

User's Manual

CAUTION

Do not connect this device to a computer data or telecommunications network



TP Receivers Family

High Resolution Video, Composite Video, and Stereo Audio
Twisted Pair Cable Transmission Products

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.

Conservier 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 présents dans la documentation utilisateur.

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

Sicherheitsanleitungen • Deutsch



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



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

Achtung

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

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

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

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

Instrucciones de seguridad • Español



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



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

Precución

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 maradas 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.

Avvertimento

Alimentazione • Non fare funzionare 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 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 équivalent recommandé 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 Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (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. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

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

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

Advertencia

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

Desconexión de alimentación eléctrica • Para desconectar con seguridad la conectada 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 debe 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.

Precautions, cont'd

安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有暴露的危险电压，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所有安全和使用说明。

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。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，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的电源线。

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。设备内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，它们是用来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。按照生产厂的建议处理废弃电池。

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. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A 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 with FCC emissions limits.



Table of Contents

Chapter One • Introduction	1-1
About the TP Receivers	1-2
Features	1-3
TP R BNC A receiver	1-3
TP R BNC AV receiver	1-4
TP R 15HD A receiver	1-4
Chapter Two • Installation and Operation	2-1
Installation Overview	2-2
Video jumpers	2-3
Video DIP switch	2-5
Audio jumpers	2-5
Mounting the receiver	2-7
Rack mounting (TP R BNC A, TP R BNC AV, TP R 15HD A) .	2-8
Furniture mounting	2-9
Projector mounting	2-11
Rear panel features and cabling	2-12
Transmitted signal cabling	2-12
Output cabling	2-13
Computer video	2-13
Composite video	2-14
Audio	2-15
Power connector	2-15
Termination of TP cable	2-16
Cable testing	2-17
Equalizing pair skew	2-17
Front Panel Controls and Indicators	2-19
Troubleshooting	2-20
If the image does not appear	2-20
If the image is not displayed correctly	2-21
If the receiver Manual/Auto LED flashes	2-22

Table of Contents, cont'd

Appendix • Specifications, Accessories, and Part Numbers	A-1
Specifications	A-2
Included Parts	A-6
Extron Accessories	A-6
Cables/Adapters	A-7

All trademarks mentioned in this manual are the properties of their respective owners.

68-547-02 **Rev. J**
01 09



TP Receivers

1 Chapter One

Introduction

About the TP Receivers

Features

Introduction

About the TP Receivers

The TP R BNC A, TP R BNC AV and TP R 15HD are Extron Twisted Pair (TP) receivers that receive transmissions of RGB video, component video, S-video, composite video, and stereo audio over Extron Enhanced Skew-Free™ A/V UTP cable or standard Category (CAT) 5 unshielded twisted pair (UTP), shielded twisted pair (STP), or foil shielded twisted pair (FTP) cable. Standard transmission distance is shown in the tables below. Minimum reliable transmission distance for the TP R BNC A and TP R BNC AV is 50 feet. The TP R 15HD A provides reliable reception and high quality video output without minimum distance limitations.

Maximum distance is determined by the output frequency and resolution. The following table specifies recommended maximum transmission distances using Extron Enhanced Skew-Free A/V UTP cable or UTP CAT 5 cable, terminated with CAT 6, or at least CAT 5e, rated connectors.

NOTE *Extron recommends using the highest quality pre-terminated and tested cable. Cables terminated on site should be tested to ensure compliance with Category 5e specifications.*

Recommended transmission ranges at 60 Hz, TP R 15HD A

Video format	Maximum range
Composite video and audio	800 feet
Component video and S-video	800 feet
640 x 480	500 feet
800 x 600	400 feet
1024 x 768	300 feet
1280 x 1024	200 feet
1600 x 1200	150 feet

Recommended transmission ranges at 60 Hz, TP R BNC A and TP R BNC AV

Video format	Maximum range
Composite video and audio	1000 feet
Component video and S-video	1000 feet
640 x 480	1000 feet
800 x 600	800 feet
1024 x 768	600 feet
1280 x 1024	400 feet
1600 x 1200	300 feet

NOTE *While it is possible to exceed recommended distances, image quality may be reduced.*

The TP receivers only receive signals transmitted by Extron TP transmitters. This user manual documents installation, features, and operation of the TP receivers only. For information about the TP transmitters, refer to the *TP Transmitters Family User's Manual*, *TP T 15HD 45 and TP T A 45 Manual*, or the *VTT001/TR001 Transmitter and Receiver Manual*, as applicable, which accompanies the transmitters.

Features

All Extron TP receivers provide the following features:

Audio output — Provides unbalanced (left/right) audio on RCA connectors, and balanced or unbalanced audio on 3.5 mm, 5-pole captive screw connectors.

Level control — Allows manual control of image brightness.

Peaking control — Allows manual control of image sharpness.

TP R BNC A receiver

The TP R BNC A receiver has the following features:

Video output — Provides RGBHV, RGBS, or RGsB video on 5 BNC connectors.

RJ-45 connector — Allows attachment to an Extron TP transmitter.

Cable length compensation — Compensates for long cable runs automatically or manually.

Mounting —

Mounts in a rack with an Extron 1U Universal Rack Shelf Kit (part #60-190-01) or 1U Basic Rack Shelf (part #60-604-02).

Mounts to a projector mounting bracket with the Extron Pole Mount Kit, PMK 200 (part #70-077-04).

Mounts under or through furniture with an Extron Under-Desk Mounting Kit (part #70-077-01) or Through-Desk Mounting Kit (part #70-077-02).

Introduction, cont'd

TP R BNC AV receiver

The TP R BNC AV receiver has the following features:

Video output — Provides RGBHV, RGBS, or RGSB video on 5 BNC connectors, and composite video on 1 BNC connector.

RJ-45 connector — Allows attachment to an Extron TP transmitter. One connector is for computer input, and one is for A/V input.

Cable length compensation — Allows you to select whether to compensate for long cable runs automatically or manually.

Mounting —

Mounts in a rack with an Extron 1U Universal Rack Shelf Kit (part #60-190-01) or 1U Basic Rack Shelf (part #60-604-02).

Mounts to a projector mounting bracket with the Extron Pole Mount Kit, PMK 200 (part #70-077-04).

Mounts under or through furniture with an Extron Under-Desk Mounting Kit (part #70-077-01) or Through-Desk Mounting Kit (part #70-077-02).

TP R 15HD A receiver

The TP R 15HD A receiver has the following features:

Video output — Provides RGBHV, RGBS, and RGsB on a 15-pin HD connector. With an optional SY 15 HD-RGBHV cable, the receiver can output component video, S-video, or composite video.

RJ-45 connector — Allows attachment to an Extron TP transmitter.

Mounting —

Mounts in an Extron VersaTools™ 1U Rack Shelf (part #60-190-20), VersaTools 1U Basic Rack Shelf (part #60-604-20), a standard Universal 1U Universal Rack Shelf Kit (part #60-190-01) or 1U Basic Rack Shelf (part #60-604-02).

Mounts under furniture or to a projector bracket with Extron's optional mounting kits (part #70-212-01, furniture, or #70-217-01, projector).

