

# TLS-EQ-9-S

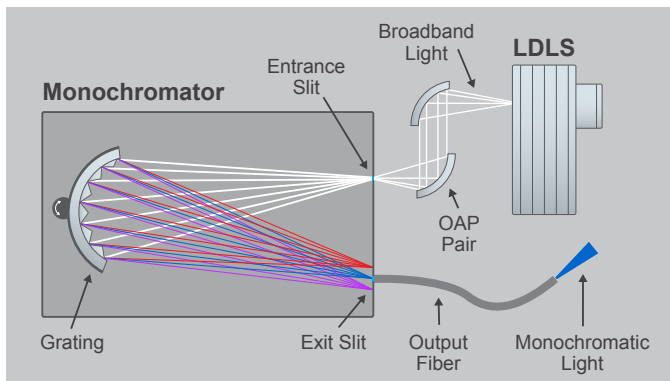
## Laser-Driven Tunable Light Source



### Overview

The TLS-EQ-9-S is a flexible wavelength tunable light source (TLS) built around Energetiq's Laser-Driven Light Source (LDLS®) platform. This exciting technology provides a wide wavelength range of tunability, high spectral resolution, fast wavelength scanning, and an extremely long lifetime with the added benefit of a convenient fiber-coupled output.

### Principle of Operation



### Consumable Components

Part Number	Lifetime	Description
EQ-9-RB	10,000 hours	Replacement Bulb (Not Field Replaceable)
EQ-9-RW-BK7	10,000 hours	EQ-9 Replacement Window (Not Field Replaceable)
Fiber Optic Cable	10,000 hours	Available fibers listed in the Accessories section

### Properties

Wavelength Range	380 nm – 1100 nm
Scan Speed	<20 ms per 2 nm step
Numerical Aperture (1.5 mm Output fiber)	0.39 NA
Bulb Lifetime	10,000 hours
Laser Class	Class 1 (IEC 60825-1: 2014)

### Typical Performance

Maximum in-band flux*	3.5 mW at 882 nm
Average in-band flux*	1.1 mW
Spectral Resolution (bandwidth, FWHM)	6.0 nm

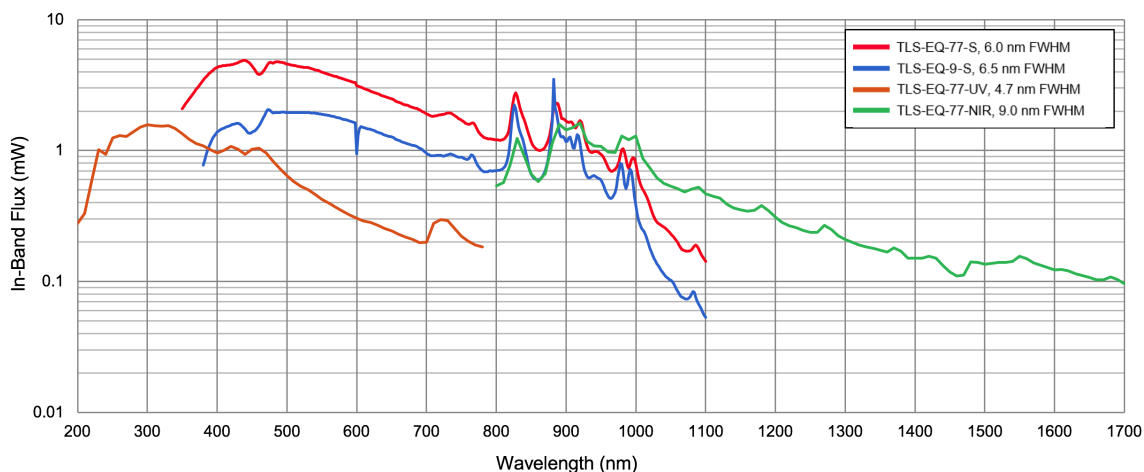
\*1500  $\mu\text{m}$  core diameter fiber optic cable

### Models

The TLS models provide a scalable solution covering a broad wavelength range from UV through visible to NIR.

Part Number	Description	Wavelength Range
TLS-EQ-9-S	Tunable light source with EQ-9 LDLS, optimized for visible and NIR wavelengths	380 nm – 1100 nm
TLS-EQ-77-S	Tunable light source with EQ-77 LDLS, optimized for visible and NIR wavelengths	350 nm – 1100 nm
TLS-EQ-77-UV	Tunable light source with EQ-77 LDLS, optimized for UV wavelengths	200 nm – 770 nm
TLS-EQ-77-NIR	Tunable light source with EQ-77 LDLS, optimized for NIR wavelengths	800 nm – 1700 nm

