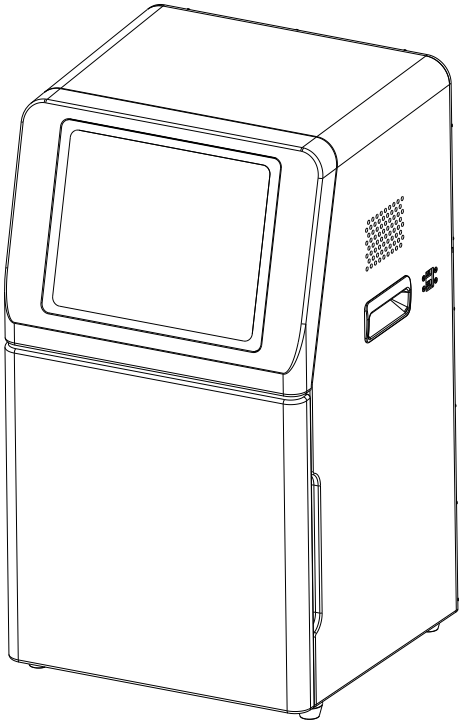
Servicebio®



User Manual

Chemiluminescence Imaging System

SCG-W3000 Plus

Please read the instructions carefully and keep them properly before using the product for future reference.

Wuhan Servicebio Technology Co.,Ltd.

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01 Introduction

The SCG-W3000 Plus is a device that utilizes chemiluminescence technology for imaging, equipped with a high-sensitivity cooled camera of 9 million pixels and a color camera of 45 million pixels. It enables fast, accurate, and high-throughput detection and imaging of samples, and is widely used in fields such as life sciences, medicine, and environmental protection.

02 Technical Specifications and Precautions

Technical Specifications

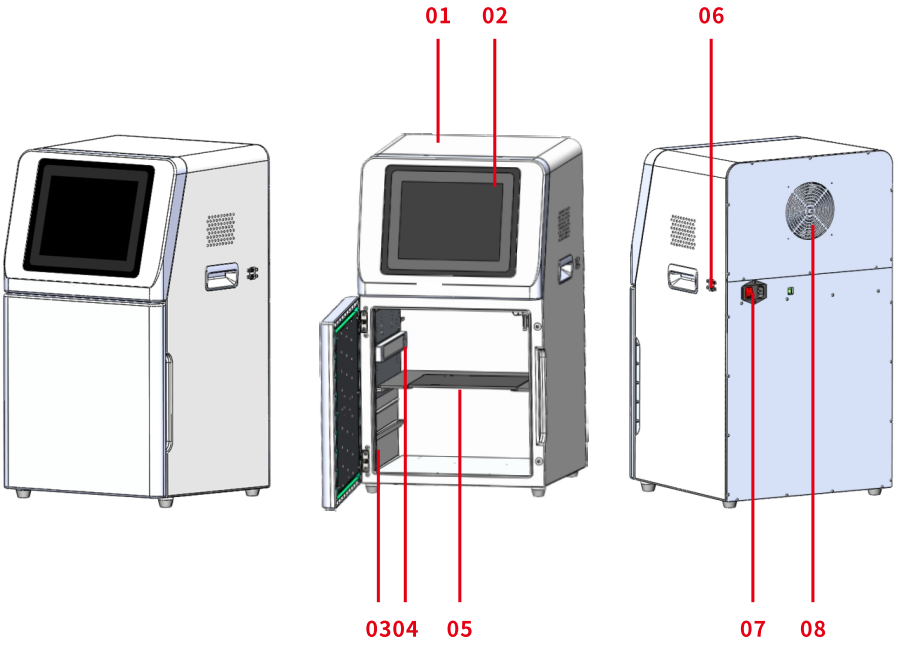
Product Name		Chemiluminescence Imaging System
Cat.No.		SCG-W3000 Plus
Dimensions		400×371×700 mm
Camera 1	**Pixel Resolution**	9 million pixels
	Resolution	2992×3000
	Pixel Size	3.76×3.76 μm
	Target Size	1“(11.28×11.28 mm)
	Full Well Capacity	16.5ke-(HCG),50.5ke-(LCG)
	Sensitivity	877mv@1/30s
	Readout Noise	1.24e-(HCG),3.22e-(LCG)
	Dark Current	0.0003e-/s/pixel@-15°C
	Signal-to-Noise Ratio	42.2dB(HCG),47dB(LCG)
	Exposure Time	0.1ms~1h
	Binning Mode	1×1,2×2,3×3
	Grayscale	16-bit (65536 levels)
	Cooling	Relative to Ambient Temperature -40°C
	Camera Type	Black and White Camera
Camera 2	**Pixel Resolution**	45 million pixels
	Resolution	2992×3000
	Pixel Size	2.315μm×2.315μm
	Target Size	1.4“(18.93×13mm)
	Full Well Capacity	10.8ke-
	Sensitivity	419mv
	Readout Noise	2.12e-

