



**Mult
Tasker™**

The MT112-108 is shown above.

MANUAL PART NUMBER: 400-0408-001

MT112-107/108

1-IN, 3-OUT / 1-IN, 6-OUT POWER

DISTRIBUTION WITH CURRENT SENSE CARDS

FOR MULTI-TASKER™ ENCLOSURES

USER'S GUIDE

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PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT112-107/108**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT112-107/108** 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 **MT112-107/108** 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 **MT112-107/108** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT112-107/108**.
- 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 their 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 MT112-107/108 2

MT112-107 & MT112-108

1-in, 3-out and 1-in, 6-out MT Power Distribution with Current Sense Cards International Version

The **MT112-107** is a 1-in, 3-out AC power distribution card. The **MT112-108** is a 1-in, 6-out AC power distribution card.

The **MT112-107/108** distributes AC power from a single AC power source to multiple AC outlets. These outlets can be connected to any type of audio/video equipment. The total current supplied to all outlets should be less than 10 amps. A special sensor will alert the user by flashing the LED's when the load is greater than 8.5A, and a warning will be sent over the RS-232 bus indicating the total current draw is near maximum.

When audio/video equipment connected to the **MT112-107/108** draws 9.5A for more than 3 seconds, the microprocessor will start turning outlets off, starting from the highest outlet number first. Additionally, a message will be sent over the RS-232 bus informing the user that outputs are being shutdown.

The **MT112-107/108** is able to turn audio/video equipment on or off in a sequential order, which may be defined using RS-232 protocol commands. The time delay between switching is also programmable from between zero and 50 seconds.

The **MT112-107/108** has built in current measuring circuits to detect load levels. The value of these loads may be read through the Multi-Tasker™ RS-232 port. The measurement is in amps and can monitor the load level on any or all outputs.

The threshold level for the on/off detect feature is adjustable to accommodate different loads and determine when AV equipment is ON or OFF. This feature is especially important for VCRs and DVD players or any other equipment that has only IR control capabilities. Using this feature, the control system can determine if the VCR is on or off.

TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT112-107/108
GENERAL	
Inputs	
MT112-107/108	(1) IEC Power Entry - Male
Outputs	
MT112-107	(3) IEC 320 Power Outlet, Female
MT112-108	(6) IEC 320 Power Outlet, Female
Approvals	CE/FCC

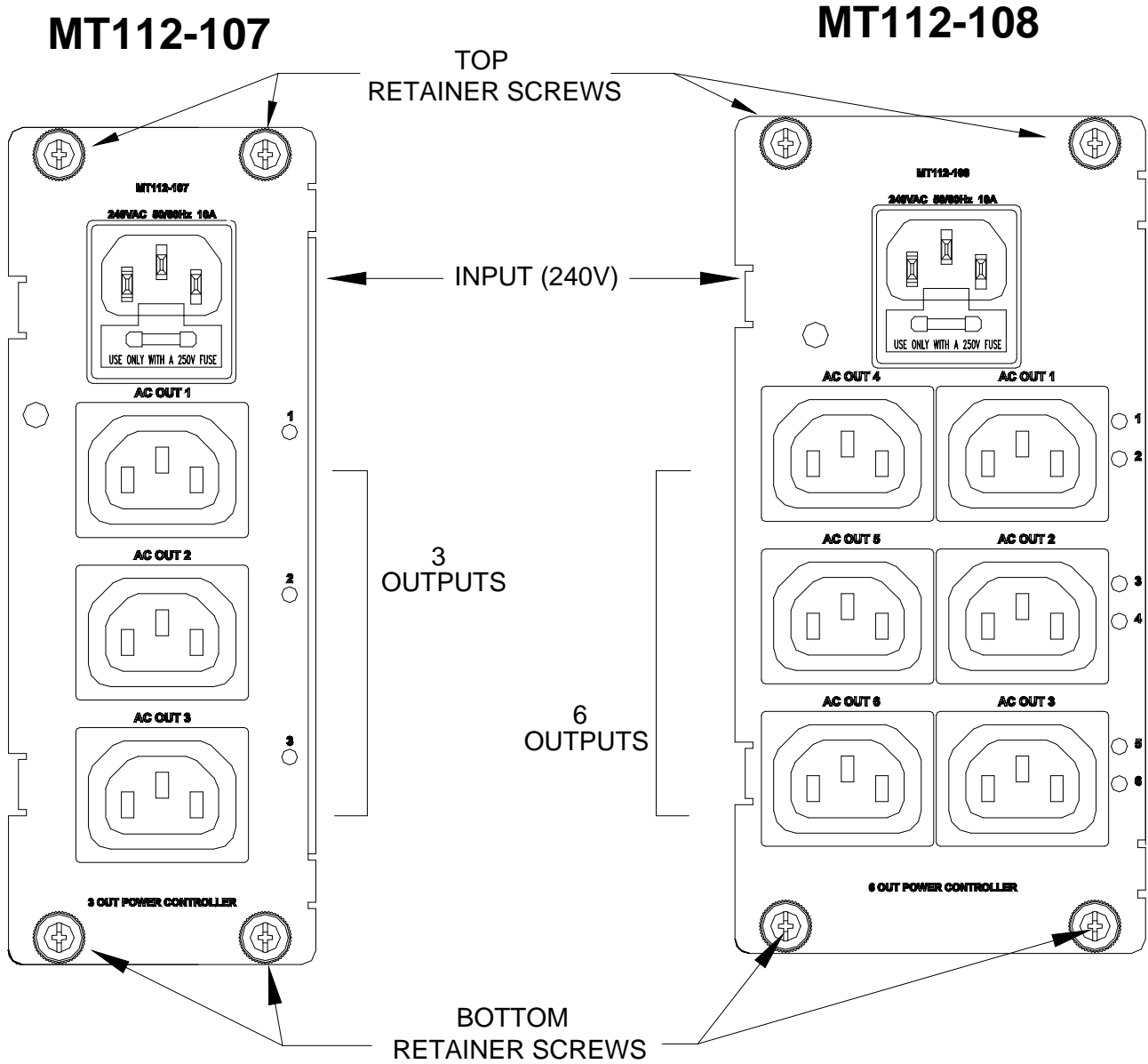
Table 1. **MT112-107/108** General

MECHANICAL	
MT112-107	
Enclosure Slots	Two
Weight	1.28lb (0.58kg)
Shipping Weight	1.75 lb. (0.79kg)
MT112-108	
Enclosure Slots	Four
Weight	1.83lb (0.83kg)
Shipping Weight	2.3 lb. (1.04kg)
MT112-107/108	
Connector Panel	Black
T° Operating	10°C-75°C
T° Maximum	0 to 75°C
Humidity	90% non-condensing
MTBF (calc.)	40,000 hrs

