



SPECTROSCOPY

www.holmarc.com





03

200 SPECTROSCOPY

- 200 Spectrometer Goniometer
- 200 Spectrometer Goniometer 1
- 202 Spectrometer Goniometer 2
- 203 Spectrometer Goniometer
- 203 Advanced Researcher Version
- 204 Scattering Photometer
- 204 Scattering Photometer
- 204 Single Channel Light Detection
- 205 Scattering PhotometerSpectral Light Detection 206 Spectrometer
- 206 CT216 Series
- 208 CG216 Series
- 210 CD 214 Series
- 212 UV-VIS-NIR Scanning Spectrometer
- 214 Spectra CT UV-VIS-NIR CCD Based
- 214 Stitched Scanning Spectrometer
- 216 Spectra CT UV-VIS-NIR CCD Based
- 216 Multi Channel Scanning Spectrometer
- 218 Spectra UV-VIS-NIR Standard Monochromator 220 Mini Monochromator
- 222 Spectra UV-VIS-NIR Quasar Series
- 222 Scientific Monochromators
- 226 Spectra UV-VIS-NIR High Throughput
- 226 DUAL Grating f/3.5 Monochromator
- 228 Fluorescence Spectrometer
- 230 Light Sources, Detectors & Accessories



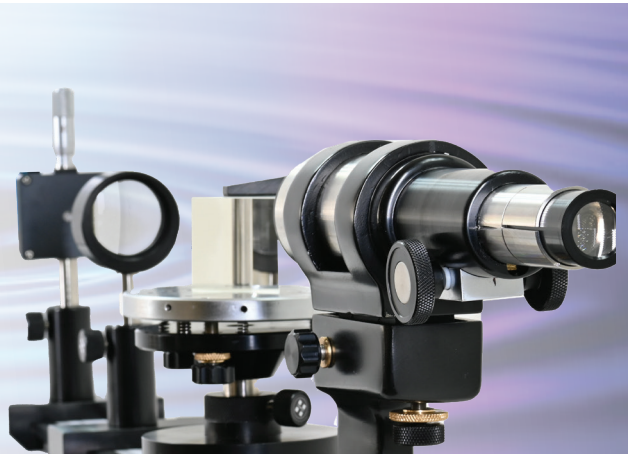
SPECTROSCOPY

- 234 Light Sources
- 236 Broadband Light Sources
- 238 Faraday Modulator
- 240 Optical Chopper
- 242 Lens Assembly Spectral Measurement System



Spectrometer Goniometer

- **Emission spectrum, Absorption spectrum, R.P of grating & prisms, Dichroism etc.**
- **Determination of Groove spacing Wavelength Biprism diffraction etc**
- **Optical density, Reflectivity, Transitivity**



Spectrometer Goniometer 1

Model : HO-SP-RE-01

Spectrometer Goniometer (Model No: HO-SP-RE-01) is designed as a versatile instrument suitable for any optics laboratory. Its optical rail based construction allows the user to device it for multitudes of applications. Laser engraved, precise rotary graduations ensure reliable and repeatable read outs. Its sturdy movement along with its fine positioning capabilities makes the instrument suitable for many research activities other than spectroscopy.

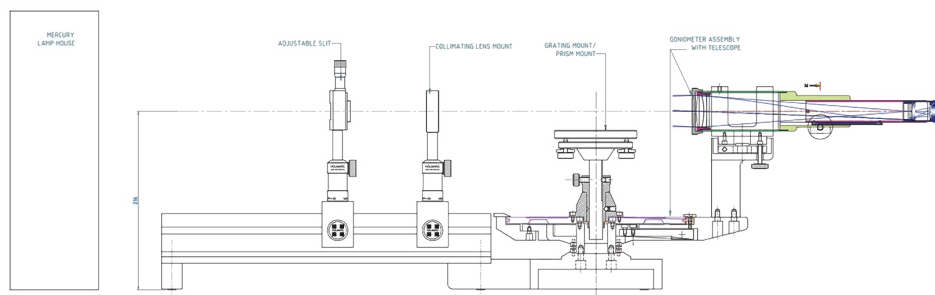
The measurement of refractive index is carried out with a dispersion prism made from the material to be tested. For the measurement of fluids, a hollow prism, which is filled with the fluid is used. It can also be used as a spectroscope for qualitative examination and measurement of emission and absorption spectra. The diffraction angle of plane grating and holographic grating can also be measured. Various accessories and mounting options are available.

All components are made of aluminium and stainless steel to avoid corrosion. Optics used are of research quality. The slit used is of precision grade with micrometer adjustments for sub-micron sensitivity. The well designed mechanics of the Goniometer allows maintenance-free operation over many years.

The instrument can be used for inspection of various optical components in laboratories or workshops.

Open and flexible design facilitates quick modification of the instrument for custom applications. This goniometer can also be used for checking reflection & transmission ratios of thin films coated on glass substrate.





Custom experiments using Theta Two Theta Goniometer

Holmarc's theta 2 theta stage consists of two rotation stages arranged in such a way that axis of rotation for both the stages are same. Both stages have preloaded ball bearing guides for wobble free rotation and positioning. 360° limitless movement is possible for inner and outer stages. Holmarc manufactures these stages with manual as well as motorized drive configurations.

Rotary graduations are provided in 1° / 2° with appropriate vernier graduations depending on the size of the stage. For motorized rotation stage, worm and gear is our standard drive mechanism. Surfaces of both stages are provided with M6 tapped holes for mounting components and sub-assemblies. Holmarc manufactures custom theta 2 theta stages to suit specific applications as well.

Resolution

Prism Table	10 arc minute
Telescope Positioning	1 arc minute

Slit

Design	Variable, 0 - 3mm
Micrometer controlled	
Resolution	10 Micron

Spectroscopy

Emission spectrum, Absorption spectrum, R.P of grating & prisms, Dichroism etc.

Diffraction

Determination of Groove spacing Wavelength Biprism diffraction etc

Measuring Optical Parameters like

Optical density, Reflectivity, Transitivity



Spectrometer Goniometer 2

Model : HO-SP-RE-02

Spectrometer Goniometer Model No: HO-SP-RE-02 has conventional design where slit along with collimator is fixed on a tilt adjustable holder instead of rail and carriage as in Model No: HO-SP-RE-01 described in the preceding page. This spectrometer is well suited for all general purpose applications including the analysis of spectrum of light sources, characterization of prisms and gratings, etc. A precision rotation stage with coarse and fine movement holds the telescope. There are two rotation stages, concentrically assembled, one for telescope and other for the sample. The 216mm graduated disc features a 360° scale with divisions of 0.5° and two vernier scales separated by 180°. The vernier scale has an accuracy of 1 angular minute. The prism table is removable and features three point leveling screws and 50mm height adjustments.

The measurement of refractive index is carried out with a dispersion prism made from the material to be tested. For the measurements of fluids, a hollow prism, which is filled with the fluid is used. It can also be used as a spectroscope for qualitative examination and measurement of emission and absorption spectra. The diffraction angle of plane grating and holographic grating can also be measured. Various accessories and mounting options are available.

All components are made of aluminium and stainless steel to avoid corrosion. Optics used are of research quality. The slit used is of precision grade with fine lead screw adjustments for sub-micron sensitivity. The well designed mechanics of the Goniometer allows maintenance-free operation over many years.

This goniometer can be used for precision measurements of the optical data on prisms. It can also be used as a spectroscope for qualitative examination and measurement of emission and absorption spectra. Numerous accessories are available.

Various detectors are available for goniometer. Optical parameters in the UV-VIS-IR range can be determined with the help of suitable detector unit. We can provide special detector heads for goniometer. You are welcome, to discuss your application requirements with us.

Specifications

Resolution	Prism Table	10 arc minute
	Telescope Positioning	1 arc minute
Slit	Design	Variable, 0 - 3mm
	Micrometer controlled	
	Resolution	10 Micron

Precision Adjustable Slit



Precision Adjustable Slit will be provided with RE-02

Research Goniometer

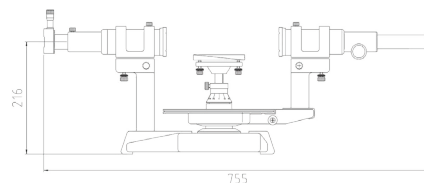
Model HO-ED-PS6

Micrometer controlled slits

Width 0 - 3mm - continuously variable

Height 10mm

Construction Metallic (non corrosive)



Spectroscopy
Emission spectrum, Absorption spectrum, R.P of grating & prisms, Dichroism etc.

Diffraction
Determination of Groove spacing Wavelength Biprism diffraction etc

Measuring Optical Parameters like
Optical density, Reflectivity, Transitivity

Mercury Lamp with Power Supply



Hollow Prism



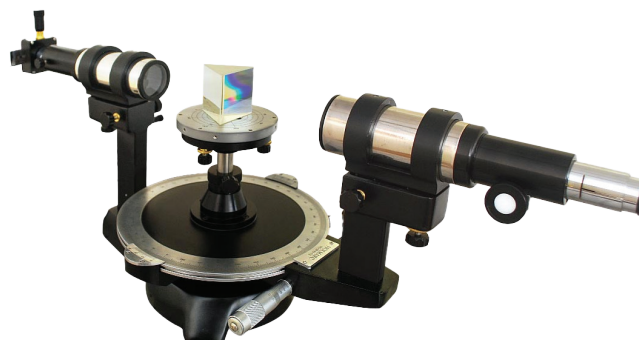
Spectrometer Goniometer



Diffraction grating



Equilateral High Index Prism



Spectrometer Goniometer Advanced Researcher Version

Model: HO-SP-RE-03DM

For precise determination of angular position, particularly for the optical spectra applications, Holmarc has introduced a new high precision 0.0001 degree resolution spectrometer goniometer. It features low dark current linear Si-Photodiode detection unit for low light measurements. This allows users to work with the spectrometer goniometer in the wavelength range of 320-1100 nm (UV-VIS-NIR). This instrument is suitable for custom experiments and inspection of various optical components with precision. Open and flexible design facilitates quick modification of the instrument for custom applications.

This instrument can as well be used as a spectroscope for the observation and measurement of emission and absorption spectra. Other applications include measurement and determination of optical angles of prisms, thin film characterization through the measurement of reflection and transmission, Brewster's angle spectroscopy etc. When used with a prism, it helps to observe visible light dispersed by wavelength. When used with a diffraction grating and a gas discharge tube, we can observe the emission spectrum of various gases. The wavelengths of each electron transition in the spectrum can be calculated according to the angle of deflection of the light reflected by the grating.

Specifications

Telescope & Collimator Tube	200 mm Focal length
Aperture	30 mm
Detector Unit	Linear Si Photodiode
Software	Spectra RE scanning Soft. Version 1.020
Rotation	360 Degree Continuously Rotatable Telescope and Sample
Design	Precision Worm gear with double bearing
Resolution	0.0001 Degree for Telescope, 0.005 Degree for Sample Plate
Marking	Graduated rotary scale for visual reference
Repeatability	0.1 degree (without encoder model) 0.001125 & 0.009 Degree (with encoder model)
Construction	Aluminium
Finish	Black anodized

Application Include

Spectroscopy

Emission spectrum
Absorption spectrum
R.P of grating & prisms
Dichroism etc.
Angle measurements of equilateral prism, wedge prism, biprism etc. Refractive index measurements.

Diffraction

Determination of Groove spacing Wavelength
Biprism diffraction etc.

Measuring Optical Parameters like

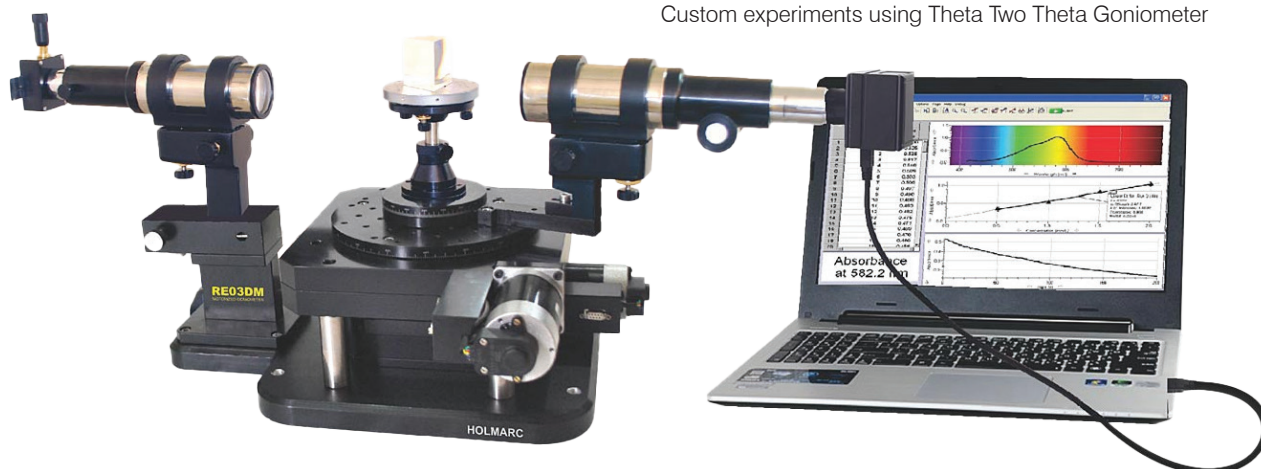
Optical density
Reflectivity
Transitivity
Absorption
Polarization angle etc.

The focal length of the telescope and collimator tube is 200 mm. The graduated disc features a 360 degree scale with divisions of 0.5. The prism table is removable and features three point bearing leveling screws.

Detector Unit

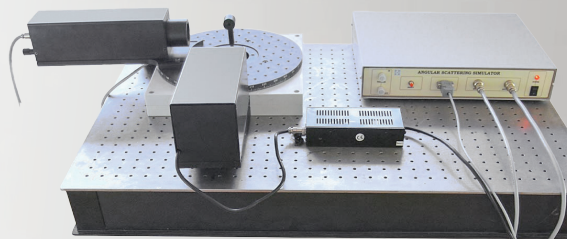
High precision low dark current (5pA) linear Si-Photodiode with an active area of 1.1 x 5.9 mm is used as detector in RE03DM Spectrometer Goniometer. It has spectral range of 320 - 1100 nm.

