

MANUAL PART NUMBER: 400-0343-003

## MT109-102

### 3 IN 1 OUT AUDIO/MIC MIXER FOR MULTI-TASKER™ USER'S GUIDE

**ALTINEX**

SIGNAL  
MANAGEMENT  
SOLUTIONS

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## PRECAUTIONS / SAFETY WARNINGS ..... 1

Please read this manual carefully before using your **MT109-102**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT109-102** and to prevent fire and shock hazard. Please read them carefully and heed all warnings.

### 1.1 GENERAL

- Qualified ALTINEX service personnel, or their authorized representatives, must perform all service.
- To prevent fire or shock, do not expose this unit to rain or moisture. Do not place the **MT109-102** in direct sunlight, near heaters or heat radiating appliances, or near any liquid. Exposure to direct sunlight, smoke, or steam can harm internal components.
- Handle the **MT109-102** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT109-102**.
- Insert the card carefully into the slots of the Multi-Tasker™ without bending any edges.

### 1.2 CLEANING

- Clean only the connector area with a dry cloth. Never use strong detergents or solvents, such as alcohol or thinner. Do not use a wet cloth or water to clean the card. Do not clean or touch any component or PCB.

### 1.3 FCC / CE NOTICE

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense.
- Any changes or modifications to the unit not expressly approved by ALTINEX, Inc. could void the user's authority to operate the equipment.

## ABOUT YOUR MT109-102 2

### MT109-102 3 in 1 out Audio Mixer Card

The **MT109-102** is a Stereo Audio Mixer Card. When installed in the Basic Enclosure (MT100-100), this card allows connection of up to three line level balanced or unbalanced microphone inputs.

Mixing of inputs is controled via easy-to-use ASCII commands from a control system or computer connected to the RS-232 port of the MultiTasker™ Basic Enclosure. The **MT109-102** can accept balanced or unbalanced audio inputs and the output can be wired for either balanced or unbalanced audio output.

Through RS-232 control, the **MT109-102** can be controlled to adjust the signal level of each input in 16 steps. In addition the volume, treble and bass of the output amplifier can be adjusted in 16 steps.

All three inputs to the amplifier are mixing inputs and can be adjusted from 0db to -60db.

Phantom Power +12V can be connected to the microphone input using a dip-switch located on the PCB.

## TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT109-102
<b>GENERAL</b>	
<b>Inputs</b>	
Input Connectors	(3) Terminal Blocks
Input 1	Balanced/Unbalanced Microphone Input
Input 2	Balanced/Unbalanced Microphone Input
Input 3	Balanced/Unbalanced Microphone Input
<b>Outputs</b>	
Output Connector	(1) Terminal Block
Output	Line Level Balanced/Unbalanced
<b>Compatibility</b>	Stereo or Mono Audio

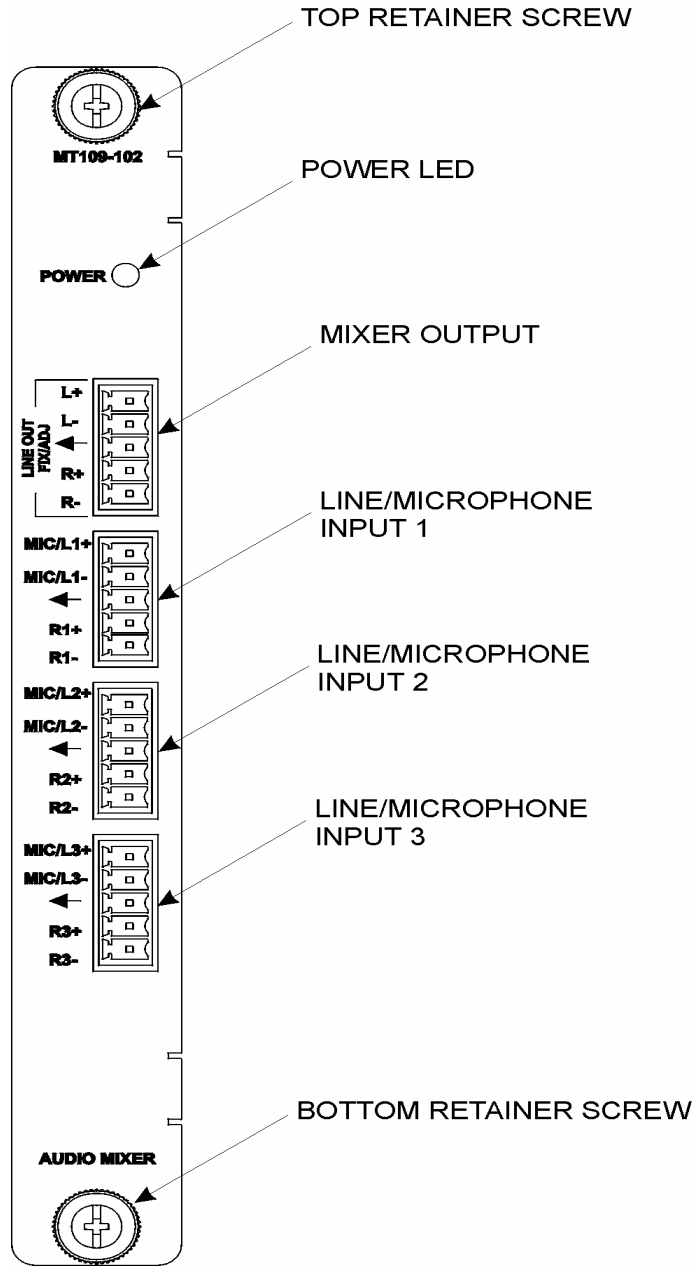
Table 1. **MT109-102** General

MECHANICAL	MT109-102
Basic Enclosure Slots Required	One Slot
Weight	0.43 lb (0.19 kg)
Connector Panel	Black
T° Operating	10°C-50°C
T° Maximum	75°C
Humidity	90% non-condensing
MTBF (calc.)	55,000 hrs

Table 2. **MT109-102** Mechanical

ELECTRICAL	MT109-102
Input Signals	
Max Line Level Input	0 dBu (.7V p-p) 10k Ohms
Max microphone Input	-65dBu (2-10mv) 47 Kohm
Frequency Response	10 Hz to 20 kHz (+/- 0.5 dB)
Noise Floor	-97 dB @ 20 kHz

