



**Mult
Tasker™**

MANUAL PART NUMBER: 400-0095-005

MT109-100

**8-IN, 1-OUT STEREO AUDIO
SWITCHER CARD
USER'S GUIDE**

ALTINEX

**SIGNAL
MANAGEMENT
SOLUTIONS™**

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PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT109-100**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT109-100** and to prevent fire and shock hazards. 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 water or moisture. Do not place the **MT109-100** 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 **MT109-100** carefully. Dropping or jarring can damage the card.
- Do not pull any cables that are attached to the **MT109-100**.
- Insert the card carefully into the slots of the MultiTasker without bending any edges.
- When removing a card, pull it halfway through to avoid damage to internal cables. If an expansion card is being removed, please make sure that the main card to which it is attached is pulled out simultaneously.

1.3 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.

1.4 FCC 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 his own 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 MT109-100 2

MT109-100 8-In 1-Out Stereo Audio Switcher Card

The **MT109-100** is a Stereo Audio Switcher Card which allows the connection of 8 stereo audio sources to a single receiving device, such as a cassette recorder, mixer, and/or amplifier for sound reinforcement.

Inputs are selected through easy-to-use ASCII commands from a control system or computer connected to the RS-232 port of the MultiTasker enclosure. While the **MT109-100** can accept only unbalanced audio inputs, the output can be wired for either balanced or unbalanced audio.

The **MT109-100** is primarily designed to utilize the inputs and output offered on the connector panel. However, it also offers a special feature that enables the **MT109-100** to send or receive stereo audio signals to or from another **MT109-100**.

This feature can be used in a variety of ways to expand the capabilities of the card. For example, two **MT109-100** cards can be installed in the MultiTasker and the output of one can be routed to an input of the other, creating a 15-In, 1-Out switcher.

TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT109-100
GENERAL	
Inputs	
Input Connectors	(8) 3.5mm stereo audio jack
Outputs	
Local Monitor Output Connector	(1) 5-pin Terminal Block
Compatibility	Stereo or Mono Audio

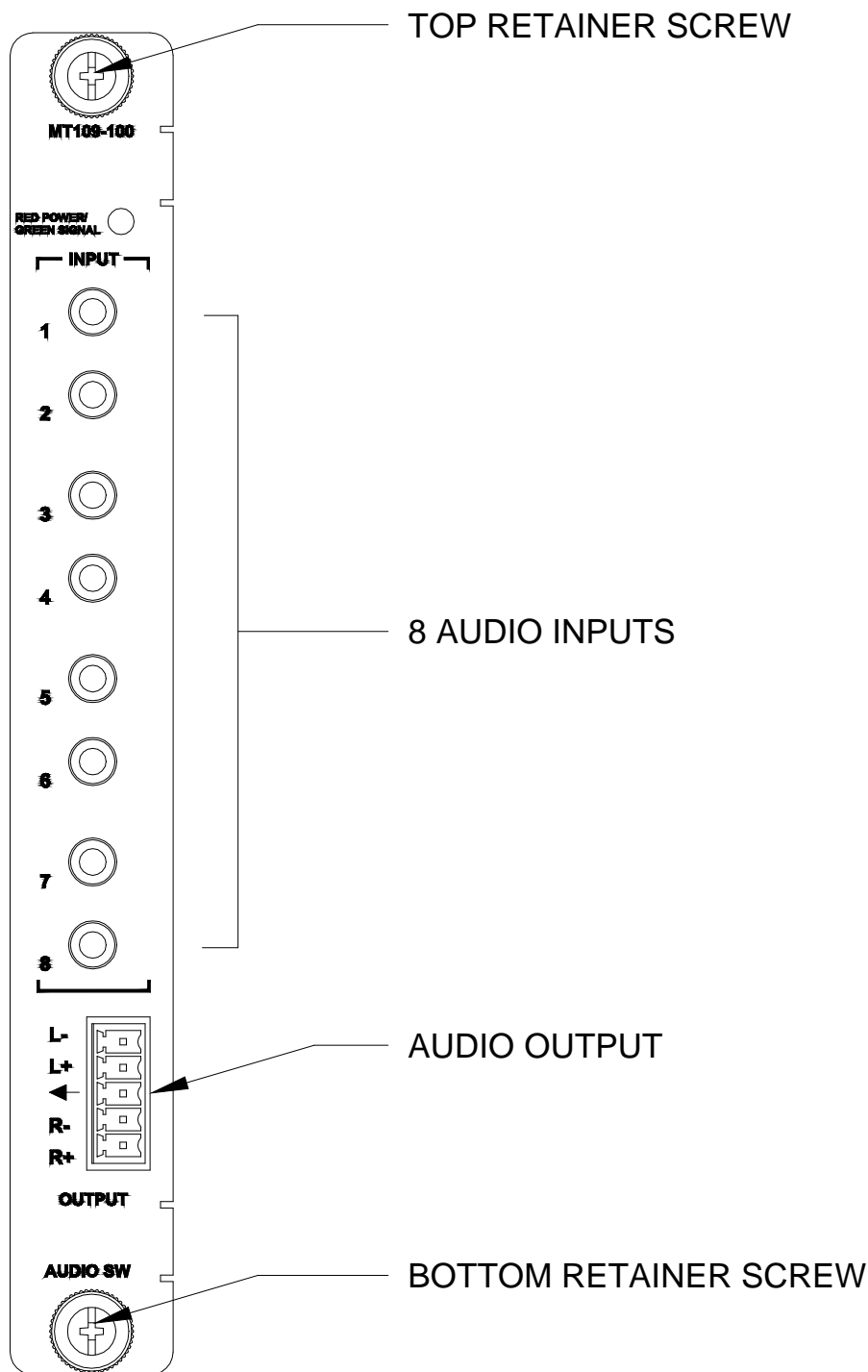
Table 1. **MT109-100** General

MECHANICAL	MT109-100
Basic Enclosure Slots Required	One
Weight	1.0 lb (0.45 kg)
Connector Panel	Black
T° Operating	10°C-40°C
T° Maximum	0 to 50°C
Humidity	90% non-condensing
MTBF (calc.)	55,000 hrs

