Crystal Clear Technology

Product Specification

T700A16X00XX

(REVISION 3)

Crystal Clear Technology sdn. bhd.

1. Table of Contents

2. Record of Revision

Rev	Date	Item	Page	Comment	Prepared	Checked
REV1	08/08/19			Initial Release	Othman	WHong
REV2	25/11/19	4.2	6	Revise Operation Current, IDD from 50mA(typ) to 15mA(min) 21mA(max)	Othman	WHong
REV3	16/07/20	3	4	Add CTP (I2C) specification		
		6	17	Add AC/DC Characteristics (CTP - I2C)		
		4.3	8	Add Luminance Max 1200 cd/m^2		
		7	20	Title change to AC/DC Characteristics (CTP - USB)		
		9	24	Add Luminance Max 1200 cd/m^2		
		13	40	Add T700A16F02 & T700A16C00A drawing	Othman	WHong

3. General Specification

T700A16X00XX is 7.0" colour TFT-LCD (Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs control circuit, LED backlight with or without Resistive Touch Panel (RTP) or Capacitive Touch Panel (CTP) or HDMI Board. This display area contains 1024(RGB) x 600 pixels and can display up to 16.7M colors. This product compliant with RoHS environmental requirement.

General Specification are summarized in the following table:

	Item	Specifications	Unit	Note
	Size (Diagonal)	7.0	inch	
	Outline dimensions	164.80(W) x 99.80(H) x 5.60(T)	mm	(1)
TFT	Display type	16.7M color TFT, Normally Black	-	(2)
	Viewing direction	All Direction	O'clock	
	TFT Active area	154.21(W) x 85.92(H)	mm	
	TFT Resolution	1024(RGB) x 600	-	
	Pixel size	0.1506(W) x 0.1432(H)	mm	
	Pixel arrangement	RGB vertical strip	-	
	TFT Controller	ILI6150c / ILI5120 or Compatible	-	
	TFT Interface mode	LVDS	-	
	Luminance	1000 (typ)	cd/m^2	(3)
RTP	RTP Dimension Outline	163.40(W) x 98.50(H)	mm	(1)
	RTP Viewing Area	156.70(W) x 89.10(H)	mm	
	RTP Active Area	154.21(W) x 85.92(H)	mm	
	RTP Top Circuit	ITO FILM	-	(4)
	RTP Bottom Circuit	ITO GLASS	-	(5)
	RTP Optical Characteristics	Light transmission ≥ 75% Linearity ≤ 1.5%	-	
	RTP Operation Force	60g – 120g	-	
	RTP Hardness	≥ 3H	-	
	RTP Capacitance	20G's max (10~200Hz)	-	
CTP (I2C)	CTP Active area	154.21(W) x 85.92(H)	mm	
	CTP Resolution	1024 x 600	-	
	CTP Origin	Top-left (FPC down)	-	
	CTP Controller	GT911	-	
	CTP Interface mode	I2C	-	
	Touch mode	5 fingers multi touch	-	
	Cover lens material	Glass	-	
	Transparency	80	%	

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CTP (USB)	CTP Active area	154.21(W) x 85.92(H)	mm	
	CTP Resolution	16384 x 9600	-	
	CTP Origin	Top-left (FPC down)	-	
	CTP Controller	ILI2511	-	
	CTP Interface mode	USB	-	
	Touch mode	10 fingers multi touch	-	
	Cover lens material	Glass	-	
	Transparency	80	%	
HDMI	Board dimensions	85.0(W) x 54.0(H) x 8.38(T)	mm	
	HDMI Driving IC	TFP401APZP + SN75LVDS83BDGG	-	
	Display Resolution	1024 x 600	-	
	Display Clock	60.0	Hz	
	Operating temperature	-20.0 ~ +70.0	°C	(6)
	Storage temperature	-30.0 ~ +80.0	°C	(6)

Note:
(1) FPC or Wire or Foam Tape or PCBA or RTP or CTP are not included.
(2) Color tone is slightly changed by temperature and driving voltage.
(3) Brightness on LCD surface. Module with CTP or RTP, brightness will be about 20% (max) lower on the touch panel surface.
(4) Anti-glare Hard-coating: Thickness: 0.188mm
(5) Thickness: 0.7mm
(6) This product specification shows range of value either in the minimum, typical or maximum category. Operating under extreme condition, bordering on the minimum or maximum range, does not mean that the product can survive perpetually under these extremities. In fact, it only means that the product can operate under such condition with no information of lifetime, other than those already indicated in the specification. User is advised to test it on their own if the specification's reliability data did not indicate it.

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STANDARD TFT MODULE ORDER INFORMATION (TABLE)

| T | | 7 | 0 | 0 | A | 1 | 6 | | 0 | 0 | | |

MODEL NUMBER
DISPLAY SIZE (DIAGONAL) in inch

VIEWING ANGLE
T : Top view (12 O'clock)
B : Bottom view (6 O'clock)
W : Wide viewing angle (O-Film)
A : All Direction

MODULE VERSION
SERIES NUMBER FOR THIS STANDARD SPECIFICATION

TOUCH PANEL OPTION
N : Without Touch Panel
C : Capacitive Touch Panel
R : Resistive Touch Panel

SEMI - CUSTOMISE (MINOR CHANGES FROM STANDARD MODEL)
00 - STANDARD SPECIFICATION MODEL
REFER TO FACTORY FOR OTHER VERSIONS. TERMS AND CONDITIONS APPLY

COVER LENS OPTION
C : Cover Lens

OTHER OPTION (if any)
H : with HDMI board

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4. AC/DC Characteristics (TFT)

4.1 Absolute Maximum Ratings (VSS = 0V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	V_{DD}	-0.3	-	+3.6	V	
Storage Humidity	H_{ST}	10	-	90	%RH	(1)
Storage Temperature	T_{ST}	-30	-	+80	°C	
Operating Humidity	H_{OP}	10	-	90	%RH	(1)
Operating Temperature	T_{OP}	-20	-	+70	°C	

Note:
(1) At 25±5°C. Absolute humidity shall be less than 90%RH at +40°C.
(2) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

4.2 Electrical Characteristics (VSS = 0V, VDD = 3.3V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	V_{DD}	3.0	3.3	3.6	V	(2)
Operation Current	I_{DD}	15	-	21	mA	
Analog Supply Voltage	A_{VDD}	9.4	9.6	9.8	V	
Common Voltage	V_{COM}	2.7	2.9	3.2	V	
Gate ON Voltage	V_{GH}	17.0	18.0	19.0	V	
Gate ON Current	I_{VGH}	-	5.5	-	mA	(3)
Gate OFF Voltage	V_{GL}	-7.0	-6.0	-5.0	V	
Gate OFF Current	I_{VGL}	-	8.0	-	mA	(4)
Input Logic High Voltage	V_{IH}	$0.7V_{DD}$	-	V_{DD}	V	
Input Logic Low Voltage	V_{IL}	0	-	$0.3V_{DD}$	V	

Note:
(1) The recommended operating conditions refer to a range in which operation of this product is guaranteed. Accordingly, please make sure that the module is used within this range. And these current values are measured under the condition that all devices are stopped, each component is stable and logic signal is input.
(2) The supply voltage is measured and specified at the interface connector of LCM.
(3) V_{GH} = 18.0V.
(4) V_{GL} = -6.0V.

4.3 LED Backlight Specification (Ta = 25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
LED Supply Voltage	V_{LED}	If = 500mA	-	9.0	-	V
LED Supply Current	If		-	500	-	mA
Luminous Intensity	L_V	White	900	1000	1200	cd/m^2
Half Life Expectancy	L_L	If = 50mA/LED	50000	-	-	hrs
LED Configuration	30 White LEDs, 3 in Series, 10 in Parallel					

Note:
(1) The LED Supply Voltage is defined by the number of LED at Ta = 25ºC and If = 500mA.
(2) The "Half Life Expectancy" is defined as the module brightness decrease to 50% original brightness at Ta = 25ºC and If = 50mA/LED. The LED lifetime could be decreased if the operating If is larger than 50mA/LED.
(3) Brightness measurement done at LCD surface.

