Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

RGB 202 Rxi, RGB 202 Rxi VTG

Universal Interfaces with Stereo Audio and ADSP™

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Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterias usadas siguiendo las instrucciones del fabricante.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:	**Europe, Africa, and the Middle East:**	**Asia:**
Extron Electronics 1230 South Lewis Street Anaheim, CA 92805, USA	Extron Electronics, Europe Beeldschermweg 6C 3821 AH Amersfoort The Netherlands	Extron Electronics, Asia 135 Joo Seng Road, #04-01 PM Industrial Bldg. Singapore 368363

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), or 65.6383.4400 (Asia) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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Chapter One

Introduction

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About the RGB 202 R*xi* and RGB 202 R*xi* VTG

Features

Introduction

About this Manual

This manual contains information about the Extron RGB 202 R*xi* and RGB 202 R*xi* VTG universal interfaces and on how to operate and configure them.

About the RGB 202 R*xi* and RGB 202 R*xi* VTG

The RGB 202 R*xi* is an analog computer-video interface with 300 MHz (-3dB) video bandwidth and Advanced Digital Sync Processing™. It accepts two computer-video and two unbalanced computer stereo audio inputs. It also features one RGBHV, RGBS or RGsB output and one balanced, line level stereo audio output. The RGB 202 R*xi* VTG is identical to the RGB 202 R*xi* except that it also contains a built-in video test generator (VTG).

Front panel controls, remote contact closure, or an RS-232 remote control system or computer can be used to select between inputs.

Features

Features of both models

Flexible mounting options — The RGB 202 R*xi* and RGB 202 R*xi* VTG can be rack mounted, mounted under a desk or podium, or mounted through a desk or other furniture with optional mounting kits.

Stereo audio — Unbalanced PC stereo audio inputs are output as line level, balanced stereo audio.

Level (boost) and peaking controls — Separate front panel controls compensate for signal losses from long cable runs.

Horizontal and vertical centering controls — These front panel controls allow separate horizontal and vertical centering adjustments.

Digital sync processing — Using regular sync processing to allow centering control (H-shift or V-shift) can create problems with some digital display devices as a result of the sync delay. Extron's ADSP™ (Advanced Digital Sync Processing™) maintains a stable sync signal while allowing centering control. These interfaces also provide another option, DDSP™ (Digital Display Sync Processing™), to ensure proper displays without altering sync pulse timing or width. The sync processing type is selected via a rear panel DIP switch.

Thirty memory presets — Thirty spaces are reserved in the interface's memory for storing user-defined combinations of horizontal and vertical position settings based upon input signal scan rates. The interface automatically recalls the position settings when it detects an input signal with a matching scan rate.

LCD scan rate indicator — This backlit liquid crystal display (LCD) indicates the horizontal and vertical sync rates, and the minimum and maximum centering limits. A DIP switch is provided for turning off the backlight.

MBC power jacks — These jacks provide power to buffered monitor breakout cables.

75 ohm video termination switches — Rear panel DIP switches provide a way to switch between high Z and 75 ohm video input termination for systems where a local computer monitor is not used.

RGBHV, RGBS, or RGsB outputs — Select the output format via cabling setup and rear panel DIP switch.

Serration pulse switch — This DIP switch-selectable feature adds or strips the serration pulses from the output signal to make it compatible with digital display devices. Use the serration pulse switch if flagging or bending occurs at the top of the video display.

Sync polarity adjustment — Horizontal and vertical sync output can either follow input sync polarity, or outgoing sync can be forced to negative via a rear panel DIP switch.

Vertical sync pulse width adjustment — Vertical sync pulse width can be adjusted via a rear panel DIP switch.

Remote control input selection — Connect a remote contact closure keypad, an RS-232 control system, or a computer to the rear panel RS-232 port to remotely control the interface.

Vented metal enclosure — Vents in the enclosure keep the interface cool and ready for use 24 hours a day, 7 days per week.

Automatic sync stripping — Sync signals are automatically stripped from the red, green and blue video input signals. The interfaces output sync simultaneously as separate horizontal and vertical sync and as composite sync, but sync on green (SOG) can be selected via a rear panel DIP switch.

Additional RGB 202 R*xi* VTG feature

Video test generator — The RGB 202 R*xi* VTG includes a 4-resolution, 4-pattern video test generator to simplify system setup and testing.

Chapter Two

Installation and Operation

Installation and Operation Overview

This is an overview of the installation process. You will find detailed installation and operation instructions in this chapter.

To install and set up the RGB 202 R*xi* and RGB 202 R*xi* VTG interfaces, follow these basic steps:

1. Turn all of the equipment (computers, remote controls, interface, projector/monitor, local monitor, and speakers or other audio device) off. Disconnect the power cords from the power source.
2. Install the rubber feet for tabletop use, or install the appropriate brackets and furniture or rack mount the interface. See "Mounting the Interfaces" in this chapter.
3. Attach the input (computers), output (display, local monitor and audio), and remote control cables. See "Cabling" in this chapter.
4. Set the rear DIP switches. Use the "Rear Panel" section of this chapter as a guide.
5. Connect power cords and turn on the devices: output devices (projector, monitors, speakers), remote control device, interface, and source computers.
6. Select an input from the front panel toggle switch or the remote control (keypad, system, or PC).
7. The image should now appear on screen, and sound should be audible. If not, ensure that all devices are plugged in and receiving power. Check the cabling and switch settings, and make adjustments as needed. Select a different input (or the VTG) to check for a picture and sound.

   If problems persist, see "Troubleshooting" in this chapter, then call Extron's customer support hotline, if needed.
8. Adjust horizontal and vertical centering, and also level and peaking to obtain the best picture.
9. For the RGB 202 R*xi* VTG, set up and test the VTG. See "Operating the VTG" in this chapter.

