SIMTRUM

Multi-channel single-mode /multi-mode laser

2024 V1

For customized projects please Contact us:

info@simtrum.com

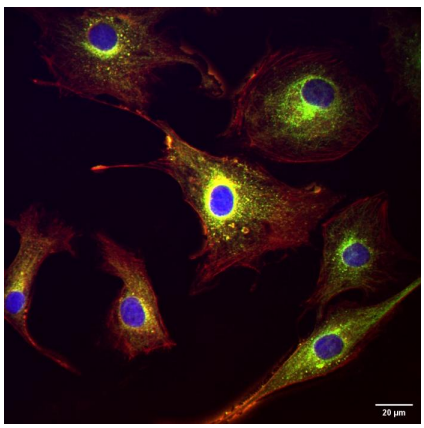
Our multi-channel in one laser (4 in 1 laser) offers four different wavelengths. It is divided into S4L-PBGR-M multi-mode (405/488/525/638nm) and S4L-PBYR-S single-mode (405/488/561/640nm) two lasers. Integrated laser diode, laser cavity, fiber coupled optics, laser power supply and LD current in one. This laser is designed for laser scanning confocal microscopy system.

Product core features

- Multi-wavelength output provides four wavelength light sources. It is suitable for a variety of experimental requirements for simultaneous observation and analysis of fluorescence signals of multiple markers or samples.
- High spectral quality The laser has a narrow spectral width and high spectral quality, which is conducive to reducing the interference of stray light from the light source, providing clear images and accurate signals.
- High mode quality is divided into single mode and multi-mode fiber output, with good mode quality and beam quality. Ideal for high resolution imaging, high precision measurement and other applications requiring high beam quality.
- High power stability High power output and excellent power stability.
- The power is adjustable to help avoid sample damage or overexposure while obtaining the best image quality and signal strength.

S4L-PBGR-M

S4L-PBYR-S



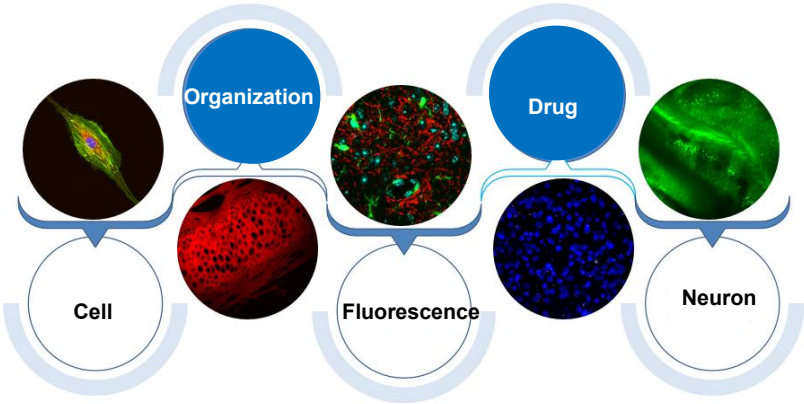
60X-1.2NA-Bovine pulmonary artery endothelial cells

Multicolor fluorescence imaging

- A 405nm laser is commonly used to excite ultraviolet dyes.
- The 488nm laser is used for fluorescein and green fluorescent protein.
- The 525/561nm laser is used for yellow fluorescent proteins and red fluorescent dyes.
- The 640nm laser is used for fluorescent proteins and infrared dyes.

