Request information

PRODUCT SPECIFICATION

TFT-LCD-TP MODULE

Module No: 1000062-01

☑ Preliminary Specification

☐ Approval Specification

Designed by	Checked by	Approved by

Final Approval by Customer

Approved by	Comment

For more information, contact us:

WWW.DCLTEK.COM | 1-800-407-8917 | SALES@DCLTEK.COM

※The specification of “TBD” should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

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1.Document Revision History

Version	Contents	Date	Note
V0	Original	2023.06.05	

2. General Description

ITEM	STANDARD VALUES	UNITS
LCM type	7.0"TFT+CTP+PCB	--
Dot arrangement	1024×3(RGB)×600	dots
Module size	176.40(W)×111.00(H)×8.28(T)	mm
Active area	154.21(W)×85.92(H)	mm
Dot pitch	0.1926 (W)×0.1790 (H)	mm
Interface	8bit 6800/16-bit 8080 3线SPI4线SPIinterface	--
Color Pixel Arrangement	RGB vertical stripe	--
Display Mode	Normally Black	--
Viewing Direction	ALL	--
Colors	16.7M	--
CTP type	G+G	--
Surface Treatment	6H	--
CTP Driver IC	GT911	--
Operating temperature	-20 ~ +60	℃
Storage temperature	-30 ~ +70	℃
Weight	TBD	g

2.1 Overview

The **1000062-01** is a high-performance parallel RGB converter designed for TFT-LCD

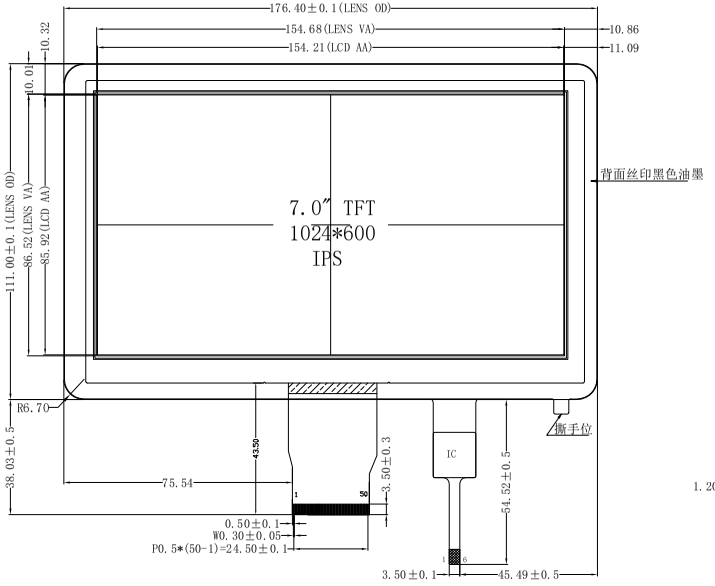
Driver board, can support screen resolution :1024X768 1024x600 800X480 parallel RGB, serial RGB interface

All of the following resolution

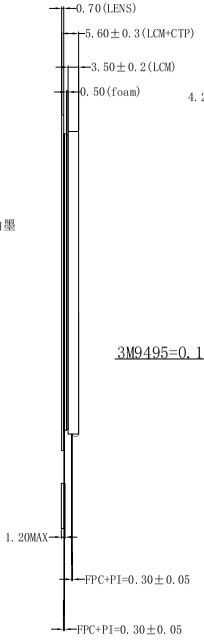
3. Outline Dimension

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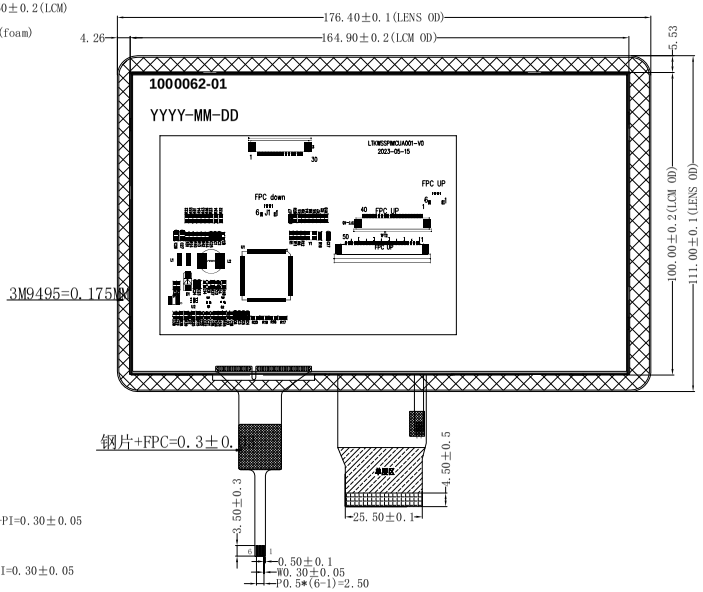
Front View



Side View

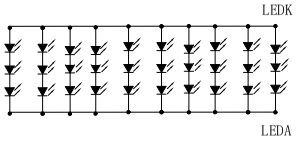


Back View



PIN NUMBER	NAME
1	LED+
2	LED+
3	LED-
4	LED-
5	GND
6	VCOM
7	DVDD
8	MODE
9	DE
10	VS
11	HS
12	B7
13	B6
14	B5
15	B4
16	B3
17	B2
18	B1
19	B0
20	G7
21	G6
22	G5
23	G4
24	G3
25	G2
26	G1
27	G0
28	R7
29	R6
30	R5
31	R4
32	R3
33	R2
34	R1
35	R0
36	GND
37	DCLK
38	GND
39	L/R
40	U/D
41	VGH
42	VGL
43	AVDD
44	RESET
45	NC
46	VCOM
47	DITHB
48	GND
49	NC
50	NC

