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Extron Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual



RGB 202xi Interface

Includes
RGB 202 VS SL2
RGB 202 VTG
RGB 202 VS2

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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 baterías 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 two 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, Central America, and Asia:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, U.S.A.

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

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 65.226.0015 (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.

Changing Jumper Settings

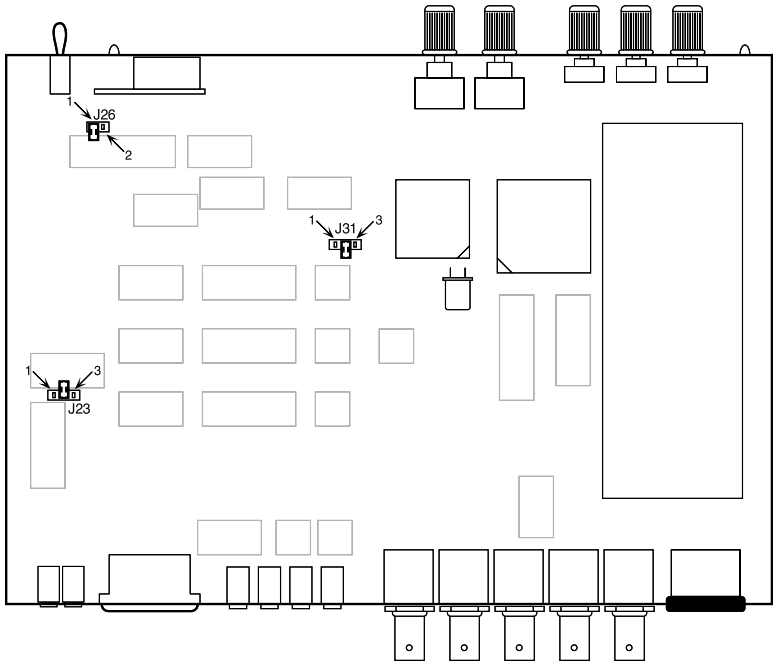
There are three jumpers in the RGB 202*xi* which can be changed by the user for special applications. They are:

Note of the position of the jumper before changing it.

J23 – TTL colors (3-pins)
1 to 2 = 64 TTL Colors (EGA)
2 to 3 = 16 TTL Colors (CGA)
Open (2 only) = Automatic Detect (Default)
The interface normally produces the proper TTL colors.

J26 – Negative Sync (2-pins)
1 to 2 = Sync negative only.
Open = Automatic sync tracking (Default)

J31 – Video Clamp Time (3-pins)
1 to 2 = Backporch (normal)
2 to 3 = Sync Tip (1µ sec from leading edge)



6. When finished, use the previous page as a guide to put the cover back on.

7. Set the RGB 202xi for normal operation.

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Legend of Icons

The following icons may be used in this manual:

Important information – for example, an action or a step that must be done before proceeding.

A Warning – possible dangerous voltage present.

A Warning – possible damage could occur.

A Note, a Hint, or a Tip that may be helpful.

Additional information may be referenced in another section, or in another document.

User's Manual Part Number Information

RGB 202*xi*, 202 VTG, 202 VS2 and 202 VS SL2 User's Manual
68-187-01
Rev. A, 69-01

Rev B, 79-01
Page 4-4 cable connector

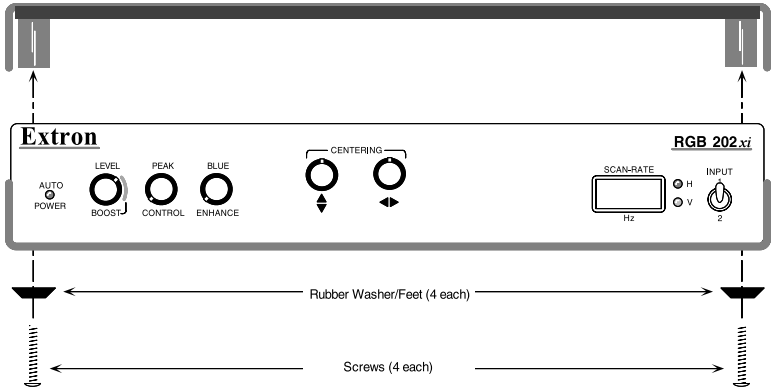
Rev C, 89-05 (for CD), 89-07 (for print)
Updated specs on page 1-5
Update inside cover styles and manual part number.
Rev D, 89-11, page 1-5
Change output video range to 1.2.
Rev E, 08-99, page 2-1
Remote description.

Written and trinted in USA.

Removing the RGB 202*xi* Cover

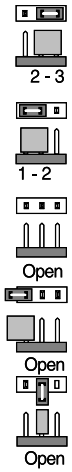
Jumpers are set at the factory to allow the RGB 202*xi* to detect most video requirements automatically. However, if it is necessary to change any of these jumpers you must first remove cover.

1. Turn power off by disconnecting the power cable.
2. Disconnect any other cables that may be in the way.



3. Use a small Phillips screwdriver to remove the four (4) screws inside each rubber foot. Put these aside.
4. Turn the case upright. The top half of the case is the cover. Pull upward on the cover to remove it.
5. Use the picture on the facing page locate the jumper that needs to be changed.

Configuration Jumpers



The general illustration here shows an example of a 3-pin jumper. These are sometimes called "Bergs". There are three possible combinations for a 3-pin jumper:

Pins 1 and 2 – Press the jumper onto pins 1 and 2.

Pins 2 and 3 – put the open end of the jumper over pins 2 and 3 and press on.

No connections (Open) – This can be done any way, as long as no pins are connected. Three different Open connections are shown here. Connecting one side of the jumper and leaving the other contact off the end, or off the side, is a common way to do this. This way, the jumper is available if it is needed in the future.

Problem	Probable Cause	Solution
Auto Power LED not illuminating.	1. Incorrect Extron MBC cable being used.	1. Check that the MBC cables are installed correctly.
	2. Interface is not receiving a sync signal from the computer.	2. Make sure computer is ON and MBC cable is properly connected.
	3. Input selection switch is set to wrong input.	3. Change the position of the Input switch on the Front Panel.
Auto Power LED stays on all the time.	1. Auto Power defeat Dip Switch #4 is on.	1. Turn Dip Switch #4 OFF.
Video on Data Display is hooking, or bending.	1. Serration Pulses are not required.	1. Turn switch #2 ON to remove Serration Pulses.
	2. Vertical Sync Pulse width needs to be wider.	2. Turn switch #4 ON to increase the Vertical Sync pulse width.
	3. Vertical Shift out of proper alignment.	3. Adjust Vertical Positioning.
No Vertical Sync.	1. Interface may be outputting separate H&V sync.	1. Set switch #3 OFF to allow Auto sync.
Computer boots up black and white instead of color.	1. No Termination to computer video output before computer is turned on.	1. Turn computer power OFF, set the appropriate termination switch (#7 for Input #1 or #8 for Input #2) ON and re-boot computer.
The Blue Video is not the correct shade of blue for TTL computer signal.	1. Blue Enhancement adjustment is not in the correct position.	1. Adjusting the Blue Enhancement knob counterclockwise to reduce the Blue Enhancement.
VGA signal does not fill screen between modes.	1. Projection device/ polarity not tracking all changes of VGA through composite sync output.	1. Set Dip Switch #3 ON and run separate H&V output to projector or monitor.

RGB 202xi, RGB 202 VTG,
RGB 202 VS2 and RGB 202 VS SL2
User's Manual

1

Chapter One

Introduction

Features

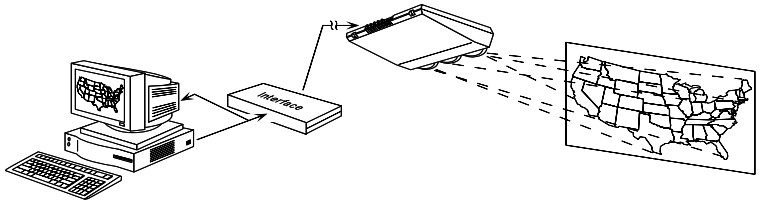
Specifications

About this manual

This manual was written to explain the features, installation and operation of Extron's RGB 202*xi* series of interfaces. Although the name "RGB 202*xi*" is used throughout the manual, it refers to four different interface models. Chapter 4 covers the differences between the standard model RGB 202*xi* and those models with special features.

