



# LED-M60C

## Receiving card



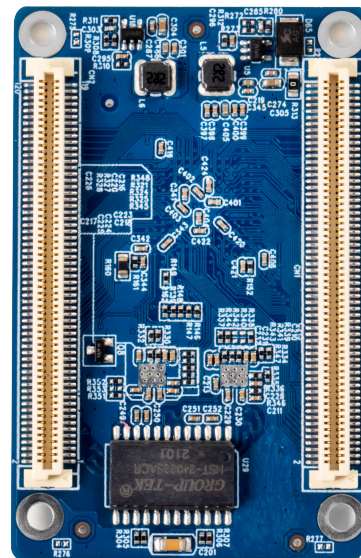
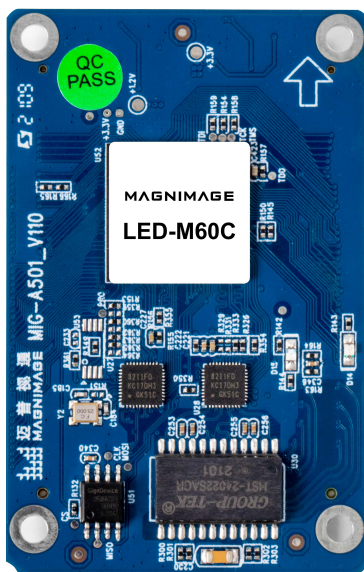
Product Specification

V1.0

## LED-M60C Receiving Card

- **Product Description**

LED-M60C is a receiving card utilized for small pixel pitch LED display. The maximum loading capacity is 192K (512\*384) pixels and used with the CLINK software, it is more stable and reliable under the premise of ensuring the display effect.



### ● Loading capacity

Three-line parallel (RGB)	Maximum pixel loading	Scan row
32 group	512*384	1-64 scan

### ● Improvement of Display Quality

Color restoration	Convert LED original gamut to target gamut, to eliminate the color deviation between the video source and the display terminal.
Fine and Smooth outline(18 Bit+)	Improve the grayscale loss in low brightness condition, especially improve the dark detail.
Independent RGB Gamma adjustment	Independent adjustment for red/green/blue Gamma to solve the problem of image non-uniformity and white balance under low gray level.
Low latency	To decrease the latency between video source to LED display in 1 frame.
Bright & dark line quick repair	Eliminates the bright and dark lines during the LED screen installation period.

Brighness & Chroma calibration	With the help of calibration software,the problem of inconsistent brightness on the screen can be eliminated, and the color uniformity of the screen is better.
3D display	Using with sending device which supports 3D function.
N* 90° rotation	Rotate the video source by every N*90°.
Mirror display	Mirror display of horizontal or vertical.

● **Easier Operation**

Free cable-connection	The loading area of a single signal cable is no longer limited to be rectangular. No more waste of equipment and cost-saving.
Loading capacity expansion	With the equipment that supports loading expansion function, the single network port can loading 1,000,000 pixels after the function is turned on in the CLINK software.
Communication detection	Check the communication quality between the network ports, cooperate with the the indicator flashing light, the hidden problem links can be quickly located.

Smart module	With the smart module, module ID management, calibration data and module parameter storage, module temperature, voltage, cable status monitoring, LED dead pixel detection, and module running time recording are realized.
Module Flash management	Supports the management of the information in the flash module, realizes the storage and readback of the calibration data and module ID. After the module is replaced, the receiving card will automatically read back the calibration data in the flash of the module.
No need reconfigure for card replacement	After replacing the receiving card, there is no need to resend the configuration file and screen connection.
Smart sequencing	After turn on this function on CLink software, the receiving card number and network port information will be displayed on the LED panel, so that the location and cable connection mode can be clearly seen.
No need to upgrade	The factory firmware program is compatible with conventional and most of the dual latch, PWM driver IC.
Configuration	Support the configuration parameter of receiving card

parameter readback	readback.
Prestore image	Display the image when no input signal or signal cut-off.

