

MediaFlex Series
Modular Audio/Video Distribution System
Operation and Technical Manual



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MediaFlex Series
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Operation and Technical Manual



May, 2005

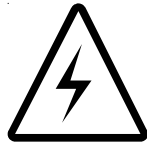


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Warnings, Cautions and Others

Mises en garde, précautions et indications diverses

	CAUTION 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.

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.

CETAPPAREIL 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'ear (tel que des cosmétiques ou des médicaments, un vase de fleurs, un pot de fleurs, une tasse, uec.) sur cet appareil.

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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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KNOX VIDEO MediaFlex Series Audio/Video Distribution System

SECTION 1. GENERAL INFORMATION

1.1 INTRODUCTION

The KNOX MEDIAFLEX SERIES AUDIO/VIDEO DISTRIBUTION SYSTEM are modular devices which accept up to sixteen composite, Y/C, RGBHV, or analog HDTV video sources (up to 1080I or 720P), sixteen unbalanced or balanced stereo audio sources, and (optionally) eight sources of VGA signal. The MediaFlex connects any one of the input SOURCES (buffered electrically) to one or more of the sixteen ZONES.

1.2 TECHNICAL DESCRIPTION

The MediaFlex Series uses a single chip microprocessor with battery-backed memory to drive a set of monolithic digital latching crosspoint decoders.

Cross-point information is collected by the microprocessor from the front panel pushbutton switches, the infrared remote control, or from the RS232 input on the rear panel, and distributed to the crosspoint decoders. Audio or video may be routed together or separately.

1.3 DETAIL SPECIFICATIONS

Video Channels:

Levels:	1v NTSC or Y/C (S-VHS or Hi-8) or analog HDTV (YUV or RGB)
Frequency Response:	DC to 30MHz @ 1v <3dB down at 30MHz
Input Impedance:	75 ohms
Output Impedance:	75 ohms
Crosstalk:	less than -70dB @ 5MHz

Audio Channels:

Levels:	
Unbalanced audio:	2v p-p unbalanced audio
Balanced audio:	up 16dBm
Frequency Response:	20Hz through 30KHz

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Input Impedance: 15Kohm
Output Impedance: 100 ohm
Crosstalk: less than -85dB@1KHz

VGA Channels:

Signal, RGB: 1v analog
Input Impedance: 75 ohms
Output Impedance: 75 ohms
Signal, H&V: 0-5 vdc, TTL compatible
Input Impedance: 510 ohms
Output Impedance: 75 ohms

Connectors:

Video: 32 BNC per video channel
Audio: 64 RCA
VGA (optional): 16 DB15HD female
RS232: 1 DB9 female
Contact closures: 1 DB25 male

Power Consumption: nominal 12v, 1.5 A from internal switching power supply

Input Voltage: 100-240VAC, 50/60 Hz, .5A, 40 watts maximum

Internal Fuse: 5x20mm slo-blo, 250v, 1 A

Dimensions: 17" wide by 7" high by 10" deep

Shipping Weight: 12 pounds

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SECTION 4. MAINTENANCE



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

4.1 INTRODUCTION

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

The power supply is protected by a 5x20mm slo-blo fuse rated at 1 amp.

The CPU on the front panel controller board has a battery backed-up memory for the crosspoint pattern storage and other non-volatile functions. It is important to check the battery annually and replace it when necessary. The battery is a DL1220 type (one-half inch in diameter, 1/10 inch thick) with a 3.2 volt rating. To avoid memory loss, replace the battery when the measured voltage falls below 2.8 volts. Be sure the replacement battery is installed with the + side visible.

No other routine maintenance is required in the MediaFlex.

4.2 SWITCH/JUMPER OPTIONS

There are no switch/jumper options in the MediaFlex.

4.3 CLEARING THE MEMORY

Under certain circumstances, such as upon failure of the memory back-up battery, the MediaFlex memory may become corrupted.

To clear the main memory, send the RS232 letter command c followed by Enter. To clear the pattern memory, send cm followed by Enter. To clear the contact closure memory send kc followed by Enter. To clear source and destination names, send ,(comma) 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. After replacing the memory back-up battery, you must send the command L01 to set up the default front panel configuration.

