MRV366
Receiving Card

Product Description

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Trademark

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Statement

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Change History

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

Contents

1 Safety

This chapter illustrates safety of the MRV366 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 MRV366 is a new receiving card developed by NovaStar. A single MRV366 loads up to 512x256 pixels.

The MRV366 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 MRV366 have fully concerned users' deployment, operating and maintenance scenarios, enabling easier deployment, more stable operating and more efficient maintenance.

Hardware design:

- Integrates 16 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

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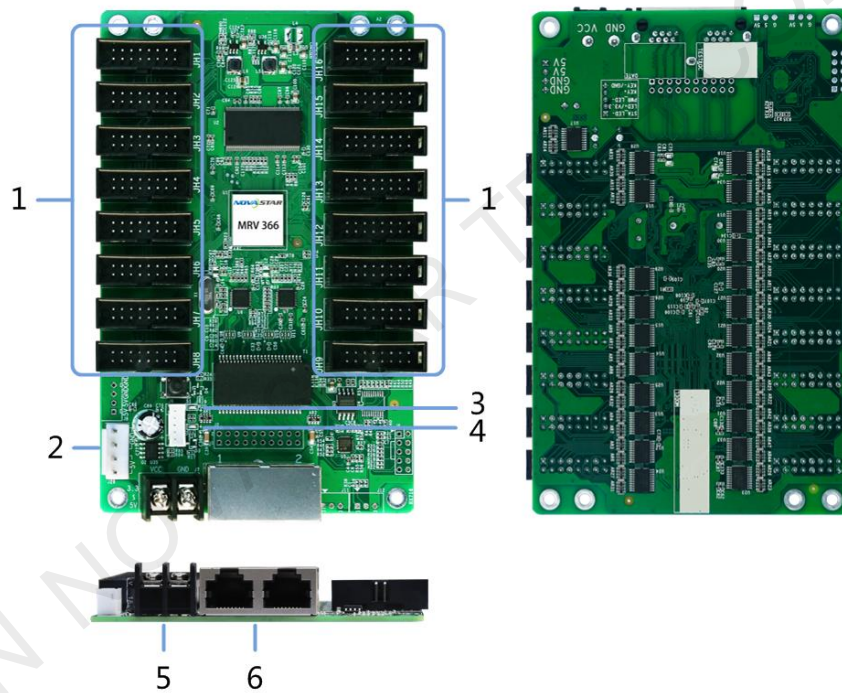
Product images provided in this file are for reference only, and the actual products shall prevail.

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 17.5 mm.

The unit of dimension chart is "mm". The location holes are connected to signal grounds (GND).
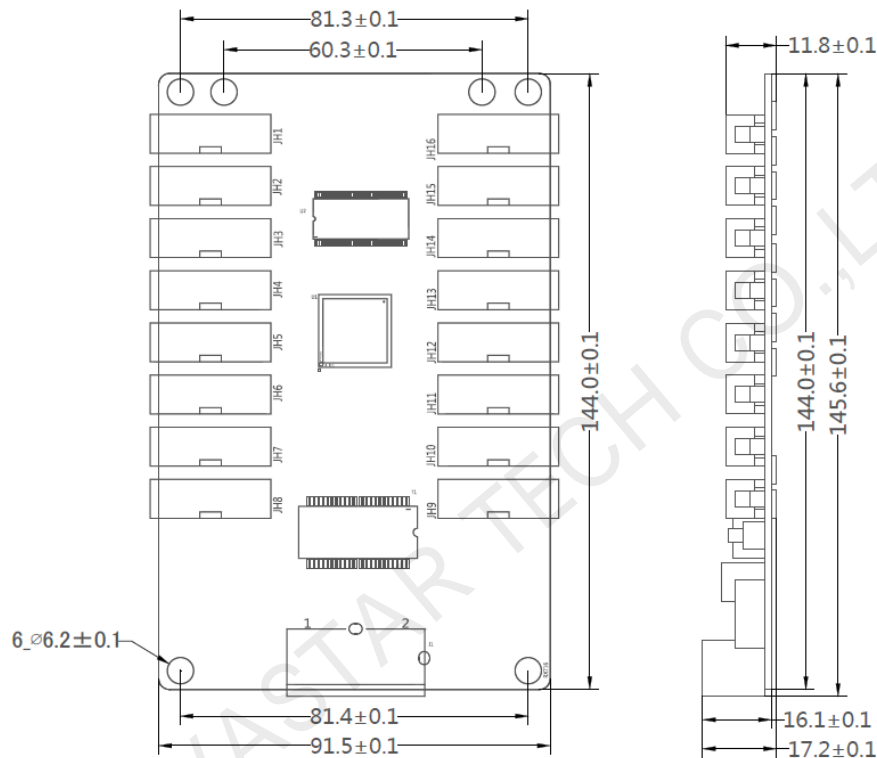
4.3 Indicators

