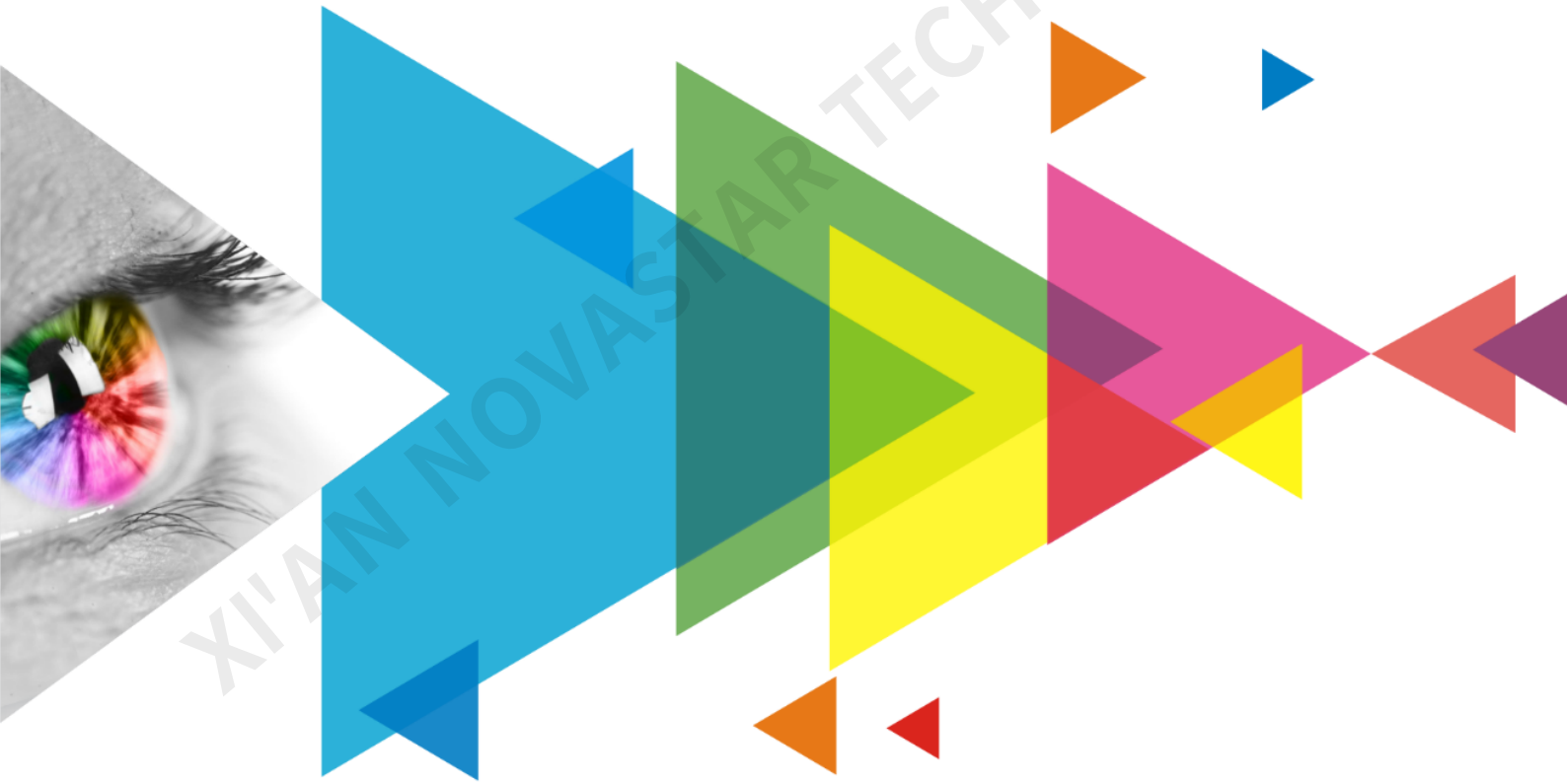
# MRV412

## Receiving Card



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Specifications

# Change History

| Document Version | Release Date | Description |
|---|---|---|
| V1.0.2 | 2021-12-03 | • Updated the certification description.<br>• Updated the description of features. |
| V1.0.1 | 2021-07-30 | Added the certification related description. |
| V1.0.0 | 2021-04-26 | First release |

# Introduction

The MRV412 is a general receiving card developed by NovaStar. A single MRV412 loads up to 512×512 pixels (NovaLCT V5.3.1 or later required). Supporting various functions such as color management, 18Bit+, pixel level brightness and chroma calibration, individual Gamma adjustment for RGB, and 3D, the MRV412 can significantly improve the display effect and user experience.

