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Intel® MAX® 10 FPGA Development Kit

The Intel® MAX® 10 FPGA Development Kit provides a full featured design platform built around a 50 K logic elements (LEs) MAX 10 FPGA, optimized for system level integration with on-die analog-to-digital converter (ADC), dual-configuration flash, and DDR3 memory interface support. The board features on-board Intel FPGA Download Cable II, high-speed mezannine card (HSMC), and Pmod* Compatible expansion cards, high-definition multimedia interface (HDMI) output, and dual Ethernet for industrial Ethernet applications. The MAX 10 FPGA Development Kit provides the perfect system-level prototyping solution for industrial, automotive, consumer, and many other market applications.

- Ordering Information
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With this development board, you can:

- Develop designs for the 10M50D, F484 package FPGA
- Measure the performance of the MAX 10 FPGA analog-to-digital block conversion
- Interface MAX 10 FPGAs to DDR3 memory at 300 MHz performance
- Run embedded Linux using the Nios® II processor
- Interface to daughtercards and peripherals using HSMC and Digilent Pmod* Compatible connectors
- Measure FPGA power (V_{CC_CORE} and V_{CC_IO}) using the power monitor graphical user interface (GUI)
- Reuse the kit's PCB board and schematic as a model for your design

Ordering Information

Table 1. MAX 10 FPGA Development Kit Ordering Code and Pricing Information

Ordering Code	Price	Ordering Information
DK-DEV-10M50-A	Buy Now ▸	Order online via the eStore or contact your local Intel distributor to place your order.

Notes:

- Buyer represents that it is a product developer, software developer or system integrator and acknowledges that this product is an evaluation kit that is not FCC authorized, is made available solely for evaluation and software development, and may not be resold

Development Kit Contents

The MAX 10 FPGA Development Kit includes the following:

- CE-compliant MAX 10 FPGA development board
  - Featured devices
    - MAX 10 FPGA (10M50D, dual supply, F484 package)
    - Intel Enpirion® EN2342QI 4A voltage-mode synchronous step-down converter with integrated inductor
    - Enpirion EN6337QA 3A high-efficiency DC-DC step-down converters with integrated inductor
    - Enpirion EP5358xUI 600 mA DC-DC step-down converters with integrated inductor
    - MAX II CPLD – EPM1270M256C4N (On-board Intel FPGA Download Cable II)
  - Programming and Configuration
    - Embedded Intel FPGA Download Cable II (JTAG)
    - Optional JTAG direct via 10-pin header
  - Memory devices
    - 64Mx16 1 Gb DDR3 SDRAM with soft memory controller
    - 128Mx8 1 Gb DDR3 SDRAM with soft memory controller
    - 512Mb quad serial peripheral interface (quad SPI) flash memory
  - Communication ports
    - Two Gigabit Ethernet (GbE) RJ-45 ports
    - One mini-USB 2.0 UART
    - One HDMI video output
    - One universal HSMC connector (see HSMC expansion cards)
    - Two 12-pin Digilent Pmod* Compatible connectors (see Pmod* Compatible expansion cards)

- Analog
  - Two MAX 10 FPGA ADC SMA inputs
  - 2x10 ADC header
  - Potentiometer input to ADC
  - One external 16 bit digital-to-analog converter (DAC) device with SMA output
- Clocking
  - 25 MHz single-ended, external oscillator clock source
  - Silicon labs clock generator with programmable frequency GUI
- Switches, push buttons, jumpers, and status LEDs
- Mini-USB cable for on-board Intel FPGA Download Cable II
- 2A power supply and cord
- Free Intel Quartus® Prime Lite design software (download software and license from the website)
- Complete documentation
  - User manual, bill of materials, schematic, and board files
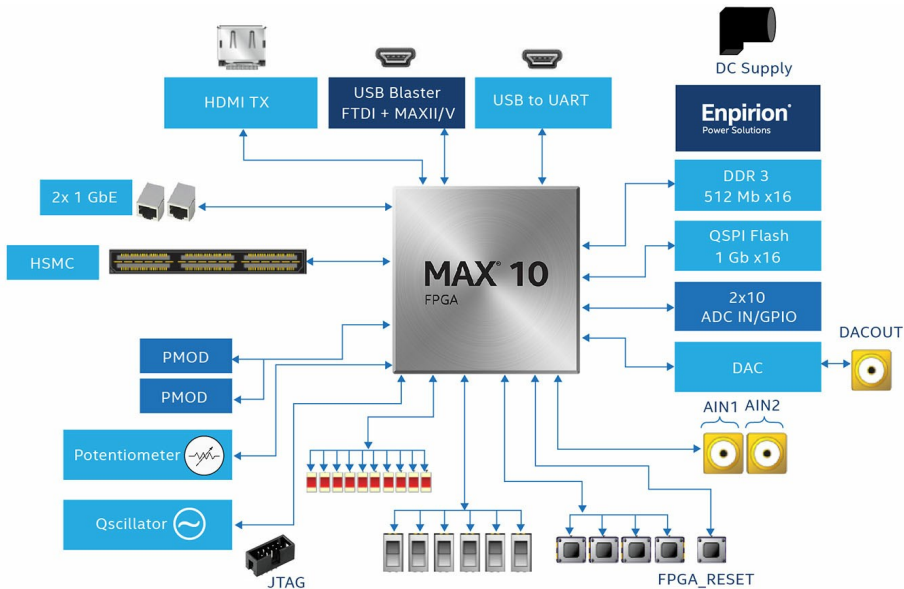

Figure 1. MAX 10 FPGA Development Board

Figure 2. MAX 10 FPGA Development Board Block Diagram

Documentation

Table 2. MAX 10 FPGA Development Kit Documents

Document	Description	Version

User Guide	Information about the MAX 10 FPGA Development Kit hardware and board setup including how to use included software.	2015.06.26
Rev C Schematic	Revision C PCB Schematic. See User Guide on how to determine PCB revision.	C1
Rev C. PCB Complete kit installation	Full installation of all files, including designs, GUI, user manual, BOM, layout, PCB, schematics, and other documents or files. **FOR <u>Rev C</u> PCB KITS ONLY**	15.0.0
Rev B Schematic	Revision B PCB Schematic. See User Guide on how to determine PCB revision.	B1
Rev B. PCB Complete kit document installation	Full installation of all files, including designs, GUI, user manual, BOM, layout, PCB, schematics, and other documents or files. **FOR <u>Rev B</u> PCB KITS ONLY**	15.0.0

Related Links

- MAX 10 FPGA training videos
- Design Store - MAX 10 FPGA reference designs
- MAX 10 FPGA documentation
- Online training:
  - Basics of Programmable Logic
  - The Quartus Software Design Series Foundation
  - The Quartus Software Interactive Tutorial

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