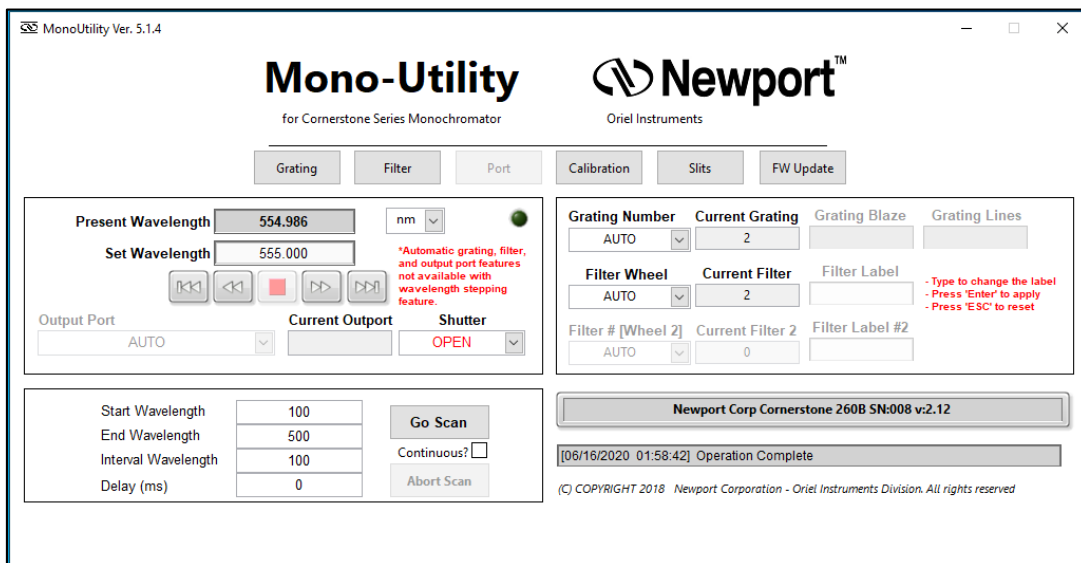# Mono-Utility v5.1

Oriel® Utility Software for Monochromators and Spectrographs

Quick Start Guide

Newport®

TABLE OF CONTENTS

1   INTRODUCTION

Thank you for your purchase of this spectroscopy instrument from Oriel Instruments. Please read this Quick Start Guide prior to installing the utility software and operating the monochromator or spectrograph. For additional important information regarding this instrument, refer to the complete User's Manual. Do not attempt to operate the system without reading all the information provided with each of the components.

This utility software allows users to control the following:

- Cornerstone 260B Monochromators.
- Cornerstone 130B Monochromators.
- With legacy support for the following:
- Cornerstone 130 Monochromators.
- Cornerstone 260 Monochromators.
- MS257 Monochromators and Spectrographs.
- MS260i Spectrographs.

While the Cornerstone CS260B and CS130B Monochromators only support USB or RS232 connections, support for legacy Instruments remains unchanged and includes either USB or RS232/GPIB connections. The following communication methods are supported by the utility software:

- USB
- RS232
- IEEE-488 (GPIB)

Utility software instrument control features:

- Set wavelength
- Set wavelength units
- Open/close shutter
- Select grating
- Select Filter
- Select output port [dual output port instruments only]
- Automatic grating, filter and port changeover setup
- Set slit widths [motorized slits only]
- Automatic bandpass adjustment [motorized slits only]
- Set up scan parameters
- Run/abort scan
- Adjust calibration factors during field recalibration

Utility software instrument monitoring features:

- Present wavelength
- Wavelength units
- Output port selected
- Shutter position
- Grating in use, blaze wavelength and line density
- Filter in use, filter label
- Calibration parameters

2   REQUIREMENTS

2.1   SOFTWARE INSTALLATION REQUIREMENTS

The computer user performing the software installation must be logged on with Administrator privileges. Computer requirements:

Operating System	Windows 7/10, 32-bit and 64-bit
	macOS Sierra[*]
Memory	2 GB minimum
Free Hard Disk Space	800 MB

The computer on which the utility software is to be installed on must have a USB port to access the software contained on the USB drive provided with the instrument.

NOTE: A legacy version of the utility software is available for Windows XP users.

The following procedure does not apply for monochromators or spectrographs that are to be used with the optional Oriel TracQ™ Basic software.

If a prior version of the utility software has been installed on the computer, it must be uninstalled prior to installation of the newest version of software. The uninstallation procedure is covered in the Appendix of the Quick Start Guide.

*Only compatible with the CS130B models.

2.2   IEEE-488 (GPIB) COMMUNICATION (Windows)

Before installing the utility software, it is required to have a National Instrument's IEEE-488 controller card or a GPIB/USB converter cable. In either case, associated drivers must be installed on the computer. It is important to configure the computer and establish communications before proceeding with application software. The GPIB board index and instrument address assigned should be noted for establishing communication when running the utility software.

It is recommended that National Instruments Measurement & Automation Explorer (NI Max) be installed prior to installation of this utility software, since it will aid in the configuration and testing of your GPIB communication interfaces (See: http://www.ni.com/tutorial/4594/en/ and https://www.ni.com/getting-started/set-up-hardware/instrument-control/gpib-usb).

2.3 RS232 COMMUNICATION (Win)

It is important to configure the computer and establish communications before proceeding with the installation and use of the utility software.   The COM PORT should be noted for establishing communication when running the utility software. It is recommended that National Instruments Measurement & Automation Explorer (NI Max) be installed prior to installation of this utility software, since it will aid in the configuration and testing of your RS232 communication interfaces.

(See: https://www.ni.com/getting-started/set-up-hardware/instrument-control/serial-connect).

2.4 USB COMMUNICATION (Win & MacOS)

A USB2 port is required in order to establish USB communication. The ORIEL_USB.SYS driver must be installed before the instrument can be controlled via a computer. It is recommended that National Instruments Measurement & Automation Explorer (NI Max) be installed prior to installation of this utility software, since it will aid in the configuration and testing of your USBTMC communication interfaces.

