



- ☒ Draft Specifications
☐ Preliminary Specifications
☐ Final Specifications

Title	18.5-inches Touch Display Product Specifications
Model Name	F185PET-T51
Version	0

Customer	
Approved by	Date
Notice: This Specification is subject to change without notice.	

Approved By	Prepared By
ZOE NIEN	ALLEN FANG
2026-05-22	2026-05-22



REVISION HISTORY

Version	ECN No.	Description of Changes	Date	Prepared
0		Draft specification first edition	2026-05-22	Allen Fang



CONTENTS

1. GENERAL DESCRIPTION	4
1.1. INTRODUCTION	4
1.2. FEATURES	4
1.3. APPLICATION	4
2. GENERAL SPECIFICATIONS	5
3. ABSOLUTE MAXIMUM RATINGS	6
4. ELECTRICAL CHARACTERISTICS	7
4.1. LCD MODULE	7
4.1.1. LCD BLOCK DIAGRAM	7
4.1.2. POWER SPECIFICATION	8
4.1.3. LVDS DC ELECTRICAL CHARACTERISTICS	9
4.1.4. LCD BACKLIGHT UNIT	10
4.1.5. PIXEL FORMAT IMAGE	11
4.1.6. THE LCD INPUT DATA FORMAT	11
4.1.7. LCD INPUT TERMINAL PIN ASSIGNMENT	12
4.1.8. LCD TIMING CHARACTERISTICS	14
4.1.9. LCD INPUT TIMING DIAGRAM	14
4.1.10. POWER SEQUENCE FOR LCD	15
4.1.11. LED BACKLIGHT UNIT	16
4.2. TOUCH DRIVER	17
4.2.1. TOUCH DRIVER PIN ASSIGNMENT	18
5. OPTICAL CHARACTERISTICS	19
6. RELIABILITY TEST ITEMS	22
7. LABEL	22
8. MECHANICAL CHARACTERISTICS	23
9. ENGINEERING DRAWING	25



1. GENERAL DESCRIPTION

1.1. INTRODUCTION

F185PET-T51 is 18.5" AHVA (IPS-like) color active matrix TFT LCD module G185HAN01.1 04 with projected capacitive multi-touch B185PBU-E04 air bonding with Touch Driver ETP-MB-EXC84H4254STAG.

The display format is intended to support the 1920 x 1080 FHD mode screen and 16.7M colors (LVDS True 8 bit) with LED backlight driving circuit.

1.2. FEATURES

- FHD (1920x1080) resolution
- Long life LED backlight (50k hrs)
- Industrial application
- RoHS product

1.3. APPLICATION

- TFT LCD monitor
- Industrial application



2. GENERAL SPECIFICATIONS

Parameter	Specification	Unit	Remarks
Active Area Size	18.47	inch	
Display Area	408.96(H) x 230.04 (V)	mm	
Outline Dimension	430.40 (H) x 254.60 (V) x 15.85 (D)	mm	D:PCAP+LCM
Weight	1930	g	Typ.
Driver Element	a-Si TFT active matrix	-	
Display Colors	16,7M, True 8 bit	Colors	
Electrical Interface	Dual LVDS	-	
Number of Pixels	1920 (H) x 1080 (V)	pixels	
Pixel Pitch	213 (H) x 213(W)	um	
Pixel Arrangement	RGB vertical stripe	-	
Display Mode	AHVA / Normal Black	-	
Color Gamut	72	%	
Touch Technology	Projected Capacitive Multi-Touch Panel	-	
Touch Method	Finger or exclusive pen	-	
Numbers of Touch	10	Points	
Touch Driver	ETP-MB-EXC84H4254STAG	-	
Touch Sensor Glass Type	Strengthening Glass	-	
Touch Controller IC	EETI, EXC80H84	-	
Touch Driver Interface	USB	-	
Support OS	Android, Linux, Win7, Win8, Win10, XP	-	



3. ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit.

Parameter	Symbol	Min.	Max.	Unit
Logic/LCD Drive Voltage	V_{DD}	-0.3	+5.5	V
LCD Input Signal Voltage	V_{signal}	-0.3	+5.5	V
LED Input Voltage	LED_V_{DD}	-0.3	+13.2	V
LED Control Signal Voltage	LED_EN, PWM	-0.3	+5.0	V
Operating Temperature	T_{op}	-20	+70	°C
Operating Humidity	H_{op}	10	90	%RH
Storage Temperature	T_{st}	-30	+80	°C
Storage Humidity	H_{st}	10	90	%RH
Touch DC Supply Voltage	USB	-0.3	5.5	V

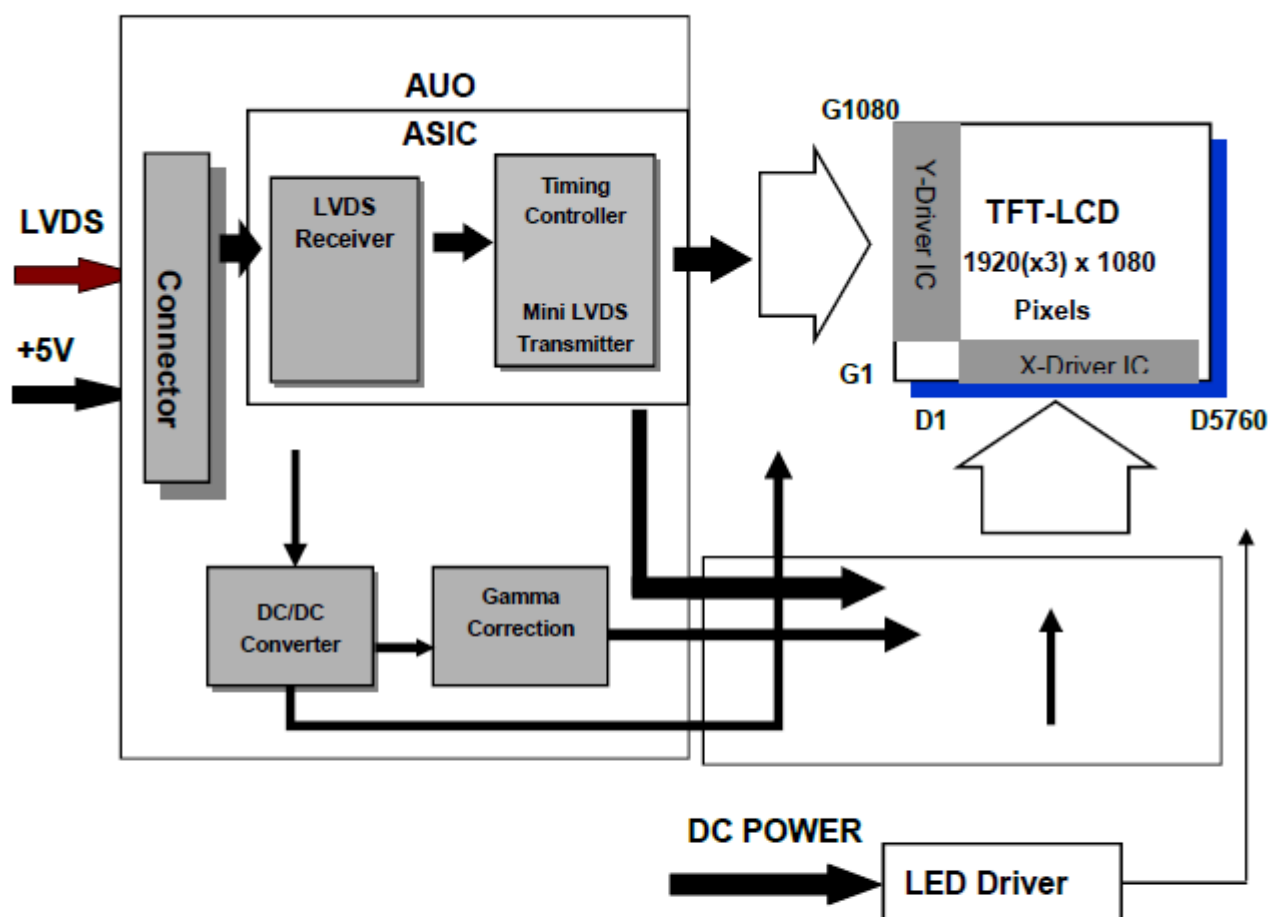
Note: Maximum Wet-Bulb temperature should be 39°C and no condensation.

