

# A712

## Receiving Card

## Specification V4.0



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## 1 Update Records

| Document Version | Hardware Version | Release Time      | Update Record |
|------------------|------------------|-------------------|---------------|
| V4.0             | A712 (V2.0.3)    | June 18(th), 2025 | First release |

## 2 Product Introduction

A712 is a standard receiving card independently developed by Mooncell, with a maximum on-board resolution of 512×512@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 12 standard HUB75E interfaces for communication, and supports up to 24 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).

- Picture scaling

With the help of AutoLED software, the pixels loaded on the receiving card can be scaled multiple times, and the display screen can be enlarged and reduced.

### 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.

- Data interface customization

With AutoLED software, the output data of the receiving card can be detected and edited.

- Complex structure box

In the advanced layout of AutoLED software, boxes can be arranged and constructed at will quickly.

- Construct complex large screen

In the complex display screen connection of AutoLED software, boxes can be arranged and constructed at will quickly.

- Communication monitoring

Monitor the working state of receiving card in real time on AutoLED.

- 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.

### 3.3 Function Customization

- Support voltage detection (need to be customized)

Support detecting the operating voltage of the receiving card.

- Support temperature detection (need to be customized)

Support detecting the operating temperature of the receiving card.

- Support power status detection (need to be customized)

The hardware has a power detection interface for detecting the working state of the power supply.

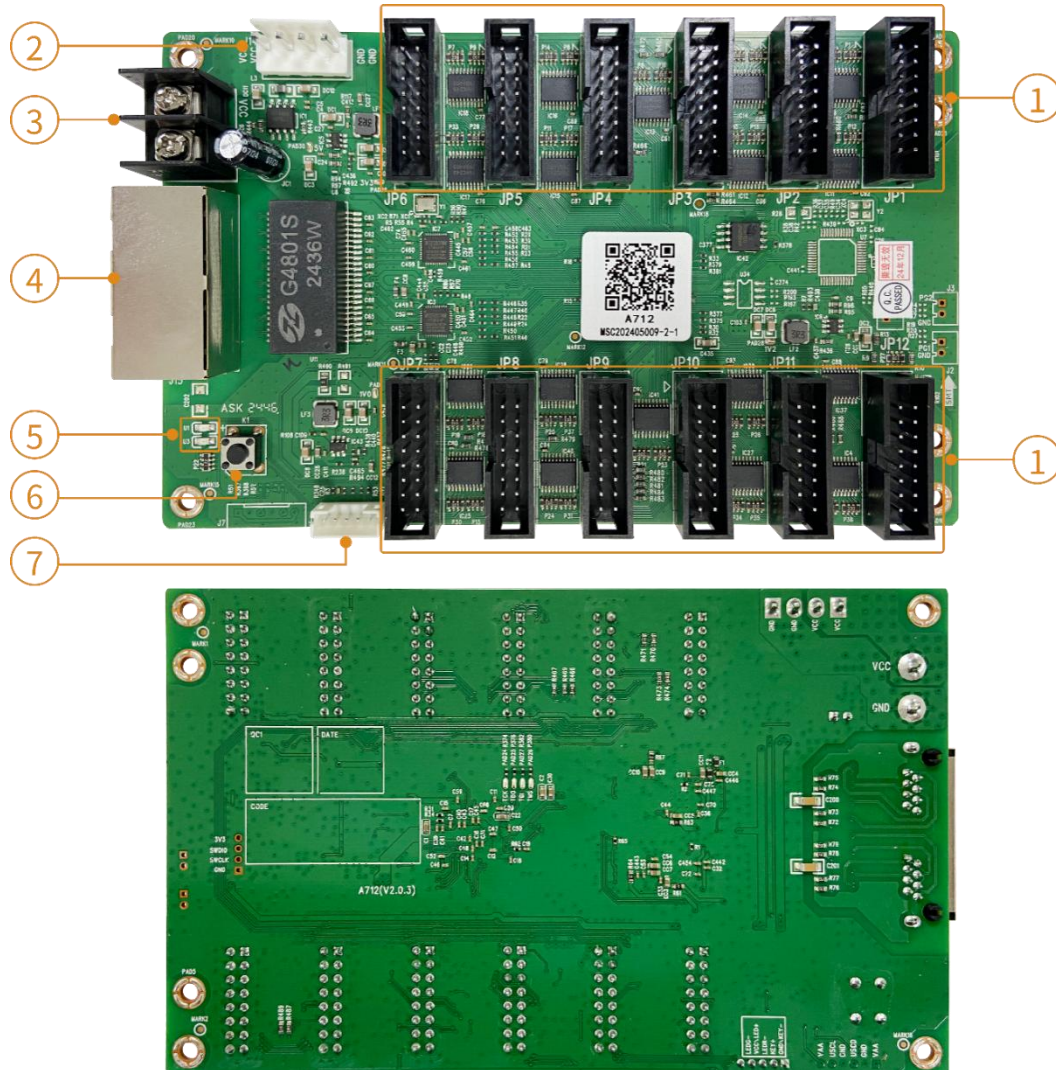
- Record of power-on times (need to be customized)

Record the number of times the receiving card is powered on and calculate cumulatively.

