Extron® Electronics
INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

TSC 100

Transcoding Standards Converter

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.

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

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

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

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll 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 el manual de instrucciones, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian 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 le désactiver.

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

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

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'Il y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement 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 Erdanschluß, 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 Stomversorgung (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 dagegengestellt 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 puentearia ni eliminaria.

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

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

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

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

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

FCC Class A Notice

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

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

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of 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:	**Europe, Africa, and the Middle East:**
Extron Electronics 1230 South Lewis Street Anaheim, CA 92805, USA	Extron Electronics, Europe Beeldschermweg 6C 3821 AH Amersfoort The Netherlands
Asia:	**Japan:**
Extron Electronics, Asia 135 Joo Seng Road, #04-01 PM Industrial Bldg. Singapore 368363	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 — TSC 100

To install and set up the TSC 100, follow these steps:

Step 1
Turn all of the equipment off and disconnect it from the power source.
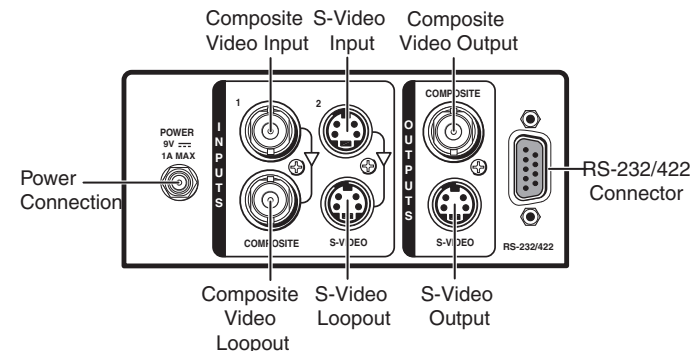
Step 2
Rack mount the TSC 100, or place it on a desktop. See "Rack Mounting the TSC 100" in chapter 2, *Installation and Operation*.

Step 3
Attach the input cable(s). See "Cabling the TSC 100" in chapter 2, *Installation and Operation*.
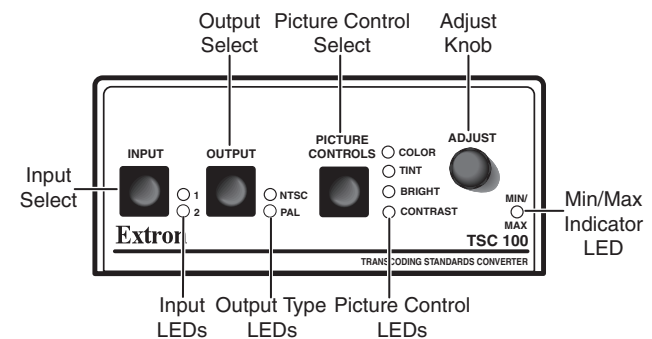
Step 4
Attach output and loopout cables, then attach an RS-232/422 controller (if desired).

Step 5
Connect power cords and turn on the equipment in the following order: output devices (projectors, monitors, etc.), RS-232 controller, TSC 100, and input devices (DSS, cable boxes, etc.).

Quick Start Guide — TSC 100, cont'd

Step 6
Select an input and an output standard using the front panel buttons or the RS-232 controller.

Step 7
The picture should now appear. If not, ensure that all devices are plugged in and receiving power. Check the cabling and make adjustments as needed. Select a different input to check for a display.

Optimizing the Video

Step 1
Complete the basic setup (described above) and obtain a picture on the output display.

Step 2
Select Aspect Ratio Preset or size and center the image through the control program (see to page 2-6), if needed.

Step 3
Adjust top and bottom blanking, if needed, to remove edge noise.

Step 4
Using the Picture Controls button, select *Brightness*, then adjust the level using the Adjust knob.

Step 5
Using the Picture Controls button, select *Contrast*, then adjust the contrast using the Adjust knob.

Step 6
Using the Picture Controls button, select *Color*, then adjust the color using the Adjust knob.

Step 7
Using the Picture Controls button, select *Tint*, then adjust the tint using the Adjust knob (see example illustration below).
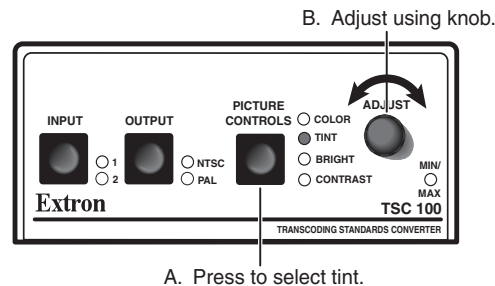
B. Adjust using knob.

