SHENZHEN APTUS TECHNOLOGY CO., LIMITED

PRODUCT SPECIFICATION

6.2" TFT-LCD 3840*2400 MODULE

MODEL NAME: DBM062M4K01

DOC VERSION: 1.0

TOTAL PAGES: 15

DATE: 2021.06.11

FOR CUSTOMER	
CUSTOMER APPROVED	

NOTE: THE CONTENT OF THIS SPECIFICATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PATER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM APTUS INTERNATIONAL CO., LIMITED.

Catalog:

NO.	Contents	Page
1	History Version	1
2	Mechanical Description	2
3	Mechanical Drawing	3
4	Interface Definition	4
5	Interface Timing	5-6
6	Absolute Maximum Ratings	7
7	DC Characteristics	7
8	Black light	7-8
9	Optical Specification	8-9
10	Reliability testing	10
11	Inspection Standard	11-12
12	Precaution	12-13

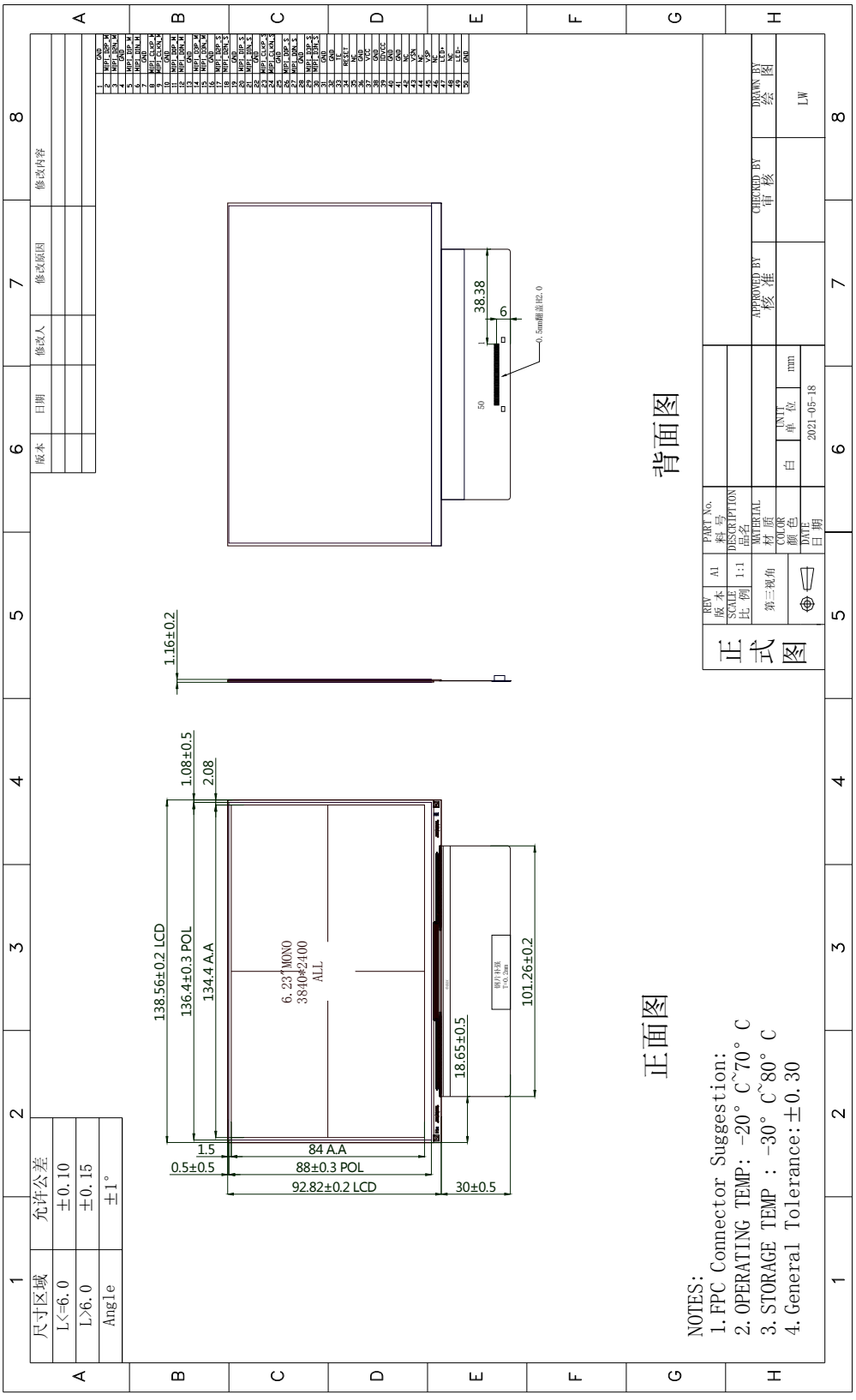
1. History Verson

Sample version	Doc. version	Date	Description	Modify
V1.0	V1.0	2021-06-11	First issue	LW

