



DATA IMAGE CORPORATION

TFT Module Specification

Preliminary

ITEM NO.: FG0700G3DUSWMGT1

Table of Contents

1. COVER & CONTENTS	1
2. RECORD OF REVISION	2
3. APPLICATION.....	3
4. GENERAL SPECIFICATIONS	3
5. ABSOLUTE MAXIMUM RATINGS	3
6. ELECTRICAL CHARACTERISTICS	3
7. INTERFACE SPECIFICATIONS	5
8. OPTICAL CHARACTERISTIC	9
9. PIN CONNECTIONS	12
10. BLOCK DIAGRAM	14
11. TOUCH PANEL CHARACTERISTICS.....	15
12. QUALITY ASSURANCE	16
13. APPEARANCE SPECIFICATION	17
14. LCM PRODUCT LABEL DEFINE	15
15. PRECAUTIONS IN USE LCM	20
16. OUTLINE DRAWING	23
17. PACKAGE INFORMATION.....	24

Customer Companies	R&D Dept.	Q.C. Dept.	Eng. Dept.	Prod. Dept.
	ALEX	JOE	GARY	KEN
Approved by	Version:	Issued Date:	Sheet Code:	Total Pages:
	2	30/JUL/13'		24

3. APPLICATION

DVD player, Car TV, UMPC, POS

4. GENERAL SPECIFICATIONS

Parameter	Specifications	Unit
Screen Size	7 (diagonal)	inch
Display Format	800(H) x (R,G,B) x 480(V)	dot
Active Area	152.4(H) x 91.44(V)	mm
Dot Pitch	0.0635 (H) x 0.1905 (V)	mm
Pixel Configuration	Stripe	
Outline Dimension	165(W) x 106.4(H) x 4.9 (D)	mm
Surface treatment	Anti-glare and hard coating (3H)	
Back-light	LED	
Display mode	Normally white	
View Angle direction	All	

5. ABSOLUTE MAXIMUM RATINGS

GND=0V

Parameter	Symbol	MIN.	MAX.	Unit	Remark
Power supply voltage	VCC	-0.3	7	V	Ta=25°C
Logic input voltage	VI	-0.3	VCC+0.3	V	
Operating temperature	Top	-20	70	°C	Module surface*
Storage temperature	Tst	-30	+80	°C	-
Humidity	Operation	20%~90% relative humidity			Ta<=60°C
	Non Operation	20%~90% relative humidity			Ta<=60°C

6. ELECTRICAL CHARACTERISTICS

6.1 Operating Conditions

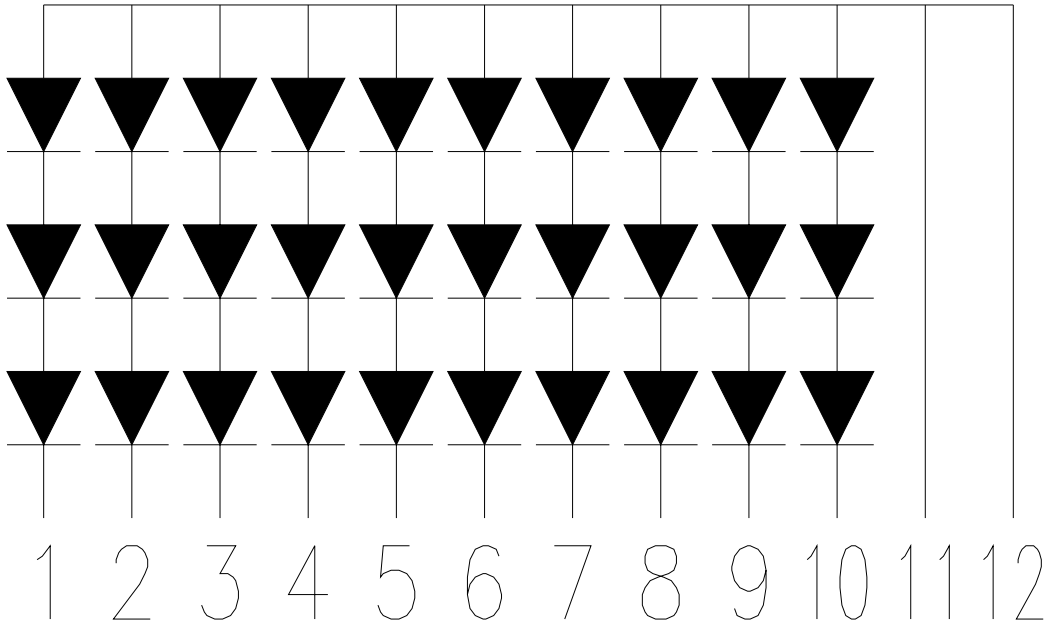
GND=0V, fH=31.5KHz, fV=60Hz, fCLK=33.26MHz, Ta=25°C

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Power Supply voltage	VCC	3.0	3.3	3.6	V	
Power Supply Current	ICC		150	200	mA	VCC =3.3V
Ripple voltage	VRF	-	-	100	mV _{P-P}	
"H" level logical input voltage	VIH	0.7Vcc	--	Vcc	V	
"L" level logical input voltage	VIL	0	--	0.3Vcc	V	

6.2 Backlight Driving Consumption

Ta= 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
VLED voltage	V_L	8.7	--	11.5	V	Note1
LED current	I_L	-	250	-	mA	
LED dice life time		20,000	30,000		hr	Note2



PIN CONNECTIONS

Pin NO.	DESCRIPTION
1	LED K1
2	LED K2
3	LED K3
4	LED K4
5	LED K5
6	LED K6
7	LED K7
8	LED K8
9	LED K9
10	LED K10
11	LED A
12	LED A

Note1: There are 10 Groups (1 Group of three LEDs).

Note2: The "LED dice life time" is defined as the brightness decrease to 50% original brightness that the ambient temperature is 18 ~28 and LED dice current=25mA.

7. INPUT SIGNAL CHARACTERISTICS

7.1 AC Characteristics

7.1.1 AC Electrical Characteristics

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
HS setup time	T_{hst}	6	-	-	ns
HS hold time	T_{hhd}	6	-	-	ns
VS setup time	T_{vst}	6	-	-	ns
VS hold time	T_{vhd}	6	-	-	ns
Data setup time	T_{dsu}	6	-	-	ns
Data hold time	T_{dhd}	6	-	-	ns
DE setup time	T_{esu}	6	-	-	ns

7.1.2 Resolution : 800x480

● sync mode

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
CLK frequency	F_{CPH}	-	33.26	-	MHz
CLK period	T_{CPH}	-	30.06	-	ns
CLK pulse duty	T_{CWH}	40	50	60	%
HS period	T_H	-	1056	-	T_{CPH}
HS pulse width	T_{WH}	1	128	-	T_{CPH}
HS-first horizontal data time	T_{HS}	-	216	-	T_{CPH}
HS Active Time	T_{HA}	-	800	-	T_{CPH}
VS period	T_V	-	525	-	T_H
VS pulse width	T_{WV}	1	2	-	T_H
VS-DE time	T_{VS}	-	35	-	T_H
VS Active Time	T_{VA}	-	480	-	T_H

● DE mode

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
CLK frequency	F_{CPH}	-	33.26	-	MHz
CLK period	T_{CPH}	-	30.06	-	ns
CLK pulse duty	T_{CWH}	40	50	60	%
DE period	$T_{DEH}+T_{DEL}$	1000	1056	1200	T_{CPH}
DE pulse width	T_{DH}	-	800	-	T_{CPH}
DE frame blanking	T_{HS}	10	45	110	$T_{DEH}+T_{DEL}$
DE frame width	T_{EP}	-	480	-	$T_{DEH}+T_{DEL}$

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
OEV pulse width	T_{OEV}	-	150	-	T_{CPH}
CKV pulse width	T_{CKV}	-	133	-	T_{CPH}
DE(internal)-STV time	T_1	-	4	-	T_{CPH}
DE(internal)-CKV time	T_2	-	40	-	T_{CPH}
DE(internal)-OEV time	T_3	-	23	-	T_{CPH}
DE(internal)-POL time	T_4	-	157	-	T_{CPH}
STV pulse width	-	-	1	-	T_H