Introduction to RGB Interfaces

As you may know by now, an RGB interface provides the means for getting a computer video output to display on a large screen. The interface must take the video signals from the computer and transform them for use by a projector or data monitor.



In addition to this, the RGB 202*xi* has many other enhancement features. This user's manual provides the technical information required to install and operate the RGB 202*xi* Universal Interface. Some places in this manual it is simply referred to as the "interface".

Interface Considerations

As illustrated above, the interface operates between a computer (or computers) and a video projector. Computers differ both in the type of video signals as well as the physical connectors they use.

Adapters – For this reason, a universal interface requires an adapter to match the physical and electrical connections of the computer and the interface.

Local Monitor – Another thing that must be considered is whether the computer's monitor ("local monitor") will be used in the application. This is more convenient for the computer operator, or presenter because it may be difficult to see the big screen while operating the computer. If the local monitor is to be used, a Monitor Breakout Cable (MBC) is required. An MBC adapts the computer to the local monitor, as well as the interface.

Problem	Probable Cause	Solution
Double image on Data Display.	1. The Horizontal scan frequency of the computer may be twice that of the Data Display.	1. Incompatibility of Data Display with computer scan frequency.
Vertical Jitter of Displayed text.	1. Computer Source is Interlaced.	1. Turn DIP switch #1 ON (LCD sync processing).
Image on Data Display is dim or not at full brightness level.	1. Input voltage level is too low.	1. Increase level using Level Control on front panel. Turn the knob clockwise.
	2. Double Termination at that input (1 or 2) of the RGB 202xi.	2. Set termination switch (#7 for Input #1, or #8 for Input #2) on Rear Panel OFF for High Z.
Image on Data Display is too bright.	1. No Termination for that input.	1. Connect a local monitor to the Extron MBC cable monitor input connector (female). or - Set termination DIP switch ON (#7 for Input #1; #8 for Input #2). or - See MBC documentation.
	2. Output level is too high.	2. Adjust the Level/Boost counterclockwise.
Unstable image on Data Display	1. Sync on Green with high sync levels on short cable runs.	1. Make sure that Peaking Control is fully ccw for short cable runs.
	2. Serration Pulses are present at the output.	2. Turn DIP switch (#5) ON to remove the Serration Pulses.
	3. Signal not terminated at projector.	3. See projector documentation on termination.
Severely or unreadable image	Signal needs horizontal clamping.	Change Jumper #31 setting (See page B8.

Due to the number of different types of Data Projectors and Data Monitors currently on the market, each with different characteristics, no specific data display device was used to generate this troubleshooting information. If you have a concern or would like to know any special or unusual characteristic of your particular display, please call Extron.

Problem	Probable Cause	Solution
No image on Data Display (projector or monitor).	1. Power Connections not being made.	1. Check to make sure power is being supplied to the computer, monitor, interface and Data Display (and MBC cable if required).
	2. Data Display not set for Analog signal.	2. Check to confirm that Data Display input settings are for Analog.
	3. Cables not connected.	3. Check and secure all cable connections.
	4. Horizontal or Vertical phase is shifted too far in one direction.	4. Turn DIP switch #1 ON to check centering reference.
	5. Level Control turned down too low on interface.	5. Adjust Level Control to the middle position.
	6. Sync on Green output from interface.	6. Set Data Display for an input of Sync on Green, or turn Dip switch #2 on to defeat Sync on Green and #3 ON to use Auto Sync.
	7. Input select switch on interface is not set correctly.	7. Make sure that the RGB 202*xi* Input Select Switch is in the correct position (Input #1 for Analog/TTL, Input #2 for Analog/ECL signals).
	8. Contrast too low on data display.	8. Increase contrast adjustment on monitor or projector.

Some monitors and projectors do require specialized settings with the interface. Therefore, if you experience any trouble, call Extron Tech Support at 714-491-1500.

Features

The RGB 202*xi* provides enhancement features to improve the performance of the connected presentation monitor or projector. These features are listed below and described on the following pages.

- *300 MHz Bandwidth*
- *15-150 kHz Compatible*
- *Level and Boost Control*
- *Peaking (Sharpness)*
- *LCD Sync Processing*
- *Auto Power*
- *LCD Frequency Readout*
- *Horizontal Centering Control*
- *Vertical Centering Control*
- *Blue Enhance Control*
- *2 Universal Inputs*
- *Input Termination Switches*
- *Serration Pulse Removal*
- *Sync Stripping*
- *Two-Input Switching*
- *Audio Interface*
- *Automatic Sync Output: RG$_s$B, RGBS or RGBHV*
- *Internal Power Supply*

Features in other RGB 202 models

RGB 202 VTG

- *Built-in Video Test Generator*

RGB 202 VS2

- *Built-in VideoShift™*

RGB 202 VS SL2

- *Built-in VideoShift™ and ShiftLock™*

*Operational differences between these models and the RGB 202*xi* are covered in Chapter 4.*

Features Defined

Auto Power – In normal operation, the RGB 202*xi* is "green" or in "power saver mode" because it turns on only when it is needed. If it senses computer sync on its selected input, the RGB 202*xi* turns ON. Also, when the selected input senses no sync from that computer, it turns itself OFF. The LED lights when the RGB 202*xi* power is on.

Level and Boost – This control is similar to a contrast adjustment on a data monitor, which is used to adjust the brightness and contrast of the displayed image. This feature is also used to boost the output signal to a maximum of 1.45 volts peak to peak to compensate for losses of signal level or picture contrast due to cable length. Output cable lengths of up to 1000 feet can be used by adjusting this feature properly. The result is also dependent on signal frequency.

Peaking (Sharpness) Control – This control is similar to the sharpness control on a data monitor. Computer signals will have a sharper image when adjusting the peaking, regardless of the cable length. The peaking adjustment compensates for mid and high frequency RGB Video Bandwidth response in data monitors and projectors and for signal loss due to cable capacitance.

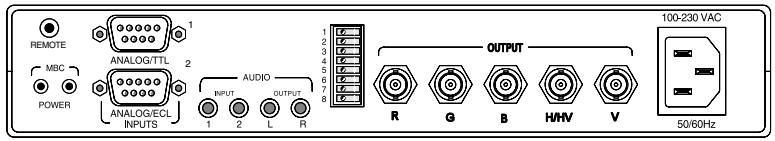
Vertical Picture Centering (with Memory) – This adjustment shifts the displayed image vertically on the monitor or projector screen and remembers the settings for both Input #1 and Input #2 separately.

Horizontal Picture Centering (with Memory) – This adjustment is used to position the displayed image from side to side on the screen. It also remembers the settings for both Input #1 and Input #2 separately.

Scan Rate Readout – This LCD readout alternately displays both the horizontal and vertical scan frequencies of the selected computer signal.

Internal Power Supply – A 90-270 Volt, 50/60Hz internal power supply is a standard feature of the RGB 202*xi*. No setup is required for 50/60Hz power sources.

Blue Enhance (TTL) – Allows for mixing just the right amount of blue video with the green video for displaying blue text in a more readable blue-green color. This color mixing affects only the displayed blue colors for TTL Computer-video signals.



Rear Panel Operation

Remote – Allows connection of a constant contact switch for remote selection of Input #1 or #2 — only if Input switch on front panel is in #1 position.

MBC Power (2 connectors) – Connect Power plug(s) from up to 2 MBC Buffer cables.

Input #1, Analog/TTL – Connect a video cable (or MBC) from any Analog or TTL source.

Input #2, Analog/ECL – Connect video cable (or MBC) from any Analog or ECL source.

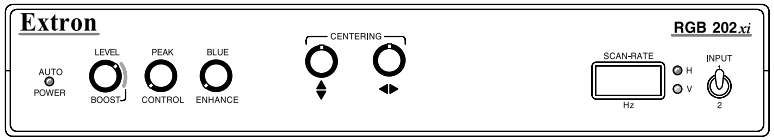
Audio Input (1 & 2) – Connect to stereo audio sources for Input #1 and for Input #2 (above).

