



Miltenyi Biotec

MACSQuant® Flow Cytometers

The future of automation



At the heart of intelligent design

The first MACSQuant Analyzer was engineered to simplify demanding and diverse flow cytometry applications of researchers around the world.

At Miltenyi Biotec, we have since continued to expand our instrument portfolio to meet the ever-growing complexities in cell analysis. Innovation is at the core of each MACSQuant Instrument, offering automated flow cytometry solutions for a diverse array of research applications.

Wondering which MACSQuant Flow Cytometer is the best fit for your lab? Explore your options in the MACSQuant Family of flow cytometers.

- **MACSQuant Analyzer 10**
automating and standardizing key assays
- **MACSQuant Analyzer 16**
increasing parameters for more colors
- **MACSQuant X**
high-throughput applications from streamlined fluidics and sample processing
- **MACSQuant VYB**
designed for fluorescent protein analysis and optimized for FITC and PE applications

				
Automation features				
Automated acquisition	●	●	●	●
Automated labeling	●	●	●	●
Automated start up, shutdown, cleaning	●	●	●	●
Automated compensation	●	●	●	●
Optics				
10 parameters	●	●		●
16 parameters			●	
405 nm laser	●	●	●	●
488 nm laser	●	●	●	●
561 nm laser				●
640 nm laser	●	●	●	
405 nm side scatter			●	
488 nm side scatter	●	●		●
Sample processing				
Needle-arm vibration mixing		●		
Orbital sample mixing		●		
Pipette sample mixing	●		●	●
24-tube rack processing	●	●	●	●
96-well plate processing	●	●	●	●
384-well plate processing		●		
High-throughput plate screening		●		
Sample cooling (chill racks)	●		●	●
Low carryover: standard mode <0.01%	●	●	●	●
Unique features				
Absolute cell counting	●	●	●	●
Rare cell enrichment	●		●	●
Remote support	●	●	●	●
Multi-instrument alignment	●	●	●	●
21 CFR Part 11 compliant software	●	●	●	●



Reliable reagents

- REAfinity® Recombinant Antibodies for reproducible results in flow cytometry applications
- Vio® and Vio Bright Dyes with superior mean fluorescence intensity and high stain indices

Customized solutions

- Antibodies and conjugates tailored to your specifications
- Personalized multicolor antibody cocktails
- Custom 'Express Mode' development, including preset acquisition, algorithm-based gating, and automated reporting

21 CFR Part 11 software package

Seamless data submission to regulatory agencies ensured by:

- Audit trail
- Analysis reports with e-signature
- User management system according to 21 CFR Part 11

Support and service

- Remote support at your fingertips via MACSQuant Live Support portal
- On- and offsite training programs
- Application support
- Comprehensive service offerings including IQ/OQ

MACSQuant Analyzer 10

Your trusted partner in automated flow cytometry

The MACSQuant Analyzer 10 brings to life the versatility and power required for modern flow cytometry research applications. Whether characterizing diverse populations, mining for rare cells, analyzing signaling pathways, or conducting in-process controls during cell manufacturing, you are equipped for the task at hand.

Truly hands-free operation

With a range of automated features, the MACSQuant Analyzer 10 lays the foundation for true automation present in all instruments belonging to the MACSQuant Family of flow cytometers.



Application highlight: Automated assays

- In-process and release testing (IPC/RT)
- Immunophenotyping
- Toxicological assays
- Whole blood analysis
- Cell counting
- Rare cell analysis
- Cytokine arrays

Automated features of the MACSQuant Family

Start-up, cleaning, and shutdown

Compensation

Labeling

Acquisition

PMT calibration and quality control



MACSQuant Analyzer 10 optical bench

405 nm

450/50 nm	VioBlue®/Vio Bright V423
525/50 nm	VioGreen™

488 nm

488/10 nm	FSC
488/10 nm	SSC
525/50 nm	FITC/Vio Bright B515
585/40 nm	PE
655–730 nm	PerCP-Vio 700
750 nm LP	PE-Vio 770

640 nm

655–730 nm	APC/Vio Bright R667
750 nm LP	APC-Vio 770

MACSQuant X

Reliable high-throughput flow cytometry

Engineered from the ground up as a compact flow cytometer, the MACSQuant X was made to provide speed and reliability in high-throughput screening. It allows you to get more data, in less time, with less effort. Perfect for laboratories that want to maximize efficiency, while enjoying the certainty of getting reliable results from every tube, 96- or 384-well plate (fig. 1). The MACSQuant X has been designed to meet high-throughput cell analysis needs for the most challenging large-scale screening settings.

