

## ICPO3

### Description:

ICPO3 maintains rapid Analysis , high sensitivity, wide dynamic range and high stability, achieves smaller device size and higher integration. It also adds a new inflation device to the light chamber, making the power on/off process more convenient. The operation is simple and the analysis is precise, providing users with an efficient solution for sample elemental analysis.

### Key Features:

#### Grating lines

The 2400 lines/mm grating can detect wavelengths ranging from 160 to 800nm  
The 3600 lines/mm grating can detect wavelengths ranging from 160 to 530nm  
The 4320 lines/mm grating can detect wavelengths ranging from 160 to 442.5nm

The greater the line density of the grating, the stronger its resolution. If the customer does not need to detect long-wave elements such as K and Na, a higher-resolution 3600 or 4320 linear density grating can be selected.

#### Far UV analysis

The description in some files cannot be met. There are no dedicated optical devices for detecting ultrashort waves, so it is impossible to detect ultrashort wavelengths such as Cl at 134.664nm and Br at 154.064nm. It can meet the detection requirements of Pb 168.215nm.

#### Unique sample introduction

##### **It can meet the description in the file, but with different methods.**

Using concentric nebulizer offers superior stability and adaptability compared to Ultrasonic Nebulizer. concentric nebulizer is suitable for organic, high-salt, and trace element applications, and is less prone to clogging, with lower usage and maintenance costs.

It can be selected for torch tubes, nebulizers and nebulizers of oil samples. Using oxygen as the auxiliary gas can minimize carbon deposits at the torch tube to the greatest extent. The outer wall of the fog chamber is equipped with circulating coolant, which can ensure the stability of the oil sample matrix. When paired with an oil-specific nebulizer, it can ensure smooth and stable sample injection. Some oils can be directly sampled (such as diesel, gasoline and other clear oils). Wax oil and heavy oil, due to their extremely high

viscosity, may even solidify at room temperature and require sample pretreatment before detection.

### **Stability for productivity**

Short-term stability  $\leq 1.5\%$

Long-term stability  $\leq 2.0\%$

Equipped with optical chamber purging technology, it has the advantages of enhanced sensitivity, stability and long service life.

Optical chamber purging can to a certain extent prevent air from absorbing the ultraviolet band ( $< 200\text{nm}$ ), enhancing the detection sensitivity of the ultraviolet band (increasing by 30% to 100%, especially for ultraviolet band elements such as Al 167nm and P 177nm).

At the same time, it can remove water vapor in the light chamber (such as when the humidity in the customer's laboratory environment is high), reduce the background, minimize spectral shift or noise.

It can also prevent the contamination of optical components and avoid the deposition of corrosive gases on optical mirrors, gratings and other components. The Czerny-Turner type optical path has high sealing performance and is easier to purge.

It can be equipped with a drying tube to ensure the dryness of the gas during inflation.

### **Analyst software**

The software provides users with an efficient, intelligent and user-friendly analysis platform, fully integrating key functions such as database management, spectral line processing and instrument status monitoring. It is suitable for quantitative analysis of various routine and complex samples.

#### **Database**

Built-in element database: including detectable element wavelengths, detection limits, interference information, preferred spectral lines, etc.

Custom database: Supports users to add elements, wavelengths and other information by themselves;

Sample information management: Each measured sample is automatically archived, and document export is supported.

#### **Background subtraction function**

Background subtraction: For each spectral line, left and right background position subtraction can be set.

Interference detection: It can automatically detect whether there are interference spectral lines in the background.

#### **Automatic detection**

Multi-element synchronous measurement: All target elements can be measured with a single injection, improving analysis efficiency.

Automatic peak position correction: Spectral drift is automatically calibrated through standard samples to ensure accuracy.

Spectrum display and viewing: You can view the real-time complete spectrum of any sample, the integral intensity, and the offset situation.

Method customization: Supports the establishment and modification of analysis methods to quickly generate working curves.

<b>Specifications</b>	
Dimensions (w x d x h in cm)	150 x 50 x 107
Weight (kg)	235
Power	Single phase, 4-5.5 kW, 28 A, 220/240 V, 50/60 Hz
Spectrometer	1-m Czerny-Turner monochromator, argon purged, thermostated
Grating	configured upon request I: 2400 lines/mm, ion-etched holographic master, 80 x 110 mm
	Option II: 4320 lines/mm used in first order
	Option III: 3600 lines/mm used in first order
	Option IV: 2400 lines/mm used in first order
<b>Optics</b>	
Wavelength range	I: 160 - 800 nm
	II: 160 - 530 nm
	III: 160 - 442.5 nm
	IV: 160 - 800 nm
Wavelength drive	Wavelength indication error $\leq \pm 0.03$ nm, reproducibility $\leq 0.003$ nm
Resolution	7/9/10/16 pm for configuration I/II/III/IV
Detector	Photomultiplier Tube (PMT)
Detection mode	Single channel
Read out	Digital display
ICP generator	Vacuum tube RF generator, frequency stabilized; reflected power control
Frequency (MHz)	40.68
Power (Watt)	4000-5500
Load coil	water cooled
Torch	fully demountable
Argon flow (L/min)	11.5-12.5
Sample introduction	thermoregulated sample compartment; radial plasma orientation; Quick-release torch clamp
Operating system and software	Compatible with Windows 7, Windows 10, and Windows 11

Computer	Intel(R) Celeron(R) G6900, 8 GB DDR4, 4 MB Intel® Smart Cache, 3.40 GHz, Intel® UHD Graphics 710 keyboard, mouse, laser printer
Short term precision (RSD for 10 replicates)	$\leq 1.5\%$
Long term precision (RSD for 4 hours)	$\leq 2.0\%$
Sensitivity	
Detection limits (mg/L):	Zn 213.856 nm $\leq 0.003$
	Mn 257.610 nm $\leq 0.002$
	Ba 455.403 nm $\leq 0.001$
	Ni 231.604 nm $\leq 0.01$
	Cr 267.716 nm $\leq 0.007$
	Cu 324.754 nm $\leq 0.007$
Minimum spectral bandwidth Mn 257.610 nm	Better than national Class A standard Mn 257.610 nm spectral bandwidth (FWHM): $\leq 0.015$ nm
Accessories	Quartz Torch for Oil Analysis, Oil-Cooled Spray Chamber, Quartz Nebulizer for Oil Analysis