灰度科技
HUIDU TECHNOLOGY

PRODUCT SPECIFICATION

Receiving Card

HD-R5s Plus

V1.0

Update history

Release version	Release time	Release Notes
V1.0	Nov. 28, 2025	First release

1. Product Overview

The R5s Plus is a small-sized receiver card with a high-density connector interface launched by Huidu Technology . A single card can control 512*512 pixels , support 32 groups of RGB parallel data or 64 groups of serial data (expandable to 128) , and has a super large load capacity, with a maximum controllable pixel size of 260,000.

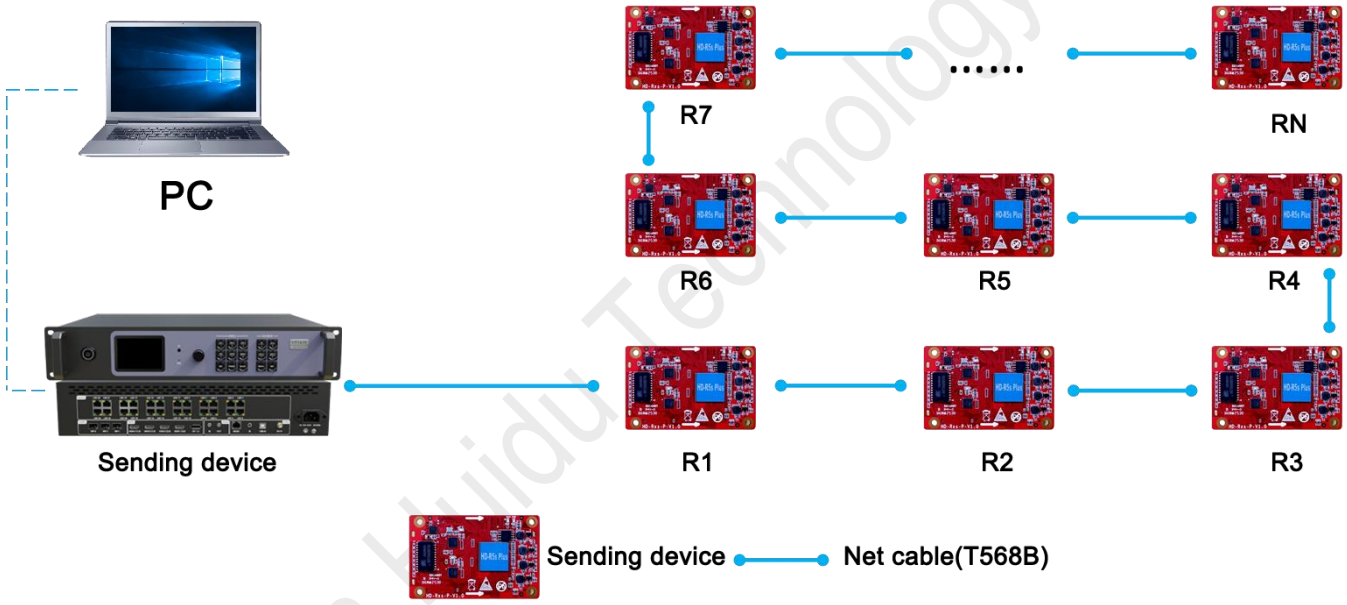
2. Parameters

Features	Parameters
Supported Sending Types	It supports synchronous and asynchronous dual-mode playback boxes, asynchronous sending cards, synchronous sending cards, and video processors.
Supported modules	Supports modules with all common chips; supports mainstream PWM chip modules.
Scanning method	Supports any scanning mode from static to 1/128 scan , and supports spot and blank spot settings.
Communication methods	Gigabit Ethernet ports
Load range	Maximum load: 512 * 512@60Hz Note: Actual load capacity depends on the number of interfaces and module resolution.
Multi-card connection	Receiver cards can be sorted arbitrarily, achieving nanosecond-level synchronization.
Gray levels	Supports levels 256 to 65536
Smart Settings	Smart setup can be completed in just a few simple steps, and the screen wiring configuration allows it to work with display unit boards with any wiring method.
Test Function	The receiver card integrates a screen testing function to test the brightness uniformity and flatness of the display module.
Communication distance	Cat5e and Cat6 network cables within 80 meters
Rotate by multiples of 90°	The screen rotates in multiples of 90 degrees (0/90/180/270 degrees).
Point-by-point correction	In conjunction with the grayscale correction system, it supports point-by-point brightness and color correction, as well as adjustment/repair of bright and dark lines.
RGB independent gamma adjustment	By adjusting the gamma values of " R ", " G ", and " B " , problems such as uneven grayscale and inaccurate white balance on the display screen are solved , thereby improving the realism of the picture.
Monitoring function	The receiver card 's temperature and voltage can be directly monitored without

