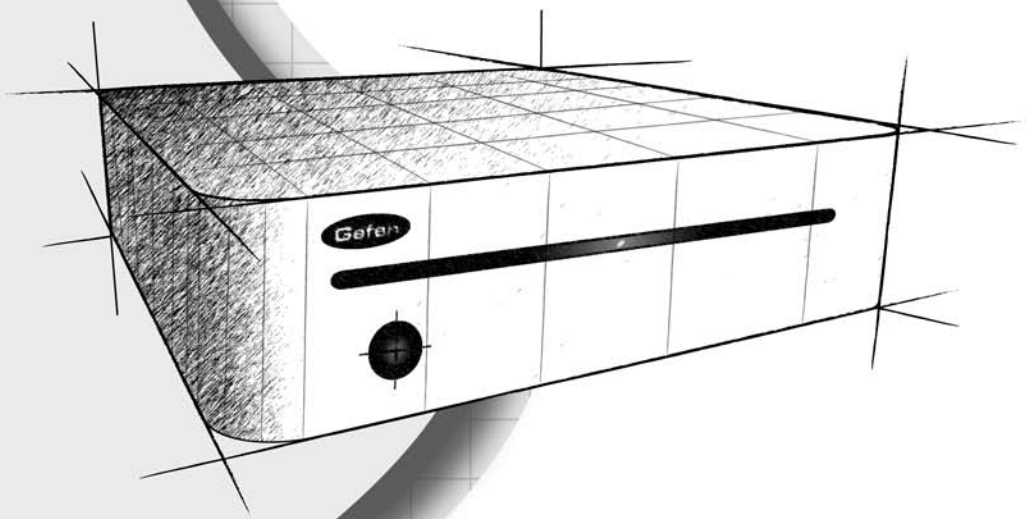
Gefen TV Signal Generator

USER MANUAL



www.gefen.com

ASKING FOR ASSISTANCE

Technical Support:

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Notice

Gefen Inc. reserves the right to make changes in the hardware, packaging and any accompanying documentation without prior written notice.

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TABLE OF CONTENTS

INTRODUCTION

Thank you for purchasing the Gefen TV Signal Generator.

The Gefen TV Signal Generator offers a long list of advanced features. It provides still and moving test patterns in SD and HD formats. It will also output audio tone in 2, 4, 6, and 8 channel over HDMI. There's also a test that will output an HDCP encrypted signal to test HDCP-compliancy. Best of all, the Gefen TV Signal Generator is portable, cost effective, and is a useful tool that allows video professionals to calibrate and test video equipment and displays.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE HOME THEATER SCALER

- Gefen TV Signal Generator will work with all HDMI and DVI displays.
- Please download the RS-232 program from the download section of Gefen's website at: http://www.gefen.com/kvm/support/download.jsp

