

A & E Lab AAS Content

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AE-WFX320

Flame Atomic Absorption Spectrophotometer



FEATURES:

High cost-effective flame AAS

Reasonable design, adopting the same key parts as in high end instruments, ensures basic functions but less automation to provide an economic model for users

Reliable integration of main unit with microprocessor

Built-in microprocessor with necessary auto-control and data processing functions achieve high reliability of the instrument.

Simple and East Operation

Eye-catching digital display, multi-function data processing ability and fast function-key direct input realize easy and fast analysis.

SPECIFICATIONS:

Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	±0.5nm
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.



	Baseline stability	0.005A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times.
Light Source System	2 lamps are powered simultaneously (one preheating)	
	Lamp current adjustment range: 0~20mA,	
	Lamp power supply mode	Powered by 400Hz square pulse
Optical System	Monochomator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm 4 steps
	Adjustment	Manual adjustment for wavelength and slit
Flame Atomizer	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber.
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate: 6-7mL/min
	Position adjustment	Manual adjusting mechanism for vertical, horizontal positions and the rotation angle of the burner
	Gas line protection	Fuel gas leakage alarm
Detection and Data Processing System	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.
	Electronic and micro-computer system	Automatic adjustment of light source power. Light energy and negative high-voltage auto-balance
	Display mode	LED display of energy and measurement values, concentration direct reading
	Read mode	Transient, time average, peak height, peak area. Integral time is selectable in the range of 0.1-19.9s.



	Scale expansion	0.1~99
	Data processing mode	Automatic calculation of mean, standard deviation and relative standard deviation. Repeating number is in the rang of 1-99
	Measurement mode	Automatic curve fitting with 3~7 standards; Sensitivity auto-correction
	Result printing	Measurement data, working curve, signal profile and analytical conditions can all be printed out.
	Instrument self-check	Check current status of each function key
Characteristic Concentration and Detection Limit	Air-C ₂ H ₂ flame	Cu: Characteristic concentration≤0.025mg/L, Detection limit≤0.006mg/L;
Function Expansion	Hydride vapor generator can be connected for hydride analysis.	
Dimensions and Weight	1020 x 490 x 540 mm, 80kg unpacked	



AE-WFX110B/120B/130B

Flame Atomic Absorption Spectrophotometer



FEATURES:

Innovated rich oxygen air-acetylene flame analysis technique (WFX-110B)

The patented flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C, which makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies. It's a break-through in flame AAS analysis.

Flame atomization system with flame emission burner

A flame emission burner head can be installed to perform flame emission analysis to Alkali metals as K, Na etc. (WFX-110B/120B)

Accurate fully automated control system

- Automatic multi-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking
- Automatic spectral bandwidth changing



- Automatic ignition

Perfect safety protection measures

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system;

Advanced and reliable electronic design

- Adopting large-scale programmable logic array and Inter I2C bus technology
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic display of measured data, automatic calculation and analytical result automatic print out.

SPECIFICATIONS:

Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	±0.25nm
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	≤0.004A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times. The S-H background correction capability at 1.8A is better than 30 times. (only for WFX-110B/120B)
Light Source	Lamp turret	6-lamp turret (WFX-110B/120B), 4-lamp turret (WFX-130B) auto alignment, fully automated scan and peak-picking.



	Lamp current adjustment	Automatic adjustment and display. Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA
	Lamp power supply mode	400Hz square wave pulse 100Hz Narrow square wave pulse + 400Hz wide square wave pulse (WFX-110B/120B)
Optical System	Monochomator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm automatic change.
Flame Atomizer	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber.
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate: 6-7mL/min
	Emission burner	Provided with WFX-110B/120B
Detection and Data Processing System	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.
	Software	Windows operating system
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction; automatic calculation of concentration and ontent.
	Repeat times	Maximum 20 times of repeat measurement, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task function	Sequential measurement of multi-elements in one sample
	Condition reading	With model function
	Result printing	Measurement data and final analytical report printout, editing with Excel.
	Standard RS-232 serial port communication	

