

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	1/25
Document No.		Revision	1.1

TO :

Date : 2023/10/12

HannStar Product Specification

(Preliminary)

15.6" Transflective TFT-LCD

Model: **HH156MR-A01-1212**

(Open Cell)

Note: (1) The information contained herein is tentative and may be changed without prior notices.

(2) Please contact Display Corp. before designing your product based on this module specification.

(3) The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by HannStar for any intellectual property claims or other problems that may result from application based on the module described herein.

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	2/25
Document No.		Revision	1.1

Record of Revisions

Rev.	Date	Sub-Model	Description of change
1.0	2023/12/12	-A00-0299-P	Preliminary Product Specification was first released

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	3/25
Document No.		Revision	1.1

Contents

1.0	GENERAL DESCRIPTION.....	4
2.0	ABSOLUTE MAXIMUM RATINGS	5
3.0	OPTICAL CHARACTERISTICS.....	6
4.0	BLOCK DIAGRAM	10
5.0	INTERFACE PIN CONNECTION	12
6.0	ELECTRICAL CHARACTERISTICS	14
7.0	RELIABILITY TEST ITEMS.....	18
8.0	OUTLINE DIMENSION	19
9.0	LOT MARK.....	20
10.0	PACKAGE SPECIFICATION	21
11.0	GENERAL PRECAUTION.....	22
12.0	EDID Data	

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	4/25
Document No.		Revision	1.1

1.0 GENERAL DESCRIPTION

1.1 Introduction

HannStar Display model HSD156GUW5-A00-0299-P is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is transfective type TFT LCD panel and a driving circuit. This TFT LCD has a 15.6 inch (16:9) diagonally measured active display area with WUXGA (1920 horizontal by 1080 vertical pixel) resolution.

1.2 Features

- . 15.6 inch configuration
- . 16.7M color by R.G.B. 8bits
- . ROHS / Halogen Free Compliance

1.3 Applications

- . TFT LCD Monitor
- . Industrial Application
- . Amusement
- . Vehicle

1.4 General information

Item	Specification	Unit
Outline Dimension	348.56(H)x200.54(V)x 1.3(T) w/o PCB	mm
Display area	344.16(H)x193.59(V)	mm
Number of Pixel	1920(RGB)x1080	pixels
Pixel pitch	0.17925(W)x0.17925(H)	mm
Pixel arrangement	RGB Vertical Stripe	
Display mode	Normally White	
Interface	eDP	
NTSC	(26) (Typ.)	%
Surface treatment	LR	
<i>Luminance</i>	500cd/m2 (typ.)	cd/ m2
Weight	TBD	g
Power Consumption	TBD	W

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	5/25
Document No.		Revision	1.1

2.0 ABSOLUTE MAXIMUM RATINGS

2.1 Electrical Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	VDD	-0.3	3.96	V	GND=0
Logic Signal Input Level	VI	-0.3	VDD+0.3	V	

Note

- (1) Permanent damage may occur to the LCD module if beyond this specification. Functional operation should be restricted to the conditions described under normal operating conditions.
- (2) $T_a = 25 \pm 5^\circ\text{C}$

2.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	T_{opa}	-20	70	$^\circ\text{C}$	
Storage Temperature	T_{stg}	-30	80	$^\circ\text{C}$	

Note 1:

If T_a below 50°C , the maximal humidity is 90%RH, if T_a over 50°C , absolute humidity should be less than 70%RH.

Note 2:

The response time will be extremely slow when the operating temperature is around -10°C , and the back ground will become darker at high temperature operating

2.3 LB power output

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Output Power Voltage	LED+	30.6	--	32.6	V	LED+ =30V @10S6P
Output Power Current	$I_{LED1 \sim LED4}$	---	20	---	mA	Total 120mA(Typ.) (20mA x6channel)
BL Power Consumption	P_L		3.92		w	

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	6/25
Document No.		Revision	1.1

3.0 OPTICAL CHARACTERISTICS

3.1 Optical specification (Reflective)

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
White Reflectance (with Polarizer)		Rw (%)	$\Theta=0$ Normal viewing angle -	-	(13.98)	-	%	(4)
Contrast Ratio		CR		-	(8)	-	-	(1)(2)
Color Gamut		S(%)		-	(13.44)	-	%	
White chromaticity (CIE1931)		Wx			(0.329)			
		Wy			(0.351)			
Response Time		Tr+Tf			(5)		ms	(1)(3)
Viewing Angle	Hor.	Θ_L	CR>2	-	(70)	-	-	(1)(4)
		Θ_R		-	(70)	-		
	Ver.	Θ_U		-	(70)	-		
		Θ_D		-	(70)	-		

