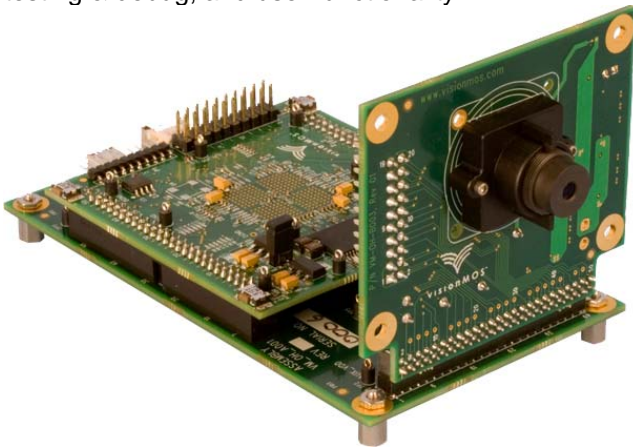


# VisionMOS Imaging Development Kit

## Overview

The VM-A005 Imaging Development Kit (IDK) is a system designed to be the basis of imaging engineering and prototyping. The core of the system is an Altera Cyclone III FPGA, and a powerful set of tools that enable image sensor capture and USB 2.0 HS interface to a PC. The kit is further enhanced with a PC application and matching embedded drivers to capture video and still images, and then perform color processing and analysis.

Users of the IDK will find that it is very versatile, with the ability to create PC or embedded new functions. It comes with source code and examples to get a user started, and can be used for image capture right out of the box. All developmental functions are enabled right over the single USB connection from new function coding, compiling, downloading of firmware, testing & debug, and user functionality.



The IDK comes with a modular image head design, which can be modified and changed by the user or VisionMOS engineering to meet specific needs. Options include the image sensor itself as well as the optic type and filtering. A common interface between the image head and the board allow for quick interchange of various sensors and functions.

The main board of the system has an integrated USB 2.0 microcontroller, which handles both bi-directional communication and high speed bulk data handling. A user manual included in the kit allows the user to understand and interact with various USB commands for control of the system.

## Features

- Versatile USB Communications Controller
  - Micro controller USB communications
  - Matching PC side driver
  - Communication structured language
  - High speed data capture
  - Download of FPGA and other data
  - Control of system functions
  - Debug of programming / algorithms
- Multi Use FPGA
  - Provide system control, I2C, UART
  - Logic for image processing
  - High speed data routing
- Modular Image Sensor
  - Multiple image sensors available
  - Custom image sensors & optics
  - Peripheral control for shutter, strobe
  - Versatile connector for new applications
- PC Application (VM ImagePro)
  - Windows GUI application
  - Image analysis
  - Image & color processing
  - Algorithm development
  - Dynamic capture & system control
  - Scripting language
  - API for new software components
- Low cost development tools
  - Altera Quartus tools free
  - FPGA source code supplied
  - Program and debug via USB
  - Binary code for micro controller supplied
  - PC application and documents
- Power and mechanical
  - Operates from single wall power supply
  - System 2.6"x4.6"x2.5"
  - Custom layouts available

## Architecture

The Cyclone III FPGA is the heart of this Development Kit. It offers an unprecedented combination of low cost, higher density and low power consumption. The FPGA contains an optimal set of features used to drive high-bandwidth parallel processing. The highly integrated FPGA consists of 10K Logic Elements, 400K bits of embedded memory and multiple hardware accelerators.

The Development Kit consists of preprogrammed hardware elements, the VM VisionPro PC application with Graphical User Interface (GUI), Windows drivers and custom Dynamic Link Library (DLL). The application, VM VisionPro, includes an Image analysis / processing package and image capture interface. An FPGA Programmer and an Integrated Circuit Communications Compliant (I<sup>2</sup>C) interface will aid in development of custom designs. VM VisionPro enables communications to all hardware elements and GPIO timing controls. Extensive documentation included with the kit ensures a complete understanding of the system operation.

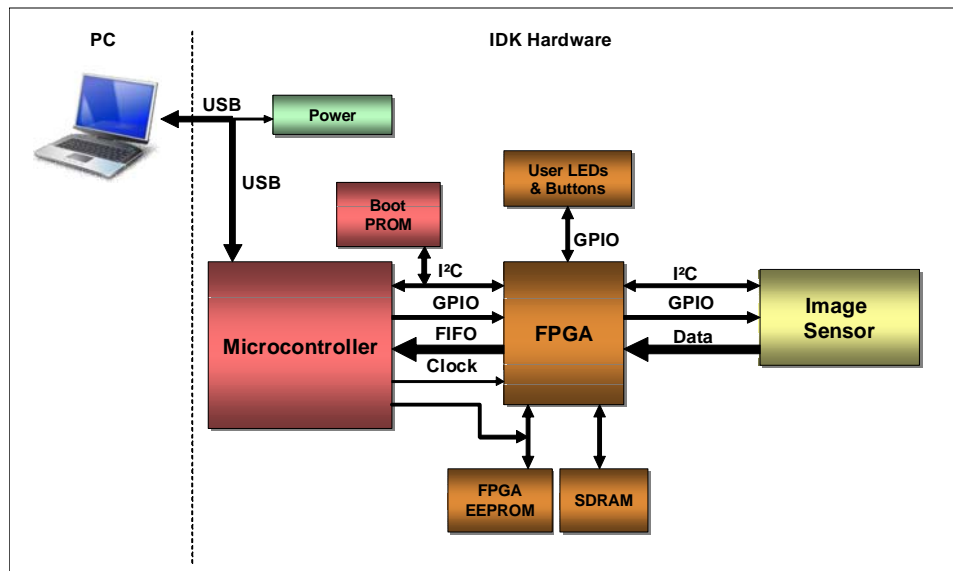
The Development Kit offers the ability to design, compile, download and execute - all via the USB port on your PC. The use of non-volatile memory eliminates the need of constant reprogramming. Free tools including the custom VHDL source code (supplied) with the kit along with free industry standard tools available online allow for a wide range of design flexibility without the need or expense of additional components.

The IDK is ideally suited for design projects that may require analysis of images, image sensor validation, image and color processing algorithm development, and test or prototype systems. Out of the box, the system comes with an application that is fully USB enabled. All development, programming, and operation (including image capture) can be done via the same simple USB interface. Software and examples are included.

This kit can enable applications:

- Rapid Prototyping and Development of Altera Cyclone Design
- Digital Camera/Image Sensor Interface
- Image Analysis and Manipulation
- Image Sensor/optic Evaluation
- IP Development and Testing
- Data Acquisition and Control
- Data Generator
- USB to I<sup>2</sup>C Compatible Bus Bridge

The IDK and VisionPro application can be customized by VisionMOS to meet your needs, or is available off the shelf in a number of standard configurations. The IDK is in pre-production now.



## Ordering Information

The VisionMOS Imaging Development Kit is available at:  
<http://www.VisionMOS.com>

For custom and/or upgraded features contact our sales team at 480-730-7800 or email [Sales@visionmos.com](mailto:Sales@visionmos.com)

## System Use

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