The MRV412 uses 12 standard HUB75E connectors for communication. It supports up to 24 groups of parallel RGB data. On-site setup, operation, and maintenance were all taken into account when designing the hardware and software of the MRV412, allowing for an easier setup, more stable operation, and more efficient maintenance.

# Certifications

RoHS, EMC Class A

**If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.**

# Features

## Improvements to Display Effect

- Color management
  Allow users to freely switch the color gamut of the screen between different gamuts in real time to enable more precise colors on the screen.
- 18bit+
  Improve the LED display grayscale by 4 times to effectively deal with grayscale loss due to low brightness and allow for a smoother image.
- Pixel level brightness and chroma calibration
  Work with the high-precision calibration system to perform brightness and chroma calibration on each LED to effectively remove brightness differences and chroma differences, enabling high brightness consistency and chroma consistency.
- Quick adjustment of dark or bright lines
  The dark or bright lines caused by splicing of modules or cabinets can be adjusted to improve the visual experience. The adjustment can be easily made and takes effect immediately.
- 3D function
  Working with the sending card that supports 3D function, the receiving card supports 3D output.
- Individual Gamma adjustment for RGB
  Working with NovaLCT (V5.2.0 or later) and the sending card that supports this function, the receiving card supports individual adjustment of red Gamma, green Gamma and blue Gamma, which can effectively control image non-uniformity under low grayscale and white balance offset, allowing for a more realistic image.
- Image rotation in 90° increments
  The display image can be set to rotate in multiples of 90° (0°/90°/180°/270°).

## Improvements to Maintainability

- Mapping function
  The cabinets can display the receiving card number and Ethernet port information, allowing users to easily obtain the locations and connection topology of receiving cards.
- Setting of a pre-stored image in receiving card
  The image displayed on the screen during startup, or displayed when the Ethernet cable is disconnected or there is no video signal can be customized.
- Temperature and voltage monitoring

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The receiving card temperature and voltage can be monitored without using peripherals.

- Cabinet LCD
  The LCD module of the cabinet can display the temperature, voltage, single run time and total run time of the receiving card.
- Bite error detection
  The Ethernet port communication quality of the receiving card can be monitored and the number of erroneous packets can be recorded to help troubleshoot network communication problems.

