

QUAKELOGIC

BENCHTOP ICP-OES SPECTROMETER



QL-OptiSpectra

Benchtop ICP-OES Spectrometer



SIMULTANEOUS FULL-SPECTRUM ELEMENTAL ANALYSIS

The QL-OptiSpectra is a compact benchtop Inductively Coupled Plasma Optical Emission Spectrometer for rapid, simultaneous multi-element analysis. It pairs a thermostatically controlled high-resolution Echelle optical system with a large-area array detector and a 27.12 MHz solid-state RF generator. Built for environmental, pharmaceutical, geological, petrochemical, food, and materials-testing laboratories, it delivers dual-view plasma observation, gas-saving standby, and a complete workstation package for routine and regulated workflows.

- Full-spectrum simultaneous acquisition captures the entire wavelength range at once, enabling retrospective reanalysis of stored spectra without repeating sample runs.
- Intelligent gas-saving standby mode reduces argon consumption during idle periods while allowing rapid return to full analytical operation.
- Dual-view axial and radial plasma observation covers trace and high-concentration elements, extending dynamic range across diverse sample matrices.
- Complete turnkey package with workstation, chiller, calibration materials, and onsite commissioning shortens time to first validated result.

STANDARD FEATURES »

- Echelle Optical System
- Array ECCD Detector
- Solid-State RF Generator
- Dual-View Plasma
- Vertical Torch Design
- Multi-Channel Peristaltic Pump
- Mass-Flow Controllers
- Gas-Saving Standby Mode
- Auto Plasma Ignition
- Drain Monitoring
- LED Status Indicator
- Safety Interlocks
- Torchbox Access Door
- Continuous Argon Purge
- Analytical Software Suite
- Dell Workstation Package
- Recirculating Chiller
- Calibration & Validation Tools
- Installation Accessory Kit
- Onsite Commissioning

Key Features

- High-resolution thermostatically controlled Echelle optical system delivers excellent wavelength stability, spectral separation, and long-term analytical performance across the full range.
- Sealed optical system with continuous argon purge enhances ultraviolet transmission and protects optical components for reliable low-wavelength measurement.
- Large-area thermoelectrically cooled array ECCD detector enables simultaneous full-spectrum acquisition with high sensitivity, wide dynamic range, and low-noise trace detection.
- Patented all-solid-state 27.12 MHz RF generator with automatic matching provides stable plasma across aqueous, high-salt, organic, and complex matrices.
- Fast plasma ignition and rapid warm-up minimize waiting time before routine analysis, improving daily laboratory throughput and instrument availability.
- Vertical torch with dual-view plasma observation supports both axial and radial measurement, balancing trace sensitivity against high-concentration linearity.
- Precision multi-channel peristaltic pump with independently controlled channels manages sample, internal-standard, and drain handling for reproducible introduction.
- Independent mass-flow controllers precisely regulate plasma, auxiliary, and nebulizer gases, ensuring consistent ignition, operation, and analytical stability.
- Comprehensive software handles instrument control, method development, calibration, interference correction, reporting, and data management from one platform.

PRODUCT FEATURES

Optical System

Thermostatically controlled high-resolution Echelle system · Sealed optics with continuous argon purge · Wavelength coverage 160 nm to 900 nm

Detector

Large-area array ECCD detector · Thermoelectrically cooled, low-noise operation · Simultaneous full-spectrum acquisition

RF Generator

All-solid-state, 27.12 MHz operation · Continuously adjustable RF output · Automatic matching and plasma optimization

Torch & Plasma

Vertical torch, dual-view (axial/radial) · Enclosed torchbox with safety interlocks · Sliding-access door and viewing window

Sample Introduction

Multi-channel peristaltic pump (≥3 channels) · Independent mass-flow controllers for all gases · Drain monitoring and liquid-sensing protection

Software & Data

Method development, calibration, quant/qual analysis · Automated wavelength and background correction · QC monitoring, export to common formats

Automation Interfaces

Plug-and-play autosampler connectivity · Auto-dilution and auto-injection support · Argon online dilution compatibility

