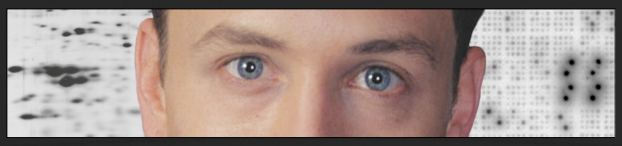
FUJIFILM
I&I – Imaging & Information

Science Imaging Systems

Very Wide Array

Fluorescent/Radioisotope



Science Imaging

System

FLA-5000

FLUORESCENCE • RADIOISOTOPE • CHEMILUMINESCENCE • GEL DOCUMENTATION

Advanced fluorescent and radioisotope detection for next-generation imaging

Versatile

More imaging methodologies in a single system than ever before

The future of science imaging continues to unfold with Fujifilm's next-generation FLA-5000 imaging system. More versatile than any predecessor, the FLA-5000 provides four separate imaging methodologies: Fluorescent, Radioisotopic, Chemiluminescent and Gel Documentation.

With a large 40 x 46cm sampling area, scanning pixels as low as 25 microns and modular add-ons for key imaging components, the FLA-5000 takes imaging versatility to a new level.

Modular

Performance for today with adaptability for tomorrow

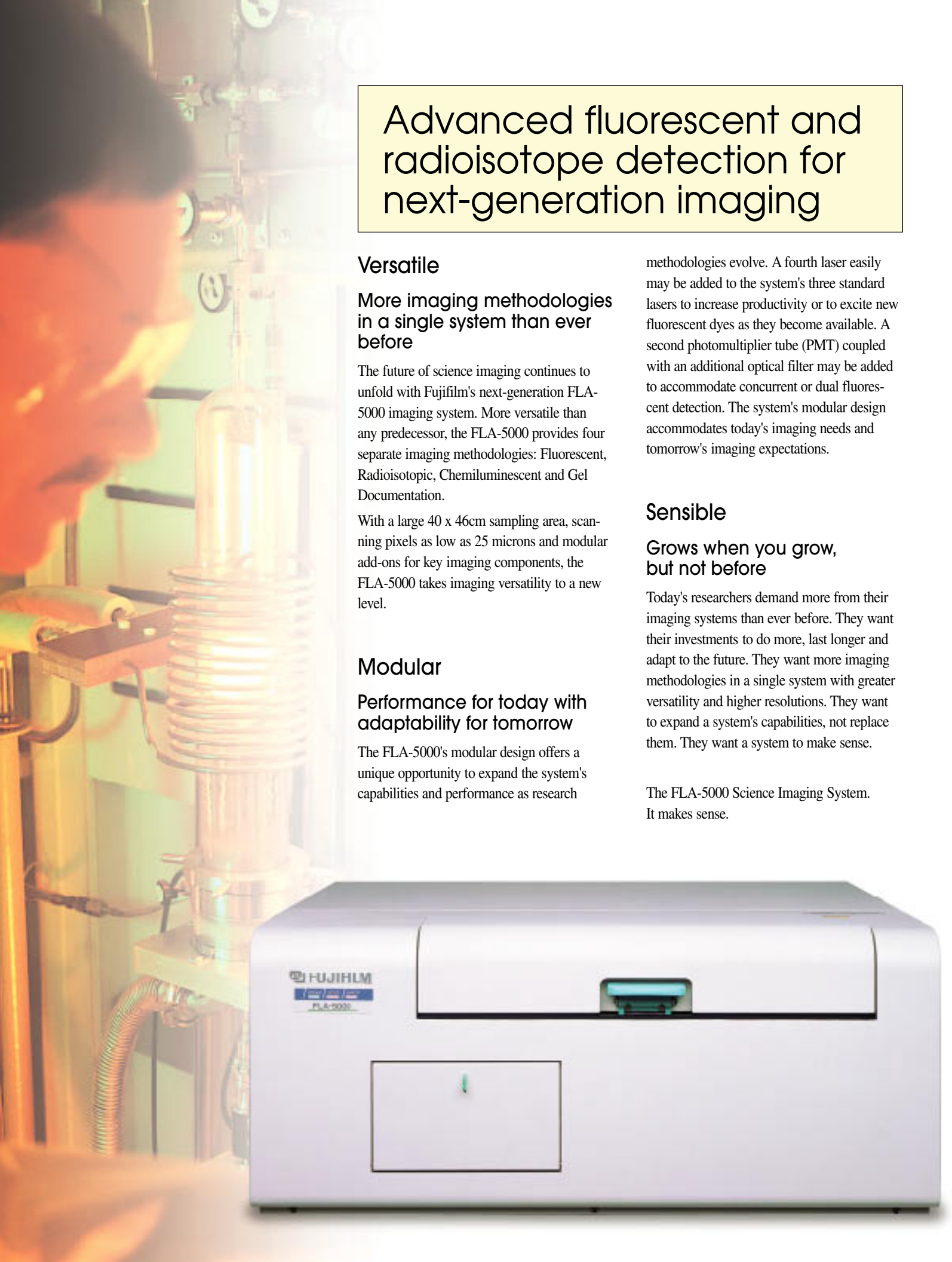
The FLA-5000's modular design offers a unique opportunity to expand the system's capabilities and performance as research methodologies evolve. A fourth laser easily may be added to the system's three standard lasers to increase productivity or to excite new fluorescent dyes as they become available. A second photomultiplier tube (PMT) coupled with an additional optical filter may be added to accommodate concurrent or dual fluorescent detection. The system's modular design accommodates today's imaging needs and tomorrow's imaging expectations.

