



**SPECIFICATION
FOR
LCM+CTP Module
KD035C-10H-C037B**

MODULE:	KD035C-10H-C037B
CUSTOMER:	

REV	DESCRIPTION	DATE
1.0	FIRST ISSUE	2019.09.07

STARTEK	INITIAL	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

CUSTOMER	INITIAL	DATE
APPROVED BY		



Revision History

[illegible]

Part. No	KD035C-10H-C037B	REV	V1.0	Page 2 of 29
常 备 库 存 Standing Stock	长 期 供 货 Long Time supply	支持小量 NO MOQ	品 种 齐 全 In Full Range	

Contents

1. Block Diagram.....	5
2. Outline dimension.....	6
3. Input terminal Pin Assignment.....	7
3.1 TFT.....	7
3.2 CTP.....	9
4. LCD Optical Characteristics.....	10
4.1 Optical specification.....	10
5. Electrical Characteristics.....	11
5.1 Absolute Maximum Rating (Ta=25 VSS=0V).....	11
5.2 DC Electrical Characteristics.....	11
5.3 LED Backlight Characteristics.....	12
6. TFT AC Characteristic.....	12
6.1 Input signal characteristics.....	13
6.2 Clock and Data Input Waveforms.....	14
7. CTP Specification.....	16
7.1 Electrical Characteristics.....	16
7.1.1 Absolute Maximum Rating.....	16
7.1.2 DC Electrical Characteristics (Ta=25℃).....	16
7.1.3 AC Characteristics.....	17
7.2 POWER ON/Reset Sequence.....	17
7.3 I2C Timing.....	19
8 LCD Module Out-Going Quality Level.....	20
8.1 VISUAL & FUNCTION INSPECTION STANDARD.....	21
8.1.1 Inspection conditions.....	21
8.1.2 Definition.....	21
8.1.3 Sampling Plan.....	22
8.1.4 Criteria (Visual).....	23
9. Reliability Test Result.....	27
9.1 Condition.....	27
10. Cautions and Handling Precautions.....	28
10.1 Handling and Operating the Module.....	28
10.2 Storage and Transportation.....	28
11. Packing.....	29

* Description

This is a color active matrix TFT (Thin Film Transistor) LCD (liquid crystal display) that uses amorphous silicon TFT as a switching device. This model is composed of a Transmissive type TFT-LCD Panel, driver circuit, back-light unit. The resolution of a 3.5" TFT-LCD contains 320x240 pixels, and can display up to 16.7M colors.

* Features

- Low Input Voltage: 3.3V(TYP)
- Display Colors of TFT LCD: 16.7M colors
- Interface: 16/18/24 Bit RGB
- CTP Interface: I2C

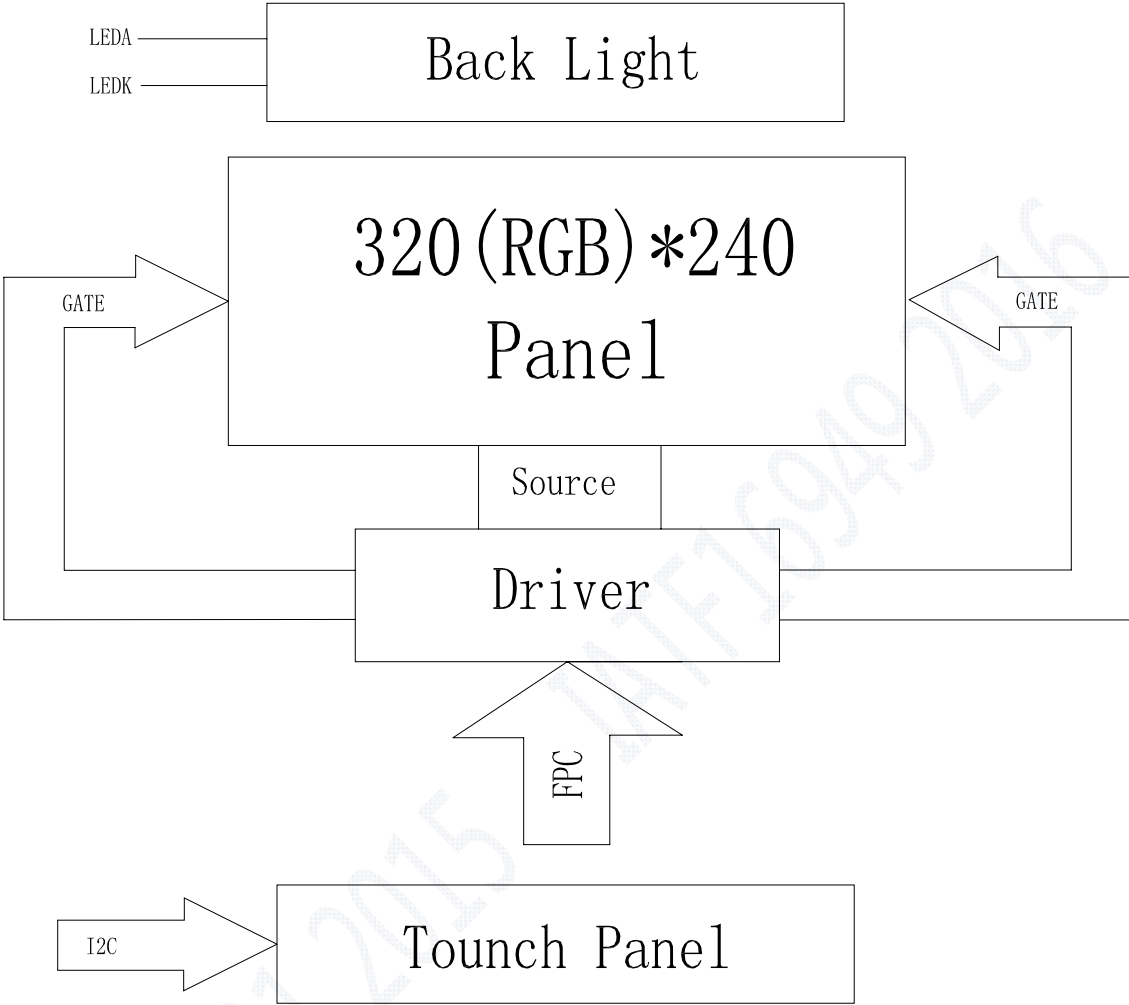
General Information Items	Specification	Unit	Note
	Main Panel		
Display area(AA)	70.08(H) *52.56(V) (3.5inch)	mm	-
CTP View area	70.68(H)*53.16(V)	mm	
Driver element	TFT active matrix	-	-
Display colors	16.7M	colors	-
Number of pixels	320(RGB)*240	dots	-
TFT Pixel arrangement	RGB vertical stripe	-	-
Pixel pitch	0.066 (H) x 0.198 (V)	mm	-
Viewing angle	12 : 00	o'clock	-
TFT Controller IC	HX8238D	-	-
CTP Driver IC	FT5436		
Display mode	Transmissive/Normally White	-	-
Touch mode	Five points and Gestures		
Operating temperature	-20~+70	°C	-
Storage temperature	-30~+80	°C	-

* Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)		86.84		mm	-
	Vertical(V)		74.84		mm	-
	Depth(D)		4.38		mm	-
Weight			--		g	-



1. Block Diagram



3. Input terminal Pin Assignment

3.1 TFT

NO.	SYMBOL	DISCRIPTION	I/O
1	VBL-	Cathode pin OF backlight	P
2	VBL-	Cathode pin OF backlight	P
3	VBL+	Anode pin of backlight	P
4	VBL+	Anode pin of backlight	P
5	YU(NC)	NC	NC
6	XR(NC)	NC	NC
7	NC	NC	NC
8	RESET	System reset pin. Internal pull high. -Connect to VDDIO when not used.	I
9	CSB	Chip select pin of serial interface. Internal pull high. -Leave it open when not used.	I
10	SCK	Clock pin of serial interface. Internal pull high. -Leave it open when not used.	I
11	SDI	Date input pin of serial interface. Internal pull high. -Leave it open when not used.	I
12-19	B0-B7	Blue data input.	I
20-27	G0-G7	Green data input.	I
28-35	R0-R7	Red data input.	I
36	HSYNC	Horizontal Sync input. Negative polarity.	I
37	VSYN	Vertical Sync input. Negative polarity.	I
38	DCLK	Clock signal. Latching data at the rising edge	I
39	NC		
40	NC		
41	VDD	Supply voltage(3.3V).	P
42	VDD	Supply voltage(3.3V).	P
43	YD(NC)	NC	NC
44	XL(NC)	NC	NC



45-47	NC		
48	SEL2	Input pin to select input interface mode.	I
49	SEL1	Input pin to select input interface mode.	I
50	SEL0	Input pin to select input interface mode.	I
51	NC		
52	DE	Data input Enable. Active High to enable the data input Bus under “DE Mode” . -if used SYNC mode Leave it open when not used.	I
53	GND	Ground.	P
54	GND	Ground.	P

3.2 CTP

NO.	SYMBOL	DISCRIPTION	I/O
1	GND	Ground.	P
2	VDDIO	I/O power supply voltage. (1.8-3.3V)	P
3	VDD	Supply voltage. (3.3V)	P
4	SCL	I2C clock input.	I
5	SDA	I2C data input and output	I/O
6	INT	External interrupt to the host.	I
7	RST	External Reset, Low is active.	I
8	GND	Ground.	P

4. LCD Optical Characteristics

4.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit.
Contrast Ratio		CR	$\Theta=0$ Normal viewing angle	200	300	--	
Response time	Rising	T _R		--	15	30	msec
	Falling	T _F			30	50	msec
Color Filter Chromaticity	White	W _X		0.268	0.308	0.348	
		W _Y		0.288	0.328	0.368	
	Red	R _X		0.570	0.610	0.650	
		R _Y		0.322	0.362	0.402	
	Green	G _X		0.298	0.338	0.378	
		G _Y		0.561	0.601	0.641	
	Blue	B _X		0.105	0.145	0.185	
		B _Y		0.033	0.073	0.113	
Viewing angle	Hor.	Θ_L	CR>10	35	45	--	
		Θ_R		35	45	--	
	Ver.	Θ_U		10	15	--	
		Θ_D		35	35	--	
		Option View Direction		12:00			

5. Electrical Characteristics

5.1 Absolute Maximum Rating (Ta=25 VSS=0V)

Characteristics	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VDD	-0.3	4.0	V
Digital interface supply Voltage	VDDIO	-0.3	3.3	V
Operating temperature	T _{OP}	-20	+70	°C
Storage temperature	T _{ST}	-30	+80	°C

5.2 DC Electrical Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
Digital Supply Voltage	VCI/VDD	3.0	3.3	3.6	V	
Normal mode Current consumption	IDD	--	10	20	mA	
Level input voltage	V _{IH}	0.8V _{DD}	--	VDD	V	
	V _{IL}	GND	--	0.2V _{DD}	V	
Level output voltage	V _{OH}	0.9VDD	--	VDD	V	
	V _{OL}	GND	--	0.1VDD	V	

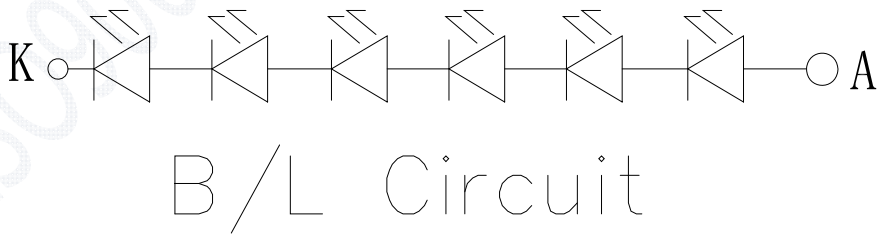
5.3 LED Backlight Characteristics

The back-light system is edge-lighting type with 6 chips White LED

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Forward Current	I_F	15	20	--	mA	
Forward Voltage	V_F		18.6		V	
LCM Luminance	L_V	340	380	--	cd/m2	If=20mA
LED life time	Hr	50000	--	--	Hour	Note1,2
Uniformity	AVg	80	--	--	%	

Note (1) LED life time (Hr) can be defined as the time in which it continues to operate under the condition: $T_a=25\pm3\text{ }^{\circ}\text{C}$, typical IL value indicated in the above table until the brightness becomes less than 50%.

