

# AvaSpec-HS1024x58/122 TEC SensLine High UV- and NIR-sensitivity TE-cooled CCD Spectrometer

## AvaSpec-HS1024x58/122TEC



AvaSpec-HS1024x58 and HS1024x122 High-sensitivity Fiber-optic Spectrometers are top performing instruments in the SensLine High-sensitivity spectrometer family, with high quantum efficiency in the UV and near infrared spectral regions. The detector pixels in the AvaSpec-HS1024x58 measure 1392  $\mu\text{m}$  high and for the AvaSpec-HS1024x122 they measure 2928  $\mu\text{m}$  high. The instrument's optical bench design is based on a revolutionary concept with high numerical (0.22) aperture and throughput. TE-cooled backthinned CCD detectors are used as a linear array of 1024 pixels, binning the vertical 58 or 122 pixels for optimal efficiency. The spectrometers have a fiber-optic entrance connector (standard SMA, other options available), toroid collimating and focusing mirrors and are available with choice of 7 different standard diffraction gratings to enable applications in the 200-1160 nm range. The AvaSpec-HS1024x58/122 include a 16-bit AD converter, and USB2.0 high-speed

interface. These instruments are especially suitable for measuring low light, fluorescence and UV applications and also have superior NIR sensitivity relative to front illuminated CCDs. Digital IO ports enable external triggering, control of shutters, and pulsed light sources from the Avantes line of instruments.

AvaSpec-HS1024x58/122 have TE-cooled detectors with lower dark noise, better signal to noise, and enhanced sensitivity that is even 3 times more sensitive than the nearest spectrometer in our Sensline. The AvaSpec-HS-1024x58/122 runs on 100-240VAC power and comes with AvaSoft-Basic, a manual and USB interface cable.

## Technical Data

Spectrometer Type	AvaSpec-HS1024x58TEC	AvaSpec-HS1024x122TEC
Optical Bench	High-sensitivity asymmetrical design 37.5 mm focal length, N.A. 0.22, f/2.27	
Wavelength range	200 - 1160 nm	
Resolution	1.2 - 20 nm, depending on configuration (see table)	
Stray-light	< 1%	< 1%
Sensitivity (counts/ $\mu\text{W}$ per ms int. time)	850,000	1,270,000
UV Quantum efficiency	80% (200-250 nm), >90% (550-750 nm)	
Detector	Back-thinned TE-cooled CCD image sensor 1024x58 pixels	Back-thinned TE-cooled CCD image sensor 1024x122 pixels
Signal/Noise	1000:1	
AD converter	16-bit, 250 KHz	
Integration time	5.22 ms - 60 seconds	6.24 ms - 60 seconds
Interface	USB 2.0 high-speed, 480 Mbps RS-232, 115.200 bps	
Sample speed with store to RAM	5.22 ms /scan	6.24 ms /scan
Data transfer speed	5.22 ms /scan (USB2) 220 ms / scan (RS-232)	6.24 ms /scan (USB2) 220 ms / scan (RS-232)
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization	
Power supply	100-240 VAC, 50-60 Hz, 35W	
Dimensions, weight	245 x 175 x 140 mm, 3.9 kg	

## Grating selection table for AvaSpec-HS1024x58/122TEC

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
UV/VIS/NIR	200-1100	900	500	330	HS500-0.33
UV/VIS	200-660	440	1000	250	HS1000-0.25
VIS/NIR	300-1160	860	500	560	HS500-0.56
VIS	350-850	460	900	550	HS900-0.55
VIS	400-722	322	1200	500	HS1200-0.5
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-HS1024x58/122TEC

Grating (lines/mm)	Slit size (μm)				
	25	50	100	200	500
500	3.8	4.5	5.5	10.5	24.0
830	2.9	3.5	4.2	7.0	15.0
900	2.7	3.2	4.1	6.8	14.5
1000	2.6	3.0	4.0	6.6	14.0
1200	2.4	2.8	3.8	6.2	13.5

\* Best resolution in the center of the range

## Ordering Information

### AvaSpec-HS1024x58TEC-USB2

- High-sensitivity Fiber-optic Spectrometer, 1024x58 pixel back-thinned TE-cooled CCD detector, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options

### AvaSpec-ULS1024x122-USB2

- High-sensitivity Fiber-optic Spectrometer, 1024x122 pixel back-thinned TE-cooled CCD detector, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options

## Options

<b>SLIT-XX</b>	• Slit size, please specify XX = 25, 50, 100, 200 or 500 μm
<b>OSF-YYY</b>	• Order-sorting filter for reduction of 2 <sup>nd</sup> order effects, 1 mm thick, please specify YYY= 305, 395, 475, 515, 550 or 600 nm
<b>OSC-HS500</b>	• Order-sorting coating with 350 and 600 nm long-pass filter for HS500 gratings in AvaSpec-HS
<b>OSC-HS900</b>	• Order-sorting coating with 600 nm long-pass filter for HS900 gratings in AvaSpec-HS
<b>OSC-HS1000</b>	• Order-sorting coating with 350 nm long-pass filter for HS1000 gratings in AvaSpec-HS

Download the latest software for your AvaSpec at [www.avantes.com](http://www.avantes.com)