7.2 Timing Controller Timing Chart

7.2.1 Clock and Data input waveforms

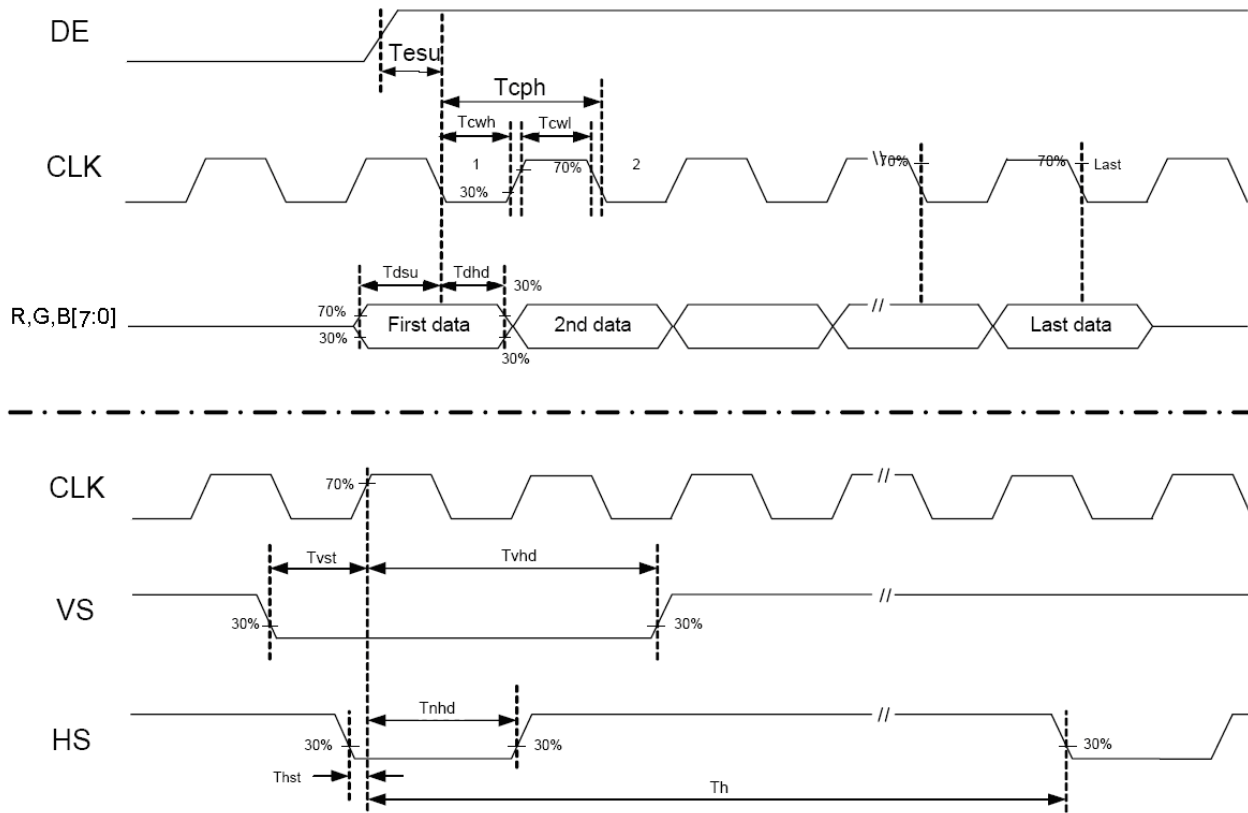


Figure 1 Clock and Data input waveforms.

7.2.2 Data Input format

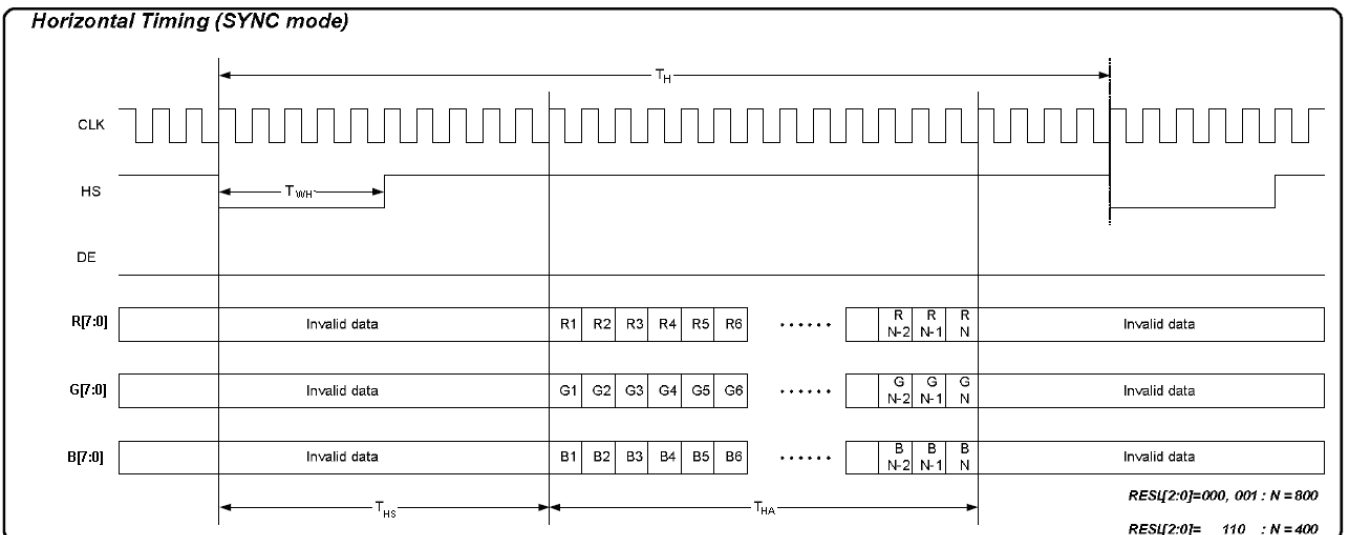
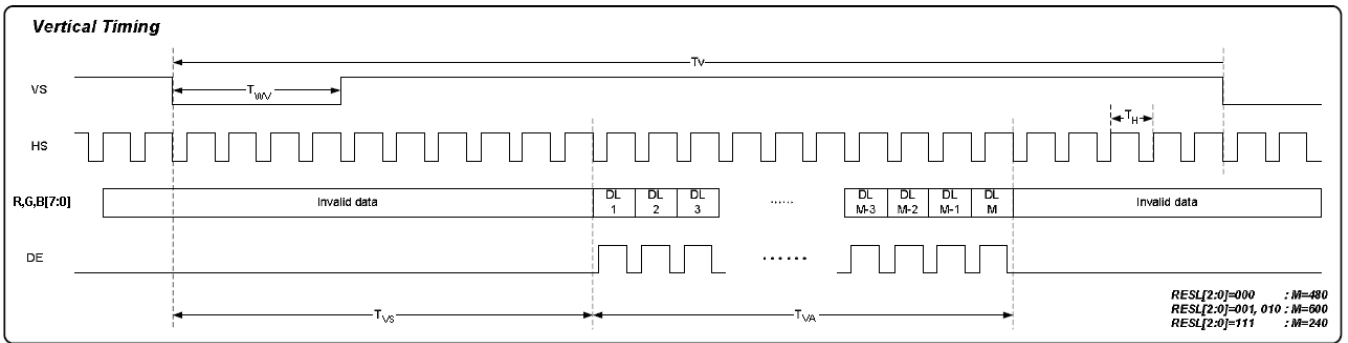
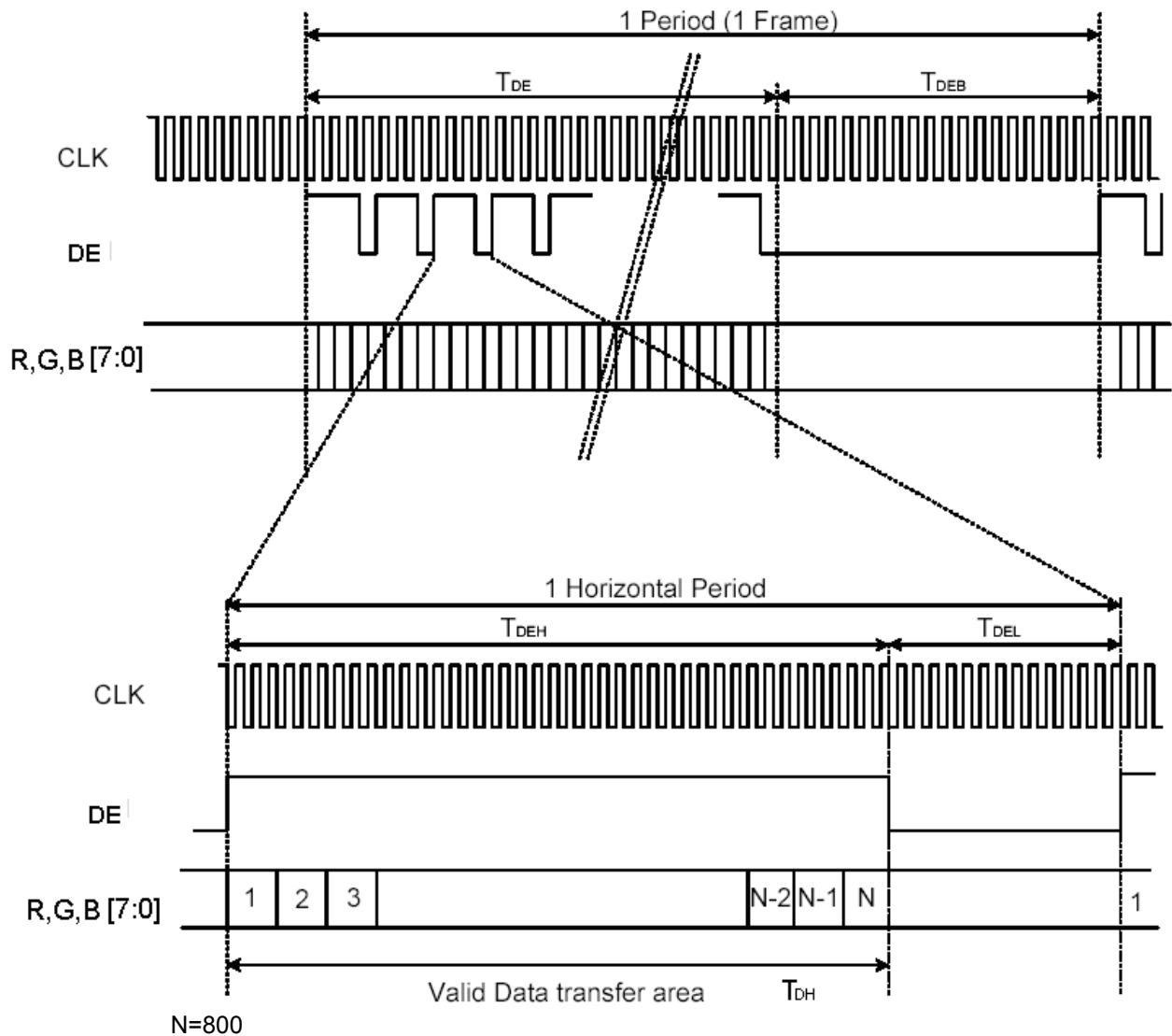


