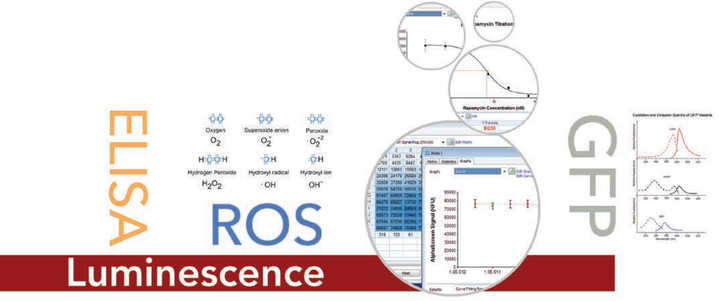
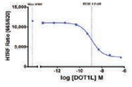


Fluorescence Polarization Assay



Life science laboratories around the globe have their own unique requirements for instrumentation, and there's no "one size fits all" instrument to suit every application. However, BioTek's high quality instruments offer the best sensitivity, fastest speeds, low maintenance costs and simple, yet amazingly powerful software. Our broad range of configurable, upgradable multi-mode microplate readers are able to meet the diverse detection needs of a very wide range of applications. To support these applications, BioTek has a huge (>2,000 articles!) searchable library of technical resources that can be viewed on our website, including Application Notes & Guides, White Papers, Presentations and Journal Citations. In addition, our expert scientific staff and highly skilled Technical Assistance Center engineers are available to help facilitate your important time sensitive research.

BioTek Hybrid Multi-Mode and Multi-Mode Readers are used in many applications:

- High throughput screening
- Drug absorption and metabolism
- Drug discovery and development
- Small molecule inhibitors
- Cell proliferation
- Cytotoxicity
- Drug targeting
- Biomarker quantification
- Genetic analysis
- Environmental testing
- Food safety
- Nucleic acid quantification
- Rapid kinetics
- FRET
- TR-FRET
- HTRF
- Cytokines
- Fluorescence polarization
- AlphaPlex
- AlphaScreen
- SNP

"Alpha" refers to products/technologies from PerkinElmer, Inc., that carry trademarks or registered trademarks.

Instrument comparison

	Synergy Neo2	Cytation	Synergy H1	Synergy 2	Synergy HTX
Key Features					
Monochromator-based:					
UV-Vis absorbance	•	•	•	•	•
Fluorescence	•	•	•		
Filter-based:					
Fluorescence	•	•	•	•	•
Top/bottom fluorescence	•	•	•	•	•
Luminescence	•	•	•	•	•
Laser-based Alpha excitation	•	•			
Standard Alpha excitation				•	•
TRF & TR-FRET	•	•	•	•	(2° mode)
Fluorescence Polarization	•	•	•	•	
Automation/BioStack compatible	•	•	•	•	•
Dual reagent injector compatible	•	•	•	•	•
Dual PMT Read Head	•				
Performance Specifications					
Fluorescein - top	monos: 2 pM filters: 0.2 pM	monos: 2.5 pM filters: 0.25 pM	monos: 2.5 pM filters: 0.25 pM	1 pM	5 pM
Fluorescein - bottom	1 pM (filters)	4 pM (monos)	4 pM (monos)	5 pM	5 pM
ATP - Flash luminescence	5 amol	10 amol	10 amol	10 amol	30 amol/10 amol (lum-only model)
Polarization - 1 nM fluorescein	1 mP	1.2 mP std dev	1.2 mP std dev	3 mP	n/a
Europium	40 fM	40 fM (filters)	40 fM (filters)	60 fM	n/a
AlphaScreen	100 amol	100 amol	n/a	100 amol	300 amol
Fastest read speed 96-/384-/1536-well plates	6/11	11/22	11/22	11/22	14/26
General Specifications					
Microplate types	1 to 1536	1 to 384	1 to 384	1 to 1536	6 to 384
Gas Controller compatible	•	•	•		
Barcode reader option	•				
Take3™ Plate compatible	•	•	•	•	•
Incubation	to 65 °C	to 65°C	to 45°C	to 65°C	to 50°C
Condensation Control™	•	•	•		•
Fluorescence bandwidth	mono: variable; 3 nm to 50 nm filter: dependent	mono: variable; 9 nm to 50 nm filter: dependent	mono: 16 nm filter: dependent	filter dependent	filter dependent
Upgradable to add imaging		•			
BioSpa™ 8 compatible	•	•	•		

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MULTI-MODE | readers

BioTek Multi-Mode Detection. A Solution for Everyone.

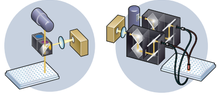
Think Possible
BioTek®

BioTek's Multi-Mode Microplate Reading Technologies

Patented Hybrid Technology™

BioTek's patented Hybrid Technology combines filter-based and monochromator-based optics to provide excellent sensitivity and application flexibility. Each optical system is completely independent, without shared components, so there is never a compromise in performance in any mode. Multiple configurations and upgradability are key features designed to meet every laboratory's workflow and budget requirements today and in the future.

