This document covers the legacy QEPVSI-B system, which is no longer available for ordering. Contact Newport if you would be interested in a modified variant of this system, utilizing our CS260B series of monochromators.



#1 Software install

- 1.1 Software install of thumb drive
- 1.2 Run setup.exe
 - This will install TracQ Basic V 6.6 and all of its libraries
 - After installation is complete restart your computer
 - Right click once on the TracQ Basic icon and click "Properties". In the Compatibility tab of the Properties window, click on "Change settings for all users".

Security	Details	Previous Versions
General	Shortcut	Compatibility
you have problem n earlier version of atches that earlier elp me choose Compatibility mod	is with this program a f Windows, select the r version. <u>the settings</u> e	nd it worked correctly on compatibility mode that
📃 Run this pro	gram in compatibility n	node for:
Windows XP (Service Pack 3)	
Settings		
🔲 Run in 256 d	colors	
🔲 Run in 640 x	(480 screen resolutio	n
🔲 Disable visu	al themes	
Disable desk	top composition	
Disable displ	lay scaling on high Di	PI settings
Privilege Level		
		tor

• Check the box "Run this program as administrator", then click "OK".

cQBasic.exe Properties	L
Compatibility for all users	
If you have problems with this program and it worked on an earlier version of Windows, select the compatibil that matches that earlier version.	correctly ity mode
Compatibility mode	
Run this program in compatibility mode for:	
Windows XP (Service Pack 3)	
Settings	
Run in 256 colors	
Run in 640 x 480 screen resolution	
Disable visual themes	
Disable desktop composition	
Disable display scaling on high DPI settings	
Privilege Level	
Run this program as an administrator	
OK Cancel	Apply

- Run as Administrator for All Users
- If you have trouble installing your drivers for the monochromator See Appendix
 # 2

#2 Lamp Installation

- 2.1 Wear proper protective equipment when handling the lamp
 - Safety glasses,
 - Gloves
- 2.1 Securely attach the brass adaptor to the negative end of the lamp



- 2.2 Install the lamp in to the lamp housing with the positive side up
 - Attach the brass adaptor that holds the thermistor on the top of the lamp with thumb screw



- Place bottom of lamp in to the lamp mount
- Tighten thumb nuts to secure the lamp to the lamp housing





- If the lamp includes a starter wire, rotate the lamp so that the wire is facing towards the back of the lamp housing. The back of the lamp housing is where the baffle covers the fan, directly opposite of the door opening.
- See Appendix 3 for more information about lamp alignment

#3 Cable Connections

3.1 Lamp housing to power supply

- Using cable 70050 only attach one way
- Power supply to wall power



3.2 Filter wheel to monochromator with ribbon cable

- This ribbon should come installed on the system
- NOTE: Do not remove the ribbon cable with the monochromator powered on damage will occur



3.3 Monochromator

- Power cable attaches to wall power
- USB connects to computer
- NOTE: Do not connect the USB cable to the computer until the TracQ Basic software is installed.



3.4 Optical Chopper

• Attach Chopper Controller cable to Chopper wheel Connection (9-pin DSub) to the motor connection on chopper controller



• Connect Sync in to TTL OUT on the back of the SRS810



3.5 SRS810 Connections



• Connect A1 BnC cable to BnC on detector / pre amp

Mini grabbers connect from the sample cell and attach to the Bnc connection at the top of the pre amp

• Reference detector

Preamplifier









CBL-70054-LIDA cable supplies power to the detector / pre amp



GPIB-USB cable connects SRS810 from port IEEE-488 STD Port to USB on computer



•

#4 TracQ Set Up

4.1 Establish mono communication select com port

• Monochromator/Mono library path /74125 USB

Organize 🔻 New folder				0
Vame	Date modified	Туре	Size	
10100RS232	10/20/2017 2:33 PM	File folder		
📙 70103GPIB	10/20/2017 2:33 PM	File folder		
70104RS232	10/20/2017 2:33 PM	File folder		
📙 70105GPIB	10/20/2017 2:33 PM	File folder		
📙 74000GPIB	10/20/2017 2:33 PM	File folder		
14000RS232	10/20/2017 2:33 PM	File folder		
📕 74004USB	10/20/2017 2:33 PM	File folder		
54100GPIB	10/20/2017 2:33 PM	Filefolder		
📙 74100RS232	10/20/2017 2:33 PM	File folder		
📙 74125USB	10/20/2017 2:33 PM	File folder		
57700GPIB	10/20/2017 2:33 PM	File folder		
📙 77700RS232	10/20/2017 2:33 PM	File folder		
📙 77778USB	10/20/2017 2:33 PM	File folder		
PM19xx_2013	10/20/2017 2:33 PM	File folder		
📙 SR810	10/20/2017 2:33 PM	File folder		
Support	10/20/2017 2:33 PM	File folder		
📙 Support Installers	10/20/2017 2:33 PM	File folder		

