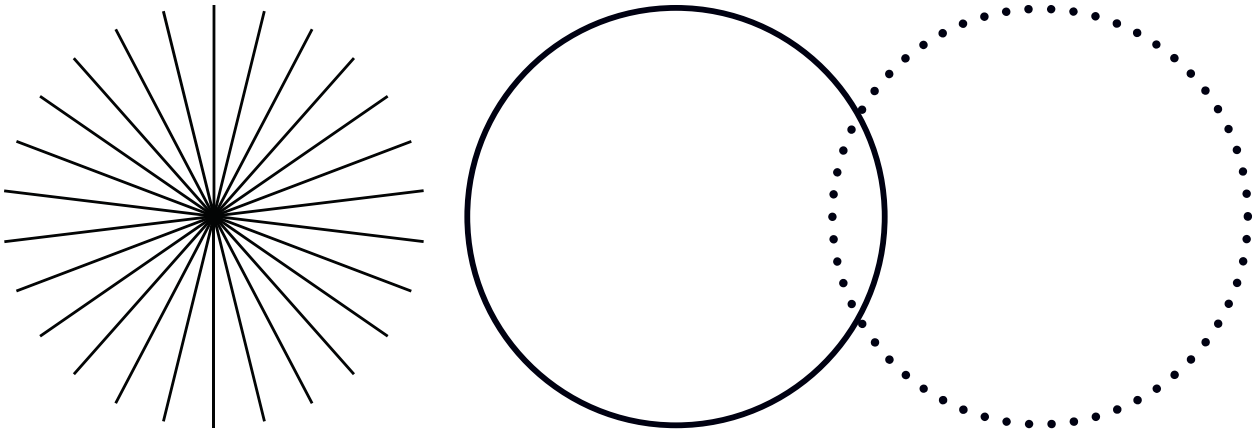
Coherent Connection™

Installation and User Guide



INNOVATIONS THAT RESONATE

COHERENT

Installation and Quick Start Guide
Coherent Connection

COHERENT

Coherent Corp.
27650 SW 95th Ave.
Wilsonville, OR 97070

Technical Support

In the U.S.:

Should you experience any difficulties with your software or need any technical information, please go to our web site www.Coherent.com. Should you need further assistance, please contact Coherent Technical Support by e-mail customer.support@coherent.com or telephone, +1-734-456-3100. Please be prepared to supply a description of the problem, and any attempted corrective steps to the Product Support Engineer responding to your request.

Telephone coverage is available Monday through Friday (except U.S. holidays and company shutdowns). Inquiries received outside of normal office hours will be captured by our automatic answering system and will be quickly returned the next business day.

Outside the U.S.:

If you are located outside the U.S., please visit www.Coherent.com for technical assistance, or contact your local Service Representative. Service Representative telephone numbers and addresses can be found on the Coherent web site.

Coherent provides telephone and web-based technical assistance as a service to its customers and assumes no liability for any injury or damage that can occur at the same time with such services. Under no conditions do these support services affect the terms of any warranty agreement between Coherent and the buyer. Operation of any Coherent laser with any of its interlocks defeated is always at the operator's own risk.

Table of Contents

List of Figures

1 Introduction

Anyone setting up or operating the software with a laser must first read and understand all safety information prior to beginning any tasks.

WARNING!
The use of controls, adjustments, or performance of procedures—except those specified in this manual—can cause dangerous radiation exposure.

1.1 Signal Words and Symbols

This section provides information about signal words and safety symbols that you need to know before you begin to use the Coherent Connection laser system.

This documentation may contain sections in which particular hazards are defined or special attention is drawn to particular conditions. These sections are indicated with signal words in accordance with ANSI Z-535.6 and safety symbols (pictorial hazard alerts) in accordance with ANSI Z-535.3 and ISO 7010.

NOTICE
This user information reported in this manual is in compliance with the following standards for Light-Emitting Products IEC 60825-1 / EN 60825-1 *"Safety of laser products – Part 1: Equipment classification and requirements"* 21 CFR Title 21 Chapter 1, Subchapter J, Part 1040 *"Performance standards for light-emitting products"*.

1.1.1 Signal Words

Four signal words are used in this documentation: **DANGER**, **WARNING**, **CAUTION** and **NOTICE**.These signal words designate the degree or level of hazard when there is the risk of injury.

Messages relating to hazards that could result in both personal injury and property damage are considered safety messages and not property damage messages.

DANGER!
Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING!
Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION!
Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

The signal word "***NOTICE***" is used when there is the risk of property damage:

NOTICE
Indicates information considered important, but not hazard- related.

1.1.2 Symbols

The signal words **DANGER**, **WARNING**, and **CAUTION** are always emphasized with a safety symbol that shows a special hazard, regardless of the hazard level.

This symbol is intended to alert the operator to the presence of important operating and maintenance instructions.

This symbol is intended to alert the operator to the danger of exposure to hazardous visible and invisible laser radiation.

This symbol is intended to alert the operator to the presence of dangerous voltages within the product enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

1.2 Preface

This guide contains user information for the Coherent Connection Software for use in operation of laser products.

NOTICE

Read this manual carefully before operating the laser for the first time. Failure to follow the instructions and safety precautions in this manual can result in serious 'Safety and Compliance' (p. 49) or death. Special attention must be given to the material in 'Safety and Compliance' (p. 49), that describes the safety features built into the laser. Keep this manual with the product and in a safe location for future reference.

DANGER!

Use of controls or adjustments or performance of procedures other than those specified herein can result in hazardous radiation exposure.

In addition to these safety warnings, also read the laser safety information for the laser device being used.

1.3 Safety and Compliance

For important information on safety and compliance with various government requirements for safety, environmental regulations, and control law refer to 'Safety and Compliance' (p. 49).

2 Description and Specifications

This section describes the Coherent Connection software and related drivers.

Optionally, a terminal program can be set up and used to communicate and control parameters; see 'Terminal Program' (p. 45).

For detailed information about terminal commands and queries that can also be used with lasers, refer to the manual for the respective laser being used.

2.1 Software Overview

The Coherent Connection software is an easy-to-use, flexible, and stable interface to set up and control one or multiple lasers. With this software, users can control laser power or other parameters directly through a USB connection from the laser to a personal computer.

The software allows direct interface with the laser to monitor the performance of the laser system. Depending on the laser configuration, features include such items as setting power, checking laser hours, and reporting the status of the laser. See the example in Figure 2-1.

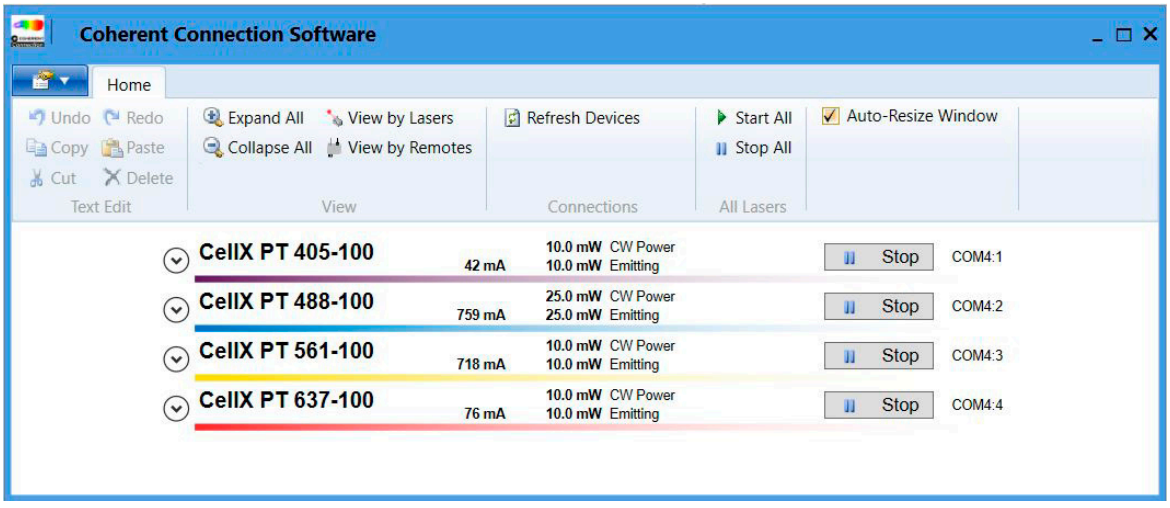


Figure 2-1. Home Screen Top Level View - Multiple Lasers in Laser System Emitting

2.1.1 Compatibility

The most current Coherent Connection software also supports the following laser products: OBIS LX, OBIS LS, OBIS LG, CellX, CellX PT, OBIS XT, Sapphire XT, Sapphire, BioRay and StingRay.

2.1.2 System Requirements

It is recommended that you use the most current and robust systems possible. Support is provided on the following operating systems:

- Windows 10 (32- and 64-bit)

In addition, the computer must meet the following minimum requirements:

- Microsoft .NET framework 4.8 or higher is installed
- CPU: 2.5 GHz or faster processor
- RAM: Minimum of 2 GB of RAM
- Available hard disk space: 1 GB
- USB 2.0 high-speed port
- Display: 1280 x 1024 screen resolution

2.2 Coherent Connection Help

For access to this guide from within the *Coherent Connection* software, click **Help**, in the upper left drop-down menu, as shown in Figure 2-2.

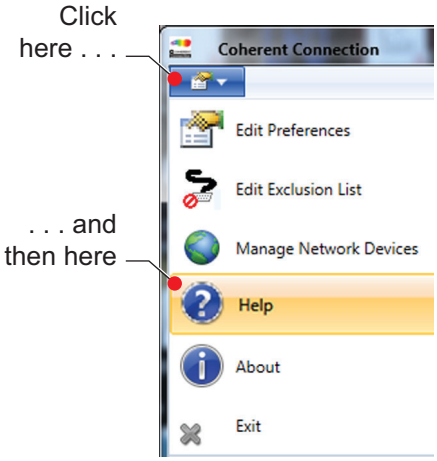


Figure 2-2. Coherent Connection Help

3 Install Coherent Connection

This section describes how to set up and install the Coherent Connection software and related drivers.

3.1 Install Software

WARNING!
Install the software before any laser or laser system is connected to the PC.

This section describes how to install the Coherent Connection software.

NOTICE
Follow the set-up procedure in the order in which it is shown. Failure to do so can result in errors.

The correct order for system set-up is as follows:

- Install the software, but wait to start the software.
- AFTER the software is installed but BEFORE the installed program is started, connect the laser to the host computer through a USB connection.
- Start the Coherent Connection software on the host computer.

1. ***T***o install the software: Download the Coherent Connection software from the Coherent website, and unzip the files on the host computer.
2. Double-click the file named like the following, or similar, to start the installation process. The last two digits show the number for the current software:

   `Coherent_Connection_Setup_vX.0.X.X`

3. From the drop-down menu shown in Figure 3-1, select the language in which to show the software and click OK. Available languages include English, Italian, French, German, Hebrew, and Japanese. Note that the language selection applies only to software set-up instructions on-screen and not the Coherent Connection software itself (English only).

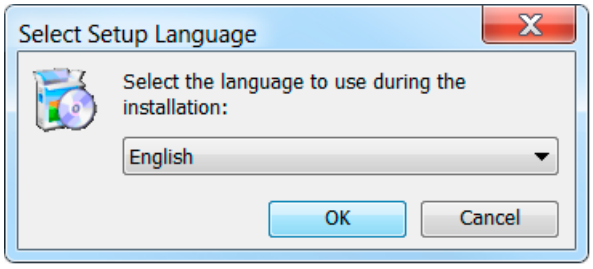


Figure 3-1. Select Language for Software

If you had installed the Coherent Connection software before, the message shown in Figure 3-2 is shown. Click Yes to continue.

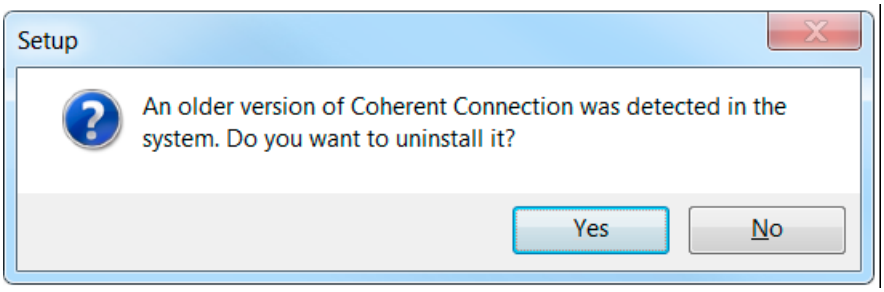


Figure 3-2. Uninstall Old Version of Software

4. Read the instructions, then click Next. The License Agreement shown in Figure 3-3 is shown.
5. Scroll down to read the agreement. Note that the Next button is shown in gray until you click the radio button to **Accept** the terms and conditions. When you do that, the button becomes available; click Next.
6. The window shown in Figure 3-4 is show. Accept the selection, or find and select to select the directory on the computer where you want to install the software, and click Next.

