

## User's Manual



### *RGB 138xi, RGB 158xi* VGA Interfaces with Stereo Audio and ADSP™



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# Precautions

## Safety Instructions • English



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



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

## Caution

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

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

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

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

## Consignes de Sécurité • Français



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



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

## Attention

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

**Conservser 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.

## 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 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 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 le 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'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un type équivalent recommande par le constructeur. Mettre au reut 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 gleichliche 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 puentearia 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 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 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.

# 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:

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

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 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 that some provisions of this warranty may not apply to you.

# Table of Contents

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<b>Chapter 1 • Introduction</b> .....	1-1
<b>About this Manual</b> .....	1-2
<b>About the RGB 138<sub>xi</sub> and RGB 158<sub>xi</sub></b> .....	1-2
<b>Features</b> .....	1-2
RGB 138 <sub>xi</sub> and RGB 158 <sub>xi</sub> features .....	1-2
RGB 138 <sub>xi</sub> features .....	1-3
RGB 158 <sub>xi</sub> features .....	1-3
<b>Chapter 2 • Installation and Operation</b> .....	2-1
<b>Installation Overview</b> .....	2-2
<b>Front Panels</b> .....	2-3
RGB 138 <sub>xi</sub> front panel .....	2-3
RGB 158 <sub>xi</sub> front panel .....	2-4
<b>Rear Panels</b> .....	2-6
RGB 138 <sub>xi</sub> and RGB 158 <sub>xi</sub> rear panels .....	2-6
<b>Setting Internal Jumpers</b> .....	2-9
<b>Installing Adapter Plates</b> .....	2-11
<b>Mounting the Interfaces</b> .....	2-14
Tabletop/desktop placement .....	2-14
Under-desk mounting .....	2-14
Through-desk mounting .....	2-15
Rack mounting .....	2-16
<b>Cabling</b> .....	2-17
<b>Troubleshooting</b> .....	2-20
<b>Appendix A • Specifications</b> .....	A-1
<b>Appendix B • Accessories and Part Numbers</b> .....	B-1
<b>Included Parts</b> .....	B-2
<b>Accessories</b> .....	B-2
<b>Cables</b> .....	B-2
<b>Adapter Plates</b> .....	B-4
Multi Type Connector Architectural Adapter Plates .....	B-5
Single Type Connector Architectural Adapter Plates .....	B-6



# Chapter One

## **Introduction**

About This Manual

About the RGB 138*xi* and RGB 158*xi*

Features

## About This Manual

This manual contains information about the RGB 138*xj* and RGB 158*xj* universal analog interfaces and on how to operate and configure them. Unless otherwise specified, references to “the interface” refer to the features or operation of both models.

## About the RGB 138*xj* and RGB 158*xj*

The RGB 138*xj* and RGB 158*xj* are computer-video and stereo audio interfaces with 300 MHz (-3dB) video bandwidth. These interfaces have a horizontal frequency range of 15 kHz to 125 kHz, so they can be used with any type of analog computer signal, including those from VGA, SVGA, XGA, SXGA, XGA-2, Mac, Quadra, Sun, and SGI computers.

## Features

This section highlights the main features of the RGB 138*xj* and RGB 158*xj* interfaces. See the installation chapter for a detailed description of front and rear panel features.

### RGB 138*xj* and RGB 158*xj* features

**Internal power supply** — Use standard IEC power cords.

**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 138*xj* and RGB 158*xj* can be mounted under a desk or podium with optional hardware, or they 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** — Both models feature 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.

### RGB 138*xj* features

**MBC power jack** — The power connector of a buffered monitor breakout cable can be plugged directly into the front panel jack on this interface.

**Vertical shift control** — The RGB 138*xj* lets you adjust vertical centering with a front panel knob.

**75 ohm video termination** — 75 ohm video termination can be selected from a rear panel DIP switch.

### RGB 158*xj* features

**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.



# Chapter Two

## Installation and Operation

Installation Overview

Front Panels

Rear Panels

Setting Internal Jumpers

Installing Adapter Plates

Mounting the Interfaces

Cabling

Troubleshooting

## Installation Overview

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

To install and set up the RGB 138<sub>xi</sub> or RGB 158<sub>xi</sub> 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 Interfaces” 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 now appear on screen, and sound should be audible. If not, ensure that all devices are plugged in and receiving power. Check the cabling and switch settings, and make adjustments as needed.

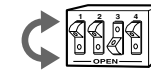
Refer to “Troubleshooting” in this chapter, then call Extron’s customer support hotline, if needed.

## Front Panels

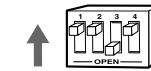
This section will familiarize you with the front panel features and the options for making connections and changing settings.

### Setting DIP switches

The DIP switches on the front panel of the RGB 158<sub>xi</sub> and on the rear panels of the RGB 138<sub>xi</sub> and the RGB 158<sub>xi</sub> may be either the rocking type or the sliding type.

