BD FACSCanto™ II

BD

Helping all people live healthy lives

A proven platform for maximum reliability and the highest quality results

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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 provides the ultimate in flexibility and can be configured with two or three lasers to detect up to eight colors.*

The BD FACSCanto II features many innovations. At the heart of the cytometer, for example, the fluidics system features a fixed alignment flow cell to minimize startup time and improve reproducibility. The optical system features a patented design that maximizes signal detection and increases sensitivity and resolution for each color in a multicolor assay. These capabilities and many other innovations make the BD FACSCanto II one of the most powerful and versatile benchtop analyzers available for both clinical and research applications.

The BD FACSCanto II is designed to address the needs of today's busy clinical lab. It provides a high degree of automation and quality control to reduce hands-on time for technicians and improve reliability of results. The newly designed BD FACS™ Loader features single-tube instrument setup and testing as well as walkaway sample introduction to help operators rapidly adopt routine clinical applications, freeing technician time for more important activities. To further simplify operation, BD FACSCanto™ clinical software automates setup, compensation analysis, and quality control for predefined clinical applications.

The BD FACSCanto II is supported by a broad portfolio of reagents. A full complement of highly qualified BD technical and application support personnel is available to help streamline work and maintain optimal instrument performance.

*Seven and eight color assays are for Research Use Only.

Maximize multicolor performance

Innovative Optical Design Delivers Highest Sensitivity

The innovative designs for both the excitation and collection optics reduce excitation losses, yielding more information from each sample.

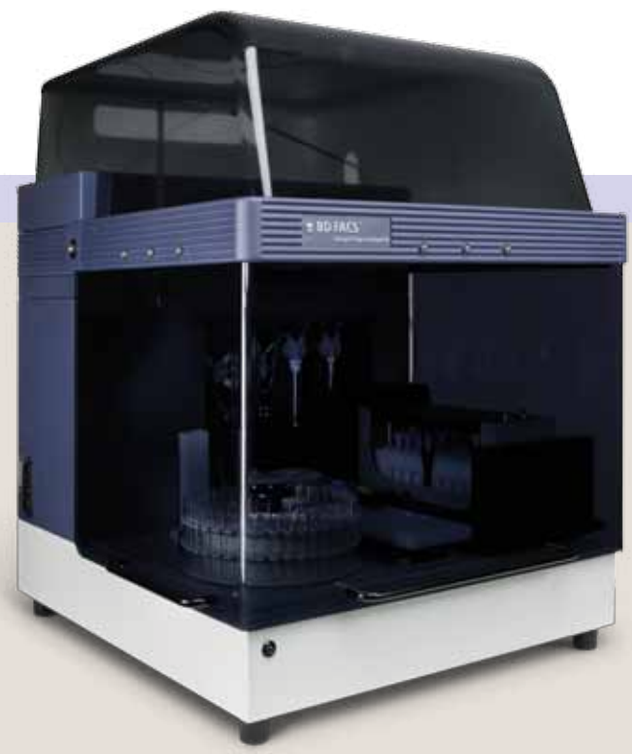
The optics of the BD FACSCanto II system consist of an excitation source with up to three lasers, a blue (488-nm, air-cooled, 20-mW solid state), a red (633-nm, 17-mW HeNe) and a violet (405-nm, 30-mW solid state).* Laser excitation optics illuminate cells in the sample and collection optics direct light scatter and fluorescence signals through spectral filters to the detectors.

Excitation
The excitation optics consist of multiple fixed wavelength lasers, fiber optics up to the beam-shaping prisms, and achromatic focusing lenses that produce spatially separated beam spots in the flow cell. Each lens focuses the laser light into the gel-coupled cuvette flow cell. Since the optical pathway and the sample core stream are fixed, alignment is fixed from day to day and from experiment to experiment with no need for user intervention.

Emission
The emission signals are transmitted from the flow cell to the detector arrays, an octagon for the blue and a trigon each for the red and the violet laser signals. The octagon contains five PMTs and detects light from the 488-nm blue laser. A PMT in the octagon collects side scatter signals. The trigons contain two PMTs each and detect light from the 633-nm red and the 405-nm violet lasers.*

Collection Optics
The octagon and trigon are BD patented detector arrays that use serial light reflections to guide signals to their target detectors, resulting in highly efficient light collection and providing maximum signal retention at the detector level.

