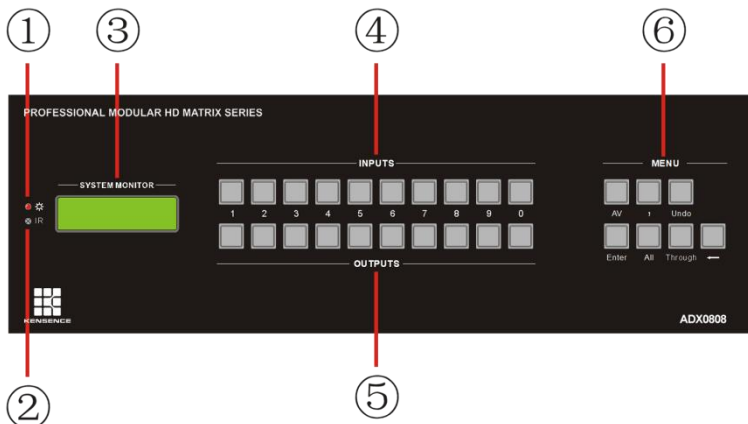


Hybrid Matrix Switcher

User Manual



1.1 Front panel

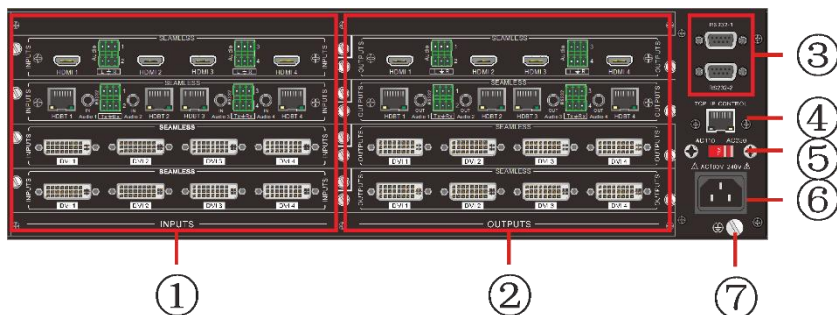


Pic 2-1 Front panel mark

Num	Name	Description
①	Power Indicator	<ul style="list-style-type: none"> When the power is turned on, the indicator light turns red; Power outage, indicator light goes out
②	IR receiver head	The built-in infrared receiver of this machine receives the infrared signal sent by the infrared remote control to facilitate the control of this machine.
③	LCD screen	Green backlight and black fonts display the real-time operating status of the system.
④	INPUTS	Input channel switching button: There are 10 buttons from 0 to 9 (if more than 9, press the combined number button directly), corresponding to the rear panel signal input from left to right, from top to next (Note: 8-way hybrid plug-in card matrix host The buttons are 1-8, 8 buttons)
⑤	OUTPUTS	<p>Output channel switching button: There are 10 buttons from 0 to 9 in total (for more than 9, just press the combined number button), which correspond to the rear panel signal output from left to right, top to next.</p> <p>(Note: The 8-way hybrid plug-in card matrix host has buttons 1-8, 8 buttons)</p>

Num	Name	Description
⑥	MENU Function key area	<ul style="list-style-type: none"> ● AV: Audio and video synchronous switching ● ,: Interval function button ● Undo: Undo the keystroke and return to the switching state after the last command operation was executed. ● Enter: Confirm key to confirm the selected channel and function. When performing an operation, confirmation must be performed before proceeding with the relevant operation. ● All: Select all button, including sending one input signal to all output channels, and switching all input channels to the corresponding output channels ● Through: through key, switches the input channel to the corresponding output channel ● ←: Backspace key, used to delete wrong operations

1.2 Back panel



Pic 2-2 Back panel mark

Num	Name	Description
①	INPUTS	<p>Signal input port:</p> <p>The 8-way hybrid card matrix has 2 card slots, which can insert 2 signal input cards;</p> <p>The 16-channel hybrid card matrix has 4 card slots and can accommodate 4 signal input cards;</p> <p>The 32-channel hybrid card matrix has 8 card slots and can accommodate 8 signal input cards;</p> <p>The 64-channel hybrid card matrix has 16 card slots and can insert 16 signal input cards;</p> <p>The 96-channel hybrid card matrix has 24 card slots and can accommodate 24 signal input cards;</p>
②	OUTPUTS	<p>Signal output port:</p> <p>The 8-way hybrid card matrix has 2 card slots, which can insert 2 signal output cards;</p> <p>The 16-way hybrid plug-in card matrix has 4 card slots, which can insert 4 signal output cards;</p> <p>The 32-way hybrid card matrix has 8 card slots and can insert 8 signal output cards;</p> <p>The 64-channel hybrid card matrix has 16 card slots and can insert 16 signal output cards;</p> <p>The 96-channel hybrid card matrix has 24 card slots and can insert 24 signal output cards;</p>
③	RS232-1 & RS232-2	<p>2 DB9 serial port sockets, connected to the RS232 port of the control device.</p> <p>(Note: The 8-way hybrid plug-in card matrix host has only one DB9 serial port socket)</p>
④	TCP/IP CONTROL	<p>2 DB9 serial port sockets, connected to the RS232 port of the control device.</p> <p>(Note: The 8-way hybrid plug-in card matrix host has only one DB9 serial port socket)</p>
⑤	power transfer switch	<p>Set the switch to 110V or 230V depending on the external voltage.</p> <p>(Note: The 8-way hybrid card matrix host does not have this switch)</p>
⑥	power port	Connect to 100-240V AC power supply.

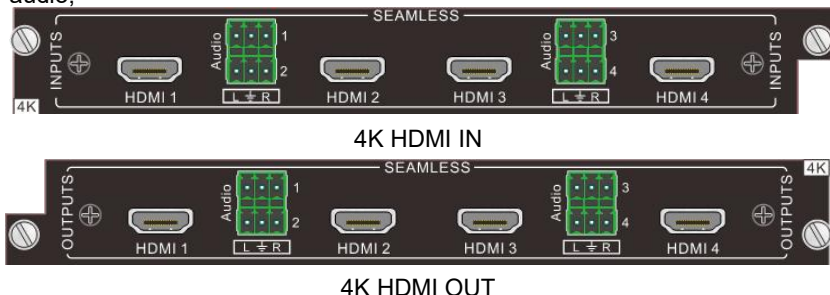
Num	Name	Description
⑦	Ground connection terminal	Connect the ground wire.


