



Product Specification

F070PET-T41 C

- ☐ Draft Specifications
☒ Preliminary Specifications
☐ Final Specifications

Title	7.0-inches Touch Display Product Specifications
Model Name	F070PET-T41 C
Version	1

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

Approved By	Prepared By
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2025-11-04	2025-11-04



REVISION HISTORY

Version	ECN No.	Description of Changes	Date	Prepared
0		Draft specification first edition	2024/09/30	Allen Fang
1		Modified temperature specification	2025/11/04	Allen Fang

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1. GENERAL DESCRIPTION

1.1. INTRODUCTION

F070PET-T41 C is a 7.0" color active matrix TFT LCD module G070VW01.0 with projected capacitive multi-touch B101PFU-E06 air bonding.

The display format is intended to support the WVGA mode (800(H) x 480(V)) screen and 262K/16.2M colors (LVDS 6/8-bits). And LED driving circuit for backlight built in PCBA.

1.2. FEATURES

- Long life LED backlight (50k hrs)
- Industrial application
- RoHS product

1.3. APPLICATION

- TFT LCD monitor
- Industrial application

1.4. GENERAL SPECIFICATIONS

Parameter	Specification	Unit	Remarks
Active Area Size	7.0	inch	
Display Area	152.40(H) x 91.44 (V)	mm	
Outline Dimension	170.0 (H) x 111.0(V) x 9.27 (D)	mm	D:PCAP+LCM
Weight	250	g	Typ.
Driver Element	a-Si TFT active matrix	-	
Display Colors	16,194,277(8-bit) / 262,144(6-bit)	Colors	
Electrical Interface	LVDS	-	
Number of Pixels	800(H) x 480 (V)	pixels	
Pixel Pitch	0.1905(H) x 0.1905(W)	mm	
Pixel Arrangement	RGB vertical stripe	-	
Display Mode	AHVA / Normal Black	-	
Color Gamut	60	%	
Touch Technology	Projected Capacitive Multi-Touch Panel	-	
Touch Method	Finger or exclusive pen	-	
Numbers of Touch	10	Points	
Touch Sensor Glass Type	Strengthening Glass	-	
Touch Controller IC	EETI, EXC80W32	-	
Touch Driver Interface	USB / I ² C	-	
Support OS	Windows (Embedded/CE/XP/2000/Vista/7/8/10) / Linux / Android	-	

2. 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 _{CCS}	-0.3	+3.6	V
EDID Drive Voltage	V _{EDID}	-0.3	+3.6	V
Converter Input Voltage	LED_V _{CCS}	-0.3	13	V
Converter Control Signal Voltage	LED_PWM	-0.3	5.3	V
Converter Control Signal Voltage	LED_EN	-0.3	5.3	V
Operating Temperature	T _{op}	-20	+70	°C
Operating Humidity	H _{op}	5	90	%RH
Storage Temperature	T _{st}	-30	+80	°C
Storage Humidity	H _{st}	5	90	%RH
Touch DC Supply Voltage	USB_V _{DD}	-0.3	6.0	V

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

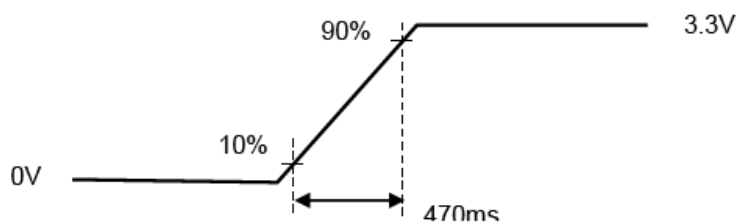
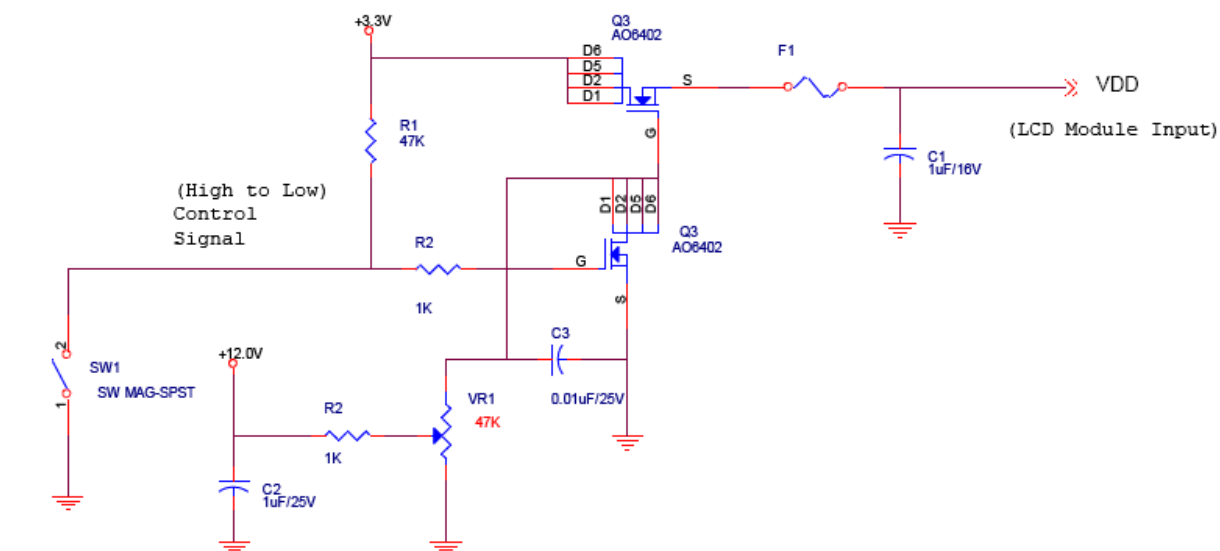
3. ELECTRICAL CHARACTERISTICS

