Demo Kit Quick-Start Guide

Instructions for Using Aptina's CMOS Image Sensor Development Kits

Introduction

Thank you for purchasing an Aptina CMOS image sensor development kit. Aptina's Demo Kits are USB-powered camera boards that enable easy testing and characterization of Aptina® sensors.

Aptina's sensor demonstration software, DevSuite, enables you to display images from your sensor. This software is downloaded from Aptina's website.

Note: To be able to download the DevSuite Software, you must have an Aptina account specific to your sensor.

Follow the instructions below to assemble the kit and to download and install Aptina's DevSuite software.

Before continuing, please ensure that you meet the Hardware and Software requirements listed in Appendix A.

Software Download

To download the DevSuite software:

1. Go to http://www.aptina.com/support/Devsuite.jsp.
2. Select the link for your sensor.
   If your sensor is not listed, select the link for Generic Software.

- If you already have access, you will be able to download the software directly.
- If you don't have access, you will be routed to a form that allows you to request access. When filling out the form, please ensure that you enter the sensor part number in the "Your question or concern" box.
  It will take one business day at most to provide the Aptina account name and password.

Note: Python 3.4.2 is required by DevSuite. If it is not installed, when DevSuite is run you will be prompted to download the Python installer and then run it.

You can also run the Python installer manually by following these steps:

1. Download the Python installer via this link.
2. When the "File Download" dialog appears, select "Save" to download the installer.
3. When the "ZIP" dialog appears, select "Extract" and then the Extract button.
4. Open the newly created folder and double-click "Install" to run the installer.
5. Follow the prompts to complete the installation of Python.

Note: Also, XP Service Pack 3 (SP3) is required.

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Demo Kit Contents

Before you begin setting up the camera, please verify the components included in your particular kit. Please note that there are several types of kits.

Full Demo Kit contents

- Aptina development kit baseboard (Demo3)
- Aptina sensor headboard with lens
- USB3 cable
- DevSuite Quick-Start Guide (this document)
- Camera tripod

Headboard-only Demo Kit contents

- Aptina sensor headboard with lens

The kits listed above may contain optional auxiliary boards.
Note that you will have access to the User Guides once you install the DevSuite software; refer to section "Additional Applications and Resources" for details.

LC HDMI board

- Refer to its User Guide for connectivity instructions: HDMI_LC User Guide.pdf.

HSSAB board

- Refer to its User Guide for connectivity instructions: HSSAB User Guide.pdf.

Demo Kit Assembly

1. Connect the headboard and baseboard via the 26-pin female connector located on the back of the baseboard and the 26-pin male header on the back of the sensor headboard.
2. For a full demo kit, screw the mini-tripod into the tripod mounting block.
3. For optional auxiliary boards, refer to their User Guide.

Caution	**Do not connect the kit to your computer yet**

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Installing DevSuite

Uncompress the .zip file downloaded from the Web site and read the "Read-Me-First.doc" for information on the installation package.

To install the Software, double-click the file *install.bat* and follow the instructions on your screen. If you have an earlier version of DevWare on your computer, you will be prompted to uninstall it before proceeding with the new install.

After installation has completed, please review the Drivers User Guide:
"All Programs > Aptina Imaging > Docs > User Guides > Aptina Drivers User Guide"

Note that the following instructions mention the "Demo2X Board", but these instructions apply as well to the Demo3 Board.

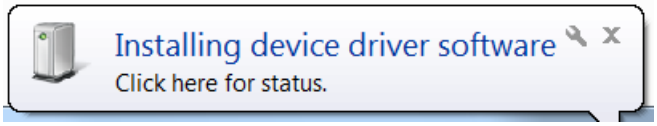
Starting Up the Software – XP Systems

Plug the kit into your computer using the USB cable provided. After a few seconds, your computer should detect new hardware and start the "Found New Hardware Wizard".

