

User's Manual



FOX 500 Tx / Rx (Analog RGB Video) *FOX 500 DVI Tx / Rx (Digital Video)* High Resolution Fiber Optic Transmitters and Receivers

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

Sicherheitsanleitungen • Deutsch



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



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

Achtung

- Lesen der Anleitungen** • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.
- Aufbewahren der Anleitungen** • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.
- Befolgen der Warnhinweise** • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.
- Keine Zusatzgeräte** • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español



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



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

Precaucion

- Leer las instrucciones** • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.
- Conservar las instrucciones** • Conservar las instrucciones de seguridad para futura consulta.
- Obedecer las advertencias** • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.
- Evitar el uso de accesorios** • No usar herramientas o accesorios que no sean 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 la contourner ni de la désactiver.
- Déconnexion de l'alimentation** • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.
- Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas éraillés 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 même type ou d'un type 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.
- Schlitzte und Öffnungen** • Wenn das Gerät Schlitzte oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.
- Litium-Batterie** • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

- Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearla ni eliminarla.
- Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.
- Protección 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.

Extron's Warranty

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

USA, Canada, South America, and Central America:

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

Europe, Africa, and the Middle East:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

Asia:

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

Japan:

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

China:

Extron China
686 Ronghua Road, Songjiang
District
Shanghai 201611
China

Middle East:

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

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

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

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

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

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

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.

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FOX 500 Tx/Rx



Chapter One

Introduction

About this Manual

About the FOX 500 Tx/Rx

Features

68-1308-01 Rev. C
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All trademarks mentioned in this manual are the properties of their respective owners.

Introduction

WARNING

The FOX 500 Tx/Rx units output continuous invisible light, which may be harmful and dangerous to the eyes; use with caution.

- **Do not look** into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

About this Manual

This manual contains information about the Extron FOX 500 family of fiber optic products. The FOX 500 family (figure 1-1) consists of two compatible sets of ultra-high performance fiber optic transmitters and receivers:

- **FOX 500 Tx (RGB) transmitter** — Accepts an analog RGB video input, an audio input, and an RS-232 serial input and outputs a proprietary optical signal to a FOX 500 receiver. Also can receive a proprietary optical signal from the receiver consisting of an RS-232 signal such as the return from a controlled device.
- **FOX 500 Rx (RGB) receiver** — Accepts a proprietary optical signal from a FOX 500 transmitter and outputs analog RGB video, audio, and RS-232 serial commands. Also can receive an RS-232 signal, such as a return from a controlled device, and send it to the transmitter via a proprietary optical signal.
- **FOX 500 DVI Tx transmitter** — Accepts a single link of DVI video input, an audio input, and an RS-232 serial input and outputs a proprietary optical signal to a FOX 500 receiver. Also can receive a proprietary optical signal from the receiver consisting of an RS-232 signal such as the return from a controlled device.
- **FOX 500 DVI Rx receiver** — Accepts a proprietary optical signal from a FOX 500 transmitter and outputs a single link of DVI video, audio, and RS-232 serial commands. Also can receive an RS-232 signal, such as a return from a controlled device, and send it to the transmitter via a proprietary optical signal.

NOTE

The FOX 500 DVI does **not** support the transmission of signals with High-bandwidth Digital Content Protection (HDCP).

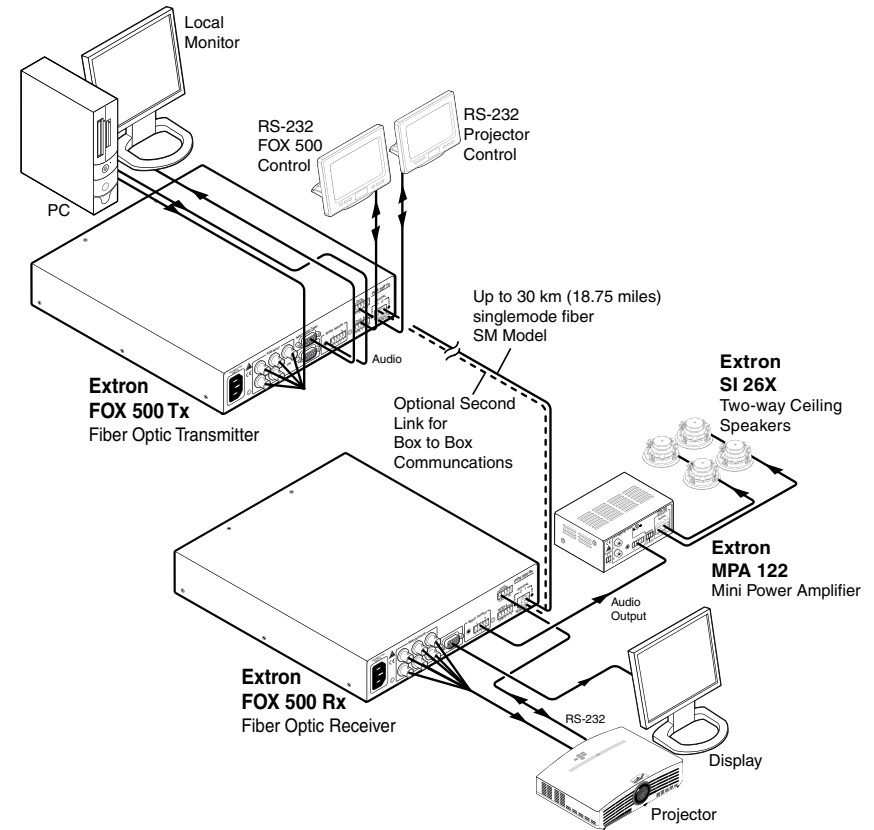


Figure 1-1 — Typical FOX 500 Tx/Rx application

NOTE

A FOX 500 Tx (RGB) transmitter is fully compatible with a FOX 500 DVI Rx receiver.

A FOX 500 DVI Tx transmitter is fully compatible with a FOX 500 Rx (RGB) receiver.

NOTE

In this manual, the term "FOX 500" refers to either an analog RGB video or DVI video unit.

In this manual, the term "FOX 500 (RGB)" refers to an analog RGB video unit.

In this manual, the term "FOX 500 DVI" refers to a DVI video unit.

About the FOX 500 Tx/Rx

General system operation

The FOX 500 (RGB) transmitter inputs VGA - UXGA RGB video.

The FOX 500 DVI transmitter inputs a single link of DVI video.

Both transmitters input audio and one-way (transmitter-to-receiver) RS-232 serial communication (for applications such as projector control). The transmitters convert all of their inputs into a proprietary signal, and output the signal on a single fiber optic cable to the receiver. An optional return (receiver-to-transmitter) stream of serial RS-232 communications, such as projector responses, requires a second fiber optic cable. The transmitter also buffers its video input (either RGB or DVI as applicable to the model) and loops it through on either a 15-pin HD or DVI connector for use by a local monitor.

The receivers convert the proprietary signal(s) back to video (either RGB or DVI as applicable to the model), audio, and serial RS-232 communication, and output the signals locally.

The FOX 500 (RGB) receiver outputs VGA - UXGA RGB video.

The FOX 500 DVI receiver outputs a single link of DVI video.

If RS-232 return communications are implemented (a second fiber optic cable is installed), the receiver outputs a proprietary serial communication signal to the transmitter on the second fiber optic cable. For video resolutions up to 1600 x 1200, the receiver's video output is a perfect, pixel-for-pixel recreation of the video signal input to the transmitter.

The transmitter and receiver have image and audio adjustments. Both units have image, audio, and fiber light status and lost-light alarm indicators.

The FOX 500 (RGB) transmitter can handle an RGBHV, RGBS, RGsB, or RsGsBs input signal. The FOX 500 (RGB) receiver can output RGBHV, RGBS, or RGsB, as selected by the user.

The receivers have built-in alternating pixels, Color Bars, and grayscale test patterns to assist in setting up the display equipment.

The FOX 500 transmitters and receivers are rack mountable and have internal switching power supplies for worldwide power compatibility.

Cable transmission modes

The transmitters and receivers are further categorized by the type of fiber optic cable, multimode or singlemode, which define the effective range of transmission:

- **Multimode** — Long distance, up to 2 km (6,560') (depending on the fiber type)
 - Fox 500 Tx MM
 - Fox 500 Rx MM
 - Fox 500 Tx DVI MM
 - Fox 500 Rx DVI MM
- **Singlemode** — Very long distance, up to 30 km (18.75 miles)
 - Fox 500 Tx SM
 - Fox 500 Rx SM
 - Fox 500 Tx DVI SM
 - Fox 500 Rx DVI SM

NOTE *The multimode and singlemode products are physically and functionally identical, with the exception of the effective range of transmission. In this manual, any reference applies to either transmission mode unless otherwise specified.*

NOTE *Many other products are compatible with the Extron FOX 500 transmitter and receiver. They will be identified where appropriate, but not specifically described in this manual.*

Features

Ultra high performance — The system offers perfect, pixel-for-pixel RGBHV video or DVI video transmission, up to 1600 x 1200 at 60 Hz.

Video input —

FOX 500 (RGB) — The transmitter accepts RGBHV, RGBS, RGsB, or RsGsBs on BNC connectors **or** a 15-pin HD connector.

FOX 500 DVI — The transmitter accepts a single link of DVI-D or HDMI video on a DVI-I connector. HDMI signal input requires an appropriate DVI-D to HDMI cable or adapter.

Loop-through on transmitter —

FOX 500 (RGB) — The transmitter has an analog loop-through, on a 15-pin HD connector that allows connection of a local monitor.

FOX 500 DVI — The transmitter has a DVI loop-through on a DVI connector that allows connection of a local monitor.

EDID emulation mode (Display Data Channel [DDC])

(FOX 500 DVI Tx only) — The FOX 500 DVI transmitter provides a selector switch for specifying the rate of the incoming DVI signal. EDID emulation mode allows proper operation when no local monitor is present.

Video output —

FOX 500 (RGB) — The receiver outputs RGBHV, RGBS, or RGsB (user-selectable) on BNC connectors **and** a 15-pin HD connector.

FOX 500 DVI — The receiver outputs a single link of DVI-D or HDMI video on a DVI-I connector. HDMI signal output requires an appropriate DVI-D to HDMI cable or adapter.

FOX 500 (RGB) and FOX 500 DVI are mutually compatible — Enables ultra-long distance DVI-to-analog RGB and analog RGB-to-DVI conversion without the need for extra signal conversion devices.

Compatible with FOXBOX 4G units, FOX 4G units, FOX 500 DA6 distribution amplifier, and Fiber Matrix 6400 matrix switcher.

Audio input — The transmitters accept a balanced or unbalanced stereo audio input on a 3.5 mm, 5-pole captive screw terminal **or** a 3.5 mm mini jack.

Audio input gain/attenuation — The input audio level can be adjusted within a range of -18 dB (attenuation) to +10 dB (gain) via the front panel any of the sytem's serial ports.

Audio output — Balanced or unbalanced stereo audio is output from the receivers on a 3.5 mm, 5-pole captive screw terminal **and** a 3.5 mm mini jack.

Links monitoring — The transmitters' and receivers' front panels have indicators for monitoring image and audio transmission and both fiber optic links.

Loss-of-light alarms — The transmitters' and receivers' rear panels have discrete outputs that indicate if either of the fiber optic links have suffered a loss of the light signal.

Windows®-based control program — For RS-232 remote control from a PC, the Extron Windows-based control software provides a graphical interface and drag-and-drop/point-and-click operation.

Simple Instruction Set (SIS™) — The transmitters and receivers use Extron's SIS for easy remote control operation.

Audio level — The audio output can be set to either the consumer level (-10 dBV) or professional level (+4 dBu) from the front panel or under RS-232 control.

Upgradable firmware — The firmware that controls each unit's operation can be upgraded in the field via an RS-232 link, without taking the unit out of service. Firmware upgrades are available for download on the Extron Web site, www.extron.com, and they can be installed using the Windows-based control program.

Memory presets — 30 memory presets are a time-saving feature that let you store input size and position settings relative to a specific input resolution. You can then recall those settings, when needed, with a few simple steps.

Rack mounting — All FOX 500 Tx and Rx units are rack mountable in any conventional 19" wide rack, using Extron's full size rack shelf.

Front panel security lockout (Executive mode) on receiver —
If a receiver is installed in an open area, where operation by unauthorized personnel may be a problem, a security lockout feature can be implemented. When the front panel is locked, a front panel action, a Widows control program operation, or an SIS command is required to unlock the unit before it can be operated from the front panel.

(The transmitter has no front panel controls.)

Power — Each unit's 100 VAC to 240 VAC, internal power supply provides worldwide power compatibility.



FOX 500 Tx/Rx

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Chapter Two

Installation

Mounting the Unit

Connections

Mounting the Unit

CAUTION *Installation and service must be performed by authorized personnel only.*

Any of the 1U high, half-rack width units can be placed on a tabletop, mounted on a rack shelf, or mounted under or through a desk or other furniture.

CAUTION *The FOX transmitters and receivers generate a lot of heat during operation. Ensure that you leave ample room between units in multiple unit installations for ventilation and/or ensure adequate equipment cooling. Units packed too closely together may overheat.*

Tabletop placement

Affix the four included rubber feet to the bottom of the unit and place it in any convenient location.

Rack mounting

UL guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of a FOX 500 transmitter or receiver into a rack (figure 2-1).

