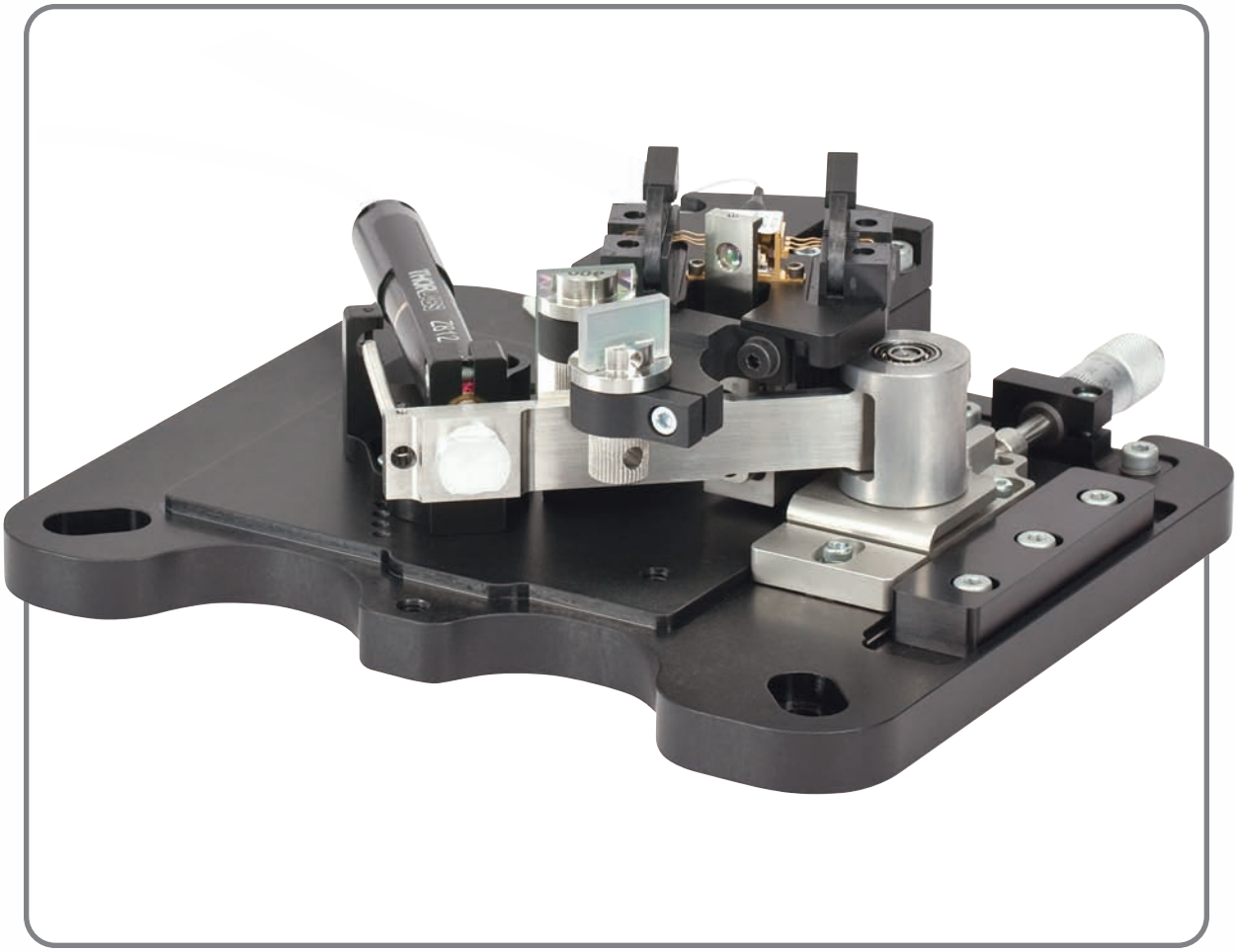
THORLABS

Tunable Laser Kits



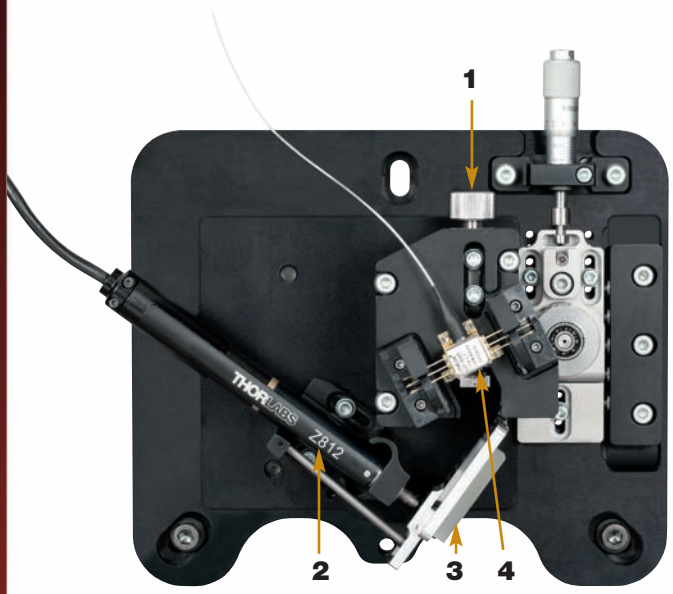
Tunable Laser Kits

Thorlabs' Tunable Laser Kits are designed for superior cavity construction flexibility and high-stability performance. Available in either a Littrow or Littman configuration, these external cavity laser (ECL) kits are complete systems that only require drive electronics (LD controller and TEC controller). They are ideal for education, component testing, and research due to their modularity.

