AL330B-DMB-A0
Digital LCD Display SOC
Demo Board
User Manual

Version 1.2

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Amendments

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Changes</th>
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<tr>
<td>2009.05.14</td>
<td>Version 1.0</td>
<td></td>
</tr>
<tr>
<td>2009.11.06</td>
<td>Version 1.1</td>
<td>Add 480i/576i input (YPbPr)</td>
</tr>
<tr>
<td>2010.02.05</td>
<td>Version 1.2</td>
<td>P3: Remove 320<em>240, 640</em>480, 800<em>600, 1024</em>768 mode</td>
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<td></td>
<td></td>
<td>P7: Change the description from &quot;burn-in&quot; mode to &quot;programming Mode&quot;</td>
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1. Introduction

The AL330B demo board is an evaluation product that demonstrates a total solution for Small to Medium digital LCD Display applications using Averlogic IC chips. This DMB product can accept multiple video signal inputs such as Composite video, S-video, Components Video-, which can then be displayed on an LCD Screen in high quality video.

The main component is the AL330B chip, a highly integrated Display SOC, containing a 3-Ch + 10-bit ADC, 2D Video Decoder, Deinterlacer, Scaler, Microcontroller, OSD, and TCON. The AL330B can support small to medium Digital TFT-LCD Panels and small to medium AMOLED Display Devices. This product contains 1 Mbit of serial flash for customizable boot and code storage.

The AL330B is a multi-channel analog preprocessing circuit, which includes Source Selection; anti-aliasing filter; ADC, ACC (Auto-Clamp Control) and AGC (Auto-Gain Control); CGC (Clock Generation Circuit); digital multi-standard decoder containing chrominance and luminance separation from an adaptive 2D comb filter; brightness, contrast, hue and saturation control circuit; programmable horizontal and vertical scaler; image and sharpness enhancement processing; On-Screen-Display; programmable TCON; and a digital RGB signal output and more.

2. Package Contents

The AL330B-DMB-A0 package contains the following components:

- AL330B-DMB-A0
- Power Cord
- Video Cable
- S-Video Cable
- User Manual (not shown)

If any components are missing or damaged, please contact your representative.

Note: To test this product, you will need to provide a Video source with S-Video, YPbPr or CVBS connector (e.g. camera, DVD player).
3. Product Description
4. Specifications

- **Video standard support**
  - NTSC
  - PAL

- **Video Input Formats**
  - Composite
  - S-Video
  - Components
  - CCIR BT656

- **Output Formats**
  - 24-bit RGB signal
  - 18-bit RGB signal

- **Output resolution supports**: 800*480

- **DMB Function**
  - Supports multiple video inputs
  - Supports PAL/NTSC auto detection
  - Supports manual adjustment of hue, brightness, contrast and saturation
  - Internal OSD overlay with programmable font for OSD display

**Note**: Please be aware that this is an Evaluation product only and not all functional capabilities of AverLogic components are fully demonstrated by this product. Please refer to the AverLogic website (www.averlogic.com) or contact your AverLogic representative (see last page of this document) for more information.
5. Quick Setup

This quick setup section will guide you through the AL330B-DMB-A0 setup. You will need to provide a video source with a CVBS, YPbPr(480i/576i), or S-Video connection. In this quick guide we will using a Standard Definition video camera.

**Step 1:** Attach Power Cable to the board. Attach the other end of the cable to an electrical outlet.

**Step 2:** Attach Video Source

Attach a video cable to the Video Source (e.g. camera) and one of the panel connectors on the the AL330B-DMB-A0 board (e.g. CVBS connector).
Step 3: Supply Power to your Video Source and turn it on.

Your setup should appear as below.

Step 4: Toggle the power-on switch on the board (located near Power Adapter). The ON position faces away from the edge of the board.
The video image from the Video Source should almost immediately show up on the LCD display.

If no video displays, double check all of the video connectors, power connectors and make sure that the Video Source is, in fact, delivering video through the cable.
6. Hardware Section
This section describes hardware components not previously mentioned.

6.1 JP1, JP2, JP3, J5 Jumper Descriptions

<table>
<thead>
<tr>
<th>Connector</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSEL2</td>
<td>JP1</td>
<td>Keep pins 1-2 jumpered always</td>
</tr>
<tr>
<td>SSEL1</td>
<td>JP3</td>
<td>Jumper pins 1-2 for programming mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jumper pins 2-3 for normal operations</td>
</tr>
<tr>
<td>SSEL0</td>
<td>JP2</td>
<td>Do not use</td>
</tr>
<tr>
<td>IIC Port</td>
<td>J5</td>
<td>For IIC debug mode/slave address:0x38</td>
</tr>
</tbody>
</table>

Note: There are other jumpers and connectors on this DMB board are not described and are either disabled or not meant for use.
### 6.2 Switch Buttons Descriptions

The Switch Buttons are a group of buttons located on the board and are used for various functions including OSD menu navigation, board reset and debugging.

<table>
<thead>
<tr>
<th>Key Label</th>
<th>Key Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW9</td>
<td>Right</td>
<td>Moves menu cursor from left to right on main menu. Also used to increase values during option settings.</td>
</tr>
<tr>
<td>SW8</td>
<td>Left</td>
<td>Move menu cursor from right to left on main menu. Also used to decrease the values during option settings</td>
</tr>
<tr>
<td>SW7</td>
<td>MENU/Select</td>
<td>Used to enter the configuration menu mode. Also used to enter a submenu from main menu. Also used as an enter/select key.</td>
</tr>
<tr>
<td>SW6</td>
<td>EXIT</td>
<td>Returns to the previous menu or exits from the main menu.</td>
</tr>
<tr>
<td>SW5</td>
<td>N/A</td>
<td>Not used</td>
</tr>
<tr>
<td>SW4</td>
<td>Debug</td>
<td>Use this key to enter “Debug” mode</td>
</tr>
<tr>
<td>SW3</td>
<td>N/A</td>
<td>Not used</td>
</tr>
<tr>
<td>SW2</td>
<td>Reset</td>
<td>Use this key to reset the AL330B.</td>
</tr>
<tr>
<td>SW1</td>
<td>Reset</td>
<td>Use this key to reset the AL330B.</td>
</tr>
</tbody>
</table>
7. Menu Descriptions

This product comes with an On Screen Display (OSD) that allows you to adjust and set various video options. To bring up the main menu, press the SW7 switch (as described earlier).

7.1 Menu Item Descriptions

<table>
<thead>
<tr>
<th>Key Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td>Adjusts the display contrast.</td>
</tr>
<tr>
<td>Brightness</td>
<td>Adjusts the display brightness</td>
</tr>
<tr>
<td>Color</td>
<td>Adjusts from color to b&amp;w</td>
</tr>
<tr>
<td>Sharpness</td>
<td>Adjusts image sharpness</td>
</tr>
<tr>
<td>Tint</td>
<td>Adjusts image Tint</td>
</tr>
<tr>
<td>Sound</td>
<td>Not available on this DMB board</td>
</tr>
<tr>
<td>Channel</td>
<td>Selects current input video source – CVBS, S-Video, Component (YPbPr)</td>
</tr>
<tr>
<td>Input</td>
<td>Input standard – NTSC, PAL, Auto Detect</td>
</tr>
</tbody>
</table>
8. Miscellaneous

8.1 Debug Mode
This board can burn-in code or operate in debug mode. Please refer to the ISP Tool Debug User Manual for more information.

8.2 Block Diagram for the AL330B-DMB-A0

**AL330B-DMB-A0 BOARD ARCHITECTURE**

![Block Diagram](image-url)
CONTACT INFORMATION

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