XplorAA

GBC SCIENTIFIC EQUIPMENT

Sensitive Technology for a Sensitive World

Compact - Lightweight - Affordable

Six lamp motorized or two lamp manual turret

Optional single Superlamp

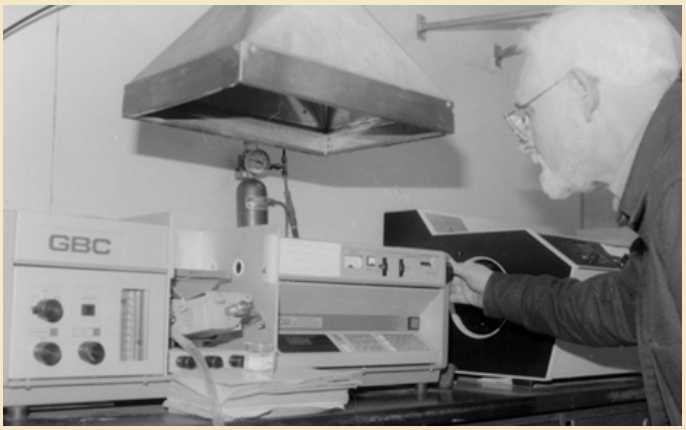
Choice of manual, automatic or programmable gasbox

Fully integrated liquid trap

Hyper-Pulse Background Correction

Windows 7or8™ 64 bit software

GBC...
a history of innovation



GBC Scientific Equipment was founded in 1978 and is now one of the world's largest manufacturers of Atomic Absorption Spectrometers with a sales and service network covering around 100 countries.

GBC's growth has been fueled by its extensive AA expertise, innovative thinking and an obsession for quality and reliability. GBC now produces the widest range of AA spectrometers in the world, with options and accessories to suit every analytical requirement.

From Ultra-Pulse background correction and asymmetric modulation from double beam instruments to Automatic Burner Rotation, GBC has brought innovation into your laboratory.

We have improved the quality of your data while ensuring that your instrument is not only easier to use but produces meaningful results faster and with less operator intervention.

Our goal has always been to increase the productivity of your laboratory while decreasing your ongoing costs. These benefits are yours now with the high performance XplorAA AAS.

The XplorAA AAS - versatile, powerful and fast

The XplorAA AAS makes use of the latest in atomic absorption spectrometer technology. Developed after exhaustive research into the needs of the analytical community, XplorAA has all the power, performance and speed required in today's modern laboratory.

GBC customers benefit from our efficient and effective global organization. Access to information, applications support and technical service is never more than a phone call or email away.

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GBC has always placed a strong emphasis on quality in all aspects of our operation, from design and manufacture to the provision of service and support to our customers, and we are fully committed to continuous evaluation and improvement in all areas.
The GBC Quality Management System has been accredited to the ISO 9001 quality standard by Lloyd's Register Quality Assurance Limited. This certification is your assurance that the procedures and processes used to produce the goods and services which GBC provides comply with the relevant International Standard, and demonstrates commitment to meeting the needs and expectations of our customers.
For almost 30 years GBC has been at the forefront of scientific technological development, manufacturing and marketing a wide range of award winning, quality scientific instruments.
ISO 9001Quality Accreditation

Protected optical system ensures long-term performance
The XplorAA uses mirrors throughout the optical system to ensure that correct focus and high energy throughput are maintained at all wavelengths. To protect the optical surfaces, a dust cover is fitted over the optical system and additional protection is provided is by coating the mirrors with quartz.

Automatic wavelength and slit setting for maximum convenience
The large, self-calibrating 0.33 metre (focal length) monochromator has been specifically designed to provide the high light throughput and stability needed for atomic absorption. Spectral bandwidth is continuously adjustable between 0.1 and 2 nm (in 0.1 nm increments) and, for furnace work, reduced slit height is available with all slit widths. You simply select the required element, and the wavelength, lamp current, slit width and slit height are set automatically. Graphical displays of wavelength scans are available for flame emission work or as a troubleshooting aid. A wide-range photomultiplier tube covers the full wavelength range.

XplorAA Dual - True double beam stability
Asymmetric modulation for double beam instruments is a GBC innovation introduced in 1985. Asymmetric modulation allows the light in the sample compartment to be measured for twice the duration of the reference beam. The genuine double beam optical system of the XplorAA Dual measures the sample and reference signals every mains cycle to give the best correction for lamp noise and the most stable baseline possible. Asymmetric Modulation improves the signal-to-noise ratio by as much as 40%. The result is unmatched performance in terms of both sensitivity and detection limit.

