

**RSII**  
**Routing Switcher System**  
**Operation and Technical Manual**

QF-045  
RSII Series Manual  
Rev. 04/01/2007



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# KNOX VIDEO

## RSII Routing Switcher System

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April, 2007




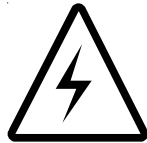
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# Warnings, Cautions and Others

## Mises en garde, précautions et indications diverses

## NOTES

	<b>CAUTION</b> RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL</p>		



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

### **CAUTION**

To reduce the risk of electrical shocks, fire, etc.:

1. Do not remove screws, covers or cabinet.
2. Do not expose this appliance to rain or moisture.

### **ATTENTION**

Afin d’éviter tout risque d’électrocution, d’incendie, etc.:

1. Ne pas enlever es vis ni es panneaux et ne pas ouvrir le coff ret de l’appareil.
2. Ne pas exposer l’appareil a la pluie ni a l’humidité.

### **Caution — STANDBY/ON switch!**

Disconnect the mains plug to shut the power off completely. The STANDBY/ON switch in any position does not disconnect the mains line. The power cannot be remote controlled.

### **Attention — Commutateur STANDBY/ON!**

Déconnecter la fiche de secteur pour couper complètement le courant. Le commutateur STANDBY/ON ne coupe jamais complètement la ligne de secteur, quelle que soit sa position. Le courant ne peut être télécommandé.

## Limited Warranty

Unless otherwise stated in the product specific documentation received with this product, Knox Video Technologies provides a five-year limited warranty for this product. The above warranty period shall begin on the date of shipment by Knox to purchaser or, if purchaser is an authorized reseller of such Knox products, from the date of shipment by the reseller to the reseller's original customer.

The warranty set forth above shall not apply to failure or deficiency which has been caused by misuse, abnormal or unusually heavy use, neglect, alteration, improper installation, unauthorized repair or modification, improper testing, accidental or causes external to the product such as but not limited to excessive heat or humidity, power failure, or improper installation.

### IF SERVICE IS REQUIRED:

If the product does not perform as warranted, call Knox Video Technologies at 301-840-5805 for available service options.

If it is necessary to return an item to Knox, the defective product should be securely packaged in original boxes and insured for shipment. Owner agrees to insure and accept all liability for loss of or damage to this product.

**YOU MUST CALL TECHNICAL SUPPORT AT 301-840-5805 FOR A RETURN AUTHORIZATION NUMBER (RA) AND "SHIP-TO" ADDRESS BEFORE SHIPPING ANY PRODUCT TO KNOX.**

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.



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### For U.S.A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

### For Canada/pour le Canada

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

### For Canada/pour le Canada

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE INTERFERENCE-CAUSING EQUIPMENT STANDARD ENTITLED "DIGITAL APPARATUS," ICES-003 OF THE DEPARTMENT OF COMMUNICATIONS.

CET APPAREIL NUMERIQUE RESPECTE LES LIMITES DE BRUITS RADIOELECTRIQUES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE B PRESCRITES DANS LA NORME SUR LE MATERIEL BROUILLEUR: "APPAREILS NUMERIQUES," NMB-003 EDICTEE PAR LE MINISTRE DES COMMUNICATIONS.

### CAUTION:

- Do not block the ventilation openings or holes.

(If the ventilation openings or holes are blocked by a newspaper or cloth, etc., the heat may not be able to get out.)

- Do not place any naked flame sources, such as lighted candles, on the apparatus.
- When discarding batteries, environmental problems must be considered and local rules or laws governing the disposal of these batteries must be followed strictly.
- Do not use this apparatus in a bathroom or places with water. Also do not place any containers filled with water or liquids (such as cosmetics or medicines, flower vases, potted plants, cups, etc.) on top of this apparatus.

### ATTENTION:

- Ne bloquez pas es orifices ou es trous de ventilation.

(Si es orifices ou es trous de ventilation sont bloqués par un journal un tissu, etc., la chaleur peut ne pas être évacuée correctement de l'appareil)

- Ne placez aucune source de flamme nue, telle qu'une bougie, sur l'appareil.
- Lors de la mise au rebut des piles, veuillez prendre en considération es problèmes de l'environnement et suivre strictement les règles et les lois locales sur la mise au rebut des piles.
- N'utilisez pas cet appareil dans une salle de bain ou un autre endroit avec de l'eau.
- Ne placez aucune récipient contenant de l'eau (tel que des cosmétiques ou des médicaments, un vase de fleurs, un pot de fleurs, une tasse, uec.) sur cet appareil.

