

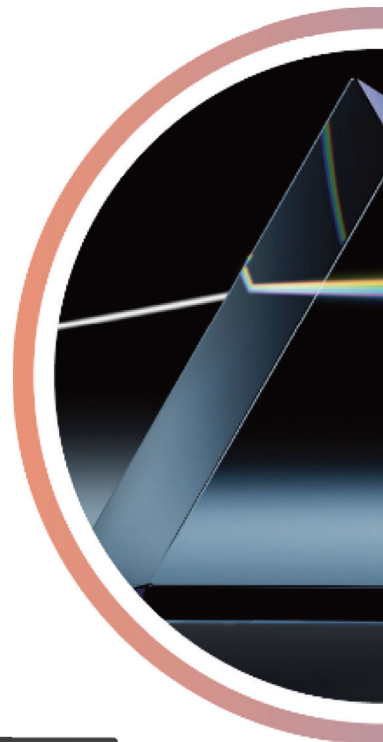




TUNABLE BANDPASS FILTERS

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

AWARD WINNING TECHNOLOGY



LIGHT SOURCES

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





TUNABLE LIGHT SOURCES

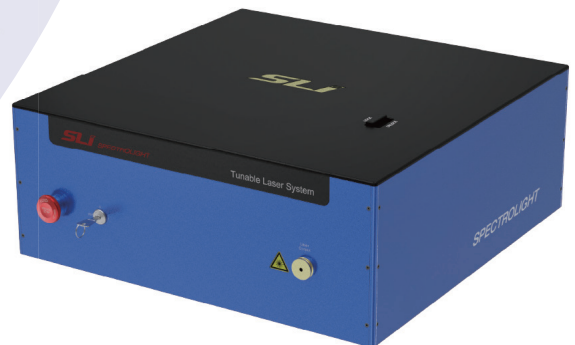
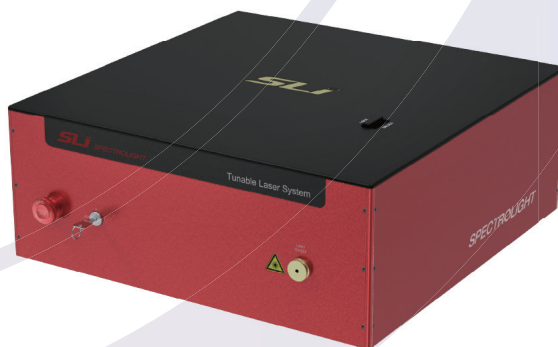
- Revolutionary Tunable Light Source
- Wide and Precise Spectral Wavelength Selection
- Versatile Applications in Scientific and Industrial fields

AWARD WINNING LIGHT SOURCE

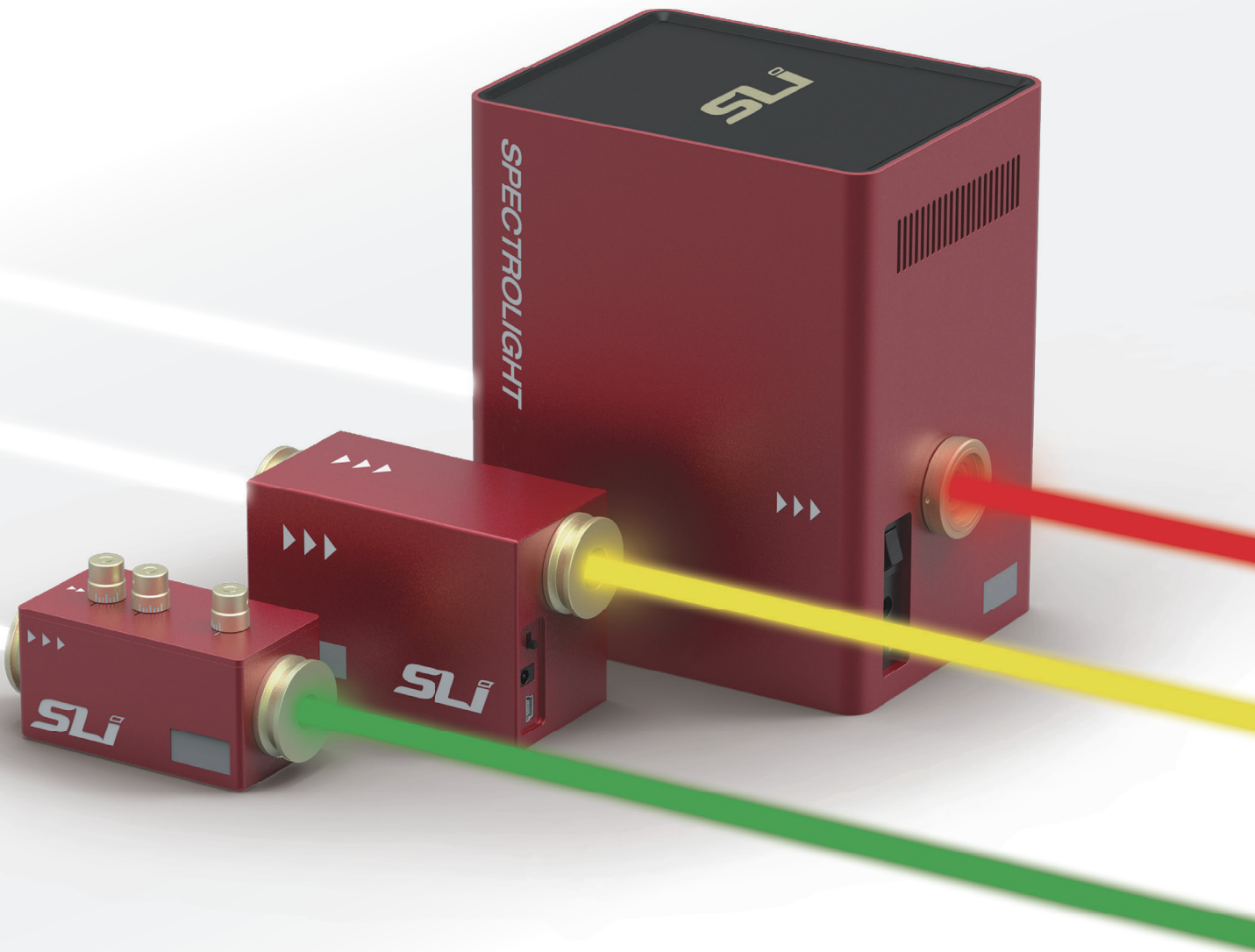


TUNABLE LASER SYSTEMS

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



TUNABLE BANDPASS FILTERS



- Wide wavelength tuning range from 255 to 1700 nm
- Suitable for both Excitation and Emission
- Compatible with all Broadband Light Sources
- Implementing the patented TwinFilm™ technology

www.spectrolightinc.com

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

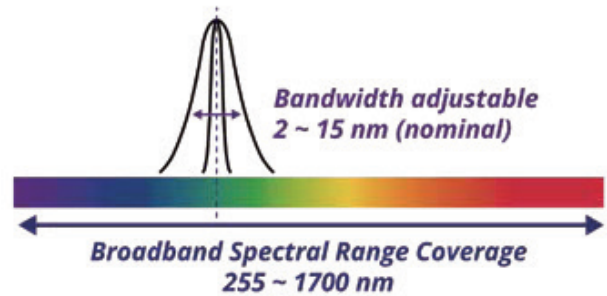
Flexible Wavelength Selector – Poly-RED



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															

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

* For optimal performance input light source must be collimated

| Detailed Models

Model	Optical Specifications
Poly-RED-UV-A5	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 2 - 15 Aperture size (mm) : 5
Poly-RED-VIS-A5	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 2 - 15(430 - 700 nm), 3 - 15(701 - 790 nm) Aperture size (mm) : 5
Poly-RED-IR-A5	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 3 - 15(775 - 890 nm), 5 - 15(891 - 1150 nm) Aperture size (mm) : 5
Poly-RED-SWIR-A5	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 5 - 15(1140 - 1500 nm), 7 - 13(1501 - 1700 nm) Aperture size (mm) : 5
Poly-RED-Custom-A5	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) Aperture size (mm) : 5
Poly-RED-UV-A10	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 2 - 15 Aperture size (mm) : 10
Poly-RED-VIS-A10	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 2 - 15(430 - 700 nm), 3 - 15(701 - 790 nm) Aperture size (mm) : 10
Poly-RED-IR-A10	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 3 - 15(775 - 890 nm), 5 - 15(891 - 1150 nm) Aperture size (mm) : 10
Poly-RED-SWIR-A10	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 5 - 15(1140 - 1500 nm), 7 - 13(1501 - 1700 nm) Aperture size (mm) : 10
Poly-RED-Custom-A10	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) Aperture size (mm) : 10

Full Specifications

	Poly-RED-A5	Poly-RED-A10
Spectral range (nm) ¹⁾	255 - 1700 nm	
Bandwidth(FWHM) (nm, nominal) ²⁾	Max : 3 - 15 nm / Min : 7 - 13 nm	
Aperture size (mm)	5 mm	10 mm
Out of band blocking ³⁾	OD 10 up to 1700 nm	
Step size of center wavelength & Bandwidth (nm)	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 (% , nominal) ⁴⁾	> 75 % (avg.)	
Scanning speed (ms) ⁵⁾	30 - 300 ms (depending on step size)	
Software	FWS-Auto ver 4.2	
Electrical requirement	AC 100 - 240 V, 50/60 Hz	
Power supply	DC 12 V, 5 A	
Data interface	USB 2.0	
Dimension (L x W x H, mm)	186 mm x 124 mm x 214 mm	
Weight (kg)	4.2 kg	

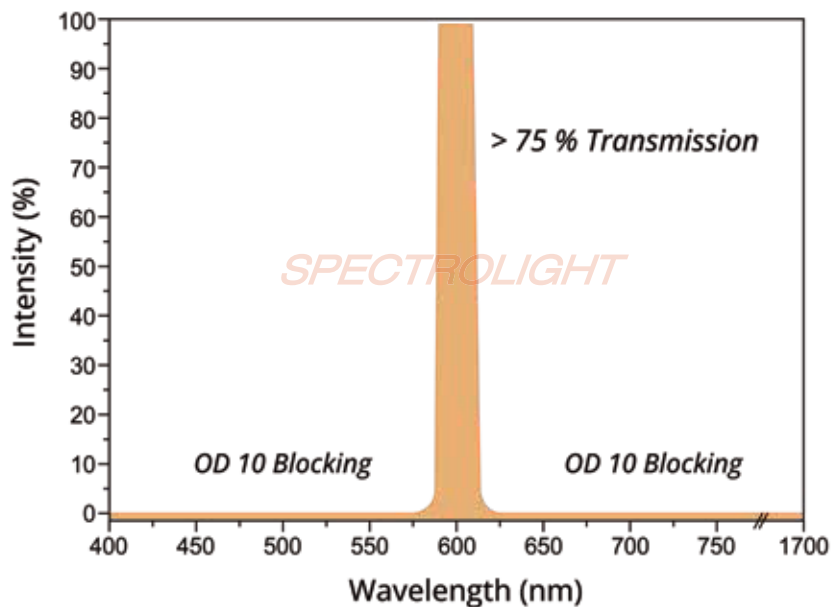
1) Specified center wavelength(CWL) tolerance for Poly-RED : ±1 nm.