This page intentionally left blank.



TP Receivers

2

Chapter Two

Installation and Operation

Installation Overview

Front Panel Controls and Indicators

Troubleshooting

Installation Overview

To install and set up a TP receiver and the associated TP transmitter(s) for operation, perform the following steps:

- 1 Disconnect power from all of the equipment, including the video source(s) (such as computers or DVD players), the transmitter, the receiver, and the output display(s).
- 2 For component, S-video, or composite video, ensure the internal jumpers (TP R BNC A and TP R BNC AV) or external DIP switch (TP R 15HD A) are in the correct position. See *Video jumpers* or *Video DIP switch* in this chapter.
- 3 **TP R BNC AV Only** — If required, configure the audio jumpers to make the receiver compatible with unmodified TP transmitters. See *Audio jumpers* in this chapter.

NOTE *The TP R BNC AV is a redesigned (modified) receiver. Audio jumpers configure the audio portion of the composite video TP link to work with the similarly redesigned TP T 15HD AV transmitter or with older, unmodified transmitters. Redesigned receivers and transmitters have an identifying label.*

- 4 Mount the receiver in a rack (the TP R 15HD A can be mounted in a standard rack or in a VersaTools rack), under a desk or podium, in a desk or table (all except TP R 15HD A), or on a projector bracket. See *Mounting the receiver* in this chapter.
- 5 Connect the cable(s) between the TP transmitter(s) and the receiver. See *Transmitted signal cabling* in this chapter and refer to the *TP Transmitters Family User's Manual*, part #68-546-03, or the *TP T 15HD 45 and TP T A 45 Manual*, #68-924-01, as applicable.
- 6 Connect the output cables. See *Output cabling* in this chapter.
- 7 Configure the TP transmitter(s). Refer to the *TP Transmitters Family User's Manual*, part #68-546-03, or the *TP T 15HD 45 and TP T A 45 Manual*, #68-924-01, as applicable.
- 8 Connect power cords to the TP receiver, the TP transmitter, and turn on the video source(s) and the output display(s).

NOTE

The following transmitters are compatible with the TP R 15HD A, TP R BNC A and TP R BNC AV receivers:

TP T 15HD 45, TP T A 45,
TP T 15HD A, TP T 15HD AV,
TP T 468

NOTE

All TP transmitters include a 15V or 12V external power supply. The transmitters (with the exception of the TP T 15HD 45 and TP T A 45) also receive power from the associated Extron TP receiver(s) (with the exception of the TP R 15HD A) via the TP cable. Extron recommends using the local power supply; however, the power supply may not be necessary in some applications. Use the following guidelines:

- The TP T 15HD A and TP T 15HD AV may not require a local power supply for cable lengths of 300 feet or less.
- All of the following transmitters require the local power supply:
 - TP T BNC DA4
 - TP T 15HD 45
 - TP T A 45
 - VTT001
 - Any transmitter connected to a TP R 15HD A

If problems are encountered, such as a missing or poor quality image on the output, use the local power supply. See Troubleshooting, on page 2-19 for other indications that may require using the local power supply.

- 9** Adjust the picture controls on the transmitter(s) and the receiver. See *Controls and Indicators* in this chapter and refer to the *TP Transmitters Family User's Manual*, part #68-546-03.

Installation and Operation, cont'd

Video jumpers

The TP R BNC A and TP R BNC AV receivers can be configured to receive component video, S-video, or composite video.

NOTE *The receivers are factory configured for RGB video. To receive any other type of video, reconfigure the jumpers.*

1. Remove the three screws on each side and the two screws on top of the cover (figure 2-1).

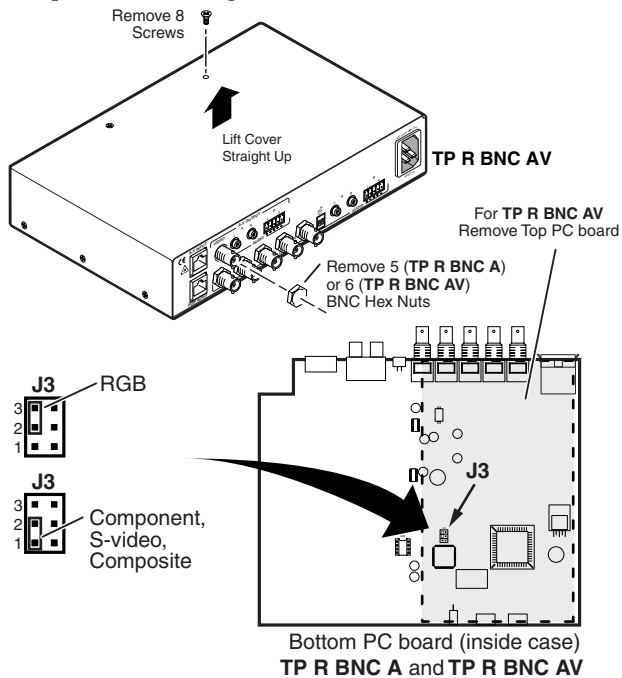


Figure 2-1 — Video jumper configuration

2. Using an Extron BNC extraction tool (part #100-096-01) or a 14 mm, deep well socket with thin walls, remove the five or six hex nuts securing the BNC connectors to the rear panel.
3. Slide the cover to the rear until the cover clears the BNC connectors and then lift the cover off.
4. **TP R BNC AV only:** Remove the four screws securing the video board to the RGB board and lift the video board out of the way.

5. Locate J3 on the RGB video printed circuit board. See figure 2-1.
 - a. For **RGB video**, ensure that pin 2 is jumpered to pin 3.
 - b. For **any other video format**, ensure that pin 1 is jumpered to pin 2.
6. Reinstall the video board, replace the cover, and reinstall the screws and BNC connector hex nuts.

Video DIP switch

The TP R 15HD A receiver can be configured to receive component video, S-video, or composite video. To configure the receiver for RGB video, set DIP switch 3 (C video) on the back of the transmitter to off (down). For any other video format set the switch on (up).



Audio jumpers

NOTE Older (unmodified) receivers and transmitters are fully compatible with each other **but not** with the TPX 88 A twisted pair matrix switcher.

Redesigned (modified) receivers and transmitters are fully compatible with each other **and with** the TPX 88 A. Most can also be jumpered to be compatible with the older (unmodified) transmitters and receivers **but not** the TPX 88 A. The TP T A 45 incorporates the redesigned audio circuits, but cannot be jumpered for backwards compatibility.

NOTE Most redesigned (modified) receivers and transmitters have an identifying label. The TP T A 45 incorporates the redesigned audio circuits, but does not have an identifying label.

The TP R BNC AV receivers are factory configured to receive the audio that is associated with the composite video link on wire pair 3 and 6. This configuration is compatible with redesigned TP transmitters and the TPX 88 A.