4.2 Establish detector communication

Organize 🔻 New folder			953 🔹	(?
Name	Date modified	Туре	Size	
) /0100RS232	10/20/2017 2:33 PM	File tolder		
🕌 70103GPIB	10/20/2017 2:33 PM	File folder		
30104RS232	10/20/2017 2:33 PM	File folder		
길 70105GPIB	10/20/2017 2:33 PM	File folder		
3 74000 GPIB	10/20/2017 2:33 PM	File folder		
3 74000RS232	10/20/2017 2:33 PM	File folder		
3 74004USB	10/20/2017 2:33 PM	File folder		
🍌 74100GPIB	10/20/2017 2:33 PM	File folder		
🍌 74100RS232	10/20/2017 2:33 PM	File folder		
3 74125USB	10/20/2017 2:33 PM	File folder		
🍶 77700GPIB	10/20/2017 2:33 PM	File folder		
3 77700RS232	10/20/2017 2:33 PM	File folder		
퉬 77778USB	10/20/2017 2:33 PM	File folder		
PM19xx_2013	10/20/2017 2:33 PM	File folder		
🎍 SR810	10/20/2017 2:33 PM	File folder		
🍌 Support	10/20/2017 2:33 PM	File folder		_
Support Installers	10/20/2017 2:33 PM	File folder		
Folder: SR810				_

• Detection Instrument/Detector library path/ SR810

- 4.3 Verify the grading calibrations parameters with the certifications that ship with mono
 - Monochromator/ calibration parameters
 - Example (values may be different)

Diagon refer	to the menochrou	mator or opertroare	ab ucorlo	Ok
manual befo	re changing any g	grating parameters.	priusers	Motorized Slits
	Grating 1	Grating 2	Grating 3	L.
Lines/mm	1200	1200	1200	
Factor	0.998560	0.999050	0.999050	
Offset	0.077002	0.071684	0.000000	
Zero	0.087266	3.228859	3.228859	

- 4.4 Grating switch over parameters
 - Monochromator / gratings
 - Grading selection to AUTO
 - Grating switch over @ (500nm)

Grating Selection			
Grating Selec	tion		
Select Grating	Auto	•	Ok
Present Syste	m Status		<u> </u>
Grating In Us	se Grat	ing Label	
2		750	
Current Wavele	ength Wavel	ength Units	
555.01	nar	nometer	
Automatic Gra	a <mark>ting Chang</mark>	e-Over Table	
From grating	to grating	at wavelengt	th
1	2	500.00	
2	3	Inf	

4.5 Filter change over parameters

• Set filter wheel selection to AUTO

Filter Selec	ction		
Select Filter	Au	to	Ok
Present Sy	stem St	atus	
Filter In	Use	Filter Label	
2		Using Table	
Current Wa	velength	Wavelength Units	
555.0	00	nanometer	
Automatic	Filter Cl	nange-Over Table	
From filter	to filter	at wavelength	
1	2	355.00	
2	3	625.00	
3	4	1040.00	
4	5	Inf	

4.6 SRS parameter set up

2	THE CONSTANT 0103 6.0 010 0.0 010		PTANFORD RESEARCH SYSTEMS Model SRB10 DSP Lock-In Amplifier 4 1000000000000000000000000000000000000
3	OND CA A+0 ION ION ION ION CA ION ION CA ION IO	ender RESERVE NORMA, LOW NORM Reserve	
	A1 8	LONE 2 x LONE Names	

- 1 Interface section
 - GPIP/RS232 = GPIB
 - ADDRESS = 2
 - BAUD = 9600
 - PARITY = NONE
 - QUEUE = 444E 3F0A
- 2 Time Constant
 - Set the parameters
 - Time Constant=100ms
 - o Slope/Oct= 12db
 - Sync <200Hz= ON
- 3 Signal Input
 - o Input=A
 - Coupling=AC
 - Ground=FLOAT
- 4 Sensitivity
 - \circ Set equal to 5 X 100 mV
- 5 Reserve
 - \circ $\,$ Set equal to LOW NOISE
- 6 Filters
 - \circ Set equal to 2 X line

