



SPECIFICATION

easy // TOUCH
DISPLAY

eTD050W2105-POA-E (12039376)

5.0" – 800x480 - COF

Version: 1.3

Date: 20.01.2020

Note: This specification is subject to change without prior notice

www.data-modul.com

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1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Resolution	800 * 3 (RGB) * 480 Dots
LCD Type	a-Si TFT , Normally white, Transmissive type
Screen size(inch)	5.0 inch
Viewing Direction	6 O'clock (Gray scale Inversion)*1
	12 O'clock (*2)
Surface treatment	Anti-Glare (LCD)
	Clear(T/P)
Color configuration	RGB Vertical Strip
Backlight Type	White LED B/L
Weight	93 g
Interface	24 Bits RGB interface
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website : http://www.powertip.com.tw/news_detail.php?Key=1&cID=1

Note:

*1. For saturated color display content (eg. pure-red, pure-green, pure-blue or pure-colors - combinations).

*2. "For display content based upon multicolor images eg. photos, RGB defined user interfaces"

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	133.7(W) x 90.5 (L) x 5.07(H)	mm

LCD panel

Item	Standard Value	Unit
Active Area	108.0 (W) * 64.8 (L)	mm
Pixel Size	0.135 (W) * 0.135 (H)	mm

Note : For detailed information please refer to LCM drawing

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Power Supply for TFT Panel	VDD	GND=0	-0.3	4.5	V	-
Power Supply for Backlight Unit	VCC	GND=0	-0.3	+20.0	V	
Operating Temperature	T _{OP} (Ts)	Note 1	-20	70	°C	
Storage Temperature	T _{ST} (Ta)	Note 2	-30	80	°C	

The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

Note 1 : Ts is the temperature of panel's surface.

Note 2 : Ta is the ambient temperature of samples.

1.4 DC Electrical Characteristics

Module

GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for TFT Panel	VDD	GND=0V	3.0	3.3	3.6	V
Power Supply for Backlight Unit	VCC	GND=0V	5	12	15	V
Input Voltage for TFT Panel	V _{IH}	GND=0V	0.7VDD	-	VDD	V
	V _{IL}	GND=0V	0	-	0.3VDD	
Supply Current for TFT Panel	IDD	IDD@VDD=3.3V	-	100	150	mA
Supply Current for Backlight Unit	ICC	ICC@VCC=5V	-	400	600	
Supply Current for Backlight Unit	ICC	ICC@VCC=12V	-	150	250	
Input Voltage for PWM Signal	V _{PH}	GND=0V	1.2	-	-	V
	V _{PL}	GND=0V	-	-	0.4	V
Dimming Clock Rate	f _P	GND=0V	5	-	100	KHz

1.5 Optical Characteristics

TFT LCD Module

VDD= 3.3 V, Ta=25°C

Item	Symbol	Condition	Min.	Typ.	Max.	unit	-	
Response time	Tr+Tf	25□	-	24	36	ms	-	
Viewing angle	Top	θY+	CR ≥ 10	60	-	Deg.	Note 4	
	Bottom	θY-		60	-			
	Left	θX-		60	-			
	Right	θX+		60	-			
Contrast ratio	CR	Ta = 25°C	500	600	-	-	Note 3	
Color of CIE	White	X	θX , θY = 0°	0.24	0.29	0.34	-	Note1

Coordinate (With B/L & LCD)	Red	Y		0.27	0.32	0.37		
		X		0.51	0.56	0.61		
		Y		0.28	0.33	0.38		
	Green	X		0.29	0.34	0.39		
		Y		0.54	0.59	0.64		
	Blue	X		0.08	0.13	0.18		
Y		0.03	0.08	0.13				
Average Brightness Pattern=white display (With LCD)*1		IV	VCC=5.0V PWM="High" (Duty=100%)	680	850	-	cd/m2	Note1
Uniformity (With LCD)*2		□B	VCC=5.0V PWM="High" (Duty=100%)	70	-	-	%	Note1

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	TPVDD	TA = 25°C	3.5		6.0	V

Note 1:

*1 : $\Delta B = B(\min) / B(\max) * 100\%$

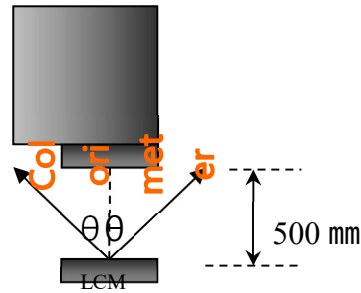
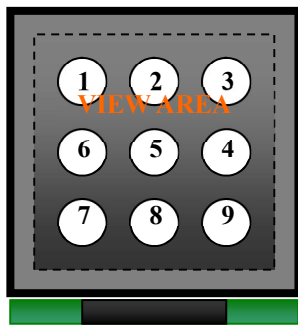
*2 : Measurement Condition for Optical Characteristics:

a : Environment: 25 ± 5 / $60 \pm 20\%$ R.H · no wind · dark room below 10 Lux at typical lamp current and typical operating frequency.

b : Measurement Distance: 500 ± 50 mm · ($\theta = 0^\circ$)

c : Equipment: TOPCON BM-7 fast · (field 1°) · after 10 minutes operation.

d : The uncertainty of the C.I.E coordinate measurement ± 0.01 · Average Brightness $\pm 4\%$



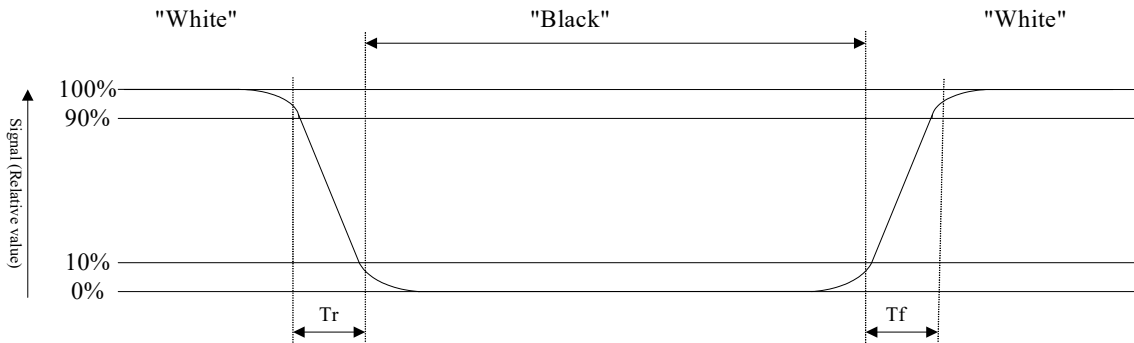
Colorimeter=BM-7 fast

To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

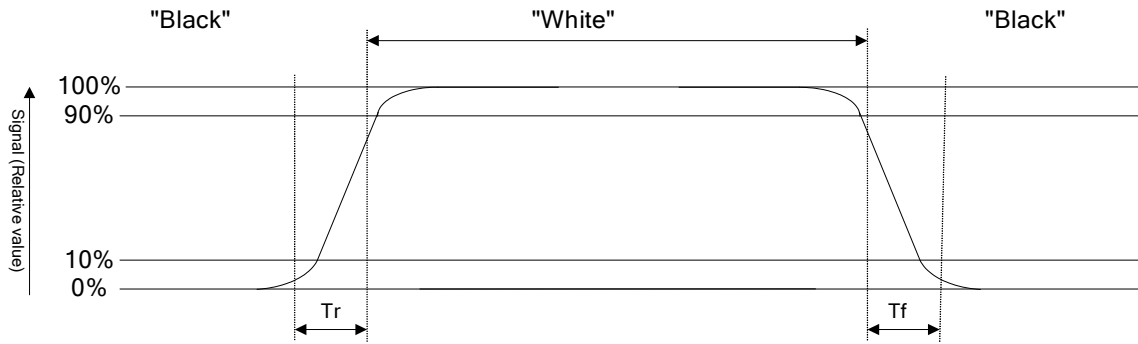
Note2: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:
Normally White



