

**Multi-Tasker™** MT103-103 is shown above.

MANUAL PART NUMBER: 400-0089-004

## MT103-103/MT103-108

### 1-IN, 6-OUT VGA DISTRIBUTION AMPLIFIER

### CARD FOR MULTI-TASKER™

### USER'S GUIDE

**TABLE OF CONTENTS**

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Page

PRECAUTIONS / SAFETY WARNINGS .....2

ABOUT YOUR MT103-103/(108) .....3

TECHNICAL SPECIFICATIONS.....3

DESCRIPTION OF MT103-103/(108).....4

APPLICATION DIAGRAM .....4

INSTALLING YOUR MT103-103/(108).....6

OPERATION .....6

    7.1 RS-232 CONTROL .....6

    7.2 DESCRIPTION OF COMMANDS .....6

    7.3. SUMMARY OF COMMANDS .....10

TROUBLESHOOTING GUIDE .....11

ALTINEX POLICY .....12



## PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT103-103/(108)**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT103-103/(108)** 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 **MT103-103/(108)** 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 **MT103-103/(108)** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT103-103**.
- Insert the card carefully into the slots of the Multi-Tasker™ without bending any edges.
- When removing a card, please make sure that the expansion card to which it is attached is also pulled out simultaneously. Note that up to three cards can share the same cable.

### 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 MT103-103/(108) 2

### MT103-103 & MT103-108 1-In 6-Out MT VGA Distribution Amplifier Cards

The 1-in 6-out MT VGA DA cards are designed for use in 2 slots of the MultiTasker enclosure. These cards enable a single computer video source to connect to six or more monitors or projectors. Resolutions supported from VGA to UXGA; **MT103-103**, QXGA is supported. Each output is buffered, and does not require termination if unused.

Female 15-pin HD (VGA-type) connectors are provided for each input and output. If used with 15-pin HD to 5 BNC adapter cables available from ALTINEX, the 1-in 6-out MT VGA DA cards can pass RGBHV format computer video signals also.

For maximum power and flexibility, the **MT103-103** offer 350 MHz bandwidth performance, and the ability to turn each output on or off through RS-232 control. On-off control is augmented by Screen Blanking, which eliminates annoying signal-loss messages by maintaining the Sync signal on all attached projectors and monitors. To expand the number of outputs, this card can be connected to one of the MT VGA DA Expansion cards, which offer 6 additional VGA output connectors. *For more information on expansion see the MT103-104, MT103-109 & MT103-110 product descriptions.*

For the most economical configurations, the **MT103-108** offers solid 250 MHz performance, and the standard features of Microsoft Windows Plug & Play compatibility and a Power LED.

## TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT103-103/ MT103-108
<b>GENERAL</b>	
<b>Inputs</b>	1
Input Connector	15-pin HD Female
<b>Outputs</b>	6
Output Connectors	15-pin HD Female
<b>Compatibility</b>	VGA/MAC/SUN/SGL/ UXGA RGBHV, RGBS with adapter cables

