
MAX Series Seamless Modular Matrix

User Manual

Version 1.0



Important note

Warning

In order to ensure the reliable performance of the equipment and the safety of the user, please observe the following matters during the process of installation, use and maintenance:

- ◆ Please do not use this product in the following places: the place of dust, soot and electric conductivity dust, corrosive gas, combustible gas; the place exposed to high temperature, condensation, wind and rain; the occasion of vibration and impact . Electric shock, fire, wrong operation can lead to damage and deterioration to the product, either;
- ◆ In processing the screw holes and wiring, make sure that metal scraps and wire head will not fall into the shaft of controller, as it could cause a fire, fault, or incorrect operation;
- ◆ When the installation work is over, it should be assured there is nothing on the ventilated face, including packaging items like dust paper. Otherwise this may cause a fire, fault, incorrect operation for the cooling is not free;
- ◆ Should avoid wiring and inserting cable plug in charged state, otherwise it is easy to cause the shock, or electrical damage;
- ◆ The installation and wiring should be strong and reliable, contact undesirable may lead to false action;
- ◆ For a serious interference in applications, should choose shield cable as the high frequency signal input or output cable, so as to improve the anti-jamming ability of the system.

Attention in the wiring:

- ◆ Only after cutting down all external power source, can install, wiring operation begin, or it may cause electric shock or equipment damage;
- ◆ This product grounds by the grounding wires .To avoid electric shocks, grounding wires and the earth must be linked together. Before the connection of input or output terminal, please make sure this product is correctly grounded;
- ◆ Immediately remove all other things after the wiring installation. Please cover the terminals of the products cover before electrification so as to avoid cause electric shock.

Matters needing attention during operation and maintenance:

-
- ◆ Please do not touch terminals in a current state, or it may cause a shock, incorrect operation;
 - ◆ Please do cleaning and terminal tighten work after turning off the power supply. These operations can lead to electric shock in a current state;
 - ◆ Please do the connection or dismantle work of the communication signal cable , the expansion module cable or control unit cable after turning off the power supply, or it may cause damage to the equipment, incorrect operation;
 - ◆ Please do not dismantle the equipment, avoid damaging the internal electrical component;
 - ◆ Should be sure to read the manual, fully confirm the safety, only after that can do program changes, commissioning, start and stop operation.

Matters needing attention in discarding product:

- ◆ Electrolytic explosion: the burning of electrolytic capacitor on circuit boards may lead to explosion;
- ◆ Please collect and process according to the classification, do not put into life garbage;
- ◆ Please process it as industrial waste, or according to the local environmental protection regulations.

The copyright of this manual belongs to Shenzhen RiFly Technology Co., Ltd. Without permission, no unit or individual shall adopt part or all of its content for commercial use.

1 Product Overview

The emergence of HD modular Video Matrix Switcher in recent years, changed the way of the different needs of different types of video matrix switcher of different signal format, and the way that signal receiving devices must have same signal format interface as the matrix switcher. HD modular Video Matrix Switcher can receive any resolution, any format of the analog signal and digital signal, and some can even receive long-distance signal with the transmission of RJ45 cable or the fiber optic cable, and the output can also be flexible like that. By using HD modular Video Matrix Switcher, you can choose different types of input cards and different types of output cards to meet your project needs and do not need any signal converter. It would reduce fault rate of your system to a great extent.

