SPECIFICATION

PRODUCT NO. : **TCXD019IBLON-78**
VERSION : **Ver 1.2**
ISSUED DATE : **2022-5-20**

This module uses ROHS material

FOR CUSTOMER：
□：APPROVAL FOR SPECIFICATION
■：APPROVAL FOR SAMPLE

DATE	APPROVED BY

Xinli Optoelectronics ：

Presented by	Reviewed by	Organized by
黃文博	趙春曉	王俊傑

Note:

1.Xinli Optoelectronics reserves the right to make changes without further notice to any products herein to improve reliability, function or design.

1. Revision Recode

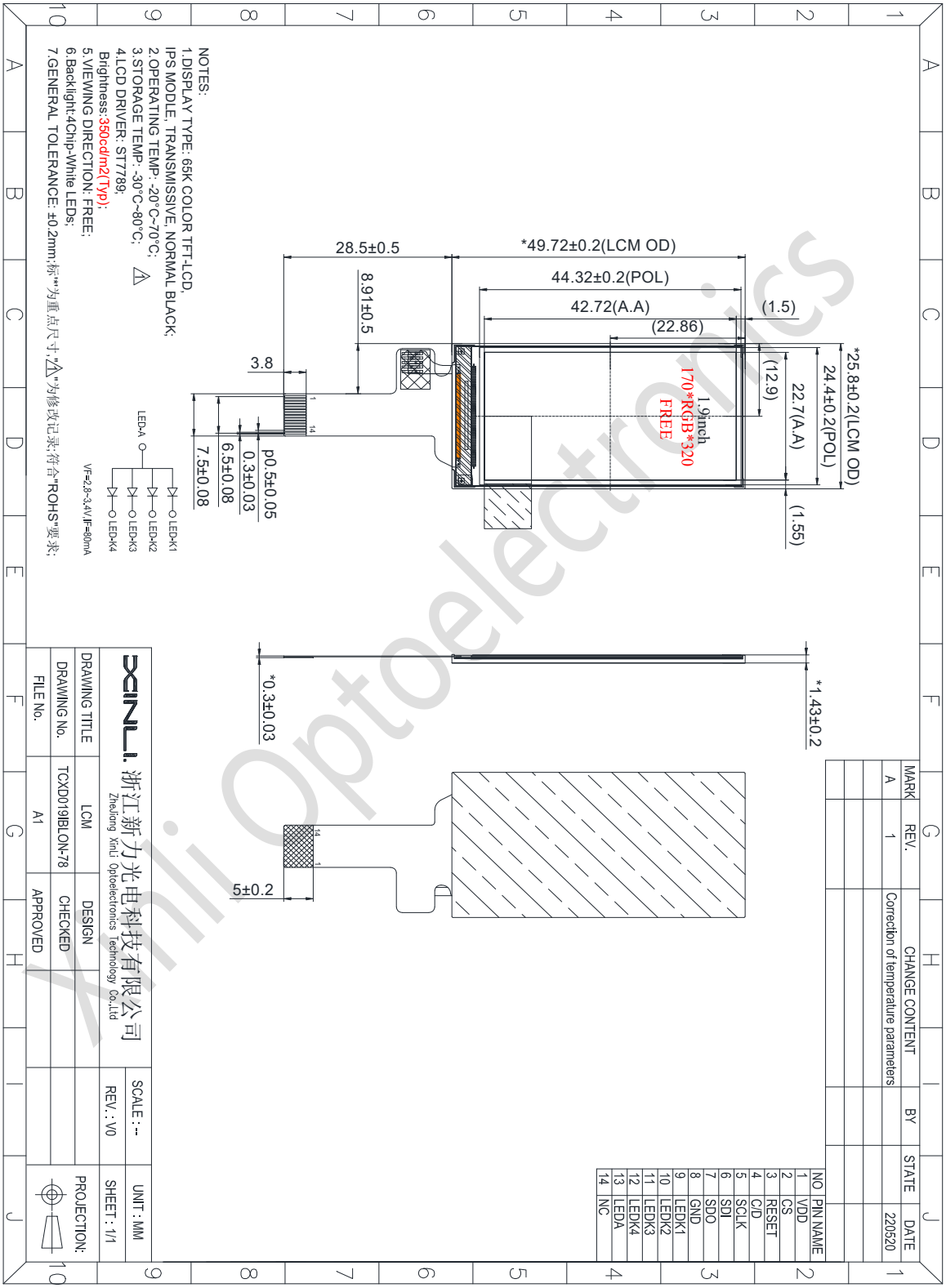
Revision	Description	Date
1.0	Initial Release	2022/4/22
1.1	FPC Modify shape	2022/5/6
1.2	Correction of temperature parameters	2022/5/20