**SECTION 4. MAINTENANCE**



**CAUTION! Disconnect from power before removing top cover. Do not operate unit with top cover removed.**

**4.1 INTRODUCTION**

The RSII uses passive air flow (convection) to keep its power supply within a comfortable operating temperature range. No maintenance of the cooling system is required.

No other routine maintenance is required in the RSII.

**4.2 SWITCH/JUMPER OPTIONS**

There are no internal switch/jumper options in the RSII. Jumper J1 on the rear panel for RS422 operation of the rear panel DB9 serial connector.

**4.3 CLEARING THE MEMORY**

Under certain circumstances the RSII memory may become corrupted.

To clear the main memory, send the letter command c followed by Enter. To clear all volume, tone, and balance adjustments and set them to their default values, send \$c followed by Enter. To clear all input trim values and set them to zero, send \$ci followed by Enter.

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\$M0, 1	Mute off/on
\$L0, 1	Loudness off/on
\$Ixx	Set input trim level
\$Z\$C	Clear the Zone Group array
\$Z\$D	Display the Zone Group array
\$Za[aa,bb,cc,....,pp]	Set Zone Group x output list
\$Za\$Vxxvv	Set absolute zone volume level to vv
\$Za\$Vxx+	Increase zone volume level
\$Za\$Vxx-	Decrease zone volume level

## SECTION 1. GENERAL INFORMATION

### 1.1 INTRODUCTION

The KNOX RSII AUDIO/VIDEO ROUTING SWITCHER is a family of devices, which accepts up to sixteen video sources and sixteen stereo audio sources. The RSII connects any one of the sixteen inputs to one or more of the sixteen outputs. The video signals may be switched independently or with the audio signals.

The RSII family of switches consists of five basic models; Composite, Y/C, YPbPr, RGB, SD SDI and HD SDI any of which can contain balanced, unbalanced or no audio. Optional features include volume and tone control for the audio as well as an Ethernet interface.

### 1.2 TECHNICAL DESCRIPTION

The RSII uses a single chip microprocessor with flash memory to drive a set of monolithic digital latching crosspoint decoders.

Cross-point information is collected by the microprocessor from the optional front panel controller (DFPC), from the RS232/RS422 inputs on the front or rear panel, and from the optional ethernet I/O and distributed to the crosspoint decoders. Audio and video may be routed together or separately.

The audio volume, tone, and balance may be adjusted if the VT option is installed.

### 1.3 DETAIL SPECIFICATIONS

#### Video Channels:

*Composite and Y/C :- NTSC, PAL or SECAM standards*

Levels:	1v p-p
Frequency Response:	DC to 30MHz @ 1v <3dB down at 30MHz
Input Impedance:	75 ohms for YC, high impedance looping for Composite

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Output Impedance: 75 ohms  
Crosstalk: less than -70dB@5MHz  
Connectors: 75ohm female BNC for Composite, 4 pin DIN for YC  
Vertical interval switching with video on External Sync BNC  
Maximum DC input: +/-0.5V

### *RGB/Y, Pb, Pr: - NTSC, PAL or SECAM standards*

Levels: 1v p-p  
Frequency Response: DC to 130MHz  
@ 1v <3dB down at 130MHz  
Input Impedance: 75 ohms  
Output Impedance: 75 ohms  
Crosstalk: less than -70dB@5MHz  
Connectors: 75ohm female BNC  
Vertical interval switching with video on External Sync BNC  
Maximum DC input: +/-0.5V

### *SD SDI:*

Input and Output specifications comply with SMPTE 259M standards  
Automatic Equalization and Reclocking on all channels  
Supported rates of 143 MB/s, 177 MB/s, 270 MB/s, and 360 MB/s  
Equalization 270MB/s up to 350 Meters of Belden 1694A cable  
Connectors: 75 ohm female BNC  
Vertical interval switching with composite analog video on External Sync BNC

