




Military Display

# 5 inch LCD Module Open Frame Specification

Model No. : SLM-MR050M-E

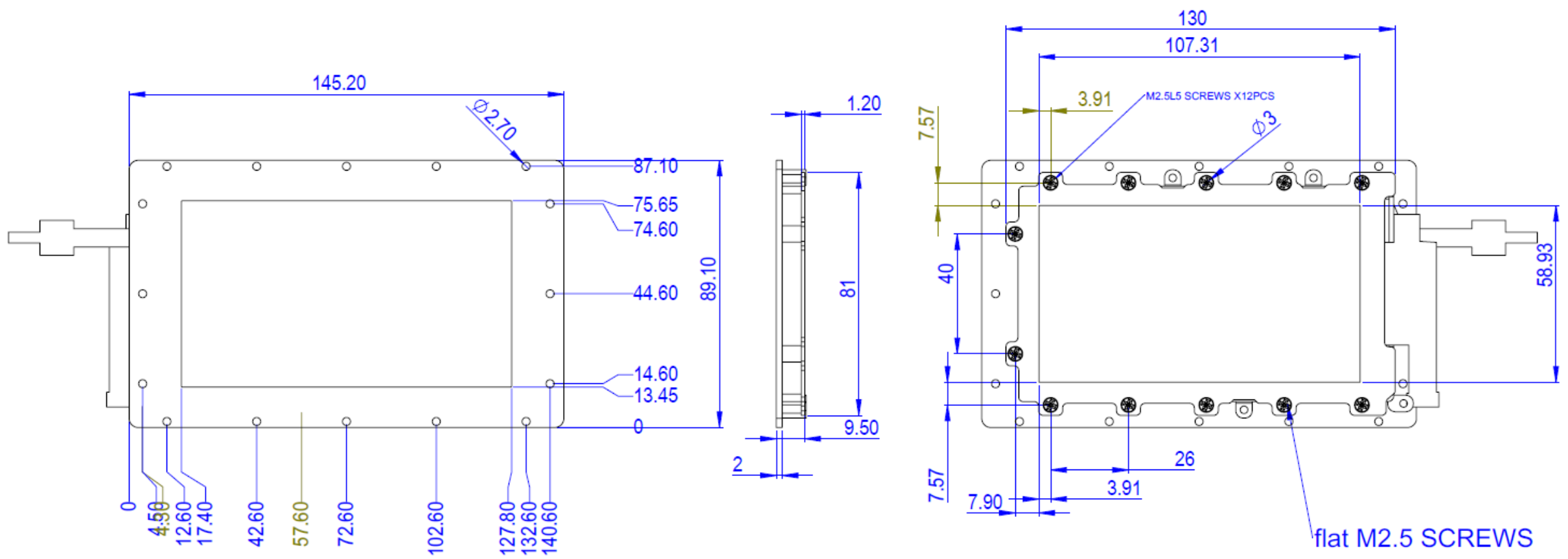
Date : 2021/3/30

Revision : 0.2

ACT Power GM Approve	ACT Power PM Approve
	

# SLM-MR050M-E

## Appearance



## MIPI Pin Assignment

Pin No.	Symbol	I/O	Function	Remark
1	GND	P	Ground	
2	GND	P	Ground	
3	VDD	P	Analogy Power Supply	
4	D3-	I	MIPI Data Lane 3-	
5	GND	P	Ground	
6	D3+	I	MIPI Data Lane 3+	
7	MTP	P	Programing Power	
8	GND	P	Ground	
9	GND	P	Ground	
10	D0-	I	MIPI Data Lane 0-	
11	LED-	P	Cathode 1 of LED	
12	D0+	I	MIPI Data Lane 0+	
13	GND	P	Ground	
14	GND	P	Ground	
15	LED+	P	Anode of LED	
16	CK-	I	MIPI Clock Lane-	
17	GND	P	Ground	
18	CK+	I	MIPI Clock Lane+	
19	LED2-	P	Cathode 2 of LED	
20	GND	P	Ground	
21	GND	P	Ground	
22	D1-	I	MIPI Data Lane 1-	
23	VDDIO	P	Digital Power Supply	
24	D1+	I	MIPI Data Lane 1+	
25	GND	P	Ground	
26	GND	P	Ground	
27	TE	I	Tearing Effect	
28	D2-	I	MIPI Data Lane 2-	
29	GND	P	Ground	
30	D2+	I	MIPI Data Lane 2+	
31	LED_PWM	P	Backlight Control PWM Signal	
32	GND	P	Ground	
33	GND	P	Ground	
34	RESX	I	Reset Signal	



