



Gefentv

HDMI[™] Signal Generator

GTV-HDMI-SIGGEN

User Manual

www.gefentv.com

ASKING FOR ASSISTANCE

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Notice

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Rev X3

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INTRODUCTION

Congratulations on your purchase of the Signal Generator. Your complete satisfaction is very important to us.

Gefen TV

Gefen TV is a unique product line catering to the growing needs for innovative home theater solutions. We specialize in total integration for your home theater, while also focusing on going above and beyond customer expectations to ensure you get the most from your hardware. We invite you to explore our distinct product line and hope you find your solutions. Don't see what you are looking for here? Please call us so we can better assist you with your particular needs.

The Gefen TV Signal Generator

The Gefen TV Signal Generator is a hand-portable, cost-effective testing tool that allows installers to locate and eliminate problems with HDTV Equipment and Displays, as well as calibrate equipment on-the-spot.

How It Works

Simply connect the HDMI output port of the Gefen TV Signal Generator to your HDTV display. Power-cycle all equipment. Activate the On-Screen Display (OSD) Menu via the remote control and select the tests that you would like to perform. The easy-to-use on-screen menu system will guide you through the options and features. You can feed digital or analog audio into the Signal Generator rear panel in order to hear music while testing displays rather than hearing the default high-pitched audio test tone.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE SIGNAL GENERATOR

- The Gefen TV Signal Generator can be customized using it's programming application. Please download this application from Gefen's website at: <http://www.gefen.com/kvm/support/download.jsp>
- HDMI 1.2 / HDCP 1.0 / DVI 1.0 compliant.

FEATURES

Features

- Multi-format video output for SD and HD video
- LCD display of function being performed
- Test patterns include: color purity, gradual, B&W, grid, circle, etc.
- Provides total 35 patterns and 39 timings
- PAL and NTSC frame rates are fully supported
- Overscan function to zoom in on undersized video input
- RGB & YUV color spaces / PC & HDTV timings supported
- Optical and analog audio inputs
- HDMI 1.2, HDCP 1.1 and DVI 1.0 compliant
- Small form factor, easy to transport, audio tone output
- Supports HDCP signal verification pattern (Pattern 39)

Package Includes

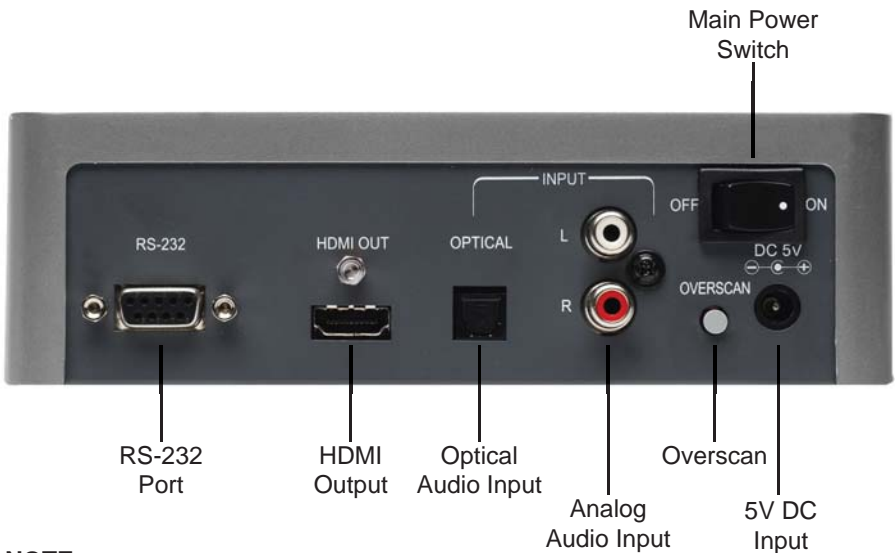
- (1) Gefen TV Signal Generator
- (1) 6 foot HDMI cable (M-M)
- (1) 5V DC Power Supply
- (1) User's Manual

PANEL DESCRIPTIONS

Front Panel



Back Panel



NOTE:

1. OVERSCAN Button

By default, the Gefen TV Signal Generator is set to underscan mode. If your video signal does not fill the entire display, press this button once to switch to overscan mode. You can press the button a second time to revert to underscan mode.

