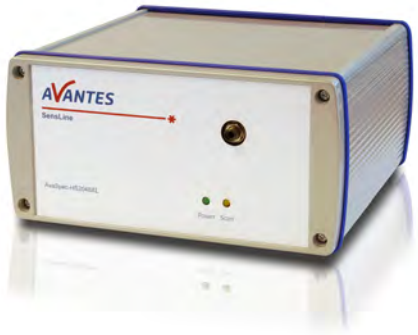
AvaSpec-HS2048XL-EVO SensLine High UV and NIR Sensitivity Back-thinned CCD Spectrometer

For high sensitivity applications where high resolution is not of paramount concern, the AvaSpec-HS2048XL-EVO is an exceptional instrument. Featuring Avantes' HS optical bench which has a full 0.22 numerical aperture for superior throughput, the AvaSpec-HS2048XL has a back-thinned CCD detector with 2048 pixels measuring 14X500 microns.

Unlike many back-thinned CCD spectrometers, which have two dimensional arrays the HS2048XL has large monolithic pixels with exceptional efficiency in the UV, from 200-400 nm, and the NIR, from 950-1160 nm, while retaining sensitivity in the visible range. The unique optical design features torroid collimating and focusing mirrors to control image magnification and enhance efficiency. The instrument also features an electronic shutter, which enables integration times as low as 2 microseconds.
For configurations, which require second order filtering, order-sorting filters are available. The AvaSpec-HS2048XL is available with a wide range of slit sizes, gratings and may be configured with SMA or FC/ PC fiber-optic entrance connectors.

The AvaSpec-HS2048XL-EVO uses the AS7010 electronics board offering USB3 (10 times faster than USB2), Gigabit Ethernet and better signal processing.

AvaSpec-HS2048XL-EVO



Technical Data

Optical Bench	High-sensitivity asymmetrical design, 37.5 mm focal length; NA – 0.22, f/2.27
Wavelength range	200 - 1160 nm
Resolution	1 - 20 nm, depending on configuration (see table)
Stray-light	< 1 %
Sensitivity	1,250,000 counts/µW per ms int. time
UV Quantum efficiency	60% (200-300 nm)
Detector	Back-thinned CCD image sensor 2048 pixels
Signal/Noise	525:1
AD converter	16-bit, 1 MHz
Integration time	2 µs – 600 seconds
Interface	USB 3.0 high-speed, 5 Gbps Gigabit Ethernet, 1 Gbps
Sample speed with on-board averaging	2.44 ms /scan
Dynamic Range	14.900
Data transfer speed	2.44 ms /scan (USB3)
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization
Power supply	Default USB power, 700 mA. or external 12VDC, 360 mA
Dimensions, weight	175 x 165 x 85 mm, 1,950 kg

Grating Selection Table for AvaSpec-HS2048XL-EVO

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
UV/VIS/NIR	200-1160	900	500	330	HS500-0.33
UV/VIS	200-660	440	1000	250	HS1000-0.25
UV	200-850	520	600	300	HS600-0.30
UV/VIS	200-850	520	600	400	HS600-0.40
UV/VIS	300-1160	860	500	560	HS500-0.56
VIS	360-1000	500	600	500	HS600-0.50
NIR	500-1050	500	600	750	HS600-0.75
VIS	350-850	460	900	550	HS900-0.55
VIS	400-722	322	1200	500	HS1200-0.5
NIR	600-1160	500	600	1000	HS600-1.0
NIR	600-1160	350	830	900	HS830-0.9
NIR	750-990	240	1200	1000	HS1200-1.0

Resolution Table (FWHM in nm) for AvaSpec-HS2048XL-EVO

	Slit size (µm)					
Grating (lines/mm)	**10**	**25**	**50**	**100**	**200**	**500**
500	2.6	4.5	5.5	6.5	10.0	22.0
600	2.2	3.8	4.5	5.5	7.5	18.0
830*	2.1	3.6	4.0	5.0	7.0	15.0
900*	2.0	3.5	3.8	4.8	6.8	14.5
1000*	1.9	3.3	3.6	4.6	6.6	14.0
1200*	1.8	3.0	3.3	4.3	6.2	13.5

** theoretical values*

Ordering Information

AvaSpec-HS2048XL-EVO	• High-sensitivity fiber-optic Spectrometer, 2048 large 500 µm pixel back-thinned CCD detector, USB powered, high-speed USB3.0 and ETH interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options
PS-12V/1.0A	• External power supply, needed for use in ETH mode

Options

SLIT-XX	• Slit size, please specify XX = 10, 25, 50, 100, 200 or 500 µm
OSF-YYY	• Order-sorting filter for reduction of 2nd order effects, 1 mm thick, please specify YYY= 305, 385, 475, 515, 550 or 600 nm
OSC-HS500	• Order-sorting coating with 350 and 600 nm long-pass filter for HS500 gratings in AvaSpec-HS
OSC-HS600	• Order-sorting coating with 350 and 600 nm long-pass filter for HS600 gratings in AvaSpec-HS
OSC-HS900	• Order-sorting coating with 600 nm long-pass filter for HS900 gratings in AvaSpec-HS
OSC-HS1000	• Order-sorting coating with 350 nm long-pass filter for HS1000 gratings in AvaSpec-HS
FCPC	• FC/PC fiber optic connector

The AvaSpec-HS2048XL-EVO is ideally suited for diffuse reflection measurements (UV, VIS, NIR) and fluorescence.

PHOTO TECHNICA
www.phototechnica.co.jp
フォトテクニカ株式会社
〒336-0017 埼玉県さいたま市南区南浦和 1-2-17
TEL:048-871-0067 FAX:048-871-0068
e-mail:voc@phototechnica.co.jp
AVANTES
MEMBER OF THE NYNOMIC GROUP