Gallios® Flow Cytometry

Powerful Versatile Performance

BECKMAN COULTER

Life Sciences

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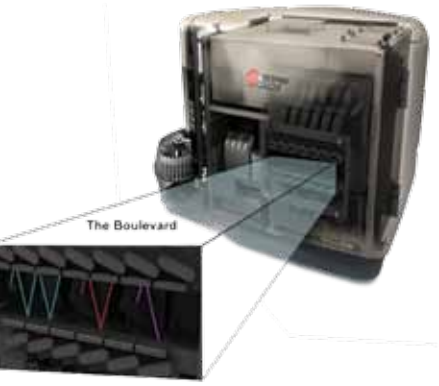
Powerful Versatile Performance

Designed with your research needs in mind, the Gallios Flow Cytometer provides very efficient acquisition of high-quality data. Using up to 10 colors and an advanced optical design, you get enhanced sensitivity when analyzing multi-color assays. The Gallios Flow Cytometer's optimized electronics ensure you will have the highest resolution in the shortest amount of time, with the most accurate processing of your flow cytometry data.



State-Of-The Art Optics

The Gallios Flow Cytometer is in a class by itself with its advanced optical design that provides efficient acquisition of superior quality data. The Gallios is built with two highly stable, solid-state lasers in standard red and blue. You can choose the option to add up to four lasers by opting for violet and yellow lasers. Easily interchangeable optical filters facilitate detection of a variety of dyes and wavelengths.

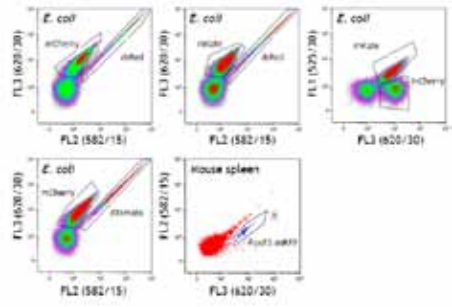
An innovative forward-scatter detector enables superior resolution of submicron particles down to 0.404 µm in diameter. A side-scatter detector incorporates an independently focused, high-performance photodiode with electronic attenuation. Six fluorescence detectors provide simultaneous acquisition of up to six fluorescence signals.

Flexibility to Expand Your Research

By incorporating the optional 405nm violet laser and an optional 561nm yellow laser, the Gallios Flow Cytometer offers a greater choice of fluorochromes to perform sophisticated multicolor experiments. You can upgrade your Gallios Flow Cytometer by adding up to four additional fluorescence detectors, which, in turn, enables the concurrent reading of up to 10 colors.

The Gallios is available in 2, 3 and 4 laser configurations:

- 6 color, 2 laser (488nm Blue & 638nm Red) (5 + 1)
- 8 color, 2 laser (488nm Blue & 638nm Red) (5 + 3)
- 10 color, 3 laser (488nm Blue, 638nm Red & 405nm Violet) (5 + 3 + 2)
- 10 color, 4 laser (488nm Blue & 561nm Yellow [co-linear], 638nm Red, 405nm Violet) (5 + 3 + 2)
  The optional 561nm yellow laser is co-linear with the blue 488nm laser



Fluorescent protein detection with 488 and 561 nm excitation. Escherichia coli *transfected with mCherry, dsRed, mKate and dTomato could be resolved in FL1, FL2, and FL3 (panels A-D). Mouse spleen cells transfected with FoxP3-mRFP (blue) are shown in panel E.*

Easily Detect Fluorescent Proteins with Optional 561nm Laser

Take full advantage with the optional 561nm laser. The Gallios Flow Cytometer is now equipped for an optional 561nm laser to allow for expanded applications and greater choice of fluorochromes for multicolor experiments. With the new 561nm laser system you can analyze multiple fluorescent proteins simultaneously, as well as benefit from a greater ability to detect red fluorescent proteins.

