

MonoRa

Monochromator & Imaging Spectrograph

MonoRa Series Selection Guide

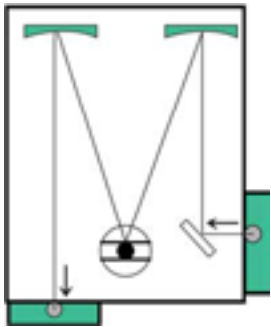
Features

- 1. Interface : USB, and RS232C
- 2. Focal lengths : 150mm, 200mm, 320mm, 500mm, and 750mm
- 3. Speed : Fast switching illuminator(Galvanometer type)
Slow scan Monochromator(Stepper motor type)
- 4. Imaging Monochromators : MonoRa150i, MonoRa320i, MonoRa500i and MonoRa750i
- 5. Double Monochromators : Triple Monochromators
- 6. Grating selection : Triple / Dual grating turret
- 7. Motorized Slit optional
- 8. PDA Remote unit for DM Series control
- 9. Own flexibility for Custom design

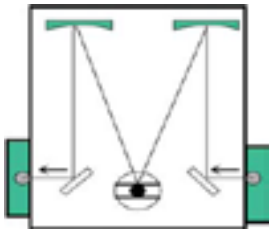
Applications

- Spectroscopy
- Photoluminescence
- Fluorescence
- Raman
- Phosphorescence
- Colorimetry
- Spectroradiometry
- Photometry
- Laser characteristics
- Light scattering

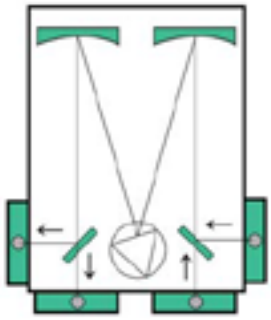
Model	Configuration	Model	Configuration
MonoRa 151i	150mm focal length monochromator with side entrance and front exit slits	MonoRa 152i	150mm focal length spectrograph with side entrance slit and front exit multichannel detector adapter flange
MonoRa 201	200mm focal length monochromator side entrance and exit slits	MonoRa 202	200mm focal length spectrograph with side entrance slit and front exit multichannel detector adapter flange
MonoRa 321i	320mm focal length monochromator side entrance and exit slit	MonoRa 323i	side entrance and two exit slits
MonoRa 322i	320mm focal length spectrograph with side entrance slit and front exit multichannel detector adapter flange	MonoRa 324i	side entrance and one exit slit and one front exit CCD port
MonoRa 501i	500mm focal length monochromator side entrance and exit slit	MonoRa 511i	side entrance and two exit slits
MonoRa 502i	500mm focal length spectrograph with side entrance slit and front exit multichannel detector adapter flange	MonoRa 512i	side entrance and one exit slit and one front exit CCD port
MonoRa 751i	750mm focal length monochromator side entrance and exit slit	MonoRa 753i	side entrance and two exit slits
MonoRa 752i	750mm focal length spectrograph with side entrance slit and front exit multichannel detector adapter flange	MonoRa 754i	side entrance and one exit slit and one front exit CCD port



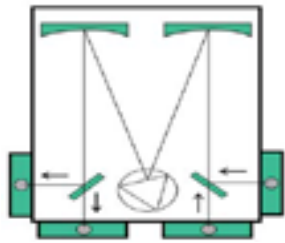
MonoRa150i, Monochromator



MonoRa200, Monochromator



MonoRa320i, Imaging spectrograph



MonoRa500i / MonoRa 750i Front entrance option

MODEL	MonoRa150i	MonoRa200	MonoRa320i	MonoRa500i	MonoRa750i
Focal Length	150mm	200mm	320mm	500mm	750mm
Aperture Ratio	f/4.3	f/4.0	f/4.2	f/6.5	f/9.8
Optical Design	computer optimized imaging Czerny-Turner type				
Optical Path	90°	90° or 180°			
Scan Range	Mechanical range 0-1600nm with a 1200gr/mm				
Operating Range	185nm to FIR with available grating and detector				
Resolution	0.2mm	0.18mm	0.09mm	0.045mm	0.02mm
Dispersion	4.6mm	3.5mm	2.4mm	1.6mm	1.0mm
Accuracy	±0.25nm	±0.2nm			±0.1nm
Repeatability	±0.04nm				
Drive step size	0.005nm with stepper motor		0.0025nm with stepper motor		
Focal Plane size	26mm wide x 10mm height				
Detector coverage	125mm	95mm	64mm	41mm	27mm
Standard slit	Width:0-5mm, 10um via micrometer control Height: 4-15mm, selectable				
Grating mount	dual grating turret		triple grating turret		
Grating Size	32 x 32mm	50 x 50mm	68 x 68mm		
Optical Path	one entrance and one exit		one entrance and one exit/one entrance and two exit two entrance and two exit		
Detector	UV,Vis : PDS-01 PMT, OPA 1024 PDA, Si / IR Detector : InGaAs, PBS, PBSE, MCT				
Software	Monoscan, Monoworks, Optra 2, Maple				
Sample Chamber	Maple, (i.e., PL Mapping sample chamber) / Ramboss, (i.e., Raman system sample chamber)				

