



HDMI 2.0 Extender over Single Cat.X with HDBaseT, RS-232, Bi-directional IR, Ethernet & PoC



P/N: AV-GM04S3-S1



Safety and Notice

The **AV-GM04S3-S1 HDMI 2.0 Extender over Single Cat.X with HDBaseT, RS-232, Bi-directional IR, Ethernet & PoC** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment the AV-GM04S3-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-GM04S3-S1 HDMI 2.0 Extender over Single Cat.X with HDBaseT, RS-232, Bi-directional IR, Ethernet & PoC** boosts up your video/audio transmission distance up to 100m (330ft) in HDTV 1080p with 48-bit color depth and 70m (230ft) at 4K-HDR. AV-GM04S3-S1 has new generation technology which makes sure the HDBaseT extender can support HDMI2.0a and HDCP 2.2. AV-GM04S3-S1 also supports the most advanced 3D video format complaint with HDMI specification and therefore guarantees the highest 3D video compatibility on the market. With only one cost-effective Cat.5/5e/6 cable, users can readily extend UHDTV sources from DVD players, Blu-ray Disc player, PS4, 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. With the advanced design for the latest HDMI technology, deep color video, DTS-HD or Dolby TrueHD audio, and HDCP support and compatibility are all further insured. This flexibility makes HDCP compliant DVD players or PS4 transmit utmost high quality video and audio with a greater distance at the minimal cost integrating several components apart. In addition, AV-GM04S3-S1 is also equipped with bi-directional IR pass-through path and RS-232 serial port control. These bonus features allow users to boost IR control distance up to 100m (330ft) through only single Cat.5/5e/6 cable including HDMI signals. In addition, serial port and USB2.0 offer the convenient path for AV-GM04S3-S1 application, such as touch panels. In addition, the extender also supports PoC (Power over Cable) which can power both units from the TX or RX with one power supply.

The AV-GM04S3-S1 includes one transmitter (TX) and receiver (RX) unit. The transmitting unit is used to capture the input HDMI / DVI signals with control packets. The receiving unit is responsible for equalizing the transmitted HDMI signal and reconstructing IR and serial controls. AV-GM04S3-S1 offers the most convenient solution for digital signage with long distance A/V transmission path.

FEATURES

- HDMI 2.0a compliant
- Supports 4K2K@60 4:4:4 8bits
- Supports High Dynamic Range (HDR)
- Extends the HDMI Signal up to 100m (330ft) from the HDMI source at Full HD 1080p 48-bit and 70m (230ft) at 4K2K@60 4:4:4 (4K-HDR Technology)
- Supports PoC (Power over Cable) which can power both units from TX or RX with power supply
- Supports ARC
- HDCP & EDID Bypass
- CEC support
- Auto equalization
- USB2.0 over Cat.5/5e/6 cable transmission
- Analog audio over Cat.5/5e/6 cable transmission from transmitter to receiver
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable 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
- Integrated port for LAN/network device
- Full Duplex RS-232 control up to 115,200 bps through connector
- Wall mounting housing design for easy and robust installation



The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ45 connectors is recommended.