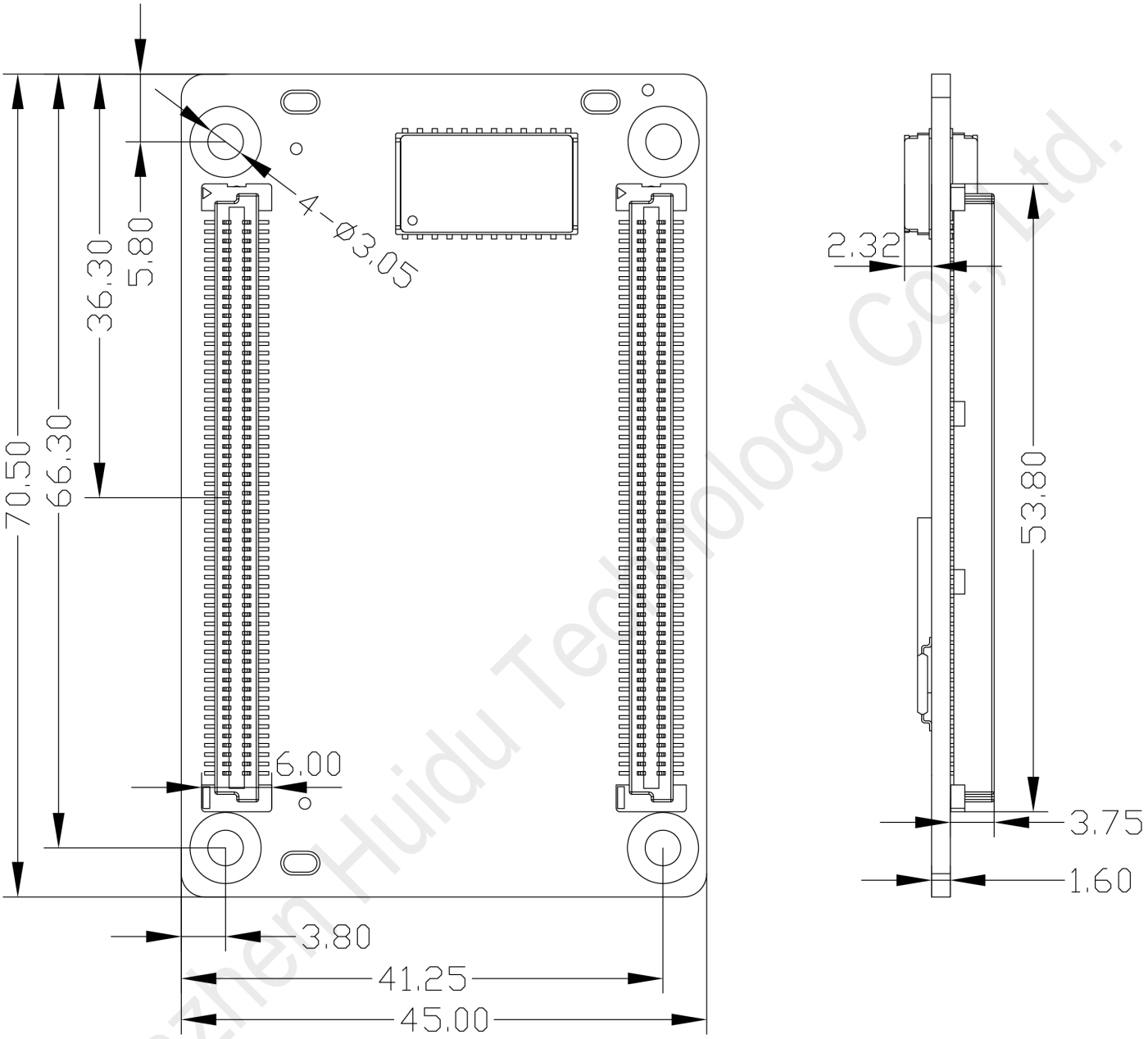
	external devices , and the current running time can be recorded.
Configuration parameters are backed up twice.	The receiver card configuration parameters can be saved to the factory area , and can be restored from the factory area when the configuration parameters are modified.
Dual backup receiver card	event of a primary card failure , the system automatically switches to the backup card to ensure continuous display and prevent interruptions or malfunctions.
Flashboard	For LED boards with Flash memory, the correction coefficients can be stored and read back for application.

