SMART DISPLAY SPECIFICATION

WINSTAR Display Co.,Ltd.

華凌光電股份有限公司

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SPECIFICATION

CUSTOMER : _____

MODEL NO. : WL0F0007000A8GDAASA00

APPROVED BY: (FOR CUSTOMER USE ONLY)	

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
		Paul Chen Wenhao Liao	Jason Chan

VERSION	DATE	REVISED PAGE NO.	SUMMARY
E	2023/04/14	7 8 11	Remove extra module info. Add brightness and add Vdc Drawing revised on CON2 pin 9 & 13 modify CON 2 pin 9 & 13 descr.

TFT Display Inspection Specification: https://www.winstar.com.tw/technology/download.html
Precaution in use of TFT module: https://www.winstar.com.tw/technology/download/declaration.html

MODLE NO：
WL0F0007000A8GDAASA00

RECORDS OF REVISION

DOC. FIRST ISSUE

VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2021/06/03		First issue
A	2021/12/22	6 18	Modify the Summary content Add new object
B	2022/03/31	8 16	Modify Contour Drawing Modify Display Usage content
C	2022/04/15	7 9 15	Add more SPEC of PCBA Add PCBA Part number Add description of default selection
D	2023/01/07	8 11 12 13 14 28	Add remark for 3.9V pins(CON2) Adjust the drawing for CN definition Modify the info of reliability test Add more details about protocol
E	2023/04/14	7 8 11	Remove extra module info. Add brightness and add Vdc Drawing revised on CON2 pin 9 & 13 modify CON 2 pin 9 & 13 descr.

Contents

1. Smart Display Classification Information

W	L	0F	000700	0A8	G	D	AA	S	A	00
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

①	W: WINSTAR products			
②	Type: L:Standard K:Customization			
③	Display Type:	Standard:	0H: Character STN 0X: Graphic STN (TAB/COF) 0F: TFT EH: Character OLED EX: OLED (TAB/COF)	0G: Graphic STN 0P: Graphic STN (COG) EG: Graphic OLED EP: OLED (COG)
		Customization:	DH: Character DN: Graphic ED: OLED	DG: Graphic STN 0J: TFT
④	Display size: (diagonal) / Display format: (resolution)	Character STN: Graphic STN:	e.g., 8x1: 000801 16x2: 001602 24x4: 002404 e.g., 128x64: 012864 320x240: 320240	
		TFT Size (inch):	000096-0.96” / 000350-3.5” / 000430-4.3” / 000570-5.7” 000700-7.0” / 000800-8.0” / 001020-10.2” / 001210-12.1” (The last two digits are two digits after the decimal point)	
		OLED:	e.g., 128x64: 012864 Customization: 0001XX	
⑤	Serial No:	0A1 ~ 0ZZ	Customization STN: 000	
⑥	Touch Panel Type:	N: Without TP T: RTP G: CTP		
⑦	Model Interface:	A: CAN B: Bluetooth C:Controller Specified D: RS485 E: RS232 F: USART G: Logic I/O	H: HDMI R: Memory Specified N: Ethernet J: Analog I/O K: USB L: WIFI M: Zigbee	X: Combined Y: Proprietary interface
⑧	Interface Serial No.:	AA ~ ZZ		
⑨	Control Category:	S: Smart Display E: Entry N: Non-specified		
⑩	Special Code:	A → Generic B → Industrial C →Automotive D →Medical		
⑪	Model code:	00 ~ ZZ		

