Synergy H1 Multi-Mode Reader

Detection > Hybrid Technology Multi-Mode Microplate Readers

Overview:

Synergy™ H1 is a flexible monochromator-based multi-mode microplate reader that can be turned into a high-performance patented Hybrid system with the addition of a filter-based optical module. The monochromator optics uses a third generation quadruple grating design that allows working at any excitation or emission wavelength with a 1 nm step. This system supports top and bottom fluorescence intensity, UV-visible absorbance and high performance luminescence detection. It is the ideal system for all the standard microplate applications found in life science research laboratories.

PATENTED HYBRID OPTICS

The filter module is a completely independent add-on that includes its own light source, and a high performance dichroic-based wavelength selection system. With its very high optical efficiency, this module supports advanced detection modes such as Fluorescence Polarization, Time-Resolved Fluorescence & TR-FRET and filtered luminescence (e.g. BRET). A dual reagent injection system is available to automate inject/read assays such as ion channels assays or flash luminescence assays (e.g. luciferase or ATP assays).

To create the ideal physiological environment for live-cell assay, incubation to 45 °C and available gas controller monitors CO_2 and O_2 levels in Synergy H1.

US Federal Government customers: *This product is available on GSA contract. Contact BioTek Customer Care with questions or submit a Quote Request Form to receive pricing and information on specific models (please note GSA Contract in the Comments field).*

Hybrid Technology™ protected under U.S. Patent 8,218,141.

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Take3 Compatible

Take3 Trio Compatible

Features:

- **Patented Hybrid Technology™** combines flexible monochromator detection with high performance dichroic-based detection.
- **Compatible with the Gas Controller** for control and monitoring of CO_2 and O_2.
- **Compatible with Take3™ Micro-Volume Plate**: samples down to 2 µL volume can be measured. Especially useful when working with precious samples, for fast and accurate DNA/RNA quantification at 260 nm

- **Quadruple grating monochromator** for maximum flexibility and ease of use.
- **Dichroic-based filter optics**, for best performance and advanced detection technologies such as fluorescence polarization and time resolved fluorescence.
- **Comes with Gen5 software**: reader control, advanced data analysis and flexible Excel export in one software package.

Models:

Part #	H1M	H1MD	H1F	H1FD	H1MF	H1MFD
Monochromator fluorescence	•	•			•	•
Monochromator absorbance	•	•			•	•
Full-light luminescence	•	•	•	•	•	•
Filter/dichroic fluorescence			•	•	•	•
Fluorescence polarization			•	•	•	•
Time resolved fluorescence	• *	• *	•	•	•	•
Filtered luminescence			•	•	•	•
Dual reagent dispenser		•		•		•
Temperature control to 45°C	•	•	•	•	•	•
Gen5 data analysis software	•	•	•	•	•	•

* Secondary mode

Gas Controller Compatible Configurations**	H1MG	H1MDG	H1FG	H1FDG	H1FMG	H1MFDG

** These configurations have the same features as the non- Gas Controller Compatible configurations in the chart above. Gas Controller sold separately.

Specifications:

General	
Detection modes	UV-Vis absorbance Fluorescence intensity Luminescence Fluorescence polarization Time-resolved fluorescence
Read methods	Endpoint, kinetic, spectral scanning, well area scanning
Microplate types	6- to 384-well plates
Other labware supported	Petri and cell culture dishes Take3 Micro-Volume Plates
Temperature control	4-Zone™ incubation to 45 °C with Condensation Control™ ±0.2 °C at 37 °C
Shaking	Linear, orbital, double orbital
Software	Gen5™ Data Analysis Software Gen5 Secure for 21 CFR Part 11 compliance (option)
Automation	BioStack and 3rd party automation compatible BioSpa 8 Automated Incubator compatible
CO_2 and O_2 control (option)	Range: 0 - 20% (CO_2); 1 - 19% (O_2) Control Resolution: ±0.1% (CO_2 and O_2) Stability: ±0.2% at 5% CO_2; ±0.2% at 1% O_2 Models for both CO_2 and O_2 or CO_2 only are available
Absorbance	
Light source	Xenon flash
Detector	photodiode
Wavelength selection	monochromator
Wavelength range	230 - 999 nm, 1 nm increments
Monochromator bandwidth	4 nm (230-285 nm), 8 nm (>285 nm)
Dynamic range	0 - 4.0 OD
Resolution	0.0001 OD
Pathlength correction	yes
Monochromator wavelength accuracy	±2 nm
Monochromator wavelength repeatability	±0.2 nm
OD accuracy	<1% at 2.0 OD <3% at 3.0 OD

OD linearity	<1% from 0 to 3.0 OD
OD repeatability	<0.5% at 2.0 OD
Stray light	0.03% at 230 nm
Reading speed (kinetic)	96 wells: 11 seconds 384 wells: 22 seconds
Fluorescence Intensity	
Light source	Xenon flash
Detector	PMT for monochromator system PMT for filter system
Wavelength selection	Quad monochromators (top/bottom) Filters (top)
Wavelength range	Monochromators: 250 - 700 nm (850 nm option) Filters: 200 - 700 nm (850 nm option)
Monochromator bandwidth	Fixed, 16 nm
Dynamic range	7 decades
Sensitivity	Filters: Fluorescein 0.25 pM (0.025 fmol/well, 384-well plate) Quad Monochromator: Fluorescein 2.5 pM (0.25 fmol/well, 384-well plate) - top Fluorescein 4 pM (0.4 fmol/well, 384-well plate) - bottom
Reading speed (kinetic)	96 wells: 11 seconds 384 wells: 22 seconds
Luminescence	
Wavelength range	300 - 700 nm
Dynamic range	>6 decades
Sensitivity	Monos: 20 amol ATP (flash) Filters: 10 amol ATP (flash), 100 amol (glow)
Fluorescence Polarization	
Light source	Xenon flash
Detector	PMT
Wavelength selection	Filters
Wavelength range	280 - 700 nm (850 nm option)
Sensitivity	1.2 mP standard deviation at 1 nm fluorescein
Time-Resolved Fluorescence	
Light source	Xenon flash
Detector	PMT
Wavelength selection	Quad monochromators (secondary mode) Filters (top)
Wavelength range	Filters: 200 - 700 nm (850 nm option)
Sensitivity	Filters: Europium 40 fM (4 amol/well, 384-well plate) Monos: Europium 1200 fM (120 amol/well, 384-well plate)
Reagent Dispensers	
Supported detection modes	All modes

Number	2 syringe pumps
Supported labware	6- to 384-well microplates, Petri dishes
Dead volume	1.1 mL with back flush
Dispense volume	5 - 1000 µL in 1 µL increment
Dispense accuracy	±1 µL or 2%
Dispense precision	<2% at 50-200 µL
Physical Characteristics	
Power	130 Watts max.
Dimensions	15.4"W 18.6"D 12.9"H (39.1 x 47.2 x 32.8 cm)
Weight	50 lbs (22.5 kg)
Regulatory	
Regulatory	CE and TUV marked. RoHS Compliant. Models for In Vitro Diagnostic use are available.