Sensible

Grows when you grow, but not before

Today's researchers demand more from their imaging systems than ever before. They want their investments to do more, last longer and adapt to the future. They want more imaging methodologies in a single system with greater versatility and higher resolutions. They want to expand a system's capabilities, not replace them. They want a system to make sense.

The FLA-5000 Science Imaging System.
It makes sense.



Largest Scanning Area

A large scanning size (up to 40 x 46cm with selectable scanning area) is especially suitable for large size 2D protein electrophoresis gel analysis. The FLA-5000 accommodates the following Imaging Plates (IPs): 1 x (3543 MS IP), 2 x (2340, 2325 MS IP) and 2 x (2040, 2025 MS, SR, ND, TR IP).

25-micron Scanning Pixels

Scanning pixels are user-selectable at 25, 50, 100 or 200-micron pixels depending on specific methodology requirements.

Multiple Lasers

Multiple lasers add imaging applications. The FLA-5000 can include three internal BGR lasers as standard: SHG blue laser (473nm), SHG green laser (532nm) and LD red laser (635nm). As an option one additional laser can be added in the future allowing selection of up to four lasers. The optional fourth laser can be connected to either an internal or external port.

Multi-format Detection

The versatility of multi-format detection allows many sampling opportunities with a single sampling tool.

Fluorescence detection by laser scanning: Repetitive scanning of a sample with different lasers and filters is controlled by Image Reader software. The addition of an optional second PMT and filter allows the simultaneous detection of two different fluorescent dyes by two different exciting lasers in a single scan.

Radioisotope by IP method: IP-S (standard mode for RI detection) generates logarithmic converted values in PSL units along with linear TIFF. The selection of the types of files generated by Image Reader software can be done. IP-V (variable mode) can change the high voltage of the PMT, which enables X-ray diffraction study, non-destructive testing and other IP detection studies.

Chemiluminescence by direct detecting: Chemiluminescence can be detected.

Gel Documentation function by Epi-illumination with fluorescent screen: Applicable for transparent gels with silver stain, CBB stain, NBT stain and others.

Stages

The Fluor Stage, Multi Stage and IP Stage allow multiple detection opportunities, including: radioisotopic images, agarose gel, polyacrylamide gel, differential display with glass sheets, membrane 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, gel documentation function and chemiluminescent detection. With the addition of the optional second PMT concurrent detection of dual fluorescence is possible.

FLA-5000 Features

Multi Stage: The Multi Stage is used for detecting fluorescence in glass plate or in up to six microtiter plates with the optional microtiter plate holder.

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. Recommended IP is BAS-MS type.

Easy to Use
Easier to Maintain

Fujifilm software: The FLA-5000 imaging system is fully supported by Fujifilm's existing software packages, including Science Lab (Image Gauge and L Process), Array Gauge and Multi Gauge.

Removable stages: The IP, Fluor and Multi stages are easily removed from and inserted into the top of the imaging unit for convenient detection of samples. Since the Fluor Stage is also waterproof, the gel can be handled with excess water on the stage.