2. Summary

7 Inch Smart Display (RS485 series) Features

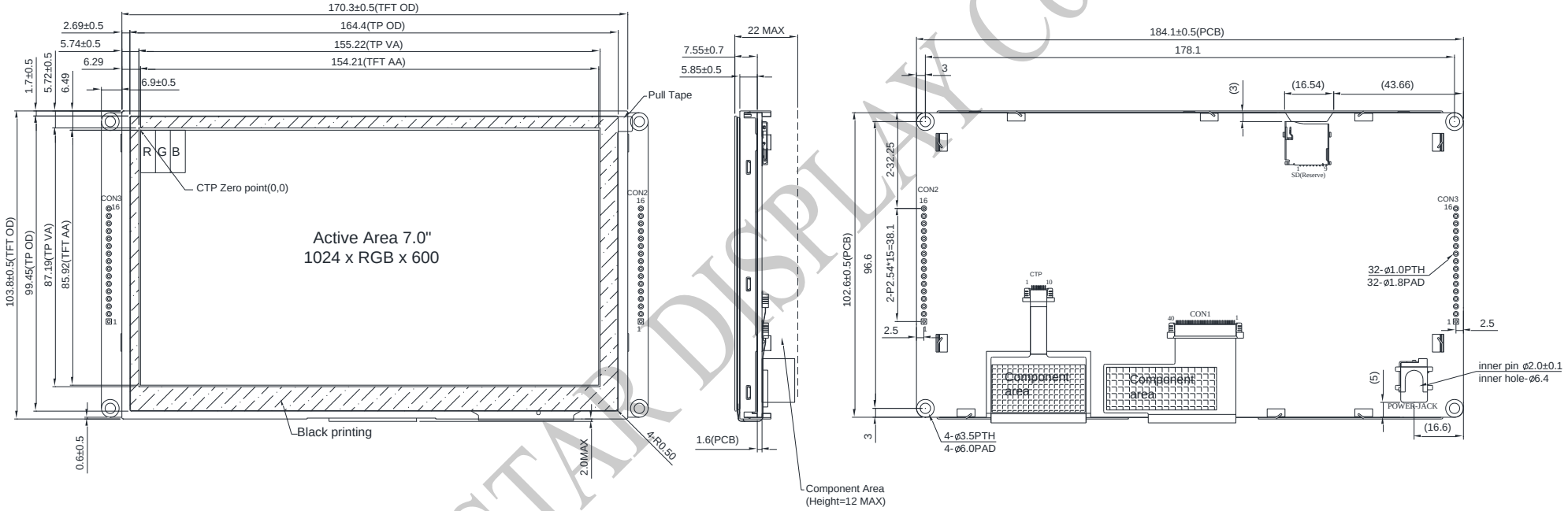
1. +12V power supply input with 5V to 16V dynamic range power input, the power consumption is around 6 Watt.
2. Self testing after booting function.
3. RS485 communication interface.
4. Built in flash memory, store the font and Object Dictionary Data.
5. Support capacitive touch panel (CTP).
6. Embedded buzzer controlled by Master Device.
7. HOST can be used on multiple platforms, such as Computer (with USB to RS-485 Dongle), MCU.

3. Product information

General information

Item	Standard Value	Unit
Operating voltage	5~16V	Vdc
Communication Interface	RS485 differential ± 3.3	Vpp
MCU	STM32F746	N/A
Flash Memory	16	MB
SDRAM Frequency	108	MHz
LCD display size	7.0	inch
Dot Matrix	1024 x RGBx600(TFT)	dot
Module dimension	184.1(W) x 103.8(H) x 22(D)	mm
Active area	154.2144 x 85.92	mm
Dot pitch	0.1506 x 0.1432	mm
Brightness	Min:400; Typ:450	cd/m^2
LCD type	LED, Normally White	
View Direction	85/85/85/85	
Aspect Ratio	16:9	
With /Without TP	With CTP	
Surface	Glare	

4. Contour Drawing



POWER JACK

2 — ◎ — 1

(GND) (12V)

CON3

PIN	SYMBOL
1	+3V3
2	SWCLK
3	GND
4	SWDIO
5	NRST
6	GND
7~16	NC

CON2

PIN	SYMBOL	PIN	SYMBOL
1	VIN	9	VDD_3.9V
2	GND	10	Reserve
3	Reserve	11	Reserve
4	Reserve	12	GND
5	GND	13	VDD_3.9V
6	GND	14	RS485_B
7	NC	15	RS485_A
8	NC	16	GND

The non-specified tolerance of dimension is ±0.3mm.

5. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-20	–	+70	℃
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℃