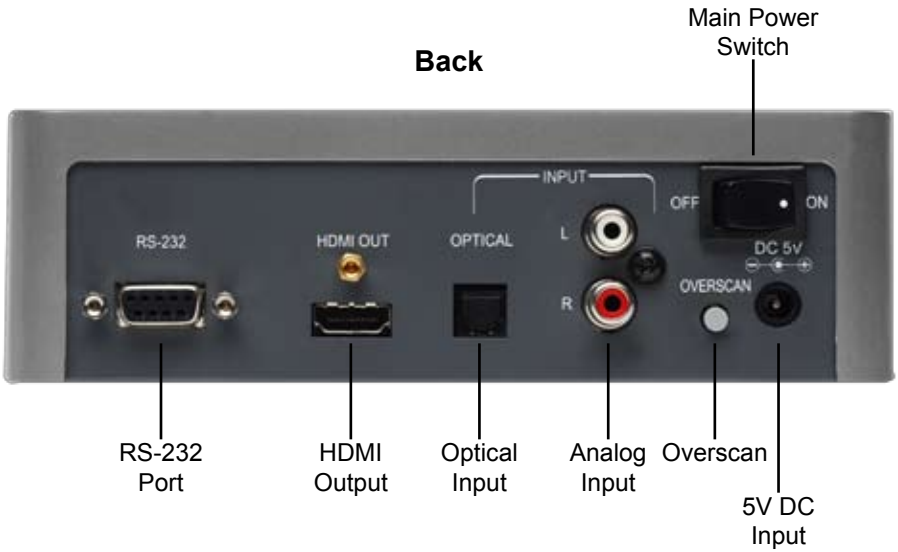
FEATURES

- HDMI v1.2, HDCP 1.1 and DVI 1.0 compliant
- Multi-format output for HD and SD video
- Still and moving test patterns
- Supports HDCP signal verification pattern (P39)
- Supports multi-channel audio testing.
- Portable size design
- Over 35 Still & Motion Patterns
- Internal HDMI & External Digital & Analog audio connectors
- RGB & YUV Color Spaces Supported
- PC & HDTV Timings Supported
- PAL & NTSC frame rates
- On-panel LED display and LED indicators
- Remote control
- Supports RS-232 control
- PC software application is downloadable at:
  http://www.gefen.com/kvm/support/download.jsp

INCLUDES:

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

PANEL LAYOUT



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.

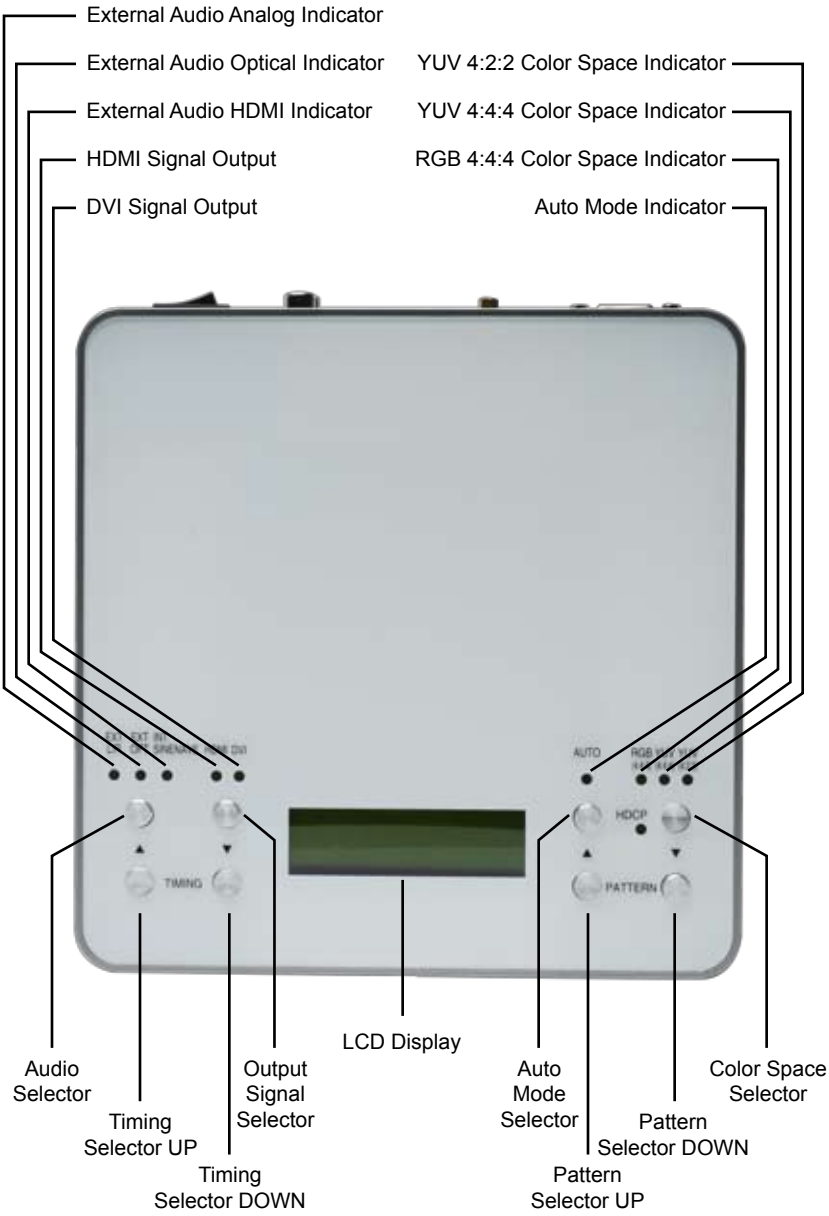
2. HDMI OUT

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 COM1 or COM2 port of your PC to control the unit remotely using the appropriate application.

