



URA-232



URA-232-XT

URA-232 & URA-232-XT

PC Video, Audio & RS232
on Twisted-Pair Receivers
with Cable Length Compensation
Skew Correction and Daisy-Chain Output

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Contents

1. Introduction 3

1.1 General..... 3

1.2 Features 4

2. Installation 4

2.1 Package Contents 4

2.2 Connection to Compatible Senders 4

2.2 Connection to Compatible Senders 5

2.3 Cable Requirements 6

2.4 Daisy-Chain Limitations 6

2.5 Block Diagram for URA-232 & URA-232-XT 6

3. Configuration & Operation 7

3.1 Why Cable Compensation? 7

3.2 Compensation Adjustment Procedure 8

3.3 Advanced Adjustment 9

3.4 Why Skew Adjustment? 10

3.5 Skew Adjustment Procedure..... 11

3.6 Signal Adjustment for the Daisy Chain..... 12

4. Software GUI..... 13

4.1 Overview 13

4.2 Getting Started 13

4.3 URA-232 Modes of Operation..... 14

4.4 Button Selection 15

4.5 Connect & Disconnect Buttons 16

4.6 Show CONFIG Button..... 17

4.7 Download Button..... 17

4.8 Upload Button..... 17

4.9 Configuration Tab..... 18

4.10 Settings Tab 20

4.11 Communications Tab 21

4.12 Menu Bar..... 22

4.13 RS-232 Command Summary 23

5. Troubleshooting 24

5.1 Contacting Hall Research 24

5.2 Shipping and Packaging 24

5.3 Problem Solving FAQ..... 25

6. Specifications 26

1. Introduction

1.1 General

This User Manual applies to Hall Research Models URA-232 and URA-232-XT.

These models are video, audio and uni-directional RS-232 over CAT5/5e/6 receivers.

In a typical application, they are located at a distance from the AV/RS-232 source and connected to a compatible sender unit that converted the audio, video and RS-232 source signal for transmission on a twisted pair cable.

Below is a list of capabilities & features of each receiver model:

	Uni-Directional RS-232	Equalization to 1000 ft	RGB Skew Correction	Chain Output	Cable Requirements
URA-232	●	●	●		Any UTP or STP Cable
URA-232-XT	●	●	●	●	Any UTP or STP Cable

Table 1 – Model Number Differences

The Models URA-232 and URA-232-XT do not have any special cable requirements since they are capable of correcting the RGB color skew induced in typical CATx cable installations.

The Model URA-232-XT allows downstream receiver units to daisy chain connections using UTP cables. This eliminates the need for running separate cables from every receiver back to the sender (in a star or home-run fashion) – this is a very useful feature when several receivers are located in a line going away from the sender.

Depending on the application, the URA-232-XT's downstream RJ45 port can connect to more receivers (URA-232-XT or URA-232). The constructed daisy chain may have:

- Up to 3750 feet maximum cable from source to last URA-232
- A maximum of 5 URA-232-XT devices in any chain
- 750 feet maximum distance between units in a chain

1.2 Features

- Receives audio, video and uni-directional RS-232 on a single CATx cable
- Adjustable cable length compensation to 1000 ft
- RGB skew correction
- Digitally controlled adjustment eliminates tweaking pots
- Supports resolutions up to 1920x1200 at any refresh rate
- Compact & rugged metal enclosure with mounting holes
- Easily expandable by daisy-chaining receivers (URA-232-XT)
- Configurable Discrete Input
 - Contact Closure
 - Voltage (5-30 vDC)
- Software GUI

2. Installation

2.1 Package Contents

Your package should contain the URA-232/URA-232-XT receiver unit, a Universal power supply (5 VDC @ 2A), an IEC320 Power Cord, and a User Manual.



2.2 Connection to Compatible Senders

The URA-232 and URA-232-XT units accept a single UTP cable connection from any of Hall Research's compatible UVA-232 Sender product line. Some compatible senders are listed below:





PART NUMBER	
UV232A-S Video, Audio and Uni-Directional RS-232	
UVA232-4S Up to (4) Video, Audio and Uni-Directional RS-232 with Remote Button Trigger	
UVA232-8S Up to (8) Video, Audio and Uni-Directional RS-232 with Remote Button Trigger	
Genesis 8x8 and 16x16 Matrix with -JAR output option Up to 16 RJ45 outputs with video, audio and RS232 that can be switched to any of up to 16 AV inputs. Housed a single 2 RU enclosure	