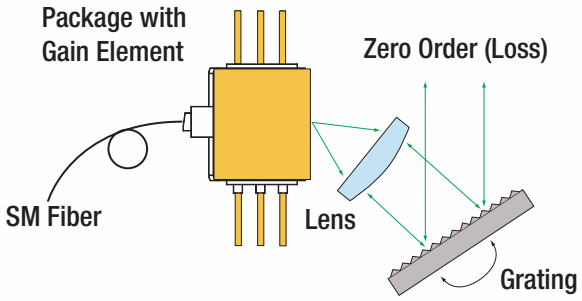
Components are offered to convert the laser between Littman and Littrow configurations. Various gain chips, cavity optics, and tuning actuators are available to provide customizable ECL solutions. Additionally, customer-furnished ECL components can be easily integrated, which minimizes construction time and cost when compared to other tunable lasers.

Features

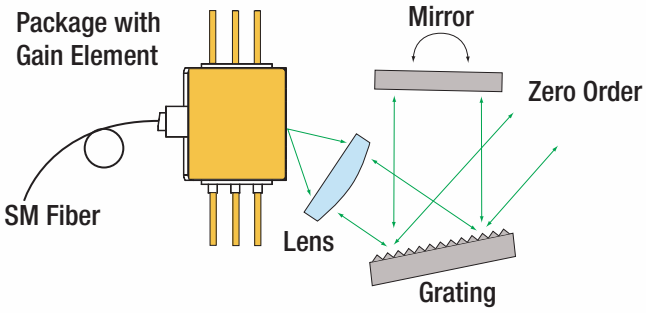
- Modular Design with User-Customizable Optics, Gain Chip, Tuning Actuator, etc.
- Littrow or Littman Cavity
- Fiber Coupled or Free Space
- Standard Available Center Wavelengths: 770, 1050, 1310, 1550, 1900, or 1950 nm
- Compatible with Half-Butterfly Gain Elements

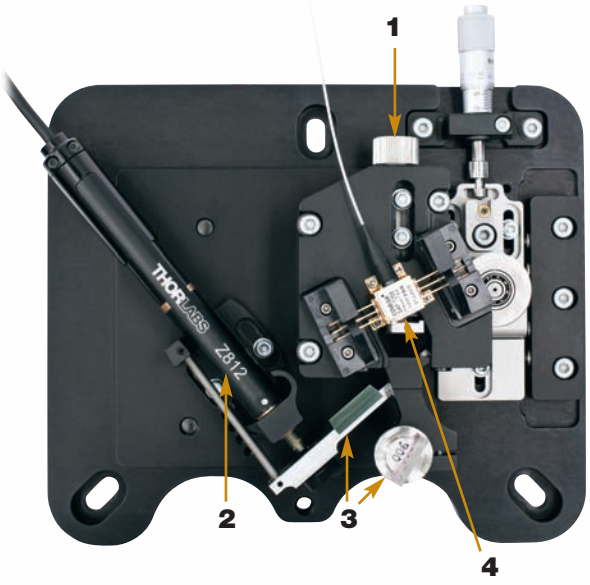


Littrow Configuration
See Pages 4 - 5



Littman Configuration
See Pages 6 - 7

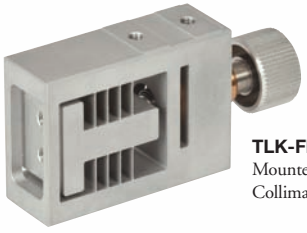




1. Laser Collimation Components

The combination of a mounted aspheric lens and the TLK-FM1 focus adjuster, which comes standard with a tunable laser kit, allows the output of the gain chip to be collimated.

See Pages 10 - 11



TLK-FM1
Mounted
Collimating Lens

TLK-352330-B
Focus Adjuster

2. Tuning Options

The standard wavelength tuning is achieved with Thorlabs' Z812 DC servo motor, which is included with any tunable laser kit. To access the full wavelength range, an open-loop piezo actuator (TLK-PZT1) is available as an optional accessory.

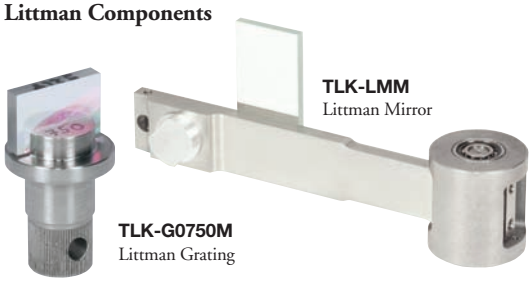
See Pages 9 - 10

Z812
DC Servo Tuning Motor

TLK-MM1
Tuning Adjuster Mount

3. Cavity Configuration Conversion

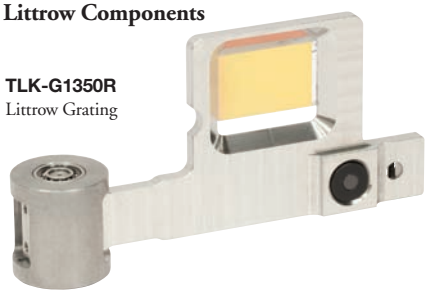
Littman Components



TLK-LMM
Littman Mirror

TLK-G0750M
Littman Grating

Littrow Components



TLK-G1350R
Littrow Grating

Switching between Littrow and Littman configurations requires changing only a few components. Please see the tables on page 4 for details.

See Page 9

4. Gain Chip and Gain Chip Mounting Options

Thorlabs offers standard half-butterfly gain chips with center wavelengths of 770, 1050, 1220, 1310, 1550, or 1900 nm. These correspond with three baseplate options, which properly align the angle of the gain chip's angled facet.

