

# AvaSpec-NIR256/512-2.5-HSC NIRLine Near-infrared Fiber Optic Spectrometer



New High Sensitivity Compact NIR Spectrometers!

The new and improved versions of our NIR spectrometers offer more sensitivity, less weight and less size. They are based on a 100mm optical bench with a NA of 0.13 offering optimal balance between resolution and sensitivity.

The 2.5-HSC series feature 256 or 512 pixel InGaAs detectors and are available in multiple configurations. These instruments are perfect for grain, corn, wheat, soya, polymers but also for medical uses, process monitoring and other analysis. The 256 pixel detectors offer best sensitivity for most applications. For applications where resolution is key, or more datapoints for modelling is required, the 512 pixel detector will be the best choice.

A range of gratings are available offering the possibility to tailor the instrument for optimal performance in your application. The instrument is equipped with a replaceable slit which offers you great flexibility in your experiment.

Also available on the -HSC 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 lowlight conditions. Analog and digital IO ports enable external triggering and control of shuttered and pulsed light sources from the AvaLight series of illumination sources

## Technical Data

Spectrometer platform	AvaSpec-NIR256-2.5-HSC	AvaSpec-NIR512-2.5-HSC
Optical Bench	TE-cooled Symmetrical Czerny Turner, 100 mm focal length	
Wavelength Range	1000 - 2500 nm	
Resolution (slit & grating dependent)	4.4 - 85.0 nm	2.6 - 85.0 nm
Pixel Dispersion (with NIR 075-1.7 grating)	6.2 nm	3.1 nm
Stray-light	<1.0%	
Sensitivity HS in counts / $\mu$ W per ms (1000-2500 nm)	70,000	32,500
Signal/Noise HS	1500:1	1800:1
Integration time HS	10 $\mu$ s -5ms	
Sensitivity LN in counts / $\mu$ W per ms (1000-2500nm)	4,000	1,900
Signal/Noise LN	3700:1	4000:1
Integration time LN	10 $\mu$ s - 100 ms	
Detector	inGaAs linear array with 2-stage TE-cooling, 256 pixel	inGaAs linear array with 2-stage TE-cooling, 512 pixel
Pixel size (WxH)	50x250 $\mu$ m	25x250 $\mu$ m
AD converter	16 bit, 500kHz	
Interface	USB2.0 high speed, 480Mbps / RS232, 115.200 bps	
Sample speed with on-board averaging	0.54 ms/scan (USB2)	
Data transfer speed	1.11ms/scan (USB2)	
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, TLL trigger, synchronization	
Power supply	12 V, 40W	
Temperature range	0- 55 $^{\circ}$ C	
Cooling	45 $^{\circ}$ C versus ambient	

## Grating selection table for AvaSpec-NIR512/256-2.5-HSC

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
NIR	1000-2500	1500	75	1700	NIR075-1.7
NIR	1000-2500	1173 - 1150*	100	2500	NIR100-2.5
NIR	1000-2500	800 - 660*	150	2000	NIR150-2.0
NIR	1000-2500	815 - 700*	150	2600	NIR150-2.6
NIR	1000-2500	574 - 530*	200	1500	NIR200-1.5

\*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 (FWMH in nm) for AvaSpec-NIR512/256-2.5-HSC

Grating (lines/mm)	Slit size (μm)				
	25*	50	100	200	500
75	8.9	12.9	16.0	33.9	84.5
100	7.2	9.5	12.0	20.0	50.0
150	4.0	5.7	7.0	12.8	32.0
200	2.6	4.4	5.2	9.3	23.3

\* Only for AvaSpec-NIR 512

## Ordering Information

### AvaSpec-NIR256-2.5-HSC

- Fiber-optic Spectrometer, 100 mm AvaBench, 256 pixel InGaAs detector with 2-stage TEC, USB powered, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range, OSF-1000, slit

### AvaSpec-NIR512-2.5-HSC

- Fiber-optic Spectrometer, 100 mm AvaBench, 512 pixel InGaAs detector with 2-stage TEC, USB powered, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating and wavelength range, OSF-1000, slit

## Options

### SLIT-XX-RS

- Slit size, please specify XX = 25, 50, 100, 200 or 500 μm
- Values shown are typical values

This instrument is perfect for grain, corn, wheat, soya and other analysis.