Camera 2	Dark Current	0.12mV
	Signal-to-Noise Ratio	40.3dB
	Exposure Time	17us~15s
	Grayscale	8-bit (256levels)
	Camera Type	Color Camera
Lens 1	Aperture	F0.95~F16
	Focal Length	17 mm
	Type	Prime lens
Lens 2	Aperture	F2.0~F22
	Focal Length	12mm
	Type	Prime lens
Light Source	Bright Field Light Source	Downward-facing LED white light source, symmetrically distributed on both sides
Dark Box	Light Isolation	Fully light-sealed, isolates environmental light.
	Door Control	Door control sensor can control the on/off of the bright field light source.
	Field of View	Effective field of view 136 × 136 mm
Software Functions	Auto Exposure	Intelligent exposure technology can quickly determine the optimal exposure time and automatically perform binning. Combined with time-lapse imaging and time accumulation functions, users can achieve the best image results with just one operation.
	Exposure Modes	High Quality: Highest image quality Standard: Balances image quality and exposure speed High Sensitivity: Fastest exposure speed
	Real-time Imaging	Real-time presentation of the changes in sample signals during the exposure process, allowing for the observation of every detail of the capture. Overexposed areas will be indicated for samples with overexposure.
	Time Imaging	After exposure is complete, each frame image within the exposure time can be generated.Through precise retrospective adjustments, users can choose any frame image within that exposure time as the final output.
	Time Accumulation	For samples with insufficient exposure, users can choose to continue exposure after the initial exposure is completed, enabling the sample to receive additional exposure on top of the already exposed time.
	Optional Settings	Color Marker/Black & White Marker, Overexposure Prompt/No Overexposure Prompt
Industrial Computer		10.4-inch display with a resolution of 1024x768, running on Windows 10 operating system, featuring 16GB of RAM, 512GB SSD, and built-in Bluetooth and WiFi.
External Interfaces		USB 3.0×2
Operating Voltage		90~132VAC/180~264VAC (selectable via switch), 47~63Hz.
Product Power		⩽200W
Product Net Weight		23.45Kg

Notes

- It is prohibited to touch or scratch the internal lenses of the dark box with hands or sharp objects.
- After placing the experimental samples, make sure to close the instrument's flip door to prevent external light from entering the dark box and affecting the experimental results.
- During imaging experiments, shaking the experimental table or instrument is prohibited to avoid impacting the image quality.
- Pay attention to electrical safety. Pulling or moving the power cord during the experiment is prohibited.
- After the experiment is completed, clean the samples and any residues inside the dark box thoroughly.

03 Functional Description



01 Internal camera lens assembly, which is the core component of the imaging system

02 10.4-inch industrial computer with user software operating interface

03 High-quality light-shielded imaging dark box

04 LED white light source for illumination

05 Sample tray, removable, used to place samples to be taken

06 External USB 3.0 interface

07 Power socket and switch

08 Cooling device

04 Operating Procedures

4.1 Power On

Plug in the power cord and turn on the power switch at the back of the instrument. The industrial computer will start up.

4.2 Sample Loading

Open the instrument door, take out the sample tray, place the prepared text sample on the tray, and then place the tray flat in the groove inside the instrument dark box. Close the instrument door.

4.3 Launching the Chemiluminescence Imaging Software

After the industrial computer starts up, the application software will be automatically loaded. Once the software is successfully launched, it will navigate to the main page.

The top-left section displays the company logo.

The bottom-left section is the status bar, showing the current camera and control board connection status, as well as detection of the inserted removable disk.

The top-right section displays the software version number.

The bottom-right section includes buttons for switching between simplified/traditional Chinese, switching to English, exporting the page, and closing the program.

Clicking on the central icon will enter the preview and capture page.

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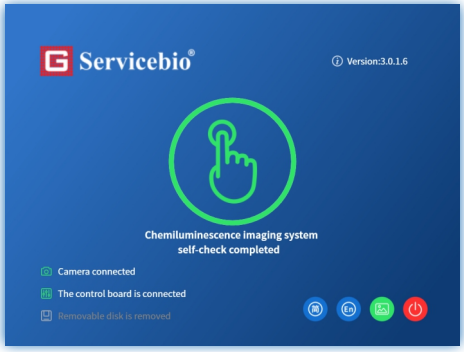
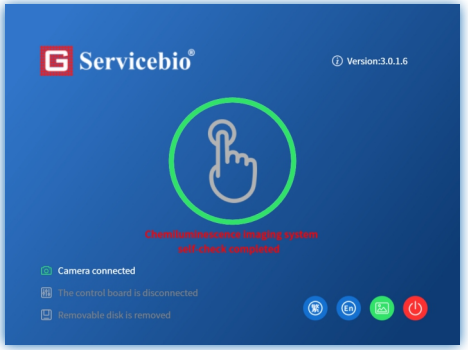


