



PRODUCT SPECIFICATIONS

Preliminary Specification

Module No: VISLCD-177HYB14A01

PRODUCT TYPE: TFT MODULE

VERSION: V0

Huayuan:

APPROVED BY	CHECKED BY	DESIGNED BY

Customer:

APPROVED BY	TESTED BY	INSPECTION RESULT



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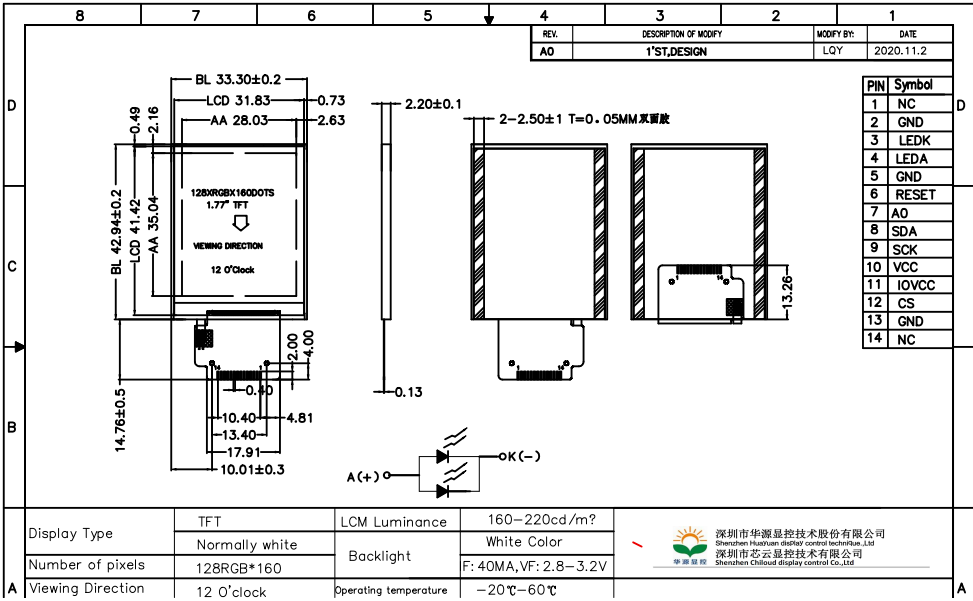


1. General Description 基本描述

MODEL NO 产品型号	VISLCD-018HYS14B
Display Mode 显示模式	Transmissive (全透)
Display Format 显示格式	Graphic 128RGB*160 Dot-matrix (128xRGBx160 图形点阵)
Input Data 显示屏接口类型	SPI-4 line interface (SPI-4 线接口)
Viewing Direction 视角方向	12 o'clock (12 点钟)
Drive 显示屏驱动芯片	ST7735S (台湾矽创)

2. Mechanical Specification 机械规格

Item	Specifications	Unit
Dimensional outline 显示屏外围尺寸	33.30(W)*42.94(H)*2.20MAX(T)	mm
Resolution 分辨率	128RGB*160	dots
LCD Active area 显示尺寸	28.03 (W)*35.04 (H)	mm
Pixel size 像素尺寸	0.219(W)*0.219(H)	mm




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4. Electrical Maximum Ratings 电气极限

Item 项目	Symbol 符号	Min 最小值	Max 最大值	Unit 单位	Note 备注
Supply voltage (VDDI) 工作电压(VDDI)	V	1.8	3.3	V	-
Supply voltage (VDD) 工作电压(VDD)	V	2.8	3.3	V	-
Operating temperature 工 作温度范围	T _{OPR}	-20	70	°C	-
Storage temperature 存储温度范围	T _{STR}	-30	80	°C	-

※NOTE: VDDI 和 VDD 可以直接连一起，共用一组 (2.8V~3.3V) 电压供电。

5. Brightness characteristic&Power dissipation 亮度特性&功耗

Item 项目	Symbol 符号	Min 最小值	Typical 典型值	Max 最大值	Unit
LED module Forward voltage LED 背光源正向电压	V _{LED}	2.9	3.1	3.3	V
LED module current LED 背光源电流	I _{LED}	-	18	-	mA
LCD Surface Luminance 显示屏表面亮度	L _S	180	220	-	Cd/m ²
LCD Surface brightness uniform LED 背光源均匀度	L _D	80	-	-	%
LCD power dissipation 显示屏总功耗	P _{LCD}	-	0.11	-	W

※NOTE: P_{LCD}=VDD * (I_{LED}+I_{LCD})