Normally Black



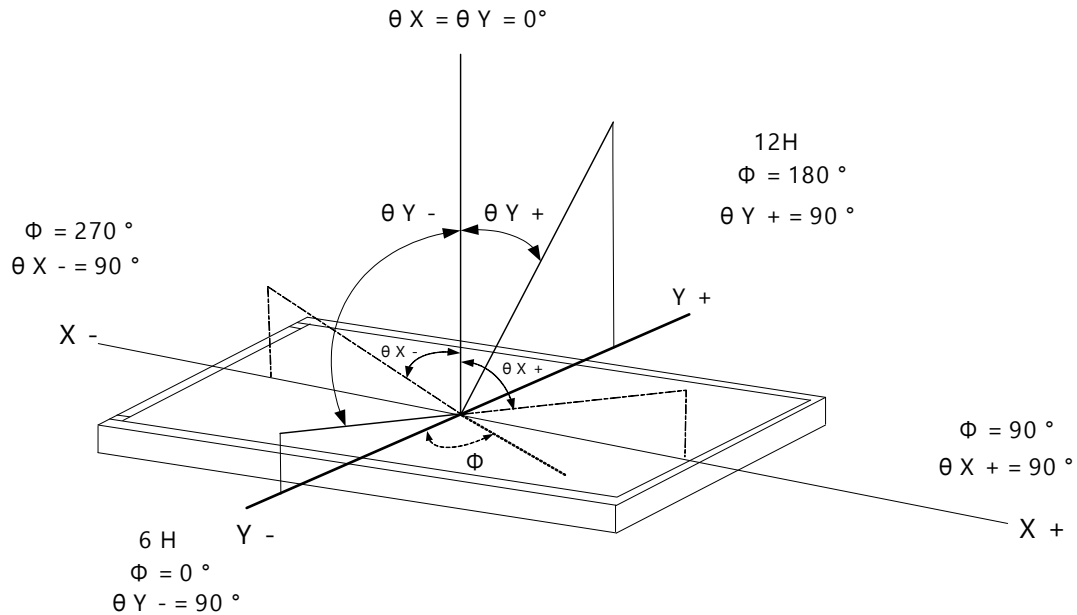
Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

Note4: Definition of viewing angle:

Refer to figure as below:



1.6 Backlight Characteristics

Maximum Ratings

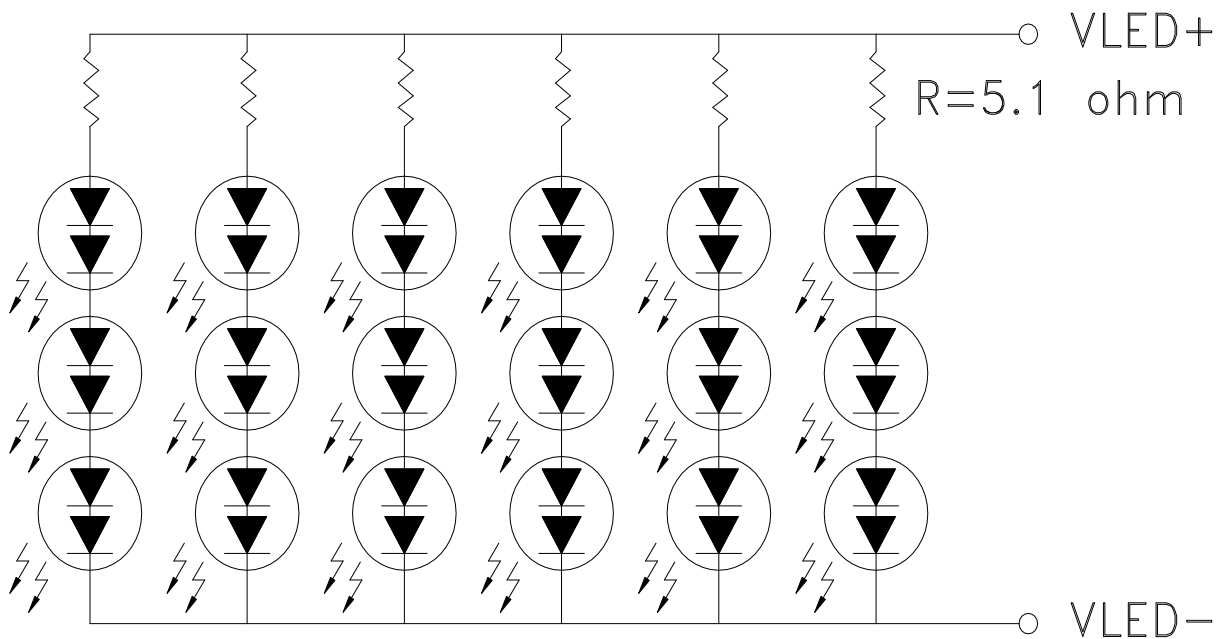
Item	Symbol	Min.	Max.	Unit	Remark
LED Forward Current	I_F	180		mA	
LED Reverse Voltage	V_R	30		V	

Electrical / Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Voltage	V_L	16.2	18.0	19.2	V	Note1
LED Current	I_L	-	90	-	mA	-
LED life time	-	50,000	-	-	H _r	Note2

Note 1: The LED Supply Voltage is defined by the number of LED at $T_a=25^\circ\text{C}$ and $I_L=90\text{ mA}$.

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at $T_a=25^\circ\text{C}$ and $I_L=90\text{ mA}$. The LED life time could be decreased if operating I_L is larger than 90 mA.



1.7 Touch Panel Characteristics

Features

Item	Standard Value
Touch Panel Size	5.0"
Touch type	True Multi-Touch Capacitive Touch Panel
Input Method	True Multi-touch with up to 10 Points of Absolution X and Y Coordinates
Output Interface	I ² C & USB
IC	ILITEK----ILI2511
I ² C Address	0x41(7bit)

Mechanical Specifications

Item	Standard Value	Unit
Viewing Area	109.5 (W) * 65.8 (L)	mm

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	TPVDD	Ta = 25°C	-0.3	+6.0	V
Operating Temperature	T _{OP}	Non condensing	-20	70	°C
Storage Temperature	T _{ST}	Non condensing	-30	80	°C

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDD 5V	-	-	5.0	-	V

Optical Characteristics

Item	Standard Value	Unit
Total light transmittance	85% or more	-
Surface Hardness	≥(6H)	-

1.8 Touch Performance

This touch device offers operation with 10 fingers simultaneously. It is intended for indoor use in industrial applications.

This module is designed to have single touch functionality when operating with freshwater. It is not designed to have functionality when operating with saltwater. Ghost touches may occur and operation might not be possible.

The module is designed to have limited functionality when operating with thin gloves.

