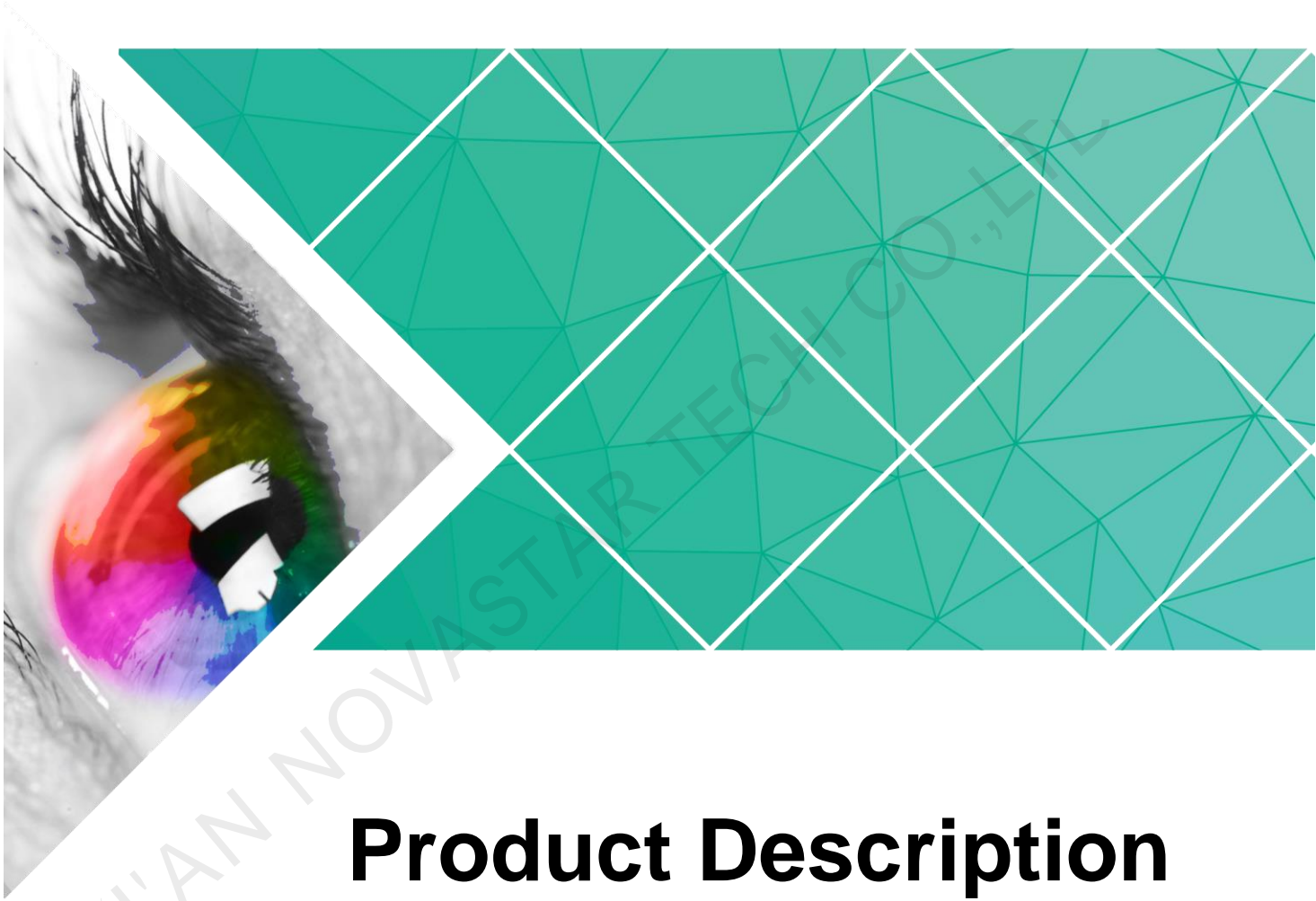


Receiving Card

MRV328



Product Description


Document Version: V1.0.0

Document Number: NS110100409

Copyright © 2018 Xi'an NovaStar Tech Co., Ltd. All Rights Reserved.

