

HR HALL RESEARCH

Miniature Video-over-CAT5 Extension System

Model UV-1

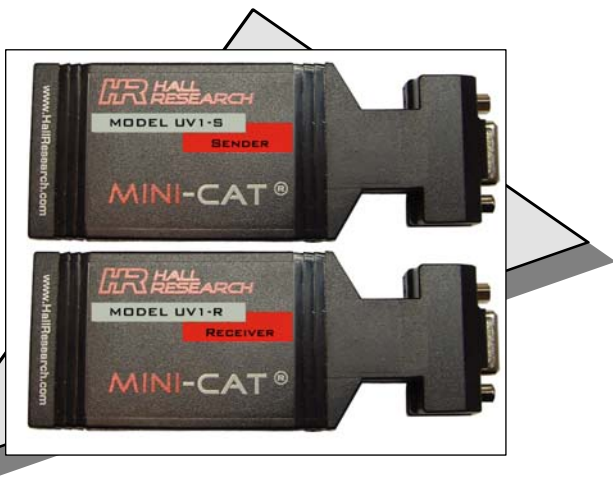
VGA Extension

Model UV-1-CP

Component Video (RGB or YPbPr) Extension

Model UV-1-CV

Composite Video and Stereo Audio Extension



CUSTOMER SUPPORT INFORMATION

Order toll-free in the U.S. 800-959-6439


FREE technical support, Call 714-641-6607 or fax 714-641-6698

Mail order: Hall Research, 1163 Warner Ave., Tustin, CA 92780

Web site: www.hallresearch.com • E-mail: info@hallresearch.com

UMA1053, Rev. A

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FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been designed and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are intended to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.



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1. Introduction

1.1 Model UV-1 (for VGA)

The Model UV1 is a single channel UTP (CAT5) VGA video extender consisting of a sender (UV1-S) and a receiver (UV1-R) sold together as a pair. The sender converts a PC's VGA signal into a format that can be transmitted using a single inexpensive and commonly available Category-5 Unshielded Twisted Pair (UTP) cable with RJ45 connectors, which is used in most Local Area Networks.

At the receiving (remote) end, the Cat5 signal is converted back to VGA for connection to your monitor, projector or other display device.

The sender and receiver are housed in a small plastic enclosure and include a HD15 video connector and a RJ45 connector for the Cat-5 cable. Included with the pair of devices are: one small power adapter (can be powered at either end), and a short adapter cable for easy connection to the standard HD-15 connector of the PC.

The Mini-Cat® brand extenders can drive CAT5 LAN cables to 500 feet (150 meters) with little to no degradation of video quality.

1.2 Model UV-1-CP (for Component Video (RGB or YPbPr))

This variation of the UV-1 includes cables for each end that allow you connect the sender to the 3 RCA connectors of DVD-players or other video sources that output Component Video (RGB or YPbPr, or YCbCr) and the receiver to connect to compatible displays such as HDTV's or high-end monitors. The actual sender and receiver units are identical to the standard UV-1 and, in fact, you can use the pair to send VGA video if you substitute VGA cables.

1.3 Model UV-1-CV (for Composite Video and Stereo Audio)

This variation of the UV-1 includes cables for each end that allow you to connect the sender to the composite Video (Yellow), Left Audio (White) and Right Audio (Red) connectors of your A/V equipment. It can actually send the signals in excess of 2000 feet (609 meters), though both ends need to be powered if the distance is beyond 500 ft.

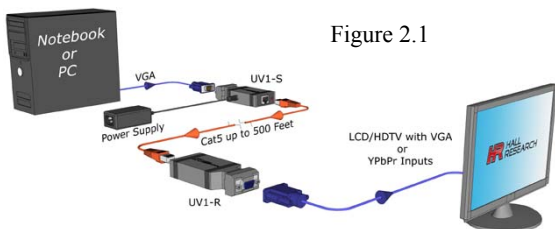
Unlike the UV-CP, the UV-1-CV is not compatible with VGA signals.

