

STARION

Covering Radioisotopic, Fluorescent, Chemiluminescent and Digitized Images
with enhanced modality to meet your life science needs



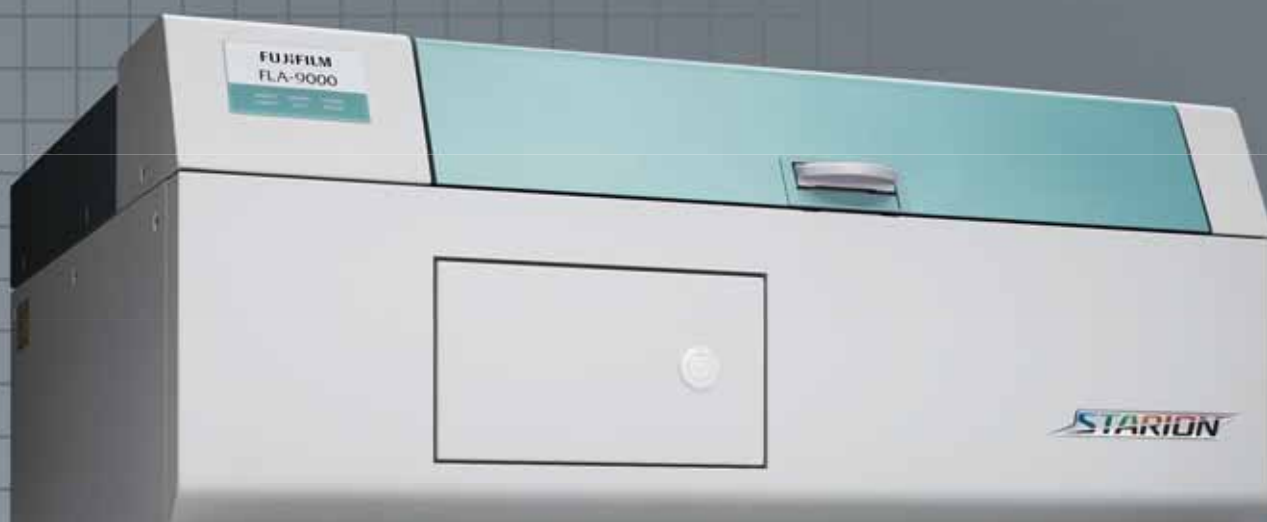
Next Generation Multi-purpose Image Scanner

FLA-9000

THE STARION IS A NEXT GENERATION, MULTI-PURPOSE IMAGE SCANNER, WHICH UNLEASHES THE POWER OF PROTEOMICS RESEARCH

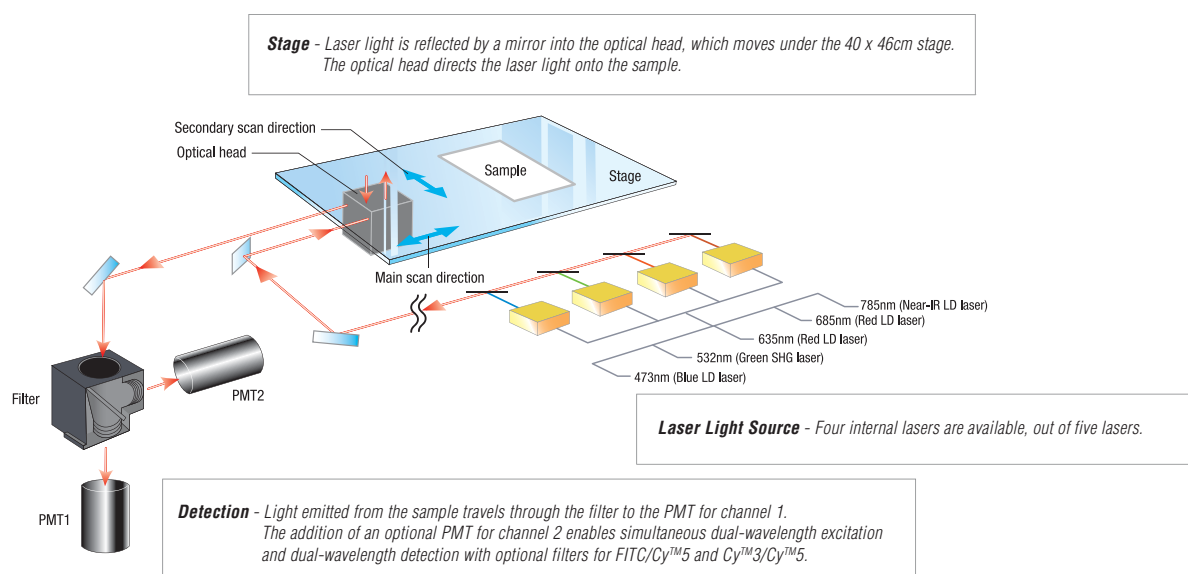
STARION is the ultimate high-end image scanner, which accentuates FUJIFILM's accumulated experience with imaging technologies, such as the originally developed imaging plate method for radioisotopic imaging or laser scanning for fluorescent imaging. It is FUJIFILM's "flagship imager" with unmatched features and high performance to support your scientific research.

