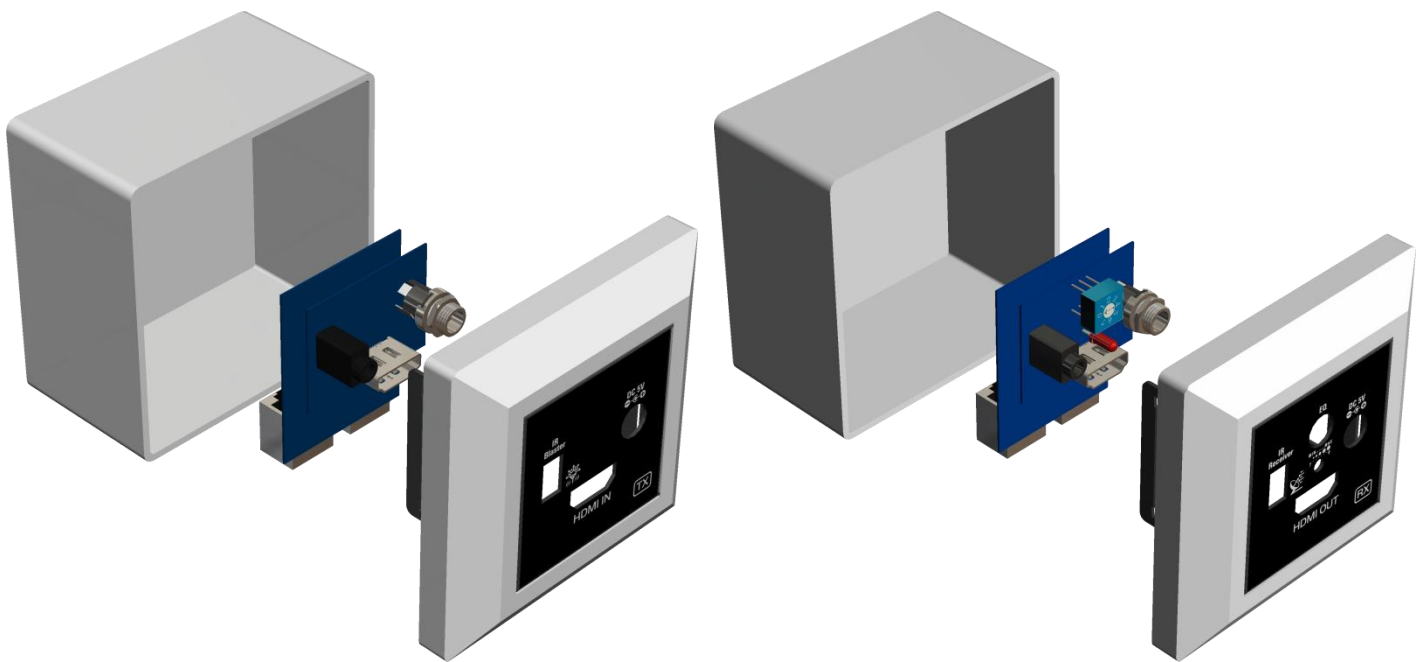




# HDMI Wall Plate Extender over Cat.X with IR



P/N: AV-GM04U3-S1



## Safety and Notice

The **AV-GM04U3-S1 HDMI Wall Plate Extender over Cat.X with IR** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM04U3-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-GM04U3-S1 HDMI Wall Plate Extender over Cat.X with IR** boosts up the HDMI audio/video transmission distance up to 60m in HDTV 720p/1080i format. With two low cost Cat-5/5e/6 cables, users can readily extend HDTV sources from DVD player, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant displays such as HDMI enabled TV sets, LCD PC monitors, or projectors. This cost effective flexibility makes HDCP compliant source devices transmit high quality video and audio over great distance at the minimal cost for wall plate application. In addition, with the embedded infrared [IR] receiver and blaster to facilitate the IR pass-through, users can enjoy high quality audio/video and control the HDMI sources from the remote site instantly.