If using this receiver with an older, unmodified TP transmitter, and not planning to include a TPX 88 A in your system, set the receiver to receive audio on wire pair 7 and 8. Shift internal jumpers as follows:

Installation and Operation, cont'd

1. Remove three screws on each side and one or two screws on top of the cover (figure 2-2).

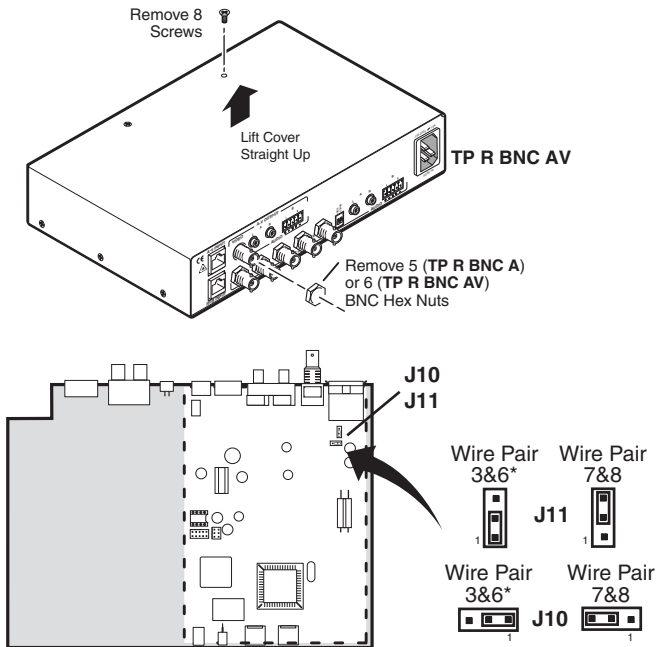


Figure 2-2 — Audio jumper configuration

2. Using an Extron BNC extraction tool (part #100-096-01) or a 14 mm, deep well socket with thin walls, remove the five or six hex nuts securing the BNC connectors to the rear panel.
3. Slide the cover to the rear until the cover clears the BNC connectors, then lift the cover off.
4. Locate J10 and J11 on the composite video printed circuit board. See figure 2-2.
 - a. **For compatibility with redesigned (modified) receivers and the TPX 88 A**, ensure that pin 1 is jumpered to pin 2 on both jumper locations.
 - b. **For compatibility with older (unmodified) receivers**, ensure that pin 2 is jumpered to pin 3 on both jumper locations.
5. Replace the cover, and reinstall the screws and BNC connector hex nuts.

Mounting the receiver

UL guidelines for rack mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of the TP Receivers in a rack:

1. **Elevated operating ambient temperature** — If the unit is 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 equipment in an environment compatible with the maximum ambient temperature (Tmax: +122 °F, +50 ° C) specified by Extron.
2. **Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
3. **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
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. Give appropriate consideration to the equipment nameplate ratings 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 (such as the use of power strips).

Installation and Operation, cont'd

Rack mounting (TP R BNC A, TP R BNC AV, TP R 15HD A)

TP R BNC A, TP R BNC AV, or TP R 15HD AV — For optional rack mounting, mount the receiver on a 9.5" deep 1U Universal Rack Shelf (Extron part #60-190-01) (figure 2-3). The TP R BNC A and TP R BNC AV mount on the left or right side of the rack. The TP R 15HD A mounts in one of eight locations on the rack.

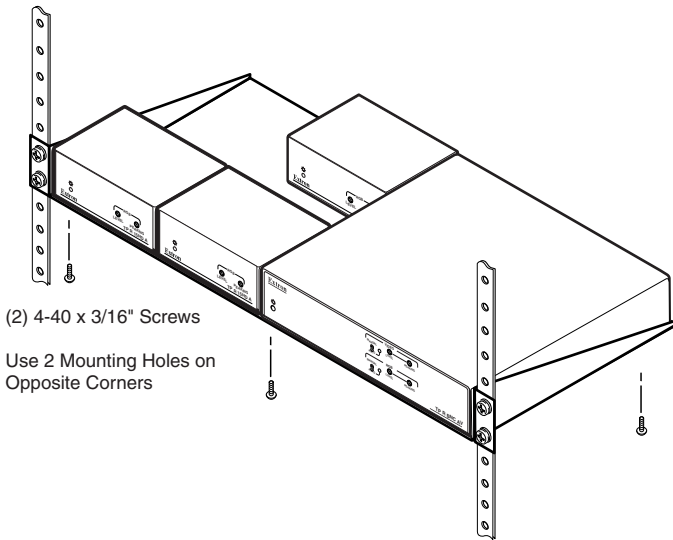


Figure 2-3 — Rack mounting the TP R 15HD A and TP R BNC AV

TP R 15HD A only — For optional rack mounting, mount the receiver on a VersaTools 3.5" deep 1U Rack Shelf (Extron part #60-190-20) (figure 2-4). The TP R 15HD A mounts in one of four locations on the rack.

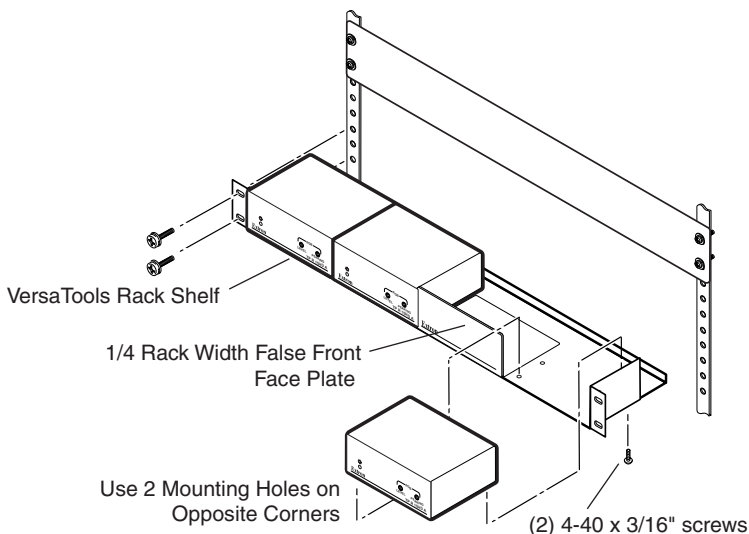


Figure 2-4 — VersaTools rack mounting the TP R 15HD A

1. If feet were previously installed on the bottom of the receiver, remove them.
2. Mount the receiver on the rack shelf, using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the receiver to the shelf.
3. Install blank panel(s) (included in the 1U universal and VersaTools rack kits, optional for the 1U basic rack kit) or other unit(s) to the rack shelf.

NOTE *Only the TP R 15HD A and products in the Extron VersaTools line can be mounted on a VersaTools shelf. Any 1U rack-mountable Extron product can be mounted on the standard shelf.*

Furniture mounting

All receiver models can be mounted under furniture such as a table or podium surface using the appropriate optional mounting bracket; the Extron Under-Desk Mounting Kit for 1/8 and 1/4 Rack Width Products (part #70-212-01) (TP R 15 HD A) or Under-Desk Mounting Kit for 1/2 Rack Width Products (part #70-077-01) (all other models).