Application

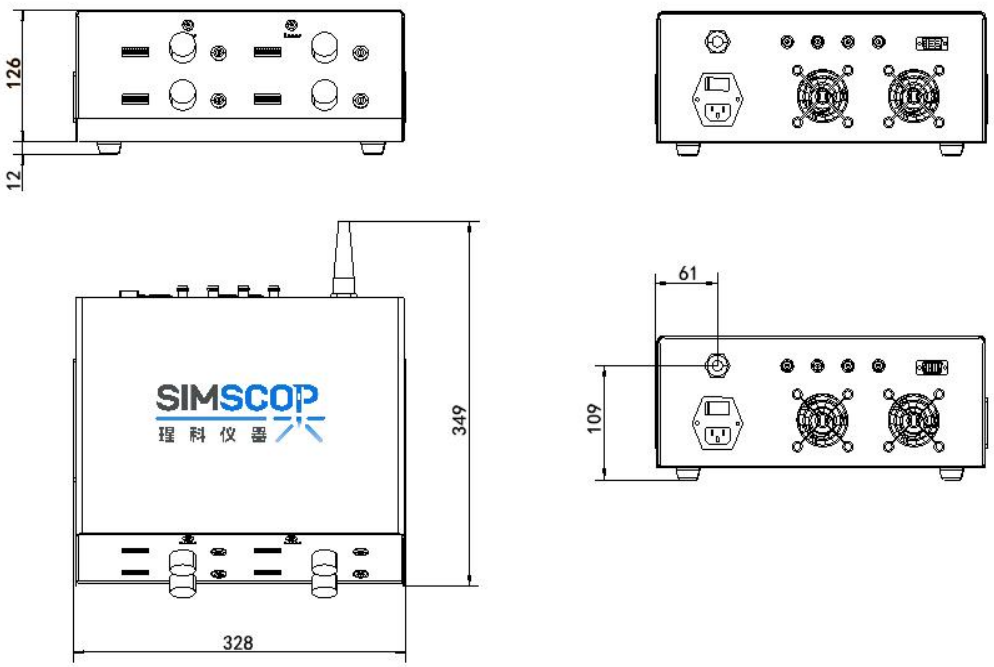
- Cell imaging and localization
- histopathology
- Study on fluorescence co-expression
- Drug screening and evaluation
- Neuronal activity imaging



Parameter	S4L-PBGR-M	S4L-customization
Wavelength	405/488/525/638nm	Based on our standard laser configuration, we offer other customized wavelength options, please see note * for details
Optical fiber	SMA905	
	1 meter long	
	Fiber core 400um	
	Customizable	
output power	>500mW	
Power stability (rms, over 4 hours)	<2%	
Laser power adjustment accuracy	1%	
Work mode	Continuous output, Software control	
Work temperature(℃)	10~35(℃)	
Power input	≥10A/~220V	
Cooling way	Air cooling	
Life expectacy (hours)	10000(Hours)	

Note*: We provide customized other wavelength including but not limited to: ultraviolet (uv) : 375 - nm, visible light: 445 nm, 473 nm, 515 nm, 525 nm, 532 nm, 633 nm, 660 nm, 685 nm, near infrared: 785 nm, 808 nm. For further customization beyond these options, please contact us for assistance.

