



SPECTROLAB

Spectrolab Science

sales@spectrolab.eu www.spectrolab.co.uk

Spectrolab - Raleigh 1100 Series PORTABLE ATOMIC FLUORESCENCE SPECTROMETER

The worlds first truly portable atomic fluorescence spectrometer for
rapid field analysis of all important elements



The remarkable new portable Raleigh 1100 AFS

As, Sb, Bi, Se, Te, Pb, Sn, Hg, Cd, Ge, Zn, Au, Cu, Ag, Co, Ni @

ng g⁻¹

Features

Elements include As, Sb, Bi, Se, Te, Pb, Sn, Hg, Cd, Ge, Zn, Au, Cu, Ag, Co, Ni

Battery operated Only 12W

Weighs just 10 Kgs

Incorporates more than 40 new patents to ensure “state of the art “ performance

This remarkable new portable atomic fluorescence spectrometer allows rapid accurate analysis of all major elements. Atomic fluorescence spectroscopy is entering a new era of rapid environmental and field analysis.

The model 1100 AFS employs more than 40 new patents including.....

- **Patented** Highly integrated low power sampling system
- **Patented** Fully enclosed and low-power atomization system
- **Patented** Digital focalization system
- **Patented** Super short focal distance non dispersive optical system
- **Patented** Intelligent sensors and GPS localization technology
- **Patented** Fully automatic gas system with dual gas source
- **Patented** Miniature photoelectric detection system
- **Patented** Low-power 2.4 GHz ISM wireless communication technology
- **Patented** New S-G smooth and wavelet transformation filtering technology
- **Patented** Solid acid and quantified tablet technology
- **Patented** Auto adaptive tail gas exhausting system

■ Technical characteristics

◆ Measurement range

- ✧ 16 elements including As, Sb, Bi, Se, Te, Pb, Sn, Hg, Cd, Ge, Zn, Au, Cu, Ag, Co, Ni; Upgraded to speciation analysis of As, Hg, Se and other elements with a wide range of accessories and sampling hardware ensuring extremely high sensitivity for the analysis of trace mercury in water and gas samples.

◆ Highly integrated low-power sampling system

- ✧ Sampling system controlled by accurate pulse width modulation (PWM), can automatically make calibration curves with single point and dilute samples;
- ✧ Integrated miniature ultraviolet digestion system, can enable directly sampling with rapid detection for all types of water sample

- ✧ Manifold based on medium separated valves can automatically switch fluid system for different applications;
- ✧ Automatic thermostate for sampling system can assure the analysis is not affected by temperature change for field analysis.

◆ **Miniature gas liquid separation system**

- ✧ New spray-flow and three-level gas liquid separator with free maintenance;
- ✧ Non-contact dual liquid level monitoring system, prevent waste liquid flowing into the atomizer;
- ✧ Foam removing technology and remarkable effect of gas-liquid separation, thoroughly remove the influence of foam generated during the reaction of samples with high organic contents.
- ✧ Surface of gas-liquid separator is completely covered with elastic rubber to protect fragile glass in harsh environment.

◆ **Highly integrated four-way mixing manifold**

- ✧ Chemical inert PEEK check valve with microliter dead volume and excellent smooth flow path, can obtain the minimum shear flow and random turbulence, greatly stable fluid transmission, get shape peak signal with excellent smoothness and reproducibility;
- ✧ Fully transparent four-way mixed module with 3D flow path can in situ observe the state of vapor generation ;
- ✧ Sweeping flow and pressure balance design, greatly improve the repeatability of vapor generation reaction.

◆ **Gas supplier and gas system**

- ✧ Miniature lightweight high pressure cylinder, working time is more than 8 hours;
- ✧ High precision digital pressure sensing system for real time monitoring pressure of gas system;
- ✧ High precision and rapid response Mass flow meter can achieve accurate control of the argon flow rate;
- ✧ Saving gas mode can reduce more than 30% argon consumption;
- ✧ PWM accurately controlled Air pump and sine pulse suppressor thoroughly eliminate pulsation.