Mounting the Interfaces

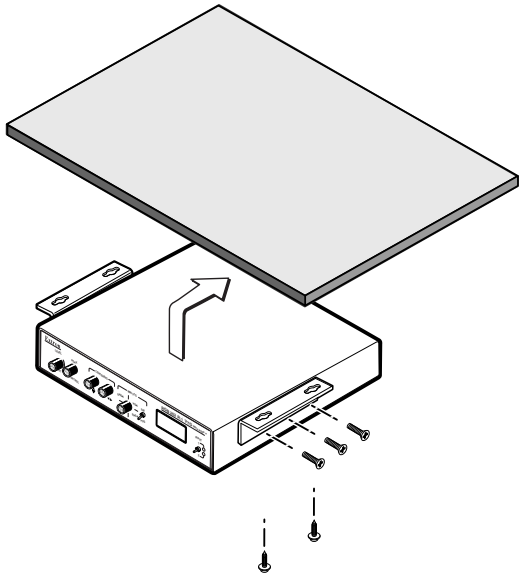
Select an installation option: tabletop/desktop placement, or under-desk, through-desk or rack mounting. Follow the appropriate installation guide on the next three pages.

Tabletop/desktop placement

For tabletop or desktop placement only, install the self-adhesive rubber feet/pads (provided) onto the four corners of the bottom of the interface enclosure.

Under-desk mounting

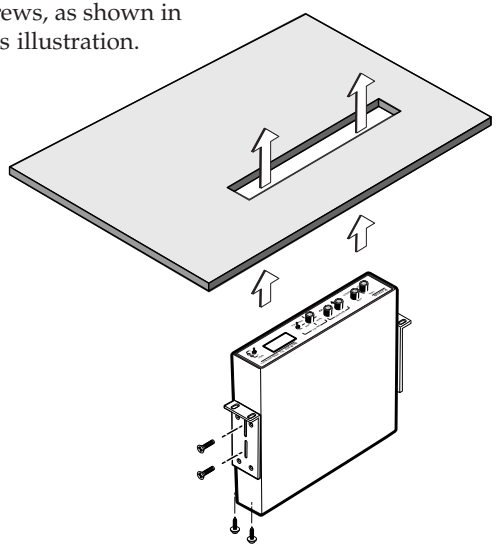
1. Attach the optional under-desk mounting brackets (part #70-077-01) to the interface with the six machine screws (provided in the mounting kit), as shown below.
2. Hold the interface with attached brackets against the underside of the desk or other furniture. Mark the location of holes for screws on the desk.
3. Drill 1/4" (6.4 mm) deep, 3/32" (2.38 mm) diameter pilot holes in the table or desk at the marked screw locations from the underside/inside (concealed side) of the furniture, where the interface will be located.
4. Insert the four wood screws into the pilot holes. Fasten each screw into the installation surface until just less than 1/4" of the screw protrudes.
5. Align the installed screws with the slots in the mounting brackets, and place the interface against the surface, with the screws through the bracket slots.
6. Slide the interface slightly forward or back, then tighten all four screws to fasten it in place.



Under-desk mounting

Through-desk mounting

1. If rubber feet were installed on the interface, remove them.
2. Insert the machine screws (provided in the mounting kit) through the slots in the optional through-desk mounting brackets (part #70-077-02), and loosely attach the brackets to the interface.
3. Hold the interface with attached brackets against the underside of the desk/table. With a soft pencil mark the location of holes for screws on the desk. Mark the opening, approximately 1.8" x 8.9" (4.6 cm x 22.6 cm).
4. Cut out the material from the installation area with a jigsaw. Check the opening size by inserting the interface part way through the hole. If needed, use a saw, file or sandpaper to enlarge the hole. Smooth the edges of the hole with sandpaper.
5. Drill 1/4" (6.4 mm) deep, 3/32" (2.38 mm) diameter pilot holes in the desk or table at the marked screw locations. The holes should be drilled from the underside or inside (concealed side) of the furniture, where the interface will be located.
6. Attach the interface to the desk with the provided wood screws, as shown in this illustration.

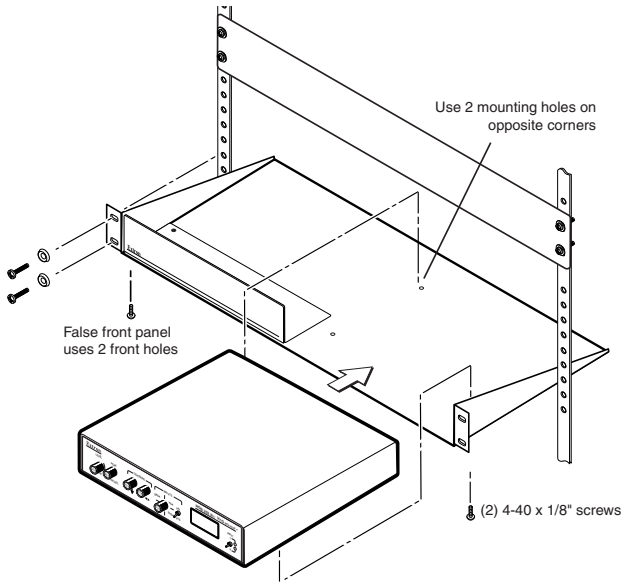


Through-desk mounting

7. To adjust the height of the interface within the desk, slide the interface up or down to the desired position, then tighten the screws that attach the brackets to the interface.

Rack mounting

1. If feet were installed on the bottom of the interface, remove them.
2. Place the interface on one half of the 1U (one unit high, 19" wide) optional rack shelf (part #60-190-01). Align the front of the interface with the front of the shelf, and align the threaded holes on the bottom of the interface with the holes in the rack shelf.
3. Attach the interface to the rack shelf with the two provided 4-40 x 1/8" machine screws. Insert the screws from the underside of the shelf, and securely fasten them through diagonally opposite corners as shown in the illustration below.

