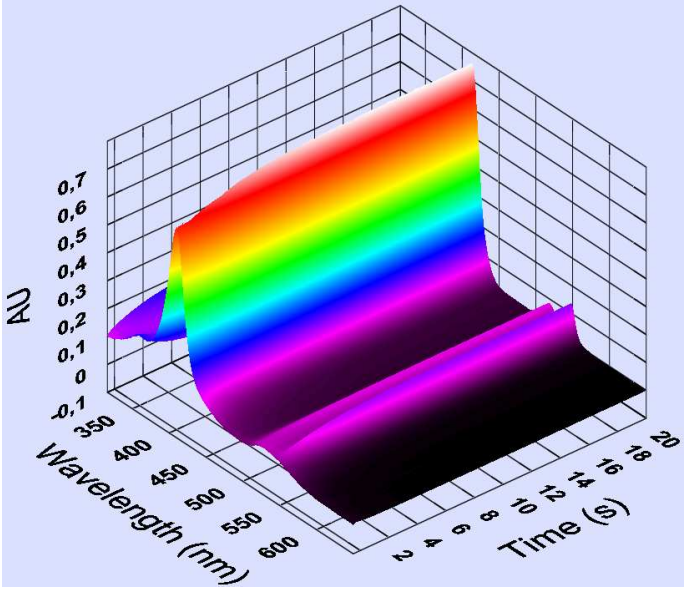
DIODE ARRAY

Compatible with
- SFM-20
- SFM-300
- SFM-400

FAST and SENSITIVE Diode Array optimized for rapid kinetics studies

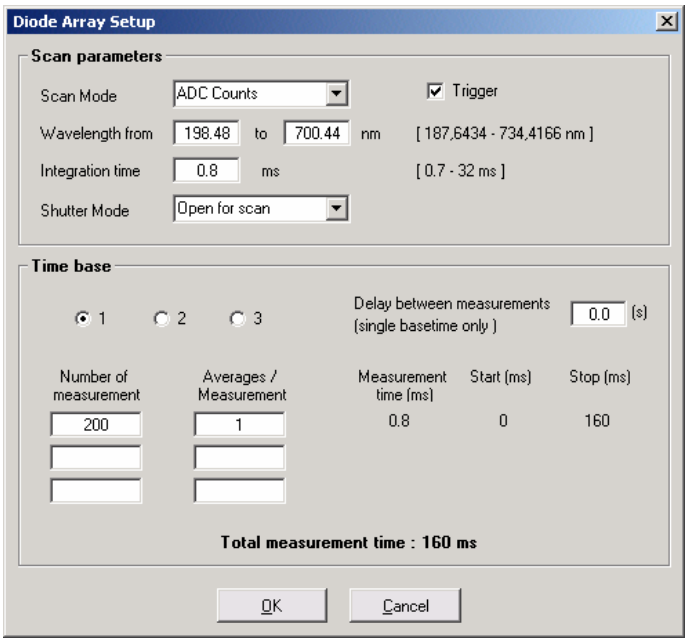
A diode array system generates 3 dimensional datasets; wavelength, absorbance and time, from a single sample run. With a diode array, single reaction kinetics can be followed at hundreds of wavelengths simultaneously on a millisecond time scale. UV/Vis spectra of intermediates, reactants and products can be calculated from analysis of the 3 dimensional data, and it is a key technique for identification of reaction intermediates. For multi-wavelength studies, a diode array requires much less sample compared to step scan monochromators..

Depending on the wavelength range of interest, the observation cell is illuminated by a white light source from a MOS-200 or MOS-450 spectrometer, or from a dedicated Deuterium/Tungsten lamp. The stopped-flow cell is connected using the included high performance fiber optic cable.



Three diode arrays models are available for specific wavelength ranges, and for the number of diodes needed. The 256 and 1024 diodes models collect spectra every 0.8 ms (1250 spectra/s) and 3 ms (333 spectra/s) respectively. The system is controlled and acquisition parameters are selected from an intuitive and easy to Biokine window.

Included Biokine software allows simple control over complex experiments. Integration times can be adjusted for slower reactions, and spectral averaging is possible for longer reactions. It is also possible to combine different time bases for complex reactions where fast and slow phase are observed. A Biokine controlled shutter can be added as an option, to prevent the sample from photo bleaching.



