Colorlight

N6

Receiving Card

Specification V2.0.1

Overview

N6 is an ultra-small receiving card launched by Colorlight for outdoor fixed display and LED lighting screen. N6 single card can carry a maximum of 512 × 384 pixels and support up to 24 groups of parallel data or 64 groups of serial data. The size is only 66.0×25.4×8.4mm, suitable for application scenarios such as light bar screen, mesh screen, point light source, special-shaped screen, etc., which can effectively save design space, reduce screen structure design and reduce design difficulty.

Features

Display effect

- Support 8bit Video source input
- Support color temperature adjustment
- Support better gray at low brightness
- Support 30/50/60/100/120 frame rate

Correction processing

- Support pixel-to-pixel calibration in brightness and chromaticity

Easy maintenance

- Support screen rotation
- Support data group offset
- Support test input key
- Support power on the screen and gradually brighten
- Support no signal display status
- Supports quick firmware upgrade and quick release of correction coefficients
- Support any pumping row, pumping column and pumping point

Stable and reliable

- Support loop redundancy
- Support ethernet cable status monitoring
- Support firmware program redundancy and readback
- Support 7×24h uninterrupted work

Feature details

Display effect

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8bit	Support 8bit color depth video source input and output, monochrome grayscale is 256, can be matched with 16777216 kinds of mixed colors.
Frame rate	Adaptive frame rate technology, not only supports30/50/60/100Hz regular frame rates, but also outputs and displays 120hz high frame rate pictures, which greatly improves picture fluency and reduces drag film. (Note: it will affect the load).
Color temperature adjustment	Support adjustment of color temperature, that is, saturation adjustment, to enhance the expressiveness of the picture.
Better gray at low brightness	By optimizing the gamma meter algorithm, the display screen can maintain the integrity and perfect display of gray scale when reducing the brightness, showing the display effect of low brightness and high gray scale.
8bit calibration	8bit precision brightness and chromaticity correction point by point, which can effectively eliminate the chromatic aberration of the lamp point, ensure the uniformity and consistency of the color brightness of the entire screen, and improve the overall display effect.
Shortcut operation	
Image rotation	Support the single cabinet image to be rotated at 90°/180°/270° angles, and with part of the main control, the single cabinet image can be rotated and displayed at any angle.
Data group offset	Supports screen offset in units of data groups, suitable for simple special-shaped screens
Test input key	After the signal line is disconnected, the display state on the module or box will switch once every time the key is pressed. The order is: red, green, blue, white, horizontal line, vertical line, left slash, right slash, flower dot, Gradient red, gradient green, gradient blue, gradient white, black
power on the screen and gradually brighten	When power is turned on or no signal is switched to a signal, the screen will gradually brighten
No signal display status	When there is no signal input, you can choose to black screen or keep the last frame display
Hardware monitoring	
Bit error detection	It supports the detection of data transmission quality and error code between receiving cards, and can easily and quickly identify the cabinet with abnormal hardware connection, which is convenient for maintenance.
Redundancy	
Loop redundancy	The redundant Ethernet port is used to increase the connection with the transmitting equipment and increase the reliability of cascading between equipment. When one circuit fails, it can realize seamless switching to the

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	other circuit and ensure the normal display of the screen.
Firmware redundancy	It supports firmware program backup and can be upgraded safely. There is no need to worry about the loss of firmware program due to cable disconnection or power interruption during the upgrade process.

Basic parameters

Control System Parameters	
Control Area	Normal chips: 512×256pixels, PWM chips: 512×384 pixels
Ethernet Port Exchange	Supported, arbitrary use
Gray Level	Maximum 65536 levels
Display Module Compatibility	
Chip Support	Normal chips , PWM chips and DS chips
Scan Type	Support up to 1/64 scan
Module Specifications Supported	Support module of any row and column within 8192 pixels
Cable Direction	Support route from left to right, from right to left, from top to bottom, from bottom to top
Data Group	24 groups of parallel RGB full color data and 64 groups of serial RGB data, data groups can be exchanged freely
Data Folded	Support horizontal 2~8 fold or vertical 2~4 fold
Module pumping point, row and column	Support any pumping point and any pumping row and any pumping column
Monitoring Function (In conjunction with the monitoring module)	
Bit Error Monitoring	Monitor the total number of data packets and error packets to check network quality
Pixel-to-Pixel Calibration	
Brightness Calibration	Support
Chromaticity Calibration	Support
Other features	
Redundancy	Support loop redundancy and firmware redundancy
Optional functions	shaped screen and serial port expansion LCD display

