Colorlight

E120

Receiving Card

Specification V1.2.0

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Revision History

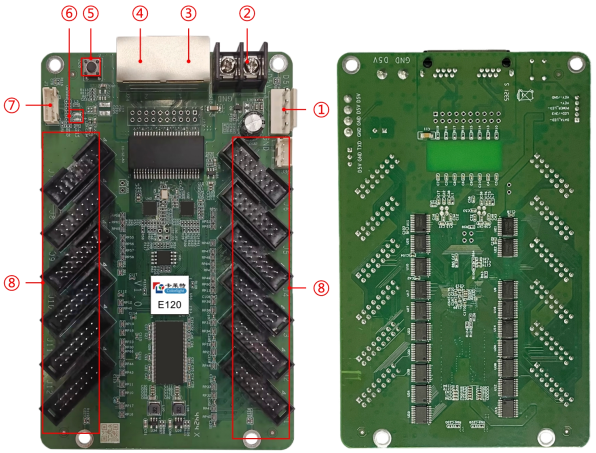
Version	Release Date	Description
V1.1.0	February 15, 2022	Initial release
V1.2.0	October 31, 2026	1. Optimize document format 2. Added the back appearance of the product. 3. Delete serial data group

01 Introduction

1.1 Overview

The Colorlight E120 is a cost-effective receiving card designed to help customers reduce costs, minimize failure points, and lower failure rates. A single card supports up to 512×512 pixels and 24 groups of parallel data. The integration of HUB connectors enhances display performance while ensuring greater reliability, convenience, and cost savings.

1.2 Appearance



No.	Item	Description	
1	Power input 1	Connects to a DC 3.8~5.5V power supply for the receiving card (Choose either of them)	
2	Power input 2		
3	Ethernet port A	RJ45 Ethernet ports for transmitting network signals. Each port can be used for input or output (auto-identified by the system).	
4	Ethernet port B		
5	Test button	With testing program, enabling test patterns such as solid red/green/blue/white, and horizontal/vertical scanning methods.	
6	Power indicator	Steady RED: Normal power supply	
	Signal indicator	Blinking GREEN (once/sec)	Receiving card: Normal operation Network cable: Normal connection
		Blinking GREEN (4 times/sec)	Loop redundancy active; receiving card in backup mode
		Blinking GREEN (10 times/sec)	Receiving card: Normal operation Cabinet: Highlighted
7	External connector	For external indicator and test button.	
8	HUB connector	HUB75 data interfaces J1-J12, connecting to the LED panel (see *03 Pin Definitions* for details).	

NOTE:

The illustration is for reference only. Actual products may vary.

02 Specifications

2.1 Features

Display Effect

- 8-bit video input
- Frame range: 23.98 – 240Hz
- Low latency
- Better grayscale at low brightness

Calibration

- Pixel-level brightness and chroma calibration

Easy Maintenance

- Full-screen highlighting and numbering
- Image rotation
- seam correction
- Data offset
- Quick firmware upgrade
- Firmware backup and readback

Stable and Reliable

- Loop redundancy
- Cable status monitoring
- 24/7 uninterrupted work

NOTE:

For detailed functions, see *Chapter 06 Appendix*. For further assistance, please contact Colorlight technical support.

2.2 Performance

Control System

Control area per card	Maximum load capacity (without calibration): Common driver ICs: 256×512 pixels PWM driver ICs: 512×512 pixels SHIXIN driver ICs: 512×512 pixels
Ethernet port switching	Flexible use for either input or output
Grayscale level	Up to 65,536

Module Compatibility

Driver ICs	Common, PWM, and SHIXIN
Scan methods	Any scan type from static to 1/128 scan
Module specification	Maximum 1,024 pixels 1 scan (including cascading)
Cabling direction	Cascading from left to right, right to left, top to bottom, or bottom to top
Data groups	24 groups of parallel RGB data; Can be freely exchanged
Data splitting	Common driver ICs: 2~8 splits horizontally, 2~4 splits vertically; PWM & SHIXIN driver ICs: 2~8 splits horizontally or vertically
Empty point/row/column	Supports emptying any point, row, or column

Cabinet-Level Monitoring

Cable monitoring	Monitors the total number of data packets and error packets, diagnosing network quality to prevent potential risks

Pixel-Level Calibration

Brightness calibration	8-bit
Chroma calibration	8-bit

Others

Optional	Irregular-shaped module construction

2.3 Hardware

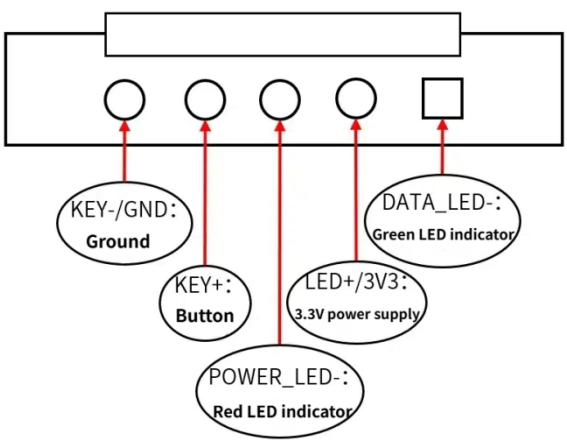
Physical Parameters (W×H×D)	
Product dimensions	145.2mm (5.72")×91.7mm (3.61")×18.4mm (0.72")
Packaging dimensions	603.0mm (23.74")×190.0mm (7.48")×501.0mm (19.72")
Packing specifications	Standard blister tray, 100 cards per carton
Hardware connector	HUB75
Transmission rate	1 Gbps
Communication distance	CAT5e ⩽ 100m
Compatible devices	Gigabit switch, Gigabit fiber transceiver
Weight	
Net weight	95g (0.21lbs)
Electrical Parameters	
Input power	DC 3.8–5.5 V, 0.6 A
Rated power	3.0 W
Operating Environment	
Temperature	–25°C to 75°C (–13°F to 167°F)
Humidity	0–80% RH, non-condensing
Storage Environment	
Temperature	-40℃ to 125℃ (-40°F to 257°F)
Humidity	0–90% RH, non-condensing