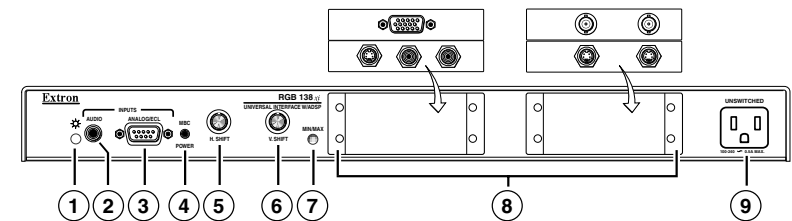


To set rocking type DIP switches, use a small screwdriver to depress the appropriate end of each switch.



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

### RGB 138<sub>xi</sub> front panel



- 1 **2-color power/signal LED** — This LED lights amber to indicate that power is 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. See “Cabling” in this chapter for wiring instructions.
- 3 **9-pin D male analog video input connector**
- 4 **MBC buffer power jack** — This audio-style 2.5 mm power jack provides power for a buffered monitor breakout cable.

(Continued)

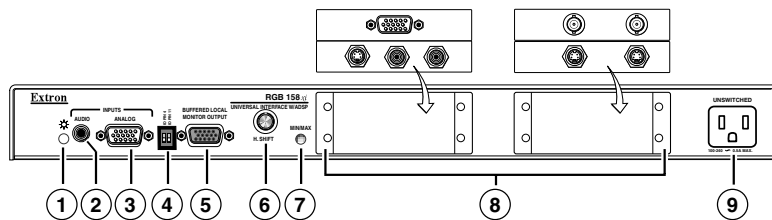
- ⑤ **Horizontal shift control knob** — This control adjusts the horizontal centering of the remote output display.

**NOTE** *The horizontal and vertical shift controls have no mechanical limits to rotation. When the minimum or maximum limit of the control is reached, the picture will cease to move on screen, and the MIN/MAX indicator LED will light red.*

**NOTE** *If the DDSP™ DIP switch is set to On, the horizontal and vertical shift controls are disabled.*

- ⑥ **Vertical shift control knob** — This control adjusts the vertical centering of the remote output display. See the notes above for horizontal shift control.
- 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 lets you connect a peripheral device that requires power. *This feature is not available in Europe.*

### RGB 158xi front panel



- 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 male 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 BIT 4 and ID BIT 11) to On if no local monitor is connected.
- OFF — Set both switches to Off if a local monitor will be attached to the interface.

- ⑤ **Buffered local monitor output 15-pin HD female connector** — This allows output to a local monitor. Set the ID bit 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 will cease to move on screen, and the MIN/MAX indicator LED will light red.*

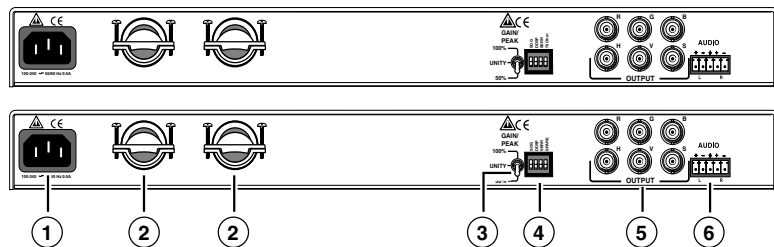
**NOTE** *If the DDSP DIP switch is set to On, the horizontal shift control is disabled.*

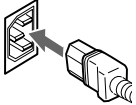
- ⑦ **MIN/MAX indicator LED** — This LED lights red whenever the lower or upper limits of the horizontal or vertical shift controls are reached.
- ⑧ **Optional architectural adapter plates** — Up to four adapter plates for pass-through audio/video connections can be attached at one time to the interface. 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.*



## Rear Panels

### RGB 138xi and RGB 158xi rear panels



- ① **AC power input connector** — Connect a standard IEC AC power cord here for power input (100VAC to 240VAC, 50/60 Hz).
 
- ② **Cable access openings** — Cables attached to the A/V pass-through architectural adapter plates exit the enclosure here. Clamp cables in place with the supplied hardware.
- ③ **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 approximately 125 feet, and the gain/peak switch is set to a setting other than unity, the image may be overly bright (overcompensated).*

*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.*

- ④ **DIP switches** — Three of the four DIP switches on the rear panels are common to both the RGB 138xi and the RGB 158xi. They control sync on green (SOG) output, Digital Display Sync Processing and serration pulse removal. The fourth switch controls video input termination (75 ohm vs. Hi Z) in the RGB 138xi, and it has no function (spare) in the RGB 158xi.

#### 1 — SOG (sync on green)

- ON — When this switch is set to On, the interface will output 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 will disable 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 will be output in the vertical sync interval.

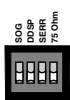
OFF — When this switch is set to Off, serration pulses will not be output.

