



MANUAL PART NUMBER: 400-0163-002

**MT100-101 MT100-103/
MT101-103/MT101-104**

**8-SLOT MULTITASKER™
ENCLOSURE USER'S GUIDE**

TABLE OF CONTENTS

	Page
PRECAUTIONS / SAFETY WARNINGS	2
GENERAL	2
INSTALLATION.....	2
RACK-MOUNT INSTALLATION	2
CLEANING.....	2
FCC NOTICE	2
ABOUT YOUR MT100-101.....	3
TECHNICAL SPECIFICATIONS.....	3
DESCRIPTION OF MT100-101	4
FRONT PANEL INSTALLATION INSTRUCTIONS	5
INSTALLING YOUR MT100-101	6
OPERATION	6
RS232 CONNECTION	6
RS-232 PROTOCOL	6
RS-232 COMMANDS	7
ASSIGNING THE SAME UNIT ID TO MULTIPLE UNITS	8
SUMMARY OF COMMANDS	8
WINDOWS BASED CONTROL SOFTWARE	ERROR! BOOKMARK NOT DEFINED.
TROUBLESHOOTING GUIDE	9
CARD CAGE IS NOT WORKING	9
CARD IS NOT WORKING	9
ALTINEX POLICY	9
LIMITED WARRANTY / RETURN POLICY.....	9
CONTACT INFORMATION	9

This manual covers:

- MT100-101** - MultiTasker 8-slot Enclosure
- MT100-103** - MultiTasker 8-slot Enclosure w/ control from card bus (no front panel control)
- MT101-103** - Blank Front Panel for MT100-101 (No micro, no buttons)
- MT101-104** - Blank Front Panel for MT100-101 (Micro included, no buttons)

PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT100-101** 8-Slot Multi-Tasker™ Enclosure. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT100-101** 8-Slot Multi-Tasker™ Enclosure 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 **MT100-101** 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 your **MT100-101** carefully. Dropping or jarring can damage the unit. If the **MT100-101** is not used for an extended period, disconnect the power cord from the power outlet or turn off the main connection.

1.3 RACK-MOUNT INSTALLATION

- Use only ALTINEX supplied **MB1003** rack-mount ears for mounting the **MT100-101** into a rack.
- The maximum operating ambient temperature is 50 degrees Centigrade.
- When installing the **MT100-101** into a rack, distribute individual units evenly, otherwise hazardous conditions may be created by an uneven weight distribution. This will reduce heat build up and will prolong the life of the **MT100-101**. Power should be connected using provided 3-prong power cord only. Furthermore, make sure that the rack is properly grounded.

1.4 CLEANING

- Unplug the **MT100-101** power cord before cleaning.
- Clean surfaces 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 unit.

1.5 FCC NOTICE

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference 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 MT100-101 2

MT100-101 Multi-Tasker™ 8-Slot Enclosure

- Empty card-cage with 8 slots available
- Basic foundation of Multi-Tasker™ solutions
- 2U high, full rack wide
- Rack ears included

The MultiTasker™ 8-Slot Enclosure, **MT100-101**, comes with a front panel installed. However, the front panel must be ordered separately to insure that you select the best solution for your application. ALTINEX currently offers four front panel choices: part numbers **MT101-103**, **MT101-104**, **MT101-105**, and **MT101-109**.

The **MT101-103** is a completely blank front panel without any microprocessor control; use this panel when the Multi-Tasker is populated with cards that require no external control, such as video and audio distribution and signal conditioning.

For applications in which the MultiTasker will strictly be controlled with a computer or third-party control system, use the **MT101-104**. Although it does not offer any buttons, it does have the main microprocessor for the MultiTasker installed on the inside of the panel, which is required for external RS-232 control of the **MT100-101**. In addition, the **MT101-104** panel provides an LED to indicate "power on" status, and a 9-pin D sub connector for RS-232 connection from the front of the unit. (This connector is provided mostly for convenience during initial setup of the MultiTasker, since the primary connection would typically be made using the 9-pin D sub Control connection on the back panel of the **MT100-101**).