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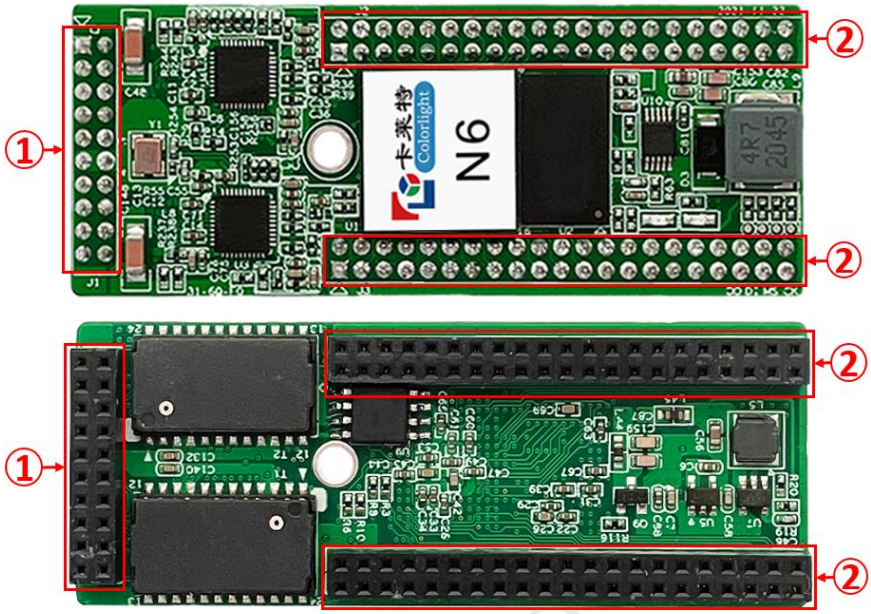
Hardware

Appearance



Interface

S/N	Name	Function
1	Power supply	Connect the DC 3.8V~12V power supply to supply power to the receiving card
	Network port	Used to transmit network signals without distinguishing between input and output
2	Dual 42Pin interface	Connect with the display’ s HUB or module and see pin definition for more details

Note: The product photos in this article are for reference only, and only the actual purchase shall prevail.

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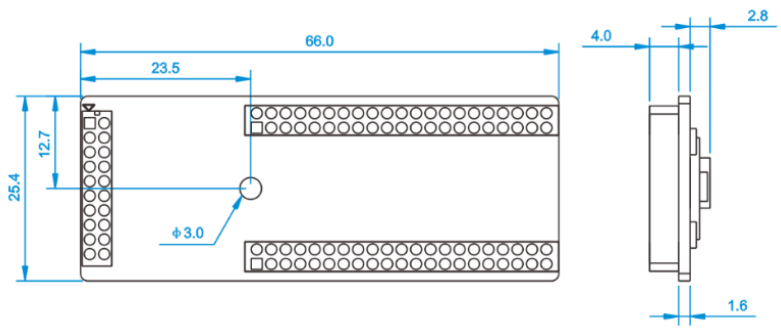
Equipment Specifications

Physical Specifications	
Hardware interface	Dual 42Pin interface
Ethernet port transmission rate	1Gb/s
Communication Distance	Recommended: CAT5e cable≤100m
Compatible with Transmission Equipment	Gigabit switch, Gigabit fiber converter, Gigabit fiber switch
Size	66.0×25.4×8.4mm
Weight	13g
Electrical specification	
Voltage	DC 3.8V~12V，0.4A
Rated power	2.0W
Body Static Resistance	2KV
Operating environment	
Temperature	-20°C~70°C （-4°F~158°F
Humidity	0%RH-80%RH, no condensation
Storage and transport environment	
Temperature	-30°C~85°C （-22°F~176°F
Humidity	0%RH-90%RH, no condensation
Package information	
Packaging rules	Standard blister box device, 8 cards per box, 800 cards per carton
Package size	550.0mm×398.0mm×180.0mm
Certification Information	
RoHS.	

