DORGEAN
Beijing Dorgean Electronic Technology Co.,Ltd

Instrument Expert
Original factory packaging
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Miniature CCD Spectrometers with High Resolution and High Stability

(Part Numbers: HRS-UV1-xxx, HRS-VIS-xxx, HRS-NIR-xxx, HRS-IR1-xxx and HRS-BD1-xxx)

FEATURES

- High spectral resolution
- Ultra compact
- High long term and temperature stability
- Interchangeable input ports with various slits
- USB2.0 interface
- High speed up to 138 scans/s
- No external power required
- Trigger input
- Full-featured SDK
- GPIOs for interfacing with other equipment
- Linux driver available

APPLICATIONS

- Lab research
- Process control
- Environment monitoring

PRODUCT DESCRIPTION

Compact CCD spectrometers are widely used in process control, environment monitoring, and scientific research applications. Mightex HRS series compact CCD spectrometers features a high-resolution 100mm Czerny-Turner optical platform coupled with a Toshiba 3648-element CCD array. The optimized optical path yields both high spectral resolution and high light collection efficiency.

Wavelength and amplitude stability is often a critical requirement for many spectrometer applications. All optical components in the HRS series spectrometers are mounted directly on a single-piece base without using screws. A box enclosure structure further increases stiffness of the base. The proprietary mounting method ensures high stability over time and temperature.
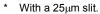
The spectrometer takes input through a SMA connector port. Usually a fiber patch cord is used to transmit light into the spectrometer. However it's also possible to send the input light directly into the spectrometer through the input slit. Input ports are interchangeable so that ports with different slit size (or without slit) can be used. Note that wavelength calibration is necessary after changing the input port.

A 16-bit DAC is used to convert the analog signal from the CCD array into a digital stream. The electronics hardware also includes trigger input and four programmable digital I/Os for interfacing with other equipment such as a light source. The spectrometer is controlled through a USB2.0 interface which also supplies all the electric power needed to operate the spectrometer.

Standard software package includes a full-featured PC software as well as a software development kit (SDK) for further software development.

PERFORMANCE SPECIFICATIONS

Parameters	Specification					Unit
Model	HRS-UV1-025	HRS-VIS-025	HRS-NIR-025	HRS-IR1-025	HRS-BD1-025	-
Optical Platform	f/4, Czerny-Turner					-
Focal Length	100					mm
Wavelength Range	200 ~ 400	390 ~ 780	600 ~ 1,000	700 ~ 870	300 ~ 1,050	nm
Resolution*	0.25	0.4	0.5	0.2	0.9	nm
Order Sorting Filter	Longpass	Longpass	Longpass	Longpass	Spatially Variable Filter	-
Entrance Slit	5, 10, 25, 50, 100, 200 or no slit					μm
Input Fiber Connector	SMA 905					-
Input Fiber NA	0.22					-
Detector	Toshiba TCD1304AP Linear CCD Array					-
Pixel Number	3648					-
Pixel Size	8x200					μm
Pixel Well Depth	100,000					electron
Signal-to-noise Ratio	1000:1(at full scale)					-
A/D Resolution	16					bit
Integration Time	0.1 to 6,500					ms
Frame Rate	up to 138					fps
GPIO	4 programmable digital I/Os					-
Trigger Input	Yes					-
PC Interface	USB 2.0					-
Trigger/GPIO Interface	DIN8					-
PC Operating System	Windows 2000/XP/Vista/7/8					-
Power Consumption	300(at 5V)					mA
Dimensions	138 x 108 x 37					mm
Weight	510					g

* With a 25μm slit.

Spectral Resolution (FWHM, nm) vs. Slit Width (μm)

Slit Width(μm)	5	10	25	50	100	200
HRS-UV1-xxx	0.15	0.20	0.25	0.45	0.85	1.65
HRS-VIS-xxx	0.25	0.30	0.40	0.80	2.00	4.80
HRS-NIR-xxx	0.25	0.30	0.50	0.90	2.10	4.90
HRS-IR1-xxx	0.12	0.15	0.20	0.38	0.90	2.10
HRS-BD1-xxx	0.50	0.60	0.90	1.70	4.10	9.70

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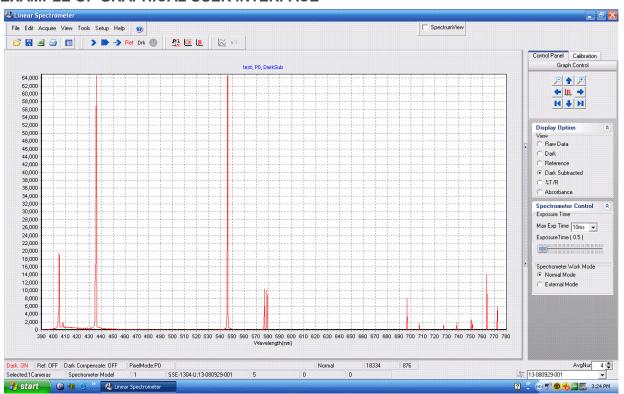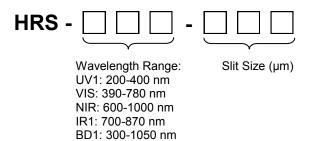
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EXAMPLE OF GRAPHICAL USER INTERFACE

PART NUMBER AND ORDERING INFORMATION

HRS - ☐☐☐ - ☐☐☐

Wavelength Range:
UV1: 200-400 nm
VIS: 390-780 nm
NIR: 600-1000 nm
IR1: 700-870 nm
BD1: 300-1050 nm

Slit Size (µm)

For example, HRS-VIS-010 is a spectrometer with a wavelength range of 390-780nm and a 10 µm slit size.

With a world-class OEM design team, Mightex offers a broad range of customized solutions in order to meet individual customer's unique requirements. Please call 1-416-840 4991 or email sales@mightex.com for details.

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