

MRV208-N

Receiving Card



Specifications

Change History

Document Version	Release Date	Description
V1.0.1	2025-03-26	Added certification information.
V1.0.0	2025-03-12	First release.

Introduction

The MRV208-N is a general receiving card developed by NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). Supporting various functions such as Color Management, 18bit+, Pixel Level Brightness and Chroma Calibration, Quick Adjustment of Dark or Bright Lines, Multi-batch Adjustment, Low Latency, 3D, Individual Gamma Adjustment for RGB, and 90° Image Rotation, the MRV208-N can significantly improve the display effect and user experience.

The MRV208-N uses 8 standard HUB75E connectors for high stability communication and supports up to 16 groups of parallel RGB data.

- For PWM driver ICs, the maximum load capacity per board when used with M3 controllers is:
 - 512×512@60Hz (For 8bit video sources)
 - 512×256@60Hz (For 10bit video sources)
- For common driver ICs, the maximum load capacity per board when used with M3 controllers is:
 - 512×384@60Hz (For 8bit video sources)
 - 512×192@60Hz (For 10bit video sources)

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

Support standard (Rec.709 / DCI-P3 / Rec.2020) and custom color gamuts, enabling more precise colors on the screen.

- 18bit+

Improve the LED display grayscale by 4 times to avoid grayscale loss due to low brightness and allow for a smoother image.

- Pixel Level Brightness and Chroma Calibration

Work with NovaStar's calibration system to calibrate the brightness and chroma of each pixel, effectively eliminating differences and enabling high consistency for both brightness and chroma.

- Quick Adjustment of Dark or Bright Lines

The different brightness of seams caused by splicing of modules or cabinets can be corrected to improve the visual experience. The correction is easy and takes effect immediately.

- Multi-batch Adjustment

Adjust the brightness of cabinets or modules to minimize display discrepancies caused by variations in production batches.

- Low Latency

The latency of video source on the receiving card end can be reduced to 1 frame (only when using modules with driver IC with built-in RAM).

- 3D

Work with the controller that supports 3D function to enable 3D output.

- Individual Gamma Adjustment for RGB

Working with NovaLCT and the controller that supports this function, the receiving card supports individual adjustment to red gamma, green gamma and blue gamma, which can effectively control image non-uniformity at low grayscale conditions and white balance offset, allowing for a more realistic image.

- 90° Image Rotation

The display image can be rotated in multiples of 90° (0°/90°/180°/270°).

Improvements to Maintainability

- Calibration Coefficient Management

The calibration coefficients can be uploaded, read back, saved to hardware, and erased.

- Uploading Calibration Coefficients

Upload calibration coefficients to the receiving card quickly or in a stable manner, with acceleration support if needed.

- Data Group Mapping

Display the test pattern by data group to clearly see the position of each data group within the cabinet.

- Mapping 1.1

The cabinets can display the controller number, receiving card number, and Ethernet port information, allowing users to easily obtain the locations and connection topology of receiving cards.

- Settings of a Stored Image in the Receiving Card

The image displayed 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 external devices.

- Cabinet LCD

The LCD module of the cabinet can display the temperature, voltage, single run time and total run time of the receiving card.

- Bit Error Detection

Real-time monitoring of the communication of the Ethernet port on the receiving card which helps users troubleshoot network communication problems.

- Firmware Program Readback

The receiving card firmware program can be read back and saved to the local computer.

- 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 controller form a loop via the primary and backup line connections. When a fault occurs at a location of the lines, the screen can still display the image normally.

