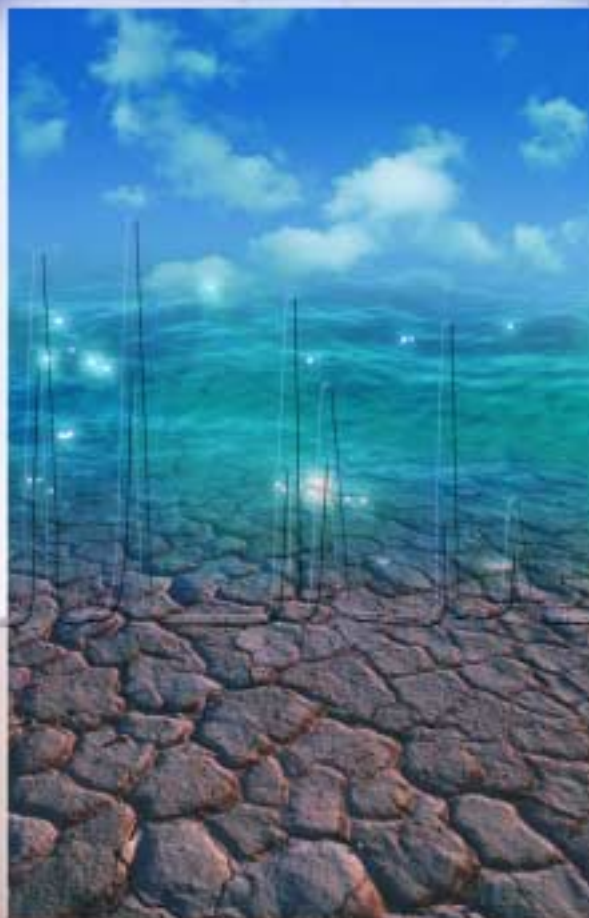


GAT D-STAR HPLC SYSTEMS

- **Manual Isocratic HPLC Systems w/Fixed and Variable Wavelength Detection**
- **Automated Isocratic HPLC Systems, Fixed and Variable Wavelength Detection, w/*Star-Chrom*[™] HPLC Management Software**
- **Automated Gradient HPLC Systems, Fixed and Variable Wavelength Detection, w/*Star-Chrom*[™] HPLC Management Software**



GAT Gamma Analysentechnik GmbH

Why pay for more instrument than you will ever use?[™]

No other HPLC Systems have ever been made more affordable and easy to use than those manufactured by GAT D-Star instruments.

Designed with the smaller laboratory in mind, the new isocratic and gradient systems from GAT D-Star Instruments provide viable, low cost alternatives to the more expensive HPLC Systems in today's market. The GAT D-Star design philosophy has been to provide the HPLC community with more systems and detectors that can be purchased by laboratories with limited budgets, and provide enhanced profits for Original Equipment Manufacturers, without sacrificing their quality and flexibility. GAT D-Star now offers a variety of instrument configurations that meet and often exceed the user's applications and methods needs. GAT D-Star takes the expense out of HPLC.

Innovative, economical design and manufacturing processes of the systems and modules is enhanced with "state-of-the-art" software that has multi-media features. Commonality of system parts contributes to significant cost-savings, and simple operation of all the systems.

GAT D-Star Systems integrate features rivaling those of high level and high cost instruments including solvent delivery, gradient and isocratic control, high pressure mixing, sample injections, UV-VIS detection, and data acquisition and processing, organized in an ergonomic manner in both the manual and automated systems.

Versatility is standard on GAT D-Star modules and systems. With the aid of **Star-Chrom™** software and its pump control features, GAT D-Star HPLC Systems can be used for various types of solvent delivery purposes including isocratic and gradient systems. Dual channel software permits

the use of two detectors and enables the control of the built-in or stand-alone GAT D-Star UV-VIS unit as the primary detector, and the acquisition of data from a second detector such as RI, fluorescence, or electrochemical detectors.

Self-diagnostics functions in the software ensure error free operation.

Method parameters are checked automatically; under and over pressure alarms can interrupt pump operation to prevent system damage; column conditioning and solvent equilibration times are pre-set by the operator and are automatically monitored; and, the system pressure and detector outputs are monitored.

Biocompatibility is achieved by PEEK™ construction. Stainless Steel is available as an option at the same price. The wetted components for all the GAT D-Star systems are constructed of PEEK or SS at the user's option. The pressure transducer is the only metallic surface in the PEEK system; however its volume and location will not affect samples that cannot tolerate metal surfaces.

Dual Head pump performance from single head technology combined with a built-in Pulse Damper Assembly provides a virtually pulse-free flow.

