Tool Crib

System Requirements

• Pentium class processor running Windows 2000 or XP Pro, Mac OS X 10.3.9 and higher.
• 64 MB of Ram
• 50 MB of free disk space

Windows Installation

On Windows, ToolCrib installs by default to C:\Program Files\X-Rite\Tools\ToolCrib, and creates shortcut icons in X-Rite\Tools. It also installs all necessary USB drivers into the WINDOWS directory, ready to be recognized by the New Hardware Wizard.

Instrument Driver Installation

ToolCrib installs all the drivers necessary for the instruments that it supports. The first time a particular kind instrument is connected to your computer, Windows may pop up the New Hardware Wizard. First it will ask if you want to connect to the Internet to find the driver. Say no. On the next screen, check the option to "Install the Software Automatically (Recommended)". At this point, you may see a screen of driver choices. If one of the choices is "xrusbunified.inf", do not pick that one; it is obsolete and can be removed from your system. You may get a warning that the driver has not been signed. Say "Continue Anyway". After this, you will see a message indicating that the hardware has been successfully installed.

Toolcrib used to place its drivers in local subdirectories, and installation would require the user to navigate there to choose the right driver. Now, this should happen automatically.

Additional TCDs

The functionality for interacting with each instrument is contained in a separate TCD file. If you receive an additional TCD from X-Rite, either for a new instrument or an updated version of one that comes preinstalled, simply exit ToolCrib and drop the file into the "Tools" subdirectory. The next time ToolCrib is started, the new instrument will appear in the list of available choices.

Macintosh Installation

On Mac OS X, ToolCrib installs by default to /Applications/X-Rite/Tools/ToolCrib. Optionally, it could be installed to the Applications folder within the user's Home folder, but then only this user could run it.

Instrument Driver Installation
Mac OS X comes with all necessary USB drivers pre-installed, so this shouldn't be an issue.

Additional TCDs
Additional TCDs for new instruments need to be placed inside of the ToolCrib application. On Mac OS X, applications are really folders called "packages". To open it up, right-click (or Control-click for systems with a one-button mouse) and choose "Show Package Contents". A new Finder window opens, showing the internal structure of the application. Copy the TCD to /Contents/Resources/Java/Tools within the package. The next time ToolCrib is started, the new instrument will appear in the list of available choices.

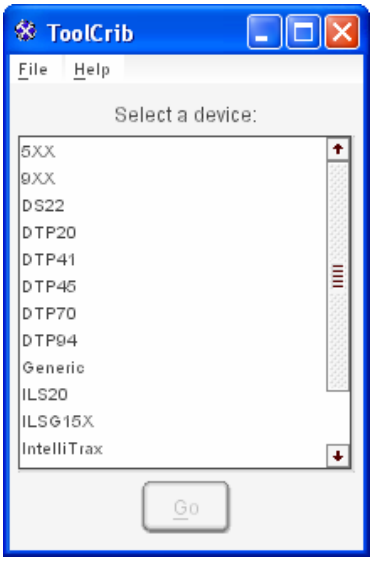
ToolCrib Troubleshooting

If an unexpected application error occurs while ToolCrib is running, perhaps even causing the application to be shut down, you may want to check the application log for any troubleshooting hints. The application log is located in the "Logs" subdirectory of your ToolCrib installation.

For example, seeing a message like the following in the log

```
Caused by: java.lang.UnsatisfiedLinkError: no XDSIII in java.library.path
```

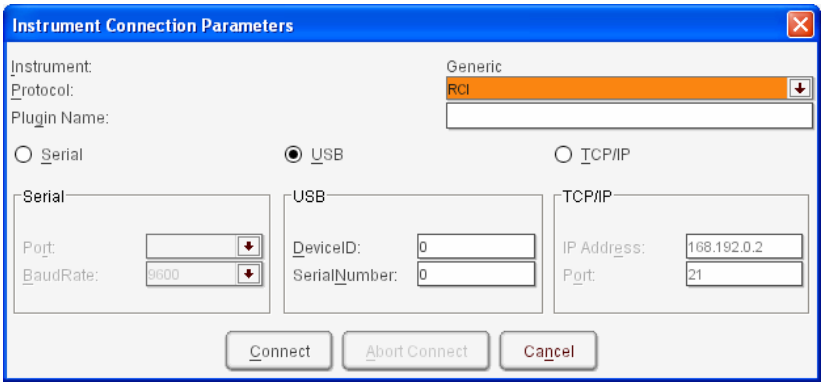
may lead you to reinstall ToolCrib to restore a missing or damaged XDSIII library. You should also attach the error log to any email communication with X-Rite customer support.



