

 <b>INNOLUX DISPLAY CORP.</b>	<b>工程變更客戶通知書</b> <b>Engineering Change Notices to Customer</b>	保管單位 Storage	AVQA/ CS
		保存年限 Retention Period	3 年

**Subject of Change :**

7SD NJ070NA-23A 設計變更  
7SD NJ070NA-23A **design change**

客戶確認

**For customers' acceptance**

<b>客戶名稱</b> <b>Customer Name:</b> _____  <b>核准人</b> <b>Approved by:</b> _____  <b>核准日期</b> <b>Date:</b> _____	<b>印章</b> <b>Seal:</b>
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### 變更主題

#### Subject of Change

7SD NJ070NA-23A 設計變更

7SD NJ070NA-23A design change

### 變更原因

#### Reason of Change

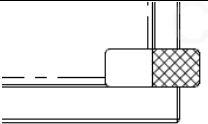
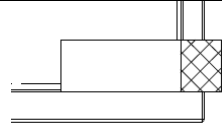
Novatek IC 2021/12 EOL, 無替代 IC 可切換,需換玻璃 & IC

Novatek IC 2021/12 EOL, no compatible IC,need change panel & drive IC

### 變更內容

Item	Detail	Before	After	Remark
1	Panel	Old (7041)	New (7005)	Panel 外形尺寸： 161.90mm*94.72mm→161.81mm*94.52mm Outline dimension: 161.90mm*94.72mm→161.81mm*94.52mm
2	背光膠框 Housing	In house	In house	由於 Panel 外形尺寸變更，玻璃擋牆相關尺寸隨之調整 Due to the outline dimension of the panel changed, the relevant dimension of the panel retaining wall was adjusted accordingly.
3	軟性電路板 Main FPC	弘信	景旺	1.由於 Panel 更換，FPCA Bonding 區寬度變更 2.輸入端 FPC 從單層變成兩層，為了滿足 LVDS 信號差分阻抗符合 LVDS 規格要求。 3. Main FPC layout 變更,增加 gamma 電阻。 4.元件數量增加，元件區尺寸隨之擴大，背面補強板外形尺寸增加；為防止絕緣保護膠帶 Peeling，增大膠帶尺寸 1.Due to the panel changed, the width of FPCA Bonding area changed. 2.Change main FPC to 2layers for keeping LVDS differential impedance. 3. Main FPC layout change, add Gamma resistors. 4.As the number of components increases,the size of the component area expands,and the size of the back stiffener plate increases; to prevent the insulation protection tape from peeling,increase the size of the tape.
4	鐵框 Bezel	In house	In house	由於 FPCA Bonding 區寬度變更，Bezel 相關尺寸變更 Due to the width of FPCA bonding area changed, the relevant dimension of bezel changed.

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Item	Detail	Before	After	Remark
5	Drive IC	NOVATEK NT51008+ NT52003B	Fitipower EK79001AX+ EK73215BCGA	因 Novatek driver IC,更換為 Fitipower,搭配新玻璃。Novatek Driver IC will EOL, change Driver IC to Fitipower for matching new cell.
6	Bottom BEF	With	With out	因為 7005 panel 穿透高於 7041 panel , 為降低亮度調整 film 材架構。 Because the penetration of 7005 panel is higher than 7041 panel, adjust the film material structure to reduce the brightness.
7	Bottom Diffuser	1PCS	2PCS	
8	異方性導電膠 ACF	Dexerials CP538SA	Dexerials PAF1000	Vendor Hitachi change name to Showa
		Hitachi AC-7813YM	Showa AC-7813YM	
9	Lightbar FPC	同泰	同泰	由於 FPCA 上焊盤位置有調整, 為保證焊接正常, Lightbar FPC 需加長, 保護膠帶貼附位置隨之變更。 Due to the adjustment of the pad position on FPCA , Lightbar FPC needs to be lengthened to ensure normal welding, the position of the protective tape is changed accordingly.
10	Pull tape			Pull tape change Before: 20x8mm After: 40x13mm

### Contents of Change

1、外觀差異 Look difference

■Yes    □No

2、功能差異 Function difference

■Yes    □No

1. 輸入電源電壓有變,如下表.