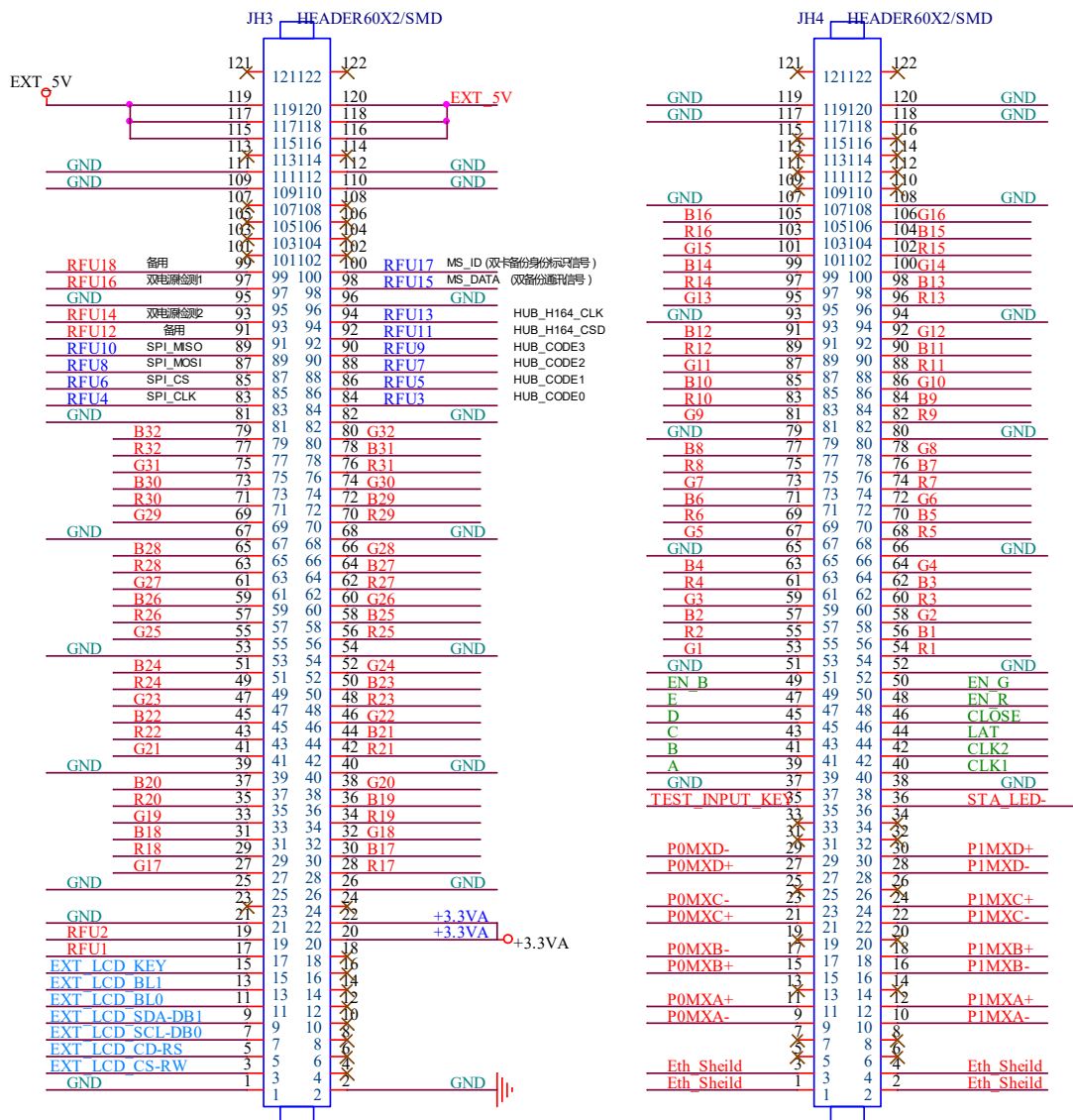
### ● Improvement of the Stability

Dual-card backup	Support connect two power supply simultaneous, it can detect whether the working state of the two power supplies is normal, and automatically reduce the brightness if one power supply failure is detected.
Network port backup	The network port can be used for input or output both way, support hot backup of main and backup cable.
Dual power supplies	Support dual power supplies and automatically reduce the brightness if one power supply failure is detected.
No System Breakdown (firmware read back)	The firmware program of receiving card can restore the factory settings and readback to prevent card system breakdown after upgrading.
Temperature and voltage detection	Real-time monitoring the temperature and voltage.
LCD screen	Display the temperature and voltage of the receiving

