深圳市华科百誉科技有限公司

TO :

《新规·变更》
New   Revision

产 品 规 格 书
Product Specification

产品名
Product   TFT-LCD Module

机种名
Model

> M156X40-0101

Customer's Approve	NCPD
	Approved by Project Director : Name : Date : Signature:
	Reviewed by Project manager: Name : Date : Signature:
	Reviewed by Project Leader: Name : Date : Signature:

※ 本基准书由封面、附件等全 20 页构成。如果对该规格书有异议，请在下订单前提出。

※ This Product Specification have 20 pages including the coversheet and Appendices. Please negotiate the objection point before purchase order.

RECORDS OF REVISION

Model No. : M156X40-137-0101

DATE	NO.	REVISED No.	PAGE	SUMMARY	NOTE
2016/10/13	-	1	-	First Edition	Tentative

1. Application

This specification applies to a color TFT-LCD Module, M156X40-137-0101

2. Overview

This module is a color active matrix LCD module incorporating Oxide TFT (Thin Film Transistor).It is composed of a color TFT-LCD panel, driver ICs, a control circuit and power supply circuit. Graphics and texts can be displayed on a 1920×3×1080 dots panel with 262144 colors by using eDP (Embedded Display Port) Ver1.2 interface and supplying +3.3V DC supply voltage for TFT-LCD panel driving.

In this TFT-LCD panel, color filters for excellent color performance is incorporated to realize brighter and clearer pictures, making this Module optimum for use in multi-media applications.

Optimum viewings are in all directions.

9serial 4paralel LED structure.

Backlight-driving LED controller is built in this Module.

eDP transfer rate specification: 2.7Gbps/2 lane.

3. Generalspecifications.

Parameter	Specification	Unit	Note
Display size	394.38 (Diagonal)	mm	
	15.6 (Diagonal)	inch	
Active area	344.16(H) × 193.59(V)	mm	
Pixel Format	1920(H) × 1080(V) （1pixel = R + G + B dot）	pixel	
Pixel pitch	0.17925(H) x 0.17925 (V)	mm	
Pixel configuration	R, G, B vertical stripe		
Display mode	Normally black		
Driving scheme	FFS		
Power Consumption	0.561	W	
Surface treatment of front polarizer	Anti-glarecoating: (3H)		

Outline dimensions

Parameter		Min.	Typ.	Max.	Unit	Remark
Unit outline dimensions	Width	359.2	359.5	359.8	mm	
	Height	223.25	223.75	224.25	mm	[Note3-1]
	Depth	2.9	3.1	3.3	mm	
Mass			TBD		g	

[Note 3-1] With PWB

4.　Input Terminals

4-1 Driving interfaceofPWB

CN1 (eDPsignals, +3.3V DC power supply and B/L power supply)

Pin No.	Symbol	I/O	Function	Remark
1	NC	-	Reserved for LCD	[Note4-1-1]
2	H_GND	P	High Speed Ground	[Note4-1-2]
3	Lane1_N	I	Complement Signal Link Lane 1	
4	Lane1_P	I	True Signal Link Lane 1	
5	H_GND	P	High Speed Ground	[Note4-1-2]
6	Lane0_N	I	Complement Signal Link Lane 0	
7	Lane0_P	I	True Signal Link Lane 0	
8	H_GND	P	High Speed Ground	[Note4-1-2]
9	AUX_CH_P	I	True Signal Auxiliary Channel	
10	AUX_CH_N	I	Complement Signal Auxiliary Channel	
11	H_GND	P	High Speed Ground	[Note4-1-2]
12	LCD_VCC	P	LCD logic and driver power(3.3V)	
13	LCD_VCC	P	LCD logic and driver power(3.3V)	
14	NC	I	Reserved for LCD manufacturer's use	[Note4-1-1]
15	LCD_GND	P	LCD logic and driver ground	
16	LCD_GND	P	LCD logic and driver ground	
17	HPD	O	HPD Signal	[Note4-1-3]
18	BL_GND	P	Backlight ground	
19	BL_GND	P	Backlight ground	
20	BL_GND	P	Backlight ground	
21	BL_GND	P	Backlight ground	
22	BL_ENABLE	I	Backlight on/off	[Note4-1-4]
23	BL_PWM_DIM	I	System PWM	[Note4-1-5]
24	NC	-	Reserved for LCD for manufacturer's use	[Note4-1-1]
25	NC	-	Reserved for LCD for manufacturer's use	[Note4-1-1]
26	BL_PWR	P	Backlight power	
27	BL_PWR	P	Backlight power	
28	BL_PWR	P	Backlight power	
29	BL_PWR	P	Backlight power	
30	NC	-	Reserved for LCD for manufacturer's use	[Note4-1-1]

*1 P: POWER I: Input O: Output

[Note 4-1-1] Don't input any signals or any powers into a NC pin. Keep the NC pin open.
[Note 4-1-2] The shielding case is connected with signal GND.
・Connector used :20455-030E-66 (I-PEX)
・Corresponding connector : 20453-030T (I-PEX)
(Panda is not responsible to its product quality, if the user applies a connector not corresponding to the above model.)

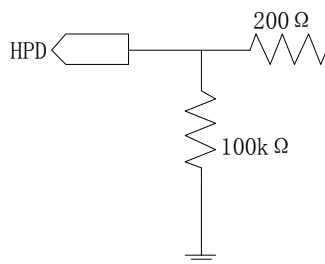The equivalent circuit figure of the terminal.