Table 1. MT103-103/(108) General

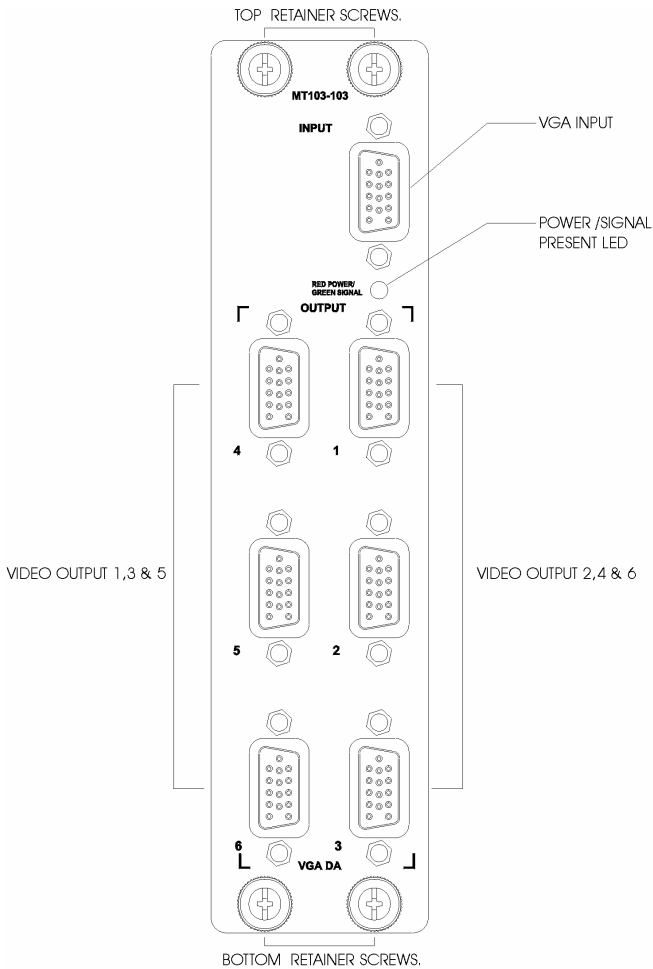
MECHANICAL	MT103-103/ MT103-108
Enclosure Slots Required	Two
Weight	1.0 lb (0.45 kg)
Connector Panel	Black
T° Operating	10°C-40°C
T° Maximum	0 to 50°C
Humidity	90% non-condensing
MTBF (calc.)	40,000 hrs

Table 2. MT103-103/(108) Mechanical

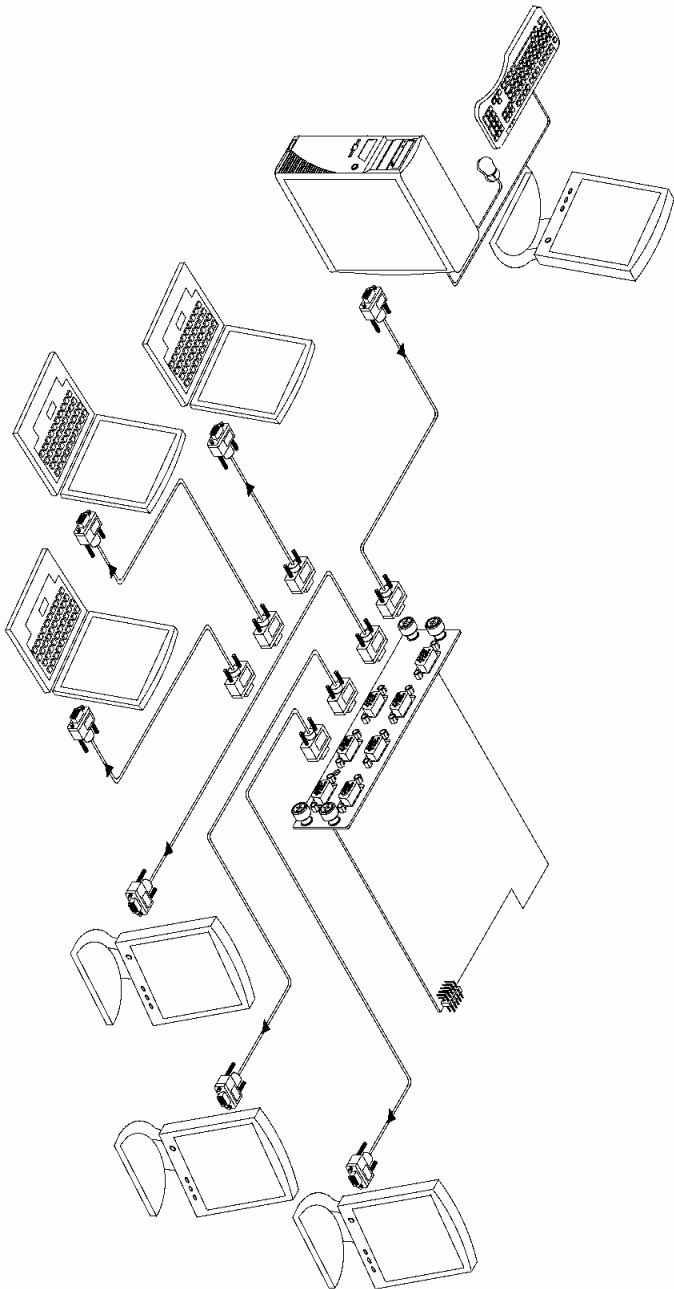
ELECTRICAL	MT103-103/ MT103-108		
<b>Input Video Signals</b>			
Analog	1.7V max.		
Impedance	75 Ohms +/-1% (terminated)		
<b>Input Sync Signal</b>			
Horizontal, Vertical	TTL (+/-)		
Impedance	10k Ohms		
<b>Output Video Signals</b>			
Analog	1.7V p-p max. (terminated)		
Impedance	75 Ohms		
<b>Output Sync Signals</b>			
Horizontal, Vertical	TTL (+/-)		
Impedance	22 Ohms		
<b>Frequency Compatibility</b>			
Horizontal	15 –130 kHz		
Vertical	25 –180 Hz		
Bandwidth	350 MHz @ -3dB		
<b>Power</b>			
Power from MT100-100	<b>+6V</b>	<b>-6V</b>	<b>Power Consumption</b>
MT103-103	250 mA	220 mA	2.8 watts
MT103-108	250 mA	220 mA	2.8 watts