Figure 2 SYNC Mode Horizontal Data Format


Figure 3 SYNC Mode Vertical Data Format
7.2.3 DE Mode Data Format

Figure 4 DE Mode Data Format

7.3 Color Data Input Assignment

COLOR	DISPLAY	DATA SIGNAL																					GRAY SCALE LEVEL			
		RED							GREEN							BLUE										
		R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4		B5	B6	B7
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	-
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	-
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
GRAY SCALE OF RED	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0	
	DARK ↑	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1	
		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R252
	LIGHT ↓	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R252
		1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R253	
	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R254	
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R255	
GRAY SCALE OF GREEN	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0	
	DARK ↑	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G1	
		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	G2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	G3~G252	
	LIGHT ↓	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	G3~G252	
		0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	G253	
	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G254	
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	G255	
GRAY SCALE OF BLUE	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0	
	DARK ↑	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	B1	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	B2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B252	
	LIGHT ↓	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B252	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	B253	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	B254	
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	B255	

Note) Definition of Gray :

R_n : Red Gray, G_n : Green Gray, B_n : Blue Gray (n = Gray level)

Input Signal : 0 = Low level voltage, 1 = High level voltage

8. OPTICAL CHARACTERISTIC

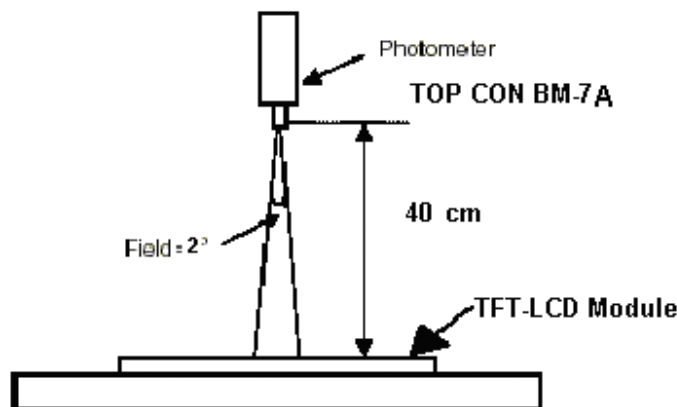
Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	θ_{x+}	Center CR \geq 10	70	80	--	deg	Note 1,4
		θ_{x-}		70	80	--		
	Vertical	θ_{y+}		70	80	--		
		θ_{y-}		70	80	--		
Contrast Ratio		CR	at optimized viewing angle	500	600	--		Note 1,3
Response time	Rise	Tr	Center	-	5	10	ms	Note 1,6
	Fall	Tf	$\theta_x=\theta_y=0^\circ$	-	15	20	ms	
Uniformity		B-uni	$\theta_x=\theta_y=0^\circ$	70	80	--	%	Note1,5
Brightness		L	$\theta_x=\theta_y=0^\circ$	320	400	--	cd/m ²	Note 1,2
Chromaticity		x_W	Center $\theta_x=\theta_y=0^\circ$	0.268	0.318	0.368		Note 1,7
		y_W		0.289	0.339	0.389		
		x_R		0.525	0.575	0.625		
		y_R		0.310	0.360	0.410		
		x_G		0.281	0.331	0.381		
		y_G		0.521	0.571	0.621		
		x_B		0.099	0.149	0.199		
		y_B		0.088	0.138	0.188		
Image sticking		tis	2 hours			2	Sec	Note 8

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance \leq 1 lux, and at room temperature).

The operation temperature is 25°C \pm 2°C and LED Backlight Current IL=250mA.

The measurement method is shown in Note1.

Note1: The method of optical measurement:

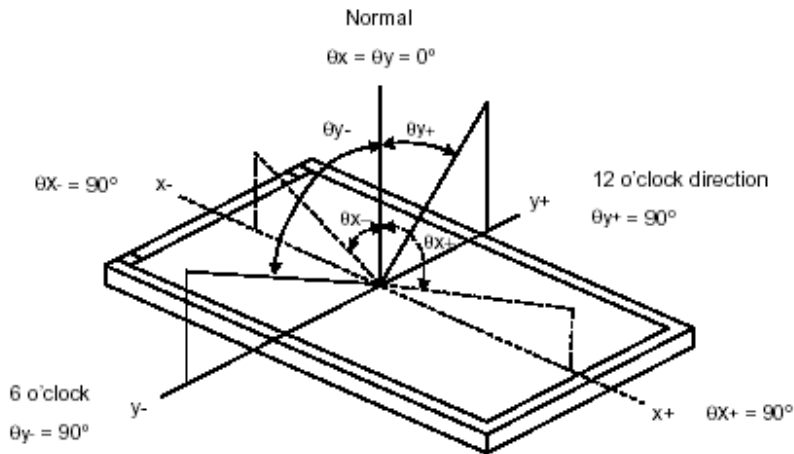


Note2: Measured at the center area of the panel and at the viewing angle of the $\theta_x = \theta_y = 0^\circ$

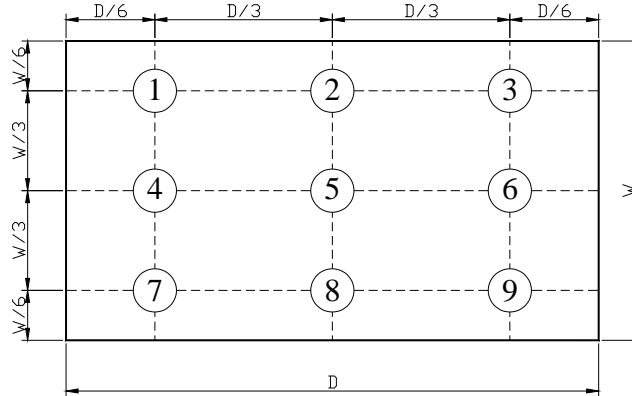
Note3: Definition of Contrast Ratio (CR):

$$CR = \frac{\text{Luminance with all pixels in white state}}{\text{Luminance with all pixels in Black state}}$$