No part of this document may be copied, reproduced, extracted or transmitted in any form or by any means without the prior written consent of Xi'an NovaStar Tech Co., Ltd.

Trademark

 is a registered trademark of Xi'an NovaStar Tech Co., Ltd.

Statement

You are welcome to use the product of Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar). This document is intended to help you understand and use the product. For accuracy and reliability, NovaStar may make improvements and/or changes to this document at any time and without notice. Any problem in use or any good suggestion, please contact us through ways provided in the document. We will do our utmost to solve the problems and adopt the suggestions after evaluation as soon as possible.

XI'AN NOVASTAR TECH CO., LTD.

Change History

Version	Release Date	Description
V1.0.0	2018-01-10	First release

XI'AN NOVASTAR TECH CO.,LTD

Contents

Change History	ii
1 Safety	1
2 Overview	2
3 Features	3
4 Hardware Structure	4
4.1 Appearance.....	4
4.2 Dimensions	5
4.3 Indicators	5
4.4 Definition of Data Interface	6
5 Software Structure	7
6 Typical Networking	8
7 Specifications	10

1 Safety

This chapter illustrates safety of the MRV328 receiving card to ensure the product's storage, transport, installation and use safety. Safety instructions are applicable to all personnel who contact or use the product. First of all, pay attention to following points.

- Read through the instructions.
- Retain all instructions.
- Comply with all instructions.

Storage and Transport Safety

- Pay attention to dust and water prevention.
- Avoid long-term direct sunlight.
- Do not place the product at a position near fire and heat.
- Do not place the product in an area containing explosive materials.
- Do not place the product in a strong electromagnetic environment.
- Place the product at a stable position to prevent damage or personal injury caused by dropping.
- Save the packing box and materials which will come in handy if you ever have to store and ship the product. For maximum protection during storage and shipping, repack the product as it was originally packed at the factory.

Installation and Use Safety

- Only trained professionals may install the product.
- Plugging and unplugging operations are prohibited when the power is on.
- Ensure safe grounding of the product.
- Always wear a wrist band and insulating gloves.
- Do not place the product in an area having frequent or strong shake.
- Perform dust removing regularly.
- Contact NovaStar for maintenance at any time, rather than have the product disassembled and maintained by non-professionals without authorization.
- Replace faulty parts only with the spare parts supplied by NovaStar.

2 Overview

The MRV328 is a new receiving card developed by NovaStar. A single MRV328 loads up to 256x256 pixels.

The MRV328 supports pixel level brightness and chroma calibration, which effectively removes color difference, greatly improves display consistency of LED images, and presents finer displays to users.

Software and hardware designs of the MRV328 have fully concerned users' deployment, operating and maintenance scenarios, enabling easier deployment, more stable operating and more efficient maintenance.

Hardware design:

- Integrates 8 standard HUB75 connectors, which makes the HUB board unnecessary.
- Adopts the Gigabit Ethernet port, which can connect to the PC.

Software design:

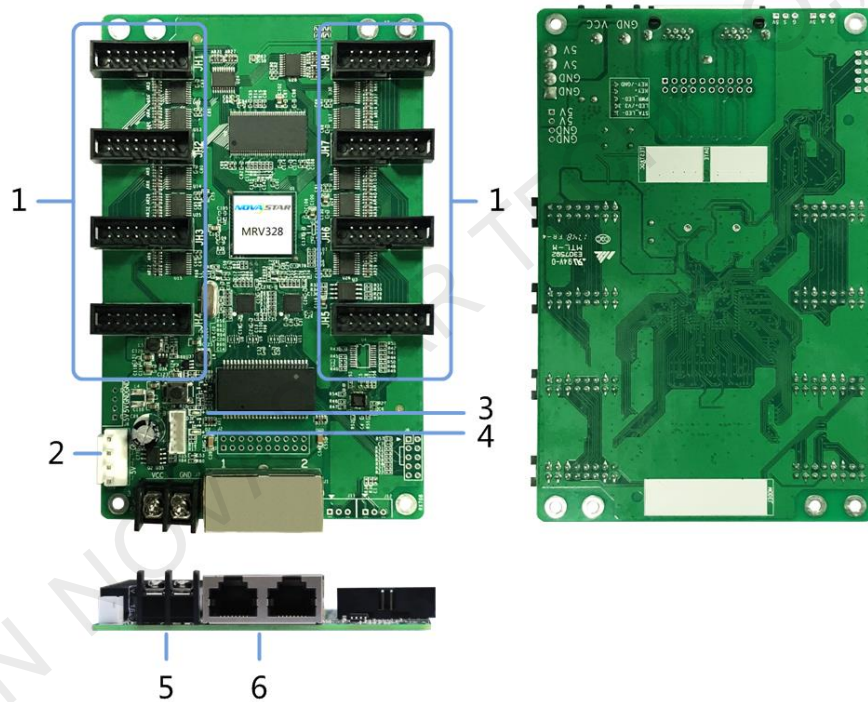
- Supports pixel level brightness and chroma calibration.
- Supports setting of images pre-stored in the receiving card.
- Supports status detection of temperature, voltage, Ethernet cable communication and video source signals.
- Supports the 5-pin LCD module.