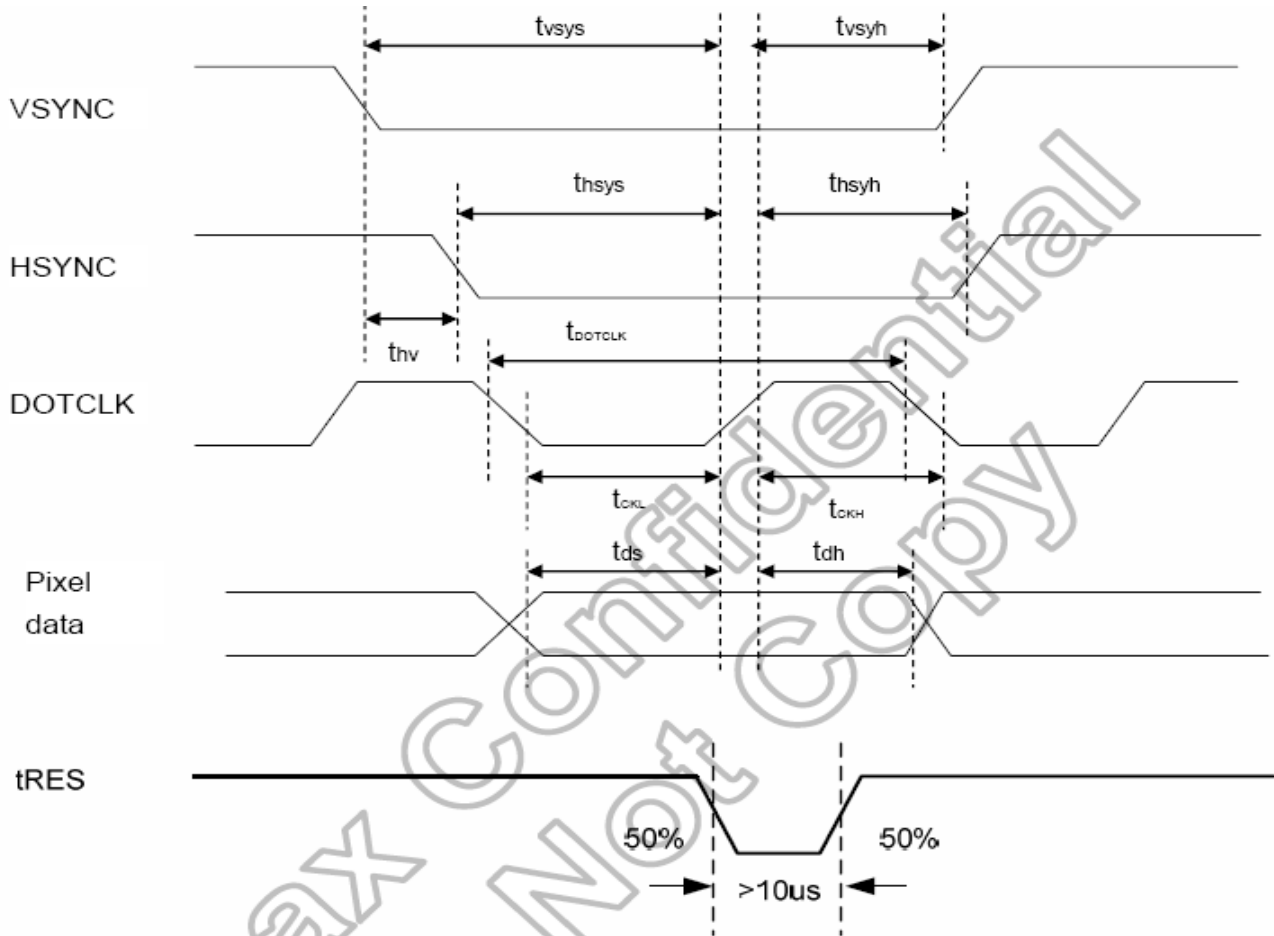
Note (2) The “LED life time” is defined as the module brightness decrease to 50% original brightness at $T_a=25^{\circ}\text{C}$ and If=20mA. The LED lifetime could be decreased if operating If is larger than 20mA. The constant current driving method is suggested.



6. TFT AC Characteristic

6.1 Input signal characteristics

AC Electrical Characteristics (VDDIO=VDD=3.0 to 3.6v, GND=0V, TA=-20 to +85 °C)

