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A5X

Receiving card

Specification V4.0

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1 Update records

Document version	Hardware version	Release time	update record
V4.0	A5X（V1.0.0）	June 20(th), 2025	First release

2 product introduction

A5X is a high-end receiving card with small size and large load independently developed by Mooncell. The maximum load resolution of a single card is 400×400(PWM).

Support 18-bit,pixel-by-pixel chromaticity correction, low delay, RGB independent Gamma adjustment, 90 multiple rotation of the screen, serial number detection of the receiving card, configuration parameter readback and other functions to improve the screen display effect and user experience;

High-precision connector interface is used for communication, which is dustproof and shockproof, with high stability and supports up to 10 sets of RGB parallel data; The hardware design integrates network transformer, which simplifies the design, improves electromagnetic compatibility, has strong LED driver chip compatibility, and is suitable for the construction of various field environments.

3 product characteristics

3.1 Improve the display effect

- 18bit

  Enabling 18bit in the software can increase the gray scale of LED display screen by 4 times, effectively deal with the gray scale loss caused by brightness reduction of LED display screen, optimize the pitting problem caused by low gray, make the low gray transition natural, and make the image display more delicate.

- Brightness correction by pixels

  With the correction software, the brightness and chromaticity of each pixels point of the large screen are corrected, which effectively eliminates the color difference, makes the brightness and chromaticity of the display screen highly consistent, and improves the image quality of the display screen.

- Low delay

  Reduce the delay of the video source at the receiving card end, and the delay is as low as 1 frame (for the lamp board of the driving IC using built-in RAM).

- 3D

  The 3D picture effect needs to be viewed with 3D glasses, and the format of the 3D signal is transmitted to the 3D glasses by connecting the 3D signal transceiver.

- RGB independent Gamma adjustment

  With the independent master control and software supporting RGB independent Gamma adjustment, the problems such as uneven low gray and white balance drift of the display screen are effectively controlled by adjusting "red", "green" and "blue" respectively, making the picture more realistic.

- 90 multiple rotation of the picture.

  With the help of AutoLED software, the picture is displayed in multiples of 90 (0, 90, 180, 270).

- Picture scaling

  With the help of AutoLED software, the pixels loaded on the receiving card can be scaled multiple times, and the display screen can be enlarged and reduced.

- Interrupted communication display setting

  Set the receiving card interrupt communication display status (black screen, standby picture, last frame).

3.2 Improve maintainability

- Receiving card serial number detection

  With the network port debugging function in AutoLED software, the receiving card number and network port information will be displayed on the target box, and the user can know the position serial number and connection line of the receiving card.

- Data interface customization

  With AutoLED software, the output data of the receiving card can be detected and edited.

- Complex structure box

  In the advanced layout of AutoLED software, boxes can be arranged and constructed at will quickly.

- Construct complex large screen

  In the complex display screen connection of AutoLED software, boxes can be arranged and constructed at will quickly.

- Communication monitoring

  Monitor the working state of receiving card in real time on AutoLED.

- Error detection

  On the AutoLED, the communication signal quality of the network cable connected with the system hardware can be monitored in real time, so as to quickly judge the quality of the network cable and troubleshoot.

- Configuration parameter readback

  The configuration parameters of the current receiving card can be read back on the AutoLED. Read back the configuration parameters of the receiving card and save them locally.

- Loop backup

  The network port is connected through the loop of the main and standby network cables to increase the reliability of the serial connection of the receiving cards. When one of the main and standby series lines fails, the other one can ensure the normal display of the screen.

- Dual power supply backup

  Detect the power status and feed back the software.

