HORIBA Scientific

JOBIN YVON Technology

VS-7000-CCD

The next generation of **OEM** CCD mini-spectrometers

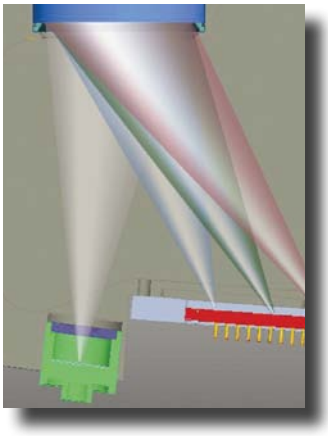
Affordable performance for OEM high volumes:

VS-7000-CCD is the latest evolution of the low cost, high performance family of mini-spectrometers from HORIBA Scientific. VS-7000-CCD features include:

High readout speed
High QE CCD
Ultra-low stray light

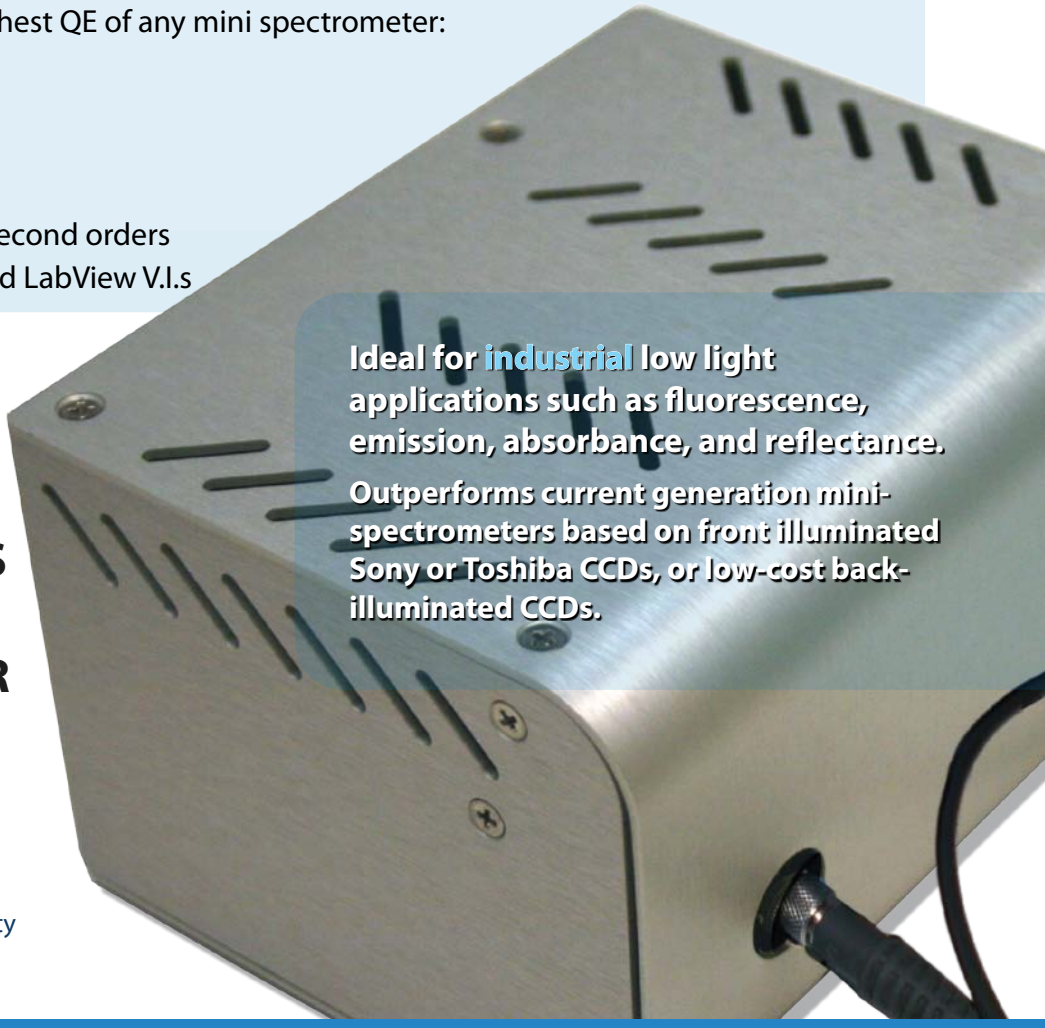
3 spectral coverage options:	**200-860 nm**
	380-750 nm
	200-1050 nm

- Most popular UV-VIS range: 200-860 nm with excellent peak symmetry
- 2.3 ms maximum readout speed
- Low-noise electronics, high linearity (raw) and linearity correction (on-board parameters)
- Back-illuminated linear CCD - highest QE of any mini spectrometer:
  - 65 % at 250 nm
  - >90 % at 650 nm
  - 70 % at 850 nm
- True USB 2.0 interface
- Order-sorting filter to eliminate second orders
- Windows acquisition software and LabView V.I.s



UV-VIS
VIS
UV-NIR

Sturdy single optic design – excellent light purity
No moving parts/shutter – excellent reliability



Ideal for industrial low light applications such as fluorescence, emission, absorbance, and reflectance.

