

## S1FC1310- August 14, 2024

Item # S1FC1310 was discontinued on August 14, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

### FIBER-COUPLED LASER SOURCES: NIR

- ▶ SM and PM Sources Available
- ▶ Minimum Full Output Powers from 1.5 to 25.0 mW
- ▶ Stable, Low Noise, Constant Power Operation



Front Panel Display Provides an Enable Button, Laser Power Control, and Display Screen



#### OVERVIEW

##### Features

- SM and PM Available Wavelengths: 785 to 1550 nm
- Single Mode or Multimode FC/PC Fiber Interface
- Stable, Low Noise, Constant Power Operation
- Power Level is Adjustable via Knob and BNC Modulation Input
- Interlock Circuit Provided via 2.5 mm Mono Jack

Thorlabs offers single mode and polarization-maintaining fiber-coupled laser sources that emit in the NIR portion of the spectrum. Each benchtop laser source features both a pigtailed Fabry-Perot laser diode and current controller in a single unit.

Single Channel Benchtop Laser Sources Selection Guide					
Spectrum	Wavelength	TEC	Laser Type	Cavity Type	Output Fiber Type
Visible	405 - 675 nm	No	Semiconductor	Fabry Perot	SM, MM, or PM
	405 - 685 nm	Yes	Semiconductor	Fabry Perot	SM
NIR	785 - 1550 nm	No	Semiconductor	Fabry Perot	SM or PM
	705 - 2000 nm	Yes	Semiconductor	Fabry Perot	SM
	1310 - 1550 nm	Yes	Semiconductor	DFB	SM
	1900 - 2000 nm	N/A	Fiber Laser	Fabry Perot	SM
MIR	2.7 $\mu$ m	N/A	Fiber Laser	Fabry Perot	SM

**Other Fiber-Coupled Laser Sources**

The front panel of each laser source displays the output power in mW, an on/off key, an enable button, and a knob to adjust the laser power. The back panel includes a BNC input that allows the laser diode drive current to be controlled via an external DC or sine wave voltage source and a remote interlock input.

Please refer to the table to the right for all of our single channel benchtop laser sources.

Key Specifications <sup>a</sup>										
Item #	S1FC780	S1FC785	S1FC808	S1FC980	S1FC1060	S1FC1310	S1FC1550	S1FC780PM	S1FC1310PM	S1FC1550PM
Fiber Type	SM							PM		
Wavelength	785 nm	785 nm	808 nm	980 nm	1064 nm	1310 nm	1550 nm	785 nm	1310 nm	1550 nm
Spectrum								-	-	-
Minimum Full Output Power	10.0 mW	20.0 mW	25.0 mW	13.0 mW	20.0 mW	1.5 mW	1.5 mW	6.25 mW	1.5 mW	1.5 mW
Power Stability	15 min: $\pm 0.05$ dB, 24 hr: $\pm 0.1$ dB (After 1 hr Warm-up at $25 \pm 10$ °C Ambient)									

a. Complete specifications are available in the Specs tab above.