Audio Output (L & R) – Connect to stereo left & right inputs of an external audio system.

DIP Switches: (On = press right side of the switch, or away from the printed switch numbers;
Off = press left side.)

1 - Off = Normal sync processing; **On** = Use LCD Sync processing (▲▼ & ◄► become inactive).
2 - Off = Auto Sync detection; **On** = Auto Sync detection, but **No** Sync on Green.
3 - On = Force separate Horizontal & Vertical Sync; **Off** = Auto Sync.
4 - Off = Auto Power detect; **On** = Auto Power defeat (forces power On).

5 - Off = Allow Serrations; **On** = remove Serrations.
6 - Off = Normal vertical sync width;
On = Vertical Sync approximately twice normal width.
7 - Off = High Z, Input #1; **On** = 75 ý Impedance, Input #1.
8 - Off = High Z, Input #2; **On** = 75 ý Impedance, Input #2.



Front Panel Operation

Auto Power – Senses computer power and automatically turns the RGB 202*xi* power **On**.

Level Boost – Similar to a contrast control, this control raises and lowers the output signal level from the original input level. e.g. a VGA input of 0.7v peak-to-peak (p-p) can be adjusted for an output level of 0.3 to 0.8v p-p (without boost). Within the boost (red) range, the output can be raised to 1.25v p-p.

Peak Control – Similar to a sharpness control, this control compensates for mid and high frequency bandwidth response in data monitors and projectors, and for signal losses due to cable capacitance. A sharper image will be seen from most computers, regardless of cable length. For long cables, the setting will probably be above the 50% level. Use your visual judgement when using this adjustment.

Blue Enhance – Used with TTL signals (Input #1), allows the mixing of blue with green for displaying text that is easier to read (blue-green color).

V Centering ▲▼ (vertical shift) – Moves image up or down on the display screen. (Not active if DIP switch #1 is On) Memory stores settings to keep image centered when switching inputs.

H Centering ◀▶ (horizontal shift) – Moves image left or right on the display screen. (Not active if DIP switch #1 is On.) Memory stores settings to keep image centered when switching inputs.

LCD Screen – Alternately displays the horizontal and vertical frequencies of the selected input.
H LED (red) – Lights when the LCD is displaying the horizontal frequency of the selected input.
V LED (green) – Lights when the LCD is displaying the vertical frequency of the selected input.

Input Switch – Used to select Input #1 or #2 (both video & audio) for output from the RGB 202*xi*. (If in the #1 position, a constant contact switch may be connected through the rear panel for remote switching.)

LCD Sync Processing – Exclusive to Extron, our LCD sync processing makes the RGB 202*xi* work with CRT and LCD based presentation displays.

Input Switch – The RGB 202*xi* interface can be connected to the outputs of two computers at the same time, making it a two-input switcher as well as an interface. The Input switch is used to select which input source (#1 or #2) will be displayed on the connected monitor or projector. Both inputs are universal.

Termination Switches – These switches allow for 75 ohm termination of the connected computer for either of the two inputs. With this feature, an external termination adapter is not required when using an Analog type computer without an external local monitor (i.e., a Laptop).

Automatic Sync Stripping – Sync is automatically stripped off any incoming signal with sync on the red, green and blue video channels. If desired, it can be added back to the green output signal by the use of a dip switch, or Auto Sync output detection.

Auto-Sync Output Detection – Automatically senses the impedance on each BNC output, determines which ones are being used and sends the proper sync output.

Audio Interface – The RGB 202*xi* includes a PC/computer audio (600 ohm) to line-level audio (balanced) converter. For computers that have a sound card, the audio interface will select that audio input together with the video (audio follow). The audio output can be connected to an external stereo system.

Two-Input Switching – The RGB 202*xi* may be used as a two input (one Analog/ECL and one Analog/TTL) switcher. Input selecting can be done by the front panel toggle switch or with an optional external switch plugged into the rear panel remote connector. Audio input is switched with video.

Local Monitor Compatibility – Using an MBC (Monitor Breakout Cable) with the RGB 202*xi* allows for computer monitor and large screen display image to operate at the same time. This allows the presenter, or computer operator to use the computer's (local) monitor while the audience watches on the large screen.

Specifications

Input Signal

Video: Analog 0.3 to 1.45 V p-p
ECL 0.3 to 1.45 V p-p
TTL 2.7 to 7.00 V p-p

Audio: Connector: 2.5 mm Stereo Jack
Impedance: High Z

Sync: Separate Sync TTL/Analog
Horizontal Sync - Pos,/Neg.
Vertical Sync - Positive/Negative
Composite Sync TTL/Analog Level
Positive/Negative
Composite Sync on Green Video
0.3V p-p Negative
(video 0.7V p-p positive)

Output Signal

Video: Analog .5 to 1.2V p-p
Sync: Auto Sync on Green
Composite Sync
(TTL level, 4V p-p)
(separate, negative-going)
Separate H and V Sync
(TTL level, 4v p-p)
Tracks polarity
(or force negative sync via jumper)
Audio: Connector: (2) 2.5 Stereo Jacks
Impedance: 600 ohms
Level: Line

RGB Video Output (RGB 202 VTG model)

RGB Video 1 v p-p
Peak White 0.7 - 0.714 v p-p above ground
Sync 0.272 - 0.375 v p-p below ground

Frequency Range

Horizontal: 15.5 kHz to 150 kHz
(Automatically)
Vertical: 40 Hz to 140 Hz
(Automatically)

LCD Scan-Rate Range

10 to 150 kHz Horizontal
30 to 200 Hz Vertical

RGB Video Bandwidth

300 MHz (-3dB) Bandwidth

Operating Temperature

Operating 0° to 50° C (31° to 122° F)
Storage -20° to 60° C (-4° to 140° F)

RGB 202xi, RGB 202 VTG,
RGB 202 VS2 and RGB 202 VS SL2
User's Manual

Appendix B

Reference and Troubleshooting

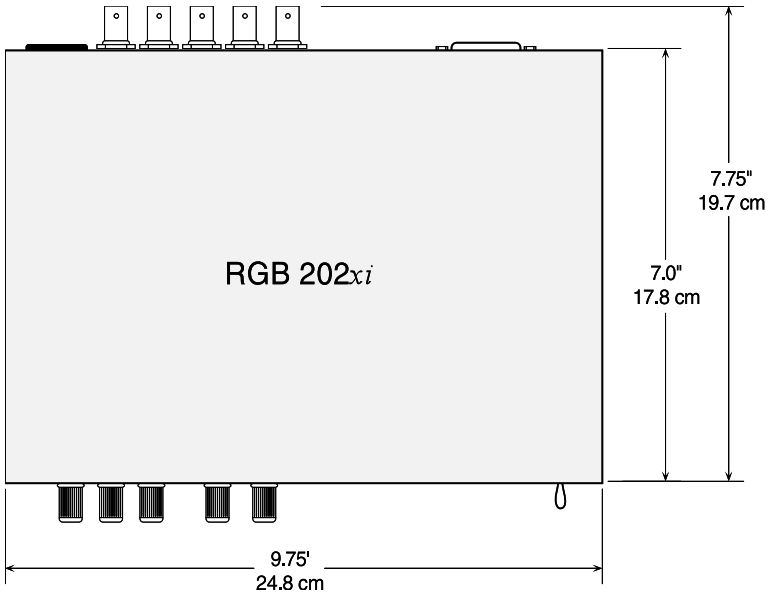
Quick Reference Guide

Troubleshooting

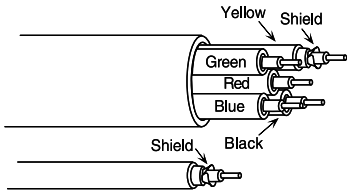
Removing the Cover

Changing Jumper Configurations

Humidity	5% to 95% non-condensing
Power Supply	90-270 Volt (auto-switchable)
Power Dissipation	12 Watts (Nominal**)**
Enclosure Dimensions	
Plastic or Metal	9.75" W x 7" D x 1.75" H
(metric	24.8 W x 17.8 D x 4.5 H cm)
with rear BNCs	D = 7.75" (See picture below.)
(metric	19.7 cm)
Weight	
Plastic	2 lbs. 4 oz. (1.02 kg)
Metal	2 lbs. 10 oz. (1.2 kg)
Warranty	2 years parts and labor



