multimode microplate reader optional injection modules

Multimode microplate reader is a high-performance laboratory instrument integrating multiple detection modes, designed for the scientific research needs in the fields of biomedicine, drug discovery and development, life sciences and other fields.

Multimode microplate reader has modular design, which can be flexibly upgraded and customized according to the experimental needs, providing high-quality data analysis and processing functions to enhance the experimental efficiency and reliability of results.

Main Features of Multimode Microplate Reader

1. Multiple detection modes: support light absorption, fluorescence, chemiluminescence, time-resolved fluorescence (TRF), fluorescence polarization (FP) and other modes, which is suitable for a variety of detection needs.
2. High sensitivity detection: Adopting advanced photomultiplier tube (PMT) technology, it can accurately detect weak signals to ensure high sensitivity and high precision.
3. Modular design: provide dedicated, scalable detection accessories, convenient to configure and expand according to different experimental needs.

4. Intelligent operation: full automatic gain adjustment and correction function simplifies the experimental setup without manual intervention and improves the stability and repeatability of the experiment.
5. Powerful data processing functions: support a variety of data analysis methods, such as subtracting blanks, standard curve production, qualitative analysis, kinetic analysis, etc., to help users quickly get high-quality experimental results.
6. Convenient data sharing and storage: built-in data sharing library, supports uploading data via QR code and FTP, convenient for result sharing and remote data viewing.

Advantages of Multimode Microplate Reader

1. Flexibility and Expandability: Different detection modes can be selected according to experimental needs, and other functions can be added flexibly through modularized design to meet the needs of complex experiments.
2. Precision and stability: Optimized optical design and advanced electronic control system ensure the precision and stability of the experimental results, suitable for high-throughput and micro-volume sample analysis.
3. Simplified operation: no need to frequently adjust the instrument settings, intelligent automated operation greatly reduces human error, improve experimental efficiency and accuracy.
4. Efficient data analysis: provide a variety of data processing and analysis methods, support for custom algorithms and real-time generation of QR code, simplify the management and sharing of data, improve the efficiency of collaboration between the team.

Working Principle

1. Light Absorption Detection: The instrument adopts a monochromator optical path system, which can carry out accurate wavelength scanning in the range of 200nm to 1000nm, and the step accuracy reaches 1nm. The instrument is also equipped with a reference optical path, which ensures the stability and accuracy of the detection results. The light source, light shed, detector and other components are automatically calibrated after startup to ensure the accuracy of spectral data.
2. Fluorescence detection: The optical path design based on dichroic mirrors and filters enables sensitive fluorescence detection at the top of the microplate. The independent detachable filter module allows researchers to switch between different wavelengths easily and quickly. Through the automatic gain and correction function, the instrument can automatically adjust the voltage of the photomultiplier tube (PMT) according to the signal strength of the sample, ensuring that a reliable concentration range and accurate detection results can be obtained under different experimental conditions.
3. Chemiluminescence detection: This mode utilizes advanced photomultiplier tube (PMT) technology to enhance the sensitivity of weak luminescence signals and effectively avoid saturation of high signals. The optimized chemiluminescence optical path design reduces inter-well signal crosstalk and ensures the accuracy of experimental results. Precise dual-channel autosampler can maintain excellent detection performance in high-density 384-well plates.

4. Time-Resolved Fluorescence (TRF): Lanthanide labeled dyes are used, after excitation, the duration of the emitted light is longer than ordinary fluorescein. After the excitation light is turned off, the emitted light is still released continuously, effectively eliminating the interference of excitation light and scattered light, thus improving the sensitivity and accuracy of detection. Time-resolved fluorescence has the characteristics of high sensitivity, high specificity, good stability, short operation process, etc. It is suitable for ultra-trace analysis in biology and medicine, hormone detection, viral hepatitis marker detection, targeted cell drug detection and drug screening.
5. Fluorescence Polarization (FP): Optimized optical path design combined with fast switching polarizer function can effectively reduce the detection bias. This function is mainly used for the detection of interactions between small molecules and macromolecules, such as drug and hormone binding, tyrosine kinase detection, protein-peptide interactions and other studies.

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Model	**MR30-1**	**MR30-2**	**MR30-3**
Absorption, Fluorescence, Chemiluminescence	yes		
Time-Resolved Fluorescence	no	yes	yes
Fluorescence Polarization	no	no	yes
Absorption of light, Grating			
Light Source	xenon lamp		
Detector	PD		
Wavelength Accuracy	2nm		
Wavelength Repeatability, SD	0.2nm		
Full Width at Half Maximum	less than 2.5nm		
Wavelength Range	200nm to 1000nm, 1nm increment		

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Model	**MR30-1**	**MR30-2**	**MR30-3**
Measurement Range	0 to 4 OD		
Resolution	0.0001 OD		
Accuracy at 450nm	96-Precision Mode: ±(1.0% + 0.003 Abs) for (0.0 to 2.0 Abs], ±2.0% for (2.0 to 3.0 Abs]		
Repeatability at 450nm	CV < 1.0% or SD < 0.003 in Fast mode (0.0 to 3.0 Abs], CV < 0.5% or SD < 0.003 in Precision mode (0.0 to 3.0 Abs]		
Stray Light	0.1% at 220nm		
Linearity at 450nm	⩾0.999 at [0.0-3.0Abs]		
Reading Time	96 microplate, less than 15 seconds		
Fluorescence, optical filter			
Reading Mode	top reading		

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Model	**MR30-1**	**MR30-2**	**MR30-3**
Excitation Light Source	xenon lamp		
Detector	PMT		
Wavelength Range	EX: 200nm to 1000nm, EM: 270nm to 850nm		
Filter	3 sets, EX485|EM530, EX523|EM564, EX624|EM692, other wavelengths customizable		
Limit of Detection	1pm		
Linear Dynamic Range	6 logs		
Chemiluminescence			
Detector	PMT		
Limit of Detection	15 amol, well, 5 amol, well, with photomultiplier tube, PMT		
Linear Dynamic Range	6 logs		

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Model	**MR30-1**	**MR30-2**	**MR30-3**
Crosstalk	≤0.005%		
Wavelength Range	200nm to 850nm		
Time-Resolved Fluorescence			
Wavelength Range	EX: 200nm to 1000nm, EM: 270nm to 850nm		
Limit of Detection	0.02pm		
Fluorescence Polarization, Optical Filter			
Wavelength Range	300nm to 850nm		
Limit of Detection	5mp		