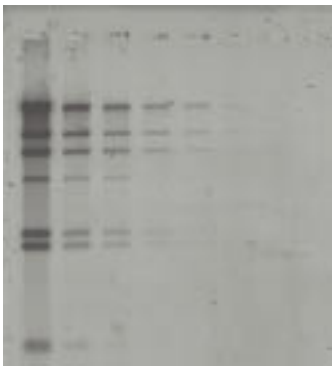
Removable filter cartridges: The filter cartridges are removable and easily changed to accommodate specific detection criteria.

FLA-5000 Imaging

Fluorescence

Fluorescent image with Fluor Stage and Multi Stage

Three excitation lasers are used to create images of fluorescently labeled or fluorescently stained samples.



DNA stained with SYBR® Green I after electrophoresis with agarose gel (473nm excitation laser with LPB filter)

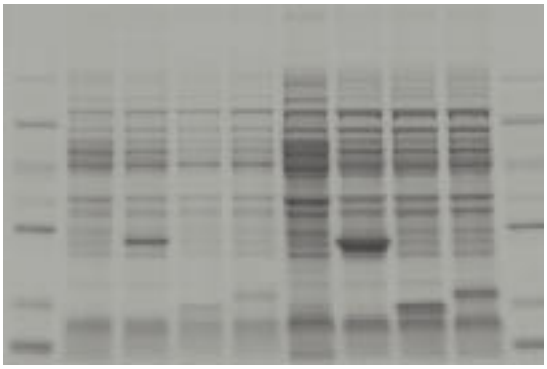
Protein stained with SYPRO® Ruby after 2D electrophoresis (473nm excitation laser with LPG filter)

Gel Documentation

Gel Documentation image with Fluor Stage

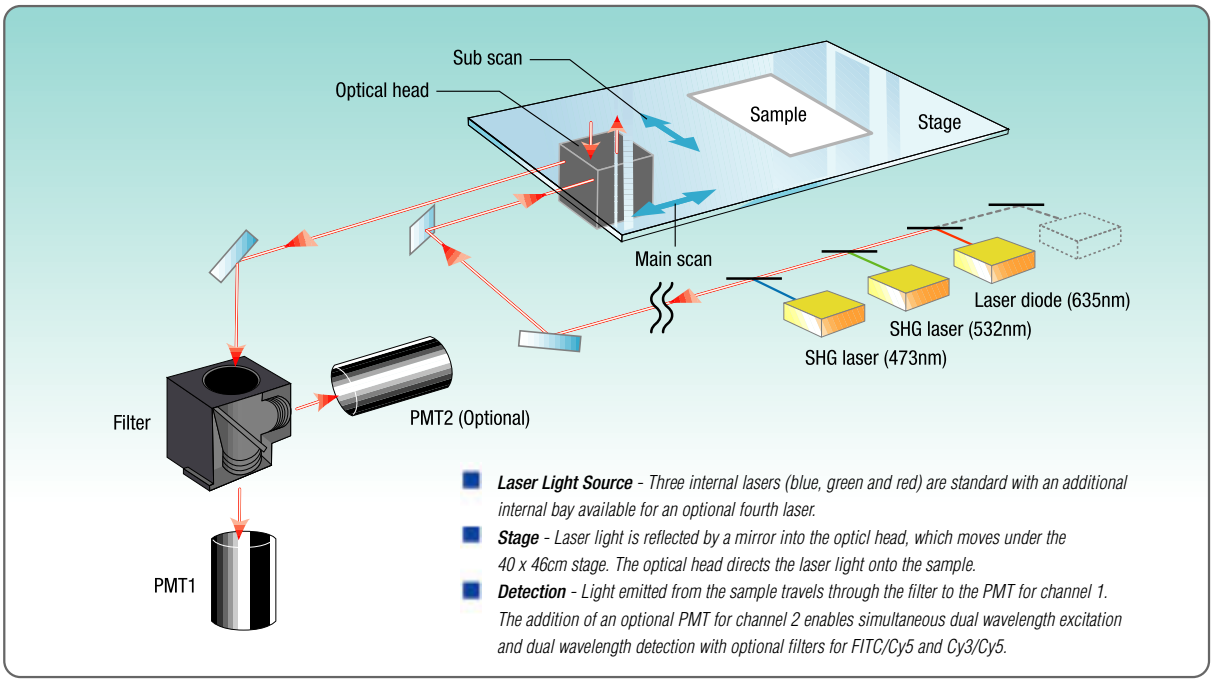
The gel documentation function is used for silver stained or CBB stained gel imaging. A specific fluorescent screen is placed over the stained gel on a Fluor Stage. Silver stained or CBB stained bands absorb the excitation laser and the emission light of the fluorescent screen and generate a posi/nega converted image. The PMT is set to 250v. The resulting reversed black and white images are automatically acquired by Image Reader software.