Table 2. **MT109-100** Mechanical

ELECTRICAL	MT109-100				
Input Signals					
Max Level	0 dBu				
Impedance	10k Ohms				
Audio Throughput					
Gain	0 dB unbalanced, 6dB balanced				
Frequency Response	10 Hz to 20 kHz (+/- 0.05 dB)				
Noise Floor	-100 dB @ 20 kHz				
CMRR	>80 dB, 10 Hz to 20 kHz				
Output Signals					
Level	1V p-p				
Impedance	Low – drives 600 Ohms				
Gain	0 dB				
Power					
Power from MT100-100	+6V	-6V	+13V	-13V	Power Consumption
MT109-100	75 mA	20 mA	46 mA	40 mA	1.7 W

Table 3. **MT109-100** Electrical



APPLICATION DIAGRAM

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DIAGRAM 1: TYPICAL CONFIGURATION

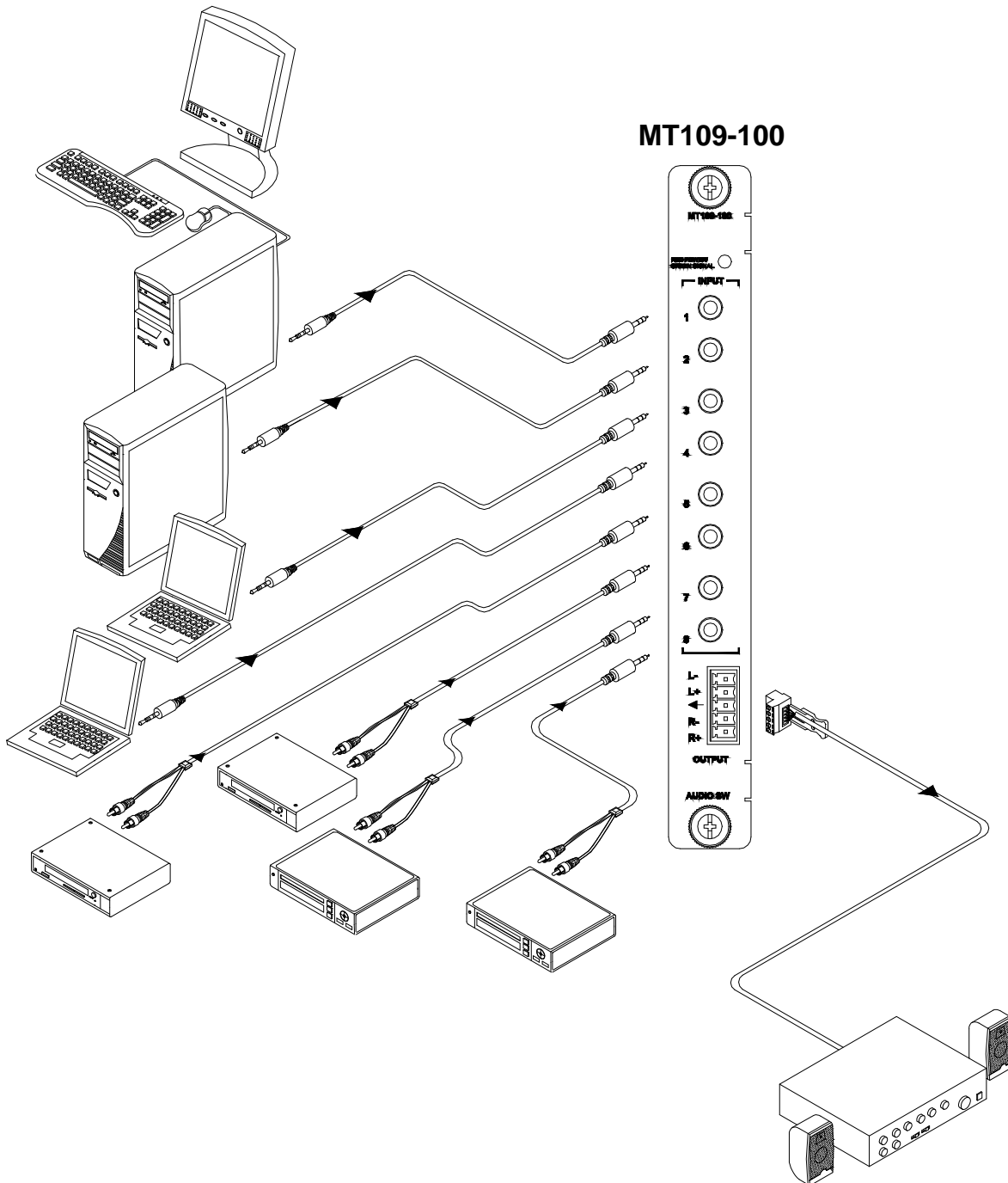


DIAGRAM 2: INTERNAL VIEW

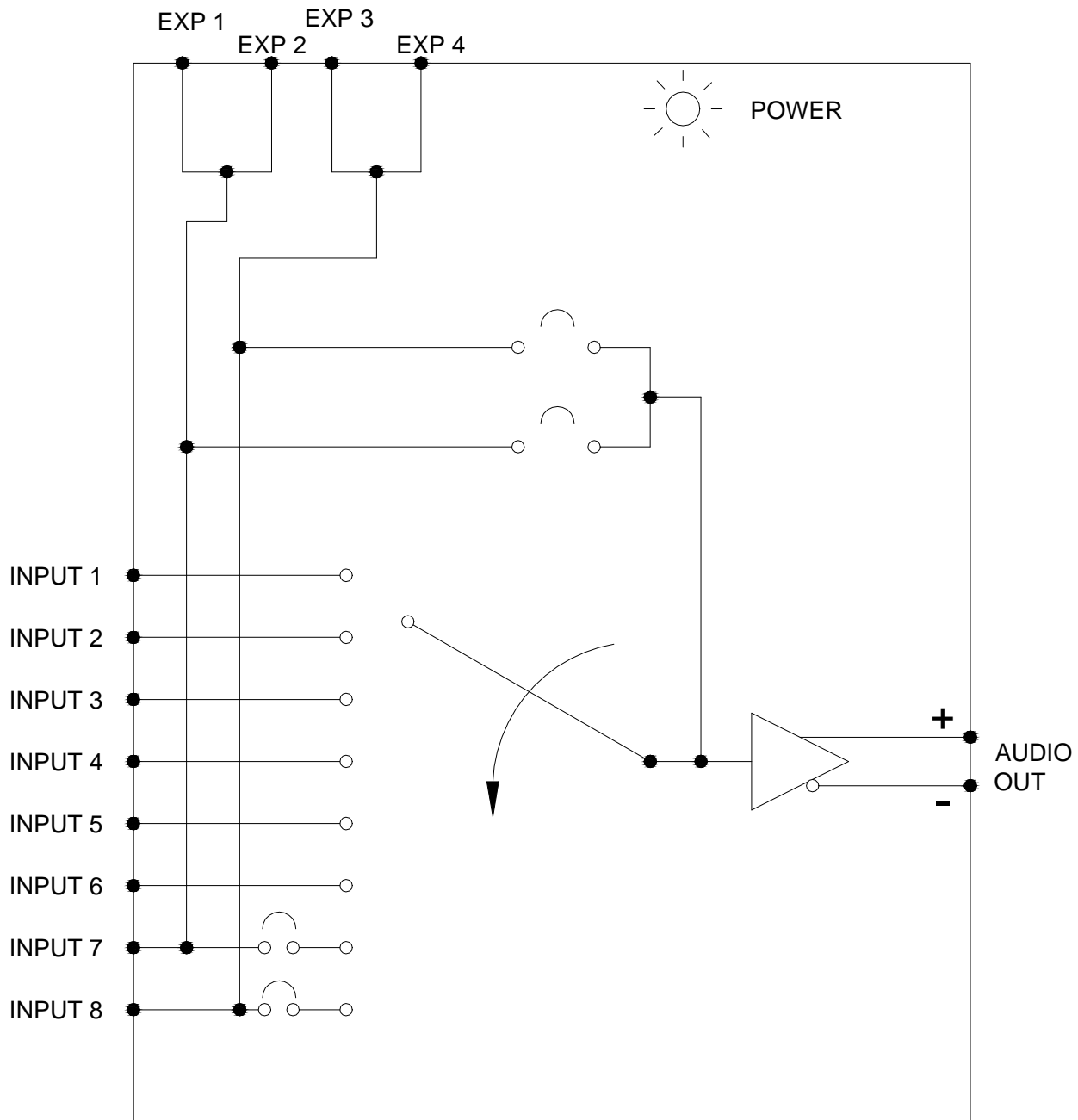
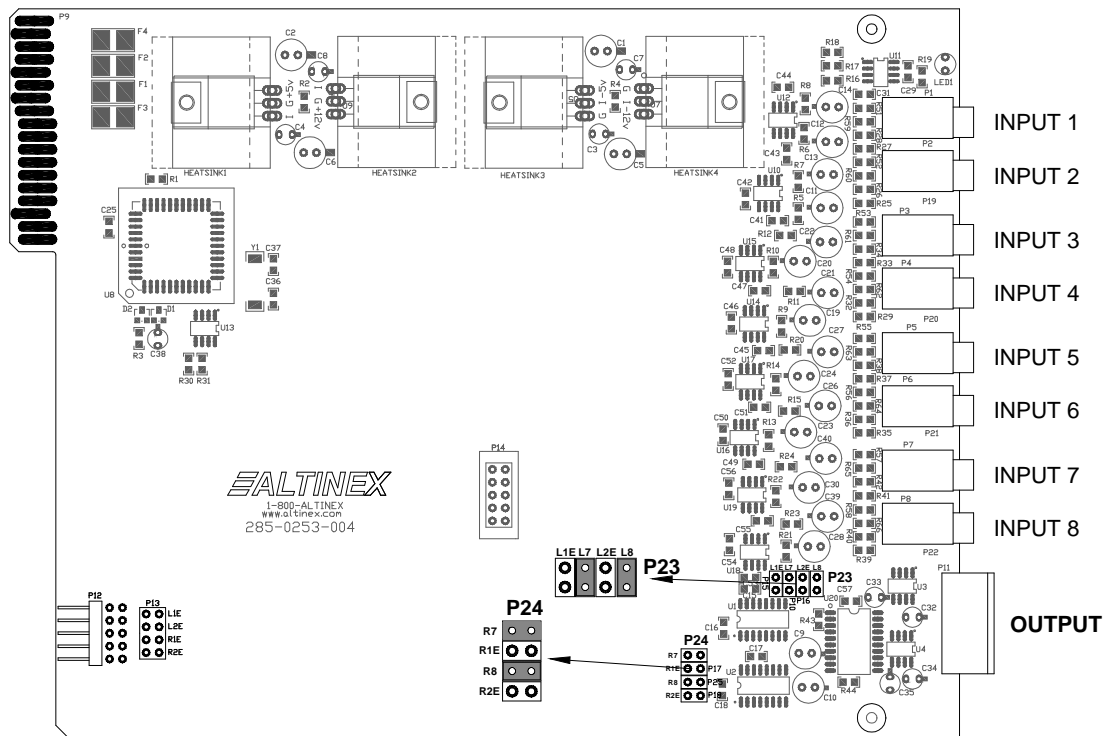


DIAGRAM 3: JUMPER SETTINGS



Default jumper settings shown.

