



AL244-EVB-A1
Evaluation Board
User Manual
Version 1.0

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1 Introduction

1.1 Introduction

AverLogic's AL244 is a high quality 4-in-1 video decoder. It combines four stand alone multi-standard video decoders and includes 2D Comb filter for high level video surveillance applications. The AL244 EVB supports CVBS, S-video and Component inputs. It decodes NTSC/PAL/SECAM from this input interface and converts it into YCbCr 4:2:2 or RGB- 565 digital video data through the programmable data bus.

The EVB combines the AverLogic AL244 Decoder with the Philips SAA7105 Encoder. The input interfaces include four CVBS interfaces, two S-Video interfaces and one component interface. It also provides CVBS and S-Video output interfaces. The digital interface has an additional feature that allows it to interface through the AL244 decoder kernel.

1.2 Features

Analog Input

- Four 10-bit ADC, AGC & ACC (Automatic Clamping Control)
- Supports Auto Multi-Standard NTSC/PAL/SECAM mode detection
- Supports Weak & Non-Standard Signal mode detection
- Adaptive 2D Comb-Filter video decoding for Y/C separation

Digital video output

- Supports four digital ITU-R 656 8-bit outputs with four-video-decoder mode.
- Supports two ITU-R 601 16-bit outputs with two-video-decoder mode.
- Supports RGB 565 16-bit output with two-video-decoder mode.

Video Processing

- Closed Caption/V-Chip/WSS/WSS-J VBI decoding.

4-Decoder Mode (A,B,C and D)

- 4 analog CVBS inputs for each of the four video decoders
- Standard ITU-R BT 656 format 8-bit outputs
- 4 RTSO (Real Time Status Output) signals for each of the 4 video decoders
- 2 Fast Channel-Switching I/O's for each decoder

2-Decoder Mode (AB and CD)

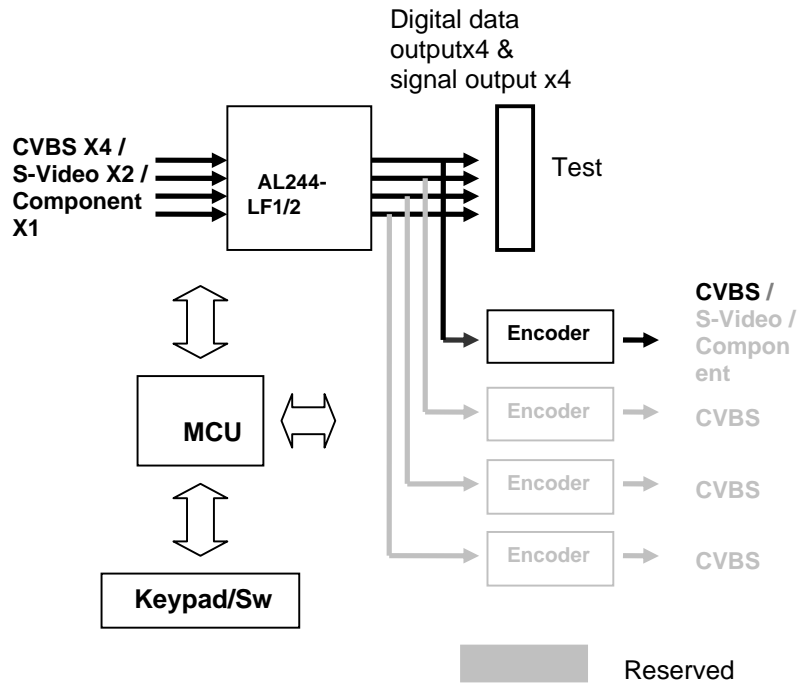
- Each of the 2 video decoders support S-Video and Component inputs
- Standard ITU-R BT 656 format 8-bit outputs
- Standard ITU-R BT 601 format 16-bit outputs
- Digital RGB output (8-bit for Green channel,6-bit for Red and Blue Channels)
- 4 RTSO (Real Time Status Output) signals for each of the 2 video decoders

Miscellaneous

- 1.8V core logic. 3.3V I/O with 5V tolerance
- Controlled via 2-wire serial-bus interface. All 4 video decoders require only one serial bus and share one slave address
- Requires only one crystal for all 4 video decoders
- Supports interrupt output pin for hardware mode detection
- Built-in Test Pattern Generator