Note4: Definition of Viewing Angle



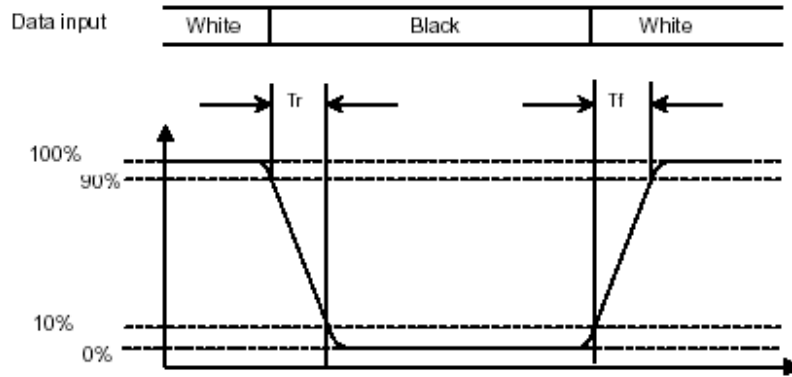
Note 5: Definition of Brightness Uniformity (B-uni):



$$B\text{-uni} = \frac{\text{Minimum luminance of 9 points}}{\text{Maximum luminance of 9 points}} \quad (\text{Note 5}).$$

Note6: Definition of Response Time:

The Response Time is set initially by defining the “Rising Time (T_r)” and the “Falling Time (T_f)” respectively. T_r and T_f are defined as following figure.



Note 7: Definition of Chromaticity:

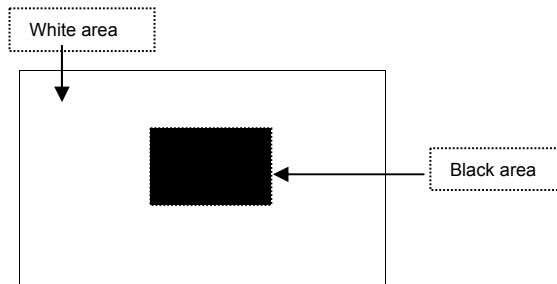
The color coordinates (x_w, y_w) , (x_r, y_r) , (x_g, y_g) , and (x_b, y_b) are obtained with all pixels in the viewing field at white, red, green, and blue states, respectively.

Note 8: Definition of Image sticking (tis):

Continuously display the test pattern shown in the figure below for 2 hours. Then display a completely white screen.

The previous image shall not persist more than 2 sec at 25 °C

Image sticking pattern



9. PIN CONNECTIONS

Pin NO.	SYMBOL	DESCRIPTION
1	GND	Power Ground
2	GND	Power Ground
3	VCC	Power Supply for Digital Circuit
4	VCC	Power Supply for Digital Circuit
5	R0	Red Data 0 (LSB)
6	R1	Red Data 1
7	R2	Red Data 2
8	R3	Red Data 3
9	R4	Red Data 4
10	R5	Red Data 5
11	R6	Red Data 6
12	R7	Red Data 7 (MSB)
13	G0	Green Data 0 (LSB)
14	G1	Green Data 1
15	G2	Green Data 2
16	G3	Green Data 3
17	G4	Green Data 4
18	G5	Green Data 5
19	G6	Green Data 6
20	G7	Green Data 7 (MSB)
21	B0	Blue Data 0 (LSB)
22	B1	Blue Data 1
23	B2	Blue Data 2
24	B3	Blue Data 3
25	B4	Blue Data 4
26	B5	Blue Data 5
27	B6	Blue Data 6
28	B7	Blue Data 7 (MSB)
29	GND	Power Ground
30	CLK	Clock Signals ; Latch Data at the Falling Edge
31	NC	No connection
32	HS	Horizontal synchronous signal
33	VS	Vertical synchronous signal
34	DE	Data Enable Signal
35	NC	No connection
36	NC	No connection
37	GND	Power Ground
38	GND	Power Ground
39	NC	No connection
40	NC	No connection

Note:

The LCM support both DE mode and Sync mode timing. When DE is pulled low, which is sync mode. When DE is an active data and pulled low for blanking data, which is DE mode.

Remarks:

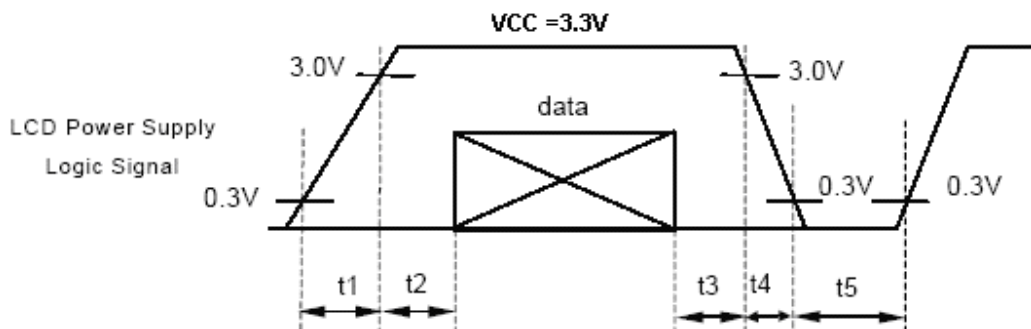
Power Signal sequence:

$t1 \leq 10\text{ms}$; $1 \text{ sec} \leq t5$

$50\text{ms} \leq t2$;

$0 < t3 \leq 50\text{ms}$;

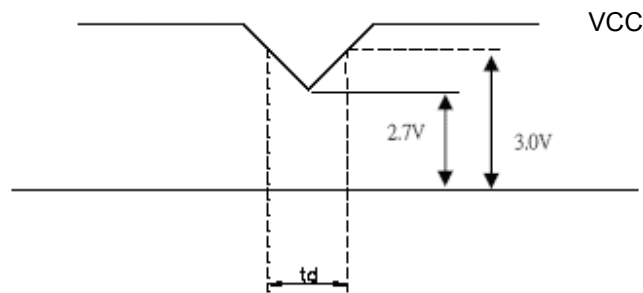
$0 < t4 \leq 10\text{ms}$



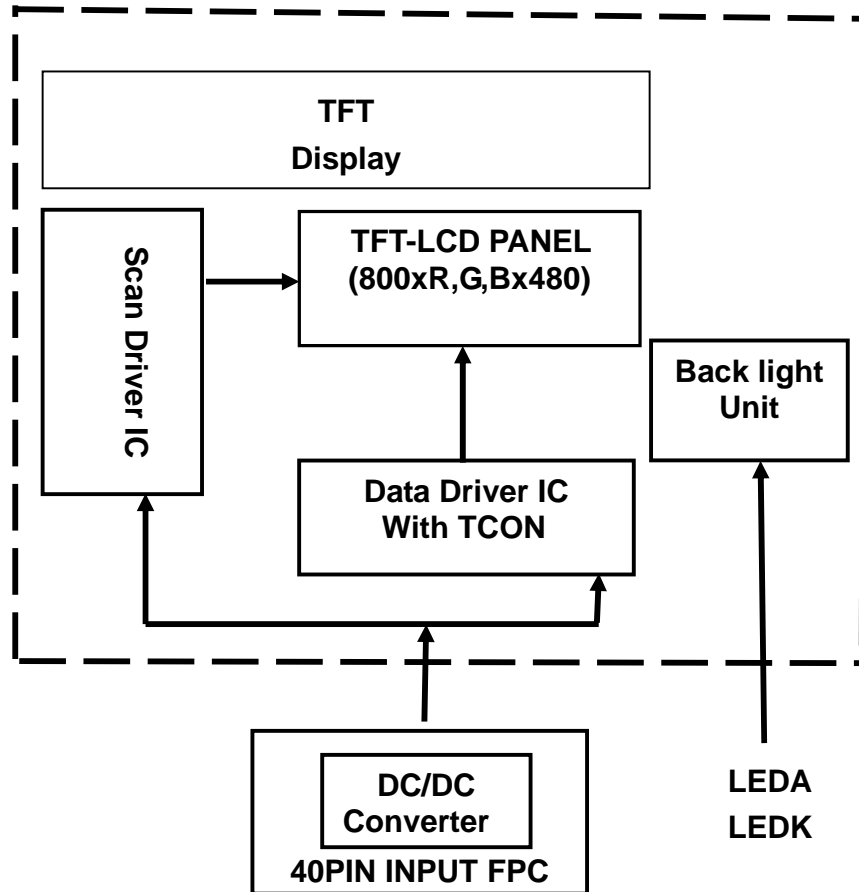
VCC -dip condition:

(1) $2.7\text{V} \leq VCC \leq 3.0\text{V}$: $t_d \leq 10 \text{ ms}$

(2) $VCC > 3.0\text{V}$: VCC -dip condition should be the same with VCC,-turn-on condition.



