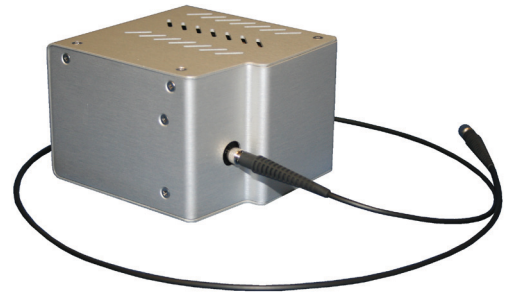


High-performance fiber-optic spectrometer for OEM volumes

VS-7000+ Mini-CCD Spectrometer

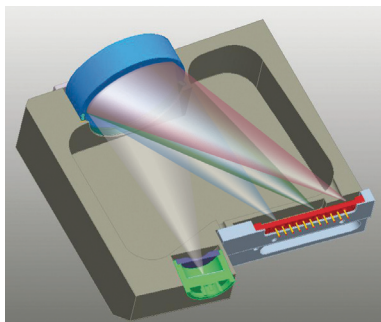
- High throughput ($f/2.8$)
- Ultra-low stray light
- Three spectral coverages: UV-VIS (200–860 nm), VIS (380–750 nm), and UV-NIR (200–1050 nm).
- Ideal for industrial low-light applications such as fluorescence, emission, absorbance, and reflectance.
- Outperforms current mini-spectrometers based on front-illuminated Sony or Toshiba CCDs, or low-cost back-illuminated CCDs.



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 (on-board)
Back-illuminated linear CCD	QE = 63% at 250 nm; 70% 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 VS-7000+ 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>	0.04% (0.08%) for UV-VIS configuration with 300 μm tall CCD (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 Pixel resolution Slit (factory configuration)	UV-VIS: 75 μm slit, 2048 pixels, 2.7 nm resolution; 0.33 nm/pixel (configuration with 300 μm tall CCD) Available slits: 12-25-37-50-62-75-100-125-150-200 μm (contact us for other gratings)
Improved CCD full well Raw non-linearity Factory-corrected non-linearity	>250 ke ⁻ (sensitivity mode); >450 ke ⁻ (high FW mode) <1% (sensitivity mode) <3% (high FW mode) <0.4% (sensitivity mode) <0.8% (high FW mode)
Readout speed	8.6 ms (500 kHz mode); 116 spectra/s with 0 exposure time (Multi-Acq mode) Max: 4.5 ms (Ultra mode); 223 spectra/s with 0 exposure time (Multi-Acq mode)
Typical dark current	2.8 counts/ms at 20°C (room temp.); typical offset = 1000 counts
Typical readout noise	35 e ⁻ (max = 45 e ⁻) in sensitivity mode; 75 e ⁻ (max = 90 e ⁻) in High FW mode
A/D converter	16 bit, 500 kHz
Typical dynamic range	7000:1 in sensitivity mode; 6000:1 in high FW mode
Typical signal-to-noise ratio	500:1 (sensitivity mode) to 700:1 (high FW mode). Shot-noise-limited conditions
Gain selection	4 e ⁻ /count and 8 e ⁻ /count

*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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