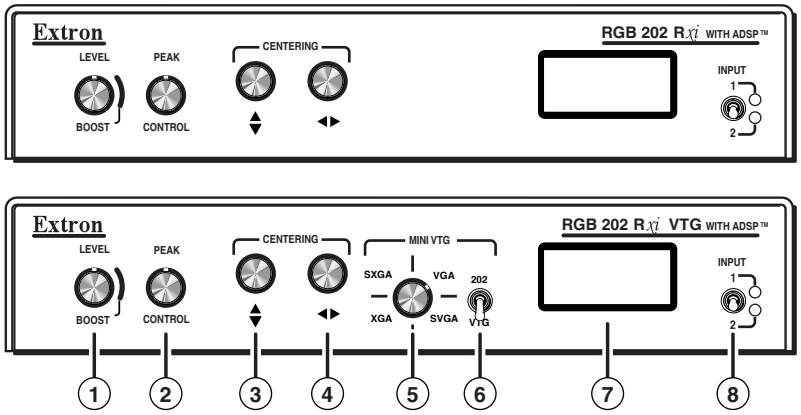


Rack mounting

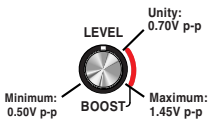
4. Attach the false front panel (provided with the rack shelf) to the unoccupied side of the rack (as shown above), or install a second half-rack-width device in that side by repeating steps 1 – 3.
5. Attach the rack shelf to the rack using four 10-32 x ¾" bolts. Insert the bolts through #10 beveled washers, then through the holes in the rack ears and rack, as shown above.

Front Panel

The features described in this section apply to both models unless otherwise noted.



(1) **Level/boost control** — This alters the video output voltage to affect the brightness of the displayed image. Adjust the level/boost control while viewing the displayed image to set the level/boost that provides best picture quality.



If the interface receives a typical (0.7 volts p-p) analog computer video input, the output will be as follows:

- At the minimum level setting (the counterclockwise limit of this control), the interface will output video at 0.5 volts p-p.
- Unity level is 0.7 volts p-p, the same as the input signal. Set the control to just before the boost area (indicated by the red line) to output unity level video.
- At the maximum level setting (the clockwise limit of this control), the interface will output video at 1.45 volts p-p.

Select a setting in the boost range (0.7 volts and above), indicated by the red line, to compensate for the decrease in signal level that occurs when the signal passes through long cables.
Set the boost at 100% (the maximum level) for cable lengths over 500 feet for all computer signals of 15 kHz to 135 kHz.

(2) **Peaking (Peak) control** — Peaking affects the sharpness of a picture. Increased peaking can compensate for detail (mid- and high-frequency) loss from low bandwidth system components or capacitance in long cables. The minimum setting (at the counterclockwise limit) provides no peaking. The maximum setting (at the clockwise limit) provides 100% peaking. Adjust this control while viewing the displayed image to obtain the optimum picture sharpness.

(3) **Vertical centering (▲▼)** — While viewing the displayed image, rotate this control to move the image up or down on the screen. During centering adjustment, the LCD displays V-SHIFT, and it indicates the vertical shift minimum or maximum limit when the centering limit has been reached. See the notes below.

(4) **Horizontal centering (◀▶)** — While viewing the displayed image, rotate this control to move the image to the right or left on the screen. During centering adjustment, the LCD displays H-SHIFT, and it indicates the horizontal shift minimum or maximum limit when the centering limit has been reached.

NOTE *DDSP disables the interface's vertical and horizontal centering controls. If DDSP is set to On and either centering control is rotated, N/A DDSP ON appears on the LCD display.*
To use the display device's centering controls instead of the interface's centering, set the DDSP DIP switch to On.

NOTE *The centering controls have no mechanical limits to rotation. When the minimum or maximum limit of the control is reached, the picture stops moving on screen.*

Many projectors store centering information in their own memories based on signal frequency. When a projector displays video from input sources that have the same frequency, one source's images may not be centered. Using the interface's centering controls eliminates that problem.

Turning the centering control knobs not only moves the images, but it also stores the horizontal and vertical centering settings in separate memories for each selected input. The interface recalls the centering settings each time an input is selected. Centering adjustments only need to be set once for an application because the settings are saved even when the power is off.

(5) **VTG output resolution and pattern selection switch (RGB 202 Rxi VTG only)** — Select a combination of display resolution and video test pattern using this 16-position rotary switch. Four different video test patterns are available for each of the four resolutions offered by the RGB 202 Rxi VTG's built-in mini video test generator. See "Operating the VTG" in this chapter for more information.

(6) **202 (interface)/VTG selection switch (RGB 202 R*xi* VTG only)** — Use this switch to select the output signal's source

202 = The image from the interface (from input 1 or input 2) will be displayed.

VTG = A test pattern generated by the VTG (video test generator) will be displayed.

NOTE *When this switch is set to VTG, signals from input1 and input 2 are ignored; the interface's internal VTG provides a test pattern in place of the computer video input. Input selection (selection of input 1 or input 2) cannot be performed until the 202/VTG selection switch is set to 202.*

(7) **LCD display** — This backlit LCD shows the horizontal and vertical scanning frequencies. While centering adjustments are being made, the LCD displays H-SHIFT or V-SHIFT, and it indicates the horizontal or vertical shift minimum or maximum limit when a centering limit has been reached. If DDSP is on and the horizontal or vertical centering control is rotated, the LCD displays N/A DDSP ON.