The AV-GM04U3-S1 is consisted of transmitting unit and receiving unit. The transmitting unit is used to transfer the HDMI and IR signals input and carry the signals through two RJ45 connectors over two low cost Cat-5/5e/6 cables. The receiving unit is responsible for equalizing transferred TMDS multimedia data and re-sending IR signals. The transmission distance between the sending and receiving units can be up to 60m under HD resolution 720p or 1080i, or 40m under Full HD resolution 1080p. With 8-level equalization control at the receiving unit, users can adjust the optimal equalization to the received HDMI signals to find the best audio/video quality.



Depending upon the HDMI source and receiver, the equalization level may need to adjust even though the installed cables remain intact.

## FEATURES

- Support HDMI Deep Color & full 3D
- HDCP compliant
- Extends HDMI signals to 40m over CAT5e at 1080p and likely longer with better HDMI source device, better grade HDMI display, and better quality solid CAT6/7 cable
- Extends HDMI signals to 50m over CAT5e at 1080i or 720p and likely longer with better HDMI source device, better grade HDMI display, and better quality solid CAT6/7 cable
- Purely unaltered uncompressed 7.1ch digital HDMI transmission
- Embedded IR pass-through from RX to TX for controlling source devices
- Minimizes the cable skew by adjustable 8-level equalization control
- Easy installation with wall-plate mounting design



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-GM04U3-S1	
Technical		AV-GM04U3-S1[Tx]	AV-GM04U3-S1[Rx]
Role of usage		Transmitter [TX]	Receiver [RX]
HDMI compliance		HDMI Deep Color & full 3D	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz (6.75Gbps)	
Video support		480i / 480p / 720p / 1080i / 1080p60 24/30/36-bit color	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over UTP transmission (24-bit)		Full HD (1080p)-40m (130ft) [CAT.X] HD (720p/1080i)-50m (165ft) [CAT.X]	
HDMI equalization		N/A	8-level digital rotary control
Input TMDS signal		1.2 Volts (peak-to-peak)	
Input DDC signal		5 Volts (peak-to-peak, TTL)	
ESD protection		[1] Human body — ±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	2x RJ45 + 1x 3.5mm
Output		2x RJ45 + 1x 3.5mm	1x HDMI
HDMI source control		Controllable via IR pass-through from RX to TX	
IR remote control		Electro-optical characteristics: $\tau = 25^\circ$ / Carrier frequency: 20~60kHz	
HDMI connector		Type A (19-pin female)	
RJ45 connector		WE/SS 8P8C	
3.5mm connector		Earphone jack for IR emitter	Earphone jack for IR receiver
Rotary control		None	EQ for signal equalization
Mechanical			
Housing		Metal enclosure	
Dimensions L x W x H	Model	263 x 170 x 97mm [10.4" x 6.7" x 3.8"]	
	Package	174 x 263 x 97mm [1'8" x 1'2" x 11.3"]	
Weight	Model	210g [7.4 oz]	
	Package	360g [12.7 oz]	
Fixedness		Wall plate mounting	
Power supply		5V 2A DC at either TX or RX	
Power consumption		1 Watt (max)	
Operation temperature		0~40°C [32~104°F]	

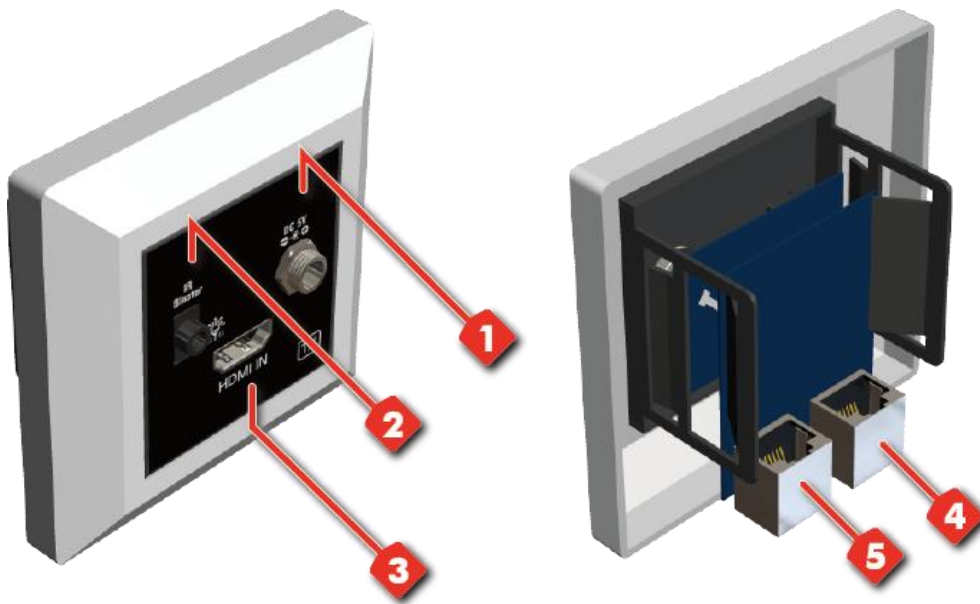
Storage temperature	-20~60°C [-4~140°F]	
Relative humidity	20~90% RH (no condensation)	
Package Contents	1x AV-GM04U3-S1 (TX & RX) 1x 5V power supply unit 1x User manual	1x IR emitter 1x IR receiver

