# MULTI-TASKER ™



MT103-117 is pictured above.

# MT103-117/119

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

**≡ALTINEX**

SIGNAL MANAGEMENT SOLUTIONS

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**ALTINEX**

SIGNAL MANAGEMENT SOLUTIONS

## PRECAUTIONS / SAFETY WARNINGS    1

Please read this manual carefully before using your **MT103-117/119**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT103-117/119** 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 **MT103-117/119** 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 **MT103-117/119** carefully. Dropping or jarring can damage the card.

- Do not pull the cables that are attached to the **MT103-117/119**.

- 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 MT103-117/119     2

### MT103-117/119
### 1-in 6-out MT S-Video
### Distribution Amplifier Cards

The **MT103-117/119** are video distribution amplifiers (DA) designed for use in a Multi-Tasker™ enclosure. When installed in a Multi-Tasker™, these DA's enable the connection of one input to several output devices.

These MT composite and S-Video DA cards can pass NTSC, PAL or SECAM type video signals. The MT S-Video DA cards will handle video signals with levels up to 1.5Vp-p.

The **MT103-117/119** is a 1-in 6-out S-Video DA Card. There is one S-Video input and six outputs. These cards enable the connection of a single S-Video source to six displays or recording devices. Additionally, the outputs on the MT103-119 may be individually enabled or disabled through RS-232 control. The 117 and 119 both employ signal detection circuitry. The Power ON LED is RED with power ON, and GREEN when an input signal is present.

The **MT103-119** also features Equalization adjustment. The equalization allows the user to adjust the signal when long cable lengths are involved. The Equalization circuitry is good for cable runs up to about 250 feet when a high quality 75 ohm coaxial cabled is used.

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

## TECHNICAL SPECIFICATIONS     3

| FEATURES/ DESCRIPTION | MT103-117 | MT103-119 |
|---|---|---|
| **Inputs** | | |
| External Input Connectors | (1) 4-pin Mini-DIN | (1) 4-pin Mini-DIN |
| **Outputs** | | |
| S-Video Output Connectors | (6) 4-pin Mini-DIN | (6) 4-pin Mini-DIN |
| **Approvals** | CE/FCC | CE/FCC |

Table 1. **MT103-117/119** General

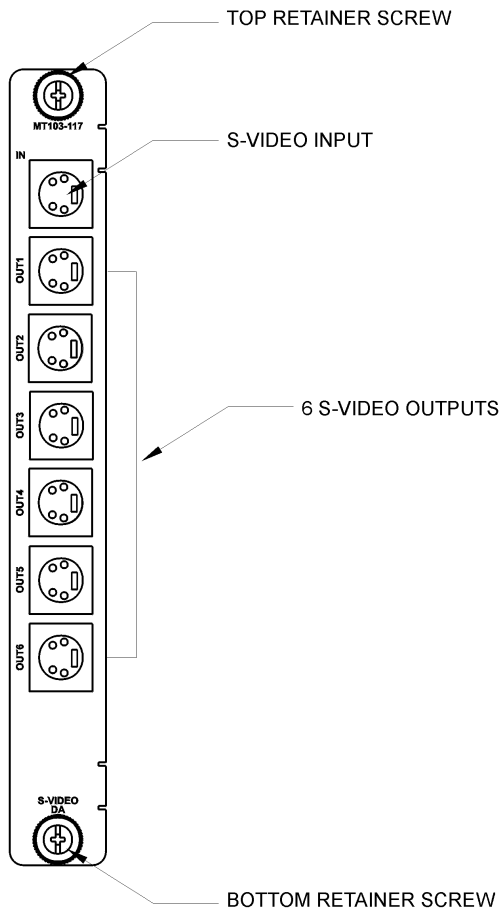| MECHANICAL | MT103-117/119 |
|---|---|
| Enclosure Slots | One Each |
| Weight | 0.43lb (0.19kg) |
| Shipping Weight | 1 lb. (0.42kg) |
| Connector Panel | Black |
| T° Operating | 10°C-40°C |
| T° Maximum | 0 to 50°C |
| Humidity | 90% non-condensing |
| MTBF (calc.) | 55,000 hrs |

