

*HPLC
Automated
Chromatography
Sample
Introduction
System*

*Premier Instruments for
High Performance Liquid Chromatography*



Automated HPLC Sample Processing

Increased sample demands necessitates laboratory automation

Factors such as ever increasing sample numbers, demands for standardization of HPLC methods, and requirements for more and more information to be gathered from each sample, are placing enormous burdens on most HPLC laboratories. These three factors are ensuring a diminishing capacity in the modern analytical chromatography laboratory. The GBC LC1650 Automated Chromatography Sample Introduction System (ACSIS) is the solution to this problem. This unique programmable robot maximizes efficiency and capacity while minimizing operating costs.

ACSIS Injection precision and accuracy

HPLC applications require both injection accuracy and precision. The autosampler's advanced metering system provides these parameters over an extended programmable injection range. From small injection volumes of 1 μ l to larger samples of 200 μ l, reproducibility is guaranteed. This versatility enables 'off-range' samples to be readily re-analyzed without the necessity of sample concentration or dilution. Additionally, the unit's capability of vial to vial transfer enables multi-steps for pre-column sample derivatizations or on-line preparation of calibration standards.

Reduced operating cost with all electric design

ACSIS' all electric design removes the need for expensive cylinders or compressors, resulting in further space conservation, and the flexibility to be located anywhere within the laboratory. Optional Peltier cooling ensures sample integrity for your valuable samples.

Maximize productivity with 160 vial capacity

ACSIS provides an unprecedented 160 vial capacity, allowing uninterrupted analysis for hours on end, enabling laboratories to increase productivity with overnight processing. The resultant increase in productivity ensures valuable time can be utilized on other important laboratory functions.

Minimize valuable bench space

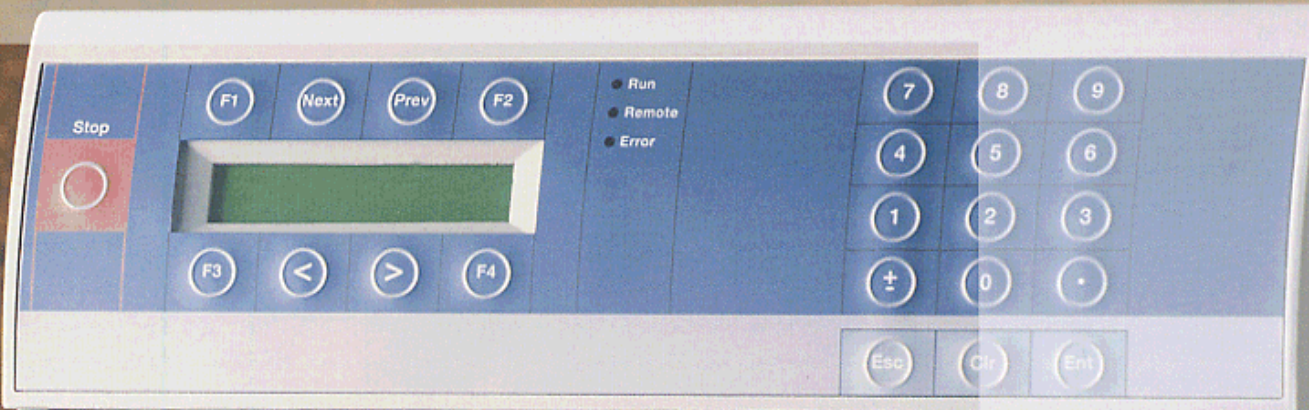
Conserve valuable bench space—ACSIS boasts a modest footprint, less than 34 cm in width. Ergonomically designed, the minimized footprint allows you to better utilize your work area and provides a professional appearance.

Proven fluidic and open access design for assured reliability

The autosampler's proven 'Flow Through' needle fluidic design, its position sensors, and advanced system diagnostics all work in combination to assure that your desired sample processing sequences are correctly executed, and notifies you of any deviations. The needle is part of the fluidic path. It is flushed automatically with mobile phase after the injection cycle and excludes any possible sample carry over from the internal needle wall, between injections. The simplicity of this design improves the units ruggedness for maximum up-time.

A transparent door permits visual observation of the instrument's robotic operations while protecting the compartment from possible external interferences. The autosampler's open access arrangement allows fast sample loading and makes routine maintenance simple and easy.





ACSIS is designed specifically to deliver enhanced automation to your HPLC system for increased productivity. High precision injection assembly, extended vial capacity, variable volume facility, X-Y-Z sampling robotics and fully electric open access design all work in combination to guarantee reliable results with high sample throughput and added user convenience.



