PN3000 XPT
Optical Particle Sizing Detector

Online/Batch Sizing for Microparticles

PN3000 XPT Detector

Features

The Postnova PN3000 XPT Online Particle Size Detector is a innovative new type of detection system, which combines optical particle sizing with advanced CCD detection and fast image analysis. The system enables the online measurement of microparticles in any liquid phase stream coming from a suitable separation system, such as SPLITT or Field-Flow Fractionation (FFF). The detector is using a special developed inert glass flow cell, intensive LED light source and sensitive CCD devices for the optical identification of any microparticle from approx.1 µm up to 300 µm. In combination with a SPLITT or FFF separation system, even the most complex particle systems can be separated. The particle size and number, size distribution and shape can be easily obtained for each fraction. This makes the technology ideal for use in Pharmaceutical Technology, Biotechnology, Chemical and Environmental applications.

Unique Working Principle and Features

Avoiding the pitfalls of other commonly used online particle size detectors based on static light scattering, the PN3000 XPT is truely the first real online detector for microparticle sizing connected to FFF and SPLITT separation systems.

The detector allows online measurement of Particle Size, Particle Counts, Particle Shape and Particle Color Intensity Change by an innovative online image analysis as the particles pass through the flow cell. A high resolution CCD camera with 1024 x 768 Pixel and an extremely short shutter for sharp images of fast moving particles is the core of the system. The software platform is used for automatic online image aquisition, particle size and shape analysis, trend display, storage of analysis methods and automatic saving of images depending on predefined criteria.

Applications

- Particle-sizing
- Particle-counting
- Particle-shape detection
- Particle-volume calculation
- Particle-color density detection
- Particles, droplets or bubbles in liquid
- Online counting of product beads into vials
- Fibre counting within irregular shaped particles
- Measurement of shape changes of grinding particles
- Microparticle detection in highly concentrated nanoparticle solutions
- General food, pharma, polymer, chemical and environmental applications

Software

In the „Development Window" the master user is setting-up and testing methods. A method consists of three sub-methods: Camera Method (lighting, region of interest), Filter Method (contrast enhancement, inverting, subtraction of background) and Analysis Method (measurement range, filtering particles by size or shape). All methods are saved independently. Result files are saved in a non-changeable format for completely compliance of software with 21CFR Part 11 regulations.
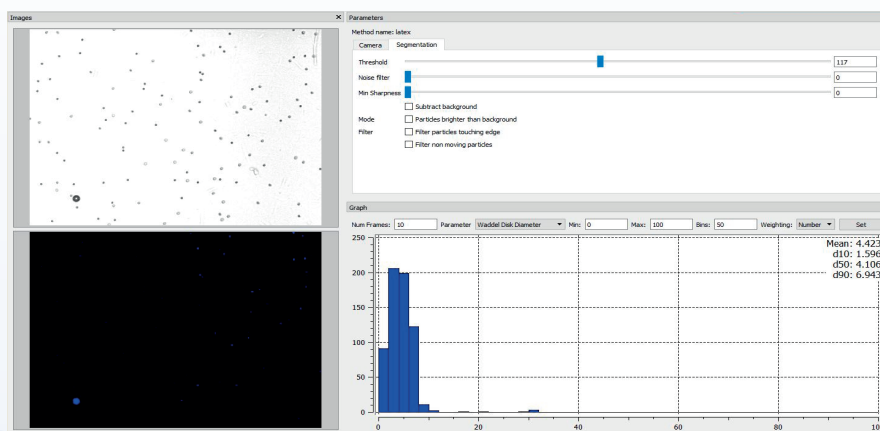
Specifications

- Sample Cell:
  Flow through cell with 160 µL detection volume
  Cell completely inert made from quartz glass
  Maximum pressure tolerance up to 10 bar

- Measurement Range:
  From 1 µm up to 300 µm
  Maximum resolution 0.3 µm/Pixel

- Typical Flow Rates:
  Range from ca. 0.5 mL/min to approx. 5 mL/min

- Outer Dimensions:
  380 x 300 x 120 mm

- Case Material:
  stainless steel

- Camera:
  1024 x 768 Pixel
  Power supply 115/230 V

- Detection Principle:
  Optical CCD detection using online image analysis

- Precision of Particles Size:
  +/-0.3 µm limited by CCD and optical lense resolution

- Light Source:
  Special high intensity LED

- Light Source Life Time:
  Approx. 10,000 hours

- Solvent Compatibility:
  All commonly used aqueous and organic solvents

- Electronics/Communications:
  Out-put signal of online particle size
  Software selectable event out-put signal
  Camera with 1024 x 768 Pixel

- PC:
  Pentium 4.3 GHz – PC
  Notebook, IP65

- Shipping Weight:
  ca. 12.5 kg

- Power Requirements:
  230/110 V, 50/60 Hz

- Requires a PC with USB and IEEE port.

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