PMX 120 ZetaView® Mono Laser

Standard Technical Data (availability depending on selected modules)

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 scattering and fluorescence mode. • One software-controlled laser for enhanced fluorescence measurements • Manual controlled emission filter for quick changes between scatter and fluorescence measurements • Fast scanning to acquire and analyze typically 1000 particles in ~ 1 minute • Software-controlled pumps for flushing and sample sub-dosing
Samples:	• Nanoparticles suspended in polar liquids (e.g. water, alcohols) for size, concentration, fluorescence and zeta potential* studies

Hardware

Equipment:	• ZetaView® PMX-120 main unit is equipped with Cell Assembly, laser (see section Lasers) and bottles for buffer rinse • Power of statistics by automated unique scan and dose control for measurement of 1 - 100 independent sub-volumes • Optional: Zeta potential option (Z-NTA)* • Fluorescence option features short acquisition time to avoid negative effect of photo bleaching
Optical Layout :	• 90° laser scattering video microscope with x10 magnification • Automated alignment and focusing of laser and microscope
Laser:	• 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
Camera:	• High sensitive CMOS camera 640 x 480 pixels • Variable frame rate from 1 to 60 Hz for optimum resolution and fast acquisition
Fluorescence Filters:	• 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 • Bandpass filter available on request
Cell Assemblies:	• NTA – slide-in assembly for size and concentration measurements in aqueous and organic solvents • X-NTA – as NTA, for isolating samples from contact with others • Z-NTA – slide-in assembly for size, concentration and fluorescence measurements plus zeta-potential experiments in aqueous and organic solvents with pumps for 2 different liquids/buffers – for rinsing and sub-dosing experiments, electrical field sensing

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Cleaning:	● Cell cleaning recommended weekly – cell resistant to >1000 brush cleanings ● Cleaning of driver electrodes required after 1000 zeta potential runs* ● Cleaning kit and basic replacement parts included in delivery
Temperature Range/Control:	● Working external temperature range: 5°C to 45°C ● Sample temperature control: Peltier temperature control from RTP-5°C to 55°C with dew-point sensing

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-customisable SOPs for different samples/applications
Analysis and Reports:	● Data Analysis: particle size distribution profiles, concentration, 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 – 2000nm (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: 10nm – 2000nm (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: 10nm – 5000nm (dependent on sample and laser selection) ● Conductivity range: 3µS/cm – 15mS/cm ● Accuracy: ±4mV (for alumina zeta potential standard) ● Reproducibility: ±2mV (for alumina zeta potential standard)
General:	● Minimum sample quantity: 500µl of sample at 10^5 particles/ml ● pH range: 1 – 13 ● Temperature: control: 5°C to 45°C (external temperature) ● Sample volume visualised and tracked by the camera for a single measurement: 11 x 3.3 nL
Reference Materials:	● Nominal 100 nm reference suspension for size ● Nominal 100 nm reference suspension for fluorescence ● Nominal -50mV reference suspension for zeta potential*

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Dimensions.

Physical:	● Footprint (W x D x H): 20 x 30 x 25cm ● Weight: 8.5kg (main unit, PC extra) ● Shipping box with standard content: 48 x 62 x 63cm; 22kg
Electrical:	● 90-240V, 47-63Hz, 50VA

Warranty & Support

Warranty:	● 1 year (glass excluded).
Service & Support:	● Reaction time 48 h. ● Maintenance, Service and IQ/OQ contracts on demand. ● Support via telephone, email and TeamViewer for trained users free of charge during warranty period ● Training courses for new users available on demand. ● Special arrangements and specifications available on demand – quotation required

** With 'Z-NTA' cell assembly only.*

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