Image Sensor Demo System Kits

Introduction

Micron's CMOS image sensor demo kits are USB-powered camera boards that enable easy testing and characterization of Micron® sensors. The Micron Imaging demonstration system family supports the full line of Micron's CMOS image sensor products.

The current demonstration system board is called the DEMO2, which uses a USB 2 interface to transport raw digital video data from the sensor to the host PC. Several software applications are provided with the demo system to enable the user to display the data from the sensor on the host computer, and to change some basic settings of the sensor for evaluation purposes. A software development kit (SDK) is also provided to customers who wish to write their own software applications to access the sensor on the demo system.

Why Use Micron's Demo Kit?

A Micron demo kit with DevSuite software is one of the most advanced sensor characterization tools available. Advantages include:

- Helps shorten development time by up to 650 engineering hours (a potential savings of US$39,000)
- Helps reduce the NRE cost by up to US$3,500
- Provides efficient sensor characterization within your environment
- Simplifies experimentation with different lenses via a universal lens mount
- Enables optical and electrical simulations

Demo Kit Contents

A demo kit and headboard is available for almost all of our sensors. These headboards are interchangeable, so you only need to purchase one full demo kit—and additional headboards, as needed—to test multiple sensors.

Each demo kit includes the following:

- Micron Imaging demo camera board
- Micron sensor headboard with lens
- USB 2.0 cable
- Camera tripod
- License to download and use DevSuite software

Figure 1: Demo Board and Sensor Headboard
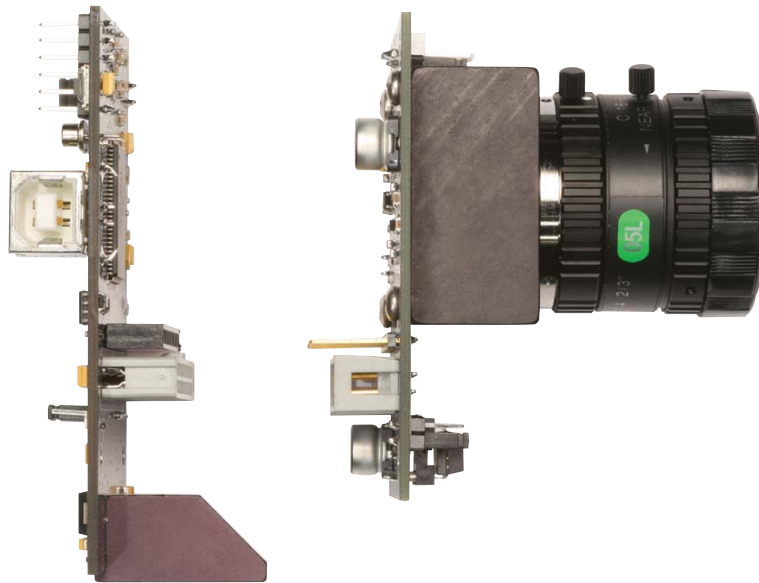
Requirements

Our demo kits systems come complete with everything you need to get set up and running on a typical Windows-based PC or notebook computer. Specific requirements are listed below.

Hardware Requirements

- Pentium III 450 MHz or higher (a faster processor will improve the displayed frame rate on the PC)
- 128MB RAM
- USB 2.0 host controller (recommended is Adaptec's "USB 2 CONNECT" PCI USB2 adapter, part number AUA-3100LP [AUA-1420A for notebook PCs])

Software Requirements

We do not recommend Windows 2000 with built-in USB2 controllers.

- Windows 2000 with a minimum of Service Pack 2 or Windows XP with a minimum of Service Pack 1
- The latest drivers for the USB 2.0 host controller

**Figure 2:   Demo Kits with C-Mount and Mini Lens Configurations**

C-Mount   Mini Lens
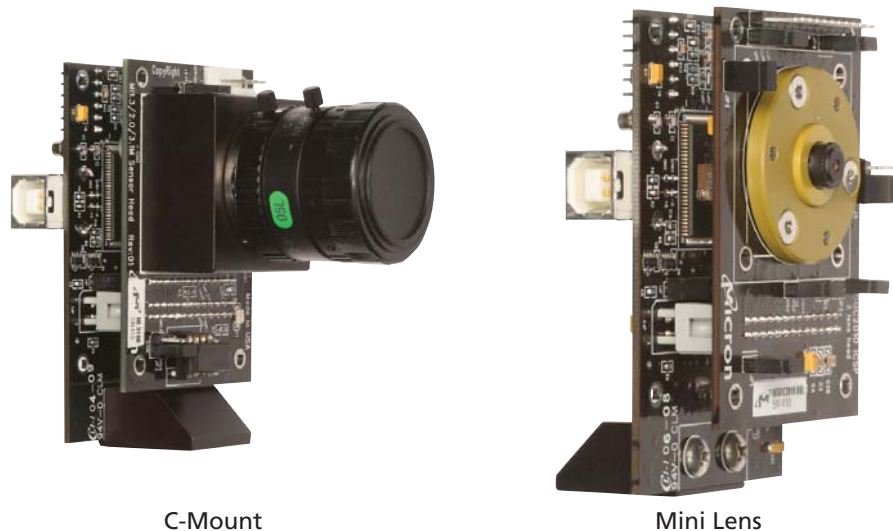
Notes: 1. S-mount lenses are also available with some sensors.

