



A10X Receiving Card

Specification V3.7

Shenzhen Mooncell Electronics Co., Ltd

1 Product Overview

Product Introduction

A10X is a small sized receiving card that fully researched and developed by Mooncell; it adopted the high-precision 120 PIN connector; it can supports the maximum 32 groups of the parallel connection data;the maximum loading capacity could reach up to 512*640 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 to simplify the design and improve electromagnetic compatibility
- With MCU design, improve the flexibility of product application
- It supports dual card backup function,which has enhanced the reliability and stability.
- 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.

2 Function Introduction

Displaying Effect

It supports pixel level brightness and Chroma Calibration	Using it with the Mooncell Calibration Software to calibrate each one of the pixels on its brightness and Chroma. It can effectively 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 effects.
Multiple Solutions of the Displayed Effects are Supported	Using it with Monncell AutoLED Software, the Refresh and Grey Scale performances are able to take the precedence over othersettings.
The Images on the led screen can be rotated 90 degree in a factor of multiple times	Using it with Mooncell AutoLED Software.
The images can be zoomed in or out	Using it with Mooncell AutoLED
Support low brightness and high gray (18bit +)	Improve the effect of low gray display, smoother screen transition
Support low latency	Support low-delay control and display of the receiving card, that is, on the basis of using the sending card, the time delay between the output of the signal source and the display of the light board is 2 frames
Support 3D	3D picture effect, you need to use 3D glasses to watch; transmit the format of the 3D signal to the 3D glasses by connecting the 3D signal transmitter.

Support for RGB independent gamma	GAMMA values for RGB can be independently customized
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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 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.
Intelligent Module is supported(Customized)	The Intelligent Module consists of Flash and MCU.The Flash can reserve the calibration data and information of the PCB Board. The MCU can be communicated with the receiving cards so as to detect the temperature, voltage and wiring connectivity of each module (on a module-level: module by module). With Intelligent Module, the monitor cards are not necessary for the Monitor Users, which means you can save a lot more space on the cabinets.
Module Self-Calibrated is supported(Customized)	When a module is replaced, the receiving card will automatically read the ID and its calibration data of the new one once the electricity power is connected, and the data will be reserved to the Flash.

Hardware Stability

(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.
	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.
Dual Power Supplies Backup	Detect power status and feed back to the software
It supports to detect the voltage	It will detects the voltage status of the receiving cards.
It supports to detect the temperature	The operating temperature of the receiving cards could be detected.
Supports access to module sensors	Sensor for module infrared distance access via I2C requires HUB and module support
FPGA dual program startup	When the FPGA main program configuration is unsuccessful, enter the standby BOOT program to work and achieve normal communication.

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.

3 Product Parameters

Basic Parameters

RGB Parallel	Number of data interfaces	Driver IC	Maximum Loading Capacity (Pixels)	Loading Capacity After lightness Calibrating	Loading Capacity after Color Calibrating (Pixels)
32 Groups	2*120 PIN	Conventiona l	512*640	512*640	512*512
		PWM	512*640	512*640	512*512

