VARIUS™ NIR ENHANCED SPECTROMETER

STARLINE



Discover the VARIUS™ NIR Enhanced Spectrometer. The standard VARIUS™ has been reimagined with an advanced detector to deliver unparalleled performance in near-infrared spectroscopy.

Designed for professionals who demand precision, reliability, and enhanced sensitivity, this latest development positions the VARIUS™ as the ultimate solution for your needs.

ADVANTAGES DETECTOR

The Near-Infrared enhanced detector has the following advantages:

- Enhanced sensitivity in 700 - 1100 nm range Up to 2x increase.
- Enhanced NIR quantum efficiency
- Faster data transfer time compared to backthinned models
- Smooth spectrum
- Temperature stability

WHY CHOOSE VARIUS™

- Patented optical bench design
- Flexible performance through replaceable slit
- Versatile spectroscopy design
- Semi-automated production for unsurpassed inter-instrument reproducibility & scalability
- Superior stray light performance
- High signal-to-noise ratio
- Easy to operate with intuitive software
- Cost-effective instrument

APPLICATIONS & INDUSTRIES

The NIR Enhanced VARIUS™ Spectrometer is suitable for applications such as;

Food Sorting

Raman

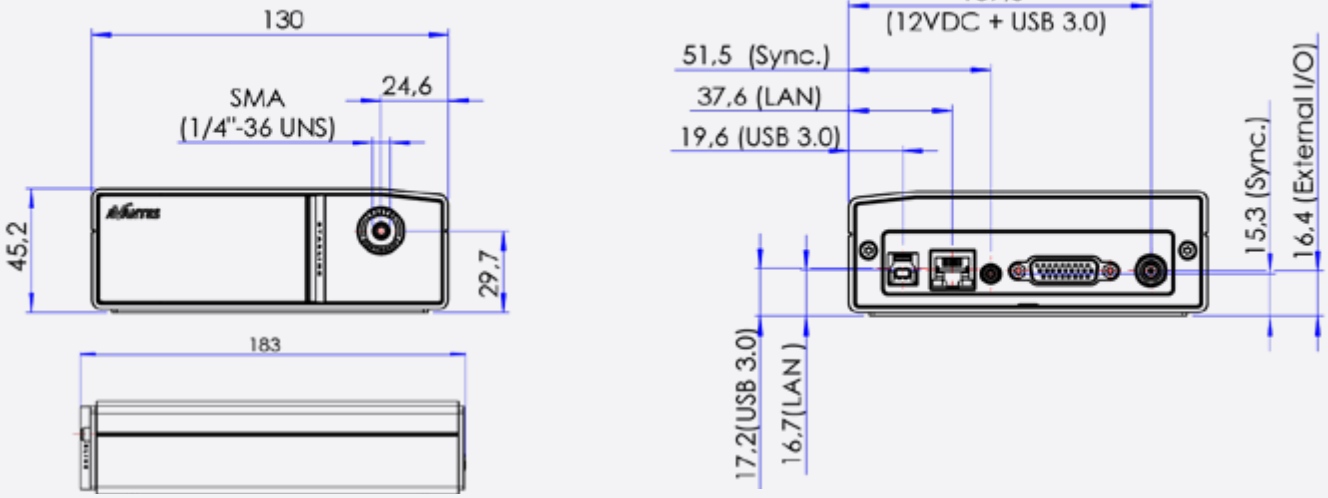
VCSEL/Laser

System Integration

SPECIFICATIONS VARIUS™ NIR ENHANCED SPECTROMETER

	VARIUS™ 2K	VARIUS™ 4K
Optical Bench	Symmetrical Czerny-Turner design, 75 mm focal length; VRS bench	
Wavelength range	400 - 1160 nm	
Stray light	0.1 - 1% (typical value 300 l/mm, blaze 300 nm < 0.3%)	
Detector	NIR Enhanced CMOS linear array, 2048 pixels (14x200 µm)	NIR Enhanced CMOS linear array, 4096 pixels (7x200 µm)
Signal/Noise	375:1	365:1
Dynamic Range	4500	
Dark noise	15 cnts	
AD converter	16-bit, 6 MHz	
Integration time	9 µs – 30 s	
Interface	USB 3.0 high speed (5Gbps), Gigabit Ethernet (1 Gbps)	
Sample speed on-board averaging	0.38 ms/scan	0.70 ms/scan
Data transfer speed	0.38 ms/scan (USB3.0), 1.0 ms (ETH)	0.70 ms/scan (USB3.0), 1.31 ms (ETH)
Digital I/O	HD-26 connector, 2 Analog in, 2 Analog out, 13 Digital bidirectional, trigger, sync., strobe, laser	
Dimensions, weight	183 x 130 x 45,2 mm, 1068 grams	
Power supply	Default USB3 power, 500 mA or 12 VDC, 300 mA	
Temperature range	5-55 °C	

