AvaSpec-NIR256/512-1.7(TEC) NIRLine Near-Infrared Fiber-optic Spectrometer

AvaSpec-NIR256-1.7TEC

For measurements in the near infrared range out to 1.7 µm, Avantes offers three spectrometer configurations. The AvaSpec-NIR256-1.7 is the most economical in the NIR-range of spectrometers made by Avantes, but offers exceptional performance specifications such as a sample speed of only 1.06 ms/scan and integration times as fast as 10 µs. This instrument is also available in RS-version meaning you can easily change the slit in a matter of seconds.

The AvaSpec-NIR256/512-1.7 TEC spectrometers are also affordably priced and can be operated in two distinct gain-setting modes, the high-sensitivity mode (HS, default) and the low-noise (LN) mode. Setting of the different gain modes can be done via a software option.

All NIR-1.7 instruments are available with a choice of four different gratings, making it possible to choose the bandwidth fitting your application. Digital and analog I/O ports enable external triggering and control over the shutter and pulsed light sources from the Avantes line of products. The uncooled AvaSpec-NIR256-1.7 is USB2 powered, while the TEC cooled instruments require external power.

Technical Data

Spectrometer	AvaSpec-NIR256-1.7	AvaSpec-NIR256-1.7TEC	AvaSpec-NIR512-1.7TEC
Optical Bench	Symmetrical Czerny-Turner, 50 mm focal length	Symmetrical Czerny-Turner, 50 mm focal length, TE-cooled	
Wavelength range	900 - 1750 nm		
Resolution (slit & grating dependent)	2.0 - 50 nm	3.0 - 50 nm	2.5 - 50 nm
Stray-light	< 1%	<0.5%	<0.5%
Sensitivity HS in counts /µW per ms	1,300,000 (integral 1000-1750 nm)	2,770,000 (integral 1000-1750 nm)	2,770,000 (integral 1000-1750 nm)
Signal/Noise HS	2000:1	1700:1	1700:1
Integration time HS	10 µs – 750 ms	20 µs – 1 second	20 µs – 1 second
Sensitivity LN in counts /µW per ms	74,000 (integral 1000-1750 nm)	96,000 (integral 1000-1750 nm)	96,000 (integral 1000-1750 nm)
Signal/Noise LN	6000:1	3600:1	3600:1
Integration time LN	10 µs – 8 seconds	20 µs – 35 seconds	20 µs – 35 seconds
Detector	InGaAs linear array, 256 pixels, 50 µm x 500 µm	TE-cooled InGaAs linear array, 256 pixels, 50 µm x 500 µm	TE-cooled InGaAs linear array, 512 pixels, 25 µm x 500 µm
AD converter	16-bit, 500kHz	16-bit, 2.4 MHz	16-bit, 2.4 MHz
Interface	USB 2.0 high-speed, 480 Mbps RS-232, 115.200 bps		
Sample speed with store to RAM	1.06 ms /scan	0.19 ms /scan @ 0.08 ms int. time	0.31 ms /scan @ 0.09 ms int. time
Data transfer speed	1.56 ms /scan (USB2) 60 ms /scan (RS-232)	1.0 ms /scan (USB2) 60 ms /scan (RS-232)	1.2 ms /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	Default USB power, 350 mA or with SPU2 external 12VDC, 150 mA	100-240 VAC, 50-60 Hz, 35W	
Dimensions, weight	175 x 165 x 85 mm, 2.2 kg	244 x 144 x 254 mm, 5.1 kg	

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Grating selection table for AvaSpec-NIR256/512-1.7

Use	Useable range (nm)	Spectral range (nm)		Lines/mm	Blaze (nm)	Order code
		256	256/512TEC			
NIR	900-1750	850	650	200	1500	NIR200-1.5
NIR	1000-1700	340	250	400	1600	NIR400-1.6
NIR	900-1400	200	n.a.	600	1200	NIR600-1.2
NIR	1300-1600	152	n.a.	600	1600	NIR600-1.6

Resolution table (FWHM in nm) for AvaSpec-NIR256/512-1.7

	Slit size (µm)				
Grating (lines/mm)	25*	50	100	200	500
200	5	6	12	24	50
400	2.5	3	6	12	25
600	n.a.	2	4	8	18

* only for AvaSpec-NIR512TEC

Ordering Information

AvaSpec-NIR256-1.7	• Fiber-optic Spectrometer, 50 mm AvaBench, 256 pixel InGaAs detector, USB powered high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, OSF-850/1000-3. Specify grating, wavelength range and slit
AvaSpec-NIR256-1.7TEC	• Fiber-optic Spectrometer, 50 mm AvaBench, 256 pixel InGaAs detector with 2-stage TE cooling, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, OSF-850/1000-3. Specify grating, wavelength range and slit
AvaSpec-NIR512-1.7TEC	• Fiber-optic Spectrometer, 50 mm AvaBench, 512 pixel InGaAs detector with 2-stage TE cooling, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, OSF-850/1000-3. Specify grating, wavelength range and slit

Options

-RS	• Replaceable slit for the AvaSpec-NIR256-1.7 only
SLIT-XX-RS	• Replaceable slit with SMA connector, specify slit size XX=25, 50, 100, 200 or 500 µm, only in combination with the AvaSpec-NIR256-1.7-RS
SLIT-XX-RS-FCPC	• as SLIT-XX-RS, but with FC/PC connector
SLIT-XX	• Slit size, please specify XX = 25*, 50, 100, 200 or 500 µm

** only for AvaSpec-NIR512TEC*

For external triggering Avantes offers the AvaTrigger featuring optical triggering, external TTL or manually through the pushbutton.