Table 2 – Compatible Senders

- ❑ Connect the UTP cable from any of the compatible UVA senders to the “UTP IN” connector.
- ❑ Connect the HD15 - “PC/HDTV OUT” connector to the display device. For YPbPr video sources, use a 3-RCA to HD15 cable (Hall Research P/N CHD15-RGB).
- ❑ Connect the 3.5mm - “AUDIO OUT” connector to the speakers or other sound equipment.
- ❑ Connect the RS232 from the device to be controlled to the “Terminal Strip” (Pin 1 = TX, Pin 2 = GND, Pin 3 = RX)
- ❑ Connect the Discrete Input (Contact Closure or 5-30 vDC power) to the “Terminal Strip” (Pin 4 = +, Pin 2 = - when using Voltage)
- ❑ Connect ONLY the included power supply to the 2.1mm – center positive +5 VDC power input connector on the unit.
- ❑ **Never use any other supply as this may damage the device.**



Model URA-232 & URA-232-XT

2.3 Cable Requirements

All units can use with CAT5/5e/6 or Zero-Skew™ UTP or STP (unshielded or shielded twisted pair) cables.

All units provide high-frequency compensation (to account for the losses in the CATx cable) and RGB skew correction.

2.4 Daisy-Chain Limitations

The Model URA-232-XT allows downstream receiver units to be daisy chained using UTP cables. This eliminates the need for running separate cables from every receiver back to the sender.

Depending on the application, the URA-232-XT's downstream RJ45 port can connect to more receivers (URA-232-XT or URA-232). The constructed daisy chain may have:

- Up to 3750 feet maximum cable from source to last URA-232
- A maximum of 5 URA-232-XT devices in any chain
- 750 feet maximum distance between units in a chain

2.5 Block Diagram for URA-232 & URA-232-XT

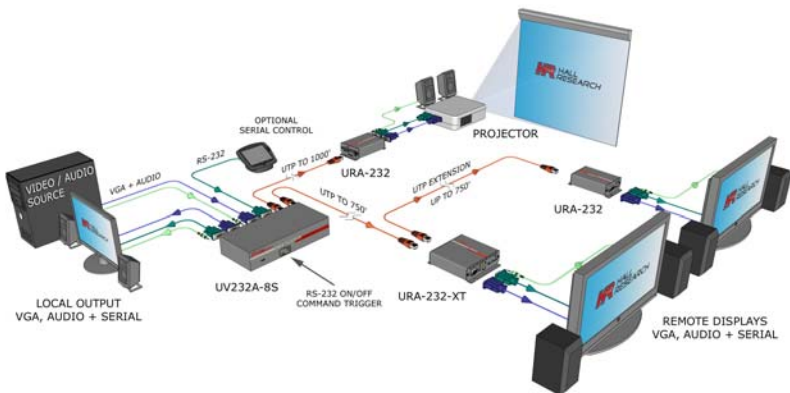


Figure 2 – URA-232 & URA-232-XT Application Diagram

3. Configuration & Operation

3.1 Why Cable Compensation?

All cables attenuate (reduce) the high-frequency components of the video signal that is being transmitted. The longer the cable, the more signal loss. If not compensated for, this signal loss will result in blurry and smeared images being displayed.

The image quality depends on the resolution and level of detail in the image. The Hall Research URA series of receivers have one of the most precise and complex equalization techniques in the industry and allow full recovery of the original signal's bandwidth.

It is best to make this adjustment using a test pattern that is designed to depict and exaggerate this effect.

Some Hall Research senders may have a built-in test pattern generator. If your sender unit is equipped with this feature, simply activate it on the sender. Otherwise, you can connect a PC to the source and display a test pattern. A sample test pattern is available at <http://www.hallresearch.com/skew.htm> to assist in the adjustment of the compensation and to evaluate the amount of color skew in the installation.

The table below lists the recommended maximum distances from sender to the receiver depending on the resolution used.

		Refresh Rate	
		60 Hz	75 Hz
Resolution	800x600	1000 ft	1000 ft
	1024x768	1000 ft	850 ft
	1280x1024	850 ft	750 ft
	1920x1200	750 ft	700 ft

Table 3 -

Recommended maximum CATx cable length from sender to the receiver

3.2 Compensation Adjustment Procedure

- Apply power to the receiver. Wait until all LED's are turned off
- Press the **SEL** button once to enter **Adjustment-mode**.
- In **Adjustment-mode**, all three (3) LEDs will be turned ON.
- The UP or DOWN buttons can now be used to adjust the high frequency (HF) compensation up or down until the video no longer looks smeared (see figure below).
- While using the UP and DOWN buttons, if an upper or lower limit of adjustment is reached, the LED's will blink for each continued press of the UP or DOWN button.
- Pressing both the UP & DOWN buttons together will reset the high frequency (HF) compensation back to zero.
- To exit the **Adjustment mode** at any time, press the **SEL** button until all LED's are OFF (the unit also has a built-in 1 minute timeout).

