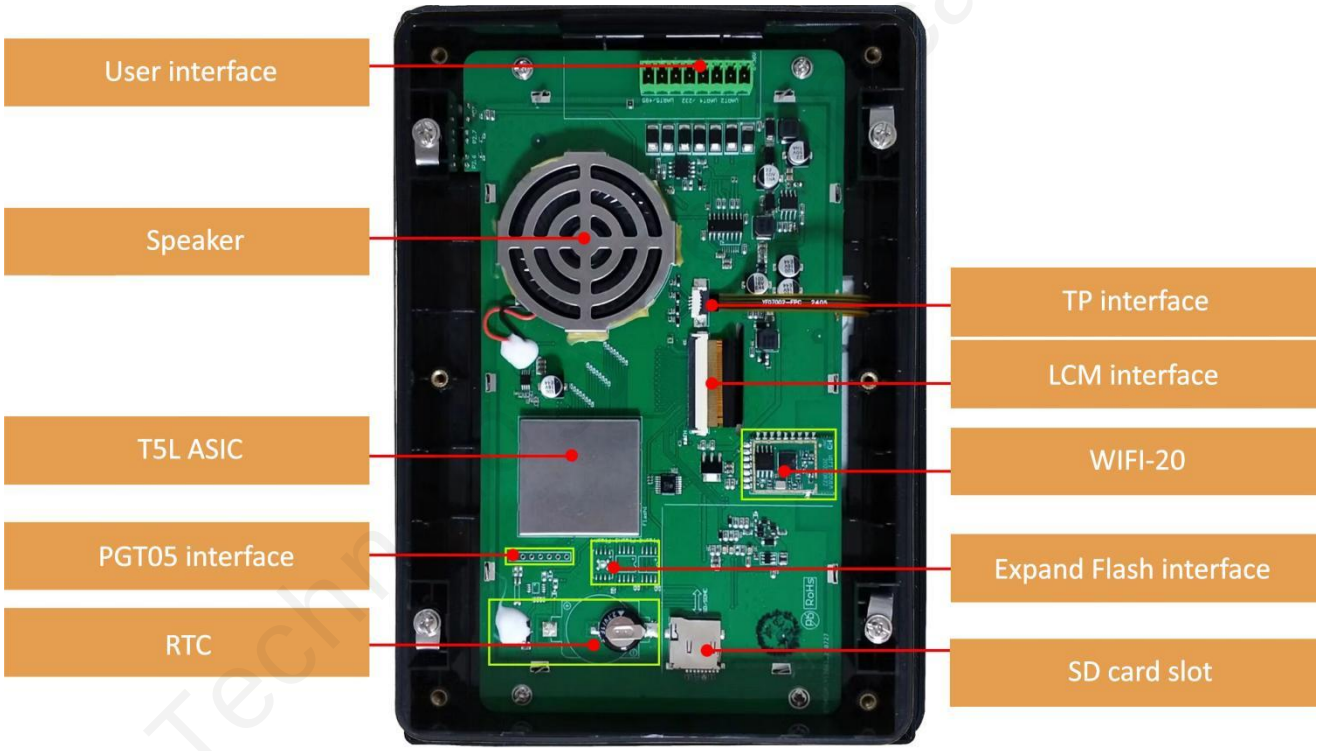
DMG80480T070_15WTRIOT

Features:

- **Based on the T5L1 ASIC CPU, running the DGUS II human-machine interaction software platform, smart LCM for industrial-grade applications.**
- **7.0-inch, 800*480 pixels resolution, 16.7M colors true-color display, TN-TFT LCD screen.**
- **With built-in speaker, LED lamp, photosensitive sensor, conformal coating and enclosure.**
- **Equipped with WI-FI 20, Support server/backend management customization function.**

1. Hardware and interface

1.1 Hardware interface diagram



Hardware interface diagram

1.2 Hardware and interface description

No.	Item	Description
1	T5L1 ASIC	DWIN independently developed, mass production in 2019. Dual 8051 cores, GUI and application run on separate 8051 cores.
2	User interface	8Pin_3.81mm socket for power supply and serial communication.
3	Flash	16MBytes (1*16MBytes NOR Flash) for storing UI files like fonts, images, music, with over 100,000 erase/write cycles.
4	Expand Flash pads	Three expansion slots support NOR or NAND Flash, up to 64MB (4x16MB NOR Flash) or 48MB+512MB (3x16MB NOR Flash + 512MB NAND Flash).
5	Speaker	Onboard speaker. Power: 2W.
6	RTC	Super-capacitor powered, accuracy: ±20ppm @25℃, maintains operation for 7 days after power-off. Reserved button cell power supply compatible circuit.
7	SD card slot	For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate.
8	WiFi module	WI-FI module model: WIFI-20, support server/backend management customization function.
9	PGT05 interface	For programming DGUS firmware.