Table 3. MT103-103/(108) Electrical

## DESCRIPTION OF MT103-103/(108) 4



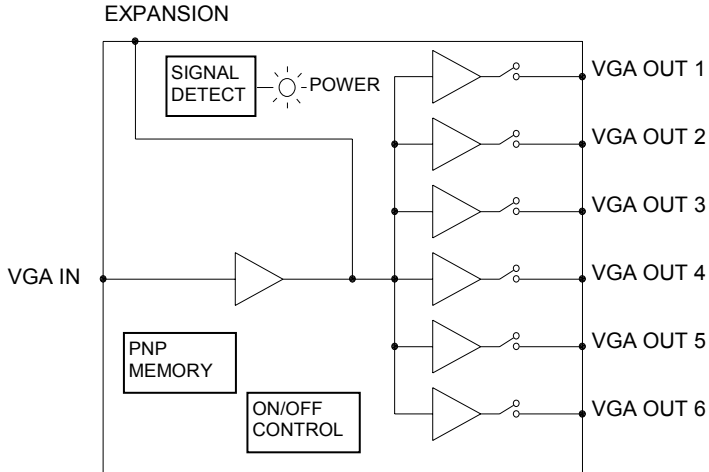
## APPLICATION DIAGRAM 5



Internal View of the MT103-103

MT103-103

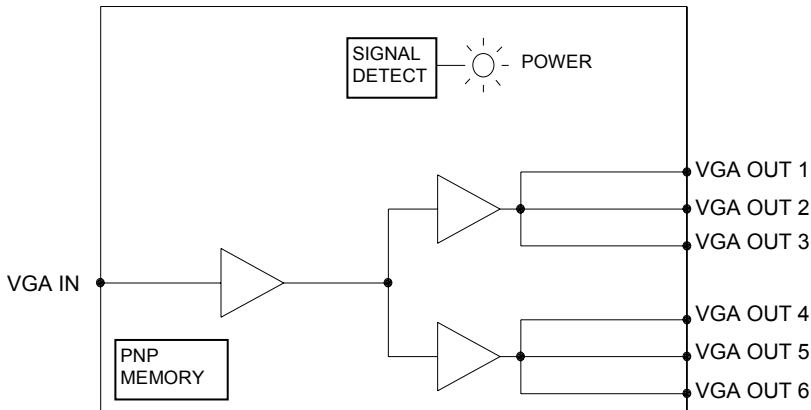
1 IN 6 OUT MT VGA DA + PNP + SIGNAL DETECT  
350MHZ + SYNC BEHIND + OUTPUT ON/OFF + EXPANSION