## PANEL DESCRIPTIONS

### Transmitting unit ► AV-GM04U3-S1-TX

Front View

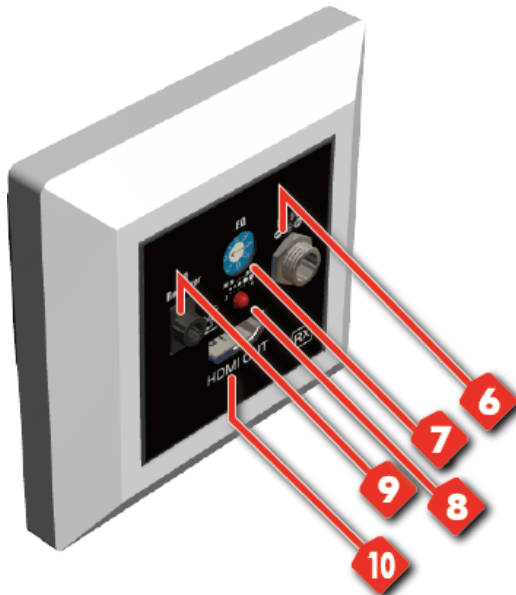
Lateral View



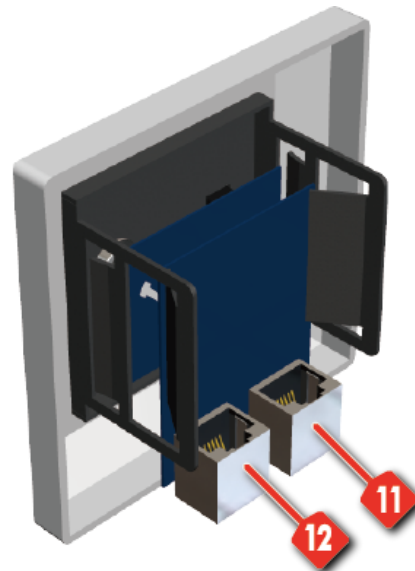
- +5V DC:** Connect to a 5V DC latch-locking power supply unit either at TX or RX.
- IR Blaster:** Plug in the IR emitter to transmit all IR command signals received from the IR receiver at the receiving unit. The IR emitter is good to emit IR signals up to 1m radius range.
- HDMI IN:** Connect to a HDMI source device with a HDMI male-male cable.
- TMD5:** Plug in a Cat-5/5e/6 cable that needs to be linked to the TMD5 connector of the receiving unit AV-GM04U3-S1-TX.
- DDC:** Plug in a Cat-5/5e/6 cable that needs to be linked to the DDC connector of the receiving unit AV-GM04U3-S1-TX.

## Receiving unit ► AV-GM04U3-S1-RX

Front View



Lateral View



**6. +5V DC:** Connect to a 5V DC latch-locking power supply unit either at TX or RX.

**7.EQ:** Adjust the 8-level equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Adjust the signal level from 7 to 0 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!

### **8. Power indicator LED**

**9. IR Receiver:** Plug in the IR receiver to receive all IR command signals from the IR remote control of the HDMI source devices. The IR receiver can receive IR signals up to 6m radius range.