4.4 Power Sequence

To prevent a latch-up or DC operation of the LCD module, the power ON/OFF sequence shall be as shown in below

4.4.1 Power ON
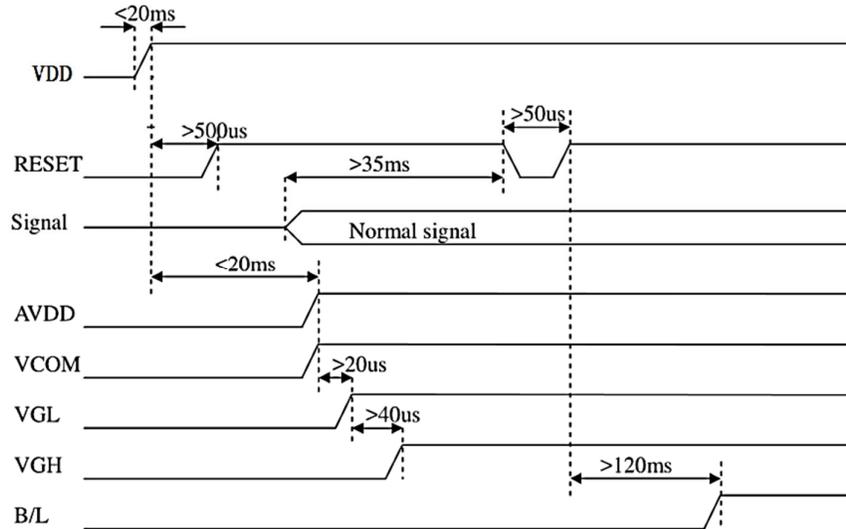
4.4.2 Power OFF
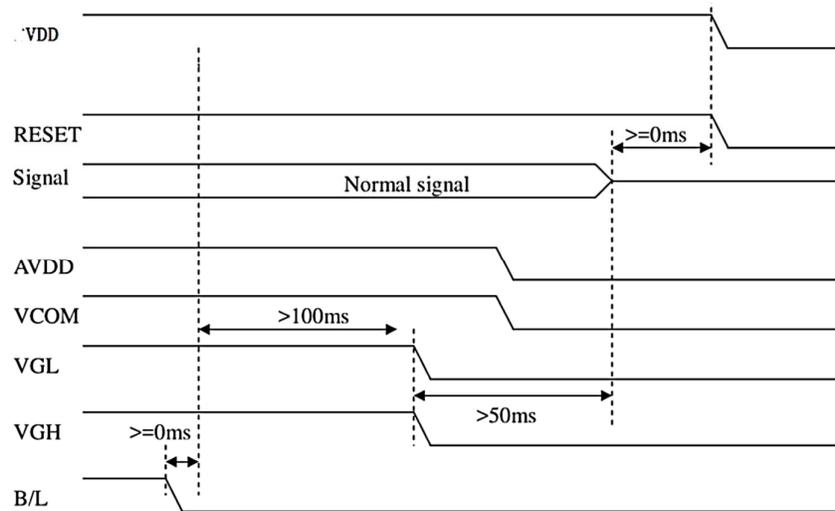
Notes:

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

![CTC logo] CRYSTAL CLEAR TECHNOLOGY SDN. BHD

4.5 LVDS Interface

6-bit LVDS Input

8-bit LVDS Input
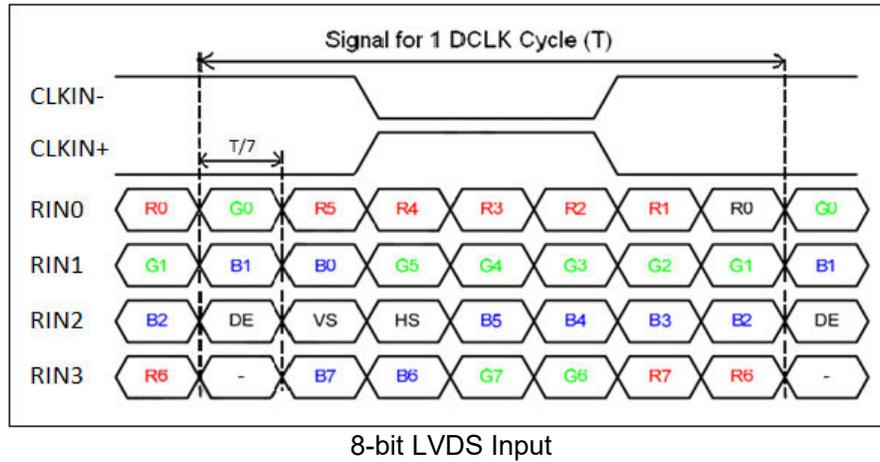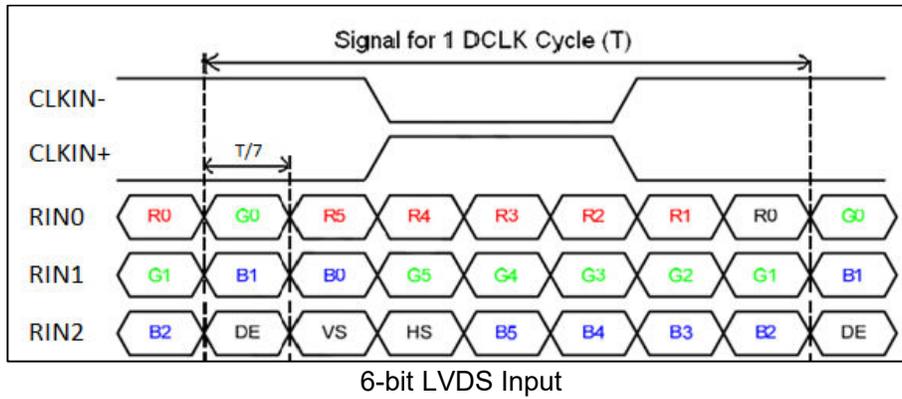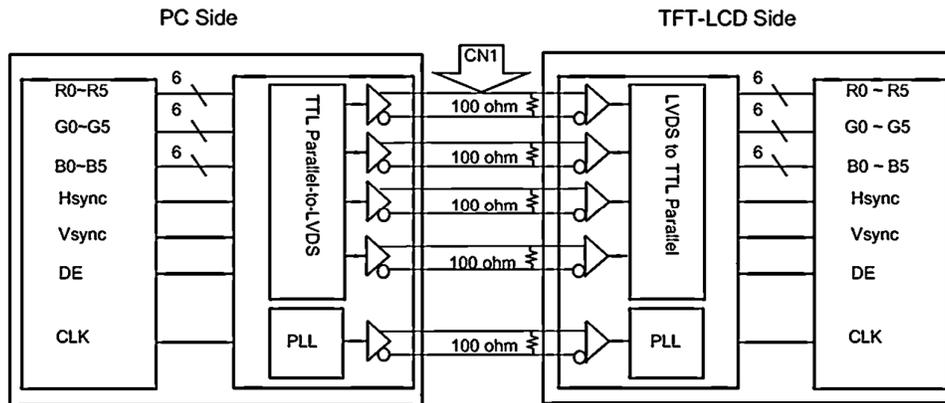
4.6 LVDS Signal Timing

Item	Symbol	Min.	Typ.	Max.	Unit	Remarks
Clock Frequency	R_{xFCLK}	20.0	-	71.0	MHz	
Input Data Skew Margin	T_{RSKM}	500	-	-	ps	(1)
Clock High Time	T_{LVCH}		$\dfrac{4}{7R_{xFCLK}}$		ns	
Clock Low Time	T_{LVCL}		$\dfrac{3}{7R_{xFCLK}}$		ns	
PLL Wake-up Time	T_{enPLL}			150	μs	

Note:
(1) $|V_{ID}|$ = 400mV, R_{xVCM} = 1.2V, R_{xFCLK} = 71.0 MHz.

T_{RSKM} : Receiver strobe margin
R_{SPOS} : Receiver strobe position
T_{SW} : Strobe width (Internal data sampling window)
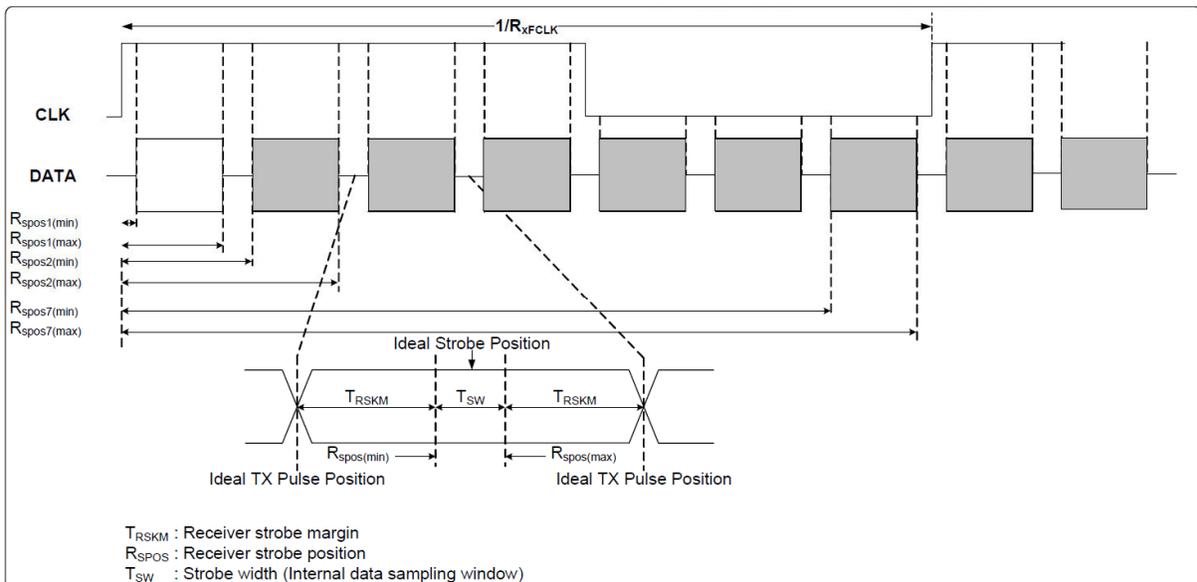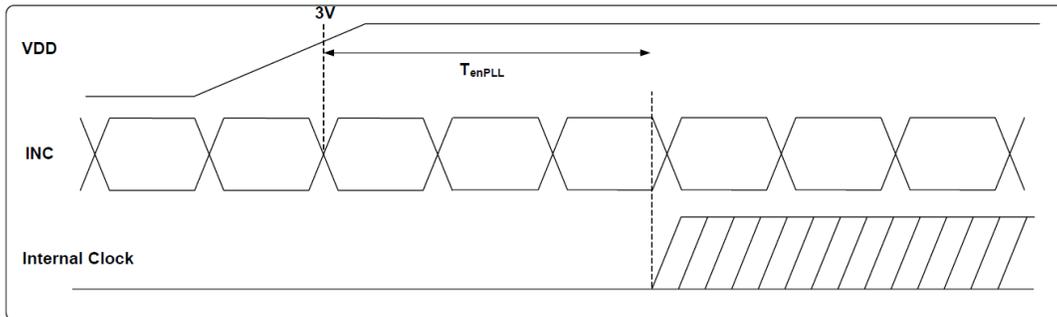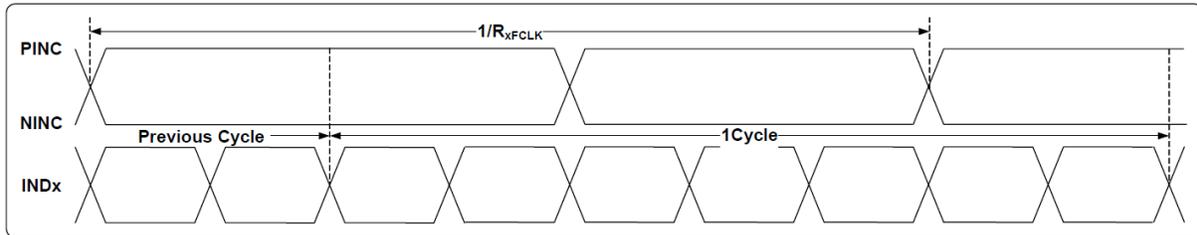
4.7 Signal Timing Specification

