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Date	2010/4/13

Product Specification

SK-104-D1

SK-104-D2

TFT LCD DISPLAY KIT

Resolution:640x480, Brightness:450 nits

LED back light.

Approval

Issue by	R & D	QA	ME	Approve by

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Record of Revision

Version	Revise Date	Page	Content
1	2010/4/13	-	First edition V1

1. GENERAL.

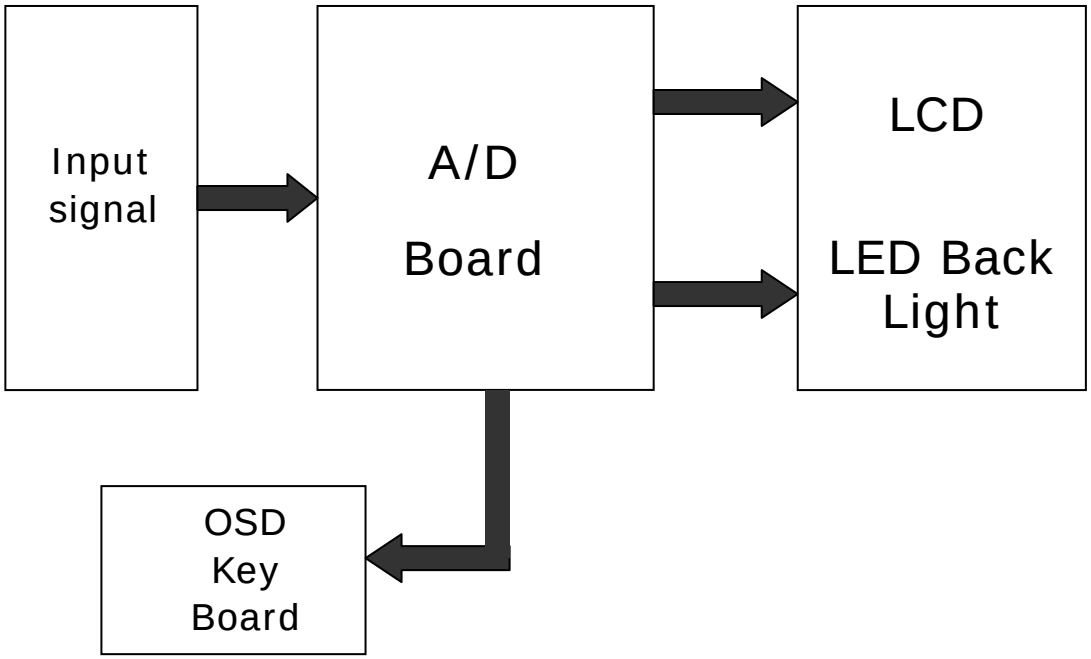
This SK-104-D1 and SK-104-D2 Display kit are designed to provide 10.4” TFT LCD Display solution with standard input signal of CVS,SV and CVS/SV/VGA.

It has the LCD panel and all parts you need to display 10.4” screen in 640x480 resolution.