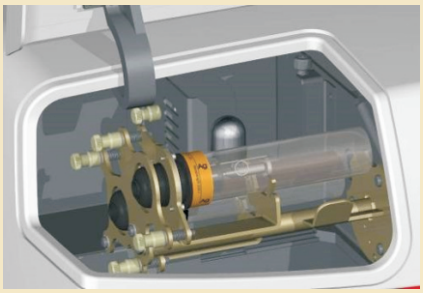
XplorAA Single - Maximum energy
The XplorAA Single uses the simplicity and high energy of single beam optics to provide the best possible performance/price ratio. An automatic baseline zero between samples allows the XplorAA Single to be used for extended periods with flame or furnace autosamplers without the problem of baseline drift.

Hyper-Pulse background correction
The hyper-pulse background corrector is one of the fastest background correction systems available. It has been further improved by pulse interpolation of “transient signals” such as graphite furnace. The high intensity deuterium arc lamp provides a 175-425nm correction range. The GBC hyper pulse system measures 200 (50 Hz) or 240 (60 Hz) sample measurements per second. The background correction range is up to 2.5 total absorbance.

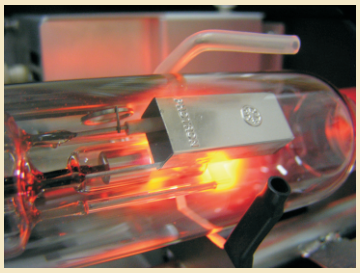
Guarantee of Performance
GBC guarantees that, when optimized, the instrument will give an absorbance of at least 0.8 for a 5 mg/L copper solution with an relative standard deviation will be less than 0.45% for ten 10-second integration. This performance is achieved by an efficient blend of good design and durable materials.

This guarantee is unique to GBC.

Standard two lamp manual turret



Optional six lamp motorized turret



Optional single Super Lamp power supply

Super Lamps are high intensity hollow cathode lamps. Elements such as As, Se, Cd, Ni and Pb in particular have improvements in detection limit, sensitivity and

Element	Standard HCL (µg/ml)	Super Lamp (µg/ml)	Detection Limit improvement
As	0.5	0.1	5.0
Se	0.4	0.06	6.7
Cd	0.014	0.007	2.0
Pb	0.14	0.05	2.7

Gasbox Options

All materials in contact with the sample have been selected for maximum corrosion resistance. The spray chamber and integrated liquid trap are made from inert polypropylene. The burner is made entirely of titanium. The nebulizer has a platinum-iridium capillary and a titanium venturi. The nebulizer has an adjuster sample uptake rate, with a locking mechanism.

Manual (interlocked):
This system allows the flame to be ignited only if a burner is installed, the liquid trap is full and an air-acetylene flame is selected. Changeover to the nitrous oxide-acetylene flame is allowed only if a nitrous oxide-acetylene burner is present. Push-button flame ignition is included.

Automatic:
This system is interlocked to gas supplies, burner type, flame detector, mains power, liquid trap, presence of nebulizer and pressure relief bung. It provides a programmed ignition and shutdown sequence - if nitrous oxide-acetylene is selected, an air-acetylene flame is first established and then the acetylene flow is automatically boosted before automatic changeover to the nitrous oxide-acetylene flame.

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Programmable:
Automatic setting of flame type and gas flows from stored conditions within customer defined methods. Programmed ignition and shutdown sequences. Automatic change of flame conditions during automatic multi-element operation. May be programmed to automatically extinguish the flame at the end of an analysis. Interlocks monitor air, acetylene and nitrous oxide pressure, burner type, liquid trap level, presence of nebulizer and pressure relief bung, oxidant flow, flame condition and mains power. Ignition is prevented or flame is shutdown if a fault is detected. Operating software display of interlock status and gasbox operating parameters.

Fast, sturdy and reliable Sample Delivery System
The autosampler is a precision engineered X-Y-Z auto sampler. It provides accurate and fast analysis due to its durable, simple, adaptable, reliable and sturdy design. Supplied with sample racks to holds 240 sample vials, each of approximately 14ml, and a standards rack to hold 10 standard vials, each with a volume of approximately 50ml. Plastic sample and standard vials are supplied. PTFE and PEEK is used to provide a metal free liquid flow path. Variable continuous flow sample probe rinse station with peristaltic pump minimizes sample contamination and carry-over. An inert spill rack which prevents any solution inadvertently spilling over the auto sampler or your laboratory.

