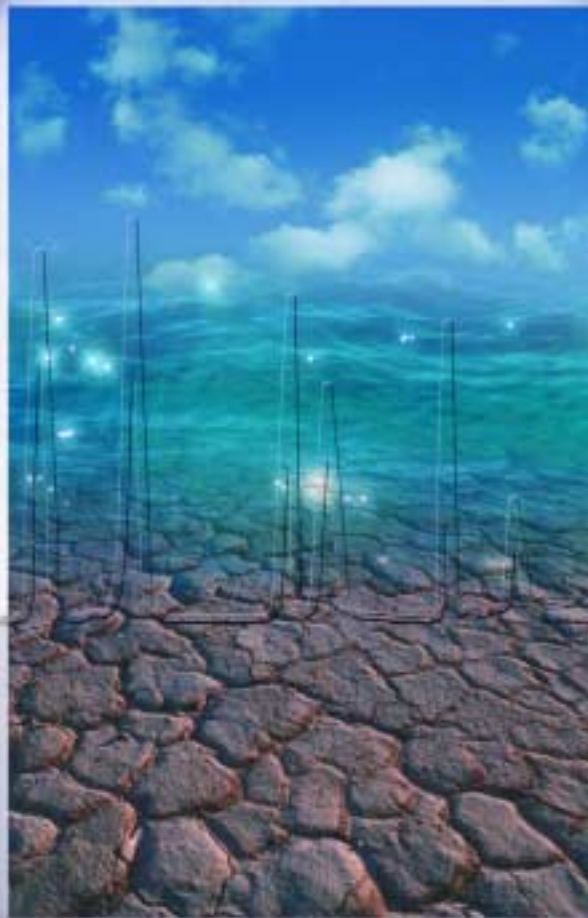


# GAT D-STAR HPLC DETECTORS

- **UV-VIS Variable Wavelength Detectors**
- **Dual Wavelength Detectors**
- **UV-VIS Fixed Wavelength Detectors**
- **Fluorescence Detectors**



**GAT Gamma Analysentechnik GmbH**

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

# GAT D-Star Instruments is dedicated to providing the analytical instruments industry with high quality detectors for HPLC and other dynamic flow techniques.

Our innovative designs result in substantial savings in the purchase of these instruments to both the end-user and the corporate OEM. OEM customers can take full advantage of the combined volume manufacturing of GAT D-Star's detectors resulting in considerable benefit to their bottom line.

As you review our products, we think you will agree with our design philosophy of providing the best instruments at the best possible prices, and without any compromise to the most important function: quality. If your specific product requirements are not met by our standard products we would be pleased to discuss your needs with you. You can be assured that your needs as an OEM will be given top priority, and in a strictly confidential fashion.

The information in this catalog is presented in an easy to understand format. Each product area contains information on the individual products in a logical flow.

All GAT D-Star products come with an unconditional warranty against defects in materials or workmanship.

## Detectors for HPLC and Related Flow Techniques

### Fixed Wavelength Detectors

*Small Package—Small Price—Big Performance*



GAT D-Star Instruments now offers a series of easy to operate, economically priced, high performance, fixed wavelength UV-VIS detectors for liquid chromatography. Our detector product line meets the demanding price/performance requirements of today's chromatographers. The **DFW-20** and **DFW-20C/21C** are the first of a series of liquid chromatography detectors designed to fit the tightest budget requirements, are simple to use, and meet lab bench size constraints.

GAT D-Star detectors are also designed to accommodate OEM requirements, either as stand alone detectors or modified to be integrated into the OEM's system.

The **DFW-20**, a 254nm detector, is relatively low priced, and because of the nature of its design, it cannot be converted for operation at other wavelengths. The **DFW-20C/21C**, priced slightly higher, may be converted to 280nm or any other wavelength where appropriate lamp and filter combinations are available. Please consult your GAT D-Star representative or contact us directly for advice.

### Applications

Designed for maximum flexibility, GAT D-Star detectors can be used for a variety of applications. Their relatively low cost easily puts the **DFW-20**, **DFW-20C** and **DFW-21C** within the budgets of university and secondary school level activities. Their simple operation is ideal for undergraduate and even scholastic chemistry classes where chemical instrumentation, and in particular separation science, is part of the curriculum. Furthermore, the light weight of the detector and its small footprint make it ideal for applications where lab space is at a premium, including set ups in chemical hoods. Its light weight permits it to be easily transported for field work such as environmental testing. Other application areas include routine QC analysis and dedicated process monitoring.

