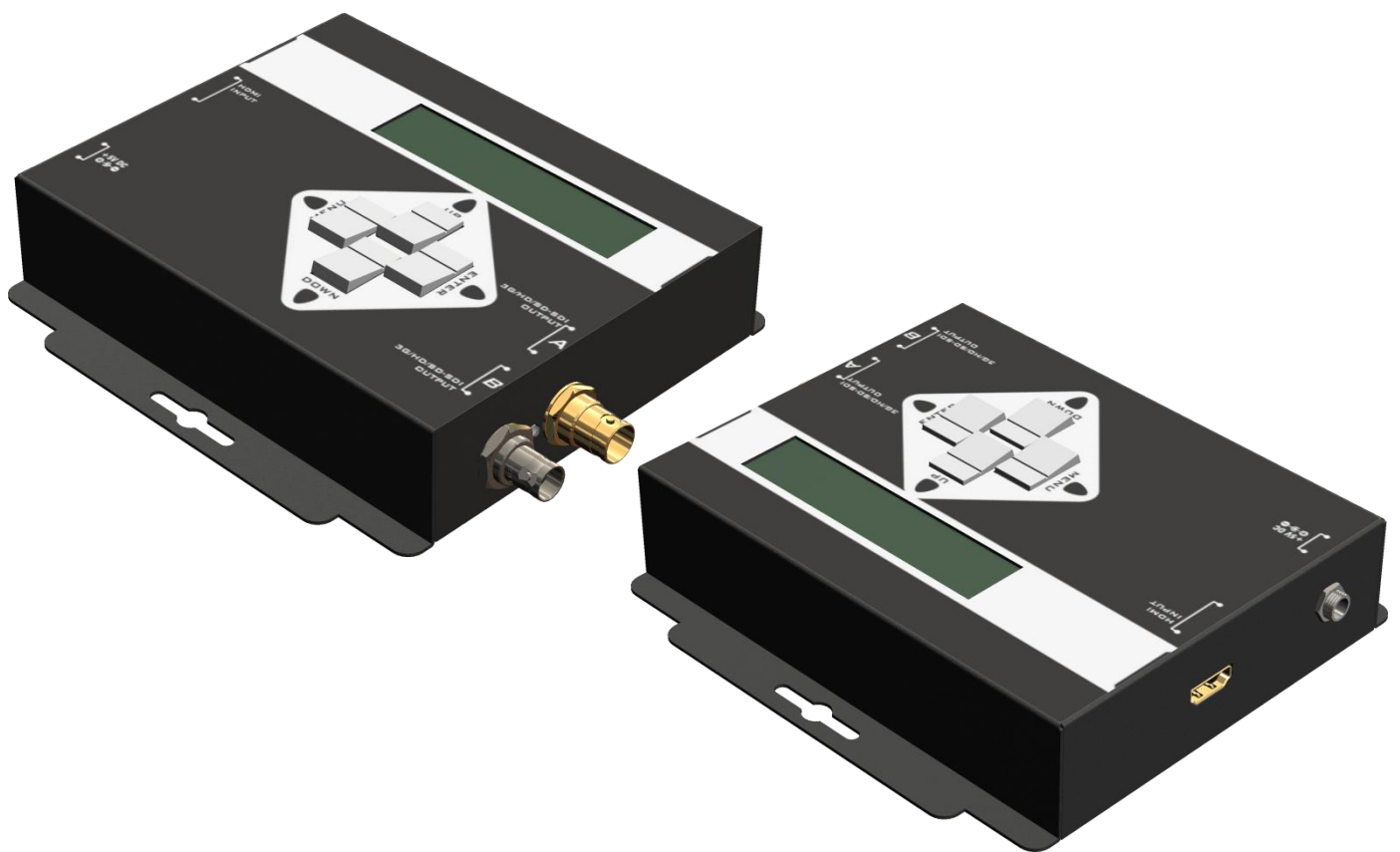




## 3G/HD/SD-SDI Pattern Generator



P/N: AV-GM0973-S1



## Safety and Notice

The **AV-GM0973-S1 3G/HD/SD-SDI Pattern Generator** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM0973-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-GM0973-S1 3G/HD/SD-SDI Pattern Generator** is an advanced SDI pattern generator with multi-format (3G/HD/SD) and multi-pattern support. Besides still and moving video test patterns, other features such as audio (SMPTE-291M) are also provided. AV-GM0973-S1 can support up to 8 channel AES compliant audio with 48KHz sample rate. Another attractive feature of AV-GM0973-S1 comes from bypassing HDMI input and allows users with more testing patterns for connected display or treats AV-GM0973-S1 as an advanced HDMI to SDI converter with 3G capability. With portable size, AV-GM0973-S1 is equipped four buttons and LCM screen to ease the control. This device provides a cost effective way to calibrate and test SDI enable video devices and displays.

## FEATURES

- **Supported output resolution**  
NTSC 525@60, PAL 625@50, 720p@23.98, 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: 2.97 Gbps, 2.967 Gbps, 1.485 Gbps, 1.4835 Gbps, 270 Mbps  
Resolution: 10bit
- **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)
- **Save Settings to Memory Option**
- **ANC Data**  
EDH (RP-165), SMPTE 352M, SMPTE291M
- **Control**  
By LCM or panel buttons
- **Video Output**  
Triple SDI output (SDI, HD-SDI, 3G-SDI)

## PACKAGE CONTENTS

- 1x AV-GM0973-S1

- 1x 5V power supply unit
- 1x User Manual

## SPECIFICATIONS

Model Name		AV-GM0963-S1	AV-GM0973-S1
<b>Technical</b>			
Role of usage		Pattern generator	
SDI standards		HD/SD-SDI	3G/HD/SD-SDI
Auto SDI rate detection		Yes	
