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JASCO®

Model 821-FP

Fluorescence Detector



The model 821-FP fluorescence detector is designed to be an intelligent detector of the LC-800 series HPLC. Pursuing the advanced optical system design of its direct forerunner, the model 820-FP fluorescence detector, the model 821-FP accomplished the following design targets:

- Increasing sensitivity:
  S/N of Raman band of water is better than 120 using 350 nm excitation.
- Design integrity with other modules of the LC-800 series.
- Scanning both excitation and emission monochromators
- Time programming of excitation(Ex) and emission(Em) wavelengths as well as sensitivity.
- Variable slit width.
- Interfacing to LC-800 series system controller.

The model 821-FP is a microcomputer controlled fluorescence HPLC detector. It uses a 150-watt high energy Xenon lamp housed in a sealed lamp house to achieve an outstanding sensitivity. To maximize energy throughput and prevent chromatic and focusing aberrations, an all reflective optics is employed. Holographic concave gratings are used in both excitation and emission monochromators to eliminate "ghost" artifact and reduce stray light.

Both excitation and emission monochromators are driven by a computer controlled stepper motor so that time programming of Ex and Em wavelengths and scanning a fluorescence spectrum are available. Correction of excitation characteristics is done by extensive use of microprocessor associated with reference detector system which monitors time- and wavelength-dependent changes in excitation energy. Slit width of the emission channel is variable in two steps 18 and 30nm, allowing the user to select the best suitable band width for his analysis.

Embodying the LC-800 series's intelligent module concept, the 821-FP is intelligent and provides programmable Ex and Em wavelengths and sensitivity, inter-module communication, and user-interaction through the front panel keypad associated with two line-by-16-character liquid crystal display(LCD). To optimize sensitivity and selectivity for selected components, Ex and Em wavelengths and sensitivity setting can be automatically changed at up to five programming steps. A built-in communication capability allows the 821-FP to send and receive signals to and from the system controller of the LC-800 series. All user interaction can be done through the front panel keypad with an extensive use of LCD.

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SPECIFICATIONS OF 821-FP

Product description
The standard 821-FP Fluorescence detector is a microcomputer based fluorescence detector with added features of microcomputer control, scanning both excitation and emission monochromators, variable slit width, time programming, lamp time counter, self diagnostics check-out, and membrane touch-key panel with LCD.

Optics:	Reflective optics. Both excitation and emission monochromators include holographic concave gratings.
Light source:	150 Watt Xenon lamp
Detector:	Photomultiplier
Reference detector:	Photo diode
Wavelength range:	220 to 650 nm
Flow cell:	Front loading type, 16μl
Spectrum band width:	variable in two steps; 18 and 30 nm
Wavelength accuracy:	±5 nm
Wavelength reproducibility:	±0.3 nm
Sensitivity:	Defined by the signal to noise ratio(S/N) of the Raman band of water using 18 nm slits, 350nm excitation, 1.5 sec response. S/N is better than 120 using peak-to-peak noise.
Response:	Selectable in three steps; FAST(approx. 0.5sec) STD (approx. 1.5sec) SLOW(approx. 4.0sec)
Sensitivity ranges:	1, 2, 4, 8, 16, 32, 64, 128, and S (short).
Amplifier gain:	x 1, x 10, x 100, and x1000
Self-Diagnostics:	power-on test and run-time test are standard.

Time programming

Number of steps:	five;
Program time:	0.1 to 999.9 minutes in 0.1 minutes increment;
Programmable parameters:	Ex and Em wavelengths, GAIN, and ATTENUATION.

Communication

Inputs:	response, attenuation, gain, Ex and Em wavelengths, auto zero, marker, program reset/start;
Outputs:	leak and marker. recorder(10mV full scale) integrator(1V full scale and 0.5V full scale)

User interaction

Keypad:	9 touch-sensitive membrane keys;
Display:	2 line-by-16-character LCD.

Physical characteristics

Dimensions:	210(W)X150(H)X470(D)mm;
Weight:	12kg;
Power requirements:	100, 110, 220, or 240V±5% AC, single phase grounded supply; nominal 350VA.
Materials:	All materials in contact with solvents are fused silica, stainless steel or fluorocarbon polymer.

