



# Specification

**CLAA080MB0ACW**  
**8.0" / 800x600 / TTL / LED**

**Version July 2008**

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## 1. OVERVIEW

CLAA080MB0ACW is 20.32 cm(8") color TFT-LCD(Thin Film Transistor Liquid Crystal Display)module composed of LCD panel,driver ICs,control circuit,and backlight.

The 8.0" screen produces a high resolution image that is composed of 800×600 pixel elements in a stripe arrangement.Display 262K colors by 6 Bit R.G.B signal input.Use 3.3 voltage (Vcc) to drive the power of LCD system, and 5 Voltage to drive the LED back light.

General specifications are summarized in the following table:

ITEM	SPECIFICATION
Panel Size	8 inch(panel diagonal)
Display Area (mm)	162(H)×121.5(W)
Number of Pixels	800(H) x 3(RGB) x 600(V)
Pixel Pitch (mm)	0.2025(H)×0.2025(V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white
Number of colors	262,144
Brightness(cd/m <sup>2</sup> )	250
NTSC ratio	50 %
Response Time (Tr+Tf)	25 ms
Outline Dimension(in mm)	183(W) x 141(H) x 6.3(D) (TYP)
Viewing Angle(BL on,CR≥10)	140 degree(H) · 120 degree(V)
Power consumption ( with BLU )	2.75 W (typ.)
BL unit	LED
Electrical Interface(data)	TTL
Viewing Direction	6 o'clock
Weight(g)	208 (typ.)
Surface Treatment	Anti-Glare · Hardness:3H

## 2. ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	Vcc	-0.3	4.0	V	
Signal Input Voltage	R0~ R5 / G0~G5 B0~B5 / CLK	-0.3	Vcc + 0.3	V	
Static Electricity	VESDc	-200	200	V	【Note2】
	VESDm	-15K	15K	V	
ICC Rush Current	IRUSH	-	1	A	【Note3】
Operation temperature	T <sub>op</sub>	-30	70	°C	【Note1】
Storage temperature	T <sub>stg</sub>	-40	80	°C	【Note1】

[Note]

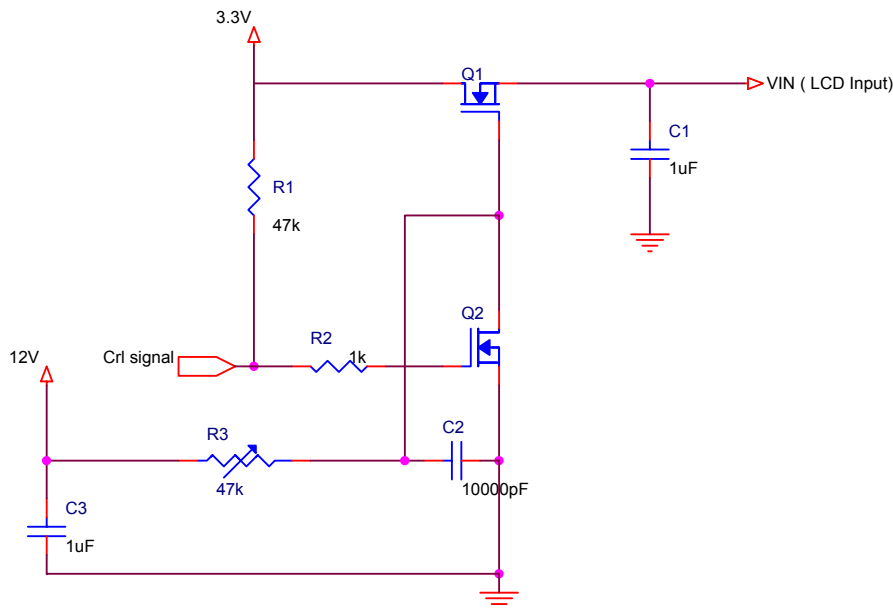
\*1) If users use the product out of the environment operation range (temperature and humidity), it will concern for visual quality.