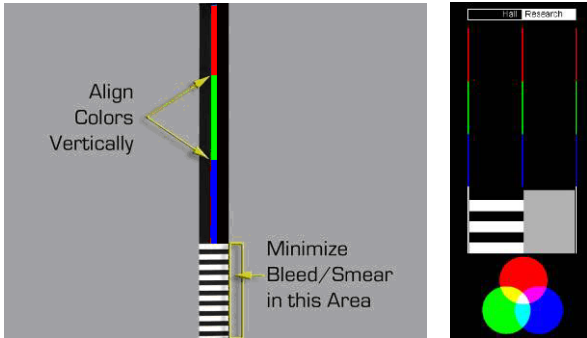


Figure 4 - Typical test patterns used for adjusting compensation

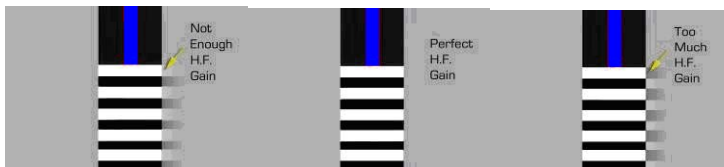


Figure 5 - Effect of adjustment on the smearing

3.3 Advanced Adjustment

The URA series of devices can equalize the brightness of the video by reducing smearing.

- Apply power to the receiver. Wait until all LED's are turned off
- Press the SEL button once to enter **Adjustment-mode**.
- In **Adjustment-mode**, all three (3) LEDs will be ON solid.
- Press and hold the SEL button for at least 3 seconds to enable the **Video Brightness Adjustment Mode** (previously called Wire Gauge Mode).
- In **Video Brightness Adjustment Mode**, the GREEN and BLUE LED's will be blinking.
- The UP button raises the video brightness level.
- The DOWN button lowers the video brightness level.
- Pressing BOTH the UP and DOWN buttons at the same time will reset the Video Brightness to the default setting.
- While using the UP and DOWN buttons, if an upper or lower limit of the adjustment is reached, the LED's will blink for each continued press of the UP or DOWN button.
- To exit the **Video Brightness Adjustment mode** at any time, press the SEL button until all LED's are ON solid. Press the SEL button once more until all LED's are OFF (The unit also has a built-in 1 minute timeout).

Note

The Video Brightness adjustment may not be noticeable when only using 1 device. When products are daisy-chained using the -XT version the adjustment is easier to observe.

3.4 Why Skew Adjustment?

UTP cables have 4 twisted pairs inside. The Hall Research UVA/URA video transmission on UTP uses 3 individual pairs for each color (Red, Green, & Blue).

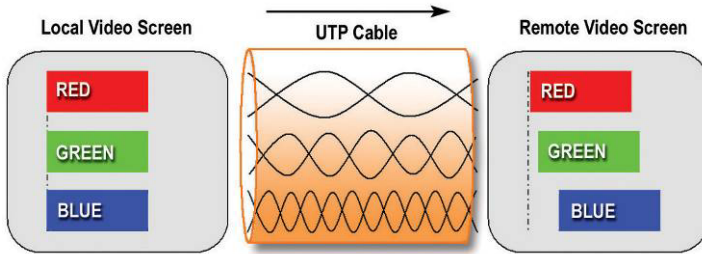


Figure 6 - skew mechanism, example

As shown in the figure above, a characteristic of CAT5/5e/6 cable is that the pairs of wires twist at different rates.

Therefore, for a given length of CAT6 cable the total length of any particular pair could be longer than other pairs in the same cable. Since the signals travel along the length of each pair at a fixed speed, the arrival times of signals will 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.

If you are using special UTP cables that are specifically designed for video transmission (such as Hall Research Zero-Skew™), then there should be no shift in color alignment regardless of the cable length. However, in many applications standard and common CAT6 cables may be utilized, this will necessitate a receiver that can also move each color component to the left and right in order to realign them.



300 ft of CAT6 (1280x1024 source)
* actual zoomed photo of screen *



After skew adjustment

Figure 7 – Example of Skew manifested



3.5 Skew Adjustment Procedure

- Apply power to the receiver. Wait until all LED's are turned off
- Press the SEL button once to enter **Adjustment-mode**.
- In **Adjustment-mode**, all three (3) LEDs will be turned ON.
- Press the SEL button once to enter the **Adjustment mode**. Press the SEL button again to light only one of the 3 Red, Green or Blue LEDs. As you press SEL the Red, Green, and Blue LEDs will light up one at a time.
- The **UP** and **DOWN** buttons are used to move the selected color component to the left and right. Pressing both buttons at the same time resets all skew adjustments.
- While using the UP and DOWN buttons, if an upper or lower limit of adjustment is reached, the LED's will blink for each continued press of the UP or DOWN button.
- To exit the **Adjustment mode** at any time, press the SEL button until all LED's are OFF (the unit also has a built-in 1 minute timeout).

