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# ***FibreXtreme***

**SL100/SL240**

**Software Installation Manual  
for x86 and x64 Platforms**

**Running Windows Vista, Windows 7, Windows 8,  
Windows Server 2003, Windows Server 2008,  
Windows Server 2012**

**Using PCI, PMC and CPCI Cards**

**User Guide**

F-T-MI-WMXXGS31-A-0-A1



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# **1 FORMALITIES**



## 1.1 FOREWORD

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### **FCC**

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### **CE**

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# **2 INTRODUCTION**



## 2.1 How to Use This Manual

### Purpose

This manual guides users of the FibreXtreme SL100/SL240 software through the installation process for Windows. This manual contains information specific to the Windows Vista, Windows 7, Windows 8, Windows Server 2003, Windows server 2008 and Windows Server 2012 version of the FibreXtreme SL100/SL240 software. For information common to all platforms consult the *FibreXtreme SL100/SL240 API Guide*.



**NOTE:** Both the FibreXtreme SL100 and SL240 hardware will be referred to throughout this manual as SL240. The software that supports both the SL100 and SL240 hardware will also be referred to as SL240, including the driver and API. Anything that is exclusive to the SL100 or the SL240 will be described as such.

### Scope

This manual contains the following information:

- Instructions for installing the software.
- Instructions for installing the SL240 device driver.

The information in this manual is intended for users familiar with the Windows operating system and its development environment.

### Style Conventions

- Callouts within figures when referenced in text are enclosed in parentheses. For example (C) = ©.
- Called functions are italicized. For example, *OpenConnect()*.
- Data types are italicized. For example, *int*.
- Function parameters are bolded. For example, **Action**.
- Path names are italicized. For example, *utility/sw/cfg*.
- File names are bolded. For example, **config.c**.
- Path file names are italicized and bolded. For example, ***utility/sw/cfg/config.c***.
- Hexadecimal values are written with a "0x" prefix. For example, 0x7e.
- For signals on hardware products, an 'Active Low' is represented by prefixing the signal name with a slash (/). For example, /SYNC.
- Code and monitor screen displays of input and output are boxed and indented on a separate line. Text that represents user input is bolded. Text that the computer displays on the screen is not bolded. For example:

```
>ls
_file1          file2          file3
```

- Large samples of code are Courier font, at least one size less than context, and are usually on a separate page or in an appendix.

## 2.2 Related Information

- *FibreXtreme SL100/SL240 Hardware Reference Manual for PCI, PMC and CPCI Cards*, Curtiss-Wright Defense Solutions.
- *FibreXtreme SL100/SL240 API Guide*, Curtiss-Wright Defense Solutions.

## 2.3 Quality Assurance

Curtiss-Wright's Corporate policy is to provide our customers with the highest quality products and services. In addition to the physical product, the company provides documentation, sales and marketing support, hardware and software technical support, and timely product delivery. Our quality commitment begins with product concept, and continues after receipt of the purchased product.

Curtiss-Wright's Quality System conforms to the ISO 9001 international standard for quality systems. ISO 9001 is the model for quality assurance in design, development, production, installation and servicing. The ISO 9001 standard addresses all 20 clauses of the ISO quality system, and is the most comprehensive of the conformance standards.

Our Quality System addresses the following basic objectives:

- Achieve, maintain, and continually improve the quality of our products through established design, test, and production procedures.
- Improve the quality of our operations to meet the needs of our customers, suppliers, and other stakeholders.
- Provide our employees with the tools and overall work environment to fulfill, maintain, and improve product and service quality.
- Ensure our customer and other stakeholders that only the highest quality product or service will be delivered.

The British Standards Institution (BSI), the world's largest and most respected standardization authority, assessed Curtiss-Wright's Quality System. BSI's Quality Assurance division certified we meet or exceed all applicable international standards, and issued Certificate of Registration, number FM 31468, on May 16, 1995. The scope of Curtiss-Wright's registration is: "Design, manufacture and service of high technology hardware and software computer communications products." The registration is maintained under BSI QA's biannual quality audit program. Customer feedback is integral to our quality and reliability program. We encourage customers to contact us with questions, suggestions, or comments regarding any of our products or services. We guarantee professional and quick responses to your questions, comments, or problems.



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# **3 TECHNICAL SUPPORT**



Technical documentation is provided with all of our products. This documentation describes the technology, its performance characteristics, and includes some typical applications. It also includes comprehensive support information, designed to answer any technical questions that might arise concerning the use of this product. We also publish and distribute technical briefs and application notes that cover a wide assortment of topics. Although we try to tailor the applications to real scenarios, not all possible circumstances are covered.

While we have attempted to make this document comprehensive, you may have specific problems or issues this document does not satisfactorily cover. Our goal is to offer a combination of products and services that provide complete, easy-to-use solutions for your application.

If you have any technical or non-technical questions or comments, contact us. Hours of operation are from 8:00 a.m. to 5:00 p.m. Eastern Standard/Daylight Time.

- Phone: (937) 252-5601 or (800) 252-5601
- E-mail: **DTN\_support@curtisswright.com**
- Fax: (937) 252-1465
- World Wide Web address: [www.cwdefense.com](http://www.cwdefense.com)

## 3.1 Ordering Process

To learn more about Curtiss-Wright's products or to place an order, please use the contact information above or E-mail: [DTN\\_info@curtisswright.com](mailto:DTN_info@curtisswright.com). Hours of operation are from 8:00 a.m. to 5:00 p.m. Eastern Standard/Daylight Time.





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# **4 SOFTWARE OVERVIEW**



## 4.1 Software Organization

There are several layers of software between the user and the SL240 hardware:

<b>SL240 API</b>	Library call-routines for executing calls to the SL240 device driver.
<b>SL240 Device Driver</b>	A kernel-level WDM device driver.

Figure 4-1 shows a top-down view of these layers.