Supported protocols		SMPTE 259M (270Mbps / 360Mbps) SMPTE 292M / HDTV (1.485 & 1.485/1.001Gbps)	SMPTE 259M (270Mbps / 360Mbps) SMPTE 292M / HDTV (1.485 & 1.485/1.001Gbps) SMPTE 424/425M (2.97 & 2.97/1.001Gbps)
Video bandwidth		1.485Gbps	2.97Gbps
Data rates		143 / 270 / 1483 / 1485 Mbps	143 / 270 / 1483 / 1485 / 2967 / 2970 Mbps
Video support		[HD] 720p50/59.94/60, 1080p24/30, 1035i50/59.94/60, 1080i50/59.94/60 [SD] NTSC@59.94Hz, PAL@50Hz	[3G] 1080p@50/59.94/60 (4:2:2) [HD] 720p50/59.94/60, 1080p24/30, 1035i50/59.94/60, 1080i50/59.94/60 [SD] NTSC@59.94Hz, PAL@50Hz
SDI signal type		SMPTE-292M / 259M	SMPTE-292M / 259M / 424M
HDMI bypass		Yes	
Output impedance		75Ω	
Cable (Belden 1694A) equalization / transmission		[3G-SDI] up to 60m (190ft) / [HD-SDI] up to 150m (500ft) / [SD-SDI] up to 300m (1000ft)	
Audio support		Yes	
PCB Stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		1x HDMI	
Output		2x BNC [SDI]	
BNC connector		75Ω interlocking socket	
HDMI connector		Type A [19-pin female]	
[HD] Eye pattern characteristics		Amplitude: Within 800mV <10% Rise overshoot: Less than 2% Fall overshoot: Less than 2%	Long time jitter <1.0 UI Timing jitter <1.0 UI Alignment jitter <0.2 UI
<b>Mechanical</b>			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	150 x 190 x 32mm [5.9" x 7.5" x 1.3"]	
	Package	175 x 270 x 100mm [6.9" x 10.6" x 3.9"]	

	Carton	450 x 370 x 300mm [1'6" x 1'3" x 1']
Weight	Model	660g [1.5 lbs]
	Package	1260g [2.8 lbs]
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	NTSC
		PAL
		720p
		1080p
		1080i
	Frequency	60
		59.94
		50
		30
		29.97
		25
		24
		23.98
		PsF25
		PsF29.97
		PsF30
	Output	YCbCr 422
02 Video	Patterns	SMPTE Bar
		100% Color Bar
		75% Color Bar
		Check Field
		Gradient B→R(H)
		Gradient B→G(H)
		Gradient B→B(H)
		Gradient R→B(H)
		Gradient G→B(H)
		Gradient B→B(H)