### Important DFW-20, DFW-20C/21C features

- Modularized, simple operation.
- Flowcell located in convenient position at the rear of the detector, thus minimizing the possibility of heat transfer from the rest of the detector's electronics. The flowcell's position also permits the unit's operation in any attitude and location.
- Flowcells (the analytical is included in the price) are available for applications in industrial and biochemical areas. These applications include small scale prep, semi-prep, and microbore separations.
- All wettable components constructed of PEEK™, Teflon™, or Tefzel™ which make the detector completely biocompatible. Stainless Steel construction is also available for the analytical cell.
- Eight selectable absorbance ranges for use at most concentrations normally encountered in HPLC when used with a strip chart recorder.
- High sensitivity with relatively low noise.
- Priced below all other UV-VIS detectors on the market.



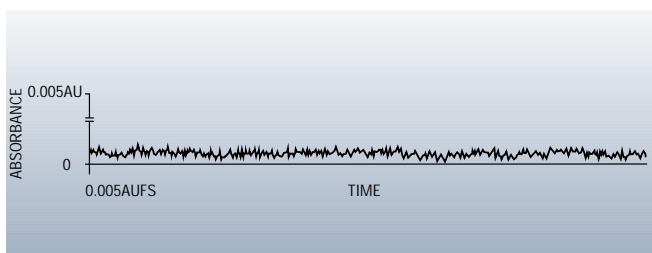


Figure 1. Background noise of DFW-20 @ 254nm and @ 0.005AUFS for a period of 3 hours indicates the superior stability and minimum noise of the instrument.

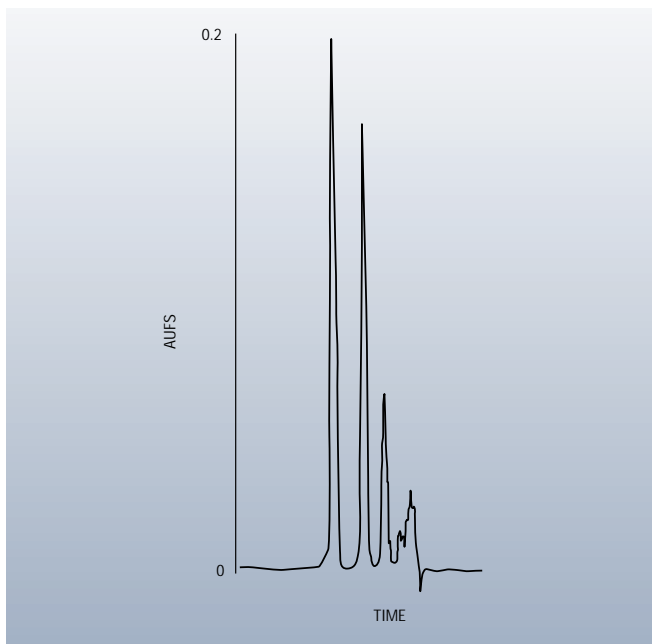


Figure 2. Separation of Toluene, Biphenyl, Phenanthrene in methanol; C-18 column, flowrate at 1ml/mn, UV at 254nm, Recorder speed 10mm/mn, Full scale 0.20AU.

## Variable Wavelength Detectors

### Variable Wavelength Detectors at a Fixed Wavelength Price!!

GAT INSTRUMENTS presents the forerunner of its new line of high performance, variable wavelength, UV-VIS detectors for liquid chromatography. These units provide a very price competitive alternative when compared to all the other detectors in today's market. The DVW Series offers the best price/performance ratio in the market. And in today's economy, isn't that what purchasing a detector is all about: performance that meets your needs at a price that meets your budget. Why buy performance specifications you will never use at prices you really can't afford?

### Detector Replacement

The **DVW-10** can replace your current UV-VIS detector at a much lower cost than your original purchase price. If your needs call for a quality variable wavelength detector designed to offer an alternative to your aging detector, without unnecessary bells and whistles, then the **DVW-10** is your obvious choice.



