Product Specification

Model Name:	**7” UART Interface TFT LCM with CTP**
Product P/N:	**ZY070C024600-02**
Version:	**V02**

Customer		
Tested By **测试**	**Checked By** **复核**	**Approved By** **批准**

Supplier		
Designed By **设计**	**Checked By** **复核**	**Approved By** **批准**

Change History:

Date	Revision	Description	Person in Charge
2024-03-10	V01	First Release	Terry

CONTENTS

■ General Description

ZY070C024600-02 is a TFT dot matrix LCD module. It is composed of a PCBA, color TFT LCD panel, Source and Gate driver IC, FPC, CTP and a backlight unit. The module display area contains 1024x600 pixels. This product accords with RoHS environmental criterion.

■ LCM Parameter

Item	Contents	Unit	Notes
LCD Type	TFT Transmissive	/	/
Viewing Direction	Full View	O' Clock	/
PCBA Dimension	188.9(W) x 105.1(H) x 9.6(T)	mm	/
LCM Dimension	165(W) x 100 (H) x 3.5(T)	mm	/
Active Area (W x H)	154.21(W) x 85.92(H)	mm	/
Number of Dots	1024 x 600	Pixels	/
Touch Type	G+G Capactive touch panel	/	/
Backlight Type	6x3=18 LEDS / White	/	Vbl=9.6V
Backlight Luminance	250	cd/m2	/
Interface	UART	/	8 Pin
Input Voltage	4.5~18	V	

■ Electrical Characteristics

Item	Min.	Typical	Max.	Unit	Notes
Operating Voltage	4.5	5.0	18	V	VDD
Operating Current	---	470	---	mA	5V Power
Operating Temperature	-10	25	60	°C	/
Storage Temperature	-20	25	80	°C	/
Serial Baud Rate	---	9600	115200	bps	Standards
Serial Output Level	3.0	3.3	---	V	/
Serial Input Level	3.0	3.3	---	V	/
Flash Size	---	128M	---	bits	Nor Flash

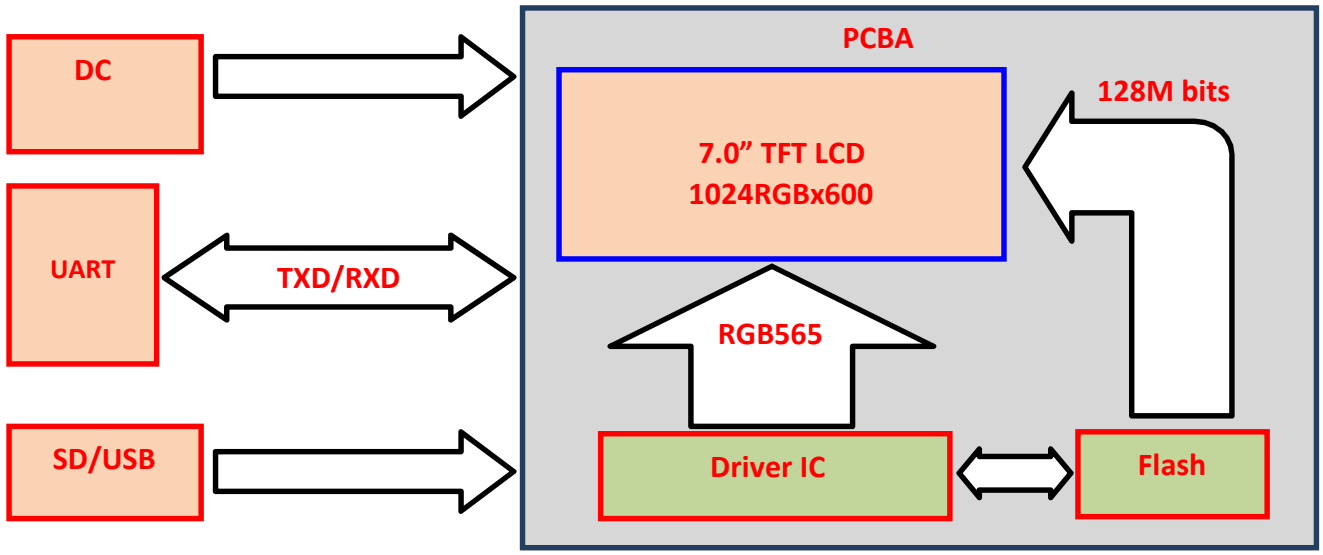
Display RAM	---	128M	---	Bytes	MCU
Flash Memory	---	512K	---	Bytes	MCU
SRAM Memory	---	256K	---	Bytes	MCU
MCU Frequency	120	150	---	MHz	MCU

■ Backlight Characteristics

Condition: Constant Current Driving Method (If=20mA(+/-10%)

Item	Symbol	Min.	Typ.	Max	Unit	Condition
Forward Voltage	Vf	9.0	9.6	9.8	V	If=120mA
Luminance with LCD	Lv	--	250	--	cd/m2	/
Number of LED	/	7x3= 21			Pcs	/
Connection mode	S	3 Serial 7 Parallel			/	/

