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WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



Winstar Display Co., LTD

華凌光電股份有限公司



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SPECIFICATION

CUSTOMER : Winstar

MODEL NO. : WLOF00043000WGXAANA00

<p>APPROVED BY: (FOR CUSTOMER USE ONLY)</p>	
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SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
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VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2025/12/5		First issue

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 :
WLOF00043000WGXAANA00

RECORDS OF REVISION			DOC. FIRST ISSUE
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1. HMI Display Classification Information

W	L	OF	000430	00W	G	X	AA	N	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 OJ: TFT				
④	Display size: (diagonal) / Display format: (resolution)	Character STN:	e.g., 8x1: 000801 16x2: 001602 24x4: 002404								
		Graphic STN:	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)								
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

4.3-inch HMI Display Development Board Feature

1. **TFT Module:** WF43WTWAEDNGA# 4.3" IPS, normally black transmissive TFT with 80/80/80/80 wide viewing angle, 480×272 resolution, 24-bit RGB color depth (16.7M colors), typ. 400 cd/m² brightness, 50,000 hours LED backlight lifetime, and integrated I²C capacitive touch panel.
2. **MCU:** STM32U599ZIT6Q ultra-low-power MCU with 2 MB Flash, ~2.5 MB SRAM, integrated GPU2D and LTDC, and TrustZone-based secure boot, providing efficient GUI processing for low-power HMI systems.
3. **Memory:** W25Q128JVS1QT 128-Mbit (16 MB) serial Flash provides additional storage for fonts, images and application data beyond the MCU's internal memory.
4. **Power Input:** Wide-range VIN input 5–28 V or 5 V via USB-C.
5. **Interfaces:** USB-C (USB 2.0 OTG HS, power + data), Micro SD card slot, RS-485 / UART, SPI, I²C, UART, SWD debug interface, plus PWM backlight and GPIO buzzer control.
6. **Development Support:** Supplied with Initial Code Project compatible with STM32CubeMX, STM32CubeIDE, STM32Cube Programmer and TouchGFX Designer, enabling rapid application development; hardware schematic is available under NDA to assist developers with system integration and secondary development.

3. Product Information

General information

Item	Standard Value	Unit	
Operating voltage	5-28	VDC	
Communication Interface	USB-C	—	
	Micro SD Card	—	
	CON300	Option for RS485, UART	—
	CON301	SPI	—
		I ² C	—
CON302	UART	—	
MCU	STM32U599ZIT6 (2MB Flash, 2.5MB RAM)	—	
External Flash Memory	16	MB	
LCD display size	4.3	inch	
Dot Matrix	480 x R.G.B. x 272 (TFT)	dots	
Module dimension	119.3(W) × 67.2(H) × 12.8(D)	mm	
Active area	95.04(W) × 53.856(H)	mm	
Pixel pitch	0.198(H) × 0.198(V)	mm	
Brightness	Min: 300; Typ: 400	cd/m ²	
LCD type	TFT, Normally Black, Transmissive		
View Direction	80/80/80/80		
Aspect Ratio	16:9		
With /Without TP	With CTP		
Surface	Glare		

