OPTICS

EXCITATION OPTICS
The instrument has the capacity for 15 parameters, including 13 for fluorescence detection. The fully activated instrument includes four fluorescent channels from the 405 nm (Violet) laser, four from the 488 nm (Blue) laser, three from the 638 nm (Red) laser, and two from the 808 nm (Infrared) 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>
</tr>
</thead>
<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>Red</td>
<td>638 nm</td>
<td>50 mW</td>
</tr>
<tr>
<td>Infrared</td>
<td>808 nm</td>
<td>60 mW</td>
</tr>
</tbody>
</table>

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>Wavelength</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>450/45</td>
<td>690/50</td>
</tr>
<tr>
<td>525/40 (2)</td>
<td>712/25</td>
</tr>
<tr>
<td>585/42</td>
<td>763/43 (2)</td>
</tr>
<tr>
<td>610/20</td>
<td>840/20</td>
</tr>
<tr>
<td>660/70 (2)</td>
<td>885/40</td>
</tr>
</tbody>
</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 band pass 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, and 561 nm laser, CytExpert QC automation pass/fail criteria is rCV ≤5.0%. For detection channels off of the 375 nm laser, the criteria is ≤7.0%.

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
- 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.

Every Event Matters.
**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, FCSExpress, 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