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

Hardware Introduction



Power Indicator

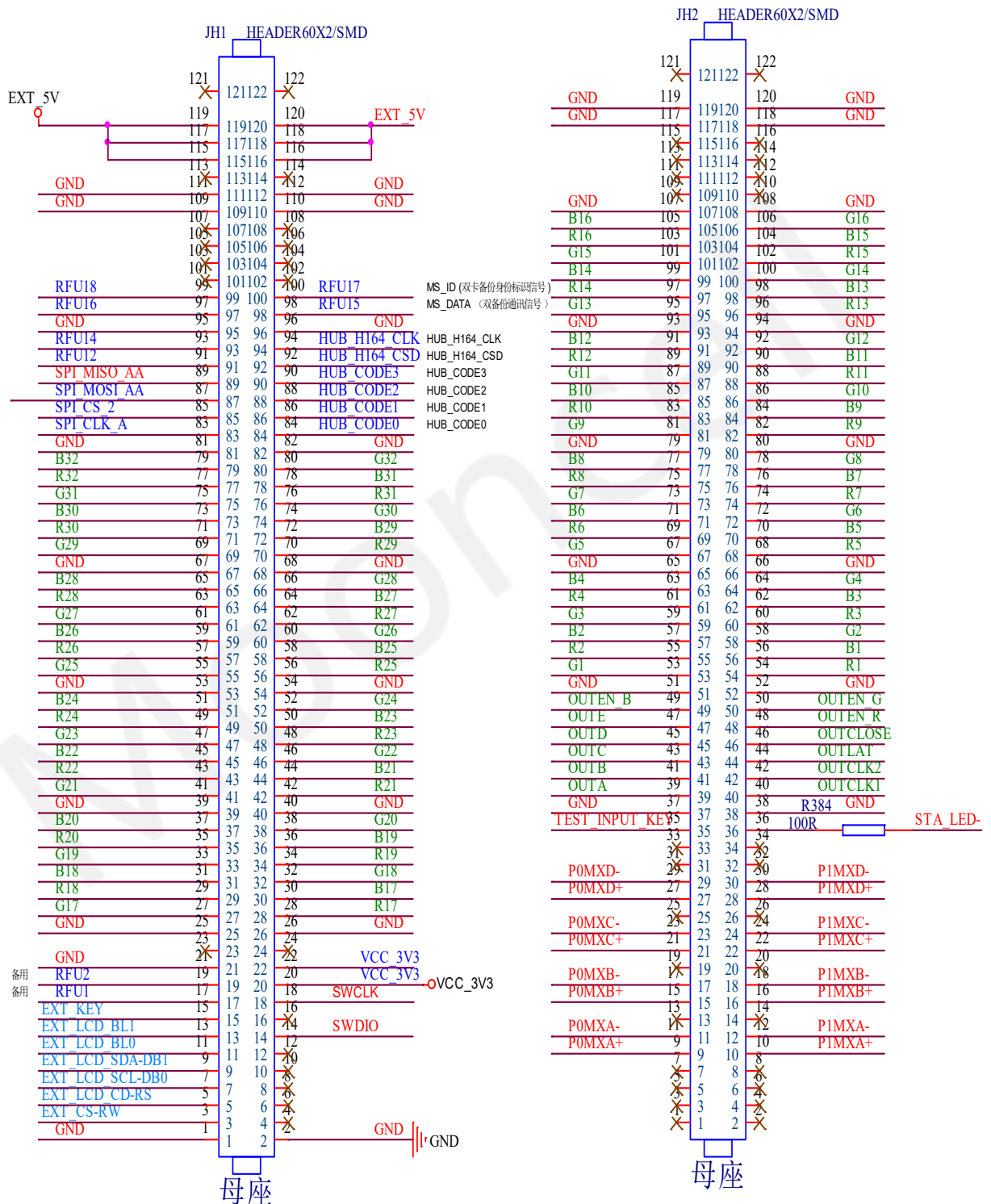
Status Indicator



high-precision connector

Output Port Definition

Port Definition of the 32 Groups of parallel connection data



JH1 Definition:

Illustration	Definition	PIN	PIN	Definition	Illustration
	GND	1	2	GND	
LCD Data Signal	EXT_LCD_SDA	9	10	NC	
LCD Backlight Signal 1	EXT_LCD_BL0	11	12	NC	
LCD Backlight Signal 2	EXT_LCD_BL1	13	14	SWDIO	
LCD Control Key	EXT_LCD_KEY	15	16	NC	
Extension Ports	RFU1	17	18	SWCLK	
	RFU2	19	20	VCC_3.3	3.3V Subsidiary Output
	GND	21	22	V	
	NC	23	24	NC	
	GND	25	26	GND	
	G17	27	28	R17	
	R18	29	30	B17	
	B18	31	32	G18	
	G19	33	34	R19	
	R20	35	36	B19	
	B20	37	38	G20	
	GND	39	40	GND	
	G21	41	42	R21	
	R22	43	44	B21	
	B22	45	46	G22	
	G23	47	48	R23	
	R24	49	50	B23	