3.1. LCD MODULE

3.1.1. POWER SPECIFICATION

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Logic/LCD Drive Voltage	VDD	3	3.3	3.6	V	
VDD Current	I _{VDD}	-	230	250	mA	64 Gray Bar Pattern (VCCS=3.3V at 60Hz)
LCD Inrush Current	I _{rush}	-	-	3	A	Note 1
VDD Power	P _{VDD}	-	0.76	0.9	W	64 Gray Bar Pattern (VCCS=3.3V at 60Hz)

Notes 1: Measurement condition



VDD rising time



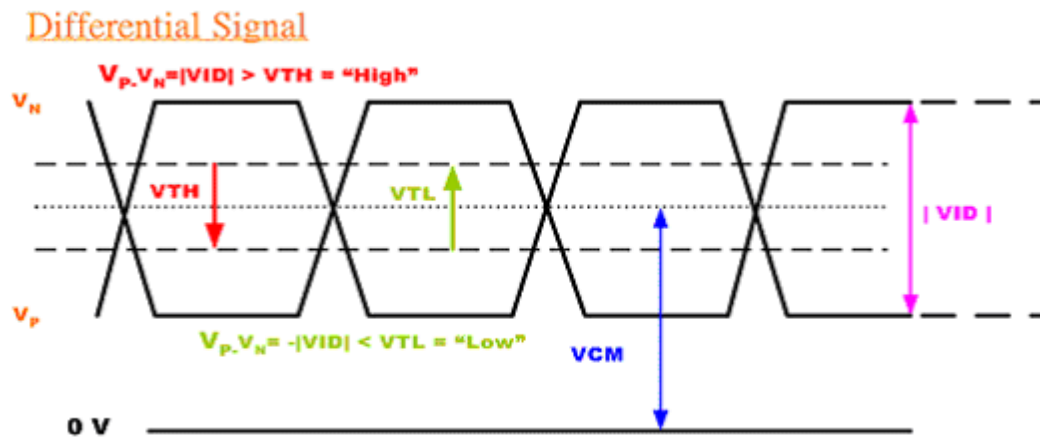
64 Gray pattern

3.1.2. LVDS DC ELECTRICAL CHARACTERISTICS

Input signals should be low or Hi-Z state when VCCS is off.

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Differential Input High Threshold	VTH	-	-	100	mV	VICM=1.2V
Differential Input Low Threshold	VTL	-100	-	-	mV	VICM=1.2V
Input Differential Voltage	VID	100	400	600	mV	
Differential Input Common Mode Voltage	VICM	1.1	-	1.6	V	VTH/VTl=±100mV

Note: LVDS Signal Waveform



3.2. LCD BACKLIGHT UNIT

Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max.		
Input Voltage		LED_VCC	10.8	12	12.6	V	
Input Current		I _{VCC}	-	0.16	-	A	100% analog dimming
Power Consumption		P _{VCC}	-	1.92	2.65	W	100% analog dimming
Inrush Current		I _{rush LED}	-	-	3.0	A	At wising time=470μs
Dimming		Swing Voltage	0.3	-	5.0	V	Analog Dimming
EN Control Level	Backlight on	LED_EN	2	3.3	5	V	
	Backlight off		-	0	0.6	V	
PWM Control Duty Ratio		D _{PWM}	25	-	100	%	
LED Forward Current		I _F	-	50	-	mA	Ta=25°C
LED Forward Voltage		V _F	-	30	-	V	I _F =50mA, Ta=30°C
			-	30	33	V	I _F =50mA, Ta=25°C
			-	29.2	-	V	I _F =50mA, Ta=85°C
LED Power Consumption		P _{LED}	-	1.5	-	W	I _F =50mA, Ta=25°C
LED Life Time		LT _{LED}	50,000	-	-	Hrs	I _F =22.5mA, Ta=25°C

Note:

1. Ta, means ambient temperature of TFT-LCD module.
2. LED_VCC, I_{VCC}, P_{VCC}, I_{LED RUSH} are defined for LED backlight. (100% analog dimming)
3. I_F, V_F, P_{LED}, are defined for LED light bar. There is one LED channel (An1-CA1) in back light unit.
4. If G070VW01.0 module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.
5. Operating life means brightness goes down to 50% initial brightness. Minimum operating life time is estimated data.