The XplorAA software totally controls rinse time, delay time, number of replicates, rescale rate, re-calibration rate, measurement time and analysis order. Full random access capability is standard. Up to 360 samples can be loaded using 7ml tubes and a further 360 samples using the optional rack extension giving a total of 720 samples.

Fast, sturdy and reliable Dilutor
The dilutor is used in combination with the auto sampler, removing the need for manual standard and sample preparation and sample dilution for flame and hydride applications. The Dilutor is totally controlled through the XplorAA software enabling true fully-automated analysis. Simple and reliable automation of standard additions and spike recover, or sample matrix modification through the addition of up to two chemical modifier solutions provides hands-off operation and versatility. The ability to work in combination with Automatic Burner Rotation (ABR) extends the dynamic range beyond that of other dilution systems.

Purge Kit
Uses positive pressure (compressed air) within the instrument to provide protection from harsh laboratory environments.

Fully automated high performance Graphite Furnace system
For analyses where parts per billion detection limit is required. The System offers the automation, the reproducibility and the accuracy required.

The System is a complete graphite furnace system which includes the PAL Autosampler for rapid and accurate analysis, the power supply unit and workhead. The entire system is controlled by the software.

Approximately 50 elements can be determined, most at sub-parts-per billion concentrations.

The PAL programmable Auto Sampler provides automatic calibration with up to 10 standards and automatic analysis of up to 40 samples. Sample volumes between 1 and 100 ul may be selected.

Features and benefits:

- Variable injection volume of 1ul to 100ul in 1ul increments allows the user to setup optimum method.
- Temperature program up to 3,000ºC for even the most complex sample.
- Programmable gas selection allows different gases to be used allowing for diverse ashing techniques to be used in one method.

- Chemical modifiers are dispensed automatically. Two modifiers are available eliminating almost all manual sample pre-treatment.
- Variable injection speed is a useful feature which is needed with viscous samples such as oils, or when using hot injection.
- Hot injection allows faster analyses and thus greater laboratory productivity.
- Unique setup and storage of PAL probe coordinates (horizontal position and vertical position) in the software.
- Multiple injections allow automatic pre-concentration. For low concentration analyses the PAL Auto Sampler will deposit the sample and the furnace will dry then ash before the cycle is repeated as many as fifty times, totally eliminating messy and time consuming extraction or pre-concentration techniques.
- Rapid heating (2000°C/sec) under full control. The unique GBC temperature control system uses true power feedback to ensure reproducible analytical conditions. This system has a fast response and is independent of fluctuations in mains voltage or conductivity of the graphite components and covers the full temperature range.
- Automatic mixing of standards saves time and improves reliability. The auto sampler will automatically prepare a series of up to 10 standards from a single stock solution and can also automatically prepare standard additions from the stock solution. This procedure eliminates errors in the preparation of standards, reduces the likelihood of contamination and saves considerable time.
- Automatic dispensing of chemical modifier eliminates the need for manual sample treatment. With many applications, the addition of a chemical modifier to the sample improves sensitivity, reduces background absorbance or reduces chemical interferences. The auto sampler can automatically add a specified volume of chemical modifier to each sample and standard.
- Automatic dilution. Manual dilution is time and labor-intensive and is also prone to errors and contamination. The auto sampler eliminates these problems by automatically diluting any over-range samples to bring them into the calibration range.

Continuous flow Hydride Generator for best results
This is an automatic continuous flow hydride generator for the analysis of hydride forming elements such as arsenic, selenium, antimony, bismuth, tellurium, tin, germanium and lead at parts per billion concentration levels.

The same system can be used to measure mercury at parts per billion concentration utilizing the cold vapor technique.

As the system is a continuous flow system, signals can be integrated, thus filtering noise and improving the detection limits when compared to hydride generation systems that produce transient signals. To achieve the same sensitivity with flow injection systems, much larger sample volumes are required, meaning longer set up and analysis times.

The continuous flow process also means faster analysis when following good analytical procedures and measuring more than one replicate. Typical sample throughput is 60 samples per hour, measuring three replicates on each sample. Other systems only allow 30 to 40 samples to be measured each hour when measuring three replicates on each sample. The hydride generator will increase the productivity of your laboratory.