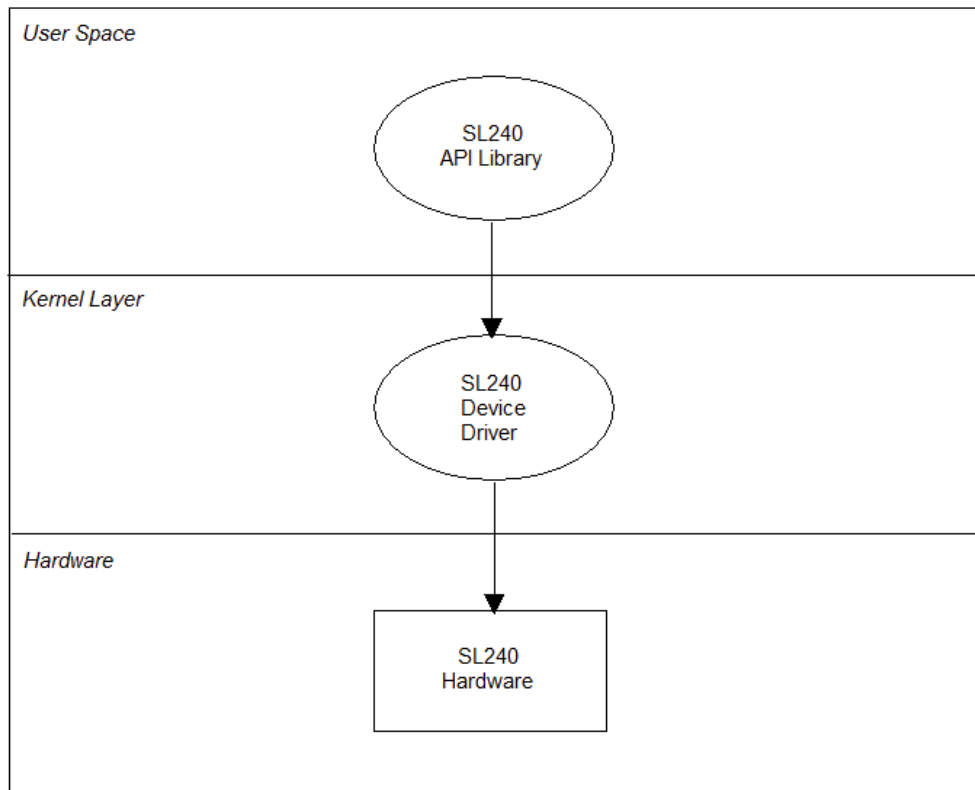


Figure 4-1 SL240 Structure

## 4.2 Software Distribution

The SL240 software for Windows systems is distributed on CD-ROM. The software contains an SL240 API (Application Programming Interface) library, and an SL240 device driver. The software is intended to provide an easy to use, very high-speed point-to-point communication link.

## 4.3 System Requirements

The minimum system requirements include the following:

- An x86-based or x64-based Windows Vista, Windows 7, Windows 8, Windows Server 2003, Windows Server 2008, or Windows Server 2012 system.
- CD-ROM drive.
- A suggested minimum of 256 MB of RAM.
- One or more SL100 or SL240 PCI, PMC, or CPCI cards.



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# **5 INSTALLATION**



## 5.1 Overview

To install the SL240 software, complete the following steps:

- Install the hardware (section 5.2).
- Install the software onto the host computer (section 5.3).
- Install the device driver (section 5.3.1).
- Verify the directory structure (section 5.4).



**NOTE:** Please read this entire document before attempting to install the SL240 software. This SL240 device driver can support between one and sixteen SL240 PCI Cards.

## 5.2 Install the Hardware

Install the SL240 hardware before installing the SL240 software. See the FibreXtreme SL100/SL240 Hardware Reference Manual for PCI, PMC and CPCI Cards for details on installing SL240 hardware in the host system.



**NOTE:** The SL100 and SL240 cards do not communicate with each other or any other card.

## 5.3 Install the Software onto the Host Computer

This section describes how to install the software. Software is distributed on one CD-ROM.

### 5.3.1 Install the Device Driver



**NOTE:** The screens shown are from Windows 7. The Windows interface may vary on other versions of windows.

On the first boot after the hardware is installed, Windows will detect the SL240 card and look for a driver for the SL240 card.

If the SL240 Card is not detecting at startup, you can manually install the driver from the device manager. To open the device manager, open a command window and enter the command “mmc devmgmt.msc”.

From the device manager window (Figure 5-1) you should see an entry named “**PCI Data Acquisition and Signal Processing Controller**” under the “**Other Devices**” section.

To install the driver, right click the “**PCI Data Acquisition and Signal Processing Controller**” and select Update Driver Software from the pop-up Window.

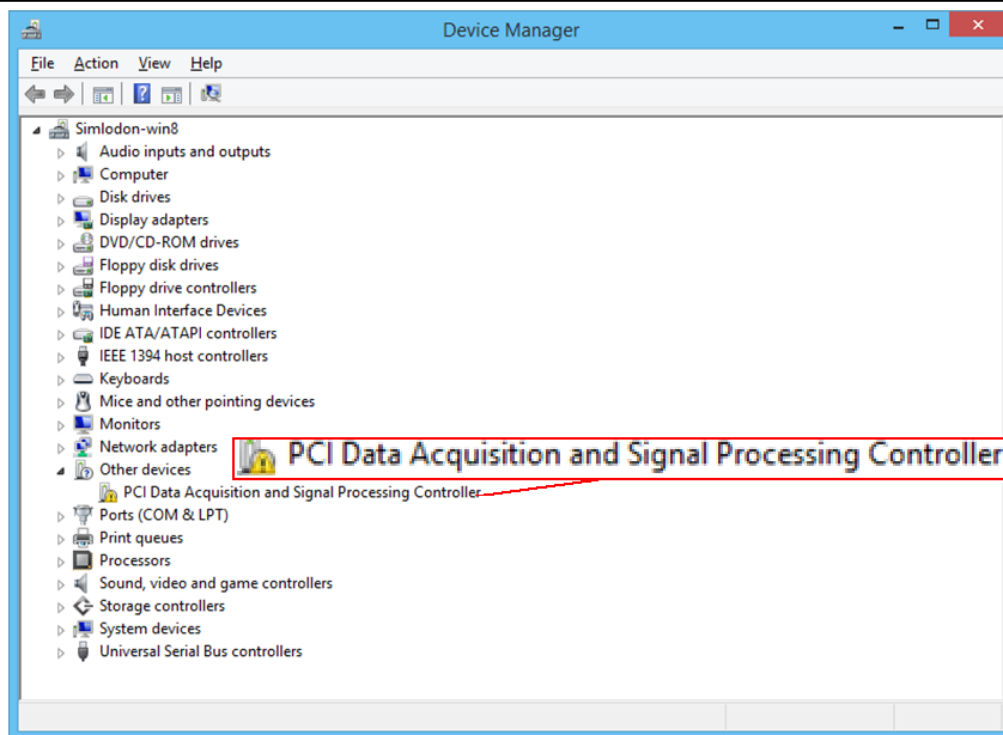


Figure 5-1 Device Manager Window

From this point forward the steps should be the same as if the new hardware wizard had detected the presence of the card.

Click **Browse my computer for driver software** to manually specify where windows will search for the SL240 driver software.

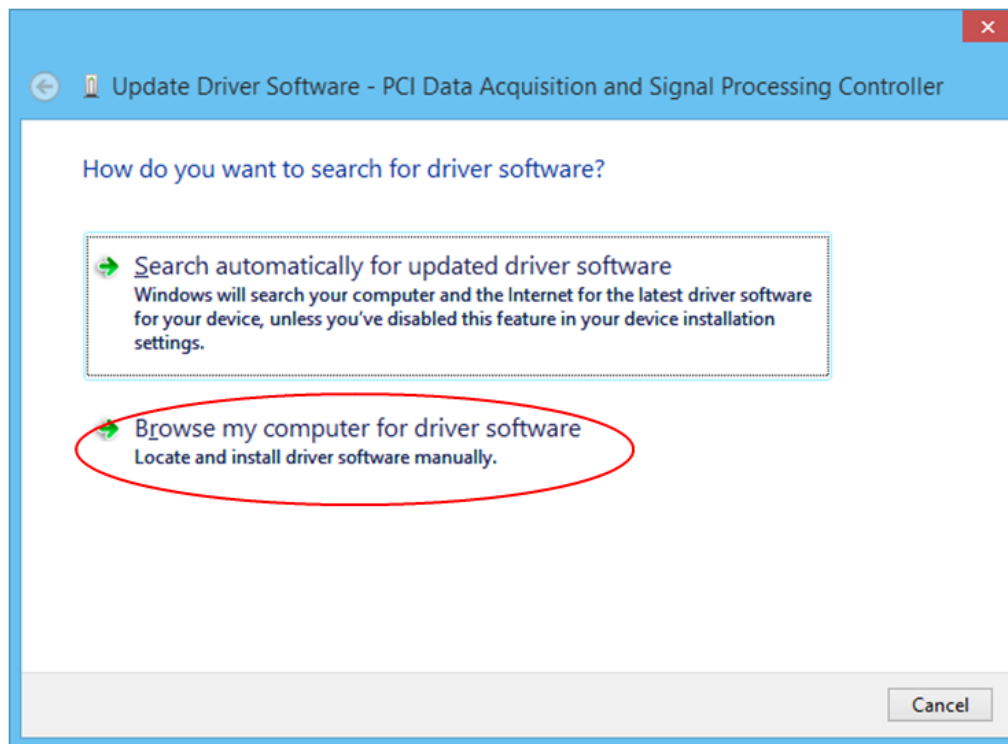


Figure 5-2 Search for Driver



Click the **Browse** button and then navigate to the drive and folder where the SL240 installation files are located. If installing from CD-ROM, make sure the CD-ROM is installed and its drive letter is specified. The folder specified should contain the file *fxsl.inf* and two folders named *i386* and *amd64* which contain the driver files. Click **Next** to start the driver installation.