2 Signal card introduction

The empty card slot of the array host can be inserted into signal cards of various signal formats, including HDMI, DVI, VGA, SDI, HDBT, CVBS and other seamless input/output signal cards. The board card does not support hot swapping, but the signal port supports hot swapping. The following is an introduction to each signal card:

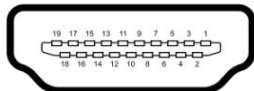
2.1 4K HDMI seamless input & output signal card

- Input signal card: 4 HDMI inputs, 4 audio inputs;
- Output signal card: 4 channels of HDMI output, 4 channels of audio output;
- Support HDMI signal and compatible with DVI-D;
- The highest resolution supports 4096 x 2160@30Hz;
- Input/output supports stereo audio embedding/de-embedding;
- Supports HDMI1.4 standard, supports HDCP2.2 and is backward compatible;
- The input/output signal card is used in conjunction with other 1080P seamless input/output cards, and seamless switching can be achieved through dialing settings. The default factory dialing status is (3840 x 2160P@30Hz);
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- The output board supports 8 resolution adjustments: 1024 x 768P@60Hz, 1360 x 768P@60Hz, 1280 x 720P@60Hz, 1920 x 1080P@60Hz, 3840 x 2160P@30Hz (default resolution), 4096 x 2160P@ 30Hz
- The command selects the input audio as HDMI embedded audio/external analog audio, and the default is HDMI embedded audio;



注: When the 4K seamless input signal card is used with the 1080P seamless output signal card, the dial code needs to be adjusted to the following state:  (1920 x 1080P@60Hz)


Female port HDMI connector pinout:



N u m	Name	N u m	Name
1	TMDS Data 2+	11	TMDS Clock Shield
2	TMDS Data 2 Shield	12	TMDS Clock-
3	TMDS Data 2-	13	CEC
4	TMDS Data 1+	14	No Connect
5	TMDS Data 1 Shield	15	DDC Clock
6	TMDS Data 1-	16	DDC Data
7	TMDS Data 0+	17	Ground
8	TMDS Data 0 Shield	18	+5V Power
9	TMDS Data 0-	19	Hot Plug Detect
10	TMDS Clock+	20	SHELL

2.2 4K HDBT seamless input & output signal card

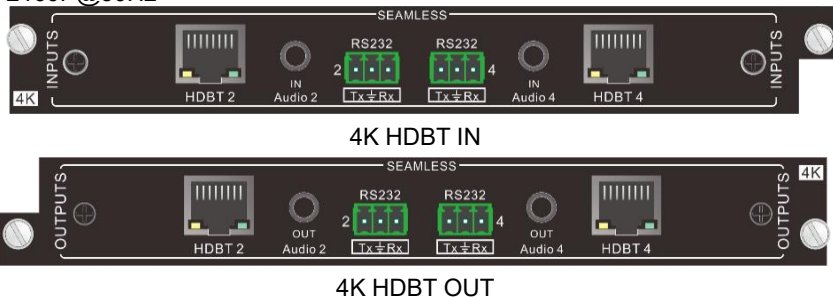
- Input signal card: 2 HDBT inputs, 2 audio inputs, 2 RS232;
- Output signal card: 2 HDBT outputs, 2 audio outputs, 2 RS232;
- Support HDMI signal and compatible with DVI-D;
- The highest resolution supports 4096 x 2160@30Hz;
- Input/output supports stereo audio embedding/de-embedding;
- Supports HDMI1.4 standard, supports HDCP2.2 and is backward compatible;
- The input/output signal card is used in conjunction with other 1080P seamless input/output cards. Seamless switching can be achieved through dialing settings.

The default factory dialing status is  (3840 x 2160P@30Hz);


- Supports 4K up to 40M, 1080P up to 70M;
- HDBT board needs to be used with remote transmitter/receiver;
- HDBT port indicator status: After the device is powered on, the yellow light flashes when the twisted pair is not connected; when the twisted pair is connected, the yellow light flashes and the green light is always on;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- Each HDBT port also contains 1 channel Audio external audio and 1 channel RS232 control signal;
- Supports audio embedding and de-embedding, the input default is built-in audio,

and the output default de-embedding audio is on;

- Supports RS232 transparent transmission with the remote end, but cannot communicate with the local one;
- The RS232 serial port is used in conjunction with the remote transmitter/receiver serial port to achieve two-way serial communication;
- The output resolution of the output signal card is adjustable and supports 6 resolution adjustments: 1024 x 768P@60Hz, 1360 x 768P@60Hz, 1280 x 720P@60Hz, 1920 x 1080P@60Hz, 3840 x 2160P@30Hz (default resolution rate), 4096 x 2160P@30Hz

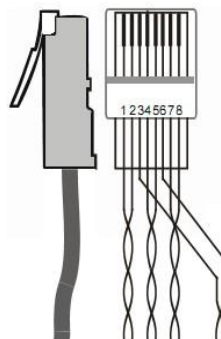


注:

1. When the 4K seamless input signal card is used with the 1080P seamless output signal card, the dial code needs to be adjusted to the following state:  (1920 x 1080P@60Hz)
2. When controlling remote devices through the RS232 network port, you can only control devices with baud rates of 2400, 4800, 9600, 19200, 38400, 57600, and 115200.

The video port is RJ45 and is connected using a Class A or Class B straight-through twisted pair. It is recommended to use a Class B straight-through cable. Both ends of the straight-through cable follow the same standard. The following is the pin reference standard for Class A/B straight-through cables:

TIA/EIA 568A		TIA/EIA 568B	
Pin	Color	Pin	Color
1	Green white	1	Orange white
2	Green	2	Orange
3	Orange white	3	Green white
4	Blue	4	Blue
5	Blue white	5	Blue white



6	Orange	6	Green
7	Brown white	7	Brown white
8	Brown	8	Brown
Each color forms a pair with its corresponding half-white line			

2.3 1080P HDMI seamless input & output signal card

- Input signal card: 4 HDMI inputs, 4 audio inputs;
- Output signal card: 4 channels of HDMI output, 4 channels of audio output;
- Support HDMI1.3 standard and compatible with DVI signal;
- The highest resolution supports 1080P@60Hz;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- When the input signal card is used in conjunction with other signal cards whose output resolution is not adjustable, the corresponding output resolution of each input can also be adjusted through instructions: 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200;
- The output resolution of the output signal card can be adjusted through commands, and a total of 36 types are supported: 720x480I@60Hz, 720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1920x1200P@60Hz, 1600x900P@60Hz;
- The input audio can be selected as HDMI embedded audio/external analog audio through commands. The default is HDMI embedded audio;
- The output analog audio can be set on/off through commands, the default is on;