Board Functionality

The USB board provides centralized communication between the image sensor and the host PC. The system receives firmware programming from a serial EEPROM that configures the board into a synchronous slave FIFO mode. The sensor data fills up an internal FIFO with data when the elimination of handshake is taking place. The firmware automatically sends data through the USB 2.0 interface whenever the FIFO becomes full and the FRAME_VALID is polled to determine when a frame is complete. When the FRAME_VALID drops, the host computer is signaled through the USB interface with a frame end packet. The firmware also supplies the necessary code to implement USB vendor commands that allow the host computer to query and modify the system configuration data.

Vendor commands are used to communicate with the image sensor through the serial host interface protocol built into the sensor head interface.

Figure 3:   DEMO2 Board Block Diagram
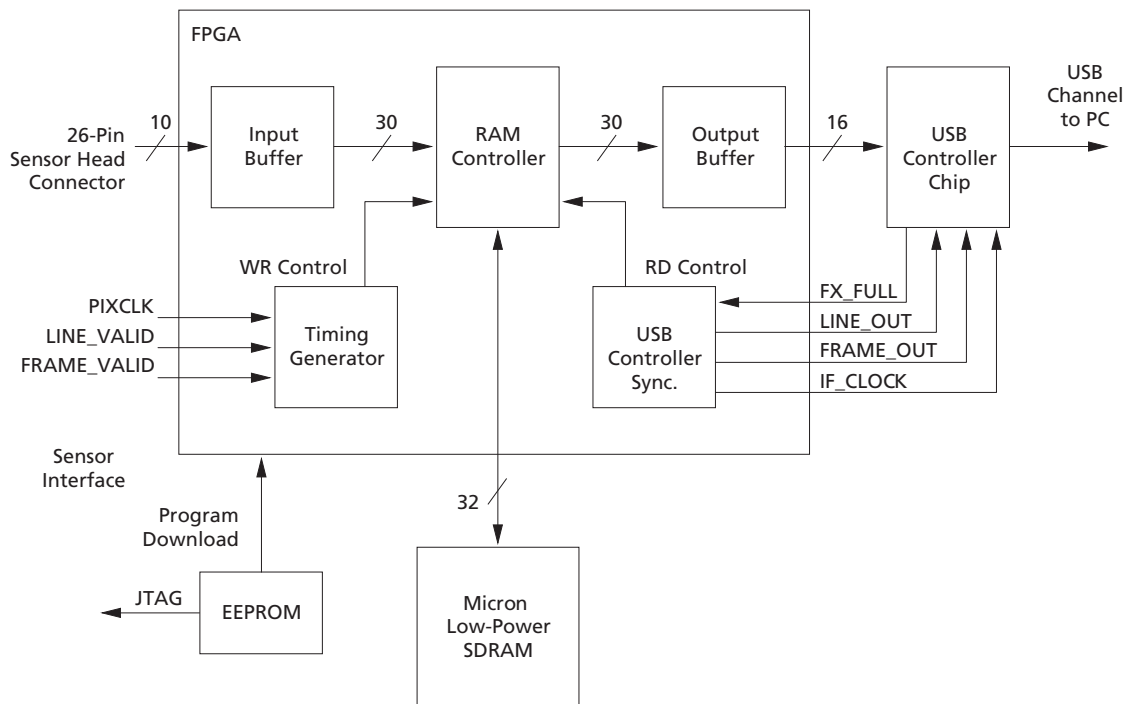
DEMO2

Micron's DEMO2 board comes equipped with the addition of an FPGA and memory controller. This allows the hardware to store up to three entire frames of data on the board prior to USB 2 transport, which helps avoid avoid frame drop on high-resolution sensors. The DEMO2 baseboards are common to all sensor configurations. The FPGA optimizes the data flow through the USB to avoid FIFO overflow, thus ensuring complete frames, even for large sensors.

Ordering Information

Visit www.micron.com/products/cmos/kitparts.aspx to view the list of available parts. Micron demo kits and headboards are stocked by several distributors, including Avnet, Arrow, and DigiKey. Contact your preferred distributor to order or follow the links on our Web site.