#### 4 — 75 Ohm (video input termination) —

**RGB 138<sub>xi</sub> only** — Video termination is accomplished in a number of ways when using a universal interface like the RGB 138<sub>xi</sub>:

1. Setting the 75 ohm termination switch on the interface when using an MBC cable without a local monitor attached,
2. Using a laptop breakout cable (LBC) connected to a laptop or desktop computer with no local monitor,
3. Connecting a local monitor to the breakout from an MBC cable,
4. Using a termination adapter with an MBC cable and no local monitor attached, or
5. Using an MBC buffer cable.

The input to the interface is high impedance, and for the video signal to be at a proper level (not blooming) 75 ohm termination is needed for the computer signal. The switch provides a method



of termination to prevent blooming when a monitor breakout cable is used but no local monitor or termination adapter is connected.

ON — The RGB 138<sub>xi</sub> provides 75 ohm video input termination.

OFF — The RGB 138<sub>xi</sub> provides Hi Z (high impedance) video input termination.

#### 4 — SPARE — RGB 158<sub>xi</sub> only



This DIP switch does not have a function in the RGB 158<sub>xi</sub>.

- ⑤ **BNC output connectors** — These BNC female connectors are for red, green, and blue video output, and horizontal, vertical and composite sync output.

- ⑥ **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.

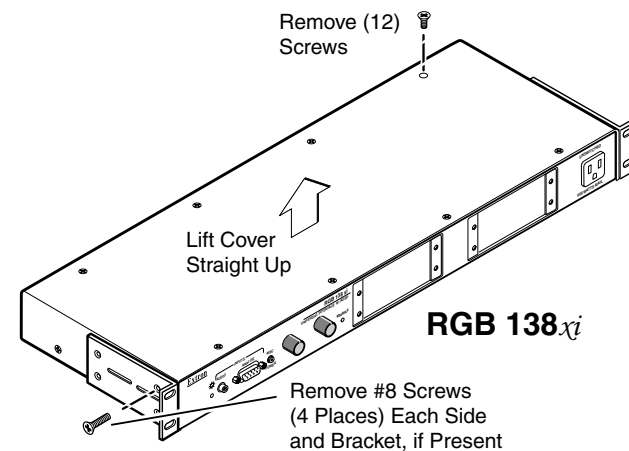
The user-configurable, internal jumpers control the following functions:

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

Follow these steps to change the jumper settings. The RGB 138<sub>xi</sub> is shown for illustration, but the steps apply to both models.

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. Remove the screws from the enclosure, and lift the cover straight up.

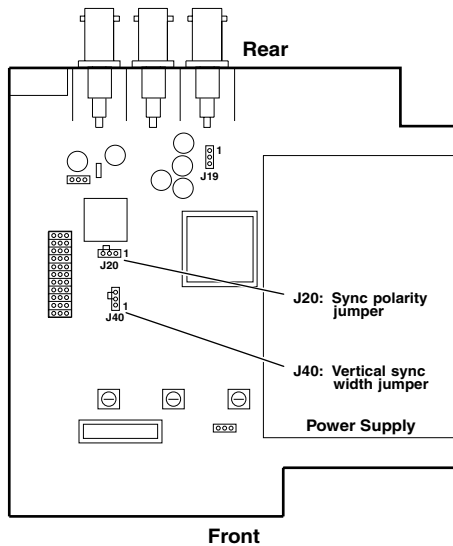
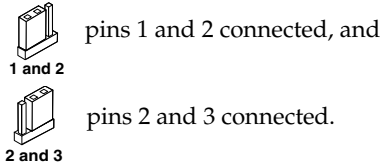
**WARNING** Do not touch any switches or electronic components inside the interface. Doing so could damage the interface.



### Opening the interface cover

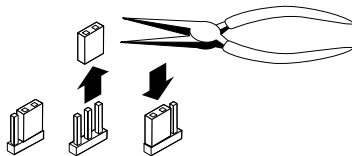
## Installation and Operation, cont'd

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



### Circuit board jumper locations

- 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.
- 
- If the jumper is placed on pins 1 and 2, output H and V sync polarities will be 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 will be 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 will be short (narrow).
  - If the jumper is placed on pins 2 and 3, the output vertical sync pulse will be wide. This is the default setting.

- 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 138 $\chi$ i and RGB 158 $\chi$ i offer the ability to incorporate a variety of optional architectural adapter plates for pass-through audio and/or video connections. Each interface can hold up to four (4) adapter plates.

Blank plates (two single height and one double height plate) are included with the interface to cover unused spaces. Other adapter plates must be ordered separately.

The 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. Some adapters require wires to be soldered to the rear connectors.