With an approximate one-second-refill cycle, optimized refill and pulse suppression techniques combine to eliminate fluctuations detectable in chromatographic peaks. This ensures stable detector baselines and more accurate quantitation. The same pumping system is used in all GAT D-Star Systems. The pump can achieve operating pressures up to 3000 PSI in one configura-

tion and 5000 PSI in the high-pressure configuration ("P" Models); SS construction only. A 5.0 ml flow rate pump head is available as an additional accessory for 6000 PSI operation (SS only). Users can choose the high-pressure system at one price level, and can achieve a significant savings in price at the lower pressure option.

Outstanding features of the GAT D-Star Pumping System include:

- 1. Disposable Head Assembly**—heads can be changed easily in a matter of minutes. Heads are constructed either of high performance plastic (PEEK) for biocompatibility or Stainless Steel where certain applications cannot use plastic heads.
- 2. Positive Seal Washing**—extends seal life by removing salts and wetting the seals. This is particularly important when using mobile phases containing buffers.
- 3. Wide Flow Rate Range**—from .01 ml per minute to 10 ml per minute at pressures to 3000 PSI in the standard configuration, and to 5000 PSI in the high-pressure configuration (6000 with 5.0 ml pump head), permits analytical, microbore, and small-scale preparative applications.
- 4. Standard Built-In Pulse Damper**—ensures pulse-free operation.
- 5. Prime/Purge Valve**—enhances accuracy in chromatography start-up.
- 6. Integrated Injection Valve**—available in either PEEK or SS construction with 0.0625 in. fittings; port diameter of 0.016 in. and a 20 µl loop are standard.



Fixed Wavelength HPLC Systems

From Manual Isocratic To Automated Gradient Systems

There was a time, not so long ago, when it would have been insane to think that you could find a high performance HPLC system for a less than five figure price; but we did it.

Designed to meet even the smallest scholastic budget, GAT D-Star Instruments introduced the first of its new line of totally integrated HPLC Systems at a price thousands of dollars below equivalent, competitive systems.

GAT D-Star realized then, as now, that there was a continuing need for high performance HPLC systems with uncompromising quality, at sensible prices. In fact, the **DLC-10** with built-in 254nm detector, is still available at the same introductory price. In a continuing effort towards product improvement, two additional versions of the **DLC-10/11** series of instruments have been introduced at only a slight increase in price. The detectors built into the **DLC-10/11** series of instruments are the GAT D-Star **DFW-20** and **DFW-20C/21C Fixed Wavelength Detectors** which combine quality performance with an extraordinarily low price.

DLC-10; DLC-10C/11C; DLC-10CP/11CP



The DLC-10 is the perfect HPLC system for teaching liquid chromatography on the undergraduate level.

The **DLC-10** with 254nm operation cannot be upgraded to any other wavelength, a design feature we have made to maintain the low introductory price. For those customers who would like to upgrade the system to other fixed wavelengths, the **DLC-10C/11C** series are available at a slightly higher price. The **DLC-10C** (254nm operation) and the **DLC-11C** (280nm operation) use a new and improved lamp and ballast. There is no difference in price between the 254nm operating system and the 280nm operating system. This pricing strategy also carries through in the automated isocratic and gradient systems as well.

In 2000, additional product improvements were made to our fixed and variable wavelength systems. The new **DLC-10CP/11CP** series now incorporates higher operating pressure capability, up to 5000 PSI, an internal pressure transducer, and front panel display of system pressure with pressure alarms. Also included in these systems is a position sensing valve, making the upgrade to automated systems with the **Star-Chrom HPLC Management Software** an easy field installation. The high pressure systems are available in SS construction only. An interchangeable 5.0 ml pump head accessory permits system operating pressure to 6000 PSI.

These HPLC systems are available in PEEK or Stainless Steel construction at the same price. All the systems come standard with an analytical PEEK or SS flowcell dependent on the user's

choice of system construction. Other application oriented flow-cells are available. This system's simple operation is straight forward, yet still provides an academic challenge to the student. The unit's small footprint and relatively light weight makes it transportable. This makes it an ideal instrument for environmental field testing, quality control procedures, and dedicated industrial processes.

DIS-10/11 and DIS-10P/11P Automated Isocratic HPLC Systems



The **DIS-10/11** and **DLC-10P/11P** are automated isocratic versions of the GAT D-Star isocratic fixed wavelength HPLC systems fitted with a position sensing valve, pressure transducer, and the new **Star-Chrom** dual channel, Windows® 95, 98, and NT compatible management software for the standard **DLC-10C/11C** systems. The **DIS-10P/11P** is based on the **DLC-10CP/11CP** high pressure systems. The **DIS-10 Systems** are configured for 254nm operation and the **DIS-11** for 280nm operation. Other wavelengths and light sources are available as additional accessories. Addition of an autosampler or auto-injection valve could fully automate the system.

