BD FACSymphony™ A5 SE Cell Analyzer

The BD FACSymphony™ A5 SE Cell Analyzer features additional high-sensitivity detectors and new software functionality to detect the full spectrum of emitted light and perform live spectral unmixing in BD FACSDiva™ Software, all while retaining the flexibility of familiar compensation-based workflows.

For BD FACSymphony™ A5 Cell Analyzer customers, all these capabilities can be added without the need for a new instrument purchase via the BD FACSymphony™ A5 SE Cell Analyzer upgrade kit.

BD

Technical specifications

Optics

Excitation optics

The BD FACSymphony™ A5 SE Cell Analyzer comes with five standard lasers:
349 nm - 60 mW
405 nm - 200 mW
488 nm - 150 mW
561 nm - 150 mW
637 nm - 140 mW

Flow cell
Rectangular quartz cuvette: Internal cross-section, 430 x 180 µm

External quartz cuvette surfaces are anti-reflective coated for optimal transmission of laser light. Fixed optical assembly with spatially separated laser beams.

Emission optics

Optical coupling
Emitted light from the gel-coupled cuvette is delivered by fiber optics to the detector arrays. The optical pathways use signal reflection to maximize signal detection. Each detector array is equipped with appropriately matched optical filters for light collection.

Forward scatter detector
Photodiode with a 488/10 bandpass (BP) filter for the 488-nm laser

Side scatter detector
PMT with a 488/10 BP filter for the 488-nm laser

Fluorescence detectors
48 fluorescent detectors algorithmically optimized to cover the full spectrum of visible light off standard laser lines:

UV (349 nm): 10 detectors between 365 nm–850 nm
Violet (405 nm): 14 detectors between 415 nm–880 nm
Blue (488 nm): 9 detectors between 500 nm–849.5 nm
Yellow-Green (561 nm): 9 detectors between 570 nm–850 nm
Red (637 nm): 6 detectors between 645 nm–810 nm

Fluidics

Sample flow rates
Front button panel provides three modes: RUN, STANDBY and PRIME.

Continuously adjustable flow rate, plus three preset flow rates:

LO: 12 µL/min

MED: 35 µL/min

HI: 60 µL/min

Fluidic reservoirs
Autoclavable 10-L sheath and waste containers are provided

Performance

Fluorescence sensitivity

Fluorescence sensitivity is dependent on selected configuration, laser wavelengths, laser power, PMTs and filters. Molecules of equivalent soluble fluorochrome (MESF) measurements, using SPHERO™ Rainbow Calibration Particles (RCP-30-5A), were performed on multiple instruments with 488-nm (150 mW), 561-nm (150 mW) and 637-nm (140 mW) lasers. The BD FACSymphony™ A5 SE Analyzer configurations are customer-defined and MESF values may vary based on setup.

FITC: <80 MESF-FITC
PE: <20 MESF-PE
APC: <70 MESF-APC

Fluorescence resolution
Coefficient of variation (CV)

PI: Area, <3.0%, full G^0 /G^1 peak for PI-stained chicken erythrocyte nuclei (CEN)

Fluorescence linearity
Doublet/singlet ratio: PI-stained CEN: 1.95–2.05 (488-nm laser)

Forward and side scatter sensitivity
Sensitivity enables separation of fixed platelets from noise

Forward and side scatter resolution
Scatter performance is optimized for resolving lymphocytes, monocytes and granulocytes

Side scatter resolution
Scatter performance enables separation of 0.5-µm beads from noise

Acquisition rate
40,000 events/second with beads

Data management

Software
BD FACSDiva™ Software v9.6 or later

Live ordinary least squares (OLS) unmixing
Autofluorescence unmixing

Workstation
HP™ Z2 G9 Performance Workstation

- Intel™ Core™ i7-12700 12 C 2.10 GHz 65 W processor
- 2 1-TB PCIe 2280 TLC M.2 SSD
- 64-GB RAM
- Microsoft™ Windows™ 10 Professional (64-bit) OS

Options

BD FACSymphony™ A5 SE Cell Analyzer upgrade kit
Any BD FACSymphony™ A5 Cell Analyzer can be upgraded to a BD FACSymphony™ A5 SE Cell Analyzer with a standard upgrade kit.

BD® High-Throughput Sampler (HTS) Option
Increase lab productivity by utilizing this option to acquire samples from a 96- or 384-well microtiter plate.

Acquisition throughput

High-throughput mode: Less than 15 minutes per microtiter plate using 2-second acquisition

Standard mode: Less than 44 minutes using 10-second acquisition

Carryover

High-throughput mode: <0.5%

Standard mode: <0.75%

BD FACSFlow™ Supply System
Automated fluidics system that includes a rolling cart and two 20-L Cubitainer™ packages

Installation requirements

Instrument dimensions (W x D x H)
101.6 x 78.7 x 101.6 cm (40 x 31 x 40 in.)

Weight
215 kg (474 lb)

Power
Operation at 100/115/230 VAC and 50 or 60 Hz

Temperature operating range
Between 19 and 26 °C (66 and 79 °F)

Operating humidity
10%–90% relative humidity (noncondensing)

Heat dissipation
2,701 BTU/hour

Electrical requirements
BD requires one dedicated circuit for the cytometer and the computer system (including printer), with a dedicated AC source not shared with any other equipment. The instrument will be powered from the line conditioner supplied by BD Biosciences.

Class 1 Laser Product.
For Research Use Only. Not for use in diagnostic or therapeutic procedures.

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bdbiosciences.com