### *HD SDI:*

Input and Output specifications comply with SMPTE 259M and 292M standards  
Automatic Equalization and Reclocking on all channels  
Supported rates of 143 MB/s, 177 MB/s, 270 MB/s, 360 MB/s, 540MB/s, 1.485/1.001 GB/s  
Equalization at 1.485 GB/s up to 140 Meters of Belden 1694A cable  
Connectors: 75 ohm female BNC  
Vertical interval switching with composite analog video on External Sync BNC

### 3.4.9 COMMANDSUMMARY

Bxyz/Bxxyzz	Both
Vxy/Vxxy	Video
Axy/Axxy	Audio
Exy/Exxy	Queue - both
Fxy/Fxxy	Queue - video
Gxy/Gxxy	Queue - audio
Xxyz/Xxxyzz	Salvo - both
Yxyz/Yxxyzz	Salvo - video
Zxyz/Zxxyzz	Salvo - audio
S	Store powerup pattern
R	Recall powerup pattern
Sxx	Store numbered pattern
Rxx	Recall numbered pattern
D	Dump
C	Clear
Gm	Clear pattern memories
W	Send signon message
\$C	Clear VTB to default values
\$Ci	Clear input trims
\$Dxx	Report VTB status
\$Di	Report input trim status
\$Vxxv	Change volume level
\$Vxx+	Increase volume level
\$Vxx-	Decrease volume level
\$Bxxv	Change bass level
\$Bxx+	Increase bass level
\$Bxx-	Decrease bass level
\$Txxv	Change treble level
\$Txx+	Increase trble level
\$Txx-	Decrease treble level
\$Sxx	Change input trim level

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## 3.4.8 ADDITIONAL SOUND CONTROL COMMANDS

\$ci clears all input trims  
\$cxxi clears input trim for input xx  
\$c sets all VTB for all outputs to default\* values  
\$cxx sets all VTB for output xx to default\* values  
\$cvxx sets all volumes to value xx, where xx is 00-63 (00=+4dB)

\$dxx dumps VTB values for output xx to the console  
\$di dumps table of all input trim values to the console

### Syntax notes:

Any command which allows a + or - also allows a number in front of the + or - to indicate multiple steps; so \$vxx+ increases volume by one step; \$vxx3+ increases it by three steps

Volume, bass and treble allow an absolute number to be entered, but balance and trim allow only steps to be specified)

\*Default values are volume at its lowest point, bass, treble, and balance at mid-point

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## Audio Channels:

Levels:  
Unbalanced audio: 3v p-p unbalanced audio  
Balanced audio: up 16dBu  
Frequency Response: 20Hz through 30KHz

## Control:

RS232/RS422: 2 DB9 female (front and rear--front panel DB9 is RS232 only)  
Ethernet: RJ45(default IP 192.168.168.48 port 3001)  
Control Panel: 1 DB25 male (behind removable front cover)

## Power Consumption:

*Composite Y/C:* nominal 15v, 2A from external switching power supply  
Input Voltage: 100-240VAC, 50/60 Hz, .5A, 40 watts maximum  
Dimensions: 19" wide by 3.5" high by 10" deep, 2RU  
Shipping Weight: 12 pounds

*RGB/Y,Pb,Pr:* nominal 15v, 2A from external switching power supply  
Input Voltage: 100-240VAC, 50/60 Hz, .5A, 40 watts maximum  
Dimensions: 19" wide by 5.25" high by 10" deep, 3RU  
Shipping Weight: 12 pounds

*SDI:* Internal switching power supply  
Input Voltage: 90-264VAC, 47/63 Hz, 100 watts maximum, internally fused  
Dimensions: 19" wide by 3.5" high by 10" deep, 2RU  
Shipping Weight: 13 pounds

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To control balance between the left and right channels send a command of the form:  $\$Sxx+$ ,  $\$Sxx-$ , or  $\$Sxx0$ , where 0 resets balance to equal (+ decreases left channel; - decreases right) The range of the balance is from -32 to +32; 0 is the default value.

To mute the sound output send the command  $\$mxx1$  for mute on,  $\$mxx0$  for mute off (default is off). To select loudness on or off:  $\$Lxx1$  is loudness on;  $\$Lxx0$  is loudness off (default is off).

To make a fade from the current value to zero or from zero back to the preselected full volume send the command  $\$Fxxyy0$  to fade down to 0;  $\$Fxxyy1$  to fade up to previous volume (xx is output number, yy is time to fade from 01-99, where 99 is the longest fade).