Custom experiments using Theta Two Theta Goniometer



Scattering Photometer

- Air pollution particle analysis
- Environmental aerosol monitoring
- Spectroscopic light scattering studies



Scattering Photometer Single Channel Light Detection

Model : HO-IAD-SG-01

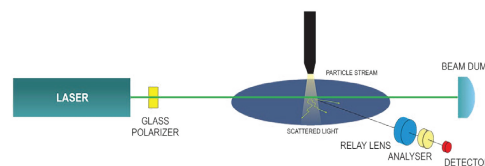
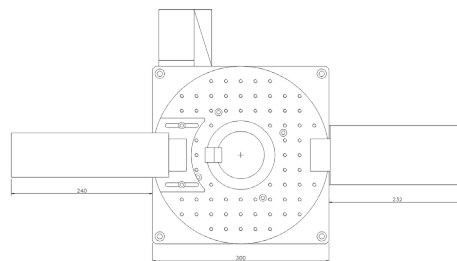
A scattering photometer for measuring the intensity of light scattered by particles has been developed by Holmarc for environmental research. It is a precision instrument designed for spectroscopic measurements of scattered light. This goniometer based instrument provides controlled multi angle measurement of particles.

A 100mw laser beam (532nm) is directed first to a linear polarizer and then into a scattering compartment containing the particles under study. The scattered light is focused onto APD (Avalanche Photo Diode) detector to generate an electrical signal indicating the amount of scattered light at that position. The motorized rotation stage helps to take reading at different angles. The entire operation is automated through a personal computer. Custom developed software and interfacing electronics are supplied along with the system.

Laser source is mounted on a precision rotation stage with central access hole. The stage is driven by stepper motor. Sample is introduced through the center hole of the stage. As the stage along with the laser source rotates, output data from the detector is collected automatically and saved in the computer with reference to the angular position of the rotation stage.

Specifications

Resolution	0.01 degree
Maximum Speed	10 degree / sec
Traverse	280°
Actuator	Stepper Motor (DPM60SH86 - 2008AF)
Load Capacity	50 Kg
Material	Aluminium
Turn Table Dimension	500 x 500 x 65 mm
Net. Weight	37 Kg



Multi angle measurement

Rotation stage is driven by worm gear assembly

Note : Model : HO-IAD-SG-01 comes with 100mW DPSS 532nm laser with APD Detector.

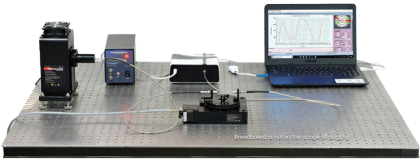
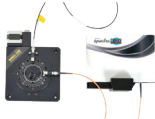
Other laser and detectors can also be integrated with the system on special request.

Scattering Photometer Spectral Light Detection

Model : HO-IAD-SG-02

Spectrometer (Model : HO-IAD-SG-02) has been developed for measuring the intensity of light spectrum (ranging from 350 - 1050nm) scattered by particles. It is a precision instrument designed for research applications where spectroscopic measurements need to be carried out from scattered light. Goniometer based design helps in multi angle spectral measurements.

A 50W fiber coupled Quartz halogen lamp is used as the light source for scattering measurements. Light from halogen lamp is coupled to the optical fiber which collimates it into the scattering compartment / sample chamber (containing particles under study) using precision lens system. The scattered light is focused onto a fiber optic cable connected to a compact CCD spectrometer. Software provided with the spectrometer analyze the amount of scattered light at different wavelength and position. The motorized rotation stage helps to take the reading at different angles. The entire operation is automated through a personal computer. Custom developed software and interfacing electronics are supplied along with the system.

Goniometer 	Resolution	0.05 degree
	Maximum Speed	10 degree / sec
	Traverse	280°
	Actuator	Stepper Motor (DPM60SH86 - 2008AF)
	Load Capacity	10 Kg
	Material	Aluminium
	Turn Table Dimension	150 x 150 x 50 mm
Spectrometer	Spectrograph f #	2.9
	Optical Platform	Concave Grating
	Spectral Range	350 to 1050 nm
	Spectral Resolution	1 nm
	Slit Options	Micrometer Controlled Variable Slit
	Input Fiber Connector	SMA 905 [FC (Optional)]
	Input Fiber NA	0.22
	Stray Light	< 0.06 % @ 532nm (< 0.1% overall)
	Detector	Toshiba TCD1304AP Linear CCD Array
	Pixel Number	3648
	Pixel Size	8 x 200 μ m
	Pixel Well Depth	100,000 electron
	Signal-to-noise Ratio	1,000:1 (at full scale)
	A / D Resolution	16 bit
	Integration Time	0.1 to 6,500 ms
	Frame Rate	up to 138 fps
	Trigger Input	Yes, Optional
	Software	Spectra ANALYTE Includes DLL libraries and SDKs for easy custom application development
Source Specifications 	Lamp	Quartz Halogen
	Wattage	50 W
	Wavelength range	340 - 2700 nm
	Powersupply	Constant Current SMPS
	Supply	Fixed
	Lamp Housing	Forced Air Cooled Type
	Optics	Concave metallic mirror
	Construction	Aluminium black Anodized
Fiber Specifications 	Wavelength Range	190 - 1600 nm
	Connector	SMA
	Numerical Aperture NA	0.22
	Acceptance Angle	25.4°
	Operating Temperature	- 40 to +100°C
	Length	1.5 m

Spectrometer

- **Options for single and continuous acquisition**
- **Performs Emission, Absorbance & Transmission / Reflection Measurements**
- **Performs real time measurements**
- **Save live to file**

CT216 Series

USB 2.0 CCD Spectrometer
Model : HO-IAD-SG-01

The CT216 Series spectrometers are cost-effective high-performance CCD based instruments designed for use with a PC. The standard sensor arrays used in the spectrometer is Toshiba TCD1304DG B/W board-level line CCD camera, based on a single-line, 3648 - pixel CCD chip. It can accept light directly through its built-in slit or via optical fibre. Custom based UV spectrometer uses windowless CCD to increase the UV sensitivity down to 200 nm.

- New compact, custom-configured models
- Connected via optical fibre
- Designed for a wide range of applications
- High performance optics & electronics
- UV enhancing coating for UV Range Spectrometer

CT216 Series spectrometer uses f/4 Czerny - Turner design with plane grating for spectral dispersion. Standard interface to the CT216 Series spectrometers is USB 2.0 compatible with 16-bit extended dynamic range. Software support includes SDK and DLLs for dedicated applications development and Spectra QSR Windows-based spectral acquisition and analysis package.

The CT216 Series spectrometers are custom-wavelength range configured models which can be tuned to desired spectral range wavelength for custom applications.



-30 Degree Cooled CCD

Peltier cooling device integrated into spectrometer sensor can reduce the temperature of the CCD chip by -30°C against ambient, improving the dark baseline level by a significant factor of 2 - 3. It makes this instrument ideally suitable for measuring low light applications like fluorescence.

Czerny - Turner Design



Model No.	HO-CT216	HO-CT216-UV	HO-CT216-3582	HO-CT216-4065	HOCT216-2010	HO-CT216-3010
Wavelength Range	350 ~ 900 nm	200 ~ 400 nm	350 ~ 820 nm	400 ~ 650 nm	200 ~ 1000 nm	300 ~ 1,050 nm
Resolution *	0.5 nm	0.25 nm	0.45 nm	0.27 nm	1 nm	0.9 nm
Spectrograph f #	4	4	4	4	4	4
Optical Platform	Czerny - Turner	Czerny - Turner	Czerny - Turner	Czerny - Turner	Czerny - Turner	Czerny - Turner
Effective Spectral Range	200 to 1050 nm	200 to 1050 nm	200 to 1050 nm	200 to 1050 nm	200 to 1050 nm	200 to 1050 nm
Spectral Resolution	0.1 to 1 nm depending on choices					
Slit Options	Micrometer Controlled Variable Slit or 10, 15, 20, 25, 50, 100, 200 or 400 μm Fixed Slits					
Input Fiber Connector	SMA 905 [FC (Optional)]					
Input Fiber NA	0.22	0.22	0.22	0.22	0.22	0.22
Stray Light	< 0.06 % @ 532 nm (< 0.1% overall)					
Detector	Toshiba TCD1304AP Linear CCD Array					
Pixel Number	3648	3648	3648	3648	3648	3648
Pixel Size	8 x 200 μm	8 x 200 μm	8 x 200 μm	8 x 200 μm	8 x 200 μm	8 x 200 μm
Pixel Well Depth	100,000 electron					
Signal-to-noise Ratio	1,000 : 1 (at full scale)					
A / D Resolution	16 bit	16 bit	16 bit	16 bit	16 bit	16 bit
Integration Time	0.1 to 6,500 ms	0.1 to 6,500 ms	0.1 to 6,500 ms	0.1 to 6,500 ms	0.1 to 6,500 ms	0.1 to 6,500 ms
Frame Rate	up to 138 fps	up to 138 fps	up to 138 fps	up to 138 fps	up to 138 fps	up to 138 fps
Trigger Input	Yes, Optional	Yes, Optional	Yes, Optional	Yes, Optional	Yes, Optional	Yes, Optional
PC interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Software	Spectra QSR V2.26 (free with spectrometer) Includes DLL libraries and SDKs for easy custom application developme					

Fiber Optic Patch Cords

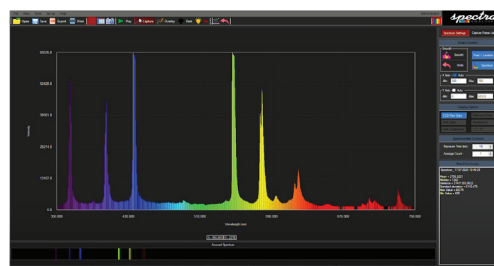
UV / VIS
200 Micron
600 Micron

VIS / NIR Models for Spectrometer
400 Micron
1000 Micron



Software

- Options for single and continuous acquisition
- Performs Emission, Absorbance & Transmission / Reflection Measurements
- Performs real time measurements & video recording
- User defined exposure time control & Frame averaging
- See list of recent measurements in 'Captured List' plane
- Grid view & Playback mode are available
- Advanced smoothing algorithms
- Automated spectra scaling and peak finding
- Wavelength calibration using Polynomial Regression & Hartman equation
- Export the details / image to Excel / CSV and jpeg
- Print plot directly



CG216 Series

USB 2.0 CCD Spectrometer

The CG216 Series spectrometers are cost-effective high-performance CCD based instruments designed for use with a PC. The standard sensor arrays used in the spectrometer is Toshiba TCD1304DG B/W board-level line CCD camera, based on a single-line, 3648-pixel CCD chip. The array driver electronics has been developed by Holmarc and designed for highly sensitive yet stable operation. More pixel numbers in the sensor makes the CG216 Series spectrometers more suitable for the applications requiring high resolution. Thanks to high sensitivity of the CCD, the spectrometer can be used for applications with low light signals as well. It can accept light directly through its built-in slit or via optical fiber. UV spectrometer uses windowless CCD to increase the UV sensitivity down to 200nm. It helps the signal sensitivity below 380 nm get improved ~20 - 50% more in general.

- New compact, custom-configured models
- Can be handheld or securely mounted
- Flexible optical input direct to slit or via fiber
- Designed for a wide range of applications
- High performance optics & electronics
- Standard design allows up to 200 - 1050 nm range
- UV enhancing coating for UV Range Spectrometer

CG216 Series spectrometer uses f/4 Czerny - Turner design with concave grating for spectral dispersion. Standard interface to the CG216 Series spectrometers is USB 2.0 compatible with 16-bit extended dynamic range. Software support includes SDK and DLLs for dedicated applications development and Spectra QSR Windows-based spectral acquisition and analysis package.

Wavelength Range



- A. 200 ~ 750 nm for HO-CG216-2075
- B. 320 ~ 900 nm for HO-CG216-3290
- C. 400 ~ 1,000 nm for HO-CG216-4010

Fiber Optic Patch Cords

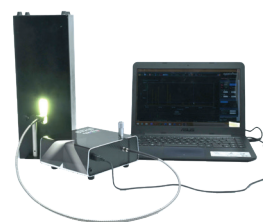


UV / VIS and VIS / NIR Models for Spectrometer

UV / VIS	VIS / NIR Models for Spectrometer
200 Micron	400 Micron
600 Micron	1000 Micron

-30 Degree Cooled CCD

Peltier cooling device integrated into spectrometer sensor can reduce the temperature of the CCD chip by -30°C against ambient, improving the dark baseline level by a significant factor of 2 - 3. It makes this instrument ideally suitable for measuring low light applications like fluorescence.



Perfect Choice for Spectral Applications

UV enhancing coating for UV Range Spectrometer

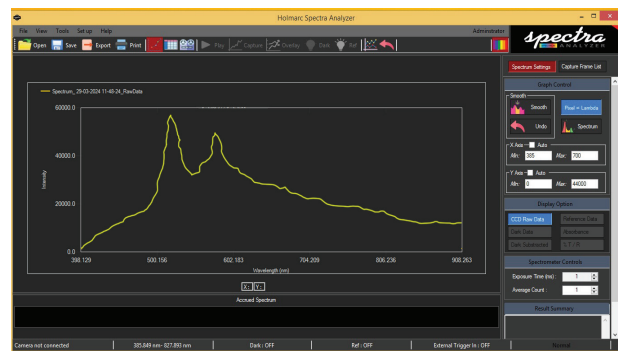
Model No.	HO-CG216-2075	HO-CG216-3290	HO-CG216-4010
-----------	---------------	---------------	---------------



Wavelength Range	200 ~ 750 nm	320 ~ 900 nm	400 ~ 1,000 nm
Resolution *	0.95 nm	0.9 nm	0.75 nm
Spectrograph f #	2.9	2.9	2.9
Optical Platform	Concave Grating		
Effective Spectral Range	200 to 1050 nm		
Spectral Resolution	0.1 to 1 nm depending on choices		
Slit Options	Micrometer Controlled Variable Slit or 10, 15, 20, 25, 50, 100, 200 or 400 μm Fixed Slits		
Input Fiber Connector	SMA 905 [FC (Optional)]		
Input Fiber NA	0.22		
Stray Light	< 0.06 % @ 532 nm (< 0.1% overall)		
Detector	Toshiba TCD1304AP Linear CCD Array		
Pixel Number	3648		
Pixel Size	8 x 200 μm		
Pixel Well Depth	100,000 electron		
Signal-to-noise Ratio	1,000 : 1 (at full scale)		
A / D Resolution	16 bit		
Integration Time	0.1 to 6,500 ms		
Frame Rate	up to 138 fps		
Trigger Input	Yes, Optional		
PC interface	USB 2.0		
Software Spectra Analyte V2.26 (free with spectrometer)Includes DLL libraries and SDKs for easy custom application development			