Installation and Operation, cont'd

All models except the TP R 15HD A can be mounted through a table or podium using an Extron Through-Desk Mounting Kit for 1/4 or 1/2 Rack Width Products (part #70-077-02). Furniture mount the receiver as follows:

1. Attach the mounting brackets to the receiver with the machine screws provided (figure 2-5).

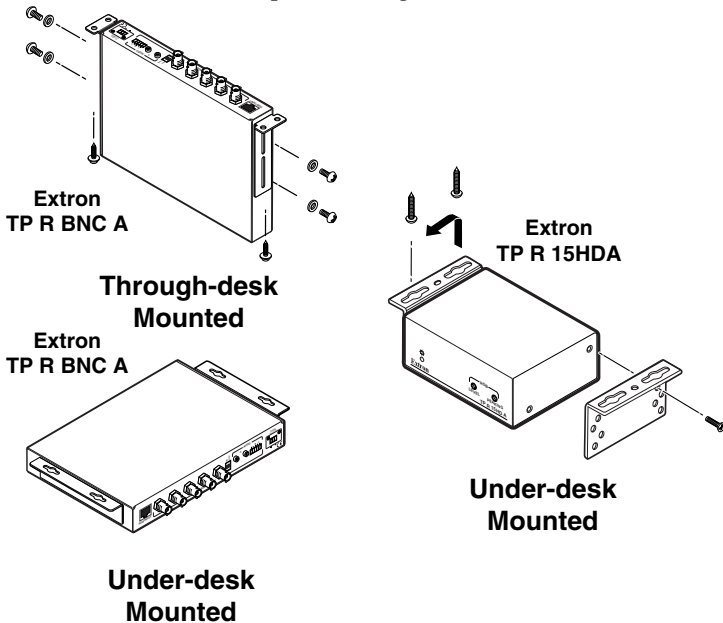


Figure 2-5 — Under-desk or through-desk mounting

2. For through-surface mounting (all except TP R 15HD A), cut the proper sized hole in the mounting surface.
3. Hold the receiver with the attached brackets against the underside of the table or other furniture. Mark the location of the screw holes of the bracket on the mounting surface.
4. Drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep in the mounting surface at the marked screw locations.
5. For through-surface mounting (all except TP R 15HD A), insert four #8 wood screws through the bracket and into the four pilot holes. Tighten all four screws to secure the receiver in place.
6. For under-surface mounting, insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until slightly less than 1/4" of the screw protrudes.

-
7. **For under-surface mounting**, align the mounting screws with the slots in the brackets and place the receiver against the surface, with the screws through the bracket slots.
 8. **For under-surface mounting**, slide the receiver slightly forward or back, then tighten all four screws to secure the switcher in place.

Projector mounting

All of the receiver models can be mounted on a projector bracket using the appropriate optional mounting bracket, the Extron Pole Mount Kit for One 1/4 Rack Width Product (part #70-217-01) (TP R 15 HD A) or Pole Mount Kit for One 1/4 or 1/2 Rack Width Product (part #70-077-04) (**all other models**).

Secure the mounting bracket to the receiver using two machine screws in the side of the receiver (TP R 15HD A) or the three #8 machine screws provided (**all other models**). Secure the receiver to a projector mount or other surface by inserting the mounting bolt through the bracket's slotted hole (figure 2-6).

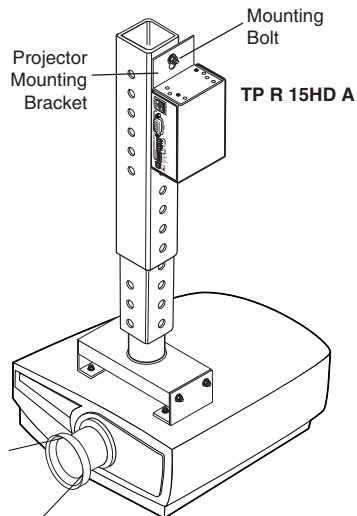


Figure 2-6 — Projector bracket mounting a receiver

Installation and Operation, cont'd

Rear panel features and cabling

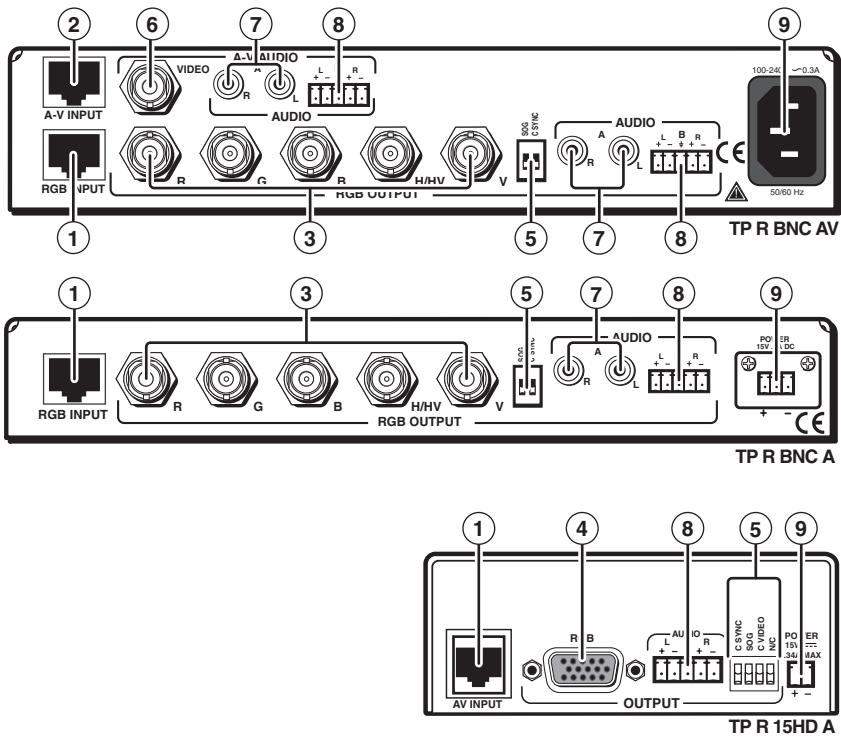


Figure 2-7 — Installation features, TP receivers

Transmitted signal cabling

CAUTION

Do not connect this device to a computer data or telecommunications network

NOTE

RJ-45 termination must comply with the TIA/EIA T 568A wiring standards for all connections.

- ① **RGB video transmission connector** — Attach one end of a TP cable to this RJ-45 female connector (figure 2-7). Attach the other end to an Extron TP 15HD or BNC transmitter. See *Termination of TP cable* on page 2-15 for pin assignments.
- ② **Composite video transmission connector** — Attach one end of a TP cable to this RJ-45 female connector. Attach the other end to an Extron TP composite video transmitter. See *Termination of TP cable* on page 2-15 for pin assignments.

Output cabling

Computer video

The TP R BNC A, TP R BNC AV and TP R 15HD A receive and output RGB video. These receivers can also receive component video, S-video, or composite video and output them on the R, G, and B signal lines.

Reception of component video, S-video, or composite video requires an internal jumper (TP R BNC AV and TP R BNC) or external DIP switch (TP R 15HD A) be repositioned. See *Video jumpers* or *Video DIP switch* in this chapter.

- ③ **RGB Output BNCs (TP R BNC A and TP R BNC AV)** — Connect the desired video output device to the rear panel output BNCs:

For RGBHV video, use the R, G, B, H/HV, and V BNCs.