Main Page

4.4 Software Self-Check

If the software starts abnormally and the camera or control board is not connected, the software system text will turn gray, the middle icon will turn gray, and the self-test completion prompt will turn red. It is not possible to click to enter the preview and exposure interface. At this time, it is necessary to check whether the camera and PCB board driver are installed correctly.



Self Check Abnormality Page

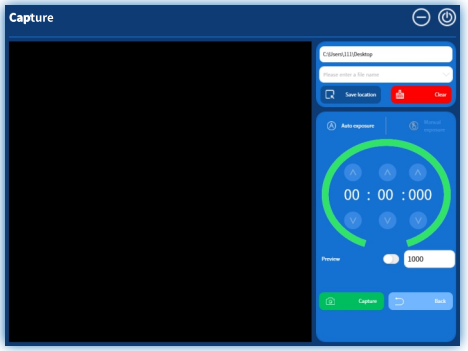
4.5 Preview and Capture Page

On the preview page, the user needs to input the location for storing the experimental results. The file name is optional and facilitates file retrieval for the user.

The user can choose between manual exposure and automatic exposure as the current experimental mode. For manual exposure, the user needs to input the exposure time, while for automatic exposure, the algorithm calculates the optima exposure time. The exposure time is stabilized at around 30 seconds.

On the right side of the preview, the user can input a time value in microseconds (us). This time represents the exposure time for the bright field image. Clicking the preview switch initiates the preview, and the preview time can be adjusted as needed.

Shooting Modes Clicking the capture button starts the exposure for capturing the image, while clicking the return button takes the use back to the main page.



Preview and Capture Page

4.6 Shooting Process

1. Select Automatic Exposure / Set Preview Time

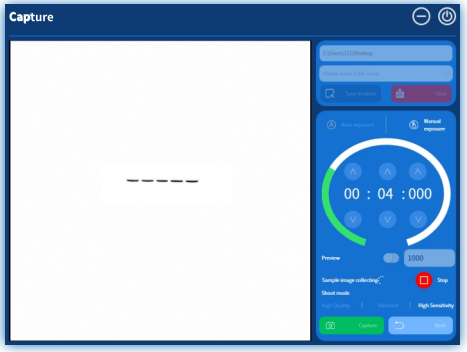
Automatic exposure Intelligent technology quickly determines the optimal camera settings and exposure time. During the preview, the color marker can be seen, corresponding to the bright-field image of the final exposure result.

2. Real-time Imaging

Click on the capture button to start the exposure. A strip is displayed on the left, and a countdown of the exposure time is shown on the right. As the countdown progresses, real-time imaging of the sample signal changes is displayed on the left.

Real-time imaging Presents the changes in the sample signal during the exposure process in real-time, allowing users to grasp every detail of the capture. This breakthrough feature not only enhances shooting efficiency but also greatly improves user interaction experience.

During real-time imaging, areas in the strip that are overexposed will be displayed in red. If it is determined that the strip meets the requirements, you can click on the stop button in the lower right corner to end the exposure early.



Real-time imaging

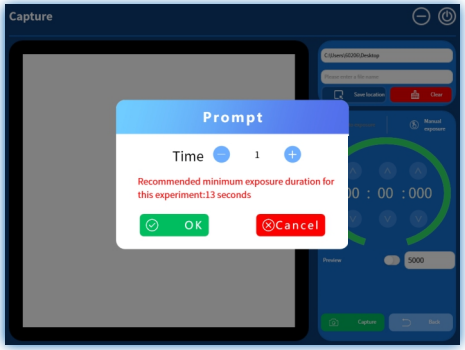
3. Temporal Imaging,Time Accumulation

After the exposure is complete, it automatically enters the results page, where adjustments can be made to the captured results.

Temporal Imaging Through precise retrospective adjustment, users can select any frame within the exposure time as the final output result.

Time Accumulation Even after the exposure is complete, users can choose to continue the exposure, allowing the sample to receive additional exposure based on the already-exposed time. When clicking "Continue Exposure," there is a prompt for the minimum exposure time. The set time needs to be greater than this minimum time. If the set time is shorter than this minimum time, the actual exposure time will be the minimum exposure time indicated by the prompt.