(See: https://knowledge.ni.com/KnowledgeArticleDetails?id=kA00Z0000019NsmSAE).

3   SOFTWARE INSTALLATION

3.1   SOFTWARE INSTALLATION (Windows)

The software installation screens that follow are applicable to a Windows 7, 32-bit operating system. The screens shown may differ slightly, depending on the operating system type and whether any versions of the National Instruments LabVIEW Runtime Engine had been installed previously. Do not connect the instrument to the computer until the software installation is complete and the computer has been restarted.

Insert the USB drive that came with the instrument and open it to view the contents. Select the appropriate folder that matches the target OS upon which the Mono Utility software is being installed (Fig. 1).
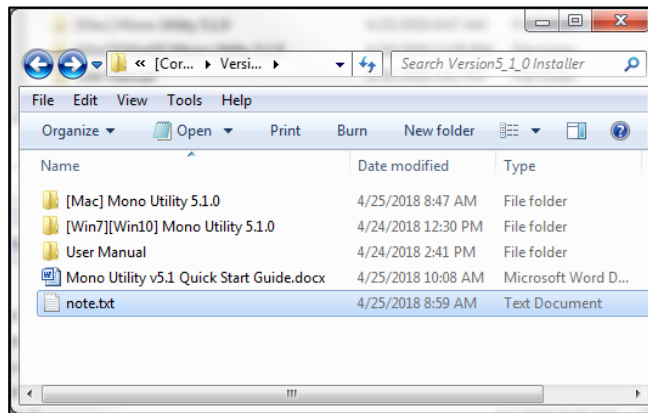

Figure 1: Select folder for Mono Utility installation.

For Windows, right-click on the setup.exe application and select Properties (Fig. 2).
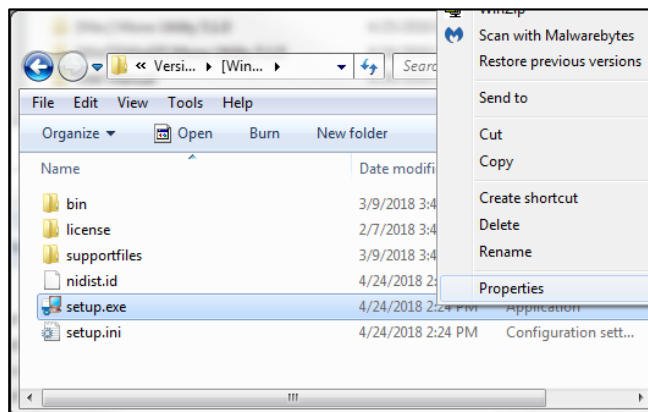

Figure 2: Right-click on, "setup.exe."

Click on the Compatibility tab. Check box next to, "Run this program as an administrator." Select "Apply" and "OK" (Fig. 3).
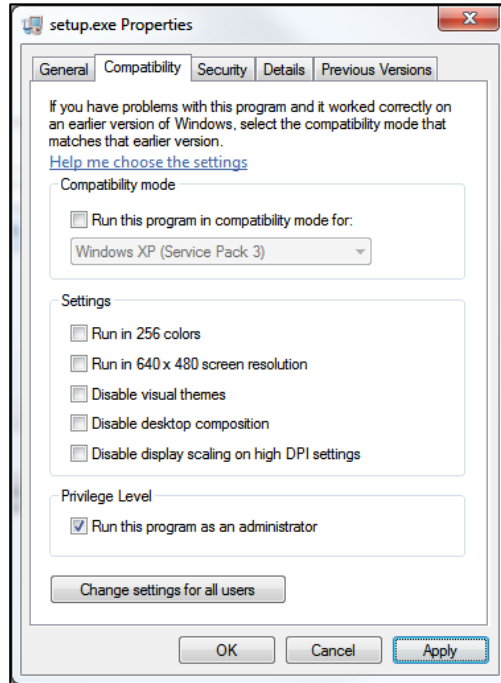

Figure 3: Click on the, "Compatibility" tab.

Double-click on the setup.exe application to begin the utility software installation (Fig. 4).
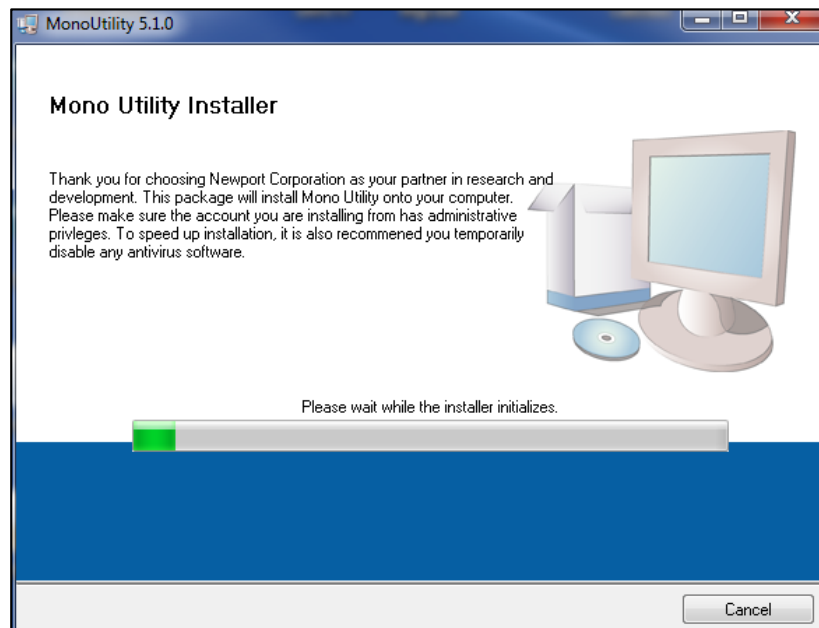.

Figure 4: Double-click on, "setup.exe" to install utility software.