The **MT109-100** has 8 external inputs, 1 internal input, and 1 output. The internal inputs come from an Expansion card using a 10-pin IDC cable connected between P12s of the Expansion and Master cards.

The internal input is configured as input 7 or input 8. Only one of two internal inputs is used at a time and it depends on how the jumpers on the Expansion are set. In order to use one of the internal inputs, one of the external inputs (7 or 8) cannot be used.

Setting Jumpers:

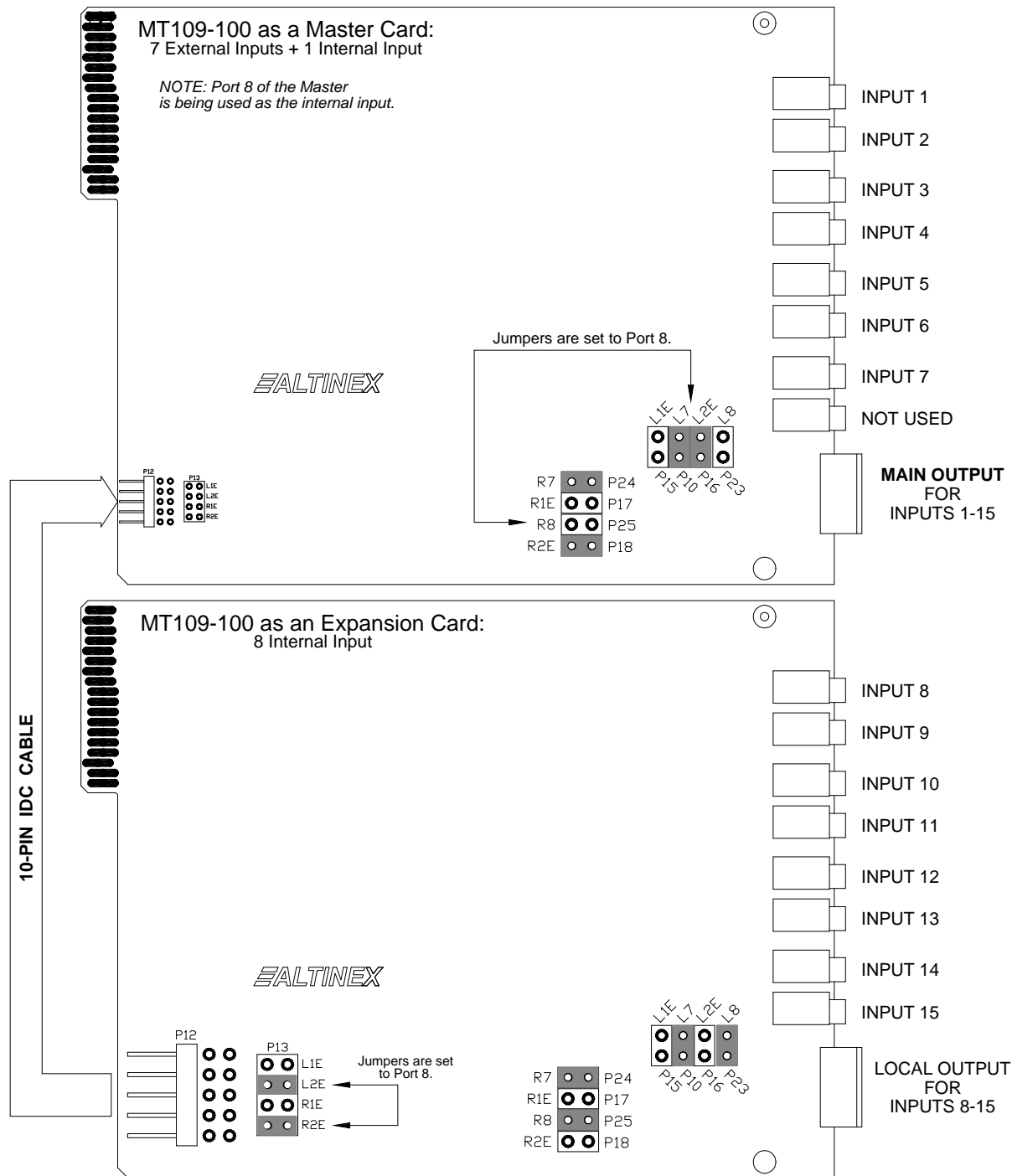
- 1) As an Expansion card: set P13 as port 7 (L1E and R1E) or port 8 (L2E and R2E).
- 2) As a Master card: set jumpers on P23 and P24 as described below.

If the Expansion card's jumpers on P13 are set on L1E and R1E, the Master card must select internal input 7 on P23 (L1E) and P24 (R1E).

If the Expansion card's jumpers on P13 are set on L2E and R2E, the Master card must select internal input 8 on P23 (L2E) and P24 (R2E).

Note: The **MT109-100** is an 8-In, 1-Out switcher. For a 15-In, 1-Out switcher, use two **MT109-100** cards, one as a Master card and the other as an Expansion card. (See page 8.)

DIAGRAM 4: 15 IN, 1 OUT SWITCHER



INSTALLING YOUR MT109-100

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Step 1. Determine how the **MT109-100** is going to be configured. A standard **MT109-100** is an 8-In, 1-Out switcher, but two **MT109-100s** (one Master and one Expansion) may be configured as a 15-In, 1-Out switcher.

In Application Diagram, DIAGRAM 4, on page 8, the Master is set to accept 7 external inputs and 1 internal input. The Expansion card has 8 external inputs (inputs 8-15). For RS-232 commands, the 8 external inputs of the Expansion card must still be configured as inputs 1-8.

For example, if the Master is in slot 1 and the Expansion card is in slot 2, select inputs using the following commands:

```
To select input 1: [ON1C1]
                2: [ON2C1]
                ...
                7: [ON7C1]
To select input 8: [ON8C1] [ON1C2]
                9: [ON8C1] [ON2C2]
                ...
               15: [ON8C1] [ON8C2]
```

Step 2. Turn off power to the MultiTasker system and disconnect from AC power.

