Ultima Expert

Ultimate ICP-OES Spectrometer
Best Performance & Easy-of-Use
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!

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High Performance Design for Demanding Applications

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
  - Unrivalled 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

Resolution
Stability
Accuracy
Repeatability
Robustness
ICP Neo software for HORIBA Scientific ICP-OES spectrometers is designed to facilitate method development, samples measurements and results management.

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. The ICP Neo 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!

Performance Through a Simplified Method Development
- Interference free lines by visual display using S³ wavelengths database
- Unique HDD mode to remove the need for optimization of High Voltage
- Multiple measurement parameters with Gaussian, Maximum and Mean mode
- Multiple calibration mode

Flexibility and Automated Analysis
- SmartRinse for automatic monitoring of rinse efficiency between 2 samples
- Automatic control of the quality with limits on correlation coefficient and on recalculated concentrations
- Use of multiple methods in a single sequence

Results Management
- Archive capability
- Reprocess capability with integrity of raw results
- Reports with user’s selectable data
- Customization of reports with logo, instrument name…
- Print and export results for LIMS

Quality Control Protocols
- Fully US EPA compliant QC protocols with ICV, CCV, LCS, Interference Check, Paired samples, Spikes, and more
- Automated actions in case of value out of specifications from stop analysis to calibrate and repeat samples from the last valid QC

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.
## Standard Configuration

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

### Facility requirements

<table>
<thead>
<tr>
<th>Dimension (wxdxh)</th>
<th>1696 x 698 x 604 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>205 kg (452 lb)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Single phase, 220-240 V, 50-60 Hz, 4 kVA</td>
</tr>
<tr>
<td>Environmental</td>
<td>20 to 80 % humidity, 18-24°C at ± 2°C</td>
</tr>
<tr>
<td>Argon</td>
<td>99.995 % purity</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>160 to 190 nm, 99.999 % purity</td>
</tr>
<tr>
<td>Exhaust</td>
<td>250 m³/h (150 cfm)</td>
</tr>
</tbody>
</table>

## 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

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