Mooncell

Shenzhen Mooncell Electronics Co., Ltd

FPGA Receiving Card Series

A5X Product Specifications

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Updates History

File Version	Hardware Version	Released Date	Updates Records
V3.0	V1.0.0	28/2/2024	First Release

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1 Product Overview

Product Introduction

*A4X is a small sized receiving card that fully researched and developed by Mooncell; it adopted the high-precision **2*40 PIN** connector; it can supports the maximum **32** groups of the parallel connection data;the maximum loading capacity could reach up to **256*384** pixels; with strong processing ability, supper reliability and high competitive price.*

Product Features

- *It features the small size and thickness, saving a lot more space for the narrow cabinet and space of the led strip(bar).*
- *It features high precision connector, which is dust-proof & shock proof; with high reliability and stability.*
- *Integrated Network Transformer, Simplified Design, Improved Electromagnetic Compatibility.*
- *With strong LED Driver IC compatibility.*

Application Scenarios

It could be widely used for high-end LED display area that requires high standards; and has significant advantages in application scenarios such as led rental display, TV Broadcast, LED display for respectable Event,High-end project,etc.

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2 Function Introduction

Displaying Effect

Support point-by-point lighting and chromaticity correction	It can cooperate with the correction software to correct the brightness and chromaticity of each lamp on the large screen, effectively eliminate the color difference and make the brightness and chromaticity of the display screen highly consistent, and improve the image quality of the display screen.
Support a variety of display effect schemes	Cooperate with AutoLED software to achieve refresh priority and grey release priority effects.
Support screen 90 ° multiple rotation	With AutoLED software, it can rotate the receiving card screen by a multiple of 90 °.
Support screen zoom function	With AutoLED software, the pixels carried on the receiving card can be multiplied and scaled to realize the enlargement and reduction of the display screen.

Enhanced Operability:

The Receiving Card is Supported to detect its own Sequence number	Using the Network Port testing function on Mooncell AutoLED Software, the receiving card serial number and the Network Port Information will be displayed on the target cabinet. Users will be able to get to know the locations of the receiving cards as well as its Connection diagram.
Data Port User-Defined is supported	Using it with the Mooncell AutoLED

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	Software, you can detect and edit the output data of the receiving cards.
To build up a complicated cabinet is supported	*On AutoLED Software, there is an ‘Advanced Setting’, from here you can quickly arrange or structure the modules at your option.*
To structure a complicated Led Screen is supported	*On AutoLED Software, there is a “Complicated Led Screen Connection”, from here you can quickly arrange or structure the cabinet modules on your option.*

Hardware Stability

Ethernet Cable Backup(Hot Backup)	*The main cable will be having the loop connection. If there’s one cable breaks then still there will have another one to make sure the led display work properly.*
	Dual receiving cards backup is supported(Dual Circuit backup design) Customized :when the main working receiving card fails, the other one (backup) will take its job to keep the led display working properly.
Support voltage detection	*Support detecting the working voltage of the receiving card.*
Support temperature detection	*Support detecting the working temperature of the receiving card.*

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Smart Software and Hardware Stability

The receiving card can read the configuration data back from where it has been stored	*You will be able to do this on Mooncell AutoLED Software.*
It supports to detect the error rates of the network cable	*On the Mooncell AutoLED Software, you can detect the network cable connectivity in real time to tell the condition of the network cables, so that you can get rid of any errors immediately.*
Communication Monitoring Function	*On Mooncell AutoLED Software, you can monitor the Working Status of the receiving cards in real time.*