Precision, Reliability and Versatility

Precision and accuracy guarantee productivity and reliability of results

Automation without precision and accuracy can be more unproductive than manual injections. ACSIS uses a unique new metering system that ensures injection accuracy and precision. With volumes from 1 to 200 microliters, the coefficient of variation is less than 1 percent! There is no need to run duplicate or triplicate samples in order to feel secure about your results.

The unique needle design minimizes carry over and maximizes precision.

AC SIS has been developed with these design advancements to enable you to produce reliable and accurate results.

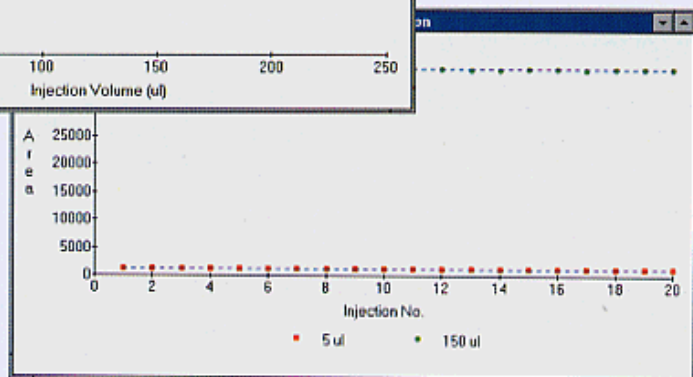
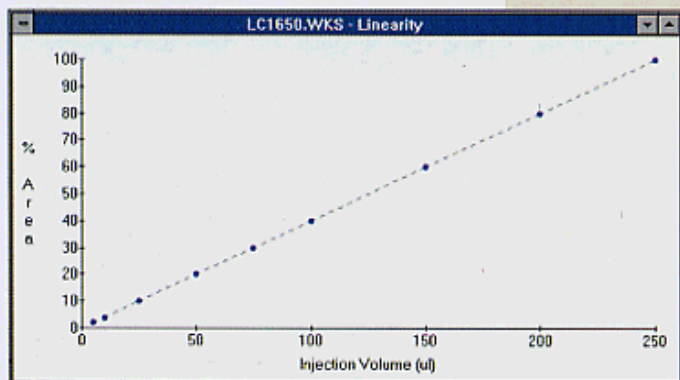
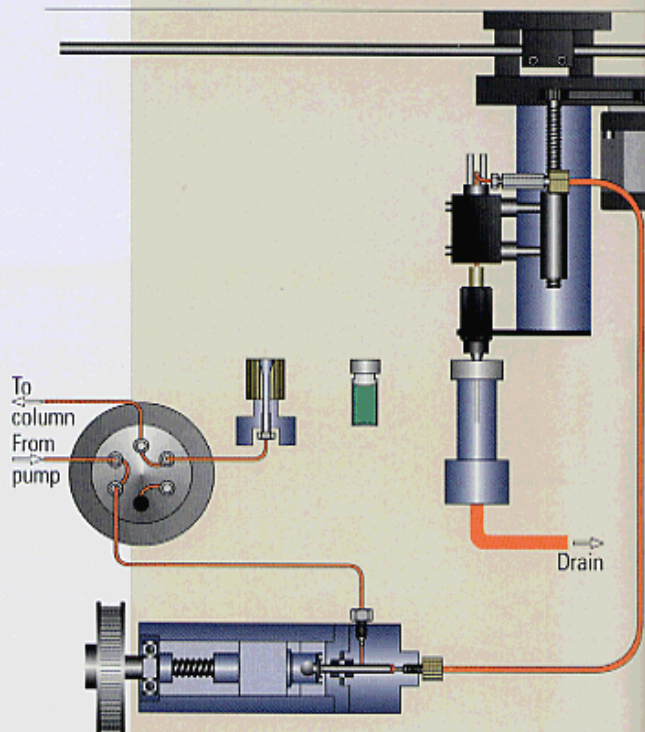
Micro-volume flexibility minimizes valuable sample waste

