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TaskMaster

Operations Manual

Strand Lighting

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West Coast Office (All Services):

18111 South Santa Fe Ave.
Rancho Dominguez, CA 90221 (213) 637-7500

East Coast Office (Field Service, Sales):

20 Bushes Lane
Elmwood Park, NJ 07407 (201) 791-7000

Canadian Office (All Services):

6490 Viscount Road
Missisauga, Ontario L4V 1H3
Canada (416) 677-7130

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Introduction

TaskMaster Operations Manual

This section provides information on manual organization, and definition of the terms and conventions used in this manual. It also details procedures for getting your suggestions to Strand Lighting, and receiving help if necessary.

1. About this Manual

This manual provides information on the operating procedures for TaskMaster.

1.1 Manual Organization

This manual contains 5 major sections as shown below.

INTRODUCTION

Manual organization, and definitions and conventions (chapter 1)
How to get help (chapter 2)

SYSTEM INFORMATION

Console description (chapter 3)
Cautions (Chapter 4)
Control layout (Chapter 5)

QUICK REFERENCE

Command summaries for reference by experienced operators (chapter 6)

TUTORIAL

Step by step tutorial for detailed information and first time operators (chapters 7 through 13)

APPENDICES

Appendices A and B

1.2 Definitions

This manual uses the following definitions to avoid confusion.

Fixture

Any Strand Lighting gel scroller or movable lighting fixture compatible with the Strand Lighting Motion Control Bus protocol.

Preset

A pre-defined setup of fixture intensities, positions, colors, etc., stored in memory for later replay.

Memory

Storage location for preset information.

Cue

The process of recalling a preset from its memory location and putting the result on stage.

Note: "Preset," "Cue," and "Memory" are often used interchangeably. This manual uses "Memory" for consistency with console labeling.

Chase

A pre-defined series of memories called in sequence automatically, and continuously repeated.

Channel

The basic control unit used in TaskMaster. TaskMaster can control all 99 channels addressable on the Motion Control Bus. Fixtures respond to the channel number matching their fixture number (thumbwheel switch setting). A channel controls all fixtures set to the same fixture number.

Color

A single color frame in a Strand Lighting gel scroller.

1.3 Conventions

The following conventions of capitalization apply in this manual:

[COPY] (All capital Helvetica typeface, surrounded by [ ]) Refers to the actual push-button labeled "COPY." A sequence of button pushes is thus shown as [1][+][2][+][3] etc.

[#] Refers to a number entered with the numeric keypad. May be up to three digits.

[Color#] Refers to a number entered with Selection Buttons. Specific selection buttons are shown by replacing # with the selection button number (e.g., [Color12], [Group2], [Chase1]).

[list] Refers to a single channel or a channel list made using [+] or [THRU].

(PAN) (All capital Helvetica typeface, surrounded by ( )) Refers to the numeric LED display labeled "PAN."

150 (Courier bold typeface) Refers to a number in a display window.

{SPEED} (All capital Helvetica typeface, surrounded by { }) Refers to a motion control wheel or trackball.

{move} A fixture move made with one or more of the motion control knobs.

ON (All capital Helvetica typeface) Refers to the status of a function or switch, as in "Turn the switch ON."

2. Technical Assistance

2.1 Problems

If equipment fails to operate properly upon installation, or under normal load and temperature conditions, and basic trouble-shooting procedures are not effective, please contact Strand Lighting Field Service at the office serving your area. Strand Lighting will issue an RGA (Return Goods Authorization) before the return of any defective materials. This allows tracking of returned equipment, and speeds its return to you.

2.2 Technical Questions

For technical questions regarding setup, operation, or maintenance of this equipment, please contact the Strand Lighting Field Service office serving your area (see reverse side of manual title sheet for addresses and phone numbers).

2.3 Parts Purchases

For purchase of spare parts or documentation, Please contact Strand Lighting Customer Service in the Rancho Dominguez office.

2.4 Comments and Suggestions

For comments regarding equipment functions and/or possible improvements, please call or write to the Automated Fixture Product Manager at the Rancho Dominguez office.

For comments on this manual, please write to the Technical Publications Manager at the Rancho Dominguez office.

System Information

TaskMaster Operations Manual

This section provides specifications, cautions, and control layout information for TaskMaster.

3. *Console Description*

TaskMaster uses solid-state memory for rapid storage and retrieval of up to 250 cues. Data is accessible at any time for playback or modification. The system is micro-processor based, and programmed specifically for processing and control of lighting fixture motion control.

TaskMaster provides a convenient method of controlling the movement and color changes of the Strand Lighting ShowChangers line of automated lighting fixtures. The console offers 99 channels of control, 32 groups, 250 cues, and 12 chases. Each channel or group controls all fixture motion by use of individual pan, tilt, speed, and color selection controls.

An optional Extended Functions Panel provides additional controls for iris, gobo, intensity, and focus.

TaskMaster may also provide power distribution to any Strand Lighting gel scroller, up to a total of 6 Amps. Each console provides 2 outlets for control cables, each providing control of up to 6 units. A 6 Amp circuit breaker prevents damage to these outlets in case of an overload or short circuit.

A separate, 2 Amp circuit breaker protects the console electronics and worklight.

Separate power supply(s) and/or special distribution boxes are required for some fixtures. Buffer(s), or splitter(s) may be required for some configurations of fixtures. Please consult your local representative or call Strand Lighting for help if you have questions.

TaskMaster includes a battery backup capable of maintaining information stored in memory for at least 12 months.

Operator interface is provided by a special purpose keyboard in the console.

An optional floppy disk drive allows storage of information on floppy disk.

4. Cautions

4.1 Environment

Since TaskMaster is computer-based, the following environmental requirements must be met:

Operating environment:

Temperature -- **20 ±5° C (68 ±9° F)**

Humidity -- **90% R.H. maximum, no condensation**

Dust -- **Good office environment**

Power:

Leave console connected to power source (primary power - 120VAC, 50/60Hz, 15A or 240VAC, 50/60Hz, 10A), unless maintenance is being done or console is not in use for extended periods of time.

Primary power should be exclusively for the console and not used for other devices such as power hand tools, motors, transformers, and dimmers.

4.2 Handling Disks

This equipment uses hard-shelled micro floppy disks for library storage. The system can format any industry standard 3-1/2 inch 720KB capacity disk.

Make two copies of all essential data. A rotation of three disks is recommended. When changes are made, make two copies of current data and keep the third disk as backup. If data is lost while recording new disks, or making changes in memory, the backup disk needs only one days worth of modifications.

DON'T leave disks unprotected. Always place disks in protective container when not in use.

DON'T erase a label attached to a disk.

DON'T force disks into drives or storage envelopes. If there is resistance, find and fix the cause before insertion.

DON'T store disks where temperature exceeds 100° F.

DON'T store disks in areas of large magnetic fields. IF YOUR DIMMER RACKS ARE IN THE SAME ROOM AS THE CONSOLE, KEEP DISKS AS FAR AWAY FROM THE DIMMER BANK AS POSSIBLE. NEVER PLACE THEM NEXT TO OR ON TOP OF OPERATING STAGE DIMMERS.

DON'T store disks flat. Store vertically in a dust-tight container.

DON'T power console up or down with disk installed in drive. Power spikes can alter data on disks.

DON'T smoke while handling disks or operating a console with a disk installed in the drive.

DON'T count on a disk manufacturers lifetime guarantee and ignore the above cautions. Some manufacturers guarantee data recovery, but meanwhile your show data is out of reach.

Disks do not last forever. As they wear out, they may begin to feed "glitches" into the system. Check manufacturers recommended life span and retire disks before they cause damage to show data. A "lifetime" warranty simply means that the manufacturer will replace the disk, and/or try to recover its data, if there are problems.

5. *Controls and Displays*

TaskMaster controls are in logical groupings according to their function. TaskMaster comes equipped with a floppy disk drive for cue storage, and can be purchased with or without the Extended Functions Control Panel. The panel layout below shows a TaskMaster equipped with extended functions.