4.7 In TracQ software go to the pull-down menu Detection Instrument / Setup Communication. Set up as shown



- In TracQ software go to Detection Instrument/ setup parameters
 - Verify that Channel 1 Display is set to R
 - trument Options About SRS810 Control Panel and SR810 Instrument Control Panel Ok % GPIB0::2::INSTR -Channel 1 Display R NONE • Filter 6 dB/oct + Input Coupling AC • 500 mV/nA Sensitivity • Reserve Low Noise • Sync Filter Off Ref Source Internal • Ref Slope Sine Wave ٠ Auto-Phase Input Configuration A • Time Constant 100 ms Auto-Gain Frequency 25 * Calibrated Power Monitor Line Notch Filter Line In [2x] -
 - Verify Ref Source is set to Internal





• Wheel (1) = 2

- Sync (2) = EXT+
- Mode (3) = Normal
- The 'Set' button (4) cycles through parameters indicated by the adjacent LEDs. These should be:
 - FREQ = 25.0 Hz
 - PHRASE = 0 DEG
 - **H = 6**
 - S = 1

#5 Optical Alignment

- 5.1 Power supply settings (OPS-A500)
 - Verify I Set is 16A and I Max is17.5



Verify P Set is 300W and P Max is 330W



- Verify the power supply is operating in power mode
- Once the values are set you can now ignite the lamp by pressing the lamp button on the front panel of the power supply

- 5.2 Use TracQ to open/close shutter
 - Monochromator / shutter

Monochro Shutter C	omator/Sp control	ectrogra	ph	
Shutter	Open	-	Ok	

• Verify shutter is in correct position

5.3 Use TracQ go to wavelength and enter "0"

• Monochromator/ go to wavelength

Send Monochromator to Destin	ation Wave	elength	
Destination Wavelength	0	SSEem	Ok
*All Wavelengths must be e	ntered in n	anometers.	

5.4 Increase slit widths on both micrometers to 600 microns (for optical alignment only)





5.5 Use condensing lens to focus on the arc

• Focus image with knob on condenser lenses



- Focus Reflector Image to look similar to Lamp image as shown below. Use the three knobs for Rear Reflector Adjustment on the Lamp Housing.
- Overlay the two images of the arc



- Lock condenser in place using locking knob
 - (You Tube video https://www.youtube.com/watch?v=cwhYITvA8El)
- 5.6 Minimum slit height to center beam (tab adjustment)
- 5.7 Center lamp using adjustment gray knobs for horizontal and vertical adjustments.
 - Defocus condenser lens to make beam uniform.
 - Uniform beam







5.8 Set both micrometers to 375 um



5.10 Set wavelength to 555nm

- Monochromator/go to wavelength (see step 5.3)
- 5.11 Attach 77330 Focusing Lens assembly



5.12 Place calibrated reference detector in beam path align beam under the active area of the detector



• Focus the beam distance is around 40mm +/- 5 mm

5.14 Detector parameters

Set gains to 10^4 and time to min



Check SRS to verify that you are seeing signal in mv

#6 Reference Scan

- 6.1 Set up reference scan parameters
 - 🚾 Enter Scan Parameters Wavelength Units nanometers Ok Cancel Starting 300.0000 1100.0000 Ending Interval 10.0000 100 Wait [ms] 200 Prescan Wait [ms]
- Scan/ Set up scan wavelength parameters

- Starting wavelength •
- **Ending wavelength**
- Interval- (step size)
- Wait (ms)- The delayed of time in-between grating positions before the • detector takes a sample

• Pre scan wait (ms)- Allow the sample extra time to settle prior to talking the first data point

6.2 QE gain set up



- Set measurement type to AC
- Preamp Gain to 10000 (10^4)
- Reference Gain 10000 (10^4)
- These are the default values

Previous Paramet	ers N	lew Parameters	Ok
AC measurement	A(easurement Omeasurement [Cancel
Preamp Gain 1000	0 Preamp G	ain 10000	
Reference Gain 1000	0 Reference	Gain 10000	

