FORTEC
ELEKTRONIK AG

OUR GLOBAL COMPETENCE CENTRES

APOLLO DISPLAY TECHNOLOGIES

DISTEC

DISPLAY TECHNOLOGY

FORTEC
ELEKTRONIK AG

Datasheet

InnoLux

DJ070IA-20B

CH-01-071

Doc. Number:

☐ Tentative Specification

■ Preliminary Specification

☐ Approval Specification

MODEL NO.: DJ070IA
SUFFIX: 20B

Customer:

APPROVED BY **SIGNATURE**

Name / Title

Note :

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By
KJ Cheng	Pam Liang	Phoebe Huang

REVISION HISTORY

Version	Date	Page	Description
1.0	2020/2/10	All	Product Specification is first issued.

Contents

1. General Specifications

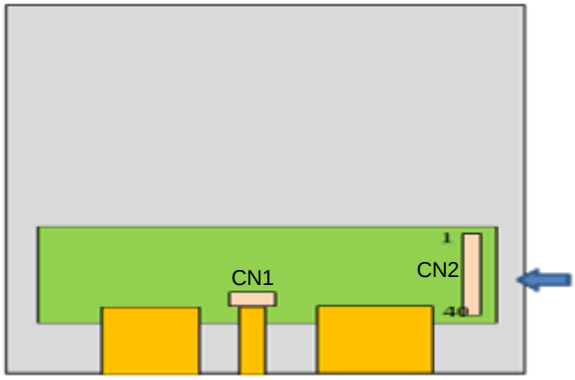
No.	Item	Specification	Remark
1	LCD size	7.0 inch (Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	1280 × 3(RGB) × 768	
4	Display mode	Normally Black, Transmissive, AAS	
5	Dot pitch	0.1191 (W) × 0.1191 (H) mm	
6	Active area	152.45 (W) × 91.47 (H) mm	
7	Module size	163.35 x 107.12 x 6mm (excluding mounting features and PCBa components)	Note 1
8	Surface treatment	AGLR	
9	Color arrangement	RGB-stripe	
10	Color Depth	RGB 8/8/8bit	
11	Interface	1-port LVDS (DE mode only)	
12	Backlight power consumption	(3.37)W (Max)	
13	Panel power consumption	(0.8) W (typ.)	
14	RoHs Compliant	Yes	
15	AECQ qualified	Electorical components except connectors	
16	Driving mode	Dot inversion	
17	Weight	(180g+-10%)	

Note 1: Refer to Mechanical Drawing.

2. Pin Assignment

2.1. Input Connector

The recommended connector model as below:
1. **CN1: IRISO IMSA-12003S-10Y900.**
2. **CN2: IRISO IMSA-12003S-40Y901**



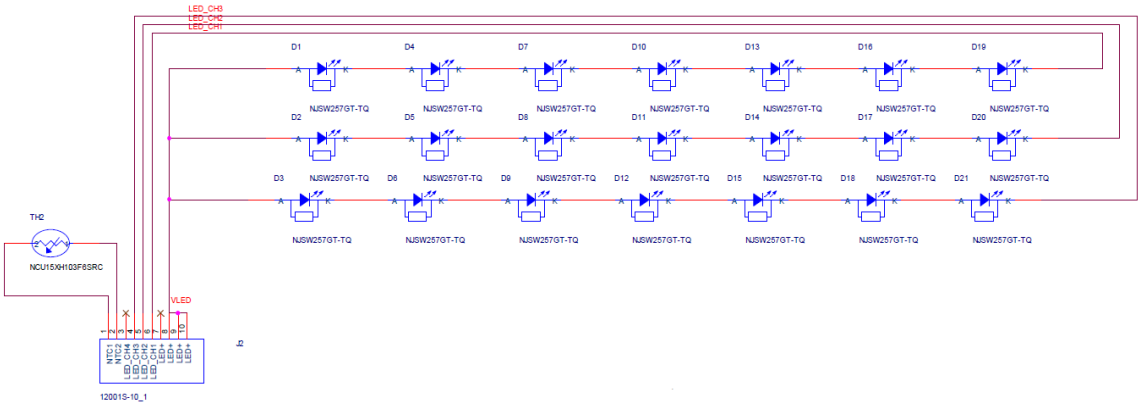
Pin No.	Symbol	I/O	Pulled Internally	Function	Remark
1	NTC1	**Input**		NTC Resistance node 1	
2	NTC2	**Input**		NTC Resistance node 2	
3	dummy	**NC**		dummy pin (not used)	
4	LED_CH3	**Power**		Negative backlight voltage	
5	LED_CH2	**Power**		Negative backlight voltage	
6	LED_CH1	**Power**		Negative backlight voltage	
7	dummy	**-**		dummy pin (not used)	
8	LED+	**Power**		Positive backlight voltage	
9	LED+	**Power**		Positive backlight voltage	
10	LED+	**Power**		Positive backlight voltage	
11	dummy	**-**		dummy pin (not used)	
12	NC	**-**		INX internal use (function pin)	
13	dummy	**-**		dummy pin (not used)	
14	UDLR	**Input**	**H**	control data and data driver shift direction; Internal resistor pull to H	
15	S_SDI	**Input**		Serial communication data input pin. 4/3-wire mode normally pulled low. If no used, please keep floating push-pull circuit	
16	S_SDO	**Input**		Serial communication data output pin. Note: Output enable controlled by	

				4-wire interface. If no used, please keep floating Buffer output	
17	S_SCLK	**Input**		Serial communication clock input. 4/3-wire mode normally pulled low. If no used, please keep floating push-pull circuit	
18	S_SCS	**Input**		Serial communication chip selection. Normally pulled high. If no used, please keep floating Internal resistor pull to H	
19	IND_OUT	**output**		abnormal indicated pin: If no DE/RXCLKIN input to INX module, output high level to our customer site by this pin If no used, please keep floating push-pull circuit	
20	STBYB	**Input**		**Standby mode setting pin** Internal resistor pull to L	
21	RESET	**Input**		**Global reset pin** Internal resistor pull to H	
22	GND	**Power**		**Ground**	
23	RXIN3+	**Input**		**LVDS data 3+**	
24	RXIN3-	**Input**		**LVDS data 3-**	
25	GND	**Power**		**Ground**	
26	RXIN2+	**Input**		**LVDS data 2+**	
27	RXIN2-	**Input**		**LVDS data 2-**	
28	GND	**Power**		**Ground**	
29	RXCLKIN+	**Input**		**LVDS clk +**	
30	RXCLKIN-	**Input**		**LVDS clk -**	
31	GND	**Power**		**Ground**	
32	RXIN1+	**Input**		**LVDS data 1+**	
33	RXIN1-	**Input**		**LVDS data 1-**	
34	GND	**Power**		**Ground**	
35	RXIN0+	**Input**		**LVDS data 0+**	
36	RXIN0-	**Input**		**LVDS data 0-**	
37	GND	**Power**		**Ground**	
38	VCC	**Power**		**External main and I/O power supply ; Power3.3V (typ.)**	
39	VCC	**Power**		**External main and I/O power supply ; Power3.3V (typ.)**	
40	GND	**Power**		**Ground**	

2.2 Backlight

The recommended connector model is IRISO IMSA-12003S-10Y900.

Pin No.	Symbol	I/O	Function	Remark
1	NTC1	**Input**	NTC Function for LED Driver, If not use please keep floating.	
2	NTC2	**Input**	NTC Function for LED Driver, If not use please keep floating.	
3	dummy	-	Dummy pin	
4	LED_CH3	**Power**	Negative backlight voltage	
5	LED_CH2	**Power**	Negative backlight voltage	
6	LED_CH1	**Power**	Negative backlight voltage	
7	dummy	-	Dummy pin	
8	LED+	**Power**	Positive backlight voltage	
9	LED+	**Power**	Positive backlight voltage	
10	LED+	**Power**	Positive backlight voltage	



