



CytoFLEX mosaic 63 Spectral Detection Module + CytoFLEX S Flow Cytometer



The CytoFLEX mosaic spectral detection module is the natural evolution of our CytoFLEX platform - a detection module that enables spectral capabilities using our CytoFLEX S and LX instruments.

The CytoFLEX S flow cytometer, when paired with the CytoFLEX mosaic 63 module, can function in either spectral or conventional modes. In conventional mode, its performance matches that of the CytoFLEX S. For more details, please refer to the CytoFLEX S specification sheet.

OPTICS

EXCITATION OPTICS

Violet-Blue-Yellow Green-Red (V-B-Y-R) Series

The system can accommodate 63 parameters, with 58 designated for fluorescence detection.

CytoFLEX S Analyzer	CytoFLEX mosaic module	Channel (FSC/SSC/FL)	FSC	405 nm (SSC/FL)	488 nm (SSC/FL)	561 nm (SSC/FL)	638 nm (SSC/FL)
CytoFLEX S B2-R3-V4-Y4	CytoFLEX mosaic 63 V-B-Y-R	1/4/58	1	1/20	1/16	1/12	1/10

LASER SPECIFICATIONS

Spatially separated laser options (beam spot size: 5 µm x 80 µm)

Laser Wavelength Power

Violet 405 nm 80 mW

Blue 488 nm 50 mW

Yellow Green 561 nm 30 mW

Red 638 nm 50 mW

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

FLUORESCENCE AND SIDE SCATTER DETECTION

Fluorescence and side scatter light are delivered by fiber optics to Avalanche Photodiode detector arrays. The proprietary design ensures high performance, efficient, low-noise signal detection. Emission profiles are collected using reflective optics and single transmission bandpass filters. The newly designed detection array for CytoFLEX mosaic has a two-layer design, and can collect up to 20 fluorescent channel signals for one laser.

FLUORESCENCE CONFIGURATION

Fluorescent detectors are designed to cover a broad range of wavelengths across the spectrum:

Violet 405 nm: 20 detectors 420 nm–950 nm

Blue 488 nm: 16 detectors 498 nm–950 nm

Yellow Green 561 nm: 12 detectors 567 nm–950 nm

Red 638 nm: 10 detectors 649 nm–950 nm

SIDE SCATTER CONFIGURATION

Side scatter signals from all lasers are available. The blue side scatter channel (BSSC) is the default. For better resolution of nanoparticles, the violet side scatter channel (VSSC) can be used. Alternative SSC detection opens the possibility of label-free assays based on multiple scatters.

QUALITY CONTROL

For detection channels using the 405, 488, 561, and 638 nm lasers, the CytExpert QC automation pass/fail criteria is an rCV of ≤5.0%.

PERFORMANCE

SCATTER RESOLUTION

Blue (488 nm) Side Scatter Resolution: <300 nm
Violet (405 nm) Side Scatter Resolution (VSSC): 80 nm relative to 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: ≤ 1.0%

SENSITIVITY

FITC: <30 molecules of equivalent soluble fluorochrome (MESF-FITC)
PE: <10 molecules of equivalent soluble fluorochrome (MESF-PE)
APC: <25 molecules of equivalent soluble fluorochrome (MESF-APC)
Fluorescence sensitivity is measured based on peak channel testing results

FLUORESCENCE RESOLUTION

The CytoFLEX Flow Cytometer with the CytoFLEX mosaic spectral detection module can achieve an rCV of < 3% using alignment verification particles that are also capable of rCVs below 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 two selectable channels

FLUIDICS

Ultra-low pressure peristaltic sheath and sample delivery 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

FLUID CAPACITY

10 L 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 for details on all plate loader options

DATA MANAGEMENT

SOFTWARE

The CytExpert for Spectral software is a comprehensive package that manages instrument operation, data collection, and result analysis in spectral mode. For conventional mode, use CytExpert version 2.6 or higher. Refer to the CytoFLEX S specification sheet for more details.

There are two installation modes based on security needs:

- **User Management Installation:** Ideal for multiuser instruments, it requires user login and includes role management features.
- **Electronic Records Management Installation:** Provides tools for compliance with 21 CFR Part 11, covering Electronic Records and Electronic Signatures.

The software also supports gravimetric calibration for absolute counts. Unmixed FCS files can be exported for offline analysis in Cytobank or some other 3rd-party analysis software if needed.

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

OPERATING SYSTEM

Windows 10 Enterprise LTSC 2019 (x64)

FCS FORMAT

FCS 3.1 and FCS 3.0

MINIMUM COMPUTER SPECIFICATIONS

CPU: Intel Core i7-11700K Processor, 3.6GHz or higher
RAM: 64GB RAM or higher, 6 USB 3.0 and above ports
Storage: 1 TB SSD drive
1000BASE-T Gigabit Ethernet

UNMIXING

In the CytExpert for Spectral software, users can choose between two algorithms for spectral unmixing: LSM (Least Squares Method) Unmixing and Poisson Unmixing. Both can be used for live unmixing during data acquisition, with options for automatic or manual fine-tuning afterward.

The Novel Spectral Library lets users store fluorescent spillover unmixing values of dyes, making it easy to determine the correct unmixing matrix with different dye combinations. You can also import or export the unmixing matrix between experiments.

INSTALLATION REQUIREMENTS

DIMENSIONS (W X D X H)

CytoFLEX mosaic 63	42.5 cm x 34.5 cm x 53.5 cm
CytoFLEX S	42.5 cm x 42.5 cm x 34 cm
Tanks and Holder	14 cm x 35.6 cm x 35.6 cm

WEIGHT

CytoFLEX mosaic 63	30 kg
CytoFLEX S	23.4 kg
CytoFLEX S with Plate Loader DW	28 kg

POWER SPECIFICATIONS

Voltage: 100–240 V

Power:

CytoFLEX mosaic 63	450VA
CytoFLEX S	250VA

OPERATING ENVIRONMENT

Ambient temperature: 15-27° C

Relative humidity: 15% RH-80% RH, non-condensing



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2024-GBL-EN-107011-v1