NOTES:
1. DISPLAY TYPE: 7.0″, 1024*600 TFT LCD
2. DISPLAY MODE: transmissive Normally Black
3. VIEWING DIRECTION: ALL O'CLOCK
4. DRIVER IC:TYP
5. LCM (White 9 AVG 1/9) :
   Brightness: 350cd/m^2
   Uniformity:80%(MIN)
6. BACK LIGHT: 30 chip white LEDs If=200mA,Vf=8.8V-10V
7. OPERATING TEMP: -20° C TO 60° C,STORAGE TEMP: -30° C TO 70° C
8. * Critical Parameter,( ) ref Parameter,[ ] cpk Parameter
   Unspecified Tolerances:±0.20mm
   Modification mark:
9. SUGGESTION:TP window size unilateral increase 0.3~0.5mm than LCM A.A
10. REQUIREMENTS ENVIRONMENTAL PROTECTION: RoHS



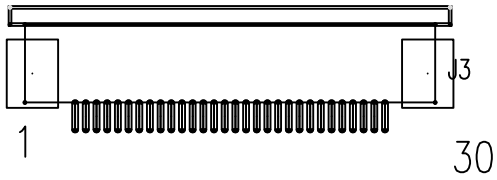
CTP interface

1	INT
2	SDA
3	SCL
4	RST
5	GND
6	VDD3.3

REV	DESCRIPTION	DATE	NAME
3			
2			
1			
0	NEW	2023.06.15	

SCALE:1/1	UNIT:mm	PAGE:1/1	Approve	Check	Drawn
Part No:	1000062-01	VER:V0			
Customer No:					

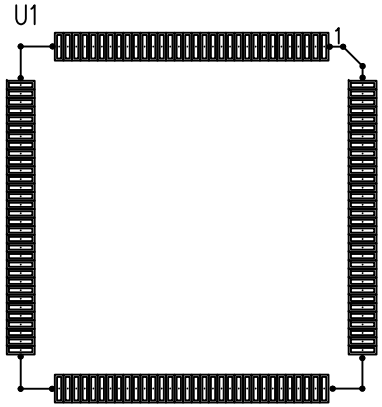
HIGH QUALITY DISPLAY SOLUTIONS MADE EASY



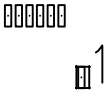
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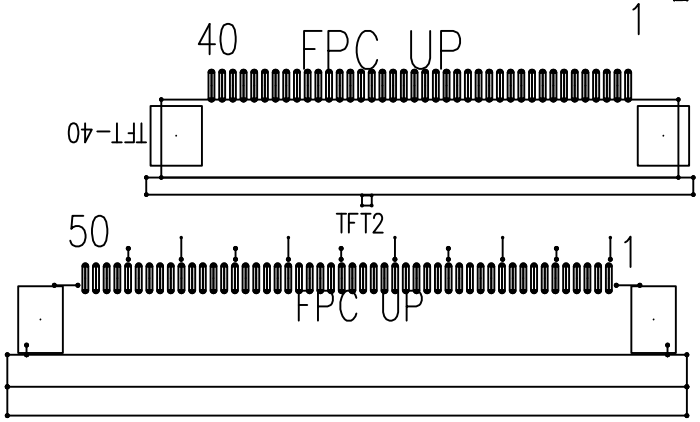
FPC down





FPC UP





4. Interface Specification

NO.	Symbol	Function	Remark
1	VDD3.3V	Power Supply for Display.	
2	RESET	Reset signal input terminal, active at 'L'	
3	GND	Power ground	
4	DB0	Data bus. Pins not used should be floating.	
5	DB1	Data bus. Pins not used should be floating.	
6	DB2	Data bus. Pins not used should be floating.	
7	DB3	Data bus. Pins not used should be floating.	
8	DB4	Data bus. Pins not used should be floating.	
9	DB5	Data bus. Pins not used should be floating.	
10	DB6	Data bus. Pins not used should be floating.	
11	DB7	Data bus. Pins not used should be floating.	
12	DB8	Data bus. Pins not used should be floating.	
13	DB9	Data bus. Pins not used should be floating.	
14	DB10	Data bus. Pins not used should be floating.	
15	DB11	Data bus. Pins not used should be floating.	
16	DB12	Data bus. Pins not used should be floating.	
17	DB13	Data bus. Pins not used should be floating.	
18	DB14	Data bus. Pins not used should be floating.	
19	DB15	Data bus. Pins not used should be floating.	
20	CS	Chip select signal input terminal, Active at 'L'	

21	RS	Register select signal input terminal: RS='H': select a control register; RS='L': select an index or status register.	
22	WR	Write signal input terminal, Active at 'L'	
23	RD	Read signal input terminal, Active at 'L'.	
24	CTP-3.3V	Power Supply For CTP.	
25	CTP-RES	External Reset, Low is active.	
26	CTP-SCL	I2C clock input.	
27	CTP-SDA	I2C data input and output	
28	CTP-INT	Interrupt request to the host, or Wakeup request from the host.	
29	CTP-GND	CTP-Ground.	
30	BL ON/OFF	Backlight use signal	

MCU interface 5.0

1.MCU hardware interface LT768X provides two kinds of 8-bit and 16-bit parallel interfaces, as well as SPI, I2C serial MCU interface, so that different MCU can control LT768x with a suitable interface. The mode of MCU interface is set by PSM [2:0] pin, please refer to the following table:

Table 5-1: MCU interface mode setting

PSM[2:0]	MCU interface mode
0 0 X	Select parallel port 8-bit or 16-bit 8080 mode
0 1 X	Select parallel port 8-bit or 16-bit 6800 mode
1 0 0	Select serial 3-wire SPI mode
1 0 1	Select serial 4-wire SPI mode
1 1 X	Select the serial port I2C mode

2.In parallel port mode, the choice of 8-bit or 16-bit data transfer is determined by Bit0 of register REG [01H] , if BIT0 = 0, then set to 8-bit data bus, if Bit0 = 1, is set to a 16-bit data bus. The LT768x family has different packages and supports different MCU interfaces. For example, the LT7680 is a 68pin QFN package, which only supports serial port 3-wire SPI and 4-wire SPI modes, the following table corresponds to the MCU interfaces supported by the LT768x family:

Table 5-2: interface definitions for different MCU modes

Pin Name	8080 I/F		6800 I/F		SPI 3-Wires	SPI 4-Wires	I2C
	8-bits	16-bits	8-bits	16-bits			
DB[15:8]	--	DB[15:0]	--	DB[15:0]	GPIOA[0:7]	GPIOA[0:7]	GPIOA[0:7]
DB[7]	DB[7:0]		DB[7:0]		SCLK	SCLK	SCLK
DB[6]					GND	SDI	I2C_SDA
DB[5]					SD	SDO	I2CA[5]
DB[4]					SCS#	SCS#	I2CA[4]
DB[3:0]					GND	GND	I2CA[3:0]
CS#	CS#		CS#		GPIB[0]	GPIB[0]	GPIB[0]
RD#	RD#		EN		GPIB[1]	GPIB[1]	GPIB[1]
WR#	WR#		RW#		GPIB[2]	GPIB[2]	GPIB[2]
A0	A0		A0		GPIB[3]	GPIB[3]	GPIB[3]
INT#	INT#		INT#		INT#	INT#	INT#
WAIT#	WAIT#		WAIT#		--	--	--

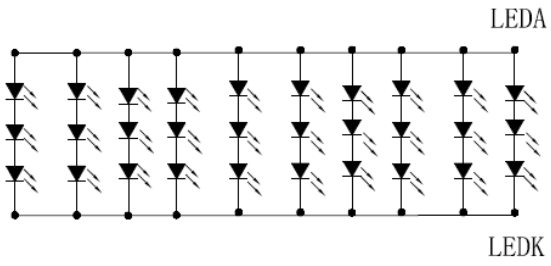
6.0.LED Backlight Specification

Item	Symbol	Min	Typ	Max	Unit	Notes
Forward voltage	Vf	8.8	-	-	V	-
Forward current	IF		200		mA	-
Luminance(With LCD+CTP)	Lv		350		cd/m2	-
LED life time	N/A		30,000		Hr	

Note:The “LED life time” is defined as the module brightness decrease to 50% of original brightness at

IL=20mA/LED. The LED life time could be decreased if operating IL is larger than 25mA/LED.

LED circuit：



7. Absolute Maximum Ratings

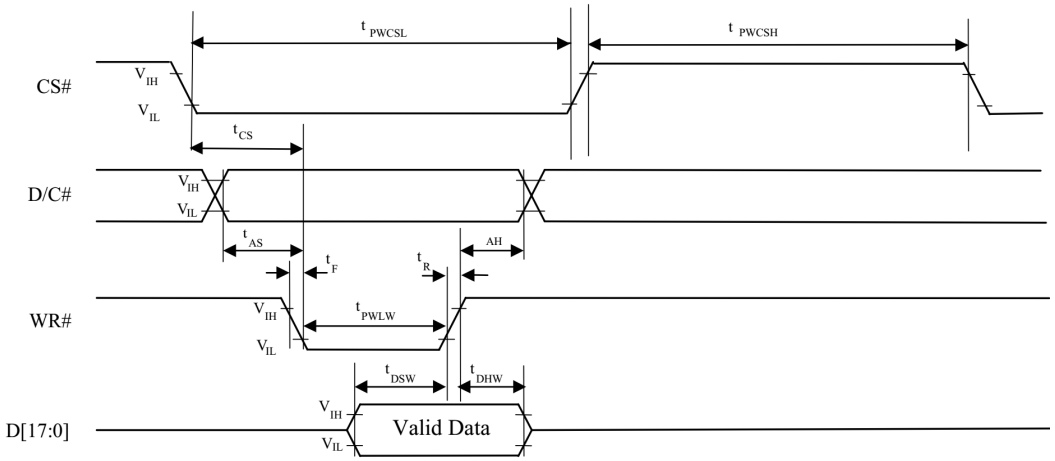
Item	Symbol	Min.	Max.	Unit
Analog Supply Voltage	VCC	-0.5	3.3	V
Input Voltage	Vin	-0.5	3.3	V
Operating Temperature	TOP	-20	60	°C
Storage Temperature	TST	-30	70	°C
Storage Humidity	HD	20	90	%RH

8. DC Characteristics

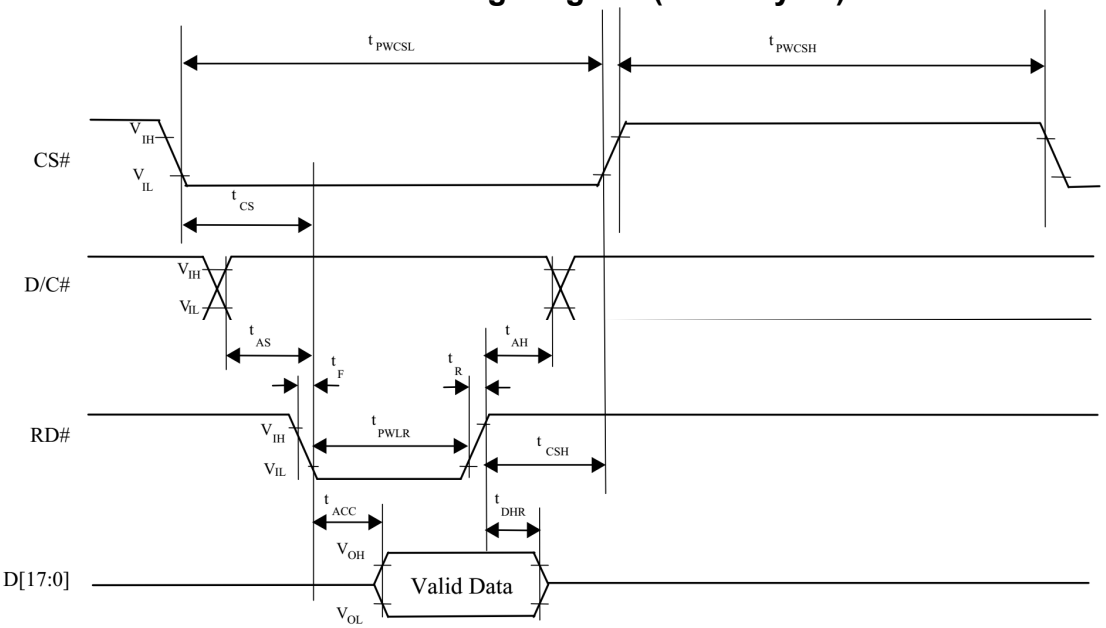
Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Analog Supply Voltage	VCC	-	3.3	-	V	-
Input High Voltage	V_{IH}	0.8VCC	-	VCC+0.5	V	Digital input pins
Input Low Voltage	V_{IL}	GND	-	0.2VCC	V	Digital input pins
Output High Voltage	V_{OH}	0.8VCC	-	VCC	V	Digital output pins
Output Low Voltage	V_{OL}	GND	-	0.2VCC	V	Digital output pins
I/O Leak Current	ILI	-1	-	1	uA	-
Supply Current	IBL	-	360	410	mA	
	ITFT	-	60	70	mA	VCC=3.3V

