i.MX27 IP Camera Reference Design
Quick Start Guide
Table of Contents

1. Getting Started .......................................................................................................................... 3
   1.1. Camera Kit Contents .............................................................................................................. 3
   1.2. CD-ROM Contents ................................................................................................................ 3
2. Setting up Camera Hardware ...................................................................................................... 4
3. Setting up Camera Software ...................................................................................................... 4
4. Preparing Windows® to View Video Stream .............................................................................. 5
   4.1. Internet Explorer 6.0 or 7 .................................................................................................... 5
   4.2. FFPLAY Video Client ........................................................................................................... 7
   4.3. Starting Video Stream ......................................................................................................... 8
   4.4. Changing the Camera IP address using Terminal ............................................................... 8
5. Revision History ........................................................................................................................ 9
1 Getting Started

This document is provided as a quick start guide that will help the user set up the Freescale i.MX27 IP camera and start a web based session.

1.1 Camera Kit Contents

The IP camera reference design kit is shipped with the items listed in Table 1.

Table 1. IP Camera Reference Design Kit Contents

<table>
<thead>
<tr>
<th>Type</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board</td>
<td>• CPU board</td>
</tr>
<tr>
<td></td>
<td>• Image Sensor board</td>
</tr>
<tr>
<td></td>
<td>CPU board and image sensor board with lens assembled, are housed in a plastic enclosure.</td>
</tr>
<tr>
<td>Cables</td>
<td>• RJ45 Ethernet cable</td>
</tr>
<tr>
<td></td>
<td>• Modified serial connector with one 9-pin female connection and one 3-pin terminal block connector.</td>
</tr>
<tr>
<td>Power Supply</td>
<td>• 12VDC @ 1A power supply with a center positive 2.5mm barrel jack connector.</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>• Camera Mini Tripod</td>
</tr>
<tr>
<td>Paperwork</td>
<td>• CD-ROM: Content CD</td>
</tr>
<tr>
<td></td>
<td>• End-User License Agreement</td>
</tr>
<tr>
<td></td>
<td>• Quick Start Guide (this document)</td>
</tr>
<tr>
<td></td>
<td>• Warranty card</td>
</tr>
<tr>
<td></td>
<td>• Freescale support card</td>
</tr>
</tbody>
</table>

Verify that all items are contained in the package.

1.2 CD-ROM Contents

The IP camera reference design kit is shipped with the items listed in Table 2.

Table 2. CD-Rom contents

<table>
<thead>
<tr>
<th>Type</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Documentation</td>
<td>• i.MX27 IP Camera Fact Sheet</td>
</tr>
<tr>
<td></td>
<td>• Bill of Materials, Schematics and Gerber files for CPU board and Image Sensor board.</td>
</tr>
<tr>
<td></td>
<td>• i.MX27 IP Camera Software Guide</td>
</tr>
<tr>
<td></td>
<td>• i.MX27 IP Camera Reference Manual</td>
</tr>
<tr>
<td></td>
<td>• DAP: Au-Zone Fact Sheet</td>
</tr>
<tr>
<td></td>
<td>• Data sheets for the IP camera’s non-Freescale components</td>
</tr>
</tbody>
</table>
2 Setting up Camera Hardware

The following section describes the procedure for setting up the camera hardware. Figure 1, below, depicts various connectors on the back of the unit.

1. Connect the RJ45 connector to both a local network port and the RJ45 connector located on the back on the unit. The camera supports Auto-MDI and therefore does not require a crossover cable.
2. Connect the terminal end of the serial connector on the back of the unit. This is only required if a terminal session is required.
3. Connect the female DB9 connector to the serial port on the host PC. Please exercise caution when connecting and removing the female DB9 connector to ensure that it does not break.
4. The Mini Tripod simply screws into the mount on the bottom of the unit.
5. Apply power by connecting the power adapter to the barrel connector on the back of the board. This is not required if a POE Ethernet connection is used.
6. Blue LEDs inside the top side of the enclosure indicate that the unit is running when activated.

3 Setting up Camera Software

This section describes the procedure for starting a streaming video session.

Note that the serial connection is not required to run the system. If it is desired that a Linux shell be present, connect the serial cable to the host PC as described above, and start up a terminal program for an 8-N-1, 115,200 connection. Disable all forms of Flow Control (Flow Control should be set to NONE).
4 Preparing Windows® to View Video Stream

This section describes the required procedure for preparing Windows to view the video stream.

In order to stream video in Windows XP™, some basic configuration needs to be completed first. The following applies to Windows XP with Internet Explorer 6.0 or 7.

- Default IP Addresses for the Camera Server – The camera is shipped with the following default IP addresses.
  - Wired Network: 192.168.1.254
  - The subnet mask is the 255.255.255.0. This means that “192.168.1” is the significant portion of the IP address and must be the same on the PC in order to communicate with the camera.

