Extron Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

VS 200 SL

VideoShift with ShiftLock

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Precautions

Safety Instructions • English

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

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

Caution

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

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

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

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

Consignes de Sécurité • Français

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

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

Attention

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

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

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

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

Sicherheitsanleitungen • Deutsch

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

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

Achtung

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

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

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

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

Instrucciones de seguridad • Español

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

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

Precaucion

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

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

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en 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.

Warning

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

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

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

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

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

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

Avertissement

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

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

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

Vorsicht

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

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

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

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

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

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

Advertencia

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

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

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

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

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el 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 baterias usadas siguiendo las instrucciones del fabricante.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of two 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, Central America, and Asia:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, U.S.A.

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

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), or 65.226.0015 (Asia) 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.

Legend of Icons

The following icons may be used in this manual:

Important information – for example, an action or a step that must be done before proceeding.

A Warning – possible dangerous voltage present.

A Warning – possible damage could occur.

A Note, a Hint, or a Tip that may be helpful.

Additional information to help clarify the current subject.

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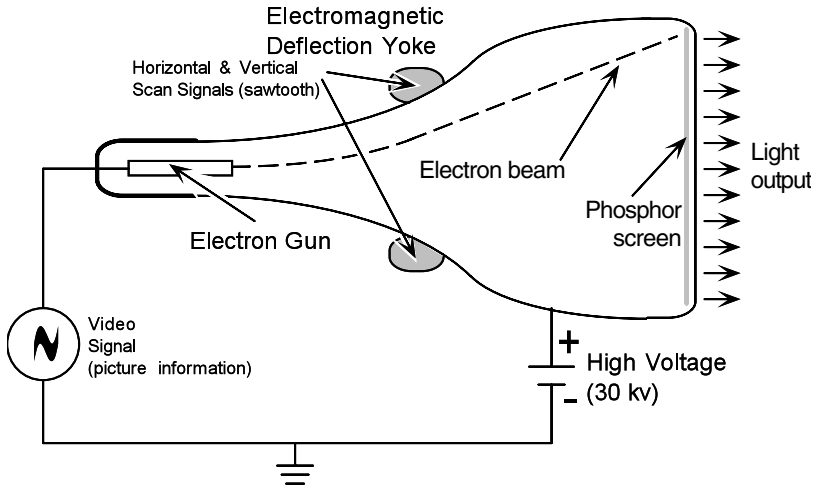
Terms that relate to this manual

Burn/Burn-in – Overexposure - In the case of CRTs, when the screen's phosphor has been exposed to the electron beam for too long a time, the phosphor becomes permanently damaged. The damaged phosphor has a different color; that's why the image appears to remain on the screen when the beam is off.

CRT (cathode ray tube) – Sometimes called a "picture tube", a CRT is a vacuum tube that produces light when energized by the electron beam inside the tube. The light beam strikes a phosphor coating on the back side of the screen, causing it to glow.

Phosphor – The chemical coating on the inside of a CRT screen that emits light when struck by the electron scan beam.



Screen Saver – Any method of "saving" the CRT screen from phosphor burn by changing the displayed image or by blanking the screen.

Example of Phosphor Burn

If the text on the top screen were to stay too long, it could damage the phosphor on the screen.

As shown on the second screen, when the text does change, there are images of the old text burned into the phosphor, making it difficult to read the new text.

1

Chapter One

Introduction

Description of VideoShift

VideoShift™ is a video image movement system designed to extend the life of projection CRTs in large screen projectors and data monitors. The VideoShift system moves, or shifts, the video image clockwise around the display screen area. This movement is so gradual that it takes several minutes for each rotation, and it is not noticeable by viewers. Shifting the image limits the time during which bright video information remains in one spot on the CRT phosphor. Moving the image allows the phosphor to cool down and recover, thus extending its life.

Screen Savers vs VideoShift

Ordinarily, the life of a CRT or monitor is shortened by allowing intense or bright information to be displayed in the same location of the CRT screen for an extended period of time. Images "burn" into the screen, causing discoloration of the phosphor. Burned phosphor also has less brightness. This is why computers use *screen saver* programs. However, there are applications where a screen saver would not be practical because the information must remain on the screen. One example where this is necessary is on the flight schedule monitors at an airport. The information is usually stationary white text on a black background. Because much of the information does not often change, the intense white text will burn or discolor the display. When the display is turned off, or the information changes, evidence of old information can still be seen – usually a dull, brown image.