- Running time record (need to be customized)

Receiving card running time record, software can view the time record.

## 4 Product Appearance

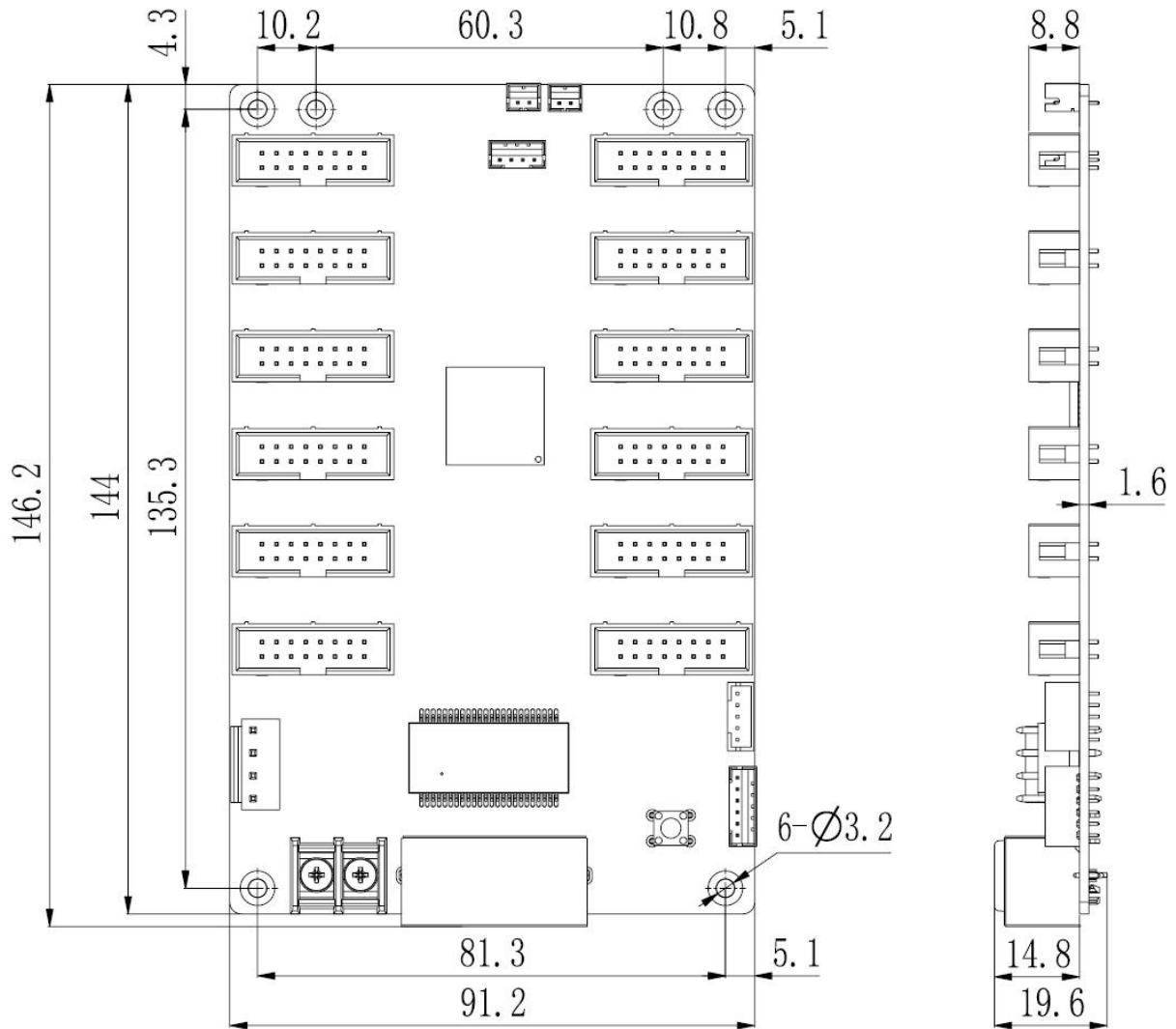


\* Product photos are for reference only, please refer to the products actually purchased.

