DVI Extender over Dual Cat.X with RS-232

P/N: AV-GM0413-S1

Safety and Notice

The **AV-GM0413-S1** DVI Extender over Dual Cat.X with RS-232 has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM0413-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-GM0413-S1** DVI Extender over Dual Cat.X with RS-232 extends your PC DVI transmission distance up to 60m (200ft) with resolution 1024x768@60Hz or 720p@60Hz. With AV-GM0413-S1, users can transmit high quality digital video of PC applications through one cost effective Cat-5/5e LAN cables to the remote monitor or projector, instead of using short and expensive DVI cables. With embedded EDID inside the adapter, your PC will continue to send the digital video even when the monitor is not connected. The user can then disconnects the monitor, place it in a remote location and reconnect it without rebooting the operating system. Furthermore, AV-GM0413-S1 is equipped with a popular serial control path RS-232. With high definition digital PC signal and serial control, AV-GM0413-S1 makes your digital signage application with the upmost performance in pure digital domain.

The AV-GM0413-S1 includes two units: transmitting and receiving units. The transmitting unit is connected to your PC DVI output and serial port, such as COM1, and the receiving unit is connected to the monitor with serial control such as touch panels. While successfully connected, the two LED lights on the RJ45 connector will blink. The transmission distance between the sending (AV-GM0413-S1-TX) and receiving units (AV-GM0413-S1-RX) can be up to 60m (200ft) at XGA (1024x768@60Hz) and 30m (100ft) at UXGA (1600x1200@60Hz). With compact size, AV-GM0413-S1 is the most cost effective choice for bringing your impressive digital video to the remote display.

FEATURES

- DVI 1.0 compliant
- HDCP 1.1 support
- Handy DVI-D to RJ45 adapter with programmable EDID feature
- Extends the transmission length from the sources up to 60m (200ft) at XGA (1024x768@60Hz) and 30m (100ft) at UXGA (1600x1200@60Hz)
- Minimize the cable skew by adjustable 8-level equalization control
- Supports 1080i / 1080p HDTV resolutions & VESA standards
- Receiving unit can learn EDID information of DVI/HDMI enabled display device
- Supports serial port RS-232 [TXD & RXD] control
- Direct plug-in at TX and wall-mounting with screws at RX
- Integrates with other DVI over Cat.X series products

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.

PACKAGE CONTENTS

- 1x AV-GM0413-S1 [TX & RX]
- 2x 5V power supply unit
- 1x User Manual

SPECIFICATIONS

Model Name	AV-GM0413-S1	
Technical	AV-GM0413-S1-TX	AV-GM0413-S1-RX
Role of usage	Transmitter [TX]	Receiver [RX]
HDMI compliance	DVI 1.1	
HDCP compliance	Single-link 165MHz [4.95Gbps]	
Video bandwidth	Up to WUXGA [1920x1200@60Hz] & UXGA [1600x1200@60Hz]	
Video support	1920x1200@60Hz – 30m [100ft] 1024x768@60Hz – 60m [200ft]	
Video transmission over category cable	No audio for DVI signal	
Equalization	8-level digital at RX	
Input TMDS signal	1.2 Volts [peak-to-peak]	
Input DDC signal	5 Volts [peak-to-peak, TTL]	
PCB stack-up	4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input	1x DVI + 1 x RS-232	1x RJ45
Output	1x RJ45	1x DV + 1x RS-232
RS-232 connector	DE-9 [9-pin D-sub female]	
RJ45 connector	WE/SS 8P8C with 2 LED indicators	
Rotary switch	None	EQ
Mechanical	AV-GM0413-S1-TX	AV-GM0413-S1-RX
Housing	Metal enclosure	
Dimensions [L x W x H]	Model	101 x 83 x 27mm [4" x 3.3" x 1"]
	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	TBA
	Package	TBA
Fixedness	Wall-mount with screws	
Power supply	5V 2A DC	
Power consumption	1.5 Watts [max]	

