

PRODUCT SPECIFICATION

HDA700LPTM-HDMI

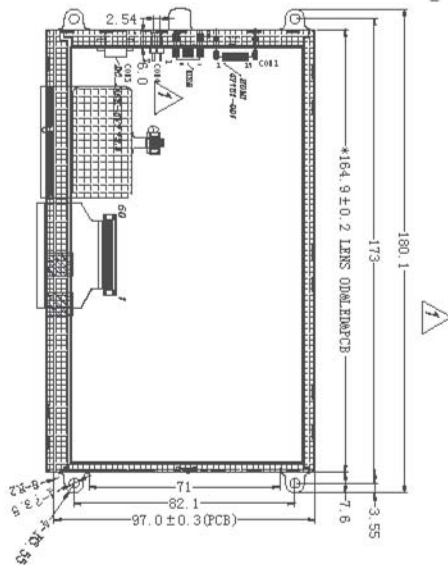
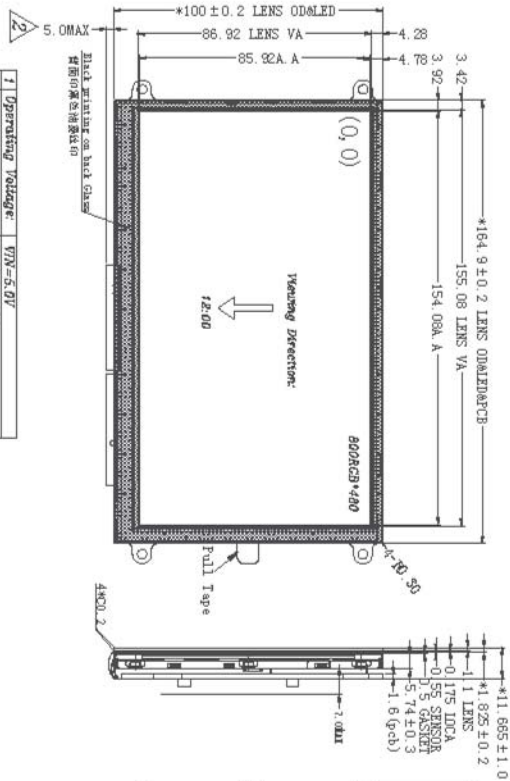
7", TFT WVGA (800X480) COLOR
LCD DISPLAY MODULE



HANTRONIX, INC. 10080 BUBB RD. CUPERTINO, CA 95014	Q.A.: Z.W.	HDA700LPTM-HDMI	SHEET 1 OF 13 DATE: 12/10/18
--	-------------------	-----------------	-------------------------------------

1. General Specifications

No	Item	Contents	Unit
1	Size	7	inch
2	Resolution	800RGB*480	
3	Color depth	16M	
4	Interface	HDMI&USB	
5	Technology Type	a-Si TFT active martix	
6	Pixel Pitch	0.1790*0.1790	mm
7	Pixel Arrangement	R.G.B Stripe	
8	Display Mode	Transmissive,TN,NW	
9	Viewing Direction	12: 00	
10	LCM (W x H x D)	164.9*100*11.665	mm
11	Active Area (W x H)	154.08*85.92	mm
12	With/Without TSP	With CTP	



CONT: HDMI

PIN ASSIGNMENT	
1	TX0+
2	GND
3	TX0-
4	TX1+
5	GND
6	TX1-
7	TX2+
8	GND
9	TX2-
10	TXC+
11	GND
12	TXC-
13	NC
14	NC
15	DDCLK
16	DDAT
17	GND
18	VDD(+5V)
19	HOTPLUS

1	Operating Voltage:	VIN=5.0V
2	Resolution:	800RCS*400
3	Color:	16M
4	Interface:	HDMI/HDCP
5	Display Type:	Transmissive TN Normally White
6	Viewing Direction:	12:00
7	Operating Temp:	-30°C~70°C
8	Storage Temp:	-30°C~80°C
9	Driver IC:	BRV3002ABSRKV19CA
10	CTP Driver IC:	HL6611A
11	LCM luminance(cd/m2):	670(TYP)
12	Unspecified tolerance:	±0.3

CON2: USB
GL55030900TLR-T-2.0

PIN	SYM
1	+5V
2	D-
3	D+
4	NC
5	GND

CON3:
DC_JACK-5V? ? 3.5

PIN	SYM.
1	GND
2	VIN

CON4: 2.54Pitch PIN Header

PIN	SYM.
1	PWM
2	NC(+5V)

DC-DC, LED-Driver Built in

HANTRONIX, INC.
10080 BUBB RD.
CUPERTINO, CA 95014

QA:
Z.W.

