SLi

SPECTROLIGHT

PRODUCT BROCHURE

v 25-03

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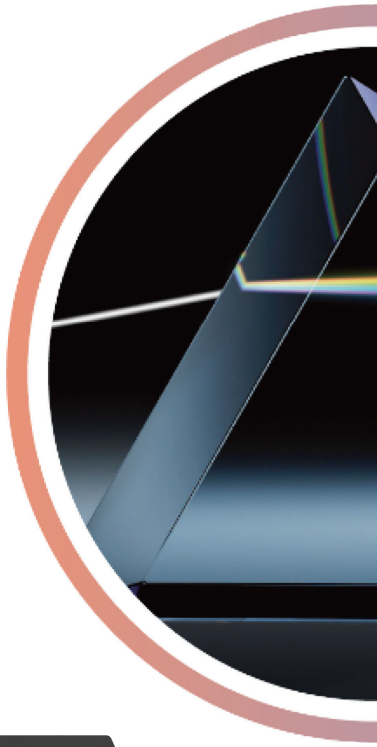
Light Done Right!

TUNABLE BANDPASS FILTERS

- Designed for wavelength selection over wide spectral ranges (255 - 1700 nm)
- Employs patented TwinFilm™ technology
- Compatible with any broadband light source



AWARD WINNING TECHNOLOGY

PRISM AWARDS FINALIST

INNOVATORS AWARDS 2018 LaserFocusWorld GOLD HONOREE

INNOVATORS AWARDS 2019 LaserFocusWorld GOLD HONOREE

INNOVATORS AWARDS 2020 LaserFocusWorld GOLD HONOREE

LIGHT SOURCES

- Powerful and Compact broadband light sources
- Low-noise with Versatile output modules
- Fully compatible with the FWS

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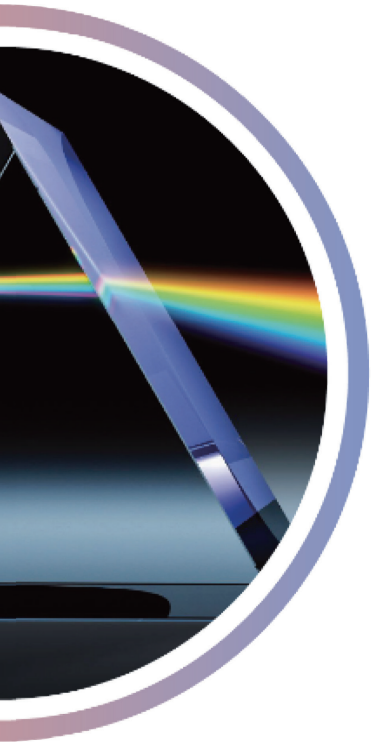
TUNABLE LIGHT SOURCES

- Revolutionary Tunable Light Source
- Wide and Precise Spectral Wavelength Selection
- Versatile Applications in both Scientific and Industrial fields

AWARD WINNING LIGHT SOURCE

INNOVATORS AWARDS 2022 LaserFocusWorld SILVER HONOREE

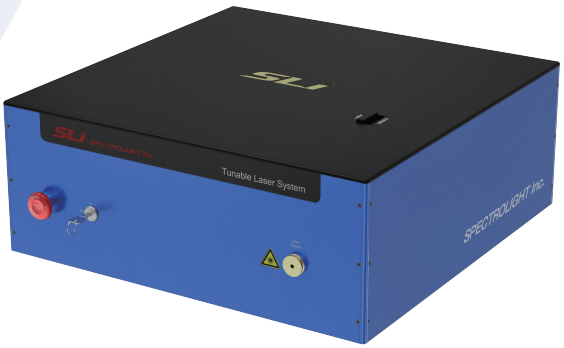


TUNABLE LASER SYSTEMS

- Tunable Pico-second Pulsed Supercontinuum Laser System
- One-box PLUG&PLAY System
- Easy, Effective and Reliable applications
- Fully Customizable to meet all your requirements

INNOVATORS AWARDS 2024 LASER FOCUS WORLD GOLD HONOREE

EDGE AWARDS



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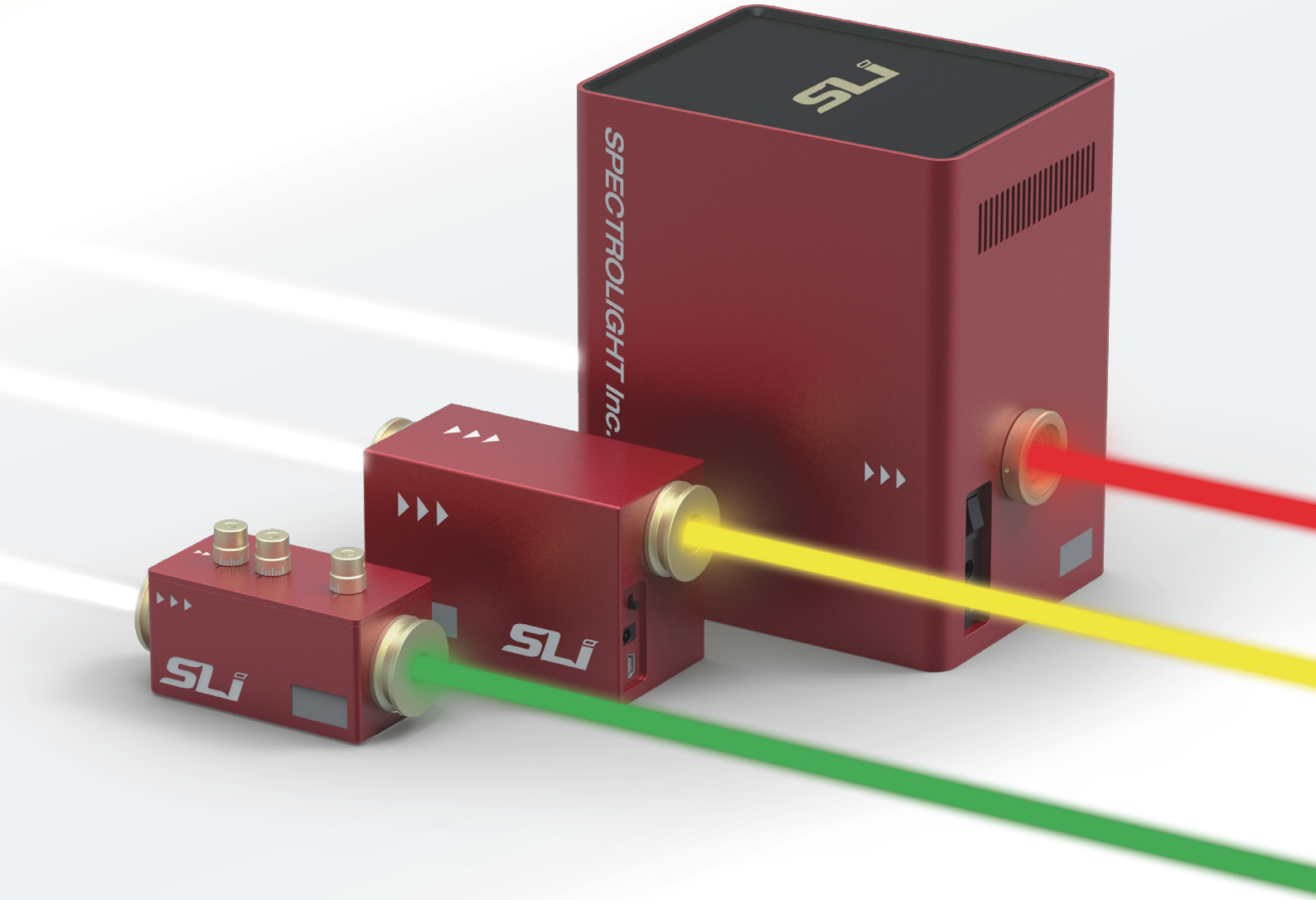
TUNABLE BANDPASS FILTERS



- Wide Tunable Spectral Wavelength of 255 - 1700 nm
- Relevant for both Excitation and Emission
- Compatible with all Broadband Light Sources
- Implementing the patented TwinFilm™ technology

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Flexible Wavelength Selector (FWS)

Tunable bandpass filter for spectroscopy and spectral imaging

Flexible Wavelength Selector is a unique, compact optomechanical device that utilizes the patented TwinFilm™ technology to deliver precise wavelength tuning and adjustable bandwidth with the imaging advantages of a circular aperture filter.

FWS- Auto (Automated type)

Poly-RED

Poly-BLUE

Mono

FWS- Manual (Manual type)

Basic

High Resolution

CenterLine

Customized

Ideal for

- Fluorescence microscopy
- Hyperspectral imaging
- Life sciences instrumentation
- Machine vision
- Laboratory research

Key product advantages

- Broad wavelength tuning (255 - 1700 nm)
- Adjustable bandwidth (FWHM 2 - 15 nm, nominal)
- 5 / 10 mm circular aperture
- Compact and light-weight optomechanical device
- No beam deviation or walk-off during tuning

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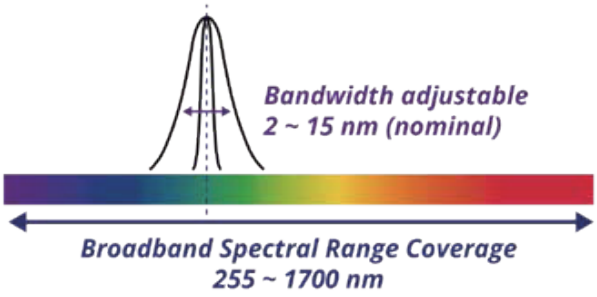
Flexible Wavelength Selector – Poly-RED

Model name	Spectral range (nm)
Poly-RED-UV	280 - 390
Poly-RED-VIS	430 - 790
Poly-RED-IR	775 - 1150
Poly-RED-SWIR	1140 - 1700
Poly-RED-Custom	Custom range

Spectral range (nm)	Tunable bandwidth (nm)
255 - 700	2 - 15
701 - 890	3 - 15
891 - 1500	5 - 15
1475 - 1700	7 - 13



** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
** Minimum step size of center wavelength : 1 nm*
** Step size of bandwidth (FWHM) : 1 nm*

FWHM	2 - 15									3 - 15		5 - 15				7 - 13
CWL	255 - 290	280 - 310	310 - 350	348 - 390	385 - 435	430 - 490	485 - 550	545 - 620	615 - 700	690 - 790	775 - 890	880 - 1015	1000 - 1150	1140 - 1310	1300 - 1500	1475 - 1700
Poly-RED-UV		●	●	●												
Poly-RED-VIS						●	●	●	●	●						
Poly-RED-IR											●	●	●			
Poly-RED-SWIR														●	●	●
Poly-RED-Custom	Up to 9 in one device															

	Aperture size	
Poly-RED-A5	5 mm	Suitable for supercontinuum lasers
Poly-RED-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*

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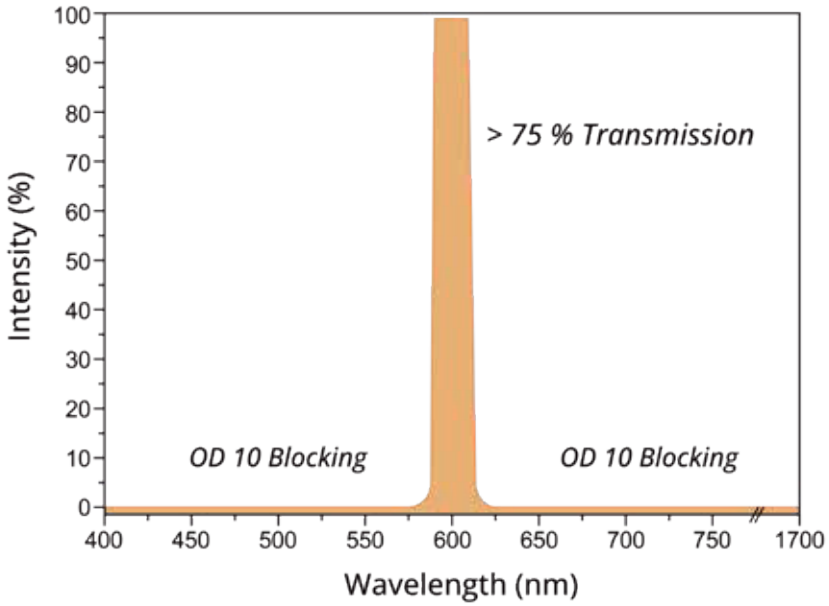
Full Specifications

	Poly-RED-A5	Poly-RED-A10
Spectral range (nm)	255-1700	255-1700
Bandwidth (FWHM) (nm)	2-15 (nominal)	2-15 (nominal)
Aperture size (mm)	5	10
Out of band Blocking	OD 10 up to 1700 nm	
Step size of center wavelength (nm)	1.0	
Step size of bandwidth (FWHM) (nm)	1.0	
Wavelength accuracy (nm) : CWL, FWHM	< 1 nm	
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm^2 (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ^{2}(1064 nm, ~ 90 µm spot diam.)	
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM > 10 nm)	
Scanning speed (ms)	20 - 200 ms (depending on step size)	
Software	FWS-Auto ver 4.2	
Dimension (L x W x H, mm)	186.2 x 124 x 214	
Input power	DC 12 V, 5 A	
Electric requirement	AC 100 - 240 V, 50/60 Hz	
Data interface	USB 2.0	
Weight (kg)	4.2	

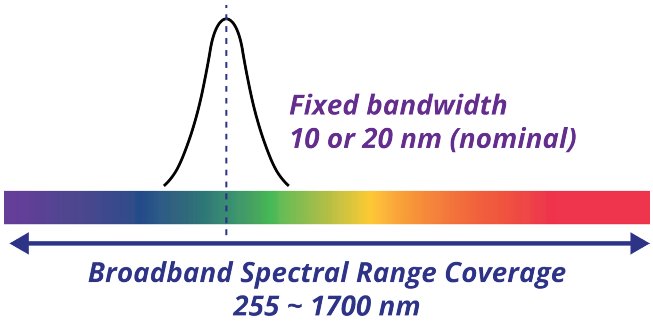


** Transmission may differ depending on specific wavelengths*

Flexible Wavelength Selector – Poly-BLUE

Model name	Spectral range (nm)
Poly-BLUE-UV	280 - 390
Poly-BLUE-VIS	430 - 790
Poly-BLUE-IR	775 - 1150
Poly-BLUE-SWIR	1140 - 1700
Poly-BLUE-Custom	Custom range

** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
** Minimum step size of center wavelength : 1 nm*
** Bandwidth (FWHM) Fixed : 10 or 20 nm (nominal)*