	B24	51	52	G24	
	GND	53	54	GND	
	G25	55	56	R25	
	R26	57	58	B25	
	B26	59	60	G26	
	G27	61	62	R27	
	R28	63	64	B27	
	B28	65	66	G28	
	GND	67	68	GND	
	G29	69	70	R29	
	R30	71	72	B29	
	B30	73	74	G30	
	G31	75	76	R31	
	R32	77	78	B31	
	B32	79	80	G32	
	GND	81	82	GND	
	RFU4	83	84	RFU3	
	RFU6	85	86	RFU5	
	RFU8	87	88	RFU7	
	RFU10	89	90	RFU9	
	RFU12	91	92	RFU11	
	RFU14	93	94	RFU13	
	GND	95	96	GND	
	RFU16	97	98	RFU15	
	RFU18	99	100	RFU17	
	NC	101	102	NC	
	NC	103	104	NC	
	NC	105	106	NC	

	NC	107	108	NC	
	GND	109	110	GND	
	GND	111	112	GND	
	NC	113	114	NC	
	VCC	115	116	VCC	
	VCC	117	118	VCC	
	VCC	119	120	VCC	
	NC	121	122	NC	

JH2 Definition :

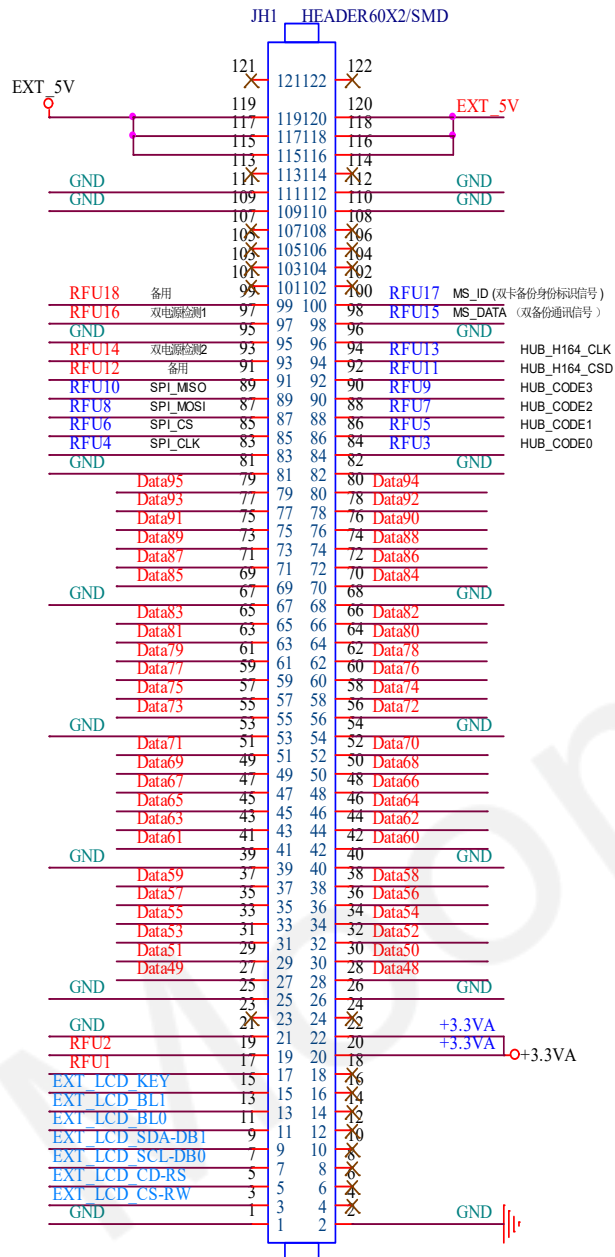
Illustration	Definition	PIN	PIN	Definition	Illustration
	NC	1	2	NC	
	NC	3	4	NC	
	NC	5	6	NC	
	NC	7	8	NC	
Gigabyte Ethernet Ports	P0 MXA+	9	10	P1 MXA+	Gigabyte Ethernet Ports
	P0 MXA-	11	12	P1 MXA-	
	NC	13	14	NC	
	P0 MXB+	15	16	P1 MXB+	
	P0 MXB-	17	18	Port2_B-	
	NC	19	20	NC	
	P0 MXC+	21	22	P1 MXC+	
	P0 MXC-	23	24	P1 MXC-	
	NC	25	26	NC	
	P0 MXD+	27	28	P1 MXD+	
	P0 MXD-	29	30	P1 MXD-	
	NC	31	32	NC	
	NC	33	34	NC	
Testing Key	TEST_INPUT_KEY	35	36	STA_LED-	Operating