Size of multi-mode laser



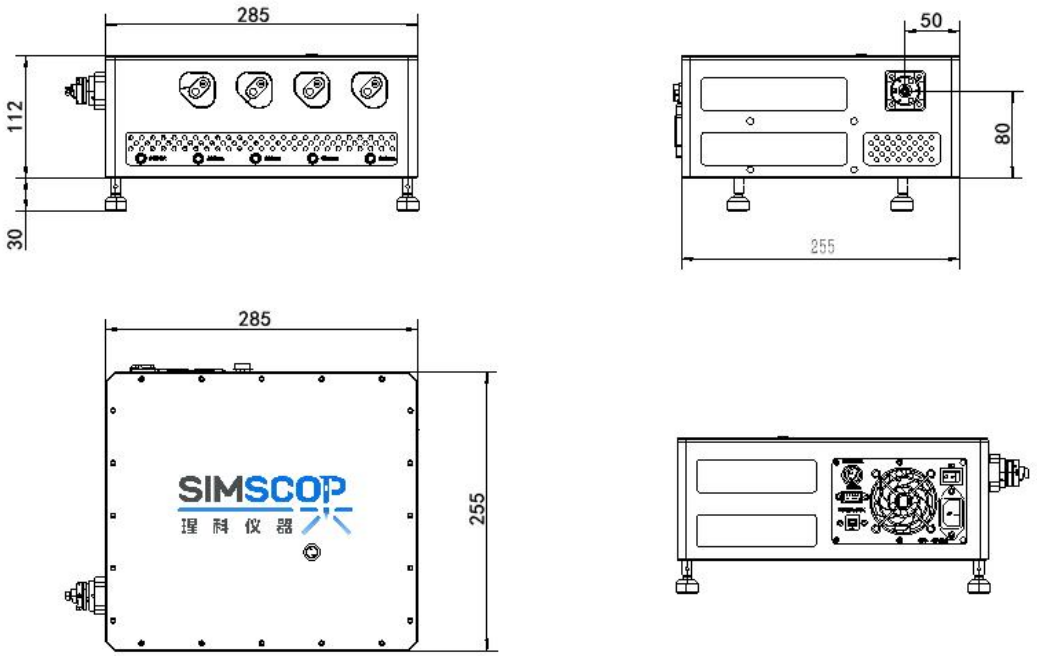
Rear panel serial No.	Name	Function
1	Optical fiber	Laser transmission fiber, transmission laser power.
2	100-240VAC	Ac signal input.
3	SIGNAL IN	Signal input (BNC cable) Pin definition: inner core signal is positive, outer signal is negative.
4	Fan	For internal heat dissipation of power supply.
5	485 Communication protocol	The laser light output is controlled by the protocol.
6	Switch	Control power on and off.

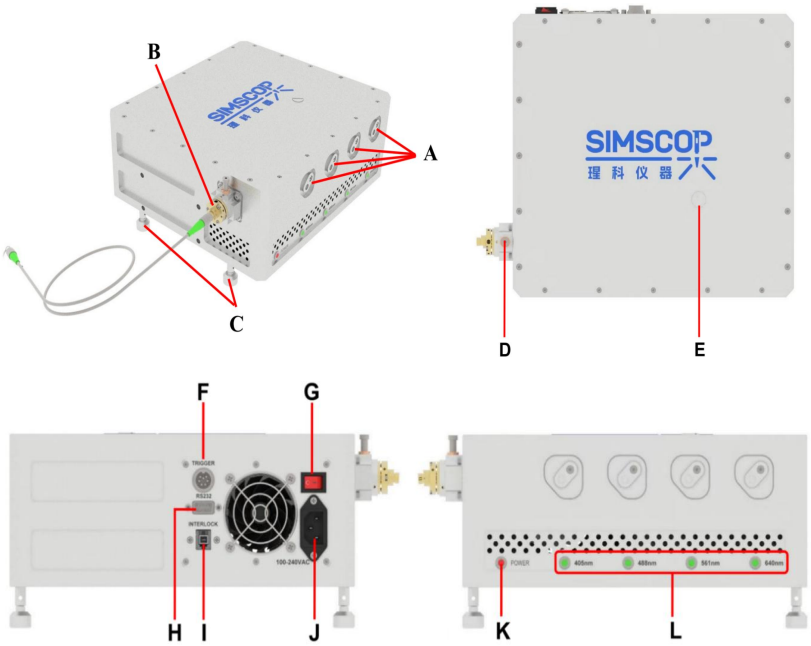
Front panel No.	Name	Funciton
1	Screen	Play the current current.
2	Potentiometer	Rotates to adjust the current size, clockwise current increases, counterclockwise current decreases.
3	Status indicator	Power on, blue light "Laser" on, laser working; The laser fails to work normally, and the red Alarm indicator is on.
4	Key Switch	Control laser light, key to "ON", adjust the potentiometer laser light; Turn the key to "OFF", the laser stops emitting light.