4. Contour Drawing

CON303

PIN	SYMBOL
1	+3V3
2	SWCLK
3	GND
4	SWDI
5	NRST
6	SWO

CON302_UART1

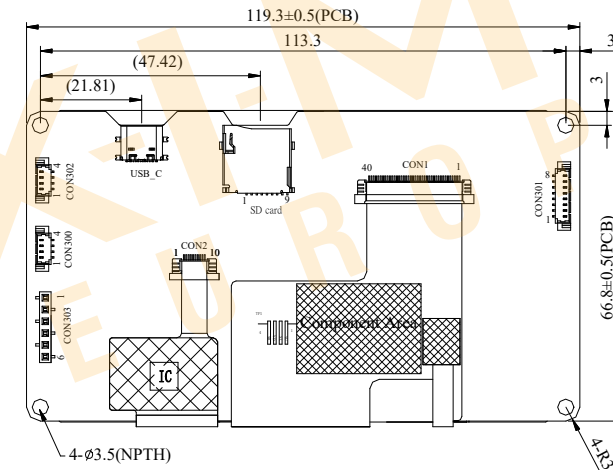
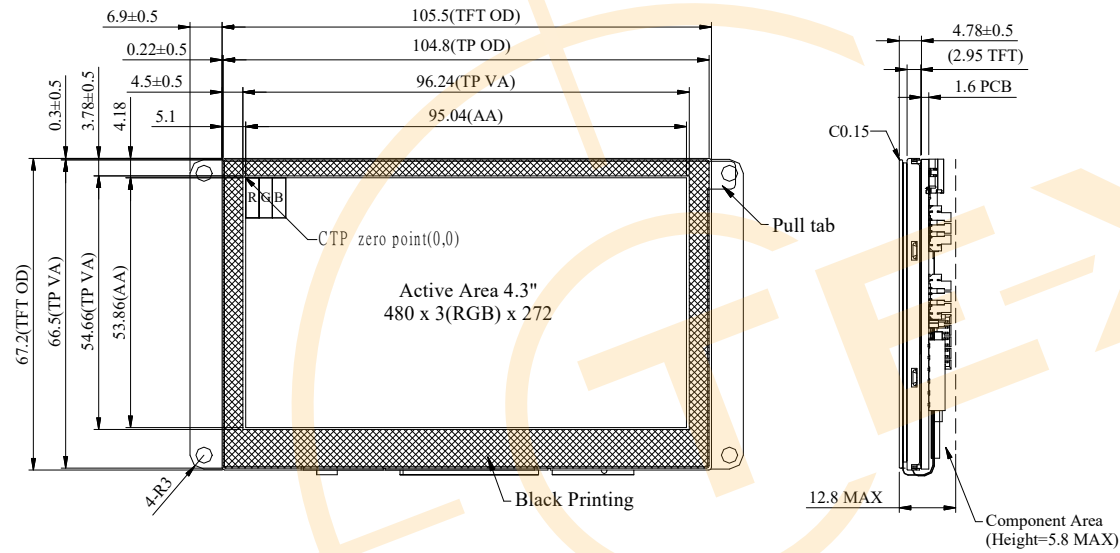
PIN	SYMBOL
1	VIN
2	GND
3	UART_TX1
4	UART_RX1

CON301

PIN	SYMBOL
1	+3V3
2	GND
3	SDA
4	SCL
5	MOSI
6	MISO
7	CLK
8	CS

CON300_UART2

PIN	SYMBOL
1	VIN
2	GND
3	UART_TX2
4	UART_RX2



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

5. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-30	—	+80	°C
Storage Temperature	TST	-30	—	+80	°C
Supply Voltage	VIN	—	—	28	V

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

- Temp. $\leq 60^{\circ}\text{C}$, 90% RH MAX. Temp. $> 60^{\circ}\text{C}$, Absolute humidity shall be less than 90% RH at 60°C

