

Thermo Scientific iCAP 7600 ICP-OES

High productivity and versatility
for demanding applications

The Thermo Scientific™ iCAP™ 7600 ICP-OES is designed for the most demanding analysis challenges, with highest thru-put, sensitivity and detection limits; the instrument incorporates an integrated sample loop, delivering the sample to the plasma in the most efficient method to drive increased productivity. The iCAP 7600 ICP-OES maximizes scalability and advanced accessory connectivity to support expanding requirements.



The Thermo Scientific™ iCAP™ 7600 ICP-OES is a powerful simultaneous spectrometer based on the core technologies of the Thermo Scientific iCAP 7000 Series ICP-OES to solve the challenges of the most demanding laboratory applications. The iCAP 7600 ICP-OES employs the latest technology developments to achieve exceptional performance and long term stability with capability for low gas consumption and high productivity to deliver the lowest cost analyses.

The instrument is driven by the Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution™ (ISDS). Developed to combine highly efficient workflow, easy data management, scalability and compliance, Qtegra ISDS delivers simplicity, productivity, efficiency and quality in the analysis workflow.

The innovative hardware and software design of the iCAP 7600 ICP-OES and the Qtegra ISDS provides powerful tools for method development and auto-optimization with the capability to control a range of advanced sample introduction accessories for enhanced performance and application flexibility.



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Performance

A 4-channel, mini peristaltic pump with a unique drain sensor, provides smooth, low noise signals and safe operation.

The enhanced, high efficiency free-running 27.12 MHz solid state RF plasma generator delivers rugged reliable performance with the power and stability to cope with even the most difficult sample matrices.

The high resolution echelle spectrometer has a unique optical layout, resulting in high efficiency light transmission and excellent resolution with enhanced sensitivity and detection capability. The iCAP 7600 ICP-OES is also an extremely compact instrument and therefore requires minimal laboratory bench space.

A powerful Charge Injection Device (CID) detector, the CID86, enables free choice of wavelengths over the complete 166 – 847 nm range. More stable, with lower noise and greater dynamic range than previous CID designs, its non-destructive readout allows optimum signal-to-noise measurements at all concentration levels.

Versatility

The iCAP 7600 ICP-OES provides precise, stable delivery of all gas flows using mass-flow control to guarantee plasma stability, irrespective of changes in atmospheric conditions. An integrated additional mass-flow controller is also configured within the system for delivery of additional gases with more complex and demanding applications.

A comprehensive range of liquid sample handling kits are available to enable simple and effective configuration of the iCAP 7600 ICP-OES for optimum analytical performance with the required sample matrices.

Instrument configurations are also available with dedicated Radial plasma viewing or Duo (Axial and Radial) plasma viewing, depending on sample type and elements of interest.

Flexible, intuitive Qtegra ISDS software and data reporting tools make the instrument simple to learn and use due to its minimized workflow from sample introduction to reporting and data interpretation.

Productivity

An integrated Sprint valve with customizable sample loop provides optimum rinse and sample uptake times to achieve Sprint analyses for aqueous or organic sample matrices.

The large sample compartment with full visibility door and ergonomically designed components ensure easy, reliable installation and adjustment of the torch and sampling modules, simplifying maintenance and increasing up-time and productivity.

Ducted airflows and a thermostatically controlled polychromator (controlled to within 0.1°C) ensure an extremely stable spectrometer, enabling extended analytical runs with fewer re-calibrations.

Powerful data acquisition modes are available to address the performance requirements for all application areas effectively. The advanced Sprint mode enables ultra high-speed trace element screening for the most demanding high thru-put laboratory environments. This mode employs intelligent plasma view sequencing in conjunction with Cumulative Set Pattern Integration (CSPI) to achieve ultimate sample analysis speed and productivity.

Qtegra ISDS minimizes task times with few clicks from creation of an analytical LabBook, the start of your intelligent analysis sequence, with full QA/QC protocols and processes, to powerful results reports. Full software control of autosampler sequencing and system optimization ensures simplicity of use and the highest productivity.

Accessories

A range of liquid autosampler accessories are available that allow for 180 to 720 samples, to run unattended.

