



OFFICE OF PURCHASING, TRAVEL AND FLEET MANAGEMENT
SOLE SOURCE DETERMINATION (SSD)

(TO BE SUBMITTED TO OPTFM UPON COMPLETION OF RFIN)

AGENCY CONTACT INFORMATION SUBMITTING SOLE SOURCE DETERMINATION

Agency Name: Jackson State University / RCM Center for Environmental Health

Agency Contact: Dr. Paul Tchounwou

Phone: 601-979-0777

Agency Contact Email Address: paul.b.tchounwou@jsums.edu

RFIN#: _____

SOLE SOURCE INFORMATION (Part A)

Vendor: Becton Dickinson and Company

Vendor Contact: Kathleen DiRosato

Phone: 201-847-6800

Vendor Contact Mailing Address: 1 Becton Drive Franklin Lakes, NJ 07417

Vendor Contact Email Address: kathleen_dirosato@bd.com

Vendor Contact Fax Number: 201-847-5612

Date Form Submitted: December 05, 2018-Commodity: FACS Lyric 3L10C Instrument System

Other Description/Information: _____

Total Value.....\$236,558.13

QUALIFYING INFORMATION (Part B)

Were any objections to the sole source determination regarding this commodity received by the Agency?

☐ YES ☒ NO

If "yes", did the Agency appeal to PPRB? ☐ YES ☒ NO

What was the outcome of the appeal to PPRB?

*If Agency received no objections to sole source determination, complete entire form and submit with P-1 Request.
If PPRB approval received, please complete the remainder of this form and submit with P-1 Request. If PPRB did not approve, the Agency is required to submit the procurement of the commodity to an advertised competitive bid or selection process. Once competitive bid or selection process is complete, attach this form (SSD) as an internal attachment to P-1 request and do not complete (Part C).*

PPRB APPROVAL RECEIVED (Part C)

What efforts were made by the Agency to determine that the proposed provider is the only entity that can provide the commodity needed?

The RCMI Center for Environmental Health at Jackson State University did a national search to identify the scientific equipment that would allow the Centers' investigators and students to perform flow cytometry research, and discovered that the FACS-Lyric 3L10C Instrument System was the equipment needed for that purpose. We also found that BD Biosciences is the sole manufacturer and solely distributor of this analytical instrument in the United States. There are no other companies that provide such high technology equipment in the United States and the rest of the world.

What efforts were made to ensure the best possible price for the commodity was obtained?

During the grant proposal submission to the National Institutes of Health, Dr. Paul Tchounwou (principal investigator and director of RCMI Center for Environmental Health at JSU, contacted the sale representative at Becton Dickinson Biosciences who provided a quote. This quote was reviewed and approved by NIH. Also, Becton Dickinson Biosciences provided a 13% academic discount toward the purchase of this equipment.

Why is the commodity the only one that can meet the needs to the Agency?

We did an extensive search of the scientific literature, consulted with the technical staff at Beckton Dickinson Biosciences, and our colleagues at the University of Mississippi Medical Center, Tulane University Cancer Center, Louisiana State University, Health Sciences center and Tuskegee University Center of Health Disparities Research, and found that the FACS-Lyric is the only flow cytometer that has a manual sample introduction port that can accommodate multiple sample formats without an optional Loader device, ranging from 50ml conical tubes to 2ml microcentrifuge tubes. Also, the BD FACS-Lyric flow cytometer is the only analytical instrument that provides the superior positive sample identification along with error management through use of an imaging system in the optional BD FACS Universal Loader that images the multi-sample format that is loaded and compares to what is expected. This functionality prevents accidental crashing of the probe due to errors and therefore prevents the system from being unavailable. With the design capacity of using more than 10 fluorochromes simultaneously it allows researchers to sort cells at high efficiency and purity under the proper conditions or to run analytical experiments for many assessment/ measurement end-points. As such, the FACS-Lyric system will provide the needed biomedical research capacities for researchers at the JSU Center for Environmental Health to sort cells or sub-cellular elements, perform analysis of cell phenotypes, as well as the biochemical and molecular properties such as cell cycle distribution, signal transduction, and molecular biomarkers of cell proliferation, cell differentiation, cytotoxicity, oxidative stress, apoptosis and/or necrosis. With the acquisition of this high-end instrument, RCMI investigators at JSU will be able to address biomedical and health science issues through pioneering research and education in cellular biology, cancer biology and therapeutics, and molecular toxicology. It will also help to educate and train a new generation of underrepresented minorities in molecular science as applied to medicine, public health and environmental health.

Why is the amount expended for the commodity reasonable?

The budgeted amount to purchase the FACS-Lyric 3L10C Instrument System is reasonable based on the amount that was paid by our colleagues at other institutions for the purchase of their FACS-Lyric instruments. Also, as mentioned above, we received a 13% academic discount from Becton Dickinson Biosciences. The critical need for this instrument has been reviewed and approved by the National Institutes of Health that provided the funds for its purchase. Having the instrument available on the JSU campus will not only promote the development and implementation of flow cytometry research but also facilitate the research training of the next generation of biomedical scientists.

The following items must be attached to your P-1:

1. Letter from Agency head, or designee, outlining the results of the procedures that have been detailed above.
2. Copy of SSD form and any accompanying documents.
3. Copy(s) of OSS, if applicable.
4. Original quote, signed by Vendor. Electronic quotes do not require the signature of the Vendor.

See 31-7-13(b) or 3.108.03.1 of Procurement Manual.



The BD FACSLyric is the only Flow cytometer that is alignment free for routine use but in addition is equipped with capabilities that allow for software alerts notifying user to correct slight drifts that can occur over time through the simple click of a button. In the FACSLyric system, the user is able to automatically adjust alignment on the horizontal axis using tools within FACSuite software. For multi-color applications, the BD FACS Lyric is the only flow cytometer that utilizes the new heptagon fluorescence collection system that minimizes the number of times fluorescence signals must pass through dichroic mirrors, maximizing signal intensity and eliminating alignment of fluorescence channels. This is also the only system that includes electronic IDs for each filter-mirror combination ensuring that the configuration is as expected for a given experiment. In case of mismatch the user is able to identify that before collecting data, ensuring accurate results.

The BD FACSLyric flow cytometer is the only device that provides the superior positive sample identification along with error management through use of an imaging system in the optional BD FACS Universal Loader that images the multi-sample format that is loaded and compares to what is expected. This functionality prevents accidental crashing of the probe due to errors and therefore prevents the system from being unavailable.

The FACSLyric is the only Flow Cytometer that has a manual sample introduction port that can accommodate multiple sample formats without an optional Loader device, ranging from 50ml conical tubes to 2ml microcentrifuge tubes.

The FACSLyric system is patented. It uses a patented gel coupled flow cell. This patented design offers superior sensitivity.

BD Biosciences is the sole manufacturer and solely distributor of this analytical instrument in the United States. There is no other companies that provides such high technology equipment in the United States and the rest of the world.