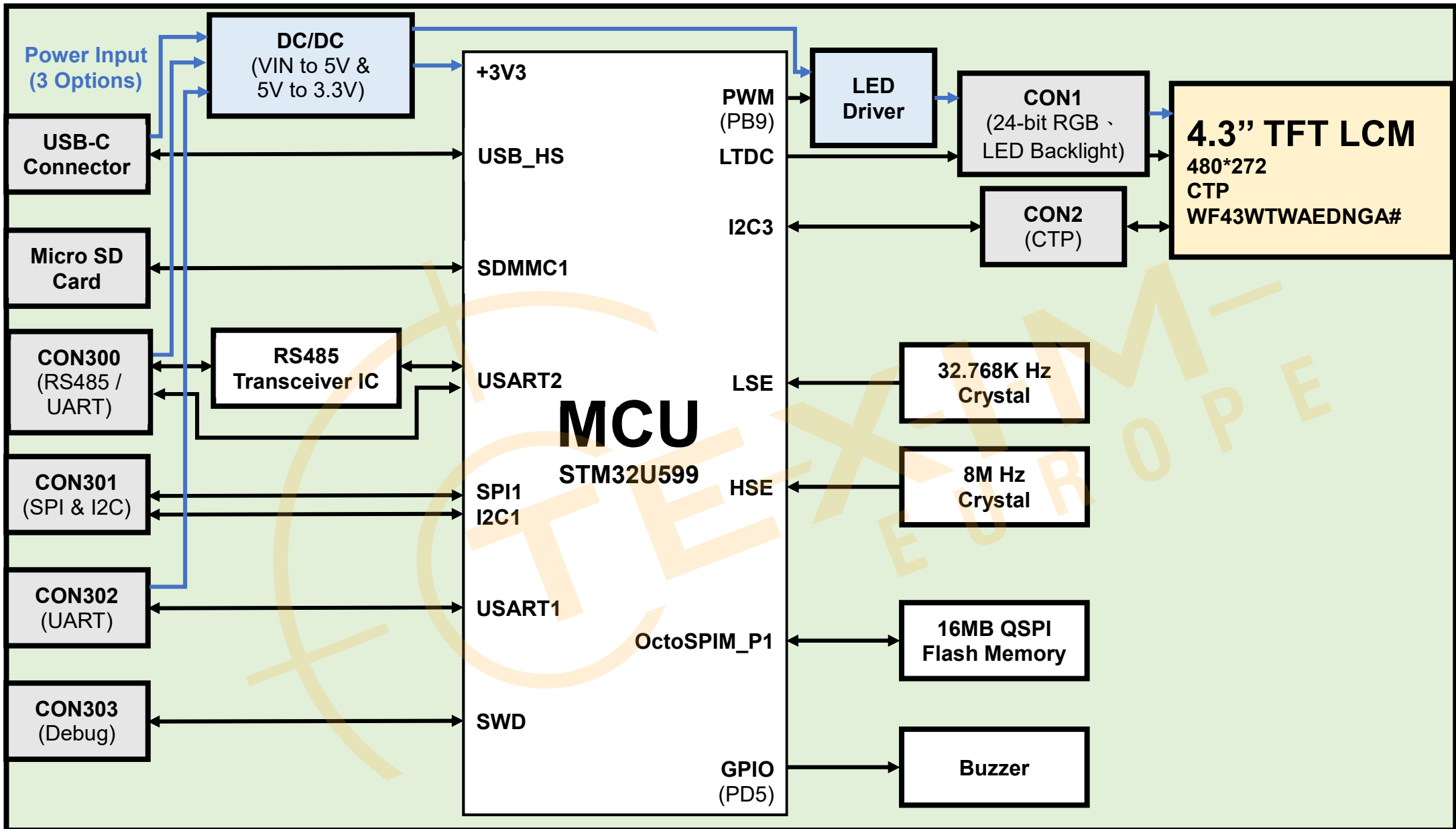
6. Electrical Characteristics

Item	Symbol	Min	Typ	Max	Unit	Remark
Supply Voltage	VIN	5	12	28	V	—
Supply Current	ICC	—	120	—	mA	VIN = 12V

7. BOM

Item	Description	Remark
LCM	WF43WTWAEDNGA#	
PCBA	SV10004R300WC00N0100	

8. Block diagram



9. Interface

CON300 (RS485 / UART) Definition:

Pin	Symbol	Function	Remark
1	VIN	Power supply input; 5V ~ 28V	Power
2	GND	Ground	Power
3	RS485_A / UART_TX2	USART2_TX	I/O
4	RS485_B / UART_RX2	USART2_RX	I/O

Note:

- Pin 3 and Pin 4 share the same USART2 port and operate in RS-485 mode by default (on-board transceiver enabled). When the RS-485 driver is disabled via software, the pins function as a 3.3 V TTL UART. The external wiring must match the selected mode.
- Connector Type: Molex 0532610471 (1.25 mm pitch, 4-pin) or equivalent.