10. BLOCK DIAGRAM



11. TOUCH PANEL CHAR

1. Input Method and Activation Force

Input Method	Activation Force
0.8mm dia. Delrin Polyacetal stylus	60~100gf

2. Typical Optical Characteristics

ITEM	Parameter
Visible Light Transmission	≥80%
Haze	≤10%
Surface Hardness	≥3H

3. Electrical Specification

ITEM	Parameter
Operating Voltage	DC 7V Max
Circuit close resistance	X 100~800Ω
	Y 300~1000Ω
Circuit open resistance	>20MΩ at 25V DC
Contact bounce	≤10ms
Linear Test	≤1.5%

4. Linearity

ITEM	Parameter
Linear Test Specification Direction	X ≤1.5%
	Y ≤1.5%

5. Specification

ITEM	Parameter
Operating Temperature	-20°C~+70°C
Storage Temperature	-30°C~+80°C

6. Durability test:

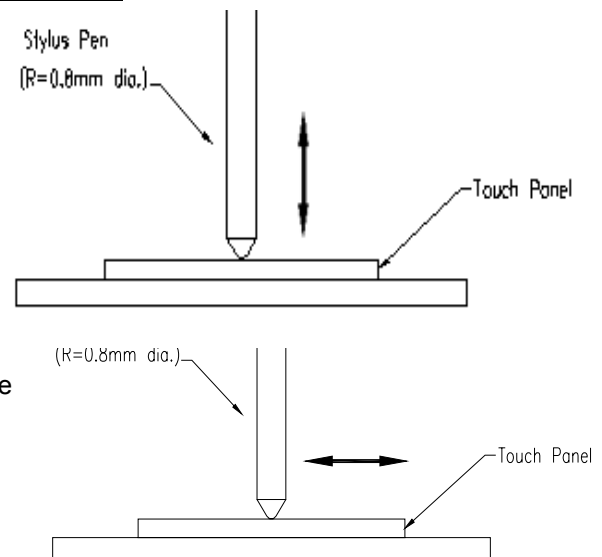
6.1 Touch panel is hit 1 millions times with a R0.8 sty second. The measurement must satisfy the follow

- Circuit close resistance: x 100~800Ω ;
y 300~1000Ω
- Circuit open resistance: >20MΩ at 25V DC
- Contact bounce: ≤10ms
- Linearity test: ≤1.5%

6.2 Stylus writing

Touch panel is drawn by R0.8 Darling stylus pen, at 150g forces, repeat one inch by 100k times. The measurement must satisfy the following:

- Circuit close resistance: x 100~800Ω ;
y 300~1000Ω
- Circuit open resistance: >20MΩ at 25V DC
- Contact bounce: ≤10ms
- Linearity test: ≤1.5%



12. QUALITY ASSURANCE

12.1 Test Condition

12.1.1 Temperature and Humidity(Ambient Temperature)

Temperature : $25 \pm 5^{\circ}\text{C}$

Humidity : $65 \pm 5\%$

12.1.2 Operation

Unless specified otherwise, test will be conducted under function state.

12.1.3 Container

Unless specified otherwise, vibration test will be conducted to the product itself without putting it in a container.

12.1.4 Test Frequency

In case of related to deterioration such as shock test. It will be conducted only once.

12.1.5 Test Method

Reliability Test Item & Level		Test Level	Remark
No.	Test Item		
1	High Temperature Storage Test	T=80 ,240hrs	IEC68-2-2
2	Low Temperature Storage Test	T=-30 ,240hrs	IEC68-2-1
3	High Temperature Operation Test	T=70 ,240hrs	IEC68-2-2
4	Low Temperature Operation Test	T=-20 ,240hrs	IEC68-2-1
5	High Temperature and High Humidity (No operation)	T=60 ,90%RH,240hrs	IEC68-2-3
6	Thermal Cycling Test (No operation)	-30 → +25 → +80 , 100 Cycles 30 min 5 min 30 min	IEC68-2-14
7	Vibration Test (No operation)	Frequency :10 ~ 55 Hz Amplitude :1.5 mm Sweep time : 11 mins Test Period: 6 Cycles for each direction of X, Y, Z	IEC68-2-6
8	Shock Test (No operation)	100G, 6ms Direction: ±X, ±Y, ±Z Cycle: 3 times	IEC68-2-27

12.2 Judgment standard

The Judgment of the above test should be made as follow:

Pass: Normal display image with no obvious non-uniformity and no line defect. Partial transformation of the module parts should be ignored.

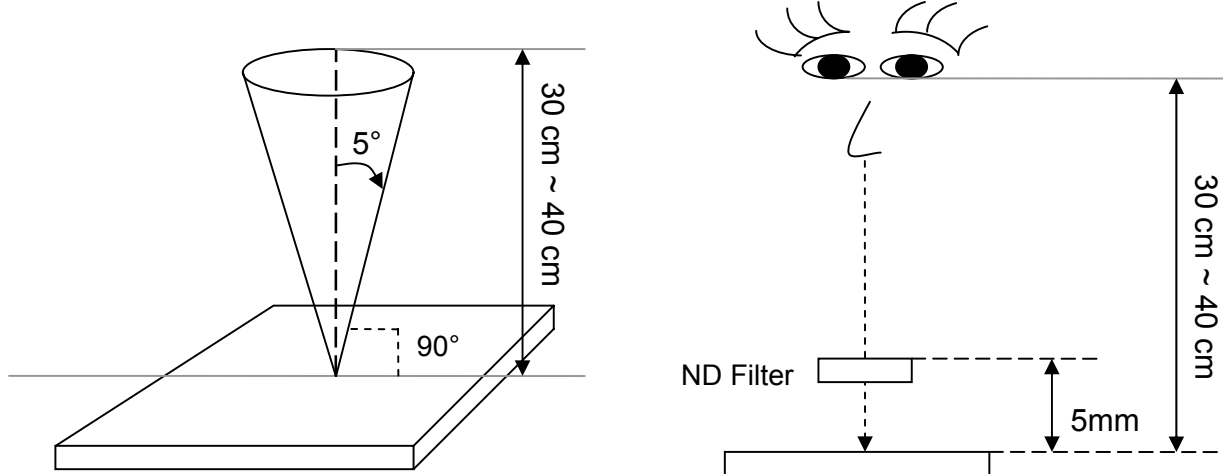
Fail: No display image, obvious non-uniformity, or line defect.

13. APPEARANCE SPECIFICATION

13.1 Inspection conditions

13.1.1 Inspection Distance : 35 ± 5 cm

13.1.2 View Angle : Inspection under test condition : $\pm 5^\circ$



13.1.3 Environment conditions :

Ambient Temperature :		25±5
Ambient Humidity :		65±5%
Ambient Illumination	Functional Inspection	300~ 500 lux

