ALTERA®

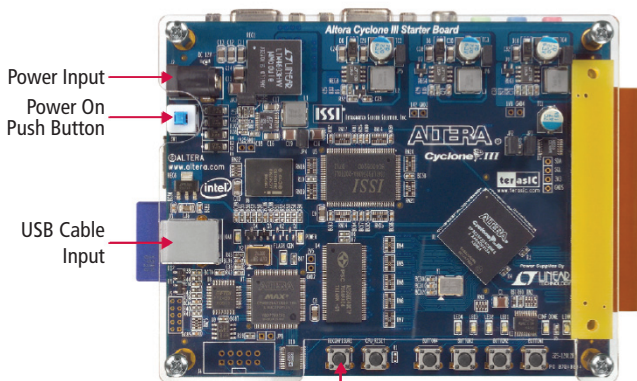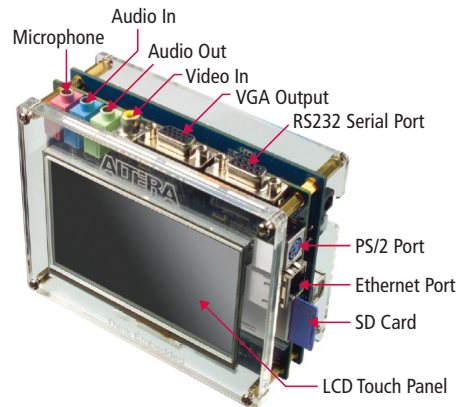### Nios II Embedded Evaluation Kit, Cyclone III Edition
Quick Start Guide

Cyclone III FPGA Base Board and Touch-panel LCD Daughtercard

Power Input
Power On Push Button
USB Cable Input
Press RECONFIGURE to Return to Application Selector

Microphone
Audio In
Audio Out
Video In
VGA Output
RS232 Serial Port
PS/2 Port
Ethernet Port
SD Card
LCD Touch Panel

What's in the Box?

- Cyclone® III starter board
  - Cyclone III EP3C25F324 FPGA, 25,000 logic elements (LEs)
  - Embedded USB-Blaster™ circuitry for FPGA configuration
  - 32 megabytes (MB) DDR SDRAM
  - 1 MB synchronous SRAM
  - 16 MB Intel P30/P33 Flash
- LCD daughtercard
  - 800 x 480 touch-screen LCD display
  - 24-bit CD-quality audio coder/decoder (CODEC) with line-in, line-out, and mic-in jacks
  - Ethernet 10/100 megabits per second (Mbps)
  - VGA output
  - Composite video input
  - PS2 connector
  - RS-232 connector
- Cables and accessories
  - Standard definition (SD) card and USB-to-SD card adaptor
  - Type A-B USB cable
  - One serial cable (RS-232), PS/2 mouse/keyboard connectors
  - 12-V power supply, international power cords
  - Ethernet (RJ-45) cable (7 ft.), Ethernet crossover adapter

Experienced users can go directly to **www.altera.com/nios2eval** 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**.

Introduction

The Nios® II Evaluation Kit, Cyclone III Edition is a first-class, low-cost evaluation platform for embedded developers. The kit includes the Nios II Embedded Design Suite (EDS), a complete design suite for all your embedded development needs. The software tutorials and examples in this kit come with full source code showing applications such as a picture viewer, a web server, C-to-hardware (C2H) acceleration, and graphics.

Install the Design Software

The Nios II Embedded Evaluation Kit, Cyclone III Edition User Guide will guide you through the steps to:

1. Install the following software from the Altera web page:
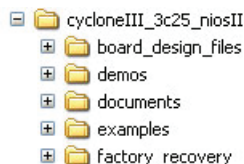   **www.altera.com/download**

Install ALL of the following:

- Quartus II FPGA design software
- Nios II EDS
- Altera MegaCore® intellectual property (IP) library

2. Obtain a license file

3. Install USB-Blaster driver software

4. Go to the following Altera webpage to download the development kit installer of the Nios II Embedded Evaluation Kit, Cyclone III Edition and install it to your computer:
   www.altera.com/nios2eval

