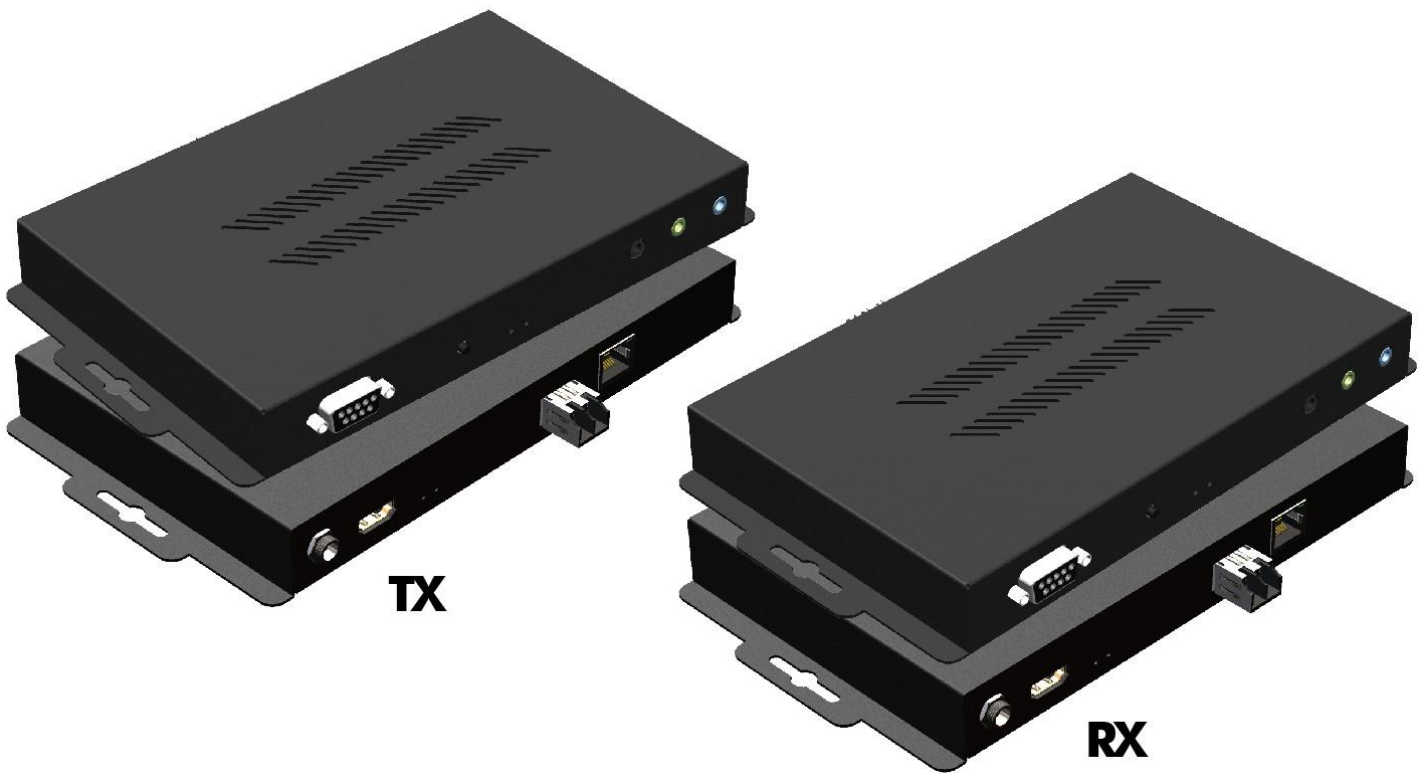# HDMI over IP (fiber) Uncompressed Multicast System

TX

RX

⚠️ Safety and Notice

The **AV-GM04H3-S1** HDMI over IP (fiber) Uncompressed Multicast System has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM04H3-S1** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.

- Do not attempt to service this unit yourself, except where explained in this manual.

- Provide proper ventilation and air circulation and do not use near water.

- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.

- Use only the power adapter and power cords and connection cables designed for this unit.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

ESD CAUTION

TABLE OF CONTENTS

INTRODUCTION

The **AV-GM04H3-S1** HDMI over IP(fiber) Uncompressed***** Multicast System boosts up your video/audio transmission distance up to 300m(1000ft) over a duplex, LC terminated multimode fiber cable in Ultra-HD 4K2K@30 format. Users can readily extend Ultra-HD sources from DVD players, Blu-ray Disc player, PS3, PC, and any other HDMI sources broadcasting to distant display monitors including HDMI or DVI enabled TV sets or LCD PC monitors. Besides **AV-GM04H3-S1** is HDCP compliant, and supports IR and RS-232 pass-through path.