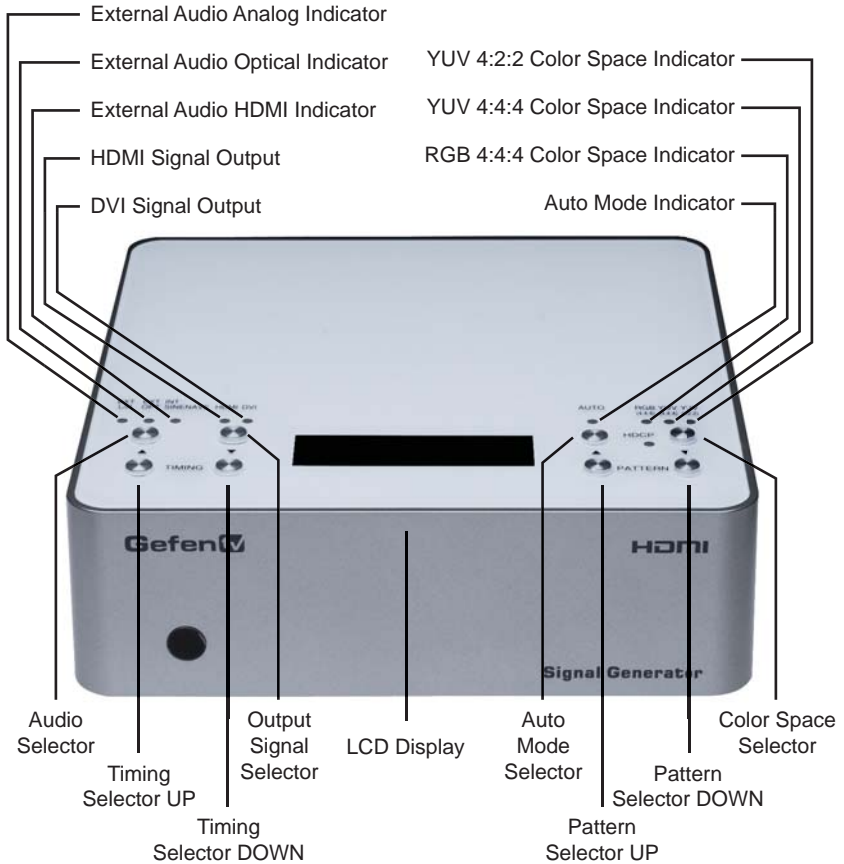
2. HDMI OUT

The HDMI output can be connected to an HDMI display using HDMI cable or to a DVI display using HDMI to DVI cable or Gefen adapter from HDMI to DVI.

3. RS232 Communication Port

Connect to the RS-232 serial port of your PC to customize the unit using the appropriate application.

TOP PANEL DESCRIPTIONS



CONNECTING AND OPERATING THE SIGNAL GENERATOR

How to connect the Gefen TV Signal Generator

1. Connect the HDMI OUT of the Gefen Signal Generator to the HDMI of your HDMI display or device.
2. Plug the 5V power supply into the Gefen TV Signal Generator.
3. Turn on the display first.
4. Turn on the Gefen TV Signal Generator second.

You may need to press the OVERSCAN button if the signal from the Gefen TV Signal Generator does not fill the entire screen.

If you are not receiving a picture, check your power supply. Make sure the Gefen TV Signal Generator is plugged in and that the unit is turned on. If your display has more than one HDMI port, make sure that your display is set up to receive signals from that input. If you're testing HDMI, make sure that the Output Signal Selector is set to HDMI.

If you are still unable to receive a picture, it is possible that the current output timing is not supported by your monitor. The current timing (resolution and refresh rate) are displayed in the LCD window on the unit. Use the Timing Selector UP or DOWN buttons to select a different timing. See chart on page 8.