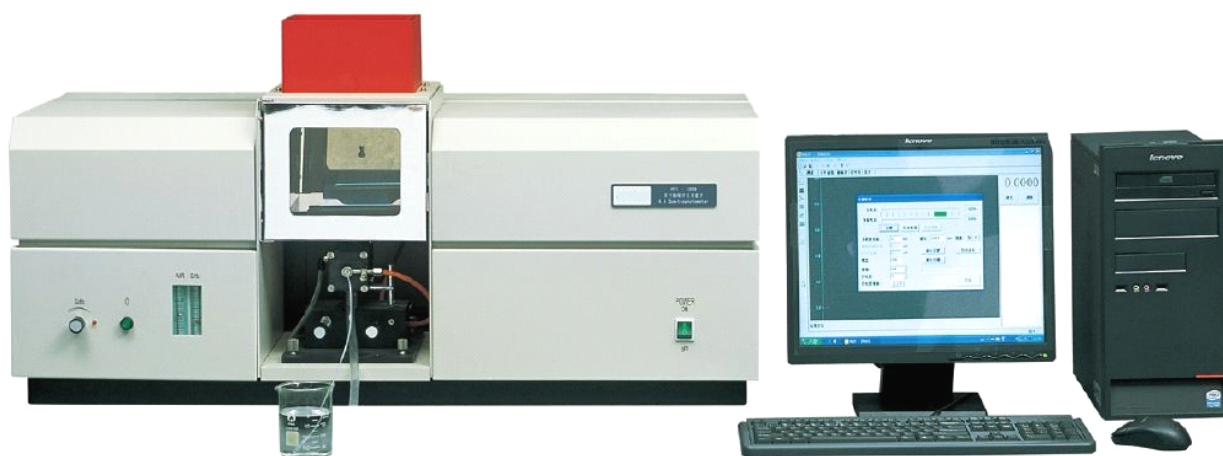


Characteristic Concentration and Detection Limit	Normal Air-C ₂ H ₂ flame	Cu: Characteristic concentration ≤ 0.025mg/L, Detection limit ≤ 0.006mg/L;
	Oxygen-rich Air-C ₂ H ₂ flame	Ba: Characteristic concentration ≤ 0.22mg/L Al: Characteristic concentration ≤ 0.4mg/L (for WFX-110B)
Function Expansion	Hydride vapor generator can be connected for hydride analysis.	
Dimensions and weight	1020 (L) × 490(W) × 540 (H) mm (main unit), unpacked 80kg	



AE-WFX110A/120A/130A

Flame/Graphite Furnace Atomic Absorption Spectrophotometer



FEATURES:

Innovated rich oxygen air-acetylene flame analysis technique (WFX-110A)

The patented flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C, which makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame will not pollute the environment and is not harmful to human bodies. It's a break-through in flame AAS analysis.

Integrated flame/graphite furnace atomization system, changeable with flame emission burner

- Automatically controlled changeover of the integrated flame and graphite furnace atomizer featuring easy operation and time saving eliminates human labor.
- A flame emission burner head can be installed to perform flame emission analysis to Alkali metals as K, Na etc. (WFX-110A/120A)



Accurate fully automated control system

- Automatic multi-lamp turret, automatic adjustment of lamp current and optimization of light beam position.
- Automatic wavelength scanning and peak picking
- Automatic spectral bandwidth changing
- Automatic changeover between flame and graphite furnace operation, automatic optimization of position parameters, and automatic ignition

Reliable fully automatic graphite furnace analysis

- Adopting FUZZY-PID and dual curve mode light-controlled temperature control technique, temperature auto-correction technique, ensures fast heating, good temperature reproducibility and high analytical sensitivity. The temperature control accuracy is less than 1%.
- Graphite furnace with pneumatic control and pressure lock ensures constant pressure and reliable contact.

Perfect safety protection measures

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system;
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system.

Advanced and reliable electronic design

- Adopting large-scale programmable logic array and Inter I2C bus technology
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic display of measured data, automatic calculation and analytical result automatic print out.



SPECIFICATIONS:

Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	±0.25nm
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	≤0.004A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times. The S-H background correction capability at 1.8A is better than 30 times. (only for WFX-110A/120A)
Hollow Cathode Lamps	Lamp turret	6-lamp turret (WFX-110A/120A), 4-lamp turret (WFX-130A) Auto-alignment, fully automated scan and peak-picking.
	Lamp current adjustment	Automatic adjustment and display. Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA
	Lamp power supply mode	400Hz square wave pulse 100Hz Narrow square wave pulse + 400Hz wide square wave pulse (WFX-110A/120A)
Optical System	Monochromator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm
	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm automatic change.



Flame Atomizer	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber.
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate: 6-7mL/min
	Emission burner	Provided with WFX-110A/120A
Graphite Furnace	Temperature range	Room temperature~3000°C
	Heating rate	2000°C/s
	Graphite tube dimensions	28mm (L) x 8mm (OD)
	Characteristic mass	Cd \leq 0.8 \times 10 ⁻¹² g, Cu \leq 5 \times 10 ⁻¹² g, Mo \leq 1 \times 10 ⁻¹¹ g
	Precision	Cd \leq 3%, Cu \leq 3%, Mo \leq 4%
Detection and Data Processing System	Detector	R928 Photomultiplier with high sensitivity and wide spectral range.
	Software	Windows operating system
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction; automatic calculation of concentration and content.
	Repeat times	Maximum 20 times of repeat measurement, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task function	Sequential measurement of multi-elements in one sample
	Condition reading	With model function
	Result printing	Measurement data and final analytical report printout, editing with Excel.