With broadcasting management software and 10 Gigabit Ethernet network switch (supported IGMP Snooping), **AV-GM04H3-S1** is a complete Ultra-HD 4K2K@30 video broadcasting solution for digital signage. It can transmit Ultra-HD 4K2K@30 HDMI video broadcasting over IP network. The broadcasting format can be Point to Point, Point to Many, and Multi-Casting. Multi-casting is based on Managed Gigabit Switch with 802.1Q VLAN function which provides control remotely, so multi video and source allowed and supported.

> * Up to 4K@60 HDR
>
> 4K@60 4:4:4 needs Light compress

FEATURES

- Supports uncompressed HDMI Deep Color, full 3D & 4K2K@30
- HDCP & EDID Bypass
- CEC support
- Auto equalization
- Pure unaltered uncompressed 7.1ch digital HDMI over fiber transmission
- DTS-HD Master Audio and Dolby TrueHD high bit rate audio support
- Supports full frequency IR signal from 20KHz to 60KHz
- Bi-directional IR path-through
- Full Duplex RS-232 control up to 115,200 bps through connector
- Integrated port for LAN/ network device
- Fiber extension and connection to a 10GbE Ethernet Switch (supported IGMP Snooping)
- Support software to configure & update device and to control the switching operation of the various signal types
- Support IP pass-through
- Support seamless switching

PACKAGE CONTENTS

- 1x AV-GM04H3-S1 [TX & RX]
- 1x IR blaster
- 1x IR receiver
- 2x DC 5V
- 1x User Manual

SPECIFICATIONS

| Model Name	AV-GM04H3-S1	
Technical	AV-GM04H3-S1[Tx]	AV-GM04H3-S1[Rx]
Role of usage	Transmitter [TX]	Receiver [RX]
HDMI compliance	HDMI Deep Color, full 3D & 4K2K@30	
HDCP compliance	Yes	
Video bandwidth	Single-link 340MHz [10.2Gbps]	
Video support	480i / 480p / 720p / 1080i / 1080p60 / 4K2K@30 / 4K2K@60 HDR	
HDMI over fiber	Yes	
Audio support	Surround sound [up to 7.1ch] or stereo audio	
Equalization	Auto	
Input TMDS signal	1.2 Volts [peak-to-peak]	
Input DDC signal	5 Volts [peak-to-peak, TTL]	
ESD protection	Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]	
PCB stack-up	6-layer board [impedance control — differential 100Ω; single 50Ω]	
IR pass-thru	Bi-directional	
RS-232 support	Yes	
Input	1x HDMI 2x 3.5mm	1x fiber 1x 3.5mm
Output	1x fiber 1x 3.5mm	1x HDMI 2x 3.5mm
In / Out	1x RS-232 1x RJ-45(Ethernet)	1x RS-232 1x RJ-45(Ethernet)
HDMI source control	Controllable via IR pass-through from RX to TX with IR extenders	
HDMI connector	Type A [19-pin female]	
RJ-45 connector	WE/SS 8P8C(Reverse Mode)	
Rotary control switch	None	
3.5mm connector	IR receiver / IR blaster	IR receiver / IR blaster
Mechanical	AV-GM04H3-S1[Tx]	AV-GM04H3-S1[Rx]
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	195 x 122 x 25mm[7.7" x 4.8" x 1"]	
	Package	325 x 196 x 92mm[12.7" x 7.7" x 3.6"]	
	Carton	490 x 426 x 352mm[1'6" x 1'4" x 1'2"]	
Weight	Model	656g [23.1oz]	656g [23.1oz]
	Package	2393g [5.3lbs]	
Fixedness		Wall-mounting case with screws	
Power supply		5V4A	
Power consumption		Max 12W	
Operation temperature		0~40°C [32~104°F]	
Storage temperature		-20~60°C [-4~140°F]	
Relative humidity		20~90% RH [no condensation]	

PANEL DESCRIPTIONS

Transmitting unit ► AV-GM04H3-S1-TX

Front Panel

1. **+5V DC:** Connect to a 5V power supply unit
2. **HDMI IN:** Connect to a HDMI source with a HDMI male-male cable
3. **Status LED:** When device read the firmware, the indicator LED will light
4. **Signal LED:** When user connect to the source, the indicator LED will light
5. **SFP OUT:** Connect a duplex, LC terminated multimode fiber cable
6. **Ethernet Port:** Ethernet control port

