ADCA402

Analogue to digital audio converter

USER MANUAL

Crystal Vision

Crystal Vision Ltd., Lion Technology Park, Station Road East, Whittlesford, Cambridge, CB22 4WL, England.
E-mail: sales@crystalvision.tv Website: www.crystalvision.tv Tel: +44(0) 1223 497049 Fax: +44(0) 1223 497059

ADCA402 Dual AES/EBU Analogue to Digital Converter USERS MANUAL

INTRODUCTION

The ADCA402 converts 4 channels of analogue audio to 2 digital AES/EBU signals. It can take its reference from a video reference, AES reference or AES word clock. The unit can be set to work in either 525 or 625 line standard, and has a system of links for setting the channel status bits in the AES/EBU output. It is very compact with six modules fitting in a 1U frame, or 12 in a 2U frame. The FR1-4-2A frame allows a mixture of 2 of the Crystal Vision Audio AtoD or DtoA converters, and 4 of the video converters all in a single 1U frame.

The unit plugs into the front of the rack frame. The hinged front panel of the frame reveals LED indication of status. Configuration is possible using movable links.

SPECIFICATION

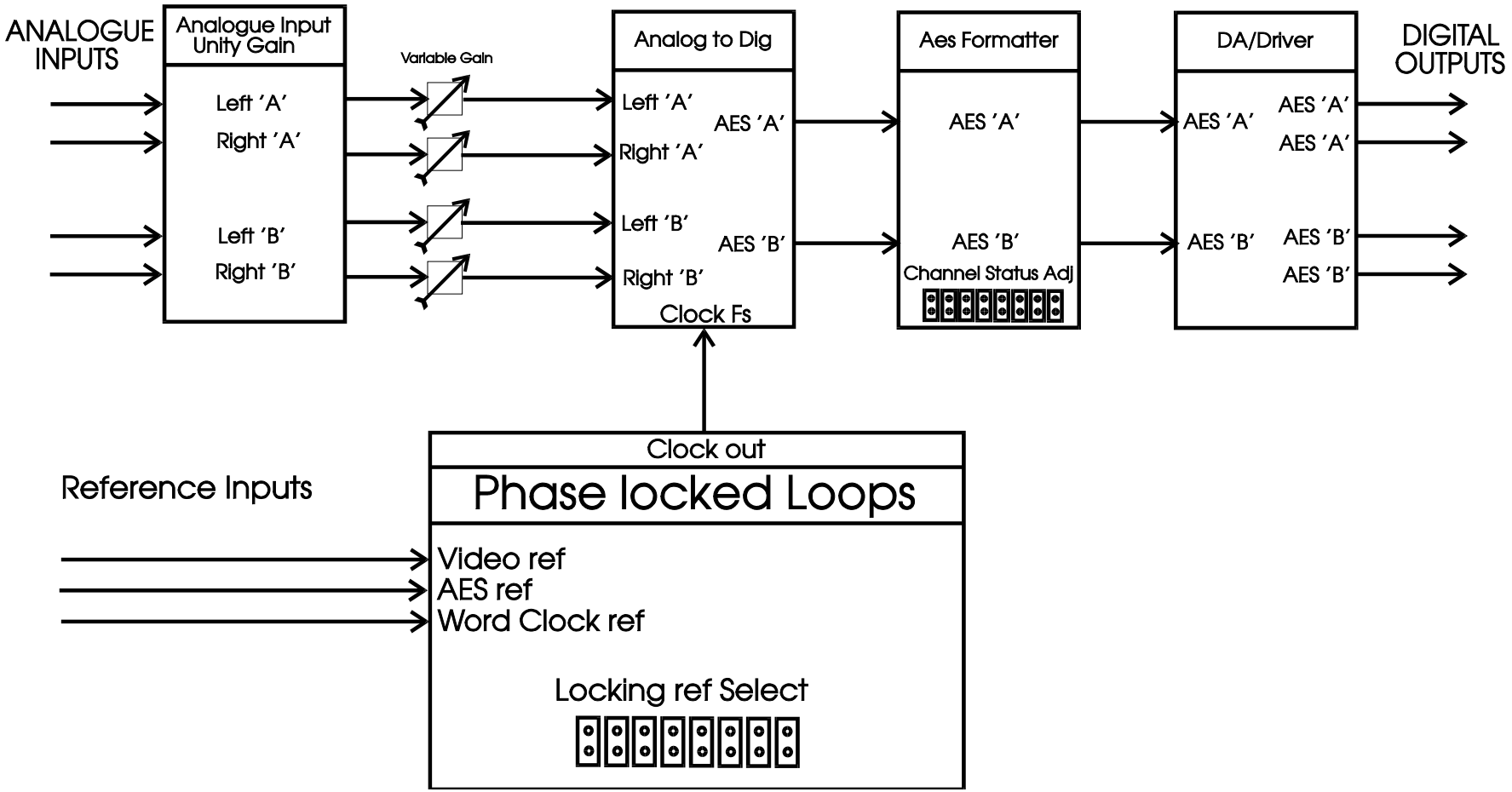
Mechanical
100mm x 266mm module with DIN 41612 connector. User indication at end of board to allow access from hinged front panel.