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

**11.TMDS:** Plug in a Cat-5/5e/6 cable that needs to be linked to the TMDS connector of the transmitting unit AV-GM04U3-S1-RX.

**12.DDC:** Plug in a Cat-5/5e/6 cable that needs to be linked to the DDC connector of the transmitting unit AV-GM04U3-S1-RX.

# IR PASS-THROUGH

## IR Extenders



## IR Sockets

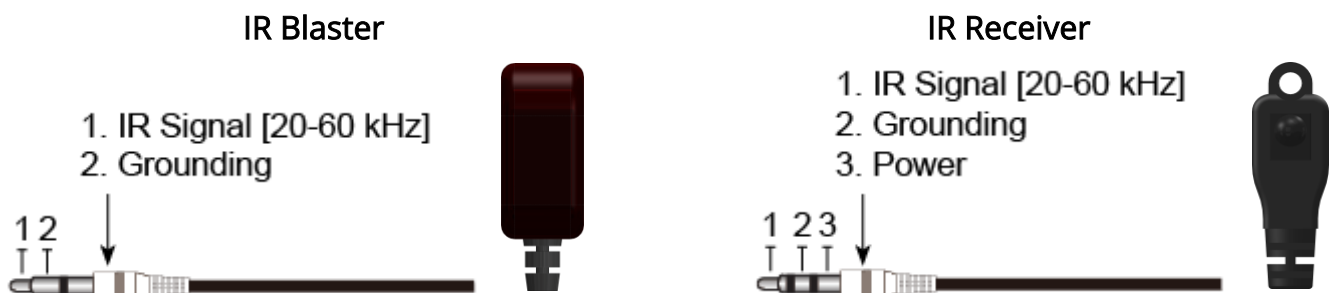
**IR BLASTER:** plug in the IR blaster to emit all IR command signals received from the IR receiver from the other end to control the devices corresponding to the IR signals.

**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





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.