[Note 4-1-3]   [Note 4-1-4]

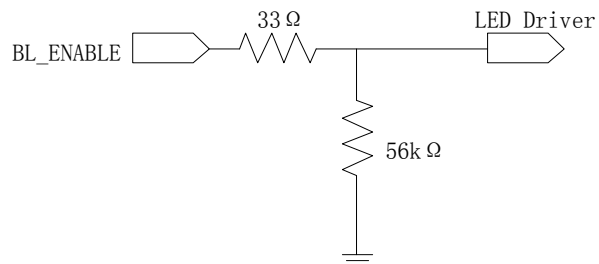Fig.4-1-1 Equivalent circuit (Pin No.17)   Fig.4-1-2Equivalent circuit (Pin No.22)
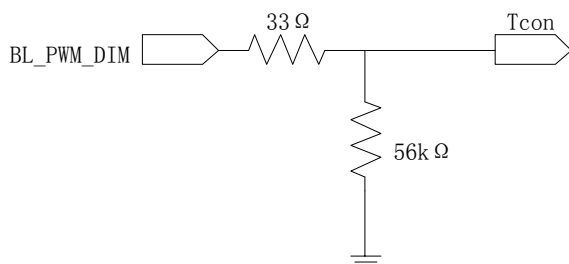
[Note 4-1-5]

Fig.4-1-3 Equivalent circuit (Pin No.23)
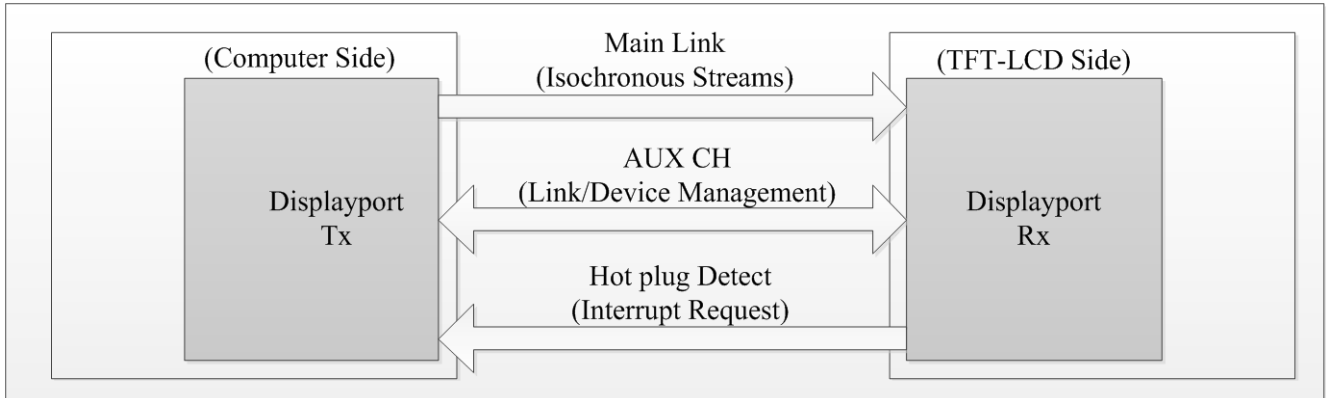
4-2　CN1 pin 1 position
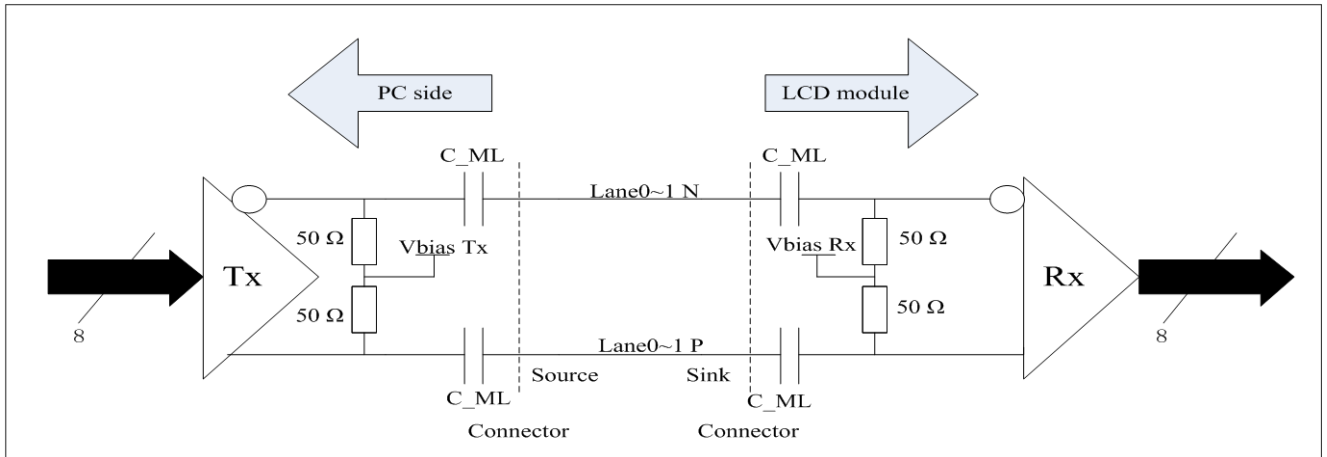
4-3 eDP interface