SVD / Global fitting analysis

The 3 dimension data generated by the diode array are analyzed using the included SFit software. A user-friendly interface allows easy navigation and handling of 2D and 3D data. Single Value Decomposition (SVD) analysis as provided by Sfit is an invaluable tool for identification of reaction intermediates. Concentration profiles and individual spectra can be extracted from the SVD analysis. Sfit includes :

- Automatic estimation of number of vectors
- Fast SVD analysis
- Global fitting with residual analysis
- Levenberg-Marquardt and Simplex algorithms
- A large selection of kinetics models
- Import of data from clipboard or text files

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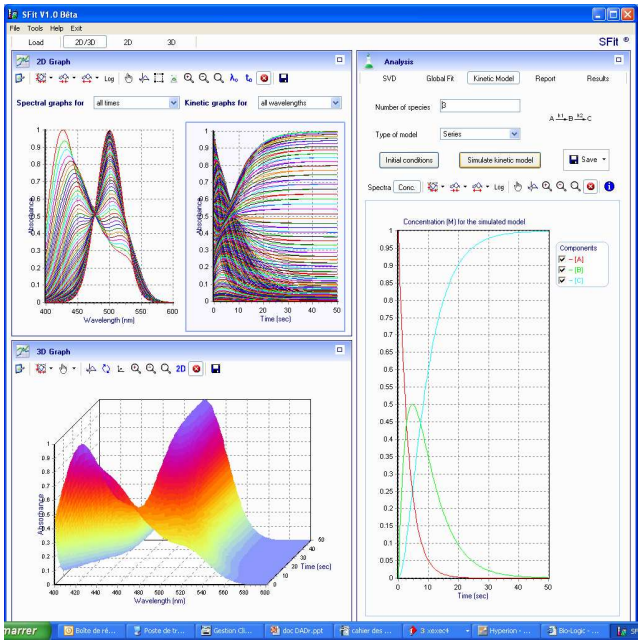


Specifications

Number of diodes	256 or 1024
Spectral resolution	2 nm/diode ; 256 diodes 0.8 nm/diode ; 1024 diodes
Maximum sampling rate	0.8 ms/spectrum ; 256 diodes 3 ms/spectrum; 1024 diodes
A/D conversion	16 bits
Linear signal range	0 - 0.8 AU (MMS technology) 0 – 2AU (MCS technology)
Wavelength accuracy	Better than 0.1 nm
Wavelength reproducibility	Better than 0.07 nm
Noise	Better than $1x10^{-4}$ AU single scan Better than $1x10^{-5}$ average of 100 scans
Maximum number of spectra	3000 (for 256 diodes model) 750 (for 1024 diodes model)
Connection to stopped-flow	Fiber optics
PC requirements ***(PC is not included)***	Large PCI slot Pentium IV, Windows XP, Vista

Specifications are subject to change without prior notice

3 models

MMS-VIS : 300 -1100 nm (256 diodes)
MMS-UV : 200- 740 nm (256 diodes)
MCS-UVNIR : 190-1010 nm (1024 diodes)

Included with the diode array

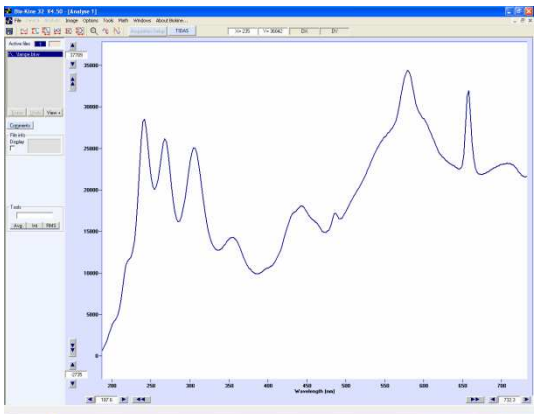
- 1 meter fiber optics cable (other lengths available on request)
- Fiber optic cable and adaptor for connections to stopped-flow head
- Trigger cable
- Acquisition board and communication cable.
- SFit software

Recommended light source

(Ref 060-21/4)

The Bio-Logic deuterium/tungsten-halogen light source provides high brightness in a wavelength range from 200 to 1100 nm. Lamps can be used separately if the range of interest is narrower.

High stability: 2 x 10^{-5} AU peak/peak
Low drift : 0.3%/hour.
Fiber optic cable is included for connection to stopped-flow



Lamp spectrum recorded with 200-740 nm diode array model.

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