Table 2. **MT112-107/108** Mechanical

ELECTRICAL		MT112-107/108		
Input Signals				
AC	240VAC/10A Maximum			
Output Signals				
AC	240VAC/10A Maximum			
Warning Level	8.5 Amps			
Shutdown Level	9.5 Amps > 3sec			
Shutdown Sequence	Output 6,5,4,3,2,1			
Power				
Power (from Enclosure)	+13V	+6V	-6V	TOTAL Power
MT112-107	1.7W	0.7W	0.2W	2.6 watts
MT112-108	2.9W	1.2W	0.2W	4.3 watts

Table 3. **MT112-107/108** Electrical



APPLICATION DIAGRAM

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DIAGRAM 1 : TYPICAL SETUP - MT112-107

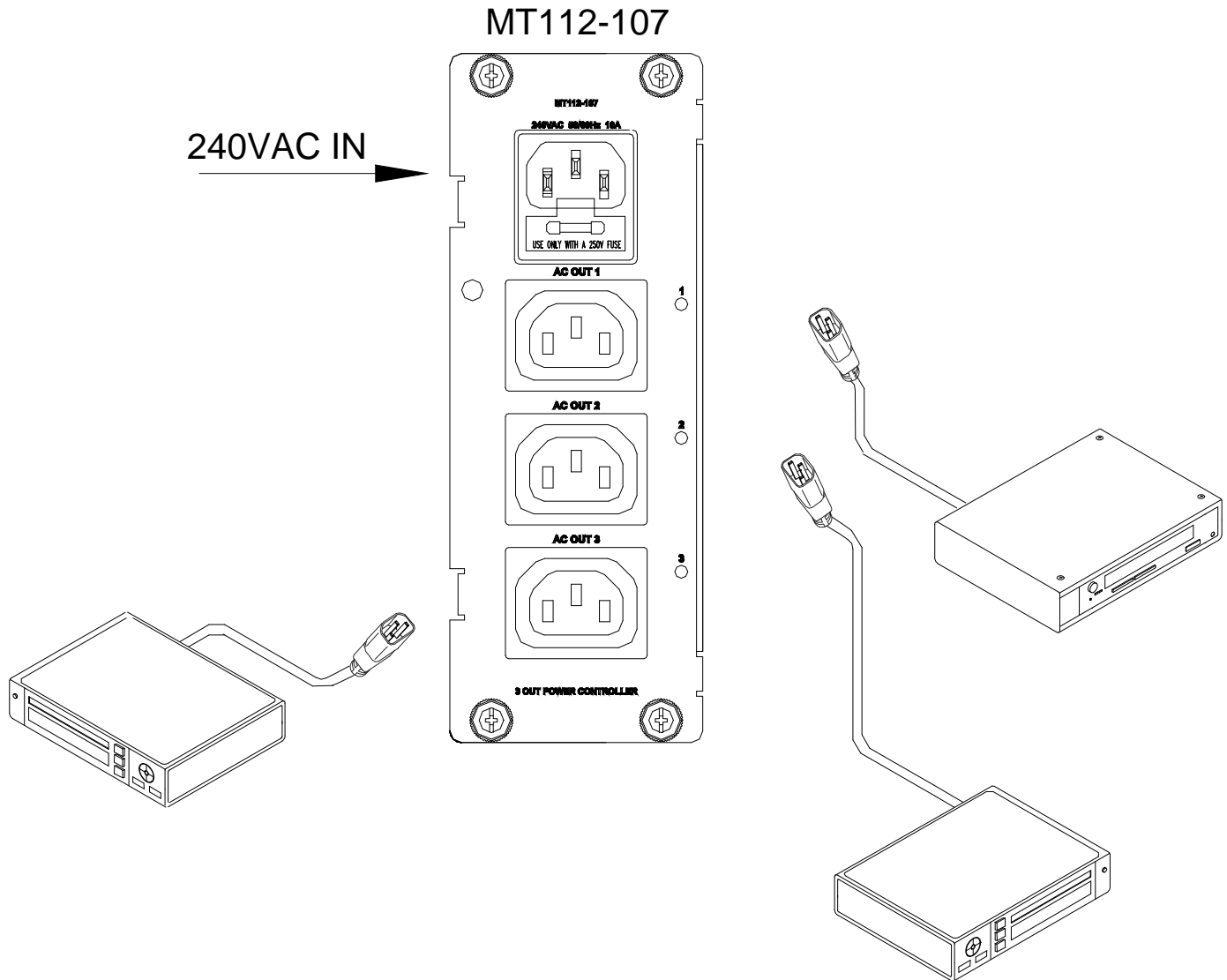


DIAGRAM 2 : TYPICAL SETUP - MT112-108

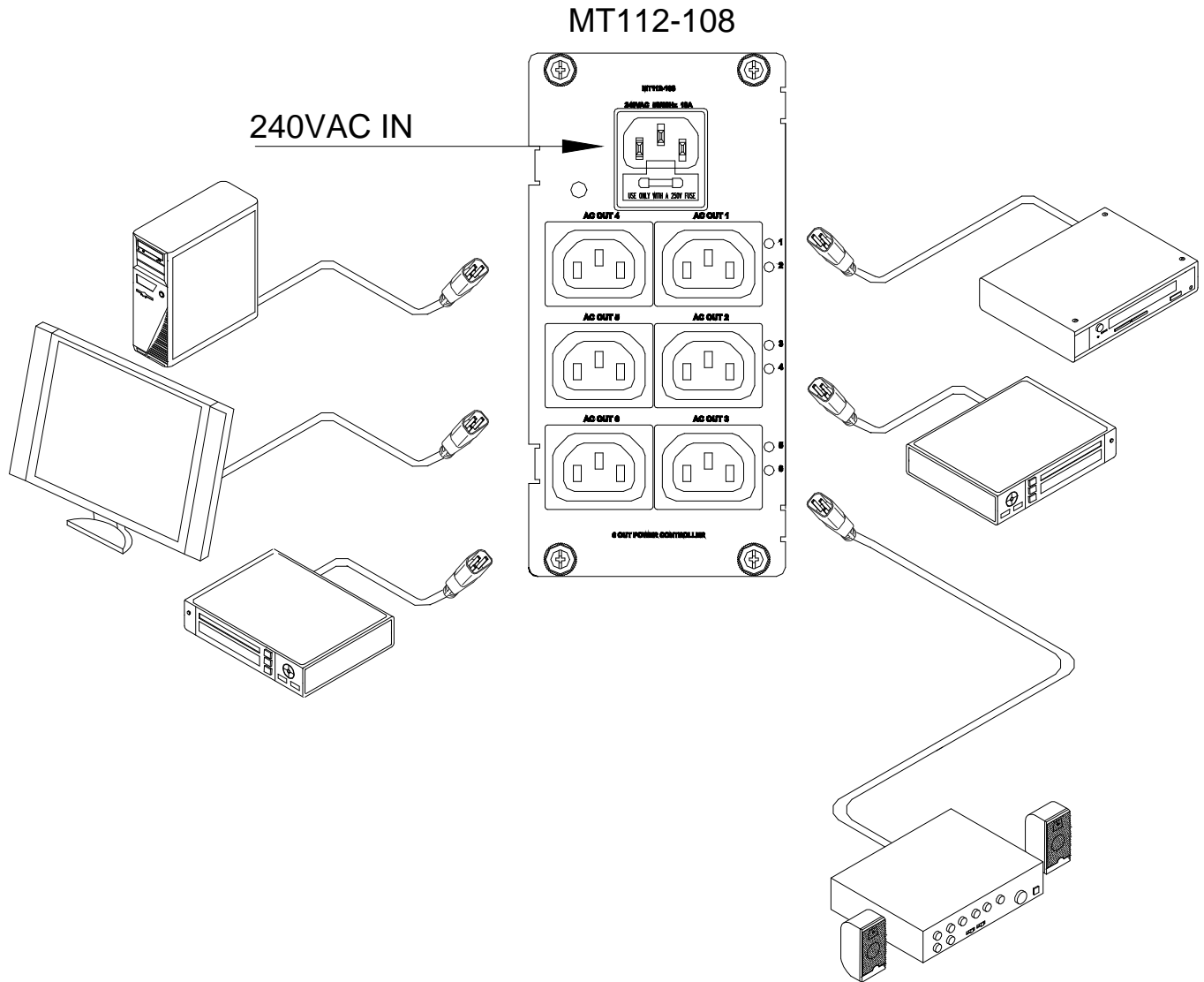


DIAGRAM 3 : INTERNAL VIEW MT112-107

MT112-107 : 1 IN, 3 OUT

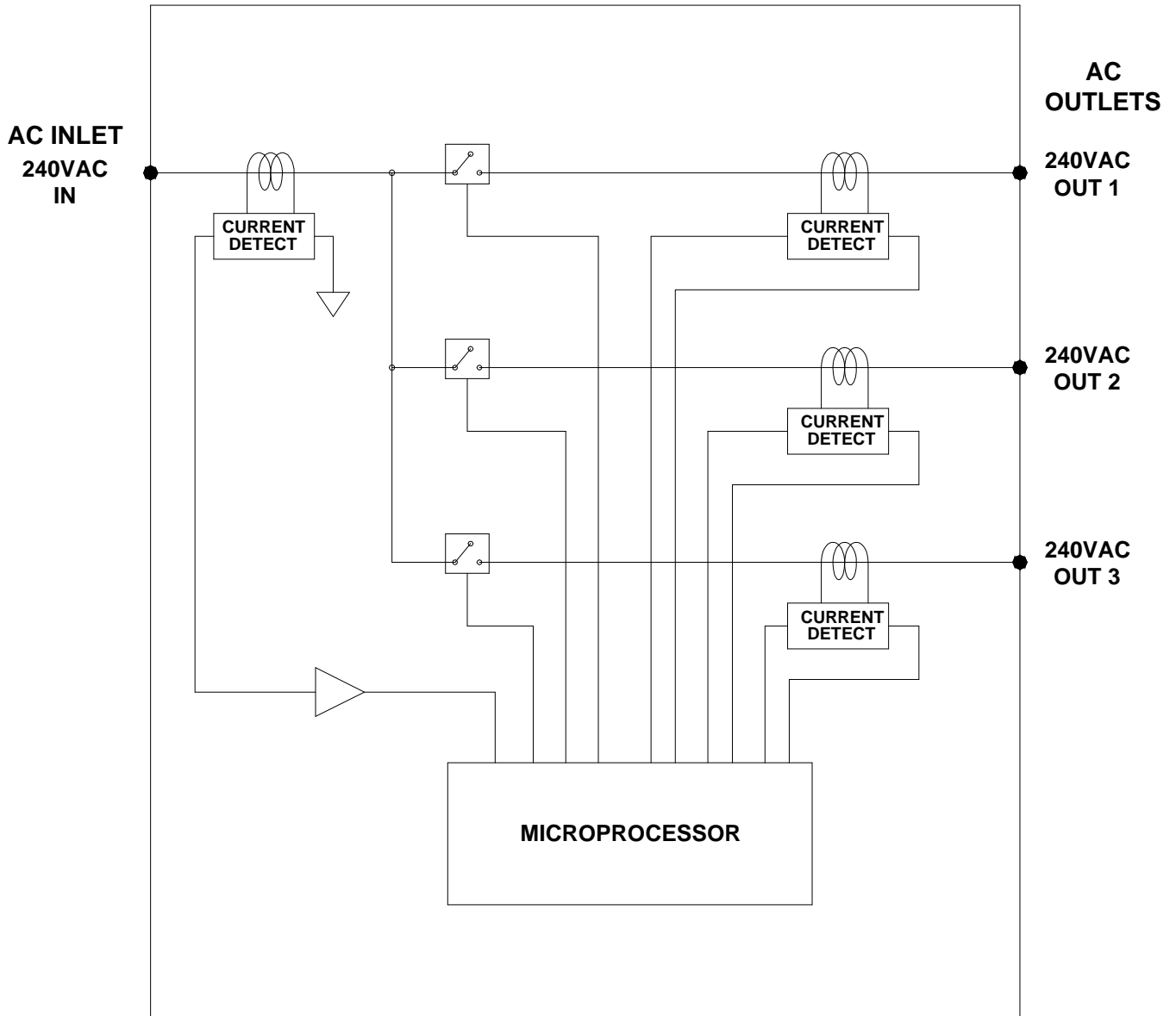
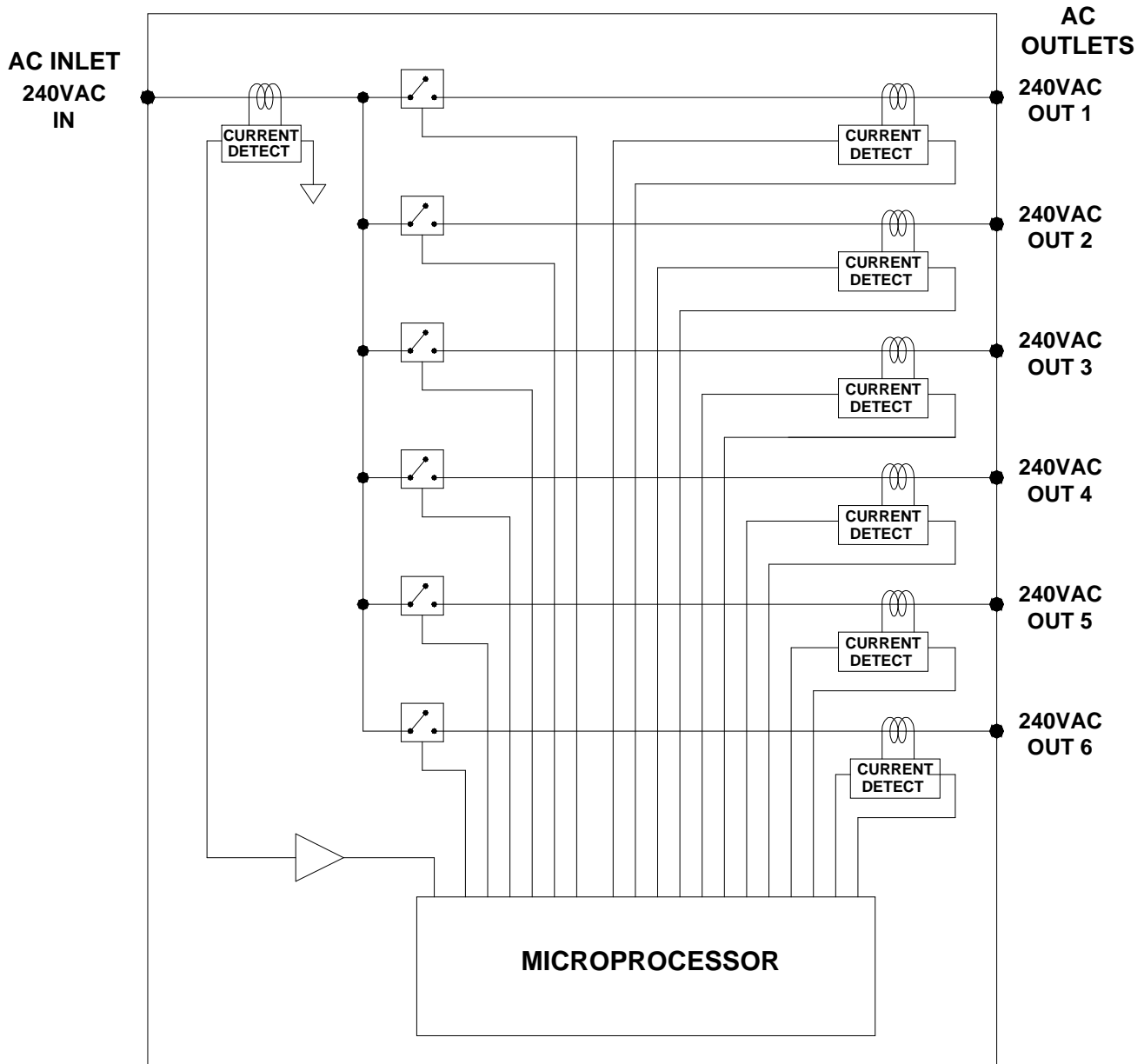


