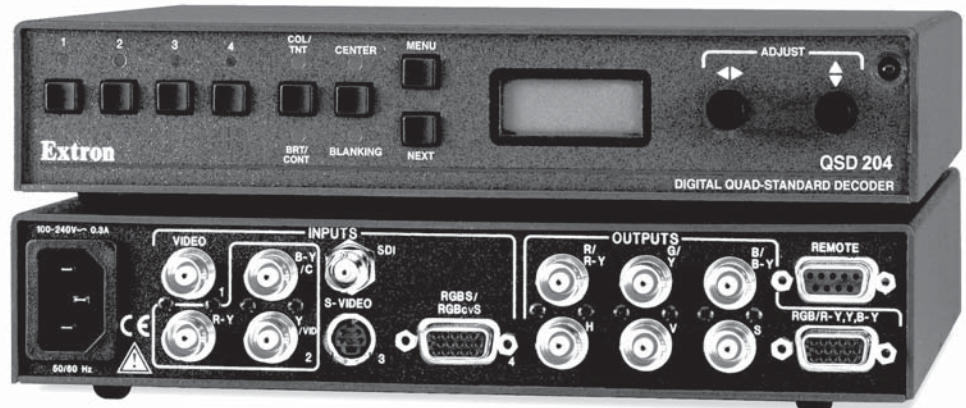


User's Manual



QSD 204

Quad Standard Decoder series
QSD 204 and QSD 204 D

Precautions

Safety Instructions • English



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



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

Caution

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

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

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

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

Consignes de Sécurité • Français



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



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

Attention

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

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

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

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

Sicherheitsanleitungen • Deutsch



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



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

Achtung

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

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

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

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

Instrucciones de seguridad • Español



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



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

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de le contourner ni de 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 un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandée par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluss, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar 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.

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

Advertencia

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

Desconexión de alimentación eléctrica • Para desconectar con seguridad la 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.

Quick Start — QSD 204

Installation

Step 1

Refer to the application example at the end of this page. Turn off power to the decoder and input and output devices, and remove power cords from them.

Step 2

Install the four rubber feet on the bottom of the QSD 204 decoder, or mount the decoder in a rack.

Step 3

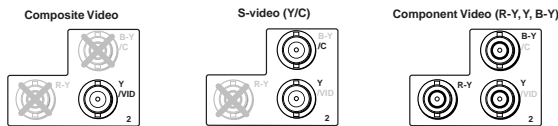
Attach input devices to the decoder.

Rear panel video inputs

Input 1: Composite video



Input 2: Composite/S-video/Component



Input 3: S-video



Input 4: RGBS/RGBcvS



SDI input

Attach an SDI source to this BNC (204 D model only).



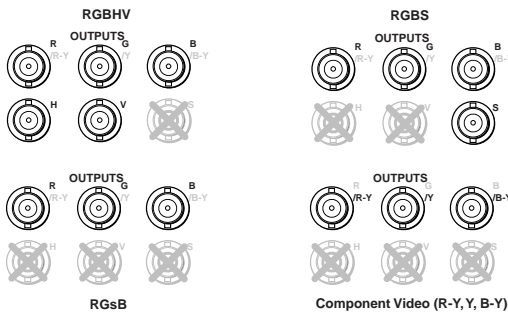
Step 4

Attach output devices to the decoder.

Rear panel video outputs

Output BNC connectors

Output 15-pin HD connector



NOTE

You can connect both outputs simultaneously to two different displays. The sync format is the same for both outputs.



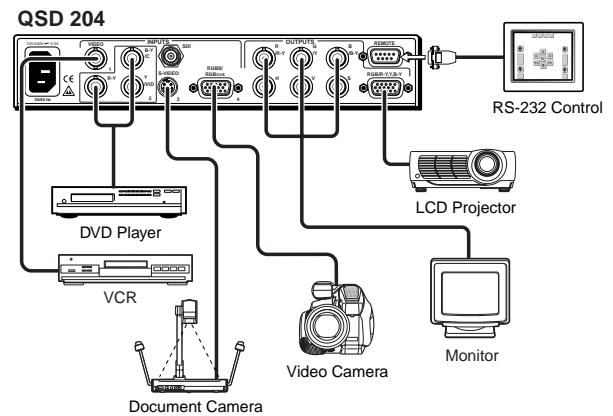
Step 5

Plug the QSD 204, 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 (see the next page) or RS-232 programming to configure the decoder. See chapter two for installation and operation procedures, and see chapter three for programming information.

