

## Multi-Line CW Single-Mode Laser ST4LS Series



**2024 V1**

For customized projects please Contact us:

[info@simscop.com](mailto: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	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
			512 x 512pixel					
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

Our **Multi-Line CW Single-Mode Laser(The four-in-one laser)** includes four different wavelengths (405nm/488nm/532nm/640nm or 405nm/488nm/561nm/640nm), integrating laser diodes, laser cavities, fiber-coupled optics, laser power supplies and LD current into one unit. It is designed for laser scanning confocal microscopy system.

The four-in-one laser in a laser scanning confocal microscopy system is a special laser system used for biomedical research and clinical applications. It combines four different wavelengths of lasers to provide multiple excitation light sources. Laser scanning confocal microscopy is a high-resolution microscopy technique that acquires the three-dimensional images of cells and tissue through laser beam scanning and focusing. The four-in-one laser provides different wavelengths of lasers for the laser scanning confocal microscopy system to excite different fluorescent dyes or markers, allowing for observation and study of samples under a microscope.



Different wavelengths of lasers can interact with different fluorescent dyes or markers, allowing for visualization and localization of different cellular and molecular structures. For example, 405nm laser is typically used for exciting ultraviolet dyes, 488nm for fluorescein and green fluorescent protein, 561nm laser for yellow fluorescent protein and red fluorescent dyes, and 640nm laser for fluorescent protein and infrared dyes.

The advantage of the four-in-one laser system lies in its ability to provide multiple wavelengths of laser light sources, enabling simultaneous excitation of multiple fluorescent dyes or markers, obtaining more comprehensive information in a single experiment. This is of great significance for multi-color fluorescence imaging, co-localization, and co-expression studies of cells and tissues.

## Features

- **Multi-wavelength Output**

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

- **High Spectral Quality**

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

- **Single-mode Output**

This laser system utilizes single-mode fiber output, which has excellent mode 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. It can stably output the required laser power during long-term experiments and data acquisition, ensuring the reliability and consistency of experimental results.

- **Adjustable Power**

Users can flexibly adjust the laser power according to experimental needs and sample characteristics. This helps to avoid sample damage or overexposure while obtaining 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 the 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.

Item Number	SC4LS-A	SC4LS-B	SC4LS-C
Wavelength	405/488/532/640nm	405/488/561/640nm	Based on our standard laser configurations (405/488/561/640 and 405/488/532/640), we offer customizable options for additional wavelengths, 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
Fiber	FC/APC		
	Length: 1 Meter		
	Core Diameter: 4-6 Micrometers		
	Customization is available		
Output Power	> 20mW		
Power Stability(rms, over 4 hours)	<1%		
Laser Noise	< 4%		
Spectral Linewidth	< 3nm		
Laser Power Adjustment Accuracy	Multiple Wavelength AOTF Power Adjustment Accuracy:0.1%; Without AOTF: 0.5mW		
Working Mode	Continuous Output, TTL Modulation, Analog Modulation for Option		
Operating Temperature	10~35(°C)		
Power Supply	100~240VAC		
Cooling Method	Air Cooling		
Lifespan	10000(Hours)		

### Machine Drawing

