

**Multi
Tasker™**

MANUAL PART NUMBER: 400-0356-002

MT112-100

**24 I/O PORTS, CONTACT CLOSURE/LED
DRIVE CONTROL CARD
FOR MULTI-TASKER™
USER'S GUIDE**

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PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT112-100**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT112-100** and to prevent fire and shock hazard.

1.1 GENERAL

- Qualified ALTINEX service personnel, or their authorized representatives must perform all service on the **MT112-100**.
- To prevent fire or shock, do not expose this unit to rain or moisture. Do not place the **MT112-100** in direct sunlight, near heaters or heat radiating appliances, or near any liquid.
- Handle the **MT112-100** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT112-100**.
- Insert the card carefully into the slots of the MultiTasker™ 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 paint thinner or acetone or nail polish remover.

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 MT112-100 2

MT112-100

Universal IO Control Card

The **MT112-100** has 24 Input/Output ports. These ports are jumper configurable and each may be configured as either an input or an output port. As outputs, these IO ports may be used to control external controls and devices. As inputs, these ports can trigger events and control other cards in the Multi-Tasker™ enclosure.

As an Input port, an external contact closure to ground activates the port. A subroutine may be used to execute any number of desired commands. Each port may be assigned one subroutine to be performed when a low to high transition occurs and another when a high to low transition occurs.

As an Output, the port generates a TTL level, 0 to 5 volts, output with a 24mA drive capacity. These outputs may be used to drive external LED's or other circuitry.

The I/O ports may also be configured to work in pairs. The first member of the pair is used as an input to sense an external key or switch. The second member of the pair controls an external LED. Special control commands are available which allow subroutines to be assigned to actions when the key is pressed. Additionally, different subroutines may be assigned to perform different tasks depending on whether or not the LED is on or off when the key is pressed.

TECHNICAL SPECIFICATIONS 3

FEATURES/DESCRIPTION	MT112-100
GENERAL	
Control Ports	
Connectors	(6) 5-pin Terminal Blocks

Table 1. **MT112-100** General

MECHANICAL	MT112-100
Basic Enclosure Slots Required	One
Weight	1.0 lb (0.45 kg)
Connector Panel	Black
T° Operating	10°C-55°C
T° Maximum storage	0 to 75°C
Humidity	90% non-condensing
MTBF (calc.)	40,000 hrs

Table 2. **MT112-100** Mechanical

ELECTRICAL	MT112-100
I/O Port	
Type	Optocoupler Isolated
Voltage	TTL
Current	24mA

Table 3. **MT112-100** Electrical

APPLICATION DIAGRAM

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DIAGRAM 1: TYPICAL CONFIGURATION