13.2 Definition of applicable Zones



13.3 Inspection Parameters

No.	Parameter	Criteria										
1	Operating	Display function: No Display malfunction (Major)										
		Contrast ratio (Black, White): Does not meet specified range in the spec. (Major) (Note:3)										
		Line Defect: No obvious Vertical and Horizontal line defect in bright, dark and colored. (Major) (Note:1)										
		Point Defect (Red, green, blue, dark): Active area ≤ 5 dots (Minor) (Note:1)										
		<table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th>Acceptable number</th> <th rowspan="2">Total</th> </tr> <tr> <th>Active Area</th> </tr> </thead> <tbody> <tr> <td>Bright Dot</td> <td>2</td> <td rowspan="2">5</td> </tr> <tr> <td>Dark Dot</td> <td>4</td> </tr> </tbody> </table>	Item	Acceptable number	Total	Active Area	Bright Dot	2	5	Dark Dot	4	
		Item		Acceptable number		Total						
Active Area												
Bright Dot	2	5										
Dark Dot	4											
Non-uniformity: Visible through 5%ND filter. (Note:1) (Minor)												
Foreign material in Black or White spots shape ($W > 1/4L$)												
<table border="1"> <thead> <tr> <th>Zone Dimension</th> <th>Acceptable number</th> <th rowspan="4">Class Of Defects</th> <th rowspan="4">AQL Level</th> </tr> </thead> <tbody> <tr> <td>D > 0.5</td> <td>0</td> </tr> <tr> <td>0.3 < D \leq 0.5</td> <td>3</td> </tr> <tr> <td>D \leq 0.3</td> <td>*</td> </tr> </tbody> </table> <p>D = (Long + Short) / 2 * : Disregard</p>	Zone Dimension	Acceptable number	Class Of Defects	AQL Level	D > 0.5	0	0.3 < D \leq 0.5	3	D \leq 0.3	*		
Zone Dimension	Acceptable number	Class Of Defects			AQL Level							
D > 0.5	0											
0.3 < D \leq 0.5	3											
D \leq 0.3	*											
Foreign Material in Line or spiral shape ($W \leq 1/4L$) (Note: 4)												
<table border="1"> <thead> <tr> <th>L (mm) \ Zone W(mm)</th> <th>Acceptable number</th> <th rowspan="4">Class Of Defects</th> <th rowspan="4">AQL Level</th> </tr> </thead> <tbody> <tr> <td>L > 5 W > 0.1</td> <td>0</td> </tr> <tr> <td>3 < L \leq 5 0.05 < W \leq 0.1</td> <td>4</td> </tr> <tr> <td>L \leq 3 W \leq 0.05</td> <td>*</td> </tr> </tbody> </table> <p>L : Length W : Width * : Disregard</p>	L (mm) \ Zone W(mm)	Acceptable number	Class Of Defects	AQL Level	L > 5 W > 0.1	0	3 < L \leq 5 0.05 < W \leq 0.1	4	L \leq 3 W \leq 0.05	*		
L (mm) \ Zone W(mm)	Acceptable number	Class Of Defects			AQL Level							
L > 5 W > 0.1	0											
3 < L \leq 5 0.05 < W \leq 0.1	4											
L \leq 3 W \leq 0.05	*											
2	External Inspection (non-operating)	Dimension: Outline (Major)										
		Bezel appearance: uneven (Minor)										
		Scratch on the Touch panel : (Note:2)										
		<table border="1"> <thead> <tr> <th>W (mm) \ Zone L(mm)</th> <th>Acceptable number</th> <th rowspan="4">Class Of Defects</th> <th rowspan="4">AQL Level</th> </tr> </thead> <tbody> <tr> <td>W > 0.1 -</td> <td>0</td> </tr> <tr> <td>0.05 < W \leq 0.1 L \leq 10</td> <td>5</td> </tr> <tr> <td>W \leq 0.03</td> <td>*</td> </tr> </tbody> </table> <p>L : Length W : Width * : Disregard</p>	W (mm) \ Zone L(mm)	Acceptable number	Class Of Defects	AQL Level	W > 0.1 -	0	0.05 < W \leq 0.1 L \leq 10	5	W \leq 0.03	*
		W (mm) \ Zone L(mm)	Acceptable number	Class Of Defects			AQL Level					
		W > 0.1 -	0									
0.05 < W \leq 0.1 L \leq 10	5											
W \leq 0.03	*											
Dent on the Touch panel (Note:2)												
<table border="1"> <thead> <tr> <th>Zone Dimension</th> <th>Acceptable number</th> <th rowspan="4">Class Of Defects</th> <th rowspan="4">AQL Level</th> </tr> </thead> <tbody> <tr> <td>D \leq 0.3</td> <td>*</td> </tr> <tr> <td>0.3 < D \leq 0.5</td> <td>3</td> </tr> <tr> <td>D > 0.5</td> <td>0</td> </tr> </tbody> </table> <p>D = (Long + Short) / 2 * : Disregard</p>	Zone Dimension	Acceptable number	Class Of Defects	AQL Level	D \leq 0.3	*	0.3 < D \leq 0.5	3	D > 0.5	0		
Zone Dimension	Acceptable number	Class Of Defects			AQL Level							
D \leq 0.3	*											
0.3 < D \leq 0.5	3											
D > 0.5	0											

Class of defects			Definition
	Major	AQL 0.65%	It is a defect that is likely to result in failure or to reduce materially the usability of the product for the intended function.
Minor	AQL 2.5%	It is a defect that will not result in functioning problem with deviation classified.	

Note:1.(a)Bright point defect is defined as point defect of R,G,B with area $>1/2$ dot respectively

(b)Dark point defect is defined as visible in full white pattern.

(c)Definition of distribution of point defect is as follows:

- minumum separation between dark point defects should be larger than 5mm.
- minumum separation between bright point defects should be larger than 5mm.

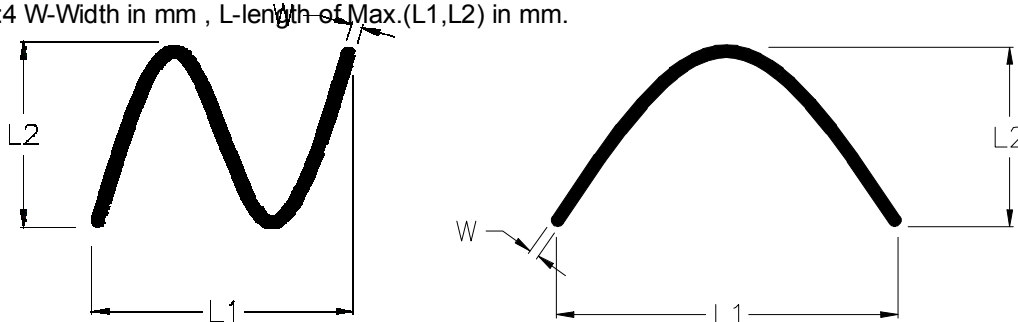
(d)Definition of joined bright point defect and joined dark point defect are as follows:

- Two or more joined bright point defects must be nil.
- Three joined dark point defects must be nil.
- Coupling of one dark and one bright point in junction is counted as one dark and bright spot with 1 pair maxmum.
- Two Joined dark point is counted as two dark point with 2 pair maxmum. (e)Line defect is defined as visible by using 5% ND filter.

Note:2 The external inspection should be conducted at the distance 35 ± 5 cm between the eyes of inspctor and the panel .

Note:3 Luminance measurement for contrast ratio is at the distance 50 ± 5 cm between the detective head and the panel with ambient illuminance less than 1 lux. Contrast ratio is obtained at optimum view angle.

Note:4 W-Width in mm , L-length of Max.(L1,L2) in mm.



13.4 Sampling Condition

Unless otherwise agree in written, the sampling inspection shall be applied to the incoming inspection of customer.

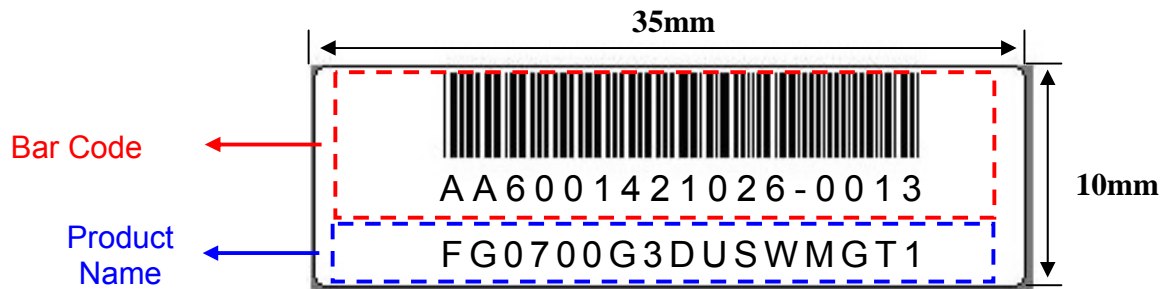
Lot size: Quantity of shipment lot per model.