Rear Panel
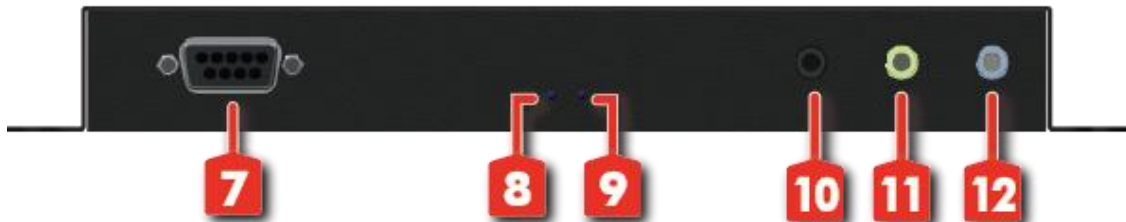
7. **RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
8. **Transmission Status LED:** When device transmit the Ethernet frames at a rate of 10Gb/s, the indicator LED will light
9. **Receiving Status LED:** When device receive the Ethernet frames at a rate of 10Gb/s, the indicator LED will light
10. **Audio IN:** Connect an audio source device here
11. **IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
12. **IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster

Receiving unit ► AV-GM04H3-S1-RX

Front Panel

13. **+5V DC:** Connect to a 5V power supply unit

14. **HDMI OUT:** Connect to a HDMI display with a HDMI male-male cable

15. **Status LED:** When device read the firmware, the indicator LED will light

16. **Signal LED:** When user connect to the display, the indicator LED will light

17. **SFP IN:** Connect a duplex, LC terminated multimode fiber cable

18. **Ethernet Port:** Ethernet control port

Rear Panel
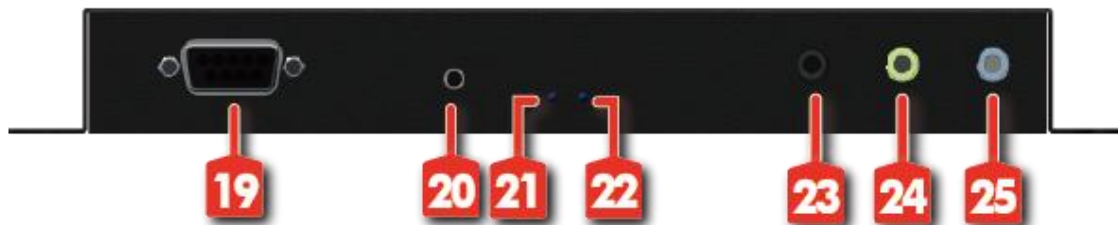
19. **RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here

20. **EDID Button:** To learn EDID from display

21. **Transmit Status LED:** When device transmit the Ethernet frames at a rate of 10Gb/s, the indicator LED will light

22. **Receive Status LED:** When device receive the Ethernet frames at a rate of 10Gb/s, the indicator LED will light

23. **Audio OUT:** Connect an audio output device (e.g. speaker or headphone) here

24. **IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver

25. **IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster

IR Extenders

IR Blaster   IR Receiver

IR Sockets

IR BLASTER: plug in the IR blaster to emit all IR command signals received from the IR receiver from the other enf to control the devices corresponding to the IR signals.

IR RECEIVER: plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

CAUTION!

Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

Definition of IR Earphone Jack

IR Blaster   IR Receiver

1. IR Signal
2. Grounding

1 2

1. IR Signal [20-60 kHz]
2. Grounding
3. Power

1 2 3

You can buy any IR extension cables in the market that are compatible to the definition of the IR sockets for the matrix if necessary for replacement use. However, IR cables longer than 2m (6-ft) may not work.

HDMI PIN DEFINITION
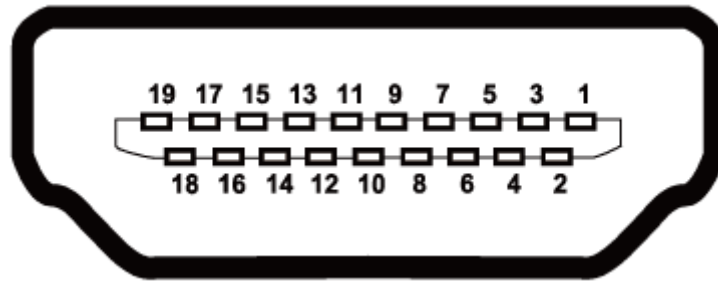
Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 11	TMDS Clock Shield
Pin 2	TMDS Data2 Shield	Pin 12	TMDS Clock–
Pin 3	TMDS Data2–	Pin 13	NC
Pin 4	TMDS Data1+	Pin 14	Reserved (N.C. on device)
Pin 5	TMDS Data1 Shield	Pin 15	SCL
Pin 6	TMDS Data1–	Pin 16	SDA
Pin 7	TMDS Data0+	Pin 17	DDC/CEC Ground
Pin 8	TMDS Data0 Shield	Pin 18	+5V Power
Pin 9	TMDS Data0–	Pin 19	Hot Plug Detect
Pin 10	TMDS Clock+		