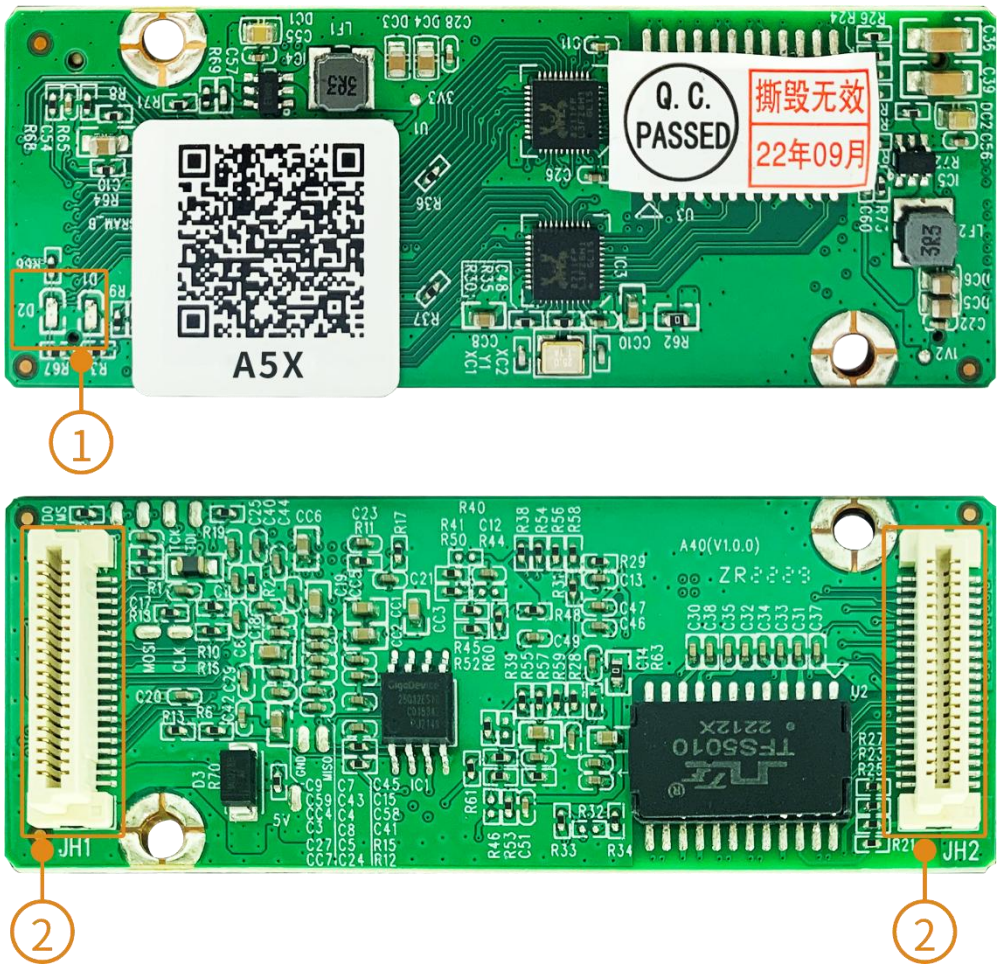
- FPGA dual program startup

  When the FPGA main program configuration is unsuccessful, it enters the standby BOOT program to work and realize normal communication.

- online update

  Support software to upgrade the firmware of the receiving card online.