The **Star-Chrom** software can acquire the chromatographic data, analyze it, process it, and report the data in a user designed custom report. The entire system is under the control of the software. This includes pump control via RS-232, and detector control by



contact closures. Wavelength control is still available, but is not necessary since wavelength is provided by fixed wavelength filters. The detector autozero and the event mark circuit, which is activated by the injection valve, are controlled, or acquired, by the software.

The **DIS-10/11** (and the high pressure "P" version) is the lowest priced computer assisted isocratic HPLC system in the industry. These systems are ideal for specific method dedication in both large and small quality control labs. Consider that better than 95% of QC analyses are isocratic in nature, yet many labs buy a high priced gradient system at thousands of dollars more than the price of a **DIS-10/11** or **DIS-10P/11P**. Several **DIS-10/11** instruments, each dedicated to a single method, which is routinely used in the research or QC lab, are less of an investment than a single competitive isocratic or gradient system.

The **DIS-10P** or the **DIS-11P** may be ordered as a complete system or the instrument may be upgraded from either a **DLC-10P** or **DLC-11P**, GAT D-Star's basic low cost fixed wavelength, high pressure isocratic systems. Significant cost-savings are available when ordered as a complete system. System upgrade is a factory installed option (Refer to Ordering Information section on System Upgrades) for the standard system, but a field retrofit for the high pressure system.

DGS-10/11, DGS-10P/11P Automated Gradient Systems



The **DGS-10/11** and **DGS-10P/11P** are high pressure binary gradient HPLC systems based on the GAT D-Star **DLC-10/11** and **DLC-10CP/11CP Isocratic Systems**. These systems are the lowest priced binary gradient systems in the industry. They include a complete chromatography management software package for data acquisition and instrument control and a built-in fixed wavelength detector: **DGS-10** for 254nm operation or **DGS-11** for 280nm operation. Other lamps and filter options are available.

The **DGS-10/11** systems include the **DGP-10 Gradient Pump** and accessory kit, mixing tee/pressure transducer assembly, and **Star-Chrom HPLC Management Software**, which operates in Windows 95, 98, or NT. The software allows pump control of the systems. Detector control is not required since a fixed wavelength

detector is used in the system. The gradient pump is the same pump used in the base **DLC-10C/11C** (PEEK or SS) or the high-pressure system (SS only). Using two of the same pumps eliminates variable flow characteristics due to different compressibility between dissimilar pumps. An injection valve with a position feedback sensor is included. The valve uses a 20µl loop.

Star-Chrom provides simple and flexible programming capabilities for setting up the method for binary gradients: select the solvent program page in the software and enter the gradient profile, flow rate, and flow program. By entering the time for the gradient steps and volume changes of solvents A and B, making sure that each volume in A is complemented by a volume in B, then saving the method, you have completed the gradient profile.

The **Transducer/Mixing Tee** provides for high pressure gradient formation. Many experienced chromatographers advise that high pressure mixing is more accurate and preferable to low pressure gradient mixing.

Both the standard **DGS-10/11** and high pressure versions may be purchased as a complete package to maximize cost savings. The **DLC-10C/11C** and the **DIS-10/11** series can both be upgraded to a complete binary gradient system. Upgrading the **DLC-10C/11C** to a **DGS-10/11** requires factory installation. The high pressure systems can be retrofitted in the field by the user. The upgrade from a **DIS-10/11** to a **DGS-10/11** can be accomplished by the user as well. (See the Ordering Information Chart).

Variable Wavelength Systems

High Performance Liquid Chromatography Systems At The Price Of Most Stand Alone UV-VIS Detectors



GAT D-Star's new **DLC-20** and **DLC-20P**, totally integrated isocratic HPLC systems, incorporate a variable wavelength UV-VIS detector. They are priced well below competitive systems and at about the same cost as many stand alone UV-VIS detectors.

The instruments include an analytical flowcell at no additional cost. The **DLC-20** and **DLC-20P** series can be used for analytical, microbore, semi-preparative, and preparative chromatography with appropriate flowcells.

The **DLC-20** is a manual isocratic HPLC system capable of working at operating pressures to 3000 PSI. Priced at a slightly higher



level, the **DLC-20P** permits operation to 5000 PSI (SS only). A 5.0 ml pump head accessory is available for 6000 PSI system operating pressure. In addition, the **DLC-20P** has a built-in pressure transducer, a front panel display of system operating pressure along with high and low pressure alarms, and a position sensing valve with a 20 μ l loop.

Both instruments are completely integrated packages using key components, which are factory tested as a complete system and not a sprawling modular configuration. The small footprint of the system takes up a minimum amount of valuable laboratory bench space. The user only needs to choose the column to be used.

The materials used in the construction of the **DLC-20** and the **DLC-20P** make them ideal for biochemical as well as industrial analytical applications. The systems can be obtained in PEEK or SS construction at no difference in price. The variable wavelength detector built into the instruments extends the instrument's capability for analysis and separations of compounds which may absorb anywhere between 195nm and 800nm.