HDA700LPTM-HDMI

SHEET 3 OF 13

DATE: 12/10/18

3. PIN Assignment

CON1:HDMI

Pin No	Symbol
1	TX0+
2	GND
3	TX0-
4	TX1+
5	GND
6	TX1-
7	TX2+
8	GND
9	TX2-
10	TXC+
11	GND
12	TXC-
13	NC
14	NC
15	DDCLK
16	DDAT
17	GND
18	VDD(+5V)
19	HOTPLUS

CON2:USB GL55S03G00TLR-Y-2.0

Pin No	Symbol
1	+5V
2	U-
3	U+
4	NC
5	GND

CON3: DC_JACK-5V, Φ 3.5

Pin No	Symbol
1	GND
2	VIN

CON4: 2.54Pitch PIN Header

Pin No	Symbol
1	PWM
2	NC(+5V)

4. Absolute Maximum Rating

AGND = GND = 0V, Ta = 25° C

Item	Symbol	Min	Max	Unit	Remark
Operating Temperature	T _{OPR}	-20	70	° C	
Storage Temperature	T _{STG}	-30	80	° C	

The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

5. Electrical Characteristics

5.1. Recommended Operating Condition

AGND = GND = 0V, Ta = 25° C

Item	Min	Typ.	Max	Unit	Remark
Power Voltage		5		V	

5.2. Recommended Driving Condition for Backlight

Ta = 25° C

Item			Symbol	Min	Typ.	Max	Unit	Remark
Power supply voltage			V _{BL}	4.75	5	5.25	V	
Power supply current			I _{BL}	840	880	930	mA	
Input&Control Signal	On/off	On	V _{ON}	1.5		5.0	V	
		Off	V _{OFF}			0.8	V	
	Brightness Adjust		Dimming	0		100	%	
	BL_DIM Frequency		F _{PWM}	0.2		20	KHz	
	Pulse Duty Level (BL_DIM)		V _H	1.5		5	V	
			V _L			0.4	V	
Life time				50000			Hrs	

6. Optical Characteristics

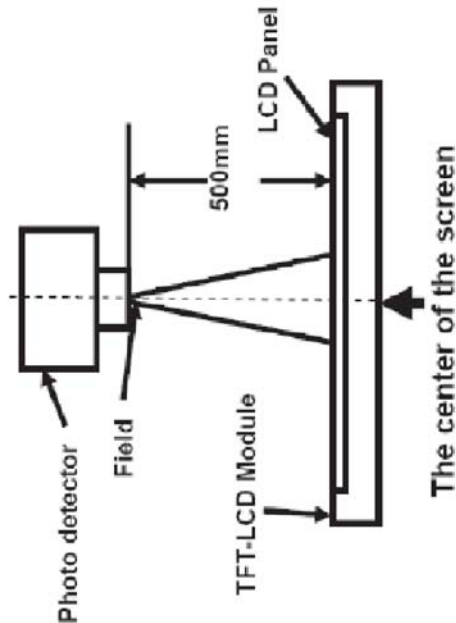
Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles	θ_T	$CR \geq 10$	40	60		Degree	Note 2
	θ_B		60	70			
	θ_L		60	70			
	θ_R		60	70			
Contrast Ratio	CR	$\theta = 0^\circ$	400	500			Note 1 Note 3
Response Time	T_{ON}	$25^\circ C$		25	50	ms	Note 1
	T_{OFF}						Note 4
Chromaticity	W_x	x	0.278	0.308	0.3338		Note 1
	W_y	y	0.297	0.327	0.357		Note 5
Uniformity	U		70	75		%	Note 5
Luminance	L			870		cd/m ²	Note 1 Note 5

Test Conditions:

1. Operating voltage= 5V,the ambient temperature is $25^\circ C$.
2. The test systems refer to Note 2.

Note1: Definition of optical measurement system.