The CETAC APS-1650 sample preparation accessory enables fast, automated off-line sample dilutions and is ideally suited to oils and viscous liquid matrices.

An integrated hydride generation system accessory, with its high efficiency membrane gas/liquid separator, yields sub-ppb performance for hydride forming elements such as As, Bi, Hg, Sb, Se, Sn and Te.

Specific sample handling kits are available for organic and volatile solvent-based solutions. Further sampling kits allow use of hydrofluoric acid solutions or high solids solutions containing up to 25% dissolved solids. An argon humidifier minimizes blockages with glass concentric nebulizers when used to analyze samples containing high dissolved solids. The ceramic D Torch accessories can also be configured as part of the sample introduction system and provide enhanced torch longevity with aggressive sample matrices.

iCAP 7400 ICP-OES

Dimensions (mm)	840 W x 750 D x 590 H
Peristaltic pump	4-channel, mini peristaltic pump Speed: 0 – 125 rpm
Sampling valve	Standard: Sprint valve aqueous (4 mL loop) Optional: Sprint valve organic (3 mL loop)
Standard sample handling kit	Concentric glass nebulizer Glass cyclonic spray chamber Semi-demountable EMT torch 1.5 mm bore quartz center tube (Radial) 2 mm bore quartz center tube (Duo)
Plasma gas	Mass flow control, 0 – 20 L/min
Auxiliary gas	Mass flow control, 0 – 2 L/min
Nebulizer gas	Mass flow control, 0 – 1.5 L/min
Additional gas	Mass flow control, 0 – 100 mL/min
Plasma viewing	Duo or Radial
RF source	27.12 MHz solid state 750 – 1600 W output power (Duo restricted to 1350 W)
Spectrometer	Simultaneous echelle type 52.91 grooves/mm ruled grating 383 mm effective focal length 9.5° UV fused silica cross dispersion prism
Spectral bandpass	7 pm at 200 nm
Wavelength range	166 – 847 nm
Detector	High performance solid-state CID86 chip
Productivity features	<ul style="list-style-type: none"> • Sprint valve • Intelligent introduction and rinse • Sprint data acquisition mode
Data acquisition mode	<ul style="list-style-type: none"> • Precision mode • Speed mode • Sprint mode
Auto-optimization features	<ul style="list-style-type: none"> • Get Ready: automatic performance checks • Gas flow (plasma, auxiliary and nebulizer) • Plasma power • Pump speed • Viewing height (Radial)
Fullframe image capability	Yes

Ordering information**Required items**

iCAP 7600 ICP-OES Duo	8423 200 76021 or 8423 200 76121 (N. America)
iCAP 7600 ICP-OES Radial	8423 200 76001 or 8423 200 76101 (N. America)
TF900 Turbine Pump Chiller (230 V/50 Hz)	101163010000001 (or user supplied equivalent)
TF900 Turbine Pump Chiller (115 V/60 Hz)	101103010000003 (or user supplied equivalent)
TF900 Turbine Pump Chiller (208 V/60 Hz)	101123010000000 (or user supplied equivalent)
Data station (110 or 220 V)	8423 140 50004 (or user supplied equivalent)

Optional accessories

Autosampler	
CETAC ASX-260 (up to 180 Samples)	8423 470 04002
CETAC ASX-520 (up to 360 samples)	8423 470 04001
CETAC XLR8 (up to 720 samples)	8423 470 04003
CETAC ASX-1400	8423 470 04004
Stirring autosampler	
CETAC APS-1650	8423 470 04005
Automated Prep Station	
Sample handling kit	
Organics (Radial/Duo)	8423 120 52311/52261
Volatile organics (Radial/Duo)	8423 120 52301/52251
HF resistant (Radial/Duo)	8423 120 52291/52241
High solids (Radial/Duo)	8423 120 52281/52231
Standard aqueous (Radial/Duo)	8423 120 52271/52221
Duo Ceramic D Torch kit	8423 120 52202
Radial ceramic D Torch kit	8423 120 52201
Argon humidifier	8423 120 52081
Integrated hydride generation accessory	8423 180 50101



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