Product Specification

Customer: _____

Model Name: GZ80188-DIT156FH

Date: _____

Version: _____

■ **Preliminary Specification**

☐ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by

Table of Contents

1. Record of Revision 3
2 General Specifications 4
3 Input/Output Terminals 5
4 Absolute Maximum Ratings 5
5 Electrical Characteristics 6
6 Optical Characteristics 10
7 OPTICAL SPECIFICATION 11
8 Mechanical Drawing 12
9 Packing 13
10 Precautions For Use of LCD modules 14

1. Record of Revision

Rev	Issued Date	Description	Editor
00	2023/10/11	First Release.	

2 General Specifications

Feature		Spec
Characteristics	Size	15.6 inch
	Resolution	1920(horizontal)*1080(Vertical)
	Interface	LVDS
	Connect type	Connector
	Color Depth	262K
	Technology type	a-Si
	Display Spec. Pixel pitch (mm)	TBD
	Pixel Configuration	R.G.B.-Stripe
	Display Mode	Normally Black
	Driver IC	TBD
	Surface Treatment	HC
	Viewing Direction	Full View
	Gray scale Direction	free
Mechanical	LCM (W x H x D) (mm)	360*212.35*5.7
	Active Area(mm)	344.16 (H) ×193.59 (V)
	With /Without TSP	With out
	Weight (g)	-
	LED Numbers	66(11*6)

Note 1: Viewing direction is follow the data which measured by optics equipment.
Note 2: Requirements on Environmental Protection: RoHS
Note 3: LCM weight tolerance: +/- 5%

3 Input/Output Terminals

No.	Symbol	Description
1	RIN0-	-LVDS differential data input
2	RIN0+	+LVDS differential data input
3	RIN1-	-LVDS differential data input
4	RIN1+	+LVDS differential data input
5	RIN2-	-LVDS differential data input
6	RIN2+	+LVDS differential data input
7	GND	Ground
8	RCLK-	-LVDS differential clock input
9	RCLK+	+LVDS differential clock input
10	RIN3-	-LVDS differential data input
11	RIN3+	+LVDS differential data input
12	RINE0-	-LVDS differential data input
13	RINE0+	+LVDS differential data input
14	GND	Ground
15	RINE1-	-LVDS differential data input
16	RINE1+	+LVDS differential data input
17	GND	Ground
18	RINE2-	-LVDS differential data input
19	RINE2+	+LVDS differential data input
20	RECLK-	-LVDS differential clock input
21	RECLK+	+LVDS differential clock input
22	RINE3-	-LVDS differential data input
23	RINE3+	+LVDS differential data input
24	GND	Ground
25	GND	Ground
26	GND	Ground
27	GND	Ground
28	VDD	Power Voltage for digital circuit 3.3V
28	VDD	Power Voltage for digital circuit 3.3V
30	VDD	Power Voltage for digital circuit 3.3V

5 Electrical Characteristics

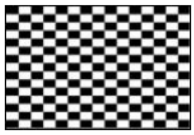
5.1 Absolute Maximum Ratings

3.1 Electrical Specifications

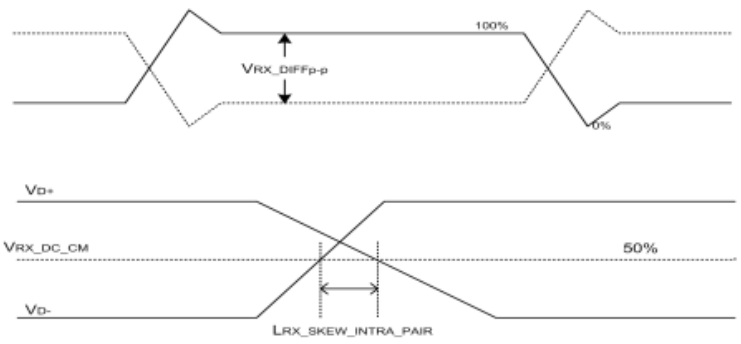
< Table 3. Electrical specifications > Ta=25+/-2°C

Parameter		Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage	V_{DD}	3.0	3.3	3.6	V	Note 1
Permissible Input Ripple Voltage	V_{RF}	-	-	100	mV	At V_{DD} = 3.3V
Power Supply Current	I_{DD}	-	303	-	mA	Note 1
Differential Input Voltage	V_{ID}	200	-	600	mV	
Power Consumption	P_D	-	1.0	1.8	W	Note 1

Notes : The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for 3.3V at 25℃.
a) Typ : Mosaic Pattern
b) Max : R/G/B Pattern