4.7.1 DE Mode

Item	Symbols	Min	Typ	Max	Unit	Note
Clock Frequency	f$_{CLK}$	40.8	51.2	67.2	MHz	(1)
Horizontal Display Area	t$_{HD}$		1024		DCLK	
HSYNC Period Time	t$_H$	1114	1344	1400	DCLK	
HSYNC Blanking	t$_{HB}$ + t$_{HFP}$	90	320	376	DCLK	
Vertical Display Area	t$_{VD}$		600		H	
VSYNC Period Time	t$_V$	610	635	800	H	
VSYNC Blanking	t$_{VB}$ + t$_{VFP}$	10	35	200	H	

4.7.2 HV Mode

Item	Symbols	Min	Typ	Max	Unit	Note
Clock Frequency	f$_{CLK}$	44.9	51.2	63.0	MHz	(1)
Horizontal Display Area	t$_{HD}$		1024		DCLK	
HSYNC Period Time	t$_H$	1200	1344	1400	DCLK	
HSYNC Pulse Width	t$_{HPW}$	1	-	140	DCLK	
HSYNC Back Porch	t$_{HBp}$	160	160	160	DCLK	
HSYNC Front Porch	t$_{HFP}$	16	160	216	DCLK	
Vertical Display Area	t$_{VD}$		600		H	
VSYNC Period Time	t$_V$	624	635	750	H	
VSYNC Pulse Width	t$_{HPW}$	1	-	20	H	
VSYNC Back Porch	t$_{HBp}$	23	23	23	H	
VSYNC Front Porch	t$_{HFP}$	1	12	127	H	

Note:
  (1) Frame rate = 60Hz
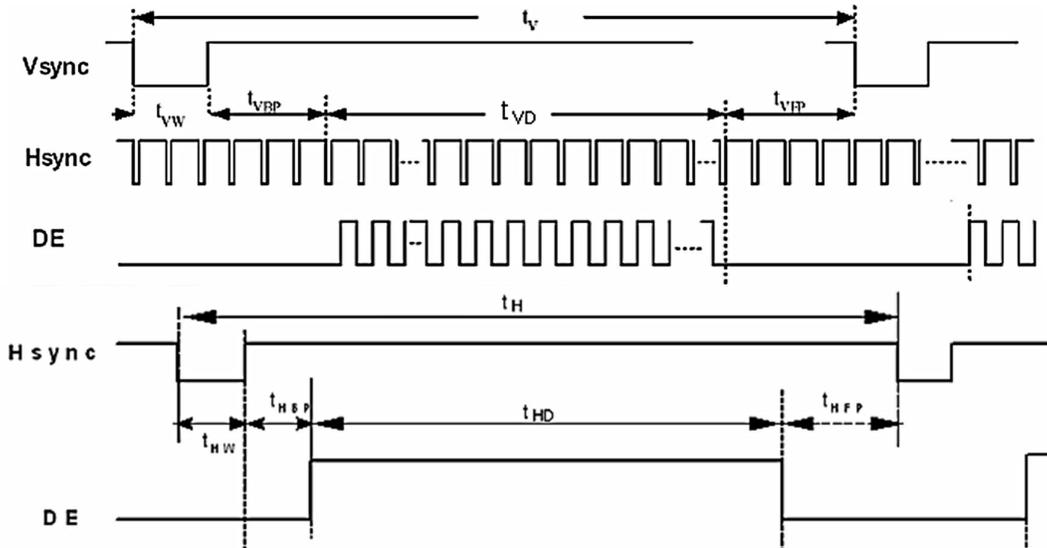
4.8 Pin Assignment Table

Pin No.	Symbol	I/O	Description	Note
1	VCOM	P	Command Voltage	
2 - 3	VDD	P	Power Supply	
4	NC	-	Not Connected	
5	RESET	I	Global Reset, Active Low	
6	STBYB	I	Standby Mode, H: Normal Operation, L: Standby	
7	GND	P	Ground	
8	RXIN0-	I	LVDS Negative data signal (-)	
9	RXIN0+	I	LVDS Positive data signal (+)	
10	GND	P	Ground	
11	RXIN1-	I	LVDS Negative data signal (-)	
12	RXIN1+	I	LVDS Positive data signal (+)	
13	GND	P	Ground	
14	RXIN2-	I	LVDS Negative data signal (-)	
15	RXIN2+	I	LVDS Positive data signal (+)	
16	GND	P	Ground	
17	RXCLKIN-	I	LVDS Negative CLK signal (-)	
18	RXCLKIN +	I	LVDS Positive CLK signal (+)	
19	GND	P	Ground	
20	RXIN3-	I	LVDS Negative data signal (-)	
21	RXIN3+	I	LVDS Positive data signal (+)	
22	GND	P	Ground	
23 - 24	NC	-	Not Connected	
25	GND	P	Ground	
26 - 27	NC	-	Not Connected	
28	SELB	I	6bit/ 8bit Select, H:6bit, L:8bit	
29	AV_{DD}	P	Power for Analog Circuit	
30	GND	P	Ground	
31 - 32	LED-	P	LED Cathode	
33	L/R	I	Horizonal Inversion	
34	U/D	I	Vertical Inversion	
35	V_{GL}	P	Gate OFF Voltage	
36 - 37	NC	-	Not Connected	
38	V_{GH}	P	Gate ON Voltage	
39 - 40	LED+	P	LED Anode	

5. AC/DC Characteristics (RTP)

5.1 Electrical Characteristics

Item	Value
Rated voltage	DC5V
Rated Current	1mA
Resistance between terminals	X direction [Glass side]: 500-1100Ω
	Y direction [Film side]:150-350Ω
Insulation resistance	DC 25V, ≥ 20MΩ
Linearity	≤ 1.5%
Chattering Time	≤ 15ms

5.2 Structure

The Structure and the performance guarantee area of this touch panel are defined as below:
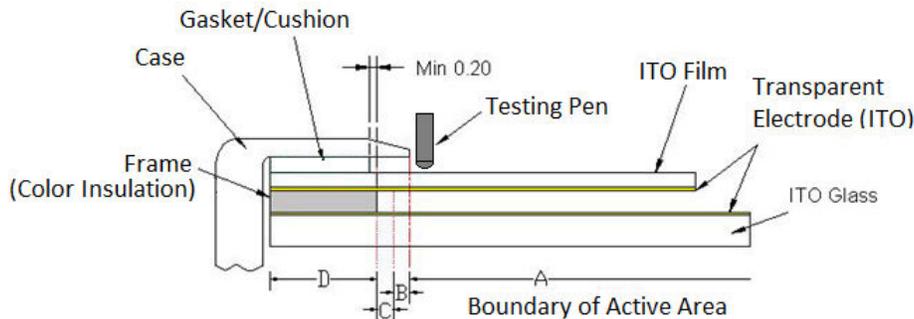
A Area: Active Area
The area guarantees a touch panel operation with the following characteristics when pressed:
1. Operation Force
2. Electrical Characteristic
3. Tapping durability
4. Pen Sliding durability

B Area: Operation non-guaranteed area
This area is about 0.5mm outside the Active Area (A)
The area does not guarantee a touch panel operation and its function. When this area is pressed, touch panel shows degradation of its performance and durability such as a pen sliding durability becomes about 10% compared with the Active Area (as guaranteed area) and its operation force requires about double.

C Area: Pressing Prohibition area
This area is about 0.5mm outside the B area
Any Pressing force must be avoided from this area because an excessive load is applied to a transparent electrode and it will cause serious damage to the touch panel function.

D Area: Non-Active Area
This area does not active even if pressed.
In order to prevent unusual performance degradation or malfunction of the touch panel, the casing must be avoided from touching area B and C. Both area are sensitive area.

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5.3 Test Condition

5.3.1 Mechanical Characteristic
5.3.1.1 Tapping durability

Using R8mm silicon rubber test on centre of active area. Testing continue until pass the criteria.

