

DFL-10 Fluorescence Detector

A Sensitive Fluorescence Detector at a Sensible Price!



The new 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.

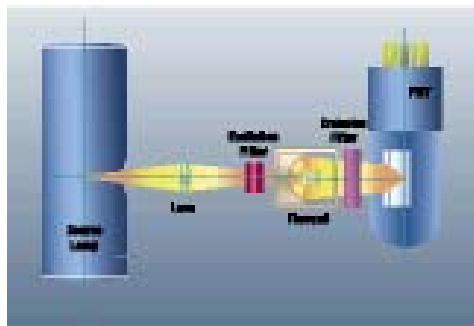
The new **DFL-10 Fluorescence Detector** is a highly sensitive detector for use in liquid chromatography as well as in non-chromatographic techniques such as flow injection analysis. The geometry of the **DFL-10** optical system, including its specific flowcell, also permits the instrument to be used 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.

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, LED 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.

Sensitivity

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.



Schematic of Fixed Wavelength Fluorescence Detector Optical System

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 and 280nm mercury (Hg) lamps, multiple LED 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.



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DFL-10 SPECIFICATIONS

Wavelengths Selectable Ex & Em

Lamps Hg 254, 285; LEDs; W & D2

Flowcells

Analytical 10ul Delrin construction; 250 PSI w/ Bulkhead Assembly

Spectral Resolution Dependent on Filter Selection

Linearity Better than 2%

Wavelength Accuracy N/A

Wavelength Reproducibility N/A

Drift < 1mV/Hour w/ 15 min Warm-up

Noise N/A

Recorder Ranges User selectable in 12 ranges, in three steps/decade for 10mV
Chart Recorder

Recorder Output See Integrator/Data

Integrator/Data Output 3.0V maximum with a resolution of 10mV at the Data
Acquisition output

Display LED Display for Fluorescence, Lamp Energy, PMT Voltage, and Offset

Dimensions 15 in (L) x 9.2 in (W) x 7.5 in (H)

Weight 18 lb. (8.2 Kg)

Power 115, 220-230 VAC 50/60 Hz

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, Aflatoxin
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.	Aflatoxin, 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, TocopherolsDNA, 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.



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