2. Specification parameters

2.1 Display parameters

LCD Type	TN, TFT LCD.
Viewing Angle	Normal viewing angle, 70°/70°/50°/70° (L/R/U/D).
Resolution	800×480 (support 0°/90°/180°/270°)
Color	16.7M color (24-bit 8R8G8B)
Active Area (AA)	154.20mm (W) ×85.88mm (H)
Viewing Area (VA)	155.1mm (W) ×86.9mm (H)
Backlight	LED
Backlight Service Life	>30000 hours
Brightness	250nit
Brightness Control	100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range)
Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display.	

2.2 Touch parameters

Type	Resistive touch panel.
Structure	ITO film + ITO glass structure and hardness 3H.
Light Transmittance	>80%
Life	Over 1,000,000 times touch.

2.3 Serial interface parameters

Mode	UART2: RS232 UART4: RS232 (Only available after OS configuration) UART5: RS485 (Only available after OS configuration)				
Voltage Level (RXD, TXD)	Test Condition	Min	Typ	Max	Unit
	Output 1	-	-5.0	-3.0	V
	Output 0	3.0	5.0	-	V
	Input 1	-15.0	-5.0	-	V
	Input 0	-	5.0	15.0	V
Baud Rate	3150~3225600bps, typical value of 115200bps.				
Voltage Level (V_AB)	Test Condition	Min	Typ	Max	Unit
	Output 1	2.5	5.0	-	V
	Output 0	-	-5.0	-2.5	V
	Input 1	0	2.5	-	V
	Input 0	-	-2.5	-0.2	V
Baud Rate	3150~921600bps, typical value of 115200bps.				
Data Format	UART2: N81 UART4: N81/E81/O81/N82 ,4 modes (OS configuration) UART5: N81/E81/O81/N82 ,4 modes (OS configuration)				
Interface Cable	8Pin_3.81mm				

2.4 Electrical specifications

Rated Power	<5W	
Operating Voltage	9-36V, typical value of 12V.	
Operating Current	195mA	VCC=12V, max backlight.
Recommended power supply: 12V 1A DC.		

2.5 Operating environment

Operating Temperature	-20℃ to 70℃ (12V @ 60% RH)
Storage Temperature	-30℃ to 80℃
Conformal Coating	Yes
Operating Humidity	10%-90%RH, typical value of 60% RH.
Protective Level	IP65 (Front)

3. Reliability test

3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: the product was placed on the test bench to perform contact and air discharge in turn of the serial screen iron frame and display area. During the experimental process, it was observed whether the screen is dead, black, white, splash, or reboot. According to the experiment results, the performance is in line with the criteria GB/T 17626.2 B level and above.

■ Test standard : ☐EN 61000-4-2:2009 ☑IEC 61000-4-2:2008 ☐GB/T 17626.2-2018
☐Other:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-8kV	+8kV	-15kV	+15kV
Screen					A	A		
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-6kV	+6kV	-8kV	+8kV
Jo	✓	✓	✓	✓	✓	✓	✓	
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

Performance Criterion:

A. Normal performance within limits specified by the manufacturer, requestor or purchaser;

B. Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;