3 Features

Features	Description
Supporting pixel level brightness and chroma calibration	Brightness and chroma calibration on NovaLCT for each pixel could remove color difference effectively, make the brightness and chroma of the whole screen highly consistent, and improve the display effect.
Supporting setting of images pre-stored in the receiving card	On NovaLCT, the specified images could be set as the screen startup image and images used when the Ethernet cable is disconnected or no video source signal is available.
Supporting status detection of temperature, voltage, Ethernet cable communication and video source signals	On NovaLCT, the status of receiving card's temperature, voltage, Ethernet cable communication and video source signals can be detected.
Supporting LCD module	Supports NovaStar's general 5-pin LCD module. The LCD module is connected to the HUB board to display temperature, voltage, single operating time and total operating time of the receiving card.
Supporting readback of configuration file	On NovaLCT (V5.0.0 or later), the configuration information stored in the receiving card can be read back.
Supporting readback of firmware version	On NovaLCT (V5.0.0 or later), the firmware versions of the receiving card can be read back.

4 Hardware Structure

4.1 Appearance



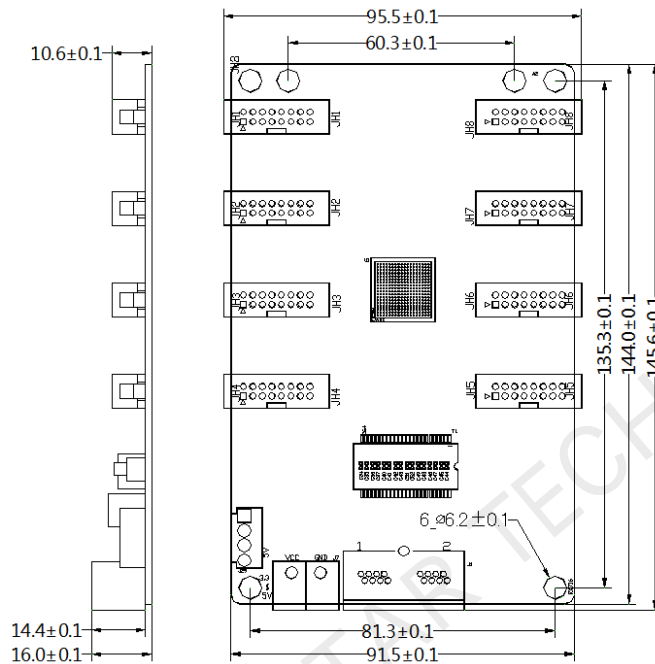
Product images provided in this file are for reference only, and the actual products shall prevail.

No.	Description
1	HUB75 connectors
2	Power socket
3	D1, status indicator
4	D2, power indicator
5	Power socket
6	Gigabit Ethernet ports

4.2 Dimensions

The board thickness is not greater than 2.0 mm, and the total thickness (board thickness + thickness of components on front and rear panels) is not greater than 17.0 mm.

The unit of dimension chart is “mm”. The location holes are connected to signal grounds (GND).

