

User's Manual



RGB 168xi VGA Interface with Stereo Audio and ADSP™

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 the instructions • Prendre connaissance de toutes les consignes de sécurité 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 den Benutzer auf wichtige Anleitungen zur Bedienung und Wartung (Instandhaltung) in der Dokumentation hinweisen, die im Lieferumfang dieses Gerätes enthalten ist.



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 Sicherheitsanleitungen sollten aufbewahrt werden, damit Sie später 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.

Precaución

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 en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían 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 remove 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 • Achémener 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 y a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandée par le constructeur. Mettre au rebut les batteries usagées conformément 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 Stift oder Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar und sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabeln aus der Rückseite des Gerätes oder aus dem Desktop-Strommodul (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 dagegen gestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Im Inneren des Gerätes sind keine Teile enthalten, die vom Benutzer gewartet werden können. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst zu warten, da beim Öffnen oder Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags 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 nur durch diegleiche oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgung der verbrauchten 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 puentearla ni eliminarla.

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 de los 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 sobrecalentamiento 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.

安全须知 • 中文



这个符号提示用户该设备用户手册中的操作和维护说明。



这个符号警告用户该设备机壳内暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。设备必用有地线供电系统供电。第三条线（地线）是安设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统电源线。

电源线保护 • 妥善布线，避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。设备部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用防止机内敏感元件过热。不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的议处理废弃电池。

FCC Class A Notice

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.

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68-550-01 **Rev. B**
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RGB 168*xi*

1

Chapter One

Introduction

About this Manual

About the RGB 168*xi*

Features

Introduction

About this Manual

This manual contains information about the RGB 168 χ i universal analog interface and how to operate and configure it.

About the RGB 168 χ i

The RGB 168 χ i is a computer-video and stereo audio interface with 300 MHz (-3dB) video bandwidth. This interface has a horizontal frequency range of 15 kHz to 125 kHz, so it can be used with any type of analog computer signal, including those from VGA to UXGA-2, Mac, Quadra, Sun, and SGI computers.

Features

This section highlights the main features of the RGB 168 χ i interface. See the installation chapter for a detailed description of front and rear panel features.

Internal power supply — Uses a standard IEC power cord.

Front panel AC outlet — Peripherals or laptop computers can be plugged into the unswitched front panel AC outlet for a convenient power connection. This feature is not available in Europe.

Furniture and rack mountability — The RGB 168 χ i can be mounted under a desk or podium with optional hardware, or it can be mounted in a rack or through a desk or other furniture with included vertical mounting brackets.

Active stereo audio — Unbalanced stereo audio input via a front panel jack is output as balanced, line level stereo audio on the rear panel captive screw connector.

Horizontal shift control — The interface features front panel horizontal centering control.

Sync stripping — Incoming sync will be stripped from the red, green, and blue signals.

RGBHV, RGBS, or RGSB output — RGBHV can be output simultaneously with RGBS. Sync on green (RGSB) output can be DIP switch selected.

Advanced Digital Sync Processing™ (ADSP™) — ADSP allows sync processing operations, such as horizontal centering, to occur without affecting the signal's sync timing. This allows horizontal centering to be applied to signals that are output to digital display

devices such as LCD projectors, DLP projectors and plasma displays. A rear panel DIP switch allows an alternative, Digital Display Sync Processing™ (DDSP™), to be used instead.

Gain/peaking control — To compensate for signal degradation caused by long cable lengths, use this rear panel toggle switch to increase output voltages.

Serration pulse — This feature allows serration pulses to either be present or not present at the output. Serration pulses are required for some displays.

Pass-through connectors — A wide assortment of architectural adapter plates is available for installation on these interfaces to allow convenient pass-through A/V connections.

Buffered local monitor output — A 15-pin HD female connector provides a front panel buffered output for a local monitor.

ID bit termination — Two front panel DIP switches provide ID bit termination on pins 4 and/or 11 of the local monitor output.



RGB 168xi

2

Chapter Two

Installation and Operation

Installation Overview

Front Panel

Rear Panel

Setting Internal Jumpers

Installing Adapter Plates

Mounting the Interface

Cabling

Troubleshooting

Installation and Operation

Installation Overview

To install and set up the RGB 168 χ i for operation, follow these basic steps:

- 1 Turn all of the equipment off. Make sure that the computer, the interface and the output device(s) (projector or display monitor, and local monitor) are all turned off and disconnected from the power source.
- 2 Set internal jumpers for sync polarity and sync pulse width. See “Setting Internal Jumpers” in this chapter.
- 3 Install optional adapter plates for pass-through A/V connections. See “Installing Adapter Plates” in this chapter.
- 4 Install the rubber feet for tabletop use, or install the appropriate brackets and furniture or rack mount the interface. See “Mounting the Interface” in this chapter.
- 5 Attach the input (computer) and output (display, local monitor and audio) cables. See “Cabling” in this chapter.
- 6 Set the DIP and toggle switches. Use the “Front Panels” and “Rear Panels” sections of this chapter as a guide.
- 7 Connect power cords and turn on the devices in the following order: output devices (projector, monitors, speakers) and input device (computer).
- 8 The image should 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.

