BECKMAN COULTER
Life Sciences

# CytoFLEX nano Flow Cytometer


The first built-for-purpose nanoscale flow cytometer capable of detecting nanoparticles at least as small as 40 nm* while simultaneously characterizing them in detail.

## OPTICS

### EXCITATION OPTICS

The CytoFLEX nano flow cytometer has the capacity for 12 simultaneous detection channels, broken out as 6 fluorescent channels, 5 side scatter channels and 1 forward scatter channel. Each instrument is available in one configuration with all lasers activated. The excitation lasers are listed in the table below.

### LASER SPECIFICATIONS
**Colinear Laser Description**

| Laser | Wavelength | Power at Flow Cell |
|---|---|---|
| Violet | 405 nm | 120 mW |
| Blue | 488 nm | 50 mW |
| Yellow | 561 nm | 35 mW |
| Red | 638 nm | 100 mW |

### FLOW CELL

Fixed integrated optics and quartz flow cell design

### FORWARD SCATTER DETECTION

Silicon photodiode with built-in 405/10 nm bandpass filter

### BANDPASS FILTERS
**Side scatter filters cannot be replaced, repositioned or removed. Fluorescence filters can be replaced, but can not be repositioned or removed. Please discuss custom filter placement with technical support.**

| Fluorescence | Scatter |
|---|---|
| 447/60 | 405/10 (3) – VSSC1, VSSC2, VFSC |
| 531/46 | 488/8 - BSSC |
| 595/50 | 561/6 - YSSC |
| 670/30 | 638/6 - RSSC |
| 710/47 | |
| 792/64 | |

### FLUORESCENCE AND SIDE SCATTER DETECTION

Fluorescent and side scatter light is delivered by fiber optics to Avalanche Photodiode 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.

### QUALITY CONTROL

For detection channels off each of the lasers, CytExpert nano QC fluorescence pass/fail criteria is rCV <10% when using CytoFLEX nano QC Fluorospheres and QC Scatterspheres. QC process is enhanced with automated baseline monitor process.

## FLUIDICS

Built-in diaphragm and maintenance-free piston pumps deliver both sheath and sample, respectively.

### FLUIDIC CAPACITY

Fluidic cart with on-board fluid containers

10 L disposable sheath container

5 L disposable CytoFLEX Cleaner

### SAMPLE FLOW RATES

Adjustable sample flow rates from approximately 1-6 µL/min, in 1 µL/min steps.

### SAMPLE INPUT FORMATS

5 mL (12 x 75 mm) tubes, 1.5 mL micro-centrifuge sample tubes

### VOLUMETRIC COUNTING ACCURACY

>90% - tested with 144nm QC Scatterspheres at all nominal sample flow rates.

### MAINTENANCE

Automated sample and sheath baseline signal check and user defined cleaning and acceptance criteria.

Maintenance reminder can be set up in the software for some regular operations with custom cycle tim.e

User replaceable fluidic filters and sample line and probe

## ELECTRONICS

### NOMINAL ELECTRONIC ACQUISITION RATE

16,000 events per second with all configured parameters

### RECOMMENDED ACQUISITION RATE

Up to 5,000 events per second with all configured parameters

### DATA DISPLAY

Fully digital system with 7 decades data display

### SIGNAL

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

## PERFORMANCE

### ANALYSIS

### SCATTER SENSITIVITY

Reflective optics with a single transmission bandpass filter in front of each detector

Violet (405 nm) Side Scatter Resolution (VSSC1, VSSC2): Able to detect scattered light from polystyrene particles at least as small as 40 nm* and as large as 1000 nm. Intended range of operation: VSSC1 - 40 nm to 150 nm, VSSC 2 - 80 nm to 1000 nm, when light scatter is equivalent to or greater than polystyrene.

### CARRYOVER

<1.0% for both QC beads and biological material

### FLUORESCENCE SENSITIVITY

Sensitivity is monitored by automated QC process using 500 nm CytoFLEX nano Multi-intensity Fluorospheres

## DATA MANAGEMENT

### SOFTWARE

The CytExpert nano software is a full-featured software package that controls the instrument's operation, collection of experiment data, and analysis of the results

If desired, data files can be exported as FCS files for analysis in Kaluza, Cytobank and other platforms

### LANGUAGE

English and Chinese

### OPERATING SYSTEM

Windows® 10 Enterprise LTSC 2019 x64 -bit

### FCS FORMAT

FCS 3.0, FCS 3.1

### MAXIMUM DATA FILE SIZE

25 million event per file with all parameters

### RECOMMENDED MINIMUM COMPUTER SPECIFICATIONS

CPU: 10th Gen Intel®Core™ i7 (12MB Cache, 2.40 GHz)

Memory: 16 GB RAM or higher

Storage: 512 GB TB

Ethernet: Integrated 100M GB, Dual Ethernet ports

USB Port: >4 ports

Monitor: 32-inch monitor (2560x1440 resolution) or 24-inch monitor (1920x1080 resolution)

### 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 or matrix between experiments

Absolute linear gain amplifications allows automatic compensation adjustment between experiments that use different gain settings

## INSTALLATION REQUIREMENTS

### DIMENSIONS (W X D X H)

### FLOW CYTOMETER

59 cm x 50 cm x 44 cm

### FLUIDICS CART

37 cm x 89 cm x 33 cm, cart can be placed on bench or floor

### WEIGHT

**CytoFLEX nano Flow Cytometer:** 45 kg

**Fluidics cart (with fluid):** 22 kg

### POWER SPECIFICATIONS

Voltage: AC 100-240V, 50/60Hz

Rated Power: 200VA

### OPERATION ENVIRONMENT

**Ambient Temperature:** 15-27°C within ±2°C temperature variation during operation

**Relative Humidity:** 20-80% (noncondensing)

**Altitude:** 2,000 m (max)

## COMPLIANCE AND SAFETY STANDARDS

EN 61010-1:2010+A1:2019

UL 61010-1:2012

CAN/CSA-C22.2 NO. 61010-1-12 + GI1 +GI2 (R2017) + A1

IEC 61010-2-081:2019

EN IEC 61010-2-081:2020

UL 61010-2-081:2019

CSA C22.2 NO. 61010-2-081:19 61010-1:2010, AMD1:2016

AS/NZS CISPR 11:2017+AMD 1:2020

## ENVIRONMENTAL, HEALTH, AND SAFETY

EU RoHS 3(2015/863/EU)

EU waste electrical and electronic equipment 2012-19/EU

California Proposition 65

REACH 1907/2006

Packaging and Packaging Waste Directive 94/62/EC

California Seismic Regulation LAW

## COMPLIANCE CERTIFICATION MARKS

cNTRLus Certification Mark

CB Certification Mark

CE Certification Mark

RCM Certification Mark

UKCA Certification Mark

*polystyrene when triggering on violet side scatter

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