AVERLOGIC

AL330B-EVB-A0
Digital LCD Display SOC
Evaluation Board

User Manual

Version 1.1

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Amendments

Date	Version	Comments	Author
2010-08-12	1.0	Version 1.0	Ken Liu
2010-10-07	1.1	Correct Package Contents	Ken Liu

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1. Introduction

The AL330B EVB is an evaluation product using AverLogic chips to demonstrate a total solution for Small to Medium Digital LCD Display applications. This EVB product can accept multiple video inputs (Composite video, S-video , Components Video, Analog RGB), which can then be displayed in high quality on an LCD Screen.

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.

AverLogic can also provide ISP Tools for development and a Converter board for adapting different types of display panels for use with the AL330 EVB. Please contact your representative for more information.

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2. Package Contents

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

A.   Mainboard (with LCD display) H.   Component (YPbPr) Cable

B.   Source Input Board I.   VGA Cable

C.   Keypad Board J.   Remote controller

D.   12V Power Adapter K.   Source Input Board cable

E.   AC Power Cord L.   Keypad Board cable

F.   CVBS Video Cable M.   User Manual (not shown)

G.   S-Video Cable

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

Note: To test this product, you will need to provide a Video Source (e.g. camera, DVD player) with an S-Video, YPbPr, CVBS or VGA connector.

3. General Product Description

The AL330B-EVB-A0 is comprised of a Mainboard with an LCD Panel attached to one face of the board. Ribbon cables are used to attach a Source Input board and a Keypad board. The backside of the Mainboard contains ribbon cable connectors, a power connector, an on/off switch; it also contains several jumpers that will be explained later.

Mainboard (backside)

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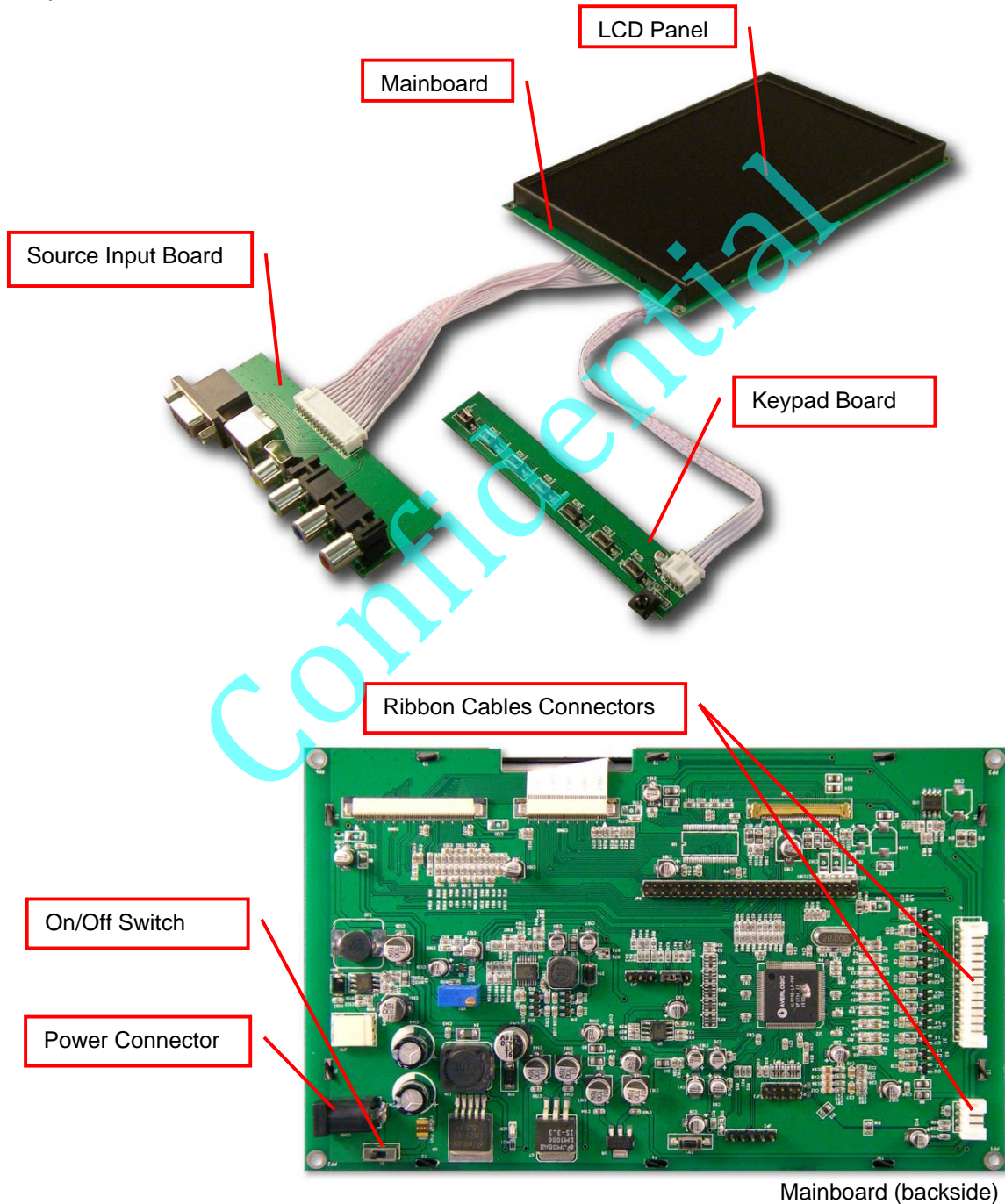
3.1 Specifications