Single-mode laser parameter	S4L-PBYR-S	S4L-customization
Wavelength	405/488/561/640nm	Based on our standard laser configuration, we offer customizable additional wavelength options. Please refer to Remarks * for details
Optical fiber	FC/APC	
	Length 1m	
	Core diameter 4-6μm	
	Available customization	
Output power	> 20mW	
Power stability (rms, over 4 hours)	<1%	
Laser noise	< 4%	
Spectral linewidth	< 3nm	
Laser power adjustment precision	Multi-wavelength AOTF regulated power 0.1% None AOTF: 0.5mW	
Work mode	Continuous output, TTL modulation, analog modulation optional. PC control (Note: The standard model at 561 nm requires manual adjustment and does not support PC control; the upgraded version includes an electric attenuation module that supports PC control)	
Work temperature(℃)	10~35(℃)	
Power input	100~240VAC	
Cooling way	Air cooling	
Life expectancy (hours)	10000(Hours)	

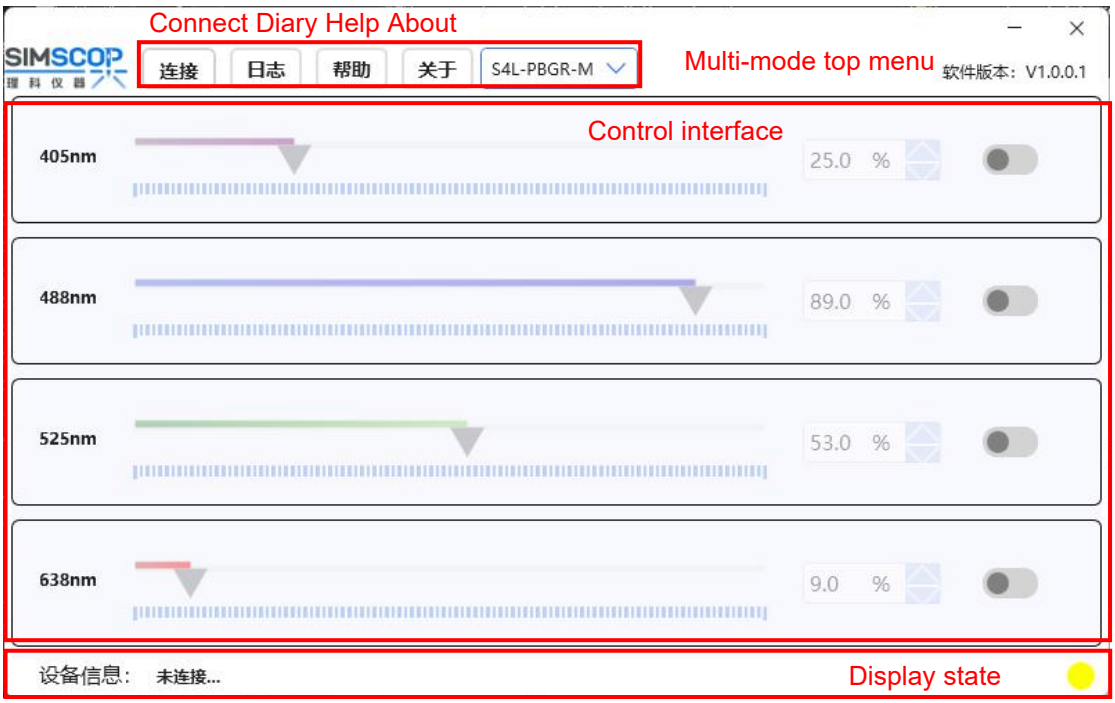
Note*: We provide customized other wavelength including but not limited to: ultraviolet (uv) : 375 - nm, visible light: 445 nm, 473 nm, 515 nm, 525 nm, 532 nm, 633 nm, 660 nm, 685 nm, near infrared: 785 nm, 808 nm. For further customization beyond these options, please contact us for assistance.

