



Model UV232A & UV232B

VGA + AUDIO + UNI-DIRECTIONAL RS232 (UV232A)

&

VGA + BI-DIRECTIONAL RS232 (UV232B)



UV-232A

UV-232B

UMA1159 Rev. E

**SUPPORT &
ORDERING
INFORMATION**

For technical support, Call **714-641-6607** or fax **714-641-6698**

Order by phone: **toll-free** in the U.S. **800-959-6439**

Web site: **www.hallresearch.com**

Hall Research, 1163 Warner Ave. Tustin, CA 92780

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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 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 designed 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 their 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 General

Hall Research's Model UV232A and UV232B kits are members of HR's powerful video product line. The model UV232A kit extends VGA/HD video, audio (L+R Mixed), and unidirectional RS-232 over a single Cat5 cable, while the model UV232B kit extends VGA/HD video and bi-directional RS-232.



Figure 1 – UV232B Block Diagram

1.2 Features

- Sends PC or HD video, audio (L+R mixed), and unidirectional RS-232 over single Catx (Model UV232A)
- Sends PC or HD video and bi-directional RS-232 over single Catx (Model UV232B)
- Wide bandwidth to transmit WUXGA signals (1920x1200 / 60hz) or HD Analog Component (1080p)
- Compensation for UTP cable to 500 ft.
- No power supply required for local unit – powered from VGA source
- DDC compliant EDID emulation on the Sender
- Supports all baud rates to 115Kbps
- Perfect for touch-screen (UV232B), Kiosk, or Projector Control applications.
- RS-232 and high quality VGA input cables provided
- Compact metal enclosure with mounting provisions
- Compact, Rugged, Reliable, and Economical
- Made in USA

2. Installation

2.1 Connecting the UV232A / B

UVA232A Sender (Inputs)



UV232A Receiver (Outputs)



VGA – AUDIO – RS232 EXTENDERS

1. Connect video source to Sender unit using supplied VGA cable. Connect the RS-232 serial using supplied straight-through DB9 male/female cable. Connect line-level audio to mini-stereo jack (UV232A only).

Note: The Sender unit receives power from the VGA source per VESA standard (+5v on pin 9). If the source is not VESA compliant in that regard, or if the video is YPbPr (using a 3 RCA to HD15 input cable), then a power supply would be needed at both ends. Two power supplies are included for this purpose.

2. Connect the Sender's RJ45 port to the Receiver unit using straight-through UTP or STP cable directly to the receiver. ***IMPORTANT:*** *You cannot connect the Cat5 cable to any other manufacturer's device or network equipment.*

3. Connect the Receiver to the display device, and use a straight-through RS-232 cable to connect the receiver to the remote serial device (e.g. touch-screen (UV232B), projector, etc). Connect audio output to powered speakers (UV232A only).

CAUTION

Maximum Recommended Cable Lengths

Table 3.1

Before applying power to the remote unit, verify that the AC line is properly wired and that a protective ground (green) wire is established with NO potential difference between both the sender and receiver locations. The extender can tolerate up to 5v peak-to-peak ground potential between the two locations. Failure to ensure good grounding can result in erratic operation and possible shock hazards or damage to your equipment.

4. Power receiver using included power supply; check green Power LED on sender to verify it is receiving power from VGA source. Using a small screwdriver; turn the compensation potentiometer CW for more compensation or CCW for less, until the image is perfectly clear.

3. Configuration and Operation

3.1 Adjusting the video quality for long cable runs

The video quality at the remote station depends on: (1) the length of the CAT5 cable, (2) video resolution setting, (3) refresh rate setting and the model of the receiver.

In general, at low and mid resolutions, excellent image reproduction is provided at up to 500 feet. At high resolution and refresh rates perfect image reproduction can be achieved at shorter distances (see table below). Using longer cables or higher resolution rates will still produce an image, but the reproduction quality will be reduced.