1.4 Features

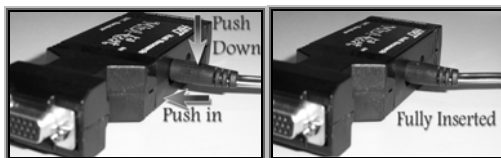
- Eliminates the need for bulky, expensive and hard to build multi-coaxial cables for High-Resolution A/V extension
- Amplifies the signal for clean and crisp transmission
- Differential signaling eliminates ground loops and noise
- Handles resolutions up to 1920x1440 at 60 Hz
- Rugged, Reliable, Compact size
- Only one end requires power in most applications. The power supply connects at either the sending or the receiving end, whichever is most convenient based on cable length.
- Drive standard CAT5 cables to 500 feet for (VGA and Component video versions) or to 2000 feet for (Composite Video and Stereo Audio version)
- Available with EDID Emulation, both Standard and Custom Programming available

2. Installation

1. Connect the VGA in (HD-15) connector of the UV1-Sender to the computer's video port using the supplied cable (see figure 2.1).



2. Connect the supplied power adapter to the power input connector on either of the units. Note that only one power adapter is normally needed to power both the sender and receiver. It can be plugged into either the sender or receiver. Please be sure to insert the power connector fully. You may need to push down on the connector as shown below. Check the red light next to the RJ45 connector to verify unit's power.



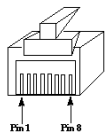
Recommended Power Supply Connection

- ❑ Cat 5 cable length of 0 to 150 feet:
It does not matter in which end you plug the power supply. Do whatever is most convenient for your setup.
 - ❑ Cat 5 cable length of 150 to 300 feet:
We recommend that you plug the power supply at the receiving end.
 - ❑ Cat 5 cable length of 300 to 500 feet:
You should plug the power supply at the receiving end, however, depending the grounding of the video source (PC) and the display device at the remote end, you may need to purchase an additional power supply to power up both ends.
 - ❑ Cat 5 cable lengths over 500 feet:
Purchasing an additional power supply to power up both ends is almost certainly required.
3. Using Category-5 cable connect the UV1-Receiver to the unit's RJ45 output. Connect the remote monitor to the receiver.

IMPORTANT

Do not connect this unit to any LAN device such as network cards or hubs as this may cause damage. Use EIA/TIA 568B standard straight-through patch wiring as shown below. Do not use crossover cables.

EIA/TIA 568B WIRING STANDARD	
PIN	Wire Color
1	White w/ Orange Stripe
2	Orange
3	White w/Green Stripe
4	Blue
5	White w/Blue Stripe
6	Green
7	White w/Brown Stripe
8	Brown



The diagram shows a perspective view of an 8-pin connector. The pins are arranged in a row. Two arrows point to the first and eighth pins from the left, labeled 'Pin 1' and 'Pin 8' respectively.

3. Configuration & Operation

The Mini-Cat® Receivers are equipped with an adjustment to improve image quality when using long cables. The adjustment is made via a single turn trim-pot located next to the power connector on the receiver.

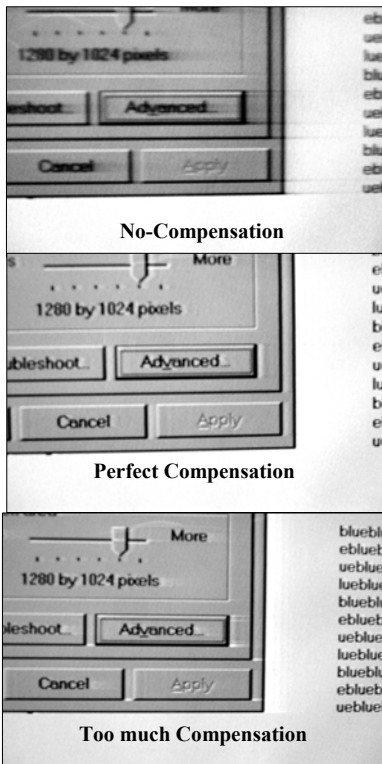
Miniature VGA over CAT5 Extension System

When using a long cable with no compensation, any solid horizontal lines tend to smear to the right. For example in the image shown, observe the dark black line at the bottom of the window and see how it is smearing to the right (not changing to white abruptly as it should). This is the effect of long cable on the signal.