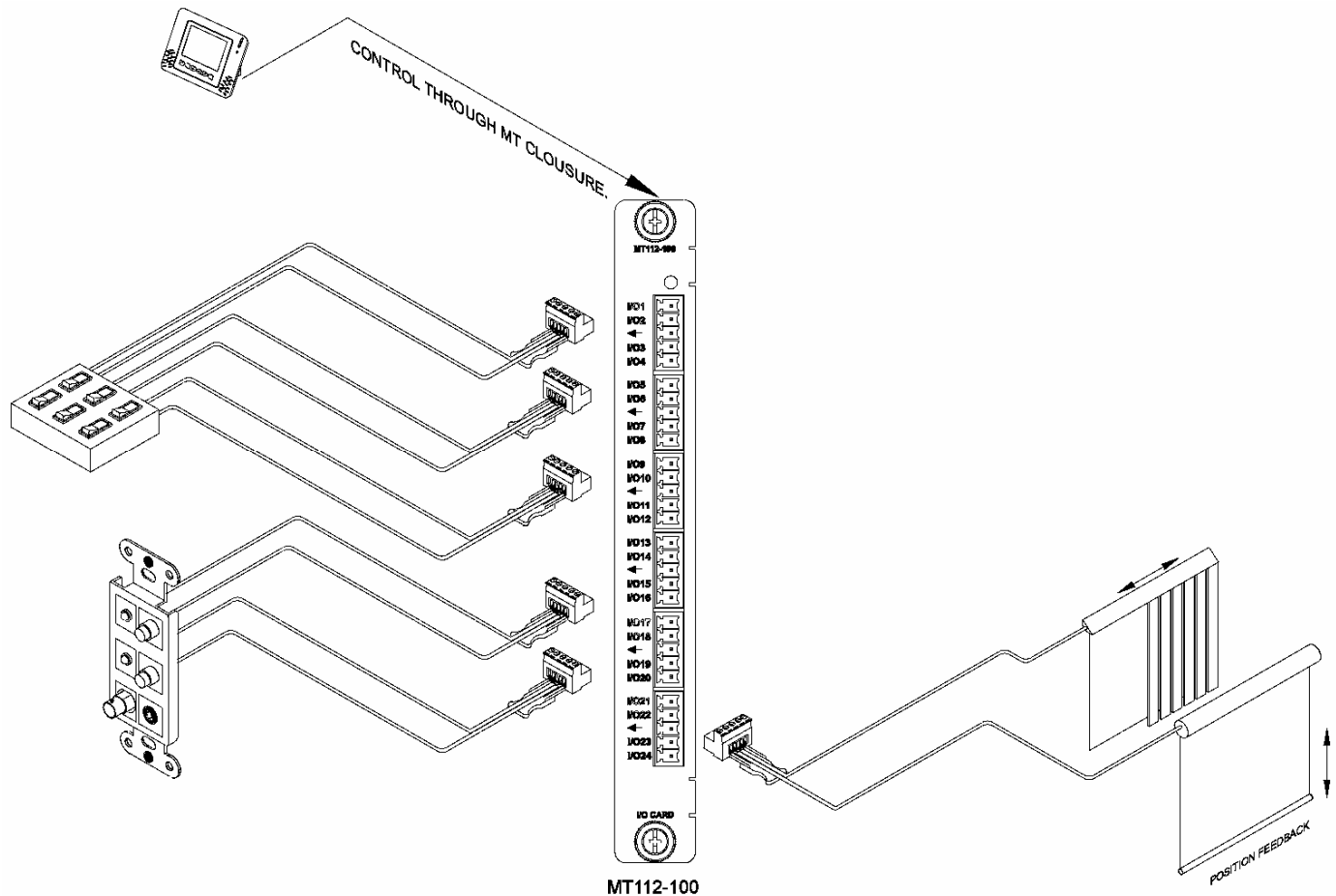


DIAGRAM 2: JUMPER SETTINGS

MT112-100 Input/Output Port Jumpers

Place the jumper across the two pins indicating the desired function, either Input or Output.

The diagram below shows the jumpers in the Output position. Each IO port is an individual port and may be set to Input or Output regardless of the other ports.