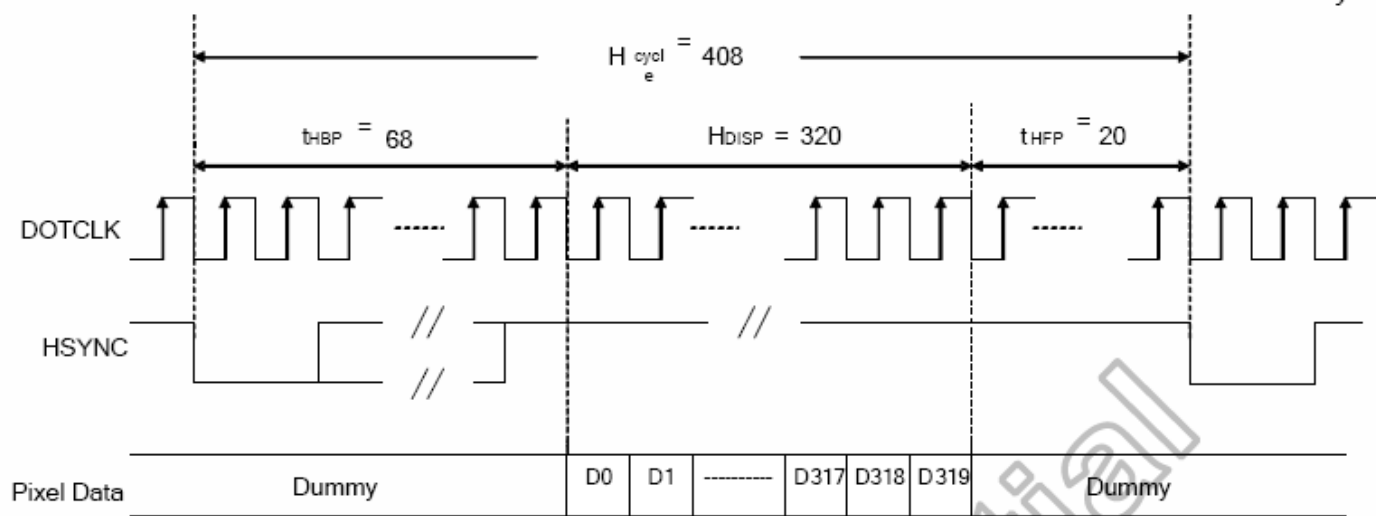


Characteristics	Symbol	Min.		Typ.		Max.		Unit
		24 bit	8 bit	24 bit	8 bit	24 bit	8 bit	
DOTCLK Frequency	fDOTCLK	-	-	6.5	19.5	10	30	MHz
DOTCLK Period	tDOTCLK	100	33.3	154	51.3	-	-	ns
Vertical Sync Setup Time	tvsys	20	10	-	-	-	-	ns
Vertical Sync Hold Time	tvsh	20	10	-	-	-	-	ns
Horizontal Sync Setup Time	thsys	20	10	-	-	-	-	ns
Horizontal Sync Hold Time	thsh	20	10	-	-	-	-	ns
Phase difference of Sync Signal Falling Edge	t _h v	1		-		240		tDOTCLK
DOTCLK Low Period	tCKL	50	15	-	-	-	-	ns
DOTCLK High Period	tCKH	50	15	-	-	-	-	ns
Data Setup Time	tds	12	10	-	-	-	-	ns
Data hold Time	tdh	12	10	-	-	-	-	ns
Reset pulse width	tRES	10		-		-		μs

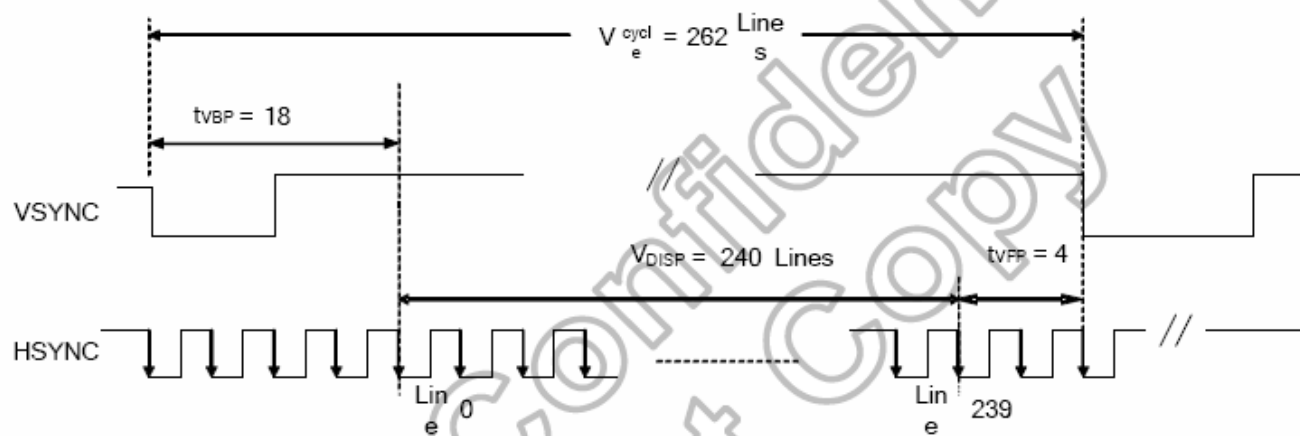
Note: External clock source must be provided to DOTCLK pin of HX8238-D. The driver will not operate if absent of the clocking signal.



6.2 Clock and Data Input Waveforms



(a) Horizontal Data Transaction Timing



(b) Vertical Data Transaction Timing



Characteristics		Symbol	Min.		Typ.		Max.		Unit
			24 bit	8 bit	24 bit	8 bit	24 bit	8 bit	
DOTCLK Frequency		fDOTCLK	-	-	6.5	19.5	10	30	MHz
DOTCLK Period		tDOTCLK	100	33.3	154	51.3	-	-	ns
Horizontal Frequency (Line)		fH	-		14.9		22.35		KHz
Vertical Frequency (Refresh)		fV	-		60		90		Hz
Horizontal Back Porch		tHBP	-	-	68	204	-	-	tDOTCLK
Horizontal Front Porch		tHFP	-	-	20	60	-	-	tDOTCLK
Horizontal Data Start Point		tHBP	-	-	68	204	-	-	tDOTCLK
Horizontal Blanking Period		tHBP + tHFP	-	-	88	264	-	-	tDOTCLK
Horizontal Display Area		HDISP	-	-	320	960	-	-	tDOTCLK
Horizontal Cycle		Hcycle	-	-	408	1224	450	1350	tDOTCLK
Vertical Back Porch		tVBP	-		18		-		Lines
Vertical Front Porch		tVFP	-		4		-		Lines
Vertical Data Start Point		tVBP	-		18		-		Lines
Vertical Blanking Period		tVBP + tVFP	-		22		-		Lines
Vertical Display Area	NTSC	VDISP	-		240		-		Lines
	PAL				280(PALM=0)				
	PAL				288(PALM=1)				
Vertical Cycle	NTSC	Vcycle	-		262		350		Lines
	PAL				313				

7. CTP Specification

7.1 Electrical Characteristics

7.1.1 Absolute Maximum Rating

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	VDD	2.7	3.6	V	
Operating temperature	T _{OP}	-30	+85	°C	
Storage temperature	T _{ST}	-30	+85	°C	

7.1.2 DC Electrical Characteristics (Ta=25°C)

Item	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage/VDD	2.7	3.3	3.47	V	
Normal mode operating current	--	11	--	mA	
Sleep mode operating current	--	42	--	uA	
Monitor mode operating current	--	0.43	--	mA	
Digital Input low voltage/VIL	-0.3	--	0.3*VDD	V	
Digital Input high voltage/VIH	0.7*VDD	--	VDD	V	
Digital Output low voltage/VOL	--	--	0.3*VDD	V	
Digital Output high voltage/VOH	0.7*VDD	--	--	V	



7.1.3 AC Characteristics

AC Characteristics of Oscillators

Item	Symbol	Unit	Test Condition	Min.	Typ.	Max.	Note
OSC clock 1	fosc1	MHz	VDD3 = 2.8V; Ta=25°C	49	50	51	

7.2 POWER ON/Reset Sequence

Reset should be pulled down to be low before powering on and powering down. I2C shouldn't be used by other devices during Reset time after VDD powering on (Trtp). INT signal will be sent to the host after initia-lizing all parameters and then start to report points to the host. If Power is down, the voltage of supply must be below 0.3V and Tpdtr is more than 1ms.

