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Multi-channel Tunable Lasers
ECL-200/210



santec

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The ECL tunable laser series provides a rack-mounted, multi-channel solution that caters specifically to the needs of both DWDM production and research engineers. The ECL-200 and ECL-210 offer excellent long term wavelength and power stability in conjunction with notably high output power. Each unit has a wide tuning range of more than 100 nm which is selectable in the ranges 1270 ~ 1350 nm and 1430 ~ 1630 nm. In addition, Santec's unique tuning mechanism enables any wavelength within the specified tuning range to be easily and accurately selected.

The ECL systems share many standard features that include Automatic Power Control, fine-tuning wavelength control, coherence control, and a GPIB/RS-232C interface with drivers for LabVIEW™ and Visual Basic™.

The ECL-200 features manual coarse-wavelength tuning and electronic fine-wavelength tuning controls, while the ECL-210 offers complete electronic wavelength tuning (coarse and fine) which is fully controllable using remote communications.

In addition, ECL-210 builds in a optical variable attenuator (OVA) as standard.

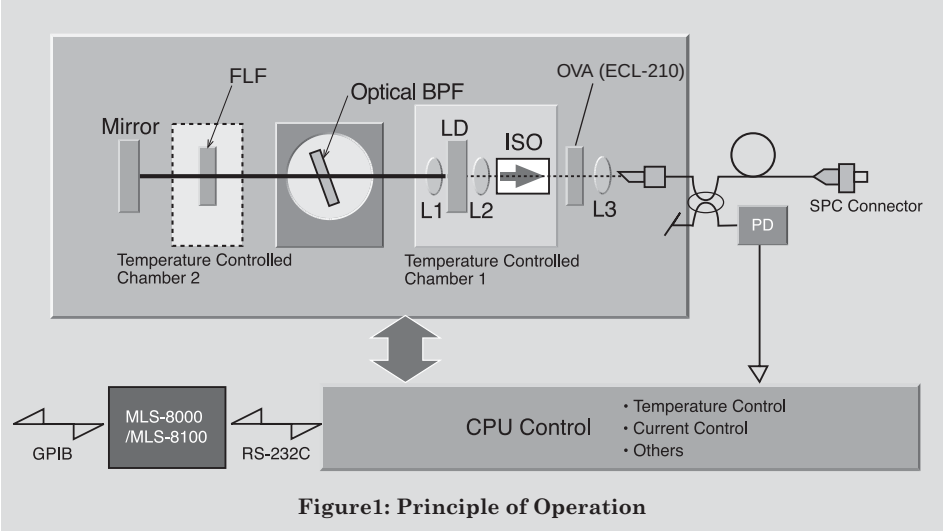


Figure1: Principle of Operation

Features

- Wide tuning range over 100nm
- High power (>10mW typ.)
- 1.3µm, 1.4µm range available

Output Power

Wavelength	Nomal (mW)	High Power Option
Peak	>8	>10
40nm	>6	>7
80nm	>4	>5
100nm	>3	>4

Model Comparison

	ECL-210	ECL-200
Peak Power	10mW (typ)	10mW (typ.)
Tuning Range	100nm	>100nm
Wavelength Resolution	0.024nm	0.024nm
Wavelength Accuracy	<±0.1nm	-
Control	electronic tuning	manual tuning
Power Indication	yes	none
Wavelength Indication	yes	none

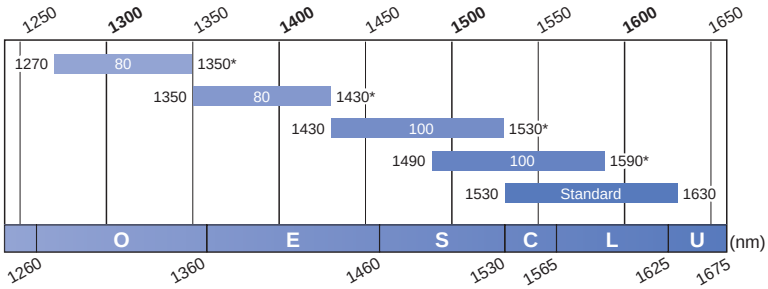
CP-10E Control Pad for ECL-200/210

The ECL lasers feature a simple, easy-to-use front panel interface. The CP-10E offers additional control, providing full support of all functions in a compact handheld unit.



Wavelength Selection

Ask us for other wavelength range.