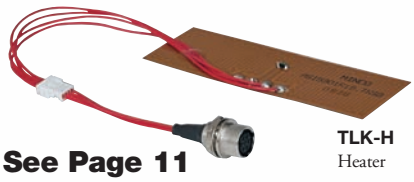
See Page 8

SAF1176S
Half-Butterfly Gain Chip

TLK-P19
Gain Chip Mount

Tunable Laser Kit Accessories

These accessories are not included with the Tunable Laser Kit but can be purchased separately. The TLK-E enclosure allows the user to purge the system with gas to remove absorption lines, thermally stabilize the laser cavity (with the TLK-H heater), and steer the beam (with the TLK-SM-1 steering mirror).



TLK-H
Heater

See Page 11

TLK-SM-1
Steering Mirror

TLK-E
Enclosure

Cavity Configurations

Lasers consist of an active gain element and optical feedback to this gain element. The most common diode lasers are based on a Fabry-Perot design with a linear waveguide and reflective surfaces at both ends of the gain chip to provide feedback. Some Fabry-Perot (FP) lasers, like the TFP780A, are constructed for external feedback, but this is rare. Single angle facet (SAF) gain chips, on the other hand, have a curved waveguide with only one internally reflective endface and rely on external optical feedback to produce lasing.

Littrow and Littman configurations are the two most common ways to build an External Cavity Laser (ECL). Many other ECL configurations are based on these designs but have modifications to incorporate additional optical components. Littrow cavities typically offer higher power, while Littman cavities typically produce a narrower linewidth.

Littrow Cavity Configurations

These are the differentiating components of each Littman tunable laser kit. The gain chip, mounting plate, grating module, and collimating lens are the components you will need to convert from one supported wavelength to another.

INCLUDED IN KIT	CENTER WAVELENGTH	GAIN CHIP	TOP PLATE	GRATING MODULE	COLLIMATING LENS
TLK-L1300R	1310 nm	SAF1174S	TLK-P26	TLK-G1350R	TLK-352230-C*
TLK-L1550R	1550 nm	SAF1176S	TLK-P19	TLK-G1050R	TLK-352230-C*
TLK-L1900R	1950 nm	SAF1900S	TLK-P26	TLK-0900R	TLK-352230-C*

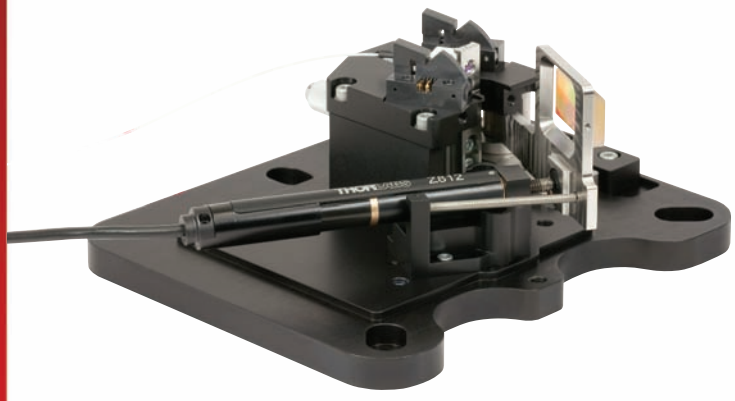
* Coming soon

Littman Cavity Configurations

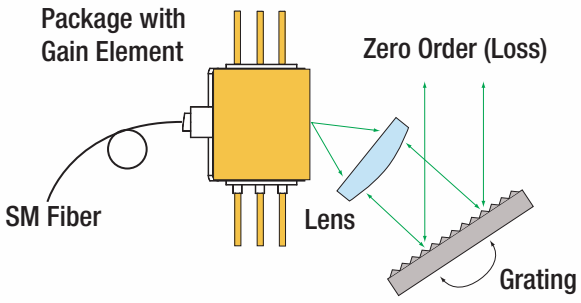
To convert from one Littman cavity wavelength range to another, the necessary parts are below. If you are converting your Littrow tunable laser kit to a Littman configuration, you will also need to purchase the TLK-LMM and TLK-LGP.

INCLUDED IN KIT	CENTER WAVELENGTH	GAIN CHIP	TOP PLATE	GRATING MODULE	COLLIMATING LENS
TLK-L780M	770 nm	TFP780A	TLK-P00	TLK-G1500M	TLK-352330-B
TLK-L1050M	1050 nm	SAF1171S*	TLK-P26	TLK-G1050M*	TLK-352230-B*
TLK-L1300M	1310 nm	SAF1147S	TLK-P26	TLK-G0900M	TLK-352330-C
TLK-L1550M	1550 nm	SAF1176S	TLK-P19	TLK-G0750M	TLK-352330-C
TLK-L1900M	1900 nm	SAF1900S	TLK-P26	TLK-G0600M*	TLK-352230-C*