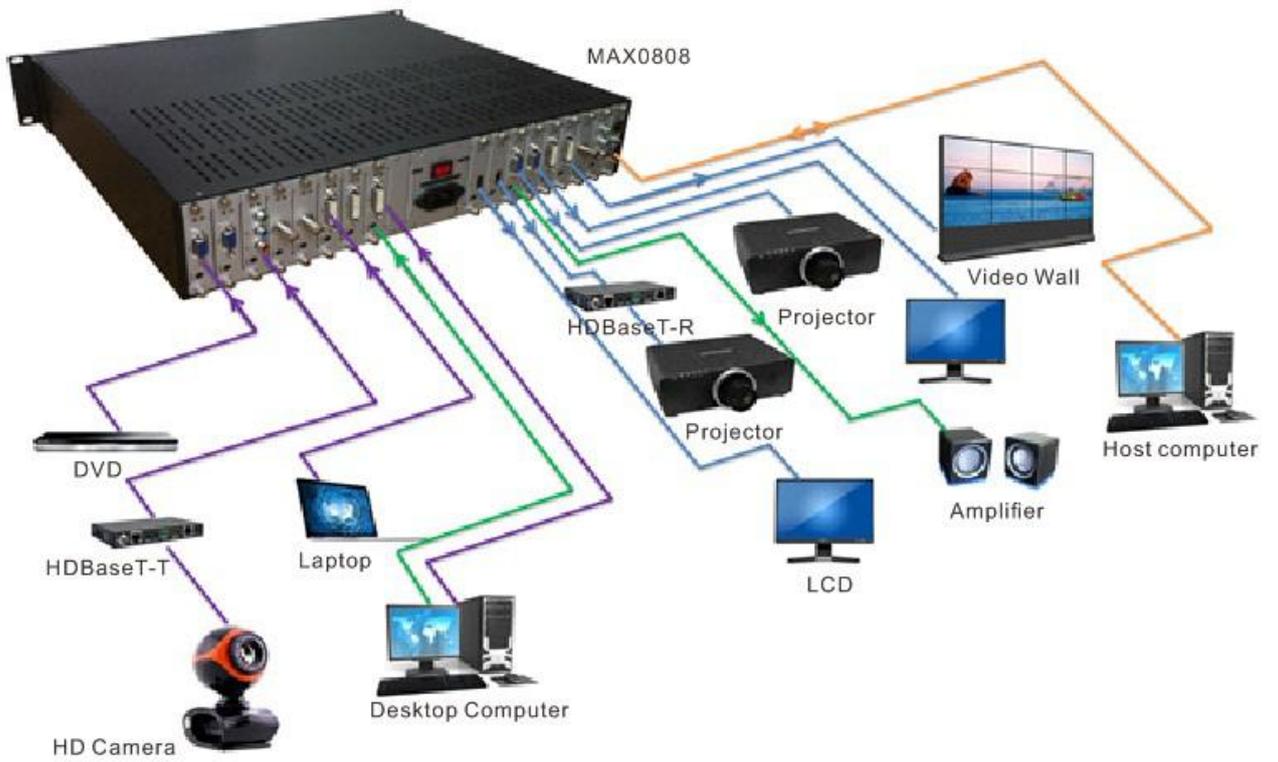
HD modular Video Matrix Switcher provide an easier way to match different areas of use, like the command center, dispatching center, conference center, video conference system etc.

2 Features

- ◆ **Seamless switch, channel switch without signal cut off in the middle.**
- ◆ **Configurable resolution for output card.**
- ◆ **Each input card provide 3.5MM audio input interface and each output card provide 3.5MM audio output interface, audio and video switch simultaneously.**
- ◆ **Support video splitting output.**
- ◆ **Arbitrarily configurable OSD indicator for each input source, make it easy to identify signal source of the termination.**
- ◆ **Led indicator for valid signal detecting.**
- ◆ **Be capable of TCP/IP network control, RS232 serial control and the front keyboard panel control with LCD screen.**
- ◆ **Redundant Power Supply: Power Supply system can automatically switch to spare power supply when one supply does not work normally or properly.**

◆ **Pure hardware card inserting structure. Input cards and output cards can be configured flexibly and support hotplug, supporting HDMI/DVI/VGA/CVBS/YPbPr/SDI/HDBaseT inputs and outputs.**