Software Features

- Options for single and continuous acquisition
- Performs Emission, Absorbance & Transmission / Reflection Measurements
- Performs real time measurements
- Save live to file
- User defined exposure time control
- Averaging of spectra
- Options for loading saved dark & reference data automatically when starting the application
- See list of recent measurements in 'Captured List' pane
- Grid & Playback mode
- Easily overlay captured spectrum for easy comparison
- Spectroscope View of captured spectrum simulating visual appearance through spectroscope
- Displays spectroscope lines on plot
- Batch collection of data, either continuous, external triggered or scheduled
- Flexible & intuitive display adjustments, plus cursor and peak-finding
- Peak analysis options
- Advanced smoothing algorithms
- Automated spectra scaling and peak labeling
- Fast scaling, zooming, scrolling, panning, re scaling with mouse
- Changing of legend captions
- Lock axis range to custom values
- Easy to Switch x axis Pixels Wavelengths
- Status bar at graph window displays current mouse position => fast reading of data points
- Displays saturation status of current frame. 'Normal' or



'Over Saturated'

- Easy to flip x axis
- Toggle Y axis between linear and logarithmic scaling with Ctrl + L
- Displays statistical values of the acquired spectral intensities
- Options for user wavelength calibration [Polynomial Regression & Hartman regression]
- Two User Levels : Administrator, User
- Exports single and multi spectral files to Excel / CSV and HSB
- Plot export as: Bitmap Image (.bmp) | JPG Image (.jpg) | Gif Image (.gif) | JPEG Image (.jpeg) | Png Image (.png) | Tiff Image (.tiff) | Wmf Image (.wmf)
- Print plot directly
- Copy Function to Clipboard
- Saves previous settings

CD 214 Series

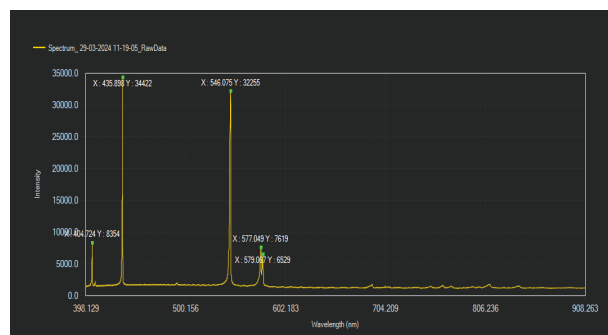
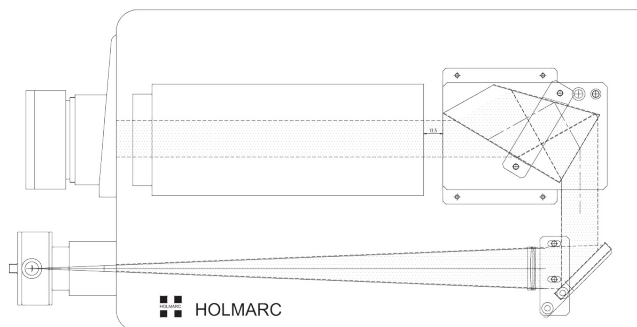
USB 2.0 Spectrometer

Spectra CD214 is a CCD based prism spectrometer. It is identical to a grating instrument except that the dispersion element used is pellin broca prism. The prism has constant efficiency over its range of transmittance. Filter is not required for measurement. In many cases, it is the ideal choice for absorption and emission spectra measurement and characterization.

CD214 Series spectrometers are available from Holmarc in various resolution and wavelength range for multitudes of spectroscopic applications. Various accessories include directly attachable light sources and sample holders. Sample holder for 10mm cuvettes connects to the entrance slit of the spectrometer. The optional dual entrance and exit ports allow the user to set up two or more experiments simultaneously. The spectrometer is flexible in design so that it can be easily customized to suit specific applications.

The Spectra Prism Spectrometer is a low-cost, lab spectrometer that is ideal for general purpose laboratory and research spectroscopic applications. The use of linear CCD array with PB prism makes it more convenient and user friendly compared to other spectroscopes. It is more reliable and cost effective compared to grating spectrometers.

Our CD214 Series Prism Spectrometer's wavelength range is from 400nm to 700nm and utilizes a detector with 3648 active pixels; that is 3648 data points in one full spectrum. The spectrometer is configured with a micrometer controlled entrance slit which opens from 0-3 mm in width by micrometer adjustment. Optical resolution is approximately 0.15 nm.



CCD Imaging System

Cost effective & User friendly

Slit

Micrometer Controlled Variable Slit (0 - 3 mm)



Specifications

Optical Platform	Constant Deviation
Spectrometer Prism	Pellin Broca
Spectral Resolution	0.1 nm
Accuracy	0.5 nm
Slit Options	Micrometer Controlled Variable Slit (0 - 3 mm)
Stray Light	< 0.06 % @ 532 nm (< 0.1 % overall)
Detector	Toshiba Linear CCD Array
Total Pixel Number	3648
Pixel Size	8 x 200 μm
Pixel Well Depth	100,000 electron
Signal-to-Noise Ratio	1,000 : 1 (at full scale)
A/D Resolution	16 bit
Exposure Time	1.0 to 6,500 ms
Frame Rate	Upto 138 fps
Trigger Input	Yes (Optional)
PC Interface	USB 2.0
Software	Spectra QSR V2.26

For the spectra prism spectrometers, directly attachable light source and sample holders are available as accessories (sold separately). The most common light source is quartz halogen lamp. Sample holder we stock generally is for 10mm cuvettes which connects to the front side of the spectrometer. Software has capabilities for capturing single or continuous spectra, custom wavelength calibration, dark subtraction and intensity comparison, simultaneous display of overlay multiple spectra, exporting dat to microsoft® excel etc. The software has facilities for spectrum saving in programmed intervals.

Model No.	Dispersion Element	Wavelength Range	Detector	Resolution
Spectra CD 214VIS	PB N-SF1	400 - 700 nm	Line CCD 3648 pixels	0.15 nm
Spectra CD 214NIR	PB N-SF1	650 - 950 nm	Line CCD 3648 pixels	0.26 nm

Features - Software

- Options for single and continuous acquisition
- Performs Emission, Absorbance & Transmission / Reflection Measurements
- Performs real time measurements
- Save live to file
- User defined exposure time control
- Averaging of spectra
- Options for loading saved dark & reference data automatically when starting the application
- See list of recent measurements in 'Captured List' pane
- Grid & Playback mode
- Easily overlay captured spectrum for easy comparison
- Spectroscope View of captured spectrum simulating visual appearance through spectroscope
- Displays spectroscopy lines on plot
- Batch collection of data, either continuous, external triggered or scheduled
- Flexible & intuitive display adjustments, plus cursor and peak-finding
- Peak analysis options
- Advanced smoothing algorithms
- Automated spectra scaling and peak labeling
- Fast scaling, zooming, scrolling, panning, re scaling with mouse
- Changing of legend captions
- Lock axis range to custom values
- Easy to Switch x axis Pixels Wavelengths
- Status bar at graph window displays current mouse position => fast reading of data points



- Displays saturation status of current frame. 'Normal' or 'Over Saturated'
- Easy to flip x axis
- Toggle Y axis between linear and logarithmic scaling with Ctrl + L
- Displays statistical values of the acquired spectral intensities
- Options for user wavelength calibration [Polynomial Regression & Hartman regression]
- Two User Levels : Administrator, User
- Exports single and multi spectral files to Excel / CSV and HSV
- Plot export as: Bitmap Image (.bmp) | JPG Image (.jpg) | Gif Image (.gif) | JPEG Image (.jpeg) | Png Image (.png) | Tiff Image (.tiff) | Wmf Image (.wmf)
- Print plot directly
- Copy Function to Clipboard
- Saves previous settings

UV-VIS-NIR Scanning Spectrometer

Fiber Coupled

Model: HO-SP-S100 Series

Scanning spectrometer is specially designed and developed for industrial and academic research laboratories in the fields of biology, chemistry, physics, environmental science and engineering. This device works in the wavelength range of 190 to 1100nm. Scanning spectrometer can rapidly scan a range of wavelengths and record light intensity at each wavelength.

Input and output ports of the spectrometer are fitted with precise micrometer controlled variable slits. A plane holographic grating is used to diffract the input light that is subsequently focused by a second concave mirror. The holographic gratings used in the instrument minimizes stray light for high sensitivity and accuracy. A stepper-motor controlled sine drive positions the grating, which is mounted on a precision rotary table. The sine drive delivers a linear relationship between stepper motor motion and wavelength of interest. It includes a mechanism to change the wavelength selected by the software and to record the resulting changes in the measured quantity as a function of the wavelength.

The software developed for the instrument has facilities for setting up and calibration in addition to scanning and manual readout. Scanning is possible for a desired wavelength range too. This feature saves time whenever full wavelength range scan is not necessary. The software stores and displays the data acquired on MS Excel sheet. This helps to plot graph with ease whenever required.

Heavy duty aluminium construction is used for stability with respect to vibration and thermal effects. Multiple accessory options allow the user to configure the system for custom applications. The basic system and accessories are designed in modular fashion. More and more accessories can be added as the applications expand.

There are two types of single channel detectors for using with scanning spectrometers, photomultiplier tube (Model : HO-SP-S100MA) and silicon photo diode (Model : HO-SP-S100SA and HO-SP-S100SAUV). For general emission and absorption experiments, scanning spectrometer with silicon photo diode is suitable. It can be used for spectroscopic study of LED and other optical filters. PMT detectors typically offer much high sensitivity to low light levels than silicon photo diode and are suitable for Raman spectrum, fluorescence, bioluminescence and chemiluminescence.

Dual exit port configured model is also available. It enables simultaneous use of more than one detector. It helps to work with different wavelength regions. The software allows data retrieval from each detector independently. This can be completely automated and PC-controlled.

Fiber Optic Collimators

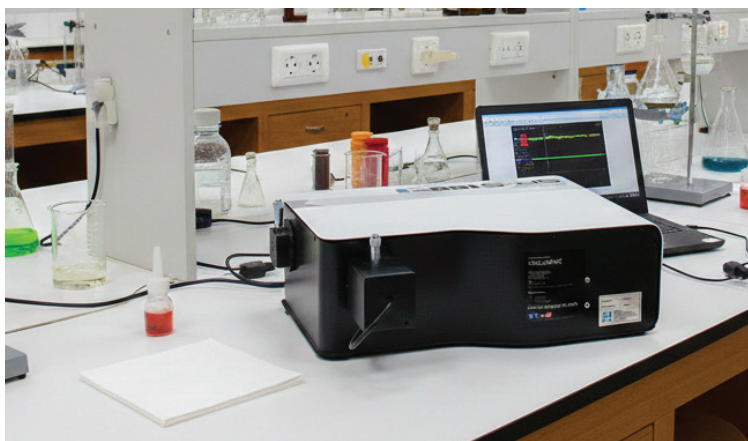
Multi elemental aberrations corrected design

- Fiber optic collimator
- Laser to fiber coupling
- Slit to fiber coupling
- Fiber to detector coupling

Fixed collimators for custom beam sizes can be manufactured at holmarc. Please contact our engineers at sales@holmarc.com for your special requirements.

Features

- Fiber Coupled Input Slit
- High resolution spectral analysis
- High wavelength accuracy
- 190 - 1100nm spectral range in a single scan
- Optional photomultiplier and silicon photo diode detector
- Adjustable Input and output slit to control the spectral resolution
- Adjustable wavelength steps
- RS-232 and USB to serial port extension module
- Optional optical port with optical output and detector input ports



Specifications



Optical path configuration	Czerny-Turner type
Dispersion element	Holographic grating
Grating density	1200 grooves / mm
Relative diffraction efficiency	45 - 65% (Visible)
Scanning Wavelength Range	190 - 1100 nm
Wavelength range (Detector)	350 - 1100 nm for HO-SP-S100SA 190 - 1100 nm for HO-SP-S100SA-UV 185 - 900 nm for HO-SP-S100MA
Resolution	0.1 nm
Wavelength Repeatability	± 0.5 nm
Slit width	0 - 3 mm (Micrometer Controlled)
Detector	Si photodiode or PMT
Interface	USB 2.0 or RS-232
Data formats	Spread sheet

Wavelength Range

350 - 1100 nm
for HO-SP-S100SA



Holographic

Dispersion Gratings



Spectra CT UV-VIS-NIR CCD Based Stitched Scanning Spectrometer

Model: HO-SP-3S300F

HOLMARC's Model HO-SP-3S300F is a CCD based scanning spectrometer, rapidly scan a range of wavelengths and record light intensity at each wavelength. In this spectrometer, only 70nm wavelength range is covered in a single imaging, by making use of the entire 3648 pixels available in the CCD. This feature increases the resolution significantly. For obtaining spectra over full wavelength range, various spectral images are taken and stitched together using the software provided. Hence this device is named "Stitched Scanning Spectrometer". It works in the wavelength range of 200 to 1050nm.

Holographic diffraction grating used in this spectrometer disperses light by diffracting different wavelengths at different angles and it is subsequently focused by a second concave mirror. The grating is positioned in such a way to get all the wavelength of light in to a linear CCD. The required wavelength range is selected by rotating angle of the grating. The mirror and slit positions remain fixed. It utilizes a computer controlled motorized turret for automatic grating and wavelength selection. Resolution and wavelength range of the spectrometer is depends on the selection of grating. Scanning is possible for a desired wavelength range. This feature saves time whenever full wavelength range scan is not necessary. Electronics is packaged inside the housing and has RS-232 interface to the computer. For USB interface a Serial to USB converter is connected to the RS-232 output and a USB converter driver needs to be loaded on the computer so that it will recognize the USB interface as a virtual RS-232 serial port. There is also a fast and interactive graphical software interface allowing full control of all the spectrograph functions.

Specifications

Optical path configuration	Czerny-Turner type
Focal Length	300 mm
Aperture Ratio	f / 6
Port Configuration	Single I / P & O / P (Customizable)
Dispersion element	Holographic grating UV Optimized
Grating density	1200
Grating Size	50 x 50 mm
Relative diffraction efficiency	65 %
Wavelength range	200 - 1050 nm
Resolution with CCD (FWHM)	~ 0.058 nm
Band width per pixel	~ 0.029 nm
Slit width	0 - 3 mm, Micrometer controlled
Slit Resolution	10 Micron
Dispersion	2.459 nm / mm @ 350nm
CCD wavelength coverage	70 nm
CCD Sensor	B / W line Sensor
Number of Pixels	3648
Pixel Size	8 x 200 micron
Pixel Output Clock	0.5 MHz
ADC resolution	16 bits
Exposure Time Range	0.1ms - 6,500ms
Frame Rate	Up to 138 scans / second
Interface	USB 2.0
Compatibility	Windows 2000 XP or higher
Default slit width is 20 μ m	
Spectral Coverage : approximate, use for reference purpose only	

Features

High resolution spectral analysis
High wavelength accuracy
200 - 1100nm spectral range in a single scan
Optional photomultiplier and silicon photo diode detector
Adjustable Input slit to control the spectral resolution
Selectable wavelength range
RS-232 and USB to serial port extension module
Optional optical port with optical output and detector input ports

Czerny - Turner Design

with 300mm focal length and aperture ratio of f/16

CCD Sensor

B / W line Sensor of 70nm wavelength with 3648 Pixels at 8x200 micron pixel size and a clock rate of 0.5 MHZ



Build Quality

Heavy duty aluminium construction is used for stability with respect to vibration and thermal effects. Multiple accessory options allow the user to configure the system for custom applications. The basic system and accessories are designed in modular fashion. More and more accessories can be added as the applications expand.