DIAGRAM 4 : INTERNAL VIEW MT112-108

MT112-108 : 1 IN, 6 OUT



INSTALLING YOUR MT112-107/108 6

- Step 1.** Slide the **MT112-107/108** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the **MT112-107/108** card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT112-107/108** card.
- Step 2.** Turn ON enclosure power. If the outputs are enabled, the LED's should be ON and RED.
- Step 3.** Connect AC power to the card input power using the standard power cord provided.
- Step 4.** Starting from the left, identify the slot number where the **MT112-107/108** card is plugged into the Enclosure and note that it is for RS-232 control.

OPERATION 7

7.1 RS-232 CONTROL

The **MT112-107/108** 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 **MT112-107/108**, are in a simple ASCII character format.

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

The cards in a Multi-Tasker™ system are capable of performing various functions, as well as providing feedback to the user or control system. Some commands instruct a card to perform specific actions. Other commands request information about the status of the card. Other commands do both at the same time.

A command that instructs the card to simply perform an action will generate feedback of “[]”. The open and close brackets indicate the card received a valid command. If the command requested information from the card, the feedback generated by the card is the acknowledgement of having received a valid command. Invalid commands generate feedback of “[ERR001]”.

After processing a command, an OK or [ERR001] will be returned as feedback if "F" is included at the end of a command string.

Commands ending 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.

The Card ID is an assigned value. It is equal to the enclosure slot number in which the card is installed. The value can range from 1 to 4 up to 1 to 20 depending on the enclosure.

Card ID 0 (C0) is used for the controller. See the MT100-100 User's Guide for details.

Changing the position of a card will significantly affect the commands recorded on software definitions or third party control systems.

The 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 zero, each command may be used without Ui. Use the command [SETU0], as explained in the MT100-100 User's Guide.

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 **MT112-107/108** card.

Command Format: [VERCnUi]

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

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

Example:

An **MT112-107** card is in slot 4. Send the command [VERC4], and the Multi-Tasker™ Enclosure will return feedback as:

```
[MT112-107 690-0189-005 C04]
```

```
MT112-107 = card type
690-0189-005 = software version
C04 = card ID/slot number
```

2. [C]

This command displays the status of the card.

Command Format: [CnUi]

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

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

Example Feedback for MT112-108:

```
ON SEQUENCE: 123456, T=01 (0.5 Sec)
```

```
OFF SEQUENCE: 654321, T=01 (0.5 Sec)
```

```
OUTPUT LOAD(A) THR(A) SIGNAL
```

```
1:On 1.500 0.500 On
2:On 0.250 0.500 Off
3:Off 0.000 0.500 Off
4:Off 0.000 0.500 Off
5:Off 0.000 0.500 Off
6:Off 0.000 0.500 Off
```

In the above example, Relay 1 is on (1:On), the threshold current is 500mA and the actual load current is 1.5A. At the end of the line is Signal on or off for the load. The signal is considered on if the measured current (1.5A) is greater than its threshold (0.5A). In this case, the Signal is on. See [THR] command for details on threshold setting.

In the above example, relay 2 is on (2:On), but the load is off. The load is considered off because the threshold level is 500mA and the output load is only at 250mA.

3. [CnS]

This command saves the card's settings. This configuration will be restored after the system is reset or powered off then on.

Command Format: [CnS]

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

S = save configuration

Example:

Send the command [C4S] to save the settings for the card in slot 4. The feedback will be in the following format:

```
ON SEQUENCE: 123456, T=01 (0.5 Sec)
```

```
OFF SEQUENCE: 654321, T=01 (0.5 Sec)
```

```
OUTPUT LOAD(A) THR(A) SIGNAL
```

```
1:On 1.500 0.500 On
2:On 0.250 0.500 Off
3:Off 0.000 0.500 Off
4:Off 0.000 0.500 Off
5:Off 0.000 0.500 Off
6:Off 0.000 0.500 Off
```

```
[SAVED C04]
```

Outputs 1 and 2 are enabled and all thresholds are set to 500mA. The information for Signal On/Off and the measured current values are displayed, but are not saved because they are measured values. Additionally, the card also saves the threshold values and sequence information.

FEEDBACK COMMANDS: ?, ?Cn and STA

The next three commands are a function of both the card and the front panel and are only available with Multi-Tasker™ Front Panel systems that have the following firmware:

690-0122-015 = Version 015 or later.
690-0123-004 = Version 004 or later.
690-0124-018 = Version 018 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback that includes the following:

690-0122-015 690-0123-004 690-0124-018

Check the last three digits against the numbers above to determine if the option is available.

4. [?]

This command will return general information about the Multi-Tasker™ and installed cards.

Command Format: [?Ui]

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

Example:

A Multi-Tasker™ with Unit ID 1 has a front panel with part number MT101-101 and contains an MT112-108. Send the command [?U1] and receive the following feedback:

[(MT101-101U1)(MT112-108C04)]

MT101-101U1 = Front Panel MT101-101, ID 1

MT112-108C04 = MT112-108 with card ID 4

5. [?C]

This command will return general information about the card and its status.