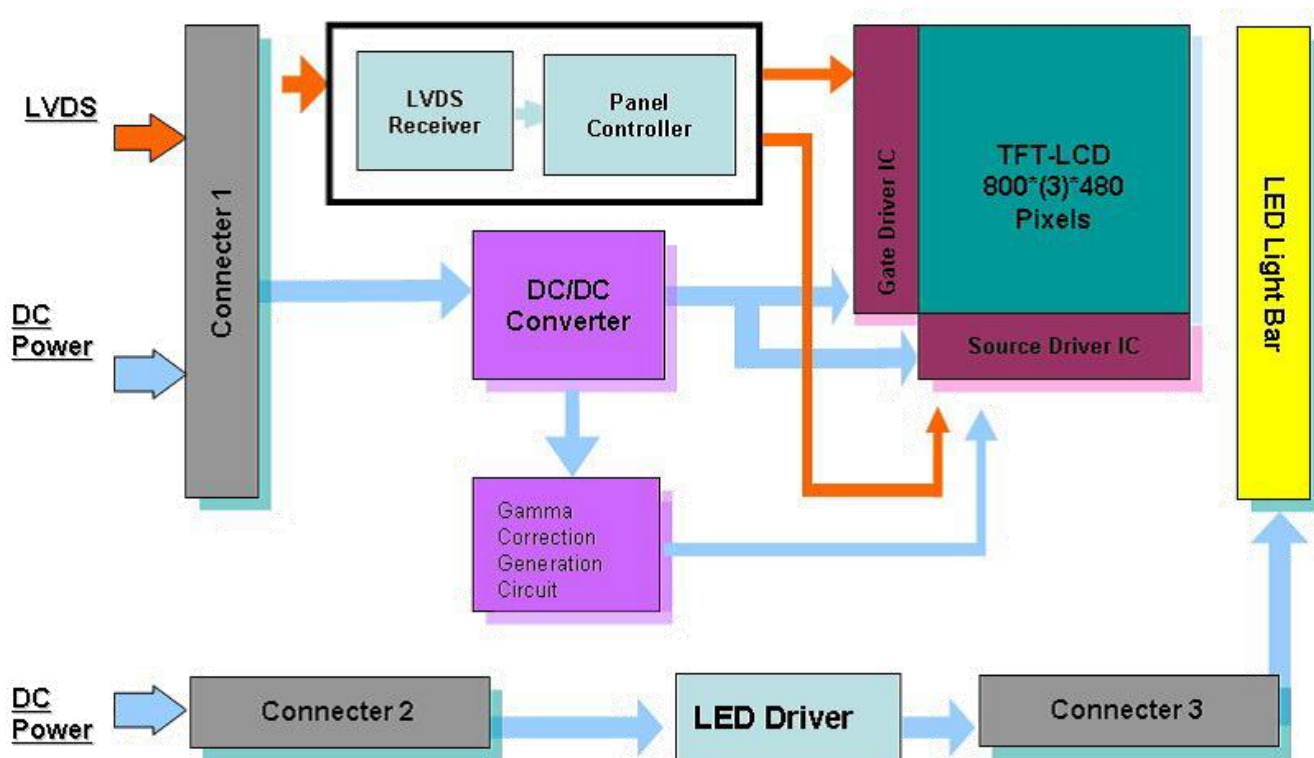
3.3. TOUCH CONTROL

NO.	Item	Specification
1	Touch Controller IC	EXC80W32
2	Number Of Support	10 Fingers Touch
3	Interface	USB & I2C
4	OS	Android, Linux, Win7, Win8, Win10,XP

Remark: Regarding the IC specification, please refer the IC data sheet from supplier

Interface	Symbol	Condition	Min.	Typ.	Max.	Unit
I2C	V_{DD}	-	-	3.3	-	V
USB				5		

3.4. LCD BLOCK DIAGRAM



3.5. LCD INPUT TERMINAL PIN ASSIGNMENT (CN1)

LVDS is a differential signal technology for LCD interface and a high-speed data transfer device.
The Connector Pin definition is as below.

Pin	Symbol	Description
1	V _{DD}	Power supply: +3V (Typical)
2	V _{DD}	Power supply: +3V (Typical)
3	UD	Vertical Reverse Scan Control, When UD=High or NC → Normal Mode. When UD=Low → Vertical Reverse Scan. Note3
4	LR	Horizontal Reverse Scan Control, When LR=High or NC → Normal Mode. When LR=Low → Horizontal Reverse Scan. Note3
5	RX0-	Negative transmission data of pixel 0
6	RX0+	Positive transmission data of pixel 0
7	GND	Ground
8	RX1-	Negative transmission data of pixel 1
9	RX1+	Positive transmission data of pixel 1
10	GND	Ground
11	RX2-	Negative transmission data of pixel 2
12	RX2+	Positive transmission data of pixel 2
13	GND	Ground
14	RXCLK-	Negative of clock
15	RXCLK+	Positive of clock
16	GND	Ground
17	SEL 68	LVDS 6/8 bit select function control, Low or NC → 6 Bit Input Mode. High → 8 Bit Input Mode. Note3
18	NC	No Connection
19	RX3-	Negative transmission data of pixel 3 Pin19:VDD for 6 Bit Input Mode Note4
20	RX3+	Positive transmission data of pixel 3 PIN20:GND for 6 Bit Input Mode Note4

Note1. LCD connector: STM-MSB24013P20HA or compatible

Note2. User's connector Part No.: Hirose-DF19-20S-1C or compatible

Note3. "Low" stands for 0V. "High" stands for 3.3V. "NC" stands for "No Connected."