Where it is Used?

It can be used for spectroscopic study of LED's, optical filters, general emission and absorption experiments etc.

Dual exit port configured model is also available. It enables simultaneous mounting of different detectors. It helps to work with different wavelength region. The Software allows usage of all the functions of each device independently. All systems can be made completely automated and PC controlled

Wavelength Range

350 - 1100 nm
for HO-SP-S100SA



Holographic

Holographic grating UV
Optimized at a grating
Intensity of 1200 and upto
50mm x 50mm grating
size



Slit

10 Micron
resolution
0 - 3 mm,
Micrometer
controlled Slit
Width



Spectra CT UV-VIS-NIR CCD Based Multi Channel Scanning Spectrometer

Model: HO-SP-3S300FS

HOLMARC's Model HO-SP-3S300FS is a CCD based scanning spectrometer designed for multichannel spectroscopic application, can hold up to 10 Nos. of 600 micron optical fibers at the input slit (Optional - can be customized as per requirements). It can rapidly scan a range of wavelengths and record light intensity of all the channels at each wavelength. In this spectrometer, only 58 nm wavelength range is covered in a single imaging, by making use of the entire 3032 x 2016 pixels available in the CCD. This feature increases the resolution significantly. For obtaining spectra over full wavelength range, various spectral images are taken and stitched together using the software provided. Hence this device is named "Stitched Scanning Spectrometer". It works in the wavelength range of 340 to 1050nm.

Holographic diffraction grating used in this spectrometer disperses light by diffracting different wavelengths at different angles and it is subsequently focused by a second concave mirror. The grating is positioned in such a way to get all the wavelength of light in to a linear CCD. The required wavelength range is selected by rotating angle of the grating. The mirror and slit positions remain fixed. It utilizes a computer controlled motorized turret for automatic grating and wavelength selection. Resolution and wavelength range of the spectrometer is depends on the selection of grating.

Electronics is packaged inside the housing and has RS-232 interface to the computer. For USB interface a Serial to USB converter is connected to the RS-232 output and a USB converter driver needs to be loaded on the computer so that it will recognize the USB interface as a virtual RS-232 serial port. There is also a fast and interactive graphical software interface allowing full control of all the spectrograph functions.

- Trigger In & Trigger Out function
- High resolution spectral analysis
- High wavelength accuracy
- 340 - 1050 nm spectral range in a single scan
- Optional photo multiplier and silicon photo diode detector attachment
- Adjustable input slit to control the spectral resolution
- Selectable wavelength range
- RS-232 and USB to serial port extension module
- Optional optical port with optical output and detector input ports

Specifications



Optical path configuration	Czerny-Turner type
Focal Length	300 mm
Aperture Ratio	f / 6
Port Configuration	Single I / P & O / P (Customizable)
Dispersion element	Holographic grating UV Optimized
Grating density	1200
Grating Size	50 x 50 mm
Relative diffraction efficiency	65 %
Wavelength range	340 - 1050 nm
Resolution with CCD (FWHM)	~ 0.058 nm
Band width per pixel	~ 0.029 nm
Slit width	0 - 3 mm, Micrometer driven
Slit Resolution	10 Micron
Dispersion	2.3 nm / mm @ 532 nm
CCD wavelength coverage	58 nm
Interface	USB 2.0

Hydrogen Absorption Spectrum



Hydrogen Emission Spectrum



About Product

Heavy duty aluminium construction is used for stability with respect to vibration and thermal effects. Multiple accessory options allow the user to configure the system for custom applications. The basic system and accessories are designed in modular fashion. More and more accessories can be added as the applications expand.

It can be used for spectroscopic study of LED's, optical filters, general emission and absorption experiments etc.

Dual exit port configured model is also available. It enables simultaneous mounting of different detectors. It helps to work with different wavelength region. The Software allows usage of all the functions of each device independently. All systems can be made completely automated and PC controlled.

Holographic Gratings

Optimized for UV with upto 50x50mm grating size and 1200 grating density



Foci Length

300mm

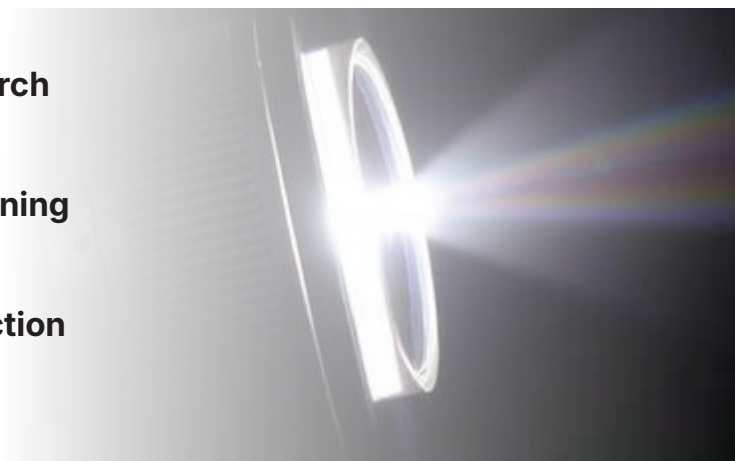
Slit

0 - 3 mm,
Micrometer driven Slit



Monochromator

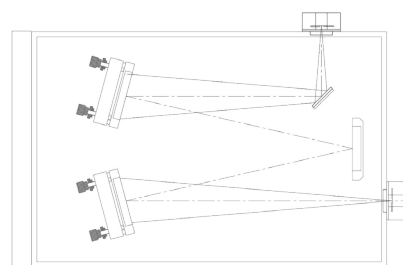
- General spectroscopic research applications
- Precision wavelength positioning control
- Automated wavelength selection system



Spectra UV-VIS-NIR Standard Monochromator

Model: HO-SP-M01S | HO-SP-M03S

HOLMARC's Spectra UV-VIS-NIR standard monochromators are designed for general spectroscopic research needs. These monochromators are designed using single 1200 lines / mm holographic precision grating. A microprocessor onboard controls the motor for precision wavelength positioning. The instrument can be operated either from the front panel or through a personal computer which can be interfaced with the device by using RS 232C serial port. Input and output ports of the monochromator are fitted with precise, micrometer controlled variable slits. Mirrors are kinematically mounted for fine tuning during installation and setup. The software developed for the instrument has facilities for setting up and calibration as well. System accepts input data as wavelength or wave number. Monochromator consists of diffraction grating, slits and spherical mirrors, all held by precision opto-mechanical mounts. The input light source, which is always application dependent, typically emits a broad spectrum of radiations. Diffraction grating disperses light by diffracting different wavelengths at different angles. The angular position of the grating is adjusted by the use of rotary stage so that light with required wavelength is passed through the exit slit and all other wavelengths are blocked, without changing position of mirrors and slits. Precision stepper motor controlled rotation stage is used for driving the grating. Very fine resolution for the grating stage is achieved by the micro-stepping feature of the stepper motor control. Wavelength selection is made much easier in automated system compared to manually adjusted versions.



- Micrometer adjustable slits to precisely control incoming light.
- User specified gratings to meet specific applications
- Stepper motor scanning for precision wavelength positioning
- Internal shutter or filter wheel (Optional)
- Motorized slit (Optional)
- Custom configurations



Specifications



Model HO-SP-M01S

Optical path configuration	Czerny-Turner type
Wavelength Range	200 - 1100 nm
Collimating & Focusing mirror	50 mm dia, 300 F
Optical Grating	1200 l / mm
Grating Size	50 x 50 mm
Absolute Diffraction Efficiency	45 - 65 %
Slit Width	0 ~ 3 mm Continuously Adjustable
Resolution	0.1 nm (@ 546 nm, 10 μ m slit width)
Wavelength Accuracy	$\leq$ 0.2 nm
Wavelength Repeatability	$\leq$ 0.1 nm
Stray Light	$\leq$ 10 ⁻³
Reciprocal of Linear Dispersion	2.7 nm / mm
Half-Width of Spectral line	$\leq$ 0.2 nm @ 586 nm
A fixed diverter mirror assembly for entrance side port	
A exit selection diverter mirror assembly for exit ports	
A micrometer controlled adjustable slit for entrance and exit ports, 0 to 3mm(10micrometer increment/decrement unit)	

Model HO-SP-M03S

Optical path configuration	Czerny-Turner type
Focusing mirror	80 mm dia, 500 F
Collimating mirror	80 mm dia, 500 F
Clear aperture	76.92 mm
Coating	Broadband Al-Coating
Folding mirror	55 x 40 mm
Grating Size	50 x 50mm (68 x 68mm Optional)
Resolution	0.05 nm @ 435.8 nm [1200 gr/mm grating, 10 μ m slits]
Accuracy	+/- 0.2 nm
Repeatability	+/- 0.04 nm
Drive-step size	0.0025 nm with 1200gr/mm
Dispersion	1.7 nm / mm
Aperture	f / 6.5
Interface	RS232 & USB Standard
Focal-plane size	26 mm wide x 14 mm high
A fixed diverter mirror assembly for entrance side port	
A exit selection diverter mirror assembly for exit ports	
A micrometer controlled adjustable slit for entrance and exit ports, 0 to 3mm(10micrometer increment/decrement unit)	

Holographic Gratings

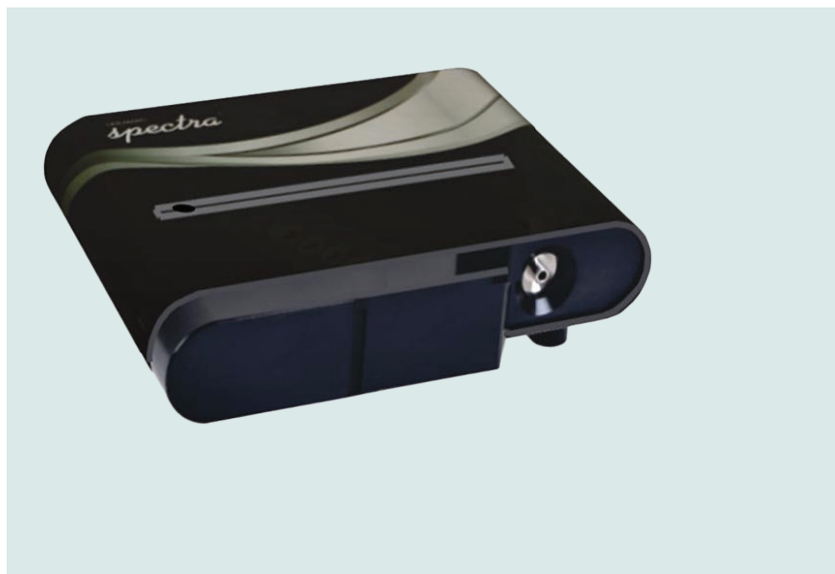
Available Options	1200 l/mm 1800 l/mm 2400 l/mm
Monochromators are available in various port configurations.	
Single I/P & O/P port, Double I/P & O/P port	
Single I/P & Double O/P port, Double I/P & Single O/P port	
Other model in standard series monochromator	
Model	HO-SP-M02S - 400 mm Focal length Monochromator
	HO-SP-M04S - 600 mm Focal length Monochromator

Mini Monochromator

Compact, Automated Scan Model: HO-SP-150F6 Series

HOLMARC's New 125mm & 150mm focal length CT monochromators are compact mini optical system delivering a high performance, reliable solution wide scan wavelength measurement over UV-VIS-IR region (185nm - 3300nm). Its features are comparable to many larger, more expensive, conventional models. At just 16 x 8cm the 125F5 monochromator (20 x 10cm for 150mm F6 monochromator) features a compact design with a single entrance and exit slit with up to two diffraction gratings ideal for accommodation into the smallest of spaces available, particularly suitable in OEM applications. The 150F6 monochromator is ideally suited to measurements whereby a medium to lower spectral resolution is required, i.e. as tuneable light source, wavelength scan measurement system etc. Suitable for integration into a larger measurement system. Because of the compact design it can be used in a variety of sophisticated analytical and biomedical equipment such as: clinical chemistry analyzers, HPLC detectors, and UV-VIS-NIR spectrophotometers.