* Coming soon



Littrow Configuration

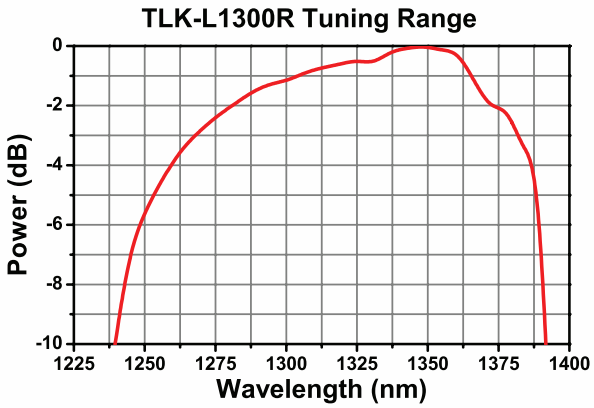


Littrow Kits

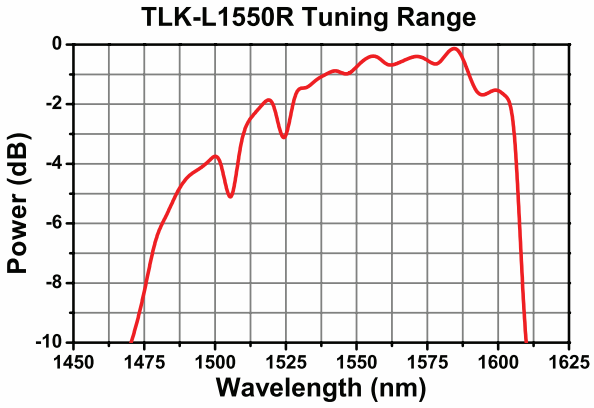
The standard Littrow kits are offered with your choice of a 1310, 1550, or 1950 nm fiber-coupled single angle facet (SAF) gain chip. The Littrow configuration is ideal for customers that need high output power and broad tuning ranges. The cavities are configured as shown in the schematic shown below.

One end of the gain element must allow light to exit, such as in the design of an SAF. Light emitted from this end is first collimated. A grating then diffracts this collimated beam such that the 1st order diffraction gets coupled back into the gain element, which allows it to support lasing. Wavelength tuning of the laser is possible by altering the angle of the grating relative to the cavity. 0th order diffraction from the grating will exit the laser's cavity at an angle dependent on the grating angle.

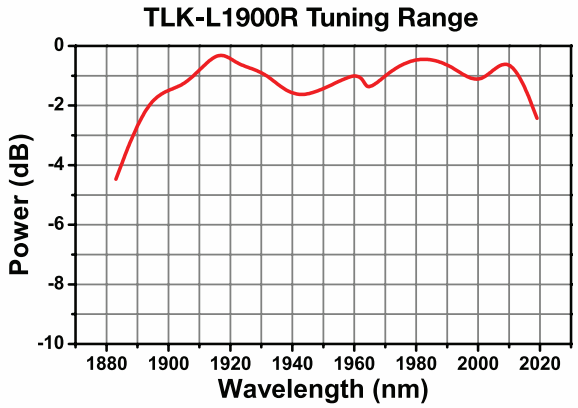
ITEM #	TLK-L1300R		
	Min	Typical	Max
Center Wavelength	1290 nm	1310 nm	1320 nm
Tuning Range (10 dB)	100 nm	130 nm	–
Peak Power	30 mW	70 mW	–
Wavelength Tuning Resolution	1 pm	–	–
Tuning Speed	–	–	25 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm



ITEM #	TLK-L1550R		
	Min	Typical	Max
Center Wavelength	1530 nm	1550 nm	1570 nm
Tuning Range (10 dB)	70 nm	120 nm	–
Peak Power	10 mW	30 mW	–
Wavelength Tuning Resolution	–	–	1 pm
Tuning Speed	–	–	40 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm

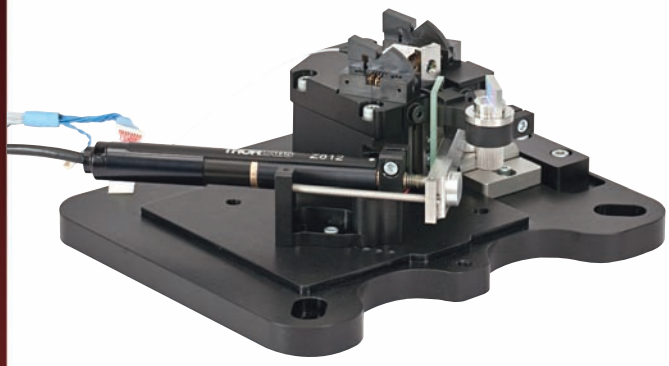


ITEM #	TLK-L1900R		
	Min	Typical	Max
Center Wavelength	1920 nm	1950 nm	1970 nm
Tuning Range (10 dB)	50 nm	80 nm	–
Peak Power	5 mW	10 mW	–
Wavelength Tuning Resolution	4 pm	–	–
Tuning Speed	–	–	57 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	2 pm
Open-Loop Wavelength Stability (24 hr)	–	–	100 pm

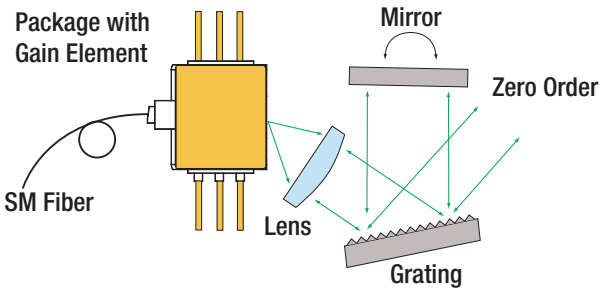


ITEM #	$	£	€	RMB	DESCRIPTION
TLK-L1300R	$ 10,500.00	£ 7,245.00	€ 9.345,00	¥ 88,620.00	Tunable Laser Kit, 1310 nm, Littrow Configuration, FC/APC
TLK-L1550R	$ 10,500.00	£ 7,245.00	€ 9.345,00	¥ 88,620.00	Tunable Laser Kit, 1550 nm, Littrow Configuration, FC/APC
TLK-L1900R	$ 10,000.00	£ 6,900.00	€ 8.900,00	¥ 84,400.00	Tunable Laser Kit, 1950 nm, Littrow Configuration, FC/APC