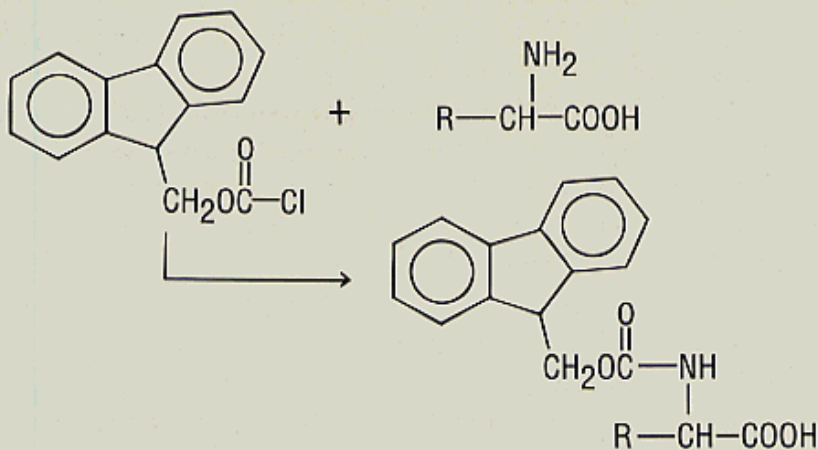
Your samples may be the most valuable items in your laboratory! When you are sample limited and you require as much information as you can get, you can be sure that ACSIS will be sparing with those valuable samples. As little as 1 microliter can be injected from an amazingly small 3 microliters total volume! The 'Flow Through Fluid Path' (FTFP) and spring loaded grooved needle design ensures minimal carry over, reducing the possibility of contamination of the remaining sample. When combined with the optional needle wash, even the most viscous of samples do not carry over.

Expanded sample processing capability

The robotic sampling probe provides expanded capability, with the option to use a range of autosampler vials. The enhanced X-Y-Z microstepper movement provides maneuverability and flexibility in pre-treatment of samples, derivitization steps, pre-injection mixing, dilutions, addition of standards, extractions and other time consuming manipulations.

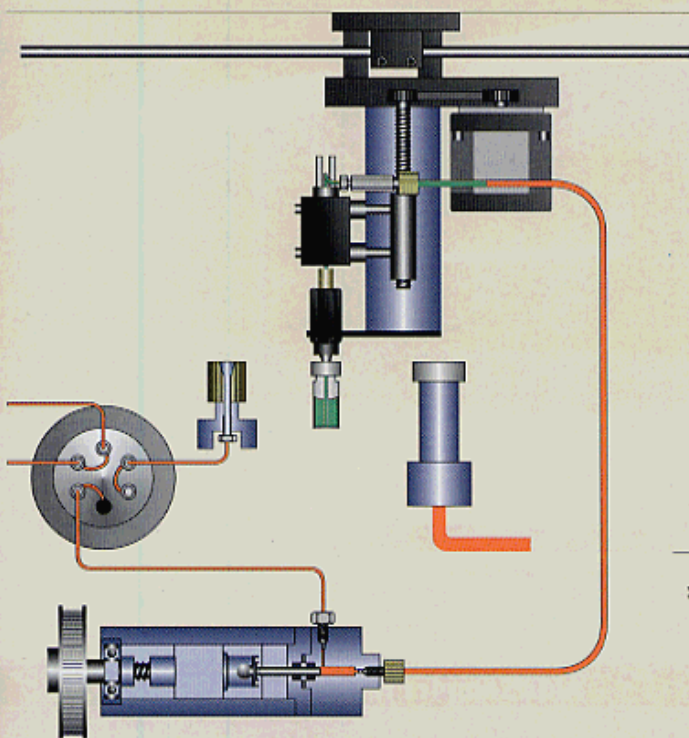
Startup Cycle





The powerful X-Y-Z sampling robotics means complex precolumn sample preparations can be easily automated as integral parts of your HPLC operations with high accuracy. This means improved assay precision while you have more time for other creative endeavors.