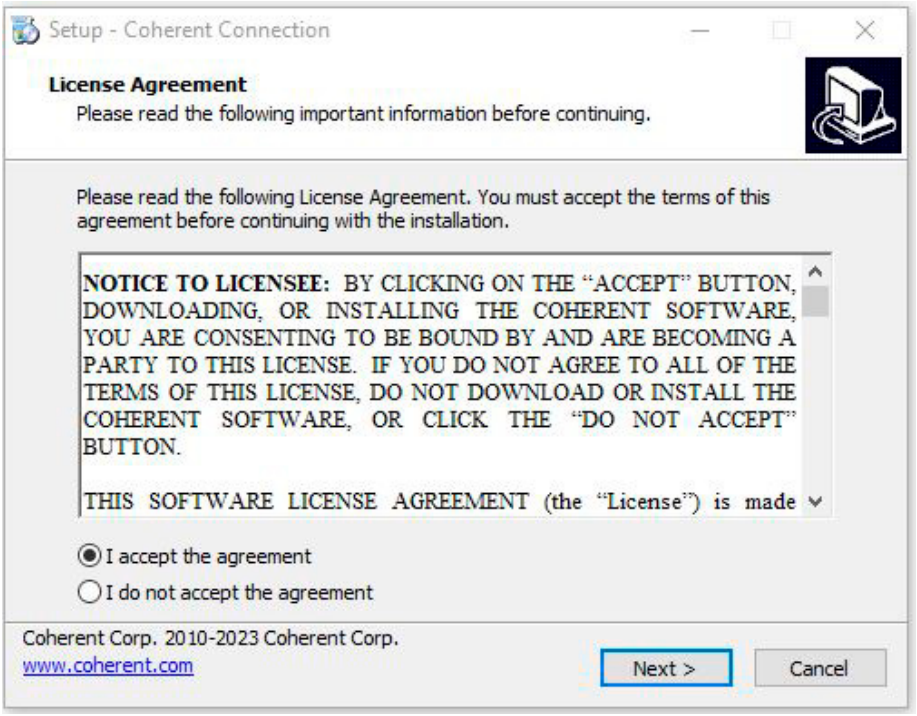


Figure 3-3. Coherent Connection License Agreement

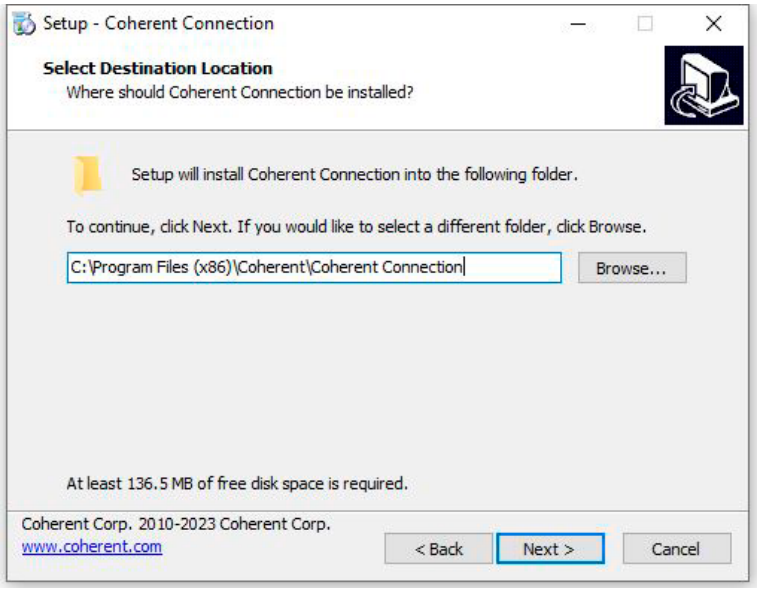


Figure 3-4. Select Directory to Install Software

7. You can create an icon for the software on your desktop or for a Quick Launch (or both). As shown in Figure 3-5, click the applicable check box, and then click Next.

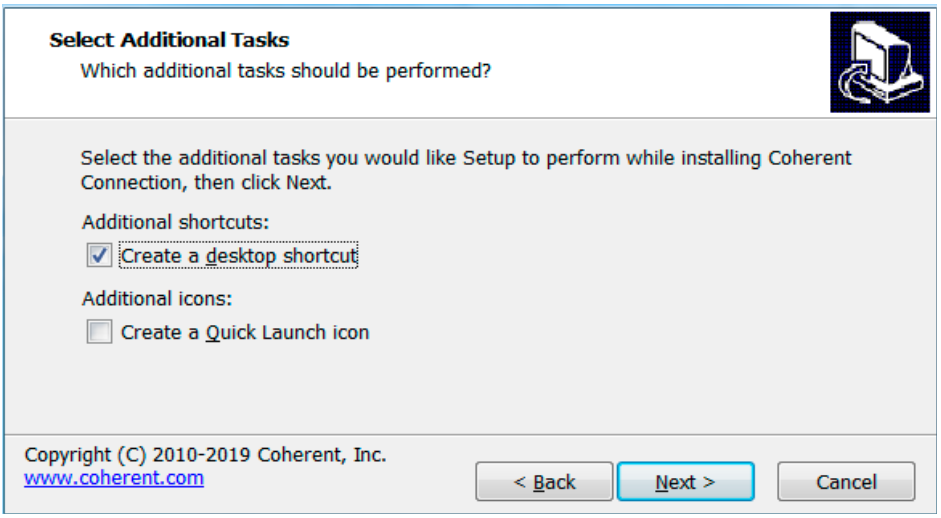


Figure 3-5. Create Desktop or Quick Launch Icon

8. The set-up utility is now prepared to start installation of Coherent Connection software on the computer. Review the location and icons, as shown in the example in Figure 3-6, and then click Install.

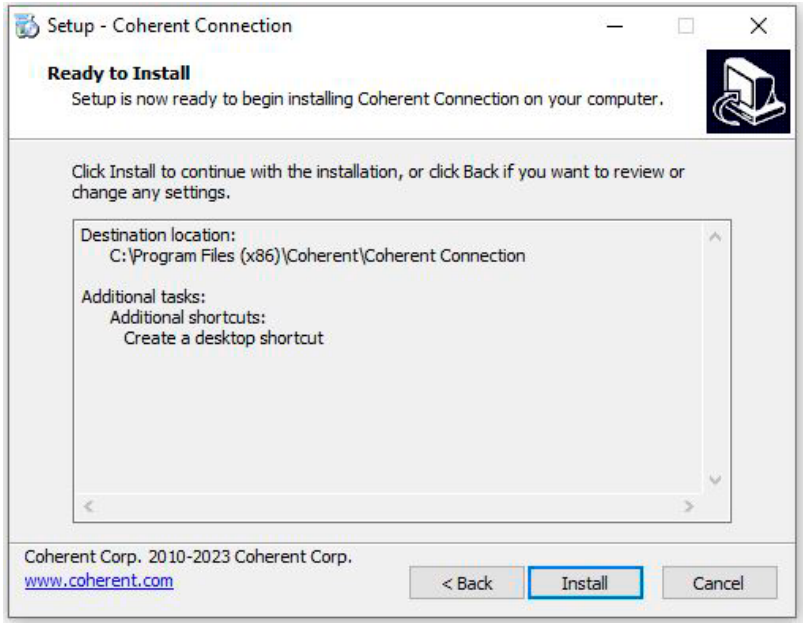


Figure 3-6. Review Set-Up before Installation Starts

A progress bar is shown, as shown in Figure 3-7.

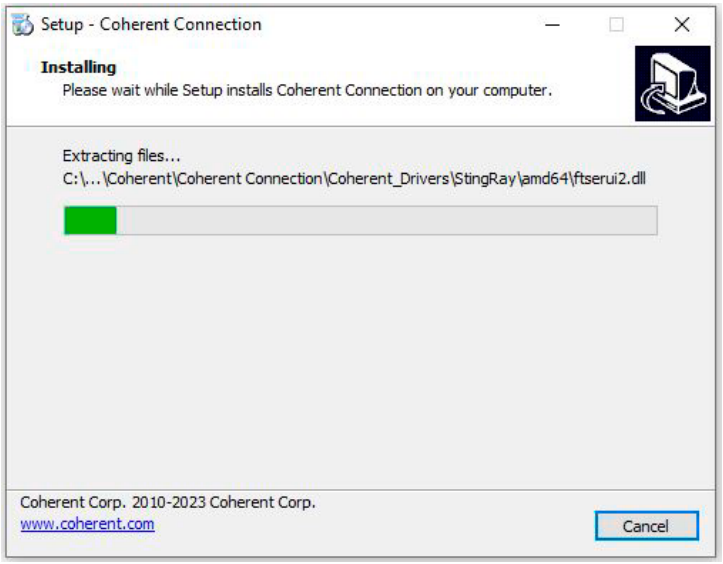


Figure 3-7. Progress of Installation

9. After all files are extracted, click Finish. The screen shown in Figure 3-8 closes and the software can be started.

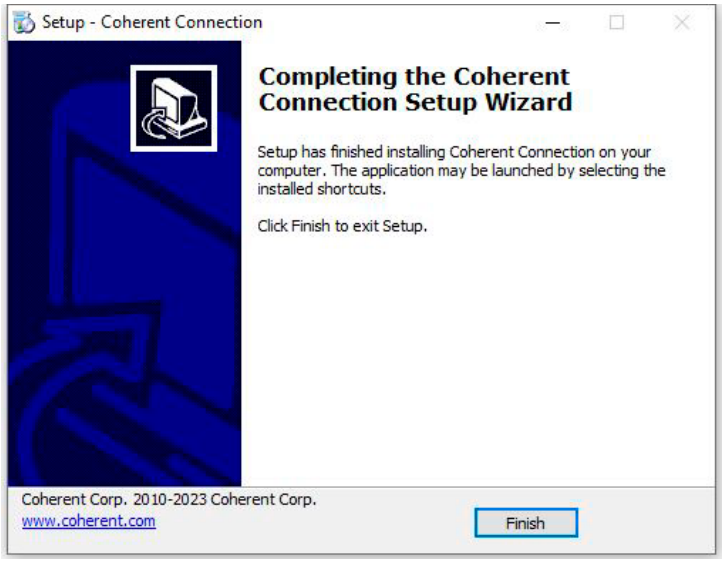


Figure 3-8. Finish the Software Installation

The software and USB driver are now installed. If you selected a short-cut (icon) to be set up during installation, that is now shown on the desktop of your computer (shown in Figure 3-9) and/or in the Quick Launch menu:

Figure 3-9. Desktop Icon for Coherent Connection 4 Software

10. Before work is continued with the use of a laser and it is not yet installed, do the following:
    a.) Shut down the workstation.
    b.) Install the laser to the PC or workstation. Refer to the respective operator's manual or installation guide for the laser that is being set up.
    c.) Restart the workstation.

NOTICE
After installation, do NOT start the software until the laser or remote is connected.

3.2 Start the Software and Verify Connection

This section shows how to make sure that the laser is installed correctly and is visible in the software. It shows troubleshooting steps in the event that the laser is not immediately shown in the software.

1. Make sure that the laser is installed to the workstation.
2. Start the Coherent Connection Software
3. Make sure that the laser is shown on the Home screen in the software. Refer to Figure 3-10.

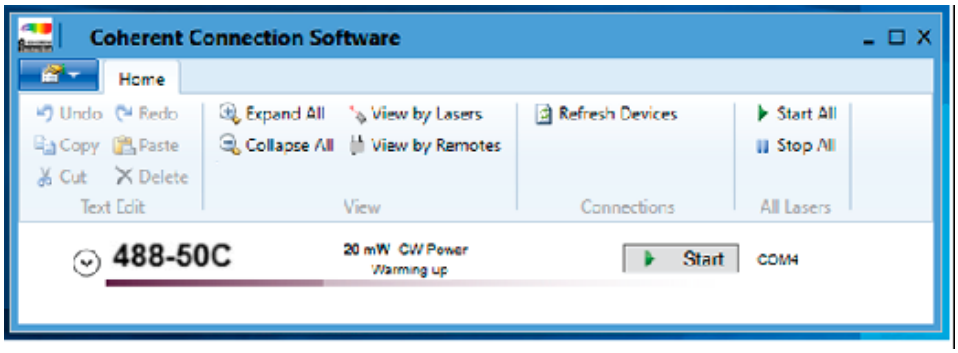


Figure 3-10. Primary Home Window - Connected Laser Shown

4. If no laser displays in the Home tab window, as shown in the example in Figure 3-11, do the following:

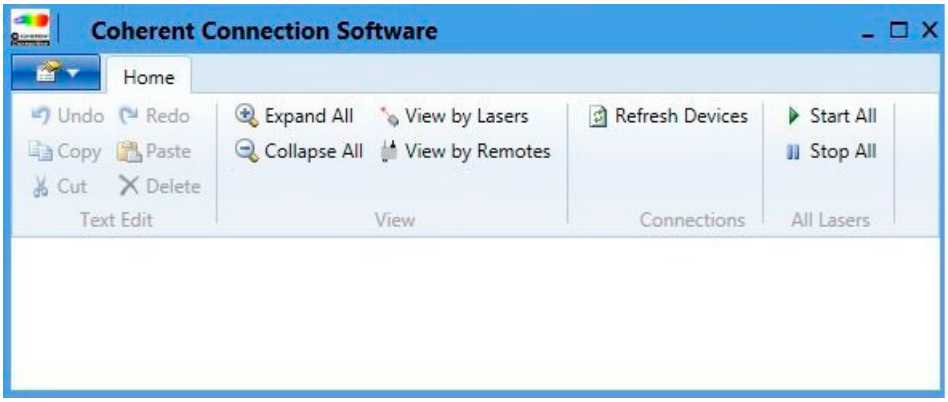


Figure 3-11. Primary Home Window - No Connected Laser Shown

a.) If a remote controller and SDR cable are connected to a laser head or laser system, make sure that the USB and power cord cables are connected to the remote.

b.) If just a laser head is connected, such as an OBIS laser, make sure that the power supply and USB cables are connected directly to the laser head.

c.) If a remote is being used, make sure that 12V supply is connected to the remote and the power switch in front of the remote is set to ON.

d.) If no remote is used, make sure that 12V supply is connected to the laser head.

NOTICE

The status LED on the laser should show a light when the laser is connected correctly.

e.) Close the Coherent Connection software.

f.) With the USB and power cables connected to the laser, open the Windows device manager.

g.) Make sure that it shows the laser connected to the COM port and that there are no errors. Refer to the example in Figure 3-12.