	card on the LED panel.
Bit error rate detection	Test the communication quality of the system, record the error and solve the communication issue.

### ● Output Interface Definition

Definition of 32 groups of parallel data interface



JH1 definition:

Description	Definition	Pin	Pin	Definition	Explanation
	GND	1	2	GND	
LCD data signal	EXT_LCD_SDA	9	10	NC	
LCD back signal 1	EXT_LCD_BL0	11	12	NC	
LCD back signal 2	EXT_LCD_BL1	13	14	NC	
LCD control button	EXT_LCD_KEY	15	16	NC	
Expanded port	RFU1	17	18	NC	
	RFU2	19	20	3.3V_LED	3.3V auxiliary output
	GND	21	22		
	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

Description	Definition	Pin	Pin	Definition	Explanation
	NC	1	2	NC	
	NC	3	4	NC	
	NC	5	6	NC	
	NC	7	8	NC	
Gigabit network port	P0 MXA+	9	10	P1 MXA+	Gigabit network port
	P0 MXA-	11	12	P1 MXA-	

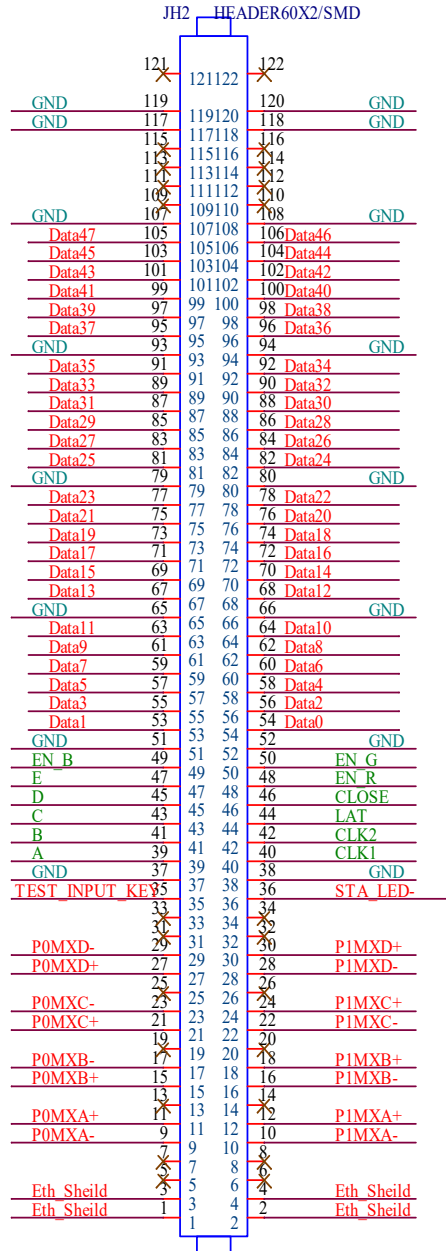
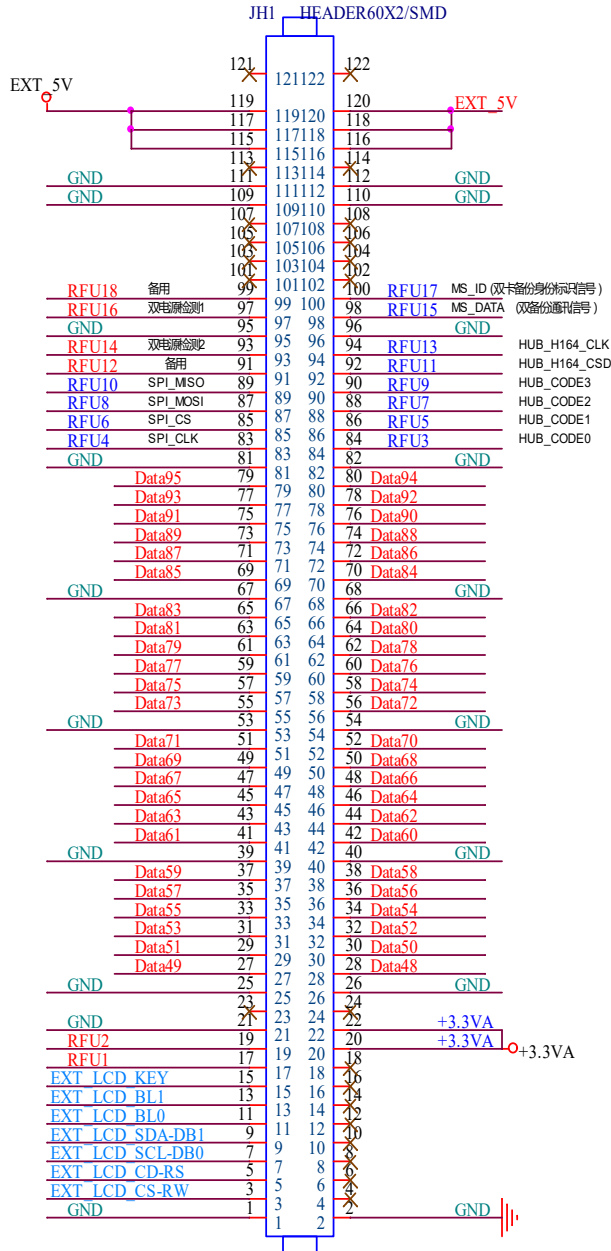
	NC	13	14	NC	
	P0 MXB+	15	16	P1 MXB+	
	P0 MXB-	17	18	Port2_B-	
	NC	19	20	NC	
	P0 MXC+	21	22	P1 MXC+	
	P0 MXC-	23	24	P1 MXC-	
	NC	25	26	NC	
	P0 MXD+	27	28	P1 MXD+	
	P0 MXD-	29	30	P1 MXD-	
	NC	31	32	NC	
	NC	33	34	NC	
Testing button	TEST_INPUT_KEY	35	36	STA_LED-	Operating indicator(in low voltage)
	GND	37	38	GND	
Row decoding signal	OUTA	39	40	OUTCLK_1	The 1 <sup>st</sup> row output of clock shift