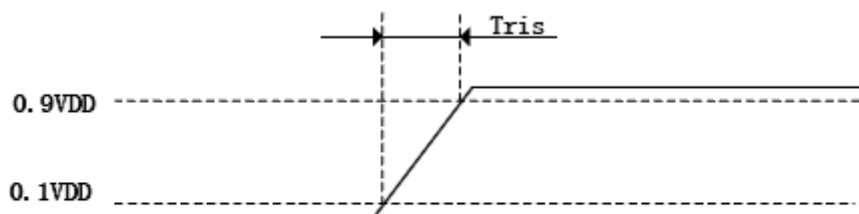


Figure 3-3 Power on time

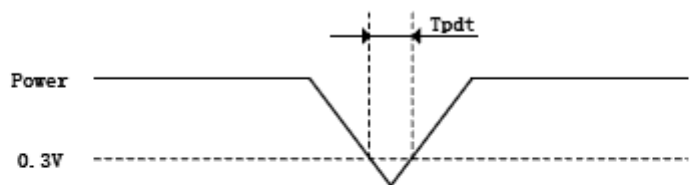


Figure 3-4 Power Cycle requirement

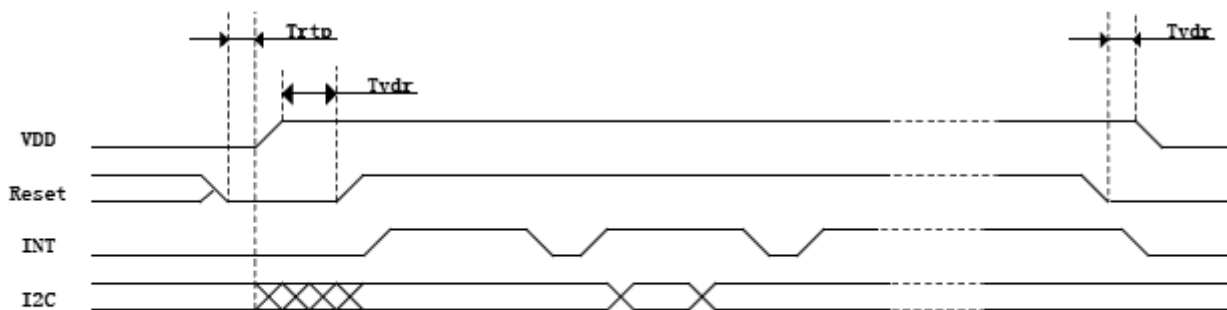


Figure 3-5 Power on Sequence

Reset time must be enough to guarantee reliable reset, the time of starting to report point after resetting approach to the time

Part. No	KD035C-10H-C037B	REV	V1.0	Page 17 of 29
常备库存 Standing Stock	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	



of starting to report point after powering on.

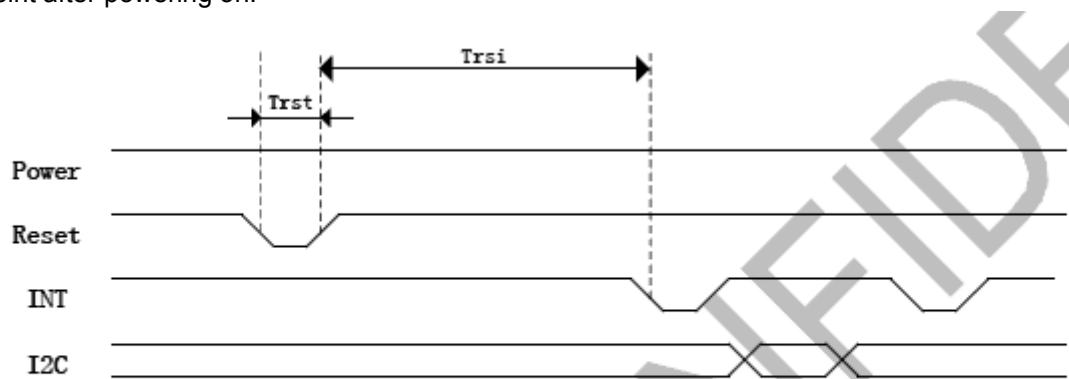


Figure 3-6 Reset Sequence

Table 3-5 Power on/Reset Sequence Parameters

Parameter	Description	Min	Max	Units
Tris	Rise time from 0.1VDD to 0.9VDD	—	5	ms
Tpdt	Time of the voltage of supply being below 0.3V	5	—	ms
Trtp	Time of resetting to be low before powering on	100	—	μs
Tvdr	Reset time after VDD powering on	1	—	ms
Trsi	Time of starting to report point after resetting	—	200	ms
Trst	Reset time	1	—	ms

7.3 I2C Timing

FT5436 supports the I2C interfaces, which can be used by a host processor or other devices.

The I2C is always configured in the Slave mode. The data transfer format is shown in **Figure 2-4**.