6.2 SRS Sensitivity Selection

- Set wavelength to 555nm(see step 5.3) make sure shutter is open (see step 5.2)
- Press auto gain on the SRS810



• After Auto Gain is complete, manually adjust the sensitivity from the front panel (from 1 x100 mV to 2 x 100 mV). This will keep the signal from saturating *during* a wavelength scan



- You know the sensitivity is too high when the red OVLD symbol appears on the display of the SR810.
- This will cause the detector to oversaturate and cut off data
- Reduce the sensitivity as needed to take the signal out of overload

6.3 Perform Wavelength scan



- Save file
- File\ save scan data as ref1_XXX where XXX is the last 3 numbers of the calibrated reference detector
- Below is an example of wave length scan with 10 nm steps

 You should see gradual increase from 350-800 and peaks at 825nm, 875nm, 930nm, 945nm, 980nm

Image: Scan_Manachromatar_Detection Instrument_Options_About_	×
0.22- 0.2- 0.18- 0.16- 0.14- © 0.12- ¹⁰ / ₂ 0.1- 0.08- 0.06- 0.04- 0.02-	
ŽzŚo 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 ₩avelength (nm)	
Measurement List System Reading Autoscale X (0nce) ref_530 Present Signal Reading 0.0000E+0 Autoscale X (0nce) Present Wavelength 5.5499E+2 nm Graph Controls Log X Axis Instrument Statue Monochromator Detection Instrument Toggle Plot Legend Log Y Axis	

6.4 Perform Background scan of detector

- Close shutter (see step 5.2)
- Press the Auto Gain button on the SR810 to automatically reset the instrument to increase the sensitivity to read the signal from the Reference Detector with no incident light.



- After Auto Gain is complete, manually adjust the sensitivity from the front panel (to 2 x1 uV). This will keep the signal from saturating *during* a wavelength scan, Auto gain can also be accessed by Detection Instrument/ setup parameters (see step 4.7)
- Perform Wavelength scan (See Steps 6.3) on the reference detector with no light to measure the background signal of the
- Save background scan File\ save scan data detector background

- 6.5 Load detector background file for background subtractions
 - Once the back ground file is loaded you will have to toggle background subtraction on.

ersion 6.5					
Options Ab	out		- 10		
Backgroun Reference Lamp Calib Detector C QE Gain Se	d File File pration alibration etup	 Load Clear Toggle O 	n/Off		
Please selec	t a Backgr	roundFile			? 🔀
Look jn: [🕽 15Dec14		Y G 🕫	• 📰 🍤	
My Recent Documents Desktop My Documents My Computer	background ref1_636				
File	e <u>n</u> ame:	background		· [ОК
My Network File	es of <u>type</u> :	All Files (*.*)		•	Cancel

- Notice that *Background Subtraction* is now highlighted green indicating that the present scan has the
- Background data subtracted from the measured detector signal.

000 000 100

6.6 Open shutter (step 5.2)

- Set the wavelength to 555 (see steps 5.3)
- Press the Auto gain on the SR810
- Manually adjust the sensitivity of the detector signal to 5X 100 X mV.



- 6.7 Perform a wavelength scan (See Step 6.3) on the reference detector a second time with background subtraction on.
 - Save file ref2_XXX
- 6.8 Load the both reference files for comparison
 - Select the scan that you want to view under Measurement list.
 - Hold Ctrl key and select the second scan that you want to view

6.12 If the reference scans are identical, then background noise is low and bulb is warmed up. This is a good sign the system is stable and ready to make accurate measurements of you samples.

6.13 Load the second reference file ref2_XXX



6.14 *LOAD CALIBRATED REFERENCE DETECTOR CAL FILE*

 Load the calibration file for your specific Reference Detector. Options/ Detector Calibration / Load/ "70356_70316N_636_tabs.txt" (example file name). This calibration file for *your specific reference detector* is included on your USB thumb drive



6.15 Now you have calibrated your QEPVSI-B for following wavelength scans of your solar samples or filter transmission. It is very important at this point that you resist modifying the QEPVSI-B instrument in any way from its current configuration before completing your test scans. Do not turn off/on the lamp; adjust the collimation of the lamp, the input/output slits on the monochromator, the output lens position or the horizontal slider that controls beam height. If changes are made or you return to your system after a long period of time (many hours) in which the lab environment has changed, please repeat these calibration steps.

