



晶采光電科技股份有限公司
AMPIRE CO., LTD.

SPECIFICATIONS FOR LCD MODULE

CUSTOMER	
CUSTOMER PART NO.	
AMPIRE PART NO.	AM-1024768Y8TZQW-TA1H
APPROVED BY	
DATE	

- Approved For Specifications
- Approved For Specifications & Sample

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RECORD OF REVISION

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2019/1/17	-	New Release	Kokai

1. General specification

AM-1024768Y7TZQW-TA8H is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit and a back light system. This TFT LCD has a 10.4 inch diagonally measured active display area with HD (1024 horizontal by 768 vertical pixels) resolution.

- (1) Construction: 10.4" a-Si TFT active matrix, White LED Backlight.
- (2) Resolution (pixel): 1024(R.G.B) X 768
- (3) Number of the Colors : 16.2M (R , G , B 8 bit digital each)
- (4) LCD type : Normally black
- (5) Interface : 24 Bit LVDS interface
- (6) Without LED Driver.
- (7) 4 Wire-Resistive Touch Panel.

1.1 Display Characteristics

Item		Specification	Unit
Outline Dimension		236.0(H) x 174.3(V) x11.62 (D) (Typ)	mm
Display area		211.2(H) x 158.4(V) (10.4" diagonal)	mm
Number of Pixel		1024(H) x 768(V)	pixels
Pixel pitch		0.20625(H) x 0.20625(V)	mm
Pixel arrangement		RGB Vertical Stripe	
Display mode		Normally Black	
NTSC		70(Typ.)	%
Weight		TBD	g
Back-light		Single LED (Side-Light type)	
Power Consumption	Logic System (White Pattern)	TBD(max) @V _{DVDD} =3.3V	W
	B/L System	TBD	W

2. Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast		CR	$\Theta=0$ Normal viewing angle	600	900	—		(1)(2)
Response time	Rising	TR+TF		—	30	40	msec	(1)(3)
	Falling							
White luminance (Center)		Y_L		640	800	—	cd/m ²	(1)(4) ($I_L=200mA$)
Color chromaticity (CIE1931)	White	W_x		0.263	0.313	0.363	(1)(4)	
		W_y		0.279	0.329	0.379		
	Red	R_x			TBD			
		R_y			TBD			
	Green	G_x			TBD			
		G_y			TBD			
	Blue	B_x		TBD				
		B_y		TBD				
Viewing angle	Hor.	Θ_L	80	85	—			
		Θ_R	80	85	—			
	Ver.	Θ_U	80	85	—			
		Θ_D	80	85	—			
Brightness uniformity		B_{UNI}	$\Theta=0$	70	80	—	%	(5)
Optima View Direction		Free						(6)

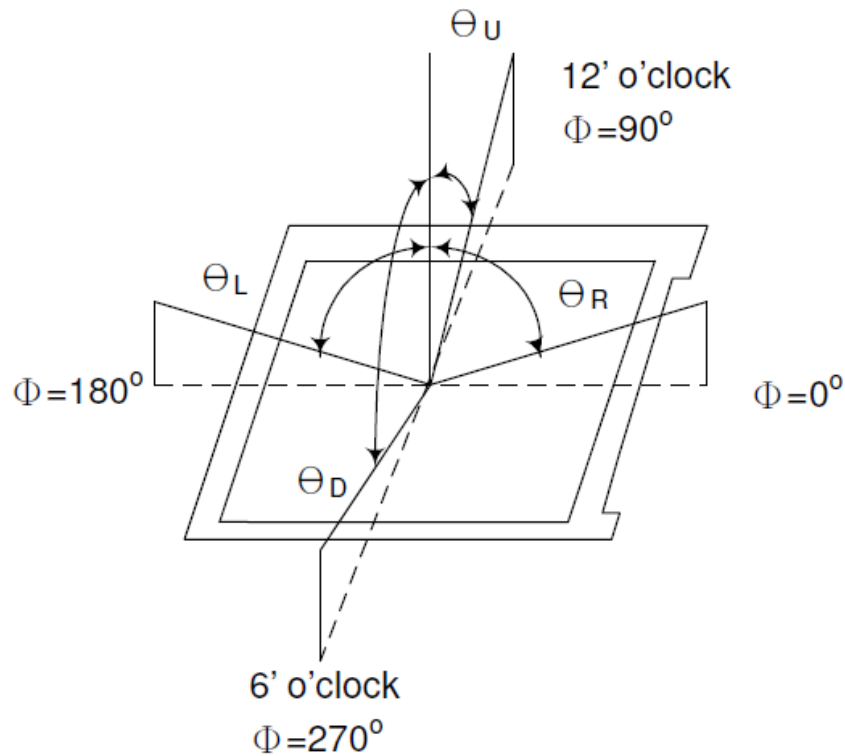
Measuring Condition

- Measuring surrounding dark room
- LED current $I_L = 200mA$
- Ambient temperature $25 \pm 2^\circ C$
- 15min. warm-up time.

Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.
- Measuring spot size : 20 ~ 21 mm

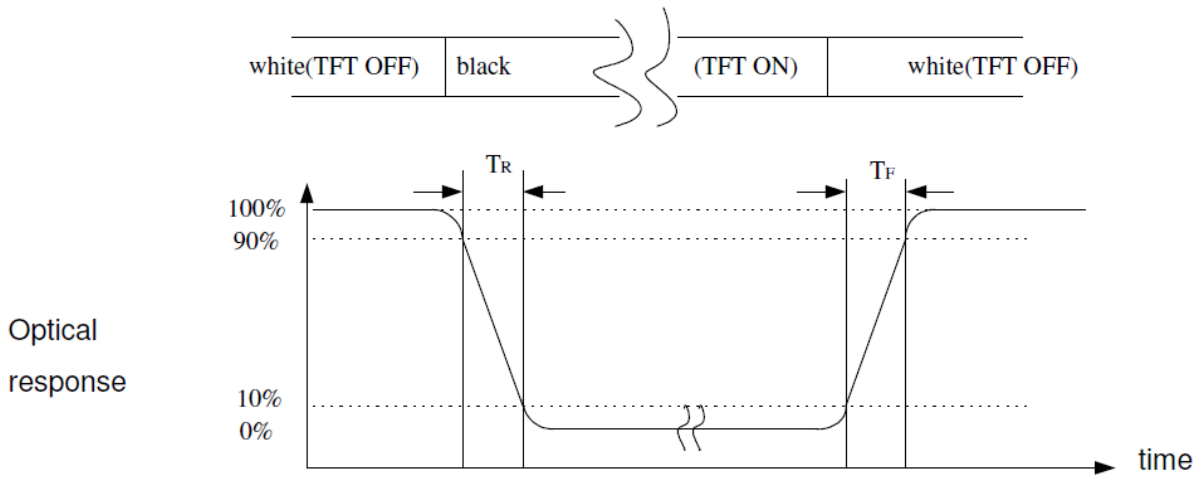
Note (1) Definition of Viewing Angle:



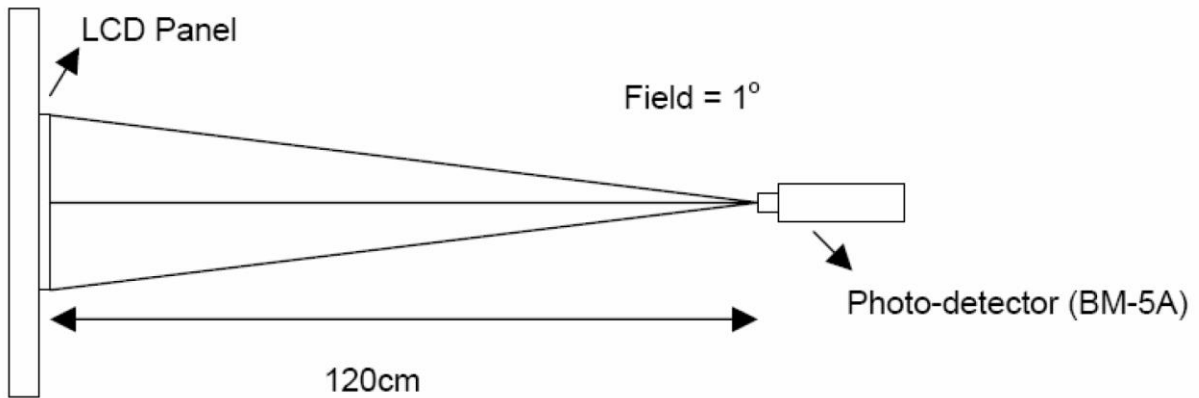
Note (2) Definition of Contrast Ratio (CR) :
measured at the center point of panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

