

Ultima Expert

Ultimate ICP-OES Spectrometer
Best Performance & Ease-of-Use



Designed to Handle the Most Challenging Applications

HORIBA Scientific develops and manufactures high performance ICP-OES spectrometers for more than 35 years.

The new Ultima Expert is a unique combination of ultimate performance with comprehensive assistance tools designed to simplify method development.

Ultima Expert integrates high efficiency Jobin Yvon optical design capable to achieve optimal performance for a large variety of sample types and matrices.

Ultima Expert is driven by the powerful Analyst software featuring a large variety of analytical functionalities for tailored control and analysis.

The robustness of the Ultima Expert makes it ideal for applications common to mining, chemicals manufacture, salt production, wear metals in oil analysis, petrochemical, metallurgical production and precious metal refining.

Gain in efficiency with the Ultima Expert for your most demanding needs!

Ultima Expert

Superior Performance in ICP-OES

Unique Plasma Torch Design for Most Versatile and Accurate Analyses

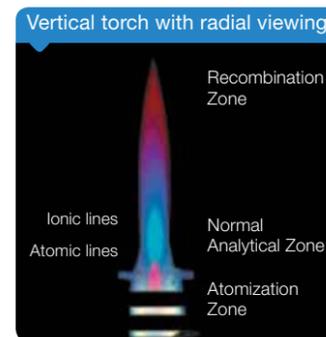
Ultima Expert uses a unique plasma torch design with radial viewing mode to allow viewing of the entire normal analytical zone.

The vertical torch, the original sheath gas device and the wide injector enable the Ultima Expert to handle difficult matrices, with robust operation and minimal maintenance.

Ultima Expert ensures the lowest detection limits even with the most challenging samples, such as high salt content, brines, dissolved solids and complex organics.

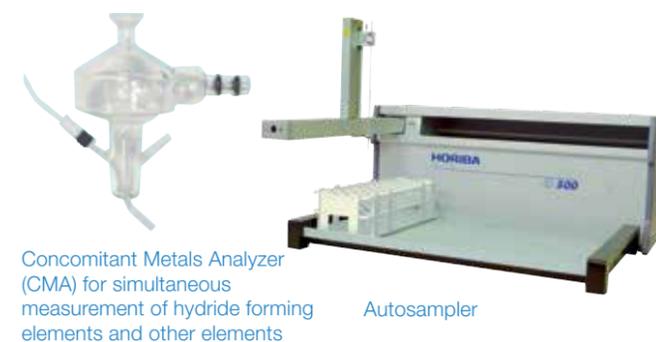
Its water-cooled high efficiency 40.68 MHz solid state generator enhances the ability to handle a large range of samples, reduces warm-up time down to 15 minutes, and improves stability and reliability.

All these features make the Ultima Expert the most versatile, accurate and robust ICP OES spectrometer available.



Accessories for Varied Applications

The Ultima Expert features a variety of accessories to further enhance automation and instrument's functionality for varied and demanding applications.



High Resolution and Full Wavelength Coverage

Ultima Expert delivers the highest resolution with less than 5 picometers for the UV range and less than 10 picometers for the Visible range. Such resolution can be achieved due to the unique optical design of the Ultima Expert, which integrates a high density holographic grating and one meter focal length optics.

True simultaneous internal standardization with the integrated high stability device provides unrivaled repeatability.

