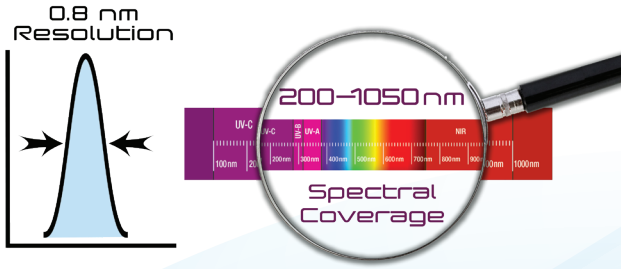
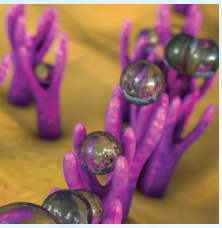
HORIBA
Scientific

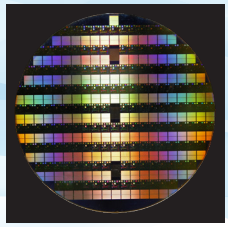


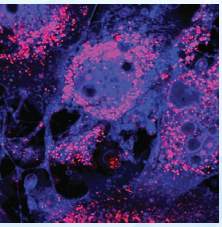
VS70-PDA

Miniature PDA Spectrometer
VS70 Family







For OEM
Industrial Applications

JOBIN YVON
Technology

horiba.com/oem

Miniature PDA Spectrometer VS70 Family

Overview

VS70-PDA OEM Photodiode Array Spectrometer is a high performance compact fiber coupled spectrometer covering wide spectral range of 200 to 1000 nm. This VS70 system for industrial applications uses a modified VS70 optical engine with Horiba's type-IV Aberration-Corrected Flat-Field Holographic Ion-Etched concave grating optimized for UV-VIS and a linear photodiode array.

This system is fitted with a custom multi-area order-sorting filter to eliminate higher orders and features a single-optics design for superior imaging, high sensitivity, high resolution and low-stray light performance for bright-light applications such as emission, absorbance and reflectance.

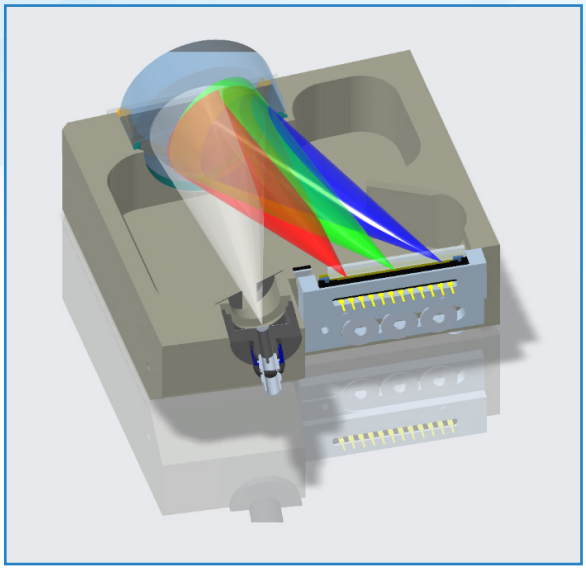
Applications

Ideal for industrial bright-light applications such as emission, absorbance, and reflectance

Examples:

- Pharmaceuticals & life science
- Semiconductor
- Liquid chromatography
- Environment, agriculture and energy

Optical and Mechanical Layout



Concave-grating mini spectrometer optical mechanical design.

Features

High spectral acquisition speed (high read out speed 3.5 ms)