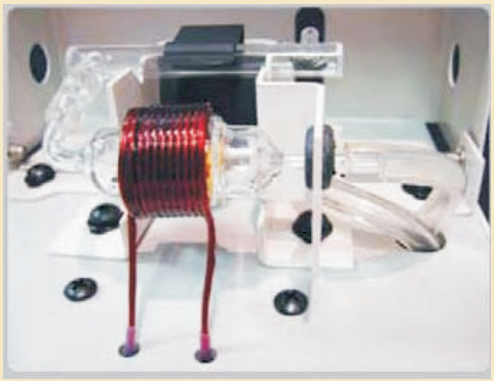
Improve hydride results with the Electrically Heated Hydride Cell
The electrically heated hydride cell is used to electrically heat the quartz cell used in hydride generation analysis, as an alternative to flame-heating of the cell. The advantages of using an electrically heated cell include: more accurate temperature control, more stable temperatures, less noise as the flame is not present, and improved detection limits for most elements.

Since it does not require a flame, hydride analyses can be carried out unattended or even overnight, saving the laboratory time and money.

In addition, the electrically heated hydride cell can be used for warming the cell for cold vapor mercury analysis, eliminating any condensation in the quartz tube.

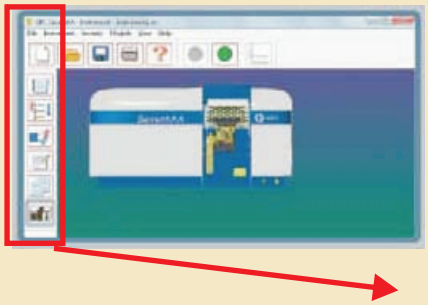
The electrical heating blanket can also be used with XplorAA No Flame, which does not have a gas box, enhancing its analytical capability.

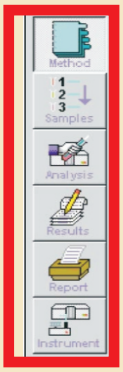
Mercury Concentrator
Measure mercury at less than 10 ppt.
Regulations for mercury analysis are pushing the required detection limits continuously lower, so that they are well below the level achievable using the standard cold vapor technique. The Mercury Concentrator accessory for the Hydride Generator addresses this problem. By concentrating the mercury vapor on a gold foil, then heating by a patented radio frequency, detection limits of five parts per trillion can be readily achieved. The very quick and centralized heating, results in unsurpassed sensitivity and reproducibility. The Mercy Concentrator accessory is fully controlled by the XplorAA software and the analysis can be carried out unattended when used in conjunction with the auto sampler delivery system.



XplorAA Software

GBC has earned a world-wide reputation for superlative AAS software.
Easy for the first-time user to operate, it has the power to handle the most demanding applications.



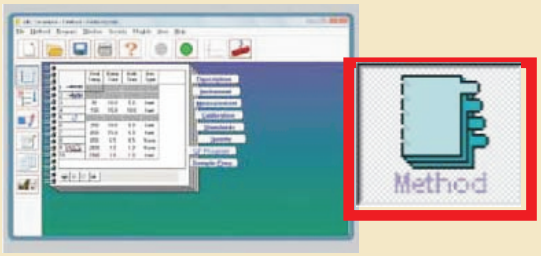


Modular design for easy use

The software is comprised of six individual modules which simplify analysis and setup, so that only one mouse click is required to initiate an analysis.

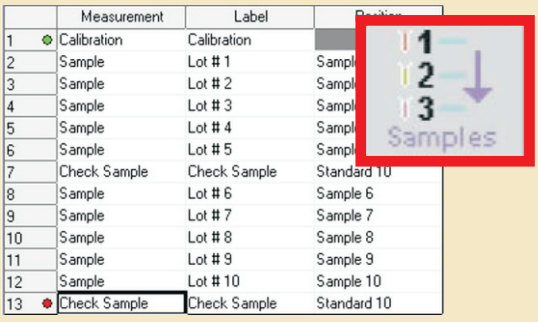
Operation is further simplified by an extensive contact-sensitive on-line help system which includes tutorials on analytical technique.

The system provides fully integrated software for instrument and accessory control, graphics, data acquisition, storage and reporting. There is no need to switch to add-on software packages.



Rapid method development

The method module of the software allows the operator to setup and store all parameters associated with an elemental analysis including instrument, quality control, calibration, flame and graphite furnace, sampling and measurement parameters.
As all the parameters are within one module it is a simple task to develop a method. Once an element is selected from the periodic table and the appropriate wavelength determined, recommended conditions are recalled. Methods can be created or modified, even while the instrument is collecting data.
Password protection can be applied to method files to ensure that unauthorized changes or erasure cannot take place.

