

Research Line Scan Confocal Microscope L Series



2024 V1

For customized projects please Contact us: info@simtrum.com



SIMSCOP was established in Singapore in 2019. We have an excellent R&D team. The core members have decades of optical technology and industry background, focusing on the innovation and application of microscope technology.

Our goal is to further promote the development of high-end microscopes and provide advanced microscope solutions for professional users in the fields of Life Sciences, Material, Bio-tech and Indsutry.



Microscope

Line Scan Confocal Microscope

Spinning Disk Confocal Microscope

SIMSCOP Series Products

Type of microscope	Spatial resolution nm	Vertical depth µm	Speed fps	Laser nm	Detector	Displacement Stage	Pixel
Point scan confocal	~30	100	8fps 512 x 512pixel	405 488 561 640	SiPM	Manual\Electric XYZ	2048 x 2048
Line scan confocal Industry	~230	100	50fps 1024 x 1024pixel	405	CCD	Manual\Electric XYZ	1024 x 1024
Line scan confocal Research	150-200	600	50fps 1024 x 1024pixel	405 488 561 640	sCMOS	Electric XYZ	
Spinning Disk Confocal	~230	< 200	>100fps	405 488 561 640	sCMOS	Electric XYZ	2048 x 2048
Raman/Fluorescen ce-PL confocal	> 200	< 100	10	532 785 1064	CMOS/Spectro meter	Electric XY	1340 x 1340
Automated fluorescence	~230	50	>100fps	Three channel LED	sCMOS	Electric XYZ	2048*2048
SIM structured light	~100	50	13	400 - 750	sCMOS	Electric XYZ	1024 x 1024
Microscopy Solution	SIMSCOP provides various advanced microscopy solutions for industry and research, please refer to the relevant page.						

Remarks: Available wavelengths of lasers 375nm/445nm/473nm/515nm/525nm/532nm/633nm/660nm/685nm/785nm/808nm

Confocal microscopy is a powerful imaging tool that scans a sample with a laser or illumination along a line while simultaneously collecting emitted fluorescence or reflected light from that line. This method enables rapid image acquisition, reduces out-of-focus light, and enhances image contrast, offering high resolution, high contrast, dynamic imaging, and multi-layer imaging.

Compared to traditional point-scanning confocal microscopes, Hekang's line-scan confocal microscope (L series) combines confocal principles with the ability to quickly capture images along a line. It operates at lower laser intensities, minimizing sample bleaching and phototoxicity, making it suitable for research in cytology, neuroscience, biomedicine, drug development, and life sciences.



High-speed line scan confocal L series Research

Product core feature

- **High-speed aquisition** 50fps@1024×1000 pixel.
- Multiple wavelength laser 405nm/488nm/532nm/641nm.
 Adjustable power for various situations.
- Large FOV (60X: 0.36mm, 40X: 0.54mm.
- Software function Large image Mosaic, 3D imaging rendering.
- High-speed scanning 100mm/s (Linewidth 1mm).
- **3D depth of field fusion** z-axis resolution 50nm.
- Line scan confocal module Largest depth of imaging 600µm.

Large FOV and high sensitivity

The system features a large field of view (FOV) with a scientific-grade CMOS camera providing up to 5.5 million pixels, paired with 60x (0.36 mm) and 40x (0.54 mm) objectives for maximum viewing. Maximizing the fluorescence microscope's FOV is increasingly important in applications such as highcontent scanning of large cell areas, imaging of developing embryos, neuron mapping, and tissue imaging.



Line scan confocal module Largest depth of imaging: 600µm



The line-scan focus modulation module enhances penetration depth in confocal microscopy. By combining an electro-optic modulator with a custom liquid crystal phase plate, it selectively modulates only the fluorescence signal at the focus, while stray and background light remain unaffected. This technique improves the signal-to-noise ratio and contrast ratio by 20–30 dB, increasing imaging depth to about 2–4 times that of conventional confocal microscopes.









Standard configuration optical circuit diagram



Full section fluorescence pathological line scanner microscope light path



- Under 40× magnification, resolution ٠ of scanner≤0.25µm/Pixel.
- Support up tp 9 fluorescence • channels and flexible design of dye

filters.



The maximum scanning area is not ٠ less than 52mm×23mm.

