

QUAKELOGIC

ICP-OES SPECTROMETER SYSTEM



QL-SpectraPro

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ICP-OES Spectrometer System



SIMULTANEOUS MULTI-ELEMENT ICP-OES ANALYSIS

The QL-SpectraPro is a fully simultaneous Inductively Coupled Plasma Optical Emission Spectrometer for advanced multi-element analysis in environmental, agricultural, industrial, pharmaceutical, food, mining, and research laboratories. It pairs a high-resolution fixed echelle optical system with dual-view plasma observation and a thermoelectrically cooled full-spectrum CCD detector to determine 70 or more elements at once, delivering low detection limits, excellent precision, and long-term stability across complex sample matrices.

- Fully simultaneous detection of 70 or more elements accelerates throughput and cuts analysis time across trace, minor, and major concentration ranges.
- Dual-view plasma observation with axial, radial, and bi-directional modes optimizes sensitivity while reducing spectral and matrix interferences.
- Robust plasma handles total dissolved solids of 20% or greater, enabling reliable analysis of high-matrix environmental and industrial samples.
- 21 CFR Part 11 compliant software with audit trail and electronic signatures ensures regulatory traceability and secure long-term data integrity.

STANDARD FEATURES »

- Fixed Echelle Optics
- Dual-View Plasma
- Digital RF Generator
- Water-Cooled RF
- Cooled CCD Detector
- Cyclonic Spray Chamber
- Concentric Nebulizer
- Demountable Quartz Torch
- Peristaltic Pump
- Mass Flow Controllers
- Automatic Wavelength Correction
- 50,000+ Line Library
- Automated Calibration
- 180-Position Autosampler
- 21 CFR Part 11 Software
- Multi-Level User Management
- Audit Trail Logging
- Remote Diagnostics
- Intelligent Diagnostic Routines
- English Software Interface

Key Features

- High-resolution fixed echelle optical system delivers exceptional wavelength stability and spectral separation for confident multi-element identification.
- Dual-view plasma observation supports axial, radial, bi-directional, and simultaneous modes to maximize sensitivity and minimize interferences.
- Digital 27.12 MHz RF generator with 500–1600 W adjustable power and automatic tuning maintains stable plasma under demanding conditions.
- Large-area thermoelectrically cooled scientific CCD captures the full spectrum simultaneously for fast, comprehensive elemental acquisition.
- Temperature-controlled cyclonic spray chamber at 20 °C or below reduces matrix effects and improves long-term analytical stability.
- Automatic wavelength correction and real-time spectral calibration sustain outstanding analytical stability over continuous eight-hour operation.
- Advanced background, spectral interference, and internal standard correction algorithms deliver accurate quantitative results in complex matrices.
- High-capacity autosampler with 180 or more positions and acid-resistant racks enables unattended, high-throughput laboratory workflows.
- Integrated spectral library of more than 50,000 emission lines supports qualitative, semi-quantitative, and quantitative analysis in one platform.

PRODUCT FEATURES

Optical System

Fixed echelle optical design · Resolution 0.006 nm (FWHM) at 200 nm · Wavelength coverage 160–900 nm

RF Generator

Digital solid-state, 27.12 MHz · Adjustable power 500–1600 W · Automatic tuning and ignition, water-cooled

Plasma & Observation

Dual-view axial and radial observation · Bi-directional and simultaneous modes · Handles TDS of 20% or greater

Detector

Thermoelectrically cooled scientific CCD · Full-spectrum simultaneous acquisition · Linear dynamic range ≥ 5 orders of magnitude

Sample Introduction

Quartz concentric nebulizer for high-salt matrices · Corrosion-resistant quartz cyclonic spray chamber · Four-channel, twelve-roller peristaltic pump

Gas Control

High-precision multi-channel mass flow controllers · Automatic plasma, auxiliary, nebulizer, cooling regulation · Optional process-gas channels

Software & Compliance

Qualitative, semi-quantitative, quantitative analysis · 21 CFR Part 11 compliant with audit trail · Multi-level user management, electronic signatures

Automation

Autosampler 180+ positions · Automatic calibration and optimization · Remote diagnostics and support

For more information about the features, specifications, and available configurations of the QL-SpectraPro, please contact QuakeLogic.