HDMI IN



2.4 1080P HDMI seamless input signal card (audio addition and de-embedding)

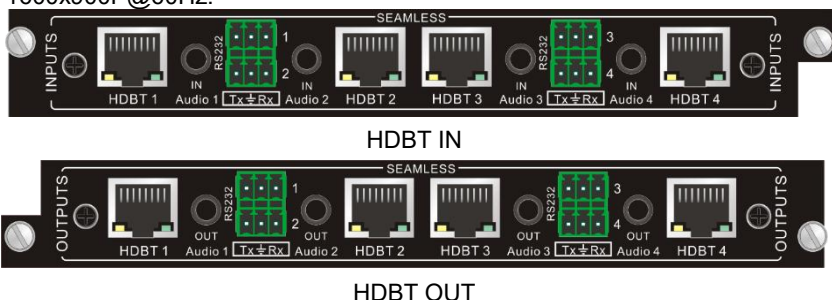
- Input signal card: 4 HDMI inputs, 4 audio inputs;
- Support HDMI1.3 standard and compatible with DVI signal;
- The highest resolution supports 1080P@60Hz;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- When the input signal card is used in conjunction with other signal cards whose output resolution is not adjustable, the corresponding output resolution of each input can also be adjusted through instructions: 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200;
- Support audio embedding and de-embedding;
- The command selects the input audio as HDMI embedded audio/external analog audio, the default is HDMI embedded audio, and the output external audio interface is HDMI de-embedded audio, and has a power-off memory function;



2.5 4.51080P HDBT seamless input & output signal card

- Input signal card: 4 HDBT inputs, 4 audio inputs;
- Output signal card: 4-channel HDBT output, 4-channel audio output;
- The output card supports 1080P seamless switching, the default is 1080P@60hz;
- Supports audio embedding and de-embedding, the input default is built-in audio, and the output default de-embedding audio is on;
- Supports RS232 transparent transmission with the remote end, but cannot communicate with the local one;
- 1080P maximum transmission distance is 70m;
- HDBT board needs to be used with remote transmitter/receiver;

- HDBT port indicator status: After the device is powered on, the yellow light flashes when the twisted pair is not connected; when the twisted pair is connected, the yellow light flashes and the green light is always on;
- Each HDBT port also contains 1 channel Audio external audio and 1 channel RS232 control signal;
- The RS232 serial port is used in conjunction with the remote transmitter/receiver serial port to achieve two-way serial communication;
- The output resolution of the output signal card can be adjusted through commands, and a total of 37 types are supported: 720x480I@60Hz, 720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1680x1050P@60Hz, 1920x1200P@60Hz, 1600x900P@60Hz.

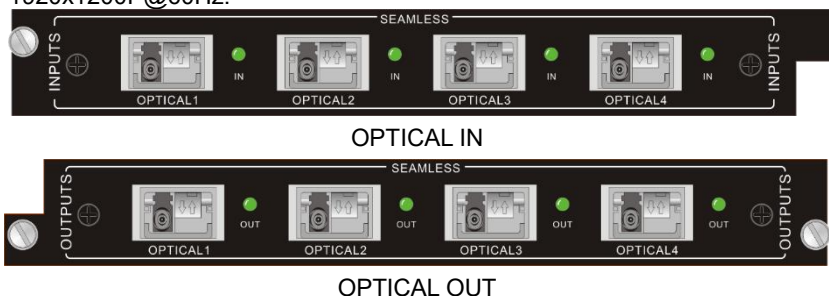


2.6 1080P OPTICAL seamless input & output signal card

- Input signal card: 4-channel optical port input;
- Output signal card: 4-channel optical port output;
- Supports up to 1080P seamless transmission;
- Needs to be used with a fiber optic transmitter/receiver. The maximum transmission distance of single-mode fiber is 2KM and multi-mode is 300M;
- Does not support HDCP transmission and no DDC data reading channel;
- Indicator light status: When there is signal input/output, the indicator light lights green;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for

related instructions;

- When the input signal card is used in conjunction with other signal cards whose output resolution is not adjustable, the corresponding output resolution of each input can also be adjusted through instructions: 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200;
- The output resolution of the output signal card can be adjusted through commands, and a total of 36 types are supported: 720x480I@60Hz, 720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1680x1050P@60Hz, 1920x1200P@60Hz.

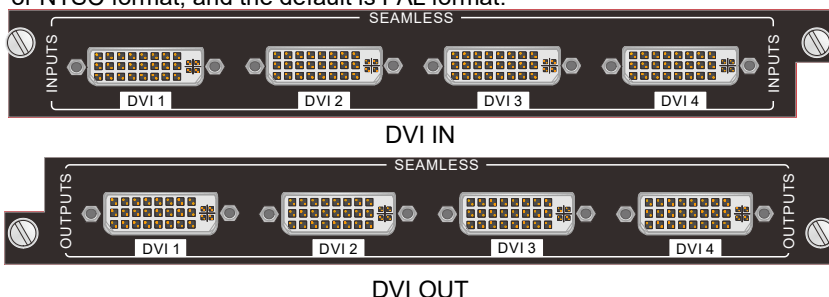


2.7 1080P DVI seamless input & output signal card

- Input signal card: 4 channels of DVI input;
- Output signal card: 4 channels of DVI output;
- Seamless input/output signal card (only supports high-definition video signals);
- Compatible with HDMI1.3 & HDCP1.4 standards;
- Input and output ports support DVI, HDMI, VGA, YPbPr and C-VIDEO format signals;
- Input automatically recognizes signal format, no manual settings required;
- The output signal format can be set through serial port instructions;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- When the input signal card is used in conjunction with other signal cards whose output resolution is not adjustable, the corresponding output resolution of each input can also be adjusted through instructions: 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200;
- The output resolution of the output signal card can be adjusted through commands, and a total of 36 types are supported: 720x480I@60Hz,

720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1920x1200P@60Hz, 1600x900P@60Hz;

- Has embedded EDID management technology (for HDMI and DVI signals) and supports DDC control;
- When switching between 4O-DS and other seamless input signal cards, the resolution of the input signal source connected to the switching channel must be consistent;
- When the output board is set to output CVBS signal format, it can be set to PAL or NTSC format, and the default is PAL format.