3.2 Optical Specification (Transmittance, Back-light No.XXXXXX)

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
White Transmittance (with Polarizer)		Tr(%)	$\Theta=0$ Normal viewing angle -	-	(1.5)	-	%	(4)
Contrast Ratio		CR		-	(25)	-	-	(1)(2)
Color Gamut		S(%)		-	(26)	-	%	
Luminance		IV		-	500	-	cd/2m	
White chromaticity (CIE1931)		Wx			(0.327)			
		Wy			(0.365)			
Response Time		Tr+Tf			(15)		ms	(1)(3)
Viewing Angle	Hor.	Θ_L	CR>2	-	(60)	-	-	(1)(4)
		Θ_R		-	(60)	-		
	Ver.	Θ_U		-	(60)	-		
		Θ_D		-	(60)	-		

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	7/25
Document No.		Revision	1.1

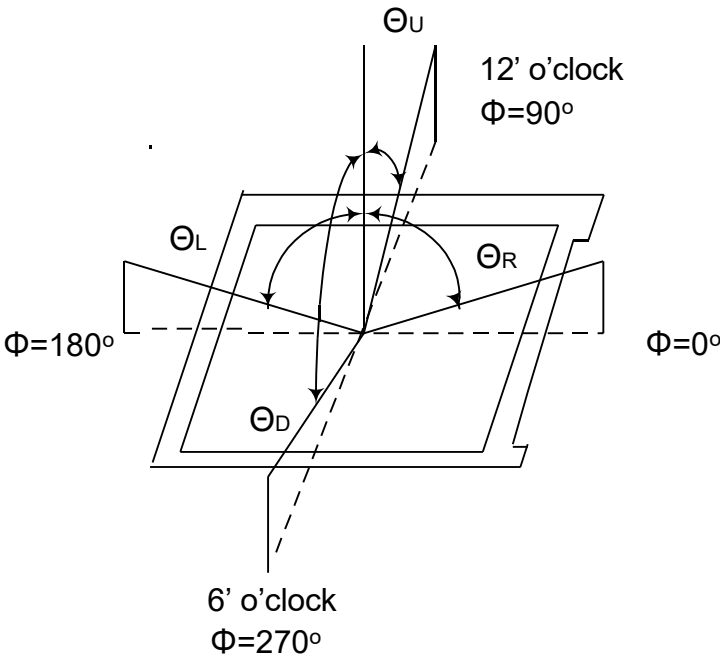
3.3 Measuring Condition

- . Measuring surrounding: dark room
- . Ambient temperature: $25 \pm 5^\circ\text{C}$
- . 15min. warm-up time.
- . The optical specifications are measured under standard backlight

3.4 Measuring Equipment

- . DMS (DMS = Display Measurement System) of AUTRONIC-MELCHERS GmbH, motorized goniometer system for comprehensive display characterization

Note (1) Definition of Viewing Angle:

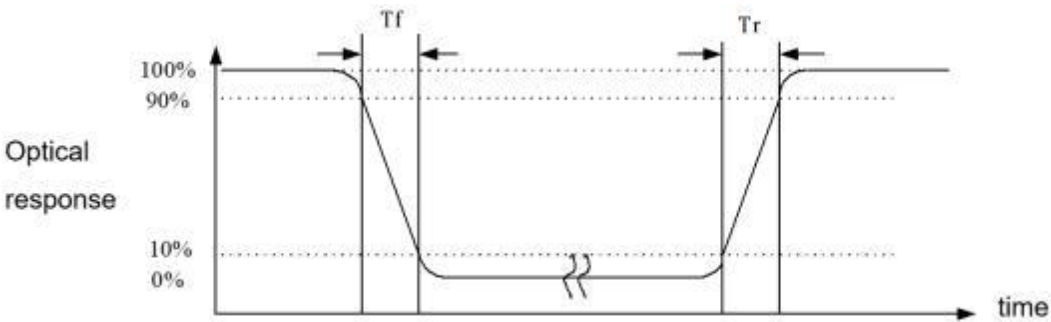


Note (2) Definition of Contrast Ratio (CR) :
measured at the center point of panel