## 4.1 Data Interface Description

| # | Interface Name        | Interface Description                                                                                     |                                                                                                            |
|---|-----------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1 | HUB75E Interface      | Connect the lamp board                                                                                    |                                                                                                            |
| 2 | Power Input 1         | Connect the DC3.5~ 5.5V power supply to power the receiving card, use only one of them.                   |                                                                                                            |
| 3 | Power Input 2         |                                                                                                           |                                                                                                            |
| 4 | Gigabit Ethernet port | Connect the sending card and cascade other receiving cards, the two interfaces can enter and exit at will |                                                                                                            |
| 5 | 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 Indicator U3    | The red light is always on, which means the power supply is normal.                                       |                                                                                                            |
| 6 | Test Button           | Set up the test screen                                                                                    |                                                                                                            |
| 7 | Indicator Interface   | Indicator external interface                                                                              |                                                                                                            |

## 4.2 Product Dimensions

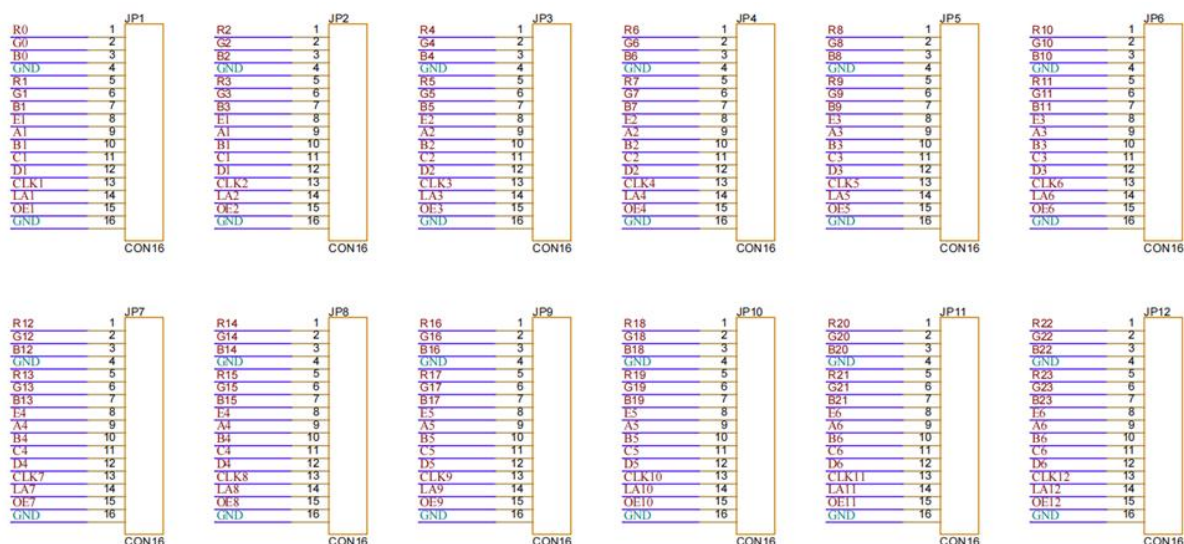


Tolerance: 0.3

Unit: mm

## 4.3 Definition of Output Interface

24 groups of parallel data interface definitions



JP1-JP12 Data Interface Definition

| Illustration                | Definition | Pin | Pin | Definition | Illustration        |
|-----------------------------|------------|-----|-----|------------|---------------------|
| RGB Data Output             | R0         | 1   | 2   | G0         | RGB Data Output     |
|                             | B0         | 3   | 4   | GND        | Ground Connection   |
|                             | R1         | 5   | 6   | G1         | RGB data output     |
|                             | B1         | 7   | 8   | E1         | Row Decoded Signal  |
| Row Decoded                 | A1         | 9   | 10  | B1         |                     |
| Signal                      | C1         | 11  | 12  | D1         |                     |
| Shift clock output          | CLK1       | 13  | 14  | LAT        | Latch Signal Output |
| Display Enabled<br>(Note 1) | OE1        | 15  | 16  | GND        | Ground Connection   |

\* Note 1: Pin 15 is the display enable pin; when using the PWM chip, it is the GCLK signal

#### J16 Data Interface Definition

| Illustration | Definition | Pin | Pin        |
|--------------|------------|-----|------------|
| +5V          | 1          | 2   | GND        |
| FLS_CS       | 3          | 4   | FLS_DO     |
| FLS_CLK      | 5          | 6   | FLS_DI     |
| PROGRAM_B    | 7          | 8   | MCONF_DONE |
| GND          | 9          | 10  | +5V        |