Command Format: [?CnUi]

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

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

The **MT112-107** in slot 4 has Input 1 on. The on sequence is 1,2,3 and the off sequence 3,2,1. Send the command [?C4] to receive the feedback status. For example:

[(MT112-107C04)(VR690-0189-005C04)
(ON100C04)(SN123T2C04)(SF321T2C04)
(SI000C04)(TH010000000000C04)
(LD000000000000C04)]

All status feedback is enclosed in brackets, “[]”. Each data field within the status is enclosed in parentheses. The first two characters identify the status type. The last three characters are the card’s ID.

MT112-107 = Model Number
VR690-0189-005 = Firmware version
ON100 = Output ON/OFF status
SN123T2 = ON Sequence
SF321T2 = OFF Sequence
SI100 = Signal Detect
TH010000000000 = Threshold Levels
LD026400000000 = Measured Loads

The on/off status line is read from left to right as outputs one through maximum. A "1" indicates the output is enabled and a "0" indicates the output is disabled or off.

The sequence lines show the order in which outputs are turned on or off. The delay time between switching outputs on or off is 0.5 times the number following the ‘T’. For example, T4 is a two second delay.

The signal detect line shows a “1” for any outputs where the load exceeds the threshold current. In this case, the load on Output 1 exceeds the threshold current.

Each threshold and measured load value is represented as a four digit number in milliamps. The first four digits are for output 1, the next output 2 and so on. The above example shows the threshold for output 1 set to 100mA and the current measured on output 1 equal to 264mA.

6. [STA1]

This command enables automatic feedback from the front panel. The command affects any card with auto-feedback capability, not just the **MT112-107/108**. The default at power on or reset is STA0, off. For more details, see the [?Cn] command definition.

Command Format [STA1] = On

Feedback Prefix Definitions:

ON = Output Enable

SI = Signal/Load Present

Example:

Command = [OFF1C4]

Feedback = (ON011C04)

ON = output enable

011 = 1 off, 2 and 3 on

C04 = card ID

7. [STA0]

This command disables automatic feedback from the card and front panel. The command affects any card with auto-feedback capability, not just the **MT112-107/108**. The default at power on or reset is STA0, off.

Command Format [STA0]

8. [ONn]

This command enables a single output.

The LED for each enabled output is red, unless the current draw is greater than the threshold value. In that case, the LED will be green.

Command Format: [ONmCnUi]

m = Output number (m = 1 to 6)

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

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

Example:

Send [ON2C4] to enable output 2 of card 4. The LED for output 2 should be on and red.

9. [ON]

This command enables all outputs.

The LED for each enabled output is red, unless the current draw is greater than the threshold value. In that case, the LED will be green.

Command Format: [ONCnUi]

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

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

Example:

Send [ONC4] to enable all outputs of card 4. The outputs will be turned on with the delay and sequence defined by the [SON] command.

10. [OFFn]

This command disables a single output.

The LED for each disabled output will be off.

Command Format: [OFFmCnUi]

m = Output number (m = 1 to 6)

Cn = Card ID (n = 1 to max slots)

Ui = Unit ID (i = 0 to 9)

Example:

Send the command [OFF2C6] to disable output 2 of card 6.

11. [OFF]

This command disables all outputs.

The LED for each disabled output will be off.

Command Format: [OFFCnUi]

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

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

Example:

Send the command [OFFC6] to disable all outputs of card 6. The outputs will be turned off with the delay and sequence defined by the [SOFF] command.

12. [SON]

This command displays the turn on sequence.

Command Format: [SONCnUi]

Cn = Card ID number (n = 1 to max slots)

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

Example MT112-108:

The turn on sequence has been set to the order 1,2,3,4,5,6 with a delay of 1 second between each switching. Sending the command [SONC4] will yield the following feedback:

SON123456T2

13. [SON...]

This command sets the sequence and delay time between enabling outputs. It is used by the [ON] command when turning on all outputs.

Command Format: [SON^{^^^}TyyCnUi]

^{^^^} = Sequence (^ = output numbers 1-6)
yy = Delay Time Multiple of 0.5 seconds
(yy = 00-99)
Cn = Card ID number (n = 1 to max slots)
Ui = Unit ID number (i = 0 to 9)

Example:

Sending the command [SON654321T2C4] sets the sequence to turn on the outputs in the order 6, 5, 4, 3, 2 and 1 with a delay time of 1 second between turning on each output.

14. [SOFF]

This command displays the turn off sequence.

Command Format: [SOFFCnUi]

Cn = Card ID number (n = 1 to max slots)
Ui = Unit ID number (i = 0 to 9)

Example:

The turn off sequence has been set to the order 6,5,4,3,2,1 with a delay of 1 second between each switching. Sending the command [SOFFC4] will yield the following feedback:

SOFF654321T2

15. [SOFF...]

This command sets the sequence and delay time between disabling outputs. It is used by the [OFF] command when turning off all outputs.

Command Format: [SOFF^{^^^}TyyCnUi]

^{^^^} = Sequence (^ = output numbers 1-6)
yy = Delay Time Multiple of 0.5 seconds
(yy = 00-99)
Cn = Card ID number (n = 1 to max slots)
Ui = Unit ID number (i = 0 to 9)

Example:

Sending the command [SOFF654321T2C4] sets the turn off sequence to turn off the outputs in the order 6, 5, 4, 3, 2 and 1 with a delay time of 1 second between turning off each output.

16. [THR]

This command is used to display the threshold settings. The threshold level is used to indicate if a load is present on the output. If the load is greater than the threshold, the feedback from the status command [C] will indicate the signal is on.

Command Format: [THRCnUi]

Cn = Card ID (n = # from 1 to max slots)
Ui = Unit ID (i = # from 0 to 9)

Example MT112-107:

Send the command [THRC4] and the system will return feedback similar to the following:

[THR1=0500mAC04][THR2=0500mAC04]
[THR3=0500mAC04]

In this example, all the thresholds are set to 500mA and the card is in slot 4.

17. [THRn=]

This command is used to set the current threshold of one or all outputs. The threshold level is used to indicate if a load is present on the output. If the load is greater than the threshold, the feedback from the status command [C] will indicate the signal is on.

Command Format: [THRx=yCnUi]

x = Output number (x = 1 to 6, * for all)
y = Threshold current in mA (y = 0 to 9999)
Cn = Card ID (n = # from 1 to max slots)
Ui = Unit ID (i = # from 0 to 9)

Example:

There is an **MT112-108** in slot 4. Send the command [THR1=1000C4] to set the current threshold of Input 1 to 1.0 amp.

18. [CLR]

This command performs a reset on the card and forces all settings to factory defaults.

Command Format: [CLRCnUi]

Cn = Card ID number (n = 1 to max slots)

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

Example:

Send the command [CLRC4] to reset the board in slot 4 to its factory defaults. After clearing the card, all outputs will be enabled and all thresholds will be set to zero.

