A703

Receiving card

User Manual

Document version:： V2.0

CONTENT

1 Update Records

Document Version	Hardware Version	Release Time	Update Record
V4.0	A704（V1.0.0）	June 16(th), 2025	First release

2 Product Introduction

A703 is a standard receiving card independently developed by Mooncell, with a maximum on-board resolution of 512×256@60Hz（PWM）;

Support 18-bit, pixel-by-pixel chromaticity correction, low delay, RGB independent Gamma adjustment, 90 multiple rotation of the screen, serial number detection of the receiving card, configuration parameter readback and other functions to improve the screen display effect and user experience;

It uses 3 standard HUB75E interfaces for communication, and supports up to 6 sets of RGB parallel data. It has powerful processing power, ultra-stable performance, and high cost performance.

3 Product Characteristics

3.1 Improve the display effect

- 18bit

  Enabling 18bit in the software can increase the gray scale of LED display screen by 4 times, effectively deal with the gray scale loss caused by brightness reduction of LED display screen, optimize the pitting problem caused by low gray, make the low gray transition natural, and make the image display more delicate.

- HDR

  Support HDR10 and HLG two video source standards; with large-band independent master controller, input HDR10 standard or HLG standard video source, which can achieve greater brightness dynamic range and color space, greatly enhance the display image quality, and make the picture more delicate and real.

- Brightness correction by pixels

  With the correction software, the brightness and chromaticity of each pixels of the large screen are corrected, which effectively eliminates the color difference, makes the brightness and chromaticity of the display screen highly consistent, and improves the image quality of the display screen.

- Seam Tool Quick Adjustment

  Quickly adjust the bright and dark lines on the software to quickly solve the bright and dark lines caused by the splicing of the adjustment module and the splicing of the box, and improve the visual abrupt sense caused by the bright and dark lines. It takes effect immediately during the adjustment process and is simple and easy to use.

- Low delay

  Reduce the delay of the video source at the receiving card end, and the delay is as low as 1 frame (for the lamp board of the driving IC using built-in RAM).

- 3D

  The 3D picture effect needs to be viewed with 3D glasses, and the format of the 3D signal is transmitted to the 3D glasses by connecting the 3D signal transceiver.

- RGB independent Gamma adjustment

  With the independent master control and software supporting RGB independent Gamma adjustment, the problems such as uneven low gray and white balance drift of the display screen are effectively controlled by adjusting "red", "green" and "blue" respectively, making the picture more realistic.

- 90 multiple rotation of the picture.

  With the help of AutoLED software, the picture is displayed in multiples of 90 (0, 90, 180, 270).

3.2 Improve maintainability

- Receiving card serial number detection

  With the network port debugging function in AutoLED software, the receiving card number and network port information will be displayed on the target box, and the user can know the position serial number and connection line of the receiving card.

- Error detection

  On the AutoLED, the communication signal quality of the network cable connected with the system hardware can be monitored in real time, so as to quickly judge the quality of the network cable and troubleshoot.

- Configuration parameter readback

  The configuration parameters of the current receiving card can be read back on the AutoLED. Read back the configuration parameters of the receiving card and save them locally.

