

# Multimode Microplate Reader

## Technical Specifications

- The instrument should be a spectral scanning multimode microplate reader capable of doing photometry, Fluorometric Intensity, TRF (Time Resolved Fluorometry), and upgradable to luminometry and three on board dispensers for flash luminescence applications.
- Quadruple monochromators i.e. dual excitation monochromators and dual emission monochromators for fluorometric measurements.
- Double monochromators for photometric (UV and Vis) measurements
- **All specifications of the system should be tested and guaranteed by the factory. The specification should not be typical performance values or relative values.**
- Instrument should have proven performance with publications using the quoted model. Publications from Indian scientist will be an added advantage.

### **Plate Format :**

- Instrument should read 6 well to 1536 well plate formats, with or without lids for fluorescence intensity, TRF and luminometry and 6 – 384 well plates in absorbance/photometry.
- Able to measure all detection technologies in single well i.e. photometry, fluorescence and luminescence in same well.
- In built incubation and plate shaking option should be provided.

### **Fluorescence/Fluorometry :**

- Fluorometry: Excitation range: 200-1000nm, Emission: 270-840nm.
- Fluorescence intensity sensitivity of <0.4 fmol fluorescein with 384 well black plate and top reading.
- Selectable excitation bandwidths of 5 and 12 nm and emission bandwidth of 12nm.

**Absorbance / Photometry :**

- Measurement range in Photometry: 200-1000nm
- Linear measurement range in photometry:  
0-4Abs at 450 nm,  $\pm 2\%$  (96-well plate) and  
0-3Abs at 450 nm,  $\pm 2\%$  (384-well plate).
- Instrument should have on-board pathlength correction for direct quantification.  
E.g. Nucleic acids and proteins.

**Luminometry : (optional )**

- Luminometric upgration should be possible on site / at Lab.
- Luminometric sensitivity of  $<7$  amol ATP/well with 384 well white plate using flash ATP reaction. Should have spectral scanning option.
- Luminometry should have three measurements mode – Normal, Filter and Monochromator mode with excellent sensitivity.
- Option for on-board dispensers for Flash Luminescence assays , dispensing volume should be 1 $\mu$ l to 10,000  $\mu$ l with 1  $\mu$ l increments. Automatic safety control based on maximum well volume.

**Safety Features :**

- Orbital Shaking with adjustable timing, speed and diameter. Automatic safety control based on the shaking speed and plate format to avoid spilling of the liquid from wells.
- Database based software to run backups of all data, restore back up data (in case of hardware failure of original computer).
- No loss of already measured data even in case of power failure.
- Option for on-board dispensers, dispensing volume should be 1 $\mu$ l to 10,000  $\mu$ l with 1  $\mu$ l increments. Automatic safety control based on maximum well volume.

**Data Analysis Software :**

- Analysis software should be supplied with the instrument and has unlimited user system license.
- Software should have Inbuilt calculations, such as Blank Subtraction, Quantitative Curve Fit, Qualitative Classification, Spectral Analysis and Kinetic Calculations, as well as a comprehensive reporting tool.
- Both measured and calculated data can also easily be exported to other systems like Microsoft Excel for further data handling.
- User should able to load the software in to multiple computer systems for data analysis.
- Software should have option for area selection . i. e different protocols at different area of the same plate.
- Database based software to run backups of all data, restore back up data (in case of hardware failure of original computer).
- Spectral scanning of all 96 samples or 384 samples should be able to view in single graph plot.