3. Connection Method

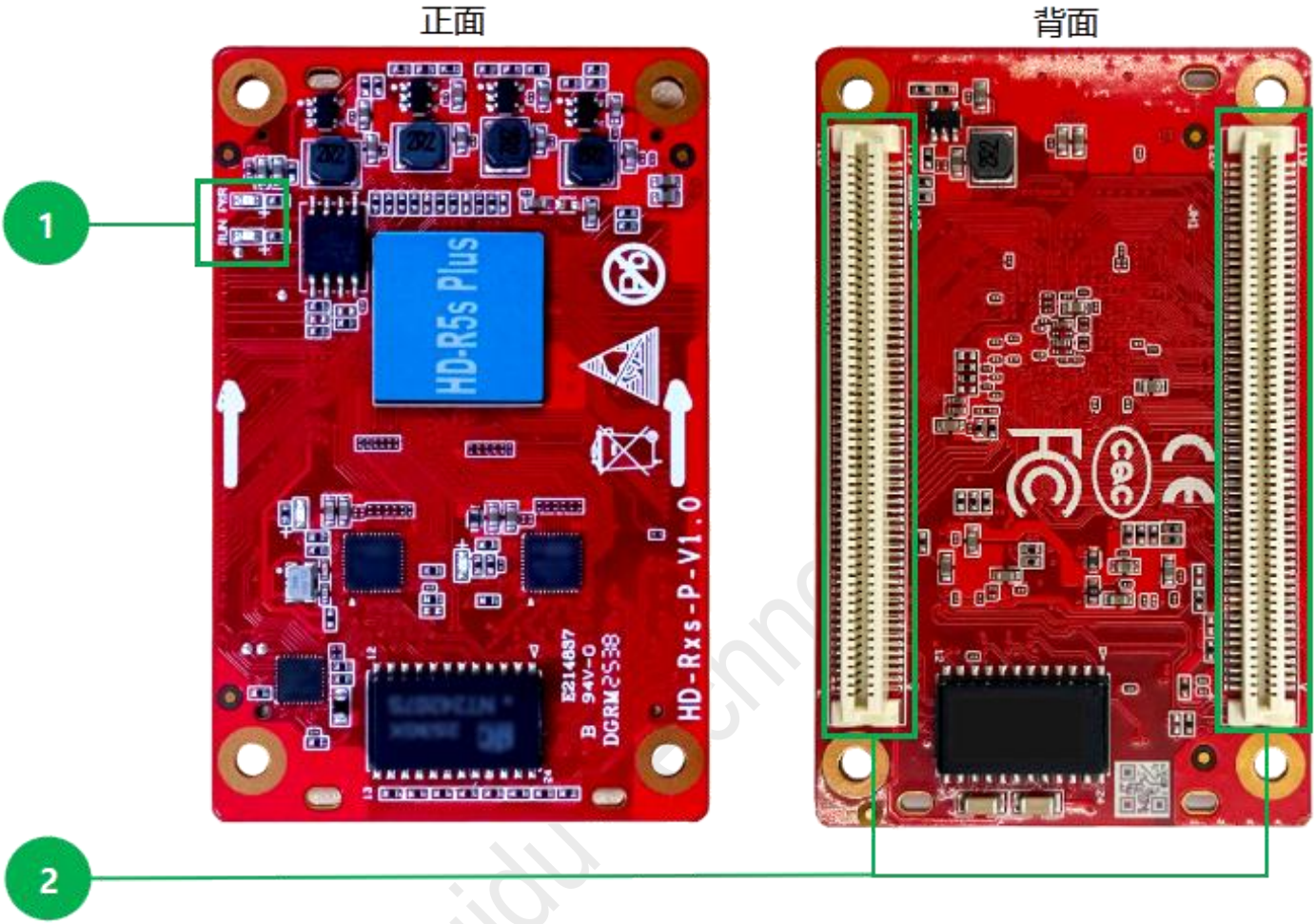
Schematic diagram of connection between sending box and receiving card:



4. Dimensions



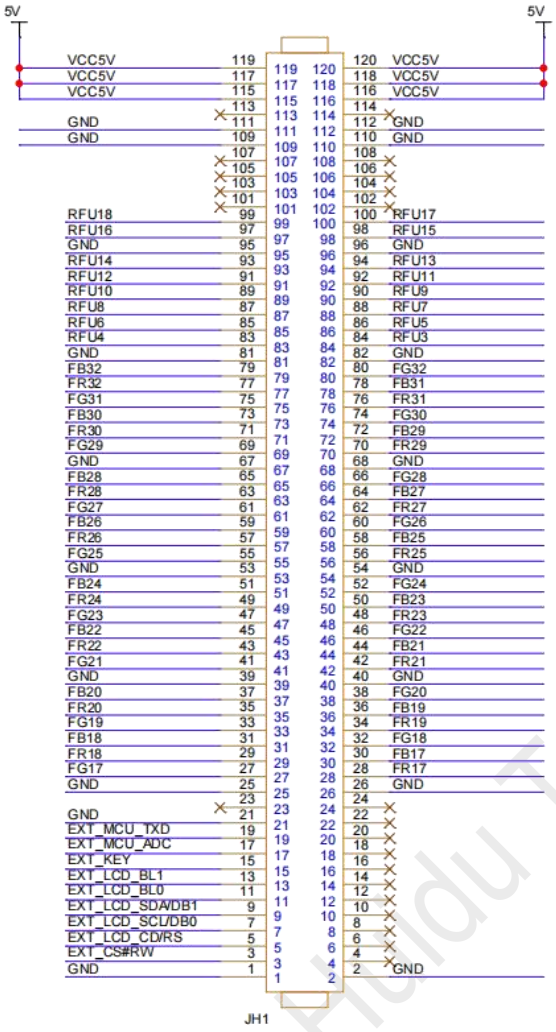
5. Interface Description

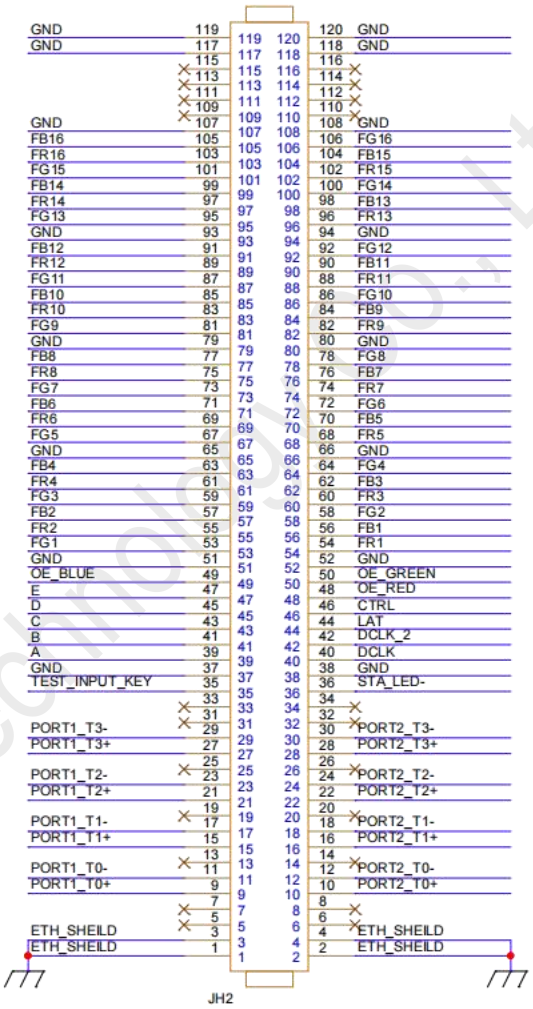


No.	Interface	Description	
1	Indicator light	Power indicator (PWR) green	The light is constantly on, indicating normal power input.
		Power indicator (RUN) green	If the screen lights up and turns off in one second, it indicates a network connection problem or no video signal. The flashes 4 times per second, indicating that the receiver card is working properly and the video signal is normal. Flashes 5 times in 2.5 seconds, then stops after 1.5 seconds; receiver card parameters are locked.
2	Data interface	Data signal transfer interface, which is connected with the transfer board	

