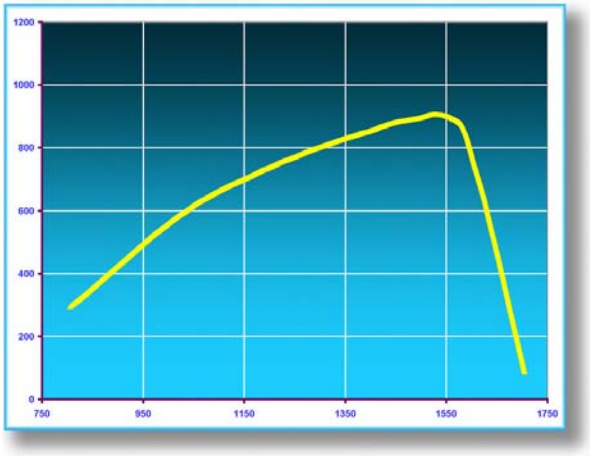
Near Infrared Spectrometers



1.7 InGaAs Response

- *Low noise electronics*
- *High dynamic range*
- *Spectral response from 900nm to 2500nm*
- *Fast, diode array technology*
- *Enhanced 8051 microprocessor*
- *Up to 18-bit A/D (16-bit displayed) with DAC offset*
- *Non-scanning device, acquire full spectrum in less than a millisecond!*
- *Small, rugged, portable*

The near infrared (NIR) spectral region lies between 780nm and 2500nm (4000 cm^{-1} to 12,800 cm^{-1}). NIR spectroscopy (NIRS) has the unique ability to provide both physical and chemical information. The use of NIRS has become very popular especially in the pharmaceutical, feed, food, grain, flour, petrochemical, chemical, and semi-conductor industries. Modern day spectrometers, based on diode array or FTIR platforms, provide spectra with excellent signal-to-noise ratios. Most NIRS does not require sample preparation, is noninvasive, and is well suited to on/in/at line applications.

Control Development, Inc., offers a wide range of NIR spectrometers. Our flexible and versatile product line caters to budget minded as well as high performance requirements. With a wide selection of InGaAs arrays and cooling options, we can match product to your application. Standard InGaAs arrays have spectral response from 900nm to 1700nm. Extended InGaAs arrays have spectral response from 1100nm to 2200nm (optional to 200nm). In addition to standard configurations, we offer higher resolution spectrometers, flexible input configurations, built-in wavelength calibration sources, and a sidecar tungsten halogen light source.

All our spectrometers come with free application software. CDI Spec32 is a data acquisition package with several data processing techniques included. Also supplied free are our Lab View VI, Active X application, and DLLs.

All our devices are compact, rugged, and portable, well suited for OEM applications. We will custom design spectrometers for your application usually at no extra charge.

Control Development, Inc.
2633 Foundation Drive, South Bend, IN 46628
Phone: (574) 288-7338 Fax: (574) 288-7339
www.controldevelopment.com
sales@controldevelopment.com

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Product Specifications

Part Number	NIR128L-1.7TS	NIR128L-1.7T1	NIR256L-1.7T1	NIR256L-2.2T2	NIR512L-1.7T1
Spectrometer					
Spectral Range (nm)*	900-1700	900-1700	900-1700	1100-2200	900-1700
Linear Dispersion (nm/pixel)*	6.250	6.250	3.125	4.400	1.625
Resolution FWHM (nm)*	12.5	12.5	6.25	8.8	3.25
Wavelength Accuracy*	¼ pixel	¼ pixel	¼ pixel	¼ pixel	¼ pixel
Input Fiber					
Core Diameter (microns)	400	400	400	400	400
Material	Ultra Low OH	Ultra Low OH	Ultra Low OH	Ultra Low OH	Ultra Low OH
Connector	905 SMA	905 SMA	905 SMA	905 SMA	905 SMA
Slit Width**	50 micron	50 micron	50 micron	50 micron	25 micron
Optics	f/3	f/3	f/3	f/2	f/3
Grating					
Lines/mm	200	200	400	400	400
Coating Material	Gold	Gold	Gold	Gold	Gold
Blaze Wavelength (nm)	1315nm	1315	1315	1600	1600
Order Sorting Filter	Yes	Yes	Yes	Yes	Yes
*nominal					
**other widths available; slit height is always greater than the fiber core diameter					
Detector					
Material Type	InGaAs	InGaAs	InGaAs	Extended InGaAs	InGaAs
Number of elements	128	128	256	256	512
T.E. cooling	None*	single stage	single stage	double stage	single stage
Pixel Dimensions (WxH)	50 µm X 500 µm	50 µm X 500 µm	50 µm X 500 µm	50 µm X 250 µm	25 µm X 500 µm
*heated, temperature stabilized	Note: Arrays can have up to 2% bad pixels				
Electronics					
Integration times	10 µs to 16 s	10 µs to 16 s	10 µs to 16 s	10 µs to 16 s***	10 µs to 16 s
A/D Converter	16 Bit, 330 KHz	16 Bit, 330 KHz*	16 Bit, 330 KHz*	16 Bit, 330 KHz*	16 Bit, 330 KHz*
Read out speed	8 µs per pixel	2 µs per pixel	2 µs per pixel	2 µs per pixel	2 µs per pixel
Readout Noise **	<5 counts RMS	<5 counts RMS	<3.5 counts RMS	<4.5 counts RMS	<4 counts RMS
Offset DAC	Yes	Yes	Yes	Yes	Yes
Flash Memory	On-Board	On-Board	On-Board	On-Board	On-Board
Microprocessor	Enhanced 8051	Enhanced 8051	Enhanced 8051	Enhanced 8051	Enhanced 8051
Strobe	TTL compatible	TTL compatible	TTL compatible	TTL compatible	TTL compatible
Lamp Drivers	Two	Two	Two	Two	Two
* 18 Bit A/D, 16 Bit displayed	** nominal	***typically < 0.5s due to detector limitations			
Power Requirements					
Voltage	5V DC	5V DC	5V DC	5V DC	5V DC
Current	8.0 Amps	8.0 Amps	8.0 Amps	8.0 Amps	8.0 Amps
Power supply	Included	Included	Included	Included	Included

Communications
USB2.0 Interface

Internal Wavelength Calibration
Internal Mercury-Argon line source option available

Physical Dimensions

Dimensions	6.535”L X 4.173”W X 3.0”H
Weight	2 lb

Software
The following is included free with every spectrometer purchase:
Spec32™, DLLs, Lab View VI, and Active X App all with user manuals

Warranty and Support

Warranty	1 year
Extended Warranty	Available
Support	Several support packages available
Telephone	9:00 AM to 5:00 PM, EST, Mon-Fri.

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