

AvaSpec-128 Fiber Optic Spectrometer

The AvaSpec-128 Fiber Optic Spectrometer is the replacement of the AvaSpec-102 and based on the AvaBench-45 symmetrical Czerny-Turner design with 128 pixel Photo Diode Array. The spectrometer has a fiber optic entrance connector (standard SMA, others possible), collimating and focusing mirror and diffractive grating. A choice of 11 different gratings with different dispersion and blaze angles enable applications in the 360-1100nm range. The AvaSpec-128 can be delivered with 2 platforms of electronics; either with USB1.1 with 14 bit AD converter or the new USB2.0 interface with 16 bit AD converter. Applications for this instrument are low cost color measurements. Digital IO ports enable external triggering and control of shutter and pulsed light sources from the Avantes line of instruments.

The AvaSpec-128 is also available as dual channel or multiple channel instrument (up to 8 channels), where all spectra are taken simultaneously.

The AvaSpec-128 comes with AvaSoft-basic, a complete manual, USB interface cable and a PS-12V/1.0A power supply. AvaSoft-full and application software can be ordered separately.

Alternatively the AvaSpec-128-SPU has a switch to run on USB power or external power.

The new AvaSpec-128-USB2 has a USB2 interface with ultrafast

AvaSpec-128



datasampling of 8000 spectra per second (with on board averaging) and datatransfer in 1.1msec 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-128-USB2 runs on USB power and comes with AvaSoft-basic, a complete manual and USB interface cable. Multiple (up to 127) USB2 spectrometers with different detectors can be externally coupled (see section multichannel spectrometers, page 32).

Technical Data



Spectrometer Platform	AvaSpec-128	AvaSpec-128-USB2
Optical Bench	Symmetrical Czerny-Turner, 45 mm focal length	
Wavelength range	360-1100 nm	
Resolution	1.4 –64 nm, depending on configuration (see table)	
Stray light	< 0.3%	
Sensitivity (AvaLight-HAL, 8 µm fiber) in counts/µw -per ms integration time	1000 (14-bit AD)	4000 (16-bit AD)
Detector	Photo diode array, 128 pixels	
Signal/Noise	500:1	
AD converter	14 bit, 1.33 MHz	16 bit, 2 MHz
Integration time	1 msec – 60 sec	0.06 msec - 10 minutes
Interface	USB 1.1, 12 Mbps RS-232, 115.200 bps	USB 2.0 high speed, 480 Mbps RS-232, 115.200 bps
Sample speed with on-board averaging	3 msec	0.12 msec
Data transfer speed	6-7 ms / scan (depending on # pixels transferred)	1.1 msec / scan
Digital IO	DB-15 connector, 2 Digital in, 12 Digital out	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, sync.
Power supply	12 VDC, reverse polarity protection, 160 mA (PS-12V/1.0A) or 5VDC USB power	Default USB power, 350 mA. Or with SPU2 external 12VDC, 350 mA
Dimensions, weight	175 x 110 x 44 mm(1 channel), 716 grams 175 x 165 x 85 mm (2 channels), 1700 gr.	175 x 110 x 44 mm(1 channel), 716 grams

Grating selection table for AvaSpec-128

Use	Useable range	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
VIS/NIR	360-1100	500	300	300	UA
VIS	360-750	100	1200	250	UC
VIS	360-850	240	600	400	BB
VIS/NIR	360-1100*	740*	150	500	VZ
VIS/NIR	360-1100	500	300	500	VA
VIS	360-850	240	600	500	VB
VIS	400-980	100	1200	500	VC
NIR	500-935	240	600	750	NB
NIR	500-1000	100	1200	750	NC
NIR	600-1100	500	300	1000	IA
NIR	600-1100	200	600	1000	IB

* please note that not all 128 pixels will be used for the useable range

Resolution table (FWHM) for AvaSpec-128

Grating (lines/mm)	Slit size (µm)			
	50	100	200	500
150	13.0	13.0	26.0	64.0
300	6.4	6.4	13.0	32.0
600	3.0	3.0	6.0	16.0
1200	1.5	1.5	3.0	8.0

ORDERING INFORMATION

AvaSpec-128	Fiber Optic Spectrometer, 45 mm Avabench, 128 pixel PDA detector, USB1.1/RS-232 interface, incl AvaSoft-Basic, USB interface cable and a PS-12V/1.0A power supply, specify grating, wavelength range and options
AvaSpec-128-USB2	Fiber Optic Spectrometer, 45 mm Avabench, 128 pixel PDA detector, USB powered high speed USB2 interface, incl AvaSoft-Basic, USB interface cable, specify grating, wavelength range and options
AvaSpec-128-2	Dual Channel Fiber Optic Spectrometer, 2* 45 mm Avabench, 128 pixel PDA detector, USB1.1/RS-232 interface, incl AvaSoft-Basic, USB interface cable and a PS-12V/1.0A power supply, for both channels specify grating, wavelength range and options
Options	
-SPU	incl. switch for USB powered USB1 or external power for RS232
-SPU2	incl. switch for USB powered USB2 or external power for RS232/BT
-SPU2-BT	Bluetooth® interface for USB2 platform only, including antenna and switch
SDXXX	Internal XXX MB SD card for on board data saving, for USB2 platform only
DCL-VIS	Detector collection lens to enhance sensitivity, PMMA, 360-1100nm
SLIT-XX	Slit size, please specify XX = 50, 100, 200, 500 µm
OSF-YYY	Order sorting filter for reduction of 2 nd order effects, please specify YYY= 385, 475, 515, 550, 600 nm