Select the destination directories and click, "Next" (Fig. 5).
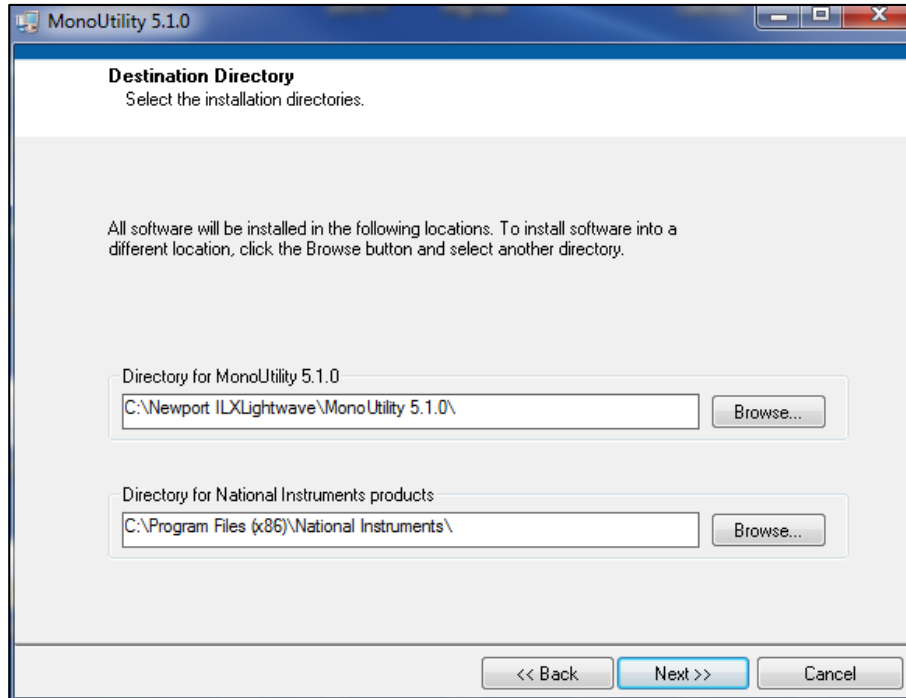

Figure 5: Select destination directories.

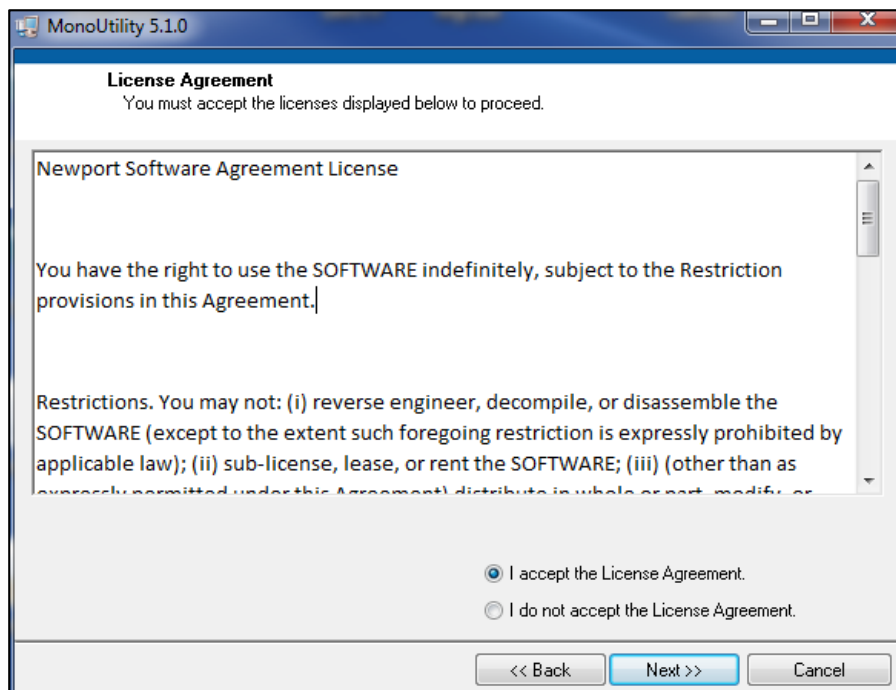Accept the Newport License Agreement and click, "Next" (Fig. 6).

Figure 6: Click, "Next" to accept the Newport License Agreement.

Accept the National Instruments License Agreement and click, "Next" (Fig. 7).
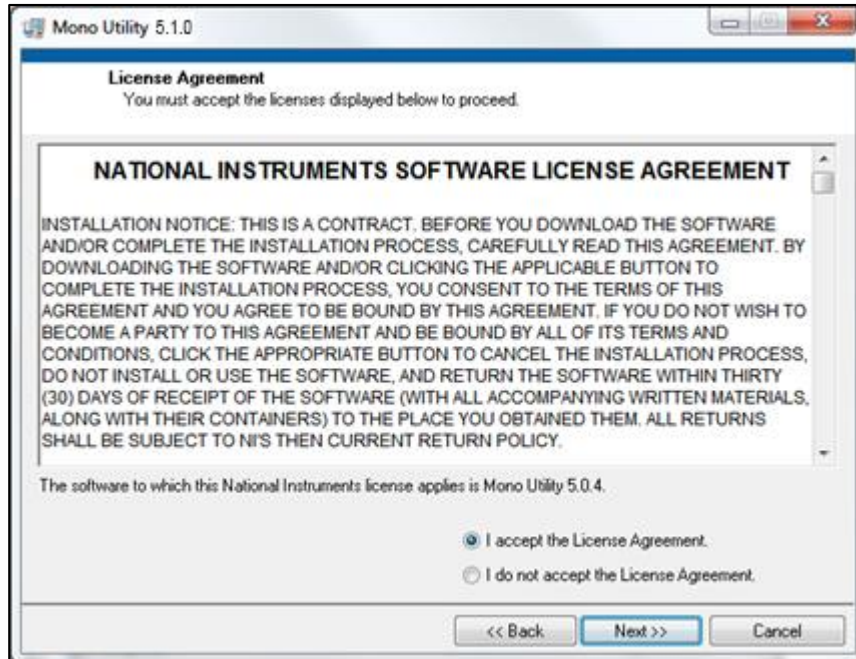

Figure 7: Click, "Next" to accept the National Instruments License Agreement.

