

BD Biosciences Technical Specifications

BD™ LSR II

The Most Flexible Flow Cytometer Available.

Introduction

The BD LSR II is the first and only air-cooled, four-laser benchtop flow cytometer with the ability to acquire up to 18 colors. At the heart of the BD LSR II is the new digital acquisition, allowing for additional parameters to be detected, and yielding more information per cell. BD Biosciences digital flow cytometry software provides both online and offline compensation running in a Microsoft® Windows®-based environment. Configure your cytometer with fixed-alignment 488-nm, 633-nm, 405-nm, and 355-nm lasers as well as a variety of optional lasers. Light is transmitted by fiber optics to an innovative Octagon detector array with user-interchangeable reflective dichroics and optically matched bandpass filters for increased sensitivity. Multicolor experiments are now easier when running them on the BD LSR II.

For more information contact your BD Biosciences sales representative.



Performance

Fluorescence Sensitivity

Measurements performed using SPHERO™ Rainbow Calibration Particles RCP-30-5A.

FITC-A: 80 molecules of equivalent soluble fluorochrome (MESF-FITC)

PE-A: 30 molecules of equivalent soluble fluorochrome (MESF-PE)

Fluorescence Resolution

Coefficient of variation PI-Area of <3%, full G₀/G₁ peak for propidium iodide (PI)-stained chicken erythrocyte nuclei (CEN).

Fluorescence Linearity

Doublet/singlet ratio of 1.95-2.05 for CENs stained with PI detected off the 488-nm or stained with DAPI detected off the UV laser.

Forward and Side Scatter Sensitivity

Enables separation of fixed platelets from noise.

Forward and Side Scatter Resolution

Scatter performance is optimized for resolving lymphocytes, monocytes, and granulocytes.

Sample Acquisition Rate

>20,000 events/sec (2 x 10⁷ cells/mL running at 60 μL/min)

BD Biosciences

bdbiosciences.com

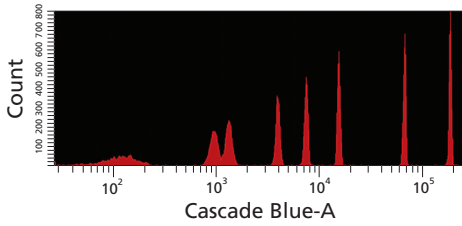
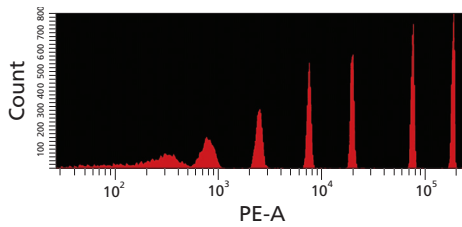
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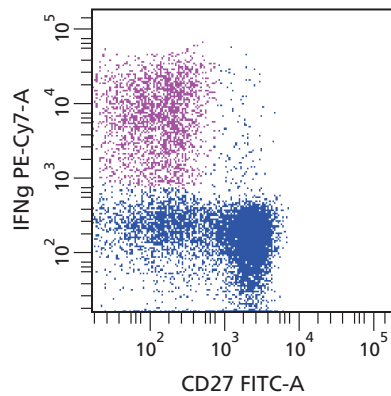
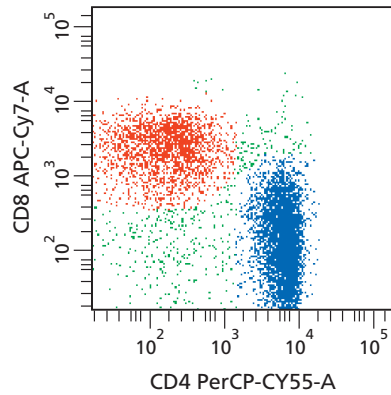
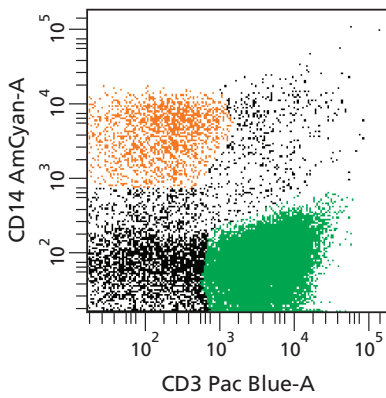
Class 1 (I) laser product.

