VESA®
Video Electronics Standards Association

2150 North First St., Suite 440
San Jose, CA

Phone: (408) 435-0333
Fax: (408) 435-8225

VESA Standard

Connector and Signal Standards for Stereoscopic Display Hardware

Version 1

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Purpose:

To establish a standard connector for the attachment of stereoscopic viewing devices, such as LCD shutters, shutter glasses, etc., which will provide power and the stereo synchronization signal to these products.

Background & Summary:

The use of stereoscopic viewing modes which rely on the alternate display of left- and right-eye fields is becoming more important in the computer industry. Devices to enable this mode require a "stereo sync" signal, which is used to prevent each eye in turn from seeing the "wrong" field. Until now, no standard connection was defined for these devices.

General Information and Intent of Standard

This document is intended to establish standards for the physical connector and signals used to support stereoscopic display hardware of the type using sequential display of left and right images, with hardware means of shuttering the viewer's eye such that each eye sees only the intended image. Common implementations include LC (liquid crystal) shutter glasses, or similar systems relying on polarization of the images. In any case, the systems intended to be covered by this standard require the use of a stereo synchronization signal which identifies by its state which of the two images is currently being displayed. This standard provides a specification of the physical connector to be used to provide this signal regardless of the physical location of this port within a computer system, and the specifications for the signal itself.

Intellectual Property Statements

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Software Support - Please note that VESA has defined standard software interfaces to stereo hardware, via the VESA BIOS Extension standards VBE 3.0+ and VBE/AF2.0+. The reader is referred to these standards, available from the Video Electronics Standards Association, for further information.

Support - Clarifications and application notes to support this standard may be available. To obtain the latest standard and any suppot documentation, contact the Video Electronics Standards Association.

If you have a product which incorporates a stereo connector per this standard, you should ask the company which manufactured your product for assistance. If you are a manufacturer, VESA can assist you with any clarifications you may require regarding this standard. All questions, comments, or reported errors should be submitted in writing to VESA, either by fax (1-408-435-8225, direct your fax to "Technical Support"), e-mail (support@vesa.org), or to the address shown on the first page.

Acknowledgements

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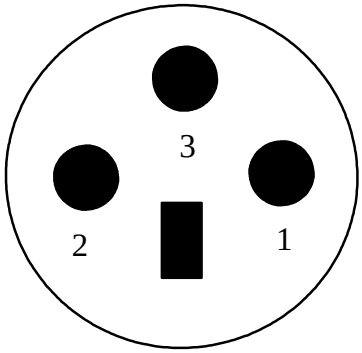
Hewlett-Packard Co.
Stereo Workgroup Leader
VESA Monitor Committe

1. Physical Connector and Pinout

1.1- The connector to be used for the interface to stereoscopic hardware shall be a 3-pin mini-DIN, with signal assignments as shown in the drawing below. The receptacle (female) connector shall be used by the host controller, while the plug (male) connector will be supplied by the stereoscopic hardware.

3-pin mini-DIN receptacle, front face



Pin	Signal
1	+5 VDC
2	Ground
3	Stereo Sync.

Connector:
IEC-1076-4-105
or equivalent.

2. Signal Standards

2.1 Stereo Synchronization

The stereo synchronization signal supplied by the host to the stereo hardware shall comply with the following specifications:

1. Level: Standard TTL levels. A logical "1" (high) state shall be recognized whenever the signal level is at or above 2.4 VDC; similarly,a logical "0" (low) state shall be recognized whenever the signal level is at or below 0.8 VDC. The output driver shall not be required to sink more than 10 mA in the low state, nor source more than 0.5 mA in the high state.
2. Polarity: The logical "1" (high) state of the stereo synchronization signal will correspond to the display of the left-eye image, while the logical "0" (low) state will correspond to the display of the right-eye image.
3. Timing/duty cycle: The stereo sync signal shall be a nominal 50% duty cycle square wave at one-half the vertical sync. rate currently in use. The transitions of the stereo synchronization signal shall take place within three horizontal lines of the start of the vertical synchronization pulse, but in no case shall the transition of this signal occur prior to the start of vertical blanking.

NOTE: This signal definition is intended to be compatible with the definition of the stereo synchronization signal as documented in the VESA Enhanced Video Connector and Plug and Display standards.

2.2 Power

The power supplied by host on this connector shall comply with the following specifications:

1. Voltage: +5 VDC, +/- 10%. NOTE: Some existing hardware using similar connectors may provide +12 VDC; therefore, equipment designed to plug into the VESA Stereo Connector must be capable of withstanding at least +12 VDC on this input, even though VESA-standard hosts will not provide more than 5.5 VDC per this specification.

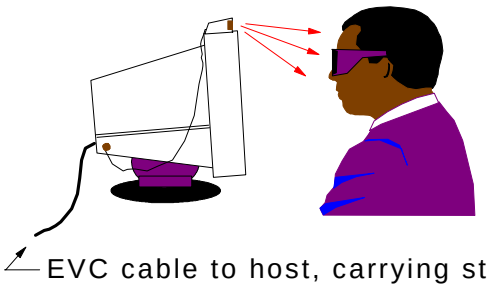
2. Current: The host must be capable of providing at least 300 mA on this connection, but should also limit the current provided to no more than 1.0 A

3. Physical Implementation

It is not the intention of this standard to mandate the location of the stereo connector within any computer system or peripheral; manufacturers are free to provide this connection at any location they choose. However, it is recommended that the connector be placed in a location which will be readily accessible by the user, and which will permit the use of "tethered" (wired-connection) stereo eyewear without difficulties resulting from the routing of the cable, etc.. It is further recommended that the connector be clearly identified as a stereo connection port through appropriate labels, logos, etc., to avoid possible confusion with other connectors within the system.

While the location of the connector is not specified in this standard, the preferred implementation will use the VESA EVC or P&D connectors to provide the stereo sync signal to the display, and then the VESA Stereo Connector may be provided by the display for the connection of stereo hardware. When using a display with no stereo connector, such a connection may be provided by means of a video cable connecting to the host's EVC or P&D connector, and providing stereo connection via a break-out of the appropriate lines.

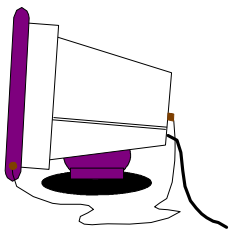
The following diagrams are intended solely as examples of possible usages of the VESA Stereo Connector; no recommendation of or preference for these particular locations should be inferred.



Wireless (IR) stereo eyewear, used with IR emitter connected to VESA stereo connector on the side of the monitor.

EVC cable to host, carrying stereo sync to monitor

User with wired stereo eyewear, connected to VESA stereo connector mounted on PC front panel.



Stereo shutter panel added to existing monitor, connected to VESA stereo connector on the monitor's rear panel.