### In-Band Light Flux Comparison Average in-band light flux with standard output fibers. For reference only.



## Accessories

Part Number	Description															
TLS-FIBER-1500-09M-SMA-SMA	Standard fiber included with system (1.5 mm dia., 0.9 M length, Output termination: SMA)															
TLS-FIBER-1500-2M-FC-SMA	Replacement fiber (1.5 mm dia., 2 M length, Output termination: FC)															
TLS-FIBER-1500-10M-FC-SMA	Replacement fiber (1.5 mm dia., 10 M length, Output termination: FC)															
TLS-EQ-9-SLIT-KIT	Kit of removable monochromator slits (3 sizes, 2 of each size) <table border="1" data-bbox="337 426 885 640"> <thead> <tr> <th>Slit Size</th> <th>Bandwidth (FWHM) [nm]</th> <th>Typical In-band flux [mW]**</th> </tr> </thead> <tbody> <tr> <td>1 mm*</td> <td>6</td> <td>1.1</td> </tr> <tr> <td>0.5 mm</td> <td>3.5</td> <td>0.65</td> </tr> <tr> <td>0.25 mm</td> <td>2</td> <td>0.22</td> </tr> <tr> <td>0.1 mm</td> <td>1.5</td> <td>0.04</td> </tr> </tbody> </table> <p>*Standard slit size shipped with system **At approximately 500 nm</p>	Slit Size	Bandwidth (FWHM) [nm]	Typical In-band flux [mW]**	1 mm*	6	1.1	0.5 mm	3.5	0.65	0.25 mm	2	0.22	0.1 mm	1.5	0.04
Slit Size	Bandwidth (FWHM) [nm]	Typical In-band flux [mW]**														
1 mm*	6	1.1														
0.5 mm	3.5	0.65														
0.25 mm	2	0.22														
0.1 mm	1.5	0.04														

## Facility Requirements

Electrical	100-240 VAC, single phase 50-60 Hz 140 W max. (LDLS) 50 W max. (TLS monochromator)
Cooling	No auxiliary cooling required
Nitrogen Purge	Recommended. Grade 4.8 or higher, filtered to 5µm; 20 psig ±2
Ambient Temperature	15-35 °C

## Physical Specifications

System Dimensions (H x W x D)	245 x 357 x 285 mm
System Weight	7.6 kg

## User Interface

The system interfaces with Windows operating system through a Mini USB connector. Software includes basic controls, and enhanced user interface and Dynamic Link Library (\*.dll) for custom control.

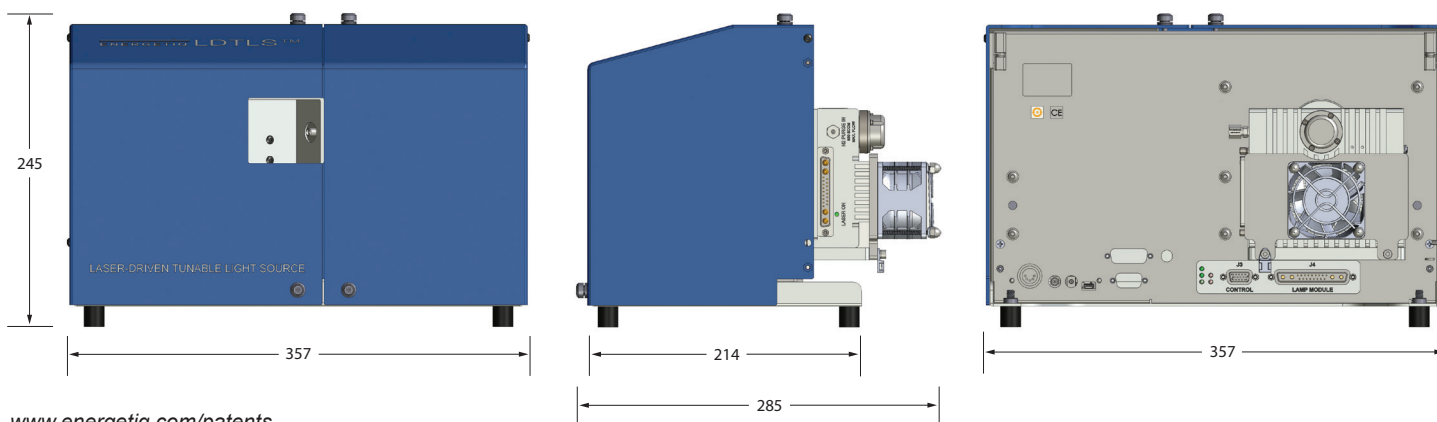
TLS can be used in two modes: go-to-wavelength or cycle/sweep. The user is also able to adjust the filter wheel transition for the order sorting filter via the software.

Position	Light Path
1	Closed
2	Open
3	Order sorting filter, 593 nm long wavelength pass

During a wavelength sweep, it is recommended that you transition to the order sorting filter position (position 3) for wavelengths of **620 nm and greater**.

## System Dimensions (Unit: mm)

Drawings are for reference only and are not to scale. STEP file available.



[www.energetiq.com/patents](http://www.energetiq.com/patents)



Energetiq Technology, Inc.  
205 Lowell Street  
Wilmington, MA 01887

Phone: +1 781-939-0763  
Email: [info@energetiq.com](mailto:info@energetiq.com)  
[www.energetiq.com](http://www.energetiq.com)

Specifications are subject to change without notice.  
TLS-EQ-9-S – 01/2024

©2024 Energetiq Technology, Inc. All rights reserved.