■ **Video standard support**
- NTSC
- PAL
- VGA (640x480 at 60Hz, 800x600 at 60Hz,1024x768 at 60Hz)

■ **Video Input Formats**
- Composite
- S-Video
- Component
- CCIR BT656
- Analog RGB

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

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

■ **EVB Functionality**
- Multiple video inputs
- PAL/NTSC auto detection
- RGB input auto detection
- 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. Please refer to the AverLogic website (www.averlogic.com) or contact your AverLogic representative for more information (see last page of this document).

4. Quick Setup

This quick setup section will guide you through the AL330B-EVB-A0 setup. You will need to provide a video source with a CVBS, YPbPr (480i/576i), VGA, or S-Video connection. In this quick guide, we will use a standard definition video camera as the example video source.

Step 1: Attach the 4-wire Keypad board cable to the Mainboard and the Keypad board. The connectors will attach in one direction only; do not try to force the cable connector onto the board connector.
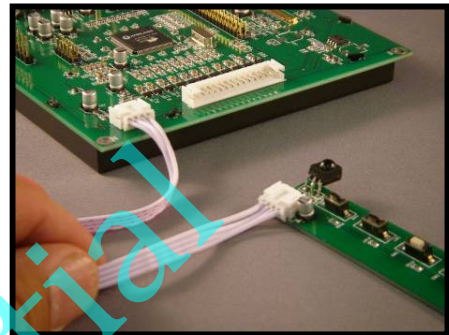

Step 2: Attach the wider ribbon cable (Source Input board cable) to the Mainboard and the Source Input board.
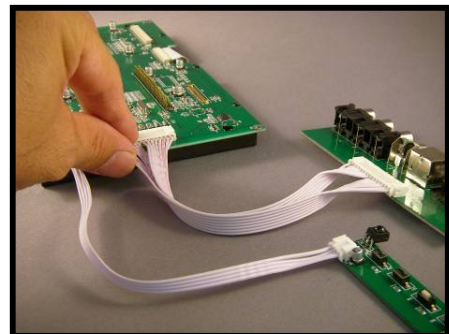

Step 3: Attach the Power Adaptor to the Mainboard. Attach the Power Cord to the Power Adaptor and then connect it to an electrical outlet with the appropriate voltage.
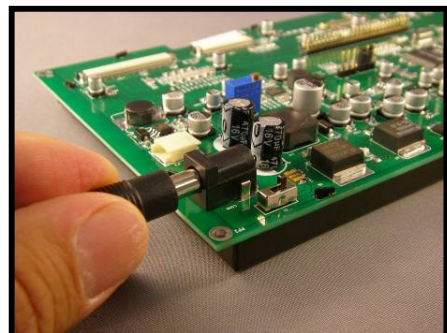
Step 4: Attach a video cable from the Video Source (e.g. camera) to one of the video connectors on the AL330B-EVB-A0 Mainboard. This example uses the CVBS connector (VGA, S-Video and YPbPr connectors are also available).
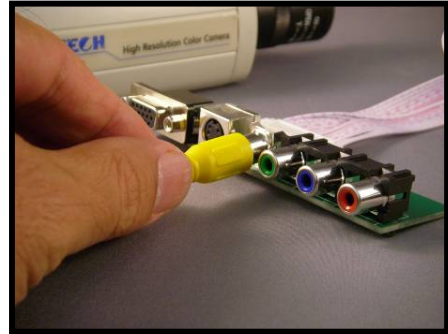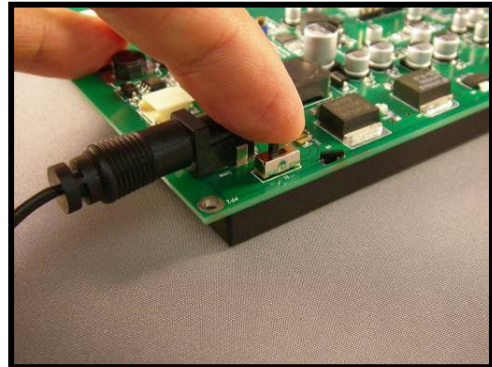