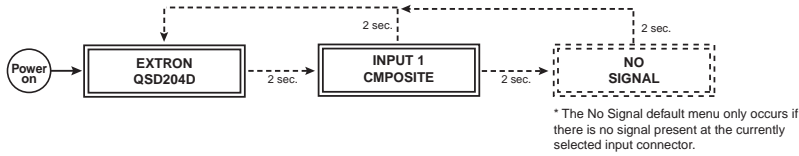
Application example



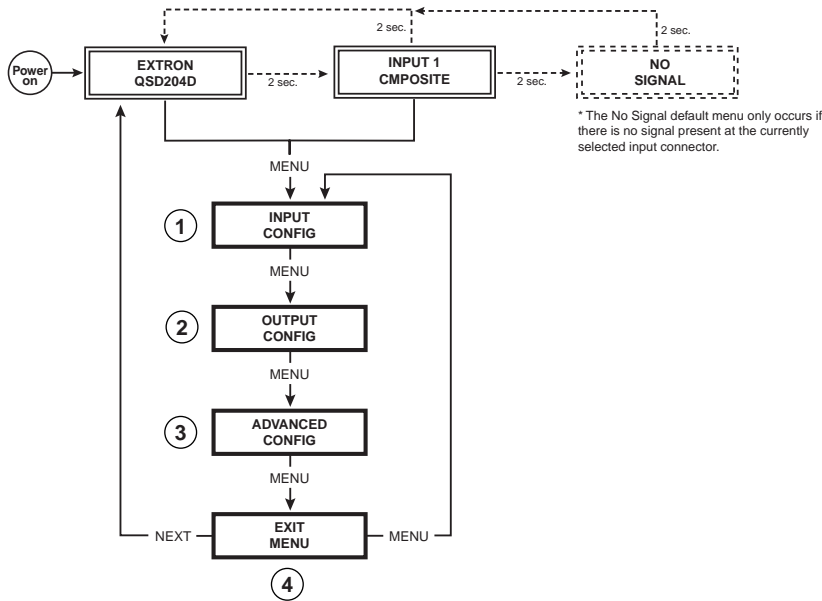
Quick Start — QSD 204, cont'd

QSD 204 Menu System

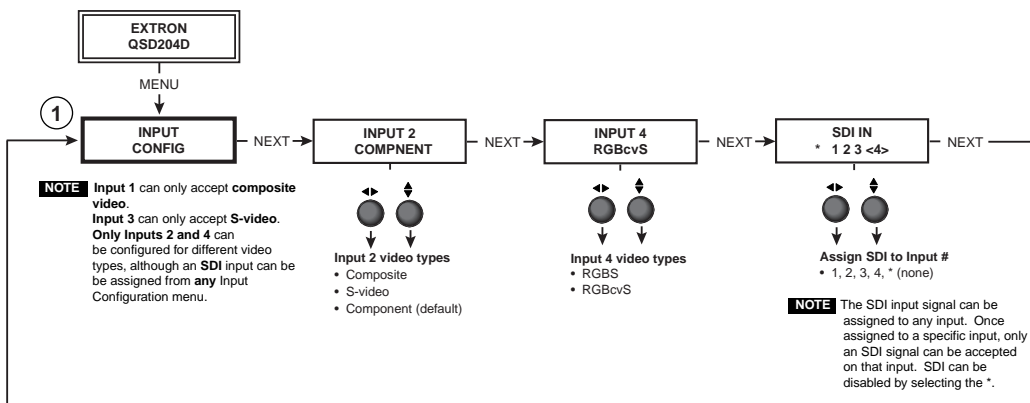
Default Cycle menu



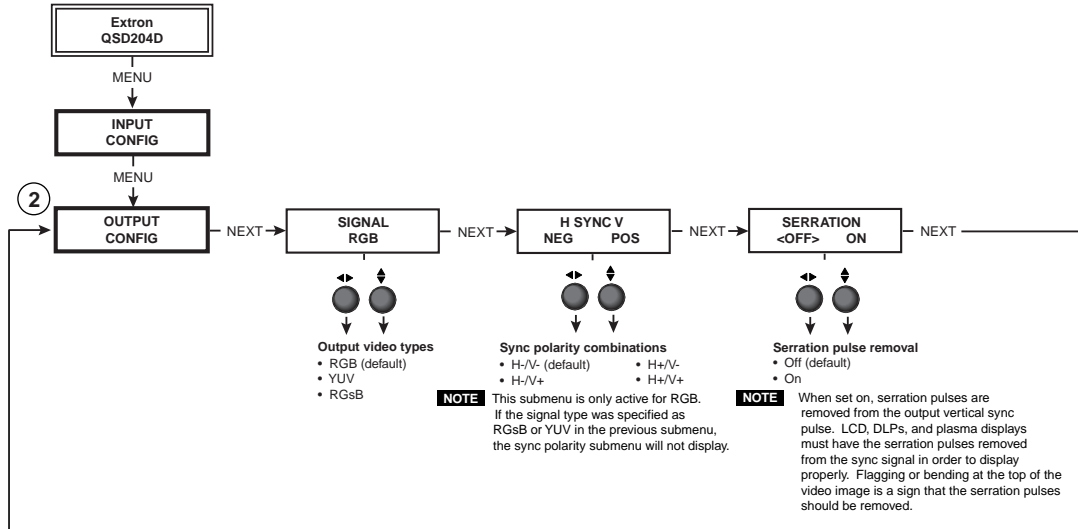
Main menu



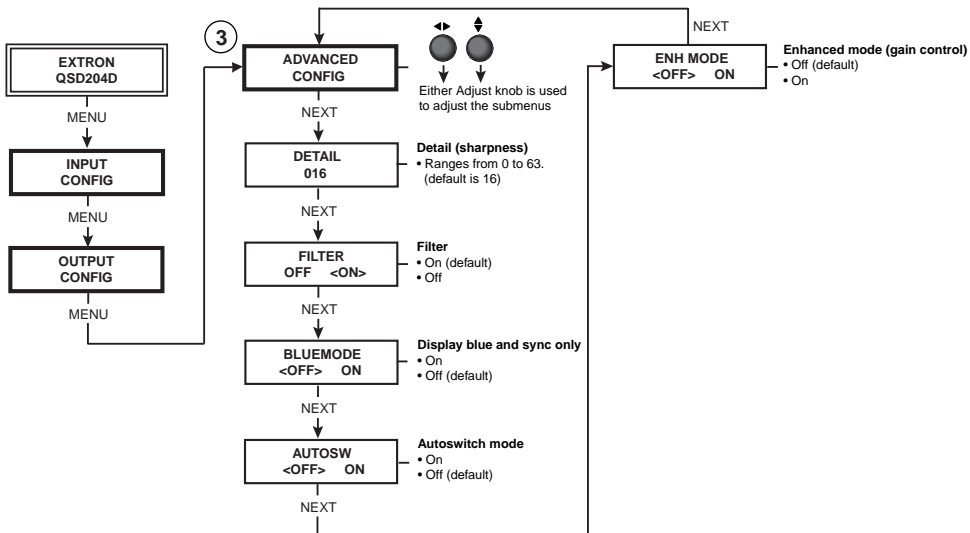
1 Input Configuration menu



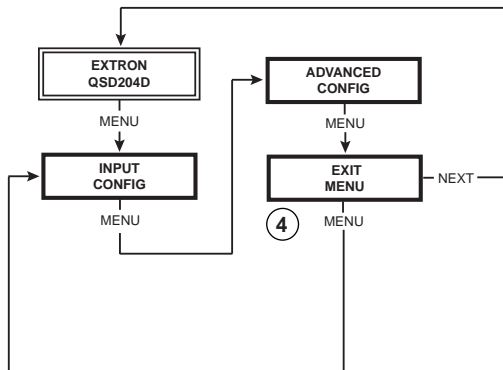
② Output Configuration menu



③ Advanced Configuration menu

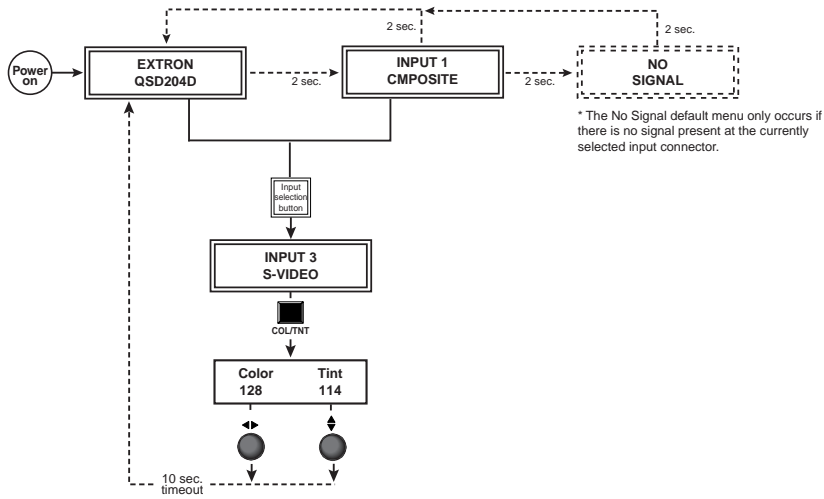


④ Exit menu



Quick Start — QSD 204, cont'd

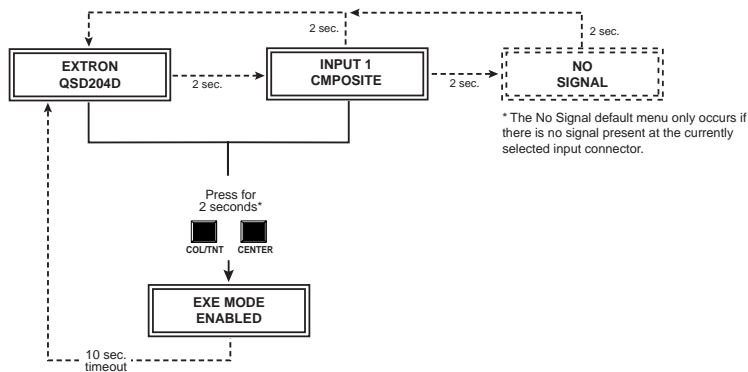
Picture Adjustments menu



NOTE The Adjust horizontal knob and the Adjust vertical knob are used to adjust the image settings on the left and right sides of the LCD screen, respectively.

Executive Mode menu

Enable Executive Mode



Disable Executive Mode

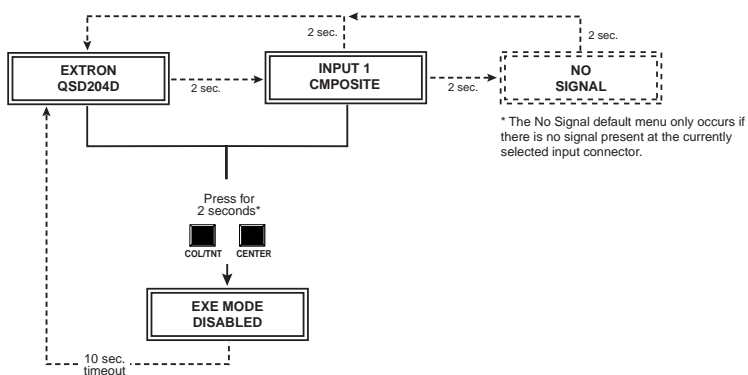


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QSD 204

Chapter One

Introduction

About this Manual

About the QSD 204

Features and Options

Introduction

About this Manual

This manual discusses how to install, configure, and operate the Extron QSD 204 quad standard decoder and how to operate the optional IR 901 infrared remote control (part #70-152-01).

Throughout this manual the terms “QSD”, “quad standard decoder”, and “decoder” are used interchangeably to refer to the same product.

About the QSD 204

What is the QSD 204?

The QSD 204 is a high performance quad standard decoder.

The QSD 204 comes in two models, one of which offers a serial digital interface (SDI) input connector: QSD 204 (no SDI) and QSD 204 D (with SDI).

Controlling the QSD 204 quad standard decoder

The QSD 204 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, and Extron’s control software for Windows provides a graphical interface for controlling the decoder from a computer.
- The optional IR 901 remote control, which has most of the front panel controls.

Features and Options

Features

Quad standard decoder — The QSD 204 converts interlaced S-video and composite video signals following either the NTSC 3.58, NTSC 4.43, PAL, or SECAM video standards, to a non-interlaced output: RGBHV, RGBS, RGsB, or component video.

Four video inputs —

- **Input 1** — One BNC connector on the rear panel accepts composite video.
- **Input 2** — Three BNC connectors on the rear panel accepts composite, component, or S-video.
- **Input 3** — A 4-pin DIN connector accepts an S-video signal.
- **Input 4** — A 15-pin HD connector accepts an RGBS or RGBcS video signal.

SDI video input (optional) — One BNC connector on the rear panel accepts SDI video.

Picture controls — Color, tint (hue), brightness, contrast, centering, and blanking. The blanking feature will remove unwanted scan lines from the top or bottom of a displayed image, such as noise and closed captioning.

Four-line adaptive comb filter — Separates the color carrier signal and its harmonics from the video signal to eliminate chroma noise and enables a projector or monitor to display a clean, clear picture.

Buffered video outputs — Six rear-panel BNC connectors and one VGA-type 15-pin HD connector provide connections for RGB output. Both outputs (the BNCs or the 15-pin HD connector) are active at all times for simultaneous output.

Three ways to control the decoder — The decoder'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 QSD.

Autoswitch mode — When autoswitching is enabled, the decoder will automatically select the highest numbered input which has an input present.

Sync polarity selection — The output horizontal and vertical sync polarities may be set for displays which require specific signal polarities.

Serration pulse removal — LCD displays, DLP projectors, and plasma displays do not require serration pulses to synchronize retracing. The serration pulse can be stripped from the vertical blanking portion of a signal by using this feature.

RS-232 configuration — The QSD 204 can be configured by using the Extron control software for Windows, or by using a third party control system.

Versatile mounting options — The QSD 204 is 1U high, and a half rack wide. It is rack mountable, or it can be placed on a table or other furniture. An optional mounting bracket kit will also allow the QSD to be mounted under a tabletop or desktop. Rubber feet and rack mounting hardware are included.

Options and accessories

The QSD 204'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 QSD 204 except the Menu and Next buttons.
- **SDI input card** — Serial digital interface (SDI) input can be added to the QSD 204 model by the installation of an SDI input card (part #70-168-01).