Female port DVI-I connector pinout:



Pin	Function	Pin	Function
1	T.M.D.S.Data2-	13	T.M.D.S.Data3+
2	T.M.D.S.Data2+	14	+5V Power
3	T.M.D.S. Data 2/4 Shield	15	Ground (for +5V)
4	T.M.D.S. Data 4-	16	Hot Plug Detect
5	T.M.D.S. Data 4+	17	T.M.D.S. Data 0—
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield
8	No Connect	20	T.M.D.S.Data5—
9	T.M.D.S.Data1-	21	T.M.D.S.Data5+

10	T.M.D.S.Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S.Data1/3 Shield	23	T.M.D. S. Clock +
12	T.M.D.S.Data3-	24	T.M.D.S .Clock —
C1	Analog Red	C2	Analog Green
C3	Analog Blue	C4	Horizontal Sync Analog
C5	Analog Ground (analog R, G, B return)		

Note:

- When the signal format is VGA, YPbPr and C-VIDEO, use it with different adapters/cables:

- DVI to YPbPr/C-VIDEO



Pin	Signal Name	Pin	Signal Name
C1	RED	C3	BLUE
C2	GREEN	C5	GND
The remaining pins are empty			

- DVI 转 VGA

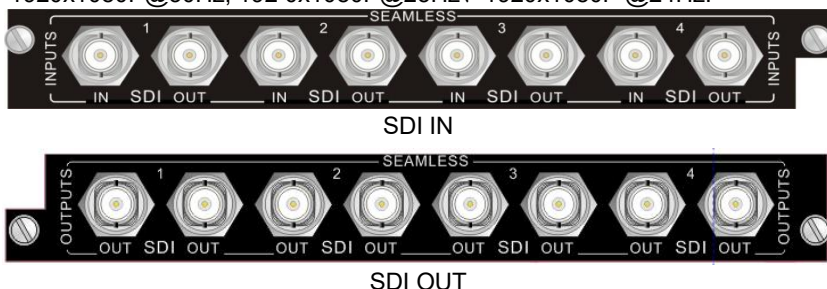


DVI-I Pin	VGA Pin	Signal Name	DVI-I Pin	VGA Pin	Signal Name
8	14	HSync	C4	13	VSync
C1	1	RED	C5	6	GND
C2	2	GREEN		7	
C3	3	BLUE		8	
The remaining pins are empty					

2.8 1080P SDI seamless input & output signal card

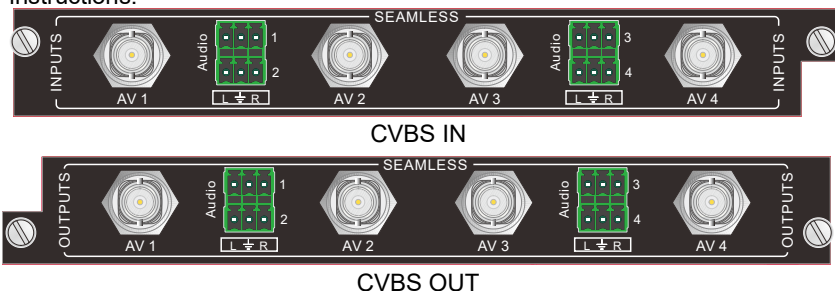
- Input signal card: 4 SDI inputs, with 4 loop outputs;
- Output signal card: 4 channels of SDI output, with 4 channels of loop out;
- Signal format supports SDI, HD-SDI, 3G-SDI;
- Input resolution is automatically recognized;
- The input signal card has a scaling function, which scales low input resolution to 1080P output by default;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- SDI output uses coaxial cable transmission to support a transmission distance of up to 100m (1080P signal);
- The output resolution of the output signal card is adjustable and supports 9 resolutions: 1280x720P@60Hz, 1280x720P@50Hz, 1920x1080I@60Hz,

1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@50Hz,
1920x1080P@30Hz, 1920x1080P@25Hz, 1920x1080P@24Hz.



2.9 1080P CVBS seamless input & output signal card

- Input signal card: 4-channel CVBS input, with 4-channel audio input;
- Output signal card: 4-channel CVBS output, with 4-channel audio output;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- The output resolution of the input signal card is adjustable, that is, the scaled line to backplane resolution can support: 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200;
- The output resolution of the output signal card supports two resolutions: 480i and 576i;
- The output analog audio can be set on/off through commands, the default is on;
- Supports PAL and NTSC formats, set through RS232 serial port instructions.



2.10 1080P HDMI & SDI seamless input & output signal card

- Input signal card: 2 HDMI inputs, 2 audio inputs, 2 SDI inputs, 2 SDI loop outs;
- Output signal card: 2 HDMI outputs, 2 audio outputs, 2 SDI outputs, 2 SDI loop outs;
- Seamless default resolution is 1920x1080P@60Hz;
- The HDMI port supports HDMI1.3, HDCP1.3, and is compatible with DVI signals;

- HDMI supports audio embedding and de-embedding functions;
- The SDI signal format supports SDI, HD-SDI, and 3G-SDI, and has a scaling function. By default, low input resolution is scaled to 1080p@60Hz output;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- When the input signal card is used with other signal cards with non-adjustable output resolution, the output resolution corresponding to the input can be adjusted through instructions, that is, the scaled line to backplane resolution supports 1360x768, 1024x768, 1280x720, 1280x800, 1920x1080, 1920x1200, 1600x1200 ;
- The output resolution of the output signal card can be adjusted through commands. The 2-channel HDMI output resolution supports a total of 29 types: 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1920x1200P@60Hz, 1600x900P@60Hz; 2-channel SDI output resolution supports the following 9 Type: 1280x720P@60Hz, 1280x720P@50Hz, 1920x1080I@60Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@25Hz, 1920x1080P@24Hz;
- SDI output uses coaxial cable transmission to support a transmission distance of up to 100 meters (1080P signal);
- The command selects the input audio as HDMI embedded audio/external analog audio, and the default is HDMI embedded audio;
- The output analog audio can be set on/off through commands. The default is on.