■ Block Diagram



■ Pin Description

J2: RS-232 Connector (8P 2.0mmm Pitch SMT Connector. Mating Connector Housing and Terminator P/N: WT200Y0-8PH，WT200Y0-T008P)

Pin. No	Symbol	Description
1，2	VDD	Power Supply
3，4	RXD	UART receiving data input
5，6	TXD	UART transmit data output
7，8	GND	Ground

J5: TFT LCD Panel FPC Connector (50P 0.5mm Pitch Top contact FPC connector)

Pin. No	Symbol	Description
1，2	VLED+	Power for LED Backlight (Anode)
3，4	VLED-	Power for LED Backlight (Cathode)
5	GND	Ground
6	VCOM	Power for Common
7	DVDD	Power for Digital
8	Mode	DE/SYNC Mode Select. Normally Pull High High: DE Mode　Low: HDS/VDS mode
9	DE	Data Enable Signal
10	VSD	Vertical SYNC input，Negative Polarity
11	HSD	Horizontal SYNC input，Negative Polarity
12~17	B7~B0	Blue Data
20~27	G7~G0	Green Data
28~35	R7~R0	Red Data
36	GND	Ground
37	DCLK	Clock Signal Input
38	GND	Ground
39	L/R	Left/Right Mirror Control
40	U/D	Up/Down Mirror Control
41	VDDG	Positive Power for TFT LCD
42	VEEG	Negative Power for TFT LCD

43	AVDD	Analog Power
44	RSTB	Reset Pin， Active Low.
45	NC	No Connection
46	VOM	Power for Common
47	DITH	Dithering Setting High: 6 bit L: 8 bit (Default Setting)
48	GND	Ground
49	NC	No Connection
50	NC	No Connection

J9: CTP FPC Connector（6P 1.0mm Pitch，Bottom contact FPC Connector）

Pin. No	Symbol	Description
1	VDD	Power Supply（+3.3V+/-0.3V）
2	INT	Interrupt Signal Output
3	RST	Reset Pin， Active Low.
4	SCL	I^2C Clock
5	SDA	I^2C Data
6	GND	Ground

J6: Micro SD Card Socket for firmware upgrade（TF Card）

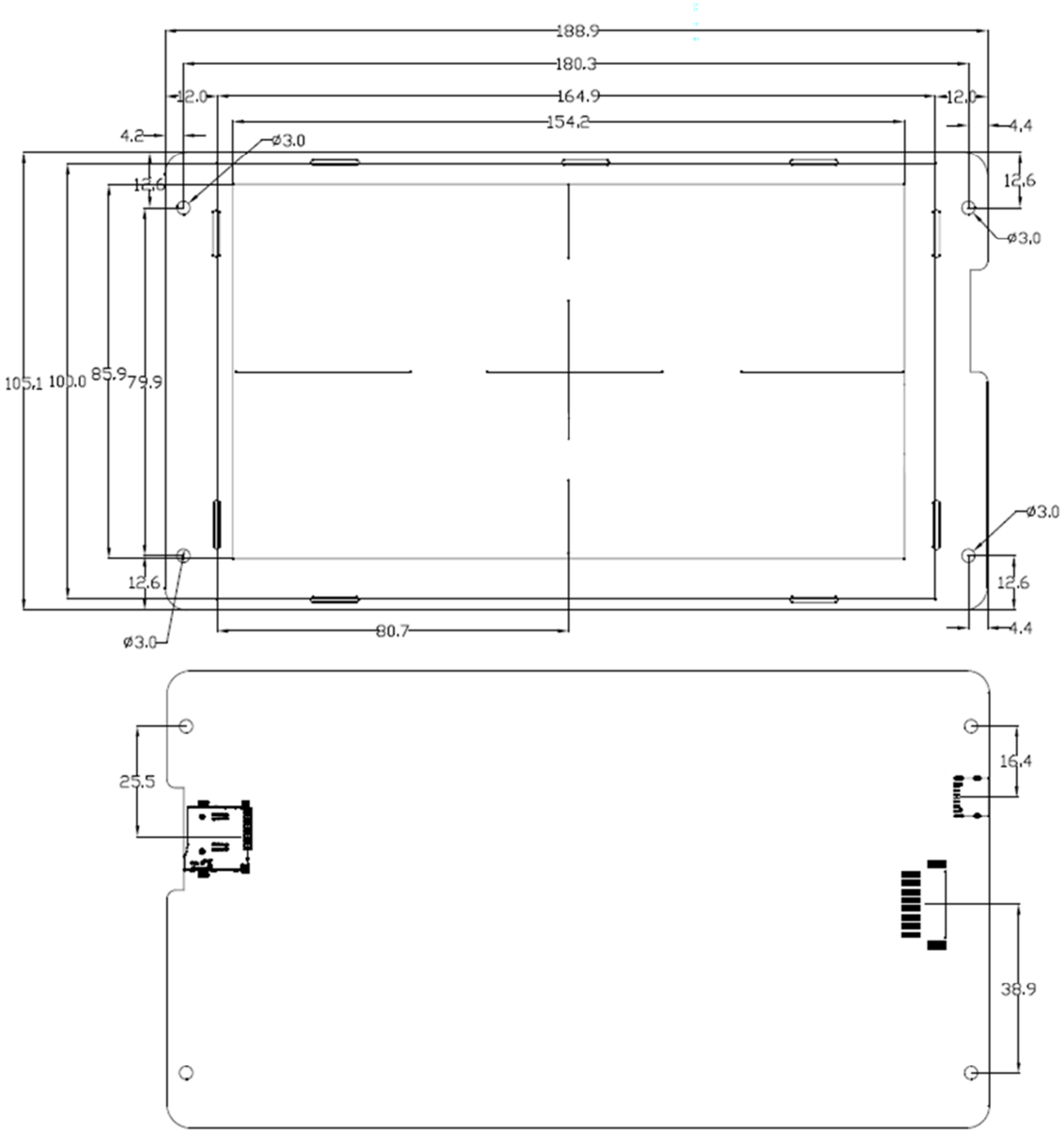
Pin. No	Symbol	Description
1	DAT2	Data bit 2
2	CD/DAT3	Data bit 3/Card Detection
3	CMD	Command Response
4	VCC	Power Supply（+3.3V+/-0.3V）
5	CLK	Clock
6	VSS	Ground
7	DAT0	Data bit 0
8	DAT1	Data bit 1
9	On/Off	Wake-up input