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3.6 USING THE DOORBELL OPTION

The Mediaflex Series can be fitted with an optional sound generator which can simulate certain doorbell and alarm tones. When the Doorbell contact is closed, the sound generator is substituted at line level for audio input #16. When used by itself, the Doorbell option can be used to simply cause the doorbell or other alarm to ring at any outputs, such as dedicated speakers, which have been previously connected to input 16. When the Doorbell Contact Closure is tied to one of the other Contact Closures, however, the doorbell or alarm sound can interrupt other audio outputs as well, then have them return to normal when the doorbell contact is reopened. See 3.5 above for the three modes of operation of the Contact Closures.

There are 10 doorbell/alarm styles available with the Doorbell option. To select which tone will be heard, send an RS232 command of the form:

Lxx[ENTER], where xx is:

<u>XX</u>	<u>SOUND</u>
01	siren
02	interrupted tone
03	ding-dong chime
04	warble
05	double gong
10	whoop
11	interrupted tone
12	double chime
13	quad chime
14	double buzz

The additional pinout at the rear-panel DB25 connector is:

	<u>HOT PIN</u>	<u>COMMON</u>
DOORBELL	22	any pin 1-8

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SECTION 2. INSTALLATION

2.1 INTRODUCTION

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

CAUTION!

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

2.2 UNPACKING AND INSPECTION

Unpack the MediaFlex 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 MediaFlex Series 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, usually in or near the local zone, ZONE 1. Mount the MediaFlex on a horizontal flat surface or on a shelf in a standard 19" rack panel; it requires four standard rack units (4U) for clearance. Connect the MediaFlex power plug to a properly grounded AC power mains outlet of the correct voltage and frequency.



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 baseband video SOURCES (cameras, VCRs, DVD players, satellite receivers, RF demodulators, etc) to the NTSC, Y/C, or HDTV video input connectors. Inputs are automatically terminated in 75 ohms. It is not necessary to terminate unused inputs.

Connect up to sixteen ZONE destination devices (TV monitors, VCRs, LCD projectors, RF modulators, etc) to the NTSC, Y/C, or HDTV 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. Devices may be terminated with a 1Kohm load.

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

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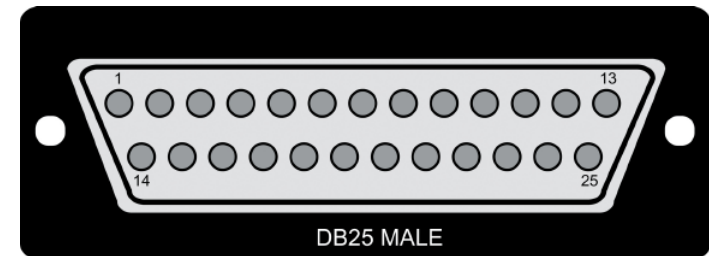
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Note: mode 0 requires only the first string of commands, mode 1 requires both strings of commands separated by a colon, and mode 2 requires both strings, another colon, and the time in seconds

To clear all programmed strings and return to the default pattern recall, send the command KC (ENTER).

The pinout for the rear-panel DB25 contact closure connector is:

<u>CONTACT</u>	<u>HOT PIN</u>	<u>COMMON</u>
CC1	14	1
CC2	15	2
CC3	16	3
CC4	17	4
CC5	18	5
CC6	19	6
CC7	20	7
CC8	21	8
Doorbell	22	any pin 1-8



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3.5 CONTROL VIA THE CONTACT CLOSURES

The MediaFlex Series provides for 8 regular contact closures and one optional Doorbell contact closure, accessible from the rear panel DB25 connector. Allowable inputs include mechanical switches, relays, TTL or CMOS signals, and optoisolators. One side of the contact closure must be at ground potential.

As programmed from the factory, the regular contact closures are single-action closures (active on closure only) which allow the user to recall up to 8 stored patterns, one for each contact closure.

