



TL - 2448

LIGHTING CONTROL CONSOLE



OWNERS MANUAL

Revision 0.6
12/27/2007

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PRODUCT DESCRIPTION

The TL-2448 is a multi-application lighting control console. The unit provides both LMX-128 (multiplex) and DMX-512 output protocols simultaneously. This console will store 600 conventional scenes which can be cued with control of fade times. The cue list may hold up to 600 scenes. There are 2 patch pages for reassigning output channels. Thirty six chase sequences may be created and stored by the operator. Each of these may have 40 steps. Dedicated moving lights support is included for up to 8 moving light fixtures with up to 12 channels per fixture. 600 additional scenes are available for moving light control.

DIMENSIONS AND WEIGHT

The TL-2448 measures Aprox. 23" wide X 18" deep X 2.5" high. The unit weight is 23 pounds.

INSTALLATION**POWER REQUIREMENTS**

The TL-2448 is powered by a 120VAC, 50/60 Hz. A ON/OFF switch is located along the back edge of the unit. The power consumption is 20 Watts.

SIGNAL CONNECTIONS

Output signal connectors for the LMX-128 and DMX-512 protocols are provided along the rear edge of the unit. MIDI connections are also located along the rear edge. Three wire shielded microphone type cable may be used for the LMX-128 signal. Connections for DMX-512 are via the 5 pin female XLR connector. DMX requires a high grade, low capacitance cable (25pf per foot or less). DMX control cable systems should be terminated by a 130 Ohm, 1/4 watt resistor at the last device on the DMX chain. The terminator connects between pins 2 and 3 on a DMX bus.

SIGNAL WIRING CONNECTIONS**LMX-128 3 Pin, Female XLR Connector**

PIN NUMBER	SIGNAL
1	Common or Signal Ground
2	Not Used
3	Multiplexed signal

DMX-512 5 Pin Female XLR Connector

PIN NUMBER	SIGNAL
1	DMX Common
2	DMX Data -
3	DMX Data +
4	Not Used
5	Not Used

WORK LIGHT

The "BNC" coaxial connector near the upper right corner of the unit will accommodate a 12vdc flexible shaft lamp to assist operating the console in dark areas. The maximum power available at this connector is 5 Watts.

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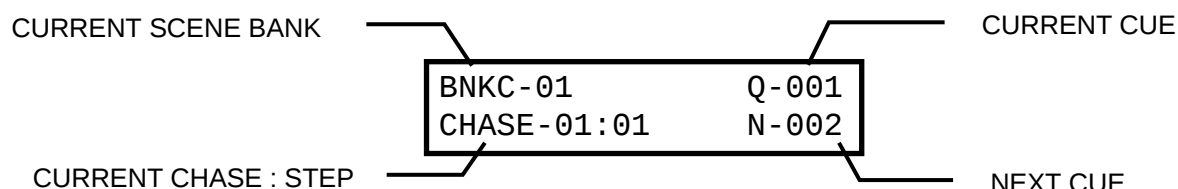
CONTROLS AND INDICATORS

