



# BD FACSymphony™ A1 Cell Analyzer

**The BD FACSymphony™ A1 Cell Analyzer** features high-end technology from BD FACSymphony™ platforms in a compact size. The BD FACSymphony™ A1 Cell Analyzer supports high-resolution analysis of up to 16 fluorescent markers simultaneously, by utilizing low-noise electronics, proprietary optical design and high-powered lasers.

For small particle research such as investigation of extracellular vesicles, the newly designed BD® Small Particle

Detector (SPD) option enhances side scatter detection to resolve small particles from noise.

This versatile and compact system is designed to fit in most research labs and runs on industry standard BD FACSDiva™ Software, which streamlines your entire workflow from system setup to data acquisition and analysis.



# Technical specifications

## Optics

### Excitation optics

The optics layout encompasses four lasers in up to four configurations.

#### 14 color\*:

- 6 violet (405 nm)
- 2 blue (488 nm)
- 4 yellow-green (561 nm)
- 2 red (637 nm)

#### 16 color\*:

- 6 violet (405 nm)
- 2 blue (488 nm)
- 5 yellow-green (561 nm)
- 3 red (637 nm)

\*Both 14-color and 16-color configurations can be installed with the BD<sup>®</sup> Small Particle Detector option.

### Laser power

- 405 nm: 100 mW
- 488 nm: 100 mW
- 561 nm: 100 mW
- 637 nm: 100 mW

### Flow cell

Rectangular quartz cuvette: Internal cross-section, 430 x 180  $\mu$ m

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. Please refer to the filter guide for additional information on dye and filter options.

#### Forward scatter detector

Photodiode detector with a 488/10 bandpass (BP) filter

#### Side scatter detector

Photomultiplier tube (PMT) with a 488/10 BP filter

#### Small particle side scatter detector (optional)

Photomultiplier tube (PMT) with a 488/10 BP filter

## 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  $\mu$ L/min
- MED: 35  $\mu$ L/min
- HI: 60  $\mu$ L/min

### Standard fluidic reservoirs

One 10-L sheath container and one 10-L waste container provided

### Sample carryover

<0.3% when acquiring from 12 x 75-mm tubes and running a wash tube between samples

## Performance

### Fluorescence sensitivity

FITC: 60 molecules of equivalent soluble fluorochrome (MESF)

PE: 15 MESF

APC: 20 MESF

FITC, PE and APC measurements were performed using SPHERO<sup>™</sup> Rainbow Calibration Particles (Spherotech Cat. No. RCP-30-5A)

### Fluorescence resolution

Coefficient of variation (CV): Area of <3%, full G /G peak for propidium iodide (PI)-stained chicken erythrocyte nuclei (CEN)

### Fluorescence linearity

Doublet/singlet ratio of 1.95–2.05 for CEN stained with PI and excited with the 488-nm blue 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

Enables separation of 0.3- $\mu$ m beads from noise

### Small particle side scatter resolution

Enables separation of 90-nm polystyrene beads from noise with the BD<sup>®</sup> Small Particle Detector option

### Acquisition rate

25,000 events/second with beads can be achieved

10,000 events/second with <15% abort rate

High acquisition rate may increase the abort rate

## Data management

### Software

BD FACSDiva<sup>™</sup> v9.0.2 Software or later

### Workstation<sup>†</sup>

HP<sup>™</sup> Z2 Mini G5 Workstation

- Intel<sup>™</sup> Core<sup>™</sup> i7 10700 2.9 GHz 8C65W
- Turbo Drive 1 TB 2280 TLC SSD
- 16 GB (1x16 GB) DDR4
- Microsoft<sup>™</sup> Windows<sup>™</sup> 10 Professional (64-bit) OS

<sup>†</sup>Minimum configuration listed. Workstation may include upgraded specifications.

## Options

### BD® Small Particle Detector Option

The small particle detector enables separation of 90-nm polystyrene beads from noise for small particle research such as investigation of extracellular vesicles.

### BD® High-Throughput Sampler (HTS) Option

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 FACSTFlow™ Supply System

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

## Installation Requirements

### Dimensions (W x D x H)

58 x 61 x 59 cm (23 x 24 x 23 in.)

### Weight

52.2 kg (115 lb) depending on configuration

### Power

Operation at 100–240 VAC and 50 or 60 Hz maximum power: 250 watts

### Temperature operating range

Between 15 and 30 °C

±2.5°C variation in the same day

### Heat dissipation

~860 BTU/hour depending on configuration

### Air supply

None required

### 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.

## Compliance with safety standards

UL 61010-1 (US)

IEC 60825-1 (Europe)

CAN/CSA C22.2 No. 61010-1-12 (Canada)

CAN/CSA E60825-1 (Canada)

Class 1 Laser Product.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

BD Life Sciences, San Jose, CA 95131, USA

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