Littman Kits



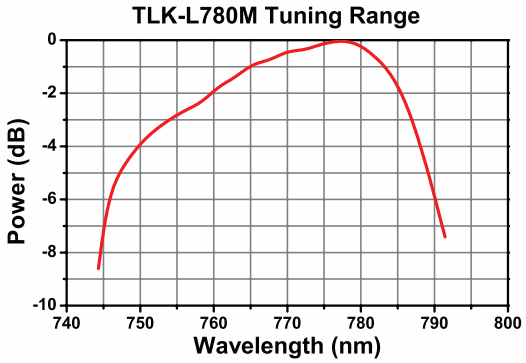
Littman Configuration



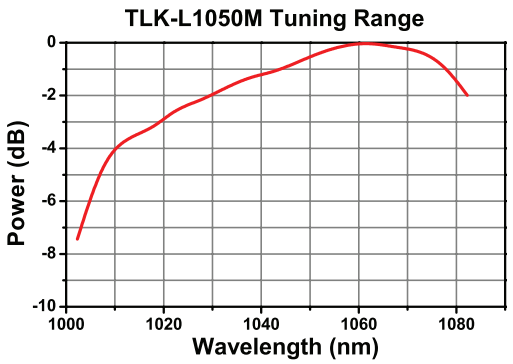
Thorlabs' Littman configuration kits are available with a 770, 1050, 1310, 1550, or 1900 nm gain element. The sub-130 kHz linewidth is ideal for applications that require a single frequency laser. Since light undergoes diffraction twice in this configuration, the result is a narrower linewidth than what is achievable with a Littrow configuration, but this narrow linewidth comes at the expense of both power and tuning range.

The 770 nm Littman configuration kit is a free-space design, while the 1050 nm, 1310 nm, 1550 nm, and 1900 nm are fiber coupled.

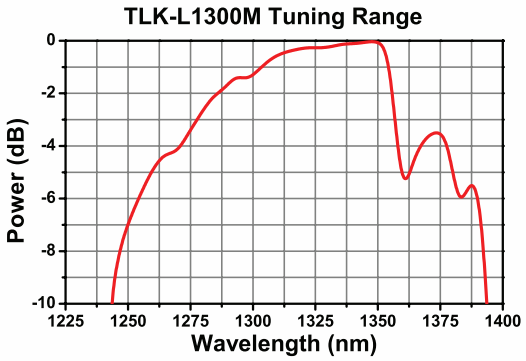
ITEM #	TLK-L780M		
	Min	Typical	Max
Center Wavelength	760 nm	770 nm	780 nm
Tuning Range (10 dB)	15 nm	30 nm	–
Peak Power	5 mW	10 mW	–
Wavelength Tuning Resolution	–	–	1 pm
Tuning Speed	–	–	40 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio		N/A	
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm



ITEM #	TLK-L1050M		
	Min	Typical	Max
Center Wavelength	1040 nm	1050 nm	1060 nm
Tuning Range (10 dB)	45 nm	60 nm	–
Peak Power	10 mW	15 mW	–
Wavelength Tuning Resolution	2 pm	–	–
Tuning Speed	–	–	30 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	45 dB	–	–
Polarization Extinction Ratio		N/A	
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm

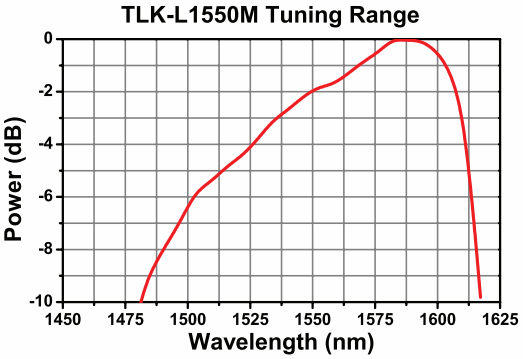


ITEM #	TLK-L1300M		
	Min	Typical	Max
Center Wavelength	1290 nm	1310 nm	1320 nm
Tuning Range (10 dB)	100 nm	130 nm	–
Peak Power	20 mW	65 mW	–
Wavelength Tuning Resolution	1 pm	–	–
Tuning Speed	–	–	25 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm

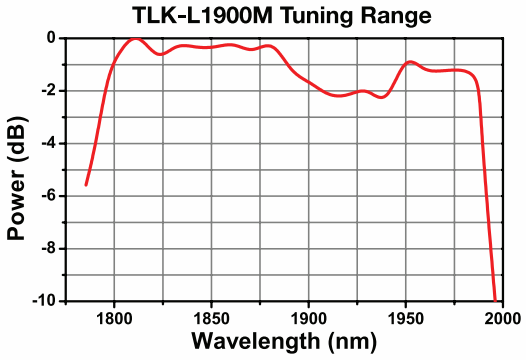


Note: The power fluctuations from 1350 to 1380 nm are due to water absorption. This can be avoided by purchasing the TLK-E enclosure and purging the system with gas.

ITEM #	TLK-L1550M		
	Min	Typical	Max
Center Wavelength	1530 nm	1550 nm	1570 nm
Tuning Range (10 dB)	70 nm	120 nm	–
Peak Power	8 mW	25 mW	–
Wavelength Tuning Resolution	–	–	1 pm
Tuning Speed	–	–	40 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	1 pm
Open-Loop Wavelength Stability (24 hr)	–	–	50 pm



ITEM #	TLK-L1900M		
	Min	Typical	Max
Center Wavelength	1870 nm	1900 nm	1930 nm
Tuning Range (10 dB)	130 nm	170 nm	–
Peak Power	5 mW	10 mW	–
Wavelength Tuning Resolution	4 pm	–	–
Tuning Speed	–	–	57 nm/s
Linewidth	–	100 kHz	130 kHz
Side Mode Suppression Ratio	30 dB	45 dB	–
Polarization Extinction Ratio	–	N/A	–
Open-Loop Power Stability (30 s)	1%	–	–
Open-Loop Power Stability (24 hr)	10%	–	–
Open-Loop Wavelength Stability (30 s)	–	–	2 pm
Open-Loop Wavelength Stability (24 hr)	–	–	100 pm



