

## User's Manual



## SW MTP T Series

**SW2 MTP T 15HD A**  
**SW4 MTP T 15HD A**  
**SW6 MTP T 15HD A**



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# Precautions

## Safety Instructions • English



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



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

## Caution

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

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

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

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

## Consignes de Sécurité • Français



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



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

## Attention

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

**Conservser les instructions** • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

**Respecter les avertissements** • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

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

## Sicherheitsanleitungen • Deutsch



Dieses Symbol soll 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 le contourner ni de la désactiver.

**Déconnexion de l'alimentation** • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

**Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

**Réparation-maintenance** • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à des 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 reut les batteries usagées conformément aux instructions du fabricant.

## Vorsicht

**Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte 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 dagegestellt werden können.

**Wartung** • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

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

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

## Advertencia

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

**Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

**Protección del cables de alimentación** • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

**Reparaciones/mantenimiento** • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrirlo o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

**Ranuras y aberturas** • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

**Batería de litio** • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

# FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

# Extron's Warranty

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

**USA, Canada, South America, and Central America:**  
Extron Electronics  
1001 East Ball Road  
Anaheim, CA 92805, USA

**Europe, Africa, and the Middle East:**  
Extron Electronics, Europe  
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3821 AH Amersfoort  
The Netherlands

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

**Japan:**  
Extron Electronics, Japan  
Daisan DMJ Bldg. 6F,  
3-9-1 Kudan Minami  
Chiyoda-ku, Tokyo 102-0074  
Japan

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.

## Quick Start Guide — SW MTP T Series

Install and operate the SW MTP T Series switchers as follows:

### Step 1

Turn all of the equipment off and disconnect it from the power source.

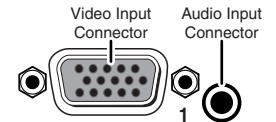
### Step 2

Mount the switcher in a rack or furniture, or place on a desktop.

### Step 3

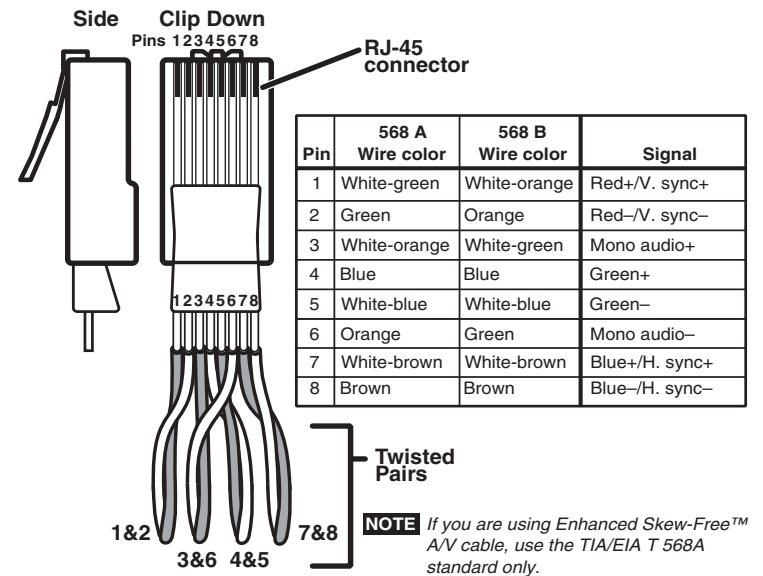
Connect up to six video input cables, depending on the switcher model.

Connect up to six audio input cables, depending on the switcher model.



### Step 4

Connect the Twisted Pair (TP) video and audio output cable.



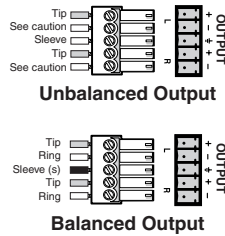
### Step 5

Connect the other end of the TP cable to an MTP R 15HD A or MTP RL 15HD A receiver.

## Quick Start Guide — SW MTP T Series, cont'd

### Step 6

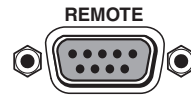
Cable the captive screw audio output connector for stereo, balanced or unbalanced audio output.



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

### Step 7

Connect an RS-232 **OR** contact closure controller. Wire the connector as shown in the table at right.



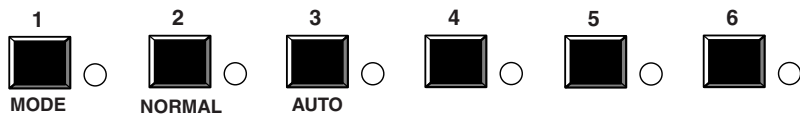
Pin	RS-232	Contact Closure	Function
1	—	In #1	Input #1
2	TX	—	Transmit data
3	RX	—	Receive data
4	—	In #2	Input #2
5	Gnd	Gnd	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6

### Step 8

Connect power cords and turn on the equipment: output devices (projectors, monitors, speakers), SW MTP T Series switcher, contact closure/RS-232 controller, and input devices (computers, audio sources).

### Input selection (normal switch mode)

Select an input using the front panel buttons (as shown below), or the contact closure or RS-232 controller (switcher must be in normal switch mode). The selected input's LED lights.



### Input selection (auto switch mode)

When the switcher is in auto switch mode, it switches to the highest-numbered input with a sync signal present. The selected input's LED lights.

If no input has sync signals present, no input is selected. No input LED lights.

### Switch mode selection

Select the switch mode by pressing and **holding** the Input 1/Mode button and pressing and releasing either the Input 2/Normal (normal switch mode) or Input 3/Auto (auto switch mode) button. Release the Input 1/Mode button. The Auto Switch LED lights when the switcher is in auto switch mode.

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## SW MTP T Series Switchers

# Chapter One

## Introduction

About this Manual

About the SW MTP T Series Switchers

TP Cable Advantages

Features

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## About the SW MTP T Series Switchers

The SW2 MTP T 15HD A, SW4 MTP T 15HD A, and SW6 MTP T 15HD A switchers are two, four, or six input, VGA or other high resolution video and computer audio switchers with a proprietary twisted pair (MTP) transmitter output that incorporates the selected video and mono audio signals and a separate stereo audio-only output.

The twisted pair (TP) output is compatible with long-distance transmission to an Extron MTP receiver over Extron's Enhanced Skew-Free™ A/V UTP cable or over Category (CAT) 5 shielded twisted pair (STP), unshielded twisted pair (UTP), or foil shielded twisted pair (FTP) cable.

The switcher is a part of the Extron VersaTools™ line of basic distribution amplifiers, switchers, transmitters, receivers, and associated video accessories.

The MTP switcher inputs high resolution video on 15-pin HD connectors and audio on 3.5 mm stereo jacks (figure 1-1). The transmitter also can accept component video, S-video, or composite video. The transmitter converts the selected video and audio input signals to proprietary signals and outputs them to the MTP receiver on an RJ-45 connector. The transmitter also makes the selected input audio available for local use on a 3.5 mm 5-pin captive screw connector.