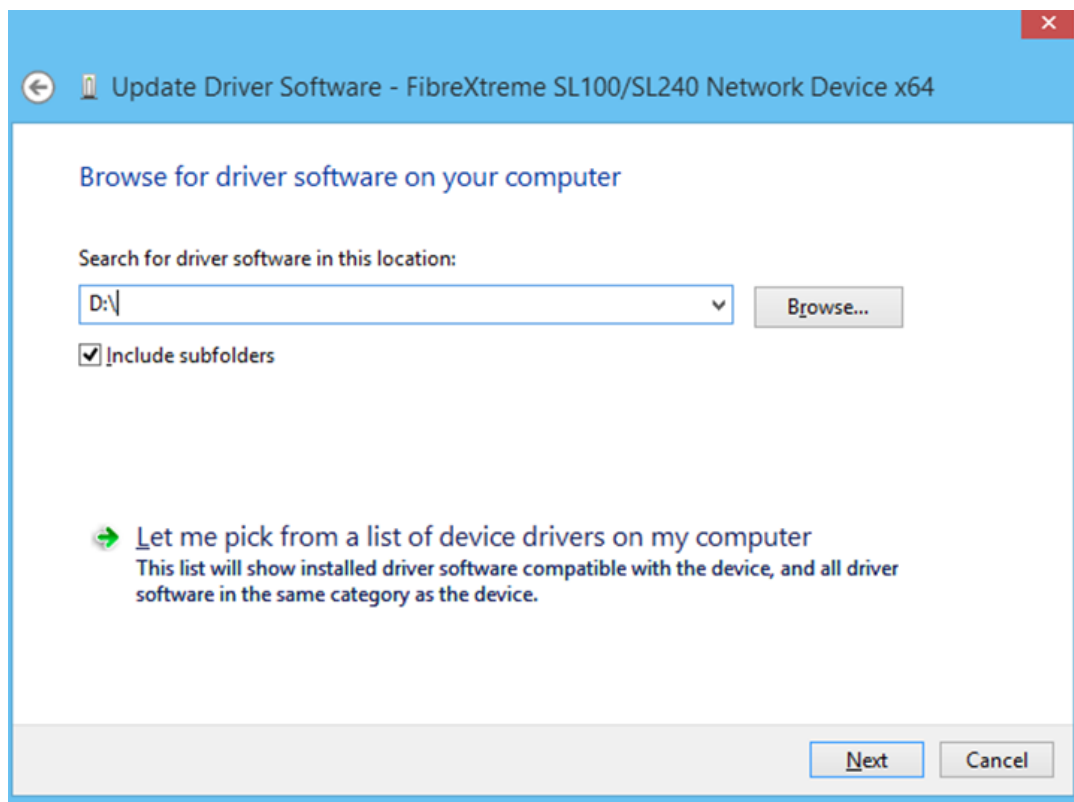


Figure 5-3 Specify the location where software is located

After Windows has finished installing the driver click the Close button. The driver should be running, and will restart automatically whenever the computer is rebooted.

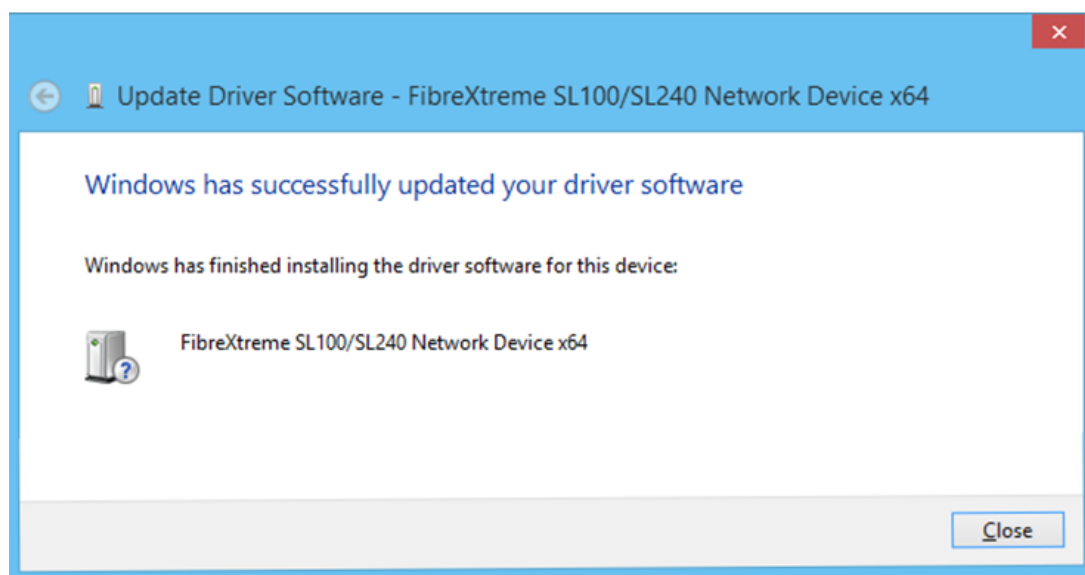


Figure 5-4 Driver Installation Complete

### 5.3.2 Verifying Driver Installation

To verify the driver is installed, start the device manager. You can start the device manager by opening a command window and entering the command “`mmc devmgmt.msc`”. A dialog similar to Figure 5-5 should appear.

