Quartus® II

Programmable Logic Development System

Installation & Licensing for PCs

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Quartus II Installation & Licensing for PCs
Version 1.0 Revision 3
April 2001

P25-04731-04

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I.S. EN ISO 9001

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Documentation Conventions

The *Quartus II Installation & Licensing for PCs* manual uses the following conventions to make it easy for you to find and interpret information.

Terminology

The following terminology is used throughout the *Quartus II Installation & Licensing for PCs* manual:

Term:	Meaning:
"click"	Indicates a quick press and release of the left mouse button.
"double-click"	Indicates two clicks in rapid succession.
"choose"	Indicates that you need to use a mouse or key combination to start an action.
"select"	Indicates that you need to highlight text and/or objects or an option in a dialog box with a key combination or the mouse. A selection does not start an action. For example: Select **Chain Description File**, and click **OK**.
"turn on"/"turn off"	Indicates that you must click a check box to turn a function on or off.

Typographic Conventions

Quartus II documentation uses the following typographic conventions:

Visual Cue:	Meaning:
Bold Initial Capitals	Command names, dialog box titles, and button names are shown in bold, with initial capital letters. For example: **Find Text** command, **Save As** dialog box, and **Start** button.

Visual Cue:	Meaning:
bold	Directory names, project names, disk drive names, file names, file name extensions, software utility names, tab names, and options in dialog boxes are shown in bold. Examples: **quartus** directory, **d:** drive, **license.dat** file.
Initial Capitals	Keyboard keys, user-editable application window fields, and menu names are shown with initial capital letters. For example: Delete key, the Options menu.
"Subheading Title"	Subheadings within a manual section are enclosed in quotation marks. In manuals, titles of Help topics are also shown in quotation marks.
Italic Initial Capitals	Help categories, manual titles, section titles in manuals, and application note and brief names are shown in italics with initial capital letters. For example: *FLEXlm End User Manual*.
italics	Variables are enclosed in angle brackets (< >) and shown in italics. For example: <*file name*>, <*CD-ROM drive*>.
`Courier font`	Anything that must be typed exactly as it appears is shown in Courier. For example: `\quartus\bin\lmulti lmhostid`.
■	Bullets are used in a list of items when the sequence of the items is not important.
✓	The checkmark indicates a procedure that consists of one step only.
	The hand points to information that requires special attention.
	The feet show you where to go for more information on a particular topic.
↵	Enter or return key.

Installing the Quartus II Software

This section describes the requirements and procedures for installing the Altera® Quartus® II software on PCs or compatible computers running Microsoft Windows NT version 4.0, Windows 98, or Windows 2000.

System Requirements

Your system must meet the following minimum requirements:

- Pentium II PC running at 400 MHz or faster
- Microsoft Windows NT version 4.0 (Service Pack 3 or higher), Windows 98, or Windows 2000
- Microsoft Windows–compatible graphics card and SVGA monitor
- CD-ROM drive
- Microsoft Windows–compatible 2- or 3-button mouse
- One or more of the following ports:
  - Parallel port for use with the ByteBlasterMV™ parallel port download cable
  - Serial port for use with the MasterBlaster™ communications cable
  - USB port for use with the MasterBlaster communications cable (Windows 98 and Windows 2000 only)
- Microsoft Internet Explorer software version 4.0 or higher

Go to the **readme.txt** file, which is located in the **quartus** directory on the Quartus II Programmable Logic Development Software for PCs CD-ROM, for specific information about disk space and memory requirements in the current version of the Quartus II software.

You must have Microsoft Internet Explorer software version 4.0 or higher installed, because portions of the Internet Explorer software are required to use the Quartus II online Help system. However, you do not need to make the Internet Explorer browser your default browser. You can install Internet Explorer from the Microsoft Internet Explorer software CD-ROM that is provided with your Quartus II development system, or you can download it from the Microsoft Internet Explorer web site at

http://www.microsoft.com/ie/. However, you may need to configure the Internet Explorer software to work with your company network. For example, you may need to configure for a dial-up connection or for a proxy server.

Uninstalling Previous Versions of the Quartus Software

If you have installed a previous version of the Quartus® software, Altera recommends that you uninstall that software before installing the new version of the software. However, it is not necessary to uninstall it.

To uninstall a previous version of the Quartus software:

✓ Choose **Programs > Altera > Quartus <*version number*> Uninstall** (Windows Start menu).

or

✓ Delete the **quartus** folder and delete the **Altera** file from **c:\winnt<*Windows version number*>\profiles\all users\start menu\programs**.

Uninstalling the ObjectStore Software

If you installed a version of the Quartus software prior to version 2000.09, you also installed the ObjectStore database software. This software is no longer required for use with the Quartus II software, so you can delete it if you want to make more disk space available. However, if you want to use a version of the Quartus software prior to version 2000.09, do not uninstall the ObjectStore software.

☞ The ObjectStore software was provided only with previous versions of the Quartus software, not the Quartus II software.

To uninstall the ObjectStore software:

✓ Choose **Programs > ObjectStore Win32 > ObjectStore Uninstall** (Windows Start menu).

or

✓ Delete the **odi** folder and the **ObjectStore Win32** file from **c:\winnt<*Windows version number*>\profiles\all users\start menu\programs** .

Running the Setup Program

The Quartus II software uses a Setup program for installation. Follow these steps to run the Setup program on your PC:

☞ Installation on a PC running Windows NT 4.0 or Windows 2000 requires that you have system administration (Administrator) privileges.

1. Insert the Quartus II Programmable Logic Development Software for PCs CD-ROM into your CD-ROM drive. The Quartus II Install CD window appears automatically, offering several options. If the CD-ROM is in the drive, and the Setup program is not already running, start the Setup program manually by performing the following steps:

   a. Choose **Run** (Windows Start menu).

   b. In the **Run** dialog box, type <*CD-ROM drive*>:`\install`.

   c. Click **OK**.