#7 Sample test

7.1 Place sample in beam path

- Keep same working distance as (see step 5.12)
- Set the wavelength to 555 (see step 5.4)
- Be careful to place the beam in between the bus bars



7.2 Connect the sample cell to the pre amplifier (see steps 3.5)

• Check gain settings. Same as detector settings gain on the pre amp 10^4 time min

7.3 Press the Auto Phase to allow the SR810 to lock to the phase difference between the chopper sync signal and the pulse light signal from the sample cell. The auto phase can be pushed a few times to verify the lock-in phase is consistent. The phase will likely be different from what it was previously when using the reference detector. This is normal.



7.4 Take a background scan of you sample cell

Clear the old back ground file



• Verify Background Subtraction is off by noticing the green indicator has become read



- Close shutter (see step 5.2)
- 7.5 Press the *Auto Gain* button on the SR810 (see step 6.4)
 - Manually adjust the sensitivity to keep the SR810 from over saturating
 - Example: 5 X 1 X uV

7.6 Minimize light entering the sample cell by covering the sample from room lights and equipment lights

7.7 Perform Wavelength scan on the sample cell with no light to measure the background signal of the system (see steps 6.3)

• Save file as background_sample cell

7.8 Load background_sample cell file (see step 6.5)

- Now the background noise of sample amplifier can be subtracted from all future wavelength scans performed with your sample cell.
- Verify background is active

7.9 Wavelength scan of sample cell

- Open shutter (see step 5.2)
- Set mono to 555 (see step 5.3)
- Press Auto gain then manually adjust the sensitivity of the detector signal to 5X 100 X mV.
- Perform a wavelength scan on the sample cell with back ground subtraction on (see step 6.3)
- Save scan as sample cell 1

7.10 Compare ref2_XXX and sample01 (see step 4.12)

• It is common for the sample cell (green curve) to have a slightly higher response than the reference detector (gray curve) as shown.



Compare scans (see step 6.8)

<u>#8. QE scan sample cell</u>

At this point it is critical that no changes be made to the wavelength scan parameters, slit widths, working distances.

8.1 Before you can take a QE measurement load the following files

- Options / Background File / Load / background_sample cell (see steps 4.7)
- Options / Reference File / Load / ref2_XXX (see steps 4.13)
- Options / Detector Calibration / Load / 70356_70316N_636_tabs.txt (example) (See steps 6.14)



8.2 From front panel of the TracQ, select Scan / Perform QE Scan

File	Scan Monochromator Detection	nstr. Options About
	Setup Scan Wavelength Paramet	rs
((Perform Wavelength Scan	
	Setup Time Interval Scan Perform Time Interval Scan	
	Perform QE Scan	
	Perform Lamp Radiometry Scan	
	Perform Detector Radiometry Sca	i l
	Perform Absorbance Scan	
	Perform Transmittance Scan	

- 8.3 The QE scan will automatically begin. You can abort the scan at any time during the scan by clicking on clear or stop icons.
- 8.4 Your QE scan should look similar to the following screen shot, peaking around 90-95%.
 - This example shows wavelength 300-375 measuring around 50% QE
 - From wavelengths 375-580 measure an increase in QE from 50%-92% efficiency
 - From wavelength 580-850 the QE is relatively flat and measuring 90-95% QE
 - From wavelength 850-1000 QE starts a gradual decrease in efficiency

• From wavelength 1000-1100 sharp decrease down to around 20% QE

e Scan Monochromator Detection Instrument Options About		
S. 🕸 2. S 🔹 🗕 🗈	TracQ _{BASIC}	
90- 80- 70- 20- 50- 50- 40- 30-		
20– 250 300 350 400 450 500 550 Background Subtraction	600 650 700 750 800 850 Wavelength (nm)) 900 950 1000 1050 1100 平梁勁
Measurement List detector background ref2_530 background sample cell	System Reading Present Signal Reading 8.1758E-3 Present Wavelength 1.1000E+3	Autoscale X (Once) [Autoscale Y (Once) [nm
sample cell 1	Instrument Status	Graph Controls E Cog Axis

- 8.7 Save QE scan as QEsample01
- 8.8 To verify you QEPVSI-B is performing properly, Click on the load scan and Browse to the file "QEsample_factory" file on your USB jump drive to load the factory scan.
 - In Measurements list click on the QE scan you have just performed hold down ctrl and select the QE scan from the factory
 - Your QE scan of your sample cell (brown curve) should be nearly identical to the factory QE scan of your sample (green curve). Slight differences may arise from exact placement of the beam on the sample and, especially, if part of the beam overlaps a bus bar on the sample surface.