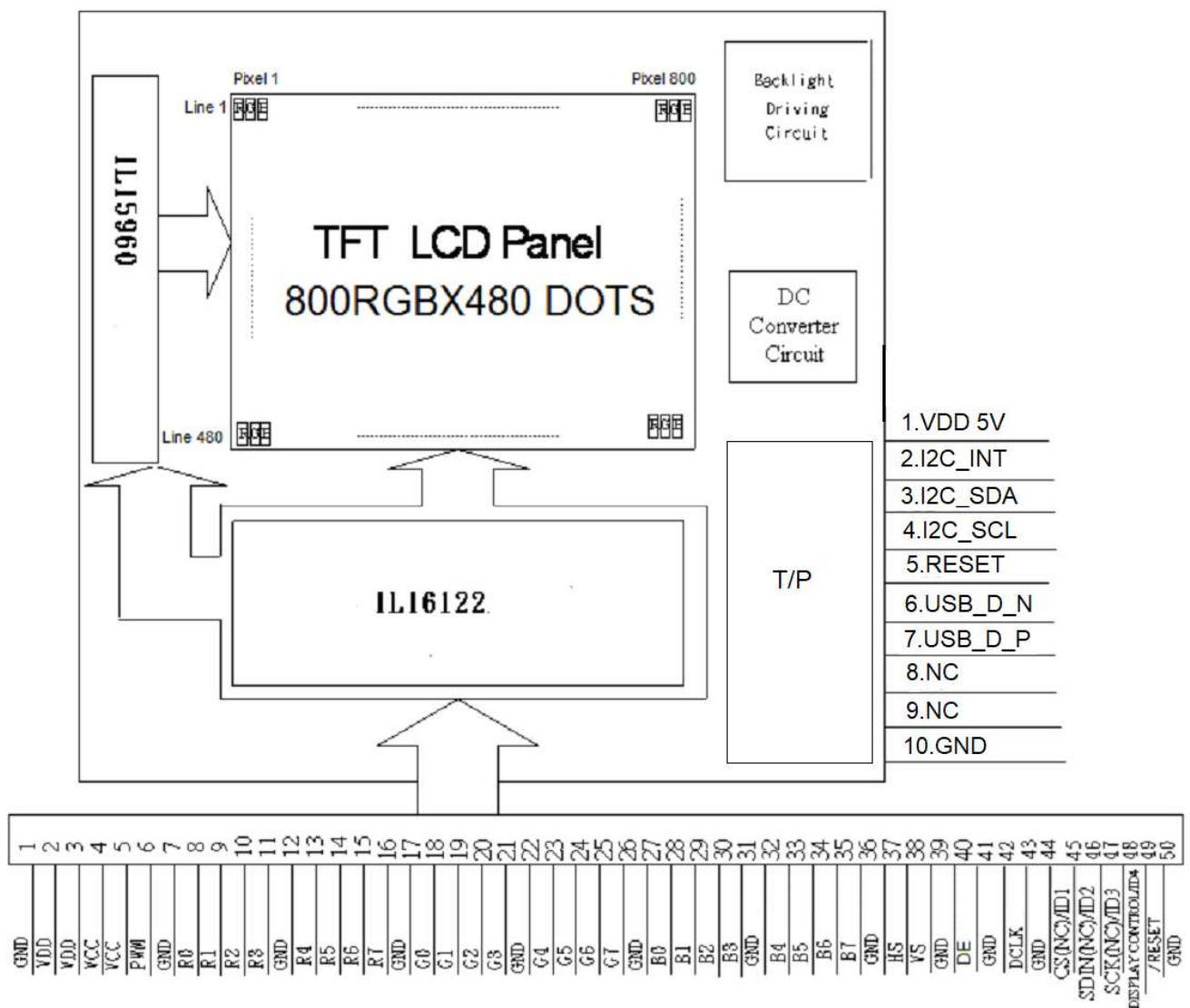
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

Pin#	Name	DESCRIPTION
1	GND	Power ground.
2	VDD	Power for Digital Circuit.
3	VDD	Power for Digital Circuit.
4	VCC	Power For LED backlight.
5	VCC	Power For LED backlight.
6	PWM	Shutdown & Dimming control input for backlight. Do not allow this pin to float. "Hi" =100%, "Low" = 0%.
7	GND	Power ground.
8	R0	Red Data.
9	R1	Red Data.
10	R2	Red Data.
11	R3	Red Data.
12	GND	Power ground.
13	R4	Red Data.
14	R5	Red Data.
15	R6	Red Data.
16	R7	Red Data.
17	GND	Power ground.
18	G0	Green Data.
19	G1	Green Data.
20	G2	Green Data.
21	G3	Green Data.
22	GND	Power ground.
23	G4	Green Data.
24	G5	Green Data.
25	G6	Green Data.
26	G7	Green Data.
27	GND	Power ground.
28	B0	Blue Data.
29	B1	Blue Data.

Pin#	Name	DESCRIPTION
30	B2	Blue Data.
31	B3	Blue Data.
32	GND	Power ground.
33	B4	Blue Data.
34	B5	Blue Data.
35	B6	Blue Data.
36	B7	Blue Data.
37	GND	Power ground.
38	HS	Line synchronization signal. Horizontal Sync Input.
39	VS	Frame synchronization signal. Vertical Sync Input.
40	GND	Power ground.
41	DE	Display enable pin from controller. Data Input Enable.
42	GND	Power ground.
43	DCLK	Sample clock. Data will be latched at the falling edge of DCLK.
44	GND	Power ground.
45	CS(NC) / ID1	No Function./ ID[4:1]These pins select LCM type. See NOTE1
46	SDIN(NC) / ID2	No Function./ ID[4:1]These pins select LCM type. See NOTE1
47	SCK(NC) / ID3	No Function ./ ID[4:1]These pins select LCM type. See NOTE1
48	DISPLAY CONTROL / ID4	Display Enable(Hi Active)./ ID[4:1]These pins select LCM type. See NOTE1
49	/RESET	Global Reset (Low Active).
50	GND	Power ground.

Note 1
ID Pins
Definition:

	PIN 45 ID1	PIN 46 ID2	PIN 47 ID3	PIN 48 ID3
ID PIN Setting	X	0	1	X

1. Resistor=10k ohm
2. "X"=No use .

Capacitive Touch Panel(CTP) Interface

Pin No.	Symbol	Function
1	TPVDD	Power supply for touch panel
2	I2C_CHG	Interrupt
3	I2C_SDA	Serial data line
4	I2C_SCL	Serial clock line
5	Reset	Reset
6	USB_D_N	D-
7	USB_D_P	D+
8	NC	NC
9	NC	NC
10	GND	GND