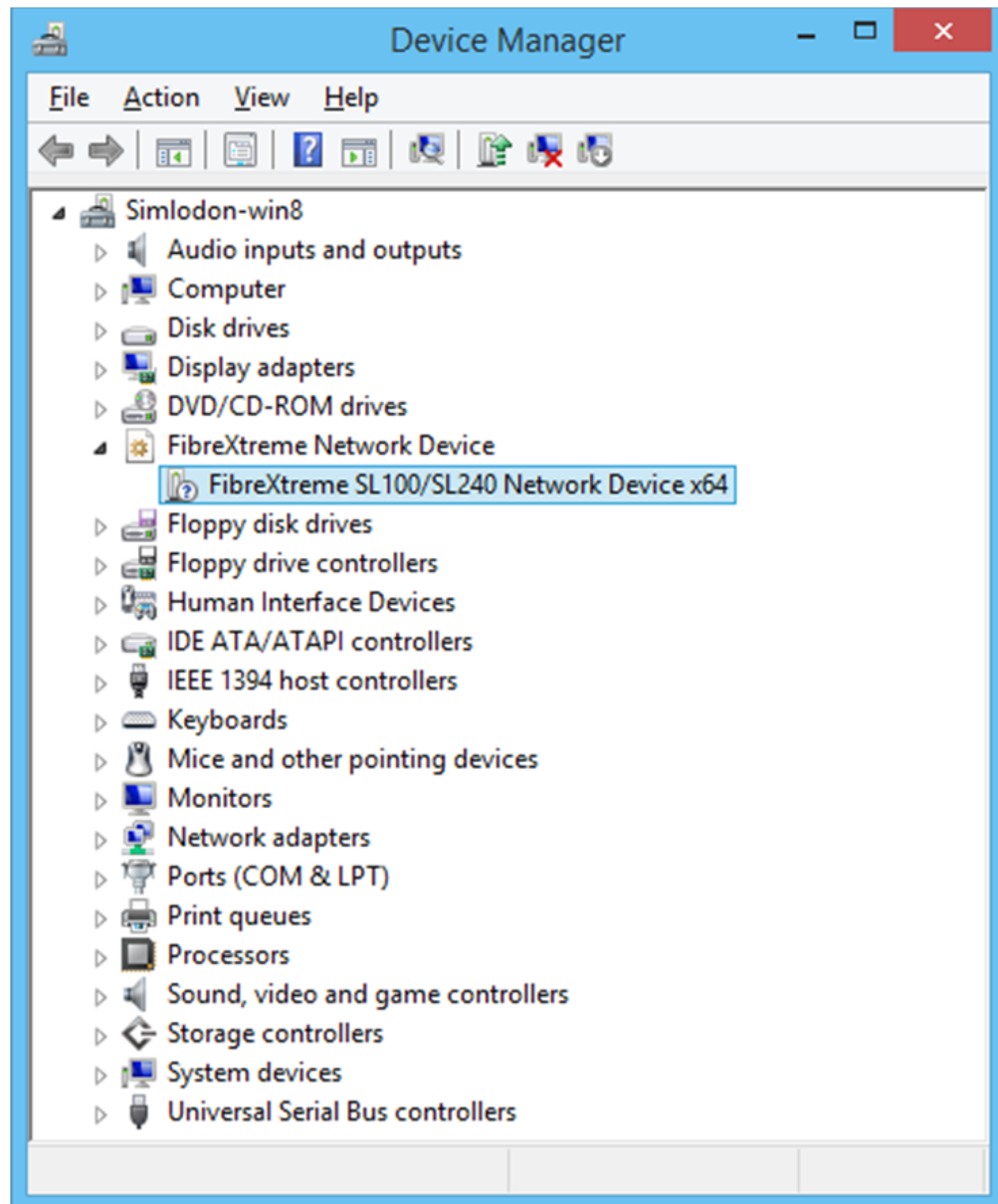


Figure 5-5 Device Manager Window

If the driver is properly installed you should see a new category named “**FiberXtreme Network device.**” In that category you should see an entry for each FiberXtreme SL240 card installed in the system.

### 5.3.3 Install the API Example Files

An automated installation file (**setupFiberXtreme.exe**) is provided on the CD to install the driver and API files. The file is an installation program, which extracts the API files, headers, and sample programs.



**NOTE:** You must have administrative privileges to proceed with the SL240 software installation.

To install the SL240 software on your system:

1. Log on to the system as administrator, or as a user that is part of the administrative group.
2. Open a new Windows file Explorer.
3. Place the CD-ROM in the drive or browse to the folder where the software installation files are located.
4. Click on the **SetupFiberXtreme.exe** file to start the installation process.

The installation program will step through a set of dialogs to configure how the software is installed.

- You will first see a User Account Control Dialog asking permission to install the software. Click **Yes** to proceed with installation.

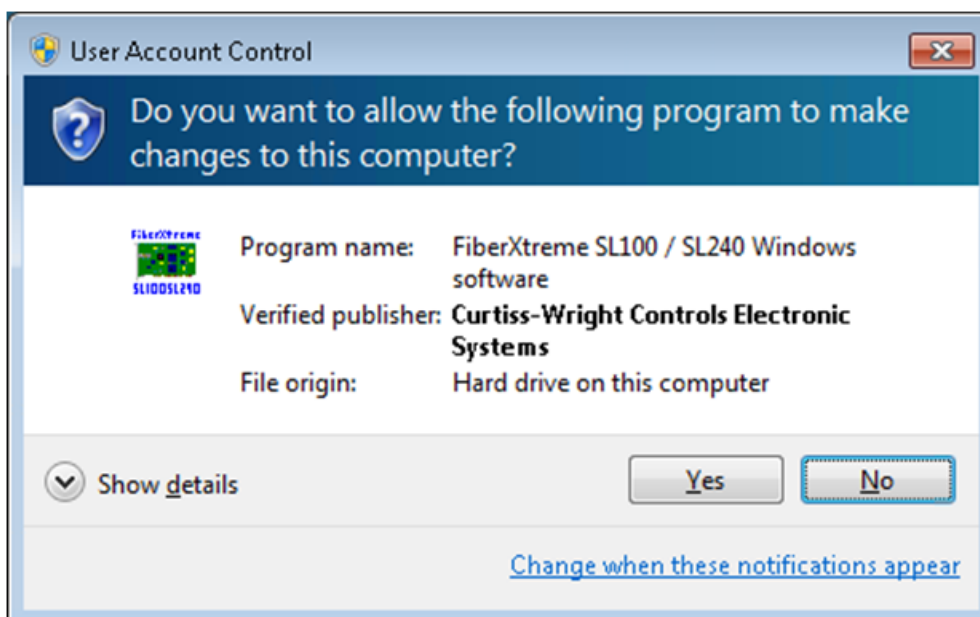


Figure 5-6 Request Permission to Install Software

- The installation process starts by displaying a welcome dialog. Click Next when ready to begin installation.

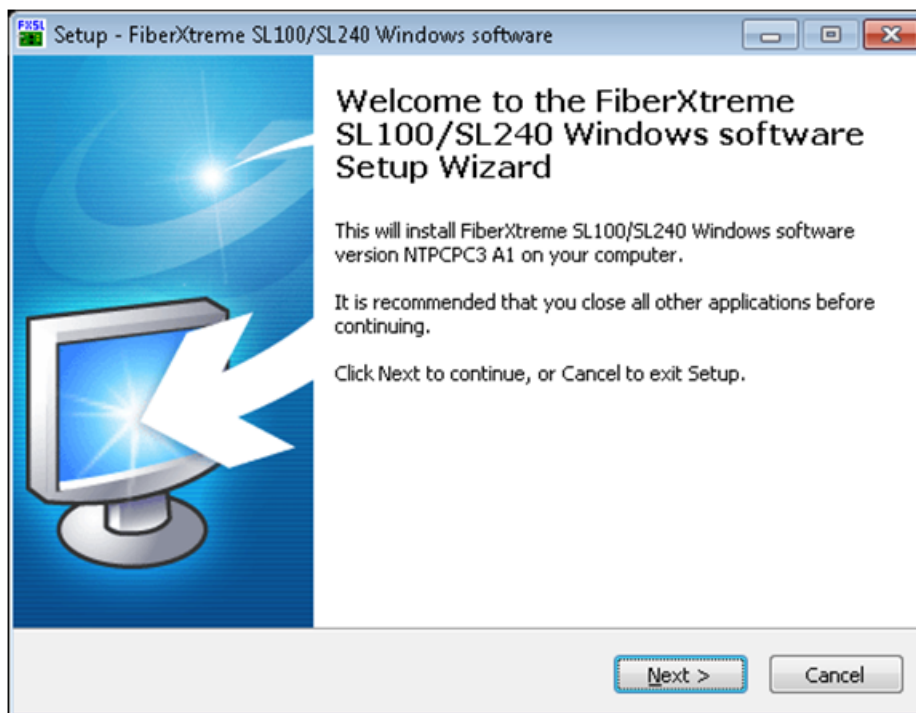


Figure 5- 7 Start Installation Wizard

- The License Agreement page will appear next. Select **I accept the Agreement** and then click **Next**.

