

The MACSQuant[®] X

Reliable high-throughput flow cytometry



JOIN THE
FLOW
REVOLUTION

Innovative benchtop screening

The MACSQuant® X has been engineered from the ground up as a compact flow cytometer made to provide maximum 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 optimize time while enjoying the certainty of getting reliable results every single run, the MACSQuant X has been designed to meet high-throughput cell analysis needs for the most challenging large-scale screening settings.

High-throughput

Process and analyze up to 10 parameters in 384- and 96-well formats.

Speed

Run an entire 96-well plate in only 15 minutes and a whole 384-well plate in under 60 minutes.

Reliability

Get consistent results every experiment regardless of sample type and volume.

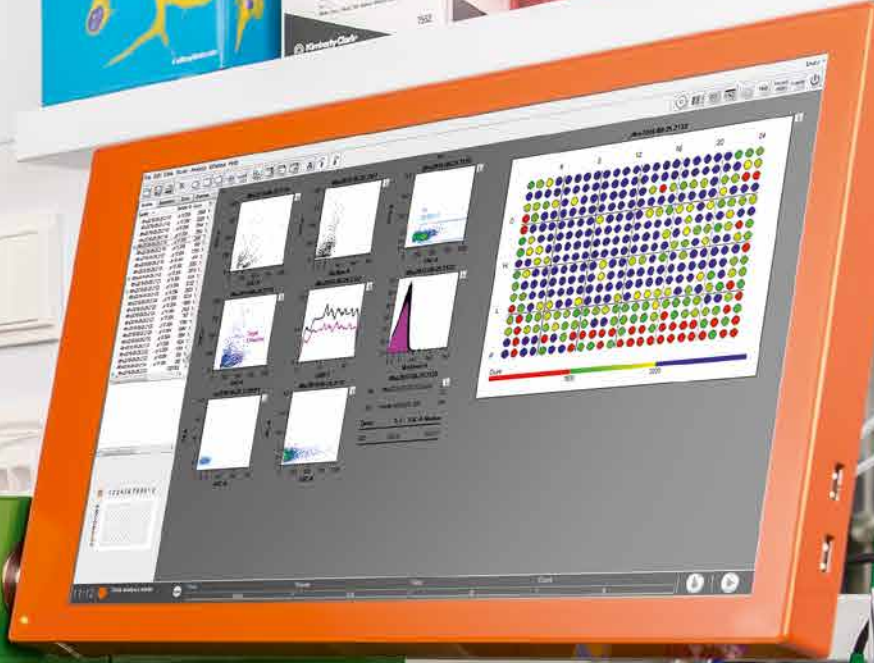
Flexibility

Easily and immediately switch between tubes and plates at the click of a button.

Automation

Take advantage of a truly hands-free instrument, which can be easily integrated into liquid handlers.







High-throughput



Speed



Reliability

MACSQuant® X
Orbital Shaker

Speed meets reliability

Compact and consistent high-throughput flow cytometry

Get more out of every plate

The MACSQuant® X gives you access to affordable and easy-to-use, 10-parameter high-throughput flow cytometry. Building on the core of our successful line of MACSQuant Instruments, we have developed a flow cytometer capable of processing various types of tubes and plates.

- 384-well plate in less than 60 minutes
- 96-well plates in 15 minutes

The MACSQuant X fluidics system utilizes less running buffer during each run, enabling the processing of multiple plates without the need to exchange buffer bottles. This miniaturization makes it possible to use 384-well plates for any type of cell- or bead-based assay allowing you to use less sample volume while getting consistent results.

In 15 minutes from start to analyzed data

Built with speed in mind, the MACSQuant X allows you to screen record amounts of data in a short period of time. Each sample is saved as an individual file, allowing you to either analyze every sample on the fly or access ready-to-analyze samples immediately after the plate processing has finished.

When used in conjunction with our MACSQuantify™ Software, a heat map view allows for rapid visual depiction of the information measured for every sample, even while the instrument is continuously acquiring samples.

Biology's variability measured with consistency

At Miltenyi Biotec we believe that instruments should adapt to your experimental set-up, and not vice versa. That is why the MACSQuant® X provides reliable data regardless of the chosen flow rate, sample type or uptake volume. Expect consistently low sample variability even with an uptake volume as low as 5 µL per sample (fig. 1). Fulfilling the industry's gold standard of less than 0.01% carryover between samples, the MACSQuant X gives you the certainty of data you can trust, even when screening hundreds of samples at a time.