Internal View of the MT103-108

MT103-108

1 IN 6 OUT MT VGA DA + PNP + SIGNAL DETECT + 250MHZ



## INSTALLING YOUR MT103-103/(108) 6

- Step 1.** Slide the **MT103-103/(108)** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the **MT103-103/(108)** card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT103-103/(108)** 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 the Troubleshooting Guide in section 8.
- Step 3.** Connect a VGA cable from the video source to the input connector of the **MT103-103/(108)**. Connect the output connectors of the **MT103-103/(108)** to the display devices through VGA cables.
- Step 4.** Starting from the left, identify the slot number where the **MT103-103/(108)** 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 **MT103-108** are always enabled; therefore, no RS-232 control is necessary. However, the commands [VER] and [SIG] will display information about the card.

When used in the Multi-Tasker™ Enclosure, the **MT103-103** 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 **MT103-103** 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 valid command, an [OK] string will be returned with the command. If an invalid command is entered, the [ER] string will be returned.

### 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, which represents the number of slots. 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]



## 1. [VER]

This command displays the software version and card type for the **MT103-103** card.

Command Format: [VERCnUi]

Cn = card ID No. (n = slot # from 1 to 19)

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

### Example:

If one **MT103-103** card is in slot #2 of unit 3:

To send command **[VERC2U3]**, the Multi-Tasker™ Enclosure will return:

MT103-103 690-0125-009

MT103-103 = card type in slot #2  
690-0125-009 = software version

## 2. [C]

This command receives the status of the card.

Command Format: **[CnUi]**

Cn = card id (n = slot # from 1 to 19)

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

### Example:

There is an MT103-103 in slot 6 of unit 0. All 6 outputs are enabled. Sending the command [C6] would yield the following feedback:

ON: 1,2,3,4,5,6 C06

## 3. [CiS]

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

Ci = card number

S = save configuration

If all 6 outputs are enabled, the feedback after sending the command [C4S], for slot 4, would be:

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

## 4. [SIGCi]

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

i = Slot Number

### 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 group of cards.

### [ONmCnUi]: for a single card

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

Default when plugged in = ALL OFF

m = Output number (m = 1 to 6)

n = Card ID number (n = 1 to 19)

i = Unit ID number (i = 0 to 9)

Note that the **[ONC3U2]** and **[OFFC3U2]** commands will turn on or off outputs 1, 2, 3, 4, 5 and 6 together.

If there is an expansion card (MT103-104/(109) or (110) attached to the **MT103-103** in slot #3 and the expansion card is in slot #5, sending the **[OFFC3]** command will turn off output 1, 2, 3, 4, 5 and 6 of the **MT103-103** without affecting the expansion card. The outputs on the expansion card must be controlled separately.

### Example:

- 1) **[ON12C5U3]**: Turns ON only output 1 and 2 of the expansion card located in slot #5 of the MT100-100 Enclosure with unit ID3.
- 2) **[ON3C5U3]**: Turns ON only output 3 of the expansion card located in slot #5 of the MT100-100 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.

### **[ONmGkUi]**: 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)  
k = group number (k = # from 1-9)  
i = unit number (i = # from 0-9)

#### **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 is executed ( [SW] ). 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 = output number (m = 1 to 6)  
n = card ID No. (n = a slot # from 1 to 19)  
P = path

#### **Example:**

If 2 cards are in slot 6 and 7 of unit 3:

To enable output 1 of card 6 and output 3 of card 7 simultaneously, use the following commands:

```
[ON1C6U3P]  
[ON3C7U3P]  
[SW]
```

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

### **[ON.....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 or if the unit ID is zero.

#### **Example:**

**[ON1C2U3F]**: if path is not set  
**[ON1C2U3PF]**: if path is set

## 6. **[OFF]**

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

### **[OFFmCnUi]**: for a single card

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

m = output number (m = 1 to 6)  
n = card ID No. (n = slot # from 1 to 19)  
i = Unit ID number (i = 0 to 9)

**[OFFCnUi]**: Turns OFF all outputs of the card

#### **Example:**

- 1) If card 5 of unit 3 has output 1, 2 and 3 ON:
  - a) **[OFF1C5U3]**: Turns OFF output 1 while output 2 and 3 remain ON.
  - b) **[OFF23C5]**: Turns OFF output 2 and 3.
  - c) **[OFFC5U3]**: Turns OFF all outputs, which is equivalent to **[OFF123C5U3]**.