For applications in which the MultiTasker needs to be controlled using front panel buttons, select the **MT101-105** with 36 user-programmable buttons, or **MT101-109** with 14 user-programmable buttons; both also contain a microprocessor. The buttons offer removable transparent faces, allowing access to removable labels for easy identification of programmed functions. Non-volatile memory protects the programming during power-down.

Programming is accomplished through either the front or back 9-pin RS-232 port.

TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT100-101
GENERAL	
RS-232	9-pin D connector (GND, RXD & TXD)
Compatibility	Cards designed for the Multi-Tasker™ System

Table 1. **MT100-101** Electrical

MECHANICAL	MT100-101
Weight (without cards)	12lbs. (5.44kg)
Width	17in. (432mm)
Height	3.5in. (89mm)
Depth	12in (305mm)
Available Slots	8
Back Panel	Black
T° Operating	10°C-35°C
T° Maximum	50°C
Humidity	90% non-condensing
MTBF (calc.)	40,000hrs

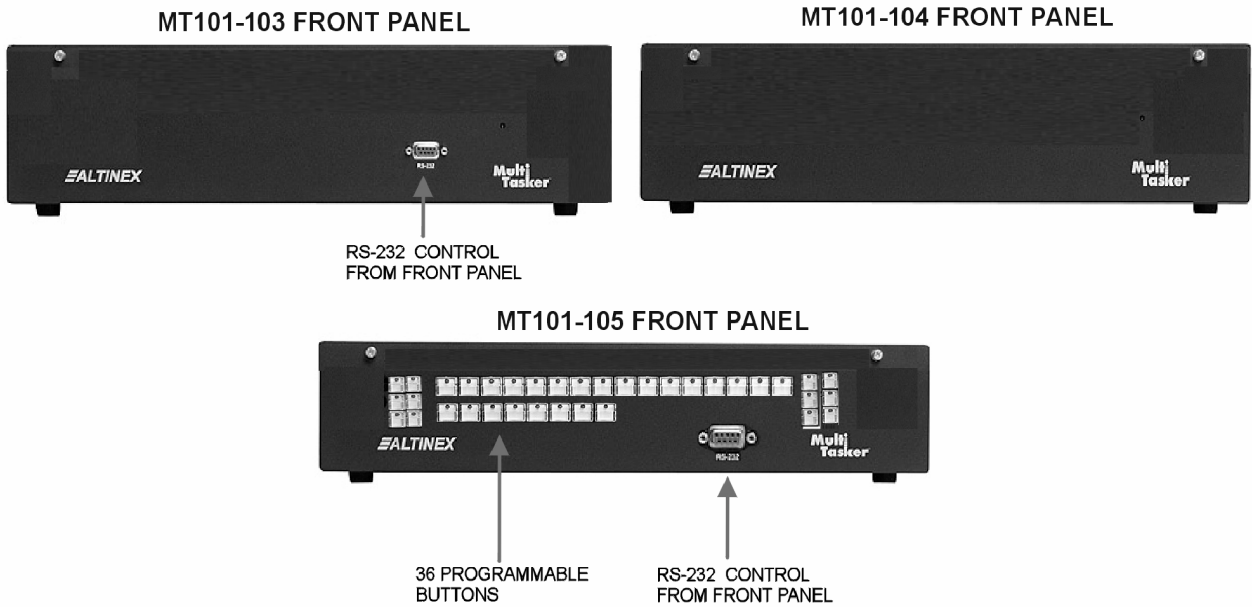
Table 2. **MT100-101** Mechanical

ELECTRICAL	MT100-101