CONNECTION DIAGRAM
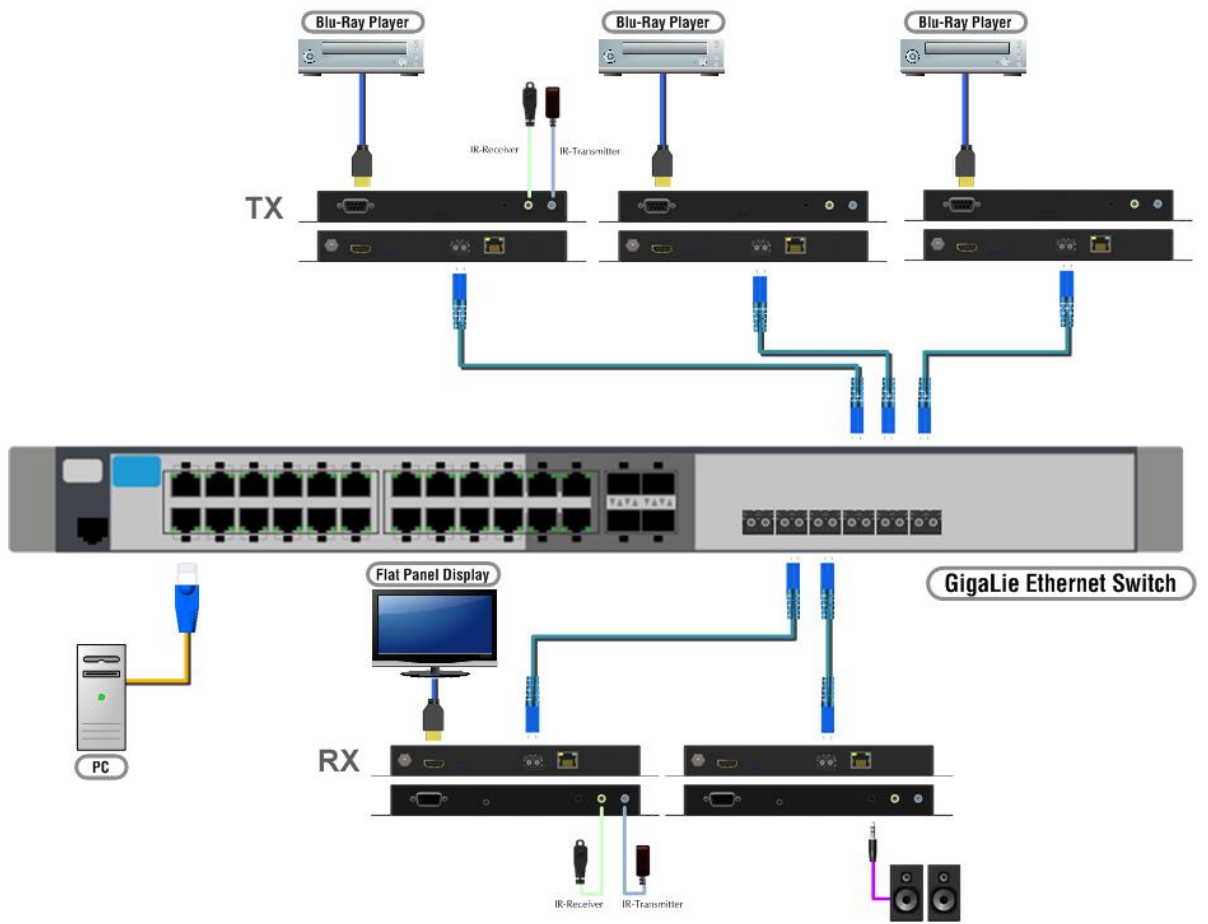
OPERATION APPROACH

Software Control through Ethernet port

1. **System Requirement**

   (1) OS information : MS Win XP/7/8/10

   (2) Baud Rate: 57600

   (3) Software size: 17MB

   (4) Minimum RAM requirement: 256MB

2. **Control Interface**

   Before you execute the software, please open the software control program (based on your operating system).