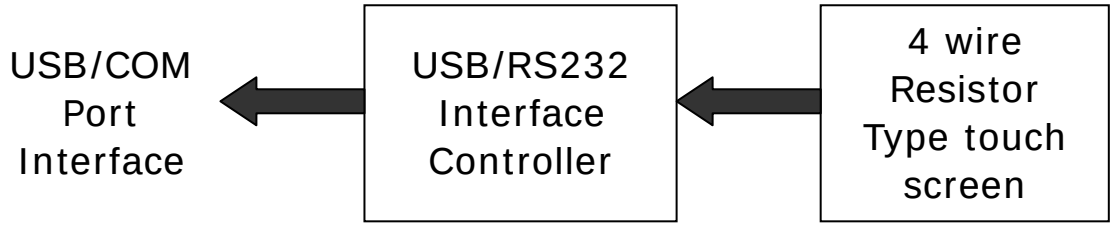
2. Specification

Input Signal	SK-104-D1	CVS/SV
	SK-104-D2	CVS/SV/VGA
Display Size (Diagonal)	10.4 inch	
Number of Pixels (dots)	640(H) x RGB x 480(V)	
Pixel Pitch (mm)	0.33(W) x 0.33(H)	
Active Area (mm)	211.2 (H) x 158.4 (V)	
Panel overall dimension (mm)	243 x 176.6 x 8.0	
LCD panel Model	LM-104-DVL.	
Brightness (cd/㎡)	450	
Contrast Ratio	700	
Operation Temp.(℃)	-10~50	
Storage Temp. (℃)	-20~70	
View Angle (U/D/L/R)	60/80/80/80	
Response Time (m sec.)	30	
Type of Back light	LED	
Back light life time (Hr)	50000 @ If =80mA to half brightness	
Recommended Resolution	640x480 @60Hz	
On-Screen-Display (OSD)	Build in Key Board; control all relevant display and interface parameters.	
Supply Voltage (VDC)	10 ~ 14	
Power Consumption	4W (TYP.)	
Optional Audio output	2W, 2 CH	