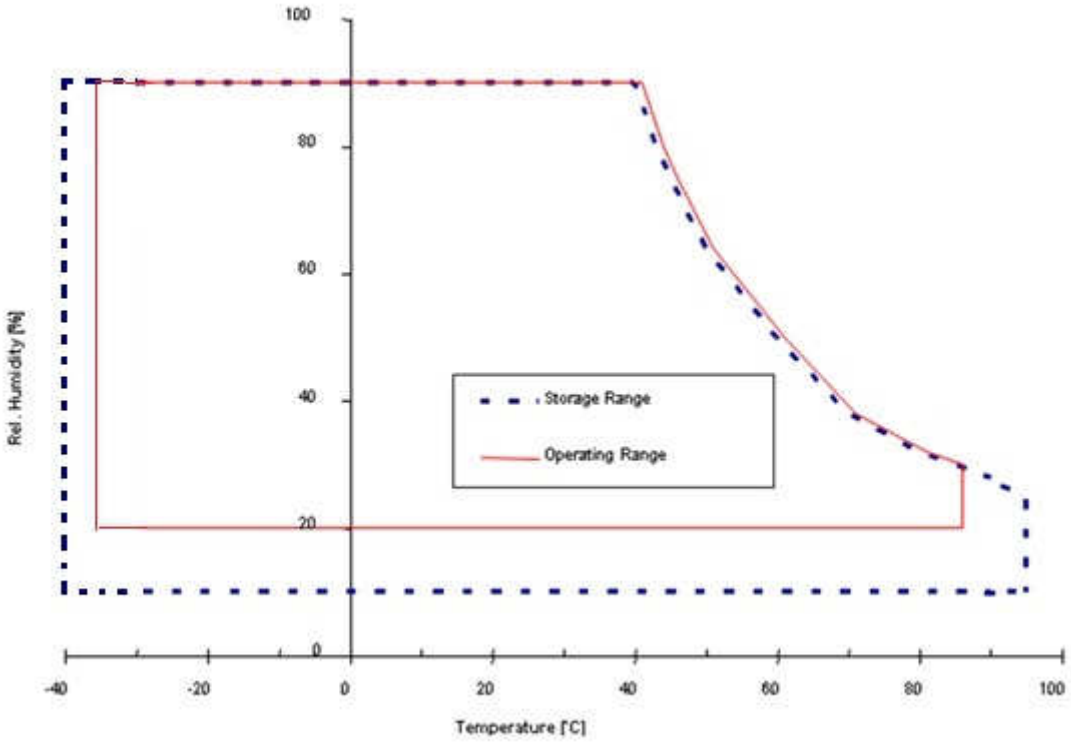
3. Operation Specifications

There is a difference between the maximum value of a parameter's specification and its absolute maximum value. The maximum value indicates that the performance will be reduced when you go beyond this value, but this is reversible. Where the absolute maximum value as indicated in this section is a value beyond which permanent damage to the product or its function may be expected.
Function operation should be restricted to the conditions described under Normal Operating Conditions

3.1 Absolute Ratings of Environment

Item	Symbol	Min.	Max.	Unit	Remark
Operating Temperature	OTR	-35	+85	℃	Note 1,2,3
Storage Temperature	STR	-40	+95	℃	Note 1

Note 1: Panel surface temperature, no condensation allowed under any condition.
Note 2: Operating from -40/-30'C possible, readable to some extent, cosmetic defects can happen.
Note 3: Module operating with de-rating function (follow product de-rating curve)



3.2 Absolute Ratings of TFT LCD Module

Item	Symbol	Min.	Max.	Unit	Remark
External +3.3V power supply.	VCC	3.0	3.8	V	T= -40℃ ~ +85℃

Note1: GND=0V

3.3 Absolute Ratings of Backlight

3.3.1 Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	V_L	19.404	20.041	20.447	V	Note 1
Current for LED backlight	I_L		55		mA	Note 2
LED life time	-	10,000			Hr	Note3
Power Consumption	Watt	3.2	3.31	3.37	Watt	Note4

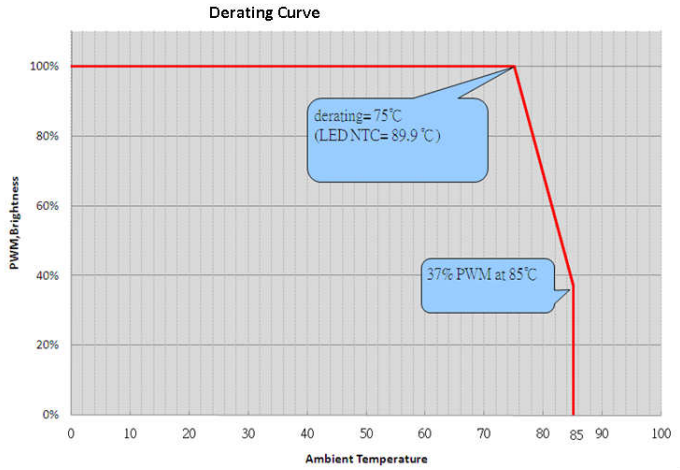
Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and I_L = (55)mA,1parallel
Note 2: 1parallel
Note 3: The "LED life time" is defined as the module brightness decrease to 80% original brightness at Ta=25℃ and I_L = (55)mA. The LED lifetime could be decreased if operating I_L is larger than (55)mA.
Note4: Total 7S3P

3.3.2 Backlight NTC Registor

To limit the heat dissipation under high ambient temperature (Ta). The LED string has a NTC (Negative Temperature Coefficient) to detect the ambient temperature of LED string. This NTC was located in the middle of FPC mounted with LED that acts as an indicator to show if the module is operated under safe operation region without overheating and damage. The detail application for this NTC, please refer to data sheet of Murata P/N : NCU15XH103F6SRC
About Murata NCU15XH103F6SRC application. Please follow component data sheet.

3.3.3 Derating diagram

*Suggest that derating the BLU from 75℃ and 37% PWM at 85℃ to avoid damaging the module.



3.4 Electrical characteristics

Recommended operation conditions (based on GND=0V; Ta 25℃±2℃)

Item	Symbol	Min.	Typ	Max.	Unit	Remark
External +3.3V power supply.	VCC	3.0	3.3	3.6	V	Note 1
Low level input voltage	V_{IL1}	GND		0.3*VCC	V	
High level input voltage	V_{IH1}	0.7*VCC		VCC	V	
Low level output voltage	VOL1	GND		0.4V	V	
High level output voltage	VOH1	VCC-0.4V		VCC	V	
VCC Current	I_VCC	180	225	270	mA	
Inrush VCC Current	I_VCC	(700)	(800)	(900)	mA	Note 2

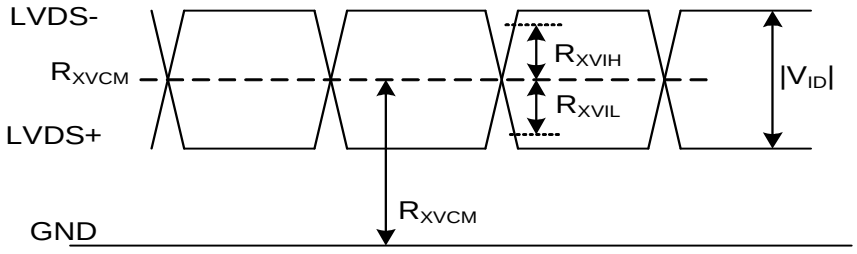
Note 1: The VCC ripple shall be less than 150m Volt (+/- 75mV)
Ripple higher than the suggested value should be verified by the actual application.
Note 2. Reference value 10%->90% during 470us

3.5 LVDS Interface Timing

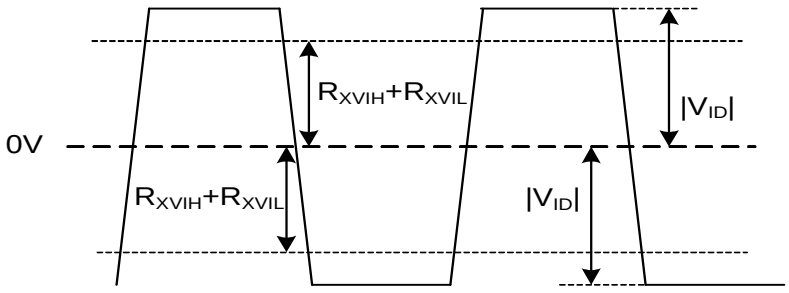
3.5.1 LVDS Interface DC characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	R_{XVIH}	+0.05	-	+0.3	V	
Differential input low threshold voltage	R_{XVIL}	-0.3	-	-0.05	V	
Differential input common mode voltage	R_{XVCM}	1.0	1.2	1.4	V	
Differential input voltage	|VID|	0.1	-	0.6	V	
Differential input leakage current	I_{XVLK}	-10	-	+10	uA	VCC+VCC_IF current, VCC=VCC_IF=1.8V, CLKP/N, DxP/N

Single-end Signal



Differential Signal



3.5.2 LVDS Interface AC Characteristic

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Clock frequency	F_{LVCLK}	25	-	85	MHz	Refer to input timing table for each display resolution.
Clock period	T_{LVCLK}	11.76	-	40	ns	$T_{LVCLK} = 1/F_{LVCLK}$
Clock high time	T_{LVCH}	-	$4/(7*T_{LVCLK})$	-	ns	
Clock low time	T_{LVCL}	-	$3/(7*T_{LVCLK})$	-	ns	
Input data skew margin	TRSKM	-	-	0.25	UI	VCC_IF=1.8V without SSC FLVCLK ≤ 72MHz
1 data bit time	UI	-	1/7	-	T_{LVCLK}	Ref. Fig3.
Position 1	T_{POS1}	-0.25	0	0.25	UI	Ref. Fig2. (FLVCLK ≤ 72MHz)
Position 0	T_{POS0}	0.75	1	1.25	UI	
Position 6	T_{POS6}	1.75	2	2.25	UI	
Position 5	T_{POS5}	2.75	3	3.25	UI	
Position 4	T_{POS4}	3.75	4	4.25	UI	
Position 3	T_{POS3}	4.75	5	5.25	UI	
Position 2	T_{POS2}	5.75	6	6.25	UI	
PLL wake-up time	T_{enPLL}	-	-	150	us	Ref. Fig1.