2) Specified full width at half maximum(FWHM) tolerance: ±1 nm for Poly-RED.

3) OD 7 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

4) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

5) Scanning speed represents time required for a single wavelength-to-wavelength transition, depending on step size.



* Transmission may differ depending on specific wavelengths

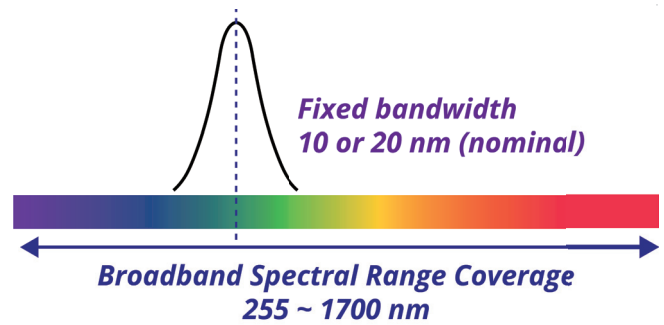


Flexible Wavelength Selector – Poly-BLUE

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															

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

* For optimal performance input light source must be collimated

| Detailed Models

Model	Optical Specifications
Poly-BLUE10-UV-A5	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 10 Aperture size (mm) : 5
Poly-BLUE10-VIS-A5	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 10 Aperture size (mm) : 5
Poly-BLUE10-IR-A5	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 10 Aperture size (mm) : 5
Poly-BLUE10-SWIR-A5	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 10 Aperture size (mm) : 5
Poly-BLUE10-Custom-A5	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) FWHM range (nm, nominal) : 10 Aperture size (mm) : 5
Poly-BLUE10-UV-A10	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 10 Aperture size (mm) : 10
Poly-BLUE10-VIS-A10	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 10 Aperture size (mm) : 10
Poly-BLUE10-IR-A10	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 10 Aperture size (mm) : 10
Poly-BLUE10-SWIR-A10	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 10 Aperture size (mm) : 10
Poly-BLUE10-Custom-A10	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) FWHM range (nm, nominal) : 10 Aperture size (mm) : 10

Detailed Models

Model	Optical Specifications
Poly-BLUE20-UV-A5	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 20 Aperture size (mm) : 5
Poly-BLUE20-VIS-A5	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 20 Aperture size (mm) : 5
Poly-BLUE20-IR-A5	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 20 Aperture size (mm) : 5
Poly-BLUE20-SWIR-A5	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 20 Aperture size (mm) : 5
Poly-BLUE20-Custom-A5	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) FWHM range (nm, nominal) : 20 Aperture size (mm) : 5
Poly-BLUE20-UV-A10	Spectral range (nm) : 280 - 390 FWHM range (nm, nominal) : 20 Aperture size (mm) : 10
Poly-BLUE20-VIS-A10	Spectral range (nm) : 430 - 790 FWHM range (nm, nominal) : 20 Aperture size (mm) : 10
Poly-BLUE20-IR-A10	Spectral range (nm) : 775 - 1150 FWHM range (nm, nominal) : 20 Aperture size (mm) : 10
Poly-BLUE20-SWIR-A10	Spectral range (nm) : 1140 - 1700 FWHM range (nm, nominal) : 20 Aperture size (mm) : 10
Poly-BLUE20-Custom-A10	USER SPECIFIED CUSTOM RANGE (Selectable wavelength range from 255 to 1700 nm) FWHM range (nm, nominal) : 20 Aperture size (mm) : 10

Full Specifications

	Poly-BLUE10-A5	Poly-BLUE10-A10	Poly-BLUE20-A5	Poly-BLUE20-A10
Spectral range (nm) ¹⁾	255 - 1700 nm			
Bandwidth(FWHM) (nm, nominal) ²⁾	10 nm		20 nm	
Aperture size (mm)	5 mm	10 mm	5 mm	10 mm
Out of band blocking ³⁾	OD 10 up to 1700 nm			
Step size of center wavelength & Bandwidth (nm)	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 (% , nominal) ⁴⁾	> 75 % (avg.)			
Scanning speed (ms) ⁵⁾	30 - 300 ms (depending on step size)			
Software	FWS-Auto ver 4.2			
Electrical requirement	AC 100 - 240 V, 50/60 Hz			
Power supply	DC 12 V, 5 A			
Data interface	USB 2.0			
Dimension (L x W x H, mm)	137 mm x 124 mm x 214 mm			
Weight (kg)	3.15 kg			

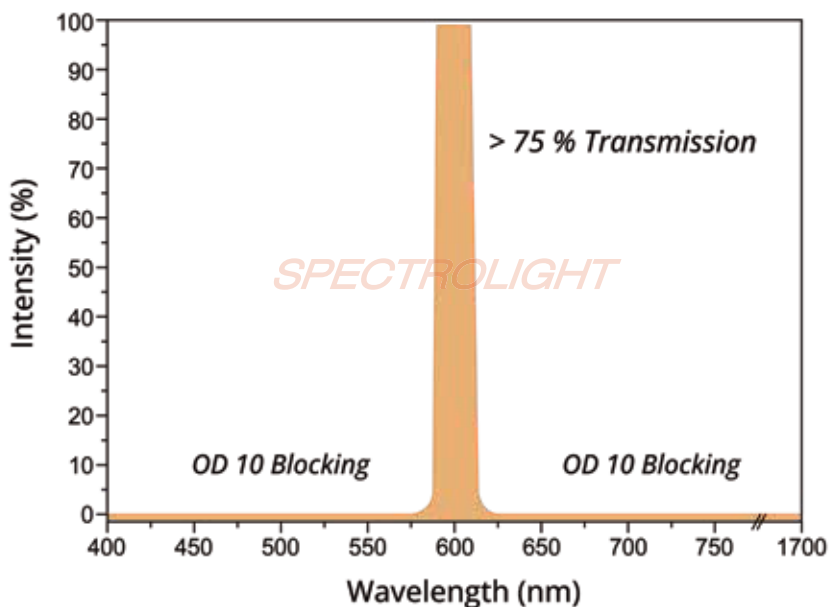
1) Specified center wavelength(CWL) tolerance for Poly-BLUE : ±1 nm.

2) Specified full width at half maximum(FWHM) tolerance: ±2.5 nm for Poly-BLUE.

3) OD 7 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

4) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

5) Scanning speed represents time required for a single wavelength-to-wavelength transition, depending on step size.



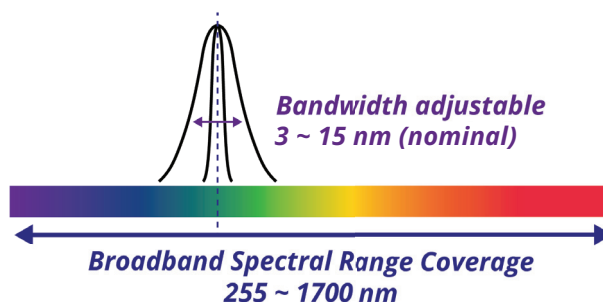
* Transmission may differ depending on specific wavelengths

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

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

* For optimal performance input light source must be collimated

Full Specifications

	Mono-A5	Mono-A10
Spectral range (nm) ¹⁾	255 - 1700 nm	
Bandwidth(FWHM) (nm, nominal) ²⁾	Max : 3 - 15 nm / Min : 7 - 13 nm	
Aperture size (mm)	5 mm	10 mm
Out of band blocking ³⁾	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm	
Step size of center wavelength & Bandwidth (nm)	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 (% , nominal)	> 75 % (avg.)	
Scanning speed (ms)	30 - 300 ms (depending on step size)	
Software	FWS-Auto ver 3.1	
Dimension (L x W x H, mm)	48 mm x 92 mm x 64 mm	
Adaptor specifications	DC 12 V, 2 A	
Electrical requirement	AC 100 - 240 V, 50/60 Hz	
Data interface	USB 2.0	
Weight (kg)	0.4 kg	

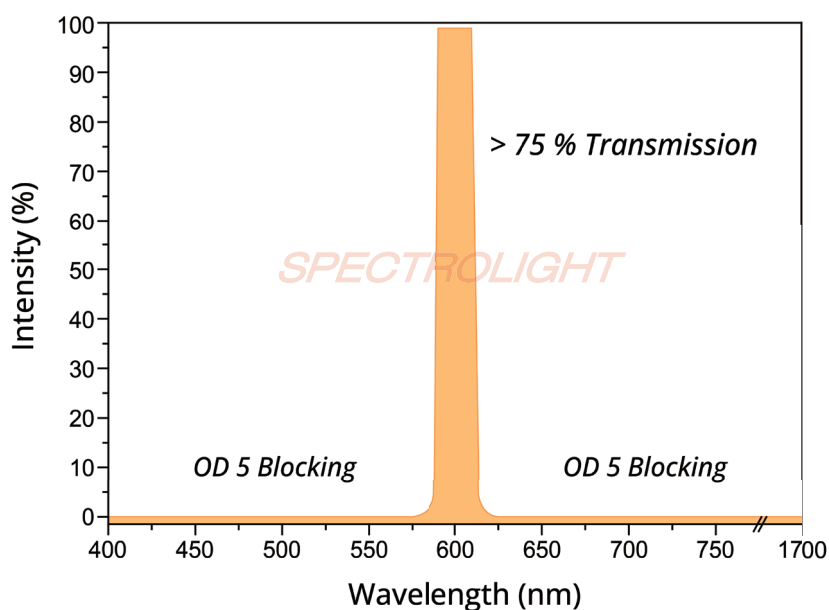
1) Specified center wavelength(CWL) tolerance : ±1 nm.