Wide spectral coverage from UV to NIR

Colossal PDA full well up to 1 Ge^-, more than 100 times deeper than any CCD

High signal-to-noise ratio combined with ultra low stray light

High UV sensitivity with smoothly varying spectral response

High throughput

Compact size robustness and stability

General Spectrometer Specifications*

Spectral Coverage	Standard: UV-VIS (200–860 nm) with 477 l/mm grating, VIS (380–750 nm) with 582 l/mm grating, UV-NIR (200–1050 nm) with double-blazed 365 l/mm grating On request other spectral ranges available; different mechanical integration might needed
Spectrometer Input	Fiber coupled: FC or SMA; Free space: 12-25-37-50-62-75-100-125-150-200 µm slits, other options available upon request
Spectral Resolution	2 nm for 365 l/mm grating, 1 nm for 477 l/mm grating, 0.8 nm for 582 l/mm grating (25 µm slit fo r all)
Average Spectral Dispersion	30.9 nm/mm for 365 l/mm grating, 23.7 nm/mm for 477 l/mm grating 16.3 nm/mm for 582 l/mm grating, 16.3 nm/mm for 582 l/mm grating
Focal Length	70 mm
Options	Selection of high grade sensors: CMOS, B.I. CCD, PDA Input port: SMA, FC, free space, custom input
F/#	F/2.8
Stray-light Rejection Typical (maximum)	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
Wavelength Accuracy	0.2 nm
Software**	LabVIEW™ acquisition software for initial evaluation (DLLs provided for software integration)

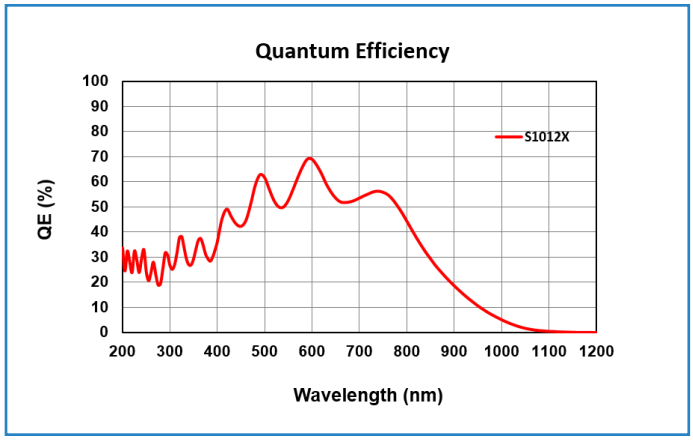
Detector Options and Specifications*

	High sensitivity, high dynamic range linear photdiode array
Detector Model	Hamamatsu S10123-1024N with higher UV sensitivity and smoothly varying spectral response characteristics in UV region and wide photosensitive area
Sensor Format	1024 x 1 pixels (512 pixels available on request)
PDA Pixel Size	25 x 500 µm (larger 2500 µm version available on request)
PDA Active Area	25.6 x 0.5 mm
PDA QE	See the plot on following page
Sensor Temperature	Uncooled
Full Well Capacity	100 Me^- (up to 200 Me^- and 1 Ge^- available as well)
Readout Noise	8,000 e^- (typical)
Digitization	16-bit
Dynamic Range (FW/RN)	12,500:1 (typical)
SNR	14,000:1 (typical)
Non-linearity (measured on each system)	< 0.4% (corrected)
Dark Current	200,000 e^-/pix/s (typical); 250,000 e^-/pix/s (maximum) (25 x 500 µm pixel size)
Communication	USB 2
Environmental Conditions	Operating temperature 15° C to 40° C ambient Relative humidity <70% (non-condensing) Storage temperature -25° C to 45° C
Power Requirements	Samtec connector, 5 VDC

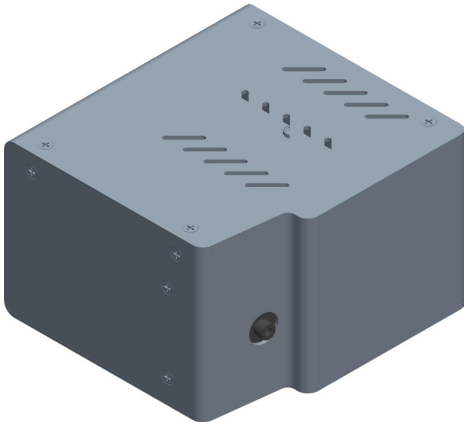
* HORIBA Instruments has a policy of continuous product development, and reserves the right to amend part numbers, descriptions and specifications without prior notice.

