

INDUSTRIAL STRENGTH... Start Your Application From YOURITECH

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EMC tests

on-site service

Optical Bonding

In-house Manufacturing

Cover glass

System solutions

OEM Solutions

Custom Display

Production Custom designs Installation

Mechanical design



MODEL NO : ET027HV01-T

MODEL VERSION: 01

SPEC VERSION : 1.0

ISSUED DATE: 2020-10-21

☐ Preliminary Specification

☒ Final Product Specification

Customer : _____

Approved by	Notes

Youri Confirmation

Prepared by	Reviewed by	Approved by
John	Johnny	Wang

1. Introduction

1.1 Scope of application

LCD specification: Dots 960xRGBx240.

As to basic specification of the driver IC, refer to the IC (ILITEK:ILI8961) specification and data book.

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL;;

9 O'CLOCK Type LCD

960dot-segment and 240 dot-common outputs;

262K Color can be selected by software;

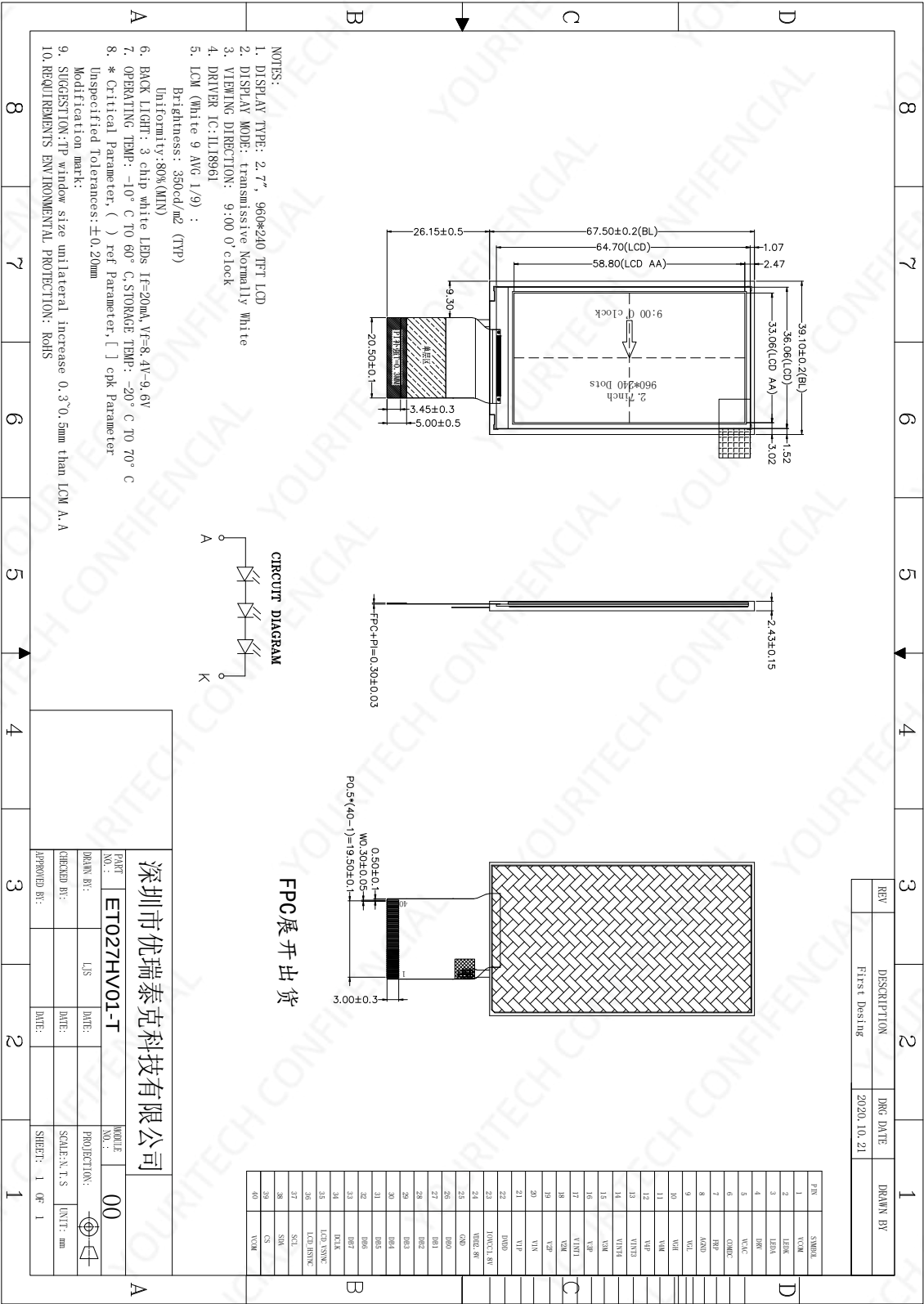
White LED back light;