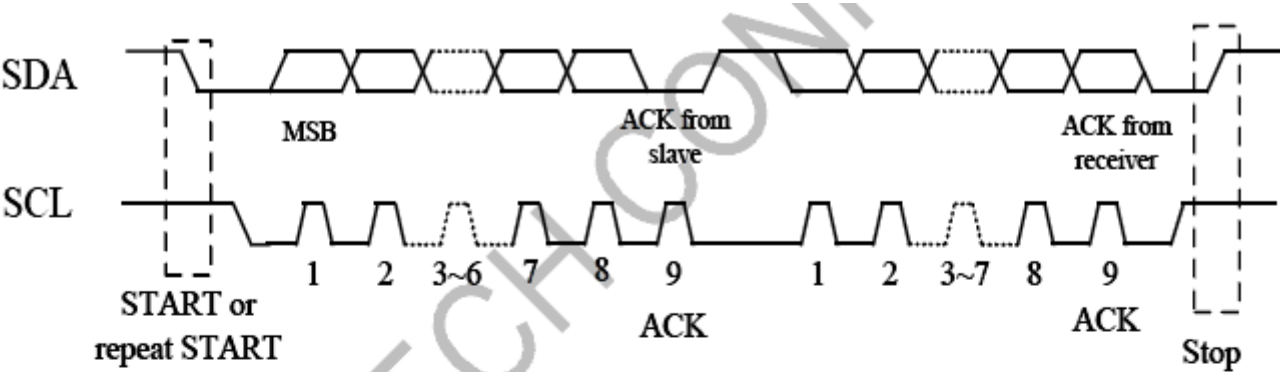


Figure 2-4 I2C Serial Data Transfer Format

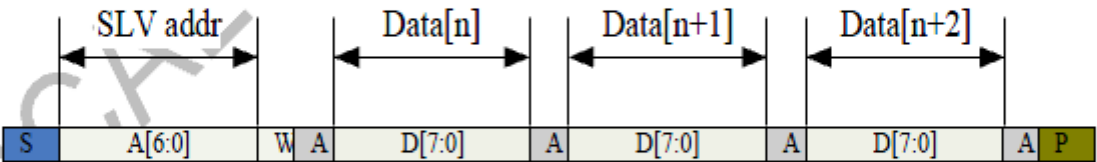


Figure 2-5 I2C master write, slave read

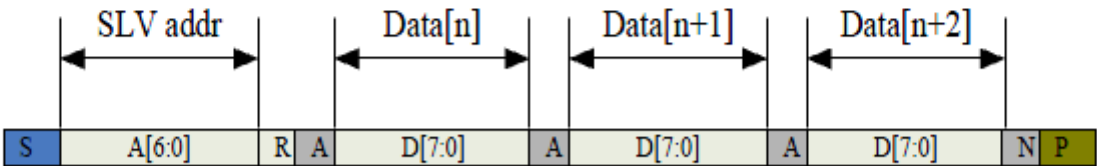


Figure 2-6 I2C master read, slave write

Table 2-1 lists the meanings of the mnemonics used in the above figures.

Table 2-1 Mnemonics Description

Part. No	KD035C-10H-C037B	REV	V1.0	Page 19 of 29
常备库存 Standing Stock	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	

Mnemonics	Description
S	I2C Start or I2C Restart
A[6:0]	Slave address
R/ W	READ/WRITE bit, '1' for read, '0'for write
A(N)	ACK(NACK) bit
P	STOP: the indication of the end of a packet (if this bit is missing, S will indicate the end of the current packet and the beginning of the next packet)

I2C Interface Timing Characteristics is shown in Table 2-2.

Table 2-2 I2C Timing Characteristics

Parameter	Min	Max	Unit
SCL frequency	0	400	KHz
Bus free time between a STOP and START condition	1.3		us
Hold time (repeated) START condition	0.6		us
Data setup time	100		ns
Setup time for a repeated START condition	0.6		us
Setup Time for STOP condition	0.6		us

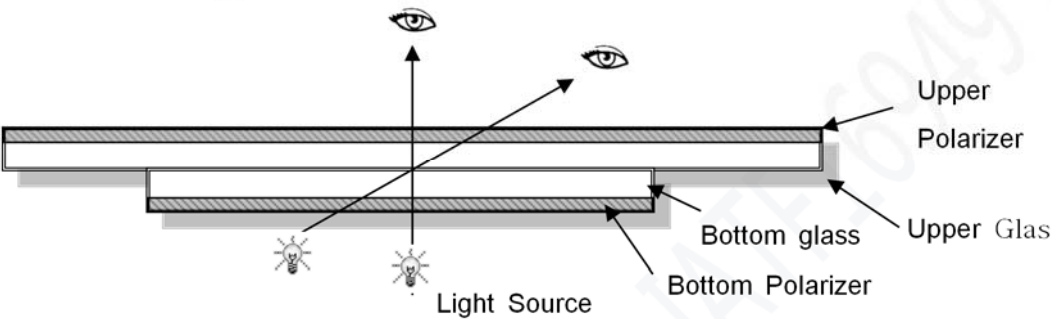
8 LCD Module Out-Going Quality Level

8.1 VISUAL & FUNCTION INSPECTION STANDARD

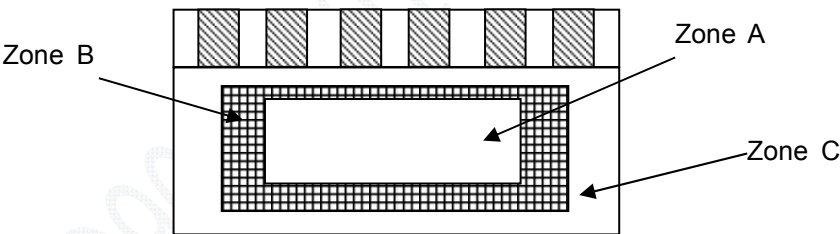
8.1.1 Inspection conditions

Inspection performed under the following conditions is recommended.

- Temperature : 25±5℃
- Humidity : 65%±10%RH
- Viewing Angle : Normal viewing Angle.
- Illumination: Single fluorescent lamp (300 to 700Lux)
- Viewing distance:30-50cm



8.1.2 Definition



- Zone A : Effective Viewing Area(Character or Digit can be seen)
- Zone B : Viewing Area except Zone A
- Zone C : Outside (Zone A+Zone B) which can not be seen after assembly by customer .)

Note:

As a general rule ,visual defects in Zone C can be ignored when it doesn't effect product function or appearance after assembly by customer.