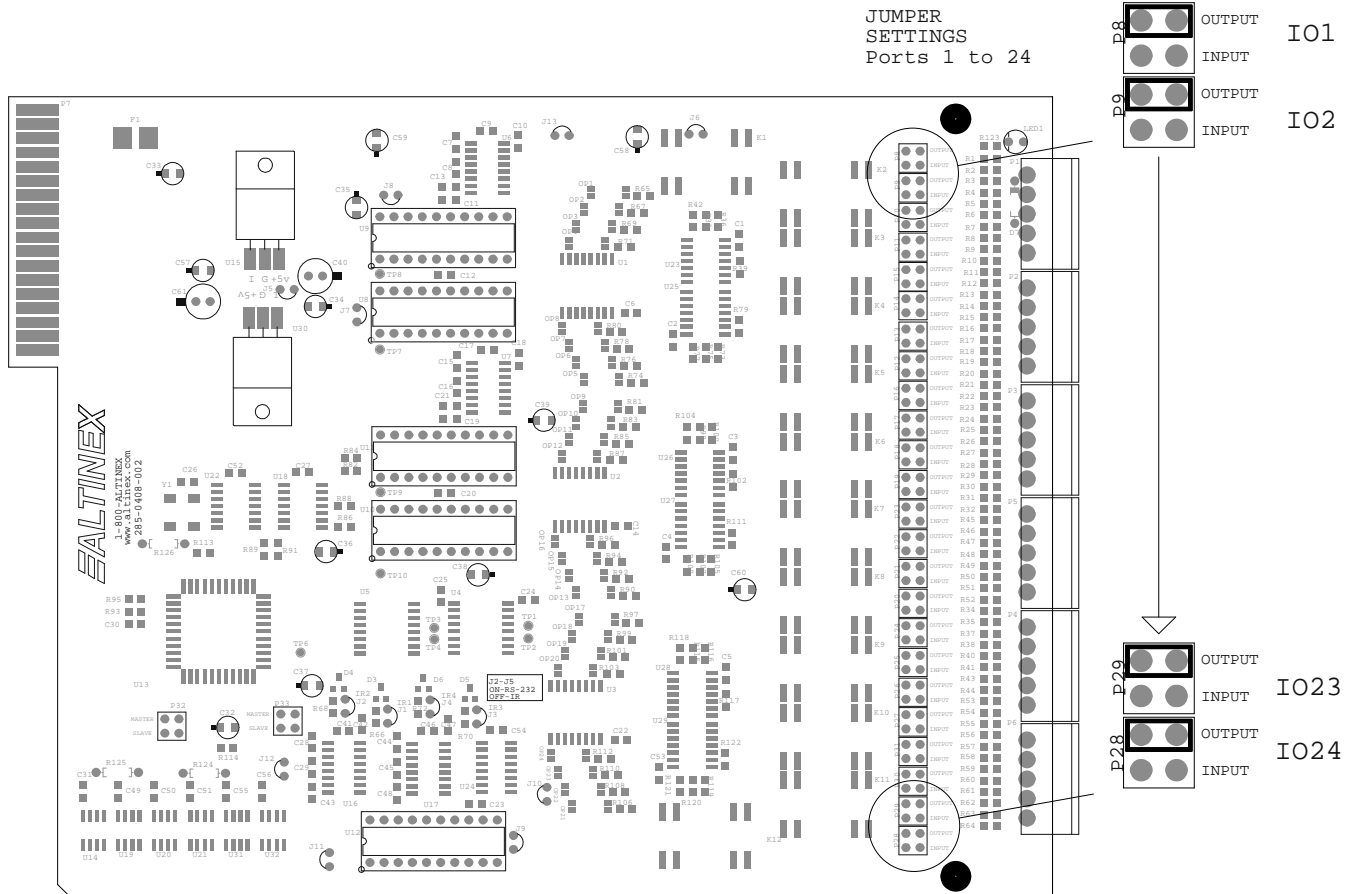
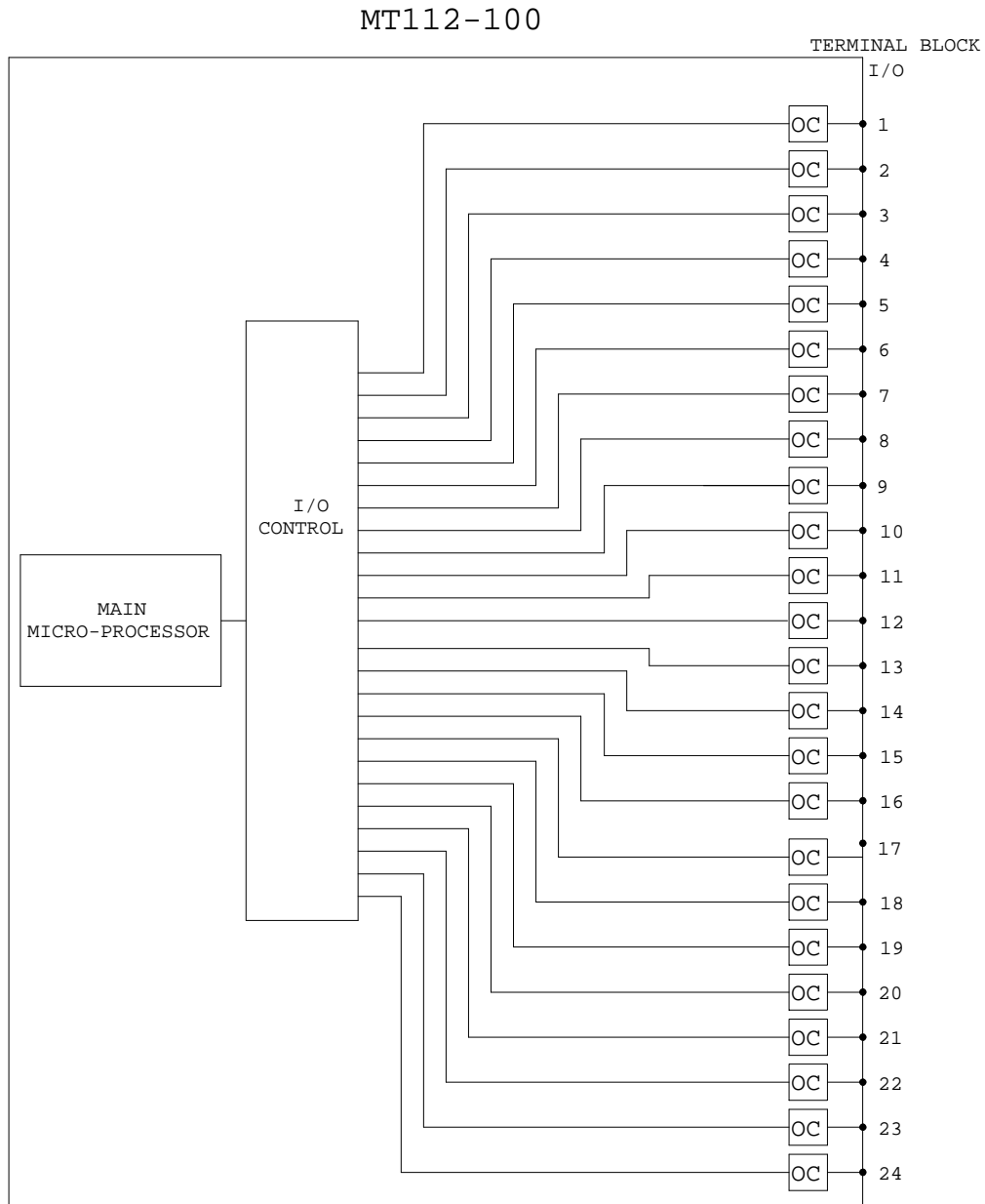