### **[OFFmGkUi]**: for a group of cards

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

Command Format: **[OFFmCnUiP]**

m = card output (m = # from 1-6)  
k = group number (k = # from 1-9)  
i = unit number (i = # from 0-9)

#### **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 is executed ( [SW] ). Commands ending in "P" are not executed immediately. The path for outputs on multiple cards or the same card can be loaded.

Command Format: [OFFmCnUiP]

m = number (m =1 to 6)

n = card ID No. (n = a slot # from 1 to 19)

P = path

### Example:

If 2 cards are in slot 6 and 7 of unit 3:

To enable output 1 and 2 of card 6 and output 3 and 4 of card 7 simultaneously, use the following commands:

[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 will be returned as feedback if "F" is included at the end of a command string or if the unit ID is zero.

### Example:

[OFF1C2U3F]: if path is not set

[OFF1C2U3PF]: if path is set

## 7. [...S] – Save

This command will save the configuration command being sent in memory. When sending the command [ON12C4S], after reset or power up, outputs 1 and 2 will be enabled on C4.

## 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 or if the unit ID is zero.

## 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 and all other cards in the MT100-100.

The system will return feedback as **OK**.

## 11. [WR]

This command groups multiple cards in the MT100-100 Enclosure. Each unit contains a maximum of nine groups.

Command Format: [WRCn...GkUi]

n = card ID No. (n = slot # from 1 to 19)

k = group number (k = # from 1-9)

i = unit number (i = # from 0-9)

### Example:

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

## 12. [CLR]

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

Command Format: [CLRgkUi]

k = group number (k = # from 1-9)

i = unit number (i = # from 0-9)

### Example:

- To clear group #1, send the [CLRg1U1] command. This command clears the members for the specified group only.
- To clear all groups of unit 1, send the [CLRg\*U1] command.

## 13. [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]

k = group number (k = # from 1-9)

i = unit number (i = # from 0-9)

## Example:

If group 1 has DA Cards with output 1 and 2 on, while group 2 has SW Cards with input 2 on:

- 1) **[G1]**: will return feedback as **[On12G1]**.
- 2) **[G2]**: will return feedback as **[On2G2]**.

## 14. [RD]

This command displays the members in each group.

Command Format: [RDGkUi]

k = group number (k = # from 1-9)

i = unit number (i = # from 0-9)

member = C1 - C19 (card 1 to 19)

## Example:

To read member data for group 1 of unit 1, send the [RD] command. The system will return feedback as C1C2C19 G5U1.

## 15. [HELPCi]

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

Ci = card slot number

## 7.3. SUMMARY OF COMMANDS

- 1) **[VER]** Receives software version
- 2) **[C]** Receives status of the card
- 3) **[CiS]** Saves status of the card
- 4) **[SIG]** Indicates presence of 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 output enable configuration sent
- 8) **[...F]** Provides feedback upon sending
- 9) **[...P]** Sets the path, preload for [SW]
- 10) **[SW]** Switch (outputs the preloaded buffer)
- 11) **[WR]** Groups multiple cards
- 12) **[CLR]** Clears members of a single group or all groups
- 13) **[G]** Requests group data
- 14) **[RD]** Displays the members in each group
- 15) **[HELP]** Displays list of commands available for card

## TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT103-103/(108)**; however, we would like to offer suggestions for the following:

- 8.1 LED IS NOT LIT
- 8.2 LED IS BLINKING RED
- 8.3 NO DISPLAY

### 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

If the LED on the card 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 MT103-103/(108) 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 3.

**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 message, 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 turned OFF.**

**Solution 1:** Turn ON the card output that is used. 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 1: 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](http://www.altinex.com) for details on warranty and return policy.

### 9.2 CONTACT INFORMATION

#### ALTINEX, INC

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