4. ELECTRICAL CHARACTERISTICS

4.1. LCD MODULE

4.1.1. LCD BLOCK DIAGRAM

The following diagram shows the function block of the 18.5 inches wide Color TFT/LCD module.



I/F PCB Interface:

FI-XB30SSRLA-HF-16-R3500 (JAE)

Mating Type:

FI-X30HL or FI-X30C2L-NPB

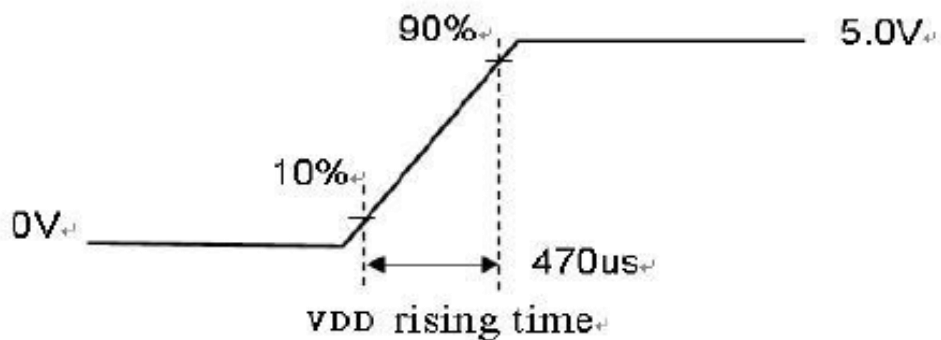
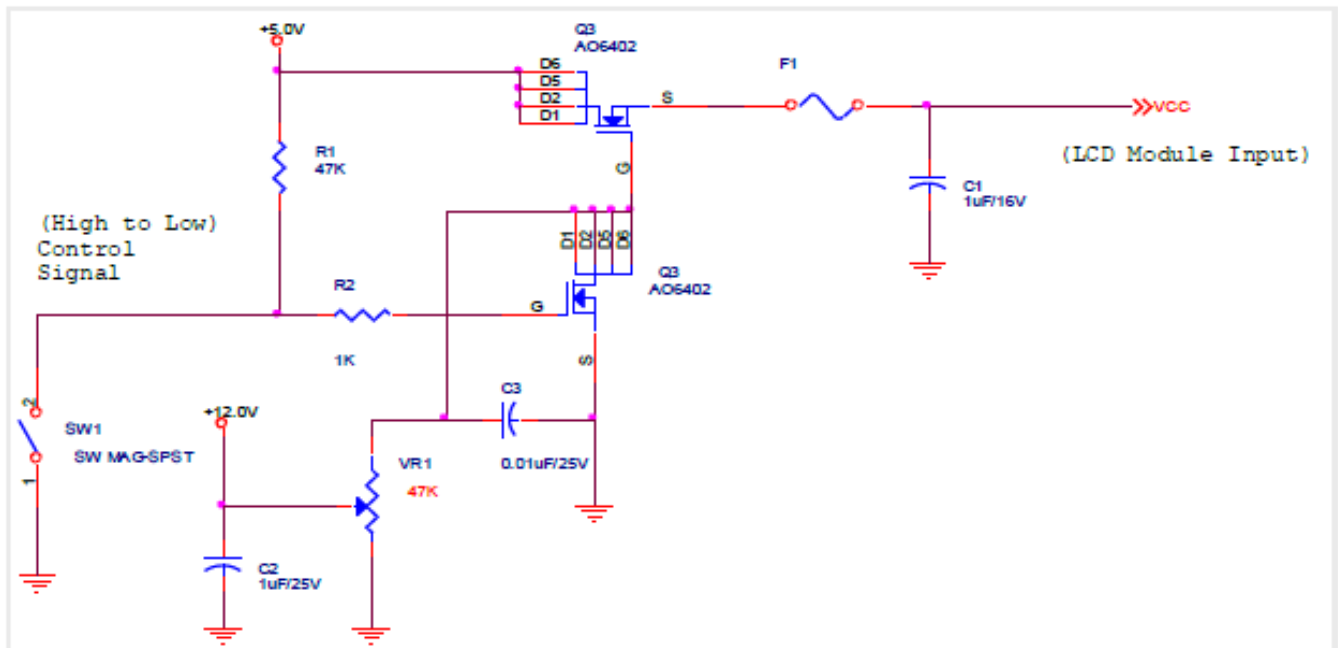
4.1.2. POWER SPECIFICATION

LCD Input power specifications are as below;

The power specifications are measured under 25°C and frame frequency under 60Hz.

Symbol	Parameter	Min.	Typ.	Max.	Units	Remark
VDD	Logic/LCD Drive Voltage	4.5	5	5.5	V	
IDD	IDD Current	-	0.89	107	A	All White pattern (VDD=5V, at 60Hz),
PDD	VDD Power	-	4.45	5.35	W	All White pattern (VDD=5V, at 60Hz)
IRush	Inrush Current	-	2	2.5	A	Note 1
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	300	mV p-p	All White pattern (VDD=5.0V, at 60Hz)

Note 1: Measure Condition



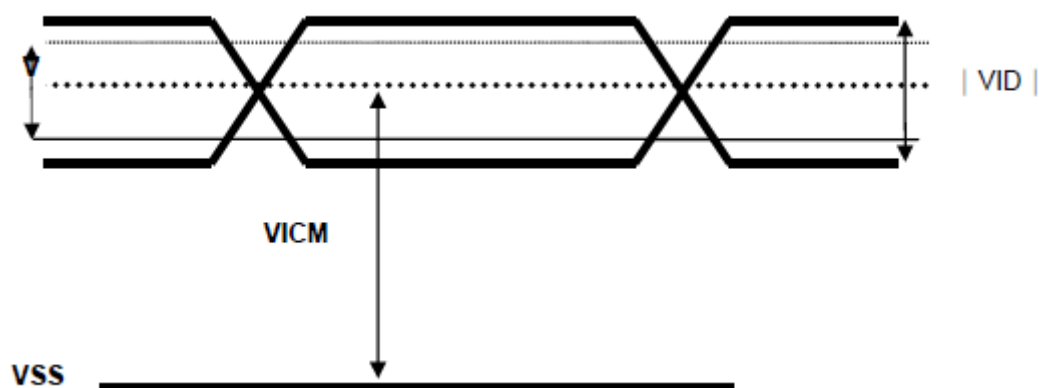
4.1.3. LVDS DC ELECTRICAL CHARACTERISTICS

LCD Input signals shall be low or High-impedance state when VDD is off.