Maximum Recommended Cable Lengths

Table 3.1

		Refresh Rate		
		60 Hz	75 Hz	85 Hz
Resolution	800x600	500 ft	500 ft	500 ft
	1024x768	500 ft	450 ft	400 ft
	1280x1024	400 ft	350 ft	300 ft
	1600x1200	300 ft	300 ft	300 ft

3.2 UTP Cable Recommendations

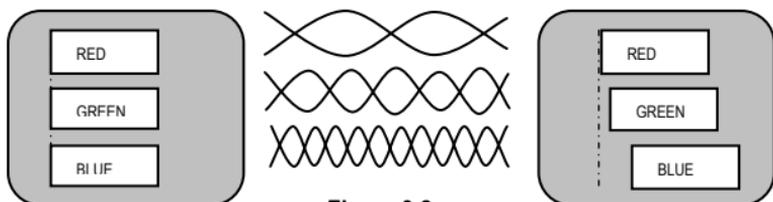


Figure 3.2

UTP cables have 4 twisted pairs inside. The video transmission over UTP uses 3 individual pairs for each color (Red, Green, & Blue). As shown in figure 3.2 above, a characteristic of Category-5/5e/6 cable is that the pairs of wires are twisted at different rates. Therefore, for a given length of Cat-5 cable the total length of a particular pair could be longer than others. Since the signals travel in the cable at a fixed speed, the arrival times of signals can be skewed in a long cable (those that have to travel farther arrive later and the corresponding color shifts to the right).

This is seen on the monitor as separation, or lack of convergence in colors. For example a vertical white line on the screen may look to have a red tinge on the left edge and blue tinge on the right edge.

This effect gets worse at high resolutions, high refresh rates, long cables (in excess of 200 feet), and depends on the cable construction itself. Hall Research highly recommends the use of UTP cables specifically constructed for video transmission. In these cables the all the twisted pairs are the same length. They are available from several sources including Hall Research (part numbers shown below).

Zero-Skew CAT5 Cable for use with Hall Research CAT5 Products

PART NUMBER
CUTP-Z-1000-BLK 1000 ft. Zero-Skew CAT5 cable. Bulk spool of 1000 ft
CUTP-ZP-1000-BLK 1000 ft. Zero-Skew CAT5 cable. Bulk spool of 1000 ft Plenum Rated

If you are going to use commercial grade UTP cable, then we recommend using Cat5 or Cat5e rather than Cat6, since the twist ratio match is better in Cat5 cable.

4. Troubleshooting

Most common problems are caused by the following:

- Confusing the Sender and the Receiver
- Using a Cat5 cable that is too long, not straight through, or not terminated properly
- Not connecting the power supply, or it is not powered
- Display device does not support the resolution that is being sent (in which case you should check operation without the extender first)

4.1 Contacting Hall Research

If you determine that your extender is malfunctioning, do not attempt to repair the unit. There are no user serviceable parts inside the unit. Opening the unit will void the warranty. Contact HR's Tech. Support at 714-641-6607 to obtain an RMA (Return Authorization) number.

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.

4.2 Shipping and Packaging

If you need to transport or ship your device:

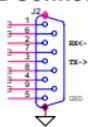
- Package it carefully. We recommend that you use the original container if possible.
- Before you ship the units back to Hall Research for repair or return, contact us to get a Return Authorization (RMA) number.

VGA – AUDIO – RS232 EXTENDERS

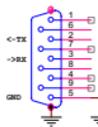
5. Specifications

Standards	Analog VGA Video (RGBHV), YPbPr, or RGB signals with sync-on-green.
Resolutions	All up to WUXGA (1920x1200 / 60Hz), 1080p
Video Level	0.7 v p-p on RGB, 5v p-p H/V sync
Bandwidth	20 Hz to 450 MHz
Common Mode Noise Rejection	100 dB @ 60 Hz, 70 dB @ 1 MHz, 50 db @ 10 MHz
Max Distance	Up to 500 ft. (152 meters) - See table 3.1 for details
Temperature	Operating: 32 to 122 Deg F (0 to 50 Deg C); Storage: -40 to +185 Deg F (-40 to +85 Deg C)
Enclosure	Aluminum
MTBF	100,000 hours (calculated estimate)
Power	Via the included power adapters. Voltage: 6v DC Center-Positive. Average Power Consumption: 200mA (Sender) 160mA (Receiver)
Size (H x W x D)	1.25" H x 2.75" W x 3.08" D* Each Device *Units have 2 mounting ears that protrude 0.40" beyond the main box on each side.

RS232 Connections



DB9F – RECEIVER



SENDER – DB9M



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