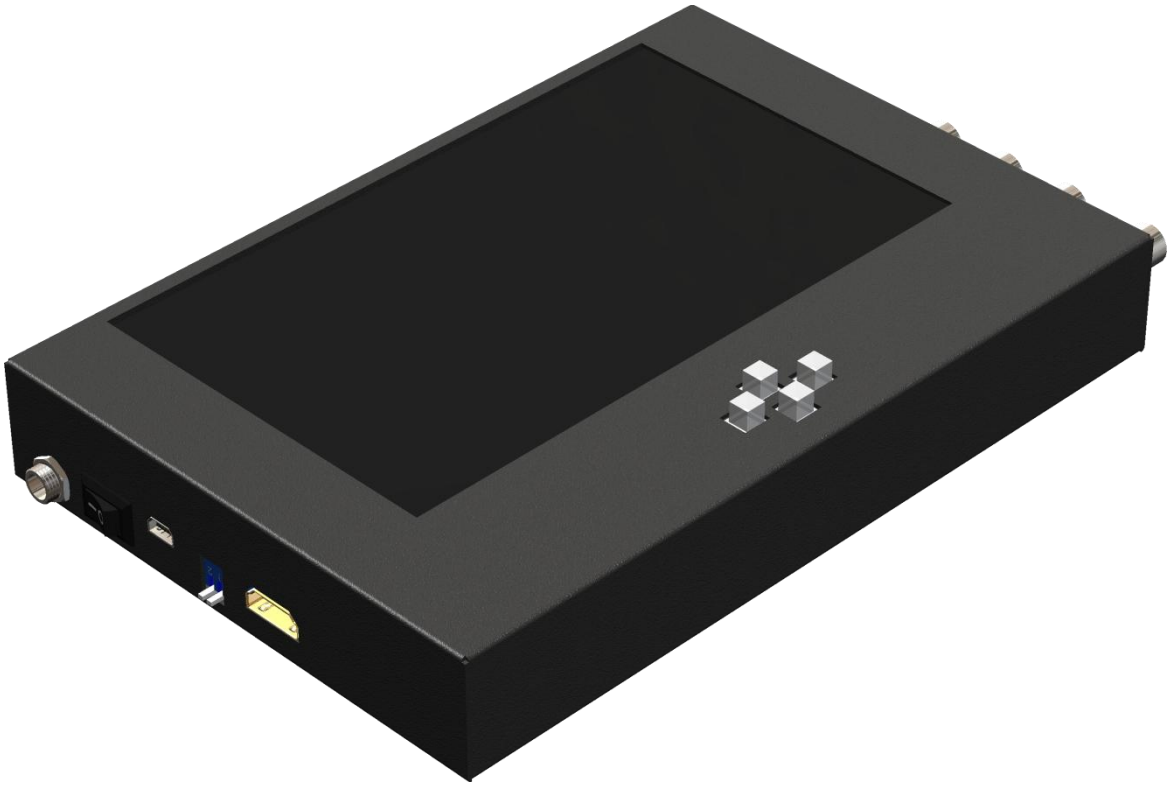
HDMI Pattern Generator & 7.0”LCD Monitor with 3D and 4K2K



P/N: AV-GM09F3-S1

Safety and Notice

The AV-GM09F3-S1 HDMI Pattern Generator & 7.0" LCD Monitor with 3D and 4K2K has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the AV-GM09F3-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 away the objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter, 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-GM09F3-S1 HDMI Pattern Generator & 7.0" LCD Monitor with 3D and 4K2K 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-GM09F3-S1 can support up to 8 channel LPCM audio with selectable sample rate. Another attractive feature of AV-GM09F3-S1 comes from bypassing HDMI input and allows users with more testing patterns for connected display or treats AV-GM09F3-S1 as an HDMI switcher. With portable size, AV-GM09F3-S1 is equipped four buttons and 7" panel to ease the control. With 7" panel, the output signal can be monitored and controlled through OSD. 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-GM09F3-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, 4K2K@30
  Bit Rate: video bandwidth 300 MHz
  Color Depth: 24/30/36 bits
- **Video Patterns**
  100% Color Bars, Random Noise, Black / White alternate fields, Full Grey / Full White, 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
- **AVI Info editor**
- **EDID analyzer**
- **Restorable Settings**
- **7" true color LCD Monitor**