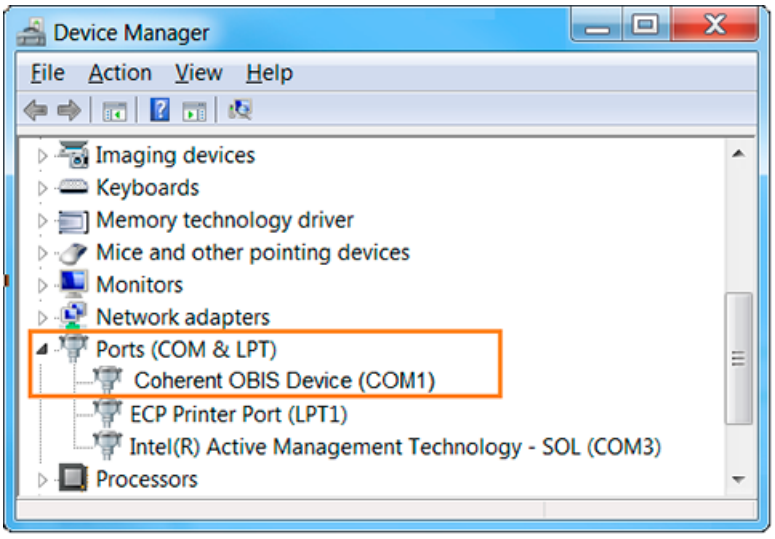


Figure 3-12. Device Manager Ports

h.) If a laser displays in the list connected to port, start the Coherent Connection software again.

5. If the laser is still not visible in the software, do the following:

a.) Click **Refresh Devices** in the top menu on the Home tab in the Coherent Connection software.

b.) If the laser is still not visible, disconnect the power cord and then reconnect it.

c.) Make sure that the correct operating system (Windows 10 or higher) and Microsoft .NET framework (4.8 or higher) are installed.

4 Understand the User Interface

This chapter gives a an overview of the Coherent Connection graphical user interface and functions.

4.1 Main Menu Interface

This section shows the main menu information and controls including top menu details and the system menu.

4.2 Main Home Tab and Menu

When Coherent Connection is started, and there is no laser connected to the host computer—or if the laser is not set to on—an empty primary Home tab shown, as shown in Figure 4-1.

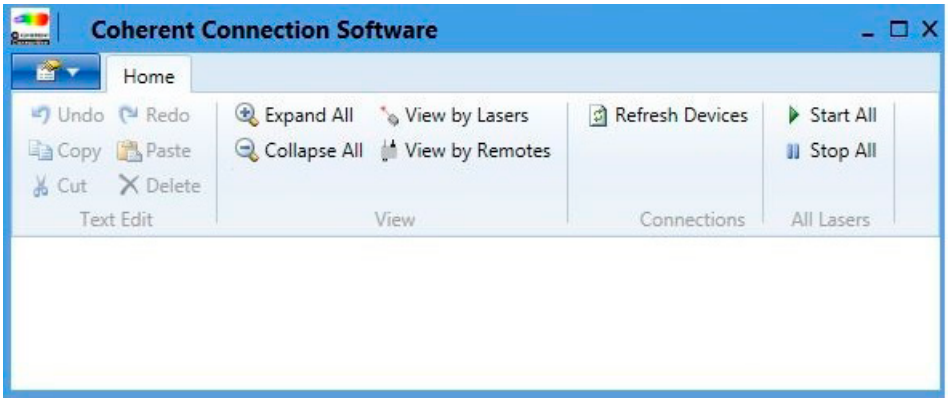


Figure 4-1. Coherent Connection Software – Main Home Window (Empty)

Figure 4-2 shows the toolbar controls available in the Coherent Connection software. It shows general information and controls to start and stop connected devices.

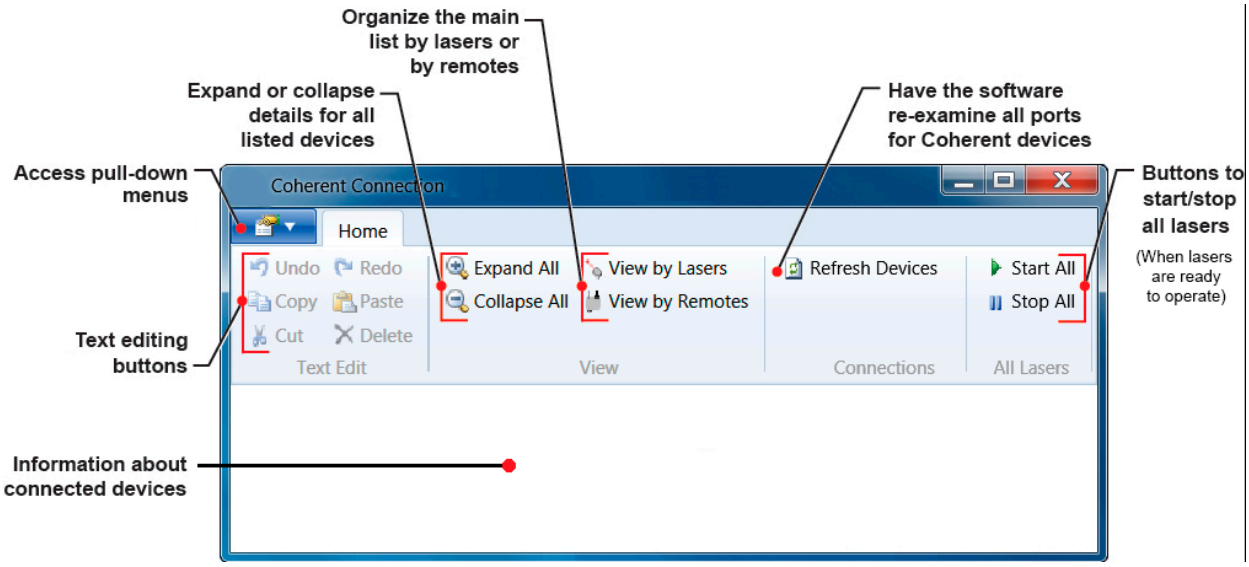


Figure 4-2. Controls in Main Home Tab

The function of each area in the toolbar is shown in Table 4-1:

Table 4-1. Home Toolbar Functions

Section	Command	Description
Text Edit	• Undo/Redo • Copy/Paste • Cut/Delete	Standard text editing commands used in any text box in the software.
View	• Expand All/ • Collapse All	Expands or collapses detailed information about each individual laser installed in the Coherent Connection laser system.
	• View by Lasers • View by Remotes	Organizes the listed in the Main window by individual lasers or by remotes
Connections	Refresh Devices	Checks all ports for Coherent devices.
All Lasers	• Start All • Stop All	Starts or stops running all lasers at one time.

4.3 View by Lasers and Remotes

Click the View by Lasers button in the top menu is to display a default view of multiple individual lasers. An view of multiple lasers attached and ready to start is shown in Figure 4-3.

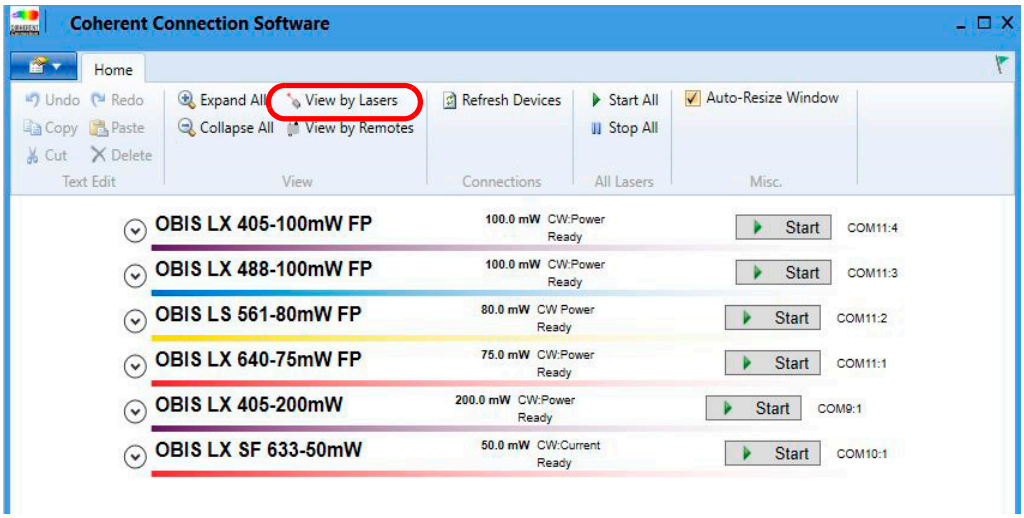


Figure 4-3. View by Lasers - Ready

Figure 4-4 shows a similar view, when some lasers are set to ON, and some lasers are not emitting.

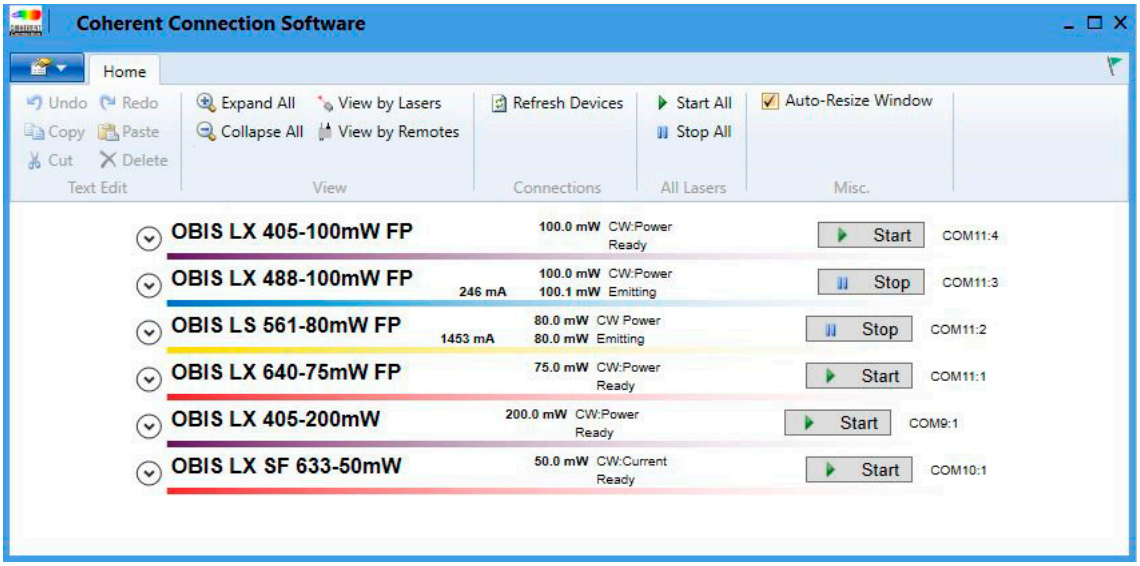


Figure 4-4. View by Lasers - Ready and Emitting

Click the View by Remotes button to show a collapsed default view when different types of remotes are attached. Refer to Figure 4-5.

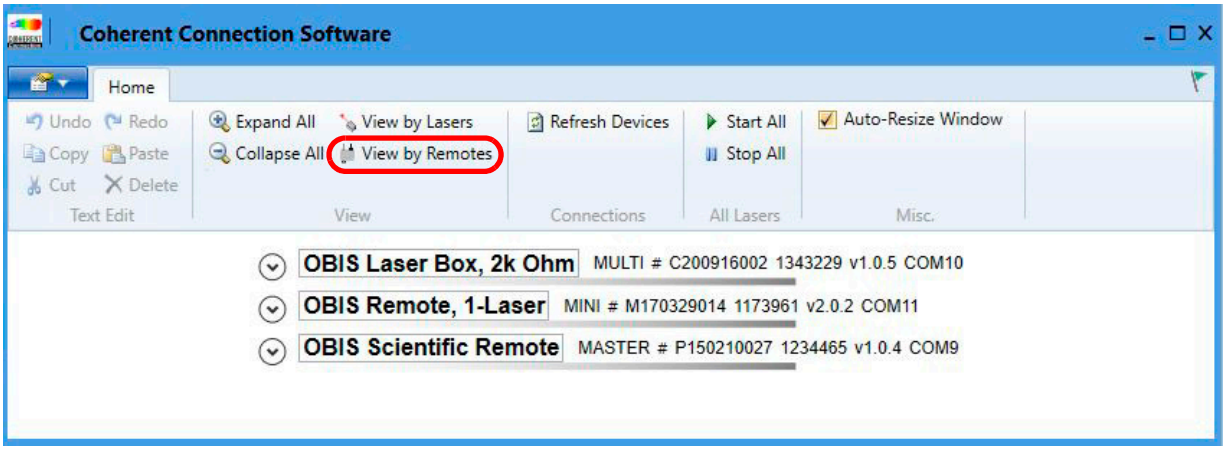


Figure 4-5. View by Remotes - Collapsed View

When the down arrows are clicked next to the record for each remote device, the view expands to show the information for individual lasers attached to each device. Refer to Figure 4-6.

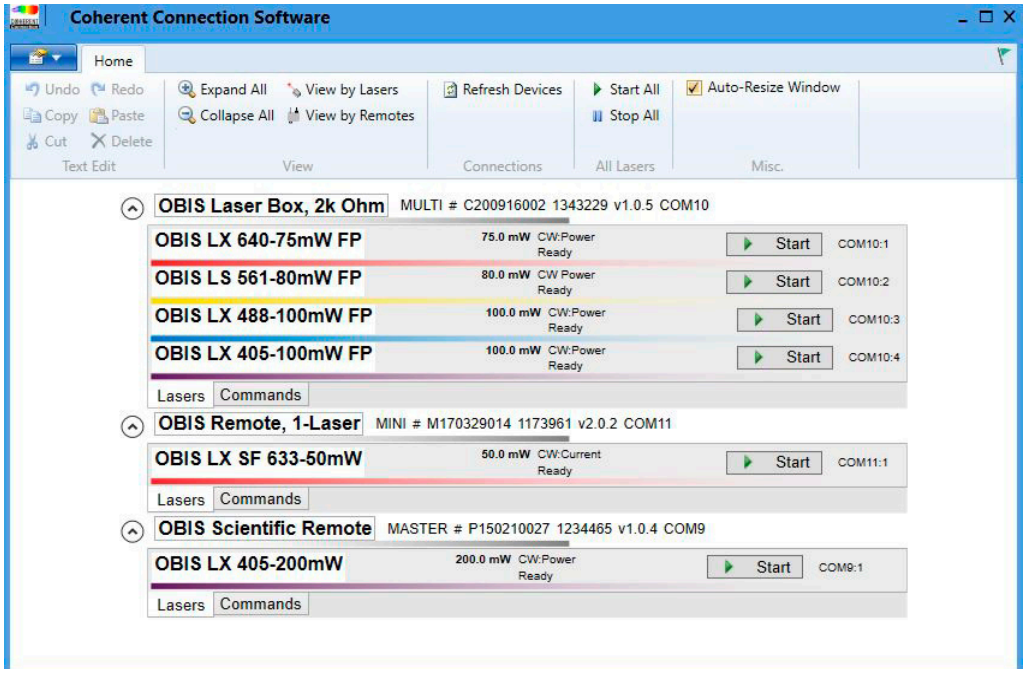


Figure 4-6. View by Remotes - Expanded View

It is possible to have a remote connected which has no lasers attached to it. The remote displays in the 'View by Remotes' view but not on the 'View by Lasers' view. However, users won't be able to expand to see the attached devices since there aren't any.

