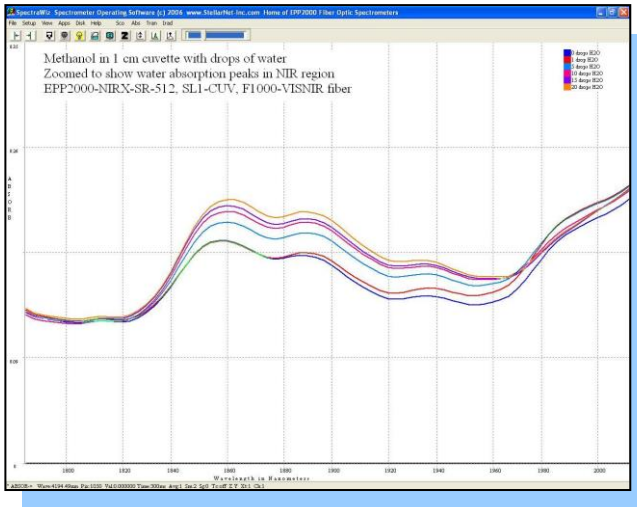
Roemerstr. 67 | 82205 Gilching/Germany | Phone: +49 8105 77940 | E-mail: info@si-gmbh.de | Web: www.si-gmbh.de

RED-Wave-NIR*x*-SR InGaAs Spectrometers for "Super Range" 0.9-2.3 µm

The **RED-Wave-NIRx-SR** spectrometers cover the NIR wavelength range from 0.9-2.3µm in one instrument using extended range InGaAs detectors. The spectrometers are exceptionally robust with no moving parts and are packaged in small rugged metal enclosure (2.75" x 4" x 6") for portable, processes, and lab applications. The InGaAs detector is a Sensors Unlimited linear photo diode array with **512** pixels (**1024** optional) 25µm by 500µm tall to provide maximum sensitivity. The detector has an integrated two-stage thermo electric cooler (TEC) maintained at –20 °C, stabilized within +/-0.1°C. The **RED-Wave-NIRx-SR** InGaAs spectrometers use single strand low OH fiber optic input cable with SMA905.



Methanol with drops of water in cuvette

Extended range NIR applications include chemical ID of samples using molecular absorption. Liquids samples are measured via cuvette, Dip probe, and flow cell for process monitoring of concentrations. Photonics applications include optical transmission characterization of materials for filter/coating applications. Laser and tunable laser wavelength monitoring, and *micro-sensor* applications.

The **RED-Wave** includes a high speed USB-2 interface cable to interface with notebook and desktop computers. SpectraWiz software is included for a variety of spectroscopy measurements.

Specifications	**RED-Wave-NIRx-SR Spectrometer with InGaAs-512X**		
Dynamic range:	4000:1 with 6 decades	Dimensions:	150 x 100 x 68.8 mm
Optical resolution:	13nm with 25µm slit	Power consumption:	2 Amps @ 5 VDC
InGaAs Detector:	512 pixel cooled PDA array	Interface:	USB-2
Detector range:	0.9-2.3µm (900-2300nm)	Data transfer speed:	3x / 40x faster than USB-1
Pixel size:	25µm x 250µm	Detector Integration:	1 to 250 milliseconds
Pixel well depth:	130 x10^8 electrons	Slit size (um):	25/50/100/200um
Selectable well control:	130 x10^8 or 5 x10^6 el.	Operating systems:	Windows
Signal to noise:	12000:1 w/ 2x TE Cooler	Software included:	SpectraWiz program & apps
Digitizer:	14/16 bit @ 2.5 MHz rate	Also **free** programs for:	LabView,Excel+VBA,Delphi

RED-Wave-NIR*x*-SR InGaAs Spectrometers for "Super Range" 0.9-2.3 µm

The SpectraWiz® software is included **FREE** for Windows to accurately measure wavelengths of emissions, reflectance, transmission, and absorption. Customizable programs and drivers are also included for operation in LabVIEW, Excel +VBA, VC, and Delphi.