SPECS

Single Mode Source Specifications								
Item #		S1FC780	S1FC785	S1FC808	S1FC980	S1FC1060	S1FC1310	S1FC1550
Wavelength	Minimum	775 nm	775 nm	798 nm	970 nm	1054 nm	1290 nm	1530 nm
	Typical	785 nm	785 nm	808 nm	980 nm	1064 nm	1310 nm	1550 nm
	Maximum	795 nm	795 nm	818 nm	990 nm	1074 nm	1330 nm	1570 nm
Spectrum <sup>a</sup>								
Minimum Full Output Power		10.0 mW	20.0 mW	25.0 mW	13.0 mW	20.0 mW	1.5 mW	1.5 mW
Setpoint Resolution		0.01 mW	0.1 mW	0.1 mW	0.01 mW	0.1 mW	0.01 mW	0.01 mW
Laser Class		3B	3B	3B	3B	3B	1	1
<b>Fiber</b>								
Fiber Type		780HP	780HP	SM800-5.6-125	SM980-5.8-125	HI1060-J9	SMF-28-J9	SMF-28-J9
Mode Field Diameter <sup>b</sup>		4.7 - 6.9 μm @ 830 nm	5.0 ± 0.5 μm @ 850 nm	4.7 - 6.9 μm @ 830 nm	5.3 - 6.4 μm @ 980 nm	6.2 ± 0.3 μm @ 1060 nm	9.2 ± 0.4 μm @ 1310 nm	10.4 ± 0.5 μm @ 1550 nm
Numerical Aperture		0.10 - 0.14	0.13	0.10 - 0.14	0.13 - 0.15	0.14	0.14	0.14
Output Fiber Connector		FC/PC, Wide 2.1 mm Key Compatible						
<b>Fiber</b>								
Power Stability		15 min: ±0.05 dB, 24 hr: ±0.1 dB (After 1 hr Warm-up at 25 ± 10 °C Ambient)						
Display Accuracy		±10%						
Adjustment Range		~0 mW to Full Power						
Input Power		115 VAC / 230 VAC (Switch Selectable) 50 - 60 Hz						
Modulation Input		0 - 5 V = 0 - Full Power, DC or Sine Wave Input Only						
Modulation Bandwidth		5 kHz Full Depth of Modulation 30 kHz Small Signal Modulation						
<b>Environmental</b>								
Operating Temperature		15 to 35 °C						
Storage Temperature		0 to 50 °C						

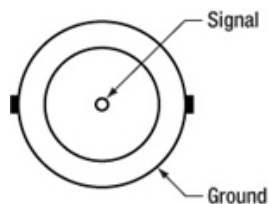
- a. Spectral plots are typical, and actual spectra vary from lot to lot. For further information, please contact Tech Support.
- b. Mode Field Diameter (MFD) is specified as a nominal value.

Polarization-Maintaining Source Specifications			
Item #	S1FC780PM	S1FC1310PM	S1FC1550PM
Wavelength <sup>a</sup>	785 nm	1310 nm	1550 nm
Minimum Full Output Power	6.25 mW	1.5 mW	1.5 mW
Extinction Ratio <sup>a</sup>	>20 dB	>23 dB	>23 dB
Stability	15 min: ±0.05 dB, 24 hr: ±0.1 dB (After 1 hr Warm-up at 25 ± 10 °C Ambient)		
Display Accuracy	±10%		
Setpoint Resolution	0.01 mW		
Laser Class	3B	1	
Adjustment Range	~0 mW to Full Power		
<b>Environmental</b>			
Operating Temperature	15 to 35 °C		
Storage Temperature	0 to 50 °C		
AC Input	115 VAC / 230 VAC (Switch Selectable) 50 - 60 Hz		
Modulation Input	0 - 5 V = 0 - Full Power, DC or Sine Wave Input Only		
Modulation Bandwidth	5 kHz Full Depth of Modulation 30 kHz Small Signal Modulation		
Fiber	PM780-HP	PM1300-HP	PM1550-HP

- a. The information provided in the specifications table is meant to serve as a guideline. However, since each pigtailed laser diode is unique, the specific data is included on a specifications sheet that is shipped with the product.

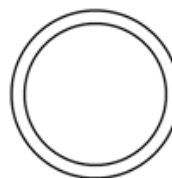
## PIN DIAGRAMS

### Modulation In BNC Female



0 to 5 V Max, 50  $\Omega$

### Remote Interlock Input 2.5 mm Mono Phono Jack



Terminals must be shorted either by included plug or user device, i.e. external switch, for laser mode "ON" to be enabled.

## Single Mode Fiber-Coupled Laser Sources



- ▶ Seven Wavelengths Available: 785 to 1550 nm
- ▶ Minimum Full Output Powers of Up to 25.0 mW
- ▶ Fiber Patch Cables Sold Separately

These Single Mode Fiber-Coupled Laser Sources conveniently package a pigtailed Fabry-Perot laser diode and current controller into a single benchtop unit. The Fabry-Perot laser diode inside each unit is pigtailed to a single mode fiber that is terminated at an FC/PC bulkhead (wide and narrow key compatible) attached to the front panel of the unit. Thorlabs offers single mode fiber optic patch cables for connecting to the bulkhead on the front panel. To minimize losses, we recommend using a fiber patch cable that is the same fiber type as the fiber-pigtailed laser; refer to the *Specs* tab for the internal fiber type used for the pigtail. Additionally, to reduce noise from back reflections, we recommend that a hybrid FC/PC to FC/APC cable be used with the FC/PC end connected to the laser source.

