



HDMI Extender over Dual Cat.X with Bi-directional IR & Phantom Power



P/N: AV-GM02P3-S1



Safety and Notice

The **AV-GM02P3-S1 HDMI Extender over Dual Cat.X with Bi-directional IR & Phantom Power** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM02P3-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-GM02P3-S1 HDMI Extender over Dual Cat.X with Bi-directional IR & Phantom Power** boosts your audio/video transmission distance up to 60m (200ft) in HDTV 1080i format, 40m (130ft) in HDTV 1080p format, and 20m (65ft) in HDTV 1080p with 36 bit color depth. With two cost effective solid Cat-5/5e/6 UTP/STP cable, users can readily extend HDTV sources from DVD players, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant display monitors including HDMI or DVI enabled TV sets or LCD PC monitors. The AV-GM02P3-S1 also features with embedded IR input and output on both Transmitting and Receiving units so users can control the source device or HDMI display at remote site via IR remote in bi-directional IR pass-through.

The AV-GM02P3-S1 includes two units: Transmitting unit and Receiving unit. The Transmitting unit sends the HDMI or DVI signals received from the source device and receives IR signals from the Receiving unit or sends the received IR signal from the Transmitting unit via two low cost Cat-5/5e/6 cables. The Receiving unit is responsible for equalizing the audio/video data received from the Transmitting unit and sends the IR signals received from the IR Receiving to the Transmitting unit or receives IR signals from the Transmitting unit. The transmission distance between the audio/video source and the display can be up to 60m (200ft) at HD resolution (720p/1080i), or 40m (130ft) at Full HD resolution (1080p). With 8-level digital signal equalization control on the Receiving unit, users can adjust the signal level equalization scale to the received audio/video signals, and therefore optimize the transmission distance between source and display.

FEATURES

- Support HDMI Deep Color & full 3D
- Extends the transmission distance up to 60m (200ft) from the sources under 1080i or 720p
- Extends the transmission distance up to 40m (130ft) from the sources under 1080p
- Provides independent DDC channel, fully HDCP compliant
- Minimizes the cable skew by adjustable 8-level equalization rotary control switch
- Support bi-directional full bandwidth of IR signal, 20KHz ~ 60KHz
- Pure unaltered uncompressed 7.1ch digital HDMI over CAT5/6 cable transmission
- Wall mounting housing design for easy and robust installation
- Only needs power supply at either TX or RX unit
- Perfectly integrated with other HDMI over Cat.X series products



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

For over CAT5/COAX transmission, the cable(s) has to be solid, not stranded. Any keystone jack along the transmission path will kill the transmission performance significantly!

SPECIFICATIONS

Model Name		AV-GM02P3-S1	
Technical		AV-GM02P3-S1[Tx]	AV-GM02P3-S1[Rx]
Role of usage		Transmitter [TX]	Receiver [RX]
HDMI compliance		HDMI Deep Color & full 3D complian	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz [6.75Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over UTP transmission [8-bit]		Full HD (1080p)-40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i)-50m (165ft) [CAT5e] / 60m (200ft) [CAT6]	
Signal equalization		8-level digital rotary switch for signal level control at RX	
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]	
IR pass-through		Half-duplex bi-directional	
Input		1x HDMI + 1x 3.5mm	2x RJ45 + 1x 3.5mm
Output		2x RJ45 + 1x 3.5mm	1x HDMI + 1x 3.5mm
HDMI source & display control		Controllable via bi-directional IR pass-through path	
IR remote control		Electro-optical characteristics: $\tau = 25^\circ$ / Carrier frequency: 20-60kHz	
HDMI connector		Type A [19-pin female]	
RJ-45 connector		WE/SS 8P8C with 2 LED indicators	
3.5mm connector		IR sender and receiver	
Rotary control switch		None	8-Signal level equalization
Mechanical			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	83 x 74 x 27mm [3.3" x 2.9" x 1.0"]	
	Package	270 x 175 x 80mm [10.6" x 6.9" x 3.1"]	
	Carton	450 x 370 x 300mm [1'6" x 1'3" x 11.8"]	
Weight	Model	405g [14 oz]	
	Package	1132g [2.5 lbs]	
Fixedness		Wall-mounting case with screws	
Power supply		5V 2A DC at either TX or RX	
Power consumption		1.5 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]	