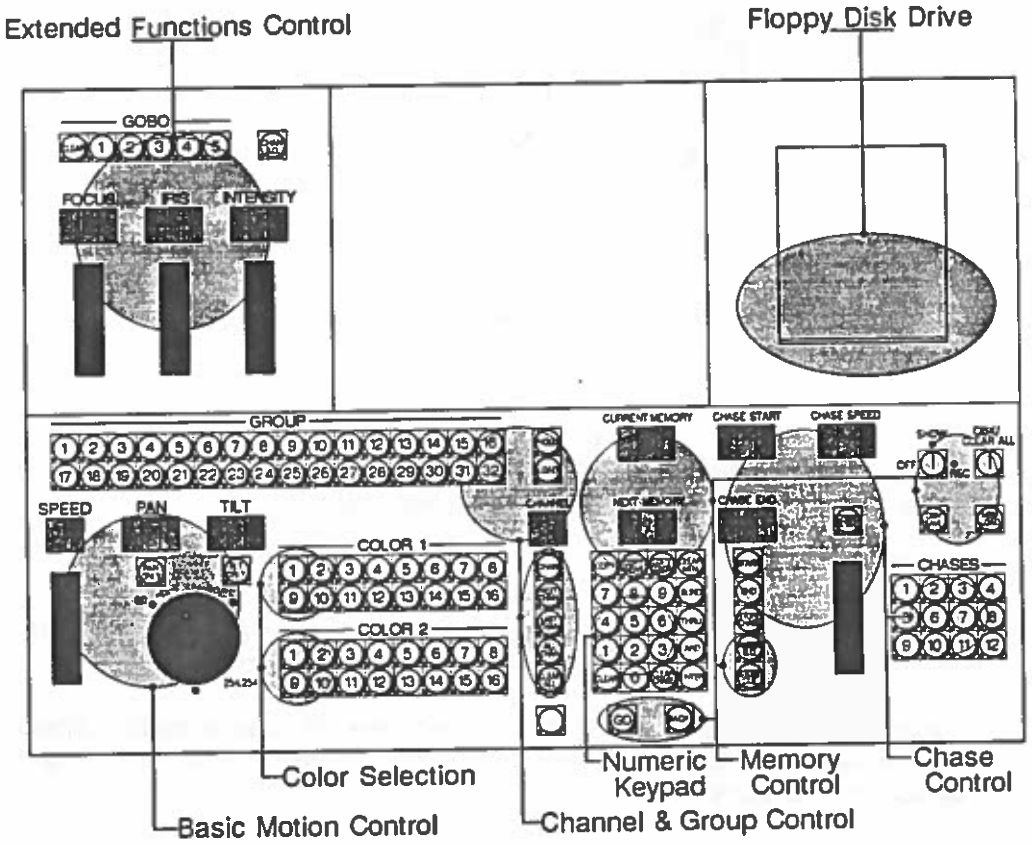


Figure 1. TaskMaster Control Layout

5.1 Basic Motion Control

Controls fixture motion and color change of the selected channel or channels.

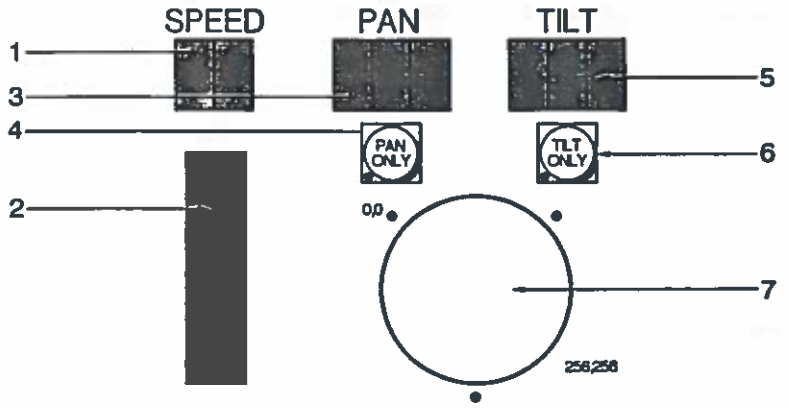


Figure 2. Motion Control

1) (SPEED)

Shows motion speed using a number between 0 and 15. Speed "0" is the fastest motion possible and can only be used when manually adjusting fixtures. When recorded, a speed of "0" is recorded as "1."

2) {SPEED}

Wheel which controls motion speed for all functions of all active channels. Move wheel up to increase speed and down to decrease speed.

"0" indicates the fastest motion, while "15" indicates the slowest motion. Speed "0" can only be used when manually adjusting fixtures. When recorded, a speed of "0" is recorded as "1."

3) (PAN)

Shows current channel pan status (0-254). 0 is trackball all the way left, and 254 is trackball all the way right.

4) [PAN ONLY]

Selects Pan Only Function. Trackball controls pan only when [PAN ONLY]LED is ON.

5) (TILT)

Shows current channel tilt status (0-254). 0 is trackball all the way up, and 254 is trackball all the way down.

6) [TILT ONLY]

Selects Tilt Only Function. Trackball controls tilt only when [TILT ONLY]LED is ON.

7) {PAN/TILT}

Trackball which controls "PAN" (left/right motion) and/or "TILT" (up/down motion) on selected channels of fixtures so equipped, depending on direction of rotation and status of [PAN ONLY] and [TILT ONLY].

5.2 Group and Channel Selection

Group and channel selection buttons allow selection of channels for movement, color change, etc.

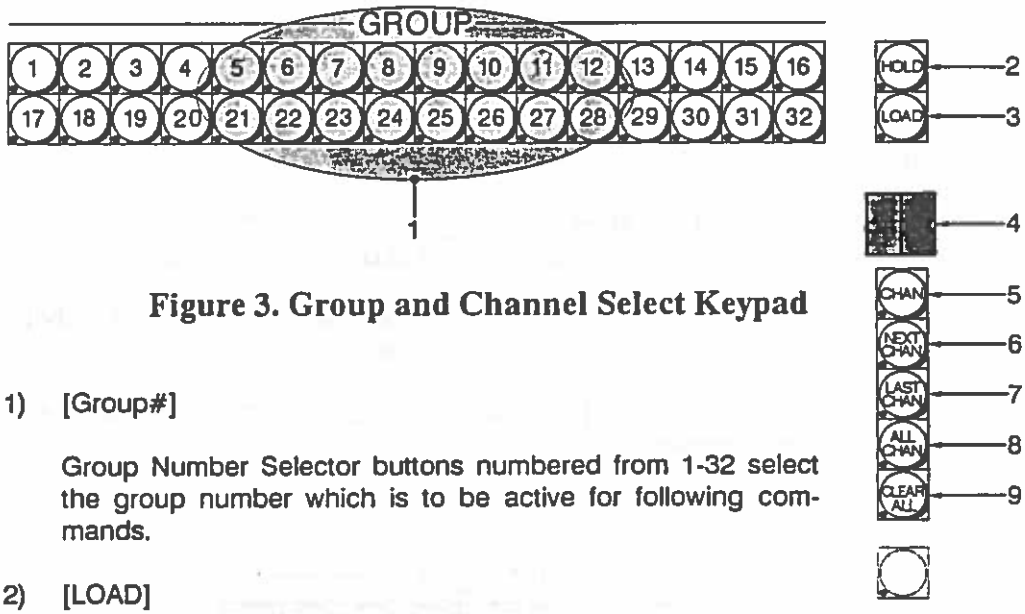


Figure 3. Group and Channel Select Keypad

1) [Group#]

Group Number Selector buttons numbered from 1-32 select the group number which is to be active for following commands.

2) [LOAD]

Allows assignment of any number of channels to a group button ([Group#]).

3) [HOLD]

Freezes the current position of selected channels.

4) (CHAN)

Shows selected channel number. When multiple channels are selected, shows number of the last selected channel (not highest channel number).

5) [CHAN]

Causes the [#] entered on the Numeric Keypad to be a channel number. The number appears in (CHAN).

6) [NEXT CHAN]

Increases number in (CHAN) by one.

7) [LAST CHAN]

Decreases number in (CHAN) by one.

8) [ALL CHAN]

Allows control of all channels as a single group. This is an alternate action function. The [ALL CHAN]LED is on while this "group" is active.

9) [CLEAR ALL]

Clears [ALL CHAN] and sends all fixtures to their home position.