   - linux-arm
   - linux-x86_32
   - linux-x86_64
   - windows-cygwin32
   - windows-cygwin64
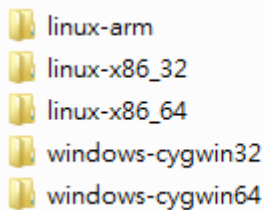
   After executing the control software, the following interface will pop up.
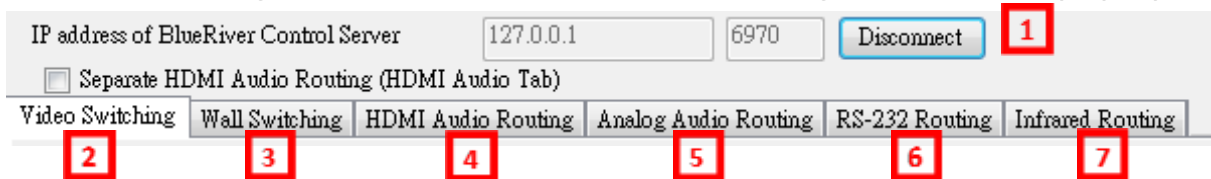
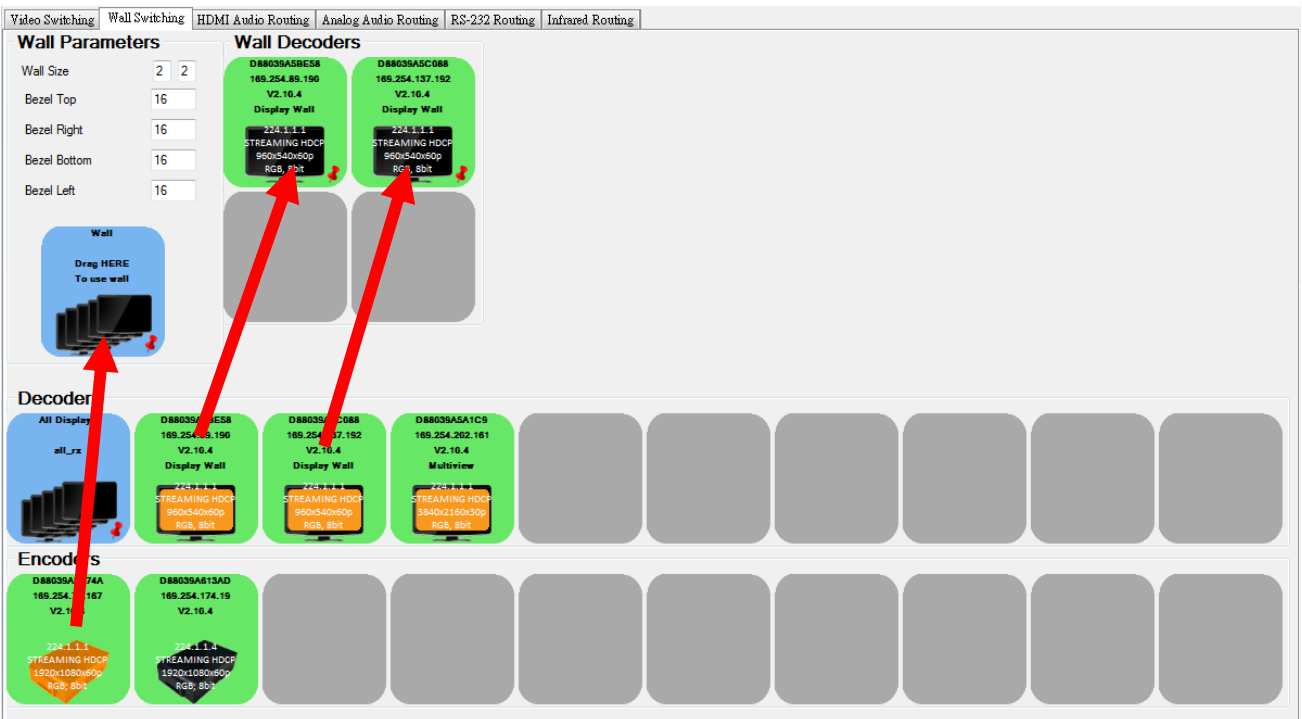 | 1 | Connect Control Software | 5 | Analog Audio Routing |
   |---|---|---|---|
   | 2 | Video Switching (Mapping) | 6 | RS-232 Routing |
   | 3 | Wall Switching | 7 | Infrared Routing |
   | 4 | HDMI Audio Routing | | |

   (1) Video Switching (Mapping)

