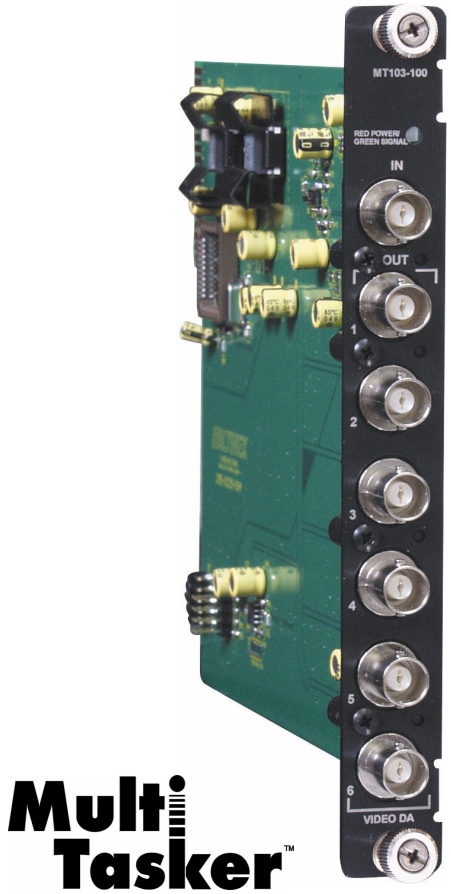


MT103-100 is shown above

MANUAL PART NUMBER: 400-0081-005

MT103-100/105/111

1-IN, 6-OUT VIDEO DISTRIBUTION AMPLIFIER CARDS FOR MULTI-TASKER™ ENCLOSURES USER'S GUIDE

TABLE OF CONTENTS

PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT103-100/105/111**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your MT103-100/105/111 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.

1.2 INSTALLATION

- To prevent fire or shock, do not expose this unit to rain or moisture. Do not place the **MT103-100/105/111** 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 **MT103-100/105/111** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT103-100/105/111**.
- Insert the card carefully into the slots of the Multi-Tasker™ without bending any edges.
- When removing a card, please make sure that the card to which it is attached is also 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 / 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 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 MT103-100/105/111 2

MT103-100, MT103-105 & MT103-111 1-in 6-out MT Video Distribution Amplifier Cards

The **MT103-100**, **MT103-105**, and **MT103-111** are 1-in 6-out Video Distribution Amplifier Cards designed for use in Multi-Tasker™ enclosures. When installed in a Multi-Tasker™, these MT Video DA cards enable the connection of a single composite video source to six displays or recording devices. For more outputs, the **MT103-100** and **MT103-111** can be used with one or more Video DA Expansion Cards. *See the MT103-101/MT103-106/MT103-112 for more information.*

A variety of video signal formats can be accommodated using multiple MT Video DA cards in a Multi-Tasker™ enclosure. For example, two MT Video DA cards can handle the two components of an S-Video signal (Chroma and Luma). Create a component video distribution amplifier by installing three of the MT Video DA cards, one each for the Y, Pr, and Pb (or Y, R-Y, B-Y) signal components. Similarly, the MT Video DA series cards can also be used to pass computer video signals: 4 cards for RGBS and 5 for RGBHV.

All of the cards in the MT Video DA series provide GLI on Board™ ground loop isolation. This provides protection against "hum bars," artifacts, and potential equipment damage caused by ground loops that are often present in audio/visual presentation systems.

Look to the **MT103-100** or **MT103-111** for high-bandwidth performance and expansion capabilities. Each card offers industry leading 425 MHz bandwidth, with the **MT103-100** adding “on-off control” of each output. Many combinations of “always on” and “on-off controlled” outputs – up to 38 total - can be achieved by adding up to four Expansion cards to the **MT103-100** or **MT103-111**.

For the most economical configurations, the **MT103-105** is a low cost solution for “always on,” non-expandable distribution, and solid 325 MHz bandwidth performance.

TECHNICAL SPECIFICATIONS 3

FEATURES/ DESCRIPTION	MT103-100/105/111
GENERAL	
Inputs	1
Input Connector	(1) BNC Female (Analog Video or TTL Sync)
Outputs	6
Output Connector	(6) BNC Female
Internal Output Connector **(MT103-100 & MT103-111)**	(1) 10-pin IDC Connector
Capability	Video Formats
Using 1 Card	Composite Video
Using 2 Cards	S-Video (Y/C)
Using 3 Cards	Component Video, RGsB & RsGsBs
Using 4 Cards	RGBS
Using 5 Cards	RGBHV, VGA thru UXGA*, QXGA* (MT103-100 & MT103-111 only) * requires adapters, see Optional Accessories
Approvals	CE/FCC
Expandability	
MT103-100 & MT103-111	Up to four cards
MT103-105	Non-expandable