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) of +122 °F (+50 °C) specified by Extron.
2. **Reduced air flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **Reliable earthing (grounding)** — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Mounting instructions

For optional rack mounting, mount any of the 1U high, half rack width units on either of the following rack shelves:

- RSU 129 9.5" 1U universal rack shelf (part #60-190-01) (figure 2-1)
- RSB 129 9.5" 1U basic rack shelf (part #60-604-01)

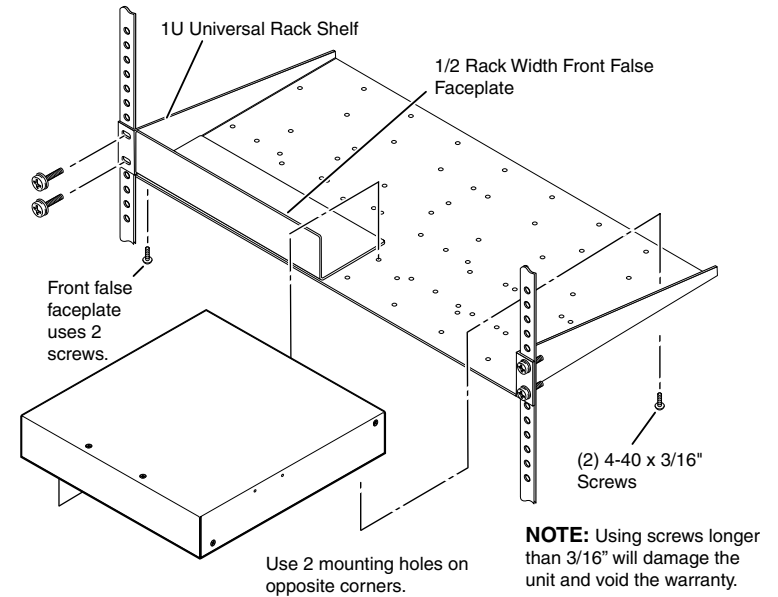


Figure 2-1 — Mounting the unit on a standard rack shelf

1. If installed, remove the feet from the bottom of the unit.
2. Mount the unit on either the left or right side of the shelf, using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the unit to the shelf.
3. Install a false faceplate or another unit to the rack shelf.
4. Insert the shelf into the rack, aligning the holes in the shelf with those of the rack.
5. Secure the shelf to the rack using the supplied machine screws.

Furniture mounting

Mount any of the 1U high, half-rack width units under a desk or podium using the optional Extron MBU 125 under desk mounting kit (part #70-077-01) as follows:

1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Secure the mounting brackets to the unit with the machine screws provided (figure 2-2).

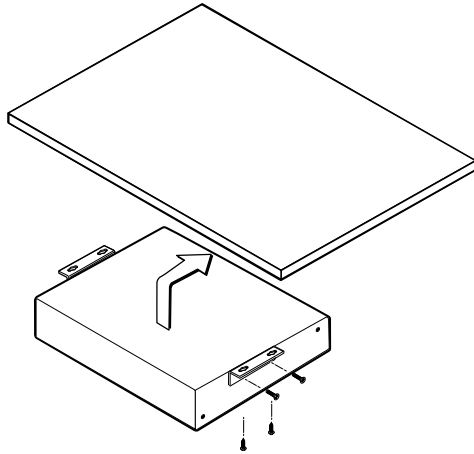


Figure 2-2 — Under-desk mounting the unit

3. Hold the unit with the brackets attached 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 four pilot holes, each 3/32" (2 mm) in diameter by 1/4" deep (6.3 mm) deep in the mounting surface at the marked screw locations.
5. Insert provided #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" (6.3 mm) of the screw head protrudes.
6. Align the mounting screws with the slots in the brackets and place the unit against the surface, with the screws through the bracket slots.
7. Slide the unit slightly in or out, then tighten all four screws to secure the unit in place (figure 2-2).

Through-desk mounting

Mount any of the 1U high, half-rack width units through a desk or podium using the optional Extron MBD 129 through desk mounting kit (part #70-077-02) as follows:

1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Secure the brackets to the unit with the provided machine screws (figure 2-3). Leave the screws slightly loose.

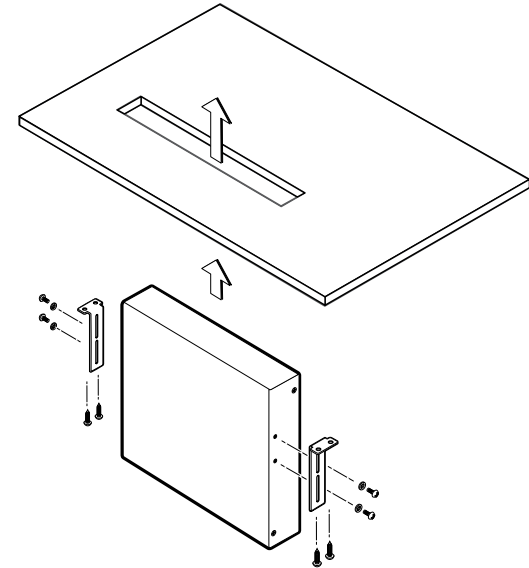


Figure 2-3 — Through-desk mounting the unit

3. Hold the unit and brackets on the underside of the surface to which you are mounting the device and mark the four screw holes and the table material to be removed.
4. Remove the table material. Test the fit by inserting the front of the device through the hole. If necessary, use a rasp or coarse file to enlarge the hole.
5. Drill four pilot holes, each 3/32" (2 mm) in diameter by 1/4" deep (6.3 mm) deep, in the locations that you marked in step 3.
6. Using the provided #8 four wood screws, attach the brackets to the mounting surface.
7. Slide the device in or out until it is in the desired position. Tighten the screws installed in step 2.

If the screws are inaccessible to a screwdriver:

- a. Mark the location of the brackets relative to the screws.
- b. Remove the transmitter or receiver from inside the furniture.
- c. Tighten the screws.
- d. Replace the unit inside the surface (step 6).

Connections

Transmitter rear panel connections and settings

All connectors except the Configuration port are on the rear panel (figure 2-4).

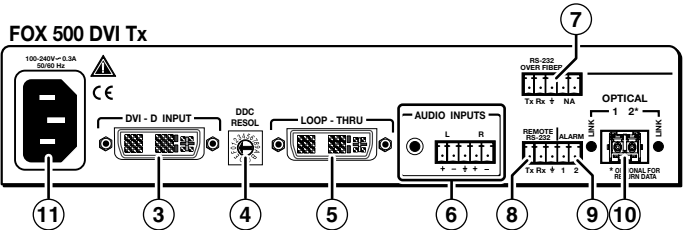
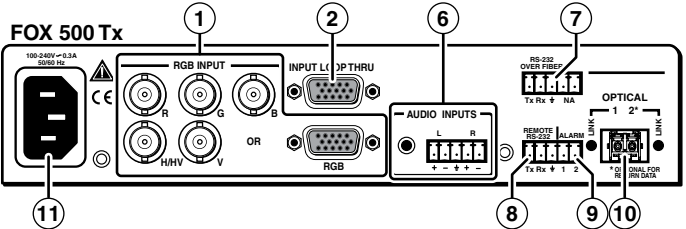
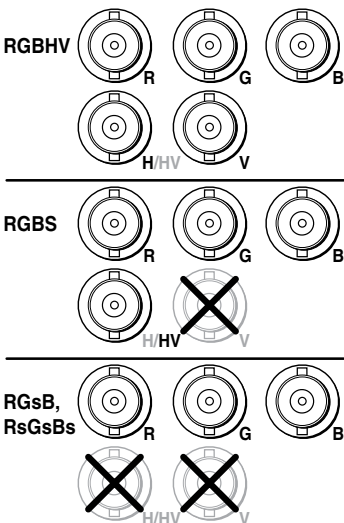


Figure 2-4 — FOX 500 Tx transmitter's connectors

NOTE Connect an active input to *only* the BNC connectors or the 15-pin HD connector, not both.

① RGB Input connectors (FOX 500 [RGB] only) —

BNC connectors — Connect an RGBHV, RGBS, RGsB, or RsGsBs video source to these BNC connectors. Connect the cables as shown at right.



15-pin HD connector — Connect an analog VGA - UXGA RGB video source to this 15-pin HD female connector.

- ② **Buffered Loop-through connector (FOX 500 [RGB] only)** — If desired, connect a local monitor to this 15-pin HD connector.
- ③ **DVI-I Input connector (FOX 500 DVI only)** — Connect a single link of DVI-D to this DVI-I connector. See "DVI connector (FOX 500 DVI)" on page 2-15 for pin assignments.

NOTE The FOX 500 DVI accepts only the digital signals on the DVI-I Input connector. The analog pins on the port are not connected.

- ④ **DDC Resol (ution) rotary switch (FOX 500 DVI only)** — Set this switch to one of the positions below to select the source of the DDC or a specific resolution.
- **Position 0** — The loop-through monitor (item ⑤, below) is the source of the Display Data Channel (DDC)
- **Position 1** — The DDC is selected either from the front panel (using the menu system) or via one of the system's serial ports (using an SIS command or the Windows-based control program).
- **Position 2 - F** — Specify a resolution. The table below identifies the switch positions and the associated resolutions. The vertical refresh rate for all resolutions is 60 Hz with the exception of the 576p resolution, which is 50 Hz.

Pos.	Source or Resolution	Pos.	Resolution	Pos.	Resolution
0	Local monitor	6	1280 x 1024	C	576p
1	RS-232/menu	7	1365 x 768	D	720p
2	1920 x 1200	8	1366 x 768	E	1080i
3	800 x 600	9	1400 x 1050	F	1080p
4	1024 x 768	A	1600 x 1200		
5	1280 x 768	B	480p		

- ⑤ **Buffered Loop-through connector (FOX 500 DVI only)** — If desired, connect a local monitor to this DVI-I connector. See "DVI connector (FOX 500 DVI)" on page 2-15 for pin assignments.

⑥ Audio Input connectors —

NOTE Connect an active input to **only** the 3.5 mm mini jack **or** the captive screw connector, **not both**.

3.5 mm mini jack — Plug a stereo mini plug into this connector.

5-pole captive screw connector — Connect a balanced or unbalanced stereo or mono audio input to this connector. The connector is included with FOX 500, but you must supply the audio cable. See figure 2-5 to wire a captive screw connector for the appropriate input type and impedance level. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.

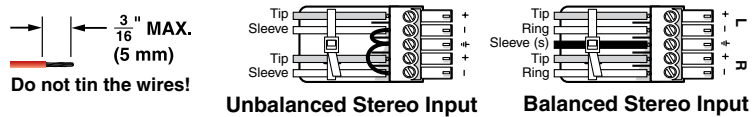


Figure 2-5 — Captive screw connector wiring for stereo audio input

NOTE The length of exposed wires is critical. The ideal length is 3/16" (5 mm).

- If the stripped section of wire is longer than 3/16", the exposed wires may touch, causing a short circuit.
- If the stripped section of wire is shorter than 3/16", wires can be easily pulled out even if tightly fastened by the captive screws.

NOTE See figure 2-6 to identify the tip, ring, and sleeve when you are making connections for the transmitter from existing audio cables. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The tip, ring, and sleeve wires are also shown on the captive screw audio connector diagrams, figure 2-5 and figure 2-8.

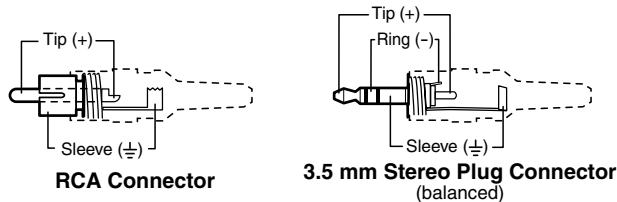
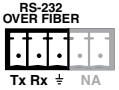


Figure 2-6 — Typical audio connectors

The input audio level can be set via the front panel or RS-232 control. See chapter 3, "Operation", and chapter 4, "Remote Control".

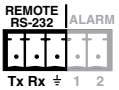
- ⑦ **RS-232 Over Fiber port** — If you want the FOX 500 to pass serial command signals to the receiver, for serial control of a projector for example, connect the host device to the transmitter via three poles of this 5-pole captive screw connector. See "Rear panel serial ports connections" on page 2-16 to wire this connector.



NOTE If you connect only one fiber optic cable (item ⑩, on the next page), you will not receive reports from the controlled device. To receive responses from the controlled device, you must install two fiber optic cables.

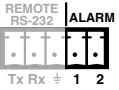
NOTE The FOX 500 can pass RS-232 commands and responses at rates up to 115200 baud.

- ⑧ **Remote RS-232 port** — For serial control of the transmitter, connect a host device, such as a computer, touch panel control, or RS-232 capable PDA, to the transmitter via three poles of this 5-pole captive screw connector. See "Rear panel serial ports connections" on page 2-16 to wire this connector.



See chapter 4, "Remote Control", for definitions of the SIS commands (serial commands to control the transmitter via this connector).

- ⑨ **Alarm outputs port** — For remote monitoring of the status of fiber optic link 2, connect a locally-constructed or furnished monitoring device to the transmitter via two poles of this 5-pole captive screw connector. When the transmitter does not detect a light link on fiber cable Optical 2 (optional), pin 1 and pin 2 of this port are shorted together.



⑩ Fiber optic connectors and LEDs —

WARNING These units output continuous invisible light, which may be harmful and dangerous to the eyes; use with caution. For additional safety, plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

NOTE Ensure that you use the proper fiber cable for your transmitter/receiver pair. Typically, singlemode fiber has a yellow jacket and multimode cable has an orange jacket.

NOTE Only one fiber optic cable, Optical 1, is required for video, audio, and serial command transmission. But, if you connect only one fiber optic cable, you will **not** receive RS-232 reports from the controlled device, and there will be **reduced** front panel, Windows-based control program, and RS-232 command functionality on the Rx unit. To receive responses from the controlled device and for full functionality, you will need to install both fiber optic cables.

Optical 1 (required) — For all one-way video, audio, and serial communications from the transmitter to the receiver, connect a fiber optic cable to the Optical 1 LC connector.

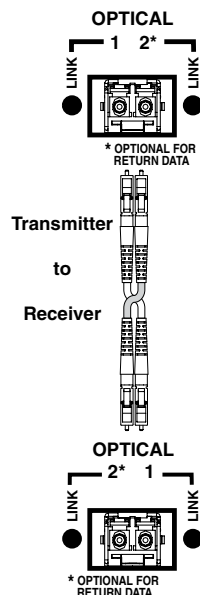
Connect the free end of this fiber optic cable to the Optical 1 connector on the FOX 500 Rx receiver (item ⑩ on figure 2-7) or to any other compatible Extron FOX 500 device.