Introduction, cont'd



QSD 204

Chapter Two

Installation and Operation

Mounting the Decoder

Rear Panel Features

Front Panel Features

Menus, Configuration, and Adjustments

Image Adjustments

Input Reset

System Reset

Executive Mode

IR 901 Infrared Remote Control

Troubleshooting

Installation and Operation

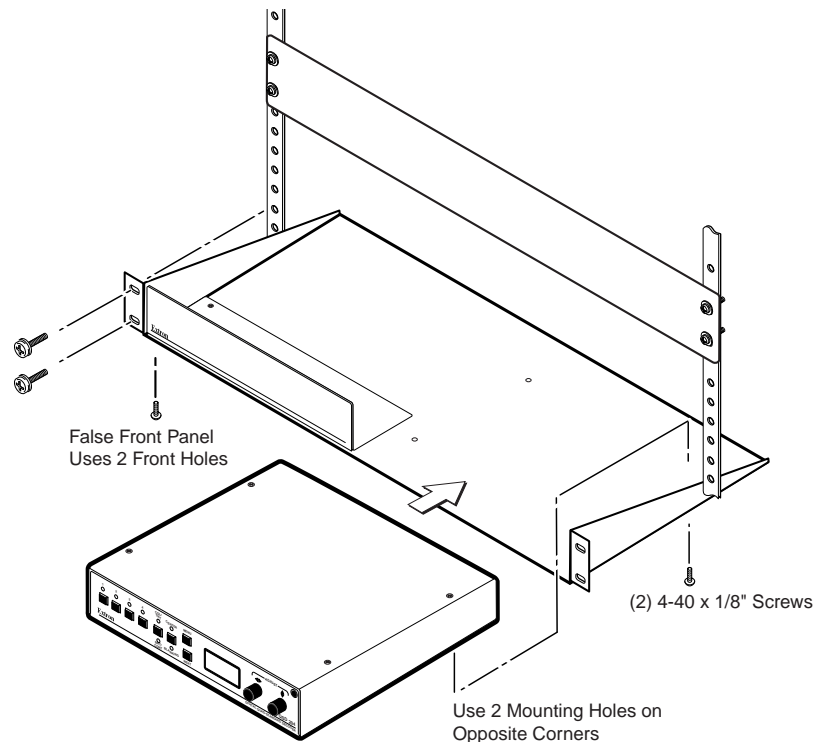
Mounting the Decoder

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 QSD 204, remove them.
2. Place the QSD 204 on one half of the 1U (one unit high) rack shelf (part #60-190-01). Align the front of the QSD 204 with the front of the shelf, and align the threaded holes on the bottom of the QSD 204 with the holes in the rack shelf.
3. Attach the QSD 204 to the rack shelf with the two provided 4-40 x 1/8" machine screws. Insert the screws from the underside of the shelf, and securely fasten them into diagonally-opposite corners. See the illustration below.

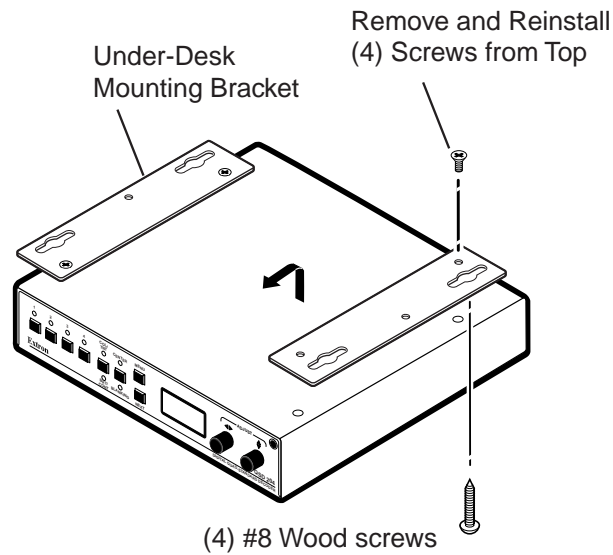


Rack mounting the QSD 204

4. Attach the false front panel (provided with the rack shelf) 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 – 3.
5. Attach the rack shelf to the rack using four 10-32 x 3/4" bolts with captive nylon washers (provided). Insert the bolts through the holes in the rack ears and rack, as shown above.

Under-furniture mounting

For under-tabletop or under-desktop placement (see illustration below), install the optional under-furniture mounting kit (part #70-219-01), as follows:



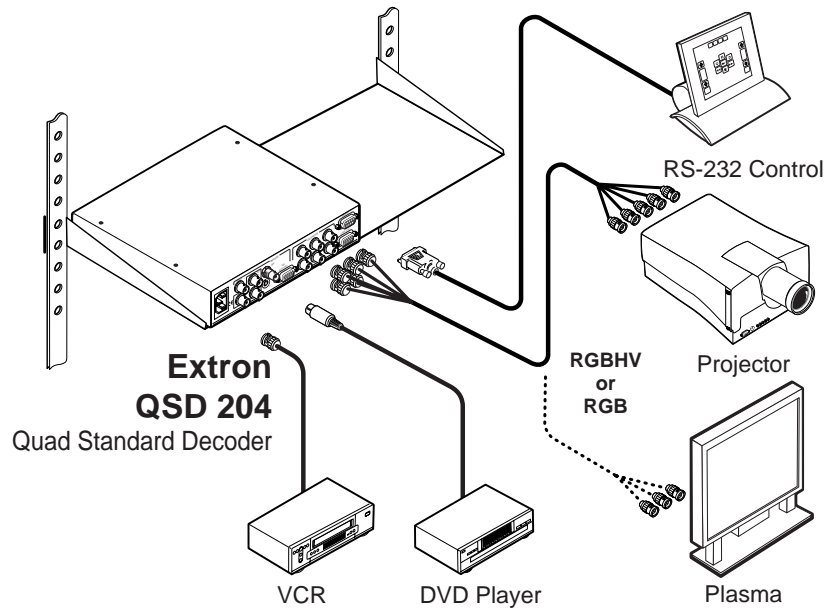
Mounting the QSD 204 on the underside of furniture

1. Attach the mounting brackets to the QSD 204 decoder using the decoder's existing top cover screws. See the above illustration.
2. Place the decoder against the underside of the furniture, then mark the location of the bracket screw holes on the mounting surface.
3. Drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep into the marked bracket screw holes on the furniture mounting surface.
4. Insert the four #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until about 1/4" of the screw head still protrudes from the mounting surface.
5. Align the mounting screws with the slots in the brackets and place the decoder flush against the mounting surface. Position the decoder forwards or backwards in the bracket slots, then tighten the four screws.

Installation and Operation

Application diagram

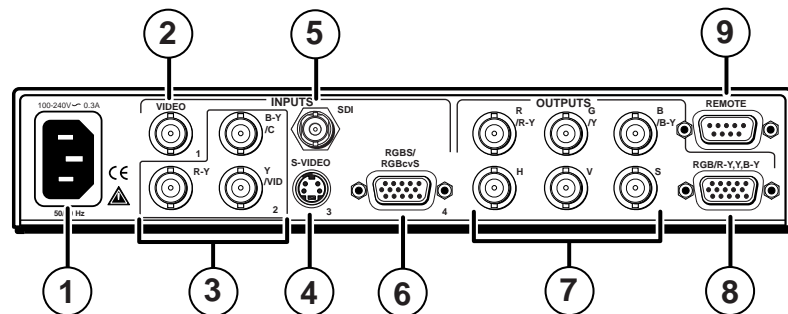
The following diagram is an example of a typical QSD 204 application with cable connections.



Example application of the QSD 204

Rear Panel Features

The rear panel of the QSD 204 D, as shown below, contains all of the possible connectors available on the QSD 204 series of decoders (QSD 204 and QSD 204 D models).

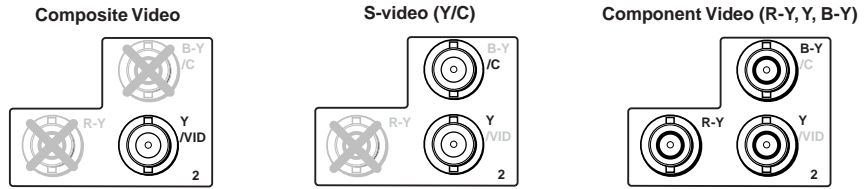


QSD 204 D rear panel connectors

- AC power connector** — Plug a standard IEC power cord into this connector to connect the decoder to a 100 to 240VAC, 50 Hz or 60 Hz power source. The front panel control and input selection LEDs will light during power-up.
- Video input 1: Composite video** — A composite video signal is input through the female BNC connector.



- ③ **Video input 2: Composite/S-video/Component** — This input, consisting of 3 female BNC connectors, accepts composite video, S-video, and component video signals. Connect cables for the appropriate signal type, as shown here.



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

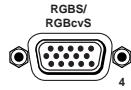


- ⑤ **SDI (serial digital interface) input connector** — Connect an SDI signal to this female BNC connector.



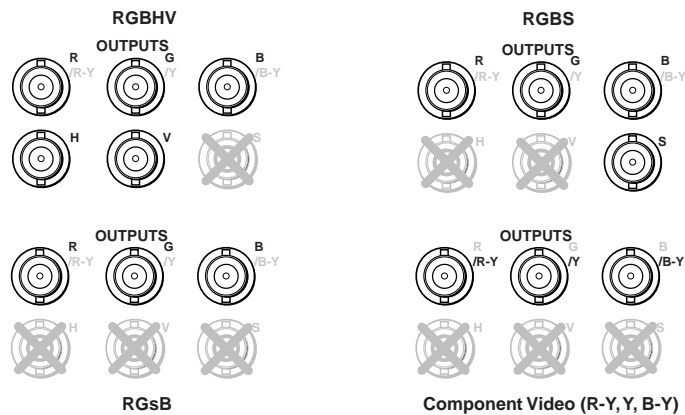
NOTE Only the QSD 204 D model has an SDI connector.

- ⑥ **Video input 4: RGBS or RGBcV** — Connect an RGBS or RGBcV video signal to this 15-pin HD connector.



NOTE Equipment following the SCART interconnection standard may be connected to the RGBcV input cabling configuration.

- ⑦ **RGB (RGBHV, RGBS, RGsB) or HD component (R-Y, Y, B-Y) video BNC outputs** — Connect coaxial cables from a display device to these BNCs for pass-through RGB or component video output.



Installation and Operation, cont'd

NOTE Outputs ⑦ and ⑧ are both buffered and can be connected simultaneously to two different displays. The sync format will be the same for both outputs.

- ⑧ **RGB or HD component (R-Y, Y, B-Y) 15-pin HD video output** — Connect an RGB video display or HD component video display to this connector.



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

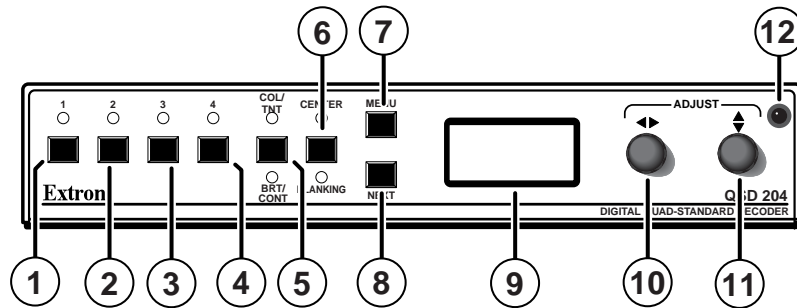
Pin	RS-232 function	Description
1	Input #1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input #2	Contact closure
5	Gnd	Signal ground
6	Input #3	Contact closure
7	Input #4	Contact closure
8	–	No connection
9	–	No connection

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 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 buttons, controls, LCD, and infrared sensor of the QSD 204, as shown below, are found on all models of the QSD 204 decoder series. The LEDs above each input button will light green and the LEDs above/below both picture control buttons will light amber when the button is pressed.