## Installation and Operation, cont'd

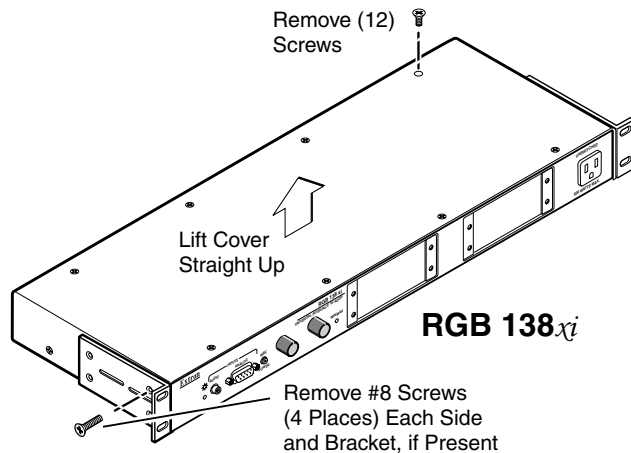
Adapter plates should be attached to the output cables and interface before the interface is installed in a rack or in furniture. The screws for installing the adapter plates are built into the plates, so no additional screws will be needed.

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

Follow these steps to install adapter plates. The RGB 138*xi* is shown for illustration, but the steps apply to both models.

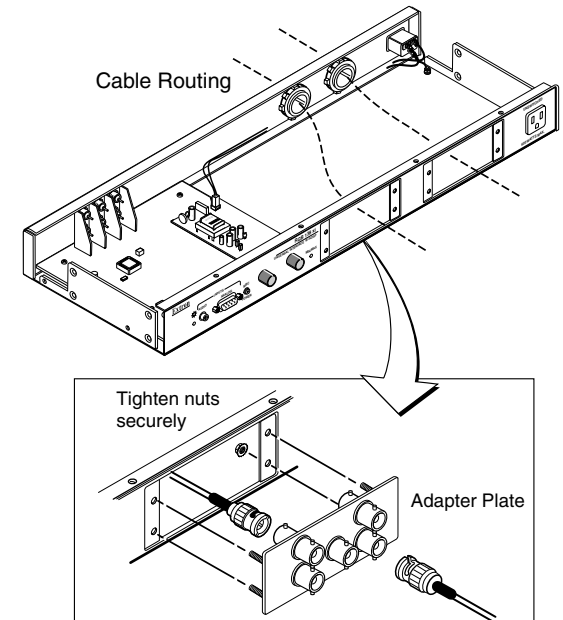
1. Make sure that the power is removed from the interface by disconnecting the AC power cord from the unit.
2. Open the cover of the interface (the top half of the enclosure), as shown below. Remove the screws from the enclosure, and lift the cover straight up.

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



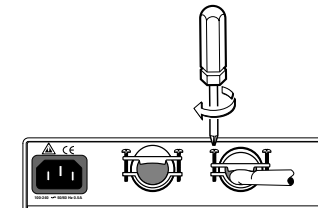
### Opening the interface cover

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 adapter plates. Soldering will be required for some connectors.



### 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 out the rear panel openings. 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.



### Mounting the Interfaces

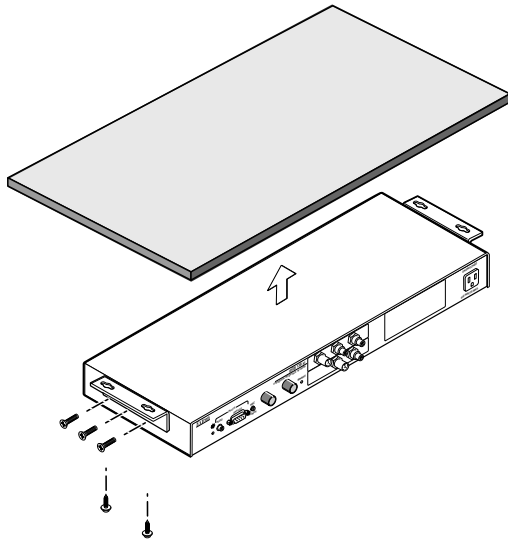
Select the installation site. Take cabling and power availability into consideration. Select an installation option: tabletop/desktop placement, or under-desk, through-desk, or rack mounting.

#### 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

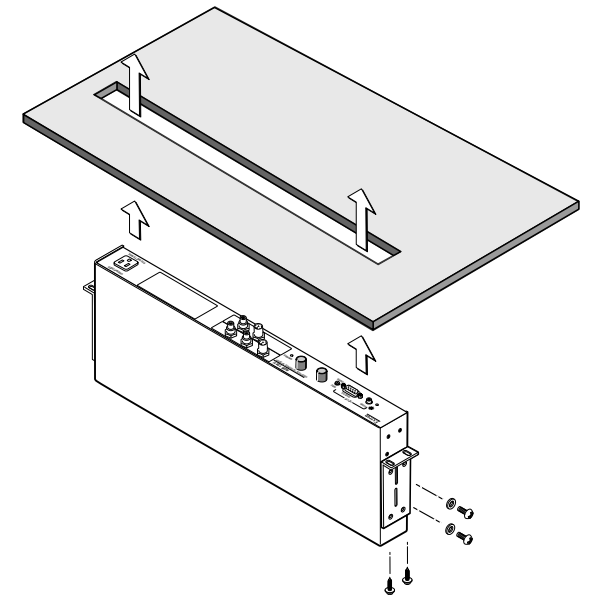
1. Attach the mounting brackets to the interface with the provided machine screws, as shown below.
2. Hold the interface with attached brackets against the underside of the desk or other furniture. Mark the location of holes for screws on the desk.
3. Drill 1/4" (6.4 mm) deep, 3/32" (2.38 mm) diameter 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 below.