					Indicator(ACTIVE LOW)
	GND	37	38	GND	
Line Decoding Signal	OUTA	39	40	OUTCLK_1	First Shift Clock Output
Line Decoding Signal	OUTB	41	42	OUTCLK_2	Second Shift Clock output
Line Decoding Signal	OUTC	43	44	OUTLAT	Latch Signal output
Line Decoding Signal	OUTD	45	46	OUTCLOSE	Blanking Control Signal
Line Decoding Signal	OUTE	47	48	OUTEN_R	Display enable (when OE_R, G, B are not controlled separately, use OE_R)
Display enable (when OE_R, G, B are not controlled separately, use OE_R)	OUTEN_B	49	50	OUTEN_G	
	GND	51	52	GND	
	G1	53	54	R1	
	R2	55	56	B1	

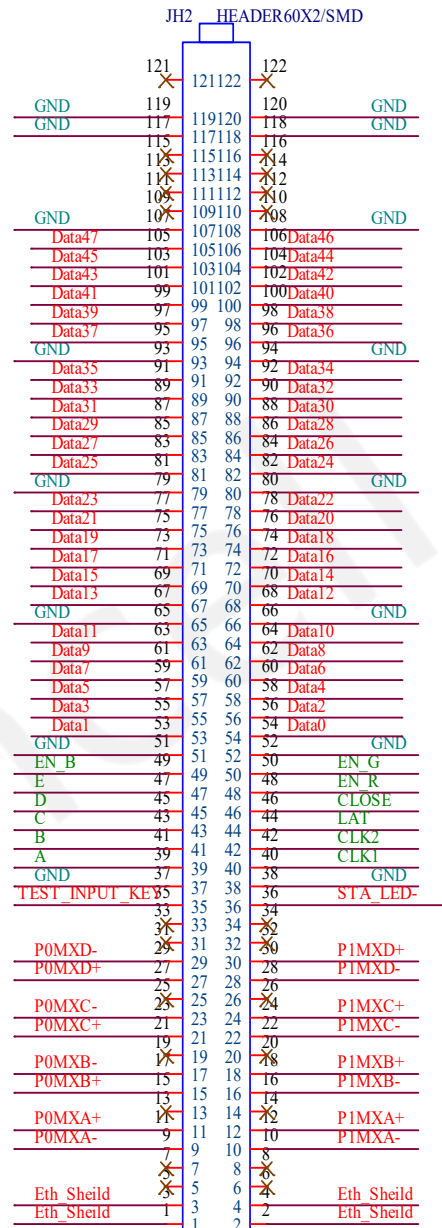
	B2	57	58	G2	
	G3	59	60	R3	
	R4	61	62	B3	
	B4	63	64	G4	
	GND	65	66	GND	
	G5	67	68	R5	
	R6	69	70	B5	
	B6	71	72	G6	
	G7	73	74	R7	
	R8	75	76	B7	
	B8	77	78	G8	
	GND	79	80	GND	
	G9	81	82	R9	
	R10	83	84	B9	
	B10	85	86	G10	
	G11	87	88	R11	
	R12	89	90	B11	
	B12	91	92	G12	
	GND	93	94	GND	
	G13	95	96	R13	
	R14	97	98	B13	
	B14	99	100	G14	
	G15	101	102	R15	
	R16	103	104	B15	
	B16	105	106	G16	
	GND	107	108	GND	
	NC	109	110	NC	
	NC	111	112	NC	