DIMENSIONS IN MM



GRATINGS

Use	Useable range (nm)	Spectral range (nm)	Lines/mm	Blaze (nm)	Order code
UV/VIS	250-850	536-532*	600	400	MN0600-0.40
VIS/NIR	300-1160**	800**	300	500	MN0300-0.50
VIS	360-1000	529-519*	600	500	MN0600-0.50
VIS	300-800	247-216*	1200	500	MN1200-0.50
VIS	350-750	147-121*	1800	500	MN1800-0.50
VIS	350-640	96-89*	2400	VIS	MN2400-0.50
NIR	500-1050	515-506*	600	750	MN0600-0.75
NIR	500-1050	210-204*	1200	750	MN1200-0.75
NIR	600-1160	339-300*	830	800	MN0830-0.80
NIR	600-1160**	500**	300	1000	MN0300-1.00
NIR	600-1160	500	600	1000	MN0600-1.00

Note: a selection of starting wavelength is possible, contact us for available configurations.
* Depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and smaller the range to select
** Please note that not all pixels will be used for the useable range

RESOLUTION VARIUS™ 2K (FWHM in nm)

Slit size (µm)	10	25	50	100	200	500
300 lines/mm grating	1.0	1.4	2.25	4.8	9.2	21.3
600 lines/mm grating	0.40-0.53*	0.7	1.2	2.4	4.6	10.8
830 lines/mm grating	0.32	0.48	0.93	1.7	3.4	8.5
1200 lines/mm grating	0.20-0.28*	0.27-0.38*	0.52-0.66*	1.1	2.3	5.4
1800 lines/mm grating	0.10-0.18*	0.20-0.29*	0.34-0.42*	0.8	1.6	3.6
2400 lines/mm grating	0.09-0.13*	0.13-0.17*	0.26-0.34*	0.44-0.64*	1.1	2.7

*Depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and the higher the resolution.

RESOLUTION VARIUS™ 4K - (FWHM in nm)

Slit size (µm)	10	25	50	100	200	500
300 lines/mm grating	0.50-0.70	1.4	2.25	4.8	9.2	21.3
600 lines/mm grating	0.30-0.36*	0.7	1.2	2.4	4.6	10.8
830 lines/mm grating	0.25	0.48	0.93	1.7	3.4	8.5
1200 lines/mm grating	0.14-0.18*	0.27-0.38*	0.52-0.66*	1.1	2.3	5.4
1800 lines/mm grating	0.09-0.11*	0.20-0.29*	0.34-0.42*	0.8	1.6	3.6
2400 lines/mm grating	0.07-0.09*	0.13-0.17*	0.26-0.34*	0.44-0.64*	1.1	2.7

*Depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and the higher the resolution.

ORDERING INFORMATION

Order code	Ordering information
AvaSpec-VRS2048CLIR-EVO	VARIUS™ fiber-optic spectrometer, 75 mm AvaBench, 2048 pixel CMOS detector 14 x 200 µm, USB powered, high-speed USB 3.0 and ETH interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options (A). NIR Enhanced version
AvaSpec-VRS4096CLIR-EVO	VARIUS™ fiber-optic spectrometer, 75 mm AvaBench, 4096 pixel CMOS detector 7 x 200 µm, USB powered, high-speed USB 3.0 and ETH interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options (A). NIR Enhanced version
AvaSpec-VRS-OEM	Contact one of our offices for ordering information regarding the VARIUS™ OEM

CONFIGURATION DEPENDANT PARAMETERS

Order code	Parameter information
SLIT-XX-PRS	Replaceable Slit for VARIUS™ spectrometer for non OSF configurations. Slit size, please specify XX = 10, 25, 50, 100, 200, 500 µm
SLIT-XX-PRSF	Replaceable Slit for VARIUS™ spectrometer for OSF configurations. Slit size, please specify XX = 10, 25, 50, 100, 200, 500 µm
OSC	Order sorting coating for grating MN 0600-0.50 and MN 0600-0.40 (>350 nm)
OSC-UA	Order sorting coating for grating MN 0300-0.50
OSC-UB	Order sorting coating for grating MN 0600-0.40 (<350 nm)
OSF-YYY-3	Order sorting filter for reduction of second-order effects, possible: YYY = 395, 475, 515, 550, or 600 nm, depending on range
DCL	Detector Collection Lens. To be included

Avantes will select the optimal second order suppression based on desired configuration.

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