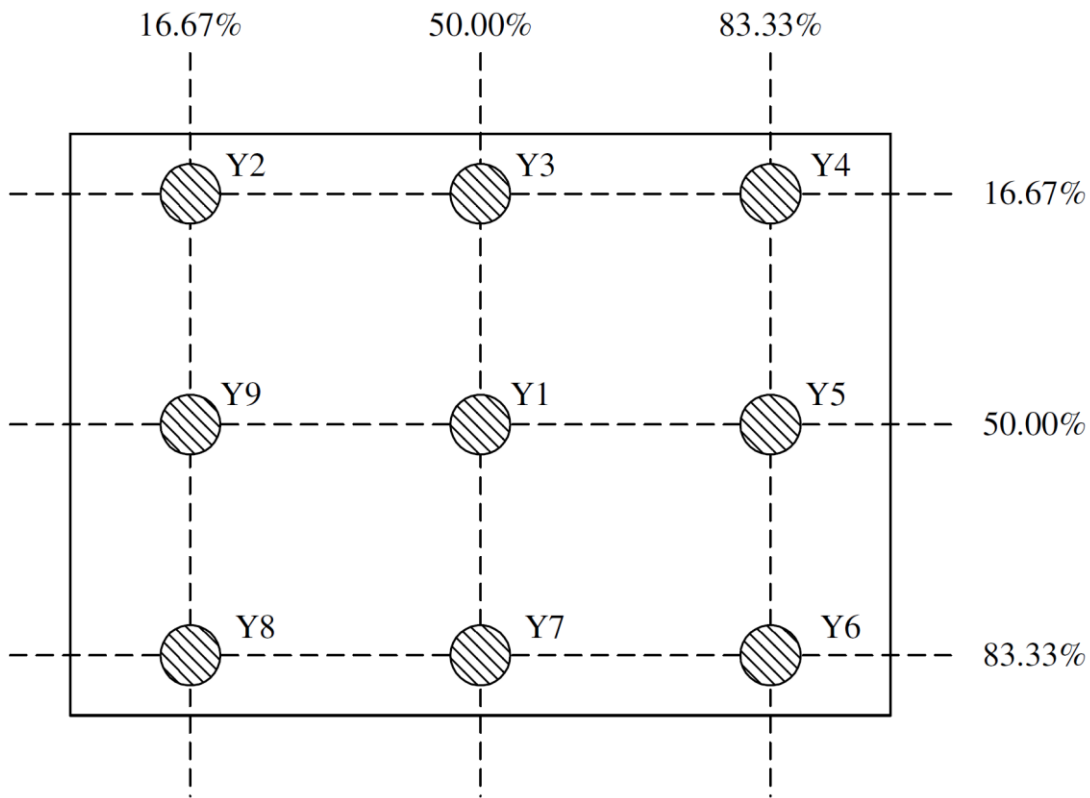
Note (3) Definition of Response Time : Sum of T_R and T_F



Note (4) Definition of optical measurement setup



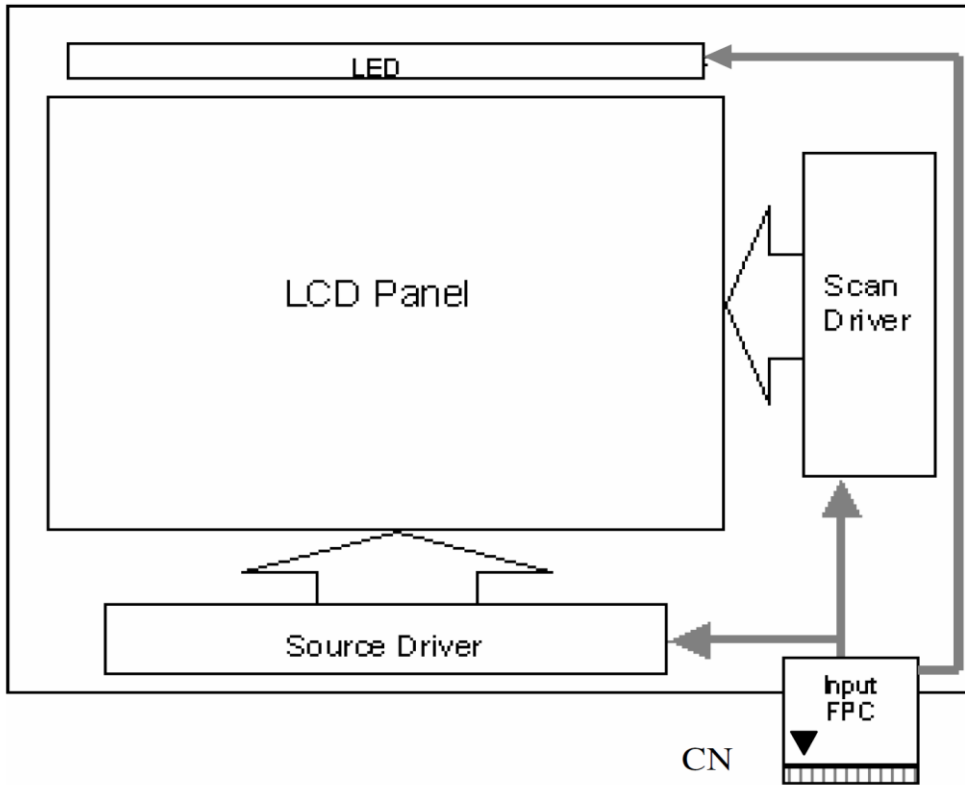
Note (5) Definition of brightness uniformity



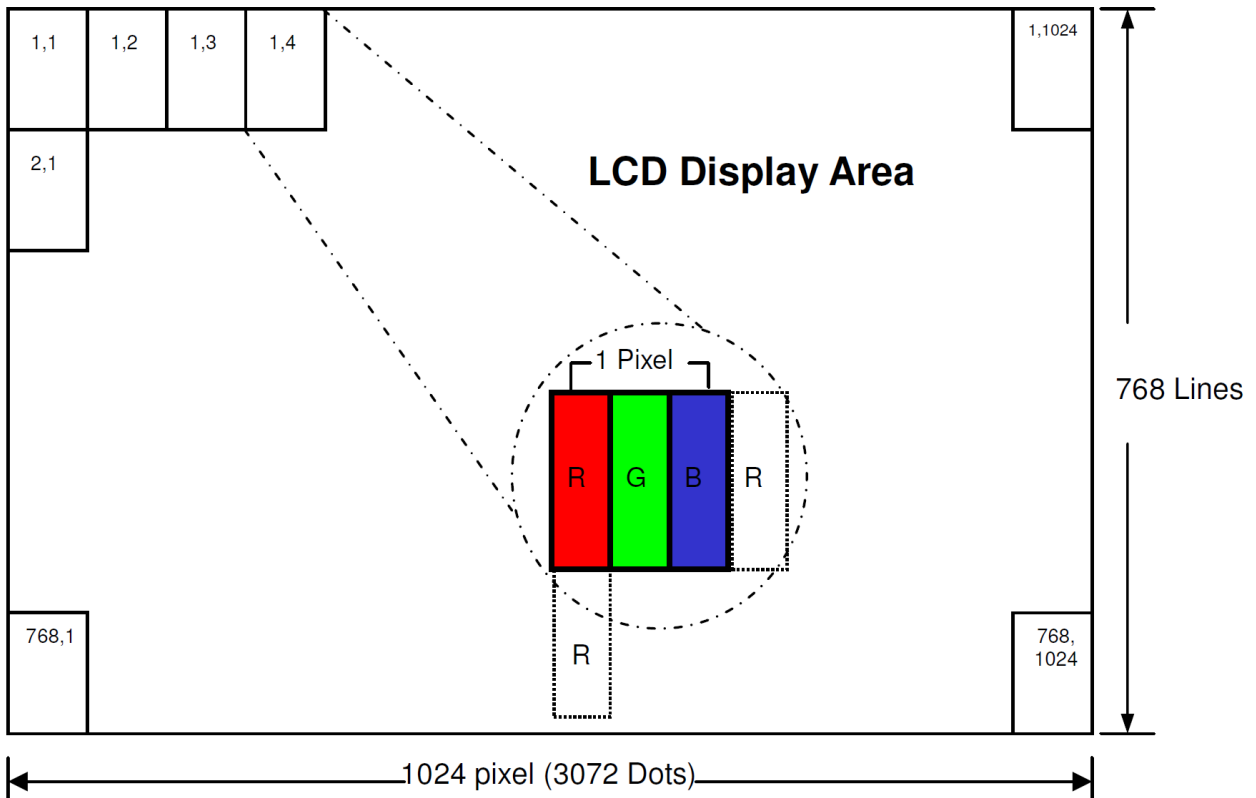
$$\text{Luminance uniformity} = \frac{(\text{Min Luminance of 9 points})}{(\text{Max Luminance of 9 points})} \times 100\%$$

Note (6) : Rubbing Direction (The different Rubbing Direction will cause the different optima view direction.)