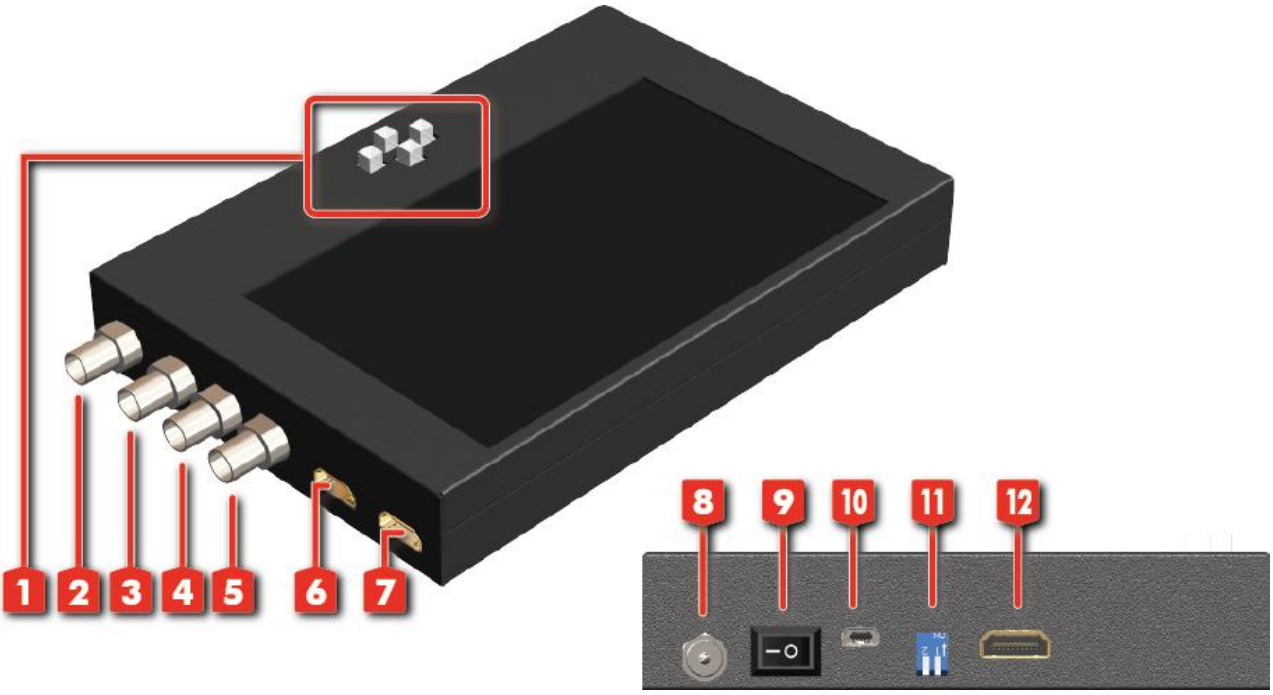
SPECIFICATIONS

Model Name		AV-GM09F3-S1
Technical		
Role of usage		Pattern Generator & LCD Monitor
HDMI standards		HDMI Deep Color & 3D
Video bandwidth		300 MHz
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 4K2K @30
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		1x HDMI
Output		1x HDMI + CVBS + Component
Control & Fimrware Update		Mini USB
HDMI connector		Type A [19-pin female]
Mechanical		**AV-GM09F3-S1**
Housing		Metal enclosure
Dimensions [L x W x H]	Model	176 x 133 x 10mm [6.9" x 5.1" x 0.4"]
	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	709g [25oz]
	Package	1.21kg [2.7lbs]
Fixedness		Interlocking power supply
Power supply		12V 5A 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]

PACKAGE CONTENTS

- 1x AV-GM09F3-S1
- 1x 12V power supply unit
- 1x User Manual

PANEL DESCRIPTIONS



1. **PUSH BUTTON:** Up, Down, Enter, Exit Button
2. **CVBS OUT :** Connect to a CVBS display with a CVBS male-male cable here
3. **COMPONENT – Pr OUTPUT**
4. **COMPONENT – Pb OUTPUT**
5. **COMPONENT – Y OUTPUT**
6. **HDMI OUT :** Connect to a HDMI display with a HDMI male-male cable here
7. **HDMI OUT :** Connect to a HDMI display with a HDMI male-male cable here
8. **12V DC power jack**
9. **Power Switch:** Power ON/OFF switch
10. **Mini-USB:** Serial Control Port
11. **Dip Switch:** Mode setting
12. **HDMI IN :** Connect to a HDMI source with a HDMI male-male cable here