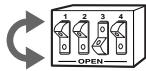
Refer to “Troubleshooting” in this chapter, then call the Extron customer support hotline, if needed.

Front Panel

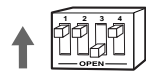
This section familiarizes you with the front panel features and the options for making connections and changing settings.

Setting DIP switches

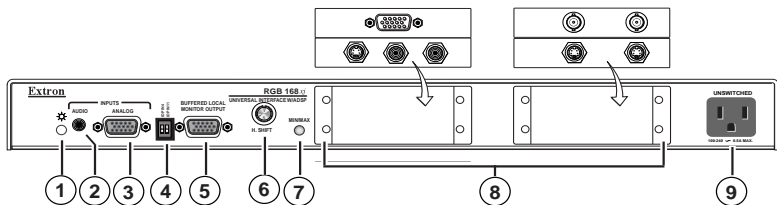
The DIP switches on the front and rear panels of the RGB 168*xi* may be either the rocking type or the sliding type.



To set rocking type DIP switches, use a small screwdriver to depress the appropriate end of each switch.



To set sliding type DIP switches, use a small screwdriver to slide (push) the switch to the On/closed or Off/open position.



- 1 **2-color power/signal LED** — This LED lights amber to indicate power on only. It lights green to indicate that power is on and a video signal is also present.
- 2 **Audio input jack** — This 3.5 mm stereo input jack accepts an unbalanced stereo audio input.
- 3 **Analog video input 15-pin HD female connector**
- 4 **ID bit termination DIP switches** — These switches provide proper ID bit termination when a local monitor is not connected to the interface's buffered local monitor output.



DIP switch 1 connects pin 4 to ground.
DIP switch 2 connects pin 11 to ground.

ON — Set both switches (ID PIN 4 and ID PIN 11) to On if no local monitor is connected.

OFF — Set both switches to Off if a local monitor is attached to the interface.

Installation and Operation, cont'd

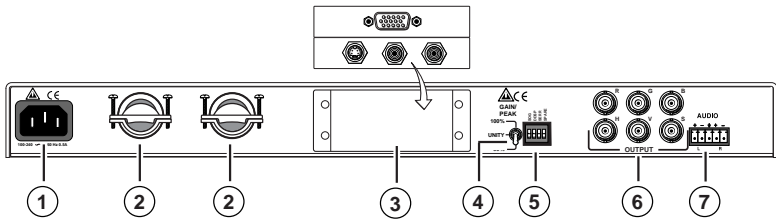
- ⑤ **Buffered local monitor output 15-pin HD female connector** — This allows output to a local monitor. Set the ID PIN DIP switches to On if this connector is not used.
- ⑥ **Horizontal shift control knob** — This control adjusts the horizontal centering of the remote output display.

NOTE *The horizontal shift control has no mechanical limits to rotation. When the minimum or maximum limit of the control is reached, the picture ceases to move on screen, and the MIN/MAX indicator LED lights red.*

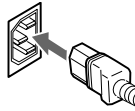
NOTE *If the DDSP DIP switch is set to On, the horizontal shift control is disabled.*

- ⑦ **MIN/MAX indicator LED** — This LED lights red whenever the lower or upper limits of the horizontal or vertical shift controls are reached.
- ⑧ **Optional architectural adapter plates** — Up to four adapter plates for pass-through audio/video connections can be attached at one time to the interface. See the “Installing Adapter Plates” section in this chapter for installation instructions.
- ⑨ **AC power output connector** — An unswitched standard IEC AC power connector allows you to connect a peripheral device that requires power. This feature is not available in Europe (RGB 168 χ Int).

Rear Panel



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



- ② **Cable access openings** — Cables attached to the front panel A/V pass-through architectural adapter plates exit the enclosure here. Clamp cables in place with the supplied hardware.
- ③ **Optional output architectural adapter plate** — Front panel input AAP A/V connectors can be wired here to pass-through output connectors.
- ④ **3-position gain/peaking switch** — Use this toggle switch to compensate for signal degradation caused by long (over about 125 feet) cable lengths. Choose the setting that provides the best image on the output display device. Select from these options:
- **Unity** (no gain or peaking) — The output level is the same as that of the input and with no added peaking.
 - **50%** — This setting increases the output signal level and adds 50% of the maximum peaking to the signal.
 - **100%** — This setting increases the output signal level and adds 100% of the maximum peaking to the signal.