Once you have established a timing that is accepted by your display, you can select from a wide array of video test patterns by using the Pattern Selector UP or DOWN buttons (see table beginning on page 9).

Checking stereo or multi-channel audio capability

1. Connect the HDMI OUT to the HDMI IN of your A/V receiver (if applicable).
2. Connect the HDMI OUT of the Gefen TV Signal Generator to the HDMI IN of your A/V receiver.
3. Connect the HDMI OUT from the A/V receiver to the HDMI IN of your display.
4. Set the Audio Output Selector to INT SINEWAVE. (If you are using the optional digital optical or analog stereo audio inputs, please select those instead.)
5. Use the Pattern Selector buttons to select P38 AUDIO and follow the onscreen directions.

The audio test is capable of verifying 2, 4, 6 and 8 discrete channel audio.

CONNECTING AND OPERATING THE SIGNAL GENERATOR

External Audio Inputs

In addition to using the internal sinewave for checking audio, the Gefen TV Signal Generator allows you to use your own audio source and accepts both analog and digital audio signals. For digital audio connections, connect an optical cable from your audio source to the OPTICAL input on the back of the unit and select EXT OPT by pressing the Audio Selector button. For analog connections, connect a stereo RCA cable to your audio source and plug the other end into the Analog Input jacks and select EXT L/R by pressing the Audio Selector button. To prevent a reversed stereo image, make sure that the left and right channels are connected properly.

Testing DVI

You can test DVI devices by setting the Output Signal Selector to DVI. This button will toggle between HDMI and DVI color space. Simply connect the HDMI OUT from the Gefen TV Signal Generator to the DVI IN of the device you wish to test.

Color Space

You can switch color spaces by pressing the Color Space Selector button. Pressing this button will cycle through RGB, YUV2 and YUV4 color spaces. HDMI supports all color spaces but DVI only supports YUV2.

HDCP compliance

To check HDCP compliance, select a timing that is accepted by your display and use the Pattern Selector buttons to select P39 HDCP-Protect from the list of patterns.

You can also check audio in this mode by setting the Audio Output Selector to INT SINEWAVE.

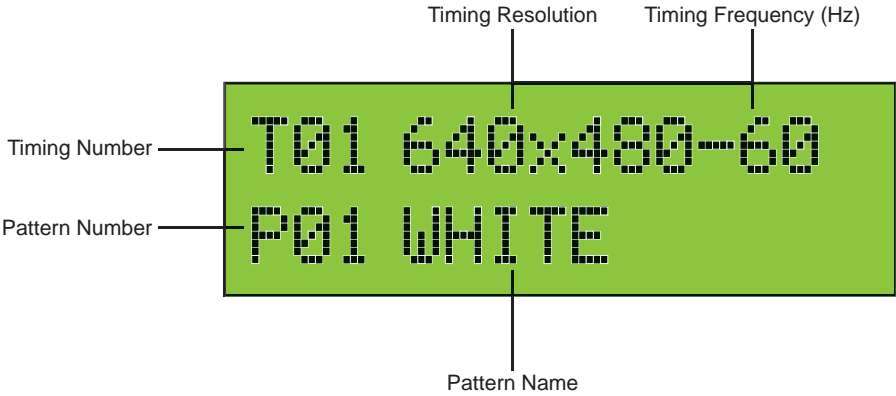
HDCP testing can only be verified through HDMI or DVI connections.

Automatic Testing

The Gefen TV Signal Generator has the capability to auto select specific timings from the table provided on page 8.

Press the AUTO button to start auto mode. To stop the auto mode, press the AUTO button again.