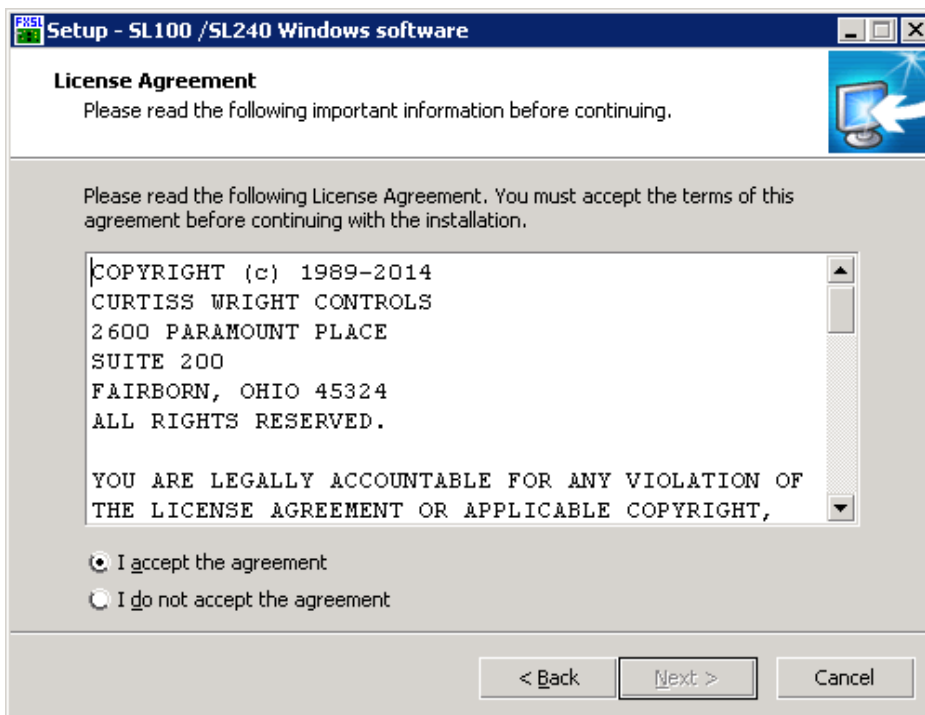


Figure 5- 8 License Information

- Indicate the directory where the source and executable files will be installed. The default is *C:\program files\sl240* on a 32-bit systems, and *C:\program files(x86)\sl240* on a 64-bit systems.

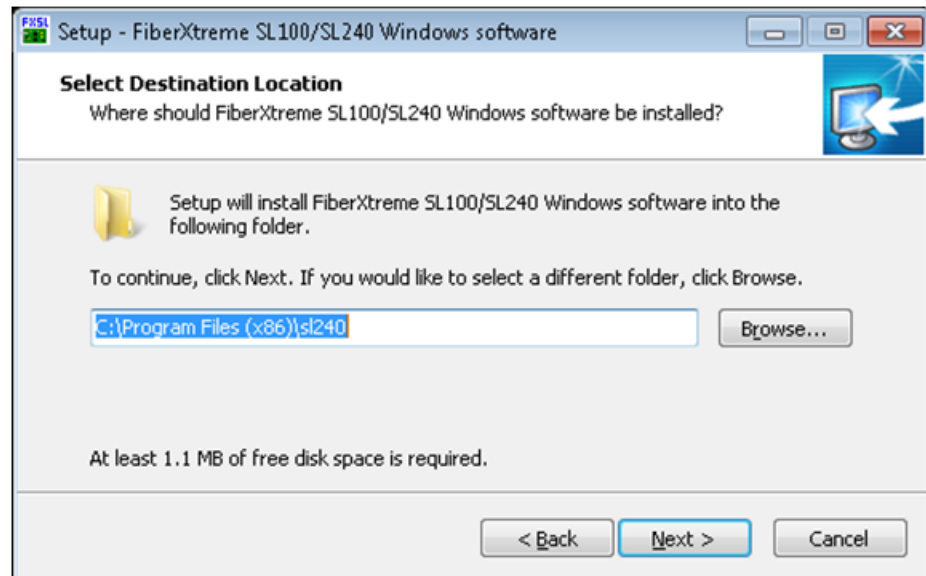


Figure 5-9 Set Installation Location

- Select which components to install.

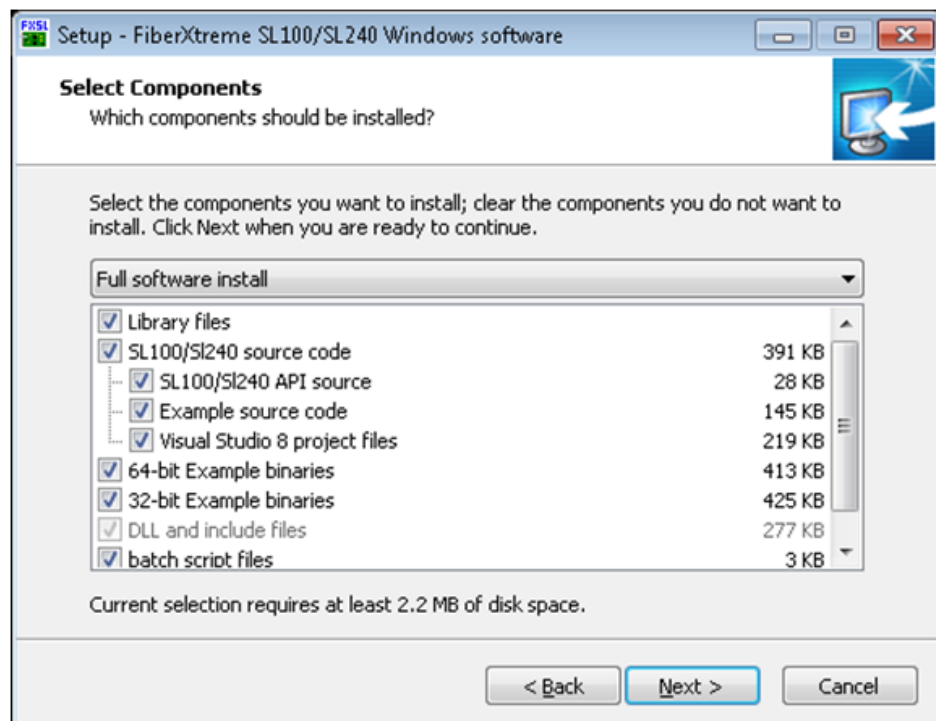


Figure 5-10 Component Installation Selection

- Select the Start Menu Folder Name and then click **Next**.