Input power Voltages are changed as below table.

變更前/Before

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	DV <sub>DD</sub>	3.0	3.3	3.6	V	Note 2
	AV <sub>DD</sub>	10.8	11	11.2	V	
	V <sub>GH</sub>	19.7	20	20.3	V	
	V <sub>GL</sub>	-6.5	-6.8	-7.1	V	
Input signal voltage	V <sub>COM</sub>	3.3	3.8	4.3	V	Note 4
Input logic high voltage	V <sub>IH</sub>	0.7 DV <sub>DD</sub>	0.9 DV <sub>DD</sub>	DV <sub>DD</sub>	V	Note 3
Input logic low voltage	V <sub>IL</sub>	0	0.1 DV <sub>DD</sub>	0.3 DV <sub>DD</sub>	V	

變更后/After

5.ELECTRICAL SPECIFICATION

Item	Symbol	Specification			Unit	Note
		Min.	Typ.	Max.		
Digital power	VDD	2.8	3.3	3.5	V	(1)
Analog power	AVDD	11.9	12	12.1	V	(1)
TFT gate on voltage	VGH	14.5	15	15.5	V	(2)
TFT gate on voltage	VGL	-10.5	-10	-9.5	V	(3)
TFT common electrode voltage	Vcom(DC)	4.05	4.55	5.05	V	(4)

2. 取消 CABC 功能/Cancel CABC function

變更前/Before

# 工程變更客戶通知書

## Engineering Change Notices to Customer

保管單位 Storage	AVQA/ CS
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25	GND	P	Ground	
26	NC	---	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note3
34	U/D	I	Vertical inversion	Note3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note2
37	CABCEN0	I	CABC H/W enable	Note2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

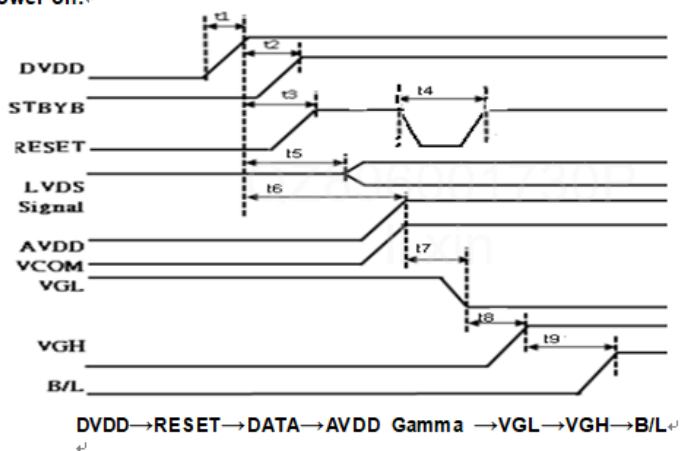
### 變更后/After

25	GND	P	Ground	
26	NC	---	No connection	
27	NC	---	No connection	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note2
34	U/D	I	Vertical inversion	Note2
35	VGL	P	Gate OFF Voltage	
36	NC	---	No connection	
37	NC	---	No connection	
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

### 3. 開關機時序/Power On/Off Sequence.

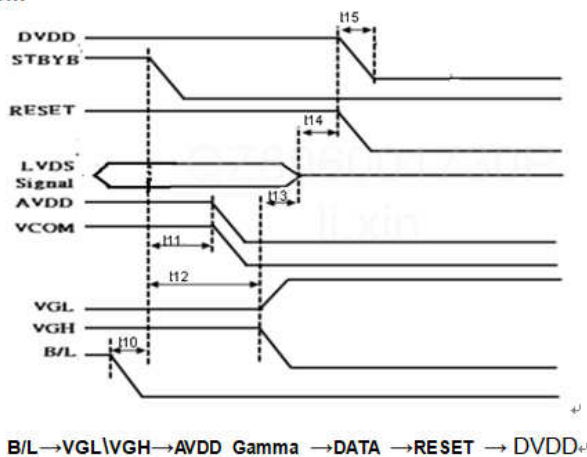
#### 變更前/Before

a. Power on:



Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t1	0.5	5	20	ms
t2	0	0.25	0.5	ms
t3	0.5	1	3	ms
t4	1	2	5	ms
t5	3	15	20	ms
t6	40	45	50	ms
t7	0.04	3	10	ms
t8	0.04	8	10	ms
t9	100	180	200	ms

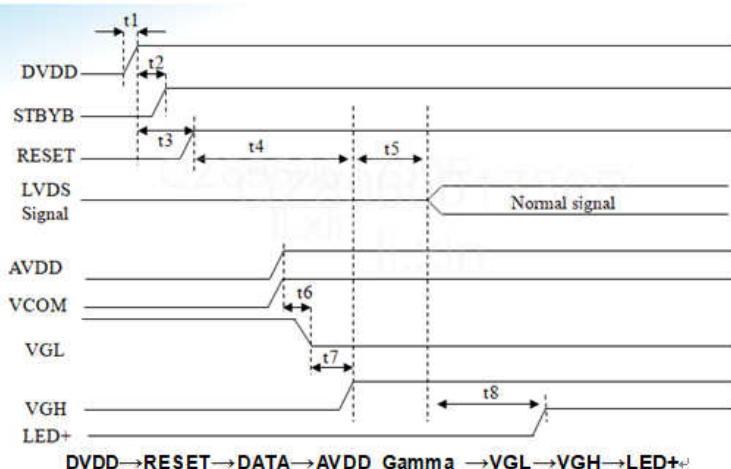
b. Power off:



Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t10	0	5	20	ms
t11	70	75	80	ms
t12	100	105	110	ms
t13	50	70	100	ms
t14	0	50	100	ms
t15	0	10	20	ms

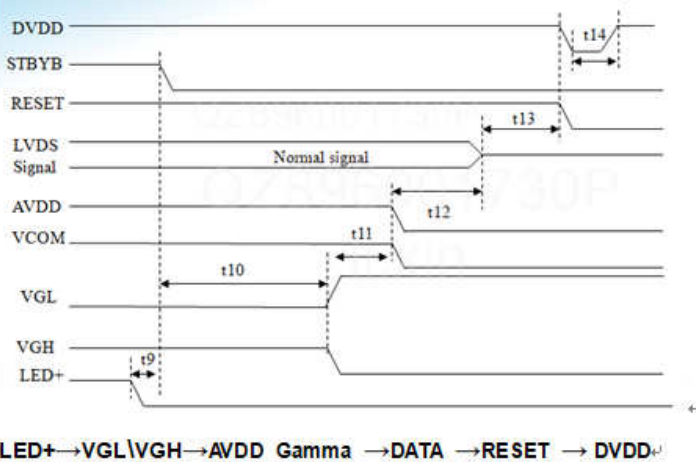
變更后/After

a. Power on:



Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t1	0.5	5	20	ms
t2	0	0.25	0.5	ms
t3	1	10(RC Delay)	12	ms
t4	90	-	150	ms
t5	30	-	50	ms
t6	20	-	75	ms
t7	20	-	75	ms
t8	150	-	-	ms

b. Power off:



Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t9	0.1	1	10	ms
t10	120	150	200	ms
t11	50	100	200	ms
t12	1	10	20	ms
t13	0.1	10	100	ms
t14	500	-	-	ms

變更管理

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### **Change Control**

- 1、規劃時間 Planning Time: 2021 年 11 月
- 2、切換時間 Switching Time: 2022 年 2 月
- 3、產品包裝 Product Package  
☒The same box    ☐The different box
- 4、產品規格書 Product Spec  
☐No change    ☒Change