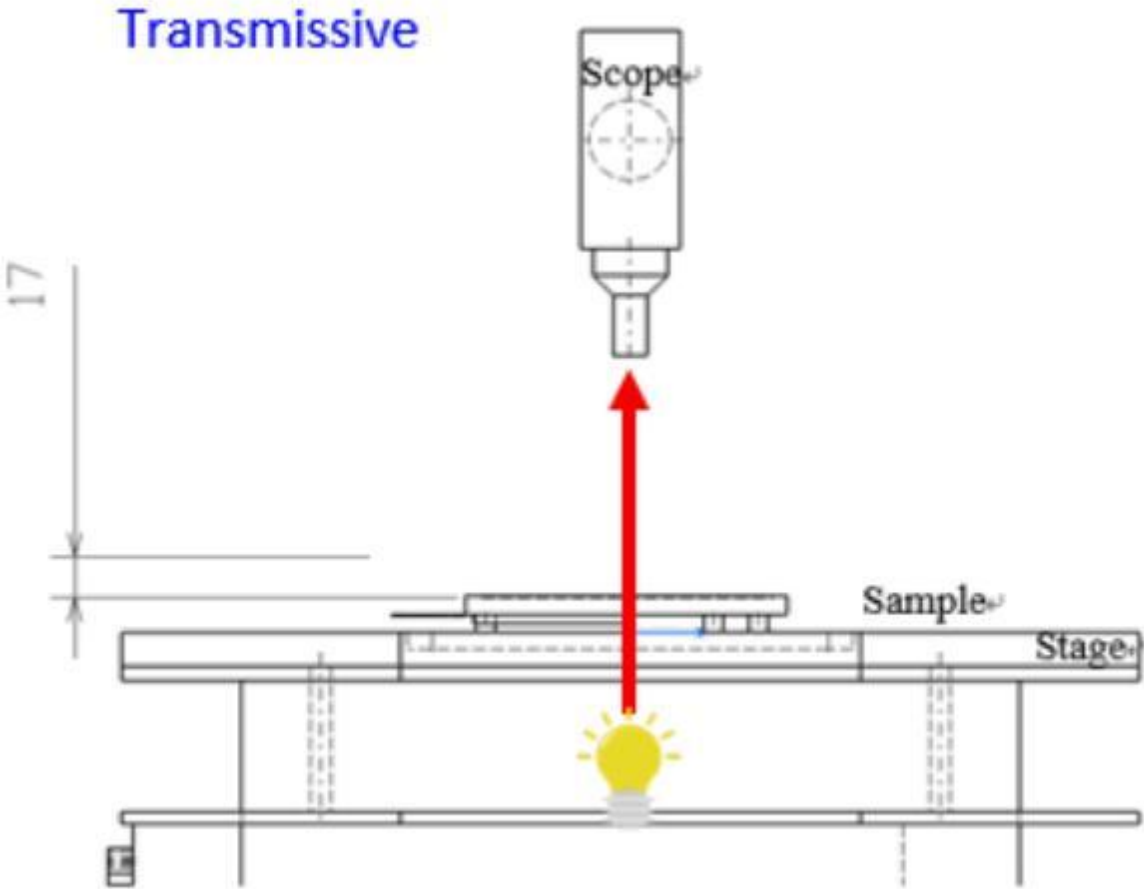
$$\text{CR} = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	8/25
Document No.		Revision	1.1

Note (3) Definition of Response Time : Sum of T_r and T_f

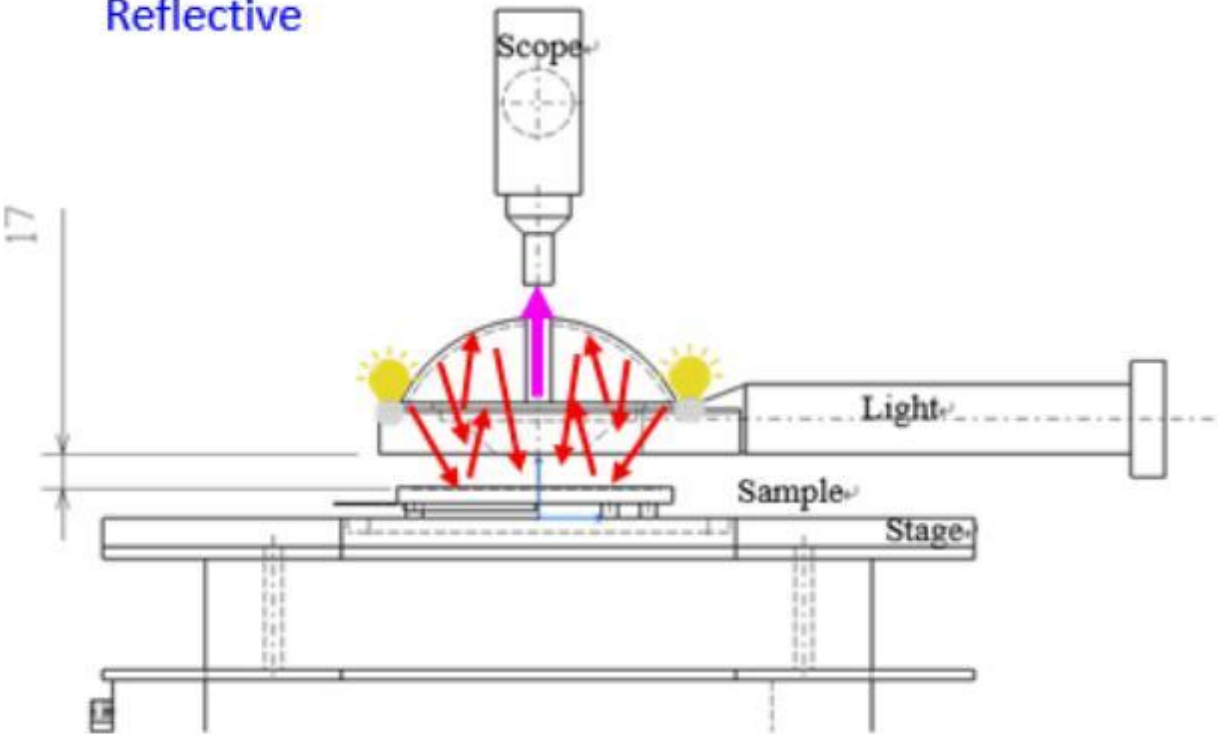


Note (4) Definition of optical measurement setup



Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	9/25
Document No.		Revision	1.1