	FWHM	10 or 20 (nominal)														
	CWL	255 - 290	280 - 310	310 - 350	348 - 390	385 - 435	430 - 490	485 - 550	545 - 620	615 - 700	690 - 790	775 - 890	880 - 1015	1000 - 1150	1140 - 1310	1300 - 1500	1475 - 1700
Poly-BLUE-UV			●	●	●												
Poly-BLUE-VIS							●	●	●	●	●						
Poly-BLUE-IR												●	●	●			
Poly-BLUE-SWIR															●	●	●
Poly-BLUE-Custom		Up to 9 in one device															

Aperture size

Poly-BLUE-A5	5 mm	Suitable for supercontinuum lasers
Poly-BLUE-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*

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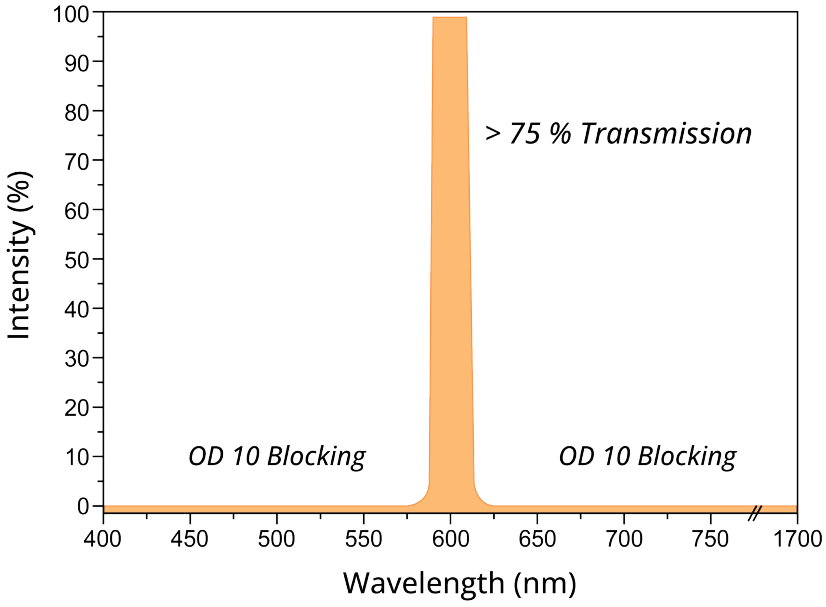
Full Specifications

	Poly-BLUE-A5	Poly-BLUE-A10
Spectral range (nm)	255-1700	255-1700
Bandwidth (FWHM) (nm)	10 or 20 (fixed)	10 or 20 (fixed)
Aperture size (mm)	5	10
Out of band Blocking	OD 5 in tuning range, OD 10 in spectral range up to 1700 nm	
Step size of center wavelength (nm)	1.0	
Step size of bandwidth (FWHM) (nm)	Fixed 10 or 20 nm	
Wavelength accuracy (nm) : CWL, FWHM	< 1 nm	
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm² (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ²(1064 nm, ~ 90 µm spot diam.)	
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM > 10 nm)	
Scanning speed (ms)	20 - 200 ms (depending on step size)	
Software	FWS-Auto ver 4.2	
Dimension (L x W x H, mm)	136.7 x 124 x 214	
Input power	DC 12 V, 5 A	
Electric requirement	AC 100 - 240 V, 50/60 Hz	
Data interface	USB 2.0	
Weight (kg)	3.15	



** Transmission may differ depending on specific wavelengths*

Wavelength Selection Guide

Poly-RED

FWHM	CWL	UV	VIS	IR	SWIR	CUSTOM
2 - 15	255 - 290					
	280 - 310	●				
	310 - 350	●				
	348 - 390	●				
	385 - 435					
	430 - 490		●			*Up to 9 in one device*
	485 - 550		●			
	545 - 620		●			
	615 - 700		●			
3 - 15	690 - 790		●			
	775 - 890			●		
5 - 15	880 - 1015			●		
	1000 - 1150			●		
	1140 - 1310				●	
	1300 - 1500				●	
7 - 13	1475 - 1700				●	

* Units : nm

Poly-BLUE

FWHM	CWL	UV	VIS	IR	SWIR	CUSTOM
10 or 20 (nominal)	255 - 290					
	280 - 310	●				
	310 - 350	●				
	348 - 390	●				
	385 - 435					
	430 - 490		●			*Up to 9 in one device*
	485 - 550		●			
	545 - 620		●			
	615 - 700		●			
	690 - 790		●			
	775 - 890			●		
	880 - 1015			●		
	1000 - 1150			●		
	1140 - 1310				●	
	1300 - 1500				●	
	1475 - 1700				●	

* Units : nm

	Aperture size	
Poly-A5	5 mm	Suitable for supercontinuum lasers
Poly-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

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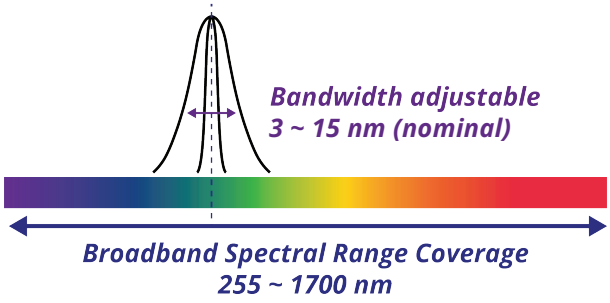
Flexible Wavelength Selector – Mono

FWS-Mono features complete software control of wavelength and bandwidth via a USB link and simple software interface.

Model	CWL (nm)	FWHM (nm)
Mono-F00	255 - 290	3 - 15
Mono-F01	280 - 310	3 - 15
Mono-F02	310 - 350	3 - 15
Mono-F03	348 - 390	3 - 15
Mono-F04	385 - 435	3 - 15
Mono-F05	430 - 490	3 - 15
Mono-F06	485 - 550	3 - 15
Mono-F07	545 - 620	3 - 15
Mono-F08	615 - 700	3 - 15
Mono-F09	690 - 790	3 - 15
Mono-F10	775 - 890	3 - 15
Mono-F11	880 - 1015	5 - 15
Mono-F12	1000 - 1150	5 - 15
Mono-F13	1140 - 1310	5 - 15
Mono-F14	1300 - 1500	5 - 15
Mono-F15	1475 - 1700	7 - 13



** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
** Minimum step size of center wavelength : 1 nm*
** Step size of bandwidth (FWHM) : 1 nm*

	Aperture size	
Mono-A5	5 mm	Suitable for supercontinuum lasers
Mono-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*

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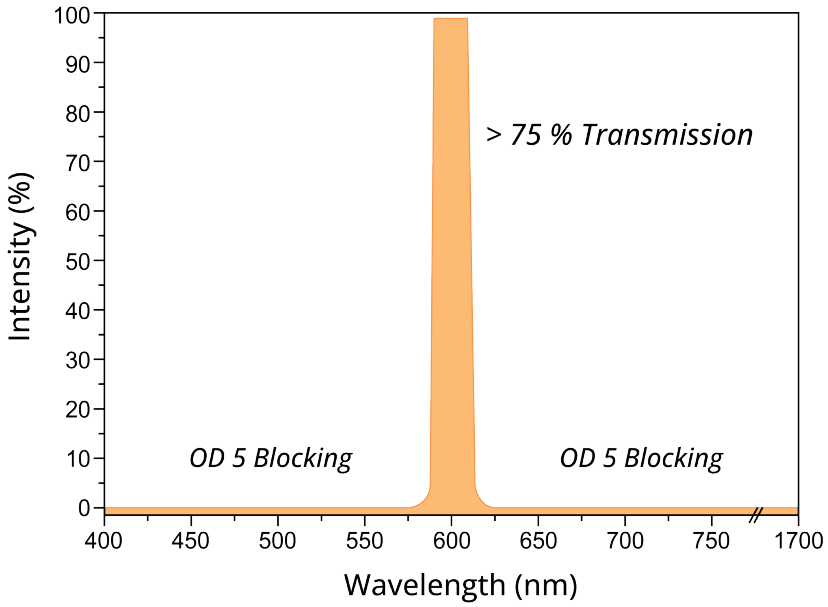
Full Specifications

	Mono-A5	Mono-A10
Spectral range (nm)	255 - 1700	255 - 1700
Bandwidth (FWHM) (nm)	3 - 15 (nominal)	3 - 15 (nominal)
Aperture size (mm)	5	10
Out of band blocking	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm	
Step size of center wavelength (nm)	1.0	
Step size of bandwidth (FWHM) (nm)	1.0	
Wavelength accuracy (nm) : CWL, FWHM	< 1 nm	
Damage threshold	Peak Fluence < 1.75 joules/cm^2 (~70 spot diam., 10 ns pulse, 10 Hz repetition rate, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm^2(1064 nm, ~ 90 μm spot diam.)	
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM . 10 nm)	
Scanning speed (ms)	20 - 200 ms (depending on step size)	
Software version	FWS-Auto ver 3.1	
Dimension (L x W x H, mm)	48 x 92 x 64	
Input power	DC 12 V, 2 A	
Electrical requirement	AC 100 - 240 V, 50/60 Hz	
Data interface	USB 2.0	
Weight (kg)	0.4	



** Transmission may differ depending on specific wavelengths*

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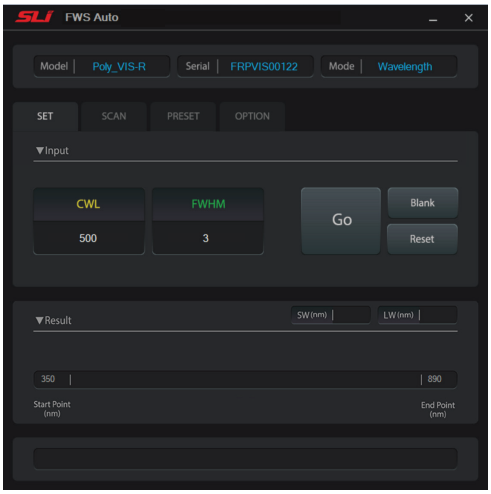
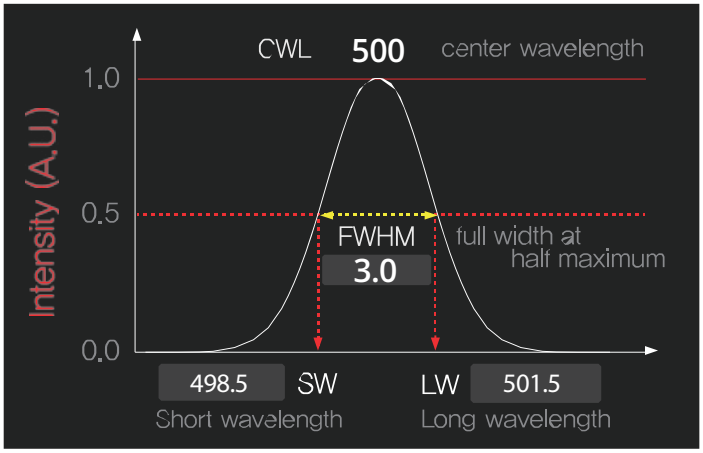
Poly, Mono Software

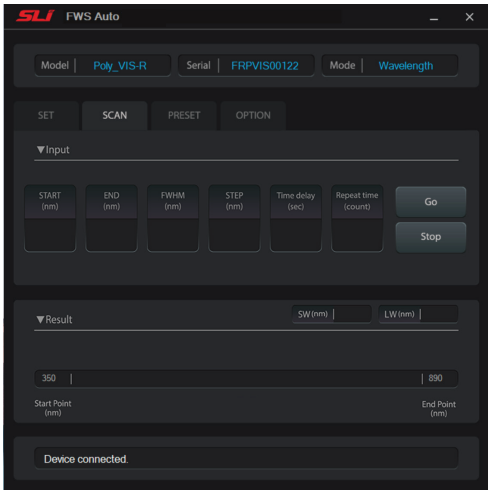
Software Control

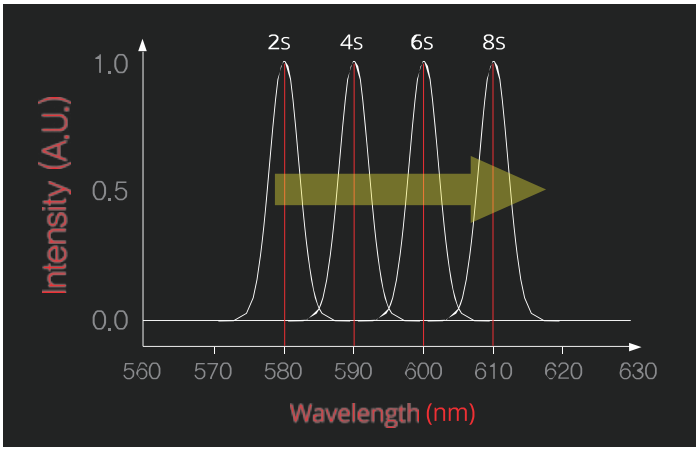
Set



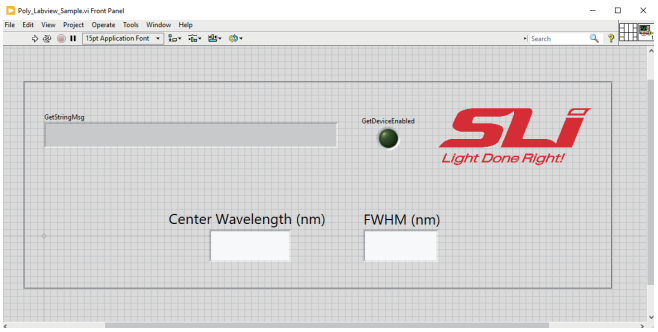


Scan





Software Compatibility



- Applying SDK of FWS to a Labview software (uploaded on the website)
- Compatible with various softwares (LabVIEW, Python, MATLAB)

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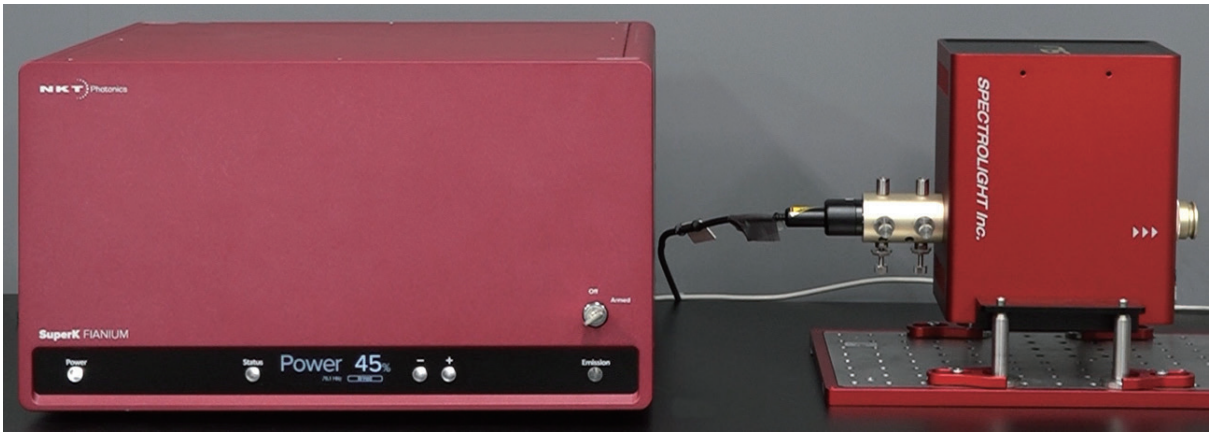
Flexible Wavelength Selector – Auto

Application

Wavelength tuning for broadband light sources

Flexible Wavelength Selector (FWS) can be applied with various types of light sources, such as supercontinuum laser, plasma light, LED, Xenon lamp and so on.
FWS can provide the tunability on the light sources used in a user's system.