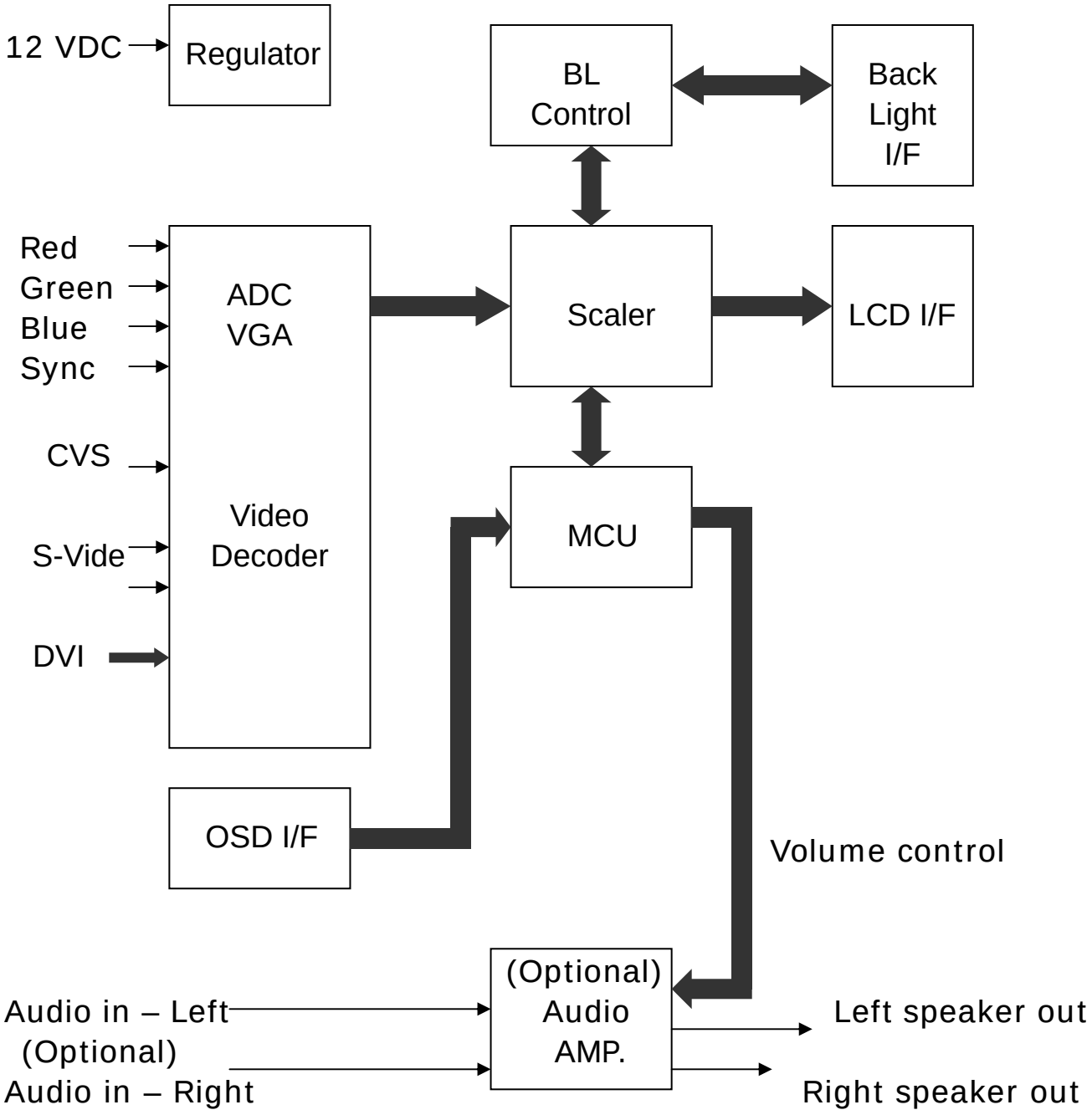
3. Block Diagram



Optional Touch screen and Interface controller.