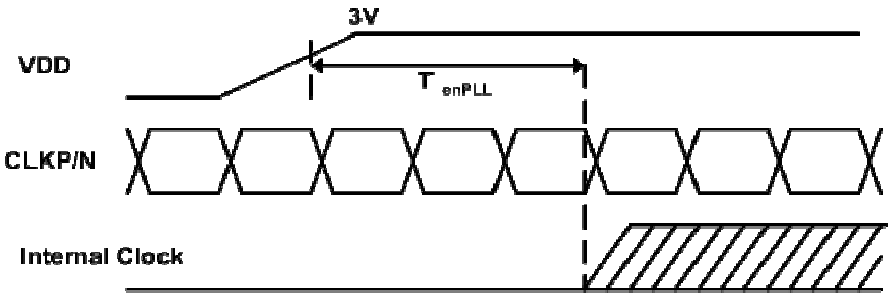


Fig1.

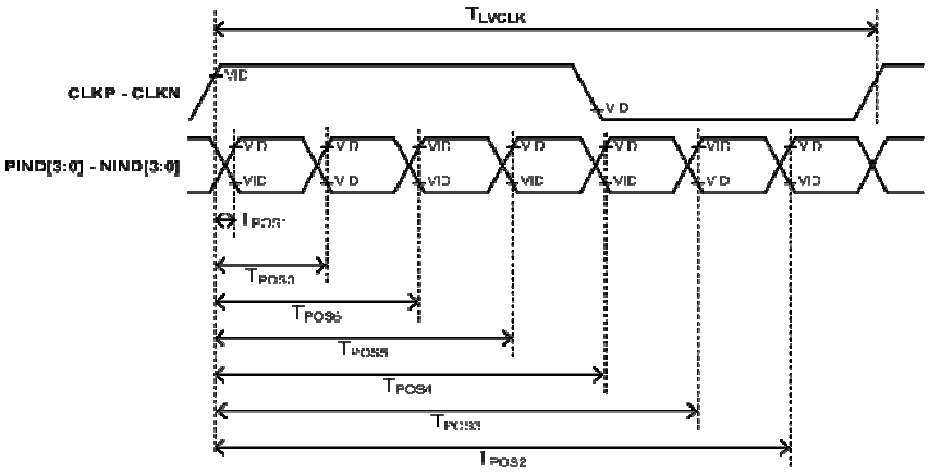


Fig2.

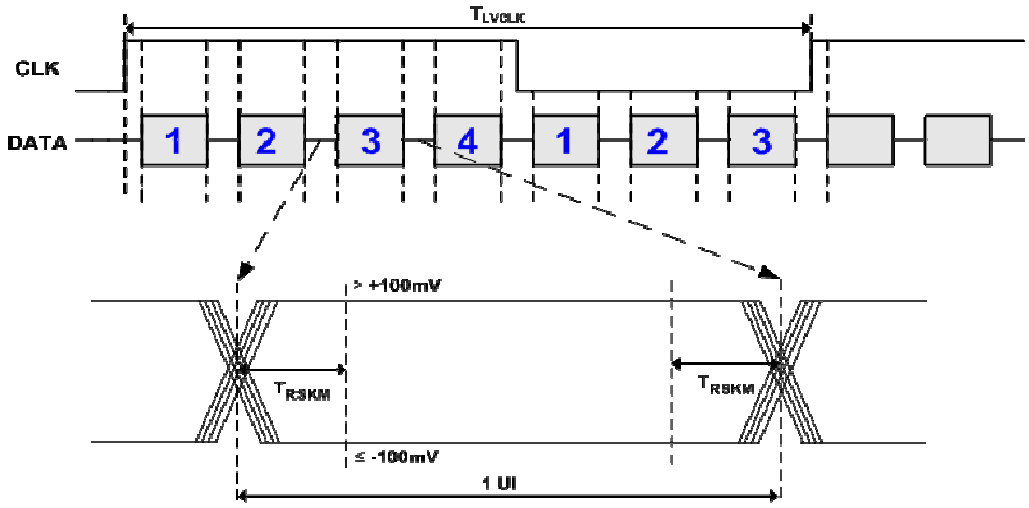
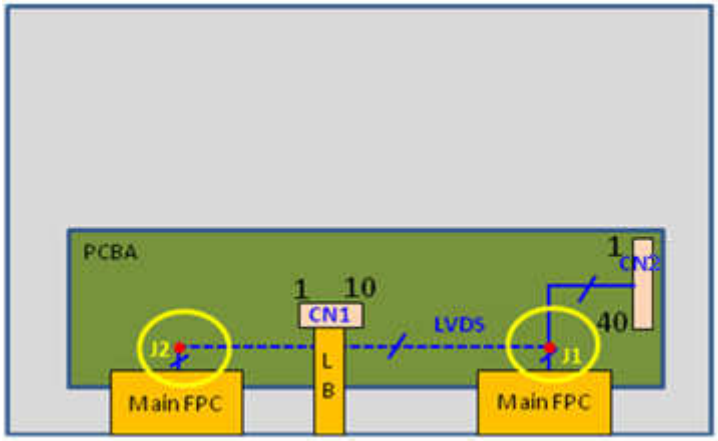


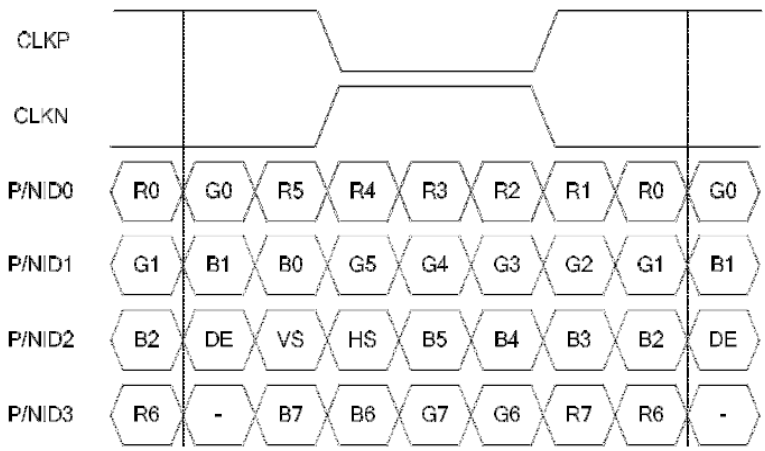
Fig3.

