

# AU OPTRONICS CORPORATION

## Product Specification

### 15.0" XGA Color TFT-LCD Module

**Model Name: B150XG02 V4**

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## Product Specification

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( ) Preliminary Specifications  
(V) Final Specifications

**Note:** This Specification is subject to change without notice.

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## Record of Revision

Version and Date	Page	Old description	New Description	Remark
0.1 2005/05/23	All	First Edition for Customer		
0.2 2005/06/9	10		Add Note 5 and Note 6	
0.3 2005/07/19	16		Add description in 5.1.2	Final



## 1. Handling Precautions

- 1) Since front polarizer is easily damaged, pay attention not to scratch it.
- 2) Be sure to turn off power supply when inserting or disconnecting from input connector.
- 3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
- 4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
- 5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- 6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
- 7) Do not open nor modify the Module Assembly.
- 8) Do not press the reflector sheet at the back of the module to any directions.
- 9) In case if a Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the CCFL Reflector edge. Instead, press at the far ends of the CFL Reflector edge softly. Otherwise the TFT Module may be damaged.
- 10) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
- 11) After installation of the TFT Module into an enclosure (Notebook PC Bezel, for example), do not twist nor bend the TFT Module even momentarily. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
- 12) Cold cathode fluorescent lamp in LCD contains a small amount of mercury. Please follow local ordinances or regulations for disposal.
- 13) Small amount of materials having no flammability grade is used in the LCD module. The LCD module should be supplied by power complied with requirements of Limited Power Source(, IEC60950 or UL1950), or be applied exemption.
- 14) The LCD module is designed so that the CFL in it is supplied by Limited Current Circuit(IEC60950 or UL1950). Do not connect the CFL in Hazardous Voltage Circuit.

## 2. General Description

B150XG02 V4 is a Color Active Matrix Liquid Crystal Display composed of a TFT LCD panel, a driver circuit, and backlight system. The screen format is intended to support the XGA (1024(H)

x 768(V)) screen and 262k colors (RGB 6-bits data driver). All input signals are LVDS interface compatible. Inverter card of backlight is not included.

B150XG02 V4 is designed for a display unit of notebook style personal computer and industrial machine.

## 2.1 Display Characteristics

The following items are characteristics summary on the table under 25 condition:

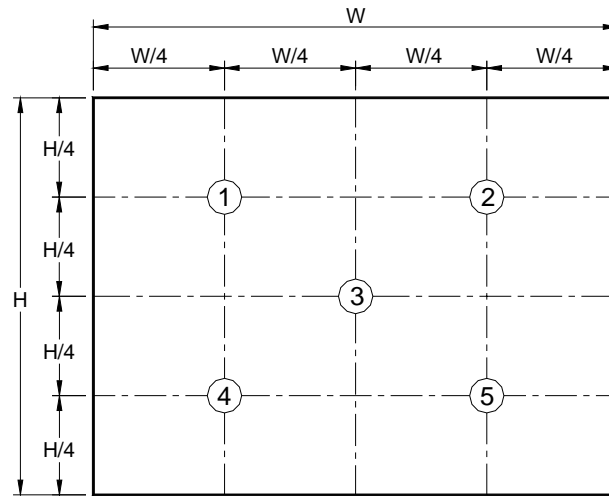
Items	Unit	Specifications
Screen Diagonal	[mm]	381 (15.0")
Active Area	[mm]	304.1 X 228.1
Pixels H x V		1024x3(RGB) x 768
Pixel Pitch	[mm]	0.297X0.297
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		Normally White
Typical White Luminance (ICFL=6.0mA)	[cd/m <sup>2</sup> ]	170 typ. (5 points average) 150 min. (5 points average) (Note1)
Luminance Uniformity		1.25 max. (5 points)
Contrast Ratio		300 typ.
Optical Rise Time/Fall Time	[msec]	16/9 typ.
Nominal Input Voltage VDD	[Volt]	+3.3 typ.
Typical Power Consumption	[Watt]	5.6W max.
Weight	[Grams]	585g typ.
Physical Size	[mm]	317.3(typ.)x 242.0(typ.) x 6.5(max.)
Electrical Interface		1 channel LVDS
Surface Treatment		Anti-glare, Harness 3H, Haze 25%, Reflectance 4.3%
Support Color		Native 262K colors ( RGB 6-bit data driver )
Temperature Range Operating Storage (Non-Operating)	[°C] [°C]	0 to +50 -20 to +60
RoHS Compliance		RoHS Compliance

## 2.2 Optical Characteristics

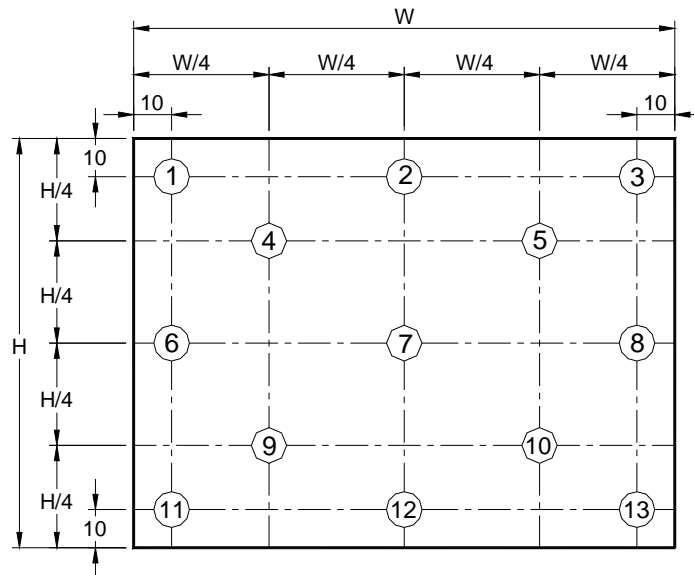
The optical characteristics are measured under stable conditions at 25 (Room Temperature):

Item	Unit	Conditions	Min.	Typ.	Max.	Note
White Luminance CCFL 6.0mA	[cd/m2]	5 points average	150	170	-	1,2,3
Viewing Angle	[degree]	Horizontal (Right)	-	40	-	2,7
	[degree]	CR = 10 (Left)	-	40	-	
	[degree]	Vertical (Upper)	-	10	-	
	[degree]	CR = 10 (Lower)	-	30	-	
Uniformity		5 Points			1.25	1
Uniformity		13 Points			1.50	
CR: Contrast Ratio			250	300	-	6
Cross talk	%				4	4
Response Time	[msec]	Rising	-	16	24	5
	[msec]	Falling	-	9	11	
	[msec]	Raising + Falling		25	35	
Color / Chromaticity Coordinates (CIE 1931)		Red x	0.560	0.580	0.600	2,7
		Red y	0.320	0.340	0.360	
		Green x	0.290	0.310	0.330	
		Green y	0.530	0.550	0.570	
		Blue x	0.135	0.155	0.175	
		Blue y	0.135	0.155	0.175	
		White x	0.293	0.313	0.333	
		White y	0.309	0.329	0.349	

Note 1: 5 points position (Display area : 304.5mm x 228.375mm)



Note 2: 13 points position



Note 3: The luminance uniformity of 5 and 13 points is defined by dividing the maximum luminance values by the minimum test point luminance

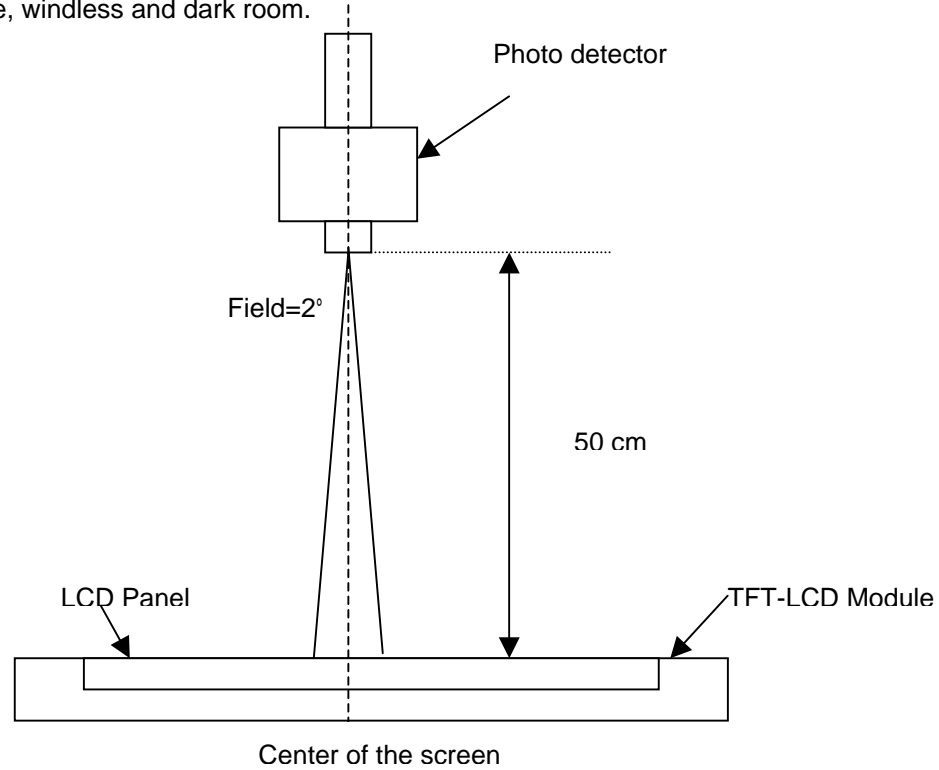
$$W_5 = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

$$W_{13} = \frac{\text{Maximum Brightness of thirteen points}}{\text{Minimum Brightness of thirteen points}}$$