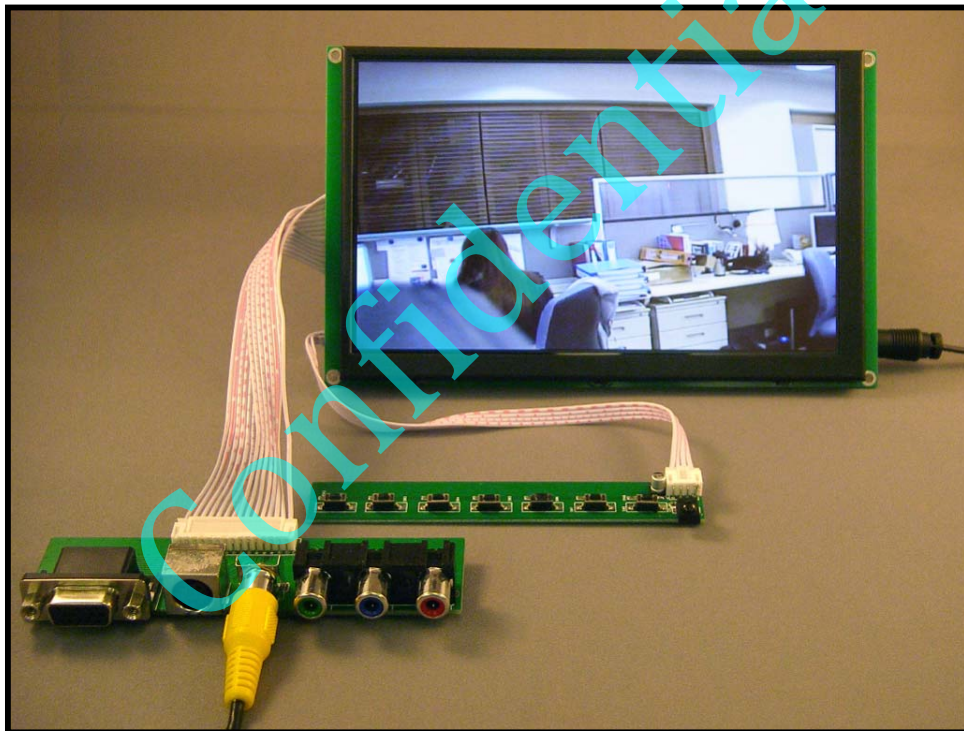Your setup should appear as below.
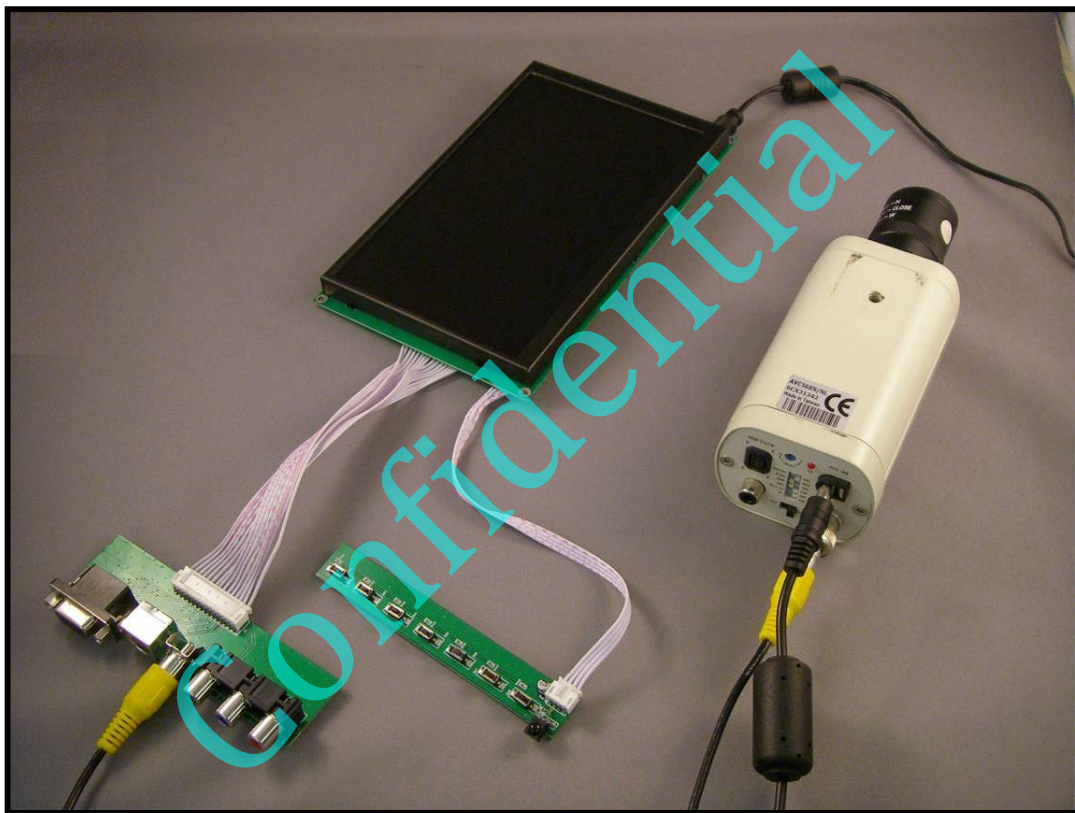
Step 5: Supply Power to your Video Source and turn it on.