3. Functional Block Diagram



Pixel Format



3.1 Relationship between Displayed Color and Input

	Display	MSB				LSB				MSB				LSB				Gray scale Level								
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0		B7	B6	B5	B4	B3	B2	B1	B0
Basic color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	-
	Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	-
	Light Blue	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
	Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Purple	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	-
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	-
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
Gray scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L252
	H	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L253	
	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L254	
	Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	Red L255
Gray scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L252
	L	L	L	L	L	L	L	L	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L253		
	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L254		
	Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	Green L255
Gray scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L252
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	H	L253	
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	L	L254	
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	Blue L255
Gray scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	H	L1	
		L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	H	L	L2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251	
		H	H	H	H	H	L	L	H	H	H	H	H	L	L	H	H	H	H	H	L	L	L	L	L252	
	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H	L	L	L	L	L253		
	H	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	L	L	L	L	L254		
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White L255

4. ABSOLUTE MAXIMUM RATINGS

4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min.	Max.	Unit	Note
Power supply voltage	VDD	-0.3	5	V	
Logic Signal Input Level	V_{DVDD} V_{DVDD_LVDS}	-0.3	5	V	

4.2 Absolute Ratings of Environment

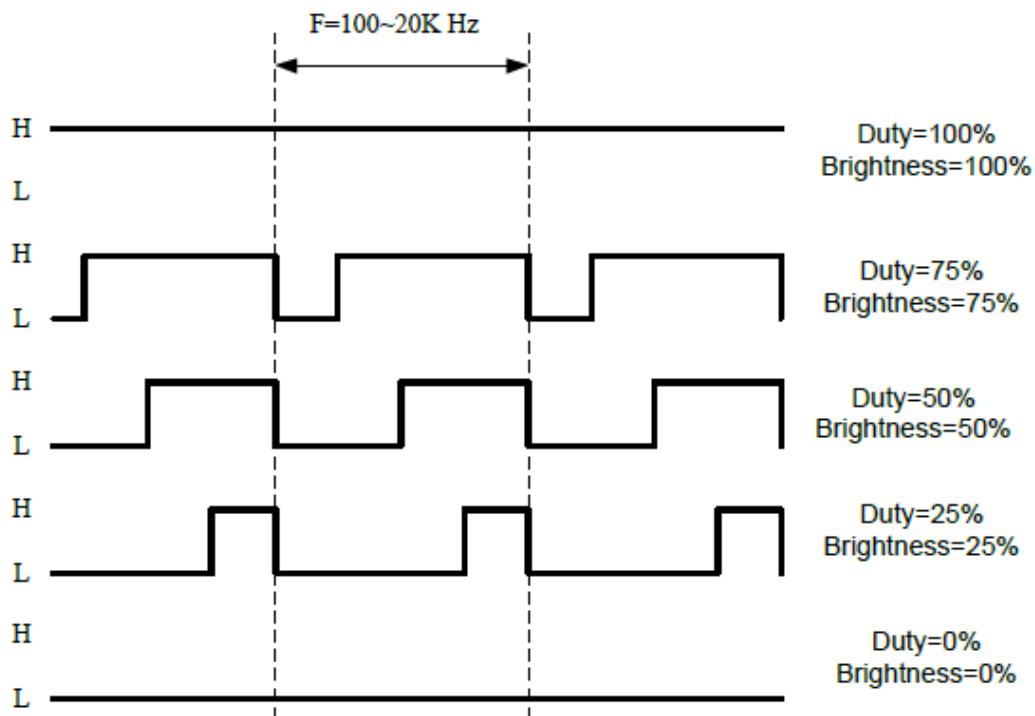
Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	T_{opa}	-20	70	°C	
Storage Temperature	T_{stg}	-30	80	°C	

5. ELECTRICAL CHARACTERISTICS

5.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
LCD Supply Voltage	VDD	3	3.3	3.6	V	
LCD Signal Logic High	VIH	0.8*VDD		VDD	V	
LCD Signal Logic Low	VIL	0	--	0.2VDD	V	
LED Driver Supply Voltage	VLED	11.5	12	12.5	V	
Input Current	ILED	--	(700)	--	mA	ADJ :100% PWM duty
ADJ Frequency	Fpwm	200	400	200	Hz	
ADJ Signal Logic High	VIH	2.4	--	5	V	
ADJ signal logic Low	VIL	0	--	0.7	V	
LED Forward Current	IF	--	200	--	mA	Ta=25°C
LED Forward Voltage	VF	--	33	--	V	IF=250mA, Ta=25°C

ADJ : LED Back-light brightness Adjust.

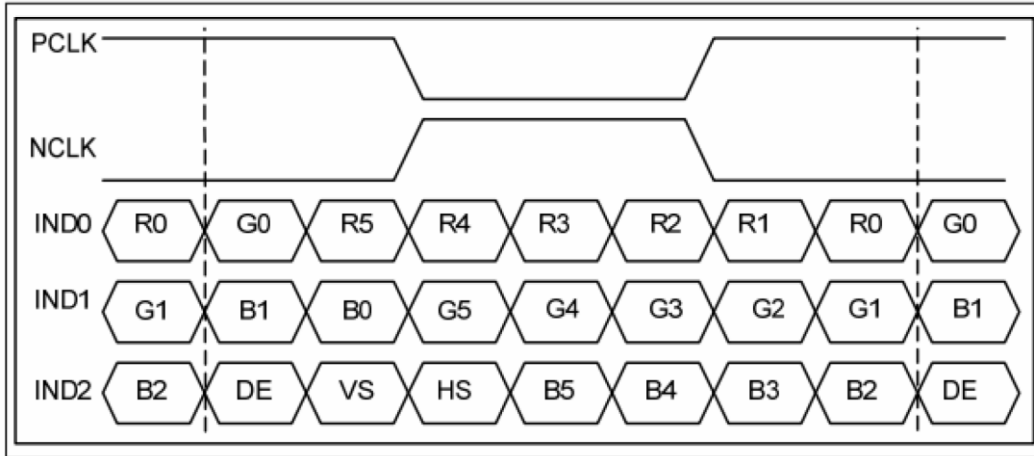


5.2 Switching Characteristics for LVDS Receiver

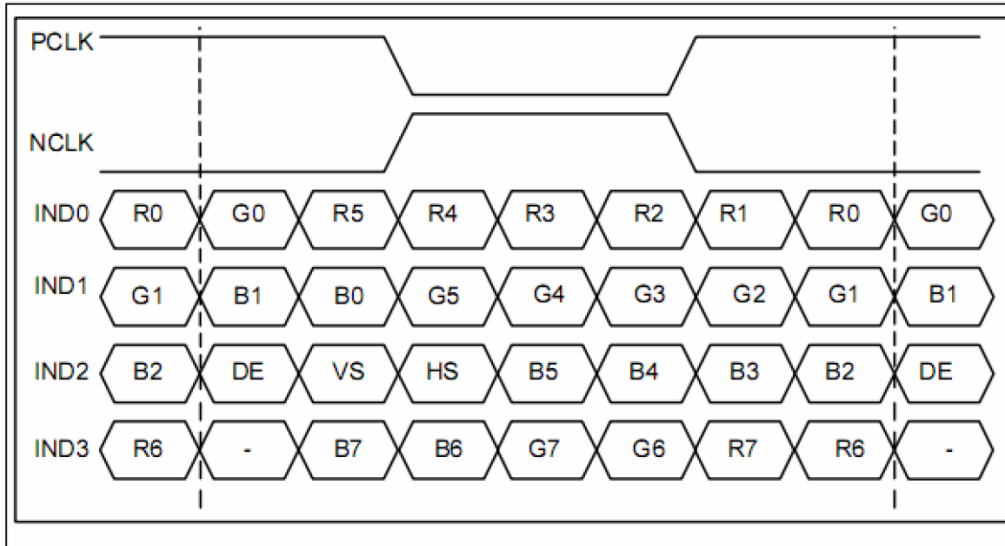
Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	V _{th}			100	mV	V _{CM} =1.2V
Differential Input Low Threshold	V _{tl}	-100			mV	
Input Current	I _{IN}	-10		10	uA	
Differential input Voltage	V _{ID}	0.1		0.6	V	
Common Mode Voltage Offset	V _{CM}	0.7	1.2	1.6	V	