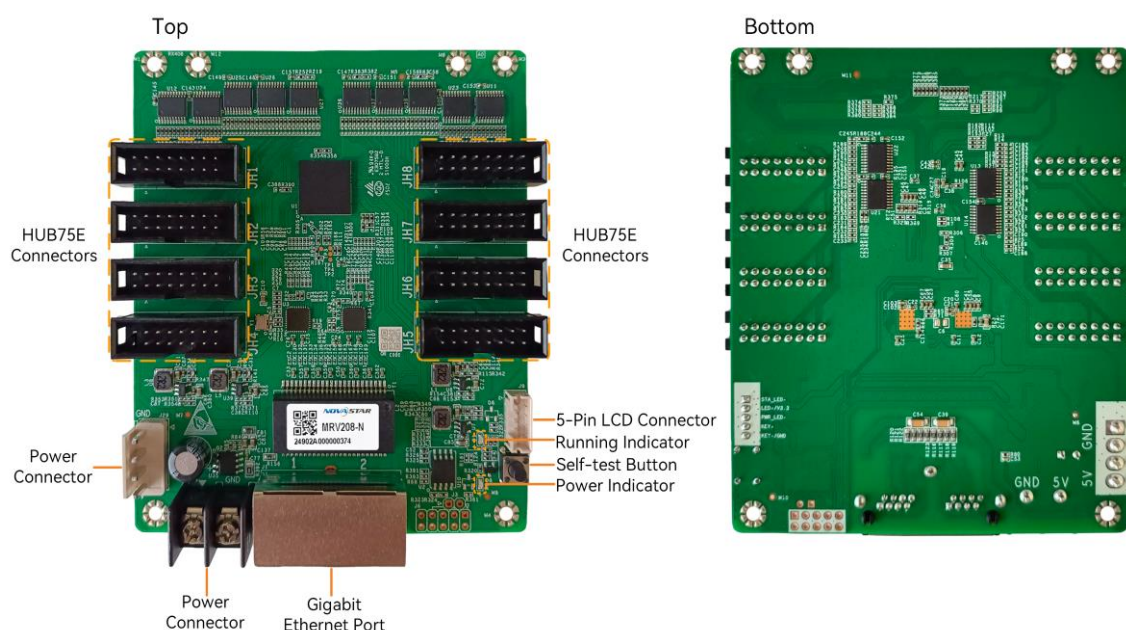
- Dual Backup of Configuration Parameters

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 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.

Name	Description
HUB75E Connectors	Connect to the module.
Power Connector	Connect to the input power. Either of the connectors can be chosen.

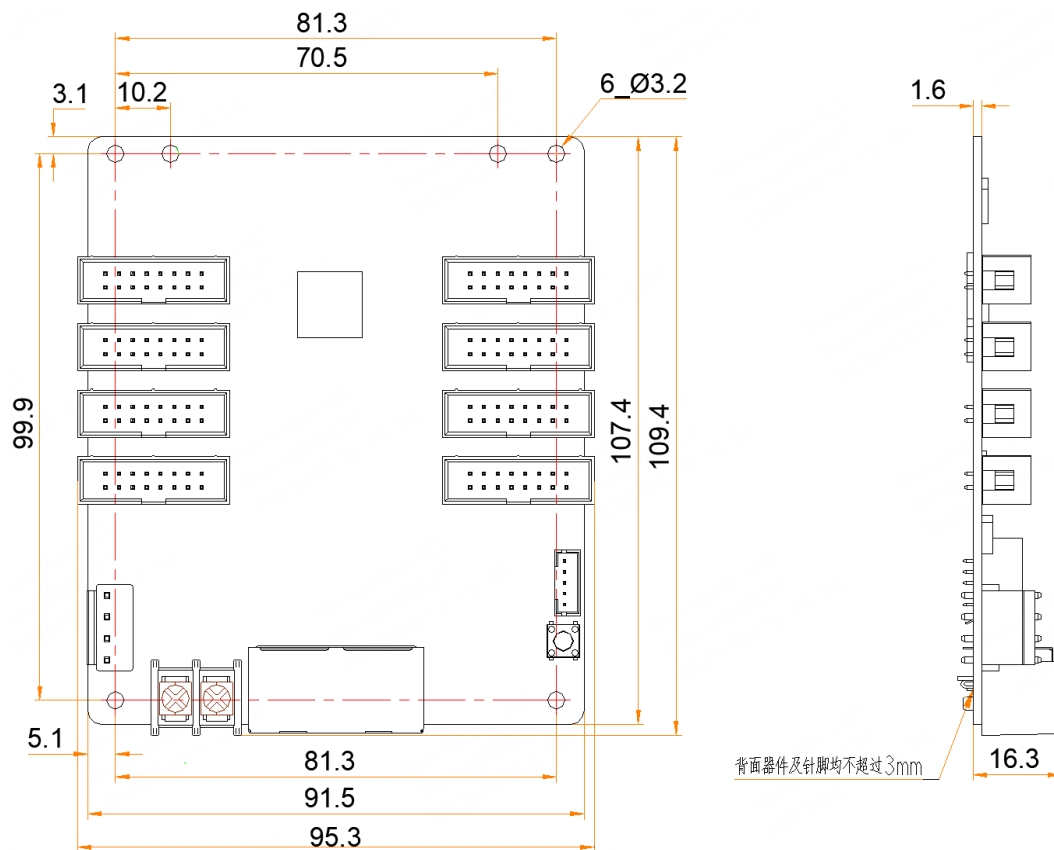
Name	Description
Gigabit Ethernet Ports	Connect to the sending card, and cascade other receiving cards. Each connector can be used as input or output.
Self-Test Button	Set the test pattern. After the Ethernet cable is disconnected, press the button twice, and the test pattern will be displayed on the screen. Press the button again to switch the pattern.
5-Pin LCD Connector	Connect to the LCD.