QSD 204 front panel

Input selection buttons

- ① **Composite input button** — This button selects composite video input (Input 1).
- ② **Composite/YC/component input button** — This button selects composite video, YC, or component video input (Input 2).
- ③ **S-video input button** — This button selects the S-video input (Input 3).
- ④ **RGBS/RGBcvS input button** — This button selects the RGBS (15 kHz) or RGBcvS input (Input 4).

NOTE An SDI input signal can be assigned to any of the inputs (Inputs 1 through 4).

Picture adjustment buttons

Pressing these buttons successively will toggle between the different picture adjustment functions and light the LEDs above and below each button.

- ⑤ **Color/Tint control button (Col/Tnt)** — This button controls the color and tint adjustment on the display by using the Adjust horizontal and Adjust vertical adjustment knobs. The adjustment range of both color and tint is 0 to 255. See the “Image adjustments” section in this chapter.

NOTE The tint control is not available if the input is component video, RGBS, RGBcvS, or SDI.
The color control is not available if the input is RGBS or RGBcvS.

Brightness/Contrast control button (Brt/Cont) — This button controls the brightness and contrast adjustment on the display by using the Adjust horizontal and Adjust vertical adjustment knobs. The adjustment range of both brightness and tint is 0 to 255. See the “Image adjustments” section in this chapter.

- ⑥ **Center control button** — This button controls the centering adjustment on the output display by using the Adjust horizontal and Adjust vertical adjustment knobs. The adjustment range of both horizontal and vertical centering is 0 to +255. See the “Image adjustments” section in this chapter.

Installation and Operation, cont'd

Blanking control button — This button controls the blanking adjustment on the display. To remove noise or extraneous material, such as closed captioning, remove scan lines at either the top or bottom of the screen. Rotate the Adjust horizontal (◀▶) knob to adjust the top blanking from 0 to 127 lines (the default is 0). Rotate the Adjust vertical (⬆) knob to adjust the bottom blanking from 0 to 127 lines (the default is 0). See the “Image adjustments” section in this chapter.

Menu button

- ⑦ **Menu button** — Use this button to enter and move through the main menu system in the QSD 204. See the “Menus, Configuration, and Adjustments” section in this chapter for details.

Next button

- ⑧ **Next button** — Use this button to step through the submenus in the QSD 204 menu system. See the “Menus, Configuration, and Adjustments” section in this chapter for details.

LCD menu display and controls

- ⑨ **LCD** — Displays configuration menus and status information. See the “Menus, Configuration, and Adjustments” section in this chapter for details.
- ⑩ **Adjust horizontal (◀▶) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.
- ⑪ **Adjust vertical (⬆) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.
- ⑫ **Infrared sensor** — This sensor is used to receive infrared (IR) signals from the IR-901 remote control. See the “IR 901 Infrared Remote Control” section in this chapter.

Menus, Configuration, and Adjustments

Decoder configuration and adjustments can be performed by using the Windows-based control program (see chapter 3 for details) or by using the front panel controls and the menus that are displayed on the QSD 204's LCD screen. These menus are used primarily when the decoder 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.

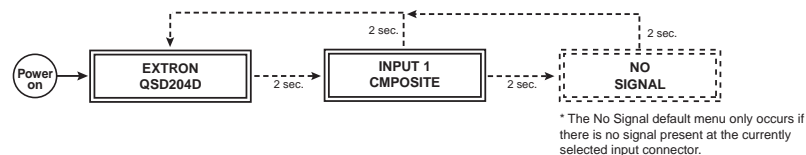
Next button — Press the Next button to move between the submenus of a selected main menu. Pressing the Next button during input configuration causes the current input's number and format type to be displayed on the LCD.

Adjust (◀▶, ⬆) knobs — In configuration mode, rotate the Adjust horizontal (◀▶) knob and Adjust vertical (⬆) 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.

Image adjustment buttons: Col/Tnt, (color/tint) Brt/Cont (brightness/contrast), Center, and Blanking — When one of these buttons is pressed repeatedly, the corresponding image adjustment menu appears on the LCD screen. Adjustments can then be made by rotating the Adjust horizontal (◀▶) knob or the Adjust vertical (⬆) knob. Settings and adjustments are stored in nonvolatile memory.

Menu overview

The default menus appear on the LCD when no adjustments are actively being made. They cycle between the screen showing the model of the decoder (QSD 204 or QSD 204 D) and the screen that shows the active input's number and video format, as shown below.



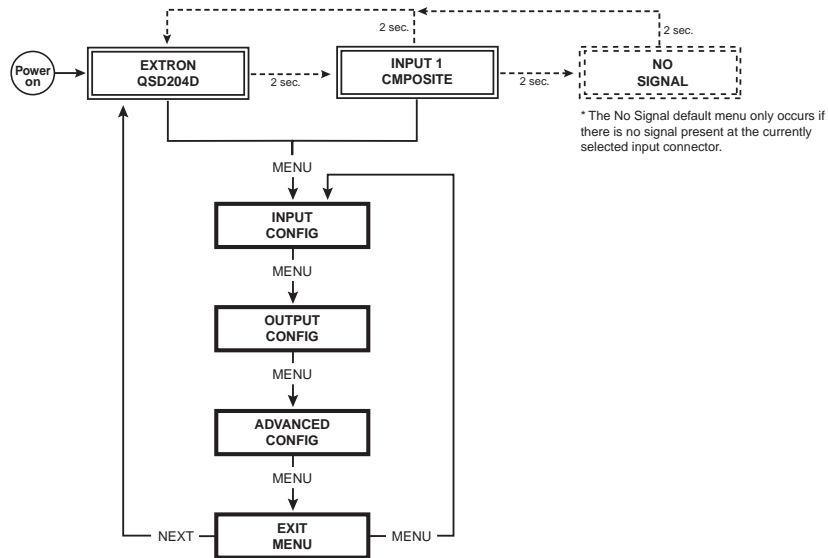
Default menus

NOTE From any menu or submenu, after ten seconds of inactivity the QSD 204 will save all adjustment settings and time-out to the default menu.

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

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

Installation and Operation, cont'd



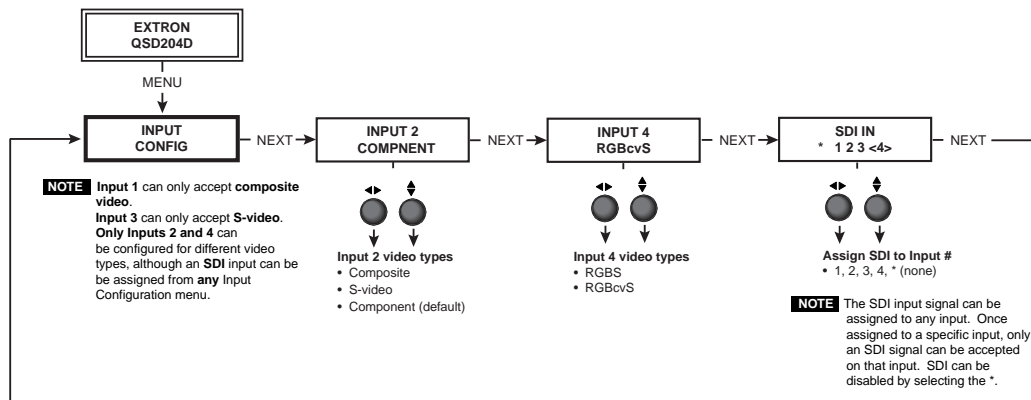
Main menus

NOTE To return to the default screens, let the QSD 204 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 will become active. For example, the menu will change from the Input Configuration menu or its submenus to the Output Configuration main menu.

Input Configuration

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



NOTE Input 1 can only input composite video, and Input 3 can only input S-video, no other video types are selectable for these inputs. Only inputs 2 and 4 offer selectable video types. From the Input Configuration menu, pressing the Next key repeatedly will display submenus with the input video types for Inputs 2 and 4. The SDI input (if any) can be assigned to any input from the Input Configuration submenus.

Input 2 Video Type

Rotate either the Adjust horizontal (◀▶) knob or Adjust vertical (⬆) knob while in the Input 2 submenu to select the appropriate video format (composite, S-video, component) for input 2. The default is component video.

Input 4 Video Type

Rotate the Adjust horizontal (◀▶) knob while in the Input 4 submenu to select the appropriate video format (RGBS, RGBcvS) for input 4. The default is RGBS.

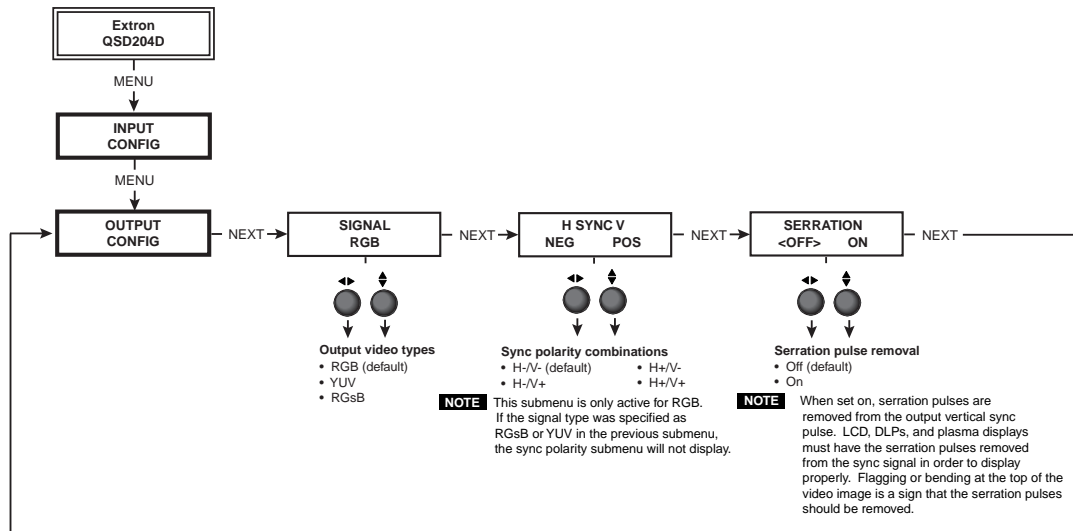
SDI input (SDI IN)

Rotate either the Adjust horizontal (◀▶) knob or Adjust vertical (⬆) knob while in the SDI Input submenu to select the input # for the SDI input. The SDI input can be assigned to inputs 1, 2, 3, 4, or none (*). The default is none.