#### Note 4: Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.



#### Note 5 : Definition of Average Luminance of White ( $Y_L$ ):

Measure the luminance of gray level 63 at 5 points ,  $Y_L = [L(1) + L(2) + L(3) + L(4) + L(5)] / 5$

$L(x)$  is corresponding to the luminance of the point X at Figure in Note (1).

#### Note 6 : Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

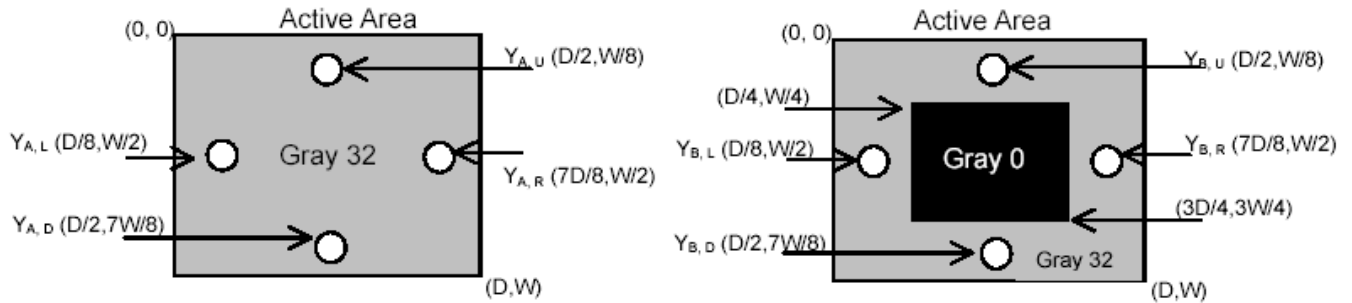
Note 7 : Definition of Cross Talk (CT)

$$CT = |Y_B - Y_A| / Y_A \times 100 (\%)$$

Where

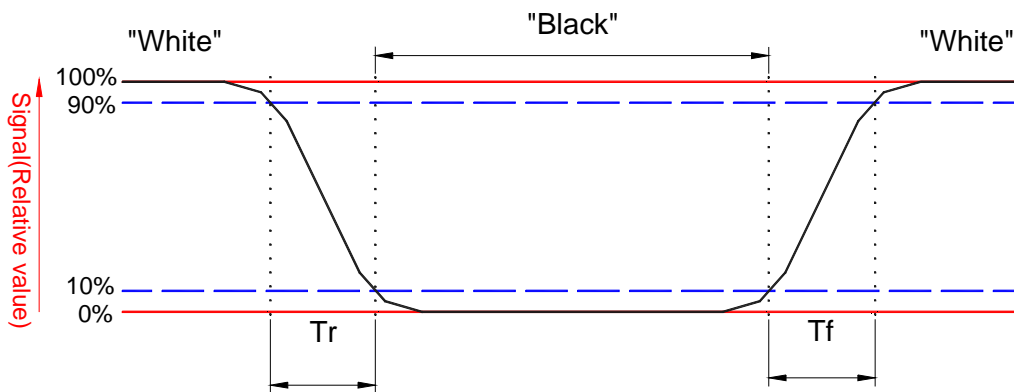
$Y_A$  = Luminance of measured location without gray level 0 pattern (cd/m<sup>2</sup>)

$Y_B$  = Luminance of measured location with gray level 0 pattern (cd/m<sup>2</sup>)



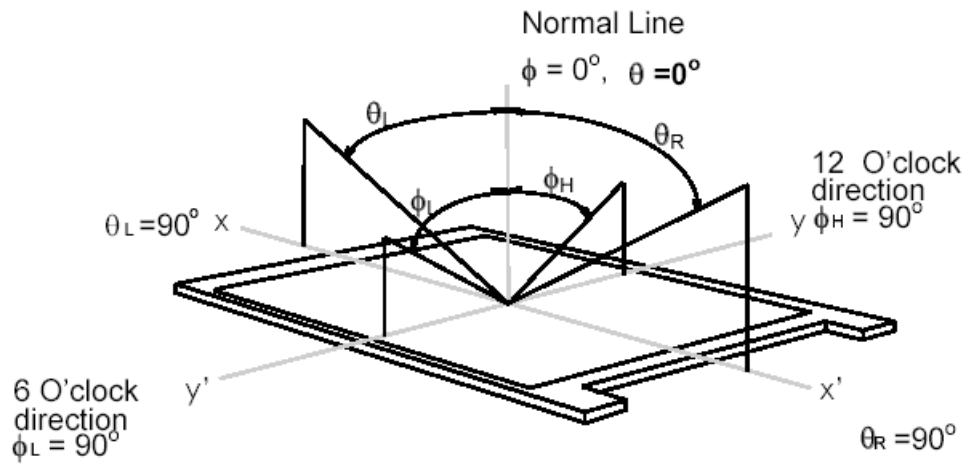
Note 8: Definition of response time:

The output signals of BM-7 or equivalent are measured when the input signals are changed from "Black" to "White" (falling time) and from "White" to "Black" (rising time), respectively. The response time interval between the 10% and 90% of amplitudes. Refer to figure as below.



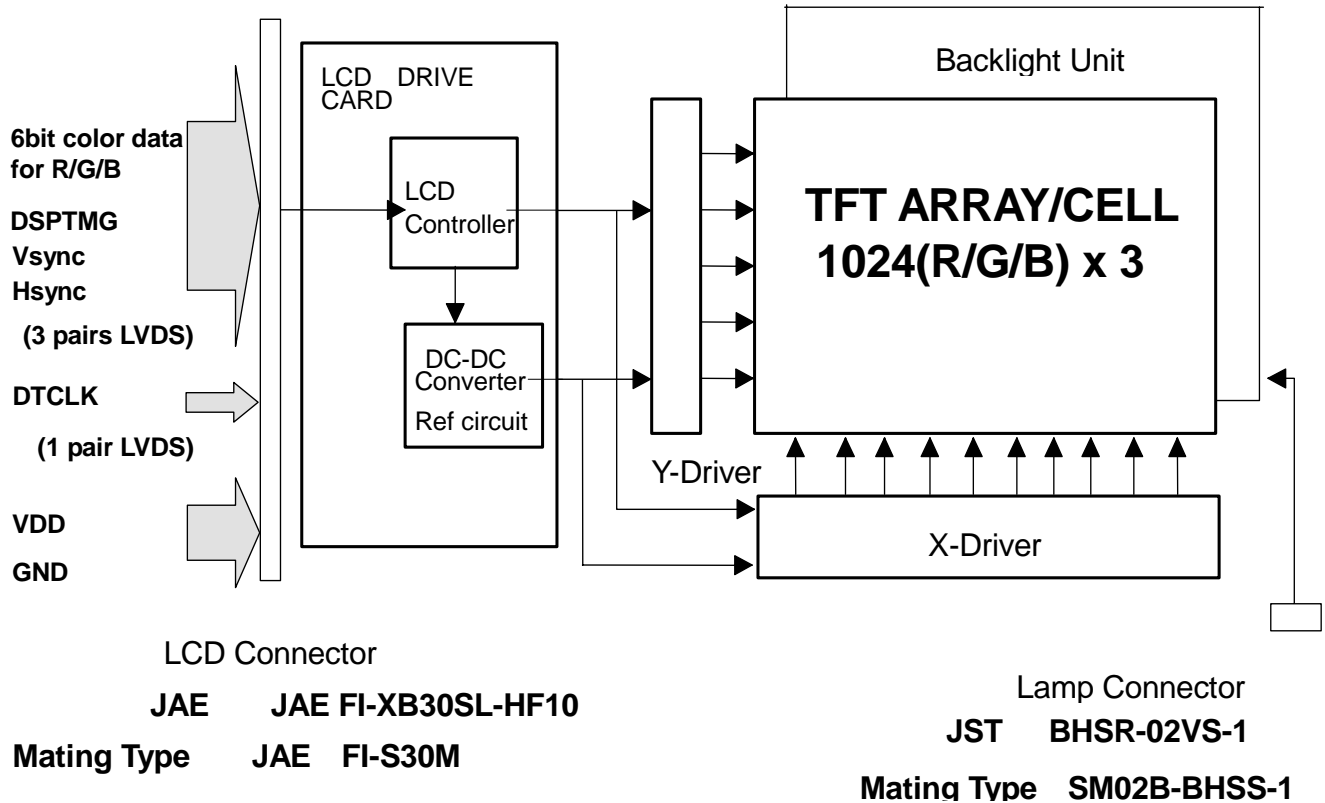
## Note 9. Definition of viewing angle

Viewing angle is the measurement of contrast ratio 10, at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° ( ) horizontal left and right and 90° ( ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