PACKAGE CONTENTS

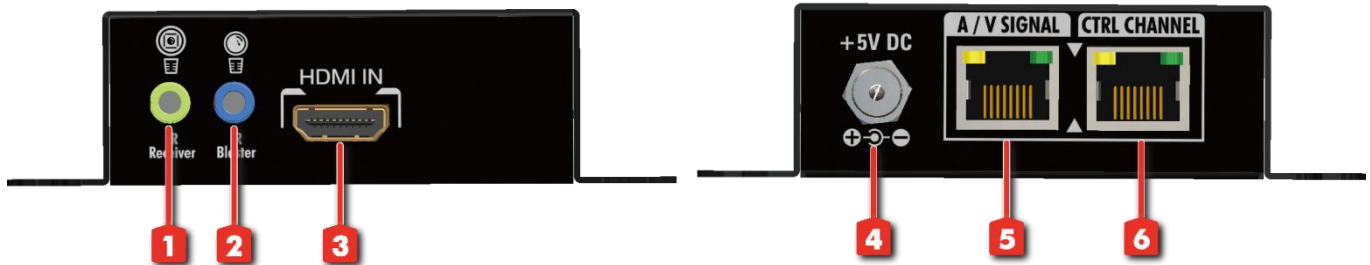
- 1x AV-GM02P3-S1 [TX & RX]
- 1x IR blaster
- 1x IR receiver
- 1x DC 5V 2A wall wart
- 1x User Manual

PANEL DESCRIPTIONS

Transmitting unit ► AV-GM02P3-S1-TX

Front Panel

Rear Panel

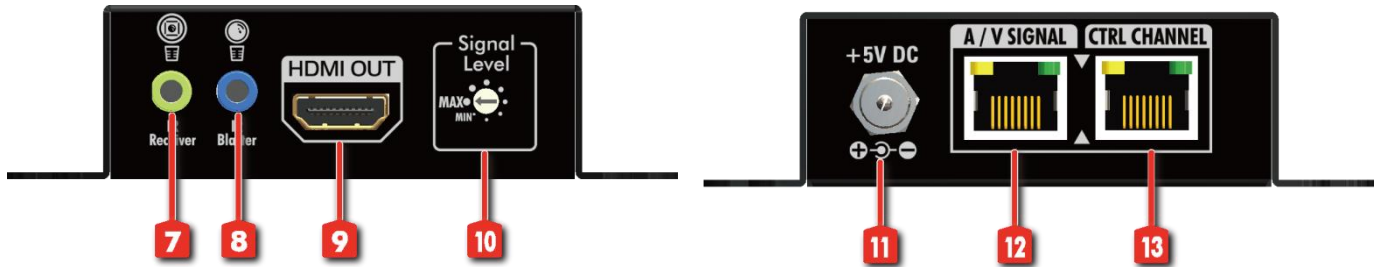


1. **IR Receiver:** 3.5mm infrared socket for plugging in the extension cable of IR receiver
2. **IR Blaster:** 3.5mm infrared socket for plugging in the extension cable of IR blaster
3. **HDMI IN:** Connects to a HDMI source with a HDMI male-male cable
4. **+5V DC:** Connect to 5V DC power supply unit either at the Transmitting Unit or the Receiving Unit. Powered at one end is enough to supply the whole extender set.
5. **A/V SIGNAL:** Connect a Cat-5/5e/6 cable to the A/V SIGNAL port on the Receiving unit
6. **CTRL CHANNEL:** Connect a Cat-5/5e/6 cable to the CTRL CHANNEL port on the Receiving unit