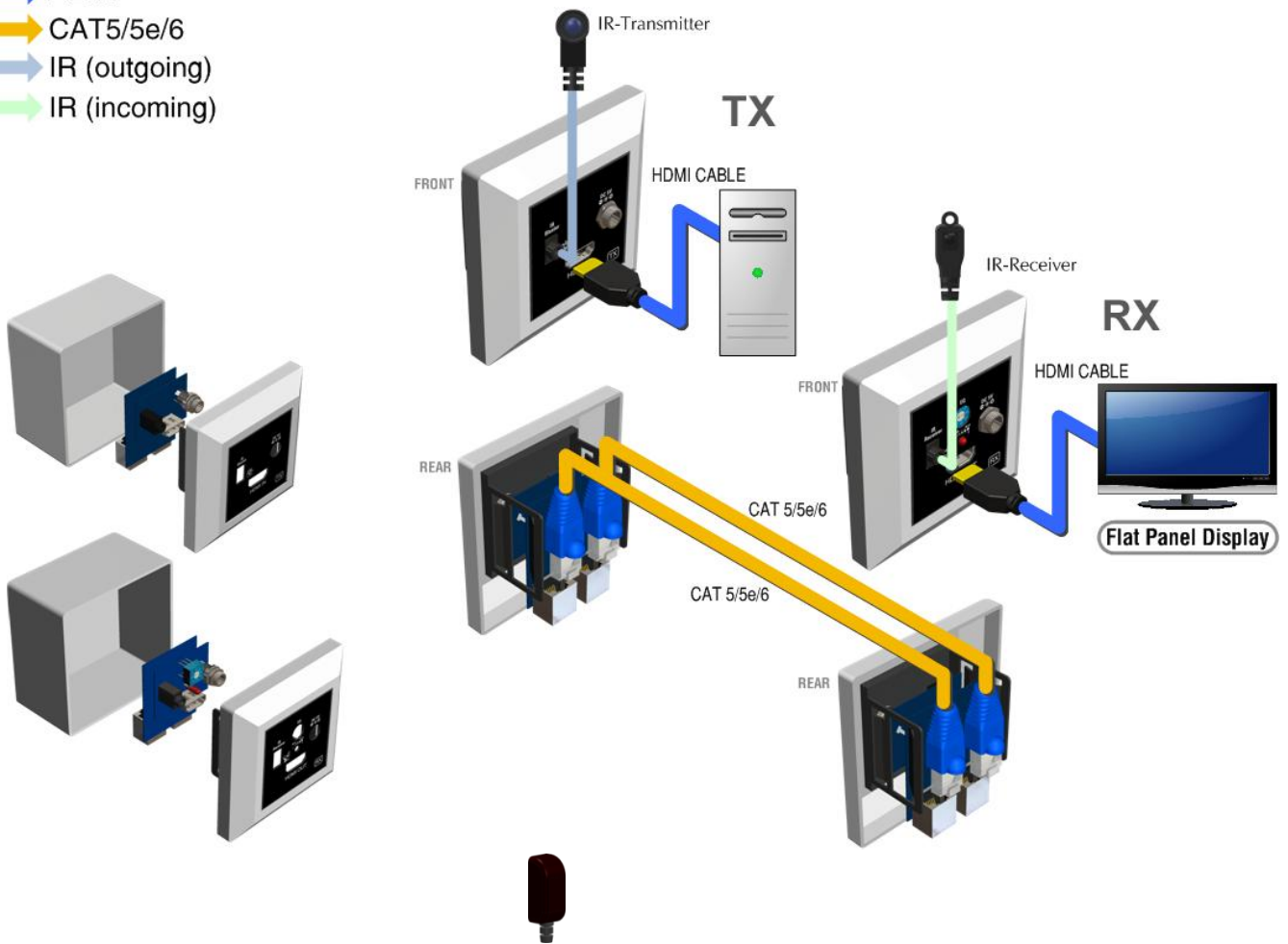


# HARDWARE INSTALLATION

1. Connect a HDMI source device to the transmitting unit of AV-GM04U3-S1.
2. Plug the IR emitter into the 3.5mm IR socket on the transmitting unit of AV-GM04U3-S1, and make the IR emitter directly pointing to the IR sensor of the HDMI source device.
3. Connect a HDMI display to the receiving unit of AV-GM04U3-S1.
4. Connect the IR receiver to the receiving unit of AV-GM04U3-S1, and make the IR receiver directly pointing to the user.
5. Connect two Cat-5/5e/6 cables between the transmitting and receiving units via Control Channel port (left) and A/V Signal port (right) respectively.
6. Make sure these two cables are tightly connected and not loose.
7. Plug in the 5V DC power supply unit to the latch-locking power jack either on the transmitting or the receiving unit of AV-GM04U3-S1.
8. If you see flickering or blinking image on the display, try to adjust the rotary control switch to improve the cable skew. 0 stands for the strongest HDMI signal level for longest possible transmission length while 7 stands for the weakest HDMI signal level for short transmission length. Try adjusting the signal level from 7 to 0 to find the optimal setting for the HDMI over CAT5 transmission.

# CONNECTION DIAGRAM

- HDMI
- CAT5/5e/6
- IR (outgoing)
- IR (incoming)



# NOTICE

1. The +5V DC power supply unit is only needed at either TX or RX unit. There is no need to plug power supply on both units.
2. For connecting CAT5 cables between TX and RX units, please connect one cable to the left RJ45 ports for control channel and the other one to the right RJ45 ports for audio/video signals.
3. When adjusting the signal level on the receiver unit, please dial the rotary control switch from 7 to 0 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!
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 Category 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 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 category cables is recommended.
7. To reduce the interference among the unshielded twisted pairs of wires in category cable, one can use double shielded STP cables to improve EMI problems, which is worse in long transmission.
8. Because the quality of the category 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.



## Performance Guide for HDMI over Category Cable Transmission

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	★★★	★★★★★	★★★★★
	Shielded (STP)	★★★	★★★★	★★★★★
Stranded	Unshielded (UTP)	★	★★	★★

	Shielded (STP)	★	★	★★
Termination		Please use EIA/TIA-568-B termination (T568B) at any time		

## WARRANTY

The SELLER warrants the **AV-GM04U3-S1 HDMI Wall Plate Extender over Cat.X with IR** 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-GM04U3-S1 features and specifications is subject to change without further notice.**

### Support

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