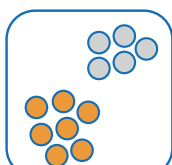
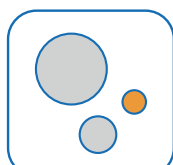


ZetaView®

Nanoparticle Tracking Analyzer



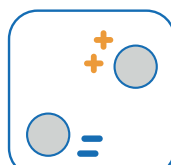
Subpopulations



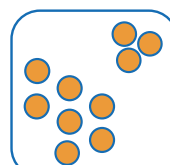
Size



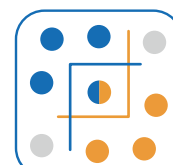
Fluorescence



Zeta Potential



Concentration



Colocalization



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ZetaView®

Nanoparticle Tracking Analyzer

ZetaView® is a nanoparticle tracking analysis (NTA) instrument for measuring hydrodynamic particle size, zeta potential, concentration and fluorescence.

Key Features & Benefits

- * **Scanning NTA** – automated measurements are taken at 11 positions through the sample cell, providing a thorough and robust interrogation of samples, without need for additional accessories.
- * **Fixed cell assembly design** – greatly enhanced performance and less susceptibility to errors.
- * **Auto-alignment & auto-focus** – the optical setup is automatically optimized by the software, saving the user time preparing the instrument for use and removing subjective user input bias.
- * **Fast measurements** – analysis of over 2,000 particles in as little as 60 seconds.
- * **Quick and simple cleaning** – cleaning between samples requires only a quick flush. The new fixed cell design allows very quick access to the measuring cell with a bayonet lock.
- * **Intuitive software** – traffic-light system gives an instant indication of whether the sample is at a suitable concentration for measurement and indicates the dilution factor of the sample.
- * **Compact all-in-one design** – measure size, concentration, zeta potential and fluorescence with one instrument. Compatible with the laboratory environment small footprint and data files.
- * **Fluorescence analysis** – fluorescence NTA measurements allow interrogation of subpopulations in the sample. A sensitive CMOS camera, up to 11 selective filters, and low bleaching performance yield high fluorescence sensitivity.
- * **No high-cost consumables** – just syringes and reference standards for scattering and fluorescence measurements (if applicable).
- * **No calibration** – size measurements do not need to be calibrated as the method is absolute.



The 10x objective of the ZetaView allows analysis of up to 600 particles in the field of view - yielding superior concentration results.

Key Applications

- **Bio-nanoparticles:**
 - Extracellular Vesicles (EVs)
 - Exosomes
 - Liposomes & Micelles
 - Protein Agglomerates
 - Viruses & Virus-Like-Particles (VLPs)
 - Drug Delivery
 - Fluorescent-labelled NPs
- **Low Concentration Samples:**
 - Nanobubbles
 - Nanometals
 - Trace Particles
 - Quantum Dots

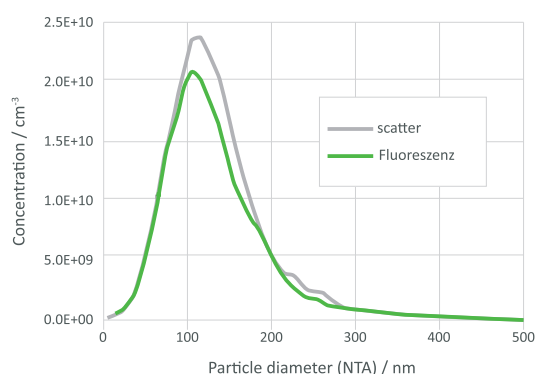


ZetaView and Fluorescence (F-NTA)

With NTA, particles are viewed by detection of the light they scatter. Due to the physical nature of this detection method, a chemical discrimination is not provided. In order to add specificity to particle characterization, fluorescent Nanoparticle Tracking Analysis (F-NTA) can be employed.

Nanoparticles such as biological vesicles can be labelled with a specific antibody bearing a fluorescent molecule (fluorophore). ZetaView® has a LWP filter option to block scattered light from the laser, allowing through only fluorescence of a longer wavelength, generated by excitation of the fluorophores by the laser. As a result, only the fluorescent-labelled particles will be detected and measured by the camera.