8bit RGB interface

1.3 Applications:

2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally White	--
Drive element	TFT active matrix	--
Number of pixels	320*3RGB(H)X240(V)	Dots
Pixel arrangement	RGB stripe	--
Pixel Pitch (H*V)	0.13775(H) x0.18375(V)	mm
Active area	58.80(H) x33.06(V)	mm
Viewing direction	9 O'CLOCK	-
TFT Driver IC	ILI8961	
TFT interface	8bit RGB interface	-
Approx. Weight	TBD	g
LCM Size(W*H*T)	67.50W) x 39.10(H) x2.43(T)	mm
Touch structure	--	
Touch Driver IC		
Touch Interface		



3.Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-20	+60	°C
LCM Storage Temperature	T _{STG}	-30	+70	°C
Humidity	RH	-	90	%

4.Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage for I/O	VDDIO	1.65	1.8	3.6	V
Supply Voltage for(DC/DC)	VDD	2.7	2.8	3.6	V
Supply Voltage for(DC/DC)	AVDD				V
Supply Voltage for(DC/DC)	AVEE				V

4.2Back-Light Unit Characeristics

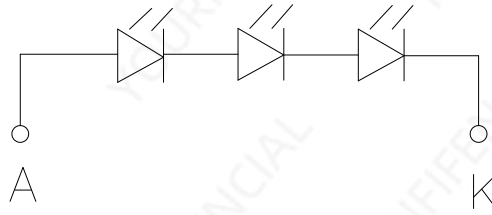
The back-light system is an edge-lighting type with white 3 LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V _F	8.4	--	9.6	V	-
Forward current	I _F	--	20	-	mA	-
Luminance(With LCD)	L _v		350	--	cd/m ²	-
LED life time	N/A	----	30,000	--	Hr	Note 1

Note:

- (1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=20mA/LED. The LED life time could be decreased if operating I_L is larger than 25mA/LED.

Backlight circuit diagram shown in below:

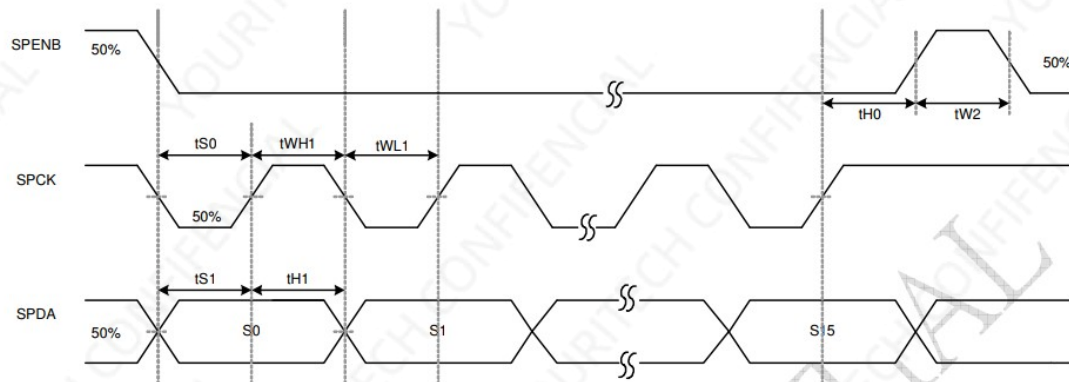


5. Module Function Description

Pin No.	Symbol	Description
1	VCOM	TFT common lane
2	LEDK	POWER SUPPLY- FOR BACKLIGHT cathode
3	LEDA	POWER SUPPLY+ FOR BACKLIGHT ANODE
4	DRV	Power transistor signal for back light power boost converter
5	VCAC	Power setting capacitor for vcom AC.
6	COMDC	VCOM DC output.
7	FRP	Frame polarity output for panel vcom.
8	AGND	Ground for analog circuit.
9	VGL	Power setting capacitor connect pin.
10	VGH	Power setting capacitor connect pin.
11-12	C4M/C4P	C4M/C4P capacitor connect pin for internal charge pump
13	VINT3	VINT3, Floating this pin.
14	VINT4	VINT4, Floating this pin.
15-16	C3M/C3P	C3M/C3P capacitor connect pin for internal charge pump
17	VINT1	VINT1, Power setting capacitor connect pin.
18-19	C2M/C2P	C2M/C2P capacitor connect pin for internal charge pump
20-21	C1M-C1P	C1M/C1P capacitor connect pin for internal charge pump
22	DVDD	Power supply for analog circuit.
23	IOVCC	POWER SUPPLY (1.8V/2.8V)
24	VCI	PINPOWER SUPPLY (2.8V)
25	GND	Gound
26-33	DB0-DB7	8-bit digital data input.
34	DCLK	Clock signal. Latching data at the rising edge.
35	VSYNC	Vertical sync input. Negative polarity.
36	HSYNC	Horizontal Sync input. Negative polarity.
37	SCL	Serial communication clock input.
38	SDA	Serial communication data input.
39	CS	CHIP SELECT
40	VCOM	TFT common plane.

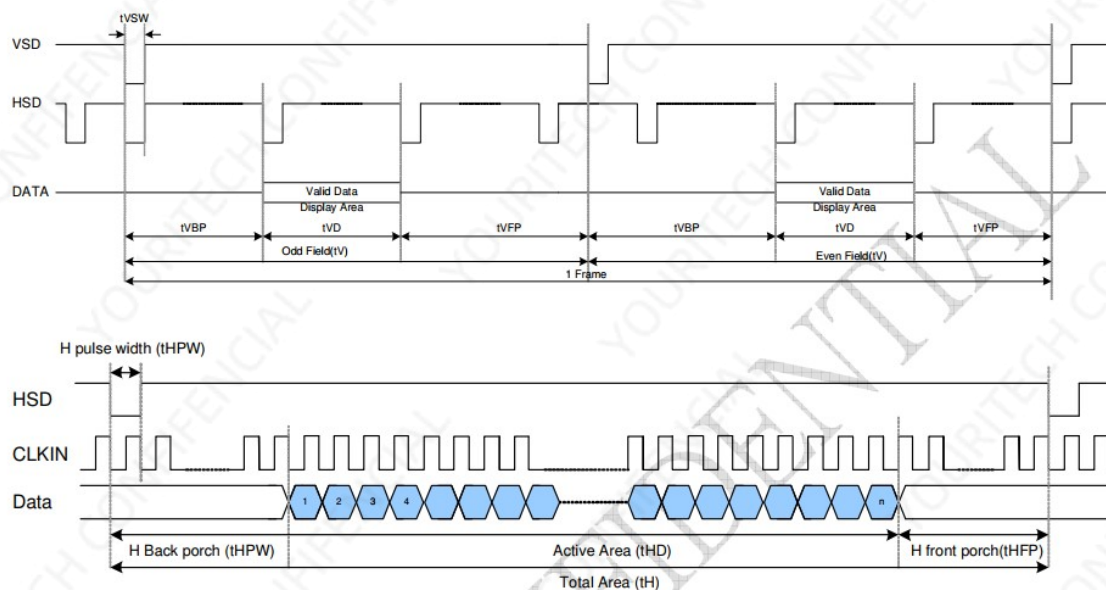
6. Timing Characteristics

Serial Control Timing



Item	symbol	Min.	Typ.	Max.	Unit
SPENB input setup time	t_{S0}	50			ns
Serial data input setup time	t_{S1}	50			ns
SPENB input hold time	t_{H0}	50			ns
Serial Data Input hold time	t_{H1}	50			ns
SPCK pulse high width	t_{WH1}	50			ns
SPCK pulse low width	t_{WL1}	50			ns
SPENB pulse high width	t_{W2}	400			ns