4 Product Appearance



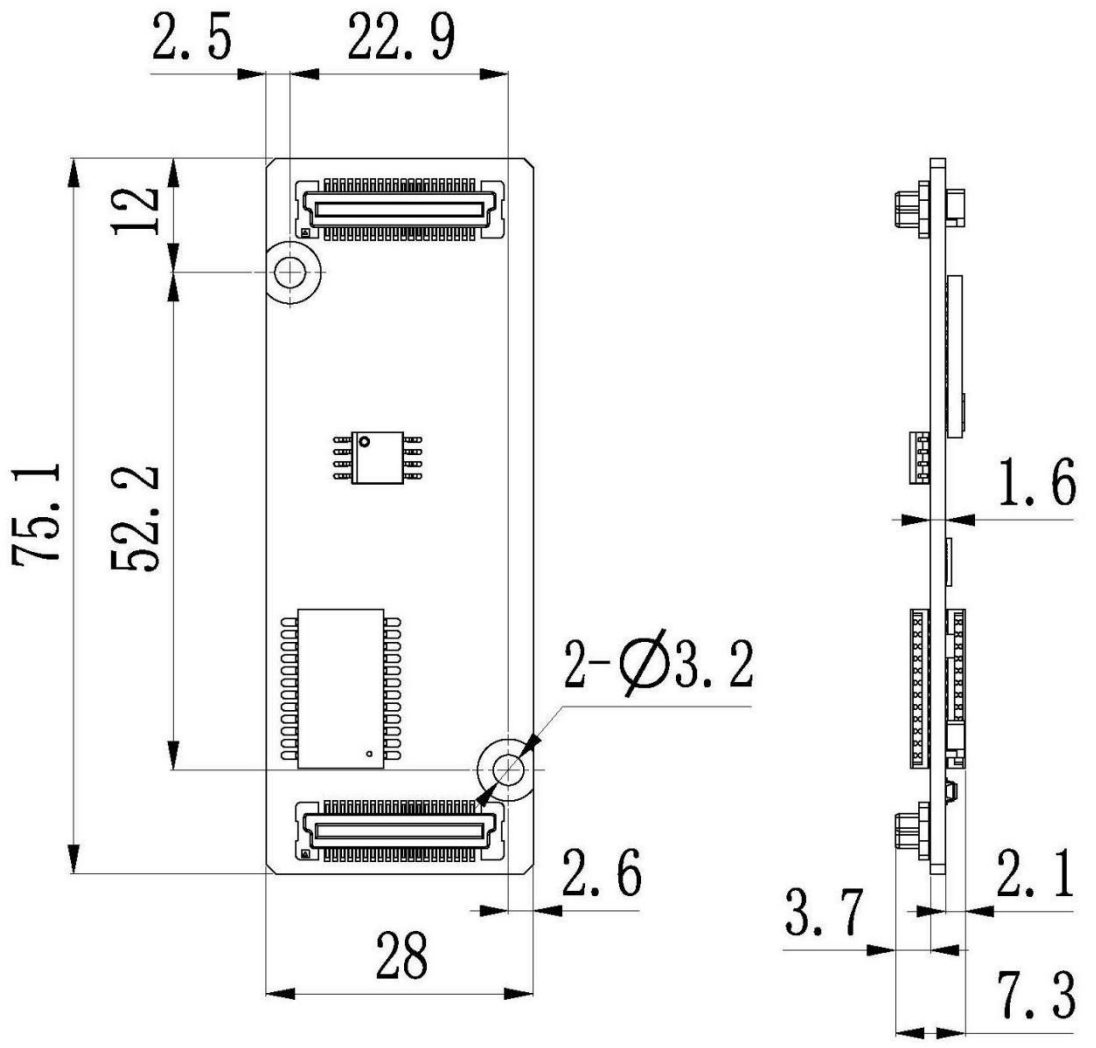
* Product photos are for reference only, please refer to the products actually purchased.

4.1 Data Interface Description

#	Interface name	Interface description	
1	Status indicator D1	Uniform slow flash	The receiving card works normally, the network cable is connected normally, and no DVI signal is input.
		Uniform flash	The receiving card works normally, the network cable is connected normally, and there is DVI signal input.
		Constant extinction	No gigabit network signal
		Flash 3 times at intervals	The receiving card works normally, the network cable loop is connected, and there is DVI signal input.

