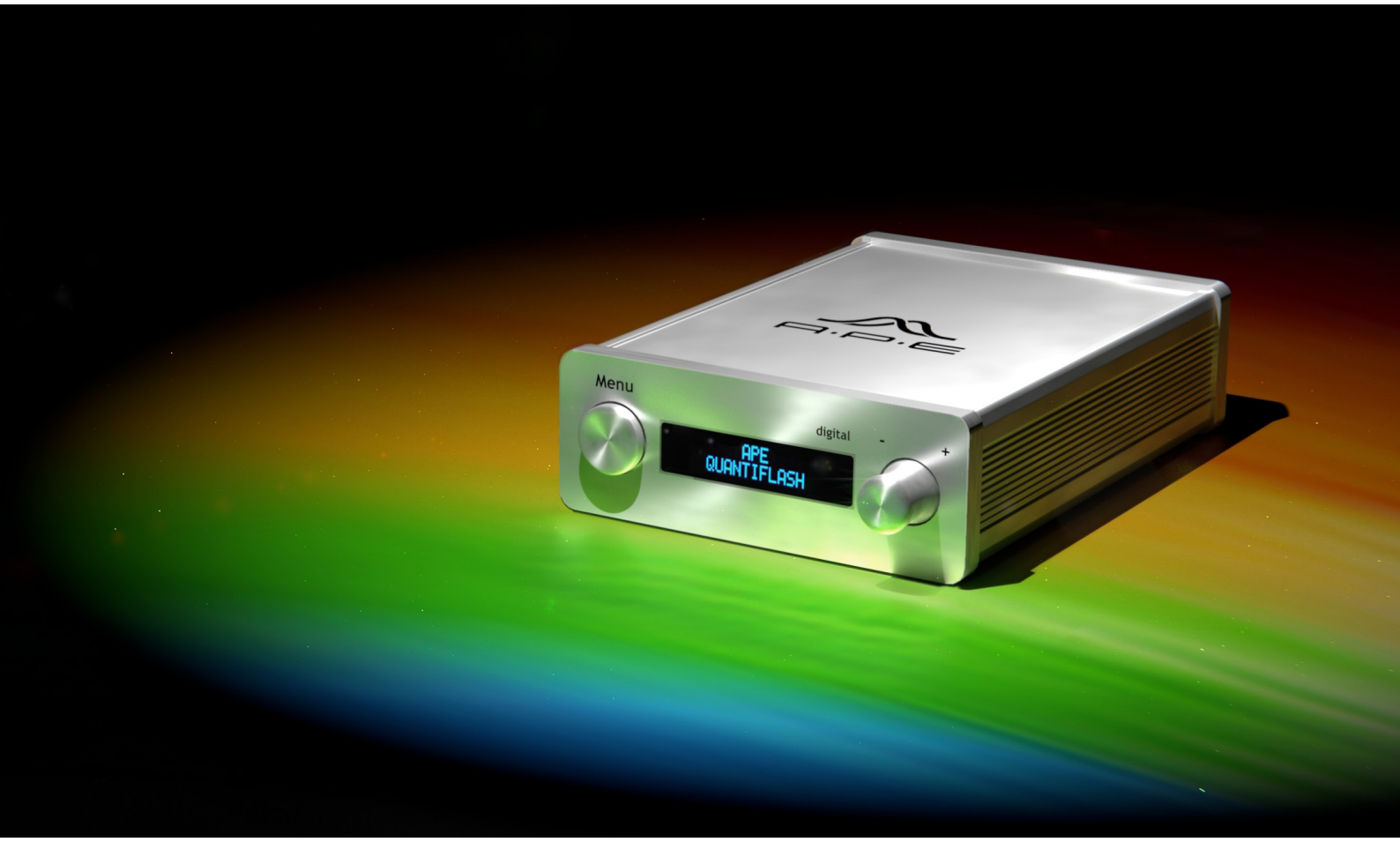
quantiFlash
Calibration Light Source for Cytometry



quantiFlash® Key Facts

- Cytometer calibration with light pulses
- Routine detector / PMT performance test
- Distinguish dim populations from noise
- Calibrate intensity scales to absolute units
- Ideally suited for quality control, service, and development

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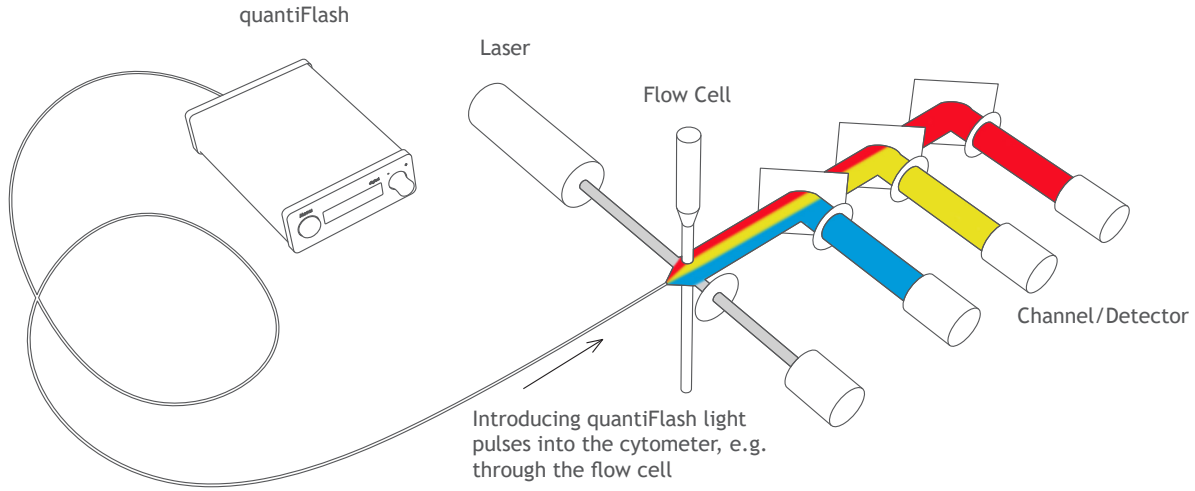
Overview

quantiFlash - a calibration light source - provides consistent and uniform light pulses that are ideally suited for cytometer calibration. The intensity and duration of the pulses is freely adjustable. In contrast to beads, light pulses have a very small intrinsic coefficient of variation, are stable for any length of time and their quality does not depend on storage conditions.