Table 1. **MT103-100/105/111** General

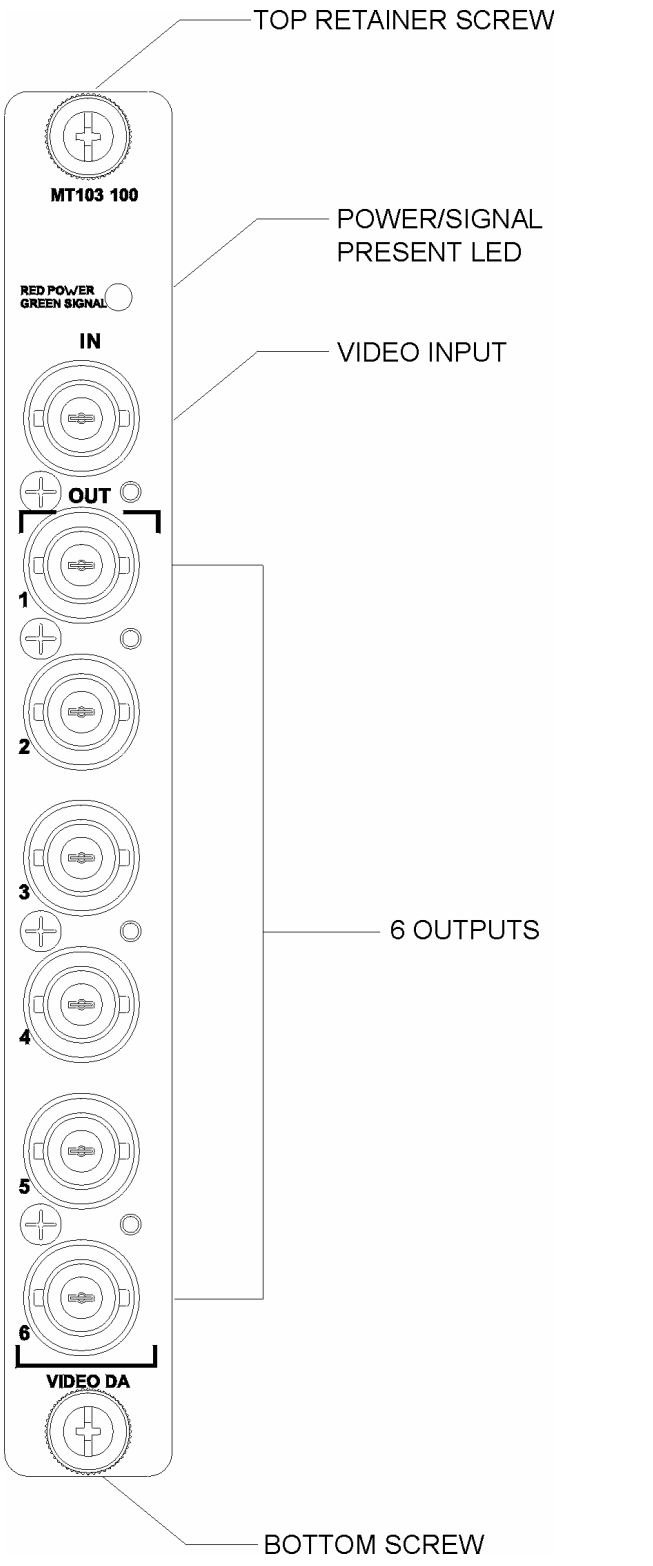
MECHANICAL	MT103-100/105/111
Enclosure Slots Required	One
Weight	0.43lb (0.19kg)
Shipping Weight	1 lb. (0.42kg)
Connector Panel	Black
T° Operating	10°C-40°C
T° Maximum	0 to 50°C
Humidity	90% non-condensing
MTBF (calc.)	55,000 hrs

Table 2. **MT103-100/105/111** Mechanical

ELECTRICAL	MT103-100/105/111		
Input Signals			
Analog	+/- 1.5V(signal: 1.5V p-p)		
Sync	0 to +5V		
Impedance	75 Ohms		
Type	Differential		
Return Loss	-38dB @ 50MHz		
Maximum DC Offset	10mV		
Output Signals			
Gain	10.5 (+/-5%)		
Impedance	75 Ohms		
Propagation Delay (Sync)	4nS max.		
Rise/Fall Time (Sync)	9nS max.		
Differential Phase Error	01°, @ 4.5 MHz		
Bandwidth			
MT103-100 & MT103-111	425 MHz @-3dB		
MT103-105	325 MHz @-3dB		
Power			
Power (from Enclosure)	**+6V**	**-6V**	**Power Consumption**
MT103-100	200mA	200mA	2.4 watts
MT103-105	200mA	200mA	2.4 watts
MT103-111	200mA	200mA	2.4 watts
Optional Accessories			
MS8102CA	6ft, 15-pin HD Male to 5-BNC Male		
MS8112CA	6ft, 15-pin HD Female to 5-BNC Male		
MS8132MG	1ft, 4-pin mini DIN Male to 2-BNC Male		
MS8133MG	1ft, 4-pin mini DIN Female to 2-BNC Male		

