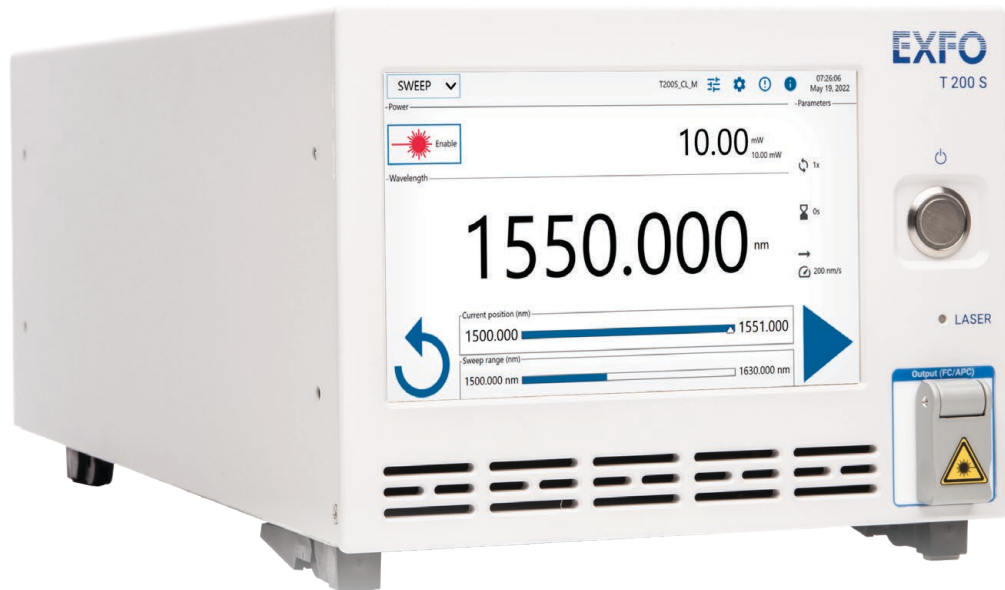


# T200S

## HIGH-POWER CONTINUOUSLY TUNABLE LASER

- High sweep-speed tunable laser, essential for R&D applications and for testing photonic integrated circuits and optical components.



### KEY FEATURES

- Up to 200 nm/s scanning speed
- Nominal 10 dBm over full tunable spectral range
- Ultra-low spontaneous emission and narrow linewidth
- Wavelength coverage: 1260 - 1360 nm or 1500 - 1630 nm
- Compact form factor
- Wavelength tuning and continuous sweep modes
- Active mode-hop-free operation

### APPLICATIONS

- Passive optical components
- Photonic integrated circuits
- Multipurpose tunable laser for R&D

### RELATED PRODUCTS



CTP10  
component tester



CT440  
component tester



T500S  
tunable laser

## ESSENTIAL FOR OPTICAL SPECTRAL CHARACTERIZATION

A continuously tunable laser is an essential instrument in R&D labs and on production floors. It covers a variety of applications where rapid, continuous wavelength tuning is required.

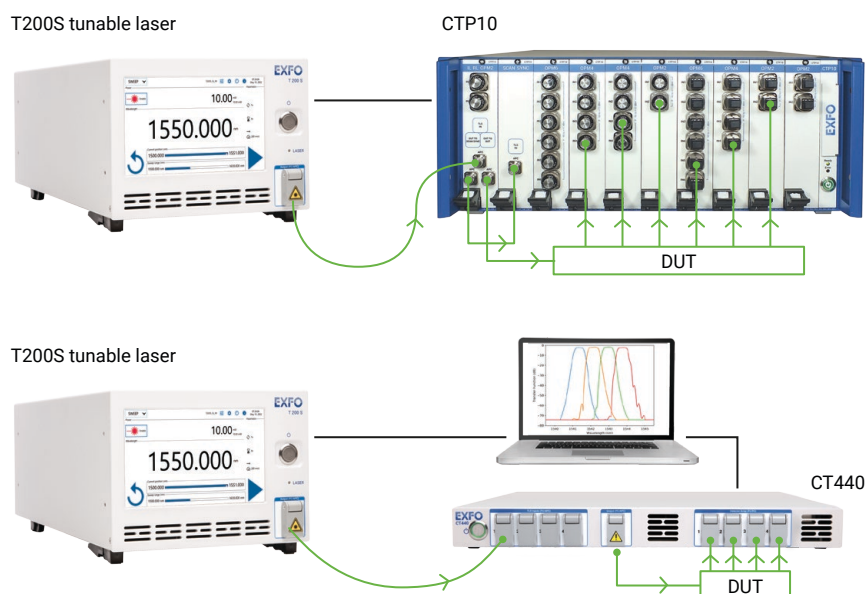
The T200S laser delivers speed and high power while sweeping in addition to narrow linewidth at fixed wavelengths.

