



Miltenyi Biotec



Instrument specifications

MACSQuant® Analyzer 10

Your reliable workhorse

The MACSQuant Analyzer 10 is a compact benchtop flow cytometer equipped with three lasers, 10 optical channels, and intuitive software to facilitate rapid and automated cellular analysis. The robust fluidics design and fixed optical bench are engineered to provide consistency and reproducibility in all assays. The MACSQuant Analyzer 10 is a versatile instrument for any kind of assay, including

immunophenotyping and functional analysis of fluorescently labeled cells. It is an excellent choice for researchers in the fields of cell manufacturing, immunology, systems biology, cell biology, neuroscience, and many other disciplines that require highly reliable and sensitive flow cytometric analyses with minimal hands-on time.

Optics

Laser excitation

Spatially separated:
405 nm, 40 mW diode
488 nm, 30 mW DPSS (diode pumped solid state)
640 nm, 20 mW diode

Emission detectors

Channel	Filter	Dye
FSC	488/10 nm	Size
SSC	488/10 nm	Granularity
V1	450/50 nm	VioBlue®, Vio® Bright V423, Viability™ 405/452
V2	525/50 nm	VioGreen™, Viability 405/520
B1	525/50 nm	FITC, Vio Bright B515, Vio Bright FITC, Vio B515, Viability 488/520
B2	585/40 nm	PE
B3	655–730 nm	PE-Vio 615, PerCP, PerCP-Vio 700
B4	750 nm LP	PE-Vio 770
R1	655–730 nm	APC, Vio Bright R667, Vio R667
R2	750 nm LP	APC-Vio 770

Fluorescence sensitivity and resolution

MESFs (CV <5%):
FITC <200
PE <100
APC <150

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

Fluidics	
Minimal uptake volume ¹	1 µL (25 µL recommended for volumetric counting applications)
Excess volume	<10 µL for Fast, Standard, and Extended modes <20 µL for Screen mode
Sample flow rate	25, 50, or 100 µL/min, or automated flow rate to maintain 500, 1,000, or 2,000 events/second
Measurement speed ^{2,3}	<25 minutes per 96-well plate (5 µL per well)
Sample uptake	1–450 µL
Maximal event rate	Up to 15,000 events/second
System maintenance	Automated startup, PMT calibration, cleaning cycles, and shutdown

Performance	
MACS Cell Enrichment Unit	For pre-analysis enrichment of rare cells
Absolute counts performance ^{2,4}	Volumetric; reproducibility (CV) <7%
Sample carry-over ^{2,5}	0.01%
Fluorescence performance	5-decade logarithmic scales (10^{-2} to 10^3), display in lin, log, or hlog scales
Sample tube/plate	96-well plate (V, U, flat well, deep well), 12 x 75 mm tubes, 1.5 and 2 ml tubes
Automation	Custom integration into liquid handling systems available

Data management	
Measurement parameters	Area, width, height for all parameters, with time and volume
Signal processing	>18 bit dynamic range in area with 32 bit floating point signal processing
Compensation	Automated or manual with 8 x 8 matrix, during or post acquisition
Threshold	Threshold can be set for any channel by selecting the trigger value
Data files	.mqd (proprietary file type) .fcs (2.0, 3.0, 3.1 compatible)

Operation details	
Size	
Width x depth without MACS MiniSampler Plus	669 x 400 mm (26.34 x 15.75 in.)
Width x depth with MACS MiniSampler Plus	669 x 500 mm (26.34 x 19.69 in.)
Height (adjustable touchscreen)	394–553.5 mm (15.51–21.79 in.)
Weight	50 kg (110 lbs)
Monitor	15.6" LCD touchscreen
Power requirements	100–240 V~, 50/60 Hz
Power consumption	450 W
Ports	4x USB 2.0 ports, 6x USB 3.0 ports (2 at display), 2x DisplayPort, 2x LAN, DVI, RE-232, Audio
Emission sound pressure level at workstation	<61 dB(A)
RAM	8 GB DDR4 (SO-DIMM)
Mass storage	500 GB SSD