Indicator

Indicators	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 video source input is unavailable.
		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 20.0 mm.



Tolerance: ± 0.3 Unit: mm

Note

To make molds or trepan mounting holes, please contact NovaStar for a higher-precision structural drawing.

Pins

JH1 R1 1 2 4 G1 B1 3 4 6 GND R2 5 6 8 G2 B2 7 8 10 HB1 HA1 9 10 12 HD1 HDCLK1 11 12 14 HLA1 HOE1 13 14 16 GND	JH2 R3 1 2 4 G3 B3 3 4 6 GND R4 5 6 8 G4 B4 7 8 10 HB2 HA2 9 10 12 HD2 HDCLK2 11 12 14 HLA2 HOE2 13 14 16 GND	JH3 R5 1 2 4 G5 B5 3 4 6 GND R6 5 6 8 G6 B6 7 8 10 HB3 HA3 9 10 12 HD3 HDCLK3 11 12 14 HLA3 HOE3 13 14 16 GND	JH4 R7 1 2 4 G7 B7 3 4 6 GND R8 5 6 8 G8 B8 7 8 10 HB4 HA4 9 10 12 HD4 HDCLK4 11 12 14 HLA4 HOE4 13 14 16 GND
JH5 R9 1 2 4 G9 B9 3 4 6 GND R10 5 6 8 G10 B10 7 8 10 HB5 HA5 9 10 12 HD5 HDCLK5 11 12 14 HLA5 HOE5 13 14 16 GND	JH6 R11 1 2 4 G11 B11 3 4 6 GND R12 5 6 8 G12 B12 7 8 10 HB6 HA6 9 10 12 HD6 HDCLK6 11 12 14 HLA6 HOE6 13 14 16 GND	JH7 R13 1 2 4 G13 B13 3 4 6 GND R14 5 6 8 G14 B14 7 8 10 HB7 HA7 9 10 12 HD7 HDCLK7 11 12 14 HLA7 HOE7 13 14 16 GND	JH8 R15 1 2 4 G15 B15 3 4 6 GND R16 5 6 8 G16 B16 7 8 10 HB8 HA8 9 10 12 HD8 HDCLK8 11 12 14 HLA8 HOE8 13 14 16 GND

Pin Definitions (JH1 as an example)

/	R1	1	2	G1	/
/	B1	3	4	GND	Ground
/	R2	5	6	G2	/

Pin Definitions (JH1 as an example)					
/	B2	7	8	HE1	Line decoding signal
Line decoding signal	HA1	9	10	HB1	
	HC1	11	12	HD1	
Shift clock	HDCLK1	13	14	HLAT1	Latch signal
Display enable signal	HOE1	15	16	GND	Ground

Specifications

Maximum Resolution	<ul style="list-style-type: none"> For PWM driver ICs, the maximum load capacity per board when used with M3 controllers is: <ul style="list-style-type: none"> 512×512@60Hz (For 8bit video sources) 512×256@60Hz (For 10bit video sources) For common driver ICs, the maximum load capacity per board when used with M3 controllers is: <ul style="list-style-type: none"> 512×384@60Hz (For 8bit video sources) 512×192@60Hz (For 10bit video sources) 	
Electrical Parameters	Input voltage	DC 3.8 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	−40°C to +85°C
	Humidity	0% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	95.3 mm × 109.4 mm × 19.3 mm
	Net weight	70.2 g Note: It is the weight of a single receiving card only.
Packing Information	Packaging	Each receiving card is packaged in a blister

		pack. Each packing box contains 100 receiving cards.
	Packing box	630.0 mm × 475.0 mm × 195.0 mm

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

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