Optical 2 (optional) — For all one-way serial communications from the receiver to the transmitter, connect a fiber optic cable to the Optical 2 LC connector.

Connect the free end of this fiber optic cable to the Optical 2 connector on the FOX 500 Rx receiver (item ⑩ on figure 2-7) or to any other compatible Extron FOX 500 device.

Link 1 and Link 2 LEDs — When lit, the link is active (light is received).

⑪ **AC power connector** — Plug a standard IEC power cord into this connector to connect the transmitter to a 100 VAC to 240 VAC, 50 or 60 Hz power source.



Receiver rear panel connections

All connectors except the Configuration port are on the rear panel (figure 2-7).

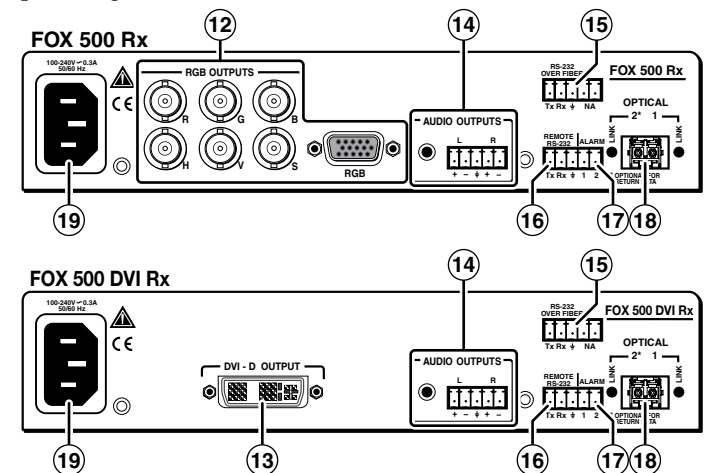
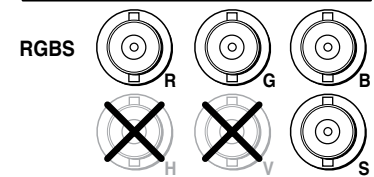
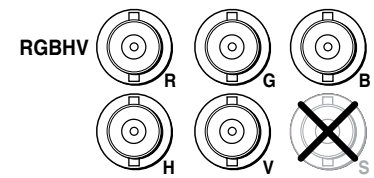


Figure 2-7 — FOX 500 Rx receiver's connectors

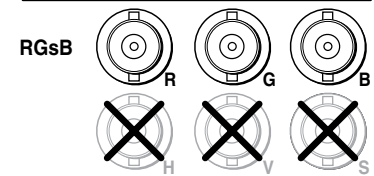
⑫ RGB Outputs connectors (FOX 500 [RGB] only) —

NOTE Both video outputs are active.

BNC connectors — Connect an RGBHV, RGBS, RGsB, or RsGsBs video display to these BNC connectors. Connect the cables as shown at right.



15-pin HD connector — Connect an analog VGA - UXGA RGB video display to this 15-pin HD female connector.



NOTE You can set the receiver to output the desired video format, RGBHV, RGBS, or RGsB. RGBHV is the default. See "Format submenu" in "Output Configuration menu" in chapter 3, "Operation".

- ⑬ **DVI-I Output connector (FOX 500 DVI only)** — Connect a DVI video display to this DVI-I connector. See "DVI connector (FOX 500 DVI)" on page 2-15 for pin assignments..

NOTE *The FOX 500 DVI outputs only the digital signals on the DVI-I Output connector. The analog pins on the port are not connected.*

- ⑭ **Audio Outputs connectors** —

NOTE *Both audio outputs are active.*

3.5 mm mini jack — Plug a stereo mini plug into this connector.

5-pole captive screw connector — This 5-pole, 3.5 mm captive screw connector outputs the transmitted, unamplified, line level audio. Connect audio devices, such as an audio amplifier or powered speakers.

See figure 2-8 to properly wire a captive screw output connector. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.

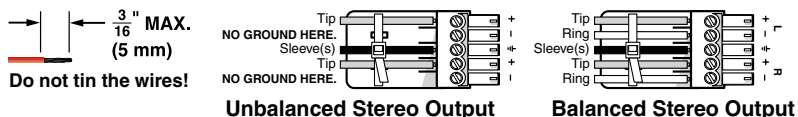


Figure 2-8 — Captive screw connector wiring for stereo audio output

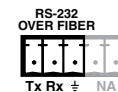
CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

NOTE *The length of exposed wires is critical. The ideal length is 3/16" (5 mm).*

- *If the stripped section of wire is longer than 3/16", the exposed wires may touch, causing a short circuit.*
- *If the stripped section of wire is shorter than 3/16", wires can be easily pulled out even if tightly fastened by the captive screws.*

The volume level for the output can be set to either the consumer line level (-10 dBV) or the professional line level (+4 dBu) via the front panel or RS-232 control. See chapter 3, "Operation", and chapter 4, "Remote Control", for details.

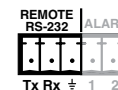
- ⑮ **RS-232 Over Fiber port** — If you want the FOX 500 to pass serial command signals to the receiver, for serial control of a projector for example, connect the controlled device to the receiver via three poles of this 5-pole captive screw connector. See "Rear panel serial ports connections" on page 2-16 to wire this connector.



NOTE *If you connect only one fiber optic cable (item ⑮, on the next page), you will not receive reports from the controlled device at the transmitter. To receive responses from the controlled device, you will need to install two fiber optic cables.*

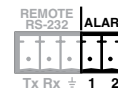
NOTE *The FOX 500 can pass RS-232 commands and responses at rates up to 115200 baud.*

- ⑯ **Remote RS-232 port** — For serial control of the receiver, connect a host device, such as a computer, touch panel control, or RS-232 capable PDA, to the transmitter via three poles of this 5-pole captive screw connector. See "Rear panel serial ports connections" on page 2-16 to wire this connector.



See chapter 4, "Remote Control", for definitions of the SIS commands (serial commands to control the transmitter via this connector).

- ⑰ **Alarm outputs port** — For remote monitoring of the status of fiber optic link 1, connect a locally-constructed or furnished monitoring device to the receiver via two poles of this 5-pole captive screw connector. When the receiver does not detect a light link on fiber cable Optical 1, pin 1 and pin 2 of this port are shorted together.



18 Fiber optic connectors and LEDs —

WARNING These units output continuous invisible light, which may be harmful and dangerous to the eyes; use with caution. For additional safety, plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

NOTE Ensure that you use the proper fiber cable for your transmitter/receiver pair. Typically, singlemode fiber has a yellow jacket and multimode cable has an orange jacket.

NOTE Only one fiber optic cable, Optical 1, is required for video, audio, and serial command transmission. But, if you connect only one fiber optic cable, you will **not** receive RS-232 reports from the controlled device, and there will be **reduced** front panel, Windows-based control program, and RS-232 command functionality on the Rx unit. To receive responses from the controlled device and for full functionality, you will need to install both fiber optic cables.

Optical 1 (required) — For all one-way video, audio, and serial communications from the transmitter to the receiver, connect a fiber optic cable to the Optical 1 LC connector.

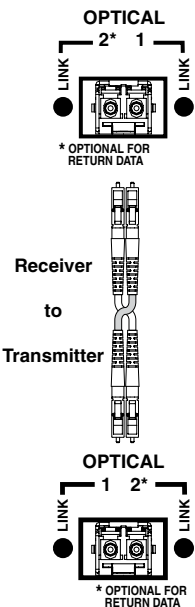
Connect the free end of this fiber optic cable to the Optical 1 connector on the FOX 500 Tx transmitter (item 10 on figure 2-4 on page 2-6) or to any other compatible Extron FOX 500 device.

Optical 2 (optional) — For all one-way serial communications from the receiver to the transmitter, connect a fiber optic cable to the Optical 2 LC connector.

Connect the free end of this fiber optic cable to the Optical 2 connector on the FOX 500 Tx transmitter (item 10 on figure 2-4 on page 2-6) or to any other compatible Extron FOX 500 device.

Link 1 and Link 2 LEDs — When lit, the link is active (light is received).

19 AC power connector — Plug a standard IEC power cord into this connector to connect the receiver to a 100 VAC to 240 VAC, 50 or 60 Hz power source.



DVI connector (FOX 500 DVI)

Figure 2-9 and the table below define the DVI pin assignments.

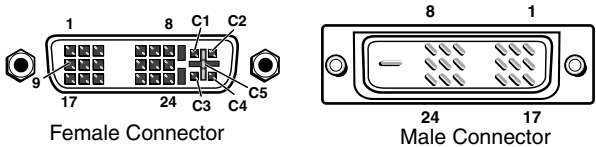


Figure 2-9 — DVI connectors

NOTE The missing connectors on the included DVI cable are not required for the single link of DVI-D data supported by the FOX 500 DVI. The analog video pins are not connected. All of these pins are grayed out on the following table.

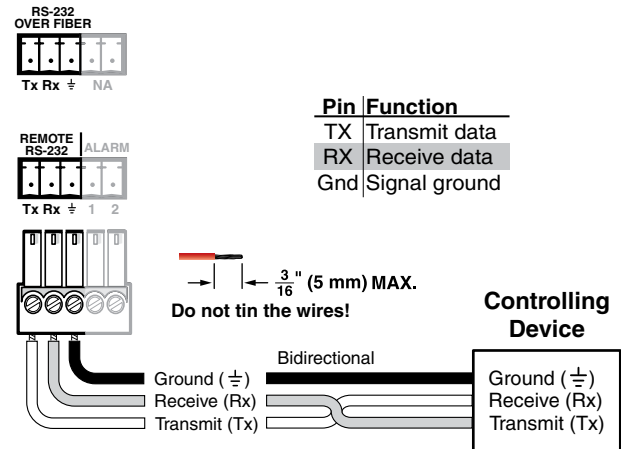
Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS Data 2-	9	TMDS Data 1-	17	TMDS Data 0-
2	TMDS Data 2+	10	TMDS Data 1+	18	TMDS Data 0+
3	TMDS Data 2/4 Shield	11	TMDS Data 1/3 Shield	19	TMDS Data 0/5 Shield
4	TMDS Data 4-	12	TMDS Data 3-	20	TMDS Data 5-
5	TMDS Data 4+	13	TMDS Data 3+	21	TMDS Data 5+
6	DDC Clock	14	+5 V Power	22	TMDS Clock Shield
7	DDC Data	15	Ground (+5 V)	23	TMDS Clock
8	No Connection	16	Hot Plug Detect	24	TMDS Clock
C1	Analog Red Video	C3	Analog Blue Video	C5	Analog Ground
C2	Analog Green Video	C4	Analog H. Sync		

DVI signals run at a very high frequency and are especially prone to bad video connections, too many adapters, or excessive cable length. To avoid the loss of an image or jitter, follow these guidelines:

- Do not exceed 16.4 feet (5 meters) on the input or buffered loop-through of the FOX 500 DVI transmitter or the output of the FOX 500 DVI receiver.
- Use only the cable designed for DVI signals that is supplied by Extron.
- Limit or avoid the use of adapters.
- Use only approved DVI/HDMI connectors.

NOTE Use only cables specifically intended for DVI or HDMI interfaces. Use of non-DVI or non-HDMI cables or modified cables can result in a missing video output.

Rear panel serial ports connection



NOTE For the RS-232 Over Fiber port, only cross the Tx and Rx lines once between the source and the target.

Figure 2-10 — RS-232 connectors

NOTE The RS-232 Over Fiber port is for transmission of serial signals, such as projector control signals, between the transmitter and receiver. The Remote RS-232 port is for remote control of the transmitter and receiver.

NOTE The length of exposed wires is critical. The ideal length is 3/16" (5 mm).

- If the stripped section of wire is longer than 3/16", the exposed wires may touch, causing a short circuit.
- If the stripped section of wire is shorter than 3/16", wires can be easily pulled out even if tightly fastened by the captive screws.

NOTE The rear panel Remote RS-232 port is active only if the front panel Configuration port is not active. If an active front panel configuration connection is made, the rear panel Remote RS-232 port becomes inactive.

Alarm outputs connection

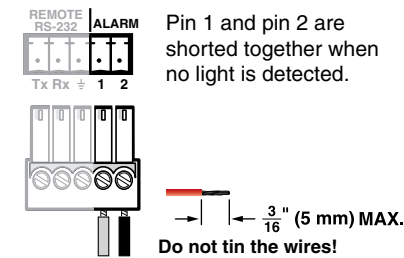


Figure 2-11 — Alarm connector

NOTE The length of exposed wires is critical. The ideal length is 3/16" (5 mm).

- If the stripped section of wire is longer than 3/16", the exposed wires may touch, causing a short circuit.
- If the stripped section of wire is shorter than 3/16", wires can be easily pulled out even if tightly fastened by the captive screws.

Front panel Configuration ports

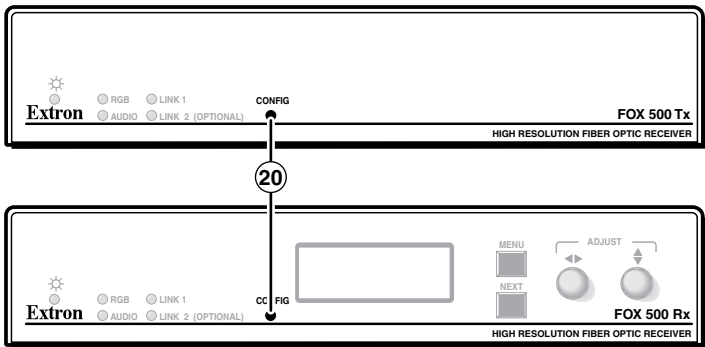
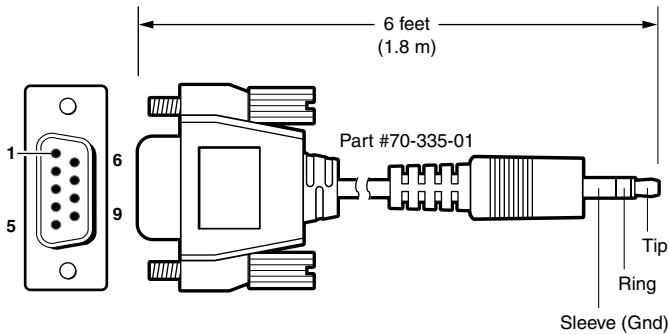


Figure 2-12 — FOX 500 Tx/Rx front panels

- NOTE** Figure 2-12 shows FOX 500 (RGB) units. The FOX 500 DVI units are similar.
- NOTE** These ports are for remote control of the transmitter or receiver, **not** for the over fiber RS-232 link.