Temporal imaging



Temporal accumulation

4. Image adjustments, result saving

After obtaining satisfactory images through automatic exposure, continued exposure, and temporal imaging, adjustments can be made to the bright field image, dark field image, and composite image on the results page.

Contrast Adjust the contrast of the bright field image

Exposure Adjust the lightness and darkness of the dark field image. Clicking on "auto-adapt" can recommend the most suitable value

Rotation Rotate the image

Invert Apply an inverted color effect to the image, turning black into white and white into black

Crop Clicking on crop will generate a region on the image. This region can be resized, and after selecting the appropriate size, clicking on crop again will crop out the desired area

Vertical flip Flips the image vertically

Horizontal flip Flips the image horizontally

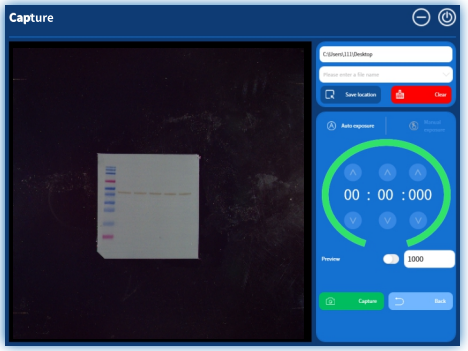
Restore Restores the image to its original state

Import Select the file automatically saved by the program to import it into the program for further operations

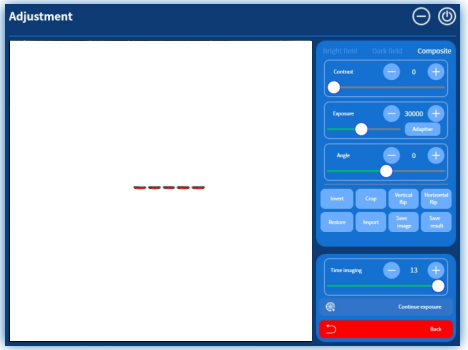
Image saving Save the image and also save the bright field image, dark field image, and composite image

Result saving Save the adjusted image as an encrypted file

If any adjustments are made to the image on the results page

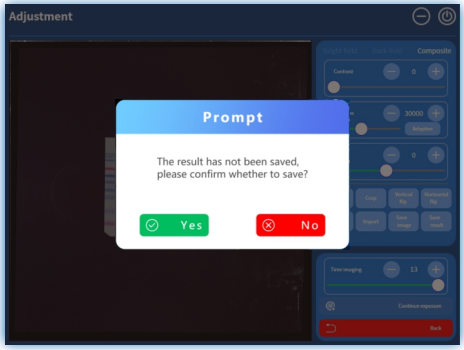


Bright field image



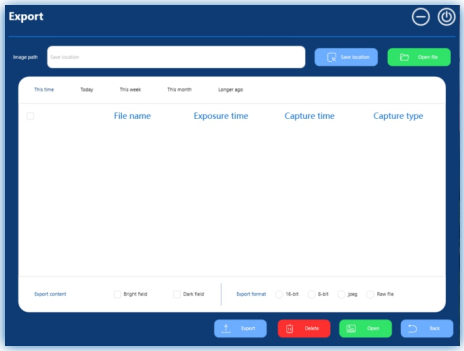
Dark field image

Composite Image



Result saving

4.7 Export page



Export page

Storage location Select the location of the image files automatically saved by the system, and the contents of the files will be displayed in a list format in the system

Open file Open the selected directory

Export Select the export content and format to export the images

Delete Select the image file to be deleted, and it will be deleted

Open Select the corresponding file in the list to open and jump to the result page. You can operate on the image on the result page, or double-click the corresponding file to open it

Return Click "return" to return to the main page

05 Product Packing List

No.	Name	Specifications	Quantity
1	Chemiluminescence Imaging System	SCG-W3000 Plus	1
2	Sample Tray		2
3	Mouse		1
4	Power Cord	250V-10A	1
5	Certificate of Conformity		1
6	User Manual		1

06 Warranty and Service Description

If any damage occurs to the instrument or components during the warranty period, our company is responsible for free repair or replacement of the damaged parts.

The following damages are excluded:

Damages caused by improper use.

Repairs or modifications not performed by our company.

Replacements made using non-original or unauthorized parts.

If you need more services, please visit Servicebio official website (https://www.servicebio.com/) or Email to info@servicebio.com.

Please fill in the following warranty card information carefully and keep it properly when purchasing the product.

Product Name	
Cat.No.	
Date of Purchase	
Address	
Product Number	
Quality Feedback	

Servicebio®

Wuhan Servicebio Technology Co., Ltd.

4006-027-178

www.servicebio.com

5th Floor, 22 Building, Biopark, No. 388 Gaoxin 2nd Road, East Lake High-tech Developing Zone, Wuhan, Hubei,China