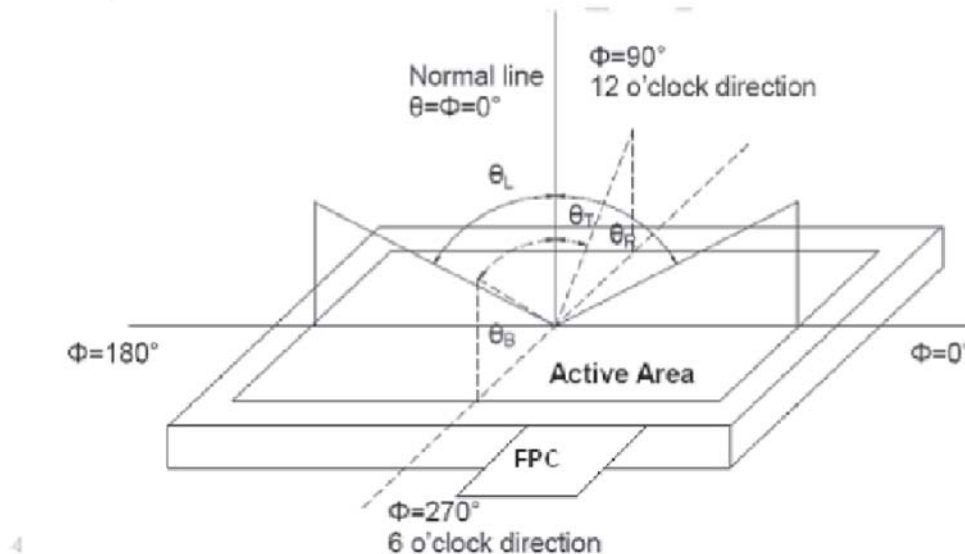
The optical characteristics should be measured in dark room. After 5Minutes operation, the optical properties are measured at the center point of the LCD screen. ALL input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	CS1000	1°
Luminance		
Lum Uniformity		
Chromaticity	CS1000	
Response Time	DMS703	-

Note2: Definition of viewing angle range and measurement system.

Viewing angle is measured at the center point of the LCD by CONOSCOPE (DMS703)



Note3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

“White state”:The state is that the LCD should drive by V_{white} .

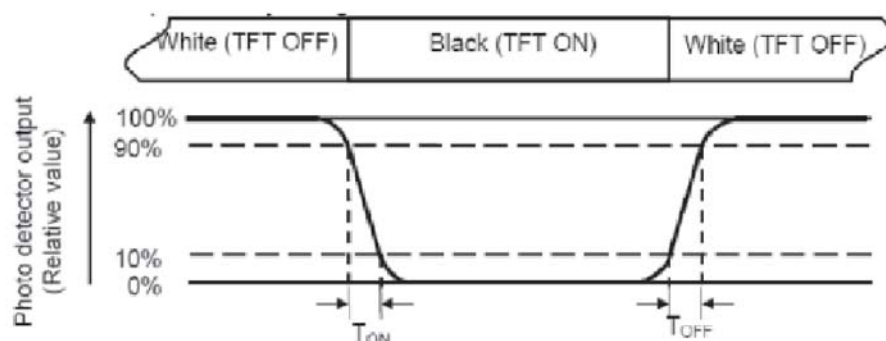
“Black state”:The state is that the LCD should drive by V_{black} .

V_{white} : To be determined

V_{black} : To be determined

Note4:Definition of Response time

The response time is defined as the LCD optical switching time interval between “White”state and “Black” state. Rise time (T_{ON})is the time between photo detector output intensity changed from 90% to 10%.And fall time (T_{OFF})is the time between photo detector output intensity changed from 10% to90%.



Note5:Definition of color chromaticity (CIE1931)

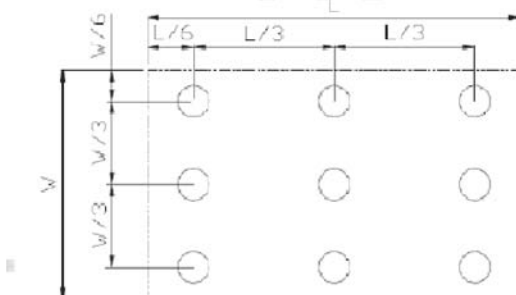
Color coordinates measured at center point of LCD.

Note6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas(Refer Fig.2).Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = L_{\text{min}} / L_{\text{max}}$$

L-----Active area length W-----Active area width



L_{max} : The measured Maximum luminance of all measurement position.