20 Configuration port — These 2.5 mm mini stereo jacks serve the same serial communications function as the rear panel Remote RS-232 ports, but are easier to access than the rear ports after the units have been installed and cabled. The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part #70-335-01 (figure 2-13), can be used for this connection.



9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
Pin 5	Computer's signal ground	Sleeve

Figure 2-13 — Optional 9-pin TRS RS-232 cable

NOTE These ports parallel the rear panel Remote RS-232 ports. If an active front panel configuration connection is made, the rear panel Remote RS-232 port becomes inactive.

This port is RS-232 only, with the following protocols:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit
- no flow control

NOTE The maximum distances from the transmitter or receiver to the controlling device can vary up to 200 feet (61 m). Factors such as cable gauge, baud rates, environment, and output levels (from the unit and the controlling device) all affect transmission distance. Distances of about 50 feet (15 m) are typically not a problem. In some cases, the unit may be capable of serial communications via RS-232 up to 250 feet (76 m) away.



Chapter Three

Operation

Front Panel Controls and Indicators

Front Panel Operations

Front Panel Controls and Indicators

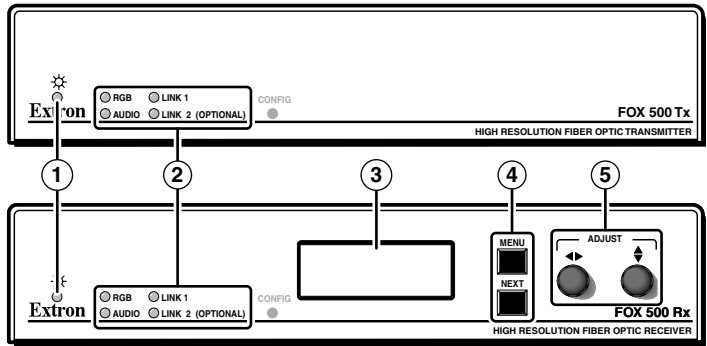


Figure 3-1 — FOX 500

NOTE Figure 3-1 shows FOX 500 (RGB) units. The FOX 500 DVI units are similar, with the exception that the Signal Monitoring "RGB" LED is labeled "DVI".

- ① **Power LED** — This LED lights to indicate the power is applied to the unit.
- ② **Signal monitoring LEDs** —
- RGB LEDs (FOX 500 [RGB] only)** — This LED lights on both units when the transmitter detects a sync signal on its video input:
- Horizontal sync (H) (for RGBHV video)
 - Composite sync (S) (for RGBS video)
 - Green (Sync on green) (G) (for RGsB or RsGsBs video)
- DVI LEDs (FOX 500 DVI only)** — This LED lights on both units when the transmitter detects a signal on its DVI video input.
- Audio LEDs** — This LED lights on both units when the transmitter detects a low level audio signal for a short period of time. This LED goes dark if the audio signal drops below the minimum threshold for a short period of time.
- Link 1 LEDs** — This LED lights on the receiver when the receiver detects light on the fiber optic cable Optical 1.
- This LED lights on the transmitter when the receiver detects light on the fiber optic cable Optical 1 and the fiber optic cable Optical 2 is installed.
- Link 2 LEDs** — This LED lights on the transmitter when the transmitter detects light on the fiber optic cable Optical 2.

This LED lights on the receiver when the transmitter detects light on the fiber optic cable Optical 2 and the fiber optic cable Optical 1 is installed.

NOTE Only one fiber optic cable, Optical 1, is required for video, audio, and serial command transmission. But, if you connect only one fiber optic cable, you will **not** receive RS-232 reports from the controlled device, and there will be **reduced** front panel functionality. To receive responses from the controlled device and for full functionality, you will need to install both fiber optic cables.

- ③ **Status display** — The 12-column by 2-line LCD displays configuration menus and status information. See "Menu system overview" in this chapter for details.
- ④ **Menu button** — The Menu button enters and moves through the main menu system in the FOX 500 Rx receiver. See "Menu system overview" in this chapter for details.
- Next button** — The Next button steps through the submenus in the FOX 500 receiver menu system. See "Menu system overview" in this chapter for details.
- ⑤ **Adjust ◀▶ (horizontal) and Adjust ⬆⬇ (vertical) knobs** — The Adjust ◀▶ and Adjust ⬆⬇ knobs change settings when used in conjunction with the menu system. Rotate these knobs to scroll through the selection options and make adjustments. See "Menu system overview" in this chapter for details.

Front Panel Operations

The following paragraphs detail the power-up process and then details the menu system, the picture adjustments, and selection of executive mode.

Power-on indications

Power is automatically applied when the power cord is connected to an AC source. When AC power is applied, both units perform self-tests. When the self-test completes satisfactorily, both units' signal monitoring LEDs (item ② on figure 3-1) light as appropriate for the connections. The receiver's LCD (shown at right) displays the model (D indicates DVI; MM and SM indicate the transmission mode), horizontal input rates (in kHz) (or No Input), and vertical input rate (in Hz).



Horizontal Start submenu

The Horizontal Start submenu defines the horizontal position of the first active pixel in the active area or the receiver's output. Rotate either Adjust knob while in this submenu to set the start variable.

Total Pixel and Pixel Phase submenu

The Total Pixel and Pixel Phase submenu displays and lets you set the total number of pixels and the pixel phase. Rotate the Adjust ◀▶ knob to adjust the total pixels within 255 of the default value (the input's horizontal resolution). Rotate the Adjust ⬆⬇ knob to select the pixel phase from 0 to 31. The default is 16.

Output Configuration menu

Figure 3-4 is a flowchart that shows an overview of the Output Configuration menu, its submenus, and the available settings.

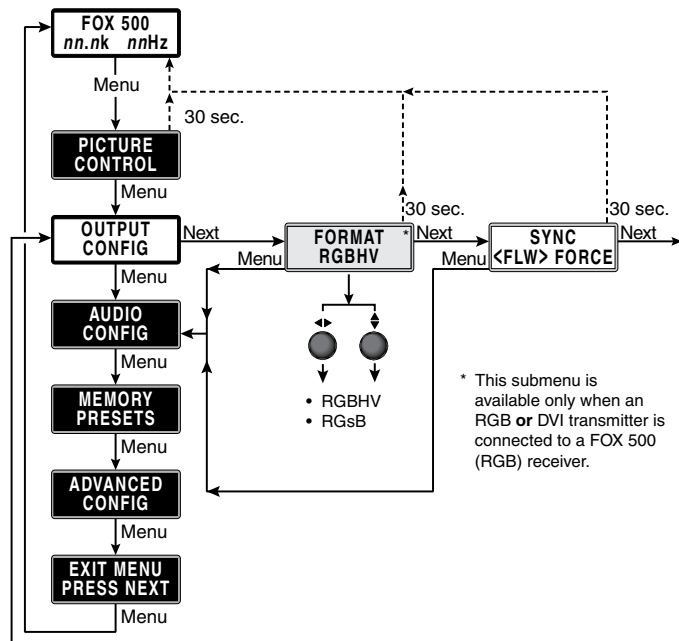


Figure 3-4 — Output Configuration menu flowchart

NOTE The Format submenu is available only when either an RGB or DVI transmitter is connected to an RGB receiver.

Format submenu

Rotate either Adjust knob while in the Format submenu to select the desired video output format (RGBHV or RGsB).

Sync submenu

The display or projector may require a negative sync signal. Rotate either Adjust knob to select FLW (Follow) (the output video sync follows the input) or Force (sync is forced negative).

Audio Configuration menu

Figure 3-5 is a flowchart that shows an overview of the Audio Configuration menu, its submenus, and the available settings.

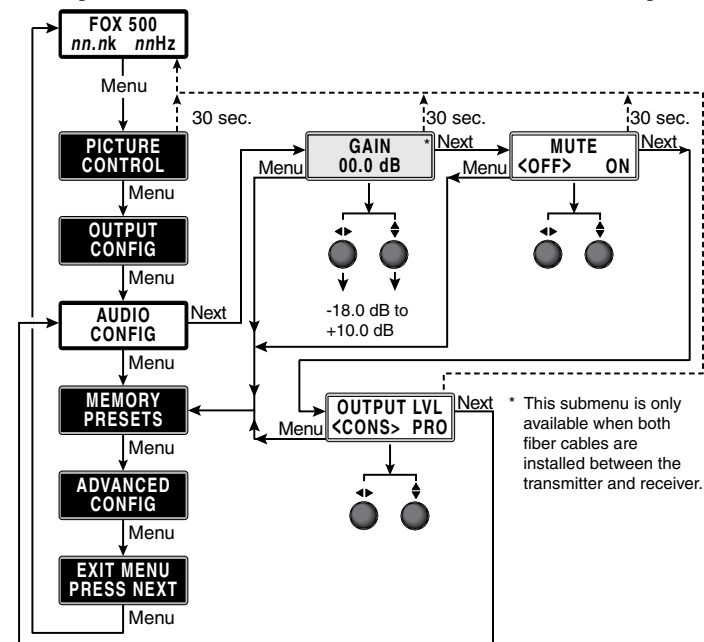


Figure 3-5 — Audio Configuration menu flowchart

NOTE The Gain submenu is available only when both fiber cables are installed between the transmitter and receiver.

Gain submenu

Rotate either Adjust knob while in the Gain submenu to select the input audio gain or attenuation value, from -18 dB to +10 dB in 1.0 dB increments. The default is a 0 dB audio level.

Mute submenu

Rotate either Adjust knob while in the Mute submenu to select or deselect the audio output mute function.

Output Level submenu

Rotate either Adjust knob while in the Output Level submenu to set the audio level for the output. The available levels are CONS (consumer) line level (−10 dBV) and PRO (professional) line level (+4 dBu).

Memory Presets menu

Figure 3-6 is a flowchart that shows an overview of the Memory Presets menu, its submenus, and the available settings.

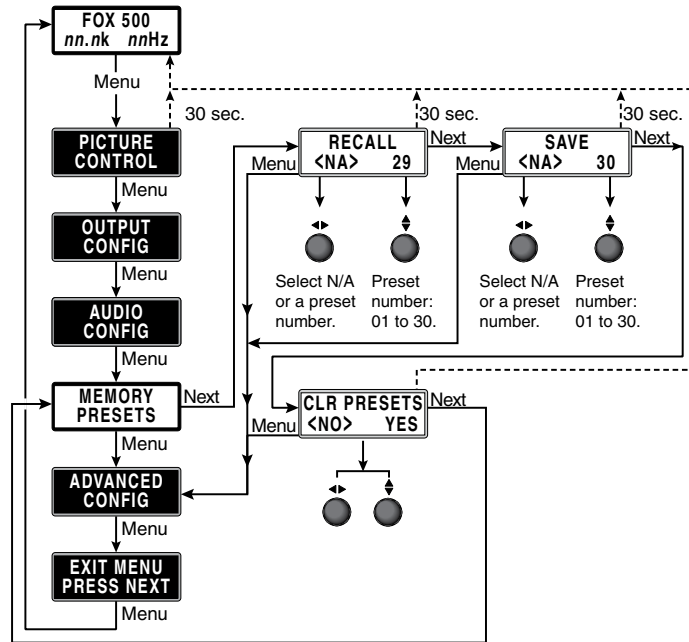


Figure 3-6 — Memory Presets menu flowchart

Memory presets are saved values of the horizontal and vertical position and sizing information in nonvolatile memory. When the FOX 500 is powered down and later powered back up, the settings are available for selection using the Save submenu (see below). Saving the settings to a preset overwrites the settings previously written to that preset.

Recall submenu

Rotate the Adjust knob while in the Recall submenu to select (< >) either the displayed preset number (01 through 30) or N/A (NA) for no preset. Press the Next button to recall the current settings to the displayed preset. Select N/A and press the Next button to exit the submenu without recalling the settings.

Save submenu

Rotate the Adjust knob while in the Save submenu to select (< >) either the displayed preset number (01 through 30) or N/A (NA) for no preset. Press the Next button to save the current settings. Select N/A and press the Next button to exit the submenu without saving the settings.

Clear Presets submenu

Rotate either Adjust knob to select (< >) Yes and press the Next button to erase all presets. Select No and press Next to exit the submenu without clearing the presets.

Advanced Configuration menu

Figure 3-7 is a flowchart that shows an overview of the Advanced Configuration menu, its submenus, and the available settings.