### Testing high-speed photonic integrated circuits (PICs)

Integrated photonics can include complex optical components with high-contrast spectrum. For instance, a ring resonator may have very sharp features making it difficult to characterize insertion loss. In addition to insertion loss, some devices require extended measurements of return loss or polarization dependent loss, with the same level of accuracy. Finally, simultaneous testing of a large number of devices or outputs from one single device is also required to speed up PIC characterization.

To test such devices, the T200S laser can be jointly operated with the CTP10, EXFO's component testing platform. With high-resolution and high-accuracy spectral measurement, the CTP10 is an integrated solution that leverages the full potential of the T200S for operations at 200 nm/s sweep speed. The T200S is also compatible with the CT440, EXFO's compact component tester operating at 100 nm/s.

For more details, please refer to the CTP10 or CT440 specification sheets.



### Optical component testing

The T200S builds on previous innovations for tunable lasers such as ultra-low signal-to-source spontaneous emission ratio (SSSER), high-power cavity and mode-hop-free operation. These three parameters are key for high-quality optical component testing, either at specific fixed wavelengths or through a swept wavelength scan.

In labs or on production floors, the test instrument can be easily operated using the large touchscreen with an ergonomic graphical user interface and it can be fully automated using SCPI commands from the Ethernet port at the back of the unit.

### Scientific R&D

In R&D environments, continuously tunable lasers are often used in swept wavelength applications but they can also be required to tune to a particular stable wavelength with narrow linewidth.

The T200S has a dedicated tuning mode that optimizes linewidth while maintaining high power stability.

## INDUSTRY-LEADING FEATURES

### 10-dBm output power with high spectral purity

The T200S exhibits crystal-clear optical spectrum at a nominal optical output power of 10 dBm over the entire tuning range. Indeed, the optical cavity eliminates broadband source spontaneous emission (SSE) without any compromise on optical power, and can be set to an optimized linewidth ( $< 50$  kHz).

High spectral purity is maintained throughout the laser sweep thanks to the active mode-hop control, ensuring reliable wavelength sweeps are achieved over and over again.

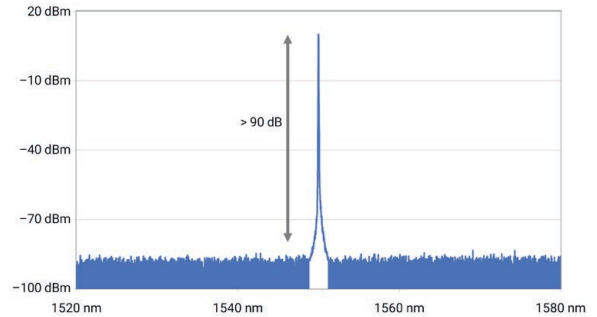


Figure 1. High power and high dynamic range.

### High-speed tunability

The T200S can be configured with a scanning speed of 200 nm/s as an option. Where speed is critical, the T200S proves an essential addition to ensure repeatable yet fast measurements. Otherwise, the laser can be set to slower scanning speeds (e.g., for legacy detection systems).

### Wavelength tuning or continuously swept wavelength scans

The T200S has two user modes: TUNE or SWEEP. Each is optimized for specific usage. TUNE mode optimizes the laser control to ensure narrow linewidth at any wavelength or provide rapid and accurate “go-to” wavelength tuning. SWEEP mode performs high-speed mode-hop-free scans over the selected wavelength range of the laser.

### Automation for high precision spectral measurements

The T200S is a key part of a spectral characterization system using EXFO’s component testing equipment (CTP10 or CT440), resulting in a spectral measurement benefiting from a wavelength accuracy of  $\pm 5$  pm and excellent wavelength repeatability. Automation of the new laser source is taken care of by these component testing instruments with limited impact on existing automation programs. As a stand-alone laser, Ethernet control makes it possible to remotely drive the laser from any location.

### Compact and easy-to-use

The half-rack configuration make the T200S an attractive device for lab applications, with limited footprint. The screen can be adjusted to suit dark optical lab environments and display relevant information so that you can see them from the other side of the optical bench.