Grating
Selection Guide



Groove / mm	Blaze Wavelength (nm)	Optimum Wavelength	Grating part number		
			Model : MonoRa150i Size : 32 x 32 mm	Model : MonoRa200 Size : 50 x 50 mm	Model : MonoRa320i MonoRa500i, MonoRa750i Size : 68 x 68 mm
150	300	200 ~ 500nm	-	2-150-300	3-150-300
	500	330 ~ 900nm	1-150-500	2-150-500	3-150-500
	1100	800 ~ 1800nm	1-150-1100	2-150-1100	3-150-1100
	1250	900 ~ 2000nm	1-150-1250	2-150-1250	3-150-1250
	2000	1300 ~ 3000nm	1-150-2000	2-150-2000	3-150-2000
	3000	2000 ~ 4000nm	1-150-3000	2-150-3000	3-150-3000
	4000	3000 ~ 5000nm	1-150-4000	2-150-4000	3-150-4000
	5000	4000 ~ 6000nm	1-150-5000	2-150-5000	3-150-5000
300	300	200 ~ 500nm	1-300-300	2-300-300	3-300-300
	500	330 ~ 900nm	1-300-500	2-300-500	3-300-500
	750	500 ~ 1400nm	1-300-750	2-300-750	3-300-750
	1000	700 ~ 1800nm	1-300-1000	2-300-1000	3-300-1000
	2000	1300 ~ 3000nm	1-300-2000	2-300-2000	3-300-2000
	3000	2000 ~ 4000nm	1-300-3000	2-300-3000	3-300-3000
	4000	3000 ~ 5000nm	1-300-4000	2-300-4000	3-300-4000
600	300	200 ~ 500nm	1-600-300	2-600-300	3-600-300
	500	330 ~ 900nm	1-600-500	2-600-500	3-600-500
	750	500 ~ 1400nm	1-600-700	2-600-750	3-600-750
	1000	700 ~ 1800nm	1-600-1000	2-600-1000	3-600-1000
	1250	900 ~ 2000nm	1-600-1250	2-600-1250	3-600-1250
	1600	1000 ~ 2400nm	1-600-1600	2-600-1600	3-600-1600
1200	250	190 ~ 450nm	-	2-1200-250	3-1200-250
	250H	190 ~ 900nm	-	2-1200-250H	3-1200-250H
	300	200 ~ 500nm	1-1200-300	2-1200-300	3-1200-300
	450H	300 ~ 1000nm	-	2-1200-450H	3-1200-450H
	500	330 ~ 900nm	1-1200-500	2-1200-500	3-1200-500
	750	500 ~ 1400nm	1-1200-750	2-1200-750	3-1200-750
	800H	500 ~ 1600nm	-	2-1200-800	3-1200-800
	850	600 ~ 1600nm	-	2-1200-850	3-1200-850
	2000	1300 ~ 3000nm	1-1200-2000	2-1200-2000	3-1200-2000
	3000	2000 ~ 4000nm	1-1200-3000	2-1200-3000	3-1200-3000
	5000	4000 ~ 6000nm	1-1200-5000	2-1200-5000	3-1200-5000
1800	250	190 ~ 450nm	-	2-1800-250	3-1800-250
	250H	190 ~ 800nm	-	2-1800-250H	3-1800-250H
	350H	350 ~ 800nm	-	-	3-1800-350H
	500	330 ~ 900nm	1-1800-500	2-1800-500	3-1800-500
	500H	300 ~ 950nm	-	2-1800-500H	3-1800-500H
2400	250H	200 ~ 900nm	-	-	3-2400-250H
	300	200 ~ 500nm	-	-	3-2400-300
3600	250	190 ~ 450nm	-	-	3-3600-250
	300H	240 ~ 500nm	-	-	3-3600-300H

• Other gratings are available on request

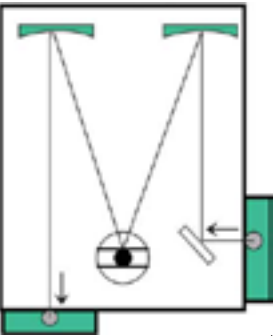
MonoRa
MonoRa150i Imaging Monochromators

Dongwoo Optron MonoRa150i



MonoRa150i is a 150mm, f/4.3 aperture, dual grating monochromator and imaging spectrograph by two aspheric mirrors featuring built-in computer compatibility, and a scanning range. It offers 0.2nm resolution with 1200 gr/mm grating, plus easy integration into automated spectral data acquisition systems, named Monoworks.

Double MonoRa150i is available for twice the dispersion of single monochromator of the same focal length. MonoRa150i is ideal for both emission and excitation.