\*2) Test Condition: IEC 61000-4-2 ,

VESDc : Contact discharge to input connector

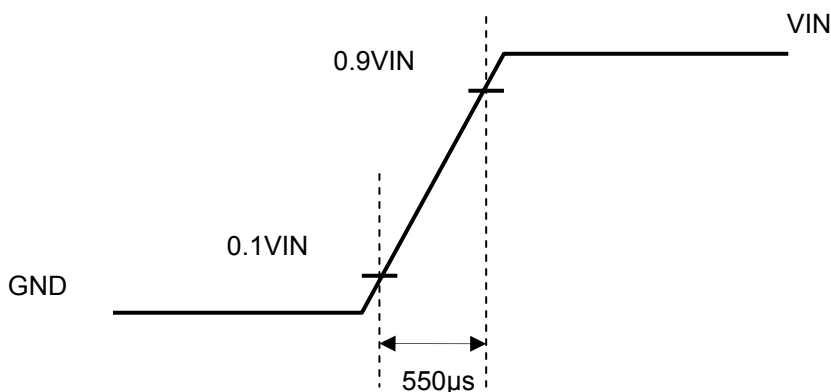
VESDm : Contact discharge to module

\*3) The Input pulse-current measurement system as below :



Control signal: High(+3.3V)→Low(GND)

Supply Voltage of rising time should be from R3 and C2 tune to 550 us.



## 3. ELECTRICAL CHARACTERISTICS

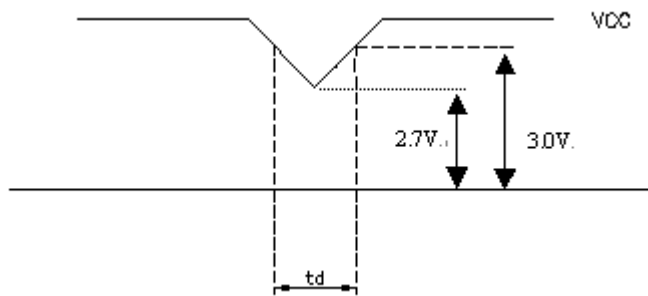
### 3.1 TFT LCD Power Voltage

Ta=25°C

Item	Symbol	Min.	Typ	Max.	Unit	Note
Power Supply Voltage For LCD	VCC	3.0	3.3	3.6	V	[Note1]
Power Supply Voltage For LED	V <sub>LED</sub>	4.5	5	5.5	V	
Logic Input Voltage	V <sub>IH</sub>	0.7VCC		VCC	V	
	V <sub>IL</sub>	0		0.3VCC	V	
ADJ Input Voltage	Input Voltage(high)	V <sub>IH</sub>	3.0	3.3	V	
	Input Voltage(low)	V <sub>IL</sub>	GND	0.3	V	

[Note1] VCC –dip condition:

- 1) When 2.7 V VCC < 3.0V · td 10ms.
- 2) VCC > 3.0V · VCC-dip condition should be same as VCC-turn-on condition.



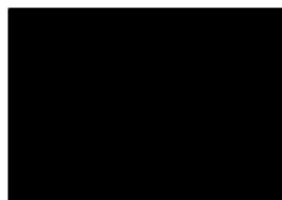
### 3.2 TFT-LCD current consumption

Item	Symbol	Min.	Typ	Max.	Unit	Note
LCD Power Current	ICC	--	150	200	mA	【Note1】
LED Power Current	I <sub>LED</sub>	--	450	550	mA	【Note2】

[Note1]