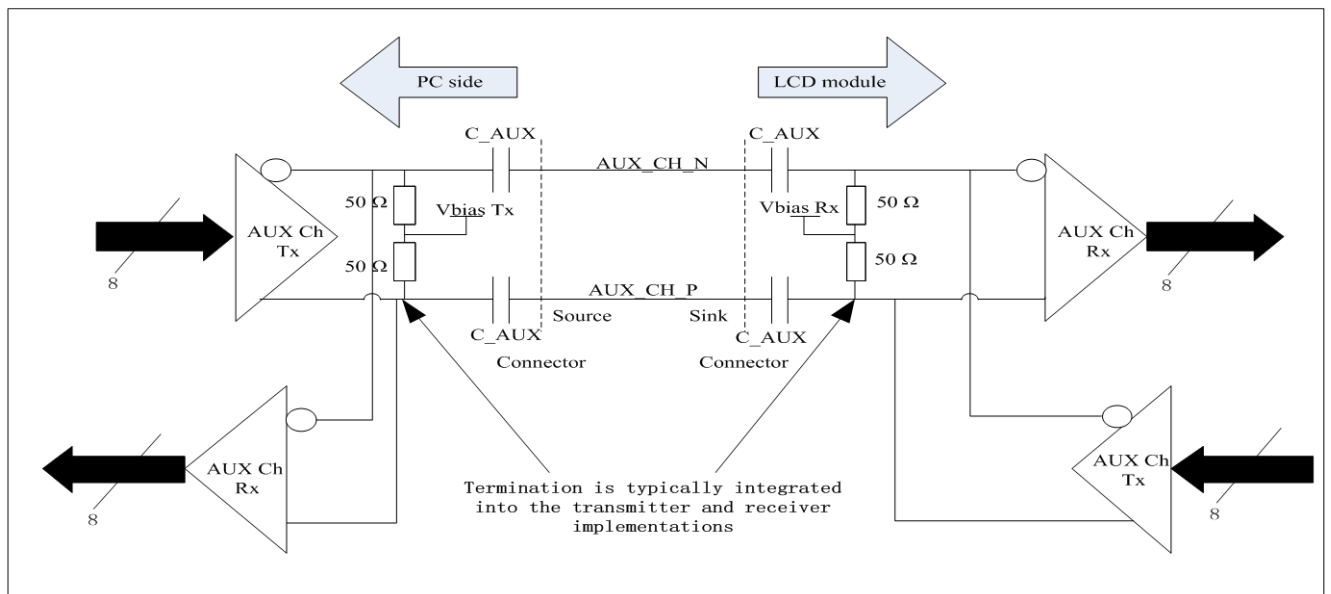Fig.4-3-1 DP architect

Fig.4-3-2 Main Link differential pair

Fig.4-3-3 AUX Link differential pair

Lane0	Lane1
R0-7:0	R1-7:0
G0-7:0	G1-7:0
B0-7:0	B1-7:0
R2-7:0	R3-7:0
G2-7:0	G3-7:0
B2-7:0	B3-7:0
R4-7:0	R5-7:0
G4-7:0	G5-7:0
B4-7:0	B5-7:0

Fig.4-3-4 eDP 2lane 8bit input data mapping

5. Electrical Characteristics

5-1. Absolute Maximum Ratings

Parameter	Symbol	Condition	Ratings		Unit	Remark
			Min.	Max.		
+3.3V supply voltage	VDD	Ta=25°C	-0.3	+4.0	V	
Back Light supply voltage	VBL	Ta=25°C	-0.3	+26.5	V	
Input voltage(eDP)	VI	Ta=25°C	-0.3	+1.5	V	[Note 5-1]
Input voltage(BL)	VBL_I	Ta=25°C	-0.3	VDD+0.3	V	[Note 5-2]
Operation temperature	TOPR	-	0	+50	°C	[Note 5-3]
Storage temperature	TSTG	-	-20	+60	°C	

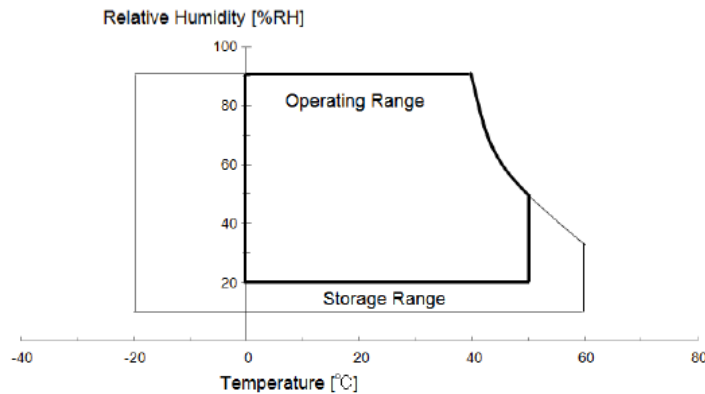(*) "*Absolute Maximum Ratings*" is regulations that do not exceed it even momentarily.

(*) Stress beyond those listed under "*Absolute Maximum Ratings*" may cause permanent damage to the device.

[Note 5-1] eDP signal

[Note 5-2]Backlight control signals(BL_ENABLE,BL_PWM_DIM)

[Note 5-3] Humidity: 90%RH Max.（Ta≦+40°C）.