Focal length	150mm
Aperture ratio	f/4.3
Optical design	Computer optimized Czerny-Turner
Optical port	Side entrance and front exit (side exit port optional)
Scan range	0-1600nm, mechanical range with a 1200gr/mm grating
Operating range	185nm to FIR with available grating and detectors
Resolution	0.2nm @10μm Slit with 1200gr/mm
Dispersion	4.6nm
Accuracy	±0.25nm
Repeatability	±0.04nm
Drive step size	0.005nm with stepper motor
Focal plane size	27mm width x 14mm height
Detector coverage	125nm @1200gr/mm grating
Standard slit	Width:0-5mm, 10μm via micrometer control Height:4-15mm, selectable, Motorized Slit optional
Grating mount	Dual grating turret
Grating size	32x32mm
PC Interface	RS232C & USB, standard, GPIB or TCP-IP(optional)
Size/Weight	218(L)X158(W)X177(H) / 5.8Kg

MonoRa150i, monochromator & Zeus450, 450W Xe lamp set



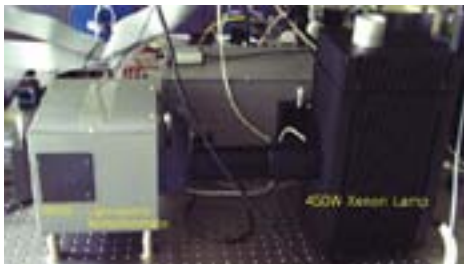
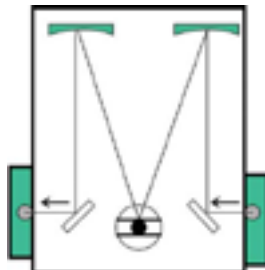
MonoRa

MonoRa200 Monochromators

Dongwoo Optron MonoRa200



MonoRa200 is a 200mm, f/4.0 aperture, dual grating monochromator and spectrograph featuring a multi-port optical system, built-in computer compatibility, and a scanning range. It offers 0.18nm resolution with 1200gr/mm grating plus easy integration into automated spectral data acquisition systems, named Monoworks. Double MonoRa200 is available for twice the dispersion of single monochromator. MonoRa200 is ideal for low cost better resolution emission Monochromator.



MonoRa200, monochromator & Zeus450, 450W Xe lamp set

Focal length	200mm
Aperture ratio	f/4.0
Optical design	Computer optimized Czerny-Turner
Optical port	Side entrance and front exit (side exit port optional)
Scan range	0-1600nm, mechanical range with a 1200gr/mm grating
Operating range	185nm to FIR with available grating and detectors
Resolution	0.18nm @10μm Slit with 1200gr/mm
Dispersion	3.5nm
Accuracy	±0.2nm
Repeatability	±0.04nm
Drive step size	0.005nm with stepper motor
Focal plane size	27mm width x 14mm height
Detector coverage	95nm @1200gr/mm grating
Standard slit	Width:0-5mm, 10um via micrometer control Height:4-15mm, selectable, Motorized Slit optional
Grating mount	Dual grating turret
Grating size	50x50mm
PC Interface	RS232C & USB, standard
Size/Weight	276(L)X184(W)X199(H) / 8.0Kg

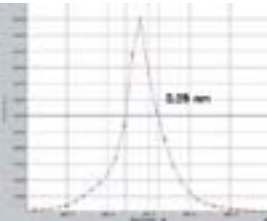
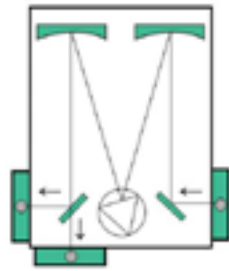
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MonoRa320i Imaging Monochromator / Spectrograph

Dongwoo Optron MonoRa320i



MonoRa320i is a 320mm, f/4.2 aperture, triple grating monochromator and imaging spectrograph by two aspheric mirrors featuring a multi-port optical system. It offers 0.09nm resolution plus easy integration into automated spectral data acquisition systems, named Monoworks. Double MonoRa320i is available for twice the dispersion of single monochromator. DM320i is ideal for Raman, laser fluorescence, P/L, and emission spectroscopy



MonoRa320i



MonoRa320i, monochromator & ATR system

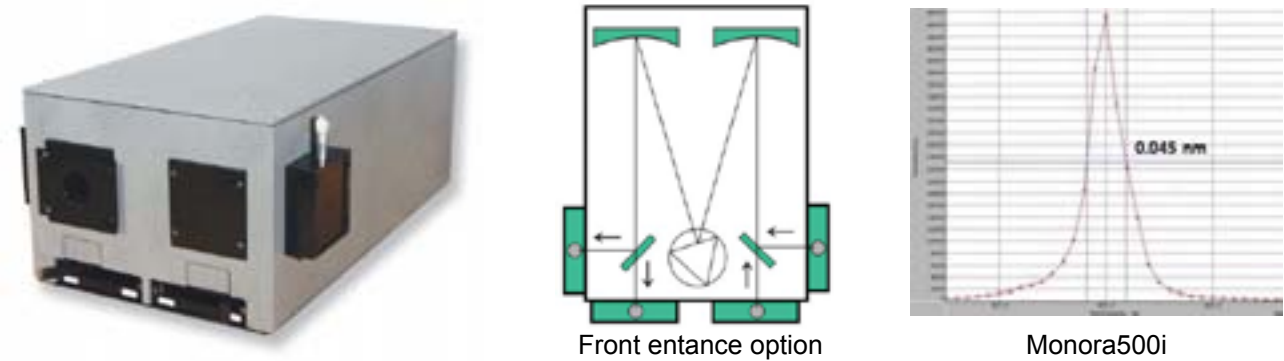
Focal length	320mm
Aperture ratio	f/4.2
Optical design	Computer optimized Czerny-Turner
Optical port	Side entrance and front exit (side exit port optional)
Scan range	0-1600nm, mechanical range with a 1200gr/mm grating
Operating range	185nm to FIR with available grating and detectors
Resolution	0.09nm @10μm Slit with 1200gr/mm
CCD Resolution	0.18nm
Raman shift Resolution	2.5cm-1 @ 632.8nm / 1800gr/mm / 10 Slit / CCD 1024 pixels
Dispersion	2.4nm/mm
Accuracy	±0.2nm
Repeatability	±0.04nm
Drive step size	0.005nm with stepper motor
Focal plane size	27mm width x 14mm height
Detector coverage	64nm @1200gr/mm grating
Standard slit	Width:0-5mm, 10um via micrometer control Height:4-15mm, selectable, Motorized Slit optional
Grating mount	Dual grating turret
Grating size	68x68mm
PC Interface	RS232C & USB, standard
Size/Weight	373(L)X258(W)X224(H) / 14.5Kg