- Provision to screw a rectangular to round fibre patch cord on both input and output slit
- Computer control of monochromator with QSR software (Lab View support)



Specifications

	Automatic Mini Monochromator	Manual Mini Monochromator
Optical Layout	Czerny Turner	Czerny Turner
Focal length	120, 125 & 150mm	125 & 100mm
Grating mount	Single / Dual grating turret	Single
Number of gratings	1 - 2	
Grating size	25 x 25 mm	25 x 25 mm
Aperture ratio	f/4, f/5 & f/6	f/5 & f/4
Number of entrance / exit ports	1	1
Fiber optic coupler plate	Yes, converts slit aperture to SMA connector	Yes, converts slit aperture to SMA connector
Mechanical resolution drive	0.000072°/ step	0.000072°/ step
Slit type	Fixed, Micrometer or motorized	Fixed
Slit width	10 μ m - 2 mm	10 μ m - 3 mm
Slit height	12 mm	12 mm
Higher order filter size	12.5 mm	
Linear dispersion	3.9 nm / mm (150 mm f)	
Wavelength accuracy	$\pm$ 0.25 nm	
Computer interface	USB 2.0	
Software control		
Higher order selection	12.5 mm	Manual
Higher order filter size	Holmarc Spectra Scan	12.5 mm

Model No.	Wavelength Range	f #	Grating	Resolution Typical Operation
HO-SP-120F4-M1	350 - 1100 nm	f 4	Single, 1200 l/mm	1.25 nm
HO-SP-125F5-M1A	190 - 1100 nm	f 5	Single, 800 l/mm	1.75 nm
HO-SP-125F5-M1B	190 - 900 nm	f 5	Single, 1200 l/mm	1.2 nm
HO-SP-125F5-M1C	350 - 700 nm	f 5	Single, 2400 l/mm	0.65 nm
HO-SP-150F6-M1A	190 - 1100 nm	f 6	Single, 800 l/mm	1.5 nm
HO-SP-150F6-M1B	190 - 900 nm	f 6	Single, 1200 l/mm	1 nm
HO-SP-150F6-M1C	350 - 700 nm	f 6	Single, 2400 l/mm	0.5 nm
HO-SP-150F6-M2A	190 - 1100 nm	f 6	Dual, 1200 & 2400 l/mm	0.5 nm
HO-SP-150F6-M2B	190 - 1600 nm	f 6	Dual, 800 & 1200 l/mm	1 nm
HO-SP-150F6-M2C	1000 - 3300 nm	f 6	Dual, 800 & 600 l/mm	1.5 nm

Manual Mini Monochromator

125 mm F5 & 100 mm F4 - Handheld Size Model: HO-SP-125F5 & HO-SP-100F4 Series

Model No.	Wavelength Range	f #	Grating	Resolution Typical Operation
HO-SP-125F5-MM1A	190 - 1100 nm	f 5	Single, 800 l/mm	1.75 nm
HO-SP-125F5-MM1B	190 - 900 nm	f 5	Single, 1200 l/mm	1.2 nm
HO-SP-125F5-MM1C	350 - 700 nm	f 5	Single, 2400 l/mm	0.75 nm
HO-SP-100F4-MM2A	190 - 1100 nm	f 4	Single, 800 l/mm	2 nm
HO-SP-100F4-MM2B	190 - 900 nm	f 4	Single, 1200 l/mm	1.5 nm
HO-SP-100F4-MM2C	350 - 700 nm	f 4	Single, 2400 l/mm	1 nm

HOLMARC's MMS-125F5 hand held Mini Monochromator is a manually operated light weight monochromator size of that utilizes a knob dial and a precision linear engraved top for wavelength selection. For quick wavelength selection a quick release lever also provided. Precision lead screw sine bar mechanism is used for the rotation of the diffraction grating which positions the selected wavelength at the exit slit. Wavelength can be read directly in nanometers from engraved top. These are ideal choice for compact wavelength selection system. 0-5 mm micrometer controlled variable slit is used for the wavelength band width controls. Narrower slits increase resolution but decrease throughput. Wider slits increase throughput at the expense of spectral purity.

Note: It is possible to converts slit aperture to SMA connector.

Spectra UV-VIS-NIR Quasar Series Scientific Monochromators

Model: HO-SP-SQR Series

HOLMARC's Spectra Quasar Series Monochromators Model : HOSP-SQR500FA, HO-SP-SQR300FA & HO-SP-SQR200FA are fully automated, triple grating instruments with dual output port while Models HO-SP-SQR500F, HO-SP-SQR300F & HO-SP-SQR200F are single grating instruments with single output port. All the four models are designed for fast, automated and continuous scanning over broad spectral range. The angular position of the grating is adjusted by the use of sine drive mechanism so that only the required wavelength of light is passed through the output slit.

Spectra Quasar series monochromators are ideal choice for either single or multichannel detector to be used in many applications that require medium to high spectroscopic resolution with excellent stray light performance such as fluorescence, Raman, absorption and transmission. Spectra series monochromators are fully automated with microprocessor controls and can be interfaced with the device by using RS 232C serial port.

Input and output ports of the monochromator are fitted with precise, micrometer controlled variable slits. The software developed for the instrument has facilities for setting up and calibration as well. System accepts input data as wavelength or wave number. Various configurations of input and output ports are available with precision and long life time.

Precision stepper motor controlled rotation stage is used for driving the grating. Fine resolution for the grating stage is achieved by microstepping feature of the stepper motor drives. Wavelength selection is made much easier in automated system compared to manually adjusted versions.

Spectra UV-VIS-IR Light Sources

HOLMARC offers a number of light sources to cover the spectral range of 200 - 2000nm which can be mounted directly to our monochromators or can be used independently. With the appropriate adapters, some of the sources can be mounted to our monochromators along with an optical chopper or filter wheel. Additional adapters and interface kits are available for focusing and launching the light directly into optical fibers.

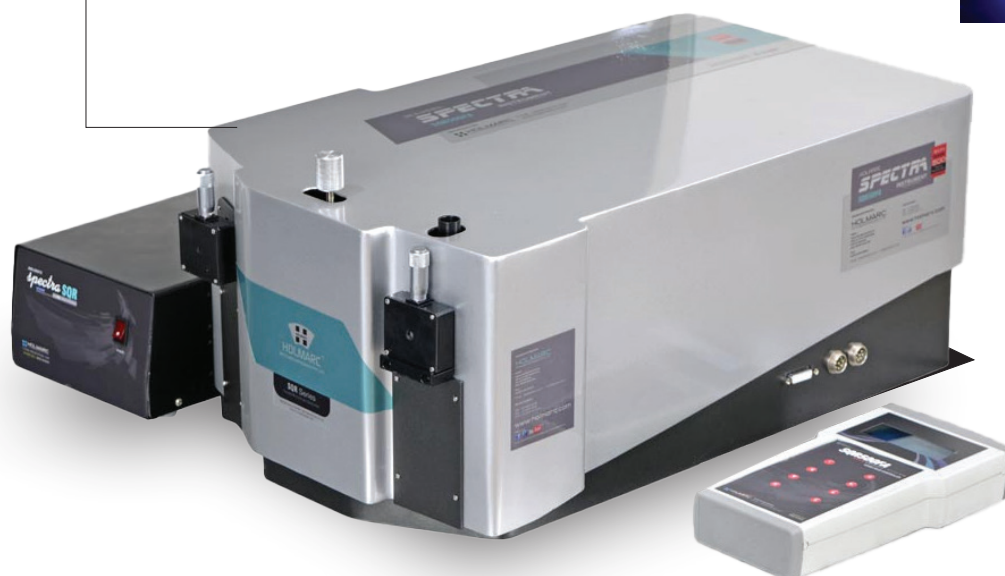
Detector Stages for Monochromators

Holmarc manufactures custom detector mounts and stages for your application. Please contact us with your custom requirements at

sales@holmarc.com /
mail@holmarc.com



FA - Fully automated Model
F - Fixed Model



Specifications



	500FA Spectra Quasar 500F Fully Automated Monochromator Czerny-Turner Dual	300FA Spectra Quasar 300F Fully Automated Monochromator Czerny-Turner Single
Optical Design		
Input Port	Dual	Single
Output Port	Dual (One for Monochromatic Light and other for single / multi channel spectral application)	Dual (One for Monochromatic Light and other for single / multi channel spectral application)
Port Selection Mechanism	Integrated Motorized Flip Mirror based Mechanism	Manual Flip Mirror based Mechanism
Main Mirrors	Parabolic type with Enhanced Aluminum Coating	Parabolic type with Enhanced Aluminum Coating
Focal Length	500 mm	300 mm
Collimating Mirror Size	-	50 x 50 mm
Focusing Mirror Size		75 x 50 mm
Diameter	68 mm or 120 mm	
Aperture Ratio	f / 5 (with 100 x 100mm grating) or f / 7.3 (with 68 x 68mm grating)	f / 6 (with 50 x 50 mm grating)
Dispersion Element	Holographic Grating	Holographic Grating
Grating Size	100 x 100 mm (Ruled Grating) Custom grating can be provided on request	50 x 50 mm
Grating Density	600 l / mm and 1200 l / mm	600 l / mm and 1200 l / mm
Wavelength Range	200 - 2000 nm	200 - 2000 nm
Diffraction Efficiency	65 % (@ 532 nm)	65 % (@ 532 nm)
Dispersion	1.426 nm / mm	2.29 nm / mm (52.13 cm - 1/mm)
Mechanical Wavelength Range	200 - 1600 nm (@ 1200 l/mm)	200 - 2000 nm (@ 1200 l/mm and 600 l / mm)
Accuracy	0.1 nm	0.1 nm
Grating Mounting Design	Triple Grating Turret Based (Can hold up to 3 Gratings)	Dual Grating Turret Based
Mount Design	Kinematic Top Adjustable Mounts	Kinematic
Grating Rotation	Front Surface Axis	Front Surface Axis
Output Port Size	30 mm	
Focal Imaging Plane	30 x 12 mm	30 x 12 mm
Focal Plane Extension from the port	42 mm	20 mm
Input and Output Slit Design	Integrated Motorized Slit or Manual Slit	Integrated Motorized Slit or Manual Slit
Slit Width Range	0 - 3 mm	0 - 3 mm
Least count	1 Micron	1 Micron
Shutter	Integrated Motorized Active Shutter	Integrated Motorized Active Shutter
Filter unit	Higher order cut off filter wheel	Higher order cut off filter wheel
Calibration	Auto calibration for all motorized function (Manual Calibration can be activated for wavelength calibration)	Auto calibration for all motorized function (Manual Calibration can be activated for wavelength calibration)
Software	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)

Specifications - Spectra Quasar 500FA Monochromator

200FA



Spectra Quasar 200FA Fully Automated Monochromator

500F



Spectra Quasar 500F Monochromator

Optical Design	Czerny-Turner	Czerny-Turner
Input Port	Single	Single
Output Port	Dual (One for Monochromatic Light and other for single / multi channel spectral application)	Dual (One for Monochromatic Light and other for single / multi channel spectral application)
Port Selection Mechanism	Off Axis Parabolic Flat field Corrected Optics	
Main Mirrors	Off Axis Parabolic Flat field Corrected Optics	Parabolic type with Enhanced Aluminum Coating
Coating	Enhanced Aluminium Coating	
Focal Length	200 mm	500 mm
Collimating Mirror Size		
Focusing Mirror Size		
Diameter		
Aperture Ratio	f / 4	f / 10 (with 50 x 50mm grating)
Dispersion Element	Holographic Grating & Ruled Grating	Holographic Grating
Grating Size	50 x 50mm (Custom grating can be provided on request)	
Grating Density	600 l / mm and 1200 l / mm	1200 l / mm
Wavelength Range	200 - 2000 nm	200 - 1100 nm
Diffraction Efficiency	65 %	65 % (@ 532 nm)
Dispersion	2.026 nm / mm	1.426 nm / mm
Mechanical Wavelength Range		200 - 1600 nm (@ 1200 l/mm)
Accuracy	0.1 nm	0.1 nm
Grating Mounting Design	Dual Grating Type	Single Grating
Mount Design		
Grating Rotation		Front Surface Axis
Output Port Size	Front Surface Axis	30 mm
Focal Imaging Plane	Output Port Size	30 x 12 mm
Focal Plane Extension from the port	42 mm	30 x 12 mm
Input and Output Slit Design	Integrated Motorized Slit	
Slit Width Range	0 - 3 mm stepper motor controlled	0 - 3 mm (Manual)
Least count	1 Micron	1 Micron
Shutter	Integrated motorized Active Shutter	
Filter unit	Higher order cut off filter wheel	Higher order cut off filter wheel
Calibration	Auto calibration for all motorized function (Manual Calibration can be activated for wavelength calibration)	
Software	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)

Specifications

300F



200F



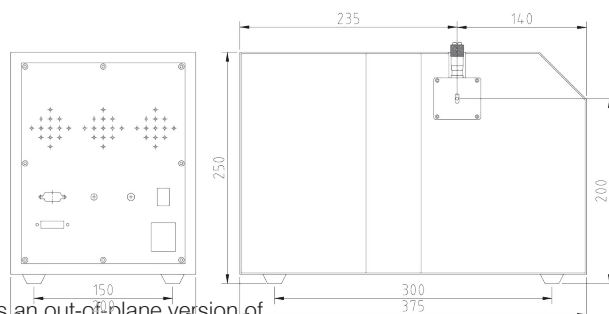
	Spectra Quasar 300F Monochromator	Spectra Quasar 200F Monochromator
Optical Design	Czerny-Turner	Czerny-Turner
Input Port	Single	Single
Output Port	Dual (One for Monochromatic Light and other for single / multi channel spectral application)	Single (designed for Monochromatic Light and multi channel spectral application)
Port Selection Mechanism		
Main Mirrors	Parabolic type with Enhanced Aluminum Coating	Off Axis Parabolic Flat field Corrected Optics
Coating		Enhanced Aluminium Coating
Focal Length	300 mm	200 mm
Collimating Mirror Size	50 x 50 mm	
Focusing Mirror Size	75 x 50 mm	
Diameter		
Aperture Ratio	f / 6 (with 50 x 50 mm grating)	f / 4
Dispersion Element	Holographic Grating	Holographic Grating & Ruled Grating
Grating Size	50 x 50 mm	50 x 50mm (Custom grating can be provided on request)
Grating Density	1200 l / mm	1200 l / mm
Wavelength Range	200 - 1100 nm	200 - 1100 nm
Diffraction Efficiency	65 % (@ 532 nm)	65 %
Dispersion	2.29 nm / mm (52.13 cm - 1/mm)	2.026 nm / mm
Mechanical Wavelength Range	200 - 1600 nm (@ 1200 l/mm)	
Accuracy	0.1 nm	0.1 nm
Grating Mounting Design	Single Grating	Single
Mount Design		
Grating Rotation	Front Surface Axis	Front Surface Axis
Grating Removal Port	Yes	
Output Port Size	30 mm	30 mm
Focal Imaging Plane	20 x 12 mm	30 x 12 mm
Focal Plane Extension from the port	50 mm	42 mm
Input and Output Slit Design		Manual Slit
Slit Width Range	0 - 3 mm (Manual)	0 - 3 mm
Least count	1 Micron	1 Micron
Shutter		Integrated motorized Active Shutter
Filter unit	Higher order cut off filter wheel	Higher order cut off filter wheel
Calibration		Auto calibration for all motorized function (Manual Calibration can be activated for wavelength calibration)
Software	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)	Windows based software to control all spectrometer functions and detector readings (with Labview interface support)

Spectra UV-VIS-NIR High Throughput DUAL Grating f/3.5 Monochromator

Model: HO-HTDG 175F2

HOLMARC's 175F2 monochromator having 175 mm focal length is an out-of-plane version of Ebert-Fastie monochromator. It is designed with large optics for high light throughput and f / 3.5 aperture, optimized to provide excellent stray light rejection while minimizing aberrations. The optical configuration is designed to ensure high resolution and maximum throughput.

175F2 has computer controlled, motorized turret for automatic grating and wavelength selection. It offers 0.2 nm resolution in UV-VIS region with 1200 lines / mm grating and 0.25 nm in IR region with 600 lines / mm ruled grating, covering wavelength range of 250 nm to 1900 nm. Monochromator includes adjustable micrometer controlled input and output slit.