3.6 Signal Adjustment for the Daisy Chain

There are no specific procedures for adjusting the URA-232-XT's other than the order of adjustment.

The URA-232-XT's RJ45 (CATx) output is the video signal AFTER IT HAS BEEN ADJUSTED.

The receiver unit closest to the sender must be adjusted first.

Set the high frequency compensation first and then adjust the skew. Since the effects in the daisy chain are cumulative, we recommend that you set the gauge of CATx cable used as well (see section 3.3 above).

Remember, if the calibration is off on a URA-232-XT in the middle of a daisy chain and you adjust the device settings you must then check the rest of the downstream devices and if necessary; make additional adjustments on those devices as well.

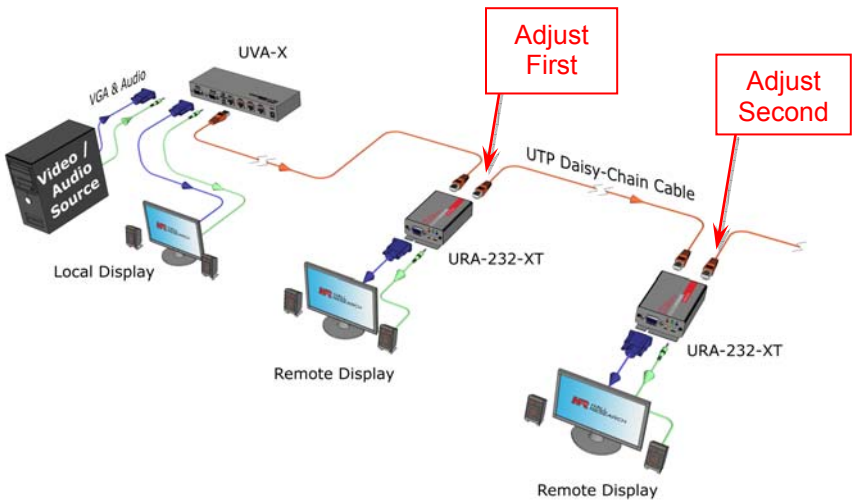


Figure 8 – Daisy-Chain adjustment sequence

4. Software GUI

4.1 Overview

The URA-232 Programmer is a Windows™ GUI used to configure the unit's discrete input, serial parameters, and to upload or download user strings. Strings are sent based on the state of a discrete input, a remote trigger from the sender or by a serial command sent from compatible UVA232 Sender.

4.2 Getting Started

The URA-232 Programmer is recommended to run on PC with Windows XP or later. The operating system should have all the latest updates and service packs installed.

The .NET Framework 2.0 or later is required prior to installing the URA-232 Programmer.

Most new PCs running with Windows™ XP or later version come with Microsoft™ .NET Framework 2.0 or later installed. If .NET Framework 2.0 or later is not installed on your PC, you can install it from the folder called Framework 2.0 in the installation software or download it from the Microsoft™ website.

After the URA-232 Programmer software has been installed, a program icon will appear on the users desktop (as shown on the right) as well as under the **Programs\Hall Research** menu.

Execute the URA-232 Programmer by double clicking the desktop icon or the program menu selection found in the PC start menu.

The main screen is displayed as shown in figure 4-2.

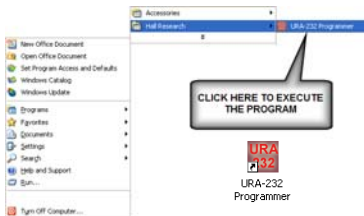


Figure 4-1



FIGURE 4-2

The URA-232 Programmer consists of three screens in tabular format, Configuration, Settings and Communications.

4.3 URA-232 Modes of Operation

The URA-232 can operate in two different modes, “**RUN-MODE**” and “**ADJUSTMENT-MODE**”. The unit is in “**RUN-MODE**” when it is first powered up.

In order to establish a communication between the URA-232 and the URA-232 Programmer GUI, the unit must be in the “**ADJUSTMENT-MODE**” prior to attempting a serial connection.

- In “**RUN-MODE**” all LED’s are off.
- To enter the “**ADJUSTMENT-MODE**”, press the **SELECT** button.
 - In “**ADJUSTMENT-MODE**”, all LED’s or a single LED will be on.
 - All LED’s indicates the HF Compensation Adjustment mode
 - A single Red, Blue or Green LED indicates SKEW Correction Adjustment mode.

Note

If the URA-232 is put into ADJUSTMENT-MODE (any LED’s on), the unit will automatically return to RUN-MODE after 1-minute of no front panel activity.