We have given this flagship imager the name "STARION", reflecting its outstanding performance, because we are confident that it generates supreme customer satisfaction.



STARION

Next Generation Multi-purpose Image Scanner
FLA-9000



All in one system

Radioisotopic, Fluorescent, Chemiluminescent and Digitized images can be captured in High Resolution using the minimum 10µm pixel size. The maximum scanning area of 40 x 46cm, and easy filter exchange, support a wide range of reagents and applications. The system supports USB2.0 and the all-in-one set up saves space in your laboratory.

Laser upgradeable

The system supports 473nm, 532nm, 635nm, 685nm and 785nm lasers and is flexible enough to allow you to install four different lasers at once. The improved 473nm Blue laser diode light source enables you to capture vivid images of Cy[™]2-labeled gels and blots. Additionally, the new 685nm and 785nm lasers afford all the advantages of near-infrared imaging. Fujifilm's STARION supports a wide array of optional accessories to meet your application needs.

Advanced imaging

The STARION is a high quality image scanner supporting a wide variety of applications from traditional radioisotopic imaging using imaging plates to highly sensitive fluorescent applications like 2D gel analysis. The system supports multispectral fluorescent applications such as Western blotting with Qdot[®] or Alexa Fluor[®] dyes, delivering all the expected benefits of imaging in the near-IR. Additionally, the system allows for parallel detection using two excitation wavelengths simplifying the workflow for multispectral applications.

For Part 11 compliance and security

In the Pharmaceutical Industry, drug development security and compliance are indispensable items. Toward this end, the FDA is mandating all submissions adhere to: Title 21 "Food and Drug" Code of Federal Regulations Part 11 "Electronic Records Signatures" requirements. ImageReader and Multi-Gauge software can now be upgraded to support compliance with 21 CFR Part 11 workflow in routine laboratory practice to help ensure data integrity and security.

Multi-tasking

The STARION includes four imaging solutions in a single system. While optimized for fluorescence, the system also excels at radioisotopic image capture using the Imaging Plate (IP) method. Additional imaging methodologies include digitization using fluorescent board and chemiluminescence detection by the direct detection method.

Modular

Component modules offer a unique opportunity to expand the system’s capabilities and performance as new research methodologies evolve. The system includes a red laser (635nm) as standard and green (532nm), blue (473nm) and near-infrared (685nm, 785nm) as optional internal lasers. Additional options include a second photomultiplier tube (PMT) and an optional optical filter to accommodate concurrent or dual fluorescence detection.

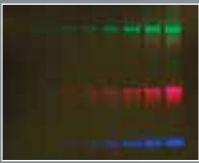
STARION Setting Example

Please consult with your local distributor on other available settings and combinations.