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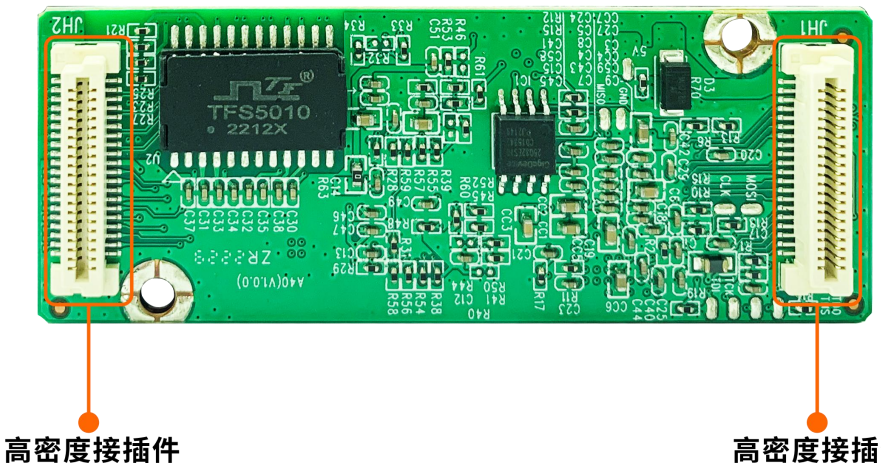
3Product Parameters

Basic Parameters

RGB Parallel	Data Connection/qty	The Maximum Loading Capacity(Pixels)	Loading Capacity After lightness Calibrating（Pixels）	Loading Capacity after Color Calibrating(Pixels)
10 Groups	84PIN/2PCS	256*384	256*384	384*224

Single Network Pot Cascading Quantity	Scanning Lines Supported		
≤1000PCS	1-64 Scan		

Hardware Introduction



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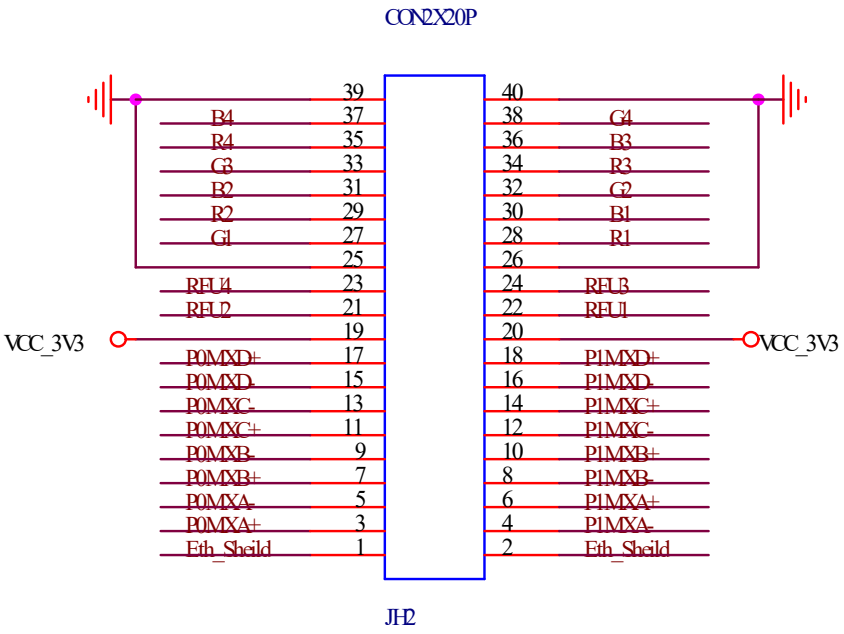
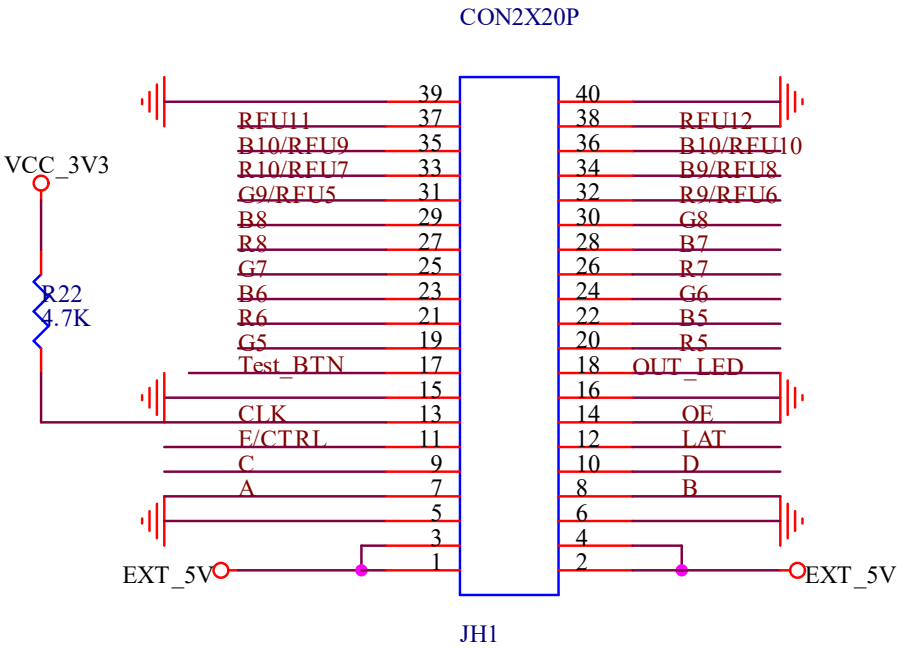
Output Port Definition

