Multiplelabs™
Turnkey Laboratories Solutions

Analytical®
Technologies Limited

High performance Microplate Reader

MRS-3201

EPC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

Triple technology

This is a micro plate multi-mode, high-performance microplate reader with a revolutionary new type of dual monochromator technology. The advanced LVF MonochromatorsTM, along with filters and a spectrometer, can be used for a variety of applications in the different detection modes.

The following three detection technologies guarantee that the ATL Ltd does not compromise on sensitivity or flexibility

- LVF Monochromators offer the best flexibility
- Spectrometer provides the fastest spectra
- Filters ensure the greatest sensitivity

Modular, upgradable microplate reader

The ATL is a modular, upgradable microplate reader that can fit the current and future needs of all laboratories and core facilities. It performs all of the leading non-isotopic detection technologies, including:

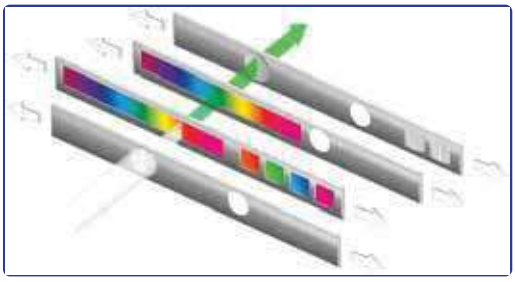
Modular, upgradable microplate reader

- UV/Vis Absorbance
- Fluorescence Intensity, including FRET
- Fluorescence Polarization/Anisotropy
- Time-Resolved Fluorescence, including TR-FRET
- AlphaScreen® / AlphaLISA® / AlphaPlexTM
- Luminescence (flash and glow), including BRET

A linear variable long pass filter slide (shown) is one of many specialized components that make up the ATL's sophisticated LVF Monochromator system.

LVF MonochromatorTM technology

With the ATL, introduces a revolutionary new type of dual monochromator technology for fluorescence and luminescence measurements. The LVF Monochromators are based on Linear Variable Filters, which have variable coatings along their lengths that can reject or pass certain wavelengths of light. A linear variable filter consists of two slides, a linear variable long pass and a linear variable short pass, that when properly aligned separate light into distinct wavelengths and continuously adjustable bandwidths



The ATL contains two LVF Monochromators, one for excitation and one for emission. In addition, a Linear Variable Dichroic mirror (340 - 740 nm) separates the two LVF Monochromators.

Greater sensitivity

Since LVF Monochromators separate light differently than conventional monochromators, they provide significantly higher sensitivity for several reasons.

No stray light	The LVF Monochromator design avoids stray light that occurs with conventional monochromators. Avoiding stray light decreases the background signal and significantly increases sensitivity.
More light with adjustable bandwidths up to 100 nm	The LVF Monochromators have unique continuously adjustable bandwidths from 8 to 100 nm. Larger bandwidths allow more light for excitation and emission, which means greater sensitivity.
Less background signal with a Linear Variable Dichroic	The Linear Variable Dichroic mirror separates the excitation from the emission light. This greatly reduces the background signal.

Greater flexibility

Top and bottom reading for fluorescence and luminescence assays can be done with monochromators or filters. The MRS-3201 inline optical system can also combine a mono chromator with a filter. For instance, an excitation filter can be used with the emission LVF Monochromator. This gives the ATL unsurpassed flexibility for your research.

Superior spectral scanning

Spectral scanning is possible in both fluorescence and luminescence modes with the LVF Monochromators. Whether developing an assay with a new fluorophore or modifying an assay with an existing one, it is important to verify the optimal peaks and bandwidths for excitation and emission with spectral scanning in order to obtain the best results.

Dynamic luminescence detection

Luminescence assays such as flash, glow, dual glow, and BRET are some of the most commonly measured assays on a microplate reader. With the MRS-3201 high performance luminescence mode and nine log dynamic range, there is no compromise in luminescence assay performance. Additionally, the LVF Monochromator or filters can be used for luminescence measurements. The LVF Monochromator with adjustable bandwidths up to 100 nm is sensitive enough to read dual color luminescence signals at concentrations not possible with conventional monochromators.

Exceptional performance in FP, TR-FRET, and AlphaScreen®

For fluorescence polarization (FP), time-resolved fluorescence (TRF and TR-FRET), and AlphaScreen® / AlphaLISA® assays, the ATL uses specialized components that guarantee exceptional performance without compromise in these assays.

Fluorescence Polarization

The unique optical design and instant polarizer switching on the ATL provides the smallest mP standard deviation in fluorescence polarization assays, making the ATL the world's best FP reader.

