

**Multi  
Tasker™**

MT103-102 is shown above.

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MANUAL PART NUMBER: 400-0107-004

**MT103-102/MT103-107**

**1-IN, 3-OUT VGA DISTRIBUTION AMPLIFIER**

**CARDS FOR MULTI-TASKER™**

**ENCLOSURES USER'S GUIDE**

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## PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your MT103-102/(107). Keep this manual handy for future reference. These safety instructions are to ensure the long life of your MT103-102/(107) 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 MT103-102/(107) 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 **MT103-102/(107)** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT103-102/(107)**.
- Insert the card carefully into the slots of the Multi-Tasker™ without bending any edges.

### 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 MT103-102/107 2

### MT103-102 & MT103-107 1-in 3-out VGA Distribution Amplifier Card

The 1-in 3-out MT VGA DA cards are designed for use in 1 slot of a MultiTasker™ enclosure. These cards enable the connection of a single computer video source to three monitors or projectors. Resolutions supported range from VGA to UXGA; in the case of the **MT103-102**, QXGA is supported. Each output is buffered and does not require a termination if unused.

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

For maximum power and flexibility, the **MT103-102** offers 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 **MT103-107** offers solid 250 MHz performance and the standard features of Microsoft Windows® Plug & Play compatibility and a Power LED.

## TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT103-102/(107)
<b>GENERAL</b>	
<b>Inputs</b>	
Input Connector	(1) 15-pin HD Female
<b>Outputs</b>	
Output Connectors	(3) 15-pin HD Female
Internal Output Connector	(1) Internal 10-pin IDC + 1 connector
<b>Compatibility</b> (* requires the use of adapters,	VGA thru QXGA (MT103-102),

see Optional Accessories)	VGA thru UXGA (MT103-107), RGBHV* & RGBS*
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Table 1. **MT103-102/(107)** General

MECHANICAL	MT103-102/(107)
Enclosure Slots Required	One
Weight	0.4lb (0.18kg)
Shipping Weight	1.0lb. (0.45kg)
Connector Panel	Black
T° Operating	10°C-40°C
T° Storage	0°C to 50°C
Humidity	90% non-condensing
MTBF (calc.)	58,000 hrs

Table 2. **MT103-102/(107)** Mechanical

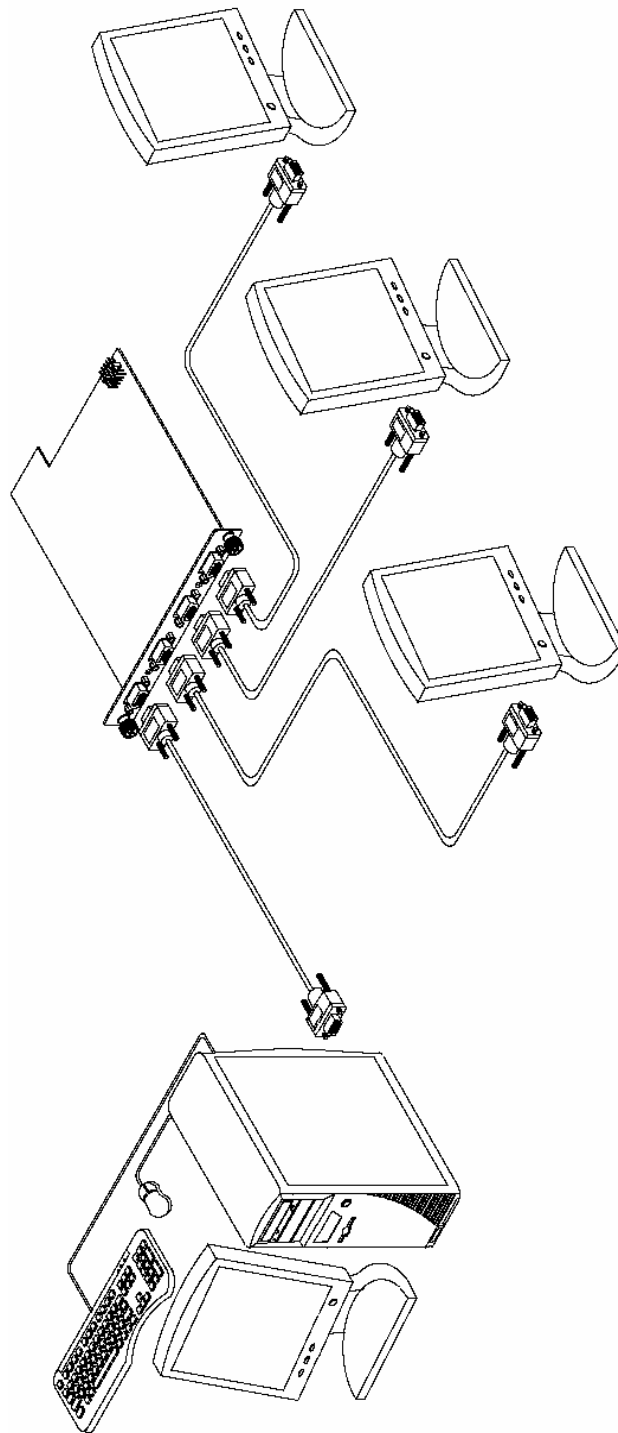
ELECTRICAL	MT103-102/(107)
<b>Input Video Signal</b>	
Analog	-3V to +1.5V (1.5V p-p max.)
Impedance	75 Ohms +/- 1% (terminated)
Return Loss	<a href="#">-45dB@10MHz</a>
Maximum DC Offset	10mv V
<b>Input Sync Signal</b>	
Horizontal, Vertical	TTL (+/-)
Impedance	10k Ohms
<b>Output Video Signal</b>	
Analog	-3V to +1.5V (1.5V p-p max.)
Impedance	75 Ohms
Gain	1.05
Crosstalk	-39dB @ 15MHz
DC Offset	+/-20V max, input = 0V
<b>Output Sync Signal</b>	
Horizontal, Vertical	TTL (+/-)
Impedance	22 Ohms
Propagation Delay	6nS max.
Rise/Fall Time	45nS max.
DC Offset	+/- .1V max, input = 0V
<b>Frequency Compatibility</b>	
Horizontal	15-130kHz
Vertical	25-180Hz
<b>Bandwidth</b>	
MT103-102	350 MHz @-3dB
MT103-107	250 MHz @-3dB
<b>Power</b>	

