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Shenzhen Mooncell Electronics Co., Ltd

FPGA Receiving Card Series

C12 Specifications

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Content

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Updates History

File Version	*Released Date*	*Updates Records*
V3.0	*01/08/2020*	*First Release*

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1Product Overview

Product Introduction

Mooncell C12 is a small sized & high-end receiving card that independently researched and developed by Mooncell, it could load 8192 pixels; with its strong processing ability,super reliability and its high competitive price,the product has been widely used and loved by the customers. The size of the C12 Card is quite small: 70mm x 24mm, that's the smallest card of its kind among its rivals in the industry, saving a lot more space, using less external cables, simplifying the design of the led display structure,reducing the difficulty of the design, helping customer to achieve the unprecedented innovative designs; the C12 actually solves quite a few problems: Limited Space,Screen Protection,After Sales Service,Price,etc, which will further provide a competitive advantage for differentiated product design.

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).*

➤ *The output features the universal 2.0mm connector, with high stability and reliability.*

➤ *It features the advanced image processing core, which has greatly improved the performance of the displaying.*

➤ *The single card supports 24 groups RGB data output in serial connections,8 groups in parallel, and 4 clock are supported to be expanded.*

➤ *The loading capacity: 8192 pixels.*

➤ *Ultra small size design : 70mm x 24mm, solving the space design difficulty.*

➤ *With strong Led Driver IC compatibility, supporting the driving of all chips.*

➤ *It supports a safe upgrading.*

➤ *It supports lightness and color calibrations.*

➤ *It supports arbitrary offset, the contents could be arbitrary rotated, so that to support the connection of the special-shaped led displays.*

➤ *It reduces the quantity of the cables and connectors that will be used, simplifies the structure design of the led screen. The signal transmission will be via just the 2core Cat5 twisted pair cable,which could combine the wiring of the led display signal and power supply into just one design. And the external cascading connection line changes from the traditional 2 in & 2 out to 1 in & 1 out.*

➤ *The led module can be integrated with the receiving card in a modular design, in the event of a failure, only the module needs to be disassembled and replaced separately, which makes the after sale service maintenance   more simple and reduces subsequent maintenance*

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costs.

➤ *It features a fully enclosed design, simplify the design, improve the EMC and help to pass the EMC Certifications.*

Application Scenarios

   It could be widely used for LED Strip Screens,Film Screens, Glass Screens, Grid Screens, Lighting Screens and other application scenarios with strict space requirements.

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2Function Introduction

Enhanced Displayed Results

Multiple Solutions of the Displayed Effects are Supported	Using it with AutoLED Software, the Refresh and Grey Scale performances are able to take the precedence over other settings.
The Images on the led screen can be rotated 90 degree in a factor of multi times	Using it with Autoled Software.
Pixel Level Brightness and Chroma Calibration are supported	Using it with the Mooncell Calibration Software to calibrate each one of the pixels on its brightness and Chroma. It can effffectively eliminate the Chromatic aberration so as to enhance its consistency of the brightness and Chroma to a high level and result in a better displayed effect.

Enhanced Operability

Data Port User-Defined is supported	Using it with the Mooncell Autoled 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.

Enhanced Hardware Stability

Hot Backup(Online Backup) is supported	*Network Port Backup: The 2 Network Ports on the HUB enhanced the reliability of its series connection by having the main network cable Loop Backup. Whenever a network cable fails, the other one will take the job to keep the led screen running properly.*

Advanced Features

|	
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.*
To detect the error rates of the network cable is supported	*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 Detecting 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

Serial Connection Data（RGB）/Parallel	The maximum Loading capacity (pixels）	Loading Capacity After lightness Calibrating (Pixels）	Loading Capacity after Color Calibrating(Pixels)
24 Groups Serial Connection data	8192	8192	4096
8 groups parallel connection data	64X128	64X128	64X64

Single Network Pot Cascading Quantity	Scanning Lines Supported	Clock Expansion	
≤1000PCS	1-64 Scans	4 Groups of Clock are supported	

