



# CytoFLEX S Flow Cytometer

## TECHNICAL SPECIFICATION



### DESCRIPTION

CytoFLEX S Flow Cytometers are an extension of the CytoFLEX Platform and continue to deliver superior performance with ease of installation and operation for research applications. The CytoFLEX S Flow Cytometer platform expands your research possibilities, with a fourth laser option, offered in multiple configurations and unique filter sets for your science. CytoFLEX S Systems are available in preset configurations with up to four lasers and up to 13 fluorescent channels. The CytoFLEX S system features a compact footprint, integrated detection optics and lasers, and a simplified, highly reliable fluidics system. Additional features include a 96-well plate loader option, and multiple band pass filters for detection of fluorescent proteins as well as near ultraviolet dyes.

#### OPTICS

##### Excitation Optics

The CytoFLEX system can be configured with up to four spatially-separated lasers. The optical system is alignment free. The laser delays are automatically adjusted by the daily QC system. No user intervention is required to ensure optimum system performance.

##### Laser Specifications

<b>Blue Laser</b>	Wavelength: 488 nm; Power: 50 mW; Beam spot size: 5 $\mu\text{m}$ x 80 $\mu\text{m}$
<b>Red Laser</b>	Wavelength: 638 nm; Power: 50 mW; Beam spot size: 5 $\mu\text{m}$ x 80 $\mu\text{m}$
<b>Violet Laser</b>	Wavelength: 405 nm; Power: 80 mW; Beam spot size: 5 $\mu\text{m}$ x 80 $\mu\text{m}$
<b>Yellow Laser</b>	Wavelength: 561 nm; Power: 30 mW; Beam spot size: 5 $\mu\text{m}$ x 80 $\mu\text{m}$
<b>Near UV Laser</b>	Wavelength: 375 nm; Power: 60 mW; Beam spot size: 5 $\mu\text{m}$ x 80 $\mu\text{m}$

##### Flow Cell

The system does not require alignment. Fixed integrated optics and quartz flow cell design with >1.3 numerical aperture.

Flow Cell dimensions: 420  $\mu\text{m}$  x 180  $\mu\text{m}$  internal diameter

##### Forward Scatter Detection

Proprietary Axial Light Loss (ALL) sensor system using silicon photodiodes with built in 488/8  $\mu\text{m}$  band pass filter.

##### 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 utilized to better resolve nanoparticles below 300 nm size threshold.

#### PERFORMANCE

##### Side Scatter Resolution

<300 nm

##### Violet Side Scatter Resolution (VSSC)

<200 nm

##### Forward and Side Scatter Resolution

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)

PE: <10 molecules of equivalent soluble fluorochrome (MESF-PE)

##### Fluorescence Resolution

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

#### QUALITY CONTROL

For detection channel off of the 405, 488, 561, and 638 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%.

#### ELECTRONICS

##### Nominal Acquisition Rate

30,000 events per second with 15 parameters

Software capability to modify window extension parameter, 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 Pump tubing and Sample Pump tubing can be replaced by the user (no service visit required)

## Sample Flow Rates

Fixed Flow Rates: 10, 30 and 60  $\mu\text{L}/\text{min}$   
 Custom Flow Rate Control mode from 10 to 240  $\mu\text{L}/\text{min}$  in 1  $\mu\text{L}$  increments.  
 Gravimetric calibration.  
 Absolute count by volume, after simple calibration, using CytExpert software.

## Fluid Capacity

Standard 4 L tanks

## Automated Maintenance Cycles

Startup (initialize), sample mix, backflush, prime, shutdown (daily clean), deep clean

## Sample Input Formats

5 mL (12 x 75 mm) polystyrene and polypropylene  
 1.5 mL and 2 mL microcentrifuge

## Plate Loader Formats

96-well Standard Flat, U and V Bottom plates

## DATA MANAGEMENT

### Software

CytExpert Software, fully featured proprietary application with exportable file formats for offline analysis, if desired.  
 Export FCS files feature allows data files to be read using Kaluza, FCSEXPRESS, FlowJo and other software platforms

### Language

English and Chinese

### Operating System

Windows® 7 Professional 64-bit

### FCS Format

FCS 3.0

### Minimum 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 for storage of spillover values of dyes to easily determine the correct compensation matrix with new gain settings  
 Ability to import/export compensation values between experiments, using compensation library function  
 Absolute linear gain amplification, enabling the use of compensation settings between experiments and sample types

## INSTALLATION

### Dimensions (W x D x H)

Cytometer (with or without Plate Loader)	Tanks and Holder
42.5 cm x 42.5 cm x 34 cm	14 cm x 35.6 cm x 35.6 cm
16.7 in x 16.7 in x 13.4 in	5.5 in x 14.0 in x 14.0 in

### Weight

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

### Power Specifications

Voltage: 100-240 V                  Power: 150 -250 W

### Operating Temperature Non-Condensing

15-27 °C, 59-80.6 °F

## CONFIGURATIONS

Preset configurations available with up to four lasers and up to 13 channels for fluorescence detection.\*

Commonly used Fluorescent Dyes	Laser	Fluorescent Channel	Part Number								
			B78558	B78561	B78559	B78560	B78557	B75812	B75811	B75408	
Number of Detectors			6	8	10	12	13	6	9	13	
DAPI, Hoechst Blue	375 nm	450/45 BP	•	•	•	•	•				
Hoechst Red		675/30 BP	•	•	•	•	•				
Pacific Blue™ dye, V450,eFluor™ 450, BV421	405 nm	450/45 BP				•	•			•	
Krome Orange, AmCyan, V500, BV510		525/40 BP				•	•			•	
BV605, Qdot® 605		610/20 BP				•	•			•	
BV650, Qdot® 655		660/20 BP				•				•	
FITC, Alexa Fluor™ 488, CFSE, Fluor-3		525/40 BP	•	•	•	•	•	•	•	•	
PE, PI	585/42 BP	•	•	•	•	•					
ECD, PE-Texas Red®, PE-CF594, PI	488 nm	610/20 BP	•		•		•		•	•	
PC5.5, PCS, PerCP, PerCP-Cy5.5, PI		690/50 BP	•		•		•	•	•	•	
PC7		780/60 BP			•		•				
PE, PI		585/42 BP		•		•		•	•	•	
ECD, PE-Texas Red®, PE-CF594, PI	561 nm	610/20 BP		•		•		•	•	•	
PC5.5, PCS, PerCP, PerCP-Cy5.5, PI		690/50 BP		•		•		•	•	•	
PC7		780/60 BP		•		•		•	•	•	
APC, Alexa Fluor™ 647, eFluor™ 660		660/20 BP		•	•		•		•	•	
APC-A700, Alexa Fluor™ 700	638 nm	712/25 BP		•	•		•		•	•	
APC-A750, APC-Cy7, APC-H7, APC eFluor™ 780		780/60 BP		•	•		•		•	•	

\*Additional custom filter sets are also available for user installation. Ask your sales representative for details.



© 2015 Beckman Coulter Life Sciences. Beckman Coulter, the stylized logo, and the Beckman Coulter product and service used herein are trademarks or registered trademarks of Beckman Coulter, Inc. in the United States and other countries. All other trademarks are the property of their respective owners. For Research Use Only. Not to be used in diagnostic procedures. Class 1 laser product.

For Beckman Coulter's worldwide office locations and phone numbers, please visit "Contact Us" at [beckmancoulter.com](http://beckmancoulter.com)

FLOW-357DS10.15-G