Silver stained gel (473nm excitation laser with LPB filter)



CBB stained gel (532nm excitation laser with LPG filter)

FLA-5000 Optical Path

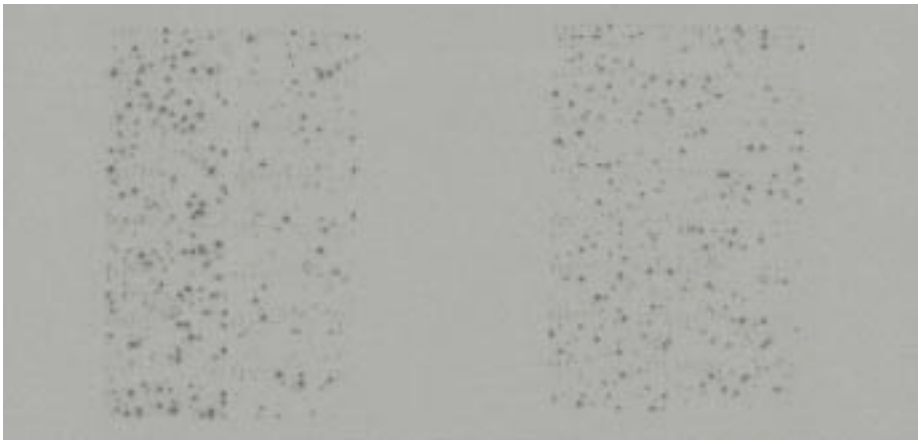


- ***Laser Light Source*** *- Three internal lasers (blue, green and red) are standard with an additional internal bay available for an optional fourth laser.*
- ***Stage*** *- Laser light is reflected by a mirror into the opticl head, which moves under the 40 x 46cm stage. The optical head directs the laser light onto the sample.*
- ***Detection*** *- Light emitted from the sample travels through the filter to the PMT for channel 1. The addition of an optional PMT for channel 2 enables simultaneous dual wavelength excitation and dual wavelength detection with optional filters for FITC/Cy5 and Cy3/Cy5.*

Radioisotope

Radioisotope image with IP Stage

A maximum image size of 46 x 40cm can be detected on the FLA-5000. Depending on the sampling requirement the system will accommodate a single BAS-MS3543 IP or two concurrent BAS-2340/2040/2325/2025 IPs.

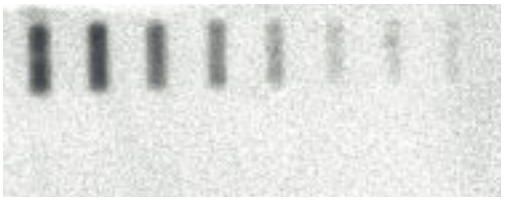


Macroarray image of ResGen™ membrane
Data courtesy of Dr. Takahashi, Aichi Cancer Research Center

Chemiluminescence

Chemiluminescent image with Multi Stage or Fluor Stage

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



DNA (pBR328) image with CDP-Star (The band at the upper right (8th slot) corresponds to 500fg.)

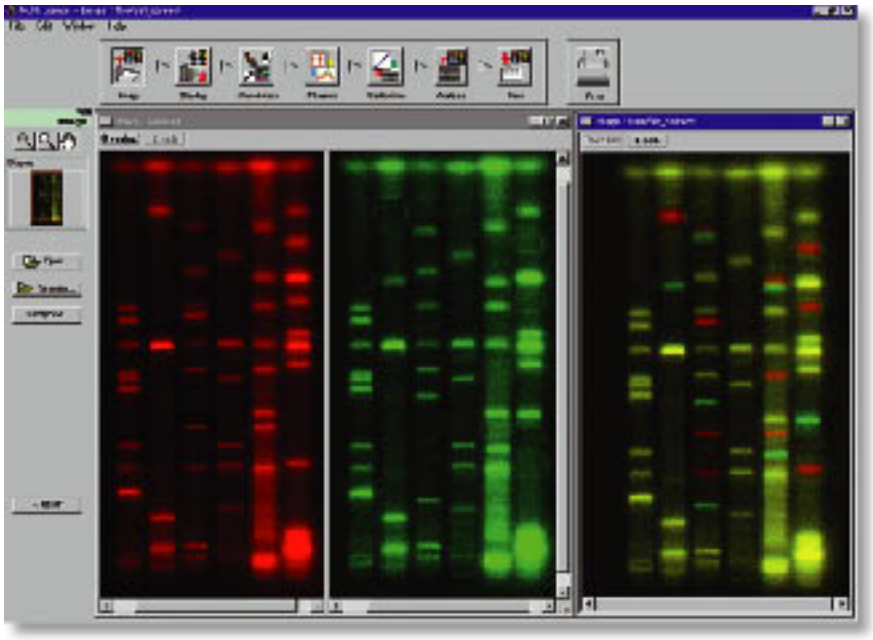
The same sample is detected by the LAS-1000plus system with a five-minute exposure.