Size of single-mode laser:





	Name	Function
A	Cover	Maintain optical elements through it, preventing laser radiation out of the cavity at the same time.
B	Output	Combine laser beams on this aperture，output laser by optical fiber.
C	Footing	Shipped with 4 footing (not installed as) as prop，The rotating strut adjusts the levelness of the laser.
D	Attenuator 1	Rotate the attenuator to adjust the laser output power. It is set to maximum power by default when shipped. Turning it clockwise reduces power to zero; turning it counterclockwise to maximum power, you can fine-tune it for 1-2 more turns, after which the output power won't change. Please do not continue adjusting it at that point.
E	Attenuator 1	**Use to adjust the 561nm laser power.** Before adjusting attenuator 2, remove its outer cap. Use the included wrench to turn attenuator 2 and adjust the green light power. The adjustment method is the same as for attenuator 1. Attenuator 2 is set to maximum output power by default when shipped.
F	External interface	During use, connect the modulation line, which serves only as a switch. The modulation line has five wires at the end. For example, with the 405nm laser, when the white and black (GND) wires are connected, the laser turns off; when they are disconnected, the 405nm laser resumes normal operation.
G	Switch	The laser switch is set to "O" to turn off.
H	RS232 interface	An RS232 data cable is required to connect the laser system to the computer, and the laser parameters are changed by software. RS232 interface definition: DB9-2 pin: receive; DB9-3 pin: Send; DB9-5 pin: GND.
I	Security "interlock"	Pull out the RJ11 plug, or disconnect the short wiring on the plug, and the laser system will stop working. In this case, you must plug it in again, or restore the short cable connection, turn off the laser switch and restart the laser switch, and turn on the laser through the software.
J	Power socket	Supply voltage (100-240VAC) to the laser as indicated on the rear panel.
K	Power indicator	When the laser is switched on, the red "Power" light comes on.
L	Laser indicator	When the software turns on the laser, its corresponding green indicator lights up.



Software Core Funciton

1. Double-type choice

- Suitable for single mode and multi mode lasers.
- Multi-mode： After connecting the multimode laser, click the top menu and select S4L-PBGR-M to output the multimode laser.
- Single-mode: After connecting the single mode laser, click the top menu and select S4L-PBYR-S to output the single mode laser.

2. Double-way connection

- Manual connection and automatic connection for different applications.
- Connection status at the bottom. Green: successful , yellow: waiting, and red: error.