1	Power indicator D2	The red light is always on, which means the power supply is normal.
2	communication interface	High density plug-in interface

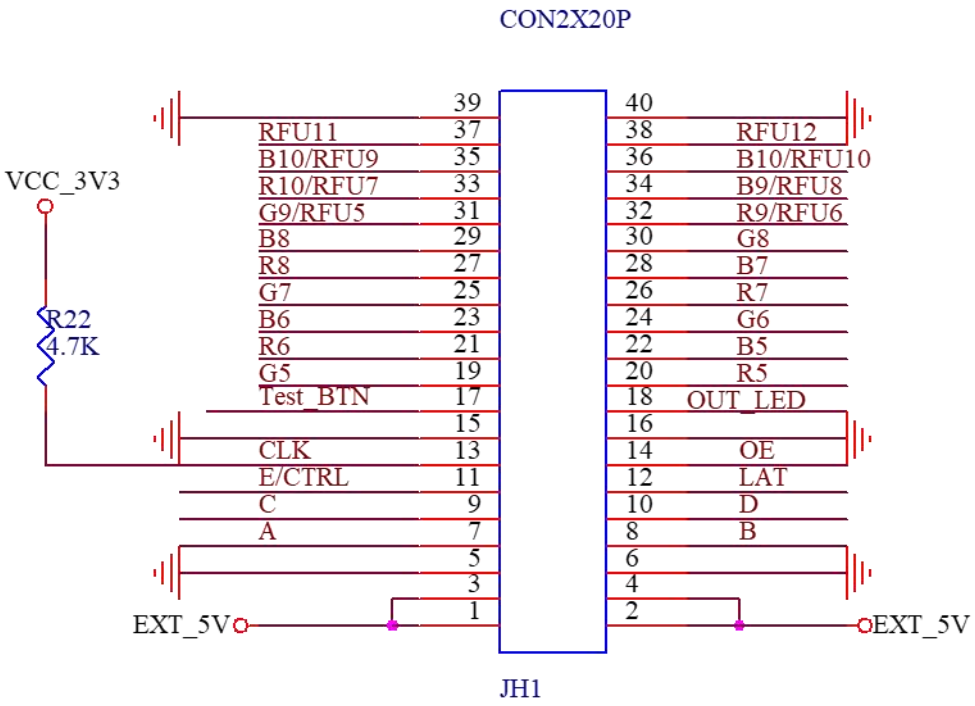
4.2 Product dimensions

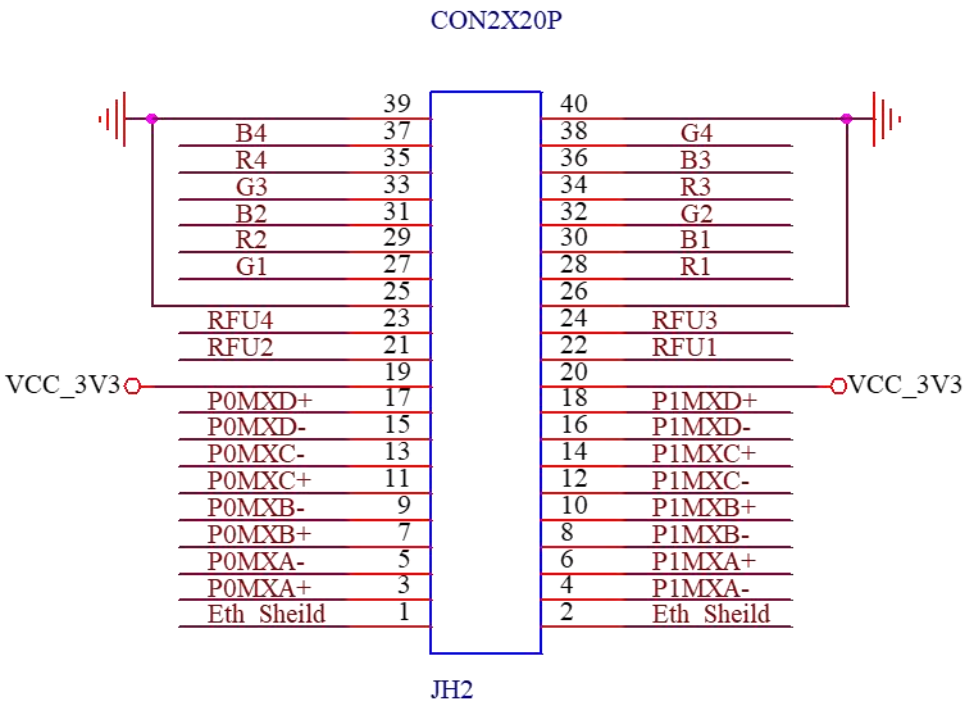


Tolerance: 0.3 Unit: mm

4.3 Definition of Output Interface

10 groups of parallel data interface definitions





JH1 data interface definition

Illustration	Definition	Pin	Pin	Definition	Illustration
Input power VCC Recommended use:	VCC	1	2	VCC	Input power VCC Recommended use: 5.0V
	VCC	3	4	VCC	
landing	GND	5	6	GND	landing
Line decoded signal	A	7	8	B	Line decoded signal
Line decoded signal	C	9	10	D	Line decoded signal
Line decoding signal/blanking	E/CTRL	11	12	LAT	Latch signal output