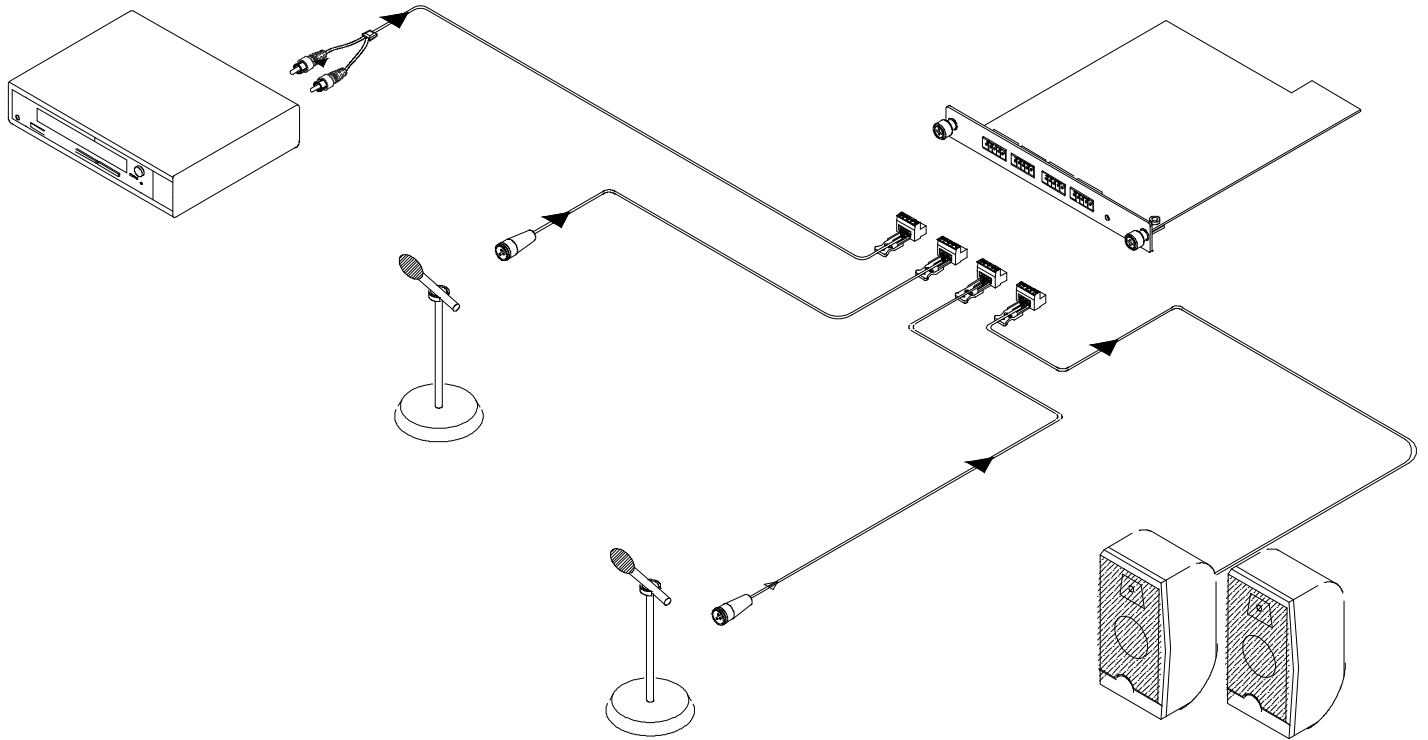
Table 3. **MT109-102** Electrical



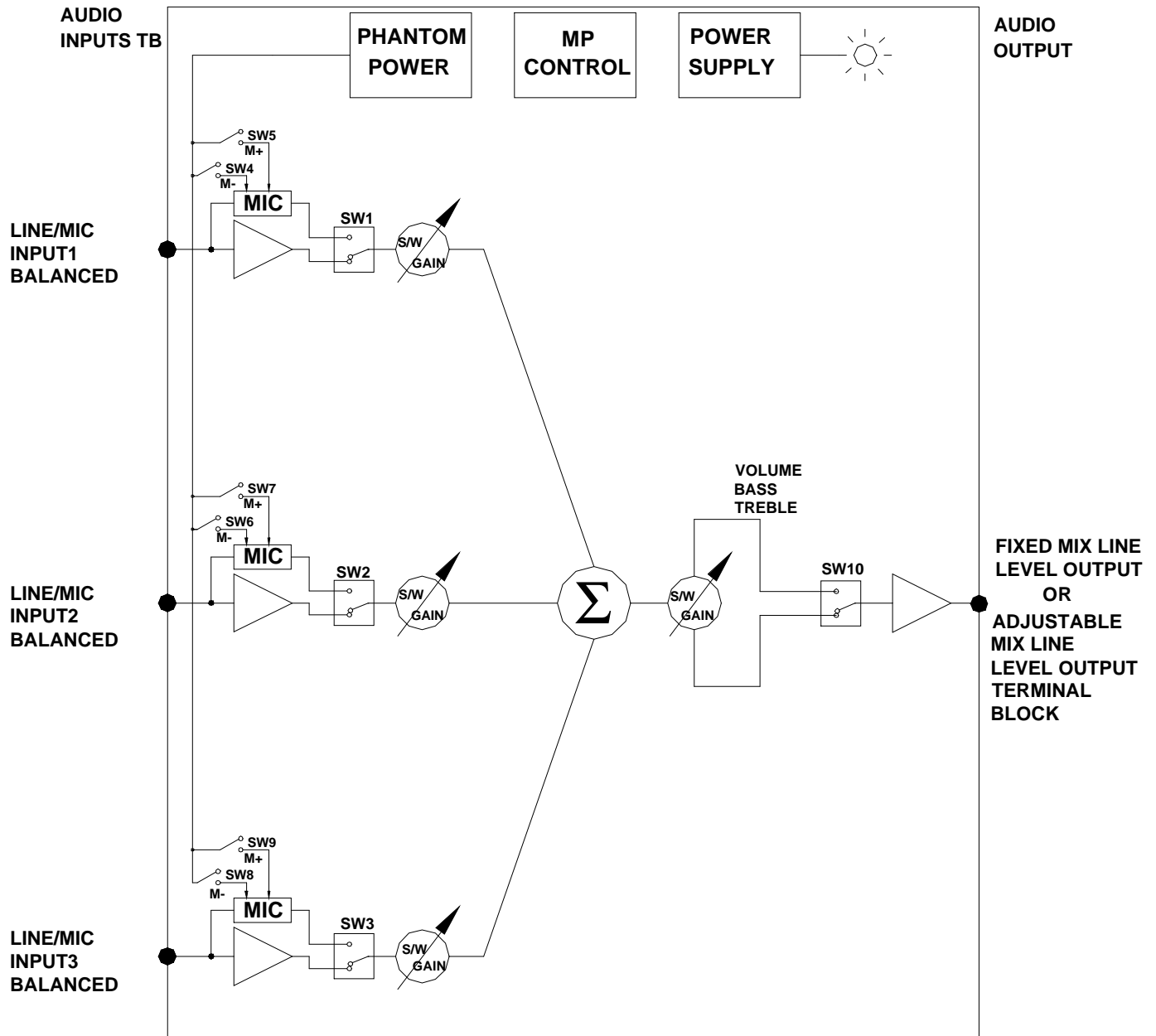
## APPLICATION DIAGRAM

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### DIAGRAM 1: TYPICAL SETUP



