

PMX 220 ZetaView TWIN Laser

Standard Technical Data (availability depending on selected modules)

General Features

Measurement Principle:	<ul style="list-style-type: none"> ● 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 modes. ● Two simultaneous aligned and software-controlled lasers for fluorescence measurements ● Software controlled emission filter wheel for quick changes between the fluorescence measurements ● Fast scanning to acquire and analyze typically 1000 particles in ~ 1 minute ● Software-controlled pumps for flushing and sample sub-dosing
Samples:	<ul style="list-style-type: none"> ● Nanoparticles suspended in polar liquids (e.g. water, alcohols) for size, concentration, fluorescence and zeta potential studies

Hardware

Equipment:	<ul style="list-style-type: none"> ● ZetaView® PMX-220 TWIN Laser main unit is equipped with Cell Assembly, two simultaneous aligned lasers (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 ● Zeta potential option ● Software controlled double Fluorescence option features short acquisition times to avoid negative effect of photo bleaching
Optical Layout :	<ul style="list-style-type: none"> ● 90° laser scattering video microscope with x10 magnification ● Automated focusing of laser and microscope
Laser sets:	<ul style="list-style-type: none"> ● Special TWIN Laser design ● Available laser wavelengths combinations: <ul style="list-style-type: none"> 405 nm / 488 nm 405 nm / 520 nm (coming soon) 405 nm / 660 nm (coming soon) 488 nm / 660 nm (Available approx. Q3/2018) <p>at typical laser power of >30 mW per laser</p> <ul style="list-style-type: none"> ● Pulse duration each laser 0.1 ms up to continuous
Camera:	<ul style="list-style-type: none"> ● Sensitive CMOS camera 640 x 480 pixels ● Variable frame rate from 1 to 60 Hz for optimum resolution and fast acquisition

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Fluorescence Filters:	<ul style="list-style-type: none">● Software controlled, automated filter wheel● Available long wave-pass (LWP) filter combinations:<ul style="list-style-type: none">430 nm / 500 nm for 405 / 488 laser combination430 nm / 550 nm for 405 / 520 laser combination (coming soon)430 nm / 680 nm for 405 / 660 laser combination (coming soon)500 nm / 660 nm for 488 / 660 laser combination (Available approx. Q3/2018)● Bandpass filter available on request
Cell Assembly:	<ul style="list-style-type: none">● Z-NTA – slide-in assembly for size, concentration and dual 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
Cleaning:	<ul style="list-style-type: none">● Cell cleaning recommended weekly – cell resistant to >1000 brush cleanings● Cleaning of driver electrodes required after more than 1000 zeta potential runs● Cleaning kit and basic replacement parts included in delivery
Temperature Range/Control:	<ul style="list-style-type: none">● Working external temperature range: 5°C to 45°C● Sample temperature control: Peltier temperature control from RTP-5oC to 55oC with dew-point sensing

Software

Communication:	<ul style="list-style-type: none">● Software provided on pre-configured PC, communication via Ethernet
Quality Control:	<ul style="list-style-type: none">● Cell quality check, daily performance check, outlier control with automatic Grubbs statistical analysis of measurement data
Live Monitoring:	<ul style="list-style-type: none">● Number of detected particles in scatter or fluorescence, scattering intensity, conductivity*, temperature, particle drift
Standard Operating Procedures (SOP):	<ul style="list-style-type: none">● Fully customisable SOPs for different samples/applications
Analysis and Reports:	<ul style="list-style-type: none">● 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

Measurement Specifications

Size/ Concentration:	<ul style="list-style-type: none">● Concentration range: 10^5 – 10^9 particles/ml● Particle size: 15nm – 1000nm (dependent on sample and laser selection)● Accuracy: ± 5nm (for 100nm polystyrene latex)● Reproducibility: ± 2nm (for 100nm polystyrene latex)
Fluorescence:	<ul style="list-style-type: none">● Concentration range: 10^5 – 10^9 particles/ml● Particle size: 30nm – 1000nm (dependent on fluorescent dye and laser selection)● Accuracy: ± 5nm (for 100nm polystyrene latex)● Reproducibility: ± 2nm (for 100nm polystyrene latex)

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Zeta Potential*:	<ul style="list-style-type: none">● 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: $3\mu\text{S/cm}$ – 15mS/cm● Accuracy: $\pm 4\text{mV}$ (for alumina zeta potential standard)● Reproducibility: $\pm 2\text{mV}$ (for alumina zeta-potential standard)
General:	<ul style="list-style-type: none">● Minimum sample quantity: 500μl of sample at 10^5 particles/ml● pH range: 2 – 12● Temperature: 5°C to 45°C (external temperature)● Sample volume visualised and tracked by the camera for a single measurement: 11 x 3nL
Reference Materials:	<ul style="list-style-type: none">● Nominal 100 nm reference suspension for size● Two nominal 100 nm reference suspensions for fluorescence● Nominal +50mV reference suspension for zeta potential*

Dimensions.

Physical:	<ul style="list-style-type: none">● 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:	<ul style="list-style-type: none">● 90-240V, 47-63Hz, 50VA

Warranty & Support

Warranty:	<ul style="list-style-type: none">● 1 year (glass excluded).
Service & Support:	<ul style="list-style-type: none">● Reaction time: 48 hours● Maintenance, service and IQ/OQ/PQ contracts available 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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Manufactured by Headwall Photonics, distributed in the UK and Ireland by **analytik**.