As a parallel to the GAT D-Star fixed wavelength HPLC systems, the **DLC-20** and **DLC-20P**'s low price provides a sound, but not budget breaking, investment for universities and colleges teaching HPLC in the undergraduate chemistry curriculum. The **DLC-20** series instruments provide a step up in the use of variable wavelength detection for teaching of the widely-used applications in the separation sciences. The high reliability, low price and relatively small size of the **DLC-20** and **DLC-20P** enable them to be used in quality control laboratories. The instrument can replace more expensive, and in many cases unnecessary, gradient systems.

The multi-wavelength capability incorporated in the **DLC-20** and **DLC-20P** is provided by GAT D-Star's **Model DVW-10 Variable Wavelength Detector**. The detector is housed in the same cabinet as the pumping system, which provides a compact, completely integrated, ergonomic package.

A unique optical bench is the heart of the detector used in our systems. This design offers the user an instrument that is both simple to operate and simple to service. A schematic of the optical bench is described below.

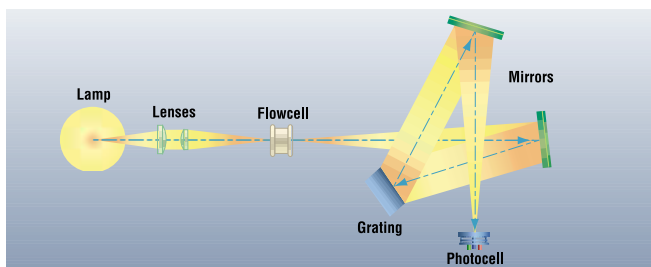


Figure 1. Variable Wavelength Detector Optical System

The outstanding features of the built-in detector include:

- UV-VIS operation from 195 to 800nm with a standard Deuterium lamp and an accessory Tungsten lamp. The lamps are pre-aligned and are easily changed to accommodate change over from the UV to the visible region of the spectrum.

- All wettable components are constructed of PEEK™, Teflon™, Tefzel™, and quartz; making the detector, as well as the **DLC-20**, compatible with most biochemical analysis. Stainless Steel is an option at no additional cost.
- Flowcells available for analytical, microbore, and preparative chromatography.
- Eight absorbance ranges via scrolling controls when the system is used with a strip chart recorder (10mV rear output). A 1V/AU output is used for integrators and data systems.
- Wavelength selection by scrolling controls.
- Digital display of absorbance and wavelength.
- Remote control selection of absorbance range and wavelength via contact closures.
- Front panel autozero control.
- Front panel event mark button.

DIS-20 and DIS-20P Automated Isocratic HPLC Systems



The **DIS-20** and **DIS-20P** are economically priced automated isocratic HPLC systems with built-in variable wavelength detectors. Similar to their fixed wavelength counterparts, these instruments combine the GAT D-Star variable wavelength **DLC-20** and **DLC-20P** isocratic HPLC systems with the new **Star-Chrom** dual channel software for data acquisition and instrument control. With dual channel software, **Star-Chrom** can acquire data from the built-in detector in the **DIS-20 System** and a second detector, which can be RI, Fluorescence, Electrochemical, or even a second UV-VIS (fixed or variable wavelength). The software can control the integrated detector by adjusting the autozero, programming the wavelength, and activating the injection valve through the event mark circuit. **Star-Chrom** will not control the second detector except for an autozero function.

As with the fixed wavelength systems, complete automation is possible by replacing the standard valve with an autoinjector or an autosampler. Control of these devices is already available in the software, at no additional cost. Methods can be established and saved in permanent data files to control all facets of the HPLC procedure including pump flow rates, peak detection, absorbance range, and wavelength selection.

The **DIS-20**, and **DIS-20P**, as complete packages, are priced attractively below competitive systems. The GAT D-Star manual



isocratic HPLC system with variable wavelength detector, the **DLC-20** or **DLC-20P**, can be factory up-graded to the **DIS-20** at a slight premium over the full package price (See the Ordering Information Chart).

DGS-20 and DGS-20P Automated Binary Gradient HPLC Systems



Similar to the **DIS-20**, the **DGS-20** and **DGS-20P** Binary Gradient Systems are based on the GAT D-Star **DLC-20** HPLC System, which incorporates a variable wavelength detector in the system.

And like the fixed wavelength systems, the **DGS-20** and **DGS-20P** are the most economical gradient systems that incorporate a variable wavelength detector, with complete data acquisition, data processing, custom reporting, and total instrument control software. No other manufacturer comes close to the price/performance ratio of these GAT D-Star Gradient Systems.

Mixing of the solvents takes place in a precision mixing tee/pressure transducer with a minimum dead volume. As with the **DGS-10/11** and its high-pressure counterpart, the software permits simple programming for the establishment of the gradients. The two pumps are controlled via RS-232 interface by way of the interface box supplied with the system. A single RS-232 connection is required to a free COMM Port on the computer.

