

TECHNICAL SPECIFICATIONS

VisionSort Platform

VisionSort brings together fundamental advances in optics, microfluidics, and artificial intelligence (AI) to deliver morphological profiling and label-free cell sorting in addition to the functionalities of traditional fluorescence-only cytometers.



GHOST CYTOMETRY

Powered by innovative Ghost Cytometry technology and equipped with three fluorescence lasers, VisionSort provides researchers with real-time, AI-driven single-cell sorting capabilities for both labeled and label-free applications. Its flexible, user-controlled AI algorithms are integrated directly into the instrument, enabling highly accurate morphometric analysis and the efficient isolation of unique and rare cell populations without bias.

OPTICS

Lasers	405 nm - 365 mW nominal output power (Structured Illumination) 488 nm - 150 mW nominal output power 637 nm - 160 mW nominal output power
Scatter detectors	Forward scatter (FSC) Backward scatter (BSC)
Fluorescence detectors	5 channels Blue: 440/40 nm (405 nm excitation) Green: 525/50 nm (488 nm excitation) Yellow: 600/37 nm (488 nm excitation) Red: 680/42 nm (637 nm excitation) Infrared: 792/64 nm (637 nm excitation)
Ghost Motion Image (GMI) signal detectors	Forward scattered GMI signal (fsGMI) Backward scattered GMI signal (bsGMI) Brightfield GMI signal (bfGMI) Diffractive GMI signal (dGMI) Fluorescence GMI signal (405 nm excitation, 440 nm emission)
Objective lens	20x, 0.63 μ m (NA: 0.8)

FLUIDICS

Sample input	5 mL round bottom tube and 15 mL conical tube
Sample collection	15 mL and 50 mL conical tubes
Fluidic reservoirs	10 L sheath 10 L waste 5 L deionized (DI) water
Minimum sample volume	100 μ L (when using 5 mL round bottom tube)
Dead volume	<50 μ L (when using 5 mL round bottom tube)
Temperature control	Temperature of inlet and outlet is software-adjustable: (12 - 23 °C, 50 - 73 °F)

PERFORMANCE

Fluorescence sensitivity	FITC: <1500 molecules of equivalent soluble fluorochrome (MESF-FITC)
Fluorescence resolution	< 5% (HPCV)
Purity and yield	A one-way sort achieved purity of >98% and yield >80% of Poisson's expected yield.
Sample flow rate	20 μ L/min
Detection rate	Up to 3,000 events per second
Viability	>95% for lymphocytes
Inlet pressure	Up to 150 kPa (21 psi)
Outlet pressure	Atmospheric pressure (0 psi)

SORTING CARTRIDGE

Material	PDMS (Dimethylpolysiloxane), Glass
Size	136 x 88 x 7.5 mm (5.4 x 3.5 x 0.3 in)
Channel dimension	34 x 50 μ m
Target particle size	Up to 40 μ m
Maximum loading cell number	9 x 10 ⁶ cells/mL
Sorting mode	One-way sorting with recovery of collect and flow through

SYSTEM & SOFTWARE

Workstation CPU	Intel Core i9-10900TE
Operating system	Windows®10 IoT Enterprise LTSC
Signal processing	14-bit analog-to-digital conversion and signal processing
USB ports	2 x USB 3.0
Ethernet	1 Port
Monitors	2 x 27" LCDs, 1,920 x 1,080-pixel resolution
Memory	64 GB (DDR4)
Storage	240 GB SATA SSD; 8 TB SATA SSD
Software	MorphoScan AI
Data types	*.gcs (proprietary file type) Scatter and conventional fluorescence data (Height, Width, Area) can be exported to Flow Cytometry Standard (FCS) 3.1 file format (*.fcs)

INSTALLATION DETAILS

Dimensions (W x D x H)	154 x 76 x 151 cm (60.6 x 29.9 x 59.5 in) System Cabinet 92 x 76 x 151 cm (1.05 m³); (36.2 x 29.9 x 59.5 in) Control Cabinet 61 x 75 x 98 cm (0.45 m³) (24.0 x 29.5 x 38.6 in)
Weight	334 kg (736 lbs.) System Cabinet 235 kg (518 lbs.) Control Cabinet 99 kg (218 lbs.)
Power requirements	100-120 VAC, 11A Max 220-240 VAC, 5A Max
Pressure supply requirements	550-800 kPa (80-116 psi)
Operating temperature	17-23 °C
Operating humidity	20-60% relative humidity, non-condensing



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