FWS-Poly + Supercontinuum laser

- Applications with various light sources
  - Supercontinuum lasers (Spectrolight, NKT, LEUKOS etc.)
  - Laser-Driven Light Source (Energetiq, ISTEQ, etc.)
  - LED, Xenon lamp, Halogen lamp and other broadband light sources

FWS-Poly + Laser-Driven Light Source

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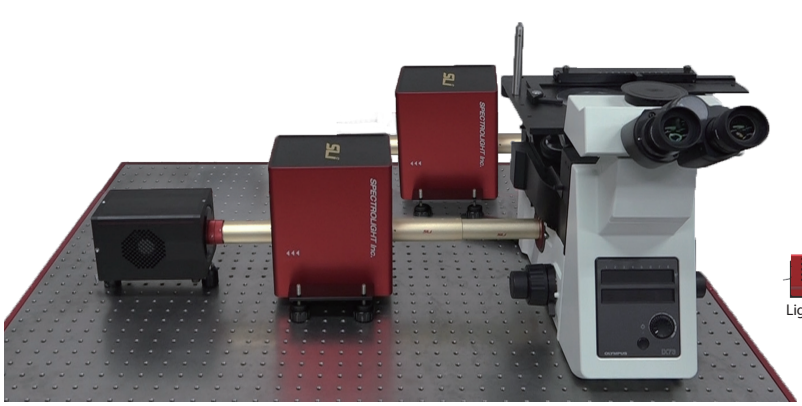
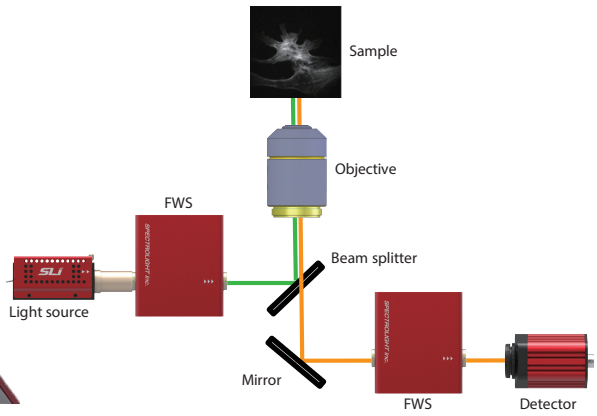
Flexible Wavelength Selector - Auto

Application

Detection for spectroscopy and microscopy

Experimental setup and scheme for fluorescence microscope





Fluorescence imaging results

It is possible to convert a commercial microscope into a Fluorescence imaging microscope by applying our FWS on the emission/excitation port of the microscope.

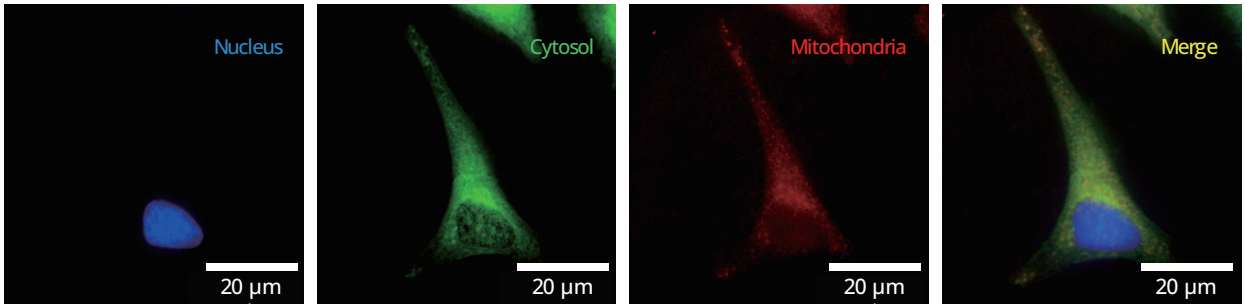
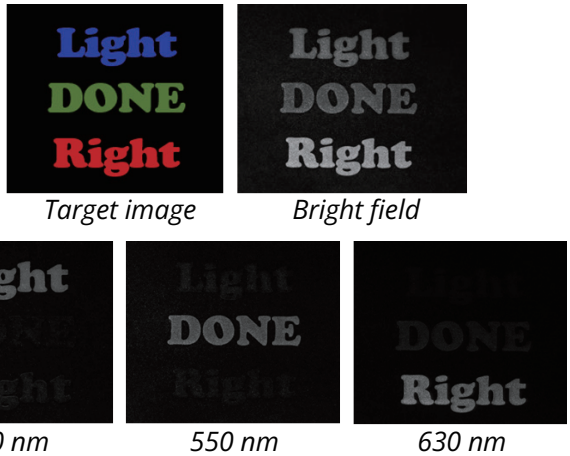


Figure 1. HeLa cells labelled with Dapi and Deep Red and CMFDA green show localization of Nucleus and mitochondria and cytosol. The images were captured using a microscope equipped with X60 objective lens.

Hyperspectral Camera



Target image *Bright field*

450 nm *550 nm* *630 nm*

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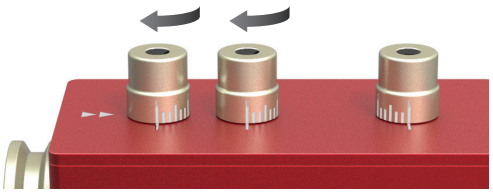
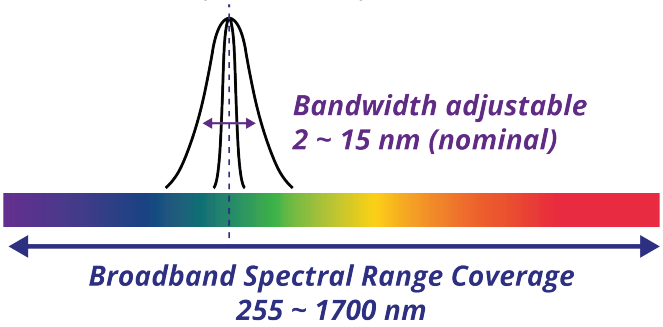
Flexible Wavelength Selector – Basic

Model	CWL (nm)	FWHM (nm)
Basic-F00	255 - 290	2 - 15
Basic-F01	280 - 310	2 - 15
Basic-F02	310 - 350	2 - 15
Basic-F03	348 - 390	2 - 15
Basic-F04	385 - 435	2 - 15
Basic-F05	430 - 490	2 - 15
Basic-F06	485 - 550	2 - 15
Basic-F07	545 - 620	2 - 15
Basic-F08	615 - 700	2 - 15
Basic-F09	690 - 790	3 - 15
Basic-F10	775 - 890	3 - 15
Basic-F11	880 - 1015	5 - 15
Basic-F12	1000 - 1150	5 - 15
Basic-F13	1140 - 1310	5 - 15
Basic-F14	1300 - 1500	5 - 15
Basic-F15	1475 - 1700	7 - 13

Basic-A10



Simple manual operation



** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
Minimum step size of center wavelength : 1 nm / Step size of bandwidth (FWHM) : 1 nm

	Aperture size	
Basic-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*
** Manual models require a spectrometer for opertation*

	Basic-A10
Spectral range (nm)	255 - 1700
Bandwidth (FWHM) (nm)	2 - 15 (nominal)
Aperture size (mm)	10
Out of band blocking	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm^2 (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ^{2}(1064 nm, ~ 90 µm spot diam.)
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM . 10 nm)
Dimension (L x W x H, mm)	48 x 92 x 64
Weight (kg)	0.2

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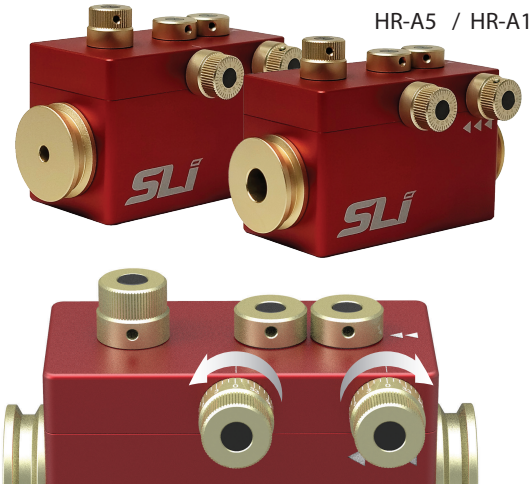
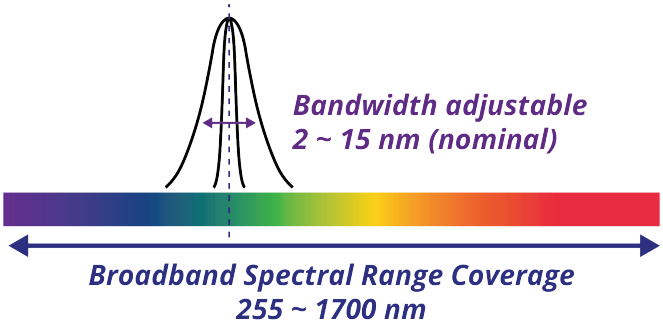
Flexible Wavelength Selector – High Resolution

Model	CWL (nm)	FWHM (nm)
High Resolution-F00	255 - 290	2 - 15
High Resolution-F01	280 - 310	2 - 15
High Resolution-F02	310 - 350	2 - 15
High Resolution-F03	348 - 390	2 - 15
High Resolution-F04	385 - 435	2 - 15
High Resolution-F05	430 - 490	2 - 15
High Resolution-F06	485 - 550	2 - 15
High Resolution-F07	545 - 620	2 - 15
High Resolution-F08	615 - 700	2 - 15
High Resolution-F09	690 - 790	3 - 15
High Resolution-F10	775 - 890	3 - 15
High Resolution-F11	880 - 1015	5 - 15
High Resolution-F12	1000 - 1150	5 - 15
High Resolution-F13	1140 - 1310	5 - 15
High Resolution-F14	1300 - 1500	5 - 15
High Resolution-F15	1475 - 1700	7 - 13

HR-A5 / HR-A10



Simple yet precise manual operation



** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
Minimum step size of center wavelength : 1 nm / Step size of bandwidth (FWHM) : 1 nm

	Aperture size	
High Resolution-A5	5 mm	Suitable for supercontinuum lasers
High Resolution-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*
** Manual models require a spectrometer for opertation*

	High Resolution-A5	High Resolution-A10
Spectral range (nm)	255 - 1700	255 - 1700
Bandwidth (FWHM) (nm)	2 - 15 (nominal)	2 - 15 (nominal)
Aperture size (mm)	5	10
Out of band blocking	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm	
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm² (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ²(1064 nm, ~ 90 µm spot diam.)	
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM . 10 nm)	
Dimension (L x W x H, mm)	40 X 76 X 50	
Weight (kg)	0.3	

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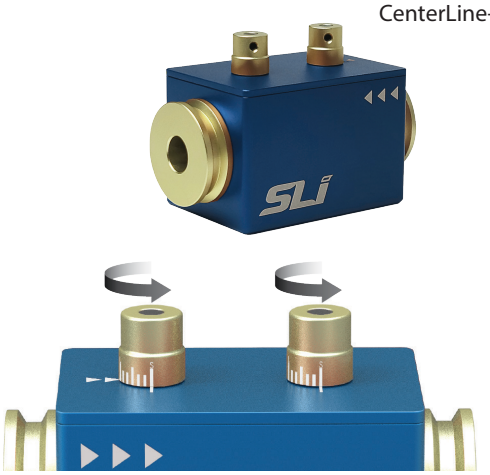
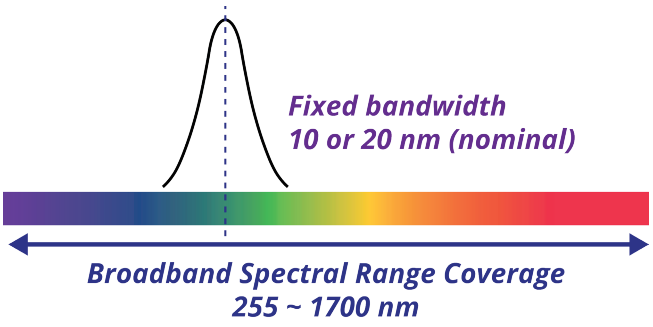
Flexible Wavelength Selector – CenterLine

Model	CWL (nm)	FWHM (nm)
CenterLine-F00	255 - 290	10 or 20 (nominal)
CenterLine-F01	280 - 310	10 or 20 (nominal)
CenterLine-F02	310 - 350	10 or 20 (nominal)
CenterLine-F03	348 - 390	10 or 20 (nominal)
CenterLine-F04	385 - 435	10 or 20 (nominal)
CenterLine-F05	430 - 490	10 or 20 (nominal)
CenterLine-F06	485 - 550	10 or 20 (nominal)
CenterLine-F07	545 - 620	10 or 20 (nominal)
CenterLine-F08	615 - 700	10 or 20 (nominal)
CenterLine-F09	690 - 790	10 or 20 (nominal)
CenterLine-F10	775 - 890	10 or 20 (nominal)
CenterLine-F11	880 - 1015	10 or 20 (nominal)
CenterLine-F12	1000 - 1150	10 or 20 (nominal)
CenterLine-F13	1140 - 1310	10 or 20 (nominal)
CenterLine-F14	1300 - 1500	10 or 20 (nominal)
CenterLine-F15	1475 - 1700	10 or 20 (nominal)

CenterLine-A10





** Center Wavelength tuning range can vary by a few nanometers depending on the product.*
Minimum step size of center wavelength : 1 nm

	Aperture size	
CenterLine-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*
** Manual models require a spectrometer for opertation*