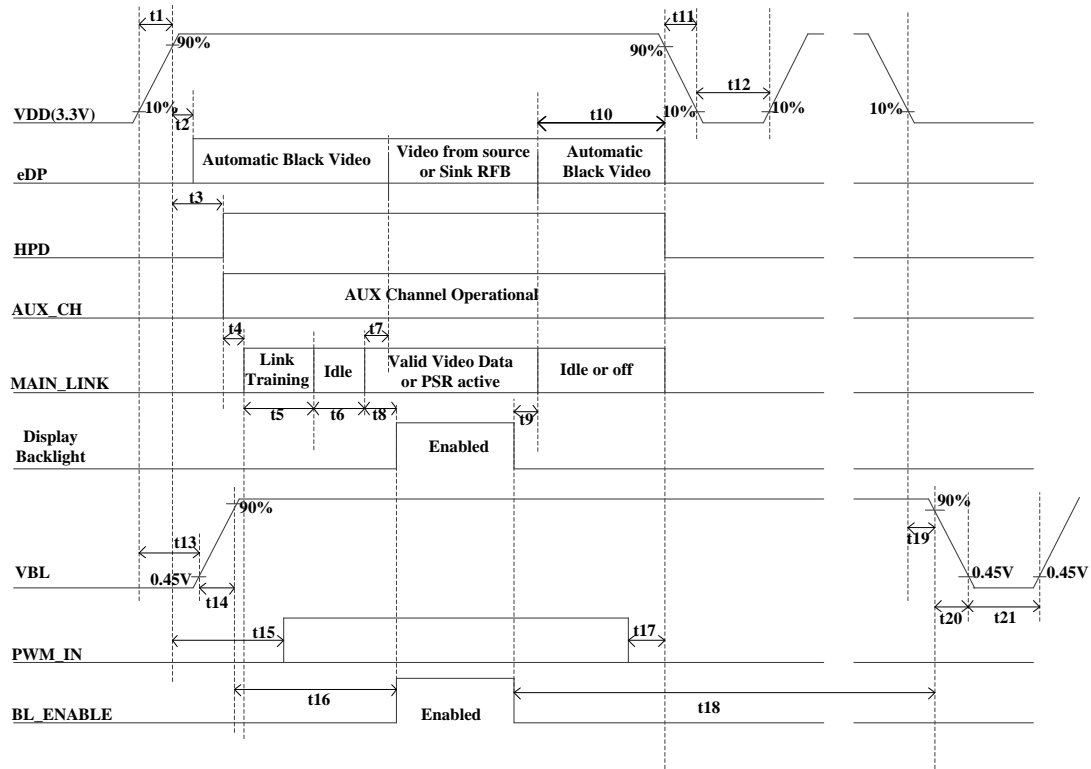Maximum wet-bulb temperature at +39°C or less at Ta>+40°C, No condensation.

5-2. DC Characteristics

5-2-1. TFT-LCD panel driving

Ta＝+25℃

DC Electrical Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
+3.3V supply voltage	VDD	+3.0	+3.3	+3.6	V	[Note 5-2-1]
Current dissipation	IDD	-	(180)	(290)	mA	[Note 5-2-2]
Permissible input ripple voltage	V_{RP}	-	-	100	mVp-p	VDD=+3.3V
eDP AUX Channel Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Unit Interval for AUX channel	UI_{AUX}	0.4	0.5	0.6	μS	
Peak-to-peak voltage at TP1	$V_{AUX-DIFF-pp}$	0.32	-	1.36	V	
AUX DC Common mode Voltage	$V_{AUX-DC-CM}$	0	-	2.0	V	
AUX Short current limit	I_{AUX_SHORT}	-	-	90	mA	
AUX CH terminationDCresistor	R_{AUX_TERM}	-	100	-	Ω	Differential input
AUX AC coupling capacitor	C_{AUX}	75	-	200	nF	
Number of pre-charge pulses	Pre-charge pulses	10	-	16		
eDP Main Link Receiver Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Link clock down spreading	Down_Spread_Amplitude	0		0.5	%	
Differential Peak-to-peak Input Voltage at Rx package pins	$V_{RX-DIFFp-p}$	90	-	1200	mV	
Differential Return Loss at 1.35GHz at Rx package pins	$RL_{RX-DIFF}$	9	-	-	dB	
Differential termination resistance	$R_{RX-TERM}$	-	100	-	Ω	
RX short circuit Current Limit	$I_{RX-SHORT}$	-	-	50	mA	
Lane Intra-pair Skew at RX package pins	$T_{RX-SKEW-INTRA-PAIR-High-Bit-Rate}$	-	-	50	ps	

[Note 5-2-1] ON-OFF conditions for supply voltage

Timing diagram labels: VDD(3.3V), eDP, HPD, AUX_CH, MAIN_LINK, Display Backlight, VBL, PWM_IN, BL_ENABLE

t1, t11, t12, t10, t2, t3, t4, t7, t5, t6, t8, t9, t13, t14, t15, t16, t17, t18, t19, t20, t21

eDP: Automatic Black Video | Video from source or Sink RFB | Automatic Black Video

AUX_CH: AUX Channel Operational

MAIN_LINK: Link Training | Idle | Valid Video Data or PSR active | Idle or off

Display Backlight: Enabled

90%, 10%, 0.45V

[Note5-2-1] Do not keep the interface signal high-impedance or unusual signal when power is on.

Symbol	Min	Max	Unit	Note
t1	0.5	10	ms	
t2	0	200	ms	
t3	0	100	ms	
t4	-	-	ms	
t5	-	-	ms	
t6	-	-	ms	
t7	0	50	ms	
t8	-	-	ms	
t9	-	-	ms	

|				
t10	0	500	ms	
t11	1	50	ms	[Note 5-2-3]
t12	500	-	ms	
t13	-	-	ms	
t14	0.5	10	ms	
t15	100	-	ms	
t16	0	-	ms	
t17	0	-	ms	
t18	-	-	ms	
t19	-	-	ms	
t20	0.1	-	ms	
t21	100	-	ms	

[Note 5-2-3]As for the power off sequence for VDD (t11), be sure to keep above mentioned timing.
If the VDD power off sequence timing is other than shown above, LCD may cause permanent damage.
As for the power sequence for backlight, it is recommended to apply above mentioned input timing.
If the backlight is light on and off at a timing other than shown above displaying image maybe getdisturbed.
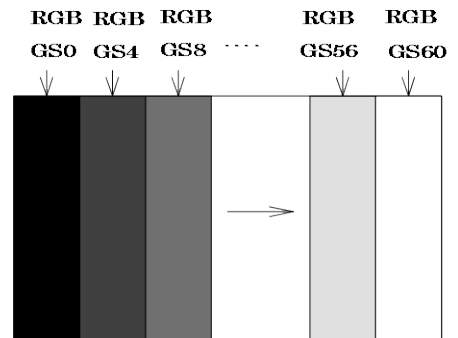
10

VDD-dip-conditions

1) 2.5 V ≦ VDD＜3.0 V

　　　td ≦ 10 ms

　　Under above condition, the display image should return to
　　anappropriate figure after VDD voltage recovers.