## Specifications

LCD Module	
LCD Size	5 TFT LCD
Backlight	LED
Resolution	720 x 1280
View Angle	± 80° (H), ±80° (V)
Luminance	700 cd/m2 (after bonding)
Contrast Ratio	800:1
Aspect Ratio	16:9
Response Time	30 ms
No. of Color	16.7M
Active area	62.10 x 110.40 mm
Pixel Pitch	0.08625 (H) x 0.08625 (V)
LED Life Time	50,000 Hrs (Min)
Touch Screen	
Touch Type	Capacitive Multi Touch
Viewable Area	110.25 x 62.23 mm
Active Area	110.25 x 62.10 mm
Touch Interface	I2C
Touch Glass	AR Coating, Strengthen Glass
Optical Bonding	EMI mesh with optical bonding
Touch Drivers	Support Windows, Linux, etc.
Environmental	
Operating Temperature	-20°C to +70°C (*)
Storage Temperature	-30°C to +80°C (*)
Humidity	Ta≤40°C, 95%RH, non-condensing
EMI/EMC	The LCD Kit is designed to meet ML-STD-461E/F for a whole display unit (*)
Shock	The LCD Kit is designed to meet MIL-STD-810D for a whole display unit (*)
Vibration	The LCD Kit is designed to meet MIL-STD-810E for a whole display unit (*)
Altitude above sea level	0~9144 M (30000 feet)(Note)