STANDARD COMPOSITION

- Model 821-FP fluorescence detector with 16μl flow cell	1 set
- Standard accessory kit	1 set
- Instruction manual	1 copy

ORDERING INFORMATION

Code No.	Description
9387	model 821-FP fluorescence detector
	Flow cell, 6.5μl
	Flow cell, 16μl
	Flow cell, 50μl
	Rectangular cell holder

OTHER JASCO CHROMATOGRAPHY PRODUCTS

HPLC pump:	Model 880-PU
UV/VIS detector:	Model 870-UV
	Model 875-UV
Multichannel UV detector:	Model MULTI-340
Chemiluminescence detector:	Model 825-CL
RI detector:	Model 830-RI
Electrochemical detector:	Model 840-EC
System controller:	Model 802-SC
Autosampler:	Model 851-AS
Column oven:	Model 860-CO
	Model 865-CO

*Specifications are subject to change without notice.

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821-FP FLUORESCENCE DETECTOR



Model 821-FP incorporates a highly energy efficient spectroscope using the simple optics of aspherical mirrors and holographic concave gratings. This allows the 821-FP to achieve the high sensitivity detection most keenly needed for a HPLC fluorescence detector. Moreover, a dual beam light source compensating system provides remarkable baseline stability by eliminating light source drift.

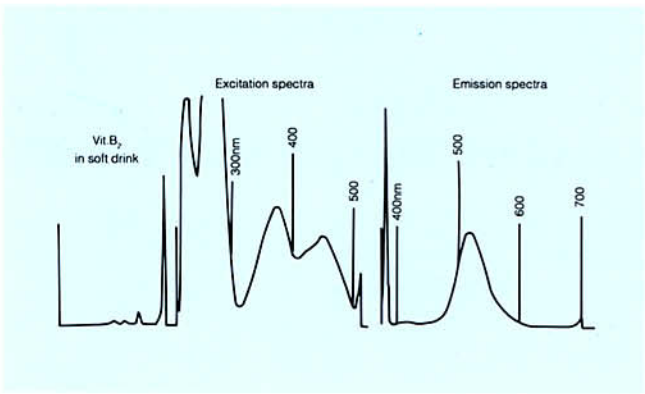
The 821-FP provides time programmable Ex and Em wavelengths and the scanning of Ex and Em spectra is available. Installed with an optional rectangular cell holder, the detector can be used as a fluorescence spectrophotometer, offering functions normally unavailable with conventional HPLC instruments.

HIGH SENSITIVITY MEASUREMENT

The high intensity 150-watt Xenon lamp and high energy optics allows the Raman spectrum of water to be measured with an S/N ratio greater than 120 (excitation: 360 nm).

MEASURES EMISSION SPECTRUM

Unlike the conventional fluorescence detector, the 821-FP can measure excitation and emission spectra. This allows the 821-FP to identify substances.



SYSTEM PROTECTION AGAINST LEAKAGE

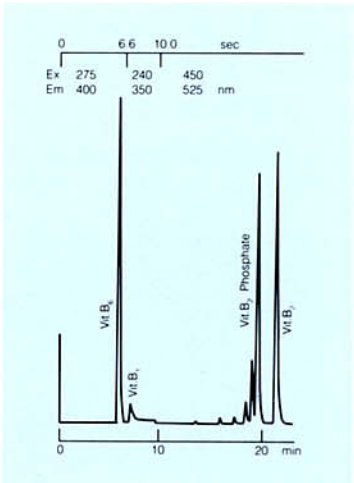
Should a leak occur from the cell, the leakage sensor promptly detects it and displays a warning message on the LCD.

SELF-DIAGNOSTICS

LCD displays the operating state and self-diagnostics results as messages.

WAVELENGTH PROGRAMMING FUNCTION ALLOWS OPTIMAL WAVELENGTH SETTING ACCORDING TO EACH COMPOUND

Excitation wavelength (Ex) and fluorescence wavelength (Em) can be changed in up to ten programming steps. Eluent content can be detected by the most suitable excitation fluorescence wavelength.



WAVELENGTH SETTING BY SIMPLE KEY OPERATION WHILE OBSERVING LCD

Users can set parameters with ease through user-system interaction using function and up-down keys while watching the LCD.

MOUNTING OF OPTIONAL RECTANGULAR CELL HOLDER ALLOWS USE OF 821-FP AS A COMPACT FLUORESCENCE SPECTROPHOTOMETER

Although the 821-FP is a dedicated HPLC fluores-cence detector, it can measure the fluorescence spectrum using its fluorescence wavelength scanning function. Adopting an easily replaceable rectangular cell holder (optional), it can be used as a fluorescence spectrophotometer.

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