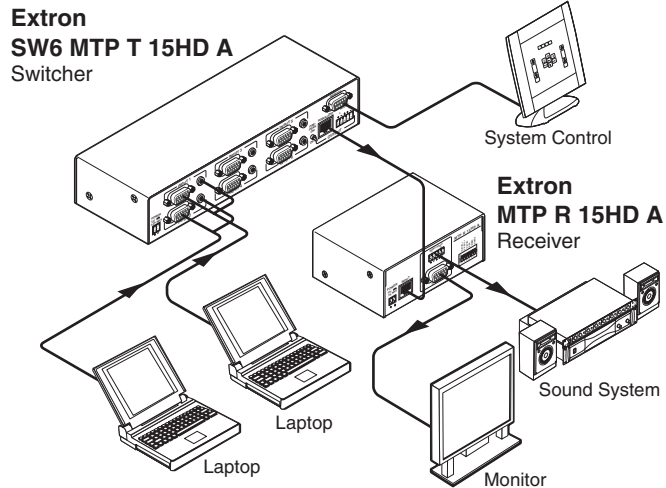


Figure 1-1 — Typical SW MTP T switcher application

The MTP switcher requires either an MTP R 15HD A, MTP RL 15HD A, or VTR001 receiver. The receiver inputs the transmitted proprietary signal and converts the signal back into its high resolution video and mono audio components.

**NOTE** The VTR001 is a video-only receiver.

All models have contact closure and RS-232 remote control capability through the 9-pin Remote connector. The KP 6 wired remote control and the IR 102 Kit infrared remote control are optional remote controls for input selection. The KP 6 has a 25-foot cable. The IR 102 has an approximate 30-foot range.

These switchers are housed in rack-mountable, 1U high, half rack-width metal enclosures. They ship with external desktop 12 V power supplies that accept 100 to 240 VAC, 50 Hz or 60 Hz input.

Front panel buttons, a contact closure or RS-232 controller, or the auto switching option can be used for input selection.

## TP cable advantages

Twisted pair cable is much smaller, lighter, more flexible, and less expensive than coaxial cable. The Extron TP products make cable runs simpler and less cumbersome. Termination of the cable with RJ-45 connectors is simple, quick, and economical.

## Transmission distance

The maximum distance is determined by the output frequency and resolution. The table on the next page specifies the recommended maximum transmission distances and Pre-Peak switch positions (see item ⑤ on page 2-9) to MTP receivers using Extron Skew-Free A/V UTP cable or UTP CAT 5 cable, terminated with CAT 5 rated connectors.

**NOTE** It is possible to exceed the recommended distance, however, image quality may be reduced.

**NOTE** The MTP switcher and the receivers perform best with Extron Skew-Free A/V cable, terminated in accordance with the TIA/EIA T 568 A wiring standard. CAT 5 cable is acceptable but less preferable. We also recommend the use of pre-terminated and tested cable. Cable terminated on site should be tested before use to ensure that it complies with Category 5 specifications.



### Recommended transmission ranges at 60 Hz MTP R 15HD A and MTP RL 15HD A receivers

Video format	Pre-Peak off	Pre-Peak on	Max. range (high quality)	Max. range (variable quality)
Composite, S-video, Component			800' (243.8 m)	1000' (304.8 m)
640 x 480	<300' (91.4 m)	>350' (106.7 m)	700' (213.4 m)	750' (243.8 m)
800 x 600	<300' (91.4 m)	>350' (106.7 m)	550' (167.6 m)	650' (198.1 m)
1024 x 768	<300' (91.4 m)	>350' (106.7 m)	500' (152.4 m)	600' (182.9 m)
1280 x 1024	<250' (76.2 m)	>300' (91.4 m)	350' (106.7 m)	450' (121.9 m)
1600 x 1200	<250' (76.2 m)	>300' (91.4 m)	300' (91.4 m)	450' (137.1 m)

**NOTE** The recommended distance when using VTR001 receivers varies. Refer to the VTT001 and VTR001 manual.

## Features

- Up to two, four, or six inputs, depending on the model
- Input sensing and reporting on the RS-232 port
- Auto switch mode (button or remote selectable)
- 9-pin contact closure/RS-232 remote control connector
- Rack- and under-desk mountable
- Worldwide external power supply
- Input connectors – VGA, female 15-pin HD
- Output connectors
  - TP output — RJ-45
  - Audio output — 3.5 mm, captive screw
- VGA—UXGA video (and Mac and Quadra computer video with optional Mac/VGA Adapter (part #26-340-01))
- Tri-level or bi-level sync



## SW MTP T Series Switchers

# Chapter Two

## Installation

Mounting the Switcher

Rear Panel Features and Connections

TP Cable Termination

# Installation

## Mounting the Switcher

The SW MTP T can be set on a table, mounted on a rack shelf, mounted to a rack without a shelf, or mounted under a desk, podium, or tabletop.

### Tabletop use

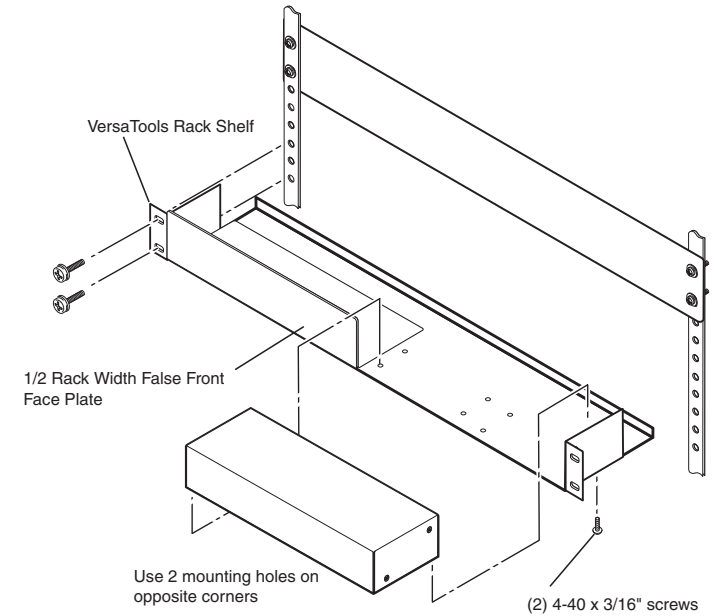
Four self-adhesive rubber feet are included with the switcher. For tabletop use, attach one foot at each corner of the bottom side of the unit and place the unit in the desired location.