L_{min} : The measured Minimum luminance of all measurement position.

Note7: Definition of luminance: Measure the luminance of white state at center point.

HANTRONIX, INC. 10080 BUBB RD. CUPERTINO, CA 95014	Q.A.: Z.W.	HDA700LPTM-HDMI	SHEET 8 OF 13 DATE: 12/10/18
---	----------------------------	------------------------	---

7. Environmental/Reliability Test

No.	Test Item	Test Condition	Inspection after test
1	High Temperature Storage	$80\pm 2^{\circ}\text{C}/240\text{ hours}$	Inspection after 2~4hours storage at room temperature,the sample shall be free from defects: 1.Air bubble in the LCD; 2.Sealleak; 3.Non-display; 4.missing segments; 5.Glass crack; 6.Current Idd is twice higher than initial value.
2	Low Temperature Storage	$-30\pm 2^{\circ}\text{C}/240\text{ hours}$	
3	High Temperature Operating	$70\pm 2^{\circ}\text{C}/240\text{ hours}$	
4	Low Temperature Operating	$-20\pm 2^{\circ}\text{C}/240\text{ hours}$	
5	Temperature Cycle	$-30^{\circ}\text{C}\sim 25^{\circ}\text{C}\sim 80^{\circ}\text{C} \times$ 10cycles (30min.) (5min.) (30min.)	
6	Damp Proof Test	$40^{\circ}\text{C}\pm 5^{\circ}\text{C} \times 90\%\text{RH}/240\text{ hours}$	
7	Vibration Test	Frequency: $10\text{Hz}\sim 55\text{Hz}\sim 10\text{Hz}$ Amplitude: 1.5mm, X, Y, Z direction for total 3hours (Packing condition)	
8	Dropping test	Drop to the ground from 1m height, one time, every side of carton. (Packing condition)	

Remark:

- 1.The test samples should be applied to only one test item.
- 2.Sample size for each test item is 5~10pcs.
- 3.For Damp Proof Test, Pure water(Resistance $>10\text{M}\Omega$) should be used.
- 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
- 5.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.
- 6.Please use automatic switch menu(or roll menu) testing mode when test operating mode.

9. Standard Specifications For Product Quality

9.1. Manner of test:

10.1.1 The test must be under 40W fluorescent light, and the distance of view must be at 30±10cm.

10.1.2 Room temperature 25±5℃ Humidity: (60±10)%RH.

9.2. Quality specification

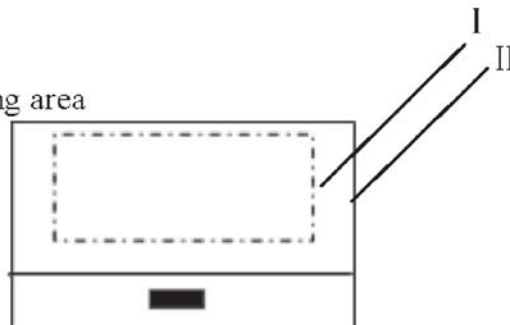
It shall be based on GB2828-87, inspection level II .

	IETM	CHECK LEVEL	AQL
MAJOR (MA)	1.Liquid crystal leakage 2.Wrong polarizer 3.Outside dimension 4. Bright dot、Dark dot 5. Display abnormal 6. Class crack	II	0.25
MINOR (MI)	1. Spot Defect (Including black spot、white spot、pinhole、foreign particle、bubbles、hurt) 2. fragment 3. Line Defect (Including black line、white line、cratch) 4. Incision defect 5. Newton's ring 6. Other visual defects	II	1.0

9.3. Definition of area:

10.3.1 I area: viewing area

II area: outside viewing area

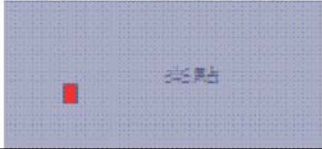
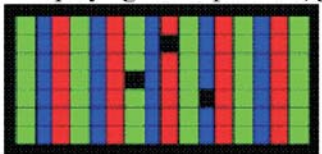


9.4. Standard of appearance test for I area: (unit: mm)

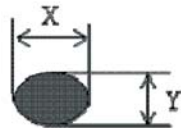
NOTE: Defect ignore for II area .

