☐ **Preliminary Specifications**

■ **Final Specifications**

Module	LCD Controller Board (AD Board) For LCD Display
Model Name	AD-0070
Document Version	Rev.V1

Coutomer

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Approved by   Date

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Notice : This Specification is subject to change without notice.

Approved By	Prepared By
Tony Chiu	Frank Kuo
2019/09/26	2019/09/26

Contents

Revision History

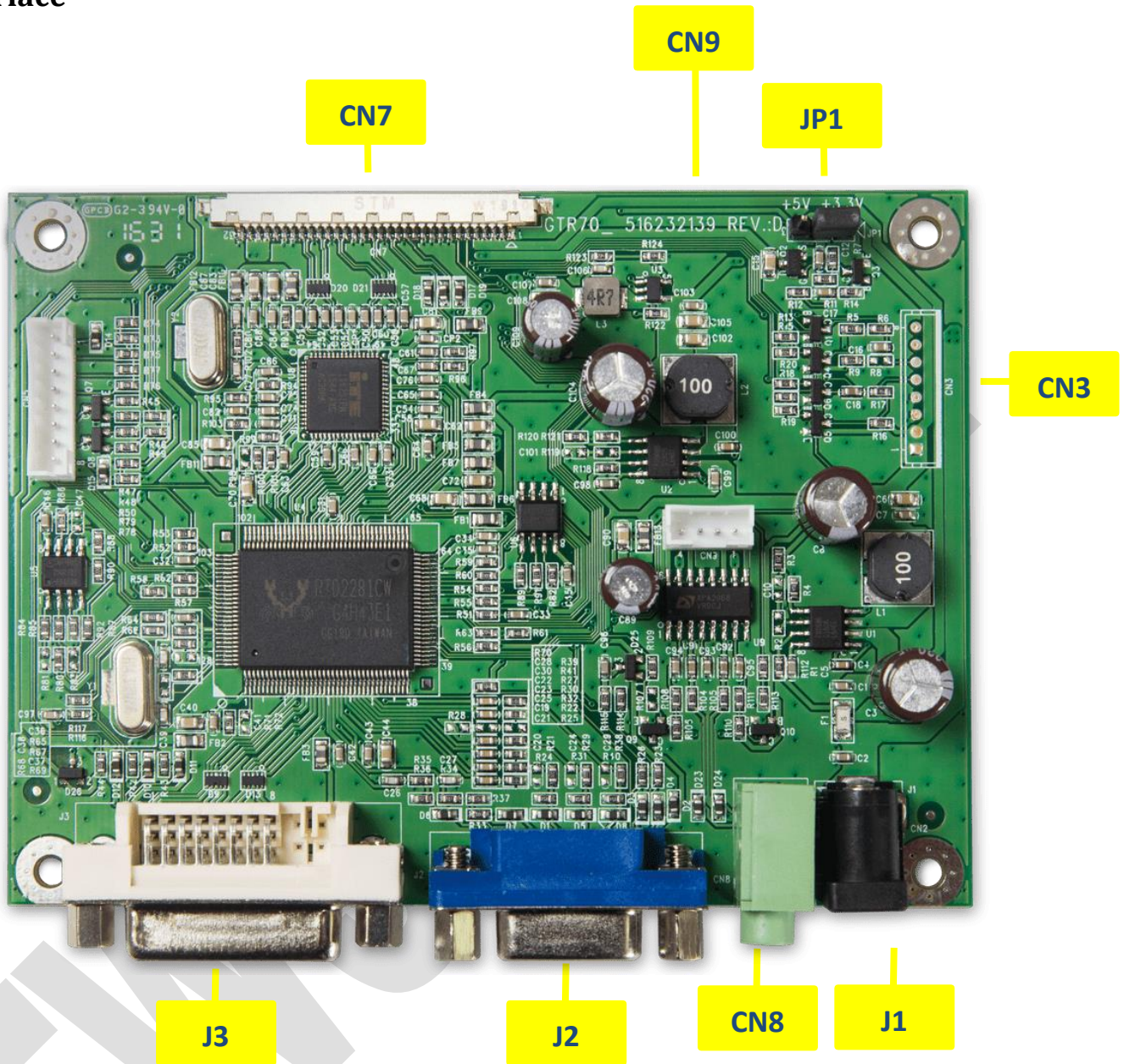| Version	Date	Revised Content/Summary	Page	Remark
0	2019/09/26	First Edition	All	
1	2019/11/26	Temperature Release	4	

1. General Function

A. TFT-LCD Module Driver Board

B. Resolution UP TO 1920 x 1080 @ 60Hz

C. 15 PIN D-SUB VGA Connector Input

D. DVI-D (Digital Video Input) Connector Input

E. 1/2/4 Lane eDP Interface Output to Panel

F. OSD (On Screen Display) Control Menu

G. Supporting HDCP Protocol (Optional)

H. Supporting DDC/CI Protocol

I. Audio Input And Audio Output 1.6W x 2 at 8ohm Speaker

2. Specification

Model	AD-0070
Panel Interface	1/2/4 Lane eDP
Maximum Resolution	Up to WUXGA 1920x1080 8 bits per color , total 16.7M colors
Vertical Refresh Rate	VGA，SVGA，XGA，UXGA VESA Standard up to 75Hz WUXGA up to 60Hz
Input Source	VGA Analog (15pin D-Sub)，DVI-D，Audio in
Audio Output	1.6W+1.6W at 8 Ohm speaker
Dot Clock Maximum (Pixel clock)	165 MHz
User Controls	Power On/Off Menu Adjust － Adjust ＋ Auto
Board Dimension	110 x 82 x 14.5 mm
Voltage for LCD Panel	3.3V，5V DC (Jump Select)
Storage Temperature Limits	Temperature –40℃~70℃
Operation Temperature Limits	Temperature -10℃~60℃ Humidity：Less than 85%