1 Becton Drive
Franklin Lakes, NJ 07417
tel: 201.847.6800
fax: 201.847.5612
www.bd.com



RCMI-Center for Environmental Health,
P. O. Box 17131
Jackson State University
Jackson, MS 39217

Re: Sole Source Justification

The BD FACSLyric is the only Flow cytometer that is alignment free for routine use but in addition is equipped with capabilities that allow for software alerts notifying user to correct slight drifts that can occur over time through the simple click of a button. In the FACSLyric system, the user is able to automatically adjust alignment on the horizontal axis using tools within FACSuite software

For multi-color applications, the BD FACS Lyric is the only flow cytometer that utilizes the new heptagon fluorescence collection system that minimizes the number of times fluorescence signals must pass through dichroic mirrors, maximizing signal intensity and eliminating alignment of fluorescence channels. This is also the only system that includes electronic IDs for each filter-mirror combination ensuring that the configuration is as expected for a given experiment. In case of mismatch the user is able to identify that before collecting data, ensuring accurate results.

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Sincerely,

Kathleen DiRosato

Kathleen DiRosato
Instrument Sales Specialist



Unique Specifications of the BD FACSLyric Flow Cytometer

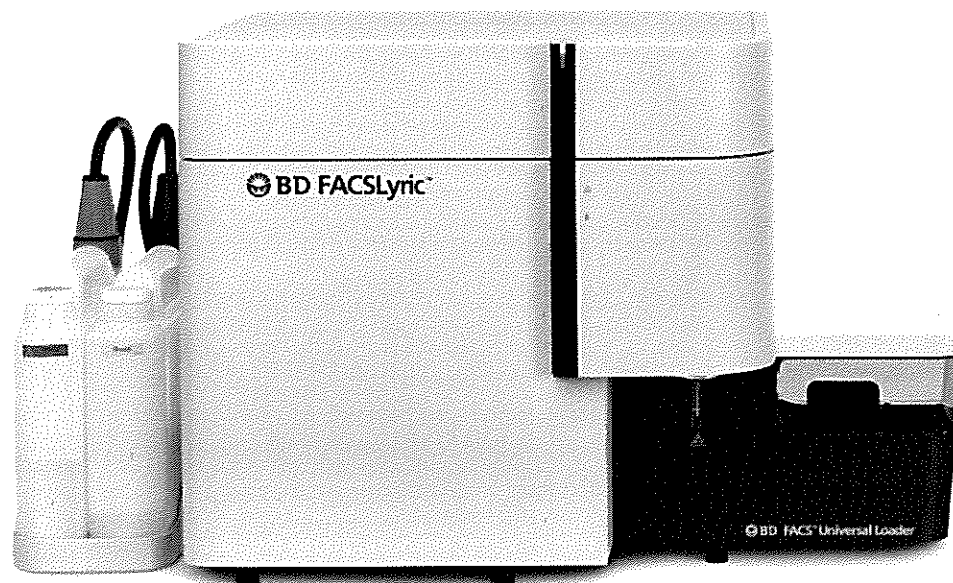
- The BD FACSLyric is the only Flow cytometer that is alignment free for routine use but in addition is equipped with capabilities that allow for software alerts notifying user to correct slight drifts that can occur over time through the simple click of a button. In the FACSLyric system, the user is able to automatically adjust alignment on the horizontal axis using tools within FACSuite software; Laser alignments are very time consuming and take time to master. On some of the larger water-cooled lasers the user must change laser optics to create different color laser lines. The switching of the optics on a laser requires a procedure called a vertical search. The alignment to the cytometer must then be completed. This type of service function is usually performed by a trained Field Service engineer and an alignment issue would result in instrument unavailability till an engineer can be on site. With the new functionality in the FACSLyric, minor alignment drifts can easily be corrected without a Service call. If equipped with the Remote Diagnostics agent, BD Assurity Linc – this function can also be performed through a remote connection by the technical support personnel.
- The BD FACSLyric is the only Flow cytometer that is equipped to accommodate an optional Loader device that can be setup with 12X75mm tube racks (40 tube or 30 tube) as well as multiple plate types – 96-well (Standard, half deep and deep well), 384 well and filter bottom 96 well plates, to enable all sample formats commonly used in research laboratories.
In most other cytometers available, loader devices are more limited in capability, requiring separate options for multi-tube Vs microtiter plate introduction. The capacity in terms on number of tubes per rack is also more limited in the majority of the instruments available. Availability of the unique BD FACS Universal Loader simplifies the workflow and allows the system to fit better within the laboratory.
- The FACSLyric is the only Flow Cytometer that has a manual sample introduction port that can accommodate multiple sample formats without an optional Loader device, ranging from 50ml conical tubes to 2ml microcentrifuge tubes.
- The BD FACSLyric Flow cytometer with the BD FACSuite software is the only system to provide users with a new setup paradigm backed by years of innovation and testing, that allows for the elimination of daily compensation when using a fixed set of fluorochromes. The lowered frequency of determining compensation allows users to save time as well as resources and overall removes errors due to incorrect compensation of data.
BD Biosciences is the only manufacturer of flow cytometers that has the ability to automate the complicated process of compensating the spectral overlap of fluorochromes used in flow cytometry. If the compensation is set using the stand visual approach for a 7 color experiment the user must have at least 21 dot plots set-up on sort document. BD software and digital electronics eliminate this dilemma.

- The BD FACSLyric flow cytometer uses a patented gel coupled flow cell. This patented design offers superior sensitivity.
- The BD FACSLyric flow cytometer is the only device in its class that provides the most superior positive sample identification. The system when equipped with the optional BD FACS Universal Loader is equipped with three barcode scanners that are able to match rack barcode and tube barcodes to what is expected per the Worklist and provide error management capabilities in case of mismatch. This is done before the start of acquisition and allows the user to walk away after the start of the multi-tube or plate run with the assurance that the system is acquiring the correct samples.
- The BD FACSLyric flow cytometer is the only device in its class that provides the superior positive sample identification along with error management through use of an imaging system in the optional BD FACS Universal Loader that images the multi-sample format that is loaded and compares to what is expected. This functionality prevents accidental crashing of the probe due to errors and therefore prevents the system from being unavailable.
- BD Biosciences is the only manufacturer that offers multiple parameter threshold capabilities in their line of cytometers. The ability to threshold on more than one parameter is a very powerful tool when working with small particles or sample preps with large amounts of unwanted particles.
- For multi color applications, the BD FACS Lyric is the only flow cytometer that utilizes the new heptagon fluorescence collection system that minimizes the number of times fluorescence signals must pass through dichroic mirrors, maximizing signal intensity and eliminating alignment of fluorescence channels. This is also the only system that includes electronic IDs for each filter-mirror combination ensuring that the configuration is as expected for a given experiment. In case of mismatch the user is able to identify that before collecting data, ensuring accurate results.
- The BD FACSLyric supports on-board mixing of the samples during acquisition from a multi-sample rack or plate. This helps in preventing the samples from settling during acquisition. The strength and duration of the mixing can be user controlled via the software for user defined applications. There is also an initial mixing/ resuspension sequence that allows samples prepared earlier to be used without the need for manual vortexing. All mixing parameters have been tested to ensure that they have no impact on cellular viability.
- The BD FACSLyric flow cytometer provides a unique High Sensitivity Mode in addition to the Normal Mode to accommodate samples that contain rare populations. This mode allows the cells to travel through the laser beam at half the usual sheath velocity and allows for a 2 fold increase in sensitivity.
- The BD FACSLyric flow cytometer uses vacuum driven fluidic system that eliminates the need for pressurized fluids and uses a stainless steel flow cell that
- The BD FACSLyric flow cytometer design has integrated the Fluidic cleaning cycles within the Startup and Shutdown routines and does not require user to invoke fluidics cleaning routine manually.
- The BD FACSLyric Flow cytometer has the unique capability of automated startup and programmed Shutdown. The system shutdown routine in particular can be added as the last item in a work list and the user is able to walk away and the system is able to perform an auto shutdown.



