HIGHNESS™

One of a kind

HM290FH111B

29" Stretch Color TFT-LCD

Release Date
16th Nov 2023

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1.0 GENERAL SPECIFICATION

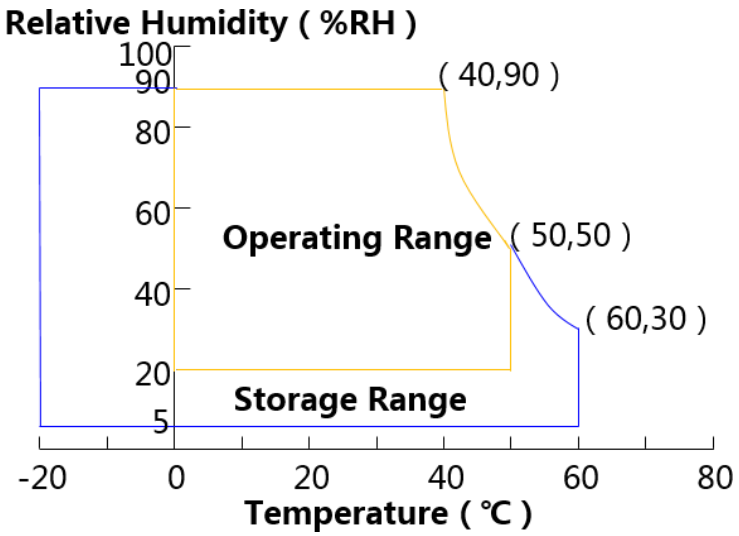
Parameter	Specification	Unit	Remarks
Active area	705.6(H)x198.45(V)	mm	
Number of pixels	1920(H) ×540(V)	pixels	
Pixel pitch	122.5(H) x367.5(V)	um	
Pixel arrangement	Pixels RGB Vertical stripe		
Display colors	16.7M	colors	8bits True
Display mode	Normally Black		
Dimensional outline	720.8(H)*226.25(V)*21.00	mm	
Weight	2415±100	g	
Power Consumption	35.8	Watt	Typ.
Bezel width (L/R/U/D)	5.6/5.6/11.9/11.9	mm	
Surface Treatment	Haze 25% /3H		
Back-light	E-LED , 2ea LED bar-down side		
Possible display type	Landscape and Portrait Enabled		

2.0 ABSOLUTE MAXIMUM RATINGS

The following are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and currentvalues are listed in Table.

Parameter	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage	VDD	8	13.2	V	Ta = 25 ℃
Operating Temperature	T_{OP}	-5	+60	℃	
Storage Temperature	T_{SUR}	-20	+60	℃	Note 1
	T_{ST}	-20	+60	℃	
Operating Ambient Humidity	Hop	10	80	%RH	
Storage Humidity	Hst	10	80	%RH	

Note 1 : Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39 ℃ max. and no condensation of water.



3.0 ELECTRICAL SPECIFICATIONS

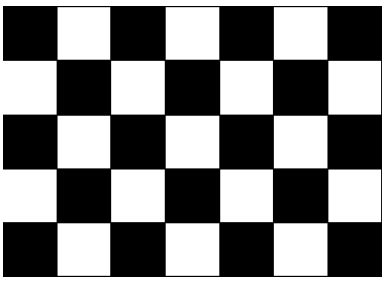
3.1 TFT LCD Open Cell

[Ta =25±2 ℃]

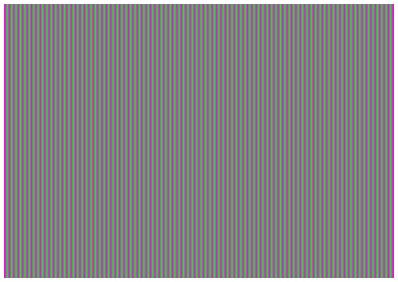
Parameter		Symbol	Values			Unit	Remark
			Min	Typ	Max		
Power Supply Input Voltage		VDD	10.8	12	13.2	Vdc	
Power Supply Ripple Voltage		VRP			400	mV	
Power Supply Current		IDD	-	250	500	mA	Note 1
Power Consumption		PDD	-	3	6.6	Watt	
Rush current		IRUSH	-	-	3.0	A	
LVDS Interface	Differential Input High Threshold Voltage	VTH	-		+100	mV	
	Differential Input Low Threshold Voltage	VTL	-100		-	mV	
	Common Input Voltage	VLC	0.7	-	1.6	V	
	LVDS swing voltage	VID	±100		±600	mV	
CMOS Interface	Input High Threshold Voltage	VIH	2.1	-	3.6	V	
	Input Low Threshold Voltage	VIL	0		1.1	V	
	Input current	IIN	-10	-	10	μA	
	Pull low resistor	RPD	50	100	150	KΩ	