Power Input	100VAC - 240VAC @ 50/60Hz

Table 3. **MT100-101** Electrical

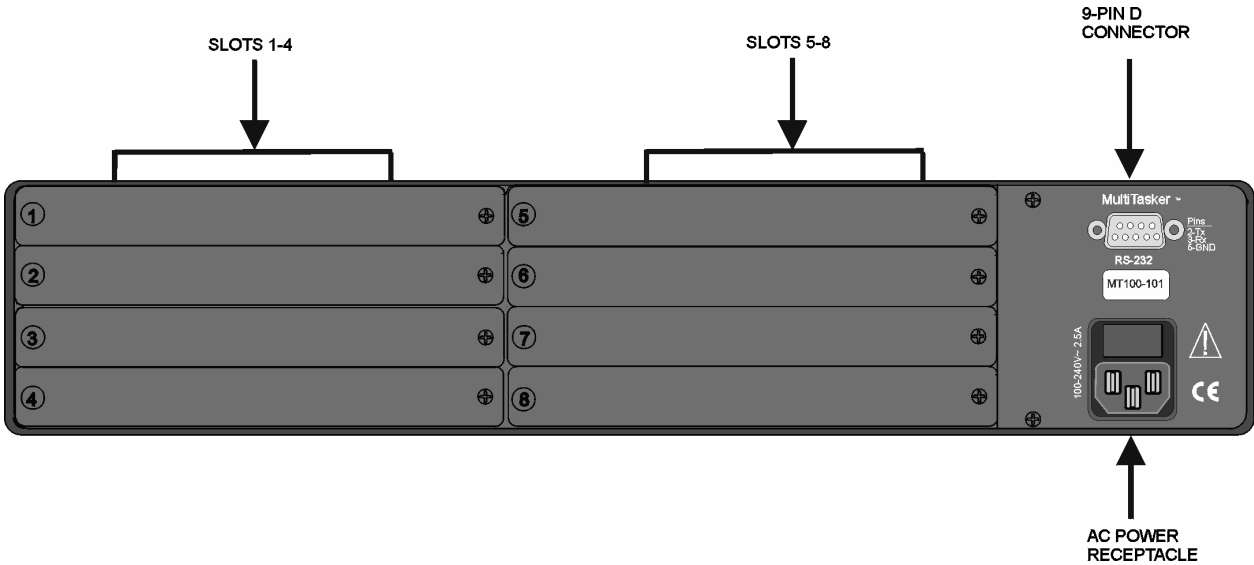
DESCRIPTION OF MT100-101 4

FRONT PANEL OPTIONS

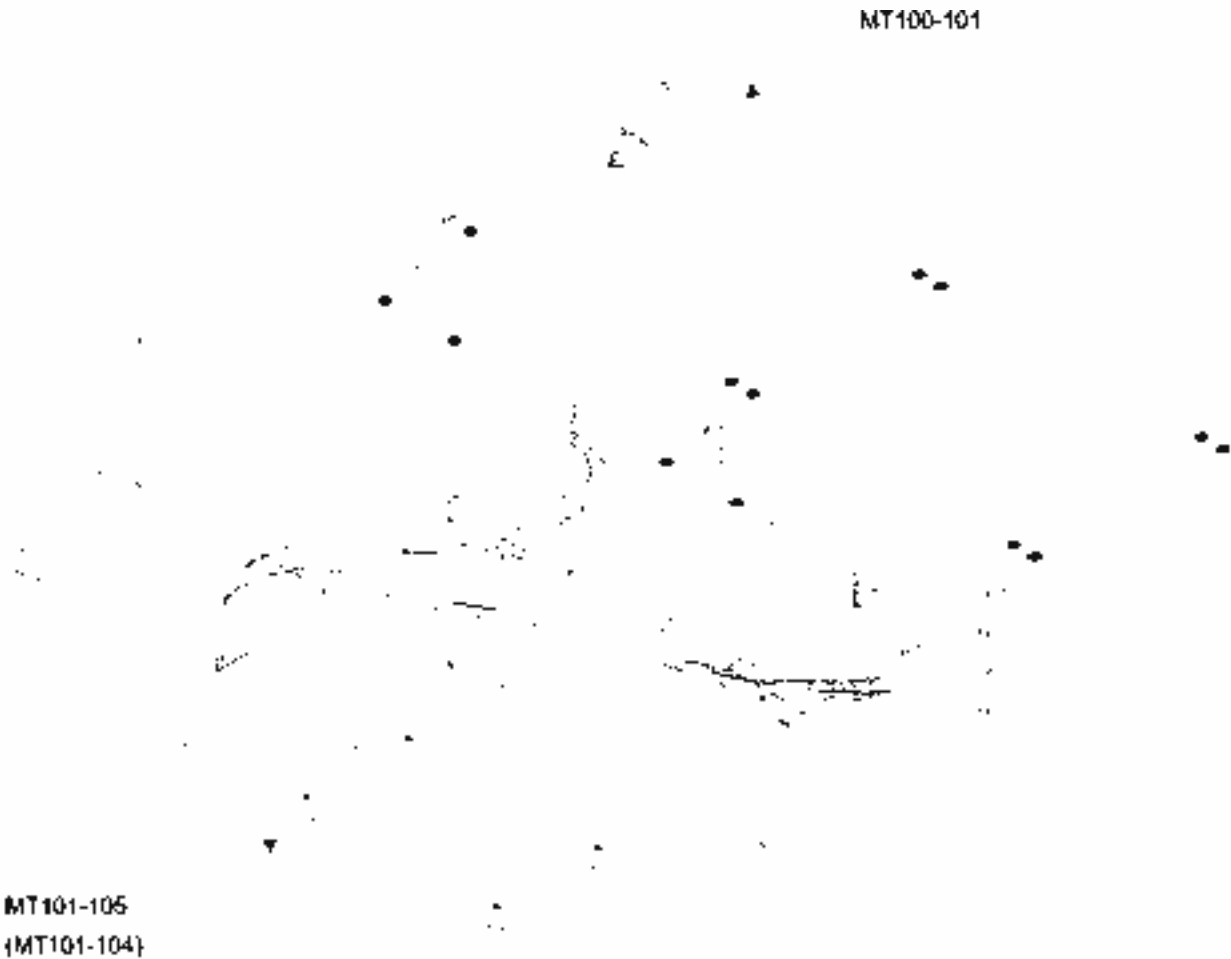


Note: For information regarding front panel control for MT101-105/MT101-109, see the MT101-105/MT101-109 user's guide.

BACK PANEL



FRONT PANEL INSTALLATION INSTRUCTIONS 5



INSTALLING YOUR MT100-101 6

- Step 1.** Connect the power entry connector of the **MT100-101** to the power outlet with the provided power cord. The power supply is universal and will work throughout the world with voltages from 110V to 240VAC.
- Step 2.** If a control system is used to control the cards in the **MT100-101** Multi-Tasker™, connect the 9-pin D connector of the **MT100-101** to the control system's RS-232 port as shown below in Table 4.

9-pin D Connector of Multi-Tasker™	Computer or Control System
GND (Ground)	Ground
RXD (Receive)	Transmit
TXD (Transmit)	Receive

Table 4. **MT100-101** RS-232 control

*Note: Make sure that the transmit pin of the control unit is connected to the receive pin of the **MT100-101**. Also, make sure that the receive pin of the control unit is connected to the transmit pin of the **MT100-101**. See figure 1 and 2.*

- Step 3.** Turn on the power switch of the **MT100-101** Multi-Tasker™.

OPERATION 7

The **MT100-101** has many advanced remote control capabilities, which are accessible through standard RS-232 communication. The actual controlling can be accomplished through a computer, a control system, or any other device capable of sending RS-232 commands. The factory settings for the RS-232 port are 9600 baud, 8 bits, 1 stop, and No parity.

Commands used for MultiTasker cards such as [ON], [OFF], and [IO] that end in "S" will be saved to 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).

In this section, "Basic Enclosure" or "Unit" has the same meaning. The basic enclosure is a complete and independent card cage that has a controller and 8 slots for plug-in cards. Each unit or basic enclosure has its own unit ID that is based on a

number from 0 to 9. Each plug-in card also has its own card ID that is a number from 1 to 8.