**Under-desk mounting**

#### Through-desk mounting

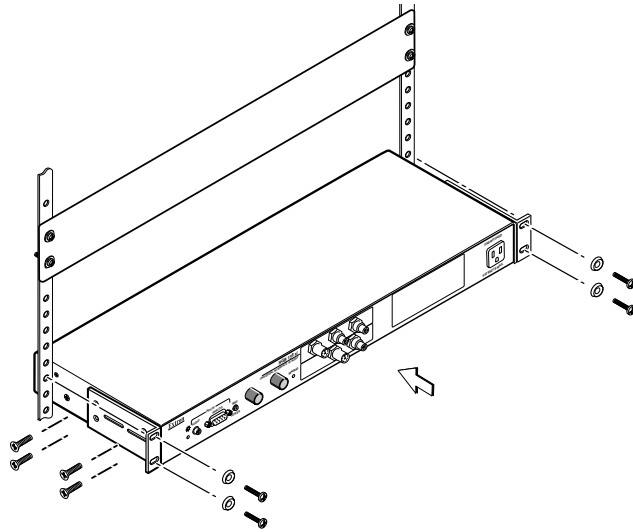
1. Attach the through-desk mounting brackets to the interface with the provided machine screws.
2. Hold the interface with attached brackets against the underside of the mounting surface of the desk or table. With a soft pencil mark the location of holes for screws on the desk. Mark the opening, approximately 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 illustration below.



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.

## Rack mounting

1. Attach the through-desk/rack mounting brackets 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**

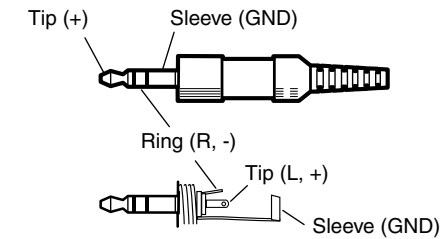
## Cabling

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 HRA series cable (#29-491-01 to #29-491-05), can be used.

For the RGB 138xi, a monitor breakout cable (MBC) can be used to allow local monitor output.

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.



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



**RGBHV**

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



**RGBS**

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



**RGsB**

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

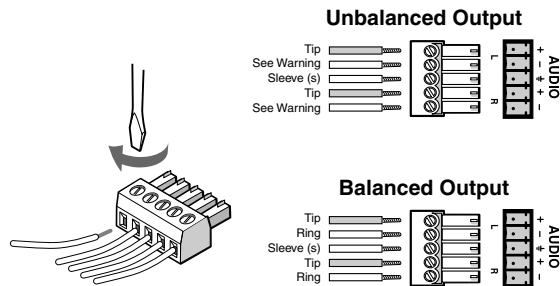
4. Connect the local monitor. For the RGB 158xi, connect the monitor's cable to the front panel 15-pin HD female local monitor output connector. For the RGB 138xi, a local monitor can be connected to the monitor breakout cable if one were used in

## Installation and Operation, cont'd

step 1 to connect the computer to the interface. Set the front panel monitor ID bit DIP switches to On if no local monitor will be used.

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.