BNC High Resolution Cables



Extron recommends High Resolution BNC cables with signal frequencies greater than of 25 kHz or when using a computer with a frequency of 15-135 kHz and running distances of 100 feet or more. Extron High Resolution BNC cables are color-coded and wrapped in a single jacket, and are listed below:

Cables	BNC-4 #	BNC-5 #	Feet/Meters
BNC-4/5-3'HR	26-210-01	26-260-15	3/0.9
BNC-4/5-6'HR	26-210-02	26-260-01	6/1.8
BNC-4/5-12'HR	26-210-03	26-260-02	12/3.6
BNC-4/5-25'HR	26-210-04	26-260-03	25/7.5
BNC-4/5-50'HR	26-210-05	26-260-04	50/15
BNC-4/5-75'HR	26-210-06	26-260-16	75/23
BNC-4/5-100'HR	26-210-07	26-260-05	100/30
BNC-4/5-150'HR	26-210-08	26-260-12	150/45
BNC-4/5-200'HR	26-210-09	26-260-06	200/60
BNC-4/5-250'HR	26-210-54	26-260-18	250/75
BNC-4/5-300'HR	26-210-53	26-260-14	300/90

Bulk cable is available in lengths greater than 300 feet in increments of 100 feet.

Handbook of Computer Interfacing Vol IV

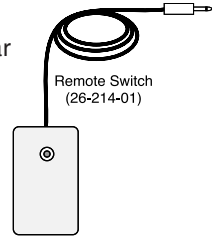
This 3-ring binder contains detailed information on computer-video applications, interfaces, scan converters, as well as the following:

- *Computer/Graphic Card cross reference charts*
- *Presentation Display Cross Reference charts*
- *Monitor Breakout Cables (MBCs) – why they are needed and how to use them*
- *Monitor Identification (ID) Bits and Terminators – what they do and how to make them work*
- *Laptop computer commands*
- *Glossary of terms*

Call Extron to order part number 67-038-01.

Remote Switch Box

Remote Switch for the RGB 202xi Rear Panel Remote jack with a 20' cable. The part number is 26-214-01.



Monitor Breakout Cables

Extron MBC "Monitor Breakout Cables" feature monitor loop-through connector for providing local monitor viewing. Below is a sample listing of Extron's most popular MBC and ICWK cables for use with the RGB 202*xi* interface. Because this is only a partial listing, please call Extron for any assistance to interface a computer that may not be listed.

Part #	Cable Name	Hor. kHz	Ver. Hz
26-108-03	MBC AMIGA HR	15.7	60
26-198-01	MBC Apollo Mono	64.0	60-76
26-018-02	MBC Apple IIGS	15.7	60
26-064-01	MBC Burroughs Color	22.2	60
26-307-01	MBC Cornerstone DP120	104	60
26-176-01	DEC VR Terminals	54 - 69	60
26-262-01	MBC E/Machine Mono	35.61	68
503-066	MBC IBM 3151	27.2	67.5
26-003-01	MBC IBM 3161/63/91/96 Mono	27.0	64.8
26-148-01	MBC IBM 3162	25.9	54.8
26-043-01	MBC IBM 3164/79/92/97 Color	22.31	60
26-227-01	MBC IBM 3178C	15.4	70
26-043-02	MBC IBM 3192 Mono	36.0	60
26-100-01	MBC IBM 3193C	50.6	80
26-058-01	MBC IBM 3194 14" Display	29.6	73
26-109-01	MBC IBM 3194 Mono	29.0	73
26-009-01	MBC IBM 3270PC	23.6	63
70-009-01	MBC IBM 3472/3477 Infowindow Kit	26.37	60
26-055-01	MBC IBM PC Mono (MDA)	18.1	50
26-010-01	MBC IBM PCC (CGA/EGA)	15.7-22	60
26-005-02	MBC IBM PGA HR	31.5	60
26-117-01	MBC IBM PS/2 (Standard VGA Only)	35	60-70
26-162-01	MBC IBM VGA HR (Super VGA)	31.5-72	60-70
26-224-01	LBC IBM VGA HR (Laptop Cable)	31.5-37	60-70
26-176-01	PowerPC (IBM)	31 - 117	60 - 88
26-162-02	MBC IMAGE Adapter/A	31-61	60 or 70
26-018-02	MBC Mac/Quadra/PowerMac HR	35-68	68
26-251-01	MBC Memorex TELEX 1192	27.5	64.5
26-272-01	MBC NCD 14C/17C-CR/19C-G	56-82	70
70-012-01	MBC NCD 15B/16E/19R	58-82	70
26-220-01	MBC NeXt Buffer, Mono	63.0	68
26-283-01	NeXT Color	63	68
26-270-01	MBC RGB H&V (9 Pin to 5 BNC's)	Varies	
26-213-01	MBC RGBS (9 Pin to 4 BNC'S)	Varies	
26-018-01	RasterOps/SuperMac	35 - 64	66
26-198-01	MBC SUN/Apollo Mono	61-90	66-76
26-283-01	MBC Sun Sparc/SGI	61-89	66-70
503-072	ICWK DEC VT 320*	18.0	60
70-004-01	ICWK DEC 340 KIT	31.5	60
70-004-03	ICWK DEC VT 340	31.5	60
503-125	ICWK DEC VT 340 PLUS*	31.5	60
503-120	ICWK DEC VT 420*	37.0	60 or 70
503-071	ICWK HP 700/94*	28.6	60
26-029-01	ICWK IBM 3180	20.0	83
70-006-01	ICWK IBM 3476	28.0	60
70-009-01	IBM 3472/3477 Infowindow kit	26.37	60
26-102-03	ICWK MAC Classic RGB (9 pin)	22.2	60
26-026-01	ICWK MAC RGB (9 pin)	22.2	60
26-102-02	ICWK MAC SE RGB (9 pin)	22.2	60
503-085	ICWK Memorex/TELEX 1191*	27.5	65.7
26-043-03	ICWK Memorex C19A	27.5	62.7
26-096-01	ICWK Wsye 50	23.0	60

Chapter Two

Rear Panel Connections

Computer-Video Inputs 1 and 2

Remote Switch

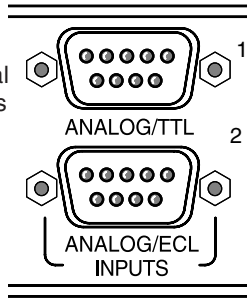
MBC Power

Audio Input and Output

BNC Outputs

Sync Options

Inputs 1 and 2 (Computer-Video)



Analog/TTL – This 9-pin input is for any TTL Computer with a horizontal scan frequency of 15-135 kHz. This is for use with Extron MBC cables only.

Analog/ECL – This 9-pin input is for any analog or ECL input computer source with a horizontal scan frequency range between 15-135 kHz. This is for use with Extron MBC cables only.

Pin assignments for the two connectors are:

Pin	Input #1 Signals	Input #2 Signals
1.	Ground	Ground
2.	Red Prime	no connection
3.	Red Video	Red Video
4.	Green Video/Sync	Green Video/Sync
5.	Blue Video	Blue Video
6.	Green Prime/Intensity	no connection
7.	Blue Prime	no connection
8.	Horizontal Sync	H Sync/Comp Sync
9.	Vertical Sync Input	Vertical Sync

Switching between the two inputs is done by the Front Panel switch (Chapter 3) or by the optional Remote connector described above.

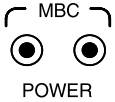
Remote



This 3.5 mm jack allows for remote switching between Input #1 and Input #2. Remote operation requires a latching switch and the front panel input switch **must be set to Input #1**. When the remote switch is closed, input #2 is selected; when it is open, input #1 is selected.

A 20 ft. cable with a remote switch is available from Extron as an option. The part number is 26-214-01.