8.1.3 Sampling Plan

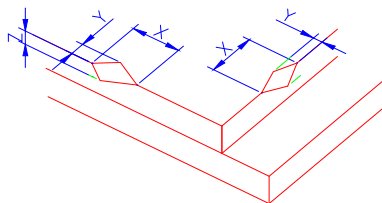
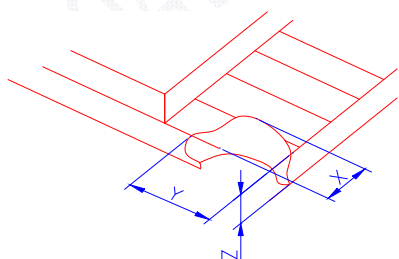
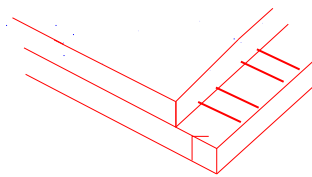
According to GB/T 2828-2003 ; , normal inspection, Class II
AQL:

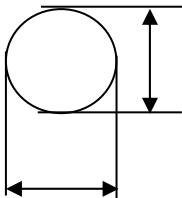
Major defect	Minor defect
0.65	1.5

LCD: Liquid Crystal Display , TP: Touch Panel , LCM: Liquid Crystal Module

No	Items to be inspected	Criteria	Classification of defects
1	Functional defects	1) No display, Open or miss line 2) Display abnormally, Short 3) Backlight no lighting, abnormal lighting. 4) TP no function	Major
2	Missing	Missing component	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed	
4	Color tone	Color unevenness, refer to limited sample	Minor
5	Soldering appearance	Good soldering , Peeling off is not allowed.	
6	LCD/Polarizer/TP	Black/White spot/line, scratch, crack, etc.	

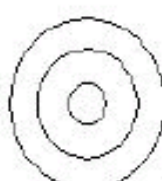
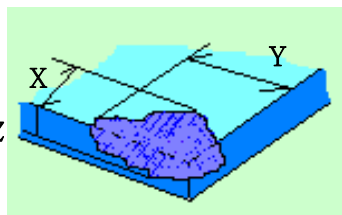
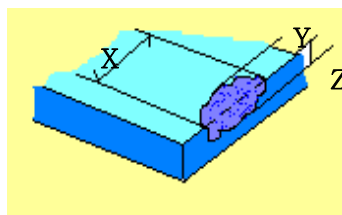
8.1.4 Criteria (Visual)

Number	Items	Criteria(mm)						
1.0 LCD Crack/Broken	(1) The edge of LCD broken	 <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3.0mm</td><td><Inner border line of the seal</td><td>≤T</td></tr></table>	X	Y	Z	≤3.0mm	<Inner border line of the seal	≤T
	X	Y	Z					
	≤3.0mm	<Inner border line of the seal	≤T					
(2)LCD corner broken	 <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3.0mm</td><td>≤L</td><td>≤T</td></tr></table>	X	Y	Z	≤3.0mm	≤L	≤T	
X	Y	Z						
≤3.0mm	≤L	≤T						
(3) LCD crack	 Crack Not allowed							

Number	Items	Criteria (mm)																													
2.0	Spot defect  Y X $\Phi=(X+Y)/2$	① light dot (LCD/TP/Polarizer black/white spot , light dot, pinhole, dent, stain)																													
		<table><tr><th rowspan="2">Zone Size (mm)</th><th colspan="3">Acceptable Qty</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>$\Phi\leq0.10$</td><td colspan="3">Ignore</td></tr><tr><td>$0.10<\Phi\leq0.20$</td><td colspan="3">3(distance $\geq 10\text{mm}$)</td></tr><tr><td>$0.20<\Phi\leq0.25$</td><td colspan="3">2</td></tr><tr><td>$\Phi > 0.25$</td><td colspan="3">0</td></tr></table>	Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi\leq0.10$	Ignore			$0.10<\Phi\leq0.20$	3(distance $\geq 10\text{mm}$)			$0.20<\Phi\leq0.25$	2			$\Phi > 0.25$	0								
		Zone Size (mm)		Acceptable Qty																											
			A	B	C																										
		$\Phi\leq0.10$	Ignore																												
		$0.10<\Phi\leq0.20$	3(distance $\geq 10\text{mm}$)																												
		$0.20<\Phi\leq0.25$	2																												
		$\Phi > 0.25$	0																												
		②Dim spot (LCD/TP/Polarizer dim dot, light leakage、dark spot)																													
		<table><tr><th rowspan="2">Zone Size (mm)</th><th colspan="3">Acceptable Qty</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>$\Phi\leq0.1$</td><td colspan="3">Ignore</td></tr><tr><td>$0.10<\Phi\leq0.20$</td><td colspan="3">3(distance $\geq 10\text{mm}$)</td></tr><tr><td>$0.20<\Phi\leq0.30$</td><td colspan="3">2</td></tr><tr><td>$\Phi > 0.30$</td><td colspan="3">0</td></tr></table>	Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi\leq0.1$	Ignore			$0.10<\Phi\leq0.20$	3(distance $\geq 10\text{mm}$)			$0.20<\Phi\leq0.30$	2			$\Phi > 0.30$	0								
		Zone Size (mm)		Acceptable Qty																											
			A	B	C																										
		$\Phi\leq0.1$	Ignore																												
		$0.10<\Phi\leq0.20$	3(distance $\geq 10\text{mm}$)																												
		$0.20<\Phi\leq0.30$	2																												
		$\Phi > 0.30$	0																												
		③ Polarizer accidented spot																													
		<table><tr><th rowspan="2">Zone Size (mm)</th><th colspan="3">Acceptable Qty</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>$\Phi\leq0.2$</td><td colspan="3">Ignore</td></tr><tr><td>$0.3<\Phi\leq0.5$</td><td colspan="3">2(distance $\geq 10\text{mm}$)</td></tr><tr><td>$\Phi>0.5$</td><td colspan="3">0</td></tr></table>	Zone Size (mm)	Acceptable Qty			A	B	C	$\Phi\leq0.2$	Ignore			$0.3<\Phi\leq0.5$	2(distance $\geq 10\text{mm}$)			$\Phi>0.5$	0												
		Zone Size (mm)		Acceptable Qty																											
			A	B	C																										
		$\Phi\leq0.2$	Ignore																												
		$0.3<\Phi\leq0.5$	2(distance $\geq 10\text{mm}$)																												
		$\Phi>0.5$	0																												
		Line defect (LCD/TP /Polarizer black/white line, scratch, stain)	<table><tr><th rowspan="2">Width(mm)</th><th rowspan="2">Length(mm)</th><th colspan="3">Acceptable Qty</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>$\Phi\leq0.03$</td><td>Ignore</td><td colspan="3">Ignore</td></tr><tr><td>$0.03<W\leq0.05$</td><td>$L\leq3.0$</td><td colspan="3">$N\leq2$</td></tr><tr><td>$0.05<W\leq0.08$</td><td>$L\leq2.0$</td><td colspan="3">$N\leq2$</td></tr><tr><td>$0.08<W$</td><td colspan="4">Define as spot defect</td></tr></table>	Width(mm)	Length(mm)	Acceptable Qty			A	B	C	$\Phi\leq0.03$	Ignore	Ignore			$0.03<W\leq0.05$	$L\leq3.0$	$N\leq2$			$0.05<W\leq0.08$	$L\leq2.0$	$N\leq2$			$0.08<W$	Define as spot defect			
		Width(mm)	Length(mm)			Acceptable Qty																									
				A	B	C																									
		$\Phi\leq0.03$	Ignore	Ignore																											
$0.03<W\leq0.05$	$L\leq3.0$	$N\leq2$																													
$0.05<W\leq0.08$	$L\leq2.0$	$N\leq2$																													
$0.08<W$	Define as spot defect																														

