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User's Manual



IN1502

Video Scaler

68-1205-01 **Rev. D**
02 08

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.

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.

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.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

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

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas 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'll 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.

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.

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.

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 especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

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 sobrecalientamiento 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.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. 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 with FCC emissions limits.*

Quick Start — IN1502

Installation

Step 1

See the application example below. Turn off power to the scaler and input and output devices, and remove power cords from them.

Step 2

Install the four rubber feet on the bottom of the IN1502 scaler, or mount the scaler in a rack.

Step 3

Attach input devices to the scaler.

Rear panel video inputs



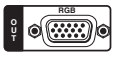
Input 1: Composite video

Input 2: S-video

Step 4

Attach an output device to the scaler.

Rear panel video output



Output 15-pin HD connector

Step 5

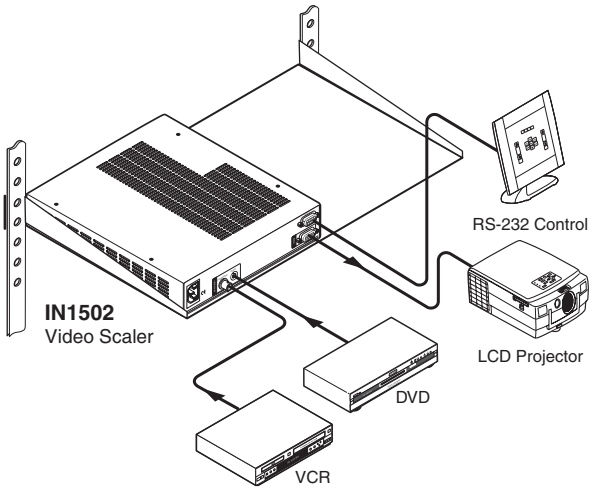
Plug the IN1502 and input and output devices into a grounded AC source, and turn on the input and output devices.

Step 6

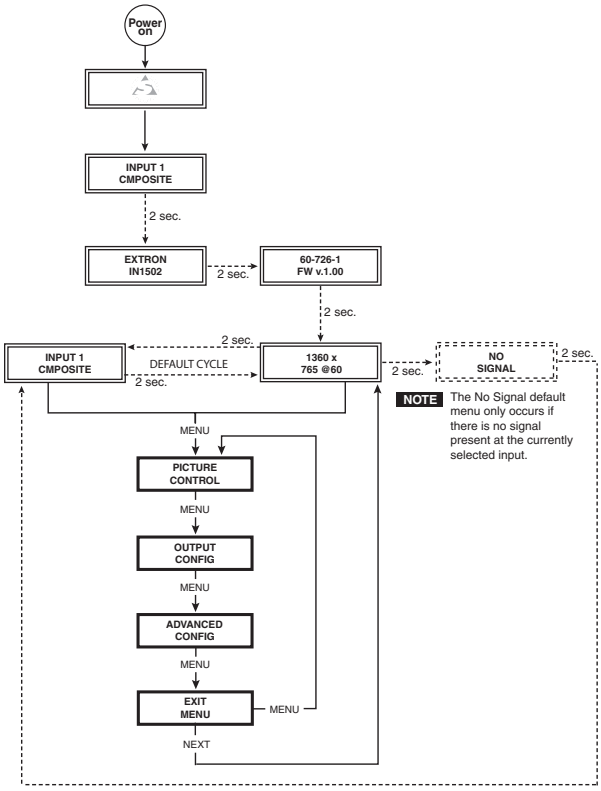
Use the LCD menu screens or RS-232 programming to configure the scaler. See chapter 2 for installation and operation procedures, and see chapter 3 for programming information.



Application example



Main menus



Output rates

Scaler Output Resolutions and Rates		
Resolution	50 Hz	60 Hz
640 x 480	X	X
800 x 600	X	X
848 x 480	X	X
852 x 480	X	X
1024 x 768	X	X*
1280 x 768	X	X
1360 x 765	X	X
1366 x 768	X	X

* The default resolution and rate is 1024 x 768 @ 60Hz.

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Chapter 1 One

Introduction

About this Manual

About the IN1502

Features and Options

Introduction

About this Manual

This manual describes how to install, configure, and operate the Extron IN1502 video scaler and how to operate the optional IR 901 infrared remote control (part #70-152-01).

Throughout this manual the terms “IN1502”, “video scaler”, and “scaler” are used interchangeably to refer to the same product.

About the IN1502

What is the IN1502?

The IN1502 is a video scaler that offers 16 output rates and provides scaling solutions for boardrooms, conference rooms, and home theaters, as well as rental and staging applications.

To enable superior scaling performance, the IN1502 features several of Extron’s patented and patent-pending technologies, including Dynamic Motion Interpolation (DMI™) technology, and 3:2 and 2:2 pulldown detection. DMI is an advanced motion detection and compensation method that enables image enhancement with no loss of image fidelity.

The IN1502 scales composite video and S-video up to computer video (RGBHV/RGBS), which can be output to a display device via a 15-pin HD connector.

Controlling the IN1502 video scaler

The IN1502 can be controlled using one or more of the following methods:

- The front panel controls
- A computer, a touch screen panel, or any other device that can send and receive the serial communications through the RS-232 port. Extron’s Simple Instruction Set (SIS™) is a set of simple keystroke commands that can be used with any such devices.
- The optional IR 901 remote control, which has most of the front panel controls

Features and Options

Features

Two video inputs

- **Input 1** — One BNC connector on the rear panel accepts a composite video signal.
- **Input 2** — One 4-pin DIN connector on the rear panel accepts an S-video signal.

Video output — One VGA-type 15-pin HD connector provides an RGB output.

Three ways to control the scaler — The scaler’s front panel, a computer or other RS-232 control device, or the optional IR 901 remote control can all be used to control the scaler.

Scaled outputs — The IN1502 offers 16 different output rates.

RS-232 configuration — The IN1502 can be configured by using a control system.

Dynamic Motion Interpolation (DMI) — This video processing technique is an advanced motion prediction and compensation method that treats motion content and still content with different algorithms to yield high fidelity images.

3:2 pulldown detection for NTSC and 2:2 film detection for PAL video sources — These advanced film mode processing features help maximize image detail and sharpness for video sources that originated from film. When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pulldown. Jaggies and other image artifacts can result if conventional deinterlacing techniques are used on film-source video. The IN1502's advanced film mode processing recognizes signals that originated from film. The IN1502 then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 pulldown process. This results in richly detailed images with sharply defined lines. A similar process is used for PAL film-source video.

Versatile mounting options — The IN1502 is 1U high, and a half rack wide. It is rack mountable, or it can be placed on a table or other furniture. Rubber feet are included.