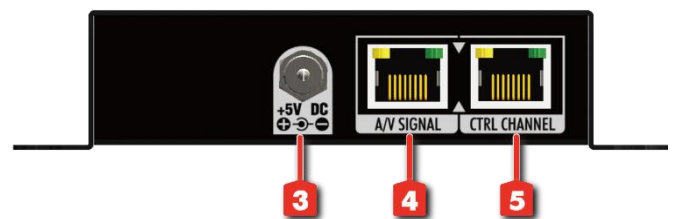| Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]

PANEL DESCRIPTIONS

Transmitting unit ▶ AV-GM0413-S1-TX

Front Panel
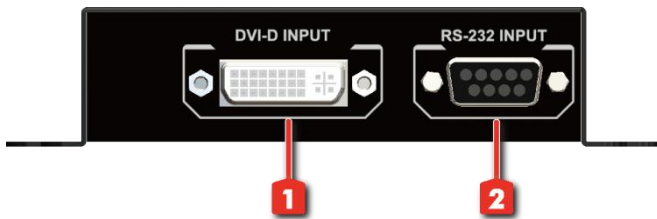
Rear Panel

1. **DVI-D INPUT:** Connect to a DVI source with a DVI male-male cable here

2. **RS-232 INPUT:** Connect to PC serial port with a DSUB-9 male-male cable here

3. **+5V DC:** Connect to 5V DC power supply.

4. **A/V SIGNAL:** Plug in a Cat-5/5e/6 cable that needs to be linked to the A/V SIGNAL port of the receiving unit AV-GM0413-S1-RX.

5. **CTRL CHANNEL:** Plug in a Cat-5/5e/6 cable that needs to be linked to the CTRL CHANNEL port of the receiving unit AV-GM0413-S1-RX.

## Receiving unit ▶ AV-GM0413-S1-RX

Front Panel
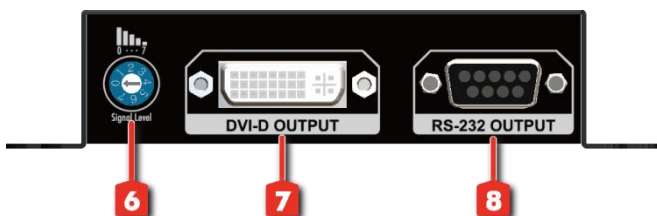
Rear Panel
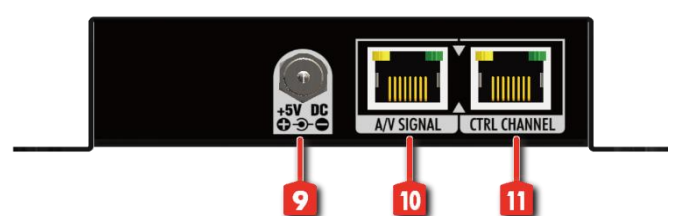
6. **Signal Level:** Adjust the 8-level equalization control to the received HDMI signals. 0 - 7 = strongest - weakest for respective transmission length [long to short]. It is recommended to switch from 7 to 0 to find the optimal visual experience.

7. **DVI-D OUTPUT:** Connect to a DVI display with a DVI male-male cable here.

8. **RS-232 OUTPUT:** Connect to a RS-232 enable device or Touch panel with serial port control

9. **+5V DC:** Connect to 5V DC power supply.

10. **A/V SIGNAL:** Plug in a Cat-5/5e/6 cable that needs to be linked to the RJ45 connector of the transmitter.

11. **CTRL CHANNEL:** Plug in a Cat-5/5e/6 cable that needs to be linked to the RJ45 connector of the transmitter.

HARDWARE INSTALLATION

1. Connect the transmitter to your DVI source (PC).

2. Connect the transmitter to your serial controlled device.

3. Connect the receiver to the remote DVI monitor.

4. Connect the receiver to the serial control device or monitor.

5. Make sure your CAT-5/5e/6 cable is tightly connected and not loose.

6. Enjoy your high quality PC video on the screen.

7. If a flickering or a blinking image is seen, try to adjust the rotational switch to improve the cable skew. 0 stands for the strongest EQ while 7 stands for the weakest. Try adjusting the EQ from 7 to 0.