2. General Description and Features

The 1.9 inch Module named TCXD019IBLON-78 is a-Si TFT-LCD module, which is the type of transmissive. It is consisted of TFT-LCD Panel, Driver IC, FPC and Back-Light unit. Features of this product are listed in the following table.

NO	Item	Contents	Unit
(1)	Module Outsize	25.8*49.72*1.43	mm
(2)	LCD Active area	22.7*42.72	mm
(3)	Dot Number	170*3(RGB)*320	/
(4)	Pixel size	0.1335*0.1335	mm
(5)	LCD type	TFT Transmissive	/
(6)	Display Color	262K	/
(7)	Viewing direction	Free	O'clock
(8)	Backlight Type	4-chip LED	/
(9)	Power Supply	2.8（TYP)	V
(10)	IC	ST7789V (Sitronix)	/
(11)	Interface	FPC 0.5mm_Pitch 14 pin	/
(12)	Interface type	SPI interface	/
(13)	Module weight	TBD	g

3. Mechanical Dimension

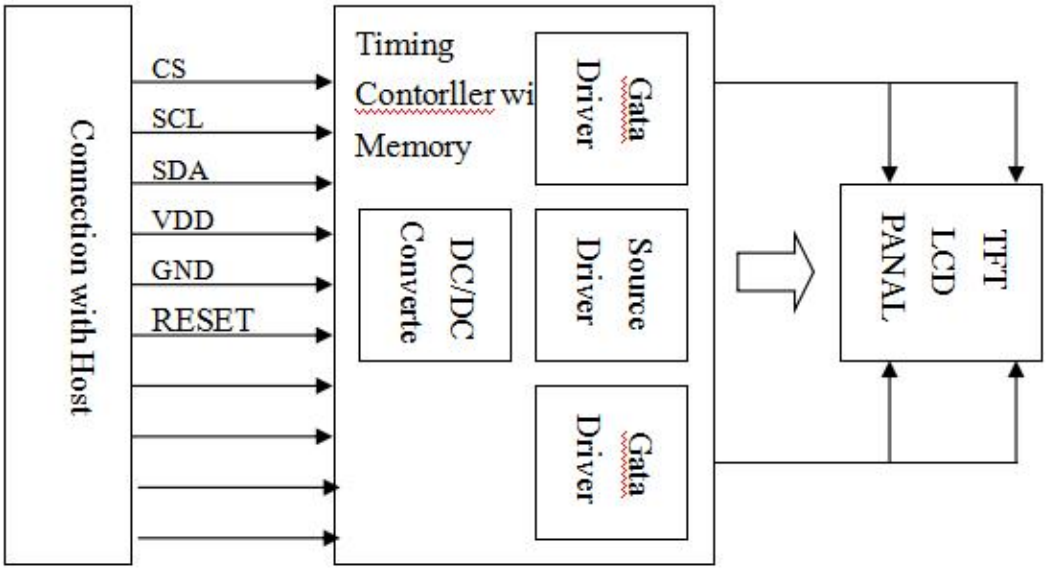


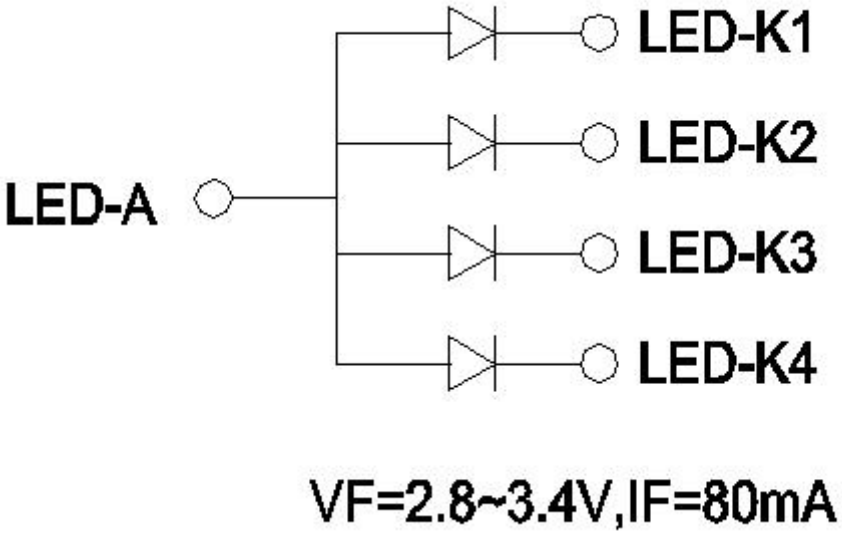
4. Interface Pin Connection

LCM interface Pin

NO	Symbol	Level	Description
1	VCC	P	Power supply(2.8V)
2	CS	I	Chip select signal input (low active)
3	RESET	I	This signal will reset the device and it must be applied to properly initialize the chip.
4	RS	I	4-line system (D/CX): Serves as command or parameter select.
5	SCL	I	This pin is used to be serial interface clock.
6	SDI	I	SPI interface input pin.
7	SDO	I	SPI interface output pin.
8	GND	p	Ground
9	LEDK1	P	Back light power supply negative
10	LEDK2	P	Back light power supply negative
