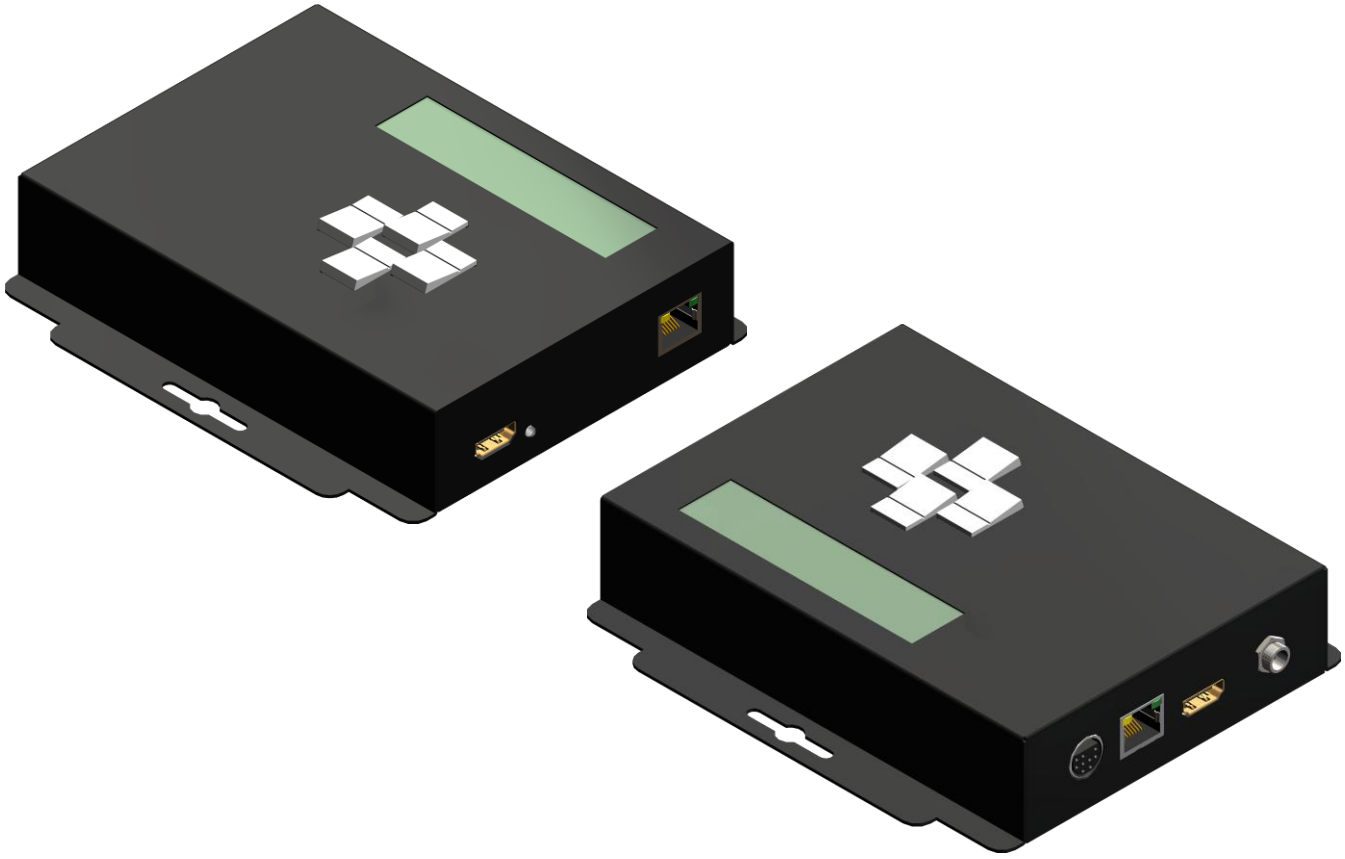
HDMI Deep Color & full 3D Pattern Generator with RJ-45 I/O



P/N: AV-GM09B3-S1

ONE YEAR Manufacturer Warranty

Safety and Notice

The AV-GM09B3-S1 HDMI Deep Color & full 3D Pattern Generator with RJ-45 I/O has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the AV-GM09B3-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.

TABLE OF CONTENTS

INTRODUCTION

The AV-GM09B3-S1 HDMI Deep Color & full 3D Pattern Generator with RJ-45 I/O is an advanced HDMI pattern generator with multi-format and multi-pattern support. Besides still and moving video test patterns, other features such as S/PDIF audio output and EDID analyzer are also provided. AV-GM09B3-S1 can support up to 8 channel LPCM audio with selectable sample rate. Another attractive feature of AV-GM09B3-S1 comes from bypassing HDMI input and allows users with more testing patterns for connected display or treats AV-GM09B3-S1 as an HDMI switcher. With portable size, AV-GM09B3-S1 is equipped four buttons and LCM screen to ease the control. This device provides a cost effective way to calibrate and test HDMI enable video devices and displays.

The unique feature available on this mini video pattern generator is the loop test, which can be used to estimate the condition of transmission line. The loop test provides signal monitor to watch the pixel loss over HDMI transmission and over time! When HDMI transmission becomes longer and the requirement on cable quality and HDMI extender becomes stronger, AV-GM09B3-S1 offers a simple way to evaluate either cables or extenders!

