CytoFLEX S Flow Cytometer
Violet-Blue-Yellow Green-Red
(V-B-Y-R) Series

TECHNICAL SPECIFICATION

OPTICS

EXCITATION OPTICS
The instrument has the capacity for 15 parameters, including 13 for fluorescence detection. The fully activated instrument includes four channels from the 405 nm (Violet) laser, two from the 488 nm (Blue) laser, four from the 561 nm (Yellow Green) laser and three from the 638 nm (Red) laser. Instruments with as few as six fluorescent channels activated are available with the ability to activate additional parameters as needed by purchasing an activation key.

LASER SPECIFICATIONS
Spatially Separated Laser Options (Beam Spot Size: 5 μm x 80 μm)

<table>
<thead>
<tr>
<th>Laser</th>
<th>Wavelength</th>
<th>Power</th>
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<tbody>
<tr>
<td>Violet</td>
<td>405 nm</td>
<td>80 mW</td>
</tr>
<tr>
<td>Blue</td>
<td>488 nm</td>
<td>50 mW</td>
</tr>
<tr>
<td>Yellow Green</td>
<td>561 nm</td>
<td>30 mW</td>
</tr>
<tr>
<td>Red</td>
<td>638 nm</td>
<td>50 mW</td>
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FLOW CELL
Fixed integrated optics and quartz flow cell design with >1.3 numerical aperture.
Flow Cell dimensions: 430 μm x 180 μm internal diameter

FORWARD SCATTER DETECTION
Proprietary Homodyne FSC sensor system using silicon photodiodes with built in 488/8 nm bandpass filter.

BANDPASS FILTERS
Includes 13 repositionable filters

<table>
<thead>
<tr>
<th>Filter</th>
<th>Power</th>
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</thead>
<tbody>
<tr>
<td>450/45</td>
<td></td>
</tr>
<tr>
<td>525/40 (2)</td>
<td>690/50</td>
</tr>
<tr>
<td>585/42</td>
<td>712/25</td>
</tr>
<tr>
<td>610/20 (2)</td>
<td>780/60 (3)</td>
</tr>
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</table>

FLUORESCENCE AND SIDE SCATTER DETECTION
Fluorescence and side scatter light delivered by fiber optics to Avalanche Photo Diode detector arrays. Proprietary design ensures high performance, high efficiency, low-noise signal detection. Emission profiles are collected using reflective optics and single transmission bandpass filters.

VIOLET SIDE SCATTER CONFIGURATION
Option to configure Avalanche Photo Diode detector array to collect side scatter signal from Violet (405 nm) laser. The configured channel (VSSC) can be used to better resolve nanoparticles.

QUALITY CONTROL
For detection channels off of the 405, 488, 561 and 638 nm laser. CytExpert QC automation pass/fail criteria is rCV ≤5.0%.

PERFORMANCE

SCATTER RESOLUTION
Blue (488 nm) Side Scatter Resolution: <300 nm
Violet (405 nm) Side Scatter Resolution (VSSC): 80 nm polystyrene particles
Scatter performance is optimized for resolving human lymphocytes, monocytes, and granulocytes as well as nanoparticles.

CARRYOVER
Single Tube Format: < 1.0%
Plate Loader Format: < 0.5%

SENSITIVITY
FITC: <30 molecules of equivalent soluble fluorochrome (MESF-FITC) from the 488 nm laser.
PE: <10 molecules of equivalent soluble fluorochrome (MESF-PE) from the 488 nm laser.

FLUORESCENCE RESOLUTION
The CytoFLEX Flow Cytometer is capable of achieving 3% rCV with alignment verification particles capable of rCVs <3%.

ELECTRONICS

NOMINAL ACQUISITION RATE
30,000 events per second with all configured parameters
Software capability to modify window extension parameter and to control abort rate during high event rate signal processing

SIGNAL PROCESSING
Fully digital system with 7 decade data display

SIGNAL
Pulse area, height for every channel, width for one selectable channel

FLUIDICS

ULTRA-LOW PRESSURE PERISTALTIC SHEATH AND SAMPLE DELIVERY SYSTEM
Low maintenance system
Sheath Fluid Filter and Sample Pump Tubing can be replaced by the user (no service visit required)

SAMPLE FLOW RATES
Fixed Flow Rates: 10, 30 and 60 μL/min
Custom Flow Rate Control mode from 10 to 240 μL/min in 1 μL increments
Gravimetric calibration for absolute counts within CytExpert Software.
**FLUID CAPACITY**
- Standard 4 L tanks
- Optional 10L cubitainers

**AUTOMATED MAINTENANCE FUNCTIONS**
- System Startup, Sample Mixing, Backflush, Prime, Shutdown, Deep Clean

**SAMPLE INPUT FORMATS**
- 5 mL (12 x 75 mm) polystyrene and polypropylene tubes
- 1.5 mL and 2 mL microcentrifuge tubes

**PLATE LOADER FORMATS**
- 96-well Standard Flat, U and V bottom plates, and 96-deep well plates.
  Refer to CytoFLEX Plate Loaders Technical Specification Sheet _FLOW-3308SPEC12.17 for details on all plate loader options.

**DATA MANAGEMENT SOFTWARE**
- The CytExpert software is a full-feature software package that controls instrument operation, data collection and analysis.
- Three different installation modes are available depending on the level of security required.
  - The Default installation requires no user login.
  - For multiuser instruments, the User Management mode requires user login and contains features for user and role management.
  - An API (Application Programming Interface) is available and allows external software to perform operations such as running methods and for basic control of the plate loader.
  - If desired, export FCS files for offline analysis in Kaluza, FCExpress, FlowJo, and other platforms.

**STANDARDIZATION**
- Daily QC beads or any other reference material that is relevant for your application may be used as the standardization sample to set target values and calibrate the gain settings automatically.

**LANGUAGE**
- English and Chinese

**OPERATING SYSTEM**
- Windows® 7 Professional 64-bit
- Windows® 8 Professional 64-bit
- Windows® 10 Professional 64-bit

**FCS FORMAT**
- FCS 3.0

**MINIMUM COMPUTER SPECIFICATIONS**
- CPU: Intel® i3 @ 2.9 GHz 1 Gigabit Ethernet port
- RAM: 4 GB 2 USB 3.0 ports
- Storage: 256 GB 4 USB 2.0 ports

**COMPENSATION**
- Automatic full matrix compensation
- Manual full matrix compensation
- Novel Compensation Library: store fluorescent spillover values of dyes to easily determine the correct compensation matrix with new gain settings
- Import/export compensation values between experiments
- Absolute linear gain amplification enables the use of compensation settings between experiments and sample types

**INSTALLATION**

**DIMENSIONS (W X D X H)**
- Cytometer (with or without Plate Loader)
  - 42.5 cm x 42.5 cm x 34 cm
  - 16.7 in x 16.7 in x 13.4 in
- Tanks and Holder
  - 14 cm x 35.6 cm x 35.6 cm
  - 5.5 in x 14.0 in x 14.0 in

**WEIGHT**
- Cytometer: 23.4 kg / 51.6 lbs
- Cytometer with Plate Loader: 28 kgs / 61.7 lbs

**POWER SPECIFICATIONS**
- Voltage: 100–240 V Power: 150 -250 W

**OPERATING TEMPERATURE NON-CONDENSING**
- 15-27 °C, 59-80.6 °F