Please refer to specifications of SN75LVDS82DGG (Texas Instruments) in detail.

Symbol	Item	Min.	Typ.	Max.	Unit	Remark
VTH	Differential Input High Threshold			+100	mV	VCM=1.2V Note 1
VTL	Differential Input Low Threshold	-100			mV	VCM=1.2V Note 1
VID	Input Differential Voltage	100	400	600	mV	Note 1
VICM	Differential Input Common Mode Voltage	1.125	-	1.375	V	VTH/VTL=200mV(Max)) Note 1

Note: LVDS Signal Waveform



4.1.4. LCD BACKLIGHT UNIT

Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Remark
Input Voltage	VCC	10.8	12	13.2	V	
Input Current	I _{VCC}		1.56	1.9	A	VCC=12V, 100% PWM Duty
Power Consumption	P _{VCC}		18.72	22.8	W	VCC=12V, 100% PWM Duty
Inrush Current	I _{rush LED}	-	-	3	A	At rising time=470us
LED Enable Input ON	V _{LED ON/OFF}	3	5	5.5	V	
LED Enable Input OFF				0.8	V	
Swing Voltage	F _{PWM}	3	3.3	5	V	
High Level		3	3.3	5	V	
Low Level			-	0.8	V	
Dimming Frequency		200	-	20K	Hz	
Dimming Duty 200~5K		5	-	100	%	
Dimming Duty 5K~20K		15	-	100	%	
LED Forward Current	I _F		85		mA	Ta=25°C
LED Forward Voltage	V _F		3.0	3.3	V	I _F =85mA, Ta=25°C
LED Power Consumption	P _{LED}		14.2	15.71	W	I _F =85mA, Ta=25°C
Operation Lifetime		50,000	-	-	Hour	I _F =85mA, Ta=25°C

Note 1: Ta means ambient temperature of TFT-LCD module.

Note 2: VCC, I_{VCC}, P_{VCC}, I_{rush LED} they are defined for LED B/L. (100% duty of PWM dimming)

Note 3: I_F, V_F, P_{LED} they are defined for single LED.

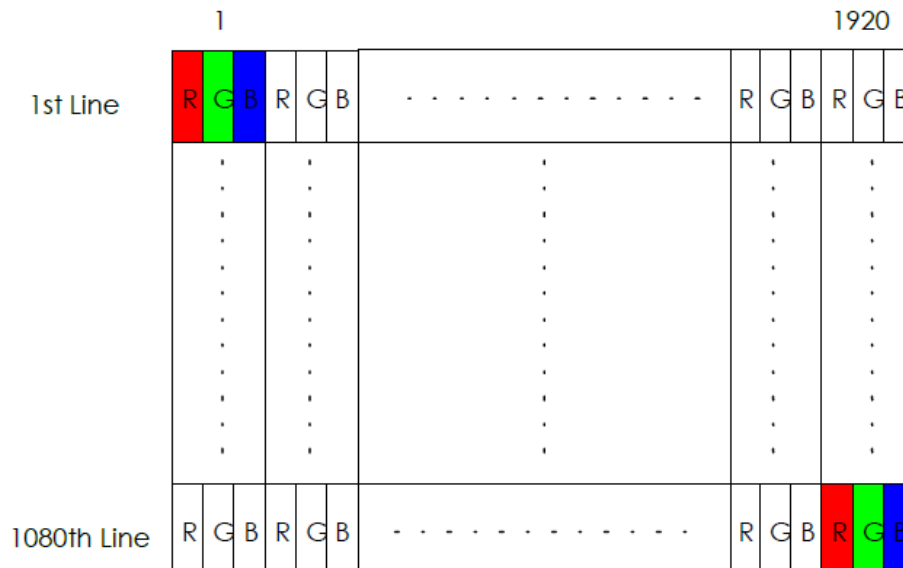
Note 4: If G185HAN01.1 module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.

Note 5: Operating life means brightness goes down to 50% initial brightness. Min. operating life time is estimated data.

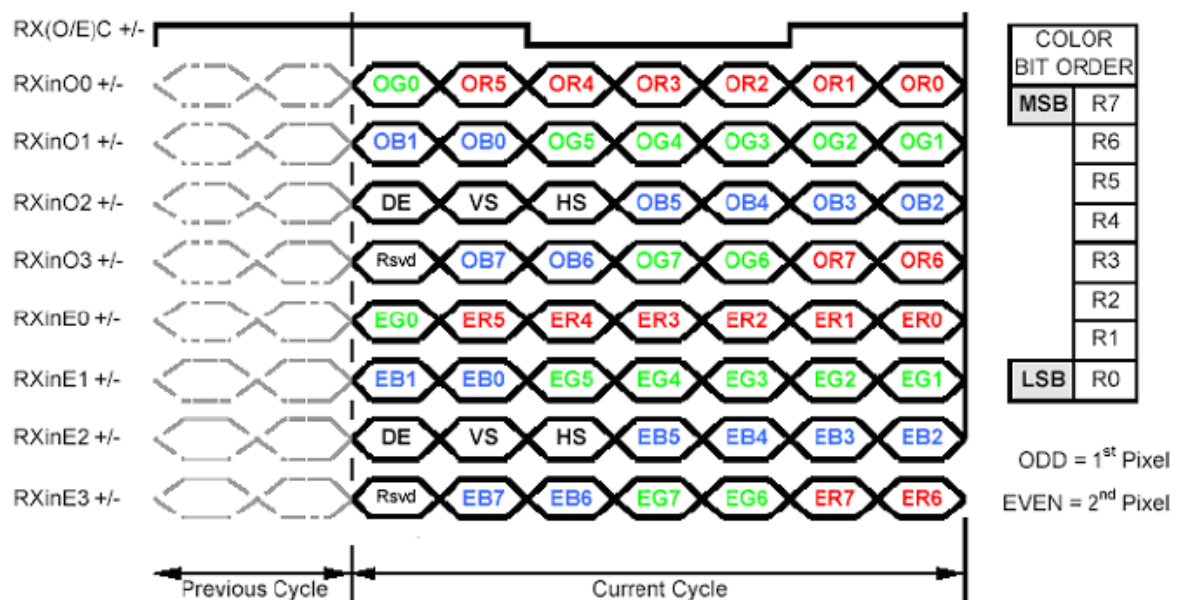
Note 6: Each LED light bar consists of 56 pcs LED package (7 strings x 8 pcs / string)

4.1.5. PIXEL FORMAT IMAGE

Following figure shows the relationship of the input signals and LCD pixel format.



4.1.6. THE LCD INPUT DATA FORMAT



Note 1: Normally DE mode only. VS and HS on EVEN channel are not used.

Note 2: Please follow VESA.

Note 3: 8-bits signal input.