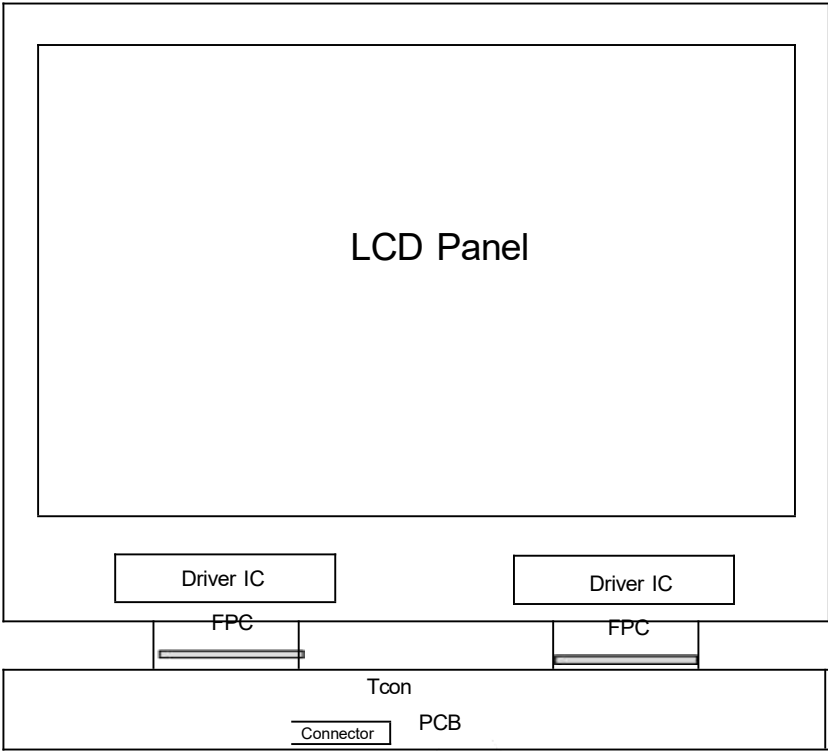
Reflective



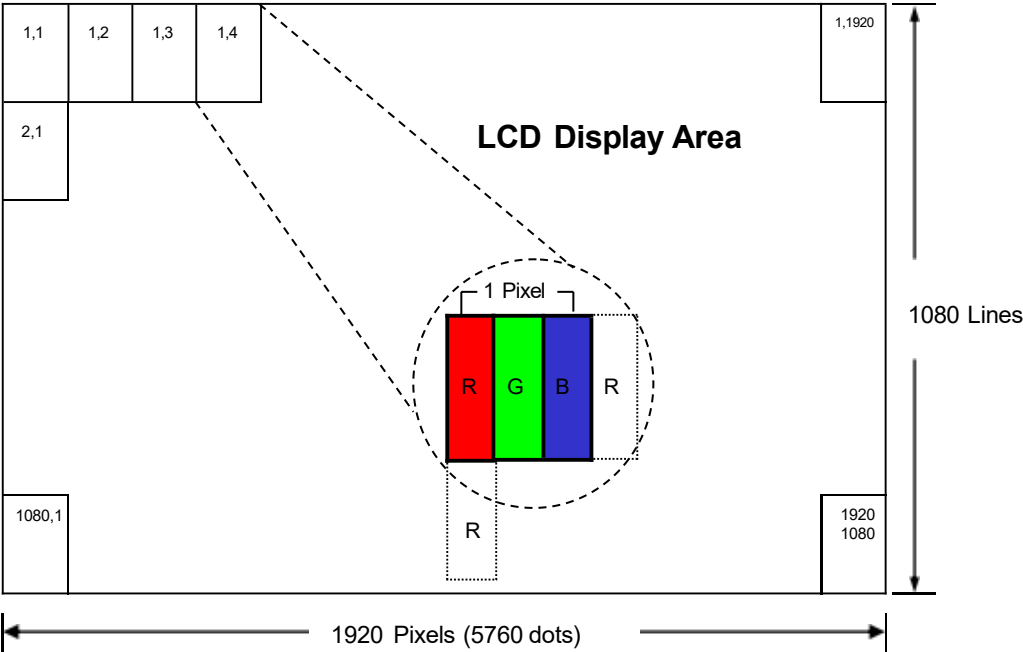
Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	10/25
Document No.		Revision	1.1