2. Click the **Install Quartus II Software** button to install the Quartus II software. The Setup program starts automatically and guides you through the installation process.

   The Setup program also allows you to install EDA interfaces. You can select the EDA interface(s) you want to install, or you can accept the default installation of all available EDA interfaces.

You must install support for the EP20K100 device if you want to run the Quartus II tutorial.

3. If you will run the Quartus II software using a network license, and not a node-locked (single-user) license, click the **Install FLEXlm Server Control Panel** button to install the FLEXlm License Manager software on the license server only.

   The Quartus II software supports network license servers on Windows NT 4.0 and Windows 2000. You do not need to install the FLEXlm License Manager software on network client PCs or on PCs running the Quartus II software using a node-locked (single-user) license. Refer to "Setting Up a License Manager Server Under Windows NT or Windows 2000" on page 12 for more information about setting up the license manager server.

Installing TCP/IP Protocol

If you do not already have TCP/IP protocol installed on the PCs in your network, you must add it to your networking configuration.

Follow these steps to install the TCP/IP protocol:

1. Close all other programs.
2. Insert your Windows operating system CD-ROM into your CD-ROM drive.
3. Choose **Settings > Control Panel** (Windows Start menu).
4. Double-click the **Network** icon in the Control Panel window.
5. In the **Network** dialog box, click the **Protocols** tab.
6. Click the **Add** button. The **Select Network Protocol** dialog box appears.
7. In the **Select Network Protocol** dialog box, select **TCP/IP Protocol** from the **Network Protocol** list.

8. Click **OK**.

9. In the **Windows <*operating system*> Setup** dialog box, make sure the directory path is **<*CD-ROM drive*>:\i386**.

10. Click **Continue**.

11. In the **Network** dialog box, click **Close** after all files have been copied.

12. When you are asked if it is OK to restart your computer, click **Yes**.

Licensing the Quartus II Software

This section describes how to license the Quartus II software. To set up your license for the Quartus II software, you must perform the following steps, each of which is described in more detail in this section:

1. If necessary, obtain a license file. The Quartus II software requires a **license.dat** license file for each server that supports a multiuser network license or for each node-locked (single-user) license. This same license file can also enable the additional Altera synthesis and simulation tools included with Altera software subscriptions, as well as the MAX+PLUS® II software.

2. If you are using a network license, set up and configure the FLEXlm license manager server.

3. Specify the location of the license file.

4. If necessary, register additional Quartus II users.

Obtaining a License File

You can obtain an ASCII license file, **license.dat**, from the Quartus II support web site at **https://websupport.altera.com** if you have the following information:

- Your Altera ID, which is a six-digit number that is provided when you purchase the Quartus II development system. This number is listed on the packing list that is shipped with the Quartus II software.

- Your serial number, which can be one of the following numbers:

  – If you have a network license (multiuser) version of the Quartus II software, the serial number is printed on the side of the Quartus II shipping box, and on the *Registration & License File Request Form*, which is also included with the Quartus II software package. This number begins with the letter G, and is followed by five digits (G*xxxxx*).

– If you have a node-locked (single-user) version of the Quartus II software, the serial number is the number on your Software Guard. This number begins with the letter T.

- Your Network Interface Card (NIC) number. To find your Windows NT server NIC number by using FLEXlm utilities, type the following command at a command prompt:

  <disk drive>:\quartus\bin\lmutil lmhostid ↵

For information about additional methods of finding your NIC number, refer to the Atlas® online solutions database, which is available at **http://www.altera.com**. For complete information about using the FLEXlm utilities, you should refer to the *FLEXlm End User Manual*, which is available at **http://www.globetrotter.com/manual.htm**.

To obtain a license file, follow these steps:

1. Point your web browser to the Quartus II support web site at **https://websupport.altera.com**.
2. Click the **License Request** icon.
3. Enter the requested information on the "License File Request" forms.

   Altera recommends that you save any previous **license.dat** file in a temporary directory, in case you need to refer to it later.

4. When you receive the license file text, save it to a file with the file name **license.dat**. If you are using your **license.dat** file with both the Quartus II software and the MAX+PLUS II software, Altera recommends that you save it in a top-level directory named **<*disk drive*>:\flexlm**.

If you plan to use any of the Altera-provided synthesis and simulation software tools included with Altera software subscriptions, such as the Exemplar Logic® LeonardoSpectrum™-Altera synthesis software, the Model Technology™ ModelSim®-Altera synthesis software, or the Synopsys® FPGA *Express*™ synthesis software, you must obtain a license file by pointing your web browser to the Altera web site at **http://www.altera.com**, clicking the **Licensing** icon, and specifying the requested information, rather than requesting the license file from the Quartus II support web site.

Figure 1 shows the Quartus II FEATURE line of a sample license file for a node-locked (single-user) license that uses a Software Guard.