	Standard RS-232 serial port communication	
Characteristic Concentration and Detection Limit	Normal Air-C ₂ H ₂ flame	Cu: Characteristic concentration ≤ 0.025mg/L, Detection limit ≤ 0.006mg/L;
	Oxygen-rich Air-C ₂ H ₂ flame	Ba: Characteristic concentration ≤ 0.22mg/L Al: Characteristic concentration ≤ 0.4mg/L (for WFX-110A)
Function Expansion	Hydride vapor generator can be connected for hydride analysis.	
Dimensions and weight	1020 (L) × 490(W) × 540 (H) mm (main unit), unpacked 80kg 420 (L) × 420 (W) × 460 (H) mm (graphite furnace), unpacked 50kg	



AE-WFX210

Atomic Absorption Spectrophotometer



FEATURES:

Innovated Rich oxygen air-acetylene flame analysis technique

The patented flame analysis technique adopting rich oxygen air-acetylene flame as the substitution for nitrous oxide-acetylene flame for high temperature element analyses, such as Ca, Al, Ba, W, Mo, Ti, V, etc. Flame temperature is continuously adjustable between 2300-2950°C, which makes it possible to choose the best atomization temperature for different elements. It features easy operation, low analysis cost and wide flame AAS analytical range. Rich oxygen flame is will not pollute the environment and is not harmful to human bodies. It's a break-through in flame AAS analysis.

Integrated flame/graphite furnace atomization system, changeable with flame emission burner

- Automatically controlled changeover of the integrated flame and graphite furnace atomizer featuring easy operation and time saving eliminates human labor.
- A flame emission burner head can be installed to perform flame emission analysis to Alkali metals as K, Na etc.

Accurate fully automated control system

- Automatic 6-lamp turret, automatic adjustment of lamp current and optimization of light



- Automatic wavelength scanning and peak picking
- Automatic spectral bandwidth changing
- Automatic changeover between flame and graphite furnace operation, automatic optimization of position parameters, automatic ignition and automatic gas flow setting

Reliable fully automatic graphite furnace analysis

- Adopting FUZZY-PID and dual curve mode light-controlled temperature control technique, temperature auto-correction technique, ensures fast heating, good temperature reproducibility and high analytical sensitivity. The temperature control accuracy is less than 1%.
- Graphite furnace with pneumatic control and pressure lock ensures constant pressure and reliable contact.
- Multi-function auto sampler features automatic standard sample preparation, automatic correction of sampling probe depth, automatic tracing and correction of liquid surface height in the sample vessel, with the sampling accuracy of 1% and reproducibility of 0.3%, realizing fully automation of graphite furnace analysis.

Perfect safety protection measures

- Alarm and automatic protection to fuel gas leakage, abnormal flow, insufficient air pressure and abnormal flame extinction in flame system;
- Alarm and protection function to insufficient carrier gas and protective gas pressure, insufficient cooling water supply and over-heating in graphite furnace system.

Advanced and reliable electronic design

- Adopting large-scale programmable logic array and Inter I2C bus technology
- European type sockets and AMP adapters with high reliability to ensure long term reliability of the whole electronic system.

Easy and practical analysis software

- Easy-to-use AAS analysis software is made under Windows operating system, realizing fast parameter setting and optimization.
- Automatic sample dilution, automatic curve fitting, automatic sensitivity correction.
- Automatic calculation of sample concentration (content), mean value, standard deviation and relative standard deviation calculation.
- Multi-elements determination in sequence to the same sample.



- Measured data and final results can be printed out and edited in Excel format.