	CenterLine-A10
Spectral range (nm)	255 - 1700
Bandwidth (FWHM) (nm)	10 or 20 (nominal)
Aperture size (mm)	10
Out of band blocking	OD 5 up to 1700 nm
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm^2 (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm^2(1064 nm, ~ 90 µm spot diam.)
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM . 10 nm)
Dimension (L x W x H, mm)	40 x 58 x 40
Weight (kg)	0.2

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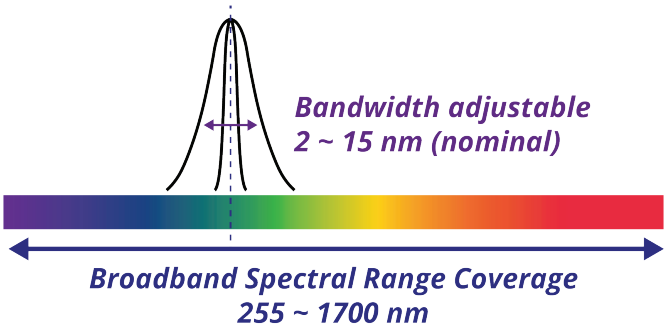
Custom Wavelength Selector - CWS

Model	CWL (nm)	FWHM (nm)
CWS-F00	255 - 290	2 - 15
CWS-F01	280 - 310	2 - 15
CWS-F02	310 - 350	2 - 15
CWS-F03	348 - 390	2 - 15
CWS-F04	385 - 435	2 - 15
CWS-F05	430 - 490	2 - 15
CWS-F06	485 - 550	2 - 15
CWS-F07	545 - 620	2 - 15
CWS-F08	615 - 700	2 - 15
CWS-F09	690 - 790	3 - 15
CWS-F10	775 - 890	3 - 15
CWS-F11	880 - 1015	5 - 15
CWS-F12	1000 - 1150	5 - 15
CWS-F13	1140 - 1310	5 - 15
CWS-F14	1300 - 1500	5 - 15
CWS-F15	1475 - 1700	7 - 13

CWS-A10



** User specified single wavelength and bandwidth*
** CWS can be shipped within 72 hours*

	Aperture size	
CWS-A10	10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)

** For optimal performance input light source must be collimated*
** Manual models require a spectrometer for opertation*

	CWS-A10
Spectral range (nm)	255 - 1700 (single wavelength)
Bandwidth (FWHM) (nm)	2 - 15 (single bandwidth)
Aperture size (mm)	10
Out of band blocking	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm^2 (~70 µm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ^{2}(1064 nm, ~ 90 µm spot diam.)
Transmission efficiency (%)	≥ 75 % (in proportion to the input light power / FWHM . 10 nm)
Dimension (L x W x H, mm)	40 x 76 x 40
Weight (kg)	0.2

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Tunable Bandpass Filter

Integration with various systems

Hyperspectral Imaging

Detection camera + Tunable bandpass filter

Fluorescence Microscopy

Extender accessory between a microscope and tunable bandpass filter and camera for imaging

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Tunable Bandpass Filter Accessories

Input / Output Linker

There are various selections of accessories available, including input and output linkers, extenders and mounting bases for Tunable Bandpass filters.

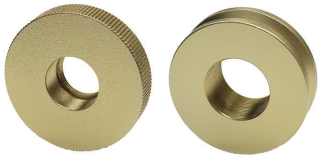
Input and Output Linkers

Input and output linkers allow the connection of Tunable Bandpass filters to other light sources, detectors, etc.

WS-FPCA
FiberPort coupler adapter for direct connection with FC/PC and FC/APC fiber types.

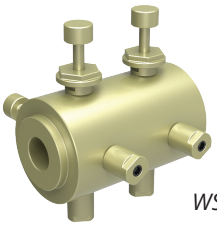
WS-FPCA

Input accessories



WS-SM1-11P
WS-SM1-05P

Fiber collimator adapter
To connect wavelength selectors with fiber collimators [Φ 11 mm, SM05]



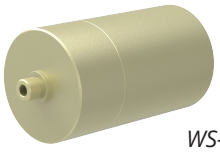
WS-SCA

Supercontinuum source adapter
To connect supercontinuum sources to wavelength selectors

WS-MB-POLY

Mounting Base
Magnetic baseplate includes an M4 center hole for simple plug & play post mounting of wavelength selectors

Output accessories



WS-SMA

SMA type fiber adapter
To connect the output of wavelength selectors directly to an SMA type

WS-LLG

Light guide adapter
To connect the output of wavelength selectors directly to light guide [3 mm, 5 mm]

WS-BL400UV
WS-BL1700SWIR

Out-of-band blocker
To block out-of-band wavelengths longer than 400 nm (> 400 nm) and longer than 1700 nm (> 1700 nm) in the SWIR range

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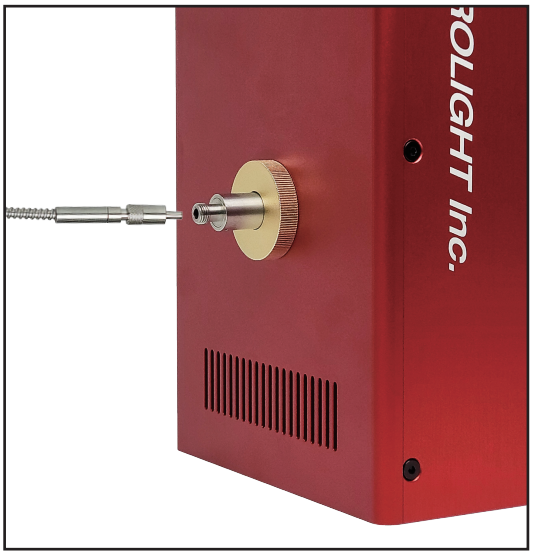
SLi
Light Done Right!

WS-SM1-05P
Input accessory for connecting commercial fiber collimators
(5 mm diameter) to the FWS. Allows SMA type fiber compatibility.

For collimator suggestions please contact us at -
support@spectrolightinc.com



WS-SM1-11P
Input accessory for connecting commercial fiber collimators
(11 mm diameter) to the FWS. Allows SMA type fiber compatibility.

For collimator suggestions please contact us at -
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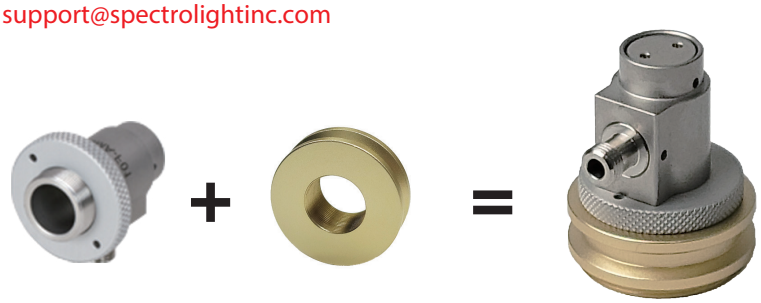

WS-SCA
Input accessory for connecting supercontinuum laser light sources.
SCAY model is for connection with supercontinuum laser of SLi.
SCAN model is for connection with supercontinuum laser of NKT.

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WS-SMA
Output accessory for connecting SMA type fiber as an output.

WS-LLG
Output accessory for connecting liquid light guide (LLG) as an output.

Comes in 3 mm and 5 mm models.

WS-FPCA
FiberPort coupler adapter for direct connection with FC/PC and FC/APC fiber types.
(Can be used for both input and output of FWS.)

* Recommended for use with lasers

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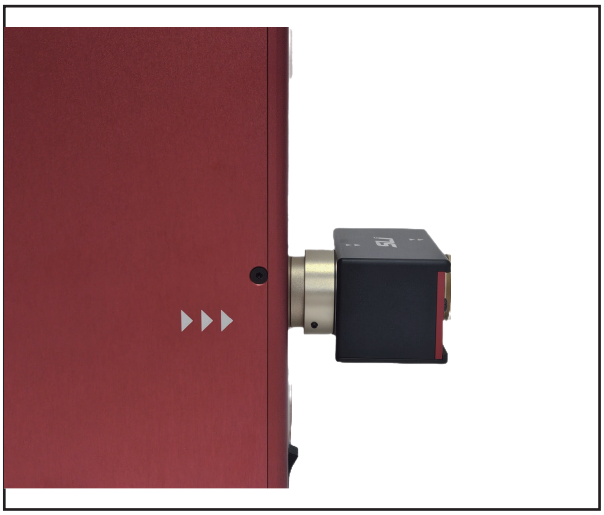
WS-BL400UV, WS-BL1700SWIR

Output accessory for blocking out-of-band wavelengths longer than 400 nm to get the UV range wavelengths only or longer than 1700 nm to get wavelengths between 400-1700 nm range only.



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- Easy, Effective and Reliable applications
- Fully Customizable to meet all your requirements

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Tunable Laser System (TLS)

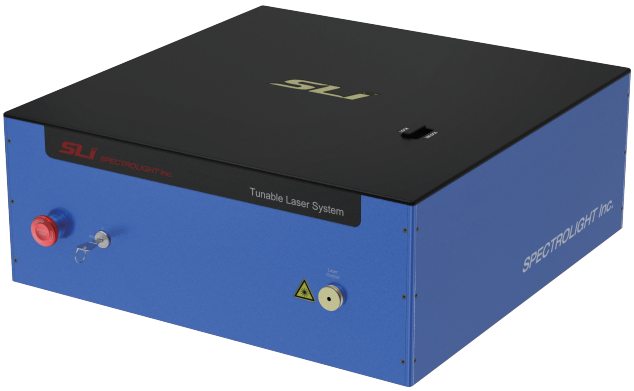
Fully tunable pico-second pulsed laser system by Spectrolight

Spectrolight's tunable laser system (TLS) is an innovative, continuously tunable laser that combines a super-continuum laser and a tunable bandpass filter in VISBLE, IR, and SWIR ranges.

TLS-RED can generate wide wavelength ranges of approximately 400 nm to 1700 nm and can control the FWHM 2 to 15 nm (nominal), and **TLS-BLUE** has the same wide wavelength ranges with fixed FWHM at 10 or 20 nm. TLS-RED is suitable for fields that require precise scanning, and TLS-BLUE is ideal for fields that require high output. By using Spectrolight's TLS, users can freely select the output power and wavelength ranges according to their needs.

TLS is a picosecond tunable laser that can be applied to various fields, from fluorescence microscopy to time-resolved spectroscopy, such as TCSPC, Hyperspectral imaging, Machine vision, Semiconductors, Sensors, and other applications.

TLS-RED (Tunable bandwidth)



TLS-BLUE (Fixed bandwidth)

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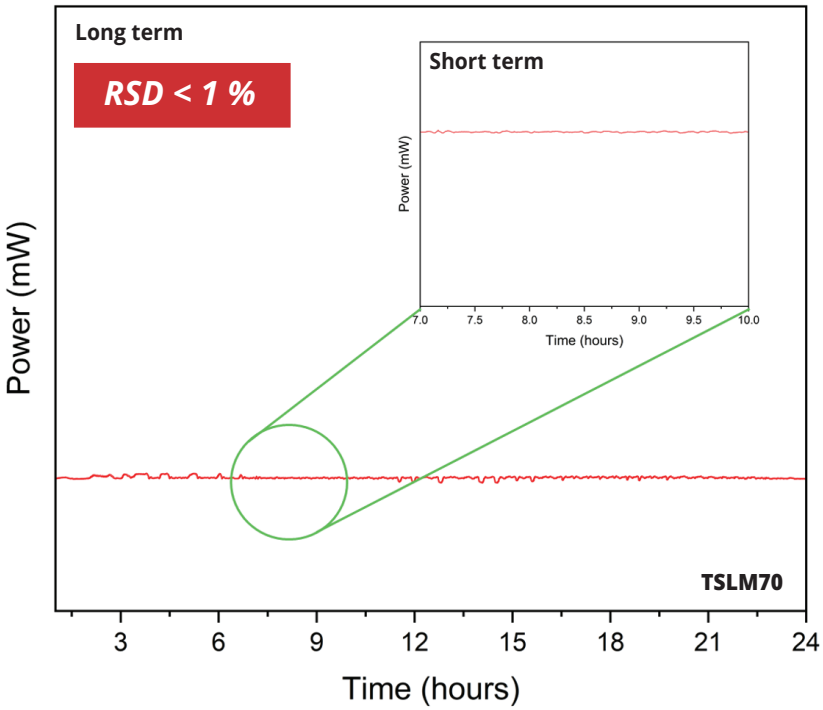
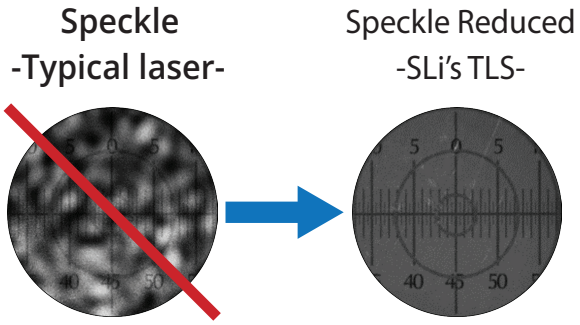
Stable Long-term Power Fluctuation

RSD is < 1 % at 650/15 nm
*RSD = Relative Standard Deviation

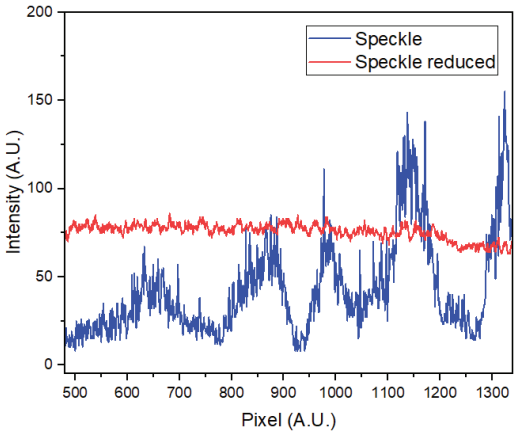


Speckle reduced Laser

TLS products are designed to reducing the laser speckle noise found as a noise pattern in typical lasers, ensuring their compatibility with imaging applications. Moreover, image segmentation reveals that stability is maintained even across varying intensity levels.



