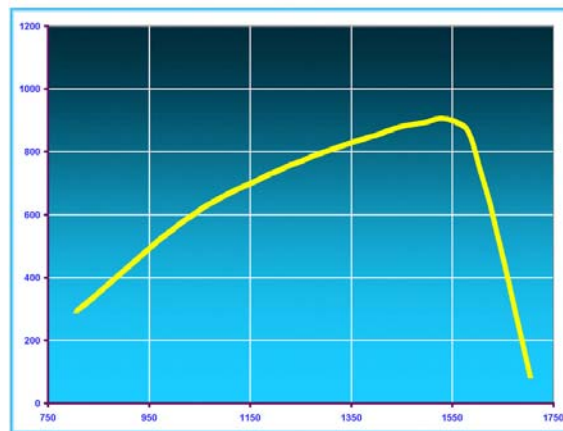


Near Infrared Spectrometers



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 $12,800\text{ cm}^{-1}$). 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 2500nm). 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

**CONTROL
DEVELOPMENT**
THE PRICE PERFORMANCE LEADER...

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

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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