3.5.3 Eye-diagram check point

LVDS AC Characteristic check point need to near source IC that show as below:
J1: LVDS via hole for source driver 1 (need to remove solder mask)
J2: LVDS terminal R for source driver 2

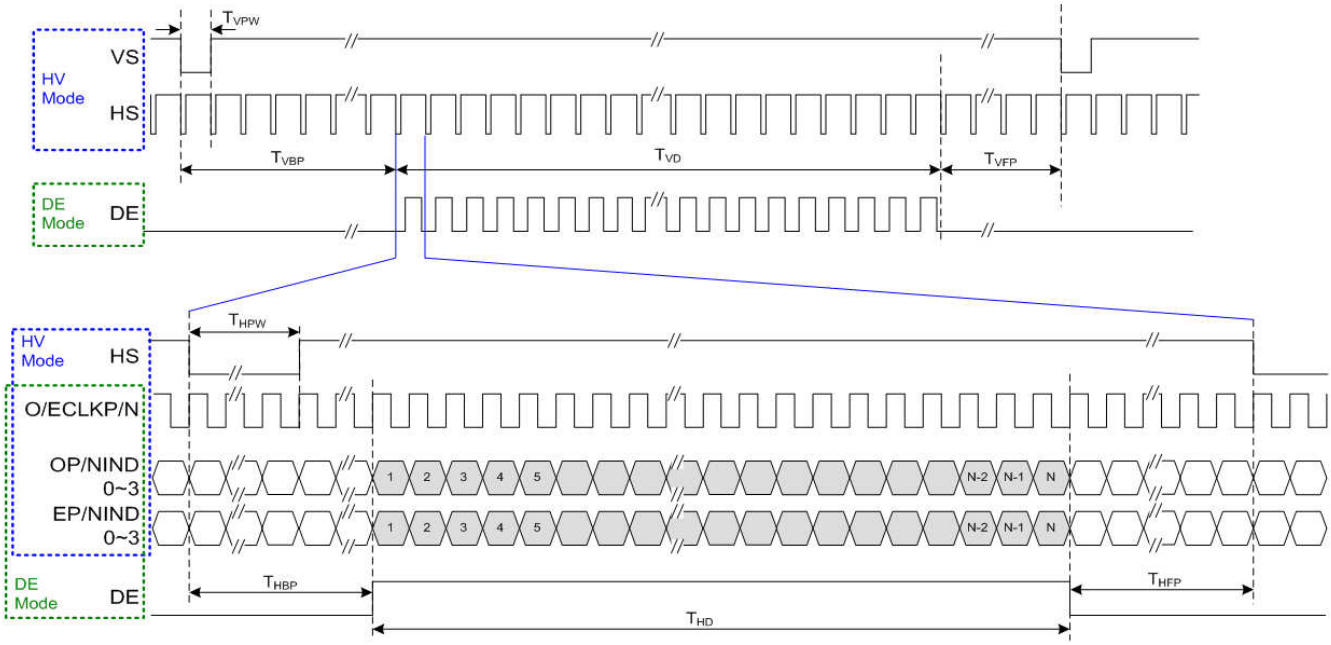


3.5.4 Data Input Format



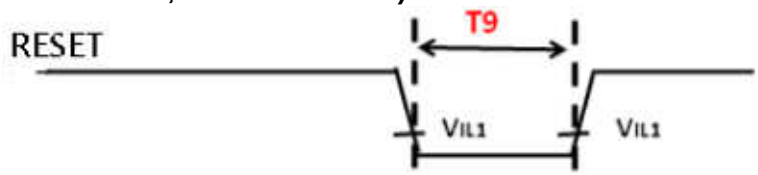
3.5.5 Data Input Format

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	FDCLK	64.1	68.98	70.5	MHz
Horizontal valid data	thd		1280		DCLK
HS period time	th	1380	1430	1440	DCLK
HS blanking	thbp+thfp	100	150	160	DCLK
HS pulse width	Thpw	16	-	<Thbp	DCLK
HBP (include Thpw)	Thbp		48		DCLK
HFP	Thfp	52	102	112	DCLK
Vertical valid data	tvd		768		H
VS period time	tv	774	804	816	H
VS blanking	tvbp+tvfp	6	36	48	H
VS pulse width	Tvpw	1	-	<Tvbp	H
VBP (include Tvpw)	Tvbp		3		H
VFP	Tvfp	3	33	45	H
Frame rate	FR		60		Hz



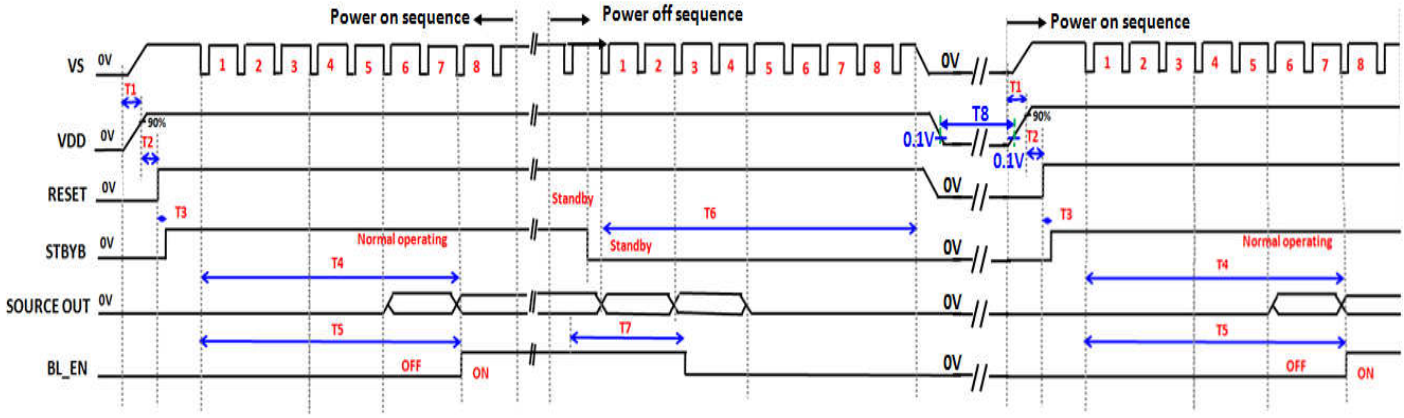
3.5.6 Reset Timing Characteristics

(VCC = 3.0V ~ 3.6V, Ta= -40℃ ~ +85℃)



Symbol	SPEC.			Unit
	Min.	Typ.	Max.	
T9	1	--	--	mS

3.5.7 Power on/ off Sequence



Note 1:
The Backlight converter power must be turned on after the power supply for the logic and the interface signal is valid.

Symbol	SPEC.			Unit
	Min.	Typ.	Max.	
T1	--	--	20	mS
T2	1	--	--	mS
T3	0	--	--	mS
T4	--	7	--	VS
T5	7	--	--	VS
T6	8	--	--	VS
T7	2.5	--	--	VS
T8	10	--	--	mS
T9	1	--	--	mS

In order to power/cell discharge, signal input≧7vs when power off (STBYB go Low)

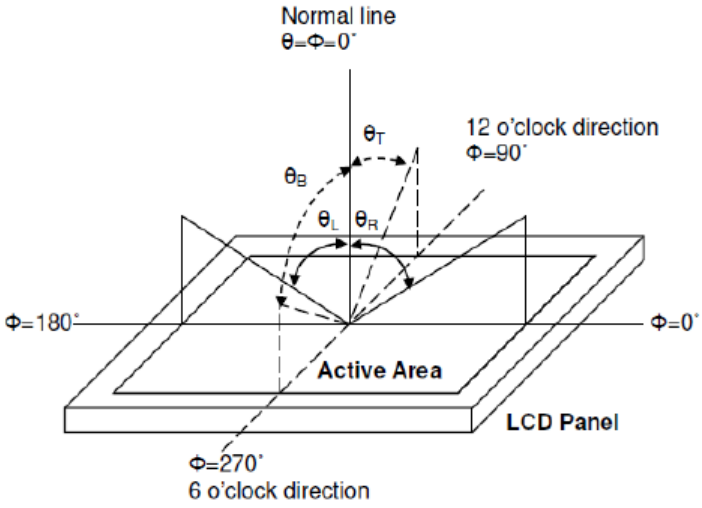
4 Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR≥ 10)	θ_L	Φ=180° (9 o'clock)	80	-	--	degree	Note 1
	θ_R	Φ=0° (3 o'clock)	80	-	--		
	θ_T	Φ=90° (12 o'clock)	80	-	--		
	θ_B	Φ=270° (6 o'clock)	80	-	--		
Response time	$T_{ON}+T_{OFF}$	Normal θ=Φ=0°	-		32	msec msec	Note 3
Contrast ratio	CR		800	1000	--	-	Note 2 Note 4
Contrast angle 1 (H+40/-40°,V+15/-15°) w/o comp.	CR	H+40/-40°,V+15/-15°	60	-	-	-	
Color chromaticity (CIE 1931)	Wx	Normal θ=Φ=0°	0.283	0.313	0.343	-	Note 2 Note 5
	Wy		0.299	0.329	0.359	-	
	Rx		0.609	0.639	0.669		
	Ry		0.275	0.305	0.335		
	Gx		0.265	0.295	0.325		
	Gy		0.589	0.619	0.649		
	Bx		0.114	0.144	0.174		
	By		0.040	0.070	0.100		
NTSC (CIE 1931)	-		70	75	-	%	Note 2 Note 5
Luminance Perpendicular	L		750	930	-	cd/m²	Note 5
Luminance uniformity	Y_U		80		-	%	Note 6
Gamma	-		2.0	2.2	2.4	-	
Reflectance	SCI		-	-	4.5	%	
	SCE		-	-	1.35	%	

Test Conditions:
1.V_{cc}=3.3V, I_L=55mA per chain (Backlight current), the ambient temperature is 25℃.