MonoRa

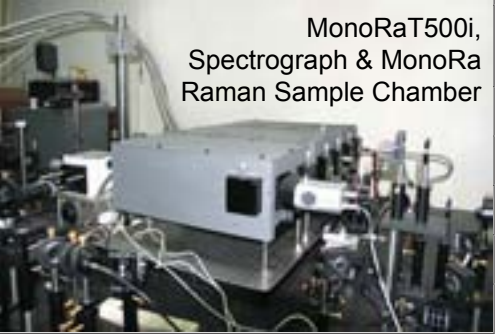
MonoRa500i Imaging Monochromator / Spectrograph

Dongwoo Optron MonoRa500i

MonoRa500i is a 500mm, f/6.5 aperture, triple grating monochromator and imaging spectrograph by two aspheric mirrors featuring a multi-port optical system. It offers 0.045nm resolution by easy integration into automated spectral data acquisition systems, named Monoworks. Double MonoRa500i is available for twice the dispersion of single monochromator. MonoRa500i is ideal for Raman, laser fluorescence, P/L, and emission spectroscopy



Focal length	500mm
Aperture ratio	f/6.5
Optical design	Computer optimized Czerny-Turner
Optical port	Side entrance and front exit (side exit port optional)
Scan range	0-1600nm, mechanical range with a 1200gr/mm grating
Operating range	185nm to FIR with available grating and detectors
Resolution	0.045nm @ 10µm Slit with 1200gr/mm
CCD Resolution	0.12nm 1200gr / 0.08nm @ 1800gr
Raman shift Resolution	2.0cm-1 632.8nm / @1800gr/mm / 10µm Slit / CCD 1024 Pixels
Dispersion	1.6nm
Accuracy	±0.2nm
Repeatability	±0.04nm
Drive step size	0.0025nm with stepper motor
Focal plane size	27mm width x 14mm height
Detector coverage	41nm @1200gr/mm grating
Standard slit	Width:0-5mm, 10µm via micrometer control Height:4-15mm, selectable, Motorized Slit optional
Grating mount	Triple grating turret
Grating size	68x68mm
PC Interface	RS232C & USB, standard
Size/Weight	546(L)X258(W)X224(H) / 18.3Kg



MonoRa

MonoRa750i Imaging Monochromator / Spectrograph

Dongwoo Optron MonoRa750i

MonoRa750i is a 750mm, f/9.8 aperture, triple grating monochromator and imaging spectrograph featuring a multi-port optical system, built-in computer compatibility, and a scanning range. As a monochromator, it offers 0.0025nm drive step size and 0.02nm resolution, plus easy integration to automated spectral data acquisition systems, named Monoworks. As a spectrograph, it offers 1.0nm/mm dispersion using a 1200gr/mm grating, as well as a 14mm-high x 27mm-wide focal plane. Double MonoRa750i is available for twice the dispersion of single monochromator of the same focal length. MonoRa750i is ideal for Raman, laser fluorescence, P/L, and emission spectroscopy



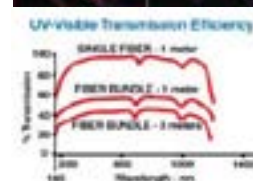
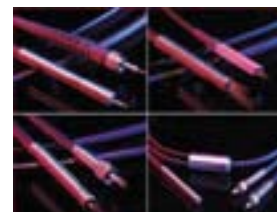
Focal length	750mm
Aperture ratio	f/9.8
Optical design	Computer optimized Czerny-Turner
Optical port	Side entrance and front exit (side exit port optional)
Scan range	0-1600nm, mechanical range with a 1200gr/mm grating
Operating range	185nm to FIR with available grating and detectors
Resolution	0.02nm @10µm Slit with 1200gr/mm
CCD Resolution	0.07nm
Raman shift Resolution	1.75cm-1 @ 632.8nm / 1800gr/mm / 10µm Slit / CCD 1024 pixels
Dispersion	1.0nm/mm
Accuracy	±0.1nm
Repeatability	±0.04nm
Drive step size	0.005nm with stepper motor
Focal plane size	27mm width x 14mm height
Detector coverage	64nm @1200gr/mm grating
Standard slit	Width:0-5mm, 10µm via micrometer control Height:4-15mm, selectable, Motorized Slit optional
Grating mount	Triple grating turret
Grating size	68x68mm
PC Interface	RS232C & USB, standard
Size/Weight	802(L)X258(W)X224(H) / 24.0Kg

