INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

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Technical Specification

Advanced high-performance Multimode microplate reader and flurometer for measurement of Fluorescence Intensity, FRET and UV-Vis absorbance and should be onsite upgradable to other detection modes.

A. General Specifications:

1. Following Detection Modes & features should be included:
   Fluorescence Intensity & FRET
   UV/Vis Absorbance

2. Should be possible to upgrade for following modes, at site:
   Luminescence (flash & glow)
   TRF & TR-FRET
   Fluorescence Polarization
   Upto two reagent injectors for time critical assays
   Atmospheric Gas Control Unit for O2/Co2 for cell based assays

3. Measurement Modes: Endpoint and Kinetic measurements
   Spectral Scanning in all modes
   Well Scanning with upto 900 data points per well

4. Microplate Formats 6- to 384 well plates & low volume (2ul) plate /adapter
5. Shaking — Linear, orbital, and double-orbital with user-definable time and speed
6. Incubation — +4°C above ambient to 60°C
7. Read Times — 10 sec for 96 well plate & 20 sec for 384 well plate
8. Focal Height Adjustment — Automated focal height adjustment for optimal position of detector

B. Fluorescence Intensity, FRET Measurement Mode:

1. Light Source — High energy xenon flash lamp
2. Detector — Photomultiplier Tube (PMT)
3. Wavelength range — 320 – 740 nm (for Monochromator) & 240 – 740nm for filters

4.	Wavelength Selection	LVF Monochromator / Quad Monochromator based & also bandpass filters for high sensitivity assays. True Hybrid technology allowing to choose either Monochromators and/or Filters vice versa in any combination for excitation & emission wavelength selection
5.	Dichroic Mirror	Auto-tuning / user selectable Spectral Range: 340 - 740 nm
6.	Bandwidth	User selectable in the range 8 – 100nm
7.	Spectral Scanning	Fluorescence Excitation / Emission Spectral Scanning with resolution of 0.1nm
8.	Optical Filters	The filter block should hold atleast 4 excitation filters and 4 emission filters TRF, TR-FRET, FP should be by dye specific filters.
9.	Sensitivity	Using Filters : Top: < 0.5 pM & Bottom: < 1.0 pM fluorescein, 384 well plate Using Monochromators : Top: < 1 pM & Bottom: < 4.0 pM fluorescein, 384 well plate
10.	Gain	Auto gain / Auto focus for each well
11.	Dynamic range	8 logs linearity

C. Absorbance Measurement Mode:

1.	Wavelength range	220 – 999 nm
2.	Wavelength Selection	Spectrometer based
3.	Detector	CCD Array / Photodiode
4.	Accuracy:	< 1% at 2 OD
5.	Dynamic Range:	0 - 4 OD
6.	Scan Speed	Capture a full UV / Vis absorbance spectrum (220 to 1000 nm) in less than 2 second per well

D. **Software:**

License free Multi-user software package including Reader Control and Data Analysis Software. Data Statistics, User defined Formulas, Signal Curve Analysis, Standard Curve with various fit types PARALLEL LINE ANALYSIS, comparative studies (One way Anova/Unpaired t-test/Paired t-test) should be possible. The software should be US FDA 21 CFR Part 11 compliant

E. **Device Control / interface:** Should be supplied with desktop 35 Processor, 8GB RAM, 256 GB SSD drive, 18" Monitor, Keyboard, Mouse, Windows 10 /11 OS