**DIAGRAM 2: INTERNAL VIEW**



**DIAGRAM 3: SWITCH POSITIONS**

	INPUT1				INPUT2				INPUT3				LINE OUTPUT	
	LINE	MIC	PHANTOM POWER		LINE	MIC	PHANTOM POWER		LINE	MIC	PHANTOM POWER		FIX	ADJ
			ON	OFF			ON	OFF			ON	OFF		
			-	+			-	+			-	+		
SW1	OFF	ON												
SW2					OFF	ON								
SW3									OFF	ON				
SW4			ON	OFF										
SW5				ON	OFF									
SW6							ON	OFF						
SW7								ON	OFF					
SW8										ON	OFF			
SW9											ON	OFF		
SW10													OFF	ON



## INSTALLING YOUR MT109-102 6

- Step 1.** Turn off the power to the Multi-Tasker™ enclosure.
- Step 2.** Slide the **MT109-102** into an available slot in the Multi-Tasker™ Basic Enclosure in order to connect to the bus. Make sure that the **MT109-102** card fits into place.
- Step 3.** Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT109-102** card.
- Step 4.** Turn the Multi-Tasker™ system power back on.
- Step 5.** The LED on the card panel will turn red indicating that the card is in full operation.
- Step 6.** Connect audio cables from the audio source to the input connector of the **MT109-102**. Connect the output connectors of the **MT109-102** to the audio equipment through an audio cable.
- Step 7.** Starting from the left, identify the slot number where the **MT109-102** card is plugged into the Enclosure and note that it is for RS-232 control.

## OPERATION 7

### 7.1 RS-232 CONTROL

When used in the Multi-Tasker™ Enclosure, the **MT109-102** has many advanced remote control capabilities, which are accessible through standard RS-232 communication. The actual controlling can be accomplished through a computer control system or any other device capable of sending RS-232 commands.

#### 7.1.1 RS-232 INTERFACE

The RS-232 commands, for the **MT109-102** are in a simple ASCII character format.

1. **Square brackets “[ ]” are part of the command.**
2. **Use uppercase letters for all commands.**

After processing a command, an OK or ER will be returned as feedback if "F" is included at the end of a command string.

Commands ending in "S" will be saved into memory. Commands not ending in "S" will still be executed but will not be restored when the system is reset or powered OFF then ON.

### 7.2 DESCRIPTION OF COMMANDS

Each command consists of three parts: Function, Card ID, and Unit ID.

[ Function , Card ID , Unit ID ]

Example: [VERC3U2]

VER = Function  
C3 = Card ID or Group ID  
U2 = Unit ID

For Function, see a detailed explanation under each command description.

The Card ID is an assigned value. It is equal to the enclosure slot number in which the card is installed. The value can range from 1 to 4 up to 1 to 20 depending on the enclosure.

Card ID 0 (C0) is used for the controller. See the MT100-100 User's Guide for details.

The Group ID is a number representing a group of cards defined with the [WR] command. When using the Group ID, all cards in the group will perform the given instruction.

Changing the position of a card will significantly affect the commands recorded on software definitions or third party control systems.

The Unit ID has a value from 0 to 9. Unit ID 0 should be used for single unit operation. If the Unit ID is set to zero, each command may be used without Ui. Use the command [SETU0], as explained in the MT100-100 User's Guide.

Example:

[VERC3]: For Unit ID Zero

[VERC3Ui]: For Unit ID other than Zero

[VERC3]: Equivalent to [VERC3U0]

## 1. [VER]

This command displays the software version and card type for the **MT109-102** card.

Command Format: [VERCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

An **MT109-102** card is in slot #4. Send the command [VERC4], and the Multi-Tasker™ Enclosure will return the following feedback:

MT109-102 690-0133-008

MT109-102 = the card model

690-0133-008 = the software version

## 2. [C]

This command receives the status of the card.

Command Format: [CnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

There is one **MT109-102** card in slot #4. Sending the command [C4] to the Multi-Tasker™ will display feedback similar to the following:

In1Vol=16/16

In2Vol=16/16

In3Vol=16/16

OutVol=16/16

Bass =08/16

Treble=08/16

Loudness:OFF

The status shows the input volume settings, in this case 16 out of 16, the output volume, the bass and treble levels and that the loudness feature is turned off.

If there is no card in slot #4, sending the [C4] command will not return any feedback.

## 3. [CnS]

This command saves the card volume settings. This configuration will be restored after the system is reset or powered off then on.

Command Format: [CnSUi]

Cn = Card ID (n = # from 1 to max slots)

S = save configuration

Ui = Unit ID (i = # from 0 to 9)

Example:

There is an **MT109-102** in slot #4. All volume levels are set to the maximum of 16. The bass and treble levels are set to 08. Save the settings of the card by sending the command [C4S]. The feedback will be as follows:

In1Vol=16/16

In2Vol=16/16

In3Vol=16/16

OutVol=16/16

Bass =08/16

Treble=08/16

Loudness:OFF

Card Status Saved

## 4. [?CnUi]

This command will return general information about the card and its status. It is a function of both the card and the front panel and is only available with Multi-Tasker™ Front Panel systems that have the following firmware:

690-0122-015 = Version 015 or later.  
690-0123-004 = Version 004 or later.  
690-0124-018 = Version 018 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback similar to the following:

```
[690-0122-015 690-0123-004 690-0124-018]
```

Check the last three digits against the numbers above to determine if the option is available.

Command Format: [?CnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = from 0 to 9)

The **MT109-102** is in slot #4. Send the command [?C4] to receive the feedback status.