TR-FRET including HTRF®

The ATL has been certified to measure HTRF® assays in black and white microplates. The ability to use black microplates, which most readers cannot use, guarantees that the ATL never compromises on any HTRF® assay.

AlphaScreen® / AlphaLISA® / AlphaPlexTM

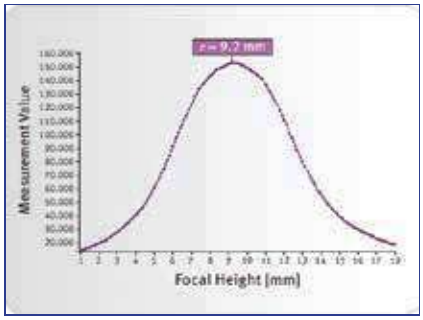
A dedicated laser and specialized optics ensure the best performance for Alpha Technology on the ATL with respect to speed, assay window, and sensitivity.

Integrated fluorophore library

To greatly simplify and improve assay setup, a library of spectra for the most common fluorophores and lumiphores is integrated into the MRS-3201 filter visualization tool. Users can measure assays with the recommended settings, or simply “Drag & Drop” new settings for wavelengths and bandwidths.

Ultra-fast UV/Vis absorbance spectra

For ultra-fast, full spectrum absorbance measurements, the ATL employs a spectrometer. This technology can capture a full UV / Vis absorbance spectrum (220 to 1000 nm) at selectable resolutions (1 to 10 nm) in less than 1 second per well. Fast, full spectrum absorbance will improve all colorimetric assays. Furthermore, users can capture up to eight discrete wavelengths simultaneously in a single measurement with no wavelength switching.



Focal height adjustment

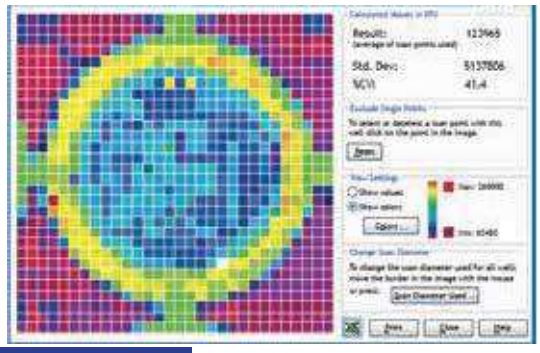
The ATL incorporates automated focal height adjustment for both top and bottom reading at a resolution of 0.1 mm. The optical system directs the excitation light to a small focal point in the center of the well, giving excellent sensitivity in all plate formats up to 1536 wells.This feature eliminates the influence of microplate formats, sample volumes, surface tension, andevaporation. The automated focal height adjustmentensures the best signal-to-noise ratio for every plate,every volume, and every application.

Cell-based assays

The ATL has several key features that improve cell-based applications, including: Advanced

Advanced cell layer scanning	allows multiple points to be measured in each well. The software displays each scan point grapically creating a map for eac well. This is the perfect feature for adherent cells that are not distributed evenly in the well.

Direct optic bottom reading	is an innovative design using lenses and mirrors to direct light to the microplate bottom, thereby eliminating the use of inefficient fiber optics. This feature significantly improves fluorescent protein detection in cell-based assays.
On-board reagent injectors	deliver precise volumes to stimulate cell-based assays or to initiate kinetic and enzymatic reactions. Delivery volumes are adjustable for each well, allowing users to automatically produce dilution schemes and gradients across the microplate.
The Atmospheric Control Unit (ACU)	is a module for independent control of both O2 and CO2 within the microplate chamber. The ACU is able to regulate O2 from 0.1 - 20 % and CO2 from 0.1 - 20 %. Applications include: Hypoxia. Migration and Invasion Studies. Proliferation and Cell Viability. Intracellular pH. Bacterial Growth Studies. Angiogenesis. Viral Uptake. Ischemia/Reperfusion, and more.



Specifications for Atmospheric Control Unit		
O2 Control	Range	0.1 – 20 %
	Control	± 0.1 %
	Sensor	Low drift, long lifetime
CO2 Control	Range	0.1 – 20 %
	Control	± 0.1 %
	Sensor	Low drift, long lifetime

Microplate Stacker and automation

The ATL has been certified to measure HTRF® assays in black and white micro

plates. The ability to use black microplates, which most readers cannot use, guarantees that the ATL never compromises on any HTRF® assay.

For higher throughput, the CLARIOstar's small footprint and integrated software allow it to be easily automated with all of the leading robotic platforms.