The following screen indicates which software is to be installed. This screen's appearance may vary if another version of National Instruments software is already installed on the computer (Fig. 8).
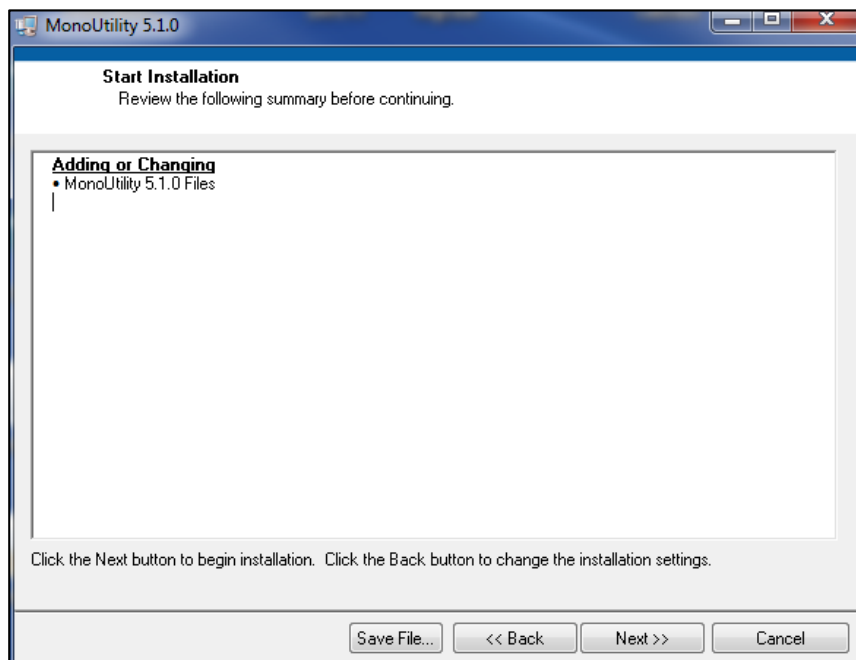

Figure 8: Software installation confirmation screen.

When the software installation is complete, click, "Next."

When prompted, select "Restart" to finish the software installation.

The installation software will have placed a shortcut (Fig. 9) onto the desktop, as shown below. The program may also be accessed through Start → Newport → Mono Utility 5.1.x.

Figure 9: MonoUtility shortcut icon.

3.2   SOFTWARE INSTALLATION (Mac)

Software installation of the Mono Utility for MacOS is accomplished by the use of a DMG file. The Dmg file extension has Mac OS X Disk Image file type, developed by Apple, which is associated with the "disk image files" category.

Associated with Mac OS X, the file is usually used by OS X software installers. It stores raw block data, which may be encrypted or compressed. Users can access the file via the Apple Disk Utility.

The DMG file format is typically used instead of the .IMG format, which has been previously used in Mac OS Classic. Even though DMG files aren't meant to be used in Windows, users can still open them with Windows Daemon Tools.

Prior to installation of the Mono Utility on the MacOS, it is strongly recommended that the LabVIEW RunTime Engine (2017) for MacOS first be downloaded and installed.

How to open a DMG file:

Double-click on the dmg file to open it. The file will open automatically if file associations have been correctly installed and there is a proper program on your computer; if not, file associations may be corrupted and your OS either cannot find the proper program, or you might not have one for opening the file.

Clicking on the Mono Utility 5… which is now exposed by opening the dmg file, will start the application.

4   ESTABLISHING COMMUNICATION

All instruments that communicate via USB interface must have the driver installation verified prior to using the Mono Utility software. The instrument must finish the startup routine prior to connecting the USB to the computer.

For the Cornerstone 130B and 260B, connect the instrument to the computer and allow it to finish its startup routine. Once the instrument is ready, use the NI MAX application to connect to and interrogate the instrument using the *IDN? Interrogatory command via the communication tools provided.

For all other legacy instruments supported by the Mono Utility, connect the instrument to the computer, turn it on, and allow it to finish its startup routine. Once the instrument is ready, ensure through the Windows Device Manager that communication has been successfully established. Below is a screenshot showing the USB driver correctly installed (Fig. 10).
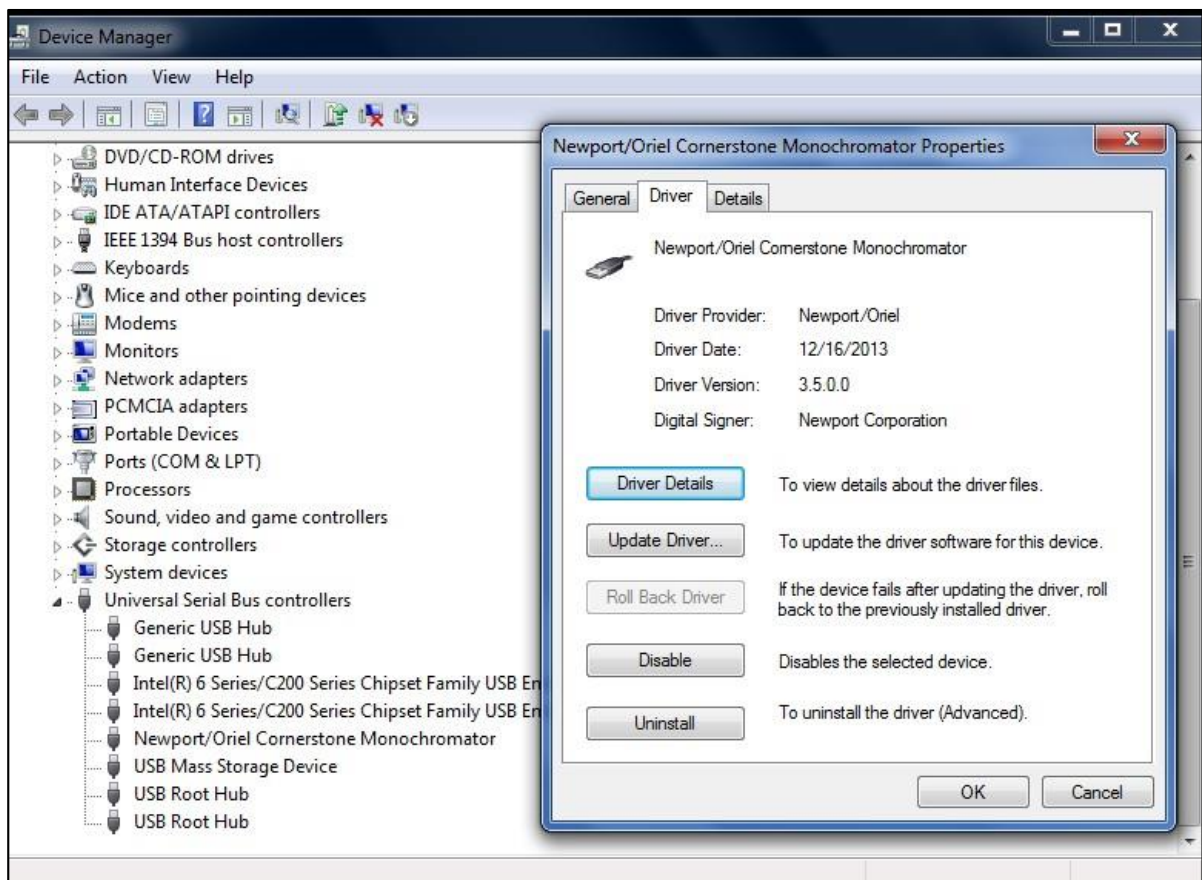