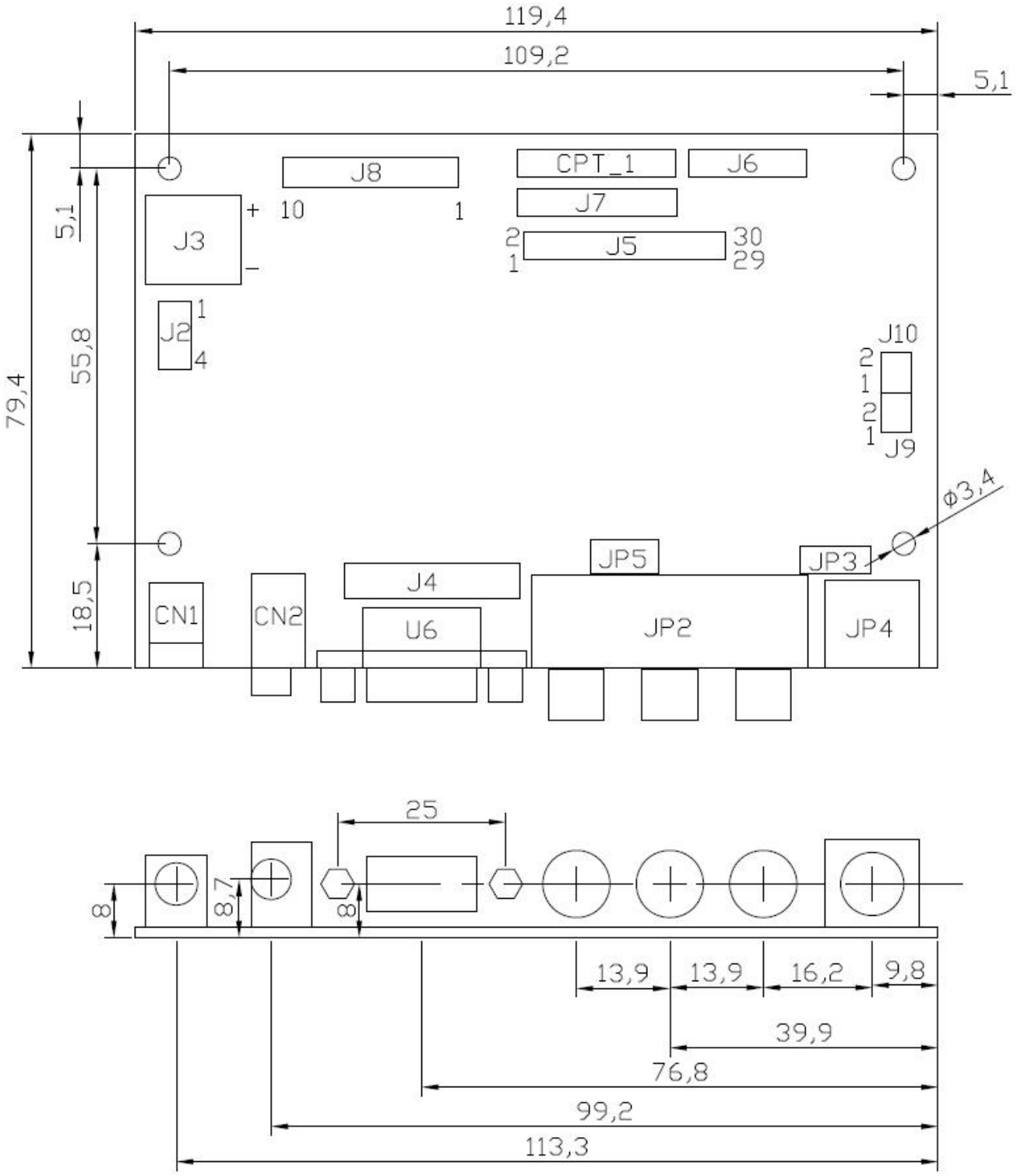


3.1. Block Diagram of