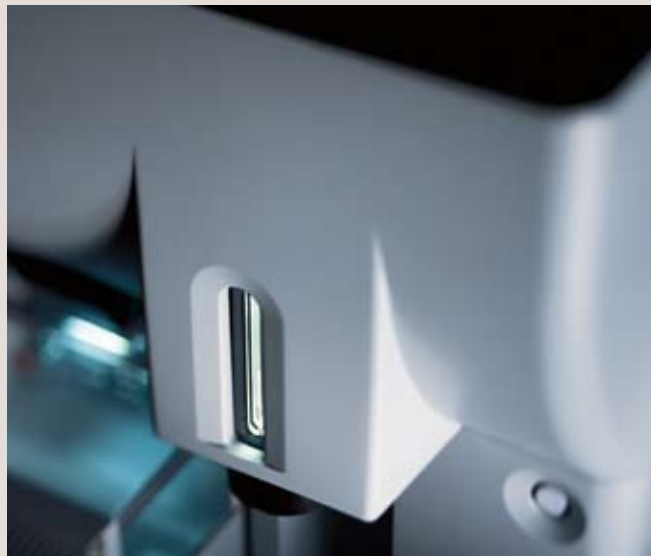


BD FACSAria

Cell Sorter



The BD FACSAria™ cell sorter sets a new standard for high-performance flow cytometry. Based on an entirely new design in instrumentation, the BD FACSAria instrument is the first benchtop sorter that incorporates a fixed-alignment cuvette flow cell that can detect up to 13 colors, for a total of 15 parameters. The cuvette flow cell allows for up to three air-cooled or solid state lasers at 488 nm, 633 nm, and 405 nm.

Faster digital electronics allow for acquisition rates of up to 70,000 events per second. High-performance sorting is easy to set up, perform, and monitor with built-in BD FACST™ Accudrop technology and sort monitoring features within the software.

For more information about the BD FACSAria flow cytometer or other quality products from BD Biosciences, please contact your local sales representative or call one of the locations listed on the back page.



Helping all people
live healthy lives

Performance

Fluorescence Sensitivity

Measurements performed at 70 psi and 90 kHz using SPHERO™ Rainbow Calibration Particles RCP-30-5A

FITC: 125 molecules of equivalent soluble fluorochrome (MESF-FITC)

PE: 125 molecules of equivalent soluble fluorochrome (MESF-PE)

Fluorescence Resolution

Coefficient of variation PI–Area of <3.0%, full G0/G1 peak for propidium iodide (PI)-stained chicken erythrocyte nuclei

Coefficient of variation Hoechst–Area of <3.5%, full G0/G1 peak for Hoechst-stained chicken erythrocyte nuclei

Fluorescence Linearity

Doublet/singlets ratio for CEN stained with PI = 1.95–2.05
detected off the 488-nm laser or Hoechst = 1.95–2.05
detected off the 405-nm laser

Forward and Side Scatter Sensitivity

Sensitivity enables separation of fixed platelets from noise, identification of bacteria, and 0.5-micron beads.

Forward and Side Scatter Resolution

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

Sample Acquisition Rate

Maximum acquisition rate: 70,000 events per second with 8 parameters, 12 compensation pairs. Maximum rate < 70,000 events per second with more parameters, > 100,000 events per second with fewer parameters.

Sort Performance

Drop Drive Frequency

Range from 1 to 100,000 Hz

Purity and Yield

At 70 psi and 90 kHz with an average threshold rate of 25,000 events per second for a four-way sort results in a purity of > 98% and a yield > 80% of Poisson's expected yield.

Viability

Sorts were performed at a variety of sheath pressures using cell lines and human peripheral blood mononuclear cells. All sorts resulted in cells that proved viable and proliferated for several days post-sort.