FEATURES

- Supported output resolution
  NTSC 525@60, PAL 625@50, 720p@50,720p@59.94, 720p@60, 1080i@50, 1080i@59.94, 1080i@60, 1080p@23.97, 1080p@24, 1080p@25, 1080p@29.97, 1080p@30, 1080p@50, 1080p@59.94, 1080p@60
  Bit Rate: up to 2.25 Gbps
  Resolution: 24/30/36 bits
- Video Patterns
  100% Color Bars, Borderline, Random Noise, Check Field, Black, Vertical Lines, Black / White alternate fields, Full Grey / Full White, Black to White Gradient, Random Generator for all still patterns, moving squares, white noise, inverse effect with still pattern, Scrolling Title (see Appendix for illustrations)
- HDMI 3D video patterns Supported output resolution
  3D video standards include frame packing, top & bottom, side-by-side half, side-by-side full, frame sequential, and line-by-line.
- Audio Patterns
  Up to 8 CH LPCM [I2S] audio encoder, S/PDIF[IEC60958], audio mask
- Equalizer Setting
  8 Level equalizer is equipped for long distance transmission
- Loop Test
  A solution to estimate the Quality of connected cable or HDMI extender
- AVI Info editor
- EDID analyzer

- Restorable Settings
- LCM Display
- RJ-45 Loop-out

PACKAGE CONTENTS

- 1x AV-GM09B3-S1
- 1x DIN9 to D-Sub9 adapter
- 1x 5V power supply unit
- 1x User Manual

SPECIFICATIONS

Model Name		AV-GM09A3-S1	AV-GM09B3-S1
Technical			
Role of usage		Pattern generator	
HDMI standards		HDMI Deep Color & full 3D	
Video bandwidth		6.75Gpbs	
Video support		[Full HD] 1080p@50/59.94/60 [HD] 720p50/59.94/60, 1080p24/30, 1080i50/59.94/60 [SD] NTSC@59.94Hz, PAL@50Hz HDMI 3D video	
HDMI bypass		Yes	
Output impedance		75Ω	
Audio support		8 CH LPCM/ S/PDIF	
PCB Stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		2x HDMI	1x HDMI + 1x RJ45
Output		1x HDMI	1x HDMI + 1x RJ45
RS-232		D-Sub9	DIN9
HDMI connector		Type A [19-pin female]	
Mechanical		**AV-GM09A3-S1**	**AV-GM09B3-S1**
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	154 x 110 x 33mm [6" x 4.3" x 1.3"]	178 x 110 x 35mm [7" x 4.3" x 1.4"]
	Package	263 x 170 x 97mm [10.4" x 6.7" x 3.8"]	
	Carton	512 x 364 x 288mm [1'8" x 1'2" x 11.3"]	
Weight	Model	TBA	
	Package	TBA	

Fixedness	Interlocking power supply
Power supply	5V 4A DC
Power consumption	10 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]

MENU OPERATION

Menu	Items	
01. Format	Resolution	576p
		576i
		480p
		480i
		720p
		1080i
		1080p
	Frequency	23.98
		24
		25
		29.97
		30
		50
		59.94
		60
	Output	DVI
		HDMI 36bits
		HDMI 30bits
		HDMI 24bits
02. Video	Patterns	SMPTE Bar
		100% Bar
		75% Bar
		Cross
		Grad B->R (H)
		Grad B->G (H)
		Grad B->B (H)
		Grad R->B (H)
		Grad G->B (H)
		Grad B->B (H)
		Grad B->R (V)
		Grad B->G (V)
		Grad B->B (V)
		Grad R->B (V)
		Grad G->B (V)

		Grad B->B (V)
		Red Level B->R
		Red Level R->B
		Grn Level B->B
		Grn Level G->B
		Blu Level B->B
		Blu Level G->B
		Gra Level B->W
		Gra Level W->B
		100% Red
		100% Green
		100% Blue
		100% White
		70% Gray
		40% Gray
		Black
		Noise
		Circle 1
		Circle 2
		Moire
		Chess 1
		Chess 2
		HDMI Source 1
		HDMI Source 2
	Text	On-White
		On-Black
		Off
	Timer	On-W/B
		On-B/W
		Off
	ID Number	Off
		0
		1
		2
		3
		4
		5
		6
		7
		8
		9
		A
		B
		C
		D
		E
		F
	3D ID	Off

	(Only Available in 3D mode)	On
	HDCP Inf	Off
		Source On
		Sink On
03. Audio	Channel	1+2
		3+4
		5+6
		7+8
		Layout: 2CH/8CH
	Mode	I2S/SPDIF/Mute
	Audio level	0dB
		-6dB
		-12dB
		-18dB
		-24dB
		-30dB
		-36dB
		-42dB
		Random
	Audio mask	Off
		CH 1
		CH 2
		CH 3
		CH 4
		CH 5
		CH 6
		CH 7
		CH 8
		CH 1+2
		CH 3+4
		CH 5+6
		CH 7+8
04. Motion	Motion	No Motion
		Square 1
		Square 2
		2 Squares
		Square Inv
	Data Speed	1
		2
		3
		4
		5
		6
		7
		8
05. Equalizer (AV-GM09B3-S1	EQ	0 (Strongest)
		1
		2

Only)		3
		4
		5
		6
		7 (Weakest)
06. Loop Test	Test Video	Off
		On
	Burst Width	1
		2
		3
		4
		5
		6
		7
		8
		9
		10
		11
		12
		13
		14
		15
	Test	Start
		Stop
07. Feature	AVI Info	Off
		On
	SPD Info	Off
		On
	Audio Info	Off
		On
	MPEG Info	Off
		On
	ACP Packet	Off
		On
	HDCP Output	Off
		On
08. AVI Info	Scan Info	No Data
		Over
		Under
	Bar Info	Invalid
		Vert
		Hori
		Vert & Hori
	ActFmt Info	Invalid
		Valid
	Color	RGB
		YCbCr422
		YCbCr444