## 3. Functional Block Diagram

The following diagram shows the functional block of the 15.0 inches wide Color TFT/LCD Module:



## 4. Absolute Maximum Ratings

Absolute maximum ratings of the module is as following:

### 4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive	Vin	-0.3	+4.0	[Volt]	Note 1,2

### 4.2 Absolute Ratings of Backlight Unit

Item	Symbol	Min	Max	Unit	Conditions
CCFL Current	ICFL	-	7.0	[mA] rms	Note 1,2

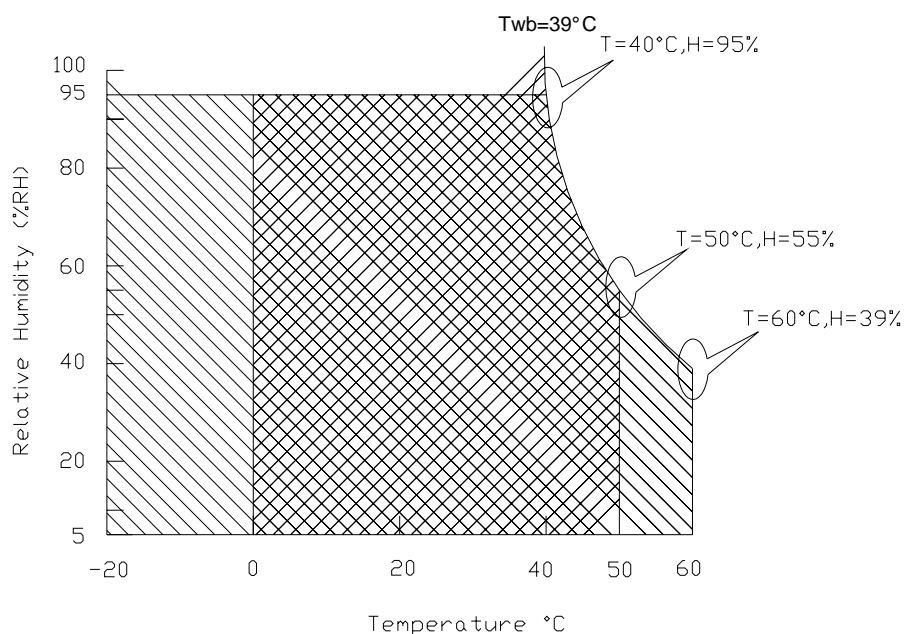
### 4.3 Absolute Ratings of Environment

Item	Symbol	Min	Max	Unit	Conditions
Operating Temperature	TOP	0	+50	[°C]	Note 3
Operation Humidity	HOP	5	95	[%RH]	Note 3
Storage Temperature	TST	-20	+60	[°C]	Note 3
Storage Humidity	HST	5	95	[%RH]	Note 3

Note 1: With in Ta (25 )

Note 2: Permanent damage to the device may occur if exceed maximum values

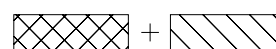
Note 3: For quality performance, please refer to AUO IIS(Incoming Inspection Standard).



Operating Range



Storage Range



## 5. Electrical characteristics

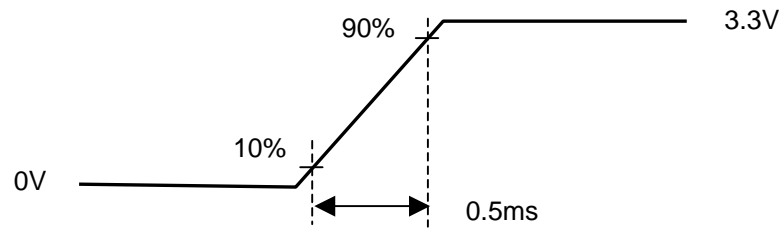
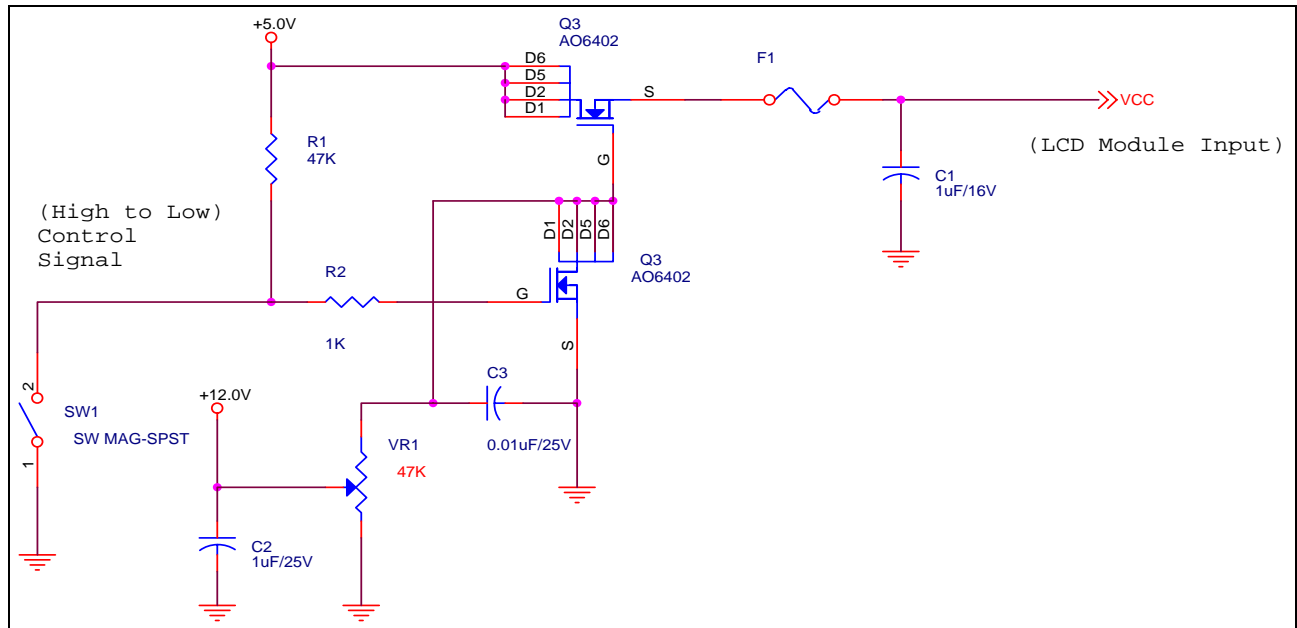
### 5.1 TFT LCD Module

#### 5.1.1 Power Specification

Input power specifications are as follows;

Symble	Parameter	Min	Typ	Max	Units	Condition
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	Load Capacitance 20uF
PDD	VDD Power		1.1	1.4	[Watt]	Black Pattern
IDD	IDD Current		380	420	mA	Black Pattern
IRush	Inrush Current			TBD	mA	
VDDrp	Allowable Logic/LCD Drive Ripple Voltage			100	[mV] p-p	

Note 1 : Measurement conditions:



**Vin rising time**

## 5.1.2 Signal Electrical Characteristics

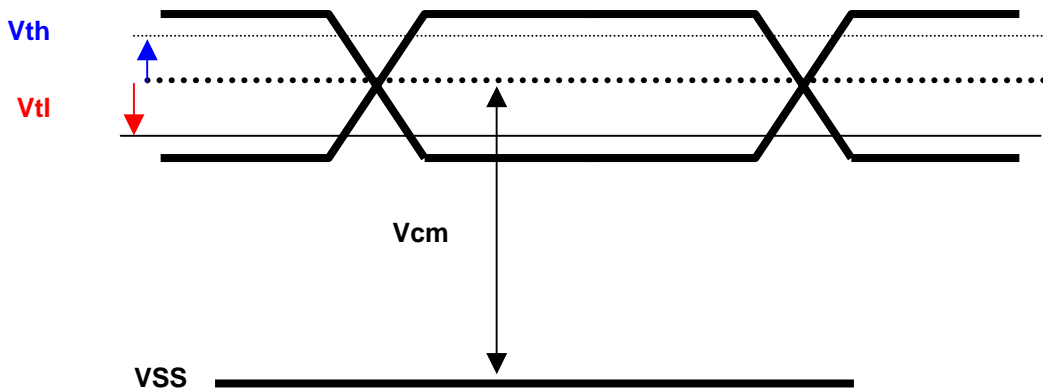
Input signals shall be low or Hi-Z state when VDD is off.