   Dragging the Encoders icon to Decoders icon to do input/output mapping. After setting the mapping, you also can click the right button to set up more video mode (ex. stop video).
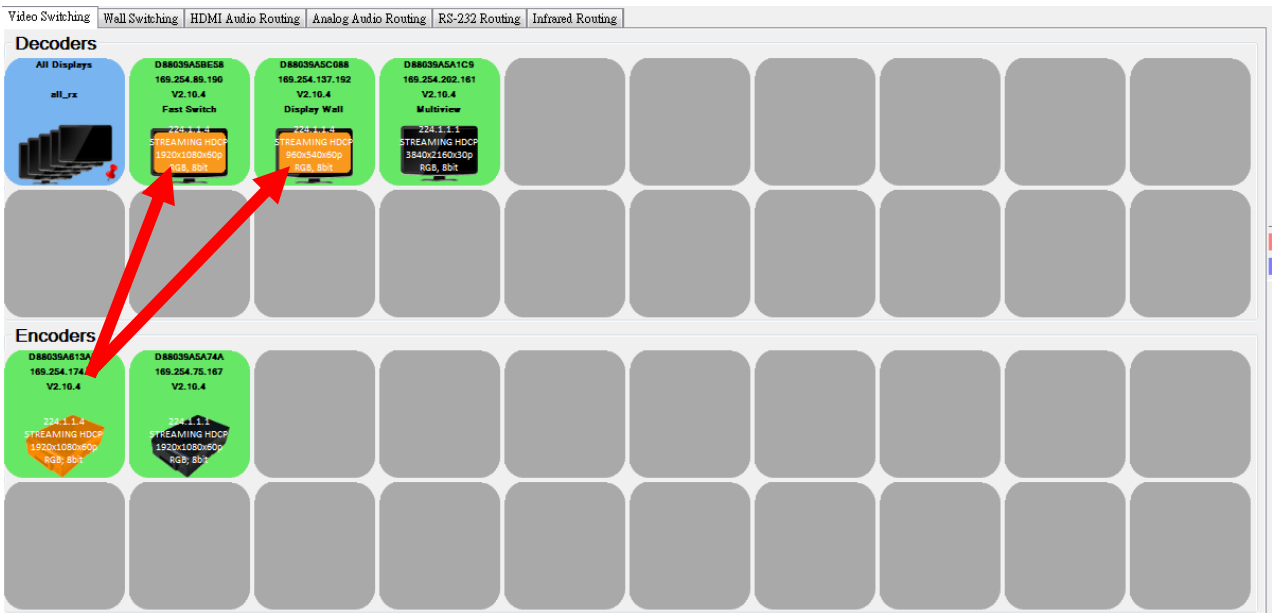
(2) Wall Switching

User can define wall size by entering the wall parameters. Dragging Encoders or Decoders to Wall and Wall Decoders icon to setup the video wall function. Please note that the resolution of each Wall Decoders is divided by the wall size. For example, the resolution of wall is 1920x1080 and the wall size is 4 (2x2), the resolution of each wall decoders is 960x540. If you want to mute the video or remove the video wall, please click the right button to select those function.

(3) HDMI/Analog Audio Routing

This function provides you to control where the audio transmit.