If the DISCRETE INPUT is not used, the unit will enter a power saving mode. If any buttons are pressed, the unit will automatically resume operation depending on the button pressed.

4.4 Button Selection

The URA-232 Programmer has four buttons as shown on the left and two buttons near the bottom right corner of the Main screen in Figure 4-2 or Figure 4-3, which allow the user to quickly access frequently used functions.

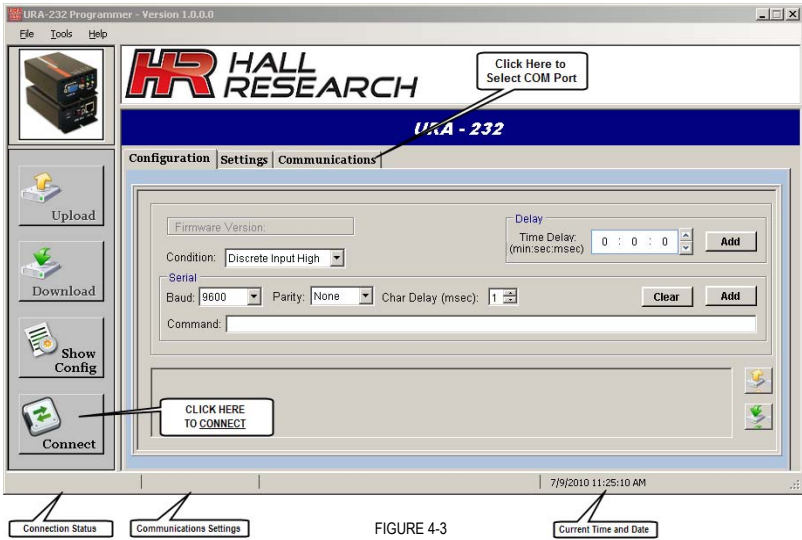


FIGURE 4-3

4.5 Connect & Disconnect Buttons



Connect



Disconnect

CONNECTING TO THE URA-232

- Click the **Communications** tab and from the screen displayed, ensure that the correct COM port has been selected. This COM Port will be connected to the URA-232 via a NULL-MODEM RS232 cable. The port information will be saved and used the next time the program is started.
- To enter “**PROGRAMMING MODE**”, click either the **CONNECT** button at the bottom left of the main screen or click the **CONNECT** button on the Communications tab.

At this point, the URA-232 Programmer software will attempt to establish communications with the URA-232 unit.

- If the unit is not in “**ADJUSTMENT-MODE**”, the software will timeout and the connection status area on the main screen will change color with the following message displayed:
 - “**Error: Press the Select Button to Enter Program Mode**”
 - To enter “**ADJUSTMENT-MODE**”, press the SELECT Button until all 3 LED’s are illuminated.
- If the connection has been established, all LED’s will blink continuously. This is called “**PROGRAMMING MODE**”

1. DISCONNECTING FROM THE URA-232

- To exit “**PROGRAMMING MODE**”, click either the **DISCONNECT** button on the bottom left of the main screen or click the **DISCONNECT** button on the Communications tab.
- You also can EXIT or CLOSE the URA-232 Programmer software to leave “**PROGRAMMING MODE**”. The unit will automatically return to “**ADJUSTMENT MODE**”, and all the LED’s will stop blinking and be continuously illuminated.
- Other alternatives to exit the “**PROGRAMMING MODE**” are to cycle power on the unit or to hit the **SELECT** button on the unit.
 - To enter “**ADJUSTMENT-MODE**”, press the SELECT Button until all 3 LED’s are illuminated.
 - Exiting “**PROGRAMMING MODE**” while the URA-232 Programmer is in a **CONNECTED** state will cause errors if the unit is reconnected. Restart the software, cycle power on the unit and try the connection again.

4.6 Show CONFIG Button



Click the **Show Config** button to display the current user configuration strings and the unit's current settings

- You can upload these user configuration strings and settings into the URA-232 unit by clicking the **UPLOAD** button displayed on the left of the main screen.

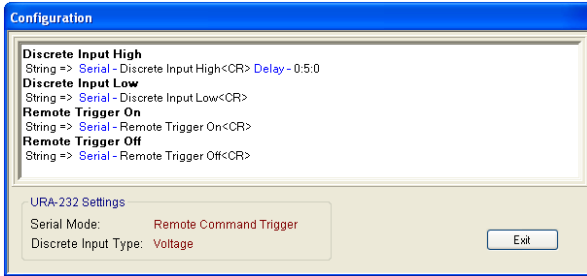


FIGURE 4-4

4.7 Download Button



- You can download the current user configuration strings and settings stored in the URA-232 unit into the URA-232 programmer by pressing the **DOWNLOAD** button displayed on the left of the Main screen.
- The user configuration strings and settings found in the URA-232 unit are displayed in the configuration and settings tabs.
- If the user configuration string for a specific condition needs to be viewed or modified, you can click the **DOWNLOAD** button displayed to the right of the configuration text box.