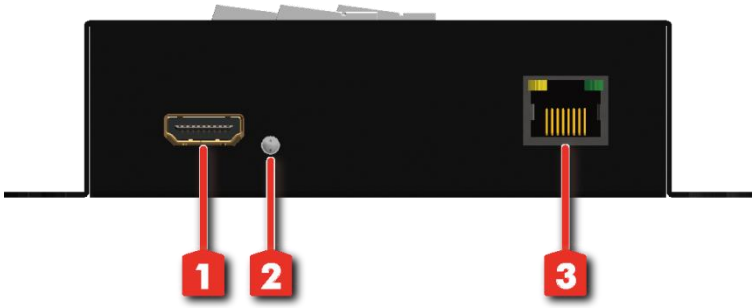
	ActFmt Aspect	None
		4:3
		16:9
		14:9
	Pic Aspect	No Data
		4:3
	Colorimetry	None
		SDTV
		HDTV
	Scaling	No Scaling
		Hori
		Vert
		Hori & Vert
	TopBar EndL	0~255
	TopBar EndH	0~255
	BotBar StartL	0~255
	BotBar StartH	0~255
	LeftBar EndL	0~255
	LeftBar EndH	0~255
	RightBar StartL	0~255
	RightBar StartH	0~255
09. SPD Info	SrcDevice	Unknown
		Digi STB
		DVD
		D-VHS
		HDD
		DVC
		DSC
		CD
		Game
		PC
		Blu-Ray
		SACD
10. Audio Info	CH Count	2CH
		3CH
		4CH
		5CH
		6CH
		7CH
		8CH
		Refer
	CT	IEC 60958
		AC-3
		MPEG1
		MP3
		MPEG2

		AAC
		DTS
		ATRAC
		One Bit Audio
		Dolby Digital
		DTS-HD Master
		Dolby TrueHD
		DST
		WMA Pro
		Refer
	Samp Freq	32KHz
		44.1KHz
		48KHz
		96KHz
		192KHz
		Refer
	Audio Width	16 Bit
		20 Bit
		24 Bit
		Refer
	Ch Allocation	0~31
	Level Shift	0~15 dB
	Down-mix	Permitted
		Prohibited
11. MPEG Info	Bit Rate0	0~255
	Bit Rate1	0~255
	Bit Rate2	0~255
	Bit Rate3	0~255
	MPEG Frame	Uknown
		I Pic
		B Pic
		P Pic
	Field	New
		Repeat
12. ACP Packet	ACP Type	Generic
		IEC 0958
		DVD Audio
		SACD
13. EDID	System [Read EDID from Device]	(00-03) Byte 0 ~ Byte 3
		...
		(FC-FF)Byte 252 ~ Byte 255
	Saved [Write EDID to Device]	(00-03) Byte 0 ~ Byte 3
		...
		(FC-FF)Byte 252 ~ Byte 255

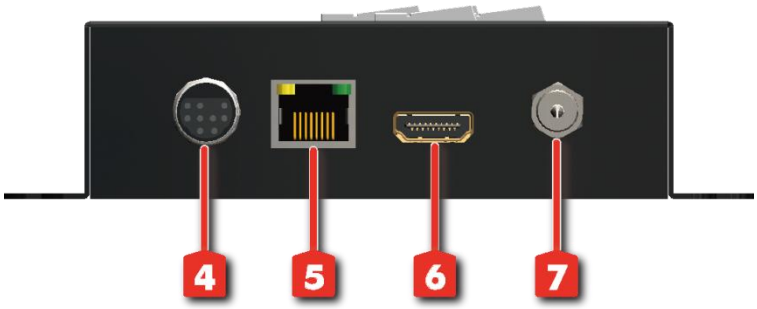
	Save Mon [Save Monitor's EDID to	
	Sys Use Def [Restore Default EDID]	
	Sys Use Saved [Overwrite EDID by	
	Monitor EDID Analyzer	
14. System	Status	No Change
		Factory
		Now Save
	Baud Rate	9600 ~ 115200
	Version	V 1.00

PANEL DESCRIPTIONS

Side View For AV-GM09B3-S1



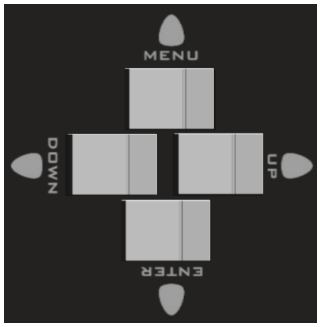
1. **HDMI OUTPUT:** Connect to a HDMI display with a HDMI male-male cable here.
2. **Signal Led:** Indicate Signal Output.
3. **RJ-45 OUTPUT:** Connect a Cat5E male-male cable here.



4. **RS-232**: RS-232 port for firmware update
5. **RJ-45 INPUT:** Connect a Cat5E male-male cable here.
6. **HDMI INPUT:** Plug in a HDMI cable to be linked to HDMI sources.

7. **+5V DC:** Connect to a 5V DC power supply unit.