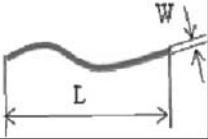
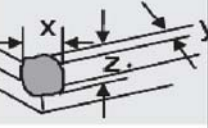
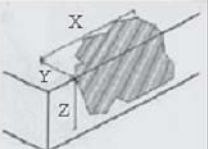
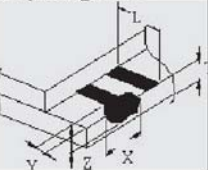
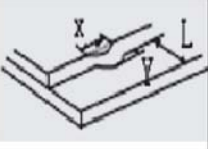
HANTRONIX, INC. 10080 BUBB RD. CUPERTINO, CA 95014	Q.A.: Z.W.	HDA700LPTM-HDMI	SHEET 10 OF 13
			DATE: 12/10/18

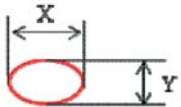
9.4.1 Bright/Dark Dots explain

Name	Explain	Definition
Bright dot	Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern 	The definition of dot: The size of a defective dot over 1/2 of single pixel dot is regarded as one defective dot . NOTE: One pixel consists of 3 sub-pixel: including R,G, and B dot.(Sub-pixel = Dot)
Dark dot	Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green, blue pattern. 	
ADJACENT DOT	Adjacent two sub-pixel are defect (define two dot defect)	

9.4.2 Inspection standard

No	Items	Criterion		Checking Manner	Defect Classes
1	Bright/dark dot	Under 6" (contain 6")	Bright dot: 2 Dark dot: $N \leq 4$ Note: be more than 5mm apart	Checking with eyes	MAJ
		6"-12"	Bright dot: $N \leq 4$ Dark dot: $N \leq 5$ Total Bright and Dark Dots: $N \leq 8$ Note : 1.Two bright dot defects (red, green, blue, and white) should be larger than 15mm; 2.The distance between black dot defects or black and bright dot defects should be more than 5mm apart.		
2	Spot Defect (Including black spot.white spot. Pinhole.foreign particle.bubbles.hurt)  $D = (X + Y) / 2$	Under 6" (contain 6")	$D \leq 0.1$ Ignore $0.1 < D \leq 0.35$ $N \leq 3$ $0.35 < D$ $N = 0$	Checking with eyes	MIN
		6"-12"	$D \leq 0.3$ Ignore $0.3 < D \leq 0.6$ $N \leq 4$ $0.6 < D$ $N = 0$		

No	Items	Criterion		Checking manner	Defect classes
3	Line Defect (Including black line, white line, scratch) 	Under 6" (contain 6")	$W \leq 0.02$ Ignore $0.02 < W \leq 0.04$ $L \leq 5$ $N \leq 2$ $0.04 < W \leq 0.06$ $L \leq 5$ $N \leq 1$ $W > 0.06$ $N = 0$	Checking with eyes	MIN
		6"-12"	$W \leq 0.07$ Ignore $0.07 < W \leq 0.1$ $L \leq 10$ $N \leq 4$ $W > 0.1$ $N = 0$		
4	Display abnormal	Not allowed		Checking with eyes	MAJ
5	Outside dimension	Accord with drawing		Callipers	MAJ
6	Class crack	Not allowed		Checking with eyes	MAJ
7	Leak	Not allowed		Checking with eyes	MAJ
8	Comer fragment 	$X \leq 3$ $Y \leq 3$ $Z \leq T$ Ignore Note : 1.No hurt identifying .wire.seal 2.T: Glass thickness X: Length Y: Width Z: thickness		Checking with eyes	MIN
9	Side fragment 	$Y \leq 1$ $Z \leq T$ Ignore Note : 1.No hurt identifying .wire.seal 2.T: Glass thickness X: Length Y: Width Z: thickness		Checking with eyes	MIN
	Step fragment 	$Y \leq 1$ and $Y \leq 1/4 L$		Checking with eyes	MIN
	Incision defect 	$Y \leq 1$ and accord with outside dimension		Checking with eyes	MIN

N ₂	Items	Criterion		Checking manner	Defect classes
10	Newton's ring (CTP or Cover board)  $D=(X+Y)/2$	Under 6" (contain 6") 6"-12"	$D \leq 25 \quad N \leq 3$ $D > 25 \quad N = 0$ $D \leq 70 \quad N \leq 5$ $D > 70 \quad N = 0$	Checking with eyes	MIN