9. Timing Characteristics

Parallel 8080-series Interface Timing Diagram (Write Cycle)



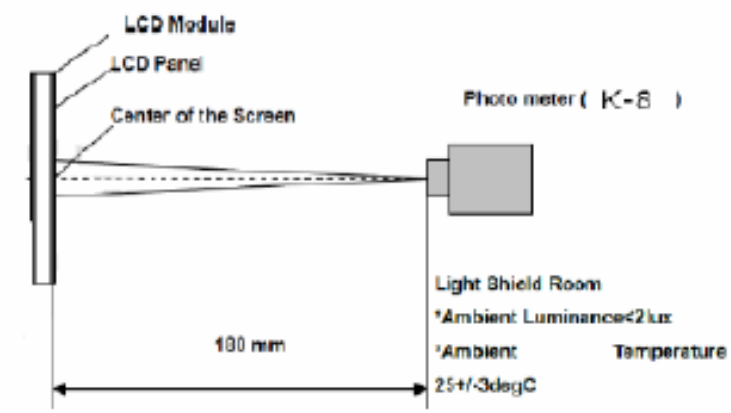
Parallel 8080-series Interface Timing Diagram (Read Cycle)



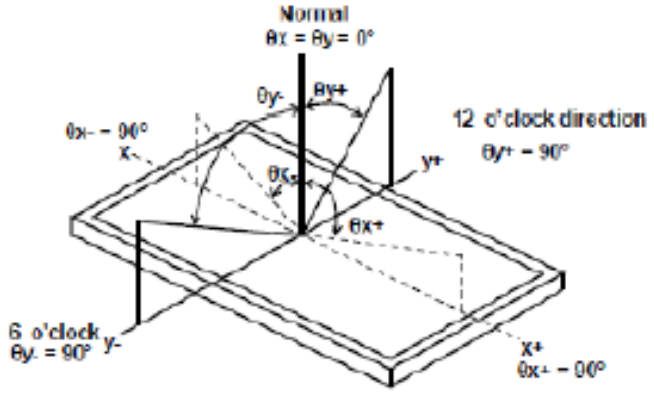
10.Optical Specification

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
Response time	Tr+Tf	Θ=0O Ø=0o Ta=25˚C		25		ms	
Contrast ratio	Cr		600	800			
Color gamut	S（%）		45	50		%	
Luminance uniformity	WHITE		80			%	
Viewing angle range	Θx+	CR≧10 Ta=25˚C		85		deg	
	Θx-			85		deg	
	Θy+			85		deg	
	Θy-			85		deg	
LCM Luminance（with TP）	LV	Θ=0o Ø=0o Ta=25˚C		350			
CIE(X,Y)Chromaticity	White(X)		0.286	0.306	0.326		
	White(Y)		0.325	0.345	0.365		

Note 1 :Measure condition :25° c±2° c,60±100%RH,under 10 Lux in the dark room. K-8.Viewing angle 2° .Measurement after lighting on 10 minus



Note2: Definition of Viewing Angle

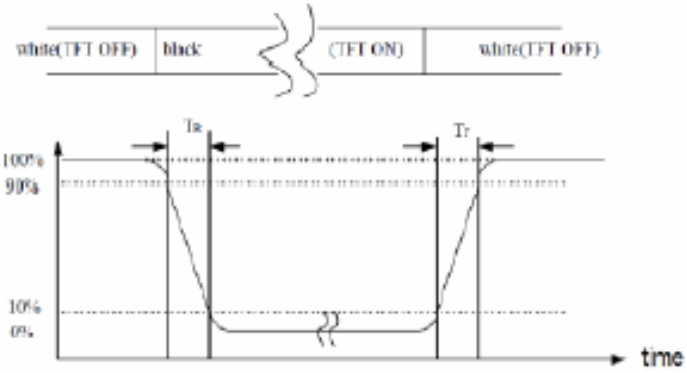


Note3： Definition of contrast ratio:

The contrast ratio can be calculated by the following expression
Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255, L0: Luminance of gray level 0

Note4: Definition of response time



Note (5) Definition of Transmittance(Module is without signal input)
Transmittance= Center Luminance of LCD/ Center Luminance of Back Light x100%

11.Reliability Test Items

Item	Test Condition	Criterion
High Temperature Operation	60 ℃, 48 hrs	Note1，Note2
Low Temperature Operation	-20 ℃, 48 hrs	
High Temperature Storage	70 ℃, 48 hrs	
Low Temperature Storage	-30 ℃, 48 hrs	
High Temp. & High Humidity Storage	50 ℃, 90％ RH, 48hrs	
Thermal Shock (Static)	-20℃, 30 min /60℃, 30 min, 20 cycles	

Note1:Evaluation should be tested after storage at room temperature for two hours.

Note2:

Pass: Normal display image no line defect.

Fail: No display image, or line defects.

Partial transformation of the module parts should be ignored.

12.Precautions

Please pay attentions to the followings as using the LCD module.

Handling

(a) Do not apply strong mechanical stress like drop, shock or any force to LCD module. It may cause improper operation, even damage.

(b) Because the polarizer is very fragile and easy to be damaged, do not hit, press or rub the display s urface with hard materials.

(c) Do not put heavy or hard material on the display surface, and do not stack LCD modules.

(d) If the display surface is dirty, please wipe the surface softly with cotton swab or clean cloth.

(e) Avoid using Ketone type materials (e.g. Acetone), Toluene, Ethyl acid or Methyl chloride to clean t he display surface. It might damage the touch panel surface permanently. The recommended solvents are water and Isopropyl alcohol.

(f) Wipe off water droplets or oil immediately.