Top View



Button	Function
Menu	Trigger the menu operation
Enter	Enter the menu item
Up	Choose the last menu item
Down	Choose the next menu item

LOOP TEST

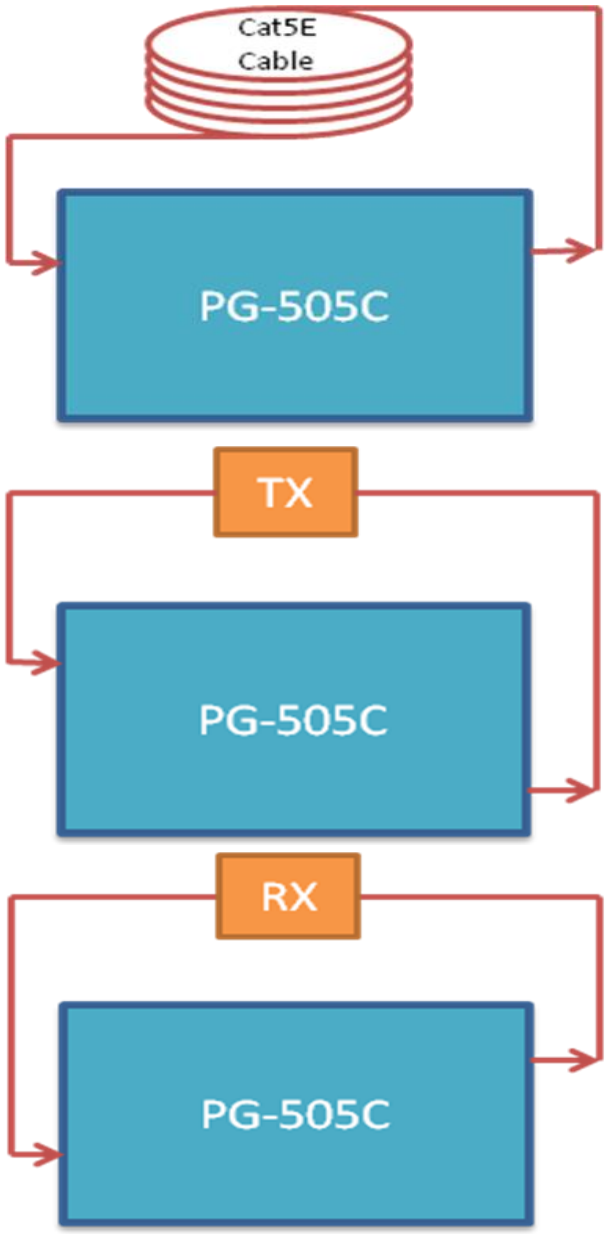
AV-GM09B3-S1 offers the unique estimator for evaluating the quality of cables or extenders. Users can simply connect the cable or extender under testing to AV-GM09B3-S1 and the built-in loop monitor will examine the video pixel by pixel! The measured statistics is displayed on LCM and offer useful information for building up robust A/V systems with HDMI backbone.

1. **Test video**
   The designed test video is bursts, and user can turn on the test video for preview without running the test.

2. **Burst width**
   AV-GM09A3-S1 offers 15 different widths for different situations with 24 bit 1080p@60 video resolution.

3. **Loop test**
   With appropriate connection, AV-GM09A3-S1 can estimate the quality of connected cable or extender, and the Pixel Error Rate will be updated every 10 seconds.

Application Illustration :



EDID MAC

AV-GM09B3-S1 offers the most convenient way for users to check, copy, and analyze the EDID. Users can directly check the EDID of the connected byte by byte on AV-GM09B3-S1 or save the monitor's EDID into flash! In addition, users can send the saved EDID in the flash through RS-232 to hyper terminal with the specified baud rate.

1. Default EDID

There are basically two sets of EDID for AV-GM09A3-S1, one for default and the other for user's use.
The default EDID is showed as follows:

0x00,0xFF,0xFF,0xFF,0xFF,0xFF,0xFF,0x00, 0x35,0x34,0x10,0x20,0x00,0x00,0x00,0x00,
0x20,0x14,0x01,0x03,0x80,0x34,0x21,0x78,0xEE,0xEE,0x91,0xA3,0x54,0x4C,0x99,0x26,
0x0F,0x50,0x54,0xBF,0xEF,0x80,0xA9,0x40, 0xA9,0xC0, 0xB3,0x00, 0x95,0x00, 0x8B,0xC0,
0x81,0x40, 0x81,0x00, 0x81,0xC0, 0x02,0x3A,0x80,0x18,0x71,0x38,0x2D,0x40,0x58,0x2C,
0x45,0x00,0xC4,0x8E,0x21,0x00,0x00,0x1E,0x28,0x3C,0x80,0xA0,0x70,0xB0,0x23,0x40,
0x30, 0x20,0x36,0x00,0xC4,0x8E,0x21,0x00,0x00,0x1A,0x00,0x00,0x00,0xFC,0x00,0x50,
0x61,0x74,0x74, 0x65,0x72,0x6E,0x20,0x47,0x65,0x6E,0x0A,0x20,0x00,0x00,0x00,0xFD,
0x00,0x38,0x4C,0x1E,0x53,0x11,0x01,0x0A,0x20,0x20,0x20,0x20,0x20,0x20,0x01,0xC5,
0x02,0x03,0x20,0x71,0x4D,0x90, 0x1F, 0x20, 0x21, 0x22, 0x05, 0x14, 0x04, 0x13, 0x12, 0x03,
0x16, 0x07, 0x23,0x09,0x7F,0x07,0x83,0x01,0x00,0x00,0x65,0x03,0x0C,0x00,0x10,0x00,
0x02,0x3A,0x80,0x18,0x71,0x38,0x2D,0x40,0x58, 0x2C,0x45,0x00,0xC4,0x8E,0x21,0x00,
0x00,0x1E,0x01,0x1D,0x80,0x18,0x71,0x1C,0x16,0x20,0x58,0x2C,0x25,0x00,0xC4,0x8E,
0x21,0x00,0x00,0x9E,0x01,0x1D,0x00,0x72,0x51,0xD0,0x1E,0x20,0x6E, 0x28,0x55,0x00,
0xC4,0x8E,0x21,0x00,0x00,0x1E,0x8C,0x0A,0xD0,0x8A,0x20,0xE0,0x2D,0x10,0x10, 0x3E,
0x96,0x00,0xC4,0x8E,0x21,0x00,0x00,0x18,0x8C,0x0A,0xA0,0x14,0x51,0xF0,0x16,0x00,
0x26, 0x7C,0x43,0x00,0xC4,0x8E,0x21,0x00,0x00,0x98,0x00,0x00,0x00,0x00,0x00,0xE0