19. [SIGm]

This command displays the load measured on a single output. The value is on amps.

Command Format: [SIGmCnUi]

m = Output Number (m = 1 to 6)

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

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

Example:

There is an **MT112-108** in slot 4. Output 1 is drawing 550mA of current. Send the command [SIG1C4] to read the current. The system will return the following feedback:

[0.550AC08]

If the threshold for output 1 is less than 550mA, then the board status will show that a load is present on the output. Sending the command [C4] will yield feedback similar to the following:

ON SEQUENCE: 123456, T=04 (2 Sec)
OFF SEQUENCE: 123456, T=02 (1 Sec)

OUTPUT LOAD(A) THR(A) SIGNAL

1:On	0.550	0.500	On
2:On	0.000	0.000	Off
3:On	0.000	0.000	Off
4:On	0.000	0.000	Off
5:On	0.000	0.000	Off
6:On	0.000	0.000	Off

20. [SIG]

This command displays the load measured on all outputs and displays the load level in amps.

Command Format: [SIGCnUi]

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

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

Example:

There is an **MT112-108** in slot 4. Output 1 is drawing 500mA, Output 2 is drawing 1A and Output 6 is drawing 2A. Send the command [SIGC4] to read the total current to all outputs. The system will return the following feedback:

[3.500AC04]

21. [TEST]

This command performs a test on the internal memory.

Upon completion, the system will display the following:

MEMORY IC IS GOOD

Otherwise, failures will be indicated.

22. [FBD]

This command turns feedback delay on or off. It is necessary when installing some newer cards in older systems. If the system does not receive all of the feedback from the card, the card may be communicating too fast. This command will slow down the card's communication rate.

Command Format: [FBDmCnUi]

m = Delay (0= no delay, 1= delay 100mS)

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

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

Example:

The command [HELPC4] is sent to the card in slot 4. Some of the HELP file is displayed on the screen, but most is missing. Send the command [FBD1C4] to slow down the rate at which the card sends feedback to the system.

ID COMMANDS: RSI, SIDn, SIDnCi, SID+, RSN

The default Card ID is the same as the card slot number. The next several commands allow the user to change the Card ID to a value other than the slot number. Once the ID is changed, moving the card to another slot will not change the card ID. If a card in slot 4 is set to ID 1, then moved to slot 10, its ID will remain 4. The RSI command forces the installed cards to take their slot number as their ID number, regardless of the slot in which they are installed.

Some cards require more than one slot in the Multi-Tasker™ system. As an example, some matrix switcher cards require 4 slots. If there are 5 of these cards installed, they would be numbered C4, C8, C12, C16 and C20. Changing the Card ID allows the user to define the cards as C1, C2, C3, C4 and C5.

Another use for changing the Card ID is to be able to use multiple systems without having to set each unit to a different Unit ID. All systems may be left as Unit ID 0 for ease of programming. The cards in the first unit may be numbered 1-10 and in the second unit 11-20.

The ID commands work with all Multi-Tasker™ Front Panel systems. However, front panels that have firmware releases prior to the following will not be able to address Card ID's greater than the number of slots in the system:

690-0122-019 = Version 019 or later.

690-0123-005 = Version 005 or later.

690-0124-019 = Version 019 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback which includes the following:

690-0122-015 690-0123-005 690-0124-019

Check the last three digits against the numbers above to determine if the Card ID commands can address all 99 Card ID's.

23. [RSI]

This command resets the card ID's in the system. After sending this command, each card ID in the system will match the slot number of the card. If the card is moved to another slot, its ID number will be the new slot number.

Command Format: [RSI]

Example:

Send the command [RSI] to the system with Unit ID 0. The card in slot 1 will have ID 1, the card in slot 2 will have ID 2 and so on.

24. [SIDn]

This command sets all the cards installed in a Multi-Tasker™ system to the same ID. After sending this command, all cards will have the same ID. Use caution when sending this command to a system with multiple board types.

Command Format: [SIDn]

n = Card ID (n = # from 1 to 99)

Example:

Send the command [SID1] to the system. All the cards in the system now have ID 1. Any commands that are sent to Card ID 1 will be received and executed by each card.

25. [SIDnCi]

This command sets the Card ID of a single card to a number from 1 to 99.

Command Format: [SIDnCi]

n = New card ID (n = # from 1 to 99)

Ci = Slot number (i = # from 1 to max slots)

Example:

Send the command [SID50C10] to set the ID of the card in slot 10 to an ID of 50.

26. [SID+n]

This command sets the Card ID of all the cards in a system to their slot number plus an offset.

Command Format: [SID+n]

n = Offset amount (n = # from 0 to 99)
The maximum Card ID is 99, so subtract the highest slot number from 99 to find the maximum offset. For example, in an 8 slot enclosure, the maximum offset would be 91. The slot number, 8, plus the offset, 91, equals 99.

Example:

There are two, 20 slot enclosures to be connected together during normal operation. The first unit will use the Card ID defaults which are equal to their slot numbers. The second unit will have the same Unit ID, but will have the card ID's offset by 20.

Connect the computer to the second unit only and send the command [SID+20] to set the ID of all the cards in the enclosure to their slot number plus 20. Reconnect both units to the computer.

The cards in the first unit will be referenced as Card ID's 1-20 and the cards in the second unit will be referenced by Card ID's 21-40.

27. [RSN]

This command reads the slot number of the card with a specified ID number, and returns the value to the system to be displayed in the terminal window. If more than one card has the same ID, each slot number will be displayed.

Command Format: [RSNCi]

Ci = Card ID (i = # from 1 to 99)

Example:

The card in slot 4 takes up four slots in the enclosure. Its ID was set to 1 since it is the first card installed in the system, reading from left to right. Send the command [RSNC1] to find the slot number of this card. The system responds with the following feedback:

[4]

28. [HELP]

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

Command Format: [HELPCnUi]

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

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

Example:

In order to display the RS-232 commands available for the **MT112-107/108** card in slot 2, send the command [HELPC2]. The commands along with a brief description will be displayed in the Terminal Window.

GROUP COMMANDS

The next few commands are group commands. The use of groups allows several boards, with the same functions, to be controlled simultaneously with a single command. These commands apply to all cards, not only the **MT112-107/108**.

29. [WR]

This command groups multiple cards in the enclosure allowing all the group members to be controlled simultaneously with the same command. Each unit may define a maximum of eight groups.

In Multi-Tasker™ systems with audio and video cards, boards are typically grouped as follows:

Group 1 = Video Cards

Group 2 = Audio Cards

Group 3 = Video and Audio Cards

Command Format: [WRCn₁Cn₂...GkUi]

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

Gk = Group number (k = # from 1-8)

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

Example:

Group cards 2, 4, and 6 as group 5 of Unit ID 1 by sending the command [WRC2C4C6G5U1]. After executing this command, cards 2, 4 and 6 will be grouped together as group 5 of Unit ID 1. The system will return the following feedback:

[G5=C2C4C6]

Now, when a command is sent to G5, each board in G5 will execute the same command.