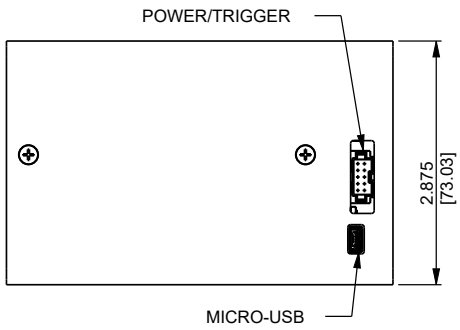
**No LabVIEW™ license is needed to run our acquisition software.

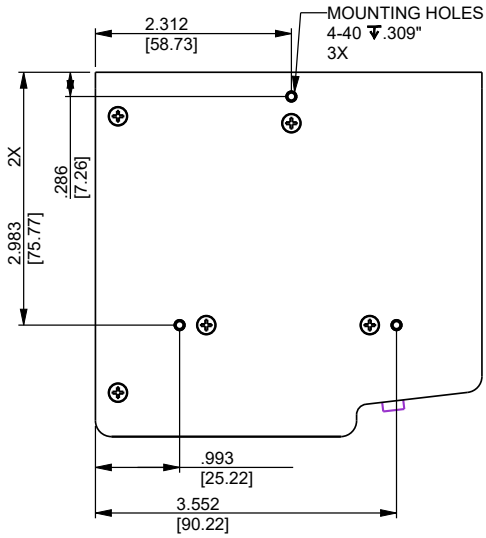
Quantum Efficiency

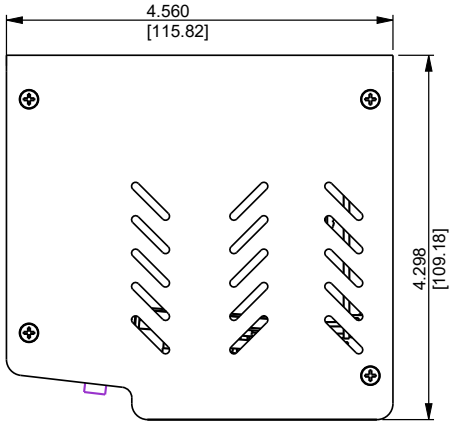


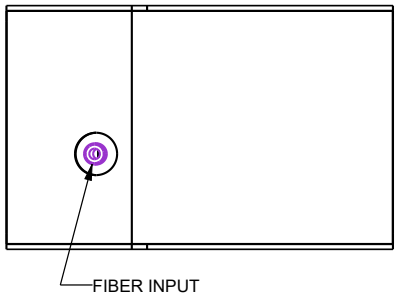
System Mechanical Drawings





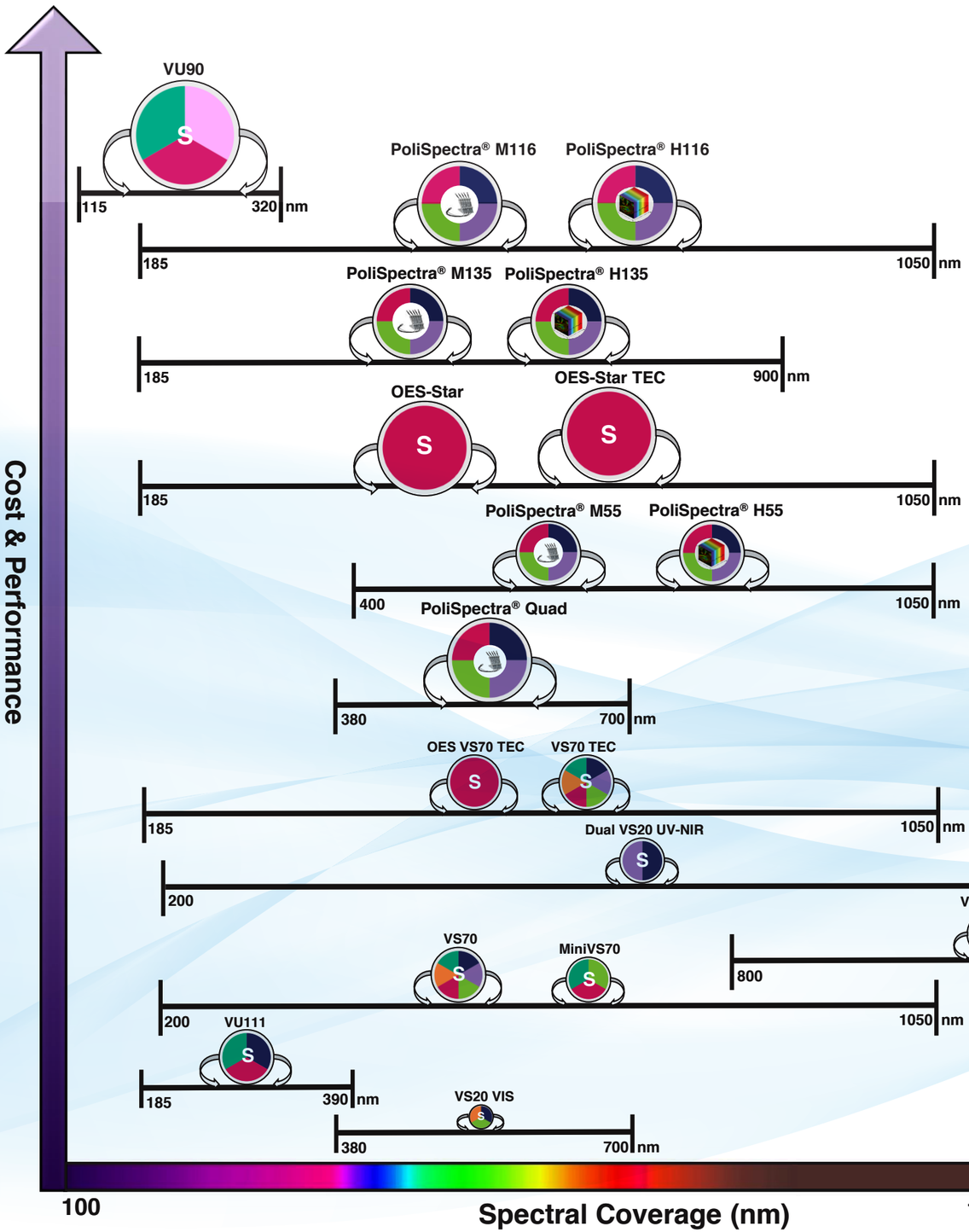


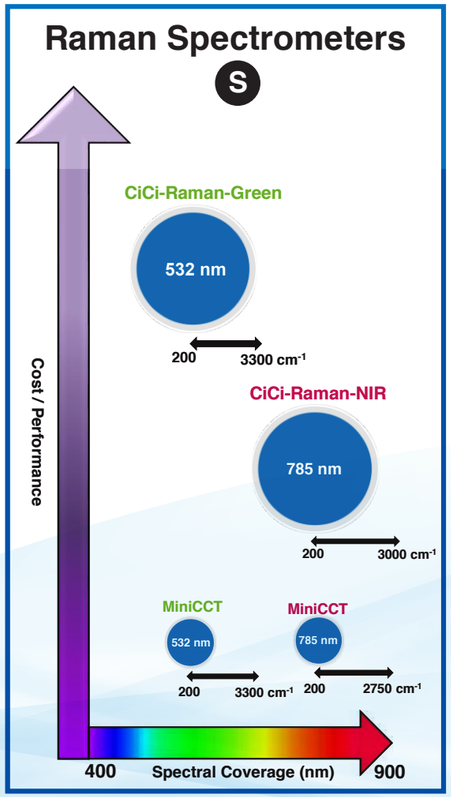




ALL UNITS IN INCHES (MM) UNLESS NOTED OTHERWISE
ASSEMBLY PART NUMBER 5500640205

OEM Spectrometer Selection Guide





Legend

Spectrometer Input Type

- S — Single-fiber Input
- Multi-fiber Input
- Hyperspectral Imager

Technique & Application

- Emission (OES)
- Absorbance
- Fluorescence
- Reflectance
- Raman
- Metrology
- Photoluminescence
- Colorimetry

