Instrument Systems
KONICA MINOLTA Group

CAS 120-HR

High Resolution Array Spectroradiometer

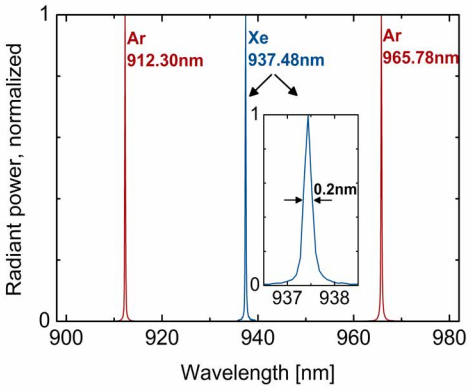
Key features at a glance

- High resolution down to 0.2 nm FWHM, 0.05 nm data point interval
- High-performance and cost-effective for production and laboratory
- Down to 4 ms integration time
- Integrated density filter wheel

The high resolution CAS 120-HR is based on Instrument Systems' high-performance spectroradiometer CAS 120. Particularly designed for the measurement of narrow band emitters, e.g. laser diodes, the CAS 120-HR combines high spectral resolution and short testing times for sophisticated and price-sensitive production and laboratory applications.

\\ VERY HIGH SPECTRAL RESOLUTION

The CAS 120-HR models achieve very high spectral resolutions down to 0.2 nm (0.05 nm data point interval) for a spectral measuring range of 80 nm (see figure below). Measuring ranges of 120 and 160 nm result in spectral resolutions of 0.3 and 0.4 nm, respectively.



Spectral radiant power of selected Ar and Xe emission lines. They were measured with a CAS 120-HR model with a spectral range of 902 to 982 nm and corresponding spectral resolution of 0.2 nm (FWHM).

\\ CUSTOMIZED WAVELENGTH RANGES

The CAS 120-HR offers a selection of different gratings with 1200, 1500 and 1800 lines/mm. Typical measuring ranges of 80, 120 and 160 nm are available in the spectral range from 800 to 1000 nm. Further spectral ranges in the VIS are available upon request.

\\ BACK-ILLUMINATED CCD SENSOR

A back-thinned and back-illuminated CCD array sensor with 2048 x 16 pixels is used for detection in the CAS 120-HR. This sensor design in combination with hardware binning of the vertical pixels offers a high level of sensitivity and large dynamic range (10800 : 1). The CCD allows capturing the spectrum of an optical emitter in a single exposure. Additionally, short integration times down to 4 ms make the CAS 120-HR particularly suitable for the measurement of emitters with pulsed and continuous operating modes.

\\ TECHNICAL SPECIFICATIONS

CAS 120-HR High Resolution Array Spectroradiometer	
Spectral range [1]	800 – 1000 nm
Detector	Back-thinned back-illuminated CCD
Number of pixels	2048 x 16
Gratings	1200, 1500, 1800 lines/mm
Measuring ranges (typical)	80 – 160 nm
Spectral resolution (typical)	0.2 – 0.4 nm
Data point interval (typical)	0.05 – 0.10 nm
Wavelength accuracy [2]	±0.05 nm
Integration time	4 ms – 20 s
Sensor dynamic range [3]	10800 : 1
Non-Linearity	±0.6%

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\\ TECHNICAL SPECIFICATIONS

CAS 120-HR High Resolution Array Spectroradiometer	
Spectrograph	
Focal length, f number, grating type	Approx. 120 mm, f/3.5, plane reflection grating
Filter wheel	Available density filters: OD 0.5, 1, 1.5, 2, 2.5
Electrical data	
AD converter	16 bit resolution
PC interface	USB 2.0
Triggering	1 TTL input with ascending slope; 2 software-controlled TTL outputs; 1 TTL output with flash pulse
Baseline noise [4]	±400 counts, or ±2.5 %
Miscellaneous	
Dimensions (H, W, D)	147 mm x 343 mm x 317 mm
Power supply	Wide-range input 100 VAC to 240 VAC 50/60 Hz
Power consumption	Max. 35 VA
Ambient temperature	15 – 35 °C; relative humidity 70% max., non-condensing
Weight	Approx. 7 kg
Valid standards	In conformity with EN 61010-1:2002-08 (safety requirements governing electrical equipment for measurement, control and laboratory use)

\\ ORDERING INFORMATION [1]

Order number			**Product code options**				
Product code			Central wavelength	Interface	Slit	Filter wheel	Grating
CAS120[Central wavelength][Interface][Slit][Filter wheel][Grating] e.g. CAS1200941U2K1			e.g. [0941] with grating [1]: 902-982 nm	[U] USB	[2] 50 µm	[K] OD 1/1.5/2/2.5 [L] OD 0.5/1/1.5/2/2.5	[1] 1800 lines/mm [2] 1200 lines/mm [3] 1500 lines/mm
Available models			**Model product code**				
Spectral range (typical)	Spectral resolution (typical)	Data point interval (typical)	Central wavelength	Interface	Slit	Filter wheel	Grating
805 - 975 nm	0.4 nm	0.10 nm	[0888] 888 nm	[U] USB	[2] 50 µm	[K] OD 1/1.5/2/2.5 [L] OD 0.5/1/1.5/2/2.5	[2] 1200 lines/mm
840 - 1006 nm	0.4 nm	0.10 nm	[0923] 923 nm				[2] 1200 lines/mm
902 - 982 nm	0.2 nm	0.05 nm	[0941] 941 nm				[1] 1800 lines/mm

[1] Further spectral ranges upon request.
[2] Applies to Penray lamp or laser.
[3] For a single acquisition with 4 ms integration time.
[4] At shortest integration time, without averaging and at 30,000 counts signal level. When averaged, this value improves (e.g. averaged over 9 times equals a threefold noise reduction).

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