	IP Model	RGB Model	IR + IP Model
Mode	Radioisotope	Radioisotope, Fluorescence, Digitized	NIR Fluorescence, Radioisotope
Excitation wavelength	635	473 532 635	635 685 785
Filter	IP	LPB LPG IP	IP BPFR 700 BPFR 800
Photomultiplier	PMT1	PMT1	PMT1 PMT2
Accessories	IP Eraser	IP Eraser	IP Eraser

Fluorescent imaging
[Fluor Stage or Multi Stage]

Up to four lasers can be installed, out of five different lasers available, to create images of fluorescently stained samples. The Fluor Stage accommodates wet gels or membranes on its glass platen. The Multi Stage accommodates a 20 x 40cm glass plate with gel or a 96-well plate using the titer plate plug-in. Multiple-stained samples can be imaged either by dual fluorescence detection when equipped with the optional PMT2 or sequential detection.



Fluorescence detection of Cy², Cy³ and Cy⁵ superimposed by Multi Gauge software.
Sample: 1D PAGE of Cy² conjugated Carbonic anhydrase, Cy³ conjugated BSA and Cy⁵ conjugated lysozyme
FLA-9000: Ex: 473nm, Filter: LPB, Ex: 532nm, Filter: LPG, Ex: 635nm, Filter: LPR, PMT: 400, Pixel size: 200µm.
The images were obtained sequentially by cyclic mode and composed by MultiGauge software.



Fluorescence detection of SYPRO® Ruby-stained 2D gel
Sample: Sake yeast
FLA-9000: Ex: 473nm, Filter: LPB, PMT: 500V, Pixel size: 50µm.



Fluorescence detection of Cy² Titerplate
Sample: Cy² labeled Primer
FLA-9000: Ex: Laser: 473nm, Filter: LPB, PMT:1000V, Pixel size: 100µm



Fluorescence detection of Pro-Q®Diamond
Sample: α-Casein
FLA-9000: Ex: 532nm, Filter: LPG, PMT:400V, Pixel size: 100µm

Application software

Fujifilm provides fast, easy-to-use software to simplify highly complex image capture, analysis and result reporting functions.
ImageReader and MultiGauge software can now be upgraded to support compliance with 21 CFR Part 11 workflow in routine laboratory practice to help ensure data integrity and security.

ImageReader software

ImageReader for image capture (Windows®/Mac®)

Science Lab software

MultiGauge is the new standard image analysis and processing software for the STARION system. MultiGauge includes the capability to capture multi-channel images which can be pseudo-colored for differentiation and overlapped, or viewed in parallel, for detailed analysis. Available modes include: Quantity (density measurement), Profile (1D electrophoresis), Plate (96-well, 384-well and custom-well) and Distance (distance and angle). Image processing functions include filtering, composition, calculations and others.

2D software

Fujifilm does not provide 2D software. Please use commercially available 2D software. Various 2D software applications are now available which have the capability to open the Fujifilm file formats (.img and .inf) used by the BAS, FLA and LAS imaging systems.



Fluorescence Mode / Selecting reading parameter



Measure Mode / Selecting lane and quantitative band

Digitization [Fluor Stage]

The digitization function is used for silver-stained or CBB-stained gel imaging. A special-sized fluorescent board is placed over the stained gel on a Fluor Stage. Using the green SHG 532nm laser at the PMT 250V setting, the stained part of the gel decreases the excitation and the fluorescence according to the density of the stain. Fujifilm's ImageReader software automatically reverses the negative image to create an easy-to-read positive image.



Digitization of CBB-stained 2D gel
Sample: Sake yeast
FLA-9000: Ex: 532nm, Filter: LPG, PMT: 250V, Pixel size: 100µm

Radioisotopic imaging [IP Stage]

Depending on the sampling requirement, the system will accommodate a single BAS-MS3543 IP or two concurrent BAS-2025/2040/2325/2340 IPs. The IP Stage consists of a magnetic plate which holds an IP with a soft ferrite backing layer.



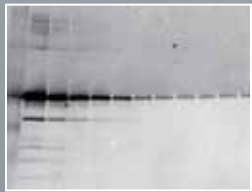
Whole body autoradiography of a rat
Sample: ^{14}C -labeled drug-injected rat
FLA-9000: IP-S mode, Pixel size: 50µm. IP: BAS-MS type



Rat brain autoradiography by BAS-TR plate
Sample: ^3H -labeled receptor assay
FLA-9000: IP-S mode, Pixel size: 25µm. IP: BAS-TR type

Chemiluminescent imaging [Fluor Stage or Multi Stage]

The optical scanning head directly detects chemiluminescence. When the pixel size is set to 200 microns, a 5 x 10cm sample can be scanned in about two minutes.