6. Interface Definition

32 Groups sets of parallel data interface definitions





JH1					
Ground	GND	1	2	GND	Ground
LCD CS signal	EXT_CS#RW	3	4	NC	/
LCD RS signal	EXT_LCD_CD/RS	5	6	NC	/
LCD clock signal	EXT_LCD_SCL/DB0	7	8	NC	/
LCD data signals	EXT_LCD_SDA/DB1	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 buttons	EXT_KEY	15	16	NC	/
Reserved pins for connection to the MCU	EXT_MCU_ADC	17	18	NC	/
Reserved pins for connection to the MCU	EXT_MCU_TXD	19	20	NC	/

JH1					
Ground	GND	21	22	NC	/
/	NC	23	24	NC	/
Ground	GND	25	26	GND	Ground
RGB output	G17	27	28	R17	RGB output
	R18	29	30	B17	
	B18	31	32	G18	
	G19	33	34	R19	
	R20	35	36	B19	
	B20	37	38	G20	
Ground	GND	39	40	GND	Ground
RGB output	G21	41	42	R21	RGB output
	R22	43	44	B21	
	B22	45	46	G22	
RGB output	G23	47	48	R23	RGB output
	R24	49	50	B23	
	B24	51	52	G24	
Ground	GND	53	54	GND	Ground
RGB output	G25	55	56	R25	RGB output
	R26	57	58	B25	
	B26	59	60	G26	
	G27	61	62	R27	
	R28	63	64	B27	
	B28	65	66	G28	
Ground	GND	67	68	GND	Ground
RGB output	G29	69	70	R29	RGB output
	R30	71	72	B29	
	B30	73	74	G30	
	G31	75	76	R31	
	R32	77	78	B31	
	B32	79	80	G32	
Ground	GND	81	82	GND	Ground
/	RFU4	83	84	RFU3	/
/	RFU6	85	86	RFU5	/
/	RFU8	87	88	RFU7	/
/	RFU10	89	90	RFU9	/
/	RFU12	91	92	RFU11	/
/	RFU14	93	94	RFU13	/