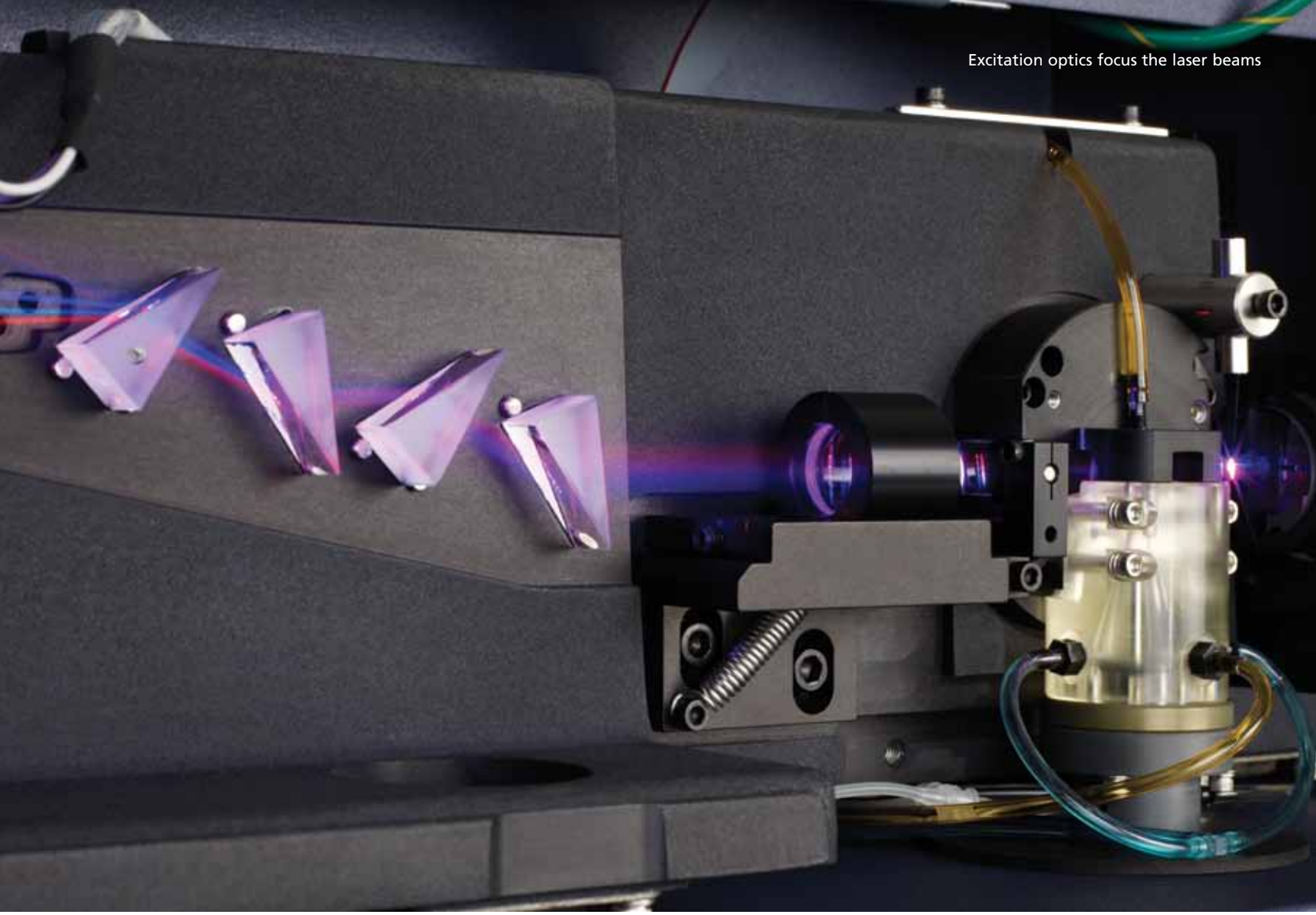
This BD serial reflective design further enhances instrument sensitivity by collecting the dimmest emission signals first, moving from the longest wavelengths (typically PE-Cy™7) to the shortest (FITC).



Sample Preparation Support
The BD FACS™ Sample Prep Assistant III (SPA III) maximizes walkaway lyse/no-wash sample preparation for clinical and research labs using the BD FACSCanto II flow cytometer. The SPA III automates flow cytometry sample preparation, speeding processing for labor-intensive manual steps and freeing technicians' time for other tasks. Automation helps reduce variability in sample preparation.

Automated Tasks
The SPA III automates a range of manual sample preparation steps. It pierces the primary blood collection tube cap to withdraw sample, aliquots blood and reagent into daughter tubes, adds lysing solution, and mixes the sample according to preprogrammed as well as custom protocols. Incubation can be performed outside the system, freeing the instrument to process the next set of samples. By automating manual steps, the SPA III minimizes interaction with potentially infectious samples, thereby reducing exposure to biohazards.