To trim inputs send a command of the form:  $\$ixx+$ ,  $\$ixx-$ , or  $\$ixx0$ , where xx is the input number, 0 is no trim; the range is from -3 to +3, default trim is 0.

### 3.4.7 SETTING ZONE GROUPS FOR UNIVERSAL VTB CONTROL

It is possible to set up to 8 Zone Groups for applying universal VTB commands to a number of outputs at one time. To set up a group send a command of the form:  $\$Zx[aa,bb,cc,dd...]$ , where x is the letter A to H corresponding to Zone Group A-H, and aa,bb, etc are a list of two-digit output numbers in square brackets, separated by commas (no spaces) for that zone group. The list can include any number of outputs from 1-16. Any output may be included in any Zone Group. To see a list of the outputs assigned to any group, send the command  $\$Zx\$D$ , where x=A to H. To clear all the Zone Groups send the command  $\$Z\$C$ .

Once a Zone Group has been established, VTB commands may be sent in common to all the outputs in the group. To send a Zone Group VTB command, send  $\$Z$  followed by the command stripped of its output number. For example, a three-step volume increment command would normally be  $\$Vxx3+$ , where xx is the output number. To send the command to all the outputs in Zone Group A, omit the output number and precede the command with a  $\$ZA$ . So the full command for the above example is  $\$ZA\$V3+$ .

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## SECTION 2. INSTALLATION

### 2.1 INTRODUCTION

This section provides the information required for installation of the RSII into its operating environment.

#### CAUTION!

The RSII is designed to work in standard video and audio systems. Operation in other environments may harm the RSII or associated equipment.

### 2.2 UNPACKING AND INSPECTION

Unpack the RSII carefully and verify that the serial number matches the number quoted on the packing list. Before installing it into a system, check the outside of the unit carefully for signs of damage and check that none of the fasteners have come loose.

### 2.3 INSTALLATION

The RSII will be connecting a number of SOURCE devices to a number of destination ZONE devices. Choose a space which is convenient for all the cables to converge. Mount the RSII in a standard 19" rack panel; it requires two standard rack units (2U) for clearance. Connect the AC power cord to a properly grounded AC power mains outlet of the correct voltage and frequency. There is no power switch on the RSII; it is intended to be on at all times.

THE MAINS OUTLET THAT IS UTILIZED TO POWER THE EQUIPMENT MUST BE WITHIN 3 METERS OF THE DEVICE AND SHALL BE EASILY ACCESSIBLE. THERE SHALL BE NO SWITCHES OR DISCONNECT DEVICES IN THE EARTH CONDUCTOR.
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### 2.4 VIDEO CONNECTIONS

Connect up to sixteen video SOURCES (cameras, VCRs, DVD players, satellite receivers, RF demodulators, etc) to the video input connectors. For NTSC/PAL units a second BNC input connector is provided for looping through to another device or termination.

**AN NTSC/PAL INPUT MUST BE LOOPED THROUGH TO A TERMINATED DEVICE OR A 75 OHM TERMINATOR MUST BE CONNECTED AT THE LOOPING CONNECTOR.**

It is not necessary to terminate unused inputs. Y/C inputs are terminated automatically.

Connect up to sixteen ZONE destination devices (TV monitors, VCRs, LCD projectors, RF modulators, etc) to the NTSC/PAL or Y/C video output connectors. Be sure that all destination devices are terminated in 75 ohms. It is not necessary to terminate unused outputs.

Do not connect a SOURCE of video to any of the video OUTPUT connectors.

### 2.5 AUDIO CONNECTIONS

Connect up to sixteen balanced or unbalanced audio SOURCES (CD players, tape players, VCRs, microphones, RF demodulators, etc) to the left and right channel input connectors. For balanced audio units, the common is at the center and the + and - are as shown on the panel. Inputs are high impedance (15K). Note: an unbalanced source may be connected to a balanced input by connecting the signal lead of the audio source to the + input and connecting the shield to both the center and - inputs.

Connect up to sixteen audio destination ZONE devices (amplifiers, VCRs, tape/CD recorders, RF modulators, etc) to the left and right channel output connectors.

Do not connect a SOURCE of audio to any of the audio OUTPUT connectors.