Condition	Criteria
Test position: any point in each side interval 2mm within active area. Test jig: 8mm silicon rubber, hardness 60° Test Force: 250gf Frequency: 2 times/sec	Up to 1000K times without any function failure

silicon rubber hardness 60
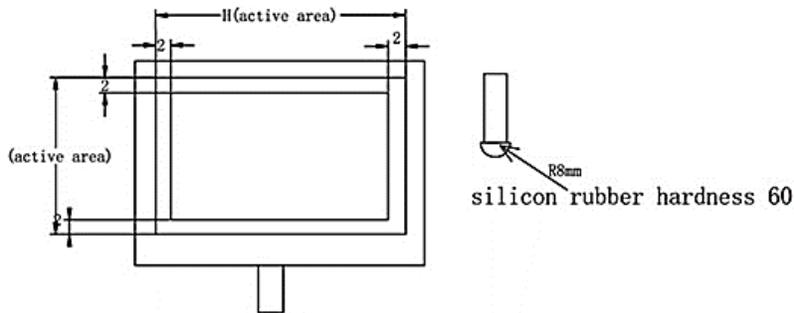
5.3.1.2 Pen sliding durability

Condition	Criteria
Test area: each side interval 3mm within active area Test jig: R 0.8mm polyacetal pen Input force: 150gf Frequency: 60mm/sec	No function fail after 100K times 1 time means sliding from A to B or B to A
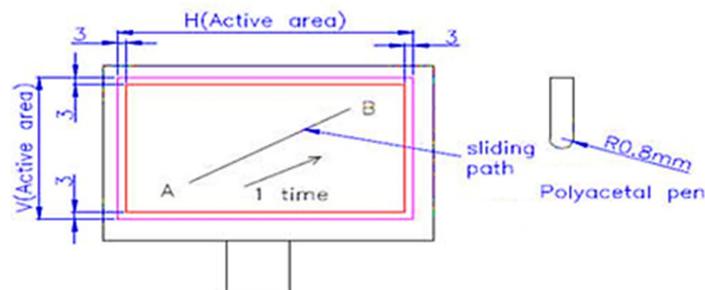
Operation force: 120g max (tip R0.8mm Polyacetal pen operation and R8mm silicon rubber, interval 2mm within Active area).

5.3.1.3 Impact Stress

Using free-fall stainless steel ball impact on the centre of touch panel active area.
The condition as below:

Condition	Criteria
For 0.55t glass, use 9.0mm stainless steel ball, drop height = 30cm	No function fail and no glass broken.
For 0.7t glass, use 9.0mm stainless steel ball, drop height = 50cm	No function fail and no glass broken.
For 1.1t glass, use 9.0mm stainless steel ball, drop height = 70cm	No function fail and no glass broken.
For 0.7t tempered glass, use 9.0mm stainless steel ball, drop height = 70cm	No function fail and no glass broken.
For 1.1t tempered glass, use 9.0mm stainless steel ball, drop height = 90cm	No function fail and no glass broken.

5.3.1.4 Surface Pressure

The method is using a flat pressed on ITO film, plate area is defined by touch panel size.

Condition	Criteria
Loading: 500gf. Test time: 30min size: H x V RTP size: more than 9inch: 10cm x 7cm RTP size: 5.5inch - 9inch: 7cm x 5cm RTP size: Less than 5.5inch: 3cm x 3cm	No visual defect No functional failure
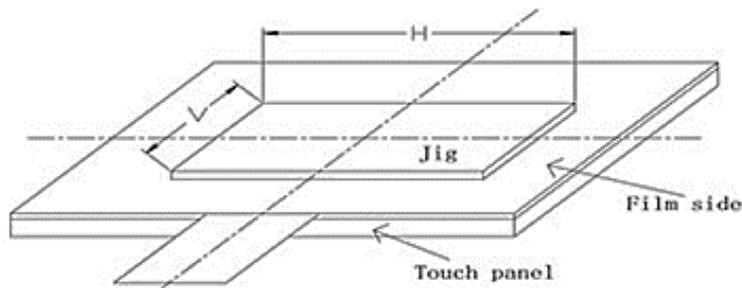
5.4 Pin Assignment Table

Pin No.	Symbol	I/O	Description	Note
1	X-	O	Touch panel left side (XL)	
2	Y-	O	Touch panel down side (YD)	
3	X+	O	Touch panel right side (XR)	
4	Y+	O	Touch panel up side (YU)	

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6. AC/DC Characteristics (CTP – I2C)

6.1 Absolute Maximum Ratings (Vss = 0V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	VDD	2.66	-	3.47	V	
Storage Humidity	HST	10	-	90	%RH	(1)
Storage Temperature	TST	-30	-	+80	°C	
Operating Humidity	HOP	10	-	90	%RH	(1)
Operating Temperature	TOP	-20	-	+70	°C	

Note:
(1) At 25±5°C. Absolute humidity shall be less than 90%RH at +40°C.
(2) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

6.2 Electrical Characteristics (Vss = 0V, VDD = 3.3V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	VDD	2.8	-	3.3	V	
Operating mode current	IDD	-	8	14.5	mA	
Green mode current	IGR	-	3.3	-	mA	
Sleep mode current	Isleep	70	-	120	uA	
Logic High Output Voltage	VOH	0.85xVDD	-	-	V	
Logic Low Output Voltage	VOL	-	-	0.15xVDD	V	
Logic High Input voltage	VIH	0.75xVDD	-	VDD+0.3	V	
Logic Low Input voltage	VIL	-0.3	-	0.25xVDD	V	

Note:
(1) The recommended operating conditions refer to a range in which operation of this product is guaranteed. Accordingly, please make sure that the module is used within this range. And these current values are measured under the condition that all devices are stopped, each component is stable and logic signal is input.

6.3 I2C Interface

Touch panel is used as I2C Slave Device, I2C Slave address is 0x14 or 0x5D, refer GT911 datasheet for details.

The system block diagram is as shown in below. There are three communication pins connected between CPU and Touch Panel Module which are including external interrupt IRQ, I2C pins SCL and SDA. The IRQ is active low while the touch state is calculated by Touch Panel Module and the touch information can be translated via I2C communication interface. The I2C data format, protocol and report packet are described as following.
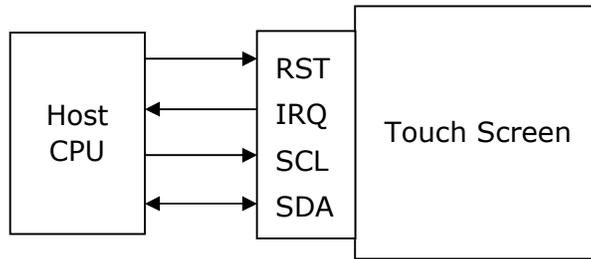
6.3.1 I2C Timing Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
SCL low period	tlo	1.3	-	-	us	
SCL high period	thi	0.6	-	-	us	
SCL setup time for Start condition	tst1	0.6	-	-	us	
SCL setup time for Stop condition	tst3	0.6	-	-	us	
SCL hold time for Start condition	thd1	0.6	-	-	us	
SDA setup time	tst2	0.1	-	-	us	
SDA hold time	thd2	0	-	-	us	

Note:
(1) 400Kbps transmission rate, 2KΩ pull-up resistor.
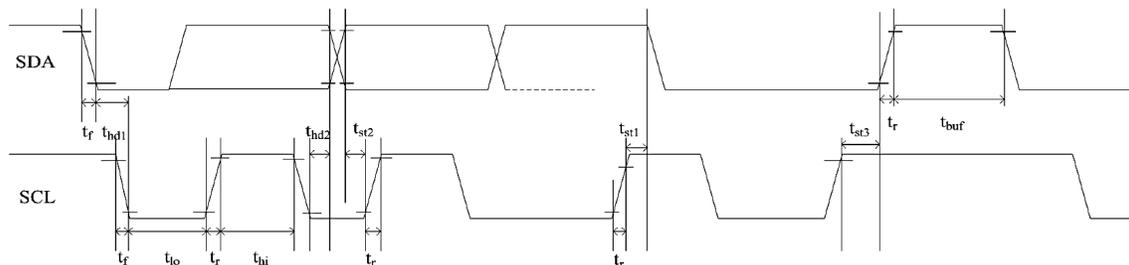
6.3.2 Power ON Timing
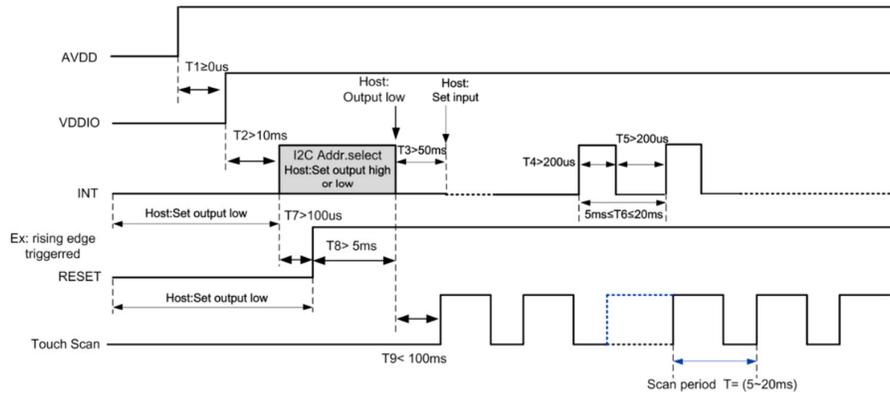
6.3.3 Timing For Host Resetting
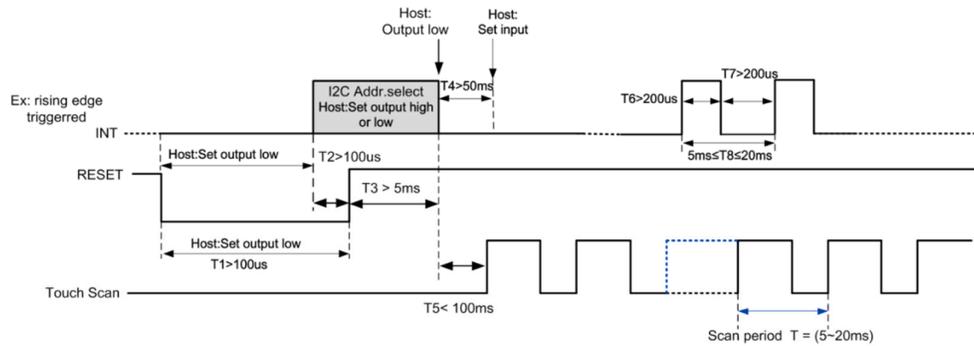
6.4 Pin Assignment Table