BD FACSLyric™

Quotation Proposal #BDB 2018-25412 v1



Prepared Exclusively For:

JACKSON STATE UNIV

INSTRUMENTS

REAGENTS

CELL CULTURE

APPLICATIONS

SUPPORT



Becton, Dickinson and Company
BD Biosciences Business Unit
One Becton Drive
Franklin Lakes, NJ 07417
Tel: (855) 236-2772
Fax: (408) 954-2736
www.bdbiosciences.com

10-18-2018

Clement Yedjou
JACKSON STATE UNIV
6019790215
clement.yedjou@jsums.edu
1325 HATTIESBURG ST
JACKSON, MS 39204-0000

Re: Quotation Proposal #BDB 2018-25412 v1

Dear Clement Yedjou,

Thank you for your recent interest in BD Biosciences, specifically BD FACSLytic™.

We at BD Biosciences are confident that our solutions will provide both superior performance and success for your current and future research needs. Additionally, our portfolios are supported by experienced and efficient Customer Training and Field Support groups ensuring an exemplary customer experience.

Please review the enclosed quotation with your requested item(s) for accuracy and note the ordering guidelines listed below.

Orders may be placed directly through BD Biosciences via Email or Fax:

- Email: InstrumentOrders@bd.com.
- Fax: (408) 954-6306

Please note the following PO Requirements:

- Vendor Name: Becton, Dickinson & Company, 1 Becton Drive, Franklin Lakes, NJ 07417.
- The Tax Exemption Certificate, if applicable, must use the name Becton, Dickinson & Company.
- Data Universal Number System (DUNS) #: BD Biosciences 024230633
- Business Size: Large
- Tax ID: 22-0760120

Thank you again for the opportunity to work with you and your lab - Please feel free to contact me directly for further questions or assistance.

Kind Regards,

Kathleen Di Rosato
Instrument Sales Specialist
(404) 263-5492
kathleen_dirosato@bd.com

INSTRUMENT OR REAGENTS, LOSS OF PROFIT OR ANY OTHER DAMAGES RESULTING FROM THE BREAKDOWN OR FAILURE OF ANY INSTRUMENT OR DELAYS IN SERVICES OR THE INABILITY TO SERVICE ANY INSTRUMENT. BD'S SOLE OBLIGATION AND LIABILITY FOR PRODUCT DEFECTS SHALL BE, AT BD'S OPTION, TO REPAIR OR REPLACE SUCH DEFECTIVE PRODUCT OR REFUND TO CUSTOMER THE AMOUNT PAID BY CUSTOMER THEREFOR. IN NO EVENT SHALL BD'S LIABILITY EXCEED THE CUSTOMER'S PURCHASE PRICE.

D. REAGENT PRODUCT LIMITED WARRANTY

Reagent Warranties: Reagent Products are warranted to conform to the description thereof on the label or, in the case of BD™ Precise reagents, the description on the Quotation, until the expiration date contained on the label. Reagent Products will be shipped with a shelf life of at least 90 days unless otherwise specified. In the event that Reagent Products do not so conform, they may be replaced as promptly as practicable, and Customer will destroy or return non-conforming products as requested by BD. With respect to BD™ Precise reagents or any custom reagents or customer instruments that were designed per a customer's request, BD warrants that the design or customization has been created professionally and in good faith to respond to the customer's request. BD does not warrant that the resulting reagents are suitable for the customer's use, or that they are the best arrangement possible for Customer's use. In the event that Customer notifies BD of a problem within thirty (30) days of receipt of BD™ Precise reagents, BD may examine the reagents and may determine that the problem is capable of being fixed easily or through a single redesign. BD may choose to provide customer with a replacement or a redesign, but makes no warranty as to the result. BD is not obligated to re-design any such reagents, and its decision to do so will be made in its own discretion.

19. WARRANTY LIMITATIONS:

- A. The warranties herein are valid provided that Products have been used and stored properly. In particular:
- B. The BD CLiC™ must be run using BD consumable products and only third party consumables that have been validated by BD (contact your customer representative if you have any question about whether a certain consumable may be appropriate).
- C. All Products contain technical data sheets or manuals that describe appropriate storage conditions and other advice for maintaining the storing the Products. The instruments must be serviced only by BD approved personnel or service providers and operated only by Customer staffs that are properly trained. Failure to follow these instructions may void BD's warranties.
- D. Customers are responsible for running third party- recommended QC procedures for given library preparation methods prior to sequencing. BD has not validated any other QC procedures for use with the BD CLiC platform.
- E. **THE FOREGOING REMEDY SHALL BE SUBJECT TO CUSTOMER'S WRITTEN NOTIFICATION OF DEFECT AND, FOR REAGENT PRODUCTS, RETURN OF THE DEFECTIVE PRODUCT WITHIN THIRTY (30) DAYS OF PURCHASE. THE FOREGOING REMEDY DOES NOT APPLY TO PRODUCTS THAT HAVE BEEN SUBJECTED TO MISUSE, NEGLIGENCE, ACCIDENT OR MODIFICATION, OR IF DAMAGE OCCURS AS A RESULT OF THE FAILURE OF CUSTOMER TO FOLLOW SPECIFIC INSTRUCTIONS, INCLUDING THOSE IN BD'S INSTRUCTIONS FOR USE OR USER MANUAL.**
- F. **THE ABOVE WARRANTIES RUN TO THE ORIGINAL PURCHASER ONLY DO NOT APPLY TO ANY PRODUCT THAT HAS BEEN SOLD OR TRANSFERRED TO ANY THIRD PARTY.**

20. Limitation of Liability: BD Biosciences liability is limited to repair, replacement of the product or refund of the purchase price. Additional disclaimers may apply to custom products and such disclaimers will appear in the quotation or other documentation provided with a custom order. No warranties apply to products that have been misused or improperly maintained.