For RGBS video, use the R, G, B, and H/HV BNCs.



For RGsB or component video, use the R (R-Y), G (Y), and B (B-Y) BNCs.



For S-video, use the R (C-chroma) and G (Y-luma) BNCs.



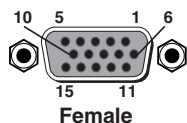
For composite video, use the R, or G, or B BNC.



NOTE The H/HV and V BNCs output sync, not video signals.

Installation and Operation, cont'd

- ④ **RGB Output 15HD (TP R 15HD A)** — Connect the desired video output device to the rear panel output 15HD connector. Refer to the table below for the video signal connections. Pins 13 and 14 are for sync only.



Pin#	Description	Component	S-Video	Composite
1	R	R-Y	C	
2	G	Y	Y	Y
3	B	B-Y		
6	R Return	R-Y Return	C Return	
7	G Return	Y Return	Y Return	Y Return
8	B Return	B-Y Return		

NOTE *If using composite video, additional genlocked video signals may be connected using the R and B lines and their associated returns.*

- ⑤ **DIP switches**

SOG switch — Set this rear panel switch up for RGsB video and down for RGBHV or RGBS video.

C Sync switch — Set this rear panel switch up for RGBS video and down for RGBHV or RGsB video.

C video switch (TP R 15HD A only) — Configures the receiver for RGB or component/S-video/composite video. See *Video DIP switch* in this chapter.

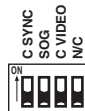
NOTE *Set all three DIP switches down for RGBHV video.*

N/C (TP R 15HD A only) — No effect. Default: Off

Composite video

The TP R BNC AV receives and outputs composite video.

- ⑥ **Video connector** — Connect a composite video device to this rear panel BNC connector. Digital audio can also be connected through this connector.



Audio

All Extron TP receivers receive and output stereo audio. All receivers except the TP R 15HD A output the audio on both left and right RCA connectors and on 3.5 mm, 5-pole captive screw connectors. The TP R 15HD A outputs audio on the captive screw connector only.

- ⑦ **Stereo audio output connectors** — Connect left and right stereo audio cables between these rear panel RCA connectors and the output device stereo audio inputs.

NOTE Only analog, line level, unbalanced audio signals can be output on these connectors.

- ⑧ **Stereo audio 5-pole captive screw connector** — Connect audio devices, such as an audio amplifier or powered speakers, to these connectors. These 3.5 mm, 5-pole captive screw connectors output unamplified, line level audio. Figure 2-8 shows how to properly wire an output connector.



CAUTION

For unbalanced audio, connect the sleeve(s) to the ground contact. **DO NOT** connect the sleeve(s) to the negative (-) contacts.

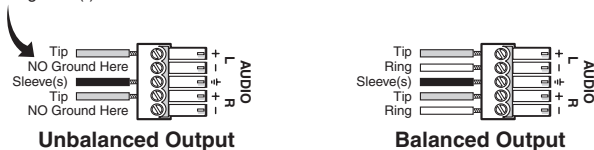


Figure 2-8 — Audio output connector wiring

NOTE If only an audio signal, no video, is received, connect a ground wire between the chassis ground and earth ground in the equipment rack or other grounded device. If the receiver is not grounded, a crackling sound may be heard in the audio output.

Power connector

- ⑨ **Power**

TP R BNC AV — Plug a standard IEC power cord into this connector to connect the TP R BNC AV to a 100 to 240 VAC, 50 Hz or 60 Hz power source.

NOTE If the distance between the transmitter and receiver is too great for the receiver to power the transmitter, the video image will be missing, distorted, or noisy, or the receiver Manual/Auto LED will flash. The transmitter will require a local power supply.

Installation and Operation, cont'd

TP R BNC A — Wire the external 15 V power supply into this 3-pole captive screw connector (figure 2-9) and plug the connector into the receiver. The power supply is included with the unit.

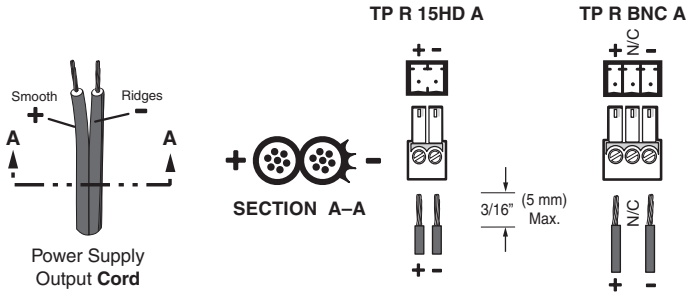


Figure 2-9 — Power connector wiring

TP R 15HD A — Wire the external 15 V power supply into this 2-pole captive screw connector (figure 2-9) and plug the connector into the receiver. The power supply is included with the unit.

Termination of TP cable

Figure 2-10 details the termination of TP cables in accordance with the TIA/EIA T 568A wiring standards.

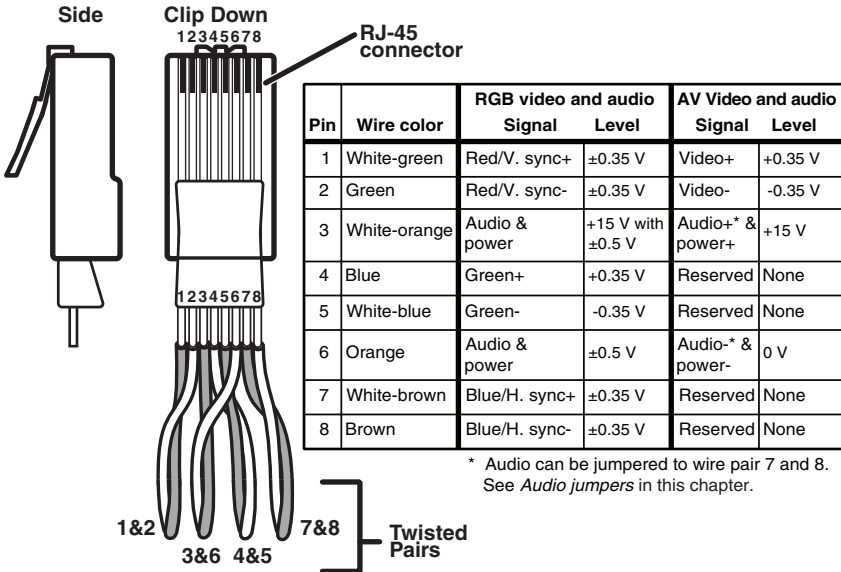


Figure 2-10 — TP cable termination

NOTE

Enhanced Skew-free A/V cable is **not recommended** for Ethernet/LAN applications.

This cable is specially designed for compatibility with Extron's Twisted Pair products, wired using the TIA/EIA 568 A standard.

The green, brown, and blue pairs of this cable have virtually identical lengths, and should be used to transmit the RGB signals.

*The orange pair of this cable has a different length and **should not** be used to transmit RGB signals.*

Cable testing

To ensure proper cable termination, each transmission cable system using CAT 5e should be tested (Extron's Enhanced Skew-Free UTP cable does not need to be tested). Testing the cable from the RJ-45 connections at the transmitter and receiver gives the most accurate indications of cable problems.