(g) Protect the LCD module from ESD. It will damage the LSI and the electronic circuit.

(h) Do not touch the output pins directly with bare hands.

(i) Do not disassemble the LCD module.

(j) Do not lift the FPC of Touch Panel.

Storage

(a) Do not leave the LCD modules in high temperature, especially in high humidity for a long time.

(b) Do not expose the LCD modules to sunlight directly.

(c) The liquid crystal is deteriorated by ultraviolet. Do not leave it in strong ultraviolet ray for a long time.

(d) Avoid condensation of water. It may cause improper operation.

(e) Please stack only up to the number stated on carton box for storage and transportation. Excessive w eight will cause deformation and damage of carton box.

Operation (a) When mounting or dismounting the LCD modules, turn the power off.

(b) Protect the LCD modules from electric shock.

(c) The Driver IC control algorithms stated above should always obeyed to avoid damaging the LSI an d electronic circuit.

(d) Be careful to avoid mixing up the polarity of power supply for backlight.

(e) Absolute maximum rating specified above has to be always kept in any case. Exceeding it may cau se non-recoverable damage of electronic components or, nevertheless, burning.

(f) When a static image is displayed for a long time, remnant image is likely to occur.

(g) Be sure to avoid bending the FPC to an acute shape, it might break FPC.

(h) Most of the touch screens have air vent to equalize the inside air pressure to the outside one. The air vent must

be open and liquid contact must be avoided as the liquid may be absorbed if the liq uid is accumulated near the air vent.

(i) For the fragility of ITO film, it should avoid to use too tapering pen as the input material.

Touch Panel Mounting Notes

(a) If a cushion is used between bezel/housing and film must be choose as free as enough to absorb t he expansion and contraction to avoid the distortion of film.

(b) The cushion must be placed out of the Viewing Area.

(c) Bezel/Housing edge must be posited between Key Area and Viewing Area. The edge enters the Ke y Area may cause unexpected input if the gap is too narrow or foreign particles like dusts exist be tween Bezel/Housing and ITO film.

(d) Mounting example:

The corner part has conductivity. Do not touch any metal part after mounting.

Others

a) If the liquid crystal leaks from the panel, it should be kept away from the eyes or mouth.

b) For the fragility of polarizer, it is recommended to attach a transparent protective plate over the di splay surface.

c) It is recommended to peel off the protection film on the polarizer slowly so that the electrostatic c harge can be minimized.

13.HSF Requirements

☑ RoHS(Restriction of the use of certain Hazardous Substances)

☐HF (Halogen Free)

☐REACH (Regulation the Registration, Evaluaton, Authorization and Restricton of Chemicals)

☐ Other regulations

14.Packaging diagram

TBD

15. IIS Standard

1. Objective:

Standardize our project products (6-11.6 inches) appearance and quality inspection specifications and standards.

2. scope:

Applicable to our project products (6-11.6 inches) inspection.

3. Responsibilities:

Quality Control Center: formulate, revise this

document and supervise implementation.

Manufacturing Department: implement and

execute this document.

4. definition:

4.1 (CR) Serious shortcomings: have a significant impact on performance or have safety risks to the human body;

4.2 (MA) Main disadvantages: the disadvantage that the product function can not achieve the desired effect;

4.3 Secondary disadvantages (MI): product functionality is not affected, only the appearance of the shortcomings beyond the specification;

4.4 LCM ： Liquid Crystal Display Module liquid crystal display module (including LCD+IC semi-finished products, finished products);

4.5 AQL：Acceptable Quality Level acceptance criteria or acceptance criteria;

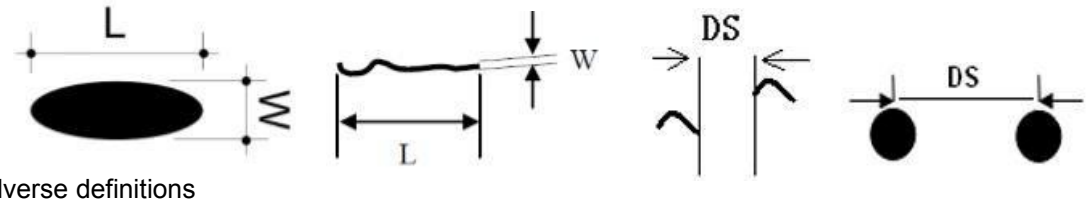
4.6 Pixel: Pixel ,1 RGB together equals one Pixel;

4.7 Subpixel: R G B single element in a Pixel;

4.8 DOT ： point, a sub-pixel in a pixel;

4.9 Code definition

Code	Meaning	Code	Meaning
L	Length	DS	Distance between two defects
W	Width	N	Quantity
D	Diameter		



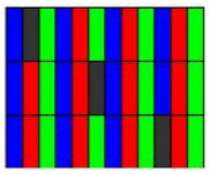
4.10 Adverse definitions

4.10.1 Spot defects: spot defects such as pixel bright spots in local locations, black spots including, but not limited to, internal stains on the screen itself, color spots, white spots, stains produced by the application of polarizers, and spot defects such as bad polarizers themselves:

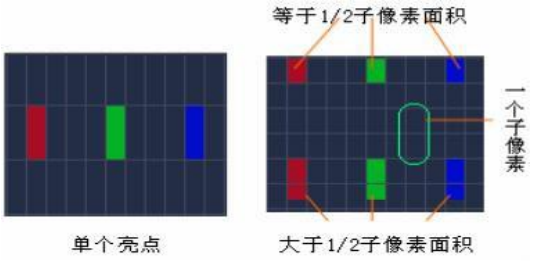
4.10.2 Impurity points: other blur points, stains, color spots, broken bright spots, etc. except pixel bright spots and pixel dark spots

4.10.3 Pixel dark point: a sub-pixel does not shine because of the failure of the MOS tube, as shown in figure (A): pixel dark point determination: a pixel dark point is determined when the non-luminous area is greater than 1/2 area of a single sub-pixel: when the non-luminous area is less than or equal to 1/2 area of a single sub-pixel.

4.10.4 Pixel highlight: due to the failure of the MOS tube, a sub-pixel has been luminous and become a pixel highlight. As shown in figure (B), pixel highlight is determined as a pixel highlight when the luminous area is greater than 1/2 area of a single sub-pixel.