Options and accessories

The IN1502's optional equipment includes:

- **IR 901 remote control** — Extron's IR 901 (part #70-152-01) is an infrared remote control which replicates all of the front panel controls of the IN1502 except the Menu and Next buttons.
- **Rack shelf mounting kit** — The 1U high, half rack width IN1502 can be rack mounted using the universal rack shelf mounting kit (part #60-190-01) or the basic rack shelf mounting kit (part #60-604-01).

IN1502

Chapter Two

Installation and Operation

Mounting the Scaler

Rear Panel Features

Front Panel Features

Menus, Configuration, and Adjustments

Optimizing the System for a DVD Player

Input Reset

System Reset

Front Panel Security Lockout (Executive Mode)

IR 901 Infrared Remote Control

Troubleshooting

Mounting the Scaler

UL rack mounting requirements

The following Underwriters Laboratories (UL) requirements pertain to the safe installation of the IN1502 in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the IN1502 in an environment compatible with the maximum ambient temperature (Tma = +113 °F, +45 °C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

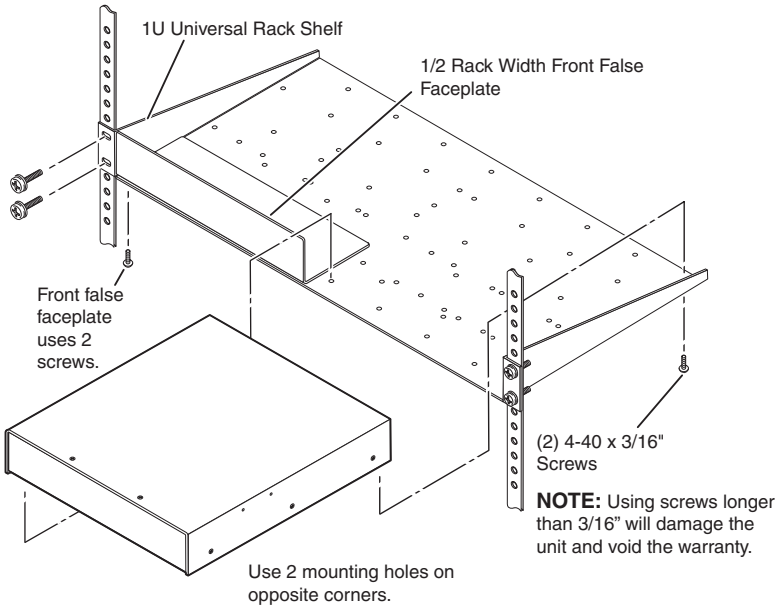
Tabletop/desktop placement

For tabletop or desktop placement only, install the self-adhesive rubber feet/pads (provided) onto the four corners of the bottom of the enclosure.

Rack mounting

1. If feet were installed on the bottom of the IN1502, remove them.
2. Place the IN1502 on one half of the 1U (one unit high, one unit wide) rack shelf (part #60-190-01 or #60-604-01). Align the front of the IN1502 with the front of the shelf, and align the threaded holes on the bottom of the IN1502 with the holes in the rack shelf.
3. Attach the IN1502 to the rack shelf with the two provided 4-40 x 3/16" machine screws. Insert the screws from the underside of the shelf, and securely fasten them into diagonally-opposite corners.

   See the following illustration.



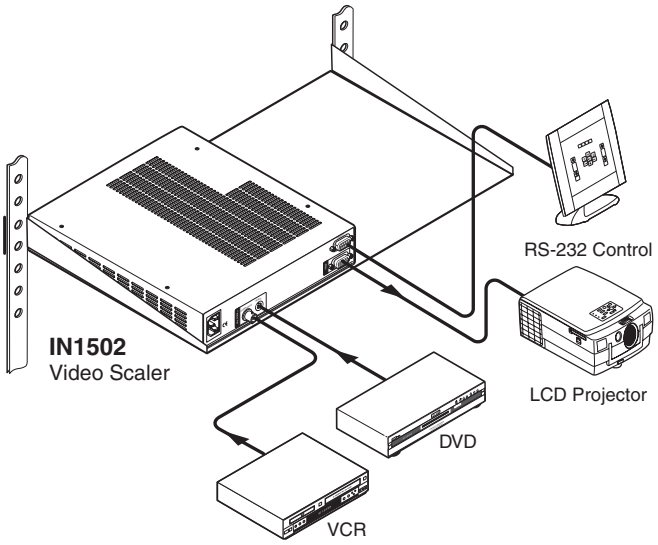
Rack mounting the IN1502

4. Attach the false front panel (provided with rack shelf part #60-190-01) to the unoccupied side of the rack (as shown above), or install a second half-rack-width device in that side by repeating steps **1** through **3**.

5. Attach the rack shelf to the rack using four 10-32 x ¾" bolts (provided). Insert the bolts through #10 beveled washers, then through the holes in the rack, as shown above.

Application diagram

The diagram shown below is an example of a typical IN1502 application with cable connections.



Application diagram example of the IN1502

Rear Panel Features

The rear panel of the IN1502 is shown below.



IN1502 rear panel connectors

(1) **AC power connector** — Plug a standard IEC power cord into this connector to connect the scaler to a 100 to 240 VAC, 50 Hz or 60 Hz power source. The front panel LCD display and input selection LEDs will light during power-up.

(2) **Video input 1: Composite video** — Connect a composite video signal to this female BNC connector.

(3) **Video input 2: S-video —** Connect an S-video signal to this 4-pin mini-DIN female connector.

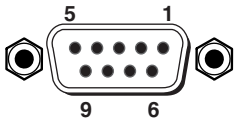
(4) **RGB 15-pin HD video output** — Connect an RGB video display.

(5) **Remote (RS-232/contact closure) 9-pin port** — This connector provides for two-way RS-232 communication and contact closure control. See chapter 3, "Serial Communication", for information on how to use the SIS commands.

The default protocol is 9600 baud, 1 stop bit, no parity, and no flow control.

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

Pin	RS-232 function	Description
1	–	No connection
2	Tx	Transmit data
3	Rx	Receive data
4	Input #1	Contact closure
5	Gnd	Signal ground
6	Input #2	Contact closure
7	–	No connection
8	–	No connection
9	Hardwired IR	IR input



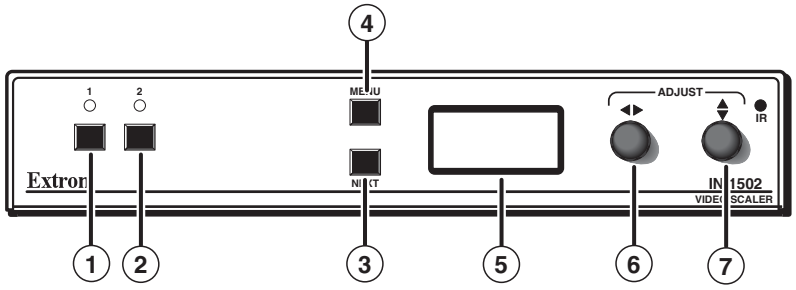
DB9 Pin Locations
Female

The Remote connector also provides a way to select an input using a remote contact closure device. Contact closure control uses pins on the Remote connector that are not used by the RS-232 interface (see preceding the table).