Typical: Under 64 gray pattern

Maximum: Under black pattern

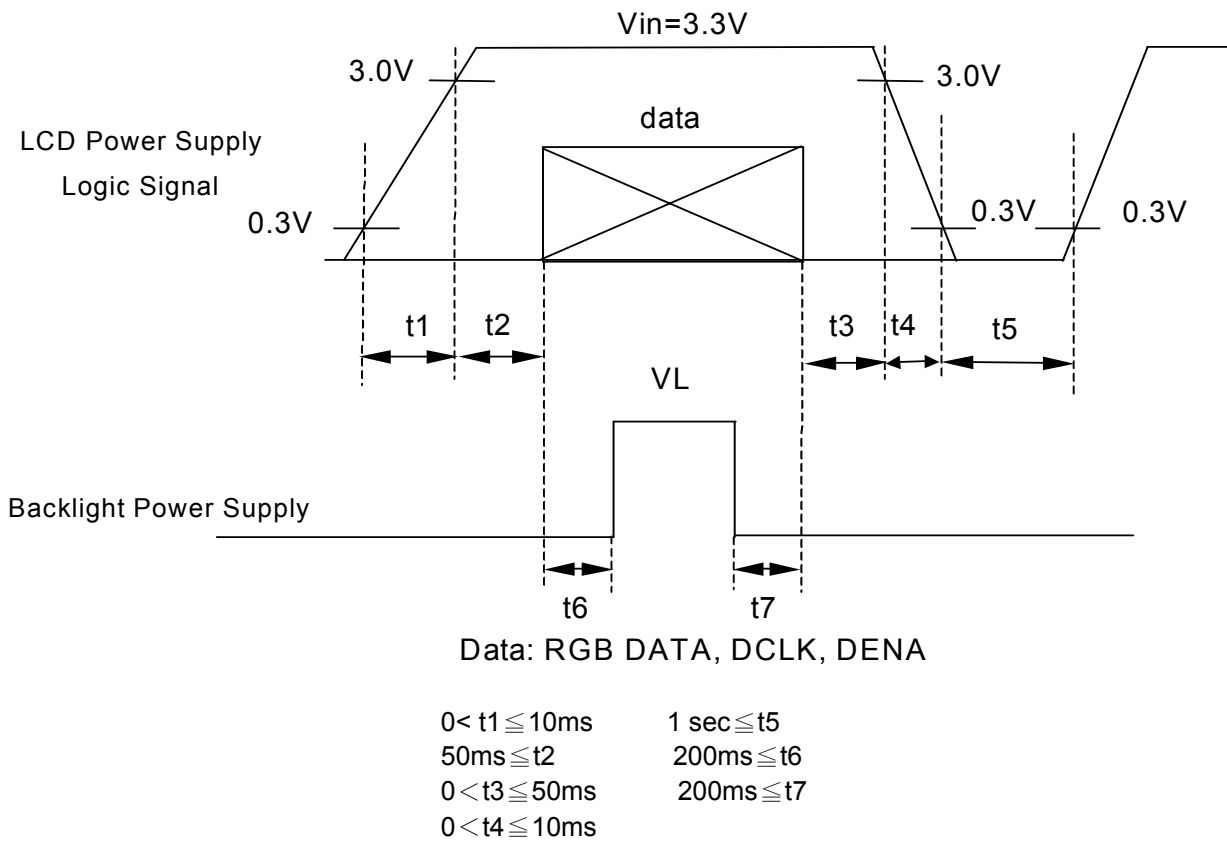


·· (a)64·Gray·Pattern······ (b)Black·Pattern····

[Note2] Typical: When V<sub>LED</sub> is 5V

Maximum: When V<sub>LED</sub> is 4.5V

## 3.3 Power 、 Signal sequence



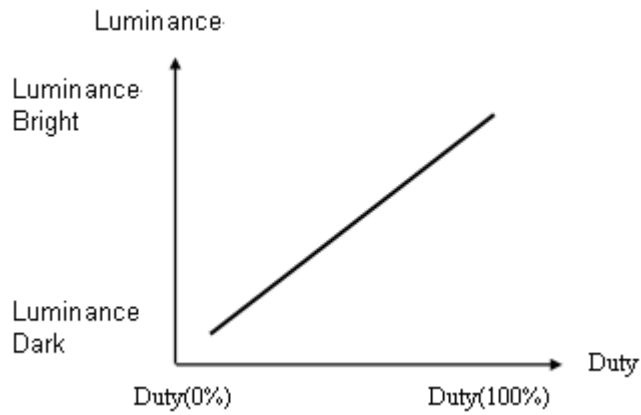
## 4. INTERFACE CONNECTION

CN1 : Connector type : FR03-S40D-2-E3000

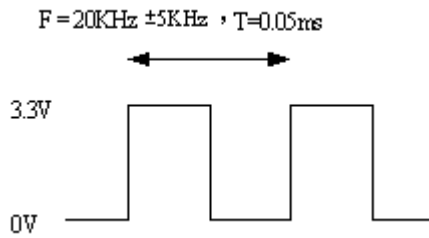
Pin NO.	SYMBOL	DESCRIPTION
1	$V_{SS}$	Power Ground
2	$V_{SS}$	Power Ground
3	ADJ	LED adjust
4	$V_{LED}$	Power Supply for LED ( $V_{LED} = 5.0 \pm 0.5$ )
5	$V_{LED}$	Power Supply for LED ( $V_{LED} = 5.0 \pm 0.5$ )
6	$V_{LED}$	Power Supply for LED ( $V_{LED} = 5.0 \pm 0.5$ )
7	$V_{CC}$	Power Supply for LCD
8	$V_{CC}$	Power Supply for LCD
9	DE	Data Enable
10	$V_{SS}$	Power Ground
11	$V_{SS}$	Power Ground
12	$V_{SS}$	Power Ground
13	B5	Blue Data (MSB)
14	B4	Blue Data
15	B3	Blue Data
16	$V_{SS}$	Power Ground
17	B2	Blue Data
18	B1	Blue Data
19	B0	Blue Data (LSB)
20	$V_{SS}$	Power Ground
21	G5	Green Data (MSB)
22	G4	Green Data
23	G3	Green Data
24	$V_{SS}$	Power Ground
25	G2	Green Data
26	G1	Green Data
27	G0	Green Data (LSB)
28	$V_{SS}$	Power Ground
29	R5	Red Data (MSB)
30	R4	Red Data
31	R3	Red Data
32	$V_{SS}$	Power Ground
33	R2	Red Data
34	R1	Red Data
35	R0	Red Data (LSB)
36	$V_{SS}$	Power Ground
37	NC	None connect
38	DCLK	Clock
39	NC	None connect
40	NC	None connect

Remarks:

1) ADJ adjust brightness to control Pin , Pulse duty the bigger the brighter.