2. Mechanical Description

Name	Content	Unit
Outline Size	138.56 (W) * 92.82 (H) * 1.16(T)	mm
Module size	6.2 (A.A)	inch
Resolution	3840* 2400 Pixels	-
Viewing size	134.40(W) * 84.00(H)	mm
Pixel size	0.034 * 0.034	mm
LCD Type	TFT (MONO)/ Transmissive	-
Viewing Angle	ALL	-
Driver IC	-	-
Backlight Type	-	-
Interface Type	8 LANE MIPI	-

3. Mechanical Drawing



4. Interface Definition

PIN NO.	PIN Name	Function Description
1	GND	Power Ground
2	MIPI_D2P_M	MASTER MIPI-DSI Data2 differential signal input pins.
3	MIPI_D2N_M	MASTER MIPI-DSI Data2 differential signal input pins.
4	GND	Ground
5	MIPI_D1P_M	MASTER MIPI-DSI Data1 differential signal input pins.
6	MIPI_D1N_M	MASTER MIPI-DSI Data1 differential signal input pins.
7	GND	Ground
8	MIPI_CLKP_M	MASTER MIPI-DSI CLOCK differential signal input pins
9	MIPI_CLKN_M	MASTER MIPI-DSI CLOCK differential signal input pins
10	GND	Ground
11	MIPI_D0P_M	MASTER MIPI-DSI Data0 differential signal input pins.
12	MIPI_D0N_M	MASTER MIPI-DSI Data0 differential signal input pins.
13	GND	Ground
14	MIPI_D3P_M	MASTER MIPI-DSI Data3 differential signal input pins.
15	MIPI_D3N_M	MASTER MIPI-DSI Data3 differential signal input pins.
16	GND	Ground
17	MIPI_D2P_S	SLAVE MIPI-DSI Data2 differential signal input pins.
18	MIPI_D2N_S	SLAVE MIPI-DSI Data2 differential signal input pins.
19	GND	Ground
20	MIPI_D1P_S	SLAVE MIPI-DSI Data1 differential signal input pins.
21	MIPI_D1N_S	SLAVE MIPI-DSI Data1 differential signal input pins.
22	GND	Ground
23	MIPI_CLKP_S	SLAVE MIPI-DSI CLOCK differential signal input pins
24	MIPI_CLKN_S	SLAVE MIPI-DSI CLOCK differential signal input pins
25	GND	Ground
26	MIPI_D0P_S	SLAVE MIPI-DSI Data0 differential signal input pins.
27	MIPI_D0N_S	SLAVE MIPI-DSI Data0 differential signal input pins.
28	GND	Ground
28	MIPI_D3P_S	SLAVE MIPI-DSI Data3 differential signal input pins.
30	MIPI_D3N_S	SLAVE MIPI-DSI Data3 differential signal input pins.
31-32	GND	Ground
33	TE	Tear effect output
34	RESET	The external reset input
35	NC	

36	GND	Ground
37	NC	
38	GND	Ground
39	IOVCC	Power
40-41	GND	Ground
42	NC	
43	VSN	Power,-5.5V
44	NC	
45	VSP	Power,+5.5V
46-49	NC	
50	GND	Ground

5. Interface Timing：

5.1 Reset Timing

When RESETB of the reset pin equals to Low, it will be in the condition of reset. When it is in the condition of reset, it will make the device recover the initial set.

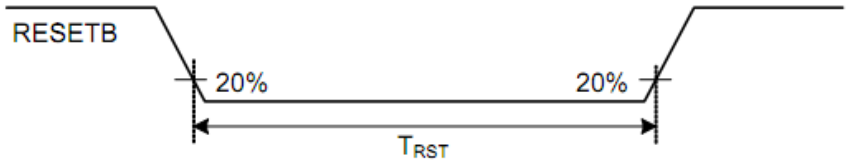
However, in order to avoid the reset noise cause reset, there is a mechanism to judge about whether the reset is needed or not.