Figure 10: Screenshot of USB driver correctly installed.

Double-click the shortcut icon on the desktop to start the Mono Utility software. A window will appear allowing the software to be configured for the instrument being utilized.

NOTE: Always ensure the instrument has completed its startup routine before opening the software application. The startup routine is complete when the gratings, filters, port selection mirror, and motorized slits are in position and no further noises are made by the instrument.

The supported Communications interfaces are automatically scanned for any supported devices currently connected to the host computer (Fig. 11).
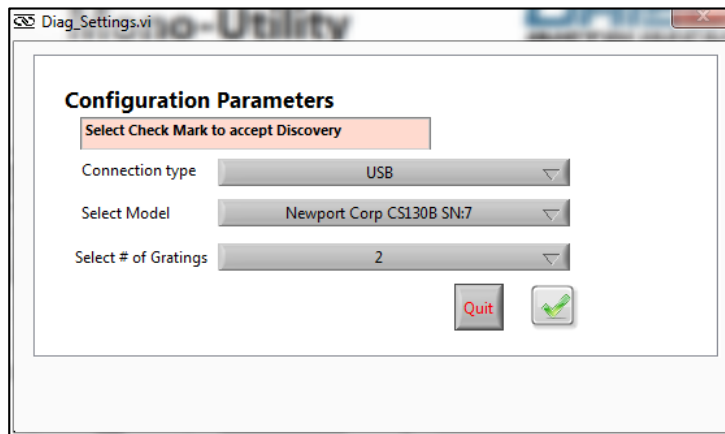

Figure 11: Configuration Parameters.

The user is presented with a list of discovered devices organized by connection type (USB, COM, and GPIB). The user can use the dropdown menu for the Connection Type and Model to review and/or select a device of interest.

The user is also presented with the number of gratings installed on the device which can be adjusted prior to finalization of the selection.

By selecting the check mark, the selection is finalized and the Utility is launched, presenting the user with the main application window, or the user has the option to quit the application if desired.

5   USING THE UTILITY SOFTWARE

5.1   FRONT PANEL PARAMETER SETTINGS

The main application window, shown below, provides easy access to most of the monochromator functions (Fig. 12).
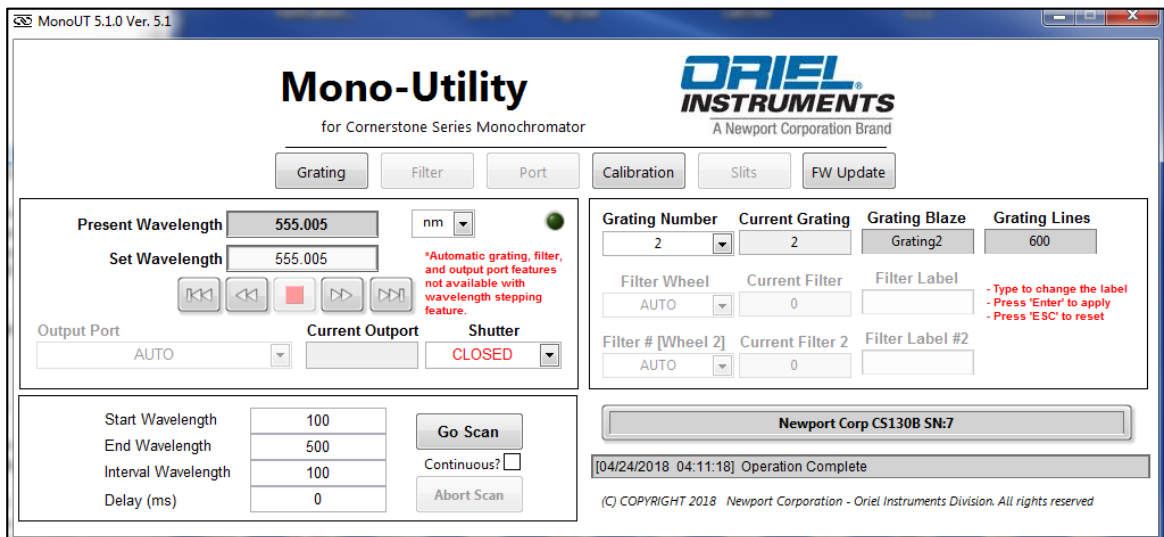

Figure 12: Main application window.