### Rack mounting

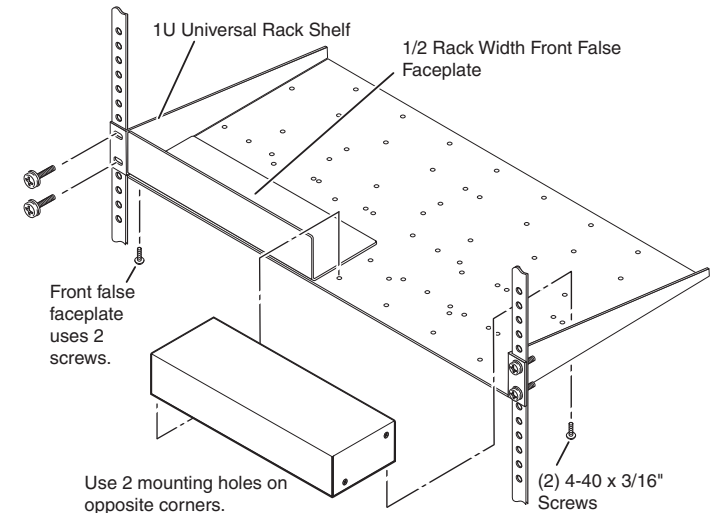
For optional rack mounting, do not install the rubber feet. Mount the switcher on a standard or basic 19" 1U VersaTools™ rack shelf (Extron part #60-190-20 or #60-604-20) or a standard or basic 1U Universal rack shelf (Extron part #60-190-01 or #60-604-01). On the Universal rack shelves, the switcher mounts in one of two locations to the rear of the rack or in one of two locations to the front of the rack.

1. Remove rubber feet if they were previously installed on the bottom of the switcher.
2. Mount the switcher on the rack shelf, using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure it to the shelf (figure 2-1 and figure 2-2).
3. Install blank panel(s) or other unit(s) on the rack shelf.
4. Attach the rack shelf to the rack using the supplied bolts.

**NOTE** Only products in the VersaTools line can be mounted on a VersaTools shelf. Most 1U rack-mountable Extron products can be mounted on the standard shelf.



**Figure 2-1 — Mounting the SW MTP T on a VersaTools rack shelf**



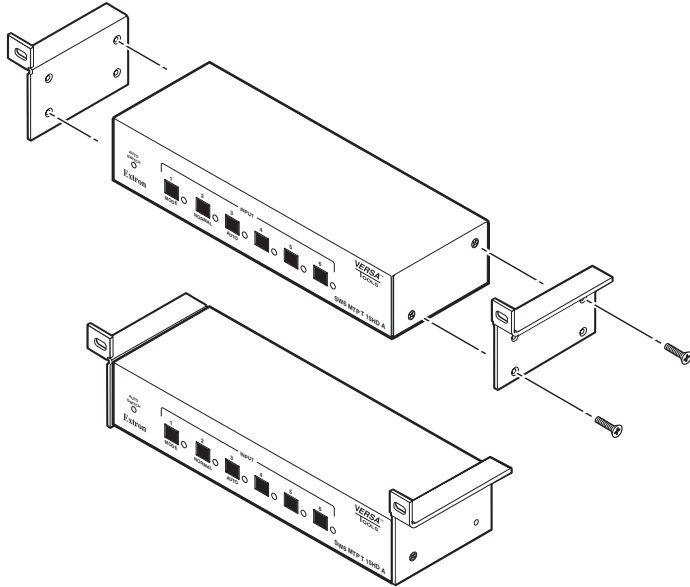
**Figure 2-2 — Mounting the SW MTP T on a 1U universal rack shelf**



# Installation

## Back of the rack mounting

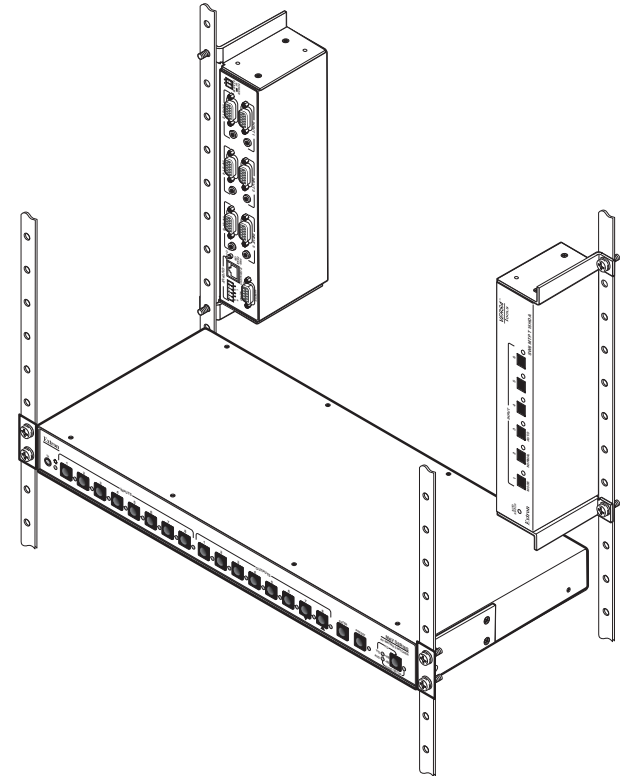
The SW MTP T can be mounted to the rear of a rack using the Extron VersaTools® back-of-the-rack mount kit (part #70-367-01) (figure 2-3). The kit allows the product to be vertically mounted to the front or rear rack supports and facing either towards the front or the rear of the rack.



**Figure 2-3 — Attaching the back of the rack kit**

1. Remove feet from the bottom of the SW MTP T if installed.
2. Remove two screws from one side of the unit. Retain the screws for possible later reassembly without the bracket.
3. Attach one bracket to the side of the unit using the longer screws included in the kit.
4. Repeat steps 2 and 3 on the other side of the unit.
5. Mount the unit to the rack using the two included rack screws (figure 2-4). The SW MTP T can be vertically mounted facing in either direction.

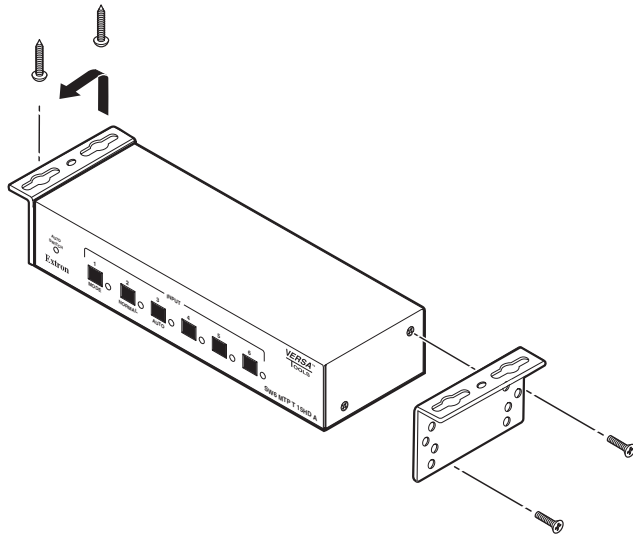
**NOTE** Only VersaTools products and most IP Link can be mounted using the back of the rack mounting kit.