Low S/N ratio imaging with speckle noise using conventional laser (left), clear imaging with reduced speckle noise using TLS (right)



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TLS-RED

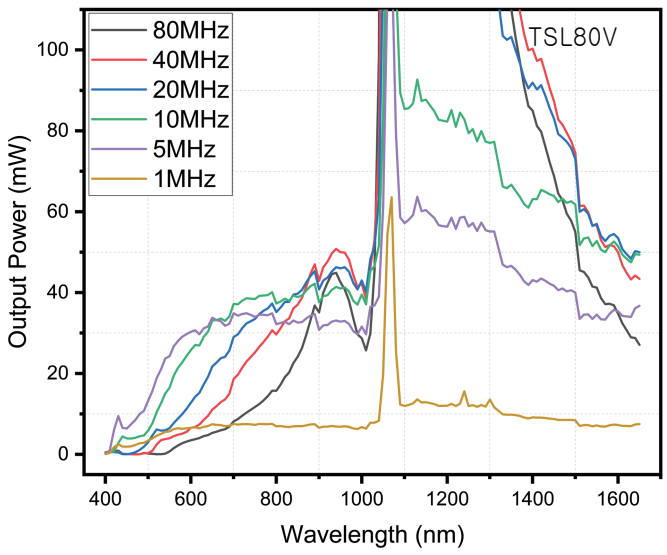
Each TLS-Red model can cover different spectral ranges from 410 to 1700 nm. The FWHM bandwidth of TLS-Red is tunable from 2 to 15 nm (nominal). The exact tunable bandwidth depends on the wavelength range. Users can select laser types and variable wavelength ranges according to the user's applications. Please refer to the detailed specifications table below.

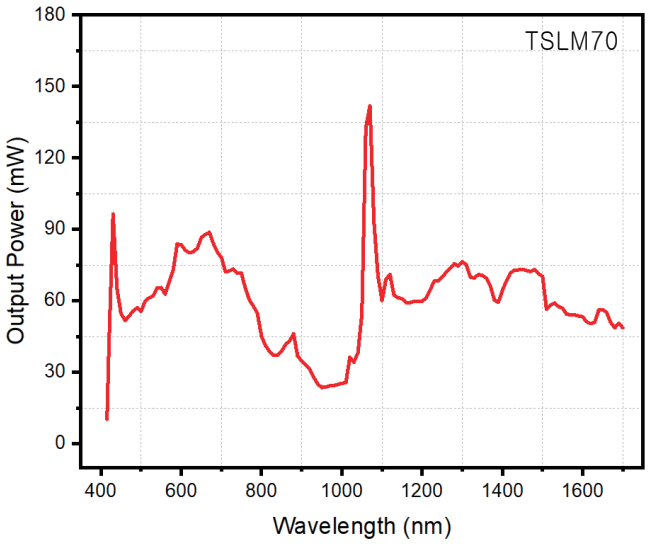
General Specifications

Tunable Laser System (*TLS-RED*) : Each TLS has VIS, IR, SWIR and Custom wavelength selection

Model	Supercontinuum output power		Repetition Rate	Output pulse width (ps)	Tuning Range (nm)	Bandwidth (FWHM) (nm)
	Visible	Total				
TSL10-RED	100 mW	1 W	5 MHz	< 300 ps	450 - 1700 nm	2 - 15 nm (nominal)
TSLM10-RED	250 mW	1 W	10 MHz	< 50 ps	410 - 1700 nm	
TSLM20-RED	500 mW	2 W	20 MHz	< 50 ps	410 - 1700 nm	
TSLM40-RED	1 W	4 W	40 MHz	< 50 ps	410 - 1700 nm	
TSLM35V-RED	1 W	3.5 W	0.01 to 40 MHz	< 50 ps	410 - 1700 nm	
TSL80V-RED	1 W	8 W	0.01 to 200 MHz	< 300 ps	430 - 1700 nm	
TSLM70-RED	2 W	7 W	80 MHz	< 50 ps	410 - 1700 nm	

Output power of TLS





** Measured at 15 nm bandwidth (FWHM)*

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Detailed Specifications

Model	Laser Specifications	Optical Specifications
TSL10-RED-VIS	Wavelength : 450 - 2400 nm Output power : 1 W VIS power : 0.1 W Repetition rate : 5 MHz	Tunable CWL : 450 - 790 nm FWHM : 2 - 15 nm (450 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSL10-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSL10-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSL10-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 450 - 1700 nm)
TSLM10-RED-VIS	Wavelength : 410 - 2400 nm Output power : 1 W VIS power : 0.25 W Repetition rate : 10 MHz	Tunable CWL : 410 - 790 nm FWHM : 2 - 15 nm (410 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSLM10-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSLM10-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSLM10-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm)
TSLM20-RED-VIS	Wavelength : 410 - 2400 nm Output power : 2 W VIS power : 0.5 W Repetition rate : 20 MHz	Tunable CWL : 410 - 790 nm FWHM : 2 - 15 nm (410 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSLM20-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSLM20-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSLM20-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 430 - 1700 nm)
TSLM40-RED-VIS	Wavelength : 410 - 2400 nm Output power : 4 W VIS power : 1 W Repetition rate : 40 MHz	Tunable CWL : 410 - 790 nm FWHM : 2 - 15 nm (410 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSLM40-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSLM40-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSLM40-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm)
TSLM35V-RED-VIS	Wavelength : 410 - 2400 nm Output power : 3.5 W VIS power : 1 W Repetition rate : 0.01 - 40 MHz adjustable	Tunable CWL : 410 - 790 nm FWHM : 2 - 15 nm (410 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSLM35V-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSLM35V-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSLM35V-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm)
TSL80V-RED-VIS	Wavelength : 430 - 2400 nm Output power : 8 W VIS power : 1 W Repetition rate : 0.01 - 200 MHz adjustable	Tunable CWL : 430 - 790 nm FWHM : 2 - 15 nm (430 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSL80V-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSL80V-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSL80V-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 430 - 1700 nm)
TSLM70-RED-VIS	Wavelength : 410 - 2400 nm Output power : 7 W VIS power : 2 W Repetition rate : 80 MHz	Tunable CWL : 410 - 790 nm FWHM : 2 - 15 nm (410 - 700 nm), 3 - 15 nm (701 - 790 nm)
TSLM70-RED-IR		Tunable CWL : 775 - 1150 nm FWHM : 3 - 15 nm (775 - 890 nm), 5 - 15 nm (891 - 1150 nm)
TSLM70-RED-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 5 - 15 nm (1140 - 1500 nm), 7 - 13 nm (1501 - 1700 nm)
TSLM70-RED-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm)

For the Custom models, users can select a supercontinuum laser model and variable wavelength ranges according to the user's applications. Please refer to the table below for supercontinuum laser models and wavelength ranges. For example, if the user selects the supercontinuum laser model as SL10 and the wavelength range of 690 – 1310 nm, then the model name of the TLS will be TSL10-RED-Custom (690 -1310 nm).

The supercontinuum laser model table

SL-Pico: Supercontinuum laser

Model	*Supercontinuum output power*		*Repetition Rate*	*Output pulse width (ps)*	*Spectral Range (nm)*
	Visible	*Total*			
SL10	100 mW	1 W	5 MHz	< 300 ps	450 - 2400 nm
SLM10	250 mW	1 W	10 MHz	< 50 ps	410 - 2400 nm
SLM20	500 mW	2 W	20 MHz	< 50 ps	410 - 2400 nm
SLM40	1 W	4 W	40 MHz	< 50 ps	410 - 2400 nm
SLM35V	1 W	3.5 W	0.01 to 40 MHz	< 50 ps	410 - 2400 nm
SL80V	1 W	8 W	0.01 to 200 MHz	< 300 ps	430 - 2400 nm
SLM70	2 W	7 W	80 MHz	< 50 ps	410 - 2400 nm

Wavelength range table

User specified custom wavelength range selectable from 410 - 1700 nm (nominal)

FWHM	2-15					3-15		5-15				7-13
CWL	410 - 435	430 - 490	485 - 550	545 - 620	615 - 700	690 - 790	775 - 890	880 - 1015	1000 - 1150	1140 - 1310	1300 - 1500	1475 - 1700

TLS-RED (Tunable bandwidth)

TLS-BLUE

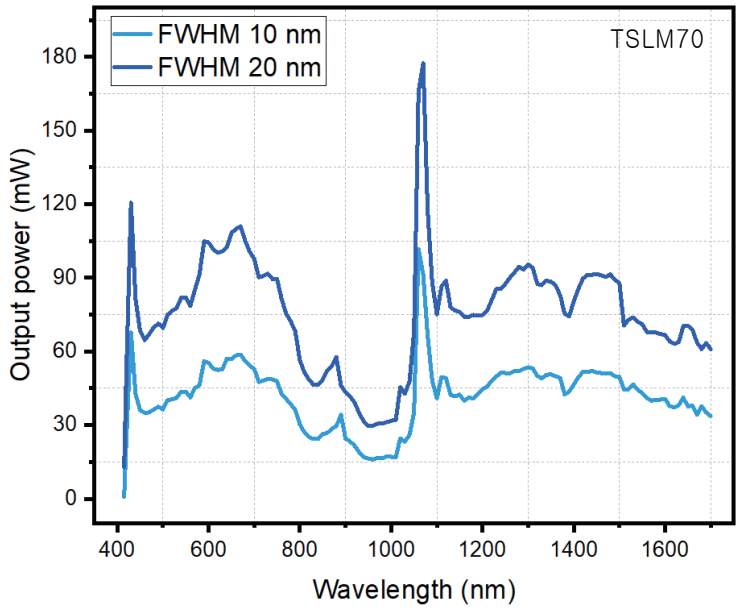
Each TLS-Red model can cover different spectral ranges from 410 to 1700 nm. The FWHM bandwidth of TLS blue is fixed at either 10 or 20 nm (nominal). Users can select laser types and variable wavelength ranges according to the user's applications.
Please refer to the detailed specifications table below.

General Specifications

Tunable Laser System (*TLS-BLUE*) : Each TLS has VIS, IR, SWIR and Custom wavelength selection

Model	Supercontinuum output power		Repetition Rate	Output pulse width (ps)	Tuning Range (nm)	Bandwidth (FWHM) (nm)
	Visible	Total				
TSL10-BLUE	100 mW	1 W	5 MHz	< 300 ps	450 - 1700 nm	10 or 20 nm fixed (nominal)
TSLM10-BLUE	250 mW	1 W	10 MHz	< 50 ps	410 - 1700 nm	
TSLM20-BLUE	500 mW	2 W	20 MHz	< 50 ps	410 - 1700 nm	
TSLM40-BLUE	1 W	4 W	40 MHz	< 50 ps	410 - 1700 nm	
TSLM35V-BLUE	1 W	3.5 W	0.01 to 40 MHz	< 50 ps	410 - 1700 nm	
TSL80V-BLUE	1 W	8 W	0.01 to 200 MHz	< 300 ps	430 - 1700 nm	
TSLM70-BLUE	2 W	7 W	80 MHz	< 50 ps	410 - 1700 nm	

Output power of TLS



Light Done Right!

Detailed Specifications

Model	Laser Specifications	Optical Specifications
TSL10-BLUE-VIS	Wavelength : 450 - 2400 nm Output power : 1 W VIS power : 0.1 W Repetition rate : 5 MHz	Tunable CWL : 450 - 790 nm FWHM : 10 or 20 nm (fixed)
TSL10-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSL10-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSL10-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 450 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSLM10-BLUE-VIS	Wavelength : 410 - 2400 nm Output power : 1 W VIS power : 0.25 W Repetition rate : 10 MHz	Tunable CWL : 410 - 790 nm FWHM : 10 or 20 nm (fixed)
TSLM10-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSLM10-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSLM10-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSLM20-BLUE-VIS	Wavelength : 410 - 2400 nm Output power : 2 W VIS power : 0.5 W Repetition rate : 20 MHz	Tunable CWL : 410 - 790 nm FWHM : 10 or 20 nm (fixed)
TSLM20-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSLM20-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSLM20-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 430 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSLM40-BLUE-VIS	Wavelength : 410 - 2400 nm Output power : 4 W VIS power : 1 W Repetition rate : 40 MHz	Tunable CWL : 410 - 790 nm FWHM : 10 or 20 nm (fixed)
TSLM40-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSLM40-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSLM40-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSLM35V-BLUE-VIS	Wavelength : 410 - 2400 nm Output power : 3.5 W VIS power : 1 W Repetition rate : 0.01 - 40 MHz adjustable	Tunable CWL : 410 - 790 nm FWHM : 10 or 20 nm (fixed)
TSLM35V-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSLM35V-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSLM35V-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSL80V-BLUE-VIS	Wavelength : 430 - 2400 nm Output power : 8 W VIS power : 1 W Repetition rate : 0.01 - 200 MHz adjustable	Tunable CWL : 430 - 790 nm FWHM : 10 or 20 nm (fixed)
TSL80V-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSL80V-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSL80V-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 430 - 1700 nm) (FWHM : 10 or 20 nm (fixed))
TSLM70-BLUE-VIS	Wavelength : 410 - 2400 nm Output power : 7 W VIS power : 2 W Repetition rate : 80 MHz	Tunable CWL : 410 - 790 nm FWHM : 10 or 20 nm (fixed)
TSLM70-BLUE-IR		Tunable CWL : 775 - 1150 nm FWHM : 10 or 20 nm (fixed)
TSLM70-BLUE-SWIR		Tunable CWL : 1140 - 1700 nm FWHM : 10 or 20 nm (fixed)
TSLM70-BLUE-Custom		USER SPECIFIED CUSTOM RANGE (Range selectable from 410 - 1700 nm) (FWHM : 10 or 20 nm (fixed))

For the Custom models, users can select a supercontinuum laser model and variable wavelength ranges according to the user's applications. Please refer to the table below for supercontinuum laser models and wavelength ranges. For example, if the user selects the supercontinuum laser model as SL10 and the wavelength range of 690 – 1310 nm, then the model name of the TLS will be TSL10-BLUE-Custom (690 -1310 nm).

The supercontinuum laser model table

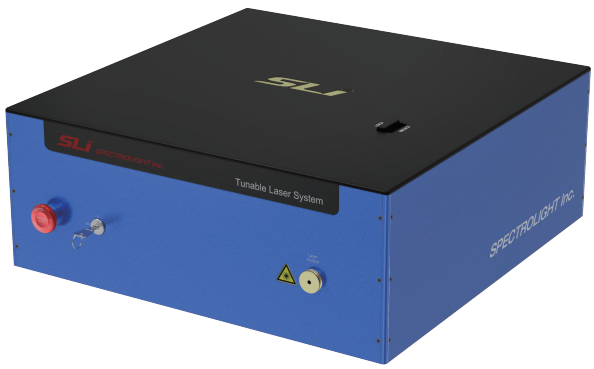
SL-Pico: Supercontinuum laser

Model	Supercontinuum output power		Repetition Rate	Output pulse width (ps)	Spectral Range (nm)
	Visible	Total			
SL10	100 mW	1 W	5 MHz	< 300 ps	450 - 2400 nm
SLM10	250 mW	1 W	10 MHz	< 50 ps	410 - 2400 nm
SLM20	500 mW	2 W	20 MHz	< 50 ps	410 - 2400 nm
SLM40	1 W	4 W	40 MHz	< 50 ps	410 - 2400 nm
SLM35V	1 W	3.5 W	0.01 to 40 MHz	< 50 ps	410 - 2400 nm
SL80V	1 W	8 W	0.01 to 200 MHz	< 300 ps	430 - 2400 nm
SLM70	2 W	7 W	80 MHz	< 50 ps	410 - 2400 nm

Wavelength range table

User specified custom wavelength range selectable from 410 - 1700 nm (nominal)

FWHM	Fixed 10 or 20 (nominal)											
CWL	410 - 435	430 - 490	485 - 550	545 - 620	615 - 700	690 - 790	775 - 890	880 - 1015	1000 - 1150	1140 - 1310	1300 - 1500	1475 - 1700



TLS-BLUE (Fixed bandwidth)

Light Done Right!