The closed interval of Low can be shown as the following.

(VDDI=1.65V~3.6V, VSS=0V, T_A=-20℃~+85℃)

Parameter	Symbol	Condition	Spec.			Unit
			Min.	Typ.	Max.	
Reset low pulse width	T_{RST}	-	20	-	-	μs

Table 13.3: Reset timing



MIPI Timing 请咨询

6. Absolute Maximum Ratings：

Name	symbol	Min	Type	Max	Unit
Operation Temperature	TOP	-20	-	70	℃
Storage Temperature	TST	-30	-	80	℃

7. DC Characteristics

Name	Symbol	Min	Type	Max	Unit
Logical Voltage	VDD	-	-	-	V
Logical Voltage	IOVCC	1.7	-	1.9	V
Logical Voltage	VSN	-	-5.5	-	V
Logical Voltage	VSP	-	+5.5	-	V
-	-	-	-	-	V
Current Consumption	IDD	-	-	150	mA

8. Blacklight：

Name	Min	Type	Max	Unit
Current	-	-	-	mA
Voltage	-	-	-	V
Power Consumption	-	-	-	mW
luminance	-	-	-	CD/M^2 (Note1) (ST-86LA)
Luminance uniformity	-	-	-	(Note2)
X Color Coordinates	-	-	-	-
Y Color Coordinates	-	-	-	-

Note1: This luminance is tested with assembling the LCD.
Note2: Definition of Luminance Uniformity.

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).Every measuring point is placed at the center of each measuring area.

