

RH460-1 Plus

Receiving Card



Specifications

Change History

Document Version	Release Date	Description
V1.0.0	2026-07-31	First release

Introduction

RH460-1 Plus is a general receiving card developed by NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). Supporting various functions such as Image Booster, HDR, Pixel Level Brightness and Chroma Calibration, Quick Adjustment of Dark or Bright Lines, Low Latency, and 3D, the product can significantly improve the display effect and user experience.

RH460-1 Plus uses 4 floating connectors for communication, ensuring high stability. It supports up to 24 groups of parallel RGB data and is suitable for various on-site setups.

For PWM driver ICs, the maximum load capacity per card is:

- 512×512@60Hz (For 8 bit video sources)
- 512×256@60Hz (For 10 bit and 12 bit video sources)



Note

For PWM driver ICs, the maximum load capacity per card when used with COEX controllers is:

- 512×512@60Hz (For 8 bit and 10 bit video sources)
- 512×256@60Hz (For 12 bit video sources)

Certifications

RoHS

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 resolve the problem.

Otherwise, the customer shall be responsible for the legal risks caused and NovaStar has the right to claim compensation.

Features

Improvements to Display Effect

- Image Booster (Effects depend on driver IC)
 - Color Management: Support standard (Rec.709 / DCI-P3 / Rec.2020) and custom color gamuts, enabling more precise colors on the screen.
 - Precise Grayscale: Individually correct the 65,536 levels of grayscale (16bit) of the driver IC to fix the display problems at low grayscale conditions, such as low-grayscale brightness spikes, brightness dips, color cast and mottling. This function can also better assist other display technologies, such as 22bit+ and individual gamma adjustment for RGB, allowing for a smoother and more uniform image.
 - 22bit+: Improve the LED screen grayscale by 64 times to avoid grayscale loss due to low brightness and allow for a smoother image with more details in dark areas.
- HDR
 - Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards.
 - Support HLG.
- 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.
- Low Latency

The latency of the video source at the receiving card end can be reduced to 1 frame (only when using modules with driver ICs 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°).

- Free Image Rotation

Support image rotation at any angle when using the dedicated MCTRL R5 controller and SmartLCT software.

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 in a stable manner, with acceleration support if needed.

- Data Group Mapping

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

- Mapping 1.1

The cabinet displays the Ethernet port, receiving card, and controller numbers in different colors, clearly showing the physical locations and connection topology of receiving cards.

- Temperature and Voltage Monitoring

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

- Detection of Ethernet Cable Disconnections

Monitor the number of times the Ethernet cable to the receiving card is disconnected, assisting in identifying potential communication link issues.

- 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

- Dual NCP Backup

The NCP file is stored in the application area and factory area of the receiving card at the same time. Typically, the NCP file in the application area is used. However, during a factory reset, the NCP file can be retrieved from the factory area.

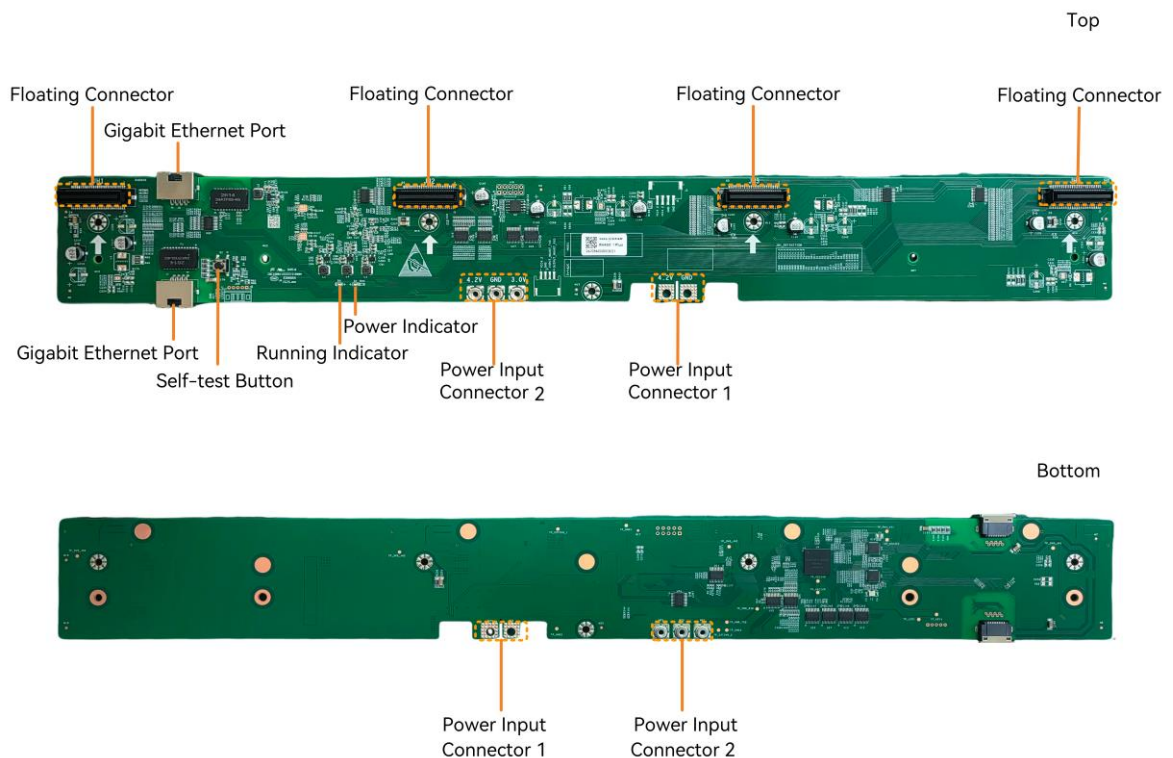
- Loop Backup

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 both 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.