Table 2. **MT103-117/119** Mechanical

| ELECTRICAL | MT103-117/119 | | |
|---|---|---|---|
| **Input Signals** | | | |
| Analog | +/-1.5V(signal: 1.5V p-p) | | |
| Sync | 0 to +5V | | |
| Impedance | 75 Ohms | | |
| Type | Differential | | |
| Return Loss | -38dB @ 50MHz | | |
| Maximum Offset | 10mV DC | | |
| **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 -** Video | 350 MHz @-3dB | | |
| **Power** (from Enclosure) | **+6V** | **-6V** | **Power** |
| MT103-117/119 | 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. **MT103-117/119** Electrical

# MULTI-TASKER <sup>TM</sup>

## PRODUCT DESCRIPTION                    4

**MT103-117/119**

TOP RETAINER SCREW

S-VIDEO INPUT

6 S-VIDEO OUTPUTS

BOTTOM RETAINER SCREW

## APPLICATION DIAGRAM                    5

**Application Diagram 1**

**MT103-117/119**
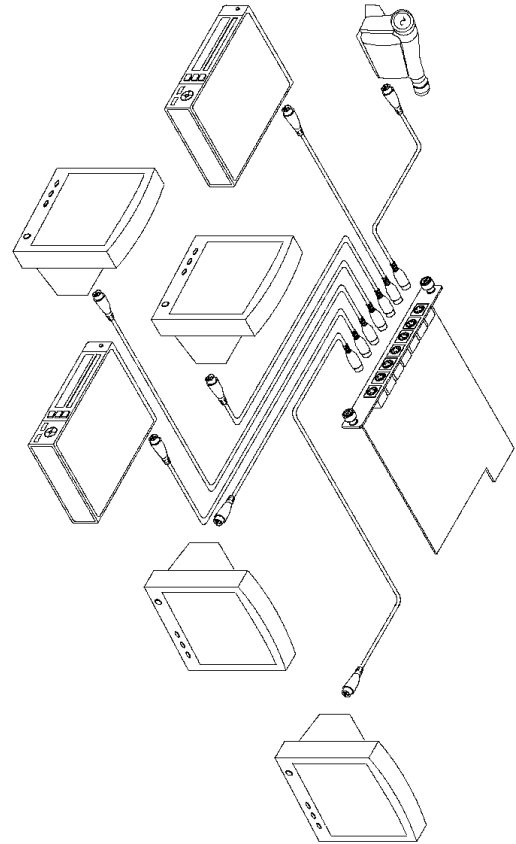
**Application Diagram 2: Internal View of MT103-117/119**

**MT103-117**
1 IN, 6 OUT S-Video Distribution Amplifier



**MT103-119**
1 IN, 6 OUT S-Video Distribution Amplifier with Equalization and Output Enable
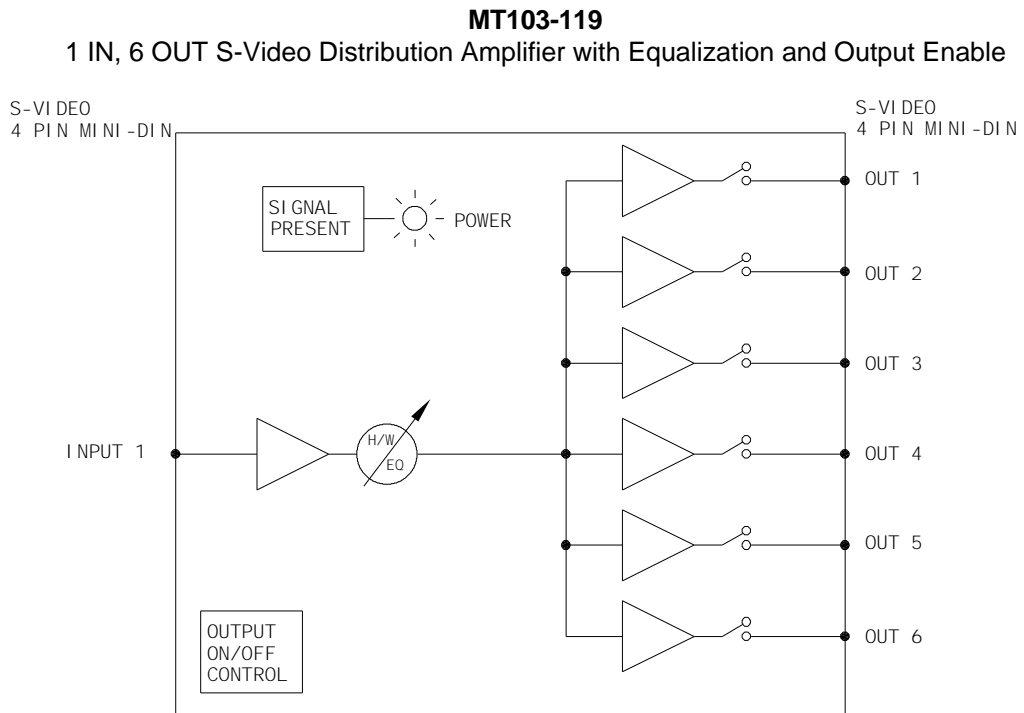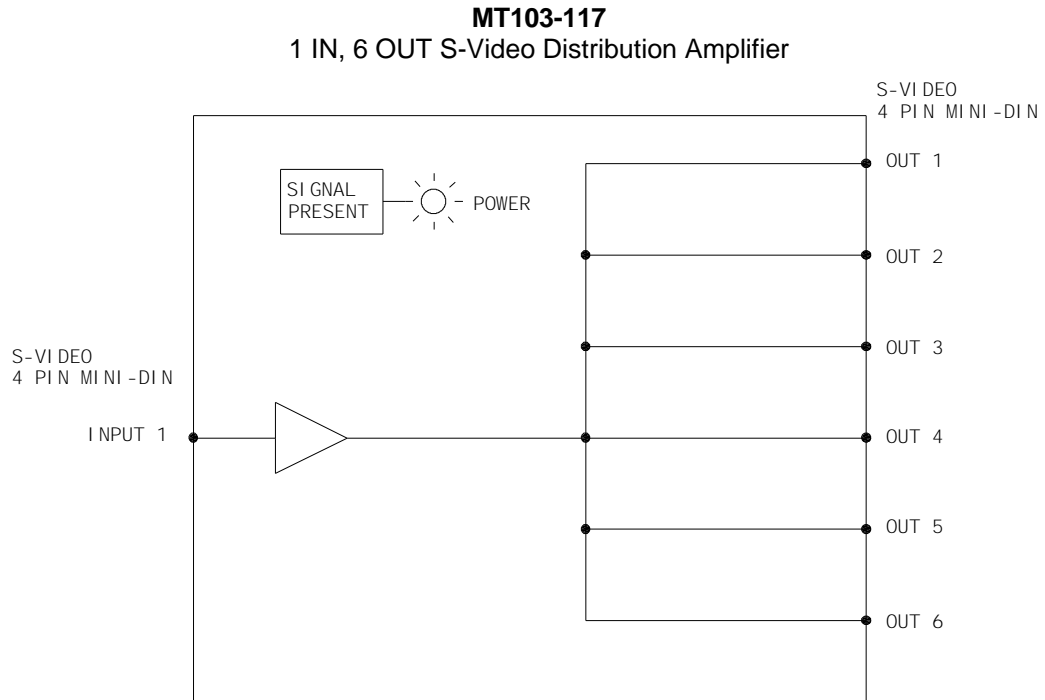