Shift clock output	CLK	13	14	OE	Display Enable (Note 2)
landing	GND	15	16	GND	landing
Test key	Test_BTN	17	18	OUT_LED	Operation indicator lamp (Note 3)
RGB data output	G5	19	20	R5	RGB data output
	R6	21	22	B5	
	B6	23	24	G6	
	G7	25	26	R7	
	R8	27	28	B7	
	B8	29	30	G8	
Note 4	G9/RFU5	31	32	R9/RFU6	Note 4
	R10/RFU	33	34	B9/RFU8	
	B10/RFU	35	36	G10/RFU10	
	RFU11	37	38	RFU12	
landing	GND	39	40	GND	landing

Note 1: Pin 11 is a multiplexing signal, and it is a blanking control signal when it is ≤16 scans; E signal when > 16 sweeps.

Note 2: Pin 14 is the display enable pin. When using PWM chip, it is GCLK signal.

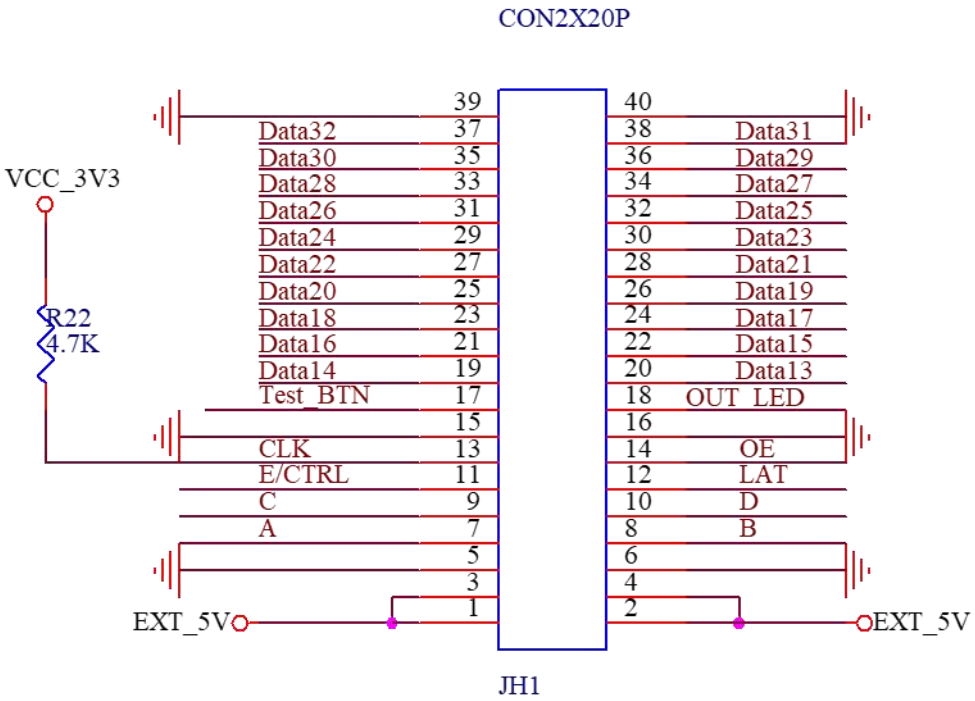
Note 3: The operation indicator is active at low level.