Appearance



All product photos in this document are for illustration purposes only. The actual product may vary.

 Note

Description of power input connectors:

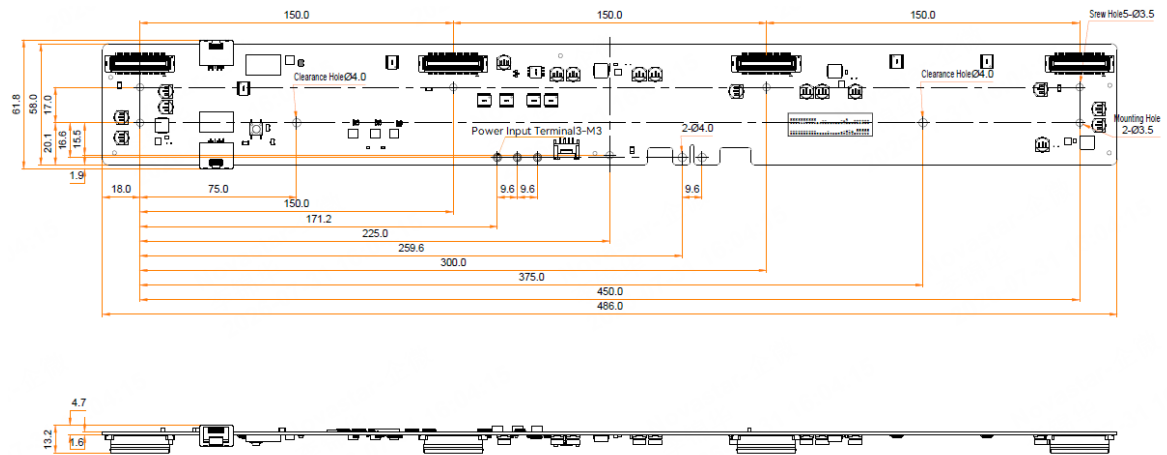
- Power input connector 1: without nut, for hard connections.
- Power input connector 2: with nut, for flexible connections.
- The rated power of this product is 100 W. When wiring, you only need to connect the 4.2 V and GND terminals.
- The power input connectors do not support backup. Do not connect multiple power modules without the backup function at the same time.
- During installation, the recommended tightening torque for the mounting screws of power input connector 2 is 0.5 N·m. Excessive torque may cause device damage, pad peel-off of surface-mounted nuts, or solder joint failures.

Indicators

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 14.0 mm.



Tolerance: ± 0.3 Unit: mm

Note

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

Pin Definitions (JH1 as an example)					
CS signal of serial pin	HUB_SPI_CS1	19	20	HLAT1	Latch control signal
/	Flash_3V3	21	22	HOE1	Display enable
/	H_G3	23	24	H_B3	/
/	H_B2	25	26	H_R3	/
/	H_R2	27	28	H_G2	/
/	H_G1	29	30	H_B1	/
Row decoding signal	HB1	31	32	H_R1	/
/	H_R4	33	34	HC1	Row decoding signal
/	H_B4	35	36	HA1	Row decoding signal
/	H_R5	37	38	H_G4	/
/	H_G5	39	40	H_B5	/
Ground	GND	41	42	VCCGB_4.2V	Input power
Ground	GND	43	44	VCCGB_4.2V	Input power
Ground	GND	45	46	VCCGB_4.2V	Input power
Ground	GND	47	48	VCCGB_4.2V	Input power
Ground	GND	49	50	VCCGB_4.2V	Input power
Ground	GND	51	52	VCCGB_4.2V	Input power
Ground	GND	53	54	VCCGB_4.2V	Input power
Ground	GND	55	56	VCCGB_4.2V	Input power
Ground	GND	57	58	VCCGB_4.2V	Input power
Ground	GND	59	60	VCCGB_4.2V	Input power

Specifications

Maximum Resolution	For PWM driver ICs, the maximum load capacity per card is: • 512×512@60Hz (For 8 bit video sources) • 512×256@60Hz (For 10 bit and 12 bit video sources)	
Electrical	Input voltage	DC 3.8 V to 5.5 V

Parameters	Rated current	0.45 A
	Rated power consumption	2.25 W
Operating Environment	Temperature	-20°C to 70°C
	Humidity	0% RH to 85% RH, non-condensing
Storage Environment	Temperature	-40°C to +85°C
	Humidity	0% RH to 85% RH, non-condensing
Physical Specifications	Dimensions	486.0 mm × 61.8 mm × 13.2 mm
	Net weight	127.8 g Note: It is the weight of a single receiving card only.
Packing Information	Packaging	An antistatic bag is provided for each card. Each packing box contains 60 cards.
	Packing box	635.0 mm × 595.0 mm × 283.0 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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