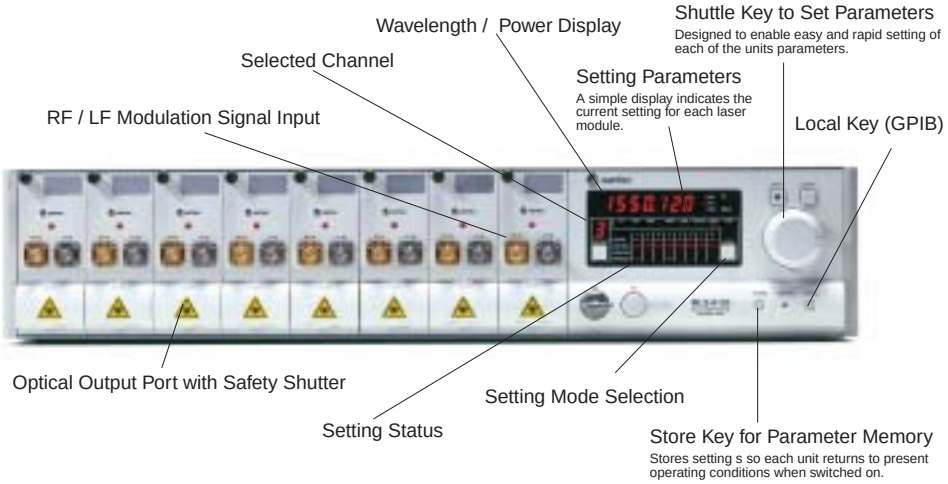
Wavelength	Available Range	High Power Option
*1270 - 1350	80nm	none
*1350 - 1430	80nm	none
*1430 - 1530	100nm	none
*1490 - 1590	100nm	yes
1530 - 1630	100nm	yes

* For certain wavelengths below 1500nm performance may not meet specification due to OH absorption.

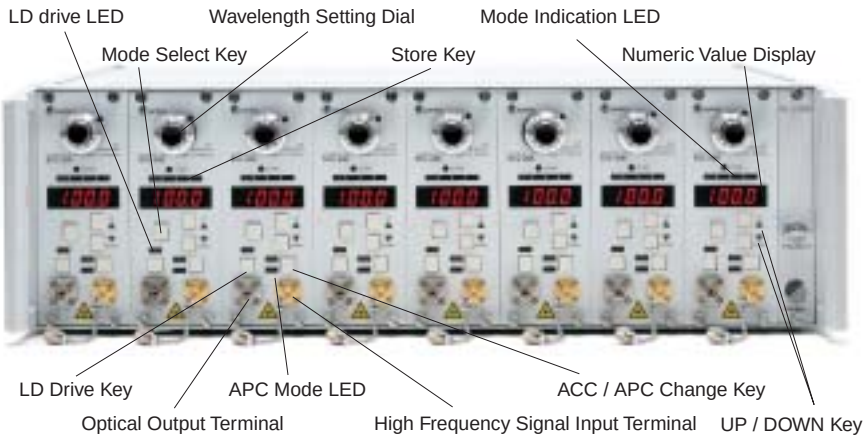
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ECL-210

MLS-8100 (max 8ch loading)/ MLS-2100 (max 2ch loading) is a rack supplying power to ECL-210.
MLS-8100/2100 can control ECL-210 by direct operation to the front panel and via GPIB/RS-232C communication from the outside.
Easy operations enable you to obtain high power and excellent stability.



ECL-200



ECL-200 is supplied power by MLS-8000 (max 8ch loading) / MLS-2100 (max 2ch loading).
It can obtain >100nm range by turning optical band path filter (OBPF) and <0.01nm resolution by adjusting frequency lock filter (FLF)'s environmental temperature.
ECL-200 requires OSA and so on to manually control wavelength and power but it is a low cost tunable laser for engineers working in optical communication industry.

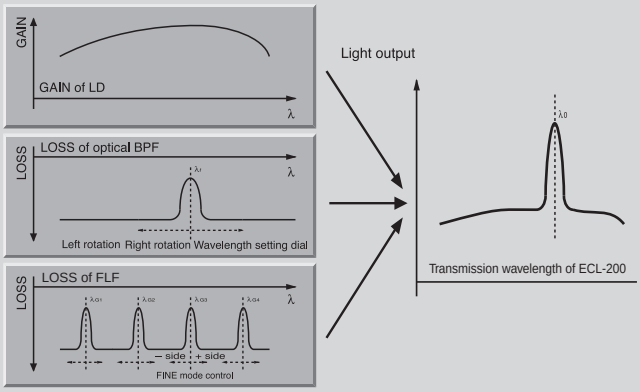


Figure 2

As for the transmission wavelength of ECL-200, laser oscillation is made at wavelength wherein the selection wavelength of the OBPF (0.024nm resolution) in the external cavity (adjustable by the wavelength setting dial) synchronizes with the wavelength grid of the FLF (100GHz intervals). (Refer to Figure 2)