Accessories for MonoRa

Single & Bundles Fiber Cables



Standard Fiber Optic Collimator Assemblies



- MF-Fiber : Mounting flange for optical fiber (any size possible on demand when order)
- MF-SMA/FC : Mounting flange for SMA/FC Fiber (type should be selected)
- MF-SMA/FC-X/XY: Mounting flange for SMA/FC Fiber with x-axis / xy-axis fine adjustable knob
- Standard Fiber

1. Single Fiber

- 1) PCU-100-1-SS :
UV-VIS fiber / 190~1100nm / 100um core / 1m / both SMA905 type
- 2) PCN-100-1-SS :
Vis-NIR fiber / 350~2400nm / 100um core / 1m / both SMA905 type
- Core : 100um, 214um, 400um, 600um, 1000um
- Specify length as -1, -2 or -3.
Specify termination type as: SS (SMA905 connectors at both ends)
QQ (1/4 inch OD ferrules at both ends) SQ (one, 1/4 inch ferrule & one SMA905)

2. Round Slit Bundles

- 1) RSU-150-1-QQ:
UV-VIS fiber / 190~1100nm / 100um core / 1m / both 1/4 inch ferrule type
- 2) RSN-150-1-QQ: Vis-NIR fiber / 350~2400nm / 100um core / 1m / both 1/4 inch ferrule type
- Core : 150um - 100 •mm x 2.5 mm slit, / 246um - 200 •mm x 4.6 mm slit, 290um - 200 •mm x 9.0 mm slit
- Specify length as -1, -2 or -3.

3. Round Round Bundles

- 1) RRU-122-1-QQ :
UV-VIS fiber / 190~1100nm / 1.22 mm Bundle diameter / 1m / both 1/4 inch ferrule type
- 2) RRN-122-1-QQ :
Vis-NIR fiber / 350~2400nm / 1.22 mm Bundle diameter / 1m / both 1/4 inch ferrule type
- Model :
122 - 1.22 mm diameter / 171 - 1.71 mm diameter 220 - 2.2 mm diameter / 320 - 3.2 mm diameter
- Specify length as -1, -2 or -3.

• Refocusing Assemblies

1. Refocusing Assemblies- LC-4 Series Assemblies

- 1) LC-4 Series Collimator Assemblies : 4.0 mm aperture within stainless steel housings of 6.35 mm
Model : LC-4N : 380-2200 nm (vis-NIR) / LC-4U : 170-2400 nm (UV-Vis)
- 2) LF-4 Series Refocusing Assemblies
Model : LF-4N5/10/15 : Focal length 5,10,15mm / 380-2200 nm (vis-NIR)
LF-4U10/15/20 : Focal length 10,15, 20mm / 170-2400 nm (UV-Vis)

2. Refocusing Assemblies- LC-10 Series Assemblies

- 1) LC-10 Series Collimator Assemblies :
10.0 mm aperture within black ionized aluminum housings of 19.0 mm
Model : LC-10N : 380-2200 nm (vis-NIR) / LC-10U : 170-2400 nm (UV-Vis)
- 2) LF-10 Series Refocusing Assemblies
Model : LF-10N20/25/40 : Focal length 20,25,40mm / 380-2200 nm (vis-NIR)
LF-10U20/25/40 : Focal length 20,25,40mm / 170-2400 nm (UV-Vis)

3. Refocusing Assemblies- LC-22 Series Assemblies

- 1) LC-22 Series Collimator Assemblies :
22.0 mm aperture within black anodized aluminum housings of 31.75 mm
Model : LC-22N : 380-2200 nm (vis-NIR) / LC-22U : 170-2400 nm (UV-Vis)
- 2) LF-22 Series Refocusing Assemblies
Model : LF-22N40/50/75 : Focal length 40,50,75mm / 380-2200 nm (vis-NIR)
LF-22U40/50/75 : Focal length 40,50,75mm / 170-2400 nm (UV-Vis)



Single & Bundles Fiber Cables



MOSF-6, Motorized order sorting filters

Light sources

Light sources

- **Out power: 75~450W**
- **Xenon, Mercury, Xenon-Mercury arc light source Tungsten-Halogen lamp**
- **Zeus450**
450W Xe arc light source
Includes. 450W Ozone generation lamp. (XBO 450W)
450W Ozone Free lamp. (XBO 450W OFR)
Arc lamp power supply for 450W Xe lamp
Lamp housing with fan cooling

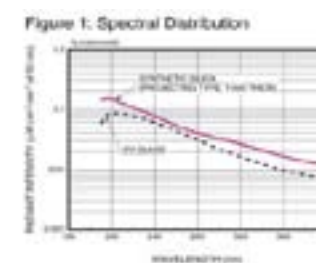


- **DL150-Xe**
150W Xe arc light source
Includes, 150W Ozone generation lamp, Lamp Housing,
Arc lamp power supply for 150W Xe or Xe-Hg lamp.
DL180-xe, DL300-xe, DL450-xe available

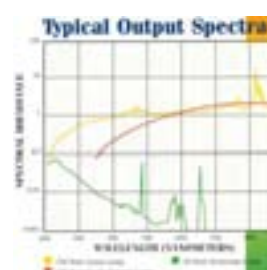
- **DL250-TH**
250W Tungsten-Halogen lamp with housing, AC power supply, Mounting flange, light collection optics.
Provide output from 350nm to >2.0µm