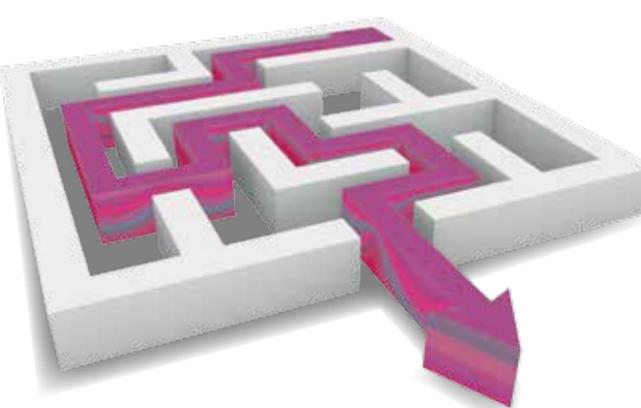
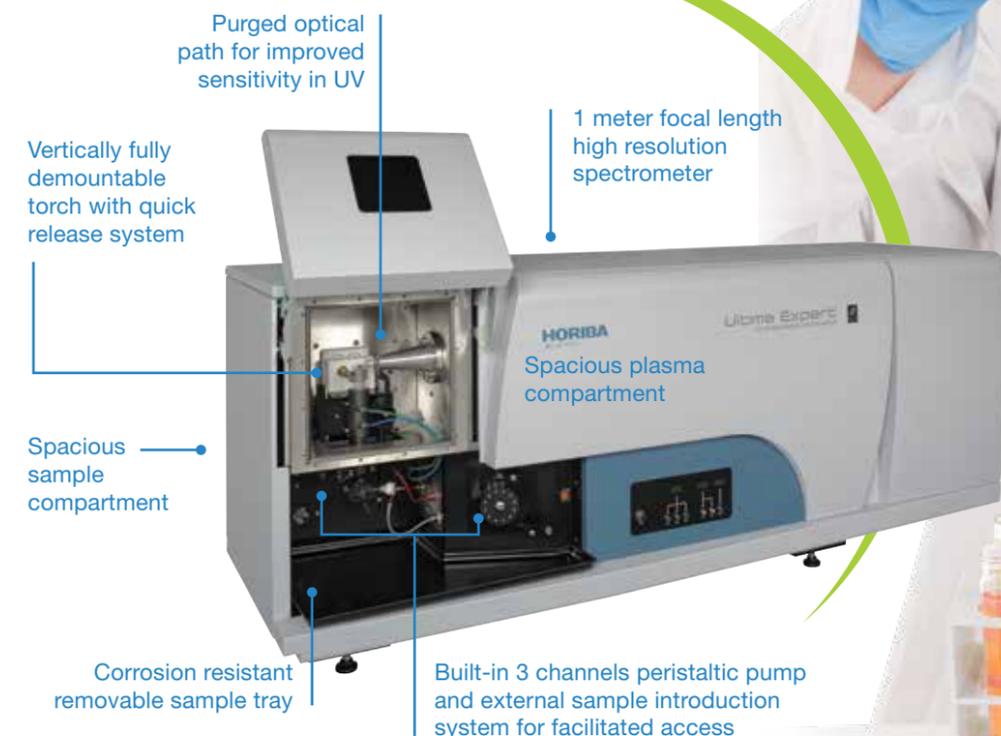
Full wavelength coverage from 160 to 800 nm is offered to satisfy all the requirements for elemental analysis. Optional Far UV kit is available to extend coverage down to 120 nm for halogen elements analysis.

High resolution and excellent sensitivity allow elements with high, low and trace concentrations to be measured accurately, giving you maximum confidence in your results.

Easy to Handle, Easy to Maintain

Spacious compartments for sample and plasma are designed to facilitate sample handling.

Quick release, fully demountable torch with no adjustment required facilitates multi-user operation and provides excellent reproducibility.



High Performance Design

For Demanding Applications



> Resolution
> Stability
> Accuracy

Repeatability <
Robustness <

Material, Chemical and Petrochemical

Designed to deliver accurate results even on complex matrices, the robust performance of Ultima Expert meets the tough demands of production.

> Features

- High sensitivity, accuracy and stability even on difficult matrices such as brines, high total dissolved solids matrices or organic solvents
- Unrivaled detection limits, stability and reduced memory effects, even on high salt matrices
- Minimized spectral interferences on complex matrices
- Standard torch that adapts to all applications
- Optional introduction systems for organic matrices or samples containing HF

Metallurgy, Geology and Mining

For elemental analysis in the presence of line-rich spectrum elements such as iron, tungsten or rare earth elements, the Ultima Expert delivers the highest performance.

> Features

- Enlarged dynamic range for major elements and exceptional sensitivity for trace elements, even in high dissolved solids matrices
- Elimination of spectral interferences, even for trace element analysis in line-rich matrices
- Full wavelength coverage provides broad flexibility in wavelength selection
- Exceptional long term stability with the 3 mm internal diameter injector and the original sheath gas device, even on high total dissolved solids matrices
- Extended high resolution range for Rare Earth Elements applications with the optional dual grating system

Precious Metals

Ultima Expert is the only ICP-OES spectrometer on the market to provide ultimate accuracy for major precious metals analysis.

> Features

- Accurate trace elements analysis in precious metals matrices capability
- Exceptional repeatability with true simultaneous internal standard measurement with the integrated high stability device
- Improved accuracy of measurements with the integrated bracketing mode

Environmental, Food and Agriculture

Major and trace elements analysis in varying matrices along with reliability and confidence in the final results. Ultima Expert incorporates comprehensive tools for high performance to satisfy even the most demanding requirements.

> Features

- Improved accuracy of the results within the large variety of samples analyzed
- High sensitivity and large dynamic range for facilitated trace and major elements analysis
- Specific tools for semi-quantitative analysis, method development, automated QC tests and uncertainty calculation

Powerful Software with Unique Comprehensive Assistance Tools

The Analyst software package of the Ultima Expert extends instrument capability beyond analytical performance, featuring advanced user guidance from sample to results.

