



# HDMI over Coaxial Extender with Bi-directional IR Pass-through



P/N: AV-GM02J3-S1



## Safety and Notice

The AV-GM02J3-S1 HDMI over Coaxial Extender with Bi-directional IR Pass-through has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the AV-GM02J3-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.



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# INTRODUCTION

The **AV-GM02J3-S1 HDMI over Coaxial Extender with Bi-directional IR Pass-through** boosts up your HDMI transmission range up to 100m (330ft) in HDTV 1080p format. AV-GM02J3-S1 is easy to install and works perfectly with the RGBHV or RG-6 coaxial cables. Coaxial cables are typically used for VGA or component signals, and provide the audio/video professionals with remarkable flexibility. Built with IR pass-through extension, users can control the remote HDMI source devices such as Blu-ray Disc players instantly at the display site. Embedded with bi-directional HDCP mechanism, high definition HDMI content is secured from piracy.

The AV-GM02J3-S1 includes two units: transmitting (AV-GM02J3-S1-TX) and receiving (AV-GM02J3-S1-RX) units. The transmitting unit is used to capture the HDMI/DVI, HDCP and IR input signals and carry the signals through five coaxial cables. The receiving unit is responsible for equalizing the transmitted HDMI multimedia data and extracting HDCP and IR data. The transmission range between the sending and receiving units can be up to 100m (330ft) under Full HD (1080p) with 7.1 channel audio. With AV-GM02J3-S1 installation, current analog A/V based distribution systems can be upgraded to become pure high quality and future-proof HDMI supported system cost effectively.

## FEATURES

- Support HDMI Deep Color and DVI 1.0 compliant
- HDCP 1.1 compliant
- Supports 7.1-channel DTS-HD Master Audio and Dolby TrueHD high bitrate audio
- Supports Deep Color x.v.Color (xvYCC)
- Extends the transmission range up to 100m (330ft) from the HDMI sources under Full HD resolution (1080p60 36-bit color depth)
- 48-bit color depth
- Supports embedded bi-directional IR pass-through and Consumer Electronics Control (CEC) channel
- Supports Video resolutions up to WQXGA (2560x1600@60Hz or 1920x1200@75Hz) or HDMI video up to 1080p@36 bit RGB/YCbCr
- Supports VESA DDC and Hot-Plug Detect (HPD)



The claimed transmission distance here is subject to the grade of installed cable(s), source device and display.

For over Cat.X/COAX transmission, the cable(s) has to be solid, not stranded. Any keystone jack along the transmission path will kill the transmission performance significantly!

## PACKAGE CONTENTS

- 1x AV-GM02J3-S1 [TX & RX]
- 2x DC 5V 2A power supply
- 1x IR blaster
- 1x IR receiver

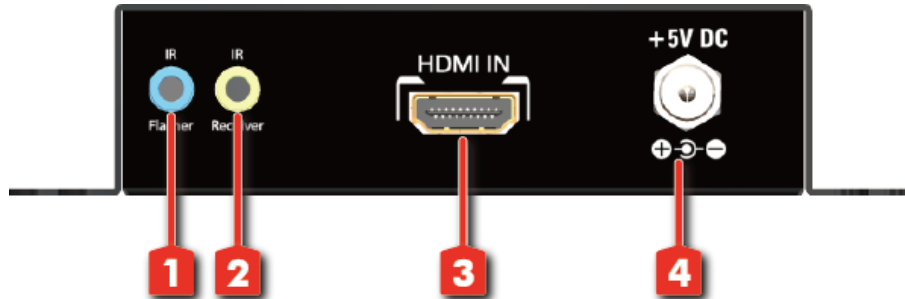
# SPECIFICATIONS

Model Name	AV-GM02J3-S1	
Technical	AV-GM02J3-S1[Tx]	AV-GM02J3-S1[Rx]
Role of usage	Transmitter [TX]	Receiver [RX]
HDMI compliance	HDMI Deep Color	
HDCP compliance	Yes	
Video bandwidth	Single-link 340MHz [10.2Gbps]	
Video support	480i / 480p / 720p / 1080i / 1080p60 / 1920x1200@75 / 2560x1600@60 up to 48-bit color	
Audio support	Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over Coax transmission range	Full HD (Deep Color) [1080p 24/36-bit color] - 100m [330ft]	
HDMI Equalization	N/A	Auto
Input TMDS signal	1.2 Volts [peak-to-peak]	
Input DDC signal	5 Volts [peak-to-peak, TTL]	
ESD protection	[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up	4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input	1x HDMI + 1x 3.5mm	5x BNC + 1x 3.5mm
Output	5x BNC + 1x 3.5mm	1x HDMI + 1x 3.5mm
IR remote control	Electro-optical characteristics: □ = 25°/Carrier frequency: 20-60kHz	
HDMI connector	Type A [19-pin female]	
BNC connector	75Ω interlocking socket	
3.5mm connector	3.5mm earphone jack for IR blaster and receiver to control HDMI device	
Mechanical		
Housing	Metal enclosure	
Dimensions [L x W x H]	Model	[TX/RX] 98 x 69 x 27mm [3.9" x 2.7" x 1.1"]
	Package	175 x 270 x 80mm [6.9" x 10.6" x 3.1"]
	Carton	450 x 370 x 300mm [1'6" x 1'3" x 11.8"]
Weight	Model	247g [8.7 oz]
	Package	1350g [3.0 lbs]
Fixedness	Interlocking power supply & wall-mount case with screws	
Power supply	5V 2A DC	
Power consumption	3 Watt [max]	
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