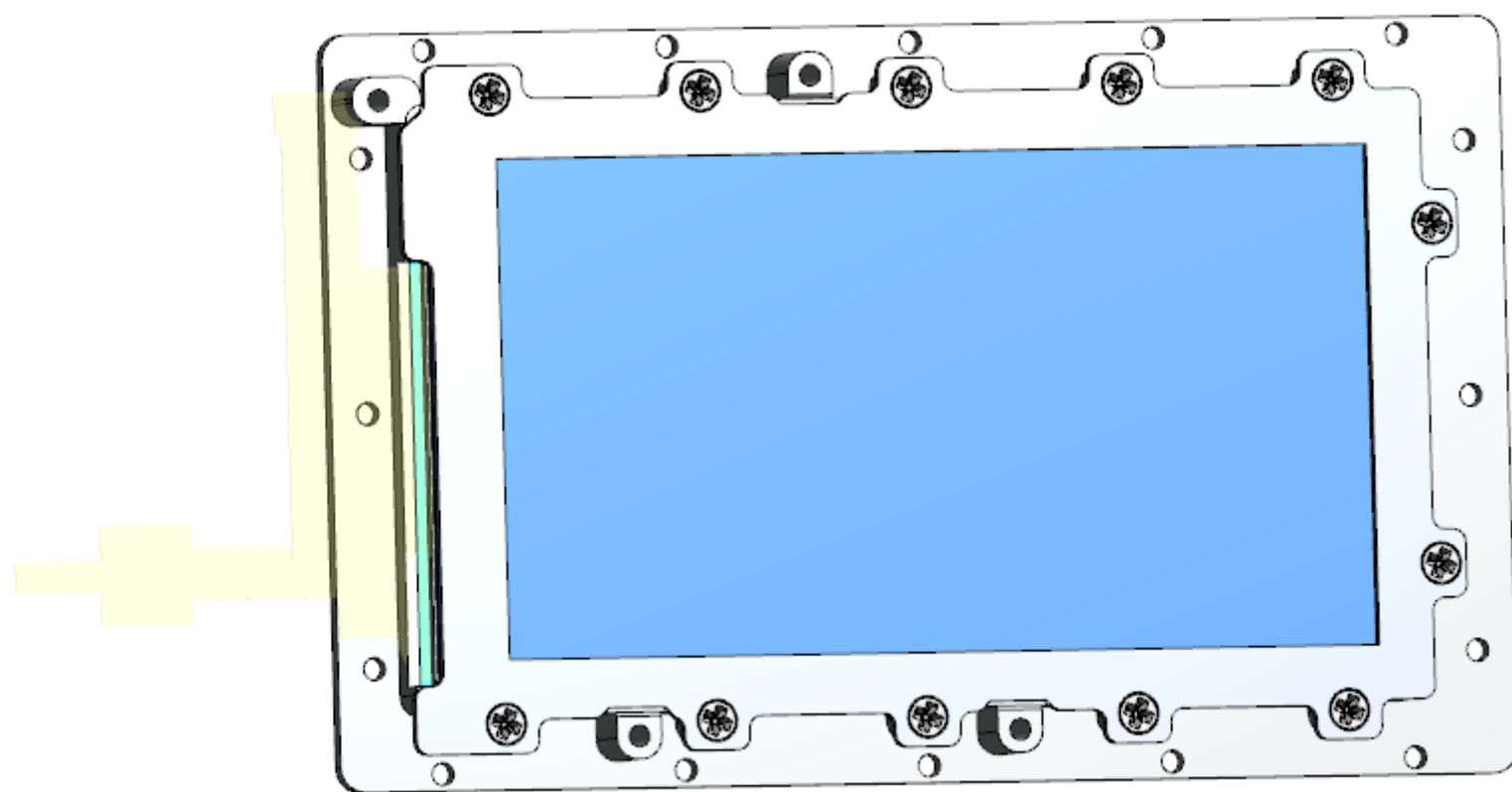
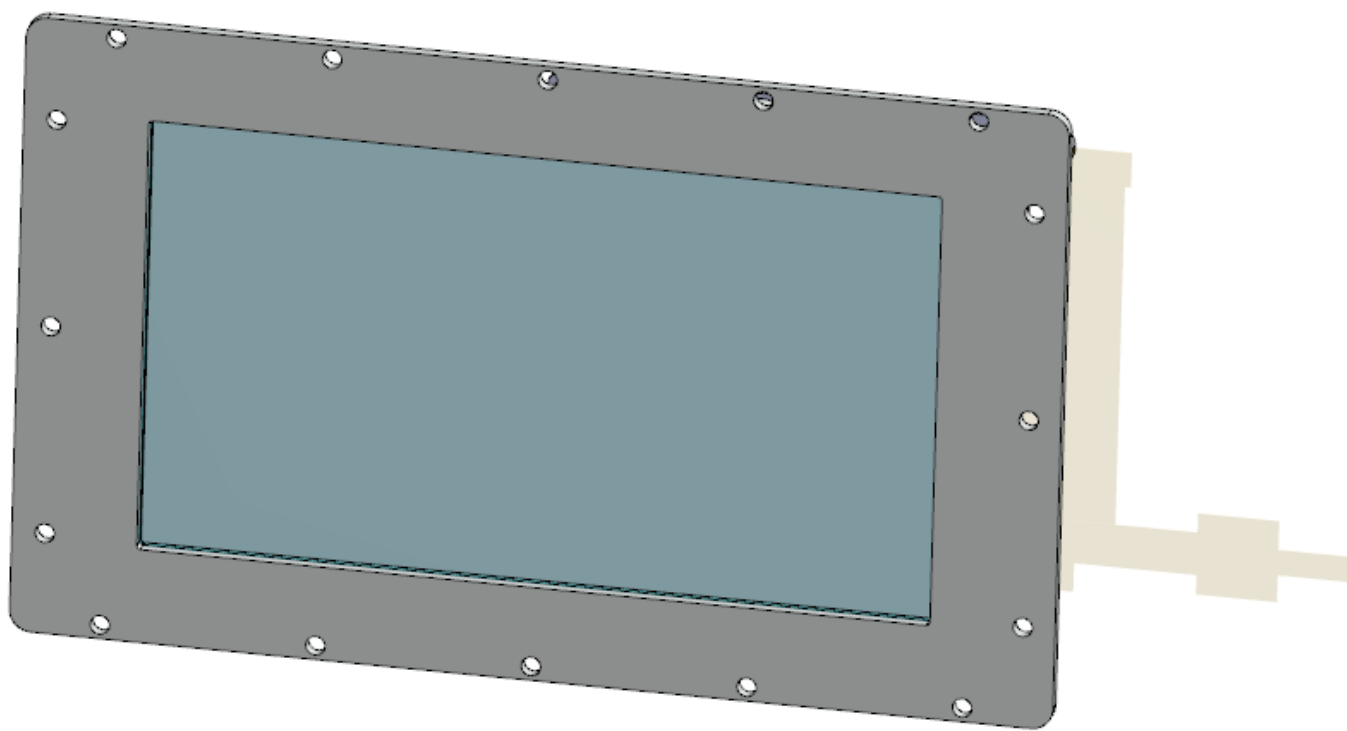
\* : LCD kit has to be properly packed with bezel and back cover with required EMI-EMC and IP Gaskets to meet EMI/EMC and Environmental specifications

