

ICP-Optical Emission Spectroscopy

Avio 550 and 560 Max Fully Simultaneous ICP-OES Systems



High Throughput with Low Cost of Ownership

With a fully simultaneous system, high sensitivity and superior resolution, the Avio® 550 and 560 Max ICP optical emission spectrometers help your lab accomplish more – even with the most difficult samples – while making the most of your resources. The Avio 550/560 Max ICP-OES systems deliver the productivity you need with the high-quality performance and faster return on investment your work demands. The instruments' performance is further optimized by Syngistix™ for ICP software, thanks to a host of smart features developed with the user in mind, providing smart workflows, smart monitoring and smart data.

Taking Fast to Fastest

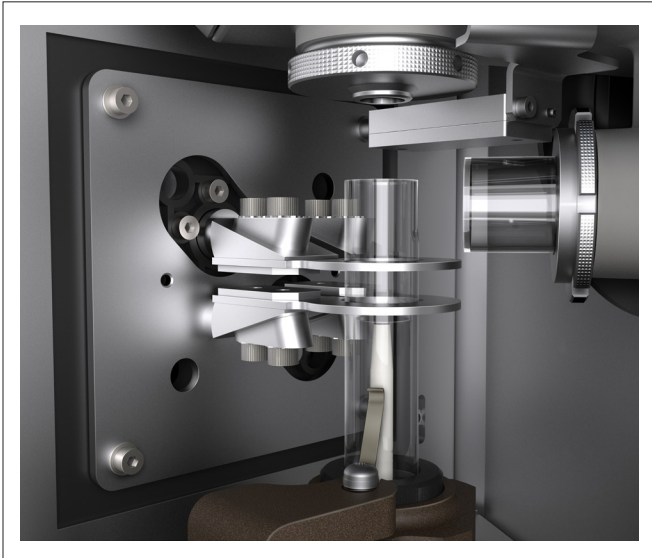
Testing labs like yours often depend on fast turnaround at the lowest possible cost, while still needing to meet regulatory requirements with uncompromised accuracy. Both the Avio 550 and 560 Max provide fully simultaneous data acquisition for fast sample-to-sample analysis times. The Avio 560 Max steps up the performance, going from fast to fastest, with the built-in HTS (high throughput system). HTS is a flow injection sample introduction module for elemental analysis. It consists of a metal-free 7-port valve, 4-channel peristaltic pump and a high-speed vacuum pump that expedites sample loading and reduces sample rinse-out, dramatically reducing laboratory overheads and cost of analysis. HTS integrates seamlessly with the Avio 560 Max ICP-OES and Syngistix™ software, delivering up to five times faster sample throughput without compromising detection limits, accuracy or repeatability.

Key Benefits

- Simultaneous background correction for faster sample-to-sample time and improved data accuracy
- High throughput enabled by dual view technology, simultaneous data acquisition and low routine maintenance
- Unsurpassed matrix tolerance with vertical torch design
- Lowest argon consumption – ~50% compared to other ICP systems
- Smart software increases uptime by monitoring instrument and sample health to ensure sample accuracy

Unsurpassed Argon Savings

The key to the reduced argon savings in the Avio 550/560 Max ICP-OES is Flat Plate™ plasma technology, which delivers a more robust, stable plasma and consumes approximately 50% less argon than other systems. Plus, PlasmaShear™ offers maintenance-free, argon-free interference removal – while other ICP instruments use up to 4 L/min of argon to remove the cool tail plume, the unique PlasmaShear technology of the Avio Max systems runs on air. In addition, nitrogen, instead of argon, is used to purge the optical system during operation to remove oxygen and moisture. In combination, these features make the Avio Max the most cost-efficient ICPs on the market in argon savings.



Flat Plate plasma technology on the Avio Max series ICP-OES.

Robust and Maintenance-Free Plasma Design

The Avio 550/560 Max ICP-OES systems are engineered to handle even the most difficult, low-to-high concentration samples without dilution, delivering productivity, performance and faster return on investment, thanks to a host of proven technologies.

- **Flat Plate™ plasma technology** delivers a more robust, stable plasma and consumes ~50% less argon than other systems. The Avio Max series has a robust plasma at only 8 L/min, creating a significant cost savings for laboratories.
- **Vertical plasma torch design** provides 100% matrix tolerance, delivering productivity, performance and faster return on investment.
- **Variable/adjustable viewing heights** allow the user to optimize the signal for the greatest analyte sensitivity. Once set, the torch mount is locked into position.
- **Quick-change torch mount** features a removable injector that is independent of the torch for less maintenance and potential for breakage as well as automatic self-alignment to provide consistent depth setting even after removal.
- **Dual view** optimizes axial and radial plasma viewing, measuring high and low concentrations in the same run, regardless of wavelength.

- **PlasmaShear™ system** offers maintenance-free, argon-free interference removal.
- **Color PlasmaCam™** provides real-time status evaluation of the plasma, injector and torch during analysis.

Performance-Enhancing Optical Design

The optical design of the Avio 550/560 Max ICP-OES utilizes a proprietary optical coating, free-form and off-axis optics along with a thermostatted housing, providing outstanding resolution, improved detection limits and increased sensitivity, especially in the UV range of the spectrum.