Each status field begins with a '+' and ends with the card slot number (ex: C04). The feedback will be similar to the following:

```
[+MT109-102C04+VR690-0133-008C04  
+VO16C04+VI161616C04+VB08C04+VT08C0  
4+VL01C04+VM0C04]
```

MT109-102 = Card Type  
VR690-0133-008 = Firmware version  
VO16 = Output Volume Level=16  
VI161616 = Input volume levels  
VB08 = Bass level = 08 out of 16  
VT08 = Treble level = 08 out of 16  
VL01 = Loudness (00=ON, 01=OFF)  
VM0 = Mute (0=OFF, 1=ON)

The Input Volume status line is read from left to right as outputs one through three. Each volume level is 2 digits, in this case, each is set to 16.

## 5. [?Ui]

This command will return general information about the Multi-Tasker™ and cards installed in the unit.

Command Format: [?Ui]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = from 0 to 9)

Example:

A Multi-Tasker™ with ID #0 has a front panel with part number MT101-102 and contains an **MT109-102**. Send the command [?] and receive the following feedback:

```
[+MT101-102U0+MT109-102C04]
```

MT101-102U1 = Panel Number and Unit ID  
MT109-102C04 = An MT109-102 is in slot 4.

## 6. [STA]

This command enables/disables automatic feedback from the front panel. The command affects any card with auto-feedback capability, not just the **MT109-102**. The default at power on or reset is STA0, OFF.

Command Format [STA1] = ON

Command Format [STA0] = OFF

Feedback Prefix Definitions:

+VR = Firmware Version  
+VO = Output Volume  
+VI = Input Volume  
+VB = Bass Volume  
+VT = Treble Control  
+VL = Loudness Control  
+VM = Mute Control

Example:

Command = [VLOA12C04]

Feedback = [+VO12C04]

+VO = Output Volume

12 = Output volume level12

C04 = Card slot number

## 7. [...S] – SAVE

This command will save the configuration command being sent in memory. When sending the command [VLBA12C4S], after reset or power up, the bass level on C4 will be 12 out of 16.

## 8. [...F] – FEEDBACK

After processing a command, an OK or ER will be returned as feedback if "F" is included at the end of some command strings.

## 9. [+ ] and [- ]

These commands allow a selected property to be adjusted from keyboard commands or programmed front panel buttons.

Command Format: [+ ], [- ]

[+] = Increment level by one step

[-] = Decrement level by one step

Example:

Select the Output Volume command for the card in slot #4. The current Output Volume level is 10, but it is not the optimal value. After sending the following commands, an optimum volume level of 15 is obtained:

1. [SELOC4]  
The current volume level is 10.
2. [-][-][-]  
The level is now 7 and is too low.
3. [+++++]  
The level is now 15 and no further adjustments are required.

## 10. [SELIm]

This command sets the path to adjust the INPUT volume level. The input volume range is 00 to 16 and is adjustable using the [+] and [-] commands.

Command Format: [SELImCnUi]

m = Input (m = # from 1 to 3)

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

An **MT109-102** is in slot #4. Adjust the volume on Input 2 by sending the command [SELI2C4] and then using the [+] and [-] commands.

## 11. [SELO]

This command sets the path to adjust the OUTPUT volume level. The output volume range is 00 to 16 and is adjustable using the [+] and [-] commands or the Volume Ramping commands.

Command Format: [SELOCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example 1:

An **MT109-102** is in slot #4. Adjust the output volume by sending the command [SELOC4] and then using the [+] and [-] commands.

Example 2:

The output volume may also be adjusted using key ramping commands. See the VOLUME RAMPING FEATURE section of this manual for details on using this feature.

## 12. [SELB]

This command sets the path to adjust the bass level. The BASS level range is 00 to 16 and is adjustable using the [+] and [-] commands.

Command Format: [SELBCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

An **MT109-102** is in slot #4. Adjust the BASS on the output by sending the command [SELBC4] and then using the [+] and [-] commands.

## 13. [SELT]

This command sets the path to adjust the treble level. The TREBLE level range is 00 to 16 and is adjustable using the [+] and [-] commands.

Command Format: [SELTCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

An **MT109-102** is in slot #4. Adjust the TREBLE on the output by sending the command [SELTC4] and then using the [+] and [-] commands.

## 14. [VLOA]

This command sets the OUTPUT volume to an absolute value.

Command Format: [VLOAmCnUi]

m = Volume Level (m = # from 0 to 16)

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Set the output volume to 16 for the **MT109-102** in slot #4. Send the command [VLOA16C4].

## 15. [VLlxAm]

This command sets an INPUT volume to an absolute level.

Command Format: [VLlxAmCnUi]

x = Input Number (x = # from 1 to 3)

m = Volume Level (m = # from 0 to 16)

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Set Input 2 volume level to a value of 8 for the card in slot #4. Send the command [VLI2A8C4].

## 16. [VLBA]

This command sets the output BASS level to an absolute level.

Command Format: [VLBAmCnUi]

m = BASS Level (m = # from 0 to 16)

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Set the output BASS level of the **MT109-102** in slot #4 to the maximum of 16 by sending the command [VLBA16C4].

## 17. [VLTA]

This command sets the output TREBLE level to an absolute value.

Command Format: [VLTAmCnUi]

m = TREBLE (m = # from 0 to 16)

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Set the output TREBLE of the **MT109-102** in slot #4 to a mid-range value of 8 by sending the command [VLTA8C4].

## 18. [LOD0]

This command disables the loudness feature.

Command Format: [LOD0CnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Turn OFF the Loudness feature of the **MT109-102** in slot #4 by sending the command [LOD0C4].

## 19. [LOD1]

This command enables the loudness feature.

Command Format: [LOD1CnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Turn ON the Loudness feature of the **MT109-102** in slot #4 by sending the command [LOD1C4].

## 20. [CLR]

This command clears the card and resets it to its factory defaults. All volume levels are set to maximum, bass and treble are set to midrange, loudness is turned off and mute is turned off.

Command Format: [CLRCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Clear the **MT109-102** in slot #4 by sending the command [CLRC4]. Send the status command after the clear command and receive the following feedback:

```
In1Vol=16/16
In2Vol=16/16
In3Vol=16/16
OutVol=16/16
Bass =08/16
Treble=08/16
Loudness:OFF
```

---

## VOLUME RAMPING FEATURE

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The following 7 commands are used to control the output volume of the **MT109-102**. They may be used with computer control, but also are designed to be used with the {SETVK} command using keys on the Front Panel. The following code sample sets front panel keys 8 and 10 to Ramp Up and Ramp Down respectively. See your Front Panel User's Guide for more details.

