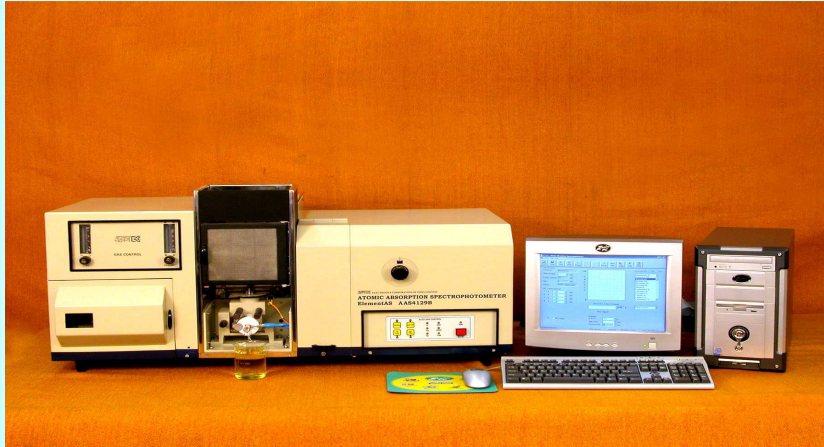


Fully Automated Double Beam Atomic Absorption Spectrophotometer ElementAS-AAS4141-8



- For over 30 years Atomic Absorption Spectrophotometers have been the most commonly used technique for the quantitative analysis of trace elements.
- Today after many generations of instruments and the introduction of numerous revolutionary techniques in their design and production, ECIL's ElementAS represents a major step forward in instrument technology.
- ECIL, with over 20 years of experience in atomic absorption spectroscopy, introduces an exciting new concept in instrumentation.
- The ElementAS is a top performance Double Beam Atomic Absorption Spectrophotometer.
- ElementAS requires no computer programming expertise at all. Yet it provides extensive software for operation of spectrophotometer.
- ElementAS – flexibility for tomorrow. As your requirements grow, ElementAS can be expanded to match.

(Continued overleaf)

FEATURES

Versatility

From routine measurements to advanced research, using absorption & emission techniques. Free access for the use of accessories including VGA, Graphite Furnace and Autosampler.

Wavelength range

From 185 to 930 nm. Covers all the elements, which can be determined by conventional absorption and emission techniques.

Resolution

With a spectral bandpass (<0.2nm) ElementAS monochromator has more than adequate wavelength resolution for atomic spectroscopy application. The use of high quality grating ensures that dispersion is practically uniform over the whole spectral range and prevents loss of resolution at low wavelengths.

Monochromator Slit

Coupled entrance and exit slits are automatically variable to achieve spectral bandwidth from 0 to 3 nm. Selectable step on 0.1nm between 0.1 to 3.0nm.

Double Beam Optics

Light from the primary source is divided into two beams, a sample beam and a reference beam. The sample beam travels through the sample compartment, while the reference beam travels around it. These beams are recombined before entering the monochromator. The double beam optics compensates for any change, which may occur in lamp intensity during analysis. The signal produced is actually a ratio between the two beams. Therefore, any fluctuations in the light output will affect both beams equally and will be compensated automatically. This results in a more stable base line and ultimately in better detection limits.

Rapid scanning

The full wavelength range of the mono-chromator is covered by the motorised scanning system.

Eight lamp Auto Turret capacity ECIL coded lamp compatible)

Automatic motorized turret for operation with 8 lamps and desired lamp can be automatically aligned over to the measuring position.

The power supply provides individual power to each of the eight lamps whose current can be controlled through the computer with facility for optimization for maximum light throughput

Flame Automiser

Premix design laminar flow PTFE mixing chamber, grooved to reduce carbonization. The precisely engineered burner with impact bead and flow spoiler remains unaffected by acid and organic solvents. It provides a stable and laminar flame and ensures maximum sample delivery in a homogeneous spray. The Spray chamber and nebuliser material is corrosion resistant.

