SMART DISPLAY SPECIFICATION

WINSTAR Display Co.,Ltd.

華凌光電股份有限公司

Winstar Display Co., LTD
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SPECIFICATION

CUSTOMER : _____

MODEL NO. : WL0F00035000XGAAASA00

APPROVED BY: (FOR CUSTOMER USE ONLY)	

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
		Leo Liu Erick Chung	Debby Hsu

VERSION	DATE	REVISED PAGE NO.	SUMMARY
C	2023/04/20		Modify Operator Voltage

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:
WL0F00035000XGAAASA00

RECORDS OF REVISION

DOC. FIRST ISSUE

VERSION	DATE	REVISED PAGE NO.	**SUMMARY**
0	2021/04/06		First issue
A	2021/12/21	6 10 17	Modify the Summary content Modify the new part number of LCM. Add new object
B	2022/04/15	9 14	Add PCBA Part number Add description of default selection
C	2023/04/20		Modify Operator Voltage

Contents

1. Smart Display Classification Information

W	L	0F	000350	00X	G	A	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 P: RS422 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 ~ Z		
⑪	Model code:	00 ~ ZZ		

2. Summary

3.5 Inch Smart Display Feature

1. DC 5V~24V working voltage, low power consumption.
2. Self testing after booting function.
3. CAN bus communication interface.
4. Supports CANopen protocol, default baud rate at 250KB.
5. Built in flash memory, store the font and Object Dictionary Data.
6. Support capacitive touch panel(CTP).
7. Smart Display scenario is slave device display and action from Master Device instruction.
8. Embedded buzzer controlled by Master Device.
9. Demo set HOST can be used on multiple platforms, such as Computer (with USB to CAN Dongle), MCU, Raspberry Pi (with PiCAN2).

3. Product information

General information

Item	Standard Value	Unit
Operating voltage	5 ~ 24	Vdc
Communication Interface	CAN bus differential ± 3.3	Vpp
MCU	STM32F750	N/A
Flash Memory	16	MB
SDRAM Frequency	108	MHz
LCD display size	3.5	inch
Dot Matrix	320× 3(RGB) × 240	dot
Module dimension	76.84(W) x 63.84(H) x 4.53(D)	mm
Active area	70.08(W) x 52.56(H)	mm
Dot pitch	0.073(W) x 0.219(H)	mm
Brightness	Min: 300; Typ: 400	cd/m^2
LCD type	TFT, Normally Black, Transmissive	
View Direction	80/80/80/80	
Aspect Ratio	4:3	
With /Without TP	With CTP	
Surface	Glare	