4.0 BLOCK DIAGRAM

4.1 TFT LCD Module



4.2 Pixel Format



Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	11/25
Document No.		Revision	1.1

4.3 Display Scanning Direction



Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	12/25
Document No.		Revision	1.1

5.0 INTERFACE PIN CONNECTION

5.1 FPC Pin Assignment : eDP Connector “LV0510L-030G0QH” or equivalent

No.	Symbol	Description
1	NC	NC
2	GND	Power ground
3	LANE1_N	Complement Signal Link Lane 1
4	LANE1_P	True Signal Link Lane 1
5	GND	Power ground
6	LANE0_N	Complement Signal Link Lane 0
7	LANE0_P	True Signal Link Lane 0
8	GND	Power ground
9	AUX_CH_P	True Signal Auxiliary Channel
10	AUX_CH_N	Complement Signal Auxiliary Channel
11	GND	Power ground
12	LCD_VCC	LCD logic and driver power
13	LCD_VCC	LCD logic and driver power
14	BISTI	BIST enable input, active high
15	GND	Power ground
16	GND	Power ground
17	HPD	HPD signal pin
18	NC	NC
19	NC	NC
20	NC	NC
21	NC	NC
22	NC	NC
23	NC	NC
24	NC	NC
25	NC	NC
26	NC	NC
27	NC	NC
28	NC	NC
29	NC	NC
30	NC	NC

Notes: NC pin must be retained; this pin can't contact GND or other signal

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	13/25
Document No.		Revision	1.1

5.2 Relationship Between Displayed Color and Input

	Display	MSB R7 R6 R5 R4 R3 R2 R1 R0	LSB G7 G6 G5 G4 G3 G2 G1 G0	MSB B7 B6 B5 B4 B3 B2 B1 B0	Gray scale Level
Basic color	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	-
	Blue	L L L L L L L L	L L L L L L L L	H H H H H H H H	-
	Green	L L L L L L L L	H H H H H H H H	L L L L L L L L	-
	Light Blue	L L L L L L L L	H H H H H H H H	H H H H H H H H	-
	Red	H H H H H H H H	L L L L L L L L	L L L L L L L L	-
	Purple	H H H H H H H H	L L L L L L L L	H H H H H H H H	-
	Yellow	H H H H H H H H	H H H H H H H H	L L L L L L L L	-
	White	H H H H H H H H	H H H H H H H H	H H H H H H H H	-
Gray scale of Red	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L H	L L L L L L L L	L L L L L L L L	L1
		L L L L L L H L	L L L L L L L L	L L L L L L L L	L2
		:	:	:	L3...L251
		H H H H H H L L	L L L L L L L L	L L L L L L L L	L252
		H H H H H H L H	L L L L L L L L	L L L L L L L L	L253
		H H H H H H H L	L L L L L L L L	L L L L L L L L	L254
	Red	H H H H H H H H	L L L L L L L L	L L L L L L L L	Red L255
Gray scale of Green	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L L	L L L L L L L H	L L L L L L L L	L1
		L L L L L L L L	L L L L L L H L	L L L L L L L L	L2
		:	:	:	L3...L251
		L L L L L L L L	H H H H H H L L	L L L L L L L L	L252
		L L L L L L L L	H H H H H H L H	L L L L L L L L	L253
		L L L L L L L L	H H H H H H H L	L L L L L L L L	L254
	Green	L L L L L L L L	H H H H H H H H	L L L L L L L L	Green L255
Gray scale of Blue	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L L	L L L L L L L L	L L L L L L L H	L1
		L L L L L L L L	L L L L L L L L	L L L L L L H L	L2
		:	:	:	L3...L251
		L L L L L L L L	L L L L L L L L	H H H H H H L L	L252
		L L L L L L L L	L L L L L L L L	H H H H H H L H	L253
		L L L L L L L L	L L L L L L L L	H H H H H H H L	L254
	Blue	L L L L L L L L	L L L L L L L L	H H H H H H H H	Blue L255
Gray scale of White & Black	Black	L L L L L L L L	L L L L L L L L	L L L L L L L L	L0
	Dark ↑ ↓ Light	L L L L L L L H	L L L L L L L H	L L L L L L L H	L1
		L L L L L L H L	L L L L L L H L	L L L L L L H L	L2
		:	:	:	L3...L251
		H H H H H H L L	H H H H H H L L	H H H H H H L L	L252
		H H H H H H L H	H H H H H H L H	H H H H H H L H	L253
		H H H H H H H L	H H H H H H H L	H H H H H H H L	L254
	White	H H H H H H H H	H H H H H H H H	H H H H H H H H	White L255

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	14/25
Document No.		Revision	1.1

