

AvaSpec-NIR256-1.7 Near-Infrared Fiber Optic Spectrometer

AvaSpec-NIR256-1.7



The AvaSpec-NIR256-1.7 Fiber Optic Spectrometer 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 4 gratings with different dispersion and blaze angles enable applications in the 900-1700nm range. The AvaSpec-NIR256 includes a 16 bit AD converter, and USB2.0 high speed interface. The AvaSpec- NIR256-1.7 is especially suitable for measuring in the NIR range from 900-1750nm applications, e.g. plastics and water absorbance. Digital IO ports enable external triggering and control of shutter and pulsed light sources from the Avantes line of instruments.

The AvaSpec-NIR256 series have a USB2 interface with fast datasampling of 940 spectra per second and datatransfer in 1.56 ms and supports analog in- and outputs as well. Optional Bluetooth® (-BT) communication and an SD card for on-board saving of spectra can be added. The AvaSpec-NIR-256-1.7 runs on USB power. The spectrometer comes 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 Data



Optical Bench	Symmetrical Czerny-Turner, 50 mm focal length
Wavelength range	900 - 1750nm
Resolution	2.0 - 50 nm
Stray light	< 0.1%
Sensitivity (AvaLight-HAL, 8 µm fiber) in counts (16-bit A/D)/µW per ms integration time	350
Detector	InGaAs linear array, 256 pixels
Signal/Noise	2000:1
AD converter	16 bit, 500kHz
Integration time	0.52 ms – 8 seconds
Interface	USB 2.0 high speed, 480 Mbps RS-232, 115.200 bps
Sample speed with on-board averaging	1.06 ms /scan
Data transfer speed	1.56 ms /scan (USB2) 60 ms /scan (RS-232)
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization
Power supply	Default USB power, 350 mA or with SPU2 external 12VDC, 350 mA
Dimensions, weight	175 x 165 x 85 mm, 2.2 Kg

Grating selection table for AvaSpec-NIR256-1.7

Use	Useable range	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
NIR	900-1750	750	200	1500	NIR200-1.5
NIR	1000-1700	340	400	1600	NIR400-1.6
NIR	900-1400	200	600	1200	NIR600-1.2
NIR	1300-1600	170	600	1600	NIR600-1.6

Resolution table (FWHM) for AvaSpec-NIR256-1.7

Grating (lines/mm)	Slit size (µm)			
	50	100	200	500
200	6	12	24	50
400	3	6	12	25
600	2	4	8	18

ORDERING INFORMATION	
AvaSpec-NIR256-1.7	Fiber Optic Spectrometer, 50 mm Avabench, 256 pixel InGaAs detector, USB powered high speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, OSF-1000-3, specify grating, wavelength range and slit
Options	
BT	Bluetooth® interface for USB2 platform only, including antenna
SDXXX	Internal XXX MB SD card for on-board data saving, for USB2 platform only
SLIT-XX	Slit size, please specify XX = 50, 100, 200, 500 µm

AvaSpec-NIR256-2.0/2.2/2.5 Near-Infrared Fiber Optic Spectrometers

The AvaSpec-NIR256-2.0/2.2/2.5 Fiber Optic Spectrometers are based on the AvaBench-50 symmetrical Czerny-Turner design with 256 pixel TE Cooled extended InGaAs Detector Arrays. The spectrometer has a fiber optic entrance connector (standard SMA, others possible), collimating and focusing mirror and diffractive grating. A choice of 4 gratings with different dispersion and blaze angles enables applications in the 900-2500nm range. The AvaSpec-NIR256-2.0/2.2/2.5 includes a 16 bit AD converter, and USB2.0 high speed interface. The AvaSpec-NIR256-2.0/2.2/2.5 have a 2-stage Thermo-electrical Peltier-cooled InGaAs detector, specially suitable for measuring in the NIR range from 1000-2000/2200/2500nm. The newly added AvaSpec-NIR256-2.0 has a very low dark noise level and therefore a much longer integration time can be used for low light level applications. Digital IO ports enable external triggering and control of shutter and pulsed light sources from the Avantes line of instruments.

The AvaSpec-NIR256 series have a USB2 interface with fast datasampling of 940 spectra per second and datatransfer in 1.56 ms and supports analog in-and outputs as well. Optional Bluetooth® (-BT) communication and an SD card

AvaSpec-NIR256-2.5



for on-board saving of spectra can be added. The AvaSpec-NIR-256-2.0/2.2/2.5 come in a desktop housing and run on 100-240VAC. They 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, page 37).

Technical Data

NEW



Spectrometer platform	AvaSpec-NIR256-2.0	AvaSpec-NIR256-2.2	AvaSpec-NIR256-2.5
Optical Bench	Symmetrical Czerny-Turner, 50 mm focal length		
Wavelength range	1000 - 2000nm	1000 - 2200nm	1000 - 2500nm
Resolution	6.0 - 60 nm	6.0 - 60 nm	6.0 - 90 nm
Stray light	< 0.1%		
Sensitivity (AvaLight-HAL, 8 μm fiber) in counts (16-bit A/D)/μW per ms integration time	250	250	200
Detector	InGaAs linear array with 2 stage TE-cooling, 256 pixels		
Signal/Noise	1500:1		
AD converter	16 bit, 500kHzHz		
Integration time*	0.52 ms- 6 seconds	0.52-350 ms	0.52-100 ms
Interface	USB 2.0 high speed, 480 Mbps RS-232, 115.200 bps		
Sample speed with on-board averaging	1.06 ms /scan		
Data transfer speed	1.56 ms / scan (USB2) 60 ms / scan (RS-232)		
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization		
Power supply	100-240 VAC, 50/60Hz, 35 W		
Dimensions, weight	315 x 235 x 135 mm, 5.1 kg		

* Integrating time with TE cooling set to -20°C

Grating selection table for AvaSpec-NIR256-2.0/2.2/2.5

Use	Useable range	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
NIR	1000-2500	1470	100	2500	NIR100-2.5
NIR	1000-2200	980	150	2000	NIR150-2.0
NIR	900-1750	750	200	1500	NIR200-1.5
NIR	1700-2500	650	200	2600	NIR200-2.6

Resolution table (FWHM) for AvaSpec-NIR256-2.0/2.2/2.5

Grating (lines/mm)	Slit size (μm)			
	50	100	200	500
100	15	25	50	90
150	10	15	30	60
200	6-8	12	24	50

ORDERING INFORMATION

AvaSpec-NIR256-2.0	Fiber Optic Spectrometer, 50 mm Avabench, 256 pixel InGaAs detector with 2stage TEC, USB powered high speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, specify grating and wavelength range, OSF-1000, specify slit
AvaSpec-NIR256-2.2	Fiber Optic Spectrometer, 50 mm Avabench, 256 pixel InGaAs detector with 2stage TEC, high speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, specify grating and wavelength range, OSF-1000, specify slit
AvaSpec-NIR256-2.5	Fiber Optic Spectrometer, 50 mm Avabench, 256 pixel InGaAs detector with 2stage TEC, high speed USB2 interface, incl. AvaSoft-Basic, USB interface cable, specify grating and wavelength range, OSF-1000, specify slit
Options	
BT	Bluetooth® interface for USB2 platform only, including antenna
SDXXX	Internal XXX MB SD card for on-board data saving, for USB2 platform only
SLIT-XX	Slit size, please specify XX = 50, 100, 200, 500 μm