NOTE

If the signal cable between the interface and the display device is shorter than 125 feet, and the gain/peak switch is set to a setting other than unity, the image may be overly bright (overcompensated).

Installation and Operation, cont'd

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 gain/peak setting.

- 5 **DIP switches** — The four DIP switches on the rear panel control sync on green (SOG) output, Digital Display Sync Processing and serration pulse removal.



The fourth switch is a spare and it has no function.

1 — SOG (sync on green)

- ON — When this switch is set to On, the interface outputs sync on green.
- OFF — When the SOG switch is set to 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.

2 — DDSP™ (Digital Display Sync Processing™)

This feature may be necessary for digital display devices such as LCD (liquid crystal display), DLP (digital light processing) and plasma displays. Use this option if the image still is not displayed properly after all other options, such as serration pulse removal and video termination changes, have been explored.

- ON — When this switch is set to On, the interface uses Digital Display Sync Processing instead of Advanced Digital Sync Processing™. DDSP does not process the sync signal.

NOTE *DDSP disables horizontal and vertical shift controls.*

- OFF — When this switch is set to Off, the interface performs sync processing operations, such as horizontal shifting, with ADSP.

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

ON — When this switch is set to On, serration pulses are output in the vertical sync interval.

OFF — When this switch is set to Off, serration pulses are not output.

4 — SPARE — This DIP switch does not have a function.

6 BNC output connectors — These BNC female connectors are for red, green, and blue video output, and horizontal, vertical and composite sync output.

7 Stereo audio output connector — This 3.5 mm, 5-conductor captive screw connector is used for audio output. See “Cabling” in this chapter for a wiring guide.

Setting Internal Jumpers

The jumpers inside the interface(s) are set at the factory to meet the requirements of most systems. However, you can change a jumper setting to meet the needs of a particular system.

WARNING *Changes to internal jumper settings must be performed by authorized service personnel only.*

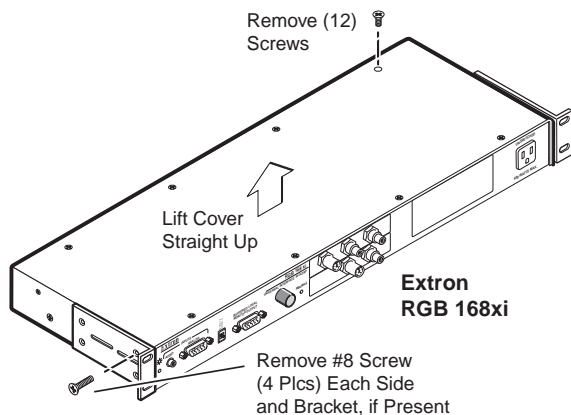
The user-configurable, internal jumpers control the following functions:

- horizontal and vertical sync polarity, and
- vertical sync pulse width.

Follow these steps to change the jumper settings.

1. Remove power from the interface (if it is connected) by disconnecting the AC power cord from the unit.
2. Open the cover of the interface (the top half of the enclosure), as shown below.

WARNING *Do not touch any switches or electronic components inside the interface. Doing so could damage the interface.*



Opening the interface cover

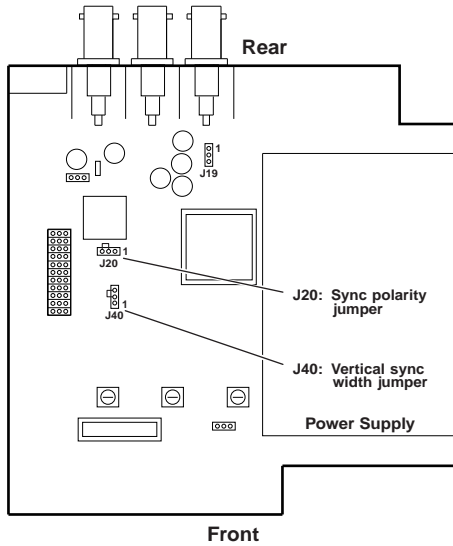
3. Note the positions of jumpers J20 and J40 before changing jumper settings. The following illustration of the circuit board shows the locations of the J20 and J40 jumpers. There are two possible setting combinations for 3-pin jumpers:



pins 1 and 2 connected, and

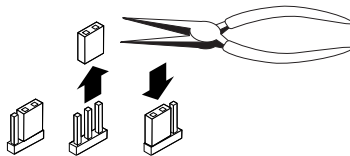


pins 2 and 3 connected.



Circuit board jumper locations

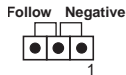
4. Configure the jumpers. To configure the jumpers, use pliers to pull the jumper shunt off the pins, then place the jumper on the appropriate pins.



