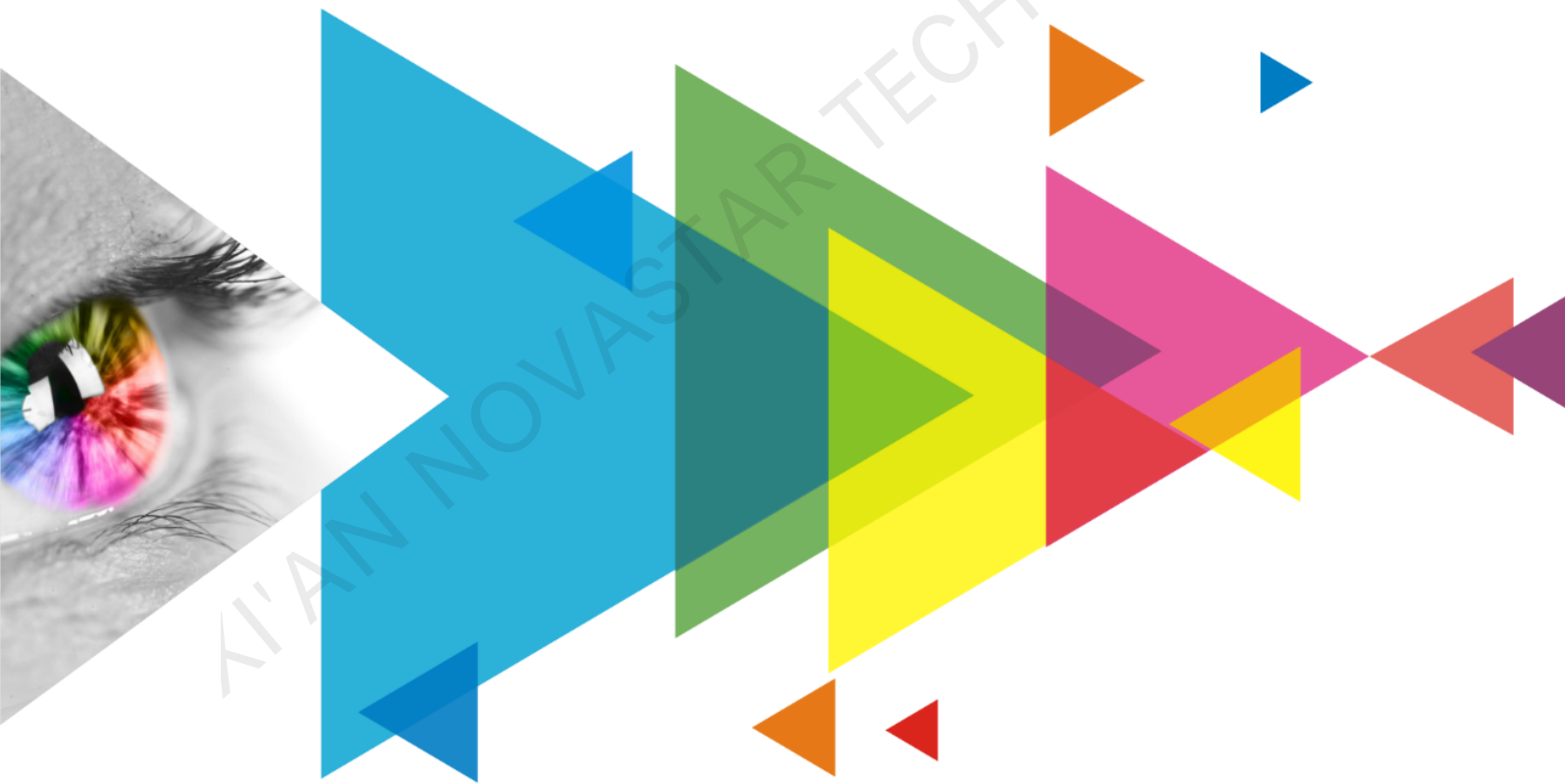


# MRV412

## Receiving Card



Specifications

## Change History

Document Version	Release Date	Description
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.

## Features

### Improvements to Display Effect

- **Color management**  
Switch the color gamut of the screen between multiple gamuts to enable more precise colors on the screen.
- **18Bit+**  
Improve the LED display grayscale by 4 times, avoiding grayscale loss due to low brightness and allowing for a smoother image.
- **Pixel level brightness and chroma calibration**  
Working with NovaLCT and NovaCLB, the receiving card supports brightness and chroma calibration on each LED, which can effectively remove color discrepancies and greatly improve LED display brightness and chroma consistency, allowing for better image quality.
- **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**  
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.