Draw Sample



Autosampler Pre-Treatment - Run

Pre-Treatment Name: D:\WINCHROM.11\PRETREAT\TRIAL.APG

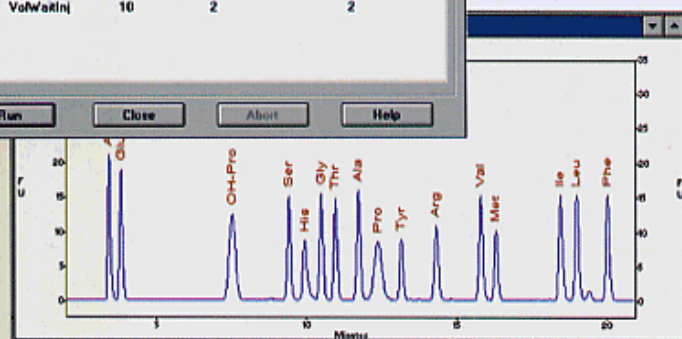
Status: Under Remote Control

Global Parameters: Vial: 1 Volume: 1 μ L

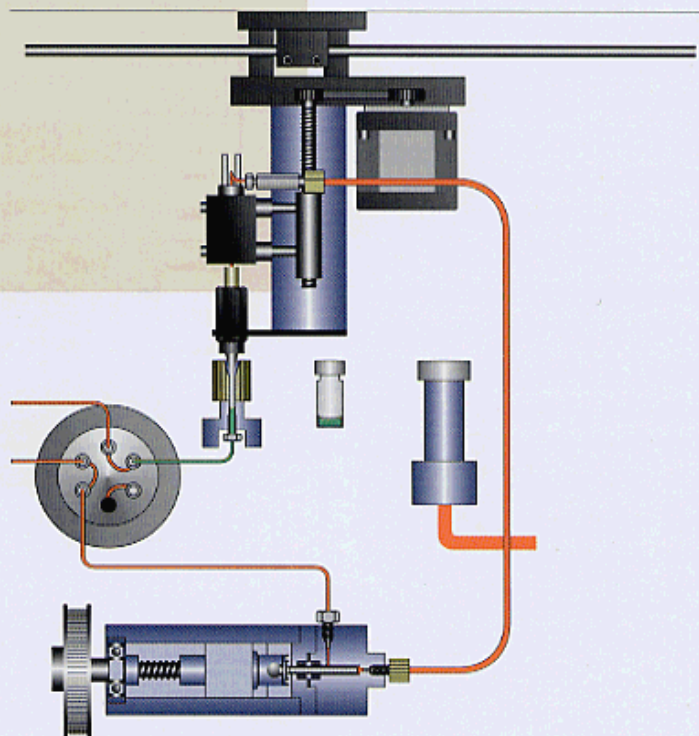
Program Run Status

No.	Command	Volume (mL)	Vial	Toggle	General
1	OH-Pro	10	1	Y	
2	VolGet	10	2		1
3	VolWtr				
4	Wait				1
5	VolWtr(n)	10	2		2

Buttons: Run, Close, Abort, Help



Inject Cycle



The advanced programmable volume metering system provides excellent precision and accuracy with reliable operation. Its elegant fluidic design minimizes sample wastage and eliminates possible carry over. With GBC ACSIS, you are assured of accurate and reproducible assay results...every time.

*Stand-alone or a Complete System:
The choice is yours*

Easy-to-use instrument control

ACSIS features a user friendly, logical instrument control keypad which allows fast, simple programming of advanced sample processing. The backlit liquid crystal display provides easy viewing from any angle. In-built pre-programmed templates ensure both unattended batch analysis and pre-column sample preparation...time after time! A PRIORITY function provides added convenience for urgent sample requests.

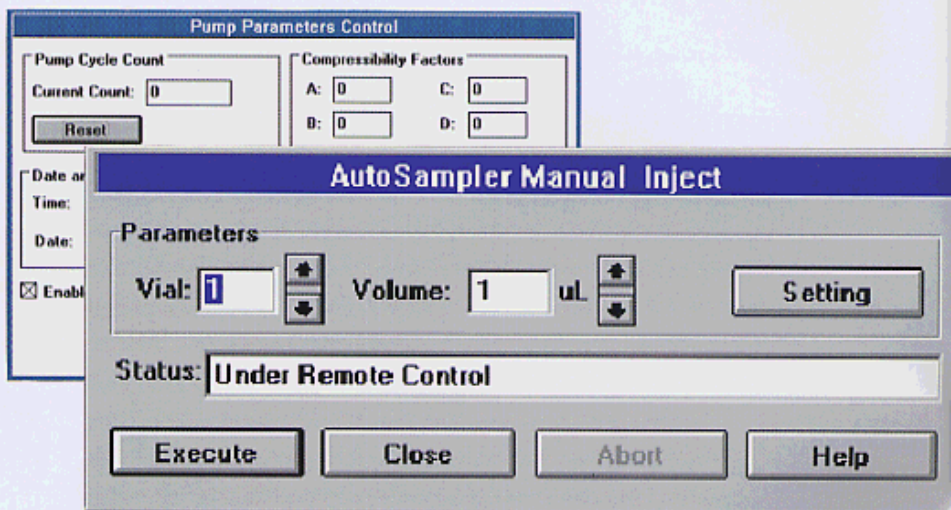
ACSIS can be easily integrated into your existing HPLC system or combined with other GBC modules using a seamless IEEE 488.2 interface to WinChrom Data Management software.

Integrated system with single user interface

Multi-tasking Windows™-based software offers convenient single-point control, ensuring further productivity gains.

