

# Fluorescence Polarization Photometer

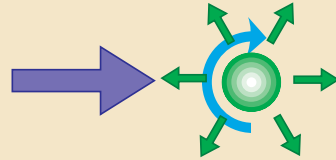
Highly sensitive and selective measurement of small sample volume of clinical and biochemical specimen with Peltier thermoelectric cell holder with built-in stirrer

## FP-715

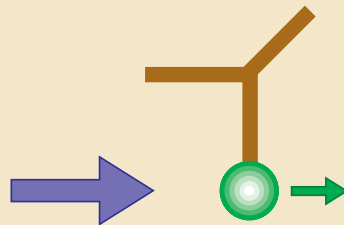


The model FP-715 is a powerful tool to analyze the equilibrium biomolecular binding profiles monitoring the rotational movement of molecules directly in solution by using Fluorescence polarization technology. Its operation is easy and simple because it does not require any filtration, immobilization or washing step. It is widely used in immunoassay, drug monitoring in clinical pharmacy, determining antibody specificity and affinity, and molecular interaction, including protein-protein, protein-DNA, coenzyme-protein, and antigen-antibody binding.

### Fluorescence Polarization



When the polarized light strikes a small fluorescent molecule, the fluorescence emitted is not polarized, because the molecule tumbles rapidly in solution.



If an antibody specific for the small fluorescent molecule is added, they combine and become a large molecule that rotates more slowly. The slower rotation causes it to emit fluorescence in the same plane as the incident light.

Fluorescence

## SPECIFICATIONS

### Hardware specifications

Light source: Xenon lamp with shielded lamp house, 75-watt

Detector: Photomultiplier

### Monochromators

#### Excitation side

Grating: Holographic grating with 1200 grooves/mm modified Rowland mount

Wavelength range: 400 to 700 nm (5 nm step)

Spectral bandwidth: 10 nm

#### Emission side

Filter: Bandpass filter (530 nm provided as standard)

Spectral bandwidth: 40 nm

### Polarizer and Analyzer

Excitation side: Automated polarizer for horizontal and vertical polarization

Emission side: Manual polarizer for horizontal and vertical polarization

### Sample compartment

Applicable cells: 10 mm rectangular cell, 7.2 mm outer diameter or 10 mm outer diameter cylindrical micro cuvettes (Cylindrical cuvettes require optional cylindrical cuvette holders)

Sample volume: Minimum required sample volume  
0.5 ml (7.2 mm dia. micro cell)  
1.0 ml (10 mm dia. micro cell)

cell holder: Single cell holder

Temperature control: Peltier thermoelectric effect (air-cooled)

Temperature range: 15 to 60 degree celsius

Stirring: Variable speed magnetic stirrer

### Display

LCD: 4 lines, 20 characters per line

Data display: 4 digits

Display items: Parallel emission intensity  $I_{vw}$

Vertical emission intensity  $I_{hv}$

Degree of polarization (P)

Anisotropy of fluorescence ( $\gamma$ )

Total emission intensity (F)

Emission intensity (I)

Concentration (C)

G factor (G)

Wavelengths (EX, EM)

Temperature

### Others

Output port: Centronics (Printer is an option.)

RS-232C interface for PC

Dimensions: 297 (W) x 420 (D) x 220 (H) mm

Net weight: Approx. 20 kg

## STANDARD COMPOSITION

|                                  |   |
|----------------------------------|---|
| FP-715 Main unit (Optical bench) | 1 |
| Spare fuses                      | 2 |
| Hexagonal wrench                 | 1 |
| Fluorescence cell (glass), 10 mm | 1 |
| Stirrer bar                      | 1 |
| Instruction manual               | 1 |

## ORDERING INFORMATION

6770-J001A Model FP-715 Fluorescence polarization photometer

## OPTIONAL ACCESSORIES

|            |                                |
|------------|--------------------------------|
| 6691-0734A | Cuvette holder for 7.2 mm dia. |
| 6691-0735A | Cuvette holder for 10 mm dia.  |

The model FP-715 is a fluorescence polarization photometer designed to obtain measurement of both the degree of polarization (P) and anisotropy of fluorescence ( $\gamma$ ). The P and  $\gamma$  values are used to evaluate the sample's degree of depolarization. The extent of depolarization reflects the micro viscosity or rotational diffusion of the dye-bound molecule. Such measurements have been used for analysis of system such as antigen-antibody reaction and cell membrane fluidity. Degree of polarization (P) and anisotropy of fluorescence ( $\gamma$ ) data are obtained by measuring the emission intensity while automatically varying the orientation of the excitation polarizer from vertical to horizontal. The FP-715 is equipped with an automated polarizers for the EX monochromator source and a manual analyzer for the EM detection. Sample temperature control is available with a Peltier thermoelectric cell holder with built-in stirrer as standard.

$$P = \frac{(I_{vw} - G \times I_{vh})}{(I_{vw} + G \times I_{vh})}$$

$$\gamma = \frac{(I_{lv} - G \times I_{lh})}{(I_{lv} + 2G \times I_{lh})}$$

$$F = I_{lv} + 2G \times I_{lh}$$

$$G = \frac{I_{hv}}{I_{hh}}$$

P : Degree of polarization  
 $\gamma$  : Anisotropy of fluorescence  
 F : Total emission intensity  
 G : Correction factor for the optical system  
 I : Emission intensity

$I_{vw}$  : Polarizer on EX side (vertical)  
 Analyzer on EM side (vertical)  
 $I_{hv}$  : Polarizer on EX side (horizontal)  
 Analyzer on EM side (vertical)  
 $I_{lh}$  : Polarizer on EX side (horizontal)  
 Analyzer on EM side (horizontal)  
 $I_{vh}$  : Polarizer on EX side (vertical)  
 Analyzer on EM side (horizontal)

● Specifications are subject to change without notice.



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