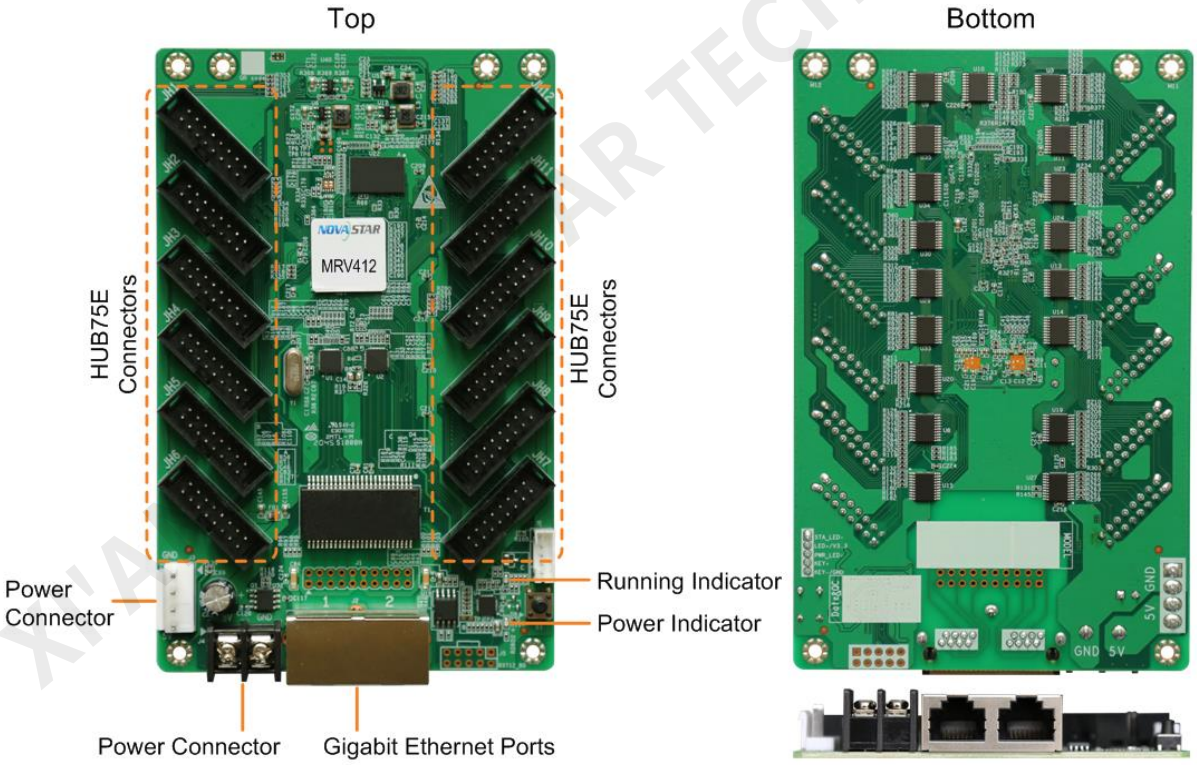
  NovaLCT V5.2.0 or later is required.
- Firmware program readback
  The receiving card firmware program can be read back and saved to the local computer.

  NovaLCT V5.2.0 or later is required.
- Configuration parameter readback
  The receiving card configuration parameters can be read back and saved to the local computer.

## Improvements to Reliability

- Loop backup
  The receiving card and sending card form a loop via the main and backup line connections. If a fault occurs at a location of the lines, the screen can still display the image normally.
- Dual backup of configuration parameters
  The receiving card configuration parameters are stored in the application area and factory area of the receiving card at the same time. Users usually use the configuration parameters in the application area. If necessary, users can restore the configuration parameters in the factory area to the application area.
- Dual program backup
  Two copies of firmware program are stored in the application area of the receiving card at the factory to avoid the problem that the receiving card may get stuck abnormally during program update.

# Appearance




All product pictures shown in this document are for illustration purpose only. Actual product may vary.