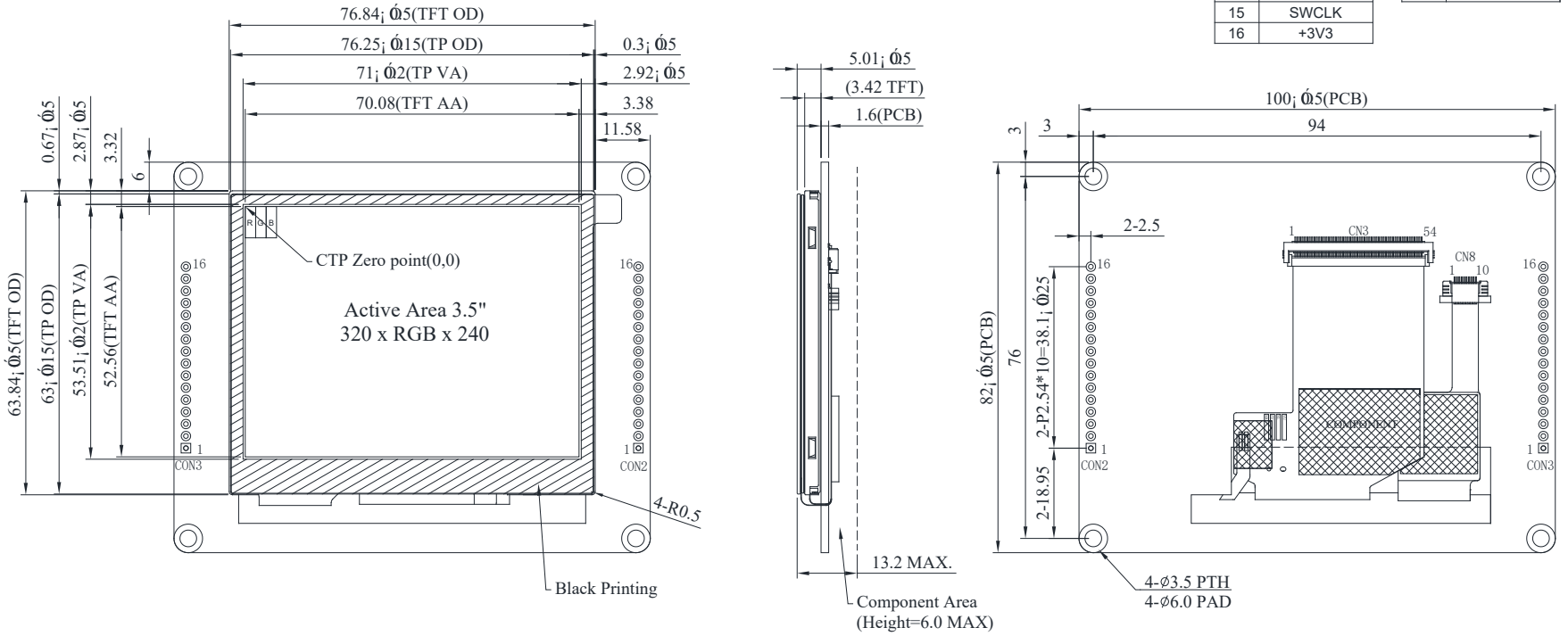
4. Contour Drawing

CON3

PIN	SYMBOL
1~10	Reserved
11	SWDO
12	NRST
13	SWDI
14	GND
15	SWCLK
16	+3V3

CON2

PIN	SYMBOL
1~12	Reserved
13	CAN_L
14	CAN_H
15	GND
16	VIN



The non-specified tolerance of dimension is ¡ Ó3mm.

5. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit	Remark
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
Temp. ≦60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