NOTE After the SDI input is no longer assigned to an input, either because it has been assigned to a new input or is set to none, the input reverts back to the last video type that was assigned to it.

Output Configuration

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



Output Signal (Signal)

Using either the Adjust horizontal (◀▶) or Adjust vertical (⬆) knob, select the output video format required by the display: RGB (default), YUV, or RGsB.

Sync Polarity (H Sync V)

The display or projector may require a particular combination of horizontal (H) and vertical (V) sync signal polarities. Select the appropriate combination of

Installation and Operation, cont'd

positive or negative H and V sync by rotating either the Adjust horizontal (◄►) or Adjust vertical (⬆) knob.

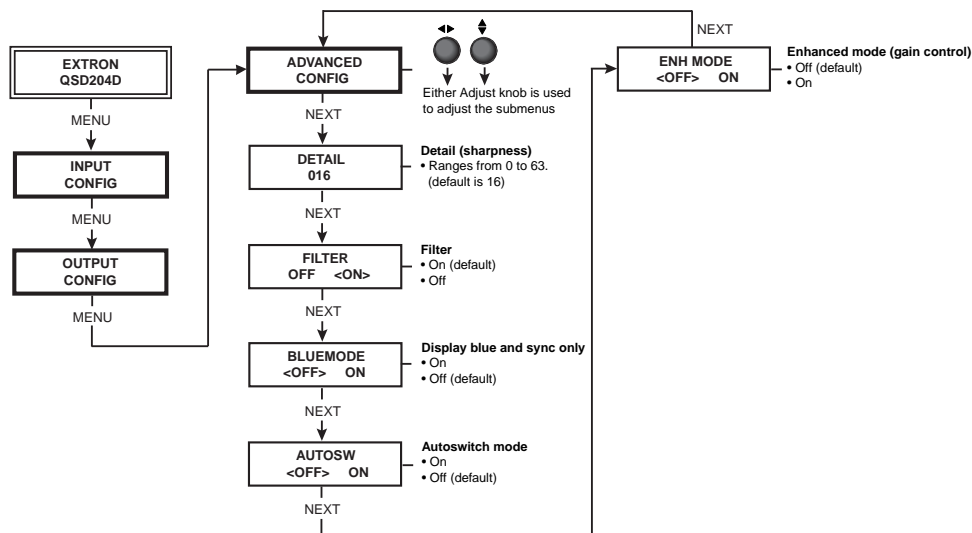
NOTE *If the previous output signal was specified as RGB or YUV, this submenu will not be displayed because this menu is only active for RGBHV.*

Serration pulse removal (Serration)

When set on, serration pulses are removed from the output vertical sync pulse. LCD, DLPs, and plasma displays must have the serration pulses removed from the sync signal in order to display properly. Flaggering or bending at the top of the video image is a sign that the serration pulses should be removed. Using either the Adjust horizontal (◄►) or Adjust vertical (⬆) knob, set the serration pulse removal to either "On" or "Off". The default is "Off".

Advanced Configuration

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



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 Adjust horizontal (◄►) or Adjust vertical (⬆) knob, adjust the detail while observing the output display.

Filter mode

The Filter mode, when set "On", reduces or eliminates aliasing and the resultant "jail bar" effect. For digital displays, set the filter "On" to reduce or eliminate high frequency noise. For CRT output, set the filter "Off".

Use either the Adjust horizontal (◄►) or Adjust vertical (⬆) knob to specify this mode as "On" or "Off". The default is "On".

Blue mode

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

Use either the Adjust horizontal (◀▶) or Adjust vertical (⬆) knob to specify this mode. The default is "Off".

NOTE *The Blue mode will be effective for RGB pass-through and YUV input signals. YC input signals will pass Y, but not C, so the output display will be black-and-white only.*

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 3 have active input signals, input 3 will be selected.

From this submenu, use either the Adjust horizontal (◀▶) or Adjust vertical (⬆) knob to specify this mode as "On" or "Off". The default is "Off".

NOTE *The Autoswitch mode ignores the presence of an SDI input signal, so any input which is assigned an active SDI signal will not be selected.*

Enhanced (Enh) mode

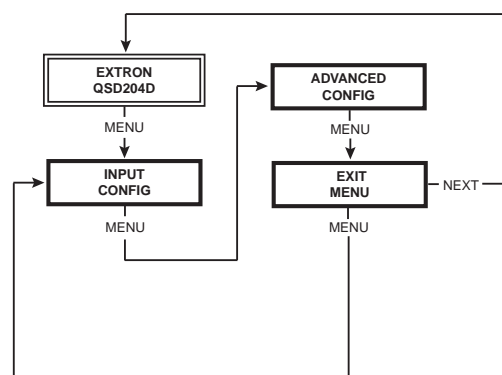
When the Enhanced mode is set "On", automatic gain control of the video input signal is enabled. If the input signal level is too weak, the signal gain will be increased, and if the input signal level is excessive, the signal gain will be decreased.

From this submenu, use either the Adjust horizontal (◀▶) or Adjust vertical (⬆) knob to specify this mode as "On" or "Off". The default is "Off".

NOTE *The Enhanced mode will only be effective on composite and S-video input signals.*

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 Input Configuration menu.



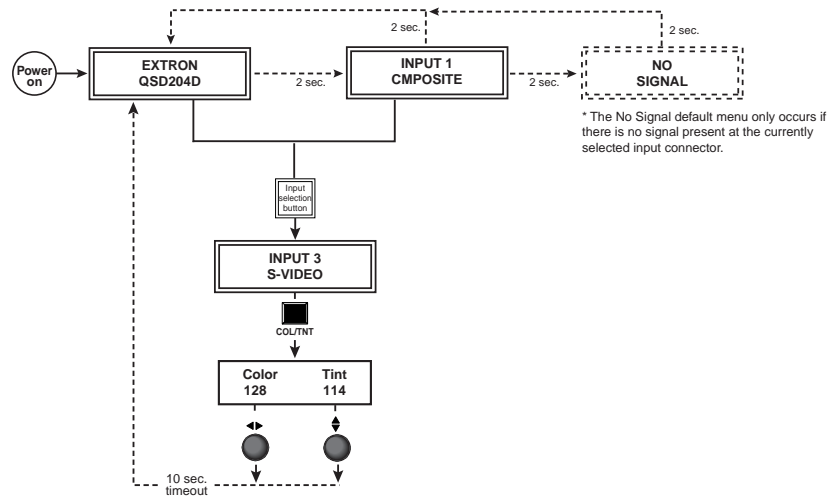
Installation and Operation, cont'd

Image Adjustments

Image adjustments apply to scaled video output only; RGB signals are passed through without adjustments. Sizing and centering image adjustments can be stored in memory as a preset (see the “Memory Preset” section in this chapter) and can be set separately for each input.

Color, tint, brightness, contrast, centering, blanking

To adjust an image for color, tint, brightness, contrast, centering, or blanking, follow the steps below. An example of making color adjustments, shown in the flowchart below, demonstrates the process, which is similar for all the other image adjustments.



NOTE The Adjust horizontal knob and the Adjust vertical knob are used to adjust the image settings on the left and right sides of the LCD screen, respectively.

1. Press the input selection button of the input you wish to adjust.
2. Toggle the appropriate image adjustment button (Color/Tint, Brightness/Contrast, Centering, and Blanking). The LCD display will show the name of the adjustments and the value of the current setting.
3. Rotate the Adjust horizontal knob (◀▶) or Adjust vertical knob (⬆⬇) to select a level from the following adjustment ranges:

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

- Color and Tint (Col/Tnt): 0 to 255 (see note below)
- Brightness and Contrast (Brt/Cont): 0 to 255
- Centering (Center): 0 to 255
- Blanking : 0 to 127

The decoder will time-out to the default menu after 10 seconds.

4. Repeat steps 2 and 3 for each image adjustment to be made for that input.

NOTE The LCD display will indicate that a Tint adjustment is not available (N/A) for Input 2 (component) or Input 4 (RGB, RGBS, RGBcvs).

Input Reset

Each input of the QSD 204 decoder can be reset to its default centering values by holding down the specific input button until the Input # Reset message is displayed on the LCD screen.