5.3 Bit LVDS input

5.3.1 6Bit LVDS input



5.3.2 8Bit LVDS input

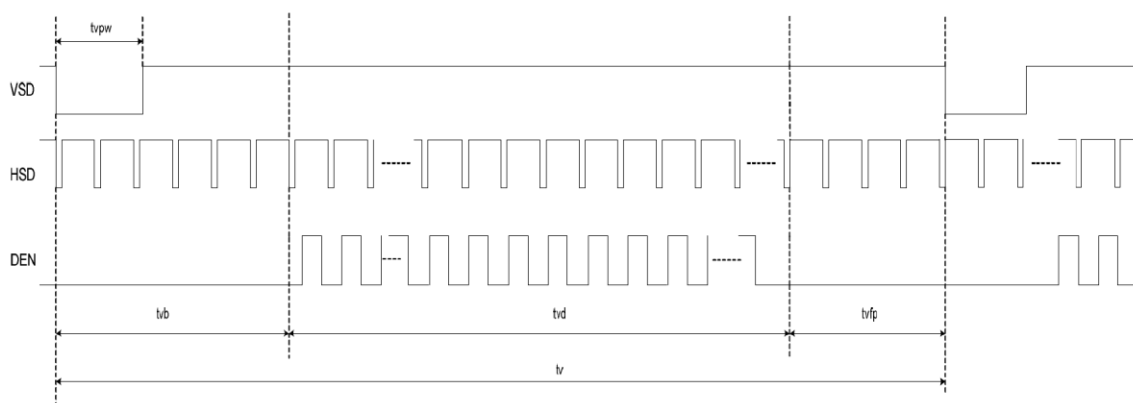


5.4 Interface Timing (DE mode)

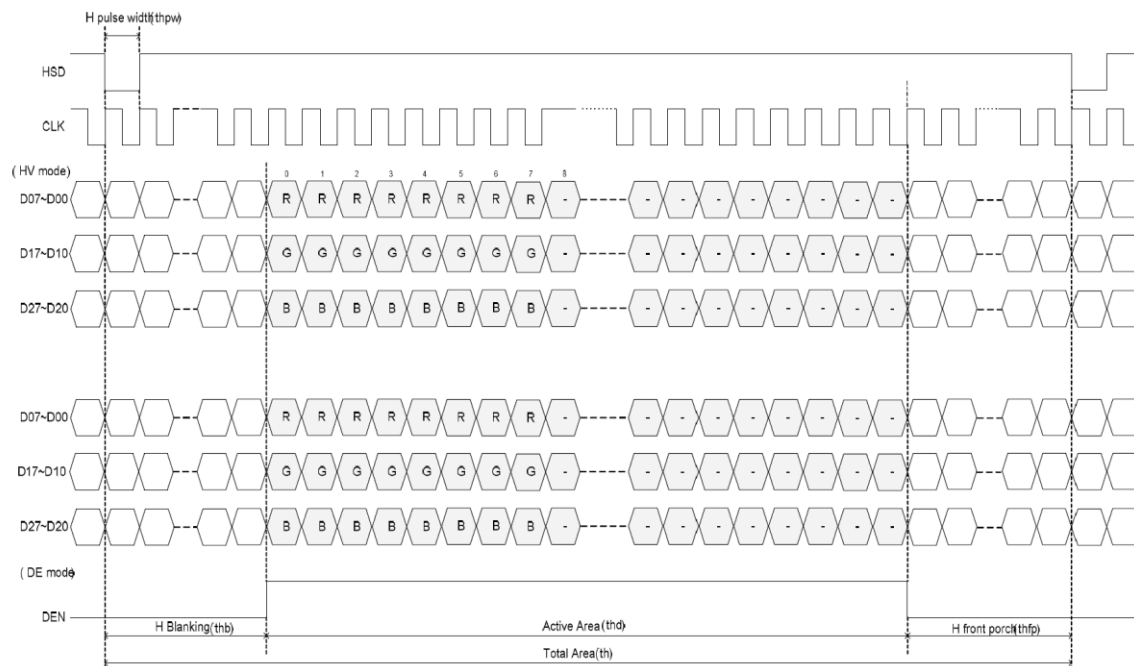
DE mode					
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60hz	fclk	52	65	71	Mhz
Horizontal display area	thd	1024			DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd	768			H
VSYNC period time	tv	778	806	845	H
VSYNC blanking	tvb+tvfp	10	38	77	H

Timing Diagram of Interface Signal (DE mode)

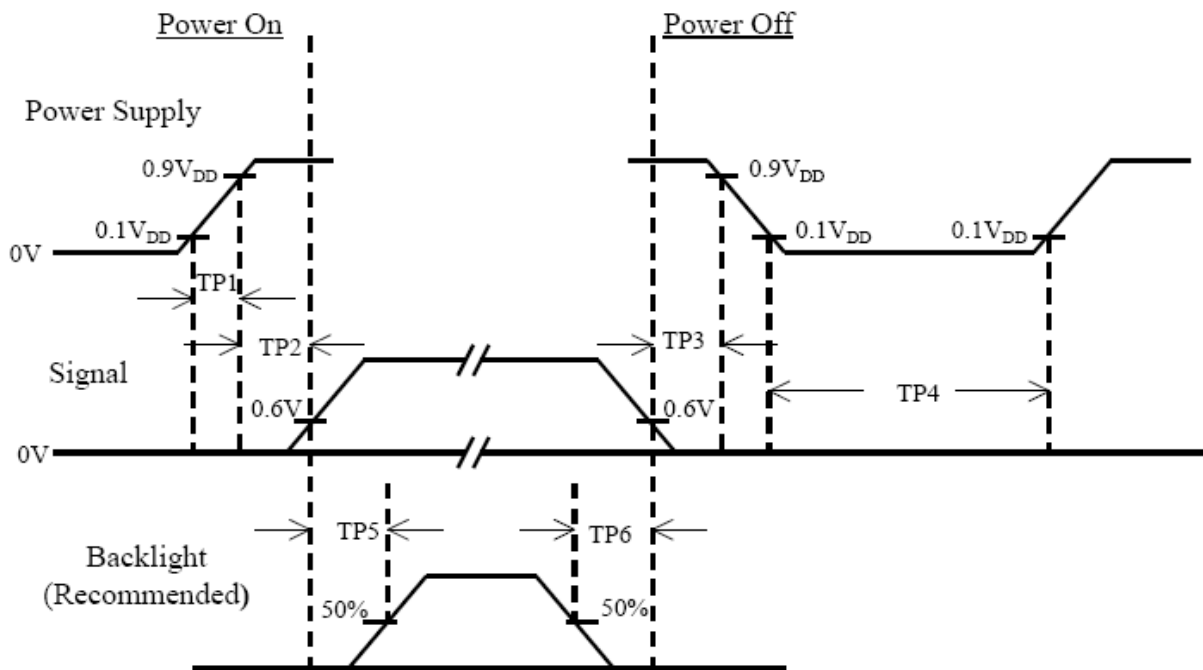
(1). Vertical input timing



(2). Horizontal input timing



5.5 Power On / Off Sequence



Item	Min.	Typ.	Max.	Unit	Remark
TP1	0.5	--	10	msec	
TP2	0	--	50	msec	
TP3	0	--	50	msec	
TP4	500	--	--	msec	
TP5	200	--	--	msec	
TP6	200	--	--	msec	

Note :

- (1) The supply voltage of the external system for the module input should be the same as the definition of VDD.
- (2) Apply the lamp voltage within the LCD operation range. When the back-light turns on before the LCD operation or the LCD turns off before the back-light turns off, the display may momentarily become white.
- (3) In case of VDD = off level, please keep the level of input signal on the low or keep a high impedance.
- (4) TP4 should be measured after the module has been fully discharged between power off and on period.
- (5) Interface signal shall not be kept at high impedance when the power is on.

5.6 Backlight Unit

Parameter	Symbol	Min	Typ	Max	Units	Condition
LED Current	I_L	--	200	--	mA	Ta=25°C
LED Voltage	V_L	--	33		Volt	Ta=25°C
LED Life-Time	N/A	30,000	--	--	Hour	Ta=25°C Note (2)

Note (1) LED life time (Hr) can be defined as the time in which it continues to operate under the condition: Ta=25±30C, typical IL value indicated in the above table until the brightness becomes less than 50%.

Note (2) The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IL=200mA. The LED lifetime could be decreased if operating IL is larger than 200mA. The constant current driving method is suggested.

Note (3) LED Light Bar Circuit is 11S3P.

6. INTERFACE PIN CONNECTION

CN2 LVDS connector: P1.0 20pin/CP100-S20G-H16

Pin No.	Symbol	I/O	Description	Note
1	VDD	P	Power Voltage for Logic: 3.3V	
2	VDD	P	Power Voltage for Logic: 3.3V	
3	GND	P	Ground	
4	GND	P	Ground	
5	IN0-	I	- LVDS differential data input	
6	IN0+	I	+ LVDS differential data input	
7	GND	P	Ground	
8	IN1-	I	- LVDS differential data input	
9	IN1+	I	+ LVDS differential data input	
10	GND	P	Ground	
11	IN2-	I	- LVDS differential data input	
12	IN2+	I	+ LVDS differential data input	
13	GND	P	Ground	
14	CLK-	I	- LVDS differential data input	
15	CLK+	I	+ LVDS differential data input	
16	GND	P	Ground	
17	IN3-	I	- LVDS differential data input	
18	IN3+	I	+ LVDS differential data input	
19	VLED	P	Power Supply Voltage for LED Driver.	
20	ADJ	I	LED Back-light Brightness Adjust	

7 4-Wire Resistive touch Panel

Please See the (Append 1)

8. Reliability Test Criteria

Test Item	Test Conditions	Note
High Temperature Operation	70±3°C , t=240 hrs	
Low Temperature Operation	-20±3°C , t=240 hrs	
High Temperature Storage	80±3°C , t=240 hrs	1,2
Low Temperature Storage	-30±3°C , t=240 hrs	1,2
Storage at High Temperature and Humidity	60°C, 90% RH , 240 hrs	1,2
Thermal Shock Test	-20°C (30min) ~ 70°C (30min) 100 cycles	1,2
Vibration Test (Packing)	Sweep frequency : 10 ~ 55 ~ 10 Hz/1min Amplitude : 0.75mm Test direction : X.Y.Z/3 axis Duration : 30min/each axis	2

Note 1 : Condensation of water is not permitted on the module.