2) Specified full width at half maximum(FWHM) tolerance : ±1 nm

3) OD 3.5 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

4) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

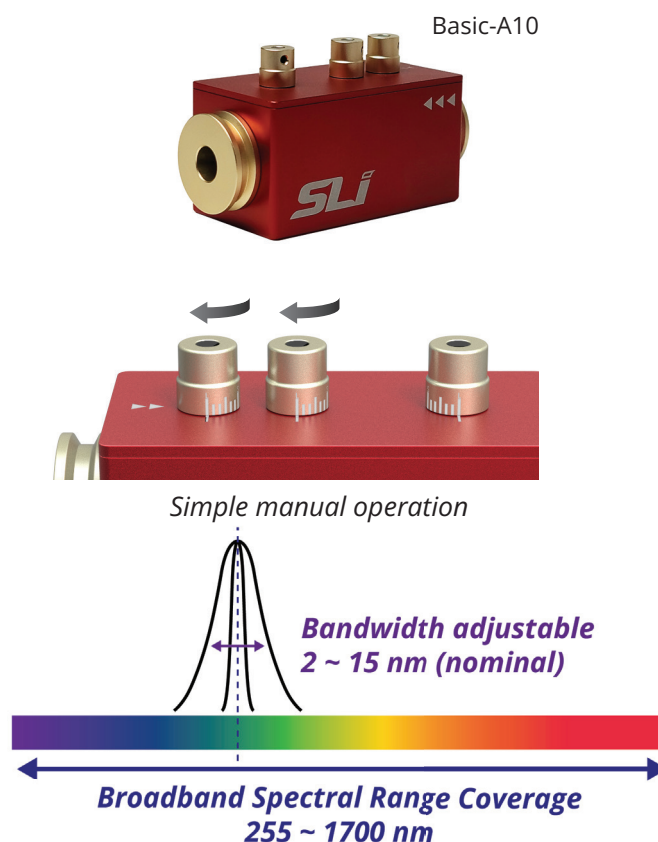
5) Scanning speed represents time required for a single wavelength-to-wavelength transition, depending on step size.



* Transmission may differ depending on specific wavelengths

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



* 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

Basic-A10	Aperture size : 10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)
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* For optimal performance input light source must be collimated

* Manual models require a spectrometer for operation

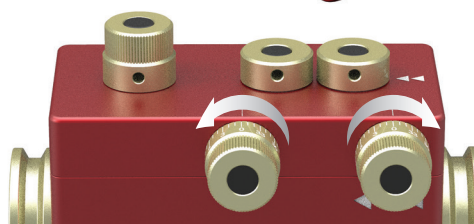
	Basic-A10
Spectral range (nm)	255 - 1700 nm
Bandwidth(FWHM) (nm, nominal)	2 -15 nm
Aperture size (mm)	10 mm
Out of band blocking ¹⁾	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm ² (~70 μm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ² (1064 nm, ~ 90 μm spot diam.)
Transmission efficiency (% , nominal) ²⁾	> 75 % (avg.)
Dimension (L x W x H, mm)	48 mm x 92 mm x 64 mm
Weight (kg)	0.2 kg

1) OD 3.5 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

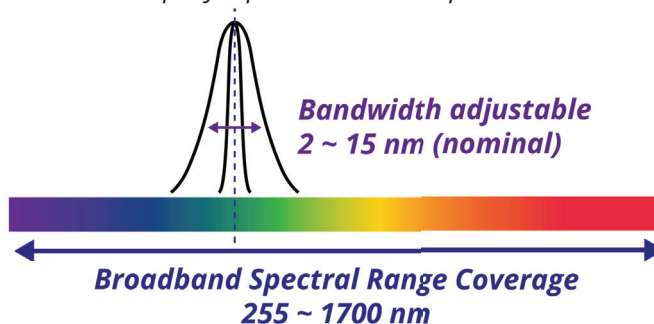
2) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

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



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

High Resolution-A5	Aperture size: 5 mm	Suitable for lasers with small beam size, such as supercontinuum lasers
High Resolution-A10	Aperture size: 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 operation

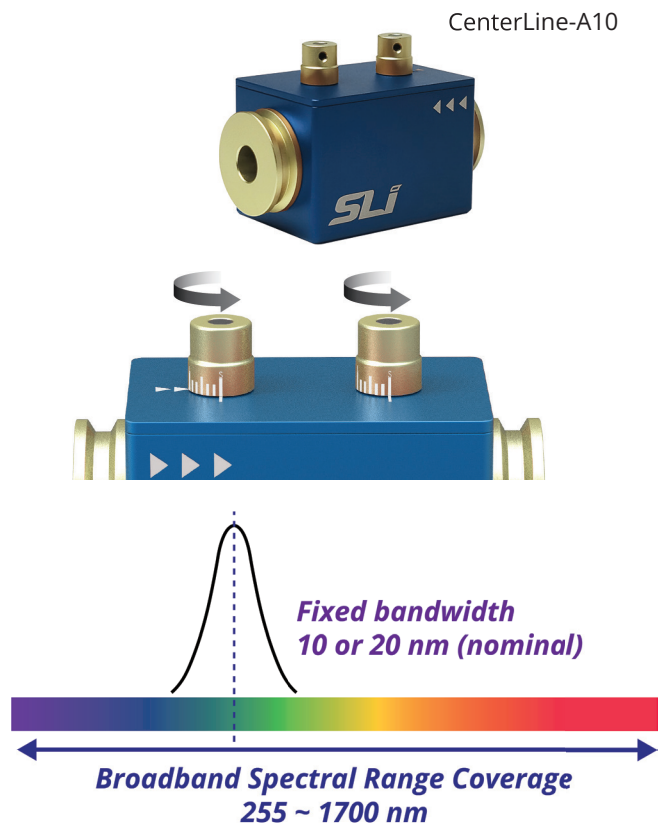
	High Resolution-A5	High Resolution-A10
Spectral range (nm)	255 - 1700 nm	
Bandwidth(FWHM) (nm, nominal)	2 - 15 nm	
Aperture size (mm)	5 mm	10 mm
Out of band blocking ¹⁾	OD 10 in tuning range, OD 5 in spectral range up to 1700 nm	
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm ² (~70 μm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ² (1064 nm, ~ 90 μm spot diam.)	
Transmission efficiency (% , nominal) ²⁾	> 75 % (avg.)	
Dimension (L x W x H, mm)	40 mm X 76 mm X 50 mm	
Weight (kg)	0.3 kg	

1) OD 3.5 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

2) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

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)



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

CenterLine-A10	Aperture size : 10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)
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* For optimal performance input light source must be collimated
 * Manual models require a spectrometer for operation

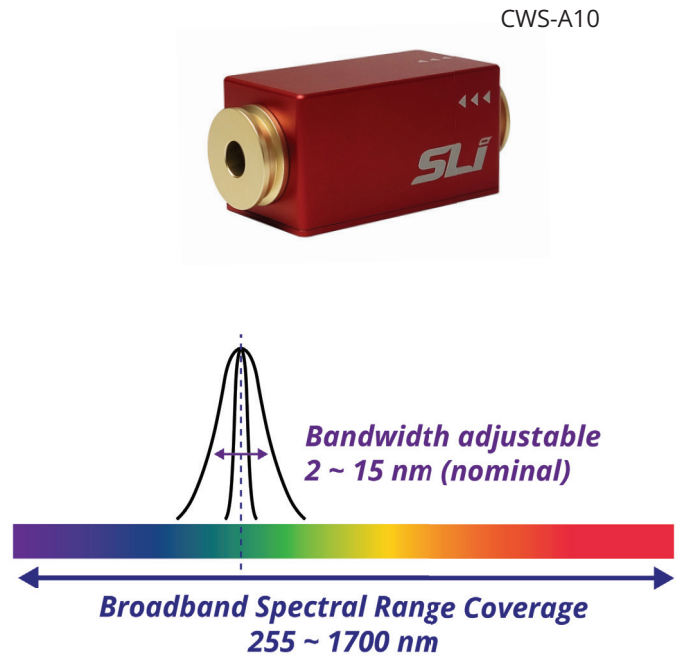
	CenterLine-A10
Spectral range (nm)	255 - 1700 nm
Bandwidth(FWHM) (nm, nominal)	10 nm or 20 nm
Aperture size (mm)	10 mm
Out of band blocking¹⁾	OD 5 up to 1700 nm
Damage threshold	Pulse : Peak Fluence < 1.75 joules/cm ² (~70 μm spot diam., 10 ns, 10 Hz, 532 nm LASER) CW (Continuous wave) : Intensity < 2 MW/cm ² (1064 nm, ~ 90 μm spot diam.)
Transmission efficiency (% , nominal)²⁾	> 75 % (avg.)
Dimension (L x W x H, mm)	40 mm x 58 mm x 40 mm
Weight (kg)	0.2 kg

1) OD 3.5 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

2) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

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



* User specified single wavelength and bandwidth

* CWS can be shipped within 72 hours

CWS-A10	Aperture size :10 mm	Suitable for light sources with large beam size (tungsten-halogen, plasma, LED)
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* For optimal performance input light source must be collimated

* Manual models require a spectrometer for operation

	CWS-A10
Spectral range (nm)	255 - 1700 nm (single wavelength)
Bandwidth(FWHM) (nm, nominal)	2 - 15 nm (single bandwidth)
Aperture size (mm)	10 mm
Out of band blocking ¹⁾	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 (% , nominal) ²⁾	> 75 % (avg.)
Dimension (L x W x H, mm)	40 mm x 76 mm x 40 mm
Weight (kg)	0.2 kg

1) OD 3.5 up to 600 nm for F00-F02 filters; for blocking beyond this range, dedicated out-of-band blockers such as WS-BL400UV and WS-BL1700SWIR are available.

2) Transmission efficiency values are based on filters with a 10 nm full width at half maximum(FWHM). At wavelengths below 400 nm, efficiency remains ≥50%.