MBC Power



Some of Extron's MBC High Resolution cables and buffers require power. For those cables with a miniature power plug attached, connect the power plug into either of these two jacks.

△ — *Do not connect any other devices to the MBC power jacks.*

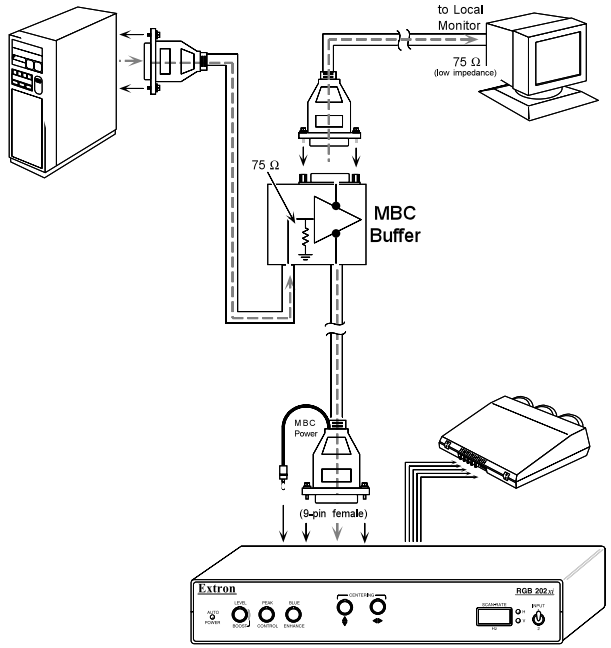
MBC Mac/Quadra Buffer (26-339-01) – Buffers all Mac II, Centris, Performa and Quadra computer output signals to both the computer's local monitor and the interface. No other cable is required.

MBC RGB Buffer (26-176-01) – Buffers all computer or Workstation outputs with Analog BNC type outputs from 15-135 kHz. Use the cable included with the computer to connect to the buffer's local monitor output and to the Workstation monitor, but use Extron High Resolution BNC-4 or BNC-5 style cable (or compatible) to connect from the computer/workstation to the MBC RGB Buffer.

MBC Sparc Buffer (26-283-01) – Buffers all 13W3 connector type computer output signals to both the computer's local monitor and the interface. No other cable is required. Compatible with Sun, SGI, DEC, NeXT and many others.

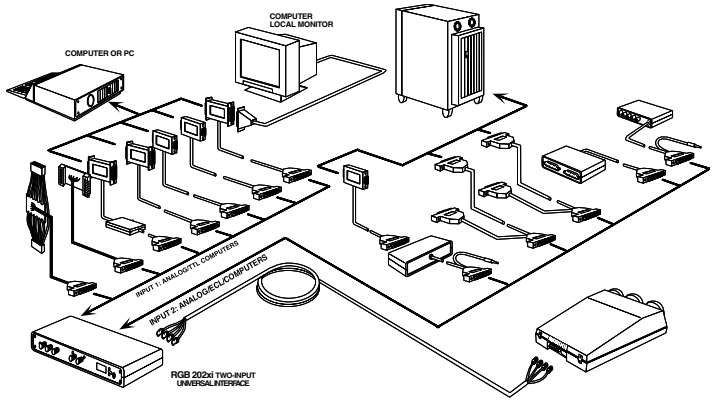
MBC IBM PowerPC Buffer (26-384-01) – Uses 13W3 connector type and buffers computer output signals to both the computer's local monitor and the interface. No other cable is required.

MBC VGA/XGA Buffer (26-338-01) – Buffers all VGA, Super VGA, XGA, VESA, or XGA-2 computer output signals to both the computer's local monitor and the interface. No other cable is required.



Computer-to-Interface Connections

As illustrated below, there are many ways to connect a computer to an interface, depending on the application. This section discusses some of the possibilities.



MBC (Monitor Breakout Cables)

Extron's MBC monitor Breakout cables feature a monitor loop-through connector to provide viewing both on the local monitor and large screen display. MBC cables are available for most computer manufacturers' display adapter cards and are attached directly the computer's display monitor output.

ICWK (Internal Computer Wiring Kit)

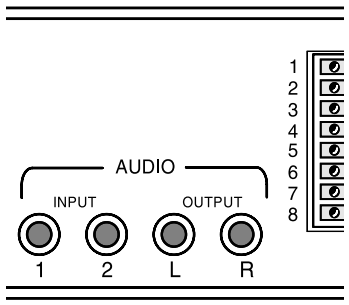
Extron ICWKs provide interfacing signals for computers and terminals with no external video display output. Internal video monitor signals are routed externally to the computer, usually to a 9-pin connector. From the 9 pin connector, a short cable is included with the kit for signal transfer to the Extron interface 9-pin connector input.

MBC Buffers

Extron MBC Buffers isolate the computer's video signal and monitor from the Extron RGB 202*xi* interface, while maintaining Video Bandwidth to the local monitor and the interface. An example of an MBC buffer is shown on the next page. Power is supplied to the buffers by the "MBC Power" jacks located on the Rear Panel of the RGB 202*xi* interface. The page A-3 shows a partial listings of the most popular buffers; call Extron for a complete list.

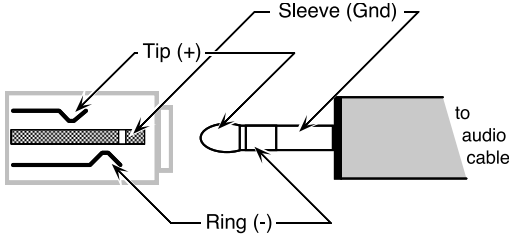
HI-Res ECL Buffer (26-177-01) – Buffers all ECL type signals and is used in conjunction with an MBC cable for the computer being interfaced.

Audio Connections



The RGB 202*xi* provides audio switching (together with the video input) to the audio output which is connected to the user's audio equipment. The user also supplies the audio cables.

The Audio Interface is a PC/computer audio (600 ý) to line-level audio (balanced) converter. If the computer has a sound card, the input switch on the RGB 202*xi* will select the audio with the video (audio follow).



3.5 mm Audio Jack/Plug

Although the input and output audio connectors are physically the same, they are used differently. See the illustration and the following descriptions for the correct wiring of audio inputs and outputs.

Audio Inputs – Connect the stereo audio sources for Input #1 and Input #2 (above). Each input connector includes contacts for left and right stereo and a common/ground connector. Input cables should be wired as follows:

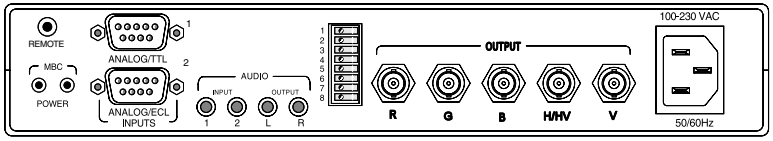
- *Stereo left to Tip (+) contact*
- *Stereo right to Ring (-) contact*
- *Both commons to Sleeve (Gnd) contact*

Audio Output (Left & Right) – There is one audio output, using separate connectors for left and right channels. Connect the left and right output jacks to the inputs of an external audio system. The 3-contact outputs can be wired for balanced or unbalanced audio.

- *For unbalanced audio, use Tip (+) and Sleeve (Gnd).*
- *For balanced audio, use Tip (+) and Ring (-).*

Observe polarity when making connections to keep left and right channels in phase.

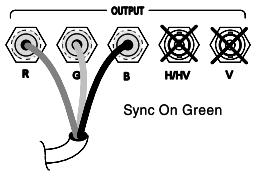
This section describes function of each connector. Rear Panel DIP switches are covered in Chapter 3.