Note 2 : The module should be inspected after 1 hour storage in normal conditions (15-35°C , 45-65%RH).

Note 3 : The module shouldn't be tested more than one condition, and all the test conditions are independent.

Note 4 : All the reliability tests should be done without protective film on the module.

9. Use Precautions

9.1 Handling precautions

- 1) The polarizing plate may break easily so be careful when handling it. Do not touch, press or rub it with a hard-material tool like tweezers.
- 2) Do not touch the polarizing plate surface with bare hands so as not to make it dirty. If the surface or other related part of the polarizing plate is dirty, soak a soft cotton cloth or chamois leather in benzine and wipe off with it. Do not use chemical liquids such as acetone, toluene and isopropyl alcohol. Failure to do so may bring chemical reaction phenomena and deteriorations.
- 3) Remove any spit or water immediately. If it is left for hours, the suffered part may deform or decolorize.
- 4) If the LCD element breaks and any LC stuff leaks, do not suck or lick it. Also if LC stuff is stuck on your skin or clothing, wash thoroughly with soap and water immediately.

9.2 Installing precautions

- 1) The PCB has many ICs that may be damaged easily by static electricity. To prevent breaking by static electricity from the human body and clothing, earth the human body properly using the high resistance and discharge static electricity during the operation. In this case, however, the resistance value should be approx. $1M\Omega$ and the resistance should be placed near the human body rather than the ground surface. When the indoor space is dry, static electricity may occur easily so be careful. We recommend the indoor space should be kept with humidity of 60% or more. When a soldering iron or other similar tool is used for assembly, be sure to earth it.
- 2) When installing the module and ICs, do not bend or twist them. Failure to do so may crack LC element and cause circuit failure.
- 3) To protect LC element, especially polarizing plate, use a transparent protective plate (e.g., acrylic plate, glass etc) for the product case.
- 4) Do not use an adhesive like a both-side adhesive tape to make LCD surface (polarizing plate) and product case stick together. Failure to do so may cause the polarizing plate to peel off.

9.3 Storage precautions

- 1) Avoid a high temperature and humidity area. Keep the temperature between 0°C and 35°C and also the humidity under 60%.
- 2) Choose the dark spaces where the product is not exposed to direct sunlight or fluorescent light.
- 3) Store the products as they are put in the boxes provided from us or in the same conditions as we recommend.

9.4 Operating precautions

- 1) Do not boost the applied drive voltage abnormally. Failure to do so may break ICs. When applying power voltage, check the electrical features beforehand and be careful. Always turn off the power to the LC module controller before removing or inserting the LC module input connector. If the input connector is removed or inserted while the power is turned on, the LC module internal circuit may break.
- 2) The display response may be late if the operating temperature is under the normal standard, and the display may be out of order if it is above the normal standard. But this is not a failure; this will be restored if it is within the normal standard.
- 3) The LCD contrast varies depending on the visual angle, ambient temperature, power voltage etc. Obtain the optimum contrast by adjusting the LC drive voltage.
- 4) When carrying out the test, do not take the module out of the low-temperature space suddenly. Failure to do so will cause the module condensing, leading to malfunctions.
- 5) Make certain that each signal noise level is within the standard (L level: 0.2V_{dd} or less and H level: 0.8V_{dd} or more) even if the module has functioned properly. If it is beyond the standard, the module may often malfunction. In addition, always connect the module when making noise level measurements.
- 6) The CMOS ICs are incorporated in the module and the pull-up and pull-down function is not adopted for the input so avoid putting the input signal open while the power is ON.
- 7) The characteristic of the semiconductor element changes when it is exposed to light emissions, therefore ICs on the LCD may malfunction if they receive light emissions. To prevent these malfunctions, design and assemble ICs so that they are shielded from light emissions.
- 8) Crosstalk occurs because of characteristics of the LCD. In general, crosstalk occurs when the regularized display is maintained. Also, crosstalk is affected by the LC drive voltage. Design the contents of the display, considering crosstalk.

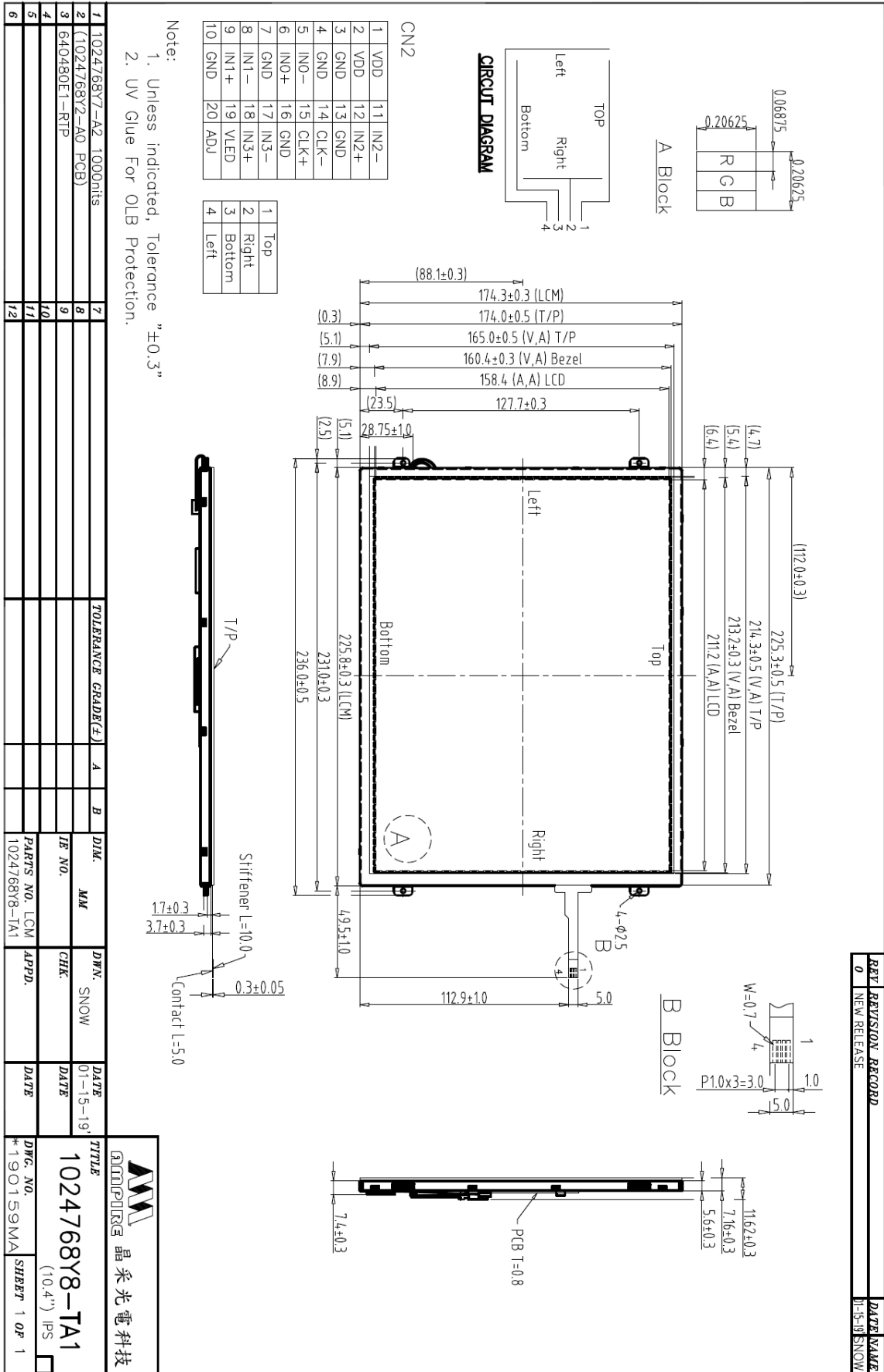
9.5 Mechanical

- 1) Please hold the LCD module properly when you use or store it.

9.6 Other

- 1) Do not disassemble or take the LC module into pieces. The LC modules once disassembled or taken into pieces are not the guarantee articles.
- 2) Do not keep the LCD at the same display pattern continually. The residual image will happen and it will damage the LCD. Please use screen saver.
- 3) AMIPRE will provide one year warranty for all products and three months warrantee for all repairing products.