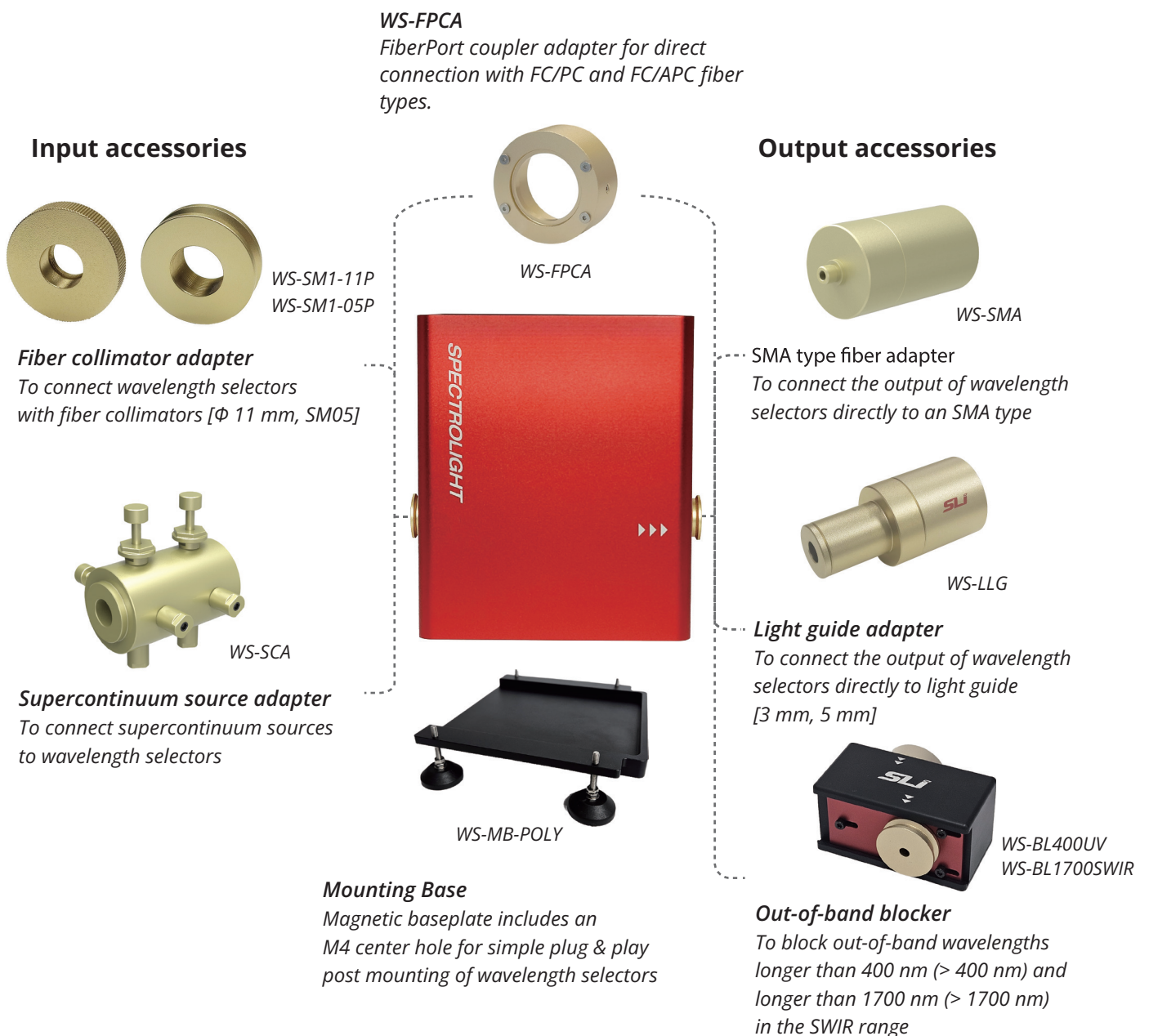
Tunable Bandpass Filter Accessories

Input / Output Linker

A wide selection of accessories is available, such as input/output linkers, extenders, and mounting bases for Tunable Bandpass filters.

Input and Output Linkers

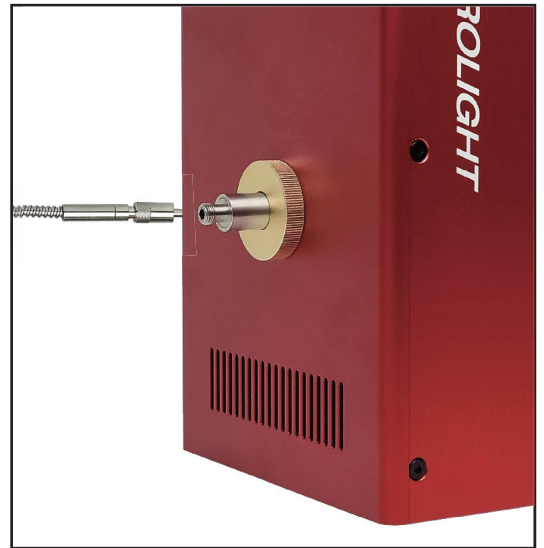
Input and output linkers allow the connection of Tunable Bandpass filters to other light sources, detectors, etc.



WS-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

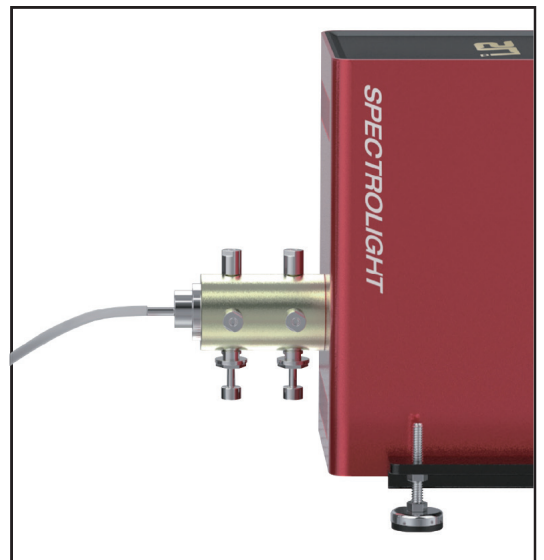
Input accessory for connecting commercial fiber collimators (11 mm diameter) to the FWS. Allows SMA type fiber compatibility.

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



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.



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



WS-BL400UV, WS-BL1700SWIR

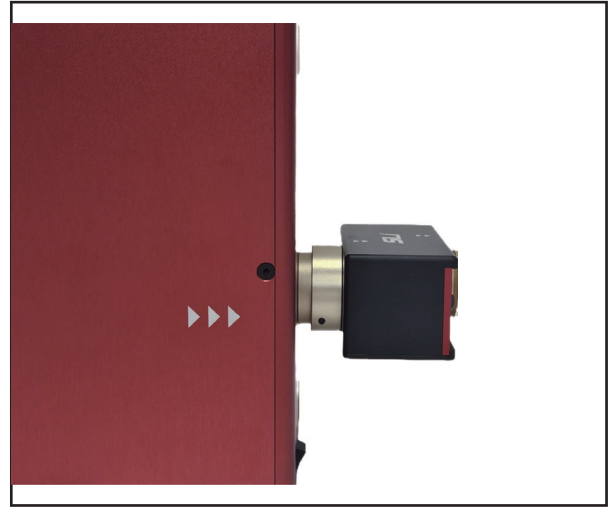
Output accessories for blocking out-of-band wavelengths

WS-BL400UV : Blocking longer than 400 nm

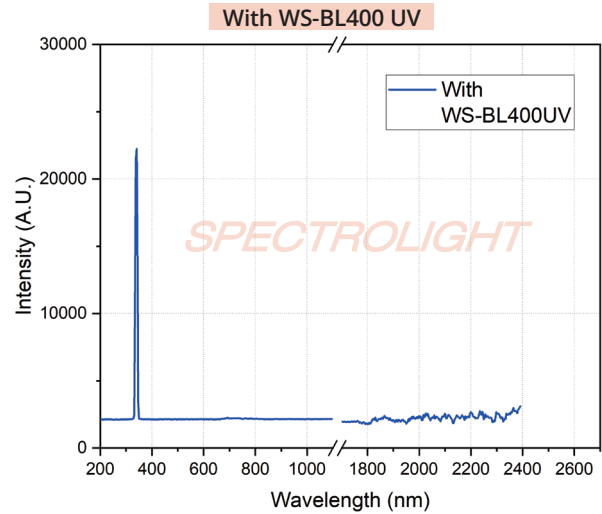
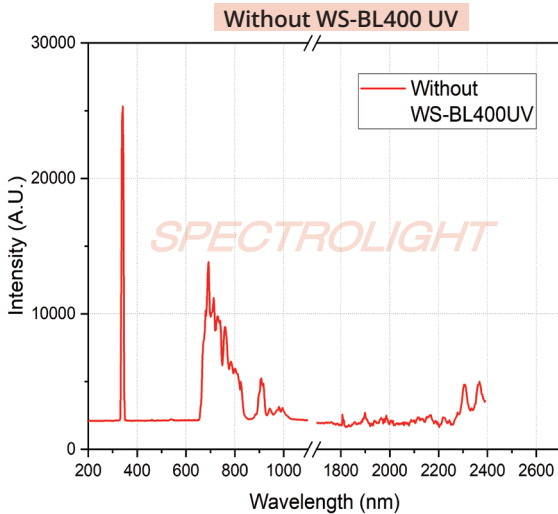
→ To isolate UV wavelengths

WS-BL1700SWIR : Blocking longer than 1700 nm

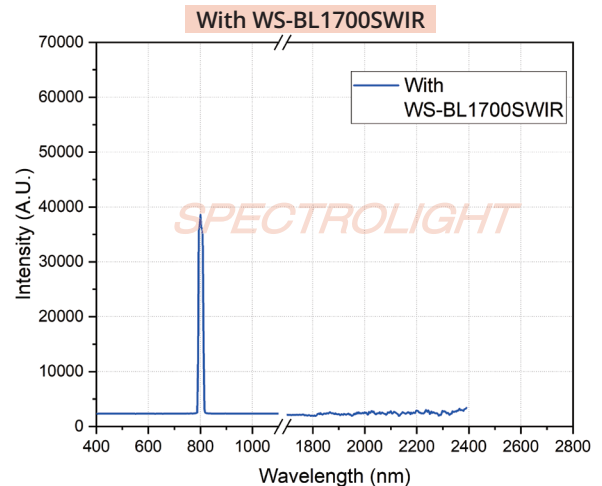
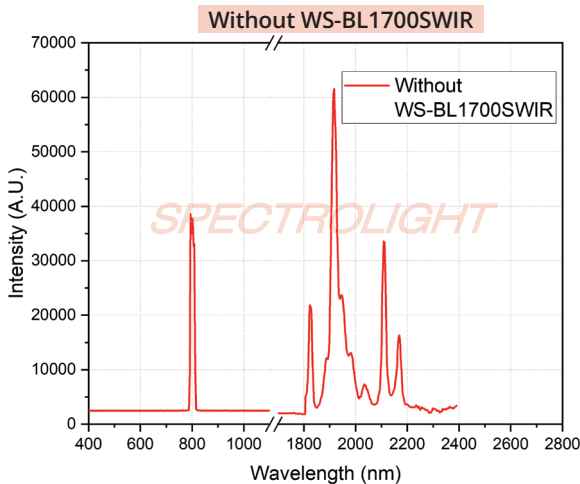
→ To isolate wavelengths between 400 - 1700 nm



For UV range FWS (F00-F02) filters, out-of-band blocking is effective only up to 600 nm. The WS-400UV can be added to the FWS to help select only light within the UV range



Broadband light sources, such as Supercontinuum lasers, can also emit long wavelengths beyond 1700 nm. While FWS blocks out-of-band light up to 1700 nm, the WS-1700SWIR should be used if blocking wavelengths beyond 1700 nm is required.