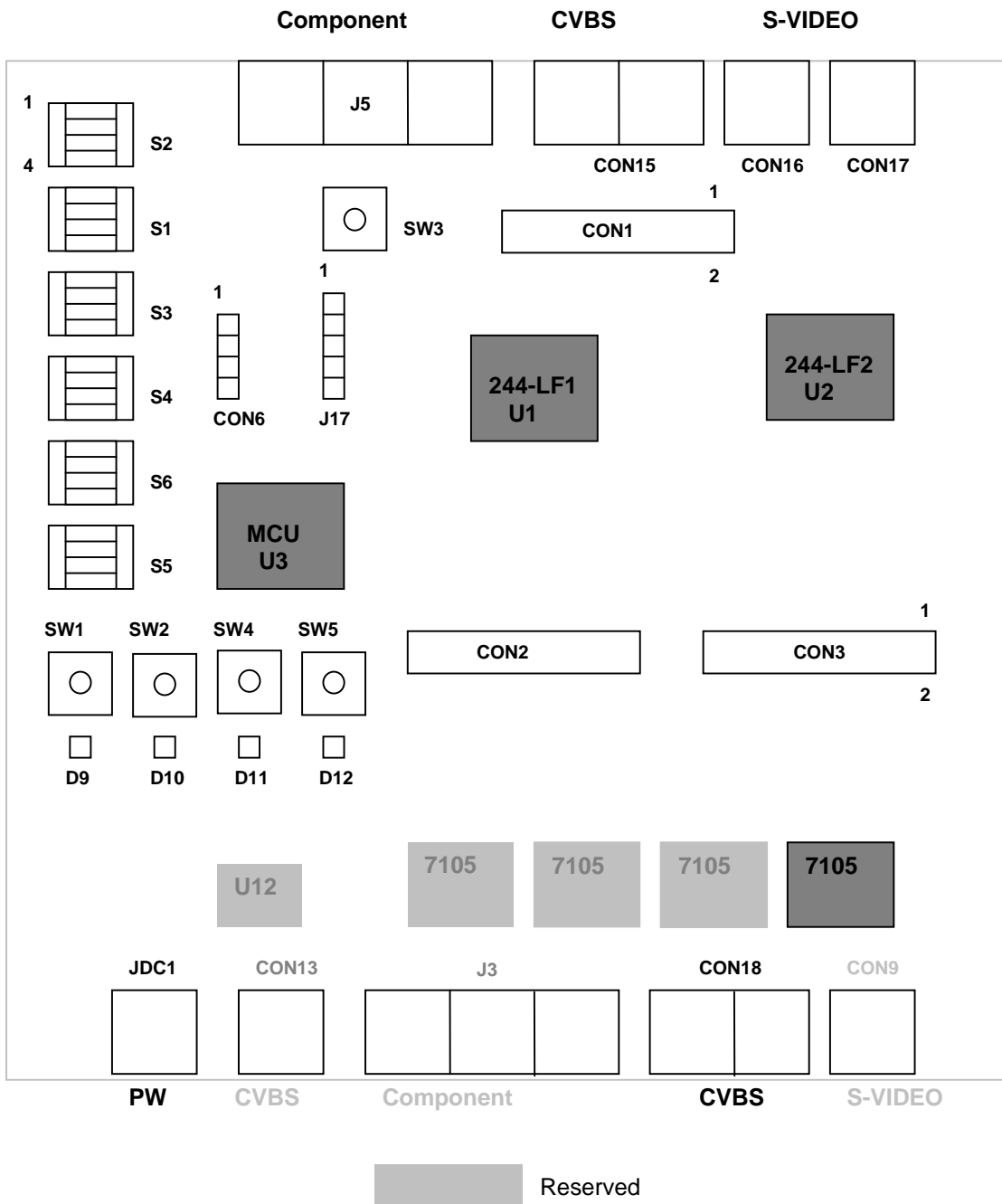
- Low power consumption
- Small-size and Lead Free Package
LQFP-128 (14x14mm) and LQFP-80 (10x10mm)

1.3 Block Diagram




2 Hardware Section

2.1 Main Board

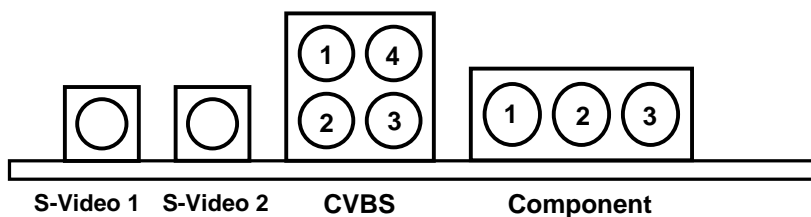


I/O Port Descriptions

Main Board		
Power Jack	JDC1	12V DC power input port (recommended current more than 1A)
Component In	J5	Component video signal input port
CVBS-Video In	CON15	CVBS Video signal input port
S-Video In	CON16/17	S-VIDEO signal input port
Component Out	J3	Component video signal output port (reserved)
CVBS-Video Out	CON18	CVBS Video signal output port
S-Video Out	CON9	S-VIDEO signal output port (reserved)