Full Specifications

		TSL10-RED	TSLM10-RED	TSLM20-RED	TSLM40-RED	TSLM35V-RED	TSL80V-RED	TSLM70-RED
Output Power	Visible	100 mW	250 mW	500 mW	1 W	1 W	1 W	2 W
	Total	1 W	1 W	2 W	4 W	3.5 W	8 W	7 W
Repetition Rate		5 MHz	10 MHz	20 MHz	40 MHz	0.01 to 40 MHz adjustable	0.01 to 200 MHz adjustable	80 MHz
Output pulse width		< 300 ps	< 50 ps	< 50 ps	< 50 ps	< 50 ps	< 300 ps	< 50 ps
Tuning range		450 - 1700 nm	410 - 1700 nm	410 - 1700 nm	410 - 1700 nm	410 - 1700 nm	430 - 1700 nm	410 - 1700 nm
FWHM range		2 - 15 nm (nominal)						
Power stability		< 1 %						
Sync(trigger) Output		NIM Output 0 - (-1) V, TTL Output 0 - 3.3 V						
Beam diameter and quality		~ 2 mm@633 nm; M2<1.1						
Beam divergence (half angle)		< 1 mrad						
State of polarization		Unpolarized						
Length of output fiber		1.5 m						
Software		TLS ver.2						
Dimension (L x W x H, mm)		584.3 x 583.6 x 246						
Input power		AC 100 - 240 V, 50/60 Hz						
Data interface		USB 2.0						

		TSL10-BLUE	TSLM10-BLUE	TSLM20-BLUE	TSLM40-BLUE	TSLM35V-BLUE	TSL80V-BLUE	TSLM70-BLUE
Output Power	Visible	100 mW	250 mW	500 mW	1 W	1 W	1 W	2 W
	Total	1 W	1 W	2 W	4 W	3.5 W	8 W	7 W
Repetition Rate		5 MHz	10 MHz	20 MHz	40 MHz	0.01 to 40 MHz adjustable	0.01 to 200 MHz adjustable	80 MHz
Output pulse width		< 300 ps	< 50 ps	< 50 ps	< 50 ps	< 50 ps	< 300 ps	< 50 ps
Tuning range		450 - 1700 nm	410 - 1700 nm	410 - 1700 nm	410 - 1700 nm	410 - 1700 nm	430 - 1700 nm	410 - 1700 nm
FWHM range		10 or 20 nm (fixed) (nominal)						
Power stability		< 1 %						
Sync(trigger) Output		NIM Output 0 - (-1) V, TTL Output 0 - 3.3 V						
Beam diameter and quality		~ 2 mm@633 nm; M2<1.1						
Beam divergence (half angle)		< 1 mrad						
State of polarization		Unpolarized						
Length of output fiber		1.5 m						
Software		TLS ver.2						
Dimension (L x W x H, mm)		584.3 x 583.6 x 246						
Input power		AC 100 - 240 V, 50/60 Hz						
Data interface		USB 2.0						

TUNABLE LIGHT SOURCES

- Award Winning Tunable Light Source
- Wide and Precise Spectral Wavelength Selection
- Wide Applications in both Scientific and Industrial fields

www.spectrolightinc.com

Tunable Mighty Light (TML)

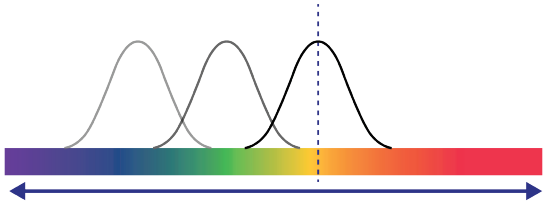
Fully tunable high power light source

Tunable Mighty Light (TML) is an innovative tunable light source that delivers a wide tunable spectral range of 430 - 700 nm. TML combines a powerful broadband light source, together with Spectrolight's very own tunable bandpass filter within a compact automatic device to provide effortless tuning of light.

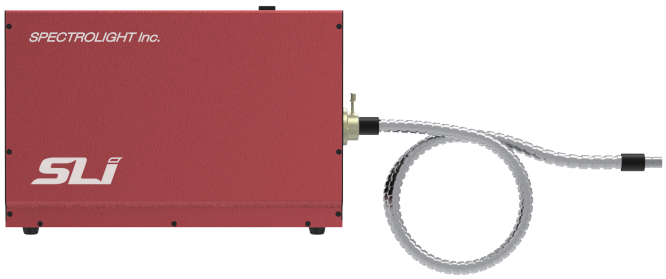
TML-LED Specifications

- High power collimated white light source
- Tunable spectral wavelength : 430 - 700 nm
- FWHM : < 30 nm
- Color temperature : 7500 K
- Lamp power consumption : 300 W
- LED lifetime : ~ 50,000 hours
- Dimensions : 374 x 292 x 243 mm
- Power control : Software control (0 - 100 %)
- Electrical requirements : AC 100 - 240 V, 50/60 Hz

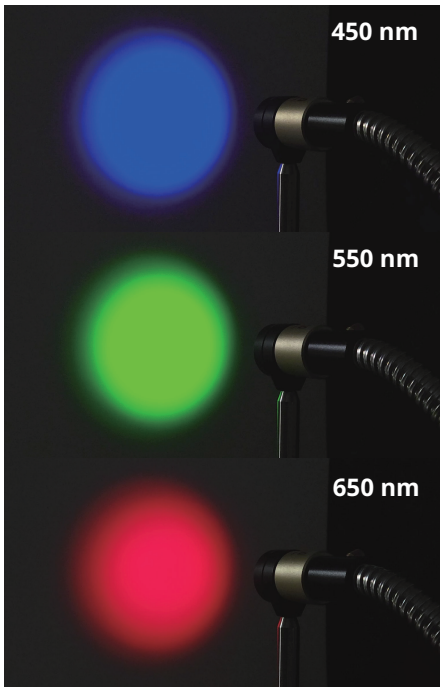
U.S Patent No. 18/158,861



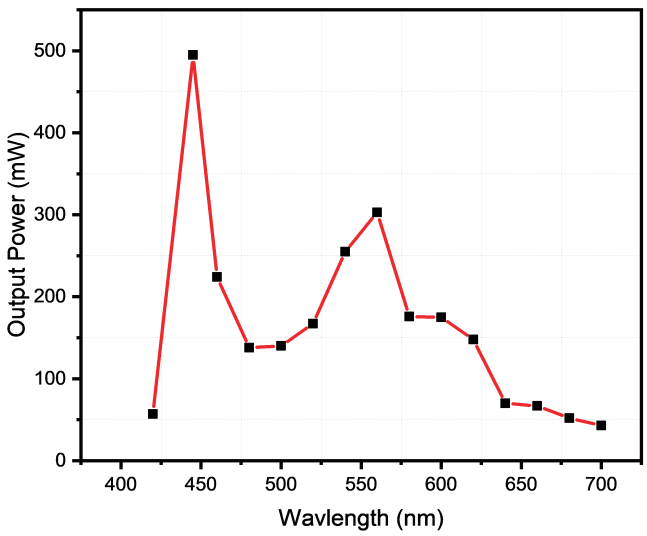
Tunable Spectral Range Coverage
430 - 700 nm



** Fiber bundle included with light source*



TML Output results in the visible range



Output power of TML

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LIGHT SOURCES

- Powerful and Compact Broadband Light Sources
- Pico-second Pulsed Supercontinuum Lasers / Tungsten-Halogen / Plasma / LED
- For the Most Advanced Illumination Applications

(Microscopy, Spectroscopy, Machine Vision and Spectral Imaging applications)

www.spectrolightinc.com

Mighty Light – Tungsten Halogen (ML-TH)

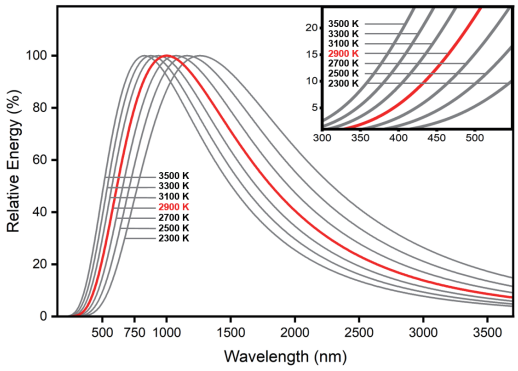
A compact source of low-noise white light with versatile output modules

ML-TH integrates a Tungsten Halogen bulb and power supply with a control board that delivers uniquely low-noise output. By applying a series of pre-aligned bolt-on accessories, ML-TH can be directly coupled into a microscope and fiber bundle with its light beam homogenized and collimated. ML-TH can also be integrated with our unique Wavelength Selector devices to create a tunable monochromatic beam.

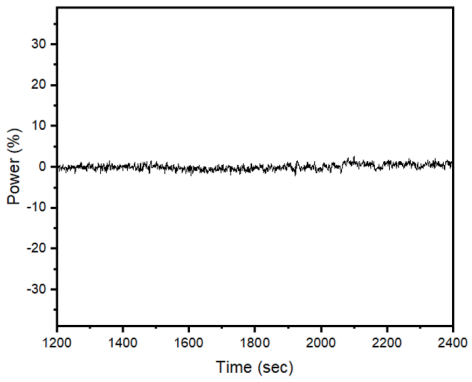
Specifications

- Type of lamp : Tungsten Halogen
- Spectral wavelength : 350 - 2500 nm
- Lamp power consumption : 12 W
- Power stability : < 0.5 %
- Bulb lifetime : ~ 300 hours
- Color temperature : 2,900 K
- Dimensions : 125 x 75 x 70 mm
- Power supply : DC 9 V at 2 A
- Electric requirement : AC 100 - 240 V, 50/60 Hz

Features



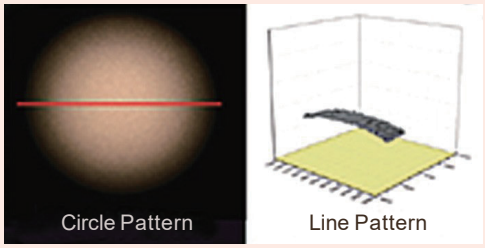
Broad output spectrum



Low power fluctuation (High stability) : < 0.5 %

Collimated light

Collimated | Collimated (magnified)



Uniform intensity when collimated

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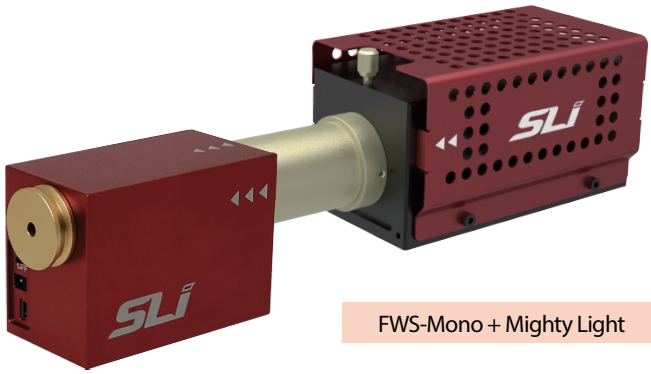
Mighty Light – Tungsten Halogen (ML-TH)

Application

Broadband tunable light source



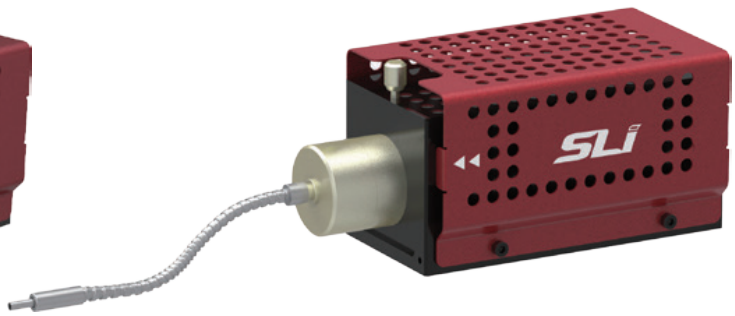
FWS-Mono + Mighty Light

- Applicable to Flexible Wavelength Selector
- Creates a tunable monochromatic beam
- Homogenizes and collimates emitted light beam

Free space

Collimator adaptor

Fiber coupling



Fiber adaptor

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www.spectrolightinc.com

Mighty Light PLUS – Tungsten Halogen (MLP-TH)

A powerful source of low-noise white light with versatile output modules

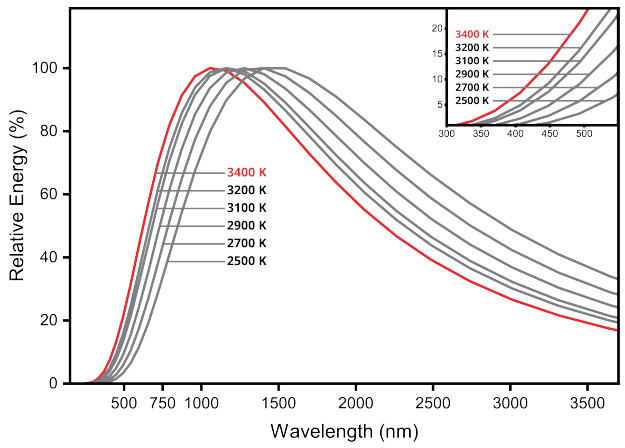
The Mighty Light PLUS (MLP) is a broadband light source that provides 10X higher spatial brightness than competitive sources: delivering up to 7 W of collimated output from a 10 mm diameter flexible light guide. Useful output spans 300 to 2500 nm and the low-noise output power is smoothly adjustable from 0 - 100 %. Applications include microscopy, white light interferometry, machine vision, and precision inspection.