2) VDD＜2.5 V
　　VDD-dip conditions should also follow the
　　ON-OFF conditions for supply voltage.
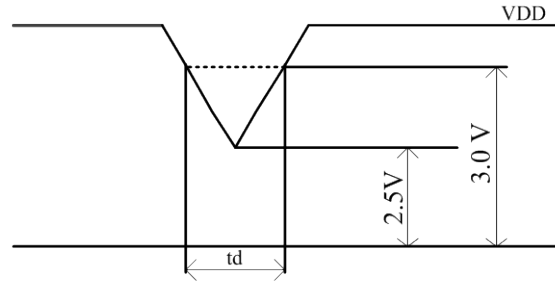
[Note 5-2-2]
　　Typical current condition: 16-gray-bar pattern.
　　VDD＝+3.3V

Maximum current condition: Vertical stripe pattern.
VDD＝+3.3V

5-3. Backlight driving (If necessary)

The backlight system is an edge-lighting type with white-LED.
　　(It is usually required to measure under the following condition: Ta=25℃±2℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Supply voltage	V_{BL}	7.0	12.0	21.0	V	
Current dissipation	I_{BL}	-	(180)		mA	V_{BL}=12.0V Duty Ratio =100%
Modulated light signal voltage	$V_{PWM}H$	1.85	-	VDD	V	
	$V_{PWM}L$	0	-	0.7	V	
Brightness Control Duty Ratio	Duty	1	-	100	%	[Note5-3-1]
Brightness Control pulse width	T_{PWM}	5	-	-	us	[Note5-3-2]
Brightness Control frequency	f_{PWM}	200	-	2000	Hz	
LED-BL ON/OFF High voltage	$V_{CNT}H$	1.3	-	VDD	V	[Note5-3-3]
LED-BL ON/OFF Low voltage	$V_{CNT}L$	0	-	0.5	V	
Input signal (H level) pin current	I_{IN}	-	-	V_{IN}/56KΩ	μA	BL_ENABLE, BL_PWM_DIM
LED lifetime	-	-	10000	-	h	LED

[Note5-3-1]V_{PWM} Input : 100%= Max luminance 1%= Min luminance
[Note5-3-2]The minimum value of the dimming signal pulse width is assumed regulations of the width of high and
the width of low.
[Note5-3-3]V_{CNT} Input : High = BL turn on, Low or OPEN =BL turn off

VBL-dip conditions

Vmin : 7.0V

Vth : 0.9V_{BL}
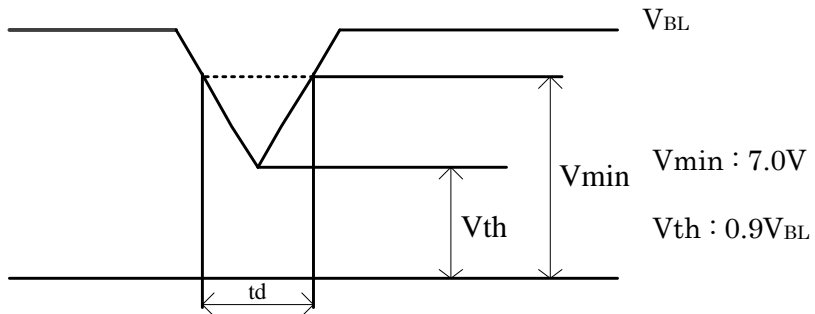
1) Vth ≦ V_{BL} ＜Vmin : td ≦20ms
2) V_{BL} ＜Vth : The condition of instantaneous voltage drop is apply to input voltage sequences

6. Timing characteristics of input signals

## 6-1.Timing Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
Clock	Frequency	$1/T_C$	132.0	138.5	140.0	MHz	[Note 6-1-1]
Data enable signal	Horizontal period	TH	2020	2080	2400	clock	
				15.02		μs	
	Horizontal period (High)	THd	-	1920	-	clock	
	Vertical period	TV	1090	1111	1200	line	
			-	16.685	-	ms	
	Vertical period (High)	TVd	–	1080	–	line	