A/D Board



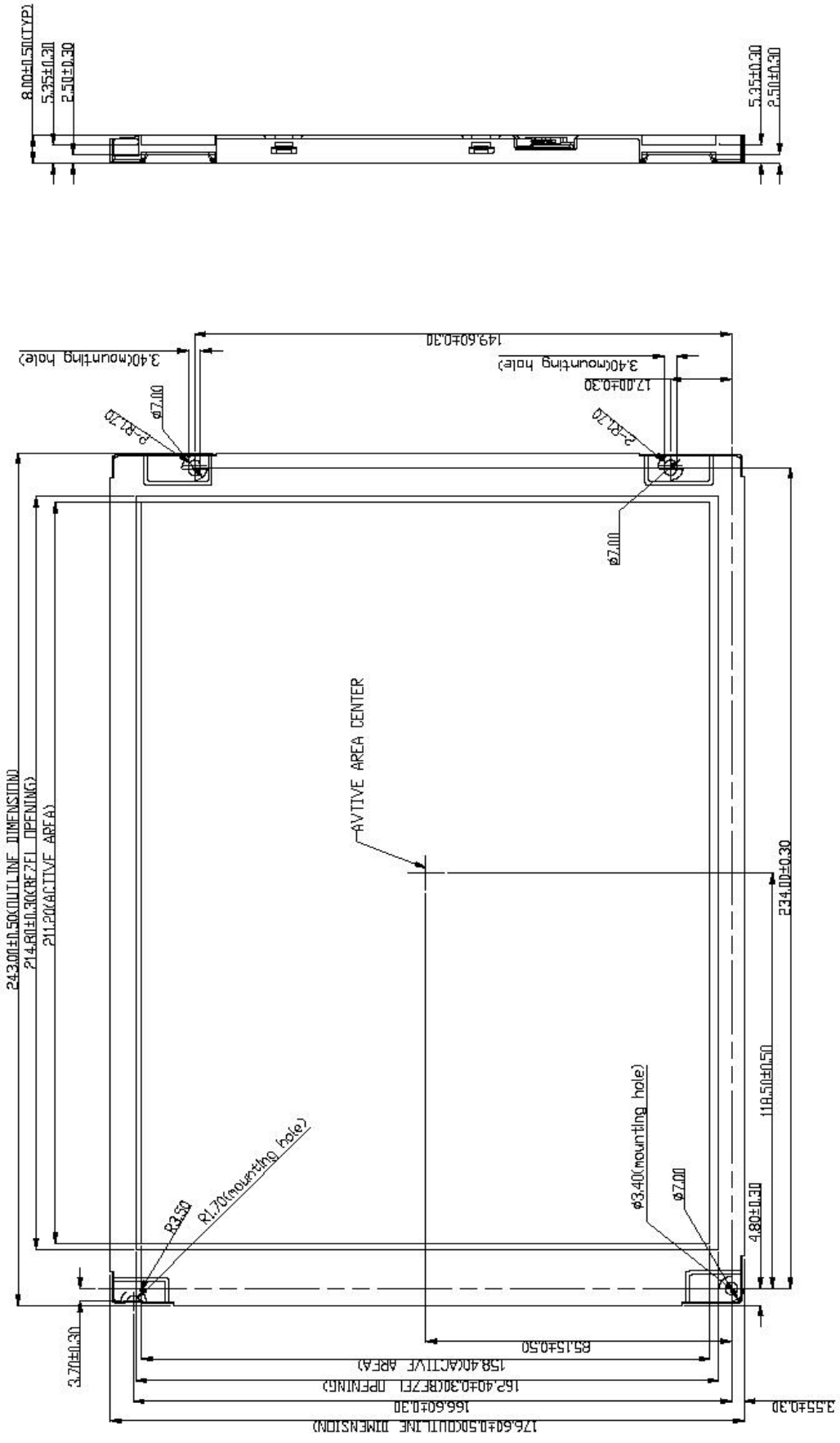
4. Dimension.