Detector control is accomplished through contact closures. Auto-injectors or autosamplers can be controlled by the **Star-Chrom** software for full automation at no additional cost. See the new **Model DAS-10** low-cost Autosampler in the "Sample Handling" section.

System Upgrades

All GAT D-Star systems can be upgraded to either automatic isocratic or automated gradient systems. Standard **DLC-10/11** and **DLC-20** instruments require factory upgrades to DIS or DGS systems. The new **DLC-10P/11P** and **DLC-20P** systems can be upgraded in the field. Please refer to the Ordering Information Chart or the latest GAT D-Star price list.

GAT D-Star Instruments Detectors

— HPLC Fixed Wavelength • UV-VIS Variable Wavelength • Dual Wavelength • Fluorescence —
all made to match your requirements

Why pay for more instrument than you will ever use?™

Fixed Wavelength Detectors



These are the ideal detectors for undergraduate and even scholastic chemistry classes where chemical instrumentation, and in particular separation science is part of the curriculum. These instruments also find wide application as peak detectors, detectors for low pressure column chromatography, and as detectors for many non-chromatographic techniques such as Flow Injection Analysis (FIA). Fixed wavelength detectors, Models DFW-20C/21C, can be configured for 254nm, 280nm, and other available wavelengths operation. Our lowest priced instrument, the DFW-20, is available in 254nm only.

Variable Wavelength Detectors



If you're looking to replace your aging variable wavelength detector, and need a workhorse unit, without all the bells and whistles found on more expensive detectors, then the DVW-10 is your answer. The instrument is small enough to fit any modular system as a stand-alone detector, and is ideal as is or in a special configuration for OEM Systems. Selection of 195nm to 800nm wavelength settings and absorbance ranges are easily definable via scrolling controls on the front panel.

Dual Wavelength Detector



This is the ideal instrument for analysis of proteins, peptides and other analytes where dual wavelength is commonly carried out at 214nm for the aliphatic amino acid moieties and 280nm for the aromatic moieties. The DDW-10 combines the specificity of dual wavelength detection with the sensitivity and low price of a single wavelength detector. Simultaneous absorbance information is provided from two wavelengths.

Fluorescence Detector



The DFL-10 has the best price/performance of any fluorescence detector in the market. The DFL-10 is a highly sensitive detector for use in HPLC applications and in non-chromatographic techniques such as FIA. The DFL-10 can be configured with a choice of different light sources and filter combinations for the isolation of excitation and emission wavelengths. The light sources include either 254nm, 280nm or 365nm Mercury lamps, Tungsten for the visible spectrum or Deuterium for the low UV. An optional high sensitivity photomultiplier is also available for optimizing wavelength sensitivity and specificity.



- **Audio** announcement of significant chromatographic events from software wave files permits unattended operation.
- **Columns and Solvents** archiving permits the user to document the routinely used columns and mobile phases for easy selection when creating the methods for isocratic or gradient runs.
- **Calibration** module included in the *Star-Chrom* software permits the user to establish calibration data bases for known standards so raw chromatographic data is corrected prior to the generation of the final report.
- **Comments** may be entered in the software by the user. Comments on the run are saved in the run file, while comments on the method are saved in the methods file.
- **Alarms**, either visual or audio, are user selected for establishing high and low pressure limits for the system. This safety feature protects the instrument from any damage by shutting the system down when the limits are exceeded.
- **Graphic Displays** of both the chromatogram and the flow profiles and system pressure are generated during the course of the run.
- **Multi-Tasking** capability for simultaneous data acquisition and processing, even while the user is running other programs.

Star-Chrom Lite™ — A New Low Cost, Universal PC Integrator Software

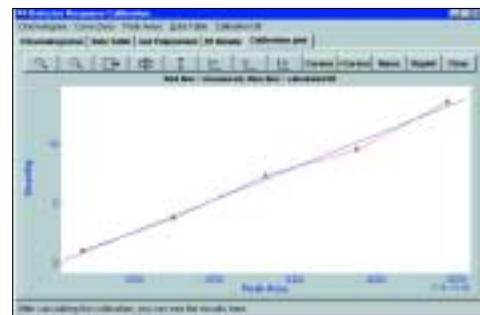
GAT D-Star's new *Star-Chrom Lite*™ Universal PC Integrator Software is an economical alternative to dedicated stand-alone chromatography integrators. It features an easy to use operating environment using pull down menus as well as page tabs to select the proper screens for programming. Other than autozeroing the detector and reading system pressure when used with GAT D-Star equipment, *Star-Chrom Lite* will not control any instrument functions.