A. Press to select tint.

Table of Contents

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TSC 100

1

Chapter One

Introduction

About the TSC 100

Features

Introduction

About the TSC 100

The Extron TSC 100 is a transcoder and standards converter that allows worldwide compatibility with video standards such as NTSC 3.58, NTSC 4.43, SECAM, and PAL. As a transcoder, it is able to take one video format, such as an analog composite signal, and transcode it into another video format, such as an S-video signal. It provides picture adjustment capability as well as RS-232/RS-422 control.

Inputs, output standard (NTSC or PAL), and picture controls are selectable from the front panel. RS-232/RS-422 communication is available for several advanced features, including autoswitching, top and bottom blanking, and several sizing options.

The TSC 100 ships with an external, desktop, 9 VDC power supply, which accepts 100-240VAC input.

Features

Autoswitching ability — The TSC 100 can be set to detect an active S-video signal and automatically switch to S-video when active (RS-232/RS-422 activated).

Factory aspect ratio presets — Three predetermined sizing and centering settings for PAL and NTSC output are stored in the TSC 100 and are selectable through RS-232 or RS-422.

Picture controls — Color, tint, contrast, and brightness can be adjusted through the front panel, and sizing and centering through RS-232 or RS-422.

Choice of black screen or color bars with no input signal — The TSC 100 will output either a black screen or Color Bars, whichever the user prefers, when no input signal is detected (RS-232/RS-422 activated).

Encoder/decoder — Encodes an S-video input signal (on a 4-pin mini DIN connector) to composite video output (on a BNC connector) and decodes composite input signal (on a BNC connector) to an S-video output (on a 4-pin mini DIN connector).

Executive Mode — The TSC 100 can be set to executive mode, which locks the front panel and prevents unauthorized changes to important settings.

Standards converter — The TSC converts a PAL video input signal to an NTSC video output and converts an NTSC video input signal to a PAL video output.

Variable top and bottom blanking — The TSC 100 allows the user to eliminate edge noise caused by tape head switching and captioning.

TSC 100

2

Chapter Two

Installation and Operation

Rack Mounting the TSC 100

Connections

Operation

Troubleshooting

Installation and Operation

Rack Mounting the TSC 100

In addition to using the TSC 100 on a desktop, it can also be rack mounted. To rack mount the TSC 100, follow the installation instructions below.

For optional rack mounting, mount the TSC 100 on a standard, 19" 1U Rack Shelf (Extron part #**60-190-01**) (figure 1) in one of four locations on the front of the rack.

1. If feet were previously installed on the bottom of the TSC 100, remove them.

2. Mount the TSC on the rack shelf using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the TSC 100 to the shelf.

3. Install blank panel(s) or other unit(s) to the rack shelf.

4. Insert the shelf into the rack, aligning the holes in the shelf with those of the rack.
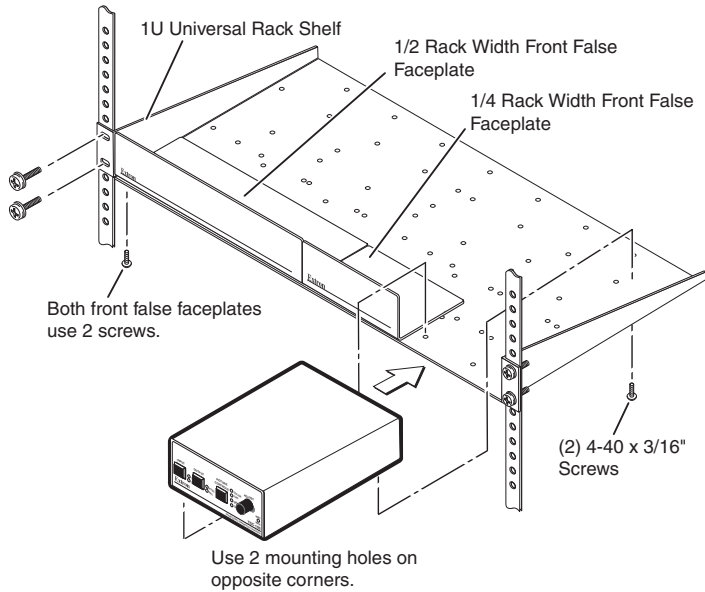

Figure 1 — Rack mounting the TSC 100

5. Secure the shelf to the rack using the supplied machine screws.

This shelf can only be mounted in the front of the rack.