Select LCD monitor mode or Component mode

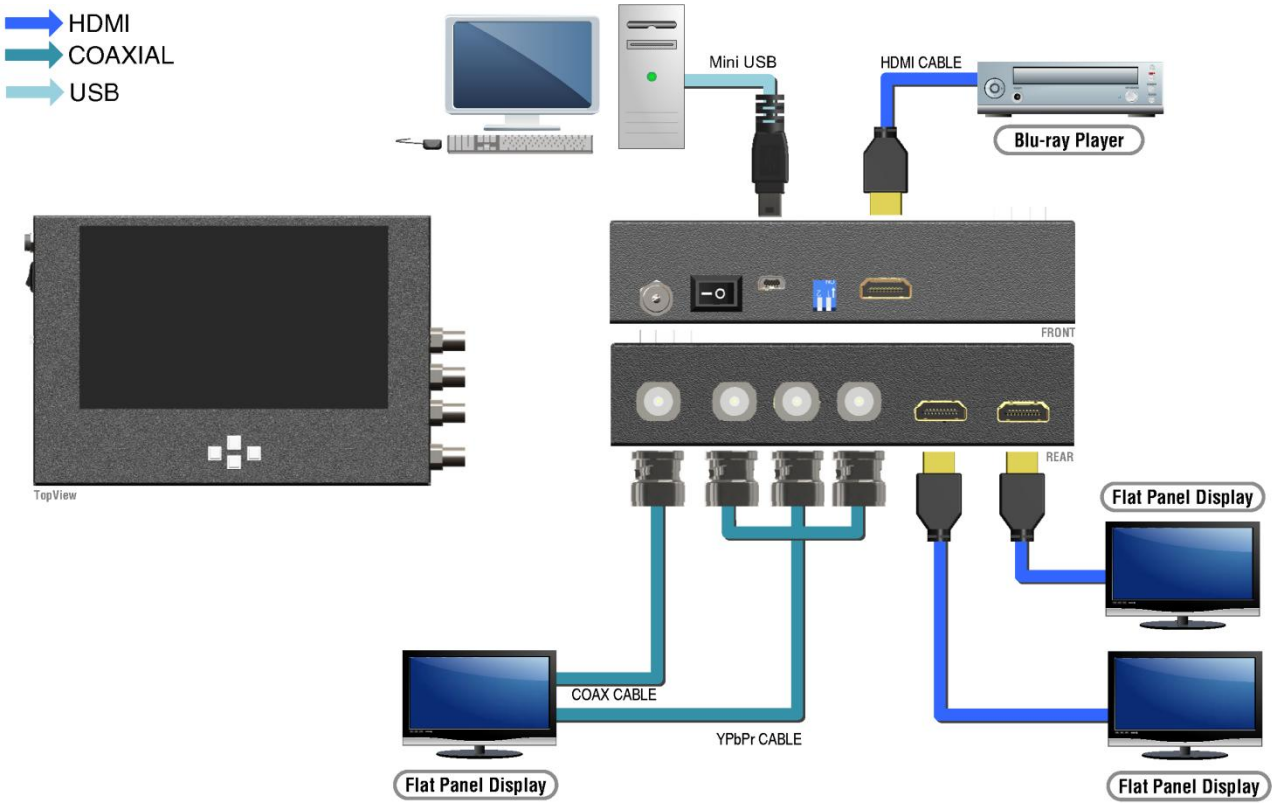
PIN 2	*Action*	*Remark*
ON [⬇]	LCD monitor mode	For Standard HDMI and CVBS output on both device LCD and displays connected.
OFF [⬆]	Component mode	To output component wither on LCD screen or displays connected.