ITEM #	$	£	€	RMB	DESCRIPTION
TLK-L780M	$ 9,900.00	£ 6,831.00	€ 8.811,00	¥ 83,556.00	Tunable Laser Kit, 770 nm, Littman Configuration, Free Space
TLK-L1050M	$ 10,500.00	£ 7,245.00	€ 9.345,00	¥ 88,620.00	Tunable Laser Kit, 1050 nm, Littman Configuration, FC/APC
TLK-L1300M	$ 9,700.00	£ 6,693.00	€ 8.633,00	¥ 81,868.00	Tunable Laser Kit, 1310 nm, Littman Configuration, FC/APC
TLK-L1550M	$ 9,500.00	£ 6,555.00	€ 8.455,00	¥ 80,180.00	Tunable Laser Kit, 1550 nm, Littman Configuration, FC/APC
TLK-L1900M	$ 10,000.00	£ 6,900.00	€ 8.900,00	¥ 84,400.00	Tunable Laser Kit, 1900 nm, Littman Configuration, FC/APC

TLK-G0750M

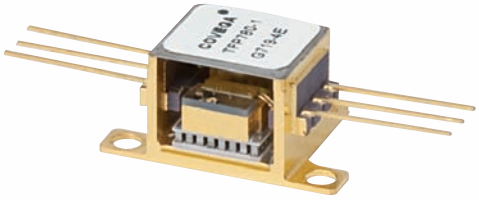
TLK-LMM

Overview

- Components Directly Compatible with Thorlabs' Tunable Laser Kits
- Convert Laser Between Littman and Littrow Configurations
- Alter Cavity to Support Other FP or SAF Gain Chips

Gain Chips

Thorlabs offers gain chips mounted in half-butterfly subassemblies for integration into the Tunable Laser Kits. When changing the gain chip in your tunable laser, please consider the top plate (below), grating module (see page 9), and collimating lens (see page 10) used. Tables that list the components used in our stock TLK configurations are shown on page 4.



ITEM #	TFP780A	SAF1171S	SAF1175S	SAF1174S	SAF1176S	SAF1176P-30	SAF1900S
Center Wavelength (CWL)	770 nm	1050 nm	1220 nm	1310 nm	1550 nm	1550 nm	1900 nm
Littman 10 dB Bandwidth	30 nm	60 nm	90 nm	130 nm	120 nm	125 nm	170 nm
Gain Chip Exit Angle	0°	26.5°	26.5°	26.5°	19.5°	19.5°	26.5°
Littman Power at CWL	45 mW	15 mW	10 mW	65 mW	25 mW	60 mW	10 mW

All values typical

ITEM #	$	£	€	RMB	DESCRIPTION
TFP780A	$ 2,200.00	£ 1,518.00	€ 1.958,00	¥ 18,568.00	Half-Butterfly-Mounted FP Gain Chip, CWL = 770 nm, Free Space
SAF1171S	$ 3,000.00	£ 2,070.00	€ 2.670,00	¥ 25,320.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1050 nm, SM Fiber Coupled
SAF1175S	$ 2,500.00	£ 1,725.00	€ 2.225,00	¥ 21,100.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1220 nm, SM Fiber Coupled
SAF1174S	$ 2,500.00	£ 1,725.00	€ 2.225,00	¥ 21,100.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1310 nm, SM Fiber Coupled
SAF1176S	$ 2,500.00	£ 1,725.00	€ 2.225,00	¥ 21,100.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1550 nm, SM Fiber Coupled
SAF1176P-30	$ 3,000.00	£ 2,070.00	€ 2.670,00	¥ 25,320.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1550 nm, PM Fiber Coupled
SAF1900S	$ 3,500.00	£ 2,415.00	€ 3.115,00	¥ 29,540.00	Half-Butterfly-Mounted SAF Gain Chip, CWL = 1900 nm, SM Fiber Coupled

Gain Chip Mounting Plates

- Mounts for Half-Butterfly or TO-Packaged Diodes
- Select Based on Lateral Beam Exit Angle of Gain Chip
- Top Plates may be Interchanged to Generate Desired Output Wavelength

These Gain Chip Mounting Plates properly angle the gain chip relative to the rest of the laser cavity. They feature a 6-pin half-butterfly mount or a TO-packaged diode mount. Mounting plate connections are made to the tunable laser kit via gold-plated, spring-loaded connectors on the bottom of the plate. The mounting plates are secured to the tunable laser kit with three M4 cap screws.

TLK-PM9

TLK-P19

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-P00	$ 885.00	£ 610.65	€ 787,65	¥ 7,469.40	Half-Butterfly Tunable Laser Kit Top Plate, 0° Exit Angle
TLK-P19	$ 885.00	£ 610.65	€ 787,65	¥ 7,469.40	Half-Butterfly Tunable Laser Kit Top Plate, 19.5° Exit Angle
TLK-P26	$ 885.00	£ 610.65	€ 787,65	¥ 7,469.40	Half-Butterfly Tunable Laser Kit Top Plate, 26.5° Exit Angle
TLK-PM5	$ 680.00	£ 469.20	€ 605,20	¥ 5,739.20	Top Plate for Ø5.6 mm TO-Packaged Diodes
TLK-PM9	$ 680.00	£ 469.20	€ 605,20	¥ 5,739.20	Top Plate for Ø9 mm TO-Packaged Diodes

Littrow Grating Modules

- Grating Modules for Operation at 980, 1310, 1550, or 1950 nm
- Includes Pivot Bracket, Arm, and Grating

Thorlabs offers four holographic reflection gratings featuring 900, 1050, 1350, or 1800 grooves/mm for use with the TLK Series of Littrow Tunable Laser Kits. They are best suited for center wavelengths at 1950, 1550, 1310, and 980 nm, respectively. The gratings are premounted on a radial arm for easy installation into existing Tunable Laser Kits.