Star-Chrom Lite offers many advantages over stand-alone integrators. These include:

- Optimization of data acquisition and peak quantification with peak identification.
- Flexibility in analyzing the data.
- Ease of set up and operation.
- Operates in Windows 95, 98 or NT (2000) and permits multi-tasking.
- Can be used on both desktop and laptop computers with one free COMM port.
- Assigns a unique, descriptive name for each sample which becomes the file name for easy recognition.
- Raw data for each run is reported in spreadsheet form without exporting to a spreadsheet program.
- All run data, methods, and reports are stored on the computer hard drive.



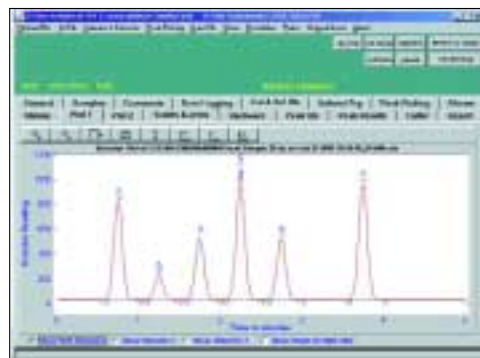
Calibration Data



Calibration Curve



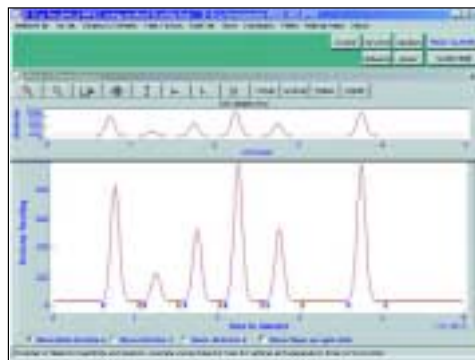
History Log screen



Plot #1 screen



- Real-time chromatograms are displayed, and scaled plots are printed with peak identification and retention times.
- User controls the rate of data collection, scaling, and offset.
- Calibration module with database constructs calibration curves for sample analysis.
- Archives all commonly-used columns and solvents in method associated files.
- Calibration reports summarize standards deviation, mean and coefficient of variation.
- Customizes standard reports.



Chromatogram plot with reference chromatogram for comparison

Sample Handling-System Accessories

DAS-10: An Economical Autosampler For HPLC

Chromatographers seeking to automate low-to-medium priced HPLC systems by adding an autosampler to the system find that the price of most autosamplers equal or sometimes even exceed the system cost. The GAT D-Star **Model DAS-10** Autosampler is an economical alternative to many of the high-priced instruments.



The **DAS-10** conforms to the GAT D-Star Instrument development policy to design and manufacture analytical instruments that meet specific market needs, at prices which fit even the smallest budget. The development of the **DAS-10** was a direct result of input from our customers who stressed functionality and economy.

DAS-10 Highlights

- **Small Footprint**—Takes up minimum bench space. It will even fit in tight confinements such as hooded enclosures.
- **Simple To Use**—Front panel programming with easily readable LCD.

- **Safe Operation**—All electric! No pneumatic connections.
- **Automatic Wash/Rinse**—Wash and Rinse between samples minimizes possibility of cross contamination.
- **Fixed Loop and Partial Loop Injection**—Ensures high accuracy. Manual injection capability provided by easy access to the injection port.
- **Remote Control Capability**—Starts injection and initiates data acquisition by contact closure.
- **Twenty Vial Carousel**—easily changeable with spare carousel to minimize manual involvement; vials and septa included with accessory kit.

This low-cost autosampler for HPLC is ideal for those applications where there is not a large number of samples to be tested, yet automation will free the user from the simple repetitive task of multi-injections. The **DAS-10** is the perfect partner for the GAT D-Star DIS and DGS automated isocratic and gradient systems. Its small footprint is ideal for mating to GAT D-Star's compact HPLC Systems to free up precious bench space.

Programming is accomplished from the front panel controls. With the embedded microprocessor, the user can program sample size/injection volume (recommended 3 to 5 times loop volume) and the number of injections. One or more injections can be programmed from the same vial.

The wash is programmable. The user may select wash or no wash after each injection. An external wash reservoir provides sufficient wash solution. An internal syringe delivers the wash in quantities to minimize any contamination.

The **DAS-10** Autosampler provides an added safety feature by using electrically activated operation, not gas pressure.

The Autosampler also uses standard 11mm autosampler vials available from most suppliers. Micro sample inserts maybe used for smaller volumes.

The **DAS-10** may be used as a stand-alone instrument or in conjunction with chromatography support software such as GAT D-Star's **Star-Chrom HPLC Management Software**. The Autosampler can be remotely controlled by contact closures.