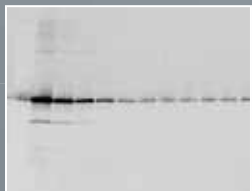
Fluorescence detection of
AlexaFluor® 680 Western blotting
Sample: BSA
FLA-9000:
Ex: 685nm,
Filter:BPFR700,
PMT:1000V,
Pixel size: 100µm



Fluorescence detection of
AlexaFluor® 750 Western blotting
Sample:BSA
FLA-9000:
Ex: 785nm,
Filter:BPFR800,
PMT:1000V,
Pixel size: 100µm



Fluorescence detection of
IRDye® 700 Western blotting
Sample: BSA
FLA-9000:
Ex: 685nm,
Filter:BPFR700 ,
PMT:1000V
Pixel size: 100µm



Fluorescence detection of
IRDye®800 Western blotting
Sample: BSA
FLA-9000:
Ex: 785nm,
Filter: BPFR800,
PMT:1000V,
Pixel size: 100µm



Fluorescence detection of
DY-682 Western blotting
Sample: BSA
FLA-9000:
Ex: Laser:685nm,
Filter: BPFR700,
PMT: 1000V,
Pixel size: 100µm

Hardware

Stages

The Fluor Stage, Multi Stage and IP Stage allow multiple detection opportunities, which include agarose gel, polyacrylamide gel, membrane, radioisotopic images and others.

Fluor Stage: The Fluor Stage includes a 40 x 46cm glass platen with an optional gel stopper and is used for fluorescent detection, digitization and chemiluminescent detection. Concurrent detection of dual fluorescence is possible with the addition of an optional PMT2.

Multi Stage: The Multi Stage is used for detecting fluorescence in a 20 x 40cm glass plate or in a microtiter plate with the optional microtiter plate holder (TP plug-in).

IP Stage: To capture radioisotopic images, the magnetic IP Stage holds the IP with a soft ferrite backing layer of any size up to 40 x 46cm in total area.

Easy to maintain

Removable stages: Fluor, Multi and IP Stages are easily removed and inserted into the top of the imaging unit for convenient detection of samples. Since the Fluor Stage is also waterproof, it can be easily cleaned with water following contamination by a sample.

Removable filter cartridges: The filter cartridges are removable and easily changed to accommodate specific detection methodologies.



Fluorescence reagents corresponding to excitation wavelength

473 nm			
Reagent name	Ex.(nm)	Em.(nm)	Filter
Cy™2	489	506	LPB, BPB, DBR
FAM™	490	520	LPB, BPB, DBR
FITC	494	520	LPB, BPB, DBR
DY-485XL	485	560	LPB, BPB, DBR
Alexa Fluor® 488	495	519	LPB
Qdot® 605		603	LPG
Qdot® 655		655	LPR
Qdot® 705		702	LPR
Qdot® 800		792	LPR
SYBR® Gold	495	537	LPB
SYBR® Green I	494	521	LPB
SYBR® Green II	492	513	LPB
SYBR Safe™	502	530	LPB
SYPRO® Orange	472	570	LPB
SYPRO® Ruby	450	610	LPG
SYPRO® Tangerine	490	640	LPG
Pro-Q® Emerald488	510	520	LPB
Flamingo™	512	535	LPB
EGFP	489	508	LPB
AttoPhos®	482	560	LPB
ECL Plus™	420	460	LPB

532 nm			
Reagent name	Ex.(nm)	Em.(nm)	Filter
Cy™3	550	570	LPG, BPG, DGR
Alexa Fluor® 532	532	554	LPG
Alexa Fluor® 555	553	568	LPG
DY-520XL	520	664	LPG
HEX™	535	553	LPG
RITC	554	577	LPG
ROX™	535	567	LPG
TAMRA™	542	568	LPG
EtBr	518	605	LPG
Pro-Q® Diamond	555	580	LPG
SYPRO® Red	547	631	LPG
Deep Purple™	528	594	LPG
HNPP	550	562	LPG

