

***FibreXtreme***<sup>®</sup>

**SL100/SL240**

**Software Installation Manual  
for x86 and PowerPC Hosts  
Running Linux<sup>®</sup> 2.4 or 2.6  
Using PCI/PMC/CPCI Cards**

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**CURTISS  
WRIGHT** **Controls, Inc.**  
*Embedded Computing*





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# 1. INTRODUCTION

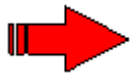
## 1.1 How to Use This Manual

### 1.1.1 Purpose

This manual guides users of the FibreXtreme SL100/SL240 software through the installation process for Linux on supported x86 or PowerPC platforms. This manual contains information specific to Linux. 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.



**NOTE:** Please read this entire document before attempting to install the SL240 software.

### 1.1.2 Scope

This manual contains the following information:

- Instructions for installing the software.
- Instructions for configuring and using the driver.
- Location and organization of the example applications.

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

### 1.1.3 Style Conventions

- 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, ***/dev/fxsla0***
- Hexadecimal values are written with a “0x” prefix: 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.

## 1.2 Related Information

- *FibreXtreme SL100/SL240 Hardware Reference Manual for PCI and PMC Cards*, Curtiss-Wright Controls, Inc.
- *FibreXtreme SL100/SL240 API Guide* – Curtiss-Wright Controls, Inc.
- Curtiss-Wright Controls, Inc. web site: [www.cwembedded.com](http://www.cwembedded.com)

## 1.3 Quality Assurance

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Curtiss-Wright Controls' 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 Controls' 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 Controls' registration is: "Design, manufacture and service of high technology hardware and software computer communications products." The registration is maintained under BSI QA's bi-annual quality audit program.

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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.

Although 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.

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- World Wide Web address: [www.cwcembedded.com](http://www.cwcembedded.com)

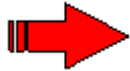
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# 2. SOFTWARE OVERVIEW

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## 2.1 Overview

The FibreXtreme SL240 device driver supports the SL100/SL240 PCI and PMC cards. The software provides an easy to use, very high-speed point-to-point communication link.



**NOTE:** The SL240 device driver can support between one and sixteen SL240 cards per host.



**NOTE:** The SL100 and SL240 cards do not, by design, communicate with each other. For more information on SL100/SL240 hardware issues, refer to the *FibreXtreme SL100/SL240 Hardware Reference Manual for PCI, PMC, and CPCI Cards*.



**CAUTION:** Do not attempt to install both the FibreXtreme Simplex Link and the SL100/SL240 on the same system.

## 2.2 Software Distribution

The SL240 software for Linux systems is distributed on CD-ROM. The software contains an SL240 API (Application Programming Interface) library, and an SL240 device driver.

## 2.3 System Requirements

### Host Requirements

- 64 MB RAM
- 2 MB hard disk space
- x86 Personal Computer
- One PCI, PMC, or CPCI slot

Or

- 64 MB RAM
- 2 MB hard disk space
- Synergy VYM2, VYFD, VYMD Single-board computer
- Apple PowerMac G4
- One PCI, PMC, or CPCI slot

### Operating System Requirements

- Fedora Core 1- 2
- Red Hat Linux 7.2 – 9.0
- SuSE Linux 8.2 – 9.0
- Yellow Dog Linux 2.3 – 3.0
- Linux kernel sources
- GCC compiler 2.95+ (3.x required for PowerPC)

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# 3. INSTALLATION

## 3.1 Overview

### 3.1.1 Chapter Outline

This chapter describes the installation process for the SL240 software. Before installing the SL240 software, install the hardware as described in the appropriate Curtiss-Wright Controls, Inc. FibreXtreme SL100/SL240 hardware reference manual.

When you have ensured the hardware is correctly installed, install the software using the following steps:

- Install the software on the host computer (Section 3.2).
- Verify directory structure (Section 3.3)
- Install the SL240 device driver (Section 3.4).

Procedures for unloading the SL240 device driver are contained in section 3.5.

### 3.1.2 Software Organization

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

- **SL240 API**..... Library call-routines for executing calls to the SL240 device driver.
- **SL240 Device Driver** ..A kernel-level Linux device driver.

Figure 3-1 shows a top-down view of these layers.

