BD FACSCanto II Flow Cytometer

Technical Specifications

Built on more than 25 years of BD experience and leadership in flow cytometry and multicolor analysis, the BD FACSCanto™ II system is an easy-to-use benchtop analyzer that delivers proven performance, accuracy, and high-quality results. The BD FACSCanto II can be configured with two or three lasers to detect up to eight colors. It features many innovations, including a true fixed alignment flow cell to minimize startup time and improve reproducibility. The optical system maximizes signal detection and increases sensitivity and resolution for each color in a multicolor assay. These and other capabilities make the BD FACSCanto II ideal for today's busy clinical lab, providing a high degree of automation and quality control. With optimal reproducibility, the BD FACSCanto II system reduces hands-on technician time and costs associated with repeat testing.

Optics

Lasers
Air-cooled:
488-nm solid state, 20-mW laser output

633-nm HeNe, 17-mW laser output

Laser Configuration
Spatially separated beams with 9 x 65-µm elliptical spots

Optical Alignment Procedure
Fixed, no operator alignment required

Flow Cell
180 x 430-µm rectangular quartz flow cell

Collection Optics
Optical-gel coupled 1.2 NA lens

FSC Resolution
1.0 µm

SSC Resolution
0.5 µm

Fluorescence Detector Design
Reflective optics with single transmission filter in front of each PMT

FSC Detector
Photodiode with 488/10 BP

SSC Detector
PMT with 488/10 BP

Fluorescence Detectors
6 PMTs in 4-2 standard configuration

Blue Laser Dyes
FITC, PE, PerCP or PerCP-Cy™5.5, PE-Cy™7 (525, 575, 678 or 695, 785 nm)

Red Laser Dyes
APC, APC-Cy7 (660, 785 nm)

Detector Bands
Blue Laser:
530/30; 585/42; >670; 780/60 nm

Red Laser:
660/20; 780/60 nm

Fluorescence Threshold Sensitivities
FITC <100 MESF; PE <50 MESF

Sensitivity Measurement Using BD FACS 7-Color Setup Beads
Sensitivity determined with the setup beads measures the ability to resolve a dimly stained population from unstained cells. This sensitivity measure takes into account both the separation of the populations and the broadness of the negative population. Different fluorochromes give different separation of the stained and unstained populations; this is also taken into account in the sensitivity measurement. The higher the reported number, the higher the resolution.

Minimum values:
FITC >15; PE >80; PerCP >9; PerCP-Cy5.5 >25; PE-Cy7 >120; APC >40; APC-Cy7 >16

Filter Change Procedure
Keyed filters, no tools required

Fluidics

General Operation
Integrated fluidics cart and compressor with onboard housekeeping solutions for automated startup, shutdown, and cleaning cycles

Sheath Consumption
1.10 L/h normal operation; <1 mL/h standby

Housekeeping Solution Capacities
BD FACSFlow™ sheath solution 20 L

BD™ FACSClean solution 5 L

BD FACS™ shutdown solution 5 L

Waste tank 10 L

Carryover
≤0.1%

Sample Injection
Direct into flow cell

Max Particle Size
50 µm

Sample Flow Rate, Min
10 µL/min

Sample Flow Rate, Max
120 µL/min

Sample Acquisition Rate
10,000 events/second, 6 compensated fluorescence parameters and 2 scatter parameters

Sample Dead Volume
30 µL (BD Falcon™ tubes 12 x 75-mm)

System Cleaning
Daily: Automated startup and shutdown procedures

Monthly: Run long clean

Data Management System

Parameters
Area (A), Width (W), Height (H) for all channels with up to 2 ratios, and Time (T)

Signal Processing
18-bit dynamic range with IEEE 32-bit floating-point resolution

Threshold
Single parameter (any channel) or logical combinations of multiple parameters (any or all channels)

Compensation
Full inter-beam matrix, during or post acquisition

Maximum Logical Gate Regions
Limited only by system memory (2 GB RAM)

CPU/Monitors
HP Xw4600, with either 19" or 24" flat screen monitors

Software
BD FACSDiva™ v6.1.3,
BD FACSCanto™ clinical v2.2 or 2.4

Operating System
Microsoft® Windows® XP Pro

Cytometer Options

8-Color Option with 3 Lasers

Lasers
Air-cooled:
405-nm solid state diode, 30-mW fiber power output

488-nm solid state, 20-mW laser output

633-nm HeNe, 17-mW laser output

Fluorescence Detectors
8 PMTs in 4-2-2 configuration

Laser Dyes
Violet:
Pacific Blue™, AmCyan (455, 488 nm)

Blue:
FITC, PE, PerCP or PerCP-Cy5.5, PE-Cy7 (525, 575, 678 or 695, 785 nm)

Red:
APC, APC-Cy7 (660, 785 nm)

Detector Bands
Violet:
450/50; 502 to 525 nm

Blue:
530/30; 585/42; >670; 780/60 nm

Red:
660/20; 780/60 nm

8-Color Option with 2 Lasers

Lasers
Air-cooled:
488-nm solid state, 20-mW output

633-nm HeNe, 17-mW output

Fluorescence Detectors
8 PMTs in 5-3 configuration

Laser Dyes
Blue:
FITC, PE, PE-Texas Red®, PerCP or PerCP-Cy5.5, PE-Cy7 (525, 575, 615, 678 or 695, 785 nm)

Red:
APC, Alexa Fluor® 700, APC-Cy7 (660, 720, 785 nm)

Detector Bands
Blue:
530/30; 585/42; 616/23; >670; 780/60 nm

Red:
660/20; 712/21; 780/60 nm

Sample Input with BD FACS™ Loader Option

Loading
40-tube carousel

Sample/test ID
Indexed carousel, with carousel ID barcode reader

Worklist importable from BD FACS™ Sample Prep Assistant (SPA) III

Throughput
56 min/carousel with BD™ Multi-check high controls,

66 min/carousel with BD Multi-check low controls using BD Multitest™ 6-color TBNK application

Miscellaneous
Multiple clinical applications can be run on the same Loader carousel.

Sample Input with BD High Throughput Sampler Option*

Loading
96- and 384-well microtiter plates

Throughput
<15 min/96-well plate in high-throughput mode with 2-second acquisition

Carryover
≤1%

Barcode Reader with Stand

Use with
BD FACSCanto clinical software

2D Reader
Streamlined input of BD FACS™ 7-color setup bead target values, input of patient information

* For Research Use Only

Specifications

Installation Requirements

Size (D x W x H)

Cytometer:
24 x 36 x 25 in. (61 x 91 x 64 cm)

Fluidics cart:
24 x 31 x 25 in. (61 x 79 x 64 cm)

The cytometer depth increases to 30 in. (76 cm) with the BD FACS Loader and HTS option installed

Weight

Cytometer:
320 lb (145 kg)

Fluidics cart:
112 lb (51 kg)

Power

100/115/230 VAC, 50–60Hz

Operating Environment

16–30°C, 20–80% noncondensing relative humidity

Heat Dissipation with BD FACS Loader Installed

1,843 BTU/h

Class I (1) laser product.
For In Vitro Diagnostic Use.
CE marked according to the In Vitro Diagnostic Medical Device Directive 98/79/EC.

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