4.4 Pull-down System Menu

The System pull-down menu at top left gives access to configuration settings and Help.

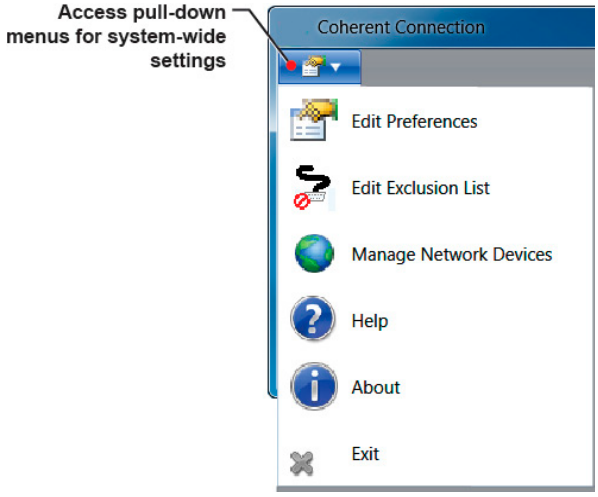


Figure 4-7. Coherent Connection Resources Pull-down Menus

4.4.1 User Preferences

The User Preferences popup menu provides access to general user settings for how information is displayed.

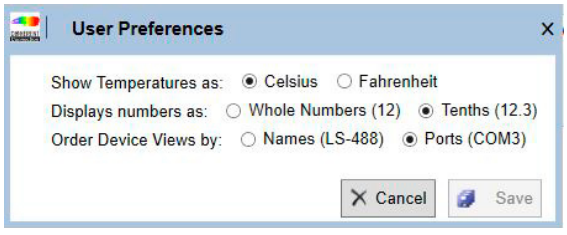


Figure 4-8. User Preferences

4.4.2 Device Exclusion List

Coherent Connection software continually examines all possible ports (serial, USB, and Ethernet) for available compatible Coherent devices. When a device is found, it is added to the Included Ports list. A device is automatically removed from the list when it is disconnected.

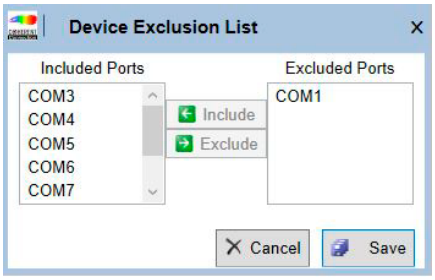


Figure 4-9. Device Exclusion List Popup

Ethernet-capable remotes have names that are the same as the 'network name' given to them. USB and RS-232 devices have names that start with 'COM'.

Sometimes a user might not want the software to communicate with a specific port. The Device Exclusion List is used to do that. This menu shows all ports in the user's system and allows them to be designated as Included or Excluded. Excluded ports are ignored by the software.

- To exclude a port, select an included port name and press Exclude to add it to the Excluded Ports list.
- To include a port, select an excluded port name and press Include to add it to the Included Ports list.
- Click Save or Cancel to continue.

4.4.3 Manage Network Devices

NOTICE
This topic is about the Coherent Scientific Remote only.

Coherent Connection can be used to control a Scientific Remote through Ethernet.

Figure 4-10. Scientific Remote

The software can communicate with more than one Ethernet device; however, to do so, each device must be individually configured for network access in the Scientific Remote and added to the Device Exclusion List in Coherent Connection.

Figure 4-11. Manage Network Devices

- First the user must configure the Scientific Remote in Network settings.
- Then the user can connect the remote to the same local area network (LAN).
- The user then starts Coherent Connection, and then uses the Search for New Devices button in the Manage Network Devices window to search for and add the remote.
- While the dialog is open, users can freely add and remove devices until the list includes all the remotes needed for access.

Other Remotes can also show and can be removed them from the list. Note that after an item is removed, the item name and address are left in the text boxes. That lets users to edit an existing entry by removing it, changing the name or address, and then adding it back in with new parameters.

- Click the Save Changes button, so remotes that have added show in the main window. Likewise, remotes that were removed will no longer show (if they were active before launching the dialog).

- Click the Abandon Changes button to discard any pending changes and go to whatever device list was in effect when the dialog was opened.

4.4.4 About Software and Check for Updates

The About selection shows software version and copyright information.

Figure 4-12. About Software

Click 'Check for updates' to allow the software to automatically identify if a software update is available for download. See the example below. The current version may be newer than the version displayed in the examples.

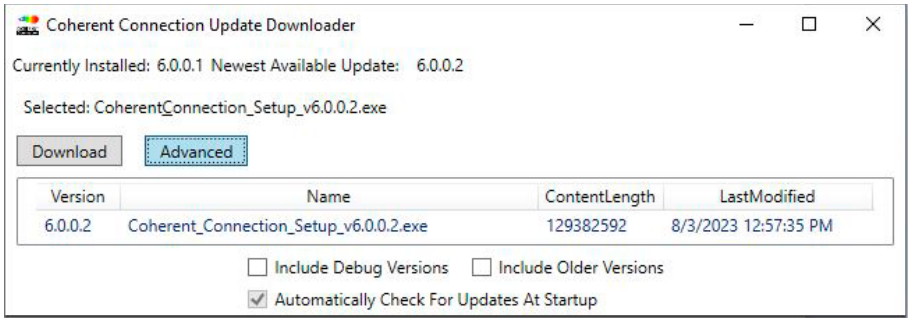


Figure 4-13. Check for Software Update

If a new version is available the user has the option to download. See the example below.

Figure 4-14. Update to Newest Software Available

Click the Advanced button for options to update at startup or to view older versions.

4.5 Laser Top Level View

After users connect and set power to the laser to ON, the window shows the laser or lasers that are connected. See the example for OBIS XT in Figure 4-15. This identifies the laser and shows top-level information about the laser.

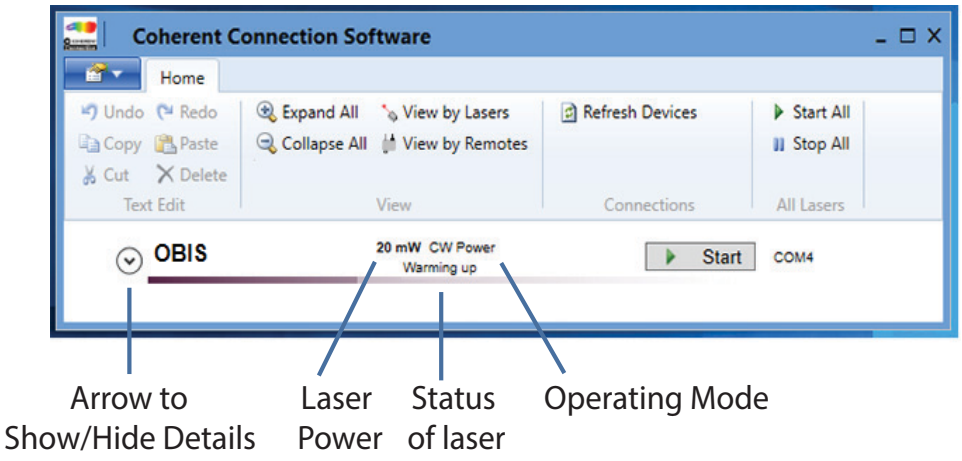


Figure 4-15. Top Level Laser View - One Laser Connected

The example in Figure 4-16 shows a laser in operation for Continuous Wave (CW) mode operation with explanations for the screen elements.

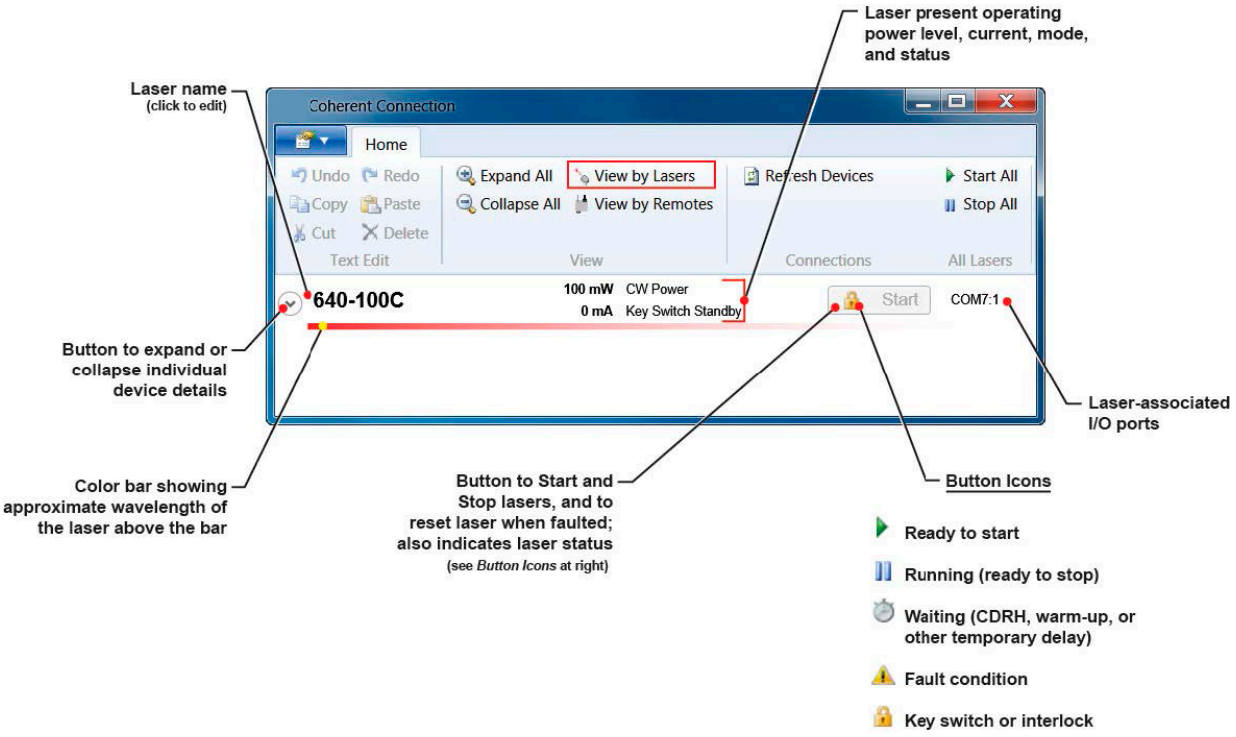


Figure 4-16. Top Level View Explained

In the examples that follow for Coherent Stingray lasers, top-level information about the laser changes if the Operating Mode and status of the laser changes.

The example in Figure 4-17 shows a laser set up for Continuous Wave (CW) mode operation.

When the Start button is clicked, the laser immediately starts to give laser output.

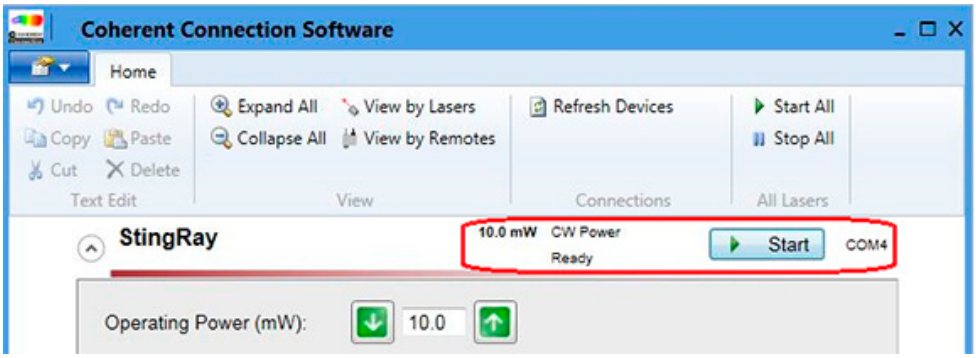


Figure 4-17. Example—CW Mode Emission

The button becomes a Start button and shows that the laser is in operation. Clicking the button when in this state stops the laser. Refer to Figure 4-16 for descriptions of different button states.

If the CDRH delay was set up at the factory, there is a 5-second delay before the lasers start to give laser light output, as shown in Figure 4-18.

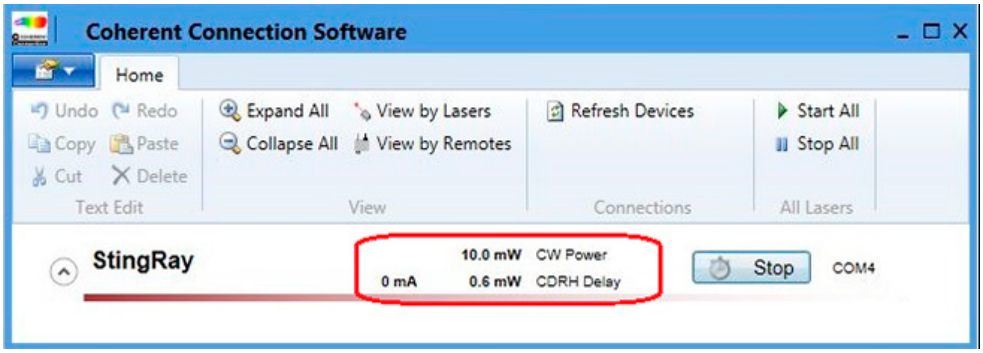


Figure 4-18. Example - CDRH Delay Enabled

Figure 4-19 shows multiple lasers emit a 100% Output Power level, at 10 mW and 50 mW, respectively.