- **DL030-D2, 30W Deuterium lamp set for UV**



REF OSRAM	PUISSANCE Watt	Duree(h) vie/garantie
XBO 150W/1	150	1200/1200
XBO 150W/1 OFR	150	1200/1200
XBO R 180W/45C	180	500/500
XBO 450W	450	2000/2000
XBO 450W OFR	450	2000/2000



Xenon, Mercury, Xenon-Mercury Tungsten-Halogen lamp

- CAL-Hg Hg Calibration lamp with power supply & mounting flange
- CAL-Ar Ar Calibration lamp with power supply & mounting flange
- CAL-Xe Xe Calibration lamp with power supply & mounting flange

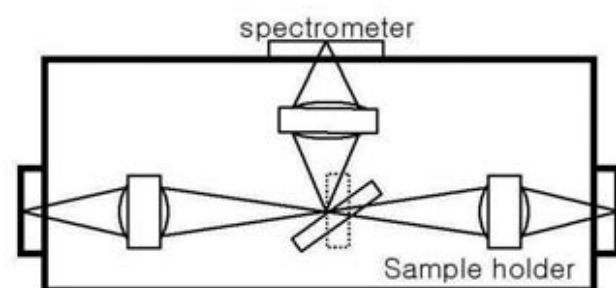


Calibration lamp

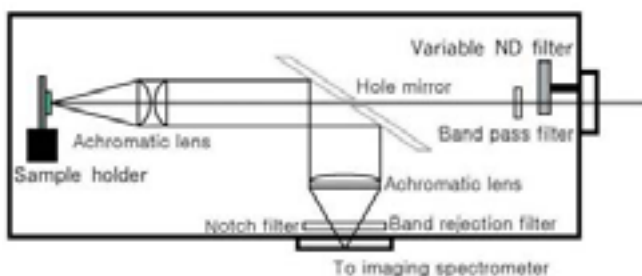
Sample Chambers

Sample Chambers

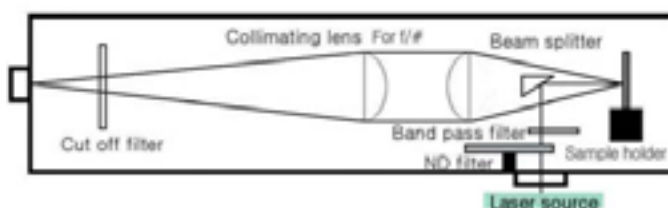
- **SC100**
Fluorescence Sample Chamber with IN/OUT Mount



- **SCR200**
Raman Sample Chamber



- **SCP300**
PL Sample Chamber



"Maple" PL Mapping sample chambers

High performance & Low cost PL Mapping system
Wide range extension(UV-VIS-NIR)
Simple Design & Alignment
Low noise and High PL signal detection
Any Excitation Laser Source available
Easy to find a peak and FWHM

"Ramboss" Raman sample chambers

High Performance Raman system
It is very easy to analyze your various samples by RAMAN Spectroscopy.
We confirm that you can take signals from Raman, Photo-Luminescence, and Fluorescence applications with our systems,
We are supplying confocal Micro systems.



Software

"Monoworks" Software program for MonoRa Series Monochromator with point detector

Features

- Single / Double monochromator control by user selection
- Multi-scan function (2D, 3D)
- Easy parameter selection
- Easy zoom in / out
- Easy application expandability
- OS: Windows98, Me, 2000, XP

Monochromator Parameter

- Select Monochromator and Serial Port
- Select Turret
- Select Grating
- Select Current Wavelength and its information

Scan Parameter

- Set the Wavelength range of scan
- Set the Number of point / resolution
- Set the integration time(ms)
- Set the number of scan / average / scan rate / scan time(sec)
- Set the delay time(msec)
- Set the accumulation

Modes

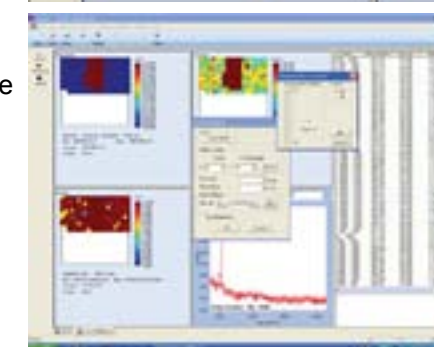
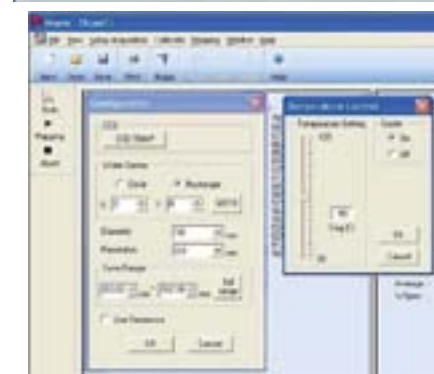
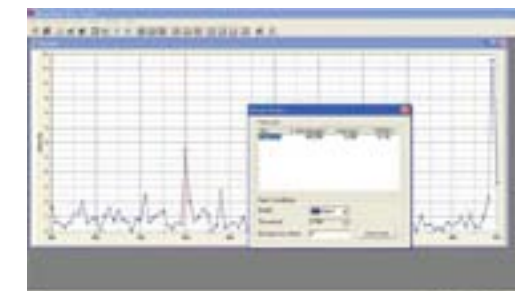
- Input Range(Voltage:0-1V, 0-10V, Current:10⁻⁷, 10⁻⁶, 10⁻⁵A)
- Scan Type:Auto, Excitation, Emission, Sync
- Scan Mode:Intensity vs Wavelength
- Unit: nanometer(nm), wavenumber(cm⁻¹), Raman shift(cm⁻¹)
- Current Intensity Monitoring
- Auto calibration