The current draw and power consumption specified is for VDD=12.0V,
Frame rate f_V=60Hz and Clock frequency = 74.25MHz.
Test Pattern of power supply current

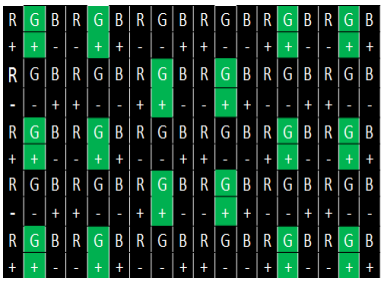
a) Typ : Mosaic 7X5 (L0/L255)



b) Max : Vline Subline (L255))



c) Flicker Pattern



Note 2 : The duration of rush current is about 2ms and rising time of Power Input is 1ms(min)

4.0 ELECTRICAL SPECIFICATIONS

4.1 Backlight Unit

[Ta =25±2 ℃]

Parameter			Min.	Typ.	Max.	Unit	Remarks
LED Forward Voltage		V_F	-	3.0	3.2	V	-
LED Forward Current		I_F	-	105	-	mA	-
LED Power Consumption		P_{LED}		32.76	34.95	W	BLU Power Consumption
LED Life-Time		N/A	50000	-	-	Hour	IF = 105mA
PWM Control Level	PWM High Level		-	-	-	V	
	PWM Low Level		-	-	-	V	
PWM Control Frequency		F_{PWM}	-	-	-	Hz	
Duty Ratio		-	-	-	-	%	

Notes : 1. LED Power Consumption Calculator Value for reference IF × VF ×104 = PLED
2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.

4.2 Backlight Input Pin Assignments

Connector type : CI1406M1VL0-NH-6pin or equivalent

Pin No.	Symbol	Feature
1	CH1-	I Return CH1,White
2	CH2-	I Return CH2,White
3	CH3+	VLED OUT CH3,Blue
4	CH4+	VLED OUT CH4,Blue
5	CH5-	I Return CH5,White
6	CH6-	I Return CH6,White

DC Input specification

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
LED forward voltage per channel	VLED	36.4	39	41.6	V
LED forward current per channel	ILED	-	105	-	mA

5.0 INTERFACE CONNECTION

5.1 Input Signal & Power

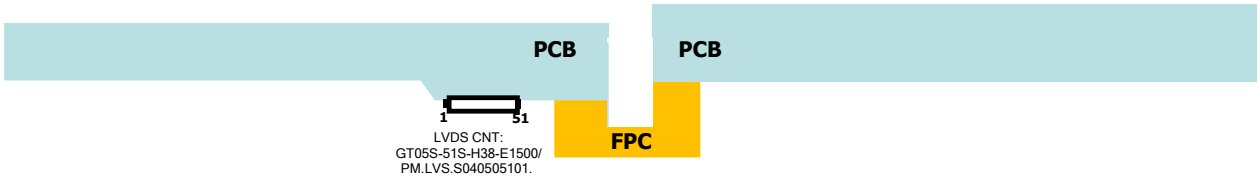
- LVDS Connector: GT05S-51S-H38-E1500/PM.LVS.S040505101.