**Figure 2-4 — Typical back of the rack installations**

## Furniture mounting

For furniture mounting, do not attach the rubber feet. Furniture mount the switcher using the optional mounting kit (part #70-212-01) (figure 2-5) as follows:



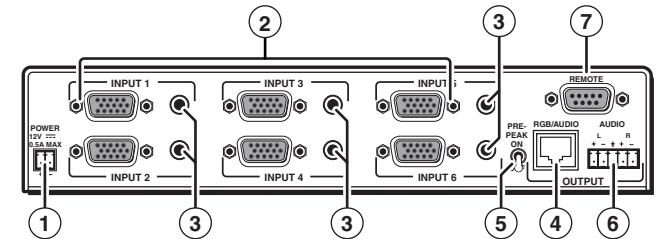
**Figure 2-5 — Attaching the furniture mounting brackets to an SW MTP T**

1. Remove the rubber feet if they were previously installed on the bottom of the switcher.
2. Attach the furniture mounting brackets to the switcher with the provided machine screws.
3. Hold the switcher with the attached brackets against the underside of the mounting surface. Mark the location of the bracket's screw holes on the surface.
4. Drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep in the mounting surface at the marked locations.
5. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" of the screw protrudes.
6. Align the mounting screws with the slots in the brackets and place the switcher against the surface, with the screws through the bracket slots.
7. Slide the switcher slightly forward or back, then tighten all four screws to secure the unit in place.

## Rear Panel Features and Connections

All connectors are on the rear panel (figure 2-6). Depending on the model of the switcher, the number of connectors on the rear panel varies.

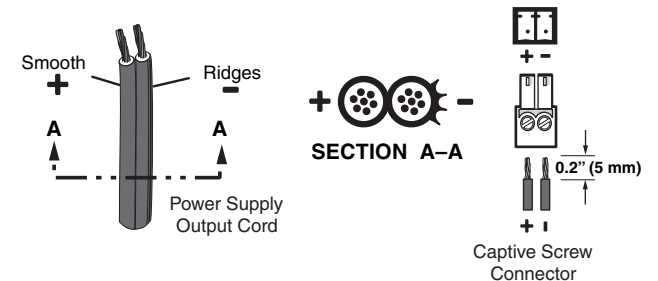
**NOTE** The SW2 MTP T and SW4 MTP T switchers have fewer input connectors but are otherwise identical.



**Figure 2-6 — SW6 MTP T switcher rear panel**

## Power connection

- ① **Power connector**— Plug the external 12 VDC power supply into this 2-pole captive screw connector. Figure 2-7 shows how to wire the connectors.



**Figure 2-7 — Power connector wiring**

**CAUTION** Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the switcher. Identify the power cord negative lead by the ridges on the side of the cord (figure 2-7).

**CAUTION** The length of the exposed (stripped) copper wires is important. The ideal length is 0.2" (5 mm). Longer bare wires can short together. Shorter wires are not as secure in the captive screw connectors and could be pulled out.

**NOTE** Do not tin the stripped power supply leads before installing the captive screw connector. Tinned wires are not as secure in the captive screw connector and could be pulled out.

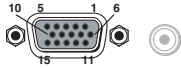
To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

**WARNING** The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

As an alternative, an Extron P/S 100 Universal 12 VDC Power Supply, part #60-357-01, can power up to ten Extron 12 VDC devices using only one AC power connector.

### Signal input connections

- ② **Computer input connectors** — Connect the high resolution or computer inputs (VGA, SVGA, XGA, SXGA, or UXGA) to these female, 15-pin HD connectors. The number of inputs available varies with the switcher model.

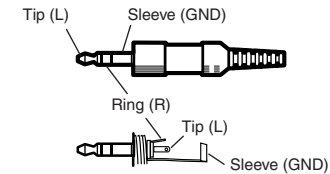


**NOTE** Input only sync signals, no video signals, on the sync pins, 13 and 14.  
 For component video, use the R (R-Y) and R return pins (pins 1 and 6), G (Y) and G return pins (pins 2 and 7), and B (B-Y) and B return pins (pins 3 and 8).  
 For S-video, use the R, R return (C-chroma), G, and G return (Y-luma) pins.  
 For composite video, use the G pin and the associated return pin.

- ③ **Audio input connectors** — Plug a 3.5 mm stereo audio plug into this jack for unbalanced audio input. Wire the plug as shown in figure 2-8. The number of inputs available varies with the switcher model.



**NOTE** Figure 2-8 shows a typical audio connector, which consists of the tip, ring and sleeve. The ring, tip, and sleeve wires are also shown on the audio output captive screw audio connector diagram, figure 2-9.



**Figure 2-8 — 3.5 mm stereo audio plug**

The selected stereo audio input is summed and output on the TP cable as mono audio. The selected input's audio is also available on a captive screw connector in its stereo, unsummed form.

### Signal output connection

- ④ **Output connector** — Connect one end of a terminated TP cable to this RJ-45 female connector.
- Connect the free end of the same TP cable from the switcher to the RJ-45 female connector on the MTP R 15HD A or MTP RL 15HD A receiver.
- See *TP Cable Termination*, on page 2-11, to properly wire the RJ-45 connectors.
- ⑤ **Pre-Peak switch** — The Pre-Peak switch alters the TP signal output to correct for long cable runs. See the table on page 1-4 for suggested switch settings based on the transmitted video format and transmission distance.

## Installation, cont'd

- ⑥ **Audio output connector** — Insert a 3.5 mm, 5-pole, one-piece captive screw audio connector into this connector for stereo audio output. Wire the connector as shown in figure 2-9.

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

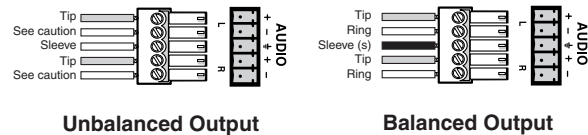


Figure 2-9 — Captive screw audio connector wiring

## Remote connection

- ⑦ **Remote RS-232/contact closure connector** — Connect a computer or control system to this 9-pin D connector to allow remote control using the Simple Instruction Set™ (SIS™) or the Extron graphical control program for Windows (see figure 2-10). See chapter 4, *Remote Control*, for details.

You can also connect a KP 6 remote control keypad (part #60-111-20) or an IR 102 Kit infrared remote control (part #70-224-01) system to this connector.