HDMI & SDI IN

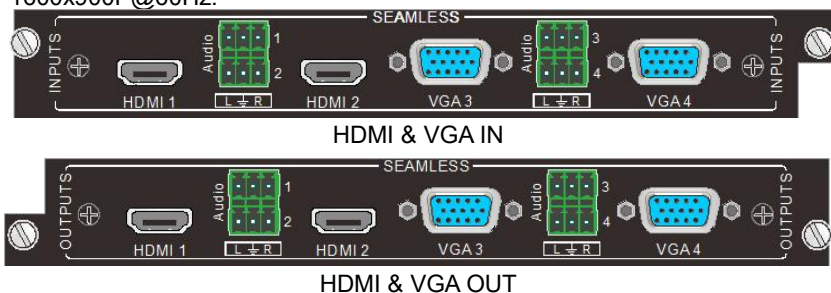


HDMI & SDI OUT

2.11 1080P HDMI & VGA seamless input & output signal card

- Input signal card: 2 HDMI inputs, 4 audio inputs, 2 VGA inputs;
- Output signal card: 2 HDMI outputs, 4 audio outputs, 2 VGA outputs;
- The default resolution for seamless switching is 1920x1080p@60Hz;
- The HDMI port supports HDMI1.3, HDCP1.3, and is compatible with DVI signals;

- VGA signal type supports manual change: VGA (RGBHV), YPbPr, S-VIDEO, C-VIDEO; the input signal can be scaled to output with a resolution of 1080P or 1920x1200;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- Supports input audio embedding and output audio de-embedding functions, and can command and control the audio embedding and de-embedding switch;
- HDMI input audio defaults to embedded audio input, and output de-embedded audio is turned off;
- The VGA signal supports embedded audio, and the audio and video are synchronized, that is, when there is no video, the embedded audio cannot be transmitted; the input audio defaults to audio embedded input, and the output analog audio is turned on;
- The corresponding output resolution of each input can be adjusted through instructions: 1024x768@60Hz, 1280x720@60Hz, 1280x800@60Hz, 1920x1080@60Hz (default), 1360x768@60Hz, 1920x1200@60Hz, 1600x1200@60Hz;
- The output resolution of the output signal card can be adjusted through commands, and a total of 36 types are supported: 720x480I@60Hz, 720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1920x1200P@60Hz, 1600x900P@60Hz.



2.12 1080P VGA seamless input & output signal card

- Input signal card: 4 VGA inputs, 4 audio inputs;
- Output signal card: 4 channels of VGA output, 4 channels of audio output;
- The input signal can be scaled to output with a resolution of 1080P or 1920x1200;

- Signal type supports manual change: VGA (RGBHV), YPbPr, S-VIDEO, C-VIDEO;
- The corresponding output resolution of each input can be adjusted through instructions: 1024x768@60Hz, 1280x720@60Hz, 1280x800@60Hz, 1920x1080@60Hz (default), 1360x768@60Hz, 1920x1200@60Hz, 1600x1200@60Hz;
- Can be connected to 4 external stereo audio inputs, set the audio on/off through commands, the default is off;
- The input signal card has a character overlay function, and the character-related attributes can be changed through instructions. Please see the instruction list for related instructions;
- The output resolution of the output signal card can be adjusted through commands, and a total of 36 types are supported: 720x480I@60Hz, 720x576I@50Hz, 720x480P@60Hz, 720x576P@50Hz, 1280x720P@60Hz, 1280x720P@59Hz, 1280x720P@50Hz, 1280x720P@30Hz, 1280x720P@25Hz, 1280x720P@24Hz, 1920x1080I@60Hz, 1920x1080I@59Hz, 1920x1080I@50Hz, 1920x1080P@60Hz, 1920x1080P@59Hz, 1920x1080P@50Hz, 1920x1080P@30Hz, 1920x1080P@29Hz, 1920x1080P@25Hz, 1920x1080P@24Hz, 640x480P@60Hz, 640x480P@75Hz, 800x600P@60Hz, 800x600P@75Hz, 1024x768P@60Hz, 1024x768P@75Hz, 1280x1024P@60Hz, 1280x1024P@75Hz, 1360x768P@60Hz, 1366x768P@60Hz, 1400x1050P@60Hz, 1600x1200P@60Hz, 1440x900P@60Hz, 1440x900P@75Hz, 1920x1200P@60Hz, 1600x900P@60Hz;
- Supports embedded audio, and the audio and video are synchronized, that is, when there is no video, the embedded audio cannot be transmitted;
- When the output card is switched with other seamless input signal cards, the resolution of the input signal source connected to the switching channel must be consistent;
- When the output board is set to output CVBS signal format, it can be set to PAL or NTSC format, and the default is PAL format.

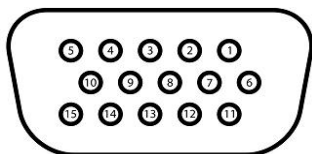


VGA IN



VGA OUT

Female port VGA connector pinout:

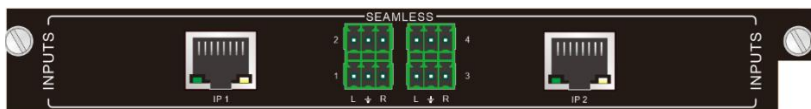


Pin	Signal Name	Pin	Signal Name
1	RED	9	KEY/PWR
2	GREEN	10	GND
3	BLUE	11	ID0/RES
4	ID2/RES	12	ID1/SDA
5	GND	13	HSync
6	RED_RTN	14	Vsync
7	GREEN_RTN	15	ID3/SCL
8	BLUE_RTN		

Note: The signal card also supports YPbPr and C-VIDEO formats. When using a VGA adapter cable, please refer to Chapter 3.14 for its connection method.

2.13 IP streaming decoding card

- IP1/IP 2: Connect to the LAN, 4-way IP decoding, connect to any IPC in the LAN;
- Audio input 1/2/3/4: Can be connected to 4 external stereo audio inputs, set the audio on/off through commands, the default is off;
- Can be connected to the TCP/IP port of the controlled hybrid plug-in matrix switcher, and the matrix can be network controlled through client software;
- Support 4*1080P@60Hz, 8*1080P@30Hz, 16*720P@30Hz decoding;
- Support rtsp/rtp/rtptcp access;
- Supports onvif2.6 protocol, supports onvif device identification, supports onvif protocol stream access, and supports onvif PTZ control;
- With power-off memory.