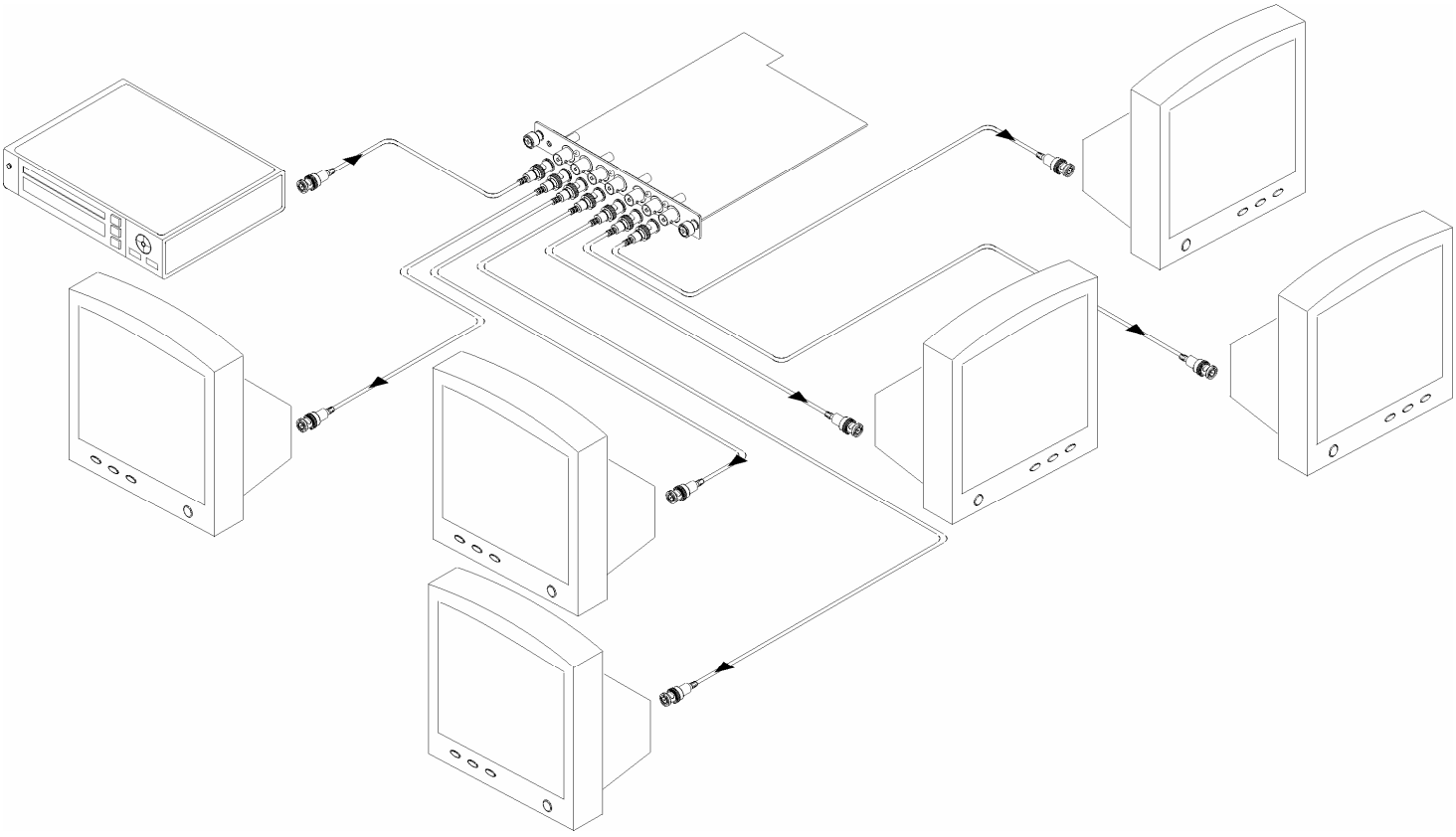
Table 3. **MT103-100/105/111** Electrical