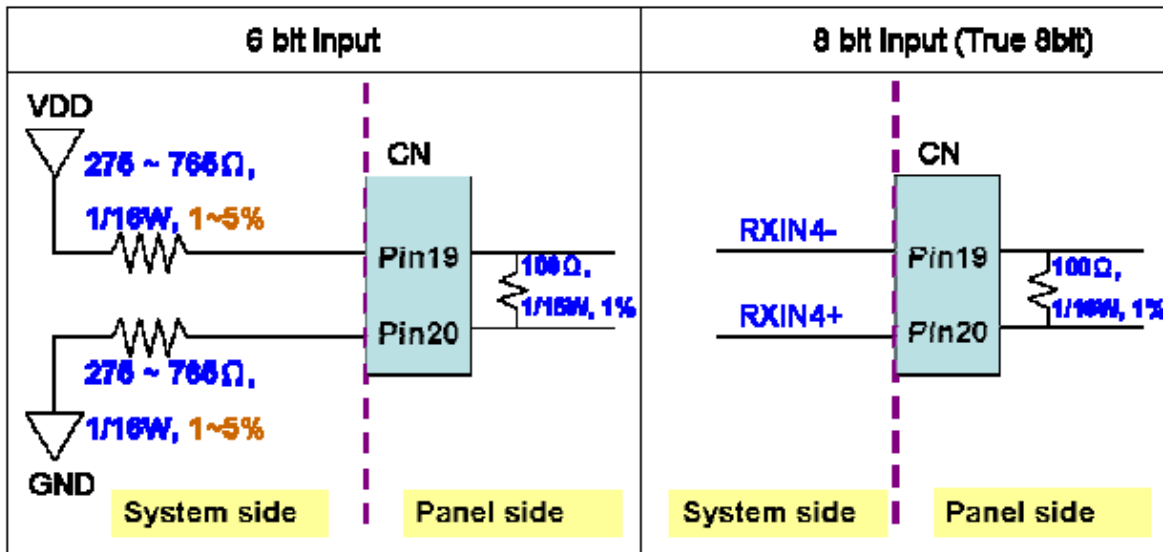
Taiwan Screen Optonics Co., Ltd

TEL: 886-2-82275490 FAX: 886-2-32347264

6F. No.87, Lide St. Jhong-he Dist.,

New Taipei City 235, Taiwan

Note4.

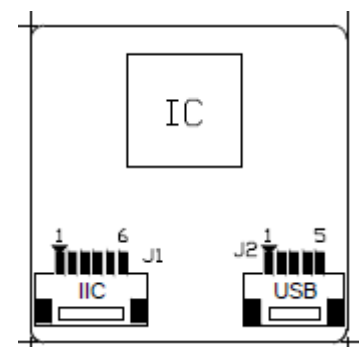


3.6. LED BACKLIGHT UNIT (CN2)

Pin#	Symbol	Description
1	GND	Ground
2	LED EN	On:3.3V, Off: 0V
3	Dimming	Analog Dimming
4	VCC	12V Power Input

3.7. TOUCH DRIVER PIN ASSIGNMENT

J1 I2C		J2 USB	
PIN	NAME	PIN	NAME
1	RST	1	VDD_5.0V
2	VDD_3.3V	2	D-
3	GND	3	D+
4	INT	4	GND
5	SDA_3.3V	5	GND
6	SCL_3.3V		



4. LCD SIGNAL CHARACTERISTIC

4.1. PIXEL FORMAT IMAGE

Following figure shows the relationship between input signal and LCD pixel format.

[illegible]

4.1.1. SCANNING DIRECTION

The following figure shows the image seen from the front view. The arrow indicates the direction of scan.

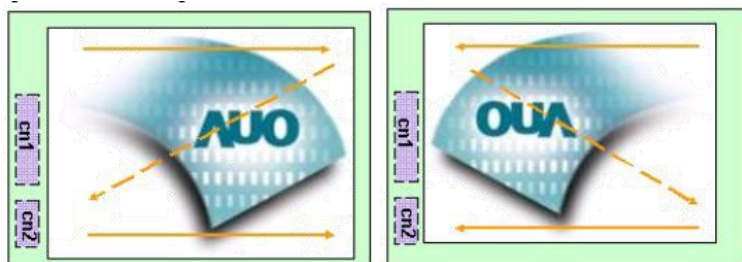


Fig. 1

Fig. 2

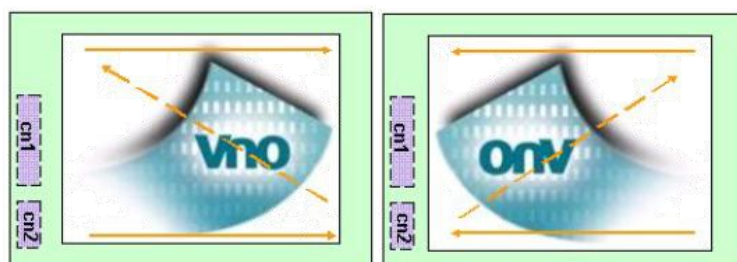


Fig. 3

Fig. 4

Fig. 1 Normal scan (Pin3, UD = High or NC; Pin4, RL = High or NC)

