



premium
quad4
monochromators™



Infinite® M1000 – top class performance with premium Quad4 Monochromators™

Outstanding flexibility, sensitivity and speed for demanding applications in drug discovery, life sciences and research



Infinite M1000

The flagship multimode microplate reader

Premium quality and performance

The Infinite M1000 is Tecan's new, high-end monochromator-based detection system. It has been specifically designed and built with the highest quality components and detection modules to ensure optimum performance, robustness and innovation for even the most demanding researchers in drug discovery, the life science industry and advanced research institutions, who continuously push the limits of today's detection assays. The Infinite M1000 joins the Infinite 200 and Infinite 500 series of detection systems and its new technology makes it the successor to Tecan's high performance Safire²™ microplate reader. Its power and versatility, combined with Tecan's expertise as a market leader in lab automation, will prepare you for all your future findings.

Versatility, sensitivity and speed in drug discovery

The Infinite M1000 provides for different microplate detection needs throughout the various stages of drug discovery, from target discovery and validation to pre-clinical research. The new platform gives excellent flexibility through its next-generation premium Quad4 Monochromators, which allow the freedom of wavelength selection but also provide sensitivity and speed comparable to that of filter-based systems, in one compact unit. The Infinite M1000 provides a series of high performance features to bridge the gap between assay development and screening, so that you can save costly re-evaluations when an assay is transferred from assay development to screening. It is ideal for researchers in the pharmaceutical and biotechnology industries, as well as for their service providers.

The Infinite M1000 supports a broad range of microplate-based detection assays, including the latest biomolecular assays for primary and secondary screening; enzymatic assays including kinase and protease assays; G protein-coupled receptor assays; receptor-ligand binding studies and other molecular interaction assays; cell-based assays; DNA/RNA quantification; and applications based on UV fluorometry.

Enhancing the life science industry and academic research

Reagent-providing companies in the life science industry continuously develop innovative research kits to meet the demands of the academic, biotech and pharmaceutical communities. The high performance Infinite M1000 provides superior flexibility and sensitivity for the definition, fine-tuning and validation of the wide range of assays and reagents used today and in the future.

The research community places the greatest demands on microplate-based assays and readers, typically requiring instrumentation that covers a broad range of biological disciplines, from basic research and applied biomedical research, to providing biopharmaceutical research services. Typically, several researchers with varying needs share the same microplate reader, and the Infinite M1000's modular design and upgrade options for new detection modules, hardware and software make it ideal for such institutes. It provides infinite flexibility for configuring the instrument to today's needs, and to grow with future applications and demands.

Bridging the gap between assay development and high throughput screening

- **'Therapeutic areas'** – target discovery/target validation applications.
- **Assay development** – fine tuning, miniaturization, multilabeling.
- **Screening groups** – primary/secondary screening.
- **Hits-to-leads** – lead optimization.
- **Compound profiling.**
- **Leads-to-candidates** – ADME/TOX, pre-clinical research.

The ultimate choice for flexibility, sensitivity and speed

High performance features

- **Premium Quad4 Monochromators**
 - **Flexible wavelength selection** – from UV to NIR with high accuracy.
 - **Adjustable bandwidth settings (patented)** – for fine adjustments towards the fluorophore.
 - **High sensitivity** premium Quad4 Monochromators technology – reduces stray light down to 2×10^{-7} .
 - **High speed recording** – for excitation, emission and absorbance spectra in the fast scanning mode.
 - **Rapid 3D scanning** – enables characterization of unknown samples.
- **Z-focusing** in all top reading modes – significantly improves the quality of your data measurements and makes it easy to optimize the set-up for demanding assay parameters (eg. low volumes; different well shapes).
- **Fast ratiometric measurements** – immediate changes in wavelength in FRET assays and change of polarization direction within one millisecond for FP measurements.
- **On-board control buttons** – for instant start/stop control of your pre-programmed measurement workflows at the touch of a button, avoiding the need to go back to your PC in between workflows.
- **New luminescence module** – provides access to single and dual color luminescence measurements, glow and flash luminescence with three fibers adapted for 96-well, 384-well and 1536-well plates.
- **Optional injectors** – with variable syringe size, volume and speed settings.
- **New i-control™ software** – for convenient workflow-oriented reader control.