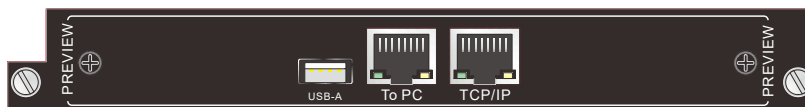


IP streaming decoding card

2.14 Preview back to graphics card

- USB-A: Upgrade port, used for firmware upgrade;
- TO PC: used to connect control equipment and realize client software control;
- TCP/IP: The TCP/IP port used to connect to the controlled hybrid plug-in matrix switcher, and the matrix can be controlled by the client software through the network;
- Comply with standard RTSP protocol;

- Can encode up to 4 channels of 4K@30HZ input signals at the same time;
- Supports 4 main streams and 4 sub-streams;
- Supports up to 1080P@30 code stream output and supports setting through the WEB interface. The default is 720P@30;
- With power-off memory.



Preview back to graphics card

2.15 VGA adapter cable instructions

Some boards (such as 4I-VA) are equipped with adapter cables that support YPbPr and C-VIDEO input signal formats. When connecting the signal source/display terminal via an adapter cable. The connection method is as follows, taking the VGA adapter cable as an example:

- When the signal format is YPbPr, the port connection is as shown below:

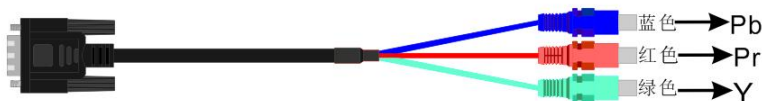


图 3-1 Connect component signals (YPbPr)

Connect component signals:

Pin	Signal Name	Pin	Signal Name
1	RED	6	GND
2	GREEN	7	GND
3	BLUE	8	GND
The remaining pins are empty			

- When the signal format is C-VIDEO, the port connection is as shown below:

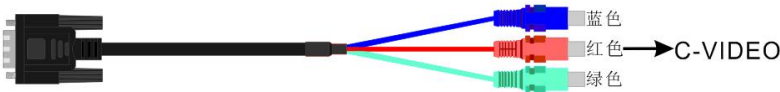


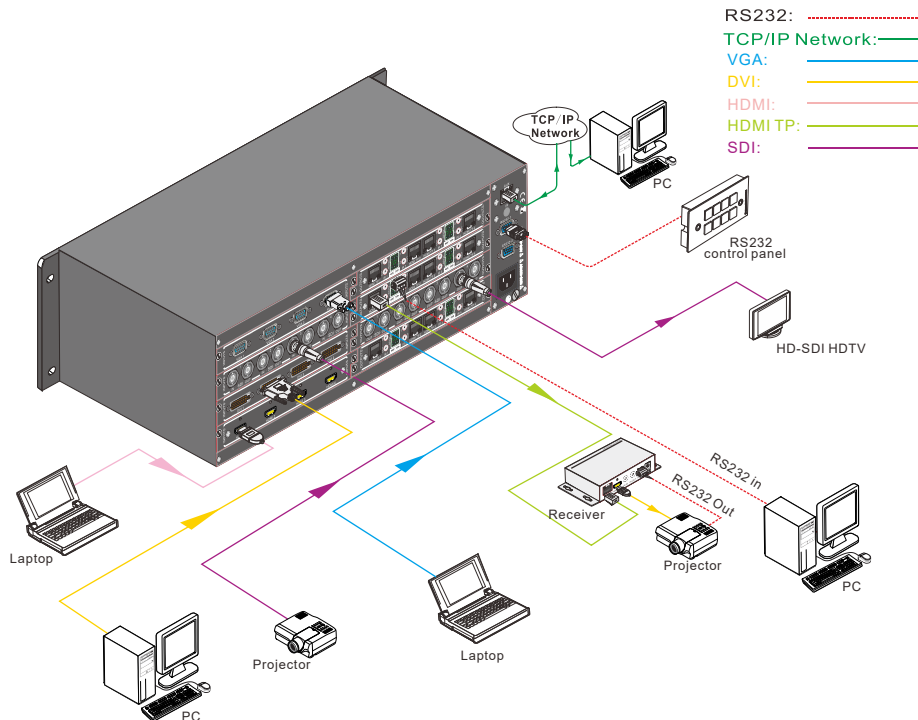
图 3-2 Connect composite video signals (C-VIDEO)

Its connection pin distribution is as follows:

Pin	Signal Name	Pin	Signal Name
1	RED	7	GND
6	GND	8	GND
The remaining pins are empty			

3 System connection

3.1 Connection diagram



Note: Product pictures are for reference only, please refer to actual application.

4 Technical parameters

4.1 Host

Control parts			
Serial control port	DB9 RS232 Female connector	Pin configuration	Pin 2 TX, Pin 3 RX, Pin 5 GND
Panel chassis structure	Pluggable signal card	Front panel control	Button
Common			
Operating temperature	-0~+50℃	Relative humidity	10%~90%
Power	Both are 100~240V AC, 50/60Hz		
Power consumption (no load)	8x8: 23W; 16x16: 31W; 32x32: 60W; 64x64: 116W; 96x96: 220W;		
Chassis size	8-way hybrid card matrix: W436.6mm x D320.0mm x H88.0mm; 16-way hybrid card matrix: W436.6mm x D320.0mm x H132.5mm; 32-way hybrid card matrix: W436.6mm x D320.0mm x H221.5mm; 64-way hybrid card matrix: W436.6mm x D320.0mm x H443.0mm; 96-channel hybrid card matrix: W436.6mm x D448.0mm x H888.0mm; Note: The dimensions of the chassis are approximate without mounting ears, please refer to the actual product.		

