

12. ATOMIC ABSORPTION SPECTROPHOTOMETER WITH ACCESSORIES :

Absorption Spectrophotometer with True Double Beam optics.

OPERATING MODES:

1. PC based operation
2. Flame Atomizers
3. Back Ground Correction with D2 lamp (continuous)
4. H.C. lamp energy & Deuterium lamp energy
5. Concentration & Standard addition

Wavelength Range: 190 nm to 900 nm with automatic wavelength selection & optimization and peak positioning through computer, wavelength scan with Zoom Function.

Photometric System:- High speed dual frequency simultaneous photometric system.

Wave length Accuracy:- $\pm 0.5 \text{ nm}$

Band width:- Variable bandwidth from 0.1nm to 2.0 nm. Automatic selection

Photometric Range: - 0.0001 to 2.00 Abs.

Photometric accuracy: $\pm 0.0001 \text{ Abs}$

LIGHT SOURCE:

Hollow Cathode Lamps:

1. No of lamps in turret: 8 or more
2. No of lamps to be lit more than one with independent power supply
3. Lamp positioning to be done automatically.
4. Automatic Alignment and lamp selection with automatic line search & optimization.
5. Auto Beam Search & Alignment
6. Built-in 2-channel power supply for normal HC lamps & High intensity Hollow Cathode Lamps.
7. Lamp frequency – 512 Hz

BACKGROUND CORRECTION:

Rapid Self-Reversal, Deuterium Lamp with 1ms rapid response for accurate correction. Deuterium lamp: Hot cathode type, frequency 1000Hz. with Beam combiner & Beam Balancer.

DETECTOR : Photo Multiplier Tube (PMT)

MONOCHROMATOR: Optical System:

1. Focal Length: 250mm or more
2. Grating 1800 lines per mm or more

3. Holographic Diffraction Grating & Quartz coated
4. Slit: Bilateral variable spectral bandwidth with computer control

Burner and Gas Control:

Gas Box should be fully automated with Computer Controlled Oxidant selection, Automatic Gas sequencing, Oxidant & Fuel monitoring and control system & Provision of automatic optimized gas flow for individual elements.

1. Sample feed rate: Computerized (Programmable through software)
2. Burner Type: Titanium venture adjustable sample intake with Air-cooled premix 100mm slot for Acetylene (fuel) Air (Oxidant) & 50mm slot for Acetylene (fuel) and Nitrous Oxide (one). Burner movement through computer, with auto height adjustment
3. Spray Chamber: PTFE spray chamber & adjustable impact bead aerosol.
4. Flame Ignition: Automatic with flame ON/OFF sensors & online flame status.
5. Gas flow controls: Automatic flow rate control & Automatic changeover to C_2H_2/N_2O flame.
6. Nebulizer: Fully inert, Platinum-iridium Alloy Capillary.
7. Power Failure Protection.

Safety Devices:

Flame Monitoring System should be fully interlocked.

1. Flashback Arrester
2. Correct Burner selection
3. Constant Head drain outflow
4. Pressure Monitoring
5. Door lock.

Software features:

Free Software with facility of Guided Operating System.

The AAS operating software should be latest Windows based, multitasking with a provision of calibration, recalibration, data storage, data manipulation, re-slope, post data run, display of recommended condition, graphs, absorbance peaks, back ground correction, inter element correction including fault/ error finding diagnostic features, statistical parameters etc. At a selection of element, there should be automatic selection of optimal running parameters like gas flow, lamp current, burner height etc. The software must have the facility of reprocessing the data.

Up gradation Facility

System should be upgradable for auto sampler

ANALYSIS: -

Instrument should show Performance Guarantee ≥ 0.9 Abs for 5ppm Standard Cu Solution with RSD $< 0.5\%$.

1. Calibration using up to 10 standards.
2. Calibration mode Linear / Quadratic or Direct.
3. Up to 100 samples data is possible to take at one time.
4. There should be extensive provision for user parameters like date and time of
5. analysis, Analyst's name, result filename, calibration, signal processing modes, result unit, sample identification name, integration time etc.
6. Standard concentration entry in ppm for more than 5 standards.
7. Provision for weight / volume / dilution factor entry to get direct concentration result in % or ppm before or after sample.
8. Powerful range of report facilities for research applications
9. Auto readout & calibration with sufficient memory for at least 50 elements.

Cook Book Parameters:-

By selecting a particular element one gets the analytical parameters like lamp current, slit width, & alternative wavelengths, type of flame and method for preparing standard solution and feeding ranges (characteristic concentration), auto gas pressure adjustment.etc.

Self Diagnosis and Error Handler:

Errors occurred during installation or during analysis reported on screen indicating where and the nature of fault for easy servicing.

Coded Hollow Cathode Lamps:

- | | |
|-------------|--------|
| 1. Copper | 01 No |
| 2. Chromium | 01 No |
| 3. Zinc | 01 No |
| 4. Cadmium | 01 No |
| 5. lead | 01 No. |
| 6. Nickel | 01 No |

Accessories:

1. Compatible **low noise** Air Compressor with Buffer Tank & Oil free Air Moisture Filter.
2. Air Acetylene Burner.
3. Nitrous Oxide Burner.
4. Acetylene Gas filled cylinder (2nos.) with explosive certificate.
5. Acetylene Gas double stage regulator (Stainless Steel).
6. Nitrous Oxide filled cylinder with explosive certificate.
7. Nitrous Oxide Gas double stage regulator (Stainless Steel).

8. Stainless steel Fume hood with Exhaust fan including necessary fitting and ducting facility.
9. Compatible computer system with **i5 or more** processor and 17" LED Monitor/ Computer System of higher configuration and Laser Printer. (Please Specify the detailed configurations)
10. 2KVA on line interactive UPS
11. Spares for five years operation.
12. Instruction Manual and Circuit diagram.