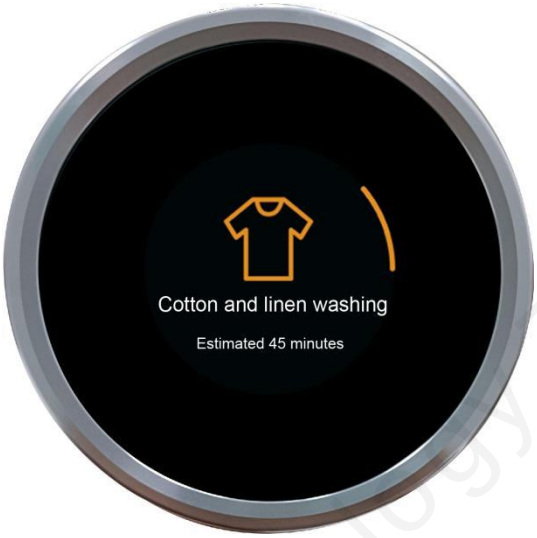
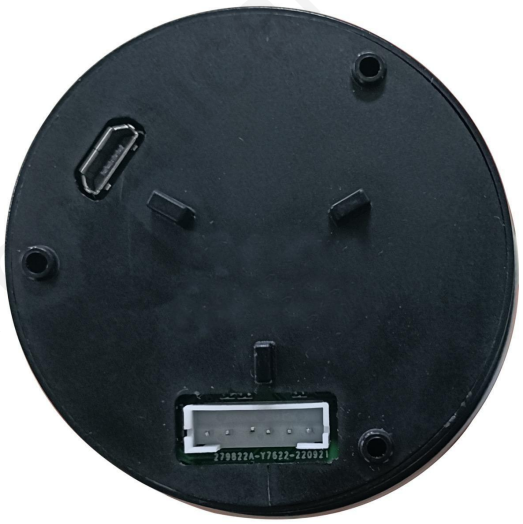
DMG24240C015_13WN

Features:

- **Based on T5L0, running DGUS II system, commercial grade.**
- **1.54-inch, 240*240 Pixels resolution, 262K Colors, IPS-TFT-LCD, Wide viewing angle.**
- **Circular rotary screen with encoder shell**





1. Hardware and interface description

No.	Name	Description
1	T5L0 ASIC	Developed by DWIN. Mass production in 2020,1MBytes Nor Flash on the chip, 512KBytes used to store the user database. Rewrite cycle: over 100,000 times
2	LCM interface	FPC12_0.5mm, 4SPI interface
3	User interface	6Pin_2.0mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
4	USB interface	MICRO USB, power supply interface (5V)
5	Flash	16MBytes NOR Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times
6	SD card interface	FPC10_0.5mm interface, without SD card slots, external adapter board is required for downloading. FAT32, Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
7	PGT05 interface	When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal

2. Specification parameters

2.1 Display parameters

LCD Type	IPS, TFT LCD
Viewing Angle	Wide viewing angle,85°/85°/85°/85°(L/R/U/D)
Resolution	240×240 pixels (0°/90°/180°/270°)
Color	18-bit 6R6G6B
Active Area (A.A.)	Diameter=26.8mm
Backlight Mode	LED
Backlight Service Life	>20000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
Brightness	-
Brightness Control	Non adjustable
Note:You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed page display for a long time.	

2.2 Mechanical characteristics

Detent torque	Only suitable for C.C, equipment.: 300±100gf.cm
Number and Position of detents	Only suitable for C.C, equipment.: 24 detents (Step angle : 15° ±3°)
Rotational life	The shaft of encoder shall be rotated to 30,000 cycles at a speed of 600~1000/h without electrical load, after which measurements shall be made
Switch circuit and Number of pulse	Single pole and single throw (push on)
Travel of switch	1.7±0.5mm
Operating force	6±3N (610±306gf)

2.3 Serial interface parameters

Mode	UART2: TTL/CMOS				
Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1, Iout = -4mA	3.0	3.3	-	V
	Output 0, Iout = 4mA	-	0	0.3	V
	Input 1	2.4	3.3	5.0	V
	Input 0	0	-	0.5	V
Baud Rate	3150~3225600bps, typical value of 115200bps				
Data Format	N81				
Interface Cable	6Pin_2.0mm				

2.4 Electrical specifications

Rated Power	<1W	
Operating Voltage	4.5~5.5V, typical value of 5V	
Operating Current	62mA	VCC=5V, max backlight
	-	VCC=5V, backlight off
Recommended power supply: 5V 0.2A DC		

2.5 Operating environment

Operating Temperature	-20℃~70℃ (5V @ 60% RH)
Storage Temperature	-30℃~80℃
Conformal coating	None
Operating Humidity	10%~90%RH, typical value of 60% RH

3. Packaging & dimensions

Form Factor	59mm diameter * 41.2mm height
Installation dimensions	51mm diameter * 22mm depth
Net Weight	60g

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)	2	2	4
Carton4：	450mm(L)×350mm(W)×300mm(H)	-	-	-
Carton5：	600mm(L)×450mm(W)×300mm(H)	-	-	-

Disclaimer: The product design is subject to alternation and improvement without prior notice.

Definition	Pin#	Type	Description
5V	1	P	Power Input
GND	2	P	GND
RX2	3	I	Input
TX2	4	O	Output
RX1	5	I	Input
TX1	6	O	Output

1. Location hole is used as position reference.
2. Unmarked Tolerance is +/-0.3mm
Active area is marked in Dash lines

Model	DMG24240C015-13WN			DWIN Technologies
Drawing	A 4	Drawn	Date	
Scale	1:1	Review	Date	
Unit	MM	Approval	Date	

4. 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

5. Revision records

Rev	Revise Date	Content	Editor
00	2023-02-15	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!