### OEM Requirements

For OEMs the **DVW-10** presents a viable alternative to other detectors on the market, especially with volume related pricing that will result in cost-savings to support profit objectives. The instrument is small enough to fit any modular system as a stand-alone detector. For OEM systems requiring integration of the detector into an existing package, GAT D-Star can provide the unit in special configurations under specific contract arrangements.

### Simple Operation

In addition to its low cost, its small footprint, and its light weight, the detector is simple to use. Selection of wavelength and absorbance ranges are easily definable via scrolling controls from the front panel. Both absorbance values and wavelength are presented in easily readable form on a 4.5 digit LED display.

Flowcells are easily mounted on the unit's side and are very accessible. A pre-aligned tungsten lamp assembly is available as an accessory for visible spectrum operation. Power switch and output signal sources are conveniently located at the rear of the instrument.

### Creative Design Provides Base For Future Detectors

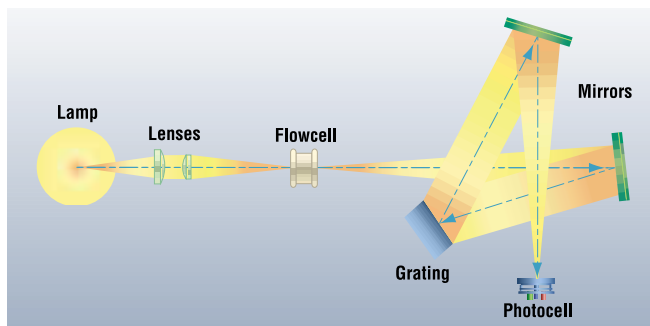


Figure 3. Schematic of Variable Wavelength Detector Optical System

A unique optical bench design is the heart of the **DVW-10 Detector**. This design provides a base for GAT D-Star's future instrument development program. In addition, it offers the user an instrument that is simple to operate and easy to service. As a result, cost-savings are achieved, which are passed on to you at attractive competitive prices.



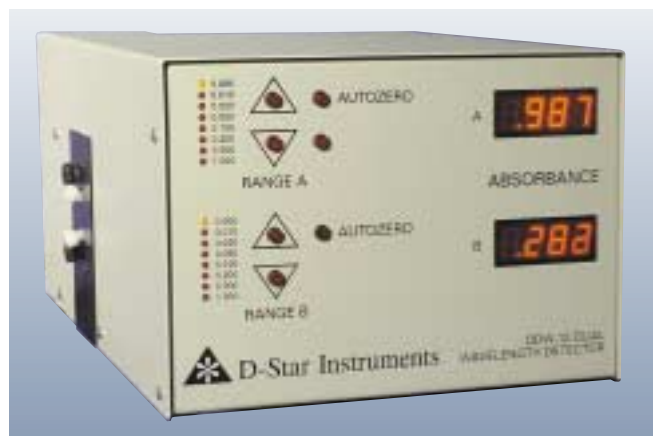
## Important DVW-10 Features

- Complete UV-VIS operation from 195nm to 800nm.
- Double beam optics (Reference and Sample Paths).
- All wettable components are constructed of PEEK, Teflon, Tefzel, and quartz, making the detector totally compatible with biochemical systems; stainless steel is an option with no difference in price.
- Flowcells are also available for prep and microbore in PEEK construction.
- Eight absorbance ranges via scrolling up and down controls.
- Sensitivity levels available for over 95% of all applications.
- Digital read-out of absorbance and wavelength.
- Analog outputs for absorbance and wavelength available at rear of instrument.
- Absorbance and wavelength remote control available via rear connector contact closures.
- Scrolling selection of wavelength.
- An analytical flowcell is standard and included in the instrument price. Stainless Steel option is also available.

## Dual Wavelength Detectors

### *A Common Sense Approach to Dual Wavelength Detection.*

GAT D-Star Instruments' **DDW-10 Dual Wavelength Det.** combines the specificity of dual wavelength detection with the sensitivity and price of a single wavelength detector.



The development of the **DDW-10** was a direct result of discussions with our customers, particularly in the bio-tech applications market. These customers told us that practically 90% of their analyses using dual wavelength detectors were performed at the same consistent 2 or 3 wavelengths. However, in order to achieve dual wavelength detection they purchased available expensive dual wavelength detectors, and in some cases even more expen-

sive diode array instruments for routine dual wavelength analysis. Until the introduction of the GAT D-Star **DDW-10** there was no other choice.