SPECIFICATIONS

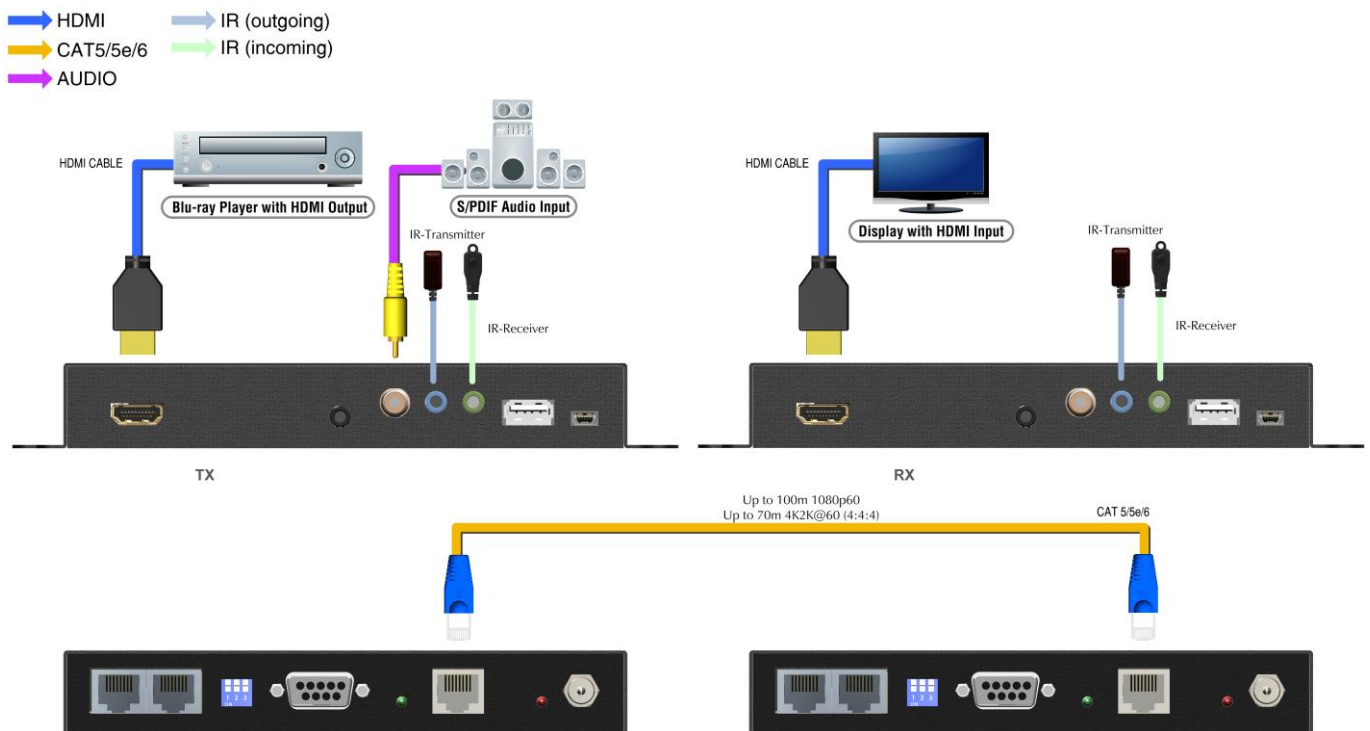
Model Name	AV-GM04S3-S1	
Technical	AV-GM04S3-S1[Tx]	AV-GM04S3-S1[Rx]
Role of usage	Transmitter [TX]	Receiver [RX]
HDMI compliance	HDMI 2.0a	
HDCP compliance	Yes (HDCP 2.2)	
Video bandwidth	Single-link 600MHz [18Gbps]	
Video support	HDR 4K2K@60 (4:2:0 10bits) / 4K2K@60 (4:4:4 8bits)	
HDMI over UTP	1080p@60 100m (330ft) [CAT 5e] 4K2K@60 (4:4:4 8bit) 70m (230ft) [CAT 5e]	
Audio support	Surround sound [up to 7.1ch] or stereo digital 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]	
IR pass-thru	Bi-directional	
RS-232 support	Yes	
USB support	USB2.0	
PoC support	Yes	
Input	1x HDMI + 2x 3.5mm	1x RJ-45 (Video) + 1x 3.5mm
Output	1x RJ-45 (Video) + 1x 3.5mm + 1xS/PDIF	1x HDMI + 2x 3.5mm+ 1x S/PDIF
In / Out	1x RS-232 + 2x USB + 2x RJ-45 (Ethernet)	1x RS-232 + 2x USB + 2x RJ-45 (Ethernet)
HDMI source control	Controllable via IR pass-through from RX to TX or TX to RX with IR extenders	
HDMI connector	Type A [19-pin female]	
RJ-45 connector	WE/SS 8P8C	
USB connector	Type A & Type mini-USB	
3.5mm connector	IR receiver / IR blaster / Stereo	IR receiver / IR blaster / Stereo
Mechanical	AV-GM04S3-S1[Tx]	AV-GM04S3-S1[Rx]
Housing	Metal enclosure	
Dimensions [L x W x H]	Model	
	Package	
	Carton	
	Model	
	Package	
Fixedness	Wall-mounting case with screws	
Power supply	24V1A	

Power consumption	15W [Max]
Operation temperature	0-50°C
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]

PACKAGE CONTENTS

- 1x AV-GM04S3-S1 [TX & RX]
- 1x IR blaster
- 1x IR receiver
- 1x DC 24V1A
- 1x User Manual