Instrument Connection

After starting ToolCrib, you are presented with the list of instruments that you can connect to. This list is determined by the TCD files located with the ToolCrib installation. After selecting an instrument, click Go, and you will be presented with the connection screen for that TCD.

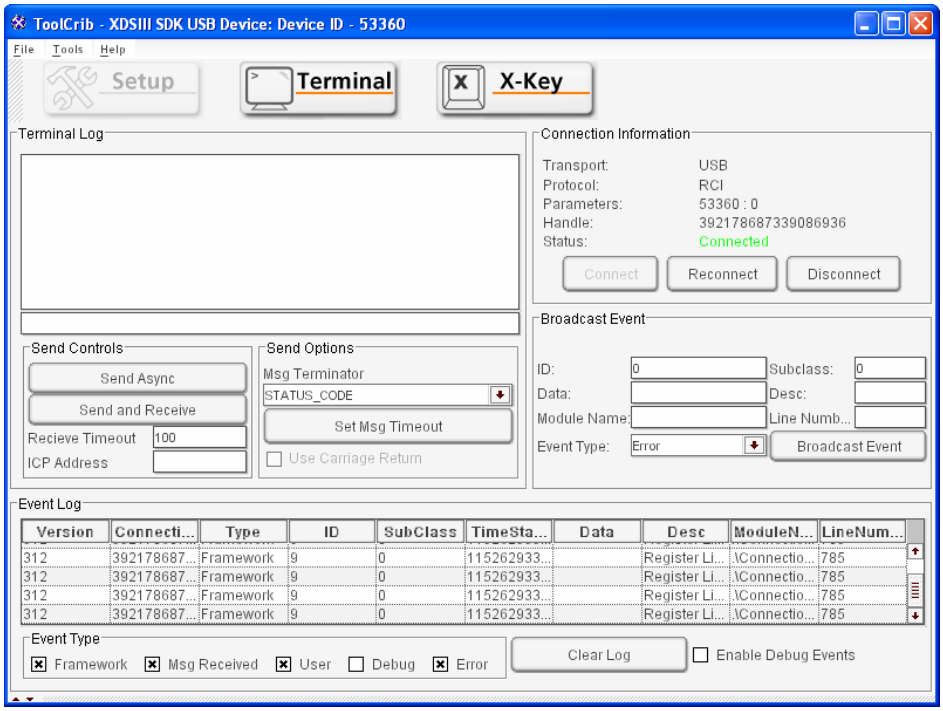
Each instrument has its own connection screen and a unique set of functionality. However, the following TCDs allow you to connect to any type of instrument.



Generic

The Generic TCD allows you to connect to any instrument if you know its Device ID. Once connected, you can use the Terminal and X-Key functionality with the instrument, as documented below.

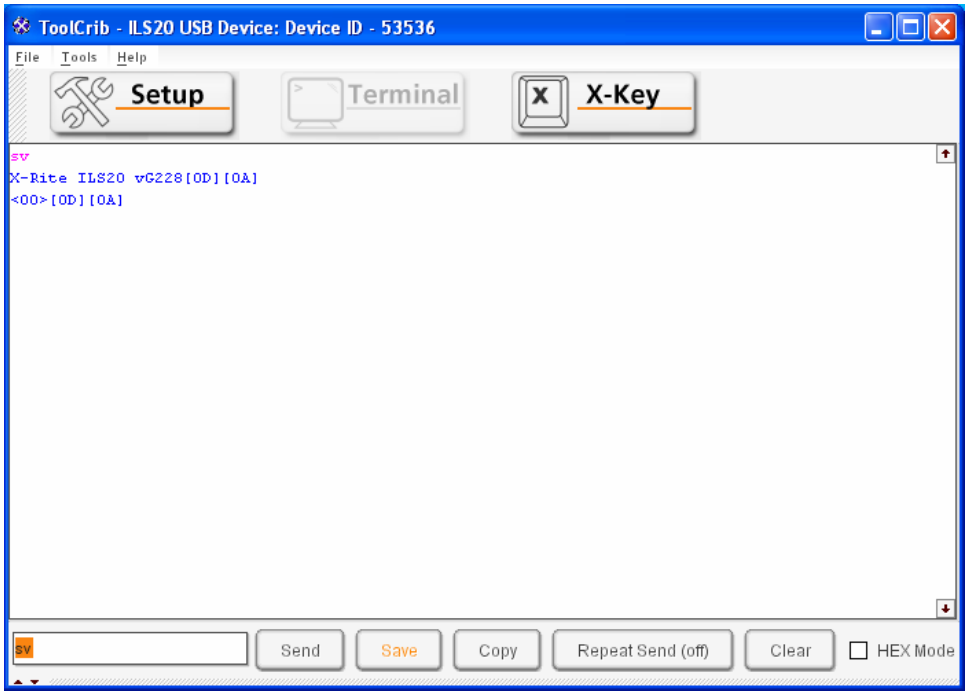
Note that you do not need to specify the serial number for the device unless there is more than one of the same instrument attached to your computer.