30. [RD]

This command reads and then displays the members in each group.

Command Format: [RDGkUi]

Gk = Group number (k = # from 1-8)

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

Example:

The cards in slots 2, 4 and 6 are part of group 5. Read the member data for group 5, by sending the command [RDG5]. The system will return feedback as follows:

[G5=C2C4C6]

The feedback shows G5 (Group 5) and then the cards that make up Group 5. In this case, Group 1 includes C2, C4 and C6.

31. [CLM]

This command removes the members in a group and leaves the group empty.

Command Format: [CLMGkUi]

Gk = Group number (k = # from 1-8)

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

Example:

Group 5 of Unit ID 1 contains the cards in slots 2, 4 and 6. Read the member data for group 5 of Unit ID 1. Send the command [RDG5U1] and receive the following feedback:

[G5=C2C4C6]

Now, clear group 5 by sending the command [CLMG5U1]. Reread the member data as above and note the following feedback:

[G5=0]

7.3 SUMMARY OF COMMANDS

Card Commands

- 1) [VER] Receives software version
- 2) [Ci] Receives status of the card
- 3) [CiS] Saves card settings
- 4) [?] Show system feedback
- 5) [?C] Show board feedback/status
- 6) [STA1] Enable auto feedback
- 7) [STA0] Disable auto feedback
- 8) [ONn] Turns on a single output
- 9) [ON] Turn on all outputs
- 10) [OFFn] Turn off a single output
- 11) [OFF] Turns off all outputs
- 12) [SON] Return on sequence
- 13) [SON..] Set turn on sequence
- 14) [SOFF] Return off sequence
- 15) [SOFF..] Set turn off sequence
- 16) [THR] Display current thresholds
- 17) [THRn=] Set current thresholds
- 18) [CLR] Reset card to default values
- 19) [SIGm] Display single load current
- 20) [SIG] Display total load current
- 21) [TEST] Test internal memory IC
- 22) [FBD] Set feedback delay
- 23) [RSI] Reset Card ID's
- 24) [SIDn] Set all Card ID's
- 25) [SIDnCi] Set one Card ID
- 26) [SID+n] Set Card ID offset
- 27) [RSN] Read Card slot number
- 28) [HELP] Display available commands

Group Commands

- 29) [WR] Groups multiple cards
- 30) [RD] Displays group members
- 31) [CLM] Delete group

7.4 MENU MODE

MENU MODE commands are RS-232 commands that allow virtually the same functionality as programming commands. Unlike the programming commands in the previous sections, 7.2 and 7.3, MENU commands prompt the user to select from a list of available commands. The system then responds based upon selections made by the user.

MENU commands may be issued in response to prompts from within MTSetup™ or other RS-232 communication software.

The MENU driven commands are only available with Multi-Tasker™ Front Panel systems that have the following firmware:

690-0122-015 = Version 015 or later.
 690-0123-004 = Version 004 or later.
 690-0124-015 = Version 018 or later.

NOTE: In MTSetup™, send the command [VER] from the Terminal Window. The system will respond with feedback that includes following:

690-0122-015 690-0123-004 690-0124-018

Check the last three digits against the numbers above to determine if the MENU MODE option is available.

7.4.1 MENU COMMAND DEFINITIONS

Refer to section 7.2 for details on card functions and examples. Following is a cross-reference of menu mode sections versus programming commands.

MENU	COMMAND
Control	
ON/OFF	[ON], [OFF]
SAVE	[CiS]
CLEAR	[CLR]
Setup	
P/ON SEQ	[SON], [SON...]
P/OFF SEQ	[SOFF], [SOFF...]
RD LOAD LEVEL	[THR], [SIG]
SET LOAD DETECT	[THR]
Status	
	[VER], [C]
Help	
	[HELP]

7.4.2 USING MENU MODE

SUGGESTION: Before using the menu mode, it is best to disable the automatic feedback feature. The values and current settings will be displayed in the menu mode, but the automatic feature will display after each setting change making the menus difficult to read.

1. The system must be connected to a computer running MTSetup™ or other RS-232 control software for Menu Mode.
2. Insert the card into an empty slot and push in all the way for a secure fit.
3. Reset the system or power the system off and then on.
4. In MTSetup™, click the cursor in the Terminal Window and press ENTER.
5. The system will interrogate the enclosure and return a list of cards installed and their slot locations.

Example: 08: **MT112-107**

NOTE: Only cards supporting the menu feature will be displayed.

6. Find the two digit number representing the card ID whose setup requires changing. They will be the first two characters in the line.
7. Enter the two digit number associated with the card, and a menu with options available for that card will appear on the screen. In the example above, press "08".
8. After selecting the **MT112-107** as described above, the system will prompt for selections specific to that card.
9. Read each menu carefully, and continue selecting keys as prompted for further functions.

WARNING: Do NOT enter any characters except those relating to the menus. Pressing ENTER after "08" will force the system back to the original prompt.

7.4.3 MENU TYPES

1. MAIN MENU

The first menu displayed after selecting the card is the Main Menu. This menu provides access to the card's main functions. Press the key representing the menu item to access. A sub menu will appear next.

2. SUB MENU

Each sub menu will display either another menu (sub menu) or a list of available options or settings. Press the key corresponding to the menu choice to change a setting or select the next menu.

NOTE: Pressing the ESCAPE (ESC) key in most menus will take you up to the previous menu.

7.4.4 MT112-107/108 MENUS

Following are the menus available to the **MT112-107/108**. First is the Main Menu only. The second listing is an expansion of the menu items available. The only difference between the **MT112-107** and **MT112-108** menus are the number of outputs.

The expanded menu contains values in parentheses that indicate the current setting or value of a parameter. These numbers will vary depending on the card settings.

In the example that follows, additional comments may be provided for clarification but are not part of the menu.

Some menu settings act as toggle features. For example, in the CONTROL menu, pressing '1' turns output 1 ON if it is off and OFF if it is on. Pressing 1 repeatedly toggles the output off/on.

System prompts requiring specific values like threshold level are not shown. See the examples following the menus for details.

MT112-107/108 MAIN MENU

- 1: CONTROL
- 2: SETUP
- 3: STATUS
- 4: HELP
- ESC: GO BACK

MT112-107/108 EXPANDED MENUS

1: CONTROL

- 1: ON/OFF (Turn Outputs On/Off)
TOGGLE ON/OFF: PRESS A KEY

0: All OFF

1: Out1 (ON)

2: Out2 (ON)

3: Out3 (ON)

4: Out4 (ON)

5: Out5 (ON)

6: Out6 (ON)

9: All ON

ESC: GO BACK; S:STATUS

KEY=

2: SAVE (Save Card Settings)

ON SEQUENCE: 123456, T=04 (2 Sec)

OFF SEQUENCE: 123456, T=02 (1 Sec)

OUTPUT LOAD(A) THR(A) SIGNAL

1:On 0.000 0.000 Off

2:On 0.000 0.000 Off

3:On 0.000 0.000 Off

4:On 0.000 0.000 Off

5:On 0.000 0.000 Off

6:On 0.000 0.000 Off

SAVE THIS SETTING?