Pin No	Symbol	Description	Pin No	Symbol	Description
1	VDD	Power Supply (12V)	27	ELV1N	Negative Transmission data of Pixel 1 (EVEN)
2	VDD	Power Supply (12V)	28	ELV1P	Positive Transmission data of Pixel 1 (EVEN)
3	VDD	Power Supply (12V)	29	ELV2N	Negative Transmission data of Pixel 2 (EVEN)
4	VDD	Power Supply (12V)	30	ELV2P	Positive Transmission data of Pixel 2 (EVEN)
5	VDD	Power Supply (12V)	31	GND	Ground
6	NC	Not connection, this pin should be open	32	ELVCKN	Negative Transmission Clock(EVEN)
7	GND	Ground	33	ELVCKP	Positive Transmission Clock(EVEN)
8	GND	Ground	34	GND	Ground
9	GND	Ground	35	ELV3N	Negative Transmission data of Pixel 3 (EVEN)
10	OLV0N	Negative Transmission data of Pixel 0 (ODD)	36	ELV3P	Positive Transmission data of Pixel 3 (EVEN)
11	OLV0P	Positive Transmission data of Pixel 0 (ODD)	37	NC	Not connection, this pin should be open
12	OLV1N	Negative Transmission data of Pixel 1 (ODD)	38	NC	Not connection, this pin should be open
13	OLV1P	Positive Transmission data of Pixel 1 (ODD)	39	GND	Ground
14	OLV2N	Negative Transmission data of Pixel 2 (ODD)	40	NC	Not connection, this pin should be open
15	OLV2P	Positive Transmission data of Pixel 2 (ODD)	41	NC	Not connection, this pin should be open
16	GND	Ground	42	NC	Not connection, this pin should be open
17	OLVCKN	Negative Transmission Clock(ODD)	43	NC	Not connection, this pin should be open
18	OLVCKP	Positive Transmission Clock(ODD)	44	NC	Not connection, this pin should be open
19	GND	Ground	45	LVDS_SEL	LVDS format select
20	OLV3N	Negative Transmission data of Pixel 3 (ODD)	46	NC	Not connection, this pin should be open
21	OLV3P	Positive Transmission data of Pixel 3 (ODD)	47	NC	Not connection, this pin should be open
22	NC	Not connection, this pin should be open	48	NC	Not connection, this pin should be open
23	NC	Not connection, this pin should be open	49	SCL_PG	I2C_SCL
24	GND	Ground	50	SDA_PG	I2C_SDA
25	ELV0N	Negative Transmission data of Pixel 0 (EVEN)	51	NC	Not connection, this pin should be open
26	ELV0P	Positive Transmission data of Pixel 0 (EVEN)			

Notes : 1. NC(Not Connected)

2. Input Level of LVDS signal is based on the EIA-644 Standard.

TOP view of LCM PCB



BIST Pattern

PT1:Black (2sec)	PT2:White (2sec)	PT3:Red (2sec)	PT4:Green (2sec)	PT5:Blue (2sec)

6.0 OPTICAL SPECIFICATIONS

[VDD = 12.0V, Frame rate = 60Hz, Ta =25±2 ℃]

Parameter		Symbol	Condition	Min	Typ	Max	Unit
Viewing Angle	Horizontal	Θ_3	CR > 10	80	89	-	Deg.
		Θ_9		80	89	-	Deg.
	Vertical	Θ_{12}		80	89	-	Deg.
		Θ_6		80	89	-	Deg.
Brightness		Lv	Θ = 0° (Center) Normal Viewing Angle	560	700	-	nit
Contrast ratio		CR		4000:1	4500:1	-	
White luminance uniformity		ΔY		75	-	-	%
Reproduction of color	White	W_x		TYP. - 0.03	0.271	TYP. + 0.03	
		W_y			0.292		
	Red	R_x			0.650		
		R_y			0.332		
	Green	G_x			0.287		
		G_y			0.616		
	Blue	B_x			0.145		
		B_y			0.082		
Color Gamut				69	72	-	%
Response Time	G to G	T_g		-	15	-	ms

7.0 MECHANICAL CHARACTERISTICS

Parameter	Specification	Unit
Dimensional outline	720.8*226.25*21	mm
Weight	2415±100	gram
Active area	705.6(H)*198.45(V)	mm
Pixel pitch	122.5(H) ×367.5(V)	um
Number of pixels	1920(H) ×540(V)(1 pixel = R + G + B dots)	pixels
Back-light	E-LED , 2ea LED bar-down side	