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

JH1

Left	Pin		Pin	Right
GND	16		15	HOE1
HLAT1	14		13	HDCLK1
HD1	12		11	HC1
HB1	10		9	HA1
HE1	8		7	B2
G2	6		5	R2
GND	4		3	B1
G1	2		1	R1

JH2

Left	Pin		Pin	Right
GND	16		15	HOE2
HLAT2	14		13	HDCLK2
HD1	12		11	HC1
HB1	10		9	HA1
HE1	8		7	B4
G4	6		5	R4
GND	4		3	B3
G3	2		1	R3

JH3

Left	Pin		Pin	Right
GND	16		15	HOE3
HLAT3	14		13	HDCLK3
HD2	12		11	HC2
HB2	10		9	HA2
HE2	8		7	B6
G6	6		5	R6
GND	4		3	B5
G5	2		1	R5

JH4

Left	Pin		Pin	Right
GND	16		15	HOE4
HLAT4	14		13	HDCLK4
HD2	12		11	HC2
HB2	10		9	HA2
HE2	8		7	B8
G8	6		5	R8
GND	4		3	B7
G7	2		1	R7

JH5

Left	Pin		Pin	Right
GND	16		15	HOE5
HLAT5	14		13	HDCLK5
HD3	12		11	HC3
HB3	10		9	HA3
HE3	8		7	B10
G10	6		5	R10
GND	4		3	B9
G9	2		1	R9

JH6

Left	Pin		Pin	Right
GND	16		15	HOE6
HLAT6	14		13	HDCLK6
HD3	12		11	HC3
HB3	10		9	HA3
HE3	8		7	B12
G12	6		5	R12
GND	4		3	B11
G11	2		1	R11

JH7

Left	Pin		Pin	Right
GND	16		15	HOE7
HLAT7	14		13	HDCLK7
HD4	12		11	HC4
HB4	10		9	HA4
HE4	8		7	B14
G14	6		5	R14
GND	4		3	B13
G13	2		1	R13

JH8

Left	Pin		Pin	Right
GND	16		15	HOE8
HLAT8	14		13	HDCLK8
HD4	12		11	HC4
HB4	10		9	HA4
HE4	8		7	B16
G16	6		5	R16
GND	4		3	B15
G15	2		1	R15

JH9

Left	Pin		Pin	Right
GND	16		15	HOE9
HLAT9	14		13	HDCLK9
HD5	12		11	HC5
HB5	10		9	HA5
HE5	8		7	B18
G18	6		5	R18
GND	4		3	B17
G17	2		1	R17

JH10

Left	Pin		Pin	Right
GND	16		15	HOE10
HLAT10	14		13	HDCLK10
HD5	12		11	HC5
HB5	10		9	HA5
HE5	8		7	B20
G20	6		5	R20
GND	4		3	B19
G19	2		1	R19

JH11

Left	Pin		Pin	Right
GND	16		15	HOE11
HLAT11	14		13	HDCLK11
HD6	12		11	HC6
HB6	10		9	HA6
HE6	8		7	B22
G22	6		5	R22
GND	4		3	B21
G21	2		1	R21

JH12

Left	Pin		Pin	Right
GND	16		15	HOE12
HLAT12	14		13	HDCLK12
HD6	12		11	HC6
HB6	10		9	HA6
HE6	8		7	B24
G24	6		5	R24
GND	4		3	B23
G23	2		1	R23

JH13

Left	Pin		Pin	Right
GND	16		15	HOE13
HLAT13	14		13	HDCLK13
HD7	12		11	HC7
HB7	10		9	HA7
HE7	8		7	B26
G26	6		5	R26
GND	4		3	B25
G25	2		1	R25

JH14

Left	Pin		Pin	Right
GND	16		15	HOE14
HLAT14	14		13	HDCLK14
HD7	12		11	HC7
HB7	10		9	HA7
HE7	8		7	B28
G28	6		5	R28
GND	4		3	B27
G27	2		1	R27

JH15

Left	Pin		Pin	Right
GND	16		15	HOE15
HLAT15	14		13	HDCLK15
HD8	12		11	HC8
HB8	10		9	HA8
HE8	8		7	B30
G30	6		5	R30
GND	4		3	B29
G29	2		1	R29

JH16

Left	Pin		Pin	Right
GND	16		15	HOE16
HLAT16	14		13	HDCLK16
HD8	12		11	HC8
HB8	10		9	HA8
HE8	8		7	B32
G32	6		5	R32
GND	4		3	B31
G31	2		1	R31

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 MRV366 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.