2. System EDID

The EDID of AV-GM09B3-S1 is basically for HDMI inputs. In order to have appropriate EDID for HDMI sources, users sometimes need to use different EDID for different scenarios or application.
By entering the following menu state, force AV-GM09B3-S1 to use default EDID.

```
Menu-13 EDID
Sys Use Def: Undo#:
```

If users would like to use the EDID learned from monitor, please enter the following menu state.

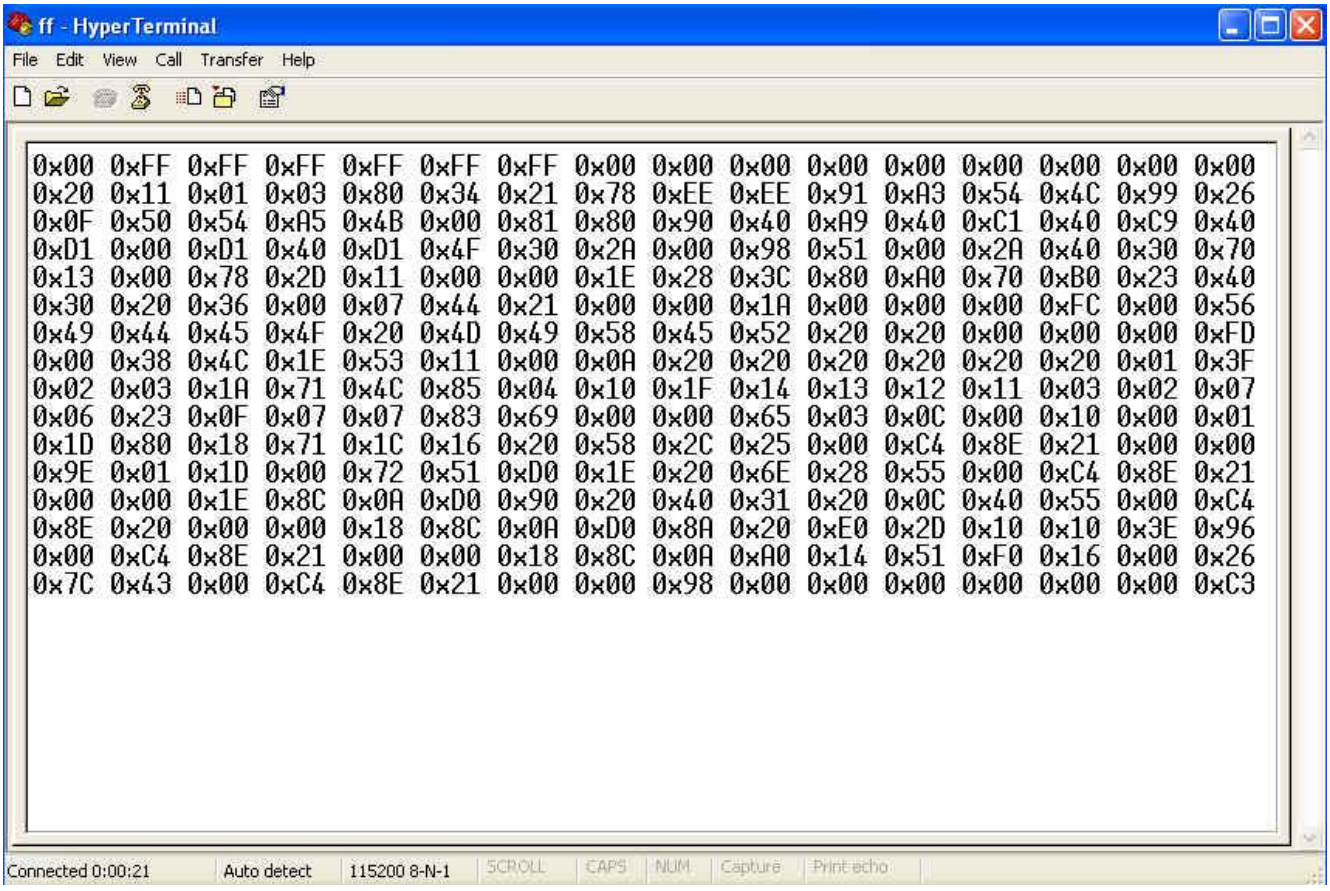
```
Menu-13 EDID
Sys Use Saved: Undo#:
```

3. Save monitor's EDID

Users can read and save monitor's EDID by entering the following menu item.