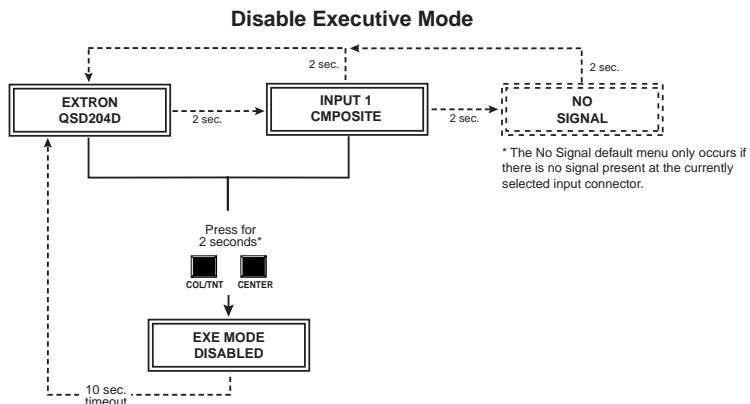
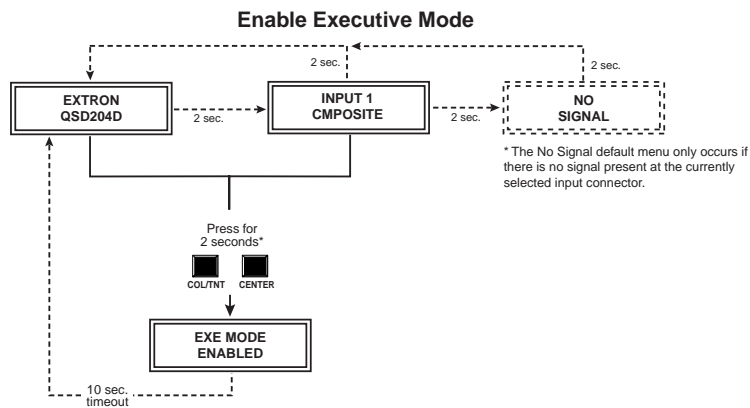
System Reset

The QSD 204 can be reset to all of its default values by holding down the Input 1 button while simultaneously plugging in the power cord. The System Reset message will be displayed on the LCD screen.

Executive Mode

To prevent accidental changes to settings, press the Col/Tnt and Center buttons simultaneously for 2 seconds to enable the QSD 204's Executive mode. Executive mode locks all front panel functions. The menu system will still return to the Default menu when 10 seconds have elapsed. The QSD 204's front panel, but not the IR 901, is affected by Executive mode. The IR 901 will still be able to control the decoder after Executive mode has been enabled. 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 three.

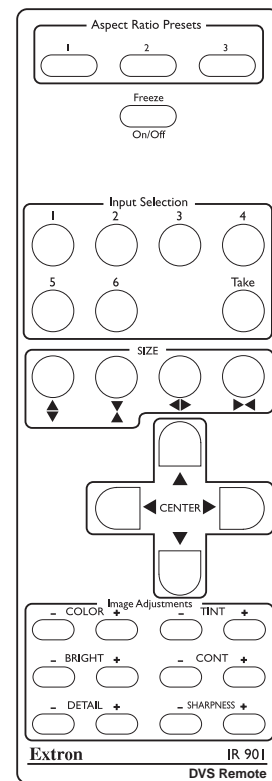
To disable the Executive mode, press the Col/Tnt and Center buttons simultaneously for 2 seconds.



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 QSD 204, input selection and adjustments can still be made from the IR 901, but you must use the QSD 204's front panel or the Windows-based control program (via an RS-232 device) to configure and program the decoder. See chapter three, "Serial Communication", for details.

The topmost part of the IR 901 features three Aspect Ratio Preset buttons, a Freeze button and four input selection buttons (1, 2, 3, 4). Inputs 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.



Freezing an input

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

Selecting an input

To select an input source, press an input button (1 thru 4).

Center

Use the Center buttons to adjust the 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 QSD 204, 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 image is frozen.	Freeze mode is on.	Deactivate freeze mode. If that does not work, unplug the power cord from the decoder, then plug it back in.
The image is green.	The output sync is configured for sync on green.	Turn off sync on green.
The image is too soft.	The detail level needs to be changed.	Change the detail level.

Installation and Operation, cont'd



QSD 204

3

Chapter Three

Serial Communication

RS-232 Programmer's Guide

Control Software for Windows

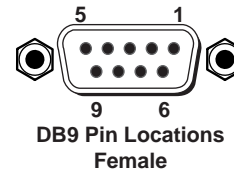
Serial Communication

The QSD 204 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) can use either Extron's Simple Instruction Set (SIS) commands or the graphical control program for Windows.

The decoder 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	Input #1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input #2	Contact closure
5	Gnd	Signal ground
6	Input #3	Contact closure
7	Input #4	Contact closure
8	-	No connection
9	-	No connection



RS-232 Programmer's Guide

Host-to-decoder 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 QSD 204 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the decoder 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.

Decoder-initiated messages

When a local event such as a front panel selection or adjustment takes place, the QSD 204 decoder responds by sending a message to the host. No response is required from the host. The decoder-initiated messages are listed here (underlined).

(C) Copyright 2002, Extron Electronics, QSD 204, Vx.xx ↵

The QSD 204 sends the copyright message when it first powers on. Vx.xx is the firmware version number.

Chn[x] ↵ (where [x] is the input number)

The QSD 204 sends this response when an input is switched. C = both audio and video were switched.

Error responses

When the decoder receives a valid SIS command, it executes the command and sends a response to the host device. If the QSD 204 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 (the number is too large)

E10 – Invalid command

E11 – Invalid preset number

E13 – Invalid value (the number is out of range/too large)

E17 – Illegal command for this signal type.

Using the command/response tables

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

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

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 (0 through 4)
0 = no input
1 = input 1, 2 = input 2, and so forth
- X2** = 0 = off, 1 = on
- X4** = Video signal type (1 through 7)
1 = composite video
2 = YC
3 = YUV
5 = RGBS
6 = RGBcvS
7 = SDI (serial digital interface)
- X5** = Input (1 to 4)
- X8** = Controller firmware version (listed to two decimal places e.g.: x.xx)
- X10** = Picture adjustment range (0 through 255)
- X12** = Detected input signal standard (0 through 4)
0 = none
1 = NTSC 3.58
2 = PAL
3 = NTSC 4.43
4 = SECAM
- = not applicable (occurs when the input is set for RGB, YUV, or progressive YUV)
- X13** = Detail level (0 through 63)
- X14** = Adjustment range (0 through 127)
- X16** = Executing mode status (0 through 2)
0 = disabled (executive mode off, normal mode on)
1 = enabled, image adjustments are locked
- X17** = Blanking adjustment range (0 through 127 lines)

Command/response table for SIS commands (continued)

Command	ASCII Command (host to decoder)	Response (decoder to host)	Additional description
View the brightness value	Y	Br 10 ↵	Show the brightness setting.
Detail mode			
Set the detail level	13 D	Det 13 ↵	Specify the detail level.
View the detail value	D	Det 13 ↵	Show the detail setting.
Horizontal shift			
Set horizontal position	10 H	Hph 10 ↵	Specify the horizontal position.
Increment	+H	Hph 10 ↵	Shift right.
Decrement	-H	Hph 10 ↵	Shift left.
View the horizontal pos. value	H	Hph 10 ↵	Show the horizontal position.
Vertical shift			
Set the vertical position	10 /	Vph 10 ↵	Specify the vertical position.
Increment up	+ /	Vph 10 ↵	Shift up.
Increment down	- /	Vph 10 ↵	Shift down.
View the vertical pos. value	/	Vph 10 ↵	Show the vertical position.
Top blanking			
Specify a top blanking value	17 (	Bl 17 ↵	Set the number of lines to blank at the top of the picture.
Increase the top blanking value	+(	Bl 17 ↵	Increase the # of top lines blanked.
Decrease the top blanking value	-(	Bl 17 ↵	Decrease the # of top lines blanked.
View the top blanking value	(	Bl 17 ↵	Show the number of lines that are blanked at the top of the picture.
Bottom blanking			
Specify a bottom blanking value	17)	Blb 17 ↵	Set the number of lines to blank at the bottom of the picture.
Increase the bottom blanking value +)	+))	Blb 17 ↵	Increase the number of lines blanked at the bottom.
Decrease the bottom blanking value -)	-))	Blb 17 ↵	Decrease the number of bottom lines blanked.
View the bottom blanking value	)	Blb 17 ↵	Show the # of bottom lines that are blanked.
Freeze			
Enable	1F	Frz 1 ↵	Output a "frozen" video image.
Disable	0F	Frz 0 ↵	Turn off freeze (output motion).
View the freeze status	F	Frz 2 ↵	Show the freeze status.
<i>Example:</i>	F	Frz 0 ↵	
Executive mode			
Disable	0X	Exe 0 ↵	Adjustments & selections can be made from the front panel.

Serial Communication, cont'd

Command/response table for SIS commands (continued)

Command	ASCII Command (host to decoder)	Response (decoder to host)	Additional description
Enable (lock image adjustments)	1X	Exe1 ↵	Lock front panel adjustments; adjust image via RS-232 only.
View the executive mode status	X	Exe [X16] ↵	Show executive mode status.
<i>Example:</i>	X	Exe0 ↵	
Firmware version, part number & information requests			
Query firmware version number	Q	Ver [X8] ↵	Show the controller firmware version.
Request part number	N	N60-501-0_ ↵	Show the decoder's part #.
Request general info.	I	(See below) C[X1]•Typ[X4]•Std[X12]•Sdi[X1] ↵	Show the decoder's status.
Zap (reset to default settings)			
Zap image adjustments/controls	[Esc] zI	ZapI ↵	Reset the image adjustments to factory settings.
Zap all QSD 204 settings/memories	[Esc] zXXX	ZapXXX ↵	Reset everything: all settings, and adjustments to the factory default.

