
Long-Term Stability	$\leq 1\%$ RSD over 8 hours

SPECIFICATION	DESCRIPTION
Linear Dynamic Range	$>10^5$
Detector	Large-area thermoelectrically cooled CCD
Wavelength Calibration	Automatic, real-time correction
Nebulizer	Quartz concentric, high-TDS
Spray Chamber	Quartz cyclonic
Sampling Matrix	HF-resistant, high-salinity
Dilution System	Integrated argon online dilution
Peristaltic Pump	12-roller, 4-channel, programmable
Gas Flow Control	Precision multi-channel mass flow control
Autosampler	180+ sample positions, unattended
Cooling System	Closed-loop recirculating unit
Rinse Protocols	Programmable automatic, low carryover
Spectral Library	$>50,000$ emission lines
Data Management	Full-spectrum storage, retrieval, reprocessing
Security	Multi-level users, audit trail, e-records
Compliance	21 CFR Part 11 architecture
Gas Supply	Standard laboratory argon

Corporate Headquarters:**QUAKELOGIC INC.**

2008 Opportunity Dr., Suite 130
Roseville, CA 95678, USA

Monday – Friday

9:00 AM – 5:00 PM (PST/PDT)

Contact Us:

Phone: +1 (916) 899-0391

Email: sales@quakelogic.net

Web: products.quakelogic.net

About QuakeLogic:

QuakeLogic Inc. is a California-based engineering and technology company providing innovative, reliable, high-quality solutions to customers worldwide.

Our Commitment

We are committed to quality, innovation, and customer satisfaction – building lasting partnerships through reliable solutions and dependable support.

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