## Order information

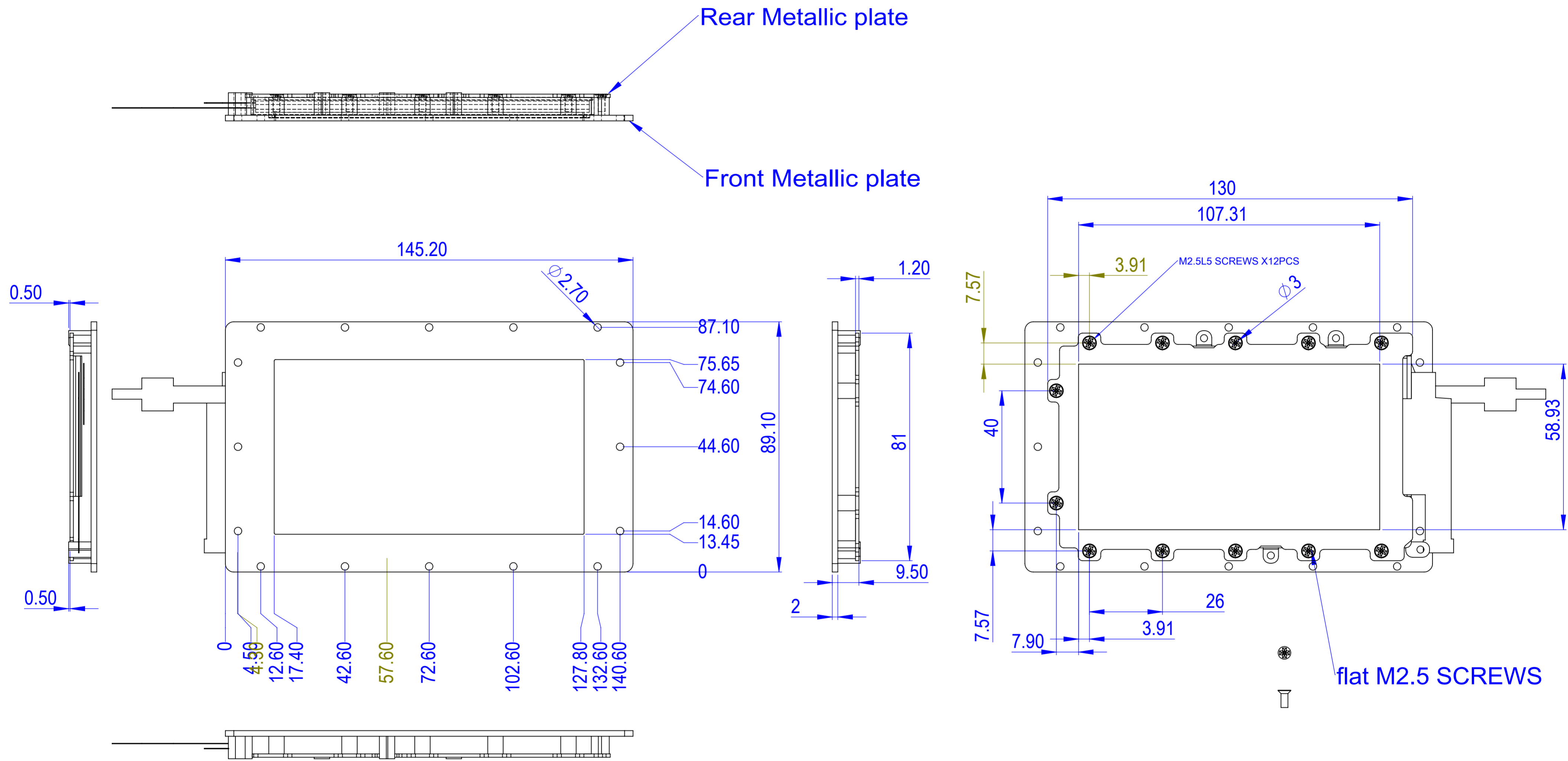
Model Name	Description	Qty
SLM-MR050M-E	5 inch LCD Module Open Frame	1