10. OUTLINEDIMENSION

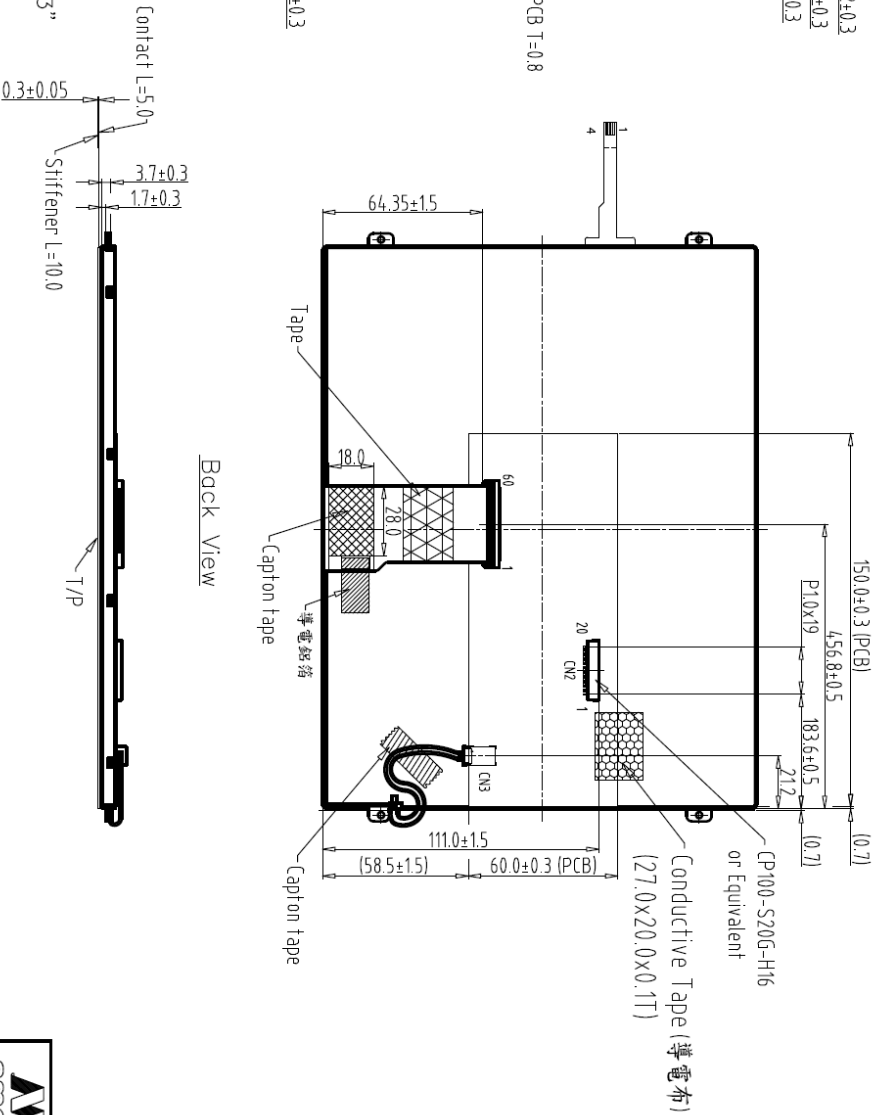


REV	REVISION RECORD	DATE	NAME
0	NEW RELEASE	01-15-19	SNOW

1	Top
2	Right
3	Bottom
4	Left

1	VDD	11	IN2-
2	VDD	12	IN2+
3	GND	13	GND
4	GND	14	CLK-
5	INO-	15	CLK+
6	INO+	16	GND
7	GND	17	IN3-
8	IN1-	18	IN3+
9	IN1+	19	VLED
10	GND	20	ADJ

Note:
 1. Unless indicated, Tolerance "±0.3"
 2. UV Glue For OLB Protection.

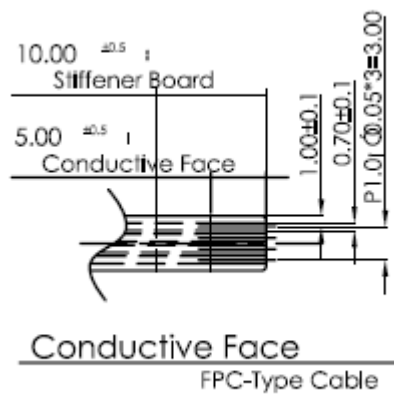
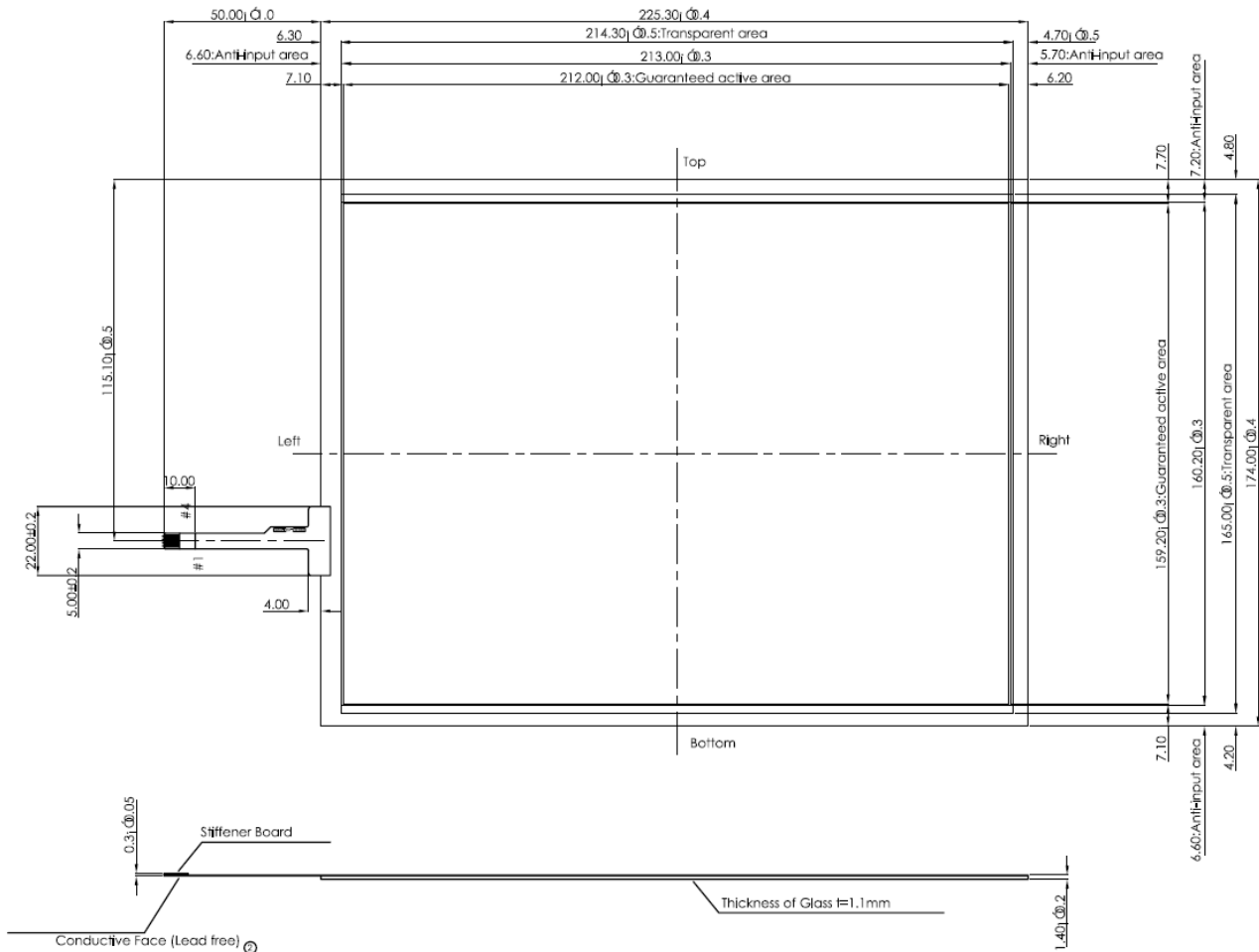


1	1024768Y7-A2	1000nits	7	TOLERANCE	GRADE(±)	A	B	DIM.	MM	DWN.	SNOW	DATE	DATE	TITLE	DWG. NO.	SHEET	OP
2	(1024768Y2-A0 PCB)		8									01-15-19		AMPIRE 晶采光电科技	*190160MA	SHEET	1 OF 1
3	640480E1-R1P		9					IE NO.		CHK.		DATE		1024768Y8-TA1			
4			10									DATE		(10.4')			
5			11					PARTS NO. LCM-1		APPD.		DATE					
6			12					1024768Y8-TA1				DATE					

● **Function:**

TTI TOUCH PANEL is resistance type that customer uses with flat display like LCD. Once operator touches it by resin PEN with round end or FINGER, the circuit for TOUCH PANEL sends coordinate point to PC from voltage at contact point.

● **Outline dimension:**



- Note:
1. Tolerance : ±0.5
 2. Pen&Finger Input Type
 3. Surface Hardness: 3H
 4. Transmissivity: 82.5% Typ. (JIS-K7105)
 5. Film: Anti-Glare Type

Connector Pin Assignment

Pin #	Description
#1	Bottom
#2	Left
#3	Top
#4	Right

● Defines of words:

Words	Defines
Guaranteed active area	Area to be guaranteed all characteristics stated on this spec.
Boundary line of top enclosure	Recommended boundary line of top enclosure
View (transparent) area	View area which is inside adhesive zone or electrode pattern . Top enclosure must not be fixed by this area.
Touch undetected	Area to protect miss-input when top enclosure edge touches the touch panel.