5.3 Color Selection

Color Number Selector Buttons ([Color#]) numbered 1-16 to select the color number for a channel or group of channels. The LED lights in the selected button.

When using 2 16 color strings in a Litescan unit, selecting color #16 in both color strings sets color string 1 to color #16 and color string 2 to color #15.

Selection of any color **except** color #1 from color string 2, disables color selection in ParScan and scrollers.

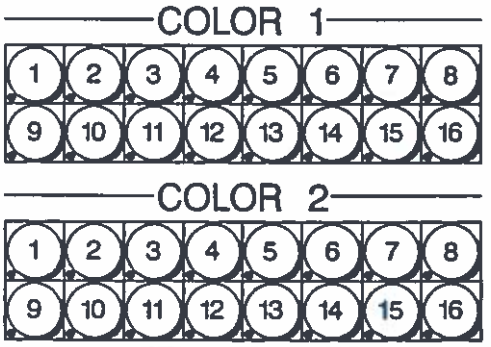


Figure 4. Color Select Keypad

5.4 Numeric Keypad

The numeric keypad is centrally located and allows selection of channel and memory numbers. A number entered on this keypad (including a multi-digit number) is shown in this text as [#].

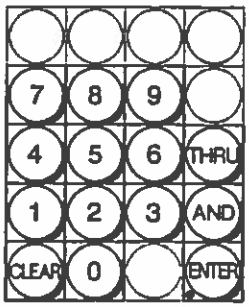


Figure 5. Numeric Keypad

1) [0] through [9]

   Enters digit on button into either (NEXT MEMORY) or (CHAN).

2) [AND]

   Performs the "And" Function when selecting channels. For example [1][AND][3][AND][7].

3) [THRU]

   Performs the "Through" Function when selecting channels. For example [CHAN][8][THRU][1][8][ENTER].

4) [ENTER]

   Completes a numeric entry. Before pushing [ENTER], the number shows in the display, but is not selected.

5) [CLEAR]

   Used to cancel Numeric Keypad entry errors, as long as [ENTER] has not been pushed.

5.5 *Memory Control*

Allows control over memory selection, recording, and copy. Channels or groups must be selected **before** any copy function is used.

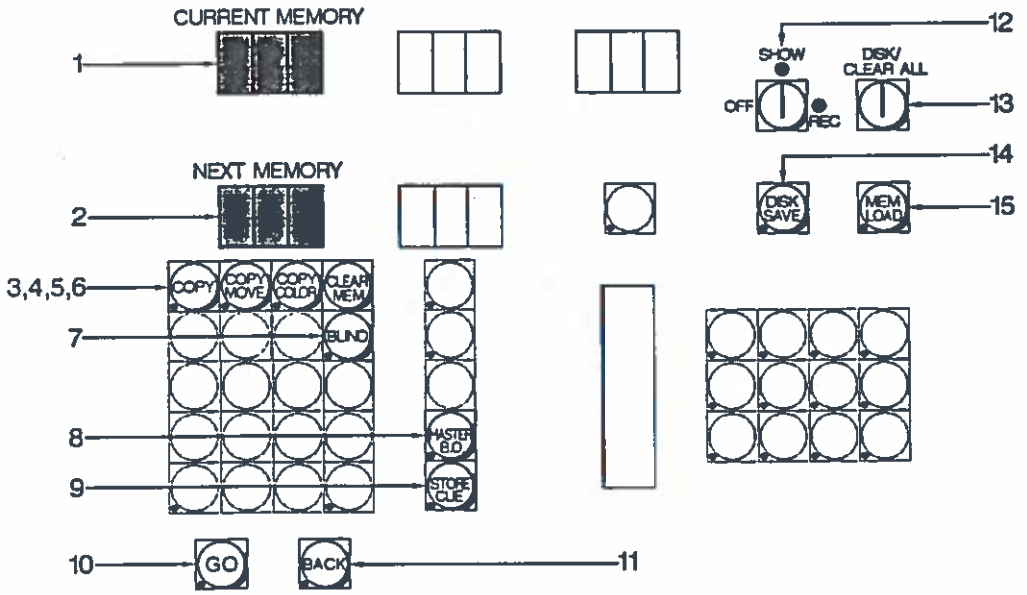


Figure 6. Memory Control

1) (CURRENT MEMORY)

Shows active memory number for recording cues or playing back information previously placed in memory.

2) (NEXT MEMORY)

Shows next memory to be recalled. Usually (CURRENT MEMORY) + 1.

3) [COPY]

Used with [STORE CUE] to copy information for selected channels in one memory to another memory.

4) [COPY MOVE]

Used with [STORE CUE] to copy only position information for selected channels in one memory to another memory. Does not copy color information.

5) [COPY COLOR]

Used with [STORE CUE] to copy only color information of selected channels in one memory to another memory. Does not copy position information.

6) [CLEAR MEM]

Used with the Disk/Clear All Keyswitch to clear all memory.

7) [BLIND]

Allows cue modification while maintaining current stage setting.

8) [MASTER B.O.]

Causes a mechanical blackout on all channels of fixtures so equipped. [MASTER B.O.]LED is ON when fixtures are OFF.

9) [STORE CUE]

In Record Mode only, used to store channel number, selected color, and position information, and to store chase data. [STORE CUE]LED is normally ON and goes OFF when [STORE CUE] is pushed to store the selected data.

10) [GO]

Moves the number in (NEXT MEMORY) into (CURRENT MEMORY) and starts cue in (CURRENT MEMORY). (NEXT MEMORY) is then increased by one.

11) [BACK]

Decreases number in (CURRENT MEMORY) by one and starts new cue.

12) System Keyswitch

"SHOW" puts system in Playback Mode and turns "SHOW"LED ON. "REC" puts system in Record Mode and turns "REC"LED ON. "OFF" disables the displays and output.

13) Disk/Clear All Keyswitch

Used with [CLEAR MEM] to clear all memory locations, and with [DISK SAVE] and [MEM LOAD] to access disk functions. Functions are active when switch is turned towards "RECORD".

14) [DISK SAVE]

Used with the Disk/Clear All Keyswitch to load data in memory to a floppy disk.

15) [MEM LOAD]

Used with the Disk/Clear All Keyswitch to load data from a disk into memory. Clears all previous data from memory while loading new data.

5.6 Chase Control

Allows recording and playback of 12 chases. Unlike most theatrical and television lighting level control consoles, where chases are a secondary function, TaskMaster is always in a chase. If you load a memory outside the chase bounds, the (NEXT MEMORY) will be the (CHASE START) memory, and not the next sequential memory. For "normal" sequencing of all memories, load a chase containing memories 1 through 250 (all memories), or use [CLEAR CHASE] and do not store the cleared chase.

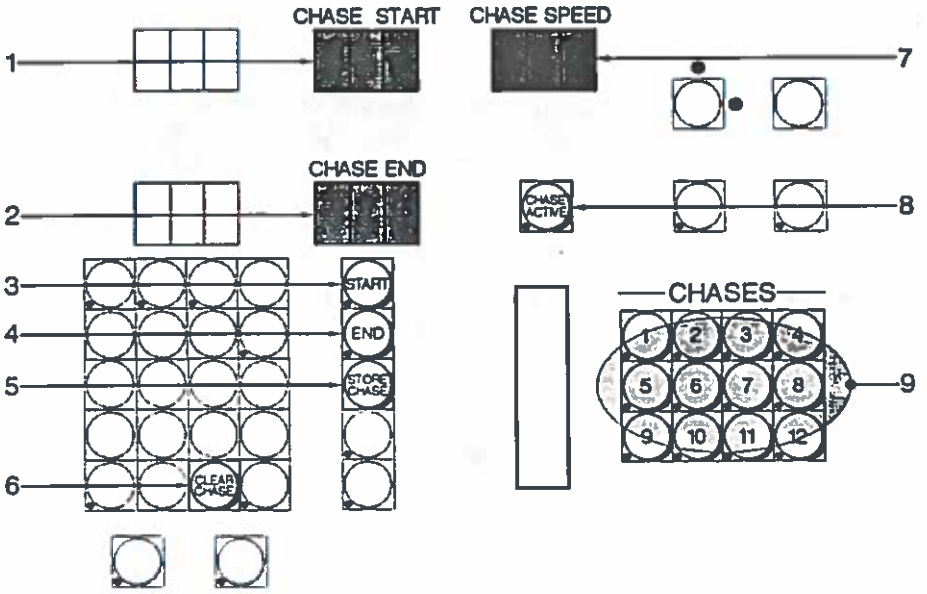


Figure 7. Chase Control

1) (CHASE START)

Shows start memory number of selected chase.