- To initially connect to the camera and configure it for the broader network, it is recommended to directly connect the camera to the PC. Then temporarily change the PC’s network settings to match the camera. Connect to the camera and change its settings to the broader network configuration then change the PC back and reboot the camera. Confirm that the settings are right and connect both the PC and the camera to the general network.

- All of the above settings can be configured through the web interface. Note that changes made via the web interface will be persistent; the camera will retain the new address on reset.

- Wireless connectivity is not supported at this time.

4.1 Internet Explorer 6.0 or 7

The following steps explain the required sequence for preparing Internet Explorer 6.0 or 7. Figure 2 and Figure 3 illustrate them.

1. Open Internet Explorer
2. Ensure proxies are disabled
3. Select Tools menu, then “Internet Options…”, open Security tab.
   1. Select “Trusted sites”
   2. Press the “Sites…” button.
   3. Ensure ‘Require server verification (https: )….’ box is not checked
4. Change the Security Level for this zone to “Low”.
Figure 2. Required Sequence to Prepare Internet Explorer 6.0 or 7 (steps 1-4)
Preparing Windows® to View Video Stream

When playing video, IE may popup with “Open File—Security Warning”. Unselect “Always ask before opening this file” and click Run.

Mozilla/Firefox or any other web browser will not be able to show the streaming video.

4.2 FFPLAY Video Client

This section explains how to set up the FFPlay video client.

4.2.1 Installing from the camera web server page

1. Open Internet Explorer and connect to the camera web server at http://192.168.1.254 or the configured IP address for the camera on your network.
2. From the main page click on the link to download ffplay (“GET FFPLAY”).
3. When installing the program save it to the “C:\Program Files\ffmpeg” directory (if it does not exist, create the ffmpeg directory).
4. Open Windows Explorer and navigate to “C:\Program Files\ffmpeg”.
5. Right-click on ffmpeg.zip
6. Select “Extract All” and ok the defaults. This will unzip the necessary files.
4.2.2 Installing using WinZip

1. Open ffmpeg.zip with WinZip
2. Click “Extract”
3. Change the destination directory to “C:\Program Files\ffmpeg”
4. Click “Ok”

The “ffplay.exe” program must exist in “C:\Program Files\ffmpeg\ffmpeg\bin\” otherwise the video streaming will not work.

4.3 Starting Video Stream

After web and video server have started on the camera platform, you should be able to connect to the device using Internet Explorer. Only one connection to the video server at a time is currently allowed.

The default IP address for the wired interface will be 192.168.1.254. You will need to change your Windows network settings to be able to access it if your subnet is different.

Once you have accessed and changed the network settings on the device to match your network, you will be able to access the web pages at http://<DEVICE IP ADDRESS>. Once that is loaded, click the “Play Video” link. If you have set up Windows and Internet Explorer as described above, the video will start playing shortly in a separate window.

4.4 Changing the Camera IP address using Terminal

If the Cameras Subnet mask is not appropriate, it can be changed using a terminal window and the RS-232 cable.

1. Open Hyper-terminal or similar terminal program and connect using 8-N-1, 115200 connection with no Flow Control.
2. Reset the camera, and the boot messages should appear in the terminal window.
3. Once the unit has completed booting and the mx27# prompt appears, use the following command to change the IP address of the camera:
   `ifconfig eth0 <IP address>`
4. The IP address will be changed until the next reset. The IP address changes can be made permanent using the System Settings page of the camera.
5 Revision History

Table 3 provides a revision history for this template.

Table 3. Document Revision History

<table>
<thead>
<tr>
<th>Rev. Number</th>
<th>Date</th>
<th>Substantive Change(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>04/2008</td>
<td>Initial release</td>
</tr>
<tr>
<td>1</td>
<td>8/2008</td>
<td>Added Section 1.2, “CD-ROM Contents.” Removed WIFI support from Section 3, “Setting up Camera Software” and Section 4, “Preparing Windows® to View Video Stream.” Updated Section 4.1, “Internet Explorer 6.0 or 7.”</td>
</tr>
</tbody>
</table>
Information in this document is provided solely to enable system and software implementers to use Freescale Semiconductor products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits or integrated circuits based on the information in this document.

Freescale Semiconductor reserves the right to make changes without further notice to any products herein. Freescale Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. “Typical” parameters which may be provided in Freescale Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals” must be validated for each customer application by customer’s technical experts. Freescale Semiconductor does not convey any license under its patent rights nor the rights of others. Freescale Semiconductor products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Freescale Semiconductor product could create a situation where personal injury or death may occur. Should Buyer purchase or use Freescale Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold Freescale Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Freescale Semiconductor was negligent regarding the design or manufacture of the part.

Freescale and the Freescale logo are trademarks or registered trademarks of Freescale Semiconductor, Inc. in the U.S. and other countries. Microsoft, and Windows are registered trademarks of Microsoft Corporation; and Windows XP is a trademark of Microsoft Corporation. All other product or service names are the property of their respective owners.

© Freescale Semiconductor, Inc., 2008. All rights reserved.