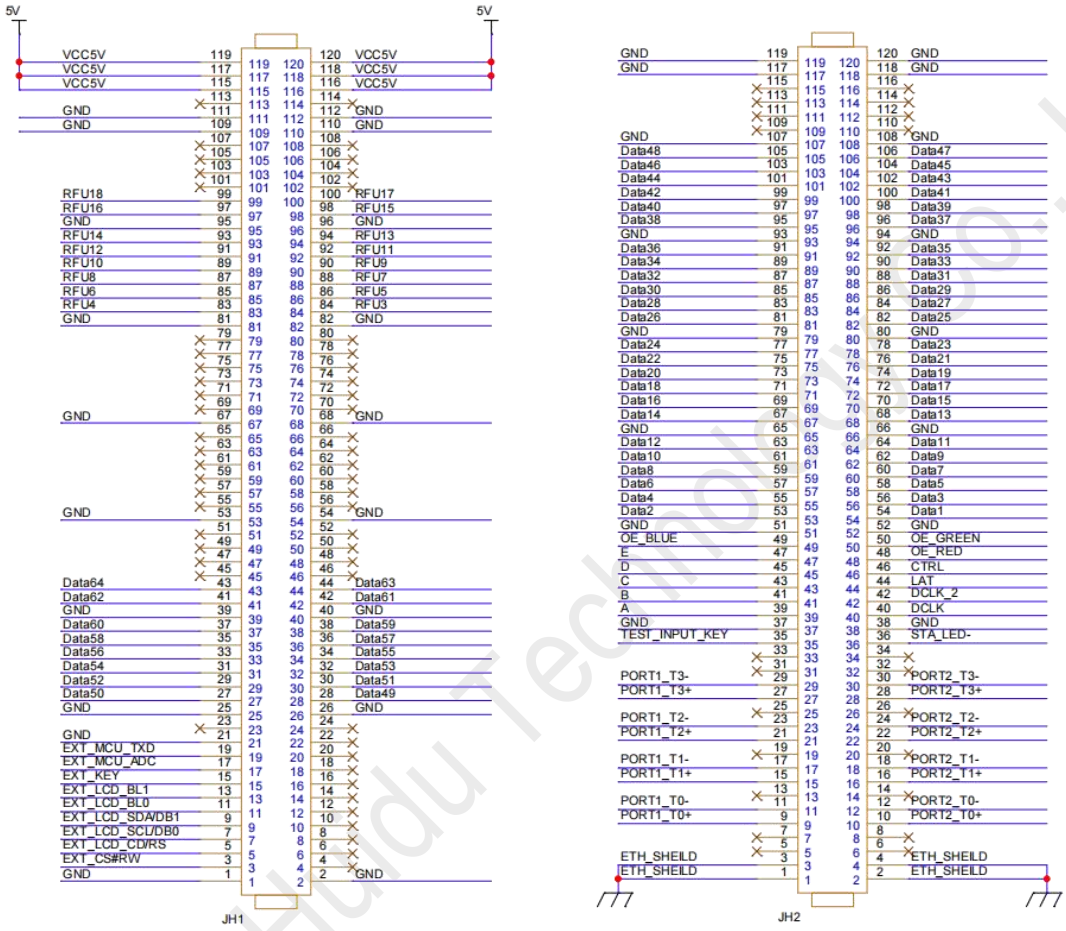
JH1					
Ground	GND	95	96	GND	Ground
/	RFU16	97	98	RFU15	/
/	RFU18	99	100	RFU17	/
/	NC	101	102	NC	/
/	NC	103	104	NC	/
/	NC	105	106	NC	/
/	NC	107	108	NC	/
Ground	GND	109	110	GND	Ground
Ground	GND	111	112	GND	Ground
/	NC	113	114	NC	/
System power supply	EXT_5V	115	116	EXT_5V	System power supply
	EXT_5V	117	118	EXT_5V	
	EXT_5V	119	120	EXT_5V	

JH2					
Grounding of the casing	ETH_SHEILD	1	2	ETH_SHEILD	Grounding of the casing
Grounding of the casing	ETH_SHEILD	3	4	ETH_SHEILD	Grounding of the casing
/	NC	5	6	NC	/
/	NC	7	8	NC	/
Gigabit Ethernet ports	PORT1_T0+	9	10	PORT2_T0+	Gigabit Ethernet ports
	PORT1_T0-	11	12	PORT2_T0-	
	NC	13	14	NC	
	PORT1_T1+	15	16	PORT2_T0+	
	PORT1_T1-	17	18	PORT2_T0-	
	NC	19	20	NC	
	PORT1_T2+	21	22	PORT2_T0+	
	PORT1_T2-	23	24	PORT2_T0-	
	NC	25	26	NC	
	PORT1_T3+	27	28	PORT2_T0+	
	PORT1_T3-	29	30	PORT2_T0-	
/	NC	31	32	NC	/
/	NC	33	34	NC	/
Test button	TEST_INPUT_KEY	35	36	STA_LED-	Operation indicator light (active low)
Ground	GND	37	38	GND	Ground
Line decoding signal	A	39	40	DCLK1	First shift clock output
Line decoding signal	B	41	42	DCLK2	Second shift clock output

JH2					
Line decoding signal	C	43	44	LAT	Latch signal output
Line decoding signal	D	45	46	CTRL	Afterglow control signal
Line decoding signal	E	47	48	OE_RED	Display enable signal
Display enable signal	OE_BLUE	49	50	OE_GREEN	Display enable signal
Ground	GND	51	52	GND	Ground
RGB output	G1	53	54	R1	RGB output
	R2	55	56	B1	
	B2	57	58	G2	
	G3	59	60	R3	
	R4	61	62	B3	
	B4	63	64	G4	
Ground	GND	65	66	GND	Ground
RGB output	G5	67	68	R5	RGB output
	R6	69	70	B5	
	B6	71	72	G6	
	G7	73	74	R7	
	R8	75	76	B7	
RGB output	B8	77	78	G8	RGB output
Grounding	GND	79	80	GND	Grounding
RGB output	G9	81	82	R9	RGB output
	R10	83	84	B9	
	B10	85	86	G10	
	G11	87	88	R11	
	R12	89	90	B11	
	B12	91	92	G12	
Grounding	GND	93	94	GND	Grounding
RGB output	G13	95	96	R13	RGB output
	R14	97	98	B13	
	B14	99	100	G14	
	G15	101	102	R15	
	R16	103	104	B15	
	B16	105	106	G16	
Grounding	GND	107	108	GND	Grounding
/	NC	109	110	NC	/
/	NC	111	112	NC	/
/	NC	113	114	NC	/
/	NC	115	116	NC	/

