



Miltenyi Biotec

MACSQuant® Analyzer 16

Instrument specifications

The MACSQuant Analyzer 16 is engineered to expand the revolutionary automation of the MACSQuant Analyzer line of flow cytometers. With 16 detection channels this instrument facilitates analysis of more parameters, while saving up to 40% of sample volume per run. In addition, it features fully automated housekeeping, PMT calibration, sample labeling, and data acquisition. For maximum flexibility, users can easily switch between 96-well plates, 24-tube racks, and single tubes. Due to its compact design, the MACSQuant Analyzer 16 is suited for basic research as well as advanced applications in clinical research. It provides users with the flexibility and customization that are required for the increasing demands of modern laboratories.

► miltenyibiotec.com/flowcytometry



Optics

Laser excitation	Spatially separated: 405 nm, 65 mW diode 488 nm, 50 mW DPSS (diode pumped solid state) 640 nm, 72 mW diode
Emission detectors	FSC 488/10 nm
	SSC 405/10 nm
	V1 450/50 nm
	V2 525/50 nm
	V3 579/34 nm
	V4 615/20 nm
	V5 667/30 nm
	B1 525/50 nm
	B2 579/34 nm
	B3 615/20 nm
	B4 667/30 nm
	B5 725/40 nm
	B6 785/62 nm
	R1 667/30 nm
R2 725/40 nm	
R3 785/62 nm	
Fluorescence sensitivity (MESF)	FITC <110
	PE <75
	APC <100
Fluorescence precision (CV)	<5% CV with alignment verification particles
Scatter resolution	Scatter performance is optimized for resolving human peripheral blood lymphocytes, monocytes, and granulocytes
Flow cell dimensions	200 × 250 µm
Fluorescence detectors	Optimized with spectrally matched PMTs for all channels
Optical alignment	Fixed tree-like configuration, no user adjustments needed
Laser spot size	15 × 45 µm

Performance

Absolute counts performance (reproducibility) ^{1,2}	CV <7%
Sample carryover ^{1,3}	0.01% (extended washing)
Suitable sample tubes / plates	96-well plate (U, V, flat, deep well) FACS tubes (5 mL) Eppendorf tubes
MACS® Cell Enrichment Unit	For pre-analysis enrichment of rare cells

Fluidics

Minimum measurement volume	1 µL (25 µL for full spectrum)
Dead volume	10 µL
Sample flow rate	25–100 µL/min plus automated flow rate to maintain 500, 1,000, or 2,000 events/second
Measurement speed ^{1,4}	25 min per 96-well plate (5 µL measurement volume; screen mode)
Sample uptake	Via robotic arm
Maximum event rate	15,000 events/second
System maintenance	Automated start-up, PMT calibration, cleaning cycles, and shutdown
Sample mixing	Aspiration

¹ Referred value indicates the average of multiple experiments and can differ for individual sample values.

² For counting performance, full 96-well plates were loaded with 200 µL/well of a peripheral blood mononuclear cell (PBMC) suspension at a nominal concentration of 5,000 cells/µL. The uptake volume was set to 50 µL at medium flow rate.

³ For carry-over, full 96-well plates were loaded with 200 µL/well of a PBMC suspension at a nominal concentration of 5,000 cells/µL in every other well ("SRC-wells"). Alternating wells were loaded with an equal volume of MACSQuant Running Buffer ("CO-wells"). The uptake volume was set to 50 µL at medium flow rate. The carry-over is defined by $\frac{\text{sum(CO-singlet count)}}{\text{sum(SRC-singlet count)}} \times 100\%$.

⁴ The measurement speed is determined by measuring the time between the first movement of the robotic arm into the first measured well and the first movement out of the last well. The measurements themselves were carried out at the highest possible flow rate in fast mode measuring 5 µL per well.



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