Example - Characterization of EVs using F-NTA



In this example, lyophilized EVs were stained with the membrane dye Cell Mask™ Green and then characterized in both scatter and fluorescence mode. In fluorescence mode, the laser excitation light is blocked, allowing only fluorescent emission light from the stained EV to be detected. Therefore, only the fluorescently labelled EVs appear. As ZetaView® measures both scatter and fluorescence signal, the proportion of successfully stained particles can be easily calculated.

The ZetaView® is now available as a two laser TWIN and a four laser QUATT model, giving users a choice of two or four excitation wavelengths for fluorescent labelling. Therefore, up to four different fluorophores can be used on the same sample to identify different sub-populations.

Please ask for details

ZetaView and Zeta Potential measurement using Electrophoretic Motion Tracking (EMT)

ZetaView® uses nano-electrophoresis to calculate zeta potential; a measure of particle surface charge. Zeta potential distribution is calculated from the electrophoretic mobility results at the two stationary layers in the sample cell, or from an electrokinetic velocity profile obtained by scanning at all 11 positions throughout the sample cell.

Zeta potential provides information about the surface chemistry of a particle. As a general rule, the higher the magnitude of zeta potential, the more particles repel each other in solution and remain stable. It is therefore of interest with respect to agglomeration and stability. ZetaView® is available in two configurations with and without zeta potential functionality.



ZetaView® Standard Technical Data

For more details please see separate datasheet

Measurement Principles

- * Precision-engineered motorized scanning NTA instrument for tracking movement of individual visualized nanoparticles in suspension
- * Real-time visualization of Brownian Motion and electrophoretic mobility, for measuring size, concentration and zeta potential in scatter and fluorescence mode (model dependent)
- * Fast scanning to acquire and analyze typically 2000 particles in less 1 minute

Samples

- * Nanoparticles suspended in polar liquids (e.g. water, alcohols) for size, concentration, fluorescence and zeta potential studies
- * Nanoparticles suspended in polar and organic solvents for size, concentration and fluorescence studies

Colocalization

- * Colocalization of two biomarkers plus scatter channel

Size / Concentration

- * Concentration range: $10^5 - 10^9$ particles/ml
- * Particle size: 10nm – 2000nm (dependent on sample & laser)
- * Accuracy: ± 5 nm (for 100nm polystyrene latex)
- * Reproducibility: ± 2 nm (for 100nm polystyrene latex)

Lasers

- * Available laser wavelengths:
405nm, 488nm, 520nm, 640nm, 660nm at typical laser power of >30 mW

For more information on the ZetaView®, or to discuss your requirements, please contact us.

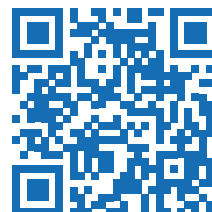
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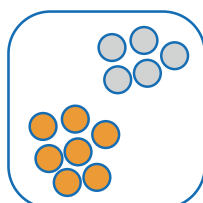
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ZetaView® TWIN

Technical Data



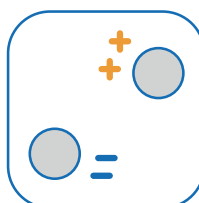
Subpopulations



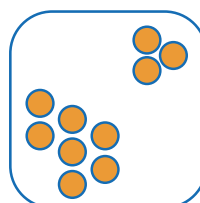
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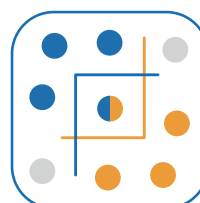
Fluorescence



Zeta Potential



Concentration



Colocalization



Technical Data: PMX-230 ZetaView TWIN Laser



Dimensions

Physical	• Footprint (W x D x H): 20 × 30 × 25cm • Weight: 8.5kg (main unit, PC and monitor extra) • Shipping box with standard content: - Main unit: 51 × 32 × 77cm; 16,9 kg to 18,5 kg* - Minimum 24" Monitor: 61 × 18 × 48cm; 7,42 kg
Electrical	• 90-240V, 47-63Hz, 50VA