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### 3.4.5 HOW TO STORE AND RECALL CROSSPOINT PATTERNS

The RSII has 17 stored routing patterns. Sixteen patterns for typical use and one for power on restore. The power-up pattern is the pattern that is loaded when the RSII is power cycled. These stored configurations are non-volatile and are thus maintained during power interruptions.

To STORE the current crosspoint pattern to one of the sixteen pattern storage areas, send a command in the form Sxx [ENTER], where xx is 01-16. To store the current crosspoint pattern to the power-up pattern type the command S [ENTER].

To RECALL and load one of the sixteen stored crosspoint patterns send a command in the form Rxx [ENTER], where xx is 01-16. To recall the power-up pattern, send the command R [ENTER].

### 3.4.6 CONTROLLING THE SOUND

If the optional VT board is installed, volume, tone, balance (VTB), and input trim can be controlled via the serial control inputs. All VTB commands are preceded by a \$; xx = an output number from 01-16 (or for trim, an input number from 01-16). All VTB commands end with an [ENTER].

To control volume send a command of the form: \$vxx+, \$vxx-, or \$vxxyy where xx is an output number and yy is a number from 00-63; 04 is the default value for a 1:1 ratio of audio in to audio out.

To control bass send a command of the form: \$bxx+, \$bxx-, or \$bxxyy, as above, but yy ranges from -7 to +7 (cut or boost); 0 is the default (neutral) value.

To control treble send a command of the form: \$txx+, \$txx-, or \$txxxy, but yy ranges from -7 to +7, as above; 0 is the default (neutral) value.

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### 3.4.3 USING THE SALVO MODE

It is possible to send the same input to a number of sequential outputs by a single eight-byte command of the form:

Xmmnnoo(ENTER)

where mm is the first output number, nn is the last output number, and oo is the input number.

Using X as the first byte sends both video and audio to the range of outputs, using Y sends video only, and using Z sends audio only.

For example, Y010408 sends the audio from input 8 to outputs 1 through 4.

### 3.4.4 USING THE QUEUE MODE

In the Queue mode it is possible to send a set of commands to the routing switcher that will be held until the final command is received, then all the commands are executed at the same time. For all but the final command in the set use the form:

Emmnn[ENTER], where mm is the output number, and nn is the input number.

Begin the command with an E for both audio and video, F for video only, and G for audio only.

The final command must start with the letter B, V or A instead of E, F, or G - or send the command EE to TAKE the string.

For example, the following consecutive commands sent over some period of time E010I[ENTER], E0202[ENTER], E0303[ENTER], B0404[ENTER] will result in connecting input 1 to output 1, 2 to 2, 3 to 3, and 4 to 4 when the last [ENTER] is received.

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### 2.6 RS232 CONNECTIONS

The RSII can be controlled by external RS232 drivers connected to either or both of the front or rear panels (on units with the optional Detachable Front Panel Controller, the front panel RS232 connector will not be accessible). Connect a computer terminal or other RS232 control device to the female DB9 connector on the right side of the rear panel or the left side of the front panel (behind the blank front cover). The RSII is wired as a data terminal; that is, data out of the RSII is on pin 2, data in is on pin 3, and pin 5 is common (ground). When connecting to the rear panel DB9, do not connect anything to pins 6, 7, 8, or 9.

A direct pin-for-pin connection from a PC compatible COM port should be set up as follows: select 9600 baud, 8 bits, no parity, and one or two stop bits. Set the Flow Control to NONE.

### 2.7 RS422 CONNECTIONS

The RSII can also be controlled by an external RS422 driver connected to the rear panel DB9 connector. Before attempting to use an RS422 controller, be sure that J1 on the rear panel is jumpered (two pads just below the input Power connector). RS422 control is available on the rear panel DB9 connector only. Connect transmit data (from the RSII) to pins 6 (+) and 7 (-), and receive data (to the RSII) to pins 8 (+) and 9 (-). Common is pin 5. Do not connect anything to pins 2 or 3.

## 2.8 ETHERNET CONNECTIONS

If the Ethernet option is installed the RSII can be controlled on an Ethernet network by connecting a network cable to the Ethernet port on the rear of the unit. The RSII must be assigned a unique IP address, and the device controlling the RSII must use that IP address and the correct port.

To configure the Ethernet network adaptor connect the RSII into the network and run commands on a computer connected to the same subnet.

