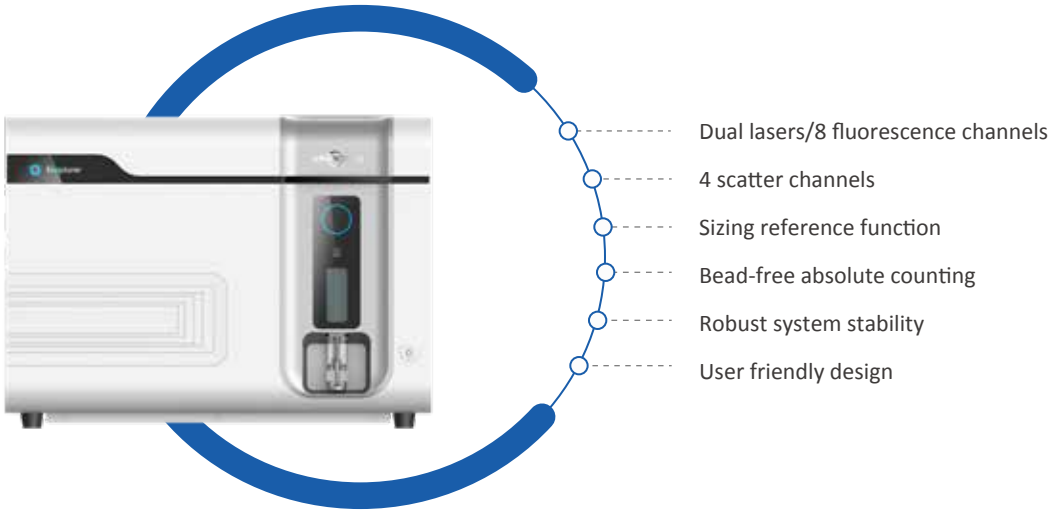
VDOBIOTECH

Exoplorer™
Nano-flow Cytometer

Introduction

The Exoplorer™ Nano-flow Cytometer is a cutting-edge instrument designed primarily for the characterization of biological nanoparticles, including exosomes, viruses, LNPs, bacteria, subcellular subunits, and other nanoparticles. Offering exceptional sensitivity, resolution, and throughput, the Exoplorer™ Nano-flow Cytometer facilitates a comprehensive analysis of nanoparticles within the 5-3000 nm range. This capability extends to size distribution, particle counting, and biochemical property assessment, making it a groundbreaking tool for life science and biomedical research.



Instrument Specifications

Instrument Specifications		
Liquid Handling Station	Dimensions	386*342*425mm（L*D*H）
	Weight (including containers, tubing, and cables)	9.5KG
Flow Cytometer	Dimensions	630*460*460mm（L*D*H）
	Weight	49.5KG
Electrical Parameters	Power Supply Voltage	100-240V
	Frequency	50/60Hz
	Power	300VA
Sampling	Tube Specifications	5 ml tube, 1.5 and 2.0 ml EP tubes
	Maximum Single Loading Volume	50μl
	Event Processing Speed	34，000 events/s

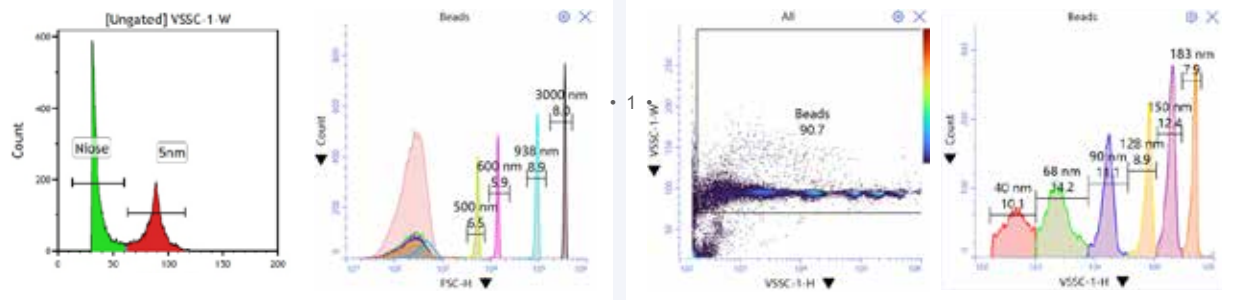
Data Management		
Operating Software	Exoplorer Software	
Language Support	Chinese, English	
FCS Version	FCS 3.1	
Recommended Computer Configuration	Operating System	64-bit Windows 10 Professional and Windows 11 Professional
	Processor	Equivalent to or better than 12th Gen Intel(R) Core(TM) i7-12700
	Memory	32GB
	Storage Space	1TB solid-state drive
	Resolution	1080P（1920*1080）
	USB	2 USB 3.0 ports / 3 USB 2.0 ports
Quality Control	Tracking and recording of quality control results, with exportable quality control reports	
	Compliance with 21CFR electronic signature requirements	
Safety Standards	IEC 61326-2-6:2020	
	EN 60825-1:2014+A11:2021	
	IEC 60825-1:2014	
	IEC 61010-2-081:2019	
	IEC 61010-1:2010/AMD1:2016	
	EN 61010-1:2010	
	EN 61010-1:2010/A1:2019	
	EN 61010-2-081:2020	
	EN IEC 61326-1:2021	
	EN IEC 61326-2-6:2021	
	EN IEC 61000-3-2:2019+A1:2021	
	EN 61000-3-3:2013/A2:2021 (Except: Risk Management Evaluation)	