JH2					
Ground	GND	117	118	GND	Ground
	GND	119	120	GND	

64 Groups sets of parallel data interface definitions



JH1					
Ground	GND	1	2	GND	Ground
LCD CS signal	EXT_CS#RW	3	4	NC	/
LCD RS signal	EXT_LCD_CD/RS	5	6	NC	/
LCD clock signal	EXT_LCD_SCL/DB0	7	8	NC	/
LCD data signals	EXT_LCD_SDA/DB1	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 buttons	EXT_KEY	15	16	NC	/
Reserved pins for connection to the MCU	EXT_MCU_ADC	17	18	NC	/
Reserved pins for connection to the MCU	EXT_MCU_TXD	19	20	NC	/

JH1					
Ground	GND	21	22	NC	/
/	NC	23	24	NC	/
Ground	GND	25	26	GND	Ground
RGB output	Data50	27	28	Data49	RGB output
	Data52	29	30	Data51	
	Data54	31	32	Data53	
	Data56	33	34	Data55	
	Data58	35	36	Data57	
	Data60	37	38	Data59	
Ground	GND	39	40	GND	Ground
RGB output	Data62	41	42	Data61	RGB output
RGB output	Data64	43	44	Data63	RGB output
/	NC	45	46	NC	/
/	NC	47	48	NC	/
/	NC	49	50	NC	/
/	NC	51	52	NC	/
Ground	GND	53	54	GND	Ground
/	NC	55	56	NC	/
/	NC	57	58	NC	/
/	NC	59	60	NC	/
/	NC	61	62	NC	/
/	NC	63	64	NC	/
/	NC	65	66	NC	/
Ground	GND	67	68	GND	Ground
/	NC	69	70	NC	/
/	NC	71	72	NC	/
/	NC	73	74	NC	/
/	NC	75	76	NC	/
/	NC	77	78	NC	/
/	NC	79	80	NC	/
Ground	GND	81	82	GND	Ground
/	RFU4	83	84	RFU3	/
/	RFU6	85	86	RFU5	/
/	RFU8	87	88	RFU7	/
/	RFU10	89	90	RFU9	/
/	RFU12	91	92	RFU11	/
/	RFU14	93	94	RFU13	/

JH1					
Ground	GND	95	96	GND	Ground
/	RFU16	97	98	RFU15	/
/	RFU18	99	100	RFU17	/
/	NC	101	102	NC	/
/	NC	103	104	NC	/
/	NC	105	106	NC	/
/	NC	107	108	NC	/
Ground	GND	109	110	GND	Ground
Ground	GND	111	112	GND	Ground
/	NC	113	114	NC	/
System power supply	EXT_5V	115	116	EXT_5V	System power supply
	EXT_5V	117	118	EXT_5V	
	EXT_5V	119	120	EXT_5V	
	GND	119	120	GND	

JH2					
Grounding of the casing	ETH_SHEILD	1	2	ETH_SHEILD	Grounding of the casing
Grounding of the casing	ETH_SHEILD	3	4	ETH_SHEILD	Grounding of the casing
/	NC	5	6	NC	/
/	NC	7	8	NC	/
Gigabit Ethernet ports	PORT1_T0+	9	10	PORT2_T0+	Gigabit Ethernet ports
	PORT1_T0-	11	12	PORT2_T0-	
	NC	13	14	NC	
	PORT1_T1+	15	16	PORT2_T0+	
	PORT1_T1-	17	18	PORT2_T0-	
	NC	19	20	NC	
	PORT1_T2+	21	22	PORT2_T0+	
	PORT1_T2-	23	24	PORT2_T0-	
	NC	25	26	NC	
	PORT1_T3+	27	28	PORT2_T0+	
	PORT1_T3-	29	30	PORT2_T0-	
/	NC	31	32	NC	/
/	NC	33	34	NC	/
Test button	TEST_INPUT_KEY	35	36	STA_LED-	Operation indicator light (active low)
Ground	GND	37	38	GND	Ground