4.8 Upload Button



- You can upload the current user configuration strings and settings into the URA-232 unit from the URA-232 Programmer by selecting the **UPLOAD** button displayed on the left of the Main screen.
- If the user configuration string of a specific condition needs to be uploaded, you can click the **UPLOAD** button displayed to the right of the configuration text box as shown.



Note

Uploading an empty user configuration strings is equivalent to clearing the action required for that specific condition.

4.9 Configuration Tab

- The **Configuration** tab is the default tab page. This tab allows the user to build user configuration strings.
- A user configuration string can be defined to perform one or more specific actions based on a particular discrete input or remote trigger condition.

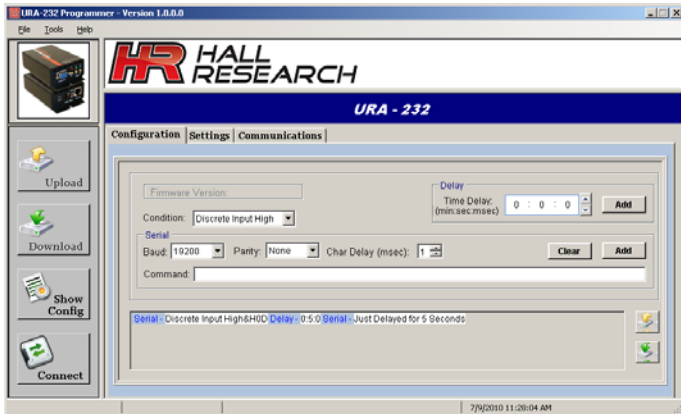



FIGURE 4-5


A user configuration string can be up to 250 bytes long, and it can be a combination of many serial commands and time delays

- **Condition Drop-Down Menu** – consists of the 4 different states the URA-232 can detect.
 - Discrete Input High
 - Discrete Input Low
 - Remote Trigger On
 - Remote Trigger Off

- **Serial Configuration**

- A user string can be in text or hex mode.
- The Serial Baud Rate and Parity can be set at any supported baud rate and with or without a parity bit
- A character delay can be programmed 0 to 5 mS between characters to meet a slower serial devices requirement.
- A serial command can be entered in the Command text box.
- When done, press the ADD button to add it to the current user configuration string. 
- Enter serial commands as a combination of ASCII text and/or hex numbers. When entering a hex number in this mode, it must have a prefix "&h" or "&H" and must be 2 hexadecimal characters in length (e.g. "&h01").
 - Power&h01On
 - Power&H01On

- **Time Delays**

- Time delays may be required for serial devices that need time to process one command before being ready to process another.
- Time delays can be from 1 millisecond up to 250 minutes.
- The limits are as follows:
 - 250 Minutes
 - 250 Seconds
 - 250 Milliseconds
- When done, press the ADD button to add it to the current user configuration string. 

4.10 Settings Tab

- The Settings tab allows the user to configure the discrete input mode and serial mode of operation. Refer to figure 4-6 below.
- The discrete input is configurable as a contact closure, a voltage input, or not used at all.
- The serial mode can be configured as pass-thru, remote button trigger or remote command trigger

Discrete Input Table

Discrete Input	High		Low	
	Level	Condition	Level	Condition
Contact closure	Open	Discrete Input High	Closed	Discrete Input Low
Voltage	5V-30V	Discrete Input High	0V	Discrete Input Low

NOTE: If a discrete input is not used in the Pass-thru mode, the URA-232 unit will go into a power-conserving mode when there is no front panel activity or no communication with URA-232 Programmer

Remote Trigger Table

Remote Trigger	High		Low	
	Input	Condition	Input	Condition
Button	UV232A-xS Green LED	Remote Trigger On	UV232A-xS Red LED	Remote Trigger Off
Serial Command	TR1<cr>	Remote Trigger On	TR0<cr>	Remote Trigger Off

- In “PASS-THRU MODE”, any serial data received on the CATx cable is sent out the 3-pin serial terminal block without modification. The URA-232 does not monitor the serial information.
- In “REMOTE BUTTON TRIGGER MODE”, the URA-232 unit will monitor the CATx input signal from the sending unit.
 - Pressing the button on the sending unit will send the user configuration string for “REMOTE TRIGGER ON”, and pressing the button again will send a user configuration string for “REMOTE TRIGGER OFF”.
- In “REMOTE TRIGGER COMMAND MODE”, the URA-232 unit will monitor the incoming SENDER serial commands for TR1<cr> or TR0<cr> at a baud rate of 19200, 8-bit data, no parity, and 1-stop bit.
 - If detected, it will process the user configuration string for “REMOTE TRIGGER ON” or “REMOTE TRIGGER OFF” accordingly
 - Sending any other commands to the unit will cause the 3 LED’s (RGB) to blink 2 times to indicate an error condition.
 - The URA-232 indicates its serial mode at power-up as listed below:

Serial Mode	LEDs Blink
Pass-Thru	None
Remote Button Trigger	2 times
Remote Command Trigger	4 times



4.11 Communications Tab

FIGURE 4-6

- The **Communications** tab is used to select a COM port your PC will use to communicate with the URA-232 unit.
- Press the **CONNECT** button in this tab page or the icon displayed on the bottom left of the Main screen to connect to the URA-232 unit.
- The URA-232's serial port communicates at a baud rate of 19200, no parity, 1-stop bit, and 8 data bits.
- The COM port is the only setting that can be set as shown in Figure 4-7.



FIGURE 4-7

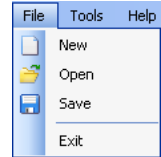
4.12 Menu Bar

The URA-232 Programmer **MENU BAR** consists of three main menus:

File

The **File** menu consists of the following menu items.

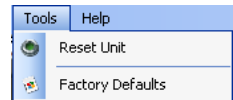
- **New** – Clear user configuration strings currently stored in the URA-232 Programmer.
- **Open** – Open a previously saved user configuration file into the URA-232 Programmer.
- **Save** – Save the user configuration file from the URA-232 Programmer.
- **Exit** – Exit the URA-232 Programmer software.



Tools

The **Tools** menu consists of the following menu items

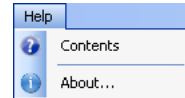
- **Reset Unit** – Sends a reset command to the URA-232 unit.
- **Factory Defaults** – Clears all user configuration strings stored in URA-232 unit, and set the unit back to its default settings.
 - (Pass-thru, Discrete Input NOT USED)



Help

The **Help** menu consists of the following menu items

- **Contents** – Display the help file of URA-232 Programmer.
- **About...** – Display the current version of URA-232 Programmer.



4.13 RS-232 Command Summary

The URA-232 consists of the following serial commands.

The unit communicates at 19200, No Parity, 8 Data Bits, 1 Stop Bit

To use the commands listed below, the unit must be in **Adjustment-mode**.

- Apply power to the receiver. Wait until all LED's are turned off
- Press the SEL button once to enter **Adjustment-mode**.
- In **Adjustment-mode**, all three (3) LEDs will be turned ON.
- Send the RS-232 Serial command at 19200 baud, No parity, 8 Databits, 1 Stop bit, to get into the programming mode(e.g) **Pass_Word<cr>**
- All three (3) LED's should be blinking and the device will have replied serially with three (3) characters. ACK (0x06), CR (0x0D) and LF (0x0A).
- Once in this mode, the commands listed below may be used.
- Send the RS-232 Serial command **EXIT<cr>** to exit programming mode and return to **Adjustment-mode**.

COMMAND	FUNCTION
VER?<cr>	Read firmware version – UNIT responds with "Ver x.y<cr><lf>" where x,y are the major and minor version numbers.
IO? <cr>	Query discrete input type – UNIT responds with "IO1" or "IO0"
IO0<cr>	Set discrete input type to Contact Closure
IO1<cr>	Set discrete input type to Voltage (5-30 vDC)
FDFT<cr>	Factory default – UNIT responds with "Are you sure (Y,N)?", a "Y<cr>" response will result in a "Factory Defaults" response. Any other response to the question or failure to answer with in 8 seconds will result in a "Cancelled" response. NO CONTACT Closure is the factory default.
RSTU<cr>	Unit reset – UNIT will respond with "Reset URA<cr><lf>"
Pass_Word<cr>	Password to get into the programming mode
EXIT<cr>	Exit the programming mode and back to the adjustment mode
RESERVED COMMANDS	
Re<cr>	RESERVED FOR HALL RESEARCH
RE<cr>	RESERVED FOR HALL RESEARCH
We<cr>	RESERVED FOR HALL RESEARCH
WE<cr>	RESERVED FOR HALL RESEARCH
RST0<cr>	Reset Video Compensation to 0
RST1<cr>	Reset RED Skew to 0
RST2<cr>	Reset GREEN Skew to 0
RST3<cr>	Reset BLUE Skew to 0
INC0<cr>	Increment Video Compensation by 1
INC1<cr>	Increment RED Skew Correction by 1
INC2<cr>	Increment GREEN Skew Correction by 1
INC3<cr>	Increment BLUE Skew Correction by 1
DEC0<cr>	Decrement Video Compensation by 1
DEC1<cr>	Decrement RED Skew Correction by 1
DEC2<cr>	Decrement GREEN Skew Correction by 1
DEC3<cr>	Decrement BLUE Skew Correction by 1
RD0? Or RD0<cr>	Read HF Compensation & Gain Settings UNIT responds with "x, y<cr><lf>"
RD1? Or RD1<cr>	Read Skew Correction Values (RGB)
RD2? Or RD2<cr>	UNIT responds with "R, G, B<cr><lf>"
RD3? Or RD3<cr>	
RDUS<cr>	Read Unit Settings
WG? <cr>	Query Wire Gauge setting – UNIT responds with "23G" or "24G"
WG1<cr>	Set 24 AWG wire size
WG0<cr>	Set 23 AWG wire size