Technology highlight:
Integration with liquid handling systems

- Robust flow cytometer capable of processing up to 9,200 samples per day (96-well plate within 15 minutes, 384-well plate in under 60 minutes)
- Seamless integration into a variety of liquid handling systems

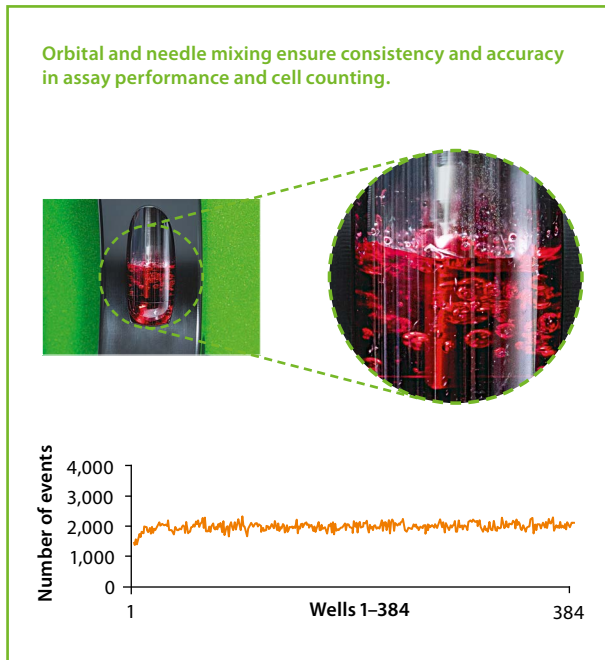
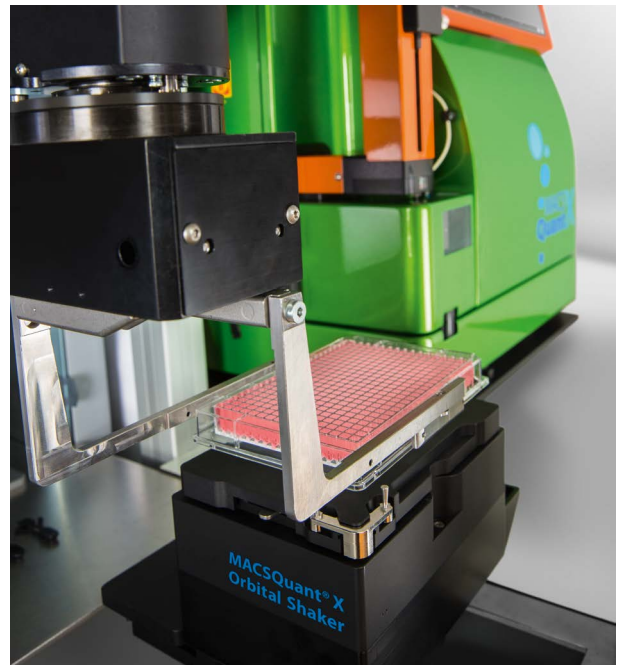


Figure 1: Fast and reliable processing of 96- and 384-well plates.



MACSQuant X optical bench

405 nm

450/50 nm	VioBlue/Vio Bright V423
525/50 nm	VioGreen

488 nm

488/10 nm	FSC
488/10 nm	SSC
525/50 nm	FITC/Vio Bright B515
585/40 nm	PE
655-730 nm	PerCP-Vio 700
750 nm LP	PE-Vio 770

640 nm

655-730 nm	APC/Vio Bright R667
750 nm LP	APC-Vio 770

MACSQuant Analyzer 16

Colorful new possibilities in automated flow cytometry

Expanding automated data acquisition to 16 parameters is what the MACSQuant Analyzer 16 is all about. The instrument's compact design makes it suitable for a wide variety of research applications. At the same time, it is specifically engineered to meet the stringent analytical requirements of cell and gene therapy (CGT) development. It provides users with the flexibility and automation capacity known from the MACSQuant Analyzer 10, with an additional six fluorescent channels to meet the increasing demands of modern laboratories.

Unique features

- Expanded fluorescent channels: Amplify your data with up to 16 parameters, while using 40% less sample material.
- Violet side scatter: Enhance your small particle analysis with the optimal laser line.



