Winstar Display Co., LTD
華凌光電股份有限公司
WEB: https://www.winstar.com.tw E-mail: sales@winstar.com.tw

SPECIFICATION

CUSTOMER : _____

MODULE NO.: WF104-1024768GL#0PW0-FC

APPROVED BY: **(FOR CUSTOMER USE ONLY)**	**PCB VERSION:** **DATA:**

SALES BY	**APPROVED BY**	**CHECKED BY**	**PREPARED BY**
first FC components			葉虹蘭
ISSUED DATE: **2022/01/03**			

3.General Specifications

Item	Dimension	Unit
Size	10.4	inch
Dot Matrix	1024 x RGB x 768 (TFT)	dots
Module dimension	230 x 180.2 x 12.4	mm
Active area	210.432 x 157.824	mm
Pixel pitch	0.2055 X 0.2055	mm
LCD type	TFT, Normally Black, Transmissive	
Viewing Angle	80/80/80/80 min	
Aspect Ratio	4:3	
TFT Interface	LVDS	
Backlight Type	LED ,Normally White	
With /Without TP	Without TP	
Surface	Anti-Glare	
Side screw torque	TBD	
Assembly Instructions	Need to use edge measuring keyholes to perform fixing and support	

*Color tone slight changed by temperature and driving voltage.

first components

4.Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-30	—	+80	℃
Storage Temperature	TST	-30	—	+80	℃

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. ≦60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

first FC components

5.Electrical Characteristics

5.1. Operating conditions

Item	Symbol	Standard Value			Unit
		Min	Typ	Max	
Power voltage	V_{DD}	3.0	3.3	3.6	V
Input logic high voltage	V_{IH}	0.7 V_{DD}	-	V_{DD}	V
Input logic low voltage	V_{IL}	0	-	0.3 V_{DD}	V
Current for Power	I_{VDD}		385	424	mA

5.2. LED driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Backlight Enable(BLEN)	High Level	1.3	3.3	-	V	Note 2
	Low Level	-	0.8	1.0	V	
PWM Control Level (PWM)	High Level	-	3.3	-	V	Note 3
	Low Level	-	0	-	V	
PWM Control Duty Ratio	-	0	-	100	%	
PWM Control Frequency	-	-	10K	-	Hz	Note 4
LED Life Time	-	-	100,000	-	Hr	Note 1

Note 1 : Ta = 25 ℃

Note 2 : Turn ON the backlight when BLEN =High, Turn OFF when BLEN =Low

Note 3 : PWM High Active Control from lowest brightness to highest brightness

Note 4 : Lower frequency causes the flicker or the image breaking of motion picture. Depending on the PWM signal integrity (jitter etc.), the flicker may be visible. Please evaluate in advance

8.Optical Characteristics

Item		Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time		Tr+ Tf	θ=0°、Φ=0°	-	25	35	.ms	Note 3
Contrast ratio		CR	At optimized viewing angle	800	1000	-	-	Note 4
Color Chromaticity	White	Wx	θ=0°、Φ=0	0.269	0.319	0.369	-	Note 2,5,6
		Wy		0.319	0.369	0.419	-	
Viewing angle (Gray Scale Inversion Direction)	Hor.	ΘR	CR≧10	80	-	-	Deg.	Note 1
		ΘL		80	-	-		
	Ver.	ΦT		80	-	-		
		ΦB		80	-	-		
Brightness		-	-	400	500	-	cd/m²	Center of display
Uniformity		(U)	-	70	-	-	%	Note 5