2. The test systems refer to Note 2.

Note 1: Definition of viewing angle range. The view angel for Θ=85°is measured by BM-5A.



Definition of viewing angle

Note 2: Definition of optical measurement system. The backlight has been light on for 30 minutes then measured the optical properties at the center point of the LCD screen in dark room. The color chromaticity, contrast ratio are measured by DMS 803.

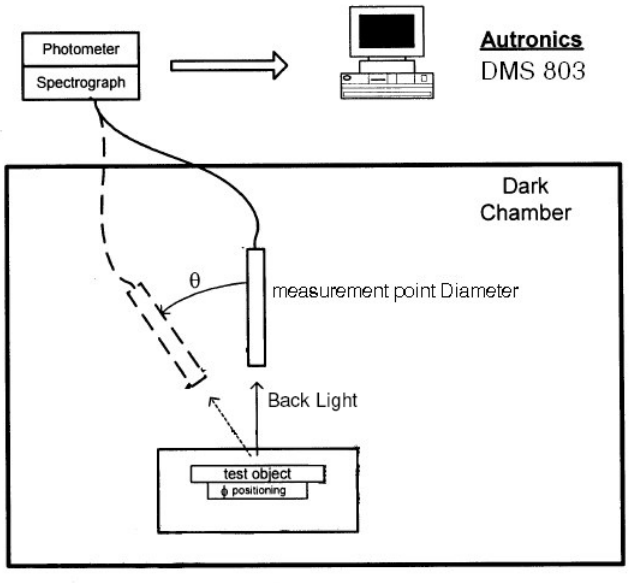


Fig. 4-2 Optical measurement system setup

Note 3: Definition of response time. The response time is measured by photo detector of oscilloscope.

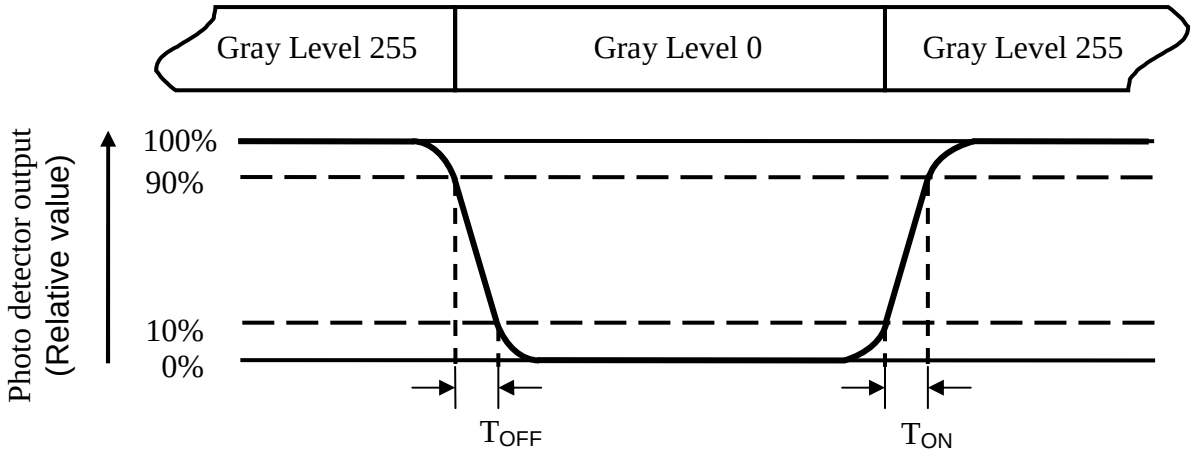


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Color chromaticity is defined by CIE1931.

Note 6: Definition of luminance uniformity

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).

L----- Active area length W----- Active area width

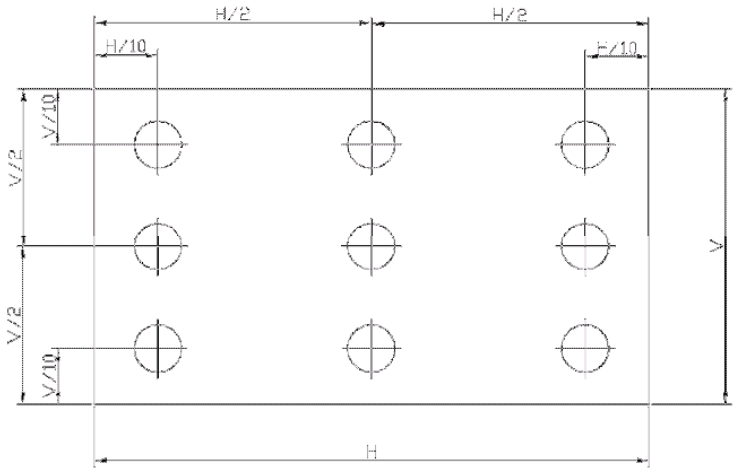


Fig. 4- 4 Definition of measuring points

$$\text{Luminance Uniformity (Yu)} = \frac{B_{min}}{B_{max}}$$

Bmax: The measured maximum luminance of all measurement position.

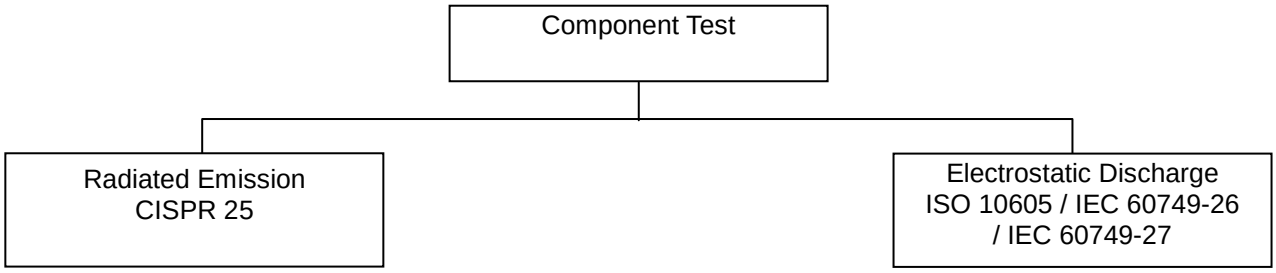
Bmin : The measured minimum luminance of all measurement position.

5 Environmental / reliability tests

This section contains a table with all the relevant environmental reliability tests that are applicable. Reference must be made to the test methods as defined in corresponding standards' documents.

5.1 Electromagnetic compatibility (EMC)

5.1.1 Overview of Required EMC standards



EMC standards:

Standard No.	Title	Date
CISPR 25	Radio disturbance characteristics for the protection of receivers used on board vehicles, boats, and on devices - Limits and methods of measurement	2002
ISO 10605	Road vehicles – Test methods for electrical disturbances from electrostatic discharge	12/2001
IEC 60749-26	Electrostatic discharge(ESD)sensitivity testing human body model (HBM)	10/2003
IEC 60749-27	Electrostatic discharge(ESD)sensitivity testing machine model(MM)	10/2003

5.1.2 Radiated emission

CISPR 25: Limits for Narrowband Radiated Disturbances from Components (2002)
Test conditions and set-up:
- The equipment is built up with a driving box, a LCD module and a backlight assembly. It is connected to an external battery by a pair of wires of 1.5 meter long.
- RGB interface
- spread spectrum is on.
- Test pattern is 160x60 pixel checkerboard.
- This display module complies with CISPR 25, Class 3

5.2 Reliability test conditions

Item	Test Conditions	Remark
High Temperature Storage Test	Ta=95ºC,500 hours	Note 1 Note 2 Note 3 Note 5
Low Temperature Storage Test	Ta=-40ºC, 500 hours	
High Temperature Operation Test	Tp=85ºC, 500 hours	
Low Temperature Operation Test	Tp=- 35ºC, 500 hours	
High Temperature & High Humidity Operation Test	HTHH Operation (High temperature High humidity operating) 65℃ 90%RH, 500hrs	Note 1 Note 2 Note 3 Note 5 Note 6
Thermal Shock	[(-40℃ 30min)→(85℃ 30min)]/cycle， 200cycles	Note 1 Note 2 Note 3 Note 5 Note 7
ESD Test (Non-Operation)	1.Surface Contact discharge ±8kV (Non-operation mode) C = 150pF, R = 330Ω , 2.air discharge ±15kV, 5 times per point; 5 points / panel C = 150pF, R = 330Ω;	Note 1 Note 2 Note 3 Note 5
Mechanical Shock	6 directions: X, Y, Z axes Repeats: 3 Peak acc.: 100g Pulse duration: 6ms Temperature 25℃	Note 2 Note 4
Mechanical Vibration	10 ~55~10Hz; Sweep Mode: Log Sweep Sweep time: 1 Oct/min; Acceleration: 1.5G; Test time:2 hr for each direction of X, Y, Z.	Note 2 Note 4

Note 1: Ta = Ambient Temperature, Tp = Panel Surface Temperature.