2) ADJ signal = 0~3.3V , operation frequency : 20KHZ±5KHZ



3)  $V_{SS}$  Pin must ground contact , can not be floating.



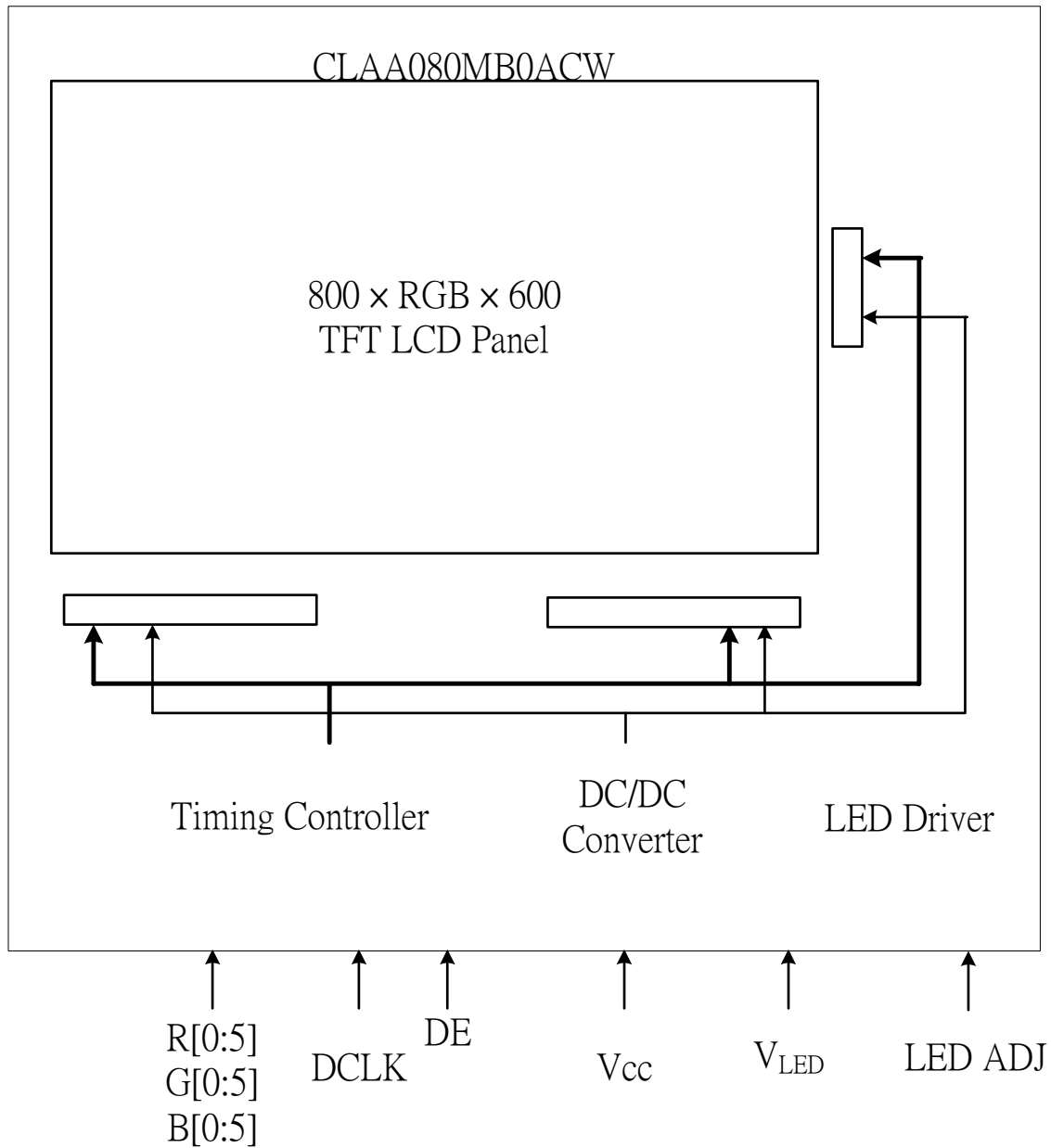
## 5.3 Color Data Assignment

COLOR	INPUT DATA	R DATA						G DATA						B DATA					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
		MSB					LSB	MSB					LSB	MSB					LSB
	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
BASIC	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
COLOR	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CYAN	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	MAGENTA	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	RED(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
RED																			
	RED(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	GREEN(2)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
GREEN																			
	GREEN(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
BLUE																			
	BLUE(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