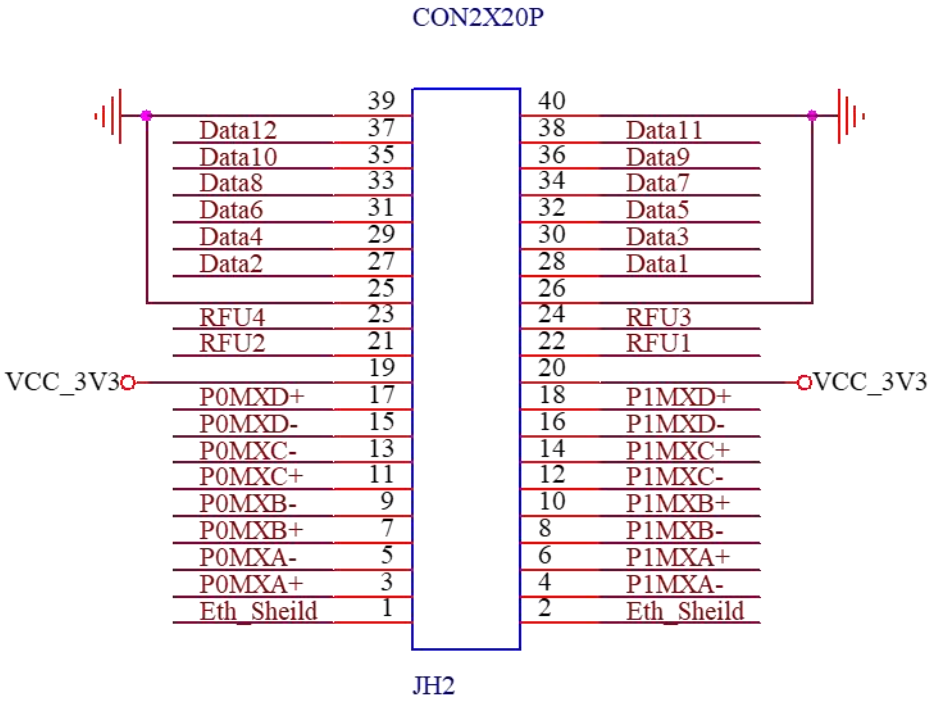
Note 4: Pins 31-36 are RGB data by default and can also be used as reserved extended function interfaces; Pins 37-38 are reserved extended function interfaces.

JH2 data interface definition

Illustration	Definition	Pin	Pin	Definition	Illustration
Enclosure grounding	Eth_Sheild	1	2	Eth_Sheil	Enclosure
Gigabit network port 1	P0MXA+	3	4	P1MXA+	Gigabit network port 2
	P0MXA-	5	6	P1MXA-	
	P0MXB+	7	8	P1MXB+	
	P0MXB-	9	10	P1MXB-	
	P0MXC+	11	12	P1MXC+	
	P0MXC-	13	14	P1MXC-	
	P0MXD+	15	16	P1MXD+	
	P0MXD-	17	18	P1MXD-	
3.3V power supply	VCC_3.3V	19	20	VCC_3.3	3.3V power
Reserved extended function interface	RFU2	21	22	RFU1	Reserved extended
	RFU4	23	24	RFU3	
landing	GND	25	26	GND	landing
RGB data output	G1	27	28	R1	RGB data output
	R2	29	30	B1	
	B2	31	32	G2	
	G3	33	34	R3	
	R4	35	36	B3	
	B4	37	38	G4	
landing	GND	39	40	GND	landing