Automatic Flame Control Unit & Fuel

Automatic flame Control Unit for oxidant selection with automatic gas sequencing and oxidant and fuel monitoring. Automatic change over to Nitrous Oxide-Acetylene from Air-Acetylene is achieved by boosting acetylene level to maintain the fuel oxidant ratio. Initial ignition with Air-Acetylene is always ensured. **Fuel regulation is through software.**

Safety Interlocks

Automatic safety interlocks are provided for mains voltage, air, flame.liquid trap, flashback and fuel supply. Burner head interlock checks the correct burner head installation for the desired flame type.

Advance Electronics

Incorporates upto-date solid state IC's. A single high performance photomultiplier permits the determination of all elements over the complete wavelength range from Selenium to Cesium. Phase sensitive demodulation to separate the atomic absorption signal rejecting all the noise generated by various sources. Suitably designed Handheld Terminal (optional) for instrument operation in case of PC failure.

Microprocessor Controller(Optional) Bidirectional

Microprocessor Controller is a standalone controller to operate the System in case of PC failure. The controller system incorporates up-to-date solid-state devices, 24x2 line Alphanumeric Display, 28 key Membrane Keyboard for user data entry, Centronics Parallel Printer port etc. The system facilitates automatic λ -selection, Lamp current supply and EHT Selection for PMT etc. through Keyboard. System also facilitates result computations in Absorbance and Concentration modes with Standard calibration facility. Highly user-friendly software with prompts on LCD display. Printing of results ONLINE on Printer. PC can be connected for Data treatment & storage

Computer

The Pentium PC provides automatic selection of wavelength peak, slit, lamp current, PMT gain adjustment, data handling and storage of analytical methods and results. A customised interface card, with a high resolution A/D converter to digitise the signal from PMT provides necessary hardware interface between the Instrument and PC.

Software

Highly user-friendly and fill-in-form type windows-based software. Self-diagnostic facilities. Assistance for unfamiliar operator, by pressing the 'HELP' key recalling instructions to the screen for immediate explanation. At every move, messages prompt the operator and indicate meaningful choice/guide. Facility of repeat of result of same sample and data treatment. Automatic calculation of percentage in base material.

Report Generation

Calculation software through DF Various forms of report generation suitable for all types of applications. Data storage of calibration with standards and results, reporting in both PPM and % form. Calibration graph in both Linear and Quadratic modes with Print facility.

SPECIFICATIONS

Optics

True Double Beam monochromator with 1800 lines/mm holographic grating. Variable slit 0 to 3 nm SBW, Selectable step of 0.1nm between 0.1 to 3.0nm, 185-930nm Wavelength range, Focal Length 330nm with RLD <2.0 nm/mm.

Lamp Supply

Eight/Four Hollow Cathode lamp assembly with modulated power supply. Current range 0-30mA.

Background Correction

Built-in background corrector in the system using high intensity and high-speed Deuterium lamp.

Integration

All operating modes use integrated data. Integration time selectable from 0.1 to 99 sec.

Calibration

Automatic calibration using up to maximum 10 standards and recalibration with a single standard. Direct concentration readout using different modes (K- Factor, Linear regression and Quadratic regression). Selection for only ABSORPTION reading mode. Emission, Molecular Absorbance

Read out

Display of the signal energy in the form of BAR signal and numeric form. ABS and %TRANS and CONC display facility. Absorbance range from 0 to 3.0 ABS

Burner Assembly

Titanium Burner for Air- Acetylene 100 mm and for N₂O – Acetylene 50 mm Flames. Corrosion resistant Nebulizer with platinum-iridium capillary, glass impact bead. Automatic Burner Positioning Facility of height, rotation & Lateral (Optional).

Safety Interlock

Safety interlock for Burner, mains voltage, gases, flame and liquid trap.

Sensitivity & Nebulizer

Greater than 0.7 absorbance for 5 ppm aqueous solution of copper with air-acetylene flame. Variable type, capillary of 90% Pt/10% Ir.

Computer

ISO certified Latest P IV PC, 160 GB HDD, 2 GB RAM, 17" LCD TFT Color monitor with standard configuration and Printer. Windows based

Dimensions

100L x 45B x 43H cms. (AAS Unit)+ PC

Weight

70 Kg (AAS Unit) +PC+ Printer weight

Electrical

230V ± 10% 50 Hz Power supply, 1.2KW

OPTIONAL ACCESSORIES

Vapour Generation System (VGA)

Hydride forming elements can react readily with sodium borohydride resulting in the formation of the respective elemental hydride. This technique in fact works as a concentration technique since only the hydride gas is allowed to escape into an open-ended quartz sample tube that is mounted on the air acetylene burner of the AAS equipment and heated by the flame. The hydride thus generated and decomposed at the flame temperature creates the required ground atoms that absorb the incoming radiation of the elemental Hollow Cathode Lamps.

