

## PMX 420 ZetaView QUATT Laser

Standard Technical Data (availability depending on selected modules)

### General Features

<b>Measurement Principle:</b>	<ul style="list-style-type: none"> <li>● Precision-engineered motorized scanning Nanoparticle Tracking Analysis (NTA) instrument for tracking the movement of individual visualized nanoparticles in suspension</li> <li>● Real-time visualization of Brownian Motion and electrophoretic mobility, for measuring size, concentration and zeta potential in scattering and fluorescence modes.</li> <li>● Four simultaneous aligned and software-controlled lasers for fluorescence measurements</li> <li>● Software controlled emission filter changer for quick changes between the fluorescence measurements</li> <li>● Fast scanning to acquire and analyze typically 1000 particles in ~ 1 minute</li> <li>● Software-controlled pumps for flushing and sample sub-dosing</li> </ul>
<b>Samples:</b>	<ul style="list-style-type: none"> <li>● Nanoparticles suspended in polar liquids (e.g. water, alcohols) for size, concentration, fluorescence and zeta potential studies</li> </ul>

### Hardware

<b>Equipment:</b>	<ul style="list-style-type: none"> <li>● ZetaView® PMX-420 QUATT Laser main unit is equipped with Cell Assembly, four simultaneous aligned lasers (see section Lasers) and bottles for buffer rinse</li> <li>● Power of statistics by automated unique scan and dose control for measurement of 1 - 100 independent sub-volumes</li> <li>● Zeta potential option</li> <li>● Software controlled double Fluorescence option features short acquisition times to avoid negative effect of photo bleaching</li> </ul>
<b>Optical Layout :</b>	<ul style="list-style-type: none"> <li>● 90° laser scattering video microscope with x10 magnification</li> <li>● Automated alignment and focusing of laser and microscope</li> </ul>
<b>Laser sets:</b>	<ul style="list-style-type: none"> <li>● Special QUATT Laser design with 405 nm / 488 nm / 520 nm / 640 nm excitation lasers at typical laser power of &gt;30 mW per laser</li> <li>● Pulse duration each laser 0.1 ms up to continuous</li> </ul>
<b>Camera:</b>	<ul style="list-style-type: none"> <li>● High sensitive CMOS camera 640 x 480 pixels</li> <li>● Variable frame rate from 1 to 60 Hz for optimum resolution and fast acquisition</li> </ul>
<b>Fluorescence Filter sets:</b>	<ul style="list-style-type: none"> <li>● Software controlled, automated filter wheel with four long-pass fluorescence emission filters (LWP) with cut-off at 430 nm / 500 nm / 550 nm / 680 nm</li> <li>● Bandpass filter available on request</li> </ul>
<b>Cell Assembly:</b>	<ul style="list-style-type: none"> <li>● 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</li> </ul>

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Cleaning:	<ul style="list-style-type: none"><li>● Cell cleaning recommended weekly – cell resistant to &gt;1000 brush cleanings</li><li>● Cleaning of driver electrodes required after more than 1000 zeta potential runs</li><li>● Cleaning kit and basic replacement parts included in delivery</li></ul>
Temperature Range/Control:	<ul style="list-style-type: none"><li>● Working external temperature range: 5°C to 45°C</li><li>● Sample temperature control: Peltier temperature control from RTP-5°C to 55°C with dew-point sensing</li></ul>

### Software

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

### Measurement Specifications

Size/ Concentration:	<ul style="list-style-type: none"><li>● Concentration range: <math>10^5</math> – <math>10^9</math> particles/ml</li><li>● Particle size: 10nm – 2000nm (dependent on sample and laser selection)</li><li>● Accuracy: <math>\pm 5</math>nm (for 100nm polystyrene latex)</li><li>● Reproducibility: <math>\pm 2</math>nm (for 100nm polystyrene latex)</li></ul>
Fluorescence:	<ul style="list-style-type: none"><li>● Concentration range: <math>10^5</math> – <math>10^9</math> particles/ml</li><li>● Particle size: 10nm – 2000nm (dependent on fluorescent dye and laser selection)</li><li>● Accuracy: <math>\pm 5</math>nm (for 100nm polystyrene latex)</li><li>● Reproducibility: <math>\pm 2</math>nm (for 100nm polystyrene latex)</li></ul>
Zeta Potential*:	<ul style="list-style-type: none"><li>● Working range: -500 to +500mV</li><li>● Concentration range: <math>10^6</math> – <math>10^{10}</math> particles/ml</li><li>● Particle size: 10nm – 5000nm (dependent on sample and laser selection)</li><li>● Conductivity range: 3<math>\mu</math>S/cm – 15mS/cm</li><li>● Accuracy: <math>\pm 4</math>mV (for alumina zeta potential standard)</li><li>● Reproducibility: <math>\pm 2</math>mV (for alumina zeta-potential standard)</li></ul>

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General:	<ul style="list-style-type: none"><li>● Minimum sample quantity: 500µl of sample at 10<sup>5</sup> particles/ml</li><li>● pH range: 1 – 13</li><li>● Temperature: 5°C to 45°C (external temperature)</li><li>● Sample volume visualised and tracked by the camera for a single measurement: 11 x 3nL</li></ul>
Reference Materials:	<ul style="list-style-type: none"><li>● Nominal 100 nm reference suspension for size</li><li>● Two nominal 100 nm reference suspensions for fluorescence</li><li>● Nominal +50mV reference suspension for zeta potential*</li></ul>

### Dimensions.

Physical:	<ul style="list-style-type: none"><li>● Footprint (W x D x H): 20 x 30 x 25cm</li><li>● Weight: 8.5kg (main unit, PC extra)</li><li>● Shipping box with standard content: 48 x 62 x 63cm; 22kg</li></ul>
Electrical:	<ul style="list-style-type: none"><li>● 90-240V, 47-63Hz, 50VA</li></ul>

### Warranty & Support

Warranty:	<ul style="list-style-type: none"><li>● 1 year (glass excluded).</li></ul>
Service & Support:	<ul style="list-style-type: none"><li>● Reaction time: 48 hours</li><li>● Maintenance, service and IQ/OQ contracts available on demand#</li><li>● Support via telephone, email and TeamViewer for trained users free of charge during warranty period</li><li>● Training courses for new users available on demand</li><li>● Special arrangements and specifications available on demand – quotation required</li></ul>

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

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