Diagram 1


External Audio Analog Indicator
External Audio Optical Indicator
External Audio HDMI Indicator
HDMI Signal Output
DVI Signal Output
YUV 4:2:2 Color Space Indicator
YUV 4:4:4 Color Space Indicator
RGB 4:4:4 Color Space Indicator
Auto Mode Indicator
AUTO
HDCP
TIMING
PATTERN
LCD Display
Audio Selector
Timing Selector UP
Timing Selector DOWN
Output Signal Selector
Auto Mode Selector
Pattern Selector UP
Pattern Selector DOWN
Color Space Selector

How to connect the Gefen TV Signal Generator

- Connect the HDMI OUT of the Gefen Signal Generator to the HDMI of you HDMI display or device
- Plug the 5V power supply into the Gefen TV Signal Generator
- Turn on the display first.
- Turn on the Gefen TV Signal Generator second

You should now be receiving a default signal from the Gefen TV Signal Generator.

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 port #. 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 7.

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 8).

Checking stereo or multi-channel audio capability

- Connect the HDMI OUT to the HDMI IN of your A/V receiver (if applicable).
- Connect the HDMI OUT of the Gefen TV Signal Generator to the HDMI IN of your A/V receiver.
- Connect the HDMI OUT from the A/V receiver to the HDMI IN of your display.
- Set the Audio Output Selector to INT SINEWAVE.
- Use the Pattern Selector buttons to select P38 AUDIO and follow the on-screen directions.

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

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-Produce 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 7.

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

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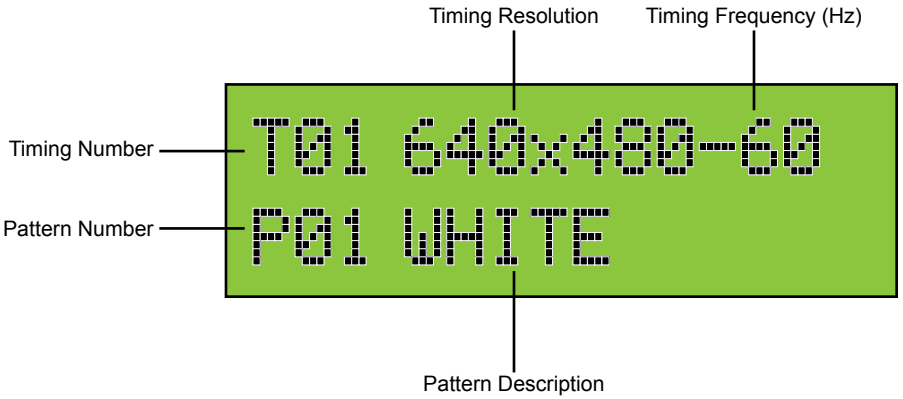
LCD LAYOUT



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	- 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	Grad-Red	**Gradual Pattern** Gradual transition of colors	- Brightness control - Luminance writing current - Linearity of video amplifier - Overall color performance - Amplitude response resolution - Linearity of chroma amplitude
P10	Grad-Green		
P11	Grad-Blue		
P12	Grad-Gray		
P13	Color Bar	**Color Bar** 8 vertical bars: White, Yellow, Cyan, Green, Magenta, Red, Blue and Black	- 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	- 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	- Check bandwidth and phase behavior of a video transmission - Verify video amplifier - Verify color temperature
P20	BW-12		

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	- 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	- Video bandwidth - Check luminance amplifier in B/W - Amplitude response resolution - Check resolution of monitors and video recorders
P25	Pludge	**Pluge Pattern** Three vertical bar pluge pulses and 3 horizontal pluge pulse boxes	- 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	- 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	- 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	- Overall linearity - Overall geometry - Framing - Reflections

No.	Name	Description	Application
P32	BW_UD	**Black and White Up/Down** Full screen filled with upper half of 100% white and lower half of 100% black	- Brightness control - Purity checks and adjustment - White setting - Synchronization
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

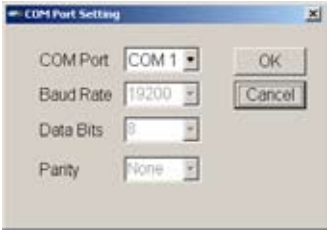
The RS-232 program can be downloaded from the download section of Gefen's website at: http://www.gefen.com/kvm/support/download.jsp