Dimensions

Unit: mm

Tolerance: ±0.3mm



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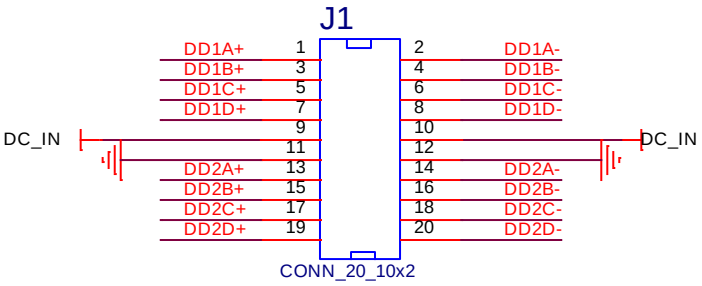
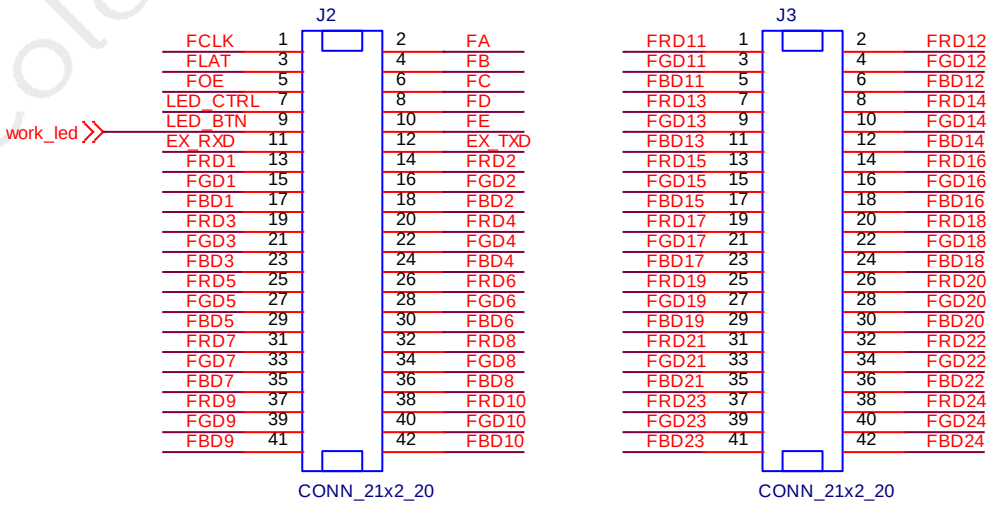
Definition of Pins

Ethernet output interface



J1					
Instructions	Instructions	Instructions		Instructions	Instructions
Ethernet port 1 signal pin	DD1A+	1	2	DD1A-	Ethernet port 1 signal pin
	DD1B+	3	4	DD1B-	
	DD1C+	5	6	DD1C-	
	DD1D+	7	8	DD1D-	
Power supply	DC_IN	9	10	DC_IN	Power supply
Ground connection	GND	11	12	GND	Ground connection
Ethernet port 2 signal pin	DD2A+	13	14	DD2A-	Ethernet port 2 signal pin
	DD2B+	15	16	DD2B-	
	DD2C+	17	18	DD2C-	
	DD2D+	19	20	DD2D-	

24 groups of parallel data interfaces



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J2					
Instructions	Instructions	Instructions		Instructions	Instructions
Serial clock	FCLK	1	2	FA	Row decoding signal
Latch signal	FLAT	3	4	FB	
Display enable， it is GCLK when the LED display use PWM chips	FOE	5	6	FC	
Blanking	LED_CTRL	7	8	FD	
Test input key/ Running lights	LED_BTN/ work_led	9	10	FE	
Serial port receiver	EX_RXD	11	12	EX_TXD	Serial port sender
RGB output	FRD1	13	14	FRD2	RGB output
	FGD1	15	16	FGD2	
	FBD1	17	18	FBD2	
	FRD3	19	20	FRD4	
	FGD3	21	22	FGD4	
	FBD3	23	24	FBD4	
	FRD5	25	26	FRD6	
	FGD5	27	28	FGD6	
	FBD5	29	30	FBD6	
	FRD7	31	32	FRD8	
	FGD7	33	34	FGD8	
	FBD7	35	36	FBD8	
	FRD9	37	38	FRD10	
	FGD9	39	40	FGD10	
	FBD9	41	42	FBD10	

J3					
Instructions	Instructions	Instructions		Instructions	Instructions
RGB output	FRD11	1	2	FRD12	RGB output
	FGD11	3	4	FGD12	
	FBD11	5	6	FBD12	
	FRD13	7	8	FRD14	
	FGD13	9	10	FGD14	
	FBD13	11	12	FBD14	
	FRD15	13	14	FRD16	
	FGD15	15	16	FGD16	
	FBD15	17	18	FBD16	
	FRD17	19	20	FRD18	
	FGD17	21	22	FGD18	
	FBD17	23	24	FBD18	
	FRD19	25	26	FRD20	