11	LEDK3	P	Back light power supply negative
12	LEDK4	P	Back light power supply negative
13	LEDA	P	Back light power supply positive
14	NC	-	Not Connect

5. Block Diagram





6. Maximum Rating

Item	Symbol	Rating	Unit
Operating temperature	Top	-20 to 70	℃
Storage temperature	Tst	-30 to 80	℃
Supply power	VCC	-0.3 ~ 4.6	V
Supply Voltage (Logic)	VDDI	-0.3 ~ 4.6	V

7. Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
System Voltage	VCC	-	2.5	2.8	3.3	V
Interface Operation Voltage	VDDI	-	1.65	1.8	3.3	V
Logic-High Input Voltage	VIH	-	0.7VDDI	-	VDDI	V
Logic-Low Input Voltage	VIL	-	VSS	-	0.3VDDI	V
Logic-High Output Voltage	VOH	-	0.8VDDI	-	VDDI	V
Logic-Low Output Voltage	VOL	-	VSS	-	0.2VDDI	V

Note 1: The LED Supply voltage is defined by the number of LED at Ta=25℃.
Note 2: Operating life means brightness goes down to 50% initial brightness. Typical operating life tine is estimated data.

Item	syb	Min	Typ	Max	Unit	Condition
Voltage	Vf	-	3.1	-	V	IF=80mA
Luminance	Lv	-	350	-	cd/m2	
Number of LED	-		4		pcs	-
Operating Life Time	-	-	20000	-	Hrs	

9. Timing Characteristics

Please consult our technical department for detail information.

10. Application Circuit

Please consult our technical department for detail information.

11. Initial Code

Please consult our technical department for detail information.