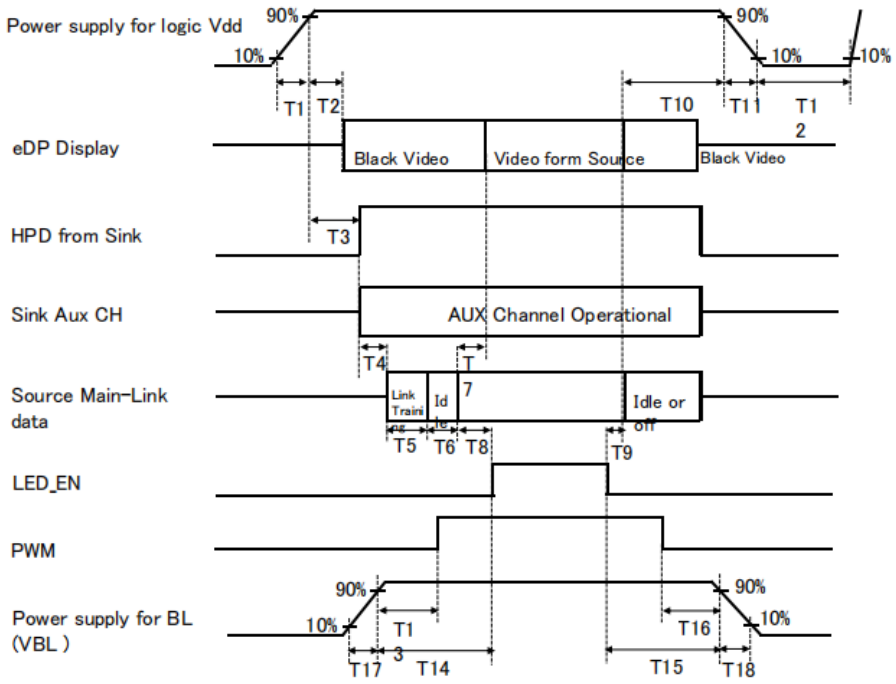


6. SIGNAL TIMING SPECIFICATION



6.2POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off seq uence shall be as shown in below



- 0.5ms ≤ T1 ≤ 10 ms
- 0ms ≤ T2 ≤ 200 ms
- 0ms ≤ T3 ≤ 200 ms
- 0ms ≤ T13
- 0ms ≤ T14
- 0ms ≤ T17
- 0ms ≤ T7 ≤ 50ms
- 0ms ≤ T10 ≤ 500 ms
- 0 ms ≤ T11 ≤ 10 ms
- 150ms ≤ T12
- 0ms ≤ T15
- 0ms ≤ T16
- 0ms ≤ T18

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on. Back Light must be turn on after power for logic and interface signal are valid.

18

7.OPTICAL SPECIFICATION

The test of Optical specifications shall be measured in a dark room (ambient luminance ≤ 1 lux and temperature = 25±2℃) with the equipment of Luminance meter system (Goniometer system and PR730) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to θØ=0 (=θ3) as the 3 o'clock direction (the "right"), θØ=90 (= θ12) as the 12 o'clock direction ("upward"), θØ=180 (= θ9) as the 9 o'clock direction ("left") and θØ=270(= θ6) as the 6 o'clock direction ("bottom"). While scanning θand/or Ø, the center of the measuring spot on the Display surface shall stay fixed. The backlight should be operating for 30 minutes prior to measurement. VDD shall be 3.3+/- 0.3V at 25°C.

Items		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angles		θ_T	Center CR≥10	70	85	-	Degree.	Note1
		θ_B		70	85	-		
		θ_L		70	85	-		
		θ_R		70	85	-		
Contrast Ratio		CR	Θ =0	-	800	-	-	Note2,
Response Time		T_{ON}	25° C	-	30	35	ms	Note3,
		T_{OFF}		-				
Chromaticity	White	X_W	Backlight is on	0.262	0.302	0.342	-	@C light CF only
		Y_W		0.298	0.338	0.378	-	
	Red	X_R		0.566	0.661	0.646	-	
		Y_R		0.285	0.324	0.365	-	
	Green	X_G		0.263	0.261	0.343	-	
		Y_G		0.527	0.592	0.607	-	
	Blue	X_B		0.107	0.173	0.187	-	
		Y_B		0.071	0.082	0.121	-	
Uniformity		U		75	80	-	%	
NTSC					50		%	
Luminance		L			1000			

Notes :

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).