Connections

All connections, including power, input and output, and control, are on the rear panel of the TSC 100. See figure 2.
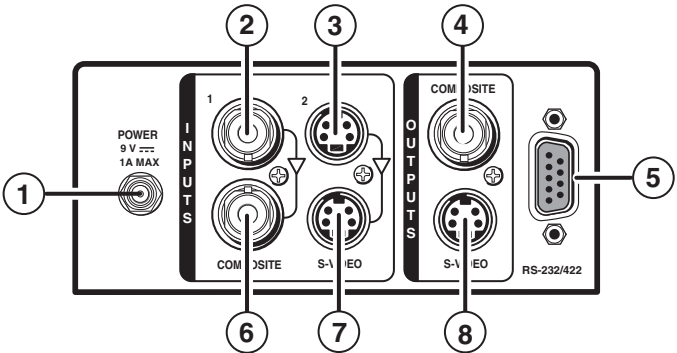
Figure 2 — TSC 100 rear panel

Rear panel connections

① **Power connection —** Plug the external 9 VDC power supply into this connector. The power supply is included with the unit.

② **Input 1 composite BNC connector —** Connect one BNC female connector for composite video input.

③ **Input 2 S-video 4-pin mini DIN connector —** Connect one 4-pin mini DIN connector for S-video input.

④ **Output composite BNC connector —** Connect one BNC female connector for composite video output.

⑤ **RS-232/422 connector —** Use this connector for RS-232 or RS-422 communications and control. Connect an RS-232 or RS-422 device (control system or PC computer) for remote switching between inputs and remote centering control to this female 9-pin D connector (see below).

Pin	RS-232	Description	RS-422	Description
1	—	—	—	—
2	Tx	Transmit data	Tx-	Transmit data (-)
3	Rx	Receive data	Rx-	Receive data (-)
4	—	—	—	—
5	Gnd	Signal ground	Gnd	Signal ground
6	—	—	—	—
7	—	—	Rx+	Receive data (+)
8	—	—	Tx+	Transmit data (+)
9	—	—	—	—

Software for RS-232 or RS-422 control is included with the TSC 100. See chapter 3, *Serial Control* for details.

6 **Buffered loopout composite BNC connector —** Connect one BNC female connector for buffered composite loopout.

7 **Buffered loopout S-video 4-pin mini-DIN connector** — Connect one 4-pin mini DIN connector for buffered S-video loopout.

8 **Output 4-pin S-video mini DIN connector —** One 4-pin mini DIN connector for S-video output.

Cabling the TSC 100

Use high resolution cable for all video input and output connections. Refer to the Appendix.

To cable the TSC 100, connect the input and output devices to the device using figure 3 as a guide.
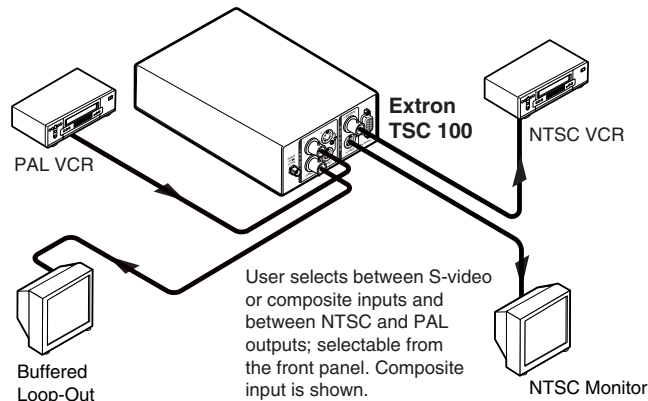

Figure 3 — Example application

Operation

Connect power cords and turn on the display output devices (projectors, monitors, VCRs), interface, and input devices (DSS, cable box, DVD). The system is ready for operation.