Each regular contact closure can be modified by an RS232 command to execute a programmed string of commands upon closure (single-action) and an optional second set of commands upon re-opening or timeout (double-action). To modify the action to be taken by a contact closure, send the command

```
KmnCMD1,CMD2:CMD3,CMD4:ss
```

where m is the contact number 1-8,
n is 0 for single-action, 1 for double-action, 2 for timed mode
CMD1,CMD2 is a valid string of commands separated by
commas to be executed on closure (e.g., B11,B21,B31)
CMD3,CMD4 is a valid string of commands separated by
commas to be executed upon reopening, if in double-action
mode (e.g., B12,B22,B32)
ss is the time in seconds between commands (for timed mode
only)

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2.6 (OPTIONAL) VGA CONNECTIONS

Connect up to eight VGA SOURCES to the DB15HD connectors labeled VGA Inputs. Inputs are automatically terminated.

Connect one or more VGA display devices to the DB15HD connectors labeled VGA Outputs.

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

2.7 RS232 CONNECTIONS

The MediaFlex Series can be controlled by external RS232 drivers. Connect a computer terminal, or other RS232 control device to the female DB9 connector on the right side of the rear panel. The MediaFlex is wired as a data terminal; that is, data out of the MediaFlex is on pin 2, data in is on pin 3, and pin 5 is common (ground).

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.

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2.8 USING THE KNOX MediaFlex Series SETUP PROGRAM

The Setup program runs under DOS. Be sure the MediaFlex Series is connected to a working COM port designated either COM1 or COM2. From the DOS prompt start the HD16.EXE program by typing mediaflex, a space, and the port number (leaving the port number out will automatically run the program on COM port 2). The computer should display the message,

‘HD Configuration Program, Using COMx, Retrieving Signon Message’

followed by the signon message from the MediaFlex and these menu choices:

<u>CHOICE</u>	<u>ASCII Equivalent</u>
1. Update Date and Time	@yymmddhhmm
2. Update Zone Name	{Noxxzonename 8 ltrs/nbrs max
3. Update Source Name	{Nixxsourcename 8 ltrs/nbrs max
4. List Zone Names	{SxxTV, xx=zone number
5. List Source Names	{SxxTA, xx=source number
6. Clear Names	, (comma)
0. Exit Program	

Use these setup procedures when the MediaFlex is first installed or to make changes later. After changing its internal memory backup battery, stored data may be corrupted. See Section 4.3 for memory-clearing procedures.

Setting Time and Date: To set the MediaFlex to your computer’s Time and Date, push 1, ENTER.

Assigning Names to Zones: Zones are given default names by the program. To give them more meaningful names, push 2, ENTER and select the zone name to be changed. Note: the default names remain available as an alternate set of names.

Assigning Names to Sources: Sources are given default names by the program. To give them more meaningful names, push 3, ENTER and select the zone name to be changed. Note: the default names remain available as an alternate set of names.

Listing Zone Names: To see a list of the current Zone names, push 4, ENTER.

Listing Source Names: To see a list of the current Source names, push 5, ENTER.

Clearing Zone and Source Names: To clear all current Zone and Source names, push 6, ENTER. Note: the old names will be lost!

Exiting the Program: To exit the program, push 0, ENTER.

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\$Vxxyy	set volume
\$Txxyy	set treble
\$Bxxyy	set bass
\$Sxxyy	set balance
\$ci	clears all input trims
\$cxi	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	displays VTB values for output xx to the console
\$di	displays table of all input trim values to the console
\$ixx	set/increment/decrement input trim for input xx
\$fxxyy0,\$fxxyy1	fade zone xx up/down in yy seconds
H	lists the commands
\$H	lists the VTB commands

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3.4.8 COMMANDSUMMARY

@yymmddhhmm	set year,month,day,hour,minute
Bxyz/Bxxyzz	make V/A crosspoint
Vxy/Vxxy	make Video crosspoint
Axy/Axxy	make Audio crosspoint
Exy/Exxy	Queue – both
Fxy/Fxxy	Queue – video
Gxy/Gxxy	Queue – audio
Xxyz/Xxxyzz	Salvo – both
Yxyz/Yxxyzz	Salvo – video
Zxyz/Zxxyzz	Salvo – audio
Ixy/Ixxy	VGA switching zone,source
ID	Display VGA crosspoints
Sx/Sxx	Store pattern
Rx/Rxx	Recall pattern
Px/Pxx	Protect output xx
Ux/Uxx	Unprotect output xx
Tss	Autosearch ss=sec, 0 ends
Jxss,Jrr, JB, JE	Scan ss=sec, rr=range B=begin, E=end
KxyCMD1,CMD2:CMD3,CMD4:ss	set contact closure commands
Kc	clear contact closure commands to defaults
Lx	set doorbell sound
D	Display V/A crosspoints
C	Clear crosspoints, memory arrays
Gm	Clear memory arrays
W	Get signon message
,	Clears all names for zones and sources
#	Power Standby
{Noxxname},{Nixxname	set Zone, Source names