6 **Typical Networking**

The MRV366 is applied to the LED display synchronous system which is generally composed of the LED display, receiving card, LED display controller 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.
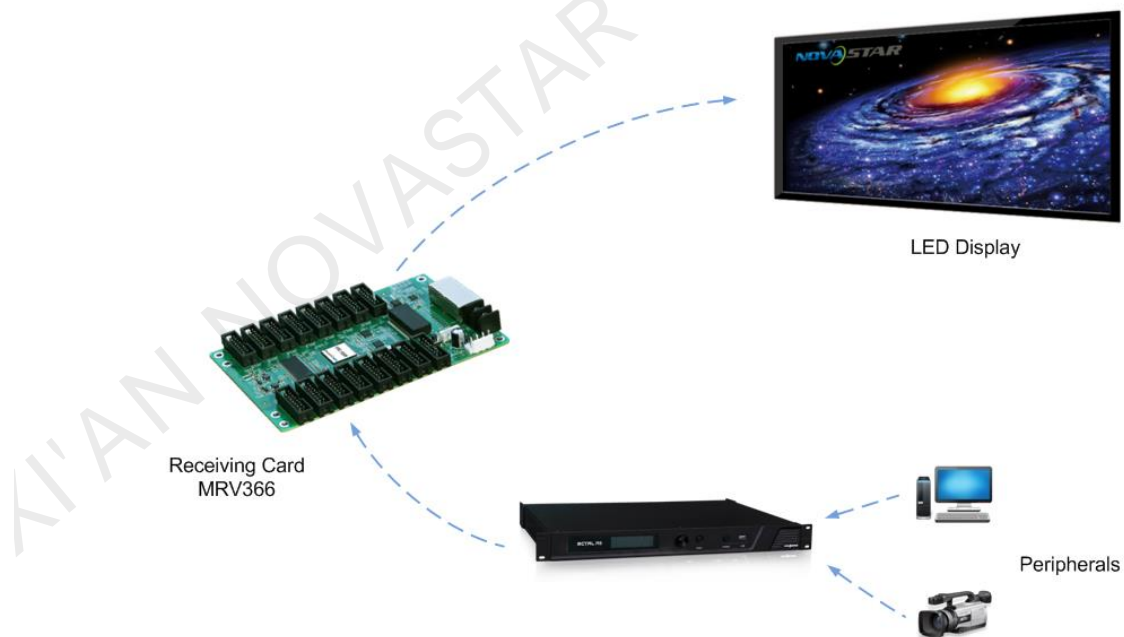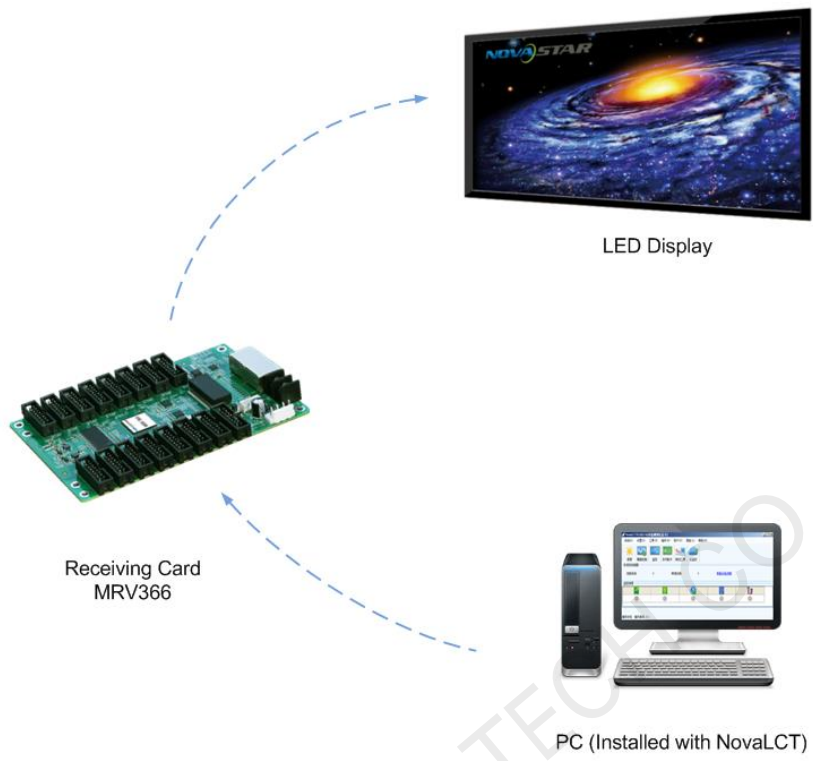
Figure 6-1 Sending card mode

Figure 6-2 No sending card mode

LED Display

Receiving Card
MRV366

PC (Installed with NovaLCT)

7 Specifications

Input voltage	DC 3.3 V–5.5 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	145.6 mm x 95.5 mm x 17.2 mm
Net weight	100.1 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.