AvaSpec-NIR256/512-2.0/2.2TEC NIRLine Near-Infrared Fiber-optic Spectrometer

AvaSpec-NIR256-2.2TEC

Avantes offers a wide range of NIR spectrometers. The 2.x-series extended InGaAs instruments feature 256 or 512 pixel detectors and are available in configurations enabling measurements up to 2000, 2200 and 2500 nm. Resolution can be as high as 4 nm (on the 512 pixel version) or 10 nm (256 pixel). Integration times can go as low as 10 microseconds. Three different gratings are possible.

A new feature of the NIR-series is the user-selectable gain setting mode: LN (low-noise, standard setting), which gives you a longer integration time and higher signal to noise ratio, or HS (high-sensitivity) for measuring in low-light conditions. This

setting can easily be changed in AvaSoft 8. Analog and digital IO ports enable external triggering and control of shuttered and pulsed light sources from the AvaLight series of illumination sources.

All instrument feature a dual stage thermo-electrical Peltier-cooled InGaAs detector, especially designed for measuring in the NIR range. Connection to the computer is managed through the USB2.0 interface. Data is transferred in 1.0 ms. All instruments are supplied with AvaSoft-Basic, a manual and USB/power cable.

Technical Data

Spectrometer platform	AvaSpec-NIR256-2.0TEC	AvaSpec-NIR256-2.2TEC	AvaSpec-NIR512-2.2TEC
Optical Bench	TE-cooled Symmetrical Czerny-Turner, 50 mm focal length		
Wavelength range	1000 - 2000 nm	1000 - 2200 nm	
Resolution (slit & grating dependent)	6 - 60 nm	6 - 60 nm	4 - 60 nm
Stray-light	< 1%		
Sensitivity HS in counts /µW per µs	70,000 (integral 1000-2000 nm)	77,000 (integral 1200-2200 nm)	38,500 (integral 1200-2200 nm)
Signal/Noise HS	1500:1	1200:1	
Integration time HS	10 µs - 350 ms	20 µs – 1 ms	
Sensitivity LN in counts /µW per µs	4,000 (integral 1000-2000 nm)	2,750 (integral 1200-2200 nm)	1,375 (integral 1200-2200 nm)
Signal/Noise LN	4000:1	4100:1	
Integration time LN	10µs – 6 seconds	20µs – 50 ms	
Detector	InGaAs linear array with 2-stage TE-cooling, 256 pixels	InGaAs linear array with 2-stage TE-cooling, 256 pixels	InGaAs linear array with 2-stage TE-cooling, 512 pixels
Pixel size (WxH)	50 µm x 250 µm	50 µm x 500 µm	25 µm x 500 µm
AD converter	16-bit, 500kHz	16-bit, 2.4 MHz	
Interface	USB 2.0 high-speed, 480 Mbps RS-232, 115.200 bps		
Sample speed with store to RAM	0.54 ms /scan	0.19 ms / scan @ 0.08 ms int.time	0.31 ms / scan @ 0.09 ms int.time
Data transfer speed	1.0 msec /scan (USB2) 60 ms / scan (RS-232)		1.2 msec /scan (USB2) 120 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, 50/60Hz, 35 W		
Dimensions, weight	315 x 235 x 135 mm, 5.1 kg		

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Grating selection table for AvaSpec-NIR256/512-2.0/2.2

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
NIR	1000-2200	980	150	2000	NIR150-2.0
NIR	900-1750	750	200	1500	NIR200-1.5
NIR	650	650	200	2600	NIR200-2.6

Resolution table (FWHM in nm) for AvaSpec-NIR256/512-2.0/2.2

Grating (lines/mm)	Slit size (µm)				
	25*	50	100	200	500
150	6	10	15	30	60
200	4	6-8	12	24	50

only for AvaSpec-NIR512TEC

Ordering Information

AvaSpec-NIR256-2.0TEC	• Fiber-optic Spectrometer, 50 mm AvaBench, 256 pixel InGaAs detector with 2-stage TEC, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating and wavelength range, OSF-1000, slit
AvaSpec-NIR256-2.2TEC	• Fiber-optic Spectrometer, 50 mm AvaBench, 256 pixel InGaAs detector with 2-stage TEC, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating and wavelength range, OSF-1000, slit
AvaSpec-NIR512-2.2TEC	• Fiber-optic Spectrometer, 50 mm AvaBench, 512 pixel InGaAs detector with 2-stage TEC, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating and wavelength range, OSF-1000, slit

Options

SLIT-XX	• Slit size, please specify XX = 25*, 50, 100, 200 or 500 µm

only for AvaSpec-NIR512TEC

The low-noise/high-sensitivity setting makes your instrument even more versatile

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