(summary continues onto next page)

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SECTION 3. OPERATION

3.1 INTRODUCTION

This section explains in detail the operation of the MediaFlex Series using either the front panel pushbutton switches, the IR remote control, or the RS232 port.

3.2 CONNECTIONS

Connect audio, video, and VGA sources 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 FRONT PANEL SWITCHES

POWER: The front panel power button has two levels of operation: ON and STANDBY. In STANDBY the displays will be off, but the crosspoint connections are held as long as power is being received by the MediaFlex Series. If power is lost, the previous crosspoint conditions will return after power is restored. Generally it is best to have the displays ON while controlling the MediaFlex Series.

ZONE LOCK: Zone Lock allows for one-button operation of the MediaFlex Series. If Zone Lock is ON the LED in the lower center of the front panel will be lit and the selected ZONE will appear in the left display window. If Zone Lock is OFF the LED will be dark. To turn Zone Lock on, push the FUNCTION button in (lower right corner) and then push the 1 button; then select the zone to lock to (usually the local zone, ZONE 1) by pushing one of the buttons 1-16. To unlock a zone, just push the FUNCTION button down and then push the 1 button.

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ROUTING VIDEO, AUDIO, and VGA: Note the ZONE LOCK light—if it is on, it means a zone has been pre-selected (usually the local zone).

~ with ZONE LOCK OFF: In this mode you must first push one of the sixteen buttons corresponding to the ZONE you want to control, then push a button to select the SOURCE. If you wish to change only the video or only the audio push the SELECT button until only the video or audio lamp is on, then push a ZONE button, followed by a SOURCE button. To select No Source, after the ZONE is selected, push the FUNCTION key and then push the 16 button.

~ with ZONE LOCK ON: You may route audio and video to the locked zone simultaneously by pushing one of the sixteen pushbuttons corresponding to the SOURCE you want. If you wish to change only the video or only the audio for that zone, push the SELECT button until only the video or audio lamp is on, then push the SOURCE button. To select No Source, push the FUNCTION key, then push the 16 button.

VOLUME and MUTE buttons (see also ROTARY KNOB below): Note the ZONE LOCK light—if it is on, it means a zone has been pre-selected (usually the local zone, zone 1).

~ with ZONE LOCK OFF: In this mode the volume and mute buttons control the local zone (zone 1) unless you first push a ZONE button corresponding to the ZONE you want to control. If you are controlling a ZONE other than ZONE 1, after a few moments of inactivity the controls will revert to the local zone.

~ with ZONE LOCK ON: If Zone Lock is ON, pushing the VOLUME DOWN and UP buttons will adjust the volume in the selected zone. MUTE will mute that zone.

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3.4.7 ADDITIONAL RS232 COMMANDS

To set the Time and Date from RS232, send the command @yymmddhhnn,

where yy is the two-digit year,
mm is the two-digit month,
dd is the two-digit day,
hh is the two-digit hour in 24-hour time
nn is the two-digit minutes

To clear Custom Names, send the command: ,(ENTER) [comma,(ENTER)]

To choose Custom Names, send {N1(ENTER), to choose Default Names send {N0(ENTER).

To enter a new Custom Name, send a command of the form {Nxyynnnnnnnn,

where x is O for output (zone) or I for input (source),
yy is the output or input number,
nnnnnnnn is a name of up to 8 letters/digits

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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 VTB 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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THE ROTARY KNOB: The rotary knob is used to control volume, tone, and balance, and to display the crosspoint connections on the LCD panel next to it.

~ with ZONE LOCK OFF: In this mode the rotary knob will control volume, tone and balance in the local zone (zone 1) unless you first push a ZONE button corresponding to the ZONE you want to control. If you are controlling a ZONE other than ZONE 1, after a few moments of inactivity the controls will revert to the local zone.