C. Temporary loss of function or degradation of performance, the correction of which requires operator intervention;

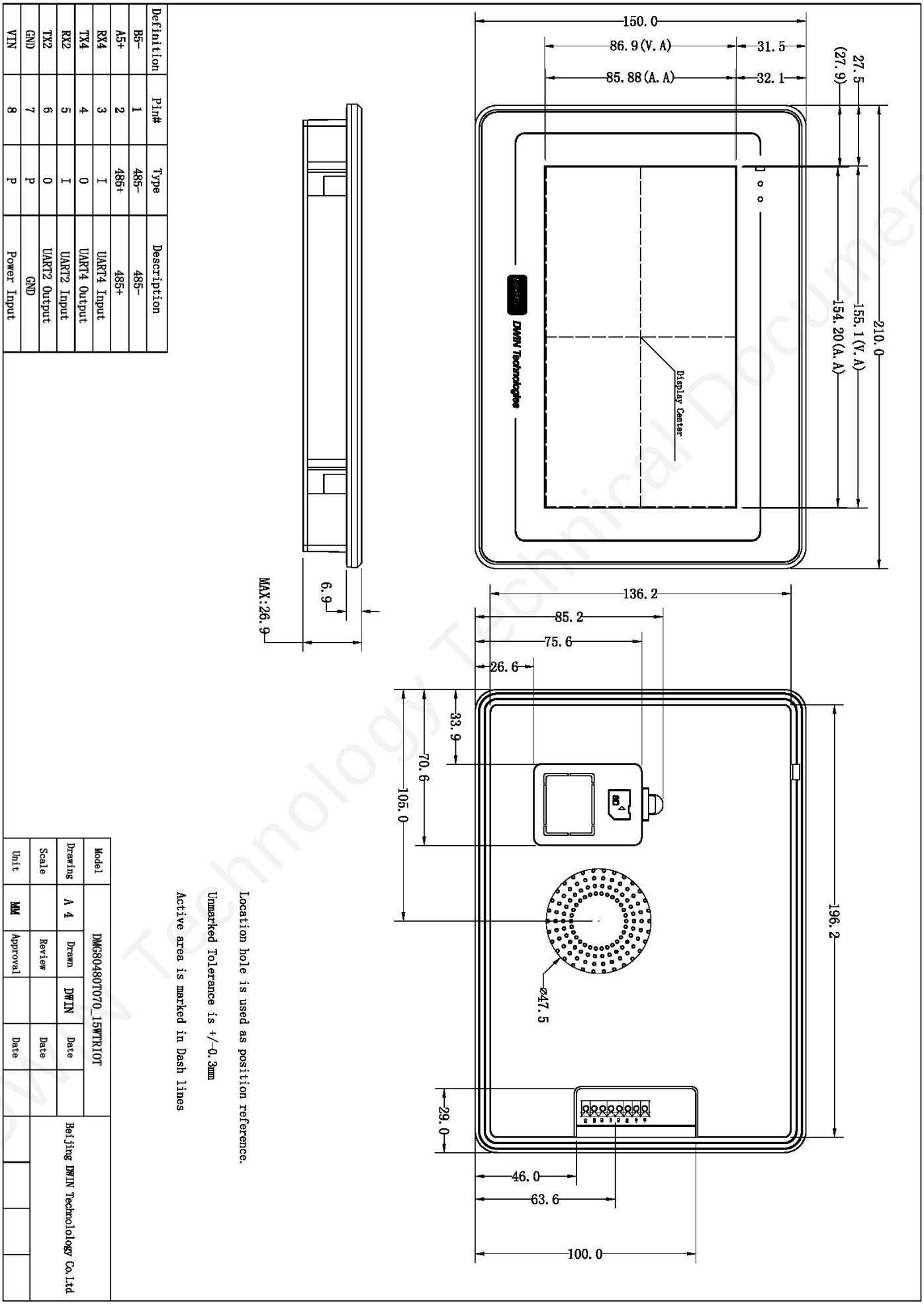
D. Loss of function or degradation of performance which is not recoverable, due to damage to hardware or software, or loss of data.

4. Packaging & dimensions

Form Factor	210.0mm (W)×150.0mm (H)×26.9mm (T)
Net Weight	490g

Packaging Standards

Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1：	220mm(L)×160mm(W)×47mm (H)	-	-	-
Carton2：	250mm(L)×200mm(W)×80mm (H)	1	2	2
Carton3：	320mm(L)×270mm(W)×80mm (H)	-	-	-
Carton4：	450mm(L)×350mm(W)×300mm (H)	2	8	16
Carton5：	600mm(L)×450mm(W)×300mm (H)	2	15	30



Definition	Pin#	Type	Description
B5-	1	485-	485-
A5+	2	485+	485+
RX4	3	I	UART4 Input
TX4	4	O	UART4 Output
RX2	5	I	UART2 Input
TX2	6	O	UART2 Output
GND	7	P	GND
VIN	8	P	Power Input

Location hole is used as position reference.

Unmarked Tolerance is +/-0.3mm

Active area is marked in Dash lines

Model	DMG80480T070_15WTRIOT			
Drawing	A 4	Drawn	DWIN	Date
Scale		Review		Date
Unit	MM	Approval		Date