2) (CHASE END)

Shows end memory number of selected chase.

3) [START]

Allows selection of the lowest numbered memory when setting chase limits. Memory number will be shown in (CHASE START). [START]LED is ON when Start Function is active.

4) [END]

Allows Selection of the highest numbered memory when setting chase limits. [END]LED is ON when End Function is active. Memory number will be shown in (CHASE END).

5) [CLEAR CHASE]

Clears all chase limits for the selected chase and causes the (CHASE START) to show **01** and (CHASE END) to show **250.**

6) [STORE CHASE]

In Record Mode only, used to store the selected chase information.

7) (CHASE SPEED)

Shows time (**0-25.5**) in seconds between steps in a chase.

8) [CHASE ACTIVE]

Starts and stops the selected chase. The [CHASE ACTIVE]LED lights while a chase is active.

9) {CHASE SPEED}

Wheel which selects speed at which active chase progresses (time between memory number changes).

10) [Chase#]

The Chase Select Push-buttons allow selection of any of 12 previously recorded chases.

5.7 Extended Functions Control

This panel is optional in TaskMaster, and allows control of the additional motion functions provided by some fixtures. These controls have no effect on fixtures without the additional functions.

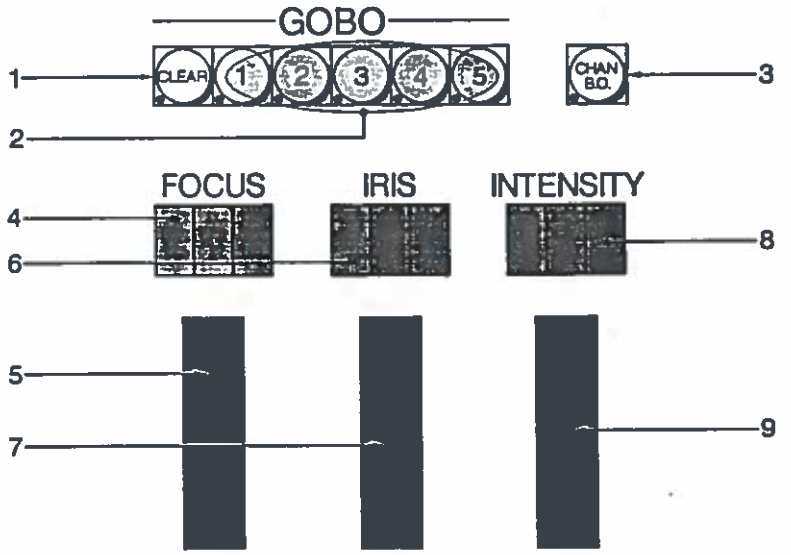


Figure 8. Extended Functions Control Panel

1) [CLEAR] (Shown as [Gobo CLEAR] in this text)

   Rotates a clear gobo into place on selected channels of fixtures so equipped.

2) [Gobo#]

   Rotates the selected Gobo into place on selected channels of fixtures so equipped. The appropriate [Gobo#]LED lights when a selection is made.

3) [CHAN B.O.]

   Causes a blackout on selected channels of fixtures so equipped. [CHAN B.O.]LED is ON when fixtures are OFF.

4) (FOCUS)

   Shows current channel focus status (**0–254**). **0** is in focus on the iris, and **254** is in focus on the gobo.

5) {FOCUS}

Wheel which controls focus position on selected channels of fixtures so equipped. Move wheel "up" to increase focus number.

6) (IRIS)

Shows current channel iris status in % (0-100). 0% is the smallest iris opening.

7) {IRIS}

Wheel which controls iris opening size on selected channels of fixtures so equipped. Move wheel "up" to increase iris size.

8) (INTENSITY)

Shows current channel intensity in % (0-100). 0% is fixture OFF.

9) {INTENSITY}

Wheel which controls intensity on selected channels of fixtures so equipped. Move wheel "up" to increase light output.

5.8 Disk Drive

Allows recording of information for a show, and later loading of the recorded information back into memory.

Quick Reference

TaskMaster Operations Manual

This section is a quick reference to command keystroke sequences used in TaskMaster, and not a comprehensive tutorial for inexperienced users. A step by step tutorial on TaskMaster operations starts with Chapter 7 of this manual.

6. Command Formats

6.1 Select Channels

Key Entry: [CHAN][#][ENTER]
Example: [CHAN][1][2][ENTER]

Select a single channel. Control over fixture motion is live. (CHAN) shows selected channel.

Key Entry: [NEXT CHAN]

Increment channel number in (CHAN) by one.

Key Entry: [LAST CHAN]

Decrease channel number in (CHAN) by one.

Key Entry: [CHAN][#][AND][#][AND][#].....[ENTER]
Example: [CHAN][1][AND][3][AND][1][5][ENTER]

Select multiple channels. Control over fixture motion is live. (CHAN) shows last channel selected. Usually shown as [CHAN][list][ENTER] in this text.

Key Entry: [CHAN][#][THRU][#][ENTER]
Example: [CHAN][5][THRU][9][ENTER]

Select a range of channels. Control over fixture motion is live. (CHAN) shows highest channel number. Usually shown as [CHAN][list][ENTER] in this text.

6.2 Select a Group

Key Entry: [Group#]
Example: [Group5]

Select a group of channels. Control over fixture motion is live. [Group#]LED lights and [CHAN]LED goes OFF. To select a different group, push a different [Group#] button. When a [Group#]LED is ON, push that [Group#] button again to clear all channels (this is the same as pushing [CLEAR ALL]).

Key Entry: [ALL CHAN]

Select all channels. Control over fixture motion is live. [ALL CHAN]LED lights, and [CHAN]LED goes OFF. If [ALL CHAN]LED is ON, push [ALL CHAN] again to clear all channels (this is the same as pushing [CLEAR ALL]).

Key Entry: [CLEAR ALL]

Sends all fixtures to their home position.

6.3 *Change Position, Color, etc.*

Fixtures ignore commands for which they are not equipped.

Key Entry: [Color#]
Example: [Color12]

Change the color for selected channels of fixtures so equipped. [Color#]LED lights.

Key Entry: [Gobo#]
Example: [Gobo3]

Change the gobo for selected channels of fixtures so equipped. [Gobo#]LED lights.

Key Entry: [Gobo CLEAR]

Change the gobo to a blank (clear light) for selected channels of fixtures so equipped. [Gobo CLEAR]LED lights.

Key Entry: [CHAN B.O.] (Next to [Gobo#] buttons in Extended Functions Control Panel)

Turn OFF (blackout) selected channels of fixtures so equipped. [CHAN B.O.]LED lights when fixtures are OFF.

Key Entry: [MASTER B.O.]

Turn OFF (blackout) all channels (whether selected or not) of fixtures so equipped. [MASTER B.O.]LED lights when fixtures are OFF.

Movement: {INTENSITY}

Change intensity of selected channels of fixtures so equipped. Status is shown in (INTENSITY). 100% is lights ON and 0% is lights OFF.

Movement: {Iris}

Move iris open or closed on selected channels of fixtures so equipped. Status is shown in (IRIS). 100% is iris full open, and 0% is iris closed.

Movement: {FOCUS}

Move focus control on selected channels of fixtures so equipped. Status is shown in (FOCUS). The exact function of this controller changes with the fixtures being used.

Movement: {SPEED}

Control motion speed for all functions of selected channels. Status is shown in (SPEED). As the wheel is moved "up" (away from the operator), (SPEED) decreases from 15 to 0.

"0" indicates the fastest motion, while "15" indicates the slowest motion. Speed "0" can only be used when manually adjusting fixtures. When recorded, a speed of "0" is recorded as "1."

Key Entry: [PAN]

Assign the Pan Function to {PAN/TILT}. [PAN]LED lights and [TILT]LED goes OFF if it is ON. Push again to de-activate pan.