Warranty & Support

Warranty	• 1 year (glass excluded)
Service & Support	• Reaction time: 48 hours • Maintenance, service and IQ/OQ contracts can be purchased on request • Support via telephone, e-mail and remote desktop software • software for trained users free of charge during warranty period • Training courses for new users available on demand • Special arrangements and specifications can be purchased on request– quotation required

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Technical Data: PMX-230 ZetaView TWIN Laser



General Features

Measurement Principle	- Precision-engineered motorized scanning Nanoparticle Tracking Analysis (NTA) instrument for tracking the movement of individual visualized nanoparticles in suspension - Real-time visualization of Brownian Motion and Electrophoretic Mobility, for measuring size, concentration and zeta potential in scatter and fluorescence mode - Two simultaneous aligned and software-controlled lasers for enhanced fluorescence measurements. - Software controlled 11-position fluorescence emission filter wheel for quick changes between scatter and fluorescence measurements as well as between different emission filters - Fast scanning to acquire and analyze typically 2000 particles in less than one minute - Two software-controlled pumps for liquid transport and sample dosing
Samples	Nanoparticles suspended in polar liquids and organic solvents (e.g. water, biological buffers, alcohols) for size, concentration, fluorescence and zeta potential

Hardware

Equipment	- ZetaView® PMX-230 TWIN Laser main unit is equipped with a fixed NTA cell assembly, two simultaneous aligned lasers (see section Lasers) and bottles for buffer rinse - Two software-controlled pumps for liquid transport and sample dosing - Power of statistics by automated unique scan and dose control for measurement of 1 - 100 independent sub volumes - Zeta potential option* - Software controlled fluorescence option with 2 fluorescence channels features short acquisition times to avoid negative effect of photo bleaching
Optical Layout	90° laser scattering video microscope with x10 magnification for maximized sample volume and highest statistics - Automated alignment and focusing of laser and microscope
Camera	- High sensitive CMOS camera 640 × 480 pixels - Variable frame rate from 2 to 60 Hz for optimum resolution and fast acquisition
Lasers	- Available laser wavelengths combinations: 405 nm / 488nm, 405 nm / 520 nm, 405 nm / 640 nm, 488 nm / 520 nm, 488 nm / 640 nm and 520 nm / 640 nm at typical laser power of >30 mW - On request, the 640 nm laser can be exchanged by a 660 nm excitation laser free of charge - Pulse duration 0.1 ms up to continuous
Fluorescence	- Software controlled, automated 11 position fluorescence filter wheel - Available long wave pass (LWP) filter combinations: 430 nm / 500 nm for 405 / 488 laser combination 430 nm / 550 nm for 405 / 520 laser combination 430 nm / 680 nm for 405 / 6X0 laser combination 500 nm / 550 nm for 488 / 520 laser combination 500 nm / 680 nm for 488 / 6X0 laser combination 550 nm / 680 nm for 520 / 6X0 laser combination - Customized LWP and bandpass filter available on request
Cleaning	- Tool-free access to glass cuvette for quick and simple cleaning process - Cell cleaning recommended weekly or monthly depending on sample type and usage - Cleaning of driver electrodes required after >1000 zeta potential runs* - Cleaning kit and spare parts included in delivery
Temperature Range/Control	- External working temperature range: 5°C to 45°C - Sample temperature control: Peltier temperature control from RTP -5°C to 55°C with automated dew-point sensing

* With zeta potential option



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Technical Data: PMX-230 ZetaView TWIN Laser



Computer System

Control Device	• Intel® NUC Mini PC • 250 GB SSD hard drive • Windows 10 Professional • Maclean holder for mounting computer at backside of screen • Keyboard and mouse
Monitor	• 24" LED screen (or better)

Software

Communication	• Software provided on pre-configured PC, communication via Ethernet
Quality Control	• Cell quality check, daily performance check, outlier control with automatic Grubbs statistical analysis of measurement data
Live Monitoring	• Number of detected particles in scatter and fluorescence mode, scattering intensity, conductivity*, temperature, particle drift
Standard Operating Procedures (SOP)	• Fully-customizable SOPs for different samples/applications
Analysis and Reports	• Data Analysis in scatter and/or fluorescence mode: particle size distribution profiles, concentration, overlays and averaging, scatter plots, zeta potential distribution profiles, sub-population analysis • Data export format: AVI, TXT, CSV, FCS, PDF reports containing key results
ZetaNavigator Software**	• Live monitoring of particle size distribution • Colocalization feature