Fig. 2 Reverse scan (Pin3, UD = High or NC; Pin4, RL = Low)

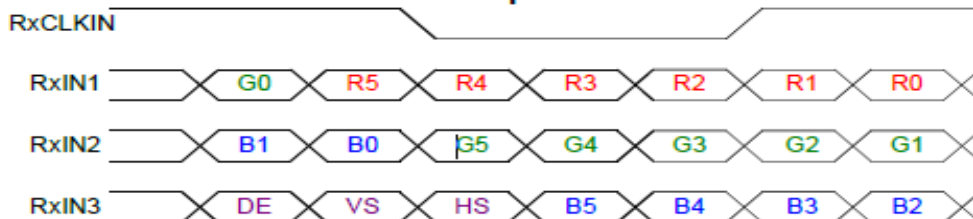
Fig. 3 Reverse scan (Pin3, UD = Low; Pin4, RL = High or NC)

Fig. 4 Reverse scan (Pin3, UD = Low; Pin4, RL = Low)

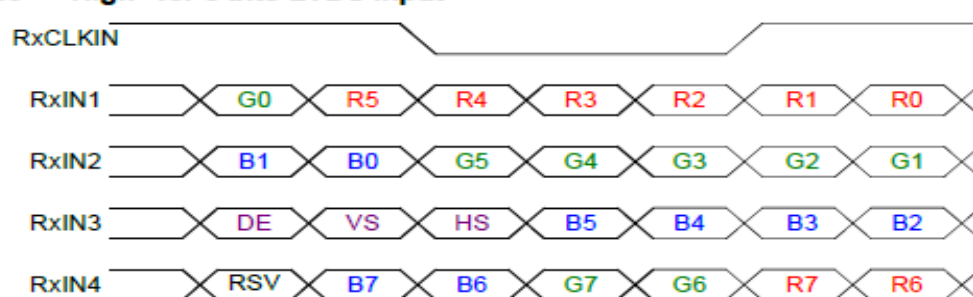
4.2. THE LCD INPUT DATA FORMAT

4.2.1. SEL68 AND ORDER_SEL

SEL68 = "Low" or "NC" for 6 bits LVDS Input



SEL68 = "High" for 8 bits LVDS Input



Note1: Please follow PSWG.

Note2: R/G/B data 7:MSB, R/G/B data 0:LSB

Signal Name	Description	Remark
R7 R6 R5 R4 R3 R2 R1 R0	Red Data 7 (MSB) Red Data 6 Red Data 5 Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0 (LSB)	Red-pixel Data Each red pixel's brightness data consists of these 8 bits pixel data.
G7 G6 G5 G4 G3 G2 G1 G0	Green Data 7 (MSB) GreenData 6 GreenData 5 GreenData 4 GreenData 3 GreenData 2 GreenData 1 GreenData 0 (LSB)	Green-pixel Data Each green pixel's brightness data consists of these 8 bits pixel data.
B7 B6 B5 B4 B3 B2 B1 B0	Blue Data 7 (MSB) Blue Data 6 Blue Data 5 Blue Data 4 Blue Data 3 Blue Data 2 Blue Data 1 Blue Data 0 (LSB)	Blue-pixel Data Each blue pixel's brightness data consists of these 8 bits pixel data.
RxCLKIN+ RxCLKIN-	LVDS Clock Input	
DE	Display Enable	
VS	Vertical Sync	
HS	Horizontal Sync	

Note: Output signals from any system shall be low or Hi-Z state when VDD is off.