32 groups of serial data interfaces





JH1 interface definition:

Illustration	Definition	P	Pin	Definition	Illustration
Input power VCC	VCC	1	2	VCC	Input power VCC
Recommended use:	VCC	3	4	VCC	Recommended use: 5.0V
landing	GND	5	6	GND	landing
Line decoded signal	A	7	8	B	Line decoded signal
Line decoded signal	C	9	10	D	Line decoded signal
Line decoding signal/blanking	E/CTRL	11	12	LAT	Latch signal output
Shift clock output	CLK	13	14	OE	Display Enable (Note 2)
landing	GND	15	16	GND	landing
Test key	Test_BTN	17	18	OUT_LED	Operation indicator lamp (Note 3)
RGB serial data output	Data14	19	20	Data13	RGB serial data output
	Data16	21	22	Data15	
	Data18	23	24	Data17	
	Data20	25	26	Data19	
	Data22	27	28	Data21	
	Data24	29	30	Data23	
	Data26	31	32	Data25	
	Data28	33	34	Data27	
	Data30	35	36	Data29	
	Data32	37	38	Data31	
landing	GND	39	40	GND	landing

Note 1: Pin 11 is a multiplexing signal, and it is a blanking control signal when it is ≤16 scans; E signal when > 16 sweeps.

Note 2: Pin 14 is the display enable pin. When using PWM chip, it is GCLK signal.

Note 3: The operation indicator is active at low level.

JH2 definition:

Illustration	Definition	Pin	Pin	Definition	Illustration
Enclosure	Eth_Sheild	1	2	Eth_Sheild	Enclosure grounding
Gigabit network port 1	P0MXA+	3	4	P1MXA+	Gigabit network port 2
	P0MXA-	5	6	P1MXA-	
	P0MXB+	7	8	P1MXB+	
	P0MXB-	9	10	P1MXB-	
	P0MXC+	11	12	P1MXC+	
	P0MXC-	13	14	P1MXC-	
	P0MXD+	15	16	P1MXD+	
	P0MXD-	17	18	P1MXD-	
3.3V power	VCC_3.3V	19	20	VCC_3.3V	3.3V power supply
Reserved extended	RFU2	21	22	RFU1	Reserved extended function interface
	RFU4	23	24	RFU3	
landing	GND	25	26	GND	landing
RGB data output	Data2	27	28	Data1	RGB data output
	Data4	29	30	Data3	
	Data6	31	32	Data5	
	Data8	33	34	Data7	
	Data10	35	36	Data9	
	Data12	37	38	Data11	
landing	GND	39	40	GND	landing

5 product parameters

5.1 Basic parameters

Three-wire parallel (RGB)	Drive IC	Maximum load (pixels)	Brightness correction band load (pixel)	Chromaticity correction band load (pixel)
10 group	Conventional	256×320	256×320	256×320
	PWM	400×400	400×400	256×320

Number of cascaded cards	Support scanning lines
≤1000PCS	1-128 sweep

5.2 Specification parameters

Electrical parameters	input voltage	DC3.5~5.5V
	rated current	0.6A
	rated power	3W
Working environment	Working temperature	-20℃~70℃
	Working humidity	10%RH~90%RH has no condensation.
Storage environment	temperature	-40℃~85℃
Board size	75.1mm×28mm	
Net weight	11.9g Description: Weight of single card	
Outer packing size	490×335×120mm	
Gross weight of product	3.5Kg Description: Including wire and fittings (packing weight)	
Packing mode	100 sheets/box	
Accessory part	Mother seat (optional): 2×20P	
Certificate information	Comply with RoHS standards and CE-EMC standards.	

* Current and power consumption may vary according to different factors such as product usage, environment and settings.

6 Precautions

- The installation process must be completed by professionals.
- Must be antistatic.
- Please pay attention to waterproof and dust removal.

National after-sales service hotline: 400-881-3531

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