DIAGRAM 3: INTERNAL VIEW



INSTALLING YOUR MT112-100 6

Step 1. Determine how each port will be used. Either as an Input or as an Output. Set the jumpers accordingly.

See DIAGRAM 2 for details.

Step 2. Turn off power to the Multi-Tasker™ system.

WARNING: Installing or removing the MT112-100 while power is on may result in the loss of all stored memory subroutines.

Step 3. Slide the **MT112-100** into an available slot in the MultiTasker™ Basic Enclosure in order to connect to the bus. Make sure that the **MT112-100** card fits into place. Secure the card to the MultiTasker™ by tightening the retainer screws located on the top and bottom of the **MT112-100** card.

Step 4. Turn on power to the Multi-Tasker™ system.

Step 5. Connect control cables as required to the input/output connector of the **MT112-100**.

Step 6. Starting from the left, identify the slot number where the **MT112-100** card is plugged into the Enclosure and note that it is for RS-232 control.

OPERATION 7

7.1 RS-232 CONTROL

When used in the MultiTasker™ Enclosure, the **MT112-100** 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 **MT112-100** 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.

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 detailed information regarding Function, see each command description.

The Card ID is a unique identifier. It is equal to the enclosure slot number, or it may be an assigned value. As the slot number, the value can range from 1 to 4 up to 1 to 20 depending on the enclosure. If the value is assigned, the ID may be a maximum of 99. Card ID 0 (C0) is used for the controller and cannot be reassigned.

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 0, then each command can be used without Ui. Use command [SETU0] to set Unit ID 0. See the MT100-100 User's Guide for more information.

Example:

[VERC3]: for unit ID zero
[VERC3Ui]: for unit ID other than zero
[VERC3]: equivalent to [VERC3U0]

1. [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:

There is an **MT112-100** card in slot #4. All I/O ports are ON. Send the command [C4], and the system will return the following feedback:

01-08: 11111111
09-16: 11111111
17-24: 11111111

The feedback provides the current state of the **MT112-100**. The IO Status shows all 1's, or ON.

2. [CLR]

This command performs a reset of the card and restores settings to the factory defaults. The subroutines stored in memory are not affected by this command. In order to clear the subroutine memory, see the [CLRS] command.

Command Format: [CLRCnUi]

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

Example:

Send the command [CLRC4] to reset the card in slot #4 to factory defaults. After sending the command the feedback will be as follows:

[PLEASE WAIT]

Upon completion, the card will return the following feedback:

[FACTORY RESET COMPLETED]

After the reset, the status [C4] will be as follows:

01-08: 11111111
09-16: 11111111
17-24: 11111111

3. [TEST]

This command performs a test of the memory IC's on the **MT112-100**.

Command Format: [TESTCnUi]

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

Example:

Perform a test of the memory on the **MT112-100** in slot #2. Send the command [TESTC2] and observe the following feedback:

MEMORY IC TEST RESULTS

U14 OK
U19 OK
U20 OK
U21 OK
U31 OK
U32 OK

4. [?]

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

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 MT103-122, MT103-123 and MT112-100. Send the command [?U1] and receive the following feedback:

[MT112-100 690-0185-003 C04]

MT112-100 = model number
690-0185-003 = firmware version
C04 = card ID

9. [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.

CARD ID COMMANDS

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.

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:

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.

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.

10. [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.