Weight	150g
Input:	4 Analogue Audio, Electronically balanced. High Impedance.
	1 AES/EBU reference Input, 110 Ohm.
	1 Word Clock Reference 110 Ohm.
Outputs:	2 pairs AES/EBU, 44.1kHz or 48KHz data rate.
Reference Sources	The same reference is selected for both AES/EBU channels.
	Video MS or B&B reference, 525 or 625 Line standards.
	AES/EBU Reference Input 44.1kHz or 48KHz.
	Word Clock Reference Input 44.1khz or 48 KHz.
System Gain	Pot adjustment for AES level -18dB to -24dB from 0dB analogue input.
LED Indication	Sampling Frequency (44.1 or 48Khz)
	Video Locking reference present
	AES/EBU Locking reference present
	Word Clock Locking reference present

Provisional Performance

Noise	<-90dB wrt full scale analogue input CCIR weighted
THD	<.01% at 0dB analogue input.

Crystal Vision Anaogue to Digital Converter Block Diagram



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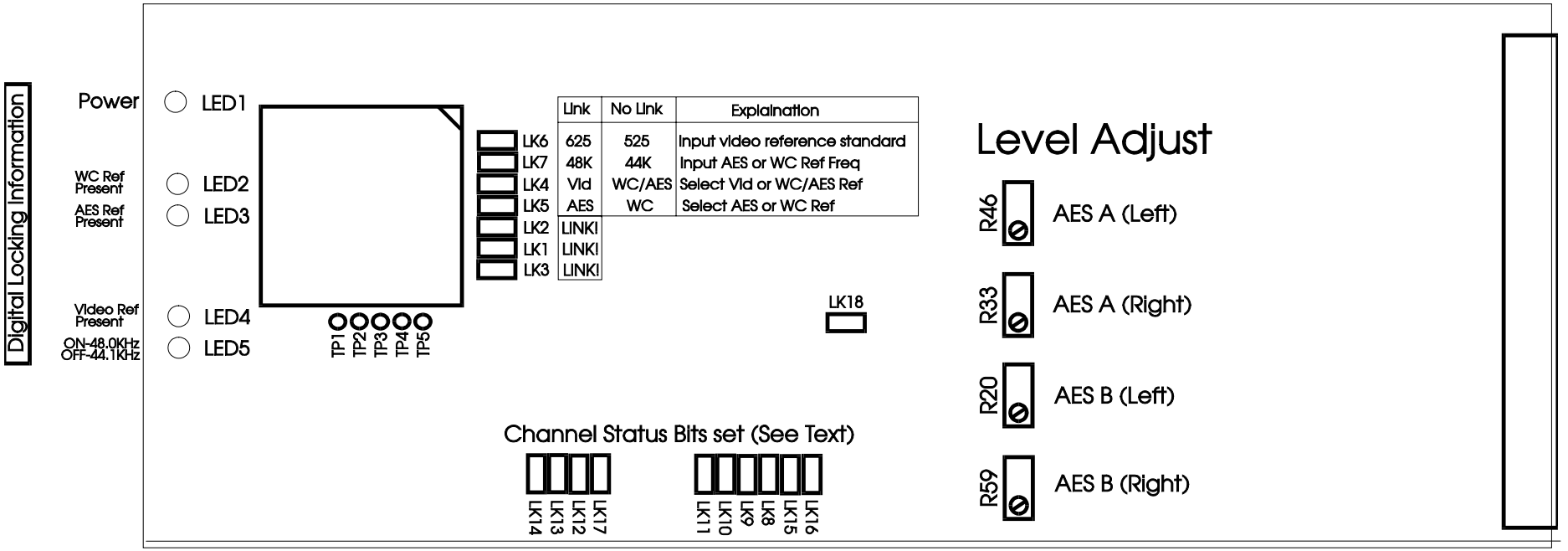
LK18 should be linked (Connects analogue to digital grounds)