PIN	RS-232	Contact Closure	Function
1	—	In #1	Input #1
2	TX	—	Transmit data
3	RX	—	Receive data
4	—	In #2	Input #2
5	Gnd	Gnd	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6



Figure 2-10 — Remote connector pinout

**NOTE** The switcher can only be controlled by an RS-232 device OR a contact closure device, not both.

The cable used to connect the Remote port to a computer, control, contact closure device, or IR control kit may need to be modified by removing pins or cutting wires. If unneeded pins are connected, the switcher may hang up. See chapter 4, *Remote Control*, for additional information.

## TP Cable Termination

**NOTE** RJ-45 termination must comply with the TIA/EIA T 568A or TIA/EIA T 568B wiring standards for all connections. If you are using Enhanced Skew-Free A/V UTP cable, then you should use the TIA/EIA T 568A standard only.

Figure 2-11 details the recommended termination of TP cables with RJ-45 connectors in accordance with the TIA/EIA T 568A or TIA/EIA T 568B wiring standards. You can use either standard with CAT 5 cable, but ensure that you use the same standard on both ends of the cable.

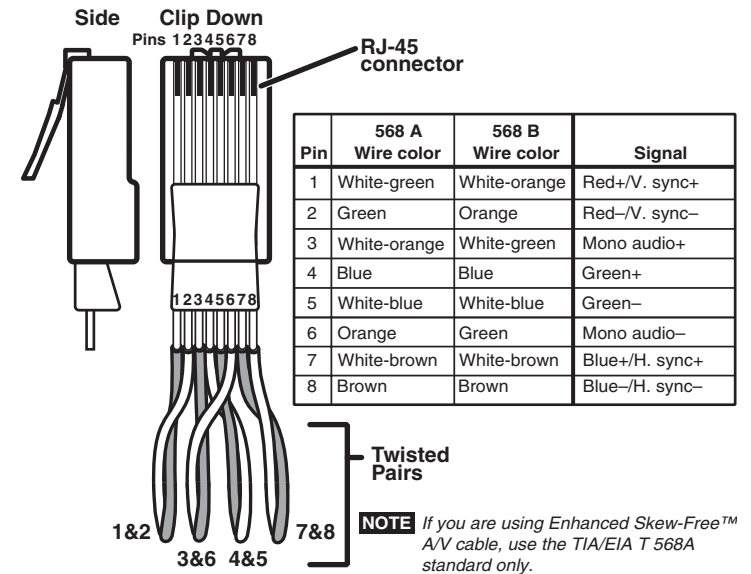


Figure 2-11 — TP cable termination

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

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

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

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



# Chapter Three

## **Operation**

Front Panel Controls and Indicators

Front Panel Operations

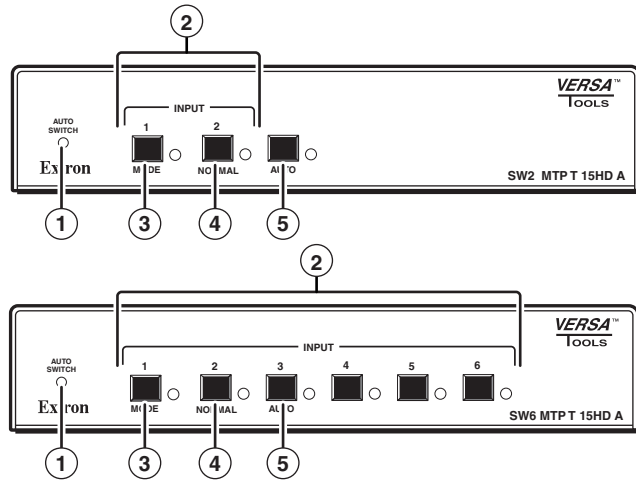
Rear Panel Pre-Peak Switch

Skew Delay Problems

## Front Panel Controls and Indicators

Figure 3-1 shows the controls and indicators on the front panel of the SW2 MTP T 15HD A and SW6 MTP T 15HD A switchers.

**NOTE** *The SW4 MTP T 15HD A switcher has fewer input buttons than the SW6 MTP T 15HD A, but is otherwise identical.*



**Figure 3-1 — SW MTP T switcher front panels**

- ① **Auto Switch LED** — When this LED is on, it indicates that the auto switch mode is active.
- ② **Input selection buttons and LEDs** — When the auto switch mode is off, use these buttons to select an input. The LED for the selected input lights. When audio is broken away (available under RS-232 control only, see chapter 4, *Remote Control*), the selected video input's LED is lit steadily and the selected audio's LED blinks.  
  
The LEDs continue to indicate the selected input when auto switch mode is on. If no input LED is lit, no input has active sync pulses and no input is selected.
- ③ **Mode button** — Use this button, with either the Auto or Normal button, to manually turn auto switch mode on or off.  
  
Mode is a secondary function of the Input 1 button.
- ④ **Normal button** — Use this button, with the Mode button, to manually turn auto switch mode off.

Normal is a secondary function of the Input 2 button.

- ⑤ **Auto button** — Use this button, with the Mode button, to manually turn auto switch mode on.

On 4-input and 6-input switchers, Auto is a secondary function of the Input 3 button.

## Front Panel Operations

Plug in all system components and turn on the input devices (such as desktop computers and laptops) and the output monitors. Select an input. The image should appear on the monitor connected to the selected output.

### Normal and auto switch mode

All SW MTP T switchers can operate in either normal (manual) mode or auto switch mode. In auto switch mode, the highest numbered input with a sync signal present is automatically selected for output. If no sync signal is present, no input is selected. Front panel input selection is blocked while in auto switch mode. However, the front panel LEDs remain functional and the buttons can be used to change the mode.

#### Selecting normal switch mode

Press and **hold** the Input 1/Mode button while you press and release the Input 2/Normal button. The Auto Switch LED turns off, indicating normal switch mode. Release the Input 1/Mode button.

#### Selecting auto switch mode

Press and **hold** the Input 1/Mode button while you press and release the Input 3/Auto button. The Auto Switch LED turns on, indicating auto switch mode. Release the Input 1/Mode button.

### Selecting an input in normal switch mode

To select an input using the front panel buttons, press and release the button for the desired input (must be in normal switch mode). The LED for the selected input lights.

An input can also be selected by an RS-232 device or a remote control device (see chapter 4, *Remote Control*).



### Rear Panel Pre-Peak Switch

The Pre-Peak switch alters the TP signal output to correct for long cable runs. See item ⑤ on figure 2-6 on page 2-7 and on page 2-9 and the table on page 1-4 for suggested switch settings based on the transmitted video format and transmission distance.