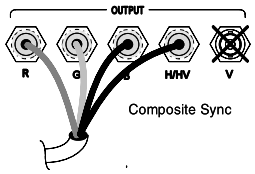
BNC Outputs with Auto Sync

The RGB 202*xi* converts all computer video to RGB Analog signals, with outputs on the rear panel BNC connectors. With all of the DIP switches in the OFF position, the RGB 202*xi* is in the "Auto Sync" mode. This means that it uses the BNC outputs that have an impedance, by way of the attached cables. For example:

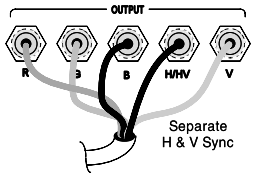
- *If BNC connectors R, G and B have cables attached (with 75ý impedance) and H/V and V have none, Auto Sync will use Sync On Green as output.*



- *If BNC connectors R, G, B and H/V have cables attached (with impedance of 75ý for RGB and less than 1ký for H/V), and V has none, Auto Sync will use Composite Sync as output.*



- *If BNC connectors R, G, B, H/V and V have cables attached (with 75ý impedance for RGB and less than 1ký for H/V and V), Auto Sync will use Separate Horizontal and Vertical Sync as output.*



Sync Options

The Auto Sync feature can be altered by DIP switches #1, #2 or #3 for specific sync processing.

Separate Horizontal and Vertical Sync - Separate horizontal and vertical sync can be generated by setting DIP switch #3 to the ON position. (See page 3-5.) When using separate horizontal and vertical sync, the sync polarity tracks the incoming polarity changes, unless jumper 26 is set to force negative sync.

See Appendix B for special setup.

RGB 202xi, RGB 202 VTG,
RGB 202 VS2 and RGB 202 VS SL2
User's Manual

Appendix A

Related Parts and Accessories

Computer-to-Interface Connections
MBC (Monitor Breakout Cables)
High Resolution BNC Cables
Partial List of MBCs
Remote Switch Box

Notes

Sync Polarity – VGA, for example, has three modes of operation. Each of these modes has a different polarity (positive or negative combinations) configuration. The RGB 202*xi* tracks these mode polarity changes and sends out the polarity exactly as it is came in. Thus, if horizontal sync comes in positive and the vertical sync is negative they will go out the same way. This sync tracking only occurs when using the separate Horizontal and Vertical sync output option (DIP switch #3) of the RGB 202*xi*. (See Page B-8, jumper 26.)

Composite Sync (H/V) vs Sync on Green – Unless the H/V output is terminated at 1ký or less, output sync will automatically be on the green channel. Regardless of termination impedance, composite sync is always present at (H/HV) output, unless DIP switch #3 (separate H&V) is ON, or the "V" Sync output is terminated with less than 1ký impedance. In these cases, separate horizontal sync is present.

Nonstandard Termination – In the professional A/V and Computer industries, the standard termination impedance for R, G and B is 75 ý and anything less than 1ký for sync. However, some data monitors or RGB switchers may use other termination impedance values. In these cases, it may be necessary to set Dip switch #2 to the ON position to defeat Sync on Green. The interface will then use composite sync (H/V).

Also, please note that many data monitors and projectors do not automatically switch between sync on green and composite sync (H/V). In these cases, make sure the monitor or projector is set to the desired input configuration.

LCD Display Devices – When using an LCD display, or if the image has jitter, try turning DIP switch #1 ON. This switch is explained on page 3-4.

See Appendix B for quick reference and troubleshooting information.

See Chapter 4 for model differences.

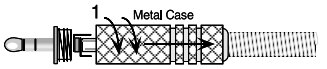
Making ShiftLock™ Cables

Extron supplies connectors for making ShiftLock cables; the user supplies the cable. Twisted pair cable may be used – up to 50 feet in length.

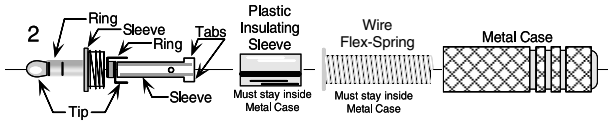
The illustration below shows the steps for a making a cable using twisted pair. Do each step for both ends of the cable. Make as many cables as required.

⚠ ___ *Although the color of the wire is not important, however you must use the same wire color assignments for each end of the cable.*

1. Unscrew the Metal Case.



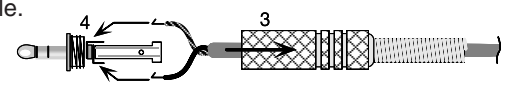
2. Identify the contacts, parts and connections.



△ ___ *The Plastic Insulator must be inside to prevent electrical contact with the metal Case.*

As shown here, the connectors have three contacts. However, only the "Tip" and "Ring" contacts are used.

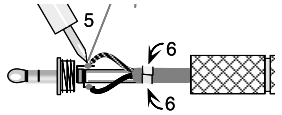
3. Insert the Metal Case (Insulator and flex Spring) over the cable.



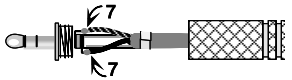
4. Strip the wires and attach them through the holes in the contacts.

5. Solder both connections.

6. Bend the Tabs around the Cable Jacket.

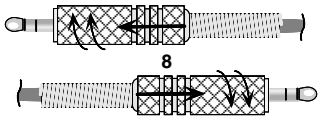


7. Press the wires and contacts inward to allow the Insulator and Metal Case to slide over easily.



△ ___ *Do not allow the contacts to touch each other.*

8. Screw the Metal Case onto the connector.

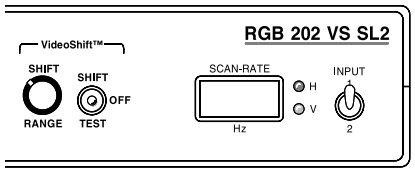


Connect the cables as shown on Page 4-3.

RGB 202 VS SL2 (VideoShift™ and ShiftLock™)

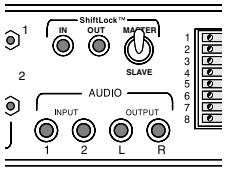
The VS SL2 model includes both VideoShift™ and ShiftLock™ features. The VideoShift™ controls are on the front panel and the ShiftLock™ controls are on the back panel.

The VideoShift is the same as that described for the VS2 model.



The ShiftLock™ feature allows two or more RGB 202 VS SL2 units to be linked together, such that one of the units controls the VideoShift for all. A toggle switch on the back panel allows one to be set as the "Master". Each of any other units connected must be set as "Slave".

When the switch is set to "Slave", the VideoShift controls for that unit are disabled.



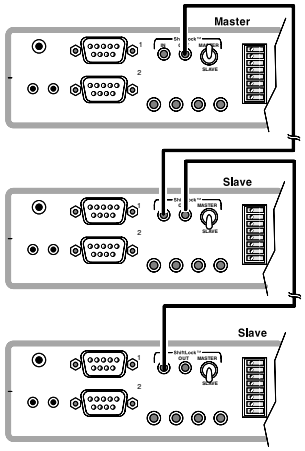
Two connectors on the back panel (see right) are used to connect the Master and Slave(s).

Setup example:

1. The Master unit will have a cable connected from its "ShiftLock Out" to the "ShiftLock In" port of the first Slave. Its toggle switch must be set to the "Master" position.

2. The first Slave will have a cable from its "ShiftLock Out" to the "ShiftLock In" of the next Slave. Its toggle switch must be set to the "Slave" position.

3. Step #2 will repeat for each Slave unit, except that the last Slave (or the only Slave), will have no cable in its "ShiftLock Out" connector.



RGB 202xi, RGB 202 VTG,
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Chapter Three

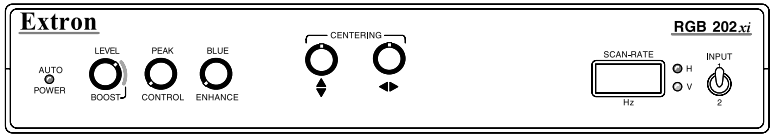
Operation • Controls and Indicators

Auto Power
Level and Boost
Peaking
Blue Enhance
Vertical and Horizontal Centering
Scan-rate Indicator
Input Switch
Rear Panel DIP Switches

Operating the RGB 202xi

This chapter covers the function of the controls and indicators on the RGB 202xi, including some examples on how they are used.

If there are any difficulties setting up for the desired results, see Appendix B for troubleshooting information.



Auto Power Indicator



This LED lights when the RGB 202xi is powered ON. "Auto Power" means that the computer signal will automatically turn the RGB 202xi power on.