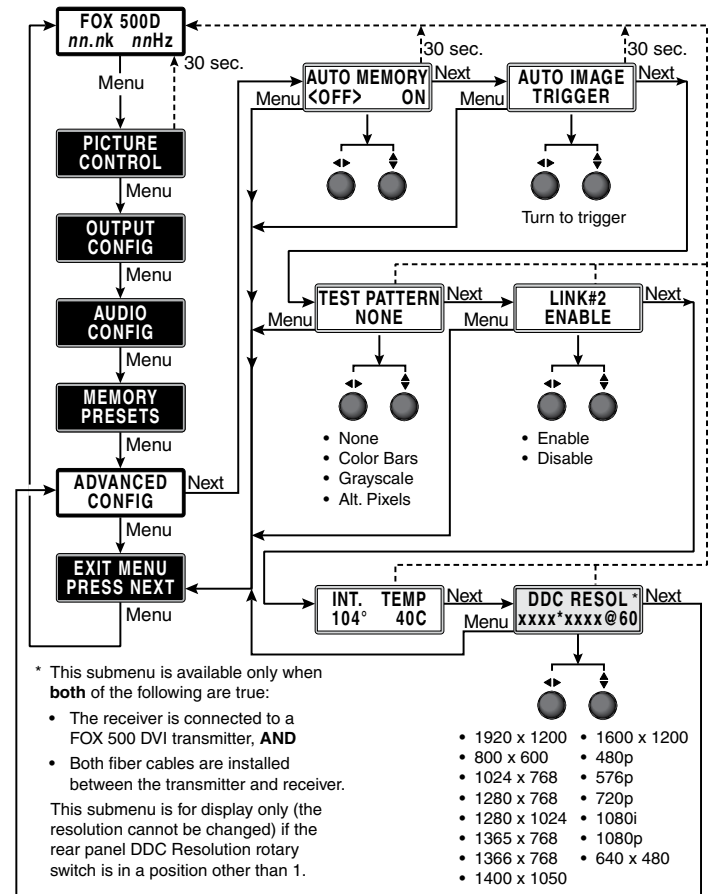


Figure 3-7 — Advanced Configuration menu flowchart

NOTE The DDC Resolution submenu is available only when the receiver is connected to a FOX 500 DVI receiver AND both fiber cables are installed between the transmitter and receiver.

Auto Memory submenu

The auto memory function automatically saves the horizontal and vertical position, horizontal start, total pixels, and pixel phase settings for different input resolutions. When on, auto memory applies the settings based on the detected input resolution.

Rotate either Adjust knob while in the Auto Memory submenu to select (< >) either on or off for the auto image function. Press the Next button to save the current settings.

Auto Image Trigger submenu

The auto image function adjusts the output settings for the best image, based on the detected input resolution.

Rotate either adjust knob to trigger the auto image function.

NOTE If no video input is connected, the submenu display reads Auto Image N/A and no function is available from this screen.

Pattern submenu

The receiver can output any of three test patterns that help you adjust the display's color, focus, and grayscale. Rotate either Adjust knob while in the Pattern submenu to select among the Color Bars, grayscale, and alternating pixels test patterns.

NOTE You must have a video input connected and fiber cable Optical 1 connected between the transmitter and receiver for the receiver to output a selected test pattern.

The test pattern will turn off if the input signal rate is changed or disconnected or if power is removed.

The size of the test pattern depends on the size of the active input signal. Any picture adjustments made on the input affect the test patterns as well.

Link #2 submenu

Rotate either Adjust knob while in the Link #2 submenu to enable or disable the Optical 2 link to the transmitter.

NOTE This function is primarily used and recommended when the transmitting device is a FOX 500 DA6 and the receiver is connected to any of outputs 2 through 6 on the DA.

Temperature display

The temperature display shows the internal temperature of the unit. No adjustment is possible.

DDC Resolution submenu

NOTE The transmitter's rear panel DDC Resol(ution) rotary switch must be in position 1 for the variables to be changeable via this submenu.

Rotate the Adjust ◀▶ knob while in the DDC Resolution submenu to select the output resolution. Rotate the Adjust ⬆⬇ knob to select the refresh rate.

Exit menu

From the Exit menu (figure 3-8), press the Next button to return to the default display cycle, or press the Menu button to return to the Picture Control menu.

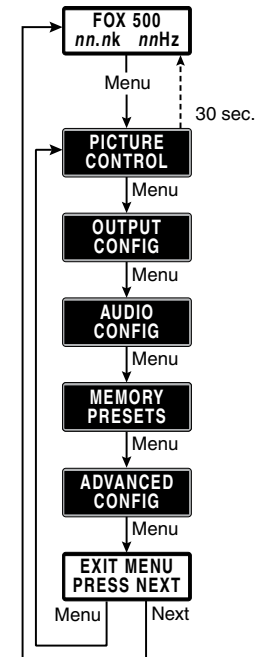


Figure 3-8 — Exit menu flowchart

System reset

To reset all FOX 500 menu selections to the factory default settings and clear all memory presets, press and hold the Menu button while applying power. After about 3 seconds, the LCD displays System Reset message. Release the Menu button.

Front panel security lockout (executive mode)

The front panel security lockout limits the operation of the receiver from the front panel. When the receiver is locked, the Menu and Next buttons are disabled (except for the unlock function).

To toggle the lock on and off, press and hold the Menu button and the Next button for approximately two seconds (figure 3-9).

Press and **hold** the Menu and Next buttons simultaneously to toggle the front panel lock on or off.

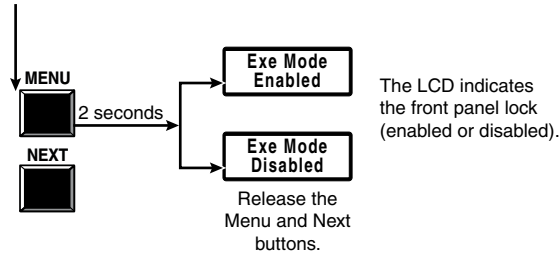


Figure 3-9 — Toggle front panel lock on or off

If the user pushes either button when the receiver is locked, the LCD displays Exe Mode Enabled.



FOX 500 Tx/Rx

Chapter Four

Remote Control

Rear Panel Remote RS-232 Ports

Front Panel Configuration Port

Simple Instruction Set Control

Windows®-Based Program Control

Remote Control

The transmitter and receiver each has two serial ports that can be connected to a host device such as a computer running the HyperTerminal utility, an RS-232 capable PDA, or a control system. These ports make serial control of the transmitter and receiver possible. The serial ports are:

- The rear panel Remote RS-232 port on 3-pin captive screw connectors
- The front panel Configuration (RS-232) port, a 2.5 mm mini stereo jack

The protocol for both ports on both units is as follows:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit
- no flow control

NOTE For each unit, the rear panel Remote RS-232 port is active only if the front panel Configuration port is not active. If an active front panel configuration connection is made, the rear panel Remote RS-232 port becomes inactive.

NOTE Only one fiber optic cable, Optical 1, is required for video, audio, and serial command transmission. But, if you connect only one fiber optic cable, you will **not** receive RS-232 reports from the controlled device, and there will be **reduced** RS-232 command and Windows control program functionality on the Rx unit. To receive responses from the controlled device and for full functionality, you will need to install both fiber optic cables.

Rear Panel Remote RS-232 Ports

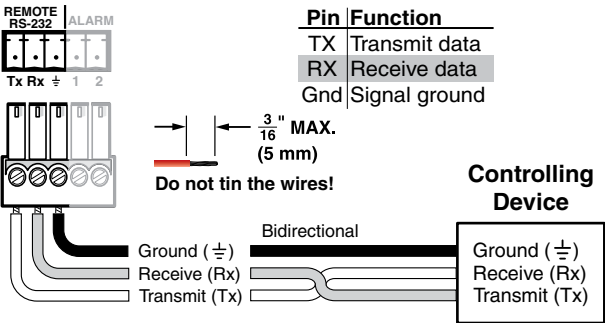


Figure 4-1 — Remote connector pin assignments

Front Panel Configuration Port

NOTE The front panel configuration ports parallel the rear panel Remote RS-232 ports. If a front panel configuration connection is made on either unit, that unit's rear panel Remote RS-232 port becomes inactive.

The optional Extron 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part #70-335-01 (figure 4-2) can be used for connection to the Configuration port.

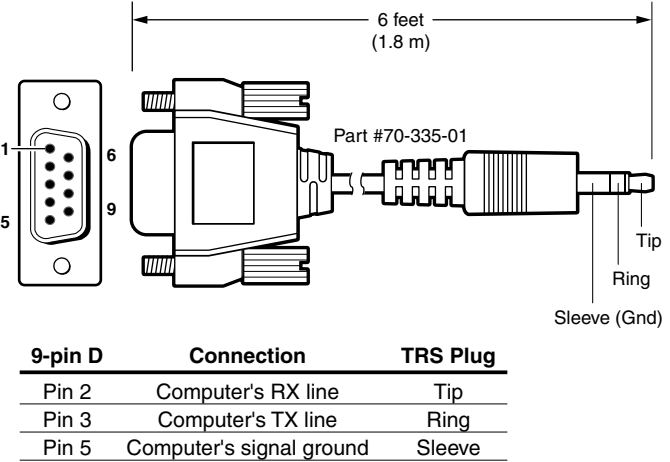


Figure 4-2 — Optional 9-pin TRS RS-232 cable

Simple Instruction Set Control

Host-to-interface communications

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

Symbol definitions

Symbols (variables), defined on the next page, are used throughout the "Unit-initiated messages" section and the command/response table on page 4-8. The symbols represent variables in the unit-initiated messages and the command/response table fields.

↵	= CR/LF (carriage return/line feed)	
•	= space	
X1	= Mute/auto image/front panel lock status	0 or 1 (0=off and 1=on)
X2	= Output sync format	0 = RGBHV 1 = RGsB
X3	= Output sync polarity	0 = follow input 1 = force sync to negative
X4	= Horizontal and vertical position	0 to 255
X5	= Horizontal start	0 to 255
X6	= Pixel phase	0 to 31
X7	= Total pixels	± 255 of the default value
X8	= Sync frequency	xxx.xx (frequency in kHz [H] or Hz [V])
X9	= Memory preset number	1 to 30
X10	= Audio gain adjustment range	0 to 10
X11	= Audio attenuation adjustment range	0 to 18
X12	= Audio level adjustment range	-18.0 to +10.0 (in 1.0 dB steps)
X13	= Output level	0 = consumer 1 = professional
X14	= Test pattern	0 = none 1 = Color Bars 2 = grayscale 3 = alternating pixels
X15	= Firmware version	v.vv
X16	= Link/input status	0 = link or input not detected 1 = link or input detected
X17	= Mode	SM = singlemode MM = multimode
X18	= Transmitter or receiver	Tx = transmitter Rx = receiver
X19	= Resolution	1 = 1920 x 1200 2 = 800 x 600 3 = 1024 x 768 4 = 1280 x 768 5 = 1280 x 1024 6 = 1365 x 768 7 = 1366 x 768 8 = 1400 x 1050 9 = 1600 x 1200 10 = 480p 11 = 576p 12 = 720p 13 = 1080i 14 = 1080p 15 = 640 x 480
X20	= Refresh rate	1 = 50 Hz 2 = 60 Hz
X21	= DDC rotary switch position	00 to 15 (= 0 to F hex)
X22	= Link 2 enable	0 = disable 1 = enable (default)
X23	= Internal temperature (Fahrenheit and Celsius)	mmF•nnC

Unit-initiated messages

When a local event, such as a front panel operation or error condition, occurs, the unit responds by sending a message to the host. The unit-initiated messages are listed below:

(c) COPYRIGHT 2007, EXTRON ELECTRONICS FOX 500 Tx,

Vx.xx, 60-746-xx↵↵

- or -

(c) COPYRIGHT 2007, EXTRON ELECTRONICS FOX 500 Rx,

Vx.xx, 60-746-xx↵↵

- or -

(c) COPYRIGHT 2007, EXTRON ELECTRONICS FOX 500 DVI Tx,

Vx.xx, 60-859-xx↵↵

- or -

(c) COPYRIGHT 2007, EXTRON ELECTRONICS FOX 500 DVI Rx,

Vx.xx, 60-859-xx↵↵

The connected unit issues the appropriate copyright message (above) when it first powers on. Vx.xx is the firmware version number, 60-xxx-xx is the connected unit's part number.

Reconfig↵

The unit sends the Reconfig message whenever the video input signal to the transmitter is changed.

HphX4↵

The unit sends the Hph message whenever the output's horizontal position is shifted.

VphX4↵

The unit sends the Vph message whenever the output's vertical position is shifted.

HstX5↵

The unit sends the Hst message whenever the output's horizontal start is shifted.

TpxX7↵

The unit sends the Tpx message whenever the total pixels variable is changed.

PhsX6↵

The unit sends the Phs message whenever the pixel phase variable is changed.

SynX3↵

The unit sends the Syn message whenever the output video format is changed.

PolX3↵

The unit sends the Pol message whenever the output sync polarity setting is changed.

AudX12↵

The unit sends the Aud message whenever the input audio level (gain and attenuation) is changed.

AmtX1↵

The unit sends the Amt message whenever audio output is muted or unmuted.

LvlX13↵

The unit sends the Lvl message whenever the audio output level is changed.

SprX9↵

The unit sends the Spr message whenever a preset is saved.

RprX13↵

The unit sends the Rpr message whenever a preset is recalled.

Zpg↵

The unit sends the Zpg message whenever all presets have been erased.

ImgX1↵

The unit sends the Img message (with the X1 variable) whenever the auto memory function has been toggled on or off.

Img↵

The unit sends the Img message (with no variable) whenever the auto image function has been triggered.

TstX14↵

The unit sends the Tst message whenever a test pattern has been selected or test patterns are turned off.

1LnkX16•2LnkX16•RGBX16•AudX16↵

The unit sends the status message whenever a change in the fiber link and video and audio connection occurs.

Error responses

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

- E10 - Invalid command↵
- E11 - Invalid preset number↵
- E13 - Invalid parameter↵
- E14 - Invalid command for this configuration↵

Timeout

Pauses of 10 seconds or longer between command ASCII characters result in a timeout. The command operation is aborted with no other indication.

Using the command/response table

The command/response table begins on page 4-8. Lower case letters are acceptable in the command field. Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table. The ASCII to HEX conversion table below is for use with the command/response table.