### Applications

In chromatographic analyses, the appearance of minor impurities in relation to the major component is a common problem. Since most compounds separated via chromatographic techniques are similar in nature, these compounds may have wavelength absorbance maxima that are similar. Also, since many of these compounds have relatively broad spectral absorbance peaks, nearby wavelengths produce almost identical absorbance characteristics for many compounds. More meaningful information can be obtained from the mixture by analyzing the sample at two distinctly different, but relevant, wavelengths.

Prime examples of this function are the analysis of proteins, peptides, and other analytes where dual wavelength analysis is commonly carried out at 214nm for the aliphatic amino acid moieties and 280nm for the aromatic moieties. Other common analyses include Ninhydrin Amino Acid analysis at 440nm and 570nm respectively.

It is the 214nm requirement that presents a problem for both the user and the instrument company developing a suitable instrument for dual wavelength detection. The most desirable source of energy for 214nm absorbance has historically been the Zinc lamp which has a strong energy emission at 214nm. However, the relative instability of the lamp, and just as important, the cost of the lamp and its power supply created a problem for users needing the 214nm function. The user had to consider a variable wavelength detector instead of the fixed 214 detector. As the dual wavelength requirement became defined it was natural to convert the variable wavelength detector into an even more expensive dual wavelength detector.

The **DDW-10** provides simultaneous absorbance information from two factory set wavelengths. This information is available at the rear of the instrument as two separate analog signals. To economize the system we chose not to burden the cost with internal firmware which can easily be accommodated by the many types of competent chromatography software packages available in today's market. Most data acquisition systems provide a means for producing suitable absorbance difference graphical output with ease, and with program choices to allow the user to manipulate the data post run. With a hardware only system, such as the DDW-10, data is processed in real time. This means the scale factor has to be determined from testing and that identical experimental conditions must be reproduced in succeeding runs, which is exactly what is done in preparative chromatography and quality control.



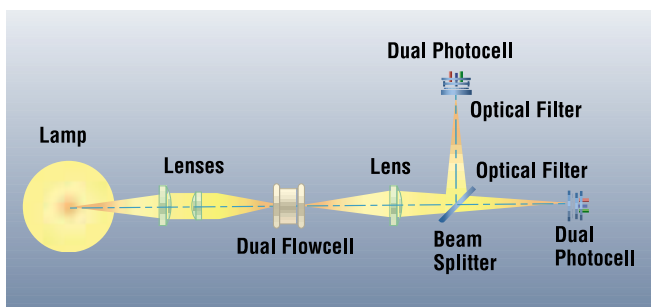


Figure 4. DDW-10 Optical Schematic

## Principles of Operation

The double beam optical system consists of a continuum spectral energy source (Deuterium for UV operation; Tungsten for visible operation), beam shaping optics, dual path length flowcell (Prep cell is standard), broad spectrum beam splitter, two wavelength selection filters, and two dual channel UV-VIS silicon photodiodes. The measurement electronics are composed of two high performance log converters and two signal processors. The front panel display provides continuous read-out of the absorbance measurement from both channels. Autozero for both channels is also located on the front panel. Absorbance range selection (for use with a chart recorder) is also on the front panel. Remote selection of absorbance range and autozero is available. An output of 1V/AU for each channel is similarly available for data systems such as *Star-Chrom™*, a dual channel software package.

## Fluorescence Detectors

### *A Sensitive Fluorescence Detector at a Sensible Price!*



The new GAT D-Star Instruments **DFL-10 HPLC Fluorescence Detector** provides the specificity and sensitivity of fluorescence detection at a price consistent with most low-cost UV detectors.

Fluorescence is a specific technique. Since many more compounds can be analyzed by absorption methods and do not exhibit fluorescence, fluorescence detection is inherently selective.

Nonetheless, fluorescence detection in HPLC is a very useful analytical technique for analyzing natural fluorophores (compounds exhibiting natural fluorescence) and other compounds which can be made to fluoresce by derivatizing them with a natural fluorescing agent. For samples with these characteristics, it is not unusual to see sensitivity levels improve 50-1000 fold over absorption chromatography analysis.