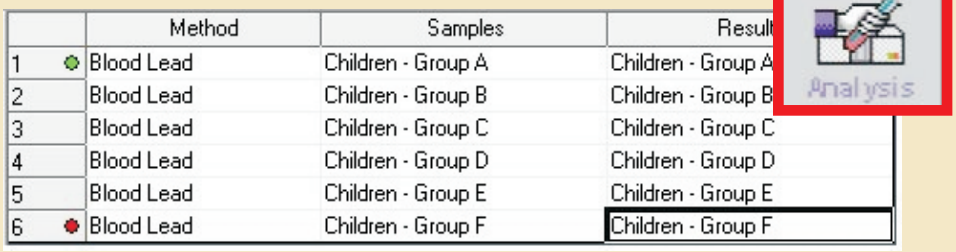


Flexible sample handling

The samples module is used to identify the samples and to determine in which order they will be analyzed, when and how often spike recoveries, check samples, re-calibrations and re-slopes will be carried out. Once a sample file has been created it can be saved for later use or modification. Also included with the sample identification are sample weights and dilutions which can be used to calculate the element concentration in the original sample. The weights can be read in directly from an electronic balance with an RS232 port, or the information can be imported from other software packages.

Manual Sampling is fast and simple

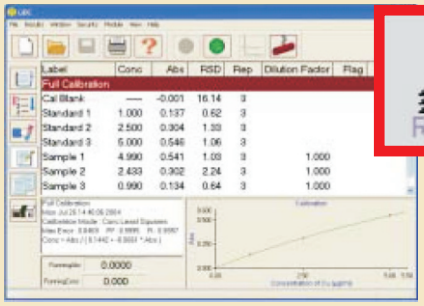
For rapid manual sampling analysis, accept default sample names and click to start. It's that simple.

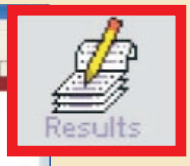


Simple automated analysis

The analysis mode is used to bring together the method and sample details for the measurements that are to be taken. These may be linked to provide fully automated multi-element analysis. This information can be saved as individual files, and single or multi-element analysis can be initiated with just three mouse clicks.

Powerful and easy to use software

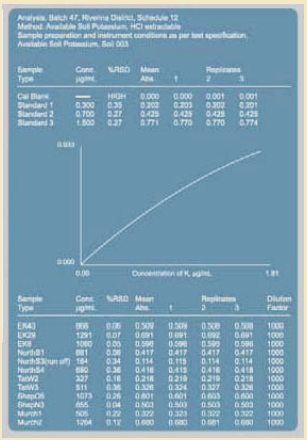




Result integrity is assured

The results section of the software is used to collect, display and process data collected by the instrument. As all the raw data is collected for each standard and sample it is possible to re-calculate results post-run, based on different criteria. For example, results that were collected in peak area mode can be calculated in peak height mode. This can be invaluable for method development, particularly in furnace work.

The calibration routine can also be changed post-run to get the best possible fit of the calibration. Even weight and dilution data can be added after the analysis and results recalculated. Of course, erroneous results can be deleted, meaning that samples or calibrations need not be repeated. The entire results section can be password protected to ensure the integrity of the data.



Customized reports

Comprehensive reports have never been easier to generate and customize in either the single element format or as a combined multi-element report. A single element report can contain any combination of information including replicates, calibration graph, method parameters and weights and volumes. All reports can include page footers and headers, individual margins, separate header file, and all columns and rows of information can be individually sized. In addition, a full selection of fonts and font sizes are available.

Reported data may be easily and automatically exported to third party software packages, either on-line or post-analysis. Direct connectivity to Laboratory Information Management Systems (LIMS) is easily enabled without additional software.

High resolution graphic display for methods development and quality control

The graphics signal is linked to individual sample readings, allowing atomic and background traces to be displayed simultaneously.

For graphite furnace work, graphics are overlaid with the furnace temperature program, simplifying method development.

Choice of calibration routines to provide the most accurate results

The XplorAA allows for automatic preparation of calibration curves using up to ten standards. Choose an exact fit to the calibration points, rational or linear least squares fit, or linear least squares fit through zero. You may also calibrate using standard additions or bracket standards.

The software is available in a wide range of international languages.

Advanced features of the XplorAA software

Storage of signal graphics provides a valuable quality assurance aid

To aid in method development and quality assurance, signal traces for all analyzed samples are stored with the corresponding numerical result. If a problem is suspected, simply clicking on the suspect replicate will display the graphical result on the same page. Zoom and cross-hair facilities also enable a close up inspection that can be used to quickly diagnose any problem.

