BD FACSymphony™ A5 Cell Analyzer

Special Order Research Product

The BD FACSymphony™ A5 Cell Analyzer is a novel high-parameter system that leverages the inherent benefits of flow cytometry and enables the simultaneous measurement of up to 50 different characteristics of a single cell. The cell analyzer is manufactured as a Special Order Research Product and is highly customizable with options of up to nine different lasers of chosen wavelengths and power ratings, up to ten photomultiplier tubes (PMTs) per laser arranged in decagon arrays and with numerous filter combinations. BD FACSymphony™ Systems are field upgradeable to support the addition of any new advances in technology.
Technical specifications

**Optics**

**Excitation optics**
Optics layout accommodates up to nine lasers simultaneously.
Select from 26 different lasers of varying power levels, ranging from 20 mW to 1,000 mW.
Most common laser wavelengths are 355 nm, 405 nm, 488-nm, 561 nm and 637 nm.

**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**
Flexible detector array technology enables user-defined detection configurations. Filters and mirrors are interchangeable.

**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**
May vary dependent on the combination of laser and filter selections

**Fluorescence resolution**
Coefficient of variation (CV)
PI: Area, <3.0%, full G₀/G₁ 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 v9.1 or later

**Workstation†**
HP® Z2 G4 Mini Workstation
- Intel® Core™ i7-8700 processor
- 1-TB NVMe SSD
- 16-GB RAM
- Microsoft® Windows® 10 Enterprise
- 2019 LTSC (64-bit) OS

*Minimum configuration listed. Workstation may include upgraded specifications.
Options

**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.