Row decoding signal	OUTB	41	42	OUTCLK_2	The 2 <sup>nd</sup> row output of clock shift
Row decoding signal	OUTC	43	44	OUTLAT	Latch data output
Row decoding signal	OUTD	45	46	OUTCLOSE	The control signal of hidden error
Row decoding signal	OUTE	47	48	OUTEN_R	Display enabled

Display enabled (OE_R, G, B not apart, OE_R used when controlling)	OUTEN_B	49	50	OUTEN_G	(OE_R, G, B not apart, OE_R used when controlling)
	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	

Definition of 96 groups serial data interface

JH1 definition



Description	Definition	Pin	Pin	Definition	Explanation
	GND	1	2	GND	

CS signal of LCD	EXT_LCD_CS	3	4	NC	
RS signal of LCD	EXT_LCD_RS	5	6	NC	
Clock signal of LCD	EXT_LCD_SCL	7	8	NC	
Data signal of LCD	EXT_LCD_SDA	9	10	NC	
Backlight signal 1 of LCD	EXT_LCD_BLO	11	12	NC	
Backlight signal 2 of LCD	EXT_LCD_BL1	13	14	NC	
LCD control button	EXT_KEY	15	16	NC	
Expanded function port	RFU1	17	18	NC	
	RFU2	19	20	3.3V_LED	3.3V 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	
Expanded function port	RFU4	83	84	RFU3	Expanded function 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	
Expanded function port	RFU16	97	98	RFU15	Expanded function 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 recommendation: 3.3V ~ 5.5V	VCC	115	116	VCC	Input power VCC recommendation: 3.3V ~ 5.5V
	VCC	117	118	VCC	
	VCC	119	120	VCC	

