



Miltenyi Biotec

Smart Gain technology

Unique features of the MACSQuantify™ Software
for multi-instrument harmonization

Inter- and intra-instrument harmonization of your MACSQuant® Flow Cytometer, enabling:

- Consistent results over time
- Comparability between sites
- Reliable transfer of Instrument Settings
- Increased standardization

► miltenyibiotec.com/flowstandardization



Multi-instrument harmonization at the touch of a button

Due to inherent differences in the optical components of each device and detection channel, instruments must be optimized independently. Manual adjustment requires a multistep process to achieve equivalent performance between instruments and is highly operator dependent. But with our MACSQuant Analyzer, this harmonization is performed automatically using Smart Gain technology during daily PMT calibration.

How Smart Gain technology works

Smart Gain technology automatically adjusts PMT voltages to predefined target values during daily calibration using MACSQuant Calibration Beads (fig. 1). This allows optimized and validated settings to be reliably transferred from one instrument to another without manual gain adjustment.

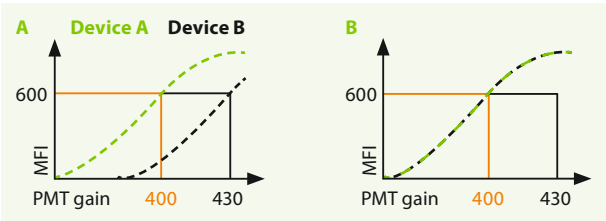


Figure 1: (A) Different PMT gains on device A and B at an MFI of 600. (B) Automatic gain adjustment of both instruments using Smart Gain technology.
Note: Scatter channels and compensation settings should be checked after the transfer of Instrument Settings between devices.

Consistent results through instrument harmonization

To evaluate our Smart Gain technology, the following experiment was performed:

- Lysed whole blood was stained with the 8-Color Immunophenotyping Kit, anti-human, REAfinity®.
- Instrument Settings were developed and optimized on the master unit.
- Instrument Settings were aligned between eight individual devices.
- A single sample was measured in triplicates on each instrument.

Results were highly reproducible (fig. 2, table 1).

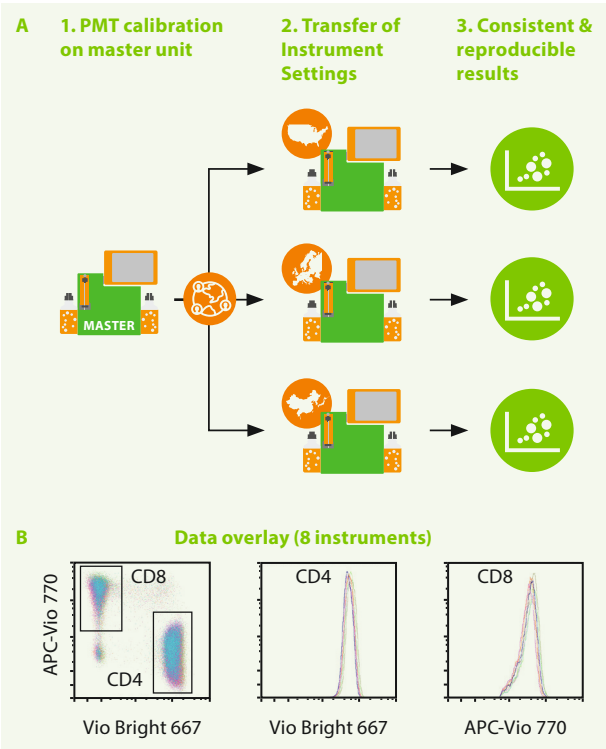


Figure 2: (A) Schematic overview of multi-instrument harmonization: Instrument Settings are transferred from a single master unit to multiple MACSQuant Analyzers in different locations. (B) Data overlays from eight individual MACSQuant Analyzers including CVs of fluorescence intensity. Signal intensities are highly comparable between instruments due to Smart Gain technology.

MACSQuant Analyzer	1	2	3	4	5	6	7	8	
Fluorochrome-conjugated antibody	MFI								CV (%)
CD4-Vio® Bright R667	47.25	52.60	51.69	56.24	53.47	59.89	52.08	49.35	6.93
CD8-APC-Vio 770	35.61	33.64	37.01	39.93	38.79	39.70	32.32	30.48	9.21
CD19-PE-Vio 770	11.97	12.32	13.15	13.29	12.19	12.64	11.38	11.99	4.82
CD3-PE	55.02	51.32	52.66	54.13	50.96	51.19	49.99	52.71	3.05
CD16/56-Vio Bright B515	68.16	81.74	89.17	82.92	83.72	76.64	79.71	68.16	8.85



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