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.

Front Panel Features

The front panel of the IN1502 is shown below.



IN1502 front panel

Input selection buttons

NOTE *Input 1 can only input composite video; Input 2 can only input S-video.*

(1) **Composite input button** — This button selects the composite video input (Input 1). The LED lights green when this input is selected.

(2) **S-video input button** — This button selects the S-video input (Input 2). The LED lights green when this input is selected.

Next button

(3) **Next button** — Use this button to step through the submenus in the IN1502 menu system. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

Menu button

(4) **Menu button** — Use this button to enter and move through the main menu system in the IN1502. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

LCD menu display and controls

(5) **LCD** — Displays configuration menus and status information. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

(6) **Horizontal Adjust (◄►) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.

(7) **Vertical Adjust (▲▼) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.

Menus, Configuration, and Adjustments

Scaler configuration and adjustments can be performed by using the front panel controls and the menus that are displayed on the IN1502's LCD screen. These menus are used primarily when the scaler is first set up.

Moving through menus by using front panel controls

Menu button — Press the Menu button to activate menus and to scroll to the four main menus.

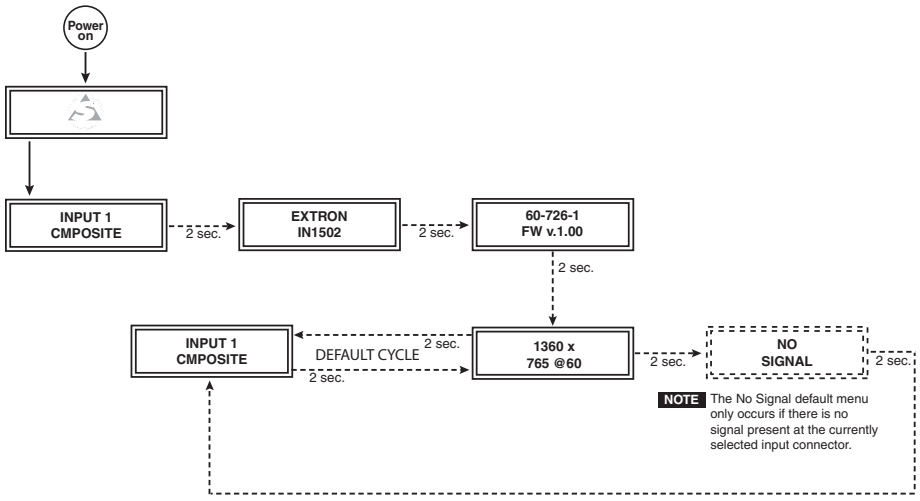
Next button — Press the Next button to move between the submenus of a selected main menu. Pressing the Next button during input configuration causes the current input's number and format type to be displayed on the LCD.

Adjust (◄►, ▲▼) knobs — In configuration mode, rotate the horizontal Adjust **(◄►)** knob and vertical Adjust (▲▼) knob to scroll through submenu options and to make adjustment selections. Refer to the flowcharts in this chapter and to specific sections for explanations on knob adjustments.

NOTE *The Adjust knobs have no mechanical limits to their rotation.*

Menu overview

After the initial power up menus display, the default menus appear on the LCD screen when no adjustments are actively being made. They cycle between the menu screen showing the active input's number and video format, and the menu screen showing the output rate, as shown in the example flowchart below.

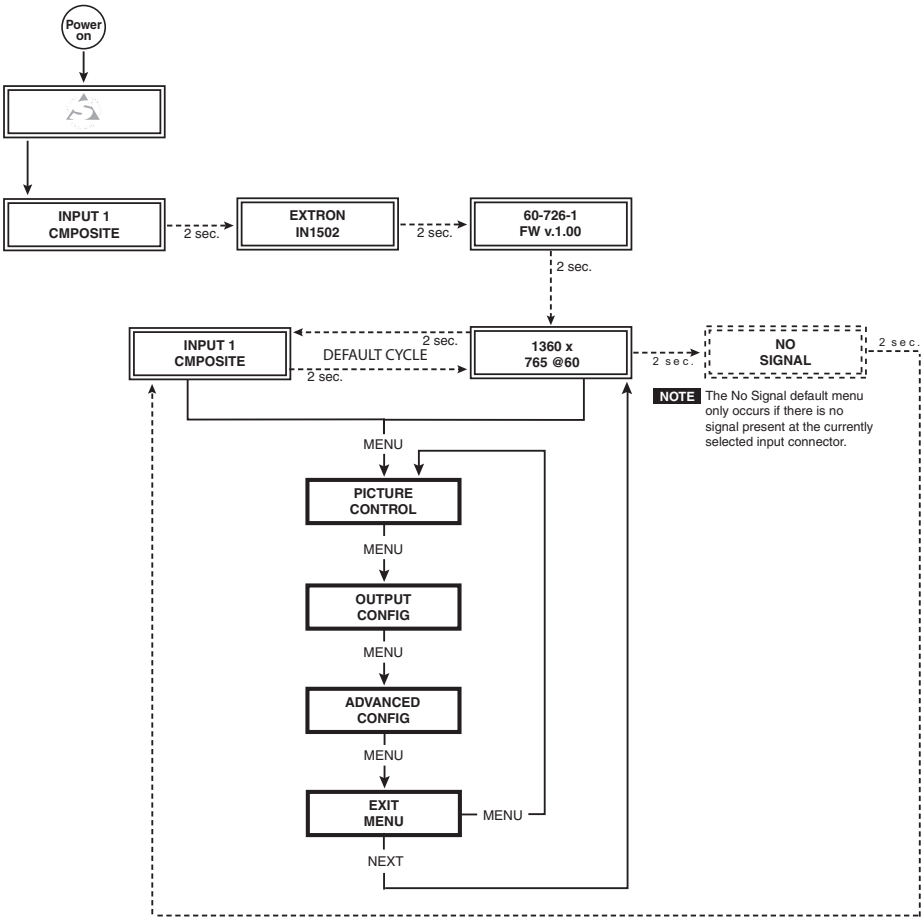


Default menus

NOTE *The No Signal default menu only occurs if there is no signal present at the currently selected input connector.*

NOTE *From any menu or submenu, after ten seconds of inactivity the IN1502 saves all adjustment settings and times out to the default menus.*

The main menus are as shown in the following flowchart. Use the Menu key to scroll between them.