Also found on the front panel is a display that shows the output power in mW, an on/off key, an enable button, and a knob to adjust the laser power. The back panel includes an input that allows the laser diode drive current to be controlled via an external DC or sine wave voltage source and a remote interlock input.

Note: The laser must be off when connecting or disconnecting fibers from the device, particularly for power levels above 10 mW.

Part Number	Description	Price	Availability
S1FC780	Fabry-Perot Benchtop Laser Source, 785 nm, 10.0 mW, FC/PC	\$1,773.58	Today
S1FC785	Fabry-Perot Benchtop Laser Source, 785 nm, 20.0 mW, FC/PC	\$1,664.28	Today
S1FC808	Fabry-Perot Benchtop Laser Source, 808 nm, 25.0 mW, FC/PC	\$2,077.69	Today
S1FC980	Fabry-Perot Benchtop Laser Source, 980 nm, 13.0 mW, FC/PC	\$1,737.94	Today
S1FC1060	Fabry-Perot Benchtop Laser Source, 1064 nm, 20.0 mW, FC/PC	\$3,231.15	Today
S1FC1310	Fabry-Perot Benchtop Laser Source, 1310 nm, 1.5 mW, FC/PC	\$1,628.63	Lead Time
S1FC1550	Fabry-Perot Benchtop Laser Source, 1550 nm, 1.5 mW, FC/PC	\$1,677.35	7-10 Days

## Polarization-Maintaining Fiber-Coupled Laser Sources



- ▶ Three Wavelengths Available: 785 nm, 1310 nm, and 1550 nm
- ▶ Minimum Full Output Powers of Up to 6.25 mW
- ▶ Fiber Patch Cables Sold Separately
- ▶ Slow Axis of the PM Fiber Aligned to the Narrow Key of the FC/PC Bulkhead Connector



Click to Enlarge  
S1FC1310PM Shown with PM1300-XP  
Polarization-Maintaining Patch Cable

These Polarization-Maintaining Fiber-Coupled Laser Sources package a pigtailed Fabry-Perot laser diode inside each benchtop unit. The laser diode is pigtailed to a single mode PM fiber

that is terminated at an FC/PC bulkhead attached to the front panel of the unit. During the pigtailing process, the fiber alignment is actively maintained so that the polarization axis of the laser diode is aligned with the slow-axis of the PM fiber. In addition, the slow-axis of the PM fiber is aligned to the narrow key of the FC/PC bulkhead connector on the front panel of the benchtop unit. Thorlabs offers polarization-maintaining fiber optic patch cables for connecting to the bulkhead on the front panel. To minimize losses, we recommend using a fiber patch cable that is the same fiber type as the fiber-pigtailed laser; refer to the *Specs* tab for the internal fiber type used for the pigtail. Additionally, to reduce noise from back reflections, we recommend that a hybrid FC/PC to FC/APC cable be used with the FC/PC end connected to the laser source.

Also found on the front panel is a display that shows the output power in mW, an on / off key, an enable button, and a knob to adjust the laser power. The back panel includes an input that allows the laser diode drive current to be controlled via an external voltage source and a remote interlock input.

Note: The laser must be off when connecting or disconnecting fibers from the device.

Part Number	Description	Price	Availability
S1FC780PM	Fiber-Coupled Laser Source, 785 nm, 6.25 mW, PM Fiber, FC/PC	\$2,017.10	Today
S1FC1310PM	Fiber-Coupled Laser Source, 1310 nm, 1.5 mW, PM Fiber, FC/PC	\$2,077.69	Today
S1FC1550PM	Fiber-Coupled Laser Source, 1550 nm, 1.5 mW, PM Fiber, FC/PC	\$2,077.69	7-10 Days