2.3 Touch Panel Description

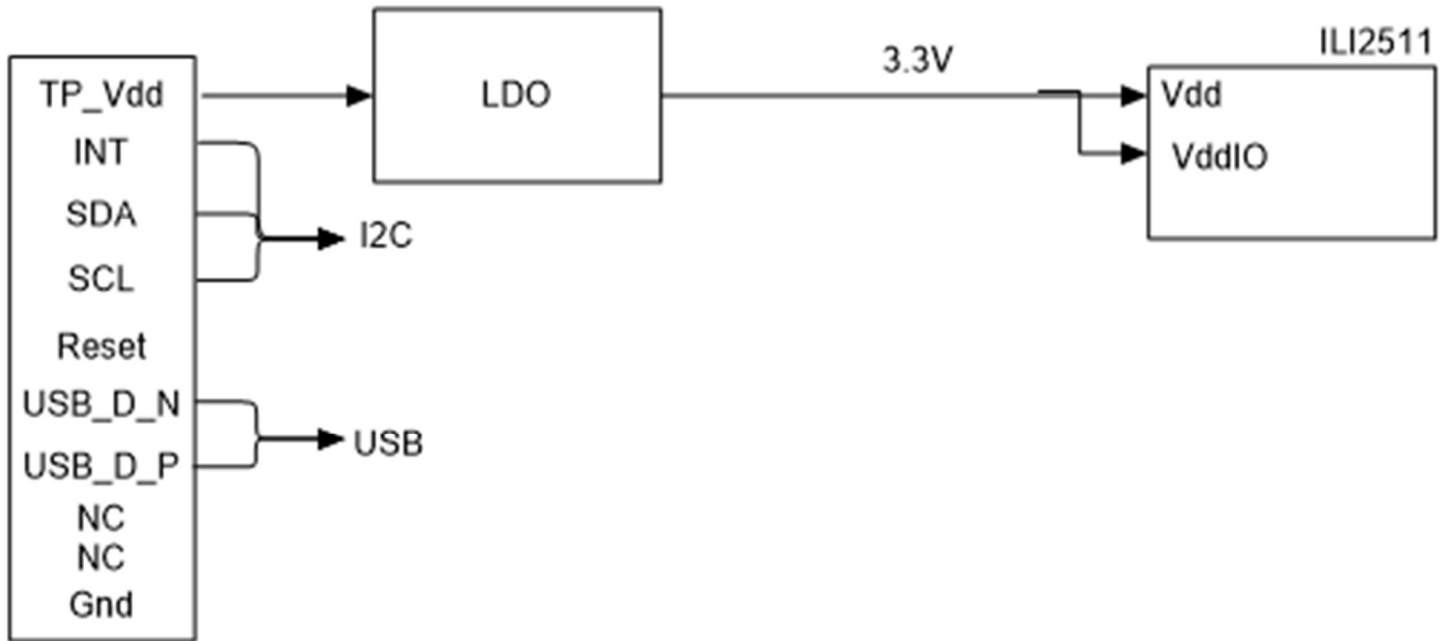
The touch panel can be operated either via I2C or via USB. A list of supported operating system is given in the following table. For drivers listed in the table, please contact your regional Data Modul sales contact.

A recommended connector for the touch tail is OMRON XF2M-1015-1A.

For easy design-in, Data Modul can provide additionally an adaptor for I2C and USB connection (incl. corresponding USB cable). Please contact your regional Data Modul sales contact for further details.

System	Interface	Function	Driver Version	Document
Windows 10 Windows 8 Embedded 8.1 Industry Embedded 8.1 Pro Embedded 8 Standard	USB	Multi Touch	Windows In-Box Driver	N/A
Windows 7 Windows Embedded 7 Embedded Enterprise 7 Embedded Standard 7 Embedded POSReady7	USB	Multi Touch	Windows In-Box Driver	N/A
Linux 2.6.36 Upward	USB	Multi Touch	Linux In-Box Driver	N/A
Linux 2.6.36 Upward	I2C	Multi Touch	ilitek_limv5_7_0_0	ILITEK_LINUX_I2C_DRIVER_CHS_V0.0.6
RTOS	I2C	Depends on system	NA	Please contact your Data Modul Sales Representative I

2.3.1 Block Diagram



2.3.2 I2C Operation

TP_VDD, I2C_CHG, I2C_SDA, I2C_SCL and RESET lines are needed for I2C operation. External pull up resistors on SDA and SCL lines are required (recommendation 4.7kΩ). On INT as well as Reset line, there is no additional pull up resistors required. Please note that VddIO voltage is always 3.3V since this voltage is derived from the LDO on the flex tail.

For detailed documentation on the software integration of I2C, please contact your regional Data Modul sales contact.

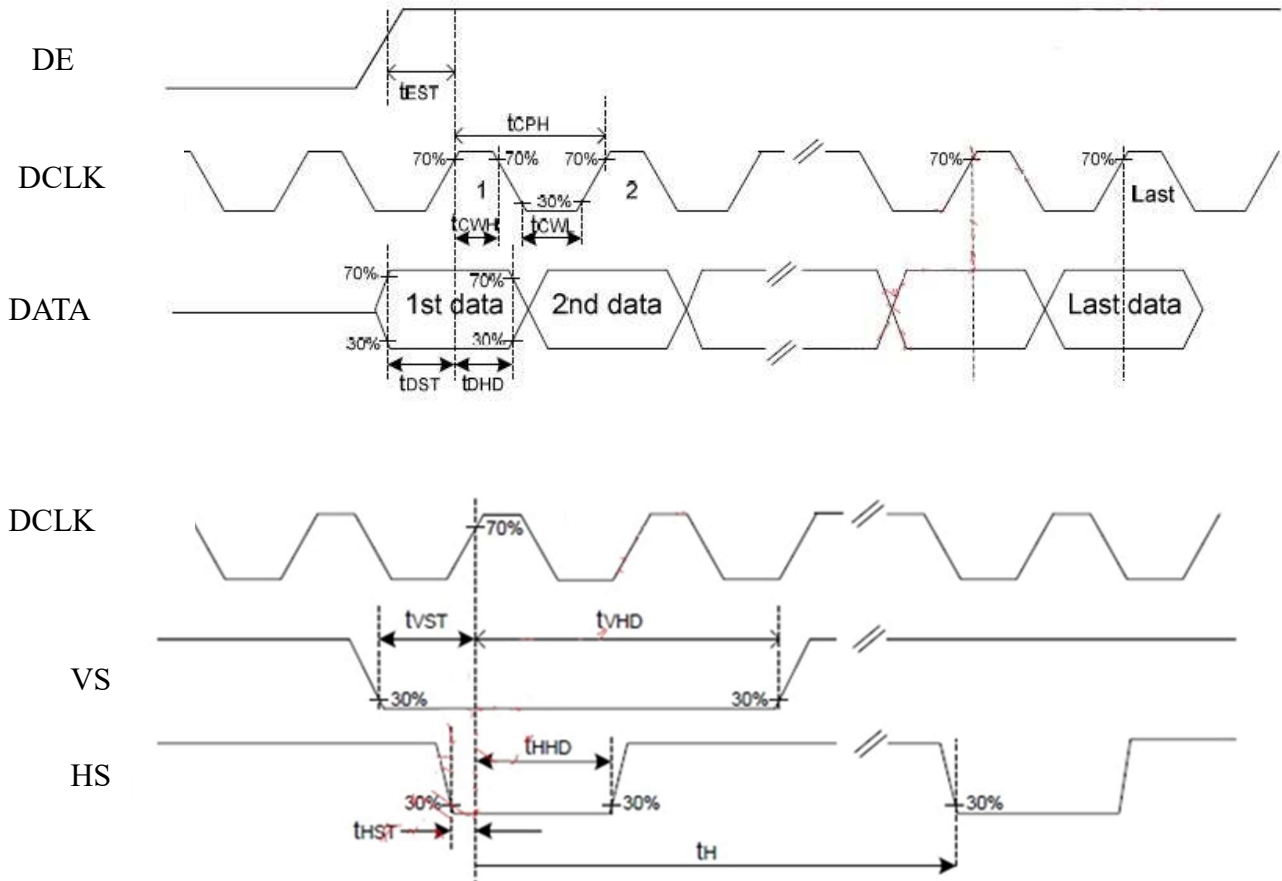
2.3.3 USB Operation

TP_VDD, USB_D_N and USB_D_P are needed for USB operation. The TP will work with most Windows version out of the box using built-in drivers (HIDUSB driver) as well as with Linux.