Sampling type: normal inspection, single sampling
Sampling table: MIL-STD-105E

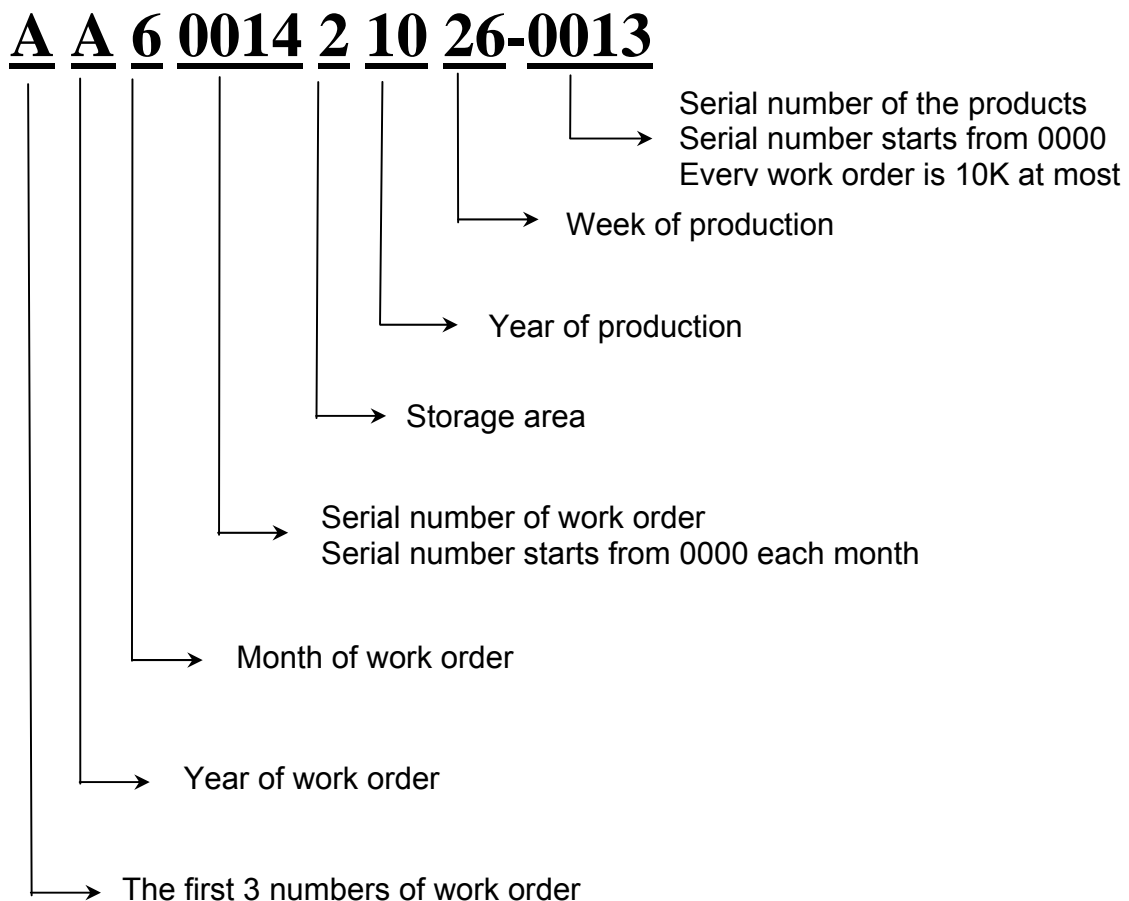
Inspection level: Level II

14. LCM PRODUCT LABEL DEFINE

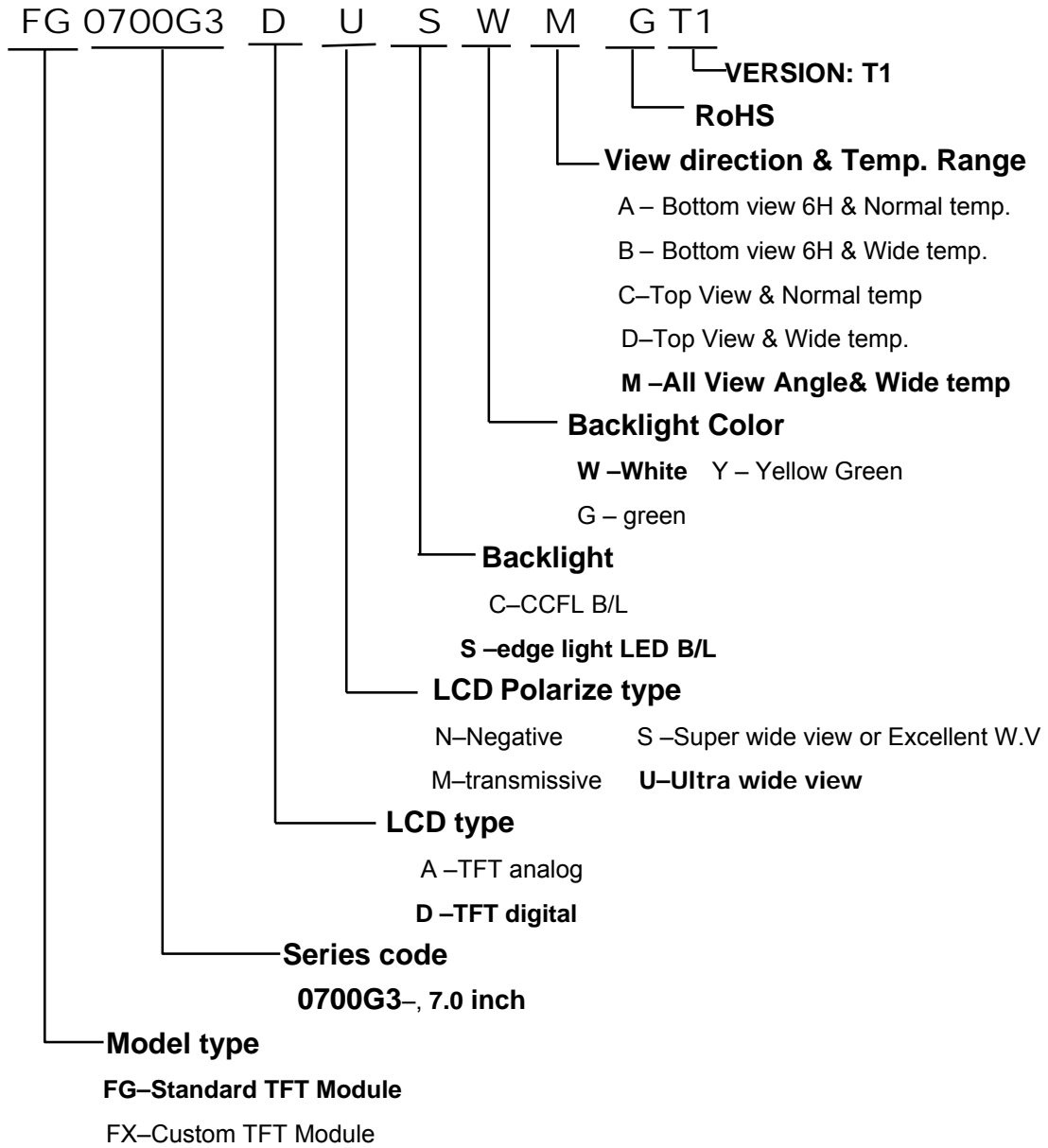
Product Label style:



BarCode Define:



Product Name Define:



15. PRECAUTIONS IN USE LCM

1. ASSEMBLY PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (4) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (5) Do not open the case because inside circuits do not have sufficient strength.
- (6) Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
- (7) Please do not touch metal frames with bare hands and soiled gloves. A color change of the metal frames can happen during a long preservation of soiled LCD modules.
- (8) Please pay attention to handling lead wire of backlight so that it is not tugged in connecting with inverter.

2. OPERATING PRECAUTIONS

- (1) Please be sure to turn off the power supply before connecting and disconnecting signal input cable.
- (2) Please do not change variable resistance settings in LCD module. They are adjusted to the most suitable value. If they are changed, it might happen LCD does not satisfy the characteristics specification
- (3) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (4) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (5) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (6) Please consider that LCD backlight takes longer time to become stable of radiation characteristics in low temperature than in room temperature.

3. ELECTROSTATIC DISCHARGE CONTROL

- (1) The operator should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such the copper leads on the PCB and the interface terminals with any

parts of the human body.

- (2) The modules should be kept in antistatic bags or other containers resistant to static for storage.
- (3) Only properly grounded soldering irons should be used.
- (4) If an electric screwdriver is used, it should be well grounded and shielded from commutator sparks.
- (5) The normal static prevention measures should be observed for work clothes and working benches; for the latter conductive (rubber) mat is recommended
- (6) Since dry air is inductive to statics, a relative humidity of 50-60% is recommended.