### Skew Delay Problems

CAT 5 TP cable can lead to registration errors between the red, green, and blue video signals. Pair skew can be measured with test equipment or identified by viewing a crosshatch test pattern with a critical eye to determine if either the red, green, or blue video image leads (appears to the left of) the other two video images. These images can be minimized or eliminated by one of the following methods:

- Switching to Extron's Enhanced Skew-Free A/V UTP cable
- Adding a skew compensation cable equal to the length of pair skew to the receiver's output
- Installing an SEQ 100 BNC Skew Equalizer on the transmitter's video input or the receiver's video output and adjusting the skew for the leading video image



# 4


## Chapter Four

### Remote Control

- Simple Instruction Set Control
- Windows-Based Program Control
- Contact Closure Remote Control
- IR 102 Infrared Remote Control

## Remote Control

The SW MTP T Series switcher's rear panel Remote connector (Figure 4-1) can be connected to the serial port of a host device, such as a computer or control system, to an Extron IR 102 Kit Universal Remote Control, **OR** to a remote contact closure device. Other than the IR 102 Kit, remote communications with the switcher are via Extron's Simple Instruction Set (SIS™), Extron's Windows-based control program, or pin-programmed in the case of a contact closure device.



PIN	RS-232	Contact Closure	Function
1	—	In #1	Input #1
2	TX	—	Transmit data
3	RX	—	Receive data
4	—	In #2	Input #2
5	Gnd	Gnd	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6

**Figure 4-1 — Remote connector pinout**

The RS-232 protocol for the rear panel Remote connector is as follows:

- 9600 baud
- no parity
- 8-bit, 1 stop bit
- no flow control

**For RS-232 and IR control**, use a control cable with only pins 2, 3, and 5 connected. To accomplish this, either cut the wires to the other pins in hard-shelled connectors, or remove the unneeded pins from molded plugs.

**For contact closure**, use a control cable with pins 2 and 3 **NOT** connected. To accomplish this, either cut the wires to these pins in hard-shelled connectors or remove these pins from molded plugs.

## Simple Instruction Set Control

### Host-to-switcher 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 switcher executes the command and sends a response to the host device. All responses from the switcher 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.

### Switcher-initiated (unsolicited) messages

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

(C) Copyright 2004, Extron Electronics SW $n$  MTP T 15HD A, V $x.xx$  ↵

The switcher issues the copyright message when it first powers on.  $n$  is the number of possible inputs and  $Vx.xx$  is the firmware version number.

All $n$  ↵

The switcher issues the All $n$  message when a front panel input selection operation occurs.  $n$  is the input number.

Sig• $n$ • $n$ • $n$ • $n$ • $n$ • $n$ • $n$ • $n$  ↵

The switcher initiates this message when there is a change in the status of an input.  $n = 1$  indicates video signal present,  $n = 0$  indicates video signal not present. There are as many  $n$ s in the switcher-initiated message as the maximum number of inputs for the models (2, 4, or 6). For example: Sig•1•1•1•0•1•0•0 ↵, in which the input signal is present on inputs 1, 2, 3, and 5 and no signal is present on inputs 4 and 6.

### Error responses

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

E01 ↵ - Invalid input channel number (out of range)

E06 ↵ - Invalid input channel change (auto switch mode active)

E10 ↵ - Invalid command

## 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 the next page. Uppercase or lowercase 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															
20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27	
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B		7C	}	7D	~	7E	DEL	7F

## Symbol definitions

- ↵ = CR/LF (carriage return/line feed) (0x0D 0A)
- = space
- [X1] = Input number            0 through 6 (0 = output mute)
- [X2] = Input signal status    0 = no signal detected,  
   1 = signal detected
- [X3] = On/off status            0 = off  
   1 = on
- [X4] = Firmware version        x.xx
- [X5] = Switch mode              1 = normal switch mode  
   2 = auto switch mode

## Command/response table for SIS commands

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional description
<b>Input selection</b>			
<b>NOTE</b>	<i>The two select video commands, [X1]&amp; and [X1]% can be used interchangeably.</i>		
Select video and audio input	[X1]!	All [X1] ↵	Select input [X1] video and audio.
Select video input only	[X1]&	Vid [X1] ↵	Select input [X1] video only (audio breakaway).
Select video input only	[X1]%	Vid [X1] ↵	Select input [X1] video only (audio breakaway).
Select audio input only	[X1]\$	Aud [X1] ↵	Select input [X1] audio only (audio breakaway).
<b>Read input selection</b>			
<b>NOTE</b>	<i>The two read video input commands, &amp; and % can be used interchangeably.</i>		
Read video input	&	[X1] ↵	Video input [X1] is selected.
Read video input	%	[X1] ↵	Video input [X1] is selected.
Read audio input	\$	[X1] ↵	Audio input [X1] is selected.
<b>Input video sensing</b>			
Request all inputs' status	0S	Sig•[X2]!•[X2]!•...•[X2]!r ↵	Each [X2] response is the signal status of an input, starting from input 1; <i>n</i> is the maximum number of inputs for this model.
<i>Example (SW6 MTP T 15HD A):</i>	0S	Sig•1•1•1•0•1•0 ↵	The input signal is present on inputs 1, 2, 3, and 5. No signal is present on inputs 4 and 6.
Request one input's status	[X1]S	[X2] ↵	[X1]'s signal status = [X2].

Command/response table for SIS commands (continued)

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional description
<b>Video Mute</b>			
Mute video	1B	Vmt[X3]↵	Video mute on
Unmute video	0B	Vmt[X3]↵	Video mute off
Read video mute	B	[X3]↵	Video mute status
<b>Audio Mute</b>			
Mute audio	1Z	Amt[X3]↵	Audio mute on
Unmute audio	0Z	Amt[X3]↵	Audio mute off
Read audio mute	Z	[X3]↵	Audio mute status
<b>Front panel mode</b>			
Set normal switch mode	1#	F1↵	Set switch mode to normal.
Set auto switch mode	2#	F2↵	Set switch mode to auto (auto-switch).
<b>Front panel lockout (executive mode)</b>			
Lock front panel	1x	Exe1↵	Lock front panel.
Unlock front panel	0x	Exe0↵	Unlock front panel.
Read front panel lock	x	[X3]↵	Read front panel lock: 1 = locked, 0 = unlocked.

Command/response table for SIS commands (continued)

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional description
<b>View, information, part number, and firmware requests</b>			
Information request <i>Example</i>	I	V[X1]•A[X1]•F[X5]•Vmt[X3]•Amt[X3]•Exe[X3]↵ V2•A2•F2•Vmt 0•Amt 1•Exe 1↵	Video input 2; audio input 2; front panel mode auto; video not muted, audio muted, panel locked.
Request for part number	N	60-xxx-xx↵	See Appendix A for part numbers.
Query firmware version	Q	[X4]↵	Firmware version x.xx.
<b>Reset</b>			
Master reset	[Esc]Zxxx←	Zpx↵	Unmute video and audio, select manual switch mode, and unlock front panel.