- 1) Start the Latronix software (device installer) program. Once it has been started the Latronix device should be displayed to the right of the software window including the MAC address and the IP address.
- 2) To assign a new IP address, highlight the Latronix device (on the right side) by clicking on it. The software will walk you through the rest of the process.
  - i) Click Assign IP icon on the tool bar then click NEXT.
  - ii) Check radio button "Assign a specific IP address" then click NEXT.
  - iii) Enter the IP address and Subnet Mask then click NEXT.

**NOTE:** The default IP address by Knox Video is 192.168.168.48 with a subnet mask of 255.255.255.0
  - iv) Click Assign.
- 3) The operating system must know the MAC address of the Lantronix device that is associated with the IP address in order to function properly. To insure this you must first open a DOS window. At the DOS prompt type the following:
  - i) `ARP-S IP address MACaddress<CR>`  
ARP, (space), -S, (space), Your IP address, (space), The associated MAC address, (ENTER)
  - ii) `Telnet IPaddress 1<CR>`  
Telnet, (space), The IP address, (space), 1, (space), (ENTER)  
At this time an error will occur. Ignore the error and type the following
  - iii) `Telnet IPaddress 9999<CR><CR>`  
Telnet, (space), The IP address, (space), 9999, (space), (ENTER), (ENTER)

## 3.4.2 ROUTING AUDIO AND VIDEO

To route both audio and video from the same source, send a four-byte or six-byte command in the form:

`Bxy(ENTER)` or `Bxxyy(ENTER)` To route both audio and video from different sources, send a six-byte command in the form:

`Bxyz(ENTER)` or `Bxxyzz(ENTER)`,

where x specifies the zone to be routed to, 01-16, where y specifies the source of video, 00-16, and where z specifies the source of audio, 00-16 (use 0's for video or audio OFF)

To route video only, send a four-byte command in the form:

`Vxy(ENTER)` or `Vxxyy(ENTER)`,

where x specifies the zone to be routed to, 01-16, and where y specifies the source of video, 00-16 (use 0's for video OFF) To route audio only, send a four-byte command in the form:

`Axy(ENTER)` or `Axxyy(ENTER)`,

where x specifies the zone to be routed to, 01-16, and where y specifies the source of audio, 00-16 (use 0's for audio OFF)

# KNOX VIDEO

## RSII Routing Switcher System

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### 3.4 CONTROL VIA THE SERIAL RS232/RS422 PORT OR ETHERNET PORT

The RS232/RS422 serial data ports on the front and rear panels allow complete control of the RSII from a computer terminal or other software-driven control device through a simple alphanumeric protocol. The rear panel DB9 serial connector will accept RS232 or RS422 serial data depending on jumper J1. The front panel DB9 serial connector will accept RS232 serial data only. A simple ASCII protocol allows all crosspoint and setup commands to be sent serially through the RSII's RS232/RS422 or Ethernet ports. These ports will accept commands from a terminal, computer, or other software-driven control device. Set the driver for 9600 baud, 8 bits, no parity, and one or two stop bits, flow control NONE. If in RS232 mode the COM port of a PC-compatible device may be connected to the front or rear DB9 connector with a standard pin-for-pin serial cable. If the device is set up for RS422 operation use only the rear DB9 connector. An Ethernet driven controller must be configured for IP address and port selection. See section 2.8 for setup and wiring details.

#### 3.4.1 USING AN RS232/RS422 OR ETHERNET TERMINAL DEVICE

There are two general types of commands: letter commands, such as B, V, and A generally crosspoint commands, and \$ commands, generally volume and tone commands, which start with the dollar sign. Certain other commands may be used only for setup. The RSII will echo all ASCII characters and acknowledge completed valid letter commands with the word DONE. Invalid commands will result in the message ERROR.

The designation (ENTER) in the commands below means Carriage Return, or hex 0D. Do not send a Line Feed (0A) with the Carriage Return.

where x specifies the output zone to be routed to, 01-16 and where y specifies the input source of video and audio, 00-16 (use 0 or 00 for video and audio OFF)

# KNOX VIDEO

## RSII Routing Switcher System

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iv) Pressing the ENTER key navigates you through the selections. Press 1 (ENTER) then check the following:

(a) Baud Rate = 9600

(b) Port = 3001 (Knox Video default port assignment)

Once you have reached the last selection on the menu, the menu listing will display every time you press the ENTER key. To save your settings you must select 9 (Save and Exit) from the menu.

