

☒ Preliminary Specifications

☐ Final Specifications

Module	LCD Controller Board (AD Board) For LCD Display
Model Name	AD-0037D
Document Version	Rev.V0

Customer

Approved by

Date

Notice : This Specification is subject to change without notice.

Approved By	Prepared By
Tony Chiu	Frank Kuo
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Revision History

Version	Date	Revised Content/Summary	Page	Remark
0	2021/06/01	First Edition	All	

1. General Function

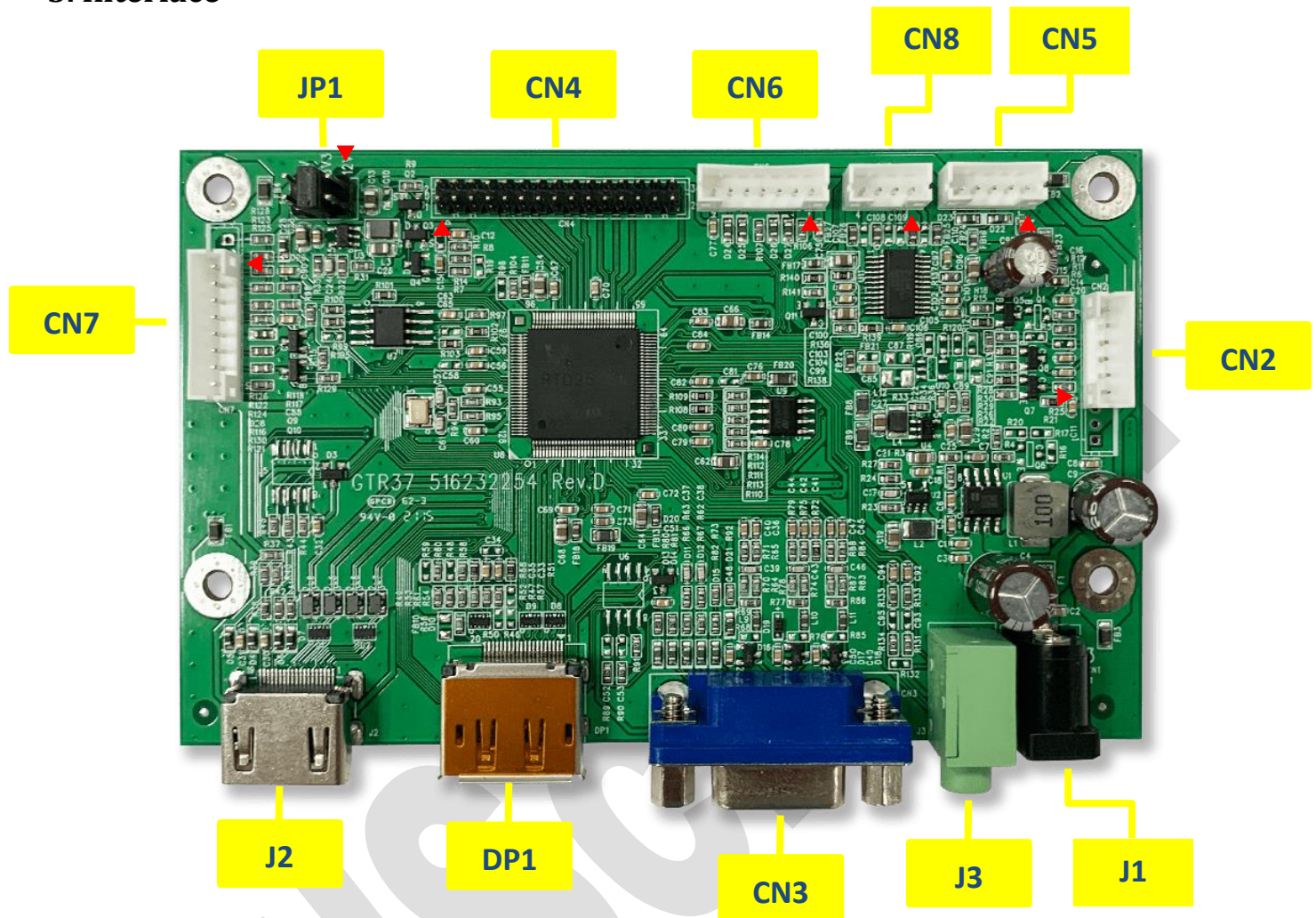
- A. TFT-LCD Module Driver Board
- B. Resolution UP TO 1920 x 1200 @ 60Hz (Note)
- C. 15 PIN D-SUB VGA Connector Input
- D. HDMI Connector Input
- E. Display Port Connector Input
- F. LVDS Interface Output to Panel
- G. OSD (On Screen Display) Control Menu
- H. Supporting HDCP Protocol (Optional)
- I. Supporting DDC/CI Protocol
- J. Audio Input And Audio Output 1.4W x 2 at 8ohm Speaker