TUNABLE LASER SYSTEMS



- One box PLUG&PLAY Tunable Laser Systems
- Easy, Effective and Reliable applications
- Fully Customizable to meet all your requirements

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.

The **TLS-RED** offers a wide wavelength range of approximately 400 to 1700 nm and can allow for FWHM 2 to 15 nm (nominal). In contrast, the **TLS-BLUE** covers the same broad wavelength range but with a fixed FWHM of 10 or 20 nm. The TLS-RED is ideal for applications requiring precise scanning, while the TLS-BLUE is better suited for fields demanding high output. With Spectrolight's TLS systems, users can freely select the output power and wavelength ranges to meet their specific 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.

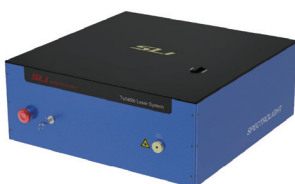
Power Fluctuation Stability

RSD is < 1 % at 650/15 nm

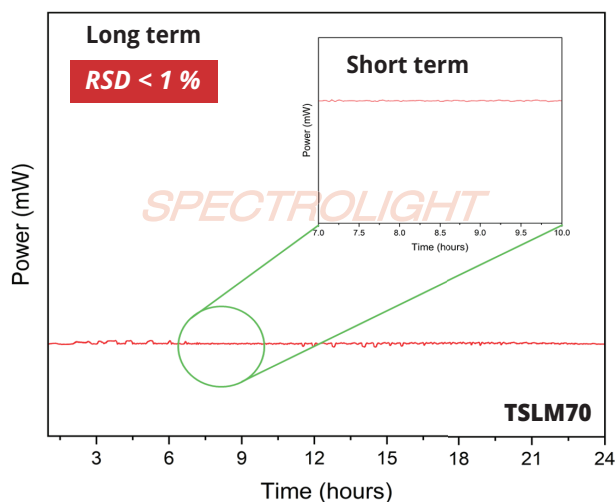
*RSD = Relative Standard Deviation



TLS-RED
(Tunable bandwidth)

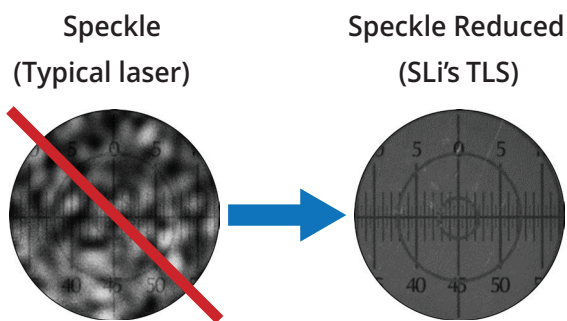


TLS-BLUE
(Fixed bandwidth)

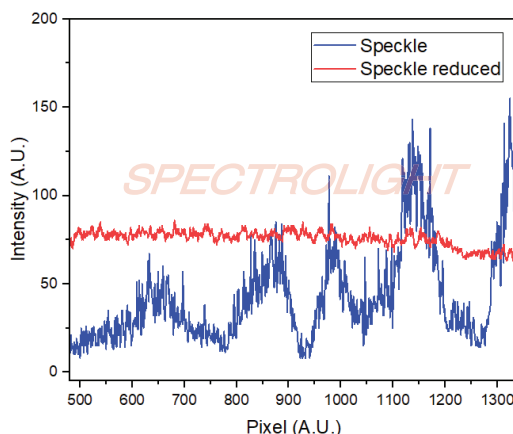


Speckle Reduced Option for Imaging

TLS products feature an option to dramatically reduce laser speckle noise, a capability not typically found in conventional lasers. When this option is applied, TLS facilitates clear imaging. The image segmentation results on the right clearly show the significant difference in speckle noise across the entire image.



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



TLS-RED



EDGE AWARDS

Each TLS-RED model covers distinct spectral ranges from 410 to 1700 nm. The bandwidth(FWHM) of TLS-Red is nominally tunable from 2 to 15 nm, with the exact tunable range dependent on the selected wavelength. Users can choose laser types and variable wavelength ranges to suit their specific applications. Please refer to the detailed specifications table below for more information.

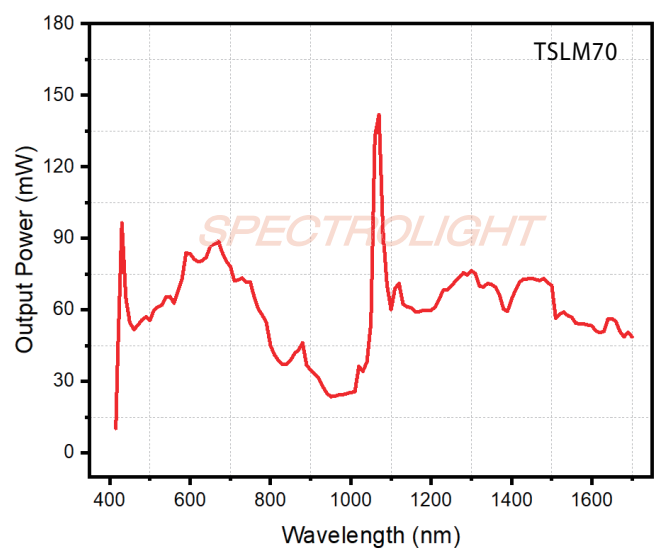
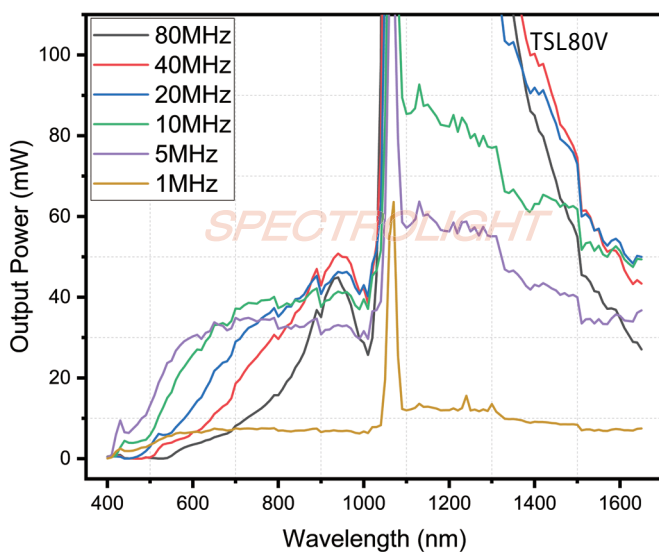
General Specifications

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	

The option for customizable repetition rates is available for an extra cost, allowing adjustment up to each product's maximum fixed rate.

Output Power of TLS-RED



* Measured at 15 nm bandwidth (FWHM)

Detailed Models

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)

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
Fundamental pulse width		~ 100 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 100 ps	~ 6 ps
Tuning spectral range ¹⁾		450-1700 nm	410-1700 nm	410-1700 nm	410-1700 nm	410-1700 nm	430-1700 nm	410-1700 nm
Bandwidth(FWHM) ²⁾		2 - 15 nm(nominal)						
Power stability		< 1 %						
Intensity control		0 - 100						
Output type ³⁾		Free space						
Beam diameter & quality		~ 2 mm @ 633 nm; M ² < 1.1						
Beam divergence		< 1 mrad (half angle)						
State of polarization		Unpolarized						
Sync(trigger) output		NIM output 0 - (-1) V, TTL output 0 - 3.3 V						
Electric requirement		AC 100 - 240 V, 50/60 Hz						
Power consumption		< 280 W						
Software		TLS ver.2						
Data interface		USB 2.0						
Dimension (L x W x H)		584.3 mm x 583.6 mm x 246 mm						
Weight		< 37 kg						

1) Specified center wavelength(CWL) tolerance: ±1 nm.

2) Specified full width at half maximum(FWHM) tolerance: ±1 nm

3) Various output accessory configurations such as fiber and fiber bundle are available. Please contact us for custom options or detailed specifications.



Each TLS-BLUE model covers distinct spectral ranges from 410 to 1700 nm. The bandwidth(FWHM) of TLS-BLUE is fixed at either 10 or 20 nm. Users can choose laser types and variable wavelength ranges to suit their specific applications. Please refer to the detailed specifications table below for more information.

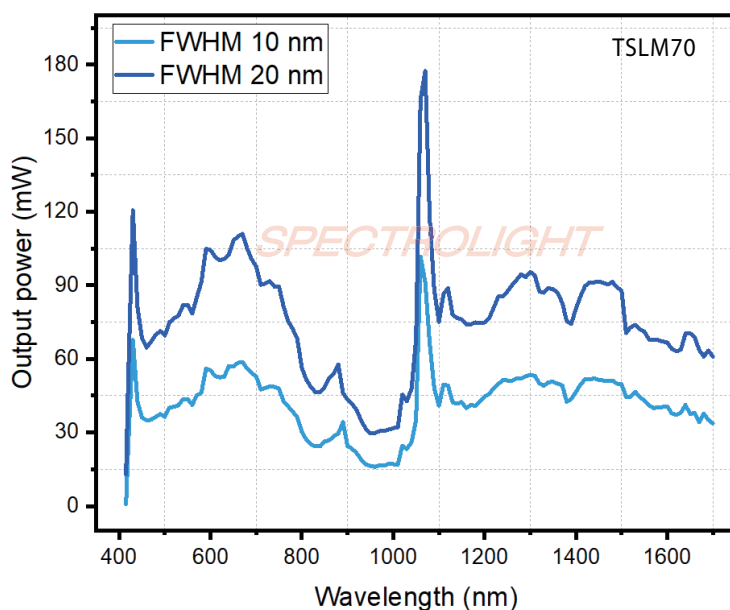
General Specifications

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	

The option for customizable repetition rates is available for an extra cost, allowing adjustment up to each product's maximum fixed rate.