4.1.7. LCD INPUT TERMINAL PIN ASSIGNMENT

Pin	Symbol	Description	Note
1	RX00-	Negative LVDS differential data input (Odd data)	
2	RX00+	Positive LVDS differential data input (Odd data)	
3	RX01-	Negative LVDS differential data input (Odd data)	
4	RX01+	Positive LVDS differential data input (Odd data)	
5	RX02-	Negative LVDS differential data input (Odd data)	
6	RX02+	Positive LVDS differential data input (Odd data)	
7	GND	Ground	
8	RXOCLK-	Negative LVDS differential clock input (Odd data)	
9	RXOCLK+	Positive LVDS differential clock input (Odd data)	
10	RX03-	Negative LVDS differential data input (Odd data)	
11	RX03+	Positive LVDS differential data input (Odd data)	
12	RXE0-	Negative LVDS differential data input (Even data)	
13	RXE0+	Positive LVDS differential data input (Even data)	
14	GND	Ground	
15	RXE1-	Negative LVDS differential data input (Even data)	
16	RXE1+	Positive LVDS differential data input (Even data)	
17	GND	Ground	
18	RXE2-	Negative LVDS differential data input (Even data)	
19	RXE2+	Positive LVDS differential data input (Even data)	
20	RXECLK-	Negative LVDS differential clock input (Even data)	
21	RXECLK+	Positive LVDS differential clock input (Even data)	
22	RXE3-	Negative LVDS differential data input (Even data)	
23	RXE3+	Positive LVDS differential data input (Even data)	
24	GND	Must connect to ground	
25	NC	No connection (for AUO test only, Do not connect)	
26	NC	No connection (for AUO test only, Do not connect)	
27	NC	No connection (for AUO test only, Do not connect)	
28	VDD	Power Supply Input Voltage	
29	VDD	Power Supply Input Voltage	
30	VDD	Power Supply Input Voltage	

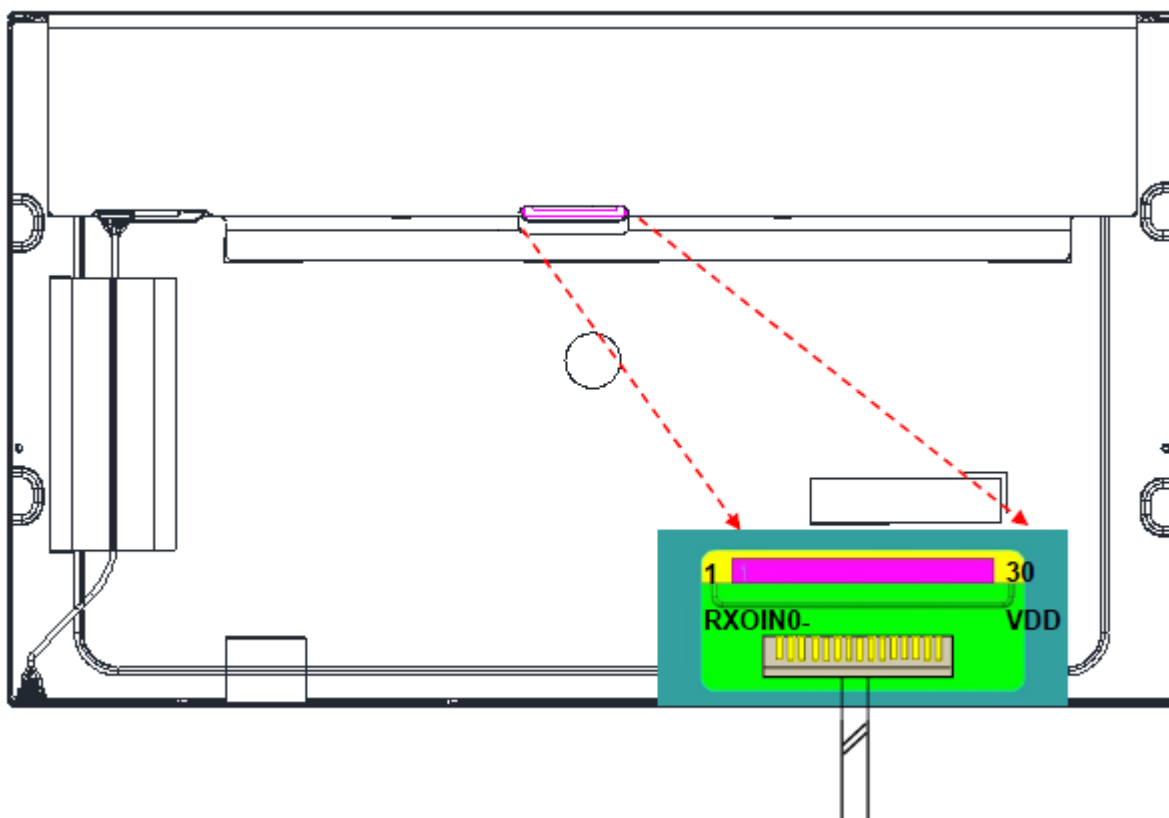
Note 1: Input signals shall be low or High-impedance state when VDD is off.

Signal Description

The first LVDS port (RxOxxx) transmits odd pixels while the second LVDS port (RxExxx) transmits even pixels.

LVDS Connector

Connector Name / Designation	Interface Connector / Interface card
Manufacturer	JAE
Type Part Number	FI-XB30SSRLA-HF-16-R3500 (JAE)
Mating Housing Part Number	FI-X30HL or FI-X30C2L-NPB



Note 2: Input signals of clock shall be the same timing.

Note 3: Please follow TV VESA Pin Assignment.

4.1.8. LCD TIMING CHARACTERISTICS

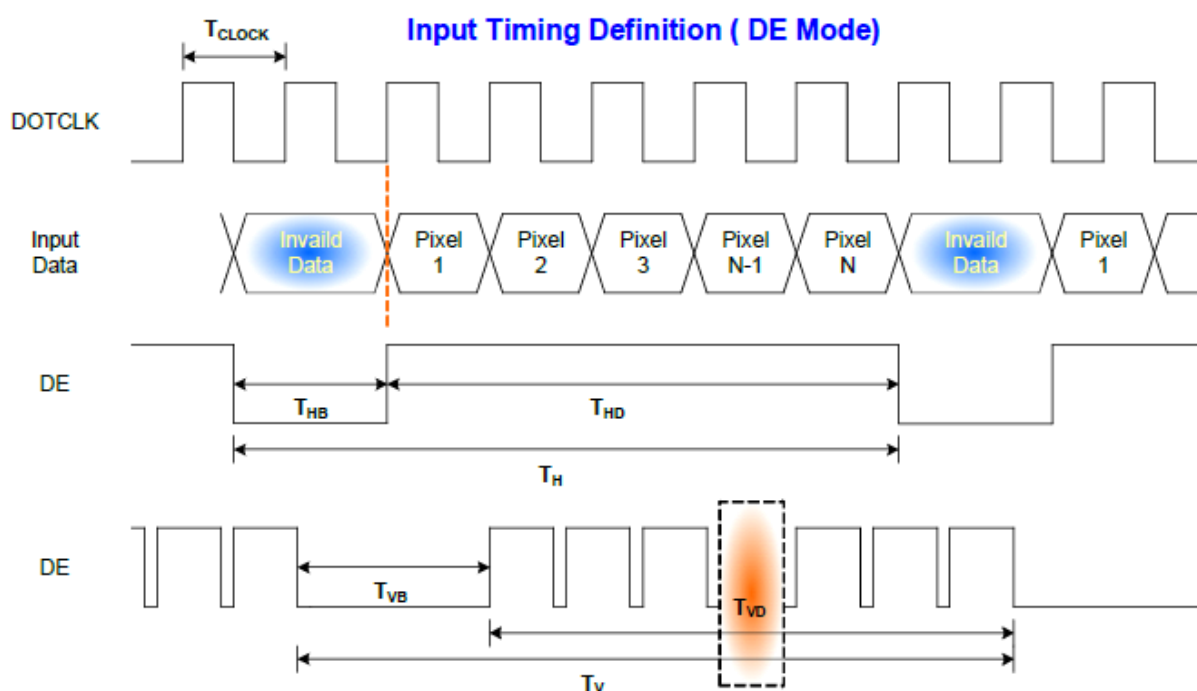
Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		1/T _V	50	60	75	Hz
Clock	Period	T _{CLK}	11.76	13.89	15.38	ns
	Frequency	Freq.	60	72	87.5	MHz
Vertical Section	Period	T _V	1090	1100	1160	T _{LINE}
	Active	T _{VD}	1080			
	Blanking	T _{VB}	10	20	80	
Horizontal Section	Period	T _H	1000	1088	1120	T _{CLOCK}
	Active	T _{HD}	960			
	Blanking	T _{HB}	40	128	160	