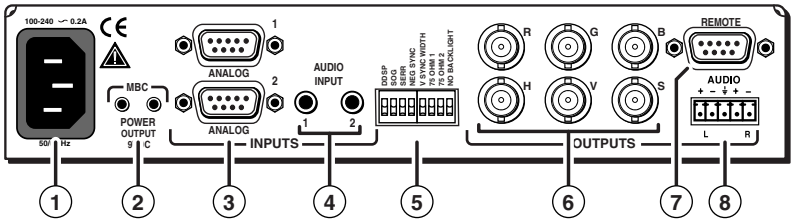
While the VTG is active (RGB 202 R*xi* VTG only), the LCD displays the current format, resolution and scan rate settings. See the "LCD Display" section for details.

The backlight turns on at power-up, and it remains on for 15 seconds if a signal is not present at the selected input. If a signal is present, the backlight will remain on at all times. However, if the rear panel No Backlight DIP switch is set to On, the backlight will turn on for only three seconds at power-up, then it will remain dark even when an active signal is present.

(8) **Input selection switch and LEDs** — Use this toggle switch to select between input 1 and input 2. The LED corresponding to the selected input lights, and the switch returns to the center position automatically.
A remote contact closure switch, a computer, or an RS-232 control system connected via the rear panel 9-pin D port can be used instead of this switch.

Rear Panel

The features described in this section apply to both models.



(1) **AC power connector** — Connect a standard IEC AC power cord here for power input (100VAC to 240VAC, 50/60 Hz) to the internal, autoswitching power supply.

(2) **MBC power connectors** — These 2.5 mm mini jacks supply 9VDC power for buffered monitor breakout cables (MBCs). Connect the MBCs' power plugs here.

(3) **Analog computer-video inputs 1 (top) and 2 (bottom)** — Connect the source computers to these 9-pin D male connectors. Adapters and monitor breakout cables are available from Extron for use with SGI, Sun, and Macintosh computers.

(4) **Audio inputs 1 and 2** — Connect audio cables from the source computers to these 3.5mm mini stereo jacks for unbalanced audio input. See "Cabling" in this chapter for a wiring diagram.

(5) **DIP switches** — This bank of DIP switches controls DDSP (Digital Display Sync Processing), SOG (sync on green) output, serration pulse output, sync polarity, vertical sync width, video termination (high Z/75 ohm), and backlight illumination.

NOTE *The default for all DIP switches is Off (down).*

1 — DDSP (Digital Display Sync Processing)
This feature may be necessary for digital display devices such as LCD, DLP (digital light processing) and plasma displays. Use this option if the image is not displayed properly after other options, such as serration pulse and video termination changes, have been explored.

On — The interface uses DDSP instead of ADSP. DDSP does not process the sync signal.

NOTE *DDSP disables horizontal and vertical centering controls.*

Off — The interface performs sync processing operations, such as centering, with ADSP.

2 — SOG (sync on green)

On — The interface outputs sync on green.

Off — The interface outputs both separate horizontal and vertical sync (on the H and V connectors) and composite sync (on the S connector) for RGBHV or RGBS, respectively.

3 — Serr (serration pulse) — Many LCD and DLP projectors and plasma displays, must have serration pulses removed from the sync signal in order to be displayed properly. Flagging or bending at the top of the video image is a sign that the serration pulses should be removed.

On — The interface outputs serration pulses in the vertical sync interval.

Off — The interface does not output serration pulses.

4 — Neg Sync — This switch controls sync polarity.

On — Both the horizontal and the vertical sync signals are forced to negative polarity on output.

Off — Output sync polarity follows (is the same as) input polarity.

5 — V Sync Width (vertical sync pulse width) — For some digital display devices, if no picture appears, the picture cuts in and out, or it is scrambled, try adjusting the output vertical sync pulse width or switching from ADSP to DDSP.

On — The vertical sync pulse is narrow.

Off — The vertical sync pulse is wide.

6 & 7 — 75 Ohm (video input termination) — DIP switches 6 and 7 provide termination for video inputs 1 and 2, respectively. Video termination can be accomplished by using a laptop breakout cable, by connecting a termination adapter or a local monitor to a monitor breakout cable (MBC), by using an MBC buffer cable, or by setting a termination switch on the interface.

DIP switches 6 and 7 provide a termination method to prevent blooming when a monitor breakout cable is used but no local monitor or termination adapter is connected.

On — The interface provides 75 ohm video input termination.

Off — The interface provides high Z (high impedance) video input termination.

8 — No Backlight — This switch controls illumination of the LCD backlight.

On — The LCD backlight is off, except for three seconds at power-up.

Off — The LCD backlight is on while a signal is present at the selected input.

(6) **BNC output connectors** — These female BNC connectors are for red (R), green (G), and blue (B) video output, and horizontal (H), vertical (V). and composite (S) sync output.

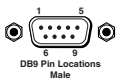
(7) **Remote control connector** — Connect a contact closure remote control device or an RS-232 device (control system or PC computer) to this 9-pin D female connector for remote switching between inputs.
Software for RS-232 control is included with the interface. See chapter 3, "Remote Control" for details.

(8) **Stereo audio output connector** — This 3.5 mm, 5-pole captive screw connector is for balanced audio output. See "Cabling" for a wiring guide.

Cabling

The application diagram in this section shows how the system looks when cabling is completed. Attach cables to the interface as follows:

1. Connect the computers' video outputs to the interface's analog input male 9-pin D connectors on the rear panel. These inputs have the following pin configuration:



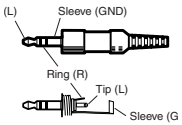
DB9 Pin Locations
Male

Pin	Signal
1	Ground
2	No connection
3	Red video
4	Green video/sync
5	Blue video
6	No connection
7	No connection
8	Horiz. sync/composite sync
9	Vertical sync

If the computers provide the audio input, laptop breakout cables (LBCs) with audio can be used, or monitor breakout cables (MBCs) with audio can be used to allow local monitor output.