How quantiFlash works

For cytometers the fluorescence beads are primarily a source of light. Light is emitted from a bead as it passes through the laser beam in the focus of the flow cell of the cytometer. As the beads rapidly run through the flow cell, the light they emit is recognized by the detectors as short light pulses.

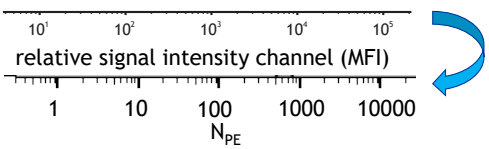
quantiFlash produces very precise light pulses over a high dynamic intensity range and with unsurpassed long-term stability. By replacing bead-based light pulses with quantiFlash, you gain robustness and reproducibility in your calibration routines.



Calibration Protocols

Standard (bead) calibration protocols as well as specific quantiFlash protocols, e.g. from NIST, can be used with quantiFlash. A list of common protocols can be found on our website.

$$CV = \frac{1}{\sqrt{N_{PE}}} \Leftrightarrow N_{PE} = \frac{1}{CV^2}$$



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Low CV

Negligible statistical variations of < 0.1 % CV of the light pulses outperform traditional calibration methods, e.g. beads or other reference samples.

Unlimited Peak

The number of peaks available with traditional calibration particles is typically limited to 4, 6, or 8. There is no such limitation for quantiFlash.

Unlimited Pulse Shapes

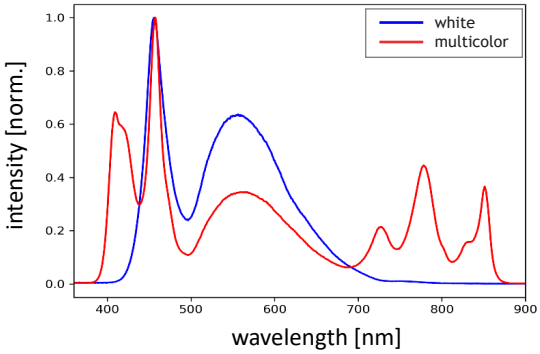
Different pulse shapes are available, e.g. Gaussian or Flat Top. It is further possible to design customized shapes.



Performance Test of PMTs

The perfect linearity of quantiFlash plus the light intensity range of up to 6 decades is ideally suited to test the performance of PMTs (e.g. signal-to-noise ratio (SNR), dynamic range (DNR), sensitivity), the signal processing, and filter setups. It allows the selection of an optimal voltage/gain setup corresponding to the maximum efficiency of PMTs.

Spectral Comparison



Measured spectra of white and multicolor

- Photonic scale calibration
- Study effects of pulse shape and pulse duration
- Simulate multi-pulse events and different pulse shapes
- Optimize PMT voltages and test the linearity of detectors
- Detector tests independent of laser alignment and sample preparation

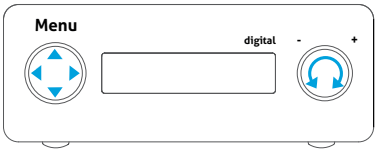
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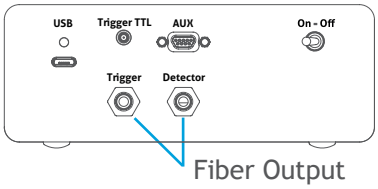


Specifications	white quantiFlash	multicolor quantiFlash
Pulse Duration	1 ... 10 µs Optional up to 100 µs available	1 ... 10 µs Optional up to 100 µs available
Events (Repetition Rate)	500 Hz ... 50,000 Hz | 100 Hz steps	500 Hz ... 50,000 Hz | 100 Hz steps
Repetition Rate Precision	10^{-6}	10^{-6}
Pulse Shape	Variable (Gaussian as default)	Variable (Gaussian as default)
Pulse Amplitude	1 : 10^{-5} (-48 dB)	1 : 10^{-3} (-30 dB)
Amplitude Precision	< 0.1% CV @ 0 dB	< 0.1% CV @ 0 dB
Trigger	Optical and TTL	TTL
Fiber Coupling	2 x fibers with f-SMA connector	1 x fiber with f-SMA connector

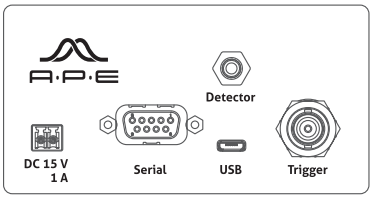
Dimensions and Power		
Dimensions	193 x 124 x 48 (L x W x H in mm)	218 x 130 x 54 (L x W x H in mm)
Power	power Li-ion battery included, rechargeable; power supply unit; USB supply	15V 1 A power supply



Front panel white quantiFlash



Rear side white quantiFlash



Connectors multicolor quantiFlash

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APE follows a policy of continued product improvement. Therefore, specifications are subject to change without notice.

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