Key Entry: [TILT]

Assign the Tilt Function to {PAN/TILT}. [TILT]LED lights and [PAN]LED goes OFF if it is ON. Push again to de-activate tilt.

Movement: {PAN/TILT}

Move fixture up and down (tilt) if only [TILT]LED is on, or side to side (pan) if only [PAN]LED is ON on selected channels. Allows moving in both planes if [PAN]LED and [TILT]LED are both OFF. Status is shown in (PAN) and (TILT).

6.4 Record a Memory

System must be in Record mode for these functions to work. Move System Keyswitch to "REC". "REC"LED lights.

Key Entry: [#][ENTER]{move}[STORE CUE]
Example: [1][2][5]{move}[STORE CUE]

Record channel information in memory [#].

Key Entry: [GO]{move}[STORE CUE]

Record channel information in (CURRENT MEMORY) + 1.

Key Entry: [BACK]{move}[STORE CUE]

Record channel information in (CURRENT MEMORY) - 1.

6.5 Record a Group

System must be in Record mode for these functions to work. Move System Keyswitch to "REC". "REC"LED lights.

Key Entry: [LOAD][CHAN][list][ENTER][Group#]
Example: [LOAD][CHAN][1][AND][5][ENTER][Group1]

Assign selected channels to [Group#].

6.6 Record Chase Limits

System must be in Record mode for these functions to work. Move System Keyswitch to "REC". "REC"LED lights.

Key Entry: [Chase#][START][#][ENTER][END][#][ENTER][STORE CHASE]
Example: [Chase1][START][1][2][ENTER][END][4][5][ENTER][STORE CHASE]

Record chase limits (from [START] to [END]) in [Chase#]. In older systems without [STORE CHASE], use [STORE] instead.

6.7 Memory Manipulation

System must be in Record mode for these functions to work. Move System Keyswitch to "REC". "REC"LED lights.

Key Entry: [#][ENTER][GO][CHAN][list]{move}[COPY][#][ENTER][GO]
[STORE CUE]
Example: [1][ENTER][GO][CHAN][list]{move}[COPY][9][ENTER][GO]
[STORE CUE]

Copy contents of first memory [#], with new fixture positions, to second memory [#]. Since [list] is used to determine the channels to copy, only one set of channel information may be changed with {move}. To copy all channels, make sure that [ALL CHAN] is ON. To copy a group of channels, make sure that the appropriate [Group#] is selected.

Key Entry: [#][ENTER][GO][CHAN][list]{move}[COPY COLOR][#][ENTER]
[GO][STORE CUE]
Example: [3][ENTER][GO][CHAN][list]{move}[COPY COLOR][1][6][ENTER]
[GO][STORE CUE]

Copy color changes of first memory [#], with fixture moves, to second memory [#]. Since [list] is used to determine the channels to copy, only one set of channel information may be changed with {move}. To copy all channels, make sure that [ALL CHAN] is ON. To copy a group of channels, make sure that the appropriate [Group#] is selected.

Key Entry: [#][ENTER][GO][CHAN][list]{move}[COPY MOVE][#][ENTER] [GO][STORE CUE]
Example: [6][ENTER][GO][CHAN][list]{move}[COPY MOVE][7][ENTER][GO] [STORE CUE]

Copy position information of first memory [#], with fixture moves, to second memory [#]. Since [list] is used to determine the channels to copy, only one set of channel information may be changed with {move}. To copy all channels, make sure that [ALL CHAN] is ON. To copy a group of channels, make sure that the appropriate [Group#] is selected.

6.8 Blind Memory Modification

Push [BLIND] to enter Blind Mode. In this mode, all movement and record functions are active, but fixtures will not move. Any movement in progress will continue, but no additional motion information will be sent to the fixtures. Any chase in progress will be "frozen," and will restart when you exit blind Mode (push [BLIND] again).

Tutorial

TaskMaster Operations Manual

This section is a tutorial for TaskMaster use. Use a console with this manual to follow the steps outlined here and observe the results. Experienced users who do not wish to follow the tutorial should turn to Chapter 6 ("Command Formats") for a quick reference to available commands.

7. *Console Power-Up*

Power up TaskMaster by connecting the AC power cord to an AC outlet and turning the power switch on the rear of the unit ON (some older units may not have a power switch). This causes a console initialization, which does the following:

A. LED check - system turns all LEDs and display segments ON.

B. Power-up self test - system checks various hardware. Error codes appear in the chase speed window (see Table 1). If error code appears, push any key to continue. If memory has been cleared and no cues recorded, error code E11 (checksum error) may appear. Once cues are recorded, this error code should no longer appear on startup.

C. Default display settings - system sets displays and indicators as follows:

(CHAN) = **0**
(CURRENT MEMORY) = **00**
(SPEED) = **1**
(NEXT MEMORY) = chase 1 data
(CHASE START) = chase 1 data
(CHASE END) = chase 1 data

Be careful to route all power cables so they cannot be accidentally unplugged. Unplugging the TaskMaster causes loss of control over fixture movement. When power is re-applied, the TaskMaster console will go through its self-test, and all fixtures powered from the TaskMaster will go through their fixture reset.

Table 1. TaskMaster Error Codes

E 1	=	battery low
E 2	=	RAM U10 group/chase error
E 3	=	RAM U11 cue 1-40 error
E 4	=	RAM U12 cue 41-80 error
E 5	=	RAM U13 cue 81-120 error
E 6	=	RAM U14 cue 121-160 error
E 7	=	RAM U16 cue 161-200 error
E 8	=	RAM U17 cue 201-240 error
E 9	=	RAM U18 cue 241-280 error
E 10	=	RAM U19 cue 281-320 error
E 11	=	ROM checksum error
E 12	=	Slave CPU/Dual Port error
E 13	=	Disk drive not responding
E 14	=	Disk Data Error

8. Channel Control

For a controller channel to control a fixture, the fixture number (thumbwheel switch setting) must match the channel number.

8.1 Select a Single Channel

Use [CHAN] to select a specific channel for modification.

A. Push [CHAN].

(CHAN) blanks and [CHAN]LED lights.

B. Select channel number.

(CHAN) shows selected number.

C. Push [ENTER].

[CHAN]LED goes OFF, showing that the channel is selected. Control over fixture motion of selected channel is live.

8.2 Select Channels with [NEXT CHAN] and [LAST CHAN]

Use [NEXT CHAN] and [LAST CHAN] to sequentially select channels for modification.

A. Push [NEXT CHAN].

(CHAN) is increased by one. Control over fixture motion is live. If there is no channel assignment, the first push of [NEXT CHAN] selects channel 1.

B. Push [LAST CHAN].

(CHAN) is decreased by one. Control over fixture motion of selected channel is live.

8.3 Select Multiple Channels with [AND]

Use [AND] to select multiple random channels for modification.

A. Push [CHAN].

(CHAN) blanks and [CHAN]LED lights.

B. Select first channel number.

(CHAN) shows selected number.

C. Push [AND].

(CHAN) shows |_||_| (the And Function is active).

D. Select next channel number.

(CHAN) shows selected number.

E. Push [AND] and select additional channels as required.

F. Push [ENTER].

[CHAN]LED goes OFF, showing that the listed channels are selected. Control over fixture motion of selected channels is live. Fixtures on all selected channels will move together.

8.4 Select Multiple Channels with [THRU]

[THRU] allows selection of a range of channels for modification.

A. Push [CHAN].

(CHAN) blanks and [CHAN]LED lights.

B. Select first channel number (start of range).

(CHAN) shows selected number.

C. Push [THRU].

(CHAN) shows --, showing that the Through Function is active.

D. Select last channel number (end of range).

(CHAN) shows selected number.

E. Push [ENTER].

[CHAN]LED goes OFF, showing that the range of channels is selected. Control over fixture motion of selected channels is live. Fixtures on all selected channels will move together.

8.5 Clear Channel Selection

Use [CLEAR ALL] to clear all channels from live control.

Push [CHAN][CLEAR ALL]

(CHAN) blanks. Motion controls no longer control any channels.

8.6 Position Fixtures

Position fixtures by selecting the appropriate channel or channels and using the motion controls in the console. Selected fixture colors and gobos can be changed, the fixture can be positioned and focused, and speed can be adjusted without recording to memory.