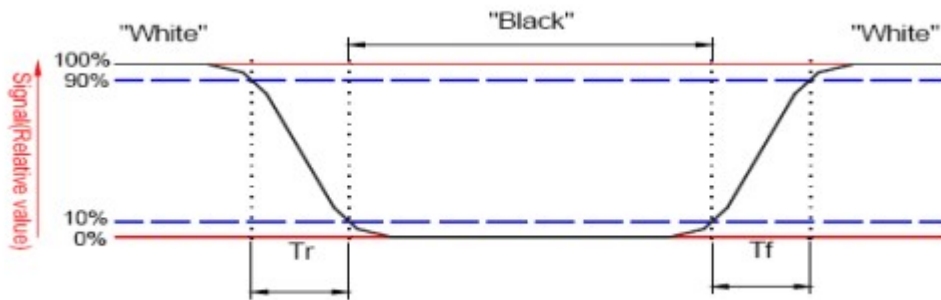


6. Module Function Description 显示屏脚位定义

PIN No. 引脚序号	Symbol 引脚名称	Description 作用描述	Notes 备注
1	NC	No connection (空脚)	-
2	GND	Ground (接地脚)	-
3	LED-K	Cathode of Backlight (背光负极供电脚)	-
4	LED-A	Anode of Backlight (2.9V-3.3V Typical:3.1V) (背光正极供电脚, 电压范围:2.9-3.3V, 典型值:3.1V)	-
5	GND	Ground (接地脚)	-
6	RESX	-This signal will reset the device and it must be applied to properly initialize the chip. -Signal is active low. (显示屏复位脚, 低电平有效)	-
7	DCX	-Display data/command selection pin in 4-line SPI interface. (4线SPI接口显示数据或显示指令选择脚) DCX='1': display data or parameter. (DCX=1:选择显示数据或参数寄存器) DCX='0': command data (DCX=0:选择指令寄存器)	-
8	SDA	-Serial input/output signal in 4-line SPI. (4线SPI串口数据输入/输出脚)	-
9	SCL	-4-line SPI serial interface clock. (4线SPI串口时钟脚)	-
10	VDD	Power Supply for Analog, Digital System and Booster Circuit. (显示屏主电源供电脚 2.8-3.3V)	-
11	VDDI	Power Supply for I/O System. (显示屏 I/O 口电源供电脚 1.8-3.3V)	-
12	CSX	-Chip selection pin Low enable. High disable. (显示屏驱动芯片选脚, 低电平使能)	-
13	GND	Ground (接地脚)	-
14	NC	No connection (空脚)	-

7. Response time & Contrast ratio 响应时间与对比度

Item 项目	Symbol 符号	Condition 条件	Remark			Unit 单位
			Min. 最小值	Typ. 典型值	Max. 最大值	
Response time 响应时间	Tr+Tf	$\theta = 0^\circ$	-	30	60	ms
Contrast ratio 对比度	CR	$\theta = 0^\circ$	200	300	-	-



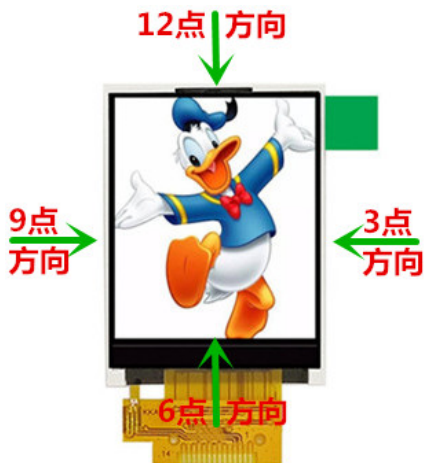
响应时间图示

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

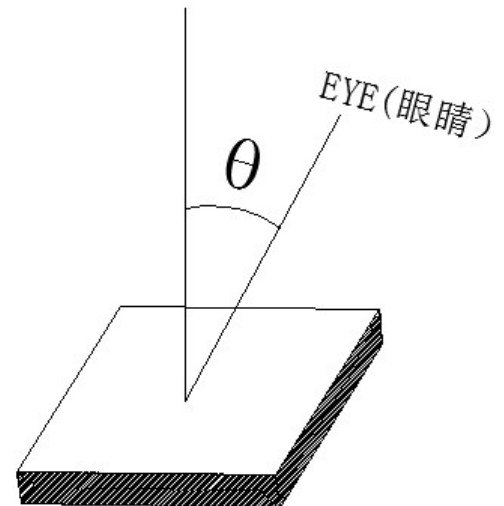
对比度计算公式

8.Viewing Angle 视角宽度

Item 项目	Symbol 符号	Condition 条件	Remark			Unit 单位
			Min. 最小值	Typ. 典型值	Max. 最大值	
Viewing angle 视角宽度	Top 12点钟方向	$CR \geq 10$ 对比度大于等于 10	40	50	-	Deg. 度
	Bottom 6点钟方向	$CR \geq 10$ 对比度大于等于 10	50	60	-	
	Left 9点钟方向	$CR \geq 10$ 对比度大于等于 10	50	60	-	
	Right 3点钟方向	$CR \geq 10$ 对比度大于等于 10	50	60	-	