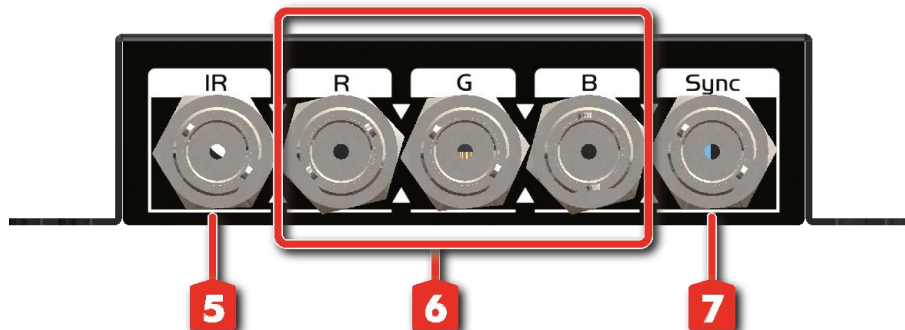
## Transmitting unit ► AV-GM02J3-S1-TX

### Front Panel



1. **IR Flasher:** 3.5mm socket for plugging in the extension cable of IR flasher
2. **IR Receiver:** 3.5mm socket for plugging in the extension cable of IR receiver
3. **HDMI IN:** connect to a HDMI source device with a HDMI male-male cable
4. **+5V DC:** connect to 5V DC power supply unit

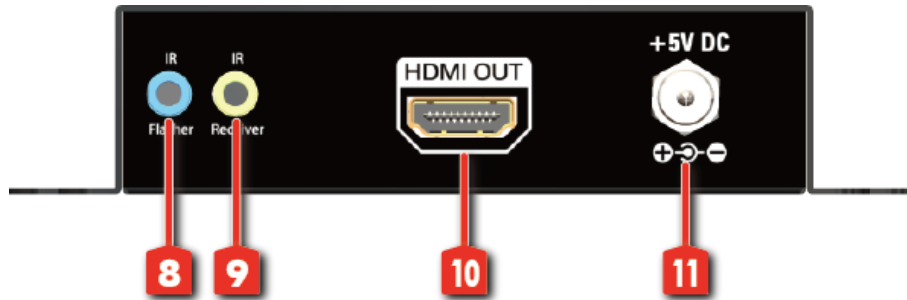
### Rear Panel



5. **IR BNC:** Connect to the same IR BNC jacks on the receiving unit respectively.
6. **R, G, B BNC:** Connect to the same R, G, B BNC jacks on the receiving unit respectively.
7. **Sync BNC:** Connect to the same Sync. BNC jacks on the receiving unit respectively.

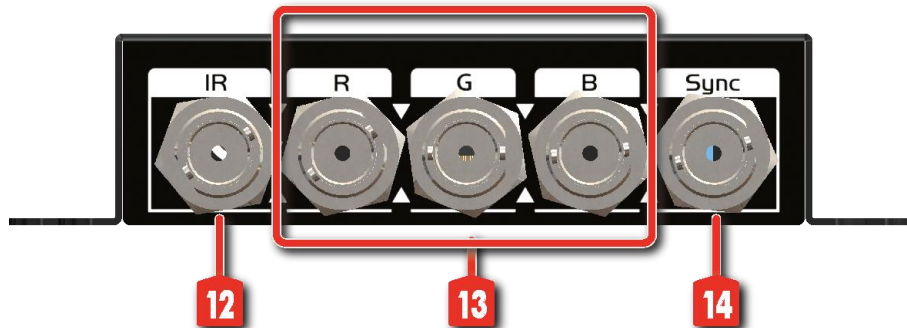
## Receiving unit ► AV-GM02J3-S1-RX

### Front Panel



- 8. **IR Flasher:** 3.5mm socket for plugging in the extension cable of IR flasher
- 9. **IR Receiver:** 3.5mm socket for plugging in the extension cable of IR receiver
- 10. **HDMI OUT:** connect to a HDMI display with a HDMI male-male cable
- 11. **+5V DC:** connect to 5V DC power supply unit

### Rear Panel



- 12. **IR BNC:** Connect to the same IR BNC jacks on the transmitting unit respectively.
- 13. **R, G, B BNC:** Connect to the same R, G, B BNC jacks on the transmitting unit respectively.
- 14. **Sync BNC:** Connect to the same Sync. BNC jacks on the transmitting unit respectively.