Step 3. Remove a slot cover (MT200-101) from an unused slot. Identify the slot number and note that it is for RS-232 control.

Step 4. Slide the **MT109-100** into an available slot in the MultiTasker in order to connect to the bus. Make sure that the **MT109-100** fits into place and then secure the card by tightening the retainer screws located on the top and bottom of the card.

Step 5. Restore power to the MultiTasker system.

Step 6. The LED on the card panel will turn red indicating the card is operational. An LED that is blinking red indicates a problem. If the LED is blinking, see the Troubleshooting Guide in section 8.

Step 7. Connect the audio sources to the input connectors of the **MT109-100**. Connect the output of the **MT109-100** to the receiving device.

Step 8. The **MT109-100** is now operational.

OPERATION

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7.1 RS-232 CONTROL

The **MT109-100** has many advanced remote-control capabilities accessible through standard RS-232 communication. Control may be accomplished through a computer control system or any other device capable of sending RS-232 communication.

7.1.1 RS-232 INTERFACE

The control commands for the **MT109-100** are in a simple ASCII character format.

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

The cards in a MultiTasker system are capable of performing various functions, as well as providing feedback to the user or control system. Commands instruct a card to perform actions or request information from the card. Some commands do both simultaneously.

A command that instructs the card only to perform an action will generate feedback of “[]”. The open bracket immediately followed by a close bracket indicates the card received a valid command. If the command requested information from the card, the feedback generated by the card is the acknowledgement of having received a valid command. Invalid commands generate feedback of “[ERR001]”.

After processing a command, an “OK” or [ERR001] 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 (optional for Unit ID 0)

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

The Card ID is a unique identifier. It is equal to the enclosure slot number, or it may be an assigned value. As the slot number, the value can range from 1-4 up to 1-to-20 depending on the enclosure. If the value is assigned, the ID may be a maximum of 99.

Card ID 0 (C0) is used for the controller and cannot be reassigned.

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]

COMMANDS

1. [VER]

This command displays the software version and card type for the card.

Command Format: [VERCnUi]

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

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

Example:

Send the command **[VERC2]** to check the version of the **MT109-100** in slot 2. The system will return the following feedback:

[MT109-100 690-0179-006]

MT109-100 = card type

690-0179-006 = software version

2. [C]

This command displays the status of the card.

Command Format: [CnUi]

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

Ui = unit id (i = 0 to 9)

Example:

An **MT109-100** card is in slot 4. Sending the command [C4] to the MultiTasker will yield feedback similar to the following:

ON 1 C04
 OUTVOL=32/32
 INVOL1=32/32
 INVOL2=32/32
 INVOL3=32/32
 INVOL4=32/32
 INVOL5=32/32
 INVOL6=32/32
 INVOL7=32/32
 INVOL8=32/32

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

3. [CnS]

This command saves the status of the card's current settings to be restored after the system is reset, or powered off and then on.

Command Format: [CnUiS]

Cn = card number
S = save configuration

Example:

Save the card's current settings by sending the command [C4S]. The feedback will display the status and a save message.

ON1C04
OUTVOL=32/32
INVOL1=16/32
INVOL2=16/32
INVOL3=16/32
INVOL4=16/32
INVOL5=16/32
INVOL6=16/32
INVOL7=16/32
INVOL8=16/32
[SAVED]

FEEDBACK COMMANDS ?, ?Cn and STA

The next four commands are a function of both the card and the front panel and are only available with MultiTasker 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.

Send the command [VER], and the system will respond with feedback that includes 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.

4. [?]

This command will display general information about the MultiTasker and cards installed in the unit.

Command Format: [?Ui]

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

Example:

A MultiTasker with Unit ID #1 has a front panel with part number MT101-101 and contains an MT103-122, MT103-123 and **MT109-100**. Send the command [?U1] and receive the following feedback:

```
[(MT101-101U1)(MT103-122C01)
(MT103-123C02)(MT109-100C03)]
```

MT101-101U1 = Panel Number and Unit ID
MT103-122C01 = An MT103-122 is in slot 1
MT103-123C02 = An MT103-123 is in slot 2
MT109-100C03 = An MT109-100 is in slot 3

5. [?C]

This command will return general information about the card and its status.

Command Format: [?CnUi]

Cn = Card ID (n = # from 1 to max slots)
Ui = Unit ID (i = from 0 to 9)

Example:

The **MT109-100** in slot 4 has Input 1 turned on with a gain level of 16 on the input and a volume level of 32 on the output. Send the command [?C4] to receive feedback status similar to the following.

```
[(MT109-100C05)(VR690-0179-006C05)
(IN1C05)(VO32C05)(VI16323232323232C05)
(VM0C05)]
```

All status feedback is enclosed in brackets, "[]". Each data field within the status is enclosed in parentheses. The first two characters identify the status type. The last three characters are the card's ID.

MT109-100 = Card model number
VR690-0179-006 = Firmware version
IN1 = Input selection
VO32 = Output volume
VI16323232323232 = Input levels
VM0 = Mute on/off

The input selection line shows the active input number is Input 1. The possible values are 1-8.

The output volume line shows the current output volume level and the input level line lists the gain setting for each input, 1-8. The maximum input and output values are 32.

The mute line shows the output's status, off or on. A "0" indicates mute is off (output is enabled) and a "1" indicates mute is on (output is disabled).

6. [STA1]

This command enables automatic feedback from the front panel. The command affects any card with auto-feedback capability, not just the **MT109-100**. The default at power up, or after a reset is STA0, off. For more details, see the [?Cn] command definition.

Command Format [STA1]: = On

Feedback Prefix Definitions:

MT Card model number
 VR Firmware revision
 IN Input selection
 VO Output volume level
 VI Input gain settings
 VM Mute setting

Example:

Command = [ON1C4]

Feedback = (IN1C04)

IN = Input selection
 1 = Setting (1-8)
 Input 1 active
 C04 = Card/Slot number

7. [STA0]

This command disables automatic feedback from the card and front panel. The command affects any card with auto-feedback capability, not just the **MT109-100** card. The default at power on or reset is STA0, OFF.