Features and Advantages

4 scatter channels

- 4 scatter channels： VSSC-1, VSSC-2, FSC, and BSSC.
- Detectable particle range: 5nm-3000nm.
- Exoplorer™ supports three signal parameters (area, height, and width), effectively distinguishing system background and noise, ensuring accurate optical signal capture.

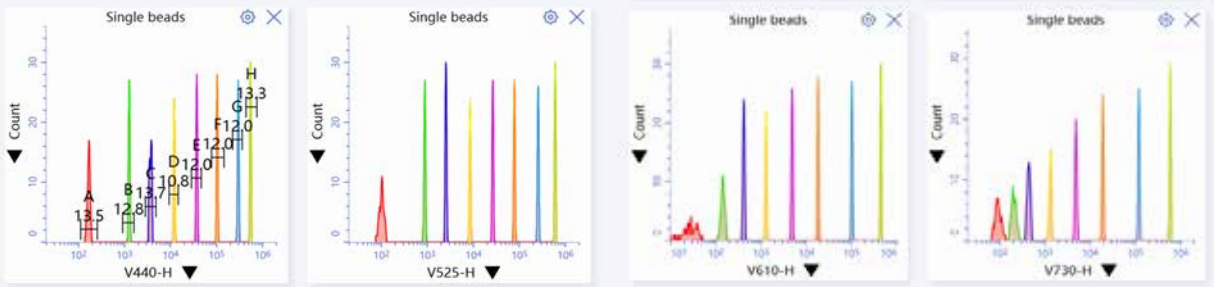
Down to 5nm | Up to 3000nm | High Resolution



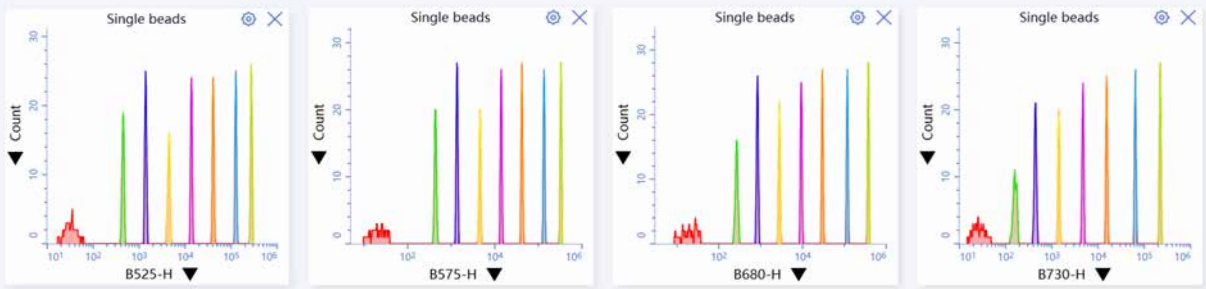
Dual lasers/ 8 fluorescence channels

- Equipped with dual lasers (violet laser and blue laser) and up to 8 fluorescence channels.
- Accurate detection of every signal peak from 8-peak beads.