TLK-G1350R

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-G0900R	$ 2,500.00	£ 1,725.00	€ 2.225,00	¥ 21,100.00	Littrow Grating Modules for Littrow Tunable Laser Kits, 900 Grooves/mm
TLK-G1050R	$ 2,600.00	£ 1,794.00	€ 2.314,00	¥ 21,944.00	Littrow Grating Modules for Littrow Tunable Laser Kits, 1050 Grooves/mm
TLK-G1350R	$ 2,700.00	£ 1,863.00	€ 2.403,00	¥ 22,788.00	Littrow Grating Modules for Littrow Tunable Laser Kits, 1350 Grooves/mm
TLK-G1800R	$ 2,700.00	£ 1,863.00	€ 2.403,00	¥ 22,788.00	Littrow Grating Modules for Littrow Tunable Laser Kits, 1800 Grooves/mm

Littman Grating Modules


TLK-LGP


TLK-G0750M

- Grating Modules for Operation at 770, 1310, or 1550 nm
- Grating Platform Available Separately for Converting from Littrow to Littman

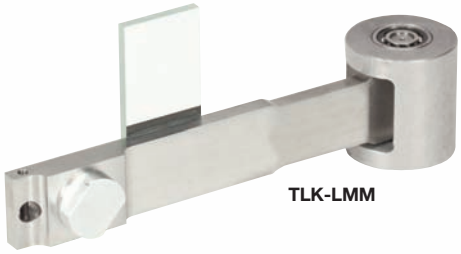
Thorlabs offers three holographic reflection gratings featuring 750, 900, or 1500 grooves/mm for use in our Littman Kits with center wavelengths of 1550, 1310, or 770 nm, respectively. The gratings, which measure 17.0 mm x 7.3 mm, are premounted for easy installation into existing Tunable Laser Kits.

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-G0750M	$ 670.00	£ 462.30	€ 596,30	¥ 5,654.80	Littman Grating Modules for Littman Tunable Laser Kits, 750 Grooves/mm
TLK-G0900M	$ 670.00	£ 462.30	€ 596,30	¥ 5,654.80	Littman Grating Modules for Littman Tunable Laser Kits, 900 Grooves/mm
TLK-G1500M	$ 735.00	£ 507.15	€ 654,15	¥ 6,203.40	Littman Grating Modules for Littman Tunable Laser Kits, 1500 Grooves/mm
TLK-LGP	$ 88.00	£ 60.72	€ 78,32	¥ 742.72	Littman Grating Platform

Littman Mirror Module

- Mirror Module for Littman Tunable Laser Kit
- Premounted Mirror for Easy Installation
- Front-Silvered Mirror

The Littman Mirror Module for Thorlabs' Tunable Laser Kits features a premounted, front-silvered mirror for easy installation. The mirror, which measures 25.0 mm x 18.0 mm, is mounted to a radial arm controlled by the Tunable Laser Kit.


TLK-LMM

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-LMM	$ 1,500.00	£ 1,035.00	€ 1.335,00	¥ 12,660.00	Littman Mirror Module for Tunable Laser Kits

Tuning Motor Mount


TLK-MM1

- Mirror / Grating Actuator Motor Mount
- Designed for Z812 Motorized Actuator
- 1/4"-80 Internal Thread for Actuator Mounting

Thorlabs' Tunable Laser Kit Tuning Motor Mount is designed to hold Thorlabs' Z812 DC motor actuator (pg. 10), which is secured using a 1/4"-80 bushing. The Motor Mount is fixated to the base plate using two M3 cap screws. A retainer spring holds the grating or mirror radial arm tight against the actuator for stable adjustments.

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-MM1	$ 300.00	£ 207.00	€ 267,00	¥ 2,532.00	Tuning Motor Mount for Tunable Laser Kits

DC Motor Tuning Actuators

- Direct Replacement for TLK Tuning DC Servo Motor
- 12 mm Travel
- 29 nm Theoretical Resolution
- 3 mm/s Max Velocity

Z812

The Z812 is the standard DC servo motor included with Thorlabs' Tunable Laser Kits. Its 1/4"-80 threaded barrel mounts to the TLK-MM1 tuning motor mount. We recommend using the TDC001 controller with this actuator; the controller is included in the standard tunable laser kits.

ITEM #	$	£	€	RMB	DESCRIPTION
Z812	$ 485.00	£ 336.30	€ 430,60	¥ 4,093.40	DC Tuning Motor for Tunable Laser Kits

Fine-Tuning Piezo Actuator


TLK-PZT1

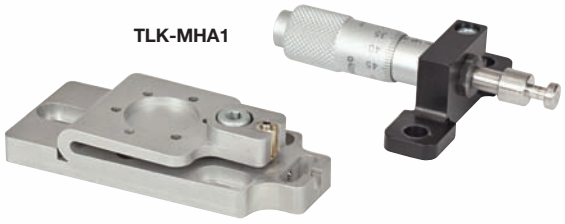
- Wavelength Tuning Open-Loop Piezo Actuator
- Use in Tandem with Main Tuning Actuator
- 9.1 µm Max Displacement
- 150 V Max, 100 V Recommended Drive Voltage
- 0.75 µF ± 20% Capacitance @ 1 kHz, 1 V_{RMS}

The piezo module is used in tandem with the Z812 tuning actuator, allowing the user to access the full tuning range, while also having the ability to finely tune the wavelength. The TLK-PZT1 has a BNC connector for use with Thorlabs' open-loop piezo controllers and is available as an optional accessory for the tunable laser kits.