It is recommended to refer the specifications of THC63LVDF84A(Thine Electronics Inc.) in detail.

Signal electrical characteristics are as follows;

Parameter	Condition	Min	Max	Unit
Vth	Differential Input High Threshold ( $V_{cm}=+1.2V$ )		100	[mV]
Vtl	Differential Input Low Threshold ( $V_{cm}=+1.2V$ )	-100		[mV]
Vcm	Differential Input Common Mode Voltage	1.125	1.375	[V]

Note: LVDS Signal Waveform





## 5.2 Backlight Unit

Parameter guideline for CCFL Inverter

Parameter	Min-	Typ	Max-	Units	Condition
White Luminance 5 points average	-	170	-	[cd/m <sup>2</sup> ]	(Ta=25 )
CCFL current(ICFL)	-	6.0	7.0	[mA] rms	(Ta=25 ) Note 2
CCFL Frequency(FCFL)	50	-	60	[KHz]	(Ta=25 ) Note 3,4
CCFL Ignition Voltage(Vs)	1560	-	-	[Volt] rms	(Ta= 0 ) Note 5
CCFL Voltage (Reference) (VCFL)	585	650	715	[Volt] rms	(Ta=25 ) Note 6
CCFL Power consumption (PCFL)	-	3.9	5	[Watt]	(Ta=25 ) Note 6

Note 1: Typ are AUO recommended Design Points.

\*1 All of characteristics listed are measured under the condition using the AUO Test inverter.

\*2 In case of using an inverter other than listed, it is recommended to check the inverter carefully. Sometimes, interfering noise stripes appear on the screen, and substandard luminance or flicker at low power may happen.

\*3 In designing an inverter, it is suggested to check safety circuit very carefully. Impedance of CFL, for instance, becomes more than 1 [M ohm] when CFL is damaged.

\*4 Generally, CFL has some amount of delay time after applying kick-off voltage. It is recommended to keep on applying kick-off voltage for 1 [Sec] until discharge.

\*5 CFL discharge frequency must be carefully chosen so as not to produce interfering noise stripes on the screen.

\*6 Reducing CFL current increases CFL discharge voltage and generally increases CFL discharge frequency. So all the parameters of an inverter should be carefully designed so as not to produce too much leakage current from high-voltage output of the inverter.

Note 2: It should be employed the inverter which has "Duty Dimming", if ICFL is less than 4mA.

Note 3: CFL discharge frequency should be carefully determined to avoid interference between inverter and TFT LCD.

Note 4: The frequency range will not affect to lamp life and reliability characteristics.

Note 5: CFL inverter should be able to give out a power that has a generating capacity of over 1,560 voltage.  
Lamp unit needs 1,560 voltage minimum for ignition.

Note 6: Calculator value for reference ( $ICFL \times VCFL = PCFL$ )

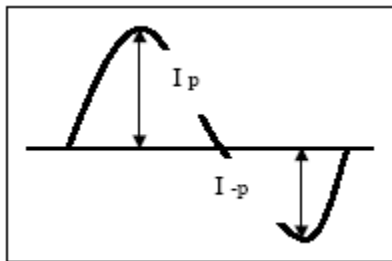
Note 7: Requirements for a system inverter design, which is intended to have a better display performance, a better power efficiency and a more reliable lamp, are following.

It shall help increase the lamp lifetime and reduce leakage current.

a. The asymmetry rate of the inverter waveform should be less than 10%.

b. The distortion rate of the waveform should be within  $2 \pm 10\%$ .

\* Inverter output waveform had better be more similar to ideal sine wave.



\* Asymmetry rate:

$$\frac{|I_p - I_{-p}|}{I_{rms}} \times 100\%$$

\* Distortion rate

$$I_p \text{ (or } I_{-p}) / I_{rms}$$

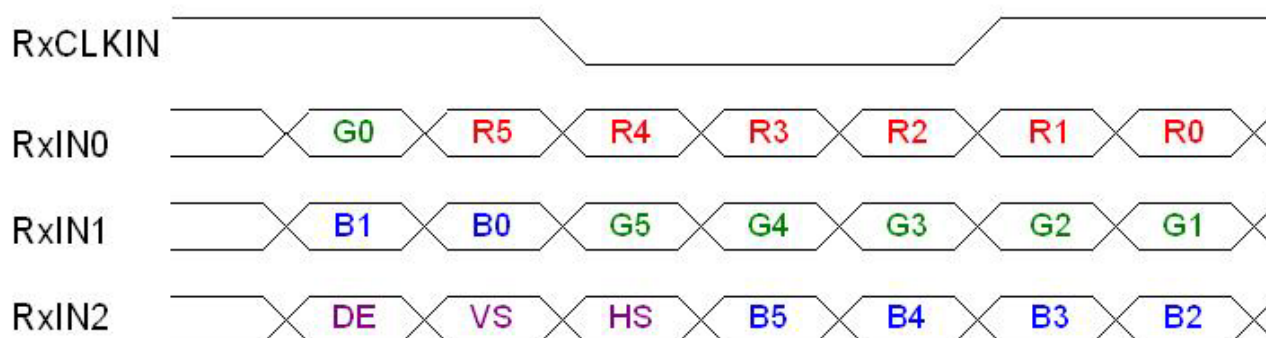
## 6. Signal Characteristic

## 6.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.

[illegible]

## 6.2 The input data format



Signal Name	Description	
RED5 RED4 RED3 RED2 RED1 RED0	Red Data 5 (MSB) Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0 (LSB)	Red-pixel Data Each red pixel's brightness data consists of these 6 bits pixel data.
	Red-pixel Data	
GREEN 5 GREEN 4 GREEN 3 GREEN 2 GREEN 1 GREEN 0	Green Data 5 (MSB) Green Data 4 Green Data 3 Green Data 2 Green Data 1 Green Data 0 (LSB)	Green-pixel Data Each green pixel's brightness data consists of these 6 bits pixel data.
	Green-pixel Data	
BLUE 5 BLUE 4 BLUE 3 BLUE 2 BLUE 1 BLUE 0	Blue Data 5 (MSB) Blue Data 4 Blue Data 3 Blue Data 2 Blue Data 1 Blue Data 0 (LSB)	Blue-pixel Data Each blue pixel's brightness data consists of these 6 bits pixel data.
	Blue-pixel Data	
DTCLK	Data Clock	The typical frequency is 68.9 MHZ.. The signal is used to strobe the pixel data and DSPTMG signals. All pixel data shall be valid at the falling edge when the DSPTMG signal is high.
DSPTMG	Display Timing	This signal is strobed at the falling edge of -DTCLK. When the signal is high, the pixel data shall be valid to be displayed.
VSNC	Vertical Sync	The signal is synchronized to -DTCLK .
HSNC	Horizontal Sync	The signal is synchronized to -DTCLK .

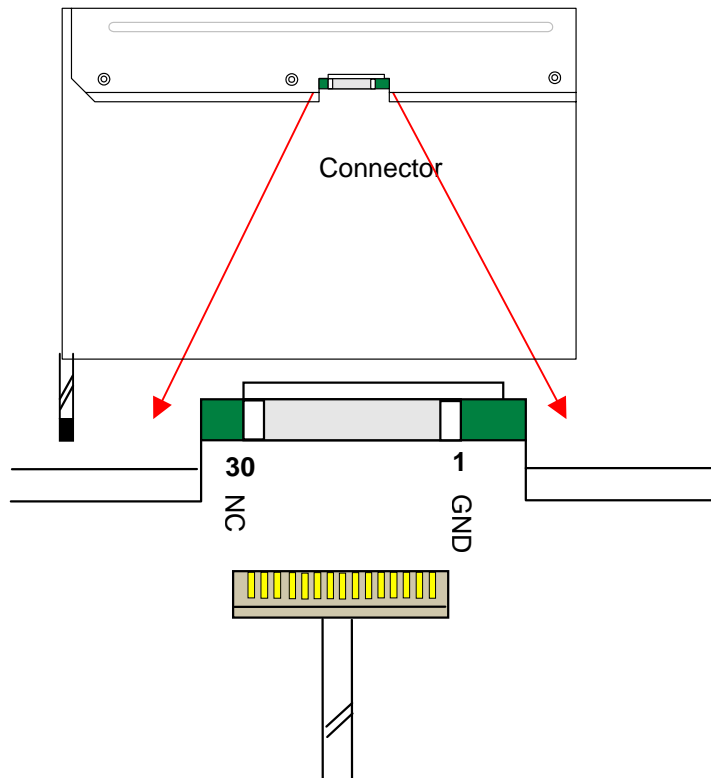
Note: Output signals from any system shall be low or Hi-Z state when VDD is off.