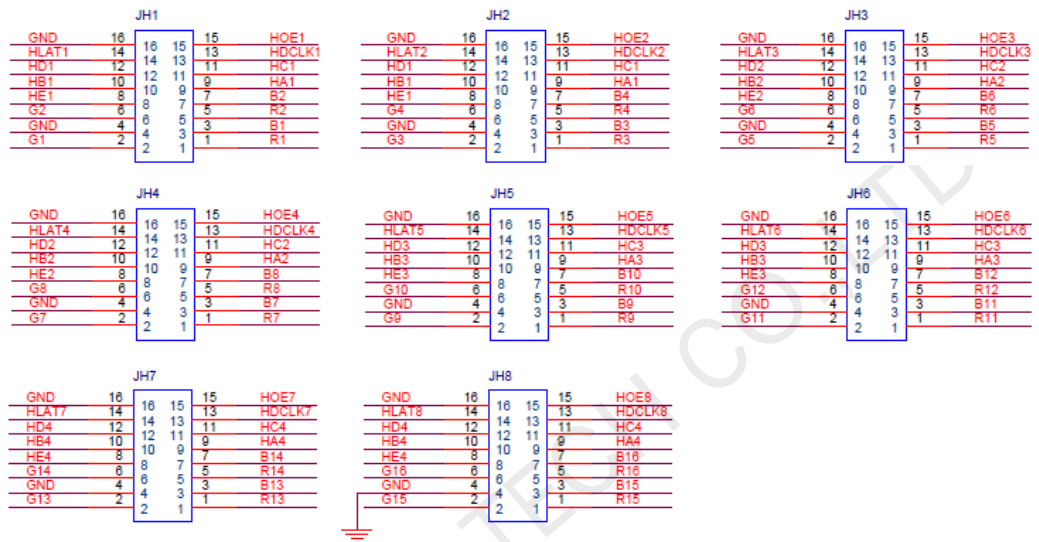


4.3 Indicators

Indicator	Status	Description
Status indicator (green)	Flashes every other 1s.	No sending card mode: The receiving card works normally with no sending card connected. Ethernet cable connection is normal, and video source input is available.
	Flashes every other 0.5s.	Sending card mode: Both the receiving card and the sending card work normally. Ethernet cable connection is normal, and video source input is available.
	Flashes every other 3s.	The receiving card works normally while the Ethernet cable connection is abnormal.
	Rapidly flashes for 3 times every other 3s.	The receiving card works normally and Ethernet cable connection is normal, while no video source input is available.
	Rapidly flashes every other 0.2s.	Program loading fails in normal operating and the device is coming to the backup operating state.

Power indicator (red)	Always on	The indicator will be always on after the power is on.
-----------------------	-----------	--

4.4 Definition of Data Interface



Definition of Data Interface			
R	1	2	G
B	3	4	GND
R	5	6	G
B	7	8	HE
HA	9	10	HB
HC	11	12	HD
HDCLK	13	14	HLAT
HOE	15	16	GND

5 Software Structure

Firmware in the delivery MRV328 includes MCU program and FPGA program.

Program download method:

Visit www.novastar-led.cn and change the user interface language to English at the top right. Then, on the displayed **Products&Downloads** page, click the target receiving card in the **Receiving Card** section to enter its detail introduction page. At last, click **Downloads** to enter the download list and download the required program packages.

XI'AN NOVASTAR TECHNOLOGY CO., LTD.

6 Typical Networking

The MRV328 is applied to the LED display synchronous system which is generally composed of the LED display, receiving card, LED display controller (optional) and controller peripherals. The receiving card is connected to the LED display over HUB connectors.

The synchronous system requires connecting a computer to display the computer's images and texts on the LED display. The synchronous system's structure is shown in the following figure.