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

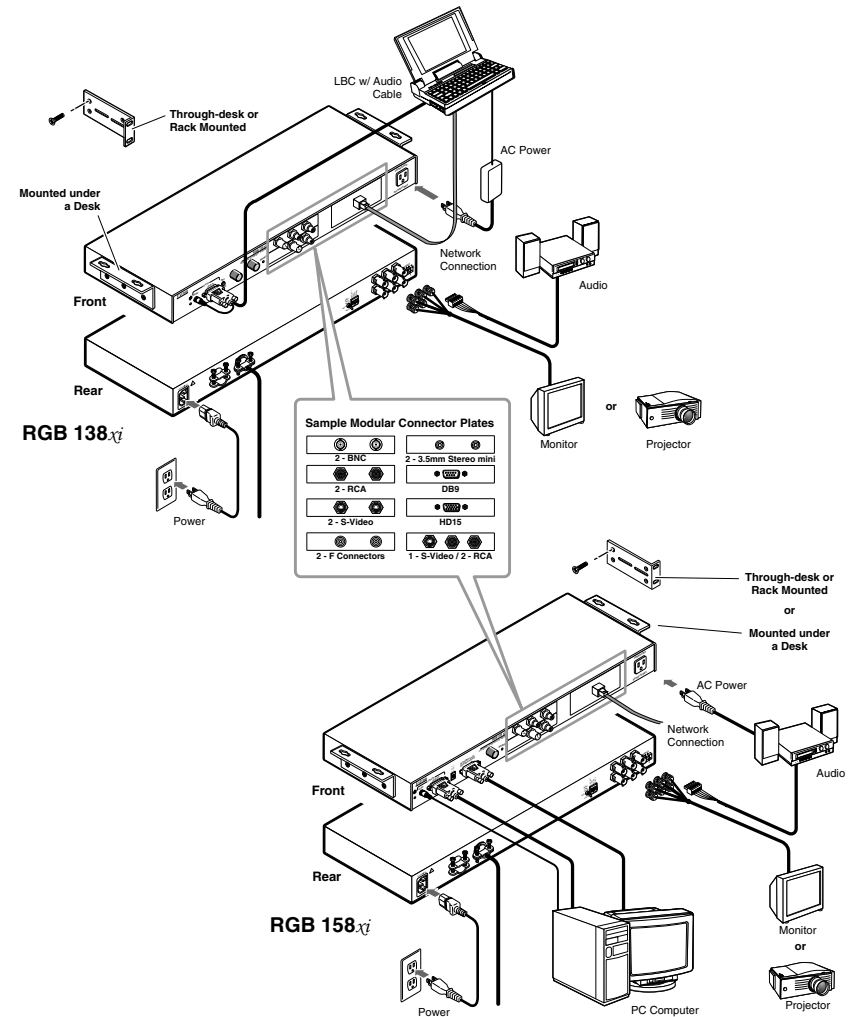


### Wiring captive screw connectors for audio output

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 for both models.



**Typical RGB 138xi and RGB 158xi 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 video input termination DIP switch on the RGB 138*xi* and the ID bit termination DIP switches on the RGB 158*xi* have been set correctly.
5. For digital display devices, try switching between ADSP and DDSP using the rear panel DDSP DIP switch.
6. Call Extron's 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 Extron's customer support hotline.



**RGB 138*xi*, RGB 158*xi***

# Appendix A

## Specifications



# Specifications

## Video input

Number/type .....	1 analog RGBHV, RGBS, RGsB, RsGsBs
Connectors .....	RGB 138 <i>x</i> i.. 1 9-pin D male, MBC/LBC cable or buffer RGB 158 <i>x</i> i... 1 15-pin HD male
Nominal level(s) .....	Analog — 0.3V to 1.5V p-p
Maximum level(s) .....	Analog — 1.5V p-p
Impedance .....	75 ohms or Hi Z, switchable (The default is Hi Z.)
Horizontal frequency .....	Autoscan 15 kHz to 130 kHz
Vertical frequency .....	Autoscan 30 Hz to 120 Hz
Return loss .....	-30dB @ 5 MHz
Maximum DC offset .....	4.0V

## Video throughput

Gain .....	Unity (0.700V p-p), 0.725V p-p with 50% peaking, 0.750V p-p with 100% peaking
Bandwidth .....	300 MHz (-3dB)

## Video output

Number/type/format .....	1 analog RGBHV, RGBS, RGsB
Connectors .....	RGB 138 <i>x</i> i.. 6 BNC female RGB 158 <i>x</i> i... 6 BNC female 1 15-pin HD female local monitor output (buffered)
Nominal level .....	Analog 0.700V p-p, 0.725V p-p, or 0.750V p-p
Impedance .....	75 ohms
Return loss .....	-30dB @ 5 MHz

## Sync

Input type .....	RGBHV TTL ( $\pm$ ), RGBS TTL ( $\pm$ ), RGsB 0.3V (-), RsGsBs 1.3V (-)
Output type .....	RGBHV ( $\pm$ ), RGBS( $\pm$ ), RGsB (-)
Input level .....	2.0V to 5.5V p-p with $\pm$ 0.2VDC offset (max.)
Output level .....	4.0V to 5.0V p-p
Input impedance .....	10 kohms
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 input

Number/type .....	1 PC level stereo, unbalanced
Connectors .....	1 3.5 mm stereo jack, 2 channel; tip (L), ring (R), sleeve (ground)
Impedance .....	10 kohms, DC coupled
Minimum level .....	100mV
Maximum level .....	+8.5dBu,(unbalanced) @ stated %THD+N

## Audio throughput

Gain .....	Unbalanced 0dB, balanced +6dB
Frequency response .....	$\pm$ 0.05dB @ 20 Hz to 20 kHz
THD + Noise .....	0.03% @ 1 kHz, 0.3% @ 20 kHz at rated maximum output drive
S/N .....	>90dB, output 14dBu, balanced
Stereo channel separation .....	>95dB @ 1 kHz to 20 kHz

## Audio output

Number/type .....	1 stereo (2 channel), balanced/unbalanced
Connectors .....	3.5 mm stereo captive screw terminal, 5 conductor, for left and right output
Impedance .....	50 ohms, unbalanced, 100 ohms balanced
Gain error .....	$\pm$ 0.1dB channel to channel
Drive (600 ohm) .....	+14dBu, balanced at stated %THD+N