		Gradient B→R(V)
		Gradient B→G(V)
		Gradient B→B(V)
		Gradient R→B(V)
		Gradient G→B(V)
		Gradient B→B(V)
		Red Level B→R
		Red Level R→B
		Green Level G→B
		Green Level B→G
Menu	Items	
02 Video	Patterns	Blue Level B→B
		Blue Level B→B
		Gra Level W→B
		Gra Level B→W
		Black Level
		White Level
		100% Red
		100% Green
		100% Blue
		100% White
		70% Gray
		40% Gray
		Black
		Circle 1
		Circle 2
		Moire
		H Stripe R
		H Stripe G
		H Stripe B
		V Stripe R
		V Stripe G
		V Stripe B
		Sequence
		Multi-Burst
		HDMI Bypass
		CZP/Prog. Only
		EQ
		PLL
	Text	Off
		On-White

		On-Black
		On-Gray
	Timer	Off
		On-W/B
		On-B/W
	Data Filter	On
		Off

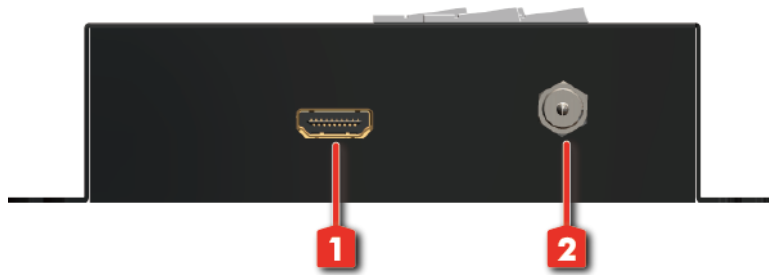
Menu	Items	
03 Audio	Mode	Off
		On
	Group	1+2
		3+4
	Level	0dB
		-6dB
		-12dB
		-18dB
		-24dB
		-30dB
		-36dB
		-42dB
		Silence
		Random
	Mask	Off
		CH 1234
		CH 1
		CH 2
		CH 3
		CH 4
		CH 1+2
		CH 3+4
04 Motion	Motion	No Motion
		Square 1
		Square 2
		2 Squares
		Square Inv
	Data Speed	1
		2
		3
		4
		5
		6
		7
		8
05 ANC Data	SMPTE-352M	Off
		On
	CC	On
		Off
	CRC	On
		Off
06 WINDOW PAT SET	Window	On
		Off
		Gray
		Red
		Green
		Blue
		Cyan
		Magenta
	Level	Yellow
		0%~100%



	Window Field	1~20
07 System	Status	No Change
		Factory
		Now Save
	Version	V1.05

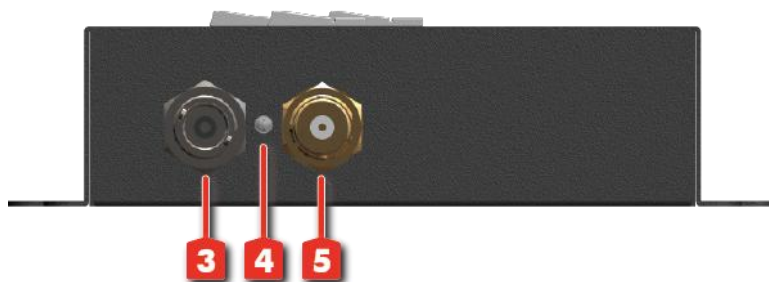
# PANEL DESCRIPTIONS

## Front Panel



1. **HDMI INPUT:** Plug in a HDMI cable to be linked to a HDMI source
2. **+5V DC:** Connect to a 5V DC power supply unit