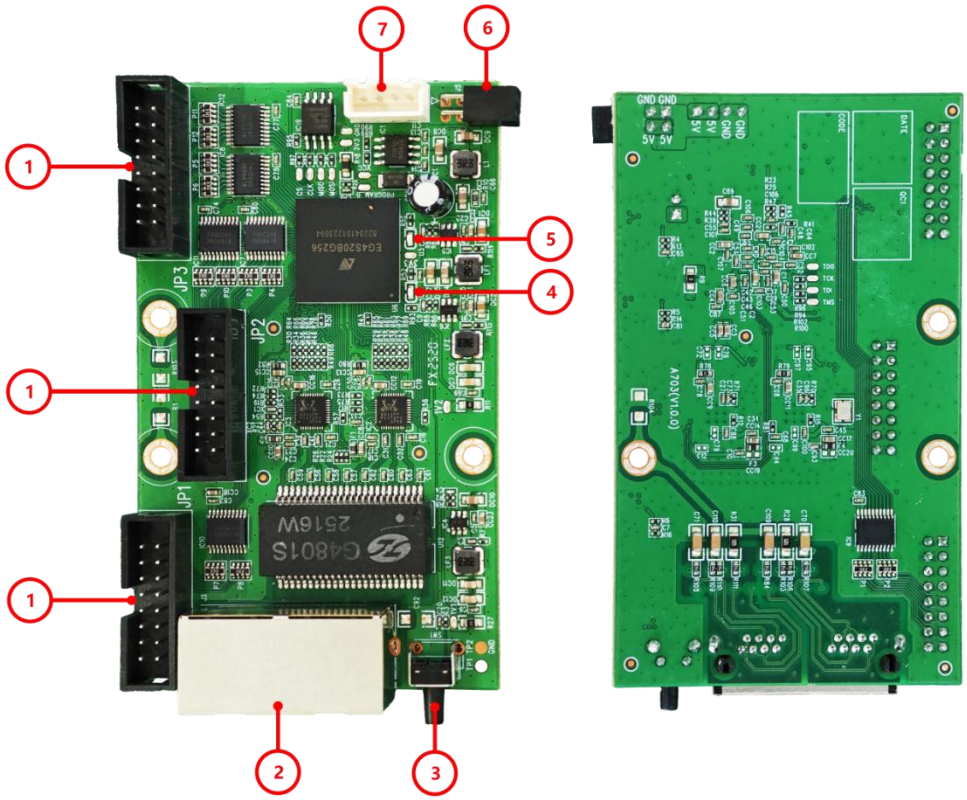
- Loop backup

  The network port is connected through the loop of the main and standby network cables to increase the reliability of the serial connection of the receiving cards. When one of the main and standby series lines fails, the other one can ensure the normal display of the screen.

- FPGA dual program startup

  When the FPGA main program configuration is unsuccessful, it enters the standby BOOT program to work and realize normal communication.

4 Product Appearance

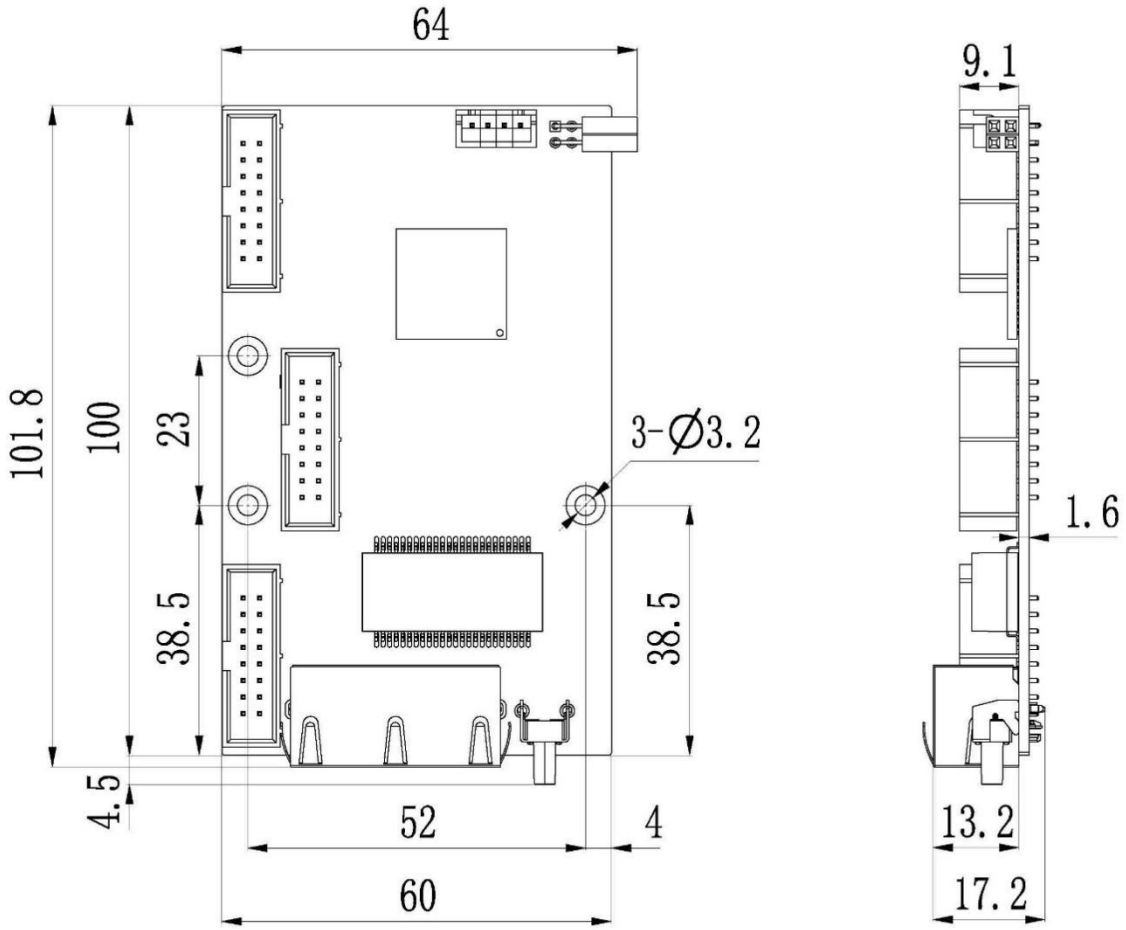


* Product photos are for reference only, please refer to the products actually purchased.