Specifications

Focal Length	175 mm
Focal ratio F/#	F / 3.5
Wavelength Selection Method	Motorized Sine Drive
Grating	Holographic 1200 l/mm & 600 l/mm ruled precision gratings
Wavelength Range	250 - 1900 nm
Grating Size	50 x 50 mm
Grating Turret	Yes, Two grating turret with grating
Wavelength Accuracy	0.2 nm with 1200 l/mm grating
Wavelength Precision	0.1 nm
Stray Light	0.03 %
Number of ports	1 input port & 1 output port
Slit	Variable Micrometer Slit
Resolution	10 Micron
Slit opening	0 - 3 mm
Higher order cut off filter	Yes - Motorized filter wheel unit
Interface	USB 2.0
Handheld control unit	Optional
Software	Spectra SQR

Optional Hand Controller

175F2 includes a connector to utilize the optional Handheld Controller for manual operation without using computer. There is no need to memorize commands or key sequences. The backlit LCD display provides information on the selection of grating, active filter, current wavelength etc

Customization

HOLMARC has built reputation for providing custom solutions. Whether you need a small modification to the existing system or a completely novel design, built from scratch up to meet your technical specifications, HOLMARC's engineering and optical design groups are ready to help.

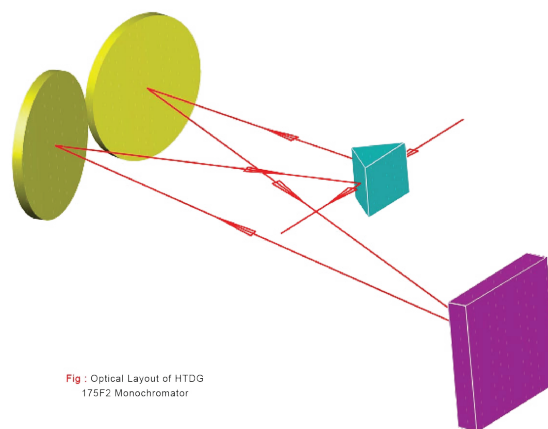


Fig : Optical Layout of HTDG 175F2 Monochromator

Fluorescence Spectrometer

- Fluorescence Analysis
- UV-VIS-NIR Detection
- Research Model Performance
- Bio Applications
- Raman Spectrum



Model: HO-SP-FRS-225Xe

Holmarc's fluorescence spectrometer model HO-SP-FRS-215Xe is manufactured for advanced material research as well as for routine biochemical analysis. The instrument incorporates latest designs and techniques in all its eight modules namely source, entrance slit, excitation monochromator, sample chamber, emission monochromator, detector, control electronics and software.

Specifications

Optical path configuration	Czerny-Turner type
Focal Length	300 mm
Aperture Ratio	f/3.5
Dispersion element	Holographic grating
Grating density	1200 l/mm
The spectral resolution	50 x 50 nm
Relative diffraction efficiency	65 % Max
Wavelength range	190 - 900 nm
Wavelength Selection	Scanning
Measurement Mode	Spectra Scanning
Filter Unit	Automated higher order cutoff filter
Resolution	~ 0.1 nm
Slit width	0 - 3 mm, Micrometer controlled
Dispersion with 300F	2.46 nm/mm
Wavelength Repeatability	± 0.5 nm
Light Source	300W Xenon ARC Lamp

Detector

Detector	High sensitive PMT Side-on type
Gain Typ.	1.0 x 10 ⁷ [Anode] Gain
Control	Auto Gain
Photocathode Material	Multi alkali
Peak Detection	400 nm
Luminous Sensitivity Min.	140 μ A/lm [Cathode]
Luminous Sensitivity Min.	1000 A/lm [Anode]
Dark Current (after 30min.) Typ.	300 (s-1) nA [Anode]
Software	Spectra F R S Ver 2.01
Interface	USB 2.0

- Fluorescence Analysis
- UV-VIS-NIR Detection
- Research Model Performance
- Bio Applications
- Raman Spectrum Measurements
- Phosphorescence Measurements
- Material Analysis
- Photometric Measurements
- Fast scan speed
- Wide dynamic range
- Auto-Gain
- 1000 A/lm Min. Luminous Sensitivity
- Automatic Higher-Order Diffraction Cut Filter

Sample Chamber

Sample chamber in the instrument is designed for accommodating 10 mm standard cuvettes. The chamber can be customized on request.

Entrance Slit

Entrance slit is micrometer driven with 10 micron resolution and 1 micron sensitivity. Slit width can be adjusted from 0-3 mm. The slit is manually adjusted and locked in position for the experiment.

Emission Monochromator

Emission monochromator has similar specifications as that of excitation monochromator. It uses plain holographic grating with motorized wavelength drive mechanism for scanning. Motor used is stepper motor driven in micro-step mode. Collimating optics used are concave mirrors with UV enhanced coating.

Software

The instrument is fully computer based with all operating commands given from the computer. The UI of the dedicated software is made as user friendly as possible. Data is saved in the computer in standard formats.

Source

Xenon lamp is used as light source for a standard models. Source can be changed to tungsten halogen or to a combination of deuterium and tungsten-halogen depending upon the application.

Excitation Monochromator

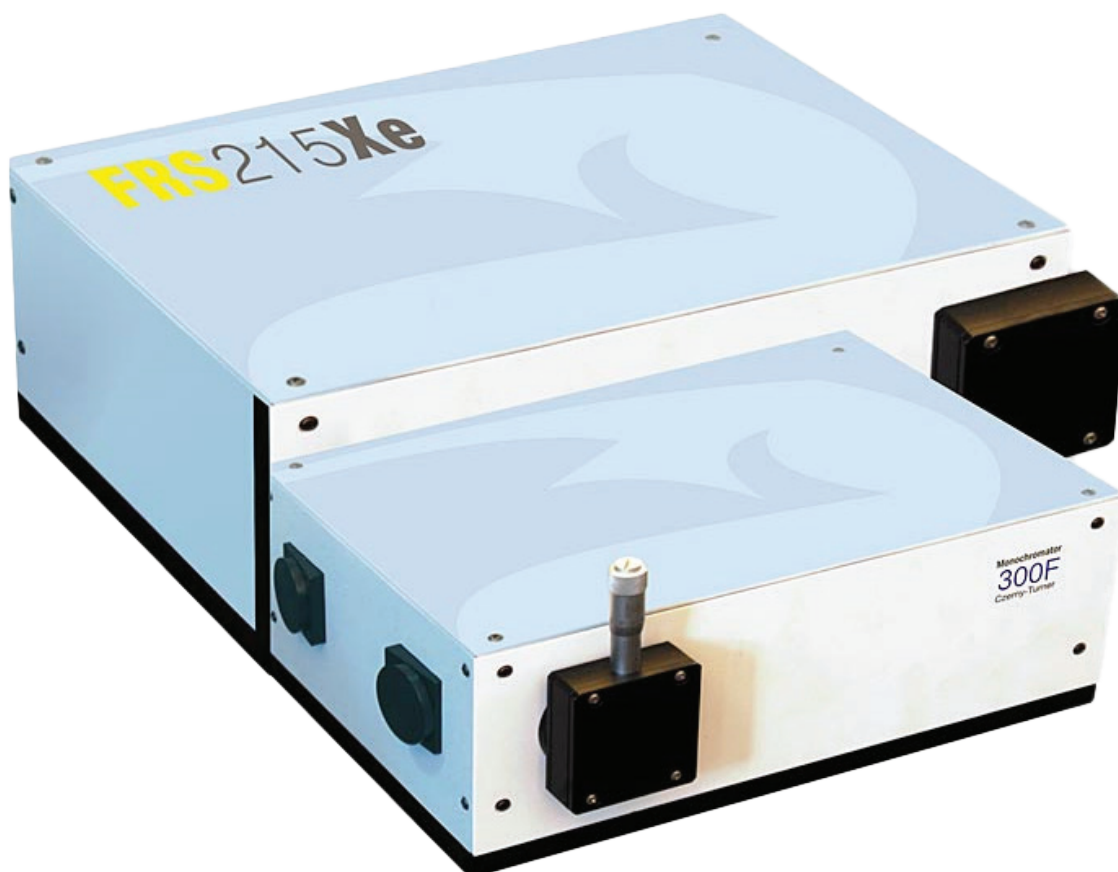
Excitation Monochromator has Czerny-Turner design with all the features of our standard device described as model : spectra-UV-VISINR . The device incorporates a plane holographic grating with 1200 lines/mm and precision motorized sine drive mechanism. Collimating optics used are concave mirrors to minimize aberrations as far as possible.

Control Electronics

Control electronics takes care of scanning functions of excitation and emission monochromators along with source and detector. Communication with computer is USB based.

Detector

The detector is highly sensitive Photo Multiplier Tubes (PMT) with integrated drive electronics to minimize electronic noise.



Light Sources, Detectors & Accessories

- Sodium Vapor Lamp
- Mercury Vapor Lamp
- Multi Spectrum Tube Housing
- Spectrum Discharge Tube



Accessories for Spectra Instruments

Model : HO-SPA-LSL10F

10W HIGH BRIGHT LED model : 450-650nm

Model : HO-SPA-LSH20F

20W Halogen Model : 350-2400nm

Model : HO-SPA-LSHD20

Halogen-Deuterium model
for UV application 200-2400nm

Model : HO-SP-VIS3965



Fiber Optic Pathcords
(0.1-1mm)
Model : HO-SPA-OF200

Model : HO-SPA-OFSPMLT

Fiber optic illumination systems - LED & Halogen-Deuterium - Up to 150W

HOLMARC has expanded its range of fiber optic illumination systems with high-power LED and Halogen-Deuterium light sources. Though designed for use as a stand-alone device, it can easily be mounted on a frame or in a rack using screws. Standard light guide adapter ensures compatibility with all fiber light guides. For efficient coupling, HOLMARC also offers light source with integrated focusing optics for other fiber diameters as well. It can be directly coupled to all spectra products. Deuterium lamp can also be incorporated in this housing for UV applications.



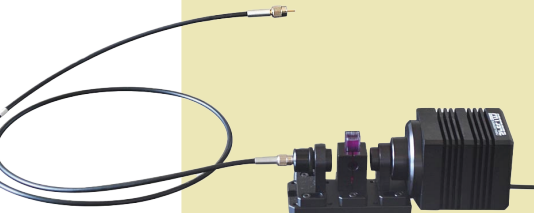


Cuvette holder with fiber optic collimator unit

This fiber optics cuvette holder is designed to attach directly to light sources and can be coupled to spectrometers via optical fibers to create a small-footprint spectrophotometric system for fluorescence and absorbance experiments. The holder is suitable for UV-VIS-NIR (200-1100 nm) applications and holds 10 mm square cuvettes. Filter can be directly attached to the system for transmittance / absorbance measurements.

Model : HO-SPA-OFSPMLT
Two terminal

Model : HO-SPA-OFSPML2T
Three terminal for fluorescence related measurements



Fiber optic illumination systems - Xenon & Mercury Discharge Tube

This stand-alone illuminator consists of a mercury or xenon arc lamp, lamp housing, mirror and power supply in single enclosure. It is designed to be used with a fiber optic guide which transmits intense illumination to the monochromator, spectrometer and other instruments. The lamp's cabinet accommodates a standard filter wheel which slides easily in and out of a slot in the light path. We also offer a variety of patchcords and collimating optics along with mounts.

Model : HO-SPA-LSMD-OF200
Mercury Discharge Tube Model - std

Model : HO-SPA-LSXe-OF200
Xe Arc Lamp Model - 150W

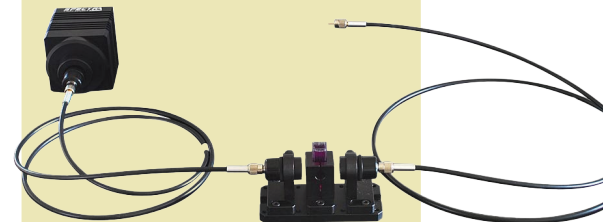


Cuvette holder

Our cuvette holders are for standard 10 mm path length cuvettes to work in UV-VIS-NIR (~200nm - 2 μ m) spectral range. These holders have two terminals (Three terminal holders are also available) for fluorescence measurements and one slot for transmittance / absorbance measurements. The embedded collimating lenses are made from fused silica material.

Model : HO-SPA-OFSPM2T
Two terminal

Model : HO-SPA-OFSPM3T
Three terminal for fluorescence related measurements



CCD Camera

Model: S10141

The CCD camera model S10141 by Holmarc is a high-resolution, back-illuminated spectral CCD camera designed for spectroscopy applications. It features a pixel format of 2048 x 256 with a pixel size of 12 x 12 μm , providing excellent image quality. The camera covers a spectral range of 200 - 1050 nm with a quantum efficiency of 90%. It has a typical line rate of 80 lines per second, which can go up to a maximum of 138 lines per second. The S10141 model is equipped with one-stage TE cooling, reducing dark current to 30 e-/pixel/s, and has a readout noise of 4 e- rms. The camera also includes a 16-bit 5 MS/s ADC with programmable offset correction and gain, ensuring precise signal conditioning

Specifications

Detector	
CCD	Back-illuminated Spectral CCD
Type	Binning type High-resolution type
Image size	24.576 x 3.000 mm
Pixel Format	2048 x 256
Pixel Size	12 x 12 μm
Spectral Coverage	200 - 1050 nm
Quantum Efficiency	90 %
Line rate (Typ.)	80 lines/s
Line rate (max.)	138 lines/s
Dark current (Typ.)	30 e-/pixel/s
Readout noise (Typ.)	4 e- rms
Cooling	One-stage TE-cooled
Window material	AR-coated sapphire
Peltier Cooling	Yes (-35 dgree cooled)
TEC controller Accuracy	+/- 0.01 degree C
Signal Conditioning unit	Yes
16-bit 5 MS/s ADC with programable offset correction and gain	
Power supply	USB
Communication Interface	USB High-speed communication interface with up to 480Mbit/s via virtual COM port driver

Image

Images upto 24.576 x 3.000 mm in size at 2048 x 256 pixel format in 12 x 12 μm pixel size

Detector

Back Illuminated Spectral CCD Detector



Fiber Optic Patchcords

Model: HO-FOP Series

Provided with protective caps

Wide wavelength range (190nm - 1600nm)

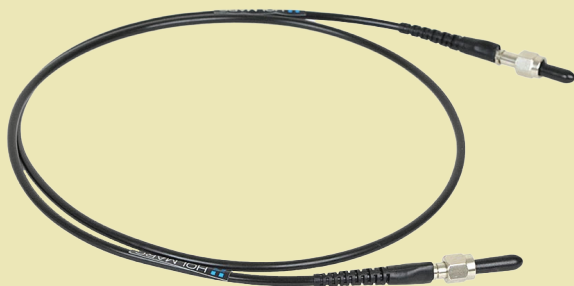
SMA 905 0.22NA Fused Silica Fiber optic patchcords

HOLMARC offers multimode step index fiber optic patch cables with SMA905 connectors on both ends and are ideal for applications requiring optimum transmission in the UV-VIS range (190 - 1600nm). These cables incorporate fused silica (0.22 numerical aperture) fiber, sheathed in rugged 3/16" OD PVC monocoil and are available in 1.5m length. Each patch cable includes two protective caps that shield the connector ends from dust and other hazards.