ASCII to HEX Conversion Table																Esc 1B	CR 0D	LF 0A
Space 20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27	(28)	29
0 30	1	31	2	32	3	33	4	34	5	35	6	36	7	37	8	38	9	39
@ 40	A	41	B	42	C	43	D	44	E	45	F	46	G	47	H	48	I	49
J 50	K	51	L	52	M	53	N	54	O	55	P	56	Q	57	R	58	S	59
T 60	U	61	V	62	W	63	X	64	Y	65	Z	66	[67	\	68]	69
^ 70	_	71	a	72	b	73	c	74	d	75	e	76	f	77	g	78	h	79
i 80	j	81	k	82	l	83	m	84	n	85	o	86	p	87	q	88	r	89
s 90	t	91	u	92	v	93	w	94	x	95	y	96	z	97	{	98	}	99

Command/response table for SIS commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Video mute			
Mute output	1B	Blk1 ←	Blank the video output.
Unmute output	0B	Blk0 ←	Output video.
Show video mute status	B	X1 ←	Video output mute status is X1 (0 = unmuted, 1 = muted).
DDC resolution and rate (FOX 500 DVI only)			
NOTE The transmitter's rear panel DDC Resol(ution) rotary switch must be in position 1 for the variables to be changeable via an SIS command. The unit returns the E14 error if the switch is in other than position 1.			
Set DDC resolution	41*X19*X20#	DDC X19 X20 ←	Select a DDC resolution and refresh rate.
Show DDC resolution	41#	X19 X20 ←	Show the DDC resolution and refresh rate.
Show DDC switch position	41S	X21	Show the rear panel DDC Resolution switch position.
Output sync format			
Set output sync format	6*X2#	Syn X2 ←	Set the sync format. 0 = RGBHV, 1 = RGsB.
Show output sync format	6#	X2 ←	
Output sync polarity			
Force output to sync negative	7*1#	Pol1 ←	Receiver output sync (H and V for RGBHV, S for RGsB, or s for RGsB) is always negative.
Set output sync to follow	7*0#	Pol0 ←	Output sync follows the video sync input to the transmitter.
Show output sync format	7#	X6 ←	

NOTE			
X1	= Mute status	0 = unmuted	1 = muted
X2	= Output sync format	0 = RGBHV	1 = RGsB
X6	= Output sync polarity	0 = follow input	1 = force sync to negative
X19	= Resolution	1 through 15. See page 4-4	
X20	= Refresh rate	1 = 50 Hz	2 = 60 Hz
X21	= DDC switch position	00 to 15 (= 0 to F hex)	

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Horizontal shift			
Set a horizontal position	X4H	Hph X4 ←	Set horizontal centering to X4.
Increment position.	+H	Hph X4 ←	Shift the image one pixel to the right.
Decrement position	-H	Hph X4 ←	Shift the image one pixel to the left.
Show position	H	X4 ←	
Vertical shift			
Set a vertical position	X4/	Vph X4 ←	Set vertical centering to X4.
Increment position	+ /	Vph X4 ←	Shift the image down one line.
Decrement position	- /	Vph X4 ←	Shift the image up one line.
Show position	/	X4 ←	
Horizontal start			
NOTE When the controlling PC is connected to the receiver, the FOX 500 can perform this command only if the fiber 2 cable is connected. The unit returns the E14 error if fiber 2 is not connected.			
Set a start position	X5)	Hst X5 ←	Set the horizontal location of the first active pixel in the active window.
Example:	128)	Hst128 ←	Set pixel 128 as the first active pixel.
Increment start position	+))	Hst X5 ←	Increase the horizontal start location value.
Decrement start position	-))	Hst X5 ←	Decrease the horizontal start location value.
Show start position)	X5 ←	

NOTE			
X4	= Horizontal and vertical position	0 to 255	
X5	= Horizontal start	0 to 255	

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Pixel phase			
NOTE When the controlling PC is connected to the receiver, the FOX 500 can perform this command only if the fiber 2 cable is connected. The unit returns the E14 error if the fiber 2 cable is not connected.			
Set a pixel phase value	[X6]U	Phs [X6] ↵	Set the pixel phase value to [X6] .
Example:	10U	Phs10↵	Set the pixel phase value to 10.
Increment pixel phase	+U	Phs [X6] ↵	Increase pixel phase value by 1..
Decrement pixel phase	-U	Phs [X6] ↵	Decrease pixel phase value by 1.
Show pixel phase	U	[X6] ↵	
Total pixels			
NOTE When the controlling PC is connected to the receiver, the FOX 500 can perform this command only if the fiber 2 cable is connected. The unit returns the E14 error if fiber 2 is not connected.			
Set a total pixel value	11* [X7] #	Tpx [X7] ↵	Set the total pixels to a specific value.
Example:	11*1555#	Tpx1555↵	Set the total pixel value to 1555.
Increment total pixel value	+11#	Tpx [X7] ↵	Increase total pixel value by 1 pixel.
Decrement total pixel value	-11#	Tpx [X7] ↵	Decrease total pixel value by 1 pixel.
Show total pixel value	11#	Tpx [X7] ↵	
List sync frequency			
View input frequency	1LS	[X8][X8] ↵	List the input frequency as [X8] kHz (horizontal) and [X8] Hz (vertical).

NOTE **[X6]** = Pixel phase
[X7] = Total pixels
[X8] = Sync frequency

0 to 31
± 255 of the default value
xxx.xx (frequency in kHz [H] or Hz [V])

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Memory presets			
Save preset	[X9],	Spr [X9] ↵	Command code is a comma.
Recall preset	[X9].	Rpr [X9] ↵	Command code is a period.
Audio input gain and attenuation			
NOTE The set gain (G) and attenuation (g) commands are case sensitive.			
NOTE When the controlling PC is connected to the receiver, the FOX 500 can perform this command only if the fiber 2 cable is connected. The unit returns the E14 error if fiber 2 is not connected.			
Set input audio gain to +dB value	[X10]G	Aud [X12] ↵	
Example:	2G	Aud+02.0↵	Set the input audio gain to +2 dB.
Set input audio attenuation to -dB value	[X11]g	Aud [X12] ↵	
Increment level	+G	Aud [X12] ↵	Increase audio level by 1.0 dB.
Example:	+G	Aud+03↵	Increment the audio input level from +2 dB to +3 dB.
Decrement level	-G	Aud [X12] ↵	Decrease the audio level by 1.0 dB.
Example:	-G	Aud-09↵	Decrement audio input level from -08 dB to -9 dB.
Show input gain	G	[X12] ↵	

NOTE **[X9]** = Memory preset number
[X10] = Audio gain adjustment range
[X11] = Audio attenuation adjustment range
[X12] = Audio level adjustment range

1 to 30
0 to 10
0 to 18
-18.0 to +10.0- (in 1.0 dB steps)

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Audio output level			
Set to consumer line level	40*0#	Lvl0 ↵	Set the transmitter's audio output to the consumer (–10 dBV) line level.
Set to professional line level	40*1#	Lvl1 ↵	Set the transmitter's audio output to the professional (+4 dBu) line level.
Show the audio output line level	40#	X13 ↵	0 = consumer, 1 = professional.
Audio mute			
Mute the audio	1Z	Amt1 ↵	Silence the receiver's audio output.
Unmute the audio	0Z	Amt0 ↵	The receiver outputs audio.
Show audio mute status	Z	X1 ↵	Audio output mute status is X1 (0 = unmuted, 1 = muted).
Auto memory			
Disable auto memory	55*0#	Img0 ↵	
Enable auto memory	55*1#	Img1 ↵	
Show auto memory status	55#	X1 ↵	
Auto image			
Trigger auto image	55*2#	Img ↵	

NOTE X1 = Mute status 0 = off 1 = on
X13 = Audio output level 0 = consumer 1 = professional

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Front panel lock (Executive mode)			
Lock the front panel	1X	Exe1 ↵	
Unlock the front panel	0X	Exe0 ↵	
Show the panel lock status	X	X1 ↵	
Test pattern			
NOTE You must have a video input connected and fiber cable Optical 1 connected between the transmitter and receiver for the receiver to output a selected test pattern. The test pattern will turn off if the input signal rate is changed or disconnected or if power is removed.			
Output Color Bars	1J	Tst1 ↵	Set the receiver to output the Color Bars test pattern.
Output grayscale	2j	Tst2 ↵	Set the receiver to output the grayscale test pattern.
Output alt. pixels	3J	Tst3 ↵	Set the receiver to output the alternating pixels test pattern.
Test pattern off	0J	Tst0 ↵	Set the receiver to output the input video (no test pattern selected)
Show test pattern status	J	X14 ↵	

NOTE X1 = Lock status 0 = unlocked 1 = locked
X14 = Test pattern 0 = none 1 = Color Bars
2 = grayscale 3 = alternating pixels

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Disable and enable return link			
NOTE This function is primarily used and recommended when the transmitting device is a FOX 500 DA6 and the receiver is connected to any of outputs 2 through 6 on the DA.			
Disable return link	66*0*0#	Rle*0*0↵	Disable link #2.
Enable return link	66*0*1#	Rle*0*1↵	Enable link #2 (default setting).
Show return link status	66*0#	0* X22 ↵	
Information requests			
Information request	I	1Link X16 •2Link X16 •RGB X16 •Aud X16 • X17 • X18 ↵	The unit responds with the current status (signal detected) of optical link 1, optical link 2, the video input, the audio input, the fiber optic mode (singlemode or multi mode), and the device type (Tx or Rx).
NOTE The receiver monitors the fiber 1 cable. If the PC is connected to the transmitter and fiber cable 2 is not installed, for the information request (I) and Status commands (S) below, the transmitter reports 1Link0 regardless of the status of the fiber 1 cable.			

NOTE	X22 = Link 2 enable	0 = disable	1 = enable (default)
	X16 = Link/input status	0 = link or input not sensed	1 = link or input sensed
	X17 = Mode	SM = singlemode	MM = multimode
	X18 = Transmitter or receiver	Tx = transmitter	Rx = receiver

Command/response table for SIS commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Information requests (Continued)			
Show firmware version	Q	X15 ↵	
Example:	Q	1.23↵	The factory-installed FOX 500 controller firmware version is 1.23 (sample value only).
Request connected unit's part number	N	60- <i>nnn-nn</i> ↵	See appendix A for part numbers.
Show link 1 status	1S	X16 ↵	0 = light link not received at receiver, 1 = light received.
Show link 2 status	2S	X16 ↵	0 = light link not received at transmitter, 1 = light received.
Show input video status	3S	X16 ↵	0 = video is not input to the transmitter, 1 = video is input.
Show input audio status	4S	X16 ↵	0 = audio is not input to the transmitter, 1 = audio is input.
Show temperature	20S	X23 ↵	View internal temperature in degrees Fahrenheit and Celsius.
Resets			
Reset audio	Esc Z A ↵	Zpa↵	Reset all audio settings to default levels (0 dB gain and consumer [-10 dB] level).
Reset presets	Esc Z G ↵	Zpg↵	Reset (erase) all memory presets.
System reset	Esc Z XXX ↵	Zpx↵	Reset all settings to the factory defaults.

NOTE	X15 = Firmware version	<i>v.vv</i>	
	X16 = Link/input status	0 = link or input not detected	1 = link or input detected
	X23 = Internal temperature (Fahrenheit and Celsius)	<i>nnnF</i> • <i>nnC</i>	

Windows®-Based Program Control

The Extron FOX Extender Program, which communicates with the transmitter and receiver pair via either unit's rear panel Remote RS-232 port or front panel Configuration port, provides an easy way to operate the pair.

The program is compatible with Windows 2000, Windows XP, or later. Updates to this program can be downloaded from the Extron Web site (www.extron.com).

Installing the software

The program is contained on a disk. To install the software, insert the disk into the drive. The setup program should start automatically. If it does not self-start, run Launch.exe from the disk and follow the instructions that appear on the screen. By default, the Windows installation creates a C:\Program Files\Extron\FOX_Extenders directory, and it places four icons into a group folder named "Extron Electronics\FOX Extender WCP." The four installed icons are:

- Check for FOX Extender updates
- FOX Extender WCP
- FOX Extender Help
- Uninstall FOX Extender WCP

Starting the program

Start the Extron FOX Extender Program as follows:

1. Click **Start > Programs > Extron Electronics > FOX Extender WCP > FOX Extender WCP.**



The Communication Setup window appears (figure 4-3).



Figure 4-3 — Communication Setup window

2. Select the Com port to which your transmitter or receiver is connected. Click **OK.**

The FOX Extender Program window appears (figure 4-4).

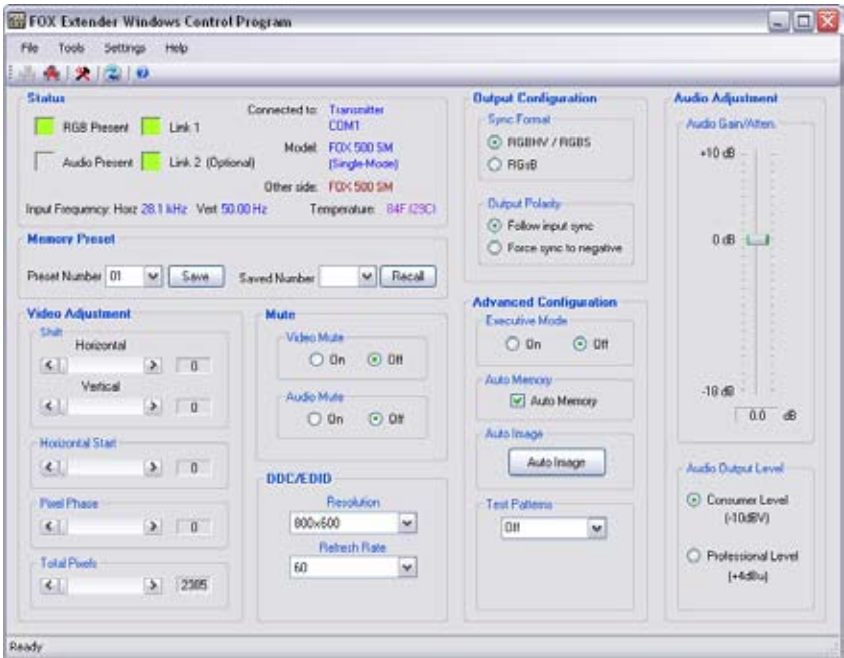


Figure 4-4 — FOX Extender Program window

NOTE Only one fiber optic cable, Optical 1, is required for video, audio, and serial command transmission. But, if you connect only one fiber optic cable, you will **not** receive RS-232 reports from the controlled device, and there will be **reduced** Windows-based control program functionality on the Rx unit. To receive responses from the controlled device and for full functionality, you will need to install both fiber optic cables.