- A. **THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, IN NO EVENT SHALL BD BE LIABLE TO CUSTOMER OR ANY THIRD PARTY FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OF ANY NATURE, WHETHER SUCH DAMAGES ARE CHARACTERIZED IN TORT, NEGLIGENCE, CONTRACT, OR ANY OTHER THEORY OF LIABILITY, REGARDLESS OF WHETHER BD HAS BEEN ADVISED OF THE POSSIBILITY OF OR COULD HAVE FORESEEN SUCH DAMAGES, AND IRRESPECTIVE OF ANY FAILURE OF ESSENTIAL PURPOSE OF A LIMITED REMEDY, AND IN NO EVENT SHALL BD'S LIABILITY EXCEED CUSTOMER'S PURCHASE PRICE. CUSTOMER ACKNOWLEDGES AND AGREES THAT THE LIMITATIONS OF LIABILITY SET FORTH IN THIS AGREEMENT ARE AN ESSENTIAL ELEMENT OF THE BASIS OF THE BARGAIN BETWEEN THE PARTIES, AND THAT BD WOULD NOT HAVE ENTERED INTO THIS AGREEMENT ON THE TERMS SET FORTH HEREIN WITHOUT SUCH LIMITATIONS OF LIABILITY.**
- B. **CUSTOMERS USING PRODUCTS IN CONNECTION WITH SEQUENCING ACKNOWLEDGE THAT A FAILURE OF SOME OF THE PRODUCTS TO PERFORM MAY CAUSE SEQUENCING DATA TO BE INACCURATE AND BD IS NOT LIABLE THEREFOR.**
- C. **CUSTOMER AGREES TO PERFORM ANY QC PROCEDURES RECOMMENDED IN THE INSTRUCTIONS FOR USE.**
- D. **NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN AND WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, CUSTOMER AGREES THAT BD WILL NOT BE LIABLE FOR ANY DAMAGES SUCH AS INACCURATE SEQUENCING, FLOW CYTOMETRY OR OTHER DATA OR ANY ASSOCIATED COSTS, DAMAGES, EXPENSES OR OTHER LIABILITIES, WHETHER OR NOT CUSTOMER PERFORMED QC PROCEDURE RECOMMENDED IN THE INSTRUCTIONS FOR USE.**
- E. BD shall have no liability to the Customer for a failure or delay to provide Services in the event of: (i) the use by the Customer of any product other than Products in conjunction with the Instrument Product; (ii) the defect arising because the Customer failed to

follow BD's oral or written instructions as to the storage, use and servicing of the Instrument Product and Products or (if there are none) good trade practice regarding the same; (iii) the defect arising as a result of BD following any drawing, design or specification supplied by the Customer; (iv) the Customer altering or repairing such Instrument Product or Products without the written consent of BD; or (v) the defect arising as a result of fair wear and tear, wilful damage, negligence, or abnormal storage or working conditions on the part of the Customer.

21. Indemnification: BUYER acknowledges that it is fully responsible for its use of any BD Biosciences product and agrees to indemnify, defend, and hold harmless BD Biosciences and its affiliates, officers, directors, employees, and agents against any and all third party liabilities arising from such use except to the extent such liabilities arise from the infringement of any BD Biosciences products (other than custom reagents or instruments) that infringe any valid U.S. patent of a third party when used in accordance with instructions.

22. Governing Law: Any order placed or contract made with BD Biosciences shall be governed by the laws of the State of California and both parties hereby submit and waive all objections to the exclusive jurisdiction of the courts of California and the federal courts located in California.

23. Acceptance of Terms: If the above terms are not acceptable to you, promptly return any products in the package in which they were received. Failure to promptly return the products or any use of the products constitutes acceptance of the above terms.

Exhibit B. Terms of Service for BD Biosciences Instruments

When BD Biosciences performs service pursuant to an instrument or parts warranty or a Service Maintenance Agreement, it will do so subject to the following terms and conditions.

I. General

- A. These terms control all of the dealings between the parties relating to service provided pursuant to it. Any other document or arrangement, including any terms and conditions included as part of a purchase order sent to BD BIOSCIENCES by BUYER, which is inconsistent with the terms of this document, is not a part of the contract for service set forth in this document.
- B. Service Maintenance Agreements are not assignable by BUYER and shall not pass to the benefit of any eventual transferee of the INSTRUMENT(s) from BUYER.
- C. Acceptance of BUYER's request for Service Maintenance Agreement is conditioned on agreement with all the terms and conditions set out herein. By issuing a purchase order, BUYER will be deemed to have accepted these terms.
- D. Service Maintenance Agreements may not be terminated by BUYER prior to the end of the term.
- E. BD Biosciences products include BD Assurity Linc™, our secure remote support solution. Service and maintenance will be conducted remotely to diagnose or resolve issues before Field Service Representatives are dispatched to site for repairs.

II. BD Biosciences Responsibilities

- A. **Service To Be Performed:** With respect to the INSTRUMENT(s) set forth in the quotation or Service Maintenance Agreement to which these terms and conditions relate (the "Term"), and subject to these terms and conditions, BD Biosciences agrees to perform remote service or send a Field Service Representative (a "Representative") to perform (a) the number of preventive maintenance inspections indicated above and (b) unlimited remote support and onsite visits as reasonably requested by BUYER to perform repairs. The Representative must be permitted access through BD Assurity Linc, BD Biosciences' secure portal, and given full and free access to the INSTRUMENT(s). In addition, BD Biosciences may through an authorized service provider, provide service on components and software manufactured by third parties in accordance with the warranty of such third party manufacturer. It is the responsibility of BUYER to register all third-party products and software with the third party for purposes of warranty and end user license. BD BIOSCIENCES does not provide service on computer workstation printers. BD Biosciences may repair or replace any INSTRUMENT(s) at its discretion in satisfaction of its obligations hereunder.
- B.
- C. **Preventive Maintenance Inspections:** During each preventive maintenance visit, the Representative will evaluate the INSTRUMENT(s) performance and provide a preventative maintenance kit (if applicable) for use by BD Biosciences' Representative. Calibrations, alignments, lubrication and part replacement will be performed as deemed necessary by BD Biosciences to maintain the INSTRUMENT(s) operation substantially in accordance with the published technical specifications for the INSTRUMENT.
- D. **Technical Support:** BUYER may obtain support by calling BD Biosciences' toll-free number which may be found through www.bdbiosciences.com. BUYER may use the toll-free number to speak with a BD Biosciences Representative during

working days between the hours of 8 AM and 12 AM Eastern Time, and may leave a message at other times. BD shall provide the Services Monday through Friday, 9:00 a.m. to 5:00 p.m. (local time for the Customer), excluding holidays ("Working Hours"), and the Parties shall work together to schedule the Services at a time that is mutually convenient. BD Biosciences guarantees its response time for certain INSTRUMENT(s), pursuant to the description of the INSTRUMENT contained in the quotation or Service Maintenance Agreement. Failure to meet the BD Biosciences guaranteed response time shall result in a credit as BUYER's sole remedy. The amount of this credit is set forth in the description of the INSTRUMENT contained on the quotation or Service Maintenance Agreement and such credits must be utilized no later than 90 days following the end of the term and may be used to purchase spare parts, consumable parts (excluding reagents and sheath fluid), applied toward the renewal cost of a Service Maintenance Agreement or applied towards the tuition fee for training courses offered by BD Biosciences. Technical Support information for the CLIC and Genomics instruments will be provided at time of delivery.