A. Push [CHAN][list][ENTER], [NEXT CHAN], or [LAST CHAN] to select channels.

(CHAN) shows the last channel number selected. Control over fixture motion of selected channels is live. Fixtures on all selected channels will move together.

B. Move {SPEED} to set required motion speed (from 0 to 15) in (SPEED).

This number is an indication of the movement speed of the fixture function, not the time it takes to complete a movement.

"0" indicates the fastest motion, while "15" indicates the slowest motion. Speed "0" can only be used when manually adjusting fixtures. When recorded, a speed of "0" is recorded as "1."

C. Push a [Color#].

[Color#]LED lights and color scrollers on selected channel fixtures move to the selected color.

D. Push [PAN].

[PAN]LED lights, and the trackball now controls only the Pan Function.

E. Move {PAN} to position fixtures horizontally.

Depending on speed setting, fixtures may track controller movement or lag behind it.

F. Push [TILT].

[TILT]LED lights. [PAN]LED goes OFF. The trackball now controls only the Tilt Function.

G. Move {TILT} to position fixtures vertically.

Depending on speed setting, fixtures may track controller movement or lag behind it.

H. Push [TILT].

[TILT]LED goes OFF. The trackball now controls both Pan and Tilt Functions. If [PAN]LED is ON, push [PAN] rather than [TILT] to turn OFF both LEDs.

I. Move {DOUSER}, {IRIS}, and {FOCUS} to set these functions as required if fixtures are so equipped.

J. Push a [Gobo#].

[Gobo#]LED lights and the selected gobo rotates into place on selected channels of fixtures so equipped.

K. Push [Gobo CLEAR].

[Gobo CLEAR]LED lights, and a clear gobo rotates into place in the gobo changer on selected channels of fixtures so equipped.

L. Push [CHAN B.O.].

[CHAN B.O.]LED lights. Selected fixtures equipped with intensity control are turned OFF.

M. Push [CHAN B.O.].

[CHAN B.O.]LED goes OFF. Selected fixtures equipped with intensity control are turned ON.

N. Repeat steps A thru M in any order to position any selected fixtures. Memory information is not changed.

9. Groups

TaskMaster provides 32 groups for combining control of multiple channels. Use [LOAD] with a [Group #] to record a group.

An individual channel may appear in every group if required.

A suggested use for groups is to group all stage right units or all upstage units.

Motion control is a relative function. Once selected as part of a group, all fixtures move the same distance and direction for any given controller motion. They do not move to the same absolute fixture positions. If fixtures must track each other, align them as required before selection as part of a group. If this alignment must be repeated frequently, record the required fixture positions as a cue, and call up the cue before selecting the group.

9.1 Record Groups

System must be in Record Mode to record groups.

A. Turn System Keyswitch to "REC". "REC"LED lights, showing that system is in Record Mode.

B. Push [LOAD].

   [LOAD]LED lights.

C. Push [CHAN].

   [ENTER]LED lights. (CHAN) blanks.

D. Select channel numbers on the keyboard using [AND] or [THRU] if necessary.

E. Push [ENTER].

   The last channel number entered is shown in (CHAN). [ENTER]LED goes OFF.

F. Push [Group #].

   [Group#]LED lights and [LOAD]LED goes OFF.

9.2 Control Channels by Groups

Push a [Group#].

Selected [Group#]LED lights. (CHAN) shows last channel in group. Motion controls now move all channels in the selected group.

9.3 Cancel Group Control

Push [group#].

[group#]LED, goes OFF. Motion controls no longer control any channels. This is the same as using [CLEAR ALL].

9.4 Control Channels with [ALL CHAN]

Push [ALL CHAN].

[ALL CHAN]LED lights. [Group#]LED or [CHAN]LED goes OFF. Activates a special group consisting of all channels. Motion controls now move all fixtures in the system.

9.5 Cancel [ALL CHAN] Control

Push [ALL CHAN].

[ALL CHAN]LED, goes OFF. Motion controls no longer control any channels. This is the same as using [CLEAR ALL].

10. Record a Memory

Motion and color information for multiple fixtures can be recorded in a memory for later playback. 250 memories are available. System must be in Record Mode for recording memories.

A. Turn System Keyswitch to "REC". "REC"LED lights, showing that system is in Record Mode.

B. Select memory number in one of the following ways:

   1) Push [GO].

      System moves (NEXT MEMORY) to (CURRENT MEMORY), and increments (NEXT MEMORY) by one.

   2) Push [#][ENTER].

      System shows selected memory number in (NEXT MEMORY). Push [GO] to put selected memory number into (CURRENT MEMORY) and move lights to the new position.

   3) Push [BACK].

      System decreases (CURRENT MEMORY) and (NEXT MEMORY) by one (within the set chase limits).

C. Select required channel(s) using [#], [AND], [THRU], [NEXT CHAN], [LAST CHAN], or a [Group#].

   The last selected channel number appears in (CHAN).

D. Adjust position, color, and speed information for selected channels as necessary.

   [STORE CUE]LED lights, showing that changes have been made.

E. Push [STORE CUE].

   [STORE CUE]LED goes OFF showing that the data is stored in memory.

Repeat steps C through E to store additional channel information in the selected memory. 99 channels are available.

11. Chase Sequences

Play back a series of memories as a chase by defining a chase start, end, and speed as a chase number. The chase start memory must be a smaller number than the chase end memory. Once chase limits are set, memories can be played automatically as a chase sequence or manually by pushing [GO] or [BACK]. Memories cycle within the chase limits. If a memory outside the limits is manually loaded, the next memory after the manually loaded memory will be the (CHASE START) memory.

11.1 Record a Chase

The system must be in Record Mode to record chases.

A. Turn System Keyswitch to "REC". "REC"LED lights, showing that system is in Record Mode.

B. Push a [Chase#].

   [Chase#]LED in the selected chase button lights. 12 chases can be recorded.

C. Push [START].

   [ENTER]LED and [START]LED light. (CHASE START) blanks.

D. Select chase start memory number using [#].

   (CHASE START) shows the selected memory number.

E. Push [ENTER].

   [ENTER]LED goes OFF and (CHASE START) memory number is entered.

F. Push [END].

   [END]LED and [ENTER]LED light. [START]LED goes OFF and (CHASE END) blanks.

G. Select chase end memory number using [#].

   (CHASE END) shows selected memory number.

H. Push [ENTER].

   [END]LED and [ENTER]LED go OFF and end memory number is entered.

I. Select chase speed using {CHASE SPEED}. (CHASE SPEED) shows selected chase speed.

J. Push [STORE CHASE].

System records (CHASE START), (CHASE END), and (CHASE SPEED) in selected chase number. In early systems without [STORE CHASE], push [STORE] instead.

K. Record additional chase sequences by repeating steps A through J.

11.2 Clear a Chase

Push [Chase#][CLEAR CHASE][STORE CHASE] to clear a chase. This resets (CHASE START) to **01** and (CHASE END) to **250** for the selected chase.

11.3 Preview a Chase

Push a [Chase#]

Chase start and chase end memories appear in (CHASE START) and (CHASE END). Chase speed in appears (CHASE SPEED). [Chase#]LED lights to show the selected chase.

11.4 Play Back a Chase

[CHASE ACTIVE] allows the operator to automatically sequentially play a group of memories defined by (CHASE START) and (CHASE END).

A. Push a [Chase#].

[Chase#]LED lights. System loads (CHASE START), (CHASE END), (NEXT MEMORY), and (CHASE SPEED) with selected chase information.

B. Push [CHASE ACTIVE].

[CHASE ACTIVE]LED lights and memories begin sequencing within bounds set in the chase. If you enter Blind Mode to record memories or chases blind, the chase "freezes," and will resume its sequencing when you exit from Blind Mode.

C. Adjustments to chase speed may be made using {CHASE SPEED}.

Once the chase is started, the memory sequence plays in numeric order and continues to cycle until turned off by pushing [CHASE ACTIVE].

D. Push [CHASE ACTIVE].

[CHASE ACTIVE]LED goes out and chase sequencing stops.