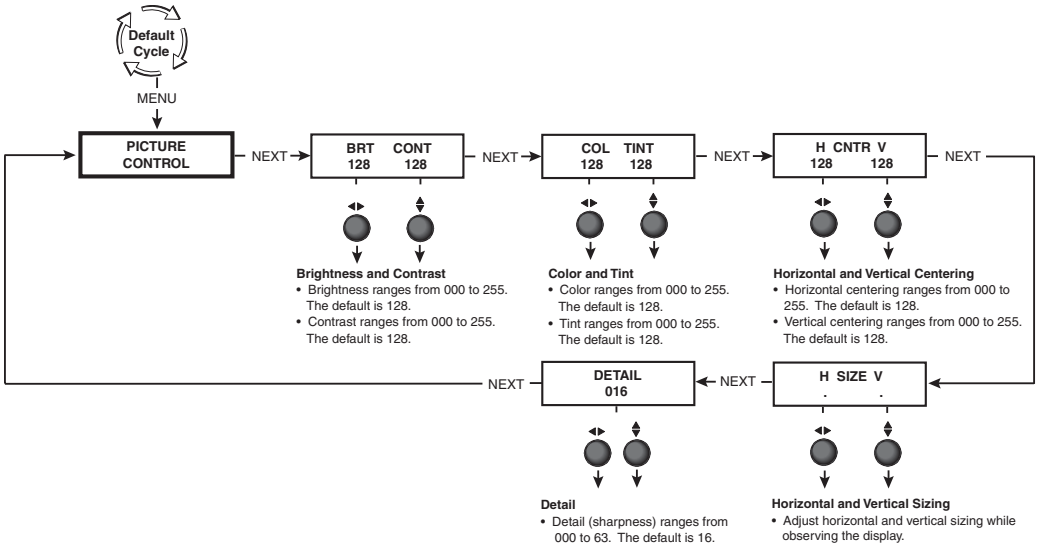
Main menus

NOTE *To return to the default screens, let the IN1502 time-out for 10 seconds, or press the Menu button until the Exit Menu menu appears, then press the Next button.*

NOTE *Submenus are accessed from a main menu by pressing the Next button. If you press the Menu button while a submenu is active, the next main menu becomes active. For example, the menu changes from the Output Configuration menu or its submenus to the Advanced Configuration main menu.*

Picture Control

The following flowchart provides an overview of the Picture Control submenus and the options for each setting.



Brightness and contrast control

This submenu allows adjustment of the brightness and contrast of the output display. The adjustment ranges from 0 to 255. The default is 128.

Rotate the horizontal Adjust **(◄►)** knob to adjust the brightness and use the vertical Adjust (▲▼) knob to adjust the contrast of the output display.

Color and tint control

This submenu allows adjustment of the color and tint of the output display. The adjustment ranges from 0 to 255. The default is 128.

Rotate the horizontal Adjust **(◄►)** knob to adjust the color and use the vertical Adjust (▲▼) knob to adjust the tint of the output display.

Horizontal and vertical centering control

This submenu allows adjustment of the horizontal and vertical centering of the output display. The adjustment ranges from 0 to 255. The default is 128.

Rotate the horizontal Adjust **(◄►)** knob to adjust the horizontal centering and use the vertical Adjust (▲▼) knob to adjust the vertical centering of the output display.

Horizontal and vertical sizing control

This submenu allows adjustment of the horizontal and vertical sizing of the output display.

Rotate the horizontal Adjust **(◄►)** knob to adjust the horizontal sizing and use the vertical Adjust (▲▼) knob to adjust the vertical sizing of the output display.

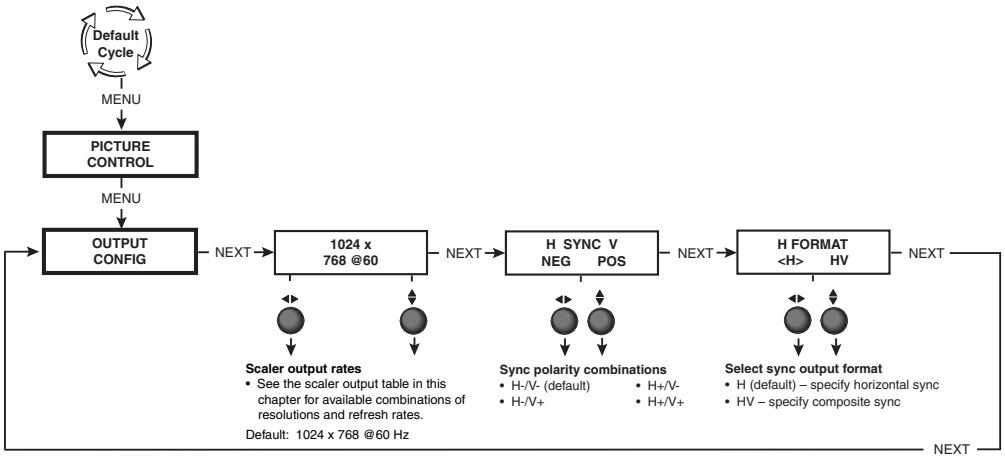
Detail control

This submenu allows adjustment of the image detail (sharpness) of the output display. The adjustment ranges from 0 to 63. The default is 16.

Using either the horizontal Adjust **(◄►)** or vertical Adjust (▲▼) knob, adjust the detail while observing the output display.

Output Configuration

The following flowchart provides an overview of the Output Configuration submenus and the options for each setting.



Resolution and refresh rates

Rotate the horizontal Adjust **(◄►)** knob while in this submenu to select one of the available combinations of output resolution rates.

Rotate the vertical Adjust **(▲▼)** knob while in this submenu to select one of the available refresh (vertical scanning) rates.

Scaler Output Resolutions and Rates		
Resolution	50 Hz	60 Hz
640 x 480	X	X
800 x 600	X	X
848 x 480	X	X
852 x 480	X	X
1024 x 768	X	X*
1280 x 768	X	X
1360 x 765	X	X
1366 x 768	X	X

* The default resolution and rate is 1024 x 768 @ 60Hz.

Sync polarity

The display or projector may require a particular combination of horizontal (H) and vertical (V) sync signal polarities. Select the appropriate combination of positive or negative H and V sync by rotating either the horizontal Adjust **(◄►)** or vertical Adjust (▲▼) knob.

