

# Maya LSL Data Sheet

## Description

The Ocean Optics Maya LSL (Low Stray Light) includes the linear CCD-array optical bench, plus all the circuits necessary for spectrometer operation. The result is a compact, flexible system, with no moving parts, that's easily integrated as an OEM component.



The Maya LSL is a unique combination of technologies providing users with high sensitivity and low stray light performance for low light-level, UV-sensitive and other scientific applications. The electronics have been designed for considerable flexibility in connecting to various modules as well as external interfaces. The Maya LSL spectrometer interfaces to PCs, PLCs and other embedded controllers through USB 2.0 or RS-232 communications.

The detector used in the Maya LSL is a scientific-grade, back-thinned, CCD array from Hamamatsu (product number S10420).

The Maya LSL operates from power provided through the USB, or from a separate + 5VDC power supply. The Maya LSL is a microcontroller-controlled spectrometer, thus all operating parameters are implemented through software interfacing to the unit.

# Features

- ❑ Back-thinned Hamamatsu detector S10420 for high UV sensitivity
- ❑ Spectrometer Design:
  - Symmetrical Crossed Czerny Turner
  - 101.6 mm focal length
  - 1 grating (T1)
  - 5 slit widths
- ❑ Electrical Performance:
  - 16 bit, 500kHz A/D Converter
  - Integration time: 7.2ms – 5s
- ❑ Embedded microcontroller allows programmatic control of all operating parameters and standalone operation:
  - USB 2.0 480Mbps (high-speed) and 12Mbps (full speed)
  - RS232 115Kbaud
  - Communication Standards for digital accessories (I2C)
- ❑ Onboard Pulse Generator:
  - 2 programmable strobe signals for triggering other devices
  - Software control of nearly all pulse parameters
- ❑ Onboard GPIO:
  - 10 user-programmable digital I/O
- ❑ EEPROM storage for:
  - Wavelength Calibration Coefficients
  - Linearity Correction Coefficients
  - Absolute Irradiance Calibration (optional)
- ❑ Plug-n-Play Interface for PC applications
- ❑ 30-pin connector for interfacing to external products

# Specifications

Specifications	Criteria
Physical Specifications: Physical Dimensions (LxWxH) Spectrometer Weight	151 mm (5.94 in.) x 151 mm (5.94 in.) x 65 mm (2.56 in.) 1.91 kg (4.21 lbs.)
Power: Power requirement Supply voltage Power-up time	500 mA at +5 VDC 4.5 – 5.5 V ~2s depending on code size
Absolute Maximum Ratings: V <sub>CC</sub> Voltage on any pin	+ 5.5 VDC +4VDC
Spectrometer: Design Focal length (input) Input Fiber Connector Gratings Entrance Slit  Detector Pixels (active) Pixel size Wavelength range Quantum efficiency Well Depth Sensitivity Dark Current	Symmetric crossed Czerny-Turner f/3 101.6 mm SMA 905 to single-strand optical fiber (0.22 NA) 1 grating (T1) 5, 10, 25, 50, or 100 $\mu\text{m}$ slits. (Slits are optional. In the absence of a slit, the fiber acts as the entrance slit.)  Hamamatsu S10420 2048 x 64 14 $\mu\text{m}^2$ 360 – 825 nm 75% peak@600 nm 200 Ke- ~0.32 counts/e- 4000 e/pixel/sec (typ) @ 25° C; 200 e/pixel/sec (typ) @ 0° C
Spectroscopic: Integration Time Dynamic Range (Typical) Signal-to-Noise Dark Noise (single dark spectrum) Nonlinearity (uncorrected) Linearity (corrected)	7.2ms – 5s 15000:1 450:1 6 RMS counts (Guaranteed) ~10% >99.7%
Environmental Conditions: Temperature Humidity	-30° to +70° C Storage & -0° to +50° C Operation 0% – 90% noncondensing
Interfaces: USB RS-232 SPI	USB 2.0, 480 Mbps 3-wire RS-232