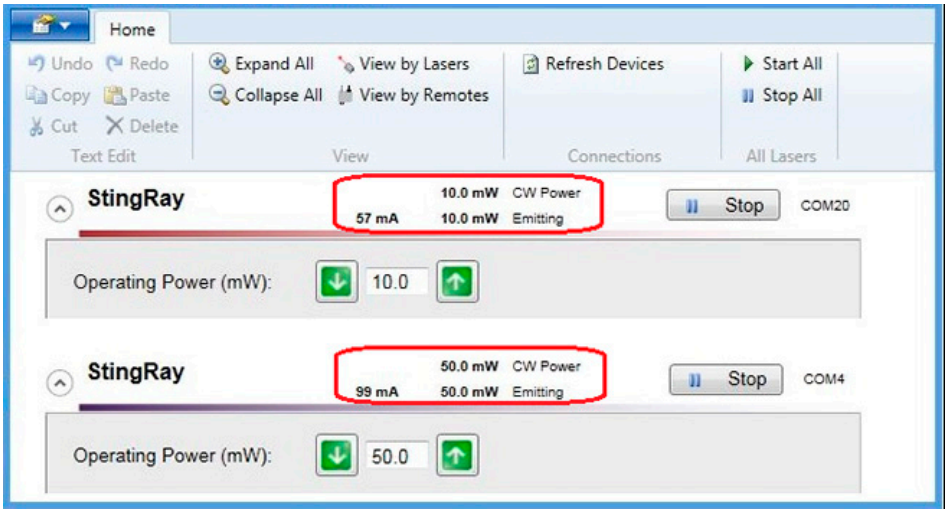


Figure 4-19. Laser Emitting at Full Output Power

If more than one OBIS XT laser is connected, the window shows all lasers. See the example in Figure 4-20. Each laser is identified, but the window is not yet expanded to show detailed information. Note how the Start buttons display differently, depending on whether the laser is in the state of 'Ready' or 'Warming up'.

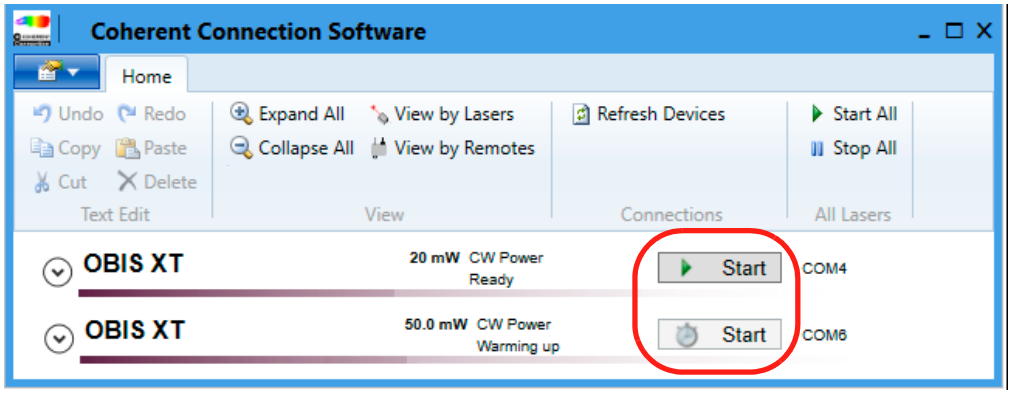


Figure 4-20. Software – Multiple Lasers Connected

To see more information about the state of the Coherent Connection unit as well as an individual laser, hover the mouse over the text. A pop-up box shows the status. Refer to the example for CellX, as shown in Figure 4-21:

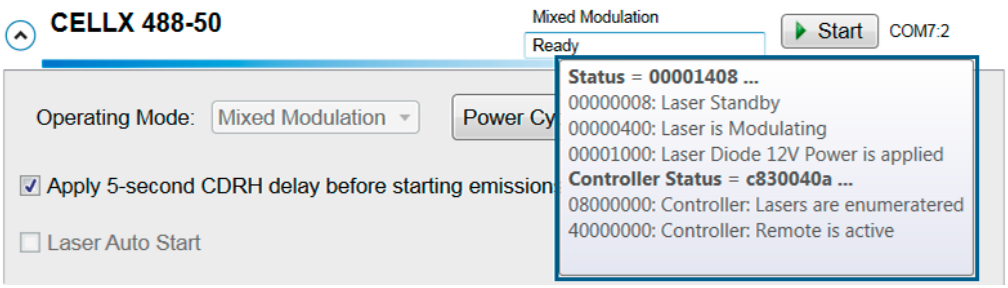


Figure 4-21. Pop-Up Box with Status

When Coherent Connection software is used with multiple lasers, users can rename each laser to more easily identify it, as shown in the example in Figure 4-22. For example, the name might include the laser model (such as OBIS XT or OBIS LS), the wavelength, or the location of the laser.

To rename the laser:

1. Click the down arrow beside the laser name. The text box is highlighted (refer to Figure 4-22).

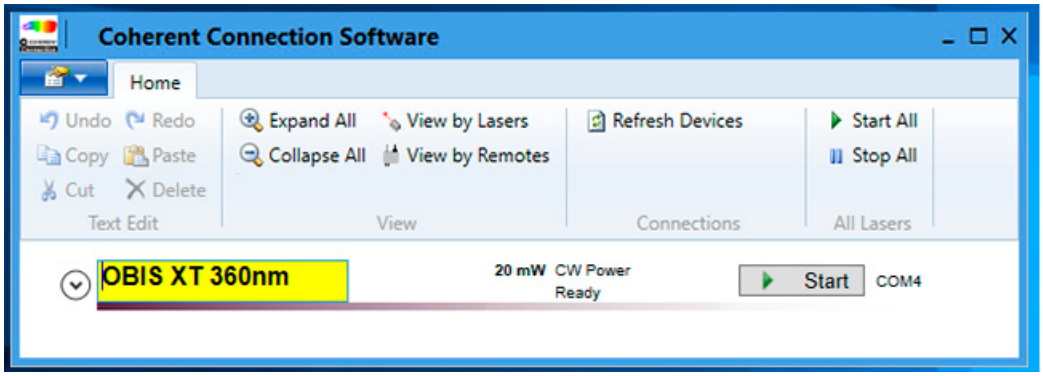


Figure 4-22. Change the Laser Name Displayed in the Software (OBIS XT example)

2. Type the new name of the laser to display, as necessary, up to twelve (12) characters.
3. Press Enter.

4.5.1 Show/Expand Laser Details

Users can show or hide operating information about a laser with the arrows next top the laser name. Refer to Figure 4-23.

- To **show** details, click the Down arrow beside the desired laser. This expands the window to show details about the laser selected.
- To **hide** details, click the Up arrow beside the desired laser. This collapses the window to show only the top-level name of the laser selected.

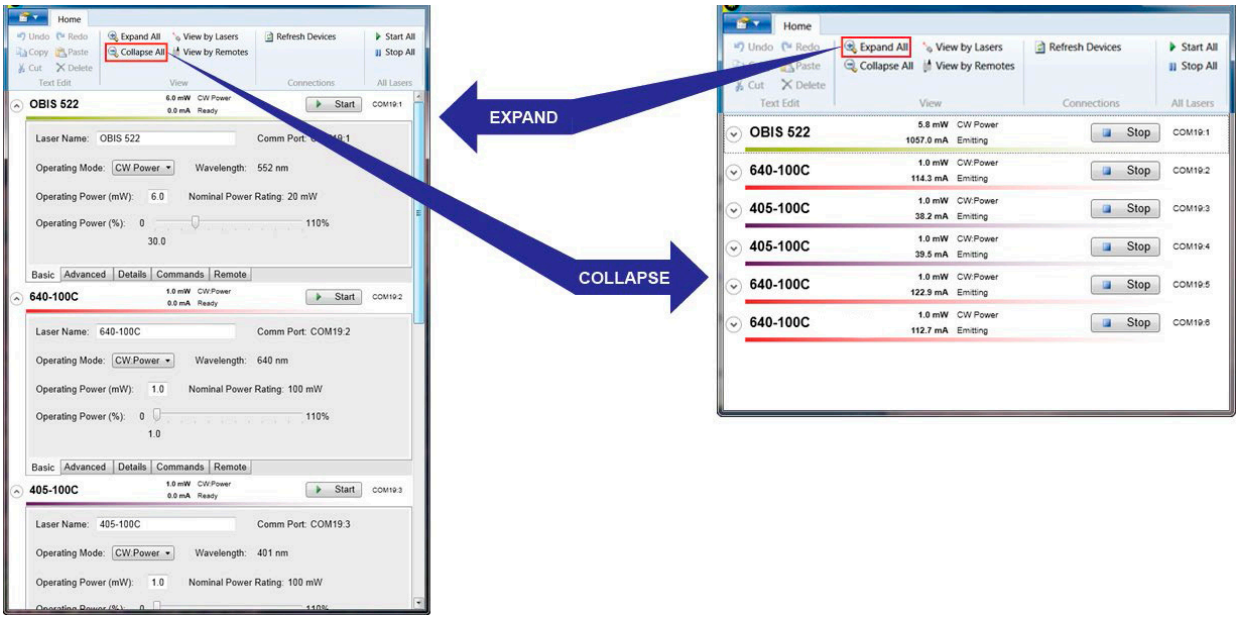


Figure 4-23. Coherent Connection - Operating Power Tab

4.6 Laser Operation and Control Details

This section gives an overview, with descriptions, of the main functional tabs for laser operation, their elements, and their functions.

4.6.1 Operating Power Tab

Figure 4-24 shows the tab in Coherent Connection for settings associated with Operating Power.

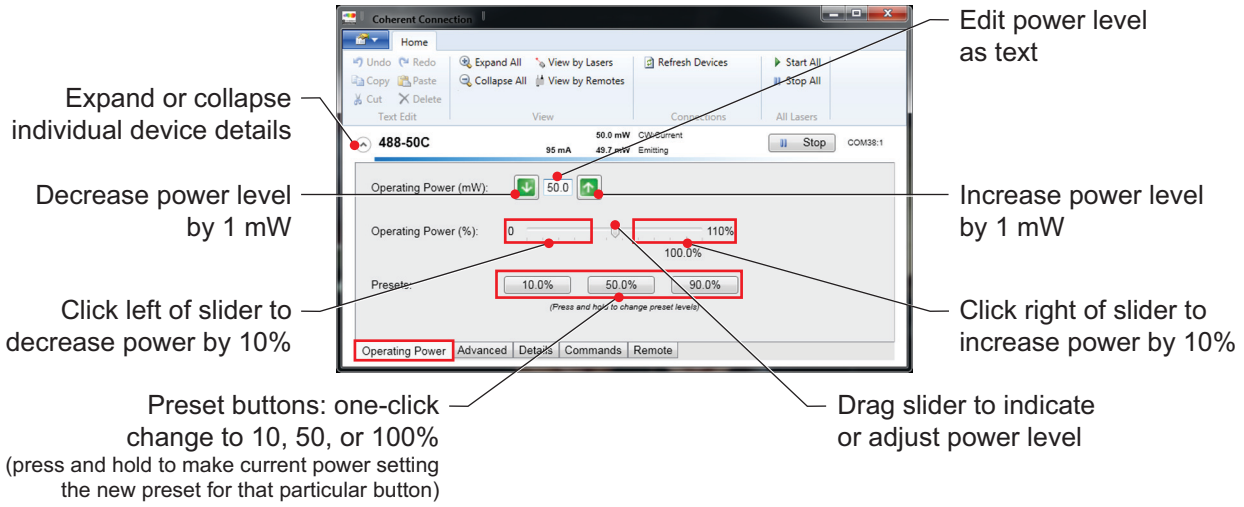


Figure 4-24. Coherent Connection - Operating Power Tab

Use the Operating Power tab to increase or decrease power levels, as well as pre-set power levels.

If more than one laser is connected, the window shows all lasers.

NOTICE

Output power can be changed in the software only for CW and Digital laser configurations. The output power CANNOT be changed through the software for lasers configured with Analog modulation.

Figure 4-25 shows the Operating Power tab window, expanded, with details about a 100 mW OBIS XT laser in Continuous Wave (CW) Mode, ready but not emitting.

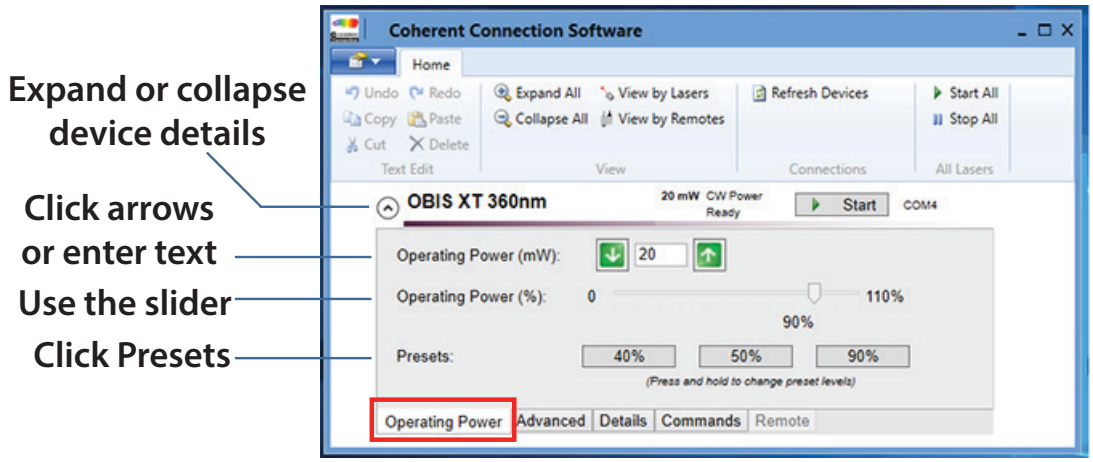


Figure 4-25. Operating Power Tab

4.6.1.1 Set Power Level and Presets

To edit the Operating Power (mW) level:

- Click the green DOWN-arrow button to decrease power levels by 1 mW per click.
- Click the green UP-arrow button to increase power levels by 1 mW per click.
- Type text in the Operating Power (mW) box between the arrows to specify the power level.