There are two varieties of cable runs: simple runs, in which a single cable is terminated only at the transmitter and receiver, and complex runs, which can include patch bays and multiple terminations and lengths of cable. In either case, the entire cabling system should be tested.

A complete test measures cable length and tests the wire map, attenuation, NEXT, PSNEXT, ELFEXT, PSELFEXT, return loss, ACR and PSACR. All of these tests are critical for digital data transfer. While all are important indicators of the quality of the cable termination, the most critical testing parameters for video transfer are wire map (T-568-A termination) and pair length measurements. The largest concern is equalization of skew between cable pairs. Cable systems of 300 feet or less should exhibit no transmission problems if they pass at least CAT 5e or preferably CAT 6-D5 channel certification testing.

The Microtest OMNI SCANNER 2 performs comprehensive certification testing to CAT 6 standards. Other manufacturers also make testing equipment. The tests include advanced diagnostics for troubleshooting the cause and location of many cable and termination problems. For simple installation testing, the Microtest MICRO SCANNER PRO tests wire map and cable length, including individual cable pair length.

Equalizing pair skew

The manufacturing process for network (CAT 5e) UTP cable leads to a condition called pair skew. For best results, pair skew needs to be equalized when using the CAT 5e cable in A/V applications. The design of the Extron Enhanced Skew-Free A/V UTP cable reduces pair skew to the point that equalization is not required.

Installation and Operation, cont'd

Skew exists between pairs when the physical length of one wire pair is different from another. As the transmission cable length increases, the amount of skew increases. Skew affects the displayed image when the differential length between wire pairs exceeds 2 feet, causing the timing of red, green, and blue video signals to appear out of alignment (horizontal registration errors). A white vertical line on a black field can appear as individual red, green, and blue lines that are close together; the signal transmitted on the shortest wire pair leads the other colors and appears to the left on the display.

UTP cable test equipment measures and reports wire pair length. The report on the various pair lengths can be used in equalizing pair skew. The nominal velocity of propagation (NVP — the speed at which the signal travels on the transmission line, measured as a percentage of the speed of light) of TP cable is very close to that of conventional coaxial cable. The similarity in NVP means that an additional length of coax equal to the length of pair skew, placed on the receiver output, equalizes the effects of pair skew (figure 2-11).

If UTP cable test measurement cannot be done, pair skew can still be equalized by viewing a test pattern with a critical eye. Examine the test pattern for loss of horizontal registration and, through a process of trial and error, equalize any pair skew with coax extensions on the red, green, and/or blue outputs.

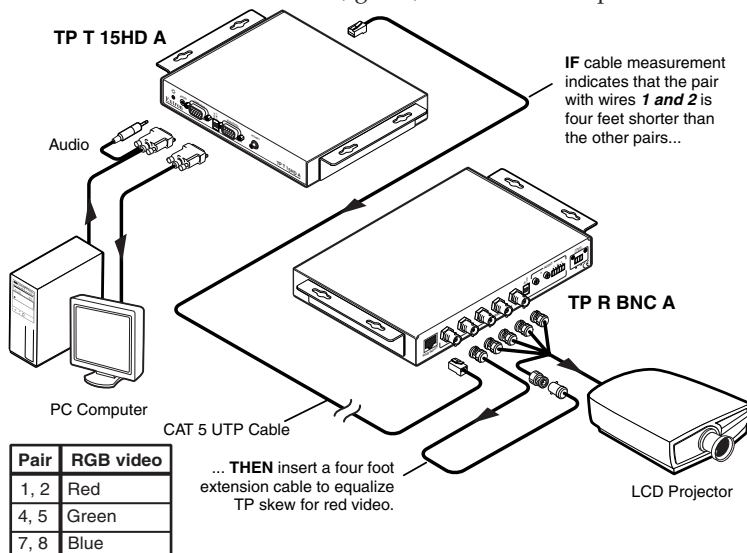


Figure 2-11 — Pair skew equalization

Front Panel Controls and Indicators

The TP R BNC A and TP R BNC AV have similar controls and indicators (figure 2-12). The TP R 15HD A has a reduced set of controls (figure 2-13).

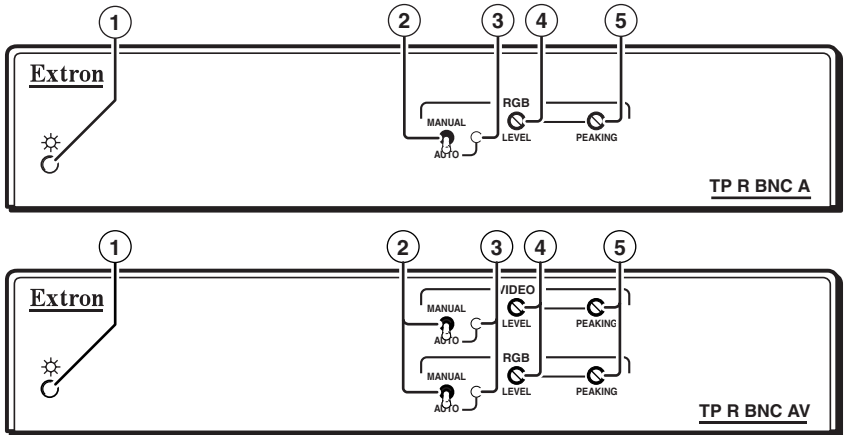


Figure 2-12 — TP R BNC A and TP R BNC AV

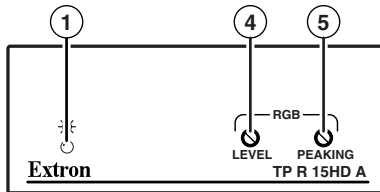


Figure 2-13 — TP R 15HD A

① Power LED

Amber — indicates that power is applied, but the transmitter is not connected to a receiver.

NOTE On the TP R BNC AV if the composite video TP link is used and the RGB link is not used, this LED will only light amber.

NOTE This LED will only light amber if the transmitter is a VTT001.

Green — indicates that a transmitter is connected and any of the following grounding conditions exist:

- The transmitter is powered by a local power supply and the receiver output is connected to a device that provides a reference ground.
- The transmitter is powered by the receiver, is locally grounded, and the receiver output is connected to a device that provides a reference ground.

Installation and Operation, cont'd

- The transmitter is receiving power from the receiver, a local monitor is connected to the transmitter, and the receiver output is connected to a device that provides a reference ground.
- The receiver is connected through a TP switcher to a device that provides a reference ground.

- ② **Manual/Auto switch (TP R BNC A and TP R BNC AV)** — With this switch in the Auto position, the receiver automatically adjusts level and peaking to compensate for long cable runs. In the Manual position, compensate for long cable runs using the level and peaking controls.

NOTE *If the transmitter is a VTT001, this switch should always be set to Manual.*

- ③ **Auto LED (TP R BNC A and TP R BNC AV)** — Indicates the Manual/Auto switch is in the Auto position.
- ④ **Level control** — Adjusts the image brightness.
- ⑤ **Peaking control** — Adjusts the image sharpness.