PRODUCT DESCRIPTION 4



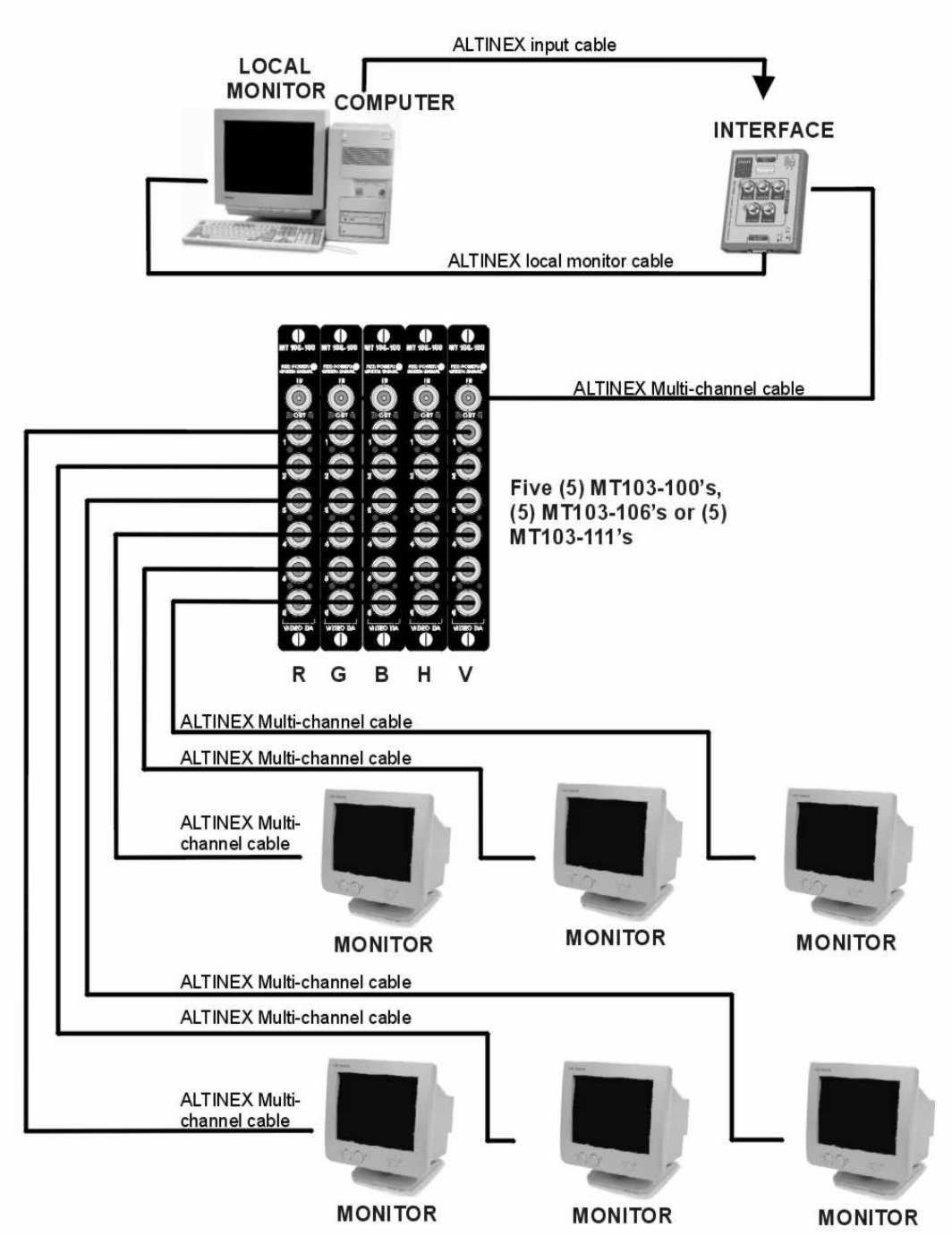
APPLICATION DIAGRAM 5

Application 1 - Generic

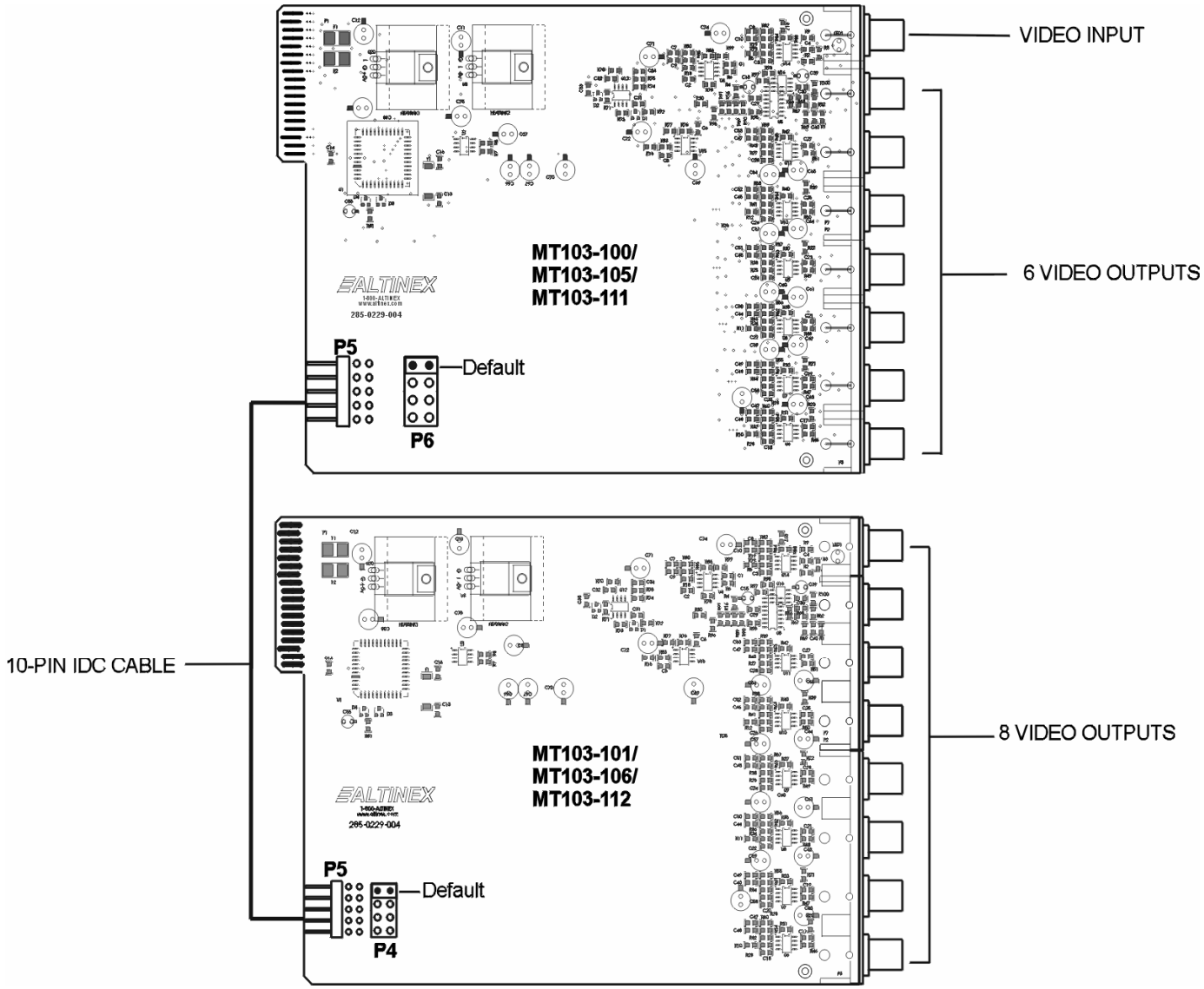


Application 2 - RGBHV Switching

One card for each channel, 5 total, is needed to use the **MT103-100/105/111** for RGBHV signals. The VID IN of each one of the five cards receives one component, either RGBH or V. The outputs are similarly distributed to various monitors. Each card supplies an individual component to a maximum of 6 monitors. As an example, connect OUT 1 of the R signal card to the R signal of a monitor. Connect OUT 2 to the R