X Faders	Controls intensity of channels 1 - 24
Y Faders	Controls intensity of channels 1 – 24. Controls intensity of channels 25 – 48 in 1 x 48 mode
SUBMASTERS Faders	Activates prestored scenes.
HOUSE MASTER Fader	Console channel 99. Controls any dimmer channel assigned to this number. The fader acts independently of all other console functions including the GRAND MASTER fader.
GRAND MASTER Fader	Master override control for all channels and scenes. Does not affect HOUSE MASTER or chase levels.
X and Y Cross Fader Pair	Transfers control between upper and lower channel faders.
MOMENTARY INTENSITY Fader	Controls the intensity level of the momentary (bump) buttons.
CUE MASTER Fader	Controls the overall intensity of scenes activated via the cue list.
Chase FADE Fader	Controls the rate at which chase steps fade in and out.
Chase INTENSITY Fader	Controls the intensity of the chase patterns.
Momentary (BUMP) Buttons	Activates the associated channel while depressed.
Submaster Momentary Buttons	Activates the associated scene while depressed.
1 x 48 MODE Button and Indicator	Controls whether lower (Y) faders will act as channels 1- 24 or 25 – 48.
SOLO Button and Indicator	Causes bump button to blackout all channels except the channel associated with the button pushed.
BLACKOUT Button and Indicator	Turns off all channels, scenes and chase patterns.
RECORD Button and Indicator	Used to save scenes, chases, and cues into the TL-2448 memory.
GO Button	Causes Cue to advance to the next scene in the list.
TAP Button	Controls the chase step rate.
SUBMASTER BANK Button	Used to set the current scene bank.
MOVING LIGHT SCENES Button and Indicator	Activates moving light scenes.
PRGM MOVING LIGHTS Button and Indicator	Controls moving light set up.
CHASE SELECT Button and LED	Enables submaster momentary buttons as chase 1 – 12 selection.
Keypad Buttons	Used to enter various patch, chase, and cue list selections.
← (Left Arrow)	Used with menu system.
MENU	Activates menu system and executes menu selections.
→ (Right Arrow)	Used with menu system. Also selects current patch page.
Number Keys	Used to enter and edit various setup parameters.
* (DIMMER / CHASE)	Used with keypad to enter various parameters.
# (ASSIGN / NEXT CUE)	Used to enter various parameters.
LCD Display	Shows status of various functions and is used with the menu system to set the parameters of the console operation.
POWER Indicator	Indicates unit is on and flashes at the current chase rate.
WORK LIGHT Connector	Used for a 12vdc lamp.

THE LCD DISPLAY

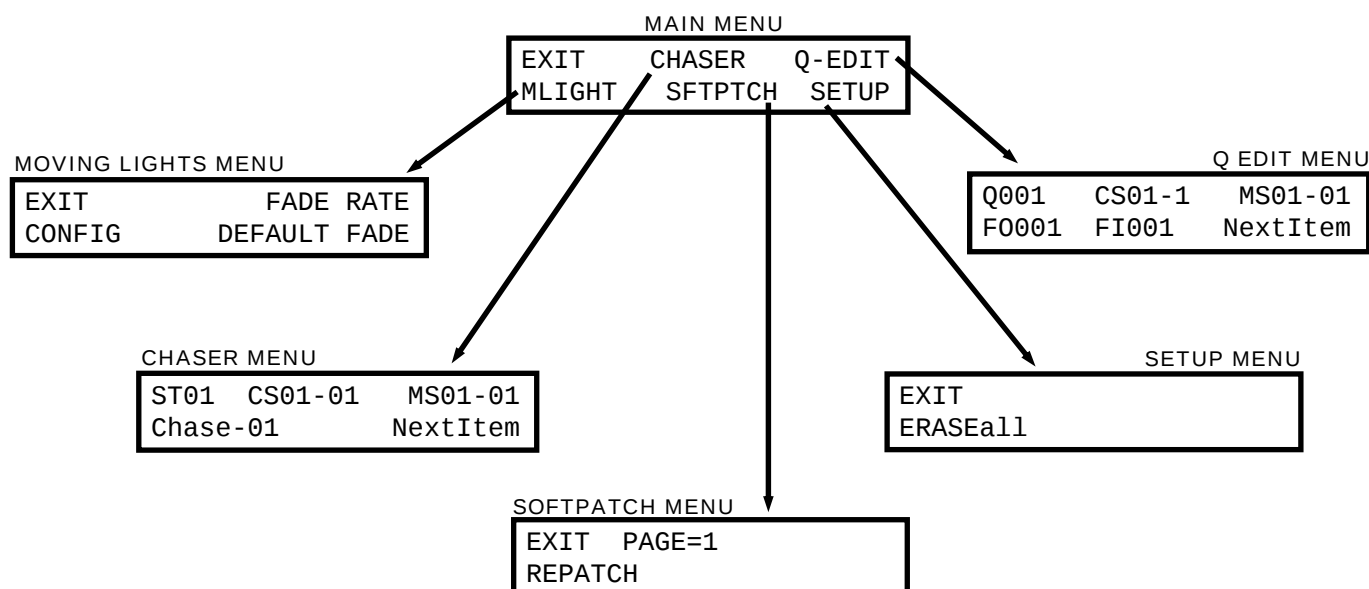
The LCD display is used to show the current status of various functions. During normal operation it indicates the current scene bank number, the current and next cue number, and the current chase number including the current chase step number. This is called the STATUS DISPLAY. The LCD is also a menu system which will be described in detail further on in this manual.