JH2 definition

Description	Definition	Pin	Pin	Definition	Explanation
Casing earthed	Eth_Sheid	1	2	Eth_Sheild	Casing earthed
Casing earthed	Eth_Sheid	3	4	Eth_Sheild	Casing earthed
	NC	5	6	NC	
	NC	7	8	NC	
Gigabit network	P0 MXA-	9	10	P1 MXA-	Gigabit network

port	P0 MXA+	11	12	P1 MXA+	port
	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 button	TEST_INPUT_KEY	35	36	STA_LED-	Operating indicator(in low voltage)
	GND	37	38	GND	
Row decoding signal	A	39	40	CLK_1	The 1 <sup>st</sup> row output of clock shift
Row decoding signal	B	41	42	CLK_2	The 2 <sup>nd</sup> row output of clock shift
Row decoding signal	C	43	44	LAT	Latch data output
Row decoding signal	D	45	46	CTRL	The control signal of hidden error

Row decoding signal	E	47	48	OE_R	Display enabled (OE_R、G、B not aprt. OE_R used when controlling)
Display enabled (OE_R、G、B not aprt. OE_R used when controlling)	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	

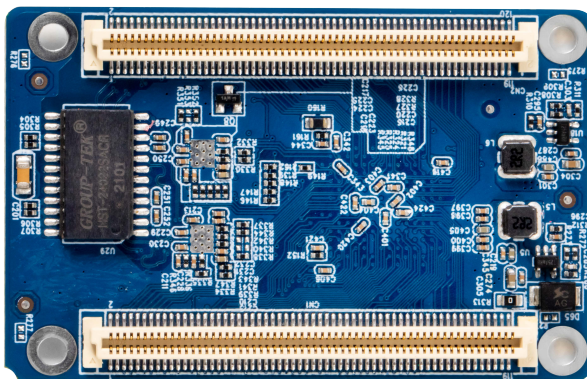
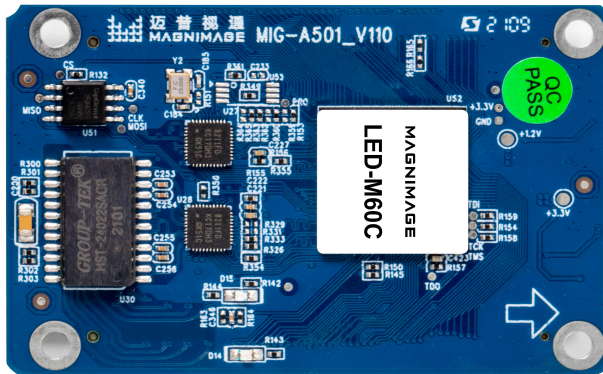
**Expanded Functions**

Expanded interface	Smart module interface recommended	Flash interface recommended	Description
RFU1	Reserved	Reserved	Connect to MCU reserved pin
RFU2	Reserved	Reserved	Connect to MCU reserved pin
RFU3	HUB_CODE0	HUB_CODE0	Flash control port 1
RFU4	HUB_SPI_CLK	HUB_SPI_CLK	Serial port clock signal
RFU5	HUB_CODE1	HUB_CODE1	Flash control port 2
RFU6	HUB_SPI_CS	HUB_SPI_CS	CS signal of serial port
RFU7	HUB_CODE2	HUB_CODE2	Flash control port 3
RFU8	/	HUB_SPI_MOSI	Flash memory input of the lamp board
	HUB_UART_TX	/	TX signal of smart module
RFU9	HUB_CODE3	HUB_CODE3	Flash control port 4
RFU10	/	HUB_SPI_MISO	Flash memory output of the lamp board
	HUB_UART_RX	/	RX signal of smart module
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 testing signal 1
RFU15	MS_DATA	MS_DATA	Dual card backup connection signal
RFU16	POWER_STA2	POWER_STA2	Dual power testing signal 2
RFU17	MS_ID	MS_ID	Dual card backup ID signal
RFU18	HUB_CODE4	HUB_CODE4	Flash control port 5