signal of another monitor and so on. Continue this sequence for each card and then repeat for the remaining GBH and V signals.



Application 3 - 1 In 14 Out
Connection of MT103-100 and MT103-101/106/112 to form a 1-in 14-out Video DA System

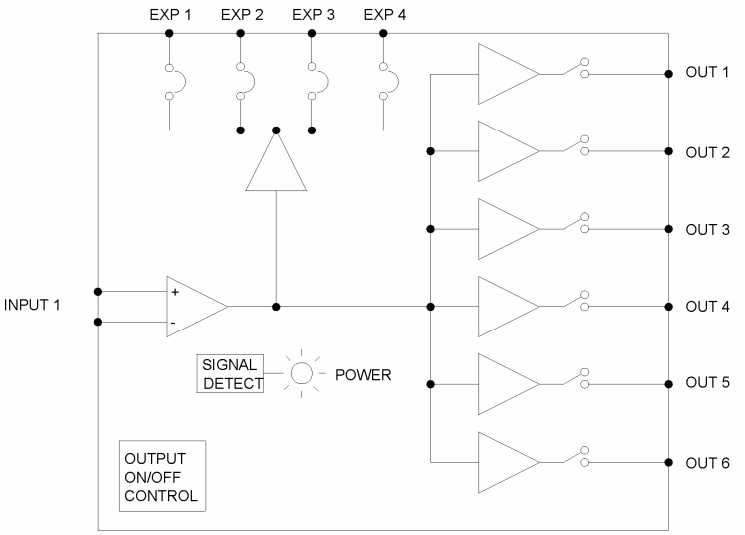


Note: The location of the jumper on the **MT103-100** (P6) should be the same as the jumper on **the MT103-101/106/112** (P4)

Block Diagrams

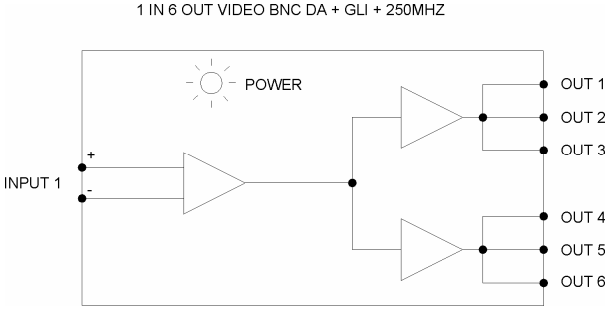
MT103-100

1 IN 6 OUT VIDEO BNC DA + GLI + EXPANSION + 350 MHZ + ON/OFF OUTPUT CAN BE EXPANDED UP TO TOTAL 38 OUT INTERNALLY CONNECTED