Note 1: Only DE mode operation. The input of Hsync & Vsync signal does not have an effect upon the LCD normal operation.

Note 2: The performance of the electro-optical characteristics may be influenced by variance of the vertical refresh rates.

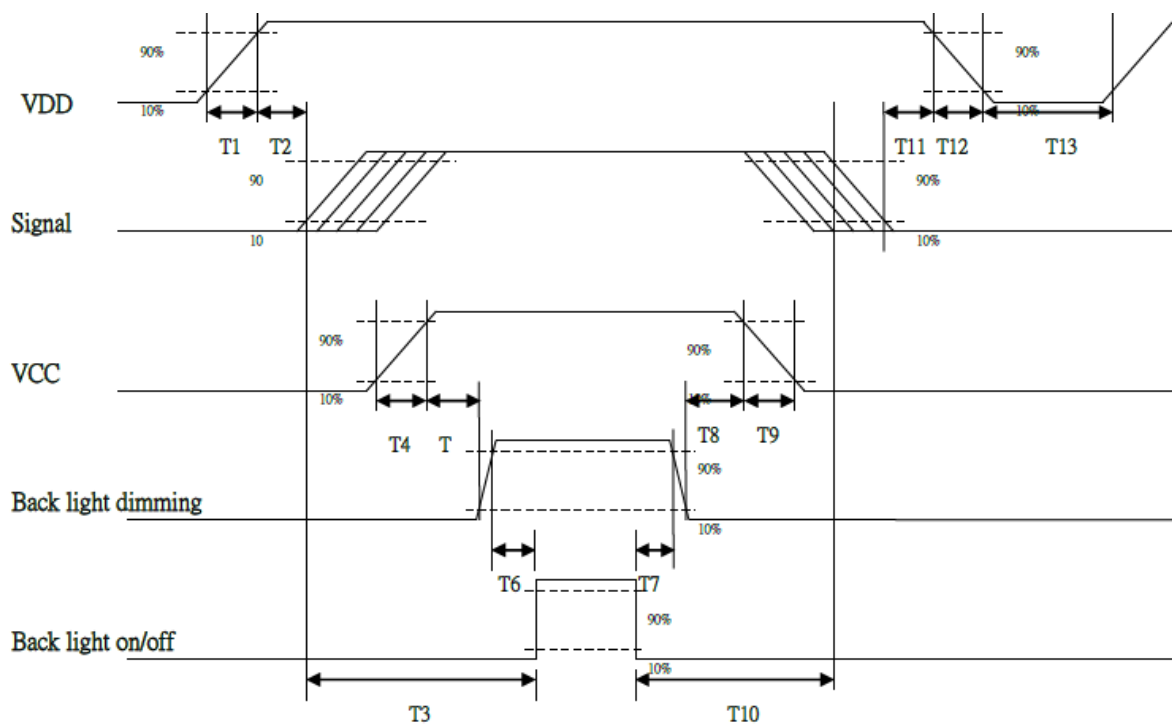
Note 3: Horizontal period should be even.

4.1.9. LCD INPUT TIMING DIAGRAM



4.1.10.POWER SEQUENCE FOR LCD

VDD power and lamp on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be High-impedance state or low level when VDD is off.



Power ON/OFF sequence timing

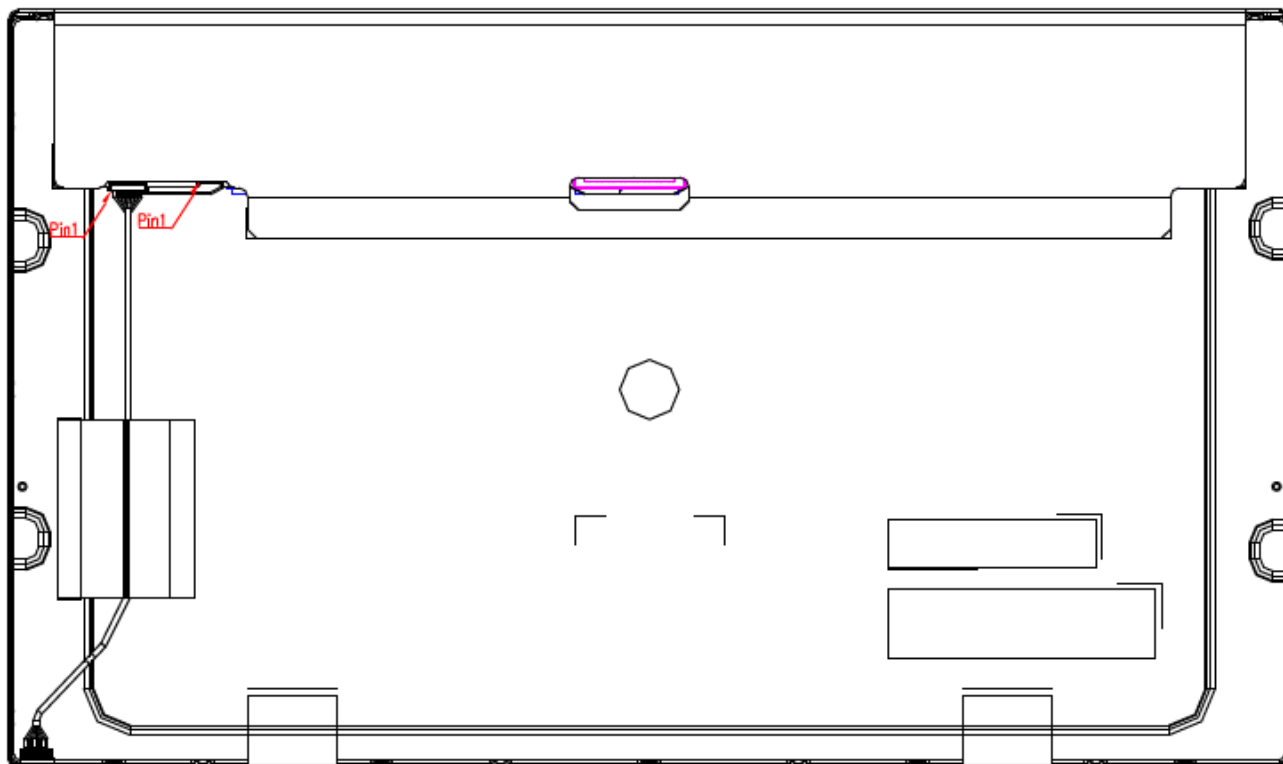
Parameter	Value			Unit
	Min.	Typ.	Max.	
T1	0.5	-	10	ms
T2	0	40	50	ms
T3	200	-	-	ms
T4	0.5	-	10	ms
T5	10	-	-	ms
T6	10	-	-	ms
T7	0	-	-	ms
T8	10	-	-	ms
T9	-	-	10	ms
T10	110	-	-	ms
T11	0.5	16	50	ms
T12	-	-	100	ms
T13	1000	-	-	ms

The above on/off sequence should be applied to avoid abnormal function in the display. Please make sure to turn off the power when you plug the cable into the input connector or pull the cable out of the connector.