(4) RS-232 Routing

Bi-directional RS-232 signal are transmitted between the device transmitter and receiver. Dragging the RS-232 icon of Senders to Receivers to make connection and sending/receiving data.
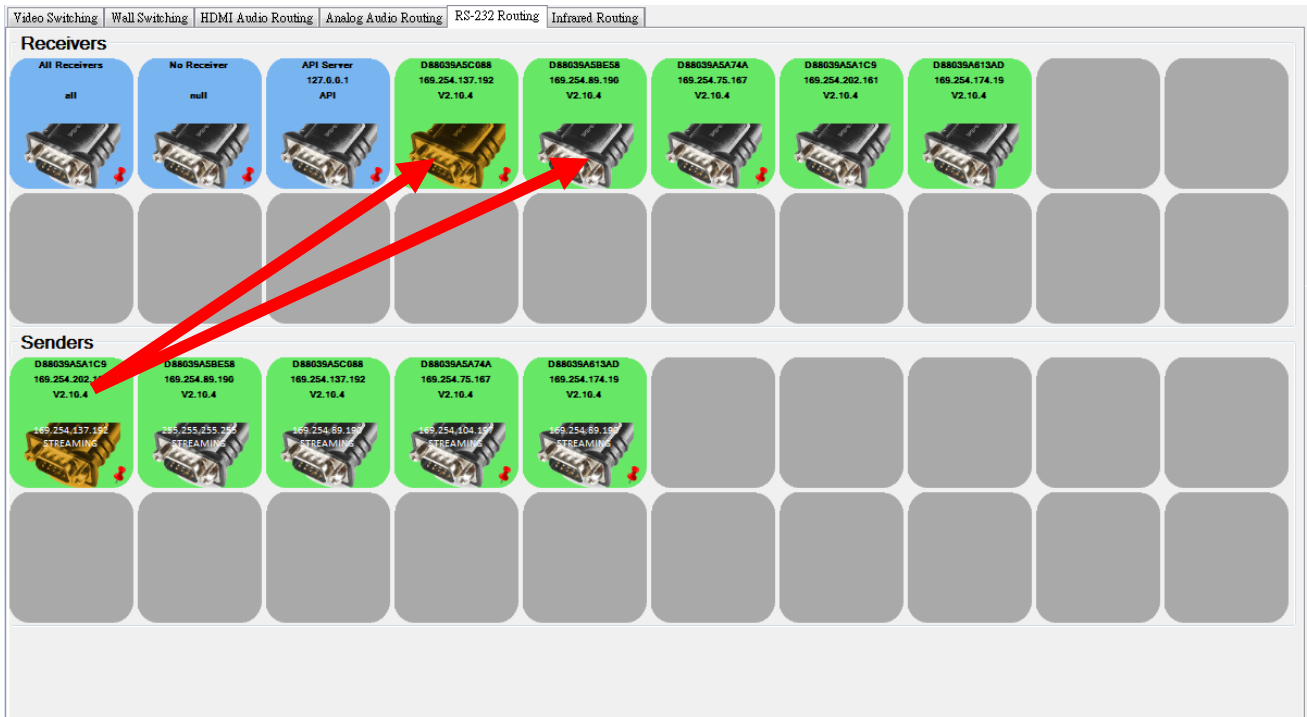

(5) Infrared Routing

Bi-directional IR signal can be transmitted between the transmitter and receiver. The IR signal can be generated either from receiver or a control system. You can drag the Infrared Senders icon to Receivers to do the Infrared Routing.
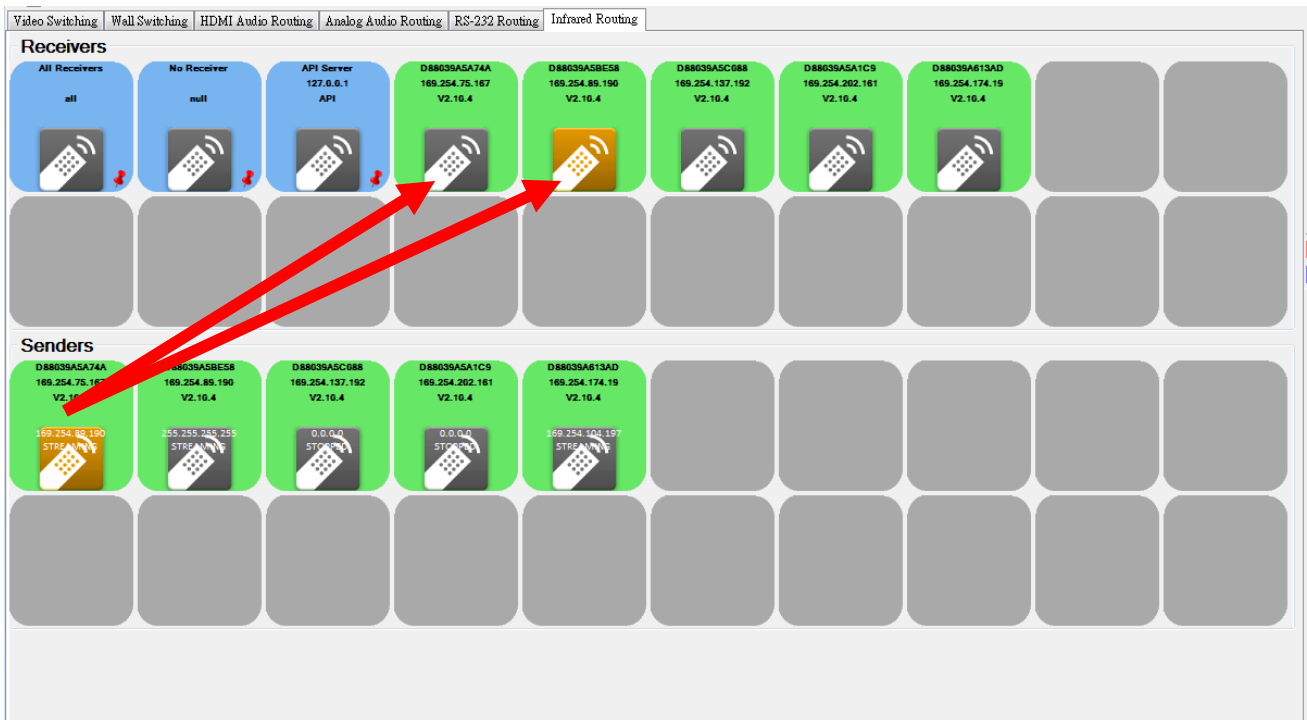
(6) Custom Setting