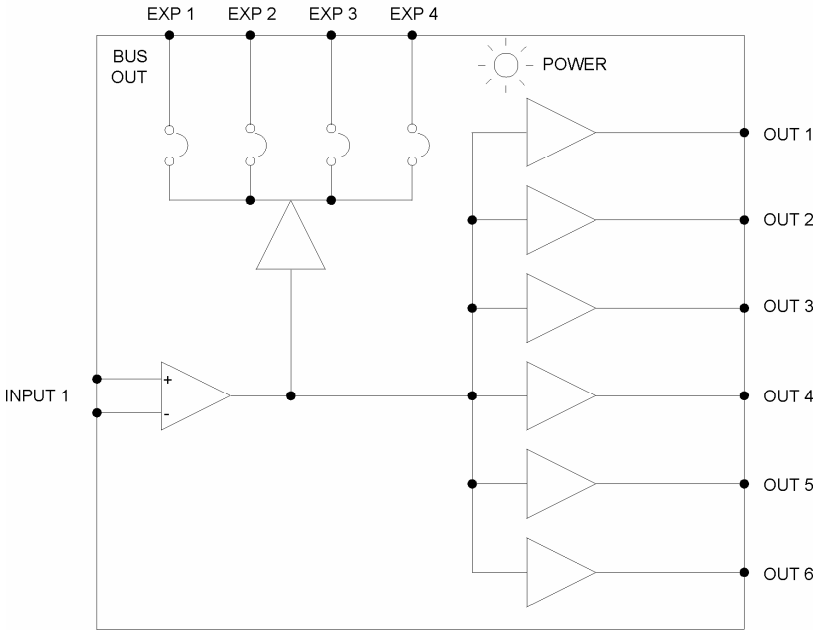
MT103-105

1 IN 6 OUT VIDEO BNC DA + GLI + 250MHZ



MT103-111

1 IN 6 OUT VIDEO BNC DA + GLI + EXPANSION CAPABILITY + 350 MHZ UP TO 48 OUT EXP. CARDS FOR 38 OUTPUTS INTERNALLY CONNECTED



INSTALLING YOUR MT103-100/105/111 6

Step 1. Slide the **MT103-100/105/111** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the **MT103-100/105/111** card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT103-100/105/111** card.

Step 2. The LED on the card panel will turn red indicating that the card is in full operation. A green LED indicates that a signal is present. An LED that is blinking red indicates that the card is experiencing a problem. If the LED is blinking, see Troubleshooting Guide in section 8.

Step 3. Connect a coaxial cable from the video source to the input connector of the **MT103-100/105/111**. Connect the output connectors of the **MT103-100/105/111** to the display devices through a coaxial cable.

Step 4. Starting from the left, identify the slot number where the **MT103-100/105/111** card is plugged into the Enclosure and note that it is for RS-232 control.

OPERATION 7

7.1 RS-232 CONTROL

The outputs of the **MT103-105** card and the **MT103-111** card are always enabled; therefore, no RS-232 control is necessary.

When used in the Multi-Tasker™ Enclosure, the **MT103-100** 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 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 string will be returned as feedback if "F" is included at the end of a command string.

Commands such as [ON] and [OFF] that end 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
U2 = Unit ID

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

Card ID is an assigned value from 1 to 19 (1 to 8 or 1 to 4 depending on the enclosure being used); based on which slot the card is put in. Card ID 0 (C0) is used for the controller (see user's guide for the MT100-100). Changing the position of a card will significantly affect the commands recorded on software definitions or a third party control system.

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 0, then each command can be used without Ui (use command [SETU0], see user's guide for the MT100-100).

Example:

[VERC3] For unit ID zero
[VERC3Ui] For unit ID other than zero
[VERC3] Equivalent to [VERC3U0]

ALTINEX
SIGNAL MANAGEMENT SOLUTIONS
Tel: 714-990-2300 • Toll-Free: 1-800-ALTINEX • FAX: 714-990-3303 • E-mail: solutions@altinex.com • Web: www.altinex.com

1. [VER]

This command displays the software version and card type for the **MT103-100/105/111** card.

Command Format: [VERCnUi]

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

Ui = Unit ID (i = # from 0 to 9) (refer to the MT100-100 user's guide for explanation)

Example:

There is one **MT103-100** card is in slot #2 of unit 3. Send the command **[VERC2U3]**, and the Multi-Tasker™ Enclosure will return feedback as:

MT103-100 690-0125-010

MT103-100 = card type
690-0125-010 = software version

2. [C]

This command receives the status of the card.

Command Format: [CnUi]

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

Ui = unit id (i = 0 to 9) (*refer to the MT100-100* user's guide for explanation)

Example:

There is one **MT103-100** card is in slot #2 of unit 3 with outputs 1 and 2 ON. Sending the command **[C2U3]**, will yield the following feedback:

ON: 1,2 C02

ON: 1,2 = Output 1 and 2 are enabled
C02 = card is in slot 2

If there is no card in slot #2 of unit 3, sending the [C2U3] command will not return any feedback from either card.

3. [CiS]

This command saves the current status of the card's output enable configuration. This configuration will be restored after system is reset or powered off then on.

Ci = card number
S = save configuration

If Inputs 1,2,3,4,5 and 6 are enabled, the feedback after sending the command [C4S], for slot 4, would be:

ON:1,2,3,4,5,6 C04 Saved

4 [SIG]

The Signal Present command tests for the presence of a signal on the input. After sending the command, the feedback will be either "1" signifying a signal is present, or a "0" indicating no signal was detected.