Please note that Data Module offers the easyAnalyzer, a visualization and evaluation software, for Windows as well as x86 Linux systems. Please contact your regional Data Modul sales contact for further details.

2.4 Timing Characteristics

2.4.1 Input Clock and Data Timing



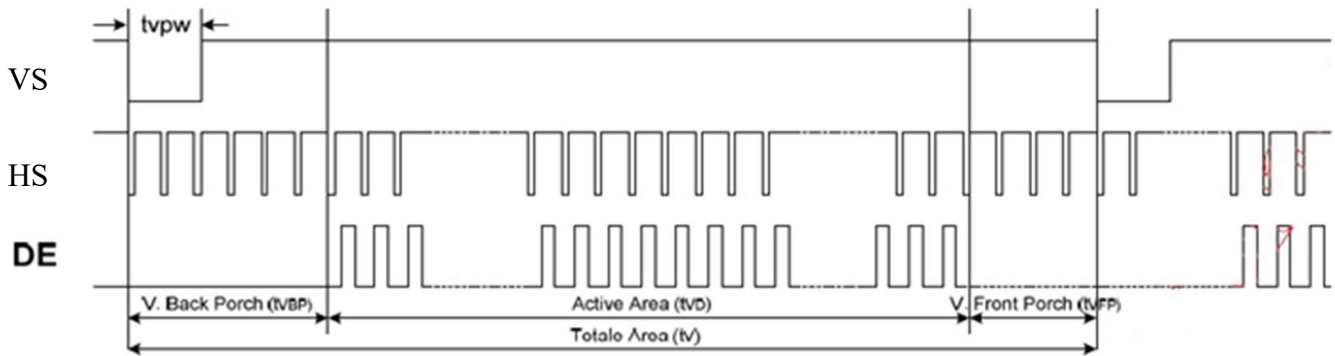
Parameters	Symbol	Spec			Unit	Conditions
		Min.	Typ.	Max.		
VDD Power ON slew rate	t_{POR}	--	--	20	ms	0V ~ 0.9VDD
RSTB pulse width	t_{RST}	10	--	--	us	CLKIN=50MHz
CLKIN cycle time	t_{CPH}	20	--	--	ns	
CLKIN pulse duty	t_{CWH}	40	50	60	%	
VSD setup time	t_{vST}	8	--	--	ns	
VSD hold time	t_{vHD}	8	--	--	ns	
HSD setup time	t_{hST}		--	--	ns	
HSD hold time	t_{hHD}	8	--	--	ns	
Data setup time	t_{DST}	8	--	--	ns	D0[7:0], D1[7:0], D2[7:0] to CLKIN
Data hold time	t_{DHD}	8	--	--	ns	D0[7:0], D1[7:0], D2[7:0] to CLKIN
DE setup time	t_{EST}	8	--	--	ns	
DE hold time	t_{EHD}	8	--	--	ns	
Output stable time	t_{SST}	--	--	6	us	10% to 90% target voltage. CL=120pF, R=10KW
CLKIN frequency	f_{CLK}	--	40	50	MHZ	VDD=3.0 ~ 3.6V
CLKIN cycle time	f_{CLK}	20	25	--	ns	
CLKIN pulse duty	t_{CWH}	40	50	60	%	TCLK
Time from HSD to Source	t_{HSO}	--	20	--	CLKIN	

output						
Time from HSD to LD	tHLD	--	20	--	CLKIN	Note (2)
Time from HSD to STV	tHSTV	--	2	--	CLKIN	
Time from HSD to CKV	tHCKV		20	--	CLKIN	
Time from HSD to OEV	tHOEV	--	4	--	CLKIN	
LD pulse width	tWLD	--	10		CLKIN	Note (2)
CKV pulse width	tWCKV	--	66	--	CLKIN	
OEV pulse width	tWOEV	--	74	--	CLKIN	

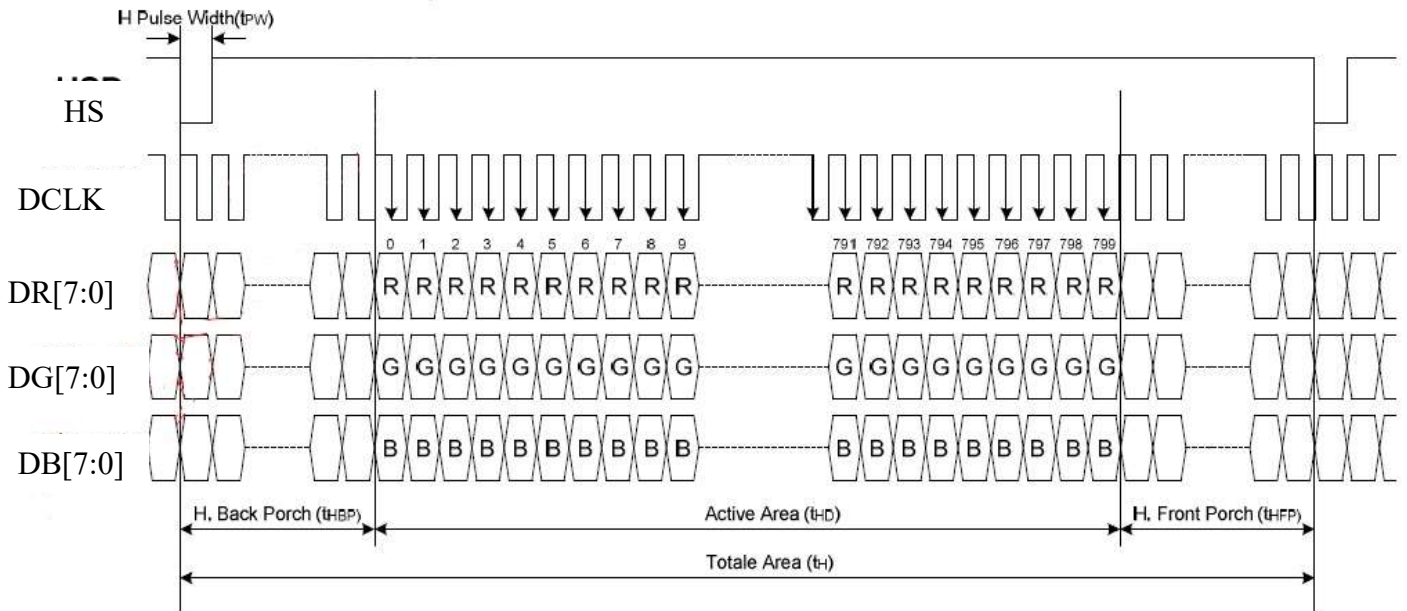
Note: (1) VDD=3.0 ~ 3.6V, VDDA=6.5~13.5V, DGND=AGND=0V, Ta=-20~+85°C

(2) The contents of the data register are transferred to the latch circuit at the rising edge of LD. Then the gray scale voltage is output from the device at the falling edge of LD.