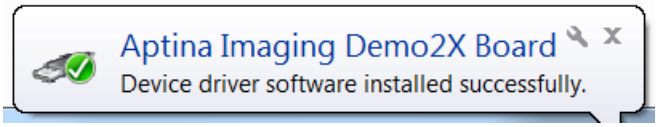
To complete the driver installation, follow the instructions in the document found via the start menu:
"All Programs > Aptina Imaging > Docs > User Guides > USB XP Driver User Guide"

Starting Up the Software – Windows7 Systems

Plug the kit into your computer using the USB cable provided. After a few seconds, your computer should detect new hardware and attempt to download the appropriate USB driver from the Microsoft driver server, during which this dialog should appear:

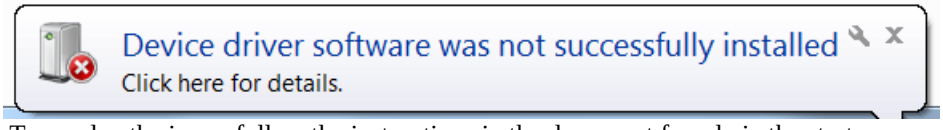


If the installation was successful, this dialog will appear:



You are now ready to Launch DevSuite – please proceed to "Launching the DevSuite Application".

If the download fails (either due to a failed Internet connection or your system's Firewall settings, or incorrect FW on the Aptina development kit baseboard), this dialog will appear:



To resolve the issue, follow the instructions in the document found via the start menu:
"All Programs > Aptina Imaging > Docs > User Guides > USB Windows7 Driver User Guide"

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Launching the DevSuite Application

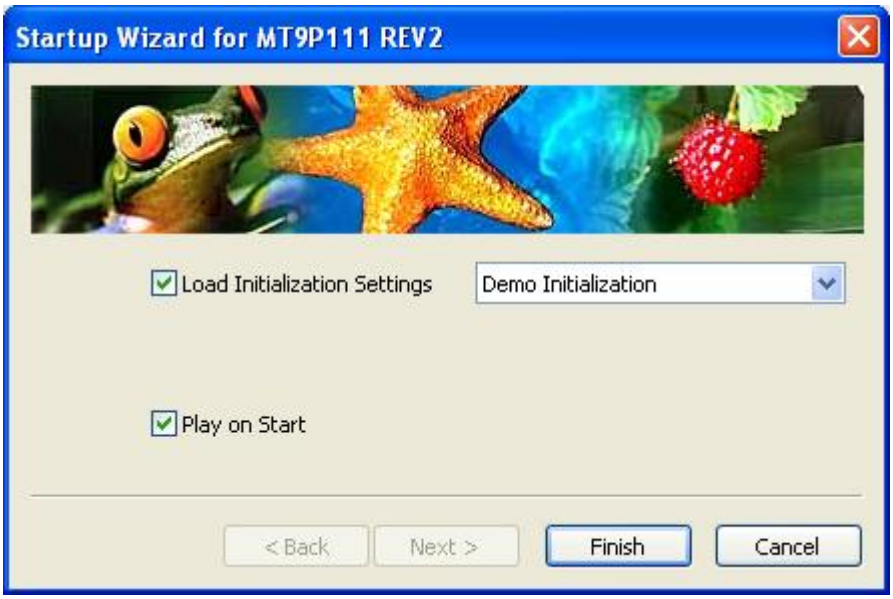
1. Go to the start menu, select "All Programs" then "Aptina Imaging" then "DevWare." The popup window shown in Figure 1 will display as DevWare probes for attached devices.

Figure 1: DevWare Popup – Searching for Attached Devices



2. After the software has found an attached device, the main DevWare window will appear with the dialog box shown in Figure 2 on page 3; select the settings shown. (Color/monochrome sensors will also need to have the color or monochrome box checked, as appropriate.) Click "Finish."