A rackmount accessory is available to mount one or two lasers inside a 19-in rack bench. With control buttons located at either corners of the screen, operating the laser can be done without even looking at the screen.

### Part of the leading series of continuously tunable lasers

The T200S is part of EXFO’s series of continuously tunable lasers that also include the T500S offering adjustable high power, bidirectional sweep functionality and spectral coverage from O-band to U-band.

For more details, please refer to the [T500S-HP specification sheet](#).

## SPECIFICATIONS – OPTICAL CHARACTERISTICS

	T200S-O	T200S-CL
<b>Wavelength</b>	Wavelength range (nm)	1260–1360
	Wavelength uncertainty <sup>a</sup> (pm)	±5 (typical) ±20 (guaranteed)
	Wavelength repeatability <sup>b</sup> (pm)	±5 (typical)
	Wavelength stability <sup>c</sup> (pm)	±5
	Wavelength resolution setting (pm)	1
<b>Sweep control</b>	Maximum speed (nm/s)	100 (200 optional)
	Adjustable speed (nm/s)	20, 50, 100, 200 (optional)
	Mode-hop-free operation	Active mode-hop cancellation
<b>Optical power</b>	Nominal output power over full wavelength range (dBm)	10
	Power stability <sup>c</sup> (dB)	±0.01
<b>Spectral characteristics</b>	Linewidth (10 μs integration time) (kHz) <sup>d</sup>	< 50 (typical)
	Linewidth (100 μs integration time) (kHz) <sup>d</sup>	< 300 (typical)
	Side mode suppression ratio (SMSR) (dB)	> 45
	Signal-to-source spontaneous emission ratio (SSSER) <sup>e</sup> (dB)	> 90 (typical)
	Signal-to-total-source spontaneous emission ratio (STSSER) (dB) <sup>f</sup>	> 75 (typical)
	Relative intensity noise (RIN) <sup>g</sup> (dB/Hz)	< -145
<b>Optical output</b>	Optical fiber type <sup>h</sup>	PM optical fiber, FC/APC connector
	PER (dB)	17 (typical)

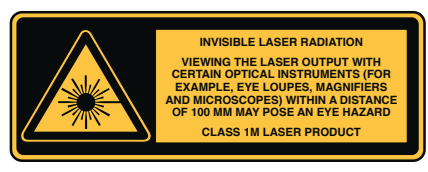
All specifications given at temperature 21°C ±1°C, after a 60-minute warm-up.

- a. TUNE mode, high accuracy setting.
- b. TUNE mode, high accuracy setting and for wavelength tuning from low to high wavelength.
- c. Over one hour.
- d. In TUNE mode, optimized linewidth setting.
- e. Measured over a bandwidth of 0.1 nm.
- f. Measured over a span of 100 nm with an exclusion zone of ±0.6 nm around the signal.
- g. RIN within 100 MHz - 3 GHz range with RBW = 30 kHz.
- h. Fiber's slow axis and polarization aligned with key connector.

## SPECIFICATIONS – HARDWARE

<b>Environmental conditions</b>	Operating temperature	15 °C to 35 °C (59 °F to 95 °F)
	Operating humidity	< 80% (non-condensing)
	Warm-up time (hour)	1
<b>Physical footprint</b>	Size (L x H x D)	217 mm x 173 mm x 441 mm (8.54 in x 6.81 in x 17.36 in)
	Weight	9 kg (19.84 lb)
<b>Connectivity</b>	Monitor	7-in capacitive touchscreen
	Remote communication	Ethernet RJ45 LAN 10/100/1000 Mbit/s
	Electrical BNC ports	1x trigger IN, 1x trigger OUT, power monitoring and wavelength monitoring
	USB ports	USB 3.0 (1), USB 2.0 (2)
<b>Security</b>	Laser safety	Class 1M
	Power supply	100 to 240V AC/ 50 to 60 Hz / 0.65 - 0.3 A
<b>Accessories (sold separately)</b>	Rackmount	4U tablet accommodating 2 units

## LASER SAFETY



## ORDERING INFORMATION

T200S-XX-XX-M-58

**Wavelength range**

O = 1260 – 1360 nm  
CL = 1500 – 1630 nm

**Scanning speed**

100 = 100 nm/s max sweep speed  
200 = 200 nm/s max sweep speed

Example: T200S-CL-200-M-58

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