V440-H fluorescence channel | V525-H fluorescence channel | V610-H fluorescence channel | V730-H fluorescence channel

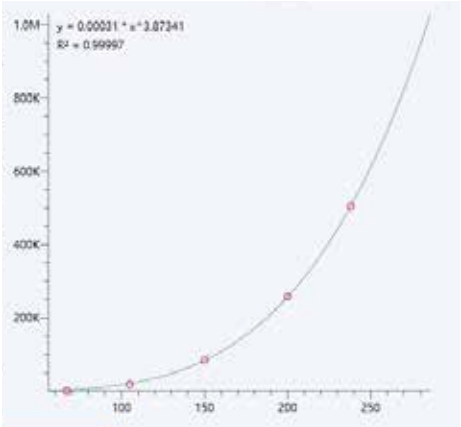


B525-H fluorescence channel | B575-H fluorescence channel | B680-H fluorescence channel | B730-H fluorescence channel



Sizing Reference Function

Utilizes a specific algorithm for precise particle size calculation.



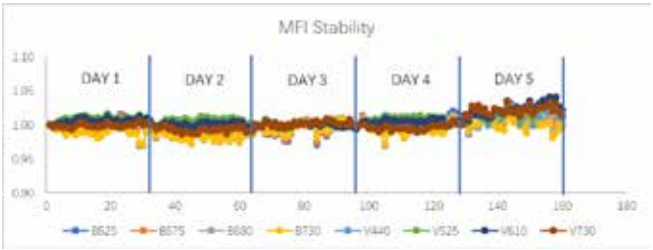
Bead-free Absolute Counting

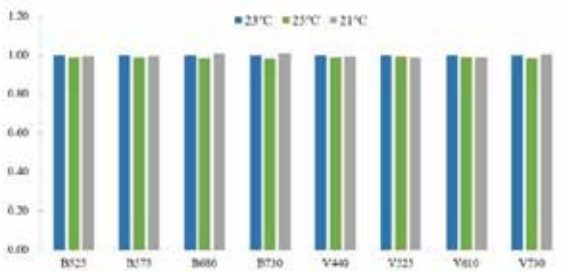
Bead-free absolute counting accuracy consistently surpasses 95%, much higher than its competitive products.

Test	Theoretical Quantity	Real Quantity	Accuracy
Test 1	1673	1596	95.36%
Test 2	5020	5095	98.51%
Test 3	20080	19726	98.24%

Robust System Stability

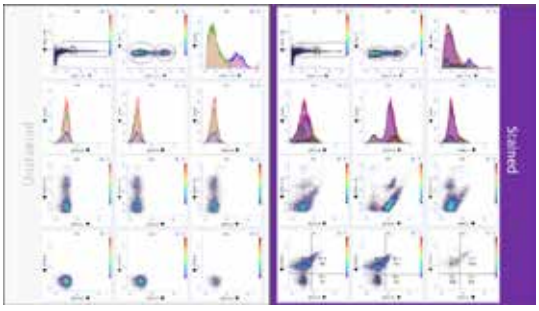
- Mean fluorescence intensity variation maintained at <±5% over 5 consecutive days.
- Operational temperature range: 15-28 ℃; fluctuation ±2 ℃.

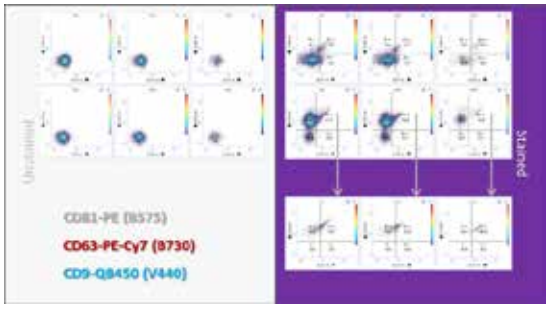




Exosome

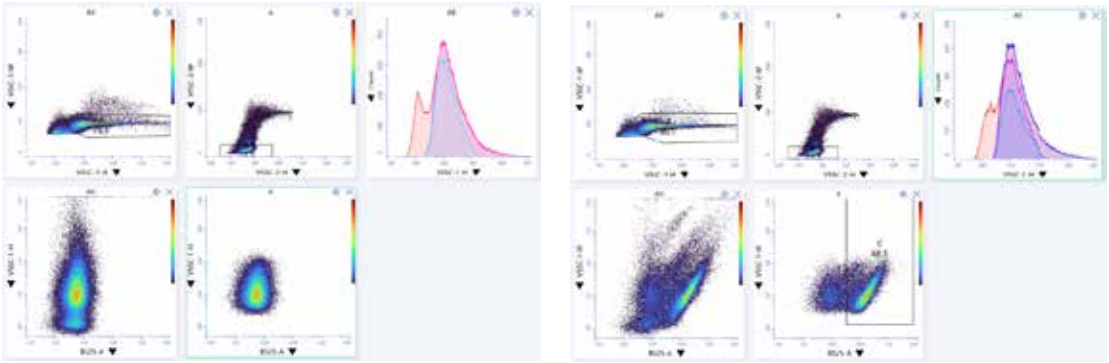
After Exoplorer™ detects the small particles stained with fluorochrome in plasma, it turns out that there are two groups of EV that differ greatly in size and antibody expression.





