

AvaSpec-NIR256 Fiber Optic Spectrometer



The **AvaSpec-NIR256** Fiber Optic Spectrometers is based on the AvaBench-50 symmetrical Czerny-Turner design with 256 pixel InGaAs Detector Array. The spectrometer has a fiber optic entrance connector (standard SMA, others possible), collimating and focusing mirror and diffractive grating. A choice of 2 gratings with different dispersion and blaze angles enable applications in the 1000-2200nm range. The AvaSpec-NIR256 includes a 14 bit AD converter, and USB2.0 high speed interface.

The **AvaSpec- NIR256-1.7** is especially suitable for measuring in the NIR range from 1000-1750nm applications, e.g. plastics and water absorbance. The **AvaSpec- NIR256-2.2** has a 2-stage Thermo-electrical Peltier-cooled INGaAs detector, specially suitable for measuring in the NIR range from 1100-2100nm or 1200-2200nm.

Digital IO ports enable external triggering and control of shutter and pulsed light sources from the Avantes line of instruments. The new **AvaSpec-NIR256** has a USB2 interface with fast datasampling of 940 spectra per second and datatransfer in 1.56 msec and supports analog in-and outputs as well. Optional Bluetooth® (-BT) communication and an SDRAM card for on-board saving of spectra can be added.

The **AvaSpec-NIR-256-1.7** runs on USB power, the **AvaSpec-NIR-256-2.2** comes in a desktop housing and runs on 100-240VAC. Both come with AvaSoft-basic, a complete manual and USB interface cable. Multiple (up to 127) USB2 spectrometers with different detector types can be externally coupled (see section multi-channel spectrometers).

Technical Specifications

Spectrometer Platform	AvaSpec-NIR256-1.7	AvaSpec-NIR256-2.2
Optical Bench	Symmetrical Czerny-Turner, 50 mm focal length	
Wavelength range	1000-1750 nm	1100-2100 nm or 1200-2200 nm
Resolution	5.0 - 30 nm	10.0 - 60 nm
Stray light	< 0.1%	
Sensitivity (AvaLight-HAL, 8 μ m fiber)	20 counts/ μ W -per ms integration time	
Detector	InGaAs linear array, 256 pixels	InGaAs linear array with 2 stage TE-cooling, 256 pixels
Signal/Noise	1000:1	1000:1
AD converter	14 bit, 500 kHz	14 bit, 500 kHz
Integration time (min)	0.52 ms	0.52 ms
Interface	USB 2.0 high speed, 480 Mbps RS-232, 115.200 bps	
Sample speed with on-board averaging	1.06 msec / scan	
Data transfer speed	1.56 msec / scan	
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization	
Power supply	Default USB power, 420 mA. Or with SPU2 external 12VDC, 420 mA	External 100-240 VAC
Dimensions	175 x 165 x 85 mm	9.5"desktop

Grating Selection table for AvaSpec-NIR256

Use	Useable range	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
NIR	1100-2200	1000	150	2000	NIRZ
NIR	1000-1750	750	200	1500	NIRA

Resolution Table (FWHM) for AvaSpec-NIR256

Grating (lines/mm)	Slit size (μ m)			
	50	100	200	500
150	10.0	15.0	30.0	60.0
200	6.0	12.0	24.0	50.0

NIR Detector Sensitivity Curves