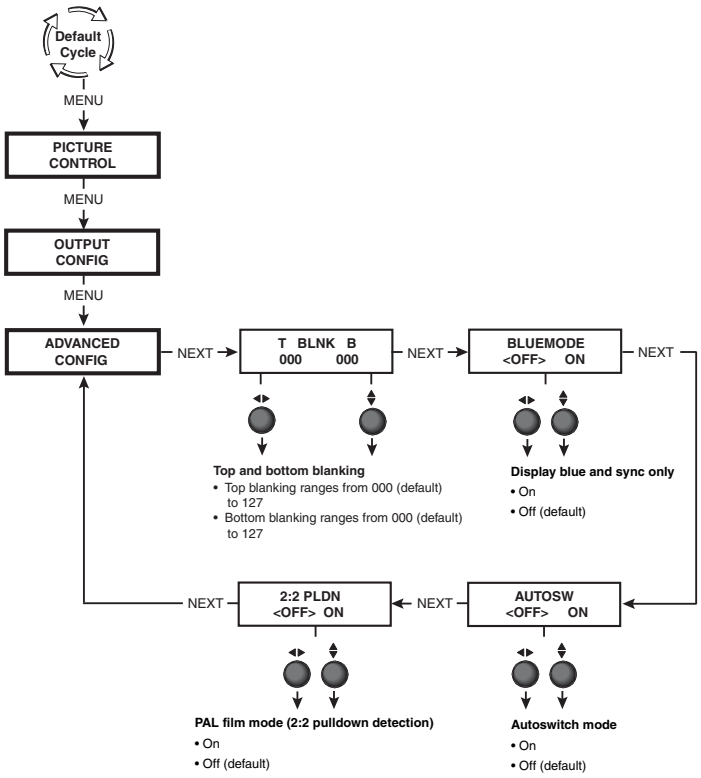
H format

To output composite sync, select "HV" as the H Format. Select "H" to output horizontal sync.

Select either H or HV by rotating either the horizontal Adjust **(◄►)** or vertical Adjust (▲▼) knob. The default is "H".

Advanced Configuration

The following flowchart provides an overview of the Advanced Configuration submenus and the options for each setting.



Top and bottom blanking

To remove noise or extraneous material, such as closed captioning, remove scan lines at either the top or bottom of the screen. Rotate the horizontal Adjust **(◄►)** knob to adjust the top blanking from 0 to 127 lines. The default is 0. Rotate the vertical Adjust **(▲▼)** knob to adjust the bottom blanking from 0 to 127 lines. The default is 0.

Blue mode

To aid in setup of the scaler's color and tint, the Blue mode can be set from this submenu to "On" so that only sync and blue video signals are passed to the display.

Use either the horizontal Adjust **(◄►)** or vertical Adjust **(▲▼)** knob to specify this mode. The default is "Off".

Autoswitch (Autosw) mode

The Autoswitch mode causes the highest numbered input that has a signal present to be automatically selected. For example, if both Inputs 1 and 2 have active input signals, Input 2 is selected.

From this submenu, use either the horizontal Adjust **(◄►)** or vertical Adjust **(▲▼)** knob to specify this mode as "On" or "Off". The default is "Off".

2:2 Pulldown detection (PAL film mode detect) submenu

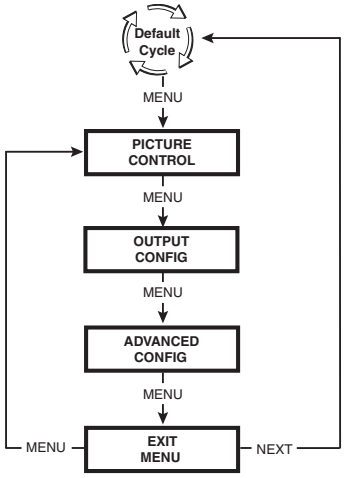
For the currently selected input, set this feature to "On" if the source is PAL video that originated in film. For standard PAL video sources, such as cameras, set this feature to "Off" (default).

NOTE *This feature does not apply to NTSC video sources since film mode (3:2 pulldown) is automatically detected for those signals.*

From this submenu, use either the horizontal Adjust **(◄►)** knob or vertical Adjust **(▲▼)** knob to specify this mode as "On" or "Off".

Exit Menu

From this submenu, press the Next button to return to the Default menu cycle, or press the Menu button to return to the Picture Control menu.



Optimizing the System for a DVD Player

For optimal performance, follow the steps in this section in order when setting up the IN1502 for a DVD player.

Setting up a DVD source

To get the best results when using a DVD as a video source, Extron recommends that the DVD player itself be set up to output an aspect ratio of 16:9 and not 4:3. Because all DVDs are mastered as 16:9, having them set up for anything else will cause the player to internally scale and compress the signal. This scaling/ compression by the DVD player will defeat the advantage of having 3:2 pulldown detection in the IN1502.

All sizing adjustments to correct aspect ratio should be done using the IN1502.

To change the output aspect ratio of most DVD players,

1. Enter the DVD player's Setup or Action menu while the disc is stopped.
2. Select a 16:9 aspect ratio.

Input Reset

To reset each input of the IN1502 scaler to its default centering and sizing values, hold down the specific input button until the Input # Reset message is displayed on the LCD screen.

NOTE *Autoswitch must be set to "OFF" before Input Reset can activated. See "Autoswitch (Autosw) mode" in the "Advanced Configuration" section of this chapter.*

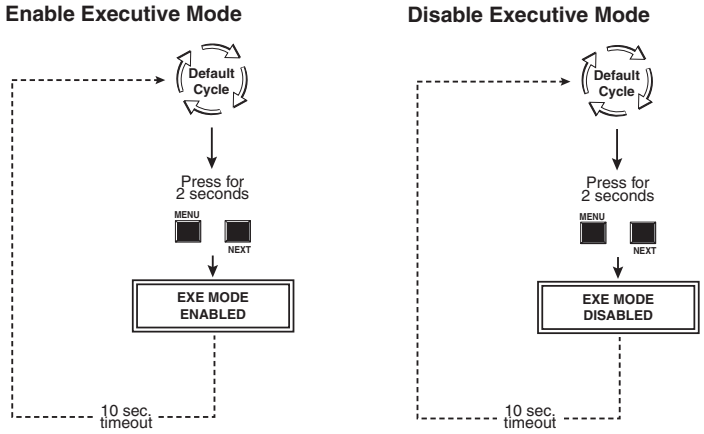
System Reset

To reset the IN1502 to all of its default values, hold down the Input 1 button while simultaneously plugging in the power cord. The System Reset message is displayed on the LCD screen.

Front Panel Security Lockout (Executive Mode)

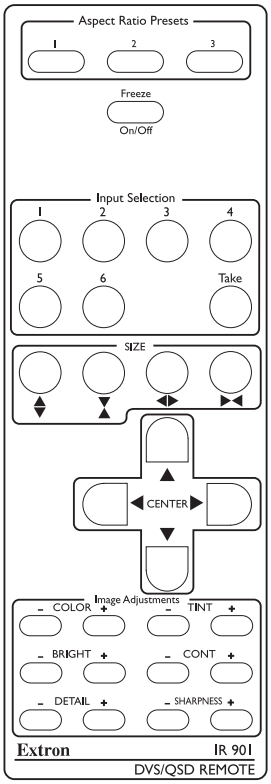
To prevent accidental changes to settings, press the Menu and Next buttons simultaneously for 2 seconds to enable the IN1502's Executive mode. Executive mode locks all front panel functions except the the input buttons. The menu system still returns to the Default menu when 10 seconds have elapsed. When Executive mode is active, all functions and adjustments can still be made through RS-232 control. For details on RS-232 control, see chapter 3, "Serial Commnication".

