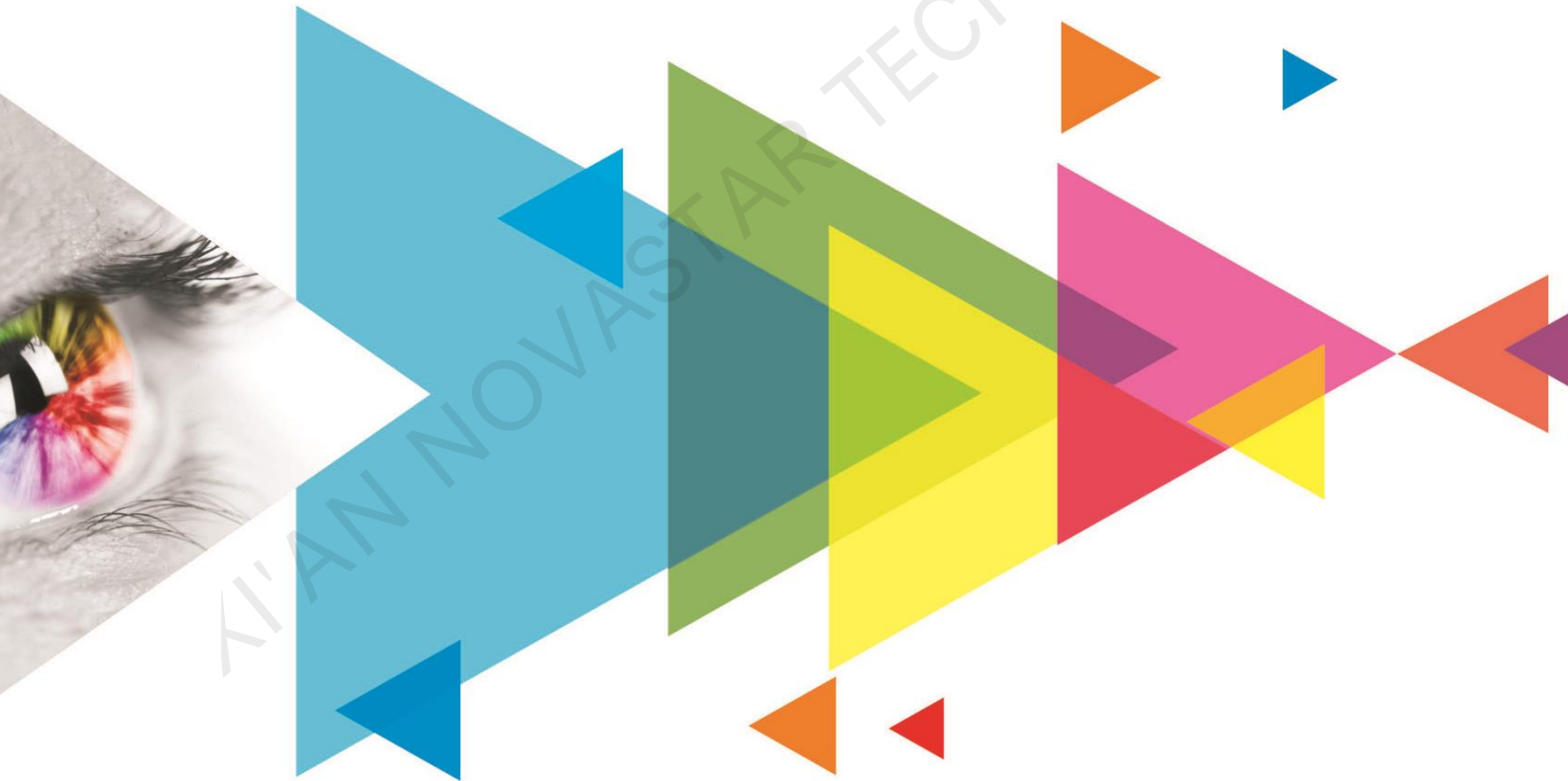


# KT8E

## Core Sending Card

V1.2.0



Specifications

## Change History

Document Version	Release Date	Description
V1.2.0	2021-05-14	Changed the product appearance.
V1.1.0	2020-11-25	Changed the product appearance.
V1.0.0	2020-06-24	First release

## Introduction

The KT8E is a core sending card specially designed by NovaStar for the application of LED display in a meeting room. A single KT8E loads an LED display up to 1920x1080@60Hz.

Featuring the standard VbyOne/HDMI connector, the KT8E can be easily integrated with any third-party Android system. The image displaying, control and management of LED display become very easy, allowing the LED display to have powerful interaction and playback capabilities, and diversified operations.