The premium Quad4 Monochromators technology

- Reduces stray light down to 2×10^{-7}
- Improves spectral blocking
- Brings more light onto the sample and the detector
- Includes a flash lamp with 2 x more power

Flexibility

The Infinite M1000 contains Tecan's premium Quad4 Monochromators that provide optimal flexibility, allowing you to select any wavelength – from UV to NIR – and to perform high speed excitation and emission scans. The 3D scanning feature enables characterization of unknown samples, and the bandwidth adjustment optimizes the system for the fluorophore, and provides superior flexibility and convenience without the need to exchange filters. In fluorescence you can select variable 'frequency modes' (patented) to choose between 'high sensitivity' and 'high speed' operation. The platform can read a variety of microplate formats in top- or bottom-reading modes, and allows free definition of plate formats up to 1536 wells; the optional injectors provide access to demanding assay formats.

Sensitivity

The premium Quad4 Monochromators system delivers high sensitivity by bringing more light into the system and the detector, and providing improved spectral blocking. The Infinite M1000 includes an autofocus function that optimizes for plate height and assay volume, and an autogain feature to ensure that the entire dynamic range is always used. Bandwidth adjustments can be made to control the amount of light and bandwidth falling on to the fluorophore, without the need to exchange filters. The outstanding sensitivity level of the Infinite M1000 (see page 6) is comparable to that of filter-based instruments.

Speed

The Infinite M1000 provides high speed recording of excitation and emission spectra in the fast scanning mode and performs absorbance scans with four channels in parallel. By selecting 'on-the-fly' measurements, you can read a 1536-well plate at high speed (see page 6)! It also allows the ultra-fast change of polarization direction for FP measurements and its ratiometric measurement capabilities are a great tool for FRET-based assays.

Infinite M1000 – Modularity in four dimensions



Modularity

The Infinite M1000 serves a wide range of application needs and functions in a single, small-footprint system. The multimode microplate reader can be tailored for your needs in four different dimensions:

- state-of-the-art technology provides options for a wide range of detection modes
- in addition to the system's i-control software, you can use the latest version of Tecan's impressive Magellan software for powerful data reduction and analysis
- up to two fully integrated injectors can be added, with variable volume and speed settings
- a stacker for automated management of 50 microplates can be added, or you can integrate the Infinite M1000 with Tecan's Freedom EVO® workstations for fully automated approaches.

Injectors

The Infinite M1000 has an optional state-of-the-art injector module for up to two injectors for dispensing reagents, to replace a manual pipetting step or to trigger fast kinetic reactions in fluorescence, luminescence and absorbance modes. The injectors have variable syringe sizes in addition to variable volume and speed settings per syringe, and can be used in combination with the ratio mode to allow fast switching of wavelengths for a wide range of applications. The injector module can handle plate formats up to 384-well plates. If the injector is used in combination with absorbance, only one channel will be active.

Automation

The instrument can be easily combined with a stacker module for batch processing of up to 50 microplates. Alternatively, the Infinite M1000 can be fully integrated with an automated liquid handling workstation from Tecan's Freedom EVO series, for complete assay set-up and preparation as well as detection.

Potential options

	Multi-channel absorbance
	Fluorescence intensity top
	Fluorescence intensity bottom
	Fluorescence polarization
	Photon counting luminescence incl. 3 fibers optimized for 96-, 384- and 1536-well plates
	Injectors (up to two with variable syringe sizes and adjustable volume and speed settings)
	Stacker for up to 50 microplates
	Barcode left or right

Detection measurement modes

The Infinite M1000's modular design allows a wide range of potential detection measurement modes including absorbance, absorbance scanning, fluorescence intensity top, fluorescence intensity bottom, fluorescence intensity scans (excitation, emission, 3D), time-resolved fluorescence (TRF), fluorescence resonance energy transfer (FRET), time resolved fluorescence resonance energy transfer (TR-FRET), fluorescence polarization (FP), kinetics and luminescence (including glow-, flash- and dual-color luminescence) assays. The Infinite M1000 has been optimized for TR-FRET and luminescence based assays.