When defined as a volume control key, the key will respond to two conditions: press and release. Below, subroutine 8 starts ramping up when key 8 is pressed and subroutine 10 starts ramping down when key 10 is pressed. Subroutine 108 stops ramping when either key is released.

```
{WRS8=RUPC4} //Ramp Up
{WRK8=8,108,0,0,0} //Press= start, release= stop
{WRS10=RDNC4} //Ramp Down
{WRK10=10,108,0,0,0} //Press= start, release= stop
{WRS108=RSTC4} //STOP RAMPING
{SETVK8} //Set key 8 as volume key
{WRLK8=VOL_UP} //Define Key 8 Label
{SETVK10} //Set key 8 as volume key
{WRLK10=VOL_DN} //Define Key 8 Label
[RAMP=10C4] //Set the ramp rate.
```

## 21. [RUP]

This command ramps the OUTPUT volume to its maximum level at the rate defined using the [RAMP] command.

Command Format: [RUPCnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Ramp the output volume from a starting level of 10 to the maximum level of 16 for the card in slot #8. Send the command [RUPC8] and the system will respond with the following feedback:

```
[11][12][13]...[16]
```

## 22. [RUP=xx]

This command ramps the OUTPUT volume to a user defined level at a rate defined using the [RAMP] command.

Command Format: [RUP=xxCnUi]

xx = Stop Level (xx = # from 01-16)

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Ramp the output volume from a starting level of 1 to a level of 10 for the card in slot #8. Send the command [RUP=10C8] and the system will respond with the following feedback:

[02][03][04]...[10]

## 23. [RDN]

This command ramps the OUTPUT volume down to a level of 1 at a rate defined using the [RAMP] command.

Command Format: [RDNCnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Ramp the output volume from a starting level of 16 down to 1 for the card in slot #8. Send the command [RDNC8] and the system will respond with the following feedback:

[16][15][14]...[01]

## 24. [RDN=xx]

This command ramps the OUTPUT volume down to a user defined level at a rate defined using the [RAMP] command.

Command Format: [RDN=xxCnUi]

xx = Stop Level (xx = # from 01-16)

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Ramp the output volume from a starting level of 16 down to 8 for the card in slot #8. Send the command [RDN=8C8] and the system will respond with the following feedback:

[16][15][14]...[8]

## 25. [RST]

This command stops ramping and maintains the last volume setting.

Command Format: [RSTCnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

The card in slot #8 is ramping from 1 to 16. Send the command [RSTC8] and the card will stop ramping the output volume. The last displayed volume setting will remain the current volume level.

## 26. [RAMP]

This command displays the ramping time for 16 steps. The time between each step is equal to the time in seconds divided by 16.

Command Format: [RAMPCnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

Display the ramp rate setting for the card in slot #8 by sending the command [RAMPC8]. The system will respond with feedback similar to the following:

RAMPTIME = 6 SECONDS

## 27. [RAMP=x]

This command sets the ramp rate for 16 steps. The settings range from 4 to 18 seconds, in two-second intervals.

Command Format: [RAMP=xCnUi]

x = Rate in Seconds

4 = 0.25 seconds/step

6 = 0.38 seconds /step

8 = 0.50 seconds /step

10 = 0.63 seconds /step

12 = 0.75 seconds /step

14 = 0.88 seconds /step

16 = 1.00 seconds /step

18 = 1.13 seconds /step

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

There is an **MT109-102** in slot #5. Send the command [RAMP=16C5] to set the ramp rate to 16 seconds. After this is set, any ramping will occur at a rate of 16 steps in 16 seconds, or 1 second per step. Confirm the setting by sending the command [RAMPC5] and receiving the feedback:

RAMPTIME = 16 SECONDS

## 28. [TEST]

This command performs a test on the internal memory. Upon completion, the system will display the results. If there are no problems, the system will display the following:

MEMORY IS GOOD

Otherwise, failures will be indicated.

Command Format: [TESTCnUi]

Cn = Card ID (n = slot # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

There is an **MT109-102** in slot #10. In order to test the internal memory, send the command [TESTC10].

## 29. [FBD]

This command turns feedback delay on or off. It is necessary when installing some newer cards in older systems. If the system does not receive all of the feedback from the card, the card may be communicating too fast. This command will slow down the card's communication rate.

Command Format: [FBDmCnUi]

m = Delay (0= no delay, 1= delay 100mS)

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = from 0 to 9)

Example:

The command [HELPC4] is sent to the card in slot #4. Some of the HELP file is displayed on the screen, but most is missing. Send the command [FBD1C4] to slow down the rate at which the card sends feedback to the system.

### CARD ID COMMANDS

The default Card ID is the same as the card slot number. The next several commands allow the user to change the Card ID to a value other than the slot number.

The ID commands work with all Multi-Tasker™ Front Panel systems. However, front panels that have firmware releases prior to the following will not be able to address Card ID's greater than the number of slots in the system:

690-0122-019 = Version 019 or later.

690-0123-005 = Version 005 or later.

690-0124-019 = Version 019 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback similar to the following:

[690-0122-015 690-0123-005 690-0124-019]

Check the last three digits against the numbers above to determine if the Card ID commands can address all 99 Card ID's.



Some cards require more than one slot in the Multi-Tasker™ system. As an example, some matrix switcher cards require 4 slots. If there are 5 of these cards installed, they would be numbered C4, C8, C12, C16 and C20. Changing the Card ID allows the user to define the cards as C1, C2, C3, C4 and C5.

Another use for changing the Card ID is to be able to use multiple systems without having to set each unit to a different Unit ID. All systems may be left as Unit ID 0 for ease of programming. The cards in the first unit may be numbered 1-10 and in the second unit 11-20.

### 30. [RSI]

This command resets the card ID's in the system. After sending this command, each card ID in the system will match the slot number of the card. Use this command along with the SID commands that follow. The [RSI] command MUST be used prior to changing Card ID's once they have already been set.

Command Format: [RSI]

Example:

Send the command [RSI] to the system with Unit ID 0. The card in slot 1 will have ID 1, the card in slot 2 will have ID 2 and so on.

### 31. [SIDn]

This command sets all the cards installed in the Multi-Tasker™ system to the same Card ID. After sending this command, all cards will be addressed with the same ID. Use caution when sending this command to a system with multiple board types.

Command Format: [SIDn]

n = Card ID (n = # from 1 to 99)

Example:

Send the command [SID1] to the system. All the cards in the system now have ID 1. Any commands that are sent to Card ID 1 will be received and executed by each card.

### 32. [SIDnCi]

This command sets the Card ID of a single card to a number from 1 to 99.