Changing jumper settings

The jumpers perform the following functions:

J-20: Sync polarity jumper — This jumper adjusts the output sync polarity. Horizontal (H) and vertical (V) sync output can either follow input sync polarity, or be forced to negative.



Installation and Operation, cont'd

- If the jumper is placed on pins 1 and 2, output H and V sync polarities are forced to negative.
- If the jumper is placed on pins 2 and 3, output sync polarities follow input sync polarity: the output sync signals' polarity are the same as the input polarity.
This is the default setting.



J-40: Vertical sync width jumper — This jumper adjusts the vertical sync pulse width. Some digital display devices have very specific requirements for incoming sync pulse width. If no picture displays, the picture cuts in and out, or the picture is scrambled, try adjusting the vertical sync pulse width or switching from ADSP to DDSP.

- If the jumper is placed on pins 1 and 2, the output vertical sync pulse is short (narrow).
 - If the jumper is placed on pins 2 and 3, the output vertical sync pulse is wide. This is the default setting.
5. Replace and fasten the enclosure cover, reversing step 2. If adapter plates will be installed next, this step can be omitted.

Installing Adapter Plates

The RGB 168 χ i offers the ability to incorporate a variety of optional architectural adapter plates for pass-through audio and/or video connections. Each interface's front panel can hold up to four (4) input adapter plates. The rear panel can hold up to two (2) output adapter plates.

Blank plates (three double height) are included with the interface to cover unused spaces. Other adapter plates must be ordered separately.

The input plates attach to the front panel. Output cables, attached to the rear of each plate, pass through the interface enclosure and rear panel and are held in place by clamps or, where an output plate is installed, may be wired directly to the rear output plate connectors. Some adapters require cables to be soldered to the input/output plate connectors.

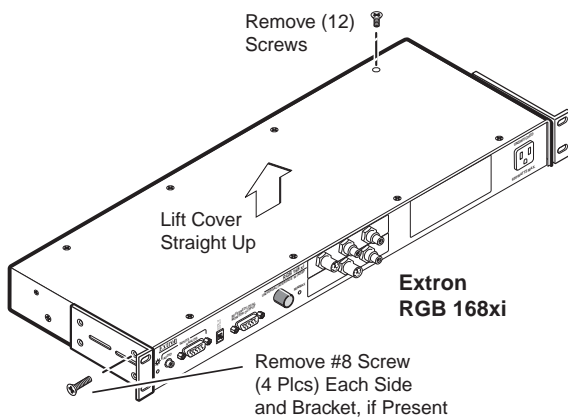
Adapter plates should be attached to the output cables and interface before the interface is installed in a rack or in furniture. The screws for installing the adapter plates are built into the plates, so no additional screws are needed.

WARNING Adapter plate installation must be performed by authorized service personnel only.

Follow these steps to install adapter plates.

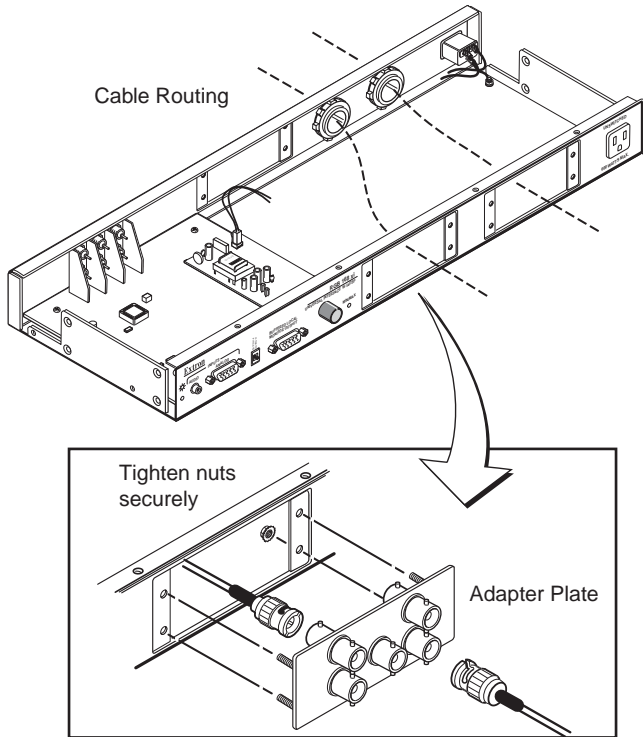
1. Make sure that the power is removed from the interface by disconnecting the AC power cord from the unit.
2. Open the cover of the interface (the top half of the enclosure), as shown below. Remove the screws from the enclosure, and lift the cover straight up.

WARNING Do not touch any switches or electronic components inside the interface. Doing so could damage the interface.