Command Format: [STA0]

8. [+O]

This command increases the output volume level by 1 up to the maximum level of 32. If the command is sent after a level of 32 has been reached, it will have no effect on the output.

Command Format: [+OCnUi]

Cn = Card ID

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

Example:

Increase the output volume of C4 (slot 4) from 31 to 32 by sending the command [+OC4].

9. [-O]

This command is the same as [+O] except that it decreases the output volume level by 1 down to the minimum level of 1.

10. [+I]

This command increases an input level by 1 up to the maximum level of 32. If the command is sent after a level of 32 has been reached, it will have no effect on the input.

Command Format: [+ImCnUi]

m = Input No. (m - # from 1 to 8)

Cn = Card ID

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

Example:

Increase the output volume of C4 (slot 4) from 31 to 32 by sending the command [+OC4].

11. [-I]

This command is the same as [+Im] except that it decreases an input level by 1 down to the minimum level of 1.

12. [+] See the [SEL] command.

13. [-] See the [SEL] command.

14. [SEL] and [SEIm]

These commands allow the input levels and output volume to be adjusted incrementally.

OUTPUT Command Format: [SELCnUi]

Cn = Card Slot Number

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

INPUT Command Format: [SELMnCnUi]

m = Input (m # from 0 to 8)
 Cn = Card Slot Number
 Ui = Unit ID (i = # from 0 to 9)

INCREMENT/DECREMENT Format: [+] / [-]

[+] = Increment level by one
 [-] = Decrement level by one

Example:

An **MT109-100** is in slot 4. Adjust the gain on Input 2 from a level of 10 to 15.

1. [SEL2C4]
The current gain 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.

15. [VLO]

This command sets the absolute volume level for the output to a specific value.

Command Format: [VLOAvCnUi]

v = Volume Level (# from 01 to 32)
 Cn = Card ID
 Ui = Unit ID (i = # from 0 to 9)

Example 1:

Set the output volume level to a level of 16 using the command [VLOA16C4].

16. [VLI]

This command sets 1 of the 8 input levels to a specific gain value.

Command Format: [VLImAvCnUi]

m = Input No. (m = # from 1-8)
 v = Volume Level (v = # from 01 to 32)
 Cn = Card ID
 Ui = Unit ID (i = # from 0 to 9)

Example 1:

Set the input gain level for Input 4 to a value of 24 using the command [VLI4A24C4].