To set power levels using the Operating Power (%) slider:

- Drag the slider until the necessary power level to use is reached, or to adjust the current power level.
- Click the left side of the Operating Power (%) slider to decrease power by 10%.
- Click the right side of the slider to increase power levels by 10%.

To set or select pre-set buttons:

- Press and hold one of the Preset % buttons to make the current power setting the new preset for that particular button.

  One click changes to 10, 50 or 100% (user-selectable)

Changes take effect immediately, and details in the windows change depending on the status of the laser. After the new levels are set, simply click a preset button to change power by the percentage indicated. After the new levels are set, simply click a preset button to change power by the percentage indicated.

4.6.1.2 Start Laser with Set Operating Power Levels

The example in Figure 4-26 shows a laser operating in Continuous Wave (CW) mode. Click the Start button and the laser immediately begins emitting (unless the laser is configured with a CDRH delay).

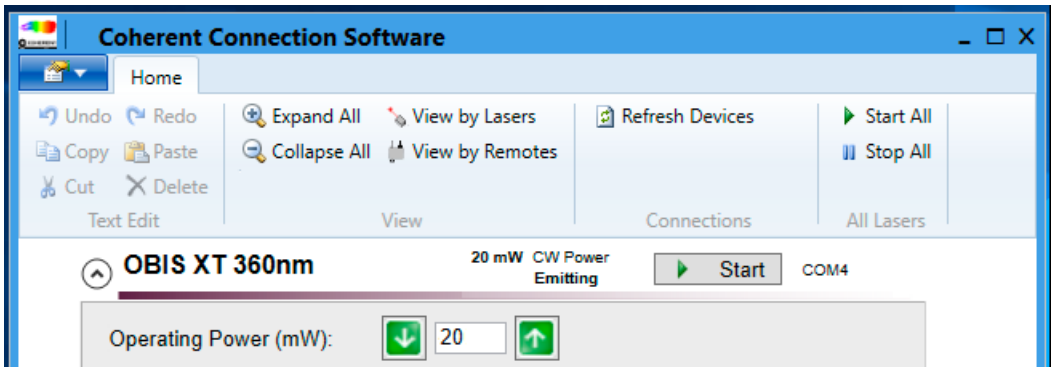


Figure 4-26. Example—CW Mode Emitting

If the CDRH delay was configured at the factory, there is a 5-second delay before the lasers start to emit, as shown in the example in Figure 4-27.

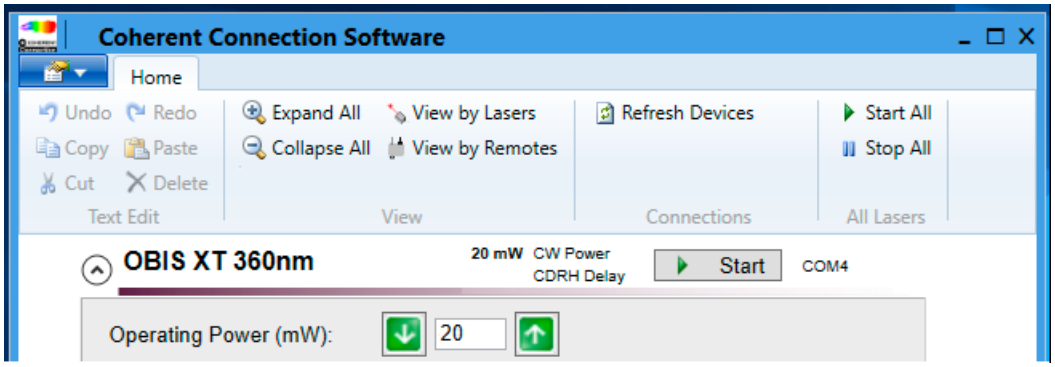


Figure 4-27. Example—CDRH Delay Enabled

For more information, refer to ’CDRH Delay’ (p. 35).

4.6.2 Advanced Tab

Figure 4-28 shows the Advanced tab in Coherent Connection and descriptions of screen elements.

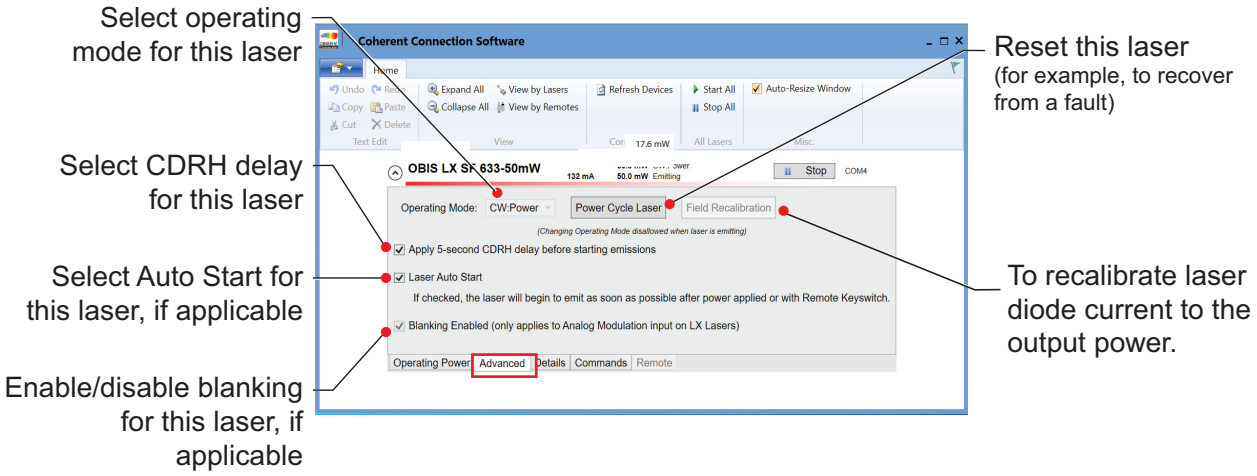


Figure 4-28. Coherent Connection - Advanced Tab

WARNING!
Use of controls or adjustments or performance of procedures other than those specified herein can result in hazardous radiation exposure.

Figure 4-29 shows the Advanced tab that shows an example for a single OBIS XT laser.

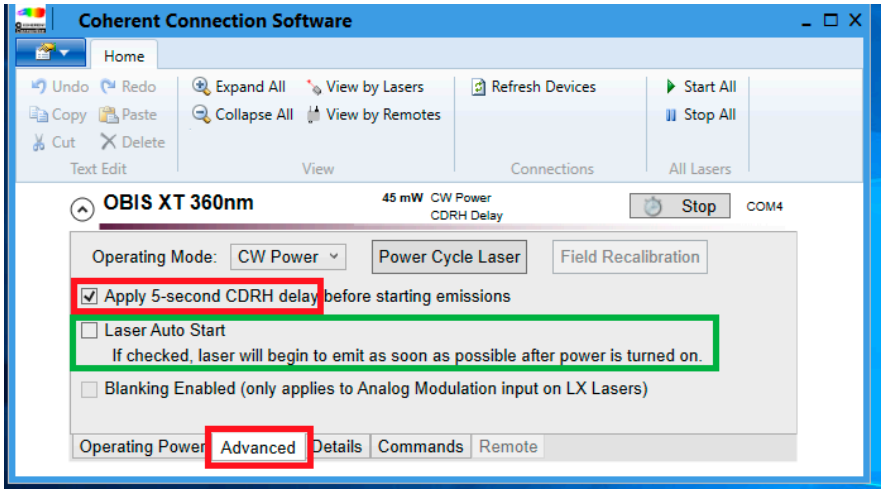


Figure 4-29. Example— Advanced Tab

In the Advanced Tab window, users can customize settings with the Coherent Connection software for the following features:

- **Operating Mode**: Select between CW Power, Digital, Analog and Mixed Modulation (representing on/standby control). Refer to Figure 4-30. (Not applicable to all lasers.)
- **CDRH Delay**: Enable/Disable CDRH Delay (Not applicable to all lasers, for example Stingray/Bioray lasers.)
- **Laser Auto Start**: Enable/Disable Auto Start or each laser (Not applicable to all lasers.)
- **Blanking Enabled**: TBD (Applies only to OBIS LX lasers.)
- **Power Cycle Laser button**: Resets power for the currently selected laser.
- **Field Recalibration button**: When enabled, replaces any field calibration settings with the original factory recalibration settings. (Only available for supported lasers.)

CDRH delay and Laser Auto Start are described in the sections that follow.

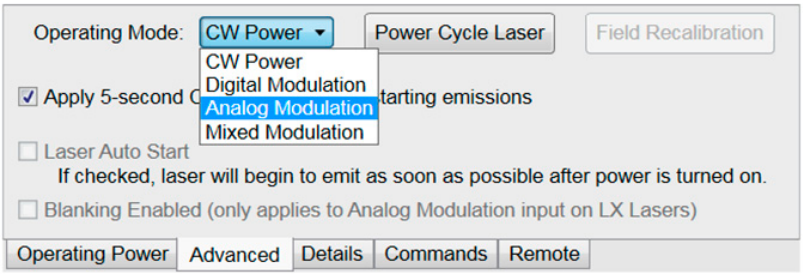


Figure 4-30. Operating Mode Drop-down

4.6.2.1 CDRH Delay

The CDRH-required delay of five seconds or more occurs between a laser-ready condition and emission of laser light. This delay lets the user take correct safety precautions before laser emission.

- For a OBIS XT laser, the CDRH delay is five (5) seconds.

- When the laser is set to OFF (or to STANDBY), the delay is applied to the next time the laser is turned ON.

WARNING!
Removing or disabling the 5-second CDRH delay defeats safety controls required by the applicable regulatory agencies. The customer takes full responsibility for safety and compliance to CDRH 21 CFR 1040 and IEC60825-1.

The ability to change the state of the CDRH-required delay requires remote communication to the laser through USB or RS-232.

The CDRH setting is stored in persistent memory inside the laser.

WARNING!
Removal of the 5-second delay defeats the safety controls required by regulatory agencies. With the use of commands, the customer takes all responsibility for safety and compliance with CDRH 21 CFR 1040 and IEC 60825-1.

To disable the CDRH Delay:

1. Click to the Advanced tab for an individual laser.
2. Uncheck the box for 'Apply 5-second CDRH delay...'. This removes the CDRH Delay.

If users deselect the check box for the CDRH delay, the warning message shown in Figure 4-31 is shown.

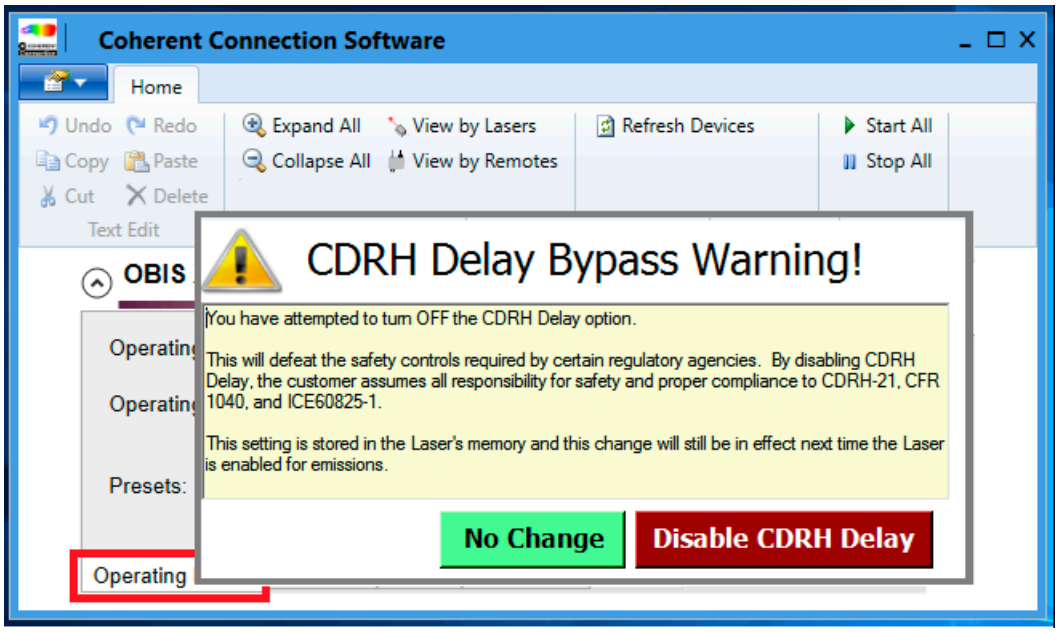


Figure 4-31. Warning Message – CDRH Delay

- To continue using a CDRH delay, click the No Change button.
- To remove the CDRH delay, click the Disable CDRH Delay button.

The setting for the CDRH Delay is applied the next time the laser is set to ON.

4.6.2.2 Remote CDRH Settings Host Commands

If not using the Coherent Connection software, users must instead control the laser remotely from a host computer, and manage CDRH settings, as follows:

1. To override the CDRH-required delay, use this command:

   ```
   SYSTem:CDRH OFF
   ```

2. Interrogate the current CDRH-required delay status by sending this command:

   ```
   SYSTem:CDRH?
   ```

3. Restore the CDRH-required delay feature by using this command:

   ```
   SYSTem:CDRH ON
   ```

See the user manual for the respective laser being for a list of all available commands.

4.6.2.3 Set Software to Auto Start Laser

Users must connect a USB cable from the laser to a personal computer and use Coherent Connection software to be able to set Auto Start.

To set Laser Auto Start in the Coherent Connection software:

1. Click to the 'Advanced Tab' (p. 34).
2. Click the check box to set **Laser Auto Start** to ON. When this check box is selected, the warning message shown in Figure 4-32 is shown.