垂直于屏表面



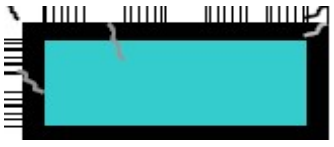
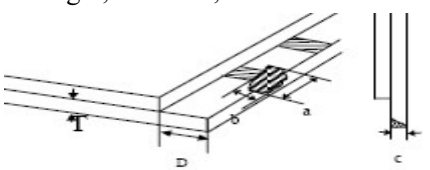
NOTE:3 点, 6 点, 9 点, 12 点方向视角的大小指的是垂直于屏表面的线眼睛视线之间的夹角(θ)。

9. Reliability Trial 可靠性实验

NO. 序号	ITEM 实验项目	CONDITION 实验环境	CRITERION 实验规范
1	High Temperature Non-Operating Test 高温存储实验	80°C*120Hrs	No Defect Of Operational Function In Room Temperature Are Allowable 室温运行功能无缺陷
2	Low Temperature Non-Operating Test 低温存储实验	-30°C*120Hrs	
3	High Temperature/Humidity Non Operating Test 高温高湿实验	60°C*90%RH*120Hrs	
4	High Temperature Operating Test 高温工作实验	70°C*72Hrs	
5	Low Temperature Operating Test 低温工作实验	-20°C*72Hrs	
6	Thermal Shock Test 热冲实验	-20 °C (30Min) ↔70 °C (30Min) *10CYCLES	

10. Inspection standards 检验标准

10.1 Glass defect

NO	Defect item	Criteria	Remark
1	Dimension Unconformity (Major defect)	By Engineering Drawing	
2	Cracks (Major defect)	1. Linear cracks panel 【Reject】 2. Nonlinear crack contrast by limited sample	
3	Glass extrude the conductive area (minor defect)	a: disregards and no influence assemblage. 1) $b \leq 1/3$ Pin width(non bonding area) 【Accept】 2) bonding area ≤ 0.5 mm 【Accept】	A: Length, b: Width
4	Pin-side ,conductive area damaged (minor defect)	(a c: disregards) $b \leq 1/3$ of effective length for bonding electrode 【Accept】	a: length, b: Width, c: Thickness 
5	Pin-side,non-conductive area damaged	1) Damage area don't touch the ITO (Including contraposition mark,	a: Length, b: Width c: Thickness

	(minor defect)	except scribing mark) 【Accept】 2) $C < T$ $b \cong BM/3$ of width 【Accept】 3) $c = T$ b not touch the seal glue 【Accept】 4) a disregards	
6	Non-pin-side damage (minor defect)	$c < T$ 1) b exceeds $1/3Bm$ 【Reject】 $c = T$ b not touch the seal glue 【Reject】	c : Thickness b : width of damage

10.2 LCD appearance defect (View area)

NO	Defect item	Criteria		Remark
		Specification	Allowable	
1	Fiber、glass cratch、polarizer scratch/folded (minor defect)	$W \leq 0.03\text{mm}$	disregard	note1:L: Length, W: Width note2: disregard if out of AA
		$0.03\text{mm} < W \leq 0.05\text{mm};$ $L \leq 3.0\text{mm}$	2	
		$0.05\text{mm} < W \leq 0.1\text{mm};$ $L \leq 3.0\text{mm}$	1	
		$W > 0.1\text{mm}; L > 3.0\text{mm}$	0	
2	Polarizer bubble、 concave and convex (minor defect)	$\phi \leq 0.2\text{mm}$	disregard	note1: $\phi = (L+W)/2$, L: Length, W :Width note2:disregard if out of AA
		$0.2\text{mm} < \phi \leq 0.3\text{mm}$	2	
		$0.3\text{mm} < \phi \leq 0.5\text{mm}$	1	
		$0.5\text{mm} < \phi$	0	
3	Black dots、dirty dots、 impurities、eye winker (minor defect)	$\phi \leq 0.15\text{mm}$	disregard	note2:disregard if out of AA
		$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
4	Polarizer prick (minor defect)	$\phi \leq 0.1\text{mm}$	disregard	note1: $\phi = (L+W)/2$, L=Length, W=Width note2:the distance between two dots>5mm
		$0.1\text{mm} < \phi \leq 0.25\text{mm}$	3	
		$\phi > 0.25\text{mm}$	0	