VOLUME RAMPING FEATURE

The following commands are used to control the volume of the **MT109-100**. They may be used with computer control, or 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 is an example of how to use the ramping feature. 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.
```

17. [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 32 for the card in slot 4. Send the command [RUPC4] and the system will respond with the following feedback:

[11][12][13][14]...[32]

18. [RUP=]

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 01-32)

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 20 for the card in slot 4. Send the command [RUP=20C4] and the system will respond with the following feedback:

[02][03][04]...[20]

19. [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 32 down to 1 for the card in slot 4. Send the command [RDNC4] and the system will respond with the following feedback:

[31][30][29]...[01]

20. [RDN=]

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 01-32)

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 32 down to 16 for the card in slot 4. Send the command [RDN=16C4] and the system will respond with the following feedback:

[31][30][29]...[16]

21. [RAMP]

This command displays the ramping time for 32 steps. The time between each step is equal to the time in seconds divided by 32.

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 4 by sending the command [RAMPC4]. The system will respond with feedback similar to the following:

RAMPTIME = 6 SECONDS

22. [RAMP=]

This command sets the ramp rate for 32 steps. The settings range from 4 to 18 seconds, in two-second intervals.

Command Format: [RAMP=xCnUi]

x = Rate in Seconds

4 = 0.13 seconds/step

6 = 0.19 seconds /step

8 = 0.25 seconds /step

10 = 0.31 seconds /step

12 = 0.38 seconds /step

14 = 0.44 seconds /step

16 = 0.50 seconds /step

18 = 0.56 seconds /step

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

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

Example:

There is an **MT109-100** in slot 4. Send the command [RAMP=16C4] to set the ramp rate to 16 seconds. After this is set, any ramping will occur at a rate of 32 steps in 16 seconds, or 0.50 seconds per step. Confirm the setting by sending the command [RAMPC4] and receiving the feedback:

RAMPTIME = 16 SECONDS

23. [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 4 is ramping up from a volume level of 1 to 32. Send the command [RSTC4] and the card will stop ramping the output volume. The last displayed volume setting will remain the current volume level.

24. [CLR]

This command clears the card's settings and returns them to the factory defaults. Input 1 is selected, the output volume is set to 32/32 and all the input levels are set to 32/32.

Command Format: [CLRCnUi]

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

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

Example:

Send the command [CLRC4] to reset the **MT109-100** in slot 4 to its factory defaults.

25. [ONm]

This command is used to select the input to be active on the output connector.

Command Format: [ONmCnUi]

m = Input number (m = # from 1 to 8)

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

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

Example:

There is an **MT109-100** card in slot 4. Send the command [ON3C5] to select Input 3 as the active input. If the output is disabled (muted), it will remain disabled.

26. [ON] Same as the [MUT0] command.

27. [OFF] Same as the [MUT1] command.

28. [MUT0]

This command turns on (enables) the output volume without changing the input port selected and without changing any volume settings.

Command Format: [MUT0CnUi]

Cn = Card Slot Number

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

Example:

Send the command [MUT0C4] to turn on the output volume for the card in slot 4.

29. [MUT1]

This command turns off (disables) the output volume without changing the input port selected and without changing any volume settings.

Command Format: [MUT1CnUi]

Cn = Card Slot Number

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

Example:

Send the command [MUT1C4] to turn off the output volume for the card in slot 4.

30. [...S] – Save

This command will save the configuration command being sent in memory. When sending the command [VLI1A16C4S], after reset or power up, Input 1 on C4 will be restored with an input volume level of 16.

31. [...F] – Feedback

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

32. [...P] – Path

This command sets the path for the output, but is not active until the switch command, [SW], is executed. Commands ending in "P" are not executed immediately. The path for outputs on one or more cards can be preloaded. See the [SW] command for details.

33. [SW] – Switch

The switch command immediately connects inputs and/or outputs, which were previously set with the path command on this card and all other cards in the system.

Example:

There is an **MT109-100** in slot 2 and another **MT109-100** in slot 3. Switch C2 to Input 1 at the same time a switching C3 to Input 4 by sending the following commands:

[ON1C2P] [ON4C3P] [SW]

34. [TEST]

This command performs a series of tests on the internal memory.

Upon completion, the system will display "MEMORY IS GOOD" if all tests pass; otherwise, failures will be indicated.

35. [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 data is displayed, but most is missing. Send the [FBD1C4] to slow the rate at which the card sends feedback to the system.

ID COMMANDS: RSI, SIDn, SIDnCi, SID+, RSN

The default Card ID is the card's slot number. The next several commands allow the ID to be set to a value other than the slot number. Once the ID is changed, moving the card to another slot will not change the card ID. If a card in slot 4 is set to ID 1 then moved to slot 10, its ID will remain 1.

Some cards require more than one slot in the MultiTasker 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.

The ID commands work with all MultiTasker Front Panel systems. However, front panels that have firmware releases prior to the following will not be able to address Card IDs 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.

Send the command [VER] and verify the feedback includes the following:

690-0122-019 690-0123-005 690-0124-019

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

36. [RSI]

This command resets the card IDs in the system. After sending this command, each card ID in the system will match the slot number of the card. If the card is moved to another slot, its ID number will be the new slot number.

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. If the card in slot 1 is then moved to slot 4, the card ID will then be 4.

37. [SIDn]

This command sets all the cards installed in a MultiTasker 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.

38. [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.

39. [SID+n]

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 sum of the slot number, 8, and 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 default IDs where the card ID is equal to the slot number. The second unit will have the same unit ID, but each card ID will be offset by 20.

Connect the computer to the second unit only and send [SID+20] to set the ID of all 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 IDs 1-20 and the cards in the second unit will be referenced by card IDs 21-40.

40. [RSN]

This command displays the slot number of a card with a specified ID number. 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]

41. [HELP]

This command displays information available for the MultiTasker interface commands.

Command Format: [HELPCnUi]

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

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

Example:

Display the RS-232 commands available for the **MT109-100** card in slot 4 by sending [HELPC4]. The commands along with a brief description will be displayed in the Terminal Window.

GROUP COMMANDS

The next few commands are group commands. The use of groups allows several boards, with the same functions, to be controlled simultaneously with a single command. These commands apply to all cards, not only the **MT109-100**.

42. [WR]

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

In systems with audio and video cards, the cards are typically grouped as follows:

Group 1 = Video Cards

Group 2 = Audio Cards

Group 3 = Video and Audio Cards

Command Format: [WRCn₁Cn₂...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:

Group cards 2, 4, and 6 as Group 5 of Unit ID 1 by sending [WRC2C4C6G5U1]. After executing this command, cards 2, 4 and 6 will be grouped together as Group 5 of Unit ID 1. The system will return the following feedback:

[G5=C2C4C6]

Now, when a command is sent to G5, each board in G5 will execute the same command.

43. [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: [RMCn₁Cn₂...GkUi]

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

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

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