[Note]

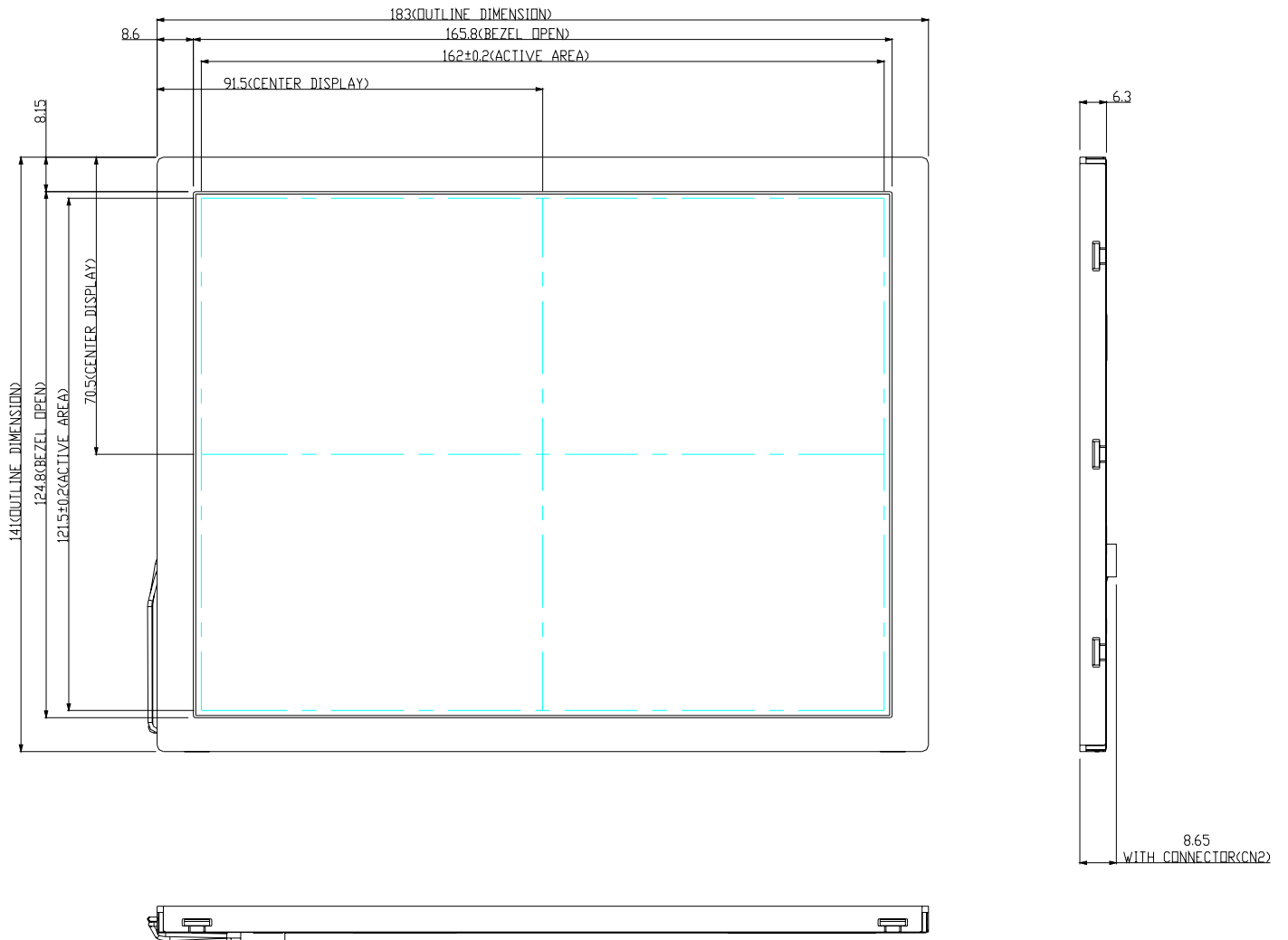
- (1) Definition of Gray Scale  
color(n) : n is series of Gray Scale  
The more n value is, the bright Gray Scale.
- (2)Data:1-High,0-Low