03 Pin Definitions

HUB75 Parallel Data

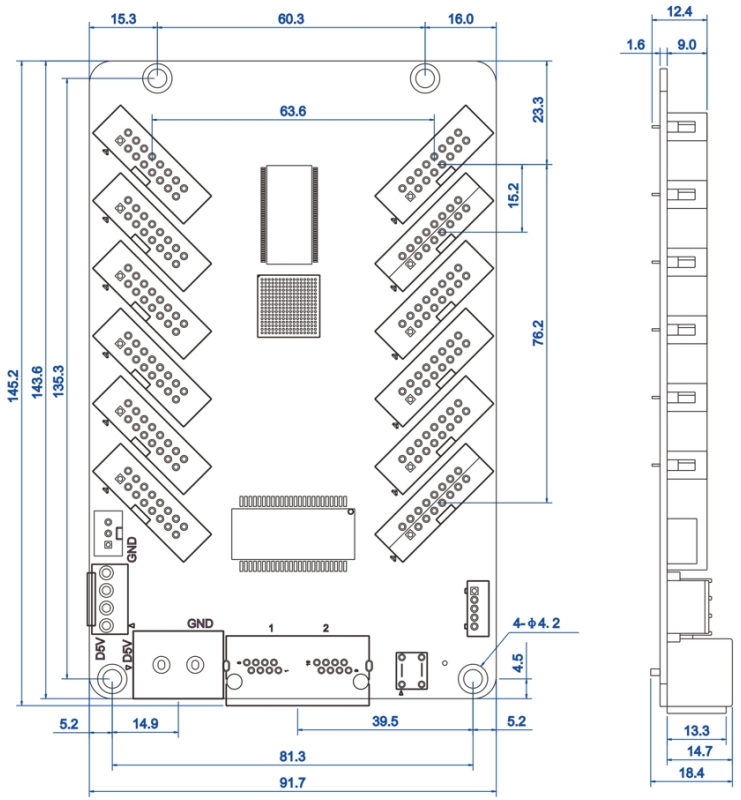
Data Signal			Scan Signal			Control Signal	
GD1	GND	GD2	E	B	D	LAT	GND
2	4	6	8	10	12	14	16
1	3	5	7	9	11	13	15
RD1	BD1	RD2	BD2	A	C	CLK	OE
Data Signal				Scan Signal		Control Signal	

External Connectors



04 Reference Dimensions

Unit: mm, Tolerance: ±0.15mm



NOTE:

To design molds or drill mounting holes, please contact Colorlight technical support.

05 Statements

5.1 Certifications

RoHS

EMC requires a compatible cabinet design. Please contact Colorlight technical support if needed.

NOTE:

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact Colorlight to confirm or address the problem as soon as possible. Otherwise, the customer shall be responsible for the legal risks or Colorlight has the right to claim compensation.

5.2 Legal Statement

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06 Appendix

6.1 Function Description

Display Effect

8bit	8-bit video input/output: 256 grayscale levels per color, supporting up to 16,777,216 color combinations.
High frame rate	Adaptive frame rate technology significantly enhances image smoothness and reduces motion blurring. Supports standard and non-integer frame rates: 30/50/59.94/60/100Hz. Outputs high frame rate images at 120/144/240Hz.
Low latency	Reduces the data transmission time of the video source to 1 frame, effectively ensuring synchronization of the displayed image.
Better grayscale at low brightness	The optimized gamma table algorithm effectively addresses grayscale loss caused by low brightness, improving grayscale performance under low brightness conditions.

Calibration

8bit calibration	Pixel-level brightness and chroma calibration with high prevision, which effectively eliminates LEDs color difference, ensuring an enhanced display with uniform color and brightness.

Easy Maintenance

Cabinet highlighting	Supports highlighting the target cabinet using the control software. The highlighted cabinet borders flash, and the blinking frequency of the cabinet's indicator changes, enabling efficient maintenance from the front and back sides of the LED screen.
Quick numbering	Works with the control software to quickly number the receiving cards connected to the selected network ports based on their actual routing sequence, facilitating the setting of screen mapping.
Image rotation	Supports rotating the image on a single cabinet by 90°/180°/270°.

Data offset	Supports image offset by data groups, suitable for basic irregular-shaped screens.

Hardware Monitoring

Cable detection	Detects data transmission status among receiving card and bit error rate, quickly identifying cabinets with hardware connection errors to facilitate maintenance.

Redundancy

Loop redundancy	The redundant port enables an extra connection to the sending device, enhancing cascading reliability. If the primary connection fails, the backup seamlessly takes over, ensuring uninterrupted display.
Firmware redundancy	Secures upgrades without the risk of firmware loss due to cable disconnection or power interruption.

Colorlight

Official Website

Colorlight Cloud Tech Ltd

Service Phone：4008 770 775
Official Website：www.colorlightinside.com
Head Office Address: 37F-39F, Block A, Building 8, Zone C, Phase III,
Vanke Cloud City, Xili Street, Nanshan District, Shenzhen, China