## 6.3 Signal Description

The LVDS receiver equipped in this LCD module is compatible with SN75LVDS86 standard. LVDS is a differential signal technology for LCD interface and high speed data transfer device. Transmitter shall be SN75LVDS84 (negative edge sampling) or compatible.

PIN#	Signal Name	Description
1	GND	Ground
2	VDD	+3.3V Power Supply
3	VDD	+3.3V Power Supply
4	V <sub>EDID</sub>	+3.3V EDID Power
5	NC	No Connection (For AUO test)
6	CLK <sub>EDID</sub>	EDID Clock Input
7	DATA <sub>EDID</sub>	EDID Data Input
8	RxIN0-	LVDS differential data input(Red0-Red5, Green0)
9	RxIN0+	LVDS differential data input(Red0-Red5, Green0)
10	GND	Ground
11	RxIN1-	LVDS differential data input(Green1-Green5, Blue0-Blue1)
12	RxIN1+	LVDS differential data input(Green1-Green5, Blue0-Blue1)
13	GND	Ground
14	RxIN2-	LVDS differential data input(Blue2-Blue5, Hsync, Vsync, DSPTMG)
15	RxIN2+	LVDS differential data input(Blue2-Blue5, Hsync, Vsync, DSPTMG)
16	GND	Ground
17	RxCLKIN-	LVDS differential clock input
18	RxCLKIN+	LVDS differential clock input
19	GND	Ground
20	GND	Ground
21	NC	No Connection (For AUO test)
22	NC	No Connection (For AUO test)
23	NC	No Connection (For AUO test)
24	NC	No Connection (For AUO test)
25	NC	No Connection (For AUO test)
26	NC	No Connection (For AUO test)
27	NC	No Connection (For AUO test)
28	NC	No Connection (For AUO test)
29	NC	No Connection (For AUO test)
30	NC	No Connection (For AUO test)

## Product Specification



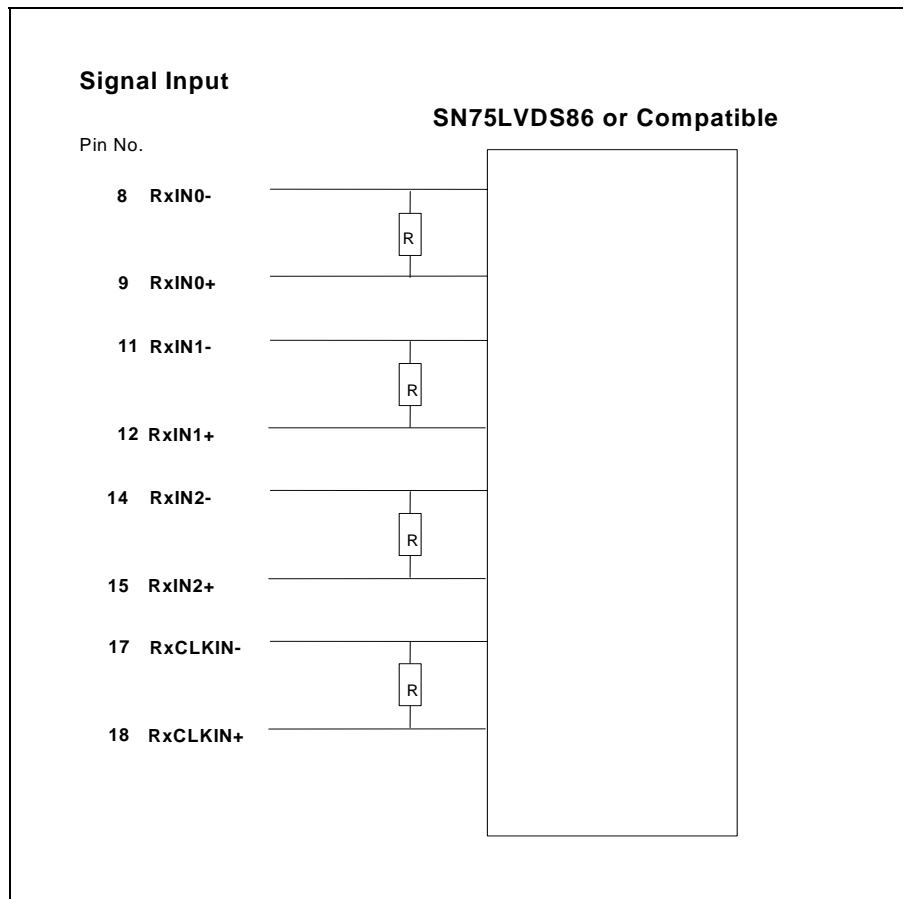
Note1: Start from right side

Note2: Please follow PSWG.

Note3: Input signals shall be low or Hi-Z state when VDD is off.

Internal circuit of LVDS inputs are as following.

The module uses a 100ohm resistor between positive and negative data lines of each receiver input



## 6.4 Interface Timing

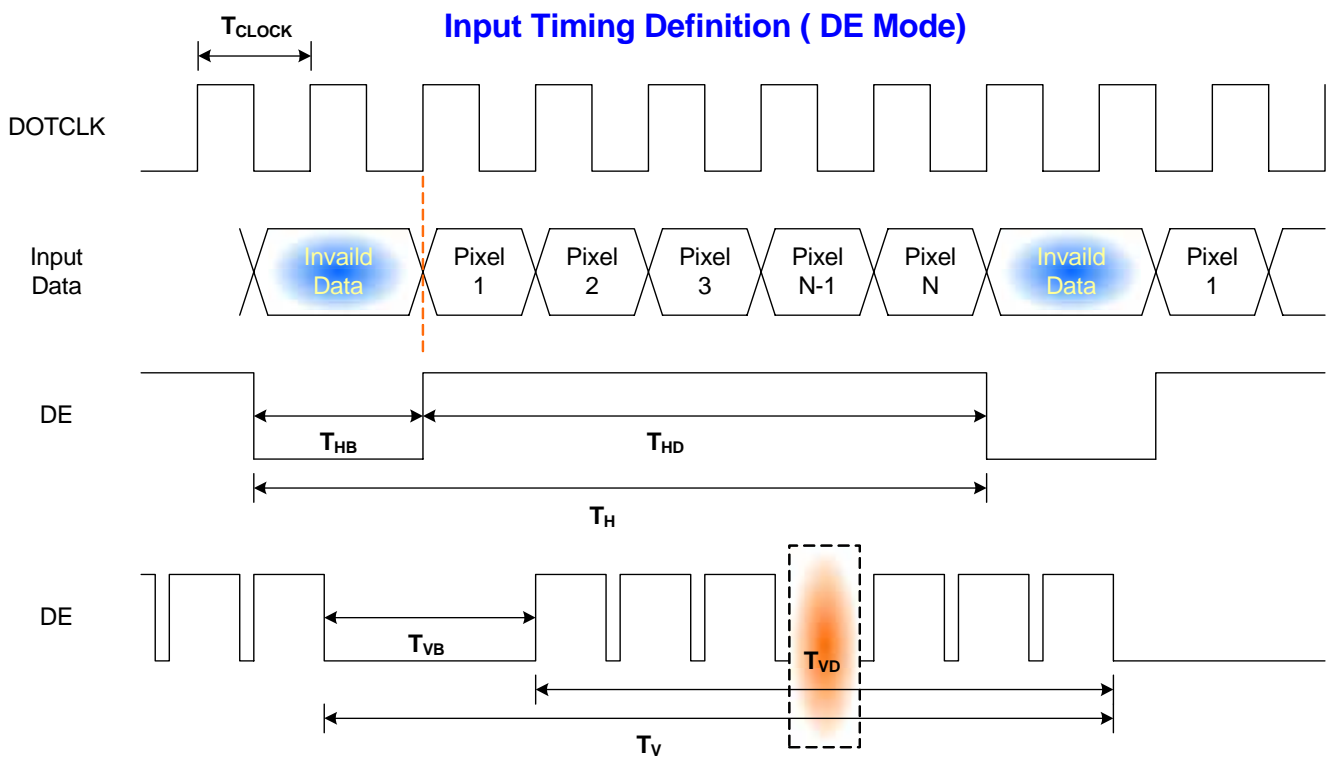
### 6.4.1 Timing Characteristics

Basically, interface timings should match the 1024x768 /60Hz manufacturing guide line timing.

Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		-	55	60	-	Hz
Clock frequency		$1/T_{\text{Clock}}$	50	65	68	MHz
Vertical Section	Period	$T_V$	774	806	1024	$T_{\text{Line}}$
	Active	$T_{VD}$	-	768	-	
	Blanking	$T_{VB}$	6	38	256	
Horizontal Section	Period	$T_H$	1054	1344	1648	$T_{\text{Clock}}$
	Active	$T_{HD}$	-	1024	-	
	Blanking	$T_{HB}$	30	320	624	
End-frame checking period		$t_{EF}$	2			$T_H$
DE checking period		$t_{DE}$	4			$T_H$

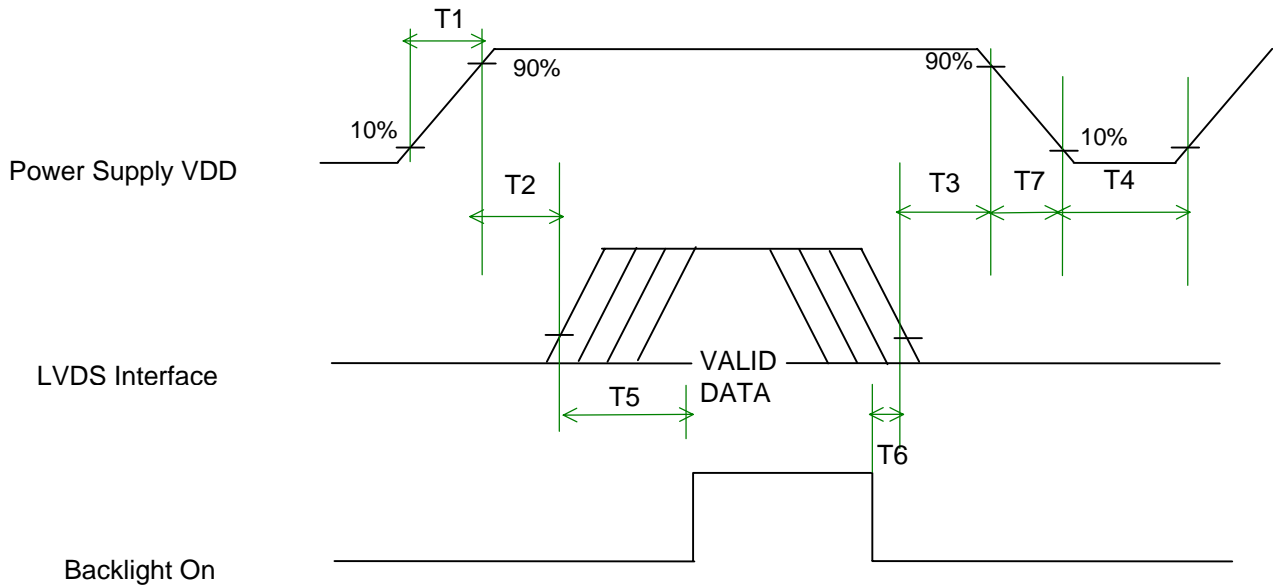
**Note** : DE mode only

### 6.4.2 Timing diagram



## 6.5 Power ON/OFF Sequence

VDD power and lamp on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



### Power Sequence Timing

Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.5	-	10	(ms)
T2	0	-	50	(ms)
T3	0	-	50	(ms)
T4	400	-	-	(ms)
T5	200	-	-	(ms)
T6	200	-	-	(ms)
T7	0	-	10	(ms)



## 7. Connector & Pin Assignment

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

### 7.1 TFT LCD Module

Connector Name / Designation	For Signal Connector
Manufacturer	JAE or compatible
Type / Part Number	FI-XB30SL-HF10 or compatible
Mating Housing/Part Number	FI-X30M, FI-X30C or FI-X30H

### 7.2 Backlight Unit

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

Connector Name / Designation	For Lamp Connector
Manufacturer	JST
Type / Part Number	BHSR-02VS-1
Mating Type / Part Number	SM02B-BHSS-1-TB

### 7.3 Signal for Lamp connector

Pin #	Cable color	Signal Name
1	Red	Lamp High Voltage
2	White	Lamp Low Voltage

## 8. Vibration and Shock Test

### 8.1 Vibration Test

**Test Spec:**

- Test method: Non-Operation
- Acceleration: 1.5G
- Frequency: 10 - 500Hz Random
- Sweep: 30 Minutes each Axis (X, Y, Z)

### 8.2 Shock Test Spec:

**Test Spec:**

- Test method: Non-Operation
- Acceleration: 220 G , Half sine wave
- Active time: 2 ms
- Pulse: X,Y,Z .one time for each side

## 9. Reliability

Items	Required Condition	Note
Temperature Humidity Bias	40 /90%,300Hr	
High Temperature Operation	50 /Dry,300Hr	
Low Temperature Operation	0 ,300Hr	
On/Off Test	25 ,150hrs(ON/10 sec. OFF/10sec., 10,000 cycles)	
Hot Storage	60 /35% RH ,250 hours	
Cold Storage	-20 /50% RH ,250 hours	
Thermal Shock Test	-20 /30 min ,60 /30 min 100cycles	
Hot Start Test	50 /1 Hr min. power on/off per 5 minutes, 5 times	
Cold Start Test	0 /1 Hr min. power on/off per 5 minutes, 5 times	
Shock Test (Non-Operating)	220G, 2ms, Half-sine wave	
Vibration Test (Non-Operating)	Random vibration, 1.5 G zero-to-peak, 10 to 500 Hz, 30 mins in each of three mutually perpendicular axes.	
ESD	Contact : ±8KV/ operation Air : ±15KV / operation	Note 1
Room temperature Test	25 , 2000hours, Operating with loop pattern	

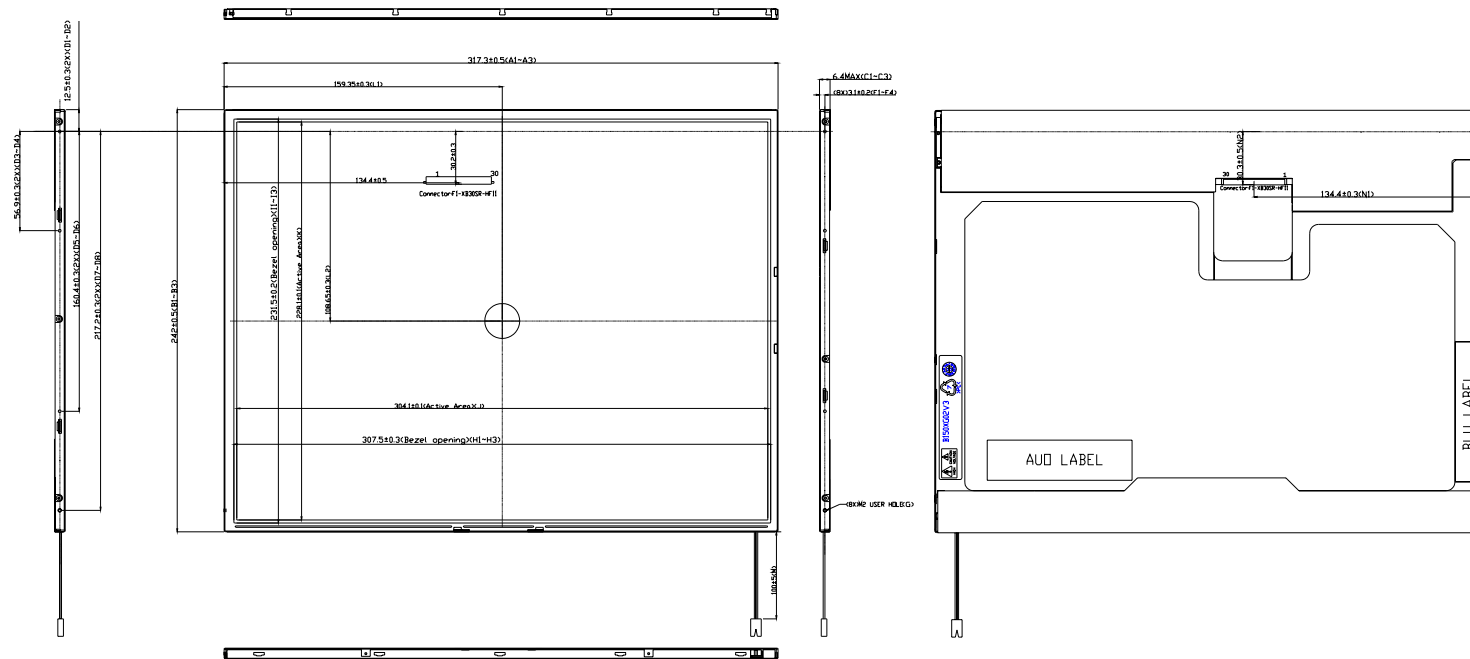
Note1: According to EN61000-4-2 , ESD class B: Some performance degradation allowed. No data lost  
. Self-recoverable. No hardware failures.