In-built comprehensive programming routines enable you to synchronize your pre-column sample preparations whilst the previous assay is being analyzed. This means your next samples are ready for assay immediately, reducing costs and saving time, with faster sample turn-around.

The in-built IEEE interface provides the versatility of configuring ACSIS with other GBC LC modules, or as a stand-alone unit within any HPLC system.



The choice is yours...

ACSIS can provide immediate enhancement to your HPLC system by simplifying your sample processing. Install it as a stand-alone module, or upgrade your existing set-up to a complete integrated system, the choice is yours.

Specifications

LC1650

Automated Chromatography Sample Introduction System

Autosampler Design

High precision X-Y-Z self priming sapphire piston sampling probe, 'flow through' needle fluidic path, polymeric soft high pressure seal, and electrical actuated rheodyne valve, model 7010.

Control

Stand-alone through instrument keypad. Computer control with WinChrom Data Management software.

Vial Capacity

160 12 x 32 mm Chromacol 2-CVG or equivalent (standard model).

160 15 x 45 mm Chromacol 4-SV or equivalent (optional model).

Sample Rack

Removable sample rack.

Injection Volume

1 to 200 μ l (in 1 μ l increments).

Metering Resolution

100 steps per μ l.

Injection Precision

Better than 0.5% RSD with 6 to 200 μ l.
Better than 1% RSD with 1 to 5 μ l.

Injection Linearity

Correlation coefficient better than 0.9999.

Sample Carry over

Less than 0.1% with external needle wash option.

Minimum Sample Requirements

3 μ l (with tapered vial inserts, a 1 μ l injection can be made from a 3 μ l sample volume).

Priority Sample

A programmed sequence of injections can be interrupted to allow the processing of urgent samples.

Method Storage

Non-volatile method storage. Up to 9 methods plus one priority method.

Programmable Method Parameters

- Non-sequential standard/sample injections.
- Injection volume.
- Pre-column derivatization.
- Priority sample sequence.
- Replicate injections (up to 99 from one vial).
- Run time (up to 240 minutes).
- Needle height.
- Metering syringe speed for sample pick-up.
- Pre-Piercing On/Off
- Pre-Piercing Height
- Standard to Sample Ratio
- Method chaining

Display

2 x 20 character back-lit supertwist liquid crystal display.

Communication

Inputs: -0V and +5V levels
Outputs: -Contact Closures to ground

Input Program start
Shutdown

Output Injection marker
Start of Program
End of Program
Ready/Error

IEEE 488.2 communications for full robotics control of all autosampler functions.

External Needle Wash (optional)

Needle wash station with in-built peristaltic pump.

Maximum Operating Pressure

41.4 MPa (6000 psi).

Operating Environment

4 to 40°C, <85% relative humidity (non condensing).

Power Requirements

100/120/220/240 V
50/60 Hz
100 W

Dimensions

338 x 554 x 500 mm (W x H x D)

Weight

Nett 27 kg
Shipping 35 kg

GBC ACSIS

- ACSIS injection precision and accuracy—micro processor stepper motor guaranteed to provide precise and accurate results.
- Micro-volume flexibility minimizes valuable sample waste.
- X-Y-Z robotics for maximum flexibility.
- Reduce operating costs with all electric design—no need for compressed air cylinders.
- Extended sample capacity (160 vials) with minimized footprint.
- Logical key pad functions are easy to use for rapid start-up and operation.
- Capacity for pre-treatment, derivatization, pre-injection, dilutions, extractions and addition of standards.
- Operate as a stand-alone unit within any HPLC system or configure with other GBC LC modules—IEEE control from WinChrom Data Management software
- Flow Through Fluid Path (FTFP) needle wash excludes possible sample carry over.
- Open access allows fast, simple loading.
- Priority function for urgent sample requests.



Designed and manufactured by
GBC Scientific Equipment Pty Ltd
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GBC reserves the right to change
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GBC supplies a wide range of HPLC
equipment and applications information for
almost every aspect of High Performance
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wavelength, scanning and rapid scanning)
- Photo-Diode Array detector
- Fluorescence detector
- Conductivity detector
- Refractive Index detector
- Electrochemical detector
- Auto-injectors (pre-injection derivatisation,
small volume, variable volume capability)
- Data acquisition and management
(Windows® based software)
- Columns and accessories

Ordering Information

99-0269-00 LC1650 ACSIS Autosampler
Standard configuration

For information on other autosampler
configurations, external needle wash, peltier
cooling, microplate handling and further
accessories, please contact your local GBC
representative.