Present Wavelength/Set Wavelength: "Present Wavelength" indicates the wavelength position of the monochromator. "Set Wavelength" allows the user to change "Present Wavelength" to a different wavelength value. The "wavelength units" indicator on the right allows the user to set different wavelength units. Choices for units are nanometers (nm), micrometers (μm), or wavenumber (cm^{-1}).

Step Wavelength/Stop: The icons under the "Set Wavelength" field may be used to step the monochromator wavelength forwards or backwards.   Choices are single step or continuous steps. Continuous steps continue to change the wavelength until the Stop icon is clicked.

Output Port: For instruments with dual output ports, this selection allows users to choose either the "Axial" [C] or "Lateral" [B] port. The "Current Output" field displays the selected port.

Shutter: Indicates and allows changing the shutter status. Choices are open or closed.

Go/Abort Scan: Once the Start Wavelength, End Wavelength, Interval Wavelength (step size) and Delay fields are filled in with the desired scan parameters, the Go Scan icon allows the scan to begin. Click on the Abort Scan icon to stop the scan at any time.

Grating Number: shows the currently selected grating position, in addition to its blaze wavelength and groove density in lines per millimeter. Using the pull-down menu, the active grating may be changed or the auto grating selection feature may be enabled.

Filter #: shows the currently selected filter, and the filter wheel number. Note that the Cornerstone and the MS260i models only support a single filter wheel. Using the pull-down menu, the active filter may be changed or the auto filter selection feature may be enabled.

Filter Label: Allows up to eight characters to be entered for labeling the active filter. If the automatic filter selection is enabled, this feature is not enabled. All characters (upper or lowercase letters, numbers, and symbols) may be entered. Labels greater than eight characters are truncated.

(NOTE: FW Update: This option is only supported for the CS130B class of monochromators. It provides an in-field mechanism to perform firmware updates as required.)

5.2   GRATING, FILTER, OUTPUT PORT SETTINGS

The following control menus allow users to set up tables that determine the filter (Fig. 13), grating (Fig. 14), and output port (Fig. 15) in use over specific wavelength ranges. The uppermost wavelength is entered as "Inf", which is an abbreviation for Infinity. To activate these settings, the selected grating, filter, and/or port need to be set to "Auto" in the main application window.

The settings may be saved and re-loaded as needed. Type the desired file name and file extension as appropriate for the parameter table. Use file extension .grt (gratings), .flt (filters), or .prt (port).
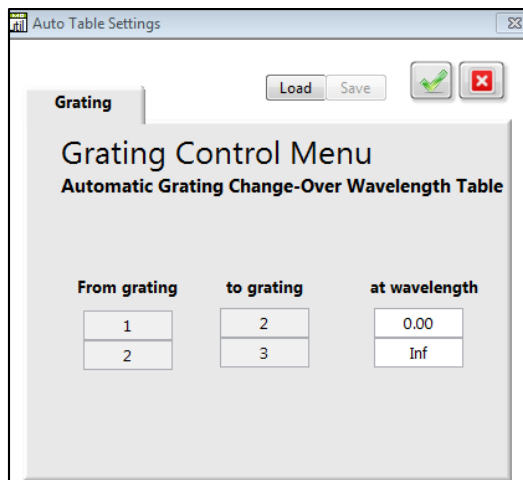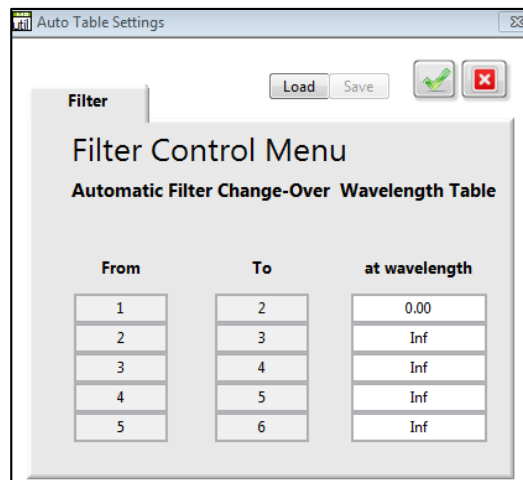
Figure 14: Grating Control Menu.
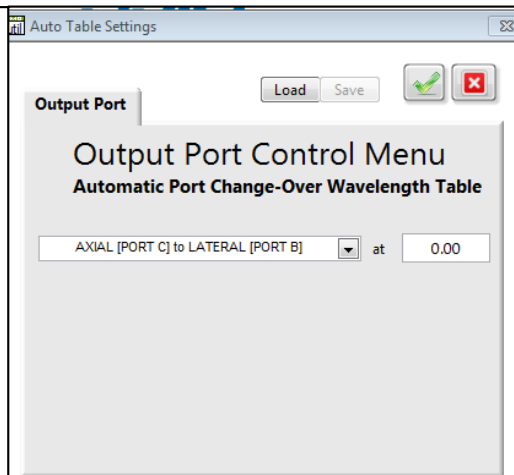
Figure 13: Filter Control Menu.

Figure 15: Output Port Control Menu.

5.3   MOTORIZED SLIT SETTINGS

The Utility Menu also allows users to control or change the motorized slits width in "Manual" mode (Fig. 16) by setting the width (in micrometers) for each slit at the input and output ports.