Benefits of Hybrid Technology include:

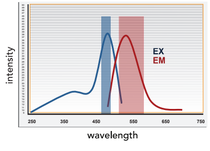


- Uncompromised performance in all detection modes
- Convenient, flexible wavelength selection
- Spectral scanning capability
- Fast wavelength switching for ratiometric assays

Variable Bandwidth Monochromators

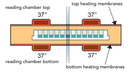
BioTek has incorporated variable bandwidth monochromators in some Hybrid multi-mode readers, to provide more assay flexibility and fluorescent dye specificity by allowing the user more control of available energy. An aperture incorporated into the excitation and emission monochromator optics allows the user to select bandwidths from 3 nm to 50 nm, in 1 nm increments, to optimize detection conditions for a wide range of fluorophores.

Benefits of variable bandwidth monochromators:

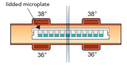


- Assay flexibility, fluorescent dye specificity
- User control of available light energy
- Optimize conditions for fluorophores with small Stokes shifts

4-Zone™ Incubation and Condensation Control™



Consistent temperature control is essential for many assays. BioTek's unique 4-Zone incubation design relies on natural convection rather than forced hot air to heat the reading chamber, so edge effect and evaporation are minimized. Four heaters and thermistors are independently controlled to accurately maintain temperature in the reading chamber.



Condensation Control, available in some BioTek multi-mode readers, allows the user to set a slightly higher temperature in the top heaters than the bottom heaters. This temperature gradient minimizes condensation in lidded plates, providing more consistent results for incubated assays, including long term kinetics.

Benefits of 4-Zone Incubation and Condensation Control include:

- Even, consistent heating with minimal variation across the plate
- Minimized evaporation and edge effects
- Minimized condensation with lidded plates
- Simple temperature control settings through Gen5™ software

Hybrid Technology™ is protected under US Patent 8,128,141.

Hybrid Multi-Mode Readers

SYNERGY|NEO2 multi-mode reader

Synergy™ Neo2 Multi-Mode Microplate Reader is BioTek's fastest, highest performance reader, with up to 4 PMTs for ultra-fast ratiometric measurements for assays like FP, FRET and TR-FRET.

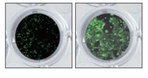
Along with all the features of our Hybrid readers, Synergy Neo2 features:

- Continuously variable bandwidth quad-monochromators
  - 3 to 50 nm, in 1 nm increments
- Laser-based excitation for Alpha assays
- Live cell assay optimization with incubation, shaking and CO_2/O_2 control
- Dedicated BioStack for fast, efficient walk-away automation
- Direct bottom illumination: excellent sensitivity for cell-based assays
- Compatible with BioSpa™ 8 Automated Incubator for workflow automation

CYTATION|Multi-Mode Readers

Cytation™ is truly unique among multi-mode readers: it includes BioTek's Hybrid Technology™, and it is configurable to add a digital microscopy module for cell-based imaging. The combination of multi-mode and microscopy enables the collection of both quantitative and phenotypic cell data in a single instrument – a powerful, valuable combination for many laboratories.

Features and options of Cytation include:



- Variable bandwidth monochromators for fluorescence
- Laser-based excitation module for Alpha detection
- Live cell assay optimization with incubation, shaking and CO_2/O_2 control
- Dual reagent injectors
- Versatile configurations, plus upgradability for future needs
- Compatible with BioSpa 8 Automated Incubator for workflow automation

SYNERGY|H1 microplate reader

When workflows require robust performance and economical modularity, the Synergy™ H1 is a great solution. Synergy H1 supports advanced detection modes such as fluorescence polarization, TRF and TR-FRET, plus 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.

Synergy H1 features include:

- Fluorescence, TRF, FP and luminescence modes
- UV-Vis absorbance from 200 nm to 999 nm
- 1- to 384-well plate reading
- Economical modularity
- Compatible with BioSpa 8 Automated Incubator for workflow automation

Multi-Mode Readers

Multi-Mode microplate readers offer flexibility and ease of use over a broad range of applications. Configurability is an important aspect of BioTek's multi-mode readers to provide the most value for laboratory budgets, but the independent optical systems in our multi-mode readers don't compromise on performance. Synergy 2 and Synergy HTX offer features and outstanding specifications for performance and economy, including:

- UV-Vis absorbance from 200 nm to 999 nm in 1 nm increments
- High blocking bandpass filters for fluorescence
- Alpha assay compatibility
- 4-Zone™ temperature control and variable shaking
- Take3™ Micro-Volume plate compatibility
- Dual reagent injector compatibility
- BioStack and third party automation compatibility
- Excellent performance in all modes
- Gen5™ Data Analysis Software: available Gen5 Secure for 21 CFR Part 11 compliance

SYNERGY|2 microplate reader

Synergy™ 2 offers additional functionality for the life science research and drug discovery laboratory. Its fluorescence detection system uses deep blocking filters and dichroic mirrors for the best level of performance in research and screening applications.

Synergy 2 features include:

- Three independent light sources, tungsten halogen, xenon flash and high energy xenon flash lamps for optimal illumination and excitation across all applications
- Fast, 11 second reading speed for 96 wells
- Excellent sensitivity for fluorescence, luminescence and Alpha assays

SYNERGY|HTX multi-mode reader

Synergy™ HTX Multi-Mode Microplate Reader is BioTek's most affordable system for 6- to 384-well microplates and Take3 Micro-Volume plates, automating absorbance, fluorescence, luminescence and AlphaScreen®/ AlphaLISA® measurements with excellent performance in all detection modes using a unique dual-optics design.

Synergy HTX features include:

- Cell friendly orbital shaking
- Incubation to 50 °C with Condensation Control
- Affordable upgradability
- Cold room (4 °C or 10 °C) compatibility