SIMSCOP
理 科 仪 器

Multi-Line CW Multi-Mode Laser
405/488/525/638nm

2024 V1

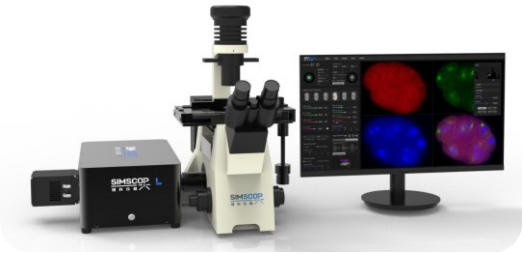
For customized projects please Contact us:

info@simscop.com

SIMSCOP 理科仪器

Established in Singapore in 2019, SIMSCOP has the sole microscopy & spectroscopy e-commerce platform in Asia and has capabilities in high-end microscope R&D and production. The core members of the team ,who have deep expertise in optical technology and industry, have collaborated with Singapore NTU and A-Star in the development of optical systems. SIMSCOP is dedicated to filling the gap in China's high-end microscope market, aiming to become the No.1 high-end microscopy technology company in China and to introduce better products to the world.




Microscope Type	Spatial Resolution (nm)	Vertical Depth (μm)	Speed FPS	Laser (nm)	Detector	Stages	Pixel	FOV
P Series	~230	100	8fps 512 x 512pixel	405 | 488 | 561 | 640	SiPM	Manual/ Motorized XYZ	2048 x 2048	5x - 1.44mm x 1.4mm 20x - 0.36mm x 0.36mm 40x - 0.18mm x 0.18mm 60x - 120μm x 120μm 100x - 72μm x 72μm
L Series Industry	~230	100	20fps 1024 x 1024pixel	405	CCD	Manual/ Motorized XYZ	1024 x 1024	5x - 1mm x 1mm 20x - 0.26mm x 0.26mm 40x - 0.13mm x 0.13mm 60x - 85μm x 85μm 100x - 51μm x 51μm
L Series Research	150-200	600	50fps 1024 x 1024pixel	405 | 488 | 561 | 640	sCMOS	Motorized XYZ		
SpinDisk	~230	< 200	>100fps	405 | 488 | 561 | 640	sCMOS	Motorized XYZ	2048 x 2048	5x - 2.7mm x 2.7mm 20x - 0.67mm x 0.67mm 40x - 0.33mm x 0.33mm 60x - 220μm x 220μm 100x - 130μm x 130μm
SIM Basic	~100	50	13	400 - 750	sCMOS	Motorized XYZ	1024 x 1024	
SIM SpinDisk	~100	< 200	13	405 | 488 | 561 | 640	sCMOS	Motorized XYZ	1024 x 1024	
MicroRam	> 200	< 100		532 | 785 | 1064	CMOS/ Spectrometer	Motorized XY		
Fluorescence/ Photoluminescence	< 1μm			UV - NIR	CMOS/ Spectrometer	Motorized XY		
Solution	SIMSCOP offers a variety of solutions for high-end industrial and scientific microscope.Please refer to the relevant page for more information							

Note: Laser wavelengths for option including 375nm/445nm/473nm/515nm/525nm/532nm/633nm/660nm/685nm/785nm/808nm

The **Multi-channel CW Multi-Mode lasers (4-in-1 lasers)** include four different wavelengths (405nm/488nm/525nm/628nm) that integrate a laser diode, laser cavity, fiber-coupled optics, laser power supply, and LD current. It is designed for laser scanning confocal microscopy systems.

The 4-in-1 laser in a laser scanning confocal microscope system is a special laser system used in biomedical research and clinical applications. It combines four different wavelengths of lasers to provide a variety of excitation light sources. Laser scanning confocal microscopy is a high-resolution microscopy technique that obtains three-dimensional images of cells and tissues by scanning and focusing with a laser beam. The 4-in-1 laser provides different wavelengths of laser light to a laser scanning confocal microscope system to excite different fluorochromes or labels, allowing samples to be observed and studied under the microscope.

Different wavelengths of lasers can interact with different fluorochromes or markers, enabling the visualization and localization of different cellular and molecular structures. For example, the 405nm laser is typically used to excite UV dyes, 488nm is used for fluorescein and green fluorescent proteins, the 525nm laser is used for yellow fluorescent proteins and red fluorescent dyes, and the 640nm laser is used for fluorescent proteins and infrared dyes.