图（A）



图（B）

4.10.5 Line defects: screen inner line impurities, including screen wool, fiber, patch impurities, polarizer surface scratch, glass scratch) for C or S line defects, if greater than the semicircle execution point defect specification control, less than semicircle, according to the linear specification;

4.10.6 Collapse / collapse angle: in the process of TP screen, LCD making, especially in the process of copying, cutting, etc., resulting in the glass edge of the small glass missing;

4.10.7 Rupture: screen fragmentation, liquid crystal leakage, Sensor rupture, Lens rupture;

4.10.8 Liquid leakage: liquid crystal leakage due to poor sealing;

4.10.9 Rainbow: the color of the local position of the screen is inconsistent with other positions;

4.10.10 Polaroid damage: point and line damage on the surface of polarizer;

4.10.11 Dirty: including hand prints, oil stains, fingerprints, stains, white fog and other undesirable phenomena. It is divided into erasable dirt and non-erasable dirt. Dipping alcohol with dustless cloth can not be erased to remove dirt;

4.10.12 Water ripple: visible water ripple on the screen;

4.10.13 Background color deviation: color inconsistency between different screens;

4.10.14 Bad edge grinding: screen or Lens edges appear different size, not smooth phenomenon;

4.10.15 Bubbles :(1) monomer impurity defects ,(2) adhesive bubble defects;

4.10.16 Scratch: product surface scratch or scratch. It is divided into fine scratch and hard scratch. Fine scratches are no deep scratches or scratches on the surface of the product, touch with your fingers without hand feeling; when W≤0.02, ignore. Hard scratches cause deep linear scratches on the surface of parts for hard objects or sharp objects. Touch hands with fingers;

4.10.17 Colour: due to the different refractive index and reflectivity of different substances, the product surface appears color halo phenomenon under the reflective condition;

4.10.18 Liquid accumulation: the accumulation of grease at the end of the component (transparent), mainly on parts with edges higher than the center. (b) Such defects are mainly found in the TP surface hardened material of non-glass material;

4.10.19 Poor optical glue: used for bonding solid or liquid optical glue appears in the overflow, offset, yellowing discoloration, aging deterioration, warping and other phenomena. Flip Sensor finger degumming between Sensor, Lens and Sensor, TP and LCD;

4.10.20 Poor protective film: the appearance of the protective film spills glue, plasticizer precipitation and other phenomena, the appearance of the product produced bad;

4.10.21 Watermark: after surface treatment (hardening, electroplating, oxidation), because the cleaning water is not dry in time or dry not thoroughly formed by the stripes, imprinting;

4.10.22 Color difference: the product surface presents a difference in color from the standard sample. Measuring with a colorimeter;

4.10.23 Point: within 10 mm×10 mm per unit area, Dmm×0.1 mm of defect points, the number of 3 times defined as points

4.10.24 Metal bridging point: touch screen visual area exists array of metal pixel bright spot phenomenon;

4.10.25 ITO shading: color aberration caused by optical refraction in the non-etching region and the etching region due to ITO etching;

4.10.26 Leakage: the light emitted from the LCD polarizer gap can be seen on the TP VA edge or in the Lens ink printing area.

4.10.27 Mura：COG Mura 、 watermark Mura 、Rubbing Mura 、 yellowish Mura 、 punctate / linear black and white Mura 、 transverse longitudinal black / white

Surrounding Mura 、 black and white Mura 、 flowers Mura 、Lens Mura 、Gap Mura 、 stereoscopic black and white

4.10.27 Missing stroke: in full display state, part does not appear.
4.10.28 No display: LCD no character display.
4.10.29 TP warp: TP double-sided glue off the LCD iron frame (or backlight glue frame) resulting in TP corner or the entire TP warp.
4.10.30 TP double-sided glue overflow: TP double-sided glue into the visual area.
4.10.31 TP Newton ring: a regular concentric circle or irregular figure on a TP surface in a reflective state.
4.10.32 TP assembly offset: the angle or edge of the TP exceeds LCD angle or edge of the iron frame below.
4.10.33 TP Film cracking, crimping, pleating: TP film separate from ITO glass or appear crimping, pleating.
4.10.34 TP silver slurry line fracture: TP silver slurry line cracks, resulting in poor conduction.

5. flow chart:

No

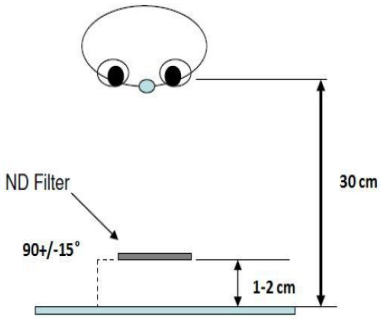
6. assignments:

6.1 Inspection of environment
6.1.1 temperature :23℃±3℃;
6.1.2 humidity :55±10 per cent RH;
6.1.3 illumination: electrical performance 100~200 Lux; appearance inspection 1000±200
6.2 Inspection conditions
6.2.1 Test distance :30±5 cm;
6.2.2 Viewing angle: test in the range of 45 degrees angle of view;
6.2.3 Test time: it is recommended to measure each picture 2~4 seconds, the overall appearance of 10±2 seconds;
6.2.4 Examiner: Inspector's visual acuity requirement is not less than 1.0
Other requirements: a. inspectors must wear finger covers and anti-static measures and test qualified b. Test and inspection platform must have anti-static measures and test qualified

6.3 Sampling Scheme and Allowable Level
6.3.1 Sampling scheme: GB/T2828-2012 ordinary class II normal single sampling;
6.3.2 Serious shortcomings (CR): AC =0, RE=1;
6.3.3 Main defects (MA): AQL =0.4;
6.3.4 Secondary defects (MI): AQL =0.65;
6.4 Inspection tools and precautions
6.4.1 Inspection tools: BM-7, eyepiece, film card, Vernier caliper, ND card, etc;
6.4.2 Inspection will use a fluorescent lamp as lighting, with the product plane up and down the left and right multi-angle inspection, inspection of the surface appearance can be made using the light-dark part formed by reflection inspection;
6.4.3 The inspector carries on the comparison inspection visually or with the comparison card, the magnifying glass;
6.4.4 In order to prevent static electricity, the protective film tear time is at least 2 seconds
6.4.5 Bad items not defined in this standard need to be reported up, after confirmation of OK before flow;

6.4.6 Illustration of Reflective Check and ND Card

燈源	亮部	暗部
螢光反射		
定義	反射面可看到燈源處	反射面不可看到燈源處（範圍是指可見燈源處附近，如圖所示）



6.5 Product Inspection Standards (mm)

Note :1. Matters not covered in this standard shall be subject to the signing of the sample.