## INSTALLING YOUR MT103-117/119    6

**Step 1.** Slide the **MT103-117/119** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the card.

**Step 2.** If the power is ON, 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 card. Connect the output connectors to the display devices through a coaxial cable.

**Step 4.** Starting from the left, identify the slot number the **MT103-117/119** card is plugged into. Note that it is for RS-232 control.

## OPERATION (MT103-119 Only)    7

### 7.1  RS-232 CONTROL

The outputs of the **MT103-117** card are always enabled; therefore, no RS-232 control is necessary.

When used in the Multi-Tasker™ Enclosure, the **MT103-119** has many advanced remote control capabilities, which are accessible through standard RS-232 communication. The actual controlling can be accomplished through computer control or any other device capable of sending RS-232 commands.

### 7.1.1  RS-232 INTERFACE

The RS-232 commands for the **MT103-119** 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); 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]

## 1. [VER]

This command displays the software version and card type for the **MT103-119**. The command format is: [VERCnUi]

Cn = card ID  (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 **MT103-119** card is in slot #2 of unit 3: Sending the command **[VERC2U3]** to the Multi-Tasker™ will yield the following feedback:

MT103-119  690-0127-007

MT103-119 = card type
690-0127-007 = software version

## 2. [C]

This command receives the status of the card.