Infinite M1000

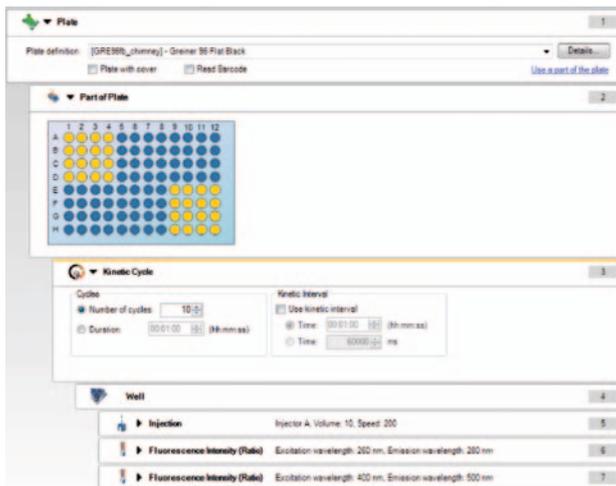
Application oriented software control

Infinite M1000 software options

The Infinite M1000 can be operated by two Tecan software packages – i-control and Magellan.

i-control

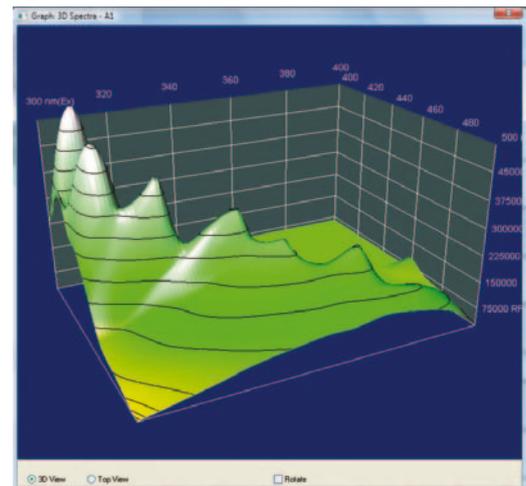
The system control software is part of the reader's standard equipment and comes complete with the instrument. The simple and flexible design of the user interface allows you to create application-oriented measurement scripts for whatever combination of processing steps you require. Data are exported to Windows®-compatible formats (Excel®).



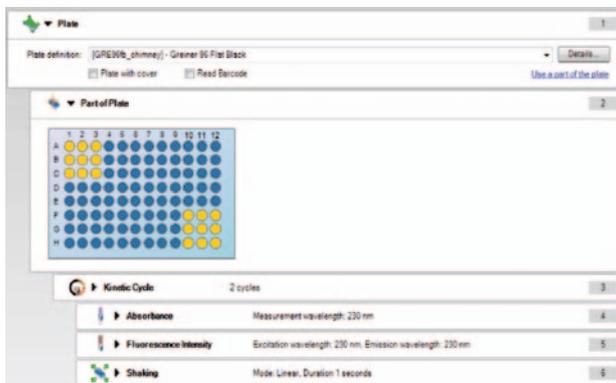
Example for ratiometric measurement in part of plate.

Magellan

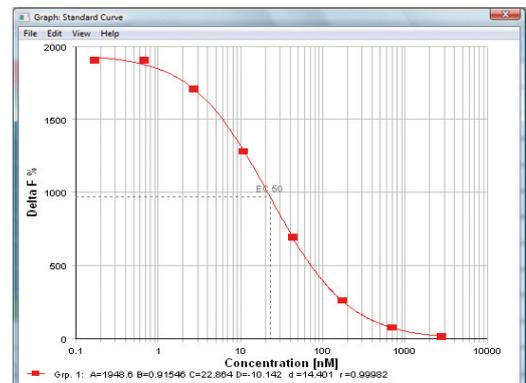
Tecan's universal data processing software offers powerful data analysis capabilities, excellent data presentation and outstanding graphical flexibility. The spectra calculation package includes background correction, curve smoothing, wavelength selection, peak identification and 3D scanning tools, making it the ideal accompaniment to the Infinite M1000. The wizard-guided user interface, convenient handling of dilution series, IC_x calculation, and automated data import and export simplify your processes. The software is also available as a version that helps to fulfil the requirements of the FDA regulation 21 CFR part 11.