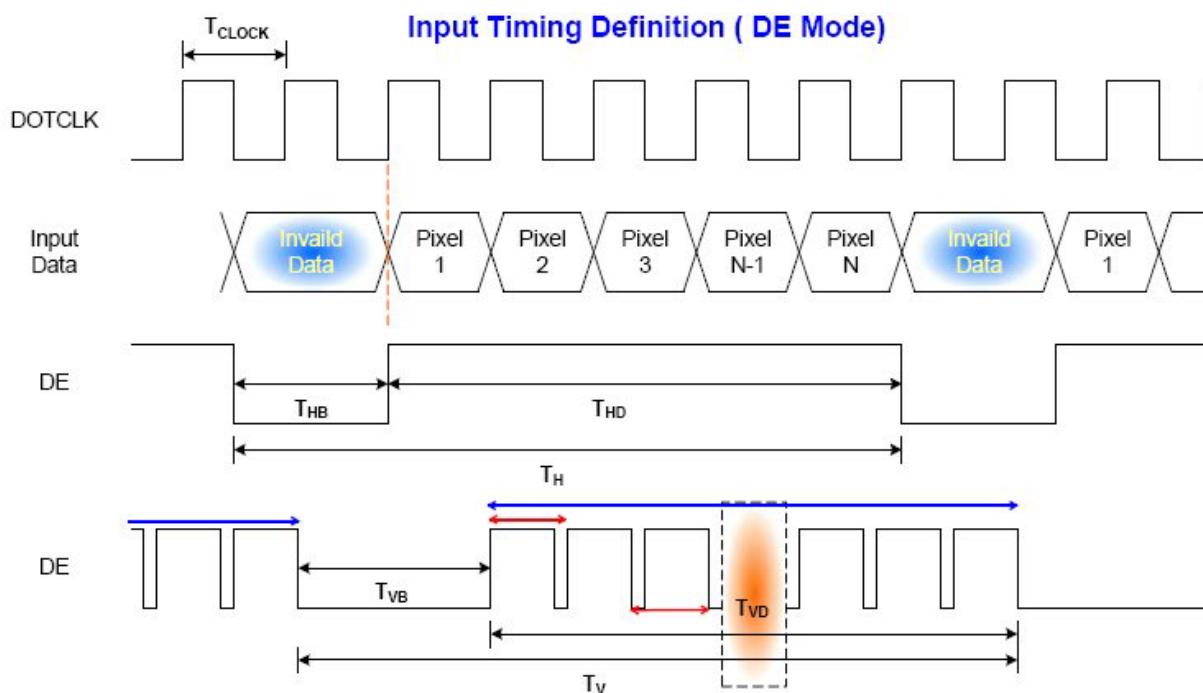
4.3. LCD INTERFACE TIMING

4.3.1. LCD TIMING CHARACTERISTICS

Signal		Symbol	Min.	Typ.	Max.	Unit
Clock Frequency		T_{dclk}	27	33.3	39.4	MHz
Vertical Section	Period	T_V	490	508	530	T_{Line}
	Active	T_{VD}	480	480	480	
	Blanking	T_{VB}	10	28	50	
Horizontal Section	Period	T_H	920	1056	1240	T_{dclk}
	Active	T_{HD}	800	800	800	
	Blanking	T_{HB}	120	256	440	

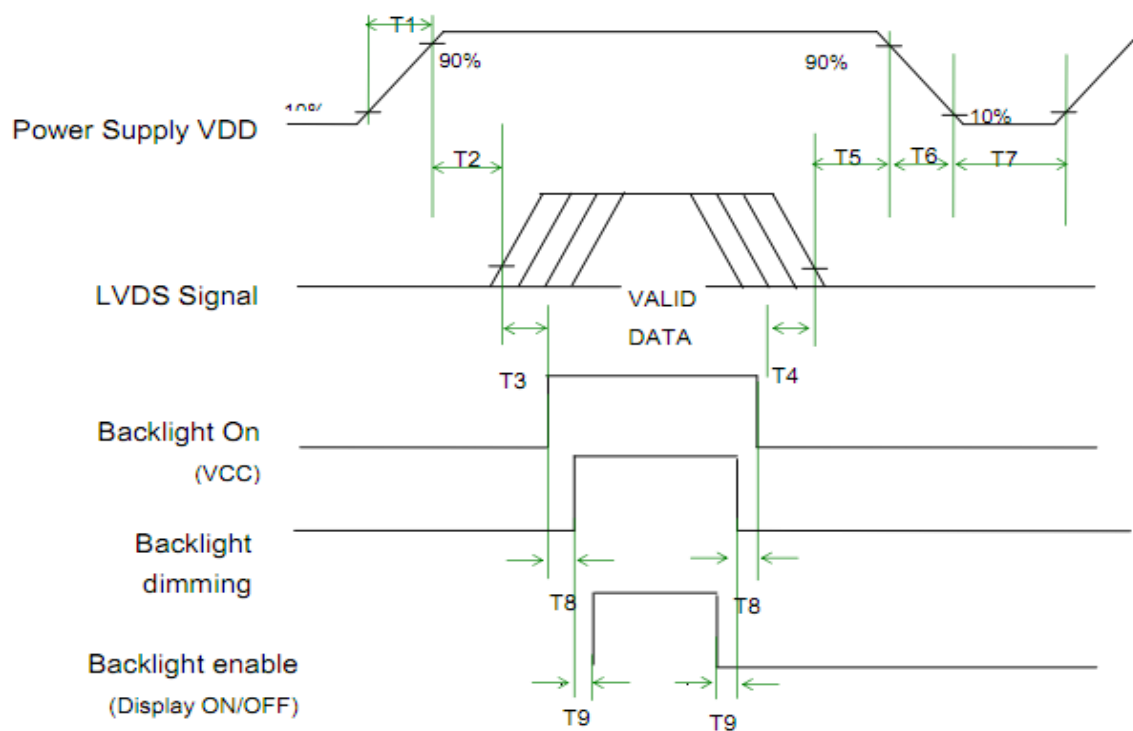
Note: Frame rate is 60Hz. DE mode.

4.3.2. LCD INPUT TIMING DIAGRAM



4.4. POWER SEQUENCE FOR LCD

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



Parameter	Values			Unit
	Min.	Typ.	Max.	
T1	0.5	---	10	ms
T2	0	40	50	ms
T3	300	---	---	ms
T4	200	---	---	ms
T5	0	16	50	ms
T6	0	---	10	ms
T7	1000	---	---	ms
T8	10	---	---	ms
T9	10	---	---	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.