Receiving unit ► AV-GM02P3-S1-RX

Front Panel

Rear Panel



7. **IR Receiver:** 3.5mm infrared socket for plugging in the extension cable of IR receiver
8. **IR Blaster:** 3.5mm infrared socket for plugging in the extension cable of IR blaster
9. **HDMI OUT:** Connects to a HDMI display or projector with a HDMI male-male cable
10. **EQ:** Adjust the 8-level signal equalization control to the received HDMI signals. The HDMI signal level varies from MAX (strongest) to MIN (weakest) for respective transmission length from longest possible range to short distance. Dial the EQ from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!
11. **+5V DC:** Connect to 5V DC power supply unit either at the Receiving Unit or the Transmitting Unit. Powered at one end is enough to supply the whole extender set.
12. **A/V SIGNAL:** Connect a Cat-5/5e/6 cable to the A/V SIGNAL port on the Transmitting unit
13. **CTRL CHANNEL:** Connect a Cat-5/5e/6 cable to the CTRL CHANNEL port on the Transmitting unit

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.

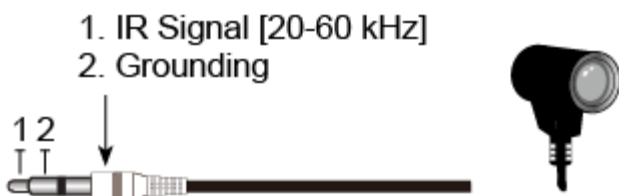
IR RECEIVER: plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

CAUTION!

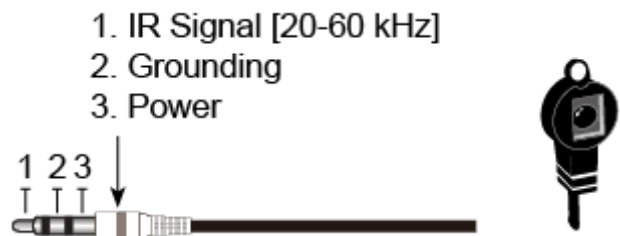
Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

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.

HARDWARE INSTALLATION

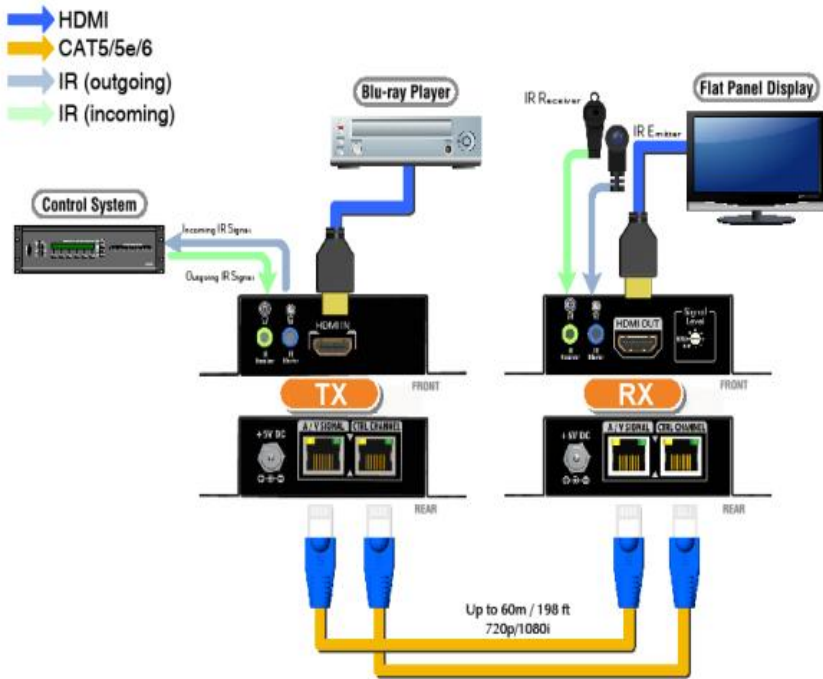
1. Connect a HDMI or DVI source (e.g., a Blu-ray Disc player) to the Transmitting Module.
2. Connect a HDMI or DVI display (e.g., a HDTV) to the Receiving Module.
3. Connect two solid Cat-5/5e/6 UTP/STP cable between the Transmitting and Receiving Modules.
4. Make sure these two solid Cat-5/5e/6 UTP/STP cable are tightly connected and not loose.
5. If you want to control the source devices at display side, plug in the IR blaster to the Transmitting Module and the IR receiver to the Receiving Unit. If you want to control the display at source side, plug in the IR receiver to the Transmitting Module and the IR blaster to the Receiving Module.
6. Plug in the 5V DC power supply unit to the latch-locking power jack on either the Transmitting Unit or the Receiving Unit.
7. If you see flickering or blinking image on the display, adjust the rotary control switch to improve the cable skew. MAX stands for the strongest HDMI signal level for longest possible transmission length while MIN stands for the weakest HDMI signal level for short transmission length. Try adjusting the signal level from MIN to MAX to find the optimal setting for the HDMI over CAT5 transmission.