F/W update mode

PIN 1	*PIN 2*	*Remark*
ON [⬇]	OFF [⬆]	F/W update mode 1
OFF [⬆]	OFF [⬆]	Reserved in the usage of technical support from factory

PS. The Pin 1 has to be set [⬆] before power on the device if you want to do F/W update

APPLICATION DIAGRAM



MENU OPERATION

Menu	Items	Menu
01. Format	Resolution	576p
		576i
		480p
		480i
		720p
		1080i
		1080p
		4K2K
	Frequency	23.98
		24
		24 (Fr-Pa)
		24 (Fr-Se)
		24 (s-b-s-F)
		25
		29.97
		30
		50
		59.94
		60
		60 (T&B)
		60 (L-b-L)
		60 (s-b-s-H)
	Output	DVI
		HDMI 24bits
		HDMI 30bits
		HDMI 36bits
	Color	RGB
		YCbCr422
		YCbCr444
02. Video	Patterns	SMPTE Bar
		100% Bar
		75% Bar
		Grad B→R(H)
		Grad B→G(H)
		Grad B→B(H)
		Grad R→R(H)
		Grad G→R(H)
		Grad B→R(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 R→B

Menu	Items	Menu
02. Video	Patterns	Green level B→G
		Green level G→B
		Blue level B→B
		Gray level B→W
		Gray 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 ByPass
	Text	On-White
		On-Black
		Off
	Timer	On-W/B
		On-B/W
		Off
03. Audio	Channel	1+2
		3+4
		5+6
		7+8
	Layout	2CH
		8CH
	Mode	12S
		S/PDIF
		Mute
	Audio Level	0 dB
		-6 dB
		-12 dB
		-18 dB
		-24 dB
		-30 dB
		-36 dB
		-42 dB

04. Motion	Motion	No Motion
		Square 1
		Square 2
		2 Squares
	Speed	1~8

Menu	Items	Menu
05. Feature	AVI Info	ON
		OFF
	SPD Info	ON
		OFF
	Audio Info	ON
		OFF
	MPEG Info	ON
		OFF
	ACP Package	ON
		OFF
	HDCP Output	ON
		OFF
06. Transmission Test	Test Video	OFF
		ON
	Test	Start
		Stop
	Burst Width	1~15
07. 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 Port 1 Save Monitor's EDID to Flash	
	Save Port 2 Save Monitor's EDID to Flash	
	Use FHD 8ch ED Restore Default EDID	
	Use FHD 2ch ED	
	Use FHD 3D ED	
	Use HD 8ch ED	
	Use HD 2ch ED	
	Use HD 3D ED	
	Use UHD 8ch ED	
	Use UHD 2ch ED	
	Use Saved EDID Overwrite EDID by Monitor's	
	Port 1 EDID Analyze	
	Port 2 EDID Analyze	
08. System	Status	No Change
		Factory
		Now Save

	Version	

TRANSMISSION TEST

AV-GM09F3-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-GM09F3-S1 and the built-in loop monitor will examine the video pixel by pixel! The measured statistics is displayed on OSD and offer useful information for building up robust A/V systems with HDMI backbone.

1. **RX Test**
   AV-GM09F3-S1 transmitter can send a designed pattern to DUT for user to preview.

2. **TX Test**
   AV-GM09F3-S1 receiver will capture the signal from its transmitter and evaluating the transmission quality. On this path, user can put cables or any repeater for test..

3. **Burst width**
   AV-GM09F3-S1 offer 15 different widths for different situations up to 4K2K @30 video resolution.