Ta=25±2℃,

Note 1: Definition of viewing angle range

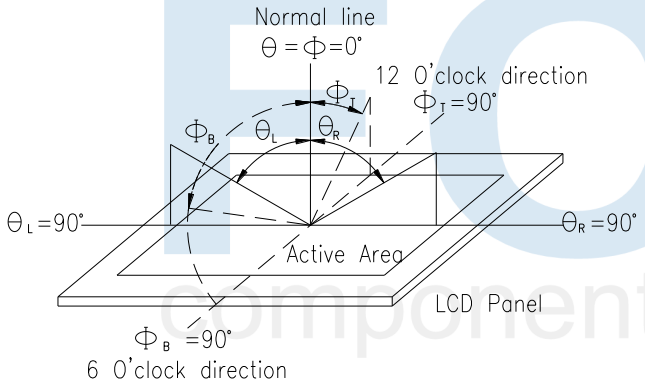
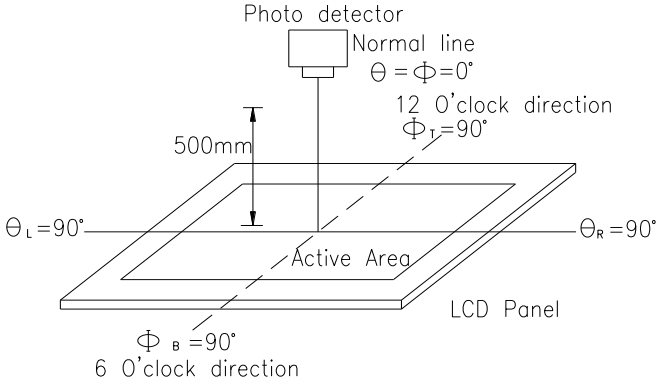


Fig. 8.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.



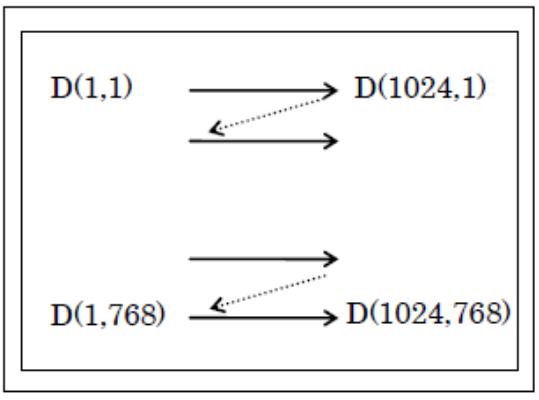
9.Interface

9.1. LCM PIN Definition (CON1)

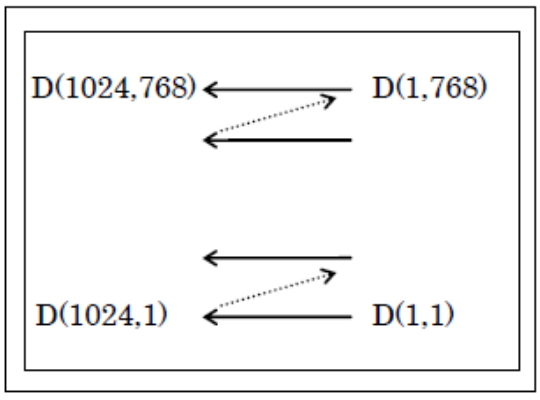
Pin	Symbol	Function	Remark
1-2	VDD	Power supply: + 3.3V	
3-4	GND	Ground	
5	Link0-	0- LVDS differential data input	
6	Link0+	0+ LVDS differential data input	
7	GND	Ground	
8	Link1-	1- LVDS differential data input	
9	Link1+	1+ LVDS differential data input	
10	GND	Ground	
11	Link2-	2- LVDS differential data input	
12	Link2+	2+ LVDS differential data input	
13	GND	Ground	
14	CLKIN-	- LVDS differential clock input	
15	CLKIN+	+ LVDS differential clock input	
16	GND	Ground	
17	Link3-	3- LVDS differential data input	
18	Link3+	3+ LVDS differential data input	
19	MODE	Bit 6:High(6 Bit);Low(8 Bit)	
20	SC	Scan direction selector (Low: Normal ;High: Reverse)	

(1) Display Position and Scan Direction
D(X,Y) shows the data number of input signal.