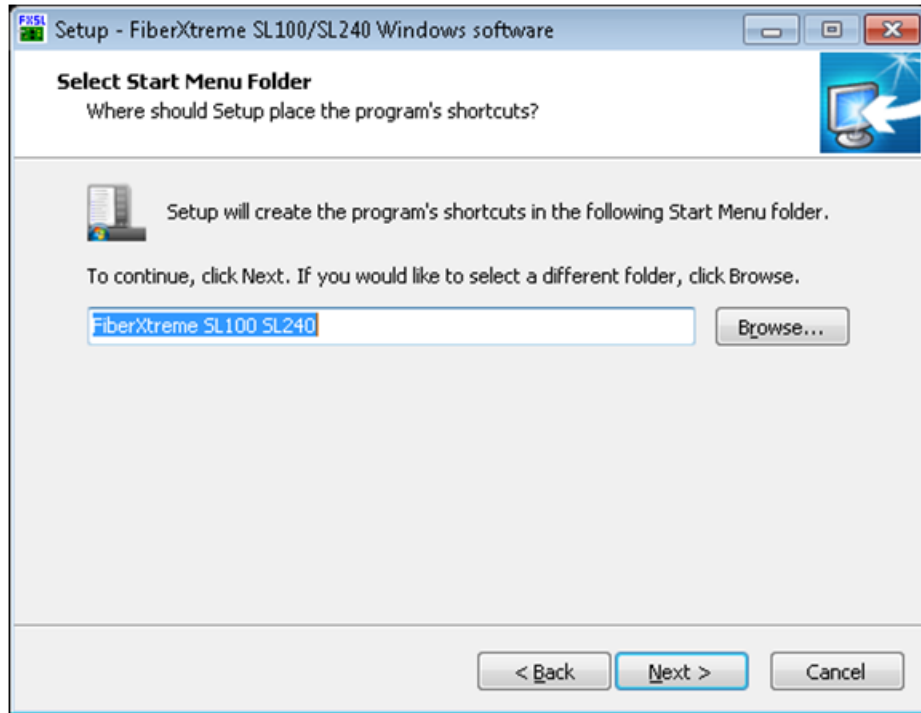


Figure 5-11 Set Start Menu Folder

- Confirm the selections and then click **Install** to start the installation process.

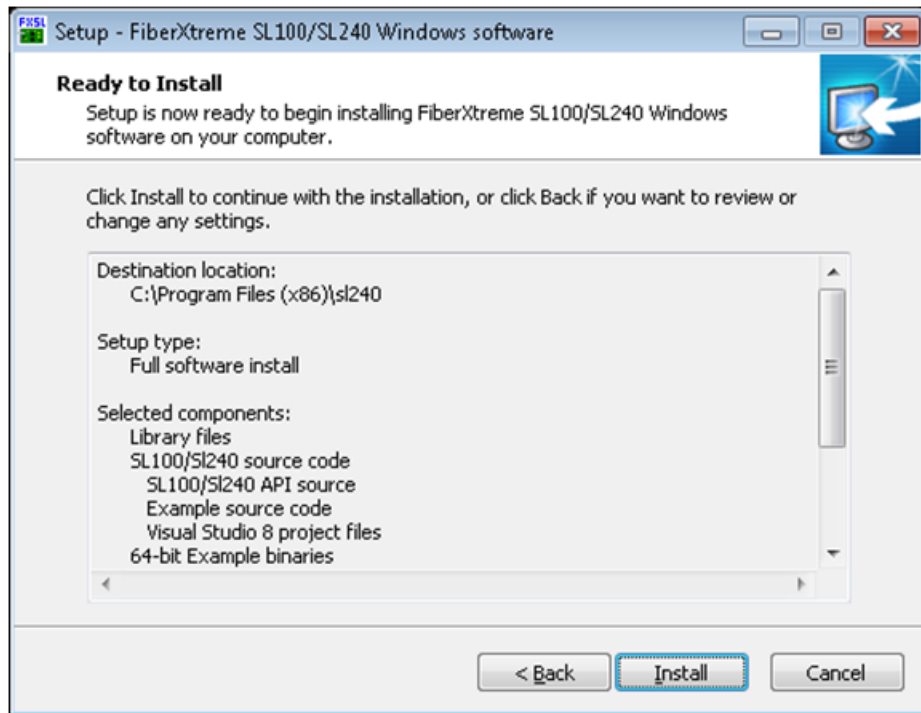


Figure 5- 12 Start Software Installation as Shown

- The installation program will now install the software creating the subdirectories described in section 5.4.

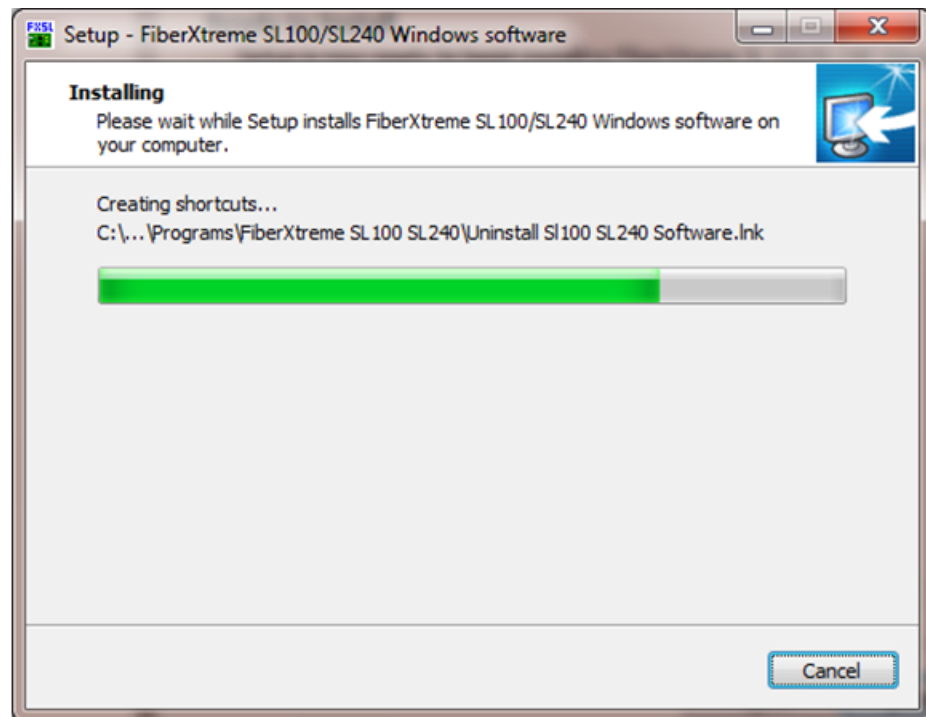


Figure 5-13 Software Installation Progressing

- When the installation is completed, the next screen will ask if you want to view the readme file. Click **Finish** to complete the installation process.