Figure 1. Sample Node-Locked (Single-User) License File

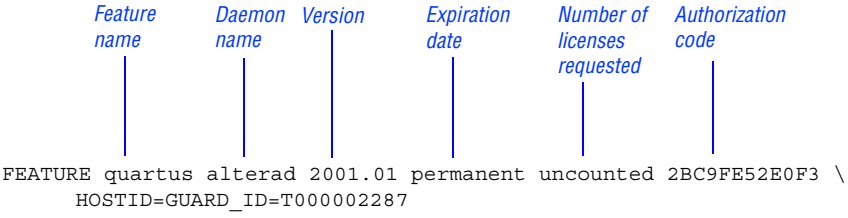
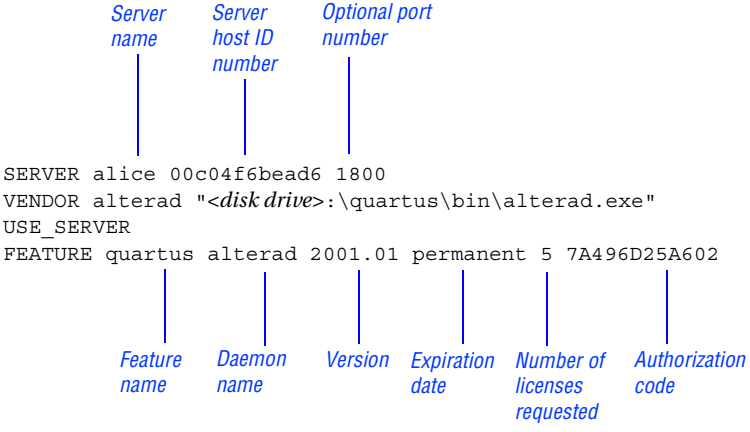


Figure 2 shows a sample single-server network license file for a PC.

Figure 2. Sample Single-Server Network License File

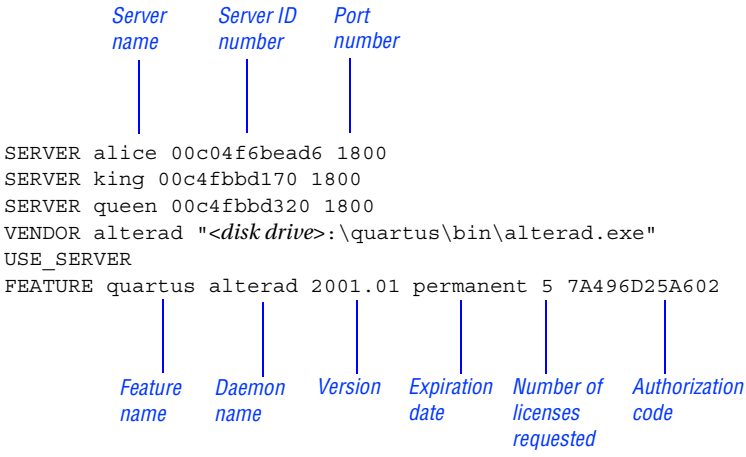


If you are using the Quartus II software with a node-locked (single-user) license, skip to "Installing a Sentinel Software Guard" on page 13.

Obtaining a Redundant Server License File

The FLEXlm licensing scheme allows you to set up three redundant license servers to serve a multiuser license. You can obtain a license file to support three redundant license servers by performing the steps described in "Obtaining a License File" on page 8. Figure 3 shows a sample redundant server license file.

Figure 3. Sample Redundant Server License File



For additional information about setting up and administering license servers, including setting up three redundant license servers, refer to the *FLEXlm End User Manual*, which is available at **http://www.globetrotter.com/manual.htm**.

Specifying an Optional Port Number

System administrators can specify a port number in the **license.dat** file for use by the license server and client PCs. If a port number is not specified in the **license.dat** file, the FLEXlm utility automatically uses the next available port number in the range 27000 to 27009. However, to prevent port number conflicts, you can specify a port number. If three redundant license servers are being used, you must specify a port number. For more information about redundant license servers, see "Obtaining a Redundant Server License File".

For PC-based license servers, Altera recommends that you specify a port number in the range of 27000-27009. However, you can use any unused port number between 0 and 64000.

Setting Up a License Manager Server Under Windows NT or Windows 2000

This section provides instructions for setting up the FLEXlm license manager server on a PC running Windows NT 4.0 or Windows 2000. A system administrator should perform these steps to configure license servers after the Quartus II software is installed.

If you have a node-locked (single-user) license, you can skip this section and go to "Installing a Sentinel Software Guard" on page 13.

To configure a license server with the FLEXlm License Manager software, follow these steps:

1. If you have not already done so, install the FLEXlm License Manager software from the Quartus II Programmable Logic Development Software for PCs CD-ROM. Refer to "Running the Setup Program" on page 5 for information on installing the FLEXlm License Manager software.

2. Choose **Settings > Control Panel** (Windows Start menu).

3. Double-click the **FLEXlm License Manager** control panel icon.

4. To enter information about your license server, click the **Setup** tab.

5. Specify the **Service Name**. The default service name is **FLEXlm License Manager**, but because the license manager can administer both the Quartus II software and the Altera MAX+PLUS II software, Altera recommends that you change this name to **Altera License Manager** to avoid conflicts with other software programs that use the FLEXlm License Manager software.

6. Specify additional options on the **Setup** tab, always including the complete path names to the files you specify. The **lmgrd.exe** executable is located in the **<*disk drive*>:\<*Windows directory*>\system32** directory. Specifying the debug log file is optional.

7. To set up the Altera License Manager as a service, turn on **Use NT Services**. You can then use the **Services** control panel to adjust the starting and stopping behavior of the Altera License Manager. Setting up the Altera License Manager as a service allows licenses to be issued to other users after you have logged out of a Windows NT session.

8. If you want the Altera License Manager to start automatically when you start your PC, turn on **Start Server at Power-Up**.

9. Click the **Control** tab. This tab allows you to start, stop, and check the status of your license server.

10. In the **Control** tab, click **Start** to turn on your license server and launch the Altera License Manager as a background application.

After the license manager server has been set up in Windows NT, the license file must be specified for each client. Refer to "Specifying the License File" on page 16 for instructions on how to specify a license file.

For complete information about using the FLEXlm utilities to administer and troubleshoot the FLEXlm License Manager software, refer to the *FLEXlm End User Manual*, which is available at **http://www.globetrotter.com/manual.htm**.