7.1 RS232 CONNECTION

If a control system is used to control the cards in the **MT100-101** Multi-Tasker™ Basic Enclosure, connect the 9-pin D connector of the **MT100-101** to the control system's RS-232 port. To connect the Multi-Tasker™ (MT) to a computer or a terminal, you must have the proper interface cable.

The interface cable must also have the appropriate connector on each end and the internal wiring must be correct. Connectors typically have 9 pins (DB-9 connector) or 25 pins (DB-25 connector) with a "male" or "female" pin configuration.

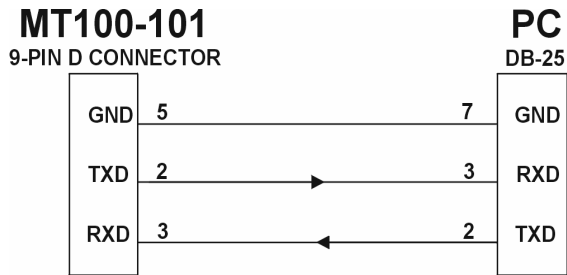


Figure 1: DB-9 Serial Connection

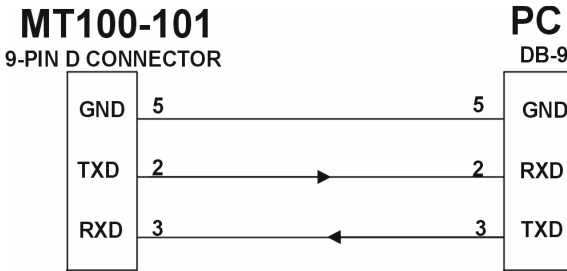


Figure 2: DB-25 Serial Connection

7.2 RS-232 PROTOCOL

The RS-232 protocol for the **MT100-101** uses a simple ASCII character format.

1. Square brackets "[]" are part of the command.
2. Use uppercase letters for all commands.
3. One command may carry up to 40 characters including brackets.

The input buffer is a 256-character ring buffer for 256 bytes. Use caution when sending consecutive commands from a computer or control system. To avoid an overflow of the command buffer, the user may send commands with the delay time.

There are two ways to send commands, see examples below.

- 1) Send commands with a delay time of 50ms.
[ON123456C2U1]
Delay 50ms
[OFF123C2U1]
Delay 50ms
[OFF6C2U1]
- 2) Send consecutive commands without delay up to 300 characters and then send the rest of the commands with a 50ms delay as shown above. The user may also calculate the time necessary to execute all commands in the buffer by multiplying the number of commands by 50ms. After the execution time, the user can send another 300-character string without delay.

7.3 RS-232 COMMANDS

7.3.1. [RES]

The [RES] command resets the Enclosure. The controller and all cards in the Enclosure will be reset.

If the unit has a unit ID of zero, it will beep once. After 3 seconds when all initializations are complete, the unit will beep twice and return feedback to the controller or computer in the form of ASCII text that says ****READY****. This will let the user know that the unit is ready for operation. The reset process will take 3 seconds.

If the unit ID is any number other than zero (# from 1 to 9), the unit will beep once. After 3 seconds when all initializations are complete, the unit will beep two times.

7.3.2. [VERUi]

This command displays the current version of the firmware for the controller unit located in the **MT100-101**.

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

Example:

[VERU1] will return feedback as
[690-0122-011 690-0123-003 690-0124-015]
[690-0122-011 690-0123-003 690-0124-015]
122011: software version of control CPU
123003: software version of process CPU
124015: software version of Panel CPU
Note: Controller card has 3 different CPU's:
Control CPU, Process CPU, and Panel CPU
(LED/KEY).

7.3.3. [C0Ui]

This command receives the status of the controller card.

C0 = ID 0 is for the controller card of the **MT100-101**.

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

Example:

To see the status of Controller unit #1, send the [C0U1] command.

The Multi-Tasker™ system will return feedback as [CONTROL:OK] if the control card is working properly.

[CONTROL: ER03] will be returned as feedback if there is an error 3 on controller card.