Select an input from the front panel button or the remote control (RS-232). The image should now appear on screen. If not, ensure that all devices are plugged in and receiving power. Check the cabling and button settings, and make adjustments as needed. Select a different input to check for a picture.

If problems persist, see *Troubleshooting* in this chapter. If the

troubleshooting tips do not help, call the Extron S[3] Sales & Technical Support Hotline.

Front panel controls and indicators

The TSC 100's controls and indicators are located on the front panel (figure 4). Push buttons are used to select the input source, output standard, and picture controls (Color, Tint, Bright, and Contrast), and LEDs indicate the options selected. An Adjust knob is provided to make adjustments to the picture control element selected.
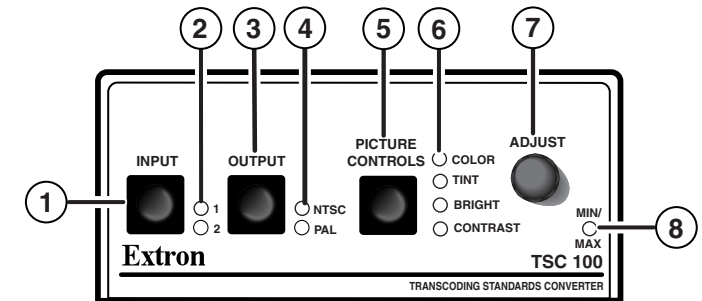
Figure 4 — TSC 100 front panel

1 **Input selector button** — Press this button to select between input 1 (composite) and input 2 (S-video).

2 **Input selection indicator LEDs** — A green LED lights to indicate which input is selected.

3 **Output selector button —** Press this button to select between NTSC or PAL output on the composite or S-video output connectors.

4 **Output selection indicator LEDs —** A yellow LED lights to indicate which standard output (NTSC or PAL) is selected.

5 **Picture Controls button —** Press this button to select the element of the picture to be adjusted by the Adjust knob 7 (either Color, Tint, Bright, or Contrast).

6 **Picture Controls selection indicator LEDs —** A yellow LED lights to indicate the element of the picture selected for adjustment.

7 **Adjust knob —** Rotate this knob to adjust the element of the picture selected by the Picture Controls button and indicated by the Picture Controls selection indicator LED.

(8) **Min / Max indicator LED** — A red LED lights to indicate when the minimum or maximum adjustment levels are reached.

Presets

When PAL is converted to NTSC or when NTSC is converted to PAL, the aspect ratio of the display can be distorted. In order to correct this distortion, six presets (shown in figure 5) are available. Please refer to chapter three, *RS-232 Control,* for information on choosing and using these presets.

NTSC Converted to PAL

Preset #1 Center Horizontally

Preset #2 Scale Up Vertically

Preset #3 Scale Down Horizontally

NTSC   PAL   PAL   PAL

PAL Converted to NTSC

Preset #1 Center Horizontally

Preset #2 Scale Down Vertically

Preset #3 Scale Up Horizontally

PAL   NTSC   NTSC   NTSC
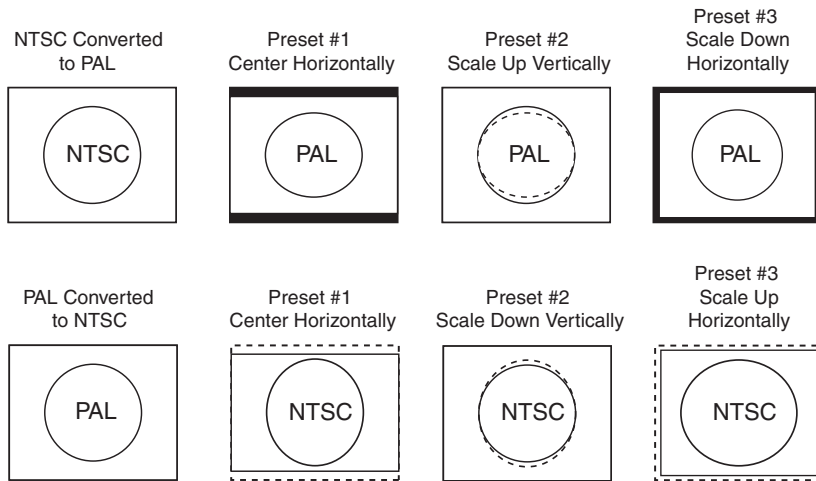
Figure 5 — Preset aspect ratios

Troubleshooting

Turn on the input devices (DVD, DSS, cable box) and output device(s) (VCRs, monitors, projectors). The image should now appear on the screen.