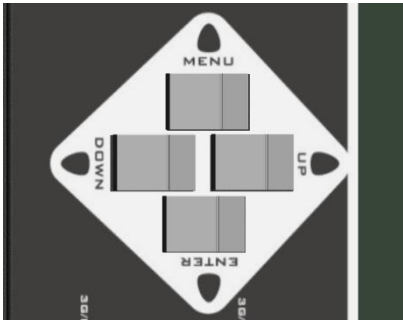
## Rear Panel



3. **SDI OUTPUT A:** Connect to a SDI device for SDI, HD-SDI, or 3G-SDI signal output either from the chosen pattern or the converted HDMI source signal
4. **Lock LED:** showing if the audio/video signal existed or not
5. **SDI OUTPUT B:** Connect to a SDI device for SDI, HD-SDI, 3G-SDI signal output either from the chosen pattern or the converted HDMI source signal

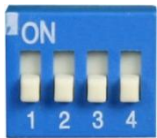
## Top View

Button	Function
Menu	Trigger the menu operation
Enter	Enter the menu item



Up	Choose the last menu item
Down	Choose the next menu item

# DIP SWITCH



A 4-pin DIP switch is used for user interface, and users can access this switch from the bottom of the unit.

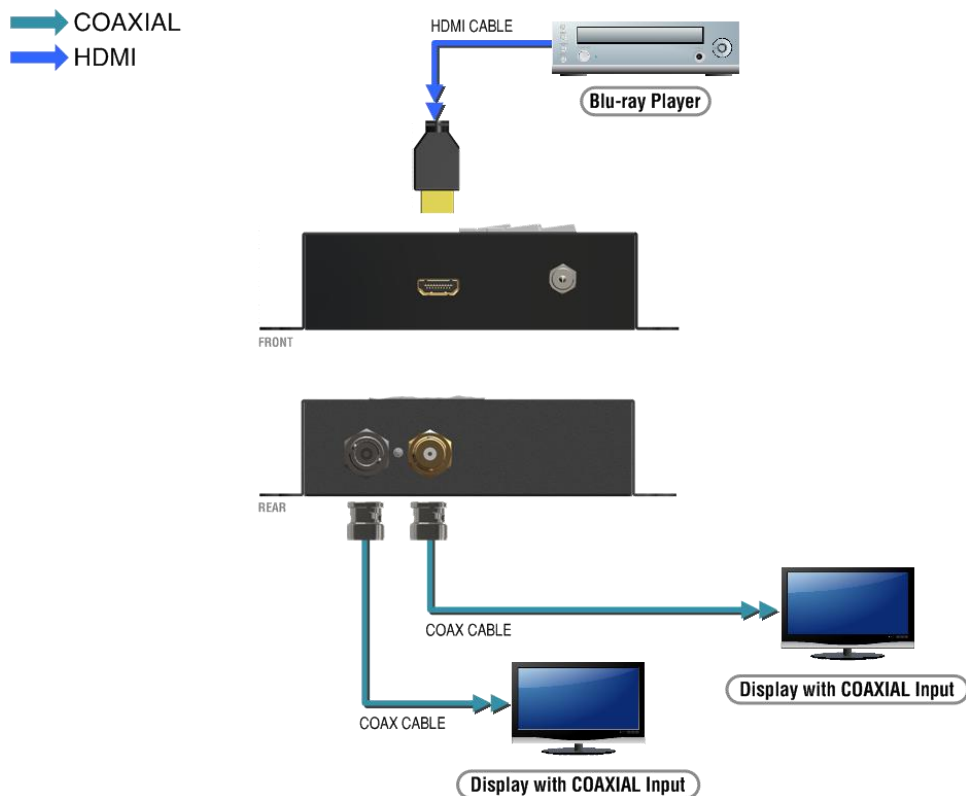
Pin No.	1	2	3	4
ON (↑)	Used for SMPTE352M	3G level B	Not in use	Update EDID
OFF (↓)		3G level A	Not in use	Default EDID



Factory default for 4-pin DIP switch: OFF-OFF-OFF-OFF [↓-↓-↓-↓]

1. In order to keep the compatibility of HDMI to most monitors, AV-GM0973-S1 features EDID learning
2. ability. The operation is shown in the EDID learning section.

## CONNECTION DIAGRAM



## EDID LEARNING

1. Turn off AV-GM0973-S1 and set the pin 4 of DIP switch of AV-GM0973-S1 to OFF [□].
2. Connect the HDTV to the HDMI port on the AV-GM0973-S1, and then turn on VPG-SDI3.
3. The Lock LED on the AV-GM0973-S1 will dim and light again, which indicates the EDID learning process is done.
4. Connect AV-GM0973-S1 to the HDMI source through a HDMI cable and enjoy the experience.