NOTE *Most laptop or notebook computers have an external video port, but they require special commands to output the video to that connector. Also, laptops' screens shut off once that port is activated. See the computer's user's guide for details, or contact Extron for a list of laptop keyboard commands.*

2. Connect the unbalanced stereo audio sources (computer or other devices such as a CD player) to the front panel.



Wire the audio jack as shown here.

3. Connect the display device's (projector's, monitor's) coaxial BNC cable to the rear panel BNC connectors.

RGBHV

For RGBHV (**separate H and V sync**) output, connect the cables as shown at left.

RGBS

For **composite sync** (RGBS), connect the sync cable to the connector labeled "S".

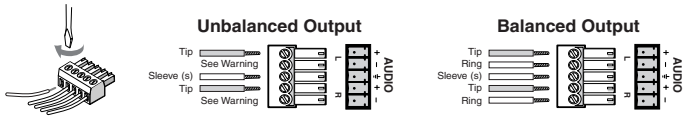
RGsB

For **sync on green** (SOG, RGsB), connect the cables as shown here, and also select the SOG option on the rear panel DIP switch.

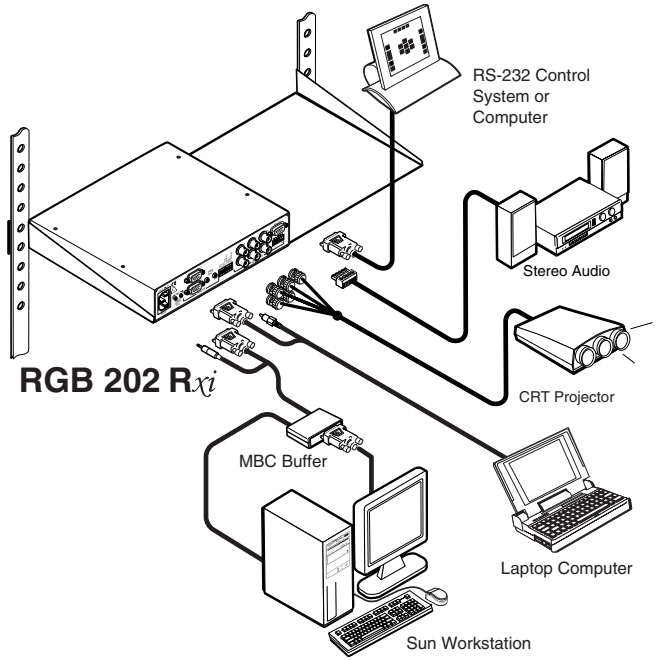
4. Connect the local monitors to the monitor breakout cables if they were used in step 1 to connect the computers to the interface. Set the 75 ohm DIP switches to On if no local monitor is used with a connected MBC cable.

5. Connect an audio device, such as powered speakers, to the rear panel stereo audio output connector for balanced or unbalanced audio output. Following the wiring guide shown below, insert the wires into the appropriate openings in the captive screw connector. Tighten the screws on top to fasten the wires, then insert the wired audio connector into the audio output connector on the interface rear panel.

WARNING *For unbalanced output, connect the sleeve to ground (GND). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*



Wiring the audio output connector



RGB 202 Rxi/RGB 202 Rxi VTG application diagram

6. Set the interface's DIP and toggle switches. Use the "Rear Panel" section of this chapter as a guide.

7. Connect an RS-232 control device, if one will be used.

8. Connect power cords and turn on the display and audio output devices (projectors, monitors, speakers), interface, and input devices (computers). The system is ready for operation.

LCD Display

The RGB 202 R*xi* and RGB 202 R*xi* VTG's front panel LCD display serves two main functions: to display the scanning rates of the input signal, and to indicate the horizontal and vertical centering limits. During VTG operation, the RGB 202 R*xi* VTG's LCD displays the VTG format, resolution and refresh rates.

LCD screen backlight

The LCD screen lights for 15 seconds at power-up, and it stays backlit as long as an input signal is present at the selected input. To force the backlight to remain off at all times except at power-up, set the rear panel No Backlight DIP switch to On.
See page 2-11 for details.

Scan rate indication

When the interface is powered on, the LCD lights for 15 seconds while it determines whether an input sync signal is present. If the No Backlight DIP switch is set to On, the LCD lights for three seconds only.

- If the interface does not detect an input sync signal, the LCD goes dark and displays "NO SIGNAL" until the interface receives an active sync signal.
- If the interface detects an input sync signal, the LCD displays the horizontal and vertical scan rates (sync frequencies) in the following format:

  Hxxx.xxk
  Vxxx.xHz

  The first line shows the horizontal rate in kilohertz, and the second line shows the vertical rate in Hertz.

Centering

While the vertical (▲▼) or horizontal (◄►) centering (shift) controls are being adjusted, the LCD displays "H-SHIFT" or "V-SHIFT", respectively. That message remains on the LCD (in place of the scan rates) until the centering control has been inactive for 3 seconds. When a centering control reaches its minimum or maximum limit, the LCD displays "MIN" or "MAX" on the line below "H-SHIFT" or "V-SHIFT".

If the centering controls are no longer active, the centering settings are saved, and the LCD displays the current scan rates.

If the DDSP DIP switch is set to On and a centering control is rotated, the LCD displays N/A DDSP ON, and the image does not shift on screen.

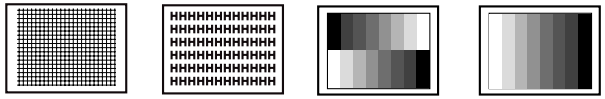
Operating the VTG (RGB 202 R*xi* VTG only)

The RGB 202 R*xi* VTG includes a limited video test generator. The VTG creates and outputs standard test patterns at fixed formats and resolutions so that a system can be set up and tested even when an input computer is not available.