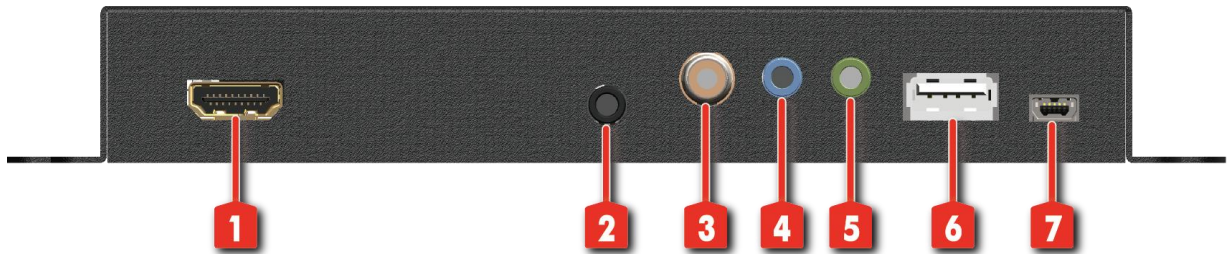
CONNECTION DIAGRAM



PANEL DESCRIPTIONS

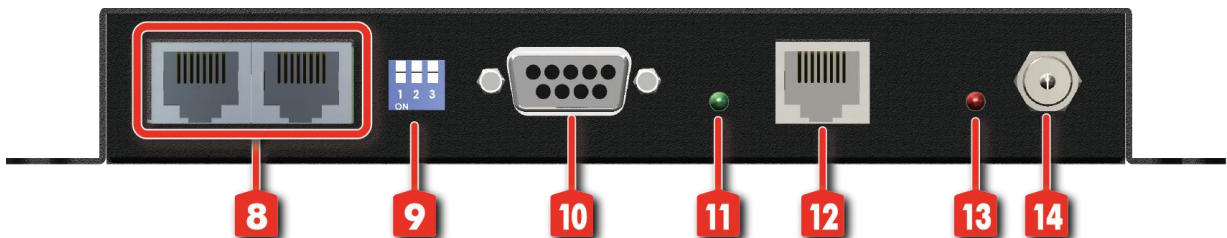
Transmitting unit ► AV-GM04S3-S1-TX

Front Panel



1. **HDMI IN:** Connect to a HDMI source with a HDMI male-male cable
2. **Stereo Input:** Provide a channel to extend an external analog audio to receiver over HDBaseT
3. **S/PDIF Output:** remote ARC output
4. **IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster
5. **IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
6. **USB:** Connect to USB Device
7. **Mini-USB:** Connect to USB Host

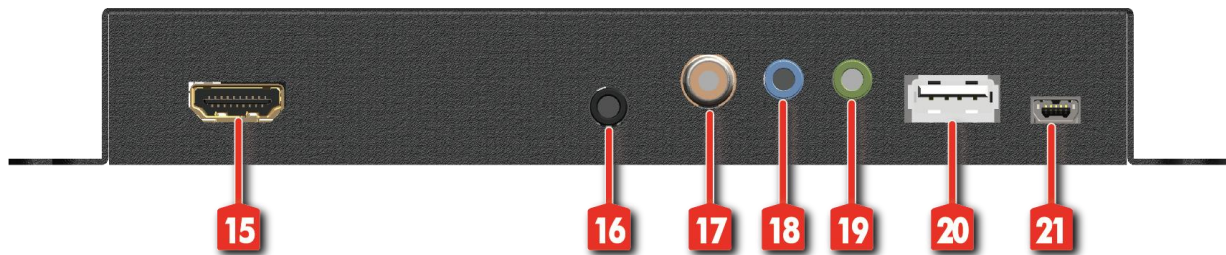
Rear Panel



8. **Ethernet port for LAN:** Connect to network device
9. **DIP Switch:** PIN#1: Setup the USB communication
PIN#2: Setup the RS-232 transceiver mode for serial communication channel
PIN#3: For Firmware Update
10. **RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
F/W update for Valens chipset
11. **Link Indicator LED**
12. **RJ45:** Plug in a Cat-5/5e/6 cable that needs to be linked to the transmitting unit RX
13. **LED:** Power indicator
14. **+24V DC:** Connect to a 24V DC power supply.