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Step 6: Toggle the On/Off switch on the
board (located near Power Adapter).
The ON position faces away from the power
connector.

The video image from the Video Source should almost instantly show up on the
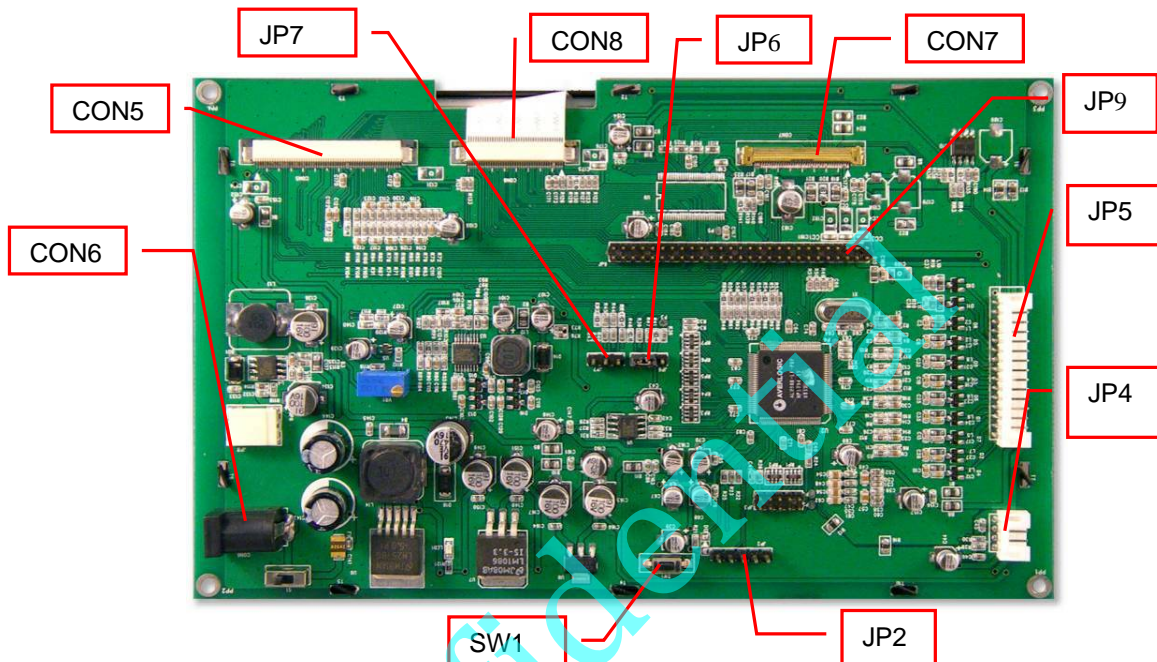LCD display.

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.

5. Hardware Section

This section describes hardware components in detail.