6.0 ELECTRICAL CHARACTERISTICS

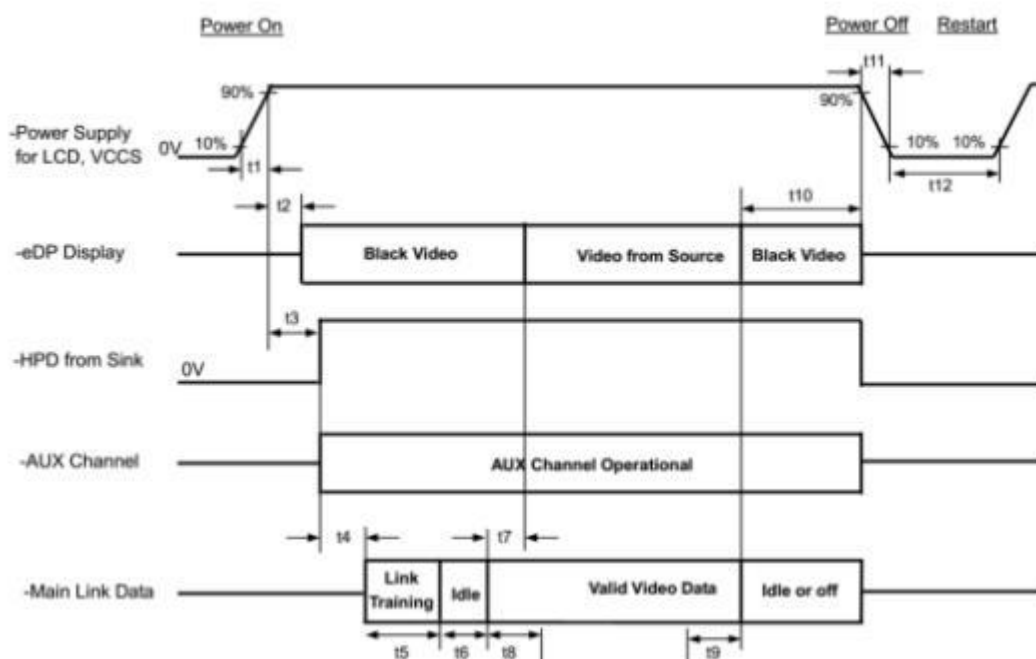
6.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	VDD	3.0	3.3	3.6	V	
Current of VDD	I _{VDD}	-	TBD	-	mA	VDD=3.3V, @60Hz
Input signal voltage	ViH	0.7*VDD	-	VDD	V	
	ViL	0	-	0.2*VDD	V	

6.2 Interface Timing

Item	Min.	Typ.	Max.	Unit
Frame Rate	-	(60)	-	Hz
Frame Period	-	(2)	-	line
Vertical Display Time		1080		line
Vertical Blanking Time	-	(40)	-	line
1 Line Scanning Time	-	(46)	-	clock
Horizontal Display Time		1920		clock
Horizontal Blanking Time	-	(272)	-	clock
Clock Rate	-	(148)	-	MHz

6.3 Power on/Off Sequence



Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	15/25
Document No.		Revision	1.1

Timing Specifications

Parameter	Description	Reqd .By	Typ.		Unit	Notes
			Min.	Max.		
t1	Power rail rise time, 10% to 90%	Source	0.5	10	ms	-
t2	Delay from VCC to black video generation	Sink	0	200	ms	Automatic Black Video generation prevents display noise until valid video data is received from the Source (see Notes:2 and 3 below)
t3	Delay from VCC to HPD high	Sink	0	200	ms	Sink AUX Channel must be operational upon HPD high (see Note:4 below)
t4	Delay from HPD high to link training initialization	Source	-	-	ms	Allows for Source to read Link capability and initialize
t5	Link training duration	Source	-	-	ms	Dependant on Source link training protocol
t6	Link idle	Source	-	-	ms	Min Accounts for required BS-Idle pattern. Max allows for Source frame synchronization
t7	Delay from valid video data from Source to video on display	Sink	0	50	ms	Max value allows for Sink to validate video data and timing. At the end of T7, Sink will indicate the detection of valid video data by setting the SINK_STATUS bit to logic 1 (DPCD 00205h, bit 0), and Sink will no longer generate automatic Black Video
t8	Delay from valid video data from Source to backlight on	Source	0	-	ms	Source must assure display video is stable

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	16/25
Document No.		Revision	1.1

t9	Delay from backlight off to end of valid video data	Source	0	-	ms	Source must assure backlight is no longer illuminated. At the end of T9, Sink will indicate the detection of no valid video data by setting the SINK_STATUS bit to logic 0 (DPCD 00205h, bit 0), and Sink will automatically display Black Video. (See Notes: 2 and 3 below)
t10	Delay from end of valid video data from Source to power off	Source	0	500	ms	Black video will be displayed after receiving idle or off signals from Source
t11	VCC power rail fall time, 90% to 10%	Source	0.5	10	ms	-
t12	VCC Power off time	Source	500	-	ms	-