1: YES

2: NO

KEY=

3: CLEAR (Set to Defaults)

RESET CARD TO FACTORY DEFAULT:

- * All Outputs: Turned On
- * Load Detect (threshold): Set to 0
- * Power On & Off Sequence: Set to 123456
- * Delay Time: Set to 2 (1 sec)

1: YES
2: NO

KEY=

2: SETUP

1: POWER ON SEQUENCE

SET POWER ON SEQ & DELAY TIME

1: ON SEQUENCE: 123456
2: DELAY TIME : 02 (1 Sec)

ESC: ACCEPT & GO BACK

KEY =

2: POWER OFF SEQUENCE

SET POWER OFF SEQ & DELAY TIME

1: OFF SEQUENCE: 123456
2: DELAY TIME : 02 (1 Sec)

ESC: ACCEPT & GO BACK

KEY =

3: READ LOAD LEVEL

READ LOAD LEVEL

LOAD 1 = 0.000 A
LOAD 2 = 0.000 A
LOAD 3 = 0.000 A
LOAD 4 = 0.000 A
LOAD 5 = 0.000 A
LOAD 6 = 0.000 A

ESC: GO BACK; S:STATUS

KEY =

4: SET LOAD DETECT

SET LOAD DETECT (THRESHOLD)

1: THRESHOLD 1 (2000mA)
2: THRESHOLD 2 (0000mA)
3: THRESHOLD 3 (1000mA)
4: THRESHOLD 4 (0000mA)
5: THRESHOLD 5 (0000mA)
6: THRESHOLD 6 (0000mA)

ESC: ACCEPT & GO BACK

KEY =

After selecting 1 through 6 above, the system will prompt for a value in mA. Press ESC after entering a value and the menu will be redisplayed with the new value.

3: STATUS

Equivalent to the [VER] and [C] commands.
Returns the card status.

4: HELP

Equivalent to the [HELP] command.
Displays a list of commands available for the MT112-107/108 along with a brief description.

ESC

Returns to the parent menu.

7.4.5 MENU MODE EXAMPLES

All MENU MODE examples assume an **MT112-107/108** is installed in slot 4. Start by clicking the mouse in the Terminal window. Press ENTER and a list of available cards will be displayed.

NOTE: When entering numeric values (not selecting menu items) the system may echo each character as it is typed. For example, entering a delay time of 03 may appear as 0033 on the screen. This will vary depending on the communication software being used.

1. Enable an Output

Follow the keystrokes below to turn ON Output #3. Assume Output #3 is currently OFF.

Enter List available cards
04 Select MT112-108 in slot 4
1 Select CONTROL Menu
1 Select ON/OFF Menu
3 Toggle Output #3 from OFF to ON.
S Display the new status. The new setting for Output #3 will be displayed in parentheses.

NOTE: Repeatedly pressing key 3 will toggle output 3 on and off.

ESC Return to the CONTROL Menu
ESC Return to the MAIN Menu

2. Set the Power ON Sequence

Starting from the MAIN Menu, set the power ON sequence to 1-2-3-4-5-6 and the delay time to 3 seconds between each output. Follow the keystrokes below.

2 Select SETUP Menu
1 Select Power ON Sequence
1 Set ON Sequence
123456 Enter 123456
ESC Accept this setting and redisplay the menu. The new sequence will be displayed.
2 Select Delay Time
06 Enter 06 (6 x 0.5 = 3 seconds)
ESC Accept the new value and redisplay menu. The new delay time will be displayed.
ESC Return to SETUP menu
ESC Return to the MAIN Menu

3. Set Load Detect Level

Starting from the MAIN Menu, set load detect for all outputs to 1A. Follow the keystrokes below.

2 Select SETUP Menu
4 Select Set Load Detect
1 Select Threshold 1
1000 Enter 1000
ESC Accept the new value and redisplay the menu with the new values.
2 Select Threshold 2
1000 Enter 1000
ESC Accept the new value and redisplay.
... Repeat for remaining outputs.
ESC Return to SETUP menu
ESC Return to the MAIN Menu

4. Display Card Status

Starting from the Main Menu, follow the keystrokes below.

3 Displays card status
The status will be displayed.

NOTE: The Main Menu will automatically be redisplayed after the status is displayed.

7.5 INDICATORS and WARNINGS

The **MT112-107/108** is capable of a maximum current output of 9.5A and has built-in protection in the case of over current. Each output has its own LED indicator. The LED status indicators and Shut Down control are as follows:

1. If the LED is off, the output is off or disabled.
2. If the LED is red, the output is on, but is drawing less current than the threshold current for that output.
3. If the LED is green, the output is on and drawing more than the threshold current.

4. If the LED is flashing red, the total output current exceeds 8.5A. This is a warning that maximum load capacity has been reached. The card will provide feedback similar to the following:

ALARM C4

In this example, C4 refers to the card in slot number 4.

5. The SHUT DOWN procedure begins when the total current draw exceeds 9.5A for more than 3 seconds. The card will turn off the highest numbered output first. If the load still exceeds 9.5A after 3 seconds, the next output will be turned off. This process repeats until the current draw is below 9.5A or all outputs are off. Feedback similar to the following will be sent to the RS-232 bus:

OUTPUT6:OFF C4

OUTPUT5:OFF C4

NO ALARM C4

The ATTENTION message is sent when over current is sensed. After three seconds, output 6 is shut down. After three more seconds, output 5 is shut down. In this case, the current draw is now within limits and the "NO ALARM" message is sent.

Cause 3: Outputs are not enabled.

Solution: Use MTSetup to enable the outputs. If the outputs are enabled and the LED's are still not lit, see Cause 4.

Cause 4: 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's light, 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's are 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 another 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 NO OUTPUT POWER

Cause 1: The source has a problem.

Solution: Check the source and make sure that there is AC voltage present and that the power cable is securely installed in the input socket. If the source is working and there is still no power, see Cause 2.

Cause 2: The card output is not selected.

Solution: Turn ON the card outputs. See RS-232 accessible commands in section 7. If there is still no power, see Cause 3.

Cause 3: Relays are not closing.

Solution: Use the RS-232 commands, [ON] and [OFF], in section 7 to repeatedly turn each output off and then on. There should be an audible "click" each time a relay is opened or closed. If the relays are working, see Cause 4.

TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT112-107/108**; however, we would like to offer suggestions for the following:

8.1 LED'S DO NOT ILLUMINATE

Cause 1: Card cage is not plugged in.

Solution: Plug card cage in. If the LED's light, the problem is solved. If the LED's are 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's are still not lit, see Cause 3.

Cause 4: There is excessive current draw.

Solution: Remove all power cables attached to the **MT112-107/108** Output ports. If the LED's turn ON, one of the devices may be bad or drawing too much current.

Plug in one at a time to find the problem device. If all devices are operating normally, call ALTINEX at (714) 990-2300.

ALTINEX POLICY

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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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