7.1 Anti-Glare and Polarizer Hardness.

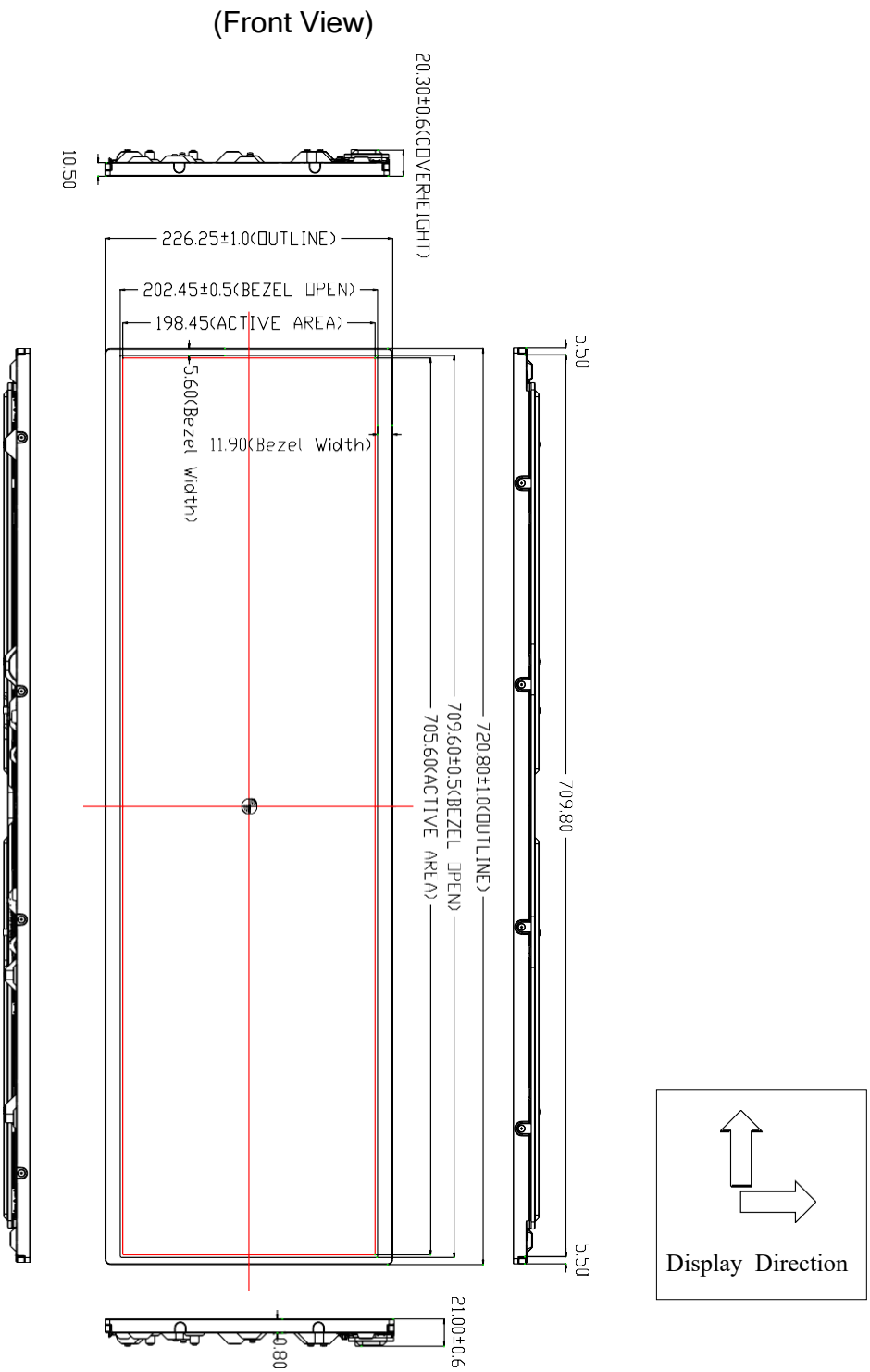
The surface of the LCD has an anti-glare coating to minimize reflection and a coating to reduce scratching.

