

# HDMI Test/Pattern Generator with Audio

HDMIPATTERN



**CONVERGE**AV

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## **FCC Compliance Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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# Introduction

Thank you for purchasing a StarTech.com Converge A/V HDMI Test Pattern Generator. Offering simple testing of HDMI displays, this device simplifies troubleshooting calibration issues with eight built-in groups of video test patterns that allow you to quickly determine color performance, linearity, audio, and HDCP issues.

## Features

- Auto detects DVI/HDMI signal usage
- Supports up to VGA @ 60Hz and 720p@50Hz, 60Hz resolutions for use with HDTV displays with DVI and HDMI ports
- Test color, linear, and HDCP functionality
- 35 video test patterns built in, one 48KHz audio sine wave test pattern
- On-Screen Display

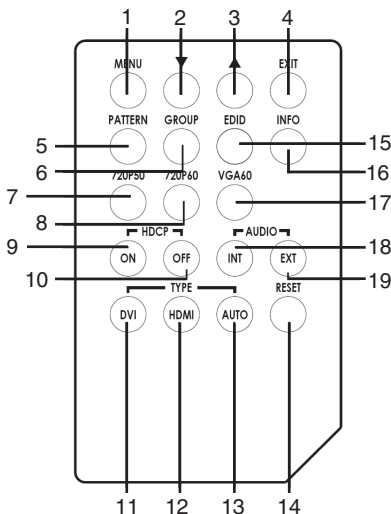
## Package contents

This package should contain:

- 1 x Converge A/V HDMI Test Pattern Generator
- 1 x Instruction Manual
- 1 x Power Adapter

# Hardware Guide

## Remote Control

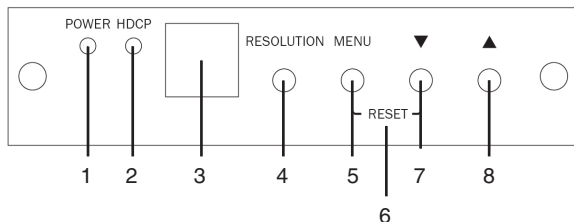


1	<b>Menu</b>	Press to view the On-Screen Display Menu, or enter functions
2	▼	Press to move the cursor down or switch to the next pattern.
3	▲	Press to move the cursor up or switch to the previous pattern.
4	<b>Exit</b>	Exit the current process or return to the previous page



Descriptions cont'd on next page →

5	<b>PATTERN</b>	Press to list pattern groups menu
6	<b>Group</b>	Press to toggle to the first option of the next "group"
7	<b>720P50</b>	Press to change timing to 720P50
8	<b>720P60</b>	Press to change timing to 720P60
9	<b>HDCP ON</b>	Press to switch ON HDCP
10	<b>HDCP OFF</b>	Press to switch OFF HDCP
11	<b>Type DVI</b>	Press to change signal type to DVI
12	<b>Type HDMI</b>	Press to change signal type to HDMI
13	<b>Type AUTO</b>	Press to auto detect signal type HDMI/DVI.
14	<b>Reset</b>	Press to return to factory setting
15	<b>EDID</b>	Press to analysis EDID information
16	<b>INFO</b>	Press to show unit setup information
17	<b>VGA60</b>	Press to change timing to VGA60
18	<b>Audio INT</b>	Press to select audio source from internal
19	<b>Audio EXT</b>	Press to select audio source from external

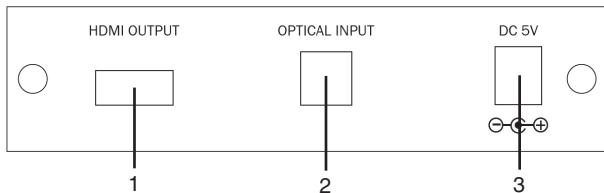
## Front Panel



Descriptions on next page →


1	<b>Power ON/OFF</b>	
2	<b>HDCP ON/OFF indicator</b>	Press [HDCP ON]/[HDCP OFF] to switch HDCP ON/OFF
3	<b>Remote control sensor</b>	
4	<b>Resolution</b>	Switch resolution among 720P50, 720P60, VGA60
5	<b>MENU (Enter)</b>	Press to view the OSD menu or press to confirm a selection
6		Press to move the cursor down or switch to the next pattern
7		Press to move the cursor up or switch to the previous pattern
8	<b>RESET</b>	Press to return to factory setting


## Rear panel




1	<b>HDMI OUTPUT</b>	HDMI/DVI output
2	<b>OPTICAL INPUT</b>	Connected external S/PDIF audio source
3	<b>DC 5V/2A</b>	Power input

## Pattern table

GROUP	PATTERN	COMMENT
Color Bar		H/V color bars
Application	<p>The color bar pattern provides information on color performance, including checks on burst keying, subcarrier regeneration, RGB amplifiers, the delay chrominance/ luminance and saturation check.</p>	


GROUP	PATTERN	COMMENT
Grayscale		step8 / 16 / 32
Application	<p>The Greyscale pattern is used to locate faulty linearity of the video amplifier or greyscale setting. Nonlinearities mainly result in a compression of the white level.</p>	


GROUP	PATTERN	COMMENT
Purity		<p>Purity Color White, Blue, Red, Magenta, Green, Cyan, Yellow, Black</p>