[Note 6-1-1] In case of using the long vertical period, the deterioration of display quality, flicker, etc, may occur.
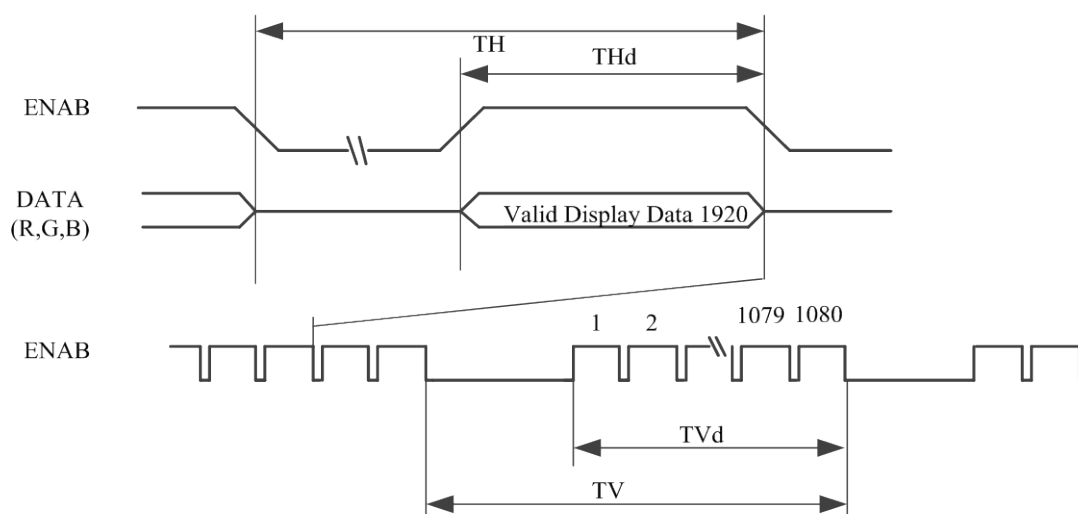
6-2. Input data signals and display position on the screen
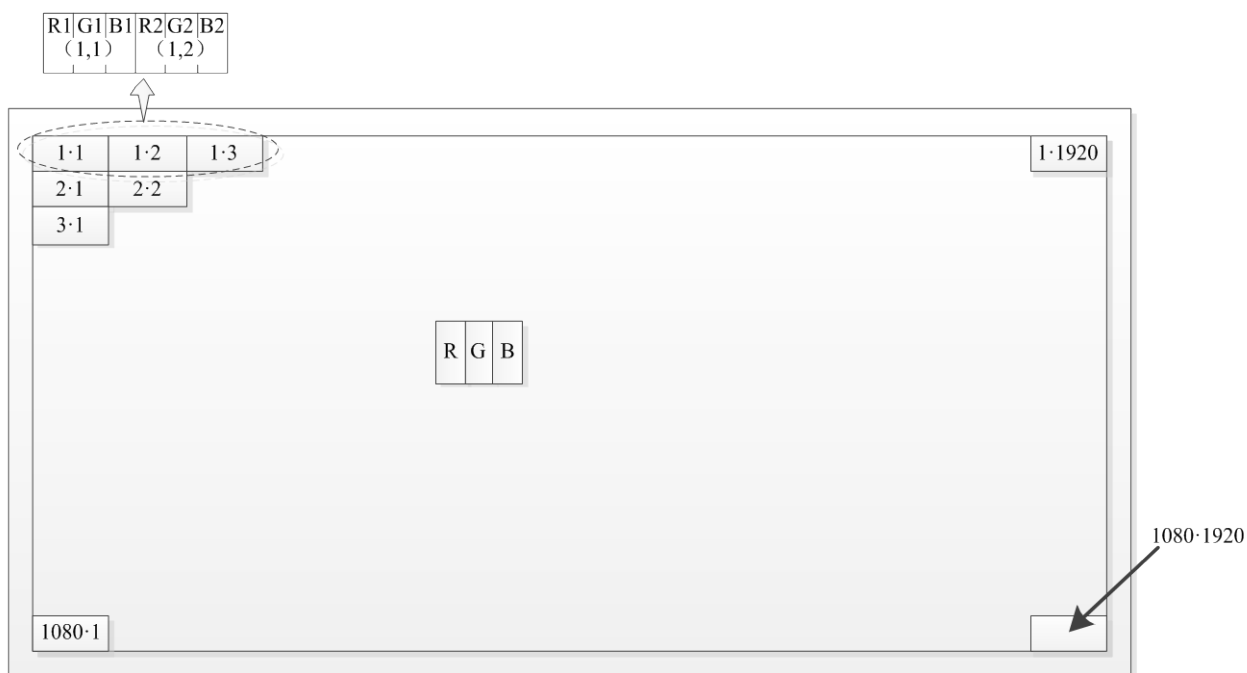
Display position of input data(V·H)

7. Input signal, basic display colors and gray scale of each color

Colors & Gray Scale		Gray Scale	Data signal																	
			R0 LSB	R1	R2	R3	R4	R5 MSB	G0 LSB	G1	G2	G3	G4	G5 MSB	B0 LSB	B1	B2	B3	B4	B5 MSB
Basic Color	Black	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	–	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Green	–	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Cyan	–	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red	–	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	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
Gray Scale of Red	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	↓			↓						↓						↓			
	⇩	↓			↓						↓						↓			
	Brighter	GS25	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	⇩	GS25	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red	GS25	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	⇧	↓			↓						↓						↓			
	⇩	↓			↓						↓						↓			
	Brighter	GS25	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0
	⇩	GS25	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0
	Green	GS25	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Gray Scale of Blue	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	⇧	↓			↓						↓						↓			
	⇩	↓			↓						↓						↓			
	Brighter	GS25	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
	⇩	GS25	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	Blue	GS25	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

0: Low level voltage,　　　1: High level voltage.

Each basic color can be displayed in 64 gray scales from 6 bit data signals.
According to the combination of 18 bit data signals, the 262144color display can be achieved on the screen.

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8 EDID Specifications (TBD)

This is the EDID(Extended Display Identification Data) data formats to support displays as defined in the VESA Plug & Display.

9   Optical characteristics

Ta=25°C

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle range	Horizontal	θ21	CR＞10		(89)		Deg.	[Note9-1,9-3,9-4,9-6]
		θ22			(89)			
	Vertical	θ11			(89)		Deg.	
		θ12			(89)		Deg.	
Contrast ratio		CR		700	1000		-	[Note9-2,9-4,9-6]
Response time		$\tau_r+\tau_d$			25	35	ms	[Note9-1,9-5,9-6]
Chromaticity of white		x	θ=0 deg.	Typ-0.03	0.313	Typ+0.03	-	[Note 9-2, 9-6] Normal operation (PWM Duty=100%)
		y			0.329		-	
Chromaticity of red		x			0.590		-	
		y			0.350		-	
Chromaticity of green		x			0.330		-	
		y			0.555		-	
Chromaticity of blue		x			0.153		-	
		y			0.119		-	
NTSC ratio		%		-	45	-	-	
Luminance of White		Y_{LI}		200	220	-	cd/m²	
Cell Transparency		T		-	(6.5)	-	-	
White uniformity 13pt		δ_W	θ=0 deg.	-	(1.3)	(1.5)	-	[Note 9-2, 9-7]

※The measurement shall be taken 30 minutes after lighting the Open-cell at the following rating.
※Condition: PWM Duty = 100%
※The optical characteristics shall be measured in a dark room or equivalent.