- E. Parts:** BD Biosciences will provide all parts required to affect a repair covered under its service obligation, except for consumables and subject to the exclusions contained in Section III below. All defective parts must be returned to BD Biosciences. The use of new or like-new parts will be at the discretion of BD Biosciences and is not obligated hereby to provide parts for spares or inventory or service on any such parts.
- F. Software Revisions:** BD Biosciences may, at its discretion from time to time hereafter, issue revisions to its proprietary software at no charge. A charge may apply for upgrades to BD Biosciences proprietary software. Updates and revisions to third-party software are not provided by BD Biosciences.
- G. Software and Firmware:** BD warrants for the Agreement term that the software and firmware sold to Buyer will conform to BD's operation manuals current at the time of shipment to BUYER when properly installed. BD does not warrant that the software and firmware will operate uninterrupted or error-free. BUYER's sole remedy for breach of this warranty is replacement by BD of the non-conforming software or firmware with conforming or updated software or firmware.
- H. Shipping & Handling:** Shipping & Handling charges for replacement parts that are covered under Warranty or Service Maintenance Agreements will be at no charge to BUYER. Shipping & handling charges for reagents, consumables and priority parts shipments are specifically excluded and will be billed to BUYER at the current rate.

III. Buyer Responsibilities

- A.** The Service Fees for the period of one year from the Commencement Date shall be the fees set out in the Quote. The Service Fees for any year after the anniversary of the Commencement Date shall be determined in accordance with Condition 3.3.
- B.** BUYER shall be responsible for providing and maintaining a proper environment, including utilities and site requirements, for the INSTRUMENT(s). A Site Installation Guide, detailing this information, is provided to the BUYER when the INSTRUMENT(s) is purchased.
- C.** The BUYER shall (i) co-operate with BD in all matters relating to the Services; (ii) be responsible (at its own cost) for preparing and maintaining the relevant premises for the installation of the Instrument Product and any supply of the Services, including preparing the site in accordance with BD's facility guide and identifying, monitoring, removing and disposing of any hazardous materials from its premises in accordance with all applicable laws, before and during the supply of the Services at those premises; (iii) obtain and maintain all necessary licenses and consents and comply with all relevant legislation in relation to the installation of the Instrument Product and the Services, in all cases before the date on which the installation or the Services are to start; (iv) keep the Instrument Product in good condition and shall not dispose of or use the Instrument Product other than in accordance with BD's written instructions or authorization; (v) inform BD of the Customer's health and safety policy and any other Customer policies that apply to BD's Representatives in the provision of the Services; (vi) report faults in the Instrument Product to BD as soon as possible after becoming aware of same; and (vii) use only BD-approved reagents with any Instrument Product.
- D.** BUYER agrees not to alter the INSTRUMENT(s) without prior consultation with and written approval from BD Biosciences, or use any repair parts other than those supplied or specified by BD Biosciences.
- E.** BUYER agrees to have the INSTRUMENT(s) operated at all times in accordance with the Instruction Manual by or under the direct supervision of a qualified operator who has completed the BD Biosciences Training Course.
- F.** BUYER agrees to maintain a safe work environment and to comply with all applicable laws, rules and regulations relating to safety in order to ensure the safety of all Representatives and other BD employees and agents who enter BUYER's premises. BD Biosciences may, from time to time in response to a concern over the safety of Representatives, visit BUYER's facilities in which the Representative and other BD employees and agents perform Services hereunder in order to audit safety compliance. Such audit would only occur during working hours and at a time reasonably agreed. BD Biosciences, its affiliates, personnel, agents and subcontractors shall not be required to enter potentially hazardous areas and BD Biosciences reserves the right to determine whether and under what circumstances its personnel, agents or subcontractors shall enter any premises. In no event will BD Biosciences be obligated to perform Services if it is not, in its sole discretion, satisfied with respect to safety.
- G.** In the event that the INSTRUMENT(s) being serviced has at any time been operated in a location that falls into the category of a Biosafety Level 4 laboratory (a "BSL 4" laboratory) according to the then-current edition of "Biosafety in Microbiological and Biomedical Laboratories" published by the U.S. Department of Health and Human Services, or that would in BD Biosciences' opinion fall into such category were it located in the United States, it shall be the responsibility of BUYER to

remove from such laboratory or other facility the INSTRUMENT(s) and decontaminate to the satisfaction of BD Biosciences, in its sole discretion, before any work is performed on the INSTRUMENT(s). All costs associated with such removal, decontamination, and re-installation shall be borne by BUYER. With respect to laboratories operated under the designation Biosafety Level 3 (A "BSL 3" laboratory), BD Biosciences reserves the right to evaluate the conditions existing therein. BUYER agrees and shall render full cooperation, including but not limited to affirmative disclosures related to any hazards in such facilities. BD Biosciences may conduct a risk assessment and require remediation to its satisfaction before any work is performed on an INSTRUMENT(s) located in a BSL 3 laboratory. In any event, if BD Biosciences determines that laboratory procedures and policies are inadequate to provide a safe environment for service personnel, BD Biosciences reserves the right to refuse service support until the situation is rectified to its satisfaction including with respect to, any injuries to the personnel, agents and subcontractors of BD Biosciences and its affiliates. BUYER agrees to notify BD Biosciences of its status as a BSL 3 or BSL 4 laboratory and to provide notice of all relevant protocols and any changes thereto. BUYER agrees and shall render full cooperation, including but not limited to affirmative disclosures related to any hazards in such facilities. All required safety training, personal protective equipment, instrument test equipment and necessary tools required for instrument service located in a BSL 3 laboratory, must be supplied by the BUYER. BD Biosciences reserves the right to discontinue any and all BSL3 laboratory instrument service until appropriate personal protective equipment and tools are furnished by the BUYER. Calibration of the tools and test equipment are the sole responsibility of the BUYER. No parts may be returned to BD Biosciences and must be disposed of by the BUYER. BD Biosciences field service personnel are not required to take BD tools and calibration equipment into the BSL 3 laboratory space. If tools are not available, BD Biosciences is not obligated to provide on-site repair service. In the event the BUYER is unable to make the instrument available for scheduled preventative maintenance in a 60-day period from the initial planned service date, BUYER waives the right to have that scheduled service visit performed during the contract year or thereafter. No compensation will be provided by BD Biosciences for any missed preventative maintenance services.