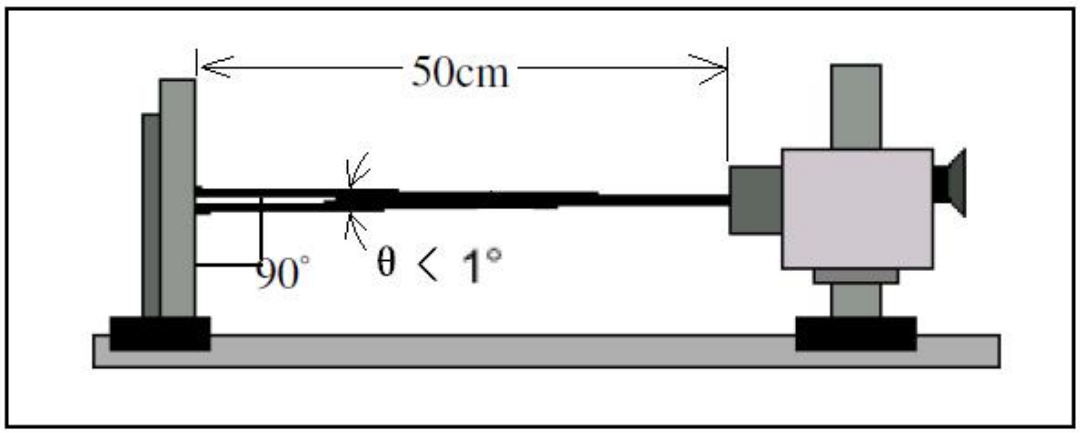
12. Electro-Optical Characteristics

Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Response time		Tr+Tf	θ =0° ∅=0° Ta=25℃	-	30	35	ms	4
Uniformity （Five point）		δ WHITE		-	75	-	%	7
Contrast ratio		Cr		700	900	-	-	3 ,5
Surface Luminance		Lv		-	350	-	cd/m^2	3 ,7
Viewing angle range		θ	∅ = 90°	60	80	-	deg	6
			∅ = 270°	60	80	-	deg	
			∅ = 0°	60	80	-	deg	
			∅ = 180°	60	80	-	deg	
Color filter chromaticity (x, y)	White	X	θ = ϕ = 0°	TBD	TBD	TBD		7 CF Glass
		Y		TBD	TBD	TBD		
	Red	X		TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Green	X		TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Blue	X		TBD	TBD	TBD		
		Y		TBD	TBD	TBD		

Note 1: Ambient temperature=25℃±2℃

Note 2: To be measured in the dark room with backlight unit.

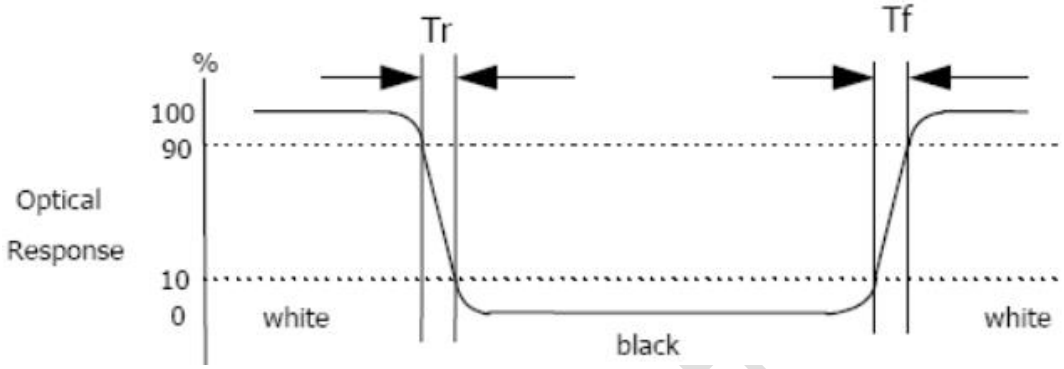
Note 3: To be measured at the center area of panel with a viewing cone of 1 by Topcon luminance meter BM-7A, after 10 minutes operation (module).



Note 4: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "white" to "black" (rising time) and from "black" to "white" (falling time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes.

Refer to figure as below.