● Optical Characteristics

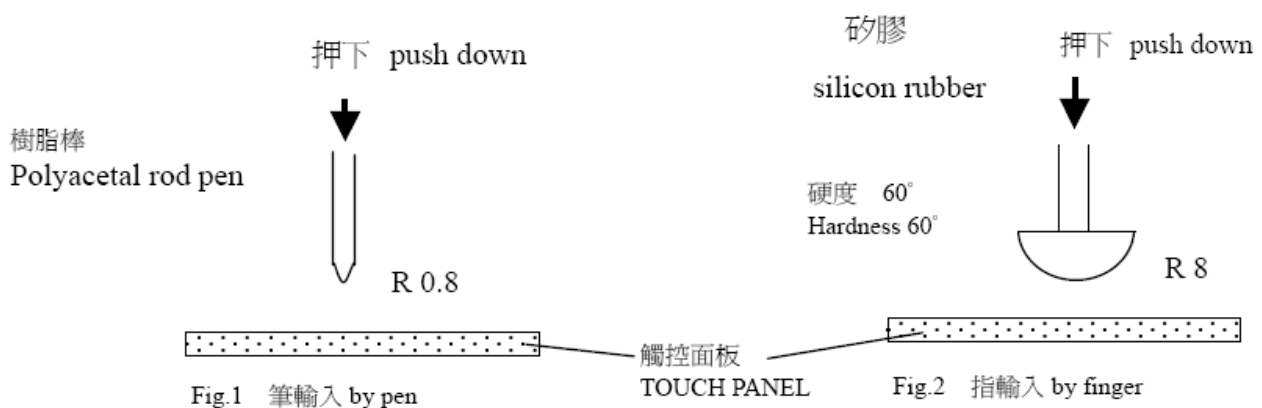
	ITEM	SPEIFICATION	REMARKS
1	TRANSPARENCY	82.5% Typ (Inside of guaranteed active area)	JIS K-7105
2	HAZE	8+/-4% Surface: Anti-glare	JIS K-7105

● Mechanical characteristics

	ITEM	SPEIFICATION		REMARKS
1	Hardness of surface	Pencil hardness 3H.		JIS K-5400
2	FPC strength	5N min		Peeling upward by 90°
3	Operation force	PEN FINGER	Max: 80 gf	Within” guaranteed active area”,but not on the age and Dot-Spacer.

Measurement condition of operation force

Resistance between X & Y axis must be equal or lower than 2kΩ (Ron ≤ 2kΩ)



● Electrical characteristics

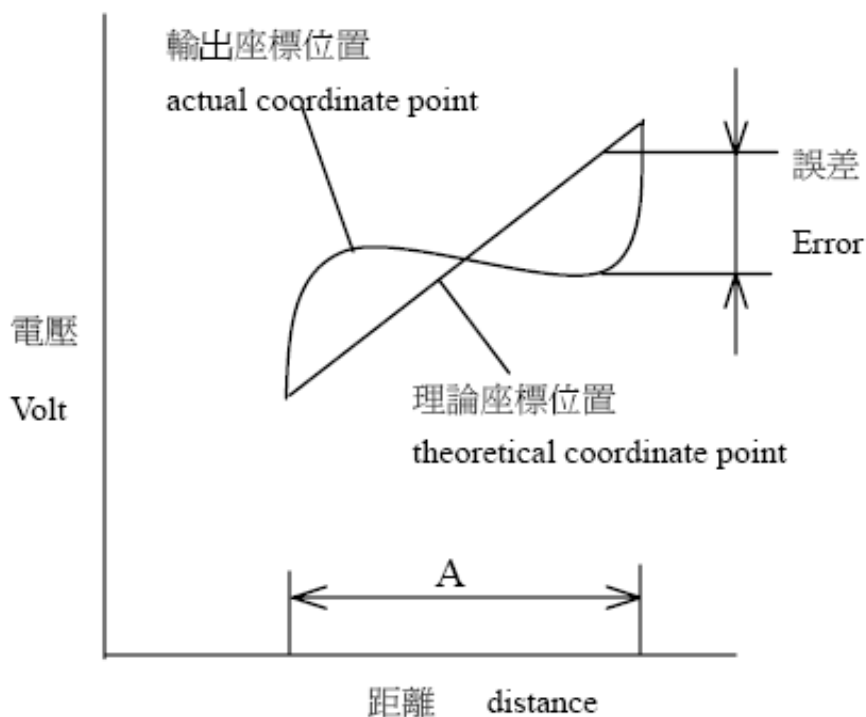
ITEM	SPEIFICATION	REMARKS	
1	Rated Voltage	DC 7V max.	
2	Resistance	X axis : 200Ω ~ 1000Ω Y axis : 約100Ω ~ 800Ω	At connector
3	Linearity	±2.0% max 「initial value」 ±3.0% ±3.5% max 「after environmental & lift test」	
4	CHATTERING	20ms Max At connector pin	
5	Insulation Resistance	10MΩ 以上(DC 25V) 10MΩ min(DC 25V)	

Measurement condition of Linearity

Difference between actual voltage & theoritical voltage

is an error at any points. Linearity is the value max.

error voltage divided by voltage difference on active area.



● Life Test Condition

	ITEM	SPEIFICATION	REMARKS
1	Notes life	10s words min	Within” guaranteed active area”
2	Input life	10s times min	At connector Within” guaranteed active area”

Notes life test condition (by pen)

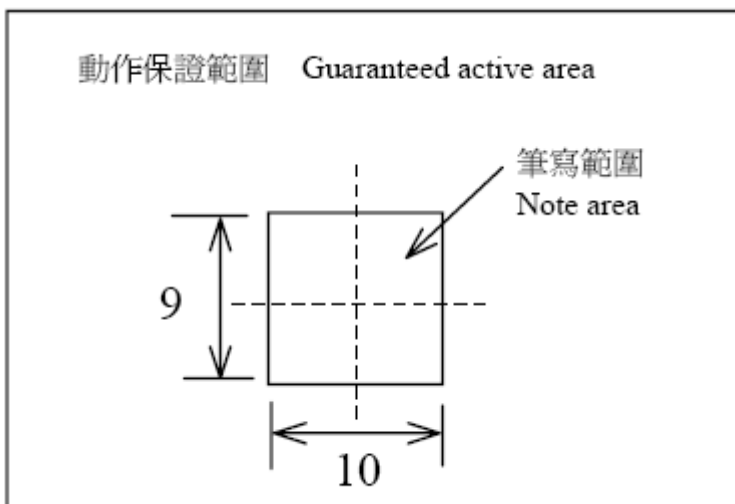
Notes area for pen notes life test is 10×9mm. Size of word is 7.5×6.75mm.

Word is any A.B.C..... word. Center of each word is changed at random in notes area.

- ◆ Shape of pen end : R 0.8 (Refer Fig.1)
- ◆ Materials of pen : Polyacetal
- ◆ Load : 250g

【 judge base 】

Operation force, Insulation resistance & Resistance stated must be within spec.



Input life test condition(by finger)

By silicon rubber tapping at same point.

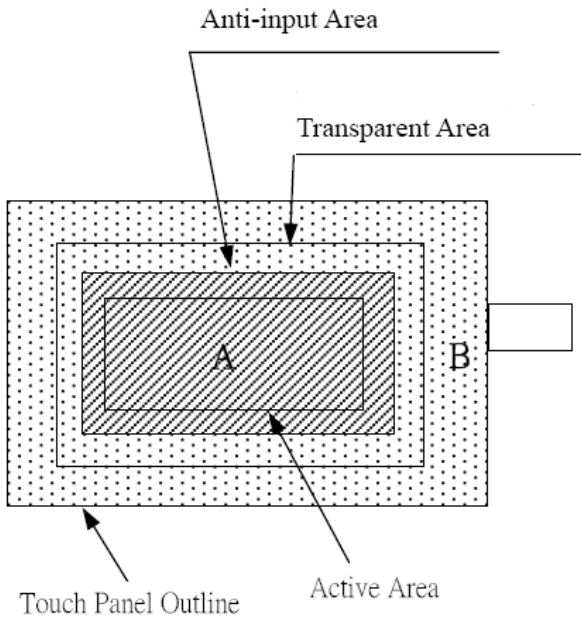
- ◆ Sharp of rubber end : R8 Hardness 60°(Refer fig.2)
- ◆ Load : 200g
- ◆ frequency : 5Hz

【judge base】

Operation force , Insulation resistance & Resistance stated must be within spec.

● **Appearance.**

Scope of reject criteria.

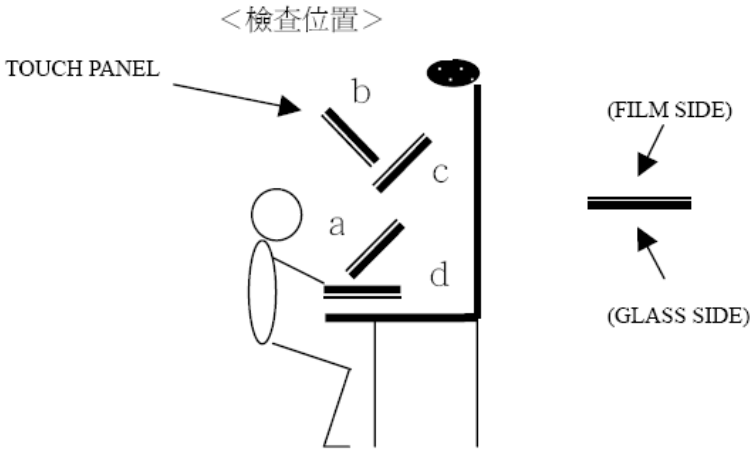


A : Inside of Anti-Input Area.