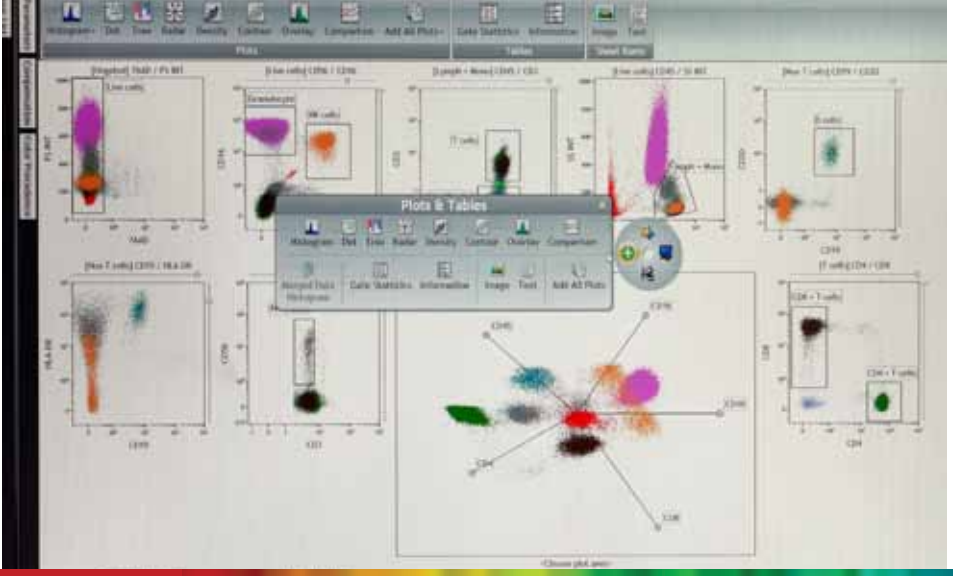
- Analyze red fluorescent proteins such as mCherry and DsRed.
- Take full advantage of improved PE tandem dyes for enhanced detection.
- Versatile for both phenotypic and functional analysis using fluorescent antibodies, dyes and proteins.
- Minimal or no compensation is needed as FITC and PE are detected using the 488nm blue laser and the 561nm yellow laser, respectively.

Superior Resolution

The Gallios Flow Cytometer was engineered to meet the extreme challenges of an increasingly complex analytical environment in the laboratory. Built on a platform designed with reliability and stability in mind, the Gallios samples information at 4.0MHz and displays data on a 1,048,576 channel scale. These specifications offer superior resolution of cell/particle characterization without sacrificing any of the analytical speed or integrity of the data.

The electronics provide accurate and efficient signal processing at high event rates. A selection of up to 62 parameters can be processed per analysis at acquisition rates of 25,000 events per seconds with high yield. The compact flow cytometer delivers a stable performance over long periods of time and across a wide range of operating temperatures.

So whether your challenges are dim markers, rare events, or just routine analysis, the Gallios is the cytometer of choice to capture all of your events; collecting four times the information as the cell passes through the interrogation point and displaying the information on a scale with four times the resolution.



Kaluza's innovative multiparametric plots revolutionize the way data is analyzed. Multidimensional visualization tools can significantly reduce time required for complex data analysis.

Elevate Your Data Analysis With Kaluza

Today, more colors require more plots, events, protocol complexity and ultimately increased analysis time. Kaluza Analysis Software is the perfect complement to the Gallios system. It's designed to efficiently and quickly analyze multi-color, multiparametric data, providing real-time updating of display and statistics. Its revolutionary speed (analyzing millions of cells, not thousands) makes analysis of multiple data sets as simple as drag and drop.

The Kaluza Flow Cytometry Analysis software package features new tools that simplify the management of multiple data sets, allows visualization of high-content data in different spatial dimensions on a single plot and provides real-time analysis of high-content flow cytometry files. The interface includes automatic plot organization, a zoom in/out feature to enhance data exploration and auto-layout, which reconfigures the workspace in order to reduce the process of maintaining an analysis. The software works with the majority of FCS-compliant files, can operate on either network or stand-alone computers and is supercomputer compatible with the NVIDIA Tesla graphics card.

PRO*Service* Remote Diagnostics

Not only do we care about designing and manufacturing quality instrumentation, but we also want to ensure that your Gallios Flow Cytometer is operating at its peak performance. To that end, we created PRO*Service*, a remote diagnostic system that enhances the technical support of your flow cytometer. We can more efficiently troubleshoot and resolve any issues competently, proficiently and promptly so that your flow cytometer will have minimum downtime. In certain circumstances, our PRO*Service* may even be able to preemptively identify potential problems and may even be able to correct them before they impact your laboratory productivity. You can count on Beckman Coulter to provide you with 24-7 support from our expert field consultants.