4.1.11.LED BACKLIGHT UNIT

Connector Name / Description	LED Connector
Manufacturer	STM or compatible
Connector Model Number	MSB24038P5D or compatible
Mating Model Number	P24038P5 or compatible

Pin #	Symbol	Description
1	VCC	12V Input
2	GND	GND
3	Enable	5V-ON, 0V-OFF
4	Dimming	PWM Dimming
5	NC	NC



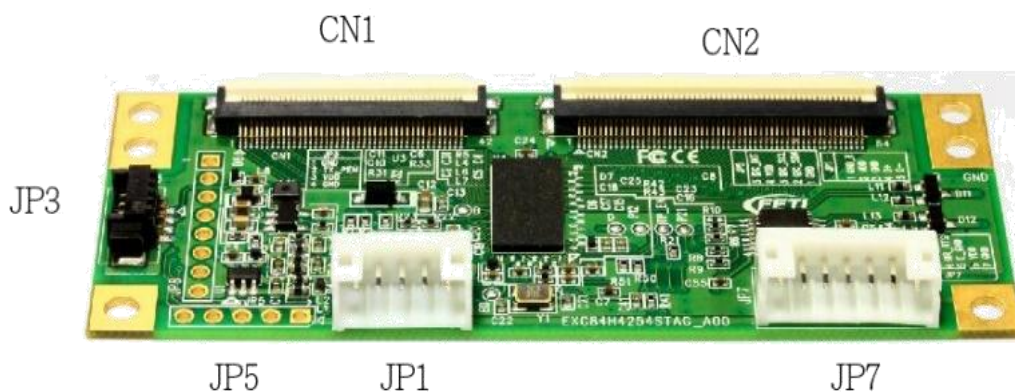
4.2. TOUCH DRIVER

This is a Control Board of USB interface for PCAP :

ETP-MB-EXC84H4254STAG

No.	Item	Specification
1	Touch Controller IC	EETI, EXC80H84
2	Number of Support	10 points Finger Touch
3	Interface	USB / RS232

Interface	Symbol	Condition	Min.	Typ.	Max.	Unit
USB			3.5	5	5.5	V



4.2.1. TOUCH DRIVER PIN ASSIGNMENT

FPC Pin Description

CN1						CN2					
PIN	SYMBOLS	PIN	SYMBOLS	PIN	SYMBOLS	PIN	SYMBOLS	PIN	SYMBOLS	PIN	SYMBOLS
1	TX_S2	21	TX20	41	TX0	1	RX_S1	21	RX32	41	RX12
2	TX39	22	TX19	42	TX_S0	2	RX51	22	RX31	42	RX11
3	TX38	23	TX18			3	RX50	23	RX30	43	RX10
4	TX37	24	TX17			4	RX49	24	RX29	44	RX9
5	TX36	25	TX16			5	RX48	25	RX28	45	RX8
6	TX35	26	TX15			6	RX47	26	RX27	46	RX7
7	TX34	27	TX14			7	RX46	27	RX26	47	RX6
8	TX33	28	TX13			8	RX45	28	RX25	48	RX5
9	TX32	29	TX12			9	RX44	29	RX24	49	RX4
10	TX31	30	TX11			10	RX43	30	RX23	50	RX3
11	TX30	31	TX10			11	RX42	31	RX22	51	RX2
12	TX29	32	TX9			12	RX41	32	RX21	52	RX1
13	TX28	33	TX8			13	RX40	33	RX20	53	RX0
14	TX27	34	TX7			14	RX39	34	RX19	54	RX_50
15	TX26	35	TX6			15	RX38	35	RX18		
16	TX25	36	TX5			16	RX37	36	RX17		
17	TX24	37	TX4			17	RX36	37	RX16		
18	TX23	38	TX3			18	RX35	38	RX15		
19	TX22	39	TX2			19	RX34	39	RX14		
20	TX21	40	TX1			20	RX33	40	RX13		

Connector Pin Configuration

JP1 USB connector

JP1	
1	GND_E
2	VDD
3	GND
4	D+
5	D-

JP5 I2C connector

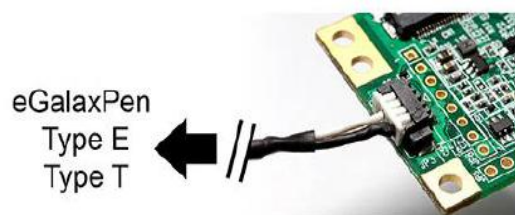
JP5	
1	GND
2	I2C_SDA
3	I2C_SCL
4	VDD
5	I2C_INT

JP7 RS232 connector

JP7	
1	UR_CTS
2	UR_TX
3	UR_RX
4	UR_RTS
5	GND_E
6	VDD
7	GND

JP3 Tethered active stylus connector

JP3	
1	GND_D
2	TX_PEN
3	VDD
4	GND_D



*JP3 connector is reserved for EETI tethered active stylus:

Type E: Entry-type active stylus

Type T: Tethered USB active stylus

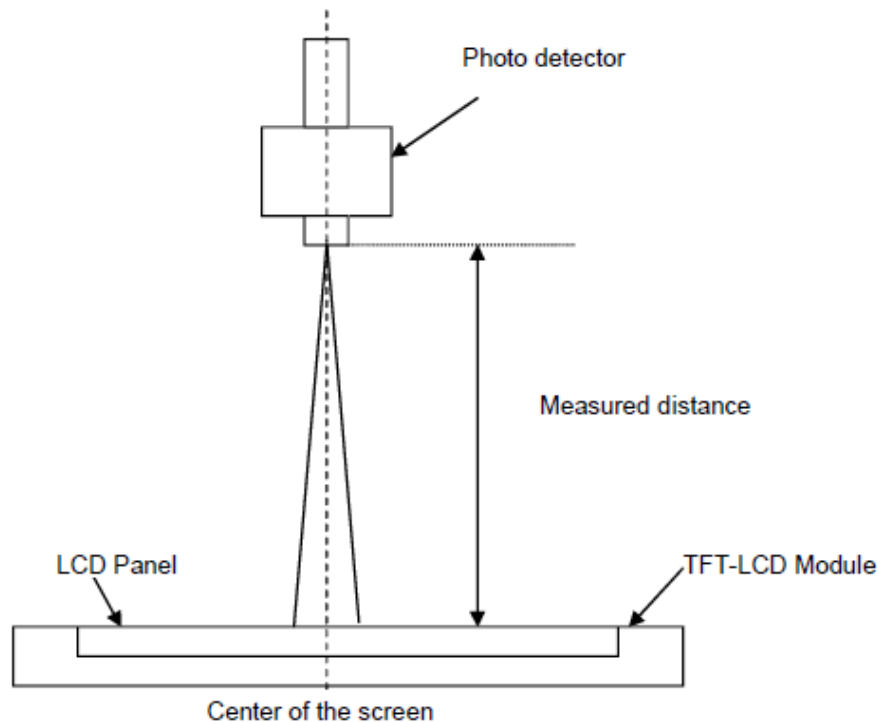
5. OPTICAL CHARACTERISTICS

The optical characteristics are measured under stable conditions of 25°C (Room Temperature)