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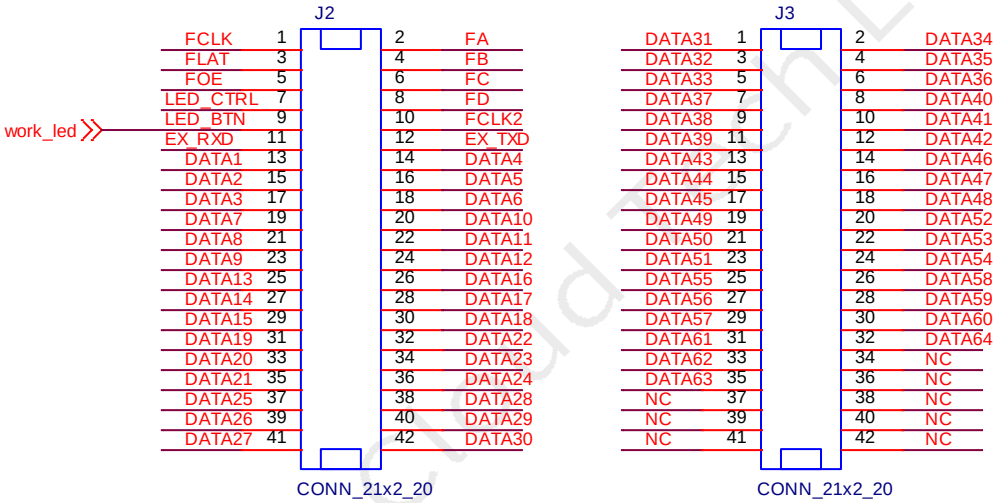
	FGD19	27	28	FGD20	
	FBD19	29	30	FBD20	
	FRD21	31	32	FRD22	
	FGD21	33	34	FGD22	
	FBD21	35	36	FBD22	
	FRD23	37	38	FRD24	
	FGD23	39	40	FGD24	
	FBD23	41	42	FBD24	

64 groups of serial data interfaces



J2					
Instructions	**Instructions**	**Instructions**		**Instructions**	**Instructions**
Serial clock	FCLK	1	2	FA	Row decoding signal
Latch signal	FLAT	3	4	FB	
Display enable，it is GCLK when the LED display use PWM chips	FOE	5	6	FC	
Blanking	LED_CTRL	7	8	FD	
TEST input key/ Running lights	LED_BTN/ work_led	9	10	FCLK2	Serial clock 2
Serial port receiver	EX_RXD	11	12	EX_TXD	Serial port sender
RGB output	DATA1	13	14	DATA4	RGB output
	DATA2	15	16	DATA5	
	DATA3	17	18	DATA6	
	DATA7	19	20	DATA10	

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	DATA8	21	22	DATA11	
	DATA9	23	24	DATA12	
	DATA13	25	26	DATA16	
	DATA14	27	28	DATA17	
	DATA15	29	30	DATA18	
	DATA19	31	32	DATA22	
	DATA20	33	34	DATA23	
	DATA21	35	36	DATA24	
	DATA25	37	38	DATA28	
	DATA26	39	40	DATA29	
	DATA27	41	42	DATA30	
J3					
Instructions	Instructions	Instructions		Instructions	Instructions
RGB output	DATA31	1	2	DATA34	RGB output
	DATA32	3	4	DATA35	
	DATA33	5	6	DATA36	
	DATA37	7	8	DATA40	
	DATA38	9	10	DATA41	
	DATA39	11	12	DATA42	
	DATA43	13	14	DATA46	
	DATA44	15	16	DATA47	
	DATA45	17	18	DATA48	
	DATA49	19	20	DATA52	
	DATA50	21	22	DATA53	
	DATA51	23	24	DATA54	
	DATA55	25	26	DATA58	
	DATA56	27	28	DATA59	
	DATA57	29	30	DATA60	
	DATA61	31	32	DATA64	
	DATA62	33	34	NC	Empty
	DATA63	35	36	NC	
Empty	NC	37	38	NC	
	NC	39	40	NC	
	NC	41	42	NC	

Note: LED_BTN and work_led are signal multiplexing pins, the running indicator is enabled by default, and displayed as a key test signal during key test; FE and FCLK2 are signal multiplexing pins, which are used as row decoding signals in parallel data, and are used as line decoding signals in parallel data. As the second serial clock in the row data, 128 groups of serial data expansion can be realized. When using 128 groups of serial data expansion mode, DATA65～DATA128 correspond to the interface data of multiplexing DATA1～DATA64.

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