Technology highlight: More acquisition parameters and multi-instrument alignment

- Explore more cell subsets by utilizing a broader range of fluorochrome and antibody options
- Enhance consistency by harmonizing instrument settings across sites and throughout longitudinal studies (Smart Gain technology)

MACSQuant Analyzer 16 optical bench

405 nm

405/10 nm	SSC
450/50 nm	VioBlue/Vio Bright V423
525/50 nm	VioGreen
579/34 nm	BV 570™
615/20 nm	Vio Bright V600
667/30 nm	BV 650™

488 nm

488/10 nm	FSC
525/50 nm	FITC/Vio Bright B515
579/34 nm	PE
615/20 nm	PE-Vio 615
667/30 nm	PerCP
725/40 nm	PerCP-Vio 700
785/62 nm	PE-Vio 770

640 nm

667/30 nm	APC/Vio Bright R667
725/40 nm	Vio Bright R720
785/62 nm	APC-Vio 770

MACSQuant VYB

Your benchmark for fluorescent protein flow cytometry

On top of the performance, automation, compactness, and convenience associated with the MACSQuant Family of flow cytometers, the MACSQuant VYB comes with a uniquely configured optical bench, featuring violet, yellow, and blue lasers. It is a perfect match for labs utilizing fluorescent protein reporters or for labs that are looking to fine-tune the combination of PE and FITC conjugates to enhance panel performance and data quality.

Technology highlight: Finding the right fit for fluorescent proteins with the yellow laser

- Fully utilize fluorescent proteins and reporter applications that require the violet, blue, or yellow laser such as mCherry, GFP, and CFP (fig. 2)
- Optimal excitation of PE and PE tandem dyes
- Minimize compensation for FITC / GFP and PE conjugates (fig. 3)

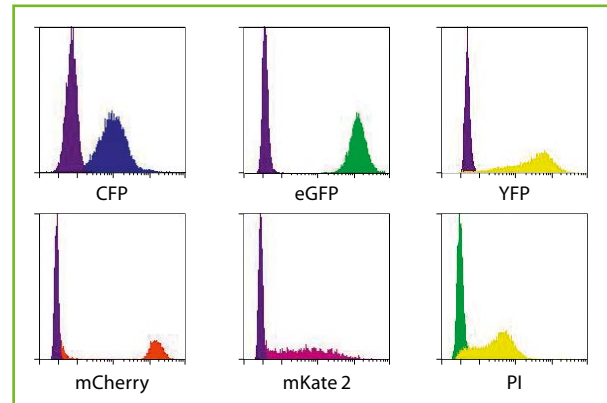


Figure 2: The MACSQuant VYB can detect a wide range of fluorescent proteins. Histograms of cells transfected with CFP, GFP, YFP (top row), mCherry, and mKate 2 (bottom row) are easily distinguished from non-transfected cells (shown in purple). GFP and YFP are often difficult to distinguish using flow cytometry due to similarities in their emission spectra. With the MACSQuant VYB, YFP (shown in yellow) and GFP (shown in green) cells are clearly distinguishable when observed in the PI channel (bottom right).

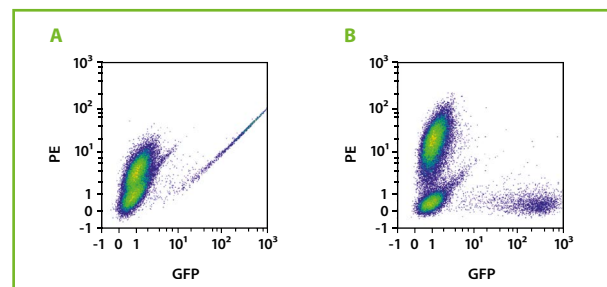


Figure 3: Cells expressing GFP were stained using a PE-conjugated antibody against a dim marker and analyzed using the MACSQuant VYB. Excitation of both PE and GFP with the blue 488 nm laser only minimally resolves the two signals (A). In comparison, excitation of PE by the yellow 561 nm laser and of GFP by the blue 488 nm laser fully resolves these two signals without the need for any compensations (B).

MACSQuant VYB optical bench

405 nm

452/45 nm	VioBlue/Vio Bright V423
525/50 nm	VioGreen

488 nm

525/50 nm	GFP, FITC
593–650 nm	PI, LSS-mKate

561 nm

561/4 nm	FSC
561/4 nm	SSC
586/15 nm	PE
615/20 nm	mCherry, PE-Vio 615, Texas Red
661/20 nm	mKate, APC, Vio Bright R667
740 nm LP	PE-Vio 770, APC-Vio 770



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