Status area



Figure 4-5 — Extender program Status area

The Status area provides visual indications of the connection status. These indications are similar to the front panel indications described in chapter 3, "Operation".

- **RGB present indicator** — This indicator is green when the transmitter detects a sync signal on its video input:
 - Horizontal sync (H) (for RGBHV video)
 - Composite sync (S) (for RGBS video)
 - Green (Sync on green) (G) (for RGsB or RsGsBs video)
 - DVI video
- **Audio present indicator** — This indicator is green when the transmitter detects a low level audio signal for a short period of time. This indicator goes dark if the audio signal drops below the minimum threshold for a short period of time.
- **Link 1 indicator** — This indicator is green when the receiver detects light on the fiber optic cable Optical 1.

NOTE The receiver detects the Optical 1 light. It reports the status to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, the control program's Link 1 indicator will **not** show green (detected) whether the receiver detects the link or not.

- **Link 2 indicator** — This indicator is green when the transmitter detects light on the fiber optic cable Optical 2.

NOTE The transmitter detects the Optical 2 light. It reports the status to the receiver via the Optical 1 cable.

If you are connected to either of the **receiver's** serial ports, **and** the Optical 1 cable is disconnected, the control program's Link 2 indicator will **not** show green (detected) whether the transmitter detects the link or not.

The Status area also shows to which unit the controlling PC is connected, the FOX 500 model (multimode or singlemode), the video input frequency, and the unit's temperature.

Memory Preset area



Figure 4-6 — Extender program Memory Preset area

The Memory Preset area provides a means to save and recall memory presets. Memory presets are saved values of the horizontal and vertical position, horizontal start, total pixels, and pixel phase settings. See "Memory Presets menu" in chapter 3, "Operation", for more information on presets.

Mute area



Figure 4-7 — Extender program Mute area

Click the **Video Mute** and/or **Audio Mute** radio buttons in the Mute area to turn the video and/or audio mutes on and off.

NOTE When the video output is RGB and the video output is muted, the receiver mutes the red, green, and blue planes, but leaves the sync plane(s) (horizontal and vertical or composite sync) live so that there is no loss of sync in the display device.

NOTE When you mute or unmute the output, the setting is changed in the receiver. It reports the changes to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, you **can** still mute the output in the control program's Mute area, but the program **cannot** report the position values. The Set video (or audio) mute On or Off message is displayed for approximately 1 second (figure 4-8).



Figure 4-8 — Alternate Mute area indication

DDC/EDID Resolution area



Figure 4-9 — Extender program DDC/EDID Resolution area

The DDC/EDID Resolution area provides drop boxes that let you manually set the DDC Resolution and refresh rate.

NOTE The transmitter's rear panel DDC Resol(ution) rotary switch must be in position 1 for the variables to be changeable via FOX Extender Program. The Resolution and Refresh Rate drop boxes are grayed out and unavailable for selection if the switch is in other than position 1.

Video Adjustment area



Figure 4-10 — Extender program Video Adjustment area

The Video Adjustment area provides slider controls that let you change the following video parameters:

- Shift Horizontal (position)
- Shift Vertical (position)
- Horizontal Start
- Pixel Phase
- Total Pixels

NOTE

When you make changes to the horizontal start, pixel phase, or total pixels settings, the value is changed in the transmitter.

If you are connected to either of the **receiver's** serial ports, **and** the Optical 2 cable is not connected in your system, you **cannot** change these values using the control program. These slider controls are grayed out (unavailable).

NOTE

When you make horizontal or vertical position changes (shift the image), the setting is changed in the receiver. It reports the shift values to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, you **can** still shift the image in the control program's Video Adjustment area, but the program **cannot** report the position values.

Output Configuration area



Figure 4-11 — Extender program Output Configuration area

Sync Format radio buttons — Click either the **RGBHV/RGBS** or **RGB** radio button to select the desired video output sync format.

Output Polarity radio buttons — Click either the **Follow input sync** or **Force sync to negative** radio button to select the desired video output sync polarity.

NOTE

When you make output configuration changes, the setting is changed in the receiver. It reports the changes to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, the program **cannot** report the output sync format and polarity position settings in the control program's Video Adjustment area. You **can** change the output sync format and polarity, but the program **cannot** report the changes.

Advanced Configuration area



Figure 4-12 — Extender program Advanced Configuration area

Executive Mode button — Click the **Executive Mode** radio button to toggle the front panel lock on and off.

NOTE When you toggle the front panel lock on and off, the setting is changed in the receiver. It reports the changes to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, you **can** still toggle the front panel lock in the control program's Advanced Configuration area, but the program **cannot** report the lock's status. The program indication changes (figure 4-13) to show that the Executive mode is control only, without an indication of the current mode. The Set executive mode On or Off message is displayed for approximately 1 second.

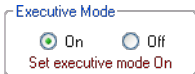


Figure 4-13 — Alternate Executive Mode button indication

Auto Memory checkbox — Click the **Auto Memory** checkbox to automatically apply saved position, horizontal start, total pixels, and pixel phase settings when the sensed input resolution changes. See "Auto Memory submenu" in chapter 3, "Operation" for more details about the auto memory function.

Auto Image button — Click the **Auto Image** button to adjust the output settings for the best image, based on the sensed input resolution.

Test Patterns drop box — Select one of three built-in test patterns - **Color Bars**, **grayscale**, and **alternating pixels** - as necessary to help adjust the display's color, focus, and grayscale. Select **Off** to output the video input to the transmitter.

NOTE You must have a video input connected and fiber cable Optical 1 connected between the transmitter and receiver for the receiver to output a selected test pattern.

The test pattern will turn off if the input signal rate is changed or disconnected or if power is removed.

Audio Adjustment area



Figure 4-14 — Extender program Audio Adjustment area

Audio Gain/Attenuation slider — Click and drag the **Audio Gain/Attenuation** slider control to select the input audio gain or attenuation value, from -18.0 dB to +10.0 dB in 1.0 dB increments. The current value is shown in a field below the slider control.

NOTE When you make input gain or attenuation changes, the setting is changed in the transmitter.

If you are connected to either of the **receiver's** serial ports, **and** the Optical 2 cable is not connected in your system, you **cannot** change the input value from the control program's Audio Adjustment area.

Audio Output Level radio buttons — Click either the **Consumer Level** (-10 dBV) or **Professional Level** (+4 dBu) radio button to select the output audio level.

NOTE When you make an audio output level change, the setting is changed in the receiver. It reports the changes to the transmitter via the optional Optical 2 cable.

If you are connected to either of the **transmitter's** serial ports, **and** the Optical 2 cable is not connected in your system, the program **cannot** report the output audio level in the control program's Audio Adjustment area. You **can** change the level, but the program **cannot** report the changes. The program shows the **Set Consumer** (or **Professional**) level message to indicate that the output level command is control only, not an indication (figure 4-15). The message is displayed for approximately 1 second.

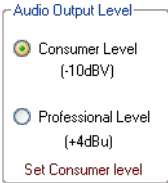


Figure 4-15 — Alternate Audio Adjustment area indication

Firmware upgrade

Firmware can be upgraded for each unit via either of that unit's serial ports by calling the Extron Firmware Loader utility from the Windows-based control program.

NOTE When firmware upgrades are available, they are unique to the unit; a transmitter firmware upgrade for the Tx unit and a receiver upgrade for the Rx unit.
You must connect directly to the unit to be updated.

Upload replacement firmware as follows:

1. Visit the Extron web site, www.extron.com, click the **Download Center** tab, and then click the **Firmware** link (figure 4-16). Select the appropriate firmware file(s) to download and copy it (them) to your computer. Note the folder to which you save the firmware file(s).



Figure 4-16 — Location of firmware upgrade files

2. In the Windows Explorer or other file browser, double-click the downloaded executable (*.exe) file(s) to self-extract the firmware file(s).
3. Connect a Windows-based computer to the either serial port (rear panel Remote RS-232 or front panel Configuration) of the unit to be updated. See chapter 2, "Installation", for more details.
4. Start the FOX Extender Program. See "Starting the program", on page 4-16.

Remote Control, cont'd

5. Click **Tools > Update Firmware**. The Extron Firmware Loader appears (figure 4-17).

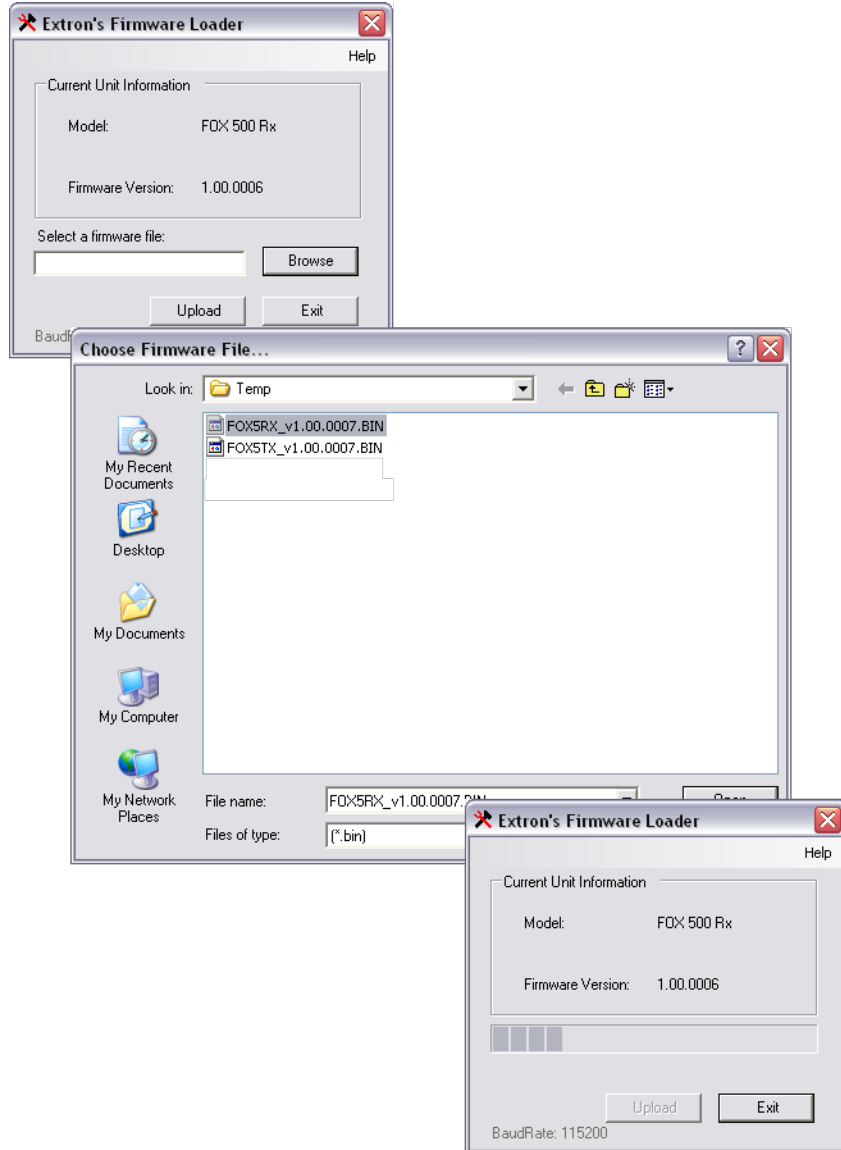


Figure 4-17 — Open window

- a. Click **Browse**. The open file window appears.
- b. Navigate to the folder where you saved the firmware upgrade file. Select the file. The Firmware Loader returns to the top.

NOTE *Valid firmware files must have the file extension “.BIN”. Any other file extension is not a firmware upgrade for your FOX 500.*

- c. Click **Upload**. The File Loader reports, “*This process could take several minutes. Please wait...*” and then displays a progress indicator bar that shows the status of the upload.
 - d. When the Firmware Loader reports, “*Transfer complete!*”, click the **Exit** button.
6. Cycle the FOX 500 unit's power.
 7. If necessary, repeat this entire procedure on the other unit of the transmitter/receiver pair.