~ with ZONE LOCK ON: If Zone Lock is ON, the rotary knob will control volume, tone and balance in the selected zone.

To increase or decrease Volume, turn the knob clockwise or counterclockwise.

To cut or boost Bass, push and release the knob once and turn it to the desired setting.

To cut or boost Treble, push and release the knob twice and turn it to the desired setting.

To move Balance toward the left or right speakers, push and release the knob three times and turn it to the desired setting.

After a few moments of inaction the rotary knob will return to the Volume function.

DISPLAY: Displaying the crosspoint connections:

For a readout of the current map of crosspoint connections, push the DISPLAY button and rotate the rotary knob until the ZONE you are interested in appears in the LCD window to the left of the knob. After a few moments of inaction the rotary knob will return to the Volume function.

CLEAR: The Clear button is used to terminate a partially completed instruction.

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FUNCTION: The Function button is used to call up additional features from the front panel. There are three standard features available through the Function button:

ZONE LOCK: to lock the front panel so that it controls only a single Zone, push Function, 1, then a number button corresponding to the zone number. To return to all-zone control, push Function, 1 again.

STORE PATTERN: up to 16 complete crosspoint and sound configurations may be stored in non-volatile memory. To save the present crosspoint and sound control settings into memory, push Function, then 2, then a number button 1-16. (This will erase the pattern presently stored under that number.)

RECALL PATTERN: to recall a stored pattern of crosspoint and sound settings, push Function, then 3, then a number button 1-16. If no pattern has been stored under that number, all crosspoints will be OFF.

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3.4.6 CONTROLLING THE SOUND

Volume, tone, and balance (VTB) can be controlled via the RS232 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)

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 \$txxyy, but yy ranges from -7 to +7, as above; 0 is the default (neutral) value.

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 a command of the form: \$mxx1 is mute on, \$mxx0 is 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 a command of the form: \$Fxxyy0 is fade down to 0; \$Fxxyy1 is 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 0 is no trim; the range is from -3 to +3, default trim is 0.

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For example, the following consecutive commands sent over some period of time E010[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.

3.4.5 HOW TO STORE AND RECALL CROSSPOINT PATTERNS

Up to sixteen complete crosspoint and sound configurations may be stored in non-volatile memory.

To save the present crosspoint and sound control settings into memory send a command in the form:

Sx or Sxx, where xx is a number from 1-16

(storing a new pattern will erase the pattern presently stored under that number)

To recall a stored pattern of crosspoint and sound settings send a command in the form:

Rx or Rxx, where xx is a number from 1-16

(if no pattern has been stored under that number, all crosspoints will be turned OFF)

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3.4 CONTROL VIA THE RS232 PORT

The RS232 data port allows complete setup and control of the HD16 through a simple alphanumeric protocol or using the Knox HD16 DOS Setup Program. The RS232 port will accept inputs from a computer terminal or other software-driven RS232 control device.

3.4.1 USING AN RS232 TERMINAL DEVICE

A simple protocol allows all crosspoint and setup commands to be sent through the MediaFlex's RS232 port. The RS232 port will accept inputs from a terminal, computer, or other software-driven control device. Set the RS232 driver for 9600 baud, 8 bits, no parity, and one or two stop bits, flow control NONE. The COM port of a PC-compatible device may be connected to the 9-pin female RS232 connector with a standard pin-for-pin serial cable.

There are two general types of commands: letter commands which start with a B, V, A, I, or M, generally crosspoint commands, and \$ commands, generally volume and tone commands, which start with the dollar sign. Certain other commands are used only for setup. The MediaFlex Series 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.

See section 3.4.8 for a summary of all RS232 commands.

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3.4.2 ROUTING AUDIO AND VIDEO

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

Bxy(ENTER) or Bxxy(ENTER)

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

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 Vxxy(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 Axxy(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)

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(optional) To route VGA, send a four-byte command in the form:

Ixy(ENTER) or Ixxy(ENTER),

where x specifies the zone to be routed to, 01-08, and where y specifies the source of VGA, 00-08 (use 00 for VGA OFF)

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:

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

Use E for both audio and video, F for video only, or 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.