Command Format: [SIDnCi]

n = Card ID (n = # from 1 to 99)

Ci = Slot Number (i = # from 1 to max slots)

Example:

Send the command [SID50C10] to set the ID of the card in slot #10 to an ID of 50.

### 33. [SID+]

This command sets the Card ID of all the cards in a system to their slot number plus the offset value.

Command Format: [SID+n]

n = Offset amount (n = # from 0 to 99)

The maximum Card ID is 99, so subtract the highest slot number from 99 to find the maximum offset. For example, in an 8 slot enclosure, the maximum offset would be 91. The slot number, 8, plus the offset, 91, equals 99.

Example:

There are two, 20 slot enclosures to be connected together during normal operation. The first unit will use the Card ID defaults which are equal to their slot numbers. The second unit will have the same Unit ID, but will have the card ID's offset by 20.

Connect the computer to the second unit only and send the command [SID+20] to set the ID of all the cards in the enclosure to their slot number plus 20. Reconnect both units to the computer.

The cards in the first unit will be referenced as Card ID's 1-20 and the cards in the second unit will be referenced by Card ID's 21-40.

## 34. [RSN]

This command reads the slot number of the card with a specified ID number, and returns the value to the system to be displayed in the terminal window. If more than one card has the same ID, each slot number will be displayed.

Command Format: [RSNCi]

Ci = Card ID (i = # from 1 to 99)

Example:

The card in slot #4 takes up four slots in the enclosure. Its ID was set to 1 since it is the first card installed in the system, reading from left to right. Send the command [RSNC1] to find the slot number of this card. The system responds with the following feedback:

4

## 35. [HELP]

This command displays information available for the Multi-Tasker interface commands.

Command Format: [HELPCnUi]

Cn = Card ID (n = # from 1 to max slots)

Ui = Unit ID (i = # from 0 to 9)

Example:

In order to display the RS-232 commands available for the **MT109-102** card in slot #2, send the command [HELPC2]. The commands along with a brief description will be displayed in the Terminal Window.

## 36. [WR]

This command groups multiple cards in the enclosure allowing all the group members to be controlled simultaneously with the same command. Each unit may define a maximum of eight groups.

In Multi-Tasker™ systems with audio and video cards, boards are typically grouped as follows:

Group 1 = Video Cards

Group 2 = Audio Cards

Group 3 = Video and Audio Cards

If assigning group commands to button functions, it is best to use the "Press and Hold on Power Up" to make group settings.

Command Format: [WRCn<sub>1</sub>Cn<sub>2</sub>...GkUi]

Cn = Card ID (n = slot # from 1 to max slots)

Gk = Group number (k = # from 1-8)

Ui = Unit ID (i = # from 0-9)

Example:

To group cards 1, 2, and 3 as group 5 of Unit ID 1, send the command [WRC1C2C3G5U1]. After executing this command, cards 1, 2 and 3 will be grouped together as group 5 of Unit ID 1. The system will return the following feedback:

G1=C1C2C3

Now, when a command is sent to G1, each board in G1 will execute the same command.

## 37. [RMC]

This command may be used to remove one or more group members from a group. Reset the system after using this command for all changes to take effect.

Command Format: [RMCn<sub>1</sub>Cn<sub>2</sub>...GkUi]

Cn = Card ID (n= # from 1 to max slots)

Gk = Group number (k = # from 1-8)

Ui = Unit ID (i = # from 0-9)

Example:

Group 1 consists of the cards located in slots numbered 1, 2, 3, 4 and 5. Remove just cards #4 and #5 from the group by sending the command [RMC4C5G1]. The system will return the following feedback:

G1=C1C2C3

## 38. [RMG]

This command may be used to delete an entire group, or all groups.

### REMOVE ONE GROUP MEMBERS

Remove all the members from the group, effectively deleting the group.

Command Format: [RMGkUi]

Gk = Group number (k = # from 1-8)

Ui = Unit ID (i = # from 0-9)

Example:

Group 1 consists of the cards located in slots number 1, 2 and 3. Remove all cards from the group by sending the command [RMG1]. The system will return the following feedback:

G1=EMPTY

### REMOVE ALL GROUPS

Remove all the members from every group, effectively deleting all groups.

Command Format: [RMGÜUi]

Ui = Unit ID (i = # from 0-9)

Example:

Group 1 consists of cards 1 and 2. Group 2 consists of cards 1, 2, 3, 4 and 5. Delete all the groups by sending the command [RMGÜ]. The system will return the following feedback:

G1-G8:EMPTY

## 39. [RD]

This command reads and then displays the members in each group.

Command Format: [RDGkUi]

Gk = Group number (k = # from 1-8)

Ui = Unit ID (i = # from 0-9)

Example:

The cards in slots 1, 2 and 19 are part of group 5. Read the member data for group 5, by sending the command [RDG5]. The system will return feedback as follows:

G1=C1C2C19

The feedback shows G1 (Group 1) and then the cards that make up Group 1. In this case, Group 1 includes C1, C2 and C19.

## 40. [CLRG]

This command clears the members for a single group or for all groups. The clear command restores the cards to default settings and is the equivalent to sending the [CLR] command to each individual card.

NOTE: Since this command is sending the [CLR] command to its group members, each card will display its own reset message, if any.

Command Format: [CLRGkUi]

Gk = Group ID (k = # from 1-8, or Ü for all)

Ui = Unit ID (i = # from 0-9)

Example:

- 1) To clear group 1 of Unit ID 0, send the [CLRG1] command. This command clears the members for the specified group only.
- 2) To clear all groups of Unit ID 1, send the [CLRGÜU1] command.

## 41. [CLM]

This command removes the members in a group and leaves the group empty. It is equivalent to sending the [RMGkUi] command without card references.