# SLM-MR0500-E

## Appearance







4			
3			
2			
1			
EC	Description	Date	Sign
	Engineering Change(EC)		



DRAWER	JASON	2023/5/3
DESIGNER	JASON	2023/5/3
APPROVED	DENNIS	2023/5/3

DESCRIPTION/PART NAME	
5 inch Open Frame LCD Moduel with Compacitive Touch	
PROJECT NAME	INTERIOR PART APPEARANCE PART
SLM-MR0500-E	
PART NO.	
SLM-MR0500-E	
FILE NAME	REV.
SLM-MR0500-E_2D_AX1	AX1

DIMENSIONAL	TOLERANCES ± (UNLESS OTHERWISE SPECIFIED)	
	Metal	Plastic
0~9.99	0.1	0~29.99 0.1
10~49.99	0.15	30~119.99 0.15
50~149.99	0.2	120~314.99 0.2
150~449.99	0.3	315~999.99 0.3
450~999.99	0.4	1000~ 0.5
1000~	0.5	

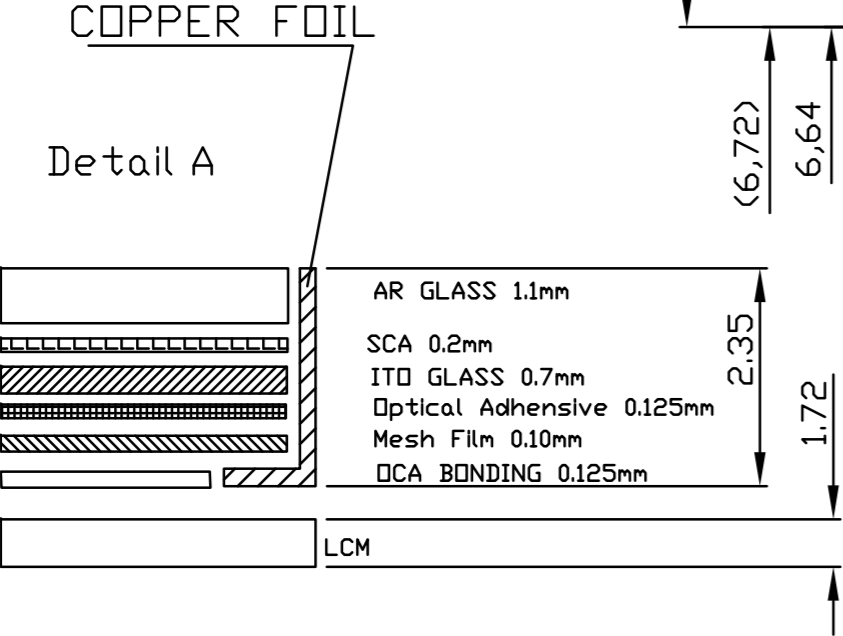
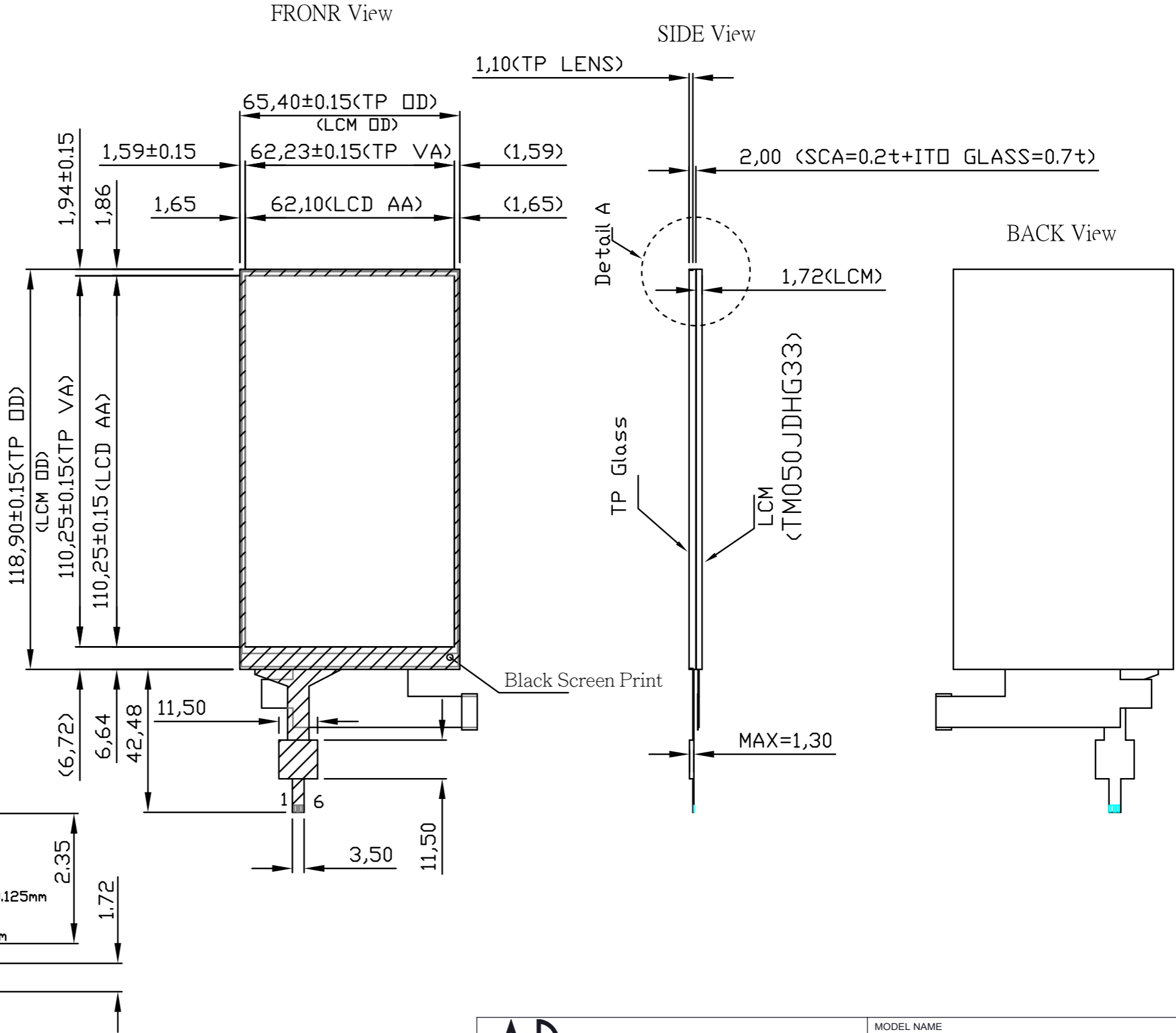
ANGLE TOLERANCES	90°	1.0°
	± Other	2°