Specifications

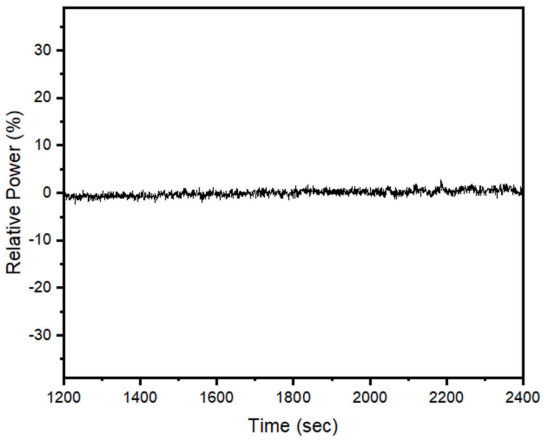
- Type of lamp : Tungsten Halogen
- Spectral wavelength : 300 - 2500 nm
- Lamp power consumption : 250 W
- Power stability : < 0.7 %
- Bulb lifetime : ~ 500 hours
- Color temperature : 3,400 K
- Dimensions : 340 x 160 x 140 mm
- Power control knob : 0 - 100 %
- Electrical requirements : AC 100 - 240 V, 50/60 Hz

** Fiber bundle included with light source*

Feature



Broad output spectrum



Low power fluctuation (High stability) : < 0.7 %

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www.spectrolightinc.com

SL-Pico : Pico-second Supercontinuum Laser

Powerful pico-second pulsed laser source with precision software controls

SL-Pico is pico-second supercontinuum lasers and designed to meet the diverse and dynamic needs of cutting-edge research and industrial applications. This supercontinuum white light lasers is highly regarded for wide wavelength range and cost-effectiveness.

SL-Pico offers a spectral range from 410 to 2400 nm, has high power, is very stable, and capable of delivering power up to 20 W. The SL-Pico's SL series shows relatively high power in the SWIR region. The SL-Pico's SLM series is a mode-locked fiber laser with a fixed repetition rate and stable and uniform power spectrum in visible range, and the SL-Pico's SLMV series has a tunable repetition rate in MHz, ensuring compatibility with a wide range of devices. Integrating a tunable bandpass filter such as FWS poly improves the laser's versatility, enabling tunable broadband laser output. This capability is important for a variety of applications, including fluorescence microscopy, TCSPC, hyperspectral imaging, machine vision, semiconductor inspection, sensor development, and more.

Wide broadband spectral range

SL-Pico Model

Model	Supercontinuum output power		Repetition Rate	Output pulse width (ps)	Spectral Range (nm)
	Visible	Total			
SL10	100 mW	1 W	5 MHz	< 300 ps	450 - 2400 nm
SLM10	250 mW	1 W	10 MHz	< 50 ps	410 - 2400 nm
SLM20	500 mW	2 W	20 MHz	< 50 ps	410 - 2400 nm
SLM40	1 W	4 W	40 MHz	< 50 ps	410 - 2400 nm
SLM35V	1 W	3.5 W	0.01 to 40 MHz	< 50 ps	410 - 2400 nm
SL80V	1 W	8 W	0.01 to 200 MHz	< 300 ps	430 - 2400 nm
SLM70	2 W	7 W	80 MHz	< 50 ps	410 - 2400 nm

* SL-Pico model name meaning
(Example: SLM35V)

- V stands for adjustable repetition rate adjustable
- Total output power : 35 means 3.5 W
- Notify if it is Modelock version

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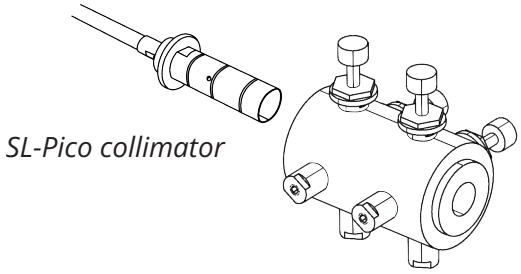
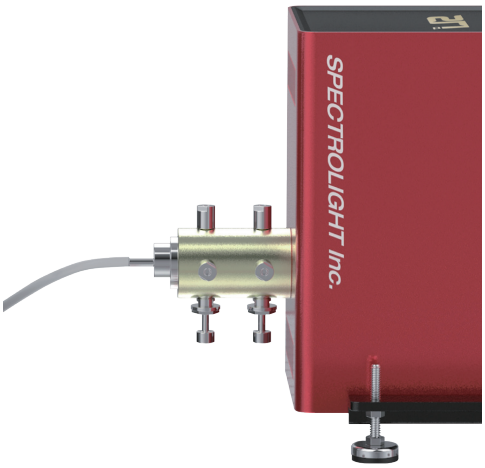
Supercontinuum Laser – SL-Pico

The SL-Pico can be applied to various applications requiring high power and repetition rates, such as low-noise OCT, fluorescence microscopy, nanophotonics, semiconductor inspection, ultra-high-resolution imaging capabilities, and other applications.



SL-Pico collimator

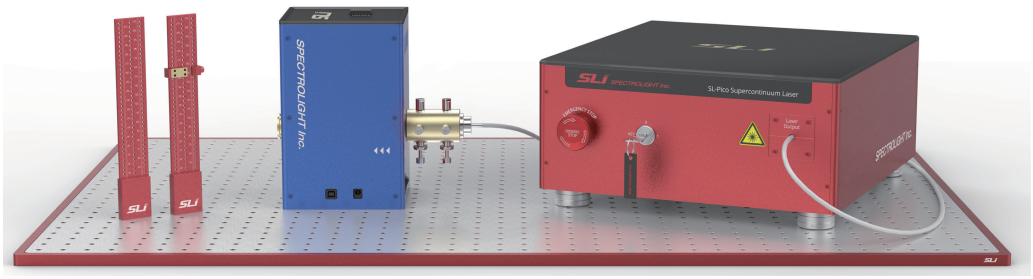
WS-SCAY



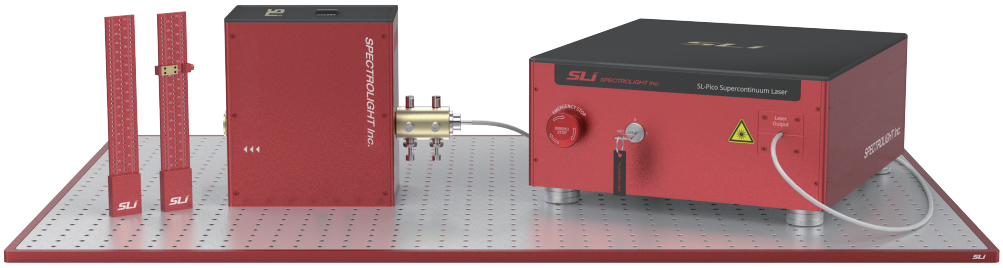
- Powerful Supercontinuum Laser Source
- Easy connection and alignment using the WS-SCAY accessory.
- Fully compatible with the Flexible Wavelength Selector.

Application Idea

*Adding our FWS(Flexible Wavelength Selector) result in a tunable laser source.



Tunable Laser using FWS-Poly-BLUE(Fixed FWHM 10 or 20 nm)



Tunable Laser using FWS-Poly-RED(Adjustable FWHM 2 -15 nm)

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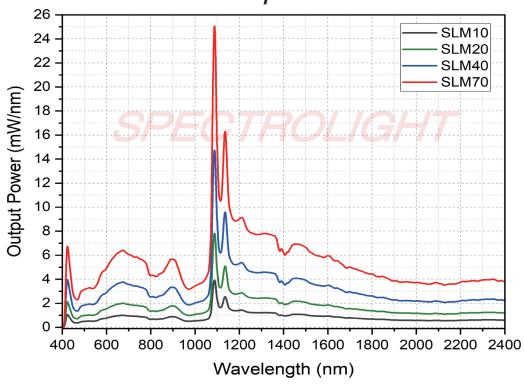
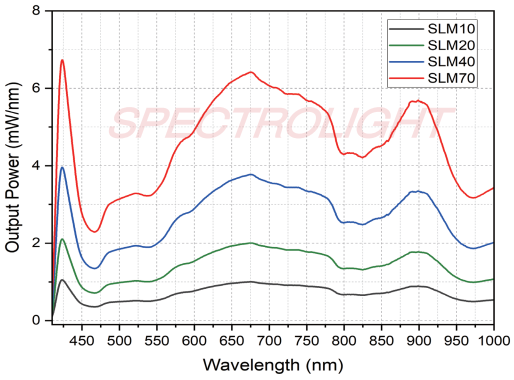
Typical Output Power Spectrum of SL-Pico

SLM Series

Full spectrum

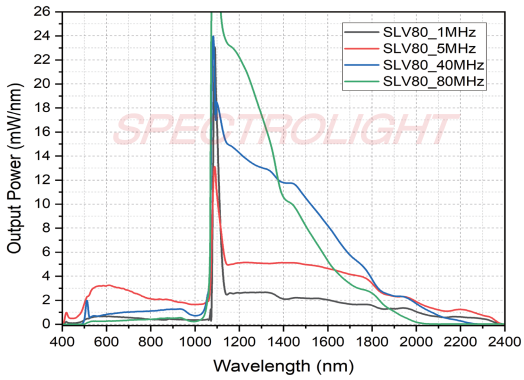


400 -1000 nm

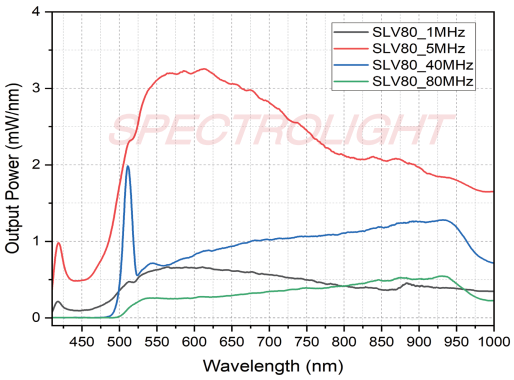


SLV Series

Full spectrum



400 -1000 nm



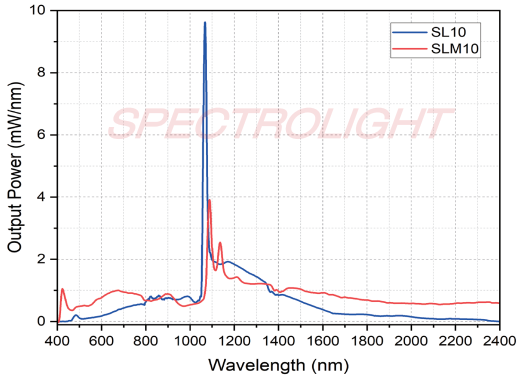
* SL-Pico has a modelocked version. The spectral shape of the SLM modelock model group is relatively stable. Adjustable repetition rate products are also available in the SLM series. (Example: SLM35V)

[SLV80]

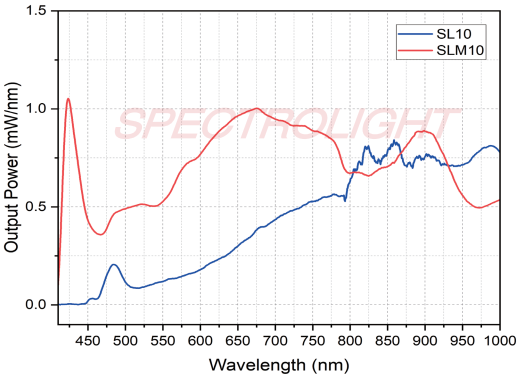
If you need high visible light power, 5 MHz and more than 70 % power would be suggested.
If you need high pulse energy, 1 MHz and more than 80 % power would be suggested.

SL10 vs. SLM10

Full spectrum



400 -1000 nm



Light Done Right!

Full Specifications

		SL10	SLM10	SLM20	SLM40	SLM35V	SL80V	SLM70
Output Power	**Visible**	100 mW	250 mW	500 mW	1 W	1 W	1 W	2 W
	Total	1 W	1 W	2 W	4 W	3.5 W	8 W	7 W
Repetition Rate		5 MHz	10 MHz	20 MHz	40 MHz	0.01 to 40 MHz adjustable	0.01 to 200 MHz adjustable	80 MHz
Output pulse width		< 300 ps	< 50 ps	< 50 ps	< 50 ps	< 50 ps	< 300 ps	< 50 ps
Spectral range		450 - 2400 nm	410 - 2400 nm	410 - 2400 nm	410 - 2400 nm	410 - 2400 nm	430 - 2400 nm	410 - 2400 nm
Power stability		< 1 %						
Sync(trigger) Output		NIM Output 0 - (-1) V, TTL Output 0 - 3.3 V						
Beam diameter and quality		~ 2 mm@633 nm; M2<1.1						
Beam divergence (half angle)		< 1 mrad						
State of polarization		Unpolarized						
Length of output fiber		1.5 m						
Software		SL-Pico Ver 1						
Dimension (L x W x H, mm)		340 x 370 x 150	437 x 423 x 170					
Weight (Kg)		15	18.4					
Input power		AC 100 - 240 V, 50/60 Hz						
Data interface		USB 2.0						

Laser-Driven Light Source (LDLS™)

EQ-99X-FC LDLS™

Energetiq's EQ-99X-FC LDLS is a high brightness fiber-coupled source with a broad wavelength range from UV to Visible and into the NIR region.
The unique principle of operation provides extremely bright, spatially and spectrally stable broadband radiation from 190 nm - 2500 nm with a lifetime greater than 10,000 hours.

Specifications

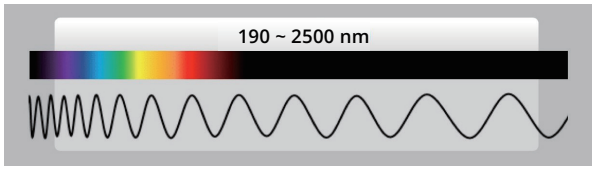
- Broadband optical power : 95 mW
  (Measured with thermopile : UVFIBERX-230 fiber optic cable)
- Spectral wavelength : 190 - 2500 nm
- Spectral radiance (at 500 nm) : 25 - 75 mW/mm².sr.nm
  (Different from the models)
- Plasma size (average FWHM) : 100 µm x 180 µm
- Numerical aperture (Output Fiber) : 0.22 NA
- Bulb lifetime : ~ 10,000 hours
- Laser class : Class 1 (IEC 60825-1: 2014)
- Power consumption : 100 - 240 V, 175 W, 50/60 Hz
- Dimension
  -Lamphead : 76 x 83 x 76 mm (0.7 kg)
  -Controller : 111 x 107 x 301 mm (1.4 kg)

EQ-99X-FC LDLS™

Fiber collimator

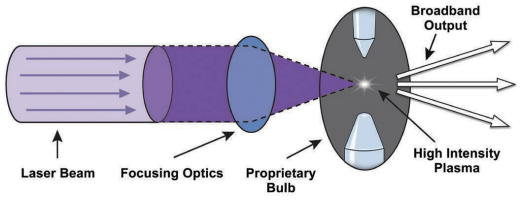
Broadband fiber

Features

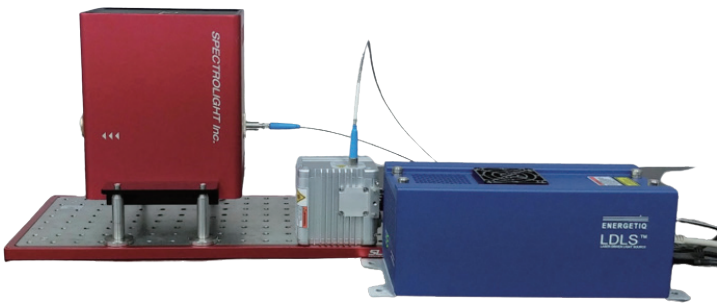


Wide broadband spectral range

With ENERGETIQ's LDLS and FWS-Poly, it is possible to generate a tunable light covering a wide spectral range, 255 - 1650 nm.