To disable the Executive mode, press the Menu and Next buttons simultaneously for 2 seconds.



NOTE *The input selection buttons (Input 1 and Input 2) remain functional during Executive mode.*

IR 901 Infrared Remote Control



The IR 901, shown at right, replicates all of the front panel controls except the Menu and Next buttons. If Executive mode has been enabled on the IN1502, input selection and adjustments can still be made from the IR 901. You must use the IN1502's front panel, a host computer, or an RS-232 control device to configure and program the scaler. See chapter 3, "Serial Communication", for details.

The topmost part of the IR 901 features three Aspect Ratio Preset buttons (not functional), a Freeze button, and two input selection buttons (1 and 2). Inputs 3, 4, 5, and 6, and the Take button are *not* functional. The middle portion of the IR 901 features the size and centering buttons. The bottom part contains the adjustment controls for color, tint, brightness, contrast, and detail adjustments. The sharpness buttons are *not* functional.

Freeze an input

To freeze the input being displayed, press the Freeze On/Off button. To unfreeze the input, press the Freeze button again.

Select an input

To select an input source, press an input button (1 or 2).

Size and center

Use the Size and Center buttons to adjust the sizing and centering aspects of a displayed image.

Image adjustments

The color, tint, brightness, contrast, and detail of a displayed image may be increased or decreased by using the appropriate Image Adjustment buttons at the bottom of the IR 901.

Troubleshooting

This section gives recommendations on what to do if you have problems operating the IN1502, and it provides examples and descriptions for some image problems you might encounter.

The following are some tips to help you in troubleshooting.

1. Some symptoms may resemble others, so you may want to look through all of the examples before attempting to solve the problem.
2. Be prepared to backtrack in case the action taken doesn't solve the problem.
3. It may help to keep notes and sketches in case the troubleshooting process gets lengthy. This will also give you something to discuss if you call for technical support.
4. Try simplifying the system by eliminating components that may have introduced the problem or made it more complicated.
5. For sync-related problems: Portable digital projectors are designed to operate close to the video source. Sync problems may result from using long cables or from improper termination. A sync adapter, such as Extron's ASTA (active sync termination adapter), may help solve these problems.
6. For LCD and DLP projectors and plasma displays: In addition to the sync-related information above, check the user's manual that came with the projector for troubleshooting tips, as well as for settings and adjustments. Each manufacturer may have its own terms, so look for terms like "auto setup", "auto sync", "pixel phase", and "tracking".

Operating problems

The table below shows some common operating problems and their solutions.

Problem	Cause	Solution
No image appears.	The input signal is incompatible.	Attach an input device that is compatible with NTSC 3.58, NTSC 4.43, PAL, or SECAM.
	Freeze mode was entered when the image was black.	Deactivate freeze mode.
	The scaled output rate is too high for the display.	Change the scaled output to a compatible resolution.
The image is frozen.	Freeze mode is on.	Deactivate freeze mode. If that does not work, unplug the power cord from the scaler, then plug it back in.
The image is flashing.	The scaled output rate is too high for the display.	Change the scaled output to a compatible resolution.
The image is too soft.	The detail level needs to be changed.	Change the detail level.

IN1502

Chapter Three

Serial Communication

RS-232 Programmer's Guide

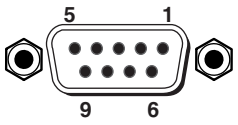
Serial Communication

The IN1502 can be remotely controlled via a host computer or other device (such as a control system) attached to the rear panel Remote connector. The control device (host) uses Extron's Simple Instruction Set (SIS) commands.

The scaler uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control.

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

Pin	RS-232 function	Description
1	–	No connection
2	Tx	Transmit data
3	Rx	Receive data
4	Input #1	Contact closure
5	Gnd	Signal ground
6	Input #2	Contact closure
7	–	No connection
8	–	No connection
9	Hardwired IR	IR input



DB9 Pin Locations
Female

RS-232 Programmer's Guide

Host-to-scaler communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the IN1502 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler 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.

It is also possible to send several SIS commands back-to-back in sequence.

Scaler-initiated messages

When a local event such as a front panel selection or adjustment takes place, the IN1502 scaler responds by sending a message to the host. No response is required from the host. The scaler-initiated messages are listed here (underlined).

(C) Copyright 2005, Extron Electronics, IN1502, Vx.xx ↵
The IN1502 sends the copyright message when it first powers on. Vx.xx is the firmware version number.

Chn[X1] ↵ (where [X1] is the input number)
The IN1502 sends this response when an input is switched.

Error responses

When the scaler receives a valid SIS command, it executes the command and sends a response to the host device. If the IN1502 is unable to execute the command because the command is invalid or it 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
E10 – Invalid command
E13 – Invalid value (the number is out of range/too large)

Using the command/response tables

The command/response tables on the next page list valid command ASCII codes, the scaler's responses to the host, and a description of the command's function or the results of executing the command. Uppercase and lowercase characters may be used interchangeably in the command field.

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

The ASCII to HEX conversion table at left is for use with the command/response tables.

ASCII to Hex conversion table

The command/response tables use symbols (defined below) to represent variables.

Symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

• = Space

Esc = Escape key

X1 = Specific input number (1 or 2)
- 1 = input 1
- 2 = input 2

X2 = 0 = off, 1 = on

X3 = Picture adjustment range (0 through 255)

X4 = Sharpness level (details) (0 through 63)

X5 = Scaler resolution
- 1 = 640 x 480
- 2 = 800 x 600
- 3 = 848 x 480
- 4 = 852 x 480
- 5 = 1024 x 768
- 6 = 1280 x 768
- 7 = 1360 x 765
- 8 = 1366 x 768

X6 = Detected input signal standard (0 through 4)
- 0 = none
- 1 = NTSC 3.58
- 2 = PAL
- 3 = NTSC 4.43
- 4 = SECAM

X7 = Blanking adjustment range (0 through 127 lines)