Control and MARS data analysis software

Analytical well-established Control Software runs the ATL microplate reader, while data are analyzed with the MARS Data Analysis Software. Both softwares are fully compliant with FDA regulation 21 CFR Part 11 and can be used on multiple PC systems at no extra cost.

Colour-code visualization of HDAC proof-of-concept screening results achieved by setting limits in the MARS software.

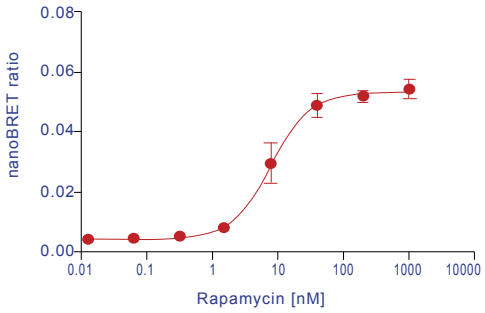
The Control Software allows users to easily define instrument parameters and protocols. With the new upgradable fluorophore library of spectra, users can easily and precisely optimize the ATL for the fluorophore or lumiphore in their assay. MARS Data Analysis Software allows users to quickly view and analyze data. MARS is able to perform a variety of simple and diverse mathematical calculations. Features include:

- Averaging, blanking, %CVs, and other statistics
- Standard curve fits, e.g. linear and segmental
- regression, 4- and 5-parameter, exponential
- Enzyme kinetics like Vmax or Km from Michaelis-
- Menten, Lineweaver-Burk, or Scatchard Plots
- Predefined templates automatically perform
- assay-specific calculations
- Equation generator for unique calculations
- S:N, S:B, and Z' factor calculations

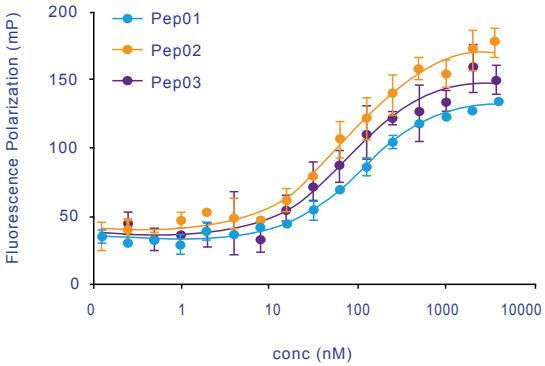
Applications center

perfectly engineered instrument is only part of the solution, it needs to effectively perform all of the leading applications. With the ATL, Analytical offers a sensitive and flexible instrument that supports all existing and future applications, including:

- DNA, RNA, and protein quantification
- Cell based assays
- Enzyme activity and kinetic assays
- Genotyping
- Reporter gene assays
- Protein-protein interactions
- Molecular binding assays
- And much more ...



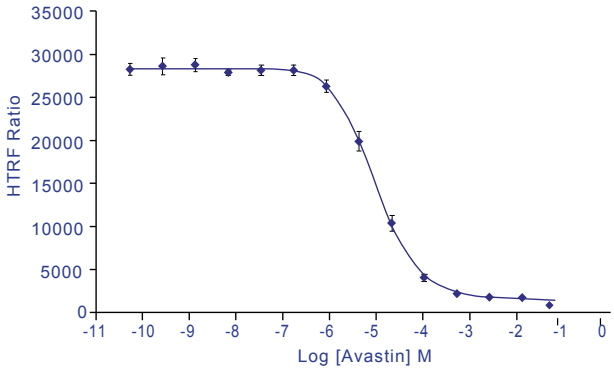
Rapamycin-induced protein dimerization assay between FKBP and FRB monitored by nanoBRET



Direct binding assay for LC1 and H3-derived peptides. In blue (pep01) H3 tail, 21 aa, methyl-Lys. In orange (pep02) H3 tail, 21 aa, K4M. In purple (pep03) SNAIL short peptide, 12 aa. Different amplitudes in the curves might be due to different protein-ligand conformations in solution

Analytical continuously works with all of the leading reagent companies to optimize settings for their assays. Visit Analytical Applications Centeronline to find references to all applications, listed as:

- Application notes
- Application focus
- Peer-reviewed papers



Our comprehensive searchable applications database reflects more than 25 years of expertise and innovations. Over 4000 published entries of peer-reviewed articles, and application notes demonstrate the flexibility and versatility of our readers, and their use in chemical and biological sciences.

Support and training

Analytical operates globally through an extensive network of subsidiaries and trained distributors. Customers can rely on Ph.D. level support and assistance with regard to software, assay development, or general enquiries related to the ATL and all other Analytical microplate reading solutions.