Choice of measurement mode enhances productivity

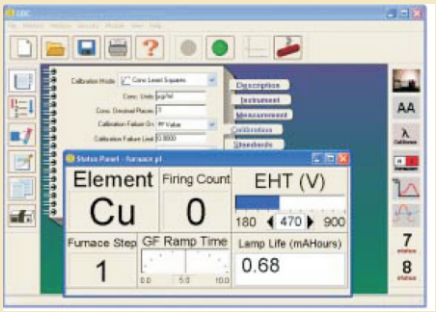
Choose from peak height, peak area, integration or running mean. The automated running mean mode provides a significant reduction in measurement time since the measurement is completed when the required precision is achieved.

Results editing facility means that samples need to be run only once

To ensure that samples and calibrations do not need to be repeated, the software features full editing capabilities for individual replicates as well as the ability to delete complete samples or standards. To prevent unauthorized editing, all results are password protected to ensure data integrity.

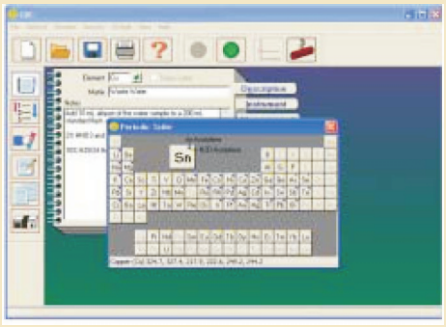
Customizable status panels

The user can monitor or access information on their samples or instrument parameters and conditions by using status panels. The user can select from nearly 400 parameters to incorporate into their own personalized status panels. Each parameter can be displayed as editable or non- editable text, dial or slide meters, switches, buttons, graphs or scans further adding to the flexibility of the XplorAA software. These parameters can be assigned to customizable status buttons.



Analytical applications are stored for instant recall

When you select the element to be determined, the software automatically selects the recommended wavelength, lamp current, slit width and flame type. After selecting the other parameters for your application, all information may be stored in an application file for instant recall at any time.



All data is preserved

All results are stored on disk and can be recalled for viewing or printing at any time, or transferred to another disk for archiving. The time and date of analysis is stored with the results, enabling you to monitor the progress of samples, identify batches of results and comply with the statutory regulations.

Reporting facility enables fully documented analyses

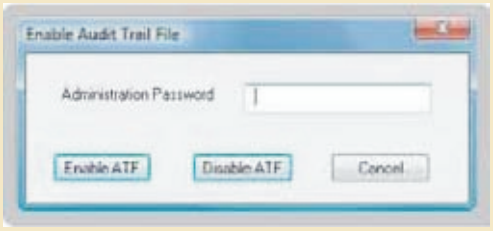
Produce printed reports in comprehensive single- element or summarized multi-element formats. Single element reports can contain any combination of information including replicates, sample labels, calibration graphs, method parameters and weights and volumes. Reports can include page footers, headers and individual margins, and all columns and rows can be individually sized. A full selection of fonts and front sizes may be used. Connect an electronic balance to directly transfer sample weights to the weight and dilution table, or use a bar code reader to directly enter sample labels.

Advanced features of the XplorAA software (continued)

Help is instantly available
Context-sensitive online help explains all aspects of the hardware setup, including operation, safety and maintenance. Learning to use the instrument is made easy via multi-media tutorials. While running a tutorial or displaying context-sensitive help, you can work through the software to create an application using as much or as little help as is required.

Continuous display of concentration for rapid sampling
The digital concentration read-out on the results and graphics screens are continually updated. Invaluable for optimization and rapid manual sampling.

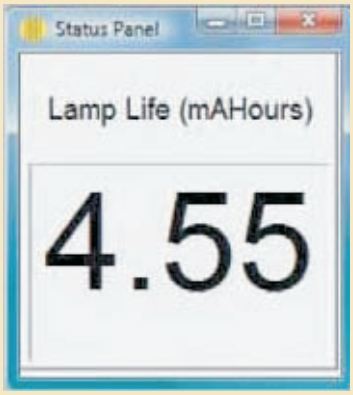
Electronic Records and signatures
The Electronic Records and Electronic Signatures Rule (21 CFR Part 11) was established by the USA FDA to define the requirements for submitting documentation in electronic form and the criteria for approved electronic signatures. This rule defines the standards by which an organization can use electronic records to meet its record keeping requirements. This feature has now been introduced into the XplorAA software making it 21 CFR Part 11 compliant.
Security settings allow for the application of an "Audit Trail File". This creates a log of every action carried out by the software and by which user.