Outperforms current generation mini-spectrometers based on front illuminated Sony or Toshiba CCDs, or low-cost back-illuminated CCDs.

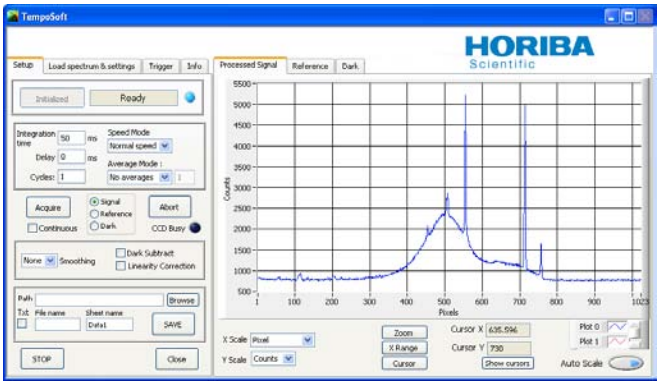
CCD based miniature fiber spectrometer for OEM volumes — System Specifications — UV-VIS-NIR

This VS-7000 system for industrial applications uses a modified VS70 optical engine which is optimized for the UV-VIS spectral range.

Spectral coverage	UV-VIS: 200-860 nm with 250 nm blazed grating and built-in order sorting filter VIS: 380-750 nm with VIS optimized grating and built-in longpass filter UV-NIR: 200-1050 nm with dual blaze grating and built-in order sorting filter
Numerical aperture	F/3
Stray light rejection Typical (Maximum)	0.04% (0.08%) for UV-VIS configuration. Stray light note: measured with broad bandpass 510 nm filter, 75 µm slit width
CCD Detector & Typical Q.E.	Back-illuminated linear CCD without etaloning in NIR region QE: 65% at 250 nm - >90% at 650 nm - 70% at 850 nm
Detector height & Fiber diameter	~300 µm CCD height and 300 µm diameter fiber (optional; 1.5 m long)
Thermoelectric stabilization	None. Dark current (and CCD pattern noise) must be subtracted. User needs to turn off the light source or install a manual shutter in the light path. As with all CCD and PDA detectors, the QE slightly shifts with temperature.
Spectral resolution Pixel resolution Slit (factory configuration)	**UV-VIS:** 75 µm slit with 1024 pixels – 2.6 nm resolution – 0.65 nm per pixel (Computed by measuring and averaging resolution at 253/365/435/546/696/811) For sub-nanometer resolution, 12 µm and 37 µm slits are available. For high volume OEM applications, other gratings and slits are available.
Improved CCD full well Raw non linearity Factory corrected linearity	168 Ke- (measured on 1024 pixel CCD version with linear correction) <2.5% <0.6% Non linearity note: difference between maximum and minimum deviation from a straight line divided by 65000
Readout speed	4.45 ms (1 MHz mode) 225 spectra/s with 0 exposure time (Multi-Acq mode)
Maximum readout speed	2.35 ms (Ultra mode) 425 spectra/s with 0 exposure time (Multi-Acq mode)
Integration time	1 µs (+ readout time) to 5-10 s (see readout speed limit above) For a few seconds exposure time, consider that there is SQRT (Dark Current) of added dark noise.
Typical Dark current	4 count/ms at 1 MHz mode at 20 °C room temperature (Max = 9 counts/ms) Typical Offset: 1000 counts
Typical readout noise	30 e- at 1 MHz (Max = 35 e-)
A/D converter & speed	16 bit, 1 MHz
Typical dynamic range	5,600:1 at 1 MHz (higher if CCD was running at lower speed)
Signal-to-noise ratio (typical)	405:1 (Square root of full well when limited by shot noise)
Gain	2.5 e-/count
Compliances	CE and RoHS compliant
Size	L 4.9 x W 3.9 x H 2.9 in (124.5 x 99 x 74 mm) (Contact us for OEM volume special requirements, such as other form factors)
Weight	2 lb

Acquisition software included (LabView 8.5 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 & dark subtract
- On-board or software averaging
- Absorbance and transmission calculations
- Scale selection between pixel, wavelength and wave number
- On-board spectral calibration
- Linearity correction On/Off
- Boxcar averaging
- Save function to Excel or text file



NOTE: No LabView license required to run our acquisition software.
LabView license, Version 8.5 required to edit our code. No code customization supported in price.

HORIBA Scientific

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