

# Exalos Swept Source | ESS – 840nm

## Applications

- Optical Coherence Tomography
- Bio-medical Imaging
- Industrial metrology
- Optical Sensing
- Spectroscopy

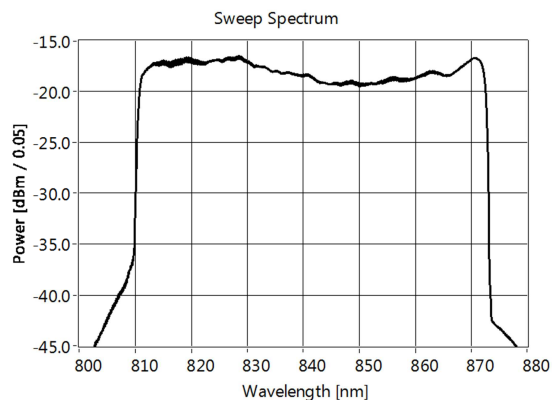
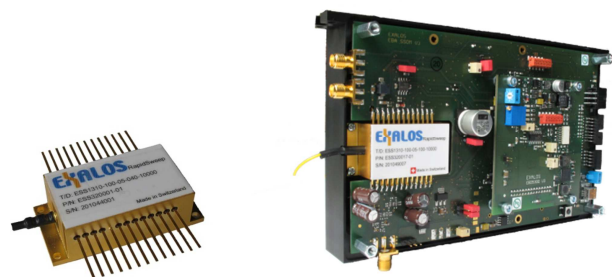
## Product Features

- High sweep frequency (up to 150 kHz)
- Wide sweep range (up to 60 nm)
- High output power (up to 12 mW)
- Long ranging depth
- Compact turn-key system
- USB interface
- Sweep trigger output
- Average optical power monitoring
- OEM versions available

Proprietary, patent-protected optical design of the micro-optical swept laser module. The entire laser cavity is sealed within a 26-pin BTF package. Its resonant MEMS mirror provides low scan jitter and high phase stability.

## Description

The Exalos swept source (ESS) is a fiber-coupled turn-key laser engine capable of fast wavelength sweep operation (1 kHz to 150 kHz) over wide spectral range. The heart of the ESS is a MEMS-based micro-optic swept laser module in a hermetically sealed 26-pin butterfly package. Its compact and robust packaging enables high performance over broad-based field deployment. Both bench-top instrument and OEM-module versions are available.





ESS-840nm-100kHz/150kHz				
Swept Source Parameters	Min	Typ	Max	Unit
Center Wavelength	820	840	860	nm
Sweep Range (-10dB)	50	60	70	nm
A-scan frequency <sup>1</sup>	95 / 145	100 / 150	115 / 155	kHz
Coherence length (in air) <sup>2</sup>		4 / 3		mm
6-dB Amplitude Fall-off		4 / 3		mm
20-dB Amplitude Fall-off		9 / 7		mm
Sweep duty cycle <sup>3</sup>	70	85	100	%
Average output power <sup>4</sup>	5	8	12	mW
ESS-840nm-40kHz				
Swept Source Parameters	Min	Typ	Max	Unit
Center Wavelength	820	840	860	nm
Sweep Range (-10dB)	50	60	70	nm
A-scan frequency <sup>1</sup>	38	40	42	kHz
Coherence length (in air) <sup>2</sup>		5		mm
6-dB Amplitude Fall-off		5		mm
20-dB Amplitude Fall-off		11		mm
Sweep duty cycle <sup>3</sup>	70	85	100	%
Average output power <sup>4</sup>	5	8	12	mW
Operating Conditions				
Operating temperature	10	25	40	°C
Storage temperature	5	25	80	°C
Humidity	5		85	% r.h.
ESD			500	V
Supply voltage	100-240 V @ 50-60 Hz			
Dimension	261 x 181 x 78			
Laser Classification (per IEC 60825-1)	Class 1M			

Notes:

- 1 EXALOS' MEMS architecture allows for realizing, upon request, A-scan frequencies from 1 kHz to above 150 kHz. The specified range is due to slight variations in the fabrication process of the MEMS and not related to instabilities of the system. EXALOS will deliver the ESS with a report specifying the exact sweep frequency, and this frequency remains stable over time. Up and down sweeps can be considered identical but mirrored.
- 2 The coherence length is the optical path difference (OPD) at which the amplitude of the optical fringe signal drops to 50% of its initial value for OPD=0 mm. Typically the so-called *image depth* is half the coherence length value.
- 3 The "sweep duty cycle" defines the relative portion of the sweep in either up or down direction that can be used for sampling and hence for the OCT scan. The maximum duty cycle is close to 100% (bidirectional scanning).
- 4 Under sweep operation. For a sweep duty cycle of 100%.

### Ordering Information

- Part Number: **ESS320017-00** : 840nm/150kHz/60nm/8mW/3mm - with k-clock
- Part Number: **ESS320016-00** : 840nm/100kHz/60nm/8mW/4mm - with k-clock
- Part Number: **ESS320028-00** : 840nm/40kHz/60nm/8mW/5mm - with k-clock