Post processing

- Peak Finder
- Graph Color
- Data Average
- Graph Control and 2D-3D conversion

"Maple" software program for PL Raman mapping

- Exit from "Andor iDus CCD" application program and launch "Maple" application program.
- After "Maple" application is launched X-Y and Z-Stage (scan image) is initialized.
- After the stage and image are being initialized launch "Z-axis Control" application program and click scan.
- Load the configuration file saved from "Andor iDus CCD" application. (Refer to the page 10).
- After load the file saved previously click "CCD Temp" and change the temperature appropriate to the application. Go to "Setup Acquisition" → "Setup Tools" and change parameters (e.g. Circle or Rectangle, Diameter, Resolution, etc.) suitable to the application.
- Double click parameters like Wavelength, Intensity, and FWHM Range and change corresponding values to change colors.



Monochromator

General

OBB's quarter-meter class, Czerny-Turner type monochromators are extremely rugged and versatile, and are available in single and dual-grating versions. They come in four different optical configurations and can be configured for dual inputs and outputs.

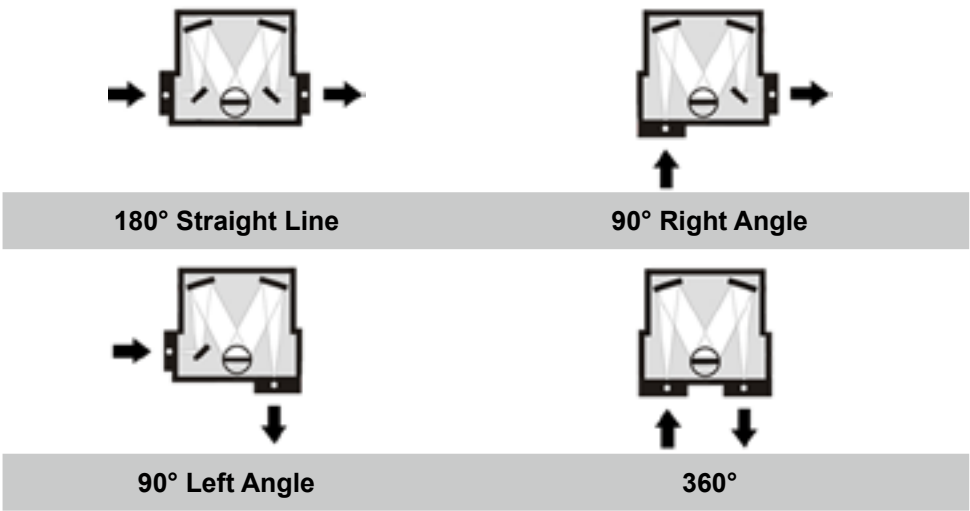
Our monochromators feature manual digital wavelength control. Motorizing options are available for computer control of wavelength, as well as an optional internal shutter.



Configurations

The monochromator has four ports that can be utilized for two inputs and two outputs. In the standard configuration it comes with one entrance and exit port populated. This gives you a choice of four different input/output geometries:

- 180° Straight Line – with folding mirrors on entrance and exit
- 90° Right Angle – with folding mirror on the exit side
- 90° Left Angle – with folding mirror on the entrance side
- 360° – with no folding mirrors



You can also elect as an option to have two entrance ports, two exit ports or two entrance and two exit ports by adding flipping mirror(s) and slit(s), refer to accessories.

All monochromators are shipped with two continuously adjustable slit assemblies.

Specifications

Specifications Using standard 1200 line/mm ruled grating

Focal length	200 mm
Aperture ratio	f/4 (calculated using grating width)
Wavelength range	180 nm to 24 microns (grating dependent)
Bandpass	continuously adjustable from 0 to 25 nm
Reciprocal linear dispersion	4 nm/mm
Resolution	0.25 nm
Throughput	60% at 300 nm
Scattered light	0.02% two bandwidths from 365 nm Hg line
Accuracy	+/- 1 nm (using manual wavelength control)
Accuracy	+/- 0.25 nm (using motorizing option under computer control)
Reproducibility	+/-0.25 nm
Optical path height	76 mm
Grating size	50 x 50 mm

Monochromator Dimensions

Length	241 mm long (9.5 inches)
Width	272 mm wide (10.7 inches)
Height	115 mm high (4.5 inches)
Weight	7.3 kg (16 lbs)

Digital Slit Assembly Dimensions

Length	10 mm thick
Width	85 mm wide
Height	180 mm high of which 113 mm is above the lid of the monochromator
Weight	7.3 kg (16 lbs)

Grating(s)

You must select one or two gratings depending on the Monochromator that you plan to order. The spectral range that you require will determine the type of grating that you should choose.