635 nm			
Reagent name	Ex.(nm)	Em.(nm)	Filter
Cy™5	649	670	LPR, DBR, DGR
Alexa Fluor® 647	653	669	LPR, DBR, DGR
DY-635	647	671	LPR, DBR, DGR
DDAO Phosphate	634	665	LPR, DBR, DGR

685 nm			
Reagent name	Ex.(nm)	Em.(nm)	Filter
Cy™5.5	675	694	BPFR700
Alexa Fluor® 680	679	702	BPFR700
Alexa Fluor® 700	689	700	BPFR700
DY-676	674	699	BPFR700
DY-682	690	709	BPFR700
IRDye® 680	683	710	BPFR700
IRDye® 700	689	700	BPFR700
Krypton™ Infrared	690	718	BPFR700

785 nm			
Reagent name	Ex.(nm)	Em.(nm)	Filter
Alexa Fluor® 750	749	775	BPFR800
Alexa Fluor® 790	784	814	BPFR800
DY-781	783	800	BPFR800
IRDye® 800	778	806	BPFR800

Accessories

Stage



FLUOR Stage, IP Stage, MULTI Stage

Filter



Filters & Filter Tray

Imaging Plate



BAS-MS 3543 (for RI)

Specification

■ FLA-9000 Reader

Detection mode : Fluorescence, RI (Radioisotope), Digitizing, Chemiluminescence

Excitation wavelength : 473nm (Blue LD laser), 532nm (Green SHG laser), 635nm (Red LD laser), 685nm (Red LD laser), 785nm (Near-IR LD laser)

Nuclides : ³H, ¹⁴C, ³²P, ³³P, ³⁵S, ¹²⁵I, Neutron, etc.

Dynamic Range : Five orders of magnitudes

Bit depth : 8bit / 16bit

Scanning size : 40 x 46cm

Pixel size : User choice of 10, 25, 50, 100, 200 micron.

Filters : B390 (IP)

LPB (510LP), LPG (575LP), LPR (665LP)
BPB (530DF20), BPG (570DF20), BPFR700 (R715), BPFR800 (R810)
DBR (530DF20 / 665LP), DGR (570DF20 / 665LP)

Dimensions : 900 (W) x 800 (D) x 400 (H) mm

Weight : ca. 97 kg

FLUOR Stage (with optional gel stopper)

A glass plate of 40 x 46cm can be used for fluorescence detection, digitizing function and chemiluminescence detection.

IP Stage

A magnetic stage holds the IP with a soft ferrite backing layer of any size up to 40 x 46cm.

MULTI Stage (with optional microtiter plate holder, which can hold up to six microtiter plates)
Large size polyacrylamide gel plate can be measured with the glass.

IP Eraser 3

applicable up to 40 x 46cm size

PMT1

For Blue, Green, Red laser

PMT2

For Red, IR laser

Imaging Plate

BAS-MS 2025/ 2040/ 2325/ 2340/ 3543
BAS-SR 2025/ 2040
BAS-TR 2025/ 2040
BAS-ND 2025/ 2040

BAS cassette

■ Operating System

Windows® : XP Professional SP2, Vista Business

Macintosh® : Mac® OS X 10.4.10, Intel Mac only,
(unavailable with Power Mac)

Image capture software

ImageReader FLA-9000

Analysis software

Science Lab

■ Operating conditions

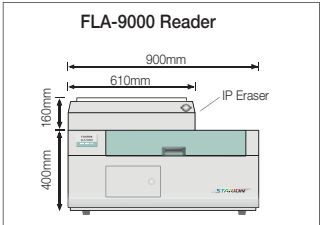
Line frequency : 50 / 60Hz

Temperature : 15-30°C

Humidity : 20-70% (no condensation)

Supply voltage : AC100-240V ±10%

Power consumption : Approx. 0.3kVA



<http://lifescience.fujifilm.com>

FLA-9000 is categorized as the class 1 laser.

Notice: With regard to patents owned by third parties related to, among other things, sample preparation, we recommend that you consult with a lawyer or patent attorney about obtaining a license from the third parties.



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