



H12s Specification

LED Receiving Card Series

Version: v1.0

Release Date: April 2025

Revision History

Version Number	Summary of the revisions	Revision Date	Revised by
V 1.0	Initial release	2025/04/27	Zhang Yongjie

Product Overview

The H12s receiving card is a small-size universal receiving card used in LED displays as a display data receiving device. It is used to convert the received data into signals that can be recognized by the driver chip and splice them into images for display on the large screen. It supports color space, 22bit+, point-by-point color correction, full grayscale correction, fast seam repair, module batch correction, 3D display, RGB independent gamma adjustment, arbitrary angle rotation and other functions to improve display effects and user experience.

H12s uses a pair of high-density connectors for communication design, which is shockproof and dustproof with high stability. It supports 32 sets of parallel data, or 64 sets of serial data, and can be expanded to 128 sets of serial data. The maximum load supported by a single card is:
PWM: 512x1024; conventional: 512x512.

Product Certification

RoHS certification, EMC Class A, EMC needs to be tested with a box, if necessary, please contact Kystar technicians for assistance

Note: If the product has no relevant certification in any country or region, please contact Kystar immediately for confirmation or processing. Otherwise, if any legal risks are caused, the customer shall bear them by himself or Kystar shall have the right to seek compensation.

Features

Display Effect

- Support 8bit/10bit/12bit video input.
- Supports HDR10/HLG.

With support for HDR10 transmission, HDR10/HLG multiple standards HDR display can be achieved

- Supports image quality wizard.
 - Chromaticity space: Adjust the display standard color gamut or custom color gamut to meet customer color needs
 - Fine grayscale : calibrate the grayscale step by step to optimize grayscale jumps , color casts, speckles and other issues
 - 18/22bit: Improves grayscale display effect, showing more details and more delicate display
- Support point-by-point brightness and chromaticity correction function.

With the help of Kystar's point-by-point correction technology, the brightness and color of each light point are corrected to solve the color difference problem and improve the consistency of the entire screen.

- Supports full grayscale correction (up to 4 layers).

With Kystar's full grayscale correction technology, it generates its own correction coefficient for each grayscale level to ensure the uniformity

of each grayscale level, thereby improving the image quality of the display.

- Support module batch correction function.

Adjust brightness and color for a single cabinet or module to improve display differences caused by batch problems

- Supports quick seam repair.

Adjust the light and dark lines at the module/cabinet joint to improve the brightness consistency of the display. Parameter adjustment takes effect in real time and is easy to operate.

- Supports 3D display effects (load reduced by half).

Cooperate with 3D transmitter and 3D glasses to achieve 3D display effect

- Supports independent adjustment of RGB.

Independent adjustment of RGB gamma can effectively control low gray uniformity, inaccurate white balance and other issues, thereby improving display effects

After-sales maintenance

- Supports light board FLASH management.

light boards with FLASH , enabling editing and reading back of correction coefficients and light board IDs

- Supports calibration data backup.

Brightness and chromaticity correction coefficients can be stored in the application area and factory area of the receiving card. Users can change the correction coefficients in the application area and restore the factory correction parameters for use when necessary.

- Supports Mapping function.

The device number and other information can be displayed on the box to understand the wiring method

- Supports photo-taking and screen-connected function.

The display connection diagram can be made by taking photos of the display and uploading them .

- Supports pre-stored picture settings.

Customize the display screen when power is on, network cable is disconnected, or there is no video source signal

- Supports its own temperature and voltage monitoring functions.

No need to connect other devices, real-time monitoring of device temperature and voltage parameters is possible

- Support external LCD module.

An external LCD module can be connected to display the temperature, voltage, single operation time and total operation time of the receiving card

- Supports real-time detection of network communication status.

Assist in eliminating abnormalities in the communication link by detecting the number of error packets in data transmission at the receiving card network port

- Supports one-click reading back of configuration file information.

Read back the configuration parameters of the receiving card and save them locally

- Supports arbitrary point extraction, easy to set various special-shaped screens.

You can follow the software prompts to set any special-shaped light panels , and easily realize the configuration and debugging of various special-shaped screens, which is convenient and fast.

- Supports display screen rotation at any angle.

Rotate the displayed image at any angle

Product stability

- Adopt high-density connector interface, the connection is stable and reliable.
- Integrated network transformer to improve electromagnetic compatibility.
- Support loop backup function.