4.2 Signal card

4.2.1 4K HDMI seamless input & output signal card

Input signal card		Output signal card	
Input signal	4 channels HDMI signal 4 channels of analog audio signals	Output signal	4 channels HDMI signal 4 channels of analog audio signals
Input connector	Type A 19-pin female connector 3-pin plug-in terminal block	Output connector	Type A 19-pin female connector 3-pin plug-in terminal block
Power consumption	12.5W	Power consumption	12.5W
Color depth	8bit	Color depth	8bit
Common			
Highest resolution resolution	4096 x 2160@60hz		
Audio format	Embedded audio supports PCM, Doby Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Standard	Support HDMI1.4, HDCP2.2		
EDID management	Support EDID learning function		
Temperature	0°C ~ +50°C	Humidity	10% ~ 90%

4.2.2 4K HDBT seamless input & output signal card

Input signal card		Output signal card	
Input signal	2-way HDBT signal 2 analog audio signals	Output signal	2-way HDBT signal 2 analog audio signals
Input connector	RJ45, with yellow and green two-color indicator light 3.5mm audio stand	Output connector	RJ45, with yellow and green two-color indicator light 3.5mm audio stand
Input level	T.M.D.S 2.9V~3.3V	Output level	T.M.D.S 2.9V~3.3V

Input resistance	Video: Differential Line 100 Ω Audio: 75 Ω	Output resistance	Video: Differential Line 100 Ω Audio: 75 Ω
Frequency response	20Hz~20K Hz	Frequency response	20Hz~20K Hz
Power consumption	15W	Power consumption	12W
Control			
Control signal	2 channels of RS232 control signals	Control port	3-pin plug-in terminal block
Protocol	Support RS232 protocol		
Common			
Gain	0 dB	Crosstalk	<-50dB@5MHz
Highest resolution resolution	4096 x 2160@60hz		
Transmission distance	1080p \leq 70m; 4K \leq 40m	Switching rate	200ns (Max)
Temperature	0 $^{\circ}$ C~+50 $^{\circ}$ C	Humidity	10%~90%
Audio format	Embedded audio supports PCM, Dolby Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
HDMI standard	Support HDMI1.4		
EDID&HDCP	Support EDID manual management, compatible with HDCP2.2		

4.2.3 1080P HDMI seamless input & output signal card

Input signal card		Output signal card	
Input signal	4 channels of HDMI signals (compatible with DVI) 4 channels of analog audio signals	Output signal	4 channels of HDMI signals (compatible with DVI) 4 channels of analog audio signals
Input connector	Type A 19-pin female connector 3-pin plug-in terminal block	Output connector	Type A 19-pin female connector 3-pin plug-in terminal block
Power consumption	10W	Power consumption	8W
Color depth	8 & 10 & 12 bit	Color depth	8bit
Common			
Signal type	HDMI、DVI		
Resolution	The highest resolution supports 1080P@60Hz		
Audio format	Embedded audio supports PCM, Dolby Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Standard	Support HDMI1.3		
EDID management	Support EDID learning function		
Temperature	0°C ~ +50°C	Humidity	10% ~ 90%

4.2.4 1080P HDMI plus and de-embedded seamless input signal card

Input signal card			
Input signal	4 channels of HDMI signals (compatible with DVI) 4 channels of analog audio signals	Input connector	Type A 19-pin female connector 3-pin plug-in terminal block
Power consumption	5.7W	Color depth	8 & 10 & 12 bit
Common			
Signal type	HDMI、DVI		
Resolution	The highest resolution supports 1080P@60Hz		
Audio format	Embedded audio supports PCM, Doby Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Standard	Support HDMI1.3		
EDID management	Support EDID learning function		
Temperature	0°C ~ +50°C	Humidity	10% ~ 90%

4.2.5 1080P HDBT seamless input & output signal card

Input signal card			
Video input		Audio input	
Input signal	4 channels HDBT signal	Input signal	4-way stereo signal
Input connector	RJ45, with yellow and green two-color indicator light	Input connector	3.5mm audio stand
Input level	T.M.D.S 2.9V~3.3V	input resistance	75Ω
Input resistance	Differential line 100 Ω	Frequency response	20Hz~20K Hz
Power consumption	21W		
Output signal card			
Video output		Audio output	
Output	4 channels HDBT signal	Output signal	4-way stereo signal

signal			
Input connector	RJ45, with yellow and green two-color indicator light	Output connector	3.5mm audio stand
Output level	T.M.D.S 2.9V~3.3V	Output resistance	75Ω
Output resistance	Differential line 100 Ω	Frequency response	20Hz~20K Hz
Power consumption	21W		
Control			
Control signal	4 channels of RS232 control signals	Control port	3-pin plug-in terminal block
Protocol	Support RS232 protocol		
Common			
Gain	0 dB	Crosstalk	<-50dB@5MHz
Transmission distance	1080p≤70m	Switching rate	200ns (Max)
Resolution	The highest resolution supports 1080P@60Hz		
Audio format	Embedded audio supports PCM, Dobly Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
HDMI standard	Support HDMI1.4a		
EDID&HDCP	Support EDID manual management, compatible with HDCP1.4		
Temperature	0℃~ +50℃	Humidity	10%~90%

4.2.6 1080P OPTICAL seamless input & output signal card

Input signal card		Output signal card	
Input signal	4-way optical fiber signal	Output signal	4-way optical fiber signal
Input connector	Fiber optic module	Output connector	Fiber optic module
Fiber optic module type	Singlemode/Multimode	Fiber optic module type	Singlemode/Multimode
Power	24W	Power	32W

consumption		consumption	
Common			
Type of data	DVI/HDMI	Resolution	The highest resolution supports 1080P@60Hz
Temperature	0°C~+50°C	Humidity	10%~90%
Fiber optic module			
Interface specifications	LC port		
Transmission distance	Single mode fiber ≤: 2KM Multimode fiber ≤: 300M		

4.2.7 1080P DVI seamless input & output signal card

Input signal card		Output signal card	
Input signal	4 channels of DVI signals	Output signal	4 channels of DVI signals
Input connector	Female port DB24+5	Output connector	Female port DB24+5
Input level	T.M.D.S 2.9V~3.3V	Output level	T.M.D.S 2.9V~3.3V
Input resistance	75Ω	Output resistance	75Ω
Power consumption	10W	Power consumption	6W
Common			
Gain	0 dB	Transmission distance	200ns(Max)Crosstalk
Crosstalk	<-50dB@5MHz	Maximum time delay	5nS(±1nS)
Resolution	The highest resolution supports 1080P@60Hz		
Video format	DVI, HDMI, VGA, C-VIDEO, YPbPr		
Audio format	Embedded audio supports PCM, Dobyly Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Audio sample rate	32K, 44.1K, 48K, 88.2K, 96K, 176.4K,192K		
EDID&DDC manage	Supports Extended Display Identification (EDID) and Display Data Channel (DDC), using DVI and HDMI standards		
HDCP manage	Supports High-bandwidth Digital Content Protection (HDCP), using DVI and HDMI1.3 standards		