The advantage of the 4-in-1 laser system is that it provides a multi-wavelength laser light source that can excite multiple fluorochromes or labels at the same time, providing a more comprehensive picture in a single experiment. This has important implications for multicolor fluorescence imaging, colocalization, and co-expression studies of cells and tissues.

Features

- **Multi-wavelength output**

Multi-wavelength single-mode lasers can provide four different wavelengths of laser light sources. This makes it suitable for observing and analyzing the fluorescence signals of multiple markers or samples at the same time, improving experimental efficiency and data accuracy.

- **High-quality spectrum**

The laser light source of this laser system has a narrow spectral width and high spectral quality, which is conducive to reducing the interference of stray light of the light source and providing clear images and accurate signals.

- **Multi-mode output**

The laser system uses a multi-mode fiber output with good pattern quality and beam quality. This makes it suitable for high-resolution imaging, high-precision measurements, and other applications that require high beam quality.

- **High power stability**

The laser system has a high power output and excellent power stability. In the process of long-term experiments and data acquisition, the required laser power can be stably output, which ensures the reliability and consistency of experimental results.

- **Adjustable power**

The user can flexibly adjust the laser power according to the experimental needs and sample characteristics. This helps to avoid sample damage or overexposure while achieving the best image quality and signal intensity.

Application

- **Imaging and Localization of Cell**

Using the different wavelength lasers provided by the four-in-one laser, the position and distribution of cell organelles such as the nucleus, mitochondria, and Golgi apparatus can be labeled and observed, which help to study cell function and interactions.

- **Fluorescence Co-expression Studies**

Using the different wavelength lasers provided by the four-in-one laser, the fluorescence signals of multiple markers can be simultaneously observed and analyzed to understand their co-localization and co-expression in cells or tissues.

- **Imaging of Neuronal Activity**

Using the laser light source provided by the four-in-one laser to excite specific fluorescent markers in neurons, such as calcium indicators, neuronal excitability and synaptic transmission processes can be observed and recorded through laser confocal microscope.

- **Drug Screening and Evaluation**

In cell culture models, the laser light source provided by the four-in-one laser can be used to observe and analyze changes in cell morphology and structure to evaluate he effects and efficacy of drugs on cells.

- **Histopathological Analysis**

Using the laser light source provided by the four-in-one laser, the details of cell structures, pathological changes and tumor metastasis in tissue samples can be observed and analyzed, providing pathologists with more accurate diagnostic and treatment decision-making basis.

Specifications **SIMSCOP Multi-Line CW Multi-Mode Laser**

Parameter	ST4LM-A	ST4LM-B	ST4LM-Customize
Wavelength	405/488/525/638nm	405/488/561/640nm	Including but not limited to: UV: 375nm, VIS: 445nm, 473nm, 515nm, 525nm, 532nm, 633nm, 660nm, 685nm, NIR: 785nm, 808nm. For further customization beyond these options, please contact us for assistance
Center wavelength	±5 nm		
Output Power	> 500mw		
Output Mode	SMA905, Core 400um, 0.39NA, Armor Fiber		
Laser Type	CW laser		
Monochromacies	<10 nm		
Power Stability	<2%		
Laser Power Adjustment Accuracy	0.01		
Models	Optoelectronic all-in-one machine		
Software Control	RS232		
Software SDK	Support secondary development of SDK or serial port protocol. Provided operating software, SDKs, dependency libraries, etc		

Control Panel

Laser power supply rear panel

Number	Definition	Function
1	Optical Fiber	Laser transmission fiber, transmit laser power
2	100-240VAC	AC signal input
3	SIGNAL IN	Signal input (BNC cable) Pin definition: the inner core signal is positive, and the outer layer is negative
4	Fan	Heat dissipation inside the power supply
5	485 communicatio n protocol	The laser output is controlled by the protocol
6	Switch	Control the power on and off

Description of the interface function

Number	Definition	Function
1	Display screen	Displays the current current
2	Potentiometer	Rotate to adjust the current size, the clockwise current increases, and the counterclockwise current decreases
3	Status display light	When the power is turned on, the blue indicator "Power" is on, and the laser is working, and the laser is not working normally, and the red alarm indicator "Alarm" is on.
4	Key switches	Control the laser to emit light, the key is turned to "ON", adjust the potentiometer laser to emit light, and the key is turned to "OFF", the laser stops emitting light

SIMSCOP China
Telephone: +86 195 8744 3246
Email: info@simscop.com

SIMTRUM Singapore
Telephone: +65 6996 0391
Email: info@simtrum.com

SIMSCOP
理 科 仪 器
www.simtrum.com