The receiving card and the sending card are connected to form a loop through the main and standby network cables. When a fault occurs somewhere in the link, it will not affect the screen display, thus improving the reliability of the project.

- Support dual card backup.

For sites with high reliability requirements, the main and backup receiving cards can be connected on a HUB board. When the main card fails, the backup card can take over the main card in time to ensure continuous display on the screen.

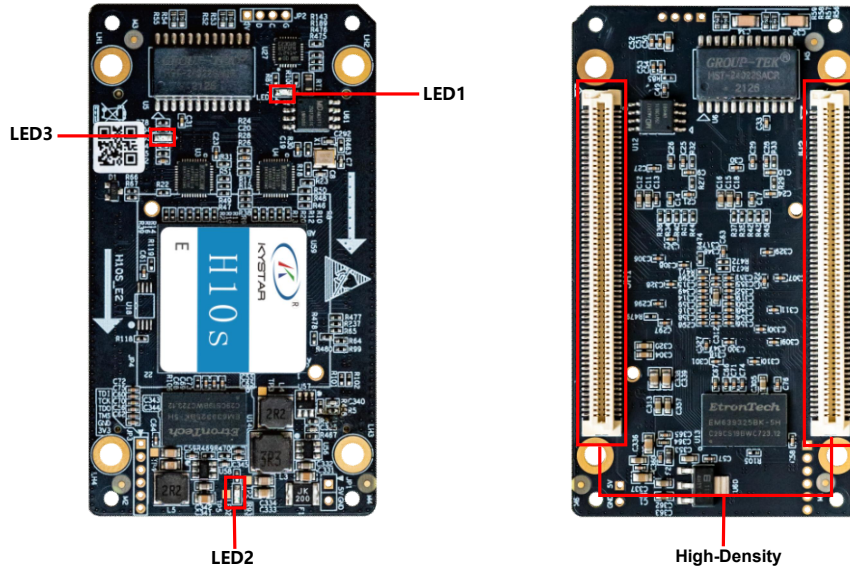
- Support dual power backup detection function.

The status of the main and standby power supplies in the cabinet can be detected

Parameter

Front panel appearance

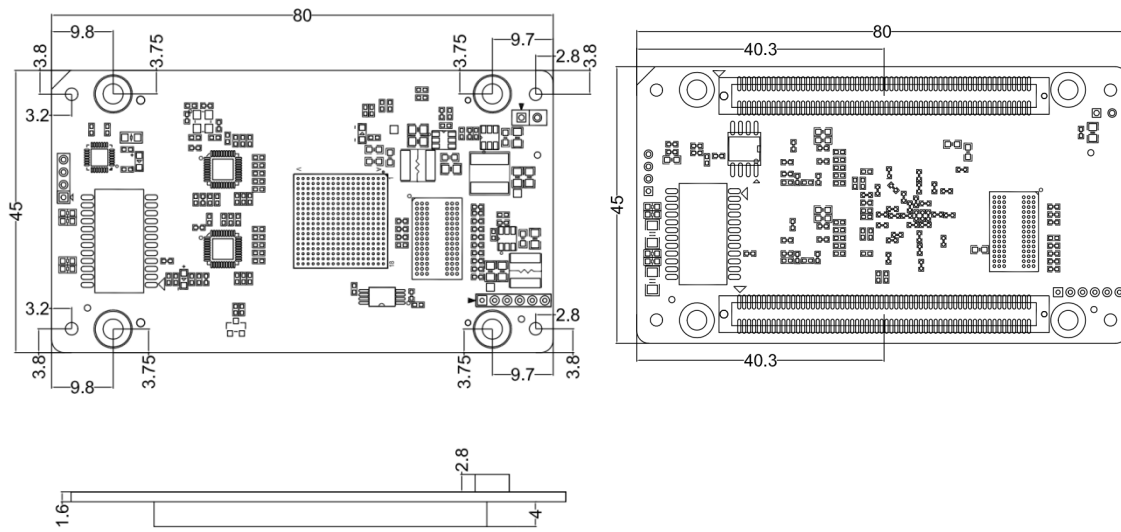
Rear panel appearance



*The product images in this article are for reference only. Please refer to the actual product purchased.