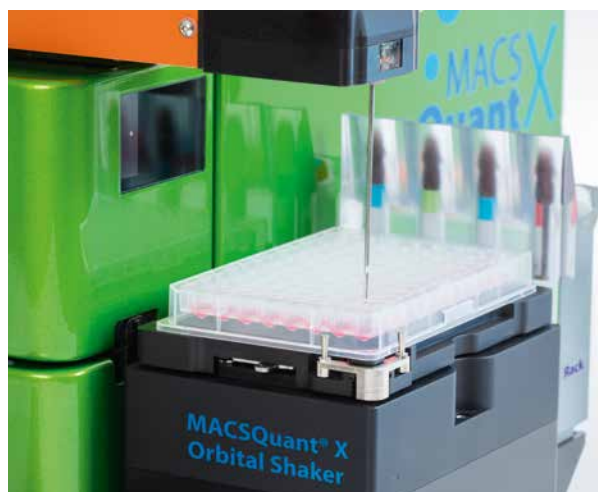
Consistent results with as little as 5 µL uptake volume per sample.



Figure 1: Fast and reliable high-throughput 96- and 384-well plate processing.



Accelerate
flow cytometry
and change the
speed of discovery.



One cytometer for all your needs

The integrated MACSQuant® X Orbital Shaker allows you to easily set up your experiment and choose between a 384-well plate, 96-well plate, tube rack or single tube set-up at the click of a button. The MACSQuant X gives you the speed of a screener together with the robustness of a day-to-day cytometer, all within one compact instrument.

Choose between different sample re-suspension options, giving you control over how and when to re-suspend your samples, ensuring consistent results regardless of your assay (fig. 2)

Sample mixing options:

- **Orbital shaker** – gentle, 2-dimensional mixing of all samples within the plate at once
- **Vibration needle** – effective, individual mixing even for hard to re-suspend samples

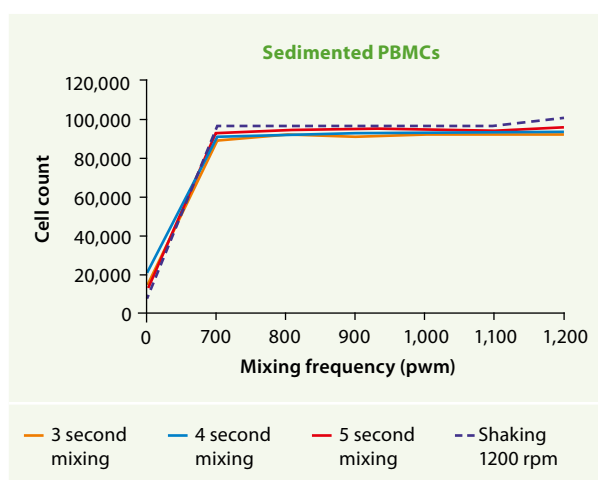


Figure 2: Flexible sample re-suspension.



Automate your workflow and speed up your analysis



Place your samples and walk away

Enjoy hands-free maintenance and sample processing with the built-in automation capabilities of the MACSQuant® X. From start-up and cleaning routines, to compensation and shut-down, everything is completely automated, leaving you more time to focus on your science.

The MACSQuant X's integrated robotic pipetting arm can also stain your samples for you, allowing you to enjoy hands-free labeling of up to 384 samples at a time. Just load the plate with your sample and let the MACSQuant X do the work for you.

Intuitive and powerful software solutions

MACSQuantify™

Setting up and analyzing an experiment using our integrated MACSQuantify™ Software has never been easier. Simply plan and schedule all automated housekeeping functions, sample layouts and labeling options directly from within the software itself. Or use the remote monitoring functionality of the MACSQuantify Software to know the status of the MACSQuant X regardless of where you are.

With 21 CFR Part 11 compliance available, you can be sure that all data acquired is suitable for submission to regulatory agencies.

Flowlogic™

The all new Flowlogic™ Flow Cytometry Analysis Software makes fast and accurate analysis of big data possible. With integrated gating, graphing and reporting functions it has never been easier and faster to generate ready-to-use high quality data. Automated features for compensation, curve fitting, statistical analysis, cell cycle and proliferation data enable you to perform advanced analyses of hundreds, even thousands of files, with only a few clicks.