*Violet laser applications are for Research Use Only.



Excitation optics focus the laser beams

Flexibility in Blood Collection Tubes
To provide greater flexibility, the SPA III works with a wide variety of sample tubes. BD Vacutainer®, Streck Cyto-Chex®, and Sarstedt primary tubes of different sizes can be accommodated.

Time Savings and Improvement in Reagent Consumption
By improving processing speed and reducing reagent consumption, the SPA III allows laboratories to realize both time and cost savings. Processing time of multicolor IMK and TBNK assays is reduced up to 30%. The SPA III also has been optimized to reduce reagent waste by approximately 20% when using the single-dispense mode.

Improved Workflow
The SPA III ensures efficient workflow, allowing technicians to choose between scanning barcodes on blood collection tubes and manually entering sample information into a worklist.

SPA worklists can be imported into BD FACSCanto clinical software and BD™ Worklist Manager software for automated sample acquisition with the BD FACSCanto II.

The SPA III runs predefined BD Multitest™ 6-color and 4-color panels.

Maintenance
Instrument maintenance procedures for priming, rinsing, and cleaning are managed by predefined software settings. The probe change procedure has been simplified and is now performed using the software interface, further reducing exposure to biohazards.

Part of a complete package of instrumentation, software, and reagents for sample prep and data acquisition and analysis, the SPA III makes BD Biosciences the clear choice for clinical applications.

Saves time, improves reproducibility

High Performance, Innovative System

The BD FACSCanto II fluidics system is designed to streamline work, save time, and improve performance.

In the fluidics system, the sample travels up the sample injection tube, and hydrodynamic focusing within the flow cell forces particles into a single-file stream where laser light intercepts the stream at the sample interrogation point. The unique flow cell design permits particles to flow through the center of the flow cell. Increasing the sample pressure increases the core diameter and the flow rate.

A fluidics cart holds large fluid tanks necessary to operate and maintain the instrument. For sample acquisition, positive-pressure pumps in the fluidics cart send sheath fluid past a 0.2-µm filter to a pressurized interior reservoir inside the instrument called the plenum. The plenum maintains a nearly constant fluid level and dampens pump pulsation using a dynamic feedback pressure control system designed to regulate pressure. As a result, sheath flow rate does not vary with the level of fluid in the sheath cubitainer, and the reservoir automatically removes small air bubbles from the sheath supply.

Daily routine procedures, such as startup, shutdown, and cleaning routine cycles, are automated as a result of fluidic integration with BD FACSCanto clinical software.
BD FACS™ shutdown solution prevents salt crystal buildup in fluidics lines and is supplemented with a preservative to prevent bacterial growth. During the instrument shutdown procedure, the BD FACS shutdown solution replaces sheath fluid in all sample and sheath fluid lines.

LED Alerts

LEDs are located in the front door to monitor each acquisition parameter. Each LED blinks when the signal level reaches a prescribed threshold.

BD FACS Loader

The BD FACS Loader is an instrument option that allows walkaway sample introduction to further improve productivity. The BD FACS Loader carousel accommodates up to 40 12 x 75-mm tubes and automatically loads them on the BD FACSCanto II system without operator intervention.

Mounted directly on the cytometer, the device includes a drive system, a tube lifter mechanism, and sensors on the sliding drawer. Two sliding doors safely enclose the drawer to protect technicians from moving parts during operation.

The BD FACS Loader utilizes compressed air to allow a more reliable tube load as well as an intelligent tube guide mechanism that automatically sends an alert if a tube is not properly positioned for loading.

A unique ID and optically read label are printed on each carousel for easy carousel identification. The BD FACS Loader is operated using BD FACSCanto clinical software. The BD FACS Loader is compatible with the SPA III.

Barcode Reader

The optional BD FACSCanto hand-held barcode reader reads the two-dimensional barcode labels and it is used to read the compensation matrix of the BD FACS™ 7-color setup beads reagent into BD FACSCanto clinical software.

Sample prep, setup, and analysis

A Turnkey System for Clinical Use

Designed to address the needs of today's busy clinical lab, the BD FACSCanto II has a proven track record of reducing hands-on time and improving reliability of results. A high degree of automation and quality control helps save time, reduce cost, and improve reproducibility of results.

Cytometer settings are tracked over time by Levey-Jennings graphs to monitor cytometer performance. Adjustments are made automatically to ensure consistent data integrity and reproducible results from day to day and experiment to experiment. Integrated quality control features further support data integrity by notifying operators if an assay fails predefined standards.

