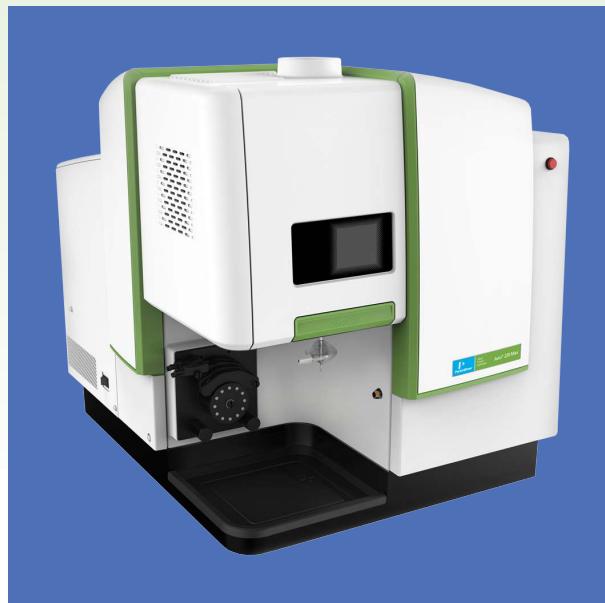


ICP-Optical Emission Spectroscopy

Avio 220 Max Hybrid Simultaneous ICP-OES



The ICP-OES System that Takes “Everyday” to a New Level

The Avio® 220 Max, the industry's only hybrid simultaneous ICP-OES, is a robust and matrix-tolerant system with plug-and-play performance taking you from cold start to analysis in just 10 minutes – ideal for labs with low-to-medium throughput requirements. The instrument's 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.

Plug and Play

The Avio 220 Max ICP-OES is able to go from cold start to sample analysis in 10 minutes – plug and play. This means that throughout the day you can turn off your instrument as many times as needed to save argon, because there is virtually no startup time. The secret behind this feature is the wavelength reference section of the detector which monitors a small portion of the neon spectrum in order to create a dynamic wavelength scale used to actively correct wavelength positions. The resultant wavelength accuracy and reproducibility allow direct ‘on-peak’ measurements rather than time-consuming peak search methods used in sequential ICP systems. This unprecedented cold startup time provides the analyst much needed flexibility in their laboratory.

Key Benefits

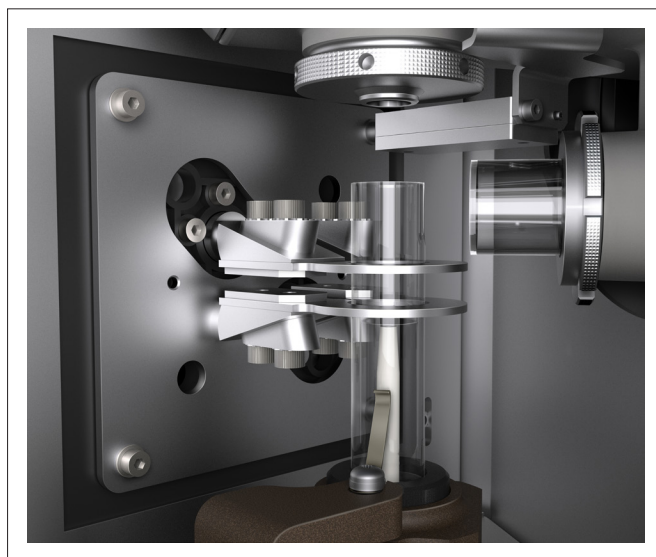
- Simultaneous acquisition of analyte and background with increased analyte sensitivity
- Plug and play: only 10 minutes from cold start to sample analysis
- Attenuation mode reduces the signal without a manual dilution, with just a click of the button, and is fully customizable by each wavelength
- Lowest argon consumption – ~50% compared to other ICP systems
- Smart software increases uptime by monitoring instrument and sample health to ensure sample accuracy

Hybrid Simultaneous

ICP-OES spectrometers have traditionally been limited by their inability to make background correction measurements simultaneously with the analyte measurement – if there is any variation in the analytical conditions between the two different measurement times, analytical precision can be degraded. This is not the case with the Avio 220 Max, the only hybrid simultaneous ICP-OES on the market – its backside-illuminated charge-coupled device (DBI-CCD) detector allows simultaneous background correction, simultaneously measuring a wavelength range around the analytical analyte, including the background correction wavelength(s). The background correction readings are made at exactly the same time as analyte measurements, which significantly improves analytical accuracy.