Pin No.	Symbol	I/O	Description	Note
1	RST	I	Sensor system global reset	
2	V$_{DD}$	P	Power supply	
3	GND	P	Ground	
4	IRQ	O	Sensor data ready request	
5	SDA	I/O	I2C serial data	
6	SCL	I	I2C serial clock	

7. AC/DC Characteristics (CTP – USB)

7.1 Absolute Maximum Ratings (VSS = 0V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	VDD	-0.3	-	6.0	V	
Storage Humidity	HST	10	-	90	%RH	(1)
Storage Temperature	TST	-30	-	+80	°C	
Operating Humidity	HOP	10	-	90	%RH	(1)
Operating Temperature	TOP	-20	-	+70	°C	

Note:
(3) At 25±5°C. Absolute humidity shall be less than 90%RH at +40°C.
(4) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

7.2 Electrical Characteristics (VSS = 0V, VDD = 5.0V, Ta = 25°C)

| Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	VDD	4.4	5.0	5.5	V	
Operation Current	IDD	-	100	-	mA	
Input Low	VIL	-	-	0.8	V	
Input High (Driven)	VIH	2.0	-	-	V	
Differential Input Sensitivity	VDI	0.2	-	-	V	(D+) – (D-)
Differential Common-Mode Range	VCM	0.8	-	2.5	V	Include VDI Range
Single-Ended Receiver Threshold	VSE	0.8	-	2.0	V	
Receiver Hysteresis	VRH	-	200	-	mV	
Output Low (Driven)	VOL	0	-	0.3	V	
Output High (Driven)	VOH	2.8	-	3.6	V	
Output Signal Cross Voltage	VCRS	1.3	-	2.0	V	
Pull-Up Resistor	RPU	1.425	-	1.575	kΩ	
Pull-Down Resistor	RPD	14.25	-	15.75	kΩ	
Termination Voltage for Upstream Port Pull Up (RPU)	VTRM	3.0	-	3.6	V	

Note:
(2) The recommended operating conditions refer to a range in which operation of this product is guaranteed. Accordingly, please make sure that the module is used within this range. And these current values are measured under the condition that all devices are stopped, each component is stable and logic signal is input.

7.3 Pin Assignment Table

Pin No.	Symbol	I/O	Description	Note
1	GND	P	Ground	
2	USB D+	I/O	USB Data+	
3	USB D-	I/O	USB Data-	
4	VDD	P	5V USB Power Supply	
5 - 10	NC	-	Not Connected	

8. AC/DC Characteristics (HDMI)

8.1 Absolute Maximum Ratings (Vss = 0V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	V_{DD}	-0.3	-	+6.0	V	
Storage Humidity	H_{ST}	10	-	90	%RH	(1)
Storage Temperature	T_{ST}	-30	-	+80	°C	
Operating Humidity	H_{OP}	10	-	90	%RH	(1)
Operating Temperature	T_{OP}	-20	-	+70	°C	

Note:
(1) At 25±5°C. Absolute humidity shall be less than 90%RH at +40°C.
(2) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

8.2 Electrical Characteristics (Vss = 0V, VDD = 5.0V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	V_{DD}	4.85	5.0	5.5	V	
Operation Current	$I_{DD(BOARD)}$	-	150	-	mA	
	$I_{DD(TOTAL)}$	-	1.55	-	A	(2)
Analog input differential voltage	V_{ID}	75	-	1200	mV	
Analog input common voltage	V_{IC}	AV_{DD}-300	-	AV_{DD}-37	mV	
Open-circuit analog input voltage	$V_{I(OC)}$	AV_{DD}-10	-	AV_{DD}+10	mV	

Note:
(1) The recommended operating conditions refer to a range in which operation of this product is guaranteed. Accordingly, please make sure that the module is used within this range. And these current values are measured under the condition that all devices are stopped, each component is stable and logic signal is input.
(2) Complete module (TFT + CTP + HDMI).

8.3 Pin Assignment Table

8.3.1 USB Power Pin Assignment (J51)

Pin No.	Symbol	I/O	Description	Note
1	V_{USB}	P	+5V DC	
2 - 4	NC	-	Not Connected	
5	GND	P	Ground	

8.3.2 HDMI Pin Assignment (J11)

Pin No.	Symbol	I/O	Description	Note
1	D2+	I	TMDS Data2+	
2	D2_S	-	TMDS Data2 Shield	
3	D2-	I	TMDS Data2-	
4	D1+	I	TMDS Data1+	
5	D1_S	-	TMDS Data1 Shield	
6	D1-	I	TMDS Data1-	
7	D0+	I	TMDS Data0+	
8	D0_S	-	TMDS Data0 Shield	
9	D0-	I	TMDS Data0-	
10	CLK+	I	TMDS Clock+	
11	CLK_S	-	TMDS Clock Shield	
12	CLK-	I	TMDS Clock-	
13	CEC	-	No Connection	
14	NC	-	No Connection	
15	SCL	I	DDC Clock	
16	SDA	I/O	DDC Data	
17	DDC	-	DDC/CEC Ground	
18	+5V	P	Power EDID/DDC	
19	DET	-	Hot Plug Detect	

8.3.3 USB CTP Data Pin Assignment (J91)

Pin No.	Symbol	I/O	Description	Note
1	V$_{USB}$	P	+5V DC	
2	D-	I/O	Data-	
3	D+	I/O	Data+	
4	ID	-	No Connection	
5	GND	P	Ground	

9. Optical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit	Note
Brightness	Bp	θ=0° Φ=0°	900	1000	1200	cd/m²	(2)
Uniformity	⊿Bp		80	-	-	%	(2)(3)
Viewing Angle	3:00	Cr≥10	-	80	-	degree	(4)
	6:00		-	80	-		
	9:00		-	80	-		
	12:00		-	80	-		
Contrast Ratio	Cr		600	800	-	-	(5)
Response Time	Tr		-	10	-	ms	(6)
	Tf		-	10	-	ms	
Colour Chromaticity	Wx	θ=0° Φ=0° T=25°C	-	0.28	-	-	(7)
	Wy		-	0.33	-	-	
	Rx		-	0.51	-	-	
	Ry		-	0.34	-	-	
	Gx		-	0.31	-	-	
	Gy		-	0.56	-	-	
	Bx		-	0.15	-	-	
	By		-	0.14	-	-	
NTSC Ratio	S		60	70	-	%	(7)
CTP Transmittance	T		-	80	-	%	(8)