Applications

A VideoShift system gets the best results when graphic images are made up of text or lines, because the bright areas are small or narrow. However, graphic images that have large, bright areas are less successful because the images are too large to move to a new area (i.e., when a large, bright area is shifted, it may overlap the area it previously occupied). However, the VideoShift system can limit the amount of phosphor burn by distributing the intensity over a larger area, making it less noticeable.

We could think of the phosphor on a screen as being like a field of grass. Walking across the field occasionally, or in a random pattern, allows the grass to recover and there is no noticeable path. However, walking frequently across the same area will wear a path because the grass can't grow back.

Extron's VideoShift Products

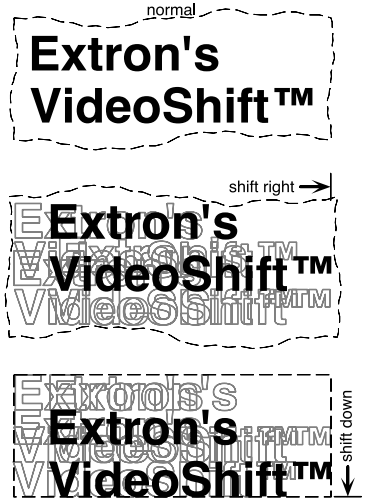
This manual covers the VS 200 SL, one of Extron's products that uses VideoShift to prevent burn-in by moving the displayed image around on the screen. The VS 200 SL model also uses Extron's ShiftLock™ feature, which allows several ShiftLock devices to be digitally locked in a master/slave VideoShift system. The master unit supplies the VideoShift sequence for each slave.

Features

- *Metal enclosure that is half the width of a rack, and 1U high.*
- *Auto-switchable 100-240 VAC, 50/60 Hz power supply.*
- *Input capability of RGBS or RGBHV signals.*
- *Outputs RGBS or RGBHV to the connected projector.*
- *Digital sync processing, making the movement imperceptible.*
- *Includes ShiftLock.*

VideoShift

VideoShift movement is to the right, and then down, to the left, and then up, etc. This is illustrated to the right. The distance of the shift or movement depends upon the range setting.



The vertical shift is in number of lines, while the horizontal shift is in units of time. Approximate settings are:

Minimum setting:
Vertical shift = 8 scan lines (4 up and 4 down from center)
Horizontal shift = 0.1 µsec.

Mid-range setting:
Vertical shift = 16 scan lines
Horizontal shift = 0.68 µsec.

Maximum setting:
Vertical shift = 32 scan lines
Horizontal shift = 1.28 µsec.

The actual horizontal distance depends on the video format.

Here are two examples at maximum range:
SGI – 128 pixels
VGA3 (640 x 480, 31.5 kHz) – 64 pixels

Specifications

Video input

Number/type	1 RGBHV, RGBS, RGsB
Connectors	5 BNC female
Nominal level(s)	Analog ..... 0.3V to 1.25V p-p
Impedance	75 ohms (all inputs are terminated at 75 ohms)
Horizontal frequency	15 kHz to 150 kHz
Vertical frequency	40 Hz to 140 Hz
Return loss	-30dB @ 5 MHz

Video throughput

Gain	Unity
Bandwidth	250 MHz (-3dB), fully loaded
Rise time	1.6 bS
Frequency response	< ± 0.1dB to 15 MHz
Crosstalk	-6dB @ 3.58 MHz

Video characteristics

Unit-to-unit tracking (ShiftLock)	Between units	± 0.5 nS accuracy
	Long-term drift	± 0.5 nS accuracy
		< 0.1 pixels @ 60 kHz
		< 0.05 pixels @ 31.5 kHz

Video output

Number/type/format	1 RGBHV, RGBS, RGsB
Connectors	5 BNC female
Nominal level	1V p-p
Impedance	75 ohms
Return loss	-30dB @ 5 MHz
DC offset	± 5mV maximum

Sync

Input type	RGBHV, RGBS, RGsB
Output type	RGBHV, RGBS, RGsB
ShoftLock connectors	2 female jacks (ShiftLock)
Input level	TTL ..... 0.5V to 5V p-p
Output level	TTL ..... 4V to 5V p-p
Input impedance	510 ohms
Output impedance	75 ohms
Output level	4V to 5V p-p
Max. rise/fall time	4.15 nS
Polarity	Positive/negative

General

Power	100VAC to 240VAC, 50/60 Hz, 12 watts, internal, autoswitchable
Temperature/humidity	Storage -40° to 158°F (-40° ro +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 1U rack shelf, part #60-190-01
Enclosure type	Metal
Enclosure dimensions	1.75"H x 8.75" W x 9.50" D
	4.45 c mH x 22.2 xcm W x 24.13 cm D
Sjipping weight	5 lbs (2.3 kg)
Vibration	NSTA 1A in carton (National Safe Transit Association)
Approvals	CE
MTBF	30,000 hours
Warranty	2 years parts and labor

Specifications are subject to change without notice.