3.0	Polarizer Bubble	Zone Size (mm) Acceptable Qty A B C
		<div><div>$\Phi \leq 0.2$</div><div>Ignore</div><div rowspan="4">Ignore</div></div>
		$0.2 < \Phi \leq 0.4$ $3(\text{distance} \geq 10 \text{ m})$
		$0.4 < \Phi \leq 0.6$ 2
		$0.6 < \Phi$ 0

4.0	SMT	According to IPC-A-610C class II standard . Function defect and missing part are major defect ,the others are minor defect.
-----	-----	---

5.0	TP Related				 1 规律性  2 非规律性  似牛顿环					
		Newton Ring	Newton Ring area>1/3 TP are a NG Newton Ring area≤1/3 TP are a OK							
		TP corner broken X : length Y : width Z : height	<table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>X≤3.0mm</td><td>Y≤3.0mm</td><td>Z<LCD thickness</td></tr></table> * Circuitry broken is not allowed.	X	Y	Z	X≤3.0mm	Y≤3.0mm	Z<LCD thickness	
		X	Y	Z						
X≤3.0mm	Y≤3.0mm	Z<LCD thickness								
TP edge broken X : length Y : width Z : height	<table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>X≤6.0mm</td><td>Y≤2.0mm</td><td>Z<LCD thickness</td></tr></table> * Circuitry broken is not allowed.	X	Y	Z	X≤6.0mm	Y≤2.0mm	Z<LCD thickness			
X	Y	Z								
X≤6.0mm	Y≤2.0mm	Z<LCD thickness								

Criteria (functional items)

Number	Items	Criteria (mm)
1	No display	Not allowed
2	Missing segment	Not allowed
3	Short	Not allowed
4	Backlight no lighting	Not allowed
5	TP no function	Not allowed

9. Reliability Test Result

9.1 Condition

Item	Condition	Sample Size	Test Result	Note
Low Temperature Operating Life test	-20℃, 96HR	3ea	pass	-
Thermal Humidity Operating Life test	70℃90%RH, 96HR	3ea	pass	-
Temperature Cycle ON/OFF test	-10℃ ↔ 60℃, ON/OFF, 20CYC	3ea	pass	(1)
High Temperature Storage test	80℃, 96HR	3ea	pass	-
Low Temperature Storage test	-30℃, 96HR	3ea	pass	-
ESD test	150pF, 330Ω, ±6KV(Contact)/± 8KV(Air), 5 points/panel, 10 times/point	3ea	pass	
Thermal Shock Resistance	The sample should be allowed to stand the following 5 cycles of operation: TSTL for 30 minutes -> normal temperature for 5 minutes -> TSTH for 30 minutes -> normal temperature for 5 minutes, as one cycle, then taking it out and drying it at normal temperature, and allowing it stand for 24 hours	3ea	pass	
Box Drop Test	1 Corner 3 Edges 6 faces, 66cm(MEDIUM BOX)	1box	pass	-

Note (1) ON Time over 10 seconds, OFF Time under 10 seconds

Part. No	KD035C-10H-C037B	REV	V1.0	Page 27 of 29
常备库存 Standing Stock	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	

10. Cautions and Handling Precautions

10.1 Handling and Operating the Module

- (1) When the module is assembled, it should be attached to the system firmly.
Do not warp or twist the module during assembly work.
- (2) Protect the module from physical shock or any force. In addition to damage, this may cause improper operation or damage to the module and back-light unit.
- (3) Note that polarizer is very fragile and could be easily damaged. Do not press or scratch the surface.
- (4) Do not allow drops of water or chemicals to remain on the display surface.
If you have the droplets for a long time, staining and discoloration may occur.
- (5) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
- (6) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane.
Do not use ketene type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
- (7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs, or clothes, it must be washed away thoroughly with soap.
- (8) Protect the module from static; it may cause damage to the CMOS ICs.
- (9) Use finger-stalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
- (10) Do not disassemble the module.
- (11) Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
- (12) Pins of I/F connector shall not be touched directly with bare hands.
- (13) Do not connect, disconnect the module in the "Power ON" condition.
- (14) Power supply should always be turned on/off by the item 6.1 Power On Sequence & 6.2 Power Off Sequence

10.2 Storage and Transportation.

- (1) Do not leave the panel in high temperature, and high humidity for a long time.
It is highly recommended to store the module with temperature from 0 to 35 °C and relative humidity of less than 70%
- (2) Do not store the TFT-LCD module in direct sunlight.
- (3) The module shall be stored in a dark place. When storing the modules for a long time, be sure to adopt effective measures for protecting the modules from strong ultraviolet radiation, sunlight, or fluorescent light.
- (4) It is recommended that the modules should be stored under a condition where no condensation is allowed. Formation of dewdrops may cause an abnormal operation or a failure of the module.
In particular, the greatest possible care should be taken to prevent any module from being operated where condensation has occurred inside.
- (5) This panel has its circuitry FPC on the bottom side and should be handled carefully in order not to be stressed.

Part. No	KD035C-10H-C037B	REV	V1.0	Page 28 of 29
常备库存 Standing Stock	长期供货 Long Time supply	支持小量 NO MOQ	品种齐全 In Full Range	

11. Packing

