



The xELS is a pluggable External Laser Source to enable highly parallel IM/DD and highly parallel coherent CPO applications

Features

- Up to 32 wavelengths on 100 GHz grid
- Output power of 14 dBm per channel
- Per channel SMSR >30 dB
- Linewidth <100 kHz
- OFC locked wavelengths enable vastly reduced DSP complexity and reduced thermal and electronic control complexity
- Pluggable form factor complying with OIF ELSFP IA. Enables field serviceability and easy replacement.

Target Specifications

Wavelength Grid	CW-WDM 100/200/400 GHz
Centre Wavelength	1300.05 nm
Number of Channels	Up to 32
Output Power per channel	14 dBm
Linewidth	<100 kHz
Channel SMSR	>30 dB
Relative Intensity Noise	<-150 dB/kHz
Wavelength Stability	+/- 2.5 pm
Operating Case Temperature	-40 to 85 °C

EXCELS

External Comb-enhanced Laser Source

The explosion of Artificial Intelligence (AI) and Machine Learning (ML) applications has led to immense pressure on data centre optical networks and has driven the rollout of Co-Packaged Optics (CPO) solutions. In CPO systems transceiver optical engines (usually Silicon Photonics) are integrated into the system enclosure near to the ASIC chip. Optical power is fibre coupled into the optical engines from faceplate pluggable external laser source (ELS) modules. Successive generations of CPO architectures will rely on vast increases in parallelism and channel rates. The capacity of today's CWDM IM/DD solutions will be rapidly exhausted in the coming years necessitating a move to denser wavelength grids and higher modulation formats. Commensurate improvements in the quality of the optical power supply is crucial to enabling this development.

In anticipation of this shift Pilot Photonics is excited to unveil our Comb-enhanced External Laser Source (xELS). This pluggable module will combine Pilot Photonics' proven expertise in optical frequency comb (OFC) and laser technologies to deliver a low-linewidth high power multi-wavelength laser source in a single package. The hybrid integration of a high-Q Silicon Nitride micro-resonator with Indium Phosphide based pump, demultiplexing and amplifying photonic integrated circuits (PICs) combines the frequency precision of an optical frequency comb with output powers comparable to a laser array.

This module will, for the first time, allow highly parallel high bit rate coherent communication to be brought to the data centre.

Applications

External Laser source to support CPO systems in hyperscale data centres for both:

- Highly parallel IM/DD communications
- Highly parallel coherent communications