Figure 4-32. Warning Message — Laser Auto Start

- To continue to use manual start, click the No Change button.
- To set Laser Auto Start to ON, click the Enable Auto Start button.

4.6.2.4 Field Recalibration

When the Field Recalibration button is enabled and available and is clicked, a popup like the following is shown:

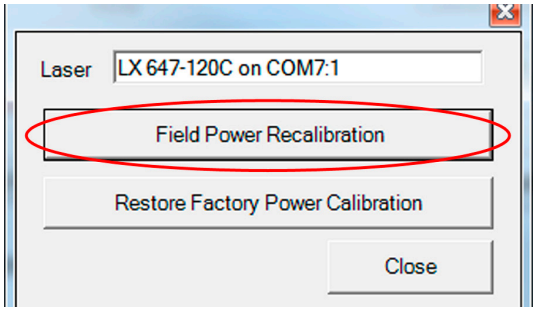


Figure 4-33. Field Recalibration Options

Users can either select to restore the factory power calibration settings or to perform field power calibration for the selected laser.

4.6.3 Details Tab

Figure 4-34 shows the Details tab. Information on this tab is specific to the currently selected laser. Users can view the model, serial number, and other information that is specific to the laser currently selected.

When there are multiple lasers shown in the window, users can show or hide information for each individual laser. The same type of information is available for each laser.

Alternatively, users can select device information with use of the ID command **`SYSTEM:INF:USER <user selected identification string>`**. Refer to 'Commands Tab' (p. 39).

4.6.4 Commands Tab

The Commands tab is shown in Figure 4-38. Notice there are two tabs at the top of the Commands tab window, User Commands and All Commands.

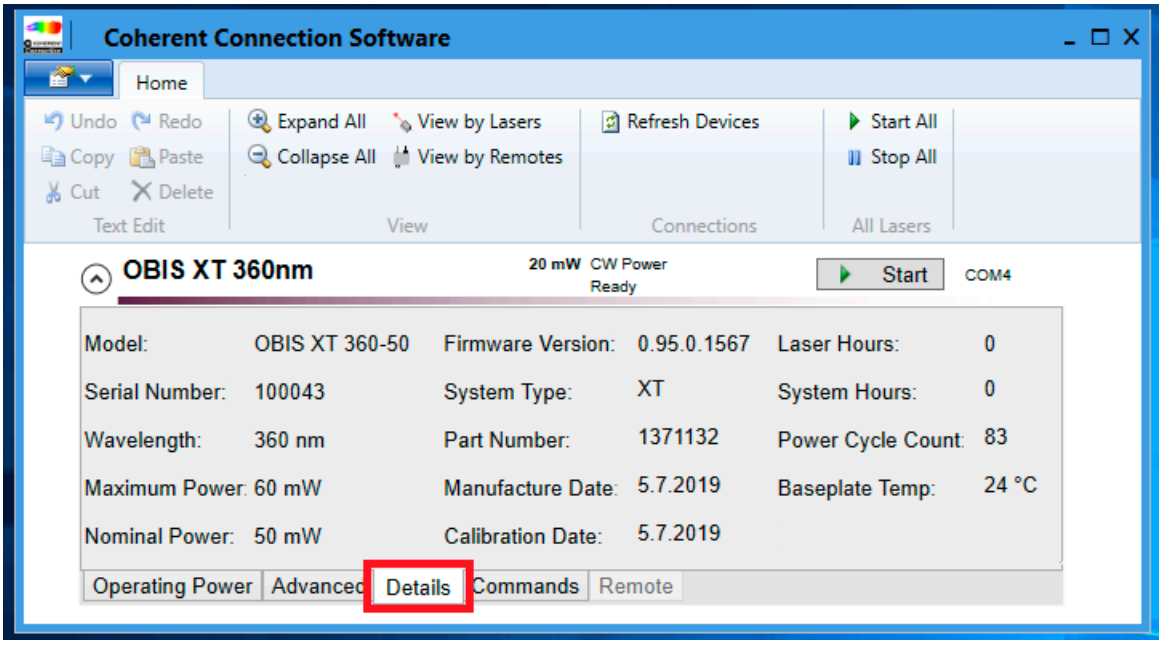


Figure 4-34. Example - Details Tab

4.6.4.1 User Commands Sub-tab

The User Commands sub-tab shows commands sent by the user of the current session as well as responses received from the laser. It shows the Command log with commands and responses sent to and received from an individual laser.

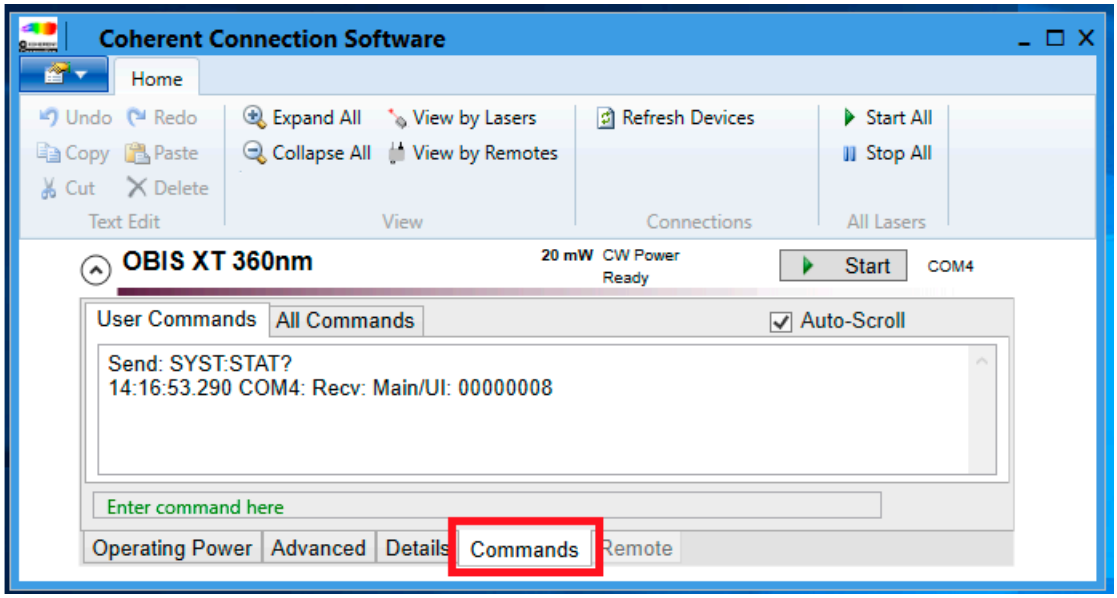


Figure 4-35. Example—Commands Tab

Enter commands or queries in the space near the bottom of the window with label ‘Enter command here’.

The example shown in Figure 4-38 is done to check the system status. After Enter is pressed, the transcript shows the command sent (**`Send:`**), and the laser response (**`Recv:`**).

Right-click in the window for a popup menu of options including:

- Auto-scroll to End
- Suspend Polling
- Clear Screen
- Copy Log to Clipboard
- Save Log To Disk

See the user manual for the respective laser being used for more information about host commands and error messages.

4.6.4.2 All Commands Sub-tab

View commands sent to control the laser, as well as responses received from the laser, in the center section of the window on the All Commands sub-tab, as shown in Figure 4-36:

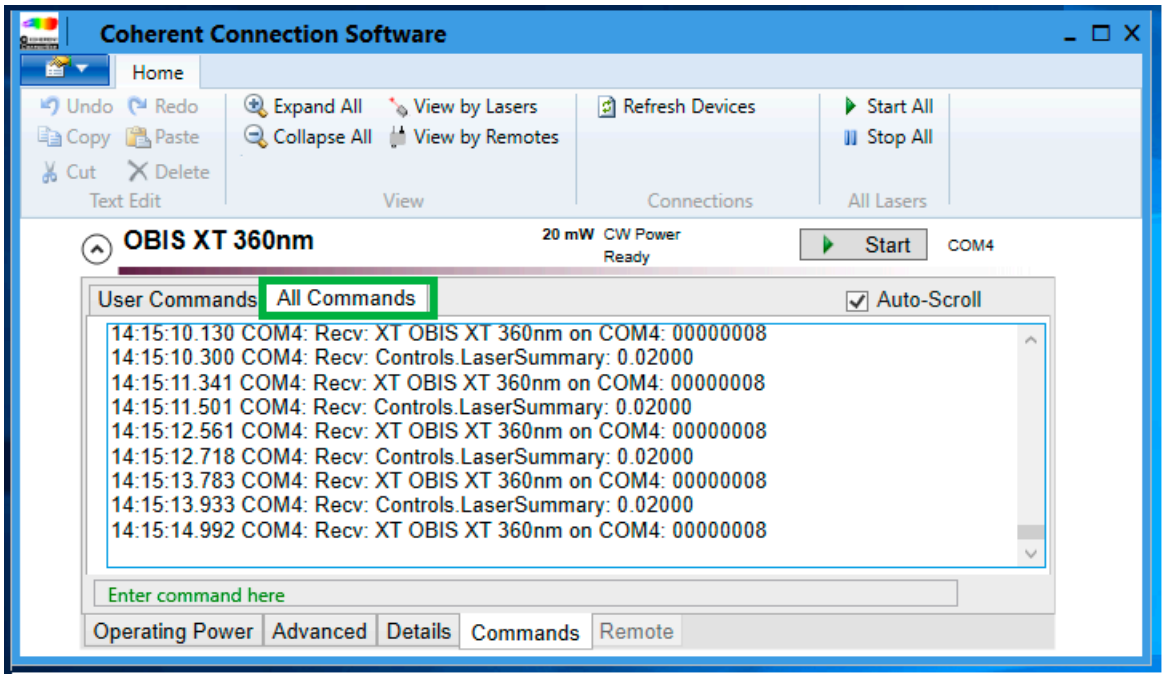


Figure 4-36. Example—All Commands Running

Figure 4-37 shows descriptions for the two fields on the All Commands sub-tab

Commands and responses sent to and received from the laser appear in this window

Enter manual commands here

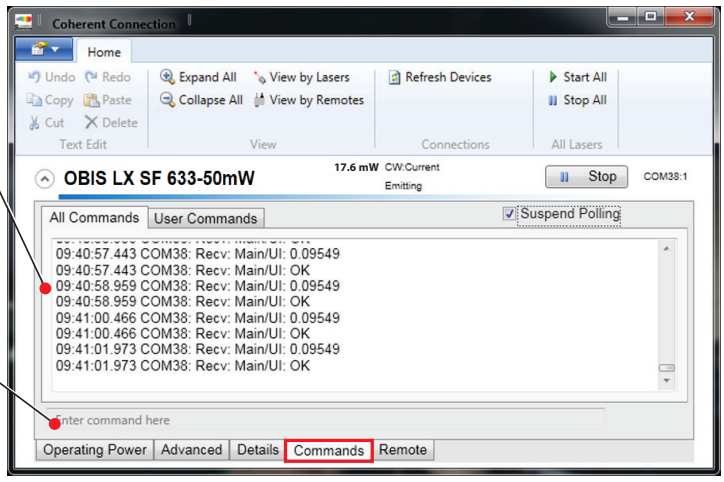


Figure 4-37. Commands Tab and All Commands Sub-tab

4.6.5 Remote Tab

A remote is a device that controls lasers through a single interface. The Coherent Connection software identifies the device being used on the Remote tab.

This tab shows identifying information about the remote or internal controller board of a laser system, such as the type, part number, serial number, firmware version, and more.

To use of the remote tab to control remote functions for each individual laser in a laser system, such as a CellX, refer to the respective product user manual.

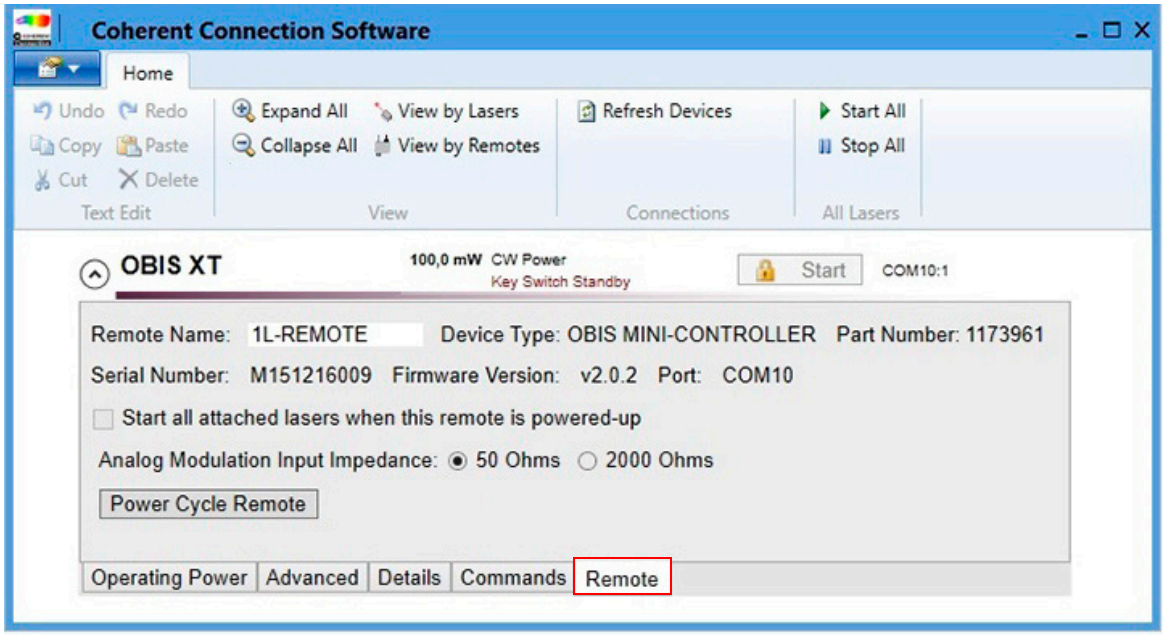


Figure 4-38. Example: Remote Tab with Coherent 1L Remote

4.6.5.1 Remote Auto Start

Figure 4-38 shows an active Remote tab.