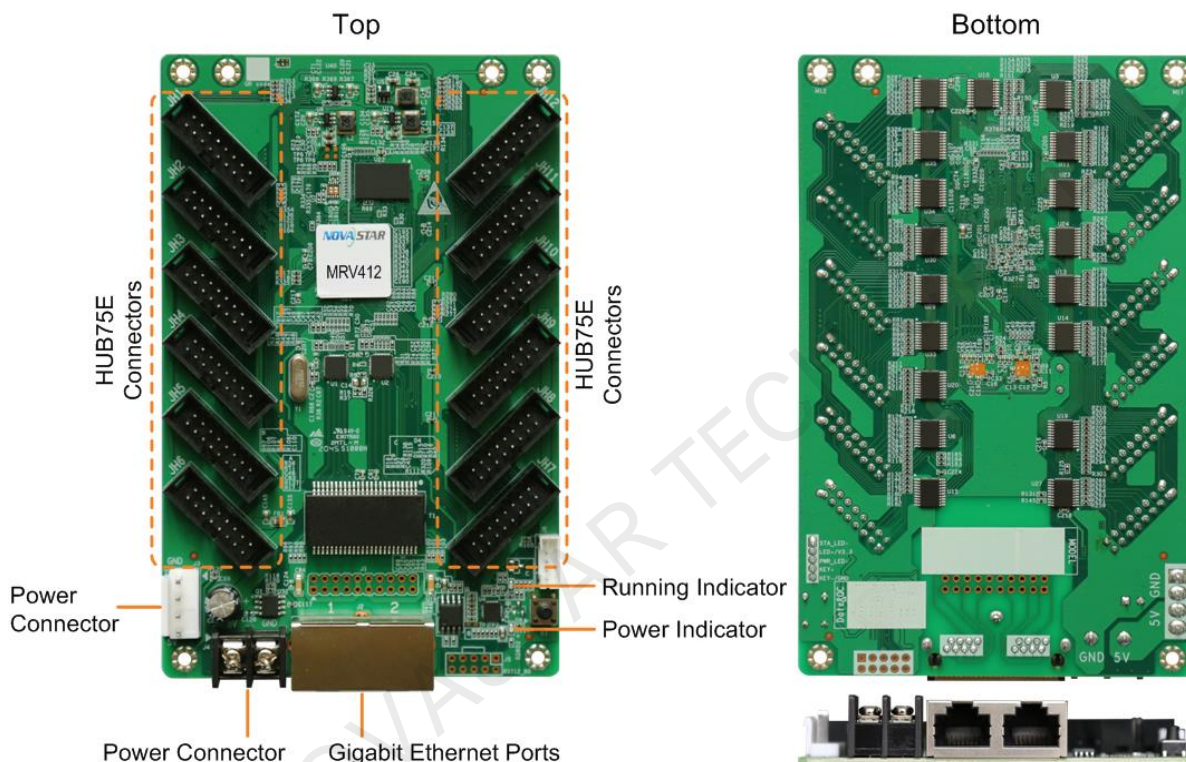
### Improvements to Reliability

- 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 backup of the application program  
Two copies of the application program are stored in the receiving card at the factory to avoid the problem that the receiving card may get stuck due to program update exception.