## Specifications, cont'd

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### General

Power .....	100VAC to 240VAC, 50/60 Hz, 15 Watts, internal, auto-switchable
MBC power jack .....	9.0VDC, 150 mA
Temperature/humidity .....	Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing
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
Enclosure dimensions .....	1.75" H x 17.50" W x 6.00" D 4.45 cm H x 44.45 cm W x 15.24 cm D
Shipping weight .....	7 lbs (3.2 kg)
Vibration .....	NSTA 1A in carton (National Safe Transit Association)
Approvals .....	UL, CE, FCC Class A
MTBF .....	30,000 hours
Warranty .....	2 years parts and labor



**RGB 138<sub>xi</sub>, RGB 158<sub>xi</sub>**

# Appendix B

**NOTE** *Specifications are subject to change without notice.*

## Accessories and Part Numbers

Included Parts

Accessories

Cables

Adapter Plates

## Accessories and Part Numbers

### Included Parts

These items are included in each order for an RGB 138<sub>xi</sub> or RGB 158<sub>xi</sub>:

Included parts	Part number
RGB 138 <sub>xi</sub>	60-292-01
RGB 138 <sub>xi</sub> (Europe)	60-292-02
RGB 158 <sub>xi</sub>	60-294-01
RGB 158 <sub>xi</sub> (Europe)	60-294-02
Blank adapter plates, single height	70-090-01
Blank adapter plate, double height	70-090-02
Through-desk/rack mounting bracket kit	70-077-03
3.5 mm, 5-pole captive screw connector	10-319-10

### Accessories

Accessories	Part number
Under-desk mounting bracket kit	70-077-01
3.5 mm stereo plug	10-306-01

### Cables

Input VGA cables (for RGB 158 <sub>xi</sub> )	Part number
VGA 6' HR	26-112-15
VGA 3' HR A (with audio)	29-491-01
VGA 6' HR A (with audio)	29-491-02
VGA 12' HR A (with audio)	29-491-03

Monitor breakout cables (RGB 138 <sub>xi</sub> )	Part number
MBC VGA/XGA HR	26-162-01
MBC Mac Quadra	26-018-01
MBC Sun Sparc HR	26-424-01
MBC SGI/13W3 HR	26-425-01

Laptop breakout cables* (RGB 138 <sub>xi</sub> )	Part number
LBC VGA HR 6'	26-244-01
LBC Mac HR 6'	26-363-01
LBC Sun HR 6' A (61 kHz) (w/audio)	26-443-02
LBC Sun HR 6' A (71 kHz) (w/audio)	26-444-02
LBC Sun HR 6' A (81 kHz) (w/audio)	26-445-02

\*Laptop breakout cables are also available in 3' and 12' lengths.

Adapter kits for RGB 138 <sub>xi</sub>	Part number
Mac 15-pin HD adapter cable kit	70-078-01
Mac 15-pin HD adapter cable kit w/audio	70-078-02
13W3 15-pin HD adapter cable kit	70-079-01
13W3 15-pin HD adapter cable kit w/audio	70-079-02

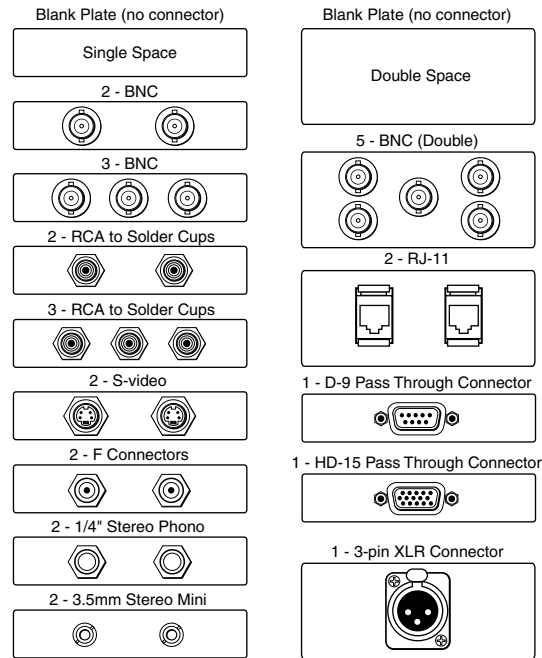
High-resolution cables	Part number
BNC-5-3'HR	26-260-15
BNC-5-6'HR	26-260-01
BNC-5-12'HR	26-260-02
BNC-5-25'HR	26-260-03
BNC-5-50'HR	26-260-04
BNC-5-75'HR	26-260-16
BNC-5-100'HR	26-260-05
BNC-5-3'HRP (plenum)	26-378-01
BNC-5-6'HRP (plenum)	26-378-02
BNC-5-12'HRP (plenum)	26-378-03
BNC-5-25'HRP (plenum)	26-378-04
BNC-5-50'HRP (plenum)	26-378-05
BNC-5-75'HRP (plenum)	26-378-06
BNC-5-100'HRP (plenum)	26-378-07
Bulk installation cable (14-conductor, non-plenum), 500' HR	22-120-02
Bulk installation cable (17-conductor, plenum), 500' HR	22-111-03

## Adapter Plates

A variety of optional architectural adapter plates for pass-through connections may be ordered for these interfaces. The RGB 138*xi* and RGB 158*xi* can each hold up to four (4) adapter plates. The following configurations of adapters could be installed in either interface:

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

The tables on the following pages list the available adapter plates.