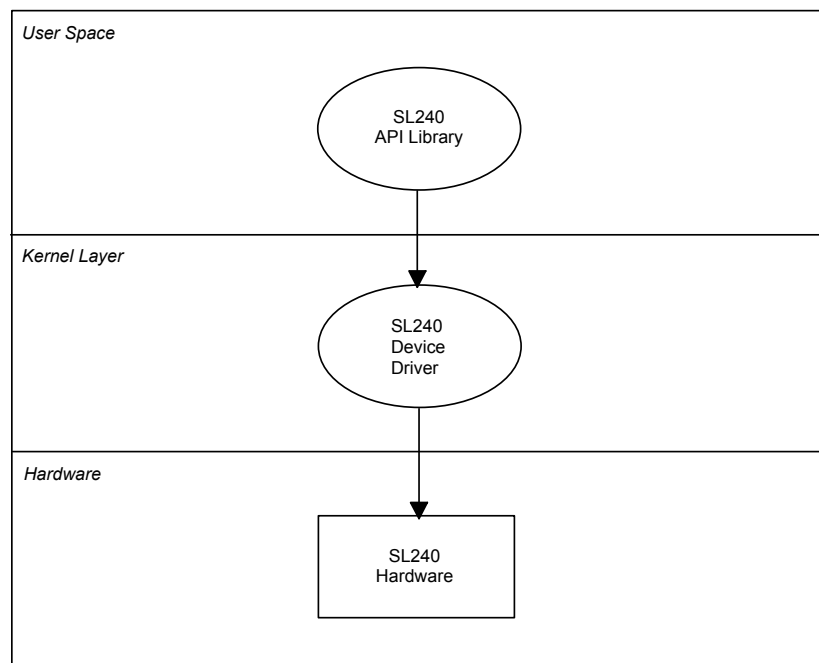


Figure 3-1 SL240 Structure

## 3.2 Install the Software On the Host Computer

The software is distributed on a CD-ROM as a UNIX **.tar** file.

To install the SL240 software on your system:

- Place the CD-ROM in the drive.
- Login to the system as root (superuser).
- Mount the CD-ROM if it isn't already mounted. For example:

```
mount /dev/cdrom /mnt/cdrom
```

- Change to the desired installation directory. For example:

```
cd /usr/local
```

- Extract the distribution **.tar** file. For example:

```
tar -xvzf /mnt/cdrom/linux2.4/sl240_bin.tar.gz
```

or

```
tar -xvzf /mnt/cdrom/linux2.6/sl240_bin.tar.gz
```

These procedures will place the contents of the tar.gz into the */usr/local/sl240* directory.

- Build the SL240 software:

```
cd /usr/local/sl240  
make
```



**NOTE:** SL100/SL240 applications are distributed on a separate CD-ROM. Consult the SL240 API Guide for installation procedures.

### 3.3 Verify the Directory Structure

The SL240 software files are placed into several subdirectories as shown in Figure 3-2 (assuming the default directory is `/usr/SL240`):

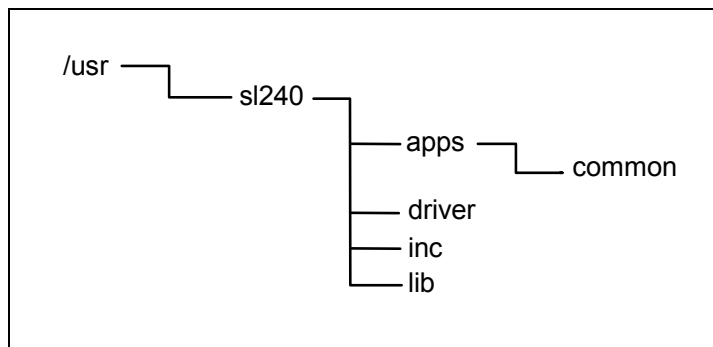


Figure 3-2 Default Directory Structure for Linux

- See the *FibreXtreme SL100/SL240 API Guide* for installing and running applications. The *apps* directory also contains the common directory containing common source code used by the sample applications.
- The *driver* directory contains the source code for creating the SL240 PCI driver and script files to install and uninstall the driver.
- The *inc* directory contains the header files for SL240 API library routines.
- The *lib* directory contains the source code and library files to resolve calls to the SL240 API routines.

### 3.4 Load the SL240 Device Driver

You must properly load the SL240 device driver before it can be accessed.

First, change to the SL240 driver directory by typing:

```
cd /usr/local/sl240/driver
```

Execute the driver install script by typing:

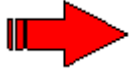
```
./fxinst
```



**CAUTION:** Ensure Linux kernel sources are installed before running the installation script. Failure to do so will result in compiler errors.



**NOTE:** The `fxinst` script will first build the driver module if it has not previously been built.



**NOTE:** When installing the driver using the **fxinst** script, the following message may appear:

“Warning loading fxsla.o will taint the kernel: Systran license.”

This message is used to identify General Public License kernel modules and may safely be disregarded.

### 3.4.1 Installation Errors

If the SL240 device driver is successfully added to the system but fails to attach to the device(s), the following output is displayed:

(Verify the appropriate hardware is installed in the bus slot(s).)

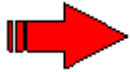
```
../bin/fxsla.o: init_module: No such device
Hint: insmod errors can be caused by incorrect module
parameters, including invalid IO or IRQ parameters
unable to load the driver
```

If the SL240 device driver is already attached to the device(s), executing the **fxinst** install script will display the following message:

```
fxsla          xxxxxx  0
A FibreXtreme driver is already loaded!
```

## 3.5 Unload the SL240 Device Driver

This section describes how to unload the SL240 device driver module if necessary.



**NOTE:** You must unload the SL240 device driver as a root user.

Change to the SL240 device driver directory by typing:

```
cd /usr/local/sl240/driver
```

Execute the driver uninstall script file by typing:

```
./fxuninst
```

The SL240 device driver is now unloaded from the system.