Hardware Introduction

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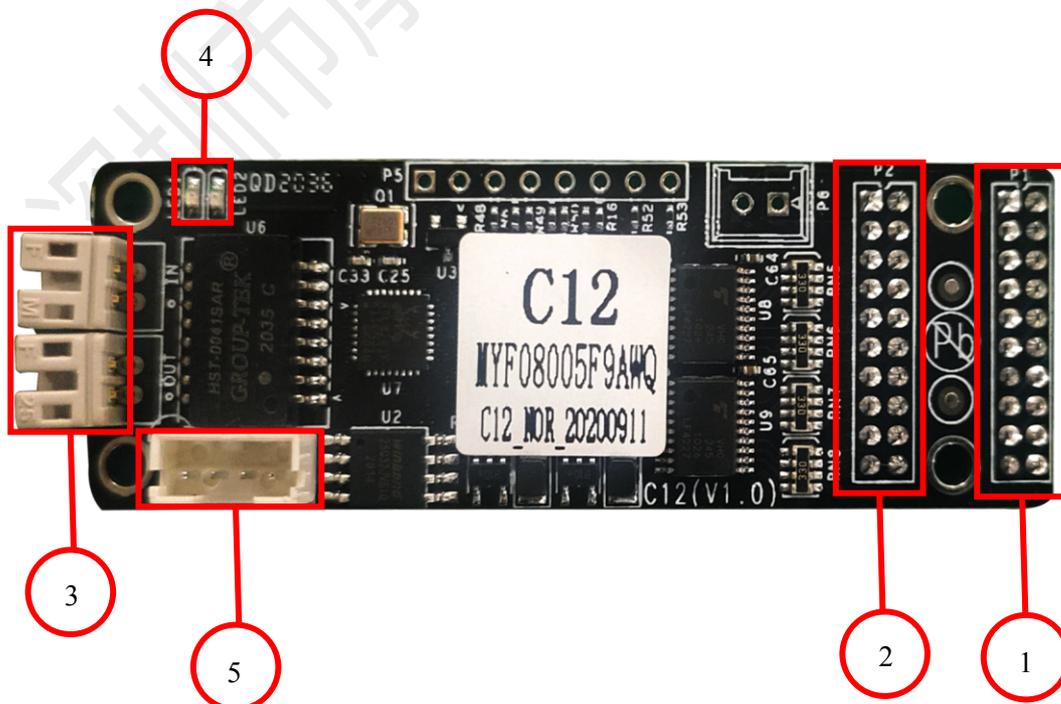
Ports Illustration

#	Position	Illustration
1	P2	P1：Signal Interface to transfer the signal to the led screen.(output)
2	P1	P2:Signal Interface to transfer the signal to the led screen.(output)
3	JP1	Signal Input Interface, the signal will be inputted from the splicer MTB(SH)100
	JP2	Signal Output Interface,the signal will be cascading outputted to the next receiving card.
4	D1	Power Indicator
	D2	Status Indicator
5	P3	External Button Indicator Interface

Output Ports Definition

24 Groups of Parallel Data PIN Definitions:
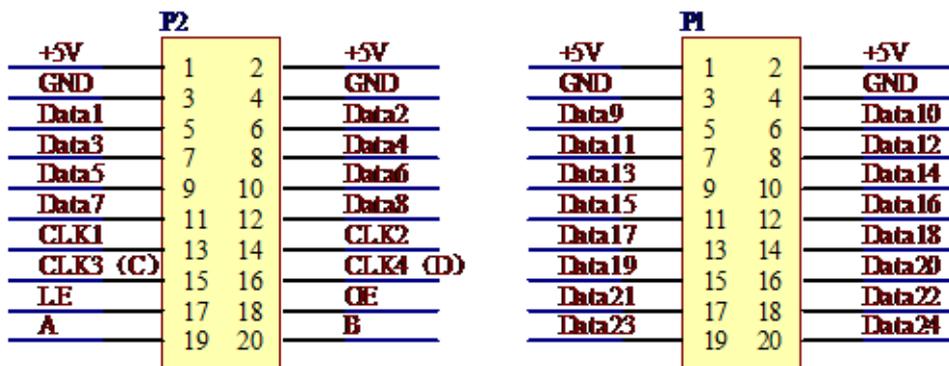
P2 Interface Definition Illustration.

Illustration	Definition	PIN	PIN	Definition	Illustration
	+5V	1	2	+5V	
	GND	3	4	GND	
RGB Serial Output Data	DATA1	5	6	DATA2	RGB Serial Output Data
	DATA3	7	8	DATA4	
	DATA5	9	10	DATA6	
	DATA7	11	12	DATA8	
Displacement Clock 1	CLK1	13	14	CLK2	Displacement Clock 2

Displacement Clock 3/Decoding Signal C	CLK3/C	15	16	CLK4/D	Displacement Clock 4/Decoding Signal D
LATCH	LE	17	18	OE	Display-ENABLED
Line Coding Signal	A	19	20	B	Line Coding Signal

Description:

1. When using 5958 decoding driver, the decoding signal A is used as the DCLK signal of 5958, the decoding signal B is used as the BK signal of 5958, and the decoding signal C is used as the DIN signal of 5958.
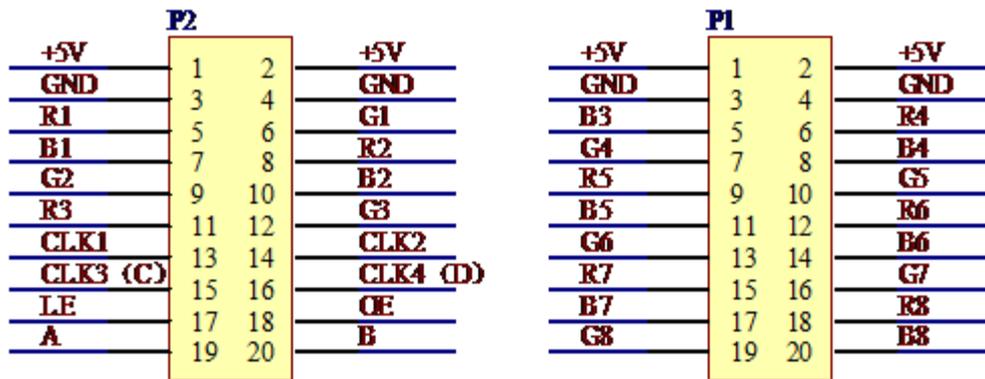
2. When 4 sets of clocks are used, the scanning signal can only be connected to A and B signals; that is: when 4 sets of clock expansion are supported at most, the 15 and 16 pins of P2 are used for CLK3, CLK4; (default normal program)

3. When using A, B, C, D scan signals, the clock can only be extended by 2 groups; that is: when the scan is greater than 4 scans, the 15 and 16 pins of P2 are used for C and D signals (customized program)

P1 Interface Definition Illustration.