### Windows-Based Program Control

The Universal Switcher Control Program, part #29-031-01, is compatible with Windows 3.1/3.11, Windows 95/98, Windows NT, Windows ME, Windows XP, and Windows 2000 and provides remote control and/or indication of the following:

- Input selection (including audio breakaway for models with video and audio)
- Front panel switch mode selection
- Input sensing indication

Updates to this program can be downloaded from the Extron Web site (<http://www.extron.com>).


### Installing the software

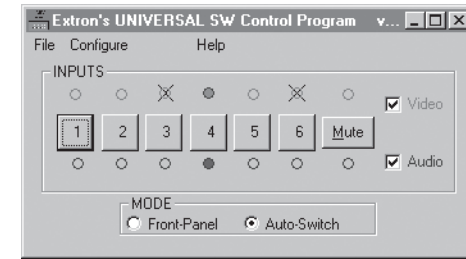
The program is contained on two 3.5" diskettes and must be installed and run from the hard drive.

To install the software on the hard drive, run setup.exe from the floppy disk and follow the screen instructions.

By default, the Windows installation creates a C:\UNIVSW folder and places two icons (Universal Switcher Control Program and Universal Switcher Help) into a group named "Extron Electronics".

### Using the software

1. To run the software, double click on the Universal Switcher Control Program icon in the Extron Electronics program group. 
2. Click on the comm port that is connected to the switcher's RS-232 port.
3. The Extron Universal Switcher Control Program window (Figure 4-2) displays the input signal status for each input (signal present or not present), and the selected input.



**Figure 4-2 — Universal Switcher Control program window**

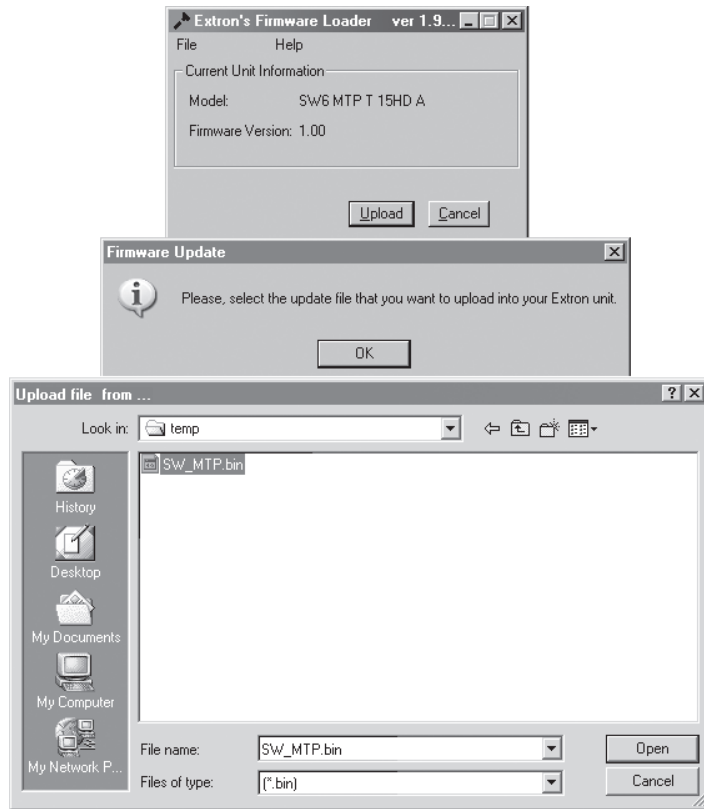
- indicates that the input signal is present and is selected.
- indicates that the input signal is present but not selected.
- ⊗ indicates that the input signal is not present.

### Updating the firmware

The firmware upgrade utility provides a way to replace the firmware that is coded on the switcher's control board without taking the switcher out of service, opening the switcher enclosure, and replacing the firmware chip.

Update the switcher firmware as follows:

1. Visit the Extron web site, [www.extron.com](http://www.extron.com), select the switcher product category, select the latest firmware file for download, and copy it to your computer. Note the folder to which you save the firmware file.
2. Start the Universal Switcher Control Program and connect to the switcher. See *Using the software*, above.
3. Click **File > Update firmware**. The Extron Firmware Loader appears (figure 4-3).



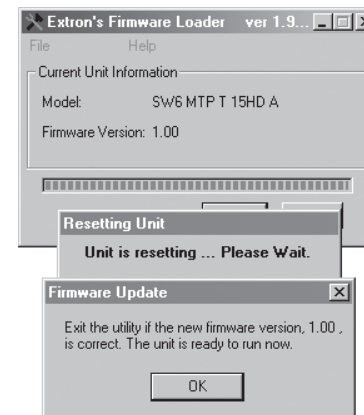
**Figure 4-3 — Open window**

- a. Click *Upload*. The Firmware Update window appears.
  - b. Click *OK*. The open file window appears.
4. Navigate to the folder where you saved the firmware upgrade file. Select the file.

**NOTE** Ensure that the firmware upgrade is for the SW MTP Series switcher.

**NOTE** Valid firmware files must have the file extension ".bin". Any other file extension is **not** a firmware upgrade.

5. Click the *Open* button. A status bar, which shows the progress of the upload, appears in the Firmware Loader window (figure 4-4). The firmware upload to the switcher may take several minutes.



**Figure 4-4 — Firmware Loader status indicator bar, switcher reset, and firmware update**

Once the status bar has progressed fully from left to right across the indicator window, the firmware loader utility automatically resets the switcher (figure 4-4).


**NOTE** If the firmware loader utility exits before the status bar has progressed completely across the indicator window, try using a control cable with only pins 2, 3, and 5 connected. If necessary, modify the cable by removing pins or cutting wires.

6. When prompted, confirm that the firmware version displayed in the firmware loader is correct. Click *Ok* in the Firmware Update prompt window to exit the firmware loader utility.



### Using the help system

For information about program features, you can access the help program in any of the following ways:

- From the Extron Electronics program group, double-click on the Universal Switcher Help icon. 
- From within the Windows-based switcher control program, click on the Help entry on the task bar.
- From within the Windows-based switcher control program, press the F1 key.

### Contact Closure Remote Control

The Remote connector also provides a way to select an input to the switcher using a remote contact closure device. Contact closure control uses pins on the Remote connector that are not used by the RS-232 interface. The contact closure pin assignments are shown in the table on page 4-2.

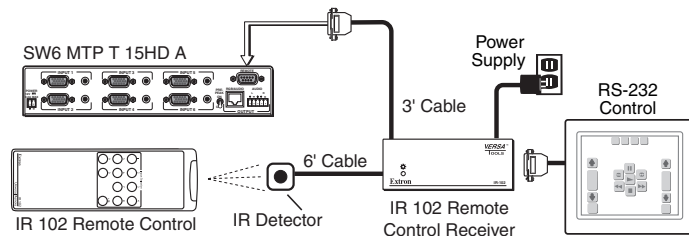
To select a different input number using a contact closure device, momentarily short the pin for the desired input number to logic ground (pin 5). To force one of the inputs to be always selected, leave the short to logic ground in place. The short overrides front panel input selections.