Indicator status	
Type	Illustrate
LED 1	The MCU signal indicator light is red, flashing when the program is normal, and not lit when abnormal
LED2	The power indicator light is red. If it is always on, it means the power supply is normal. If it is off, it means there is no power.
LED3	The device operation indicator light is green, flashing when there is a signal input, and off or always on when there is no signal.

Size



* The board-to-board high-density connector has a combined height of 5.0mm and it is recommended to use a 5.0mm copper column.

Unit: mm , tolerance ± 0.3 mm

Specification

Specification	
Rated voltage	DC 3.8V-5.5V
Rated current	0.6A
Rated Power	3.0W
Operating temperature	-10°C- 70°C
Operating humidity	0% - 95%, non-condensing
Storage temperature	-40°C- 85°C
Storage humidity	0% - 95%, non-condensing
Single card specifications	80x45x8.4mm
Packaging Specifications	Single card anti-static bag packaging, 50 cards per box
Full box weight	1.82Kg
Carton size	500x215x140mm

32 groups of parallel data interface definition

JH1							
Illustrate		Pin Definition	Pin Number	Pin Number	Pin Definition	Illustrate	
		GND	1	2	GND		
	LCD CS signal	EXT_LCD_CS	3	4	NC		
	LCD RS signal	EXT_LCD_RS	5	6	NC		

	LCD clock signal	EXT_LCD_SCL	7	8	NC		
LCD	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 buttons	EXT_KEY	15	16	NC		
Note 5	/	RFU1	17	18	NC		
	/	RFU2	19	20	NC		
		GND	21	22	NC		
		NC	23	24	NC		
		GND	25	26	GND		
	/	G17	27	28	R17	/	
	/	R18	29	30	B17	/	
Note 2	/	B18	31	32	G18	/	Note 2
	/	G19	33	34	R19	/	
	/	R20	35	36	B19	/	
	/	B20	37	38	G20	/	
		GND	39	40	GND		
	/	G21	41	42	R21	/	
	/	R22	43	44	B21	/	
Note 2	/	B22	45	46	G22	/	Note 2

	/	G23	47	48	R23	/	
	/	R24	49	50	B23	/	
	/	B24	51	52	G24	/	
		GND	53	54	GND		
Note 2		G25	55	56	R25		Note 2
		R26	57	58	B25		
		B26	59	60	G26		
		G27	61	62	R27		
		R28	63	64	B27		
		B28	65	66	G28		
		GND	67	68	GND		
Note 2		G29	69	70	R29		Note 2
		R30	71	72	B29		
		B30	73	74	G30		
		G31	75	76	B31		
		R32	77	78	B31		
		B32	79	80	G32		
		GND	81	82	GND		
	/	RFU4	83	84	RFU3	/	
	/	RFU6	85	86	RFU5	/	
Note 5	/	RFU8	87	88	RFU7	/	Note 5
	/	RFU10	89	90	RFU9	/	
	/	RFU12	91	92	RFU11	/	
	/	RFU14	93	94	RFU13	/	
		GND	95	96	GND		

Note 5	/	RFU16	97	98	RFU15	/	Note 5
	/	RUF18	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		
Note 1		VCC	117	118	VCC		Note 1
		VCC	119	120	VCC		

JH2

Illustrate		Pin Definition	Pin Number	Pin Number	Pin Definition	Illustrate	
	Shell grounding	Eth_Sheild	1	2	Eth_Sheil d	Shell grounding	
	Shell grounding	Eth_Sheild	3	4	Eth_Sheil d	Shell grounding	
		NC	5	6	NC		
		NC	7	8	NC		
	/	Port1_T0+	9	10	Port2_T0 +	/	
Gigabit Ethernet	/	Port1_T0-	11	12	Port2_T0 -	/	Gigabit Ethernet
		NC	13	14	NC		
	/	Port1_T1+	15	16	Port2_T1	/	