In "Automatic Bandpass" mode (Fig. 17), the user may allow the software to set all input and output port slit widths. The user enters the desired bandpass, and the software adjusts the slit widths to maintain that bandpass at all wavelengths. The desired bandpass is entered in the same units as was selected in the main application window.
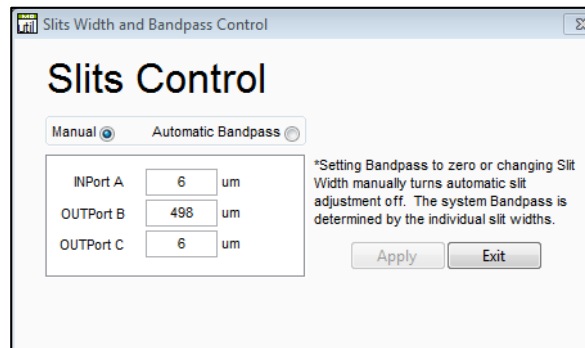
Figure 16: "Manual" mode.
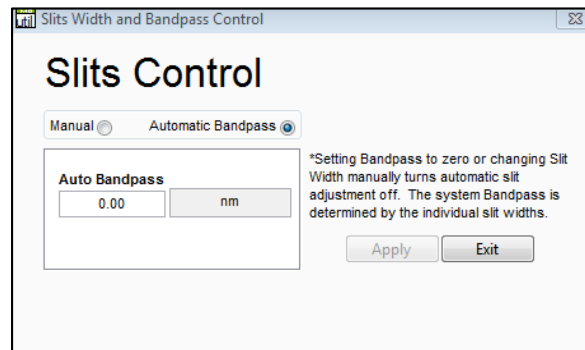
Figure 17: "Automatic Bandpass" mode.

5.4   CALIBRATION PARAMETERS SETTINGS

The Parameters icon in the main application window allows the calibration parameters (Fig. 18) to be displayed and changed, if desired, for the active grating. Additionally, the grating line density and blaze wavelength may also be viewed or updated.

Use caution when changing grating factors or offsets. Refer to the instrument's user manual for more information.
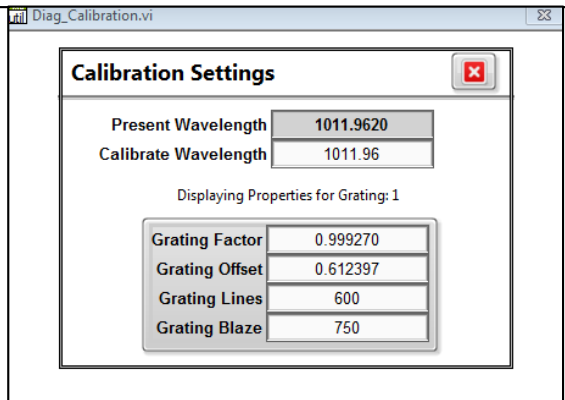
Figure 18: Parameter Settings.

6 APPENDIX: UNINSTALLING PREVIOUS SOFTWARE VERSIONS (Windows)

1. Connect the monochromator or spectrograph to the computer and power it up.

2. In the Windows Start menu, click on "Control Panel," and then select, "Program and Features" (Fig. 19). This shows a list of all software currently installed on the system, including the software version numbers. Select and uninstall, "Mono Utility version x.x.x." Uninstalling MonoUtility will take approximately 5 minutes.
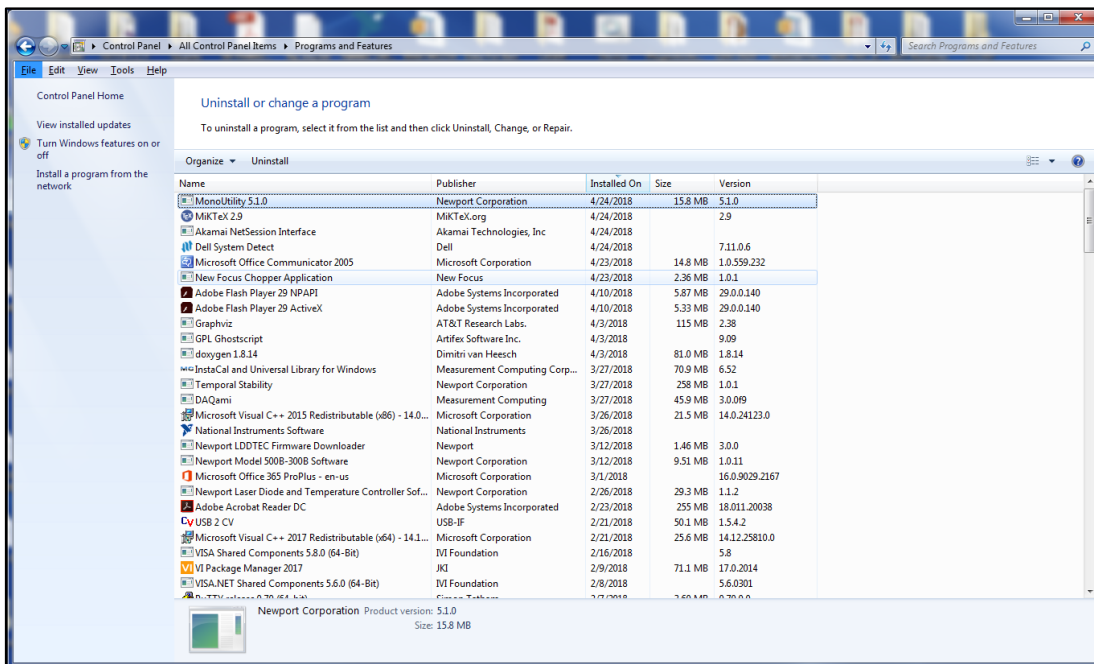
Figure 19: Programs and Features.