1. Ensure that all devices are plugged in.

2. Make sure that each device is receiving power. The TSC's front panel LEDs light if the device is receiving power and an active sync signal.

3. Check the cabling and grounding, and make adjustments as needed.

4. To ensure correct cabling from the TSC to the display device, turn on the Color Bars output, using an SIS command, and disconnect the input signal.

5. Check that the appropriate output standard is selected.

6. To test the system setup and output, substitute a video test generator (VTG) for one of the video inputs. To use a VTG, unplug the input and output devices and the TSC's power cord, replace the video source with a VTG, then reconnect power cord to restore AC power.

7. Call the Extron S[3] Sales & Technical Support Hotline if needed.

3

Chapter Three

Serial Control

Programmer's Guide for Serial Communication

Control Software for Windows®

Programmer's Guide for Serial Communication

The TSC 100 can be controlled by a host computer or other control device via an RS-232/422 connection with the following protocol:

• 9600 baud

• 1 stop bit

• no parity

• no flow control

The control device can use either Extron's Simple Instruction Set™ (SIS™) or the Extron graphical control program for Windows®.

The rear panel RS-232 9-pin D connector has the following pin assignments:

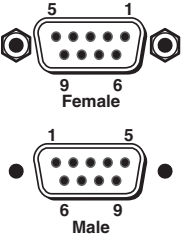| Pin	RS-232	Description	RS-422	Description
1	—	—	—	—
2	Tx	Transmit data	Tx-	Transmit data (-)
3	Rx	Receive data	Rx-	Receive data (-)
4	—	—	—	—
5	Gnd	Signal ground	Gnd	Signal ground
6	—	—	—	—
7	—	—	Rx+	Receive data (+)
8	—	—	Tx+	Transmit data (+)
9	—	—	—	—

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the TSC 100 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the TSC 100 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.

Device-initiated messages

When a local event such as an input selection occurs, the TSC 100 responds by sending a message to the host. No response is required from the host. The device-initiated message is shown below (underlined).

(C)COPYRIGHT 2002, EXTRON ELECTRONICS TSC 100, Vx.xx ↵

The device displays the copyright message when it first powers on. Vx.xx is the firmware version number.

Error responses

When the TSC 100 receives a valid SIS command, it executes the command and sends a response to the host device. If the device is unable to execute the command because the command is invalid or contains invalid parameters, it returns an error response to the host. The error response codes and their descriptions are as follows:

E01 — Invalid input channel number (too large)

E09 — Invalid function number (too large)

E10 — Invalid command

E13 — Invalid value (out of range)

Using the command/response table

The table on page 3-4 lists the commands that the switcher recognizes as valid, the responses that are returned to the host, a description of the command's function or the results of executing the command, and an example of each command. Lower case characters are acceptable in the command field only where indicated.

Symbol definitions are shown at the beginning of the table. An ASCII to HEX conversion table is provided in figure 6.

ASCII to HEX Conversion Table									Esc	1B	CR	ØD	LF	ØA
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	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	5Ø	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
`	6Ø	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	7Ø	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

Figure 6 — ASCII-to-HEX conversion table

Symbol definitions

↵ = CR/LF (carriage return/line feed)

• = Space

[X1] = Input number (1 = composite, 2 = S-video)

[X2] = Adjustment range (0-255)

[X3] = Adjustment range (0-100)

[X4] = 0 = on, 1 = off

[X5] = Video input Standard — 0 = None, 1 = NTSC, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM

[X6] = Video output standard — 1 = NTSC, 2 = PAL

[X7] = Adjustment range (0-127)

[X8] = Adjustment range (0-210)