Gallios Specifications & Performance Characteristics

OPTICS

Lasers

LASER/POWER OUTPUT

- Blue Solid State Diode: 488nm, 22mW laser output
- Red Solid State Diode: 638nm, 25mW laser output
- Violet Solid State Diode: 405nm, 40mW laser output*
- Yellow Solid State Diode: 561nm, 21.5mW laser output*

CONFIGURATION

- 125µm spatially separated beam spots

MINIMUM LASER POWER AT FLOW CELL

- Blue: >20mW
- Red: >20mW
- Violet: >30mW**
- Yellow: >17mW**

Flow Cell

150 x 460µm micron rectangular quartz

Collection Optics

Gel coupled 1.2 NA lens

Optical Filters

Easy interchangeable optical filters

Optimal 18-degree reflective optics for minimal light loss

Detector Filters – Standard Configuration

- Forward Scatter: 488/10
- Blue Laser: 525/40, 575/30, 620/30, 675/20**, 695/30, 755LP
- Dyes: FITC, PE, ECD, PC5 or PC5.5, PE-Cy7
- Red Laser: 660/20, 725/20*, 755LP*
- Dyes: APC or Alexa Fluor 647, APC-Alexa Fluor 700, APC-Cy7, APC-Alexa Fluor 750
- Violet Laser:* 450/40, 550/40 525/40**
- Dyes: Pacific Blue, Pacific Orange, Krome Orange

Detector Filters – Optional 561nm Configuration

- Forward Scatter: 488/10
- Blue Laser:× 525/40, 575/30, 620/30, 675/20**, 695/30, 755LP
- Dyes: FITC, PE, ECD, PC5 or PC5.5, PE-Cy7
- Co-linear Yellow Laser:* 525/40, 582/15, 620/30, 695/30, 755LP
- Dyes: DsRed, mCherry, mStrawberry, mBanana, mOrange, mPlum, mRaspberry, mTangerine, RFP, PE-Cy5, PE-Cy5.5, Alexa Fluor 546, Alexa Fluor 568, Alexa Fluor 594, Alexa Fluor 610
- Red Laser: 660/20, 725/20*, 755LP*
- Dyes: APC or Alexa Fluor 647, APC-Alexa Fluor 700, APC-Cy7, APC-Alexa Fluor 750
- Violet Laser:* 450/40, 550/40 525/40**
- Dyes: Pacific Blue, Pacific Orange, Krome Orange

Detectors

FORWARD SCATTER DETECTOR

- Fourier design providing up to 3 measurements of forward angle

SIDE SCATTER DETECTOR

- Independently focused high performance photodiode with electronic attenuation

FLUORESCENCE DETECTORS

- FL1-FL10 Fluorescent Detectors (7-10 optional*)

SAMPLE PROCESSING

Flow Rates

Continuous pressure is applied to the sample tube based on user selected flow rates:

Low, Medium and High

Sheath Consumption

Acquisition: 780mL/hour

Carryover: < 0.1%

Compatibility: 12 x 75mm tubes

Sheath stream stops automatically after acquiring sample

Acquisition Modes

32 tube Multi Carousel Loader (MCL)

Single tube sampling mode

Automated work list acquisition

Manual work list mode

Mixing

The MCL patented design vortexes each tube individually before sample acquisition

Biosafety

Biohazard contained wash station thoroughly rinses sample probe

Fluidics

10L IsoFlow External Sheath Container

20L Waste Container

1.5L FlowClean Cleaning Fluid Tank

1.5L Internal Sheath Tank

SIGNAL PROCESSING

Flow Rates

Dynamic Range: 20-bit data acquisition

Workstation Resolution: 1,048,576 channels

Digital Sampling Rate: 40MHz

Digital Accuracy: < 5% error

Parameters:

- Five different signals available from each detector:
- Integral linear and logarithmic, Peak linear and logarithmic and True Time of Flight linear Time, Ratio
- Selection of up to 62 parameters

PERFORMANCE CHARACTERISTICS‡

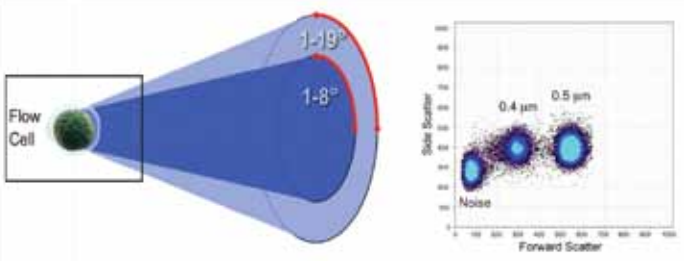
Throughput

Throughput of 10k normal lymphocytes is 80 tubes/hour

Up to 88 tubes an hour at 10,000 events per second

Scatter Resolution

Resolves 0.404µm diameter particles from background noise using forward scatter, with maximum detection up to 40µm diameter particles