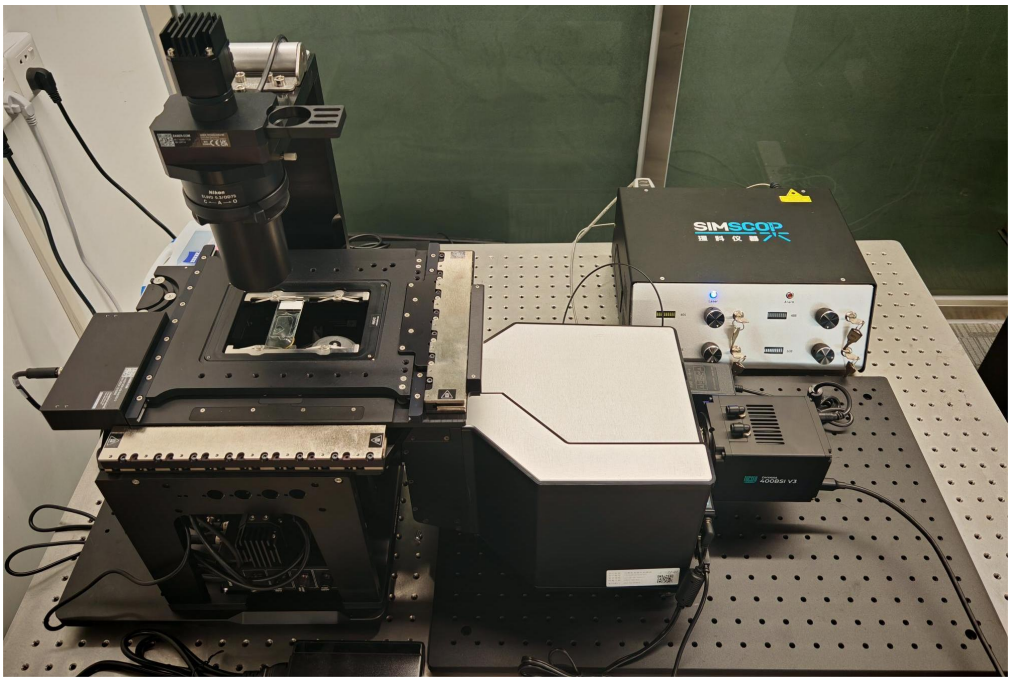
3. Multi-channel output

- 4-in-1 laser provides four laser with different wavelengths.
- Control the switch of each channel by the CheckBox on the far right of the screen.

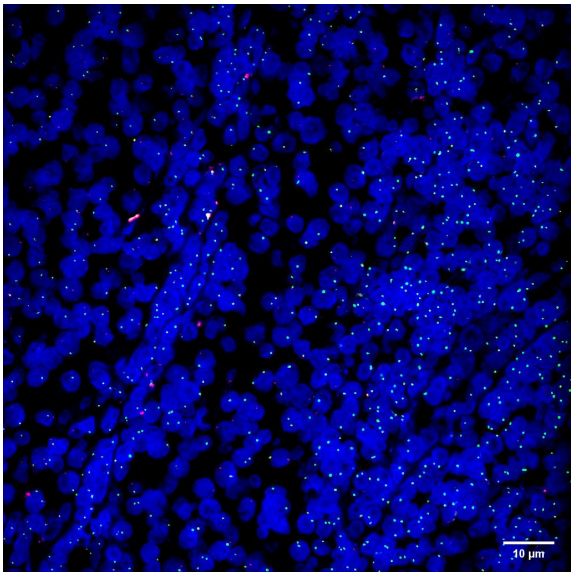
4. High-percision adjustment

- The software displays each channel's power as a percentage, allowing users to adjust laser power flexibly based on experimental needs and sample characteristics.
- Users can change the power for each channel using three methods: dragging a slider, entering numbers in a text box, or clicking arrows, with a step of 1%.

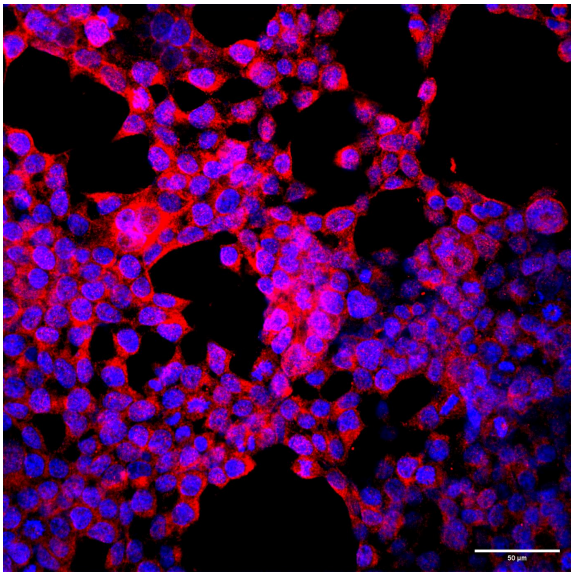
A confocal system composed of multi-channel laser



Application effect of biological research



FISH(Fluorescence Localization Hybridization Technique)-60X-1.2NA- Confocal



Glioma stem cells -40X-0.95NA- Confocal

Various wavelengths are available, please contact us for the most customized combination!

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

SIMSCOP China
Telephone: +86 133 2643 0008
Email: info@simscop.com

www.simtrum.com