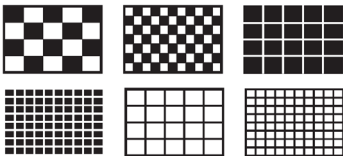



## GROUP: Purity Cont'd




<b>Application</b>	<p>The red and green patterns are most frequently used for checking color purity. On a correctly adjusted receiver, each electron beam will strike only one set of color dots/stripes on the screen. If only the red pattern is selected this color should be visible; the presence of any other color is an indication that color purity requires adjustment.</p> <p>The green pattern provides a purity check for three in-line tubes. In addition the pattern serves as a reference to locate geometrical distortions in these picture tubes. In the in-line tubes, the guns are in a horizontal position and the green gun is located in the center.</p> <p>Blue as well as the complementary colors are often used to check color performance.</p> <p>The Patterns (mainly RED) are used to ensure that there is no interference between the sound and chroma carrier.</p> <p>In addition to the primary and complementary colors 100% white can be selected as well as black pattern with color burst. Furthermore purity patterns are used for measuring unwanted amplitude and phase modulation of the subcarrier, as well as AM and PM noise as it occurs with VCRs.</p>
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GROUP	PATTERN	COMMENT
<b>Black / White Line</b>		H/V B/W line
<b>Application</b>	<p>The vertical pattern offers a quick check of a color monitor's horizontal bandwidth and the phase behavior of a video transmission as well as video amplification and color temperature.</p> <p>The horizontal pattern provides for a quick check of a color monitor's vertical bandwidth and the phase behavior of video transmission, as well as video amplification and color temperature.</p>	

GROUP	PATTERN	COMMENT
Gradual		Gradual Black/White, Red/White, Green/White, Blue/White
Application	The Greyscale pattern is used to locate faulty linearity of the video amplifier or greyscale setting. Nonlinearities mainly result in a compression of the white level.	

GROUP	PATTERN	COMMENT
Grid		Checker Board, Grid, Inverse Grid
Application	This pattern is mainly used for checking and aligning dynamic and corner convergence of TVs or monitors.	

GROUP	PATTERN	COMMENT
Grid		HDCP test and link-integrity check
Application	This pattern is mainly used to test DVI and HDMI receivers with HDCP. All DVI and HDMI options, including analyzer options, support HDCP production keys if the HDCP option is enabled.	

GROUP	PATTERN	COMMENT
Others	  	H Pattern, Dot Pattern, Circle Center
Application	<p>The H pattern is mainly used for checking dynamic alignment</p> <p>The Dot pattern is used for checking and adjusting the static convergence. The screen should contain pure white dots, whereas the presence of colored dots points to faults in focusing and convergence.</p> <p>The circle center is present in the corners of the screen to check and adjust the geometric distortion. The center cross is ideal to center TV monitors/screens and alignment of picture height/picture width. Furthermore, it is used to check the deflection linearity and pincushion correction.</p>	

## OSD Operation

Press **[MENU]** to display the OSD main menu, in order to access the following functions. To select a sub-menu, simply scroll to its listing in the Main Menu, then press the **Menu** button to enter the corresponding sub-menu.

The table found on the following page provides an outline of the sub-menu selections available from the Main Menu:

Menu	Sub-menu Selections
<b>PATTERN</b>	COLOR BAR, GRAY SCALE, PURITY, BLACKWHITE LINE, GRADUAL, GRID HDCP PATTERN, OTHERS, EXIT
<b>AUDIO SOURCE</b>	INTERNAL, EXTERNAL, OFF, EXIT
<b>HDCP SETUP</b>	OFF, ON, EXIT
<b>EDID ANALYSIS</b>	BK0. Binary List BK0. Vendor / Product Id BK0. Basic Display Parameters BK0. Color Characteristics BK0. Established Timings BK0. Standard Timings BK0. Detail Timings BK1. Binary List BK1. DTV Monitor Support BK1. Video Data Block BK1. Audio Data Block BK1. Other Data Block BK1. Detail Timings EXIT
<b>RESOLUTION</b>	720P50, 720P60, VGA60, EXIT
<b>SIGNAL TYPE</b>	DVI, HDMI, AUTO DETECT, EXIT
<b>INFORMATION</b>	RESOLUTION, VGA60, PATTERN, GRID AUDIO OFF, HDCP OFF, SIGNAL TYPE, AUTO DETECT, DVI, EXIT

# Specifications

<b>Supported Resolutions</b>	up to 720p @ 50Hz, 60Hz up to VGA @ 60Hz
<b>HDMI Compliance</b>	HDMI 1.2
<b>DVI Compliance</b>	DVI 1.0 (HDMI to DVI cable required)
<b>EDID Compliance</b>	VESA EDID v1.3 and EIA/CEA 861 version 3
<b>HDCP Compliance</b>	HDCP 1.1
<b>HDMI/DVI Bandwidth</b>	1.65Gbps (single link)
<b>Output Connector</b>	1 x HDMI
<b>Input Connector</b>	1 Tos-Link (Digital Audio)
<b>Audio Test Pattern</b>	Yes. 8 Channels LPCM, 48kHz sampling rate
<b>HDCP Test Pattern</b>	Yes
<b>Power Adapter</b>	5V DC, 2.6 Amps
<b>Video Test Pattern</b>	Yes, 35 video testing patterns

### **Technical Support**

StarTech.com's lifetime technical support is an integral part of our commitment to provide industry-leading solutions. If you ever need help with your product, visit [www.startech.com/support](http://www.startech.com/support) and access our comprehensive selection of online tools, documentation, and downloads.

### **Warranty Information**

This product is backed by a one year warranty. In addition, StarTech.com warrants its products against defects in materials and workmanship for the periods noted, following the initial date of purchase. During this period, the products may be returned for repair, or replacement with equivalent products at our discretion. The warranty covers parts and labor costs only. StarTech.com does not warrant its products from defects or damages arising from misuse, abuse, alteration, or normal wear and tear.

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