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-PZT1	$ 450.00	£ 310.50	€ 400,50	¥ 3,798.00	Piezo Adjuster, 9.1 µm Travel

Mode Hop Adjuster

TLK-MHA1



- Designed to Minimize Mode Hopping
- Fine Push Adjustment
- Securely Fasten with Cap Screws

Thorlabs' Mode Hop Adjuster is designed to alter the pivot point of the radial arm in a tunable laser kit to eliminate fluctuations in the laser's intensity/power at a given mode. Adjustments are made by pushing the pivot bracket that the radial arm is mounted to. Once the desired position is reached, the pivot bracket can be secured to the kit base plate. The adjuster provides the smoothest adjustment when it is used to push the pivot.

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-MHA1	$ 1,450.00	£ 1,000.50	€ 1.290,50	¥ 12,238.00	Mode Hop Adjuster for Tunable Laser Kits

Mounted Aspheric Collimating Lenses

- Mounted Aspheric Lenses
- Two Coatings: 600 - 1050 nm or 1050 - 1620 nm

TLK-352330-B

Thorlabs offers two different mounted aspheric lenses for use in the tunable laser kit. The premounted lenses offer easy integration and alignment. Both lenses incorporate a Ø5.00 mm, f = 3.1 mm, NA = 0.68 Geltech aspheric lens. Each lens is AR coated with either our B (600 – 1050 nm) or our C (1050 – 1620 nm) coating. Please see the table on page 4 when selecting a collimating lens.

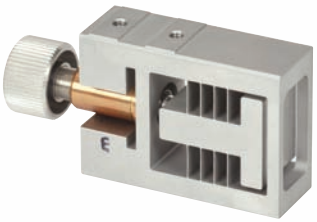
ITEM #	EFL	NA	AR COATING
352330-B	3.1 mm	0.68	600 - 1050 nm
352330-C	3.1 mm	0.68	1050 – 1620 nm

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-352330-B	$ 400.00	£ 276.00	€ 356,00	¥ 3,376.00	Tunable Laser Kit Collimating Lens, AR Coating: 600 - 1050 nm
TLK-352330-C	$ 400.00	£ 276.00	€ 356,00	¥ 3,376.00	Tunable Laser Kit Collimating Lens, AR Coating: 1050 - 1620 nm

Focus Adjuster

Thorlabs' Flexure Focus Adjuster provides precise and stable linear adjustment of the aspheric lens in the tunable laser kit. Fine adjustment is achieved using the 100 TPI adjustment screw. Enhanced stability is provided by using a flexure mechanism and a steel lead screw with a steel bearing that makes contact with a sapphire disk. A mounted aspheric collimating lens (pg. 10) is secured to the focus adjuster using two M3 cap screws. The focus adjuster is secured to the gain chip mounting plate using two M3 cap screws.

TLK-FM1



- Provides 0.3 mm of Travel
- 100 TPI Adjuster
- Stainless Steel Body Flexure Focus Adjuster
- Steel Lead Screw with Steel Ball Contacting a Sapphire Disk

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-FM1	$ 600.00	£ 414.00	€ 534,00	¥ 5,064.00	Flexure Focus Adjuster for Tunable Laser Kits

Tunable Laser Kit Enclosure

TLK-E

- Enclosure Protects Cavity and Allows for Purging
- Supports use of Heater and Beam Steering Mirrors (See Below)

The TLK-E enclosure, which is essential for the most sensitive applications, completely encases the laser, allowing the user to purge the system with gas to remove absorption lines. Windows with an AR coating for the 650 – 1050 nm range allow for free-space output.

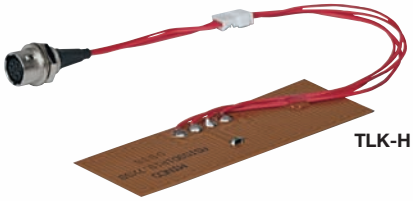
The TLK-E enclosure is also required when using the TLK-H heater and TLK-SM-1 steering mirrors (below).

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-E	$ 1,800.00	£ 1,242.00	€ 1.602,00	¥ 15,192.00	Tunable Laser Kit Enclosure

Heater Kit

- Heat Laser Cavity to Remove Absorption Lines
- Temperature Controlled with a TC200 Temperature Controller

For additional temperature stability, beyond that provided by the gain chip's TEC element, a heater kit can be added. This heater attaches between the base plate of a tunable laser kit and the bottom plate of the TLK-E enclosure. By connecting a TC200 temperature controller, the temperature of the whole enclosure can be heated. Please note that the heater kit requires the TLK-E enclosure (above).



TLK-H

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-H	$ 150.00	£ 103.50	€ 133,50	¥ 1,266.00	Tunable Laser Kit Heater
TC200	$ 535.00	£ 370.90	€ 475,00	¥ 4,515.40	Temperature Controller

Beam Steering Mirrors

TLK-SM-1

- Use Two Beam Steering Mirrors to Align Beam to the Optical Table
- Protected Silver Coating

When using a free-space tunable laser kit, it is often desirable to have your emitted beam aligned to your optical table (i.e., a beam path following the hole matrix). The TLK-SM-1 steering mirrors redirect the beam of a free-space Littman configuration laser so that it is aligned to the hole matrix. A pair of these mirrors is normally required to accomplish this; however, one steering mirror can position the beam perpendicular to the housing. Please note that these mirrors mount to the base of the TLK-E enclosure (above), and thus, the enclosure is required.

ITEM #	$	£	€	RMB	DESCRIPTION
TLK-SM-1	$ 450.00	£ 310.50	€ 400,50	¥ 3,798.00	Steering Mirror for Littman Tunable Laser Kit w/ Enclosure, 1 Mirror Element

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