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

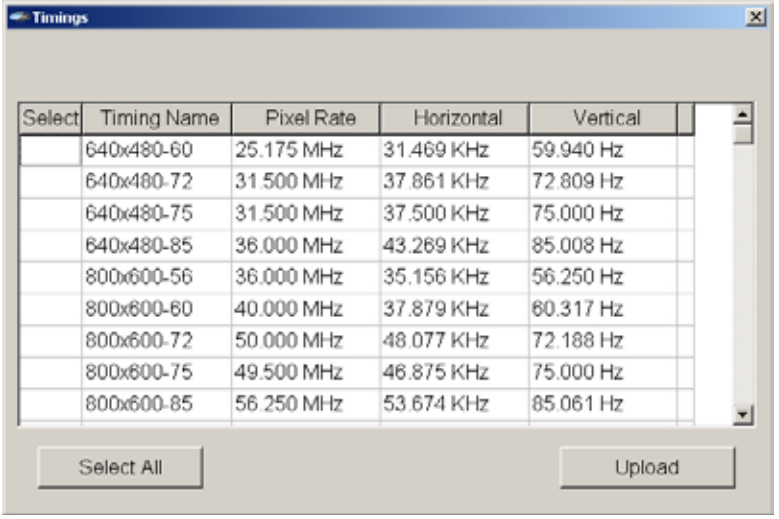
The application will prompt you to select which COM port connected to the unit you want to control. Select from COM1 or COM2 and click OK.



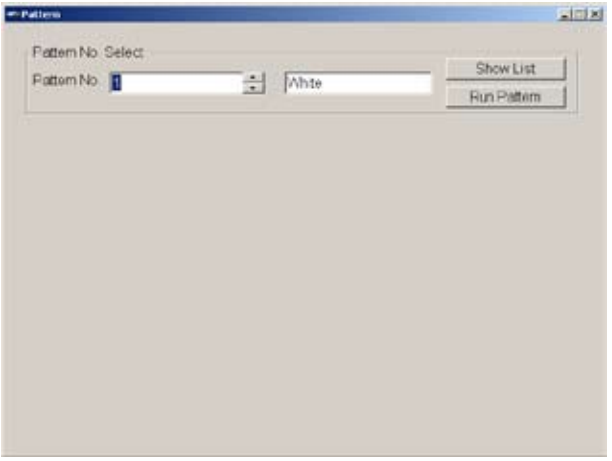
Pin	Definition		Pin	Definition
1	NC		1	NC
2	TxD		2	RxD
3	RxD	→	3	TxD
4	NC		4	NC
5	GND		5	GND
6	NC	←	6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

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.)

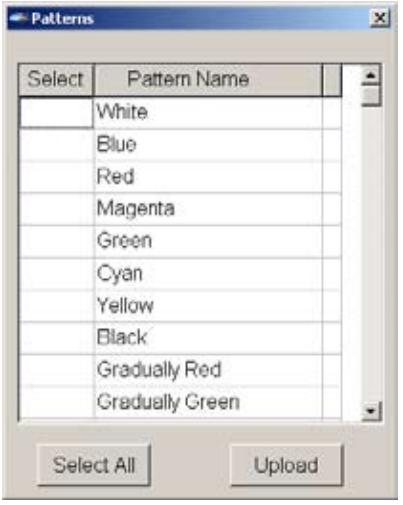
List of Timings



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.)

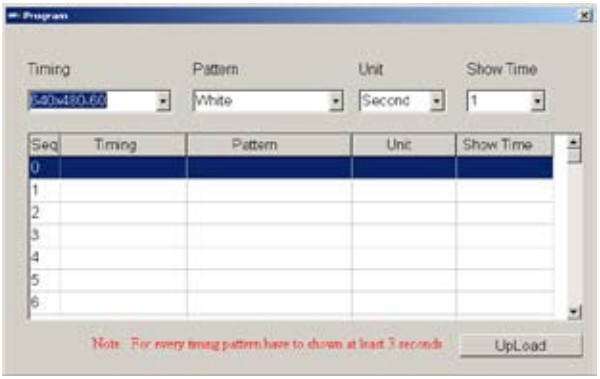


List of Patterns



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.



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.

SIGNAL GENERATOR SPECIFICATIONS

Single Link Video Bandwidth……..……...……165 MHz

Audio Input……..……TOSlink, Left / Right RCA

Video Output…….HDMI (type A connector)

Power Supply…….……..5V DC 3.2A power supply (AC 90-240V)

Weight…….....…..1.5 lbs

Dimensions…….....11” W x 5” D x 1¾” H

RS-232…….....DB-9 type C

Off / On switch…….....……Power

Overscan button…….....……..Toggle

I/R receiver…….. Remote control option