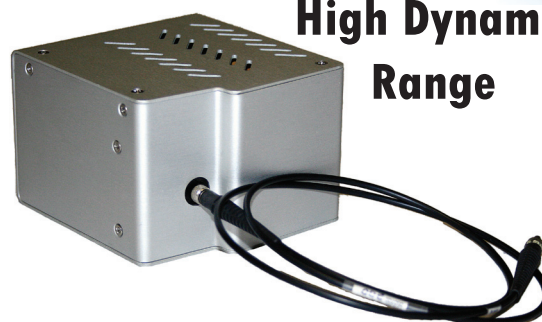


High-performance fiber-optic spectrometer for OEM volumes

VS7000-CCD-HD Miniature CCD Spectrometer

**High Dynamic
Range**

- UV-VIS (200–860 nm), VIS (380–750 nm), and UV-NIR (200–1050 nm)
- High dynamic range (7000:1)
- High throughput ($f/2.8$)
- Ultra-low stray light
- Ideal for industrial low-light applications such as fluorescence, emission, absorbance, and reflectance.

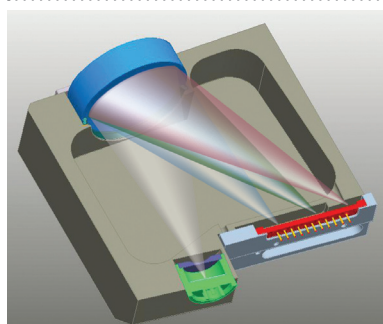


Available for OEM customers only

Feature

Spectroscopy Benefits for OEMs

Most popular UV-VIS range	Excellent peak symmetry in a miniature grating spectrometer
High readout speed	4.5 ms maximum readout speed
Advanced electronics	Low noise; high linearity (raw) and linearity-correction
Back-illuminated linear CCD	QE = 63% at 250 nm; 76% at 650 nm; 55% at 850 nm
High signal-to-noise ratio	Highest full well/signal-to-noise ratio of any uncooled CCD mini-spectrometer
USB 2.0 high and full-speed	Standard connection interfaces to PCs with 100% data integrity
Order-sorting filter	Eliminates second-order interference
Windows® acquisition software and LabVIEW™ VIs and DLLs available	Software to integrate VS-7000 as an OEM component
Sturdy single-optic design	Excellent light purity, with concave grating design
No moving parts or shutter	Excellent reliability for OEM integration



Concave-grating mini-spectrometer for
UV-VIS
VIS
UV-NIR



Specifications*

This VS7000-CCD-HD system for industrial applications uses a modified VS70 optical engine optimized for UV-VIS.

Spectral coverage	UV-VIS (200–860 nm), 250 nm optimized grating, built-in order-sorting filter VIS (380–750 nm), VIS-blazed grating, built-in long-pass filter UV-NIR (200–1050 nm), dual-blaze grating, built-in order-sorting filter
Numerical aperture	f/2.8
Stray-light rejection <i>Typical (Maximum)</i>	0.01% (0.02%) for UV-VIS configuration with 300 μm tall CCD, measured at 700 nm (measured with broad bandpass 510 nm filter, 75 μm slit-width) >2.4 AU linear range (5% variation) with caffeine 273 nm absorption peak in 10 mm cuvette and D ₂ lamp.
CCD detector Typical QE	Back-illuminated CCD with low etaloning in NIR 65% peak QE in UV
Detector height Fiber-optic option	300 μm CCD height standard (1000 μm optional) 600 μm dia., 1.5 m long fiber-optic (for 1 mm tall CCD, prefer 800–1000 μm dia.)
Thermoelectric stabilization	None. Dark current and CCD-pattern noise must be subtracted. User must switch off light source or install manual shutter in optical path. QE shifts slightly with temperature.
Spectral resolution	UV-VIS: 75 μm slit, 2048 pixels, 2.7 nm resolution; 0.33 nm/pixel
Pixel resolution	(configuration with 300 μm tall CCD)
Slit (factory configuration)	Available slits: 12-25-37-50-62-75-100-125-150-200 μm (contact us for other gratings)
Improved CCD full well	>250 ke ⁻ (sensitivity mode); >390 ke ⁻ (high FW mode)
Raw non-linearity	<1% (sensitivity mode)
Factory-corrected non-linearity	<0.4% (sensitivity mode)
Typical dynamic range	7000:1 in sensitivity mode; 5500:1 in high FW mode
A/D converter	16 bit, 500 kHz (pixel rate)
Typical dark current	1 count/ms at 20°C (room temp.); typical offset = 1000 counts
Typical readout noise	35 e ⁻ (max = 45 e ⁻) in sensitivity mode; 70 e ⁻ (max = 90 e ⁻) in High FW mode
Readout speed	Max: 4.5 ms; 223 spectra/s with 0 exposure time
Typical signal-to-noise ratio	500:1 (sensitivity mode) to 625:1 (high FW mode). Shot-noise-limited conditions
Gain selection	4 e ⁻ /count and 6 e ⁻ /count
Dimensions (H × W × D)	2.9" × 4.1" × 4.3" (73.0 mm × 103.2 mm × 109.4 mm)
Weight	1.8 lb (0.82 kg)

*Specifications, form factor, and spectrometer cover subject to change without notice.

Acquisition software included (LabVIEW™ 2011 only)

- VIs and top-level code are provided for customer customizations
- Access to data with raw CCD linearity and corrected linearity done at factory for each CCD chip
- CCD settings and dark-subtract
- On-board or software averaging
- Absorbance and transmission calculations
- Scale selection between pixel, wavelength, and wavenumber
- On-board spectral calibration
- Linearity correction on/off
- Boxcar averaging
- Save function to Excel® or text file

No LabVIEW™ license is needed to run our acquisition software. LabVIEW™ license ver. 2011 required to edit our code. No code customization supported in price.

Gratings and OEM Spectrometers Division

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