Installing a Sentinel Software Guard

If your Quartus II development system includes a Sentinel Software Guard, you must install the Sentinal driver and the Software Guard before you can specify a license file.

Installing the Sentinel Driver

The Sentinel driver is required for all Quartus II software systems running on Windows NT that use a Software Guard. The Sentinel driver is installed automatically with the Quartus II software.

1. Sentinel driver installation is optional on Windows 98 and Windows 2000 systems. Install the Sentinel driver only if you are using the parallel port with another device, such as a printer.

2. Installing the Sentinel driver on a Windows NT system requires that you have system administration (Administrator) privileges.

If the Sentinel driver is not installed, you can install it by following these steps:

1. Choose **Run** (Windows Start menu).

2. In the **Run** dialog box, type the following command:

   <*disk drive*>:`\quartus\drivers\setupx86.exe`

3. Click **OK**.

4. In the **Sentinel Driver Setup Program** window, choose **Install Sentinel Driver** (Functions menu).

5. In the **Sentinel Install** dialog box, specify the directory path to your **\quartus\drivers** directory.

6. Click **OK**.

7. Restart your computer at the prompt.

   or

   Open a command prompt window and type the following command:

   `net start sentinel` ↵

Installing the Software Guard

To install the Software Guard on a PC, follow these steps:

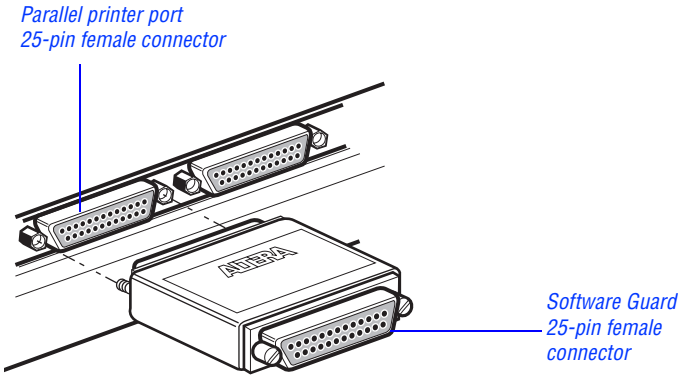
1. Locate a parallel printer port (that is, an LPT port) on the computer. If you have a printer connected to this port, you must disconnect it temporarily.

2. Insert the 25-pin male connector end of the Software Guard into the 25-pin female connector of the parallel printer port, as shown in Figure 4.

   1. Do not connect disk drives that use the parallel port or any device, other than a printer or the ByteBlasterMV download cable, to either end of the Software Guard. Disk drives can destroy a Software Guard by drawing more power than the guard is capable of handling.

   2. Disconnect the Software Guard before using the parallel port to transfer data between computers using a data transfer program. Failure to do so can cause damage to the Software Guard.

Figure 4. Attaching the Software Guard to a PC



3. If necessary, reinsert the printer cable connector into the female connector of the Software Guard.

Starting the Quartus II Software for the First Time

You can start the Quartus II software after installation is complete. In order to enable Quartus II features, however, you must specify the license file, either within the Quartus II software or outside of the Quartus II software. Refer to "Specifying the License File" for information about how to specify your license file.

To start the Quartus II software:

✓ Choose **Programs > Altera > Quartus II <*version number*>** (Windows Start menu).

or

✓ Open a new command prompt window and type the following command:

<*disk drive*>:\quartus\bin\quartus ↵

Specifying the License File

Once you have obtained a license file and set up a network license server (for multiuser licenses) or installed a Software Guard (for single-user licenses), you must specify the location of the license file for each user (or "client"). You can specify the license file with one of the following methods, which are described in more detail in this section:

- Specify the license file using the Quartus II software
- Specify the license file using the Windows NT or Windows 2000 **System** control panel
- Specify the license file in the Windows 98 **autoexec.bat** file

If you are using any of the Altera-provided synthesis and simulation software tools included with Altera software subscriptions, such as the Exemplar Logic LeonardoSpectrum-Altera synthesis tool, the Model

Technology ModelSim-Altera synthesis tool, or the Synopsys FPGA *Express* synthesis tool, and/or you are using the MAX+PLUS II software, you must specify the license file with either the **System** control panel or the **autoexec.bat** file.

Specifying the License File Using the Quartus II Software

You can specify the location of your license file from within the Quartus II software.

Specifying the license file from within the Quartus II software does not require system administration (Administrator) privileges.

To specify your license file within the Quartus II software, follow these steps:

1. If you have not already done so, start the Quartus II software, as described in "Starting the Quartus II Software for the First Time" on page 16.

2. Choose **License Setup** (Tools menu). Figure 5 on page 18 shows the **License Setup** tab of the **Options** dialog box.

3. In the **License file** box, specify the full path name of your **license.dat** file. You can click **Browse (...)** to locate your **license.dat** file. Altera recommends that you store the **license.dat** file in a directory named **<*disk drive*>:\flexlm**.