4.2.8 1080P SDI seamless input & output signal card

Input signal card		Output signal card	
Input signal	4 channels of SDI signals (each channel has one SDI loop out)	Output signal	4 channels of SDI signals (each channel has one SDI loop out)
Input connector	BNC connector	Output connector	BNC connector

Input level	T.M.D.S 2.9V~3.3V	Output level	T.M.D.S 2.9V~3.3V
Input resistance	75Ω	Output resistance	75Ω
Video signal	SDI、HD-SDI、3G-SDI	Video signal	SDI、HD-SDI、3G-SDI
Power consumption	17W	Power consumption	15W
Common			
Color depth	8&10& 12bit	Working distance	1080p≤100 meters (please use high-quality wire)
Resolution	The highest resolution supports 1080P@60Hz		
Temperature	0℃~ +50℃	Humidity	10% ~ 90%

4.2.9 1080P CVBS seamless input & output signal card

Input signal card		Output signal card	
Input signal	4-way CVBS signals 4 channels of analog audio signals	Output signal	4-way CVBS signals 4 channels of analog audio signals
Input connector	BNC connector 3-pin plug-in terminal block	Output connector	BNC connector 3-pin plug-in terminal block
Resolution	Supports 480i and 576i resolutions	Output connector	Supports two resolutions: 480i and 576i, the output default is 576i
Audio input	stereo	Audio output	stereo
Power consumption	11W	Power consumption	9W
Common			
Transmission distance	≤100m(Please use high quality wire)		
Temperature	0℃~ +50℃	Humidity	10% ~ 90%

4.2.10 1080P HDMI&SDI seamless input & output signal card

Input signal card		Output signal card	
Input signal	2 channels of HDMI signals (compatible with DVI); 2 channels of SDI signals (each channel has one SDI loop out); 2 analog audio signals	Output signal	2 channels of HDMI signals (compatible with DVI); 2 channels of SDI signals (each channel has one SDI loop out); 2 analog audio signals
Input connector	Type A 19-pin female connector; Female port BNC connector; 3-pin plug-in terminal block	Output connector	Type A 19-pin female connector; Female port BNC connector; 3-pin plug-in terminal block
Power consumption	9W	Power consumption	7W
Common			
HDMI port:			
Color depth	8 & 10 & 12 bit	Signal type	HDMI、DVI
Temperature	0℃～ +50℃	Humidity	10% ～ 90%
Resolution	The highest resolution supports 1080P@60Hz		
Audio format	Embedded audio supports PCM, Dolby Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Standard	Support HDMI1.3		
EDIDmanage	Support EDID learning function		
SDI port:			
Input level	T.M.D.S 2.9V～3.3V	Output level	T.M.D.S 2.9V～3.3V
Input resistance	75Ω	Output resistance	75Ω
Video format	SDI、HD-SDI、3G-SDI		
Resolution	The highest resolution supports 1080P@60Hz		
Temperature	0℃～ +50℃	Humidity	10% ～ 90%

Color depth	8&10& 12bit	working distance	1080P≤100 meters (please use high-quality wire)
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4.2.11 1080P HDMI&VGA seamless input & output signal card

Input signal card		Output signal card	
Input signal	2 channels of HDMI signals (compatible with DVI); 2 VGA signals; 4-way stereo audio signal	Output signal	2 channels of HDMI signals (compatible with DVI); 2 VGA signals; 4-way stereo audio signal
Input connector	Type A 19-pin female connector; 15-pin D-type female port; 3-pin plug-in terminal block	Output connector	Type A 19-pin female connector; 15-pin D-type female port; 3-pin plug-in terminal block
Power consumption	12W	Power consumption	8W
Common			
HDMI port:			
Signal type	HDMI、DVI		
Resolution	The highest resolution supports 1080P@60Hz		
Audio format	Embedded audio supports PCM, Dobyly Digital, DTS, and DTS-HD formats, and external audio supports PCM format.		
Standard	Support HDMI1.3		
EDID management	Support EDID learning function		
Temperature	0℃～ +50℃	Humidity	10% ～ 90%
VGAport:			
Coupling input	AC coupling only	Switch type	Vertical spacing
Input level	0.5～2.0Vp-p	Output level	0.5～2.0Vp-p
Input resistance	75Ω	Output impedance	75Ω

Frequency response	20Hz~20K Hz	Gain	0 dB
Crosstalk	<-50dB@5MHz	Switching rate	200ns(Max)
Video signal	VGA (RGBHV)、YPbPr、S-VIDEO、C-VIDEO		

4.2.12 1080P VGA seamless input & output signal card

Input signal card		Output signal card	
Input signal	4 channels VGA signal 4 channels of analog audio signals	Output signal	4 channels VGA signal 4 channels of analog audio signals
Input connector	15-pin D-type female port 3-pin plug-in terminal block	Output connector	15-pin D-type female port 3-pin plug-in terminal block
Input connector	0.5~2.0Vp-p	Output level	0.5~2.0Vp-p
Bandwidth	YPbPr:170MHz; C-video:150MHz; VGA:170MHz	Bandwidth	350MHz (-3dB)
Input resistance	Video: 75Ω Audio: >10KΩ	Output resistance	75Ω
Common			
Video signal	VGA (RGBHV)、YPbPr、S-VIDEO、C-VIDEO		
Resolution	The highest resolution supports 1080P@60Hz		
Gain	0 dB	Crosstalk	<-50dB@5MHz
Power consumption	12W	Power consumption	6W
Transmission distance	200ns(Max)	Resolution	1080P@60Hz
Temperature	0°C ~ +50°C	Humidity	10% ~ 90%

4.2.13 IP streaming decoding card

Port	2-way IP interface; 4-way analog audio signal		
Connector	3pin Phoenix; RJ45		
Common			
Power consumption	13W		
Host	Support WIN7 32-bit, WIN7 64-bit, WIN10 32-bit, WIN10 64-bit system host		
Temperature	0℃ ~ +50℃	Humidity	10% ~ 90%

4.2.14 Preview back to graphics card

Port	1 USB-A upgrade port; 1 PC connection port; 1 TCP/IP		
Connector	Type A port; RJ45		
Common			
Power consumption	15W		
Host	Support WIN7 32-bit, WIN7 64-bit, WIN10 32-bit, WIN10 64-bit system host		
Temperature	0℃～+50℃	Humidity	10% ～ 90%