ERROR CODES

ER01: CPU Error

This error indicates that the CPU is not working properly.

ER02: I²C Communication Error

This means that the communication between the controller and its serial device has failed.

ER03: RS485 Communication Error

This type of error is a communication error between the serial device and Controller unit and the cards in the Multi-Tasker™ Enclosure.

7.3.4. [SETUi]

This command sets the unit ID number for the **MT100-101** Multi-Tasker™ Enclosure.

Ui = Unit ID

i = number from 0 to 9

To assign an ID for a unit, first turn ON that particular unit leaving other units OFF and send this command.

Example:

a) [SETU0]

After this command is executed, all commands for this unit may either include U0 or not include U0. Factory default is unit ID 0.

Example:

[Cn] = [CnU0]

[VERCn] = [VERCnU0]

[ON123Cn] = [ON123CnU0]

[SETU6]

After this command is executed, all commands for this unit must include U6 (i.e. [CnU6], [VERCnU6], etc). This command can be used for single or multiple unit operation.

If there are 3 enclosures being used, set unit ID's using the following procedure:

- 1) Turn OFF all units.
Turn ON the unit that you want to assign unit ID no. 1
Send the [SETU1] command.
- 2) Turn OFF all units.
Turn ON the unit that you want to assign unit ID no. 2
Send the [SETU2] command.
- 3) Turn OFF all units.
Turn ON the unit that you want to assign unit ID no. 3
Send the [SETU3] command.

7.3.5. [HELPUi]

This command displays all RS-232 commands available for controlling of the **MT101-104**.

7.4 ASSIGNING THE SAME UNIT ID TO MULTIPLE UNITS

When there is more than one unit being used, unit ID 0 to 9 can be used for each unit. If identical units are used, the user may assign the same unit ID in order to operate these units simultaneously with the same command.

Example:

To assign unit ID 1 for 3 different units:

- a) Turn on only these 3 units.
- b) Send the [SETU1] command. After sending this command, all of the 3 units will have unit ID=1;
Command [ON1C2U1] will turn on input/output#1 on card 2 of these 3 units at simultaneously. Caution must be used when multiple units are assigned the same unit ID.
 - 1) Do not use the following commands for multiple units with the same unit ID: [Ci], [VER] and [RD] These commands will request feedback such as card status, version, or content of a register.
 - 2) Do not use suffix "F" in a command for multiple units with the same unit ID. (note: using F will request feedback)Note: Using commands [Ci], [VER] and [RD] or suffix "F" for multiple units with the same unit ID may return an unwanted response because more than card will send feedback simultaneously.

7.5. SUMMARY OF COMMANDS

- 1) [RES]: Resets the Enclosure to power on or off.
- 2) [VER]: Displays the current firmware version for the controller unit.
- 3) [C0]: Receives the status the controller card.
- 4) [SET]: Sets unit ID number for the Enclosure.
- 5) [ID]: Recognizes the location of the unit by sending an ID number
- 6) [HELP]: Displays RS-232 command

7.6. WINDOWS BASED CONTROL SOFTWARE

MTSetup is Windows 95/98/NT/2000/XP based control software, available from ALTINEX website at www.altinex.com in the Download section.

TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT100-101**; however, we would like to offer suggestions for the following:

8.1 CARD CAGE IS NOT WORKING

Cause 1: Card cage is not plugged in.

Solution: Plug card cage in. If the card cage works, the problem is solved. If the card still does not work, see Cause 2.

Cause 2: 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, 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, 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. If the original card was not the source of the problem, see Cause 3.

Cause 3: The input power voltage is incorrect.

Solution: Make sure that the input power range is within 100-240VAC and also make sure that the power is connected to the input power connector. If there is still a problem, call ALTINEX at (714) 990-2300.

8.2 CARD IS NOT WORKING

Cause 1: Card is not plugged in all the way.

Solution 1 Push the card in all the way. If the card still does not work, see Solution 2.

Solution 2: See the troubleshooting section of each Multi-Tasker™ Card user's guide or 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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