Standard Gratings

200	600 g/mm, 1,250 nm blaze
201	1,200 g/mm 300 nm blaze
202	1,200 g/mm 400 nm blaze
203	1,200 g/mm, 500 nm blaze
204	Holographic grating 300–800 nm

Special Gratings

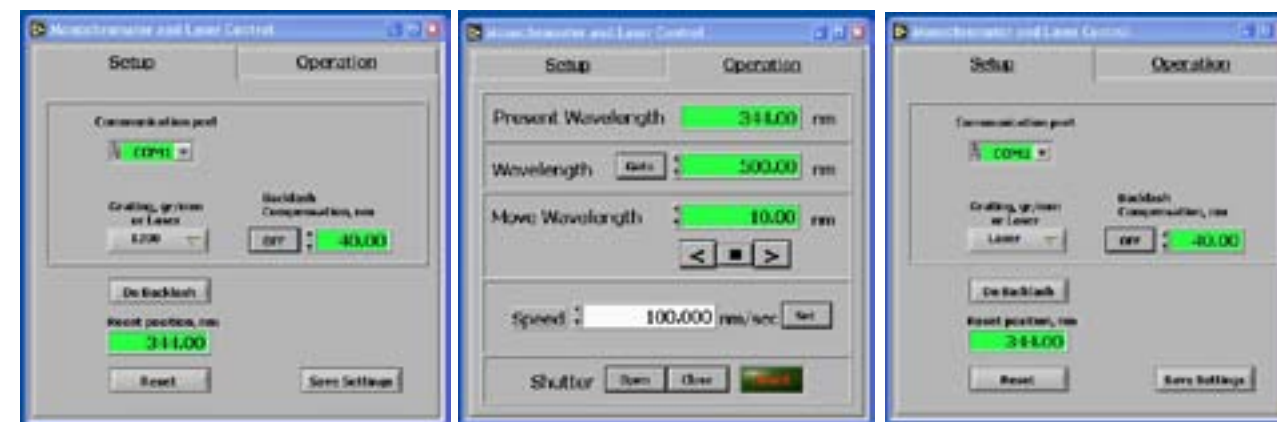
205	75 g/mm 10.0 μ m blaze
206	150 g/mm, 4.0 μ m blaze
207	300 g/mm, 2.0 μ m blaze
209	600 g/mm, 750 nm blaze
211	600 g/mm 1.0 μ m blaze
212	1,200 g/mm, 600 nm blaze
213	1,200 line/mm, 750 nm blaze

Computerized Wavelength Control

A software package is provided to control the monochromator and shutter (optional) with an RS-232 electronic interface that will work with PC type computers. Requires Windows 2000 or Windows XP operating system. A DLL is available to integrate to third party software by the user.

Software Features

- Universal power supply included
- Synchronization TTL output each time motor stops
- Two phase motor 1 A per phase, 200 steps per revolution, 1.8 degree per step
- Maximum motor speed is 1200 RPM with zero torque
- Maximum speed with mono 15,000 nm per minute
- Stepping motor voltage 5–12 V
- Stepping modes: Full, Half and Micro steps: 1/8, 1/16, 1/32, 1/64 computer selectable
- Slew rate: 1 to 62,500 micro steps per second
- Auto calibration of wavelength
- Linear ramping rate for heavy duty, fast, precision operation



Accessories

• Liquid light guide

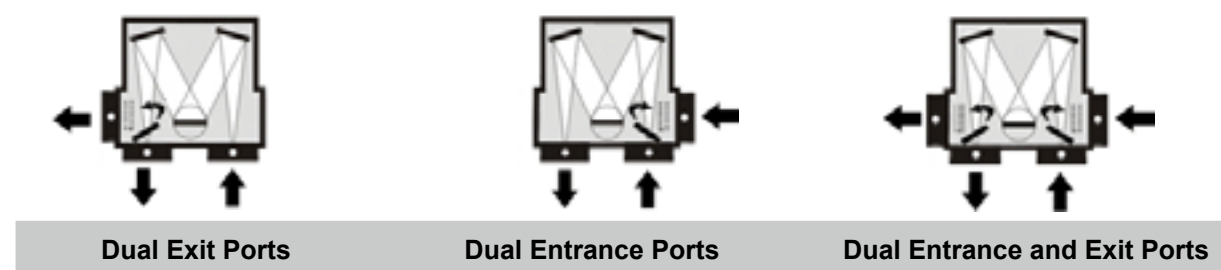
Ideal as a delivery system. We offer a two-millimeter core diameter, two-meter length liquid light guide complete with attachment to exit port of monochromator. Transmission is greater than 30% from 280 nm to 700 nm.

• Programmable shutter

A computer controlled shutter can be ordered at the time of original order. This is an ideal accessory when working with photodegradable samples. The programmable shutter requires Computerized Wavelength Control.

• Second entrance or exit port

A second entrance to attach for example a second light source or a second exit can be added to the monochromator. It includes a flipping mirror for selecting desired exit or entrance as well as a slit assembly. If you desire both two exits and two entrances for the monochromator you need two of these accessories.



• Nitrogen Inlet Port

If you plan to use the monochromator with UV, below 250 nm, you may wish to purge the monochromator with nitrogen gas to eliminate oxygen, which absorbs in the UV.