The new **DFL-10 Fluorescence Detector** is a highly sensitive detector for use in liquid chromatography as well as in non-chromatographic techniques such as flow injection analysis. The geometry of the **DFL-10** optical system, including its specific flowcell, also permits the instrument to be used for nephelometry. The excitation lamp in the **DFL-10** may be turned off independent of the operating electronics, permitting the instrument to be used for chemiluminescence and bioluminescence.

## Applications

Fluorescence techniques are particularly useful in the analysis, by liquid chromatography, of amino acids; DNA, including fragments; enzymes (NAD/NADH); environmental testing (water analysis); pesticides and herbicides; proteins; fermentation processes (sugars); vitamins, steroids, various drug metabolites; and many more compounds, particularly in the biotechnology area. For all these applications the sensitivity and specificity of the **DFL-10** make it an ideal detector.

## Sensitivity

GAT D-Star's new flowcell arrangement for the **DFL-10** uses a unique excitation and emission geometry. It also minimizes stray light entering into the analysis. Photomultiplier detection provides highly sensitive detection at very low light levels. A completely enclosed optical compartment and a thermally stabilized system enable the instrument to provide detection levels required in fluorescence assays.

The **DFL-10** can be configured with a choice of different lamp sources covering the UV and Visible areas of the spectrum. These choices include a 254nm mercury (Hg) lamp, a 280nm mercury lamp, a 365nm mercury lamp, or a tungsten (W) lamp for visible operation at no difference in price. An optional deuterium (D2) lamp is available for applications in the low UV. The price of this configuration is higher due to the cost of the D2 lamp.

Quantitative analytical data can be obtained for many varied fluorescence applications with the **DFL-10**. The sensitivity of the DFL-10 is enhanced by the selection of precision excitation and emission filters. The correct filter selection offers greater specificity and adds to the analytical accuracy of the assay. The excitation filter is usually a narrow band (N) filter that should be selected as close as possible to the maximum excitation wavelength of the compound under analysis. The emission filter is typically a "Cut On" (C) filter with a wavelength value that is approximately 10 nm less than the maximum emission wavelength for the molecule. "Cut On" filters pass all wavelengths of light greater than the "Cut On" wavelength value.



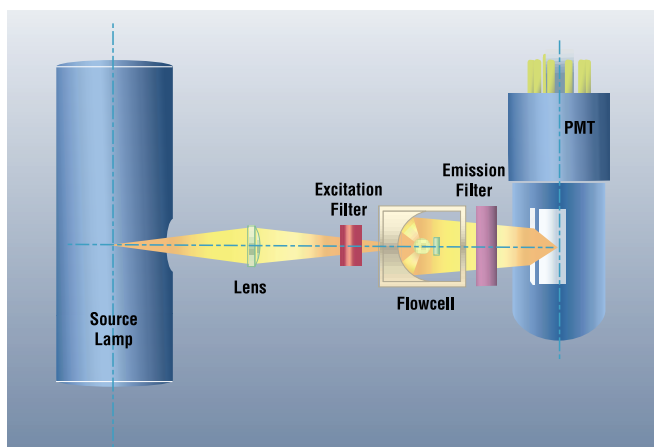


Figure 5. Schematic, DFL-10 Fixed Wavelength Fluorescence Detector

## Important Features

- Designed specifically as a detector for HPLC with an advanced design flowcell.
- User changeable excitation (EX) and emission (EM) filters to accommodate most applications.
- User Changeable Mercury and Tungsten lamps cover most UV and Visible applications.
- Standard Photomultiplier Tube (PMT) provides excellent UV and Visible sensitivity.
- Optional PMT for extended red and lower UV ranges.
- Selectable sensitivity ranges with automatic PMT gain.
- Front panel read out of fluorescence energy.
- Front panel read out of lamp energy.
- Front panel read out of high voltage as a PMT diagnostic.
- Front panel offset reading background fluorescence.
- Four user selectable rise times for signal filtering.
- Front panel and remote autozero function.
- Front panel lamp on/off control for Chemiluminescence and Bioluminescence analysis.