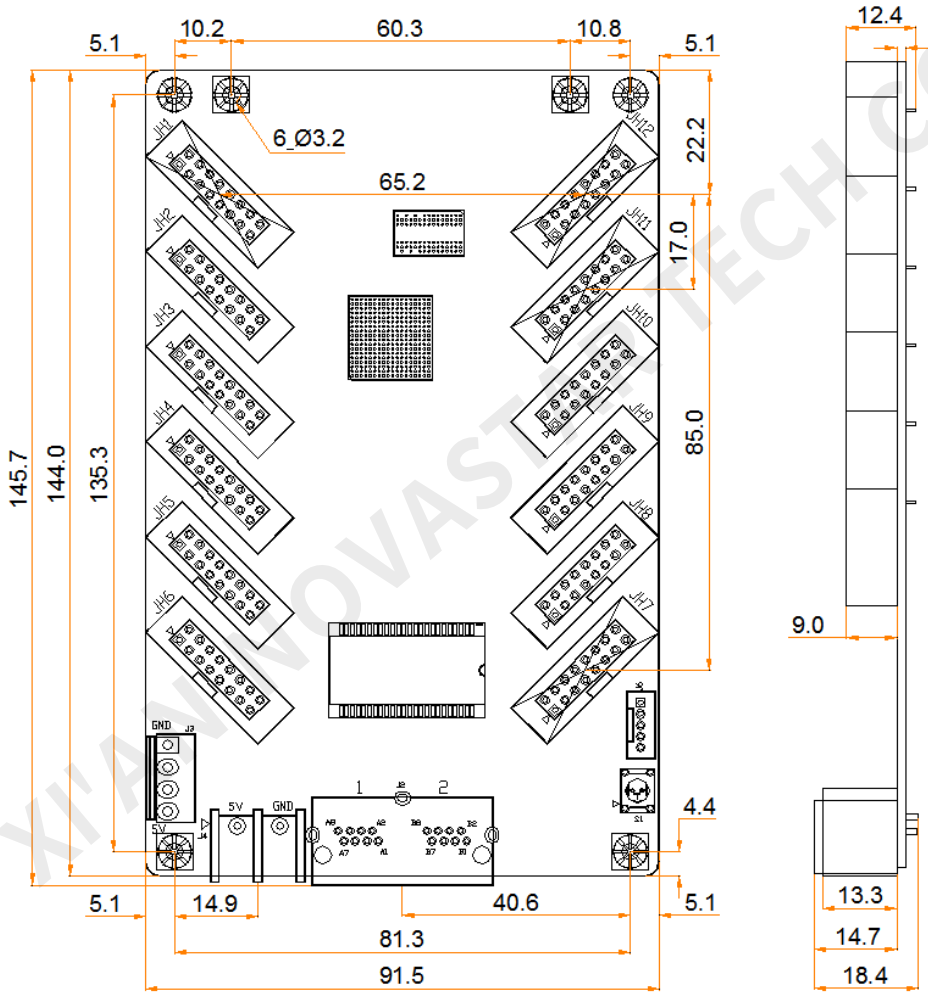
# Indicators

| Indicator | Color | Status | Description |
|---|---|---|---|
| Running indicator | Green | Flashing once every 1s | The receiving card is functioning normally. Ethernet cable connection is normal, and video source input is available. |
| | | Flashing once every 3s | Ethernet cable connection is abnormal. |

| Indicator | Color | Status | Description |
|---|---|---|---|
| | | Flashing 3 times every 0.5s | Ethernet cable connection is normal, but no video source input is available. |
| | | Flashing once every 0.2s | The receiving card failed to load the program in the application area and is now using the backup program. |
| | | Flashing 8 times every 0.5s | A redundancy switchover occurred on the Ethernet port and the loop backup has taken effect. |
| Power indicator | Red | Always on | The power input is normal. |

## Dimensions

The board thickness is not greater than 2.0 mm, and the total thickness (board thickness + thickness of components on the top and bottom sides) is not greater than 19.0 mm. Ground connection (GND) is enabled for mounting holes.




Tolerance: ±0.3 Unit: mm

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# Pins

| Pin Definitions | | | | | |
|---|---|---|---|---|---|
| Ground | GND | 16 | 15 | HOE | Display enable signal |
| Latch signal | HLAT | 14 | 13 | HDCLK | Shift clock |
| Line decoding signal | HD | 12 | 11 | HC | Line decoding signal |
| | HB | 10 | 9 | HA | |
| | HE | 8 | 7 | B | / |
| / | G | 6 | 5 | R | / |
| Ground | GND | 4 | 3 | B | / |
| / | G | 2 | 1 | R | / |

# Specifications

| | | |
|---|---|---|
| Maximum Loading Capacity | 512×512 pixels | |
| Electrical Specifications | Input voltage | DC 3.3 V to 5.5 V |
| | Rated current | 0.5 A |
| | Rated power consumption | 2.5 W |
| Operating Environment | Temperature | –20°C to +70°C |
| | Humidity | 10% RH to 90% RH, non-condensing |
| Storage Environment | Temperature | –25°C to +125°C |
| | Humidity | 0% RH to 95% RH, non-condensing |
| Physical Specifications | Dimensions | 145.7 mm × 91.5 mm × 18.4 mm |
| | Net weight | 93.1 g<br>Note: It is the weight of a single receiving card only. |
| | Gross weight | 12.9 kg<br>Note: It is the total weight of the product, printed materials and packing materials packed according to the packing specifications. |
| Packing Information | Packing specifications | Each receiving card is packaged in a blister pack. Each packing box contains 100 receiving cards. |

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| | | |
|---|---|---|
| | Packing box dimensions | 650.0 mm × 500.0 mm × 200.0 mm |

The amount of current and power consumption may vary depending on factors such as product settings, usage, and environment.

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