CON301 (SPI & I2C) Definition:

Pin	Symbol	Function	Remark
1	+3V3	Power input	Power
2	GND	Ground	Power
3	SDA	I2C1_SDA	I/O
4	SCL	I2C1_SCL	I/O
5	MOSI	SPI1_MOSI	I/O
6	MISO	SPI1_MISO	I/O
7	CLK	SPI1_CLK	I/O
8	CS	SPI1_CS	I/O

Note:

- Connector Type: Molex 0532610871 (1.25 mm pitch, 8-pin) or equivalent.

CON302 (UART) Definition:

Pin	Symbol	Function	Remark
1	VIN	Power supply input; 5V ~ 28V	Power
2	GND	Ground	Power
3	UART_TX1	USART1_TX	I/O
4	UART_RX1	USART1_RX	I/O

Note:

- Connector Type: Molex 0532610471 (1.25 mm pitch, 4-pin) or equivalent.

CON303 (SWD) Definition:

Pin	Symbol	Function	Remark
1	+3V3	Power input	Power
2	SWCLK	Serial wire clock	I/O
3	GND	Ground	Power
4	SWDIO	Serial wire debug data input/output	I/O
5	NRST	Reset	Input
6	SWO	Serial wire trace output	Output

Note:

1. Connector Type: Würth Elektronik 61300611821 (2.54 mm pitch, 6-pin) or equivalent.



10. Reliability

Content of Reliability Test (Wide temperature, -30°C~80°C)

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°C 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C 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.	80°C 240hrs	—
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-30°C 240hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max	60°C,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation <div style="text-align: center;"> <p style="margin: 0;">-30°C 25°C 80°C</p> <p style="margin: 0;">←—————→</p> <p style="margin: 0;">30min 5min 30min</p> <p style="margin: 0;">1 cycle</p> </div>	-30°C/80°C 10 cycles	—
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.

Check samples by meter VIN, ICC

Item	No 1	Note
VIN (V)	12	—
ICC (mA)	120	—

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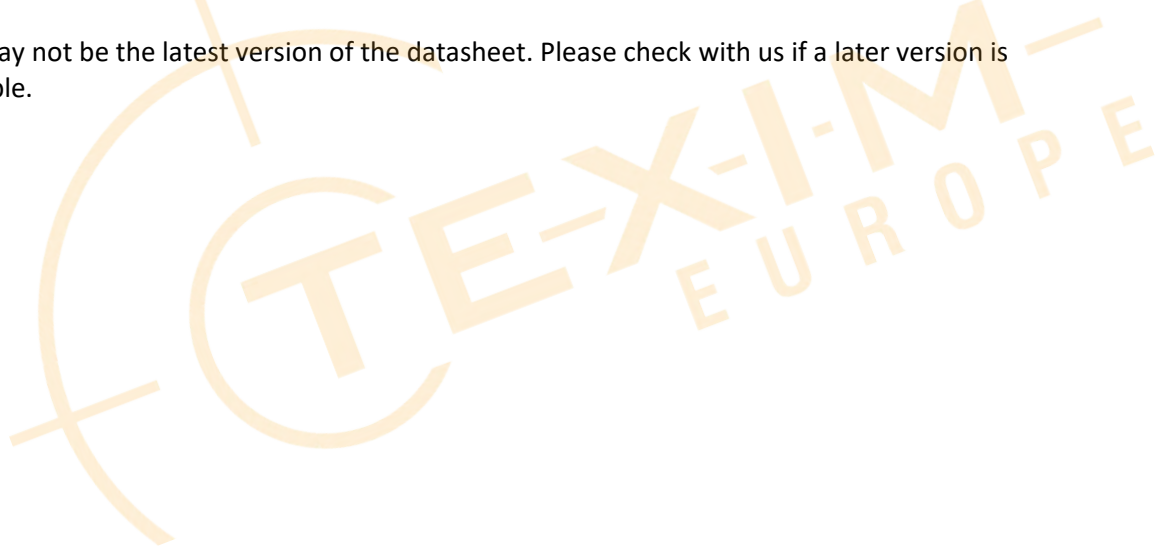
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Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time.

All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts.

Please contact us if you have any questions about the contents of the datasheet.

This may not be the latest version of the datasheet. Please check with us if a later version is available.





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