## 6. BLOCK DIAGRAM

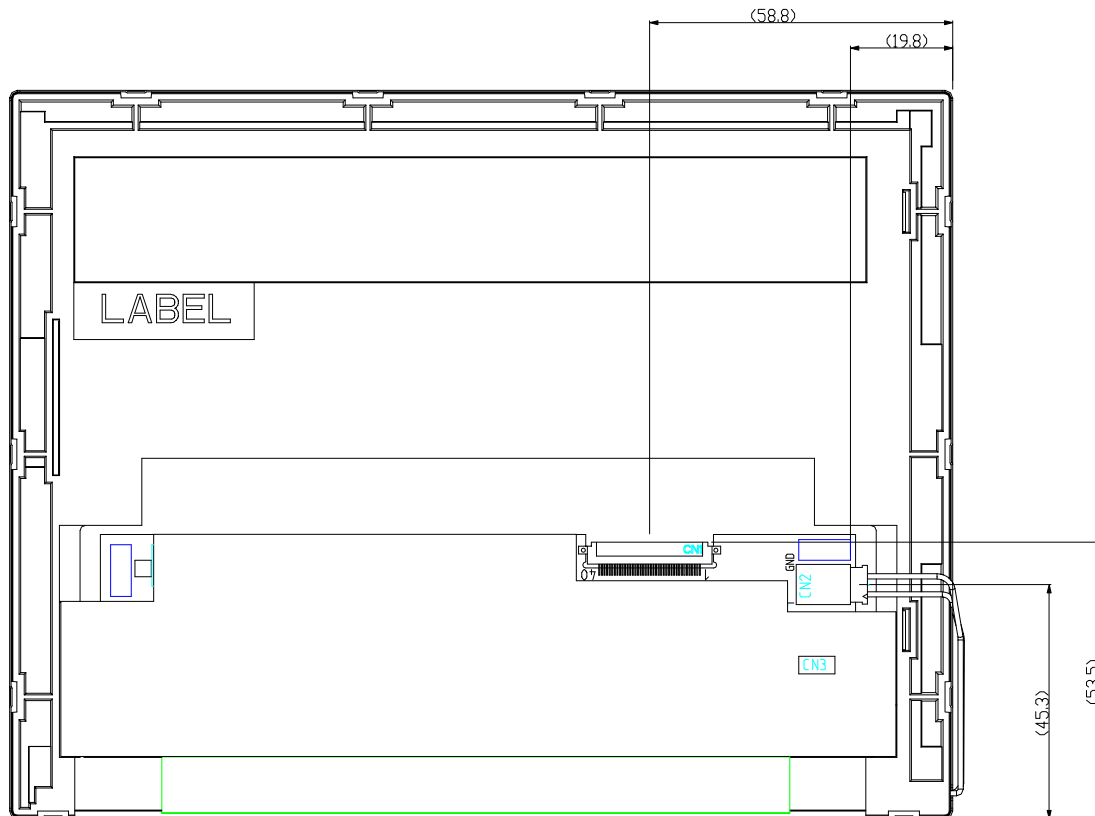


## 7. MECHANICAL DIMENSION

### 7.1 Front Side



## 7.2 Rear Side



**NOTE:**

1. GENERAL TOLERANCE:  $\pm 0.3\text{mm}$
2. 6 O'CLOCK DIRECTION IS THE OPTIMUM VIEWING ANGLE.
3. CONNECTOR TYPE: STARCONN 089N40-000R00-G2 or CONN-TEK FR03-S40D-2-E3000
4. STIFFENER LENGTH OF FPC MUST BE 6.0mm MAX.