User Password
Selected users may be restricted to a minimal amount of access within the software and prevent the accidental deletion of important files by other users.

Intelligent Lamp Warm Up
The XplorAA software calculates the exact time when the next element lamp should start to be warmed. This feature saves you money by not having a lamp in warm up mode longer than it needs to be; which can occur during long furnace programs and/or if you have many samples.

Lamp Life Log
The XplorAA software package automatically records lamp life in mA hours, as a text file named "lamplife.log" in the XplorAA program folder. Whenever you change a lamp all you need to do is reset the log and it will automatically keep track of the number of mA hours the lamp has done. Additionally you may setup a status panel whereby you can view the lamps mA hours usage any time during the course of the day.



Analysis Time Remaining
Based on the analysis type (flame or furnace program selected), the number of elements, the number of samples selected, rinse times, etc., the XplorAA software calculates the time remaining until the end of the analysis. This time can be continuously displayed on a status panel. This informative tool allows a user to know exactly when the current analysis will finish, enabling them to plan their next batch of samples or the next analysis.

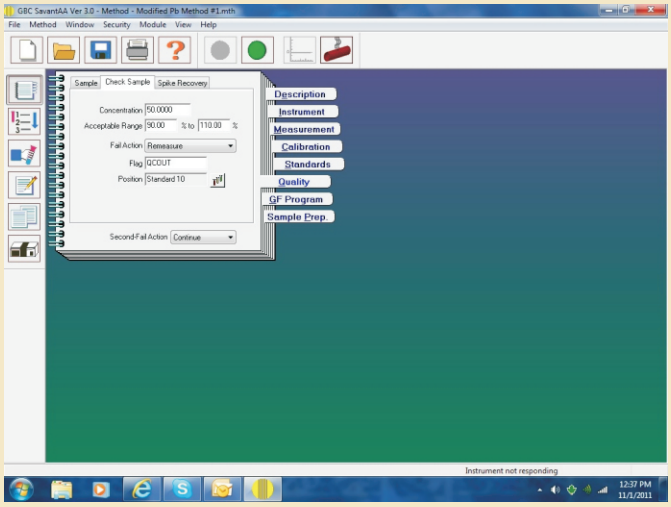
Quality control for good laboratory practices

At GBC, we realize how important it is for your laboratory to be able to assure the quality of the data it produces. To this end, GBC has incorporated extensive quality control protocols into the software.

They include:

- Upper and lower limits for quality assurance of samples. Ideal for situations where your lab is running samples that have to fall within a pre-determined range. Samples outside the specified range will be flagged.

- Check sample analysis. Once a check sample of known concentration has been analyzed, further analysis is dependent on the result of the check sample. If the check sample should fall outside the elected range then the analysis will follow a pre-selected action. Possible actions include: stop, continue and flag, re-slope and continue, re-calibrate and continue, re-slope and repeat all the affected samples or re-calibrate and repeat all the affected



The selective use of quality control protocols enables compliance with any regulatory requirement and ensures that your laboratory maintains good laboratory practices.

- Spike recovery samples allow for sample measurement followed by the analysis of a spike sample as a check for possible interferences. If the spike fails a pre-determined recovery range then the analysis will proceed according to the procedure specified by the operator. The choices available include all those available for check sample error.

- Sample blank is used when the standards and samples have different matrices and so may require separate blanks.

- Automatic Sensitivity Correction (ASC) is a unique GBC feature which provides automatic compensation for sample results affected by changes in conditions during an analytical run (for example, aging of a graphite furnace tube). It means that samples need not be re-analyzed and that re-calibrations only need to be performed when required. The productivity improvements and savings on consumables using ASC can make a significant difference to your profitability.

- Calibration fit gives the operator the option of pausing if the calibration has failed an operator-determined curve fit criteria.

- Automatic re-slope rate can be set either as a function of time or of the number of samples being analyzed, thus further ensuring data quality.

- Automatic re-calibration rate can also be set either as a function of time or of the number of samples that have been analyzed.

Graphite Furnace System (part number: 99-5005-00)

Graphite Furnace

Furnace assembly includes graphite tube (and platform if required) mounted in 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 3000ºC. Computer-controlled maximum heating rate of 2000ºC/sec. Temperature program has unlimited number of 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 ranges, and during both ramp and hold stages. Interlocked to inert gas and cooling water pressures. Corrects for changes in cooling water temperature.