2. Contrast measurements shall be made at viewing angle of Θ= 0 and at the center of t he LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state .
(see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

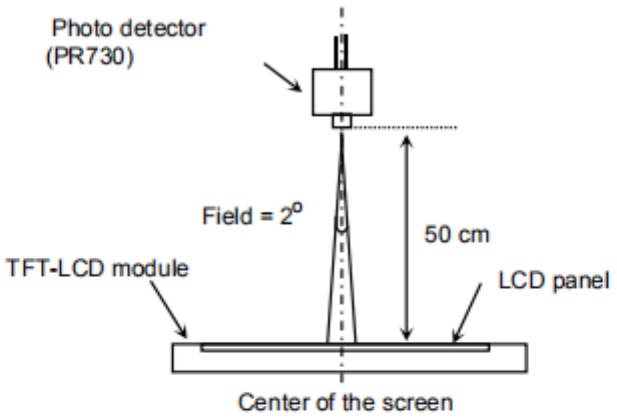
$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. The electro-optical response time measurements shall be made as FIGURE 4 by switc hing the "data" input signal ON and OFF. The times needed for the luminance to change f rom 10% to 90% is Tr, and 90% to 10% is Td.

4. Cross-Talk of one area of the LCD surface by another shall be measured by comparing the luminance (YA) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (YB) of that same area when any adjacent area is driven dark.
(See FIGURE 5).

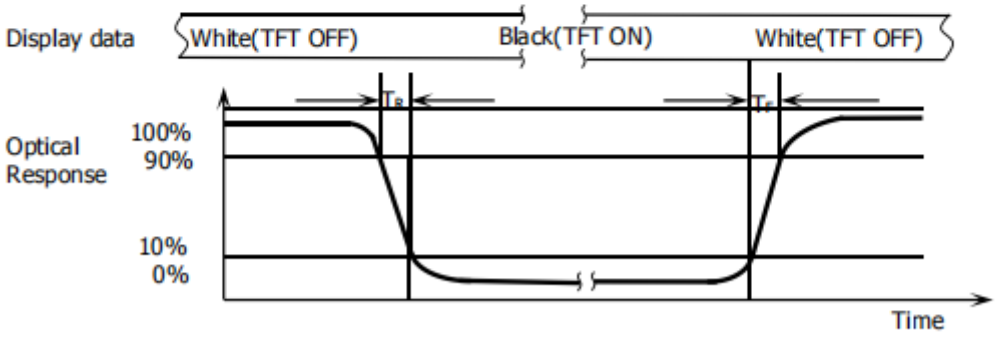
Optical measurements

Figure 1. Measurement Set Up



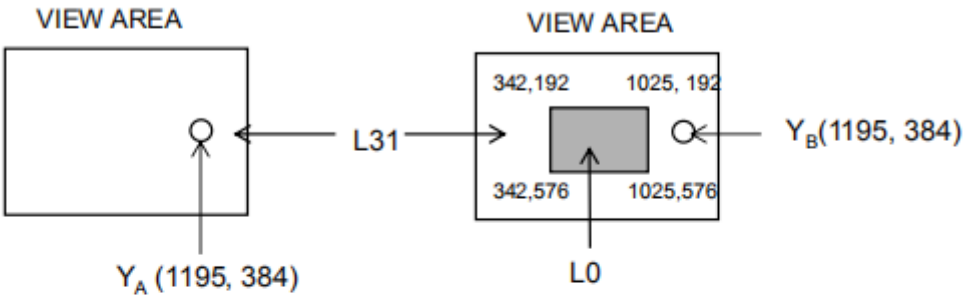
Optical characteristics measurement setup

Figure 2. Response Time Testing



The electro-optical response time measurements shall be made as shown in FIG URE 4 by switching the “data” input signal ON and OFF. The times needed for th e luminance to change from 10% to 90% is Td and 90% to 10% is Tr.

Figure 3. Cross Modulation Test Description



$$\text{Cross-Talk (\%)} = \left| \frac{Y_B - Y_A}{Y_A} \right| \times 100$$

Where:

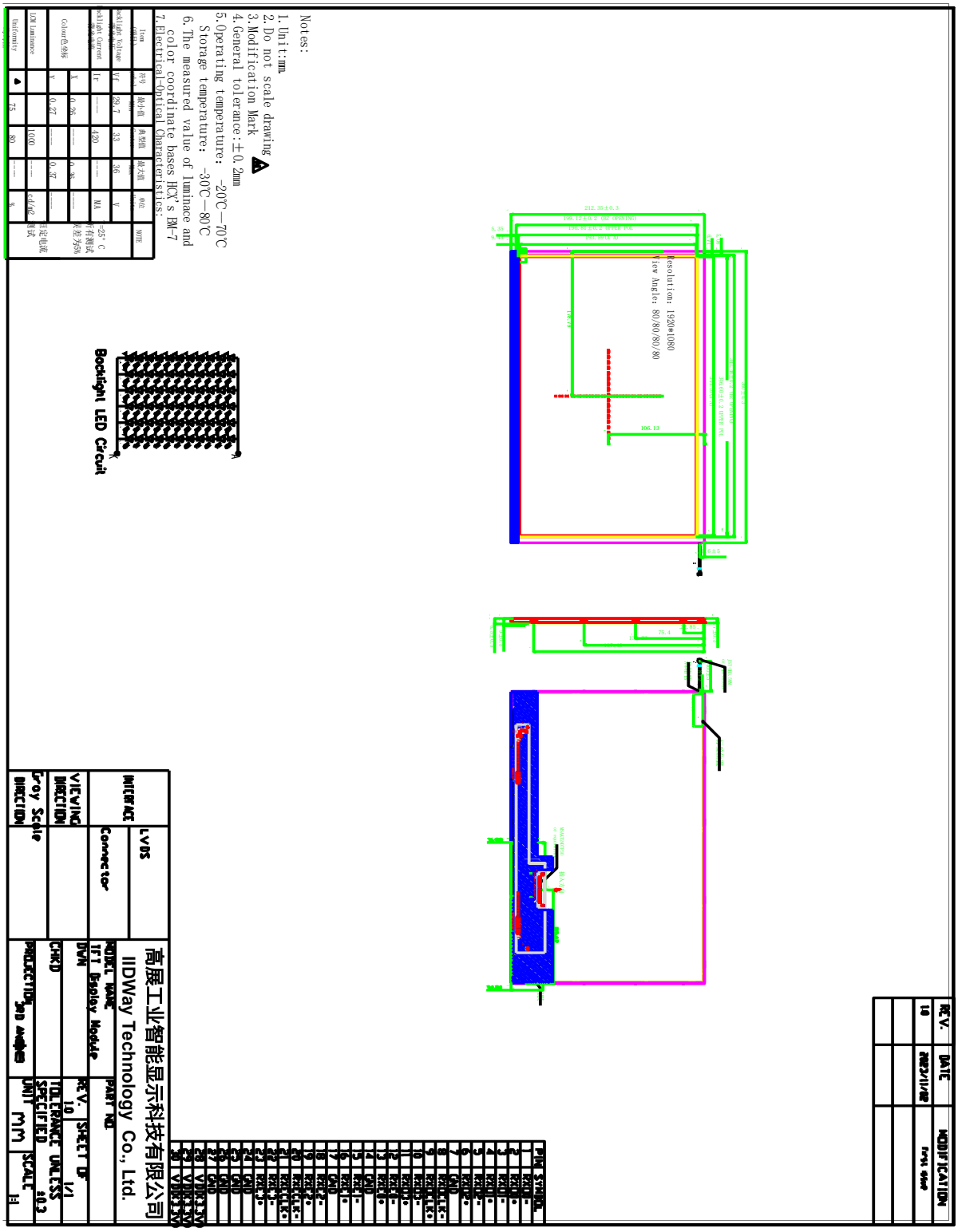
Y_A = Initial luminance of measured area (cd/m²)

Y_B = Subsequent luminance of measured area (cd/m²)

The location measured will be exactly the same in both patterns

Cross-Talk of one area of the LCD surface by another shall be measured by com paring the luminance (YA) of a 25mm diameter area, with all display pixels set to a gray level, to the luminance (YB) of that same area when any adjacent area is driven dark (Refer to FIGURE 5).

8 Mechanical Drawing



9 Packing

TBD

10. Precautions For Use of LCD modules

10.1RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

<Table 10. Reliability test>

No	Test Item	Condition	Remarks
1	High Temperature Opeartion	Ts= +70℃, 240hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Opeartion	Ta= -20℃, 240hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	Ta= +80℃, 240hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	Ta= -30℃, 240hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	Ta= +60℃, 90% RH max, 160 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-30℃ 30 min ~ +80℃ 30 min Change time: 5min, 30 Cycle	Start with cold temperature,end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Static Discharge (Opeartion)	C=150pF, R=330Ω , complete machine , Air:±15KV, 5 times; Contact:±8KV, 5 times; (Environment: 15℃ ~ 35℃, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 80 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

10.2 HANDLING & CAUTIONS

(1) Cautions when taking out the module

- Pick the pouch only, when taking out module from a shipping package.

(2) Cautions for handling the module

- As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
- As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
- As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
- Do not pull the interface connector in or out while the LCD module is operating.
- Put the module display side down on a flat horizontal plane.
- Handle connectors and cables with care.

(3) Cautions for the operation

- When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
- Obey the supply voltage sequence. If wrong sequence is applied, the module

(4) Cautions for the atmosphere

- Dew drop atmosphere should be avoided.
- Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.

(5) Cautions for the module characteristics

- Do not apply fixed pattern data signal to the LCD module at product aging.
- Applying fixed pattern for a long time may cause image sticking.

(6) Other cautions

- Do not disassemble and/or re-assemble LCD module.
- Do not re-adjust variable resistor or switch etc.
- When returning the module for repair or etc., Please pack the module not to be broken.