## EXCITATION AND EMISSION FILTERS

Wavelength*	Part No.	Description	Typical Application
254 nm (EX)	023-254N	10 nm HBW, 12.5 mm Dia.	Nucleotides
280 nm (EX)	023-280B	25 nm HBW 12.5 mm Dia.	Amino Acids, Proteins, Catecholamines
280 nm (EX)	023-280N	10 nm HBW, 12.5 mm Dia.	Amino Acids, Proteins, Catecholamines
365 nm (EX)	023-365N	10 nm HBW, 12 mm Dia.	Quinine, Thiamine, Tocopherols, Vitamin B6, Vitamin K, E, A, DNA, Ascorbic Acid, Aflotoxin
405 nm (EX)	023-405N	10 nm HBW, 12.5 mm Dia.	Catecholamines, DNA, Protoporphyrins
440 nm (EX)	023-440N	10 nm HBW, 12.5 mm Dia.	Chlorophyll, Riboflavin, Vitamin B2, Vitamin B12
492 nm (EX)	023-492N	10 nm HBW, 12.5 mm Dia.	Fluorescein, DNA, Proteins, DNA-Oligosaccharides
420 nm (EM)	024-420C	Cut On, 25 mm Dia.	Quinine Sulfate
435 nm (EM)	024-435C	Cut On, 25 mm Dia.	Aflotoxin, Thiamine, Vitamins B1, Rhodamine
455 nm (EM)	024-455C	Cut On, 25 mm Dia.	Histamine, Beta-Galactosidase
515 nm (EM)	024-515C	Cut On, 25 mm Dia.	Fluorescein, Riboflavin, Tocopherols, DNA, RNA, DNA-Oligosaccharides, Catecholamines
590 nm (EM)	024-590C	Cut On, 25 mm Dia.	Rhodamine, Protoporphyrin, DNA, Protein
665 nm (EM)	024-665C	Cut On, 25 mm Dia.	Chlorophyll

\*NOTE: Please contact the factory for additional Excitation and Emission Filters not listed here.

## SPECIFICATIONS

ITEM	DFW-20C/21C, 20	DVW-10	DDW-10	DFL-10
Wavelengths	254, 280, 365, 420, 505	195-800	Selectable Filters	Selectable Ex & Em
Lamps	Lo Press. Hg 254 and 280; separate lamps for 365, 420, 505	195-360 D2; 360-800nm W	Same as DVW-10	Hg 254, 285, 365nm; W & D2
Flowcells				
Analytical	7mm/ 10µl Volume; PEEK or SS Body, Quartz Window	Same but with Bulkhead Assembly	Same as DVW-10	10ul PEEK construction; 250 PSI
Semi-Prep	2.5mm/44ul Volume	None	None	None
Preparative	2.0mm/ 4.0ul Volume, PEEK	Same but with Bulkhead Assembly	Same as DVW-10	None
Microbore	5.0mm/ 1.5ul Volume PEEK	Same but with Bulkhead Assembly	Same as DVW-10	None
Spectral Resolution	Dependent on Filter Selection	5nm	Dependent on Filter Selection	Dependent on Filter Selection
Linearity	Better than 2%	Same	Same	Same
Wavelength Accuracy	N/A	2nm	N/A	N/A
Wavelength Reproducibility	N/A	1nm	N/A	N/A
Drift	< 5.0 x 10 <sup>-4</sup> AU/Hour	< 2.5 x 10 <sup>-4</sup> AU/Hour	< 5.0 x 10 <sup>-4</sup> AU/Hour	< 1mV/Hour w/ 15 min Warm-up
Noise	1.0 x 10 <sup>-5</sup> AU @254nm	< 2.5 x 10 <sup>-5</sup> AU @ 254nm	Same as DVW-10	N/A
Recorder Ranges	0.005, 0.01, 0.02, 0.05, 0.10, 0.20, 0.50, and 1.0 AU Full Scale	Same as Fixed Wavelength Detector	Same as Fixed Wavelength Detector	User selectable in 12 ranges, in three steps/decade for 10mV Chart Recorder
Recorder Output	10mV	10mV	10mV	See Integrator/Data