### IR 102 Infrared Remote Control

The optional Extron IR 102 kit consists of the following components:

- IR 102 handheld remote control unit
- VersaTools IR 102 remote receiver with 3' cable and RS-232 connector
- IR detector with 6' cable and captive screw connector
- External 12 VDC power supply

Install and operate the remote control in accordance with the IR 102 User's Guide included with the remote.



**Figure 4-5 — IR 102 Remote application**



# Appendix A

## Reference Information

Specifications

Part Numbers

# Reference Information

## Specifications

### Video

Number/signal type .....	1 set of proprietary analog signals
Connectors .....	1 female RJ-45

### Video input

Number/signal type .....	2, 4, or 6 (depending on the model) analog VGA-UXGA RGBHV, RGBS, RGsB, component video, S-Video or composite video
Connectors .....	2, 4, or 6 (depending on the model) female 15-pin HD
Nominal level .....	1 Vp-p for Y of component video and S-video, and for composite video 0.7V p-p for RGB 0.3V p-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels .....	Analog: 0.3 V to 1 Vp-p with no offset
Impedance .....	75 ohms
Horizontal frequency .....	15 kHz to 130 kHz
Vertical frequency .....	30 Hz to 150 Hz
Return loss .....	<-30 dB @ 5 MHz
DC offset (max. allowable) .....	2 V

### Video output — refer to twisted pair receivers' specifications and manuals

### Sync

Input type .....	RGBHV, RGBS, RGsB
Standards .....	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level .....	2.5 V to 5.5 V
Input impedance .....	560 ohms
Max input voltage .....	5.5 V

### Audio

Number/signal type .....	1 set of proprietary analog signals
Connectors .....	1 female RJ-45
Gain .....	0 dB (unbalanced), +6 dB (balanced)
Frequency response .....	20 Hz to 20 kHz, $\pm 1$ dB
THD + Noise .....	0.03% @ 1 kHz, 0.3% @ 20 kHz
S/N .....	>75 dB at maximum output, unweighted

Crosstalk .....	<-70 dB, @ 20 Hz to 20 kHz, +4 dBu stereo output
Stereo channel separation .....	>62 dB @ 20 Hz to 20 kHz
CMRR .....	>43 dB @ 20 Hz to 20 kHz

### Audio input

Number/signal type .....	2, 4, or 6 (depending on the model) stereo, unbalanced
Connectors .....	2, 4, or 6 (depending on the model) 3.5 mm mini audio jacks (tip, ring, sleeve)
Impedance .....	>10k ohms unbalanced
Nominal level .....	-10 dBV (316 mVrms)
Maximum level .....	+15 dBV, unbalanced, at <1% THD+N

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

### Audio output

Number/signal type .....	1 set of proprietary analog signals to be sent to an MTP receiver 1 stereo, balanced/unbalanced
Connectors .....	1 female RJ-45 (for proprietary signals) (1) 3.5 mm captive screw connector, 5 pole
Impedance .....	50 ohms unbalanced, 100 ohms balanced (for the stereo output)
Gain error .....	$\pm 1$ dB channel to channel (for stereo output)
Maximum level (Hi-Z) .....	>+23 dBu, balanced, at <1% THD+N (for stereo output)
Maximum level (600 ohm) .....	>+17 dBu, balanced at <1% THD+N (for stereo output)
Stereo channel separation .....	>60 dB @ 1 kHz

### Control/remote — switcher/transmitter

Serial control port .....	RS-232, 9-pin female D connector (shared with contact closure)
Baud rate and protocol .....	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Contact closure .....	RS-232, 9-pin female D connector (shared with serial control)
Contact closure pin configurations	1 = input 1, 4 = input 2, 5 = GND, 6 = input 3, 7 = input 4, 8 = input 5, 9 = input 6

## Reference Information, cont'd

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

### General

Power ..... Supplied by an external power supply

**NOTE** *The SW MTP Series transmitters cannot supply remote power to or receive remote power from attached receivers.*

External power supply ..... 100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 12 VDC, 1 A, regulated

Power input requirements ..... 12 VDC, 0.5 A

Temperature/humidity ..... Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, noncondensing  
Operating +32° to +122°F (0° to +50°C) / 10% to 90%, noncondensing

Rack mount ..... Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01; or VersaTools® rack shelf, part #60-190-20 or 60-604-20  
Also furniture mountable with optional Under-Desk Mounting Kit #70-212-01

Enclosure type ..... Metal

Enclosure dimensions ..... 1.75" H x 8.75" W x 3.0" D (1U high, half rack wide)  
4.4 cm H x 22.2 cm W x 7.6 cm D (Depth excludes connectors and toggle switch.)

Product weight ..... 0.8 lbs (0.4 kg)

Shipping weight ..... 3 lbs (2 kg)

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

Listings ..... UL, CUL

Compliances ..... CE, FCC Class A, VCCI, AS/NZS, ICES

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

### Switchers

Switcher Models	Part number
SW2 MTP T 15HD A	60-648-01
SW4 MTP T 15HD A	60-649-01
SW6 MTP T 15HD A	60-650-01

### Included Parts

Included Parts	
External power supply	28-071-01
Tweaker	
Universal Switcher Control Program	
SW MTP T Series Switcher User's Manual	

### Accessories

Accessories	Part number
19" 1U Universal Rack Shelf	60-190-01
19" 1U Basic Rack Shelf	60-604-01
VersaTools universal rack shelf	60-190-20
VersaTools basic rack shelf	60-604-20
VersaTools back of the rack mounting kit	70-367-01
VersaTools furniture mounting kit	70-212-01
Mac HV/VGA adapter	26-340-02
SY-VGA/XGA	26-173-01
KP 6 remote control	60-111-20
IR 102 remote control kit	70-224-01

### Cables

Male-to-female VGA audio cables	Part number
VGA 3' HRA	26-491-01
VGA 6' HRA	26-491-02

## Reference Information, cont'd

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Enhanced Skew-Free™ A/V cable	Part number
<b>NOTE</b> <i>Enhanced Skew-Free™ A/V UTP cables are not recommended for Ethernet/LAN applications.</i>	
Enhanced Skew-Free A/V cable (cut, various lengths)	26-569-xx
Enhanced Skew-Free A/V 1000' (Bulk) (non-plenum)	22-141-03
Enhanced Skew-Free A/V 1000' (Bulk) (plenum)	22-142-03

RJ-45 connector	Part number
CAT 6 jack (black)	10-463-10
CAT 6 jack (red)	10-463-11
CAT 6 jack (blue)	10-463-12
CAT 6 jack (orange)	10-463-13
CAT 6 jack (gray)	10-463-14
CAT 6 jack (white)	10-463-15
CAT 6 jack (ivory)	10-463-16