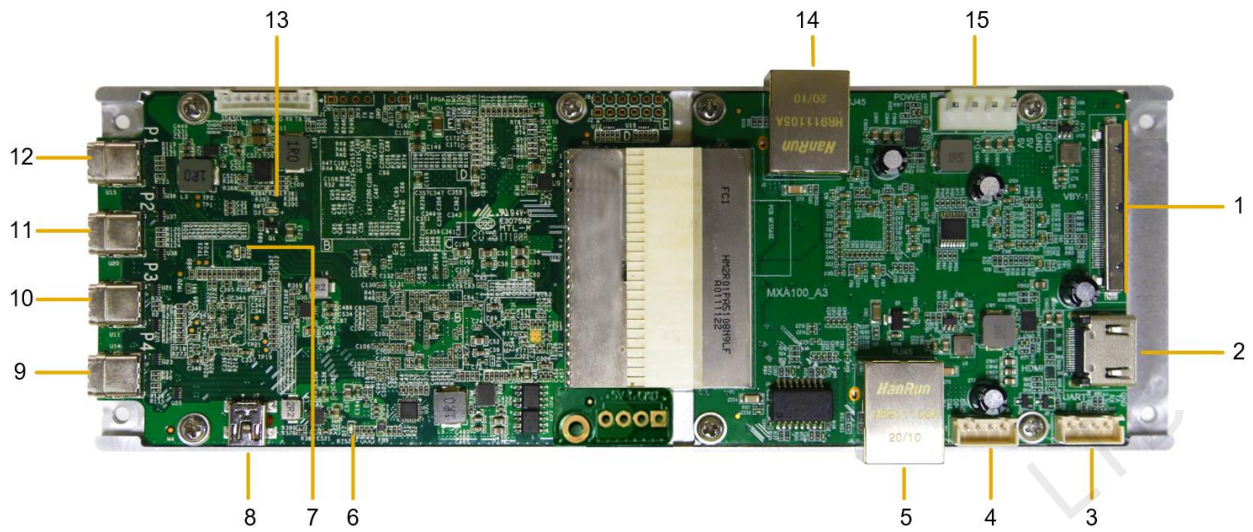
The KT8E supports the image quality improvement technologies of NovaStar. Working with the specified NovaStar receiving cards, it can enable the fine-pitch indoor LED display to have outstanding grayscale and color performance.

Thanks to its small size and modular design, the KT8E can be easily integrated into the LED display. It can be mainly used in various LED display applications for business meetings in governments and companies in many industries, such as design, health care and education.

## Features


- Capable of loading an LED display up to 1920x1080@60Hz (pixel-to-pixel display)
- Industry-standard input connectors
  - 1x VbyOne (8 lanes)
  - 1x HDMI
- 8x 1G Ethernet outputs
- Support for high bit-depth inputs: 8bit/10bit
- Color modes: RGB, YCrCb 4:4:4, YCrCb 4:2:2
- 2x Ethernet control ports
  - Connect to NovaLCT on the control computer.
- 1x Reserved USB 2.0 control port
  - Connect to NovaLCT on the control computer.
- 1x Reserved UART port
  - Work with the open serial protocol to control the LED display via a third-party Android card.
- Image scaling
  - Min.: 104x104 pixels; Max.: 2880x1620 pixels
- 3D function
  - Work with the 3D emitter and 3D glasses to allow for 3D display effects.
- HDR function
  - Work with the A8s or A10 Plus receiving card to support HDR10-Optima and HLG. The original brightness range and color space of the video source can be reproduced, allowing for a more lifelike image.
- Support for the Image Booster Engine
  - Work with the A8s or A10s Plus receiving card to improve the display effect from the following 3 dimensions (The actual effect depends on the driver IC).
    - Color Management: Manage the color gamut of the screen to enable more accurate colors on the screen.
    - Precise Grayscale (individual correction of 65,536 levels of 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 brightness spikes, brightness dips, color cast and mottling, allowing for a smoother and uniform image.
    - 22bit+: Improve the LED display grayscale by 64 times to avoid grayscale loss due to low brightness and allow for more details in dark areas and a smoother image.
- Pixel level brightness and chroma calibration
  - Work with NovaLCT and NovaCLB to support 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.

