

Synergy™ H1 Hybrid Multi-Mode Microplate Reader

Synergy™ H1 is a flexible monochromator-based multi-mode microplate reader that can be turned into a high-performance Hybrid System with the addition of a filter-based optical module. The monochromator optics use a third generation quadruple grating design that works 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. 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 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 environment for live-cell assays, the new Gas Controller for Synergy H1 allows control and monitoring of CO₂ and O₂ levels within the Synergy H1. The Gas Controller (pictured below), along with user-adjustable orbital shaking and advanced 4-Zone™ temperature control make up the CellControl™ feature set available for the Synergy H1 readers.



Features:

- Patented Hybrid Technology™ combines flexible monochromator detection with high performance dichroic-based filter detection
- Gas Controller for CO₂/O₂ or CO₂ only control and monitoring
- Compatible with Take3™ Micro-Volume Plates: 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™ Data Analysis Software: reader control, advanced data analysis and flexible Excel export in one software package



Scan with your smart phone to watch the video.



Quadruple grating monochromator system: Ease of use and flexibility.



Easy-to-use filter system with magnetic filter cubes that can be swapped in a matter of seconds.

Configurations:

- H1M: Monochromator-based
- H1F: Filter-based
- H1MF: Hybrid

Gas Controller compatible configurations:

- H1MG: Monochromator-based
- H1FG: Filter-based
- H1MFG: Hybrid

Dual reagent dispenser option available with all configurations.

Optional Accessories:

- Take3™ Micro-Volume Plate
- BioStack™: 30 or 50 plate stacker
- Gen5™ Secure for 21 CFR part 11 compliance
- Product Qualification Package
- Luminescence, Fluorescence and Absorbance Test Plates

Typical Applications:

- Nucleic acid quantification
- Protein quantification
- Enzyme kinetics
- Biomarker quantification
- ELISAs
- Genetic analysis
- Drug discovery
- Cell proliferation
- Cytotoxicity
- Drug absorption and metabolism
- Biologics drug discovery and development
- Food safety
- Biofuels research
- Environmental monitoring

Hybrid Technology™ is protected under US Patent 8,218,141.



BioTek Instruments, Inc.
Highland Park, P.O. Box 998
Winooski, Vermont 05404-0998, USA

Phone: 802-655-4040 • Toll-Free: 888-451-5171
Outside the USA: 802-655-4740
www.biotek.com

Specifications:

General

Wavelength selection: Patented Hybrid Technology™ Quadruple Monochromators and Filters/Dichroics
 Detection method: Monochromator system: FL, Lum., UV-Vis Abs.
 Filter system: FL, TRF, FP, Lum.
 Read method: End point, kinetic, spectral scanning, well area scanning
 Microplate types: 1- to 384-well plates
 Compatible with Take3™ Micro-Volume Plate
 Temperature control: To 45 °C; ±0.2 °C at 37 °C
 Shaking: Yes
 Software: Gen5™ Data Analysis Software
 Automation: Compatible with BioStack™ and 3rd party automation
 CO₂ and O₂ control: 0 – 20% CO₂ control and 1 – 19% O₂ control, with optional Gas Controller

Absorbance

Light source: Xenon flash lamp
 Wavelength selection: Monochromator
 Wavelength range: 230 – 999 nm, 1 nm increment
 Bandpass: 4 nm (230 – 285 nm), 8 nm (>285 nm)
 Dynamic range: 0 – 4.0 OD
 Resolution: 0.0001 OD
 Pathlength correction: Yes
 OD accuracy: <1 % at 2.0 OD
 <3% at 3.0 OD
 OD repeatability: <0.5 % at 2.0 OD
 Reading speed: 96 wells: 11 seconds
 384 wells: 22 seconds

Fluorescence Intensity

Sensitivity: Monochromators:
 Top: Fluorescein 2.5 pM (0.25 fmol/well 384-well plate)
 Bottom: Fluorescein 4 pM (0.4 fmol/well 384-well plate)
Filters/mirrors:
 Fluorescein 0.25 pM (0.025 fmol/well 384-well plate)
 Light source: Xenon flash lamp
 Wavelength selection: Double grating monochromators (Top and Bottom) and Deep blocking bandpass filters/dichroic mirrors (Top)
 Wavelength range: Monochromators: 250 – 700 nm
 Filters: 200 – 700 nm (850 nm option)
 Dynamic range: 5 decades
 Detection system: Two PMT detectors: one for monochromator system, one for filter system

Luminescence

Sensitivity: Monochromator system: 20 amol ATP (flash)
 Filter system: 10 amol ATP (flash)
 Wavelength range: 300 – 700 nm
 Dynamic range: >6 decades

Fluorescence Polarization

Sensitivity: 1.2 mP standard deviation at 1 nM fluorescein
 Wavelength range: 320 – 700 nm (850 nm option)

Time-Resolved Fluorescence

Light source: Xenon flash lamp
 Sensitivity: Europium 40 fM with filters (4 amol/well in 384-well plate)
 Europium 1200 fM with monos (120 amol/well in 384-well plate)
 Wavelength range: Monochromators: 250 – 850 nm
 Filters: 200 – 700 nm (850 nm option)

Reagent Dispensers

Dispense precision: <2% at 50 – 200 µL
 Dispense accuracy: ±1 µL or 2%
 Number: 2 syringe pumps
 Plate geometry: 1- to 384-well microplates
 Dispense volume: 5 – 1000 µL in 1 µL increment
 Minimum prime volume: 1 mL, 100 µL with back flush

Physical Characteristics

Power: 100 – 240 Volts AC. 50/60 Hz
 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

For In Vitro Diagnostic use. CE and TUV marked, RoHS compliant.

Performance values represent the average observed factory test values.

*Specifications subject to change.

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