XDSIII SDK

The SDK TCD allows you to connect to an instrument and, in addition to the common set of functionality also exposed by the Generic TCD, see the low level details of the communication with the instrument.

The various elements on the Setup tab allow you to set XDSIII options interactively, such as the receive timeout, message terminator, and message timeout. You can send commands to the instrument synchronously or asynchronously. You can also view any asynchronous events that are sent to you by the instrument.



Terminal Pane

The Terminal pane in ToolCrib allows you to send commands directly to the instrument, and view the raw output that is received.

Sending a Command

To send a command to the instrument, simply type it into the command textbox, and press Enter. You can also click the Send button to send a command. The command and the output will appear in the text area above. The command will appear in magenta, and the instrument response in blue.

The output is instrument-dependent, but in general can be interpreted to determine some useful information. For example, given the output

```
X-Rite ILS20 vG228[0D][0A]
<00>[0D][0A]
```

you can determine that the characters 0D and 0A are being used as line terminators, and that the result for the command was success, indicated by <00>.

Sending Multiple Commands

You can send multiple commands with one click for certain TCDs that allow this functionality. To send multiple commands, type them all on the same line, separating them with the ";" character, and then click Send. For example, sending

```
SV;SV
```

will result in 2 SV commands being sent. The 2nd one will only be sent if the result of the 1st command is a success (<00>).

Using a Command Delay

Using the multiple command syntax, it is possible to introduce a delay between commands being sent. The delay is specified in milliseconds, and must be sent between the "|" characters. For example, sending

```
SV;|1000|;SV
```

will result in 2 SV commands being sent, but the 2nd one will only be sent after a 1 second delay.

Saving Command Output

Once some output has been returned, click the Save button to store it to a .log file of your choice. Alternately, you can click the Copy button to store all the output to your clipboard.

Please note that switching away from the Terminal pane causes the output to be lost, so it is recommended that any important instrument output be stored first.

Repeat Sending of Commands

Click the "Repeat Send (off)" button to start sending the command typed into the command textbox on timed basis. Once the time interval is entered, ToolCrib will continue sending whatever is typed in until the button is clicked again.

Note that it is possible to change the command text while in this repeat send mode, but this is not recommended because it is possible that the command will not be completely typed in when the interval expires.

Clearing Output

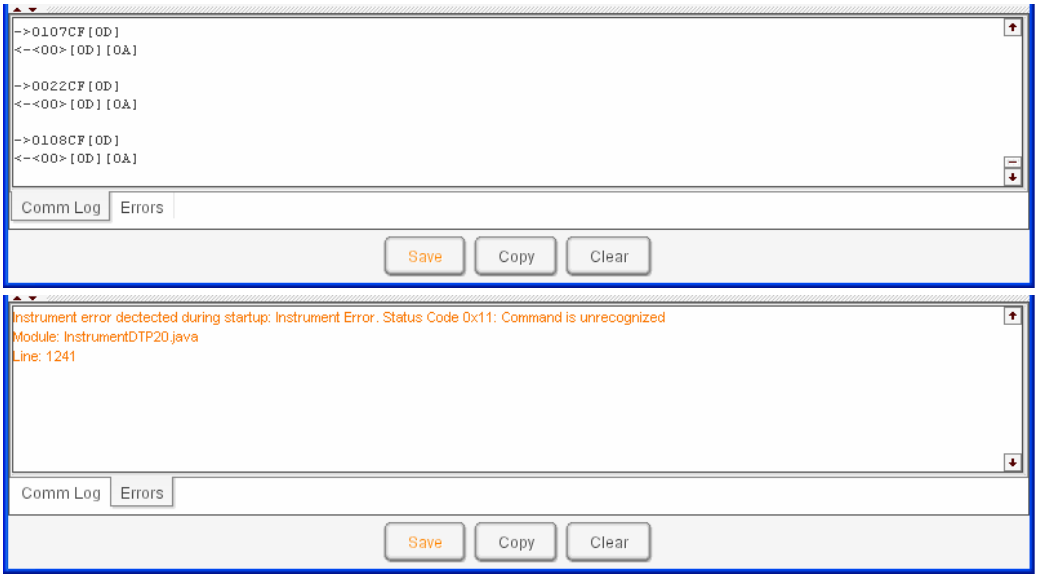
To clear the output that has been received so far from the instrument, click the Clear button.