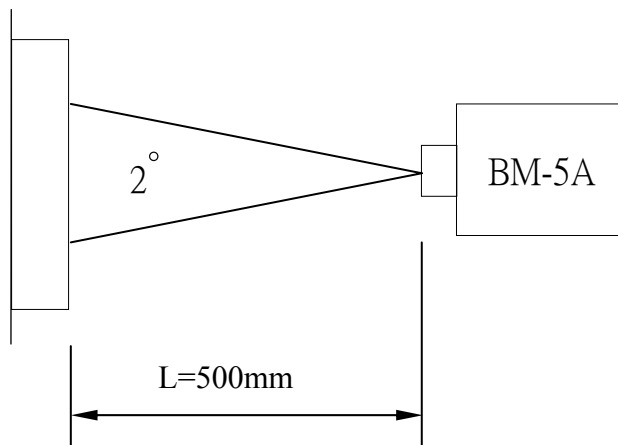
## 8. OPTICAL CHARACTERISTICS

Ta=25

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	Remarks
Contrast	CR	$\theta = \phi = 0^\circ$ Point-5	450	500	--	--	*1)
Luminance	Luminance (CEN)	$\theta = \phi = 0^\circ$	200	250	--	cd/m <sup>2</sup>	*2)
	Luminance Uniformity	$\theta = \phi = 0^\circ$	70	80	--	%	*2)
Color saturation			--	50		%	
Response Time	tr+tf	$\theta = \phi = 0^\circ$	--	25	30	ms	*3) *5)
View angle	Horizontal	CR $\geq$ 10 Point-5	130	140	--	°	*4)
	Vertical		110	120	--	°	*4)
Color Coordinate	White	Wx Wy	0.273 0.289	0.313 0.329	0.353 0.369	--	*1)*2)*3)
	Red	Rx Ry	0.577 0.301	0.607 0.331	0.637 0.361	--	
	Green	Gx Gy	0.295 0.565	0.325 0.595	0.355 0.625	--	
	Blue	Bx By	0.114 0.065	0.147 0.095	0.177 0.125	--	

Remarks :

\*1)Measure condition : 25 ±2 , 60±10%RH , under10 Lux in the dark room.BM-5A (TOPCON) , viewing angle2° , VCC=3.3V , V<sub>LED</sub> =5V.



\*2) Definition of contrast ratio :

Contrast Ratio (CR)= (White) Luminance of ON ÷ (Black) Luminance of OFF

\*3) Definition of luminance :

Measure white luminance on the point 5 as figure8-1

Definition of Luminance Uniformity:

Measure white luminance on the point1~9 as figure8-1

$$L = [L(\text{Min})/L(\text{Max})] \times 100\%$$

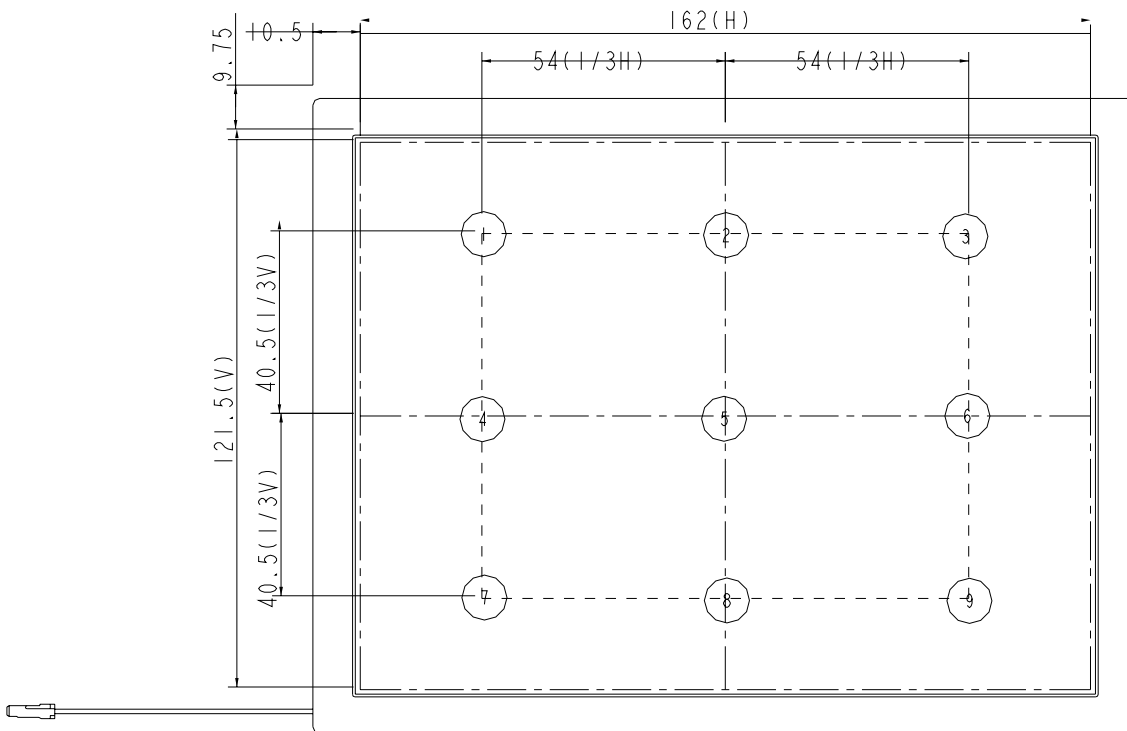


Fig8-1 Measuring point

\*4) Definition of Viewing Angle( $\theta, \psi$ ), refer to Fig8-2 as below :

These items are measured by EZ-CONTRAST(ELDIM) in the dark room. (no ambient light).