Chapter Two

Installation

Rear Panel Operation

Making ShiftLock Cables

Mounting the VS 200 SL in a Rack

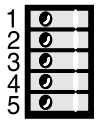
Rear Panel Operation

Following is the operation of VS 200 SL switches and connectors.

BNC Connectors – Connect Hi-Res BNC cables per application requirements. See "Automatic Sync Output Detection" below.

ShiftLock In/Out Connectors – Allows connection of more than one VS 200 SL to synchronize shifting. Use 2-conductor cables to daisy-chain ShiftLock control between master and slave devices. Set up ShiftLock only on the master; slaves shift with the master. See pages 2-2 and 2-3.

DIP Switch Settings



The VS 200 SL has auto sync, which means it outputs sync according to the impedance detected on the output cables. However, the DIP switch settings take priority. If a switch is set, it forces a condition, regardless of what is detected.

Following are the DIP switch settings for the VS 200 SL. In the default positions (all switches OFF), sync output is determined by the impedance detected through the output cables.

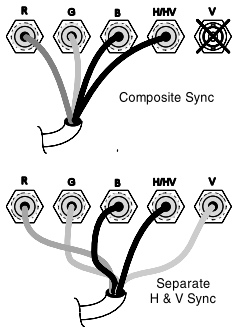
Sw#	Position	Function
1	ON OFF-normal	Always separate H and V sync Automatic sync output detection
2	ON OFF-normal	Always negative sync Sync output polarity follows Input
3	ON OFF-normal	No serration pulses Serration pulses pass through. (or added if not already present)
4	ON OFF-normal	Vertical sync width = 2-3 times normal Vertical sync width = normal
5		Not used

Automatic Sync Output Detection

Sync is output in one of two ways, depending on the impedance detected through the output cables:
Impedance = 75 ohm on R, G, and B,
or up to 1 kohm on sync lines.

Cabling Examples:

- *Impedance on only R, G, B, & H/HV channels, output = composite sync.*
- *Impedance on R, G, B, H/HV & V channels output = separate H & V sync.*

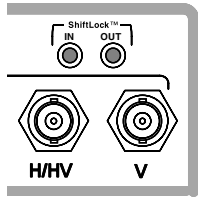


Turning a DIP switch ON overrides automatic sync detection.

ShiftLock

The ShiftLock feature allows two or more VS 200 SL units to be linked together so that all the units shift together. A toggle switch on the front panel allows one unit to be set as the master. Each of any other units connected must be set as a slave. The shift signal goes from the master to all slaves. The ShiftLock controls on the front panel are described in chapter 3.

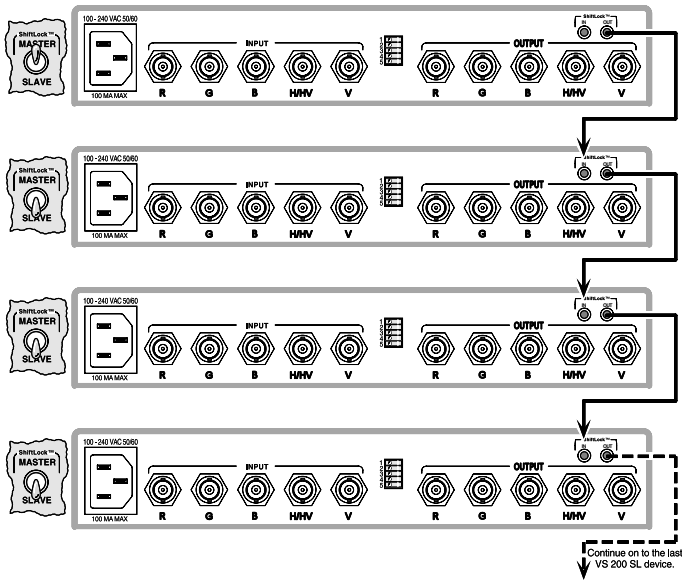
When the switch is set to Slave, the VideoShift controls for that unit are disabled.



Two connectors on the back panel are for the master-slave interconnecting cables. Extron provides the cable connectors. See page 2-3 for instructions on making the cables.