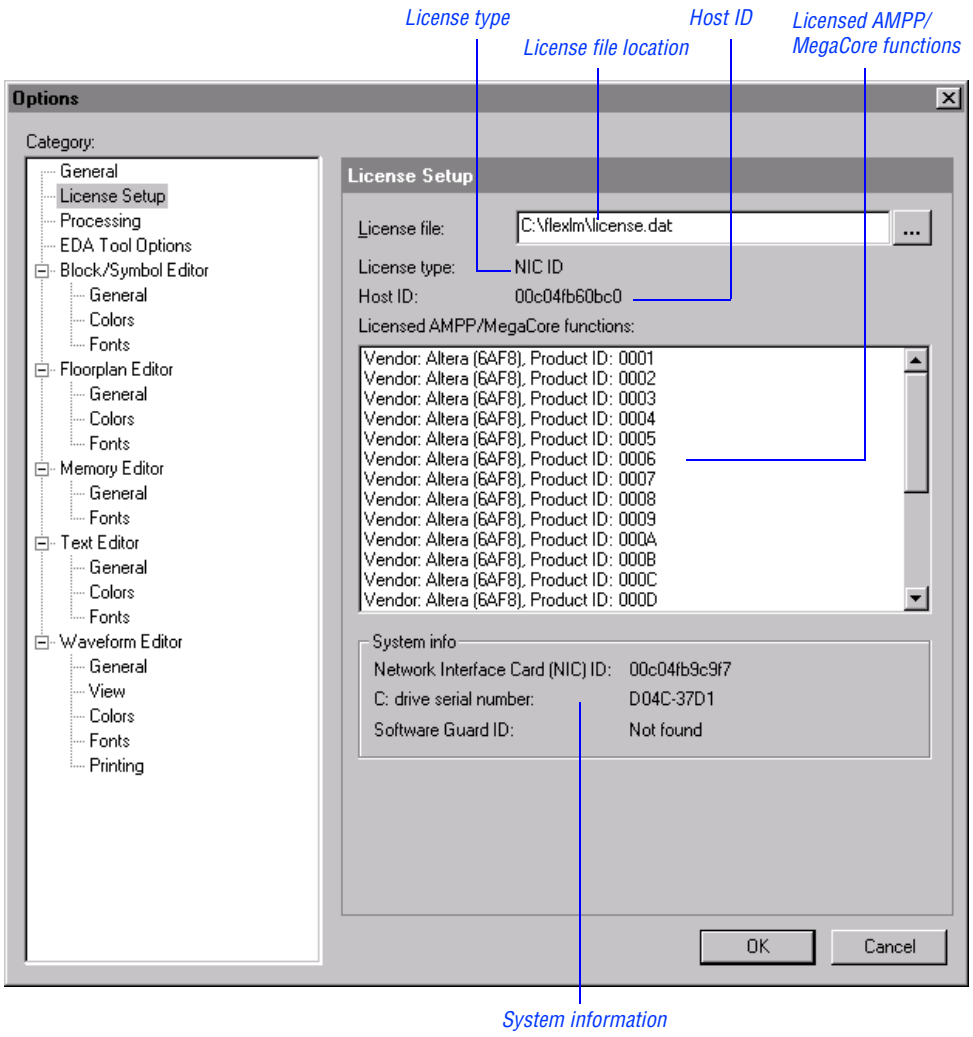
   You can also specify the location of the license file by typing a name of the format <*port*>@<*host*> instead of a license file path name, where <*host*> is the name of the server on which the license file is stored and <*port*> is the port listed in the **license.dat** file. Refer to Figure 2 on page 10 for a sample network license file to determine your port and server name, and see "Specifying an Optional Port Number" on page 11 for more information about port numbers. If there is no port listed in the **license.dat** file, you can simply specify @<*host*>.

If you have more than one license file or server, separate the port and host specifications with semicolons (;), with no spaces between the names and numbers.

4. Click **OK**.

The **Licensed AMPP/MegaCore functions** list of the **License Setup** tab lists all of the AMPP and MegaCore functions that are available for the license.

Figure 5. License Setup Tab of the Options Dialog Box



Specifying the License File Using the Windows NT or Windows 2000 System Control Panel

You can specify the location of your license file from outside the Quartus II software by setting system variables in the Windows NT Control Panel.

Specifying the license file in the Windows NT or Windows 2000 **System** control panel requires that you have system administration (Administrator) privileges.

To specify the license file in the Windows NT or Windows 2000 Control Panel, follow these steps:

1. Choose **Settings** > **Control Panel** (Windows Start menu).
2. Double-click the **System** icon in the Control Panel window.
3. In the **System Properties** dialog box, click the **Environment** tab.
4. Click the **System Variable** list to highlight it, and then in the **Variable** box, type `LM_LICENSE_FILE`.
5. In the **Value** box, type either <*disk drive*>`:\flexlm\license.dat` or a name of the format <*port*>`@`<*host*>, where <*host*> is the name of the server and <*port*> is the port listed in the **license.dat** file. Refer to Figure 2 on page 10 for a sample network license file to help you determine your port and server name. Refer also to "Specifying an Optional Port Number" on page 11 for more information about port numbers. If there is no port listed in the **license.dat** file, you can simply specify `@`<*host*>.

   If you have more than one license file or server, separate the port and host specifications with semicolons (`;`), with no spaces between the names and numbers.

6. Click **OK**.

Specifying the License File in the Windows 98 autoexec.bat File

You can specify the location of your license file from outside the Quartus II software by adding an environment variable to your Windows 98 **autoexec.bat** file.

System administration (Administrator) privileges are not required to specify your license file in your Windows 98 PC's **autoexec.bat** file.

To specify the license file in the Windows 98 **autoexec.bat** file, follow these steps:

1. With a text editor, open your PC's **autoexec.bat** file.
2. Type the following environment variable on its own line in your **autoexec.bat** file:

   `set LM_LICENSE_FILE=<`*disk drive*`>:\flexlm\license.dat`

   or

   `set LM_LICENSE_FILE=<`*port*`>@<`*host*`>`

   where <*host*> is the name of the server and <*port*> is the port listed in the **license.dat** file. Refer to Figure 2 on page 10 for a sample network license file to help you determine your port and server name. Refer also to "Specifying an Optional Port Number" on page 11 for more information about port numbers. If there is no port listed in the **license.dat** file, you can simply specify `@<`*host*`>`.

   If you have more than one license file or server, separate the port and host specifications with semicolons (`;`), with no spaces between the names and numbers.
3. Save the **autoexec.bat** file.
4. Restart the PC.