Note2: CCFL Life time: 10,000 hours minimum under normal module usage.

Note3: MTBF (Excluding the CCFL): 30,000 hours with a confidence level 90%

## 10. Mechanical Characteristics

### 10.1 LCM Outline Dimension

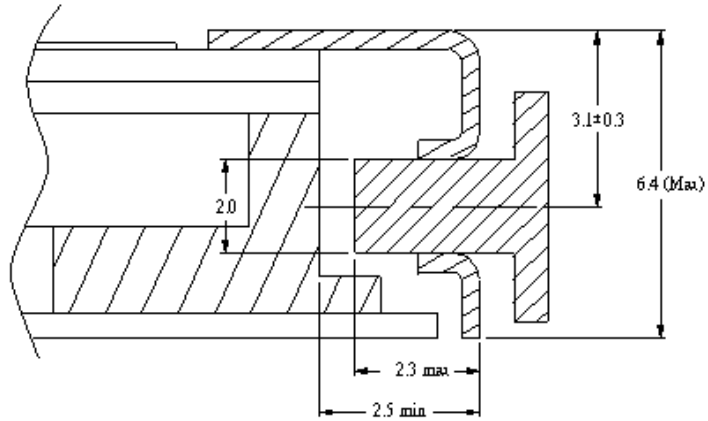


## 10.2 Screw Hole Depth and Center Position

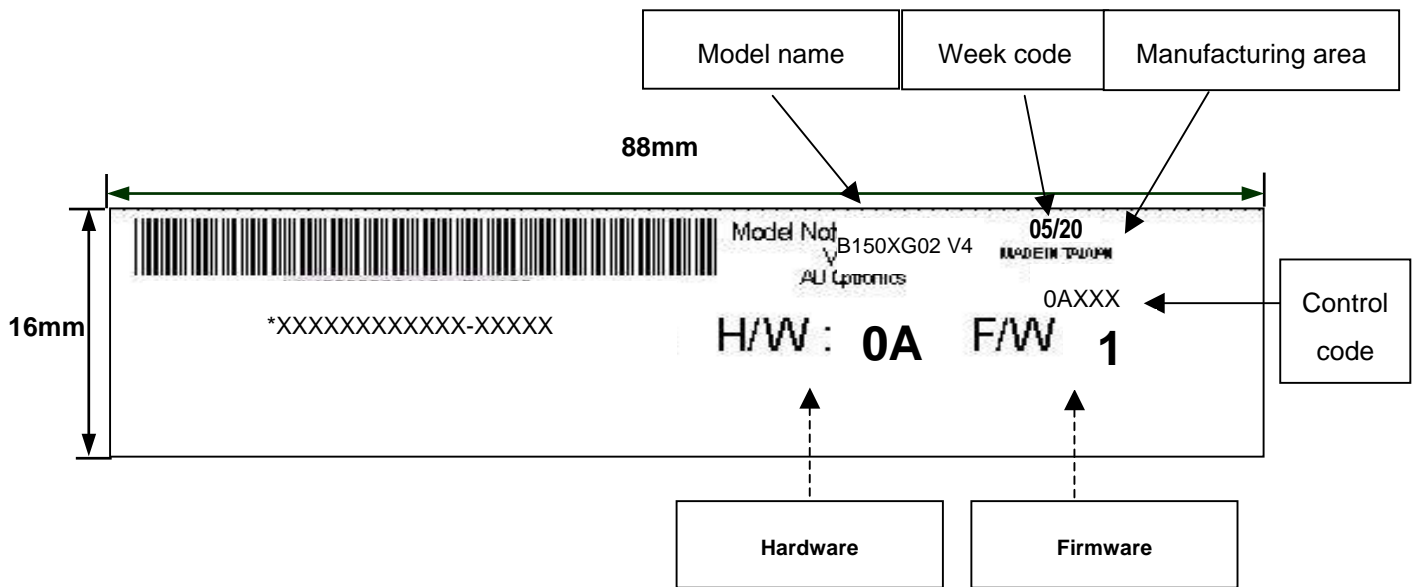
Screw hole minimum depth, from side surface = 2.5 mm (See drawing)

Screw hole center location, from front surface =  $3.1 \pm 0.3$  mm (See drawing)

Screw Torque: Maximum 2.5 kgf-cm



## 11.1 Shipping Label Format

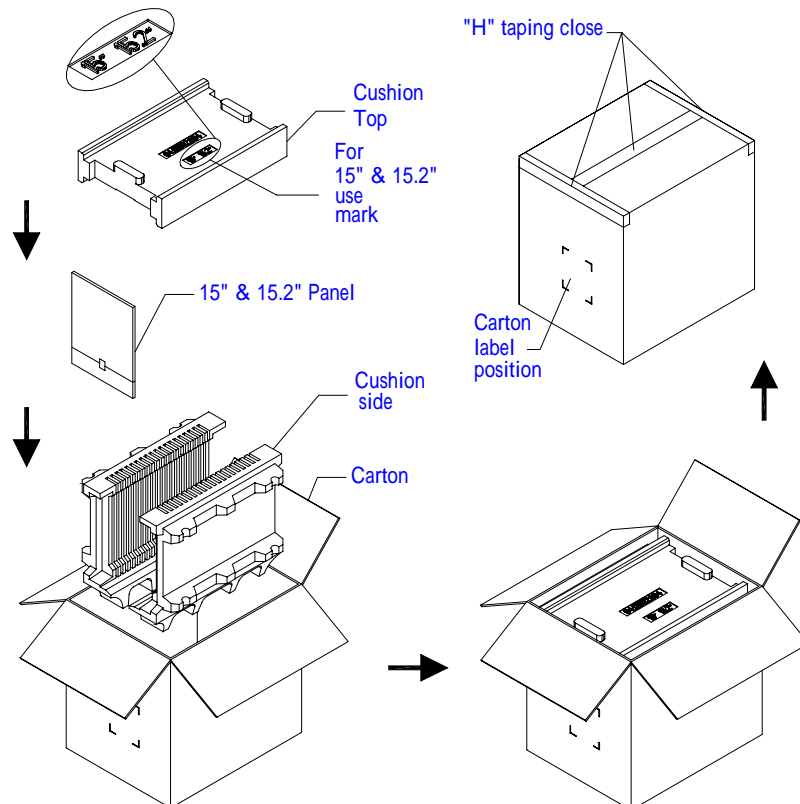


### Note 1:

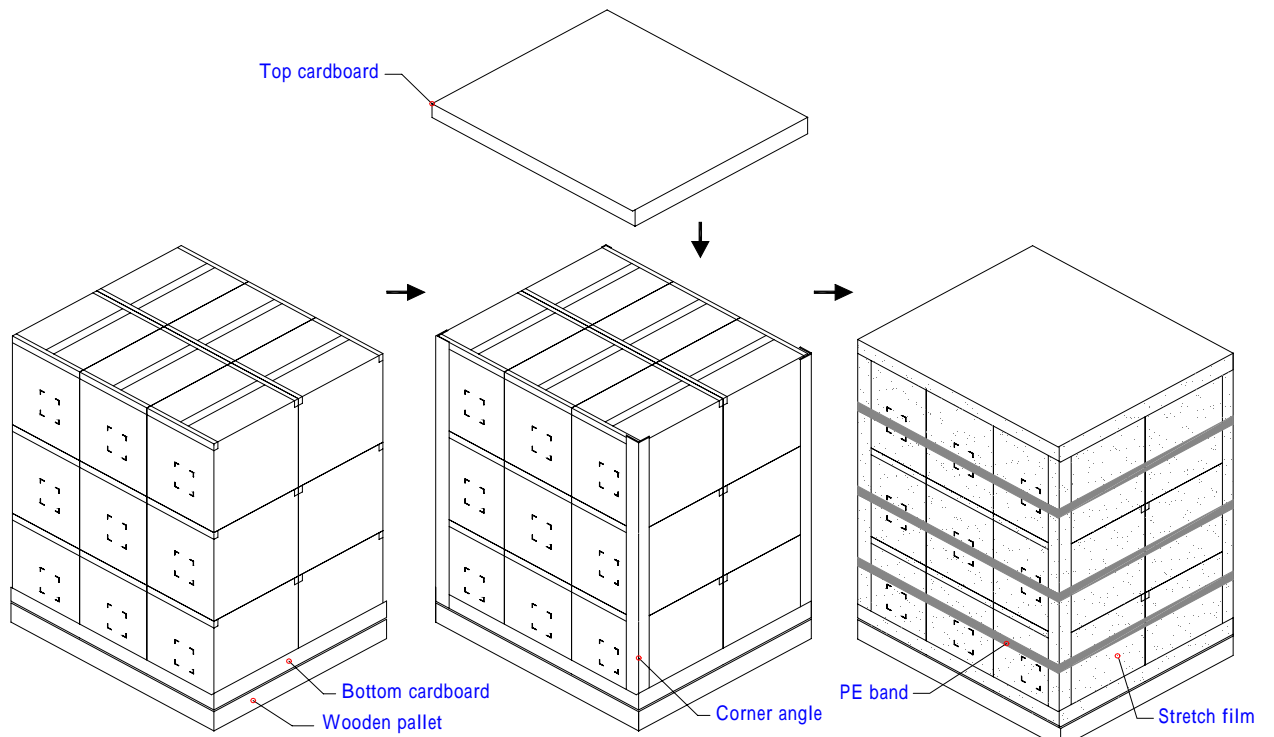
IC Combination	Control Code	H/W
Source IC: MEC MNF816BG-RD Gate IC: TSB JBT6LA2-AS	0AXXX	0A
Source NT 3960G Gate IC: NT 3955	1AXXX	1A