Output Power of TLS-BLUE



Detailed Models

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

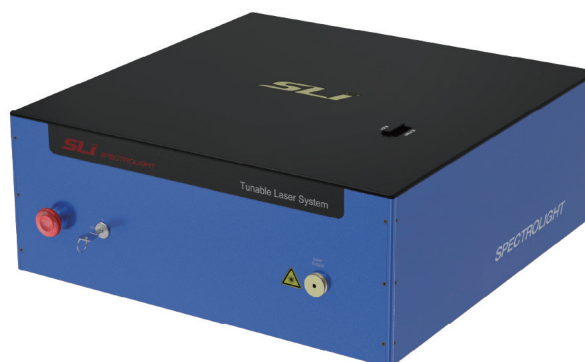
SL-Pico: Supercontinuum laser

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)

Full Specifications

		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
Fundamental pulse width		~ 100 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 100 ps	~ 6 ps
Tuning spectral range ¹⁾		450-1700 nm	410-1700 nm	410-1700 nm	410-1700 nm	410-1700 nm	430-1700 nm	410-1700 nm
Bandwidth(FWHM) ²⁾		10 nm or 20 nm (nominal)						
Power stability		< 1 %						
Intensity control		0 - 100						
Output type ³⁾		Free space						
Beam diameter & quality		~ 2 mm @ 633 nm; M ² < 1.1						
Beam divergence		< 1 mrad (half angle)						
State of polarization		Unpolarized						
Sync(trigger) output		NIM output 0 - (-1) V, TTL output 0 - 3.3 V						
Electric requirement		AC 100 - 240 V, 50/60 Hz						
Power consumption		< 280 W						
Software		TLS ver.2						
Data interface		USB 2.0						
Dimension (L x W x H)		584.3 mm x 583.6 mm x 246 mm						
Weight		< 37 kg						

1) Specified center wavelength(CWL) tolerance: ±1 nm.

2) Specified full width at half maximum(FWHM) tolerance: ±1 nm

3) Various output accessory configurations such as fiber and fiber bundle are available. Please contact us for custom options or detailed specifications.

TUNABLE LIGHT SOURCES



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

Tunable Mighty Light (TML)

Fully tunable high power light source

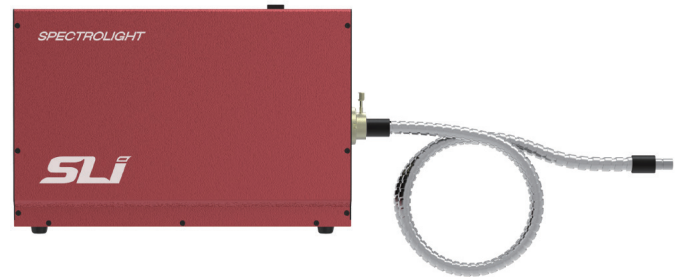
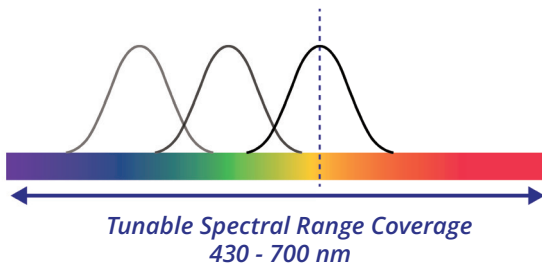
Tunable Mighty Light (TML) is an innovative tunable light source that delivers a wide tunable spectral range of 430 - 700 nm. TML combines a powerful broadband light source, together with Spectrolight's very own tunable bandpass filter within a compact automatic device to provide effortless tuning of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

TML-LED Specifications

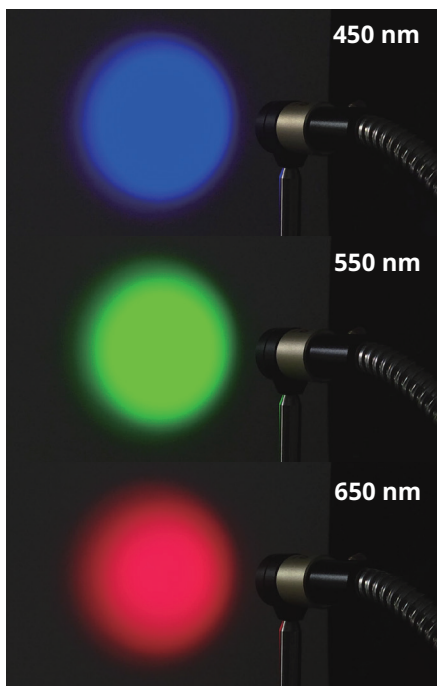
- High power collimated white light source
- Tunable spectral wavelength : 430 - 700 nm
- FWHM : < 30 nm (nominal)
- Color temperature : 7500 K
- Lamp power consumption : 300 W
- LED lifetime : ~ 50,000 h
- Power control : Software control (0 - 100 %)
- Electrical requirements : AC 100 - 240 V, 50/60 Hz
- Data interface : USB 2.0
- Dimensions (L x W x H) : 374 mm x 292 mm x 243 mm



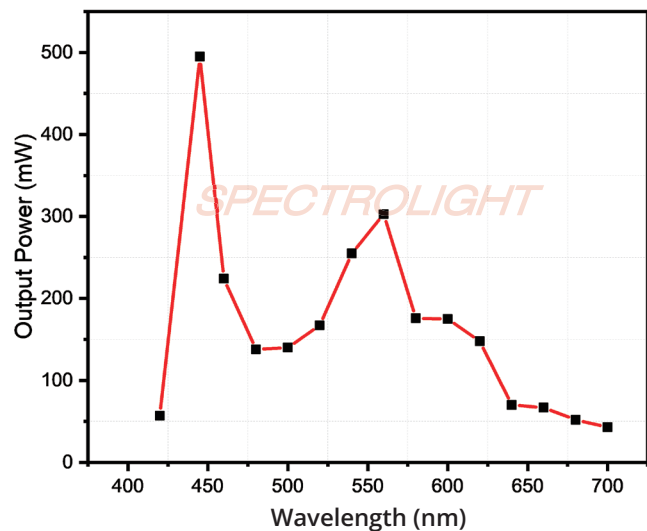
U.S Patent No. 18/158,861



* Fiber bundle included with light source



TML Output results in the visible range



Output power of TML

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)

Mighty Light – Tungsten Halogen (ML-TH)

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

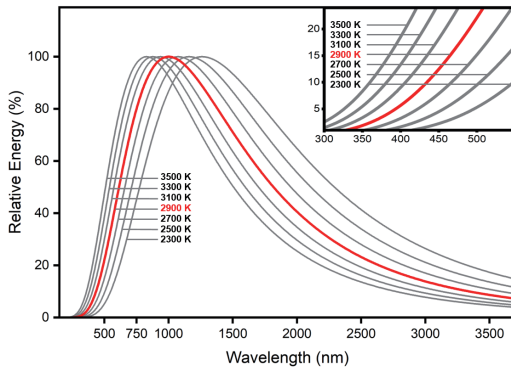
ML-TH integrates a Tungsten Halogen bulb and power supply with a control board that delivers uniquely low-noise output. By applying a series of pre-aligned bolt-on accessories, ML-TH can be directly coupled into a microscope and fiber bundle with its light beam homogenized and collimated. ML-TH can also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

Specifications

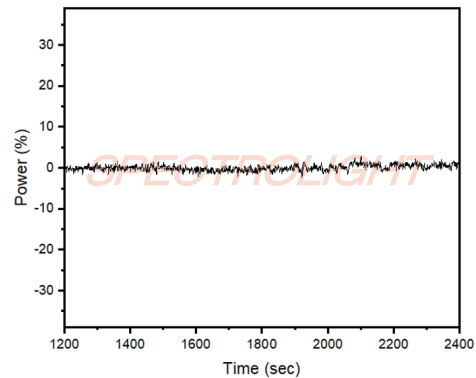
- Lamp type : Tungsten Halogen
- Spectral wavelength : 300 - 2500 nm
- Lamp power consumption : 12 W
- Power stability : < 0.5 %
- Output type : Free space with 60 degree divergence
- Bulb lifetime : ~ 300 h
- Color temperature : 2,900 K
- Dimensions (L x W x H) : 125 mm x 75 mm x 70 mm
- Power supply : DC 9 V at 3.5 A
- Electric requirement : AC 100 - 240 V, 50/60 Hz
- Weight : 0.6 kg



Features

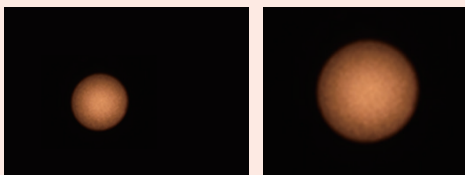


Broad output spectrum



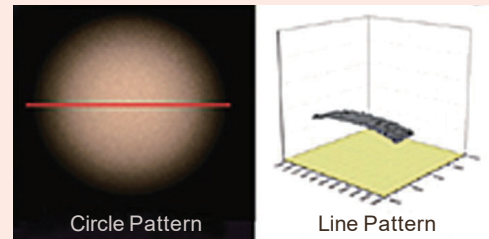
Low power fluctuation (High stability) : < 0.5 %

Collimated light



Collimated

Collimated (magnified)



Circle Pattern

Line Pattern

Uniform intensity when collimated

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.