Setup example:

1. The master unit has a cable connected from its ShiftLock Out port to the ShiftLock In port of the first slave. Its toggle switch must be set to the Master position.
2. The first slave has a cable from its ShiftLock Out port to the ShiftLock In port of the next slave. Its toggle switch must be set to the Slave position.
3. Repeat step #2 for each slave unit, except that the last slave (or the only slave), will have no cable in its ShiftLock Out port.



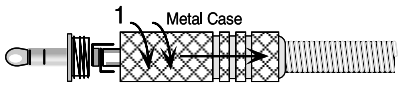
Making ShiftLock Cables

Extron supplies connectors for making ShiftLock cables; the user supplies the cable. Twisted pair cable can be used – up to 50 feet in length.

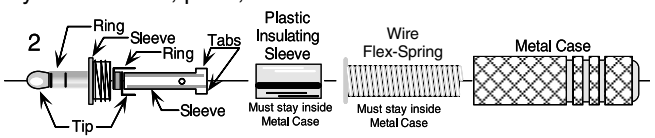
The illustration below shows the steps for a making a cable using twisted pair. Do each step for both ends of the cable. Make as many cables as required.

⚠ ___ *Although the color of the wire is not important, you must keep the same wire color assignments for both ends of the cable.*

1. Unscrew the metal case.



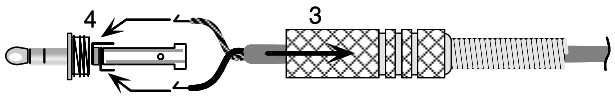
2. Identify the contacts, parts, and connections.



⚠ ___ *The plastic insulator must be inside to prevent electrical contact with the metal case.*

As shown here, the connectors have three contacts. However, only the "Tip" and "Ring" contacts are used.

3. Insert the metal case (insulator and flex spring) over the cable.

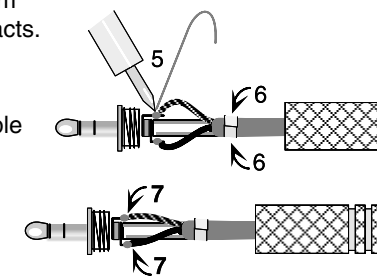


4. Strip the wires and attach them through the holes in the contacts.

5. Solder both connections.

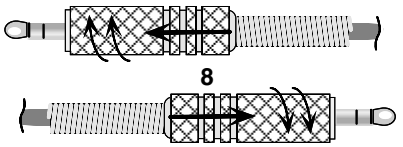
6. Bend the tabs around the cable jacket.

7. Press the wires and contacts inward to allow the Insulator and metal case to slide over easily.



△ ___ *Do not allow the contacts to touch each other.*

8. Screw the metal case onto the connector.

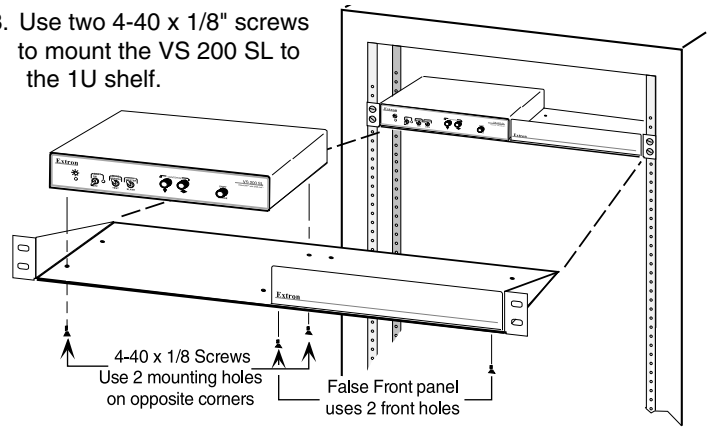


Connect the cables according to the example on page 2-2.

Mounting the VS 200 SL on a 1U Rack Shelf

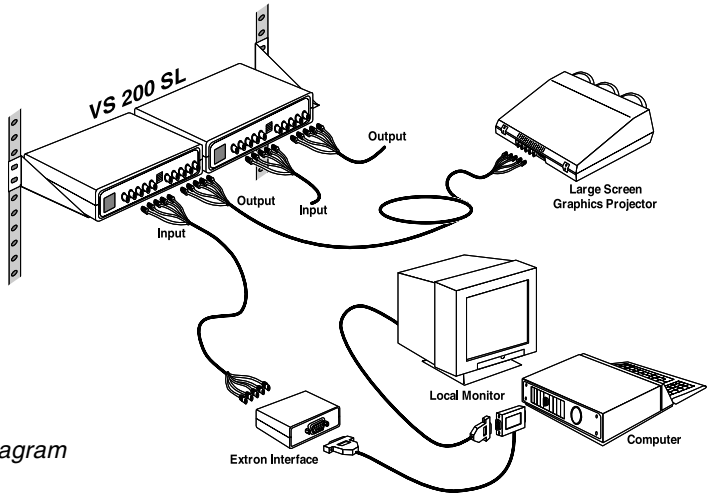
A 1U rack shelf accommodates two units the size of a VS 200 SL. Each of these devices has two threaded holes in its base plate for shelf-mounting.