LCD LAYOUT



TIMING TABLE

No.	Resolution	Hz	No.	Resolution	Hz
T01	640x480	60	T19	1600x1200	60
T02	640x480	72	T20	1920x1200	60
T03	640x480	75	T21	720x480i	59
T04	640x480	85	T22	720x480i	60
T05	800x600	56	T23	720x480p	59
T06	800x600	60	T24	720x480p	60
T07	800x600	72	T25	1280x720p	59
T08	800x600	75	T26	1280x720p	60
T09	800x600	85	T27	1920x1080i	59
T10	1024x768	60	T28	1920x1080i	60
T11	1024x768	70	T29	1920x1080p	59
T12	1024x768	75	T30	1920x1080p	60
T13	1024x768	85	T31	720x576i	50
T14	1280x960	60	T32	720x576p	50
T15	1280x960	85	T33	1280x720p	50
T16	1280x1024	60	T34	1920x1080i	50
T17	1280x1024	75	T35	1920x1080p	50
T18	1280x1024	85			

PATTERN TABLE

No.	Name	Description	Application
P01	White	Purity Pattern White (100% Y) 3 primary colors: Red, Green, Blue 4 Additional colors: Magenta, Yellow, Cyan and Black	<ul style="list-style-type: none"> - Brightness control - Purity checks and adjustment - Interference between sound and chroma carrier - Color A.G.C. - Chroma writing current of video recorders - White setting - Synchronization - FM demodulator (white level) - Beam current of picture tube - Luminance writing current
P02	Blue		
P03	Red		
P04	Magenta		
P05	Green		
P06	Cyan		
P07	Yellow		
P08	Black		
P09	RED Setting	Gradient Pattern Press the AUTO button to enter the user menu for the percentage adjustment of each color.	<ul style="list-style-type: none"> - Brightness control - Luminance writing current - Linearity of video amplifier - Overall color performance - Amplitude response resolution - Linearity of chroma amplitude
P10	Green Setting		
P11	Blue Setting		
P12	Gray Setting		
P13	Color Bar	Color Bar 8 vertical bars: White, Yellow, Cyan, Green, Magenta, Red, Blue and Black	<ul style="list-style-type: none"> - Overall color performance - Burst keying - Subcarrier regeneration - Matrix circuit check - RGB amplifiers - Color delay versus B/W signal saturation
P14	Gray -8	Grayscale Full screen linear staircase signal to white Steps: 8/16/32/64/256	<ul style="list-style-type: none"> - Brightness + contrast circuitry - Grayscale tracking - Linearity of video amplifier
P15	Gray-16		
P16	Gray-32		
P17	Gray-64		
P18	Gray-256		
P19	V-Line On/ Off	Black White Vertical Full screen linear vertical bar signal with black/white intervals of 1 and 12 pixels	<ul style="list-style-type: none"> - Check bandwidth and phase behavior of a video transmission - Verify video amplifier - Verify color temperature
P20	BW-12		

PATTERN TABLE

No.	Name	Description	Application
P21	H-Line On/Off	Black-White Horizontal Full screen linear horizontal bar signal black/white intervals of 1/3/6 pixels	<ul style="list-style-type: none"> - Check bandwidth and phase behavior of a video transmission - Verify video amplifier - Verify color temperature
P22	Hor-3		
P23	Hor-6		
P24	Multi-burst	Multi-burst Full screen definition pattern of frequencies 0.5, 1.0, 2.0, 4.0, 4.8, and 5.8 MHz for 625 line systems	<ul style="list-style-type: none"> - Video bandwidth - Check luminance amplifier in B/W - Amplitude response resolution - Check resolution of monitors and video recorders
P25	Pluge	Pluge Pattern Three vertical bar pluge pulses and 3 horizontal pluge pulse boxes	<ul style="list-style-type: none"> - Calibrate black level - Calibrate black levels: super-black, normal-black and near-black
P26	Grid-1	Grid Full screen grid with black/white intervals of 1 and 6 pixels	<ul style="list-style-type: none"> - Static convergence - Dynamic convergence - Pin-cushion correction - E/W-N/S corrections - Amplitude response
P27	Grid-36		
P28	Gra-256-R	Gradient Full screen linear 256 step staircase signal from black to red, green, or blue	<ul style="list-style-type: none"> - Brightness + contrast circuitry - Linearity of video amplifier
P29	Gra-256-G		
P30	Gra-256-B		
P31	Circles	Circles Black circle on white background, 640x480 has 4 by 3 total 12 circles, 800x600 has 5 by 3 total 15 circles, and 1024x768 has 6 by 4 total 24 circles	<ul style="list-style-type: none"> - Overall linearity - Overall geometry - Framing - Reflections