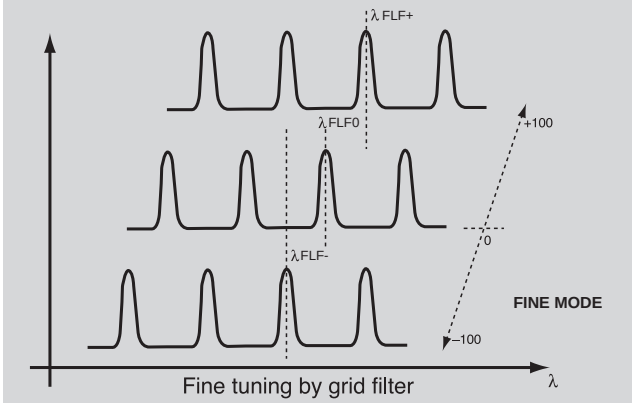


Figure 3

When the environmental temperature of the FLF is controlled by FINE mode (adjustable by the up/down key) and thereby the position of the wavelength grid of the FLF is adjusted, it is possible to obtain wavelength that cannot be obtained by only adjusting the wavelength setting dial. (Refer to Figure 3)

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■ Specifications

Category	Parameter	Unit	ECL-200	ECL-210	Notes
Wavelength Characteristics	Tuning Range	nm	1530 to 1630		Refer to "Wavelength Selection"
			100		Refer to "Wavelength Selection"
	Resolution	nm	<0.024		0.024nm + fine tuning
	Accuracy	nm	-	<±0.1	
	Repeatability	nm	-	<±0.01	N=50 /Measured at center wavelength
	Stability	nm	<±0.01		After a warm-up 1h/1hour /at center wavelength by wavemeter
	Fine Tuning Range	GHz	100	200	
Power *1	Output Power	mW	>8 (Peak)		Refer to "Output Power"
	Accuracy	%	-	5	
	Repeatability	dB	-	<±0.01	N=50 /Measured at center wavelength /at 6dBm
	Stability	dB	<±0.01		After a warm-up 1h/1hour /APC mode / by fiber with APC
	APC Flatness	dB	-	<±0.2	
	Built in Attenuator Option	dB	-	0 to 20	Resolution 0.04dB (Typ.)
Environmental Conditions	Operating Temp. Range	ºC	15 to 35		
	Operating Humidity Range	%	<80		non condensing
	Storage Temp. Range	ºC	10 to 40		
	Storage Humidity Range	%	<80		non condensing
	Recommendation Calibration Period	Year	1		
Spectrum	Spectrum Line Width (Coh. OFF)	MHz	<0.2		Measured at center wavelength
	Spectrum Line Width (Coh. ON)		0.2 to 200		Variable /Measured at center wavelength
	SSR	dB	>50		Measured at center wavelength
	RIN	dB	>145		Measurement Freq. <1GHz
Interface	Optical Connector	-	FC or SC		
	Optical Fiber	-	SMF or PMF		
	Connector Polish	-	SPC or APC		
	GP-IB	-	None		It is in a MLS. (IEEE-488) *2
	RS-232C	-	Yes		Communicates to MLS *2
Modulation	LF modulation	KHz	DC-10		
	(RF Modulation option)	MHz	1-100		at 3dB Down
Dimensions	Width x Height x Depth	mm	51x129x280	35x85x350	1ch
	Weight	kg	1.5	0.5	

*1 For certain wavelength below 1500nm performance may not meet specification due to OH absorption.
*2 MLS-8000/2000 for ECL-200, MLS-8100/2100 for ECL-210: These are power supply units for ECL-200/210.

■ Ordering Code

ECL-200/210 -□□□□□□-B-C-□□-□□-F-G

A: Wavelength: **530630**: 1530~1630nm **270350**: 1270~1350nm
430530: 1430~1530nm **490590**: 1490~1590nm

B: Fiber: **S**: SMF **P**: PMF

C: Connector: **F**: FC **S**: SC

D: Connector Polish: **SP**: SPC **AP**: APC

E: Modulation: **00**: None
LF: LF modulation (Standard for ECL-210)
RF: RF modulation

F: Power: **0**: Normal Power H: High Power

G: Control Pad
0: None **C**: Control pad

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