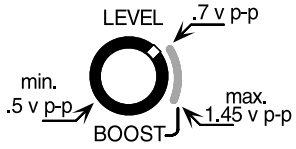
If the LED does not illuminate, check for computer operation as well as cable and power connections.

If DIP switch #4 (rear panel) is On, the Auto Power detect feature is disabled, forcing the power ON as long as it is plugged to an active power source.

Level and Boost

This control is similar to a contrast adjustment on a data monitor or projector. It can be used to increase the brightness and contrast of the displayed image. Observe the displayed image while using these adjustments.

Following are some examples of approximate output levels, with a computer input signal (such as VGA) of .7 volts peak to peak (p-p) and the output is terminated at 75 ý.



1. With the knob in the minimum (counterclockwise) position, the voltage output level will be approximately 0.5 volts p-p.

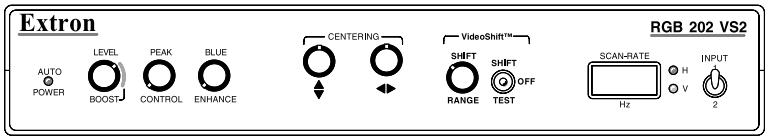
2. With the knob to the end of the level adjustment range (at the top of the red line), the voltage output level will be approximately the same level as the input (0.7 volts p-p for this example).

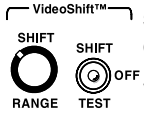
3. At the full clockwise position (past the red line), the output can be increased up to 1.45 volts p-p.

RGB 202 VS2 (VideoShift™)

The VS2 model includes Extron's VideoShift™ feature. The front panel for the RGB 202 VS2 is shown below. The section marked "VideoShift™" includes a 3-position toggle switch to do the following:

- *Off – disables the feature.*
- *Test – enables VideoShift™ at a rate fast enough to see movement on the screen. Use this position to adjust the shift range.*
- *Shift – enables the feature.*





When VideoShift™ is enabled, it prevents phosphor "burn-in" by moving the displayed image around on the screen. The movement is so slow that it cannot be detected by the human eye.

VideoShift movement to the right, down, to the left, up, etc. The distance of the shift, or movement depends upon the Range setting. The vertical shift is in number of lines while the horizontal shift is in units of time. Approximate settings are:



Minimum setting:
Vertical shift = 8 scan lines
(4 up and 4 down from center)
Horizontal shift = 0.1 µsec.



Mid-range setting:
Vertical shift = 16 scan lines
Horizontal shift = 0.68 µsec.



Maximum setting:
Vertical shift = 32 scan lines
Horizontal shift = 1.28 µsec.



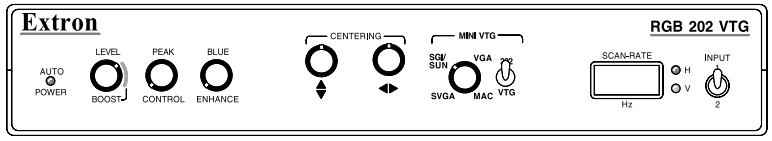
The actual horizontal distance will depend upon the video format. Here are two examples at maximum range:
SGI – 128 pixels
VGA3 – 64 pixels



There are three other models of the RGB 202xi, each of which has additional features. This chapter covers only those differences; all standard features are in the other sections.

RGB 202 VTG (Video Test Generator)

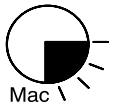
This model includes some of the features of Extron's Video Test Generators. On the front panel (shown below) there is a section marked "Mini VTG". When the toggle switch marked "202" and "VTG" is in the VTG position, a test pattern is generated on the output of the RGB 202 VTG. In the "202" position, the interface functions as a normal RGB 202xi.



In the VTG mode, the rotary switch is used to select one of four patterns for one of four display types. These are:



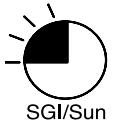
Quadrant	Format	PixelxLine	H.kHz	V.Hz
1	VGA3	640x480	31.5	60
Position 1	Crosshatch pattern			
Position 2	H Pattern, back and white			
Position 3	8-level Split Grayscale pattern			
Position 4	8-Color Bar pattern			



2	MAC13	640x480	35	60
Position 5	Crosshatch pattern			
Position 6	H Pattern, back and white			
Position 7	8-level Split Grayscale pattern			
Position 8	8-Color Bar pattern			

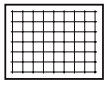


3	VESA3	1024x768	48.4	60
Position 9	Crosshatch pattern			
Position 10	H Pattern, back and white			
Position 11	8-level Split Grayscale pattern			
Position 12	8-Color Bar pattern			

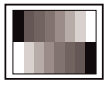


4	SGI	1280x1024	64	60
Position 13	Crosshatch pattern			
Position 14	H Pattern, back and white			
Position 15	8-level Split Grayscale pattern			
Position 16	8-Color Bar pattern			

The patterns are:

Crosshatch 

H Pattern 

Grayscale 

8-Color 

This Boost range (red) can compensate for losses of signal level or picture contrast due to increased cable length. Depending on cable specifications, 50% Boost (middle of red line) may improve picture quality for cable lengths shorter than 500 feet for all computer signals between 15-135 kHz. Set the Boost at 100% (fully clockwise) for cable lengths longer than 500 feet for all computer signals 15-135 kHz. Always observe the displayed image while using this adjustment.

Because the RGB 202xi is capable of driving signal cables up to 1000 feet long (depending on the signal frequency), Extron recommends using High Resolution, BNC type coax cables. Standard RG59 cable is good for NTSC video and low resolution computer RGB signals, but it limits video quality on medium and high resolution computer RGB signals.

Peaking Control



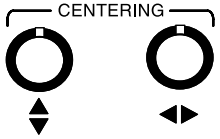
This control is similar to a sharpness adjustment on a data monitor. A sharper image will result from adding some peaking adjustment for all computer signals, regardless of the cable length used. The Peak Control compensates for mid and high frequency RGB Video Bandwidth response in data monitors and projectors, as well as for signal loss due to cable capacitance. On most cable lengths of 250 feet or more, set the Peak Control at 100% for optimum picture quality (fully clockwise). Always observe the displayed image while using this adjustment.

Blue Enhance



Because blue text is difficult to read, this adjustment allows the user to improve on this by changing the color slightly. The Blue Enhance adjustment allows for mixing just the right amount of blue information with the green signal to make the text a more readable, blue-green color. This only occurs on TTL signals such as IBM 3179, CGA, and EGA graphic cards. This adjustment will only affect TTL signals (Input #1). Always observe the displayed image while using this adjustment.

Picture Centering Controls



These two knobs are used to make four separate adjustments. The RGB 202*xi* has memories for each of its two inputs. Turning a knob not only moves the image but it also stores that information in the memory for the selected input. When switching between inputs, or when power is OFF, each memory keeps the centering information that was last set. This means that centering for each of the two inputs need only be set once for an application.

These two controls have no mechanical limits. Each centering knob can be turned forever – in either direction. Any time a Centering Control is turned, with the interface power on, centering information is being stored. The limits on how far the picture will move on the screen is determined by software, and not by any mechanical limits of the knob. There is no "reset", you simply readjust.

Many projectors store picture centering information in their memories based on frequency. When switching between input sources that have the same frequency, the image may **not** be perfectly centered. However, on the RGB 202*xi*, centering adjustments are stored for each input, regardless of frequency, thus assuring accurate centering when switching between the two inputs.

Vertical (▲▼) – The Vertical Centering adjustment (also called "Vertical Shift") is used to move the image up and down on the screen. Most data monitors and projectors don't have this adjustment and those that do may give inconsistent results when switching between inputs. This is a useful feature in an interface because Having a Centering Control on the interface provides an easy way to eliminate this problem.

– To use the centering controls on the display device, instead of those on the interface, set DIP switch #1 on the rear of the RGB 202xi to the ON position.

Horizontal (◄►) – The Horizontal Centering adjustment (also called "Horizontal Shift") is used to move the image from side to side on the screen. As with Vertical Picture Centering, this control can also be defeated (turned off) by setting DIP switch #1 on the rear of the RGB 202*xi* to the ON position.