8.0 RELIABILITY TEST

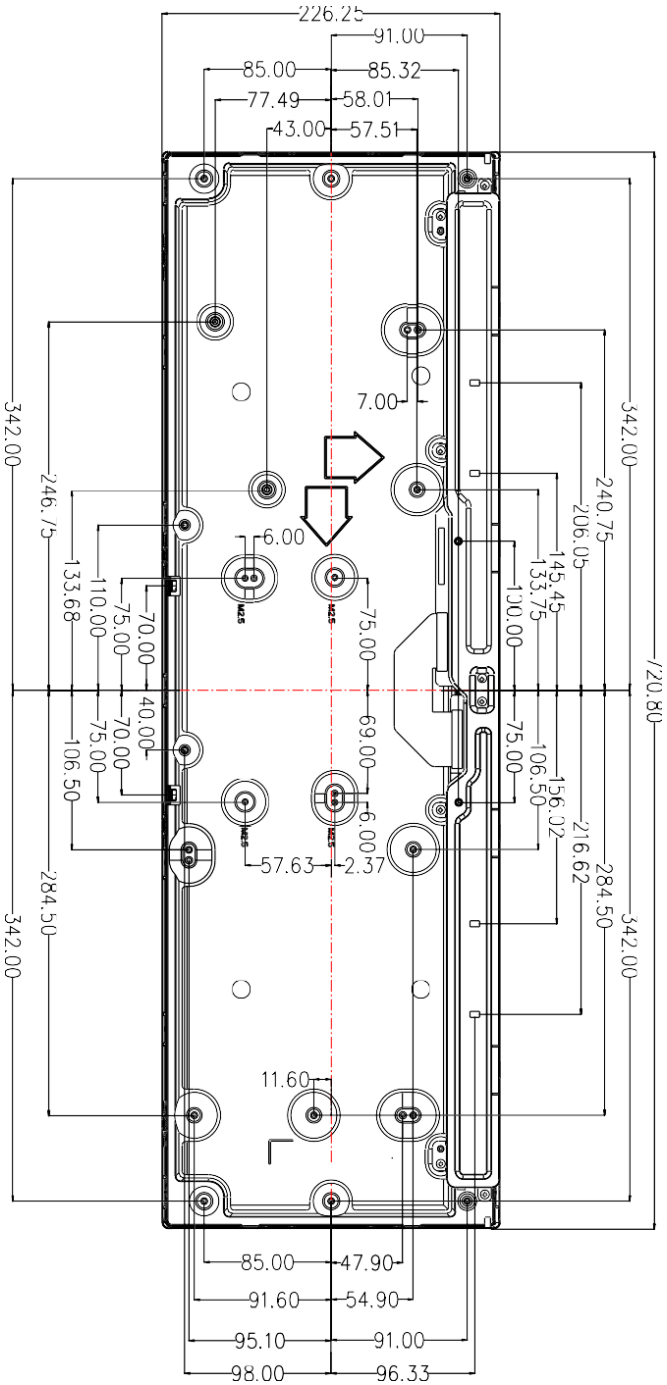
The Reliability test items, and its conditions are shown below.

No	Test Items	Conditions	
1	High temperature storage test	Ta = 60 ℃, 240 hrs	
2	Low temperature storage test	Ta = -20 ℃, 240 hrs	
3	High temperature & high humidity operation test	Ta = 50 ℃, 80%RH, 240hrs, Operation	
4	High temperature operation test	Ta = 60 ℃, 240hrs	
5	Low temperature operation test	Ta = -5 ℃, 240hrs	
6	8585	85℃，85%，240hr，Storage	
7	Thermal shock	Ta = -20 ℃ ↔ 60 ℃ (0.5 hr), 100 cycle	
8	Vibration test (non-operating)	Frequency 5 ~ 200 Hz, Sweep rate 30 min Gravity / AMP 1.47 G Period X, Y, Z 30 min	
9	Shock test (non-operating)	Gravity	220G
		Pulse width	2msec, half sine wave
		Direction	± X, ± Y, ± Z Once for each
10	On/Off	25℃，1sec on / 1sec off，100times；10sec on / 5sec off，30000times，aging 240hr，Operation	

9.0 OUTLINE DIMENSIONS



(Rear View)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