• Once you have verified a successful sample scan, you are ready to measure other samples.

How to change V to QE:

- 1. Detector collects data in Volts
- 2. Convert Volts in the Amps/Watt
 - a. Save scan as Reference file

Customer need to

- 1. Perform a quick scan of the calibrated detector. Save as REF file
- 2. Load cal file(of calibrated detector) before performing QE scan

REFERENCE MANUALS

LIDA-SRS-KIT, Mtracqbasic 6.6, MQEPVSI-B, ORIEL CORNERSTONE 260 MANUAL (MCS130), Mtracqbasic-QSG rev A, OPS-A500 manual,

BUILD PROCEDURE- 13-APQEPVSI-B-WI001

NOTES:

QEPVSI-B Operational Guide

- If you are getting over a 100% QE it is likely that the edge of the beam is being clipped by the detector.
- If you are getting low values .06um the cable to the SRS810 may be bad or may be incorrect cable.

Micrometer Adjustable Slits Appendix 1

Micrometer adjustable slit assemblies are continuously variable from fully closed to 3 mm width. A height adjustment slide allows variation in the height from 2 to 12 mm. Benefits of the micrometer adjustable slits are flexibility and high throughput. This type of slit is designed primarily for versatility and convenience in changing resolution and throughput, which are related to the slit width.



Figure 1: A Micrometer Adjustable Slit

The slit width setting is read on the micrometer. A set of numbers go around the turning dial. Another set of numbers are located on the shaft. When the zeroes in both these locations line up, the slit is fully closed. Turning the dial clockwise advances the dial position further down on the shaft, closer to the body of the micrometer. This opens the slit.



Figure 2: A Fully Closed Micrometer Adjustable Slit

The slit height is continuously adjustable. Pull the lever out for the shortest height. Push the slide in for the tallest height setting.

Use a 10x multiplier to convert the micrometer reading to the actual slit opening size. For example, turning the dial one full revolution starting from the fully closed position will give a reading of 50 on the micrometer. Using the multiplier, this indicates the micrometer width is set to 500 um. If unsure of the reading, begin at the fully closed position and add up each full revolution made.



Figure 3: Shortest Micrometer Adjustable Slit Height



Figure 4: Tallest Micrometer Adjustable Slit Height

Monochromator driver trouble shooting Appendix 2

Open the Windows Device Manager and locate the instrument. Depending on the model, it may be listed as an Unknown Device or VSE Spectra. Right click on the instrument listing and select "Update Driver Software..."

🚽 Device Manager	
File Action View Help	
	R 6
 Portable Devices Processors Sound, video and g System devices Universal Serial Bus Bluetooth Hard Intel(R) ICH9 Fa 	ame controllers controllers Copy Cable Replacement Server mily USB Universal Host Controller - 2934 mily USB Universal Host Controller - 2935 mily USB Universal Host Controller - 2936 mily USB Universal Host Controller - 2937 mily USB Universal Host Controller - 2938 mily USB Universal Host Controller - 2939 mily USB2 Enhanced Host Controller - 293A
Intel(K) ICH9 Fa	mily USB2 Enhanced Host Controller - 293C
USB Compos	Update Driver Software
USB Mass St USB Root Hu	Disable Uninstall
USB Root Hu	Scan for hardware changes
USB Root Hu	Properties
USB Root Hub USB Root Hub USB Root Hub	

Launches the Update Driver Software Wizard for the selected device.

Click on "Browse my computer for driver software".



Click on "Let me pick from a list of device drivers on my computer".

Search for driver software in this location: C:\Users\ Include subfolders Let me pick from a list of device drivers on my computer	Brow	wse for driver software on your computer	
C:\Users\	earc	h for driver software in this location:	
Include subfolders Let me pick from a list of device drivers on my computer	C:\U	lsers\	Browsen
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.		clude subfolders	

Click on "Have Disk...".

select the device driver you want to in	stall for this hardware.
Select the manufacturer and model of y disk that contains the driver you want to	rour hardware device and then click Next. If you have a o install, click Have Disk.
Show compatible hardware	
Newport/Oriel Cornerstone Monochromator	

Click on "Browse...".

	Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.	ОК
-4		Cancel
	Copy manufacturer's files from:	

Navigate to the location of the USB driver on the computer based upon the type of monochromator. Select the .inf file as listed and click "Open".

🕂 Locate File			The second second second	X
Look in:	🔒 CS Drivers		- 🗿 🖸 📂 🗔 -	
(Pa)	Name	*	Туре	
Recent Places)) 3 x64 3 x86		File folder File folder	
	oriel_usb.i	nf	Setup Informatio	n
Desktop				
Libraries				
i 🔍				
Computer				
Network				K
	File name:	oriel_usb.inf	•	Open
	Files of type:	Setup Information (*.inf)	*	Cancel

Click "OK" to continue, after verifying file path chosen.



Click "Next" to proceed with the driver software installation.

Select the device driver you want to in	nstall for this hardware.
Select the manufacturer and model of y disk that contains the driver you want t	your hardware device and then click Next. If you have to install, click Have Disk.
Show compatible hardware	
Model	
Newport/Oriel Cornerstone Monochromator	
-	Have Disk.
This driver has an Authenticode(tm) signatu	it is a second s

Check the box marked "Always trust software from 'Newport Corporation'. Then click "Install".

Windows Security	×
Would you like to install this device software?	
Name: Newport/Oriel Universal Serial Bus contr Publisher: Newport Corporation	
Always trust software from "Newport Corporation".	Don't Install
You should only install driver software from publishers you trust. <u>How which device software is safe to install?</u>	<u>v can I decide</u>

LAMP ALIGNMENT

The Newport Tunable Light Source family of products is designed to provide high-quality light output. To achieve optimal performance, proper alignment of the lamp is required. Lamp alignment consists of properly positioning the lamp, adjusting the lamp housing rear reflector position and locking the lamp housing condenser lens assembly in its correct location.

Lamp alignment must be performed when receiving the Tunable Light Source (TLS), any time the lamp is removed and reinserted (such as when transporting the unit), and when installing a replacement lamp.

Failure to align or properly align the lamp with the focusing lens of the lamp housing results in:

- An asymmetrical, non-uniform output beam
- Diminished output intensity

Always wear eye protection suitable for use with UV radiation during the lamp alignment process. The light output will heat up any surface or object to which it is aimed, particularly when the light is focused onto a small area. The lamp housing's condenser assembly will become hot while the lamp is on and will remain hot for some time after the lamp is turned off.

Do not leave the lamp unattended while performing this procedure. Ensure the light cannot cause injury or damage to persons or objects in the general area. A full list of precautions is available in the user manuals provided with the Tunable Light Source.

A flat, non-reflective vertical surface is required as a backdrop to image the output of the TLS when performing the alignment procedure. Ensure the surface is non-flammable and will not be damaged by the heat produced from the lamp. To view the image clearly, it may be necessary to turn off the room lighting.

Prior to turning on the TLS, the system must be inspected to confirm the lamp is installed, the lamp housing door is secured in place using all hardware provided and the lamp housing interconnection cable to the power is firmly connected to both the lamp housing and the power supply.



Horizontal and vertical position adjustment Knobs at the lamp housing door



Rear reflector adjustment knobs on the side of the lamp housing



Condenser lens assembly adjustment knob and adjustment lever at output of lamp housing



The Light Path and the optics of the TLS starting from the lamp to the filter wheel

As seen in Figure 62, the lamp housing used in the TLS incorporates a collimating lens to collimate the light output of the QTH/Xe arc lamp inside. This collimated light output is then input into a secondary

focusing lens housed in the 6195 lens holder coupled to the output of the collimating lens assembly of the Research Lamp Housing. By moving the adjustment knob shown in Figure 61, the distance from the collimating lens and the focusing lens is increased or decreased, defocusing or focusing the anode and cathode (Xe arc lamp) or filament (QTH lamp) of the lamp being housed. This optical configuration is designed to allow the user to precisely focus the anode and cathode or filament of the lamp for alignment purposes, and focus the output of a properly aligned lamp into the filter wheel and thus the input aperture of the monochromator.



The yellow image at the right represents the secondary image of the QTH/arc lamp from the rear reflector of the Lamp Housing. To move this secondary image in the desired direction, rotate each Rear Reflector Adjustment knob as indicated in the image on the left (counter)clockwise to achieve the desired image displacement as indicated in the figure on the right.