Technical specifications

Due to the modularity of the ATL, all or a combination of the features can be installed at purchase. Most features can be upgraded at a later date. Please contact your local representative for more details or a quote.

Direct optic bottom reading	Fluorescence Intensity - including FRET
	Luminescence (flash and glow) - including BRET
	UV/Vis Absorbance
	Fluorescence Polarization / Anisotropy
	Time-Resolved Fluorescence - including TR-FRET
	AlphaScreen® / AlphaLISA® / AlphaPlexTM

Measurement modes	Top and Bottom reading
	Endpoint and Kinetic measurements
	Spectral Scanning (Fluorescence, Luminescence and Absorbance)
	Well Scanning
Top and Bottom reading	6- to 1536-well plates, LVis Plate with 16 microspots (2 mL)
Light sources	High energy xenon flash lamp Dedicated laser for AlphaScreen® / AlphaLISA®/AlphaPlexTM
Light sources	High energy xenon flash lamp Dedicated laser for AlphaScreen® / AlphaLISA®/AlphaPlexTM
Detectors	Low noise Photomultiplier Tube (PMT) UV/Vis Absorbance Spectrometer
Dual LVF MonochromatorTM	Fluorescence, Luminescence: Top and Bottom
	Fluorescence Excitation / Emission Spectral Scanning
	Luminescence Emission Spectral Scanning
	Spectral Range: 320 - 850 nm (selectable increments from 0.1 to 10 nm)
	Software Selectable Bandwidths: 8 - 100 nm
Linear Variable Dichroic Mirror	Spectral Range: 340 - 740 nm (selectable increments of 0.1 nm)
UV/Vis absorbance spectrometer	Spectral Scanning or up to 8 discrete wavelengths in less than 1 sec / well
	Spectral Range: 220 - 1000 nm (selectable increments from 1 to 10 nm)
	Bandwidth: 3 nm
Optical filters	Top and Bottom for all detection modes, except absorbance
	Up to 4 excitation filters, 4 emission filters, and 3 dichroic mirrors
	Spectral Range: 240 - 900 nm
Sensitivity	
FI LVF Monochromator	Top: < 0.35 pM fluorescein, 384sv, 20 mL (< 7 amol/well)
	Bottom: < 3.0 pM fluorescein, 384, 50 mL (< 150 amol/well)
FI LVF Monochromator	Top: < 0.15 pM fluorescein, 384sv, 20 mL (< 3 amol/well)
	Bottom: < 1.0 pM fluorescein, 384, 50 mL (< 50 amol/well)
FP	< 0.5 mP SD at 1 nM fluorescein, 384sv, 20 mL
TRF	< 20 fM europium, 384, 80 µL

HTRF®	HTRF® certified for black and white microplates
	Reader Control Kit (Eu) after 18h incubation, 384sv, 20 mL
	> 880 % Delta F for High Calibrator
	> 30 % Delta F for Low Calibrator
	< 2.0 % CV for Standard 0
LUM	< 0.4 pM ATP, 384sv, 20 µL (< 8 amol/well)
	Dynamic Range: 9 decades
AlphaScreen®	< 100 amol/well P-Tyr100 (384sv, 20 mL)
ABS with Spectrometer	Accuracy: < 1% at 2 OD
	Precision: < 0.5% at 1 OD and < 0.8% at 2 OD
	Dynamic Range: 0 - 4 OD
Read timest	1 flash: 8 s (96) 15 s (384) 28 s (1536)
	10 flashes: 19s (96) 57 s (384) 184 s (1536)
Reagent injection	Up to 2 built-in reagent injectors with reagent back flushing
	Individual injection volumes for each well 3 to 500 µL (optional up to 2 mL)
	Variable injection speed up to 420 µL/s
Shaking	Linear, orbital, and double-orbital with user-definable time and speed
Incubation	+3°C above ambient to 45°C (65°C optional)
Software	Integrated fluorophore library
	Multi-user software package including Reader Control and
	Multi-user software package including Reader Control and
Dimensions	Width: 45 cm, depth: 51 cm, height: 40 cm; weight: 32 kg
Accessories	
ACU	Actively regulates O2 and CO2: 0.1 - 20%
LVis Plate	Measure 16 low-volume samples (2 mL) and QC standards
Stacker	Magazines for up to 50 plates - continuous loading feature

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Regulatory compliances

Corporate Social Responsibility

Analytical Foundation

Analytical Foundation is a Nonprofit Organization (NGO) found for the purpose of:

1.Research & Innovation Scientist's awards / QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personallities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops / Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXIFY human minds, souls and body by means of Yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

Reach us @

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