Note 2: Criteria: Normal display image with no Function NG, or line defects.

Note 3: Evaluation should be tested after storage at room temperature for more than two hour

Note 4: At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Note 5: A certain level of Mura (non-uniformity) of dark / black image will happen several days after

high temperature testing (H.T.T.). There is a slowly part recovery over a long time (several months). Such a long exposure time like in H.T.T. will normally not happen in a real application. Therefore the test H.T.T. was introduced to simulate cycles with normal conditions in-between but with the same total exposure time what show a significant reduced Mura.

The root cause is related to tension generated due to different amount of shrinking in the stack of layers in the polarizer sheet. The effect is more significant on larger displays like this size. An investigation into alternative polarizer material showed that there is no better alternative currently available.

Note 6: Pol. degradation (ex. Pol. peeling, Pol. discoloration etc.) should be ignored.

Note 7: After 168 cycles, Pol. degradation (ex. Pol. peeling, Pol. crack etc.) should be ignored.

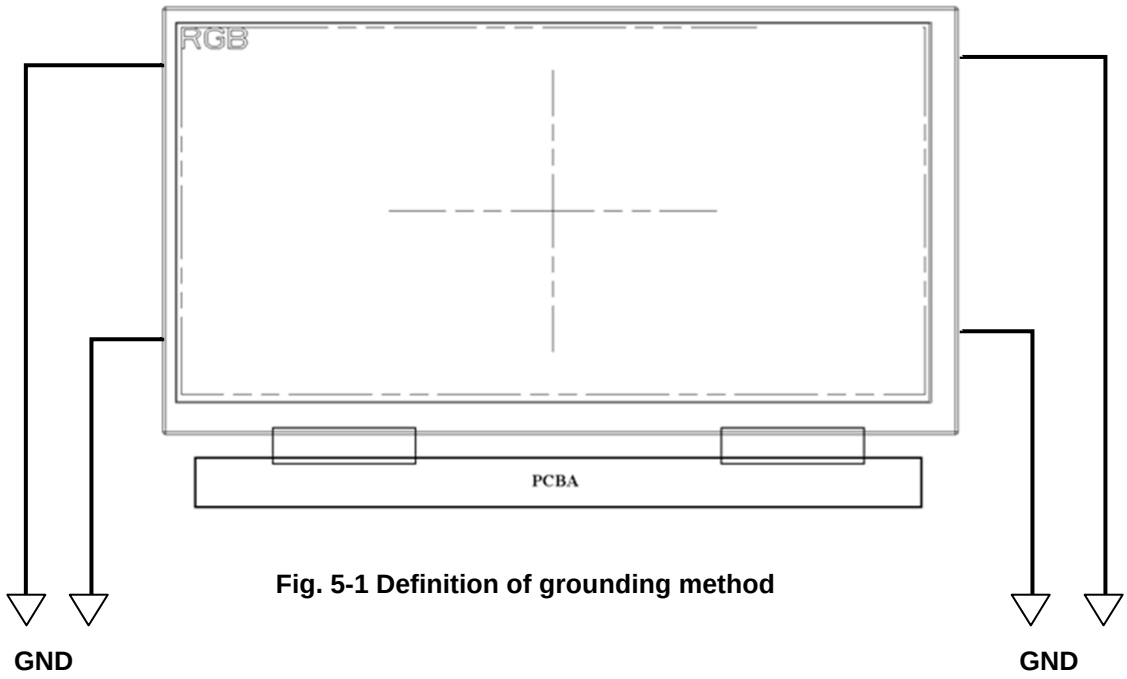


Fig. 5-1 Definition of grounding method

6 General Precautions

6.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or cloths, wash it off immediately by using soap and water.

6.2 Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.

2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.

3. To avoid contamination on the display surface, do not touch the module surface with bare hands.

4. Keep a space so that the LCD panels do not touch other components.

5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.

6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.

7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

8. Protection film: Max. Peel off speed to avoid ESD damage. (Ex. 10cm/sec)

9. Screw for stud: Max length to avoid B/L damage. (Do not screw in more than 5mm)

6.3 Static Electricity

1. Be sure to ground module before turning on power or operating module.

2. Do not apply voltage which exceeds the absolute maximum rating value.

6.4 Storage

1. Store the module in a dark room where must keep at 25±10℃ and 65%RH or less.

2. Do not store the module in surroundings containing organic solvent or corrosive gas.

3. Store the module in an anti-electrostatic container or bag.

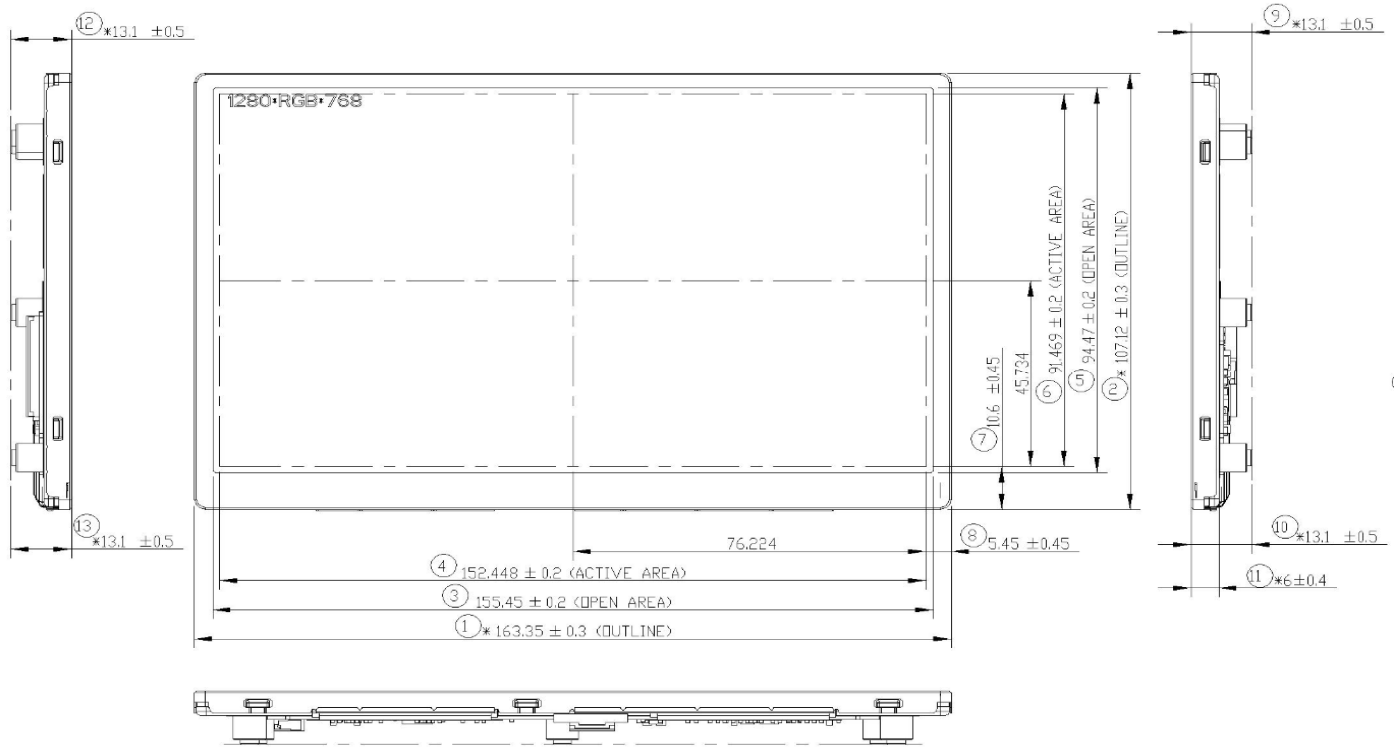
6.5 Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.