# IR PASS-THROUGH

## 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 end 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

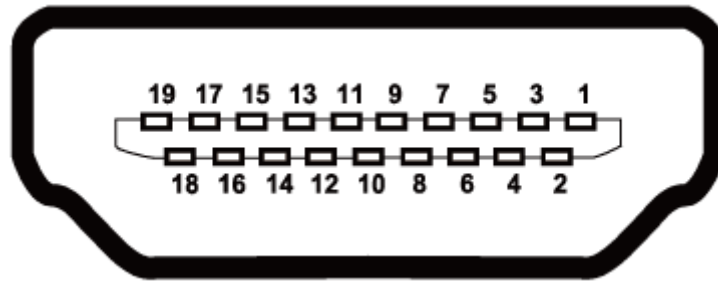


IR Receiver



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+		

# COAXIAL CABLE

## Reference for Coaxial Cables

MHz	dB loss per 100ft	dB loss per 330ft
30	0.105	0.346
50	0.243	0.799
450	0.439	1.440
1500	0.855	2.840
2000	1.020	3.360
2500	1.170	3.840

MHz	dB loss per 100ft	dB loss per 330ft
50	1.45	4.756
100	2.02	0.799
200	2.83	1.440
400	4.05	2.840
700	5.60	3.360
800	6.23	
1000	6.59	
1200	7.50	
1450	8.10	
1800	8.95	
2200	9.98	3.840

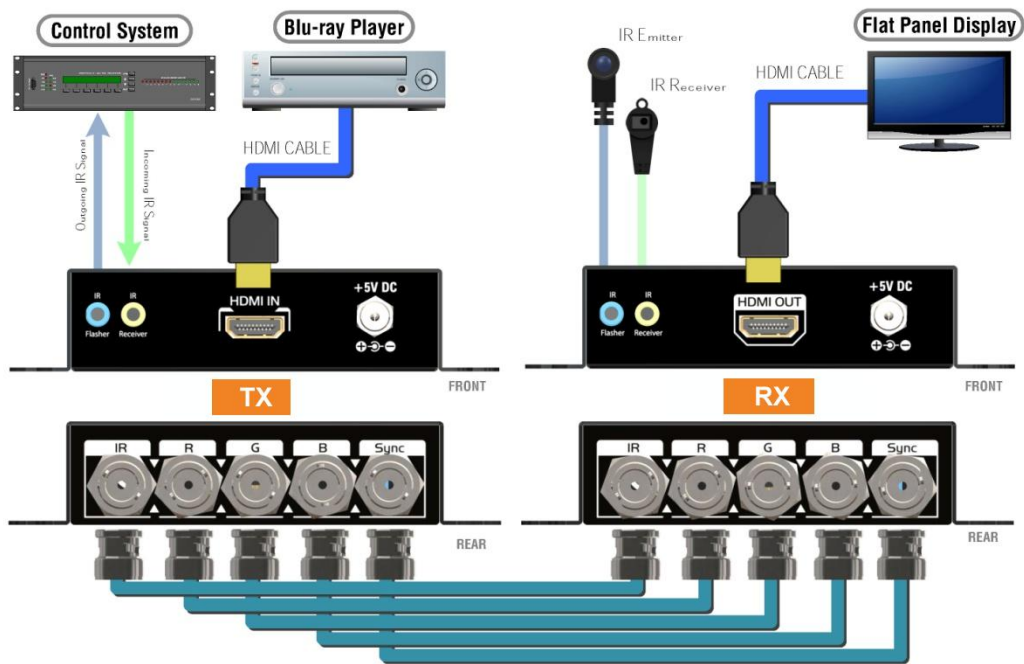


# NOTICE

1. 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.
2. All HDMI transmission distances are measured using Belden 7789A coaxial cables and ASTRODESIGN Video Signal Generator VG-859C & VG-870B. The lab testing result shows that 5 RG-6 coaxial cables can transmit 1080p/60 signals up to 80m (260ft).

## CONNECTION DIAGRAM

- HDMI
- COAXIAL
- IR (outgoing)
- IR (incoming)



# WARRANTY

The SELLER warrants the **AV-GM02J3-S1 HDMI over Coaxial Extender with Bi-directional IR Pass-through** 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-GM02J3-S1** features and specifications is subject to change without further notice.

## Support

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