X8 = Scaler refresh rate
- 1 = 50 Hz
- 2 = 60 Hz

Command/response table for SIS commands

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Input selection			
Select video input	X1 !	C X1 ↵	Video Input X1.
Example:	1!	C1↵	*Example*: select video Input 1.
Color			
Set a specific color value	X3 C	Col X3 ↵	Set the color adjustment level to X3.
Example:	47C	Col047↵	*Example*: set the color adjustment to 47.
Increment	+C	Col X3 ↵	Select the next higher color adjustment level.
Decrement	-C	Col X3 ↵	Select the next lower color adjustment level.
View the color value	C	Col X3 ↵	Show the current color adjustment level.
Tint			
Set a specific tint value	X3 T	Tin X3 ↵	Set the tint adjustment level to X3.
Example:	76T	Tin76↵	*Example*: set the tint to 76.
Increment	+T	Tin X3 ↵	Select the next higher tint adjustment level.
Decrement	-T	Tin X3 ↵	Select the next lower tint adjustment level.
View the tint value	T	Tin X3 ↵	Show the current tint adjustment level.
Contrast			
Set a specific contrast value	X3 ^	Con X3 ↵	Set the contrast adjustment to X3.
Increment	+^	Con X3 ↵	Select the next higher contrast adjustment level.
Decrement	-^	Con X3 ↵	Select the next lower contrast adjustment level.
View the contrast value	^	Con X3 ↵	Show the current contrast adjustment level.
Brightness			
Set a specific brightness value	X3 Y	Brt X3 ↵	Set the brightness adjustment to X3.
Increment	+Y	Brt X3 ↵	Select the next higher brightness adjustment level.
Decrement	-Y	Brt X3 ↵	Select the next lower brightness adjustment level.
View the brightness value	Y	Brt X3 ↵	Show the current brightness adjustment level.
Detail mode			
Set the detail level	X4 D	Det X4 ↵	Set the detail level to X4.
Increment	+D	Det X4 ↵	Increment the detail setting.
Decrement	-D	Det X4 ↵	Decrement the detail setting.
View the detail value	D	Det X4 ↵	Show the detail setting.

Command/response table for SIS commands (continued)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Horizontal shift			
Set horizontal position	X3 H	Hph X3 ↵	Set the horizontal centering to X3.
Increment the shift value	+H	Hph X3 ↵	Shift right.
Decrement the shift value	-H	Hph X3 ↵	Shift left.
View the horizontal position	H	Hph X3 ↵	Show the horizontal position.
Vertical shift			
Set the vertical position	X3 /	Vph X3 ↵	Set the vertical centering to X3.
Increment the shift value	+ /	Vph X3 ↵	Shift up.
Decrement the shift value	- /	Vph X3 ↵	Shift down.
View the vertical position	/	Vph X3 ↵	Show the vertical position.
Horizontal size			
Increase the horizontal size	+:	Hsz + ↵	Widen the picture.
Decrease the horizontal size	-:	Hsz - ↵	Make the picture narrower.
Vertical size			
Increase the vertical size	+;	Vsz + ↵	Make the picture taller.
Decrease the vertical size	-;	Vsz - ↵	Make the picture shorter.
Top blanking			
Specify a top blanking value	X7 (	Blt X7 ↵	Set the number of lines to blank at the top of the picture.
Increase the top blanking value	+(	Blt X7 ↵	Increase the number of top lines blanked.
Decrease the top blanking value	-(	Blt X7 ↵	Decrease the number of top lines blanked.
View the top blanking value	(	Blt X7 ↵	Show the number of lines that are blanked at the top of the picture.
Bottom blanking			
Specify a bottom blanking value	X7)	Blb X7 ↵	Set the number of lines to blank at the bottom of the picture.
Increase the bottom blanking value	+)	Blb X7 ↵	Increase the number of lines blanked at the bottom.
Decrease the bottom blanking value	-)	Blb X7 ↵	Decrease the number of bottom lines blanked.
View the bottom blanking value	)	Blb X7 ↵	Show the # of bottom lines that are blanked.
Scaler rate			
Set the output rate	X5 * X8 =	Rte X5 * X8 ↵	Select a scaler output scan rate.
View the output rate	=	Rte X5 * X8 ↵	Show the scaler output rate.
Video mute			
Mute on	0B	Vmt 0 ↵	Mute video output.
Example:	0B	Vmt0↵	
Mute off	1B	Vmt 1 ↵	Unmute video output.
View video mute status	B	Vmt X2 ↵	Show the video mute status.

Command/response table for SIS commands (continued)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Freeze			
Enable	1F	Frz1 ↵	Output a "frozen" video image.
Disable	0F	Frz0 ↵	Turn off freeze (output motion).
View the freeze status	f/F	Frz X2 ↵	Show the freeze status.
Example:	F	Frz 0 ↵	*Example*: Freeze is disabled.
Front panel security lockout (Executive mode)			
Enable (lock image adjustments)	1X	Exe1 ↵	Lock front panel adjustments; adjust image via RS-232 only.
Disable	0X	Exe0 ↵	Adjustments and selections are made from the front panel.
View the executive mode status	X	Exe X2 ↵	Show executive mode status.
Example:	X	Exe 1↵	*Example*: The front panel is locked.
Software version and build number requests			
Query software version number	Q/q	x.xx ↵	Show the software version.
Show version and build number	*Q	x.xxx.xxx ↵	Show the version and build number.
Part number request			
Show the DVS 202's part number	N/n	60-726-01 ↵	Show the scaler's part number.
Information request			
Show the current input number	I/i	ChnX1•StdX6 ↵	Show the scaler's input number and signal standard.
Zap (reset to default settings)			
Total reset	Esc zXXX	ZapXXX ↵	Reset everything: all settings and adjustments to the factory default.
Image adjustment reset	Esc zI	ZapI ↵	Reset image adjustments to factory settings.

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

Command/response table for special function SIS commands

Command	ASCII Command (host to scaler)	Response (scaler to host)	X! values and additional descriptions
PAL file mode (2:2 pulldown detction)			
Set mode on	18*1#	PDn1 ↵	Set PAL file mode on.
Set mode off	18*0#	PDn0 ↵	Set PAL file mode off.
View file mode status	18#	PDn X2 ↵	Show PAL file mode status.
Blue mode			
Set Blue mode on	8*1#	Blu1 ↵	Set Blue mode on.
Set Blue mode off	8*0#	Blu0 ↵	Set Blue mode off.
View Blue mode status	8#	Blu X2 ↵	Show Blue mode status.
Auto switch			
Set Auto switch mode on	10*1#	Aut1 ↵	Set Auto switch mode on.
Set Auto switch mode off	10*0#	Aut0 ↵	Set Auto switch mode off.
View Auto switch mode status	10#	Aut X2 ↵	Show Auto switch mode status.
H Format (sync output format)			
Set to horizontal sync	15*1#	HFm0 ↵	Set H format to off/0 (horizontal sync, default).
Set to composite sync	15*0#	HFm1 ↵	Set H format to on/1 (composite sync).
View H Format status	15#	HFm X2 ↵	Show H format mode status.