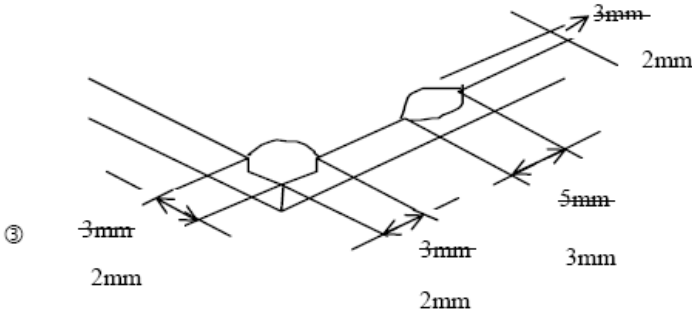
B: Without A area.

AREA	Spec.
A	Without any defect point to effect on normal operation.
B	None-specify.

Reject criteria.

項 目 Description	檢查基準 Reject criteria
FILM / GLASS 刮傷(點狀) Film / GLASS Scratch (Dot type)	Area $0.1\text{mm}^2 < S$: zero Area $0.05\text{mm}^2 < S \leq 0.1\text{mm}^2$ ④ : Max: 4 3 points Area $S \leq 0.05\text{mm}^2$: disregard
FILM / 玻璃 表面線狀刮傷 FILM / GLASS Scratch (Line type)	Width $0.1\text{mm} \leq W$: To be zero Width $0.03\text{mm} \leq W < 0.1\text{mm}$ ④ : Max: 4 3 points With length $L < 10\text{mm}$ 5mm Width $W < 0.03\text{mm}$: None-specify
FILM / 玻璃間 異物 / 髒污 Foreign material between glass & film	Area $0.1\text{mm}^2 < S$: zero Area $0.05\text{mm}^2 < S \leq 0.1\text{mm}^2$ ④ : Max: 4 3 points Area $S \leq 0.05\text{mm}^2$: disregard
FILM / 玻璃間 線狀異物 Foreign material between glass & film (Line type)	Width $0.1\text{mm} \leq W$ ④ : To be zero Width $0.03\text{mm} \leq W < 0.1\text{mm}$: Max: 4 3 points With length $L < 10\text{mm}$ 5mm Width $W < 0.03\text{mm}$: None-specify
欠點累計總數	Total detect 4 points
牛頓環 Newton ring	在螢光燈下，目視（距 Touch Panel 20~30 cm）判斷無牛頓環，但是在同一條件之下從玻璃面所見的牛頓環不在規範內。 Not seen from PANEL film side under fluorescent lamp, exclude from PANEL glass side. (Distance 20~30cm from eyes to Touch Panel)
Note: 異物包含玻璃及 FILM 表面上之異物，但是可輕易用吹風或擦拭去除的不包含 Include on the Glass surface and film surface ,Exclude which can be easily remove bye air blow or wiping <div style="text-align: center;">  <p style="text-align: center;"><檢查位置></p> </div>	

※ S ⇒ 面積， W ⇒ 寬、幅， L ⇒ 長，

項目 Description	檢查基準 Reject criteria
玻璃瑕疵 Glass flaw	<p>不超過下述的規範值，數量不限。</p> <p>厚度方向的瑕疵(缺角)最大到板厚為止。</p> <p>To be no flaw which size is over the drawing</p> <p>Specified as blow. Number of flaw is none-specify.</p> <p>Traveling flaw is none.</p> <p>Flaw of thickness direction size is max.</p> 
Film 外形大小 Film size	<p>FILM 的大小不超出玻璃外形 (雙面膠除外)。</p> <p>Film is in glass area (or size).</p> <p>(Exclude double-side adhesive tape)</p>
雙面膠大小 Adhesive Tape size	<p>雙面膠的露出不包括在尺寸規定中。</p> <p>Adhesive Tape out of Panel Outline is excluded.</p>

● **Attention**

(1) Since touch panel is consist of Glass, pls. be careful your hand and other part from injury at handling. You must wear gloves at handling.

(2) Do not put a heavy shock or stress on touch panel.

(3) Do not lift Touch Panel by cable (FPC).

(4) Do not add any stress only film face.

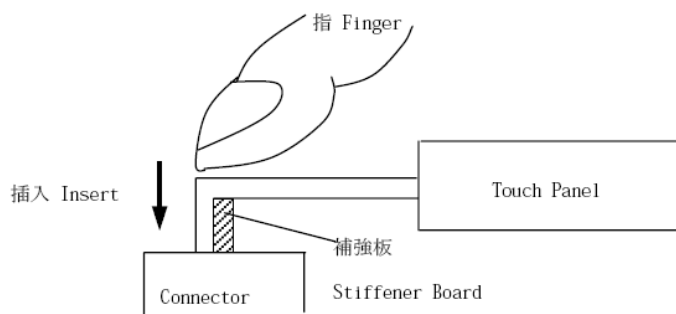
(Ex. Don't transfer the panel by film face with vacuum)

(5) Pls. use dry cloth or soft cloth with neutral detergent (after wring dry) or one with ethanol at cleaning. Do not use any organic solvent, acid or alkali solution.

(6) Do not pile Touch Panel. Do not put heavy goods on Touch Panel.

(7) Do not bend a cable of Touch Panel for prevent happen to line cut failure.

Please don't use following method for insert the cable to connector.



(8) Please pay attention for the matter as stated below at mounting design of touch panel & enclosure

-1. Enclosure support to fix touch panel must be out of view (transparent) area.

(Do not design enclosure presses the view area to protect from miss input)

-2. Enclosure edge must be between view area & Guaranteed active area.

(Enclosure edge must not touch with view area)

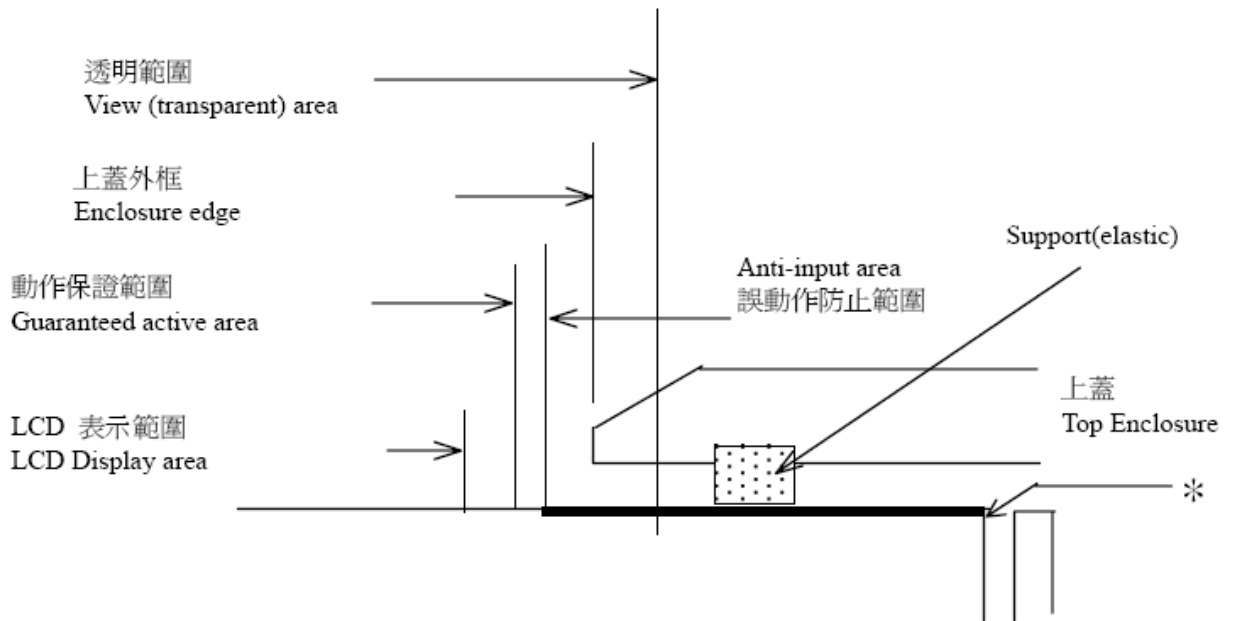
-3. We recommend the material of support to fix touch panel is elastic material.

-4. Do not bond top surface (film) of touch panel with enclosure.

-5. The corner parts (fig.*) has conductivity. Do not touch any metal part after mounting.

-6. Special design is required for water resistance use.

【實裝構造例 Mounting condition example】



● Packing Method :

As Drawing :