Command/response table for SIS commands

Command	ASCII Command (host to TSC 100)	Response (TSC 100 to host)	Additional description
Input selection			
Select input source	[X1]!	Chn [X1] ↵	Set the input source.
Video output standard			
Set video output standard	[X6] =	Rte [X6] ↵	Set the video output standard to [X6].
Example:	1=	1↵	Video output type is 1 (NTSC).
View video type	=	[X6]↵	Output video type is [X6]
Color			
Specific value	[X7]C	Col [X7] ↵	Select color value [X7] (0-127).
Example:	29C	Col 29 ↵	Select color value of 29.
Increment color value	+C	Col [X7] ↵	Select the next higher color value.
Decrement color value	-C	Col [X7] ↵	Select the next lower color value.
View color value	C	[X7] ↵	View the current color value setting.
Tint			
Specific value	[X2]T	Tin [X2] ↵	Select tint value [X2] (0-255).
Example:	29T	Tin 29 ↵	Select tint value of 29.
Increment tint value	+T	Tin [X2] ↵	Select the next higher tint value.
Decrement tint value	-T	Tin [X2] ↵	Select the next lower tint value.
View tint value	T	[X2] ↵	View the tint value.
Contrast			
Specific value	[X7] ^	Con [X7] ↵	Selects contrast value [X7] (0-127).
Example:	29 ^	Con 29 ↵	Selects contrast value of 29.

Serial Control, cont'd

Command/response table for SIS commands (cont'd)

Command	ASCII Command (host to TSC 100)	Response (TSC 100 to host)	Additional description
Contrast (continued)			
Increment contrast value	+^	Con [X7]↵	Select the next higher contrast value.
Decrement contrast value	-^	Con [X7]↵	Select the next lower contrast value.
View contrast value	^	[X7]↵	View the current contrast value setting.
Brightness			
Specific value	[X2]Y	Brt [X2]↵	Select brightness value [X2] (0-255).
Increment color value up	+Y	Brt [X2]↵	Select the next higher brightness value.
Decrement color value down	-Y	Brt [X2]↵	Select the next lower brightness value.
View color value	Y	[X2]↵	View the current brightness value setting.
Horizontal shift			
Specific value	[X2]H	Hph [X2]↵	Sets horizontal centering to [X2] (0-255).
Increment	+H	Hph [X2]↵	Shift right.
Decrement	-H	Hph [X2]↵	Shift left.
View	H	Hph [X2]↵	View the horizontal centering value.
Vertical shift			
Specific value	[X2]/	Vph [X2]↵	Sets vertical centering to [X2] (0-255).
Increment	+/	Vph [X2]↵	Shift right.
Decrement	-/	Vph [X2]↵	Shift left.
View	/	Vph [X2]↵	View the vertical centering value.
Horizontal size			
Specific value	[X2]:	Hsz [X2]↵	Sets horizontal size to [X2] (0-255).
Increase size	+:	Hsz [X2]↵	Widen the picture.
Decrease size	-:	Hsz [X2]↵	Make the picture narrower.
View	:	Hsz [X2]↵	View the horizontal size value.

Command	ASCII Command (host to TSC 100)	Response (TSC 100 to host)	Additional description
Vertical size			
Specific value	[X8];	Vsz [X8]↵	Set the vertical size to [X8] (0-210).
Increase size	+;	Vsz [X8]↵	Make the picture taller.
Decrease size	-;	Vsz [X8]↵	Make the picture shorter.
View	;	Vsz [X8]↵	View the vertical size setting.
Executive mode			
Enable executive	1X	Exe1↵	Lock the front panel. RS-232 adjustments only.
Disable executive	0X	Exe0↵	Unlock the front panel.
View status	X	[X4]↵	Show the executive mode status.
Top blanking			
Specific value	[X3](	Blt [X3]↵	Set the number of lines to blank at the top of the picture.
Increase top value	+(	Blt [X3]↵	Increase the number of top lines blanked.
Decrease top value	-(	Blt [X3]↵	Decrease the number of top lines blanked.
View top value	(	Blt [X3]↵	View the number of lines blanked at top.
Bottom blanking			
Specific value	[X3])	Blb [X3]↵	Set number of lines to blank at the bottom of the picture.
Increase top value	+)	Blb [X3]↵	Increase the number of bottom lines blanked.
Decrease top value	-)	Blb [X3]↵	Decrease the number of bottom lines blanked.
View top value	)	Blb [X3]↵	View the number of lines blanked at bottom.