## Appearance



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

Table 1-1 Connectors

Type	No.	Connector	Description
Input	1	VbyOne	1x VbyOne (8 lanes, 3840x2160@60Hz) input connector to connect a third-party Android card
	2	HDMI	<ul style="list-style-type: none"> <li>1x HDMI input connector to connect a third-party Android card</li> <li>Input resolutions up to 3840x2160@60Hz</li> <li>Do NOT support interlaced signal input.</li> <li>HDCP 1.4 compliant</li> </ul>
Output	9/10/11	Type-C	Reserved
	12	Type-C (8x RJ45)	<p>Connect to an Ethernet module, shown as follows.</p>  <ul style="list-style-type: none"> <li>8x RJ45 (1Gps) outputs</li> <li>Output resolutions up to 1920x1080@60Hz Max. width: 2880 pixels; Max. height: 1620 pixels</li> <li>Support backup between Ethernet ports. Do NOT support</li> </ul>


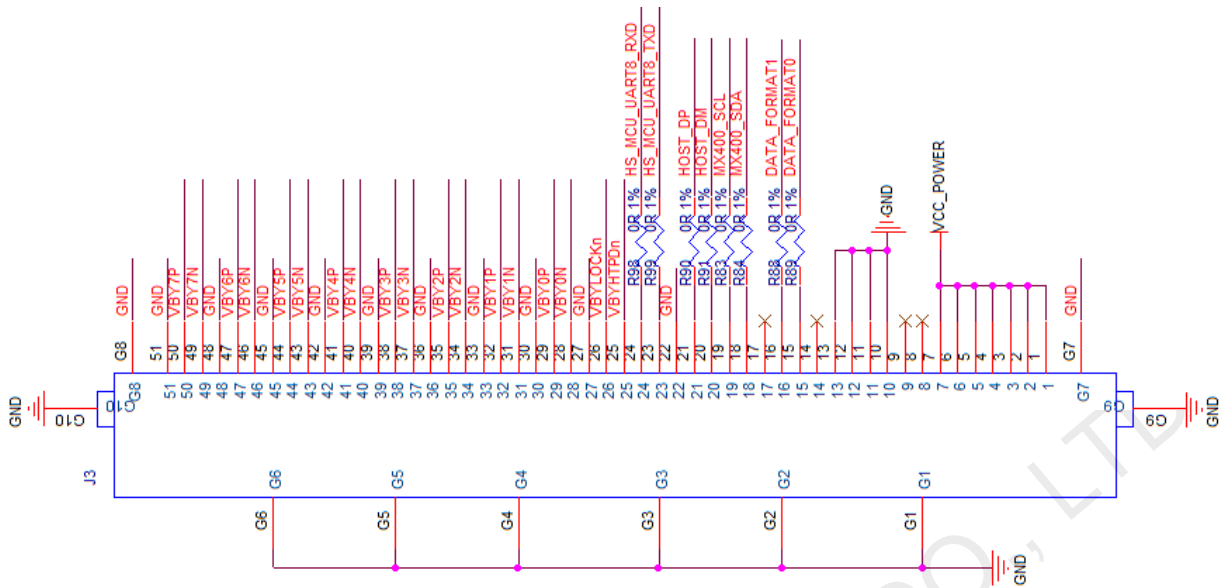
Type	No.	Connector	Description
			backup between devices.  <b>Note:</b> Users must use the Type-C To Type-C cable supplied with this product to connect this connector to the Ethernet module, and the side with a "T" mark must face upwards.
Control	3	UART (reserved)	<ul style="list-style-type: none"> <li>• Baud rate: 1,000,000 bps</li> <li>• Work with the open serial protocol to control the LED display via a third-party Android card.</li> </ul>
	4	USB 2.0 (reserved)	Communicate with the third-party Android card.
	5/14	ETHERNET	<ul style="list-style-type: none"> <li>• Fast Ethernet ports. Default IP address: 192.168.0.10</li> <li>• Connect to the NovaLCT software on the control computer.</li> </ul>
	8	Mini USB port	Connect to the NovaLCT software on the control computer.
Power	15	DC 4.4 V to 5.2 V	

Table 1-2 Indicator status

Indicator	No.	Status	Description
Status indicator (Red)	6	Always on	The power supply is normal.
		Off	The power is not supplied, or the power supply is abnormal.
MCU indicator (Green)	7	Flash once every 1s	The MCU is functioning normally.
		Flash 4 times every 1s	The firmware is being updated.
FPGA indicator (Green)	13	Flash 4 times every 1s	The video input is available.
		Flash once every 1s	The video input is unavailable.