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3. Interface

CN9

CN7

JP1

CN5

CN3

J3

J2

CN8

J1

3-1.   JP1 : Panel Voltage Selector

3-2.   J1 : Power Input (DC 12V)

3-3.   J2 : VGA Connect (VGA Signal Input)

3-4.   J3 : DVI-D Connect (DVI Signal Input)

3-5.   CN3 : Inverter Output (Optional)

3-6.   CN5 : OSD Key Output Extend

3-7.   CN7 : eDP Output

3-8.   CN8 : Audio Input (Phone Jack)

3-9.   CN9 : Speaker Output

4. Support PC Timing

NO.	Description	H-Freq. (KHz)	V-Freq. (Hz)	
1.	VGA640×400	31.480	70	
2.	VGA640×480	31.649	60	
3.	VGA720×400	37.469	70	
4.	VESA 640×480	37.862	72.809	
5.	VESA 640×480	37.5	75	
6.	VESA 800×600	35.156	56.25	
7.	VESA 800×600	37.9	60	
8.	VESA 800×600	48.077	72.188	
9.	VESA 800×600	46.875	75	
10.	VESA 1024×768	48.363	60	
11.	VESA 1024×768	56.476	70	
12.	VESA 1024×768	60.023	75	
13.	VESA 1152×864	67.5	75	
14.	VESA 1280 x 768	47.8	60	
15.	VESA 1280 x 768	60.3	75	
16.	VESA 1280×960	60	60	
17.	VESA 1280×1024	63.981	60	
18.	VESA 1280×1024	79.977	75	
19.	VESA 1440x900	59.9	60	
20.	VESA 1440x900	75	75	
21.	VESA 1600x1200	75	60	
22.	VESA 1600x1200	81.3	65	Note
23.	VESA 1600x1200	87.5	70	Note
24.	VESA 1600x1200	93.8	75	Note
25.	VESA 1680x1050	65.3	60	
26.	VESA 1680x1050	74.9	75	Note
27.	VESA 1920x1080	56.25	50	
28.	VESA 1920x1080	67.5	60	

Note: depends on panel

5. Signal input connections

5-1 Panel Voltage Selector

Location – JP1 : Pin1,Pin2 Short Panel Power 3.3V

Pin2,Pin3 Short Panel Power 5V

5-2 Power Input

Location – J1 : DC JACK D=2.0mm 12V DC Input

5-3 VGA Connect (VGA Signal Input)

Location – J2 : 15pin Hi-Density Female D-SUB

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	RED IN	6	R-GND	11	GND
2	GREEN IN	7	G-GND	12	SDA DDC
3	BLUE IN	8	B-GND	13	SYNC H
4	GND	9	PC 5V	14	SYNC V
5	GND	19	DET	15	SCL DDC

5-4 DVI-D Connect (DVI Signal Input)

Location – J3 : 30pin DVI Connector

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	DATA2-	11	GND	21	NC
2	DATA2+	12	NC	22	GND
3	GND	13	NC	23	CLK+
4	NC	14	DDC 5V	24	CLK-
5	NC	15	GND	25	NC
6	DVI DDC SCL	16	GND	26	NC
7	DVI DDC SDA	17	DATA0-	27	NC
8	NC	18	DATA0+	28	NC
9	DATA1-	19	GND	29	GND
10	DATA1+	20	NC	30	NC

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5-5 Inverter Output (Optional)

Location – CN3 : 8pin wafer pitch 2.0mm STM M24268 or equivalent

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL
1	+5V	5	Dimming control
2	+5V	6	Backlight Enable
3	GND	7	+12V
4	GND	8	+12V

5-5A Dimming : PWM Ratio 100% (LED Current Max) to PWM Ratio 20% (LED Current Min)

5-5B Backlight Enable : 5V (ON) or 0V (OFF)

5-6 OSD Key Output Connector

Location – CN5 : 8pin wafer pitch 2.0mm STM M24268 or equivalent

All Key Active Low Level , All LED Active HI Level , Output Current 10mA MAX

Pin assign and definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	MENU KEY	4	UP KEY	7	LED_O
2	AUTO KEY	5	GND	8	POWER KEY
3	DOWN KEY	6	LED_G	---	----------------

5-7 eDP Output

Location – CN7 : 30pin pitch 1.0mm FCN WF13-423-3033 or equivalent

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	+12V	11	NC	21	D1-
2	+12V	12	HPD	22	D1+
3	+12V	13	AUX-	23	D0-
4	+12V	14	AUX+	24	D0+
5	Dimming control	15	D3-	25	GND
6	Backlight Enable	16	D3+	26	GND
7	GND	17	GND	27	NC
8	GND	18	GND	28	VLCD for panel
9	GND	19	D2-	29	VLCD for panel
10	GND	20	D2+	30	VLCD for panel

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5-8 Audio Input (Phone Jack)

Location – CN8 : SCJ368R0NXS0G04G 3P Green or equivalent

Audio Input 1Vp-p Max.

5-9 Speaker Output

Location – CN9 : 4pin wafer pitch 2.0mm STM M24264 or equivalent

Audio Output 1.6W + 1.6W at 8 Ohm

Pin assign and definition

Pin No.	Signal
1	L +
2	L -
3	R -
4	R +

6. LCD Controller Board Dimension