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.

11. [SIDn]

This command sets all the cards installed in the Multi-Tasker™ system to the same Card ID. After sending this command, all cards will be addressed with 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.

12. [SIDnCi]

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

Command Format: [SIDnCi]

n = 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.

13. [SID+n]

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

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.

14. [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]

15. [WAIT]

This command causes the control to delay processing commands for a defined interval.

Command Format: [WAITmCnUi]

m = Multiples of 0.1sec (m = 01 to 99)

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

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

Example:

Many commands are begin sent to the card in slot #4. Delay 0.3 seconds after issuing several commands, and then continue with issuing more commands. Send the command [WAIT03C4].

16. [RDIO]

This command reads and displays the status of the I/O ports. Each port status is a "1" or a "0". The port displayed on the left is Port 1 and Port 24 is on the right.

0 = Port is OFF

1 = Port is ON

Command Format: [RDIOkCnUi]

k = I/O port number (1 to 24, or * for all)

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

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

Example 1:

There is an **MT112-100** in slot #2. I/O port number "4" is ON. Send the command [RDIO4C2] and the system will return the following feedback:

1

A "1" indicates the control is on. A "0" would indicate the control was off.

Example 2:

There is an **MT112-100** in slot #3. I/O Controls 1 and 2 are off while 3-24 are on. Send the command [RDIO*C3] and receive the following feedback:

001111111111111111111111

The ports are displayed left to right. The left most digit represents Port 1 and the rightmost represents Port 24. The first two 0's indicate Ports 1 and 2 are off. The remaining 1's indicate Ports 3-24 are on.

17. [WRIO]

This command writes to a single I/O port or all the I/O ports and sets the output high or low. All ports must be set to the same state using this command.

Command Format: [WRIOk=xCnUi]

- k = Port Number (1 to 24, * for all)
- x = I/O state to set port
 - 0 = Set I/O port low (GND)
 - 1 = Set I/O port high (+5V@24ma)
- Cn = Card ID (n = # from 1 to max slots)
- Ui = Unit ID (i = from 0 to 9)

Example 1:

Set I/O #1 on for card in slot #1 by sending the command [WRIO1=1C1].

Example 2:

Set all I/Os off for the card in slot #1 by sending the command [WRIO * =0C1].

18. [WRI]

This command assigns a subroutine to perform when there is a transition on an I/O port.

Command Format: [WRIx,y=SUBkCnUi]

- x = I/O Port (x = # from 1 to 24)
- y = Port Transition (y= 0 or y=1)
 - 0 = Low to High transition
 - 1 = High to Low transition
- k = Subroutine (k = # from 1 to 180)
- Cn = Card ID (n = # from 1 to max slots)
- Ui = Unit ID (i = from 0 to 9)

Example:

An **MT112-100** is in slot #3. Send the command [WRI2,1=SUB9C3] to assign subroutine 9 to be performed when I/O Port #2 changes from a High to a Low.

19. [RDIS]

This command displays the subroutine associated with an IO port.

Command Format: [RDISxCnUi]

- x = I/O Port (x = # from 1 to 24)
- Cn = Card ID (n = # from 1 to max slots)
- Ui = Unit ID (i = from 0 to 9)

Example:

An **MT112-100** is in slot #3. Send the command [RDIS2C3] and receive the following feedback:

Port02: Sub008, Sub009.

Port 02 is the port queried. Sub008 is the subroutine performed when there is a LOW to HIGH transition and Sub009 is performed when there is a HIGH to LOW transition on port 2.

20. [RDIS*]

This command displays the subroutines associated with all the IO ports.

Command Format: [RDIS*CnUi]

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

Example:

An MT112-100 located in slot #3. Send the command [RDIS*C3] and receive feedback similar to the following:

Port01: Sub000, Sub001.

Port02: Sub008, Sub009.

...

Port24: Sub001, Sub020.

21. [CLRl]

This command clears the subroutines assigned to an IO port.

Command Format: [CLRlxCnUi]

x = I/O Port (x = # from 1 to 24)

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

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

Example:

In order to clear the subroutines for IO port 8 of card 2, send the command [CLRl8C2].

22. [CLRl*]

This command clears all subroutines associated with all IO ports for a given card.

Command Format: [CLRl*CnUi]

x = I/O Port (x = # from 1 to 24)

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

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

Example:

Clear all of the subroutines for all IO ports on card 2 by sending the command [CLRl*C2].