	NC	113	114	NC	
	NC	115	116	NC	
	GND	117	118	GND	
	GND	119	120	GND	
	NC	121	122	NC	

96 Groups of Serial Connection Data Port



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JH1 Definition:

Illustration	Definition	PIN	PIN	Definition	Illustration
	GND	1	2	GND	
CS Signal of the LCD	EXT_LCD_CS	3	4	NC	
RS Signal of the LCD	EXT_LCD_RS	5	6	NC	
LCD Clock Signal	EXT_LCD_SCL	7	8	NC	
LCD Data Signal	EXT_LCD_SDA	9	10	NC	
LCD Backlight Signal 1	EXT_LCD_BL0	11	12	NC	
LCD Backlight Signal 2	EXT_LCD_BL1	13	14	NC	
LCD Control KEY	EXT_KEY	15	16	NC	
Extension Port	RFU1	17	18	NC	
	RFU2	19	20	3.3V_LED	3.3V Subsidiary Output
	GND	21	22		
	NC	23	24	NC	
	GND	25	26	GND	
	Data49	27	28	Data48	
	Data51	29	30	Data50	
	Data53	31	32	Data52	
	Data55	33	34	Data54	
	Data57	35	36	Data56	
	Data59	37	38	Data58	
	GND	39	40	GND	
	Data61	41	42	Data60	
	Data63	43	44	Data62	

	Data65	45	46	Data64	
	Data67	47	48	Data66	
	Data69	49	50	Data68	
	Data71	51	52	Data70	
	GND	53	54	GND	
	Data73	55	56	Data72	
	Data75	57	58	Data74	
	Data78	59	60	Data76	
	Data77	61	62	Data78	
	Data79	63	64	Data80	
	Data81	65	66	Data82	
	GND	67	68	GND	
	Data85	69	70	Data84	
	Data87	71	72	Data86	
	Data89	73	74	Data88	
	Data91	75	76	Data90	
	Data93	77	78	Data92	
	Data95	79	80	Data94	
	GND	81	82	GND	
Extension Port	RFU4	83	84	RFU3	Extension Port
	RFU6	85	86	RFU5	
	RFU8	87	88	RFU7	
	RFU10	89	90	RFU9	
	RFU12	91	92	RFU11	
	RFU14	93	94	RFU13	
	GND	95	96	GND	
Extension Port	RFU16	97	98	RFU15	Extension Port
	RFU18	99	100	RFU17	

	NC	101	102	NC	
	NC	103	104	NC	
	NC	105	106	NC	
	NC	107	108	NC	
	GND	109	110	GND	
	GND	111	112	GND	
	NC	113	114	NC	
Input Power VCC 3.3V- 5.5V(recommended)	VCC	115	116	VCC	Input Power VCC 3.3V- 5.5V(recommended)
	VCC	117	118	VCC	
	VCC	119	120	VCC	

JH2 Definition:

Illustration	Definition	PIN	PIN	Definition	Illustration
External Shield Ground	Eth_Sheid	1	2	Eth_Sheid	External Shield Ground
External Shield Ground	Eth_Sheid	3	4	Eth_Sheid	External Shield Ground
	NC	5	6	NC	
	NC	7	8	NC	
Gigabyte Ethernet Port	P0 MXA-	9	10	P1 MXA-	Gigabyte Ethernet Port
	P0 MXA+	11	12	P1 MXA+	
	NC	13	14	NC	
	P0 MXB+	15	16	P1 MXB+	
	P0 MXB-	17	18	Port2_B-	
	NC	19	20	NC	
	P0 MXC+	21	22	P1 MXC-	
	P0 MXC-	23	24	P1 MXC+	
	NC	25	26	NC	
	P0 MXD+	27	28	P1 MXD+	
		29	30	P1 MXD-	
	NC	31	32	NC	
	NC	33	34	NC	
Testing Key	TEST_INPUT_KEY	35	36	STA_LED-	Operating Indicator(ACTIVE LOW)
	GND	37	38	GND	
Line	A	39	40	CLK_1	First Shift

Decoding Signal					Clock Output
Line Decoding Signal	B	41	42	CLK_2	Second Shift Clock output
Line Decoding Signal	C	43	44	LAT	Latch Signal output
Line Decoding Signal	D	45	46	CTRL	Blanking Control Signal
Line Decoding Signal	E	47	48	OE_R	Display enable (when OE_R, G, B are not controlled separately, use OE_R)
Display enable (when OE_R, G, B are not controlled separately, use OE_R)	OE_B	49	50	OE_G	
	GND	51	52	GND	
	Data1	53	54	Data0	
	Data3	55	56	Data2	
	Data5	57	58	Data4	
	Data7	59	60	Data6	
	Data9	61	62	Data8	
	Data11	63	64	Data10	

	GND	65	66	GND	
	Data13	67	68	Data12	
	Data15	69	70	Data14	
	Data17	71	72	Data16	
	Data19	73	74	Data18	
	Data21	75	76	Data20	
	Data23	77	78	Data22	
	GND	79	80	GND	
	Data25	81	82	Data24	
	Data27	83	84	Data26	
	Data29	85	86	Data28	
	Data31	87	88	Data30	
	Data33	89	90	Data32	
	Data35	91	92	Data34	
	GND	93	94	GND	
	Data37	95	96	Data36	
	Data39	97	98	Data38	
	Data41	99	100	Data40	
	Data43	101	102	Data42	
	Data45	103	104	Data44	
	Data47	105	106	Data46	
	GND	107	108	GND	
	NC	109	110	NC	
	NC	111	112	NC	
	NC	113	114	NC	
	NC	115	116	NC	
	GND	117	118	GND	
	GND	119	120	GND	

	NC	121	122	NC	
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Extension Functions Design Reference:

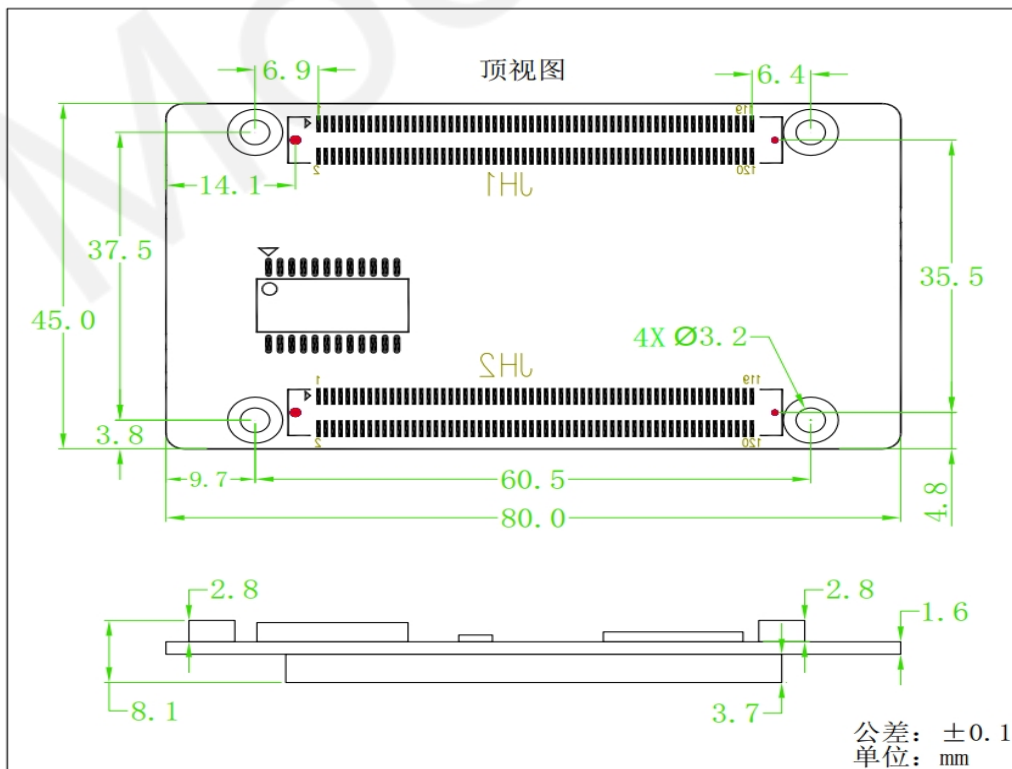
Extension Port	Recommended Intelligent Module Port	Recommended Module Flash Port	Illustration
RFU1	Reserved	Reserved	Get it connected to the reserved PIN of the MCU
RFU2	Reserved	Reserved	Get it connected to the reserved PIN of the MCU
RFU3	HUB_CODE0	HUB_CODE0	Flash Control Port 1
RFU4	HUB_SPI_CLK	HUB_SPI_CLK	Clock Signal of the Serial Connection Port
RFU5	HUB_CODE1	HUB_CODE1	Flash Control Port 2
RFU6	HUB_SPI_CS	HUB_SPI_CS	CS signal of the serial connection port
RFU7	HUB_CODE2	HUB_CODE2	Flash Control Port 3
RFU8	/	HUB_SPI_MOSI	Module Flash the Store Data Input
	HUB_UART_TX	/	Intelligent Module TX Signal
RFU9	HUB_CODE3	HUB_CODE3	Flash Control Port 4
RFU10	/	HUB_SPI_MISO	Module Flash the Store Data Output
	HUB_UART_RX	/	Intelligent Module RX Signal
RFU11	HUB_H164_CSD	HUB_H164_CSD	74HC164 Data Signal
RFU12	/	/	/
RFU13	HUB_H164_CLK	HUB_H164_CLK	74HC164 Clock Signal
RFU14	POWER_STA1	POWER_STA1	Dual Power Supply Detecting Signal 1
RFU15	MS_DATA	MS_DATA	Dual Card Backup Connection

			Signal
RFU16	POWER_STA2	POWER_STA2	Dual Power Supply detecting signal 2
RFU17	MS_ID	MS_ID	Dual card backup label signal
RFU18	HUB_CODE4	HUB_CODE4	Flash Control Port 5

Indicator Illustration

Indicator	Position	Status	Illustration
Status Indicator (Green)	U6	Flickering Slowly at a constant	The receiving card is working properly, The Ethernet Cable
		Flickering Fast at a constant speed	The receiving card is working properly, The Ethernet Cable Connection is fine, with DVI Signal
		It goes out	No Gigabit Ethernet Signal
		Fast Flickering 3 Tunes	The receiving card is working properly, The Ethernet Cable Loop
Status Indicator	U5	Long Lasting On	Power is On

Dimensions



4 Product Specifications

Specifications

Electric Parameters	Input Voltage	DC3.5-5.5V
	Rated Current	0.6A
	Rated Power	3W
Operating Environment	Operating Temperature	-20°C - 70°C
	Operating Humidity	10%RH-90%RH
Storage Environment	Temperature	-25°C~125°C
Dimensions	80mmX45mm	
Net Weight	20.9g	
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**