Port Definition of the 10 Groups of parallel connection data





JH1 Definition：

illustration	*Definition*	*PIN*	*PIN*	*Definition*	*illustration*
5V	VCC	1	2	VCC	5V
	VCC	3	4	VCC	
Ground connection	GND	5	6	GND	Ground connection
Line Decoded Signal	A	7	8	B	Line Decoded Signal
Line Decoded Signal	C	9	10	D	Line Decoded Signal
Line Decoded Signal-Blanking Control Signal (Note 1))	E/CTRL	11	12	LAT	Latch signal output
Shift clock output	CLK	13	14	OE	Display enabled (note 2)
Ground connection	GND	15	16	GND	Ground connection
Test Button	Test_BTN	17	18	OUT_LED	Operating Indicator (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/RFU7	33	34	B9/RFU8	
	B10/RFU9	35	36	G10/RFU1	
	RFU11	37	38	RFU12	
Ground connection	GND	39	40	GND	Ground connection

Note 1: Pin 11 is a multiplexed signal, which is a blanking control signal when it is less than or equal to 16 scans; 0r an E signal when it is more than 16 scans.

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

Note 3: The operating indicator light is active at a low level.

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

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JH2 Definition：

illustration	*Definition*	*PIN*	*PIN*	*Definition*	*illustration*
Earthing of Casing	Eth_Sheild	1	2	Eth_Sheild	Earthing of Casing
Gigabit Ethernet port 1	P0MXA+	3	4	P0MXA+	Gigabit Ethernet port 1
	P0MXA-	5	6	P0MXA-	
	P0MXB+	7	8	P0MXB+	
	P0MXB-	9	10	P0MXB-	
	P0MXC+	11	12	P0MXC+	
	P0MXC-	13	14	P0MXC-	
	P0MXD+	15	16	P0MXD+	
	P0MXD-	17	18	P0MXD-	
3.3V	VCC_3.3V	19	20	VCC_3.3V	3.3V
Reserved Extended Function Interface	RFU2	21	22	RFU1	Reserved Extended Function Interface
	RFU4	23	24	RFU3	
Ground connection	GND	25	26	GND	Ground connection
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	
Ground connection	GND	39	40	GND	Ground connection