5.1 Main board (back side) Descriptions

Function	Label	Description
DC Power	CON6	DC 12V Power input
Panel connector	CON8	Connector for Innolux 7 inch panel (800*480) (Default).
Source Input board connector	JP5	Connects to JP1 connector on Source Input board.
Keypad connector	JP4	Connects to Keypad board.
Reset key	SW1	Resets the AL330 and internal MCU.
SSEL1 Download pins	JP6	Jumper pins 1-2 for normal operations. Jumper pins 2-3 for programming mode. (Pin 1 is the pin closest to the JP7 connector)
Digital RGB bus	JP9	Connects to a converter board for use with different types of display panels (contact representative for more details.

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| IIC Connector	JP7	For IIC debug mode. Use the slave address 0x38 for IIC communications.
Panel connector	CON5	Reserved for AUO 8 inch panels.
Panel connector	CON7	Reserved for AUO 10.1 inch panels.
SPI connector	JP2	Connects to the ISP & Debug Tool PIN1=3.3V,PIN2=RXD,PIN3=TXD,PIN4=NC,PIN5=GND (PIN1 is the pin closest to SW1)

5.2 Source input board Descriptions
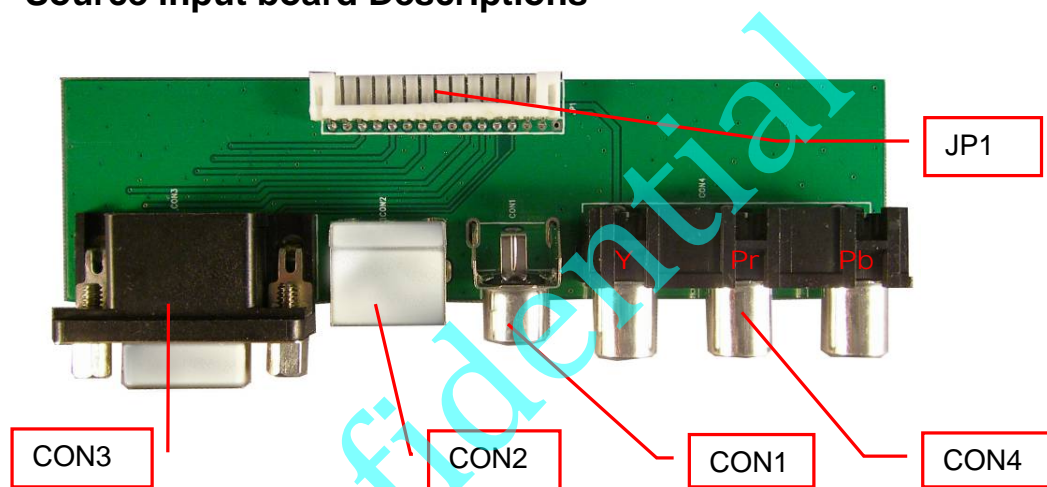
Function	Label	Description
VGA	CON3	Analog VGA input (640x480 60Hz, 800x600 60Hz,1024x768 60Hz)
S-VIDEO	CON2	S-Video input
CVBS	CON1	CVBS input
Component Video	CON4	Component video input
Connector for the Mainboard	JP1	Connects to JP5 connector on the Mainboard

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5.3 Keypad and Remote Controller Descriptions

The Keypad board contains buttons to navigate the OSD (on screen display menus – see next section). This board connects to the Mainboard using a ribbon cable (supplied in packaging).