Note : No FRC Function

2. Specification

Model	AD-0037D
Panel Interface	Single/Dual LVDS
Maximum Resolution	Up to WUXGA 1920x1200 8 bits per color , total 16.7M colors
Vertical Refresh Rate	VGA , SVGA , XGA VESA Standard up to 75Hz WUXGA up to 60Hz (No FRC Function)
Input Source	VGA Analog (15pin D-Sub) HDMI 1.4a (HDCP 1.4) Display Port 1.2 (HDCP1.4)
Audio Output	1.4W+1.4W at 8 Ohm speaker
Dot Clock Maximum (Pixel clock)	VGA : 210 MHz HDMI : 165 MHz
User Controls	Power On/Off OSD Menu Adjust — Adjust + Auto/Exit
Board Dimension	120 x 74 x 14.5 mm
Voltage for LCD Panel	3.3V , 5V , 12V DC (Jump Select)
Storage Temperature Limits	Temperature -40°C~70°C
Operation Temperature Limits	Temperature -20°C~70°C Humidity : Less than 85%

3. Interface



- 3-1. JP1 : Panel Power Voltage Selector
- 3-2. J1 : Power Input (DC 12V)
- 3-3. J2 : HDMI Connect (HDMI Signal Input)
- 3-4. J3 : Audio Signal Input (Phone Jack) for VGA Mode Only
- 3-5. DP1 : Display Port Connect (Display Port Signal Input)
- 3-6. CN2 : Backlight Control
- 3-7. CN3 : VGA Connect (VGA Signal Input)
- 3-8. CN4 : LVDS Signal Output
- 3-9. CN5 : IR and Light Sensor Control (Optional)
- 3-10. CN6 : RS232/I2C Control (Optional)
- 3-11. CN7 : OSD Key Control Connect
- 3-12. CN8 : Audio Speaker Signal Output

4. Support PC Timing

NO.	Description	H-Freq. (KHz)	V-Freq. (Hz)
1	VGA640×480	31.649	60
2	VESA 640×480	37.5	75
3	VESA 800×600	37.9	60
4	VESA 800×600	46.875	75
5	VESA 1024×768	48.363	60
6	VESA 1024×768	60.023	75
7	VESA 1280×720	45.0	60
8	VESA 1280×800	49.3	60
9	VESA 1280×1024	63.981	60
10	VESA 1280×1024	79.977	75
11	VESA 1366×768	48.0	60
12	VESA 1440×900	59.9	60
13	VESA 1440×900	75	75
14	VESA 1600×900	60	60
15	VESA 1600×1200	75	60
16	VESA 1680×1050	65.3	60
17	VESA 1920×1080	67.5	60
18	VESA 1920×1200	74	60

Note: depends on panel

5. Signal input connections

5-1 Panel Power Voltage Selector

Location – JP1 : 2x3pin pitch 2.54mm

Pin1,Pin2 Short Panel Power 12V

Pin3,Pin4 Short Panel Power 3.3V

Pin5,Pin6 Short Panel Power 5V

5-2 Power Input

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

5-3 HDMI Connect (HDMI Signal Input)