A

Appendix A

Reference Information

FOX 500 (RGB) Specifications

FOX 500 DVI Specifications

Part Numbers

Reference Information

FOX 500 (RGB) Specifications

- NOTE** *The FOX 500 consists of a transmitter (FOX 500 Tx) and a receiver (FOX 500 Rx) with one or two fiber optic cables linking the two units.*
- NOTE** *The analog RGB input signal is digitized pixel for pixel in the transmitter, sent digitally through the fiber cable, and converted back to analog RGB in the receiver.*
- NOTE** *The analog audio signal(s) is (are) digitized in the transmitter, sent through the fiber cable, and converted back to analog audio in the receiver.*

Optical fiber interconnection between transmitter and receiver

- Number/type 1 or 2 fiber optic
- NOTE** *Only one fiber is required to transmit video, audio, and unidirectional data. A second fiber is required to transmit return data for bidirectional control/communication.*
- Connectors 2 LC connectors
- Operating distance
- Singlemode..... 30 km (18.75 miles) with singlemode (SM) cables with a FOX 500 SM

Multimode..... 300 m (985') with 62.5 μm multimode (MM) cables with a FOX 500 MM

1 km (3280') with 50 μm multimode (MM) cables with a FOX 500 MM

2 km (6561') with 50 μm 2000 MHz bandwidth laser optimized multimode cable with a FOX 500 MM
- NOTE** *Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.*
- Nominal peak wavelength..... 850 nm for FOX 500 MM, 1310 nm for FOX 500 SM
- Data rate 4.25 Gbps
- Transmission power
- Singlemode..... -5 dBm, typical

Multimode..... -5 dBm, typical

- Maximum receiver sensitivity
- Singlemode..... -18 dBm, typical

Multimode..... -12 dBm, typical
- Optical loss budget
- Singlemode..... 13 dB, maximum

Multimode..... 7 dB, maximum

Video

- Number/signal type..... 1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs input
- 1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs loop-through
- Gain Unity
- Pixel data bit depth..... 8 bits per channel, 3 channels (R, G, B)
- Maximum resolution 1600x1200 @ 60 Hz, digitized pixel for pixel; higher resolutions up to 2048x1120, undersampled

Video input and loop-through — transmitter (FOX 500 Tx)

- Number/signal type..... 1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs input
- 1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs loop-through
- Connectors 1 x 5 female BNC or (1) female 15-pin HD for input
- (1) female 15-pin HD for loop-through
- Nominal level 0.7 Vp-p for RGB
- Minimum/maximum levels..... Analog: 0.3 V to 1.5 Vp-p with no offset
- Impedance..... 75 ohms
- Horizontal frequency..... 24 kHz to 100 kHz
- Vertical frequency..... 40 Hz to 120 Hz
- Return loss..... <-40 dB @ 5 MHz
- NOTE** *These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21, CFR 1040.10, and FDA 21 CFR 1040.11.*

Video output — receiver (FOX 500 Rx)

Number/signal type.....	2 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs (follows input or can be set by user)
Connectors	1 x 6 female BNC and (1) female 15-pin HD
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels.....	0.3 V to 1.5 Vp-p
Impedance.....	75 ohms
Return loss.....	-40 dB @ 5 MHz
DC offset.....	±5 mV with input at 0 offset
Video delay	1-2 frames

Sync

Input type.....	Autodetect RGBHV, RGBS, RGsB, RsGsBs
Output type.....	RGBHV, RGBS, RGsB, RsGsBs (follows input or can be set by user)
Input level	2.5 V to 5.0 Vp-p
Output level.....	TTL: 5.0 V p-p, unterminated, in HV or S; or 0.3 V p-p on Gs, terminated
Input impedance	510 ohms
Output impedance	75 ohms
Polarity.....	Positive or negative (follows input or can be set by user)

Audio

Gain	
Range	Adjustable, -18 dB to +10 dB
Default	
Captive screw connector	
Unbalanced output: -6 dB;	
balanced output: 0 dB	
Mini stereo jack.....	Unbalanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ±0.5 dB
THD + Noise.....	0.10% @ 1 kHz at nominal level
S/N.....	>80 dB at maximum output (unweighted)
CMRR.....	65 dB @ 20 Hz to 20 kHz
Audio bits per sample	18 bits per channel, 2 channels (L, R)
Sampling rate.....	48 kHz

Audio input — transmitter (FOX 500 Tx)

Number/signal type.....	2 inputs (mixed): 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm captive screw connector, 5 pole (1) 3.5 mm mini stereo jack
Impedance.....	18k ohms unbalanced, 20k ohms balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level.....	+17 dBV, (unbalanced) at 1% THD+N

NOTE 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output — receiver (FOX 500 Rx)

Number/signal type.....	2 buffered outputs: 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm captive screw connector, 5 pole (1) 3.5 mm mini stereo jack
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level (Hi-Z)	>+19 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm).....	>+15 dBm, unbalanced at 1% THD+N
Audio delay	1.5 frames

Control/remote

Serial control ports on each unit (transmitter and receiver)	
Control.....	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel) 1 RS-232, 2.5 mm mini stereo jack (front panel)
Pass-through	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel); in parallel with 1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol	
Control.....	9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through	9600 to 115,200 baud

Reference Information, cont'd

Serial control pin configurations

Captive screw connectors: 1 = Tx, 2 = Rx,
3 = GND
Mini stereo jack: tip = Tx, ring = Rx,
sleeve = GND

Program control..... Extron's control/configuration program
for Windows®
Extron's Simple Instruction Set (SIS™)

General

Power 100 VAC to 240 VAC, 50-60 Hz, 11 watts,
internal
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, vents on top and sides
Mounting
Rack mount Yes, with optional rack shelf kit
Furniture mount Yes, with optional under desk mounting
kit
Enclosure type Metal
Enclosure dimensions 1.7" H x 8.7" W x 9.5" D
(1U high, half rack wide)
(4.3 cm H x 22.1 cm W x 24.1 cm D)
(Depth excludes connectors and knobs.)
Product weight 2.3 lbs (1.0 kg) per unit,
4.6 lbs (2.1 kg) per pair
Shipping weight 4 lbs (2 kg) per unit, 8 lbs (4 kg) per pair
Vibration ISTA 1A in carton
(International Safe Transit Association)
Regulatory compliance
Safety CE, CUL, FDA Class 1, 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 ±10%.

NOTE Specifications are subject to change without notice.

FOX 500 DVI Specifications

NOTE The FOX 500 DVI consists of a transmitter (FOX 500 DVI Tx) and a receiver (FOX 500 DVI Rx) with one or two fiber optic cables linking the two units. They are available in singlemode or multimode versions.

NOTE The analog audio signal(s) is (are) digitized in the transmitter, sent through the fiber cable, and converted back to analog audio in the receiver.

NOTE These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21, CFR 1040.10, and FDA 21 CFR 1040.11.

Optical fiber interconnection between transmitter and receiver

Number/type 1 or 2 fiber optic

NOTE Only one fiber is required to transmit video, audio, and unidirectional data. A second fiber is required to transmit return data for bidirectional control/communication.

Connectors 2 LC connectors

Operating distance

Singlemode 30 km (18.75 miles) with singlemode (SM) cables with a FOX 500 DVI SM
Multimode 300 m (985') with 62.5 µm multimode (MM) cables with a FOX 500 DVI MM
1 km (3280') with 50 µm multimode (MM) cables with a FOX 500 DVI MM
2 km (6561') with 50 µm 2000 MHz bandwidth laser optimized multimode cable with a FOX 500 DVI MM

NOTE Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.

Nominal peak wavelength 850 nm for FOX 500 DVI MM,
1310 nm for FOX 500 DVI SM

Data rate 4.25 Gbps

Reference Information, cont'd

Transmission power

Singlemode.....	-5 dBm, typical
Multimode.....	-5 dBm, typical

Maximum receiver sensitivity

Singlemode.....	-18 dBm, typical
Multimode.....	-12 dBm, typical

Optical loss budget

Singlemode.....	13 dB, maximum
Multimode.....	7 dB, maximum

Video

Resolution range	Single link DVI and HDMI digital video signals are supported, including 640x480 @ 60 Hz through 1600x1200 @ 60 Hz, and also HDTV signals at 480p, 720p, 1080i, and 1080p. Higher resolutions up to 1920x1200 @ 60 Hz, undersampled
------------------------	--

NOTE The FOX 500 DVI Series can be used to distribute HDMI signals if you use a DVI-to-HDMI adapter. However, when using HDMI signals, the FOX units do not transmit audio and CEC signals.

Formats.....	RGB and YCbCr digital video
Standards.....	DVI 1.0, HDMI 1.2

Video input and loop-through — transmitter (FOX 500 DVI Tx)

Number/signal type.....	1 DVI-D (or HDMI*) input 1 DVI-D (or HDMI*) loop-through
Connectors	1 female DVI-I for input 1 female DVI-I for loop-through
Nominal level	0.8 Vp-p
Impedance.....	100 ohms

NOTE *Appropriate DVI-D to HDMI cables or adapters are required for HDMI signal input/output.

Video output — receiver (FOX 500 DVI Rx)

Number/signal type.....	1 DVI-D (or HDMI*)
Connectors	1 female DVI-I
Nominal level	0.8 Vp-p
Impedance.....	75 ohms
Video delay	1-2 frames

Audio

Gain

Range	Adjustable, -18 dB to +10 dB
-------------	------------------------------

Default

Captive screw connector

Unbalanced output: -6 dB;
balanced output: 0 dB

Mini stereo jack..... Unbalanced output: 0 dB

Frequency response 20 Hz to 20 kHz, ± 0.5 dB

THD + Noise..... 0.10% @ 1 kHz at nominal level

S/N..... >80 dB at maximum output (unweighted)

CMRR..... 65 dB @ 20 Hz to 20 kHz

Audio bits per sample 18 bits per channel, 2 channels (L, R)

Sampling rate..... 48 kHz

Audio input — transmitter (FOX 500 DVI Tx)

Number/signal type.....	2 inputs (mixed): 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm captive screw connector, 5 pole (1) 3.5 mm mini stereo jack
Impedance.....	18k ohms unbalanced, 20k ohms balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level.....	+17 dBV, (unbalanced) at 1% THD+N

NOTE 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV \approx 2 dBu

Audio output — receiver (FOX 500 DVI Rx)

Number/signal type.....	2 buffered outputs: 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors	(1) 3.5 mm captive screw connector, 5 pole (1) 3.5 mm mini stereo jack
Impedance.....	50 ohms unbalanced, 100 ohms balanced
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level (Hi-Z)	>+19 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm).....	>+15 dBm, unbalanced at 1% THD+N
Audio delay	1.5 frames

Control/remote

Serial control ports on each unit (transmitter and receiver)

Control.....	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel) 1 RS-232, 2.5 mm mini stereo jack (front panel)
--------------	---

Reference Information, cont'd

Pass-through	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel); in parallel with 1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol	
Control.....	9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through	9600 to 115,200 baud
Serial control pin configurations.	Captive screw connectors: 1 = Tx, 2 = Rx, 3 = GND
	Mini stereo jack: tip = Tx, ring = Rx, sleeve = GND
Program control.....	Extron's control/configuration program for Windows®
	Extron's Simple Instruction Set (SIS™)

General

Power	100 VAC to 240 VAC, 50-60 Hz, 11 watts, internal
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, vented left to right, vents on side panels
Mounting	
Rack mount	Yes, with optional rack shelf kit
Furniture mounting holes	Yes, with optional under desk mounting kit
Enclosure type	Metal
Enclosure dimensions.....	1.7" H x 8.7" W x 9.5" D (1U high, half rack wide) (4.3 cm H x 22.1 cm W x 24.1 cm D) (Depth excludes connectors and knobs.)
Product weight	2.3 lbs (1.0 kg) per unit
Shipping weight	4 lbs (2 kg) per unit
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety.....	CE, CUL, FDA Class 1, 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 ±10%.

NOTE Specifications are subject to change without notice.

Part Numbers

FOX 500 part numbers

The FOX 500 units are available in singlemode (SM) and multimode (MM) models:

NOTE The FOX 500 (RGB) units are available as a paired set and as individual units.

The FOX 500 DVI units are available as individual units only.

FOX 500 Models	Part number
FOX 500 (RGB) Tx/Rx SM (set)	60-746-02
FOX 500 (RGB) Tx SM (individual unit)	60-746-12
FOX 500 (RGB) Rx SM (individual unit)	60-746-22
FOX 500 Tx/Rx (RGB) MM (set)	60-746-01
FOX 500 Tx (RGB) MM (individual unit)	60-746-11
FOX 500 Rx (RGB) MM (individual unit)	60-746-21
FOX 500 DVI Tx SM (individual unit)	60-859-12
FOX 500 DVI Rx SM (individual unit)	60-859-22
FOX 500 DVI Tx MM (individual unit)	60-859-11
FOX 500 DVI Rx MM (individual unit)	60-859-21

Included parts

These items are included in each order for a FOX 500 Tx/Rx:

Included parts	Part number
IEC power cord	
Tweezer (small screwdriver)	
FOX 500 Setup Guide	
Captive screw 5-pole connectors (qty. 6)	
Extron Software Products Disk (FOX Extender Program)	
(2) 10' LC-LC duplex patch cables (SM or MM, depending on the model)	

Optional accessories

Accessories	Part number
9-pin D to 2.5 mm mini jack TRS RS-232 cable	70-335-01
RSU 129 9.5" 1U universal rack shelf kit	60-190-01
RSB 129 9.5" 1U basic rack shelf	60-604-01
MBU 125 under desk mounting kit	70-077-01
MBD 129 through desk mounting kit	70-077-02

Cables

Accessories	Part number
VGA M-M MD, 3' to 100' (0.9 m to 30.4 m) (molded)	26-238- <i>nn</i>
VGA M-M BK, 3' to 100' (0.9 m to 30.4 m) (backshell)	26-238- <i>nn</i>
VGAP M-M MD, 3' to 25' (0.9 m to 7.6 m) (molded) (plenum)	26-439- <i>nn</i>
VGAP M-M BK, 35' to 100' (10.6 m to 30.4 m) (backshell) (plenum)	26-439- <i>nn</i>
VGA-A M-M MD (with audio), 3' to 50' (0.9 m to 15.2 m) (molded)	26-490- <i>nn</i>
VGA-A M-M BK (with audio), 3' to 50' (0.9 m to 15.2 m) (backshell)	26-490- <i>nn</i>
MHR-5 BNC mini high resolution male to male, 3' to 100' (0.9 m to 30.4 m)	26-260- <i>nn</i>
MHR-5P BNC mini high resolution plenum male to male, 3' to 100' (0.9 m to 30.4 m)	26-378- <i>nn</i>
M59-5 BNC mini 59 flex male to male, 3' to 100' (0.9 m to 30.4 m)	26-499- <i>nn</i>
RG6-5 BNC super high resolution male to male, 3' to 100' (0.9 m to 30.4 m)	26-369- <i>nn</i>
DVID SL Pro/6 DVI-D male-to-male, 6' (1.8 m) cable	26-649-06
HDMI M-M/6 HDMI male to male, 6' (1.8 m)	26-613-02
HDMI M-DVI-D M/6 HDMI male to DVI-D male, 6' (1.8 m)	26-614-02

Adapters

Accessories	Part number
HDMIF-DVIDM HDMI female to DVI-D male adapter	26-616-01
HDMIM-DVIDF HDMI male to DVI-D female adapter	26-617-01