32 Groups of Serial Connection Data Port

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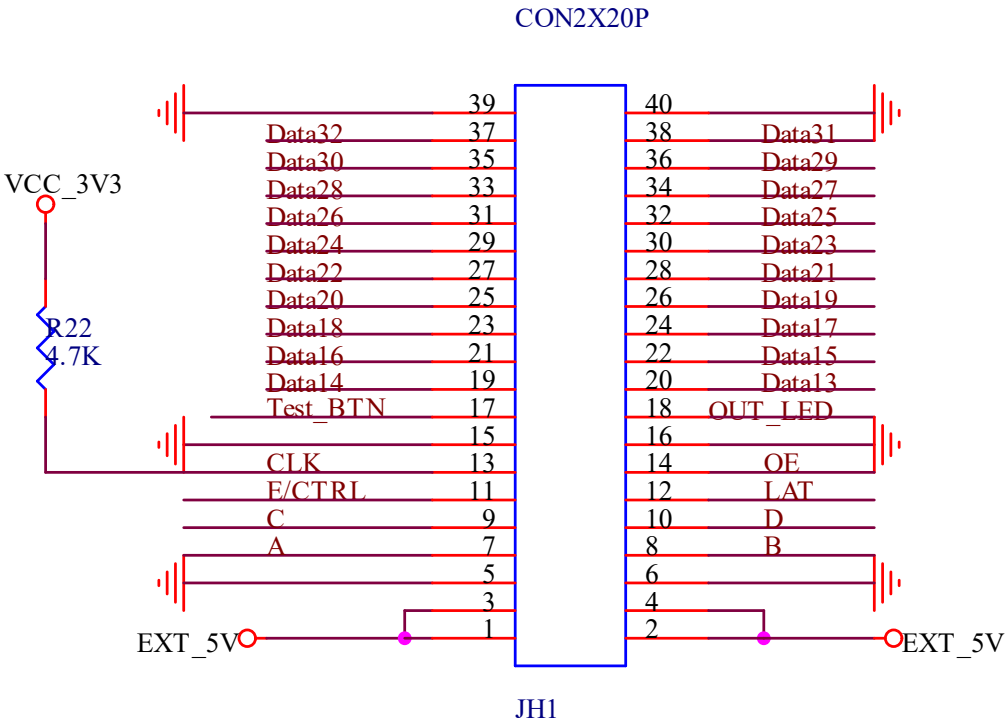
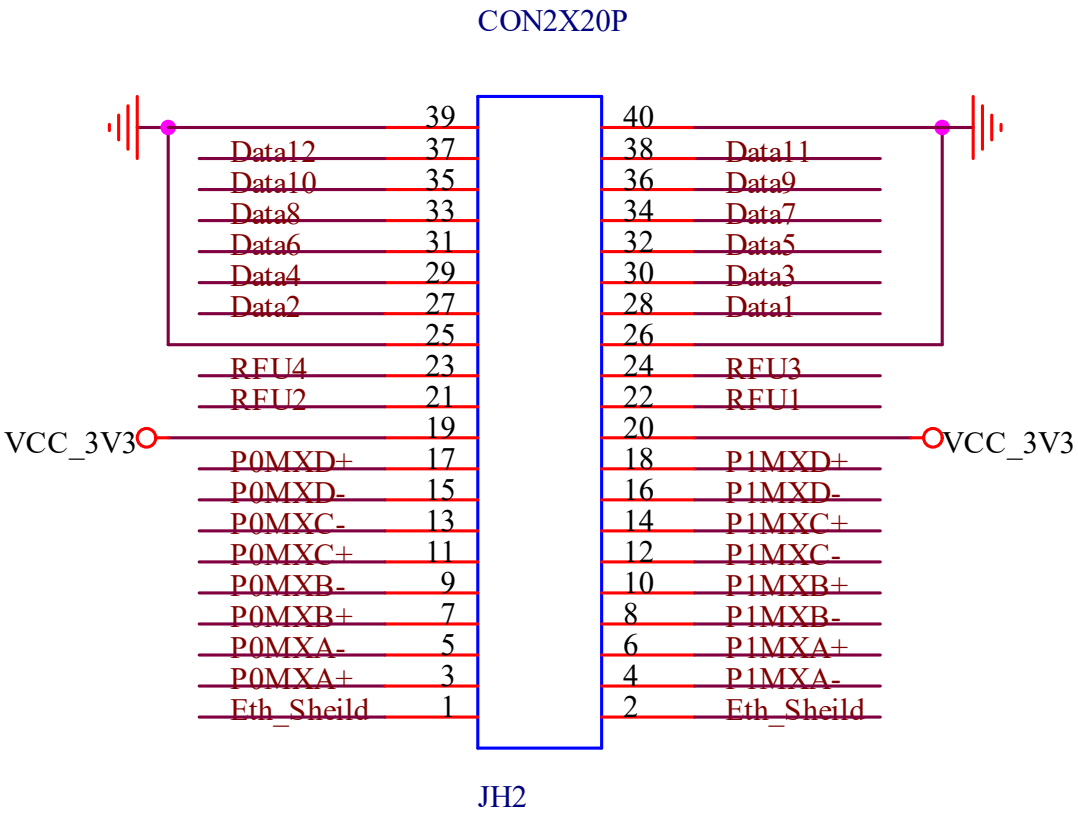

