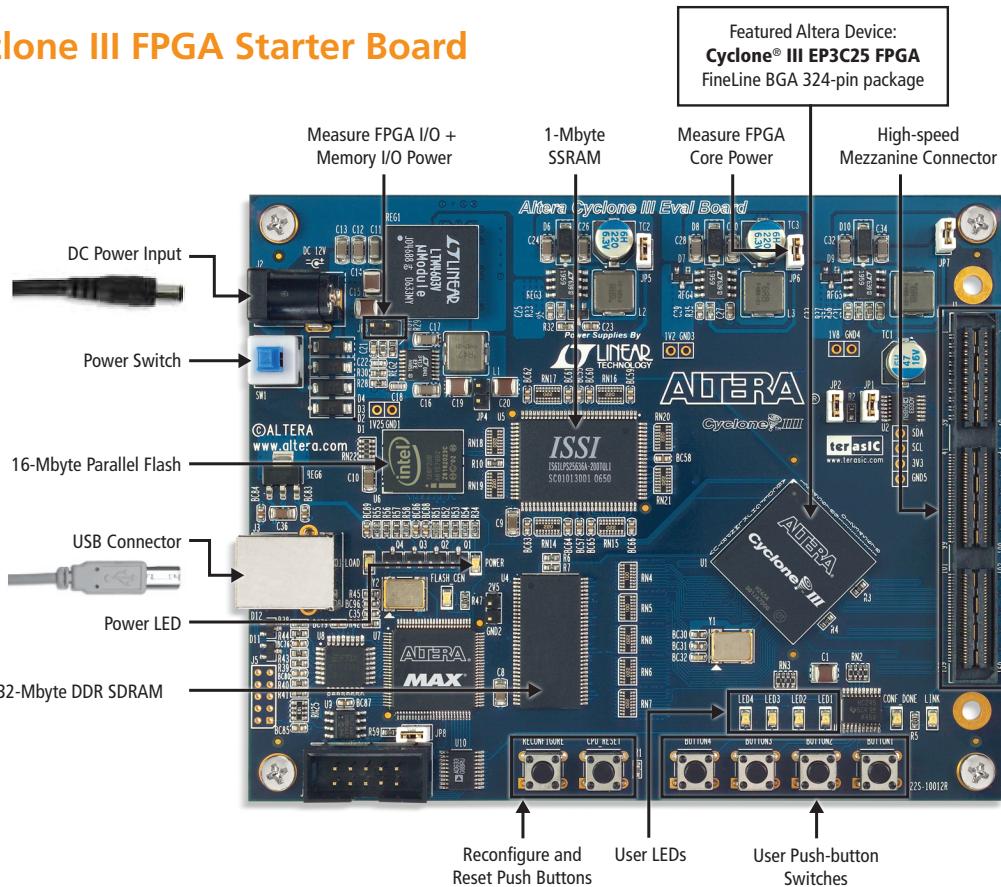


ALTERA

Cyclone III FPGA Starter Kit

Quick Start Guide

Cyclone III FPGA Starter Board



What's in the Box?

- Cyclone III FPGA Starter Board
- 12-V power supply, power cable, UK and EU plug adapters
- USB cable, type A-B
- Printed literature

Experienced users can go directly to <http://www.altera.com/products/devkits/altera-kit-cyc3-starter.html> to download the development kit installer. You can order the Quartus® II software DVD and the Development Kit Installations DVD from the Literature section of the Altera® website at www.altera.com/literature/lit-index.html.

Installing the Software

Quartus II software is the primary FPGA development tool used to create, compile, and download FPGA designs used with this kit. The Cyclone III FPGA Starter Kit requires Quartus II software version 7.2 or later in order to properly compile and generate FPGA programming files.

1. Download and install Quartus II Web Edition Software by performing the following steps:

- a. Go to the following Altera web page:
www.altera.com/download
- b. Follow the instructions to complete the installation process.

If you have difficulty installing Quartus II software, refer to “Installing Quartus II Software” in *Quartus II Installation & Licensing for Windows* found at www.altera.com/literature/manual/quartus_install.pdf.

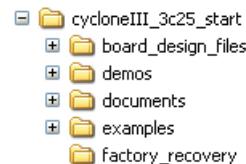
Additionally, you may want to install the Nios® II Embedded Design Suite, also available at www.altera.com/download. Nios II soft-core embedded processors run on Altera FPGAs. Some of the designs included in this kit use the Nios II processor.