Command Format: [SIGCnUi]

Cn = card number
Ui = unit ID

Example:

To check for the presence of an input signal on card 4, send the command [SIGC4] and verify feedback of "1" or "0".

5. [ON]

This command enables one or more outputs of a single card or a group of cards.

[ONmCnUiS]: for a single card

This command enables output "m" without affecting any other outputs.

m = Output number (m = 1 to 6)
Cn = Card ID number (n = 1 to max slots)
Ui = Unit ID number (i = 0 to 9)
S = saves command to memory

Example:

1) **[ON12C5U3]:** Turns ON only outputs 1 and 2 of the **MT103-100** card located in slot #5 of the Enclosure with unit ID3.

2) **[ON3C5U3]:** Turns ON only output 3 of the **MT103-100** card located in slot #5 of the Enclosure with unit ID3. After the **[ON12C5U3]** and **[ON3C5U3]** commands have been executed, outputs 1, 2 and 3 will be ON.

3) **[ONC5U3]:** Turns ON all outputs of the card.

ALTINEX
SIGNAL MANAGEMENT SOLUTIONS
Tel: 714-990-2300 • Toll-Free: 1-800-ALTINEX • FAX: 714-990-3303 • E-mail: solutions@altinex.com • Web: www.altinex.com

[ONmGkUiS]: for a group of cards

This command enables output "m" for each card in group "k" of unit "i".

m = card output (m = # from 1-6)
Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)
S = saves command to memory

Example:

1) **[ON1G5U1]:** Turns ON output 1 for each card in group 5 of unit 1.

2) **[ONG5U1]:** Turns ON all outputs for each card in group 5 of unit 1.

[ON…P]: sets path

This command will set the path for the output, but it is not active until the switch command, [SW], is executed. Commands ending in "P" are not executed immediately. The path for outputs on multiple cards or the same card can be loaded.

Command Format: [ONmCnUiP]

m = number (m =1 to 6)
Cn = card ID (n = slot # from 1 to max slots)
Ui = unit number (i = # from 0-9)
P = path

Example:

There are 2 cards are at slots 6 and 7 of unit 3. Enable outputs 1 and 2 of card 6 and outputs 3 and 4 of card 7 simultaneously. Use the following commands:

[ON12C6U3P]
[ON34C7U3P]
[SW]

If "F" is included, use the [ONmCnUiPF] command or the [ONmCnUiFP] command.

[ON…F]: feedback

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

Example:

[ON1C2U3**F**]: if path is not set
[ON1C2U3**PF**]: if path is set

6. [OFF]

This command disables one or more outputs of a single card or a group of cards.

[OFFmCnUiS]: for a single card

This command disables output “m” without affecting any other outputs.

m = output number (m = 1 to 6)
Cn = card ID (n = slot # from 1 to max slots)
Ui = Unit ID number (i = 0 to 9)
S = saves command to memory

[OFFCnUi]: Turns OFF all outputs of the card

Example:

1) If card 5 of unit 3 has outputs 1, 2 and 3 ON:

   a) **[OFF1C5U3]:** Turns OFF output 1 while outputs 2 and 3 remain ON.

   b) **[OFF23C5]:** Turns OFF output 2 and 3.

2) If card 5 of unit 3 has outputs 1, 2, 3, 4, 5, 6, 7 and 8 ON:

a) **[OFFC5U3]:** Turns OFF all outputs. This command is equivalent to the command **[OFF12345678C5U3]**.

[OFFmGkUiS]: for a group of cards

This command disables output "m" for each card in group "k" of unit "i".

m = card output (m = # from 1-6)
Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)
S = saves command to memory

Example:

1) **[OFF1G5U1]:** Turns OFF output 1 for each card in group 5 of unit 1.

2) **[OFFG5U1]:** Turns OFF all outputs for each card in group 5 of unit 1.

[OFF…P]: sets path

This command will set the path for the output, but it is not active until the switch command, [SW], is executed. Commands ending in "P" are not executed immediately. The path for outputs on multiple cards or the same card can be preloaded and then all switched at the same time.

Command Format: [OFFmCnUiP]

m = number (m =1 to 6)
Cn = card ID (n = slot # from 1 to max slots)
Ui = unit number (i = # from 0-9)
P = path

Example:

There are 2 cards are in slots 6 and 7 of unit 3. Disable outputs 1 and 2 of card 6 and outputs 3 and 4 of card 7 simultaneously. Use the following commands to disable all four outputs at the same time:

[OFF12C6U3P]
[OFF34C7U3P]
[SW]

If "F" is included, use the [OFFmCnUiPF] command or the [OFFmCnUiFP] command.

[OFF…F]: feedback

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

Example:

[OFF1C2U3**F**]: if path is not set
[OFF1C2U3P**F**]: if path is set

7. […S] – Save

This command will save the configuration command being sent in memory. When sending the command [ON1C4S], after reset or power up, output 1 on C4 will be enabled.

