



BD FACSLyric™ Flow Cytometry System Technical Specifications

The BD FACSLyric™ System includes the BD FACSLyric™ Flow Cytometer, the optional BD FACS™ Universal Loader and workstation that runs the software. All these components combine to create an integrated system with a compact footprint.

The BD FACSLyric™ Flow Cytometer is available in 4, 6, 8, 10 or 12 colors and equipped with a blue, red and violet laser depending on the configuration. The BD FACSLyric™ Flow Cytometer is upgradeable up to 12 colors.

Sample acquisition can be manual or automated via the BD FACS™ Universal Loader. The Loader provides walkaway operation with samples loaded in either microtiter plates or 12 x 75-mm tube racks.

The BD FACSLyric™ Flow Cytometer integrated with the BD FACSDuet™ Sample Preparation System provides consistency and workflow efficiency support for pre-analytical sample preparation.

The software that controls the BD FACSLyric™ Flow Cytometry System is comprised of two applications:

- The BD FACSuite™ Clinical Application supporting BD CE-IVD Assays with assay templates:

BD Tritest™ CD3/CD4/CD45 Kit
BD Tritest™ CD4/CD8/CD3 Kit with BD Trucount™ Tubes
BD Multitest™ CD3/CD8/CD45/CD4 Kit
BD Multitest™ CD3/CD16+CD56/CD45/CD19 Kit
BD Multitest™ IMK Kit
BD Multitest™ 6-Color TBNK Kit
BD® Stem Cell Enumeration Kit
BD Leucocount™ Kit
BD Trucount™ Controls
BD OneFlow™ LST,
B-CLPD T1, PCST, PCD and ALOT
BD Multitest™ and BD Tritest™ CD3/CD4/CD45 are also available with BD Trucount™ Tubes.



- The BD FACSuite™ Application supporting BD IVD Single Color Reagents and user-defined panels. Functions within the application facilitate instrument-to-instrument and site-to-site standardisation.



Technical Specifications

Optics

Available system configurations

4-color: 2-laser (blue, red) (3-1)

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)

12-color: 3-laser (blue, red, violet) (4-3-5)

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 µL/min

Medium: 60 µL/min

High: 120 µL/min

High sensitivity: 50 µL/min

Fluid capacity

Standard 5-L tanks

Optional 10-L tanks

Adapter available for 20-L

BD FACSThrow™ 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

- With BD FACSThrow™ Universal Loader Tubes

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

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

Plates

96 Falcon™ standard height, round, polystyrene

96 Falcon™ standard height, flat, polystyrene

96 Falcon™ standard height, round, polypropylene

96 Falcon™ standard height, conical, polypropylene

384 Greiner standard height, flat, polystyrene

96 Falcon™, half deep, conical, polypropylene

96 Falcon™, deep, conical, polypropylene

96 Milipore, filter bottom, polypropylene

- With manual tube port Falcon™ 5 mL (12 x 75-mm) polystyrene and polypropylene

BD Trucount™ Tubes 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

Pre-programmed startup and idle shutdown

Software

- Integrated bi-directional LIS interface using BD FACSThrow™ Workflow Manager
- 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
- Two applications

BD FACSThrow™ Application

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

BD FACSThrow™ Clinical Application

Pre-configured workflow and pre-set templates for the following BD CE-IVD assays:

- BD Tritest™
- BD Multitest™ 4-Color
- BD Multitest™ 6-Color TBNK
- BD Trucount™ Controls
- BD OneFlow™ LST, B-CLPD T1, PCST, PCD and ALOT
- BD® Stem Cell Enumeration
- BD Leucocount™

Report in 26 languages

QC

Automated single-tube QC with BD® CS&T Beads

Performance

Acquisition rate

Up to 35,000 events per second. No limit on number of events acquired in a single FCS file

Carryover*

≤0.1% with default SIT flush**
 <0.05% with 3 or more SIT flushes with 500 µL of sample.**

Sensitivity

FITC: <85 MESF
 PE: <20 MESF

Channel Qr (x1,000)

FITC	20
PE	133
PerCP-Cy 5.5	13
PE-Cy7	17
APC	10
BD Horizon™ APC-R700	8
APC-Cy7	7
BD Horizon™ V450	47
BD Horizon™ V500-C	17
BD Horizon™ BV605	133
BD Horizon™ BV711	43
BD Horizon™ BV786	16

Fluorescence precision

<3% CV for chicken erythrocyte nuclei (CEN)

Fluorescence linearity

2 ±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

≤50 minutes for a 40-tube rack with a standard BD Tritest™ Assay stopping rule on samples with normal CD4 counts (approximately 1190 cells/µl).
 ≤40 minutes for a 96-well plate, using default mix settings, a two-second acquisition, and a SIT flush in between each well and no preview before acquiring or report review delay.