## NOTICE

1. In HDMI bypass mode, users must be aware of that the jitters coming from HDMI sources, such as DVD players, may be much higher than typical requirement according to SMPTE request on HD-SDI signals. This will result in SDI output with high jitters or even no SDI outputs!
2. Due to the high frequency bandwidth and low jitter requirement of 3G-SDI signals, it is strongly recommended to use just one SDI OUTPUT with one 75 ohm.
3. The features including new timings and patterns may increase without notice after the firmware is updated! This may affect the menu items, but will keep the same framework for users!

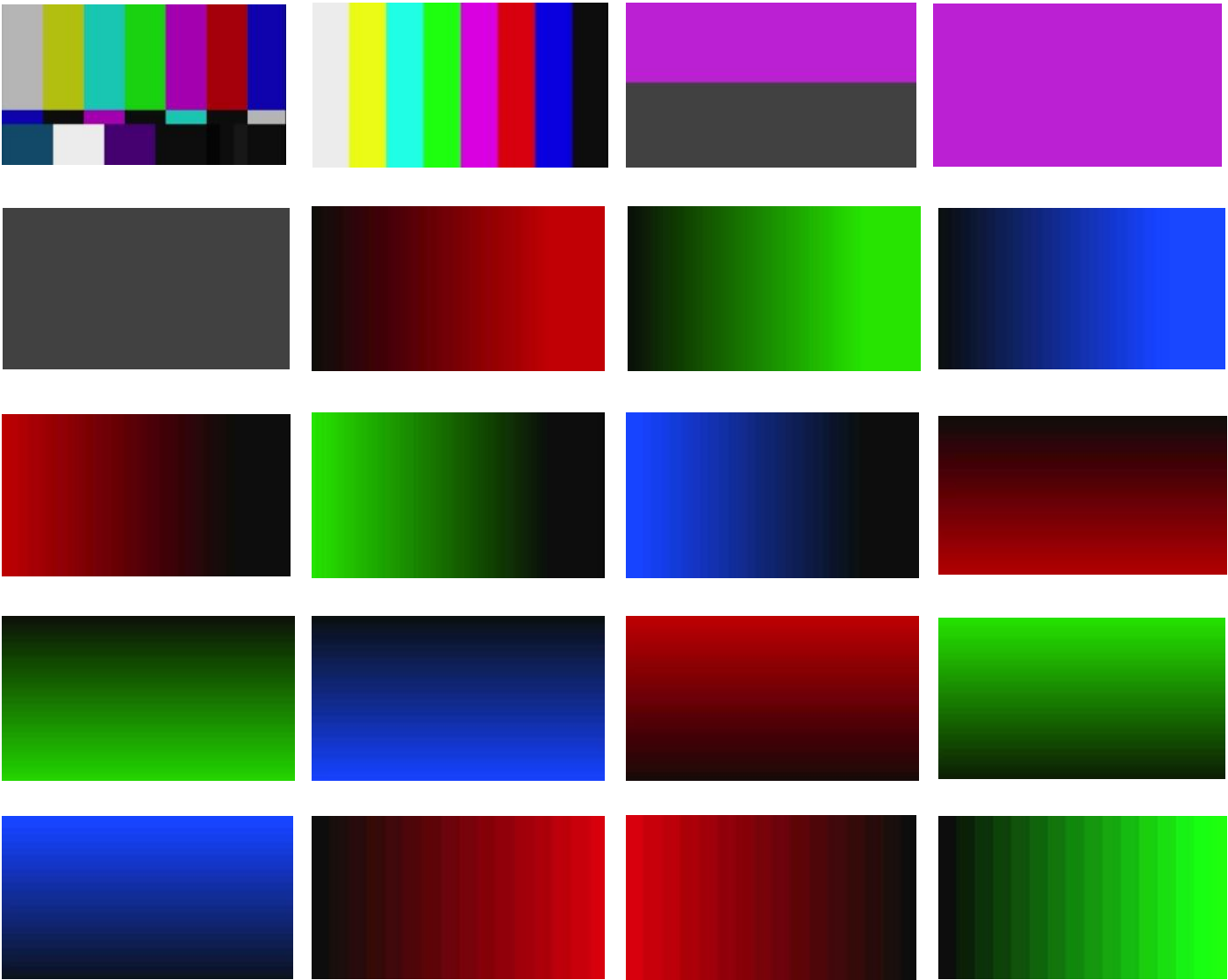
# APPENDIX

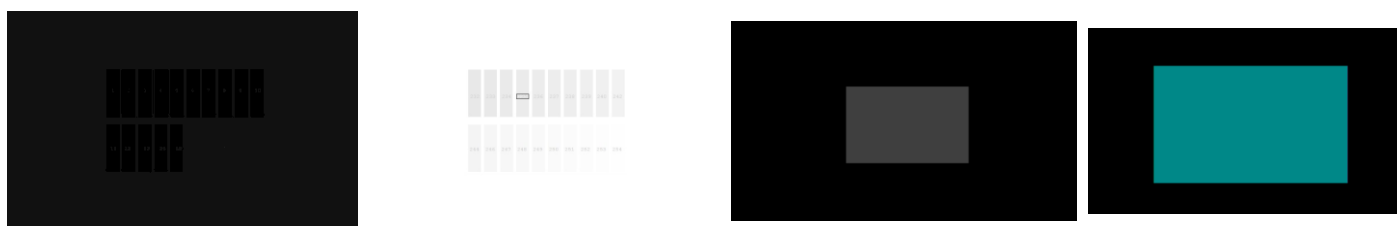
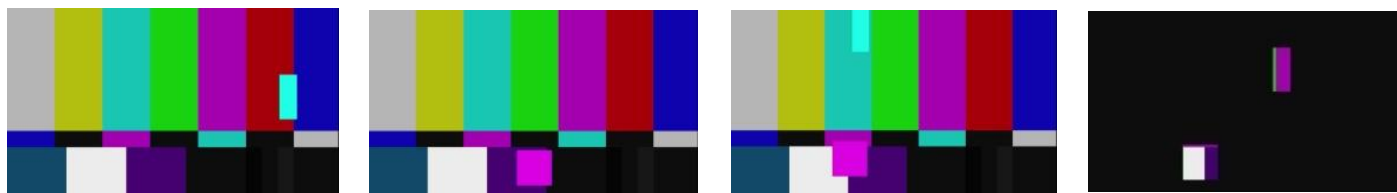
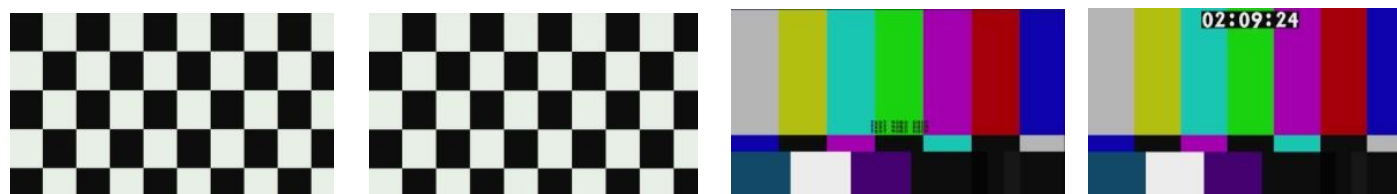
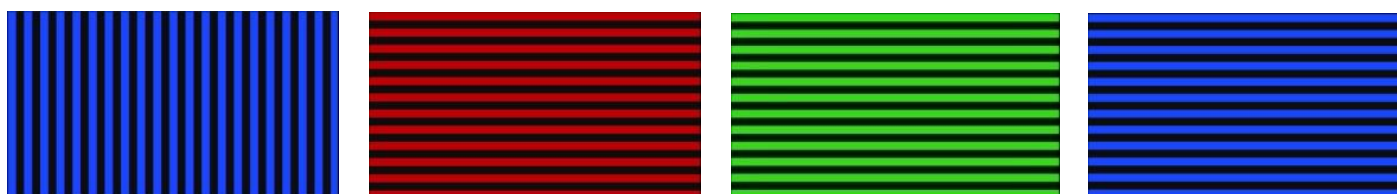
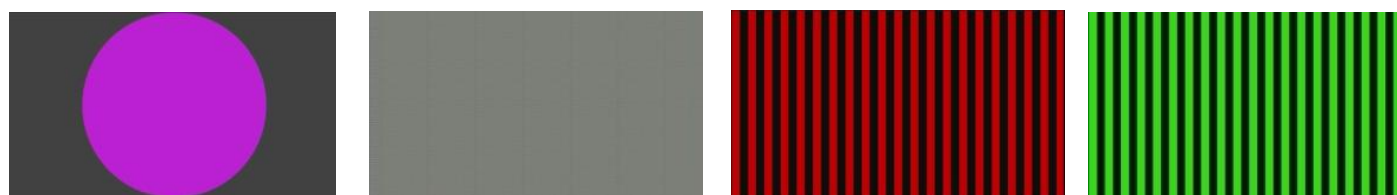
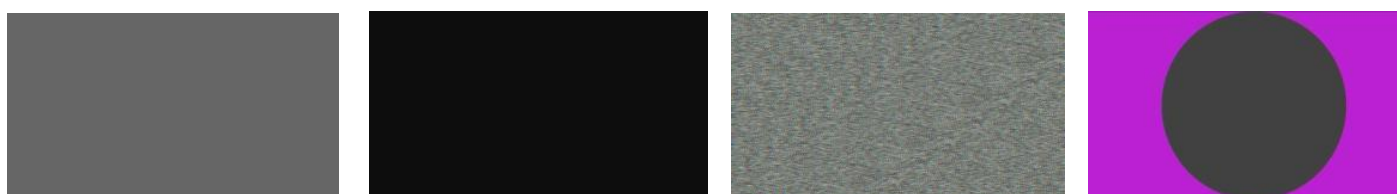
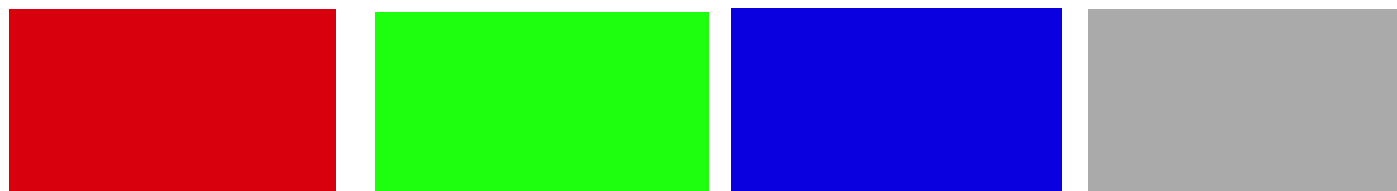