To use the VTG, follow these steps:

1. Set the front panel 202/VTG selection switch to VTG.
2. Select an appropriate combination of output resolution and test pattern using the 16-position rotary switch on the front panel. Four different video test patterns are available for each of the four resolutions. Select the test patterns by rotating the switch within the appropriate resolution quadrant. The LCD displays the selected VTG format, the resolution, and then the scan rates.

   The test patterns are shown below.



Left to right: crosshatch, H-pattern, 8 split-level grayscale, and 8 color bar test patterns

The four available resolutions are shown below.

Switch quadrant	Format	Resolution (pixels x lines)	Horiz. rate (kHz)	Vert. rate (Hz)
1	VGA 3	640 x 480	31.5	60
2	SVGA	800 x 600	37.9	60
3	VESA 3	1024 x 768	48.4	60
4	SGI	1280 x 1024	64.0	60

Troubleshooting

Turn on the input devices (computer, audio device) and output device(s) (projector, monitors, speakers). The image should now appear on the screen, and sound should be audible.

If the image does not appear or there is no sound

1. Ensure that all devices are plugged in.
2. Make sure that each device is receiving power. The interface's front panel LED lights if the interface is receiving power and an active sync signal.
3. Check the cabling and the audio connector wiring and grounding, and make adjustments as needed.
4. Verify that the 75 ohm video input termination DIP switches have been set correctly.
5. For digital display devices (including LCD, DLP and plasma devices), try turning DDSP on or off using the rear panel DIP switch.
6. To test the system setup and output, substitute a video test generator for one of the computer inputs. Use the VTG that is built into the RGB 202 R*xi* VTG, or use a stand-alone VTG with the RGB 202 R*xi*. To use a stand-alone VTG, unplug the input/output devices' and interface's power cords, replace the video source with a VTG, then reconnect power cords to restore AC power.
7. Call Extron's customer support hotline if needed.

If the image is not displayed correctly

1. If the output image looks too green, the sync on green (SOG) DIP switch may be set to On, and the display device may not be configured to handle SOG signals. Set SOG to Off.
2. If the picture bends or flags at the top of the screen, set the serration pulse DIP switch to Off.
3. For a display device that experiences intermittent glitches, try turning DDSP on or off using the rear panel DIP switch.
4. If the picture "hangs off" the edges of the screen, adjust the centering controls (◄►, ▲▼).
5. If the edges of the image seem to exceed their boundaries or if thin lines and sharp edges look thick and fuzzy, try changing the Level/Boost or Peak Control settings. If the image is too bright, decrease the boost or peaking level.
6. If the image appears and is stable, but it has ghosting or blooming, check the high Z/75 ohm video input termination. If changing the termination doesn't solve the problem, try using a different input cable.
7. If the picture is faint or cuts out and the signal is weak, the video input may be double-terminated. If a local monitor or a termination adapter is attached to the input's monitor breakout cable, or if a laptop breakout cable is used, make sure that the 75 ohm video input termination DIP switches are set to Off (for high Z termination).
8. If the picture from a new source computer does not seem correctly centered, the input position memory presets might require resetting. To reset the input position memories, do the following:
   a. Unplug the interface's AC power cord.
   b. Hold the input selection switch up (toward input 1) while reconnecting the power cord to the interface and the power source
   c. Select the appropriate input, and adjust the horizontal and vertical centering.
9. If the image still does not display correctly, call Extron's customer support hotline.

If the interface does not respond to controls

1. If the picture does not move on screen when the horizontal and vertical centering controls are rotated, DDSP is in use. Set the DDSP DIP switch to Off.
2. If the RGB 202 R*xi* VTG does not switch between inputs when a remote control is used, the front panel 202/VTG toggle switch might be set to VTG. Use the switch to select 202 in order to use a remote control.

NOTE *When the 202/VTG switch is set to VTG, signals from input1 and input 2 are ignored; the interface's internal video test generator provides a test pattern in place of the computer video input. Input selection (selection of input 1 or input 2) cannot be performed until the 202/VTG selection switch is set to 202.*

Chapter Three

Remote Control

RS-232 Programmer's Guide

Contact Closure Control

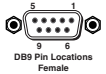
There are three ways to control input selection and centering features of an RGB 202 R*xi* /RGB 202 R*xi* VTG interface: by using the front panel controls, by using an RS-232 remote control device, and by using a contact closure keypad.

RS-232 Programmer's Guide

The interface can be remotely controlled via a host computer or other device (such as a control system) attached to the rear panel 9-pin D RS-232 connector. The protocol is 9600 baud, 1 stop bit, no parity, and no flow control.

The control device (host) can use either Extron's Simple Instruction Set (SIS) commands or the graphical control program for Windows. RS-232 control software is included with the interface.

The rear panel RS-232 9-pin D female connector has the following pin assignments:



Pin	RS-232 function	Contact closure	Description
1	–	Input 1	Select input #1
2	Tx	–	Transmit data
3	Rx	–	Receive data
4	–	Input 2	Select input #2
5	Gnd	Gnd	Signal ground
6	–	–	Not used
7	–	–	Not used
8	–	–	Not used
9	–	–	Not used

Host-to-interface communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When a command is valid, the interface executes the command and sends a response to the host device. All responses from the interface to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Interface-initiated messages

When a local event such as a front panel or contact closure selection or adjustment takes place, the interface sends a message to the host. No response is required from the host. The interface-initiated messages are listed here (underlined).

(C) Copyright 2000, Extron Electronics, RGB 202 Rxi, Vx.xx ↵
The interface displays the copyright message when it first powers on. Vx.xx is the firmware version number.