## 11.2. Carton package

The outside dimension of carton is 480 (L)mm x 390 (W)mm x 340 (H)mm



### 11.3 Shipping package of palletizing sequence



Note : Limit of box palletizing = Max 3 layers(ship and stock conditions)



## 12. Appendix: EDID description

Address	FUNCTION	Value	Value	Value	Notes
HEX		HEX	BIN	DEC	Date: Apr/11/2005
00	Header	00	00000000	0	
01		FF	11111111	255	
02		FF	11111111	255	
03		FF	11111111	255	
04		FF	11111111	255	
05		FF	11111111	255	
06		FF	11111111	255	
07		00	00000000	0	
08	EISA Manuf. Code LSB	06	00000110	6	ASCII Data String:B150XG02
09	Compressed ASCII	AF	10101111	175	AUO
0A	Panel size, resolution	51	01010001	81	15"XGA
0B	Model number, version	24	00100100	36	02 V4
0C		00	00000000	0	Fixed number
0D		00	00000000	0	Fixed number
0E		00	00000000	0	Fixed number
0F		00	00000000	0	Fixed number
10	Week of manufacture	01	00000001	1	Week 01
11	Year of manufacture	0F	00001111	15	15(2005-1990=15)
12	EDID Structure Ver.	01	00000001	1	
13	EDID revision #	03	00000011	3	
14	Video input definition	80	10000000	128	Digital Input
15	Max H image size	1E	00011110	30	30 cm
16	Max V image size	17	00010111	23	23 cm
17	Display Gamma	78	01111000	120	Gamma 2.2
18	Feature support	0A	00001010	10	no DPMS,Active off,RGB color
19	Red/Green low bits	87	10000111	135	RxRyGxGy
1A	Blue/White low bits	F5	11110101	245	BxByWxWy
1B	Red x/ high bits	94	10010100	148	Rx=0.580
1C	Red y	57	01010111	87	Ry=0.340
1D	Green x	4F	01001111	79	Gx=0.310
1E	Green y	8C	10001100	140	Gy=0.550
1F	Blue x	27	00100111	39	Bx=0.155
20	Blue y	27	00100111	39	By=0.155
21	White x	50	01010000	80	Wx=0.313
22	White y	54	01010100	84	Wy=0.329

# Product Specification

23	Established timing 1	00	00000000	0	unused
24	Established timing 2	00	00000000	0	—
25	Manufacturer's Timing	00	00000000	0	
26	Standard timing #1	01	00000001	1	unused
27		01	00000001	1	
28	Standard timing #2	01	00000001	1	
29		01	00000001	1	
2A	Standard timing #3	01	00000001	1	
2B		01	00000001	1	
2C	Standard timing #4	01	00000001	1	
2D		01	00000001	1	
2E	Standard timing #5	01	00000001	1	
2F		01	00000001	1	
30	Standard timing #6	01	00000001	1	
31		01	00000001	1	
32	Standard timing #7	01	00000001	1	
33		01	00000001	1	
34	Standard timing #8	01	00000001	1	
35		01	00000001	1	
36	Pixel Clock/10,000 (LSB)	64	01100100	100	Timing Descriptor #1
37	Pixel Clock/10,000 (MSB)	19	00011001	25	1344x806 @60_mode:pixel clock=65.00MHz
38	Horiz. Active pixels(Lower 8 bits)	00	00000000	0	Horiz active=1024 pixels
39	Horiz.Blanking (Lower 8 bits)	40	01000000	64	Horiz blanking=320 pixels
3A	Horiz. Active pixels:Horiz. Blanking (Upper4:4 bits)	41	01000001	65	
3B		00	00000000	0	Vertical active=768 lines
3C		26	00100110	38	Vertical blanking=38 lines
3D	Vert. Active pixels:Vert. Blanking (Upper4:4 bits)	30	00110000	48	
3E		18	00011000	24	Horiz sync. Offset=24 pixels
3F		88	10001000	136	Horiz sync. Pulse Width=136 pixels
40	Vert. Sync. Offset=xx lines, Sync Width=xx lines	36	00110110	54	Verti sync. Offset=3 lines,Sync Width=6 lines
41	Horz. Ver. Sync/Width (upper 2 bits)	00	00000000	0	
42	Hori. Image size (Lower 8 bits)	30	00110000	48	Hori image size= 304.1 mm
43	Vert. Image size (Lower 8 bits)	E4	11100100	228	Verti image size = 228.0mm
44	Hori. Image size : Vert. Image	10	00010000	16	

# Product Specification

	size (Upper 4 bits)				
45		00	00000000	0	Horizontal Border = 0
46		00	00000000	0	Vertical Border = 0
47		18	00011000	24	
48	Detailed timing/monitor	00	00000000	0	FAE suggest
49	descriptor #2	00	00000000	0	
4A		00	00000000	0	
4B		0F	00001111	15	
4C		00	00000000	0	
4D		00	00000000	0	
4E		00	00000000	0	
4F		00	00000000	0	
50		00	00000000	0	
51		00	00000000	0	
52		00	00000000	0	
53		00	00000000	0	
54		00	00000000	0	
55		00	00000000	0	
56		00	00000000	0	
57		00	00000000	0	
58		00	00000000	0	
59		20	00100000	32	
5A	Flag	00	00000000	0	
5B	Flag	00	00000000	0	
5C	Flag	00	00000000	0	
5D		FE	11111110	254	
5E		00	00000000	0	
5F	LCD Vendor	41	01000001	65	A
60	LCD Vendor	55	01010101	85	U
61	LCD Vendor	4F	01001111	79	O
62		0A	00001010	10	
63		20	00100000	32	
64		00	00000000	0	
65		20	00100000	32	
66		20	00100000	32	
67		20	00100000	32	
68		20	00100000	32	
69		20	00100000	32	
6A		20	00100000	32	

# Product Specification

<b>6B</b>		<b>20</b>	00100000	32	
<b>6C</b>	Flag	<b>00</b>	00000000	0	Monitor Name: Color LCD
<b>6D</b>	Flag	<b>00</b>	00000000	0	
<b>6E</b>	Flag	<b>00</b>	00000000	0	
<b>6F</b>	Data type tag:ASCII string	<b>FE</b>	11111110	254	
<b>70</b>	Flag	<b>00</b>	00000000	0	
<b>71</b>	Manufacturer P/N	<b>42</b>	01000010	66	B
<b>72</b>	Manufacturer P/N	<b>31</b>	00110001	49	1
<b>73</b>	Manufacturer P/N	<b>35</b>	00110101	53	5
<b>74</b>	Manufacturer P/N	<b>30</b>	00110000	48	0
<b>75</b>	Manufacturer P/N	<b>58</b>	01011000	88	X
<b>76</b>	Manufacturer P/N	<b>47</b>	01000111	71	G
<b>77</b>	Manufacturer P/N	<b>30</b>	00110000	48	0
<b>78</b>	Manufacturer P/N	<b>32</b>	00110010	50	2
<b>79</b>		<b>20</b>	00100000	32	
<b>7A</b>	Manufacturer P/N	<b>56</b>	01010110	86	V
<b>7B</b>	Manufacturer P/N	<b>34</b>	00110100	52	4
<b>7C</b>		<b>20</b>	00100000	32	
<b>7D</b>		<b>0A</b>	00001010	32	
<b>7E</b>	Extension Flag	<b>00</b>	00000000	0	
<b>7F</b>	Checksum	<b>00</b>	00000000	0	