23. [WRKEY]

This command allows external switches and LED's to control or be controlled through the I/O ports. Subroutines are assigned to be executed when an external key (switch) is pressed and the external LED is in a given state.

The ports are designed to work in pairs. Port 1 handles external Key #1 and Port 2 handles external LED #1. Port 3 handles external Key #2 and Port 4 handles external LED #2.

In this setup, the Port 1 jumper should be set to the INPUT position. Port 2's jumper should be in the OUTPUT position and so on.

Command Format: [WRKEYx,y=SUBkCnUi]

x = key number

y = LED state (0= ON, 1= OFF)

k = subroutine number (# from 1 to 180)

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

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

Example:

The external keys (switches) and LED's are wired to the I/O ports as follows:

I/O#1 = KEY#1 Port 1 jumpered for INPUT

I/O#2 = LED#1 Port 2 jumpered for OUTPUT

I/O#3 = KEY#2 Port 3 jumpered for INPUT

I/O#4 = LED#2 Port 4 jumpered for OUTPUT

Assign subroutine 10 to be executed if external Key #1 is pressed and external LED #1 is ON.

[WRKEY1,0=SUB10C4]

The system knows external LED#1 (Port 2) is on since the command [WRIO2=1C4] must have been issued. Port 2 was turned on to drive the LED.

24. [WRS]

This command writes/programs a subroutine in the **MT112-100** by adding functions to its subroutine. The subroutines may be used to control other cards in the Multi-Tasker™ system, but cannot be used to control the Front Panel LED's.

See the **MT101-110** User Guide for complete instructions.

CAUTION: Do NOT confuse this command with the {WRS} command, which writes subroutines to the Front Panel memory.

Command Format: [WRSm=F₁,F₂,...;CnUi]

S_m = Subroutine ID (m = # from 1 to 180)
F₁,F₂,... = Functions: functions must be separated by a comma.
C_n = Card ID (n = # from 1 to max slots)
U_i = Unit ID (i = from 0 to 9)

The maximum number of characters, including commas, which may be sent to a subroutine in a single command is 16. If the length of the command string exceeds the maximum, break the functions into smaller groups. Previous commands are NOT overwritten. The subroutine is appended with the new commands.

Example:

Program Subroutine 2 of the card in slot #4 with the following functions: ON1C3, ON2C3 and ON123456C7. Send the command [WRS2=ON1C3,ON2C3,ON123456C7;C4].

NOTE: A comma must be used between functions.

Add more functions such as ON3C3 and ON4C3 to the subroutine. Subroutines are written accumulatively. That is, each command is appended to the functions that are already part of the subroutine. Therefore, to add the functions ON3C3 and ON4C3, it is only necessary to send the command [WRS2=ON3C3, ON4C3;C4].

After sending the command above, the contents of Subroutine 2 will contain the following:

ON1C3, ON2C3, ON123456C7,ONC3, ON4C3

25. [RDS]

This command reads and displays the functions programmed in a subroutine.

Command Format: [RDSmCnUi]

S_m = Subroutine (m = # from 1 to 180)
C_n = Card ID (n = # from 1 to max slots)
U_i = Unit ID (i = from 0 to 9)

Example 1:

Read back the subroutine in the previous example for the WRS command. The card is in slot #4 and the Subroutine is 2. Send the command [RDS2C4] and receive the following feedback:

ON1C3, ON2C3, ON123456C7, ONC3, ON4C3

Example 2:

Read back the contents of an empty subroutine. The card is in slot #4 and the subroutine is Subroutine 9. Send the command [RDS9C4] and receive the following feedback:

Subroutine Empty

26. [CLRS]

This command clears the contents of memory for one or all subroutines.

Command Format: [CLRSmCnUi]

S_m = Subroutine (m = # from 1 to 180, * = all)
C_n = Card ID (n = # from 1 to max slots)
U_i = Unit ID (i = from 0 to 9)

Example 1: Clear One

Clear Subroutine 2 of the card in slot #4. Send the command [CLRS2C4] and observe the following feedback:

Sub Clear

Example 2: Clear ALL

Clear all subroutines of the card in slot #4. Send the command [CLRS*C4] and observe the following feedback:

ALL SUBS WILL BE CLEARED
PLEASE WAIT

When all subroutines have been cleared, the following feedback will be displayed:

TASK COMPLETED

27. [SUB]

This command executes the functions stored in a subroutine.

These subroutines are stored directly on the card and are separate from the commands stored in the Front Panel. Therefore, the front panel LED's cannot be controlled with commands stored on the control card, but they may be used to control other cards.