JH2					
Line decoding signal	A	39	40	DCLK1	First shift clock output
Line decoding signal	B	41	42	DCLK2	Second shift clock output
Line decoding signal	C	43	44	LAT	Latch signal output
Line decoding signal	D	45	46	CTRL	Afterglow control signal
Line decoding signal	E	47	48	OE_RED	Display enable signal
Display enable signal	OE_BLUE	49	50	OE_GREEN	Display enable signal
Ground	GND	51	52	GND	Ground
RGB output	Data2	53	54	Data1	RGB output
	Data4	55	56	Data3	
	Data6	57	58	Data5	
	Data8	59	60	Data7	
	Data10	61	62	Data9	
	Data12	63	64	Data11	
Ground	GND	65	66	GND	Ground
RGB output	Data14	67	68	Data13	RGB output
	Data16	69	70	Data15	
	Data18	71	72	Data17	
	Data20	73	74	Data19	
	Data22	75	76	Data21	
RGB output	Data24	77	78	Data23	RGB output
Ground	GND	79	80	GND	Ground
RGB output	Data26	81	82	Data25	RGB output
	Data28	83	84	Data27	
	Data30	85	86	Data29	
	Data32	87	88	Data31	
	Data34	89	90	Data33	
	Data36	91	92	Data35	
Ground	GND	93	94	GND	Ground
RGB output	Data38	95	96	Data37	RGB output
	Data40	97	98	Data39	
	Data42	99	100	Data41	
	Data44	101	102	Data43	
	Data46	103	104	Data45	
	Data48	105	106	Data47	
Ground	GND	107	108	GND	Ground
/	NC	109	110	NC	/
/	NC	111	112	NC	/

JH2					
/	NC	113	114	NC	/
/	NC	115	116	NC	/
Ground	GND	117	118	GND	Ground
	GND	119	120	GND	

Extended Functionality Reference Design

Extended Function Interface Description			
Extension Interface	Recommended LED board Flash interface	Recommended smart module interface	illustrate
RFU4	HUB_SPI_CLK	Reserved	Clock signal of serial interface
RFU6	HUB_SPI_CS	Reserved	CS signal of serial interface
RFU8	HUB_SPI_MOSI	/	Light board Flash storage data input
	/	HUB_UART_TX	Smart module TX signal
RFU10	HUB_SPI_MISO	/	Light board Flash storage data output
	/	HUB_UART_RX	Smart module RX signal
RFU3	HUB_CODE0		Light board Flash BUS control interface
RFU5	HUB_CODE1		
RFU7	HUB_CODE2		
RFU9	HUB_CODE3		
RFU18	HUB_CODE4		
RFU11	HUB_H164_CSD		74HC164 data signal
RFU13	HUB_H164_CLK		
RFU14	POWER_STA1		Dual power supply detection signal
RFU16	POWER_STA2		
RFU15	MS_DATA		Dual SIM backup connection signal
RFU17	MS_ID		Dual-SIM backup identity signal

RFU8 and RFU10 are signal multiplexing expansion interfaces. At any given time, only one of the "Recommended Smart Module Interface" and "Recommended Light Board Flash Interface" can be selected.

7. Technical Parameters

Item	Parameter value
Operating voltage (V)	DC 3.8 V-5.5 V
Power consumption(W)	3W
Operating temperature (°C)	-25 ℃ to +75 ℃
Operating humidity (RH)	0 ~ 95%RH
Storage temperature (°C)	-40 ℃ ~ + 105 ℃
Storage humidity (RH)	0 ~ 95%RH
Net weight (unit: g)	Approximately 16.5g

Precautions:

1) Ensure the system long-term stable running, please use the standard power supply.

2) Please do not operate with electricity

3) Due to the production batch and other reasons, there may be a slight error between the photo and the real thing. If in doubt, please confirm with us.