PATTERN TABLE

No.	Name	Description	Application
P32	EDID	EDID Reader Press the AUTO button to initiate an EDID read of the currently connected display.	- Extremely useful for examining a display's EDID for errors and capabilities - Detailed descriptions of various aspects of the EDID are listed on multiple pages
P33	Gefen-1	Gefen Patterns Gefen specifically designed patterns	- Multiple purpose
P34	Gefen-2		
P35	Gefen-3		
P36	Gefen-4		
P37	Crosshatch	Crosshatch Vertical and horizontal hatch pattern. White lines on a black	- Multiple point color convergence - Overall geometry, rotation, and overscan
P38	Audio	Audio PCM sine wave tone sent to either the analog, optical, or internal HDMI output. 2, 4, 6, or 8 channel	- Multi-channel audio compatibility
P39	HDCP	HDCP-Produce Green/Blue horizontal bars with HDCP verification and data comparison on the upper first third area of black background	- HDCP verification - HDCP data comparison - HDCP authentication check - HDCP transmitting encrypted data check

SIGNAL GENERATOR PROGRAMMING APPLICATION

The RS-232 program can be downloaded from the download section of Gefen's website at: <http://www.gefen.com/kvm/support/download.jsp>

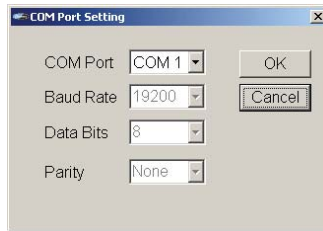
1. Main Window

Double-click the executable file to launch the remote control application. The main window will show up. Click the Connect button to link to the unit.



2. Select COM Port to Control

The application will prompt you to select which COM port connected to the unit you want to control. Select from COM1 or COM2 and click OK.



Pin	Definition		Pin	Definition
1	NC		1	NC
2	TxD		2	RxD
3	RxD	→	3	TxD
4	NC		4	NC
5	GND		5	GND
6	NC	←	6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

SIGNAL GENERATOR PROGRAMMING - TIMING

Click on the TIMING button to launch the TIMING selection window. Click “Show List” button to select from TIMING list and adjust the Horizontal/Vertical/ Pixel Clock settings, when complete, click “Run Timing” button to start the output of selected timing (resolution/frequency.)

Timing No. Select
Timing No.

Horizontal

Total	<input type="text" value="800"/>	Pixels	<input type="text" value="31.778"/>	µS
Active	<input type="text" value="640"/>	Pixels	<input type="text" value="25.422"/>	µS
Pulse Delay	<input type="text" value="16"/>	Pixels	<input type="text" value="0.636"/>	µS
Pulse Width	<input type="text" value="96"/>	Pixels	<input type="text" value="3.813"/>	µS
Rate	<input type="text" value="31.469"/>	kHz		

Vertical

Total	<input type="text" value="625"/>	Lines	<input type="text" value="16.683"/>	mS
Active	<input type="text" value="480"/>	Lines	<input type="text" value="15.253"/>	mS
Pulse Delay	<input type="text" value="10"/>	Lines	<input type="text" value="0.310"/>	mS
Pulse Width	<input type="text" value="2"/>	Lines	<input type="text" value="0.064"/>	mS
Rate	<input type="text" value="59.940"/>	Hz		