- At every uptake, an additional excess volume is aspirated by the instrument. The excess volumes are calibration- and process-dependent.
- Referred value indicates the average of multiple experiments and can differ for individual sample materials.
- The measurement speed is determined by measuring the time between the movement of the robotic arm into the first measured well, and its movement out of the last measured well. The measurements were carried out at high flow rate in Screen mode.
- Dependent on sample material.
- For carry-over, full 96-well plates were loaded with 200 µL/well of PBMC suspension at a nominal concentration of 10,000 cells/µL in every other well ("SRC-wells"). Alternating wells are loaded with an equal volume of MACSQuant Running Buffer ("CO-wells"). The uptake volume was set to 100 µL and measured at medium flow rate in standard mode. The carry-over is defined by $\text{sum}(\text{CO-singlet count})/\text{sum}(\text{SRC-singlet count}) \times 100\%$.

Accessories

MACS MiniSampler Plus (# 130-105-745)	For measurement of up to 96 samples in a single run
MACS Chill Racks Chill 5 Rack (# 130-092-951) Chill 15 Rack (# 130-092-952) Chill 50 Rack (# 130-092-953) Chill 96 Rack (# 130-094-459)	Keep samples cool while running multiple 5 mL, 15 mL, 50 mL tubes, or 96 well plates
Universal Reagent Rack (# 130-115-722)	For automated addition of up to 4 reagents from both 5 mL glass vials and 2 mL polypropylene vials

Consumables

Buffers	MACSQuant Running Buffer (# 130-092-747) MACSQuant Running Buffer Concentrate (16x) (# 130-111-562) MACSQuant Washing Solution (# 130-092-749) MACSQuant Storage Solution (# 130-092-748)
MACSQuant Calibration Beads (# 130-093-607)	For use with automated calibration program
MACSQuant Columns (# 130-094-458)	For enrichment of rare cell populations with MACS MicroBeads
MACS® Comp Bead Kits	For optimal manual or automated compensation of fluorescence spillover of fluorochrome-conjugated antibodies MACS Comp Bead Kit, anti-REA (# 130-104-693) MACS Comp Bead Kit, anti-mouse IgK (# 130-097-900) MACS Comp Bead Kit, anti-rat IgK (# 130-107-755) MACS Comp Bead Kit, anti-human IgK (# 130-104-187)

Reagents

Antibodies	Works with all flow cytometry reagents. For a complete list visit www.macsantibodies.com
MicroBeads	Enrich rare cell populations with MACS MicroBeads. For further information visit www.miltenyi.com/cellseparation

Service and Support

Warranty	1 year warranty
MACSQuant Live Support	24/5 real-time remote support directly from your flow cytometer

Service contracts	MACSQuant Essential Service (# 160-001-287)	MACSQuant Preventive Maintenance (# 160-001-288)
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Maintenance		
Replacement of wearing parts	●	●
Software updates	●	●
Labor, shipment, and product maintenance logistic costs	●	●
Maintenance intervals (visits per year)	2	2
Repairs service		
Repair and replacement	●	
Labor and travel expenses	●	
Replacement parts	●	
Laser head included	●	
Additional services		
Technical support services	●	●
Service documentation	●	●
Remote Support service	●	●

MACSQuant® Instrument configurations at a glance

Channel	Laser	Filter	MACSQuant X	MACSQuant 10	MACSQuant VYB	MACSQuant16
FSC	488	488/10	●	●		●
FSC	561	561/4			●	
SSC	405	405/10				●
SSC	488	488/10	●	●		
SSC	561	561/4			●	
V1	405	450/50	●	●		●
V1	405	452/45			●	
V2	405	525/50	●	●	●	●
V3	405	579/34				●
V4	405	615/20				●
V5	405	667/30				●
B1	488	525/50	●	●	●	●
B2	488	585/40	●	●		
B2	488	593-650			●	
B2	488	579/34				●
B3	488	655-730	●	●		
B3	488	615/20				●
B4	488	750 LP	●	●		
B4	488	667/30				●
B5	488	725/40				●
B6	488	785/62				●
R1	640	655-730	●	●		
R1	640	667/30				●
R2	640	750 LP	●	●		
R2	640	725/40				●
R3	640	785/62				●
Y1	561	586/15			●	
Y2	561	615/20			●	
Y3	561	661/20			●	
Y4	561	740 LP			●	



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