

# Product Specification: Alpha (AL) Ultra-High-Resolution OCT Spectrometers

## Description

The Alpha (AL) Series spectrometers are designed for ultra-high-resolution OCT applications, delivering exceptional wavelength stability and sensitivity across the 820–860 nm region. Built around a fully transmissive grating and a proprietary lens design with patented alignment, the Alpha Series achieves 0.02 nm spectral resolution - ideal for eye, skin, biomedical, and metal-welding OCT systems.

Using high-speed e2V Octoplus CMOS line-scan cameras operating up to 250 kHz, the Alpha provides rapid data acquisition, precise depth imaging, and stable long-term performance. With USB 3.0 or CameraLink interfaces, single-mode fiber input, and rugged mechanical construction, the Alpha Series supports both research-grade and OEM integration.



## Models and Wavelength Ranges

- AL1020: 820–860 nm, 20 kHz CMOS line-scan camera
- AL1080: 820–860 nm, 80 kHz CMOS line-scan camera
- AL1130: 820–860 nm, 130 kHz CMOS line-scan camera
- AL1250: 820–860 nm, 250 kHz CMOS line-scan camera

## Main Features

- Ultra-high spectral resolution: 0.02 nm
- Optimized for OCT (eye, skin, biomedical, metal welding)
- Fully transmissive grating with proprietary optical lens design
- Patented alignment mechanism for integrated system stability
- High-speed camera options: 20 kHz, 80 kHz, 130 kHz, 250 kHz
- Imaging depth: 8 mm
- Input fiber: 5  $\mu$ m single-mode fiber (FC/PC or FC/APC)

- Camera interface options: USB 3.0 or CameraLink
- Rugged mechanical package: ceramic or organic camera housing

## Technical Details

- Optical System: Fully transmissive grating with proprietary lens design and integrated alignment mechanism
- Spectral Range: 820–860 nm (model dependent)
- Spectral Resolution: 0.02 nm
- Camera Speeds: 20 kHz, 80 kHz, 130 kHz, or 250 kHz (e2V OctoPlus CMOS line-scan camera)
- Imaging Depth: 8 mm
- Slit Width: Fixed (per integrated OCT optical design)
- A/D Conversion: 16-bit
- Fiber Interface: 5  $\mu\text{m}$  single-mode fiber (FC/PC or FC/APC)
- Camera Interface: USB 3.0 or CameraLink (depending on camera configuration)
- Trigger Support: Camera-based external trigger and synchronization modes
- Calibration: Supports wavelength alignment and system calibration routines
- Environmental: Operating 0–50 °C; Storage –30–70 °C; Humidity 0–90% non-condensing
- Weight (with Camera): 2.3 kg

## Dimensions

- 267 (L) × 135 (W) × 79.8 (H) mm (without camera)