Click the check box to start all attached lasers when the Remote is powered ON:

- **Start ALL attached lasers when this remote is powered-up.** This is when power is applied to the controller board internal to the Coherent Connection laser system. This setting is checked by default.

- If users ***uncheck*** this setting, the change takes effect immediately and remains in effect the next time the Coherent Connection laser system is powered on.
- If users then ***select*** the check box to enable Auto-Start, a warning pop-up dialog box is shown, like the one shown in Figure 4-39. Read the warning, and then click either button to select No Change or Enable Auto-Start.

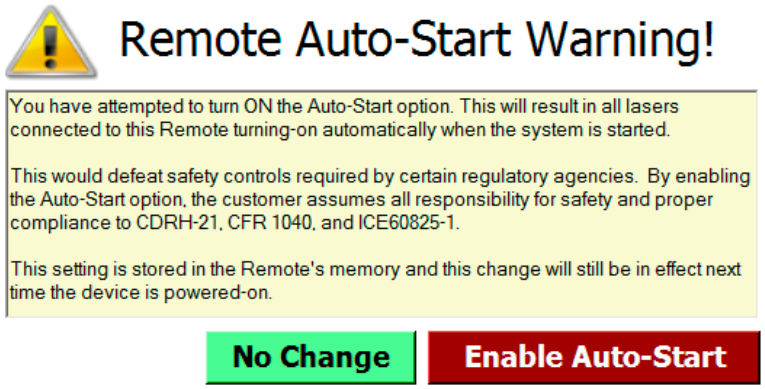


Figure 4-39. Coherent Connection–Auto-Start Warning

4.6.5.2 Additional Functions

- **Analog Modulation Input Impedance**.
- **Power Cycle Remote Button.** Clicking this button cycles power to the entire Coherent Connection unit or laser system. This is different than use of the Advanced tab to cycle power for individual lasers.

4.7 Communications With a Terminal Program

A terminal program (or a custom-developed program) allows users to open a communication session and enter commands manually to an OBIS XT laser. Refer to 'Terminal Program' (p. 45).

5 Terminal Program

This section provides information about how a terminal program is used and how it is set up.

5.1 Overview

A terminal program (or a custom-developed program) allows users to open a communication session and enter commands manually to a laser. Coherent Connection provides an interface to enter terminal commands within the graphical user interface, in the Commands sub-tab. Refer to ’Commands Tab’ (p. 39).

The USB driver in the Coherent Connection software creates a virtual COM device in the host computer that gives access to its controls. When installing Coherent Connection software, drivers are automatically loaded onto the host computer as part of the installation process.

5.2 Set up Communications With a Terminal Program

To use a terminal program, users must first configure the COM port for the OBIS XT laser system. To set up communications with a terminal program:

1. Connect the laser to a personal computer or laptop computer through either a USB connection or an RS-232 connection. The computer identifies the laser as a COM port on the computer.
2. To determine which COM port is assigned to the laser, open the Device Manager in Windows on the computer. Under the *Ports (COM*

& LPT) heading, look for the *Coherent Device,* as shown in the example in Figure 5-1.

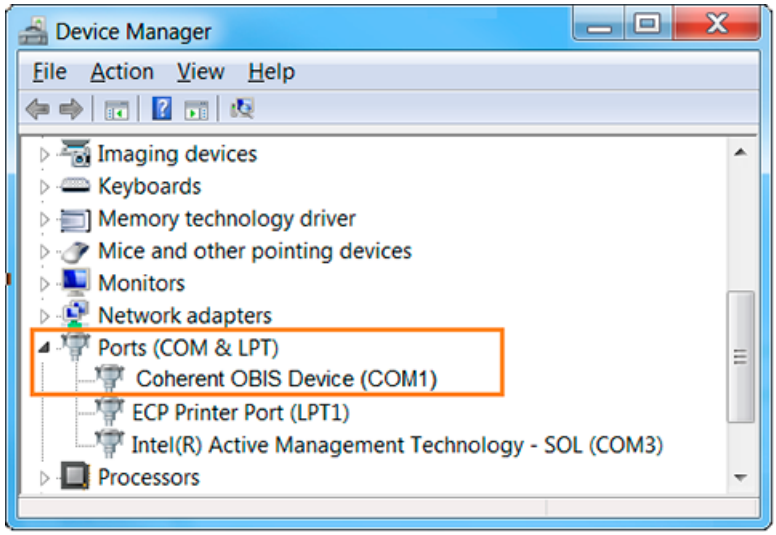


Figure 5-1. Identify the COM Port (OBIS example)

3. Double-click the device to show the device properties dialog.
4. Click the **Port Settings** tab. Refer to Figure 5-2.
5. Select the necessary port settings and then click **OK**. Refer to the user manual for the laser being used for information about correct configuration settings for that laser.

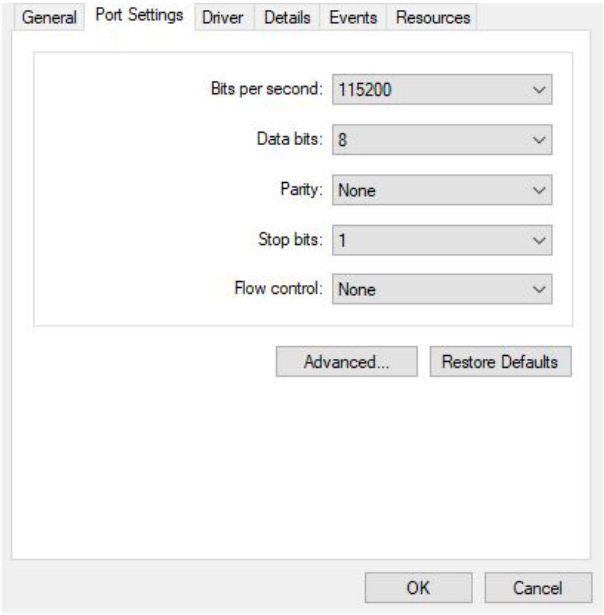


Figure 5-2. COM Port in the Workstation Device Manager

6. Start a preferred terminal program (such as Putty or TeraTerm).
7. Create a file name for the new connection.

8. Select the COM port that was assigned to the OBIS XT laser (see Step 2).
9. Set up the terminal program. Use the recommended settings shown in the following examples.

   a.) Figure 5-3 shows an example terminal program set-up.

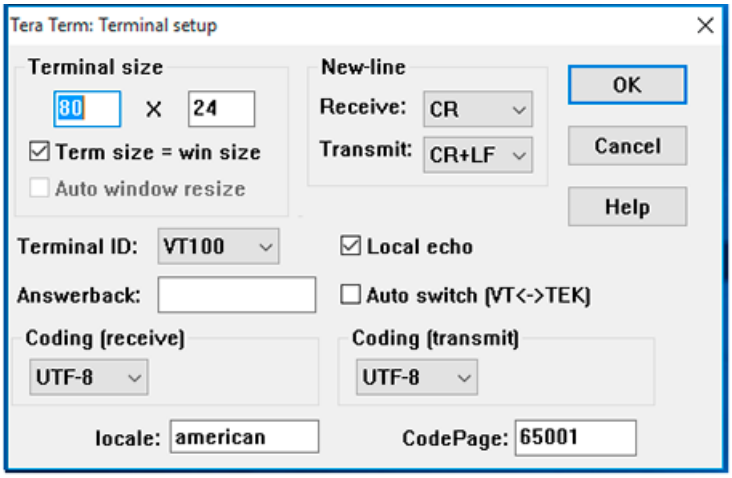


Figure 5-3. Terminal Set-Up Example

   b.) The example in Figure 5-4 shows settings for the COM Port:

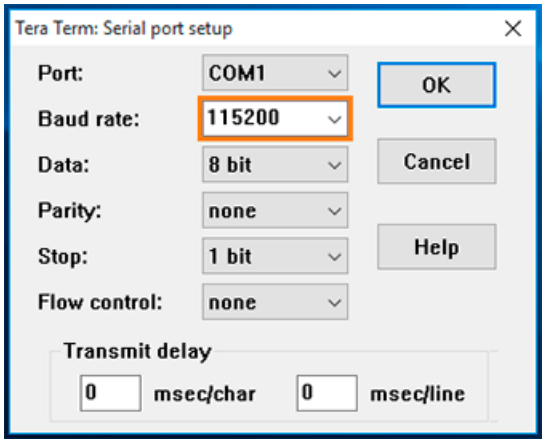


Figure 5-4. COM Port Settings

10. Go to the terminal main window and activate the connection. The example in Figure 5-5 shows query commands used to check the nominal power level and wavelength of the laser.

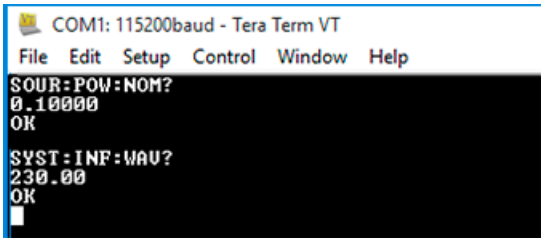


Figure 5-5. Example Query Commands

5.2.1 Port Setup through an RS-232 Serial Connection

This procedure is done for laser systems, such as CellX, that have an RS-232 connector with use of an accessory module.

To open a communications session with an RS-232 cable:

1. First attach the cable to one of the accessory modules for the Coherent Connection that includes the standard DB-9F (RS-232) connector.

NOTICE

If the Coherent Connection software is used, the COM port is usually auto-assigned. For RS-232 use, it must be assigned manually. When accessory boards are installed, the port number is auto-assigned.

2. If using Coherent Connection, select the COM port in the User Preferences, and then click **Save**.

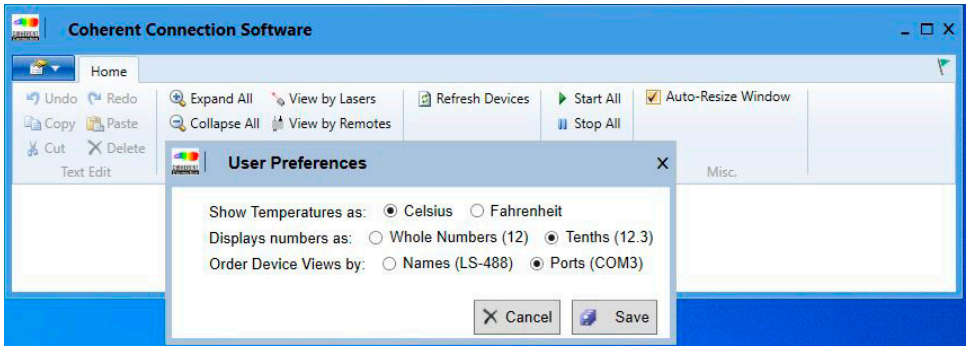


Figure 5-6. Set COM Port via RS-232 Connection

3. Open a terminal program and then create a file name for the new connection.
4. Select the COM port that is assigned to the Coherent Connection and follow the recommended terminal menu settings.
5. Go to the terminal main window and then activate the connection.

I Safety and Compliance

This section describes general requirements for safety for persons when Coherent Connection software is used with lasers.

I.1 Laser and Electrical Safety

Carefully review the laser and electrical safety information and precautions provided by the equipment manufacturer of the devices used with Coherent Connection. This includes the use of shielding and personal protective equipment.

WARNING!
Use of controls or adjustments or performance of procedures other than those specified in this manual can result in exposure to hazardous radiation.

WARNING!
When working with electrical power systems, the rules for electrical safety must be strictly followed. Failure to do so can result in the exposure to damaging levels of electricity.

I.2 Compliance

This section describes compliance with various government requirements for safety, environmental regulations, and control law.

I.2.1 Laser Safety Standards

Following are sources for information about laser safety standards, as well as safety equipment.

I.2.1.1 Inside the United States:

The applicable United States Government laser safety requirements are contained in 21 CFR Title 21 Chapter 1, Subchapter J, Part 1040 ("*Performance standards for light-emitting products")*. The text of this federal standard is available from:

U.S. Food and Drug Administration
Center for Devices and Radiological Health (CDRH)
Document Mail Center – WO66-G609
Sliver Spring, MD 20993-0002

Website: www.fda.gov

I.2.1.2 Outside of the United States:

For jurisdictions outside of the United States:

Safety of laser products - Part 1: Equipment classification and requirements
IEC 60825-1 / EN 60825-1

Safety of laser products - Part 14: A user's guide
IEC 60825-1 / EN 60825-1

Safety Requirements For Electrical Equipment For Measurement, Control and Laboratory Use
IEC 61010-1 / EN 61010-1

I.2.1.3 Publications and Guidelines

International Electrotechnical Commission (IEC)
www.iec.ch

Safety of laser products - Part 1: Equipment classification and requirements
BS EN 60825-1
British Standard Institute
www.bsigroup.com

American National Standard for Safe Use of Lasers
ANSI Z136 Series
American National Standards Institute (ANSI)
www.ansi.org

A Guide for Control of Laser Hazards
American Conference of Governmental
and Industrial Hygienists (ACGIH)
www.acgih.org

Laser Safety Guide
Laser Institute of America
www.lia.org

I.2.2 Export Control Laws Compliance

It is the policy of Coherent to follow strictly the export control laws of the United States of America (USA).

Export and re-export of lasers made by Coherent are subject to U.S. Export Administration Regulations, which are administered by the Commerce Department. Also, shipments of certain components are regulated by the State Department under the International Traffic in Arms Regulations (ITAR).

The applicable restrictions vary depending on the product involved and its destination. In some conditions, U.S. law makes it necessary that U.S. Government approval be given prior to resale, export or re-export of certain articles. When there is uncertainty about the obligations imposed by laws in the USA, clarification must be received from Coherent or a correct agency of the U.S. Government.

Products made in the European Union, Singapore, Malaysia, Thailand: These commodities, technology, or software all apply to local export regulations and local laws. Diversion contrary to local law is not allowed. The use, sale, re-export, or re-transfer directly or indirectly in any unhallowed activities are strictly disallowed.

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Part No. 2327481 Rev. AA

COHERENT

INNOVATIONS THAT RESONATE

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