Single wavelength laser research line scan microscope optical path





Parameter	L Series Research				
Laser unit	Standard wavelength: 405±5 nm/488nm±5nm/561nm±1nm/640nm±5nm Output way: single-mode polarization-maintaining fiber coupling (TEM00) Single wavelength output power: > 20mW Power stability: <1% Spectrum Linewidth < 3nm TTL Modulation, 1kHz Laser power adjust accuracy: 0.1%, Multi-wavelength AOTF adjustment power Note: Available multi-wavelength: 375nm/445nm/473nm/515nm/525nm/532nm/ 633nm/660nm/685nm/785nm/808nm				
Detector	BSI Line array scan camera; Resolution: 4640x256; Pixel Size: 5umx5um; Wavelength: 200nm-1100nm; Pixel bit depth: 8/10/12bit; TDI Stage 64/128/192/256; Line frequency: 2 x 2 Binning: 257kHz; 3 x 3 Binning: 225kHz; 4 x 4 Binning: 200kHz;				
Scanning module	Scanning pixel: 100 x 100 ~ 2048 x 2048 Frame rate: 50fps(1024x1024pixels) 500fps(1024x100pixels) fast scanning module				
XY resolution	Standard scanning module: 230nm@100x Oil objective Deep scanning module: 150nm-200nm				
Imaging depth	Standard scanning module< 100um Deep scanning module< 600um				
FOV	5x: 1mmx1mm 10x: 0.51mmx0.51mm 20x: 0.26mmx0.26mm 40x: 0.13mmx0.13mm 60x: 85umx85um 100x: 51umx51um				
Electric filter module	4 sets DAPI EM 445nm/50nm FITC EM 530nm/50nm TRITC EM 605nm/60nm Cy5 EM 695nm/40nm				
Objective	WF10X/23 Flat objective, High eyepoint; collimating telescope				
Objective tube	45° tilt, pupil distance adjustment 50-75mm, adjustable visibility				
Objective swither	Five-hole internal positioning converter; ball bearing internal positioning				
Sample stage	Mutual: Fixed stage 240mm×260mm; Travel range: 135mm×85mm Electric: Minimum stepl: 50nm; Repeatibility: ±0.1um; Largest speed: ≥100mm/s Stage size≥270x170mm Effective travel: X:1100mm Y:75mm Largest load: >1KG (horizontal)				
Z axis driver	Confocal resolution/Minimum step0.05µm, Repeatibility+/-0.2µm,Maximum step 10mm				
Confocal module	Coarse and fine coaxial adjustment with limit and locking devices; low-position coaxial focusing handwheel; fine adjustment increment of 1 µm				
Transmission lighting system	Warm light LED with continuously adjustable brightness.LED knob brightness controller. Condenser: ultra-long working distance of 72 mm, numerical aperture NA=0.30, with three-hole phase contrast ring plate				
Epifluorescence illumination system	Multi-wavelength LED light source MG-100 6-position fluorescence module Ultraviolet(U)EX:375/30nm; DM:415; EM:460/50nm Blue(B)EX:475/30nm; DM:505; EM:530/40nm Yellow(Y)EX:540/25nm; DM:565; EM:605/55nm Red(R)EX:620/50nm; DM:655; EM:692/45nm				
Software function	stitching, image analysis, imaging data management, 3D imaging rendering				

SIMSCOP L Series confocal micoscope software main function



Software feature and function:

1. Multifunctional Hardware Control Enables interaction and control of hardware components like

lasers, cameras, and motorized stages. Users can adjust objectives and configuration parameters via a software interface to meet various imaging needs.

- Confocal Image Acquisition Supports high-speed image capture to track dynamic processes. Real-time preview allows users to observe imaging, adjust parameters, and obtain immediate results.
- **3. Confocal Image** Processing Offers image processing features such as noise reduction, enhancement, and pseudocoloring to optimize image quality. Supports 3D reconstruction from multi-layer imaging data for visualizing sample structures.
- **4. Image Stitching** Facilitates stitching of multiple acquired images to recreate the complete morphology of samples.
- 5. Preview and Storage Real-time preview enables immediate observation and parameter adjustment. Supports storage and export of captured images and data in common formats for further analysis and processing.

BPAE Cell Detection



BPAE cells#1-60X-DAPI&FITC-Line scan



BPAE cells#1-60X-DAPI&FITC



BPAE cells#2-60X-DAPI&FITC&cy5

Confocal microscope 2D imaging effect

Compared with traditional confocal microscope, SIMSCOP's line scan confocal microscope can realized clearer imagings, lower backgroung noise and sharper image fringe





40X--Mouse brain neuron

Confocal microscope 2D imaging effect





Zebrafish calcium ion neurons 60x objective 3D rendering.

Various customizable research-grade solutions are available.

Please contact us for the best custom combinations!

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