NOTE *For details on the SOG and C SYNC switches, see Computer video earlier in this chapter.*

Troubleshooting

If the image does not appear

1. Ensure that all devices are receiving power. The transmitter and receiver front panel Power LEDs indicate they are receiving power.
2. Ensure the transmitter is receiving a video input.
3. Ensure the TP cable(s) are properly terminated in accordance with TIA/EIA T 568A standards and the RJ-45 connections are securely made. If the Power LEDs on the transmitter and the receiver are lit green, a transmitter is properly connected to a receiver.
4. For computer/RGB video, ensure the receiver SOG and C Sync switches are in the correct positions for the video output.
5. For computer video, ensure the transmitter ID bit switches are on.
6. For computer video on an LCD projector, ensure the transmitter DDSP (Digital Display Sync Processing) switch is on.

NOTE *The TP T 15HD 45 and TP T A 45 do not have the DDSP feature.*

7. The transmission distance may be too far for remote power. Try connecting a local 15 V power supply to the transmitter.
8. The transmission distance may be too short. Ensure the UTP cable is at least 50 feet long.
9. If the Manual/Auto switch is in the manual position, ensure the receiver level controls are not set too high. Too much level and peaking can cause display problems.
10. For computer video from a laptop or for ungrounded AC distribution systems, the transmitter may need to be grounded. See *Grounding the transmitter* in the *TP Transmitter Family User's Manual*, part #68-546-03.

NOTE *The TP T BNC DA4, the TP T 15HD 45, the TP T A 45, and any transmitter connected to a TP R 15HD A always receive local power so are always grounded.*

11. Call the Extron S³ Sales & Technical Support Hotline if necessary.

If the image is not displayed correctly

1. For computer/RGB video, if the output image looks too green, ensure the receiver SOG switch is off.
2. For computer video, if the picture hangs off the edge of the screen, adjust the transmitter H Shift control.

NOTE *DDSP disables the horizontal shift control.*

NOTE *The TP T 15HD 45 and TP T A 45 do not have shift control.*

3. Place the receiver Manual/Auto switch to manual and adjust the level and peaking controls for optimum quality.
4. The transmission distance may be too far for remote power. Try connecting the local 15 V power supply to the transmitter.
5. For computer video from a laptop or for ungrounded AC distribution systems, the transmitter may need to be grounded. See *Grounding the transmitter* in the *TP Transmitters Family User's Manual*, part #68-546-03.
6. If the image still does not display properly, call the Extron S³ Sales & Technical Support Hotline.

Installation and Operation, cont'd

If the receiver Manual/Auto LED flashes

1. The transmission distance may be too far for remote power. Connect a local 15 V power supply to the transmitter.
2. Check the RJ-45 connector for a loose connection.



TP Receivers

A **Appendix**

Specifications, Accessories, and Part Numbers

Specifications

Included Parts

Accessories

Cables/Adapters

Specifications, Accessories, and Part Numbers

Specifications

Video

Number/signal type	1 or 2 sets of proprietary analog signals
Connectors	1 or 2 shielded RJ-45 female

Video input — refer to the TP Transmitters Family User's Manual, part #68-546-02

Video output

Number/signal type	
TP R BNC A.....	1 analog RGBHV, RGBS, RGsB, component video, or S-video; or 1 S-video and 1 NTSC/PAL/SECAM composite video from a single source; or 3 NTSC/PAL composite video from a single source
TP R BNC AV	1 analog RGBHV, RGBS, RGsB, component video, or S-video; or 1 S-video and 1 NTSC/PAL/SECAM composite video from a single source; or 3 NTSC/PAL/SECAM composite video from a single source <i>and</i> 1 NTSC/PAL/SECAM composite video
TP R 15HD A.....	1 analog RGBHV, RGBS, RGsB, component video, or S-video; or 1 S-video and 1 NTSC/PAL/SECAM composite video from a single source; or 3 NTSC/PAL composite video from a single source
Connectors	
TP R BNC A.....	5 BNC female
TP R BNC AV	6 BNC female
TP R 15HD A.....	(1) 15-pin HD female
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels.....	0.3 V to 1.45 Vp-p
Impedance.....	75 ohms
Maximum resolution	1600x1200

Audio

Number/signal type.....	1 or 2 sets of analog proprietary signals
Connectors	1 or 2 shielded RJ-45 female
Frequency response	20 Hz to 20 kHz, $\geq \pm 0.05$ dB
THD + Noise.....	0.03% @ 1 kHz, 0.3% @ 20 kHz at maximum output (unweighted)
S/N.....	>63 dB at nominal level
Crosstalk.....	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation.....	>80 dB @ 1 kHz
CMRR.....	>33 dB @ 20 Hz to 20 kHz

Audio input — refer to the TP Transmitters Family User's Manual, part #68-546-02

NOTE $0\text{ dBu} = 0.775\text{ V}_{\text{rms}}$, $0\text{ dBV} = 1\text{ V}_{\text{rms}}$, $0\text{ dBV} \approx 2\text{ dBu}$

Audio output

Number/signal type	
TP R BNC A.....	1 stereo audio balanced/unbalanced, and 1 stereo audio unbalanced
TP R 15HD A.....	1 stereo audio balanced/unbalanced
TP R BNC AV	2 stereo audio balanced/unbalanced, and 2 stereo audio unbalanced
Connectors	
TP R 15HD A.....	(1) 3.5 mm, 5-pole captive screw connector per input
All other models.....	2 female RCA (left/right) per input (1) 3.5 mm, 5-pole captive screw connector per input
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Gain error	± 0.1 dB channel to channel
Maximum level (600 ohm).....	$>+11.5$ dBm, balanced at 1%THD+N

General

Power (TP R BNC AV).....	100 VAC to 240 VAC, 50-60 Hz, 40 watts, internal
External power supply (all models except TP R BNC AV)	100 VAC to 240 VAC, 50-60 Hz, external; to 15 VDC, 0.8 A, regulated
Power input requirements	
TP R BNC A	15 VDC, 0.3 A (minimum)
TP R 15HD A.....	15 VDC, 0.34 A (maximum)

Specifications, Accessories, and Part Numbers cont'd

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
Cooling	Convection, no vents
Mounting	
Rack mount	
TP R 15HD A.....	Yes, with optional 1U, 9.5" deep rack shelf, part #60-190-01 (RSU 129) or #60-604-01 (RSB 129); or 1U, 3.5" deep VersaTools® rack shelf, part #60-190-20 (RSF 123) or #60-604-20 (RSB 123); and rack shelf mounting kit, part #70-123-01 (RSM 100). Back of the rack-mountable with VersaTools Back of Rack Mounting Kit, part #70-367-01 (MBB 100)
TP R BNC A, TP R BNC AV	Yes, with optional 1U, 9.5" deep rack shelf, part #60-190-01 (RSU 129) or #60-604-01 (RSB 129)
Furniture Mount	
TP R 15HD A.....	Yes, with optional mounting brackets, part #70-077-01 (MBU 125) or #70-077-02 (MBD 129)
TP R BNC A, TP R BNC AV	Yes, with optional mounting brackets #70-077-01 (MBU 125) or #70-077-02 (MBD 129)
Pole Mount	
TP R BNC A, TP R BNC AV	Yes, with optional mounting kit, part #70-077-04 (PMK 200)
Enclosure type	Metal
Enclosure dimensions	
TP R BNC A.....	1.3" H x 8.75" W x 7.0" D (<1U high, half rack wide) 3.3 cm H x 22.2 cm W x 17.8 cm D (Depth excludes connectors.)
TP R BNC AV	1.7" H x 8.75" W x 7.0" D (1U high, half rack wide) 4.3 cm H x 22.2 cm W x 17.8 cm D (Depth excludes connectors.)
TP R 15HD A.....	1.6" H x 4.25" W x 3.0" D (1U high, quarter rack wide) 4.1 cm H x 10.8 cm W x 7.6 cm D (Depth excludes connectors.)