Power (from MT100-100)	+6V	-6V	Power Consumption
MT103-102	250 mA	220 mA	2.8 watts
MT103-107	250 mA	220 mA	2.8 watts
<b>Optional Accessories</b>			
MS8102CA	6ft, 15-pin HD Male to 5-BNC Male		
MS8106CA	6ft, 15-pin HD Male to 5-BNC Female		

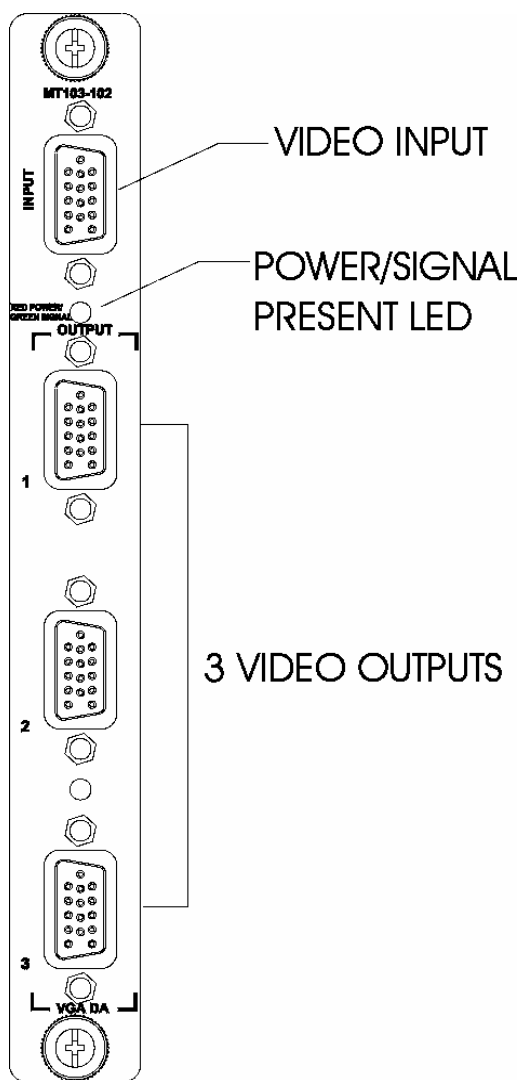
Table 3. MT103-102/(107) Electrical

## APPLICATION DIAGRAM 5

Application 1



## DESCRIPTION OF MT103-102/107 4

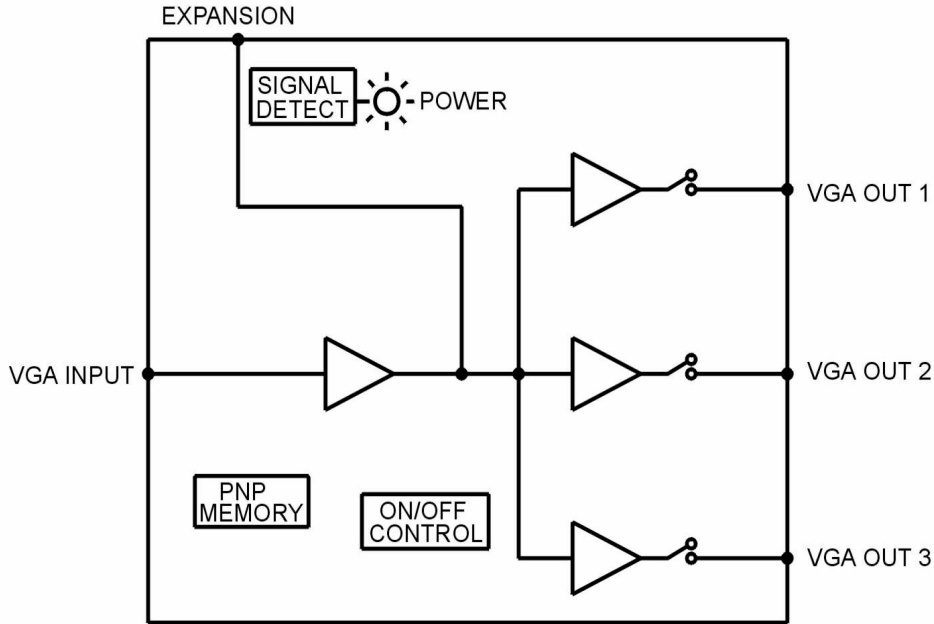


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## Application 2: Internal View of the MT103-102/107

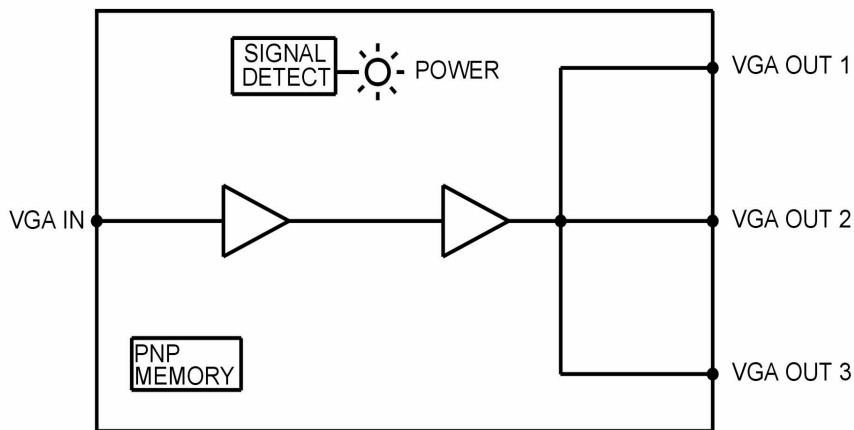
### MT103-102

1 IN 3 OUT MT VGA DA + PNP MEMORY + SIGNAL DETECT + 350MHZ + SYNC BEHIND + OUTPUT ON/OFF + EXPANSION



### MT103-107

1 IN 3 OUT MT VGA DA + PNP MONITOR + SIGNAL DETECT + 250MHZ





## INSTALLING YOUR MT103-102/107 6

- Step 1.** Slide the **MT103-102/(107)** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the **MT103-102/(107)** card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT103-102/(107)** 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 **MT103-102/(107)**. Connect the output connectors of the **MT103-102/(107)** to the display devices through VGA cables.
- Step 4.** Starting from the left, identify the slot number where the **MT103-102/(107)** 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 **MT103-107** are always enabled; therefore, no RS-232 control is necessary.

When used in the Multi-Tasker™ Enclosure, the **MT103-102** has many advanced remote control capabilities, which are accessible through standard RS-232 communication. The actual controlling can be accomplished through a computer control system or any other device capable of sending RS-232 commands.

#### 7.1.1 RS-232 INTERFACE

The RS-232 commands for the MT103-102 are in a simple ASCII character format.

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

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

Commands such as [ON], [OFF], and [IO] 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 (power off & power on again).

