



## **NIRQuest spectrometers**

The NIRQuest spectrometers are used for applications that require measurements in the Near-Infrared range, like the analyses of sugar, alcohol, moisture, fats and lubricants. NIR spectrometers are also very well suited for applications like nitrogen detection, pulpwood QC and laser characterisation.

## **Applications**

- » Light measurements
- » Solar irradiance
- » Alcohol analysis
- » Food analysis
- » Beverage characterisation
- » Paper measurements
- » Process control
- » Soil analysis
- » Petrochemical analysis

## **Features**

- » InGaAs array detector
- » Onboard thermoelectric cooling
- » 16-bit USB A/D converter
- » Crossed Czerny-Turner optical bench
- » Various trigger modes
- » Various grating options

## **Advantages**

- » Good optical resolution
- » Integrated design
- » High-performance detector
- » High sensitivity
- » Stable operation
- » Cools down to 30 °C below ambient
- » Real time spectral measurement
- » SpectraSuite compliant

# Specifications

## NIRQuest-512      NIRQuest 256- 2.1      NIRQuest 256-2.5

DETECTOR			
Type	InGaAs linear array	InGaAs linear array	InGaAs linear array
Detector range	850 - 1700 nm	900 - 2100 nm	900 - 2500 nm
Active Pixels	512 pixels	256 pixels	256 pixels
Pixel size	25 µm x 500 µm	50 µm x 500 µm	50 µm x 500 µm
Pixels well depth	188 Me- electrons	188 Me- electrons	188 Me- electrons
SPECTROSCOPIC			
Wavelength range	900-1700 nm with grating NIR3	900-2100 nm with grating NIR2	900-2500 nm with grating NIR1
Responsivity peak	1.6 µm	1.95 µm	2.3 µm
Optical resolution	~3.0 nm FWHM	~12.0 nm FWHM	~7.5-25.0 nm FWHM
Signal-to-noise ratio	4000:1 (at full signal)	4000:1 (at full signal)	4000:1 (at full signal)
A/D resolution	16 bit	16 bit	16 bit
Dark noise	12 RMS counts @ -5°C and 1s integration; 8 RMS counts @ -5°C and 100ms integration	12 RMS counts	12 RMS counts
Dynamic range	15 x 10 <sup>6</sup> (system); 5000:1 for a single acquisition	5 x 10 <sup>6</sup> (system); 5000:1 for a single acquisition	5 x 10 <sup>6</sup> (system); 5000:1 for a single acquisition
Integration time	1 milliseconds to 10 seconds	1 millisecond to 1 second	1 millisecond to 30 milliseconds
Corrected Linearity	> 99.8%	> 99.8%	> 99.8%
Max. dark current	60 pA @ 20 °C	120 pA @ -15 °C	2000 pA @ 15 °C
OPTICAL BENCH			
Design	f/4, Symmetrical crossed Czerny-Turner	f/4, Symmetrical crossed Czerny-Turner	f/4, Symmetrical crossed Czerny-Turner
Entrance aperture	10, 25, 50, 100 or 200 µm wide slits or fibre (no slit)	25, 50, 100 or 200 µm wide slits or fibre (no slit)	25, 50, 100 or 200 µm wide slits or fibre (no slit)
Grating options	Available on request	Available on request	Available on request
Fibre optic connector	SMA 905 to 0.22 numerical aperture single-strand optical fibre	SMA 905 to 0.22 numerical aperture single-strand optical fibre	SMA 905 to 0.22 numerical aperture single-strand optical fibre
PHYSICAL			
Dimensions	182 x 110 x 47 mm	182 x 110 x 47 mm	182 x 110 x 47 mm
Weight	1.18 kg (without power supply)	1.18 kg (without power supply)	1.18 kg (without power supply)
ELECTRONICS			
Power consumption	2 A @ 5 VDC	3 A @ 5 VDC	2 A @ 5 VDC
Data transfer speed	Full scans to memory every 5 ms with USB port	Full scans to memory every 5 ms with USB port	Full scans to memory every 5 ms with USB port
Trigger modes	3 modes	3 modes	3 modes
Strobe functions	Yes	Yes	Yes
COMPUTER			
Operating systems	Windows 98/Me/2000/XP, Mac OS X and Linux with USB port; Any 32-bit Windows OS with serial port	Windows 98/Me/2000/XP, Mac OS X and Linux with USB port; Any 32-bit Windows OS with serial port	Windows 98/Me/2000/XP, Mac OS X and Linux with USB port; Any 32-bit Windows OS with serial port
Computer interfaces	USB 2.0 @ 480 Mbps; RS-232 (2-wire) @ 115.2 K baud	USB 2.0 @ 480 Mbps; RS-232 (2-wire) @ 115.2 K baud	USB 2.0 @ 480 Mbps; RS-232 (2-wire) @ 115.2 K baud
Peripheral interfaces	PC integrated circuit; SPI (3-wire)	PC integrated circuit; SPI (3-wire)	PC integrated circuit; SPI (3-wire)



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