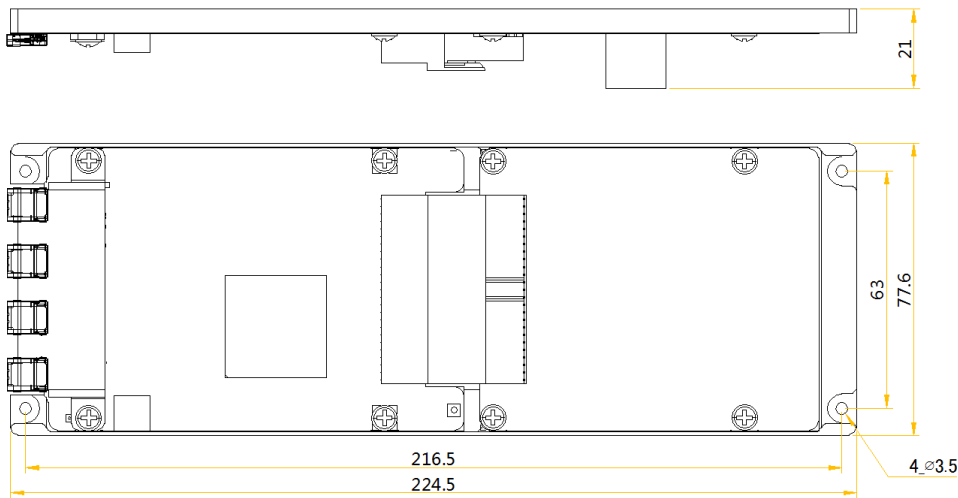
## Pins of VbyOne Connector



PIN	Symbol	Description
1	VCC_POWER	NC
2	VCC_POWER	NC
3	VCC_POWER	NC
4	VCC_POWER	NC
5	VCC_POWER	NC
6	VCC_POWER	NC
7	VCC_POWER	NC
8	NC	
9	NC	
10	GND	GND
11	GND	GND
12	GND	GND
13	GND	GND
14	NC	
15	DATA_FORMAT0	Reserve
16	DATA_FORMAT1	Reserve
17	NC	
18	MX400_SDA	Reserve
19	MX400_SCL	Reserve
20	HOST_DM	Reserve

21	HOST_DP	Reserve
22	GND	Ground
23	HS_MCU_UART8_TXD	Reserve
24	HS_MCU_UART8_RXD	Reserve
25	VBYHTPDn	Hot Plug Detect
26	VBYLOCKn	Lock Detect
27	GND	Ground
28	VBY0N	First pixel Negative VB1 differential data input.Pair 0
29	VBY0P	First pixel Positive VB1 differential data input.Pair 0
30	GND	Ground
31	VBY1N	First pixel Negative VB1 differential data input.Pair 1
32	VBY1P	First pixel Positive VB1 differential data input.Pair 1
33	GND	Ground
34	VBY2N	First pixel Negative VB1 differential data input.Pair 2
35	VBY2P	First pixel Positive VB1 differential data input.Pair 2
36	GND	Ground
37	VBY3N	First pixel Negative VB1 differential data input.Pair 3
38	VBY3P	First pixel Positive VB1 differential data input.Pair 3
39	GND	Ground
40	VBY4N	First pixel Negative VB1 differential data input.Pair 4
41	VBY4P	First pixel Positive VB1 differential data input.Pair 4
42	GND	Ground
43	VBY5N	First pixel Negative VB1 differential data input.Pair 5
44	VBY5P	First pixel Positive VB1 differential data input.Pair 5
45	GND	Ground
46	VBY6N	First pixel Negative VB1 differential data input.Pair 6
47	VBY6P	First pixel Positive VB1 differential data input.Pair 6
48	GND	Ground
49	VBY7N	First pixel Negative VB1 differential data input.Pair 7
50	VBY7P	First pixel Positive VB1 differential data input.Pair 7
51	GND	Ground

## Dimensions



Tolerance:  $\pm 0.3$  Unit: mm

## Specifications

Electrical Specifications	Input voltage	DC 4.4 V to 5.2 V
	Rated current (typical)	1.8 A
	Rated power consumption (typical)	9 W
Operating Environment	Temperature	-20°C to +60°C
	Humidity	10% RH to 75% RH, non-condensing
Storage Environment	Temperature	-25°C to +125°C
Physical Specifications	Dimensions	224.5 mm x 77.6 mm x 21.0 mm
	Net weight	0.24 kg
Packing information	Packing box	355 mm x 275 mm x 85 mm
	List	<ul style="list-style-type: none"> <li>• 1x KT8E</li> <li>• 1x Ethernet module</li> <li>• 1x Type-C To Type-C cable (1m)</li> <li>• 1x Mini USB-A cable</li> <li>• 1x Certificate of Approval</li> </ul>

### Note

The typical values are measured under the following conditions. The values may differ due to the onsite conditions and different measuring states.

- At room temperature 20°C.
- An HDMI video source is used.
- An Ethernet module is connected with its 8 Ethernet ports fully loaded for output. (Other connectors of the core sending card are not used.)

**Copyright © 2021 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 trademark of Xi'an NovaStar Tech Co., Ltd.

#### **Statement**

Thank you for choosing NovaStar's product. 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. If you experience any problems in use or have any suggestions, please contact us via the contact information given in this document. We will do our best to solve any issues, as well as evaluate and implement any suggestions.

[Official website](http://www.novastar.tech)  
www.novastar.tech

[Technical support](mailto:support@novastar.tech)  
support@novastar.tech