1. If the VS 200 SL has feet, remove them.
2. Align the VS 200 SL over the shelf so that its two threaded holes line up with two of the holes in the 1U shelf.
3. Use two 4-40 x 1/8" screws to mount the VS 200 SL to the 1U shelf.



VS 200 SL Rack Mount

4. If the shelf is not already mounted in the rack, use the supplied hardware and follow the instructions that came with the 1U Shelf (p/n 60-190-01).
5. When the VS 200 SL is mounted, continue the installation by connecting the input, output, and power cables.



VS 200 SL Connection Diagram

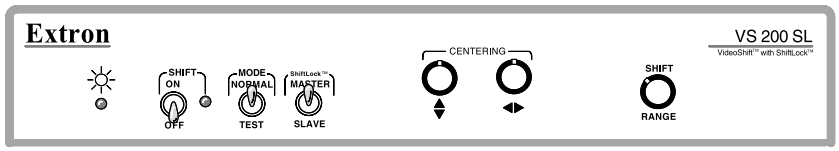
Chapter Three

Operation

Front Panel Operations

Using a VS 200 SL with an Interface

Front Panel Operation



Power LED
Indicates that the VS 200 SL is receiving power.

Shift Switch
Up = VideoShift is ON
Down = VideoShift is OFF.

Mode Switch
Up = Normal
Down = Test Mode
Used with the shift range knob (below). In test mode, the video shifting is fast enough to be seen. This allows the range to be adjusted while it is visible on the screen. Also use test mode for setting horizontal and vertical centering, blanking, and sizing on the projector.

ShiftLock/Master/Slave
Up = This is a master unit
Down = This is a slave unit.

⚠ ___ *Set the first unit as master; set others as slaves. See pages 2-2 and 2-3 for rear panel and ShiftLock cables.*

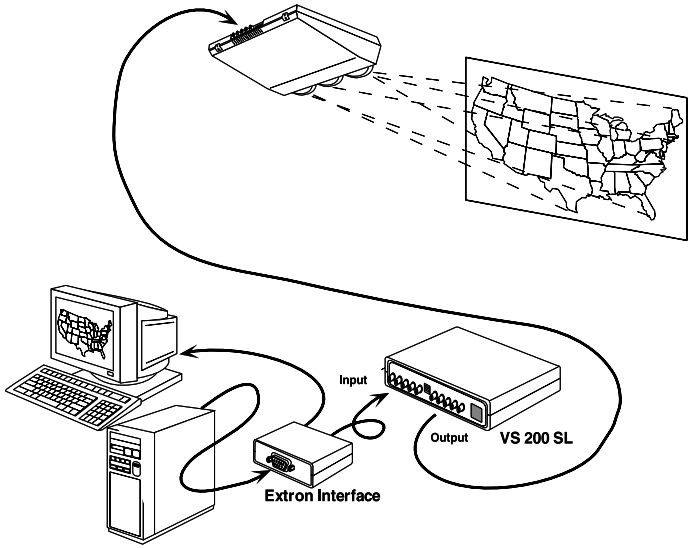
Centering Knobs
Vertical Shift (▲▼)
Moves image up or down on the display screen.
Horizontal Shift (◀▶)
Moves image left or right on the display screen.

Shift Range Knob
Use this in test mode to adjust the VideoShift range of movement. Actual distance of range depends of the type of display being used. (See page 1-2 for range settings.)

⚠ ___ *When finished with the ShiftLock, centering, sizing and blanking setup, set the mode switch to Normal.*

Using a VS 200 SL with an Interface

Following are some instructions for using a VS 200 SL with Extron interfaces.



With RGB 202*xi* Series interfaces – On this interface, DIP switch #1, on rear panel, must be ON. See the *RGB 202xi User's Manual*, page 3-4 (Use LCD Sync processing).

With other interfaces – Set the interface DIP switches to remove serrations.
If using separate H and V sync, turn off vertical shift (centering).