Item		Unit	Conditions		Min.	Typ.	Max.	Note
View Angle		degree	Horizontal	Right		89	-	2
			CR>10	Left		89	-	
			Vertical	Upper		89	-	
			CR>10	Lower		89	-	
Contrast Ratio					800	1000	-	3
Response Time		ms	Raising Time (T _{rR})			10	20	4
			Falling Time(T _{rF})			10	20	
			Rising + Falling			20	40	
Color / Chromaticity Coordinates (CIE)	Red	Rx			0.596	0.646	0.696	5
		Ry			0.283	0.333	0.383	
	Green	Gx			0.241	0.291	0.341	
		Gy			0.551	0.601	0.651	
	Blue	Bx			0.105	0.155	0.205	
		By			0.010	0.600	0.110	
	White	Wx			0.249	0.299	0.349	
		Wy			0.265	0.315	0.365	
Central Luminance		cd/m²			400	500	-	6
Luminance Uniformity		%			80	85	-	7
Color Gamut		%			-	72	-	

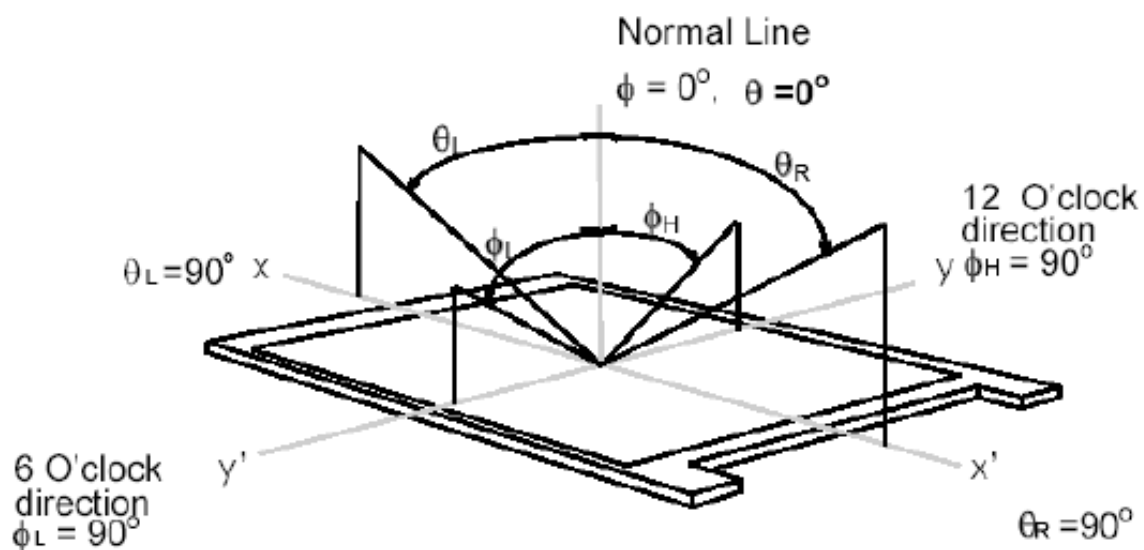
Note 1: Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring (at surface 35°C). In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.



Note 2: Definition of view angle measured by ELDIM (EZContrast 88)

Viewing angle is the measurement of contrast ratio ≥ 10 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (ϕ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.

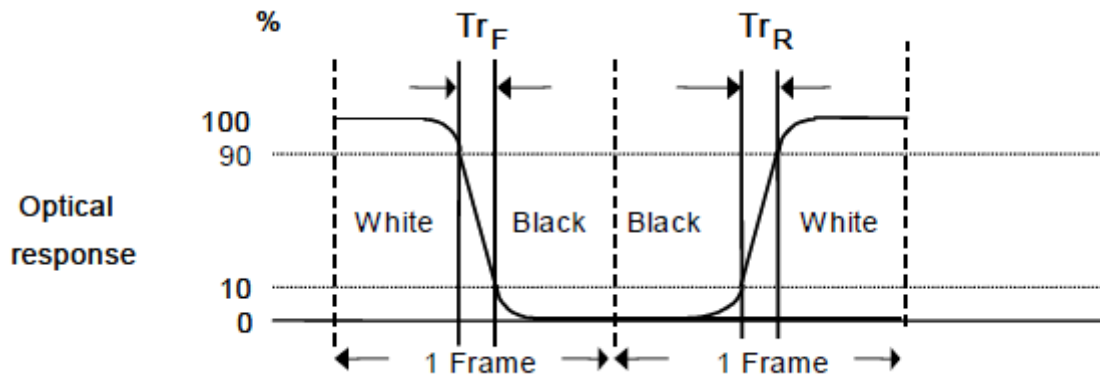


Note 3: Contrast ratio is measured by TOPCON SR-3

Note 4: Definition of Response time measured by Westar TRD-100A

The output signals of photo detector are measured when the input signals are changed from “Full Black” to “Full White” (rising time, T_{rR}), and from “Full Black” (falling time, T_{rF}), respectively. The response time is interval between the 10% and 90% (1frame at 60Hz) of amplitudes.

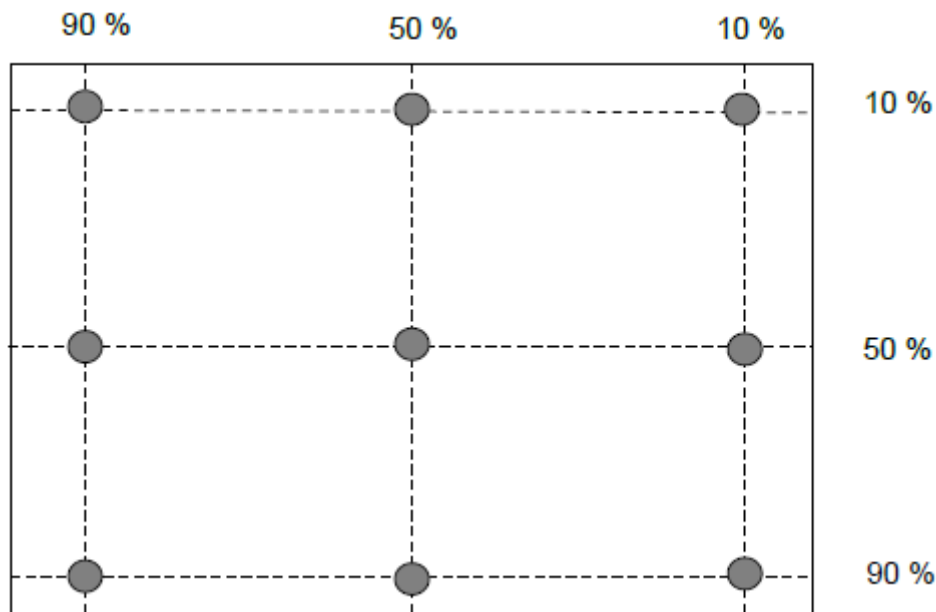
$T_{rR} + T_{rF} = 20 \text{ ms (Typ.)}$