Command Format: [CLMGkUi]

Gk = Group number (k = # from 1-8)

Ui = Unit ID (i = # from 0-9)

Example:

Group 5 of Unit ID 1 contains the cards in slots 1, 2 and 19. Read the member data for group 5 of Unit ID 1. Send the command [RDG5U1] and receive the following feedback:

G1=C1C2C19

Now, clear group 5 by sending the command [CLMG5U1]. Reread the member data as above and note the following feedback:

G1=EMPTY

## 7.3 SUMMARY OF COMMANDS

### Card Commands

- 1) [VER] Receives software version
- 2) [C] Receives status of the card
- 3) [CnS] Save card settings
- 4) [?C] Show card information
- 5) [?] Show system cards
- 6) [STA] Enable/disable auto feedback
- 7) [...S] Save the command being sent
- 8) [...F] Show command feedback
- 9) [ + ] Increments and Decrements  
[ - ] selected commands
- 10) [SELI] Select input volume to adjust
- 11) [SELO] Select output volume to adjust
- 12) [SELB] Select to adjust bass level
- 13) [SELT] Select to adjust treble level
- 14) [VLO] Set absolute output volume
- 15) [VLIm] Set absolute input volume
- 16) [VLB] Set absolute bass level
- 17) [VLT] Set absolute treble level

- 18) [LOD0] Turn ON loudness feature
- 19) [LOD1] Turn OFF loudness feature
- 20) [CLR] Reset card to default values
- 21) [RUP] Ramp volume UP to max (16)
- 22) [RUP=] Ramp volume UP to a value
- 23) [RDN] Ramp volume DOWN to min (1)
- 24) [RDN=] Ramp volume DOWN to a value
- 25) [RST] Stop ramping
- 26) [RAMP] Display ramp rate
- 27) [RAMP=] Set ramp rate
- 28) [TEST] Test internal memory IC's
- 29) [FBD] Feedback delay on/off
- 30) [RSI] Reset Card ID's
- 31) [SIDn] Set all Card ID's
- 32) [SIDnCi] Set one Card ID
- 33) [SID+n] Set Card ID offset
- 34) [RSN] Read Card slot number
- 35) [HELP] Display available commands

### Group Commands

- 36) [WR] Groups multiple cards
- 37) [RMC] Remove members from group
- 38) [RMG] Delete group
- 39) [RD] Displays group members
- 40) [CLRG] Clears group members
- 41) [CLM] Delete group

## 7.4 MENU MODE

MENU MODE commands are RS-232 commands that allow virtually the same functionality as programming commands. Unlike the programming commands in the previous sections, 7.2 and 7.3, MENU commands prompt the user to select from a list of available options. The system then responds based upon selections made by the user.

MENU commands may be issued in response to prompts from within MTSetup™ or other RS-232 communication software.

The MENU driven commands are only available with Multi-Tasker™ Front Panel systems that have the following firmware:

690-0122-015 = Version 015 or later.

690-0123-004 = Version 004 or later.

690-0124-018 = Version 018 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback that is similar to the following:

[690-0122-015 690-0123-004 690-0124-018]

Check the last three digits against the numbers above to determine if the MENU MODE option is available.

### 7.4.1 MENU COMMAND DEFINITIONS

Refer to section 7.2 for details on card functions and examples. Following is a table cross-reference of menu mode sections versus programming commands.

MENU	COMMAND
Control	
Select	n/a
Save	[CnS]
Clear	[CLR]
Volume	[VLOA], [VLBA], [VLTA], [+/-]
Loudness	[LOD0], [LOD1]
Mute	[MUT0], [MUT1]
Setup	
Group	[WR], [CLM]
Input Volume	[VLImAn]
Ramp Time	[RAMP], [RAMP=]
Status	[VER], [C]
Help	[HELP]
Not Available	[?], [?Ci], [CiS], [STA], [...S], [...F], [FBD], [RUP], [RDN], [RST], [RSI], [RSNCi], [SIDn], [SIDnCi], [SID+n], [TEST], [RD], and [SEL]

### 7.4.2 USING MENU MODE

SUGGESTION: Before using menu mode, it is best to disable the automatic feedback feature. The values and current settings will be displayed in the menu mode, but the automatic feature will display after each setting change making the menus difficult to read.

1. In order to enter MENU mode, the system needs to be connected to a computer running MTSetup™ or other RS-232 control software.
2. Insert the card into an empty slot and push in all the way for a secure fit.
3. Reset the system or power the system OFF and then ON.
4. In MTSetup™, click the cursor in the Terminal Window and press the ENTER key.
5. The system will interrogate the enclosure and return a list of cards installed and their slot locations.

Example: 08 (Slot 8): **MT109-102**

NOTE: Only cards supporting the MENU feature will be displayed.

5. Find the alphanumeric characters representing the card whose setup requires changing. It will be the first one or two characters in the line.
6. Press the number or letter associated with the card, and a menu with options available for that card will appear on the screen. In the example above, press "08".

**WARNING:** Do NOT enter any characters except the one relating to the desired menu. Pressing ENTER or RETURN after "08" will force the system back to the original prompt.

7. After selecting the **MT109-102** as described above, the system will prompt for selections specific to that card.
8. Read each menu carefully, and continue selecting keys as prompted for further functions. (Example prompt: "Key= ")

## 7.4.3 MENU TYPES

### 1. MAIN MENU

The first menu displayed after selecting the card is the Main Menu. This menu provides access to the main functions related to the card. Press the key representing the menu item for access. A sub menu will appear next.

### 2. SUB MENU

Each sub menu will display either another menu (sub menu) or a list of available options or settings. Press the key corresponding to the menu choice to change a setting or select the next menu.

**NOTE:** Pressing the ESCAPE (ESC) key in most menus will take you up to the previous menu.

## 7.4.4 MT109-102 MENUS

Following are the menus available to the **MT109-102**. The first menu is the Main Menu only. The second listing is an expansion of all the menu items available.

The expanded menu contains values that indicate the current setting or value of a parameter. The value is usually in parentheses, or otherwise indicated at the top of a sub menu. In some areas, additional comments are provided for clarification.

System prompts requiring specific values for volume, card number etc... are not shown. See the examples following the menus for details.

**CAUTION:** Pay special attention to the top of the CONTROL menu. After selecting the CONTROL menu, THIS CARD or a group will be identified at the top of the sub menu. Since group functions may be modified from this menu, make sure the desired card or group is selected.

### MT109-102 MAIN MENU

PRESS KEY TO SELECT

- 1: CONTROL
- 2: SETUP
- 3: STATUS
- 4: HELP

ESC: GO BACK

KEY =

## MT109-102 EXPANDED MENUS

### 1. CONTROL: THIS CARD

1: SELECT (Card/Group)

CURRENT SELECTION: THIS CARD

0: This Card

1: Group 1

2: Group 2

3: Group 3

4: Group 4

5: Group 5

6: Group 6

7: Group 7

8: Group 8

ESC: GO BACK

KEY =

### 2: SAVE

SAVE THIS SETTING?