[Note 9-1] Measurement of viewing angle range
[Note 9-2] Measurement of luminance and
               and Response time. Chromaticity and Contrast.
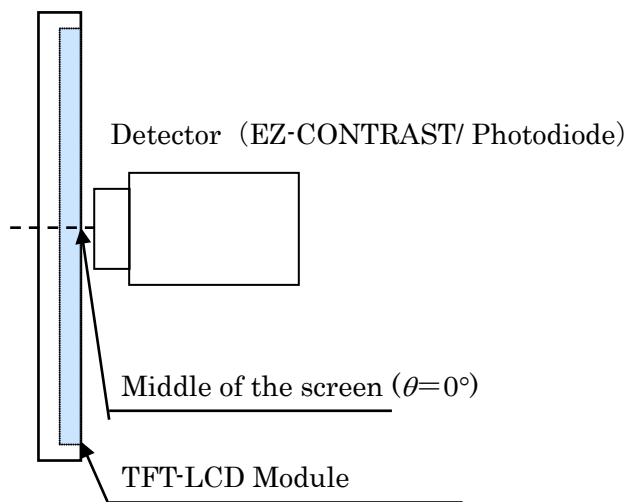

Fig.9-1 Measurement of Viewing angle range
         and Response time.
            (Viewing angle range: EZ-CONTRAST,
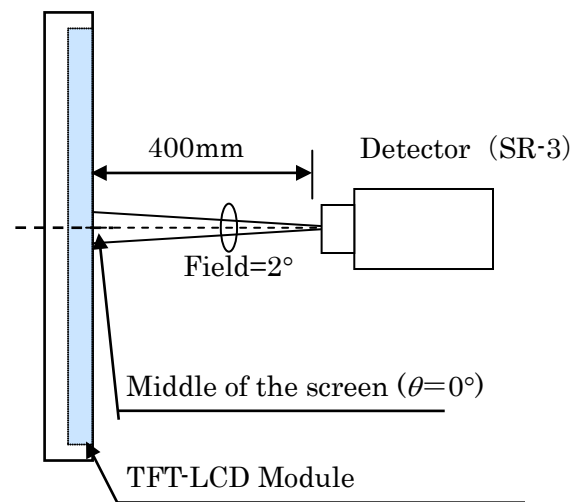   Response time: Photodiode)

Fig.9-2 Measurement of Contrast, Luminance,
            Chromaticity, White variation, Crosstalk
            AndColor temperature variation.

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[Note 9-3]Definitions of viewing angle range:

Normal line

$\theta 22$ $\theta 11$ $\theta 21$
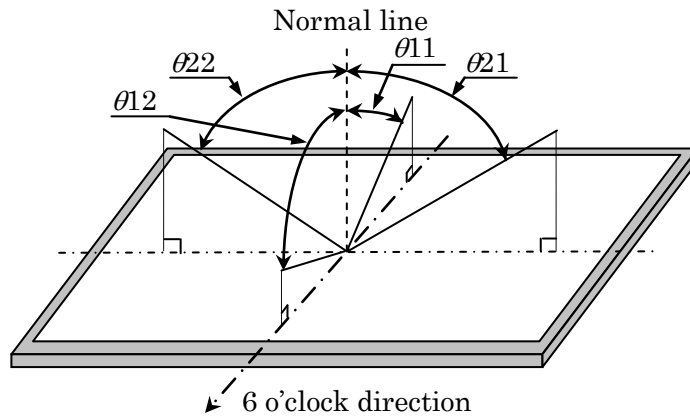
$\theta 12$

6 o'clock direction

Fig.9-3 Viewing angle

[Note 9-4]Definition of contrast ratio:

The contrast ratio is defined as the following.

$$\text{Contrast Ratio} = \frac{\text{Luminance(Brightness) with all pixels white}}{\text{Luminance(Brightness) with all pixels Black}}$$

[Note 9-5]Definition of response time:

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white" .

Any level of gray (bright)   Any level of gray (dark)   Any level of gray (bright)

Photodetector Output (Relative Value)

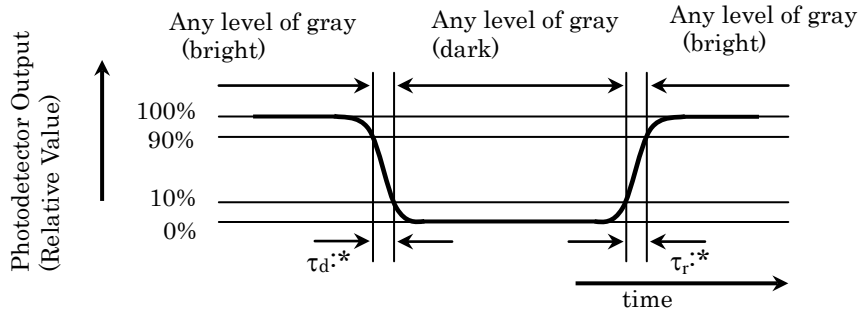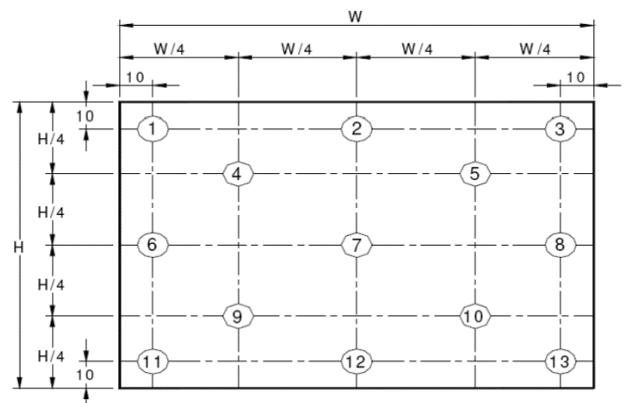100%
90%