2. Go to the following Altera web page to download the development kit installer of the Cyclone III FPGA Starter Kit and install it to your computer:
www.altera.com/products/devkits/altera-kit-cyc3-starter.html.
3. Install the USB-Blaster™ driver software as explained in the Cyclone III FPGA Starter Kit User Guide.

What Gets Installed

The Cyclone III FPGA Starter Kit installation program creates a directory structure for the installed files (figure below), where *<path>* is the selected Cyclone III Starter Kit installation directory. By default these files will be installed to: *altera\<Version #>\kits\cycloneIII_3c25_start*.

Directory Structure



The table below lists the file directory names and a description of their contents.

Installed Directory Contents

| Directory Name | Description of Contents |
|--------------------|--|
| board_design_files | Contains schematic, layout, assembly, and bill of material board design files. Use these files as a starting point for a new prototype board design. |
| documents | Contains the development kit documentation. |
| examples | Contains the sample design files for the Cyclone III FPGA Starter Development Kit. |
| factory_recovery | Contains programming files used to put the Cyclone III Starter Board back into the factory default state. |

Additionally, a menu option is added to the Windows Start Menu (**Programs >Altera > Cyclone III FPGA Starter Kit <Version #>**).

From this menu, quick links are created where you can quickly launch the control panel GUI for the Cyclone III FPGA Starter Board or open documents (shown below).

- QuickStart Guide—Cyclone III FPGA Starter Kit
- My First FPGA Tutorial
- Cyclone III FPGA Starter Kit User Guide
- Cyclone III FPGA Starter Board Reference Manual
- Cyclone III FPGA Starter Board Control Panel GUI

Power-on Test

A simple power-on test can be done at any time.

1. Plug the supplied 12-V DC power supply into an AC power outlet (100 V–240 V), and then connect this power supply to the development board.
2. Connect the development board to your computer using the supplied USB cable.
3. Turn on the development board power by pressing the blue power switch button down.
You should observe the following:
 - a. The power LED is on and the Conf_Done LED is on.
 - b. The four user LEDs are “counting” in a pattern (LED1 is the lowest bit).

Featured Altera Device

This kit features the Cyclone III EP3C25 FPGA in the FineLine BGA 324-pin package.

For detailed device specifications, please see the Cyclone III datasheet:
www.altera.com/literature/lit-cyc3.jsp.

The device is also available for purchase on Altera’s eStore:
www.altera.com/buy/buy-index.html.

Additional reference designs or design examples can be downloaded from the Altera website:

- Cyclone III FPGA Starter Kit-specific:
www.altera.com/products/devkits/altera-kit-cyc3-starter.html
- Any Altera device:
www.altera.com/end-markets/refdesigns/ref-index.jsp
www.altera.com/support/examples/exm-index.html

Literature can be found at the Altera website:

- www.altera.com/literature

Low-cost, High-volume Cyclone III FPGAs

Cyclone III Device Overview

| Device | LEs | M9K Memory Blocks | Total Memory (Mbits) | Multipliers | PLLs | Total Global Clocks | Maximum User I/O Pins |
|---------|---------|-------------------------|----------------------------|-------------|------|------------------------|--------------------------|
| EP3C5 | 5,136 | 46 | 0.4 | 23 | 2 | 10 | 182 |
| EP3C10 | 10,320 | 46 | 0.4 | 23 | 2 | 10 | 182 |
| EP3C16 | 15,408 | 56 | 0.5 | 56 | 4 | 20 | 346 |
| EP3C25 | 24,624 | 66 | 0.6 | 66 | 4 | 20 | 215 |
| EP3C40 | 39,600 | 126 | 1.1 | 126 | 4 | 20 | 535 |
| EP3C55 | 55,856 | 260 | 2.3 | 156 | 4 | 20 | 377 |
| EP3C80 | 81,264 | 305 | 2.7 | 244 | 4 | 20 | 428 |
| EP3C120 | 119,088 | 432 | 3.9 | 288 | 4 | 20 | 531 |

Want to Dig Deeper?

The next step is to read the Cyclone III FPGA Starter Kit User Guide. This document contains a more detailed description of the following operations:

- Using the GUI-based control panel which allows a user to communicate with devices on the CIII FPGA Starter Board
- How to download FPGA configuration files to the board
- How to measure power on the Cyclone III FPGA Starter Board

Additional information on training and tutorials can be found at the Altera website:

- Altera University Program: www.altera.com/universityprogram
- Altera training: www.altera.com/training