Sort Collection Devices

Two-way sorting into the following sample tube collection devices: microtubes, 12 x 75 mm, and 15 mL

Four-way sorting into the following sample tube collection devices: microtubes and 12 x 75 mm

Automatic Cell Deposition Unit (ACDU) option allows for slide and plate sorting into 6, 24, 48, 96, and 384 well plates

Sample Collection Cooling

Water recirculator for refrigeration/heating (optional)

BD FACS Accudrop

633-nm red-diode laser provided for quick drop-delay determination

Excitation Optics

Optical Platform

Fixed optical assembly of the lasers on the cuvette flow cell

Lasers and Laser Power out of the Fiber

488-nm Coherent® Sapphire™ solid state:

13 mW–20 mW

633-nm JDS Uniphase™ HeNe air-cooled:

10 mW–20 mW

405-nm Point Source Violet solid state: 10 mW–25 mW (optional)

All lasers are Class IIIb.

Laser Beam Size and Shape

Beam height is 9 +/- 3 µm and beam width is 65 +/- 7 µm

Elliptical shape

Emission Optics

Optical Coupling

Quartz cuvette flow cell is gel-coupled by refractive index-matching optical gel to the fluorescent objective lens for optimal collection efficiency

Numerical aperture is equal to 1.2.

Forward Scatter Detector and Filters

Photodiode detector with a 488/10 bandpass filter

Side Scatter Detector

Photomultiplier with 488/10 bandpass

Fluorescence Detectors and Filters

Three fixed fiber apertures (200-micron separation)

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

515–545 nm FITC

564–606 nm or 563–589 nm PE

600–620 nm PE-Texas Red®

675–715 nm PI or PerCP-Cy™5.5 or 665–685 nm PE-Cy™5 or PerCP or 750–810 nm PE-Cy™7

Two wavelengths detected from the 633-nm laser (standard filters):

650–670 nm APC

750–810 nm APC-Cy7

Two wavelengths detected from the 407-nm laser (standard filters):

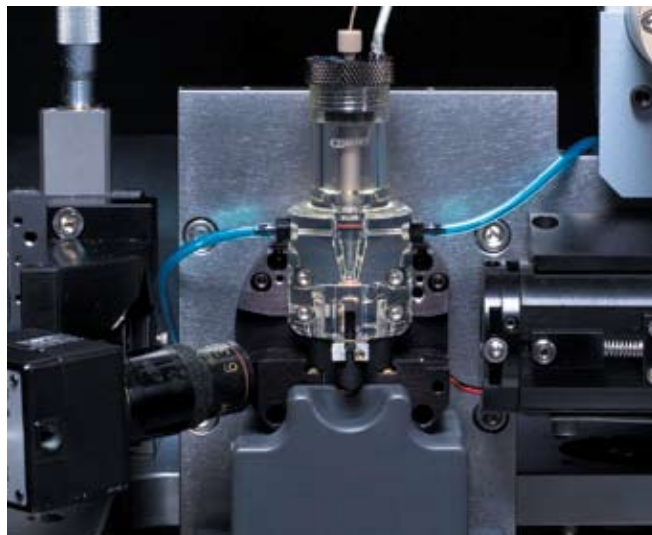
515–545 nm Alexa Fluor® 430/Am Cyan

430–470 nm Pacific Blue™ or DAPI or Hoechst

Filters and mirrors are user changeable.

Steering Optics

Fiber optics steer the three laser beams onto the beam expansion prisms, and then are focused on the cuvette flow cell.



Signal Processing

Workstation Resolution

262,144-channel resolution

Data Acquisition Channels

15 parameters: 13 fluorescent and two scatter parameters

Fluorescent Compensation

No limit to inter- and intra-beam compensation

Pulse Processing

Height, Area, and Width measurements available for any parameter. Ratio measurements are also available.

Time

Time can be correlated to any parameter for kinetic experiments or other applications.

Channel Threshold

Available for any parameter from any laser



Fluidics

General Operation

Fluidics cart provides sheath and cleaning fluids to the instrument and receives waste.

No air or vacuum required. Room air and vacuum can be used if desired.

Sheath pressure is adjustable from 2 to 75 psi.

Fluidic Reservoirs

Ten-liter sheath and waste containers provided. Five-liter cleaning reservoirs provided. Autoclavable containers and fluidics probes.

Accommodates BD FACSTream™ sheath fluid containers.

Sample Flow Rates

Adjustable sample pressures from 1 to 11 (0.2 to 1.2 psi over the sheath pressure).