Location – J2 : 19pin HDMI Connector

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	HDMI_DATA2+	8	GND	15	HDMI_SCL
2	GND	9	HDMI_DATA0-	16	HDMI_SDA
3	HDMI_DATA2-	10	HDMI_CLK+	17	GND
4	HDMI_DATA1+	11	HDMI_Cable_DET	18	HDMI_5V
5	GND	12	HDMI_CLK-	19	HDMI_HPD
6	HDMI_DATA1-	13	NC	-----	-----
7	HDMI_DATA0+	14	NC	-----	-----

5-4 Audio Signal Input (Phone Jack)

Location – J3 : SCJ368R0NXS0G04G 3P Green or equivalent

Audio Signal Input 1Vp-p Max. For VGA Mode Only

5-5 Display Port Connect (Display Port Signal Input)

Location – DP1 : 20pin Display Port Connector

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	LANE3-	8	GND	15	AUX_CHP
2	GND	9	LANE1+	16	DP_Cable_DET
3	LANE3+	10	LANE0-	17	AUX_CHN
4	LANE2-	11	GND	18	HPD
5	GND	12	LANE0+	19	RETURN
6	LANE2+	13	GND	20	DP_5V
7	LANE1-	14	GND	-----	-----

5-6 Backlight Control

Location – CN2 : 6pin wafer pitch 2.0mm STM M24266 or equivalent

Pin Assign and Definition

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

5-6A Dimming : PWM Ratio 100% (LED Current Max) to PWM Ratio 20% (LED Current Min)

5-6B Backlight Enable : 5V (ON) or 0V (OFF)

5-7 VGA Connect (VGA Signal Input)

Location – CN3 : 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	NC	9	PC 5V	14	SYNC V
5	VGA_Cable_DET	10	GND	15	SCL DDC

5-8 LVDS Signal Output

Location – CN4 : 2x15pin DuPont pitch 2.0mm

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL	Pin No.	SYMBOL
1	VLCD for panel	11	LVDS RXE 2-	21	LVDS RXO 1-
2	VLCD for panel	12	LVDS RXE 2+	22	LVDS RXO 1+
3	VLCD for panel	13	GND	23	LVDS RXO 2-
4	NC	14	GND	24	LVDS RXO 2+
5	GND	15	LVDS RXE CLK-	25	GND
6	GND	16	LVDS RXE CLK+	26	GND
7	LVDS RXE 0-	17	LVDS RXE 3-	27	LVDS RXO CLK-
8	LVDS RXE 0+	18	LVDS RXE 3+	28	LVDS RXO CLK+
9	LVDS RXE 1-	19	LVDS RXO 0-	29	LVDS RXO 3-
10	LVDS RXE 1+	20	LVDS RXO 0+	30	LVDS RXO3+

5-9 IR and Light Sensor Control (Optional)

Location – CN5 : 5pin wafer pitch 2.0mm STM M24265 or equivalent

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL
1	+5V	4	Light Sensor Signal
2	IR Signal	5	GND
3	GND	---	-----

5-10 RS232/I2C Control (Optional)

Location – CN6 : 7pin wafer pitch 2.0mm STM M24267 or equivalent

Pin Assign and Definition

Pin No.	SYMBOL	Pin No.	SYMBOL
1	3.3V	5	SCL
2	TXD	6	SDA
3	RXD	7	5V
4	GND	---	-----

Note : 5V/500mA Max 3.3V/200mA Max (Optional)

5-11 OSD Key Control Connect

Location – CN7 : 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	---	-----

5-12 Audio Output For Speaker

Location – CN8 : 4pin wafer pitch 2.0mm STM M24264 or equivalent

Audio Speaker Signal Output 1.4W + 1.4W at 8 Ohm

Pin assign and definition

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

6. LCD Controller Board Dimension

UNIT : mm