MACHINE CONFIGURATION

COMPONENT	CONFIGURATION
Spectrometer Type	Fully simultaneous ICP-OES
Optical System	High-resolution fixed echelle
Detector	Thermoelectrically cooled scientific CCD
RF Generator	Digital, 27.12 MHz, water-cooled
Plasma Observation	Dual-view (axial / radial / bi-directional)
Spray Chamber	Temperature-controlled quartz cyclonic
Nebulizer	Quartz concentric, high-salt optimized
Torch	Demountable high-purity quartz
Pump	Four-channel, twelve-roller peristaltic
Gas Control	Multi-channel mass flow controllers
Autosampler	180+ positions, acid-resistant racks
Software	Integrated, 21 CFR Part 11 compliant

CAPACITY

SPECIFICATION	VALUE
Elements Determined	70 or more, simultaneous
Wavelength Range	160–900 nm
Optical Resolution	0.006 nm (FWHM) at 200 nm or better
Linear Dynamic Range	≥5 orders of magnitude
RF Power Range	500–1600 W, continuously adjustable
Sample Uptake Rate	0.2–1.5 mL/min, adjustable
Matrix Tolerance	TDS 20% or greater
Autosampler Positions	180 or more
Continuous Operation	8 hours or longer

OPTIONAL FEATURES & ACCESSORIES

ADDITIONAL PROCESS GAS CHANNELS

Extends the mass flow controller system with optional process-gas channels for specialized sample introduction and matrix handling.

LABORATORY AUTOMATION INTERFACE

Connects the system to automated sample handling and laboratory automation platforms for fully unattended high-throughput operation.

EXTENDED AUTOSAMPLER RACKS

Acid-resistant racks and tubing expand unattended capacity beyond 180 positions for large sample batches and long analytical runs.

REMOTE TECHNICAL SUPPORT PACKAGE

Adds remote diagnostics, performance monitoring, and technical support for rapid troubleshooting and maximized instrument uptime.

TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Instrument Type	Fully simultaneous ICP-OES
Elements Analyzed	70 or more, simultaneous
Optical System	High-resolution fixed echelle
Optical Resolution	0.006 nm (FWHM) at 200 nm or better
Wavelength Coverage	160–900 nm
Plasma Observation	Axial, radial, bi-directional, simultaneous
RF Frequency	27.12 MHz, digital
RF Output Power	500–1600 W, continuously adjustable
RF Tuning	Automatic, intelligent plasma optimization
Plasma Ignition	Automatic ignition and shutdown
RF Cooling	Water-cooled
Analytical Stability	8 hours or longer continuous operation
Matrix Tolerance (TDS)	20% or greater
Sample Uptake Rate	0.2–1.5 mL/min, adjustable
Spray Chamber	Quartz cyclonic, ≤20 °C temperature-controlled
Nebulizer	Quartz concentric, high-salt optimized
Torch	Demountable high-purity quartz

SPECIFICATION	DESCRIPTION
Peristaltic Pump	Four-channel, twelve-roller, adjustable speed
Gas Flow Control	Multi-channel mass flow controllers
Detector	Large-area thermoelectrically cooled CCD
Spectral Acquisition	Full-spectrum simultaneous (UV & visible)
Linear Dynamic Range	≥5 orders of magnitude
Wavelength Correction	Automatic, real-time calibration
Correction Algorithms	Background, spectral, internal standard, standard addition
Spectral Library	>50,000 emission lines
Autosampler	180+ positions, acid-resistant
Analysis Modes	Qualitative, semi-quantitative, quantitative
Data Management	Secure database, method management
Compliance	21 CFR Part 11
User Management	Multi-level, electronic signatures, audit trail
Software Language	English graphical interface
Diagnostics	Remote diagnostics and performance monitoring
Optimization	Auto wavelength, plasma, optical alignment
Operating Environment	Tropical laboratory rated

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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.