					+		
	/	Port1_T1-	17	18	Port2_T1-	/	
		NC	19	20	NC		
	/	Port1_T2+	21	22	Port2_T2+	/	
	/	Port1_T2-	23	24	Port2_T2-	/	
		NC	25	26	NC		
	/	Port1_T3+	27	28	Port2_T3+	/	
	/	Port1_T3-	29	30	Port2_T3-	/	
		NC	31	32	NC		
		NC	33	34	NC		
	Test button	TEST_INPUT_KEY	35	36	STA_LED -	Running indicator light	Note 3
		GND	37	38	GND		
	Line decoding signal	A	39	40	DCLK	The first shift clock output	
	Line decoding signal	B	41	42	DCLK_2	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	E	47	48	OE_RED	Display	Note 4

	signal					Enable	
Note 4	Display Enable	OE_BLUE	49	50	OE_GREEN	Display Enable	
		GND	51	52	GND		
	/	G1	53	54	R1	/	
	/	R2	55	56	B1	/	
Note 2	/	B2	57	58	G2	/	Note 2
	/	G3	59	60	R3		
	/	R4	61	62	B3	/	
	/	B4	63	64	G4	/	
		GND	65	66	GND		
	/	G5	67	68	R5	/	
	/	R6	69	70	B5	/	
Note 2	/	B6	71	72	G6	/	Note 2
	/	G7	73	74	R7	/	
	/	R8	75	76	B7	/	
	/	B8	77	78	G8	/	
		GND	79	80	GND		
	/	G9	81	82	R9	/	
	/	R10	83	84	B9	/	
Note 2	/	B10	85	86	G10	/	Note 2
	/	G11	87	88	R11	/	
	/	R12	89	90	B11	/	
	/	B12	91	92	G12	/	
		GND	93	94	GND		

	/	G13	95	96	R13	/	
	/	R14	97	98	B13	/	
Note 2	/	B14	99	100	G14	/	Note 2
	/	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		

64 groups of serial data interface definition

JH1						
Illustrate	Pin Definition	Pin Number	Pin Number	Pin Definition	Illustrate	
	GND	1	2	GND		
LCD CS signal	EXT_LCD_CS	3	4	NC		
LCD RS signal	EXT_LCD_RS	5	6	NC		
LCD clock	EXT_LCD_SCL	7	8	NC		

	signal						
LCD	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 buttons	EXT_KEY	15	16	NC		
Note 5	/	RFU1	17	18	NC		
	/	RFU2	19	20	NC		
		GND	21	22	NC		
		NC	23	24	NC		
		GND	25	26	GND		
	/	Data50	27	28	Data49	/	
	/	Data52	29	30	Data51	/	
Note 6	/	Data54	31	32	Data53	/	Note 6
	/	Data56	33	34	Data55	/	
	/	Data58	35	36	Data57	/	
	/	Data60	37	38	Data59	/	
		GND	39	40	GND		
	/	Data62	41	42	Data61	/	
Note 6	/	Data64	43	44	Data63	/	Note 6
	/	NC	45	46	NC	/	

	/	NC	47	48	NC	/	
	/	NC	49	50	NC	/	
	/	NC	51	52	NC	/	
		GND	53	54	GND		
		NC	55	56	NC		
		NC	57	58	NC		
		NC	59	60	NC		
		NC	61	62	NC		
		NC	63	64	NC		
		NC	65	66	NC		
		GND	67	68	GND		
		NC	69	70	NC		
		NC	71	72	NC		
		NC	73	74	NC		
		NC	75	76	NC		
		NC	77	78	NC		
		NC	79	80	NC		
		GND	81	82	GND		
	/	RFU4	83	84	RFU3	/	
	/	RFU6	85	86	RFU5	/	
Note 5	/	RFU8	87	88	RFU7	/	Note 5
	/	RFU10	89	90	RFU9	/	
	/	RFU12	91	92	RFU11	/	
	/	RFU14	93	94	RFU13	/	
		GND	95	96	GND		

Note 5	/	RFU16	97	98	RFU15	/	Note 5
	/	RUF18	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		
Note 1		VCC	117	118	VCC		Note 1
		VCC	119	120	VCC		

JH2

Illustrate		Pin Definition	Pin Number	Pin Number	Pin Definition	Illustrate	
	Shell grounding	Eth_Sheild	1	2	Eth_Sheild	Shell grounding	
	Shell grounding	Eth_Sheild	3	4	Eth_Sheild	Shell grounding	
		NC	5	6	NC		
		NC	7	8	NC		
	/	Port1_T0+	9	10	Port2_T0+	/	
Gigabit Ethernet	/	Port1_T0-	11	12	Port2_T0 -	/	Gigabit Ethernet
		NC	13	14	NC		
	/	Port1_T1+	15	16	Port2_T1+	/	