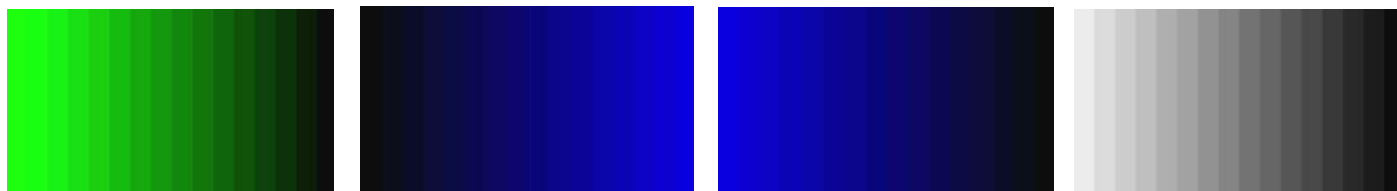
- Data Identification Word of Ancillary Data Packet

ANC Data	DID	SDID/DBN
352M	0x41	0x01
RP-165-EDH*	0xF4	0x00

*\* Data Type 1(SMPTE-291M)*

- Built-in Video Patterns





# WARRANTY

The SELLER warrants the **AV-GM0973-S1 3G/HD/SD-SDI Pattern Generator** 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-GM0973-S1 features and specifications is subject to change without further notice.**

## Support

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