3D scanning enables characterization of unknown samples.



Example for shaking in between a multilabeling kinetic.



EC₅₀ calculation example.

Infinite® M1000 – typical performance values

Flexibility	Wavelength/Bandwidth/Accuracy (fluorescence intensity)			
	Wavelength selection	Premium Quad4 Monochromators		
	Wavelength range	Excitation: 230 nm – 850 nm; Emission: 280 nm – 850 nm		
	Bandwidth	Adjustable ≤ 300 nm: 2.5 nm – 10 nm; > 300 nm: 5 nm – 20 nm		
	Wavelength accuracy	≤ 300 nm: ± 0.5 nm; > 300 nm: ± 1 nm		
	Wavelength precision	≤ 300 nm: ± 0.5 nm; > 300 nm: ± 1 nm		
	Wavelength/Bandwidth/Accuracy (absorbance)			
	Wavelength selection	Double monochromator		
	Wavelength range	230 nm – 1000 nm		
	Bandwidth	2.5 nm below 300 nm, 5 nm above		
	Wavelength accuracy	≤ 300 nm: ± 0.5 nm; > 300 nm: ± 1 nm		
	Wavelength precision	≤ 300 nm: ± 0.5 nm; > 300 nm: ± 1 nm		
	Measurement range	0 – 4 OD		
	Linearity	0 – 3 OD: R ² ≥ 0.999 @ 280 nm and 492 nm		
	Accuracy at 492 nm	1 OD: < ± 0.5 % and 0.006 OD		
Precision at 492 nm	1 OD: < ± 0.5 % and 0.006 OD			
Sensitivity	Fluorescence sensitivity values			
	Fluorescence top reading	25 amol / well (Greiner® 384-well low volume black plate; 10 µl)		
	Fluorescence bottom reading	0.6 fmol / well (Greiner 96-well SensoPlate™; 200 µl)		
	TRF	1.5 amol / well Europium (Greiner 384 well low volume white plate; 10 µl; 200 flashes)		
	FP 384-well plate	2 mP standard deviation @ 1 nM Fluorescein		
	Luminescence sensitivity values			
	Glow luminescence 384-well plate	225 amol / well (Greiner 384-well low volume white plate; 25 µl)		
	Flash luminescence 384-well plate	12 amol ATP / well (Greiner 384 well white plate; 55 µl)		
	Speed	Fastest read times – fixed wavelength (on the fly)		
			1536-well plate	384-well plate
Absorbance		19 sec	15 sec	11 sec
Fluorescence top		35 sec	24 sec	17 sec
Fluorescence bottom		36 sec	24 sec	19 sec
FP		100 sec	42 sec	22 sec
Fastest read times – scanning (450 nm – 550 nm, 5 nm step)				
Fluorescence top		96-well plate		
Absorbance		115 sec for spectra 35 sec for spectra		
Light sources				
Detectors				
High energy UV/VIS/NIR xenon flashlamp, light-emitting diodes				
Fluorescence – extended wavelength (UV and red sensitive), low dark current PMT				
Luminescence – photon counting low dark current PMT; 96-, 384-, 1536-well fibers				
Absorbance – UV Silicon photodiode, 4 channel parallel reading				
Miscellaneous				
Plate formats	6 – 1536-well plates			
Temperature control	Ambient + 4 °C to 42 °C			
Shaking	Linear, orbital, variable amplitude			
Options	Injectors	Pump speed 100 µl – 300 µl / sec ; syringe sizes 500 µl, 1000 µl or 2500 µl		
	Stacker	Up to 50 microplates		
	Barcode	Left or right		

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