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Spherotech 8 Peak Beads



PBMCs stimulated with SEB + BFA

Excitation Optics

Optical Platform

Fixed optical assembly of the lasers on the cuvette flow cell

Lasers

20-mW; Coherent® Sapphire™ 488-nm, air-cooled argon-ion laser

25-mW; 405-nm Coherent VioFlame™ Plus

20-mW; 635-nm JDS Uniphase™ HeNe

20-mW; 355-nm Lightwave solid state laser

Laser Beam Size and Shape

Beam height is $15 \pm 3\text{-}\mu\text{m}$ and beam width is $75 \pm 15\text{-}\mu\text{m}$

Optional Lasers (available as a custom option)

100-mW; 488-nm Coherent Sapphire Laser

150-mW; 532-nm Coherent M315 Laser

30-mW; 638-nm Coherent Cube Laser

50-mW; 405-nm Coherent Radius Laser

20-mW; 594-nm REO Yellow Laser

25-mW; 780-nm Coherent Radius Laser

Emission Optics

Optical Coupling

Quartz cuvette is coupled to emission lens by refractive index-matching optical gel for optimum collection efficiency.

Laser steering delivers special separated laser beam to the flow cell

Four fixed fiber apertures

(125- μm separation)

Fluorescence detectors

High-performance, high dynamic range photomultiplier and red-sensitive photomultipliers with filters

Four wavelengths detected from the 488-nm laser (standard filters):

515–545 nm FITC

562–588 nm PE

675–715 nm PerCP-Cy5.5 or PE-Cy5.5

750–810 nm PE-Cy7

Two wavelengths from the 635-nm laser (standard filters):

650–670 nm APC

750–810 nm APC-Cy7

Two wavelengths from the 355-nm laser (standard filters):

395–415 nm Indo-1 (Violet)

425–475 nm DAPI or Hoechst

Two wavelengths from the 405-nm laser (standard filters):

420–460 nm Cascade Blue®

505–585 nm Alexa Fluor® 430

Additional bandpass filters supplied:

663–677 nm PE-Cy5

750–810 nm PE-Cy7

515–545 nm Indo-1 (Green)

Filters and mirrors are user changeable

Optional Filter Sets can be purchased

GFP/YFP

Stem Cell Side Population

PE-Cy5

Alexa Fluor® 700

Signal Processing

Workstation Resolution

262,144 linear channels displayed in a 5-decade logarithmic display

Data Acquisition Channels (standard)

Twelve acquisition channels: 10 fluorescent and two scatter parameters

Dynamic Range

18-bit data acquisition

Fluorescence Compensation Networks

Inter- and intra-beam software programmable resolution of 0.01%

Pulse Processing

Width and Area measurements available for all fluorescence parameters

Ratio measurements for intra-laser parameters (useful for calcium measurements)

Time

Time available correlated to any parameter for kinetic experiments or other applications

Channel Trigger

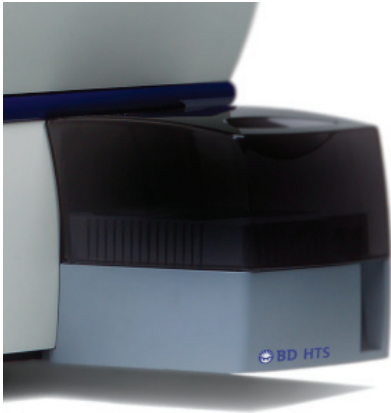
Available for any parameter for any laser

Ability to create logical AND/OR of channel triggers

Fluidics

General Operation

Front key panel provides three modes: RUN, STNDBY, and PRIME; automatic standby mode conserves sheath fluid by stopping sheath flow when no sample tube is installed.



BD LSR II with BD HTS Option

Sample Flow Rates

Three selectable flow rates

Regulated pressure difference between sheath and sample

Quartz Cuvette

Internal cross-section is rectangular 430 x 180 mm; external surfaces are anti-reflection coated for maximum transmission of laser light.

Option

BD High Throughput Sampler (HTS) option is available to increase your lab productivity by acquiring samples from a 96- or 384-well microtiter tray.

HTS Performance

Throughput

<15 minutes in high-throughput mode using a 2 sec acquisition

<44 minutes in standard mode using a 10 sec acquisition

Carryover

<1%

Data Management System

Workstation

PC workstation with at least an Intel Pentium® 4 processor @ 3.0 GHz or faster

Memory

2 GB RD RAM

Data Storage

80 GB hard drive

DVD/CD-ROM read/write combo drive

Iomega® Zip 750 MB

Floppy drive

Networking

Ethernet

Monitor

Two 18-inch LCD monitors

Printer

Networkable color inkjet printer

Data File Structure

Flow Cytometry Standard (FSC) 3.0 or 2.0

Software

BD FACSDiva™ software for the BD LSR II flow cytometer