	Link	No Link	Explaination
LK6	625	525	Input video reference standard
LK7	48K	44K	Input AES or WC Ref Freq
LK4	Vid	WC/AES	Select Vid or WC/AES Ref
LK5	AES	WC	Select AES or WC Ref
LK2	LINK!		
LK1	LINK!		
LK3	LINK!		

Link Positions for the ADCA402 Dual AES/EBU A to D Converter

Link	Explanation
1	For Diagnostic purposes only, MUST Be linked
2	For Diagnostic purposes only, MUST Be linked
3	For Diagnostic purposes only, MUST Be linked

Links 4-7 set the locking modes

4 Video	This selects between the Word Clock or AES Reference inputs and the B&B input. Video is selected by putting the jumper on.
5	If LK4 is NOT Jumpered, then this selects between AES and Word Clock Reference Input. AES is selected by putting the jumper on.
6	If LK4 IS jumpered, then this selects between 625 and 525 line standard. 625 is selected by putting the jumper on.
7	This sets the Operating frequency of the AES Data stream between 44.1KHz and 48KHz sampling. 48KHz is selected by putting the jumper on.

Links 8-17 select the various channel status bit options. The meaning of these mostly depend on whether Professional or consumer mode is set. (LK13)

Link	State	Professional Mode (LK13 Jumpered)	Consumer Mode (LK13 Not jumpered)
8	jumper	Set Ch Status bit 9	Set Ch Status bit 15
	No jumper	Clear Ch Status bit 9	Clear Ch Status bit 15
9	jumper	Clear all user bits	Clear all user bits
	No jumper	Set all user bits	Set all user bits
10	NOT USED		
11	jumper	Valid Audio (Validity Bit=0)	Valid Audio (Validity Bit=0)
	No jumper	Non Audio use (V=1)	Non audio use (V=1)
12	jumper	Set Ch Status bit 1	Leave Linked
	No jumper	Clear Ch status bit 1	Leave Linked
13	jumper	Sets Professional mode	x
	No jumper	x	Sets Consumer Mode
14	jumper	Set Ch Status bit 6	Set Ch Status bit 2

	No jumper	Clear Ch Status bit 6	Clear Ch Status bit 2
15	jumper	See Note 1	Set Ch Status bit 9
	No jumper	See Note 1	Clear Ch Status bit 9
16	jumper	See Note 1	Set Ch Status bit 8
	No jumper	See Note 1	Clear Ch Status bit 8
17	jumper	Set Ch Status bit 6	Set Ch Status bit 2
	No jumper	Clear Ch Status bit 6	Clear Ch Status bit 2

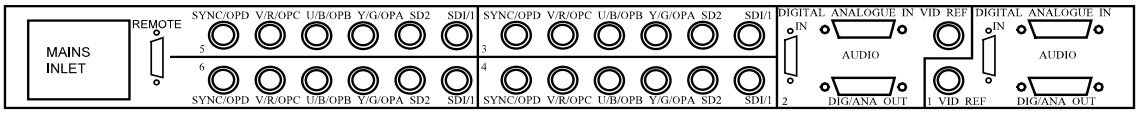
Note1

In professional mode links 15 and 16 encode channel status bits 2,3,4. These give the emphasis and copy information.