8. […F] – Feedback

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

9. […P] – Path

This command will set the path for the output, but it is not active until the switch command, [SW], is executed. Commands ending in "P" are not executed immediately. The path for outputs on multiple cards or the same card can be loaded. See examples in ON and OFF commands.

10. [SW] – Switch

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

Example:

[ON12C6U3P]
[ON34C7U3P]
[SW]

In the above example, outputs 1 and 2 of Card 6 Unit 3 and outputs 3 and 4 of Card 7 Unit 3 will all be enabled simultaneously.

11. [HELP]

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

Command Format: [**HELPCnUi]**

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

Ui = Unit ID (i = # from 0 to 9) (*refer to the MT100-100 user's guide for explanation)*

Example:

In order to view the RS-232 commands available for the **MT103-100** card in slot 2 of unit 3, send the command **[HELPC2U3]**. The commands along with a brief description will be displayed in the Terminal Window.

12. [WR]

This command groups multiple cards in the Enclosure. Each unit contains a maximum of nine groups.

Command Format: [WRCn…GkUi]

Cn = card ID (n = slot # from 1 to max slots)
Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)

Example:

To group cards #1, 2, and 3 as group 5 of unit #1, send the command [WRC1C2C3G5U1]. After executing this command, cards 1, 2 and 3 will be grouped together as group 5 of unit 1.

13. [CLR]

This command clears the members for a single group or for all nine groups.

Command Format: [CLRGkUi]

Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)

Example:

1) To clear group #1, send the [CLRG1U1] command. This command clears the members for the specified group only.
2) To clear all groups of unit 1, send the [CLRG[U1] command.

14. [G]

This command is used to request group data. With the command, the user can identify which input or output of a particular group is on.

Command Format: [GkUi]

Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)

Example:

In unit ID0, if group 1 has DA Cards with outputs 1 and 2 on, while group 2 has SW Cards with input 2 on:

[G1]: will return feedback as **ON12 G1U0.**
[G2]: will return feedback as **ON2 G2U0.**

15. [RD]

This command displays the members in each group.

Command Format: [RDGkUi]

Gk = group number (k = # from 1-9)
Ui = unit number (i = # from 0-9)
member = C1 - C19 (card 1 to max cards)

Example:

The cards in slots 1, 2 and 19 are part of group 5 in unit 1. Read the member data for group 5 of unit 1, by sending the command [RDG5U1]. The system will return feedback as follows: C1C2C19 G5U1.

7.3 SUMMARY OF COMMANDS

Card Commands

1) [VER] Receives software version
2) [Ci] Receives status of the card
3) [CiS] Saves card configuration
4) [SIGCi] Check for input signal
5) [ON] Turns on one or more outputs for a single card or a group of cards
6) [OFF] Turns off one or more outputs for a single card or a group of cards
7) […S] Save the command configuration
8) […F] Provides feedback upon sending
9) […P] Sets the path, preload for [SW]
10) [SW] Switch preloaded output buffer
11) [HELP] Display available commands

Group Commands

12) [WR] Groups multiple cards
13) [CLR] Clears members of a single group or all groups
14) [G] Requests group data
15) [RD] Displays group members

TROUBLESHOOTING GUIDE 8

ALTINEX
SIGNAL MANAGEMENT SOLUTIONS
Tel: 714-990-2300 • Toll-Free: 1-800-ALTINEX • FAX: 714-990-3303 • E-mail: solutions@altinex.com • Web: www.altinex.com

We have carefully tested and have found no problems in the supplied **MT103-100/105/111**; however, we would like to offer suggestions for the following:

8.1 LED IS NOT LIT

Cause 1: Card cage is not plugged in.

Solution: Plug card cage in. If the LED lights, the problem is solved. If the LED is still not lit, 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 lights, 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 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 IC's are seated in their sockets. If the LED is still blinking red, see Solution 3.

Solution 3: Call ALTINEX at (714) 990-2300.

Cause 2: The MT103-100/105/111 card and its serial device are not communicating.

Solution 1: Turn the system OFF and then ON again. If there is still an error, see Solution 2.

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

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: If there is still a problem, call ALTINEX at (714) 990-2300.

8.3 NO DISPLAY

Cause 1: The source has a problem.

Solution: Check the source and make sure that there is a signal present and all source connections are correct. If the source is working and there is still no display, see Cause 2.

Cause 2: The card output is not selected.

Solution: Select the card output. See RS-232 accessible commands in section 7. If no display 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 display present, see Cause 4.

Cause 4: The display has a problem.

Solution: Make sure that the display is powered. If there is still no display, call ALTINEX at (714) 990-2300.

ALTINEX POLICY 9

9.1 LIMITED WARRANTY/RETURN POLICY

Please see the Altinex website at www.altinex.com for details on warranty and return policy.

9.2 CONTACT INFORMATION

ALTINEX, INC

592 Apollo street

Brea, CA 92821 USA

TEL: 714 990-2300

TOLL FREE: 1-800-ALTINEX

WEB: www.altinex.com

E-MAIL: solutions@altinex.com