IN1502

A Appendix

Appendix

Specifications

Part Numbers and Accessories

Firmware Upgrade Installation

Appendix

Specifications

Video input

Number/signal type	1 S-video 1 composite video
Connectors	(1) 4-pin mini DIN female (S-video) 1 BNC female (composite video)
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	Analog: 0.0 V to 1.0 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency	NTSC 3.58, NTSC 4.43, PAL, SECAM
Vertical frequency	NTSC 3.58, NTSC 4.43, PAL, SECAM
Resolution range	NTSC 3.58, NTSC 4.43, PAL, SECAM
Return loss	<-25 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video processing

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color; 13.5 MHz standard
Colors	16.78 million

Video output

Number/signal type	1 scaled RGBHV, RGBS
Connectors	1 female 15-pin HD
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels	0.0 V to 0.7 Vp-p
Impedance	75 ohms
Scaled resolutions	640x480[1,2], 800x600[1,2], 848x480[1,2], 852x480[1,2], 1024x768[1,2], 1280x768[1,2], 1360x765[1,2], 1366x768[1,2] [1] = at 50 Hz [2] = at 60 Hz

Sync

Output type	RGBHV, RGBS
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0 V to 1.0 Vp-p
Output level	TTL: 5.0 Vp-p, unterminated
Input impedance	75 ohms
Output impedance	75 ohms
Max input voltage	5 Vp-p
Max. propagation delay	20 ns
Polarity	Negative

Control/remote — decoder/scaler

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 4 = input 1 select (contact closure) 5 = GND 6 = input 2 select (contact closure)
Contact closure	9-pin female D connector (same as RS-232 connector)

Contact closure pin configurations	See pins 4, 5, and 6 above.
IR controller module	Extron IR 901 (optional)
Program control	Extron's Simple Instruction Set (SIS™)

General

Power	100 VAC to 240 VAC, 50/60 Hz, 30 watts, internal, autoswitchable
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +113 °F (0 to +45 °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 8.75" W x 9.5" D (1U high, half rack wide) 4.4 cm H x 22.2 cm W x 24.1 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	3.3 lbs (1.5 kg)
Shipping weight	6 lbs (3 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 and Accessories

Included parts

These items are included in each order for a IN1502 scaler:

Included parts	Part number
IN1502	60-726-01
Rubber feet (self-adhesive) (4)	
IEC power cord	
Tweeker (small screwdriver)	
IN1502 User's Manual	

Accessories

These items can be ordered separately:

Accessories	Part number
IR 901 remote control	70-152-01
1U Universal rack shelf	60-190-01
1U Basic rack shelf	60-604-01
1U Under-desk mount kit	70-219-01

Firmware Upgrade Installation

In some cases, the IN1502's firmware may require replacement with an updated version. There are three user-replaceable firmware chips: U41 — the main microcontroller, U38, and U17. The numbers are printed on the circuit board. We recommend that you send the unit to Extron for service and updates.

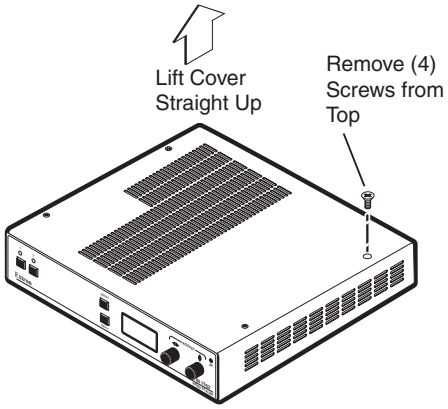
WARNING *Changes to firmware must be performed by authorized service personnel only. Some IN1502 firmware updates must be performed at the Extron factory.*

Follow these steps to replace firmware in the scaler.

1. Disconnect the AC power cord from the IN1502 to remove power from the unit.

WARNING *To prevent electric shock or damage, always unplug the IN1502 scaler from the AC power source before opening the enclosure.*

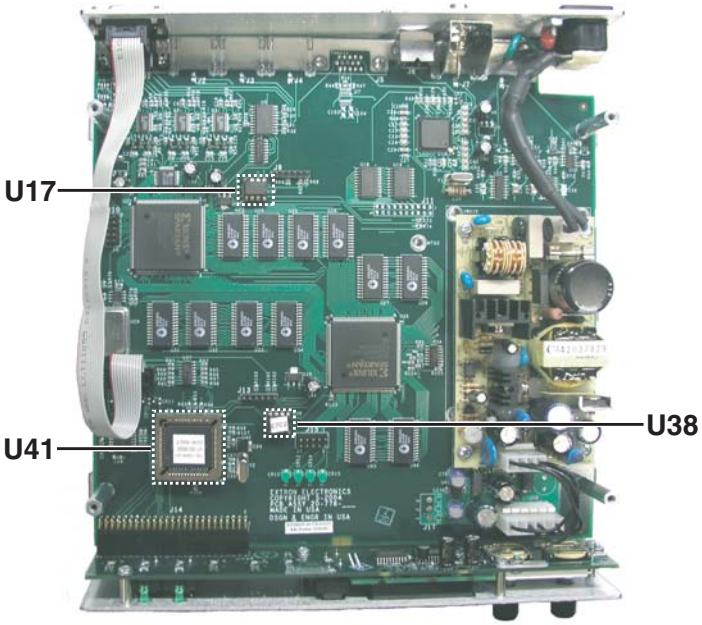
2. Remove the scaler from the rack or furniture.
3. Remove the cover of the scaler (the top half of the enclosure) by removing the four screws, then lifting the cover straight up.



WARNING *Do not touch any switches or other electronic components inside the scaler. Doing so could damage the scaler. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with firmware replacement. A grounding wrist strap is recommended.*

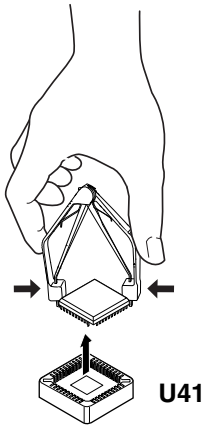
4. Locate the firmware chip(s) to be replaced on the circuit board, as shown in the following illustration.

Locating the three firmware IC chips



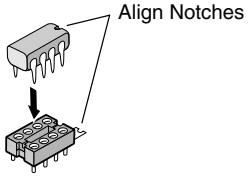
5. After you are electrically grounded, you can remove the U17 IC chip or U38 IC chip by grasping it firmly with your fingers and pulling it out; then continue to step 8.

   Removal of the U41 IC chip requires a PLCC IC puller tool. To remove the U41 chip, align the hooks of a PLCC IC puller tool with the slots located in opposite ends of the U41 firmware chip.



6. Insert the hooks into the slots, and squeeze the tool gently to grasp the chip.
7. Pull the chip straight out of the socket, and set it aside.
8. For U17 and U38, align the notch of the new firmware chip with the notch of the socket in the same orientation as the old chip.

   For U41, align the angled corner of the firmware chip with the angled corner of the socket.



9. Gently, but firmly, press the chip into place in the socket.
10. Replace the top cover on the IN1502 scaler, and fasten it with the screws that were removed in step 3.
11. Rack or furniture mount the scaler, and reconnect the AC power cord.

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
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

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

Japan:

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

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