Example:

Group 5 consists of the cards located in slots numbered 2, 4, and 6. Remove just cards 4 and 6 from the group by sending the command [RMC4C6G1]. The system will return the following feedback:

[G5=C2]

44. [RMG]

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

REMOVE A GROUP

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

Command Format: [RMGkUi]

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

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

Example:

Group 5 consists of the cards located in slots number 2, 4 and 6. Remove all cards from the group by sending the command [RMG5]. The system will return the following feedback:

[G5=0]

REMOVE ALL GROUPS

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

Command Format: [RMG*Ui]

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

Example:

Group 5 consists of cards 2, 4 and 6. Group 2 consists of cards 1, 2, 3, 4 and 5. Delete all the groups by sending the command [RMG*]. The system will return the following feedback:

G1-G8:EMPTY

45. [RD]

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

Command Format: [RDGkUi]

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

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

Example:

The cards in slots 2, 4 and 6 are part of Group 5. Read the member data for Group 5, by sending the command [RDG5]. The system will return feedback as follows:

[G5=C2C4C6]

The feedback shows G5 (Group 5) and then the cards that make up Group 5. In this case, Group 5 includes C2, C4 and C6.

7.3. SUMMARY OF COMMANDS

Card Commands

- 1) [VER] Display software version
- 2) [C] Display card status
- 3) [CnS] Save card settings
- 4) [?] Display system cards
- 5) [?C] Display card information
- 6) [STA1] Enable auto feedback
- 7) [STA0] Disable auto feedback
- 8) [+O] Increment output volume
- 9) [-O] Decrement output volume
- 10) [+I] Increment input gain
- 11) [-I] Decrement input gain

- 12) [+] Increment value by one
- 13) [-] Decrement value by one
- 14) [SEL] Select input level to adjust
- [SELM] Select output volume to adjust
- 15) [VLO] Set output volume level
- 16) [VLI] Set an input level
- 17) [RUP] Ramp volume UP to 32
- 18) [RUP=] Ramp volume UP to a value
- 19) [RDN] Ramp volume DOWN to 1
- 20) [RDN=] Ramp volume DOWN to a value
- 21) [RAMP] Return ramp rate
- 22) [RAMP=] Set ramp rate
- 23) [RST] Stop ramping
- 24) [CLR] Reset card to default values
- 25) [ONm] Select the active input
- 26) [ON] Enable output
- 27) [OFF] Disable output
- 28) [MUT0] Enable output
- 29) [MUT1] Disable output
- 30) [...S] Save command configuration
- 31) [...F] Display feedback upon sending
- 32) [...P] Set the path, preload for [SW]
- 33) [SW] Switch preloaded output buffer
- 34) [TEST] Perform board memory test
- 35) [FBD] Enable/disable feedback delay
- 36) [RSI] Reset Card IDs to defaults
- 37) [SIDn] Set all Card IDs
- 38) [SIDnCi] Set one Card ID
- 39) [SID+] Set all Card IDs to an offset
- 40) [RSN] Display card slot number
- 41) [HELP] Display available commands

Group Commands

- 42) [WR] Group cards
- 43) [RMC] Remove member(s) from group
- 44) [RMG] Delete group
- 45) [RD] Display group members

7.4 MENU MODE

Menu Mode commands allow virtually the same functionality as programming commands. Unlike the programming commands, menu commands prompt the user to select from a list of available options. The system then responds based upon selections made by the user.

The menu driven commands are only available with MultiTasker systems that have the following front panel firmware:

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

Send the command [VER] and the system will respond with feedback that includes the following:

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

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

7.4.1 MENU COMMAND DEFINITIONS

Refer to section 7.2 for details on card functions and examples.

MENU	COMMAND
Control	
Select	n/a
Save	[CnS]
Clear	[CLR]
Switch	[ON]
Volume	[VLO], [RUP], [RDN], [RST]
Mute	[MUT0], [MUT1], [OFF], [ON]
Setup	
Group	[WR], [RM]
Input Volume	[VLI]
Ramp Time	[RAMP]
Status	[VER], [C]
Help	[HELP]

7.4.2 USING MENU MODE

1. In order to enter menu mode, the system needs to be connected to a computer running RS-232 control software.
2. In the Terminal Window, press ENTER on the keyboard.
3. The system interrogates all cards and returns a list of cards and their ID numbers.

Example: 08: **MT109-100**

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

4. Enter the two-digit ID and a menu for the card will be displayed. In the example above, enter "08" for the **MT109-100**.

WARNING: Do NOT enter any characters except those relating to the desired menu. Press ENTER after "08" and the original prompt will be displayed.

5. After selecting the **MT109-100** as described above, the system will prompt for selections specific to that card.
6. 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 key functions related to the card. Press the key representing the menu item for access and a sub-menu will appear.

2. SUB-MENUS

Each menu item will display either a sub-menu, or a list of options. Press the key corresponding to the desired choice.

7.4.4 MT109-100 MENUS

Following are the menus available to the **MT109-100**. 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 in parentheses that indicate the current setting or value of that parameter. 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.

MT109-100 Menus

- 1: CONTROL
 - SELECT CARD/GROUP
 - SAVE
 - CLEAR
 - SWITCH
 - VOLUME
 - MUTE
- 2: SETUP
 - SET GROUP
 - SET INPUT VOLUME
 - SET RAMP TIME
- 3: STATUS
- 4: HELP

7.4.5 MENU MODE EXAMPLES

All Menu Mode examples assume an **MT109-100** is installed in slot 1. Start by clicking in the Terminal Window. Press ENTER and a list of available cards will be displayed.

1. Select An Input

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

Enter	List available cards
01	Select MT109-100 in slot #1
1	Select CONTROL Menu
1	Select Card/Group Select
0	Select This Card (card #1)
	The CONTROL menu will read THIS CARD at the top.
ESC	Accept this selection
4	Select SWITCH sub-menu
3	Select Input 3
ESC	Return to CONTROL Menu
ESC	Return to the Main Menu

2. Set Input 3 Input 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 software 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 using the keystrokes below.

1	Select CONTROL Menu
5	Select VOLUME
1 or 2	Use "1" to increase and "2" to decrease until the desired level is obtained.
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 using 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 Display 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 **MT109-100**; however, we would like to offer suggestions for the following:

8.1 LED IS NOT LIT

Cause 1: The card is not plugged in.

Solution: Plug the card in all the way. If the LED turns on, the problem is solved. If the LED is still not on, see Cause 2.

Cause 2: The card is not plugged in all the way.

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

Cause 3: The 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 turns on, the problem is the card cage slot. The card cage may require service. Please, 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. Please, call ALTINEX at (714) 990-2300.

8.2 LED IS BLINKING RED

Cause 1: The CPU on the card is not working properly.

Solution 1: Look at the card and verify that there is no damage. If there is no damage, see Solution 2.

Solution 2: Verify that all ICs are seated in their sockets. If the LED is still blinking red, see Cause 2.

Cause 2: The card and its serial device are not communicating.

Solution: Turn the system off and then on again. If there is still an error, see Cause 3.

Cause 3: RS485 communication error.

Solution 1: Make sure that the card is pushed all the way into the slot. If there is still an error, see Solution 2.

Solution 2: Turn the system off and then on again. If there is still an error, see Solution 3.

Solution 3: Please, call ALTINEX at (714) 990-2300.

8.3 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.

8.4 SOUND DISTORTION

Cause 1: The source level is above 1V p-p.

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

Cause 2: The destination amplifier provides excessive amplification.

Solution 1: Make sure that the source signal level is high enough so that the destination amplifier does not have to provide excessive amplification and thereby distort the signal. If there is still sound distortion, see Solution 2.

Solution 2: Please, call ALTINEX at (714) 990-2300.

8.5 SOUND LEVEL IS LOW

Cause 1 Input volume is low.

Solution 1: Turn up the source volume. If the 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 **MT109-100** card from between the source and the destination amplifier. If the problem persists, call ALTINEX at (714) 990-2300.

ALTINEX POLICIES

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9.1 LIMITED WARRANTY/RETURN POLICIES

Please see the ALTINEX website at www.altinex.com for details on warranty and return policies.

9.2 CONTACT INFORMATION

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