**Architectural adapter plates**

Multi Type Connector Architectural Adapter Plates							
Adapter plate description	Plate size	Front connector type	Rear connector type	Part #	Gray	Black	White
1 S-video female and 1 BNC female	1	4-pin mini DIN female and BNC female	4-pin mini DIN female and BNC female	70-107	-01	-02	-03
1 S-video female and 3 RCA female	2	4-pin mini DIN female and RCA female	4-pin mini DIN female and RCA female	70-107	-02	-12	-22
1 S-video female and 2 RCA female	1	4-pin mini DIN female and RCA female	4-pin mini DIN female and RCA female	70-107	-03	-13	-23
1 BNC female and 2 RCA female	1	BNC female and RCA female	BNC female and RCA female	70-108	-01	-11	-21
1 BNC female and 1 3.5mm mini stereo jack	1	BNC female and 3.5mm mini stereo jack	BNC female and 3 solder cups	70-108	-02	-12	-22
1 RCA female and 1 3.5mm mini stereo jack	1	RCA female and 3.5mm mini stereo jack	RCA female and 3 solder cups	70-109	-01	-02	-03

Single Type Connector Architectural Adapter Plates							
Adapter plate description	Plate size	Front connector type	Rear connector type	Part #	Gray	Black	White
Blank plate 1	1	n.a.	n.a.	70-090	-01	-11	-21
Blank plate 2	2	n.a.	n.a.	70-090	-02	-12	-22
2 BNC barrel (female to female)	1	BNC female	BNC female	70-091	-01	-11	-21
3 BNC barrel (female to female)	1	BNC female	BNC female	70-091	-02	-12	-22
5 BNC barrel (female to female)	2	BNC female	BNC female	70-091	-03	-13	-23
2 RCA female to solder cups	1	RCA female (red/black)	solder lug terminals	70-092	-01	-11	-21
3 RCA female to solder cups	1	RCA female (red/black)	solder lug terminals	70-092	-02	-12	-22
2 RCA female barrel (female to female)	1	RCA female (red/black)	RCA female	70-093	-01	-11	-21
3 RCA female barrel (female to female)	1	RCA female (red/black)	RCA female	70-093	-02	-12	-22
2 RCA to BNC barrel (female to female)	1	RCA female (red/black)	BNC female	70-094	-01	-11	-21
3 RCA to BNC barrel (female to female)	1	RCA female (red/black)	BNC female	70-094	-02	-12	-22
2 S-video to S-video barrel (female to female)	1	4-pin mini DIN female	4-pin mini DIN female	70-095	-01	-11	-21

2 F connector barrel	1	F connector female	F connector female	70-096	-01	-11	-21
2 ¼" stereo phono female	1	¼" stereo phono female	3 solder lug terminals	70-097	-01	-11	-21
2 ¼" mono phono female	1	¼" mono phono female	2 solder lug terminals	70-097	-02	-12	-22
2 3.5mm mini stereo female	1	3.5mm mini stereo female	3 solder lug terminals	70-098	-01	-11	-21
2 RJ-11 (female to female)	2	RJ-11 female	RJ-11 female	70-099	-01	-11	-21
2 RJ-45 (female to female)	2	RJ-45 female	RJ-45 female	70-100	-01	-11	-21
1 HD-15 (female to female)	1	15-pin HD female	15-pin HD female	70-101	-01	-11	-21
1 HD-15 (male to male)	1	15-pin HD male	15-pin HD male	70-101	-02	-12	-22
1 D-9 (female to female)	1	9-pin D female	9-pin D female	70-102	-01	-11	-21
1 D-9 (male to male)	1	9-pin D male	9-pin D male	70-102	-02	-12	-22
1 3-pin XLR female	2	3-pin XLR female	3 solder lug terminals	70-103	-01	-11	-21
1 4-pin XLR female	2	4-pin XLR female	3 solder lug terminals	70-103	-02	-12	-22
1 6-pin XLR female	2	6-pin XLR female	3 solder lug terminals	70-103	-03	-13	-23
2 6-pin mini DIN (keyboard/mouse)	1	6-pin mini DIN female	6-pin mini DIN female	70-104	-01	-11	-21
1 3.5mm, 5 pole captive screw terminal	1	3.5mm, 5 pole captive screw terminal	solder cups	70-105	-01	-11	-21
1 contact closure switch/LED show-me and 3.5mm stereo mini jack	1	contact closure switch and 3.5mm mini stereo jack	solder cups	70-106	-01	-11	-21

## **Accessories and Part Numbers, cont'd**

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