Illustration	Definition	PIN	PIN	Definition	Illustration
	+5V	1	2	+5V	
	GND	3	4	GND	
RGB Serial Output Data	DATA9	5	6	DATA10	RGB Serial Output Data
	DATA11	7	8	DATA12	
	DATA13	9	10	DATA14	
	DATA15	11	12	DATA16	
	DATA17	13	14	DATA18	
	DATA19	15	16	DATA20	
	DATA21	17	18	DATA22	
	DATA23	19	20	DATA24	

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8 Groups of Parallel Data PIN Definitions:

P2 Interface Definition Illustration

Illustration	Definition	PIN	PIN	Definition	Illustration
	+5V	1	2	+5V	
	GND	3	4	GND	
RGB Parallel Output Data	R1	5	6	G1	*RGB Parallel Output Data*
	B1	7	8	R2	
	G2	9	10	B2	
	R3	11	12	G3	
Displacement Clock 1	CLK1	13	14	CLK2	*Displacement Clock 2*
Displacement Clock 3/Decoding Signal C	CLK3/C	15	16	CLK4/D	*Displacement Clock 4/Decoding Signal D*
LATCH	LE	17	18	OE	*Display-Enabled*
Line Decoding Signal	A	19	20	B	*Line Decoding Signal*

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Description:

1. When using 5958 decoding driver, the decoding signal A is used as the DCLK signal of 5958, the decoding signal B is used as the BK signal of 5958, and the decoding signal C is used as the DIN signal of 5958.

2. When 4 sets of clocks are used, the scanning signal can only be connected to A and B signals; that is: when 4 sets of clock expansion are supported at most, the 15 and 16 pins of P2 are used for CLK3, CLK4; (default normal program)

3. When using A, B, C, D scan signals, the clock can only be extended by 2 groups; that is: when the scan is greater than 4 scans, the 15 and 16 pins of P2 are used for C and D signals (customized program)

P1 Interface Definition Illustration

Illustration	Definition	PIN	PIN	Definition	Illustration
	+5V	1	2	+5V	
	GND	3	4	GND	
RGB Parallel Output Data	B3	5	6	R4	RGB Parallel Output Data
	G4	7	8	B4	
	R5	9	10	G5	
	B5	11	12	R6	
	G6	13	14	B6	
	R7	15	16	G7	
	B7	17	18	R8	
	G8	19	20	B8	

P3 Indicator Interface Definition

PIN#	1	2	3	4
Definition	SWITCH	LED STATE	GND	3.3V

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
		2 flashes at an interval of 4S	The receiving card enters the boot state
Power Indicator (Red)	D2	Long Lasting On	The receiving card is normally powered

Dimensions
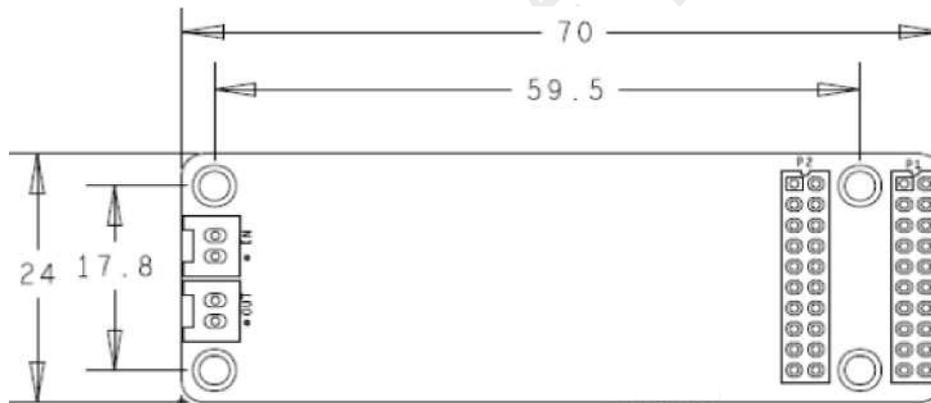
4Product Specifications

Specifications

Electric Parameters	*Input Voltage*	*DC3.5-5.5V*
	Rated Current	*0.4A*
	Rated Power	*2W*
Operating Environment	*Operating Temperature*	*-40°C ~80°C*
	Operating Humidity	*10%RH-90%RH*
Storage Environment	*Temperature*	*-25°C ~125°C*
Dimensions	*70mm X 24mm*	
Net Weight	*20g*	
Certifications	*It conforms to RoHS and CE-EMC standards.*	

Precautions

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