## SPECIFICATIONS, continued

ITEM	DFW-20C/21C, 20	DVW-10	DDW-10	DFL-10
Integrator/Data Output	1.0 V/AU	1.0V/AU	1.0V/AU	3.0V maximum with a resolution of 10mV at the Data Acquisition output
Display	None	Absorbance 4.5 digits to 1.999AU; Wavelength 3 digits	Absorbance panel meters each channel 3.5 digit	LED Display for Fluorescence, Lamp Energy, PMT Voltage, and Offset
Dimensions	11.3 in (L) x 7.5 in (W) x 3.0 in (H)	16.0 in (L) x 7.8 in (W) x 7.1 in (H)	14.3 in (L) x 9.4 in (W) x 7.1 in (H)	15 in (L) x 9.2 in (W) x 7.5 in (H)
Weight	6 lb. (2.7 Kg)	20 lb. (9.1 Kg)	22 lb. (10Kg)	18 lb. (8.2 Kg)
Power	115, 230 VAC, 50/60 Hz,	115, 230 VAC 50/60 Hz	Same as DVW-10	115, 220-230 VAC 50/60 Hz

## ORDERING INFORMATION

Model # / Part #	115 VAC 50/60 Hz	220-230 VAC 50/60 Hz	Description
<b>Fixed Wavelength Detectors</b>			
DFW-20	014-0001	014-0001-1	Fixed Wavelength Detector w/ 254 nm lamp, 7mm Pathlength, 10ul Volume flowcell. Cannot be converted to other wavelengths.
DFW-20C	014-0011	014-0011-1	Same as above but can be converted to 280nm or other available wavelengths
DFW-21C	014-0012	014-0012-1	Same as above but can be converted to 254nm or other available wavelengths
<b>Wavelength Conversions</b>			
025-0129	N/A	N/A	280nm Lamp and Filter Kit
025-0130	N/A	N/A	365nm Lamp and Filter Kit
025-0131	N/A	N/A	420nm Lamp and Filter Kit
025-0132	N/A	N/A	505nm Lamp and Filter Kit
025-0128	N/A	N/A	254nm Lamp and Filter Kit
025-0020	N/A	N/A	UV-VIS Dual Silicon Diode Photocell required for 420 and 505nm Kits
<b>Flowcells: Fixed Wavelength</b>			
025-0022	N/A	N/A	Analytical: 7mm Pathlength; 10ul Volume
025-0021	N/A	N/A	Semi-prep: 2.5 mm Pathlength; 44ul Volume
025-0085	N/A	N/A	Prep: 2.0mm Pathlength; 4ul Volume
<b>Cables: Fixed, Dual Wavelength, and Fluorescence Detectors</b>			
025-0027	N/A	N/A	Remote Control and Recorder/Integrator
025-0149	N/A	N/A	Automated Remote Control; Integrator/Recorder
<b>Variable Wavelength Detectors</b>			
DVW-10	014-0014	014-0014-1	Variable Wavelength Detector, 195-800nm w/ Deuterium Lamp, and 7mm pathlength; 10ul Volume Analytical Flowcell
<b>Flowcell Assemblies: Variable and Dual Wavelength Detectors</b>			
025-0074	N/A	N/A	Prep Flowcell (PEEK) 2.0mm Pathlength, 4.0ul Volume w/ Fittings and Bulkhead
025-0077	N/A	N/A	Analytical Flowcell (PEEK), 7.0mm Pathlength 10ul Volume w/ Fittings and Bulkhead
025-0123	N/A	N/A	Same As Above, but SS Construction
025-0125	N/A	N/A	Microbore Flowcell (PEEK), 5.0mm Pathlength, 1.5ul Volume, w/ Fittings and Bulkhead and 1/32 in Tubing
<b>Lamp Assemblies: Variable and Dual Wavelength Detectors</b>			
025-0076	N/A	N/A	Pre-aligned Tungsten Lamp and Assembly for 360-800nm Operation
025-0078	N/A	N/A	Pre-aligned Deuterium Lamp and Assembly for 195-360nm Operation
<b>Cables: Variable Wavelength Detectors</b>			
025-0079	N/A	N/A	Cable Remote Control, Recorder/Integrator
025-0150	N/A	N/A	Cable Remote Control, Recorder/Integrator Automated
<b>Dual Wavelength Detectors</b>			
DDW-10 (214 and 280 nm)	014-0020	014-0020-1	w/ 214 and 280nm Filters, Deuterium Lamp Assembly, and PEEK Prep Flowcell
DDW-10 (440 and 570 nm)	014-0021	014-0021-1	w/ 440 and 570nm filters, Tungsten Lamp Assembly for Ninhydrin Amino Acid Analysis, and PEEK Prep Flowcell
<b>Fluorescence Detectors</b>			
DFL-10 (Standard)	014-0024	014-0024-1	Fluorescence Detector w/ Standard PMT, Operation 300-660nm, and Analytical Flowcell; No Filters included* Select Lamp from Lamp Assemblies below. All Lamps Except Deuterium are Included in Base Price of Instrument.
DFL-10 (Extended Range)	014-0025	014-0025-1	Fluorescence Detector w/ Extended Range PMT Operation 185-870 nm, and Analytical Flowcell; No Filters Included* Select Lamps from Lamp Assemblies Below. Deuterium Lamp recommended for Low UV Operation.
<b>Excitation and Emission Filters</b>			
	N/A	N/A	See Filter Selection Guide or Contact GAT D-Star for Special Filters
<b>Fluorescence Lamps and Assemblies</b>			
010-0160	N/A	N/A	254nm Pre-aligned Hg Lamp and Assembly
010-0160-1	N/A	N/A	285nm Pre-aligned Hg Lamp and Assembly
010-0160-2	N/A	N/A	365nm Pre-aligned Hg Lamp and Assembly
010-0080	N/A	N/A	Pre-aligned Tungsten Lamp and Assembly
010-0060	N/A	N/A	Pre-aligned Deuterium Lamp and Assembly. Recommended for Low UV Operation. Add lamp price to base unit price
<b>Fluorescence Flowcell</b>			
025-0159	N/A	N/A	Analytical, 10ul Volume (Included in Base Unit)