6.4 Signal Electrical Characteristics

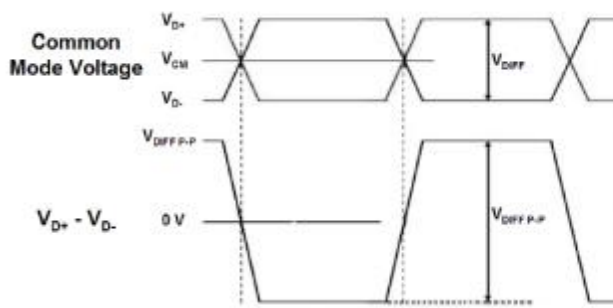
Display Port Main Link

Parameter	Description	Min.	Typ.	Max.	Unit
V _{CM}	Differential Common Mode Voltage	0	-	2.0	V
V _{Diff P-P} Level 1	Differential Peak to Peak Voltage Level 1	0.34	0.40	0.46	V
V _{Diff P-P} Level 2	Differential Peak to Peak Voltage Level 2	0.51	0.60	0.68	V
V _{Diff P-P} Level 3	Differential Peak to Peak Voltage Level 3	0.69	0.80	0.92	V
V _{Diff P-P} Level 4	Differential Peak to Peak Voltage Level 4	1.02	1.20	1.38	V

Note:

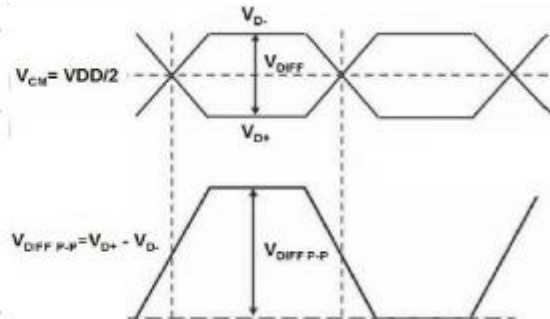
- (1) Input signals shall be low or Hi- resistance state when VDD is off.
- (2) It is recommended to refer the specifications of VESA Display Port Standard V1.2 in detail.
- (3) Follow as VESA display port standard V1.2 at both 1.62 and 2.7Gbps link rates.

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	17/25
Document No.		Revision	1.1



Display Port Main Link Signal

Display Port AUX_CH



Display Port AUX_CH Signal

Parameter	Description	Min.	Typ.	Max.	Unit
V_{CM}	Differentia Common Mode Voltage	0	VDD/2	2	V
$V_{DIFF P-P}$	Differential Peak to Peak Voltage	0.39	-	1.38	V

Note: Fallow as VESA display port standard V1.4.

Display Port VHPD

Parmeter	Description	Min	Typ	Max	Unit
V_{HPD}	High Level	2.25	-	3.6	V

Note: Fallow as VESA display port standard V1.4

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	18/25
Document No.		Revision	1.1

7.0 RELIABILITY TEST ITEMS

No.	Item	Conditions	Remark
1	High Temperature Storage	Ta=+80℃ , 240 hrs	1、 2、 3
2	Low Temperature Storage	Ta=-30℃ , 240 hrs	1、 2、 3
3	High Temperature Operation	Ta=+70℃ , 240 hrs	1、 2、 3
4	Low Temperature Operation	Ta=-20℃ , 240 hrs	1、 2、 3
5	High Temperature and High Humidity (operation)	Ta=60℃ , 90%RH, 240 hrs	1、 2、 3
6	Thermal Cycling Test (non operation)	-20℃ (30 min)→ +70℃ (30 min), 200 cycle	1、 2、 3

Note1: There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

Note2: All of the function & cosmetic Judgment basis base on room temperature.

(The tested module must have enough recovery time at least 2 hours at room temperature.)

Note3: The test condition definition panel's surface temperature.

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	21/25
Document No.		Revision	1.1

10.0 PACKAGE SPECIFICATION

10.1 Packing form

Packaging material	Standard	Quantity
BOX		
Blister tray		
Foam1		
Foam2		
Foam3		
Vacuum bag		
Module	HH156MR-A01-1212	

10.2 Packing Drawing

TBD

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	22/25
Document No.		Revision	1.1

11.0 GENERAL PRECAUTION

11.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

11.2 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

11.3 Breakage of LCD Panel

- 11.3.1** If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.
- 11.3.2** If liquid crystal contacts mouth or eyes, rinse out with water immediately.
- 11.3.3** If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.
- 11.3.4** Handle carefully with chips of glass that may cause injury, when the glass is broken.

11.4 Electric Shock

- 11.4.1** Disconnect power supply before handling LCD module.
- 11.4.2** Do not pull or fold the LED cable.
- 11.4.3** Do not touch the parts inside LCD modules and the fluorescent LED's connector or cables in order to prevent electric shock.

11.5 Absolute Maximum Ratings and Power Protection Circuit

- 11.5.1** Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.
- 11.5.2** Please do not leave LCD module in the environment of high humidity and high temperature for a long time.
- 11.5.3** It's recommended to employ protection circuit for power supply.