5. OPTICAL CHARACTERISTICS

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

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Coordinates	Red	R _x	$\theta_x=0^\circ, \theta_y=0^\circ$ Grayscale Maximum	0.573	0.623	0.673		1
		R _y		0.311	0.361	0.411		
	Green	G _x		0.276	0.326	0.376		
		G _y		0.530	0.580	0.630		
	Blue	B _x		0.097	0.147	0.197		
		B _y		0.011	0.061	0.111		
	White	W _x		0.26	0.31	0.36		
		W _y		0.28	0.33	0.38		
Contrast Ratio		CR		700	1000	--		4
Surface Luminance (White)		L _{WH}	ILED=50mA (center point)	300	400	--	Cd/m ²	1
Uniformity		δ _{W5p}	5 points	--	--	1.3		1,2,3
Response Time		T _R +T _F	θ _x =0°, θ _y =0°	--	25	35	ms	5
Viewing Angle	Horizontal	θ _r	CR≥10	80	89	--	degree	6
		θ _l		80	89	--	degree	
	Vertical	θ _u		80	89	--	degree	
		θ _d		80	89	--	degree	
Color Gamut				--	60	--	%	1

Note 1: Measurement method

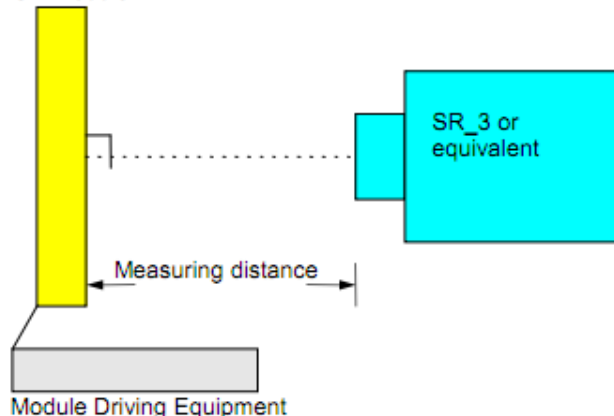
Equipment Pattern Generator, Power Supply, Digital Voltmeter, Luminance meter (SR_3 or equivalent)

Aperture 1° with 50cm viewing distance

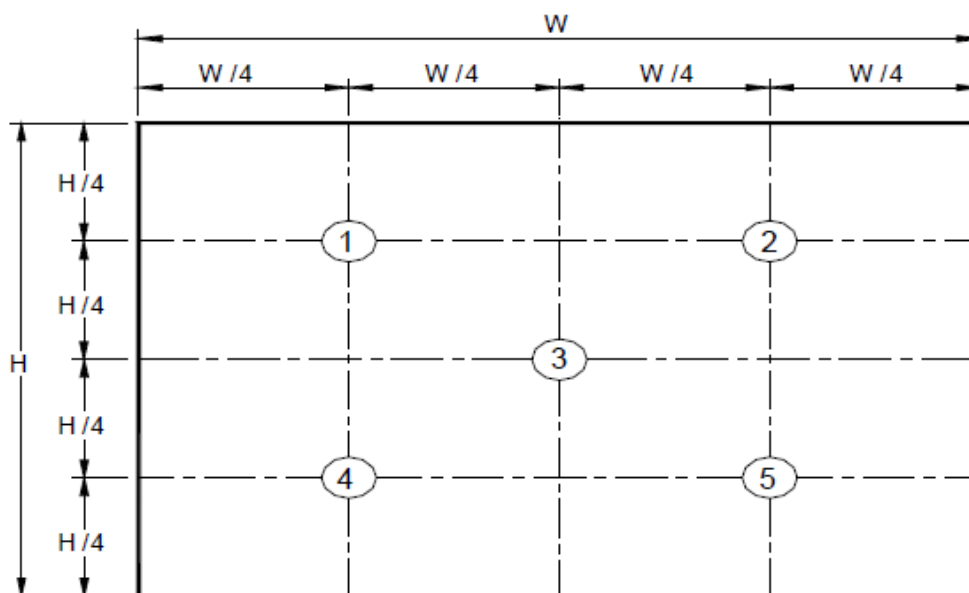
Test Point Center

Environment < 1 lux

LCD Module



Note 2: Definition of 5 points position (Display active area: 152.40(H) x 91.44 (V))



Note 3: The luminance uniformity of 5 points is defined by dividing the minimum luminance values by the maximum test point luminance

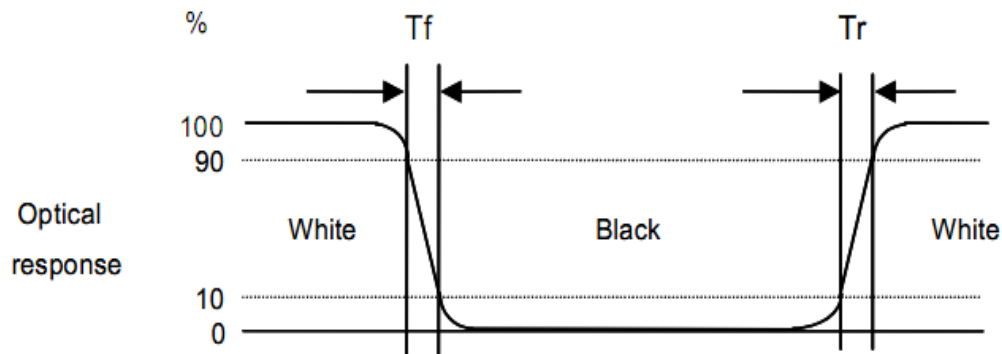
$$\delta_{w5} = \frac{\text{Minimum Brightness of five points}}{\text{Maximum Brightness of five points}}$$