Comparison

Characteristic Mass of Some Elements using rich oxygen air-C₂H₂ flame and other flame methods

Unit: ug/ml

Element	Wavelength (nm)	Rich oxygen air-C ₂ H ₂ flame	N ₂ O-C ₂ H ₂ flame	Air-C ₂ H ₂ flame
Ca	422.7	0.009	0.05	0.07
Yb	378.8	0.037	0.08	7.6
Eu	459.4	0.137	0.3	3.0
Al	309.3	0.4	0.7	
Sr	460.7	0.016	0.1	0.15
Ba	553.5	0.1	0.4	10.0
Mo	313.3	0.15	0.4	0.8
W	255.1	3.2	5.0	
Ga	287.4	0.4	1.0	1.3
Sm	429.7	2.92	8.5	
La	550.1	37.2	35.0	
Sn	224.6	0.8	3.0	50



SPECIFICATIONS:

Main Specification	Wavelength range	190-900nm
	Wavelength accuracy	Better than $\pm 0.25\text{nm}$
	Resolution	Two spectral lines of Mn at 279.5nm and 279.8nm can be separated with the spectral bandwidth of 0.2nm and valley-peak energy ratio less than 30%.
	Baseline stability	0.004A/30min
	Background correction	The D2 lamp background correction capability at 1A is better than 30 times. The S-H background correction capability at 1.8A is better than 30 times.
Light Source System	Lamp turret	Motorized 6-lamp turret (Two high performance HCLs can be mounted on the turret to increase the sensitivity in flame analysis.)
	Lamp current adjustment	Wide pulse current: 0~25mA, Narrow pulse current: 0~10mA.
	Lamp power supply mode	400Hz square wave pulse; 100Hz narrow square wave pulse + 400Hz wide square pulse wave.
Optical System	Monochomator	Single beam, Czerny-Turner design grating monochromator
	Grating	1800 l/mm
	Focal length	277mm
	Blazed Wavelength	250nm



	Spectral Bandwidth	0.1nm, 0.2nm, 0.4nm, 1.2nm, auto switch over
Flame Atomizer	Burner	10cm single slot all-titanium burner
	Spray chamber	Corrosion resistant all-plastic spray chamber.
	Nebulizer	High efficiency glass nebulizer with metal sleeve, sucking up rate: 6-7mL/min
	Emission burner provided	
Graphite Furnace	Temperature range	Room temperature~3000°C
	Heating rate	2000°C/s
	Graphite tube dimensions	28mm (L) x 8mm (OD)
	Characteristic mass	Cd $\leq 0.8 \times 10^{-12}$ g, Cu $\leq 5 \times 10^{-12}$ g, Mo $\leq 1 \times 10^{-11}$ g
	Precision	Cd $\leq 3\%$, Cu $\leq 3\%$, Mo $\leq 4\%$
Detection and Data Processing System	Detector	R928 photomultiplier with high sensitivity and wide spectral range.
	Software	Under Windows operating system
	Analytical method	Working curve auto-fitting; standard addition method; automatic sensitivity correction; automatic calculation of concentration and content.
	Repeat times	1~99 times, automatic calculation of mean value, standard deviation and relative standard deviation.
	Multi-task Functions	Sequential determination of multi-elements in the same sample.
	Condition reading	With model function
	Result printing	Measurement data and final analytical report printout, editing with Excel.
	Standard RS-232 serial port communication	
Graphite Furnace	Sample tray capacity	55 sample vessels and 5 reagent vessels



Autosampler	Vessel material	Polypropylene
	Vessel volume	3ml for sample vessel, 20ml for reagent vessel
	Minimum sampling volume	1 μ l
	Repeatable sampling times	1~99 times
	Sampling system	Accurate dual pump system, with 100 μ l and 1ml injectors.
Characteristic Concentration and Detection Limit	Air-C ₂ H ₂ flame Rich oxygen Air-C ₂ H ₂ flame	Cu: Characteristic concentration \leq 0.025 mg/L, Detection limit \leq 0.006mg/L; Ba: Characteristic concentration \leq 0.22mg/L Al: Characteristic concentration \leq 0.4mg/L
Function Expansion	Hydride vapor generator can be connected for hydride analysis.	
Dimensions and Weight	Main unit	107×49×58cm, 140kg
	Graphite furnace	42×42×46cm, 65kg
	Autosampler	40×29×29cm, 15kg



Model Parameter	AE-WFX210	AE-WFX110A	AE-WFX120A	AE-WFX130A	AE-WFX110B	AE-WFX120B	AE-WFX130B	AE-WFX320
Rich Oxygen Air-acetylene Flame Analysis Technique	√	√	×	×	√	×	×	×
Graphite Furnace Atomization Analysis System	√	√	√	√	×	×	×	×
Flame Analysis Method	√	√	√	√	√	√	√	√
Flame Emission Burner	√	√	√	×	√	√	×	×
S-H Background Correction	√	√	√	×	√	√	×	×
D2 lamp Background Correction	√	√	√	√	√	√	√	√
Lamp Turret	6-lamp turret	6-lamp turret	6-lamp turret	4-lamp turret	6-lamp turret	6-lamp turret	4-lamp turret	2-lamp turret
Auto-sampler	√	×	×	×	×	×	×	×