Fluidic Cleaning Modes Included in Software

Automated startup and shutdown

Clean flow cell

Clean sample injection chamber

Aseptic Sort Setup mode

Quartz Cuvette Flow Cell

160 μm $\times$ 250 μm , 15 mm long

Sample Injection Chamber

Sample Input Sizes

Microtubes, 12 $\times$ 75 mm, and 15-mL sample input tubes

Sample Input Agitation

Adjustable through the software to keep sample constantly suspended

Temperature Control

Sample input, software-adjustable: 4°, 20°, 37°, and 42°C

Sample output for sort collection: water recirculation unit (optional)

Data Management System

Workstation

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

Memory

> 2 GB RAM

Data Storage

40-GB and 160-GB hard drive

16x DVD +/- RW, dual layer

Floppy drive

Networking

10/100/1000 Ethernet

FireWire®

Monitor

Two 19-inch LCD, 2560 $\times$ 1024 resolution (standard)

One 20-inch LCD, 1600 $\times$ 1200 resolution (optional)

One 23-inch LCD, 1920 $\times$ 1200 resolution (optional)

Printer

Networkable color-inkjet printer

Data File Structure

Flow Cytometry Standard (FCS) 3.0 or 2.0

Software

BD FACSDiva™ software for the BD FACSAria cell sorter

Installation Requirements

Power

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

Maximum power 1,500 watts

Water Supply

None required

Air Supply

None required

Nozzle Sizes

70 and 100 micron

Removable and sonicatable

A registered key-fit position at the bottom of the cuvette provides fixed stream alignment.

Size and Weight

BD FACSAria sensor (cell sorter): 28-inch (71-cm) depth, 48-inch (122-cm) width, and 28-inch (71-cm) height; approximately 400 lb (181.4 kg)

BD FACSAria fluidics cart (wet cart): 26-inch (66-cm) depth, 32-inch (81-cm) width, and 26-inch (66-cm) height; approximately 180 lb (81.7 kg)

Table (optional)

BD FACSAria instrument and computer table: 53-inch (134.6-cm) depth, 105-inch (266.7-cm) width, and 31-inch (78.7-cm) height; approximately 100 lb (45.4 kg).

The European table is a different size.

Regulatory Requirements

CE marked according to electromagnetic compatibility directive 89/336/EEC and low voltage directive 43123/EEC

UL Standard for Safety Electrical Equipment for electrical safety USA

CSA for electrical safety Canada

Class I (1) laser product per CDRH regulations and EN/IEC 60825.

Aerosol Management

Standard Feature

Sample Injection Chamber and Sample Collection Tube area provide a sealed area to minimize aerosols.

Aerosol Management Option (AMO) (optional)

- Equipped with a 0.01- μ m size ultra-low penetrating air (ULPA) filter to trap aerosolized particles.
- Evacuates the volume of the ACDU chamber area 16 times per minute in normal evacuation mode and 69 times per minute in rapid evacuation mode.
- When operated under normal and stressed conditions (mimicking a clog), no Glo Germ™ beads were identified outside the ACDU sort collection chamber.

Sample Collection Cooling/Heating

Refrigerator/heater option is available to provide cooling or heating for sort collection into tube holders, multiwell plates, and slides.

Technical Assistance

BD Biosciences Customer Support Center

2350 Qume Drive

San Jose, CA 95131-1807 USA

(877) 232-8995

Customers outside the US, contact your local BD Biosciences representative or distributor.



BD FACSAria

Cell Sorter

**For ordering information and technical services
please contact your local BD Biosciences office.**

United States

Tel 877.232.8995

Fax 800.325.9637

Canada

Tel 888.259.0187

Fax 888.229.9918

Europe

Tel 32.2.400.98.95

Fax 32.2.401.70.94

Japan

Tel 0120.8555.90

Fax 81.24.593.5761

Asia Pacific

Tel 65.6861.0633

Fax 65.6860.1593

Latin America/Caribbean

Tel 55.11.5185.9995

Fax 55.11.5185.9895

For country-specific contact information,
visit **bdbiosciences.com/offices**

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Class I (1) laser product.

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BD FACS Accudrop US Patent 6,372,506



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