Note 5: Color chromaticity and coordinates (CIE) is measured by TOPCON SR-3

Note 6: Central luminance is measured by TOPCON SR-3

Note 7: Luminance uniformity of these 9 points is defined as below and measured by TOPCON SR-3



$$\text{Uniformity} = \frac{\text{Minimum Luminance of 9 points (1-9)}}{\text{Maximum Luminance of 9 points (1-9)}}$$

6. RELIABILITY TEST ITEMS

Test Item		Condition
1	High temperature/Humidity Bias	50°C, 80% 240hrs
2	High temperature storage test	80°C, 240hrs
3	Low temperature storage test	-30°C, 240hrs
4	High temperature operation test	70°C, 240hrs
5	Low temperature operation test	-20°C, 240hrs
6	Thermal Cycle storage test	-20°C(30min)~70°C(30min), 10cycles

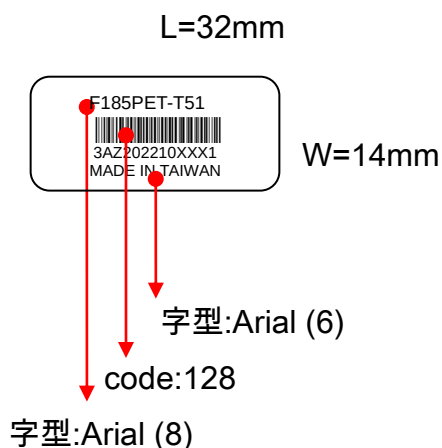
7. LABEL

Model NO. **F185PET-T51**

條碼

SN **3A Z 20 2 21 0 XXX1**

code 1,2 Production location
 code 3 Production version
 code 4,5 Production year
 code 6 Production month
 code 7,8 Production day
 code 9 Production code
 code 10,11,12,13 Serial number



8. MECHANICAL CHARACTERISTICS

Item		Dimension	Unit	Note
Outline Dimension	Horizontal	430.40	mm	PCAP : B185PBU-E04
	Vertical	254.60	mm	
	Depth	2.75	mm	
	Horizontal	430.40	mm	LCD : G185HAN01.1 04
	Vertical	254.60	mm	
	Depth	12.00	mm	
	Horizontal	82.50	mm	Touch Driver : ETP-MB-EXC84H4254STAG
	Vertical	33.00	mm	
	Depth	7.50	mm	
Weight		1930	g	F185PET-T51
Item		Specification		Remarks
PCAP Sensor Area		429.40 mm x 253.60 mm		
PCAP Active Area		413.80 mm x 234.40 mm		
PCAP FPC Length		96.65 mm		
PCAP Input method		Finger or exclusive pen		
PCAP Light Transmission		90%		BYK Gardner, 550nm, ASTM D1003
PCAP Haze		< 4%		BYK Gardner, ASTM D1003
PCAP Operation force		≤10g		Finger Input
PCAP Hardness of surface		≥7H		ASTM D3363 Pressure 750g / 45° test



Front View

TBD

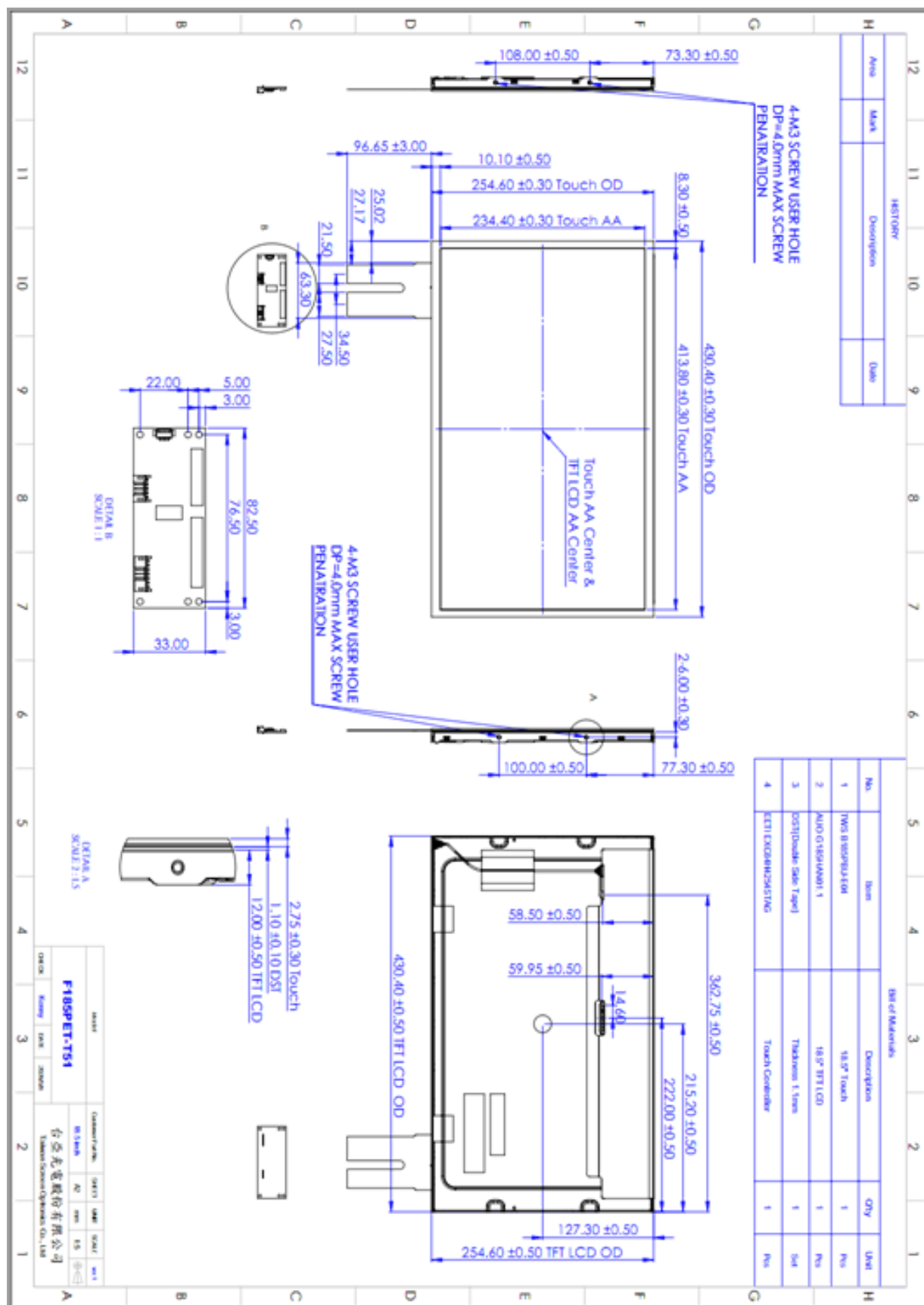
Back View

TBD

Product Specification

F185PET-T51

9. ENGINEERING DRAWING





F185PET-T51