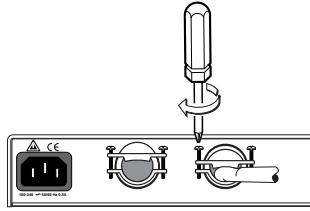
3. Remove the blank plates from the interface by unscrewing the nuts that fasten the plates to the inside of the enclosure.
4. Route the adapter output cables through the rear panel cable holes and clamps into the enclosure and out the front panel plate openings, as shown on the facing page.
5. Attach the output cables to the rear connectors of the front panel adapter plates. Soldering will be required for some connectors.

Installation and Operation, cont'd



Routing adapter output cables and attaching adapter plates

6. Insert the adapter plate screws through the holes in the interface front panel, as shown above. Attach the adapter plates to the enclosure with the provided captive washers and #4-40 nuts.
7. Gently pull excess cable(s) out the rear panel cable clamp openings or, if a rear panel output adapter plate is being used, connect the cable(s) to the plate connector(s). Do not strain or damage the cable-adapter connections.
8. Fasten the cables in place by tightening the screws on the cable clamps provided on the rear panel openings.



9. Replace the top cover on the interface, and fasten it with the screws removed in step 2.

Mounting the Interface

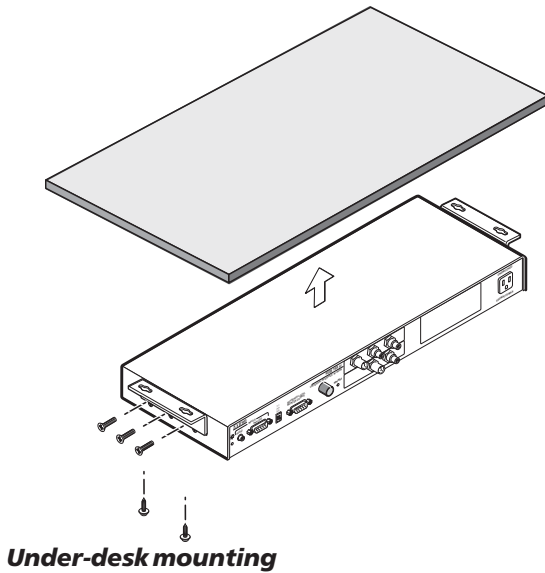
Select the installation site. Take cabling and power availability into consideration. Select an installation option: tabletop/desktop placement, or under-desk, through-desk or rack mounting.

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.

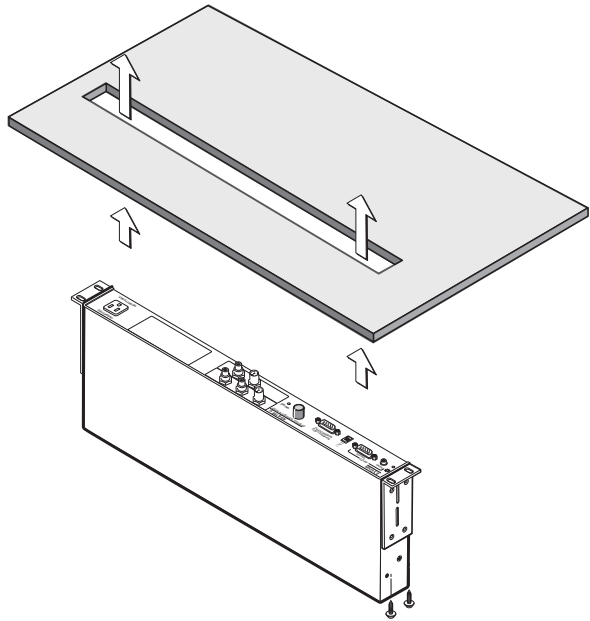
Under-desk mounting

1. Attach the Extron MBU 125 (part #70-077-01) under-desk mounting brackets to the interface with the provided machine screws, 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. Attach the interface to the installation surface with the provided wood screws, as shown in the following illustration.



Through-desk mounting

1. Attach the Extron MBD 149 through-desk mounting brackets (part #70-077-03) to the interface with the provided machine screws.
2. Hold the interface with attached brackets against the underside of the mounting surface of the desk or table. With a soft pencil mark the location of holes for screws on the desk. Mark the opening, approximately 17.63" x 1.88" (44.77 cm x 4.76 cm).
3. 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.
4. 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.
5. Attach the interface to the desk with the provided wood screws, as shown in the following illustration.



Through-desk mounting

To adjust the height of the interface within the desk, slightly loosen the screws that attach the brackets to the interface, adjust the height by sliding the interface up or down, and retighten the screws.

UL rack mounting guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the interface in a rack.