$$Luminance\ Uniformity\ (Yu) = \frac{B_{min}}{B_{max}}$$

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

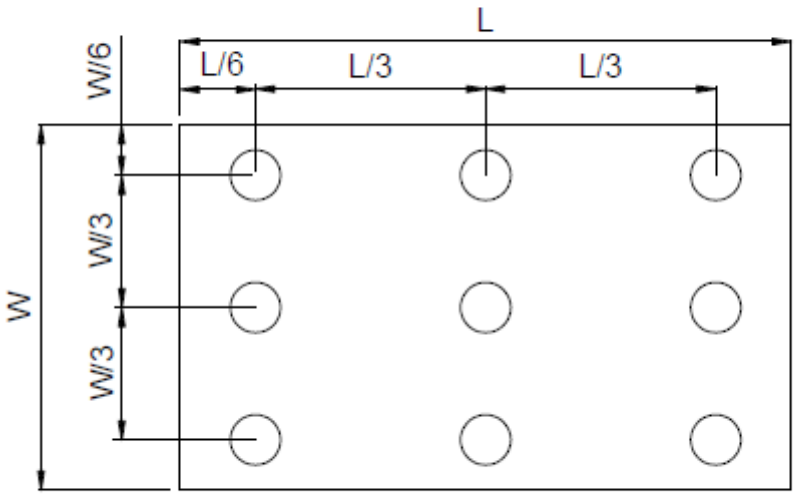


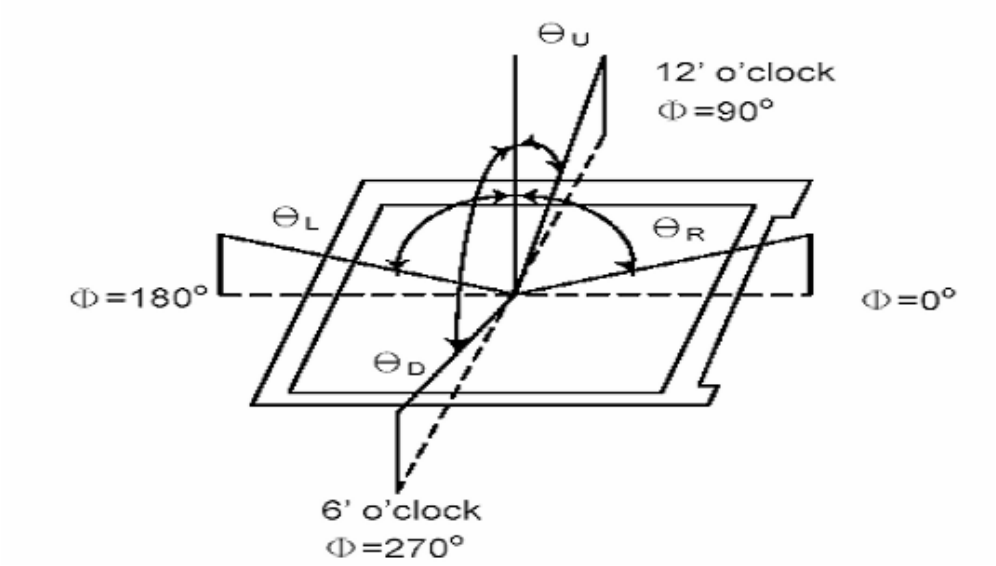
Fig. 4-4 Definition of measuring points

B_{max}: The measured maximum luminance of all measurement position.
B_{min}: The measured minimum luminance of all measurement position.

9. Optical Specification

Name	Symbol	Min	Type	Max	Unit
Transmittance rate(405)	T(%)	6	7	-	%
Contrast ratio(405)	C/R	300	350	-	-
Response time	Tr+Tf	-	25	-	ms
Viewing Angle	θ U	80	85	-	degree (C/R>10)
	θ D	80	85	-	
	θ L	80	85	-	
	θ R	80	85	-	

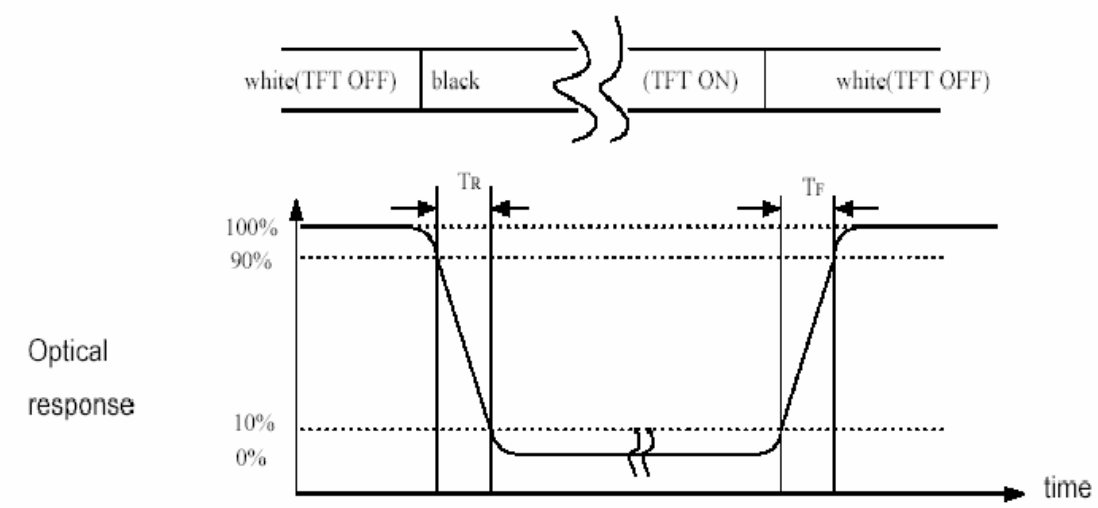
*Viewing angle descriptin:



*Contrast rate description(CR) :
Tested in the center of the LCM panel

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

*Response time description : Sum of TR and TF



10. Reliability testing：

Item No	Name	Condition	Remark
1	High temperature Operating	70° C , 168Hours	Finish product (With polarizer)
2	Low temperature Operating	-20° C , 168 Hours	Finish product (With polarizer)
3	High temperature Storage	80° C , 168 Hours	Finish product (With polarizer)
4	Low temperature Storage	-30° C , 168 Hours	Finish product (With polarizer)
5	High temperature & humidity Storage	60° C , 90%RH, 168 Hours	Finish product (With polarizer)
6	Thermal Shock Storage(No operation)	-20° C , 30min.<=> 70° C , 30min. 10 Cycles	Finish product (With polarizer)
7	ESD test	Voltage:+8KV R:330 ohm,C:150pF Air discharge,10 times	Finish product (With polarizer)
8	Vibration test	10 => 55 =>10 => 55 => 10 Hz, within 1 minute;Amplitude:1.5mm. 15 minutes for each Direction (X,Y,Z)	Finish product (With polarizer)
9	Drop test	Packed, 100CM free fall 6 sides, 1 corner, 3edges	Finish product (With polarizer)

*One single product test for only one item.

