

Fluorescence Detector

The Analytical FD-2020 Intelligent Fluorescence Detector is recognized as the industry's most sensitive detector with a signal-to-noise ratio of better than 350:1 for the Raman water peak. The FD-2020 covers a wide wavelength range both for excitation and emission from 220 to 700 nm (~900 nm with an optional PMT) with proven stability. Versatile time-programming capabilities are provided for

wavelength, response, gain, spectral scan, etc., permitting highly selective detection of various compounds. A rapid scan feature allows on-the-flow spectral acquisition for both emission and excitation spectra without interrupting the chromatographic elution. A specially designed chemiluminescence attachment and capillary electrophoresis cell are optionally available.



Maximum Sensitivity

Improvement in the optical design and coating allows greater efficiency in the collection of fluorescence energy resulting in detection of anthracene ($S/N = 1$) at levels as low as 40 femtograms. With a S/N of greater than 350:1, the FP-2020 is the most sensitive HPLC fluorescence detector on the market ensuring accurate detection and quantification for applications with very low compound concentrations.

Advanced Optics

Holographic concave diffraction gratings and non-spherical mirrors are cleverly incorporated in a compact package resulting in extremely efficient and reliable monochromators. Replacement of the lamp can be easily performed in minutes by the user without even opening the instrument cover.

Highly-reliable Data

A built-in thermistor monitors optical bench temperature and automatically compensates for temperature variation via feedback through the CPU. Digital filtering further enhances signal intensity producing highly-reliable quantitative data especially for applications requiring the ultimate in detection limits.

Rapid Spectral Scanning

A rapid spectral scan function allows on-flow spectral scanning of both emission and excitation spectra without interrupting the chromatographic elution. The FD-2020 can store up to 10 EX and EM spectra within the on-board microprocessor. Spectral subtraction allows for a true sample spectra by eliminating any interference from the mobile phase solvent.

A variety of flow cells

In addition to the standard 16 μ l flow cell, various types of flow cells, Micro flow cell (5 μ l), Capillary flow cell for capillary electrophoresis, Chemiluminescence flow cell, Inert flow cell are available to meet various applications. A rectangular cell holder is also available to place a rectangular cell (10 mm x 10 mm) for use of the FD-2020 as spectrofluorometer for methods development and finding optimal EX and EM wavelengths.

Specifications:

Optical System

Monochromators:	Holographic concave diffraction gratin gmonochromators for both excitation and emission
Light source:	150W Xe lamp
Settable wavelength:	Zero order, 200 ~ 900 nm for both Ex and Em
Measuring wavelength Range:	Zero order, 220 ~ 700 nm for both Ex and Em Optional PM tube extends the range up to 900nm
Spectral bandwidths:	Ex: 18 nm fixed Em: 18, 40 nm selectable
Wavelength accuracy:	±2.0 nm
Wavelength repeatability:	±0.3 nm
Detectors	Ex: photodiode Em: photomultiplier
Cell volume:	16 µl (standard)

Control System

Sensitivity:	S/N >350 for Raman Peak of water (Ex=350 nm, time constant=1.5 sec, with standard cell)
Sensitivity range:	1, 2, 4, 8, 16, 32, 64, 128, 256 and S.
Gain:	x1, x10, x100, x1000
Response:	FAST, STD, SLOW (0.5, 1.5, 5 sec.)
Digital filter:	3, 5, 10, 20, 40 sec
Signal processing:	Digital processing by A/D and D/A converters
Output:	10 mV/FS for recorder (Polarity change is possible.) 1 V/FS for integrator market, leak out marker, autozero, program reset/run memories, DC power supply, Ex. energy, leak in cell, lamp operation time
Input:	
Self-diagnostics:	

Programings

Time programming:	64 steps, 10 files, 0.1 to 999.9 minutes in 0.1 min increments for Ex and Em wavelength, range, gain, autozero, spectral bandwidth, and spectral measurement
Spectral scanning:	Ex and Em spectra
Spectral subtraction:	Ex and Em spectra
Lamp timer:	shows accumulated lamp operation time
Lamp off timer:	settable from 0 ~ 99.9 hours (0.1 hour increments)

Temperature

compensation:	compensates PM tube response for temperature variation
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Miscellaneous

External communication:	RS-232C, LC-Net
Dimension:	300 (W) x 150 (H) x 470 (D) mm
Weight:	Approx. 19 kg
Power Input voltage:	AC100 ~ 240 V ±10% 50/60 Hz
Power consumption:	425 VA

Standard Accessories:

Spare fuses	2 pcs Spare fuses
AC Power cable	1 pc
Protection plate	1 pc
Screw Thumb	1 pc

Optional Accessories

6716-H310B	low-Dispersion flow cell (16 μ l) standard
6715-H317B	Nicro flow cell (5 μ l)
6715-H360A	Inert flow cell holder
6604-H106A	Optional rectangular cell holder
1103-0081	Standard fluorescence rectangular quartz cell, 10 mm pathlength
1103-0180	Rectangular suprasil quartz cell, 10 mm pathlength
6715-H124A	Chemiluminescence flow cell kit
6715-H318A	Capillary flow cell kit
6755-H207A	Pen-ray cell unit for checking wavelength accuracy
4340-0033	Photomultiplier detector (R3788-01), standard
4340-0034	Photomultiplier detector (R928-23), expansion for wavelength range (~900 nm)
6715-H338A	Secondary light cut filter set (set of 7 kinds of filters for EM/EX)

Regulatory compliances



Corporate Social Responsibility

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HPLC Solutions MultipleLabs Analytical Bio-Med Analytical Distributors Analytical Foundation (Trust)

Corporate & Regd. Office:
Analytical House, # E67 & E68,
Ravi Park, Vasna Road, Baroda,
Gujarat 390 015. INDIA

T: +91 265 2253620
+91 265 2252839
+91 265 2252370
F: +91 265 2254395

E: info@hplctechnologies.com
info@multiplelabs.com
info@analyticalgroup.net
info@analyticalbiomed.com

W: www.ais-india.com
www.analyticalgroup.net
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