Fiber Specifications

Wavelength	UV / VIS / NIR
Wavelength Range	190 - 1600nm
Connector	SMA
Numerical Aperture NA	0.22
Numerical Aperture (NA) Tolerance	±0.02
Index of Refraction nd - Core	1.458
Index of Refraction nd - Cladding	1.441
Acceptance Angle	25.4°
Operating Temperature	-40 to +100°C
Length	1.5m
Jacket Diameter	2.85mm
Jacket Material	PVC Monocoil

Model	Connector	Length	Core Diameter
HO-FOP-FS1505S	SMA 905	1.5 meter	50 um
HO-FOP-FS1510S	SMA 905	1.5 meter	100 um
HO-FOP-FS1520S	SMA 905	1.5 meter	200 um
HO-FOP-FS1540S	SMA 905	1.5 meter	400 um
HO-FOP-FS1560S	SMA 905	1.5 meter	600 um
HO-FOP-FS15100S	SMA 905	1.5 meter	1000 um
Different types and lengths of fibre are available on request.			



SMA 905 PMMA 0.5NA Fiber optic patchcords

Multimode High Transmission Fiber optic patchcords for easy integration in Fiber optic test system

HOLMARC can supply high quality PMMA Fiber optic patchcord for low cost fiber coupling and illumination needs. This product is lighting grade and gives good visible light transmission and flexibility.

Fiber Specifications

Type	Multimode
Cable Diameter	3 mm
Cable Length	1, 2, 3 meter or customized
Connector loss	< 0.5 dB
Attenuation	< 180 dB / km
Core material	Polymethyl Methacrylate
Cladding material	Fluorinated Polymer
Refractive index	1.49
Numerical aperture	0.5
Refractive index profile	Step index
Connector material	stainless steel sheath / Brass insert core

Operation Condition

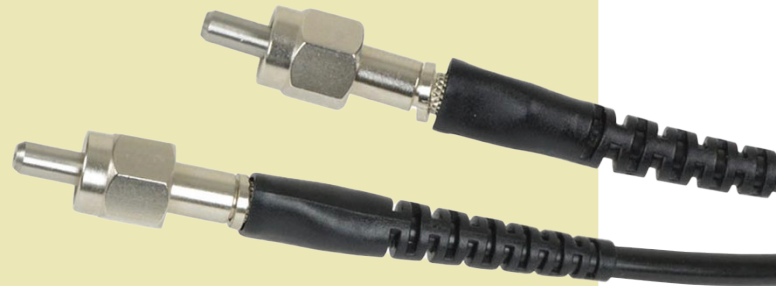
Temperature range -55°C (-67°F) to +70°C (158°F) in low humidity; < 60°C at 95% R (attenuation change is within 10% after 1000 hours other than the attenuation due to absorbed water).

Please note that fiber becomes brittle at low temperatures.

Polymethyl Methacrylate / Fluorinated Polymer

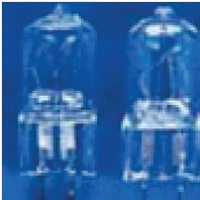
Numerical aperture	0.5
Core Diameter	750 Micron
Refractive index	1.49
Refractive index profile	Step index
Wavelength Range	

Model	Connector	Length
HO-FOP-A05	SMA 905	0.5 meter
HO-FOP-A10	SMA 905	1 meter
HO-FOP-A15	SMA 905	1.5 meter
HO-FOP-A20	SMA 905	2 meter
HO-FOP-A25	SMA 905	2.5 meter
HO-FOP-A50	SMA 905	5 meter
Different types and lengths of fibre are available on request.		



Light Sources

HOLMARC offers a number of light sources for the spectral range of 200 - 2000nm which can be mounted directly to our monochromators or can be used independently. With the appropriate adapters, some of the light sources can be mounted to our monochromators along with optical chopper or filter wheel. Additional adapters and interface devices are available for focusing and launching the light directly into optical fibers.

	Deuterium	Xenon	Tungsten Halogen
			
Spectral Range	200 - 400nm	200 - 2500nm	350 - 2400nm
	Good UV lamp, generally with higher version output than Xenon lamps	250 - 2500nm (Ozone free)	Continuous spectral output. More stable than Xenon lamps
Please contact at mail@holmarc.com for more details			

Mercury Vapor Lamp

A mercury-vapor lamp is a gas discharge lamp that uses mercury in an excited state to produce light. They offer long life time as well as intense lighting for spectral applications.

Model : HO-LH-MV100W



Lamp Houses for Spectral Study



Sodium Vapor Lamp

A sodium vapor lamp is a gas discharge lamp that uses sodium in an excited state to produce light. The low-pressure sodium lamp has remarkably high luminous efficiency. The radiation is nearly monochromatic, yellow in color.

Model : HO-LH-SV35W
Model No: HO-LH-SVC



High Voltage Transformer Continuously Variable

Model : HE-DT-PSV
Variable discharge tube power supplies are designed to be used with different gases. The discharging action is controlled by a knob and can be adjusted to get optimum performance as each gas exhibit different discharge voltages. The complete unit is enclosed in a metallic casing.



Multi Spectrum Tube Housing for spectral calibration

Model: HO-SP-MSTH-06

HOLMARC's Multi Spectrum Tube Housing holds six spectrum discharge tubes simultaneously. It can quickly switch from one gas to another without handling the tubes. Power supply is common for all discharge tubes, which is kept inside the unit.

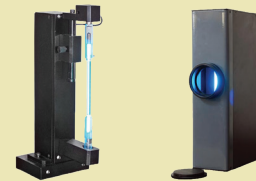
The gas tubes are permanently enclosed, which protect the tubes from breakage. Optical fiber can be directly attached to this unit for fiber optic spectrometers.



Spectrum Discharge Tube with Lamp House

Filled with spectroscopically pure gases. The following discharge tubes are available

- XX - Gas
- 01 - Argon
- 02 - Neon
- 03 - Krypton
- 04 - Ammonia
- 05 - Carbon Dioxide
- 06 - Nitrogen
- 07 - Oxygen
- 08 - Mercury vapor
- 09 - Sulphur
- 10 - Hydrogen
- 11 - Helium:



180W Blue LED Illumination Water Immersible Head with Variable Power supply

Specifications

Construction	Aluminium
Height of illumination unit	30 cm
Number of LED's	100 nos
Led Material	InGan
Color Frequency	450 nm
Bandwidth	60 nm
Luminous Intensity per LED	50 lumen
Total Luminous Intensity	5000 lumens
Viewing Angle	140°
Radiation Pattern	Lambertian
Forward Voltage	3.0 v - 3.6 v
Typical Voltage	3.1 v
Typical Forward Current	650 ma - 700 mA
Style	STAR Configuration
Power supply	Constant current continuously variable type



Broadband Light Sources

- **Lamp Houses for Spectral Study**
- **Faraday Modulator**
- **Faraday Isolator (Optical Isolator)**
- **Optical Chopper**

Deuterium Lamp with power supply unit

Deuterium lamps are excellent sources of high intensity ultraviolet radiation ranging from 185nm to 400nm. Emission in visible and infrared regions are negligible. This makes deuterium lamps ideal sources for UV spectroscopy, and as UV spectral irradiance standards. Deuterium Lamp Housing has condensing lens assembly that collects and collimates the lamp's radiation. Output is a 25mm diameter beam



Lamp Specifications

Lamp	Deuterium
Wavelength Range	185 - 400 nm
Powersupply	Fixed Constant Current Switch Mode Power Supply
Lamp Housing	Forced Air Cooled Type
Construction	Aluminum
Collimation & Collection Optics Dia	25 mm

Model No.	Source
HO-SP-DL20	20 W Deuterium
HO-SP-DHL20	20 W Deuterium & 20 W Halogen Lamp Selection by flip mirror

Dual Gooseneck LED Illuminator - 4000 lumens Model : HO-SP-DGL4000

Lamp Specifications

Source	LED CREE XM
Light output	4000 Lumen Max
Colour Temperature	6000 degree Kelvin
Luminosity control	Continuously Variable 0 - 2000 lm
LED Collimation Tube Dia	24 mm
Flex Arm Length	300 mm
Finish	Black Anodized
Power input	230V / 50Hz



Dual Gooseneck LED Illuminator has two flex and stay arms. These LED light units with intensity control give maximum light output of 4000 lumens. Each arm has 2000 lumens output white LED and focus lens. The arms are 300 mm long and there is on / off and dimmer switches to provide fine control. This unit exhibits good control and even illumination. Color temperature is 6000 degree kelvin.

LED High Bright LED Capsule

Model : HO-HBL-Y

Y - Color - R/Y/B/G/W



For ease of mounting special ultra luminous intensity LED's are housed in metallic casing. The collimating optics in front of the LED helps to get focused beam to increase its lighting efficiency. As the LED is encased in a metallic capsule, the body acts as a heat sink. Brightness is adjustable continuously. This is ideal for a variety of illumination applications where collimated light is required. Various color options are available.

Lamp Specifications

Source	LED CREE XM
Light output	4000 Lumen Max
Colour Temperature	6000 degree Kelvin
Luminosity control	Continuously Variable 0 - 2000 lm
LED Collimation Tube Dia	24 mm
Flex Arm Length	300 mm
Finish	Black Anodized
Power input	230V / 50Hz

Lamp Houses for Spectral Study

Xenon Arc lamps are excellent sources of continuous light. The bright emission from short arc between the anode and cathode makes these lamps high intensity point sources, capable of being collimated with the proper lens configuration or re imaged onto a fiber bundle.

In both models xenon arc lamp housing utilizes heat conductive forced air cooling technique, to make sure efficient cooling of the lamp and electronics. Lamp housing include condensing optics to produce a 25mm collimated light beam. 50mm collimated light beam can also be provided upon request.



Specifications

	150W Xenon arc lamp	300W Xenon arc lamp
Model :	HO-SC-XE150	HO-SC-XE300
Quartz Type	Ozone Free	Ozone Free
Wavelength Range	250 - 2500 nm	250 - 2500 nm
Wattage	150 W	300 W
Voltage	18 V	20 V
Amperage	8.5 A	15 A
Current Range	7 - 8 A	13 - 16 A
Open Circuit Voltage	60 V	60 V
Luminous Flux	2900	7000
Luminous Intensity	290	700
Average Luminance	20000 lm	27000 lm
Overall Length	145 mm	174 mm
Lamp Length	125 mm	150 mm
Tip to Shoulder Length	57 mm	63.5 mm
Bulb Diameter	20 mm	23.87 mm
Cathode / Anode Pin	M4 x 0.7	10-32 UNC-2B
Cathode / Anode Base	0.39	0.50
Arc Length	2 mm	2.54 mm
Lamp Housing	Forced Air Cooled Type	Forced Air Cooled Type
Construction	Metallic	Metallic

Deuterium Halogen Source



Holmarc's Deuterium Halogen source is a specially designed light source that covers 200 nm to 2500 nm wavelength range. In this compact lamp house both Deuterium and Halogen lights are combined to a single optical path using and motorized rotation mechanism. Output port provided with SMA connector for fiber coupling. High quality optical design delivers maximum light coupling to the optical fiber. This light source can be used as a UV-VIS-NIR source for different spectroscopic applications. Filter holder, shutter, cuvette / sample holder can be provided optionally.

Model No.	HO-HDL-01
Wavelength Range	190 nm - 2.5 μ m
Source	Deuterium & Tungsten Halogen
Lamp Wattage	20W Deuterium & 20W halogen
Input Voltage	230 V

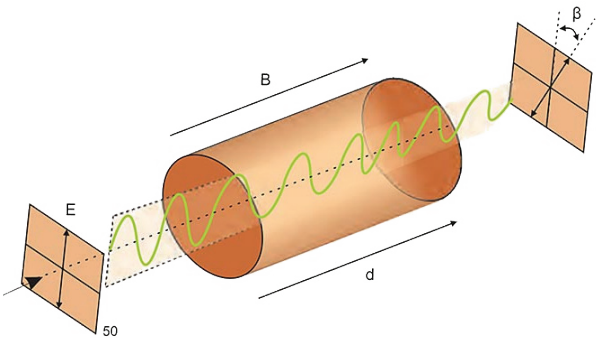
Faraday Modulator

Polarization Modulation

In Faraday Effect, the phase modulation of two mutually perpendicular components of linearly polarized light results into polarization modulation, which is then transformed into Amplitude Modulation by analyzer. The magneto-optic modulators are based on the rotation of optical polarization as light propagates along the magnetic field in a material, by the Faraday effect. Like intensity modulation, polarization modulation does not require sophisticated stabilized laser. Since, the optical sensitivity of a polarization modulated light is about twice as high as intensity modulated signal, it provides better receiver Signal to noise ratio (SNR).

Our modulator is made of MR3-2 Faraday material placed inside a solenoid coil with modulating electric current. Water cooling system is used for longer operation, for which water inlet and outlet connectors are provided on top of the device.

Since glass material in high power laser system is damaged as a consequence of self focusing, low non-linear refractive index as well as high Verdet constant are important factors for Magnetic Optical Glass. The MR3-2 glass is made by considering all these factors and is stable, sensitive and inherently immune to interference.



Faraday modulator

The Faraday modulator used for the polarimeter have important function other than providing an easy way of optimizing the signal to noise ratio; it allows the real and imaginary parts of the refractive indices to be separated. This stems from the fact that in the modulator there is very little absorption i.e. the effect is only to modulate the angle of rotation of the linearly polarized laser beam with negligible modulation of the phase or ellipticity of the light.

The Optical Specifications

Faraday Rotator Glass	MR3-2 glass
Verdet constant	-0.329 min / Oe*cm at 632.8nm and -0.108 min / Oe*cm at 1064nm
Absorption coefficient	< 0.002 per cm at 1064nm
Transmission	≥ 86% without AR coating
Bulk laser damage threshold for material	> 25 (Joules/cm²) at 1064nm, 10ns pulses
For stress birefringence, extinction ratio to perpendicular polarization	> 40 dB

Water Cooler for Faraday Modulator



HO-FM20C Faraday Modulator



Model No.	HO-FM05C	HO-FM10C	HO-FM015C	HO-MOM-FR20C
Aperture	5 mm	10 mm	15 mm	20 mm
Wavelength Range (nm)	380 - 1100nm	380 - 1100nm	380 - 1100nm	380 - 1100nm
Frequency Range	200 - 5000Hz	200 - 5000Hz	200 - 5000Hz	200 - 5000Hz
Resolution	+/- 1Hz	+/- 1Hz	+/- 1Hz	+/- 1Hz



Faraday Isolator (Optical Isolator)

Faraday isolators are optical components which allow light to travel in only one direction. Their mode of operation is based on the non-linear Faraday effect (magneto rotation). In principle, the function of an optical isolator is analogue to that of an electrical diode. Faraday isolators are composed of three elements: entrance polarizer, Faraday rotator and exit Polarizer.