2.4.2 Vertical input timing



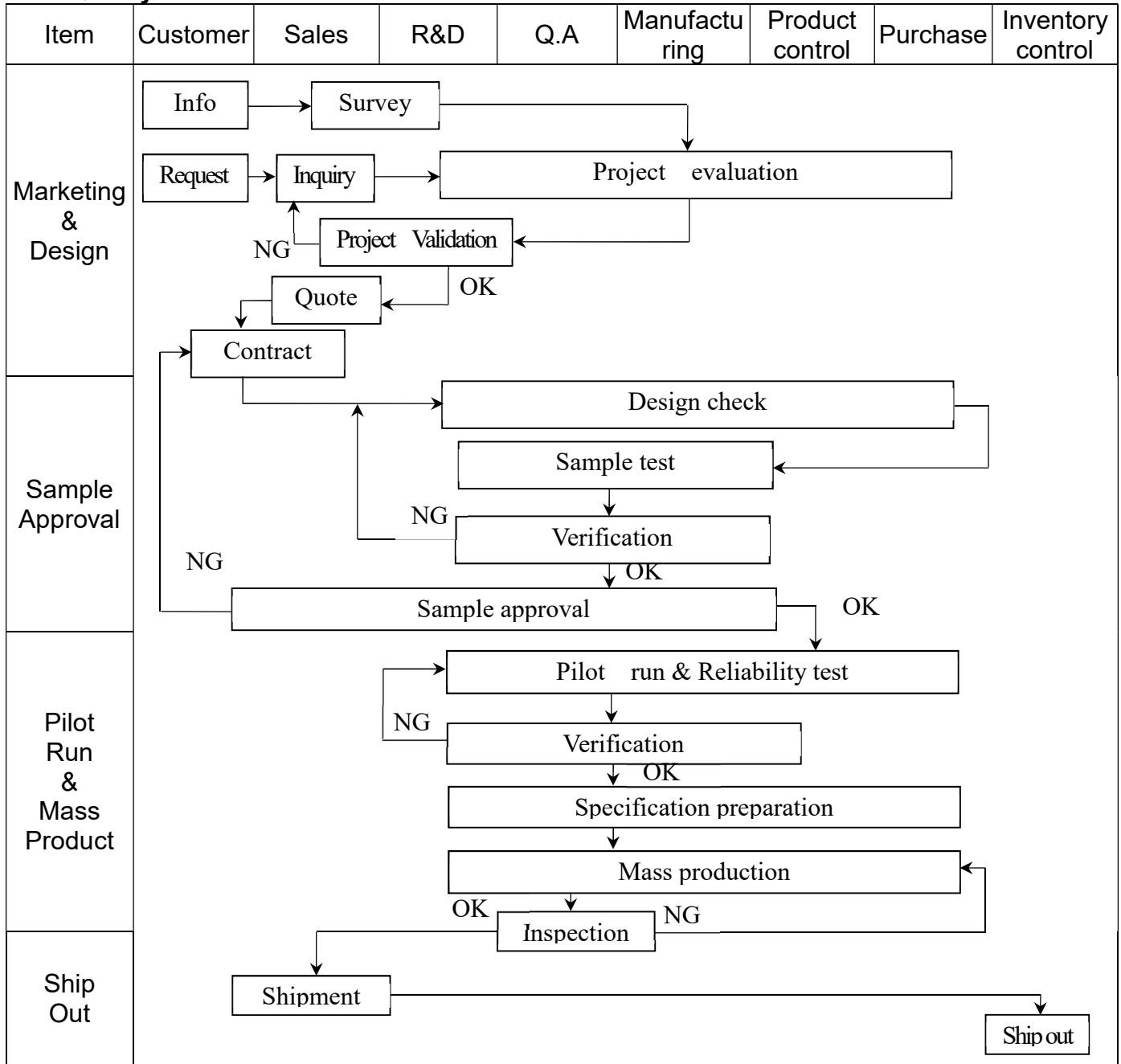
Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Vertical display area	tvd	480			H
VSYNC period time	tv	510	525	650	H
VSYNC pulse width	tvpw	1	-	20	H
VSYNC ack Porch(Blanking)	tvb	23	23	23	H
VSYNC Front Proch	tvfb	7	22	147	H



Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Horizontal display area	thd		800		DCLK
DCLK frequency	fclk	-	33.3	50	MHz
1 Horizontal Line	th	862	1056	1200	DCLK
HSD pulse width	Min	-	1		
	Typ	-	-		
	Max	-	40		
HSD Back Porch (Blacking)	thp	46	46	46	
HSD Front Proch	thfb	16	210	354	

3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



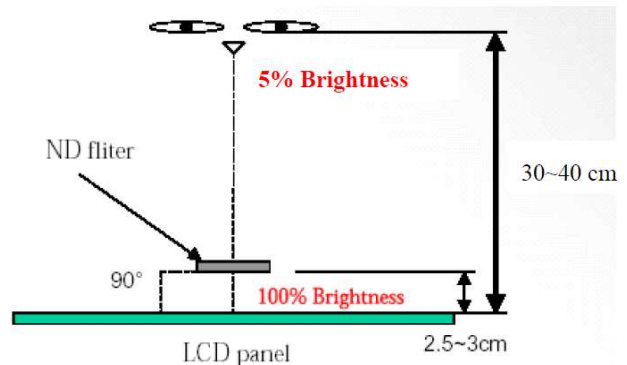
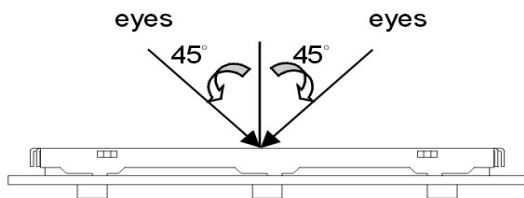
Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service	<pre> graph TD Info[Info] --> Claim[Claim] Claim --> Failure[Failure analysis] Failure --> Report[Analysis report] Failure --> Action[Corrective action] Action --> Tracking[Tracking] </pre>							
Q.A Activity	1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management				2. Process improvement proposal 4. Education And Training Activities			

3.2. Inspection Specification

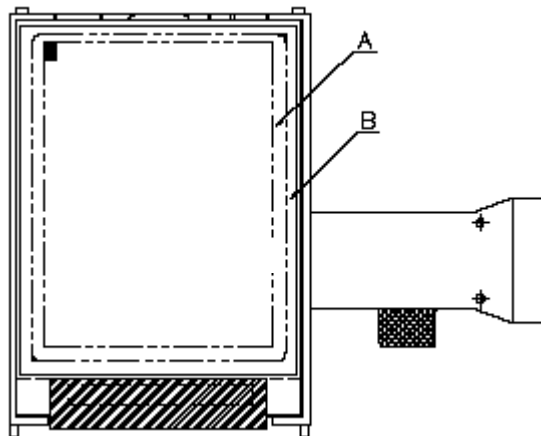
- ◆Scope : The document shall be applied to TFT-LCD Module for 3.5" ~15" (Ver.B01).
- ◆Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level II.
- ◆Equipment : Gauge 、 MIL-STD 、 Powertip Tester 、 Sample
- ◆Defect Level : Major Defect AQL : 0.4 ; Minor Defect AQL : 1.5
- ◆OUT Going Defect Level : Sampling.
- ◆Standard of the product appearance test :

a. Manner of appearance test :

- (1). The test best be under 20W×2 fluorescent light(about 300lux ~ 500lux)
 - and distance of view must be at 30~40 cm.
- (2). The test direction is base on about around 45° of vertical line.



(3). Definition of area.