J7: USB Upgrade（TYPE-C USB Connector）

Pin. No	Symbol	Description

A4/A9	VDD	Power Supply Voltage (5.0V+/-0.3V)
A7/B7	DM	USB Data Negative
A6/B6	DP	USB Data Positive
A1/A12	GND	Ground

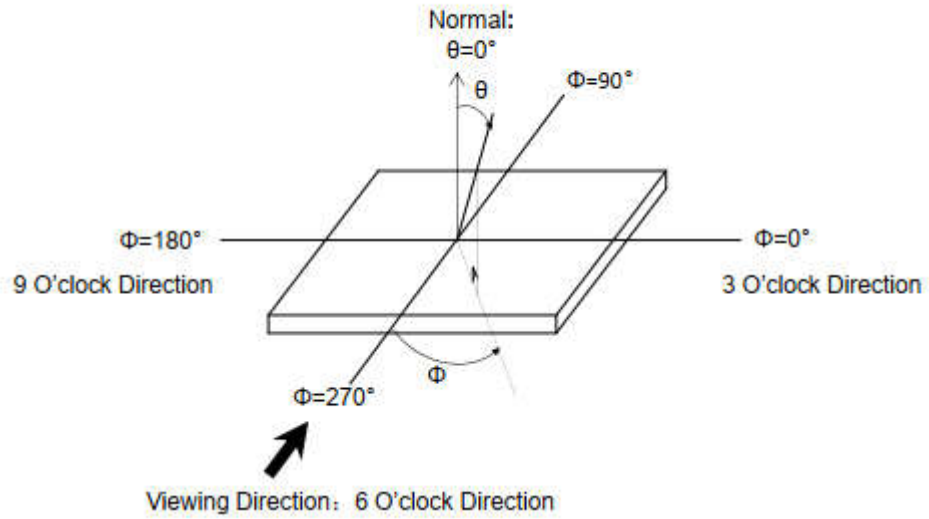
■ Outline Dimension



■ Optical Specifications

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Response time	Tr+Tf	θ=0° Φ=0° Ta=25℃	-	25	40	ms	/
Contrast ratio	Cr		600	800	-	-	/
Viewing angle range	θ	Φ=0°	80	85	-	deg	/
		Φ=90°	80	85	-	deg	
		Φ=180°	80	85	-	deg	
		Φ=270°	80	85	-	deg	

Definition of Viewing Angle θ and Φ



■ Precautions

Handing Precautions

(1) The display panel is made of glass and polarizer. As glass is fragile, it tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

(3) Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer).

(4) The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming is contacting with room temperature air.

(5) If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents

- Isopropyl alcohol
- Ethyl alcohol

Do not scrub hard to avoid damaging the display surface.

(6) Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.

(7)

- Water
- Ketone
- Aromatic solvents

Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contacting oil and fats.

(8) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

(9) Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

(10) Do not attempt to disassemble or process the LCD module.

(11) NC terminal should be open. Do not connect anything.

(12) If the logic circuit power is off, do not apply the input signals.

(13) Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.

- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

Storage Precautions

When storing the LCD modules, the following precaution is necessary.

(1). Storing in an ambient temperature 10°C to 30°C, and in a relative humidity of 45% to 75%. Don’ t expose to sunlight or fluorescent light.

(2). Storing in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it . And with no desiccant.
(3). Placing in a dark place where neither exposure to direct sunlight nor light' s keeping the storage temperature range.
(4). Storing with no touch on polarizer surface by the anything else.

Caution against static charge

The LCD module use CMOS LSI drivers, so we recommended that you :

Connect any unused input terminal to Vdd or Vss, do not input any signals before power is turned on, and ground your body, work/assembly areas, assembly equipment to protect against static electricity.

Others

Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature.
If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.
To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc., exercise care to avoid holding the following sections when handling the modules.
- Exposed area of the printed circuit board.
-Terminal electrode sections.