Unsurpassed Argon Savings

The key to the reduced argon savings in the Avio 220 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 220 Max ICP-OES system is 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.

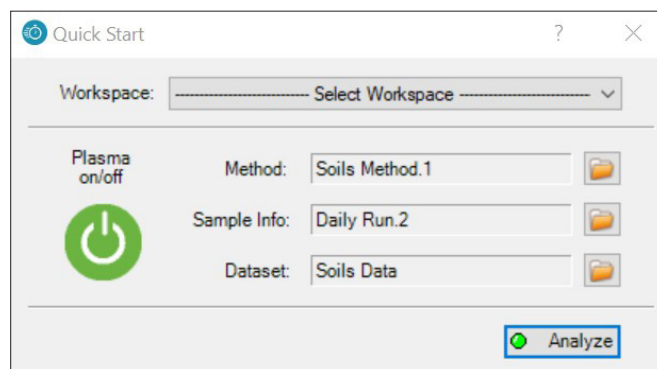
- **Vertical plasma torch design** provides 100% matrix tolerance, delivering productivity, performance and faster return on investment.
- **Variable/adjustable viewing heights** allow the user to optimize the signal for the greatest analyte sensitivity. Once set, the torch mount is locked into position.
- **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.

Syngistix – Smart Software for Improved Accuracy

Designed to optimize the performance of the 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.

Attenuation mode on the Avio 220 Max allows the analyst to reduce the signal by 90% without a manual dilution, with just a click of the button. And what's better, it is customizable by every wavelength for maximum flexibility, allowing you to run high and low concentration elements in one analysis. This extends the dynamic range of the ICP-OES without affecting the ability to measure analytes present at lower concentrations. Because the Avio 220 Max is a unique hybrid simultaneous instrument, it can attenuate the signal for a specified analyte while not affecting others, thereby providing effortless dilution, allowing both high and low concentration analytes to be measured in the same method and with the same sample preparation, reducing human error.

Smart Monitoring

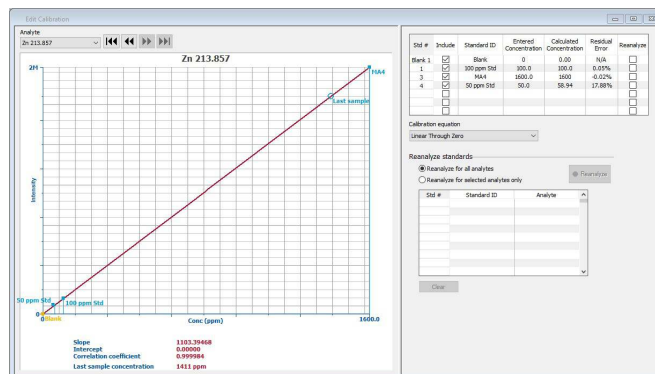
Performance Checks provides continuous monitoring with out-of-range alerts for quality control (QC) samples, internal standards, sample limit concentrations, and nebulizer back pressure to ensure accuracy over the longest runs. This feature offers:

- Automatic scheduling at start of analysis (QC only)
- Automatic actions for QC, nebulizer back pressure, and internal standard failures without manual intervention
- 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. Sample results can be color coded to provide easy viewing for out-of-range samples. 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 220 Max is a compact, plug-and-play, hybrid simultaneous ICP-OES instrument, ideal for labs with low-to-medium throughput requirements. It utilizes a vertical plasma and is engineered to handle even the most difficult, low-to-high concentration samples without dilution, delivering productivity, performance and faster return on investment. Plus, the Avio 220 Max leverages 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.