10%
0%

τ_d:* τ_r:*

time

Fig.9-4 Response time

[Note 9-6] This shall be measured at center of the screen.

[Note 9-7]Definition of white uniformity:

White uniformity is defined as the following with 13 measurements(A~M).

$$\delta_W = \frac{\text{Maximum Luminance of 13 Points(Brightness)}}{\text{Minimum Luminance of 13 Points(Brightness)}}$$

10 Display Quality
The display quality of the color TFT-LCD Module shall be in compliance with the Incoming Inspection Standard.

11 Handling Precautions
a) Be sure to turn off the power supply when inserting or disconnecting the cable.
   Please insert for too much stress not to join a connector in the case of insertion of a connector.
b) Be sure to design the cabinet so that the Module can be installed without any extra stress such as warp or twist.
c) Since the front polarizer is easily damaged, pay attention not to scratch it.
d) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
e) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
f) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface. Handle with care.
g) Since CMOS LSI is used in this Module, take care of static electricity and injure the human earth when handling. Observe all other precautionary requirements in handling components.
h) This Open-cell has its circuitry PCBs on the side and should be handled carefully in order not to be stressed.
i) Laminate film is attached to the Module surface to prevent it from being scratched. Peel the laminate film off slowly just before the use with strict attention to electrostatic charges. Ionized air shall be blown over during the action. Blow off the 'dust' on the polarizer by using an ionized nitrogen gun, etc. Working under the following environments is desirable.
   ・All workers wear conductive shoes, conductive clothes, conductive fingerstalls and grounding belts without fail.
   ・Use Ionized blower for electrostatic removal, and peel of the laminate film with a constant speed. (Peeling of it at over 2 seconds)

j) The polarizer surface on the panel is treated with Anti Glare . In case of attaching protective board over the LCD, be careful about the optical interface fringe etc. which degrades display quality.

k) Do not expose the LCD Module to a direct sunlight, for a long period of time to protect the Module from the ultra violet ray.
l) When handling LCD Modules and assembling them into cabinets, please be noted that long-term storage in the environment of oxidization or deoxidization gas and the use of such materials as reagent, solvent, adhesive, resin, etc. which generate these gasses, may cause corrosion and discoloration of the Modules.
m) Liquid crystal contained in the panel may leak if the LCD is broken. Rinse it as soon as possible if it gets inside your eye or mouth by mistake.
n) Disassembling the Module can cause permanent damage and should be strictly avoided.
   (Except for protection film of the panel.)
o) Be careful when using it for long time with fixed pattern display as it may cause afterimage.
   (Please use a screen saver etc., in order to avoid an afterimage.)
p) If a minute particle enters in the Module and adheres to an optical material, it may cause display non-uniformity issue, etc. Therefore, fine-pitch filters have to be installed to cooling and inhalation hole if you intend to install a fan.
q) Epoxy resin (amine series curing agent), silicone adhesive material (dealcoholization series and oxime series),
   tray forming agent (azo compound) etc, in the cabinet or the packing materials may induce abnormal display with polarizer film deterioration regardless of contact or noncontact to polarizer film.
   Be sure to confirm the component of them.
r) Do not use polychloroprene. If you use it, there is some possibility of generating Cl_2 gas that influences the reliability of the connection between LCD panel and driver IC.
s) Do not put a laminate film on LCD Module, after peeling of the original one. If you put on it, it may cause discoloration or spots because of the occurrence of air gaps between the polarizer and the film.
t) Ground module bezel to stabilize against EMI and external noise.

12 Packaging Condition(TBD)

13 Label (TBD)
    1) Module Bar code label:
    TBD
    2) Packing bar code label
    TBD

 14 RoHS Directive
     This LCD Module is compliant with RoHS Directive.

15 Reliability Test Items

No.	Test Item	Conditions
1	High temperature storage test	Ta=70℃ 240h
2	Low temperature storage test △3	Ta=-35℃ 240h
3	High temperature & high humidity operation test	Ta=50℃95%RH 240h (No condensation)
4	High temperature operation test	Ta=60℃ 240h
5	Low temperature operation test	Ta=-10℃ 240h

[Result Evaluation Criteria] Under the display quality test condition with normal operation state.
　　Do not change these condition as such changes may affect practical display function.
[Normal operation state] temperature：＋15~＋35℃，Humidity：45~75%，Atmospheric pressure：86~106kPa

LC156LF1L02
1920*1080

Active Center

359.5±0.3
344.16 (A.A)
306.5
177.55
5.47
26.5
223.75±0.5
220.3
212.9
206.5±0.3
193.59 (A.A)
101.3
27.5
38
304.5
281.5
3.2
8
4

3.3 (MAX)
2-13
2.9
R1.2
R1.2
3
8.05
3
8.05
3
11.05
20.05
3
5.9±0.5
119.65±0.5
R1.2
2.9
2-15
PIN30
PIN1
CN1插入方向
CN1：20455-030E-76 （I-PEX）