AvaSpec-NIR256/512-1.7-HSC-EVO NIRLine Cooled Near-Infrared Fiber-optic Spectrometer

For measurements in the near infrared range out to 1.7 μ m, Avantes offers a new series of cooled spectrometer configurations. The AvaSpec-NIR256-1.7-HSC-EVO and the AvaSpec-NIR512-1.7-HSC-EVO offer the high sensitivity 100mm optical bench (HSC) with the next generation of electronics (EVO). Both instruments deliver exceptional performance specifications such as a high sample speed and integration times as fast as 20 μ s, as the Avantes instruments you have come to trust.

For applications where resolution is key, or more datapoints for modelling is required, the 512 pixel detector will be the best choice.

The AvaSpec-NIR256/512-1.7-HSC-EVO spectrometers pair the same trusted InGaAs

array detectors with our ultra low-noise electronics board featuring USB3 and Giga-Ethernet connection port. The instruments are standard equiped with a Replaceable Slit. Digital and analog I/O ports enable external triggering and control over the shutter and pulsed

lightsources and choose from two distinct software-controlled gain-setting modes, high-sensitivity mode (HS, default) and the low-noise (LN) mode.

Cooling ensures optimal noise condition even at longer integration times.

All NIR-1.7 instruments are available with a choice of four different gratings, making it possible to choose the bandwidth fitting your application.

AvaSpec-NIR256-1.7-HSC-EVO



Technical Data

Spectrometer Optical Bench Optical Bench Wavelength range Resolution (slit 6 grating dependent) Stray-light Sensitivity HS in counts /μW per ms Dynamic Range HS Signal/Noise HS Integration time HS Sensitivity LN in counts /μW per ms Dynamic Range LN Signal/Noise LN Integration time LN Detector AvaSpec-NIR256-1.7-HSC-EVO Symmetrical Czerny-Turner, 100 mm focal length, 1 stage TE-cooled 1 number of the stage TE-cooled InGaAs linear array, 256 pixels, 50 μm x 500 μm Detector AD converter Interface Sample speed with store to RAM O 13 ms/scan O 4 ms/scan O 5 ms/scan O 5 ms/scan O 5 ms/scan O 6 ms/scan O 6 ms/scan O 7 ms/scan	rechnical Data								
Wavelength range Resolution (slit & grating dependent) Stray-light Sensitivity HS in counts /μW per ms Dynamic Range HS Signal/Noise HS Integration time HS Sensitivity LN in counts /μW per ms Dynamic Range LN Signal/Noise LN LIntegration time LN Detector Detector AD converter Interface Sample speed with store to RAM 1.7-32 nm 1.	Spectrometer	AvaSpec-NIR256-1.7-HSC-EVO	AvaSpec-NIR512-1.7-HSC-EVO						
1.9-32 nm	Optical Bench								
Stray-light Stray-light Stray-light Sensitivity HS in counts /μW per ms 4.800.000	Wavelength range	900-1750 nm							
Sensitivity HS in counts /μW per ms	Resolution (slit & grating dependent)	1.9-32 nm	1.7-32 nm						
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Sensitivity LN in counts /μW per ms (integral 1000-1750 nm) (integra									
Signal/Noise LN Integration time LN Detector Detector AD converter Interface USB3.0 high speed, 5 Gbps, Gigabit Ethernet 1 Gbps Sample speed with store to RAM 5000:1 20 μs-20 s TE-cooled InGaAs linear array, 512 pixels, 25 μm x 500 μm 512 pixels, 25 μm x 500 μm 16-bit, 1,2 MHz 16-bit, 1,2 MHz 0.13 ms/scan 0.24 ms/scan	Sensitivity LN in counts /µW per ms								
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Interface USB3.0 high speed, 5 Gbps, Gigabit Ethernet 1 Gbps Sample speed with store to RAM 0.13 ms/scan 0.24 ms/scan	Detector	3.	3.						
Sample speed with store to RAM 0.13 ms/scan 0.24 ms/scan	AD converter	16-bit, 1,2 MHz	16-bit, 1,2 MHz						
	Interface	USB3.0 high speed, 5 Gbps,	. Gigabit Ethernet 1 Gbps						
Data transfer speed 0/4 ms/scan (USB3) 0.53 ms/scan (USB3)	Sample speed with store to RAM	0.13 ms/scan	0.24 ms/scan						
O.3 may sculi (O363)	Data transfer speed	0.4 ms/scan (USB3)	0.53 ms/scan (USB3)						
Digital IO HD-26 connector, 2 Analog in, 2 Analog out, 13 Digital IO bi-directional, trigger, synchronization, strobe, laser	Digital IO								
Power supply 12VDC, 12W	Power supply	12VDC, 12W							
Operating temperature 0-40°C	Operating temperature	0-40°C							
Cooling 25°C versus ambient	Cooling	25°C versus ambient							
	Dimensions, weight	185 x 160 x 184 mm, 3.6 kg							



Grating Selection Table for AvaSpec-NIR256/512-1.7-HSC-EVO

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
		256/512			
NIR	900-1700	800	150	1250	NIR150-1.2
NIR	900-1700	380-310*	300	1200	NIR300-1.2
NIR	900-1700	262-230*	400	1200	NIR400-1.2
NIR	960-1700	262-230*	400	1600	NIR400-1.6
NIR	900-1700	172-142*	600	1200	NIR600-1.2

^{*}depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and the smaller the range to select.

Resolution Table (FWHM in nm) for AvaSpec-NIR256/512-1.7 HSC- EVO

	Slit size (µm)						
Grating (lines/mm)	25*	50	100	200	500		
150	4.0	5.7	7.0	12.8	32		
300	1.8	2.3	3.0	4.0	10		
400	1.7	1.9	2.5	3.3	8.3		
600	0.88	1.1	1.6	2.5	6.0		

^{*} only for AvaSpec-NIR512

Ordering Information

AvaSpec-NIR256-1.7-HSC-EVO

• Fiber-optic Spectrometer, 100 mm AvaBench, 256 pixel InGaAs detector with 1-stage TE cooling, high-speed USB3 and ETH interface with replaceable slit, incl. AvaSoft-Basic, USB interface cable, OSF-850/1000-3.

Specify grating, wavelength range and slit.

AuaSpec-NIR512-1.7-HSC-EVO

• Fiber-optic Spectrometer, 100 mm AvaBench, 512 pixel InGaAs detector with 1-stage TE cooling, high-speed USB3 and ETH interface with replaceable slit, incl. AvaSoft-Basic, USB interface cable, OSF-850/1000-3 Specify grating, wavelength range and slit.

Options

SLII-XX-KS

SLIT-XX-RS • Replaceable slit with SMA connector, specify slit size XX=25*, 50, 100 ,200 or 500 μm

SLIT-XX-RS-FCPC • as SLIT-XX-RS, but with FC/PC connector

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



^{*} only for AvaSpec-NIR512