Measurement Specifications

Size/Concentration	• Concentration range: $10^5 - 10^9$ particles/ml • Particle size: 10nm – 1000nm (dependent on sample and laser selection) • Accuracy: ± 5nm (for 100nm polystyrene latex) • Reproducibility: ± 2nm (for 100nm polystyrene latex)
Fluorescence	• Concentration range: $10^5 - 10^9$ particles/ml • Particle size: 20nm – 1000nm (dependent on fluorescent dye and laser selection) • Accuracy: ± 5nm (for 100nm polystyrene latex) • Reproducibility: ± 2nm (for 100nm polystyrene latex)
Zeta Potential*	• Working range: -500 to +500mV • Concentration range: $10^6 - 10^{10}$ particles/ml • Particle size: 20nm – 5000nm (dependent on sample and laser selection) • Conductivity range: 3μS/cm – 15mS/cm • Accuracy: ± 4mV (zeta potential standard) • Reproducibility: ± 2mV (zeta potential standard)
General	• Minimum sample quantity: 500μl of sample at 10^5 particles/ml • pH range: 1 – 13 • Temperature: 5°C to 45°C (external temperature) • Sample volume visualised and tracked by the camera for a single measurement: 11 $\times$ 3.3 nL
Reference Materials	• Nominal 100 nm reference suspension for size • Two nominal 100 or 200 nm reference suspensions for fluorescence • Nominal -50mV reference suspension for zeta potential*

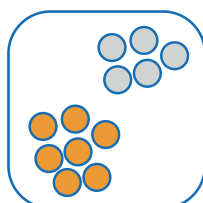
* With zeta potential option, ** With colocalization option



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ZetaView[®] MONO

Technical Data



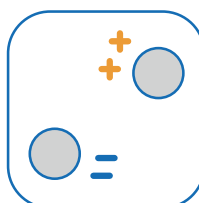
Subpopulations



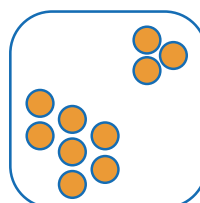
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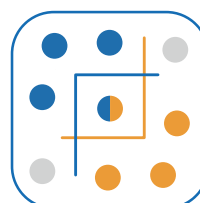
Fluorescence



Zeta Potential



Concentration



Colocalization



Technical Data: PMX-130 ZetaView Mono Laser



Dimensions

Physical	- Footprint (W x D x H): 20 × 30 × 25cm - Weight: 8.5kg (main unit, PC and monitor extra) - Shipping box with standard content: - Main unit: 51 × 32 × 77cm; 16,9 kg to 18,5 kg* - Minimum 24" Monitor: 61 × 18 × 48cm; 7,42 kg
Electrical	90-240V, 47-63Hz, 50VA

Warranty & Support

Warranty	1 year (glass excluded)
Service & Support	- Reaction time: 48 hours - Maintenance, service and IQ/OQ contracts can be purchased on request - Support via telephone, e-mail and remote desktop software - software for trained users free of charge during warranty period - Training courses for new users available on demand - Special arrangements and specifications can be purchased on request – quotation required

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* With zeta potential and/or fluorescence option



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Technical Data: PMX-130 ZetaView Mono Laser



General Features

Measurement Principle	- Precision-engineered motorized scanning Nanoparticle Tracking Analysis (NTA) instrument for tracking the movement of individual visualized nanoparticles in suspension - Real-time visualization of Brownian Motion and Electrophoretic Mobility, for measuring size, concentration and zeta potential in scatter and fluorescence mode* - One software-controlled laser for enhanced fluorescence measurements* - Software controlled 11-position fluorescence emission filter wheel for quick changes between scatter and fluorescence measurements as well as between different emission filters* - Fast scanning to acquire and analyze typically more than 2000 particles in less than one minute - Two software-controlled pumps for liquid transport and sample dosing
Samples	Nanoparticles suspended in polar liquids and organic solvents (e.g. water, biological buffers, alcohols) for size, concentration, fluorescence and zeta potential studies*