3 Typical Application



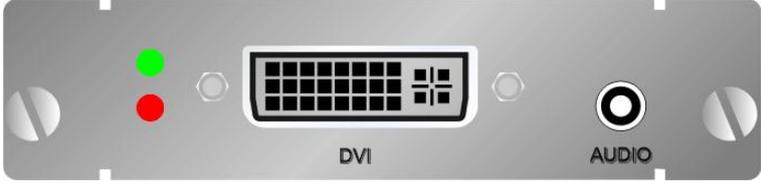
4 Machine Parameters

Model	MAX0808	MAX1818	MAX3636
Brief description	8 input card slots and 8 output card slots	18 input card slots and 18 output card slots	36 input card slots and 36 output card slots
Input card	DVI/VGA/CVBS/HDMI/3G-SDI/YPbPr/HDBT/Fiber		
Output Card	DVI/VGA/CVBS/HDMI/3G-SDI/YPbPr/HDBT/Fiber		
Resolution support	640x480~1920x1200@60Hz (VESA), 480i~1080p@60hz (HDTV)		
Protocol	DVI1.0, HDMI1.4, HDCP and E-EDID Standard		
Color space	RGB4:4:4/YUV4:4:4/YUV4:2:2/YUV4:2:0		
Bandwidth Bandwidth	10.2Gbps		
Transmission distance	25m (HDMI/DVI), 30m (analog), 100m (CAT5e/6), 500m (multi-mode fiber optic cable), 1.5~20Km (single mode fiber optic cable)		
Control	Front key panel, IR, RS232 and LAN		
Storage environment	Temperature: -20°C ~ +70°C, humidity: 10%~90%		
Work environment	Temperature: -20°C ~ +50°C, humidity: 10%~80%		
Dimensions	440mmX400mmX89	440mmX400mmX225mm (5U)	440mmX400mmX445mm (10U)
Weight	7Kg	15Kg	31Kg
Maximum power dissipation	100W	200W	450W
Power supply	100~260V 50/60Hz		
Running hours	Redundant Power Supply: Power Supply system can automatically switch to spare power supply when one supply does not work normally or properly; Work without interruption for 7X24 hours.		
MTBF	10,000 hours		
Warranty	One year warranty and lifetime maintenance		

5 Input and Output Card

Input Card

①DVI Input Card

MIN-DVI	
	
Function Characteristics:	
<p>One DVI input, support 3.5MM audio input;</p> <p>Support arbitrarily configurable OSD indicator for input source;</p> <p>Led indicator for valid signal detecting;</p>	
Specifications:	
Interface	DVI-I 24+5 pin, female, 3.5MM audio input interface
Protocol	DVI1.0 protocol, HDCP1.3 protocol, compatible HDMI1.3
Bandwidth	6.75Gbps, digital
Maximum resolution	HDPC: 1920x1200@60Hz HDTV: 1920x1080@60Hz
Minimum and maximum level	TMDS 2.9V/3.3V
Input impedance	50 Ω
Bit clock jitter	<0.15 Tbit
Bit rising time	<0.3 Tbit (20%~80%)
Bit falling time	<0.3 Tbit (20%~80%)
Transmission delay	5ns (±1ns)
EDID	Support EDID and DDC management

②HDMI Input Card

MIN-HDMI	
	
Function Characteristics:	
<p>One HDMI input, support 3.5MM audio input;</p> <p>Support arbitrarily configurable OSD indicator for input source;</p> <p>Led indicator for valid signal detecting;</p>	
Specifications:	
Interface	HDMI type A, female, 3.5MM audio input interface
Protocol	HDMI1.3, HDCP1.3, compatible DVI1.0
Bandwidth	6.75Gbps, digital
Maximum resolution	<p>HDPC: 1920x1200@60Hz</p> <p>2048*1080@24Hz</p> <p>HDTV: 1920x1080@60Hz</p>
Minimum and maximum level	TMDS 2.9V/3.3V
Input impedance	50 Ω
Bit clock jitter	<0.15 Tbit
Bit falling time	<0.3 Tbit (20%~80%)
Bit rising time	<0.3 Tbit (20%~80%)
Transmission delay	5ns (±1ns)
EDID	Support EDID and DDC management

③VGA Input Card

MIN-VGA	
	
Function characteristics:	
<p>One VGA input, support 3.5MM audio input;</p> <p>Support arbitrarily configurable OSD indicator for input source;</p> <p>Led indicator for valid signal detecting;</p> <p>Support VGA、SVGA、XVGA、SXGA、UXGA、WUXGA、HD1080P signal input;</p>	
Specifications:	
Interface	D-Sub 15 pin, female, 3.5MM audio input interface
Format	RGBHV, RGBS, RGSB, RsGsBs
Input voltage	0.5~2.0V _{p-p}
Input impedance	75 Ω
Resolution support	1024x768@60hz ~ 1920x1200@60hz
Bandwidth	450MHz (-3dB)