LK15	LK16	Emphasis Mode
no jumper	no jumper	Copy Inhibited, No Emphasis, C2=0,C3=0,C4=0
no jumper	jumper	Copy Inhibited, 50/15uS Emphasis, C2=0,C3=1,C4=0
jumper	no jumper	Copy allowed, No Emphasis, C2=1,C3=0,C4=0
jumper	jumper	Copy allowed, Reserved Emphasis, C2=1,C3=1,C4=1

INSTALLATION INFORMATION

The ADCA0402 plugs into the front of a suitable Crystal Vision frame. The FR1-4A2 is a 1U frame which takes 2 audio as well as 4 video modules. The modules can be plugged into and removed from the frame while it is powered without damage.



The Connections to an audio module are as shown below. The pin-outs are shown in the following tables, as well as the lead wiring required to connect to standard XLR connectors. Audio position 1 relates to the top left board position looking from the front of the frame. Audio position 2 is the lower left board position.

Digital In	9 way D (AES reference or Word Clock Reference on ADC)
Analogue In	25 way D
Digital/Analogue Out	25 way D (Digital Out on A to D
Video Ref	BNC

N.B. Max size for D type hoods is 32 x 15mm for 9 way, and 40 x 15 mm for 15 way.
For example RS stock numbers 460-985 and 454-930.

Connections For AES/EBU A to D Converter

9 Way D-Type Socket (Digital Input/REF)
AES or Word Clock Reference

Signal Name	DIN 41612 Pin No.	10 Way IDC Skt pin No. (internal)	9 way D Pin No.
AES +	B9	1	1
AES -	A9	2	6
GND	B10	3	2
GND	A10	4	7
GND	B11	5	3
GND	A11	6	8
WC +	B12	7	4
WC -	A12	8	9
GND	B13	9	5
GND	A13	10	-----

15 Way D-Type Socket (Analogue Input)

Signal Name	DIN 41612 Pin No.	34 Way IDC Skt pin No. (internal)	15 Way D Pin No.
AA +	B16	1	1
AA -	A16	2	9
GA	B17	3	2
GA	A17	4	10
AB +	B18	5	3
AB -	A18	6	11
GB	B19	7	4
GB	A19	8	12
AC+	B20	9	5
AC-	A20	10	13
GC	B21	11	6
GC	A21	12	14
AD +	B22	13	7
AD -	A22	14	15
GD	B23	15	8
GD	A23	16	---

15 Way D-Type Socket (Digital Output)

Signal Name	DIN 41612 Pin No.	34 Way IDC Skt pin No. (internal)	15 Way D Pin No.
AESA1 +	B24	17	1
AESA1-	A24	18	9
GND	B25	19	2
GND	A25	20	10
AESA2+	B26	21	3
AESA2-	A26	22	11
GND	B27	23	4
GND	A27	24	12
AESB1+	B28	25	5
AESB1-	A28	26	13
GND	B29	27	6
GND	A29	28	14
AESB2+	B30	29	7
AESB2-	A30	30	15
GND	B31	31	8
GND	A31	32	---
GND	B32	33	---
GND	A32	34	---

Board Edge Connector Wiring

5V A3
0V A4
-5V A5

10 way IDC socket A/B9 to A/B13
34 way IDC socket A/B16 to A/B32

Sync input (signal) B7 (on 2 way BERG connector)
Sync Input (Ground) A7

Remote Signal (SWA B1) B6
Remote Signal (SWA B2) A6

XLR Breakout Leads

Digital Input/REF (AES/Word Clock)

XLR Female AES REF	9 way D Male	
1	2	GND
2	1	+
3	6	-
XLR Female Word Clock REF		
1	5	GND
2	4	+
3	9	-

Analogue Input

XLR Female Audio Channel 1	15 way D Male	
1	2	GND
2	1	+
3	9	-
XLR Female Audio Channel 2		
1	4	GND
2	3	+
3	11	-
XLR Female Audio Channel 3		
1	6	GND
2	5	+
3	13	-
XLR Female Audio Channel 4		
1	8	GND
2	7	+
3	15	-

Digital Output

XLR Male AES/EBU 1A	15 way D Male	

1	2	GND
2	1	+
3	9	-
XLR Male AES/EBU 1B		
1	4	GND
2	3	+
3	11	-
XLR Male AES/EBU 2A		
1	6	GND
2	5	+
3	13	-
XLR Male AES/EBU 2B		
1	8	GND
2	7	+
3	15	-