CON2X20P
VCC_3V3
R22
4.7K
Data32
Data30
Data28
Data26
Data24
Data22
Data20
Data18
Data16
Data14
Test_BTN
CLK
E/CTRL
C
A
EXT_5V
39
37
35
33
31
29
27
25
23
21
19
17
15
13
11
9
7
5
3
1
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
Data31
Data29
Data27
Data25
Data23
Data21
Data19
Data17
Data15
Data13
OUT_LED
OE
LAT
D
B
EXT_5V
JH1


CON2X20P
Data12
Data10
Data8
Data6
Data4
Data2
RFU4
RFU2
VCC_3V3
P0MXD+
P0MXD-
P0MXC-
P0MXC+
P0MXB-
P0MXB+
P0MXA-
P0MXA+
Eth_Sheild
39
37
35
33
31
29
27
25
23
21
19
17
15
13
11
9
7
5
3
1
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
Data11
Data9
Data7
Data5
Data3
Data1
RFU3
RFU1
VCC_3V3
P1MXD+
P1MXD-
P1MXC+
P1MXC-
P1MXB+
P1MXB-
P1MXA+
P1MXA-
Eth_Sheild
JH2

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Ground connection	GND	15	16	GND	Ground connection
Test Button	Test_BTN	17	18	OUT_LED	Operating Indicator (note 3)
RGB data output	Data 14	19	20	Data	RGB data output
	Data 16	21	22	Data	
	Data 18	23	24	Data	
	Data 20	25	26	Data	
	Data 22	27	28	Data	
	Data 24	29	30	Data	
	Data 26	31	32	Data	
	Data 28	33	34	Data	
	Data 30	35	36	Data	
	Data 32	37	38	Data	
Ground connection	GND	39	40	GND	Ground connection

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	P0MXB+	7	8	P0MXB+	
	P0MXB-	9	10	P0MXB-	
	P0MXC+	11	12	P0MXC+	
	P0MXC-	13	14	P0MXC-	
	P0MXD+	15	16	P0MXD+	
	P0MXD-	17	18	P0MXD-	
3.3V	VCC_3.3V	19	20	VCC_3.3V	3.3V
Reserved Extended Function Interface	RFU2	21	22	RFU1	Reserved Extended Function Interface
	RFU4	23	24	RFU3	
Ground connection	GND	25	26	GND	Ground connection
RGB data output	DATA 2	27	28	DATA 1	RGB data output
	DATA 4	29	30	DATA 3	
	DATA 6	31	32	DATA 5	
	DATA 8	33	34	DATA 7	
	DATA 10	35	36	DATA 9	
	DATA 12	37	38	DATA 11	
Ground connection	GND	39	40	GND	Ground connection