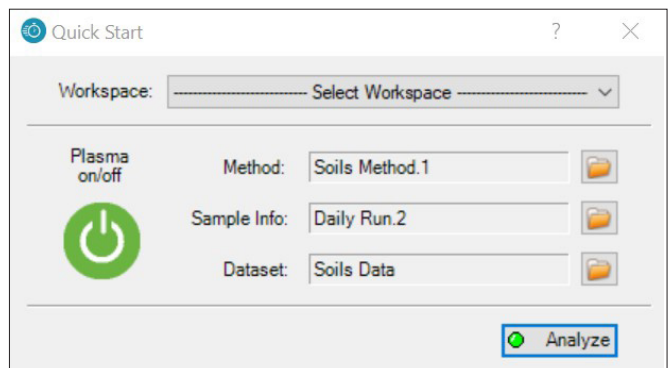
- A free-form optic with customized surface is shaped to correct for aberrations, producing clean, sharp images at the detector for highest resolution and increased sensitivity.
- Off-axis optics reduce the stray light to the detector, delivering excellent detection limits.
- Patented coating for all optics is specifically designed to increase sensitivity in the UV range.
- Thermostatted housing encloses the entire optical system of the Avio 550/560 Max instruments, isolating it from the ambient environment and ensuring exceptional wavelength stability.

Syngistix – Smart Software for Improved Accuracy

Designed to optimize the performance of Avio Max ICP-OES instruments and improve efficiencies in the lab, Syngistix for ICP software mirrors the progression of your workflow, guiding users through each step for greater control, confidence and accuracy. Flexible and easy to use, its smart features offer immediate benefits whether you're running the instruments, running the laboratory, or running the business.

Smart Workflow

Express Analysis provides quick-start capabilities. In one window, you can turn on the plasma, select a method, and start your analysis.



Easy setup with Express Analysis quick-start capability.

Syngistix Offline allows you to run multiple software sessions so you can simultaneously create methods, enter sample information, review or reprocess data, all without interrupting the active analysis.

Smart Methods

Method Editor organizes parameters into logical groups – spectrometer, sampler, processing, calibration, recovery checks and QC actions – and allows measurement times to be selected for speed and productivity.

SmartRinse™ eliminates carryover from sample to sample. It allows you to set the acceptable level of carryover and won't run the next sample until the rinse reaches the desired concentration. This is customizable by each element wavelength.

Universal Data Acquisition (UDA) gives you the option of collecting all the spectral data for every sample regardless of the elements being determined with no time penalty. You then have the flexibility to retroactively determine the concentrations of elements not in the original method or at alternate wavelengths, saving precious time and resources. This allows the flexibility to change wavelengths after analysis due to interferences or just add an element that was not considered on the first analysis. With UDA, you get all the data all the time.

Low, Normal or High-Resolution Modes on the Avio 550/560 Max systems allow you to set the level of resolution that works best for your analytes or overall analysis, whether the same for all or varied across analytes. Low resolution mode provides higher intensities for the analytes, while high resolution mode provides the best resolution when resolving the analyte of interest from interferences is key.

Smart Monitoring

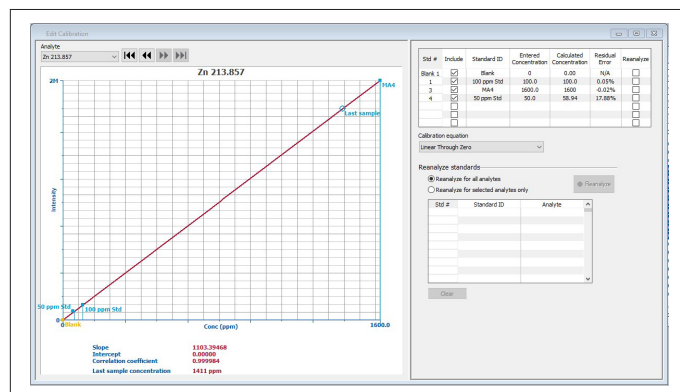
Performance Checks provides continuous monitoring with out-of-range alerts for quality control (QC) samples, internal standards, sample limit concentrations, and nebulizer back pressure to ensure accuracy over the longest runs. This feature offers:

- Automatic scheduling at start of analysis (QC only)
- Automatic actions for QC, nebulizer back pressure, and internal standard failures without manual intervention (all but sample limits)
- Indication of sample, QC or nebulizer back pressure failures in Data Viewer and/or Results window
- Notifications of failure or pause (sound, email, and text)

Smart Data

Data Viewer delivers real-time updates of detection limits and background equivalent concentrations during a run in a cross-tab format. Single or multi-view calibrations can be displayed, giving you the information you need to make faster decisions and generate more reliable data, while charting of internal standards and quality control standards allows for easy outlier or failure identification.

Edit Calibration gives you the multi-functional ability, all in one window, to see the calibration spectra, the calculated concentration and residual error, the choice to include or exclude a standard, and the ability to reanalyze for one standard or all. It cannot prevent human error, but can make corrections much easier and less time consuming.



Edit Calibration makes correcting mistakes fast and easy.

Examine Spectra makes interference correction simple and reliable by letting you view spectra, correct wavelengths, change background correction points, and build Multicomponent Spectral Fitting (MSF) or inter-element correction (IEC) models with an integrated guided workflow that allows you to create models from stored data – both original and reprocessed.

Data Manager speeds up and simplifies the transfer and export of data from Syngistix to applications like Microsoft® Excel, TIBCO Spotfire® or your LIMS so you can quickly and efficiently organize, manage, display and share information virtually any way you want. It also includes QC Charting/Reporting that helps you quickly and easily prepare quality control charts for any sample, including limit ranges, means or expected values.

Summary

The Avio 550 and 560 Max are compact, fully simultaneous ICP-OES instruments, ideal for labs with high throughput requirements. They utilize a vertical plasma and are engineered to handle even the most difficult, high-matrix samples without dilution, delivering productivity, performance and faster return on investment. Plus, the Avio 550 and 560 Max leverage Syngistix software which provides an intuitive and smart environment with real-time instrument diagnostics and results viewing to easily track sample analysis, quality control, and internal standard performance to guarantee sample accuracy.