Adeno-associated virus（AAV）

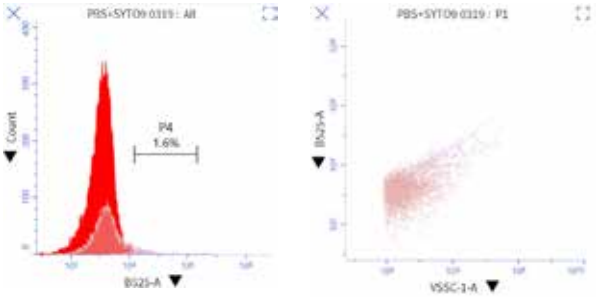
After Exoplorer™ detects the unpurified AAV IX (20-30nm） stained by SYTO-9, it turns out that not only can it fully detect the virus from the noise, but also identify doublets and multimer by analyzing the side scatter signals. With the absolute counting, it can surely succeed in detecting AAV titer.



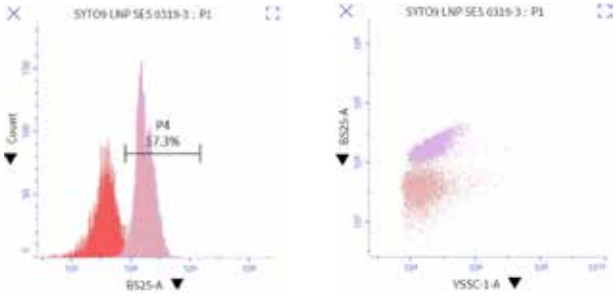
LNP Detection

LNP Carrying Nucleic Acid Positivity Rate

PBS+SYTO9（Blank）



LNP staining 15min 57.3% positive



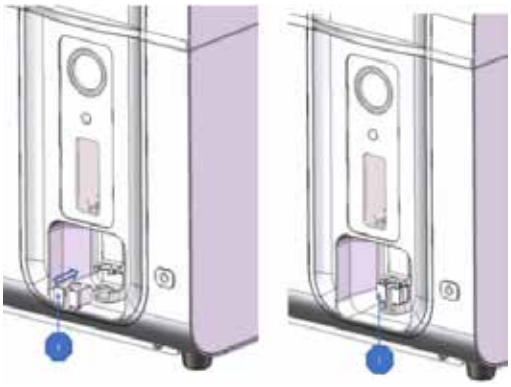
Particle Size and Concentration Detection Data

Sample	Dilution Factor	Detection Concentration (Particles/mL)	Final Concentration (Particles/mL)	RSD	Sizing:Median
LNP	160000	2.866E+08	4.585E+13	2%	63.3
	640000	7.352E+07	4.705E+13		62.7
	2560000	1.836E+07	4.700E+13		62.5

Different dilution factors were used to detect LNP samples, with a calculated final concentration RSD of 2%.

Experimental results demonstrate that the Exoplorer™ can measure the concentration, particle size, and shell rate of LNPs.

User-Friendly Design



- Test tube types for sample station: 5ml flow cytometry tube, 1.5, 2.0ml EP tube and any height the liquid container carriage.
- Maximum 50μL sample aspirated at a time consecutively.
- Carryover rate <0.1%, exceeding industry standards.
- Perfectly fit in BSL-2 biosafety cabinet in terms of size and weight.
- Analysis speed up to 34,000 events per second.
- Electronic signature in accord with the 21CFR.
- FCS files are exportable and compatible with third-party software.

Applications

	Size Distribution			Count/Concentration Detection	Fluorescence Labeling	Other Characterizations	
	Total Size Distribution	Size Distribution of Any Subgroup	Size-Function Correlated Analysis			Empty Shell Rate	Aggregates
Exosomes	v	v	v	v	v		
Viruses	v	v	v	v	v	v	v
Lipid Nanoparticles	v	v	v	v	v	v	
Bacteria	v	v	v	v	v		
Subcellular Units	v	v	v	v	v		
Other Nanoparticles	v	v	v	v	v		

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