11.6 Operation

- 11.6.1** Do not touch, push or rub the polarizer with anything harder than HB pencil lead.
- 11.6.2** Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.
- 11.6.3** When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	23/25
Document No.		Revision	1.1

11.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may cause deformation or color fading.

11.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzene or other adequate solvent.

11.7 Static Electricity

11.7.1 Protection film must be removed very slowly from the surface of LCD module to prevent electrostatic occurrence.

11.7.2 Because LCD module uses CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge. Persons who handle the module should be grounded through adequate methods.

11.8 Strong Light Exposure

The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

11.9 Disposal

When disposing LCD module, obey the local environmental regulations.

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	24/25
Document No.		Revision	1.1

12.0 EDID Data

EEPROM IC :

Device address :

Byte# (DEC)	Byte# (HEX)	Field Name & Comments	Value (HEX)	Value (BIN)	Value (DEC)
0	0	Header	00	00000000	0
1	1	Header	FF	11111111	255
2	2	Header	FF	11111111	255
3	3	Header	FF	11111111	255
4	4	Header	FF	11111111	255
5	5	Header	FF	11111111	255
6	6	Header	FF	11111111	255
7	7	Header	00	00000000	0
8	8	ID Manufacture Name : KDB	2C	00101100	44
9	9		82	10000010	130
10	0A	ID Product Code :0913	13	00010011	19
11	0B		09	00001001	9
12	0C	ID Serial Number: 0	00	00000000	0
13	0D		00	00000000	0
14	0E		00	00000000	0
15	0F		00	00000000	0
16	10	Week of Manufacture : 38	26	00100110	38
17	11	Year of Manufacture : 2023	21	00100001	33
18	12	EDID Version : 1	01	00000001	1
19	13	EDID reversion:4	04	00000100	4
20	14	Video Input Definition : Digital DFP 1.x Compatible	A5	10100101	165
21	15	Maximum Horizontal Image Size : 34 cm	22	00100010	34
22	16	Maximum Vertical Image Size : 19 cm	13	00010011	19
23	17	Display Gamma : 2.20	78	01111000	120
24	18	Feature support (no DPMS,Active off,RGB,timing BLK 1)	02	00000010	2
25	19	Red Chromaticity : Rx = TBD Red Chromaticity : Ry = TBD Green Chromaticity : Gx =TBD Green Chromaticity : Gy = TBD Blue Chromaticity : Bx = TBD Blue Chromaticity : By = TBD Default White Point : Wx = 0.313 Default White Point : Wy = 0.329	EC	11101100	236
26	1A		61	01100001	97
27	1B		FF	11111111	255
28	1C		5C	01011100	92
29	1D		55	01010101	85
30	1E		91	10010001	145
31	1F		28	00101000	40
32	20		1B	00011011	27
33	21		50	01010000	80
34	22		54	01010100	84

Document Title	HH156MR-A01-1212 Preliminary Specification	Page No.	25/25
Document No.		Revision	1.1

35	23	Established Timings I(Not Used)	00	00000000	0
36	24	Established Timings II(Not Used)	00	00000000	0
37	25	Manufacturer's Timings (Not Used)	00	00000000	0
38	26	Standard Timings (Not Used)	01	00000001	1
39	27		01	00000001	1
40	28		01	00000001	1
41	29		01	00000001	1
42	2A		01	00000001	1
43	2B		01	00000001	1
44	2C		01	00000001	1
45	2D		01	00000001	1
46	2E		01	00000001	1
47	2F		01	00000001	1
48	30		01	00000001	1
49	31		01	00000001	1
50	32		01	00000001	1
51	33		01	00000001	1
52	34		01	00000001	1
53	35		01	00000001	1
54	36	Pixel Clock: 148MHz Horizontal Image Size : 344 mm Vertical Image Size : 194 mm Refresh Mode : Non-interlaced Normal Display, No Stereo Horizontal : Active Time : 1920 Pixels Blanking Time : 272 Pixels Sync Offset : 46 Pixels Sync Pulse Width: 30 Pixels Border : 0 Pixels Frequency : 67.52 kHz Vertical : Active Time : 1080 Lines Blanking Time : 40 Lines Sync Offset : 2Lines Sync Pulse Width : 4Lines Border : 0 Lines Digital Separate, Horizontal Polarity (-), Vertical Polarity (-)	D0	11010000	208
55	37		39	00111001	57
56	38		80	10000000	128
57	39		10	00010000	16
58	3A		71	01110001	113
59	3B		38	00111000	56
60	3C		28	00101000	40
61	3D		40	01000000	64
62	3E		2E	00101110	46
63	3F		1E	00011110	30
64	40		24	00100100	36
65	41		00	00000000	0
66	42		58	01011000	88
67	43		C2	11000010	194
68	44		10	00010000	16
69	45		00	00000000	0
70	46		00	00000000	0
71	47		18	00011000	24