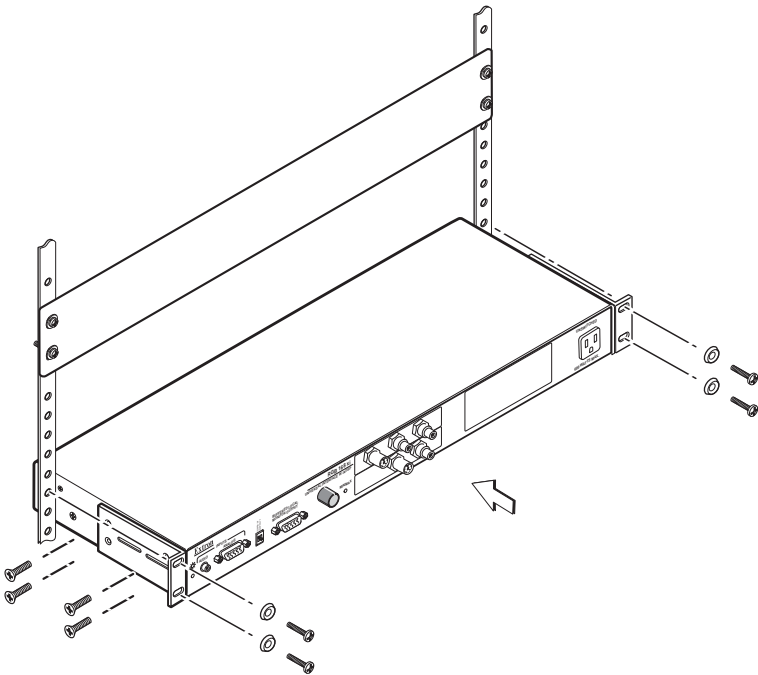
- 1. Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the interface in an environment compatible with the maximum ambient temperature ($T_{ma} = +122\text{ }^{\circ}\text{F}$, $+50\text{ }^{\circ}\text{C}$) specified by Extron.
- 2. Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- 3. Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

Installation and Operation, cont'd

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Rack mounting

1. Attach the Extron MBD 149 through-desk/rack mounting brackets (part #70-077-03) to the interface with the provided machine screws, as shown below.
2. Attach the interface to the rack with the provided machine screws.

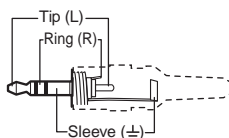


Rack mounting

Cabling

Attach cables to the interface as detailed in the steps below. A diagram later in this section shows how the system looks when cabling is finished.

1. Connect the computer's video output to the interface's front panel analog/ECL 9-pin D connector. If the computer will provide the audio input, a VGA with audio combination cable, such as an Extron VGA M MHRA series cable (#26-490-01 to #26-490-05), can be used.
2. Connect the stereo audio source (computer or other device such as a CD player or tape deck) to the front panel. The audio jack should be wired as shown below.



Unbalanced

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

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



RGBHV

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



RGBS

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



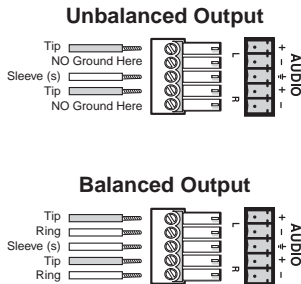
RGsB

4. Connect the local monitor's cable to the front panel's 15-pin HD female local monitor output connector. Set the front panel monitor ID bit DIP switches to On if no local monitor will be used.

Installation and Operation, cont'd

5. Connect powered speakers or another audio device to the rear panel captive screw connector. Follow the wiring guide shown below. Insert the wires into the appropriate openings. 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.

CAUTION *Connect the sleeve to ground (GND). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