Registering Additional Quartus II Users

Your copy of the Quartus II software is registered at the time of purchase. Additional users can also register themselves as Quartus II users, which allows them to submit service requests, but does not provide additional licenses.

To register as an additional Quartus II user, follow these steps:

1. While running the Quartus II software, choose **Altera on the Web > Quartus II Home Page** (Help menu) to start the Quartus II web browser and connect to the Quartus II support web site.

   or

   Point your web browser to the Quartus II support web site at **https://websupport.altera.com**.

2. Follow the instructions on the Quartus II support web site to register as a new user.

Each registered user is assigned an Altera ID number. Copy this number and save it; it will be helpful when you are submitting service requests, regenerating license files, and updating your user information.

Installing Programming Hardware

This section describes how to install the MasterBlaster Serial/USB communications cable and the ByteBlasterMV parallel port download cable.

Installing the MasterBlaster Serial/USB Communications Cable

You can use the MasterBlaster Serial/USB communications cable to download configuration data to APEX™, ARM®-based Excalibur™, FLEX® 6000, Mercury™, or MIPS-based™ Excalibur devices, to perform in-system programming of EPC2 or EPC16 configuration devices, or to perform SignalTap® logic analysis.

You can connect the MasterBlaster communications cable to an RS-232 serial port or, for Windows 98 or Windows 2000 only, to a USB port. The MasterBlaster communications cable receives power from any one of the following sources:

- 5.0-V or 3.3-V circuit boards
- 5.0 V from the USB cable (Windows 98 and Windows 2000 only)
- DC power supply, which is supplied with the MasterBlaster communications cable

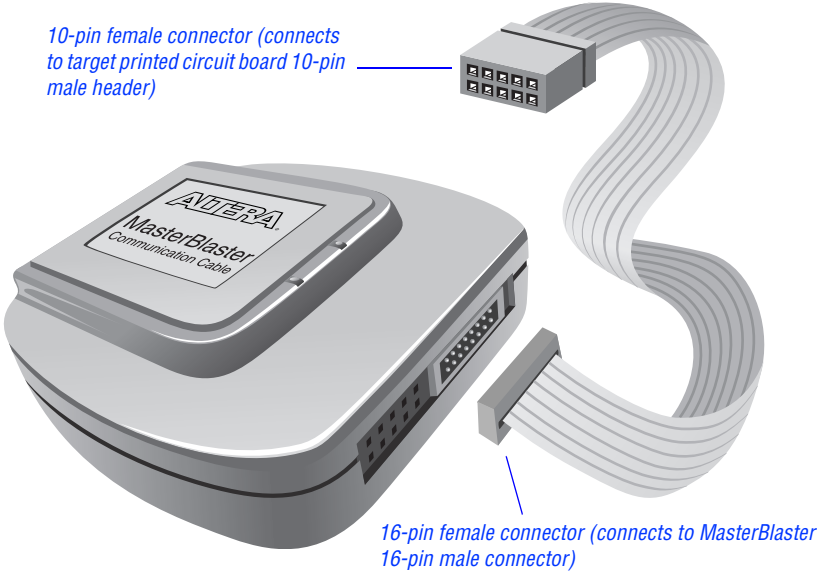
To install and set up the MasterBlaster communications cable for device configuration or programming, follow these steps:

1. With either a standard RS-232 cable or a standard USB cable, connect one end of the cable to the MasterBlaster communications cable, and the other end of the cable to the appropriate port on the computer.

If you are using the MasterBlaster communications cable with the USB port, the Windows 98 or Windows 2000 operating system prompts you to locate the USB driver **sigtap.inf** file.The MasterBlaster driver is located in your **\quartus\drivers** directory.

2. Connect the 16-pin female header end of the communications cable to the 16-pin male MasterBlaster port, and the 10-pin female end of the communications cable to the 10-pin male header on the target printed circuit board. Figure 6 shows the MasterBlaster communications cable.

Figure 6. MasterBlaster Serial/USB Communications Cable



3. Open the Quartus II Programmer:

✓ Choose **Open Programmer** (Processing menu).

or

✓ Click **New** (File menu). Click the **Other Files** tab, select **Chain Description File**, and click **OK**.

4. In the Programmer window, under **Programming Hardware**, click **Setup**.

5. In the **Hardware Setup** dialog box, in the **Hardware Type** list, select either **MasterBlaster (COM)** or **MasterBlaster (USB)**.The **USB** option is available only in Windows 98 and Windows 2000 systems.

6. In the **Port** list, select the appropriate port.

7. If you are using a serial port, in the **Hardware Setup** dialog box **Baud rate** list, select a baud rate appropriate for your computer.

8. Click **OK**.

For more information about the MasterBlaster communications cable, refer to the *MasterBlaster Serial/USB Communications Cable Data Sheet*, which is available from the Altera web site at **http://www.altera.com**. For more information about SignalTap logic analysis with the MasterBlaster communications cable, refer to "Selecting the Communications Cable for the SignalTap Logic Analyzer" in Quartus II Help.

Installing the ByteBlasterMV Parallel Port Download Cable

The ByteBlasterMV download cable is used to download configuration data to APEX, ARM-based Excalibur, FLEX 6000, Mercury, and MIPS-based Excalibur devices, to perform in-system programming of EPC2 configuration devices, or to perform SignalTap logic analysis. You can connect the ByteBlasterMV download cable directly to your PC's parallel port, or through an Altera Software Guard that is connected to the parallel port.