RECONFIG ↵
When a change is made via a front panel control or another operation occurs that must be written to a new memory block, the interface sends the reconfiguration message. No response is required from the RS-232 host, but the host may request a new status listing via the request information command (I/i). See the command/response table in this chapter for details.

Chn X2 ↵ The input number has been changed or, for the RGB 202 R*xi* VTG, the VTG has been turned on or off.

Error responses

When the interface receives a valid SIS command, it executes the command and sends a response to the host device. If the interface is unable to execute the command because the command is invalid or it contains invalid parameters, it returns an error response to the host.

The error response codes and their descriptions are as follows:

E01 – Invalid input number (the number is too large or small; occurs when attempting to select VTG mode via RS-232)
E06 – Invalid input selection (occurs when selecting an input when the RGB 202 R*xi* VTG is set to VTG mode)
E10 – Invalid command
E13 – Invalid value (the number is out of range/too large)

Using the command/response table

The command/response table lists valid command ASCII codes, the interface's responses to the host, and a description of the command's function or the results of executing the command. Lower case characters are acceptable in the command field only where indicated. The ASCII to HEX conversion table below is for use with the command/response table.

ASCII to HEX Conversion Table																								Esc	1B	CR	ØD	LF	ØA
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27	(| 28 |)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37	8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47	H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57	X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67	h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77	x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

The command/response table page uses symbols (defined below) to represent variables.

Symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)
• = Space
X1 = Input number (1 or 2)
X2 = Active input/VTG (1 = input 1, 2 = input 2, 3 = VTG)
X3 = Shift control range (-255 to +255)
X4 = Controller firmware version (listed to two decimal places e.g.: x.xx)
X5 = Frequency in Hz or kHz (listed as xxx.xx)

Command/response table

Command description	Command ASCII	Command Hex	Response to host	Additional description
Input selection				
Select input	X1 !	30 + X1 21	Chn X1 ↵	Select input 1 or 2
Horizontal shift				
Specify horizontal shift	X3 H	X3 48	Hph X3 ↵	Set horizontal shift value
Shift right one step	{ H	7B 48	Hph X3 ↵	Increment up
Shift left one step	} H	7D 48	Hph X3 ↵	Increment down
Vertical shift				
Specify vertical shift	X3 /	X3 2F	Vph X3 ↵	Set vertical shift value
Shift up one step	{ /	7B 2F	Vph X3 ↵	Increment up
Shift down one step	} /	7D 2F	Vph X3 ↵	Increment down
Firmware version, part number & information requests, and reset				
Query firmware version number	Q/q	51/71	X4 ↵	Display version (Ver x.xx)
Request part number	N/n	4E/6E	N60-32_-01 ↵	Display interface's part #
Request information	I/i	49/69	(see below)	Display status
Command =				
Response =			Chn X2 • Hph X3 • Vph X3 • Hrt X5 • Vrt X5 ↵	

Control Software for Windows

The included graphical control software for Windows offers another way to control the interface via RS-232 in addition to the Simple Instruction Set commands listed on page 3-4. The control software is compatible with Windows 3.1x, Windows 95/98, and Windows NT. The RGB 202 Rχi and RGB 202 Rχi VTG use version 2.0 or higher of Extron's RGB 302/304/202 Control Program, which is included with these interfaces.

Installing the software

The control program is contained on a 3.5-inch diskette, and it can run from the floppy drive. However, it is more convenient to run the program from the hard drive.

To install the software onto the hard drive, run SETUP.EXE from the floppy disk, and follow the instructions that appear on the screen. The program requires approximately 1 MB (megabyte) of hard disk space.

By default the installation creates a C:\RGB302 directory, and it places two icons (RGB 302+304+202 Control Pgm and RGB 302+304+202 Help) into a group or folder named "Extron Electronics".

Using the software

To run the control program, follow these steps:

1. Double-click on the RGB 302 + 304 + 202 Control Pgm icon in the Extron Electronics group or folder, or on the Rgb302.exe icon in the C:\RGB302 directory. The Comm menu will appear on the screen.

2. Click on the comm port that is connected to the interface's RS-232 port. The control software will "look for" the interface at that port and read its configuration. The control program window (shown at left) will appear and display current settings.

For information on program features, press the F1 computer key or click on the Help menu from within the control program, or double-click on the RGB 302+304+202 Help icon in the Extron Electronics group or folder.

Contact Closure Remote Control

For remote control of input selection only, connect a contact closure remote control device to the rear panel 9-pin D female Remote connector. See the pin assignment table on page 3-2.

A Appendix

Specifications, Accessories and Part Numbers

Specifications

Included Parts

Optional Accessories

Cables

Specifications, Accessories, Part Numbers

Video

Routing	2 x 1 router
Gain	0.5V to 1.45V p-p
Bandwidth	300 MHz (-3dB)
Rise time	1.5 nS

Video input

Number/signal type	2 analog RGBHV, RGBS, RGsB, RsGsBs
Connectors	2 9-pin D male for MBC/LBC cable or buffer
Minimum/maximum levels	Analog ..... 0.3V to 1.45V p-p with no offset at unity gain
Impedance	75 ohms or high Z, switchable (set to 75 ohms if no local monitor is connected)
Horizontal frequency	15 kHz to 150 kHz
Vertical frequency	40 Hz to 140 Hz
Return loss	-30dB @ 5 MHz
Maximum DC offset	4V

Video signal characteristics — RGB 202 R*xi* VTG only

Dot clock	VGA 25.18 MHz, Mac 30.04 MHz, SVGA 65.04 MHz, SGI 107.4 MHz ..
Pixel clock accuracy	> 99.02%
Scan rate accuracy	> 99.03%
Frequency range	VGA ..... 31.475 kHz x 60 Hz, SVGA ... 37.879 kHz x 60 Hz, XGA ..... 48.392 kHz x 60 Hz, SGI..... 63.928 kHz x 60 Hz
Rise/fall time	2.5 nS / 2.0 nS, measured