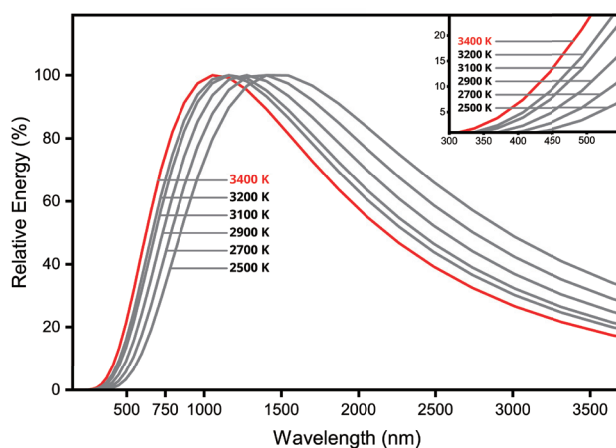
Specifications

- Type of lamp : Tungsten Halogen
- Spectral wavelength : 300 - 2500 nm
- Lamp power consumption : 250 W
- Power stability : < 0.7 %
- Output type : Fiber bundle with 10 mm diameter
- Bulb lifetime : ~ 500 h
- Color temperature : 3,400 K
- Dimensions (L x W x H) : 340 mm x 160 mm x 140 mm
- Power control knob : 0 - 100 %
- Electrical requirements : AC 100 - 240 V, 50/60 Hz
- Weight : 6 kg

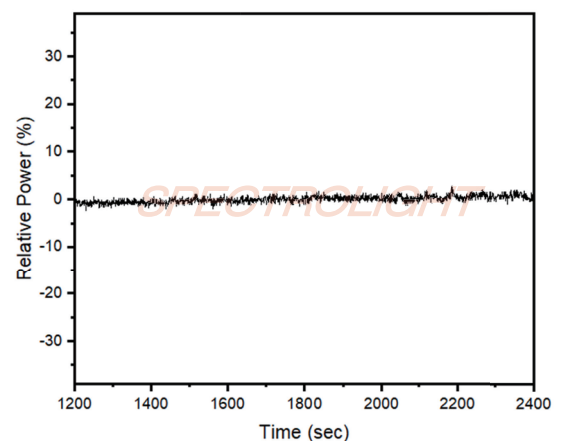


* Fiber bundle included with light source

Feature



Broad output spectrum



Low power fluctuation (High stability) : < 0.7 %

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

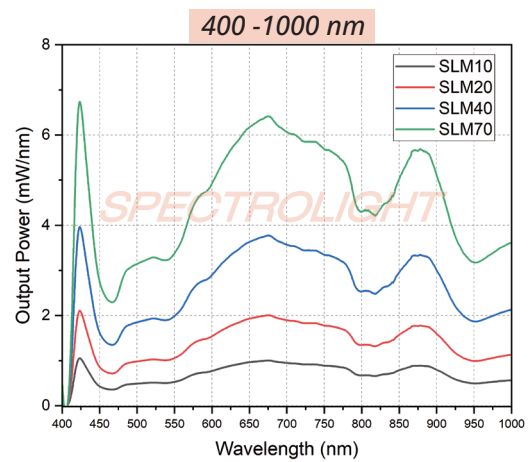
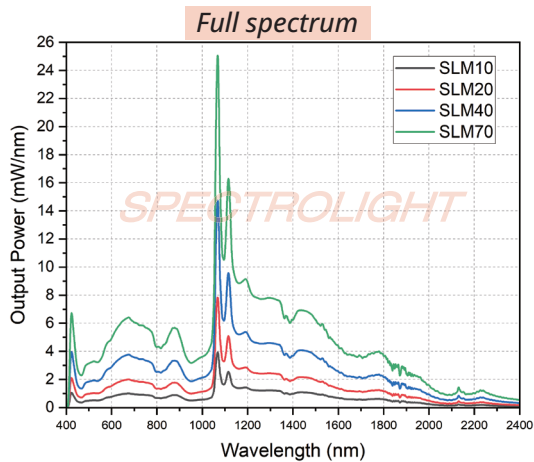
* SL-Pico model name meaning

(Example: SLM35V)

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

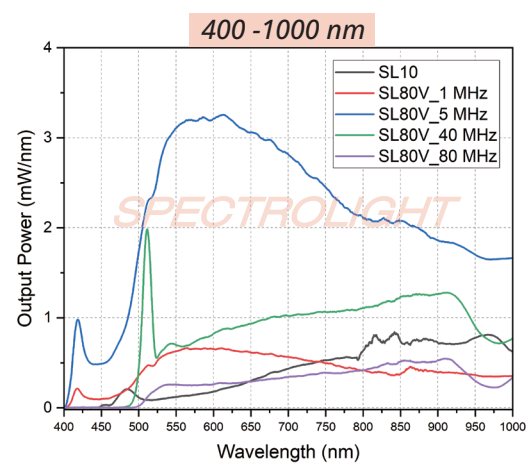
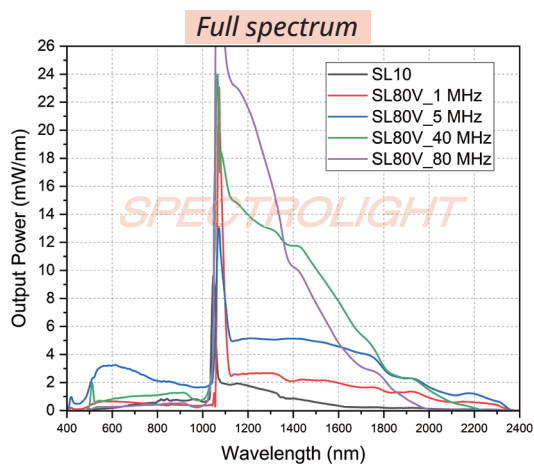
SL-Pico Output Power Spectrum

SL-Pico M-series (Mode-locked Lasers, SLM)



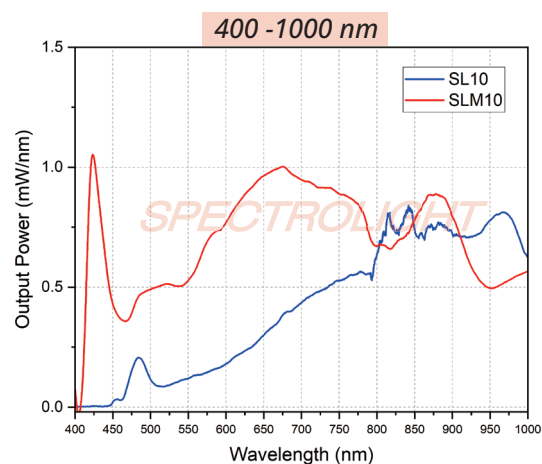
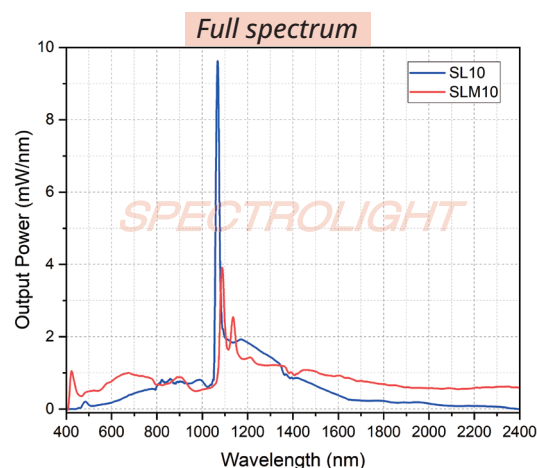
- * The SLM mode-locked model offers a more stable spectral output profile compared to the SL gain-switched model.
- * Additionally, SLM series models like the SLM35V feature an adjustable repetition rate.
- * The SL-Pico M-Series displays its spectral output profile across all wavelengths at their maximum fixed repetition rate, with customizable repetition rates available at an extra cost.

SL-Pico G-series (Gain-switched Laser, SL)



- * Check out the differences between SL10 and SLM10 at the bottom of the full spectrum.

SL10 vs. SLM10



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 (MHz)		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 (ps)		< 300 ps	< 50 ps	< 50 ps	< 50 ps	< 50 ps	< 300 ps	< 50 ps
Fundamental pulse width (ps)		~ 100 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 6 ps	~ 100 ps	~ 6 ps
Spectral range (nm)		450-2400 nm	410-2400 nm	410-2400 nm	410-2400 nm	410-2400 nm	430-2400 nm	410-2400 nm
Power stability (%)		< 1 %						
Output power control (%)		0 - 100 %						
Output type		Armored fiber with collimator						
Beam diameter and quality		~ 2 mm @ 633 nm; M ² < 1.1						
Beam divergence (mrad)		< 1 mrad (half angle)						
State of polarization		Unpolarized						
Length of output fiber (m)		1.3 m						
Sync(trigger) output		NIM output 0 - (-1) V, TTL output 0 - 3.3 V						
Electric requirement		AC 100 - 240 V, 50/60 Hz						
Power consumption		160 W						
Software		SL-Pico ver.1						
Data interface		USB 2.0						
Dimension (L x W x H, mm)		345x358 x 153	423 mm x 437 mm x 165 mm					
Weight (kg)		15.5	20.5 kg					

Laser-Driven Light Source (LDLS™)

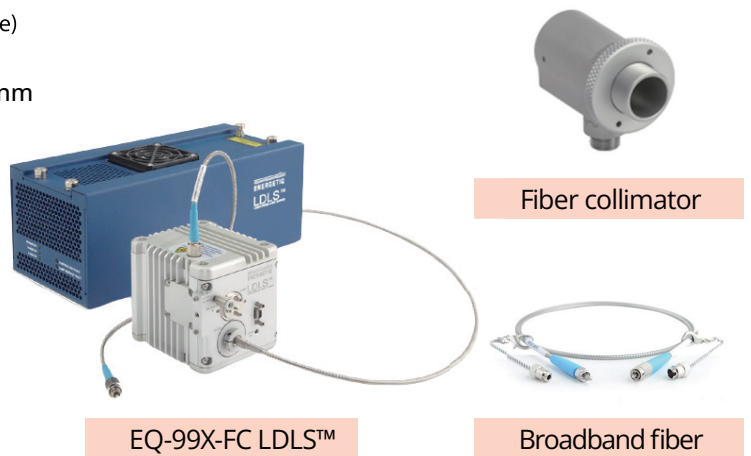
EQ-99X-FC LDLS™

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.

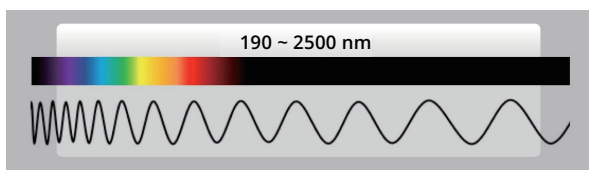
The unique principle of operation provides extremely bright, spatially and spectrally stable broadband radiation from 190 nm - 2500 nm with a lifetime greater than 10,000 hours.

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)

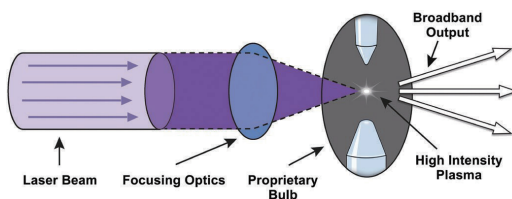


Features

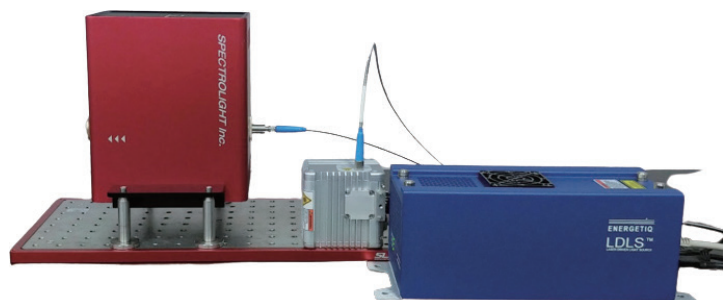


With ENERGETIQ's LDLS and FWS-Poly, it is possible to generate a tunable light covering a wide spectral range, 255 - 1650 nm.