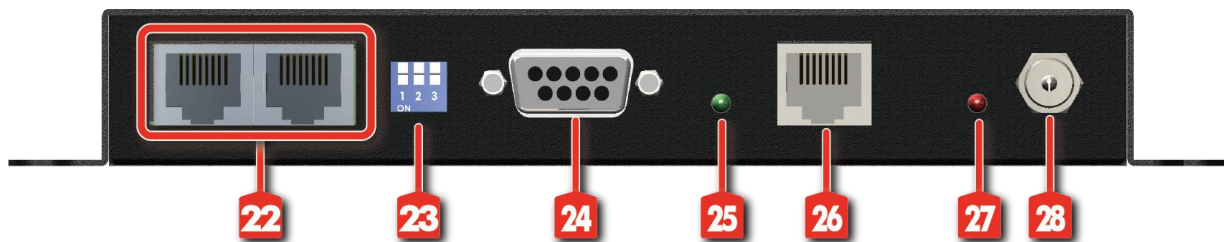
Receiving unit ► AV-GM04S3-S1-RX

Front Panel



- 15. HDMI OUT:** Connect to a HDMI display with a HDMI male-male cable
- 16. Stereo Output:** External analog audio output from transmitter over HDBaseT
- 17. S/PDIF Output:** local ARC output
- 18. IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster
- 19. IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
- 20. USB:** Connect to USB Device
- 21. Mini-USB:** Connect to USB Host

Rear Panel



- 22. Ethernet port for LAN:** Connect to network device
- 23. DIP Switch:** PIN#1: Setup the USB communication
PIN#2: Setup the RS-232 transceiver mode for serial communication channel
PIN#3: For Firmware Update
- 24. RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
F/W update for Valens chipset
- 25. Link Indicator LED**
- 26. RJ45:** Plug in a Cat-5/5e/6 cable that needs to be linked to the transmitting unit TX.
- 27. LED:** Power indicator

DIP Switch Position		Description
TX & RX		
PIN#1	ON [↓]	<i>Link to USB Host (USB Type-mini-B port)</i>
	OFF [↑]	<i>Link to USB Device (USB Type A port)</i>
PIN#2	ON [↓]	<i>TxD: The 2nd pin of RS-232, which is in charge of sending data RxD: The 3rd pin of RS-232, which is in charge of receiving data</i>
	OFF [↑]	<i>TxD: The 3rd pin of RS-232, which is in charge of sending data RxD: The 2nd pin of RS-232, which is in charge of receiving data</i>

PIN#2	PIN#3	ON [↓]	ON [↓]	<i>Firmware Update Mode</i>
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28. +24V DC: Connect to a 24V DC power supply.
***DIP Switch Position (TX/RX)**

HARDWARE INSTALLATION

1. Connect a HDMI or DVI source (such as a Blu-ray Disc player) to the transmitting unit AV-GM04S3-S1-TX.
2. Connect a HDMI or DVI display (such as a LCD TV) to the receiving unit AV-GM04S3-S1-RX.
3. Connect IR Blaster/Receiver to both TX and RX units.
4. Connect USB Host/Device to both TX and RX units
5. Connect audio source to TX and audio receiver/speaker to RX unit.
6. Connect a Cat-5/5e/6 cable between the transmitting and receiving units.
7. Make sure this Cat-5/5e/6 cable is tightly connected and not loose.
8. Plug in 24V DC power supply unit to the power jack of the transmitting unit AV-GM04S3-S1-TX.

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.



R Receiver

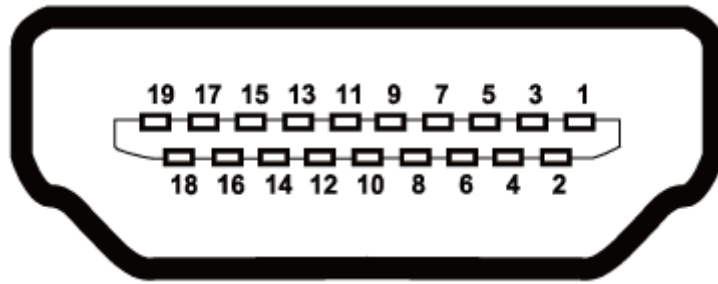
1. IR Signal [20-60 kHz]
2. Grounding
3. Power





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+		

NOTICE

1. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
2. 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.
3. 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). 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.
4. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
5. 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.
6. 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 1080p, a Cat-6 cable is recommended.
7. 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.

WARRANTY

The SELLER warrants the **AV-GM04S3-S1 HDMI 2.0 Extender over Single Cat.X with HDBaseT, RS-232, Bi-directional IR, Ethernet & PoC** 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 condition within the 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-GM04S3-S1 features and specifications is subject to change without further notice.**

Support

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

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