In the right part of the control interface, we provide the save function for user to save the video switching (mapping) into the flash memory. User also can rename the custom setting.
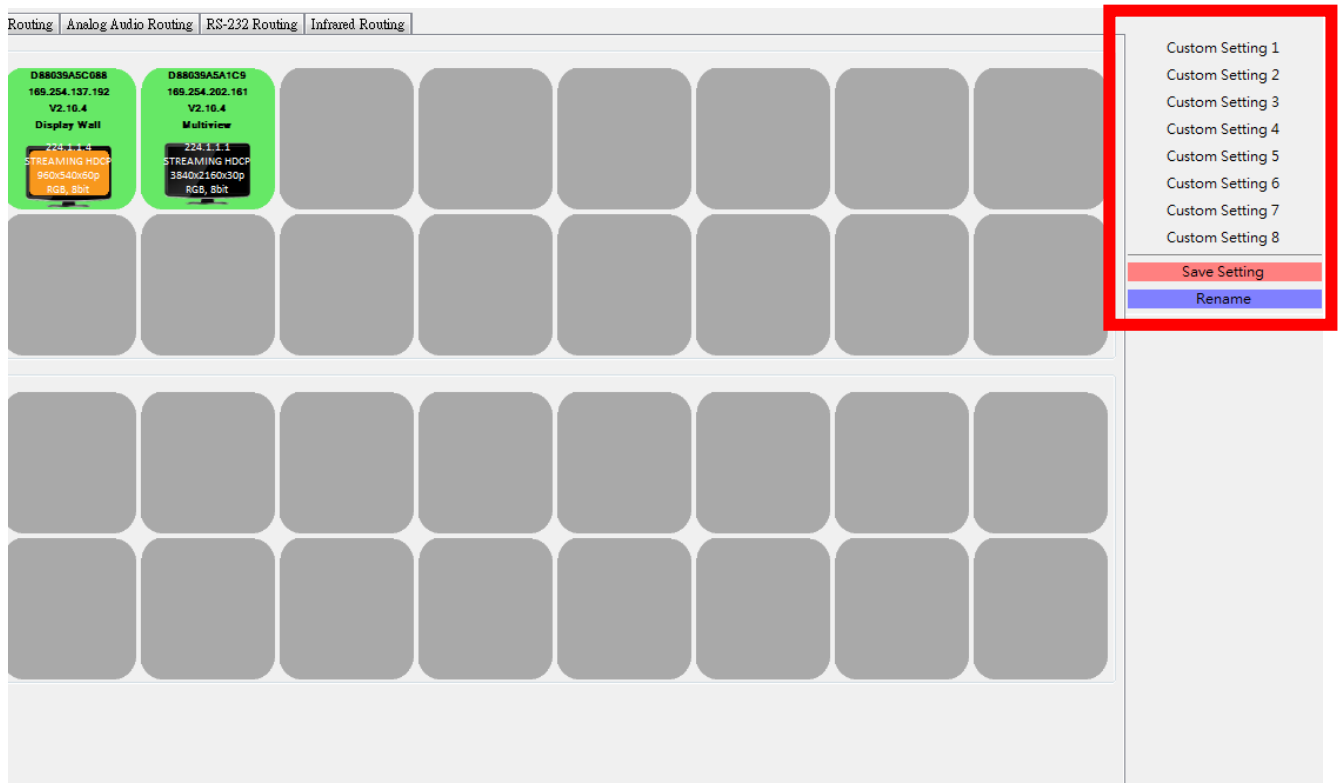
WARRANTY

The SELLER warrants the **AV-GM04H3-S1** HDMI over IP (fiber) Uncompressed Multicast System free from defects in the material and workmanship for 3 years from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 3 years warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surge. This warranty is offered by the SELLER for its BUYER with direct transaction only. This warranty is void if the warranty seal on the metal housing is broken.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables and power adapters are limited to a 30 day warranty and must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the AV-GM04H3-S1 features and specifications is subject to change without further notice.**

Support
For more info or tech support
http://www.siig.com/support

April, 2018