Inert gas requirement
Argon or nitrogen at a pressure of
70-200 kPa (10-30 psi)
Dimensions
380 x 360 x 290 mm (W x H x D)
Weight
Unpacked 35 kg, packed 45 kg
Electrical requirements
208/220/240 volts AC, 50/60 Hz, Rated current 15A, surge current 40A.

Furnace PAL Auto Sampler

Accommodates up to 49 samples and one stock solution of 40 samples and 10 pre-mixed standards or one stock solution for automatic mixing of up to 10 standards. Container volumes are 2 mL for samples and standards, 5 mL for auto-mix standard, 10 mL for blank and chemical modifier. Dispensed volume is 1-100 uL, programmable in 1 uL increments. All PTFE capillary. 1 L rinse container. Probe set-up controlled by computer with co-ordinates stored in memory. Program options include automatic mixing of standards, automatic mixing of standard additions, automatic dilution of over-range samples, automatic injection of chemical modifier, multiple injection, heated injection, automatic rescale or complete re-calibration, check sample and spike recovery.
Dimensions
220 x 209 x 140 mm (W x H x D)
Weight
Unpacked 7 kg
Packed 10 kg
Electrical requirements
208/220/240 volts AC, 50/60 Hz, Rated current 15A, surge current 40A.

Mercury Concentrator (part number: 99-0245-11)

Gold amalgamation mercury trapping accessory for use with the Hydride Generator to enable ppt analysis of mercury. Consists of a power supply and workhead with built-in gold foil trap and quartz absorption cell. Controlled by the XplorAA software. Programmable load time, number of replicates, flush time and clean.
Dimensions
260 x 160 x 290 mm (W x H x D)
Weight
Unpacked 10.6 kg
Packed 15 kg
Gas requirements
High purity argon or nitrogen gas purge, flow rate 30 ml/min and inlet pressure of 150kPa.
Electrical requirements
100-240 V AC, 50/60 Hz

Sample Delivery System (part number: 99-0582-00)

Precision engineered auto sampler. Accurate, durable, simple, adaptable, reliable, fast and sturdy design. Supplied with sample racks to hold 240 sample vials each of approximately 20 mL and a standards rack to hold 10 standard vials, each with a volume of approximately 50 mL. Plastic sample and standard vials are supplied. PTFE and PEEK is used to provide a metal free liquid flow path. Variable continuous flow sample probe rinse station with peristaltic pump, minimizes sample contamination and carry-over. Software controls include rinse time, delay time, number of replicates, rescale rate, re-calibration rate, measurement time and analysis order. Full random access capability is standard. Up to 360 samples can be loaded using 7mL tubes and a further 360 samples using the optional rack extension giving a total of 720 samples.
Dimensions
520 x 250 x 482 mm (W x H x D)
Weight
Unpacked 11 kg
Packed 15 kg
Electrical Requirements
100-240 V AC, 50/60 Hz

Hydride Generator (part number: 99-0276-00)

Automatic continuous flow hydride generator for the analysis of the hydride forming elements such as arsenic, selenium, antimony, bismuth, tellurium, tin germanium and lead, at parts per billion concentration level.
Dimensions
300 x 200 x 260 mm (W x H x D)
Weight
Unpacked 7 kg
Packed 12 kg
Gas requirement
High purity argon or nitrogen at 30 mL/min (+120 mL/min for $SnCl_2$ operation) and an inlet pressure of 150 kPa.
Electrical Requirements
100-240 V AC, 50/60 Hz, 120 VA

Electrically Heated Cell (part number: 99-0237-11)

Temperature controlled electric heating blanket for heating the quartz cell used in hydride generation AAS. Includes power supply with temperature controller and workhead.
Dimensions
260 x 160 x 290 mm (W x H x D)
Weight
Unpacked 4 kg
Packed 8 kg
Electrical Requirements
100-240 V AC, 50/60 Hz, 120 VA

Auto Dilutor (part number: 99-0597-00)

A syringe pump dilution system for flame and hydride applications. Can be used for automated sample dilution, preparation of working standards and standard additions, addition of chemical modifier solutions, automated spike recover. Can also be used in conjunction with Automatic Burner Rotation for extended dynamic range.
Dimensions
140 x 330 x 140 mm (W x H x D)
Weight
Unpacked 7 kg
Packed 9 kg
Electrical Requirements
100-240 V AC, 50/60 Hz, 120 VA