④CVBS Input Card

MIN-CVBS	
	
Function characteristics:	
<p>One CVBS input, support 3.5MM audio input;</p> <p>Support arbitrarily configurable OSD indicator for input source;</p> <p>Led indicator for valid signal detecting;</p>	
Signal type	Composite video
Interface	BNC female, 3.5MM audio input interface
Format	Support NTSC3.58, NTSC4.42, PAL and SECAM
Input Voltage	0.5~2.0V _{p-p}
Input impedance	75 Ω
Resolution support	480i, 576i
Bandwidth	200MHz (-3dB)

⑤YPbPr Input Card

MIN-YPbPr**Function characteristics:**

- One YPbPr input, support 3.5MM audio input;
- Support arbitrarily configurable OSD indicator for input source;
- Led indicator for valid signal detecting;
- Support NTSC3.58、NTSC4.42、PALand SECAM;

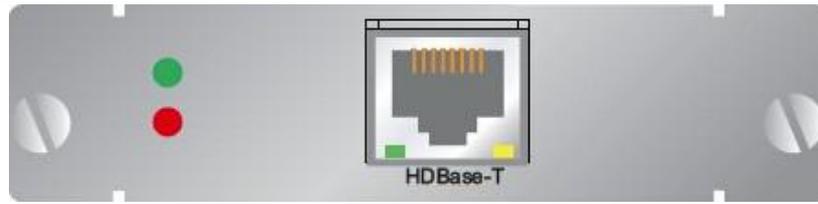
Signal type	YPbPr
Interface	RCA*3 female, 3.5MM audio input interface
Standard	EIA-770.2a
Input voltage	$0.5 \sim 2.0V_{p-p}$
Input impedance	75 Ω
Resolution support	480i, 576i, 480p, 576p, 720p, 1080i, 1080p
Bandwidth	450MHz (-3dB)

©SDI input card

MIN-SDI	
	
Function characteristics:	
<p>One SDI input and one SDI loop out, support 3.5MM audio input;</p> <p>Support arbitrarily configurable OSD indicator for input source;</p> <p>Led indicator for valid signal detecting;</p> <p>Support SD-SDI、HD-SDI、3G-SDI standard and support 1080p;</p> <p>Comply with SMPTE424M, SMPTE292M and SMPTE259M standard, support hotplug;</p>	
Specifications:	
Interface	BNC*2 female, 3.5MM audio input interface
Video format	SD-SDI/HD-SDI/3G-SDI
Data rate	270Mbps、1.485Gbps、2.97Gbps
Input impedance	75 Ω
Signal amplitude	0.8V _{p-p} ±10%
Rise and fall time	400~700ps
Minimum and maximum level	0.5V to 1.0 V _{p-p}

⑦HD-baset Input Card

MIN-HDBT



Function characteristics:

- One HDBaseT input modular;
- Led indicator for valid signal detecting;
- Use CAT5e/6 cable for transmission length up to 100M;
- Support HDBaseT1.0, HDCP;

Specifications:

Interface	RJ45 female
Format	HDBaseT1.0 standard
Bandwidth	20Gbps
Resolution support	HDPC: 1920x1200@60Hz HDTV: 1920x1080@60Hz 3D: 1920*1080@60Hz
Transmission distance	Length up to 100M

Output Card

①DVI-I Output Card

MOUT-DVI/ MOUT-DVI-S



Function characteristics:

- One DVI output, one 3.5MM audio output interface;
- Seamless switch of audio and video;
- Configurable resolution for video output;
- Support video splitting output;
- Led indicator for valid signal detecting;

Specifications:

Interface	DVI-I 24+5 pin female, 3.5MM audio output interface
Protocol	DVI1.0, HDCP1.3, HDMI1.3
Bandwidth	6.75Gbps, digital
Maximum resolution	HDCP: 1920x1200@60Hz, HDTV: 1920x1080@60Hz
Input voltage	TMDS 2.9V/3.3V
Input impedance	50Ω
Bit clock jitter	<0.15 Tbit
Bit rising time	<0.3 Tbit (20%~80%)
Bit falling time	<0.3 Tbit (20%~80%)
Transmission delay	5ns (±1ns)
EDID	Support EDID and DDC management

②HDMI Output Card

MOUT-HDMI/ MOUT-HDMI-S



Function characteristics:

- One HDMI output, one 3.5MM audio output interface
- Seamless switch of audio and video;
- Configurable resolution for video output;
- Support video splitting output;
- Led indicator for valid signal detecting;

Specifications:

Interface	HDMI Type A, female, 3.5MM audio output interface
Protocol	HDMI1.3, HDCP1.3, compatible with DVI1.0
Bandwidth	6.75Gbps, digital
Maximum resolution	HDPC: 1920x1200@60Hz, HDTV: 1920x1080@60Hz
Input voltage	TMDS 2.9V/3.3V
Input impedance	50Ω
Bit clock jitter	<0.15 Tbit
Bit rising time	<0.3 Tbit (20%~80%)
Bit falling time	<0.3 Tbit (20%~80%)
Transmission delay	5ns (±1ns)
EDID	Support EDID and DDC management

③VGA Output Card

MOUT-VGA/ MOUT-VGA-S



Function characteristics:

- One VGA output, one 3.5MM audio output interface;
- Seamless switch of audio and video;
- Configurable resolution for video output;
- Support video splitting output;
- Led indicator for valid signal detecting;
- Support VGA/SVGA/XVGA/SXGA/UXGA/WUXGA/HD1080P;

Specifications:

Interface	D-Sub 15 pin, female, 3.5MM audio output interface
Format	RGBHV, RGBS, RGsB, RsGsBs
Output Voltage	0.5~2.0V _{pp}
Output impedance	75Ω
Resolution support	1024x768@60hz ~ 1920x1200@60hz
Bandwidth	450MHz (-3dB)

④ CVBS Output Card

MOUT-CVBS	
	
Function characteristics:	
<p>One CVBS output, one 3.5MM audio output interface;</p> <p>Seamless switch of audio and video;</p> <p>Configurable resolution for video output;</p> <p>Support video splitting output;</p> <p>Led indicator for valid signal detecting;</p>	
Video Type	Composite Video
Interface	BNC female, 3.5MM audio output interface
Format	NTSC, PAL and SECAM
Input voltage	0.5~2.0V _{pp}
Input impedance	75 Ω
Resolution support	480i, 576i
Bandwidth	200MHz (-3dB)

⑤ YPbPr Output Card

MOUT-YPbPr



Function characteristics:

- One YPbPr Output, one 3.5MM audio output interface;
- Seamless switch of audio and video;
- Configurable resolution for video output;
- Support video splitting output;
- Led indicator for valid signal detecting;

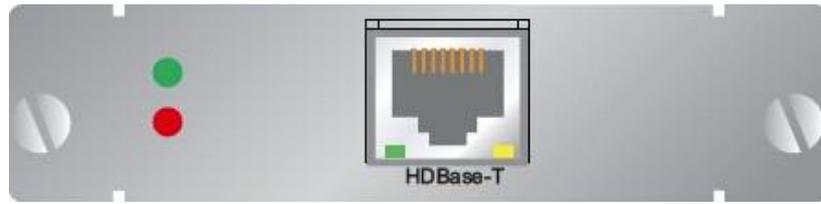
Video Type	YPbPr
Interface	RCA*3 female, 3.5MM audio output interface
Standard	EIA-770.2a
Input voltage	0.5~2.0V _{pp}
Input impedance	75 Ω
Resolution support	480i, 576i, 480p, 576p, 720p, 1080i, 1080p
Bandwidth	450MHz (-3dB)