# GAT D-Star HPLC Systems

Sample Handling Instruments and Software—Manual and Isocratic Fixed and Variable Wavelength Systems • Automated Fixed and Variable Gradient Systems • Autosampler • *Star-Chrom*™ HPLC Management Software and *Star-Chrom Lite*™ PC Integrator Software — all made to meet your requirements

## Manual Isocratic Fixed/Variable Wavelength HPLC Systems



The DLC-10 for 254nm operation only; the DLC-10/11, upgradeable to other available wavelengths, and the DLC-20 with built-in variable wavelength detector are the most economical systems in the market. The standard instruments can be used at operating pressures to 3,000 PSI. The DLC-10CCP/11CP and the DLC-20P will operate to 5,000 PSI.

## Variable Wavelength Binary Gradient HPLC Systems



These are totally integrated isocratic HPLC Systems that are ideal for precise biochemical as well as industrial analytical applications. Available with 195nm to 800nm variable UV-VIS wavelength. The DGS-20 operates up to 3000 PSI, and the DGS-20P permits operation up to 5000 PSI, and has a built-in transducer, front panel display with HI and LOW pressure alarms.

## Automated Isocratic Fixed Wavelength HPLC Systems



Ideal for specific method dedication in both large and small quality control labs. These instruments are fitted with a position sensing valve, pressure transducer and *Star-Chrom* software. The DIS-10/11 and DLC-10P/11P are complete automated isocratic systems. The DIS-10 has a 254nm, and DIS-11 series has a 280nm wavelength.

## Autosampler



The small footprint takes up very little bench space. The DAS-10 is internally programmable for serial or random selection of samples as well as programming pick up volumes. Multiple sample pick up from the same vial is allowed. A wash follows each injection to minimize carryover.

## Automated Gradient Fixed Wavelength HPLC Systems



These systems are the lowest priced binary gradient systems on the market, and include our *Star-Chrom* HPLC Management Software. The DGS-10/11 can be used for 254nm or 280nm operation, as well as other available wavelengths. These systems employ a second pump for high-pressure gradient formation.

## HPLC Management Software *Star-Chrom*™ and *Star-Chrom Lite*™

*Star-Chrom* is a Windows™ 95, 98, NT based, dual channel software that provides powerful features in a program that allows you to create and store your methods, acquire and process data, and calibrate the data via an internal database. You can design custom reports, perform single or batch runs, control the pump(s), and detectors (including setting the wavelength), control auto-injectors and or autosamplers, control fraction collectors, control auxiliary valves, and set HI-LOW pressure alarms.

*Star-Chrom Lite* Universal PC Integrator Software includes many of the features of *Star-Chrom* software but as a stand-alone package. It features an easy to use operating environment that has pull down menus as well as page tabs to select the proper screens for programming your application.



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