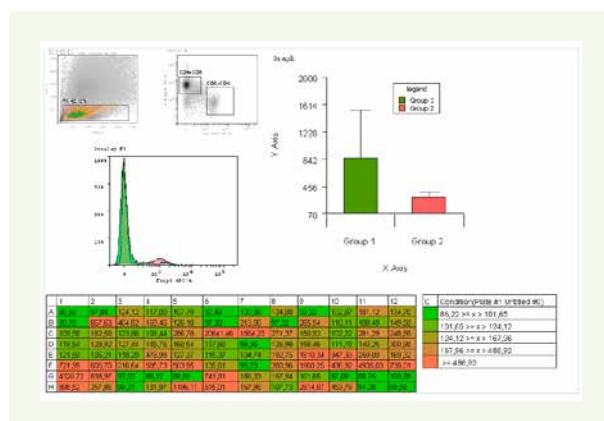
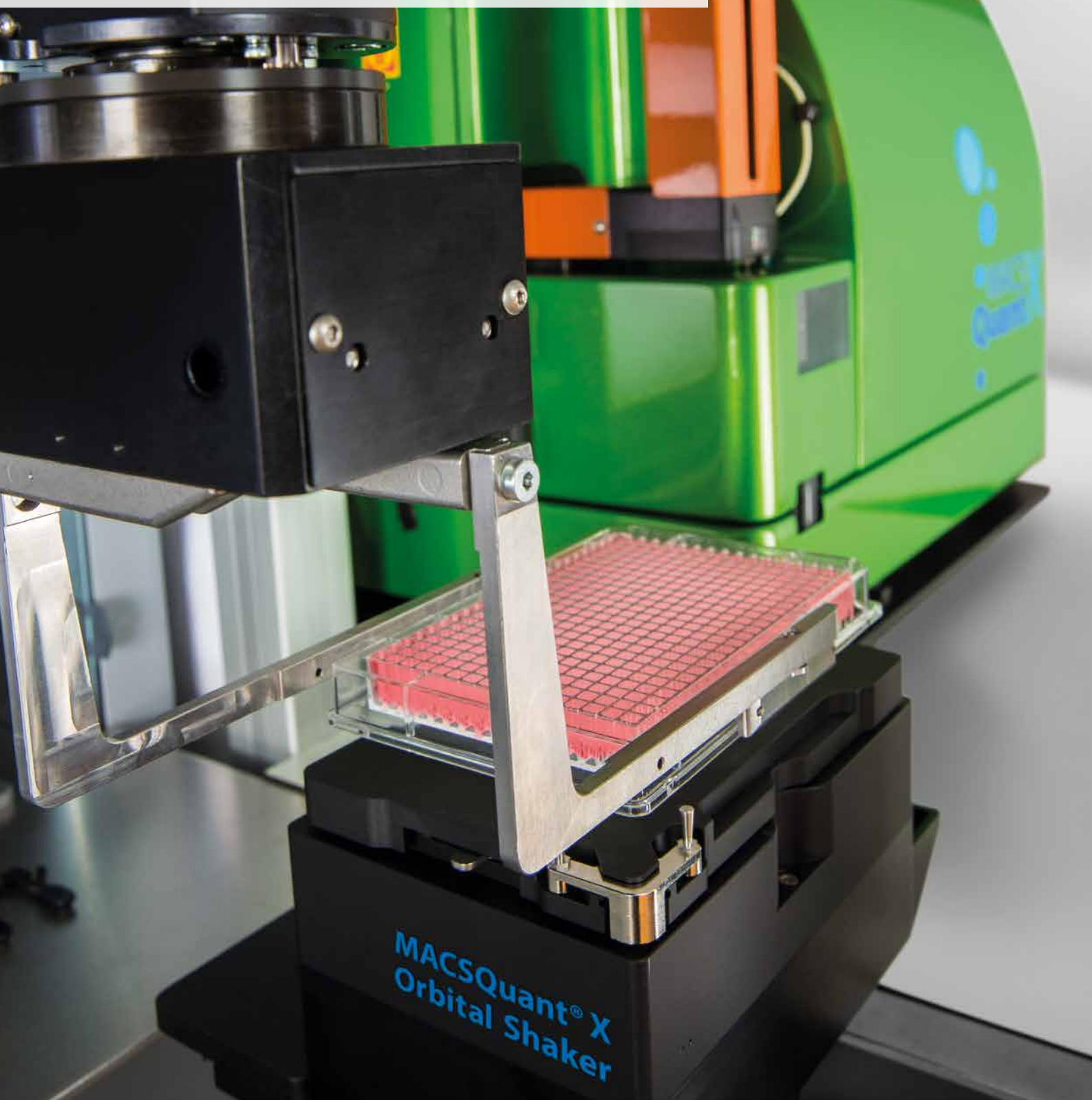


Figure 3: Ready-to-go-report. Display all results from your analysis in a customized report with Flowlogic. Everything from gates, statistical analyses, high-quality figures and batch reports can be easily generated using one program. Any changes made to your analysis will update in your report automatically.

Truly hands-free operation

Integration with liquid handling systems

The MACSQuant X was built on the premise of delivering a cytometer robust enough to process thousands of samples in a day. For that reason, it can be seamlessly integrated into a variety of robotic liquid handling systems, giving you access to unprecedented levels of automation.