4.1. A/D Board

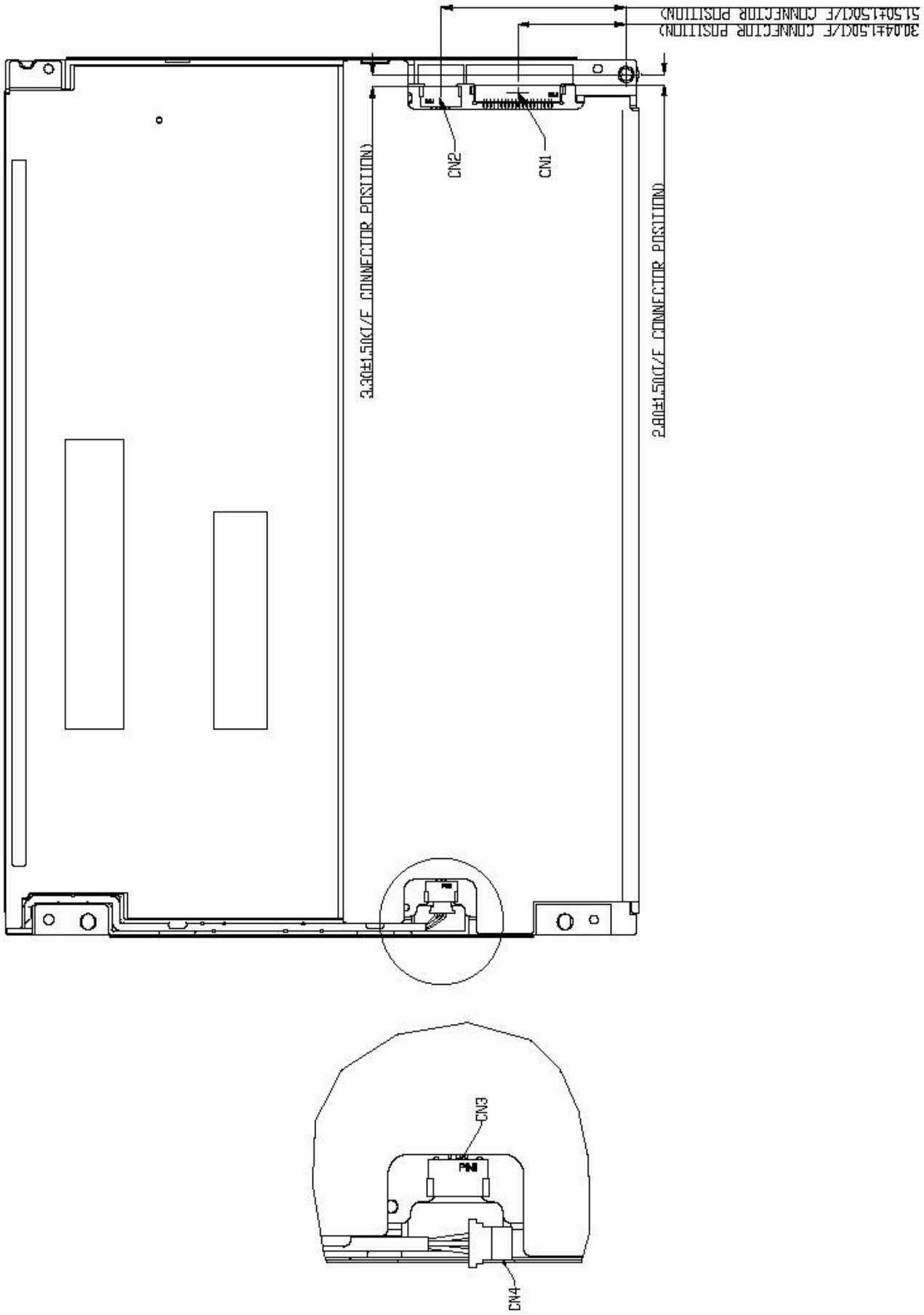


4.2. LCD Dimension:

TFT LCD PANEL Dimensions (Front View) UNIT: mm



TFT LCD PANEL Dimensions (Rear View) UNIT: mm



5. Connectors pin define.

5.1. A/D Board

5.1.1. Power input.

CN1, Input connector, 5.5x2.1mm plug socket.

SYMBOL	FUNCTION
CT(center)	+12 VDC POWER SUPPLY
GND	GROUND

5.1.2. Audio signal input

One of the following socket can be selected to supply audio signal input.

JP2, Audio signal Input RCA connector.

CN2, Audio Input socket

5.1.3. VGA signal input (for Model: SK-104-D2 only)

U6: VGA input Connector: D-SUB.

Pin	Function	Description
1	RED	Red Video (75 ohm,0.7Vp-p)
2	GREEN	Green Video (75 ohm,0.7Vp-p)
3	BLUE	Blue Video (75 ohm,0.7Vp-p)
4	RES	Reserved
5	GND	Ground
6	R GND	Red Ground
7	G GND	Green Ground
8	B GND	Blue Ground
9	+5V	+5VDC
10	DSUB DETECT	
11	GND	Ground
12	SDA	DDC Serial Data Line
13	HSYNC or CSYNC	Horizontal Sync (or Composite Sync)
14	VSYNC	Vertical Sync.
15	SCL	DDC Data Clock Line

5.1.4. CVS input socket.

JP2, 3 RCA input socket, Yellow: CVS in, Red and White: Audio in.

5.1.5. SV input socket.

JP4, standard SV DIN socket for S Video input.

5.1.6. OSD Key Board.

J8: Key Board Connector (on A/D board):

10 PIN, Pitch 2.0 mm

PIN	FUNCTION
1	NC
2	NC
3	MENU key
4	Auto position key
5	UP/+ key
6	DOWN/- key / Auto Color
7	NC
8	NC
9	POWER key
10	GND