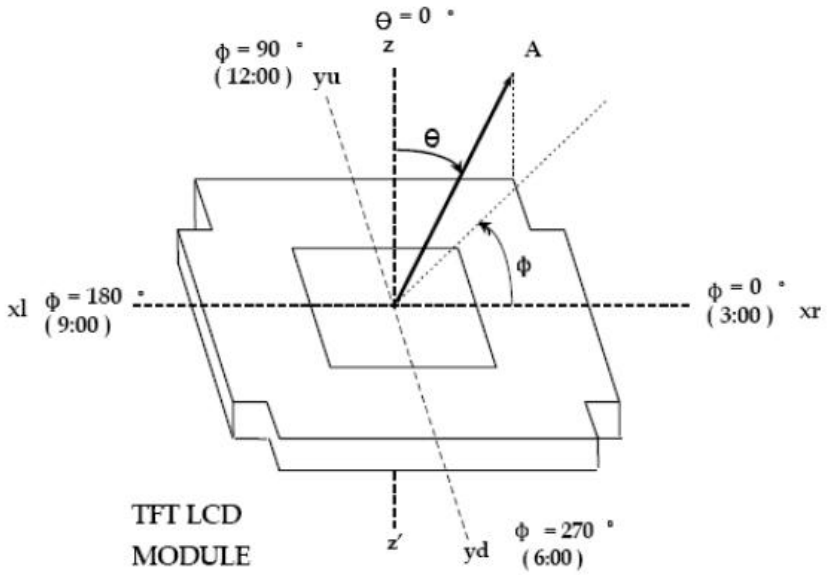
Note 5. Definition of contrast ratio:

Contrast ratio is calculated with the following formula:

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

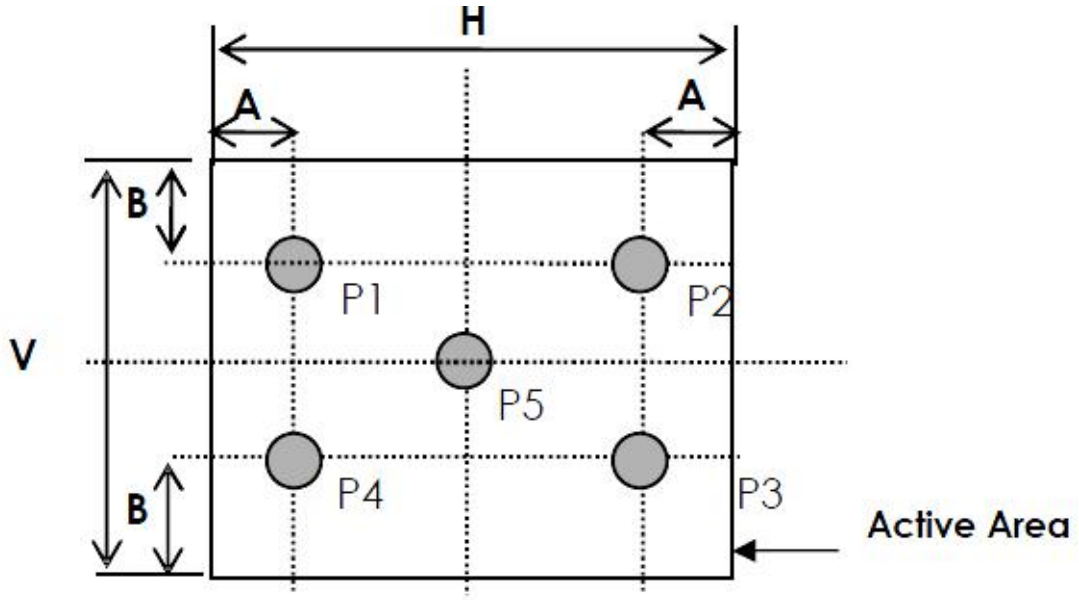
Note 6. Definition of viewing angle

Viewing angle is the angle at which the contrast ratio is greater than 10 for TFT module. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface.



Note 7. Surface luminance is the LCD surface from the surface with all pixels displaying white. Refer to figure as below.

Measuring method for Contrast ratio, surface luminance, Luminance uniformity，CIE (x, y) chromaticity



A : 5 mm B : 5 mm H,V : Active Area

Light spot size Æ=7mm, 500mm distance from the LCD surface to detector lens

measurement instrument is TOPCON's luminance meter BM-7A

Uniformity definition= [min of 5point/max of 5points]x100%

Lv = Surface Luminance with all white pixels (P_5)

13. Reliability Test

			℃,
			℃,
			℃,
			℃,
			℃, %

14. Precautions for Operation and Storage

1. Precautions for Operation

2. Precautions for Storage

℃ ℃

℃

3. Warranty period

15.Package Specification

TBD.