5. Troubleshooting

There are no field serviceable parts or circuits in the device.

Opening the unit will void the warranty.

If you think the device is malfunctioning (or you have no picture output), please try to use the methods described in Section 5.3 below to obtain a picture first.

5.1 Contacting Hall Research

If you determine that the URA-232 or URA-232-XT is malfunctioning, do not attempt to repair the unit yourself.

Contact the Hall Research 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.

5.2 Shipping and Packaging

If you need to transport or ship your unit:

- 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.

5.3 Problem Solving FAQ

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

If you have a stable image but it looks somewhat blurry (edges are not sharp), make sure that you have adjusted the receiver unit's HF compensation correctly. In addition, check the recommended table of max distance vs. resolution to see that you have not exceeded the maximum recommended cable lengths. If you still have a fuzzy image, try reducing the refresh rate and/or resolution of the video source.

2. **Image exhibits steady or rolling horizontal color "hum" bars**

This is usually an indication of improper grounding at the sending end, the receiving end, or both. 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 UTP splitter can handle up to 5 volts peak-to-peak of ground noise between the two locations, but ground potential differences more than this can show up on video.

3. **Shaking image or periodically blanking monitor**

Inherently, balanced signal transmission over twisted pair offers good immunity to EMI coupled noise from other external sources. However, a strong electromagnetic noise field can cause instability in the signal. Usual sources are high power AC lines or data and/or control cables that run adjacent to and parallel with a substantial length of the CAT5 cable. To eliminate this, either place a distance between the CAT5 cables from the sender and the interfering source, or use shielded twisted pair (STP) CAT5 cables.

4. **Poor audio quality at the receiving end**

Only use powered speakers with the splitter and receivers. It is also good practice to set the audio level (volume) output of the PC about 1/2 to 2/3 from the maximum and use the volume knob of the speakers to adjust the volume to the desired level. A low volume signal output from the PC reduces the signal-to-noise (S/N) ratio, whereas too high output amplitude can cause saturation and clipping to occur.

6. Specifications

Video

Gain	Unity
Number/signal type	1 proprietary analog signal input. Standard VGA output RGBHV, RGBS, RGSB, RsGsBs, component video (bi-/tri-level sync)
Connectors	1 female RJ-45 input, 1 HD15 output
URA-232-XT	1 female RJ-45 Daisy-Chain Output
Nominal amplitude	1 V p-p for Y of component video 0.7 V p-p for RGB and for Pr and Pb of component video 4.0 V to 5.0 V p-p, for TTL Sync signals of RGBHV, RGBS
Impedance	75 ohms
Skew compensation	62 ns
Maximum resolution	Up to 1920x1200 and 1080p at 750 ft; 1280x1024 at 850 ft
Polarity	Positive or negative

Audio

Gain	Unbalanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ± 1 dB
Connector	(1) 3.5 mm connector
Type	Monaural, Simulated Stereo
THD + Noise	0.2% @ 1 kHz, 0.3% @ 20 kHz at nominal level

General

Recommended cable	CAT 5/5e/6 (shielded or unshielded)
Power Supply	100 VAC to 240 VAC, 50-60 Hz, external; 5 VDC, 2 A, regulated; 2.1mm
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, non-condensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, non-condensing
Cooling	Convection, vents on each end
Mounting	Brackets at each end with screw hole provided for Wall or Rack mounting
Enclosure type	Metal
Dimensions	URA-232 1.18" H x 2.75" W x 3.85" D - Depth excludes connectors (30 mm H x 70 mm W x 98 mm D) URA-232-XT 1.18" H x 4.17" W x 3.85" D - Depth excludes connectors (30 mm H x 106 mm W x 98 mm D)
Product weight	0.75 lb (0.35 kg)
Shipping weight	1.5 lbs (0.70 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Safety	CE
EMI/EMC	CE, FCC Class A
MTBF	90,000 hours
Warranty	2 years parts and labor

Specifications are subject to change without notice



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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