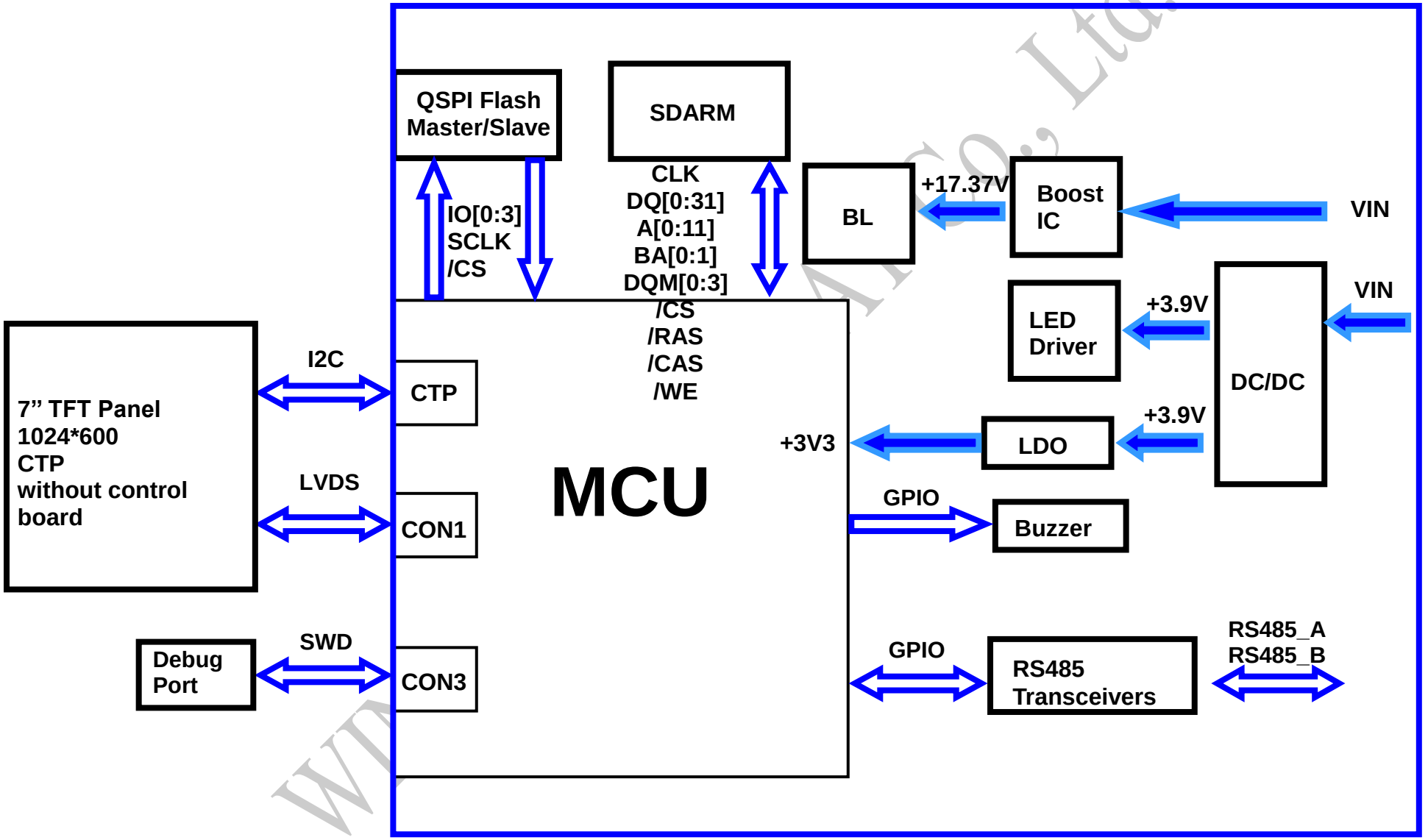
6. Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage	VIN	–	5	12	16	V
Supply current	I(mA)	–	–	490	–	mA

7. BOM

Item	Description	Remark
LCM	WF70A8TYAHLNGB#	
PCBA	SV10007R00AAA00N0104	

8. Block diagram



9. Interface

CON2 definition:

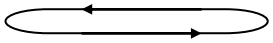
Pin	Symbol	Function	Remark
1	VIN	Power supply V+	Input
2	GND	Power supply GND input	Input
3	Reserve	USART RX interface(Reserve)	Reserve
4	Reserve	USART TX interface(Reserve)	Reserve
5	GND	Power supply GND input	Input
6	GND	Power supply GND input	Input
7	NC	_	_
8	NC	_	_
9	VDD_3.9V	3.9V	Power Source current <1A
10	Reserve	UART RX interface(Reserve)	Reserve
11	Reserve	UART TX interface(Reserve)	Reserve
12	GND	GND	GND
13	VDD_3.9V	3.9V	Power Source current <1A
14	RS485_B	RS485 DATA-	I/O
15	RS485_A	RS485 DATA+	I/O
16	GND	GND	GND

CON3 definition:

Pin	Symbol	Function	Remark
1	+3V3	3.3V power for JTAG interface	Output
2	SWCLK	CLK pin for JTAG interface	Input
3	GND	GND for JTAG interface	Output
4	SWDIO	Data pin for JTAG interface	I/O
5	NRST	Reset pin for JTAG interface	Input
6	GND	GND	Output
7~16	NC	_	_

10. Reliability

Content of Reliability Test (Wide temperature, -20℃~70℃)

Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 96hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30℃ 96hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70℃ 240hrs	___
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20℃ 240hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60℃,90%RH max	60℃,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation -20℃ 25℃ 70℃  30min 5min 30min 1 cycle	-20℃/70℃ 10 cycles	___
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=± 2kV~±6kV(contact), ±2kV~±8kV(air), RS=330Ω CS=150pF 10 times	___

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

11. Product inspection check list

Check samples by meter V_{IN}, I_{system}

Item	No 1	No 2	No 3	Note
V_{IN} (V)	12.1	12.1	12.1	
I_{System} (mA)	550	548	538	

Check sample Reliability Test

Item	Result	Note
Thermal shock	_	-20℃/70℃ 10 cycles
High Temperature Operation	_	70℃ 240hrs
Low Temperature Operation	_	-20℃ 240hrs
Static electricity test	_	VS=±2kV~±6kV(contact),±2kV~±8kV(air), RS=330Ω CS=150pF 10 times
Vibration test	_	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes

- Prepare sets for testing