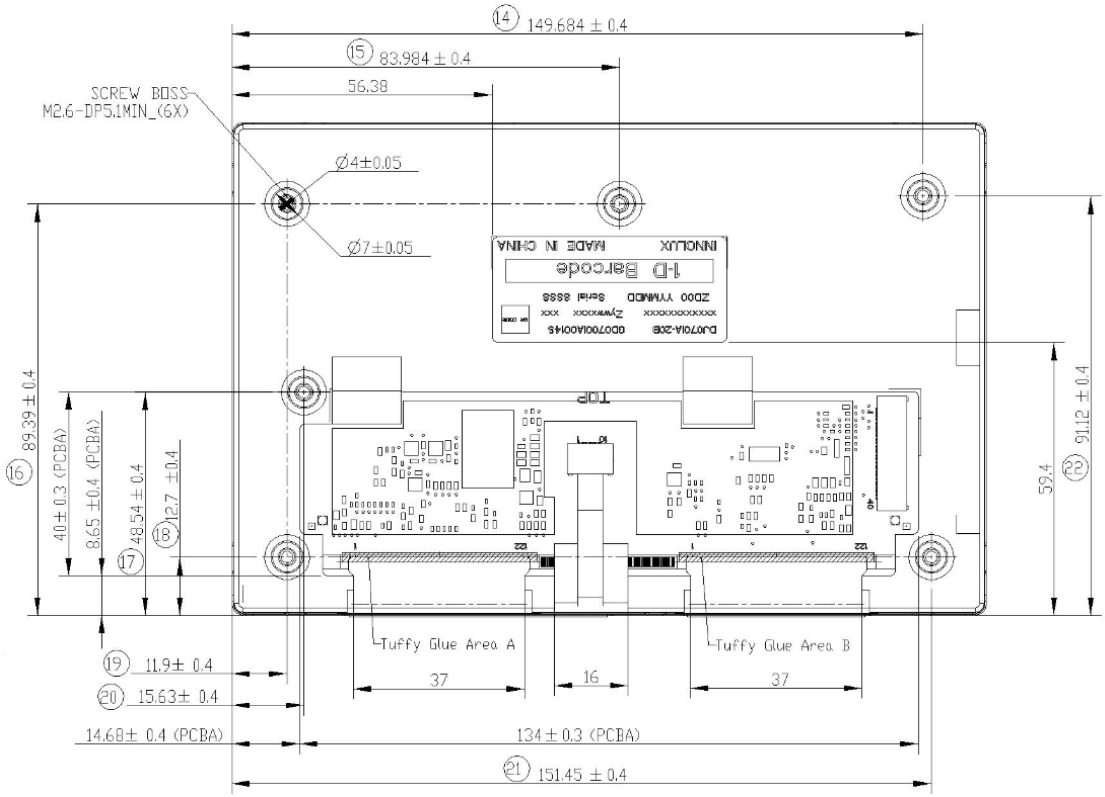
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

7 Mechanical Drawing

FRONT SIDE



BACK SIDE



8 Quality Requirement

The defect categories covered in this specification are comprised of defects in the active area such as dot defects, blemishes and partly completely mal functioning displays as well as visual appearance of the complete product and packaging of the product.

8.1 Inspection conditions and test patterns

Table1. List of inspection condition and test pattern

Item	Condition	
Lighting	Fluorescent light (day-light type) Apperance (Display surface illumination)：500 –1000 Lux Light-on (Display surface illumination)：100 – 200 Lux	
Temperature	25 ± 5℃	
Driving condition	Test pattern	Black, White, R, G, B, 50% Gray
	Supply voltage	Typical voltages as given in the specification
	Time	≦1 minute
Inspection method	Distance	35 cm ± 5 cm from display
	Viewing angle	Up(θ_Y)/Down(θ_β)：0°±10° Left(θ_L)/Right(θ_R)：0°±30°

8.2 Dot and line defect criteria

The fist criterion is visibility through 5%ND filter.
Not visible: Ignore
Visible: Follow below table.

Table 2.Dot & Line defect criteria

Item		R	G	B	Total	Inspection pattern
Dot defects(1)(2)(3)	Single bright(4)	0			4	(a) (c) (d) (e)
	Joined bright(6)	0				
	Single dark(5)	4				(b) (c) (d) (e)
	Joined dark(6)	1				
Line defects		0				(a) (b) (c) (d) (e)

a. Black field
b. White field
c. R field
d. G filed
e. B field

Note:
(1) 3 or more adjacent dots joined together are not allowed.
(2) No more than 2 defective dots shall be allowed between 12mm.
(3) A dot (sub-pixel) containing a defect area is equal to a dot of its size counted as a defective dot as per above table. A dot containing a defect area smaller than a dot of its size will be counted as a circular defect.
(4) Inspection criteria:
For easy checking 5 % ND filter used.
(5) A dark dot containing is counted as a defective dot as per above table.
(6) 2 adjacent defective dots joined together are regarded as 1 joined dot defect.

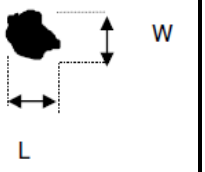
8.3 Blemishes and cosmetic anomalies

Note: the black border is the rim between the active area of the display and the metal front cover.

8.3.1 Circular defects

Table3. Circular defects requirement

Size (mm)	Acceptance number	
	Active area	Black border
D ≦ 0.2	No count	No count
0.2 < D ≦ 0.3	3	
0.3 < D	0	

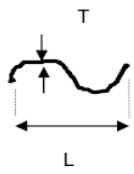


Remark: D = (Length + Width) / 2, for L and W.
Note：This item is including dent, bubble ,bright spot and black spotdefect / Distance≧12mm

8.3.2 Long defects

Table 4.Long defects

Size (mm)		Acceptance number	
		Active area	Black border
T≦0.05		No count	No count
0.05<T≦0.08	L≦2.0	3	
T≧0.08	L > 2.0	0	



Note：This item is including pol scratch,bright long and black long defect. / Distance≧12mm

8.3.3 Polarizer defects

Table5.Polarizer defects

Item	Size (mm)		Acceptance number
Scratches	T≦0.05	No count	No count
	0.05<T≦0.08	L≦2.0	3
	T≧0.08	L > 2.0	0
Dents	D ≦ 0.2		No count
	0.2 < D ≦ 0.3		4
	0.3 ≦ D		0

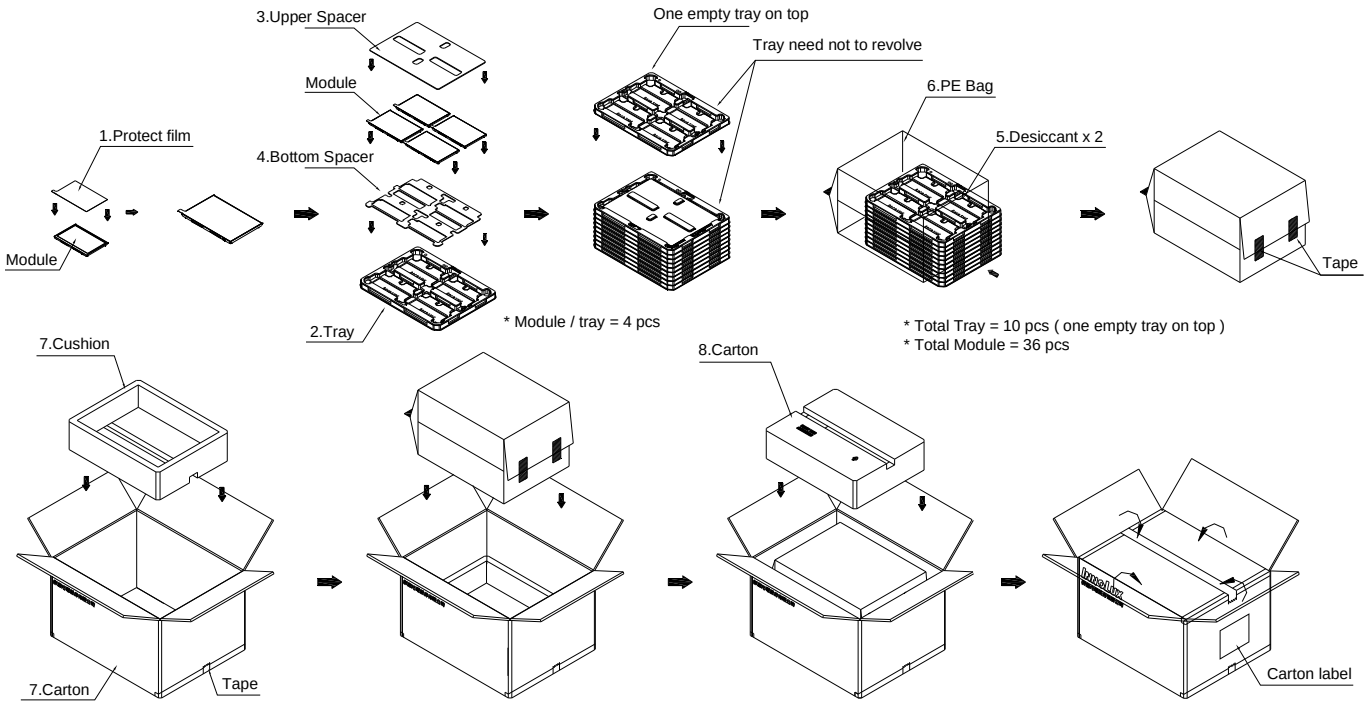
8.3.4 Other cosmetic defects (operating)