Note:
(1) The parameter is slightly changed by temperature, driving voltage and materiel.
(2) The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment BM-7A.
Measuring condition:
- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25°C.
- Adjust operating voltage to get optimum contrast at the center of the display.
Measured value at the center point of LCD panel after more than 5 minutes while backlight turning on.
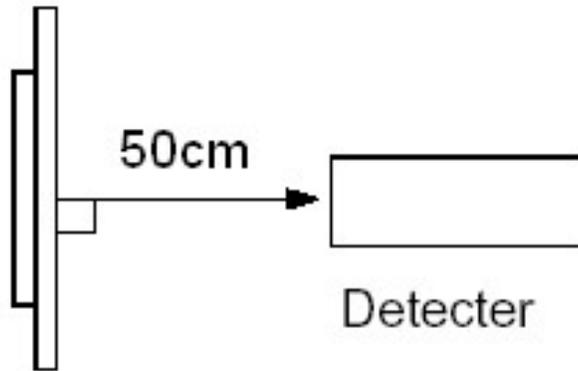
(3) The luminance uniformity is calculated by using following formula:
ΔBp = Bp (Min.) / Bp (Max.) × 100 (%)
Bp (Max.) = Maximum brightness in 9 measured spots.
Bp (Min.) = Minimum brightness in 9 measured spots.
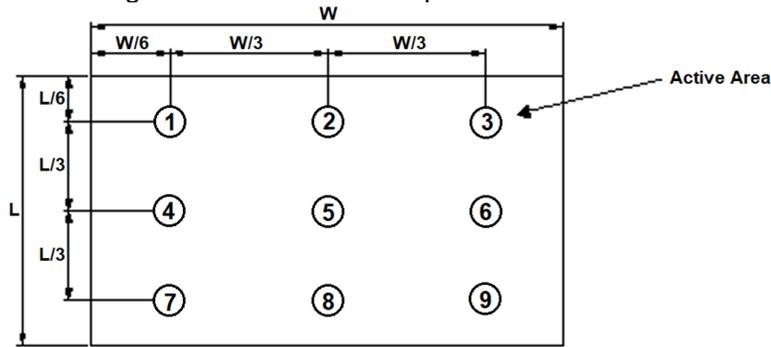
(4) The definition of viewing angle:
Refer to the graph below marked by θ and Φ
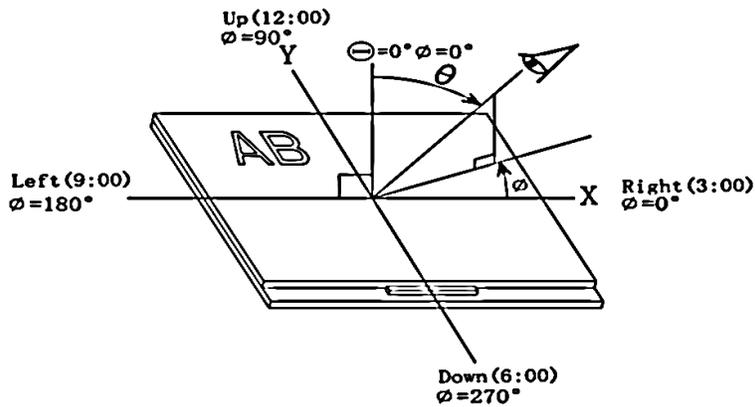
(5) Definition of contrast ratio.
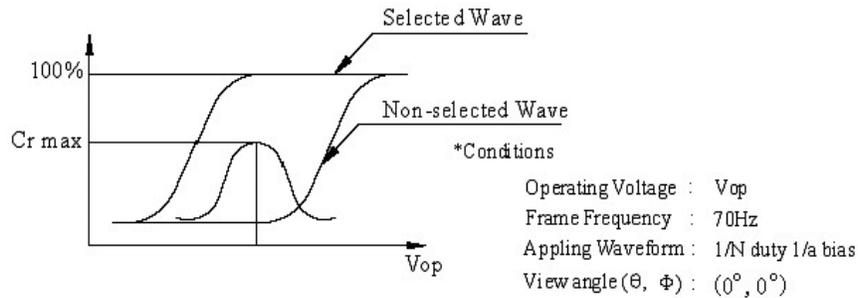
$$\text{Contrast ratio } (Cr) = \frac{\text{Brightness of selected dots}}{\text{Brightness of non−selected dots}}$$

(6) 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.
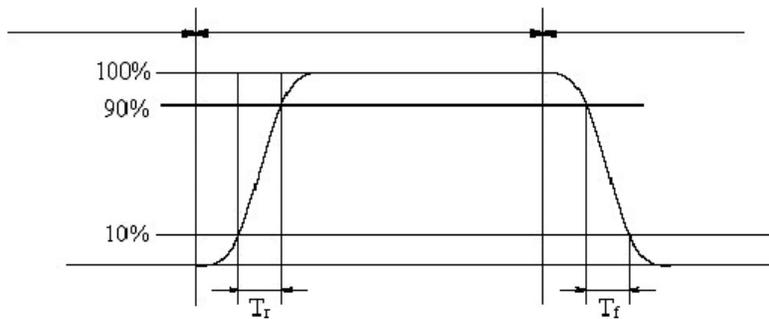
The Definition of response time

(7) Definition of Color of CIE Coordinate and NTSC Ratio.
Colour coordinates measured at centre point of LCD.

1931 CIE Chromaticity Diagram

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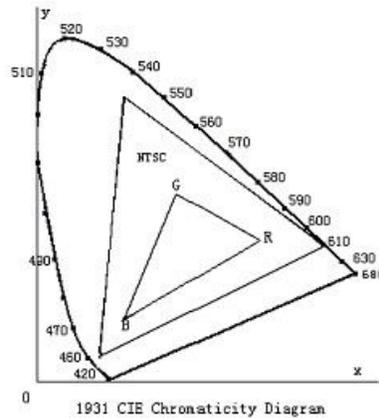
(8) Definition of The transmittance

Measurements shall be made at viewing angle of θ = 0° and at the center of the touch panel by using BM-7A. Transmittance shall be calculated by the difference of the luminance between a standard light source with touch panel and a standard light source without touch panel.

$$\text{Transmittance} = \frac{\text{Luminance on touch panel surface}}{\text{Luminance of standard light source}}$$

10. Reliability Test Condition

10.1 Other Than RTP Model

Item		Test Condition	Note
Operating	High Temperature	+70°C, 96hrs	(3)
	Low Temperature	-20°C, 96hrs	(3)
	High Temperature and High Humidity	+40°C, 90%RH, 96hrs	(3)(4)
	Cycle	RT (0m) → -20°C (30m) → RT (5m) → +70°C (30m) → RT (5m) 50 cycles	(1)(2)(3)
Storage	High Temperature	+80°C, 96hrs	(3)
	Low Temperature	-30°C, 96hrs	(3)

10.2 For RTP Model Only

Item		Test Condition	Note
Operating	High Temperature	+60°C, 96hrs	(3)
	Low Temperature	-10°C, 96hrs	(3)
	High Temperature and High Humidity	+40°C, 90%RH, 96hrs	(3)(4)
	Cycle	RT (0m) → -10°C (30m) → RT (5m) → +60°C (30m) → RT (5m) 50 cycles	(1)(2)(3)
Storage	High Temperature	+70°C, 96hrs	(3)
	Low Temperature	-20°C, 96hrs	(3)

Note:
(1) RT means Room Temperature.
(2) m means minute.
(3) Before cosmetic and functional test, the product must have enough recovery time, at least 2 hours at room temperature.
(4) No condensation.

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11. Inspection Criteria

- Inspection distance: 25~30cm.
- From lamp source to product: 250 ± 100cm.
- Angle of inspection: Ambient brightness 1k-1.5k lux inspection from front view, perpendicular to the surface of product.
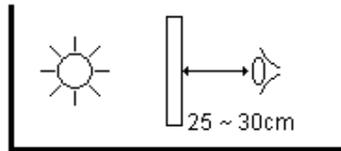
No	Defect	Definition of defect	Inspection Criteria
1	a) Definition of dot	The size of defective dot over ½ of whole is regards as one defective dot. Smaller than ½ Larger than ½ R G B R G B 'No dot defect' (ignore) '1 dot defect' (counted)	A - Viewing area B - Viewing area C - Outside Viewing area B AREA / A AREA / C AREA
	b) Bright Dot	Dot appear bright and unchanged in size when LCD panel is displaying black pattern.	Defect / A / B / C table below
	c) Dark Dot	Dot appear dark and unchanged in size when LCD panel is displaying pure color (RED, GREEN or BLUE) pattern.	
	d) 2 dot adjacent	1 pair = 2 dots Type 1 Type 2 or Type 3	Defect / Acc. Count table below
2	a) Black Spot b) White Spot c) Bright Spot d) Pin Hole e) Foreign Particle	- Black / Dark / Bright Spot is points on display which appear dark/bright and usually result from contamination. - These defect do not vary in size intensity (contrast) when contras is varied.	A - Viewing area B - Outside Viewing area

Inspection Criteria for b), c):

Defect	A	B	C
Bright Dot	1	1	NC
Dark Dot	2	2	NC
Total	4		

NC – Not Count

Inspection Criteria for d):

Defect	Acc. Count
2 Bright dot Adjacent	0
2 Dark dot Adjacent	1

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Defect Category	A	B
D < 0.15	NC	
0.15 ≤ D < 0.25	2	NC
0.25 ≤ D ≤ 0.30	1	
D > 0.30	0	

$D = (a+b)/2 (mm)$

a) Black Line
b) White Line
c) Particle between POL and Glass
d) Scratch on Glass

L: length (mm)
W: width (mm)

Defect Category	A	B
W < 0.03	NC	
0.03 ≤ W ≤ 0.1 L ≤ 3.0	2	NC
W > 0.1 L > 3.0	0	

a) Air Bubble
b) POL Bubble
c) POL Dented

Defect Category	A	B
D < 0.20	NC	
0.20 ≤ D < 0.30	3	NC
0.30 ≤ D ≤ 0.50	2	
D > 0.50	0	

3	Mura (50% Grey)		Judged by Limit sample
4	Corner Chip		Accept if (only allowed 1):- a) X ≤ 1.0mm b) Y ≤ 1.0mm c) Z ≤ 1/2T
	Edge Chip	- Touch sensor corner and edge chip that do not cause any damage to tracer and not visible to end-user after housing assembly. - Lens edge and corner chip that is not visible to end-user after housing assembly.	Accept if (only allowed 1):- a) X ≤ 1.0mm b) Y ≤ 1.0mm c) Z ≤ 1/2T Reject – if the sensor surface edge/corner chip damage circuit and visible from front view
	Glass Crack		Reject – if any crack

5	Printing Ink Light Leakage		Accept if:- Light leakage at marginal area width ≤ 0.15mm
6	Surface Smudginess	- For those that can be cleaned, ≤20% of inspected quantity in one lot under > class 10K area; ≤10% of inspected quantity in one lot ≤ class 10K area. - For those that cannot be cleaned it is classified as foreign round shape defect.	
7	FPC Defects on Contact Pad		Accept if dent, pinhole:- a) a ≤ w/3 Reject – if open circuit / cracking / oxidation / contamination
	FPC Broken		Reject if FPC broken / extruded
	FPC Warped		Accept if FPC warped
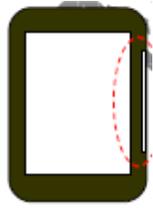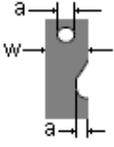
12. Precaution

1. Handing Precautions
   a. The display panel is made of glass and polarizer. As glass is fragile. It tends to chip during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock of impact or by dropping it.
   b. If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance is in contact with your skin or clothes, wash it off using soap and water.
   c. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degrade the insulation between terminals. Scratch and dents may occur on polarizer too.
   d. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than a HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on it. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming in to contact with room temperature air.
   e. If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents.
      - Isopropyl alcohol.
      - Ethyl alcohol.
      - Do not scrub hard to avoid damaging the display surface.
   f. Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.
      - Water.
      - Ketone.
      - Aromatic solvents.
      - Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or colour fading. Avoid contact with oil and fats.
   g. Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.
   h. Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.
   i. Do not attempt to disassemble or process the LCD module.
   j. NC terminal should be open. Do not connect anything.
   k. If the logic circuit power is off, do not apply the input signals.
   l. Electro-Static Discharge Control. Since this module uses a CMOS LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
      - Before removing LCM from its packing case or incorporating it into a set, be sure the module and your body have the same electric potential. Be sure to ground the body when handling the LCD modules.
      - Tools required for assembly, such as soldering irons, must be properly grounded. Make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screw driver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.