Hexadecimal Mode

By default, output from the instrument is presented in ASCII format. To see a binary representation of the output, click the "HEX Mode" checkbox, and send a command.

```
0000   58 2D 52 69 74 65 20 42   4F 4F 54 20 76 46 42 31   X-Rite BOOT vFB1
0010   34 0D 0A 3C 30 30 3E 0D   0A                        4..<00>..
```

In the output above, the first column contains a line number for the output. The second series of columns is the hex output. The last column is the ASCII representation of the output.



Communication Log and Errors

To view the communication log and errors for the instrument, drag the slider bar that appears at the bottom of the screen upward. You will then see an area with the two tabs for this functionality.

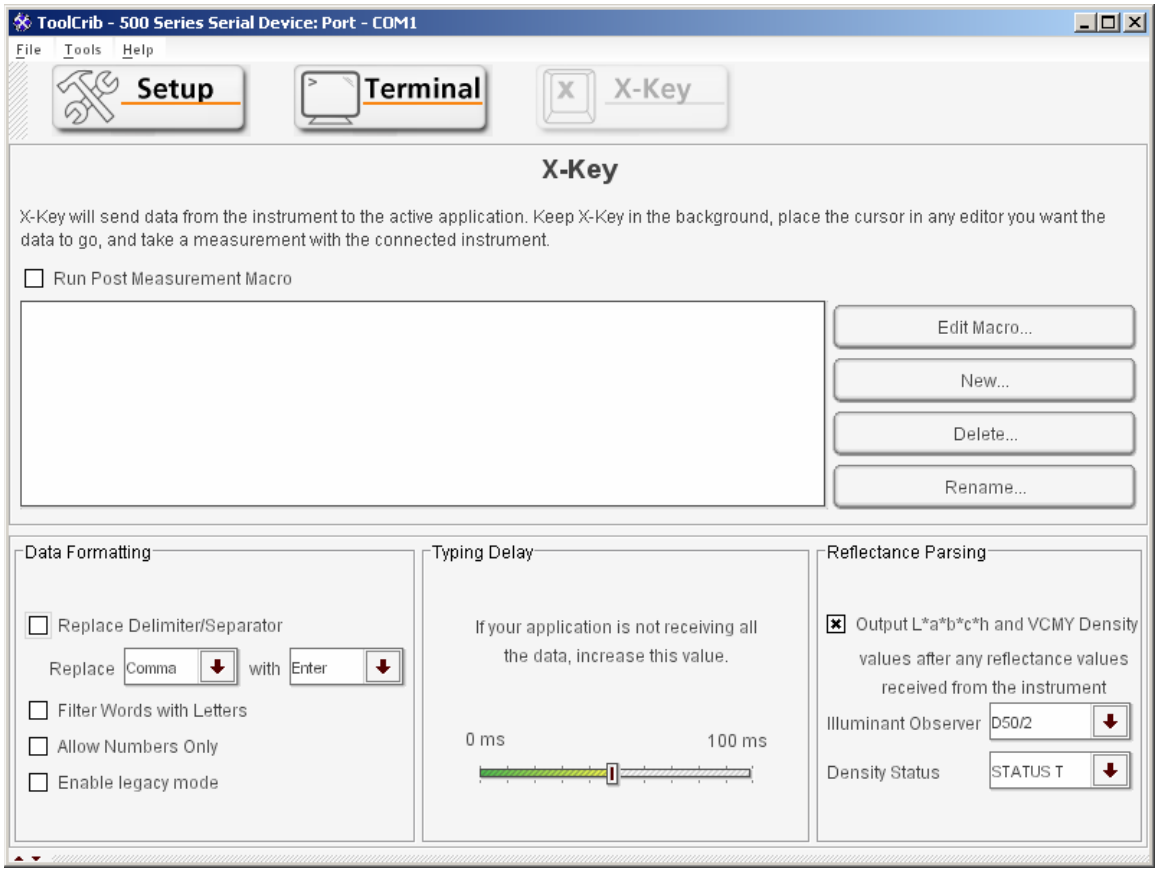
As you send new commands to the instrument, either through the Terminal pane or by interacting with the rest of the TCD, they will appear at the bottom of the communication log. Note that it is normal for the log to have entries before you have done anything in ToolCrib because each TCD may send some commands to the instrument automatically as part of the connection process, e.g. to read some of its configuration settings.