Command Format: [SUBmCnUi]

m = Subroutine (m = # from 1 to 180)
Cn = Card ID (n = # from 1 to max slots)
Ui = Unit ID (i = from 0 to 9)

Example:

The function ON1C3 is stored in Subroutine 55 of the card ID 1. Send the command [SUB55C1] and the stored function will be executed. Output 1 of card 3 will now be turned on.

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 view the RS-232 commands available for the **MT112-100** 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 commands are group commands. These commands are not normally used with control cards, but are provided as added information for controlling other cards in the system.

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. [RMC]

This command may be used to remove one or more group members from a group. Reset the system after using this command for all changes to take effect.

Command Format: [RMCn₁Cn₂...GkUi]

Cn = Card ID (n = # from 1 to max slots)
Gk = Group number (k = # from 1-8)
Ui = Unit ID (i = # from 0-9)

Example:

Group 5 consists of the cards located in slots numbered 2, 4, and 6. Remove just cards #4 and #6 from the group by sending the command [RMC4C6G1]. The system will return the following feedback:

[G5=C2]

31. [RMG]

This command may be used to delete an entire group, or all groups.

REMOVE A GROUP

Remove all the members from the group, effectively deleting the group.

Command Format: [RMGkUi]

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

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

Example:

Group 5 consists of the cards located in slots number 2, 4 and 6. Remove all cards from the group by sending the command [RMG5]. The system will return the following feedback:

[G5=0]

REMOVE ALL GROUPS

Remove all the members from every group, effectively deleting all groups.

Command Format: [RMG*Ui]

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

Example:

Group 5 consists of cards 2, 4 and 6. Group 2 consists of cards 1, 2, 3, 4 and 5. Delete all the groups by sending the command [RMG*]. The system will return the following feedback:

G1-G8:EMPTY

32. [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.

33. [CLRG]

This command clears the members for a single group or for all groups. The clear command restores the cards to default settings and is the equivalent to sending the [CLR] command to each individual card.

NOTE: Since this command is sending the [CLR] command to its group members, each card will display its own reset message, if any.

Command Format: [CLRGkUi]

Gk = Group ID (k = # from 1-8, or * for all)

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

Example:

- 1) To clear group 1 of Unit ID 0, send the [CLRG1] command. This command clears the members for the specified group only.
- 2) To clear all groups of Unit ID 1, send the [CLRG*U1] command.

34. [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) [C] Receives card status.
- 2) [CLR] Resets card to default values.
- 3) [TEST] Tests the memory IC's.
- 4) [?] Request system information
- 5) [?Cn] Request card information
- 6) [STA1] Enable auto feedback.
- 7) [STA0] Disable auto feedback.
- 8) [VER] Receives software version.
- 9) [FBD] Feedback delay on/off
- 10) [RSI] Reset Card ID's
- 11) [SIDn] Set all Card ID's
- 12) [SIDnCi] Set one Card ID
- 13) [SID+n] Set Card ID offset
- 14) [RSN] Read Card slot number
- 15) [WAIT] Tells controller to delay before the next instruction.
- 16) [RDIO] Display I/O port status.
- 17) [WRIO] Set one or more I/O ports to different states.
- 18) [WRI] Assigns subroutine to an I/O port state change.
- 19) [RDIS] Display the subroutines associated with an IO port
- 20) [RDIS*] Display the subroutines associated with all IO ports
- 21) [CLRI] Clear the subroutines associated with an IO port
- 22) [CLRI*] Clear all the subroutines associated with a IO ports
- 23) [WRKEY] Program external switches and LED's.

- 24) [WRS] Write a subroutine
- 25) [RDS] Read a subroutine
- 26) [CLRS] Clear a subroutine
- 27) [SUB] Execute the functions in a subroutine.
- 28) [HELP] Display available commands for the MT112-100.

Group Commands

- 29) [WR] Groups multiple cards
- 30) [RMC] Remove members from group
- 31) [RMG] Delete group
- 32) [RD] Displays group members
- 33) [CLRG] Clears group members
- 34) [CLM] Delete group

7.4 MENU MODE

MENU MODE commands are RS-232 commands that allow the same functionality as the 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 any 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.

690-0124-018 = Version 018 or later.

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

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.

7.4.2 USING MENU MODE

1. In order to enter MENU mode, the system needs to be connected to a computer running MTSetup™ or other RS-232 control software.
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 the ENTER key.
5. The system will interrogate the enclosure and return a list cards installed and their slot locations.