A area : viewing area

B area : Outside of viewing area

(4). Standard of inspection : (Unit : mm)

◆Specification For TFT-LCD Module 3.5" ~15" :

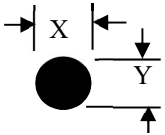
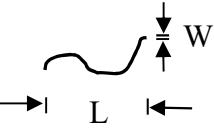
(Ver.B01)

NO	Item	Criterion	Level												
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major												
		1.2 Mixed product types.	Major												
		1.3 Assembled in inverse direction.	Major												
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major												
03	Outline dimension	3.1 Product dimension and structure must conform to structure diagram.	Major												
04	Electrical Testing	4.1 Missing line character and icon.	Major												
		4.2 No function or no display.	Major												
		4.3 Display malfunction.	Major												
		4.4 LCD viewing angle defect.	Major												
		4.5 Current consumption exceeds product specifications.	Major												
		4.6 Mura can not be seen through 5% ND filter at 50% Gray screen , should be judged by the viewing angle of 90 degree.	Minor												
05	Dot defect (Bright dot 、 Dark dot) On -display	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Item</th> <th>Acceptance (Q'ty)</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center; vertical-align: middle;">Dot Defect</td> <td style="text-align: center;">Bright Dot</td> <td style="text-align: center;">≤ 4</td> </tr> <tr> <td style="text-align: center;">Dark Dot</td> <td style="text-align: center;">≤ 5</td> </tr> <tr> <td style="text-align: center;">Joint Dot</td> <td style="text-align: center;">≤ 3</td> </tr> <tr> <td style="text-align: center;">Total</td> <td style="text-align: center;">≤ 7</td> </tr> </tbody> </table>		Item	Acceptance (Q'ty)	Dot Defect	Bright Dot	≤ 4	Dark Dot	≤ 5	Joint Dot	≤ 3	Total	≤ 7	Minor
			Item	Acceptance (Q'ty)											
		Dot Defect	Bright Dot	≤ 4											
			Dark Dot	≤ 5											
			Joint Dot	≤ 3											
Total	≤ 7														
5.1 Inspection pattern : full white , full black , Red , Green and blue screens.															
5.2 It is defined as dot defect if defect area > 1/2 dot.															
5.3 The distance between two dot defect ≥ 5 mm.															
5.4 Bright dot that can not be seen through 5% ND filter.															

◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level
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06	<p>Black or white dot、scratch、contamination</p> <p>Round type</p>  <p>$\Phi = (x + y) / 2$</p> <p>Line type</p> 	<p>6.1 Round type (Non-display or display) :</p> <table border="1"> <thead> <tr> <th rowspan="2">Dimension (diameter : Φ)</th> <th colspan="2">Acceptance (Q'ty)</th> </tr> <tr> <th>A area</th> <th>B area</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.25$</td> <td colspan="2">Ignore</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.50$</td> <td>5</td> <td rowspan="3">Ignore</td> </tr> <tr> <td>$\Phi > 0.50$</td> <td>0</td> </tr> <tr> <td>Total</td> <td>5</td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore		$0.25 < \Phi \leq 0.50$	5	Ignore	$\Phi > 0.50$	0	Total	5	Minor																										
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◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

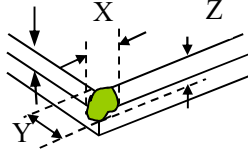
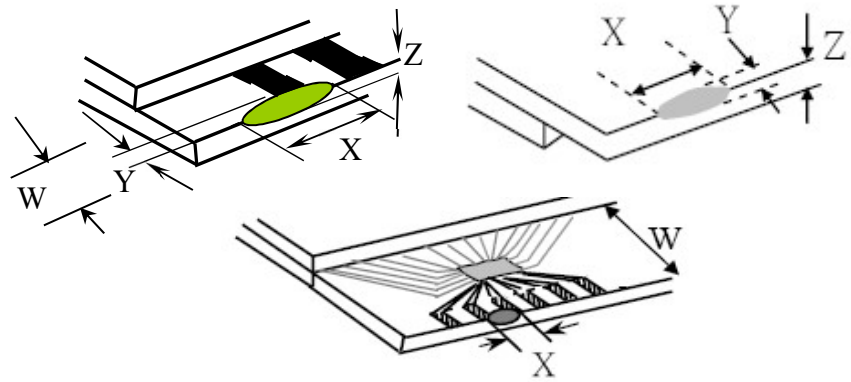
NO	Item	Criterion	Level
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08	The crack of glass	<p>Symbols :</p> <p>X : The length of crack Z : The thickness of crack t : The thickness of glass</p> <p>Y : The width of crack. W : terminal length a : LCD side length</p>	Minor						
		<p>8.1 General glass chip :</p> <p>8.1.1 Chip on panel surface and crack between panels:</p> <div style="text-align: center;"> </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">X</th> <th style="text-align: center;">Y</th> <th style="text-align: center;">Z</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$\square a$</td> <td style="text-align: center;">Crack can't enter viewing area</td> <td style="text-align: center;">$\square 1/2 t$</td> </tr> <tr> <td style="text-align: center;">$\square a$</td> <td style="text-align: center;">Crack can't exceed the half of SP width.</td> <td style="text-align: center;">$1/2 t < Z \quad \square 2 t$</td> </tr> </tbody> </table>		X	Y	Z	$\square a$	Crack can't enter viewing area	$\square 1/2 t$
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		<p>8.2 Protrusion over terminal :</p> <p>8.2.1 Chip on electrode pad :</p>  <table border="1"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>Front</td> <td>$\leq a$</td> <td>$\leq 1/2 W$</td> <td>$\leq t$</td> </tr> <tr> <td>Back</td> <td>$\leq a$</td> <td>$\leq W$</td> <td>$\leq 1/2 t$</td> </tr> </tbody> </table>		X	Y	Z	Front	$\leq a$	$\leq 1/2 W$	$\leq t$	Back	$\leq a$	$\leq W$	$\leq 1/2 t$	
	X	Y	Z												
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Back	$\leq a$	$\leq W$	$\leq 1/2 t$												

◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

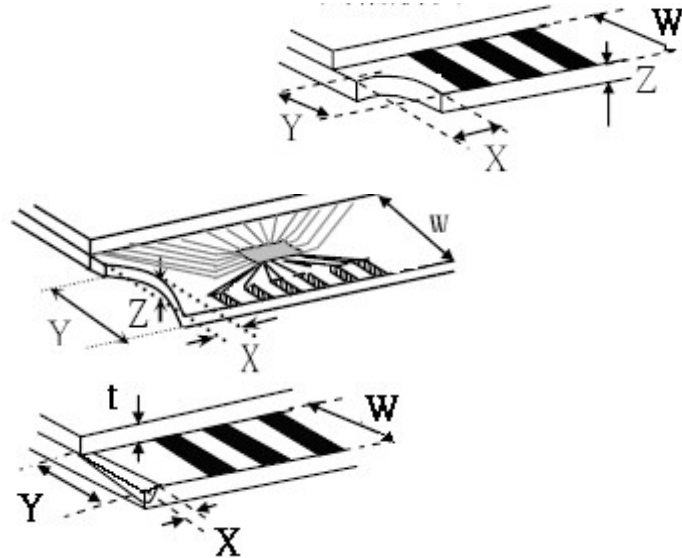
NO	Item	Criterion	Level
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Symbols :

X : The length of crack
Z : The thickness of crack
t : The thickness of glass

Y : The width of crack.
W : terminal length
a : LCD side length

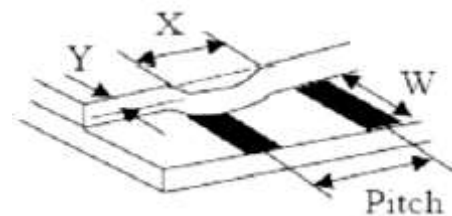
8.2.2 Non-conductive portion :



X	Y	Z
□ 1/3 a	□ W	□ t

- ⊙ If the chipped area touches the ITO terminal, over 2/3 of
 - the ITO must remain and be inspected according to electrode terminal specifications.