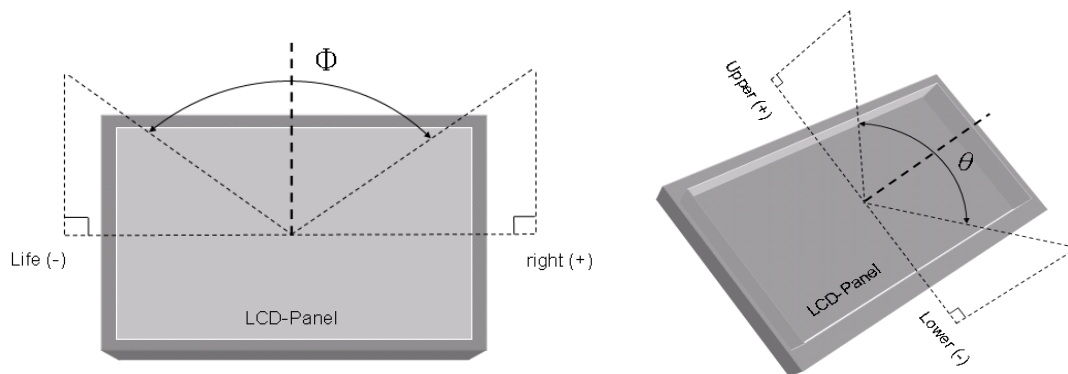


Fig8-2 Definition of Viewing Angle

\*5) Definition of Response Time.(White-Black)

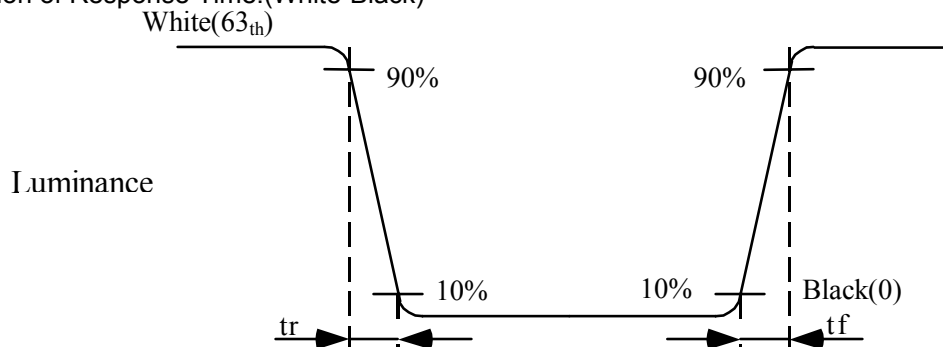


Fig8-3 Definition of Response Time(White-Black)

## 9. RELIABILITY TEST

### 9.1. Temperature and humidity

TEST ITEMS	CONDITIONS	REMARK
High Temperature Operation	70°C , 240Hrs	
High Temperature Storage	80°C , 240Hrs	
High Temperature High Humidity Operation	60°C , 90%RH , 240Hrs	No condensation
Low Temperature Operation	-30°C , 240Hrs	
Low Temperature Storage	-40°C , 240Hrs	
Thermal Shock	-30°C ( 0.5Hr ) ~ 80°C(0.5Hr) 200 cycles	

### 9.2. Shock and Vibration

TEST ITEMS	CONDITIONS
Shock (Non-operation)	<ul style="list-style-type: none"> <li>● Shock level:980m/s<sup>2</sup>(equal to 100G)</li> <li>● Waveform:half sinusoidal wave,6ms.</li> <li>● Number of shocks:one shock input in each direction of three mutually perpendicular axes for a total of three shock inputs.</li> </ul>
Vibration (Non-operation)	<ul style="list-style-type: none"> <li>● Frequency range:8~33.3Hz</li> <li>● Stroke:1.3mm</li> <li>● Vibration:sinusoidal wave,perpendicularaxis(both x,z axis:2Hrs,y axis:4Hrs).</li> <li>● Sweep:2.9G,33.3Hz-400Hz</li> <li>● Cycle:15min</li> </ul>

### 9.3.ESD experiments

ITEM	TESTING CONDITIONS	REMARK
E S D	150pF , 330Ω , ±8KV&±15KV air & contact test	*1)
	200pF , 0Ω , ±250V contact test	*2)

Remarks :

\*1)LCD glass and metal bezel ◦

\*2)IF connector pins ◦

### 9.4 MTBF : with LED B/L:20000Hrs lifetimes

### 9.5. Judgment standard

The Judgment of the above test should be made as follow:

Pass:Normal display image with no obvious non-uniformity and no line defect.Partial transformation of the module parts should be ignored.

Fail:No display image,obvious non-uniformity,or line defect.



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