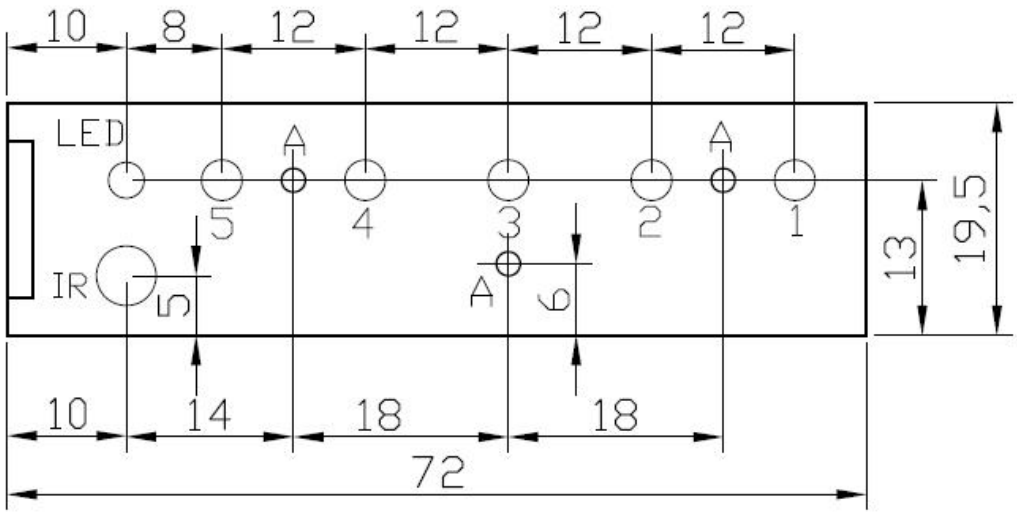
J12(J13): (on OSD Key Board) Connector:

Molex 51021-10,pitch 1.25 mm or EQ

PIN	FUNCTION
1	Key No. 5, Spare key (reserved for POWER key)
2	Key No. 4, Auto position key.
3	Key No. 3, DOWN/- key, (Auto Color)
4	Key No. 2, MENU key
5	Key No. 1, UP/+ key
6	NC
7	NC
8	NC
9	NC
10	GND

Key Board Dimensions (Top view)

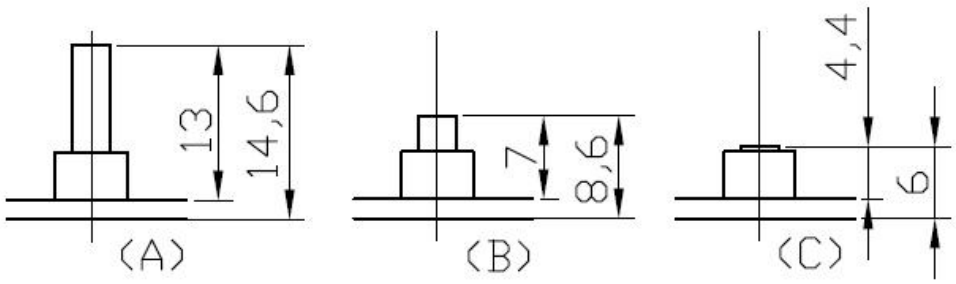
J12
(J13)



OSD KEY BOARD, TOP VIEW, COMPONENT SIDE
A: Mounting Holes, 2 mm DIA.
LED: Optional LED indicator.
IR: Optional IR Receiver.

1~5: push botton key
1: DOWN / + .
2: Menu.
3: UP / - .
4: ----.
5: spare key for custom design.

HOT KEY (When not in OSD menu mode)
3: Auto Color.
4: Auto Position.



Key switch knob hight, 13mm (standard),
optional 7mm or 4.4mm.
from PCB surface to the top of switch

5.1.7. Audio output.

J9, Left CH audio output connector, pitch 2.0mm, 2 pin.

Pin	Function	Description
1	LOUT+	Speaker +, 4~8 ohm, 2W
2	LOUT-	Speaker -, 4~8 ohm, 2W

J10, Right CH audio output connector, pitch 2.0mm, 2 pin,

Pin	Function	Description
1	ROUT+	Speaker +, 4~8 ohm, 2W
2	ROUT-	Speaker -, 4~8 ohm, 2W

5.1.8. External Back light control Interface.

J2. pitch 2.0mm, 4 pin.

Pin	Function	Description
1	DC+	Power supply 12 VDC output.
2	GND	Ground.
3	ON/OFF	Back Light on/off control.
4	DIM	Dimming, brightness adjustment.