The complete package for reproducible results in flow cytometry

Achieving maximum reproducibility between experiments cannot depend on the flow cytometer alone. In order to achieve consistent results, Miltenyi Biotec offers a complete flow cytometry solution including a broad range of reagents. We help you make sure that variations in your experiment are due to your sample and not due to unreliable antibodies or instruments.

REAfinity™ Recombinant Antibodies – flow cytometry is in their genes

Miltenyi Biotec has introduced a portfolio of REAfinity™ Recombinant Antibodies that provide superior lot-to-lot consistency and purity compared to mouse or rat monoclonal and polyclonal antibodies. Our recombinant technology also diminishes the need for FcR blocking and allows for analyses with only one single isotype control, generating high quality data with no more background signal while saving efforts when setting up experiments. For more information, visit: www.miltenyibiotec.com/reafinity

Advantages of REAfinity Recombinant Antibodies:

- High lot-to-lot consistency
- One universal isotype
- No more background signal



Vio® Dyes – brighter dyes for flow cytometry

When used in combination with our proprietary Vio® and VioBright™ Dyes, you can take advantage of superior mean fluorescence intensity and high stain indices. As the brightest dyes on the market, setting up complex multicolor experiments has never been so simple. For more information, visit:

www.miltenyibiotec.com/vio



Ready-to-use kits

Use Miltenyi Biotec's range of ready-to-use, pre-titrated kits and save valuable experiment set-up time and assay costs. Our kits have been validated to be used with the automatic labeling capacities of the MACSQuant® X, which in combination with our MACSQuant Express Modes, give you true walk-away capacities. All you have to do is set-up the experiment and come back to look at completely analyzed data.

Customized solutions

Miltenyi Biotec's custom antibody design service enables researchers to benefit from personalized flow cytometry solutions. This service includes purified, functional-grade antibodies, single- and multicolor antibody conjugates as well as multicolor antibody cocktails. To find out more, visit:

www.miltenyibiotec.com/customab

MACSQuant® X Instrument

- Reliable high-throughput screening for reproducible results
- Automation capacities, integration with liquid handling systems



Reagent portfolio

- REAfinity™ Antibodies optimized for flow cytometry
- Vio® Dyes with superior mean fluorescence, ideal for multicolor experiments
- Ready-to-use kits



Your flow cytometry solution



Support and service

- Real-time technical support by MACSQuant Application Specialists
- Dedicated instrument service team including service engineers



Customized solutions

- Tailor-made, functional-grade antibodies and conjugates
- Personalized multicolor antibody cocktails
- Customizable express modes



MACSQuant® X specifications

Optics

Laser excitation	404 nm, 488 nm, 640 nm			
Emission detectors	FSC: 488/10 nm SSC: 488/10 nm	B1: 525/50 nm B2: 585/40 nm B3: 655–730 nm B4: 750 nm LP	V1: 450/50 nm V2: 525/50 nm	R1: 655–730 nm R2: 750 nm LP
Fluorescence sensitivity (MESF)	FITC < 150 PE < 100 APC < 150			
Fluorescence detectors	Optimized with spectrally matched PMTs for all channels			

Fluidics

Minimal measurement volume	1 µL
Sample flow rate	25–100 µL / minute plus automated flow rate to maintain 500, 1000, or 2000 events / s
Measurement speed	15 minutes per 96-well plate (5 µL measurement volume; fast mode) < 60 minutes per 384-well plate (5 µL measurement volume; fast mode)
Sample uptake	Uptake port (for y/z axis movements) with an automated washing station
Maximal event rate	15,000 events / second
System maintenance	Automated startup, PMT calibration, cleaning cycles, and shutdown
Absolute counts performance	CV < 10% (fast mode) CV < 5% (standard mode) CV < 4% (extended mode)
Sample carryover	< 0.01% (extended washing) < 0.1% (standard washing) < 3% (fast washing)
Sample tube/plate	384-well plate (U, V, flat well) 96-well plate (U, V, flat well, deep well) FACS tubes (5 mL) Eppendorf tubes
Sample mixing	2-dimensional orbital shaking (200 rpm–3000 rpm) Vibrating needle (300 pwm–1200 pwm)

Data processing

Signal processing	> 20-bit dynamic range in area with 32-bit floating point signal processing
Measurement parameters	Area, width, height for all parameters, with time and volume
Compensation	Automated or manual with 8×8 matrix, during or post acquisition
Trigger	Threshold can be set for any channel by selecting the trigger value

Operation details

Width×depth (with MACSQuant X Orbital Shaker)	814×473 (32×18.6")
Height (adjustable touchscreen)	50 kg / 110 lbs
Weight	50 kg / 110 lbs
Monitor	15.6" HD touchscreen (internal)
Power requirements	100–240 VAC, 50/60 Hz
Power consumption	450 W
Ports	4×USB 2.0, 2×HDMI, VGA, LAN



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