MATERIAL	FINISHING	SCALE	UNITS	SHEET	SIZE
		1:1	mm	1 of 1	A2



Pin NO.	NAME
1	VDD 3.3V
2	SCL 3.3V
3	SDA 3.3V
4	GND
5	RST
6	INT



	<b>ACT POWER TAIWAN CO., Ltd.</b> 行動力國際股份有限公司			MODEL NAME SLM-MR0500-E	REV. AX1
				DESCRIPTION/PART NAME Parts of 5" Military Display with Capacitive Touch	
DRAWER WILLIAM	DATE 2023/3/24	PART NO. SLM-MR0500-E LCD MODULE			
DESIGNER JOE	DATE 2023/3/24	DRAWING NO. OP_A66_002	THIRD ANGLE PROJECTION		
APPROVED DENNIS	DATE 2023/3/24	UNITS mm	SHEET 1 of 1	SIZE A3	

## LCD Panel Input/Output Terminals

Pin No.	Symbol	I/O	Function	Remark
1	GND	P	Ground	
2	GND	P	Ground	
3	VDD	P	Analogy Power Supply	
4	D3-	I	MIPI Data Lane 3-	
5	GND	P	Ground	
6	D3+	I	MIPI Data Lane 3+	
7	MTP	P	Programming Power	
8	GND	P	Ground	
9	GND	P	Ground	
10	D0-	I	MIPI Data Lane 0-	
11	LED-	P	Cathode 1 of LED	
12	D0+	I	MIPI Data Lane 0+	
13	GND	P	Ground	
14	GND	P	Ground	
15	LED+	P	Anode of LED	
16	CK-	I	MIPI Clock Lane-	
17	GND	P	Ground	
18	CK+	I	MIPI Clock Lane+	
19	LED2-	P	Cathode 2 of LED	
20	GND	P	Ground	
21	GND	P	Ground	
22	D1-	I	MIPI Data Lane 1-	
23	VDDIO	P	Digital Power Supply	
24	D1+	I	MIPI Data Lane 1+	
25	GND	P	Ground	
26	GND	P	Ground	
27	TE	I	Tearing Effect	
28	D2-	I	MIPI Data Lane 2-	
29	GND	P	Ground	

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30	D2+	I	MIPI Data Lane 2+	
31	LED_PWM	P	Backlight Control PWM Signal	
32	GND	P	Ground	
33	GND	P	Ground	
34	RESX	I	Reset Signal	

Note1: Please add the FPC connector type and matched one if necessary .