2. Major anomalies found in production that are different from this standard need to be collected and evaluated for sample signing.

3. Bad appearance, customer assembly machine invisible bad regardless

Bad electrical test items	Acceptance criteria	Severity		
		CR	MA	MI
Pixel highlights	N≤3, DS≥15 mm			√
Double pixel highlights	N≤1			√
Pixel Darkness	N≤4, DS≥5 mm			√
Two pixels dark	N≤2, DS≥5 mm			√
pixel highlight + pixel dark	N≤5, DS≥5 mm			√
Break light	ND5% invisible OK or based on limited samples			√
Foreign body spots (colour/black/white spots)	D ≤0.1 mm; Ignore (Ignore)0.1 mm 0.3 mm ;ND ≤2; DS<DD ≤15 D >0.3 mm ;N≤0			√
Linear (foreign body / wool / scratch, etc)	W≤0.05 mm; Ignore (Ignore)0.05 mm <0.1 mm ,LW≤6 mm ;NW≤2;15 W >0.1 mm ,L >6 mm ;N≤0			√
Black/white/group	The 5% ND card covers the non - visible judgment OK, if necessary, the signature limit shall prevail			√
Abnormal display	Not allowed		√	
No display	Not allowed		√	
Missing line / missing line	Not allowed		√	
ghost/shadow	Not allowed		√	
Light leaks/fireflies	ND5% invisible OK or based on limited samples			√
Shadow	5S disappear OK(normal switch screen)			√

MURA	ND5% invisible OK or based on limited samples			√
LCD flash point	Judging by the light and dark criteria			√
LCD stripes	Not allowed or based on limited samples			√
LCD grid	Not allowed or based on limited samples			√
LCD bubbles	Disallowed (None)			√
Dead lights, dark lights, flashing lights	Not allowed		√	
Uneven display	Not allowed or based on limited samples			√
Wrinkle, film shifting	Not allowed		√	
Interference pattern	Not allowed or based on limited samples			√
Newtonian rings	Not allowed or based on limited samples			√

TP Bad Appearance Items	**Acceptance criteria**	**Severity**		
		CR	**MA**	**MI**
Foreign body spots (black spots, color spots, white spots, bump/mark, etc)	D ≤0.1 mm; Neglect (Ignore) 0.1 mm <D≤0.3 mm ;N≤2; DS≥15 mm D mm <D≤0.3 mm ;N≤0			√
Fish eye/bubble	D ≤0.1 mm; Ignore (Ignore)0.1 mm 0.3 mm ;ND ≤2; DS<DD ≤15D >0.3 mm ;N≤0			√
Scratch feeling	Not allowed			√
Linear (wool / black / white, etc .)/ scratch	W≤0.05 mm; Ignore (Ignore)0.05 mm <0.1 mm ,LW≤6 mm ;NW≤2;15 W >0.1 mm ,L >6 mm ;N≤0			√
White	Outside ink printing offset / white edge width W≤0.25 mm, allowed.			√
IR hole	Shadow, black dot ≤0.2 mm ,N≤2, invisible in black background IR hole marks (no light inspection), W <0.03 mm, ignored (dense not allowed); and 0.03 mm <W≤0.05 mm ,L <3 mm ,1 allowed W >0.05 mm ,IR oil printing incomplete light transmission, scratch light transmission, not allowed	)		√
Camera, LED holes	Marginal burr ≤0.15 mm ,N≤1; edge sawtooth ≤0.1 mm wipe dirt, residual glue, finger printing residue, not allowed White spots, black spots, scratches, not allowed Irregular hole position, beyond the hole size requirements, deviation, not allowed			√
Pinhole in front non-transparent area (light transmission, light leakage)	Pinhole specifications for frontal non-transparent areas: D≤0.1, allowed: N≤2, DS≥15 mm, intensive not allowed; D D≤0.1, not allowed; Pinhole: refers to the ink / BM area, due to screen / coating process problems caused by light transmission Light leaks.	`		√

Screen fonts/ LOGO	Font / LOGO screen printing smooth, no sawtooth, shadow, penetration, wear, displacement, broken lines and wiring defects, if necessary, reference limit sample		√	
CG caving angle, caving edge	Product Front: Collapse angle and edge are not allowed Product back: maximum allowable defect size: X≤0.5, YX≤0.5, ZX≤1/2 T; and only 2 defects per side ,15 mm; distance between two defects		√	
CG rupture, crack	No cracks, cracks allowed		√	
CG progressive collapse	Not allowed		√	
Sawtooth/Overflowing ink	W≤0.1 mm, ignore 0.1 mm W≤0.25 mm,Lmm <W≤1 mm allow only one side mm,Lmm <W≤W≤0.25 mm or LW≤1			√
Semi-permeable, fully permeable keys	Light inspection is required, the specific semi-permeable, fully permeable effect according to the drawing marking requirements and sealing samples. press D≤0.15, allow; or limit sample			√
IR hole, camera hole protective film, light guide film Accessories	Do not allow leakage, defect, paste deviation, fracture and other bad.			√
Surface dirt	1. process dirt and alcohol can not be wiped not allowed; 2. dry cloth can wipe dirt and wipe cloth with alcohol can wipe dirt, and dirt is less than 10% of the total product area, each product is less than two points, wipe time is less than 5 seconds, allowed	。		√