Note: Dimming adjustment can be preset by the manufacture for DC output or PWN output depend on the LCD back light requirement.

5.1.9. LCD Interface.

J5: LCD Connector Pin Assignment

LVDS Connection is used for the module electronics interface.

30 pin Pin Header, pitch 2mm dual in line.

Pin No.	Symbol	I/O	Function	Remark
1	VCC	P	Panel VCC, power voltage 3.3V for LCD	
2	VCC	P	Panel VCC, power voltage 3.3V for LCD	
3	RXO 0+	O	Differential data output, CH0 (positive)	
4	RXO 0-	O	Differential data output, CH0 (negative)	
5	RXO 1+	O	Differential data output, CH1 (positive)	
6	RXO 1-	O	Differential data output, CH1 (negative)	
7	RXO 2+	O	Differential data output, CH2 (positive)	
8	RXO 2-	O	Differential data output, CH2 (negative)	
9	RXCLK O +	O	Differential clock output (positive)	
10	RXCLK O -	O	Differential clock output (negative)	
11	NC	-	No connection	
12	NC	-	No connection	
13	NC	-	No connection	
14	NC	-	No connection	
15	NC	-	No connection	
16	NC	-	No connection	
17	NC	-	No connection	
18	NC	-	No connection	
19	NC	-	No connection	
20	NC	-	No connection	
21	NC	-	No connection	
22	NC	-	No connection	
23	GND	P	Power ground	
24	GND	P	Power ground	
25	NC	-	No connection	
26	NC	-	No connection	
27	NC	-	No connection	
28	NC	-	No connection	
29	NC	-	No connection	
30	NC	-	No connection	

I: input, O: output, P: power.

5.2. LCD side connector Pin Assignment

5.2.1. CN1, LCD connector MSB24013P20HA by STM.

The module using a LVDS receiver embaded in ASIC. LVDS is a differential signal technology for LCD interface and a high-speed data transfer device.

Input Signal Interface		
Pin No.	Symbol	Description
1	VDD	Power Supply, 3.3V (typical)
2	VDD	Power Supply, 3.3V (typical)
3	GND	Ground
4	DPS	Reverse Scan Function [H: Enable; L/NC: Disable]
5	RxIN0-	LVDS receiver signal channel 0
6	RxIN0+	LVDS Differential Data Input (R0, R1, R2, R3, R4, R5, G0)
7	GND	Ground
8	RxIN1-	LVDS receiver signal channel 1
9	RxIN1+	LVDS Differential Data Input (G1, G2, G3, G4, G5, B0, B1)
10	GND	Ground
11	RxIN2-	LVDS receiver signal channel 2
12	RxIN2+	LVDS Differential Data Input (B2, B3, B4, B5, HS, VS, DE)
13	GND	Ground
14	RxCLKIN-	LVDS receiver signal clock
15	RxCLKIN+	
16	GND	Ground
17	RxIN3-	LVDS receiver signal channel 3, NC for 6 bit LVDS Input
18	RxIN3+	LVDS Differential Data Input (R6, R7, G6, G7, B6, B7, RSV)
19	RSV	Reserved for AUO internal test. Please treat it as NC.
20	SEL68	6/ 8bits LVDS data input selection [H: 8bits L/NC: 6bit]

Note 1: Input Signals shall be in low status when VDD is off.

Note 2: High stands for "3.3V", Low stands for "0V", NC stands for "No Connection".

Note 3: RSV stands for "Reserved".

Note 4: Pin 4, 17, 18, 19, 20 are NC (No Connection)

5.2.2. CN2. Back light control Interface.

H208K-P05N-02B by Entery.

Pin	Function	Description
1	Vcc	+12 V
2	GND	Ground.
3	ON/OFF	Back Light on/off control.
4	DIM	Dimming, brightness adjustment. PWM
5	NC	No Connection.

DIM PWM: 200~20K Hz, 5~100% duty cycle.