The **RED-Wave**-NIR**x**-SR InGaAs spectrometers are available in two models to provide optimal resolutions for various NIR applications in the extended 0.9-2.3um range. The standard detector is a 512 element photo diode array (PDA) with 25 x 500µm tall pixels and has zero defects. An optional 1024 element InGaAs PDA will double the resolution over the same range, however it can have 1% non-adjacent dropout pixels. The SpectraWiz software driver provides correction for any dropouts.

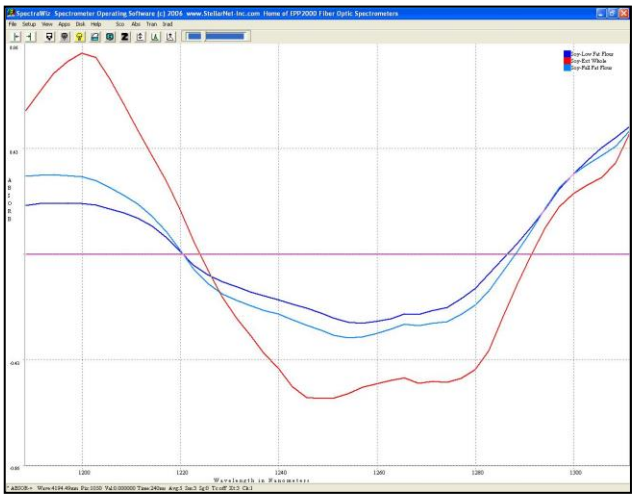
Because of reduced sensitivity the extended range systems are primarily used for measuring chemical absorption and transmission in flow cells, dip probes, cuvettes, and optics.

X

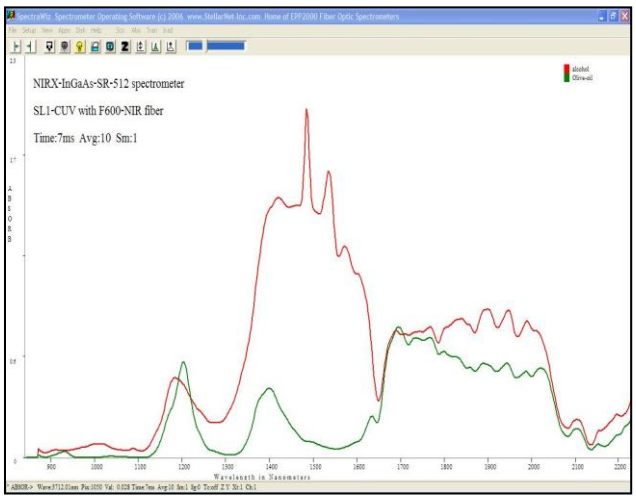
InGaAs Model	# of Array Elements	Wavelength Range (nm)	Grating (grooves/mm)	nm/pixel dispersion	Estimated Resolution (nm)
NIR*x*-SR	512	900-2300	300	5.3	<13nm
NIR*x*-SR	1024	900-2300	600	2.7	<7nm

The optical resolution is based on the grating range obtained by the StellarNet spectrograph and a 512 pixel detector to yield the dispersion. A 25µm slit will image onto one 25um pitch pixel, and possibly 2, therefore our estimate of optical resolution uses a factor of 2 times the dispersion. Measured resolution may vary from the estimates shown.

All NIR*x*-SR units can be coupled with StellarNet's BLACK-Comet or UVN-SR units to cover the entire 200-2300nm range. Coupling the units can provide you with quick analysis of color in the VIS spectrum and compound fingerprint identification in the NIR.



RED-Wave-NIR*x*-SR-InGaAs-512 spectrum showing 2nd Derivative spectral reflectance data of various soybeans (whole, low-fat, and full-fat. The RFX-1 integrated sampling accessory/light source was used for simple reflectance measurements with no sample prep required.



RED-Wave-NIR*x*-SR-InGaAs-512 spectrum showing % Transmission data of alcohol and oil samples for 900-2200nm range. Data obtained with SL1-CUV which is an integrated halogen light source + cuvette holder.

SI Scientific Instruments GmbH
Roemerstr. 67 | 82205 Gilching
+49 8105 77940 | info@si-gmbh.de | www.si-gmbh.de | Follow us on: