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AL240C-EVB-A1
Evaluation Board

User Manual

Version 0.8

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Amendments

Jan. 25, 2005	Preliminary version A0.1
Feb. 01, 2005	Preliminary version A0.2
	1. Update Evaluation Kit Setup
Mar. 29, 2005	Preliminary version A0.3
	1. Revise Component Input Y0/Y1
	2. Update Evaluation Kit Setup
Apr. 21, 2005	Preliminary version A0.4
	1. Update Evaluation Kit Setup
	2. Add a table for function indicator LEDs
Apr. 29, 2005	Preliminary version A0.5
	1. Add Software Section
Oct. 17, 2005	Preliminary version A0.6
	1. Update Evaluation Kit Setup
	2. Add a table for function Binary Switch.
	3. Add a table for function Dip Switch.
	4. Add a table for special function definition of Push Buttons
Nov. 23, 2005	Preliminary version 0.7
	1. Update title and version number
	2. Update contact information
Feb, 14, 2006	Preliminary version 0.8
	1. Remove the Development Tool and its GUI.
	2. Add 2.4 section for description of ad hoc setup.

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1. Introduction

1.1. Introduction

This AL240 Evaluation Kit is specially designed for evaluating the AL240 Adaptive Low Power Video Decoder. The Evaluation kit allows maximum flexibility for optimizing various input and output modes for specific applications. Using the hardware and software provided in the Evaluation Kit, Standalone and PC-Based mode can be demonstrated.

In addition, there are many new functions that hardware and software provide in this edition.

1. **Binary Switch**
2. **Fast Channel Switch**
3. **Close Caption VBI detect and display**

1.2.   Product Overview

AL240 Adaptive Low Power Video Decoder

The AL240 is silicon efficient, cost effective high video quality NTSC/PAL SECAM video decoder with high quality Y/C separation process. The AL240 decode NTSC/PAL SECAM composite video or S-video and convert it into YUV 4:2:2, 8-bit ITU 656 digital video output. Employing adaptive filter technology, the AL240 is able to provide a clear Y/C separated signals while maintaining excellent frequency response. The result is sharp, high detail video that eliminates unwanted dot crawl and false color effects. Fully programmable video characteristic control, such as hue, contrast, brightness, saturation, are supported. The AL240 decoder incorporates an advanced vertical blanking interval (VBI) data processor to do data slicing, parsing and decoding teltext, closed caption, and other formats. Two wires of fast channel switching input allow decoder to do an instant alternation of analog CVBS input from one to the other. Up to 4 serial bus addresses can be selected via 2 configuration pins that allows multiple AL240 chips on the design without extra logic.

The AL240 operates under the low power voltages (3.3V and 1,8V) with 44-pin Lead Free (PBF) QFP package.

2. Hardware Section

2.1. Evaluation Kit Contents & Requirement

The Evaluation Kit includes all of the specific software and hardware required to evaluate the AL242. Included in the Evaluation Kit are:

- AL240 Evaluation Board x 1
- 12V/1A Power Adapter x 1
- Power Core x 1
- Video Connection Cables x 3 (CVBS, S-Video & Component)
- EVB User Manual
- RS232 Cable x 1 (By request)

2.2. Evaluation Kit Configuration

The AL240 EVB consists of the AL242 video decoder, TV encoder, 8051 MCU and other components. The AL240 accepts four CVBS (Composite) or two S-Video (Y/C) inputs with adaptive comb filter quality. The video encoder outputs CVBS, S-Video or Component (YPbPr) for TV display. By using an 8051 MCU, this Evaluation Board can be operated in Standalone Mode without connecting to PC..

The default Dip switch and Binary Switch settings should be set as "OFF" and "0"as shown in Figure 1. AverLogic recommends that the default settings be used initially to bring up the evaluation board. The locations and descriptions of jack connectors and push buttons are also shown in Figure 1.
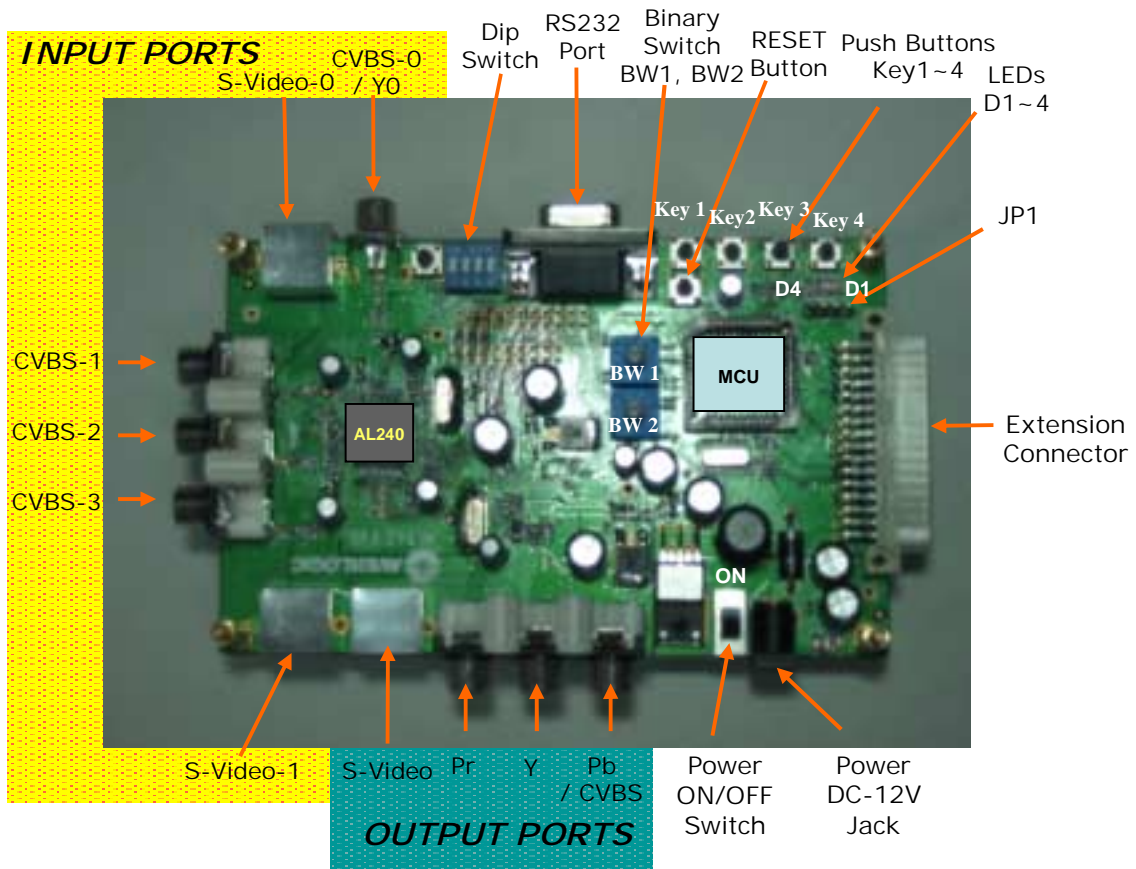
Figure 1. Front Side of Evaluation Board

Figure 2. Front Side of Evaluation Kit

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2.3. Evaluation Kit Setup

1. Verify that all of the switches of Dip Switch (SW1~4) are at "OFF" position. SW1~2 are set the default slave address. SW3~4 are set the Input Source when system enter Fast Channel Switch mode. The function definition of Dip Switch shown in Table 1.

2. Verify that all of the switches of Binary Switch (BW1~2) are at "0" position.

3. Connect the video cable of required input source to INPUT PORTS. **(The default input source is CVBS-0.)**

4. Verify video system. **(The default is Auto-Detection for NTSC or PAL-I video system.)**

5. Connect S-video (recommend) or CVBS cable from the OUTPUT PORTS of AL242 EVB to a TV display. **(The default output mode is S-Video/CVBS.)**

6. Verify power supply cable is connected to the Power DC-12V jack.

7. Turn ON the Power ON/OFF Switch.

8. The EVB will go into Default Operating mode. Power indicator LEDs (D10 & D11) will be illuminated RED. Function indicator LEDs (D1~D4) will be illuminated GREEN for NTSC. The descriptions of function indicator LEDs are shown in Table 2.

9. If the input video system is other than NTSC or PAL-I, or the EVB cannot output correct video in any case, many default settings can be loaded through changing the settings of BW1~2. Rotate binary switch to the proper position and press "RESET" button, the system will enter Manual-Setting mode. Using the function definition of Binary Switch in Table 3, the flexible combinations can be evaluated.

10. After pressing any push button at any time, the system enters Manual-Setting mode. Using the function definition of Push Buttons and LEDs shown in Table 4, the flexible combinations can be evaluated. All push buttons Key1 to Key4 must be set to enter the right settings.

11. Use the special function definition of Push Buttons shown in Table 5, the system will enter the proper mode according to the button pushed.

12. How to enter VCR mode?

   I. Under the state of power off
   (1)   Press push button (Key1~Key4) then turn on the power.
   (2)   Release push button, the system will enter VCR mode.

   II. Under the state of power on
   (1)   Press push button (Key1~Key4) then press reset button.
   (2)   Release push button, the system will enter VCR mode.

13. Use the PC Programming Utility, more EVB functions can be evaluated.

2.4. *Ad hoc* Setup

1. How to use Fast Channel Switch?
   I. Manual Mode
   (1)   Rotate Binary Switch BW1 to Fast Channel Switch Mode and turn on the power.
   (2)   Using Dip Switch SW3~4 to select the Input Source between CVBS-0~CVBS-3.
   II. Auto Mode
   (1)   Verify that Dip Switch SW3~4 are at "OFF" position.
   (2)   Verify that Binary Switch BW1 is at "0" position.

(3) Press Key3 and Key4 at the same time, system will enter Auto Fast Channel Switch Mode. Once the system enter Auto Fast Channel Switch Mode, input source will be switched continuously between CVBS-0~CVBS-3.

(The function definition of Dip Switch and Binary Switch are shown in Table 1 and Table3.)

SW1/SW2 Slave ID Setting Reference		
SW1	**SW2**	**Slave Address**
OFF	OFF	0x2a
ON	OFF	0x28
OFF	ON	0x26
ON	ON	0x24
SW3/SW4 Input Source Reference for Fast Channel Switch		
SW3	**SW4**	**Input Source**
ON	ON	CVBS-0
OFF	ON	CVBS-1
ON	OFF	CVBS-2
OFF	OFF	CVBS-3

Table 1. The function definition of Dip Switch at Manual-Setting mode.

D1	D2	D3	D4	Description
ON	ON	ON	ON	NTSC
ON	ON	ON	OFF	NTSC-443
ON	ON	OFF	ON	PAL
ON	ON	OFF	OFF	PAL-M
ON	OFF	ON	ON	PAL-N
ON	OFF	ON	OFF	SECAM
ON	OFF	OFF	ON	PAL-CN

Table 2. The descriptions of function indicator LEDs at Default Operating mode.

Binary switch Number	BW1 (Video Input Source)	BW2 (Video Input Mode)
0	CVBS-0	Auto-Detection (NTSC&PAL-I)
1	S-Video-0	Auto-Detection (7 Standard)
2	NA	NTSC
3	CVBS-1	NTSC_443
4	CVBS-2	PAL_I
5	CVBS-3	PAL_M
6	S-Video-1	PAL_N
7	Fast Channel Switch Mode	SECAM
8		PAL_CN

Table 3. The function definition of Binary Switch at Manual-Setting mode.

	D4	D3	D2	D1	Description
Key1	CVBS-0	S-Video-0	Component	NA	Video Input Select
Key2	CVBS	S-Video	Component	Test Pattern	Video Output Select
Key3	NTSC-3.58 (D4)	NTSC-4.43 (D3)	PAL (BDGHI) (D2)	PAL-M (D1)	Video System Select
	PAL-N (D3+D4)	SECAM (D1+D2)	PAL-CN (D2+D4)		
Key4	Enter Key				

Table 4. The function definition of Push Buttons and LEDs at Manual-Setting mode.

D1~D4: LED1~LED4
Key-1~4: Push Button 1~4 (Do not need to set again the push buttons Key1 to Key4 when changing to another configuration. For example, you can only push Key 2 to change the output mode.)

Key1	Key2	Key3	Key4
VBI Mode			
	Debug Mode		
		Auto Fast Channel Switch Mode	

Table 5. The special function definition of Push Buttons at Manual-Setting mode.

CONTACT INFORMATION

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