### 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 which enclosure is being used), 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 MT103-102 card.

Command Format: [VERCnUi]

Cn = card ID number (n = slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

## Example:

If one MT103-102 card is in slot #2 of unit 3:

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

MT103-102 690-0125-009

690-0125-009 = software version

MT103-102 = card type

## 2. [C]

This command receives the status of the card.

Command Format: [CnUi]

Cn = card id (n = from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

## Example:

If one MT103-102 card is in slot #2 of unit 3 with output 1 and 2 ON, HV enabled and output enabled:

To send command [C2U3], the Multi-Tasker™ Enclosure will return feedback as [On12 C02].

If there is no card plugged in slot #2 of unit 3: To send command [C2U3], the Multi-Tasker™ Enclosure will not return any feedback.

## 3. [CnS]

This command will display and save the card ON/OFF status for card in slot n. This ensures the card returns to the current configuration after system power has been turned off.

## 4. [SIGCn]

This command checks to see if there is a signal present on the Input connector. The feedback will be either 1 for YES or 0 for NO.

## 5. [ON]

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

### [ONmCnUiS] 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 3)

Cn = Card ID number (n = 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

S = saves command to memory

### Example:

1) [ON12C5U3]: Turns ON only output 1 and 2 of the MT103-102 card located in slot #5 of the MT100-100 Enclosure with unit ID3.

2) [ON3C5U3]: Turns ON only output 3 of the MT103-102 card located in slot #5 of the MT100-100 Enclosure with unit ID3. After the [ON12C5U3] and [ON3C5U3] commands have been executed, output 1, 2 and 3 will be ON.

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

### [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 1-3)

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 = output number (m = 1 to 3)

Cn = card ID No. (n = a slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

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.

## [OFFmCnUiS]: for a single card

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

m = output number (m = 1 to 3)

Cn = card ID No. (n = slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

S = saves command to memory

[OFFCnUi]: Turns OFF all outputs of the card

## Example:

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].

## [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 1-3)

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 loaded.

Command Format: [OFFmCnUiP]

m = number (m = 1 to 3)

Cn = card ID No. (n = a slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

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. [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.

## 8. [...S]: save setting

This command saves the Output ON/OFF setting to memory. The output will return to the saved setting whenever power is turned on.

## 9. [...F]: feedback

After processing a command, an OK or ER will be returned as feedback at the end of a command string or if the unit ID is zero.

## 10. [...P]: set path

This command sets the path for the output, but it is not activated 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 may be loaded and then all switched simultaneously.

## 11. [WR]

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

Command Format: [WRCn...GkUi]

Cn = card ID No. (n = slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

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

Ui = 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 group 5 and unit 1 will be grouped together.

## 12. [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:

- 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 [CLR G\*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]

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

Ui = 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:

[G1]: will return feedback as [On12G1].

[G2]: will return feedback as [On2G2].

## 14. [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 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

**Example:**

To read member data for group 1 of unit 1, send the [RD] command. The system will return feedback as C1C2C3G5U1.

**15. [HELP]**

This command displays the commands available for the card.

**Example:**

To display the commands and their explanations for the card in slot 4, send the following command, [HELPC4]. The feedback will be a listing of the commands along with a brief summary.

## 7.3 SUMMARY OF COMMANDS

- 1) [VER]      Receives software version.
- 2) [C]        Receives card status.
- 3) [CnS]     Displays and save card status.
- 4) [SIG]     Checks 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) [SW]      Switches (outputs the preloaded buffer).
- 8) [...S]    Saves an Output setting.
- 9) [...F]    Enables command feedback.
- 10) [...P]   Sets output Path.
- 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.

## TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT103-102/(107)**; however, we would like to offer suggestions for the following:

### LED IS NOT LIT

- Cause 1:** Card cage is not plugged in.  
Solution: Plug card cage in. If the card cage, still isn't working see
- 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:** 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.

### LED IS BLINKING RED

If the LED on the card is blinking red, find the error code. For example, if you are using card 5 of unit 1, send the [C5U1] command to see the status and error code. Note that card 5 refers to slot 5.

- Cause 1:** The CPU on the card is not working properly. - If the CPU is not working, you will receive an ER01 message. The system will return feedback as [On1 ER01 C05] when using card 5 of unit 1.

### 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 [www.altinex.com](http://www.altinex.com) for details on warranty and return policy.

### 9.2 CONTACT INFORMATION

#### ALTINEX, INC.

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FAX: 714-990-3303