Complete Package

Dell OptiPlex workstation and peripherals · Air-cooled recirculating chiller · Calibration, validation, and installation kits

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

MACHINE CONFIGURATION

COMPONENT	CONFIGURATION
Optical Platform	Thermostatically controlled high-resolution Echelle
Detector	Large-area array ECCD, thermoelectrically cooled
RF Generator	All-solid-state, 27.12 MHz, auto-matching
Torch	Vertical, dual-view (axial and radial)
Torch Compartment	Enclosed with interlocks and sliding-access door
Sample Pump	Multi-channel peristaltic, ≥ 3 controlled channels
Gas Control	Independent mass-flow controllers (plasma/aux/neb)
Introduction System	Nebulizer, spray chamber, torch, injector, tubing
Thermal Management	Air-cooled recirculating chiller
Workstation	Dell OptiPlex desktop, monitor, keyboard, mouse
Software	Integrated instrument control and analytical suite
Status Indication	Front-mounted LED system-status indicator

CAPACITY

SPECIFICATION	VALUE
Wavelength Coverage	160 nm – 900 nm
Analytical Range Met	Exceeds 167 nm – 852 nm requirement
Plasma Observation	Dual-view (axial + radial)
RF Frequency	27.12 MHz
Pump Channels	≥ 3 independently controlled
Gas Channels Regulated	Plasma, auxiliary, nebulizer
Data Acquisition	Full-spectrum simultaneous
Standby Operation	Reduced-argon gas-saving mode
Matrix Compatibility	Aqueous, high-TDS, high-salt, organic, geological

OPTIONAL FEATURES & ACCESSORIES

ORGANIC INTRODUCTION KIT

Adds controlled oxygen addition for stable analysis of solvent-based and organic sample matrices.

AUTOMATED AUTOSAMPLER

Plug-and-play autosampler for unattended, high-throughput sequential sample analysis and improved laboratory productivity.

AUTOMATIC DILUTION SYSTEM

Online argon or liquid dilution extends analytical range and handles high-concentration samples without manual preparation.

CERTIFIED REFERENCE MATERIALS

Supplied CRMs support system calibration, verification, and ongoing analytical quality control.

TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Configuration	Compact benchtop ICP-OES
Wavelength Coverage	160 nm to 900 nm
Required Range Compliance	Exceeds 167 nm – 852 nm
Optical System	Thermostatically controlled high-resolution Echelle
Optical Protection	Sealed, continuous argon purge
Detector Type	Large-area array ECCD
Detector Cooling	Thermoelectric, low-noise
Data Acquisition	Simultaneous full-spectrum
RF Generator	All-solid-state (patented)
RF Frequency	27.12 MHz
RF Output	Continuously adjustable
Plasma Matching	Automatic RF matching and optimization
Ignition	Automatic, fast warm-up
Standby Mode	Intelligent argon gas-saving
Torch Configuration	Vertical, dual-view
Torch Compartment	Fully enclosed with interlocks
Torch Access	Sliding-access door, safety window

SPECIFICATION	DESCRIPTION
Peristaltic Pump	Multi-channel, ≥3 channels
Pump Speed Control	Programmable, independently optimized
Gas Control	Independent mass-flow controllers
Drain Protection	Monitoring with liquid-sensing
Status Indicator	Front-mounted LED
Diagnostics	Auto shutdown, fault protection
Introduction System	Nebulizer, spray chamber, injector, tubing
Matrix Compatibility	Aqueous, high-TDS, high-salt, organic
Automation Interfaces	Autosampler, dilution, auto-injection
Online Dilution	Automatic argon online dilution support
Software	Full analytical control and data management
Calibration Functions	Auto wavelength, background, interference
QC Support	Blanks, spikes, duplicates, CCV
Data Export	Common laboratory data and report formats
Workstation	Dell OptiPlex, monitor, keyboard, mouse
Cooling	Air-cooled recirculating chiller
Installation Support	Two days onsite commissioning

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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