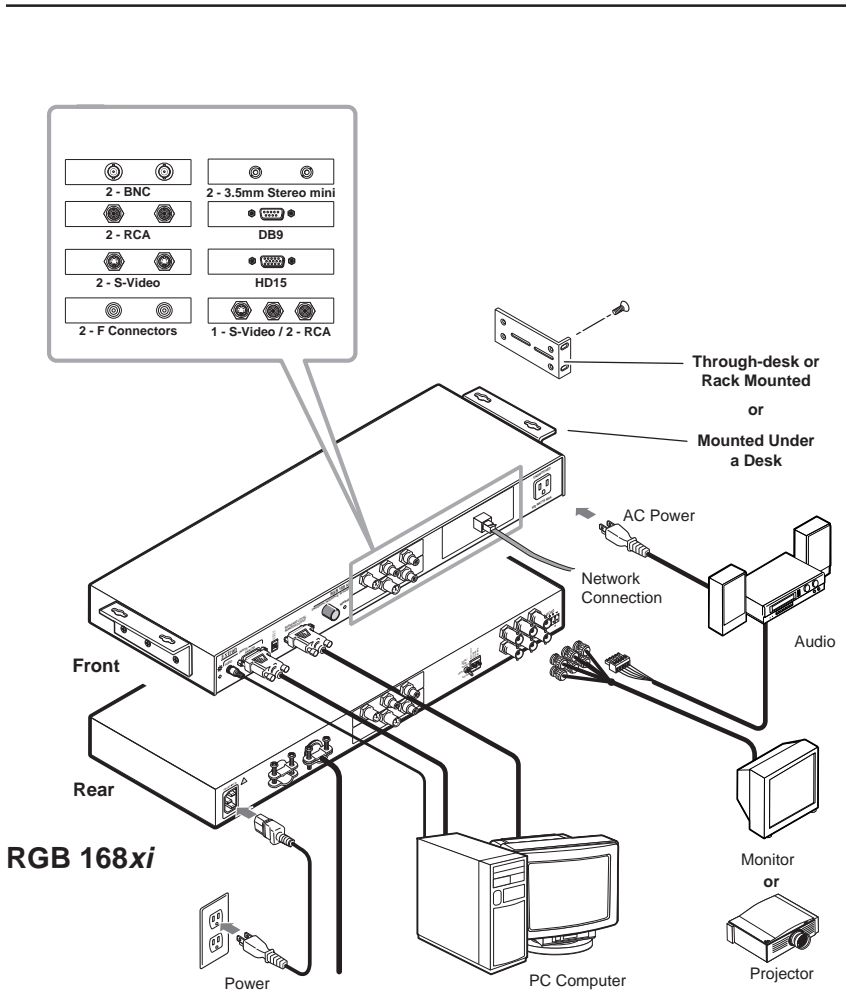


Wiring captive screw connectors for audio output

6. Set the DIP and toggle switches. Use the "Front Panel" and "Rear Panel" sections of this chapter as a guide.
7. Connect power cords and turn on the devices in the following order: display and audio output devices (projectors, monitors, speakers), interface, and input device (computer).

The system is now ready for operation.

The illustration on the facing page shows typical system installation and cable connections.



Typical RGB 168xi installation and cable setups

Troubleshooting

When the interface, computer and output devices have been properly installed, and the power is turned on, the image should appear on 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 power indicator LED should light if the interface is powered on.
3. Check the cabling and the audio connector wiring, and make adjustments as needed.
4. Verify that the ID bit termination DIP switches on the RGB 168xi have been set correctly.
5. For digital display devices, try switching between ADSP and DDSP using the rear panel DDSP DIP switch.
6. Call the Extron customer support hotline if needed.

If the image does not display correctly

1. If the output image looks too green, make sure that the sync on green feature (SOG DIP switch) is turned off.
2. If the picture bends or flags at the top of the screen, set the SERR (serration pulse) DIP switch to Off.
3. For a display device that experiences intermittent glitches, try switching between ADSP and DDSP using the rear panel DDSP 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 GAIN/PEAK setting.
6. If the image still does not display correctly, call the Extron customer support hotline.



RGB 168xi

A

Appendix A

Specifications, Accessories, and Part Numbers

Specifications

Included Parts

Accessories

Cables

Adapter Plates

Specifications, Accessories, and Part #s

Video

Gain	Unity, (0.725 Vp-p) 50% peaking, (0.75 Vp-p) 100% peaking
Bandwidth	300 MHz (-3 dB)

Video input

Number/signal type	1 analog RGBHV, RGBS, RGsB, RsGsBs
Connectors	1 female 15-pin HD
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels	Analog: 0.3 V to 1.5 Vp-p with no offset at unity gain
Impedance	75 ohms
Horizontal frequency	Autoscan 15 kHz to 130 kHz
Vertical frequency	Autoscan 30 Hz to 120 Hz
Return loss	-30 dB @ 5 MHz
DC offset (max. allowable)	4.0 V

Video output

Number/signal type	1 analog RGBHV, RGBS, RGsB
Connectors	6 female BNC 1 female 15-pin HD local monitor buffered output
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels	Analog: 0.7 V to 0.75 Vp-p with 0.70 Vp-p input
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz

Sync

Input type	RGBHV TTL (\pm), RGBS TTL (\pm), RGsB 0.3 V (-), RsGsBs 1.3 V (-)
Output type	RGBHV (\pm), RGBS (\pm), RGsB (-)
Input level	2 V to 5.5 Vp-p with ± 0.2 VDC offset (max.)
Output level	4 V to 5 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max. propagation delay	48 ns
Max. rise/fall time	3.5 ns
Polarity	RGBHV: when RGBHV is input, polarity follows input; otherwise negative RGBS, RGsB: negative