⑥SDI Output Card

MOUT-SDI	
	
Function characteristics:	
<p>Two SDI output port, one 3.5MM audio output interface;</p> <p>Seamless switch of audio and video;</p> <p>Configurable resolution for SDI output;</p> <p>Support video splitting output;</p> <p>Led indicator for valid signal detecting;</p> <p>Support SD-SDI/HD-SDI/3G-SDI standard, support 1080p;</p> <p>Comply with SMPTE424M/SMPTE292M/SMPTE259M, support hotplug;</p>	
Specifications:	
Interface	BNC*2 female, 3.5MM audio output interface
Format	SD-SDI/HD-SDI/3G-SDI
Data rate	270Mbps、1.485Gbps、2.97Gbps
Input impedance	75 Ω
Signal amplitude	0.8V _{p-p} ±10%
Rise and fall time	400~700ps
Minimum and maximum level	0.5V to 1.0 V _{p-p}

⑦HD-Baset Output Card

MOUT-HDBT



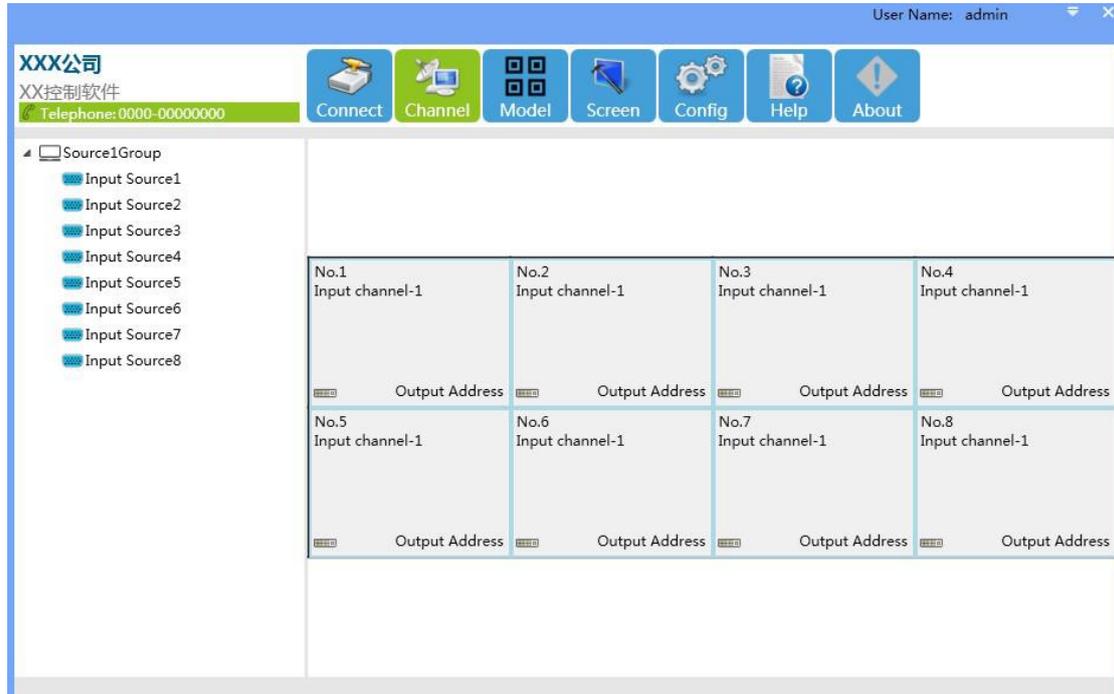
Function characteristics:

- One HDBaseT output module
- Led indicator for valid signal detecting;
- Output length up to 100M by using CAT5e/6 cable;
- Support HDBaseT1.0 and HDCP protocol;

Specifications:

Interface	RJ45, female
Standard	HDBaseT1.0
Bandwidth	20Gbps
Resolution support	HDPC: 1920x1200@60Hz HDTV: 1920x1080@60Hz 3D: 1920*1080@60Hz
Transmission distance	Length up to 100M

6 Software control



Disclaimer:

The pictures or diagrams in the manual are just for instruction and reference, the outlook of the product can only be judged by real product. Information in this manual is subject to change without notice.