AvaSpec-HERO
SensLine Back-thinned CCD Spectrometer

AvaSpec-HSC1024x58TEC-EVO

The AvaSpec-Hero is our top-of-theline spectrometer!
Based on our High-Sensitivity Compact optical (HSC) bench (f=100mm; NA=0.13) and a 1024x58 back-thinned CCD detector, it offers the best of both worlds: high sensitivity and resolution!

The instrument is equipped with a TE Cooling enabling long integration times in low light applications. In conjunction with our AS7010 electronics, including a high end AD convertor, noise is kept to a minimum, which offers you an excellent Signal to Noise and Dynamic Range performance.

From low-light fluorescence applications to the most demanding Raman applications; the AvaSpec-Hero is your ideal companion.

Of course the Digital IO ports enabling external triggering, control of shutters, and pulsed light sources from the Avantes line of instruments are compatible with the HERO as well.

The Avaspec-HERO is standard equipped for use with replaceable slits, offering optimal flexibility for a variety of applications.

Technical Data: AvaSpec-HSC1024x58TEC-EVO

Optical bench	HSC symmetrical Czerny-Turner, 100 mm focal length, NA: 0.13
Wavelength range	200 - 1160 nm
Resolution	0.2 - 7 nm, depending on configuration (see table)
Stray light	0.5%, depending on the grating
Sensitivity	445,000 counts/µW per ms integration time
Detector	CCD array image sensor with one stage TE Cooled, 1024 pixels
Signal/noise	1200:1
Dynamic range	40,000
AD converter	16-bit, 250 kHz
Integration time	5.2 ms – 60 sec
Interface	USB 3.0 high speed, 5 Gbps Gigabit Ethernet 1 Gbps
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital bidirectional, trigger, sync., strobe, laser.
Power supply	12VDC, 1.5A
Dimensions, weight	185 x 161 x 185 mm, 3500 grams

Timing and Triggering

Sample speed with on-board averaging	5.2 ms/scan
Data transfer speed	5.2 ms/scan (USB3 and ETH)
Min. delay / jitter	-5220 µs / 5220 µs

Detector Specifications

Sensitivity photons/ count @ 600 nm	Sensitivity in cts/µW per ms int. time	QE (%) @ peak	Signal/ noise	Dark noise (counts RMS)	Dynamic range
16	445,000	92%	1200:1	2	40,000

Grating Selection Table

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
UV/VIS/NIR	200 - 1160	770 - 760*	300	300	HSC0300-0.30
UV/VIS/NIR	250 - 1160	770 - 760*	300	420	HSC0300-0.42
VIS/NIR	250 - 1160	577 - 553	400	550	HSC0400-0.55
UV/VIS	200 - 850	373 - 340*	600	400	HSC0600-0.40
VIS/NIR	250 - 1160	373 - 340*	600	650	HSC0600-0.65
VIS/NIR	500 - 1160	268 - 220*	830	900	HSC0830-0.90
UV/VIS	200 - 1160	182 - 130*	1200	400	HSC1200-0.40
VIS/NIR	500 - 1050	182 - 130*	1200	750	HSC1200-0.75
UV/VIS	200 - 850	84 - 61*	2400	270	HSC2400-0.27

* 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 (FWHM in nm)

	Slit size (µm)					
Grating (lines/mm)	**10**	**25**	**50**	**100**	**200**	**500**
300	1.70	1.90	2.45	3.0	5.50	5.50
400	1.40	1.55	2.00	2.55	4.70	5.50
600	0.80	0.85	1.10	1.70	3.00	5.50
830	0.60	0.70	0.9	1.25	2.00	5.50
1200	0.32	0.35	0.48	0.80	1.30	5.50
2400	0.18	0.20	0.29	0.40	0.65	5.50

* Above values are average values. Due to optical properties resolution will be better in the lower wavelengths than in the higher wavelength range.

Options

SLIT-XX-RS	• Replaceable slit with SMA connector, specificy slit size XX = 10, 25, 50, 100, 200 or 500 µm.
SLIT-XX-RS-FCPC	• As SLIT-XX-RS, but with FC/PC connector
SLITKIT-SMA	• Slit kit containing 25, 50, 100, 200 or 500 µm slits, and the tools to replace the slit. SMA-connectors
SLITKIT-FCPC	• As SLITKIT-SMA, but with FC/PC connectors
OSF-YYY-3	• Order sorting filter for reduction of second-order effects, 3 mm thick, please specify YYY = 305, 395, 475, 515, 550, 600 nm
OSC-HSC300	• Order sorting coating for use with grating HSC0300-xx
OSC-HSC600	• Order sorting coating for use with grating HSC0600-xx and HSC0400-xx