The errors tab will contain any errors that may have been detected by ToolCrib. An example of this would be sending an invalid command to the instrument. The next time that you connect to the instrument, ToolCrib may detect an invalid instrument state resulting from that command as part of its connection process.

You may save, copy to clipboard, or clear the contents of the active tab by using the appropriate buttons at the bottom of the screen.

X-Key

X-Key is a feature that is enabled for instruments that have Auto-Transmit Mode. **X-Key** helps to create documents containing measurement results. **X-Key** will re-direct data from the instrument to the application of the user's choice. For instance, **X-Key** can send a stream of reflectance data into an Excel spreadsheet.



Keep **X-Key** in the background, place the cursor in any editor you want the data to go, and take a measurement with the connected instrument. "Editor" simply means any application that provides a text area into which you can type. It could be a text editor, word processor, or spreadsheet.

If **X-Key** is enabled for an instrument capable of Auto-Transmit, it can be opened from a prominent tab at the top of the window that appears upon connection.

Data Formatting

Often, an instrument will send measurement data in an inconvenient format. For instance, there might be a carriage return and linefeed between each piece of data, and it would be better for your document if there were only a carriage return. Or, your spreadsheet would

be happier if all data were in numeric format. The data formatting options of **X-Key** give a lot of flexibility.

Delimiters and Separators

These refer to the characters, which may be invisible, that separate each piece of data. These can be replaced, on-the-fly, with delimiters of your choosing. For instance, let's say you want the numbers to appear all in one column of your spreadsheet. One way to do that would be to click the "Replace Delimiter/Separator" checkbox, and replace Space with Enter, assuming that the instrument is putting a space between each piece of data.

Filter Words with Letters

Removes from the instrument data stream any words that have alphabetic characters in them. For example, the 500 series when transmitting reflectance data adds the wavelength to the reflectance in the form of "410nm". This option will strip the entire word away.

A word is defined as any sequence of non white space characters surrounded by white space characters.

Allow Numbers Only

Removes non-numeric data from the instrument data stream. This does not remove the entire word, as does "Filter Words with Letters", but only the non-numeric characters themselves. For instance, "400nm" becomes "400".

Enable Legacy Mode

If the formatting isn't working properly, try checking this box. This will cause the data transfer to happen the way it did before modifications were made in July 2006 to support localization.

Typing Delay

If your application is not receiving all the data, increase this value. This may fix problems that are related to computer system speed issues.

Post-Measurement Macros

Click the Run Post Measurement Macro checkbox to run a macro after measurement is complete. A macro is a sequence of stored keystrokes that has been given a name. Each macro is saved to disk as a file with a .xkm extension. When a macro is invoked, it inserts its keystrokes into the data stream. Since a keystroke may represent a text character or an invisible character or command such as <tab> or <down arrow>, the macro is capable of a wide range of effects. One use would be in a spreadsheet, where you would like the cursor to be placed at the beginning of a new row after each set of measurements is captured.

To create a new macro, click New. You are prompted to assign a name to the macro. Then the Edit Macro screen displays elements that you can add to the macro. When the macro is complete, click OK to place it in the X-Key screen. You can also Edit, Delete, and Rename existing macros.

Reflectance Parsing

The 5xx TCD has been enhanced to have an option to process reflectance data coming from the 500-series instrument to calculate L*c*h and VCMY Density values. These calculations are appended to the stream of data that actually comes from the instrument, so it looks like the instrument is sending them.

When this feature is available, a new panel shows up in the user interface, as shown in the lower right corner of the **X-Key** screen shot above. The feature is enabled or disabled at any time by clicking in the checkbox under “Reflectance Parsing”. Use the drop-down menus to set the Illuminant Observer and the Density Status. Both of these values affect the calculations of L*c*h and VCMY Density values.