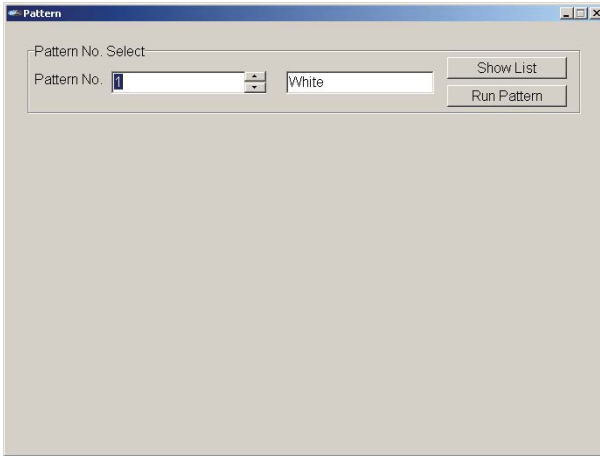
Pixel Clock: MHz

List of Timings

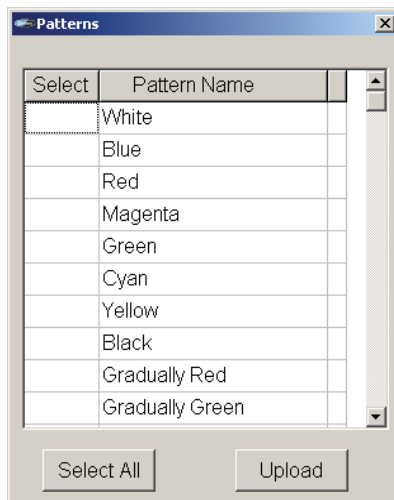
Select	Timing Name	Pixel Rate	Horizontal	Vertical
<input type="checkbox"/>	640x480-60	25.175 MHz	31.469 KHz	59.940 Hz
<input type="checkbox"/>	640x480-72	31.500 MHz	37.861 KHz	72.809 Hz
<input type="checkbox"/>	640x480-75	31.500 MHz	37.500 KHz	75.000 Hz
<input type="checkbox"/>	640x480-85	36.000 MHz	43.269 KHz	85.008 Hz
<input type="checkbox"/>	800x600-56	36.000 MHz	35.156 KHz	56.250 Hz
<input type="checkbox"/>	800x600-60	40.000 MHz	37.879 KHz	60.317 Hz
<input type="checkbox"/>	800x600-72	50.000 MHz	48.077 KHz	72.188 Hz
<input type="checkbox"/>	800x600-75	49.500 MHz	46.875 KHz	75.000 Hz
<input type="checkbox"/>	800x600-85	56.250 MHz	53.674 KHz	85.061 Hz

SIGNAL GENERATOR PROGRAMMING - PATTERN

Click the PATTERN button to launch the PATTERN selection window. Click “Show List” button to select from TIMING list and adjust the Horizontal/Vertical/ Pixel Clock settings, when complete, click “Run Timing” button to start the output of selected timing (resolution/frequency.)



List of Patterns



SIGNAL GENERATOR PROGRAMMING - UPLOADING

Click and select the “Program” from “Edit” option of the tool bar to launch the Program window.

Program the desired sequence of timing/pattern/unit/show time, then click “Upload” to send the program to the unit.

The screenshot shows a window titled "Program" with the following fields and table:

Timing: 640x480-60
Pattern: White
Unit: Second
Show Time: 1

Seq	Timing	Pattern	Unit	Show Time
0				
1				
2				
3				
4				
5				
6				

Note. For every timing pattern have to shown at least 3 seconds

Upload

Click and select the “Save as” from “File” option of the tool bar to save your program. You click the “Open” from “File” option of the tool bar later on to load your saved program.

SPECIFICATIONS

Single Link Video Bandwidth	165 MHz
Audio Input	Digital Optical, Left / Right Analog RCA
Video Output	HDMI (Type A Connector)
Power Supply	5V DC 3.2A Power Supply (AC 90-240V)
Dimensions	11" W x 5" D x 1¾" H
RS-232	DB-9 type C
Weight	1.5 lbs

WARRANTY

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment 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 ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, please visit Gefen's Warranty web page at <http://www.gefen.com/kvm/aboutus/warranty.jsp>

PRODUCT REGISTRATION

Please register your product online by visiting Gefen's web site at <http://www.gefen.com/kvm/Registry/Registration.jsp>

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