- To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions. To reduce the generation of static electricity be careful that the air in the work environment is not too dry. A relative humidity of 50%-60% is recommended. As far as possible make the electric potential of your work clothes and that of the work bench the ground potential.
- The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.

m. Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.
- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist the LCM.

2. Storage Precautions
   When storing the LCD modules, the following precaution are necessary.
   a. Store the LCD at a temperature from 10°C to 30°C and a relative humidity of 65% RH or less.
   b. Please store display in a dry place and shelter from direct sunlight.

3. Others
   a. Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature.
   b. If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.
   c. To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc. Exercise care to avoid holding the following sections when handling the modules.
   - Exposed area of the printed circuit board.
   - Terminal electrode sections.

4. Using LCD Modules
   a. Installing LCD Modules
      The hole in the printed circuit board is used to fix LCM as shown in the picture below. Attend to the following items when installing the LCM.
   b. Cover the surface with a transparent protective plate to protect the polarizer and LC cell.
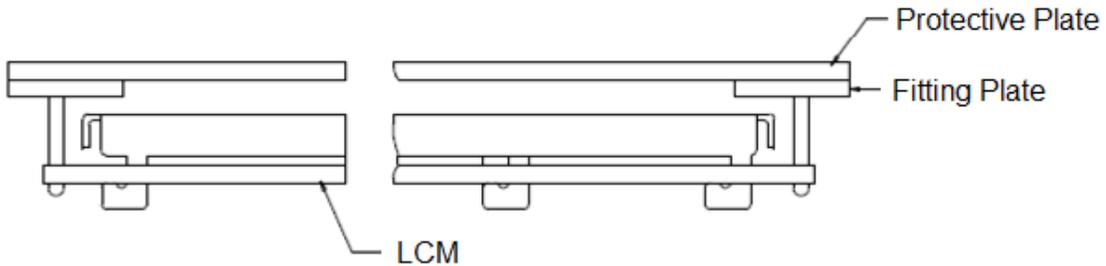
c. When assembling the LCM into other equipment, the spacer to the bit between the LCM and the fitting plate should have enough height to avoid causing stress to the module surface, refer to the individual specifications for measurements. The measurement tolerance should be 0.1mm.

d. Precaution for assemble the module with BTB connector:
    Please note the position of the male and female connector position, don't assemble or assemble like the method which the following picture shows.
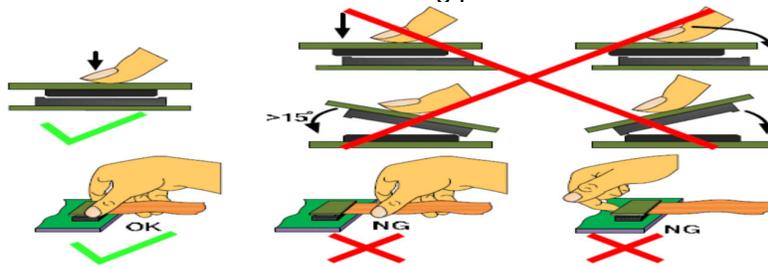
5. Precaution for soldering the LCM

	Manual soldering	Machine drag soldering	Machine press soldering
No RoHS Product	290°C ~350°C. Time: 3-5S.	330°C ~350°C. Speed: 4-8 mm/s.	300°C ~330°C. Time: 3-6S. Press: 0.8~1.2Mpa
RoHS Product	340°C ~370°C. Time: 3-5S.	350°C ~370°C. Time: 4-8 mm/s.	330°C ~360°C. Time: 3-6S. Press: 0.8~1.2Mpa

a. If soldering flux is used, be sure to remove any remaining flux after finishing the soldering operation (This does not apply in the case of a non-halogen type of flux). It is recommended that you protect the LCD surface with a cover during soldering to prevent any damage due to flux spatters.

b. When soldering the electroluminescent panel and PC board, the panel and board should not be detached more than three times. This maximum number is determined by the temperature and time conditions mentioned above, though there may be some variance depending on the temperature of the soldering iron.

c. When removing the electroluminescent panel from the PC board, be sure the solder has completely melted, the soldered pad on the PC board could be damaged.

6. Precautions for Operation

a. Viewing angle varies with the change of liquid crystal driving voltage (VLCD). Adjust VLCD to show the best contrast.

b. It is recommended to drive LCD's within the specified voltage limit since over limit will cause shorter LCD life. An electrochemical reaction due to direct current causes LCD deterioration. Avoid the use of direct current drive.

c. Response time will be extremely delayed at lower temperature compared to room operating temperature range and on the other hand, at higher temperature LCD-shows dark colour in

them. However those phenomena do not mean malfunction. The LCD will return to normal performance when ambient temperature revert to room condition.

d. If the display area is pushed hard during operation, the display will become abnormal. However, it will return to normal if it is turned off and on.

e. A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

f. Input logic voltage before apply analogue high voltage such as LCD driving voltage when power on. Remove analogue high voltage before logic voltage when power off the module. Input each signal after the positive/negative voltage becomes stable.

g. Please keep the temperature within the specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity.

7. Safety
   a. It is recommended to crush damaged or unnecessary LCDs into pieces and wash them off with solvents such as acetone and ethanol, which should later be burned.
   b. If any liquid leaks out of a damaged glass cell and comes in contact with the hands, wash off thoroughly with soap and water.

8. Limited Warranty
   Unless otherwise agreed between Crystal Clear Technology and customer, Crystal Clear Technology will replace or repair any of its LCD and LCM which is found to be defective electrically and visually when inspected in accordance with Crystal Clear Technology acceptance standards, for a period of one year from date of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of Crystal Clear Technology is limited to repair and/or replacement on the terms set forth above. Crystal Clear Technology will not responsible for any subsequent or consequential events.

9. Return LCM under Warranty
   No warranty can be granted if the precautions stated above have been disregarded. The typical examples of violations are:
   - Broken LCD glass.
   - PCB eyelet's damaged or modified.
   - PCB conductors damaged.
   - Circuit modified in any way, including addition of components.
   - PCB tampered with by grinding, engraving or painting varnish.
   - Soldering to, or modifying the bezel in any manner.

   Module repairs will be invoiced to customer upon mutual agreement. Modules must be returned with sufficient description of failure or defects. Any connectors or cable installed by customer must be removed completely without damaging the PCB eyelet's, conductors and terminals.

13.   Mechanical Specification

Dim	Tol
X.X	±0.5
X.XX	±0.30
ANGULAR	±0.5°

164.80±0.3 LCM
156.70 BZ OPENING
154.21 LCD AA
5.70
(7.04)
(80.65)
3.20
(4.49)
5.60±0.3
47.45
0.1506
0.1432
99.80±0.3 LCM
89.10 BZ OPENING
85.92 LCD AA

1024 × RGB × 600 DOTS

VIEWING ANGLE: ALL

48.35±0.5

Detail A

66.97±0.5   29.0

SOLDER HEIGHT: 0.5MAX
5.0±0.3

CONTACT SIDE   STIFFENER
0.30±0.03

3.5±0.30
0.3±0.03
0.5±0.03   0.5±0.08
P0.5*39=19.5±0.05
*20.5±0.07
DETAIL A(2:1)

LED CIRCUIT DIAGRAM:

K   A

3*10=30EA   If=500mA

PIN FUNCTION

1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -20°C ~ +70°C
4. STORAGE TEMPERATURE: -30°C ~ +80°C
5. BACKLIGHT LUMINANCE : 1000cd/m2
6. BACKLIGHT SUPPLY : Vf = 9.0V, If = 500mA (reference only, for detail pls refer full spec)
7. RoSH COMPLIANCE

CRYSTAL CLEAR TECHNOLOGY SDN BHD

	PART NAME	
	MECHANICAL SPECIFICATION	

APPROVED	CHECKED	DRAWN	UNIT : MM	DRAWING NUMBER	SHEET	REV.
		AZHAR	NTS	T700A16N00	1/1	3
		09-01-2019				

CRYSTAL CLEAR TECHNOLOGY SDN. BHD

Dim	Tol
X.X	±0.5
X.XX	±0.30
ANGULAR	±0.5°

PIN FUNCTION

1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

1024 x RGB x 600 DOTS

VIEWING ANGLE: ALL

DETAIL A

DETAIL B

PIN	OUT
1	X-
2	Y-
3	X+
4	Y+

LED CIRCUIT DIAGRAM

3*10=30EA   If=500mA

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -10°C ~ +60°C
4. STORAGE TEMPERATURE: -20°C ~ +70°C
5. BACKLIGHT LUMINANCE : 1000cd/m2
6. BACKLIGHT SUPPLY : Vf = 9.0V, If = 500mA (reference only, for detail pls refer full spec)
7. RoSH COMPLIANCE