CONNECTION DIAGRAM
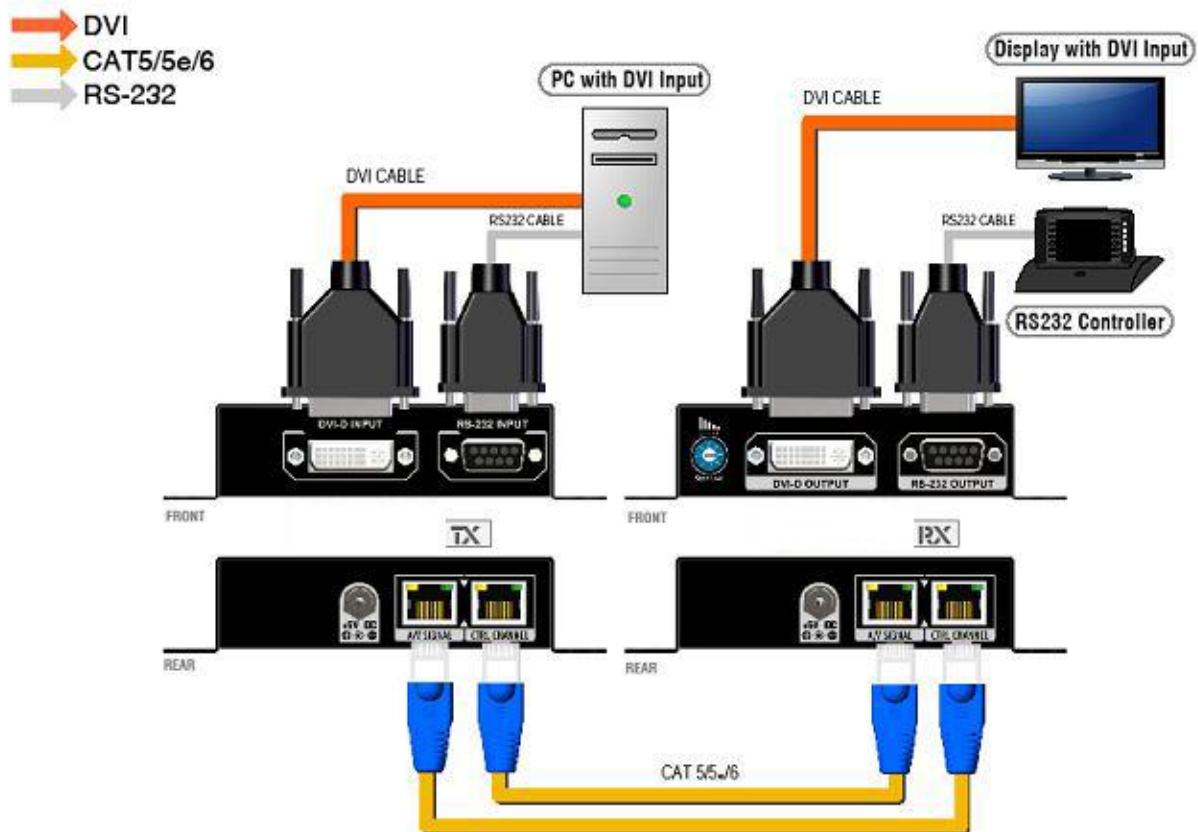
NOTICE

1. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.

2. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C.

3. The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually in bulk cable 300m/1000ft form) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suit than unshielded UTP cables. A solid UTP CAT5e cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid LAN cables are your only choice.

4. EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.

5. To reduce the interference among the unshielded twisted pairs of wires in LAN cable, you can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.

6. Because the quality of the LAN cables has the major effects in how long transmission distance will be made and how good is the received display, the actual transmission length is subject to your LAN cables. For resolution greater than 1080i or 1280x1024, a CAT6 cable is recommended.

Performance Guide for HDMI over Category Cable Transmission

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
Solid	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
Stranded	Shielded (STP)	★	★	★★
Termination		Please use EIA/TIA-568-B termination (T568B) at any time		

WARRANTY

The SELLER warrants the **AV-GM0413-S1** DVI Extender over Dual Cat.X with RS-232 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-GM0413-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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