LCM Bad Appearance Items	**Acceptance criteria**	**Severity**		
		CR	**MA**	**MI**
Terminal collapse	.ITO damaged, not allowed .MARK damaged, not allowed			√
Collapse/side collapse	1. does not affect product functionality; W≤3 mm ,LW≤3 mm：NW≤1			√
LCD scratched	Not allowed			√
LCD lines	No breakage			√
LCD edge	Non-extension cracks			√
POL scratched	Not allowed			√
POL edge bubbles	.Display area outside 1/2 BM area, not allowed; .Display area outside 1/2 BM area, regardless of control			√
POL dirt/water lines	POL dirty / water lines / finger prints are not allowed and must be wiped clean			√
POL warp	Not allowed			√
POL mix	.Different POL products mixed together, not allowed; .Not allowed to use POL, BOM chart			√
POL offset	POL need to cover the display area within 1/2 BM area			√
Silica gel coating	Height not exceeding CF			√

Silica residue	Can not cover POL/FPC etc			√
Sealing foreign body	0.1 mm ≤D			√
Sealing bubble	0.2 mm ≤D			√
Tin tip	Welding width ≤3/4 pad width, offset ≤1/4 pad			√
Welding offset	1. Solder hypertrophy, surrounded by the entire pad, can not see the part body, not allowed; solder joint projection beyond PCB pad and contact part body, not allowed			√
Tin / virtual / empty / low tin 2	Not allowed			√
PCBA/Connector/FPC/FFC Appearance	Scratch or damage does not allow exposure			√
FPC/PCB have tin, viscose, stickyTin	Not allowed			√
Disconnect/short circuit or FPC breakage	Not allowed			√
Screen printing is not clear, unrecognizable Strong plates	Not allowed			√
Gold finger oxidation/damage	Not allowed			√
Parts	No damage			√
Connection status	Need proper connection			√
FPC rupture	Not allowed			√
The alignment mark folds	Not allowed			√
FPC edge hem	Marginal height ≤1 mm (width excluded)			√
The piano cover fell off	Not allowed			√
Damaged bayonet	Not allowed			√
IC breakage, missing angle, crack	Not allowed			√
The edge of the protective film is raised and entered Area of view	Not allowed			√
POL no protective film broken or Press the iron frame on the protective film	Not allowed			√
Dirty surface of protective film	Not allowed			√
Protective film offset	Not allowed			√
It's easy to tear	Not allowed			√
Tape / tape has foreign body, breakage, scald	Not allowed			√
Less stickers, missing tape/glue paper or stickers Incorrect	Not allowed			√
Tape / tape raised	Not allowed			√
Bar code, including strip code, spray code ,2 The format does not conform to the requirements	Not allowed			√

There are broken code or fuzzy, ink light and other phenomena	Not allowed			√
Missing bar code, location does not meet requirements	Not allowed			√
LCD, rubber frame, iron frame not assembled in place	Not allowed			√
Plastic frame, iron frame scratches	Not allowed			√
Plastic frame, iron frame without scratch	Check criteria for non-scratch POL/LCD reference			√
Glue frame, iron frame deformation, rust, bending Loose loose	, Not allowed			√

Bad packing items	**Acceptance criteria**	**Severity**		
		CR	**MA**	**MI**
Label Specification / Content Inconsistent with Requirements	Not allowed			√
Packaging material/model/quantity and requirements Symbol	Not allowed			√
Damaged mix or packaging	Not allowed			√
Package	1. The middle box allows no damage to the protection of the box (damaged length <5 cm), proper deformation, no functional damage 2. The cushioning material of the package shall be free of deformation and allow for a small amount of non-recoverable indentation, creases and ruptures (length of breakage <3 cm) 3. Non-crease and non-recoverable deformation of Tray disk: for LCD/LCM (full Fitting) packing, tray disc not allowed to crack			√

7. reliable test criteria:

Serial number	Pilot projects	Experimental conditions and methods	Criteria	Experiment Quantity	Test timing/frequency Sample/ Trial production	Test timing/frequency Mass production	Prepared Note
1	High temperature storage	℃,96 H	No appearance, machinery or work allowed Can be defective.	pcs 5	●		
2	High temperature operation	℃,96 H	No appearance, machinery or work allowed Can be defective.	pcs 5	●		
3	High temperature and high humidity	℃,90 per cent RH ,96H	No appearance, machinery or work allowed Can be defective.	10PCS	●	●	
4	Temperature impact	-20℃~60℃,1 H/cycle ,48cycles	No appearance, machinery or work allowed Defects	10PCS	●	●	
5	Low temperature storage	-20℃,96 H	No appearance, machinery or work allowed Can be defective.	5PCS	●		
6	Low temperature operation	-10℃,96 H	No appearance, machinery or work allowed Can be defective.	5PCS	●		
7	ESD	Humidity :30-50 per cent Contact Resistance :100 PF+1500 ohm Air Resistance :150 PF+330 ohm Test times: plus or minus 10 times		10PCS	●		

8. related documents:

7.1 Sampling criteria: reference to the Sampling Plan

Revised curriculum vitae of the 9. document

Version	Revised content	Revised content	Revision date	Modifier
A0	A Edition		**2012.11.05**	
A1	Old version format	new version format and added B specification inspection standards	2014.03.21	
A2	No 6.3.5 clause	Add 6.3.5 clause	2014.11.04	

A3	6.6,6.7,6.8 Inspection standards are incomplete	1.6.6 fringe/ LCD network added LCD poor inspection standards 2.6.7 BL white ball / BL white print / high current 3.6.8 item adds POL inspection criteria for appearance defects such as skew 4. substantial additions or modifications to items 6.6,6.7,6.8 The imperfect project can refer to the standard content	2015.02.05	
A4	Old version format	Consolidation BL 、LCM standards of the same size and updating Formula	2017.01.16	
A5	95 per cent control over zero light ratio	To control the zero-brightness ratio, improve the version format, increase the control of the distance between foreign bodies, increase the description of the corresponding detection items of the electrical test screen, and improve the version Content	2017.8.24	
A6	Specification revision	Delete B provisions from the original version	2018.3.17	
A7	Old version format	New Edition :1 Appearance 2 Structure 3 Electrical Measurement Classification	2018.8.13	
A8	New version format	Simplification of standards and re-planning for broad categories Quasi-formulated and new applicable station definition	2018.9.20	
A9	Uniform version format	1. Revised version of the original standard, both internal and external 2. Additional Mura definitions	2019.05.20	