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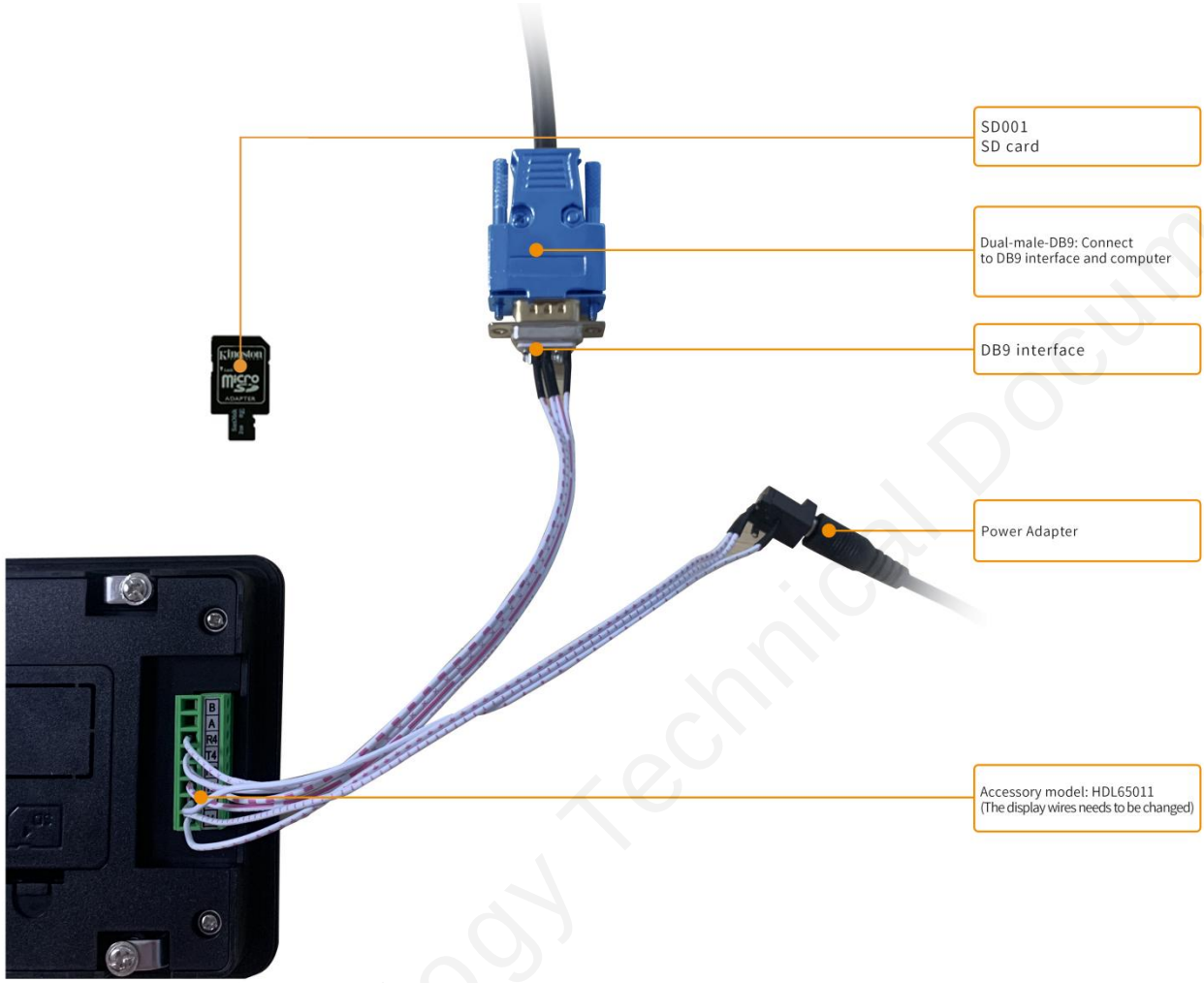
5. Debug tools

It is recommended for new users of DWIN smart LCMs to purchase official accessories. For more details, please refer to customer service center.



6. T5L series IC features

(1) Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T(single instruction cycle)high speed operation.

(2) Separate GUI CPU Core running DGUS II System:

- High-speed display memory, 2.4GB/S bandwidth.
- 2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.
- Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.
- Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.
- 1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.
- 128Kbytes variable storage space for exchanging data with OS CPU Core and memory.
- Support DGUS development and simulation on PC. Support background remote upgrade.

(3) Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:

- Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.
- 64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.
- 28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channle 16-bit PWM of adjustable resolution.
- Support IAP on-line simulation and debugging with unlimited number of breakpoints.
- Upgrade code online through DGUS system.

(4) 1Mbytes on-chip Flash with DWIN patent encryption technology ensure code and data security.

(5) Operating temperature ranges from -40°C to +85°C(IC operating temperature customizable from -55°C to 105°C).

DWIN encourages users to design your own customized product based on T5L

7. Revision records

Rev	Revise Date	Content	Editor
00	2024-11-14	First Edition	Xu Ying

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!

Important Disclaimer

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