Video output

Number/signal type	1 analog RGBHV, RGBS, RGsB
Connectors	6 BNC female
Minimum/maximum levels	0.3V to 1.30V p-p with 0.7V p-p nominal input level
Impedance	75 ohms
Return loss	-30dB @ 5 MHz
DC offset	±5mV maximum with input at 0 offset

Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB
Input level	2V to 5.5V p-p with ±0.2VDC offset max.
Output level	TTL ..... 4V to 5V p-p
Input impedance	10 kohms
Output impedance	75 ohms
Max. propagation delay	85 nS
Max. rise/fall time	2 nS
Polarity	RGBHV ..... tracks polarity (or force negative sync via DIP switch) RGBS, RGsB ..... negative

Audio

Routing	2 x 1 stereo router
Gain	Unbalanced 0dB, balanced +6dB
Frequency response	20 Hz to 20 kHz, ±0.05dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at rated maximum output drive
S/N	>90dB at rated maximum output drive (17dBu), balanced
Crosstalk	<-90dB @ 1 kHz, fully loaded
Stereo channel separation	>90dB @ 1 kHz to 20 kHz

Audio input

Number/signal type	2 PC level stereo, unbalanced
Connectors	2 3.5 mm stereo jacks (female) (2 channel); tip (L), ring (R), sleeve (ground)
Impedance	>10 kohms, unbalanced, DC coupled
Maximum level	+8.5dBu, (balanced or unbalanced) at stated %THD+N

Audio output

Number/signal type	1 buffered stereo (2 channel), balanced/unbalanced
Connectors	1 3.5 mm, captive screw connector, 5-pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (Hi-Z)	>+14dBu, balanced at stated %THD+N
Maximum level (600 ohm)	>+8.5dBm, balanced at stated %THD+N

NOTE *0dBu = 0.775 volts (RMS).*

Control/remote — interface

Serial control port	RS-232, 9-pin female D connector (also used for contact closure)
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configuration	2 = TX, 3 = RX, 5 = GND
Contact closure	1 9-pin female D connector (also used for RS-232)
Contact closure pin configuration	1 = input #1, 4 = input #2, 5 = GND
Program control	Extron's control program for Windows Extron's Simple Instruction Set™ – SIS™

General

Input power	100VAC to 240VAC, 50/60 Hz, 18 watts, internal, auto-switchable
MBC power jacks	9.0VDC, 0.15A
Temperature/humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing Operating +32° to +113°F (0° to +45°C) / 10% to 90%, non-condensing
Rack mount	Yes, with an optional rack shelf (part #60-190-01)
Furniture mount	Yes, with an optional under-desk mounting kit (part #70-077-01) or through-desk mounting kit (part #70-077-02)
Enclosure type	Metal, vented
Enclosure dimensions	1.75" H x 8.75" W x 8.0" D (1U high, half rack width) 4.4 cm H x 22.2 cm W x 20.3 cm D with rear BNCs ..... D = 8.4" (21.3 cm) (Depth excludes knobs.)
Product weight	RGB 202 R*xi* ..... 2.2 lbs (1.0 kg) RGB 202 R*xi* VTG ..... 2.3 lbs (1.0 kg)
Shipping weight	5 lbs (2.3 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

Included Parts

These items are included in each order for a RGB 202 R*xi* or a RGB 202 R*xi* VTG:

Included parts	Part number
RGB 202 R*xi*/RGB 202 R*xi* VTG	60-327-01/60-328-01
3.5 mm, 5-pole captive screw connector	10-319-10
RGB 202 R*xi*/202 R*xi* VTG User's Manual	68-500-01
Rubber feet	
IEC power cord	
Windows-based control software	29-035-01
Tweeker	

Optional Accessories

Accessories	Part number
Under-desk mounting bracket kit	70-077-01
Through-desk mounting bracket kit	70-077-02
1U rack shelf	60-190-01
3.5 mm stereo plug	10-306-01
Installation cable (bulk 14-conductor, non-plenum)	22-120-02
Installation cable (bulk 17-conductor, plenum)	22-111-03

Cables

Monitor breakout cables	Part number
MBC VGA/XGA HR	26-162-01
MBC Mac/Quadra	26-018-01
MBC Sun Sparc HR	26-424-01
MBC SGI/13W3 HR	26-425-01

Laptop breakout cables	Part number
LBC VGA HR 6′	26-224-01
LBC Mac HR 6′	26-363-01
LBC Sun HR 6′ (61 kHz)	26-413-01
LBC Sun HR 6′ (71 kHz)	26-431-02
LBC Sun HR 6′ (81 kHz)	26-431-03
LBC VGA HR 6′ A	26-441-02
LBC Mac HR 6′ A	26-442-02
LBC Sun HR 6′ A (61 kHz)	26-443-02
LBC Sun HR 6′ A (71 kHz)	26-444-02
LBC Sun HR 6′ A (81 kHz)	26-445-02

BNC cables	Part number
BNC-5 3′ HR	26-260-15
BNC-5 6′ HR	26-260-01
BNC-5 12′ HR	26-260-02
BNC-5 25′ HR	26-260-03
BNC-5 50′ HR	26-260-04
BNC-5 75′ HR	26-260-16
BNC-5 100′ HR	26-260-05
BNC-5 3′ HRP	26-378-01
BNC-5 6′ HRP	26-378-02
BNC-5 12′ HRP	26-378-03
BNC-5 25′ HRP	26-378-04
BNC-5 50′ HRP	26-378-05
BNC-5 75′ HRP	26-378-06
BNC-5 100′ HRP	26-378-07