

# 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  $\mu\text{m}$ , 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  $\mu\text{s}$ , 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 equipped 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	AvaSpec-NIR256-1.7-HSC-EVO	AvaSpec-NIR512-1.7-HSC-EVO
<b>Optical Bench</b>	Symmetrical Czerny-Turner, 100 mm focal length, 1 stage TE-cooled	
<b>Wavelength range</b>	900-1750 nm	
<b>Resolution (slit &amp; grating dependent)</b>	1.9-32 nm	1.7-32 nm
<b>Stray-light</b>	<1%	
<b>Sensitivity HS in counts /<math>\mu\text{W}</math> per ms</b>	4.800.000 (integral 1000-1750 nm)	2.500.000 (integral 1000-1750 nm)
<b>Dynamic Range HS</b>	4900:1	
<b>Signal/Noise HS</b>	1900:1	
<b>Integration time HS</b>	20 $\mu\text{s}$ -500ms	
<b>Sensitivity LN in counts /<math>\mu\text{W}</math> per ms</b>	160.000 (integral 1000-1750 nm)	83.000 (integral 1000-1750 nm)
<b>Dynamic Range LN</b>	7600:1	
<b>Signal/Noise LN</b>	5000:1	
<b>Integration time LN</b>	20 $\mu\text{s}$ -20 s	
<b>Detector</b>	TE-cooled InGaAs linear array, 256 pixels, 50 $\mu\text{m}$ x 500 $\mu\text{m}$	TE-cooled InGaAs linear array, 512 pixels, 25 $\mu\text{m}$ x 500 $\mu\text{m}$
<b>AD converter</b>	16-bit, 1,2 MHz	
<b>Interface</b>	USB3.0 high speed, 5 Gbps, Gigabit Ethernet 1 Gbps	
<b>Sample speed with store to RAM</b>	0.13 ms/scan	0.24 ms/scan
<b>Data transfer speed</b>	0.4 ms/scan (USB3)	0.53 ms/scan (USB3)
<b>Digital IO</b>	HD-26 connector, 2 Analog in, 2 Analog out, 13 Digital IO bi-directional, trigger, synchronization, strobe, laser	
<b>Power supply</b>	12VDC, 12W	
<b>Operating temperature</b>	0-40°C	
<b>Cooling</b>	25°C versus ambient	
<b>Dimensions, weight</b>	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

\*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

Grating (lines/mm)	Slit size (μm)				
	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

\* 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.

### AvaSpec-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

### 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

\* only for AvaSpec-NIR512

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