1: YES

2: NO

KEY=

### 3: CLEAR

RESET CARD TO FACTORY DEFAULT:

\* Set Output Volume to maximum (16)

\* Set Input Volumes to maximum (16)

\* Set Bass Volume to Mid Range (8)

\* Set Treb Volume to Mid Range (8)

\* Set Loudness Off

\* Set Mute Off

\* Set Ramp Time to 6 SEC

1: YES

2: NO

KEY=

### 4: VOLUME

CHANGE VOLUME:

1: OUTPUT VOLUME (16/16)

2: BASS VOLUME (08/16)

3: TREBLE VOLUME (08/16)

ESC: GO BACK

KEY=

### 5: LOUDNESS

TURN LOUDNESS ON/OFF  
(Loudness=OFF)

1: LOUDNESS ON

2: LOUDNESS OFF

ESC: GO BACK

KEY=

### 6: LOUDNESS

TURN MUTE ON/OFF (Mute=OFF)

1: MUTE ON

2: MUTE OFF

ESC: GO BACK

KEY=

### 2: SETUP

#### 1: SET GROUP ID

SET GROUP ID: (G2)

1: ASSIGN GROUP ID

2: DELETE GROUP ID

ESC: GO BACK

KEY=

#### 2: SET INPUT VOLUME

SET INPUT VOLUME:

1: INPUT1 VOLUME (16/16)

2: INPUT2 VOLUME (16/16)

3: INPUT3 VOLUME (16/16)

SELECT INPUT: ENTER A NUMBER, ESC:  
GO BACK

KEY=

### 3: SET RAMP TIME

CURRENT RAMP TIME: 18 SEC

- 1: 04 SEC
- 2: 06 SEC
- 3: 08 SEC
- 4: 10 SEC
- 5: 12 SEC
- 6: 14 SEC
- 7: 16 SEC
- 8: 18 SEC

ESC: GO BACK

KEY=

ESC: GO BACK

KEY=

### 3: STATUS

Equivalent to the [C] command.

Returns the card status.

### 4: HELP

Equivalent to the [HELP] command.

Displays a list of commands available for the **MT109-102** along with a brief description.

ESC

Returns to the parent menu.

## 7.4.5 MENU MODE EXAMPLES

All MENU MODE examples assume an **MT109-102** is installed in slot #1. Start by clicking the mouse in the Terminal window. Press ENTER and a list of available cards will be displayed.

NOTE When entering numeric values (not selecting menu items) the system may echo each character as it is typed. For example, entering a volume of 03 may appear as 0033 on the screen, depending on the settings of the control software.

## 1. Select THIS CARD for control

Follow the keystrokes below to select Input 3 as the source input.

Enter	List available cards
01	Select MT109-102 in slot #1
1	Select CONTROL Menu
1	Select Card/Group Select
0	Select This Card (card #1)
ESC	Return to CONTROL Menu
ESC	Return to the MAIN Menu

## 2. Set Input 3 Volume

Starting from the Main Menu, set Input 3 volume level to 16. Follow the keystrokes below.

2	Select SETUP Menu
2	Select Set Input Volume
3	Select Input 3 Volume
16	Enter 16
	NOTE The system may echo the 1 and the 6 entries, depending on the settings.
ESC	Return to SETUP
ESC	Return to the MAIN Menu

## 3. Set Output Volume

Starting from the Main Menu, set the output volume level to 16. Follow the keystrokes below.

1	Select CONTROL Menu
4	Select VOLUME
1	Select OUTPUT volume
111...	Press '1' to increase volume level until 16 is reached.
ESC	Return to VOLUME Menu
ESC	Return to CONTROL menu
ESC	Return to the MAIN Menu



## 4. Set Ramp Time

Starting from the main menu, set the ramp time to 10 seconds. Follow the keystrokes below.

- 2 Select SETUP Menu
- 3 Select Set Ramp Time
- 4 Select Ramp Time = 10 seconds
- ESC Return to SETUP menu
- ESC Return to the MAIN Menu

## 5. Display Card Status

Starting from the Main Menu, follow the keystrokes below.

- 3 Displays card status

NOTE: The status will be displayed, followed by the Main Menu being redisplayed.

## TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT109-102**; however, we would like to offer suggestions for the following:

### 8.1 LED IS NOT ON

**Cause 1: Card cage is not plugged into power outlet.**

Solution: Plug card cage in. If the LED is ON, the problem is solved. If the LED is still not ON, see Cause 2.

**Cause 2: Card is not plugged in all the way.**

Solution: Push the card in all the way. If the LED is still not lit, see Cause 3.

**Cause 3: Card cage slot has a problem.**

Solution 1: Test the card in other slots of the card cage. If the slot was damaged, the card may work in other slots. If other slots work, and the LED is ON, the problem is the card cage slot. The card cage may require service. Call ALTINEX at (714) 990-2300. If the other slots do not work and the LED is still not lit, see Solution 2.

Solution 2: Take any other known good card with an LED and verify that the slot used is good by seeing if the other card's LED lights in that slot. If it lights, then the original card may be the source of the problem. Call ALTINEX at (714) 990-2300.

### 8.2 NO SOUND

**Cause 1: The source has a problem.**

Solution Check the source and make sure that it is working at an appropriate volume level and all source connections are correct. If the source is working and there is still no sound, see Cause 2.

**Cause 2: The proper card input may not be selected.**

Solution: Select the card input that is used, by RS-232 accessible commands in section 7. If no sound is present, see Cause 3.

**Cause 3: Cable connections to the destination are incorrect.**

Solution: Make sure that cables are connected properly. Also, make sure that the continuity and wiring are good. If there is still no sound present, see Cause 4.

**Cause 4: The destination amplifier has a problem.**

Solution 1: Make sure that the destination amplifier is powered. If there is still no sound, see Solution 2

Solution 2: Set the volume of the destination amplifier to a reasonable level. If there is still no sound, call ALTINEX at (714) 990-2300.

## 8.3 SOUND DISTORTION

**Cause 1: Source level is above 0.7Vp-p.**

Solution1: Make sure that the source level is below 1V p-p. If the sound is still distorted, see Solution 2.

Solution 2: Call ALTINEX at (714) 990-2300.

## 8.4 SOUND LEVEL IS LOW

**Cause 1: Volume levels are inappropriate.**

Solution 1: Turn up the source volume. If sound level is still low, see Solution 2.

Solution 2: Turn up the destination amplifier volume. If the sound level is still low, see Cause 2.

**Cause 2: Poor signal transmission.**

Solution: Check the cables for continuity and make sure that connections are wired properly to verify that there is good signal transmission. Note: Test the system by removing the card from between the source and the destination amplifier. If the problem persists, call ALTINEX at (714) 990-2300.

## ALTINEX POLICY

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### 9.1 LIMITED WARRANTY/RETURN POLICY

Please see the Altinex website at [www.altinex.com](http://www.altinex.com) for details on warranty and return policy.

### 9.2 CONTACT INFORMATION

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