* Judgment after test: keep in room temperature for more than 2 hours.

- Current consumption < 2 times of initial value
- Contrast > 1/2 initial value
- Function: work normally

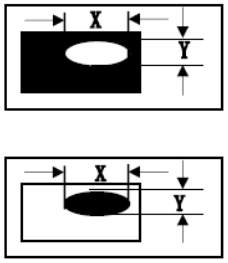
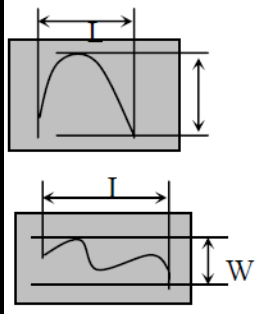
11. Inspection Standard

11.1 Defect Defination

No.	Defect Class	Defination	Content
1	重缺陷（MA）	影响显示的功能缺陷	短路、断路、缺划、大电流、视角错、漏液、显示不清等
		严重外观缺陷	产品尺寸不符、漏部品等
2	轻缺陷（MI）	不影响产品功能，但对产品外观有影响	反黑／反白点、偏光片缺陷、针孔、污点

11.2 Standard

No.	Item	Inspection Standard	Classification of defects
1	显示状态	不显、显示乱码、多划、少划、少画面、视角错、闪烁等均不允许	重缺陷
		无法用文字描述的现象，必要时制定限度样板进行参考。如：显示不均、显示浓淡、斜纹等	
		显示的颜色效果参照开发、工程样品或按限度样板判定	
		画面切换过程中可见(但非画异)之不良现象(暂停画面时不良现象不可见)不作管控，客户有特殊要求时依客户要求；	轻缺陷
		仅点背光不显示画面下可见不良现象（但显示画面时不良现象不可见)不作管控，客户有特殊要求时依客户要求；	轻缺陷
2	背光	LED 灯不亮或闪烁不稳定不允许	重缺陷
		背光电流：超出规格范围不允许	
		亮眼、漏光：进入 LCD 的 A、B 区不允许，必要时按限度样板做判定	轻缺陷
		背光颜色：根据样品、规格书判定	轻缺陷
		亮度与发光均匀度参照开发、工程或限度样板判定	轻缺陷

No.	Item	Inspection Standard			Classification of defects
3	显示黑点 白点 针孔	直径（Φ=（X+Y）/2）	允收数	图示	轻缺陷
		Φ≤0.05 （密集不可）	不计		
		0.1<Φ≤0.3 [注2]	2		
		0.3<Φ≤0.5	1		
		Φ>0.5	0		
		注1. 包括：黑点、白点、针孔、异物。 注2. 整个产品不允许超过2个点，且间距必须在10mm以上。			
4	显示黑线 白线	尺 寸（L：线长；W：线宽）	允收数	图示	轻缺陷
		L 不计 W<0.05（密集不可）	不计		
		L≤2 0.05≤W≤0.1 [注 2]	2		
		L 不计 W>0.1	以点判断		
		注1. 包括：显示黑线、白线、线状异物。 注2. 单个产品不允许超过2个线状缺陷，且缺陷距离必须大于10mm以上。			
5	触摸屏	点击触摸屏测试点画面无转换不允许			重缺陷

12. Precaution

12.1 Handling

(1) Protect the panel from static, it may cause damage to the CMOS Gate Array IC.

(2) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.

(3) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

(4) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Don't use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.

(5) Pins of I/F connector shall not be touched directly with bare hands.

(6) Refrain from strong mechanical shock and / or any force to the panel. In addition to damage, this may cause improper operation or damage to the panel.

(7) Note that polarizers are very fragile and could be easily damaged. Do not press or scratch the surface harder than a B pencil lead.

(8) Wipe off water droplets or oil immediately. If you leave the droplets for a long time,staining and discoloration may occur.

(9) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.

12.2 Storage

(1) Do not leave the panel in high temperature, and high humidity for a long time. It is highly recommended to store the panel with temperature from 0 to 35℃ and relative humidity of less than 70%.

(2) The panel shall be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during the store.

12.3 Operation

(1) The LCD shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.

(2) Do not exceed the absolute maximum rating value. (the supply voltage variation,Input voltage variation in part contents and environmental temperature and so on).Otherwise the panel may be damaged.

(3) If the panel displays the same pattern continuously for a long period of time, it can be the situation when the image” Sticks” to the screen.