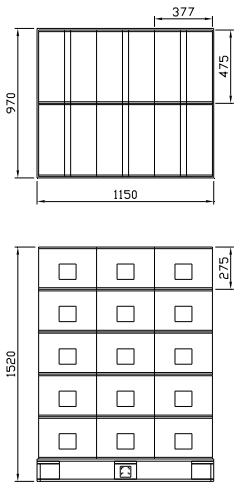
Table6.Other cosmetic defects

Item	Criteria of acceptance	Inspection pattern
Residual shadow	Less than 3 seconds	All patterns
Light leakage	Invisible by 5% ND filter	Pure Black
Mura (Non-uniformity)	Invisible through a 5% ND filter	Pure black and 50% Gray

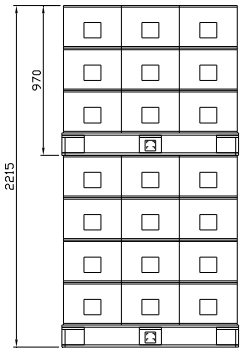
Notes: The min. distance between any two minor defects is 12mm.

9 Package

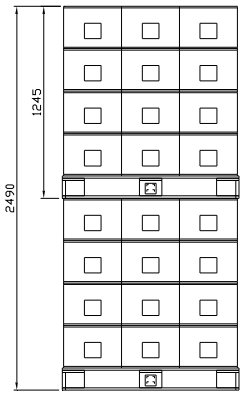

3.Upper Spacer
Module
1.Protect film
4.Bottom Spacer
Module
2.Tray
* Module / tray = 4 pcs
One empty tray on top
Tray need not to revolve
6.PE Bag
5.Desiccant x 2
Tape
* Total Tray = 10 pcs (one empty tray on top)
* Total Module = 36 pcs
7.Cushion
7.Carton
Tape
8.Carton
Carton label



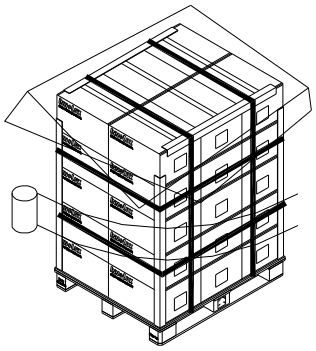
Front View
(Air trans)



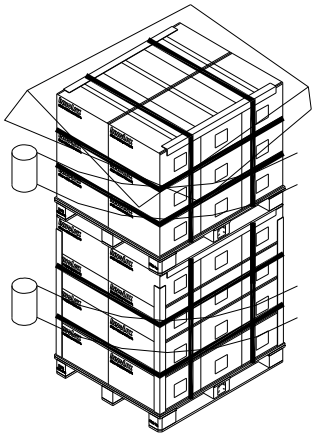
Front View
(Sea trans for normal cont.)



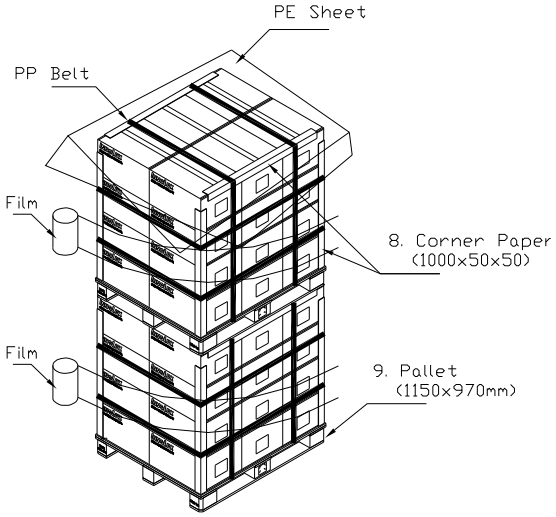
Front View
(Sea trans for HQ)



30 Cartons/pallet
(Air trans)



18+24 Cartons/pallet
(Sea trans for normal container)

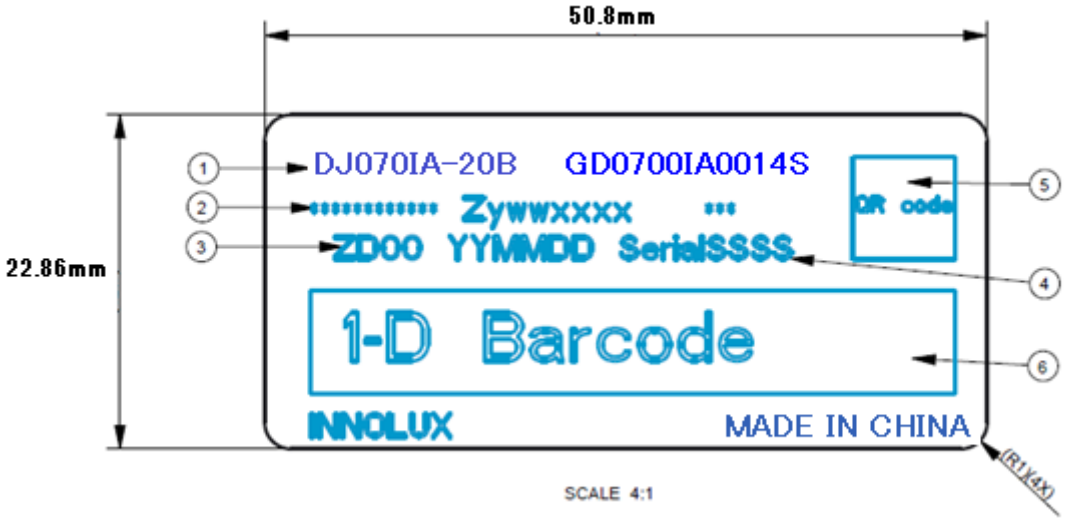


24+24 Cartons/pallet
(Sea trans for HQ container)

10 Label

Module label

PRINTING CONTENTS:



(1) DJ070IA-20B is Model Name
(2) **********Zywwxxxx*** sample
a.********** is Panel Number
b. Zywwxxxx is Z+ (the last number of B.C.)+Week (2digits) + (the last 4 digits of work order number)
c.*** is sample version
(3) ZD00 YYMMDD
a. ZD is Manufactory site code
b. 00 is Number of Significant product changes(start form00)
c. YYMMDD is production date
(4) Serial SSSS
a. SSSS is the Serial Number of work order
(5) QR code (INX internal use, panel number)
(6) 1-D Barcode (code128, contents: Zywwxxxx +panel number)

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, the UK and the USA. For more information please contact:

Headquarters

Germany

FORTEC Elektronik AG
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894450-0
E-Mail: info@fortecag.de
Internet: www.fortecag.de

Fortec Group Members

Austria

Distec GmbH Office Vienna
Nuschinggasse 12
1230 Wien

Phone: +43 1 8673492-0
E-Mail: info@distec.de
Internet: www.distec.de

Germany

Distec GmbH
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894363-0
E-Mail: info@distec.de
Internet: www.distec.de

Switzerland

ALTRAC AG
Bahnhofstraße 3
5436 Würenlos

Phone: +41 44 7446111
E-Mail: info@altrac.ch
Internet: www.altrac.ch

United Kingdom

Display Technology Ltd.
Osprey House, 1 Osprey Court
Hichingbrooke Business Park
Huntingdon, Cambridgeshire, PE29 6FN

Phone: +44 1480 411600
E-Mail: info@displaytechnology.co.uk
Internet: www. displaytechnology.co.uk

USA

Apollo Display Technologies, Corp.
87 Raynor Avenue,
Unit 1Ronkonkoma,
NY 11779

Phone: +1 631 5804360
E-Mail: info@apollodisplays.com
Internet: www.apollodisplays.com