Parameters

Area (A), Width (W), Height (H) for all channels and Time (T). Total of 43 parameters available.

3 scales:

- Linear (A, W, H)
- Logarithmic (A, H)
- Biexponential (A, W, H)

Compensation

Full inter-beam matrix, during or post acquisition

Threshold

Any single parameter or logical combination of multiple parameters

Data management

Workstation specifications (minimum required)

- Clock speed of 3.2 GHz
- 16 GB RAM

Hard drive and data storage

- 1 TB Solid State HD

Operating system

- Microsoft™ Windows™ 10 IoT
- 64-bit OS

Peripheral devices

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

Networking

Ethernet LA 10/ 100 /1000

Signal Processing

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

Monitor

- LCD flat panel, 23 in.
- LCD flat panel, 27 in. (recommended)

Data management options

BD FACS™ Workflow Manager for LIS connectivity.

BD Remote Support Services for remote troubleshooting 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
 63.3 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: 200 W

Operational heat dissipation

<498 BTU/hour

Noise under normal operating conditions

<55 dBA over 8 hours under normal operating conditions

Altitude

≥0.8 atm (approximately 2,000 meters)

*Carryover may vary based on the application and population of interest. ** Determined for CD45 population using CD45 PerCP.

Specifications for 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 GS-1 standard 1-D and 2-D formats

Extended-use fluidics

Optional tanks and connectors to allow for use with 10-L waste tanks and BD FACSFlow™ Cubitainers

BD FACSDuet™ Sample Preparation System

Integrated with the BD FACSLyric™ Flow Cytometer provides pre-analytical automation.

BD FACSLyric™ Flow Cytometers and BD FACSDuet™ Sample Preparation System are Class 1 Laser Products.

CE₂₇₉₇ BD Tritest™ CD3/CD4/CD45, BD Tritest™ CD3/CD4/CD45 with BD Trucount™ Tubes, BD Tritest™ CD4/CD8/CD3 with BD Trucount™ Tubes, BD Multitest™ CD3/CD8/CD45/CD4, BD Multitest™ CD3/CD8/CD45/CD4 with BD Trucount™ Tubes, BD Multitest™ CD3/CD16+CD56/CD45/CD19, BD Multitest™ CD3/CD16+CD56/CD45/CD19 with BD Trucount™ Tubes, BD Multitest™ 6-Color TBNK, BD Multitest™ 6-Color TBNK with BD Trucount™ Tubes, BD Multitest™ IMK Kit, BD Multitest™ IMK Kit with BD Trucount™ Tubes, BD Leucocount™ Kit, BD® Stem Cell Enumeration Kit, BD Trucount™ Controls, BD OneFlow™ LST, BD OneFlow™ B-CLPD T1, BD OneFlow™ PCST, BD OneFlow™ PCD, BD OneFlow™ ALOT are in vitro diagnostic medical devices bearing a CE mark and are CE certified by BSI Group The Netherlands B.V. (Notified Body Number = 2797).

CE BD FACSLyric™ Flow Cytometer with the BD FACSuite™ Clinical and BD FACSuite™ applications, BD FACS™ Universal Loader, BD FACSDuet™ Sample Preparation System, BD FACSuite™ Clinical, BD Tritest™ 3-Color Assays, BD FACSuite™ Clinical BD Multitest™ 6-Color Assays, BD FACSuite™ Clinical BD Multitest™ 4-Color Assays, BD FACSuite™ Clinical BD Trucount™ Controls, BD OneFlow Assay Installer I, BD OneFlow™ Assays Installer II, BD® Stem Cell Enumeration Assay Module and BD Leucocount™ Assay Module are in vitro diagnostic medical devices bearing a CE mark.

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