8.2.3 Glass remain :



X	Y	Z
□ a	□ 1/3 W	□ t

8.2.4 Cracking



Not Allowed

08

The crack of glass

Minor

◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level
09	Backlight elements	9.1 Backlight can't work normally.	Major
		9.2 Backlight doesn't light or color is wrong.	Major
		9.3 Illumination source flickers when lit.	Major
10	General appearance	10.1 Pin type 、 quantity 、 dimension must match type in structure diagram.	Major
		10.2 No short circuits in components on PCB or FPC .	Major
		10.3 Parts on PCB or FPC must be the same as on the production characteristic chart .There should be no wrong parts , missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance(PCB or FPC) is ≤ 1.5 mm.	Minor

Humidity : 50~70%

Atmospheric pressure : 86~106Kpa

5. PRECAUTION RELATING PRODUCT HANDLING

5.1 SAFETY

- 5.1.1 If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.
- 5.1.2 If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

5.2 HANDLING

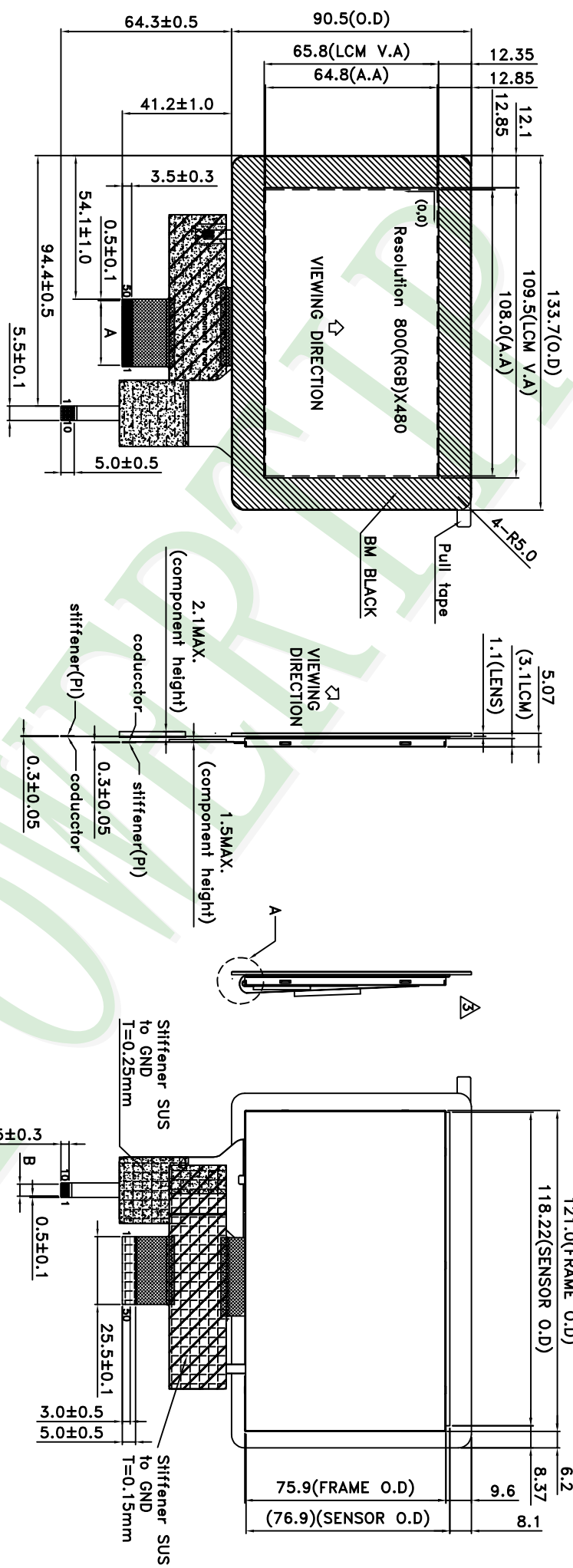
- 5.2.1 Avoid any strong mechanical shock which can break the glass.
- 5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.
- 5.2.3 Do not remove the panel or frame from the module.
- 5.2.4 The polarizing plate of the display is very fragile. So , please handle it very carefully, do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)
- 5.2.5 Do not wipe the polarizing plate with a dry cloth , as it may easily scratch the surface of plate.
- 5.2.6 Do not touch the display area with bare hands , this will stain the display area.
- 5.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.
- 5.2.8 To control temperature and time of soldering is $320 \pm 10^{\circ}\text{C}$ and 3-5 sec.
- 5.2.9 To avoid liquid (include organic solvent) stained on LCM
- 5.2.10 Caution! (LCM products with Capacitive Touch Panel)
Strong EMI-sources such as switch-mode power supplies (SMPS) can lead to touch malfunction (e.g. ghost-touches).
Therefore, the touch needs to be thoroughly tested inside the target application.
- 5.2.11 Caution: Continuously displaying same static image will result in high possibility of image sticking/image burn-in effect due to TFT panel characteristic.

5.3 STORAGE

- 5.3.1 Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and the humidity is below 65% RH.
- 5.3.2 Do not place the module near organics solvents or corrosive gases.
- 5.3.3 Do not crush , shake , or jolt the module.

5.4 TERMS OF WARRANTY

- 5.4.1 Applicable warrant period
The period is within thirteen months since the date of shipping out under normal using and storage conditions.
- 5.4.2 Unaccepted responsibility
This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in nuclear power control equipment, aerospace equipment , fire and security systems or any other applications in which there is a direct risk to human life and where extremely



- NOTES:**
- 1.LCD TYPE: TFT type
 - 2.LCD DISPLAY: POSITIVE/TRANSMISSIVE
 - 3.VIEW DIRECTION: 6 O'CLOCK
 - 4.The tolerance unless classified ±0.3mm
 - 5.A: P0.5*49=24.5±0.05,W=0.35±0.05
 - 6.T/P suggested connector: "HIROSE" FH34SRJ-10S-0.55H(50) OR EQUIVALENT
 - 7.LCM suggested connector: "HIROSE" FH12A-50S-0.55H OR EQUIVALENT
 8. Kapton tape Siffener Component area Unbending area
- EMI FILM Aluminum Foil

007									
006									
005									
004									
003	Add the FPC bending radius&modify LCM suggested connector	Lauren	2020/05/18						
002	Modify the position of pull tape& FPC white line print&EMI film	Lauren	2020/04/30						
001	NEW DRAWING	Lauren	2019/09/30						
REV	REV BY	REVISER	DATE						

PART NO: PH800480T033-IHC17
 DRAWING NAME: LMD-PH800480T033-IHC17

久正光電股份有限公司
 POWER TIP TECHNOLOGY CORPORATION

Design	Lauren Chien	Unit	MM	Surface		Resolution		Precision	
Check	Clare Chen	Scale	1:1	Material		Thickness		Level	
Approve	Rex Liao	Page	1/1	Quantity					



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Phone: +49-7934-101-0



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