SPECIFICATIONS

ITEMS	DLC-10/10C/11C (P)	DLC-20/20P	DIS-10/11/10P/11P	DIS-20/20P	DGS-10/11/10P/11P	DGS-20/20P
Flowrate	0.01 to 9.99ml/mn	Same	Same	Same	Same	Same
Pressure	3000PSI / 5000PSI	Same	Same	Same	Same	Same
Unswept Volume	<30µl	Same	Same	Same	Same	Same
Display(s)	AU, Flow, Press(P)	AU, Wavelength, P	AU, Flow, Press(P)	AU, Wavelength, P	Same	Same
Materials wetted	PEEK, or SS	Same	Same	Same	Same	PEEK
Accuracy Pump	2%	Same	Same	Same	Same	Same
Precision Pump	0.2%RSD	Same	Same	Same	Same	Same
Wavelength Accuracy	N/A	2nm	N/A	2nm	N/A	2nm
Wavelength Precision	N/A	1nm	N/A	1nm	N/A	1nm
Lamp	Hg 254/ 280nm	Deuterium	Hg 254/ 280nm	Deuterium	Hg 254/280nm	Deuterium
Flowcells						
Analytical PEEK, SS	7.0mm Path; 10ul Vol	Same	Same	Same	Same	Same
Semi-Prep PEEK, SS*	2.5mm Path; 44ul Vol	Same	Same	Same	Same	Same
Preparative PEEK	2.0mm Path; 4ul Vol	Same	Same	Same	Same	Same
Microbore, PEEK, SS	5.0mm Path, 1.5 ml Vol	Same*	Same	Same*	Same	Same*
Linearity	>2%	Same	Same	Same	Same	Same
Drift	< 5.0 x 10 ⁽⁻⁴⁾	< 2.5 x 10 ⁽⁻⁴⁾	< 5.0 x 10 ⁽⁻⁴⁾	Same	Same	Same
Noise	< 0.5 x 10 ⁽⁻⁴⁾	< 2.5 x 10 ⁽⁻⁵⁾	< 0.5 x 10 ⁽⁻⁴⁾	Same	N/A	N/A
Recorder Output	10.0mV	Same	Same	Same	Same	Same
Integrator Output	1.0V/AU	1.0 V-2.0V (2.0A)	1.0V/AU	1.0 V-2.0V (2.0A)	Same as DIS-10	Same as DIS-20
Pump Output	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232
Power	115, 220-240VAC	Same	Same	Same	Same	Same
Dimensions	7Hx10Wx16.5D in	7.8Wx7.1Hx16D in	7Hx10Wx16.5D in	7.8Wx7.1Hx16D in	Same as DIS-10	Same as DIS-20
Weight	31lbs. (13.95Kg)	40lbs (19.1Kg)	31lbs. (13.95Kg)	40lbs (19.1Kg)	Same as DIS-10	Same as DIS-20
DGP-10 Pump Weight	N/A	N/A	N/A	N/A	15 lbs	15 lbs
DGP-10 Pump Dimen.	N/A	N/A	N/A	N/A	5.5"Wx7"Hx12.5"D	5.5"Wx7"Hx12.5"D

*Fixed wavelength only.

ORDERING INFORMATION

Model No./Part No.	115 VAC; 50/60 Hz	220 VAC; 50/60 Hz	Description
Fixed Wavelength Systems			
DLC-10	015-0001	015-0001-1	Isocratic HPLC w/ Built-In 254nm Detector : Can Not Convert to Any Other Wavelength. PEEK Construction
Same As Above	015-0001-2	015-0001-3	Same As Above But SS Construction
DLC-10C	015-0018	015-0018-1	Isocratic HPLC w/ Built-in 254nm Detector; Can be Converted to Other Wavelengths. PEEK Construction
DLC-10C	015-0018-2	015-0018-3	Same As Above But SS Construction
DLC-10CP	015-0018-6	015-0018-7	Same As DLC-10C But Includes Position Sensing Valve, Pressure Transducer, Front Panel Pressure Display, and Operation to 5000 PSI. SS Construction
DLC-11C	015-0019	015-0019-1	Isocratic HPLC w/ Built-In 280nm Detector; Can be Converted to Other Wavelengths. PEEK Construction
DLC-11C	015-0019-2	015-0019-3	Same As Above But SS Construction
DLC-11CP	015-0019-6	015-0019-7	Same As DLC-10CP But for 280nm Operation. SS Construction
DIS-10	015-0015	015-0015-1	Automated Isocratic HPLC System w/ Built-In 254nm Detector and Full Software Package. PEEK Construction
DIS-10	015-0015-2	015-0015-3	Same As Above But SS Construction
DIS-10P	015-0015-6	015-0015-7	Same As Above But Includes High Pressure Package (See DLC-10CP above); SS Construction
DIS-11	015-0016	015-0016-1	Same As DIS-10 Except for 280nm Operation. PEEK Construction
DIS-11	015-0016-2	015-0016-3	Same As Above But SS Construction
DIS-11P	015-0016-6	015-0016-7	Same As DIS-10P Except for 280nm Operation. SS Construction
DGS-10	015-0010	015-0010-1	Automated Binary Gradient System w/ 254nm Detector and Full Software Package. PEEK Construction
DGS-10	015-0010-2	015-0010-3	Same As Above But SS Construction