E. Push [#][ENTER][GO], where [#] is a memory number outside the chase bounds.

System loads new memory and fixtures move as recorded. If new memory is after the chase end memory, the next memory will be the chase start memory. If new memory is before the chase end memory, each push of [GO] will load the next memory until the chase end memory, after which the chase start memory will be loaded

F. Push [CHASE ACTIVE].

[CHASE ACTIVE]LED lights. System loads (NEXT MEMORY) with the chase start memory number, and starts chase.

12. Memory Manipulation

12.1 [COPY] to a Random Memory

[COPY] allows the operator to copy the contents of one memory into another memory. The channels to copy must be specified, either with a channel list, a group, or [ALL CHAN]. The following demonstration shows channel selection with a channel list.

A. Verify that the Record Mode is ON.

B. [#][ENTER][GO] to select source memory (the cue to copy).

(CURRENT MEMORY) shows selected source memory number. Fixtures move to positions recorded in the source memory.

C. Push [CHAN][list][ENTER] to select channels to copy.

D. Push [#][ENTER] to select target memory (the cue to copy to).

(NEXT MEMORY) shows selected target memory number.

E. Push [COPY].

[COPY]LED and [STORE CUE]LED light, showing that the system is in Copy Mode.

F. Push [GO].

System shows target memory number in (CURRENT MEMORY) and increments (NEXT MEMORY) by one.

G. Make any motion or color changes as required in the target memory, which is now live.

H. Push [STORE CUE].

[STORE CUE]LED goes OFF. System records source memory information, with the changes made in step F, into the target memory.

12.2 [COPY] to Next Memory

Push [COPY][CHAN][list][ENTER][GO][STORE CUE].

System copies memory shown in (CURRENT MEMORY) to the memory shown in (NEXT MEMORY). Make any required changes after pushing [GO].

12.3 *[COPY MOVE] to a Random Memory*

[COPY MOVE] allows the operator to copy position information only from one memory into another. The channels to copy must be specified, either with a channel list, a group, or [ALL CHAN]. The following demonstration shows channel selection with a channel list.

A. Verify that the Record Mode is ON.

B. [#][ENTER][GO] to select source memory (the cue to copy).

   (CURRENT MEMORY) shows selected source memory number. Fixtures move to positions recorded in source memory without any change in colors.

C. Push [CHAN][list][ENTER] to select channels to copy.

D. Push [#][ENTER] to select target memory (the cue to copy to).

   (NEXT MEMORY) shows selected target memory number.

E. Push [COPY MOVE].

   [COPY MOVE]LED and [STORE CUE]LED light, showing that the system is in Copy Mode.

F. Push [GO].

   System shows target memory number in (CURRENT MEMORY) and increments (NEXT MEMORY) by one.

G. Make any motion or color changes as required in the target memory, which is now live.

H. Push [STORE CUE].

   [STORE CUE]LED goes OFF. System records source memory motion information, with the changes made in step F, into the target memory.

12.4 *[COPY MOVE] to Next Memory*

Push [COPY MOVE][CHAN][list][ENTER][GO][STORE CUE].

System copies move information only for memory shown in (CURRENT MEMORY) to the memory shown in (NEXT MEMORY). Make any required changes after pushing [GO].

12.5 *[COPY COLOR] to a Random Memory*

[COPY COLOR] allows the operator to copy color information only from one memory into another. The channels to copy must be specified, either with a channel list, a group, or [ALL CHAN]. The following demonstration shows channel selection with a channel list.

A. Verify that the Record Mode is ON.

B. [#][ENTER][GO] to select source memory (the cue to copy).

   (CURRENT MEMORY) shows selected source memory number. Fixture colors change as recorded in source memory without any change in fixture position.

C. Push [CHAN][list][ENTER] to select channels to copy.

D. Push [#][ENTER] to select target memory (the cue to copy to).

   (NEXT MEMORY) shows selected target memory number.

E. Push [COPY COLOR].

   [COPY COLOR]LED and [STORE CUE]LED light, showing that the system is in Copy Mode.

F. Push [GO].

   System shows target memory number in (CURRENT MEMORY) and increments (NEXT MEMORY) by one.

G. Make any motion or color changes as desired in the target memory, which is now live.

H. Push [STORE CUE].

   [STORE CUE]LED goes OFF. System records source memory color information, with the changes made in step F, into the target memory.

12.6 *[COPY COLOR] to Next Memory*

Push [COPY COLOR][CHAN][list][ENTER][GO][STORE CUE].

System copies color information only for memory shown in (CURRENT MEMORY) to the memory shown in (NEXT MEMORY). Make any required changes after pushing [GO].

12.7 [HOLD]

Use [HOLD] to freeze selected fixtures (or a selected group) while still running other cues "around" the frozen fixtures. Since the Hold function uses the group and channel selection facilities to determine the fixtures to hold, you cannot directly modify individual channels or groups while Hold is ON.

A. Select the channels or group to freeze.

B. Push [HOLD]

[HOLD]LED lights, and the selected channels are frozen.

C. Start a chase.

Fixtures on hold do not move, even if there are cues in the chase which address these fixtures.

D. Push [HOLD].

[HOLD]LED goes OFF and fixtures on hold move immediately to the positions dictated by the current cue.

12.8 Clear a Single Memory

To clear a single memory, clear all channels and record the memory.

A. Verify that the Record Mode is ON.

B. Push [GO], [BACK], or [#][ENTER][GO] to select source memory location (the cue to clear).

(CURRENT MEMORY) shows selected memory number.

B. Push [CLEAR ALL].

[STORE CUE]LED lights, showing that data has been changed.

C. Push [STORE CUE].

System clears selected memory. [STORE CUE]LED goes OFF.

12.9 Clear All Memories

1) Turn Disk/Clear All Keyswitch ON (horizontal position)

2) Push [CLEAR MEM].

   System clears all memories, groups, and chases.

3) Turn Disk/Clear All Keyswitch OFF (vertical position).

12.10 Load Memory from Disk

1) Put disk in disk drive.

2) Turn Disk/Clear All Keyswitch ON (horizontal position)

3) Push [MEM LOAD].

   System clears all memories, groups, and chases, and loads new information from the disk.

   If you do not have a disk drive installed, or do not have a disk in the drive, the console will time out and display an error code.

4) Turn Disk/Clear All Keyswitch OFF (vertical position).

12.11 Save Cues to Disk

1) Put disk in disk drive.

2) Turn Disk/Clear All Keyswitch ON (horizontal position)

3) Push [DISK SAVE].

   System loads all memories, groups, and chases onto the disk. All previous information on the disk is erased.

   If you do not have a disk drive installed, or do not have a disk in the drive, the console will time out and display an error code.

4) Turn Disk/Clear All Keyswitch OFF (vertical position).

12.12 Blind Recording

Use [BLIND] to modify a memory without changing fixture positions. In this mode, all movement and record functions are active, but fixtures will not move. Any movement in progress when you enter Blind Mode will continue, but no additional motion information will be sent to the fixtures. Any chase in progress will be "frozen," and will restart when you exit blind Mode (push [BLIND] again).

A. Verify that Record Mode is ON.

B. Push [BLIND].

   [BLIND]LED lights. Any chase in progress stops. If fixtures are in motion, they will complete the assigned motion and will stop. **You cannot send any new motion information (manually or from cues) to on-stage fixtures while this function is active.**

C. Remember memory number in (CURRENT MEMORY) for later resetting.

D. Push [#][ENTER][GO] to select memory to modify blind.

   Selected memory number appears in (CURRENT MEMORY).

E. Adjust color, speed, etc. for the desired lamp #.

   Fixtures on stage do not change positions or color.

F. Push [STORE CUE].

   (CURRENT MEMORY) is re-recorded blind, with new position data.

   If Blind Mode is released at this time, system will send fixtures to positions in the newly recorded memory, which is in (CURRENT MEMORY). Any chase which was in progress will be started where it was "frozen."

G. Push [#][ENTER][GO] to restore original memory (current on-stage positions) to (CURRENT MEMORY).

   Selected memory number appears in (CURRENT MEMORY).

H. Push [BLIND] to cancel Blind Mode.

   [BLIND]LED goes OFF. Lights do not move unless a chase was in progress when you entered Blind Mode, since (CURRENT MEMORY) is the same as when Blind Mode was turned ON. If a chase was in "frozen" when you entered Blind Mode, it is resumed.