	/	Port1_T1-	17	18	Port2_T1-	/	
		NC	19	20	NC		
	/	Port1_T2+	21	22	Port2_T2+	/	
	/	Port1_T2-	23	24	Port2_T2-	/	
		NC	25	26	NC		
	/	Port1_T3+	27	28	Port2_T3+	/	
	/	Port1_T3-	29	30	Port2_T3-	/	
		NC	31	32	NC		
		NC	33	34	NC		
	Test button	TEST_INPUT_KEY	35	36	STA_LED -	Running indicator light	Note 3
		GND	37	38	GND		
	Line decoding signal	A	39	40	DCLK	The first shift clock output	
	Line decoding signal	B	41	42	DCLK_2	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	Note 4
Note 4	Display	OE_BLUE	49	50	OE_GREEN	Display	

	Enable					Enable	
		GND	51	52	GND		
	/	Data2	53	54	Data1	/	
	/	Data4	55	56	Data3	/	
Note 6	/	Data6	57	58	Data5	/	Note 6
	/	Data8	59	60	Data7		
	/	Data10	61	62	Data9	/	
	/	Data12	63	64	Data11	/	
		GND	65	66	GND		
	/	Data14	67	68	Data13	/	
	/	Data16	69	70	Data15	/	
Note 6	/	Data18	71	72	Data17	/	Note 6
	/	Data20	73	74	Data19	/	
	/	Data22	75	76	Data21	/	
	/	Data24	77	78	Data23	/	
		GND	79	80	GND		
	/	Data26	81	82	Data25	/	
	/	Data28	83	84	Data27	/	
Note 6	/	Data30	85	86	Data29	/	Note 6
	/	Data32	87	88	Data31	/	
	/	Data34	89	90	Data33	/	
	/	Data36	91	92	Data35	/	
		GND	93	94	GND		
	/	Data38	95	96	Data37	/	
	/	Data40	97	98	Data39	/	

Note 6	/	Data42	99	100	Data41	/	Note 6
	/	Data44	101	102	Data43	/	
	/	Data46	103	104	Data45	/	
	/	Data48	105	106	Data47	/	
		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		

Note 1. The recommended input power supply VCC is 3.8-5.5V .

Note 2. RGB data sets must be used in groups.

Note 3: The operation indicator light is valid at low level.

Note 4. OE_RED, OE_GREEN, and OE_BLUE are display enable pins. When OE_RGB is not controlled separately, use OE_RED. When using a PWM chip, use the GCLK signal.

Note 5. RFU1~19 are reserved for extended function interfaces. For more information, see " Extended Function Reference Design" .

Note 6: When using the 128-group serial data group mode , Data65~Data128 correspond to the pins multiplexed with Data1~Data64.

Extended Function Reference Design

Extended Function Interface Description			
Extension interface	Recommended smart module interface	Recommended light board Flash interface	Illustrate
RFU1	/	/	/
RFU2	/	/	/
RFU3	HUB_CODE0	HUB_CODE0	Flash control interface 1
RFU4	HUB_SPI_CLK	HUB_SPI_CLK	Serial interface clock signal
RFU5	HUB_CODE1	HUB_CODE1	Flash control interface 2
RFU6	HUB_SPI_CS	HUB_SPI_CS	CS signal of serial interface
RFU7	HUB_CODE2	HUB_CODE2	Flash control interface 3
RFU8	/	HUB_SPI_MOSI	Light board Flash storage data input
	HUB_UART_TX	/	Smart module TX signal
RFU9	HUB_CODE3	HUB_CODE3	Flash control interface 4
RFU10	/	HUB_SPI_MISO	Light board Flash storage data output
	HUB_UART_RX	/	Smart 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 detection signal 1
RFU15	MS_DATA	MS_DATA	Dual card backup connection signal


RFU16	POWER_STA2	POWER_STA2	Dual power supply detection signal 2
RFU17	MS_ID	MS_ID	Dual card backup identity signal
RFU18	HUB_CODE4	HUB_CODE4	Flash control interface 5
RFU19	/	/	/

Note: RFU8 and RFU10 are signal multiplexing expansion interfaces. You can only choose one between "Recommended smart module interface" and "Recommended light board Flash interface" .

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