- H.** BUYER agrees to indemnify and hold harmless BD BIOSCIENCES, its affiliates and their employees, agents, officers and directors (the "BD Indemnified Parties") from and against (a) any and all actions or claims brought by a third party relating to the services and parts supplied hereunder unless BUYER can show that such third-party action involves death or personal injury and results solely from BD Biosciences' gross negligence or willful misconduct, in which case BUYER agrees to indemnify and hold the BD Indemnified Parties harmless from and against any amounts required to be paid in excess of the amounts actually paid by BUYER to BD BIOSCIENCES hereunder; and (b) any and all liability relating to BUYER's failure to comply with Section III. With respect to laboratories operated under the designation Biosafety Level 3, (a "BSL 3" laboratory) BD BIOSCIENCES reserves the right to evaluate the conditions existing therein. BUYER agrees and shall render full cooperation, including but not limited to affirmative disclosures related to any hazards in such facilities. BD BIOSCIENCES will conduct a risk assessment and require remediation to its satisfaction before any work is performed on an INSTRUMENT(s) BSL 3 laboratory. BUYER's indemnification obligations hereunder shall include the payment of reasonable attorney's fees.
- I.** Upon purchase of a Service Maintenance Agreement, BUYER is obligated for the duration of the agreement specified and is responsible for payment in full. Service Maintenance Agreements are not cancelable.
- J.** The Customer shall provide such information as BD may reasonably request in order to carry out Services in a timely manner, and ensure that such information is accurate in all material respects.
- K.** If BD's performance of its obligations under the Contract is prevented or delayed by any act or omission of the Customer, or the Customer's Representatives, BD shall not be liable for any costs, charges or losses sustained or incurred by the Customer that arise directly or indirectly from such prevention or delay.

IV. Exclusions

- A.** Service does not include consumable items (except preventive maintenance kits as applicable).
- B.** Consumable items are listed in BD Biosciences product catalog under spare parts and consumables section. Any consumable items replaced by BD Biosciences during the course of a service call or inspection will be billed to the BUYER at BD Biosciences' then current list price.
- C.** Neither the warranty nor the Service Maintenance Agreement provide for Service relating to damage caused to the INSTRUMENT(s) or any part thereof, by accident, the elements, failure of electrical power, Acts of God, the use of unauthorized parts or reagents or negligence are not covered under this Agreement. Work performed by BD Biosciences on the INSTRUMENT(s) made necessary as a result of such causes shall be billed to the BUYER at BD Biosciences' then prevailing rate for parts, labor and travel expenses.
- D.** Any damage caused during transportation for the service of a depot repaired product is not covered under this Agreement.
- E.** Defacement of the Product's serial number will void this Agreement.
- F.** Any incorporation of the Product under this Agreement into a system without BD's approval will void this Agreement.
- G.** Any work to be performed by BD Biosciences on a weekend or BD Biosciences designated holiday is subject to availability and will be billed at weekend/holiday rates in effect at the time of the service, unless otherwise indicated by Service Maintenance Agreement.
- H.** The warranty and the Service Maintenance Agreement do not provide for Service on the computer workstation printer.
- I.** Service may be discontinued on any Third Party software or hardware that is not currently marketed by BD.

- J. The warranty and the Service Maintenance Agreement do not provide for Service relating to a failure to comply with Section III or any other damage to the INSTRUMENT(s) resulting from BUYER's negligence.

V. Service Parts Warranty

- A. All parts supplied by BD Biosciences during the warranty period or Service Maintenance Agreement period are warranted against defects in material and workmanship until the expiration date of the term and all service shall be performed in a professional manner. BD Biosciences' sole responsibility under this warranty shall be to repair or replace parts found to be defective. The Customer must make any claim for breach of this warranty within ninety (90) days of the date the Services were performed or the Products were installed or delivered, as appropriate, and prior to any unauthorized repair, change, or modification has been made to any part of the Instrument Product. BD makes no other warranties of any kind whatsoever, express or implied. BUYER'S SOLE REMEDY FOR ANY CLAIM HEREUNDER, WHETHER SUCH CLAIM IS MADE UNDER CONTRACT, TORT, OR ANY THEORY OF LAW, SHALL BE THE REPAIR OR REPLACEMENT OF ANY PART IN QUESTION.
- B. BD warrants that the Services that it provides to the Customer will be in accordance with the generally accepted standards prevailing in the industry.
- C. **Disclaimer Applicable to All Products and Services**
THE FOREGOING WARRANTIES ARE THE SOLE WARRANTIES THAT BD MAKES WITH RESPECT TO THE PRODUCTS AND SERVICES. BD MAKES NO FURTHER WARRANTY, EITHER EXPRESS OR IMPLIED WITH RESPECT TO ANY PRODUCT OR SERVICE, AND SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES FOR MERCHANTABILITY, NON-INFRINGEMENT AND FITNESS FOR ANY PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES WILL BD BIOSCIENCES OR ITS CONTRACTORS OR AGENTS BE LIABLE TO BUYER OR ANY THIRD PARTY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, PROPERTY DAMAGE, LOST TIME, LOSS OF USE OF INSTRUMENT OR REAGENTS, LOSS OF PROFIT OR ANY OTHER DAMAGES RESULTING FROM THE BREAKDOWN OR FAILURE OF ANY INSTRUMENT OR DELAYS IN SERVICES OR THE INABILITY TO SERVICE ANY INSTRUMENT. BD'S SOLE OBLIGATION AND LIABILITY FOR PRODUCT DEFECTS SHALL BE, AT BD'S OPTION, TO REPAIR OR REPLACE SUCH DEFECTIVE PRODUCT OR REFUND TO CUSTOMER THE AMOUNT PAID BY CUSTOMER THEREFOR. IN NO EVENT SHALL BD'S LIABILITY EXCEED THE CUSTOMER'S PURCHASE PRICE.

VI. Miscellaneous

- A. **Limitation of Liability:** BD Biosciences' liability is limited to repair, replacement of the product or refund of the purchase price. Additional disclaimers may apply to custom products and such disclaimers will appear in the quotation or other documentation provided with a custom order. No warranties apply to products that have been misused or improperly maintained.
- B. **Governing Law:** Any order placed or contract made with BD Biosciences shall be governed by the laws of the State of California and both parties hereby submit and waive all objections to the exclusive jurisdiction of the courts of California and the federal courts located in California.
- C. **Variations and Waiver.** Any variation of these Conditions shall be in writing and signed by or on behalf of the Parties. Any waiver of any right under these Conditions is only effective if it is in writing and it applies only to the Party to whom the waiver is addressed and to the circumstances for which it is given. Any waiver by either Party of any breach of, or any default under, any provision of these Conditions by the other Party will not be deemed as a waiver of any subsequent breach or default and will in no way affect the other terms of these Conditions. Failure to exercise or delay by either Party in exercising any right or remedy provided under these Conditions or by law shall not constitute a waiver of such right or remedy, nor shall it prevent or restrict any future exercise or enforcement of such right or remedy. No single or partial exercise of any right or remedy under these Conditions shall prevent or restrict the further exercise of any other right or remedy.
- D. **Severance.** If any provision of these Conditions (or part of a provision) is found by any court or administrative body of competent jurisdiction to be invalid, unenforceable or illegal, the other provisions shall remain in force. If any invalid, unenforceable or illegal provision would be valid, enforceable or legal if some part of it were deleted, the provision shall apply with the minimum modification necessary to make it legal, valid and enforceable.

