



Multi-Line CW Single-Mode Laser



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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.

Specification

Item Number	ST4LS-A	ST4LS-B
Wavelength	405/488/532/640nm	405/488/561/640nm
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)	