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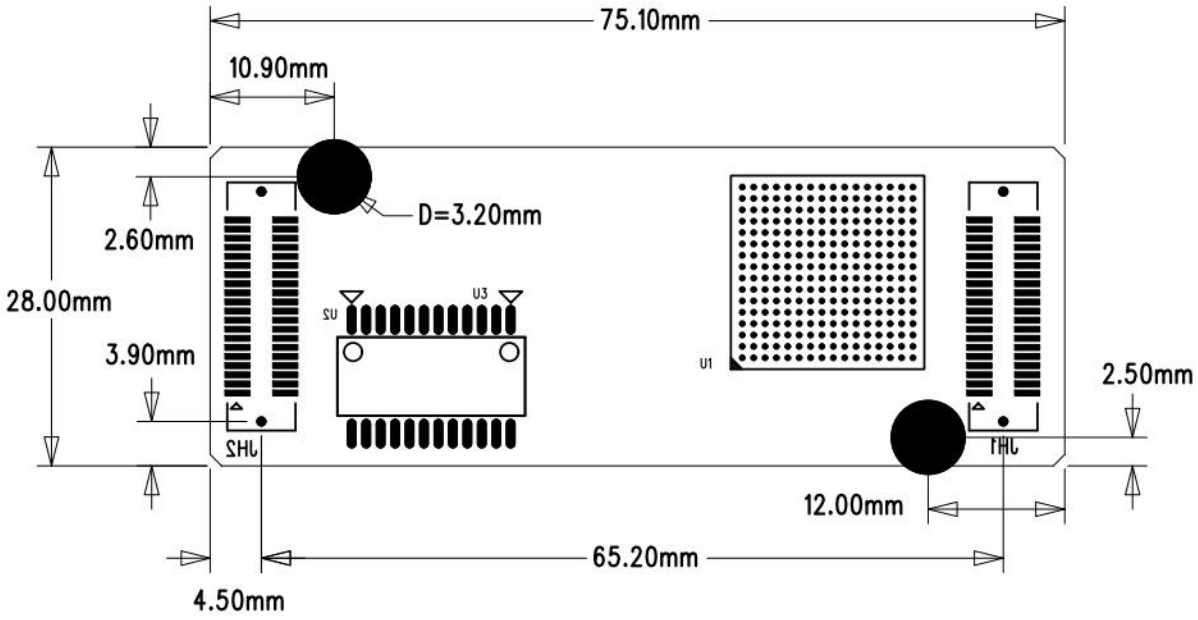
Indicator Illustration

Indicator	Position	Status	Illustration
Status Indicator (Green)	D1	Flickering Slowly at a constant speed	The receiving card is working properly, The Ethernet Cable Connection is fine, No DVI Signal Input
		Flickering Fast at a constant speed	The receiving card is working properly, The Ethernet Cable Connection is fine, with DVI Signal Input
		It goes out	No Gigabit Ethernet Signal
		Fast Flickering 3 Tunes	The receiving card is working properly, The Ethernet Cable Loop Connection is fine, DVI Signal Input
Status Indicator	D2	Long Lasting On	Power is On

Dimensions



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4Product Specifications

Specifications

Electric Parameters	Input Voltage	DC3.5-5.5V
	Rated Current	0.6A
	Rated Power	3W
Operating Environment	Operating Temperature	-40℃ - 80℃
	Operating Humidity	10%RH-90%RH
Storage Environment	Temperature	-25℃～125℃
Dimensions	75.1mmX28mm	
Net Weight	11. 9g	
Certifications	It conforms to RoHS and CE-EMC standards.	
Accessories	Specification	Quantity
Adapter plate (optional)	2x20P	2

Precautions

1. The testing (debugging) and installation should be done by the qualified professionals
2. Anti-Static, Water-Proof and Dust-Proof Required