3. If the instrument is connected by a USB cable on the computer, then go to the Windows Device Manager. Expand the Universal Serial Bus Controllers (Fig. 20). Right-click on "Newport/Oriel Cornerstone Monochromator" to display the option menu dialog box. Select, "Uninstall". A confirmation dialog box will appear next. Check the box to "Delete the driver software for this device" and then click, "OK." Refresh the Device Manager to ensure that the "Newport/Oriel Cornerstone Monochromator" driver was removed.
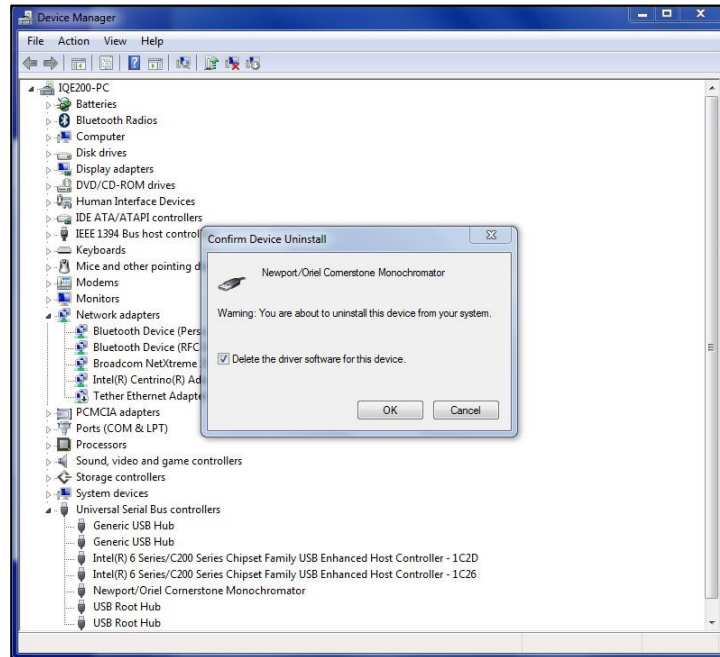
Figure 20: Universal Serial Bus Controllers in Device Manager.

4. In Windows Explorer, navigate to the following directory: C:\Windows\System32\drivers (Fig. 21). Delete the file named "oriel_usb.sys."
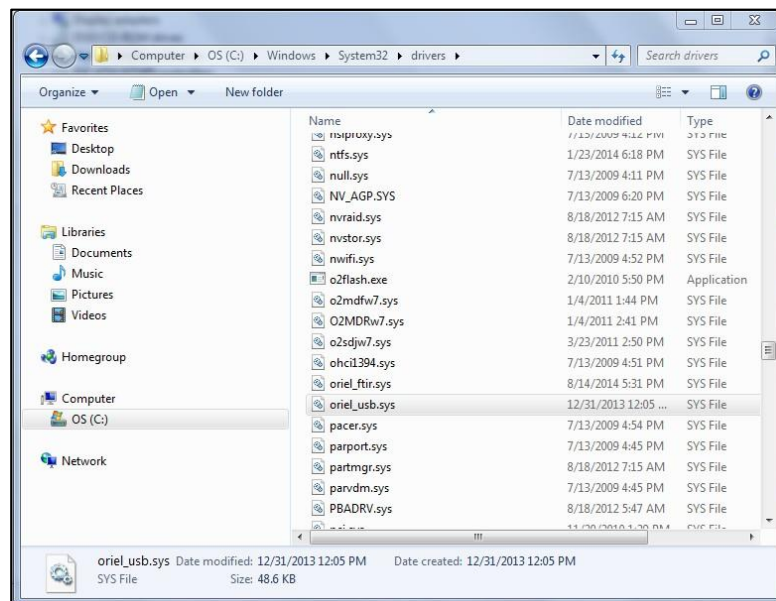
Figure 21: C:\Windows\System32\drivers.

5. Navigate to C:\Windows\inf directory and perform the following steps:

- Locate and delete the "Cornerstone drivers" directory (if this directory cannot be found, it was removed automatically by Windows in step 2).
- Search for and delete both "x64" and "x86" directories (if these directories cannot be found, they were removed automatically by Windows).

6. If Mono Utility 4.7 was installed, delete files "oriel_cs.cat" and "oriel_usb.inf". If these files cannot be found, they were removed automatically by Windows.

7. Disconnect the monochromator or spectrograph from the computer and proceed with installation of the latest utility software as noted in this Guide.

7   WARRANTY AND SERVICE

7.1   CONTACTING ORIEL INSTRUMENTS

Oriel Instruments belongs to Newport Corporation's family of brands. Thanks to a steadfast commitment to quality, innovation, hard work and customer care, Newport is trusted the world over as the complete source for all photonics and laser technology and equipment.

Founded in 1969, Newport-Oriel is a pioneering single-source solutions provider of laser and photonics components to the leaders in scientific research, life and health sciences, photovoltaics, microelectronics, industrial manufacturing and homeland security markets.

Newport Corporation proudly serves customers across Canada, Europe, Asia and the United States through numerous international subsidiaries and sales offices worldwide. Every year, the Newport Resource catalog is hailed as the premier sourcebook for those in need of advanced technology products and services. It is available by mail request or through Newport's website. The website is where one will find product updates, interactive demonstrations, specification charts and more.

To obtain information regarding sales, technical support or factory service, United States and Canadian customers should contact Newport directly.

Newport Corporation
1791 Deere Avenue
Irvine, CA 92606 USA

Telephone: 800-222-6440 (toll-free in United States)
               949-863-3144

Fax: 949-253-1680

Sales: oriel.sales@newport.com
Technical assistance: oriel.tech@newport.com
Repair Service: rma.service@newport.com

Customers outside of the United States must contact their regional representative for all sales, technical support and service inquiries. A list of worldwide representatives can be found on Newport's website: https://www.newport.com/contact/contactslocations

7.2 REQUEST FOR ASSISTANCE / SERVICE

Please have the following information available when requesting assistance or service:

- Contact information for the owner of the product.
- Instrument model number (located on the product label).
- Product serial number and date of manufacture (located on the product label). Description of the problem.

To help Oriel's Technical Support Representatives diagnose the problem, please note the following:

- Is the system used for manufacturing or research and development? What was the state of the system right before the problem?
- Had this problem occurred before? If so, when and how frequently?
- Can the system continue to operate with this problem, or is it non-operational?
- Were there any differences in the application or environment before the problem occurred?

7.3 LOANER / DEMO MATERIAL

Persons receiving goods for demonstrations or temporary use or in any manner in which title is not transferred from Newport shall assume full responsibility for any and all damage while in their care, custody and control. If damage occurs, unrelated to the proper and warranted use and performance of the goods, recipient of the goods accepts full responsibility for restoring the goods to their original condition upon delivery, and for assuming all costs and charges.