Audio

Gain	Unbalanced output: 0 dB; balanced output +6 dB
Frequency response	20 Hz to 20 kHz, ± 0.05 dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at nominal level
S/N	>72 dB, at maximum output (14 dBu), balanced (unweighted)
Stereo channel separation	>66 dB @ 1 kHz to 20 kHz

Audio input

Number/signal type	1 PC level stereo, unbalanced
Connectors	(1) 3.5 mm stereo jack, 2 channel; tip (L), ring (R), sleeve (ground)
Impedance	5k ohms, DC coupled
Nominal level	-10 dBV (316 mVrms)
Maximum level	+4.2 dBu, (unbalanced) at 1% THD+N

NOTE $0\text{ dBu} = 0.775\text{ Vrms}$, $0\text{ dBV} = 1\text{ Vrms}$, $0\text{ dBV} \approx 2\text{ dBu}$

Audio output

Number/signal type	1 stereo (2 channel), balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	± 0.1 dB channel to channel
Maximum level (600 ohm)	>+8.8 dBm, balanced at 1% THD+N

General

Power	100 VAC to 240 VAC, 50/60 Hz, 15 watts, internal
MBC power jack	9.0 VDC, 150 mA
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes, with included kit, #70-077-03
Furniture mount	Yes, with optional kit, #70-077-01 (under desk), or included kit #70-077-03 (through desk/rack mount)
Enclosure type	Metal

Specifications, Accessories and Part #s, cont'd

Enclosure dimensions	1.75" H x 17.5" W x 6.0" D (1U high, full rack wide) 4.4 cm H x 44.5 cm W x 15.2 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	3.5 lbs (1.6 kg)
Shipping weight	7 lbs (4 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL
Compliances	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at $\pm 10\%$.*

NOTE *Specifications are subject to change without notice.*

Included Parts

These items are included in each order for an RGB 168 λ i:

Included parts	Part number
RGB 168 λ i	60-379-12
Blank adapter plate, double height (3)	70-090-12
MBD 149 through-desk mounting bracket	70-077-03
3.5 mm, 5-pole captive screw connector	10-319-10

Accessories

Accessories	Part number
MBU 125 under-desk mounting bracket	70-077-01
3.5 mm stereo plug	10-306-01

Cables

Input VGA cables	Part number
VGA M-M MD/6	26-238-01
VGA-A M-M MD/3 (with audio)	26-490-01
VGA-A M-M MD/6 (with audio)	26-490-02
VGA-A M-M MD/12 (with audio)	26-490-03

Adapter kits	Part number
Mac 15-pin HD F adapter cable kit w/audio	70-156-01
13W3 15-pin HD F adapter cable kit w/audio	70-157-03

High-resolution cables	Part number
MHR-5 BNC	26-260-xx
MHR-5P BNC (plenum)	26-378-xx

Specifications, Accessories and Part #s, cont'd

Adapter Plates

A variety of optional architectural adapter plates for pass-through connections may be ordered for these interfaces. The RGB 168 χ i can hold up to four (4) input adapter plates and two (2) output adapter plates. The following configurations of adapters could be installed in either interface:

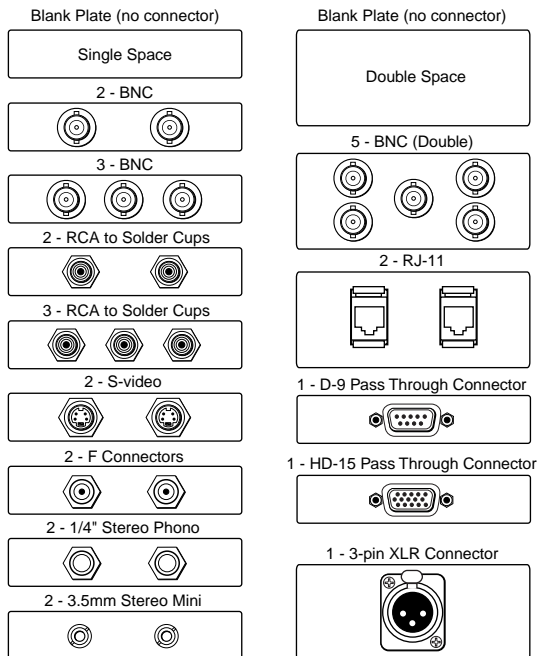
Input adapter plates:

- four input adapter plates with a “plate size” of one,
- two input adapter plates with a plate size of one and one input adapter plate with a plate size of two, or
- two input adapter plates of plate size two.

Output adapter plates:

- one output adapter plate with a plate size of two, or
- two output adapter plates of plate size one.

Typical adapter plates are shown below..



Architectural adapter plates

Specifications, Accessories and Part #s, cont'd

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:**

Extron USA
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:

Extron Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia
135 Joo Seng Road #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

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), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) 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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