4.1 Data Interface Description

#	Interface Name	Interface Description	
1	HUB75E Interface	Connect the lamp board	
2	Gigabit Ethernet port	Connect the sending card and cascade other receiving cards, the two interfaces can enter and exit at will	
4	Status Indicator U1	Uniform slow flash	The receiving card works normally, the network cable is connected normally, and no DVI signal is input.
		Uniform flash	The receiving card works normally, the network cable is connected normally, and there is DVI signal input.
		Constant extinction	No gigabit network signal
		Flash 3 times at intervals	The receiving card works normally, the network cable loop is connected, and there is DVI signal input.
5	Power Iindicator U3	The red light is always on, which means the power supply is normal.	
3	Test Button	Set up the test screen	
6	Power Input 1	Connect the DC3.5~ 5.5V power supply to power the receiving card, use only one of them.	
7	Power Input 2		

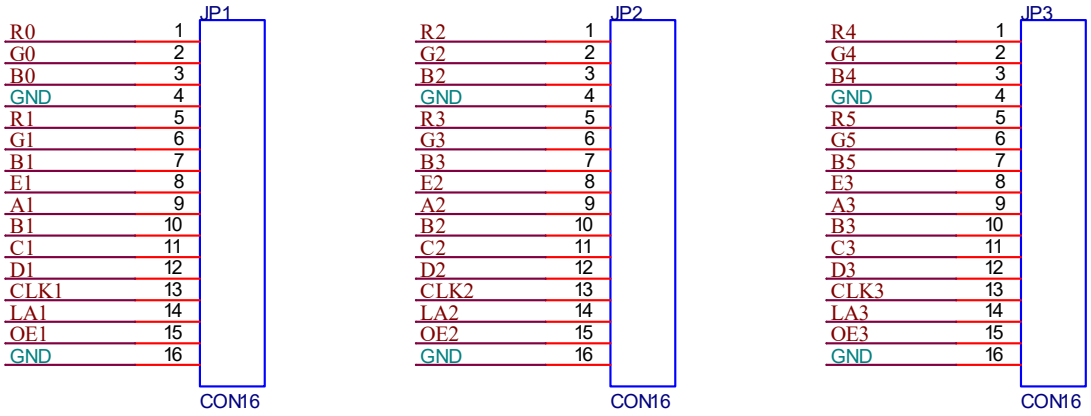
4.2 Product Dimensions



Tolerance: 0.3 Unit: mm

4.3 Definition of Output Interface

6 groups of parallel data interface definitions



JP1-JP6 Data Interface Definition

Definition	Pin	Pin	Definition
R0	1	2	G0
B0	3	4	GND
R1	5	6	G1
B1	7	8	E1
A1	9	10	B1
C1	11	12	D1
CLK1	13	14	LA1
OE1	15	16	GND

J2 Indicator Light Interface Definition

Pin	1	2	3	4	5
Definition	GND/KEY-	KEY+	LEDR-	VCC/LED+	LEDG-

J5 Power Socket Definition

Pin	1	2	3	4
Definition	VCC	VCC	GND	GND

5 Product Parameters

5.1 Basic parameters

Three-wire Parallel (RGB)	Data Interface	Maximum Load (pixels)	Brightness Correction Band Load (pixel)	Chromaticity Correction Band Load (pixel)	Chroma Correction With Load (pixels)
6 Groups	HUB75E	Conventional	256×192	256×192	256×192
	3	PWM	512×256	512×256	256×320
Number of cascaded cards			Support scanning lines		
≤1000PCS			1-128 sweep		

5.2 Specification Parameters

Electrical parameters	Input voltage	DC3.5~5.5V
	Rated current	0.6A
	Rated power	3W
Working environment	Working temperature	-20℃~70℃
	Working humidity	10%RH~90%RH has no condensation.
Storage environment	Temperature	-40℃~85℃
Board size	104.5mm×60mm	
Net weight	50g Description: Weight of single card	
Certificate Information	Comply with RoHS standards and CE-EMC standards.	

* Current and power consumption may vary according to different factors such as product usage, environment and settings.

6 Precautions

- The installation process must be completed by professionals.
- Must be antistatic.
- Please pay attention to waterproof and dust removal.

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