BD FACSLoader™

Maintenance Service Agreement Options

5-Day Coverage (Monday - Friday)

This option covers the BD FACSLoader™ for labor, travel expenses and parts (excluding consumable items) for the following:

- **Unlimited service visits during the term of this Agreement, Monday through Friday, excluding BD Biosciences holidays.**
- **Unlimited telephone support for instruments, reagents and applications will be provided at no additional charge.**

Instrument Model	Training Included with Instrument Purchase	Additional Options for Purchase
BD Accuri™ C6 Plus	Self-paced e-learning (two user licenses to Learning@BD)	661269 Onsite Install and Training (1 day) 661290 Onsite Training per day 659765 Remote Consulting per hour 661893 E-learning Library Subscription per user per year (additional licenses to Learning@BD or subscription renewal)
BD FACSAria™ II, III, and Fusion	One training provision for instructor-led training in San Jose, CA	337667 Additional Operator Course Training per user 654344 Five nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 337676 Onsite Training per day
BD FACSCalibur™	Onsite training	654857 Remote Consulting per hour 337676 Onsite Training per day
BD FACSCanto™ II and 10-color	Two training provisions for instructor-led training in San Jose, CA	337668 Additional Operator Course Training per user 654344 Five nights hotel package 654857 Remote Consulting per day 657636 Training Conversion Fee 337676 Onsite Training per hour
BD FACSCelesta™	One training provision for instructor-led training in San Jose, CA	660680 Additional Operator Course Training per user 654344 Five nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 337676 Onsite Training per day
BD FACSJazz™	One training provision for instructor-led training in San Jose, CA	656263 Additional Operator Course Training per user 654344 Five nights hotel package 659766 Remote Consulting per hour 657637 Training Conversion Fee 657174 Onsite Training per day
BD FACSLytic™ IVD	Two training provisions for instructor-led training in San Jose, CA and self-paced e-learning (two user licenses to Learning@BD)	663011 Additional Operator Course Training per user 654344 Five nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 663012 Onsite Training per day 661893 E-learning Library Subscription per user per year (additional licenses to Learning@BD or subscription renewal)
BD FACSLytic™ RUO	Two training provisions for instructor-led training in San Jose, CA and self-paced e-learning (two user licenses to Learning@BD)	662634 Additional Operator Course Training per user 654345 Four nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 662635 Onsite Training per day 661893 E-learning Library Subscription per user per year (additional licenses to Learning@BD or subscription renewal)
BD FACSMelody™	Self-paced e-learning (two user licenses to Learning@BD)	654857 Remote Consulting per hour 661937 Onsite Training per day 661893 E-learning Library Subscription per user per year (additional licenses to Learning@BD or subscription renewal)
BD FACSVerse™	One training provision for instructor-led training in San Jose, CA	653727 Additional Operator Course Training per user 654345 Four nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 337676 Onsite Training per pay
BD FACSVia™	Self-paced e-learning (two user licenses to Learning@BD) Four hours of virtual instructor-led training (via Skype or WebEx)	654857 Remote Consulting per hour 661892 Onsite Training per day 661893 E-learning Library Subscription per user per year (additional licenses to Learning@BD or subscription renewal)
BD Influx™	One training provision for instructor-led training in San Jose, CA	653061 Additional Operator Course Training per user 654344 Five nights hotel package 659766 Remote Consulting per hour 657637 Training Conversion Fee 648696 Onsite Training per day
BD LSRFortessa™ and X-20	One training provision for instructor-led training in San Jose, CA	650826 Additional Operator Course Training per user 654344 Five nights hotel package 654857 Remote Consulting per hour 657636 Training Conversion Fee 337676 Onsite Training per day

Glossary

- **Additional Operator Course Training:** Includes training in San Jose, CA for one person for the duration of the operator course (number of days varies depending on the instrument type). Also includes training materials and lunches. Lodging and airfare are **not** included.
- **E-Learning Library Subscription:** Includes one user license for access to the e-learning library for one year.
- **Hotel Package:** Includes four or five nights of hotel stay at the BD-selected hotel, shuttle service from San Jose International airport to hotel on arrival (before 10:30 PM), and breakfast
- **Onsite:** Includes instructor travel and lodging and one day of onsite training and training materials for up to two people. Multiple days can be purchased.
- **Onsite Install and Training:** Includes instructor travel and lodging and one day of onsite training and training materials for up to two people. Also includes installation of the instrument.
- **Remote Consulting:** Per-hour fee for training delivered by an instructor via Skype or WebEx. Topics for discussion and duration are determined prior to the start of the consult session.
- **Self-paced E-learning:** Videos or interactive courses available 24/7 in Learning@BD. Two user licenses for one-year access to Learning@BD are included with instrument purchase for the BD Accuri C6 Plus, BD FACSMelody, BD FACSLytic, and BD FACSVia.
- **Training Conversion Fee:** Conversion of a training provision to an onsite includes instructor travel and lodging and two days of onsite training and training materials for up to two people. Additional onsite training days can be purchased for \$2,200 per day.
- **Training Provision:** Includes training in San Jose, CA for one person for the duration of the operator course (number of days varies depending on the instrument type). Also includes training materials and lodging (hotel, breakfast, and shuttle service from San Jose International airport to hotel on arrival before 10:30 PM).
- **Virtual Instructor-led Training:** Includes training delivered by an instructor via Skype or WebEx. Topics for discussion and duration are determined prior to the start of the training session.



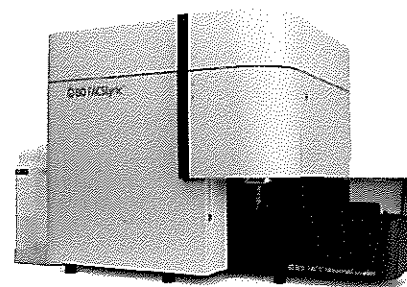
BD FACSLytic™ System

Technical specifications

The BD FACSLytic™ flow cytometer is a flexible, high-performance instrument in a compact footprint. The system is available in 6, 8 or 10 colors and equipped with a blue, red and violet laser depending on the configuration. The built-in capability to automatically check and correct laser alignment allows for optimal optical alignment at all times.