By default these files will be installed to the "<install_directory>":

/altera/<version #>/kits/cycloneIII_3c25_niosII

Directory Structure

```
☐ 📁 cycloneIII_3c25_niosII
   ⊞ 📁 board_design_files
   ⊞ 📁 demos
   ⊞ 📁 documents
   ⊞ 📁 examples
   ⊞ 📁 factory_recovery
```

Installed Directory Contents

Directory Name	Description of Contents
board_design_files	Schematic, assembly, bill of materials.
documents	Kit documentation, user guides, tutorials
examples	Source code for example applications
demos	Ready-to-run demonstration applications
factory_recovery	Files required to restore default factory image

Perform Power-on Test

As you unpack the box you will notice that there is no USB-Blaster. The USB circuitry is on the board.

1. Plug the supplied 12-V DC power supply into an AC power outlet (100V - 240V), 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.

4. Out of the box you should observe that the application selector appears on the LCD screen.

Launch Demo Applications

You can launch the demo applications included in the Nios II Embedded Evaluation Kit, Cyclone III Edition using the touch panel.

1. The first time the kit is powered on, it will default to the application selector.

2. Scroll through the available applications using the touch-screen LCD display. Touch to select the application and press "LOAD" to launch it.

3. When you are done viewing the application, **press the "RECONFIGURE" push button to return to the application selector**.

For more details, refer to the Nios II Embedded Evaluation Kit, Cyclone III Edition User Guide.

Evaluate the Software Development Tools

The Nios II EDS is a complete design suite for all your embedded development needs.

Additionally, the Nios II EDS includes a developer's license for third-party software.

Nios II EDS

Component	Description
Nios II Integrated Development Environment (IDE)	Includes text editor, compiler, debugger, and flash programmer
Micrium's MicroC-OS II RTOS	Evaluation version for real-time operating system
NicheStack TCP/IP Network Stack - Nios II Edition	Evaluation version of commercial grade network stack
El Camino SD Card Controller	Evaluation version of SD Card Controller
Nios II C2H Compiler	Evaluation version of ANSI C-to-Hardware acceleration compiler

Create My First Software Application

Take the My First Nios II Software Tutorial located in the *<install_directory>\documents\tutorials\software_tutorials* directory

Learning Resources

Additional Learning Resources	Learning Goal
My First FPGA—Hardware Tutorial (located in the *<install_directory>\documents\hardware_tutorials* directory)	Create an FPGA hardware design
Training* • Developing Software for Nios II Processor • Using the Nios II Software	Learn how to use the software
Literature* • Nios II Software Developer's Handbook • Nios II Processor Handbook • Software and hardware tutorials and application notes Design Examples* • Source code provided for design examples	Develop applications using Nios II processors

*Access resources at **www.altera.com/embedded**

Download More Designs

New designs for the Nios II Embedded Evaluation Kit, Cyclone III Edition are available and can be downloaded from the Nios II Embedded Evaluation Kit, Cyclone III Edition web page: **www.altera.com/nios2eval**.

Refer to the Nios II Embedded Evaluation Kit, Cyclone III Edition User Guide to learn how to download new designs to your kit.

Learn More About the Nios II Embedded Evaluation Kit, Cyclone III Edition

Learn more in the Nios II Embedded Evaluation Kit, Cyclone III Edition User Guide, including how to:

- Develop applications for the evaluation kit
- Add your own designs to the evaluation kit
- Add your own pictures to the picture viewer demo
- Update your evaluation kit with new applications available online
- Recover the factory image

Join the Nios II Embedded Evaluation Kit Community

Obtain design examples, source code, and IP for the Nios II Embedded Evaluation Kit. You can also post your own ready-to-run SD card demos at this site.

Go to the NiosWiki:

http://www.nioswiki.com/Nios2EmbeddedEvaluationKit

Related Links

- Nios II Embedded Evaluation Kit, Cyclone III Edition web page
  www.altera.com/nios2eval
- Altera Nios II embedded processor web page
  www.altera.com/embedded
- Nios Wiki
  http://www.nioswiki.com/Nios2EmbeddedEvaluationKit