The syntax for setting a special function is $\boxed{x?} * \boxed{x!} \#$ where $\boxed{x?}$ is the function number and $\boxed{x!}$ is the value. To view a function's setting, use $\boxed{x?}\#$ where $\boxed{x?}$ is the function number. In the following table the values of the $\boxed{x?}$ 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 decoder)	Response (decoder to host)	$\boxed{x!}$ values and additional descriptions
Enhanced mode			
Enhanced mode	12 * $\boxed{x!}$ #	Enh $\boxed{x!}$ ↵	0 = off, 1 = on,
<i>Example:</i>	12*1#	Enh1 ↵	<i>Example:</i> enable enhanced mode
Decoder settings			
Output signal	6 * $\boxed{x!}$ #	Syn $\boxed{x!}$ ↵	0 = RGB 1 = YUV 2 = RGSB (sync on green, SOG)
<i>Example:</i>	6*0#	Syn0 ↵	<i>Example:</i> RGB sync output
Decoder output polarity	7 * $\boxed{x!}$ #	Pol $\boxed{x!}$ ↵	0 = H-/V- (default) 1 = H-/V+ 2 = H+/V- 3 = H+/V+
<i>Example:</i>	7*1#	Pol1 ↵	<i>Example:</i> H-/V+ sync polarity
Blue screen			
Blue screen (blue & sync output only)	8* $\boxed{x!}$ #	Blu $\boxed{x!}$ ↵	0 = off (default) (RGB & sync output) 1 = on (blue video & sync output only)
<i>Example:</i>	8*1#	Blu1 ↵	<i>Example:</i> blue & sync output for setup
Auto switch			
Auto switch mode	10* $\boxed{x!}$ #	Aut $\boxed{x!}$ ↵	0 = off (default) 1 = on
<i>Example:</i>	10*1#	Aut1 ↵	<i>Example:</i> enable auto switch mode
Reconstruction filter			
Reconstruction filter	11* $\boxed{x!}$ #	Fil $\boxed{x!}$ ↵	0 = off 1 = on (default)
<i>Example:</i>	11*1#	Fil1 ↵	<i>Example:</i> enable the reconstruction filter
Serration pulse			
Serration pulse	17* $\boxed{x!}$ #	Ser $\boxed{x!}$ ↵	0 = off (default) 1 = on
<i>Example:</i>	17*1#	Ser1 ↵	<i>Example:</i> enable serration pulse

Serial Communication, cont'd

Control Software for Windows

The included Extron QSD 204 Control Program for Windows offers another way to control the QSD 204 via RS-232 connection in addition to the Simple Instruction Set commands. The control program's graphical interface includes the same functions as those on the decoder's front panel and some additional features that are only available through the Windows-based software.

The control software is compatible with Windows 95/98, Windows NT, and Windows 2000. Extron's QSD 204 Control Program is included with the decoder, and updates can be downloaded from the Extron Web site (<http://www.extron.com>).

Installing the software

The control program is contained on a set of 3.5-inch diskettes, and it requires approximately 2 MB (megabytes) of hard disk space.

To install the software on the hard drive:

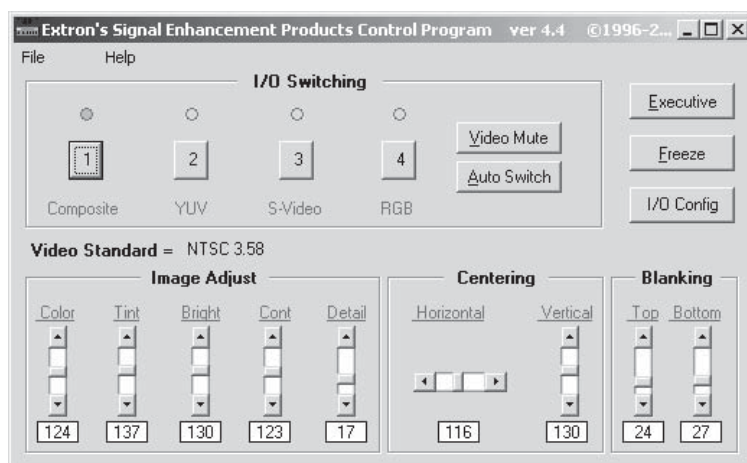
1. Run SETUP.EXE from the floppy disk.
2. Follow the instructions that appear on the screen.

By default the installation creates a C:\QSD 204 directory, and it places two icons (QSD 204 Control Pgm and QSD 204 Help) into a group or folder named "Extron Electronics".

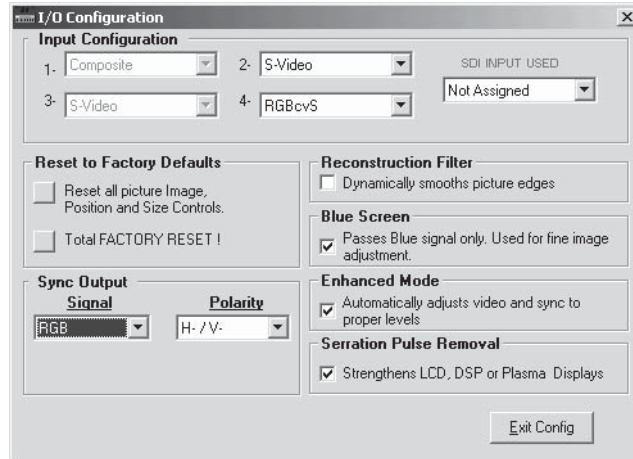
Using the control program

Many items found in the QSD 204 Control Program are also accessible via front panel controls and the LCD menus described in chapter two. Refer to chapter two for details on features and settings. The QSD 204 Help Program provides information on settings and on how to use the control program itself. Some features, including the miscellaneous options, are only available via this control program. These features are described in the sections of this chapter that correspond to the parts of the control program where the features are found.

1. To run the control program, double-click on the QSD 204 Control Pgm icon in the Extron Electronics group or folder. The Comm menu appears on the screen.
2. Click on the comm port that is connected to the QSD 204's RS-232 port. The Extron QSD 204 Control Program windows appear.



- Click on the I/O Config button to configure the inputs from the I/O Configuration Window.



Using the help program

For information on program features, press the F1 computer key, or click on the Help menu from within the QSD 204 Control Program, or double-click on the QSD 204 Help icon in the Extron Electronics group or folder.



For explanations of buttons or functions, click on the tabs in the help screen to reach the desired screen. Use a mouse or the Tab and Enter keys to select a button/function. A description and tips on using the program will appear on screen.

Serial Communication, cont'd



QSD 204

A

Appendix

Appendix

Specifications

Part Numbers and Accessories

Firmware Upgrade Installation

Serial Digital Interface (SDI) Card Installation

Appendix

Specifications

Video input

Number/signal type	1 RGBS, RGBcvS 1 component video (Y, R-Y, B-Y), S-video, composite video 1 SDI (optional) 1 S-video 1 composite video
Connectors	1 15-pin HD female (RGB) 3 BNC female (component video, S-video, composite video) 1 BNC female (optional SDI) 1 4-pin mini-DIN female (S-video) 1 BNC female (composite video)
Minimum/maximum levels	Analog 0.0V to 1.0V p-p with no offset
Impedance	75 ohms
Horizontal frequency	15.6 kHz to 17.75 kHz
Vertical frequency	50 Hz to 60 Hz
Return loss	-30dB @ 5 MHz

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	2 decoded RGBHV, RGBS, RGsB, or component video
Connectors	6 BNC female, 1 15-pin HD female
Minimum/maximum levels	0.0V to 0.7V p-p
Impedance	75 ohms
Vertical frequency	50 Hz to 60 Hz

Sync

Input type	RGBS, RGBcvS
Output type	RGBHV, RGBS, RGsB, component video
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	RGB, 0V to 5.0V p-p RGBcvS, 0V to 1.0V p-p
Output level	TTL 5.0V p-p
Input impedance	75 ohms
Output impedance	75 ohms
Max input voltage	5.0V p-p
Max. propagation delay	20 ns
Polarity	Positive or negative (switch-selectable)

Control/remote — decoder

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	1 = input 1 select, 2 = TX, 3 = RX, 4 = input 2 select, 5 = GND, 6 = input 3 select, 7 = input 4 select
Contact closure	9-pin female D connector (same as RS-232 connector)
Contact closure pin configurations	See pins 1, 4, 6, and 7 above.
IR controller module	IR 901

Program control Extron's control program for Windows®
Extron's Simple Instruction Set™ – SIS™

General

Power 100VAC to 240VAC, 50/60 Hz, 30 watts, internal, auto-switchable
Temperature/humidity Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing
Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing
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 width)
4.4 cm H x 22.2 cm W x 24.1 cm D
(Depth excludes connectors and knobs.)
Product weight 3.3 lbs (1.5 kg)
Shipping weight 6 lbs (2.7 kg)
DIM weight TBD
Vibration ISTA/NSTA 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 *Specifications are subject to change without notice.*

Part Numbers and Accessories

Included parts

These items are included in each order for a QSD 204 decoder:

Included parts	Part number
QSD 204, 204 D (1)	60-501-01, -02
Rubber feet (self-adhesive) (4)	25-020-02
IEC power cord	27-044-01
Tweezer (small screwdriver)	100-014-01
QSD 204 User's Manual	68-651-01
DVS 406 Windows-based control program	29-017-01
QSD 204 label	33-718-01

Accessories

These items can be ordered separately:

Accessories	Part number
IR 901 remote control	70-152-01
Rack shelf mounting kit	60-190-01
SDI video input card	70-168-01
Under-desk mounting bracket kit	70-219-01

Firmware Upgrade Installation

In some cases the QSD 204'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.

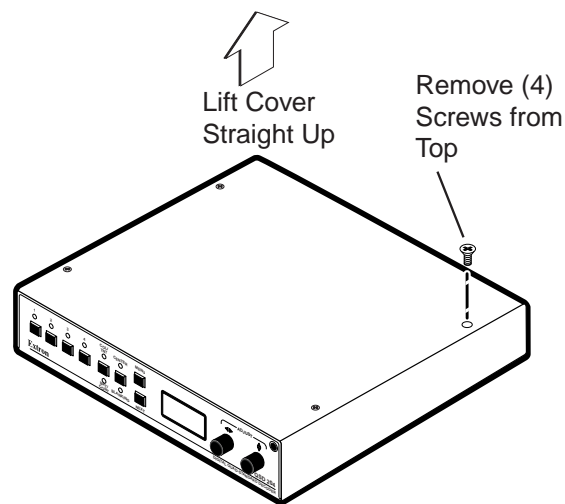
WARNING *Changes to firmware must be performed by authorized service personnel only. Some QSD 204 firmware updates must be performed at the Extron factory.*

Follow these steps to replace firmware in the decoder.