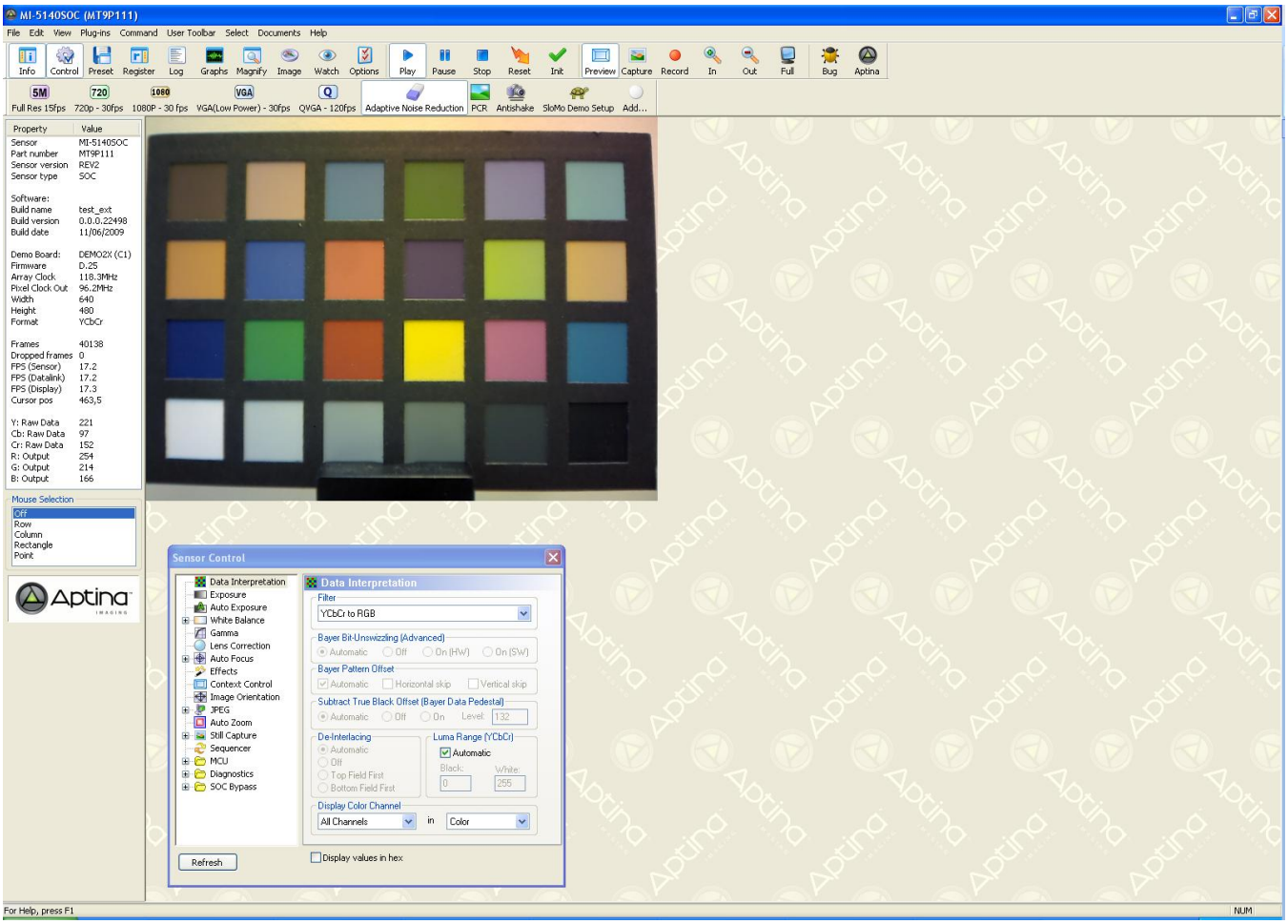
Figure 2: Startup Dialog



Note: This is the startup dialog for the MT9P111 sensor headboard. The startup for other headboards will be slightly different.

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Figure 3: DevWare Main Screen



The installation is complete.

For assistance using DevWare, see the help files within the application. Users will also notice that tooltip" pop-ups" are available for many controls; simply pause the cursor over the control to read the tooltip.

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Additional Applications and Resources

There are several additional DevSuite applications and resources that are useful for demonstrating and configuring sensors.