4) At this point you can open Hyper Terminal and verify the Knox Video switch functionality.

5) If the Lantronix module is not working after this procedure the module may need to be reset to the factory default settings. To do this, follow the procedure above to step 3-ii. However, enter 7 and (ENTER) "Defaults" instead of 1 (ENTER) "Channel 1". Then restart the procedure from step 3-iii.

### 2.9 SETTING UP HYPER TERMINAL™ AS A SERIAL CONTROLLER

In a Windows environment, Hyperterminal™ may be set up to control the RSII via RS232, RS422, or an Ethernet. Bring up Hyperterminal™ and choose File, Properties, and choose the direct connection from a COM port or TCP/IP. Under Configure, for a COM port set the baud rate to 9600, 8 bits, no parity, 1 stop bit, and no flow control; for a TCP/IP connection enter the IP address of the RSII and enter port 3001. Click OK and you should be connected. If the connect fails, consult your network administrator.

### 2.10 DETACHABLE FRONT PANEL CONTROLLER

To add the optional detachable Front Panel Controller, remove power from the RSII. Remove any RS232 control device connected to the front panel DB9 connector, or remove the blank front cover by unscrewing the two knurled screws—put the blank cover aside. Install the DFPC by carefully aligning the DB9 and DB25 connectors and then pushing the DFPC in until it rests against the face of the RSII. Be sure to engage and finger-tighten the two knurled screws to hold the DFPC firmly in place.

## **SECTION 3. OPERATION**

### **3.1 INTRODUCTION**

This section explains in detail the operation of the RSII using either the Detachable Front Panel Controller, the RS232/RS422 serial ports, or the Ethernet I/O port.

### **3.2 CONNECTIONS**

Connect audio and video sources and destinations as described in section 2. There is no requirement that all inputs or outputs be used or terminated, but be sure that all outputs which are used are properly terminated.

Outputs should not be looped back to unused inputs.

### **3.3 CONTROL VIA THE REMOTEABLE FRONT PANEL CONTROLLER**

The optional detachable Remotable Front Panel Controller (RFPC) displays information about the condition of the RSII crosspoints and the settings of the optional volume, tone and balance (VTB) for each output. The display consists of an LCD with a rotary switch to select and the output number and to adjust VTB parameters. In addition, an array of 32 switches allows for the selection of crosspoints and storage/recall of stored crosspoint patterns.

#### **3.3.1 DISPLAYING THE CROSSPOINT CONNECTIONS AND VTB VALUES**

In idle mode, line 1 of the RFPC display shows an output number (always Zone 1 at powerup), a Video input number, and an Audio input number. Line 2 shows the current VTB settings for that output number: Volume, Bass, Treble, and Balance. To stop the crawling motion push the Cancel button or turn the rotary (the display will resume crawling after a few seconds). To view the crosspoint and VTB data for another output, turn the rotary until the desired output number shows on line 1 of the display.

### **3.3.2 CHANGING A CROSSPOINT CONNECTION**

You can make crosspoint changes with the 16 input buttons and 16 output buttons on the right. You may start with an input number or with an output number, then push the connection you want to make. Changes may be made to the videocrosspoint, the audio crosspoint, or both. Two indicators under the display show whether Video, Audio, or both will be affected. To change this selection, before starting a crosspoint change, push the Select button one or more times until the correct combination of lights is shown.

When making a crosspoint change, pushing one of the 16 input or output buttons will cause the Armed LED to light indicating a change is pending. Make the desired output or input connection, or push Cancel to start over. If no crosspoint selection is made, the Armed light will go off after five seconds.

### **3.3.3 USING THE MUTE BUTTON**

The Mute button under the display can be used to Mute any output. Turn the Rotary until the output you wish to Mute shows on the display. Then push the Mute button; you will be prompted to verify the output number and push Mute again, or push cancel.

### **3.3.4 ADJUSTING VTB WITH THE ROTARY SWITCH**

The VTB parameters of any output may be changed from the front panel. Turn the rotary until the display is showing the output you wish to make changes to, then click the rotary (push the knob in, then release it) until the desired parameter is displayed on the LCD.