Spectrometer Size

- ≤ 10.5x9x7 inches
- ≤ 8x8x8 inches
- ≤ 7.5x4.5x5 inches
- ≤ 7.5x4.5x3 inches
- ≤ 6x6x7.5 inches
- ≤ 5x5x5 inches
- ≤ 5x5x2 inches
- ≤ 2x2x2 inches

OEM Philosophy and Mission

3 Centers of Excellence Dedicated to OEM Spectroscopy and Camera Solutions in US, EU, and Asia

Our mission is to provide a complete development and manufacturing experience, from optical simulations to opto-mechanical design and prototyping of spectroscopic and camera systems extending to, and including, electronics, firmware, software design and first articles.

Our products provide superior performance, reliability and stability, combined with robust cost reduction. Capable of flexible high volume production capacity in quantities of hundreds to thousands per year, we offer full confidentiality, providing "Black Boxes" or private labelling, using your logo or graphics.

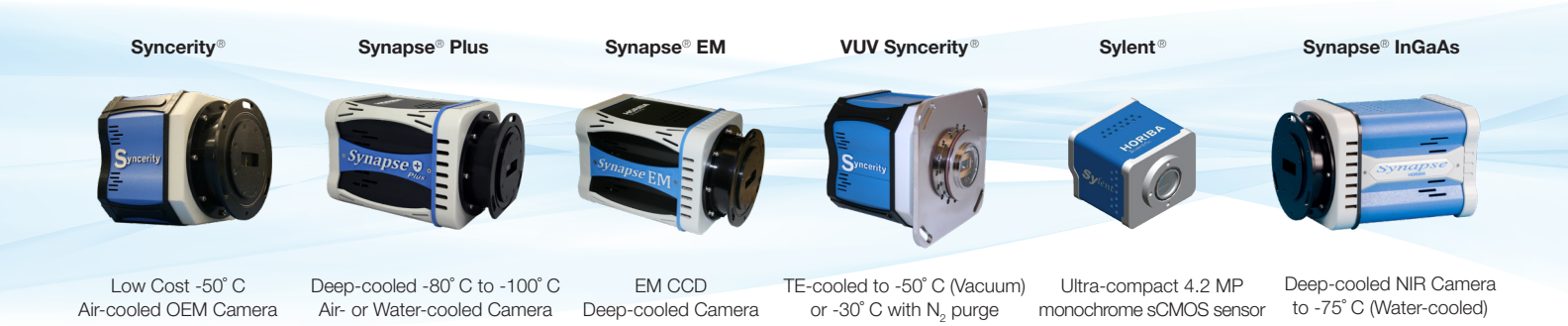
Unmatched customer service is provided by our exceptionally experienced workforce, featuring on-time delivery and flexibility, allowing scheduling modifications.

Adhering to Copy Exactly! (CE!) processes, our fully trained staff, from engineering to manufacturing, form a dedicated OEM engineering force that supports you over the lifetime of the product.

Scientific Segment - OEM Products and Capabilities:

- Custom master optical diffraction gratings
- Diffraction grating replicas (concave, convex and flat)
- Spectrometers, optical assemblies with pre-aligned sensors (CCD, PDA, CMOS, InGaAs) using either customers' or HORIBA's OEM electronics
- OES spectrometers
- Spectroscopy systems or modular engines, such as mini fluorometers and mini Raman systems
- Single and double scanning monochromators
- Imaging spectrographs and spectrometers with CCD or CMOS cameras
- Multispectra spectrometers with multiple fiber inputs / MultiTrack spectroscopy
- Hyperspectral system with HORIBA or customer provided camera (Push-broom configurations)
- Cameras: Spectroscopic deep-cooled scientific cameras (1D and 2D CCD & InGaAs – FI and BI)
- OEM electronics for optosensors ranging from PD and PDA to CCD and CMOS sensors
- Imaging cameras: Uncooled and cooled with FI and BI high-end scientific CMOS
- VUV/FUV spectrometers and CCD vacuum and N_2-purged cameras

Scientific Deep Cooled CCD, InGaAs and CMOS Cameras



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