Hardware

Equipment	- ZetaView® PMX-130 main unit is equipped with a fixed NTA cell assembly, laser (see section Lasers) and bottles for buffer rinse - Two software-controlled pumps for liquid transport and sample dosing - Power of statistics by automated unique scan and dose control for measurement of 1 - 100 independent sub volumes - Zeta potential option* - fluorescence option features short acquisition times to avoid negative effect of photo bleaching*
Optical Layout	90° laser scattering video microscope with x10 magnification for maximized sample volume and highest statistics - Automated alignment and focusing of laser and microscope
Camera	- High sensitive CMOS camera 640 × 480 pixels - Variable frame rate from 2 to 60 Hz for optimum resolution and fast acquisition
Lasers	- Available laser wavelengths: 405 nm, 488 nm, 520 nm, 640 nm, and 660 nm at typical laser power of >30 mW - Pulse duration 0.1 ms up to continuous
Fluorescence	- Long wave-pass (LWP) cut-off filters: @405 nm: 430 nm @488 nm: 500 nm @520 nm: 550 nm @640 nm: 680 nm @660 nm: 680 nm - Customized LWP and bandpass filter available on request
Cleaning	- Tool-free access to glass cuvette for quick and simple cleaning process - Cell cleaning recommended weekly or monthly depending on sample type and usage - Cleaning of driver electrodes required after >1000 zeta potential runs* - Cleaning kit and spare parts included in delivery
Temperature Range/Control	- External working temperature range: 5°C to 45°C - Sample temperature control: Peltier temperature control from RTP -5°C to 55°C with automated dew-point sensing

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* With zeta potential and/or fluorescence option



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Technical Data: PMX-130 ZetaView Mono Laser



Computer System

Control Device	• Intel® NUC Mini PC • 250 GB SSD hard drive • Windows 10 Professional • Maclean holder for mounting computer at backside of screen • Keyboard and mouse
Monitor	• 24" LED screen (or better)

Software

Communication	• Software provided on pre-configured PC, communication via Ethernet
Quality Control	• Cell quality check, daily performance check, outlier control with automatic Grubbs statistical analysis of measurement data
Live Monitoring	• Number of detected particles in scatter and fluorescence mode*, scattering intensity, conductivity*, temperature, particle drift
Standard Operating Procedures (SOP)	• Fully-customizable SOPs for different samples/applications
Analysis and Reports	• Data Analysis: particle size distribution profiles, concentrations, overlays and averaging, scatter plots, zeta potential distribution profiles, sub-population analysis (using additional 'Particle Explorer' software) • Data export format: AVI, TXT, CSV, FCS, PDF reports containing key results

Measurement Specifications

Size/Concentration	• Concentration range: $10^5 - 10^9$ particles/ml • Particle size: 10nm – 1000nm (dependent on sample and laser selection) • Accuracy: ± 5nm (for 100nm polystyrene latex) • Reproducibility: ± 2nm (for 100nm polystyrene latex)
Fluorescence*	• Concentration range: $10^5 - 10^9$ particles/ml • Particle size: 20nm – 1000nm (dependent on fluorescent dye and laser selection) • Accuracy: ± 5nm (for 100nm polystyrene latex) • Reproducibility: ± 2nm (for 100nm polystyrene latex)
Zeta Potential*	• Working range: -500 to +500mV • Concentration range: $10^6 - 10^{10}$ particles/ml • Particle size: 20nm – 5000nm (dependent on sample and laser selection) • Conductivity range: 3μS/cm – 15mS/cm • Accuracy: ± 4mV (zeta potential standard) • Reproducibility: ± 2mV (zeta potential standard)
General	• Minimum sample quantity: 500μl of sample at 10^5 particles/ml • pH range: 1 – 13 • Temperature: 5°C to 45°C (external temperature) • Sample volume visualised and tracked by the camera for a single measurement: 11 $\times$ 3.3 nL
Reference Materials	• Nominal 100 nm reference suspension for size • Nominal 100 or 200 nm reference suspension for fluorescence* • Nominal -50mV reference suspension for zeta potential*

* With zeta potential and/or fluorescence option



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