4. STORAGE PRECAUTIONS

- (1) When you store LCDs for a long time, it is recommended to keep the temperature between 0°C-40°C without the exposure of sunlight and to keep the humidity less than 90%RH.
- (2) Please do not leave the LCDs in the environment of high humidity and high temperature such as 60°C 90%RH
- (3) Please do not leave the LCDs in the environment of low temperature; below -20°C.

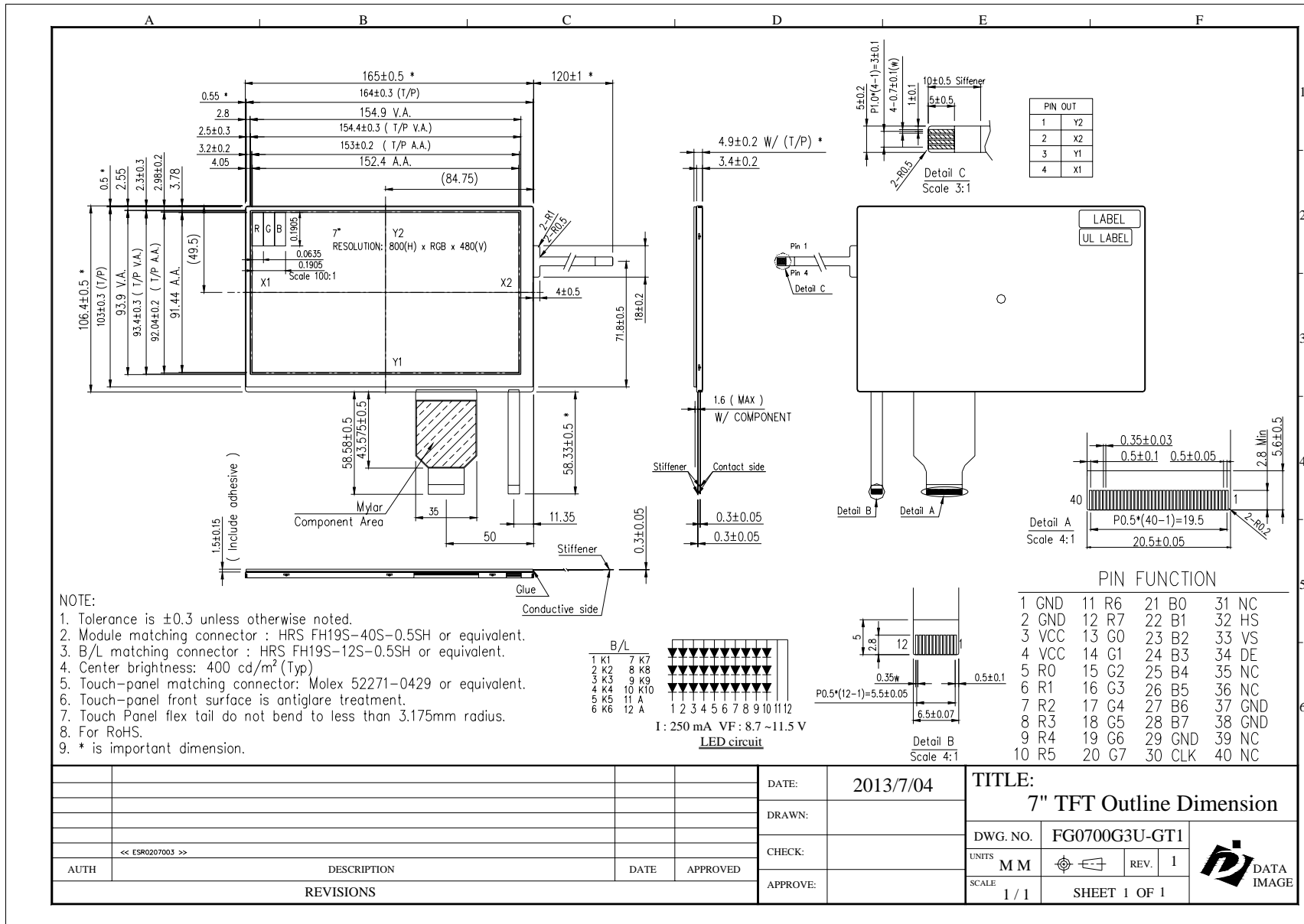
5. OTHERS

- (1) A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight and strong UV rays
- (2) Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
- (3) For the packaging box, please pay attention to the followings:
- (4) Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
- (5) Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
- (6) Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

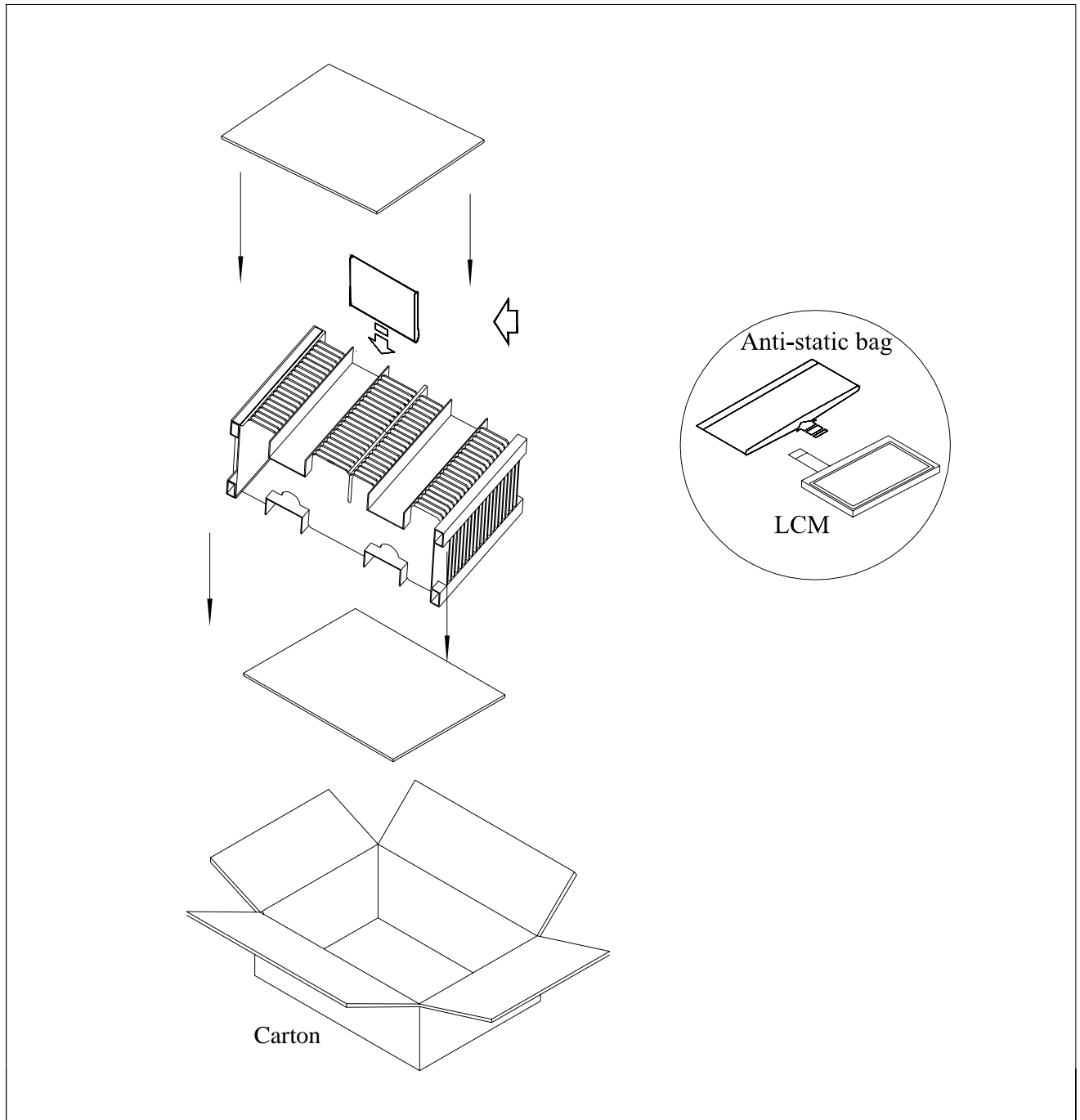
6. LIMITED WARRANTY

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

Confidential Document
16. OUTLINE DRAWING



17. PACKAGE INFORMATION



Item	Size(L*W*H)	Quantity	Note
Master Carton	482*282*279	1	
Quantity Per Master Carton		38	
N . W	7.0 (kg)	G . W	8.5 (kg)