Example: 8 (Slot 8): **MT112-100**

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

5. Find the alpha-numeric character representing the card whose setup requires changing. It will be the first character in the line.
6. Press the number or letter associated with the card, and a menu with options available for that card will appear on the screen. In the example above, press "8".

WARNING: Do NOT enter any characters except the one relating to the desired menu. Pressing ENTER or RETURN after "8" will force the system back to the original prompt.

7. After selecting the **MT112-100** as described above, the system will prompt for selections specific to that card.
8. Read each menu carefully, and continue selecting keys as prompted for further functions.

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 main functions related to the card. Press the key representing the menu item to access. A sub menu will appear next.

2. SUB MENU

Each sub menu will either display 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 any menu will take you up to the previous menu.

7.4.4 MT112-100 MENUS

Following are the menus available to the **MT112-100**. The first menu is the Main Menu only. The second listing is an expansion of all the menu items available.

The expanded menu contains values in parentheses that indicate the current setting or value of that parameter. Some menu settings act as toggle features. For example, port controls only provide one option. If the port is on, it may be turned off. If the port is off, it may be turned on.

MT112-100 MAIN MENU

- 1: CONTROL
- 2: VERSION
- 3: STATUS
- 4: HELP

ESC: GO BACK

MT112-100 EXPANDED MENUS

1. CONTROL

Press Key to Toggle Ports

1:1 (1)	9:9 (1)	H:17 (1)
2:2 (1)	A:10 (1)	I:18 (1)
3:3 (1)	B:11 (1)	J:19 (1)
4:4 (1)	C:12 (1)	K:20 (1)
5:5 (1)	D:13 (1)	L:21 (1)
6:6 (1)	E:14 (1)	M:22 (1)
7:7 (1)	F:15 (1)	N:23 (1)
8:8 (1)	G:16 (1)	O:24 (1)

P: All ON(1) Q: All OFF(0) ESC: GO BACK

2. VERSION

Returns card number and firmware version.

3. STATUS

Equivalent to the [C] command.

Returns the card status/relay states.

4. HELP

Equivalent to the [HELP] command.

Displays a list of commands available for the **MT112-100** along with a brief description.

5. ESC

Returns to the parent menu.

7.4.5 MENU MODE EXAMPLES

1. Turn ON IO Port 20

An **MT112-100** is in slot #5. All IO Ports are currently ON. Turn OFF IO Port number 20. Start by clicking the mouse in the Terminal window and pressing the ENTER key. The system will return a list of available cards with Menu Mode features:

KEY Comments

- 05 Select MT112-100 in slot #5
- 1 Select Control Menu and receive the following feedback:

Press Key to Toggle Ports

1:1 (1)	9:9 (1)	H:17 (1)
2:2 (1)	A:10 (1)	I:18 (1)
3:3 (1)	B:11 (1)	J:19 (1)
4:4 (1)	C:12 (1)	K:20 (1)
5:5 (1)	D:13 (1)	L:21 (1)
6:6 (1)	E:14 (1)	M:22 (1)
7:7 (1)	F:15 (1)	N:23 (1)
8:8 (1)	G:16 (1)	O:24 (1)

P: All ON(1) Q: All OFF(0) ESC: GO BACK

If the value in parentheses for port number 20 is 1, then the port is ON. Press 'K' to toggle the port OFF.

20 Toggle Relay Number 20

The system will return feedback indicating the port is now OFF.

ESC Return to the Main Menu

2. All Ports ON

An **MT112-100** is in slot #5. Turn ON all IO Ports regardless of whether they are ON or OFF. Press ENTER for a list of available cards.

KEY Comments

- 05 Select MT112-100 in slot #5

- 1 Select Control Menu

- 99 Turn ON all ports.

The system will return feedback indicating all ports are now ON.

ESC Return to the Main Menu

3. Display Card Status

Display the status of the **MT112-100** in slot #19. Starting from the **MT112-100's** Main Menu, follow the keystrokes below:

- 3 Displays card status

NOTE: In this case, the Main Menu is still active although it is not redisplayed.

TROUBLESHOOTING GUIDE 8

We have carefully tested and have found no problems in the supplied **MT112-100**; however, we would like to offer suggestions for the following:

8.1 I/O PORT NON RESPONSIVE

Cause 1: Jumpers are not set.

Solution 1: The I/O ports may be used as input or output ports. Verify the jumpers are set to the correct position.

Solution 2: Check the cable and verify there is continuity for both the I/O port pin and the Ground pin. If there is still no response, please call Altinex at (714) 990-2300.

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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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