4. Error Rate

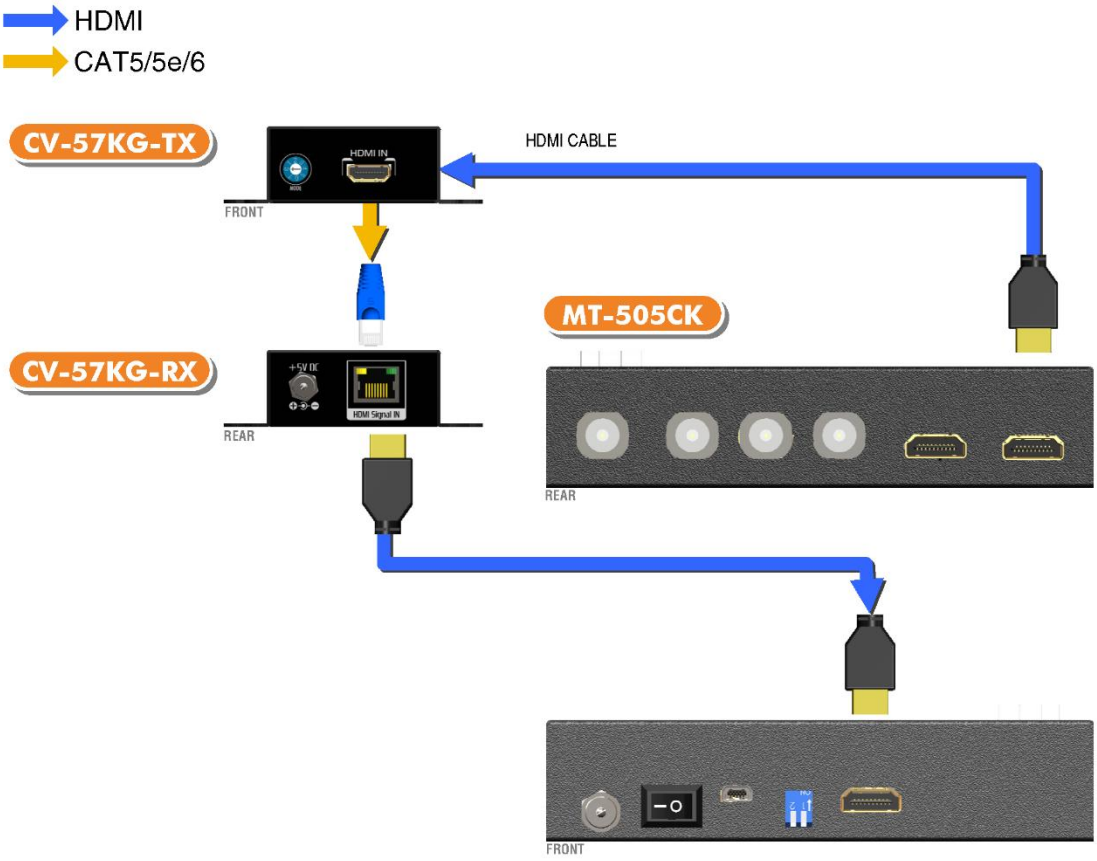
Test Result	
Under Standard	TMDS character error rate is less than 10^{-9}
Over Standard	TMDS character error rate is more than 10^{-9}

Note: According HDMI Specification

(1) At TMDS clock frequencies less than or equal to 165MHz, the Sink shall recover data at a TMDS character error rate of 10^{-9} or better.

(2) At TMDS clock frequencies above 165MHz, the Sink shall recover data at a TMDS character error rate of 10^{-9} or better.

Application Illustration:


HDMI
CAT5/5e/6
CV-57KG-TX
HDMI IN
FRONT
HDMI CABLE
MT-505CK
CV-57KG-RX
+5V DC
HDMI Signal IN
REAR
REAR
FRONT

EDID MAC

AV-GM09F3-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-GM09F3-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 eight sets of default EDID for AV-GM09F3-S1 for user's selection.

The default EDIDs are showed as follows:

1. Full HD 8 Channel EDID
2. Full HD 2 Channel EDID
3. Full HD 3D EDID
4. HD 8 Channel EDID
5. HD 2 Channel EDID
6. HD 3D EDID
7. UHD 8 Channel EDID
8. UHD 8 Channel EDID

2. System EDID

The EDID of AV-GM09F3-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-GM09F3-S1 to use default EDID.

```
Menu-12 EDID
Sys Use Def: Undo#:
```

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

```
Menu-12 EDID
Sys Use Saved: Undo#:
```