Figure 6-1 Sending card mode

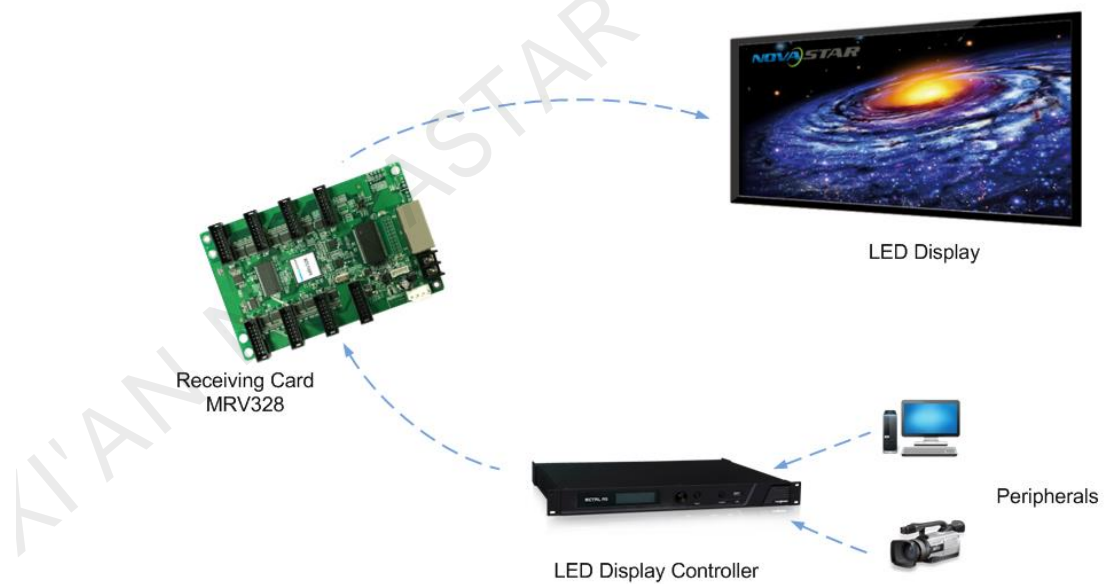
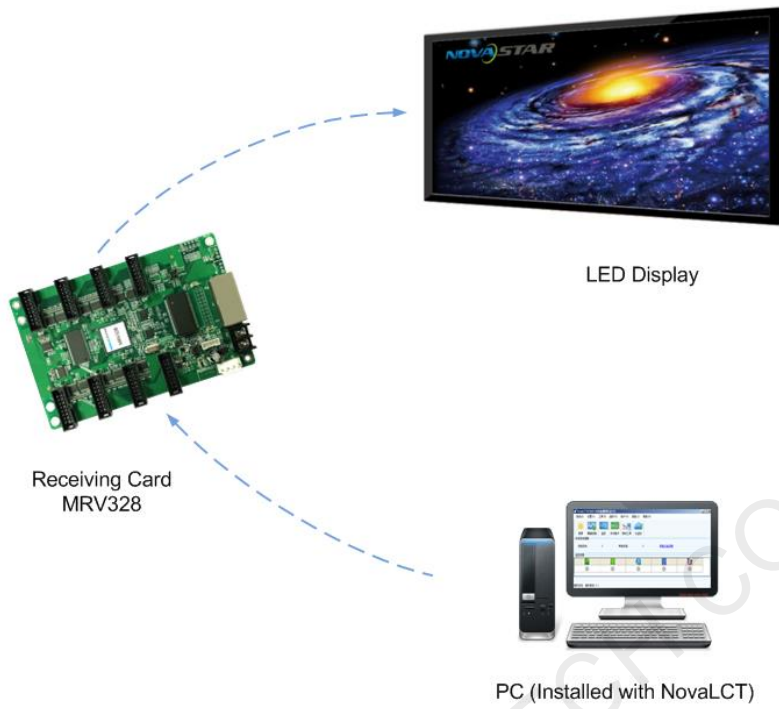


Figure 6-2 No sending card mode



7 Specifications

Input voltage	DC 3.3 V–5.0 V
Rated current	0.5 A
Rated power consumption	2.5 W
Operating temperature	-20°C–70°C
Storage temperature	-20°C–70°C
Operating humidity	10% RH–90% RH
Dimensions	144.0 mm x 91.5 mm x 16.0 mm
Net weight	85.5 g
Certifications	EMC Class A RoHS
Packing	An antistatic bag and anti-collision foam are prepared for each receiving card. Dimensions of the packing box: 650.0 mm x 500.0 mm x 200.0 mm, 100 receiving cards in each box.