They are used to protect a laser source from destabilizing feedback or actual damage from back-reflected light. The 5mm aperture Faraday isolators are cylindrically-shaped magneto-optic devices. Strong Neodymium Iron Boron permanent magnets are used to generate high axially-oriented fields within the magnet housing.

In operation, the magnet housing is sandwiched between input and output polarizers that have their transmission axis oriented 90 degrees relative to each other. In the reverse direction the backward traveling beam has a polarization orthogonal to the input polarizer and is therefore crossed with it, resulting in a rejected beam exiting the input polarizer.

We also provide custom designed isolators, based on your requirements. Please feel free to contact us.

Features

- Polarimetry & Other Optical Rotation Measurements
- Magneto-Optic Kerr Effect
- Faraday Modulation Spectroscopy (FAMOS)
- Optical Communication

Model No.	HO-FI410	HO-FI532	HO-FI632	HO-FI650	HO-FI785
Center Wavelength	410 nm	532 nm	632.8 nm	650 nm	785 nm
Aperture	5 mm	5 mm	5 mm	5 mm	5 mm
Transmission	80 / 82 %	85 / 89 %	85 / 89 %	85 / 89 %	85 / 89 %
Isolation	30 dB	36 / 40 dB	36 / 38 dB	36 / 38 dB	36 / 38 dB
Min / Typica					
Polarizer Type	Calcite	Calcite	Calcite	Calcite	Calcite
Rotating Medium	MR3-2 Faraday Glass				
Power Handling	> 25 (Joules/cm ²) at 1064 nm 10 ns pulses				



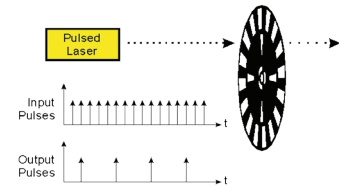
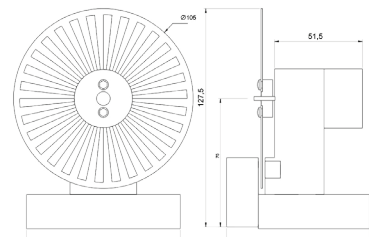
Optical Chopper

Model No: HO-IAD-OC-01

An optical chopper is a mechanical device which physically chops a light beam into discrete light pulses. It is widely used in various optical experiments. It modulates different light sources with given frequency for their subsequent analysis.

The chopping discs come in a variety of slot apertures and can be replaced with ease.

Holmarc's optical chopper is a stable device through out the frequency range. The basic system consists of control unit, rotating head and a set of four chopper discs. A DC motor drives the rotating head in closed loop control. Chopping discs are replaceable by the user with ease. A heavy base to which the rotating assembly is fixed provides stability during operation. Optical axis height is approximately 100 mm. The required disc depending on the frequency can be fixed to the rotating head. This system provide wide range of frequencies (10Hz - 3.7kHz.) A wide selection of additional discs and accessories are available to extend the frequency range and to satisfy individual requirements. Frequency is displayed directly on the digital display of the control unit. Easy-to-interchange blades are made of corrosion protected material for durability.



Faraday Isolator (Optical Isolator)

The delay generator accepts a TTL pulse train having a frequency between 10 Hz to 4 kHz, and provides a delayed version of the same signal. The amount of time delay can be set using the front panel buttons and the LCD display. It can delay the signal by 10 microseconds minimum to 60 milliseconds maximum. This device can be used for triggering a measurement device or camera when used with an optical chopper. The reference signal from the optical chopper may not be in phase with the chopped laser output. Adding a user specified delay to the reference signal will make it in phase with the laser and bring the triggering in sync with the laser pulsations.

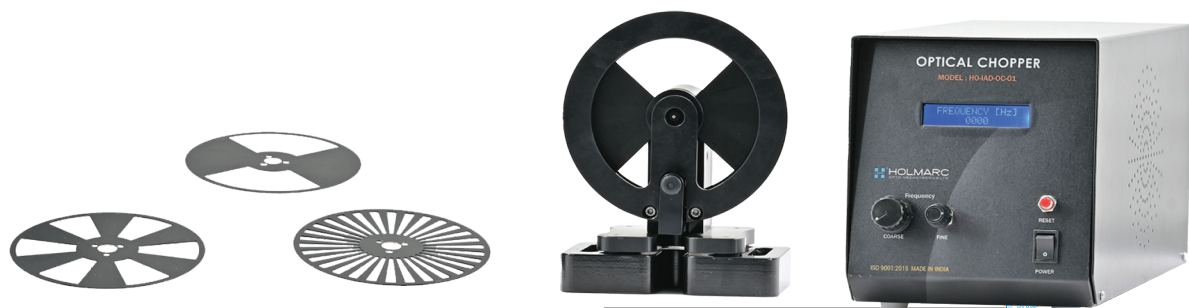


Specifications

Input signal	TTL (5V) pulses
Input signal frequency range	10 Hz to 4000 Hz
Minimum delay	10 micro second
Maximum delay	60 millisecond
Delay resolution	1 microsecond
User interface	Alphanumeric LCD and buttons
Input & Output connectors	BNC
Power input	90 - 260V / 50 - 60Hz

Lamp Specifications

Two Slot	10 Hz to 200 Hz
Six Slot	100 Hz to 600 Hz
Thirty slot	200 Hz to 4000 Hz
Duty Cycle	50 %
Stability	+/- 1 Hz
Chopper Wheel Diameter	105 mm
Frequency Read Out	16 x 2 Lines LCD
Reference Pick-Up	IR LED and Photo Transistor Pair
Motor Cable Length	1.5 m
Operating Temperature	10°C - 50°C
Power input	230V, 50Hz



Integrating Sphere

Model No: HO-SP-ISP Series

An integrating sphere is a valuable tool used in various scientific and industrial applications to measure and manipulate light. It's essentially a hollow sphere with a highly reflective inner coating, typically made of a diffuse white material. This special coating ensures light entering the sphere scatters and reflects multiple times before exiting through a designated port.

Holmarc integrating spheres come with different diameters, ports and detector configurations. The body material is aluminum and the inner walls are highly polished and coated with diffused reflecting material. Baffles are fixed inside to reduce the direct light entry to the detector port.

Custom Integrating spheres are available up to 300 mm diameter and different port configurations.



Standard Spheres

Model No.	HO-SP-ISP-50	HO-SP-ISP-100	HO-SP-ISP-150
			
Sphere size	50 mm	100 mm	150 mm
Coating	BaSO4 mix	High reflective BaSO4 mix	High reflective BaSO4 mix
No. of ports	3	4	4
Port size	12.5 mm	25 mm	25 mm
Fiber coupling port	-	Optional	Optional
Optical fiber coupler option	Yes	Yes	Yes
Detector Options			
UV Silicon photodiode for 190 nm - 1100 nm			
InGaAs detector for 900 nm - 2400 nm			

Modal : HO-SP-ISP-300



Modal : HO-SP-ISP-150



Lens Assembly Spectral Measurement System

Model No: HO-SP-LSMS 01

The Holmarc Lens Assembly measurement system is designed for on- and off-axis optical characterization of imaging lens assemblies and zoom lenses. The complete system consists of a collimated light source, motorized sample positioning stages, an integrating sphere with positioning stages, and a high-resolution UV-VIS-IR spectrometer.

The system consists of a 150-mm collimated halogen light source, which is used as the light source with a 150-watt air-cooled halogen lamp. A variable aperture and fixed aperture slots are provided to control the input beam diameter.

The collimated beam is passing through the lens assembly sample, which is kept fixed on a motorized ZYZ and Theta stage. The motorized stages are positioned using Holmarc software with fine and coarse movement, and positions can be saved. For on-axis measurement, the theta stage is positioned at zero degrees, and the collimated halogen beam is passing through the sample. The light is then focused on the integrating sphere, which records the light intensity of the silicon photodiode and the InGaAs detector. The integrating sphere is fixed on another XYZ motorized stage. The gain of these two detectors can be individually controlled through the software. The diffused light is also collected by the optical fiber and fed into the SQR200FA spectrometer for spectral characterization of the same.

The SQR 200 FA is a dual-grating detector spectrometer with a wavelength range of 350 nm to 2400 nm and a 0.1 nm spectral resolution. The on- and off-axis spectral characterization can be performed after completing a baseline measurement of the desired wavelength range. The interval can also be selected from 0.1 nm to several nano meters.

For off-axis measurements, the sample can be rotated to the to the desired angle, and the integrating sphere is positioned precisely using the motorized stages. The complete system is fixed on a rigid optical table top and black acrylic enclosure is provided for avoiding the stray light.

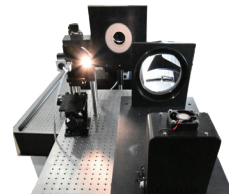
Monochromator

f4 200mm dual grating high throughput Automated Monochromator



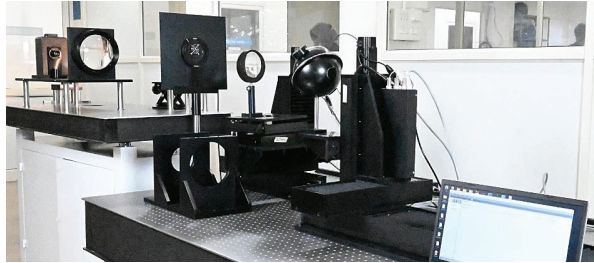
Detectors

High Sensitive Silicon Photodiode & InGaAs Detector



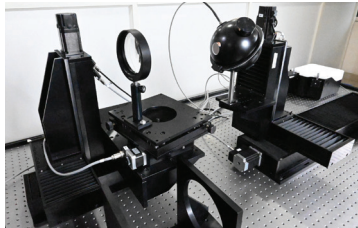
Sample Positioning Stage

0 - 20 KG Load Compatibility
XYZ Kinear Travel of 150mm and
360 degree theta stage



Integrating Sphere with motorized positioning

3.3 Inches with 4 Number of
Ports (FIBER COUPLED)
350nm to 2400nm



Specifications

Spectrometer	
f4 200mm dual grating high throughput Automated Monochromator	
Optical Layout	Czerny Turner
Focal length	200 mm
Grating mount	Dual grating turret
Wavelength Range	200 - 2400 nm
Number of gratings	2 (1200 l/mm holographic grating & 600 l/mm precision ruled diffraction grating)
Grating size	50 x 50 mm
Aperture ratio	f / 4
Number of entrance/ exit ports	1 No.
Mechanical resolution drive	0.000072°/ step
Slit type	Fixed, Micrometer or motorized
Slit width	10 μ m - 2 mm
Slit height	12 mm
Higher-order cut-off filter	Yes
Higher-order filter size	12.5 mm
Fiber optic coupler plate	Yes
Linear dispersion	2.25 nm / mm
Wavelength accuracy	$\pm$ 0.15 nm
	Resolution @ 25 μ m Slit width & 1200l/mm Configuration : 0.1 nm
Computer Interface	USB 2.0
Software Control	Holmarc Spectra Scan High Sensitive Silicon Photodiode & InGaAs Detector

Sample Positioning Stage	
Number of Degrees of Freedom	6 (XYZ, Theta, Tip and Tilt)
XYZ Theta Scanning	Motorized (Stepper Motor controlled)
Linear Travel Range in XYZ Axis	150 mm
Theta	360 degree
Angular stage resolution	0.01 deg or better
Angular stage Repeatability	0.1 deg or better
Linear stage Repeatability	+/-5 Micron or better
Accuracy	+/- 10 Micron or better
Load compatibility	0 - 20 KG
Integrating Sphere with motorized positioning	
Size	3.3 inch
Number of ports	4 Nos
Port 1	Input port
Port 2	Detector
Port 3	Fiber coupled
Port 4	Fiber coupled
Coating	Avian B coating
Wavelength range	350 nm to 2400 nm
Detector	Dual- Si photodiode & InGaAs detector
XYZ motorized stage	150 , 150 and 600 mm travel resp.
Accuracy	+/- 10 Micron or better
Load compatibility	Minimum 10 Kg

Spectral Measurements

For More Advanced Spectroscopy
and related Products
Contact us : sales@holmarc.com





Designed @ HOLMARC Design LAB
Cochin, May 2020



State of the art manufacturing Quick turn customization

Holmarc is unique in its ability to design, prototype, and manufacture under one roof.
We have well-developed optic, mechanical & electronics fabrication facilities and thin film coating unit.
Contact us for assistance with your manufacturing needs.

5000+

With more than 5000 products, Holmarc Opto-Mechatronics Ltd. stands at the forefront of scientific and engineering innovation. Our comprehensive range—from precision optics to advanced laboratory instruments—empowers research, education, and industry. With 150–200 new products introduced annually, our commitment to innovation and quality ensures reliable performance and long-term value.

Product Group

Optical Tables, Breadboards & Enclosures | Rail carriers & Accessories | Optomechanics
Positioning Devices | Optics | Analytic Instruments | Imaging Devices
Optical Fibers, Positioners & Accessories | Optical Sources & Detectors | Spectroscopy
Bio-Lab Instruments | Life Science | Thin Film Lab Equipments | Holography | Physics Instruments



GET A FREE CATALOG

Need another catalog
for yourself or
a colleague?
Scan @ QR Code

Catalog Request

ADD TO CONTACT QR CODE



HOLMARC

OPTO-MECHATRONICS PVT.LTD

FACTORY ADDRESS

B.7, H.M.T. INDUSTRIAL ESTATE,
H.M.T. P.O, KALAMASSERY,
KOCHI - 683 503, KERALA,INDIA

PHONE CONTACTS

Tel: 91-484-2540075 (Off)
91-484-3266603 (Factory)
Fax: 91-484-2540882

visit us @

www.holmarc.com

E-mail: sales@holmarc.com / mail@holmarc.com

Follow us on



All Products are manufactured and marketed by
HOLMARC Opto-Mechatronics Ltd

Because of continuous product improvement, the various data listed are subject to change without notice.
Please confirm before ordering.

For more products and informations, log on to www.holmarc.com or contact us at sales@holmarc.com