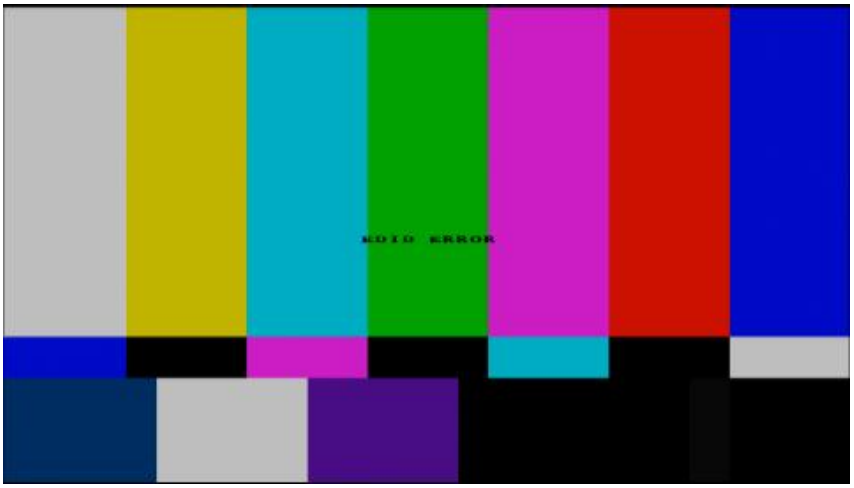
Menu-13 EDID Saved (00-03):

When Enter button is pushed, 256 bytes of EDID data will be sent to the serial port with the specified baud rate.



4. EDID Detector

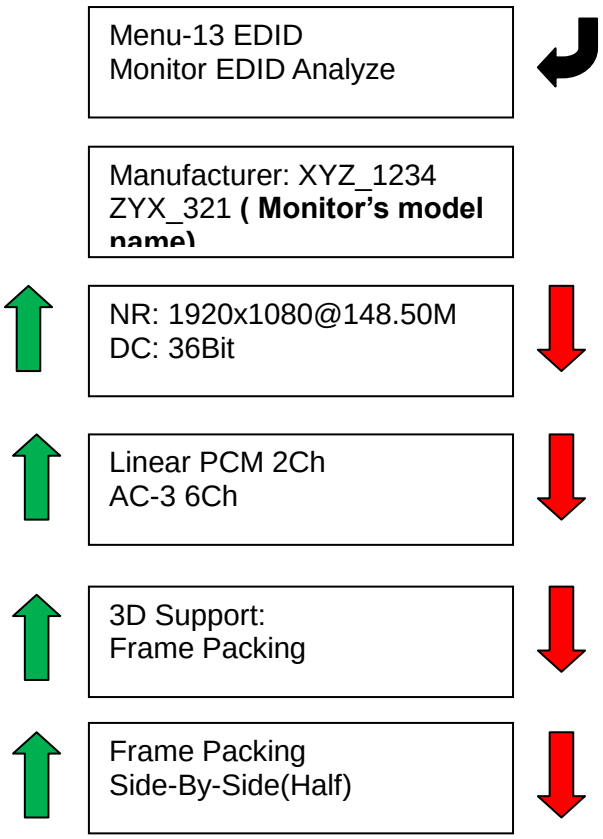
AV-GM09B3-S1 will read the EDID of the connected monitor and read and check EDID from monitor! If the EDID on monitor does not seem correct, AV-GM09B3-S1 will send a warning on-screen-display (OSD) message along the video pattern to emphasize the potential EDID error!



OSD warning message when EDID error occurs

5. EDID Analyzer

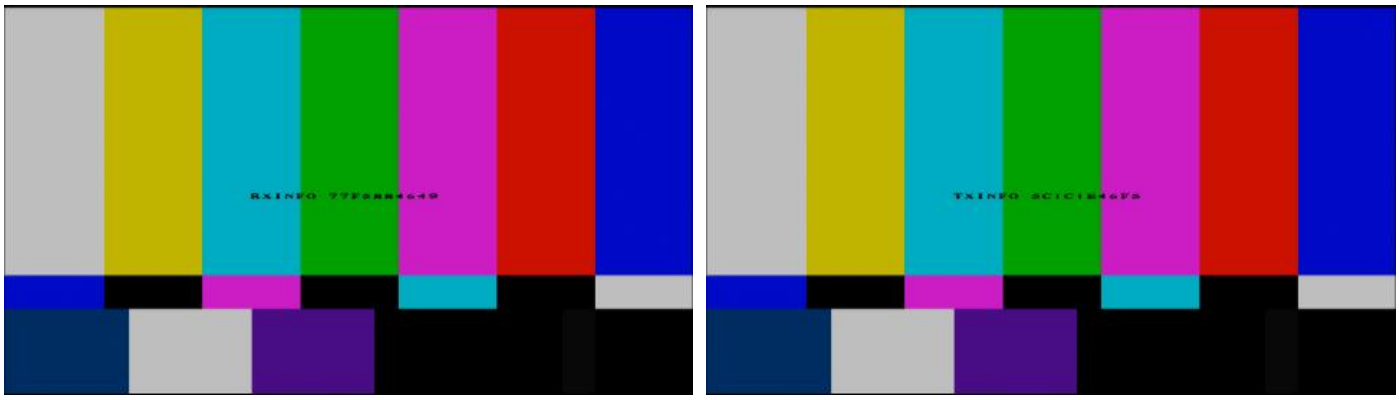
In order to make user easily realize the capability of monitors, AV-GM09B3-S1 also build an EDID analyzer which can do a quick analysis on EDID content and deliver the most important information to common usages or installations, such as native resolution, audio support, 3D support etc.