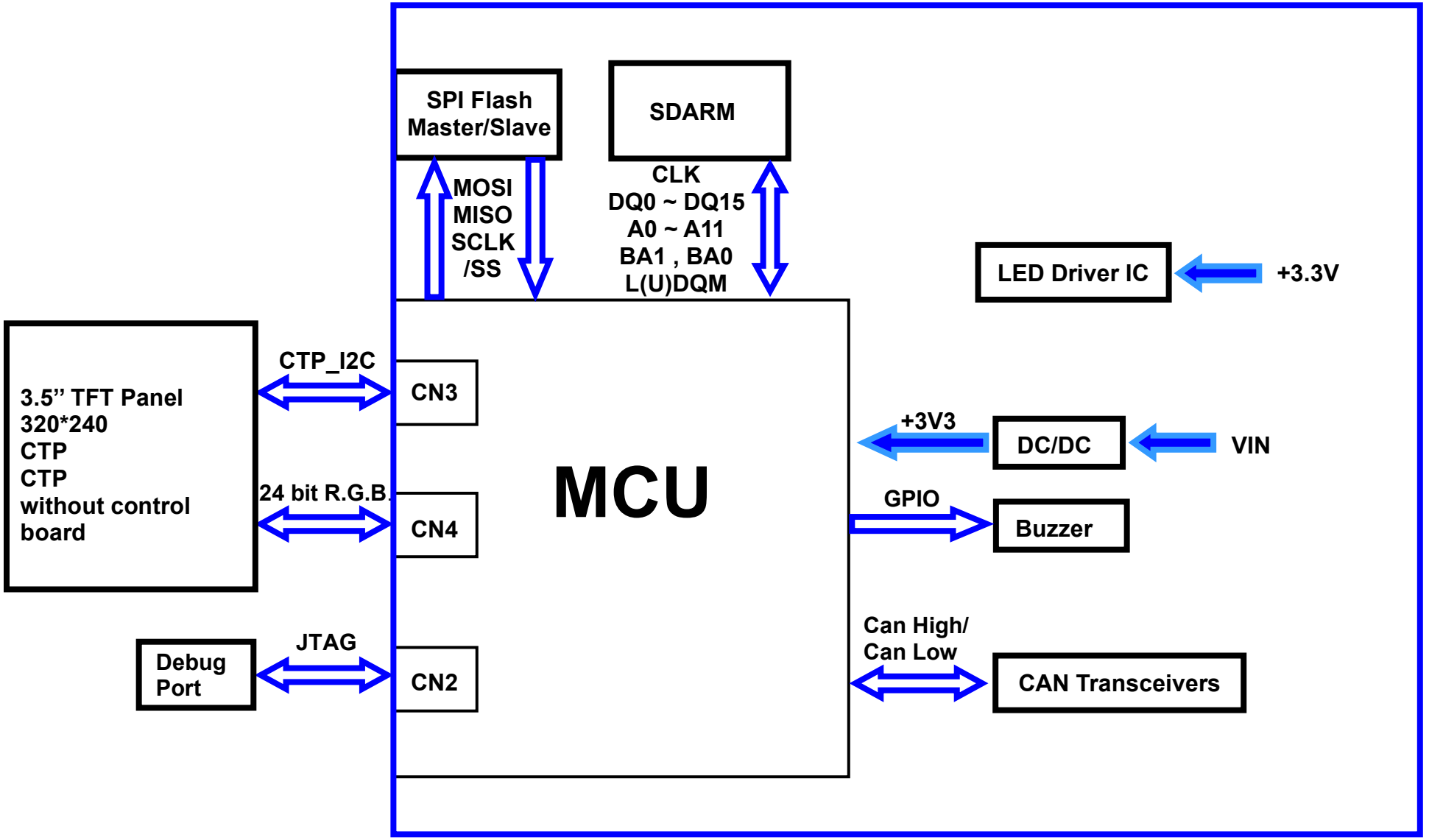
6. Electrical Characteristics

Item	Symbol	Min	Typ	Max	Unit	Remark
Supply Voltage	VIN	5	12	24	V	
Supply Current	ICC	-	150	-	mA	

7. BOM

Item	Description	Remark
LCM	WF35XTYACDNG0#	
PCBA	SV100035000XA00N0101	

8. Block diagram



9. Interface

CON2 definition:

Pin	Symbol	Function	Remark
16	VIN	Power +5V~24V	Input
15	GND	Power GND	Input
14	CAN_H	CAN bus D+	I/O
13	CAN_L	CAN bus D-	I/O
12-1	Reserved	--	--

CON3 definition:

Pin	Symbol	Function	Remark
16	+3V3	3.3V power for JTAG interface	Output
15	SWCLK	CLK pin for JTAG interface	Input
14	GND	GND for JTAG interface	Output
13	SWDI	Data pin for JTAG interface	I/O
12	NRST	Reset pin for JTAG interface	Input
11	SWDO	Data pin for JTAG interface	I/O
10-1	Reserved	--	-

10. Reliability

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℃ 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30℃ 200hrs	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℃ 200hrs	———
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20℃ 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 40℃,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	———

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

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	12	12	
I_{System}(mA)	151	150	150	

Check sample Reliability Test

Item	Result	Note
Thermal shock		-20℃/70℃ 20 cycles
High Temperature Operation	PASS_20210406	80℃ 200hrs
Low Temperature Operation	PASS_20210305	-30℃ 200hrs
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