13. Play Back Memories

Remember that this console is always in a chase, even if the chase involves all memories. For manual sequencing of memories, one of the chases should be set up with (CHASE START)=1 and (CHASE END)=250.

If manual playback sequencing starts in a lower memory number than the current chase start memory, memories play back in sequence up to the chase start memory, then through the chase, and to the chase end memory. The memory after the chase end memory will be the chase start memory.

If a manual playback sequence starts in a higher memory number than the chase end memory, the next memory will be the chase start memory. Memories will then sequence to the chase end memory, and repeat.

A. Push [#][ENTER][GO].

   Fixtures move to the position(s) set in the memory.

B. To play back memories sequentially, push [GO] at the proper time. The next memory after the chase end memory will be the chase start memory unless memories are individually selected using the Numeric Keypad as in steps A and B.

C. To play back memories randomly, push [#][ENTER][GO] for each memory to play back.

Refer to the chapter on chases for instruction on how to build and run a chase sequence.

Memory #0 is a non-changeable memory which places all functions of all lights to their "Home" position. This is with gel scrolls on their home color, and all fixtures at mid point of pan and tilt travel.

Appendix A

Installation Rules

TaskMaster Operations Manual

A.1 Fanout

Fanout is the number of devices which can be hooked into an output. For Show-Changer components, fanouts for 115VAC, +24VDC (Parscan) or +32VDC (Parscan II), and Control Signal must all be considered.

A. 115 VAC Fanout to Scrollers and Motorized Yokes

115 VAC fanout from any source device is 6 devices. The Power Supply II box (cat. #5575) and TaskMaster do not provide 115VAC unless this option is internally selected.

Sources are:	All controllers Power Supply II with AC internally selected Buffer box on "LOCAL" power Distribution box
Devices are:	All Scrollers Motorized Yokes Buffer Box on "REMOTE" power

B. 115VAC And +24/32 VDC Fanout to Parscan and Parscan II fixtures

+24/32 VDC Fanout applies only to Power Supply I and Power Supply II boxes as a source and only Parscan and Parscan II fixtures as devices.

Six (6) Parscan fixtures (cat. #5410) are allowed per Power Supply I box (cat. #5550 or cat. #5560) or Power Supply II box (cat. #5575).

Six (6) Parscan II fixtures (cat. #5415) are allowed per Power Supply II box (cat. #5575). Use of Parscan II fixtures with the Power Supply I box (cat. #5550 or #5560) should be avoided where possible, since the Power Supply I box only supplies +24VDC, and Parscan II requires +32VDC for optimum operation. Parscan fixtures (cat. #5410) will not be damaged if used with the Power Supply II box (cat. #5415).

Three (3) Parscan II fixtures (cat. #5415) are allowed per Power Supply box I (cat. #5550 or cat. #5560). Parscan II fixtures will not be damaged when used in this manner, but may not operate to full specification.

All power supply boxes must connect to a local power source.

C. Control Signal Fanout

Control signal fanout is 6 devices per active source. **Power supply box and Splitter Box outputs are <u>not</u> active sources.**

Active sources are:	Buffer Output Control Console Output
Devices are:	All fixtures Buffer Boxes

A.2 Allowed Cable Lengths

Allowable distances between ShowChanger components are shown below. These distances assume the use of 18 gauge, shielded, twisted pair wire (Strand Lighting green distribution cables), because of the better shielding it provides for the control signal.

Controller, Interface, or Buffer Box to next buffer point = 250 feet max.

Controller, Interface, or Buffer Box to Motorized Yoke = 250 feet max.

Controller, Interface, or Buffer Box to the last scroller when daisy chained = 100 feet max.

Splitter Box output to Scroller = 20 feet maximum for all but one output. One output may be 100 feet maximum to the last Scroller or 250 feet maximum to a Buffer Box.

Each Parscan II (cat. #5415) must be connected to a Power Supply II box output (Cat. #5575). 5575 power supply box to Parscan II = 50 feet max.

Each Parscan (cat. #5410) must be connected to a Power Supply I (cat. #5550 or #5560) or Power Supply II box (Cat. #5575) output. Power Supply I or Power Supply II box to Parscan = 20 feet max.

Combined length of output cable per Power Supply I box = 100 feet max.

Appendix B

Motion Control Data Bus

TaskMaster Operations Manual

B.3 Motion Control Data Bus

The Strand Lighting Motion Control Data Bus is an 8 wire bus used for transmitting commands and power to ShowChanger automated fixtures.

Transmit format is 1 start bit, 8 data bits, 1 even parity bit, and 1.5 stop bits.

Transmit Rate is 62.5Kbaud.

Data is transmitted with a three byte header, followed by 100 data frames of 8 bytes each.

FF	sync byte 1	)
FF	sync byte 2	)transmission header
AD	data steam identifier	)
XX	pan data	)
XX	tilt data	)
XX	color data	)
XX	speed data	)data frame per fixture
XX	gobo data	)
XX	iris data	)
XX	douser data	)
XX	focus data	)

B.4 Control Cable

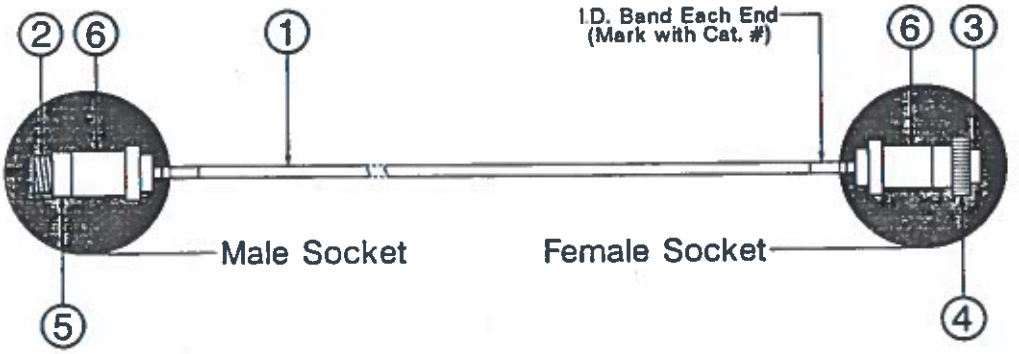
The control cable for Strand Lighting ShowChangers is a special prefabricated cable which can carry Control Signal, +24/32 VDC, and 115 VAC. It does not carry AC power for fixture lamps. **Fixture distribution must use this cable, which is available in several lengths, and can be connected end-to-end.** Consult Strand Lighting Customer Service for available lengths and part numbers. The voltages present in this cable depend on the actual equipment being used. 15VAC is not required for Parscan II.

Transmit and $\overline{\text{Transmit}}$ provide a differential signal for transmitting commands to Showchanger fixtures. Levels on these lines switch between 0 and 5 volts, out of phase with each other. Receivers are opto-isolated.

ShowChangers use two types of cable for basic distribution, identifiable by color (gray or green cable). For longer runs, you should use the green cable, which has shielded, twisted wire pairs for better noise immunity.

	Custom Atlas Cable (Green Cable)		Belden 9157 (Gray Cable)		
Pin #	Wire Color	Pair #	Wire Color	Pair #	Function
1	Yellow	2	Blue	2	+24/32 VDC
2	Green		Black	3	Transmit 8 Volts*
3	White		Black	4	AC Power Neutral
4	Red	2	Black	2	+24/32 VDC Return
5	Black		Red	4	AC Power
6					Not Used
7	Brown	1	White	1	Transmit (0 volts idle)
8	Orange	1	Black	1	Transmit (5 volts idle)
9	Shield Drains		Green	3	Protective Ground

*Not used in later equipment, but useful for oscilloscope reference.



Item	Strand Part #	# Req.	Description
1	1-263157-000 or 6-263002-010		Belden #9157 Cable (Gray Cable) Atlas Custom Cable (Green Cable)
2	1-411314-000	8	Crimp Pin, AMP 66098-9
3	1-411315-000	8	Crimp Socket, AMP 66100-9
4	1-229323-000	1	Plug Molding, AMP 206708-1
5	1-229444-000	1	Receptacle Molding, AMP 206705-2
6	1-141026-000	2	Connector Housing, AMP 206966-1

Figure 9. ShowChanger Cable

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