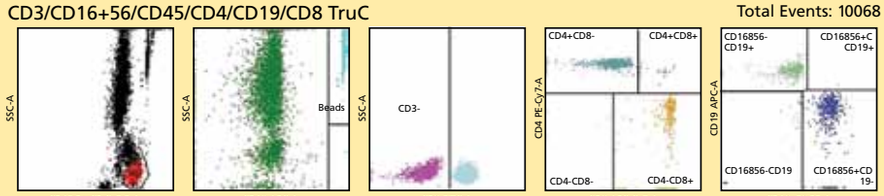
BD FACSCanto clinical software includes specific application modules optimized for use with specific IVD reagent kits. The modules feature automated gating, calculations, and report generation to deliver a consistent, reproducible, and standardized analysis.

As a leading provider of tools for flow cytometry, BD Biosciences is committed to offering comprehensive, innovative software solutions, including third-party solutions that support application specific customer requirements.

For example, optional Laboratory Information System (LIS) software easily connects the BD FACSCanto II with an existing customer Laboratory Information System to enable direct, bi-directional transfer of data. The software simplifies laboratory workflow by customizing data reporting, securing validation, and transferring data to reduce manual transcription. The solution automates the process from request to reporting to help reduce errors, and improve data quality and laboratory productivity.

CD3/CD16+56/CD45/CD4/CD19/CD8 TruC

Total Events: 10068



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Reagent Lot ID: 39825

Parameter	Percent	Value/AbsCnt
Lymph Events		2714
Bead Events		1544
$CD3^+$	66.76	1171.51
$CD3^+CD8^+$	14.41	252.79
$CD3^+CD4^+$	52.51	921.30
$CD3^+CD4^+CD8^+$	0.63	10.99
$CD16^+CD56^+$	16.80	294.82
$CD19^+$	15.84	278.01
$CD45^+$		1754.68
4/8 Ratio		3.64

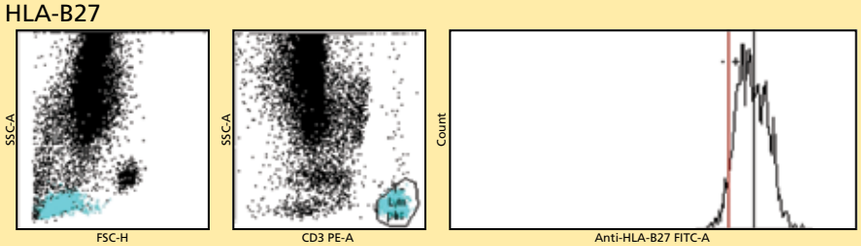
Monitoring HIV—Identification and Enumeration of Lymphocyte Subsets

The BD Multitest™ 6-color TBNK kit is the first and only 6-color In Vitro Diagnostic application to provide a complete immune panel in a single tube, saving valuable time and resources for sample processing.

Detection of HLA-B27 Antigen

The BD™ HLA-B27 module for the BD FACSCanto II system provides a complete system for rapid detection of HLA-B27 antigen, which is clinically relevant to the evaluation of seronegative spondyloarthropathies.

HLA-B27



Total Events: 17083

308001.001.fcs

Reagent Lot ID: 37681:145

Gated Events	2015
Preset HLA-B27 Marker	145
Sample HLA-B27 Median	166
Conclusion	HLA-B27 positive sample

Technical expertise from BD

Committed to Customer Success

BD Biosciences is fully committed to the success and satisfaction of its customers. Supporting flow cytometry applications for over 35 years, BD training, support, and field service teams are dedicated to helping customers achieve optimal instrument performance, ease of use, and streamlined workflow. With unmatched flow cytometry experience, this world-class service organization is available to help with your BD FACSCanto II product installation, future upgrades, and application support.

Training
Hands-on training is included with each BD FACSCanto II product. Training courses are held at BD training centers worldwide. BD flow cytometry training courses combine theory and practice to provide participants with the skills and experience they need to take full advantage of the capabilities of their BD FACSCanto II system.

Technical Application Support
BD Biosciences technical applications support specialists are available to provide field- or phone-based assistance and advice. Expert in all aspects of flow cytometry, BD technical application specialists are well equipped to address customer needs in both instruments and applications support.

Field Service
When instrument installation or service is required, a BD Biosciences Technical Field Service Engineer can be dispatched to the customer site. BD Biosciences field service engineers are located across the world. On-site service and maintenance agreements are available to provide long-term support for BD FACSCanto II systems.

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