The combination of vacuum-driven fluidics, a unique sample injection tube (SIT) and a new cuvette design enhances system reliability and improves signal resolution.

BD FACSuite™ software supports the creation of user-defined assays for clinical research, and tools that facilitate instrument-to-instrument and site-to-site standardization.



The fluidics design enables a large selection of sample input devices. For manual acquisition, choose from 12 x 75-mm tubes, microcentrifuge tubes (~500-μL) or large (up to 50-mL) conical tubes for continuous sample acquisition. For automated acquisition, the optional BD FACS™ Universal Loader provides walkaway operation with samples loaded in either microtiter plates or 12 x 75-mm tube racks.



Optics

Available system configurations

6-color: 2-laser (blue, red) (4-2)

8-color: 3-laser (blue, red, violet) (4-2-2)

10-color: 3-laser (blue, red, violet) (4-3-3)

Solid-state laser specifications

Blue laser: 488 nm, 20 mw

Red laser: 640 nm, 40 mw

Violet laser: 405 nm, 40 mw

Beam spot size (all lasers)

9 μm x 63 μm

Optical alignment

Auto alignment on demand

Flow-cell lens

1.2 NA

FSC detector

Photodiode

SSC and FL detectors

PMT

See filter guide for optical configurations.

Fluidics

Flow cell

Stainless steel with low coefficient of thermal expansion for predictable, stable performance

Cuvette internal cross-section

430 μm x 180 μm

Sample flow rates

Low: 12 $\mu\text{L}/\text{min}$

Medium: 60 $\mu\text{L}/\text{min}$

High: 120 $\mu\text{L}/\text{min}$

High sensitivity: 50 $\mu\text{L}/\text{min}$

Fluid capacity

Standard 5-L tanks

Optional 10-L tanks

Adapter available for 20-L BD FACSTFlow™ cubitainer

Sheath core stream fluid velocity

Normal: 5.4 m/s

High sensitivity: 2.7 m/s

Sheath fluid consumption

Normal: 13.6 mL/min

High sensitivity: 6.6 mL/min

Supported tubes, plates and tube racks

BD FACS Universal Loader

30-tube rack (12 x 75-mm tubes)

40-tube rack (12 x 75-mm tubes)

Wide selection of 96- and 384-well polystyrene and polypropylene plates

Manual tube port

Falcon® 5 mL (12 x 75-mm)

polystyrene and polypropylene

BD Trucount™ 5 mL (12 x 75 mm)

Falcon 15 mL

Falcon 50 mL

Microcentrifuge 2 mL

Sample dead volume

30 μL (12 x 75-mm tubes)

Cytometer schedule settings

Preprogrammed startup and idle shutdown

Performance

Acquisition rate

Up to 35,000 events per second

No limit on number of events acquired in a single FCS file

Carryover

<0.10% with default SIT flush

<0.05% with 3 or more SIT flushes

Sensitivity

FITC: <85 MESF

PE: <20 MESF

Channel Qr (x1,000)

FITC	20
PE	133
PerCP-Cy™5.5	13
PE-Cy™7	17
APC	10
BD Horizon™ APC-R700	8
APC-Cy7	7
BD Horizon™ V450	47
BD Horizon™ V500	17
BD Horizon™ BV605	133

Fluorescence precision

<3% CV for chicken erythrocyte nuclei (CEN)

Fluorescence linearity

2 \pm 0.05% for CEN

Data resolution

Uncompensated data has a range of 0–262,143

SSC and FSC resolution

Enables separation of 0.2- μm beads from noise

System throughput

Absolute count, multicolor assay example: \leq 50 minutes for a 40-tube rack

Parameters

Area (A), Width (W), Height (H) for all channels and Time (T). Total of 37 parameters available.

Compensation

Full inter-beam matrix, during or post acquisition

Threshold

Any single parameter or logical combination of multiple parameters

Software

BD FACSuite software

- Integrated bi-directional LIS interface using BD FACSLink™ software
- Support for 21 CFR Part 11 workflow with audit trail and e-signature
- Universal setup for fast and convenient instrument setup and standardization
- Single-tube QC with BD™ CS&T beads
- QC module with Levey-Jennings plots

Support for:

- User-defined assays
- User-defined plots
- User-defined worksheets and reports
- User-defined tube/reference settings
- Expression editing

QC

Automated single-tube QC with BD™ CS&T beads

Data management

Workstation specifications (minimum required)

Clock speed of at least 3.4 GHz
8 GB RAM

Hard drive and data storage

2 x 500 GB - RAID 1 Mirrored Array
Configuration
16X DVD-ROM

Operating system

Microsoft® Windows® 7 Professional
64-bit OS
DVD + Driver DVD

Peripheral devices

At least 3 USB ports
HP USB Keyboard US
HP USB Optical Mouse

Networking

Ethernet LAN 10/100/1000

Recommended monitor

LCD flat panel, 23 in.

Data management options

BD FACSLink software for LIS connectivity
BD Assurity Linc™ software for remote diagnostic capability

Installation requirements

Operating temperature

15°C (59°F) to 30°C (86°F)

Maximum of ±2.5°C/day fluctuation recommended

Humidity

15% to 85% relative humidity (noncondensing)

Dimensions (W x D x H)

Cytometer

63.2 x 57.9 x 57.9 cm
24.9 x 22.8 x 22.8 in.

With standard tanks

85.2 x 57.9 x 57.9 cm
33.5 x 22.8 x 22.8 in.

With standard tanks and loader

107.2 x 57.9 x 57.9 cm
42.2 x 22.8 x 22.8 in.

Weight

Cytometer: 56.0 kg (123.5 lb)
Loader: 13.2 kg (29 lb)

Power specifications

Voltage: 100–240 ±10% VAC
Frequency: 50–60 ±10% Hz
Current: 2 A
Power: 150 W

Operational heat dissipation

≤488 BTU/hour at ambient temperature

Noise under normal operating conditions

≤55 dBA over 8 hours under normal operating conditions

Altitude

≥0.8 atm (approximately 2,000 meters)

System options

BD FACS Universal Loader

Compatible with 30 (barcoded) or 40 (non-barcoded) tubes (12 x 75 mm). Equipped with an orbital shaker for in-place mixing and resuspension of cells. Optimized for all supported plate and tube formats. Includes internal barcode reader for positive sample identification.

Supported barcode formats

Codabar

Code 128

Code 3 of 9

Interleaved 2 of 5

Handheld barcode scanner

Handheld barcode scanner with stand supporting common 1-D and 2-D formats

Extended-use fluidics

Optional tanks and connectors to allow for use with 10-L waste tanks and BD FACSTflow cubitainers

Class 1 Laser Product.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

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BD follows a policy of continuous product improvement. Specifications are subject to change without notice.

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BD Life Sciences, San Jose, CA, 95131, USA

bdbiosciences.com