Dual peristaltic pump with flow controller, with continuous flow injection based vapour/ hydride generation technique, metal hydrides can be generated continuously and led into the flame cell. With this technique signal giving species are available continuously and the system produces a stable signal output and better detection limits. Provides enhanced sensitivity level for Hg, As, Se and other Hydride forming elements, Incorporates quartz Absorption Cell.

VGA comprises of a reaction assembly and a quartz cell assembly. The reaction assembly is free standing and includes all pneumatic components of carrier gas and transport of metallic vapours to the quartz cell. The cell assembly consists of a closed absorption cell and a mount. The mount installs on any Air-acetylene burner head. VGA can be operated through AA software. Option for using with a programmable Auto sampler, precision better than 1% RSD.

Graphite Furnace (Furnace and Autosampler Assembly)

Automated graphite furnace system comprises graphite furnace power supply and workhead programmable automatic sample loader, controlled by AA software.

Graphite Furnace

Furnace assembly includes graphite tube (and Platform if required) mounted in an enclosure with Quartz windows. Permanently connected to power supply by umbilical cord carrying gas, cooling water and electrical supplies, inert and auxiliary Gas supplies, Temperature range ambient to 3000°C. Computer controlled maximum heating rate of 2000° C/sec. Temperature programme of upto 10 steps, each with ramp and hold, gas selection, graphics display option and read option. Temperature controller monitors current and voltage and uses power feedback to provide accurate control over the full temperature range and during both ramp and hold stages. Interlocked to inert gas and cooling water pressures. Corrects for changes in cooling water temperature

Furnace Autosampler

Accommodates 40 samples and 10 premixed standards or one stock solution for automatic mixing of upto 10 standards. Container volumes are: 2 mL for samples and standards, 5mL for automix standard, 10mL for blank and chemical modifier. Dispensed volume is 1-100µ programmable in µ increments. All PTFE capillary. 1L rinse container. Probe set-up controlled by

computer with co-ordinates stored in memory. Programme options include automatic mixing of standards and automatic mixing of standard additions, automatic injection of chemical modifier, multiple injections, heated injection, automatic rescale or complete recalibration.

Cooling Water requirement

1-2L / min at 100-200kPa (15-30psi)

Inert Gas requirement

Argon or Nitrogen at a pressure of 70-200kPa (10-30psi)

Dimensions

Graphite Furnace: 38 x 36 x 29 cm.

Auto Sampler: 22 x 29 x 14 cm

Weight

Graphite Furnace: Unpacked 35 Kg.

Packed 45 Kg.

Auto Sampler: Unpacked 7 Kg. Packed 10 Kg.

Electrical Requirements

230 V ± 10 % AC, 50 Hz.

Data subject to alteration without notice)



Electronics Corporation of India Limited

(A Government of India – Department of Atomic Energy – Enterprise)

Flame Autosampler

Automatic sample changer for flame of vapour generation analysis. Carousel holds 10 standards and 60 samples. Separate positions for rinse, blank and rescale rate, recalibration rate, number of standards, number of replicates, first and last sample numbers. Microsampling mode

Hollow Cathode Lamp:

Coded Hollow cathode Lamp of majority of elements are manufactured by ECIL.

Dimensions

42 x 23 x 38 cm

Weight

Unpacked 12 Kg. Packed 19 Kg.

Electrical Requirements

230 V ± 10 % AC, 50 Hz

NOTE: All optional are at extra cost.

Instruments & Systems Division.

ECIL Post Office. Hyderabad – 500 062

Phone: 040-27125040 FAX: 040-27121611

email: headig@ecil.co.in

BRANCHES:	New Delhi	Calcutta	
	Mumbai	Chennai	Bangalore
PHONE:	25776790	22495523	
	24227760	24349448	22269525