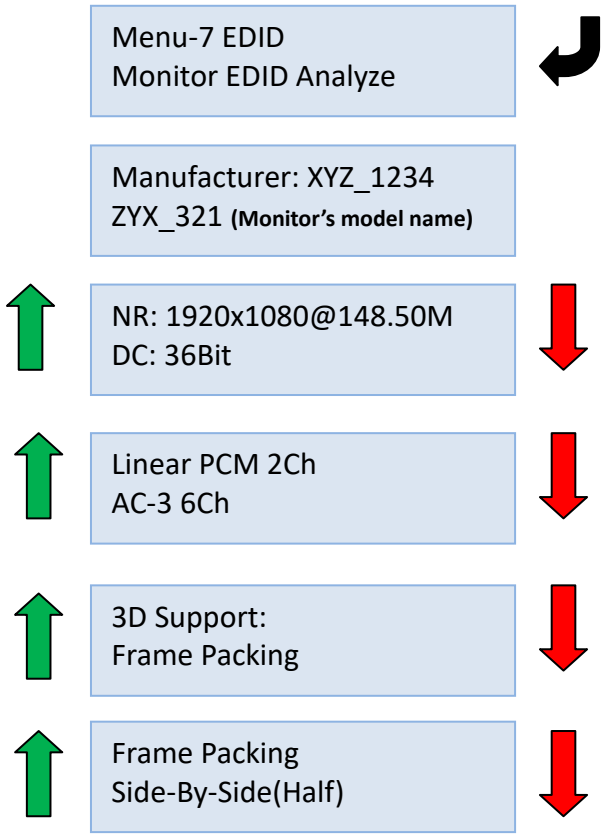
3. Save monitor's EDID

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

```
Menu-7 EDID
Saved (00-03):
```

4. EDID Analyzer

In order to make user easily realize the capability of monitors, AV-GM09F3-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.



NOTICE

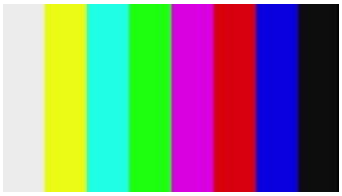
1. All the information or packet are designed for debugging purpose and AV-GM09F3-S1 will NOT generate any compressed video or audio.
2. AV-GM09F3-S1 only supports I2S and S/PDIF audio formats. For audio packet, users can setup different audio format flags in audio packet for debug purposes. AV-GM09F3-S1 will output the chosen audio format, either I2S or S/PDIF, according to the mode section of 03-Audio.
3. Same to MPEG info. The MPEG info is designed for debugging purpose and AV-GM09F3-S1 will NOT generate any compressed video or audio.

APPENDIX

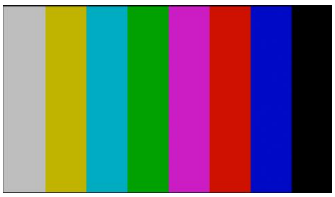
Built-in Video Patterns

SMPTE bar

100% bar



75% bar



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 → G

Grn level G → B

Blu level B → B

Blu level B → B

Gra level B → W

Gra level W → B

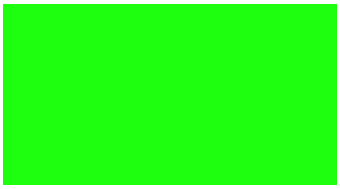
100% Red

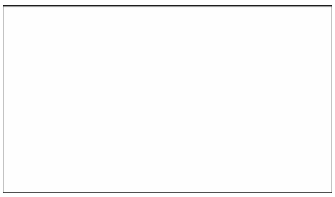
100% Green

100% Blue

100% White

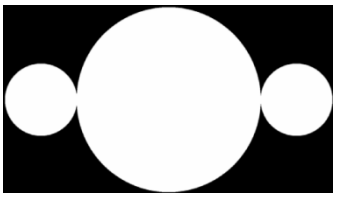
70% Gray



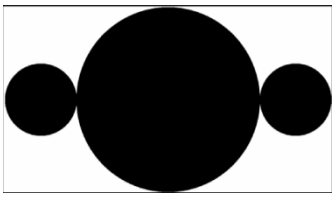


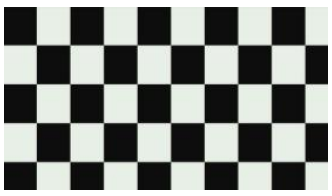
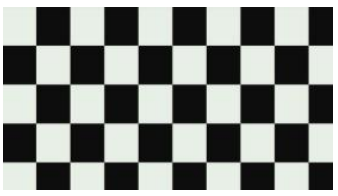

40% Gray | Black | Noise | Circle 1



Circle 2 | Moire | Chess 1 | Chess 2



HDMI ByPass | HDMI ByPass | HDMI ByPass | HDMI ByPass




LIMITED WARRANTY

The SELLER warrants the **AV-GM09F3-S1** HDMI Pattern Generator & 7.0" LED Monitor with 3D and 4K2K 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-GM09F3-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