Command Format: [CnUi]

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

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

**Example:**

There is one MT103-119 card in slot #2 of unit 3 with outputs 1 and 2 ON.   Sending the

command **[C2U3]** to the Multi-Tasker™ 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

**Example:**

If outputs 1,2,3 and 4 are enabled for the card in slot 2 of unit 2, sending the command [C2SU2] would yield the following feedback:

ON: 1,2,3,4  C02  Saved

## 4. [SIGCi] - MT103-117/119

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

Ci = 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 a 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 1 to 6

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

**Examples:**

1) **[ON12C4U3]:** Turns ON only outputs 1 and 2 of the card located in slot #4 of the Enclosure with unit ID3.

2) **[ON3C5U3]:** Turns ON only output 3 of the card located in slot #5 of the Enclosure with unit ID3. After the **[ON12C4U3]** and **[ON3C5U3]** commands have been executed, outputs 1 and 2 of card 4 will be ON and output 3 of card 5 will be ON.

3) **[ONC5U3]:** Turns ON all outputs of the card in slot 5 of unit ID 3.

**[ONmGkUiS]: for a group of cards**

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

m = Output number 1 to 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 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 1 to 6

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:**

There is an MT103-119 in slot 6 of unit 3 and in slot 7. To enable outputs 1 and 2 of card 6 and outputs 3 and 4 of card 7 simultaneously, use the following commands:

[ON12C6U3**P**]
[ON34C7U3**P**]
[SW]

If "F" is included use the [ONmCnUi**PF**] command or the [ONmCnUi**FP**] 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 or if the unit ID is zero.

**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 1 to 6

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

**Examples:**

1) If MT103-119 card 5 of unit 3 has outputs 1, 2 and 3 ON:

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

b) **[OFF23C5]:** Turns OFF outputs 2, 3.

2) If MT103-119 card 5 of unit 3 has outputs 1, 2, 3, 4, 5 and 6 ON:

a) **[OFFC5U3]:** Turns OFF all outputs, which is equivalent to sending **[OFF123456C5U3]**.

## [OFFmGkUiS]: for a group of cards

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

m = Output number 1 to 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 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 = Output number 1 to 6

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 6s and 7 of unit 3: To disable outputs 1 and 2 of card 6 and outputs 3 and 4 of card 7 simultaneously, use the following commands:

[OFF12C6U3**P**]

[OFF34C7U3**P**]

[SW]

If "F" is included use the [OFFmCnUi**PF**] command or the [OFFmCnUi**FP**] 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 or if the unit ID is zero.

### 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 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 or any other cards in the Enclosure.

### Example:

[ON12C6U3PF]
[OFF34C7U3PF]
[SW]

The above example will enable outputs 1 and 2 of the card in slot 6 at the same time that

outputs 2 and 3 of the card in slot 7 are disabled. The system will return feedback as OK if the command is accepted correctly.

## 11. [HELP]

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

## 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 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 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 19) *(1-8 for MT100-101 or 1-4 for MT100-106)*

**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.

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## 7.3 SUMMARY OF COMMANDS

1) **[VER]** **Receives software version**

2) **[Ci]** **Receives status of the card**

3) **[CiS]** **Saves card configuration**

4) **[SIGCi]** **Check for input signal presence**

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 sent**

8) **[…F]** **Provides feedback upon sending**

9) **[…P]** **Sets the path, preload for [SW]**

10) **[SW]** **Switch (outputs the preloaded buffer)**

11) **[HELP]** **Display all available commands**

12) **[WR]** **Groups multiple cards**

13) **[CLR]** **Reset card configuration or clears members of a single group or all groups**

14) **[G]** **Requests group data**

15) **[RD]** **Displays the members in each group**

## TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT103-117/119**. 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 ON, see Cause 2.

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

*Solution:* Push the card in all the way. If the LED is still not ON, 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 Cause 2.

**Cause 2:** **The 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 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:* 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 there is no display, see Cause 3.

**Cause 3:** **Cable connections are incorrect.**

*Solution:* Make sure that cables are properly connected. 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 has power and is turned ON. 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

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