NOTICE

1. When adjusting the signal level on the Receiving unit, please dial the rotary control switch from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!
2. Wrongly insert IR blaster and IR receiver to wrong 3.5mm infrared sockets may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets.
3. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI display EDID information.
4. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
5. The transmission length is largely affected by the type of Cat-5/5e/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
6. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
7. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use shielded STP cables to improve EMI problems, which is worsen in long transmission.
8. Because the quality of the CAT5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
9. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input









#1] generally can produce better transmission performance among all HDMI inputs.

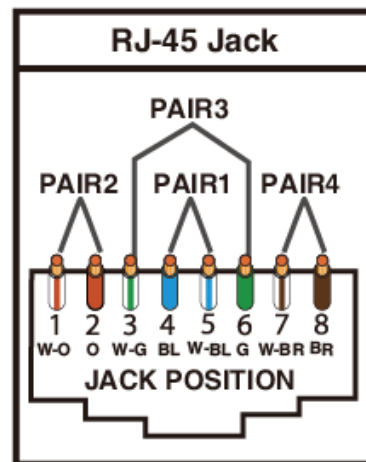
CONNECTION DIAGRAM











RJ45 / CAT5 PIN DEFINITION

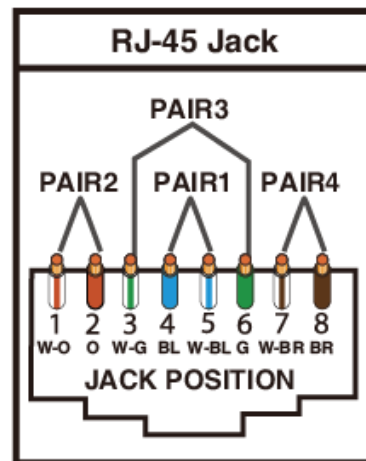
Audio/Video Port

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	 W-O	TX0-
2	 O	TX0+
3	 W-G	TX1-
4	 BL	TX2-
5	 W-BL	TX2+
6	 G	TX1+
7	 W-BR	TXC-
8	 BR	TXC+



Control Channel Port

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	 W-O	IR
2	 O	Power
3	 W-G	DDC SCL
4	 BL	DDC SDA
5	 W-BL	GND
6	 G	GND
7	 W-BR	Power
8	 BR	CEC



WARRANTY

The SELLER warrants the **AV-GM02P3-S1 HDMI Extender over Dual Cat.X with Bi-directional IR & Phantom Power** 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-GM02P3-S1** features and specifications is subject to change without further notice.

Support

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