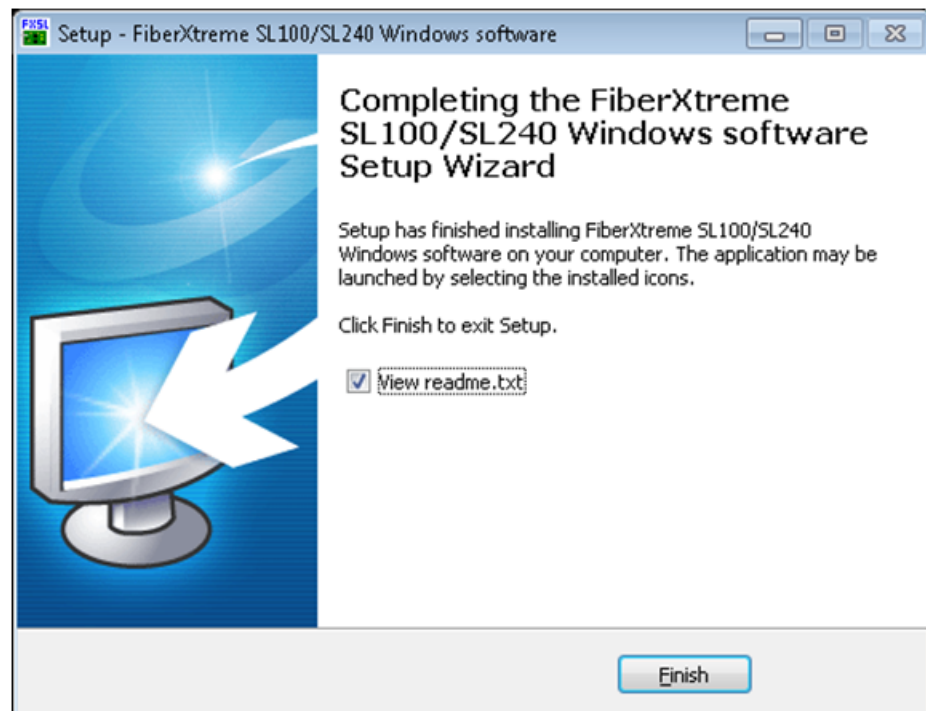


Figure 5-14 Finish and Exit Setup

## 5.4 Verify the Directory Structure

The SL240 software files are placed into several subdirectories as shown below in Figure 5-16 (assuming the default directory is *C:\program files\sl240*):

C:\PROGRAM FILES \SL240

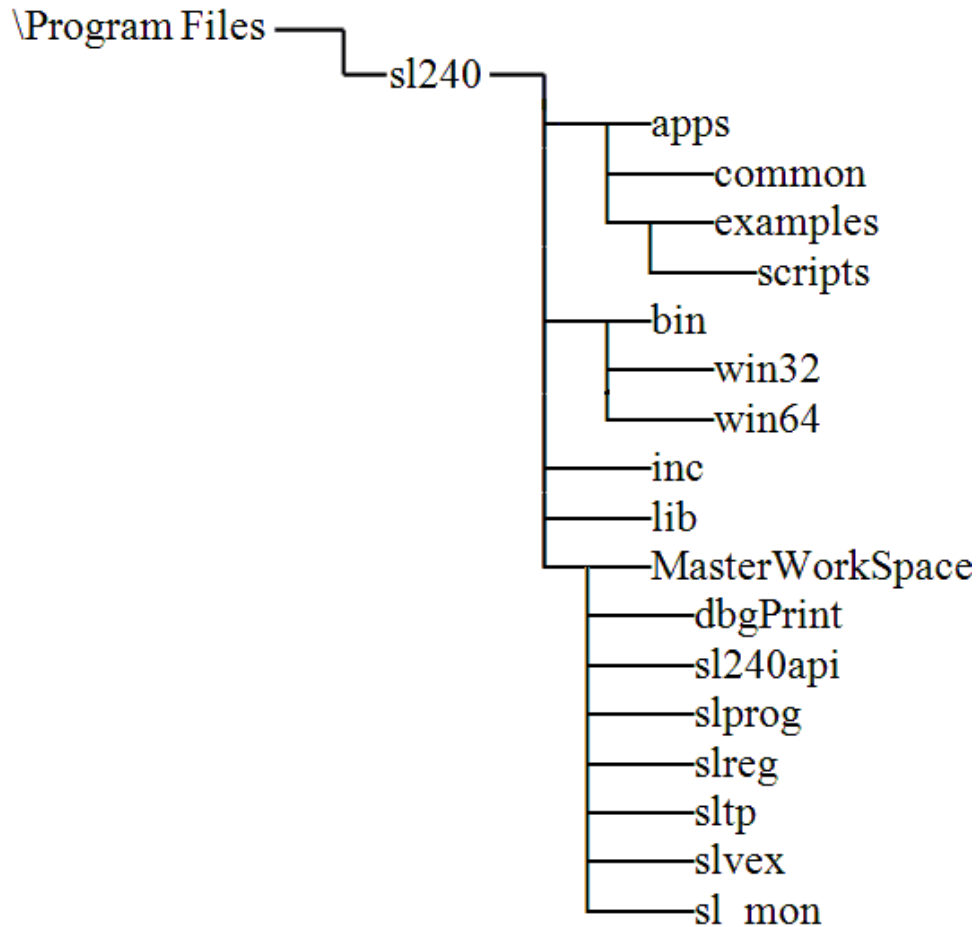


Figure 5-15 Default Directory Structure

- See the *FibreXtreme SL100/SL240 API Guide* for a detailed explanation of each of these applications. The *apps* directory also contains the *common* directory containing common source code used by the sample applications.
- The *apps/examples* directory contains source code for the example programs
- The *inc* directory contains the header files for the SL240 API library routines.
- The *lib* directory contains the library file to resolve calls to the SL240 API routines.
- The *bin* directory contains a *win32* folder with 32-bit sample executable files and a *win64* folder with 64-bit sample executable files. Note: The *Win64* folder is not installed if you are using a 32-bit version of Windows.
- The *MasterWorkspace* folder contains a visual studio 2008 solution file to build the *sl240api.dll* file and the example programs.



## 5.5 Uninstalling the SL240 Software

Use the following procedures if it becomes necessary to uninstall the software.

- Open the Control Panel.
- Click on "uninstall a program" or "Programs and Features"
- Click on the entry named "FiberXtreme SL100 SL240 software"

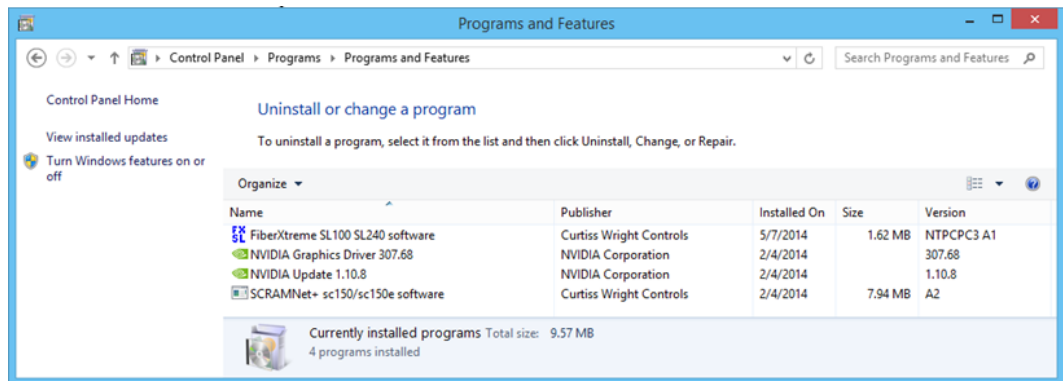


Figure 5-16 Programs and Features Window

- Click on **Yes** when Windows asks you if you would like to remove the software.