Note 4: Definition of contrast ratio (CR)

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

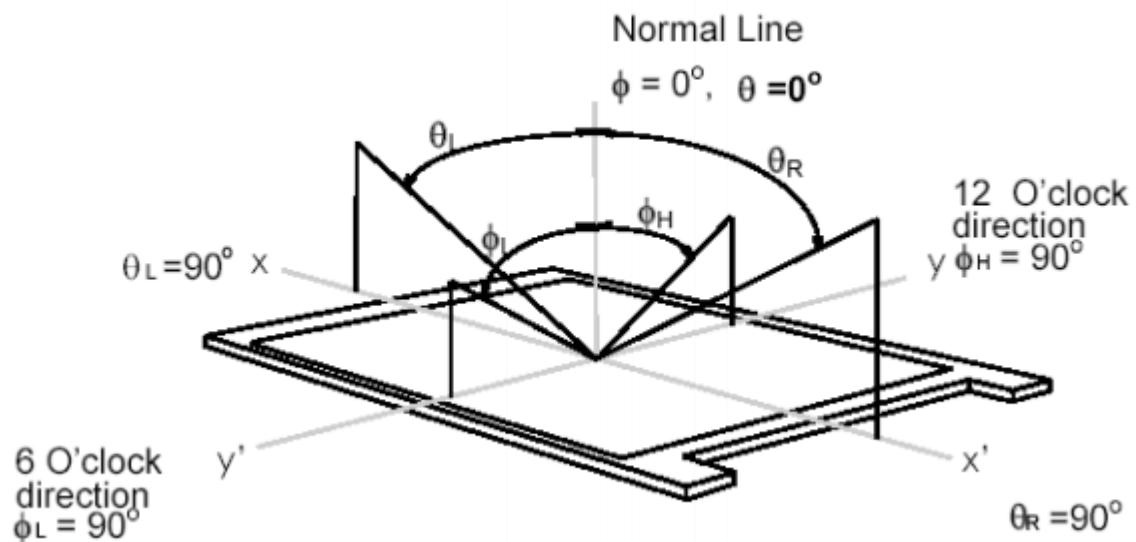
Note 5: Definition of Response Time (T_R , T_F)

The output signals of photo detector are measured when the input signals are changed from “White” to “Black” (falling time) and from “Black” to “White” (rising time), respectively. The response time interval is between 10% and 90% of amplitudes. Please refer to the figure as below.



Note 6: Definition of viewing angle

Viewing angle is the measurement of contrast ratio ≥ 10 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal view angles). The 180° viewing angle range is broken down as below: 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 to its center to develop the desired measurement viewing angle.



6. RELIABILITY TEST ITEMS

Test Item		Condition
1	High temperature/Humidity Storage test	80°C, 90% 240hrs
2	Low temperature storage test	-30°C, 240hrs
3	High temperature/Humidity operation test	70°C, 90%RH, 240hrs
4	Low temperature operation test	-20°C, 240hrs
5	Thermal Cycle storage test	-30°C(30min)~80°C(30min), 10cycles

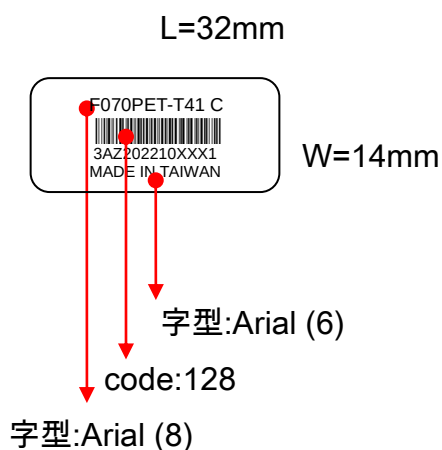
7. LABEL

Model NO. F070PET-T41 C

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	164.55	mm	PCAP : B070PFU-E06
	Vertical	104.70	mm	
	Depth	1.77	mm	
	Horizontal	170.0	mm	LCD : G070VW01.0
	Vertical	111.0	mm	
	Depth	7.5	mm	
Weight		250	g	F070PET-T41 C
Item		Specification		Remarks
PCAP Viewing Area		153.00 mm x 92.04 mm		
PCAP Sensor Area		163.55 mm x 103.71 mm		
PCAP FPC Length		57.00 mm		
PCAP Input method		Finger or exclusive pen		
PCAP Light Transmission		≥85%		
PCAP Operation force		≤10g		Finger Input
PCAP Hardness of surface		≥6H		Pressure 500gf test
PCAP Surface Treatment		Clear Type		

Front View



Back View



9. ENGINEERING DRAWING