To install the ByteBlasterMV download cable, you must perform the following steps, each of which are described in more detail in this section:

1. Install the Altera ByteBlaster driver (on PCs running Windows NT 4.0 or Windows 2000 only).

2. Install the ByteBlasterMV download cable.

Installing the Altera ByteBlaster Driver for Windows NT

The Altera ByteBlaster driver is required for PCs running Windows NT 4.0 that use the ByteBlasterMV download cable. You must install the Altera ByteBlaster driver separately from the Quartus II software.

1. You do not need to install the ByteBlasterMV download cable before installing the Altera ByteBlaster driver.

2. Installing the Altera ByteBlaster driver requires that you have system administration (Administrator) privileges.

To install the Altera ByteBlaster driver for Windows NT, follow these steps:

1. Choose **Settings > Control Panel** (Windows Start menu).

2. In the Control Panel window, double-click the **Multimedia** icon.

3. In the **Multimedia Properties** dialog box, click the **Devices** tab, and click **Add**.

4. In the **List of Drivers** list, select **Unlisted or Updated Driver** and click **OK**.

5. In the **Install Driver** dialog box, type <*disk drive*>:`\quartus\drivers` or select the name with **Browse** to specify the Quartus II software **drivers** directory.

6. Click **OK**.

7. In the **Add Unlisted or Updated Driver** dialog box, select **Altera ByteBlaster**.

8. To restart your computer, click **Restart Now**.

Installing the Altera ByteBlaster Driver for Windows 2000

The Altera ByteBlaster driver is required for PCs running Windows 2000 that use the ByteBlasterMV download cable. You must install the Altera ByteBlaster driver separately from the Quartus II software.

1. You do not need to install the ByteBlasterMV download cable before installing the Altera ByteBlaster driver.

2. Installing the Altera ByteBlaster driver requires that you have system administration (Administrator) privileges.

To install the Altera ByteBlaster driver for Windows 2000, follow these steps:

1. Choose **Settings > Control Panel** (Windows Start menu).

2. In the **Control Panel** window, double-click the **Add/Remove Hardware** icon and click **Next**.

3. In the **Choose a Hardware Task** dialog box, select **Add/Troubleshoot a device** and click **Next**.

4. In the **Choose a Hardware Device** dialog box, select **Add a new device** and click **Next**.

5. In the **Find New Hardware** dialog box, select **No, I want to select the hardware from a list** and click **Next**.

6. In the **Hardware Type** dialog box, select **Sound, video and game controllers** and click **Next**.

7. In the **Select a Device Driver** dialog box, select **Have disk**.

8. Use **Browse (...)** to specify the full directory path to the **win2000.inf** file (for example, **\quartus\drivers\win2000**) and click **OK**.

9. In the **Digital Signature Not Found** dialog box, click **Yes**.

10. In the **Select a Device Driver** dialog box, select **ByteBlasterMV** and click **Next**.

11. In the **Start Hardware Installation** dialog box, click **Next**.

12. In the **Digital Signature Not Found** dialog box, click **Yes**.

13. In the **Completing the Add/Remove Hardware Wizard** dialog box, click **Finish**.

14. To restart your computer, click **Restart Now**.

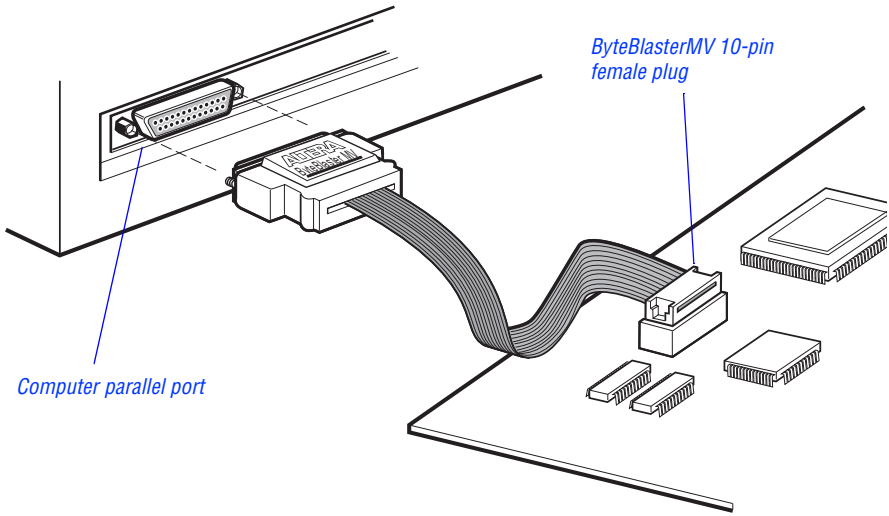
Installing the ByteBlasterMV Parallel Port Download Cable

To install and set up the ByteBlasterMV parallel port download cable for device configuration or programming, follow these steps:

1. Attach the ByteBlasterMV download cable to a parallel port on your PC and insert the 10-pin female plug into the prototype system containing the target device, as shown in Figure 7.

   The board must supply power to the ByteBlasterMV download cable.

Figure 7. ByteBlasterMV Parallel Port Download Cable



2. Open the Quartus II Programmer:

   ✓ Choose **Open Programmer** (Processing menu).

   or

   ✓ Choose **New** (File menu). Click the **Other Files** tab, select **Chain Description File**, and click **OK**.

3. In the Programmer window, under **Programming Hardware**, click **Setup**.

4. Click **OK**. In the **Hardware Setup** dialog box, in the **Hardware Type** list, select **ByteBlasterMV**.

5. In the **Port** list, select the appropriate port.

6. Click **OK**.

For more information about the ByteBlasterMV parallel port download cable, refer to the *ByteBlasterMV Parallel Port Download Cable Data Sheet*, which is available from the Altera web site at **http://www.altera.com**. For more information about SignalTap logic analysis with the ByteBlasterMV download cable, refer to "Selecting the Communications Cable for the SignalTap Logic Analyzer" in Quartus II Help.