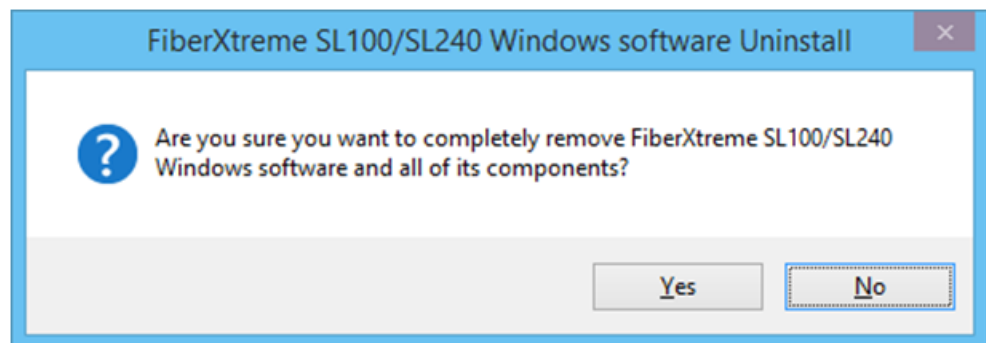


Figure 5-17 Confirm Uninstall Selection

- Dialog will appear when unistall is complete.

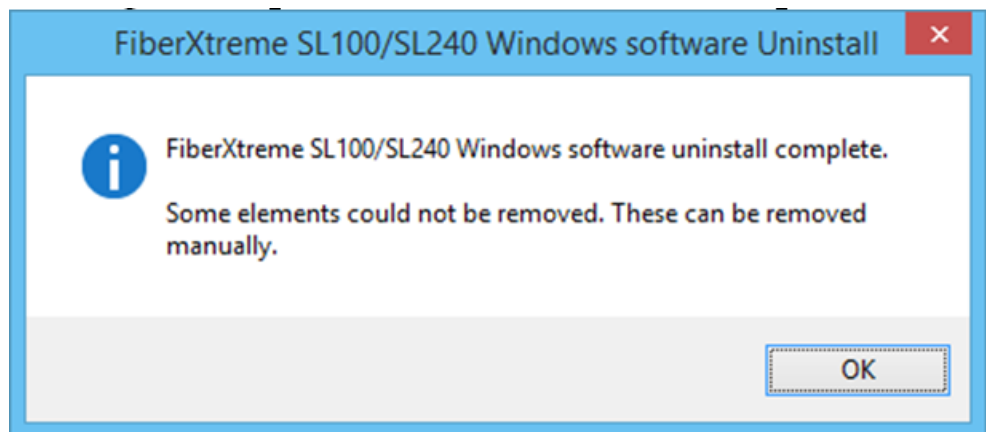


Figure 5-18 Uninstall Process Done





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# **6 API and UTILITY PROGRAMS**



## 6.1 Overview

The windows installation program installs the source code to the API library and utility programs. The SL240 API library fits between the applications and the driver. The SL240 API allows applications to access the driver using a set of defined functions. These functions are described in detail in the FiberXtreme SL100/SL240 API Guide. Document No: F-T-ML-S2API###-A-0-A#. The SL240 utility programs are provided to assist in verifying the card's functionality, to assist in application development, and to provide examples using the SL240 API.

## 6.2 Building the SL240 API and Utility Programs

The Windows software package provide two ways to build the sl240 API and utility packages. There are command line makefiles and a visual studio 2008 solution file.



**NOTE:** The default visual studio installation options do not install the 64-bit compilation tools. If you do not see an x64 option on your system, you will need to update your visual studio installation to build 64-bit binaries.

### 6.2.1 Building Software from Visual Studio GUI

To build the software using visual studio 2008 or latter, start visual studio and open the solution file named **masterWorskpace.sln**. The **masterworskpace.sln** file is located in the *sl240/masterworkspace* folder. From the build menu select build solution to build the software. From the configuration manager you can select build win32 or x64 binaries.

### 6.2.2 Building Software from Command Prompt

To build a 32-bit versions of the API and utility program, open a **Visual studio command prompt** by clicking the entry in the start menu with this name. Then from the command prompt issue the following commands:

Change to the SL240 API library folder

```
cd \program files\sl240\lib
```

Execute the platform-specific makefile:

```
nmake -f win32.mak
```

Change to the SL240 examples folder:

```
cd \program files\sl240\apps\examples
```

Execute the platform-specific makefile:

```
nmake -f apps.win32.mak
```

To build a 64-bit versions of the API and utility program, open a **visual studio x64 cross tools command prompt** by clicking the entry in the start menu with this name. Then from the command prompt issue the following commands:

Change to the SL240 API library folder

```
cd \program files\sl240\lib
```

Execute the platform-specific makefile:

```
nmake -f win64.mak
```

Change to the SL240 examples folder:

```
cd \program files\sl240\apps\examples
```

Execute the platform-specific makefile:

```
nmake -f apps.win64.mak
```

## 6.3 Running the Utility Programs

To run the utility programs open a command prompt. Then change directories to *\program files\sl240\bin\win32*. From here you can run 32-bit versions of the utility programs. If you are running on a 64-bit system you can also change directories to *\program files (x86)\sl240\bin\win64* to execute 64-bit versions of the utility programs.

The programs **slprog.exe**, **slreg.exe**, **sltp.exe**, **slvex.exe**, **sl\_mon.exe** and **dbgprint.exe** are installed on the system.

The **DbgPrint.exe** utility program is Windows specific, and is used to read and write a 32-bit value in the SL240 device driver that controls what type of debug messages are printed by the driver. Run the program with the flag **-h** to see the help menu shown below for more information on what type of message each bit is responsible for masking.

```

dbgPrint ver: 1.00 (05/18/2014)
This program allows you to view and modify the debug level mask
value used by the windows driver to control what type of debug
messages are displayed by the windows driver. The debug mask
value bit definitions are as follows:
-----
Mask      | Definition
-----
00000001 Show critical errors.
00000002 Show warning messages.
00000004 Show informational messages.
00000008 Show version info.
00000010 Show ioctl transactions.
00000020 Show dispatch IRP messages.
00000040 Show get address mapping messages.
00000080 Show write to PCI registers messages.
00000100 Show read from PCI registers messages.
00000200 Show interrupt deferred procedure call messages.
00000400 Show PNP configuration messages.
00000800 Show DMA setup messages.
00001000 Show DMA semaphore transitional messages.
00002000 Show DMA transaction messages.
00004000 Show build DMA chain list messages.
00008000 Show allocate DMA Chain list memory messages.
00010000 Show allocate transaction queue memory messages.
00020000 Show receive transaction messages.
00040000 Show send transaction messages.
00080000 Show ioctlXmit start send or receive messages.
00100000 Show DMA time-out error messages.
00200000 Show DMA EMPTY or FULL state warning messages.
-----
To view the debug mask value, run the program with no
arguments.
To set the debug mask value, run the program with a single
hexadecimal input parameter. For example run the command
'dbgPrint 0xb' to enable critical, warning and version info
messages.

```

The other applications are platform independent and are described in detail in chapter 6 of the FiberXtreme SL100/SL240 API guide Document No: F-T-ML-S2AP1###-A-0-A#

## 6.4 Building Your Own Programs

The API comes in two forms **sl20api.dll** and **sl240api64.dll**. Each of these dynamic link libraries has a corresponding lib file in the `\sl240\lib` folder. The file **sl240api.lib** is for use in 32-bit applications and the file **sl240api64.lib** is for use in 64-bit applications.

When building your own programs you will need to define the keyword "PLATFORM\_WINNT4" by adding it to your compiler's pre-processor definitions or add the flag `/D"PLATFORM_WINNT4"` to your compiler flags.