Product weight

TP R BNC A.....	1.6 lbs (0.7 kg)
TP R BNC AV	2.6 lbs (1.2 kg)
TP R 15HD A.....	0.4 lbs (0.2 kg)

Shipping weight

TP R BNC A.....	4 lbs (2 kg)
TP R BNC AV	5 lbs (3 kg)
TP R 15HD A.....	2 lbs (1 kg)

Vibration ISTA 1A in carton (International Safe Transit Association)

Regulatory Compliance

Safety..... CE, CUL, UL

EMI/EMC CE, C-tick, FCC Class A, ICES, VCCI

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.*

Specifications, Accessories, and Part Numbers cont'd

Included Parts

These items are included in each order for a specific TP receiver:

Included parts	Part number
All	
TP Receiver User's Manual	
Captive screw connector, 5 pole, 3.5 mm (1 or 2)	100-457-01
TP R BNC A	
Single output external power supply, 15 V, 0.8 A	70-776-01
Captive screw connector, 3 pole, 3.5 mm	100-456-01
TP R 15HD A	
Single output external power supply, 15 V, 0.8 A	70-776-01
TP R BNC AV	
60-351-02	
60-450-01	
60-350-03	
NOTE	<p><i>The TP R BNC AV is a redesigned receiver. The audio portion of the composite video TP link can be configured to work with similarly redesigned TP T 15HD AV transmitters or with older, unmodified transmitters. See Audio jumpers in chapter 2, Installation and Operation.</i></p> <p><i>The TP T A 45 incorporates the redesigned audio circuits, but cannot be jumpered for backwards compatibility.</i></p> <p><i>Most redesigned (modified) receivers and transmitters have an identifying label. The TP T A 45 incorporates the redesigned audio circuits, but does not have an identifying label.</i></p>

Extron Accessories

Accessories	Part number
PS 150 Multiple output 15 V power supply	60-432-01
1U, 9.5" deep Universal Rack Shelf, RSU 129	60-190-01
1U, 9.5" deep Basic Rack Shelf, RSB 129	60-604-02
1U, 3.5" Deep Rack Shelf Kit, RSF 123	60-190-20
1U, 3.5" Deep Basic Rack Shelf, RSB 123	60-604-20
1U, 1/2 Rack Width, Under-Desk Kit, MBU 125	70-077-01
1U, 1/2 Rack Width, Through-Desk Mounting Kit, MBD 129	70-077-02
1U, Full Rack Width, Through-Desk Mounting Kit, MBD 149	70-077-03
1U, 1/2 Rack Width Pole Mount Kit, PMK 200	70-077-04

Cables/Adapters

NOTE

*Enhanced Skew-Free A/V UTP cables are **not** recommended for Ethernet/LAN applications.*

Enhanced Skew-Free™ A/V cable	Part number
Enhanced Skew-Free A/V UTP 1000' (Bulk) (non-plenum)	22-141-03
Enhanced Skew-Free A/V UTP 1000' (Bulk) (plenum)	22-142-03
CAT 6 Jacks (various colors)	100-476-01
3' Enhanced Skew-Free A/V UTP	26-569-01
6' Enhanced Skew-Free A/V UTP	26-569-02
12' Enhanced Skew-Free A/V UTP	26-569-03
25' Enhanced Skew-Free A/V UTP	26-569-04

Skew-Free A/V cable	Part number
35' Enhanced Skew-Free A/V UTP	26-569-05
50' Enhanced Skew-Free A/V UTP	26-569-06
75' Enhanced Skew-Free A/V UTP	26-569-07
100' Enhanced Skew-Free A/V UTP	26-569-08
25' Enhanced Skew-Free A/V UTP Plenum	26-570-04
35' Enhanced Skew-Free A/V UTP Plenum	26-570-05
50' Enhanced Skew-Free A/V UTP Plenum	26-570-06
75' Enhanced Skew-Free A/V UTP Plenum	26-570-07
100' Enhanced Skew-Free A/V UTP Plenum	26-570-08
150' Enhanced Skew-Free A/V UTP Plenum	26-570-09
200' Enhanced Skew-Free A/V UTP Plenum	26-570-10
250' Enhanced Skew-Free A/V UTP Plenum	26-570-11
300' Enhanced Skew-Free A/V UTP Plenum	26-570-12

Specifications, Accessories, and Part Numbers cont'd

Video cables and adapters	Part number
MHR-5 BNC/3 (3 feet/0.9 meters)	26-260-15
MHR-5 BNC/6 (6 feet/1.8 meters)	26-260-01
MHR-5 BNC/12 (12 feet/3.7 meters)	26-260-02
MHR-4 BNC/3 (3 feet/0.9 meters)	26-210-01
MHR-4 BNC/6 (6 feet/1.8 meters)	26-210-02
MHR-4 BNC/12 (12 feet/3.7 meters)	26-210-03
MHR-2 SVM-M/6 SVHS (6 feet/1.8 meters)	26-316-02
MHR-2 SVM-M/12 SVHS (12 feet/3.7 meters)	26-316-03
S-video male to 2 BNC adapter, female, 8"	26-353-02
S-video female to 2 BNC, male, 8"	26-353-01
RG6 BNC/3 (3 feet/0.9 meters)	26-383-01
RG6 BNC/6 (6 feet/1.8 meters)	26-383-12
RG6 BNC/12 (12 feet/3.7 meters)	26-383-07

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

Japan: Extron Electronics, 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), 65.383.4400 (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.

Extron USA - West
Headquarters

+800.633.9876
Inside USA / Canada Only
+1.714.491.1500
+1.714.491.1517 FAX

Extron USA - East

+800.633.9876
Inside USA / Canada Only
+1.919.863.1794
+1.919.863.1797 FAX

Extron Europe

+800.3987.6673
Inside Europe Only
+31.33.453.4040
+31.33.453.4050 FAX

Extron Asia

+800.7339.8766
Inside Asia Only
+65.6383.4400
+65.6383.4664 FAX

Extron Japan

+81.3.3511.7655
+81.3.3511.7656 FAX

Extron China

+400.883.1568
Inside China Only
+86.21.3760.1568
+86.21.3760.1566 FAX

Extron Middle East

+971.4.2991800
+971.4.2991880 FAX