1. Disconnect the AC power cord from the QSD 204 to remove power from the unit.

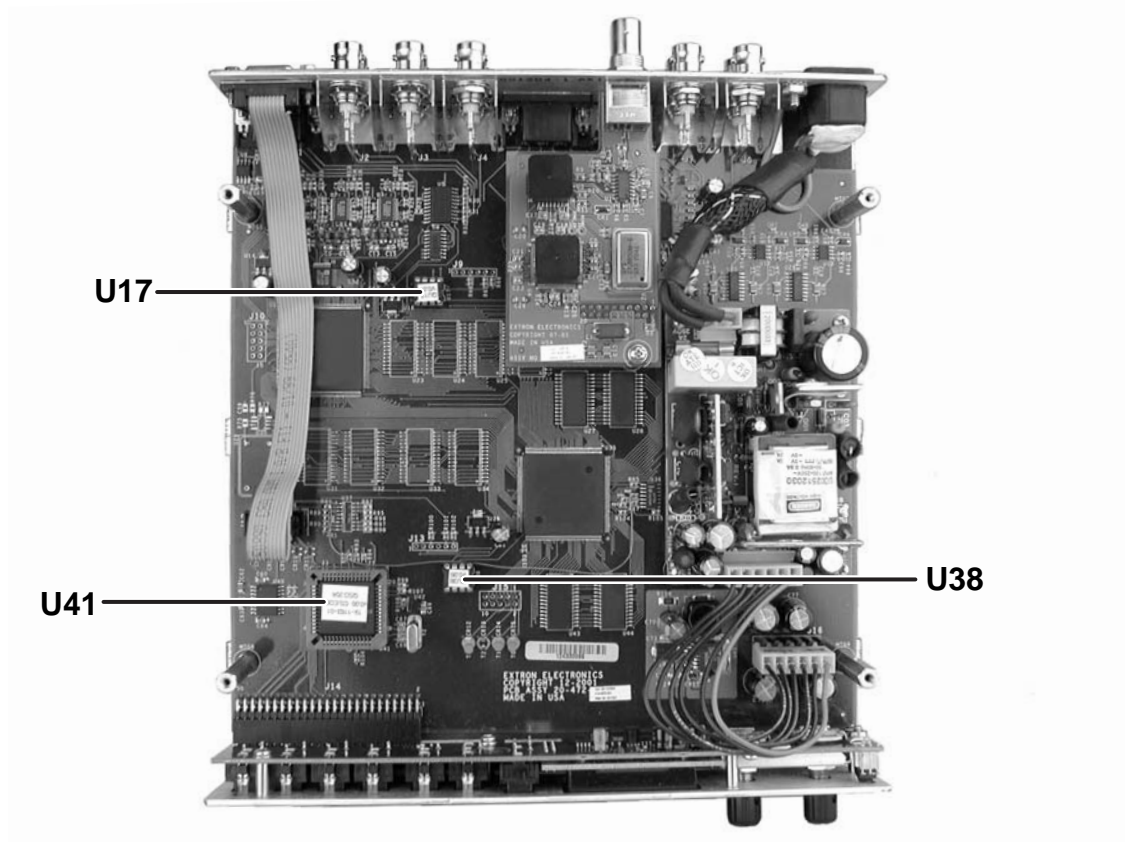
WARNING *To prevent electric shock or damage, always unplug the QSD 204 decoder from the AC power source before opening the enclosure.*

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



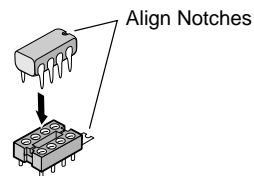
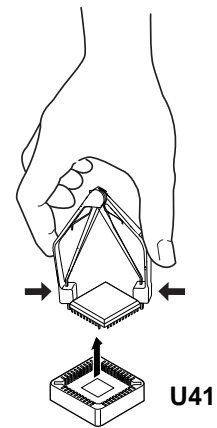
WARNING *Do not touch any switches or other electronic components inside the decoder. Doing so could damage the decoder. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with firmware replacement. A grounding wrist strap 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, the U17 or U38 IC chip may be removed by grasping it firmly with your fingers and pulling it out, then continuing 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. Align the slots of the new firmware chip with the angled corners of the socket in the same orientation as the old chip.
9. Gently, but firmly, press the chip into place in the socket.
10. Replace the top cover on the QSD 204 decoder, and fasten it with the screws that were removed in step 3.
11. Rack/furniture mount the decoder, and reconnect the AC power cord.



Serial Digital Interface (SDI) Card Installation

The optional SDI card may be installed in the decoder if it does not already have an input for a serial digital interface signal. We recommend that you send the unit in to Extron for service and updates.

WARNING *Changes to electronic components must be performed by authorized service personnel only.*

Follow these steps to install an SDI card in the QSD 204.

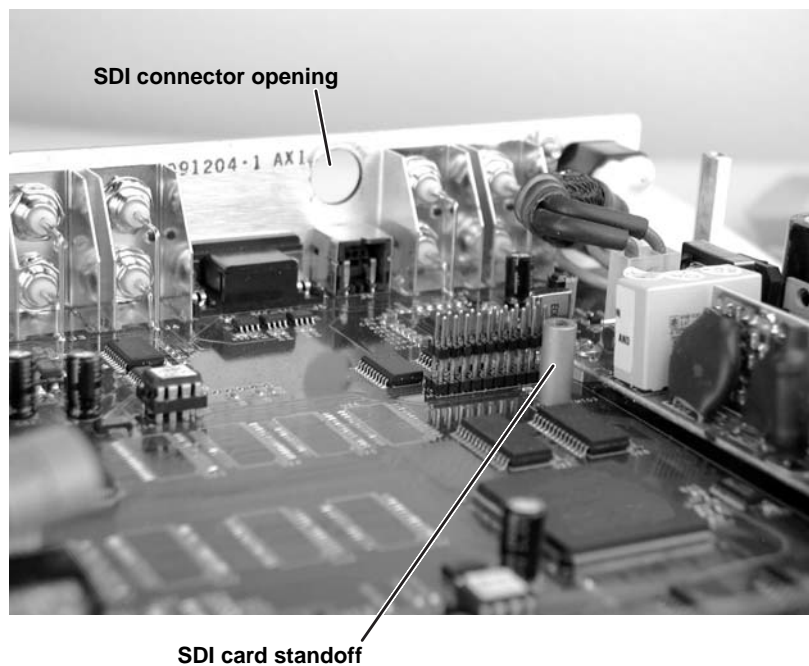
1. Disconnect the AC power cord from the QSD 204 to remove power from the unit.

WARNING *To prevent electric shock, always unplug the QSD 204 decoder from the AC power source before opening the enclosure.*

2. Remove the decoder from the rack or furniture.
3. Remove the cover of the decoder (the top half of the enclosure) by removing the screws, then lifting the cover straight up. See the top cover removal diagram in the “Firmware Upgrade Installation” section.

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

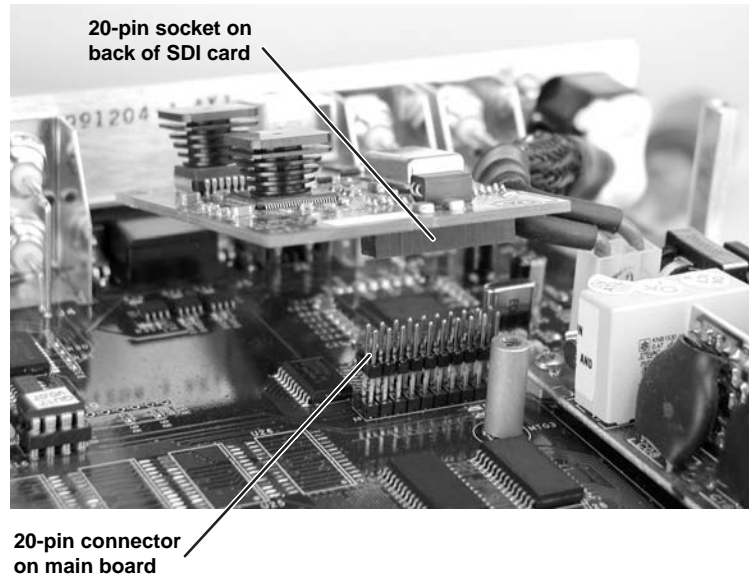
4. Locate the SDI card standoff located near the middle rear portion of the main circuit board (looking from above with the front panel nearest to you).



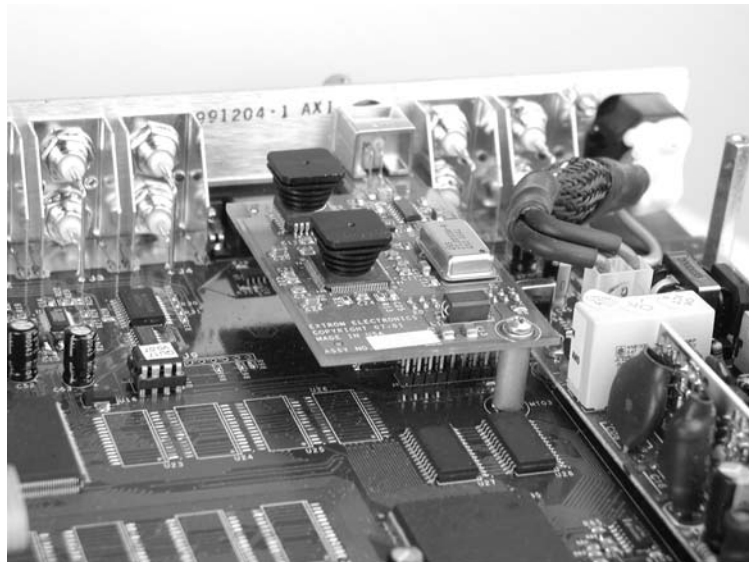
5. Remove the adhesive SDI cover from the rear SDI connector opening of the decoder and position the SDI card at an angle with the SDI connector protruding from the rear SDI connector opening.

Appendix, cont'd

- The SDI card has a 20-pin socket on the underside which should align with the 20 pins on the main circuit board. Be sure to align the pins properly, in order to prevent bending the pins, before pressing the SDI card firmly in place against the standoff. The mounting hole on the SDI card should now be directly over the standoff.



- Insert the card's installation screw through the SDI card's mounting hole and gently tighten it into the standoff.



- Install the SDI connector's hex nut and keep the SDI card from twisting as the nut is tightened.
- Replace the top cover on the QSD 204 decoder, and fasten it with the screws that were removed in step 3.
- Rack/furniture mount the decoder, and reconnect the AC power cord.