Applicable Software

The FLA-5000 utilizes Fujifilm's familiar, user-friendly software packages researchers have depended on for years to simplify their imaging, analysis and reporting functions.

- Science Lab (Image Gauge and L Process)
- Array Gauge
- Multi Gauge - Designed specifically for the FLA-5000 system, Multi Gauge builds on Fujifilm's reputation for developing fast, easy-to-use software interfaces to simplify highly complex research functions.

Image overlapping by Multi Gauge



Multi Gauge software is able to analyze multi-channel fluorescence data from the FLA-5000 imaging system. The images can be overlapped, or viewed in parallel, for profile analysis.

Specifications and Applications

Operating System

Windows® and MacOS

Nuclides

^{14}C, ^{32}P, ^{33}P, ^{35}S, ^{125}I, ^{3}H, Neutron, etc.

Dynamic Range

Five orders of magnitude

Bit Depth

16 bit/8bit

Recommended Use

The IP, fluorescence, gel documentation and chemiluminescence detection ability allows multipurpose use.

Filters

Four filters may be placed on a single filter tray and may be easily changed. Available filters are indicated below in *Accessories*.

Dimensions (mm)

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

Weight

ca. 110kg

Fluorescent dyes with suitable excitation wavelength (laser) and filter

473 nm

Florescent Dye	Ex. (nm)	Em. (nm)	Filter
SYBR® Green I	494	521	LPB
SYBR® Green II	492	513	LPB
SYBR® Gold	495	537	LPB
SYPRO® Orange	472	570	LPB
SYPRO® Ruby	450	610	LPB, LPG
SYPRO® Tangerine	490	640	LPB
FITC	494	520	LPB, BPB1, DBR1
FAM™	490	520	LPB, BPB1, DBR1
Alexa Fluor®488	495	519	LPB
AttoPhos™	482	560	LPB

532nm

Fluorescent Dye	Ex. (nm)	Em. (nm)	Filter
EtBr	518	605	LPG
SYPRO® Red	547	631	LPG
RITC	554	577	LPG
Cy™3	550	570	LPG, BPG1, DGR1
TAMRA™	542	568	LPG
ROX™	535	567	LPG
HEX™	535	553	LPG
Alexa Fluor® 532	532	554	LPG
Alexa Fluor® 546	556	573	LPG
HNPP	550	562	LPG

635nm

Fluorescent Dye	Ex. (nm)	Em. (nm)	Filter
Cy™5	649	670	LPR, DBR1, DGR1
Alexa Fluor® 633	632	647	LPR, DBR1, DGR1
Alexa Fluor® 680	679	702	LPR, DBR1, DGR1
DDAO Phosphate	634	665	LPR, DBR1, DGR1

Standard filters:

LPB (Y510), LPG (0575), LPR (R665)

Optional filters:

BPB1 (530DF20), BPG1 (570DF20), DBR1 (530DF20, R665), DGR1 (570DF20, R665)

Accessories

IP Eraser 3
(applicable up to 40 x 46cm size IP)

IP Shield Box

BAS 4043
IP Cassette

Imaging Plate
BAS-MS 3543

Filter Tray

Filters
Filter for IP detection
Y510 for blue laser
O575 for green laser
R665 for red laser
530DF20 for FITC
570DF20 for Cy3™
530DF20/R665 set for FITC/Cy5™
570DF20/R665 set for Cy3™/Cy5™

Pictrography 3500/4000

Fluorescent screening for digitizing function

Additional PMT *(option)*
for concurrent detection of dual fluorescence

← From left to right:

FLUOR Stage
(with optional gel stopper)
A glass platen 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 layer of any size up 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.

FUJIFILM
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TÜV PRODUCT SERVICE Quality system certified to ISO 9001

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