### Appearance

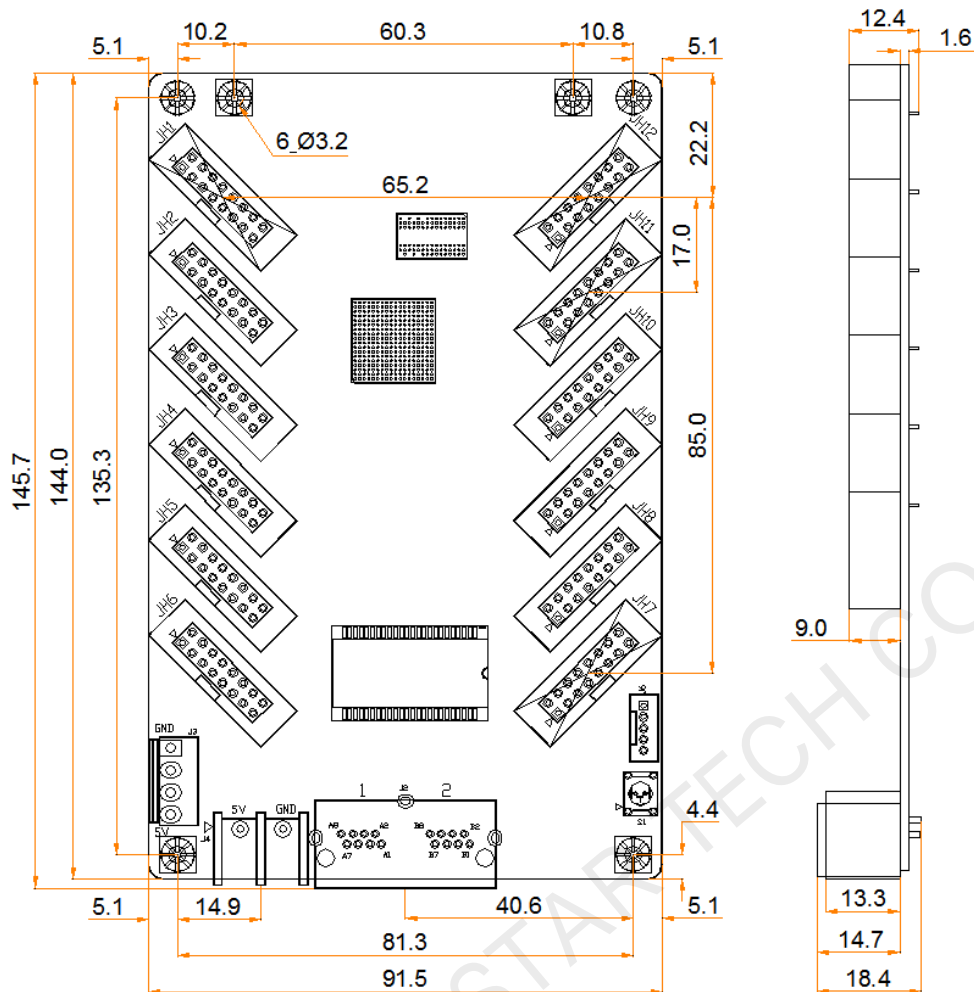


All product pictures shown in this document are for illustration purpose only. Actual product may vary.

### 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.
		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



Tolerance: ±0.1 Unit: mm

## Pins

JH1		JH2		JH3		JH4	
GND	16	16	15	GND	16	16	15
HLAT1	14	14	13	HLAT3	14	14	13
HD1	12	12	11	HD2	12	12	11
HB1	10	10	9	HB2	10	10	9
HE1	8	8	7	HE2	8	8	7
G2	6	6	5	G6	6	6	5
GND	4	4	3	GND	4	4	3
G1	2	2	1	G5	2	2	1
HOE1	15	HOE2	15	HOE3	15	HOE4	15
HDCLK1	13	HDCLK2	13	HDCLK3	13	HDCLK4	13
HC1	11	HC15	11	HC2	11	HC16	11
HA1	9	HA15	9	HA2	9	HA16	9
B2	7	B4	7	B6	7	B8	7
R2	5	R4	5	R6	5	R8	5
B1	3	B3	3	B5	3	B7	3
R1	1	R3	1	R5	1	R7	1

JH5		JH6		JH7		JH8	
GND	16	16	15	GND	16	16	15
HLAT5	14	14	13	HLAT11	14	14	13
HD3	12	12	11	HD6	12	12	11
HB3	10	10	9	HB6	10	10	9
HE3	8	8	7	HE6	8	8	7
G10	6	6	5	G22	6	6	5
GND	4	4	3	GND	4	4	3
G9	2	2	1	G21	2	2	1
HOE5	15	HOE6	15	HOE11	15	HOE12	15
HDCLK5	13	HDCLK6	13	HDCLK11	13	HDCLK12	13
HC3	11	HC11	11	HC6	11	HC14	11
HA3	9	HA11	9	HA6	9	HA14	9
B10	7	B12	7	B22	7	B24	7
R10	5	R12	5	R22	5	R24	5
B9	3	B11	3	B21	3	B23	3
R9	1	R11	1	R21	1	R23	1

JH9		JH10		JH11		JH12	
GND	16	16	15	GND	16	16	15
HLAT13	14	14	13	HLAT15	14	14	13
HD7	12	12	11	HD8	12	12	11
HB7	10	10	9	HB8	10	10	9
HE7	8	8	7	HE8	8	8	7
G26	6	6	5	G30	6	6	5
GND	4	4	3	GND	4	4	3
G25	2	2	1	G29	2	2	1
HOE13	15	HOE14	15	HOE15	15	HOE16	15
HDCLK13	13	HDCLK14	13	HDCLK15	13	HDCLK16	13
HC7	11	HC9	11	HC8	11	HC10	11
HA7	9	HA9	9	HA8	9	HA10	9
B26	7	B28	7	B30	7	B32	7
R26	5	R28	5	R30	5	R32	5
B25	3	B27	3	B29	3	B31	3
R25	1	R27	1	R29	1	R31	1

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	

Pin Definitions					
	HE	8	7	B	/
/	G	6	5	R	/
Ground	GND	4	3	B	/
/	G	2	1	R	/

## Specifications


Maximum Loading Capacity	512x512 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 x 91.5 mm x 18.4 mm
	Net weight	93.1 g Note: It is the weight of a single receiving card only.
	Gross weight	12.9 kg 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.
	Packing box dimensions	650.0 mm x 500.0 mm x 200.0 mm
Certifications	RoHS, EMC Class A  Note: If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please apply for the certifications yourself or contact NovaStar to apply for them.	

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

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