ORDERING INFORMATION, continued

Model No./Part No.	115 VAC; 50/60 Hz	220 VAC: 50/60 Hz	Description
DGS-10P	015-0010-6	015-0010-7	Same As Above But Includes High Pressure Package (See DLC-10CP above); SS Construction
DGS-11	015-0011	015-0011-1	Same As DGS-10 But for 280nm Operation. PEEK Construction
DGS-11	015-0011-2	015-0011-3	Same As Above But SS Construction
DGS-11P	015-0011-6	015-0011-7	Same As DGS-11 But includes High Pressure Package, SS Construction
Systems Upgrades (Fixed Wavelength)			
DLC-10C/11C Upgrade to DIS-10/11	026-0003	026-0003-1	Upgrade for Systems w/ PEEK Construction
Same As Above	026-0003-2	026-0003-3	Upgrade for Systems w/ SS Construction
DLC-10CP/11CP Upgrade to DIS-10P/11P	026-0003-6	026-0003-7	Upgrade for Systems w/ SS Construction
DLC-10C/11C Upgrade to DGS-10/11	026-0004	026-0004-1	Upgrade for Systems w/ PEEK Construction; Includes Gradient Pump
Same As Above	026-0004-2	026-0004-3	Upgrade for Systems w/ SS Construction; Includes Gradient Pump
DLC-10CP/11CP Upgrade to DGS-10P/11P	026-0004-6	026-0004-7	Upgrade for Systems w/SS Construction; Includes Gradient Pump
DIS-10/11 Upgrade to DGS-10/11	015-0014	015-0014-1	Upgrade for Systems w/ PEEK Construction; Includes Gradient Pump
Same As Above	015-0014-2	015-0014-3	Upgrade for Systems w/ SS Construction; Includes Gradient Pump
DIS-10P/11P Upgrade to DGS-10P/11P	015-0014-6	015-0014-7	Upgrade for Systems w/ SS Construction; Includes Gradient Pump
Variable Wavelength Systems			
DLC-20	015-0007	015-0007-1	Manual Isocratic HPLC System w/ Variable Wavelength. PEEK Construction
DLC-20	015-0007-2	015-0007-3	Same As Above But SS Construction
DLC-20P	015-0007-6	015-0007-7	Isocratic HPLC w/ Variable Wavelength Detector, High Pressure Operation; see DLC-10P/11P. SS Construction
DIS-20	015-0017	015-0017-1	Automated Isocratic HPLC System w/ Built-in Variable Wavelength Detector and Full Software Package. PEEK Construction
DIS-20	015-0017-2	015-0017-3	Same As Above But SS Construction
DIS-20P	015-0017-6	015-0017-7	Same As Above But w/ High Pressure Package. SS Construction
DGS-20	015-0012	015-0012-1	Automated Binary Gradient System w/ Variable Wavelength Detector and Full Software Package. PEEK Construction
DGS-20	015-0012-2	015-0012-3	Same As Above But SS Construction
DGS-20P	015-0012-6	015-0012-7	Same As Above But w/ High Pressure Package. SS Construction
System Upgrades (Variable Wavelength)			
DLC-20 Upgrade to DIS-20	026-0005	026-0005-1	Upgrade for Systems w/ PEEK Construction Includes Full Software Package. Older Models Require Factory Installation; Inquire
Same As Above	026-0005-2	026-0005-3	Upgrade for Systems w/ SS Construction
DLC-20P Upgrade to DIS-20P	026-0005-6	026-0005-7	Upgrade for Systems w/ SS Construction; Field Retrofittable
DLC-20 Upgrade to DGS-20	026-0006	026-0006-1	PEEK Construction. Older Models Require Factory Installation; Includes Gradient Pump
Same As Above	026-0006-2	026-0006-3	Upgrade for Systems w/ SS Construction; Includes Gradient Pump
DLC-20P Upgrade to DGS-20P	026-0006-6	026-0006-7	Upgrade for SS Systems; Field Retrofittable; Includes Gradient Pump
DIS-20 Upgrade to DGS-20	015-0014	015-0014-1	Upgrade for Systems w/ PEEK Construction; Includes Gradient Pump
Same As Above	015-0014-2	015-0014-3	Upgrade for Systems w/ SS Construction; Includes Gradient Pump
DIS-20P Upgrade to DGS-20P	015-0014-6	015-0014-7	Upgrade for Systems (high pressure) w/SS Construction; Includes Gradient Pump
Autosampler			
DAS-10 Autosampler	016-0001	016-0001-1	Autosampler with One 20 Position Carousel
Software			
Star-Chrom Lite™	015-0021	015-0021-1	Universal PC Integrator Software





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