Starting the Quartus II Tutorial

The online tutorial introduces you to the basic features of the Quartus II programmable logic development system. It shows you how to create and process your own logic designs quickly and easily. The tutorial guides you through the steps required to create and process a sample finite impulse response (FIR) filter design, called **fir_filter**. The tutorial's modular design allows you to learn as little, or as much, as you need about using the Quartus II software.

To start the Quartus II tutorial after you have successfully installed the Quartus II software:

✓ Choose **Tutorial** (Help menu).

After you start the tutorial, the Quartus II window resizes to allow you to view the Tutorial window and the Quartus II software simultaneously.

☞ You must have installed support for the EP20K100 device if you want to run the tutorial. If you did not install support for this device, refer to "Running the Setup Program" on page 5.

Quartus II File Organization

During the Quartus II software installation, two top-level directories are created: **quartus** and **qdesigns**.

- The **quartus** directory contains system software and data files and includes the subdirectories described in Tables 1 through 3.
- The **qdesigns** directory contains tutorial and sample files and includes the subdirectories described in Table 4.

The main **quartus** directory includes the subdirectories described in Table 1.

Table 1. Quartus II System Directory (quartus) Structure

Directory	Description
.\bin	Contains the executable software program files.
.\drivers	Contains the Altera ByteBlaster driver software, which is required to use the ByteBlasterMV download cable with Windows NT; the MasterBlaster USB driver, which is required to use the MasterBlaster communications cable with USB for Windows 98 and Windows 2000; and the Sentinel driver, which is required to use the Sentinel Software Guard with node-locked (single-user) licenses for Windows NT.
.\eda	Contains libraries for use with other EDA tools. Refer to Table 2 for information on the subdirectories of this directory.
.\libraries	Contains the Quartus II software directory for "self-contained" libraries. Refer to Table 3 for information on the subdirectories of this directory.
.\lmf	Contains Library Mapping Files (**.lmf**).

The **\quartus\eda** directory includes the subdirectories described in Table 2.

Table 2. Quartus II EDA Directory (eda) Structure

Directory	Description
.\cadence	Contains technology libraries for Cadence EDA tools.
.\h	Contains header files for software interfaces to other EDA tools.
.\lib	Contains library files for software interfaces to other EDA tools.
.\mentor	Contains technology libraries for Mentor Graphics EDA tools.
.\sim_lib	Contains VHDL and Verilog HDL simulation libraries that are compatible with EDA tools from other vendors.
.\synopsys	Contains technology libraries for Synopsys EDA tools.
.\innoveda	Contains technology libraries for Innoveda EDA tools.

The **\quartus\libraries** directory includes the subdirectories described in Table 3.

Table 3. Quartus II Library Directory (libraries) Structure

Directory	Description
.\megafunctions	Contains megafunctions, including Library of Parameterized Modules (LPM) functions, corresponding Include Files (**.inc**) that contain their AHDL Function Prototypes, and corresponding Block Symbol Files (**.bsf**).
.\others	Contains libraries of logic functions that provide compatibility between the Quartus II software and the MAX+PLUS II software.
.\primitives	Contains Block Symbol Files (**.bsf**) for Quartus II primitives.
.\vhdl87	Contains the library of IEEE std. 1076–1987 VHDL packages.
.\vhdl93	Contains the library of IEEE std. 1076–1993 VHDL packages.

The **\quartus\qdesigns** work directory includes the subdirectories described in Table 4 on page 32.

Table 4. Quartus II Work Directory (qdesigns) Structure

Directory	Description
.\tutorial	Contains the completed project and design files for the tutorial. This directory includes a **readme.txt** file that contains important information about the tutorial.
.\fir_filter	Directory in which you should create the **fir_filter** project if you are completing the Design Entry module. Use this directory to prevent accidental changes to the original design files in the **\qdesigns\ tutorial** directory.
.\fir_filter\compile	Contains the **compile_fir_filter** project for use when completing the Compilation module independently or nonsequentially.
.\fir_filter\timing	Contains the **timing_fir_filter** project for use when completing the Timing Analysis module independently or nonsequentially.
.\fir_filter\simulate	Contains the **simulate_fir_filter** project for use when completing the Simulation module independently or nonsequentially.
.\fir_filter\program	Contains the **program_fir_filter** project for use when completing the Programming module independently or nonsequentially.

Contacting Altera

If you have any additional questions about Altera products, contact Altera for technical support and product information.

Technical Support

If you need technical support, call or fax the Altera Applications Department Monday through Friday.

Tel:	(800) 800-EPLD	(6:00 a.m. to 6:00 p.m. Pacific Time)
	(408) 544-7000	(7:30 a.m. to 5:30 p.m. Pacific Time)
Fax:	(408) 544-6401	

You can also e-mail the Altera Applications Department at **support@altera.com**.

In addition, you can visit the online solutions database, which is available from the Altera web site at **http://www.altera.com/support/spt-index.html**.

For additional technical support for the Quartus II software, refer to the Quartus II support web site by choosing **Altera on the Web > Quartus II Home Page** (Help menu), or by pointing your browser to **https://websupport.altera.com**. This web site provides information on how to register your software and obtain license information, and also provides other support information.

Product Information

If you need the latest Altera product information or literature, use the Altera web site, which is available 24 hours a day, seven days a week.

Altera web site: **http://www.altera.com**

Go to "Contacting Altera" in Quartus II Help for complete information on Altera technical support services.

Revision History

The information contained in Quartus II Installation & Licensing for PCs 1.0 Revision 3 supercedes information published in previous versions.

Minor typographical corrections were made to the original version.

Updated the copyright information on the copyright page and on pages 3, 4, and 9.

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