Fluorescence Sensitivity Threshold Levels

FITC	112 MESF	PE	78 MESF
PE-Cy5	15 MESF	APC	75 MESF

Acquisition Rate

Greater than 90% yield at 25,000 events per second

GALLIOS SOFTWARE

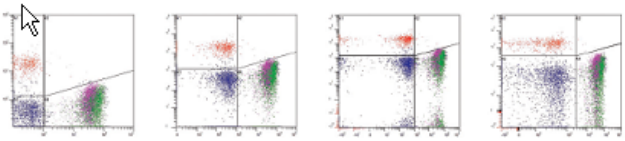
Acquisition

- Unlimited histogram displays per sample
- 256 regions are available per protocol with up to 32 available Boolean gates
- Autogating and Flex quadrant with dual parameter histograms

Settings & Compensation

- Manual or automatic voltage adjustment (using Flow-Set Pro Fluorospheres)
- Manual or automatic color compensation settings
- Real time and listmode of inter and intra beam compensation
- Offline compensation matrix generation

Customizable display of six positive decades and negative scale



Data & User Management

- Administrator control of password security and user access privileges
- Fully compatible with Microsoft Office including automated Excel export functionality
- Customizable FlowPage for reporting with automated pdf or printer output
- Database for storing results and connectivity with LIS and middleware

File Format

- FCS 3.0 compatible
- Storage of both compensated and un-compensated data
- Storage of embedded protocol for rapid replay

REMOTE DIAGNOSTICS

PRO*Service*

PRO*Service* compatible; high-speed Internet connectivity with optional hardware for remote system monitoring, diagnostics and repair

WORKSTATION (MINIMUM SPECIFICATIONS)

Operating System: Windows Business Vista, 32 bit
- RAM: 4GB
- Processor Frequency: Pentium Core 2 Duo 2.13GHz

Hard Drive: 160GB
Removable Media Support: DVD 18X, CD 40X
Network Ports: 3, 2 available for networking
Video Card: PCI express x 16, 256MB DDR2
- 54-bit onboard memory

Support for 1689 x 1050 resolution dual monitors
USB Ports: 8
RoHS Compliant
Monitor: 22-inch Flat Panel LCD Monitor

INSTALLATION REQUIREMENTS

Power: Universal Power Supply (100-240VAC, 50-60Hz)
Operating Temperature: 15.5-32°C (60-90°F)
Noise: < 60db

PHYSICAL DIMENIONS

Cytometer			Supply Cart			561nm Laser System		
Weight	104kg	230lbs	Weight	30kg	67lbs	Weight	4.08kg	9lbs
Width	95cm	38in	Width	72.4cm	28.5in	Width	33.02cm	13in
Height	61cm	24in	Height	29.8cm	11.75in	Height	8.61cm	3.38in
Depth	70cm	28in	Depth	49.5cm	19.5in	Depth	23.11cm	9.01in

ORDERING INFORMATION

Part Number/Description

GALLIOS

A94291	6 Colors, 2 Lasers (488nm Blue & 638nm Red) (5 + 1 configuration)
A94299	8 Colors, 2 Lasers (488nm & 638nm Red) (5 + 3 configuration)
A94303	10 Colors, 3 Lasers (488nm Blue, 638nm Red & 405nm Violet) (5 + 3 + 2 configuration)
B01751	Optional Gallios 561nm DPSS Yellow Laser System

KALUZA ANALYSIS SOFTWARE (Optional)

EDUCATIONAL LICENSES (For Degree Granting Institutions)

B16406	SWRE Kit Kaluza, Single User Educational License
B16407	SWRE Kit Kaluza, 1 Year Single User Educational License
B16408	SWRE Kit Kaluza, 5 User Network Educational License
B16409	SWRE Kit Kaluza, 10 User Network Educational License

STANDARD LICENSES

A82959	SWRE Kit Kaluza, Single User License, Perpetual
A82960	SWRE Kit Kaluza, 5 User Bundle License
A82961	SWRE Kit Kaluza, 10 User Network License
A84174	SWRE Kit Kaluza, 1 Year Single User, Renewable
A84175	SWRE Kit Kaluza, 5 User Network License
A85788	SWRE Kit Kaluza, 3 User Bundle License

Gallios Flow Cytometer

Download a free 30-day trial version of Kaluza Analysis Software at www.KaluzaNow.com

For more information about the Gallios Flow Cytometer, contact your local Beckman Coulter office or log onto our website at: www.Gallios561.com

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Gallios and Kaluza are for research use only. Not for use in diagnostics procedures.

** Optionally available depending on upgraded system configuration.*

*** Optional filter included.*

‡ These characteristics can be influenced by a number of factors relating to instrument setup, sample type, number of parameters selected, protocol definition and number of events acquired. Refer to Instrument Instructions for Use for more information on Analytical Characteristics.

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