Small, high brightness broadband output



Application with FWS

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SPECTROMETERS

- State-of-the-art Performance in a Miniaturized Package
- Easy-to-use Functions by PC control
- Available to the Diverse Applications

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Spectrometers

A family of array-based spectrometers delivering computer controlled state-of-the-art–performance in a miniaturized package. These light-weight portable spectrometers are perfect for on-the-move applications.

SP245

SP642, SP642-NIR

SP303

SP304

Features

- Scientific-grade performance
- Low dark noise and stray light
- Flexible optical input: direct to slit or via fiber
- Optimum performance for a wide range of application
- High speed data acquisition
- Light-weight, portable, minaturized device

Full Specifications

		SP245	SP642	SP642-NIR	SP303	SP304
Wavelength Range		200 - 1050 nm	200 - 1050 nm	200 - 1200 nm	200 - 1050 nm	900 - 1700 nm
Sensor		Sony ILX511	Hamamatsu S10420-1106S (Non TE-Cooled Backthinned FFT CCD)	Hamamatsu S16010-1106 (Non TE-Cooled Backthinned FFT CCD)	Hamamatsu S7031-1006S (TE-Cooled Backthinned FFT)	Hamamatsu G3204-512
Detectors	No. of pixel	2048	2048 x 64	2048 x 64	1024 x 58	512
	Pixel Size	14 x 200 um	14 x 14 um	14 x 14 um	24 x 24 um	25 x 500 um
	Cooling	X	X	X	O, (-10°C one stage TE cooling)	O, (-20°C one stage TE cooling)
Dark Noise RMS*		< 35 RMS @35 ms	< 7 RMS @35 ms	< 7 RMS @ 35 ms	< 2 RMS @35 ms	< 6 RMS @100 ms**
Signal to Noise Ratio		> 250:1	> 450:1	> 450:1	> 1000:1	> 15,000:1 @100 ms
Optical Resolution		0.25 - 10 nm*	0.25 - 7 nm*	0.25 - 7 mm*	0.3 - 7 nm*	> 3 nm overall
Fiber Optic Connector		SMA905 or FC standard				
PC Interface		Windows XP/VISTA/Win7, 8.1, 10, 11 (32/64bit) SM32Pro & SMProMX (free with spectrometer) Includes DLL libraries and SDKs for easy custom application development				

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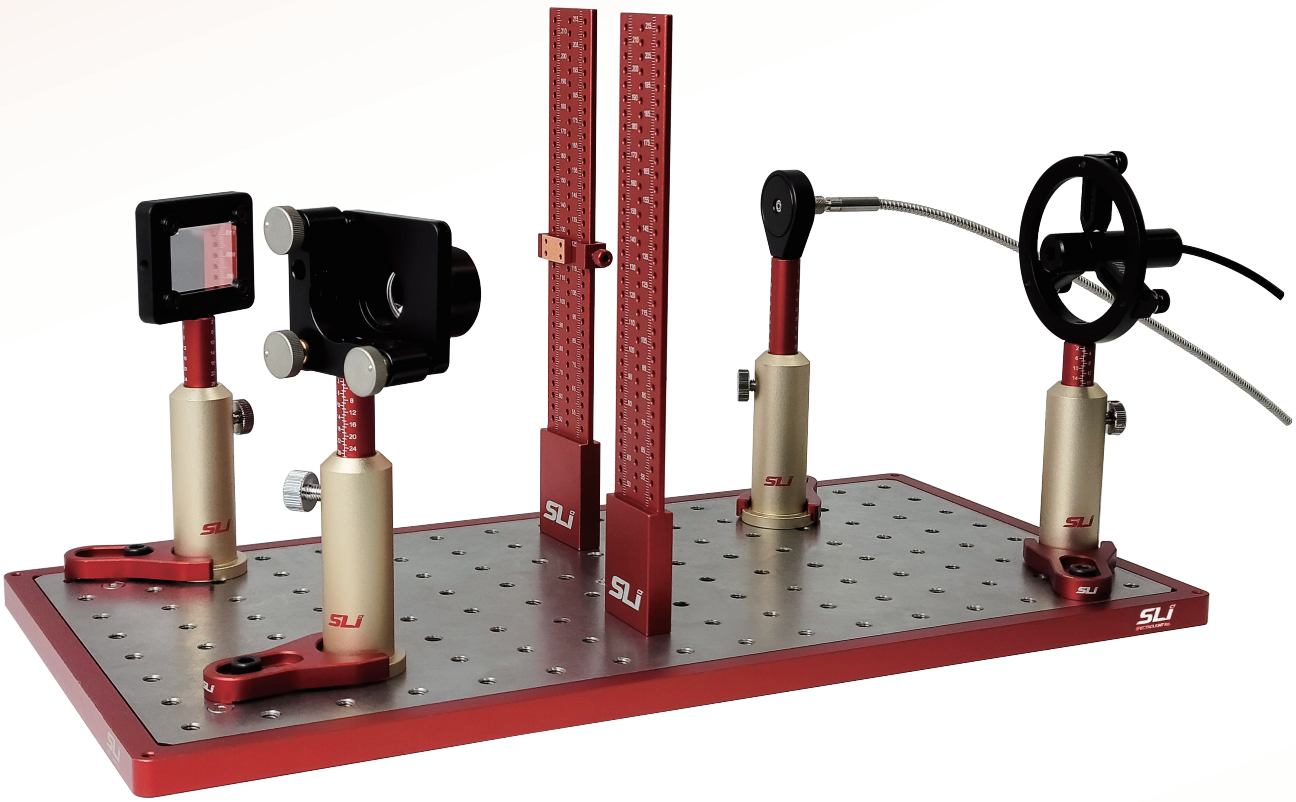
OPTICAL COMPONENTS



- Easy and Minute Light Alignment
- Precision Engraved Fiducials
- Lightweight and High Quality Stainless Board

Optomechanics - Light Aligner (LA)

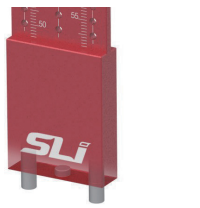
Compatible for both Metric and Imperial (inch) versions

The Light Aligner (LA) is an anodized metal ruler that can be temporarily and accurately placed on any optical table, breadboard, or metal surface. LA solves the common problem of the alignment of laser or light beams in an optomechanical system on a breadboard or optical table. This brings complete freedom in its placement or precise beam alignment regardless of the mounting hole pattern on a table or breadboard. Optional extensions double the maximum height. The IR Slider accessory enables alignment of the IR beam which is otherwise invisible to the naked eye.

Specifications

Type	Item Number	Detail
Basic	LA-I8-B	Imperial Aligner Basic, 8.6 inches, Two poles
	LA-M220-B	Metric Aligner Basic, 220 mm, Two poles
Center	LA-I8-C	Imperial Aligner Center, 8.6 inches, Center pole
	LA-M220-C	Metric Aligner Center, 220 mm, Center pole
Free	LA-I8-F	Imperial Aligner Free standing, 8.6 inches, No poles
	LA-M220-F	Metric Aligner Free standing, 220 mm, No poles
Extender	LA-I8-E	Imperial Aligner Extender, 7.5 inches
	LA-M220-E	Metric Aligner Extender, 193 mm
Slider	LA-IR-C	Bolt-on accessory for IR detection, 18 mm x 10 mm

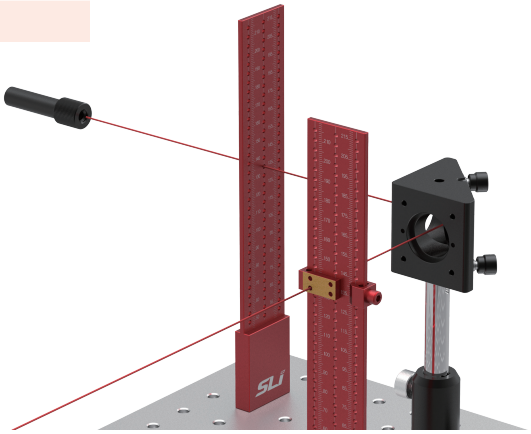
Features

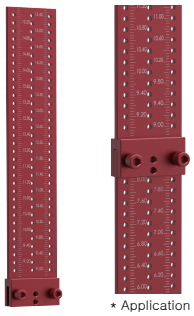


Basic
Centers between rows of holes

Center
Centers over row of holes

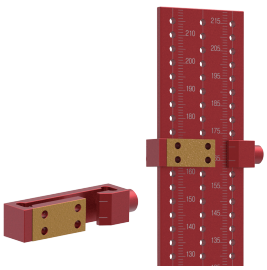
Free Standing
Positions any where





* Application example

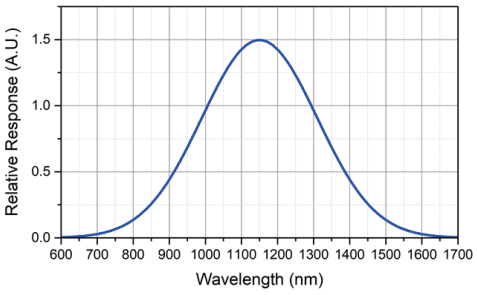
Extender
Extends length of Light Aligner



* Application example

IR Slider
Aligns infrared ray

** Relative response of IR Slider*



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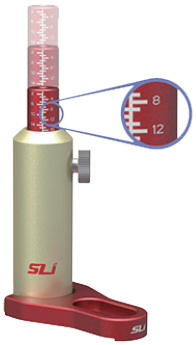
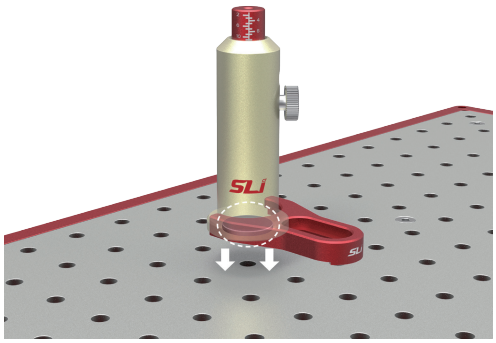
Optomechanics – Ruler Post

The Ruler Post is a simple solution to the frequent challenge of setting post mounted optics to a fixed/ common height above an optical table or breadboard. A clever locking clamp and magnetic base allows the Ruler Post to be securely located anywhere on the table surface.

Features



Precision engraved fiducials

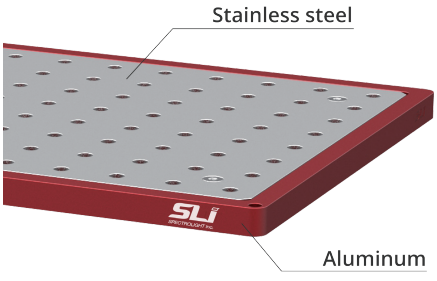


Magnetic base / Fork clamp

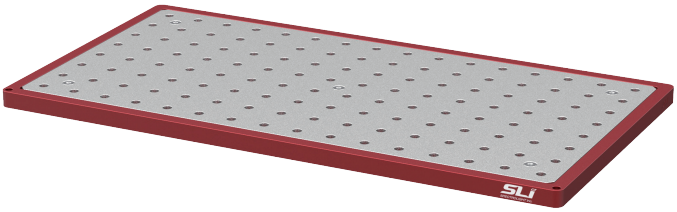
Optomechanics – Hybrid Board

The Hybrid Board is a thin, lightweight breadboard. Due to the aluminum base, it is suitable for optical assemblies, small sub-systems, and small optical experiments. The main work space is made of high quality stainless steel, allowing stable and precise application through magnetic accessories.

Features



High quality stainless steel for magnetic appliances



Light-weight aluminum base

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Optomechanics – Fibers

Our multimode fibers are durable and high-quality patch cords that consistently deliver uniform results with minimal signal and energy variance. These products offer a wide range of fiber-optic cables, which can be made in a variety of lengths and configurations to meet users' needs.

Features

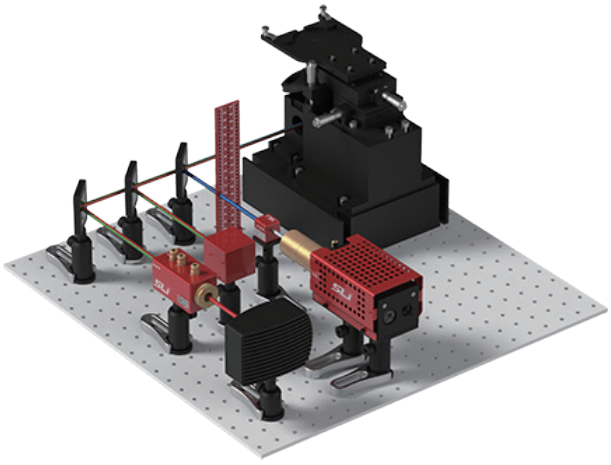
Durable and high-quality patch cords

SMA type connectors

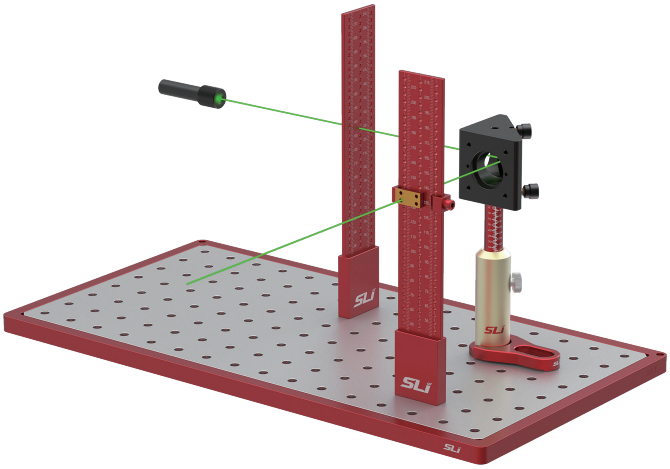
Optomechanics

Application

Modular optical microscopes



Infrared-ray light beam alignment



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