◆ **Fully enclosed low power atomization system**

- ✧ Fully enclosed atomization system, will not be affected by the change of external environment;
- ✧ Auto adaptive tail gas exhausting system can get stable argon-hydrogen flame and effectively eliminate waste gas;
- ✧ Corrosion resistance pulse ignition technology with no electromagnetic interference, average power is only 2 W, the life is more than 100,000 times;

- ✧ Automatically thermostate system with small size, no need to control temperature, low power consumption and long service life;
- ✧ Coaxial quartz furnace atomization eliminates the radial temperature gradient effect;
- ✧ No sheath gas is needed, greatly reducing the argon gas consumption.

◆ **Optical system and focalization system**

- ✧ Super short focal length and fully enclosed non-dispersion optical system;
- ✧ Auto high precision digital focalization technology;
- ✧ Highly reliable light intensity drift and pulse auto calibration system;
- ✧ Special optical trap effectively eliminates the interference of scattering light and improves stability of the measurement.

◆ **Light source**

- ✧ Noncoding design, compatible with any high performance hollow cathode lamps;
- ✧ Fully new design of high frequency pulse width modulation and square wave smoothing technique, effectively improve analysis sensitivity, prolong the life of hollow cathode lamps.
- ✧ High voltage power supply, wide range input, fast response time, good stability and high reliability.

◆ **Miniature photoelectric detection system**

- ✧ Miniature photomultiplier tube, spectral response is 160~ 320nm;
- ✧ Comprehensive electromagnetic shielding high performance preamplifier circuit, based on fA operational amplifier, low leakage polystyrene capacity and high precision low temperature drift resistance.

◆ **Electrical system**

- ✧ Intelligent electrical system, can automatically optimize working parameters and diagnose the failures ;
- ✧ Through the optimization of PCB wiring and layout process, combining with high electromagnetic shielding processing among various modules, high limit field improve the electromagnetic interference resistance ability of the system, and make the reliability of the whole system quality promotion.

◆ **Intelligent monitoring system**

- ✧ Leakage real time monitoring;
- ✧ High precision digital monitoring system for the pressure of gas system ;
- ✧ GPS localization system, accurately show the geographical position of test point;
- ✧ Temperature and humidity sensors for real-time monitoring change of the environment;
- ✧ Flame sensor for real-time monitoring status of argon-hydrogen flame;

- ✧ Vibrating sensor and slope sensor ensure the normal instrument working conditions.

◆ Power supply

- ✧ Rechargeable high capacity Lithium ion battery;
- ✧ Working time is more than 8 hours with Lithium ion battery in the full state;
- ✧ Built-in power management system, real time LED indicator for displays capacity of the battery.

◆ Software

- ✧ Fully support 2.4GHz ISM wireless communication;
- ✧ Automatic makeE calibration curve with single standard, automatic dilution, automatic mark the samples which is beyond the limit;
- ✧ Fully compatible with Windows XP/7/8 operating system;
- ✧ Automatically identify all attachments and connection of attaching module, automatically switch to the associated interface;
- ✧ Innovative software automatically scan port and automatically establish communication function;
- ✧ More sample groups functions, realizes grouping test of multiple sets of samples and multiple different sample blank.

◆ Solid acid and Potassium Borohydride tablet technology

- ✧ Solid acid is quantitative compressed into tablets and used to replace liquid acid, such as hydrochloric acid, nitric acid and sulfuric acid. The tablet is portable, safe and can greatly simplify the complexity of field analysis.
- ✧ Potassium Borohydride and Potassium Hydroxide are quantitative compressed into tablets. The tablet can greatly simplify the preparation of the reductant solution.



◆ Size, weight and power

✧ **Size: 415mm(L)*365mm(W)*240mm(H);**

✧ **Weight: 10kg;**

✧ **Power: 12W;**

◆ **Related accessories and upgrade function**

✧ Device for ultra trace mercury analysis in water;

✧ Device for ultra trace mercury analysis in gas;

✧ Direct mercury analysis in the air;

✧ Interface for coupling with chromatography, upgraded to speciation analysis.



SPECTROLAB

Spectrolab Science

Oxford House, 20 Oxford St Newbury, Berkshire. RG14 1JB UK. Offices in UK, EU

sales@spectrolab.eu

www.spectrolab.co.uk

CAT 22234