

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



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. The -HSC is the improved version of the AvaSpec-NIR2.5TEC and offers improved sensitivity, less weight and less size. It is based on a 100mm optical bench with a NA of 0.13 offering optimal balance between resolution and sensitivity. A range of gratings are available offering the possibility to tailor the instrument for optimal performance in your application.

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 low-light conditions. Analog and digital IO ports enable external triggering and control of shuttered and pulsed light sources from the AvaLight series of illumination sources.

The instrument features 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 1.1 ms. All instruments are supplied with AvaSoft-Basic, a manual and USB/power cables.

The instrument is equipped with a replaceable slit which offers you great flexibility for your experiment.

## Technical Data

<b>Spectrometer platform</b>	AvaSpec-NIR256-2.5-HSC
<b>Optical Bench</b>	TE-cooled Symmetrical Czerny Turner, 100 mm focal length
<b>Wavelength Range</b>	1000 - 2500 nm
<b>Resolution (slit &amp; grating dependent)</b>	4.8-77 nm
<b>Stray-light</b>	<1.0%
<b>Sensitivity HS in counts / <math>\mu</math>W per ms (1000-2500 nm)</b>	995,000
<b>Signal/Noise HS</b>	1400:1
<b>Integration time HS</b>	10 $\mu$ s -5ms
<b>Sensitivity LN in counts / <math>\mu</math>W per ms (1000-2500nm)</b>	57,500
<b>Signal/Noise LN</b>	3685:1
<b>Integration time LN</b>	10 $\mu$ s -100ms
<b>Detector</b>	InGaAs linear array with 2-stage TE-cooling, 256 pixel
<b>Pixel size (WxH)</b>	50x250 $\mu$ m
<b>AD converter</b>	16 bit, 500kHz
<b>Interface</b>	USB2.0 high speed, 480Mbps / RS232, 115.200 bps
<b>Sample speed with on-board averaging</b>	0.54 ms/scan (USB2)
<b>Data transfer speed</b>	1.11ms/scan (USB2)
<b>Digital IO</b>	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, TLL trigger, synchronization
<b>Power supply</b>	12 V, 40W
<b>Temperature range</b>	0- 55 °C
<b>Cooling</b>	45 °C versus ambient
<b>Dimensions, weight</b>	185 x 145 x 185 mm, 3.5 kg.

## Grating selection table for AvaSpec-NIR256-2.5-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-NIR256-2.5-HSC

Grating (lines/mm)	Slit size (µm)			
	50	100	200	500
75	12.1	15.7	30.8	77.0
100	9.5	12.4	21.0	52.5
150	6.4	8.3	14.0	35.0
200	4.8	6.1	10.6	26.5

## 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

## Options

### SLIT-XX-RS

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

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