## Absolute Maximum Ratings

GND=0V

Item	Symbol	MIN	MAX	Unit	Remark
Power Voltage	VCC	-0.3	6.5	V	Note1
Input voltage	V <sub>IN</sub>	-0.3	3.9	V	
Operating Temperature	Top	-20	70	°C	
Storage Temperature	Tst	-30	80	°C	
Relative Humidity Note2	RH	--	≤95	%	Ta≤40°C
		--	≤85	%	40°C < Ta ≤ 50°C
		--	≤55	%	50°C < Ta ≤ 60°C
		--	≤36	%	60°C < Ta ≤ 70°C
		--	≤24	%	70°C < Ta ≤ 80°C
Absolute Humidity	AH	--	≤70	g/m <sup>3</sup>	Ta > 70°C

**Table 3 Absolute Maximum Ratings**

Note1: Input voltage include VCI, VDDIO, MIPI lanes, CK+,CK-

Note2: Ta means the ambient temperature.

It is necessary to limit the relative humidity to the specified temperature range.  
Condensation on the module is not allowed.



## Electrical Characteristics

### 4.1 Driving TFT LCD Panel

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Supply Voltage	VCC	2.5	2.8	6.0	V	
IO Supply Voltage	VDDIO	1.65	1.8	3.3	V	
Input Signal Voltage	Low Level	VIL	-0.3	—	0.3* VDDIO	V
	High Level	VIH	0.7* VDDIO	—	VDDIO	V
Output Signal Voltage	Low Level	VOL	0	—	0.2*VDDIO	V
	High Level	VOH	0.8*VDDIO	—	VDDIO	V
(Panel+LSI) Power Consumption	Black Mode (60Hz)	-	100	120	mW	
	Standby Mode	-	2	4	mW	

### 4.2 Backlight Unit

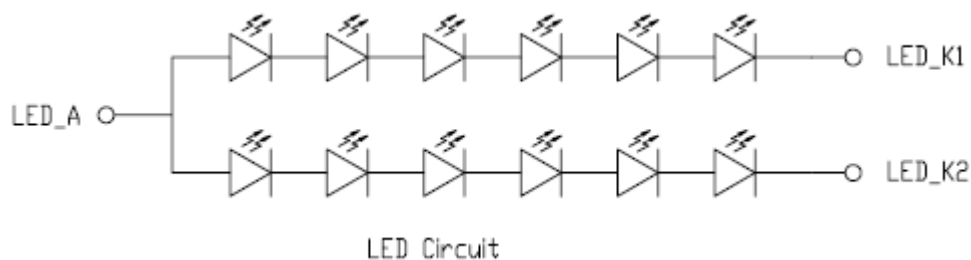
Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	$I_F$	-	20	30	mA	One LED
Forward Voltage	$V_F$	-	3.2	3.4	V	One LED
Backlight Power Consumption	$W_{BL}$	-	768	1224	mW	One LED
LED life Time	-	10000	20000	-	-	One LED

Note1: The LED driving condition is defined for each LED module (6 LED Serial, 2 LED Parallel).

Note2: Under LCM operating, the stable forward current should be inputted. And forward voltage is for reference only.

Note3:  $I_F$  is defined for one channel LED. Optical performance should be evaluated at  $T_a=25^\circ\text{C}$  only if LED is driven by high current, high ambient temperature & Humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

Note4: The LED driving condition is defined for each LED module.



## Touch Panel Electric Characteristics

Items	Value
Working voltage	DC 3.3V
Insulation Resistance	> 20M DC25V
Working Current	12mA~14.5mA
Response Time	≤16ms

## Touch Panel interface PIN define

Pin NO.	NAME
1	VDD 3.3V
2	SCL 3.3V
3	SDA 3.3V
4	GND
5	RST
6	INT