## ● Indicator Light Specification

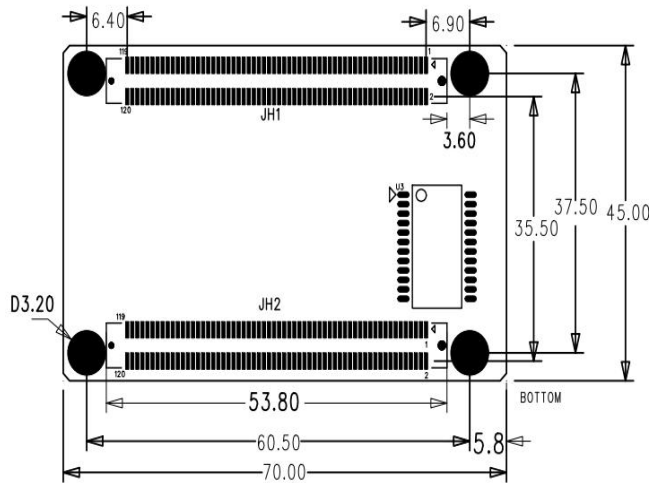
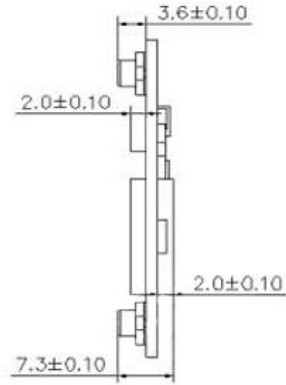
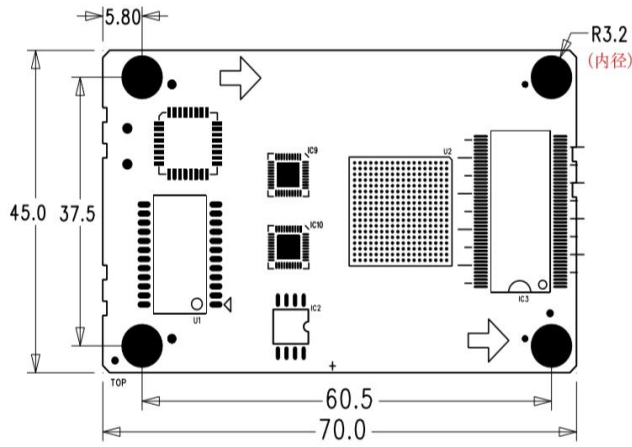
Indicator	Position	Status	Description
Status indicator(green)	U6	Slow flash regularly	The receiving card works normally,the network cable connects normally,
		Fast flash regularly	The receiving card works normally,the network cable connects
		Always OFF	No Gigabit network signal
		Flashes at 3 times intervalstimes	The receiving card works normally,the network cable loop
Status indicator (red)	U5	Always ON	Power supply is normal

● Product photo



High precision interface

● Product dimension (unit:mm)



Regular size	$0 < a \leq 6$	$6 < a \leq 30$	$30 < a \leq 120$
Margin of error	$\pm 0.1$	$\pm 0.2$	$\pm 0.3$



## ● Parameters

Electrical parameters	Input voltage	DC3.5-5.5V
	Rated current	0.6A
	Rated power	3W
Working environment	Working temperature	-20°C - 70°C
	Working moisture	10%RH-90%RH
Storage environment	Temperature	-25°C ~ 125°C
Card dimension	70mmX45mm	
Net weight	18.3g	
Certification	RoHS compliant, CE-EMC compliant	

## ● Note

- (1) The installation process should be completed by professionals..
- (2) It must be anti-static.
- (3) Stay away from water and dust.

**24h** 400-6868-203

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