SC: Low



SC: High

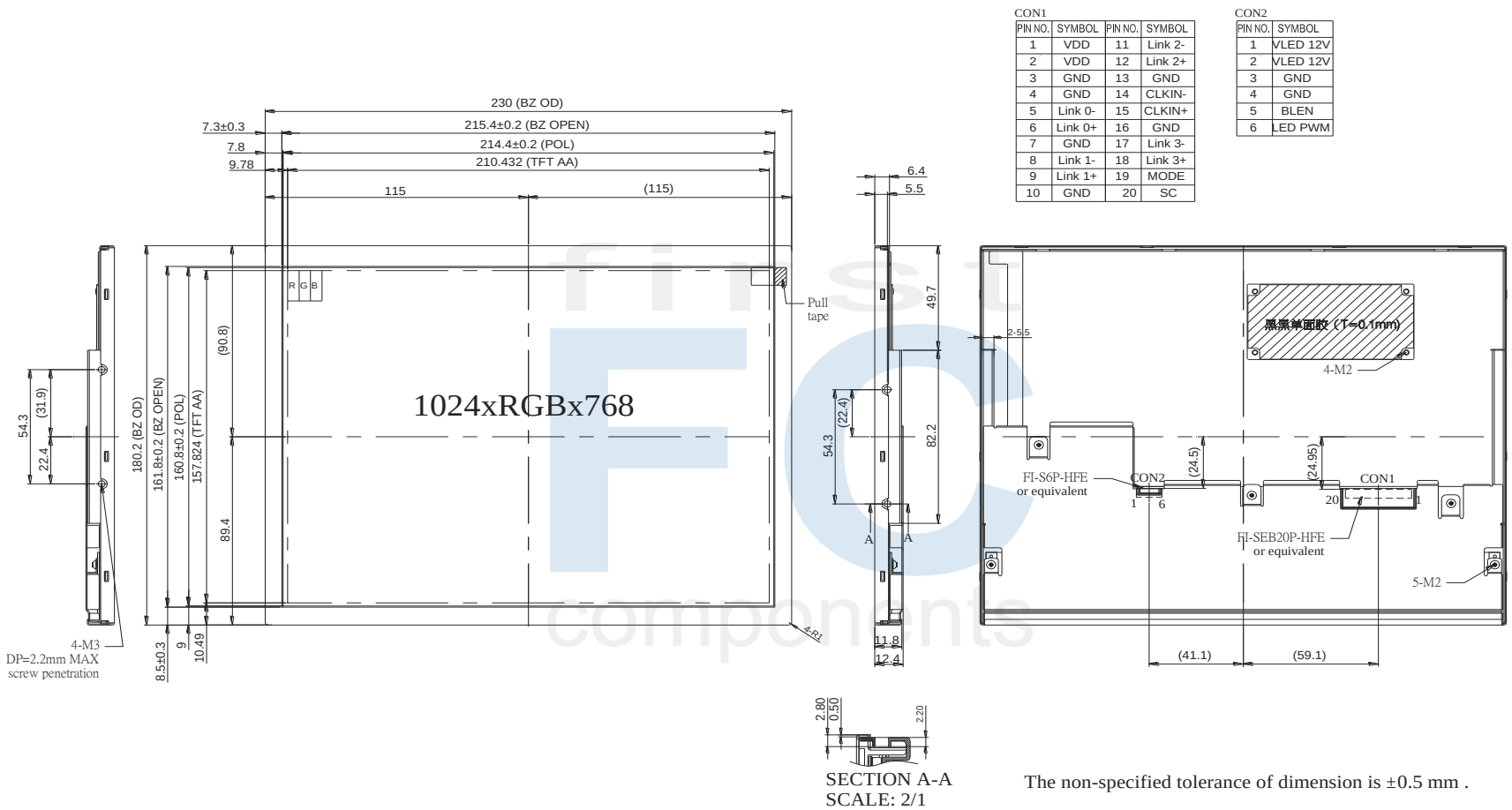


9.2. CON2

Pin	Symbol	Function	Remark
1-2	VLED 12V	12V input	
3-4	GND	Ground	
5	BLEN	Backlight ON-OFF	
6	LED PWM	Light Dimming Control (PWM) Input Voltage (Low active)	

first FC components

12.Contour Drawing



CON1

PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	VDD	11	Link 2-
2	VDD	12	Link 2+
3	GND	13	GND
4	GND	14	CLKIN-
5	Link 0-	15	CLKIN+
6	Link 0+	16	GND
7	GND	17	Link 3-
8	Link 1-	18	Link 3+
9	Link 1+	19	MODE
10	GND	20	SC

CON2

PIN NO.	SYMBOL
1	VLED 12V
2	VLED 12V
3	GND
4	GND
5	BLEN
6	LED PWM

The non-specified tolerance of dimension is ±0.5 mm .