Miscellaneous commands

Command	ASCII Command (host to TSC 100)	Response (TSC 100 to host)	Additional description
Test Pattern: Enable color bars	1J	Tst1↵	Show Color Bars test pattern.
Disable color bars	0J	Tst0↵	Remove Color Bars test pattern.
View status	J	[X4]↵	
Reset: ZAP (reset to default settings)		Esc zXXX ↓	Zpx↵ Reset everything; all settings and adjustments revert to factory default.
Information Requests:			
Query software version	q/Q	x.xx ↵	Shows the controller firmware version.
Request part number	n/N	XX-XXX-XX	Displays the Extron part number.
Request information	i/I	C [X1]•Typ[X5]↵	Typ [X5] displays the type of input signal that is automatically sensed by the decoder. This cannot be changed.

Command/Response Table for Special Function SIS Commands

The syntax for setting a special function is [X2] * [X1] [X?] # , where [X?] is the function number and [X1] is the value. To view a function's setting, use [X2] #, where [X2] is the function number. In the following table, the values of the [X2] variable are different for each command/function. These values are given in the rightmost column.

| Command	ASCII Command (host to TSC 100)	Response (TSC 100 to host)	Additional description
Autoswitch	10*[X4]#	Aut [X4]↵	0 = Off (default), 1 = On. Enable autoswitch mode.
Example	10*1#	Aut 1↵	
Color bars	2 * [X1]#	Blk [X1]#↵	0 = Off (black screen with no input signal). 1 = On (Color Bars Display on output) Enable Color Bars Display on output.
Example	2*1#	Blk 1↵	
Aspect Ratio	5*[X1] #	Asp [X1]↵	x! = 1, 2, or 3 (see *Figure 7*). Enable aspect ratio #1.
Example	5*1#	Asp 1↵	
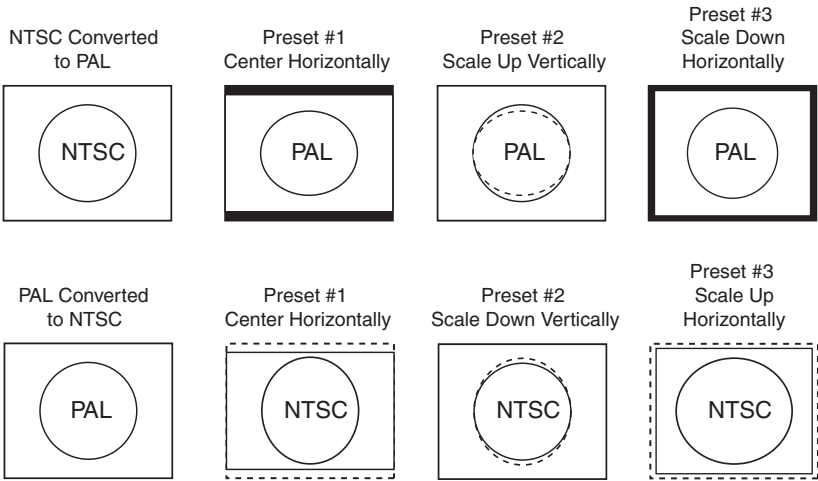
Figure 7 — Aspect Ratio Presets

Control Software for Windows

The included graphical control software for Windows offers another way to control the TSC 100 via RS-232/422 in addition to the Simple Instruction Set commands listed on the previous pages. The TSC 100 uses Extron's Signal Enhancement Products Control Program, which is included with these interfaces. The control software is compatible with Windows 3.1x, Windows 95/98, and Windows NT.

Installing the software

To install the software onto the hard drive, run SETUP.EXE from the floppy disk, and follow the instructions that appear on the screen. The program requires approximately 2 MB (megabytes) of hard disk space.

By default the installation creates a C:\TSC 100 directory, and it places two icons (TSC 100 Control Pgm and TSC 100 Help) into a group or folder named "Extron Electronics".

Using the software

To run the control program, follow these steps:

1. Double-click on the TSC 100 Control Pgm icon in the Extron Electronics group. The Comm menu will appear on the screen.

2. Click on the comm port that is connected to the interface's RS-232 port. The control software will "look for" the interface at that port and read its configuration.

The control program window (shown below) will appear and display current settings.