#### J12 Indicator Light Interface Definition

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

#### J14 Power Socket Definition

| Pin        | 1   | 2   | 3   | 4   |
|------------|-----|-----|-----|-----|
| Definition | VCC | VCC | GND | GND |

## 5 product parameters

### 5.1 Basic parameters

| Three-wire<br>Parallel (RGB) | Data Interface | Maximum<br>Load<br>(pixels) | Brightness<br>Correction<br>Band Load<br>(pixel) | Chromaticity<br>Correction<br>Band Load<br>(pixel) | Chroma<br>Correction<br>With Load<br>(pixels) |
|------------------------------|----------------|-----------------------------|--------------------------------------------------|----------------------------------------------------|-----------------------------------------------|
| 24 Groups                    | HUB75E         | Conventional                | 512×384                                          | 512×256                                            | 256×320                                       |
|                              | 12             | PWM                         | 512×512                                          | 512×512                                            | 256×320                                       |
| Number of cascaded cards     |                |                             | Support scanning lines                           |                                                    |                                               |
| ≤1000PCS                     |                |                             | 1-128 sweep                                      |                                                    |                                               |

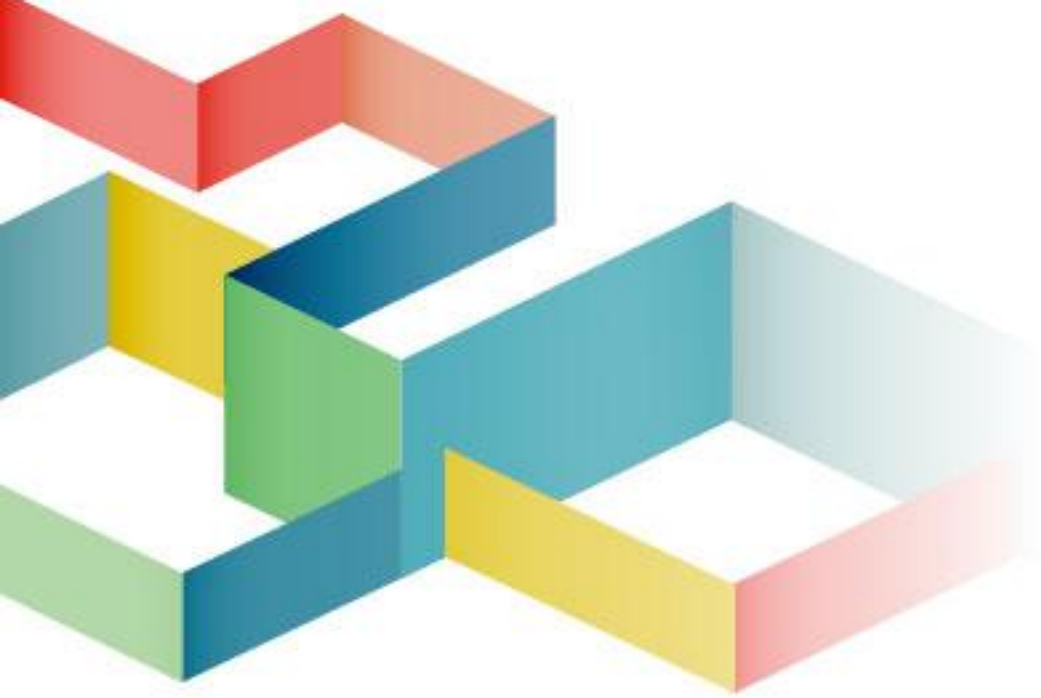
## 5.2 Specification Parameters

|                                 |                                                  |                                  |
|---------------------------------|--------------------------------------------------|----------------------------------|
| Electrical parameters           | Input voltage                                    | DC3.5~5.5V                       |
|                                 | Rated current                                    | 0.6A                             |
|                                 | Rated power                                      | 3W                               |
| Working environment             | Working temperature                              | -20°C~70°C                       |
|                                 | Working humidity                                 | 10%RH~90%RH has no condensation. |
| Storage environment             | Temperature                                      | -40°C~85°C                       |
| Board size                      | 146.2mm×91.2mm                                   |                                  |
| Net weight                      | 90.4g Description: Weight of single card         |                                  |
| Outer packing size              | 690×440×190mm                                    |                                  |
| Gross weight of product         | 12.6Kg Description: Including wire, accessories  |                                  |
| Single Card with plastic Holder | 102.6g                                           |                                  |
| Pack Mode                       | 100PCS /box                                      |                                  |
| 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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