( ) : REPEATED OR REFERENCE DIMENSION ONLY   SPECIAL CHARACTERISTIC ℗= SPC IS REQUIRED   Ⓢ= MSA IS REQUIRED   Ⓒ= NO SPC/MSA REQUIRED

REFERENCE (FOR PD USE ONLY)

				1	
			MODEL NAME	NO	MATERIAL	REMARKS

CRYSTAL CLEAR TECHNOLOGY SDN BHD

PART NAME

7.0" TFT WITH CTP

APPROVED	CHECKED	DRAWN	UNIT : MM	DRAWING NUMBER	SHEET	REV.
		AZHAR		T700A16R00	1/1	1
		14-08-2019	NTS			

Dimension Tolerance Table

Dim	Tol
X.X	±0.5
X.XX	±0.30
ANGULAR	±0.5°

PIN FUNCTION

PIN	FUNCTION
1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

PIN OUT TABLE - CTP

PIN	SYMBOL
1	GND
2	USB D+
3	USB D-
4	USB 5V
5	NC
6	NC
7	NC
8	NC
9	NC
10	NC

Dimensions: 183.00±0.3 LCM, 155.21 BZ OPENING, 154.21 LCD AA, 13.89, (14.39), (91.50), (5.64), 58.60, 117.20±0.3 LCM, 85.92 LCD AA, 0.1506, 0.1432, 1024 × RGB × 600 DOTS, VIEWING ANGLE: ALL, 42.10±0.5, 60.58±0.5, 37.68±0.5, 77.83±0.5, 29.0, 0.7±0.1, 7.70±0.3, 166.25, 9.41, 9.82, 101.13

CONTACT SIDE, STIFFENER, 0.30±0.05, 3.5±0.30, 0.3±0.03, 0.5±0.03, 0.5±0.08, P0.5*39=19.5±0.05, *20.5±0.07, R0.30, 3.0±0.5, 0.3, 0.5±0.05, 4.5±0.1, 5.5±0.1, DST (t = 0.1mm), METAL STIFFENER

LED CIRCUIT DIAGRAM:
3*10=30EA   If=500mA

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -20°C ~ +70°C
4. STORAGE TEMPERATURE: -30°C ~ +80°C
5. BACKLIGHT LUMINANCE : 1000cd/m2
6. BACKLIGHT SUPPLY : Vf = 9.0V, If = 500mA (reference only, for detail pls refer full spec)
7. RoSH COMPLIANCE

( ) : REPEATED OR REFERENCE DIMENSION ONLY

REFERENCE (FOR PD USE ONLY)

SPECIAL CHARACTERISTIC (P) = SPC IS REQUIRED (S) = MSA IS REQUIRED (C) = NO SPC/MSA REQUIRED

					1	
				MODEL NAME	NO	MATERIAL	REMARKS

PART NAME: 7.0" TFT WITH CTP

APPROVED | CHECKED | DRAWN: AZHAR 12-12-2018 | UNIT : MM NTS

DRAWING NUMBER: T700A16D00C

SHEET: 1/1

REV.: 1

CRYSTAL CLEAR TECHNOLOGY SDN BHD

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CRYSTAL CLEAR TECHNOLOGY SDN. BHD

Dim	Tol
X.X	±0.3
X.XX	±0.10
ANGULAR	±0.5°

183.00±0.3 LCM
155.21 V/A
154.21 A/A
13.89
(14.39)
(91.50)
4 - R10.0
(15.64)
58.60
0.1506
0.1432
117.20±0.3 LCM
86.92 - V/A
85.92 - A/A

1024 x RGB x 600 DOTS

VIEWING ANGLE: ALL

(17.48) - COMPONENT
7.70±0.3
0.7±0.1

166.25
9.41
9.82

MICRO USB 2.0 (CTP)   J91
HDMI   J11
HDMI BOARD
MICRO USB 2.0 (POWER)   J51
101.13
40

DST (t = 0.1mm)

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -20°C ~ +70°C
4. STORAGE TEMPERATURE: -30°C ~ +80°C
5. RoSH COMPLIANCE
6. LED : JUFEI - 01.JA.ZD3014W65P01 30(31)/J5(K5)/5-2

( ) : REPEATED OR REFERENCE DIMENSION ONLY

SPECIAL CHARACTERISTIC (P)= SPC IS REQUIRED (S)= MSA IS REQUIRED (C)= NO SPC/MSA REQUIRED

REFERENCE (FOR PD USE ONLY)

		1		
	MODEL NAME	NO	MATERIAL	REMARKS

CRYSTAL CLEAR TECHNOLOGY SDN BHD

PART NAME
7.0" TFT WITH CTP

APPROVED	CHECKED	DRAWN	UNIT : MM	DRAWING NUMBER	SHEET	REV.
		AZHAR	NTS	T700A16D00CH	1/1	4
		17-12-2018				

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CRYSTAL CLEAR TECHNOLOGY SDN. BHD

Dim	Tol
X.X	±0.5
X.XX	±0.30
ANGULAR	±0.5°

PIN FUNCTION

1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

CTP PINOUT

PIN	SYM
1	RST
2	VCC
3	GND
4	INT
5	SDA
6	SCL

1024 × RGB × 600 DOTS

VIEWING ANGLE: ALL

BENDING AREA
COMPONENT
IC
STIFFENER
CONTACT SIDE
DST
DETAIL A

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -20°C ~ +70°C
4. STORAGE TEMPERATURE: -30°C ~ +80°C
5. BACKLIGHT LUMINANCE (LCD SURFACE): 1000cd/m2
6. BACKLIGHT SUPPLY (REF ONLY): Vf = 9.0V, If = 500mA
7. RoSH COMPLIANCE
8. CTP IC : GT911

MODEL NAME		NO	MATERIAL	REMARKS
		1		

CRYSTAL CLEAR TECHNOLOGY SDN BHD

PART NAME: 7.0" TFT WITH CTP

APPROVED	CHECKED	DRAWN	UNIT : MM	DRAWING NUMBER	SHEET	REV.
		AZHAR 15-07-2020	NTS	T700A16C00A	1/1	1

( ) : REPEATED OR REFERENCE DIMENSION ONLY   SPECIAL CHARACTERISTIC (P)= SPC IS REQUIRED (S)= MSA IS REQUIRED (C)= NO SPC/MSA REQUIRED

REFERENCE (FOR PD USE ONLY)

Dim	Tol
X.X	±0.5
X.XX	±0.30
ANGULAR	±0.5°

164.80
(156.7) - BEZEL OPENNING
(5.70)
154.21 - A/A
7.04
(3.20)
4.49
7.05±0.5
(5.60)

1024 X RGB X 600 DOTS

0.1506
0.1432

100.00
(89.1) - BEZEL OPENNING
85.92 - A/A

48.15±0.5
BENDING AREA
COMPONENT
(38.15)
(19.60)
(47.43)
88.46±1.0
IC
66.97±0.5
(20.5)
29.0
(20.0)
(3.5)
36.77

DST
STIFFENER
CONTACT SIDE
0.30±0.05
5.0±0.5

STIFFENER
CONTACT SIDE
0.30±0.05

3.0±0.5
6   1
0.5±0.1
0.30±0.05
0.50±0.05
3.5±0.1

PIN FUNCTION

1	VCOM
2	VDD
3	VDD
4	NC
5	RESET
6	STBYB
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	SELB
29	AVDD
30	GND
31	LED-
32	LED-
33	L/R
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

CTP PINOUT

PIN	SYM
1	RST
2	VCC
3	GND
4	INT
5	SDA
6	SCL

NOTE:
1. DISPLAY : 7.0 TFT, NORMALLY BLACK
2. VIEWING DIRECTION : ALL DIRECTION
3. OPERATING TEMPERATURE: -20°C ~ +70°C
4. STORAGE TEMPERATURE: -30°C ~ +80°C
5. BACKLIGHT LUMINANCE (LCD SURFACE): 1000cd/m2
6. BACKLIGHT SUPPLY (REF ONLY): Vf = 9.0V, If = 500mA
7. RoSH COMPLIANCE
8. CTP IC : GT911
9. CTP Firmware : 5mm Cover Glass

DETAIL A
1   40
3.5±0.30
0.3±0.03
0.5±0.03
0.5±0.08
P0.5*39=19.5±0.05
*20.5±0.07

	1		
MODEL NAME	NO	MATERIAL	REMARKS

PART NAME
7.0" TFT WITH CTP

CRYSTAL CLEAR TECHNOLOGY SDN BHD

APPROVED	CHECKED	DRAWN		DRAWING NUMBER	SHEET	REV.
		AZHAR	UNIT : MM	T700A16F02	1/1	1
		15-07-2020	NTS			

( ) : REPEATED OR REFERENCE DIMENSION ONLY   SPECIAL CHARACTERISTIC ⓟ = SPC IS REQUIRED   ⓢ = MSA IS REQUIRED   ⓒ = NO SPC/MSA REQUIRED

REFERENCE (FOR PD USE ONLY)