ENHNC

Signal
Enhancement
Products
Control Pgm

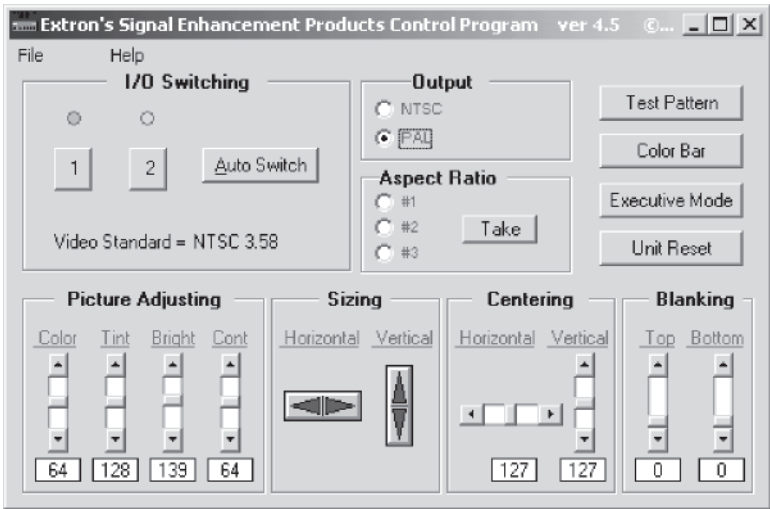*Figure 8 — Control program window*

Using the help system

For information on program features, press the F1 computer key or click on the Help menu from within the control program, or double-click on the TSC 100 Help icon in the Extron Electronics group or folder.

Signal
Enhancement
Products Help

TSC 100

Appendix A

Specifications, Part Numbers, and Accessories

Specifications

Parts

Specifications, Part Numbers, and Accessories

Specifications

Video

Gain	Unity
Bandwidth	10 MHz (-3 dB)
Differential phase error	0.3º at 3.58 MHz and 4.43 MHz
Differential gain error	0.36% at 3.58 MHz and 4.43 MHz
Crosstalk	-60 dB @ 3.58 MHz

Video input

Number/signal type	1 NTSC/PAL S-video 1 NTSC/PAL composite video
Connectors	2 female 4-pin mini DIN (1 input, 1 buffered loop out) 2 female BNC (1 input, 1 buffered loop out)
Nominal level	1 Vp-p for Y of S-video and for composite video 0.3 Vp-p for C of S-video
Minimum/maximum level(s)	S-video .... luma: 2 Vp-p chroma: 0.6 Vp-p Composite video: 2 Vp-p with no offset
Impedance	75 ohms
Return loss	<-13 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video processing

Decoder	9 bit digital
Encoder	10 bit digital
Digital sampling	24 bit, 8 bits per color
Colors	16.78 million

Video output

Number/signal type	1 S-video and composite video
Connectors	1 female 4-pin mini DIN 1 female BNC
Nominal level	1 Vp-p for Y of S-video and for composite video 0.3 Vp-p for C of S-video
Minimum/maximum levels	0 V to 2.0 Vp-p
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz

DC offset	±5 mV maximum

Sync

Standards	
Sync input	NTSC 3.58, NTSC 4.43, PAL, SECAM
Sync output	NTSC 3.58, PAL

Control/remote — transcoder/converter

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

General

External power supply	100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 9 VDC, 1 A, regulated
Power input requirements	9 VDC, 0.20 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 rack shelf, part #60-190-01
Enclosure type	Metal
Enclosure dimensions	1.75" H x 4.4" W x 6.5" D (1U high, quarter rack wide) 4.4 cm H x 11.1 cm W x 16.5 cm D (Depth excludes connectors and knobs.)
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.*

Specifications, Part Numbers, Accessories, cont'd

Parts

Included Parts

These items are included in each order for a TSC 100:

Included parts	Replacement part number
TSC 100	60-451-01
9 VDC, 1A external power supply	70-056-01
TSC 100 User's Manual	

Accessories

Accessories	Part number
Through-desk mounting bracket kit	70-077-02
19" 1U Universal Rack Shelf	60-190-01

Cables

Cables	Part number
S-video cable, up to 100' (various lengths)	26-316-xx
Superflex SHR cable, BNC (various lengths)	26-383-xx
RS-232 cable, male-to-female (var. lengths)	26-433-xx

Adapters

Adapters	Part number
Male S-video to 2 female BNCs, 8"	26-353-01
Male S-video to 2 male BNCs (var. lengths)	26-353-xx
Female S-video to 2 female BNCs, 8"	26-541-01
Female S-video to 2 male BNCs (var. lengths)	26-541-xx