Complemented with Image Navigator for qualitative and semi-quantitative analysis of unknown samples based on full spectrum acquisition, S³-base and MASTER for facilitated method development, and an uncertainty calculation tool for calibration quality improvement, the Analyst software provides full instrument control and advanced features for method development, analysis and results management.

Delivering accurate results has never been easier using the Ultima Expert!

Bringing Expertise in All Laboratories For Every Application

Performance Through a Simplified Method Development

- Step-by-step assisted method development
- Advanced acquisition parameters for improved performance on each wavelength
- Advanced calibration parameters including Inter-Element Correction for the most difficult samples

Flexibility in Analysis with Multiple Tasks Sequence

- Full spectrum acquisition to store fingerprint of samples for retrospective analysis
- Quality control functions
- Autosampler positions set up using drag and drop function

Security and Quality of Results with SQL Database Management

- Quality control charting with mean, standard deviation and limit ranges display
- Data reprocessing: Background correction points, replicate edition and calibration curve adjustments
- Data export with multiple formats, large variety of reports
- Full data archiving to store results, sequences and methods

Perform your ICP Analysis Faster and Easier!

Unique and Proprietary S³-Base

With more than 50,000 lines identified and combined with their spectroscopic data, the Single element Spectra Spectroscopic S³ database was developed especially for ICP-OES and is based on real spectra acquisition.

This extensive database, exclusively available for HORIBA Scientific ICP-OES spectrometers, provides reliable information on wavelengths, relative intensities, and detection limits.

MASTER, Software for Easy Method Development

By using all spectroscopic data of S³-base, MASTER facilitates method development and ensures the right choice for the analytical lines.

With the list of elements and the expected concentration range entry information, synthetic spectra are displayed with the most adequate lines for your analysis.

Information is not only given on emission lines but also on molecular emission and background structure, facilitating the selection of the wavelengths.

Image Navigator for Full Spectrum Display

Image Navigator displays the full spectra acquired and offers unique features for qualitative and semi-quantitative analysis.

Multiple spectra can be overlaid enabling visual inspection and sample fingerprint comparison. As the full spectra are stored, retrospective analysis is always possible.

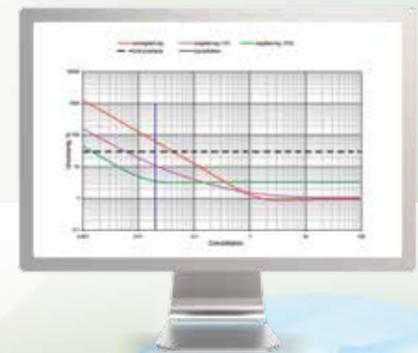
Element identification window



Uncertainty Calculation

Uncertainties on sample measurements arise from sample preparation, calibration procedure and measurement. A dedicated uncertainty calculation tool enables users to define the best calibration strategy to minimize uncertainties on their final results.

Uncertainty across the concentration range



Analyst software views: sequence editor, plasma control and analysis window



MASTER main screen display



Ultima Expert

Specifications



Standard Configuration

Generator	Radio-frequency, solid-state 40.68 MHz, water-cooled
Spectral range	160 – 800 nm
Spectrometer	Thermally stabilized, 1 meter focal length with 2400 g/mm grating used in the 1st and 2nd order
Resolution	<5 pm for 160-320 nm and <10 pm for 320-800 nm
Plasma torch	Fully demountable torch with 3 mm i.d. alumina injector and quartz tubes
Sample introduction	Concentric glass nebulizer and glass cyclonic spray chamber, 3 channel peristaltic pump

Options

Instrument	Dual back-to-back gratings (4320 g/mm and 2400 g/mm) used in the 1st order offering resolution <6 pm for 160-450 nm and <10 pm for 450-800 nm Far UV kit to extend measurement capability down to 120 nm for halogen elements analysis
Accessories	Autosampler AS-500 with optional rinse station Argon humidifier Introduction system kits for improved performance (small volume, organics, Hydrofluoric acid, high total dissolved solids) Concomitant Metals Analyzer for simultaneous measurement of hydride forming elements and other elements Oxygen kit for alkali elements in organics

Facility requirements

Dimension (wxdxh)	1696 x 698 x 604 mm
Weight	205 kg (452 lb)
Power supply	Single phase, 220-240 V, 50-60 Hz, 4 kVA
Environmental	20 to 80 % humidity, 18-24°C at ± 2°C
Argon	99.995 % purity
Nitrogen	160 to 190 nm, 99.999 % purity 120 to 160 nm, 99.9995 % purity
Exhaust	250 m ³ /h (150 cfm)

The Ultima Expert is also available in LT version. Configuration and options are slightly different. Contact us for more information.

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