You can turn the trim-pot to eliminate these streaks as shown on the second picture. If you add too much compensation to the signal, then an opposite effect may be observed, i.e. black lines smear to the right as white lines or vice-versa. The third picture shows the case where too much compensation is added.

In general, when using long cables, the image quality is a function of resolution and refresh rate. If possible, set the refresh rate to 60 Hz at any resolution.

Also for best results at long distances, try to use standard Category-5 Cable (instead of CAT5e or CAT6 since CAT5e and CAT6 cables may have widely dissimilar twist ratios of the wire pairs in the cable that may result in noticeable color skew).



4. Troubleshooting

1. Fuzzy, blurry, or ghosting image at remote location

If you have a stable image but it looks somewhat blurry (object or character edges are not sharp), try to adjust the compensation first. When the trim-pot is turned fully CCW there is no compensation. As you turn the pot clockwise, you are applying compensation. Look at the screen and slowly turn the pot clockwise. Notice what happens to the right of solid horizontal lines (as in figure 3.1). If you still have a fuzzy image, try reducing first the refresh rate and then the resolution of the PC.

2. Shaking image or periodically blanking monitor

Although CAT5 cable uses twisted pairs to transmit the signals from the splitter to the receivers to reduce the amount of EMI coupled noise from external sources, a strong electromagnetic noise field can cause instability in the signal. Usual sources of this form of noise coupling are high current AC lines or other high-density data and/or control cables that run adjacent to and parallel with a substantial length of the CAT5 cable.

To eliminate this, either separate the Cat 5 cable of Mini-Cat® from the interfering source or use shielded CAT5 cables. Note that separating the CAT5 cable from the EMI source by a few inches is often sufficient to eliminate this problem.

3. The PC does not recognize a Plug-and-Play monitor

If the PC's operating System is setup to detect a plug-and-play monitor (usually in Display Properties Advanced Settings), it may have trouble finding a monitor. If the PC does not produce an image due to this, disable the plug-and-play monitor detection in the PC's operating system Display properties.

4. Substituting power supplies

The sender and receiver rely on the power adapter that is supplied with them. Do not substitute any other power supply or DC power source

Contacting Hall Research

If you determine that your extender is malfunctioning, do not attempt to repair the unit. Contact Hall Research's Technical Support Department at 714-641-6607.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description.

Shipping and Packaging

If you need to transport or ship your extender:

- Package it carefully. We recommend that you use the original container.
- Before you ship the units back to Hall Research for repair or return, contact us to get a Return Authorization (RMA) number.

5. Specifications

Standards	VGA, SVGA, XGA, or UXGA video
Video Types	VGA through UXGA, RGBS, RGSB (sync on “green”), or YPbPr
Resolution	Up to 1600 x 1200 non-interlaced at up to 85 Hz
Bandwidth	DC to 250 MHz
Max. Distance	Up to 500 ft. (150 m) for VGA and Component Video models, or 2000 ft (609 m) for Composite Video and Stereo Audio models
Connectors	HD15 female for video in and out; Shielded RJ45
Interfaces	Standard Analog VGA; Proprietary CAT5
Compliance	Meets requirements for CE; FCC Part 15 Subpart B Class A, IC Class
Max. Altitude	10,000 ft. (3048 m)
Temperature	Operating: 32 to 122°F (0 to 50°C); Storage: -40 to +185°F (-40 to +85°C)
Humidity	Up to 95% non-condensing
Enclosure	Plastic ABS-94VO, UL File#56070
MTBF	300,000 hours (calculated estimate)
Power	From utility-power (mains) outlet, through included external power adapter. Output Voltage: 9v DC Center-Positive. Current requirement 500-mADC max
Size	UV1-Sender & UV1-Receiver 0.8H X 1.7W X 4.5L
Weight	2 lbs. (shipping)



Products Designed and Made in the USA

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