Note: Power Jack:  +

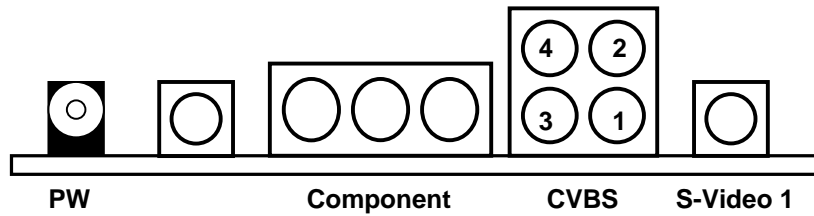
2.2 Front side



Front side I/O Port Descriptions

S-Video 1	CON17	S-video signal to AL244-LF1 decoder A/B
S-Video 2	CON16	S-video signal to AL244-LF1 decoder C/D
CVBS 1 IN	CON15	CVBS Video signal to decoder A
CVBS 2 IN	CON15	CVBS Video signal to decoder B
CVBS 3 IN	CON15	CVBS Video signal to decoder C
CVBS 4 IN	CON15	CVBS Video signal to decoder D
Component In	J5	1.Y to decoder A
	J5	2.Pb to decoder B
	J5	3.Pr to decoder B

2.3 Rear side



Rear side Descriptions

Power	JDC1	12V DC power input port (recommended current more than 1A)
Component out	J3	1.Y to decoder A (reserved)
		2.Pb to decoder B (reserved)
		3.Pr to decoder B (reserved)
CVBS 1 out	CON18	Encoder 1 output
CVBS 2 out	CON18	Encoder 2 output (reserved)
CVBS 3 out	CON18	Encoder 3 output (reserved)
CVBS 4 out	CON18	Encoder 4 output (reserved)
S-Video 1 out	CON9	Encoder 1 S-video signal output (reserved)

2.4 Switch definitions

SW2: Video format / input source selector



0000= NTSC,
0001= PAL

SW1: Video output signal selector

0001= Flip LLC
0010=Color bar
0100=Multi-burst
1000=Color Ramp

SW3: Video quality selector

0000 : Contrast (input)
0001 : Brightness (input)
0010 : Saturation (input)
0100 : Hue (input)

SW4: decoder function selector

0000 : PLL for decoder and LLC out
0001 : X'in for decoder and LLC
0010 : Double edge X'in for decoder and LLC
0100 : 54 MHz CIF out
1000 : 54 MHz D1 2 decoder mode
1111 : 54 MHz Ext'clock in 27 LLC out

2.5 Keypad definitions:

SW5 : Up
SW4 : Enter / Menu
SW2 : Down
SW1 : Store

2.6 Decoder output bus definitions

CON2	
PIN1	A D0
PIN2	A D1
PIN3	A D2
PIN4	A D3
PIN5	A D4

PIN6	A D5
PIN7	A D6
PIN8	A D7
PIN9	GND
PIN10	GND
PIN11	A LLC
PIN12	A LLC2
PIN13	GND
PIN14	GND
PIN15	A RTSO 0
PIN16	A RTSO 1
PIN17	A RTSO 2
PIN18	A RTSO 3
PIN19	GND
PIN20	GND
PIN21	B D0
PIN22	B D1
PIN23	B D2
PIN24	B D3
PIN25	B D4
PIN26	B D5
PIN27	B D6
PIN28	B D7
PIN29	GND
PIN30	GND
PIN31	NC
PIN32	B LLC
PIN33	GND
PIN34	GND
PIN35	B RTSO 0
PIN36	B RTSO 1
PIN37	B RTSO 2
PIN38	B RTSO 3
PIN39	+5V
PIN40	+5V

CON3	
PIN1	C D0
PIN2	C D1
PIN3	C D2
PIN4	C D3
PIN5	C D4
PIN6	C D5
PIN7	C D6
PIN8	C D7
PIN9	GND
PIN10	GND
PIN11	C LLC
PIN12	C LLC2
PIN13	GND
PIN14	GND
PIN15	C RTSO 0
PIN16	C RTSO 1

PIN17	C RTSO 2
PIN18	C RTSO 3
PIN19	GND
PIN20	GND
PIN21	D D0
PIN22	D D1
PIN23	D D2
PIN24	D D3
PIN25	D D4
PIN26	D D5
PIN27	D D6
PIN28	D D7
PIN29	GND
PIN30	GND
PIN31	NC
PIN32	D LLC
PIN33	GND
PIN34	GND
PIN35	D RTSO 0
PIN36	D RTSO 1
PIN37	D RTSO 2
PIN38	D RTSO 3
PIN39	+5V
PIN40	+5V

2.7 16-Channel Input

(AL244C-LF1-PBF)

CON1	
PIN1	AI3_A
PIN2	GND
PIN3	AI2_A
PIN4	GND
PIN5	AI2_A
PIN6	GND
PIN7	AI3_B
PIN8	GND
PIN9	AI2_B
PIN10	GND
PIN11	AI1_B
PIN12	GND
PIN13	AI1_D
PIN14	GND
PIN15	AI2_D
PIN16	GND
PIN17	AI3_D
PIN18	GND
PIN19	AI1_C
PIN20	GND
PIN21	AI2_C
PIN22	GND
PIN23	AI3_C
PIN24	GND

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