Sensor Demo

Sensor Demo is demonstration software that runs DevWare in an abbreviated mode. The register defaults are loaded and images will play automatically upon start-up. The console only shows a basic toolbar and display area. All dialogs are disabled. This allows for quick demonstration of a sensor. If necessary, a dialog can be enabled by going to the View menu and selecting the appropriate dialog name. For example: View -> Info Dialog.
Sensor Demo can be launched via the desk-top shortcut.

Side-by-Side Demo

This application allows two Aptina Imaging Demo cameras to be simultaneously displayed side-by-side. It is useful for comparing differences in equal sized sensors, although dissimilar sensors may also be used together. Synchronous control of both images is provided for panning, zooming and play-state.
Side-by-Side can be launched via the desk-top shortcut.

Training Videos

A set of training videos can be found via the shortcut:
Start->All Programs->Aptina Imaging->Training->DevWare Training.

Documentation

There are various sets of documentation, including User and Development Guides, found via the Windows shortcut:
Start->All Programs->Aptina Imaging->Docs.

The documentation is also available from within DevWare from the “Documentation” menu item.

SDK

A Software Development Kit is available for users to write their own applications to interface to Aptina sensors. Information can be found via the shortcut:
Start->All Programs->Aptina Imaging->SDK.

Tools Shortcut

There are various other applications that can be found via the shortcut:
Start->All Programs->Aptina Imaging->Tools.
Each has its own “Help” file.

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Trouble Shooting

- Application can't locate sensor data (.sdat) files.
  - Read the "Read-Me-First.doc" from the installation package to ensure that all required files have been installed.
  - Ensure that the installation package name is matched to the sensor.
- Windows 7: the USB driver can't be found, or device not recognized.
  - On an XP-based OS, run the "Hardware Update Tool" to ensure the correct version of FW is installed; see "USB Driver User Guide" for details. Accessed via:
    Start->All Programs->Aptina Imaging->Docs->User Guides
- The Frame Rate is very low.
  - The amount of data being processed is quite significant for large display sizes, especially on larger sensors. Lower the size of the displayed image.
  - Ensure that the HW and SW requirements as defined in Appendix A are met.
- "ApBaseCom" can't be registered during SW installation.
  - Usually limited to Windows 7 systems with SP2.
  - If this error appears during running the installation script, select "Ignore" to continue.
  - If ApBaseCom will used, do the following;
    - Open a CMD window and navigate to the installation folder (usually C:\Aptina Imaging)
    - Enter "regsvr32 apbasecom.dll".
- On XP on DevWare start-up, errors of "The procedure entry point …" are reported.
  - Ensure that Service Pack 3 (SP3) is installed.

Reporting Bugs

If you are having issues with any of the applications, please use the "Bug" icon on the menu bar to open "Bug Report" dialog. Your system and sensor configuration information will be filled-in automatically.
Please enter information in to "Bug Description" and "How to reproduce the bug" fields, select the "Copy to Clipboard" button, and then paste that information in to an Email using the address provided in the dialog.

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Appendix A

Requirements

Hardware and software requirements for Aptina's development kit are detailed below.

Hardware Requirements

- Pentium III 450 MHz or higher (a faster processor will improve the displayed frame rate on the PC). Advanced noise reduction, sophisticated demosaic, and high dynamic range processing are very CPU-intensive
- Available C: HDD space of at least 600Mb, even when installation will be to another drive.
- Available RAM at least sensor size times 40 bytes. For example 600MB available RAM for a 14MP sensor. Remember to account for RAM needed by the system and by other applications or memory-resident software when calculating total system RAM requirements
- USB 2.0 host controller (an available USB 2.0 port)
- Graphics card and drivers capable of handling the images from the sensor. Some graphics cards or drivers will not display images much larger than about 8MP

Software Requirements

- Windows XP with a minimum of Service Pack 3
- The latest drivers for the USB 2.0 and/or USB 3.0 host controller
- Python 3.3.0; follow the instructions on page 1 to manually download Python.

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