The Keypad board also contains an IR sensor to allow you to alternately issue OSD menu commands through a Remote Control. The only functional buttons on the remote control are highlighted in the picture below and are listed in the table that follows (all other buttons are non-functional).
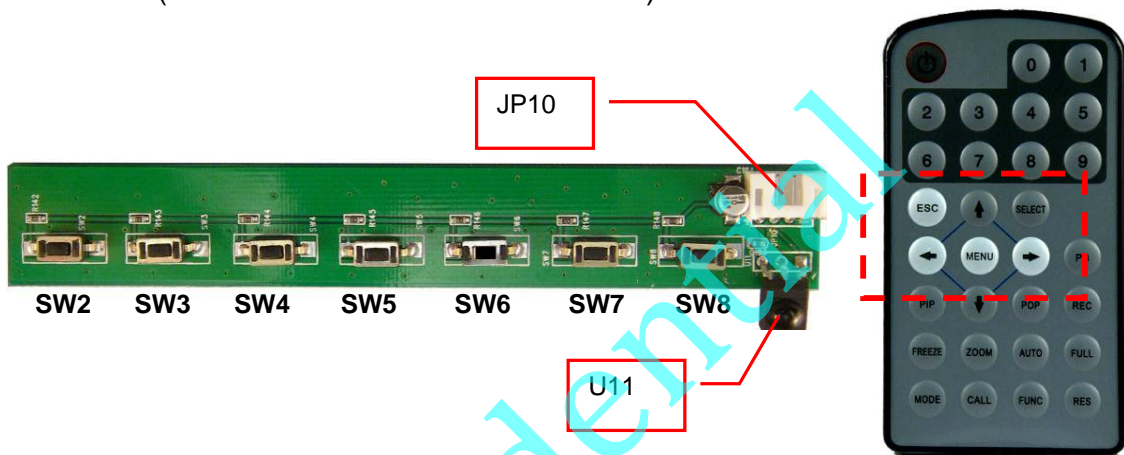
| Function	Keypad	Remote	Description
Right	SW8	➔	Moves menu cursor from left to right on the menu screens. Also used to increase values during option configurations.
Left	SW7	←	Move menu cursor from right to left on the menu screens. Also used to decrease values during option configurations.
MENU/Select	SW6	MENU	Used to enter the configuration menu mode. Also used to enter a submenu from the main menu. Also used as an enter/select key.
EXIT	SW5	ESC	Returns to the previous menu or exits from the main menu.
N/A	SW2/SW3/SW4		Not used

IR Receiver	U11		Receives IR signals from the remote control to be relayed to the Mainboard. You must point the Remote Control at this sensor in order for the IR Receiver to receive the IR signals.
Connector for the Mainboard	JP10		Uses a ribbon cable to connect to the Mainboard.

6. OSD Menu Descriptions

This product comes with an On Screen Display (OSD) menu that allows you to adjust and set various video options. To bring up the main menu, press the SW6 switch (as described earlier).

6.1   Menu Item Descriptions
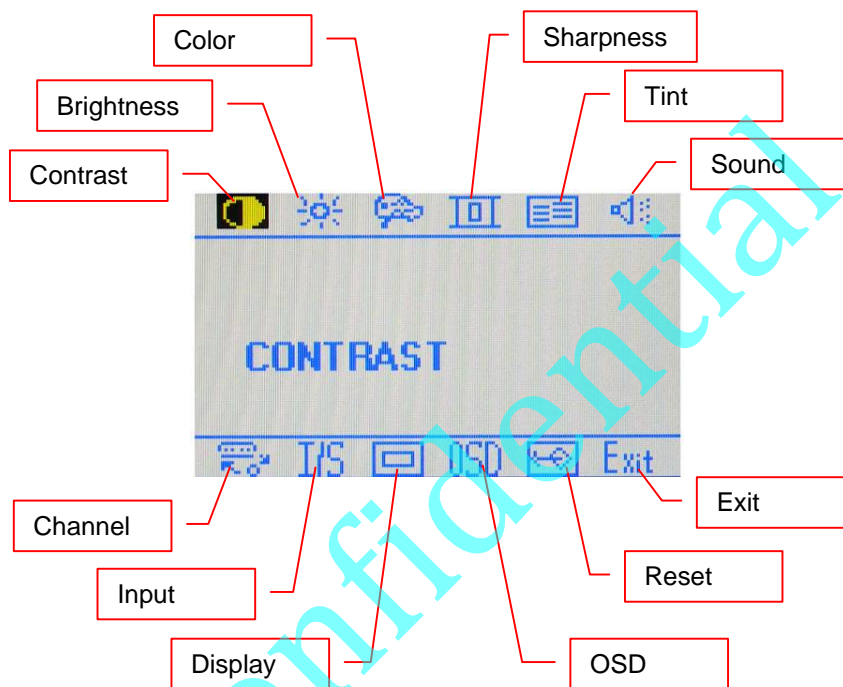
Key Label	Description
Contrast	Adjusts the display contrast.
Brightness	Adjusts the display brightness
Color	Adjusts from color to b&w
Sharpness	Adjusts image sharpness
Tint	Adjusts image Tint
Sound	(not available on this EVB)
Channel	Selects current input video source – CVBS, S-Video, Component (YPbPr) PC(VGA)
Input	Select input is not available. It always uses Auto Detect.

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Display	N/A
OSD	Move OSD window position horizontally or vertically
Reset	N/A
Exit	Exit the OSD menu

NOTE: Contrast, Brightness, Color, Sharpness and Tint cannot be used when using video from VGA input.

7. Miscellaneous

7.1 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.

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CONTACT INFORMATION

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