RGB 202xi, RGB 202 VTG,
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Chapter Four

RGB 202 Model Differences

RGB 202 VTG

(Video Test Generator)

RGB 202 VS2

(VideoShift™)

RGB 202 VS SL2

(VideoShift™ and ShiftLock™)



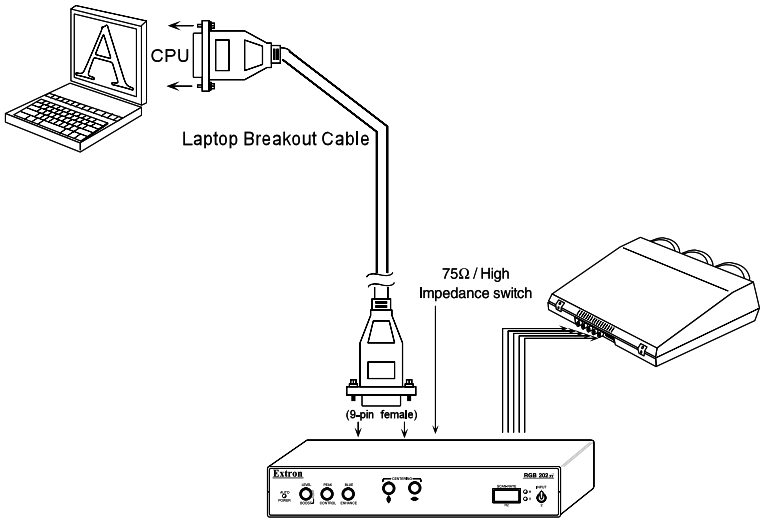
Laptop, Notebook or Portable Applications – Video from these computers may be quite different from standard PCs or Macs because they were designed to use an LCD screen instead of a CRT monitor. Here are some guidelines:

A) When using Laptop, Notebook or portable computers with VGA outputs, the termination switch must be set to 75 ý for that input (#1 or #2) and all cable connections must be made before turning the computer power ON (unless using an LBC VGA cable, or using a VGA Termination Adapter).

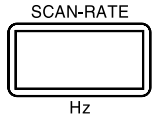
B) Most Laptop, Notebook and portable computers have external video (CRT or RGB) ports but require special keyboard commands to access or output the video to this connector. See the User's Guide that came with the computer for instructions to activate this video port or call Extron for a complete list of all Laptop, Notebook and Portable keyboard commands.

C) Most portable computers with built-in LCD displays will be deactivated (shut-off) automatically once the external video port has been activated.

The illustration below shows how a Laptop computer could be connected to an RGB 202*xi*.



Scan Rate Indicator



This LCD readout alternately displays the horizontal and vertical scan frequencies of the selected input. To the right of the scan-rate display, the red LED will illuminate indicating a horizontal reading, and the green LED will illuminate indicating a vertical reading. This frequency readout is displayed in Hertz (Hz).

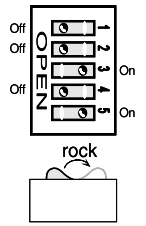
Input Switch



The RGB 202*xi* interface can be connected to two computers at the same time, thus making it a two- input switcher, as well as an interface. The input switch is used to select which input source will be displayed on the data monitor or projector. Used to select Input #1 or #2 (both video & audio) for output from the RGB 202*xi*. When in the #1 position, a constant contact switch may be connected through the rear panel for remote switching.

DIP Switch Operation

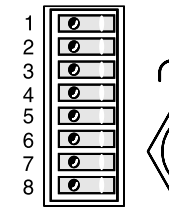
The RGB 202*xi* uses the "rocker" type of DIP switches. An example is shown here. When looking at the switches from the rear:
On = press right side of the switch.
Off = press left side of the switch.



_ The factory setting for all DIP switches is Off.

Rear Panel DIP Switches

The DIP switches function as follows:



#1 - Sync Processing
Off = Use normal sync processing.
On = Use LCD Sync processing. Centering controls (▲▼ and ◀▶) become inactive. This switch may also be used:

a. To get a center reference point by temporarily turning it ON, note the picture centering, and then turn it OFF and make centering adjustments.

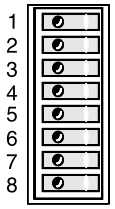
b. When centering from the display device only.

c. If there is difficulty adjusting the centering.

#2 - Sync On Green Defeat
Off = Auto Sync detection is active.
On = Auto Sync detection, but **No** Sync on Green.

#3 - Sync Output

Off = Auto Sync Processing.
On = Force separate Horizontal and Vertical Sync output, regardless of cable connections. This feature may be used when the display device does not have a sync impedance that is low enough to be detected by the Auto Sync feature.



#4 - Auto Power Defeat

Off = Auto Power detect
On = Auto Power defeat forces RGB 202*xi* power On. This turns the interface on permanently while it is connected to an active AC power source.

⚠ ___ *This switch must be turned on **before** computer boot-up when using any Extron Monitor Breakout Cables (MBCs) that get power from the RGB 202xi.*

#5 - Serration Pulses

Off = Allow Serration pulses on the composite sync vertical sync interval. If not there, it will create them.
On = Remove serration pulses from the composite sync vertical sync interval.

_ *The RGB 202xi is unique in that it can remove serration pulses, or it can create them if they are not present.*

#6 - Vertical Sync Width

Vertical Sync pulse width depends upon the frequency coming into the RGB 202*xi*. This switch allows this width to be increased.
Off = Use normal vertical sync width.
On = Vertical Sync approximately twice normal width.

#7 - Impedance for Input 1

Off = High Impedance for Input #1
On = 75 ý Impedance for Input #1.

_ *Use the OFF position when the video source is terminated elsewhere, such as at the local monitor; use ON if the it is **not** terminated elsewhere. If terminated elsewhere, **and** at the interface, this is called "double termination" and will send a weak signal to the display device. Guidelines for using these switches are on following pages.*

8 - Impedance for Input 2

Off = High Impedance for Input #2
On = 75 ý Impedance for Input #2.
The note above also applies for both Inputs.

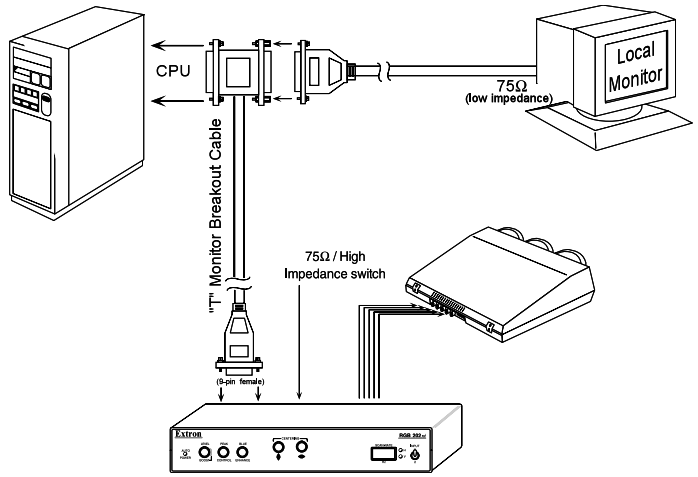
___ *If there are any difficulties getting the desired results, see Appendix B for additional information.*

Termination Guidelines

When connecting an interface to a computer's video output, it is necessary to provide the same termination impedance for which those video circuits were designed. The RGB 202*xi* provides the necessary termination for any application. Following are some guidelines for using termination switches #7 and #8.

MBC Cables – When using an Extron Monitor Breakout Cable (MBC) with the computer's local monitor attached, set the Termination Switch for that input OFF (High Impedance). When not using a computer local monitor or when using a Laptop, set the switch for that input ON for 75 ý termination.

The illustration below shows a PC connected to an RGB 202*xi* with a local monitor.



_ *Some computers need Monitor ID bit termination. An external Termination Adapter may be required.*

ICWKs – When using an Extron ICWK (Internal Computer Wiring Kit), set the switch for that input to the ON position for 75 ý termination.

MBC Buffers – When using Extron MBC Buffer cables, set the impedance switch for that input (#7 for Input 1 or #8 for Input 2) to the OFF position for high impedance.

___ *Page A-1 has more information on MBCs.*

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