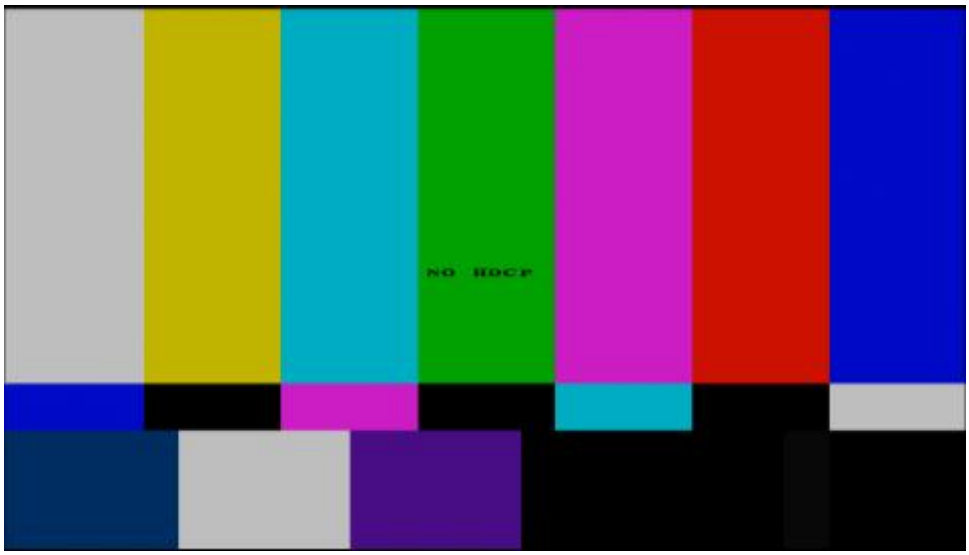
HDCP MAC

NR: Native Resolution DC: Deep Color

AV-GM09B3-S1 also equips HDCP engines to monitor the HDCP authentication process either for HDCP capable sources or displays! Along with OSD message about HDCP KSV key between HDCP transmitter and receiver, users can readily to verify if HDCP authentication is successful!



Active HDCP activity indicator



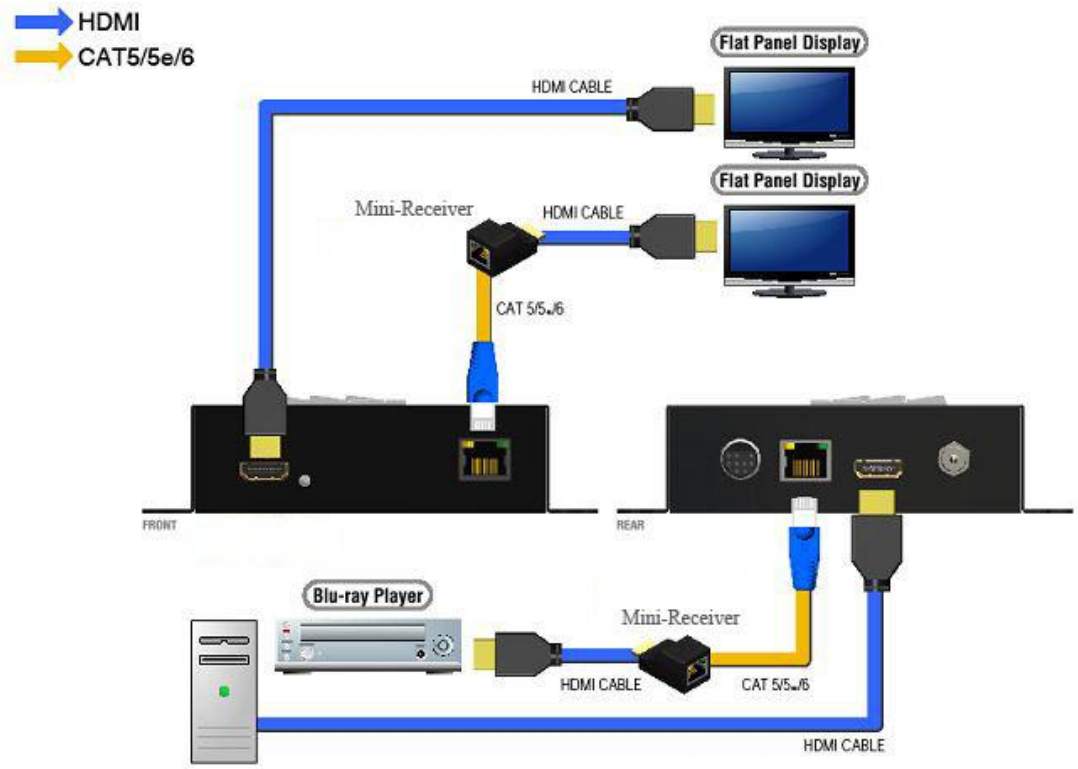
OSD message for NO HDCP activity

NOTICE

1. AV-GM09B3-S1 only supports I2S and S/PDIF audio formats. For audio packet, users can setup different audio format flags in audio packet for debug purposes. AV-GM09B3-S1 will output the chosen audio format, either I2S or S/PDIF, according to the mode section of 03-Audio.