8-bit RGB/8-bit Dummy RGB/YUV /Parallel RGB Input Timing Chart

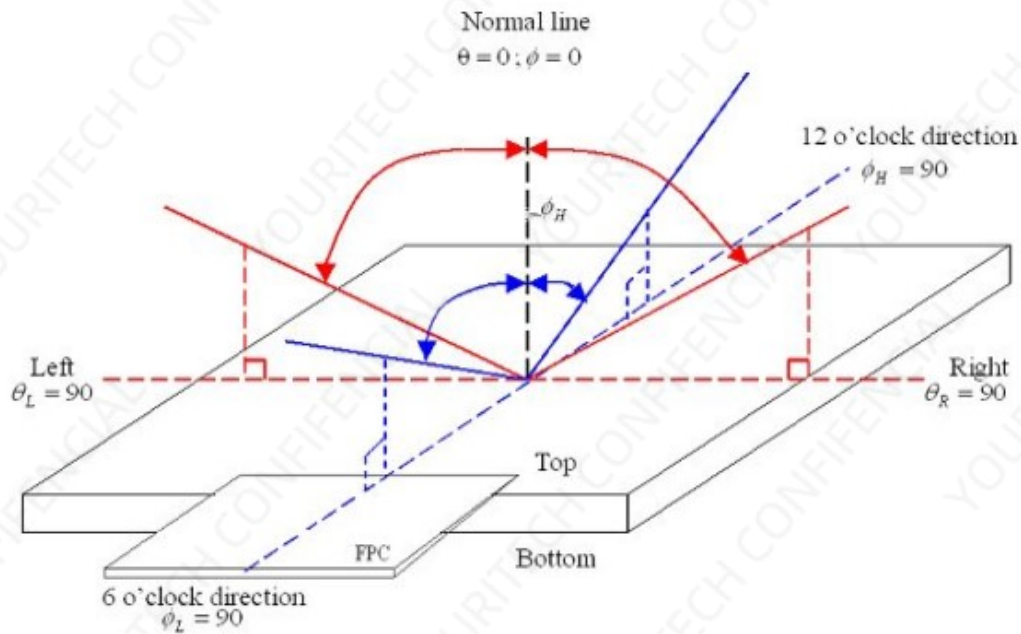


Parameter	Symbol	Interface			Unit
		Min.	Typ.	Max.	
CLKIN frequency	fCLKIN	13.5	27	27.19	MHz
HSD period	tH	1024	1716	1728	CLKIN
HSD display period	tHD		960		CLKIN
HSD back porch	tHBP	50	70	255	CLKIN
HSD front porch	tHFP	14	686	718	CLKIN
HSD pulse width	tHSW	1	1	tHBP-1	CLKIN
VSD period time	tV	242.5	262.5	450.5	H
Vertical display area	tVD		240		H
VSD back porch	tVBP	1	21	31	H
Odd field		1.5	21.5	31.5	
VSD front porch	tVFP	1.5	1.5	179.5	H
Odd field		1	1	179	
VSD pulse width	tVSW	1CLKIN	1CLKIN	6H	
1 Frame		485	525	901	H

7.Optical Characteristics

7.1 Optical Specification

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.
Color Filter Chromaticity	White	x	$\theta=\phi= 0^{\circ}$	0.274	0.294	0.314
		y		0.316	0.336	0.356
	Red	x	$\theta=\phi= 0^{\circ}$	0.577	0.597	0.617
		y		0.294	0.314	0.334
	Green	x	$\theta=\phi= 0^{\circ}$	0.258	0.278	0.298
		y		0.533	0.553	0.573
	Blue	x	$\theta=\phi= 0^{\circ}$	0.126	0.146	0.166
		y		0.140	0.160	0.180
	Gamut			49.6%		
0Measured by C light						
Transmittance		$\theta=\phi= 0^{\circ}$		5.2%	4.5%	
Measured by GP standard backlight						



8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+70°C / 96H	1. Functional test is OK. Missing Segment, short, unclear segment non-display, display abnormally and liquid crystal leakage un-allowed. 2. No low temperature bubbles, end seal loose and fall, frame rainbow.
2	Low Temp. Storage	-30°C / 96H	
3	High Temp. Operating	+60°C / 96H	
4	Low Temp. Operating	-20°C / 96H	
5	High Temperature / Humidity storage	50°C x 90%RH / 96H	
6	Thermal and cold shock	Static state, -20°C (30min) ~60°C (30min), 50 cycles	

9. Packing Method----TBD

- END -