Wide broadband spectral range



Small, high brightness broadband output



SPECTROMETERS



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

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

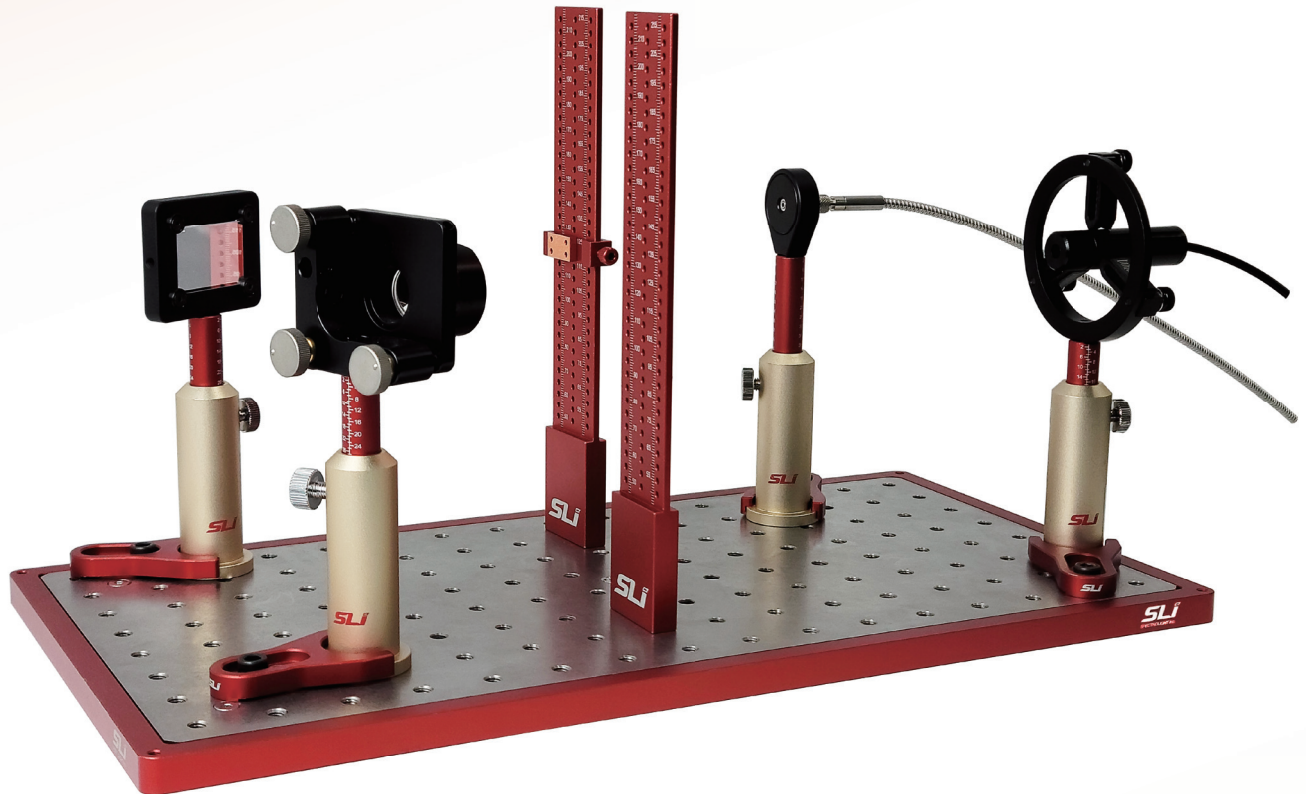
Full Specifications

		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 S10420-1106 (Non TE-Cooled Backthinned FFT CCD)	Hamamatsu S10420-1106	Hamamatsu S7031-10065 (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 µm	14 x 14 µm	14 x 14 µm	24 x 24 µm	25 x 500 µm
	Cooling	X	X	X	O (-10 °C one ststage TE cooling)	O (-20 °C one ststage 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 nm*	0.3 - 7 nm*	> 3 nm overall
Fiber Optic Connector		SMA905 or FC standard				
PC Interface		Windows XP/VISTA/Win 7, 8.1, 10, 11 (32/64bit) SM32Pro & SMPProMX (free with spectrometer) Includes DLL libraries and SDKs for easy custom application development				

*Depending on the slit and grating choices

**Measured with TEC ON & 10pF CF value

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



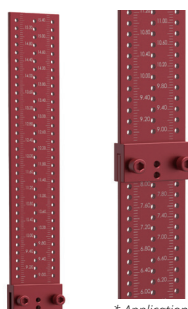
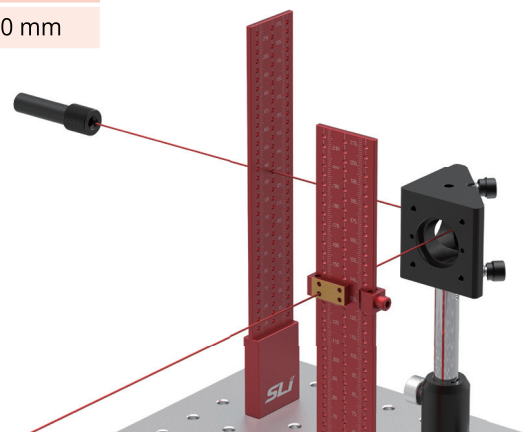
Center

Centers over row of holes



Free Standing

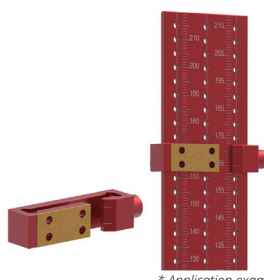
Positions anywhere



* Application example

Extender

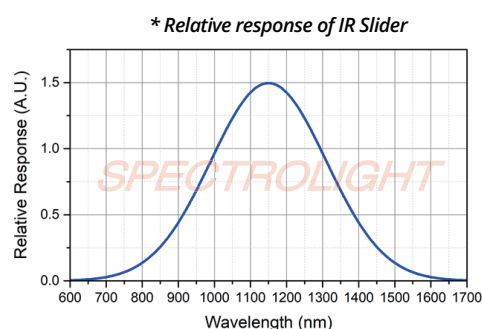
Extends length of Light Aligner



* Application example

IR Slider

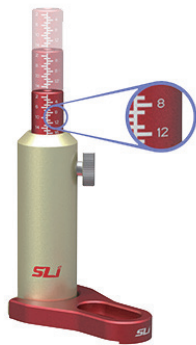
Aligns infrared ray



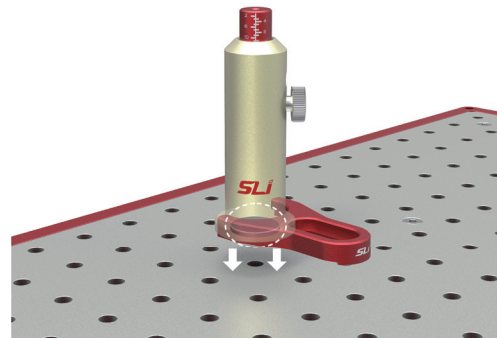
Optomechanics – Ruler Post

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

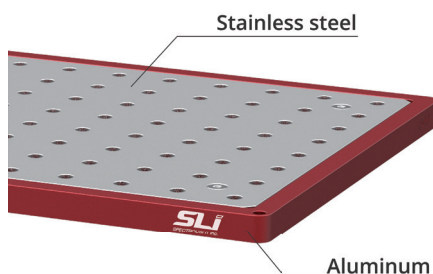


Magnetic base / Fork clamp

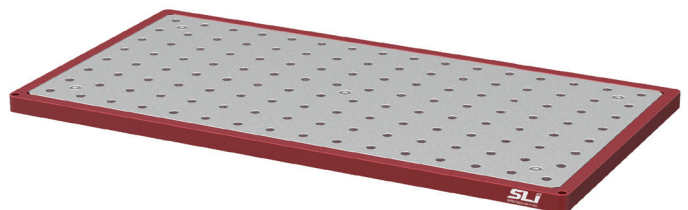
Optomechanics – Hybrid Board

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

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



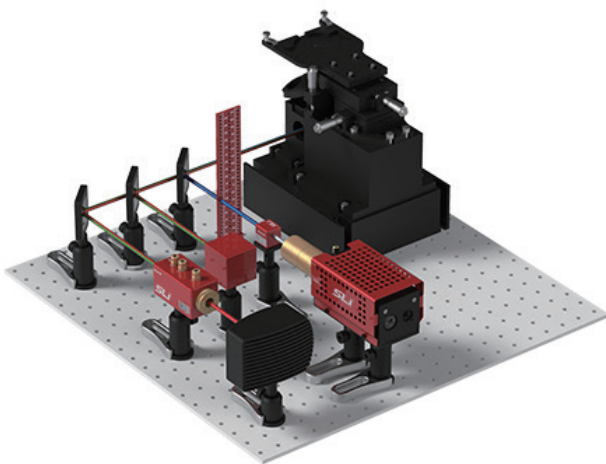
Durable and high-quality patch cords



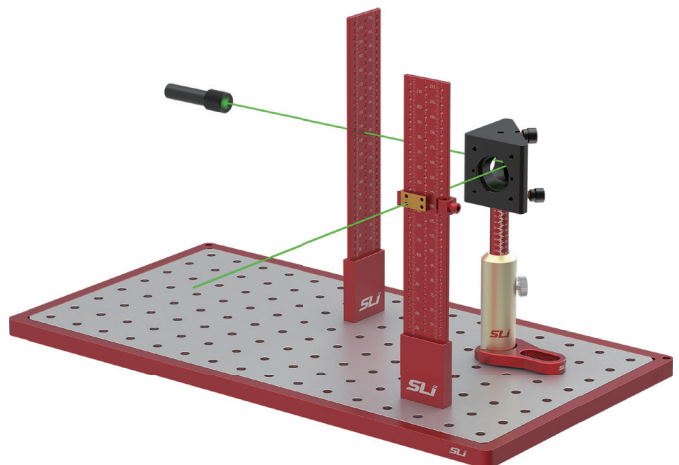
SMA type connectors

Optomechanics Application

Modular optical microscopes



Infrared-ray light beam alignment



Light Done Right!

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	E-mail : support@spectrolightinc.com
OEM Sales	Phone : +82 - 10 - 6538 - 9852
	E-mail : sales@spectrolightinc.com