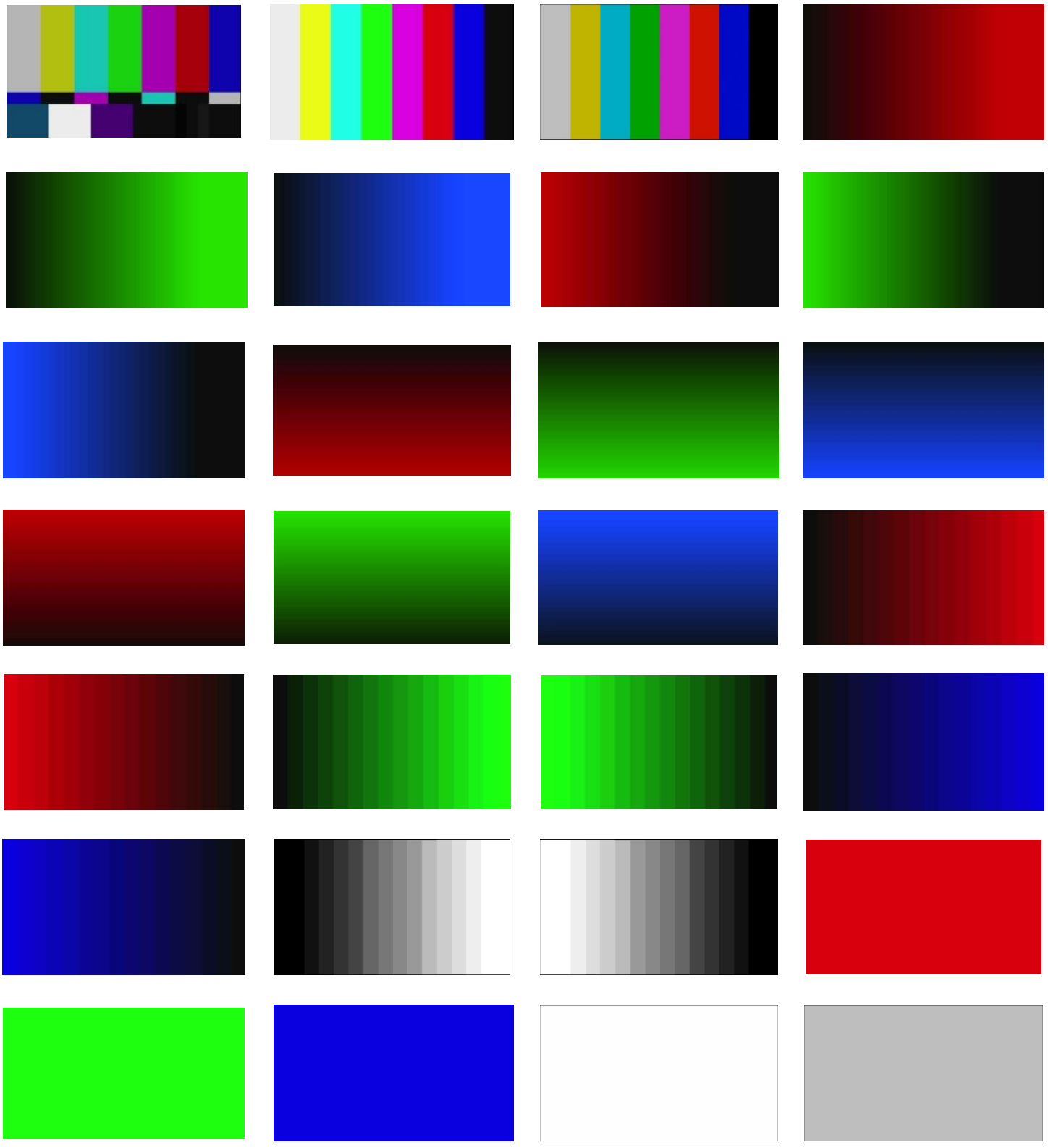
2. Same to MPEG info. The MPEG info is designed for debugging purpose and AV-GM09B3-S1 will NOT generate any compressed video or audio.

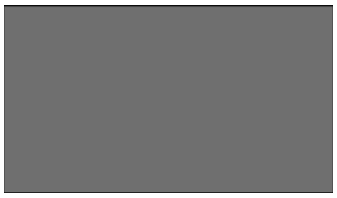
CONNECTION DIAGRAM

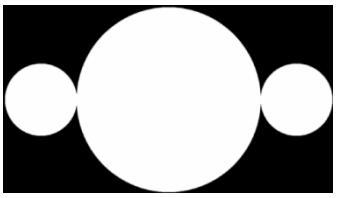
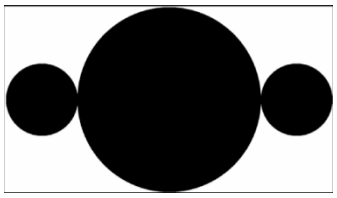


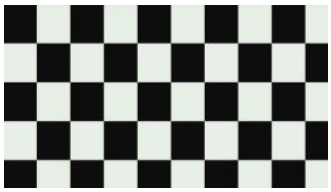
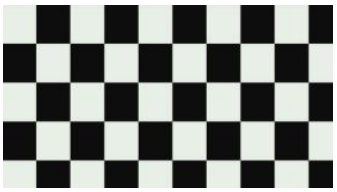
APPENDIX

Built-in Video Patterns



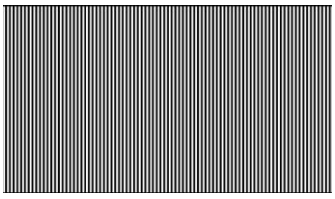
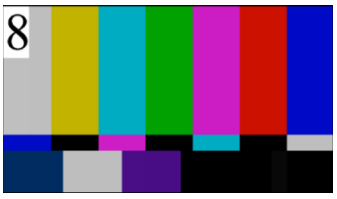



02:09:24

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WARRANTY

The SELLER warrants the AV-GM09B3-S1 HDMI Deep Color & full 3D Pattern Generator with RJ-45 I/O to be 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 surges.

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 are limited to a 30 day warranty and cable 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-GM09B3-S1 features and specifications is subject to change without further notice.

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

April, 2018