STATUS DISPLAY



THE MENU SYSTEM

The menu system controls the features and configuration settings for the TL-2448. It is activated by pushing the MENU button on the keypad. The TL - 2448 menu structure below. Each of the main menu choices leads to a more detailed submenu to control that specific feature. To activate a menu, use the ◀ and ▶ keys to move between the selections on the main menu. When your choice is blinking, push MENU to select it. Use the same process to select submenus further down in the structure.



SETUP AND PRELIMINARY OPERATION

CONSOLE RESET

The TL-2448 may be cleared or reset using the menu system. It is recommended that the reset procedure be used anytime you begin to set the board up for a new application. This is also a good idea when having operational difficulties since it will configure the unit to a known set of conditions. If you have scenes, cues or chases stored in the unit, be sure that they are written down before you reset the board since they will be lost once the reset is performed.

You can reset the console by using the SETUP menu. Executing the ERASEALL submenu function will cause the following actions to occur:

A one to one channel assignment scheme will be invoked for patch page 1.
Patch page 2 will be completely cleared .
All cues will be set to point to factory default banks/scenes.
Conventional and moving light scenes will be cleared.
Chase pattern 1 will be set to point to the factory default bank/scene. Chases 2 – 36 will be cleared.

CHANNEL ASSIGNMENTS (PATCHING)

DEFAULT CHANNEL ASSIGNMENTS

Execution of an ERASEALL on the console results in a 1 to 1 patch for dimmer channels 1 - 48. The pattern is repeated beginning at dimmer channel 49 (It is assigned to console channel 1 again). The repeat continues up to dimmer channel 256. Beginning at dimmer channel 257 - assignments are made to moving light fixture channels. The moving light channels may be re-assigned to conventional dimmer channels.

You can assign console channels to dimmer channels other than a 1 to 1 correspondence. For instance you may want to have the lights connected to dimmer channels 1 and 2 assigned to console fader 3. (You can have several dimmer channels patched to a single console fader but you cannot assign a dimmer channel to more than 1 console channel at a time.) This channel assignment or "patch" information can be saved in the console as a "patch page".

PATCH PAGES

The TL-2448 contains 2 patch pages. In situations where the console is used for different applications, multiple patch pages can save time that would be spent re-patching each channel for a given application. The current patch page may be toggled between the two pages by using the MENU system.

TO CHANGE THE CURRENT PATCH PAGE

1. Enter the SFTPTCH submenu and push  to select the PAGE= n choice. It will begin flashing.
2. Push MENU to toggle the choice between patch pages 1 and 2.

ASSIGNING CURRENT PATCH PAGE CHANNELS

Channel assignments are always applied only to the currently selected patch page.

Enter the SFTPTCH menu and select REPATCH. The following submenu will be shown:

Patch Dimmers	0000
DIM→000 *	CON= 00 #

Enter a dimmer channel number on the keypad and push *. The number you entered now appears on the left side of the lower row as a dimmer channel selection. Now enter a console channel number as a two digit number on the keypad and push #. This number now appears on the right side of the lower display row and is assigned to the dimmer channel shown on the left. You can continue this sequence for as many channel assignments as necessary. You can use the ◀ and ▶ keys while assigning channels to cycle through the dimmer channel assignments and observe or change the assignments as needed. It is possible to enter four digit numbers for the console channel. If you do so - the assignment will apply to moving light fixtures. See the section of this manual which applies to moving light control.

TO COPY A PATCH PAGE

1. Enter the SFTPTCH menu and select COPY. The following submenu will be shown:

COPY SOFTPATCH TO - 2# MENU to Abort

2. Enter the number (1 or 2) to select where the copy destination will be.
3. Push the # key to execute the copy operation or push MENU to return to normal operation without activating the copy function.

TO RESET THE CURRENT PATCH PAGE

Enter the SFTPTCH menu and select RESET. The following submenu will be shown:

EXIT PATCH 1to1	CLEAR
--------------------	-------

The CLEAR selection will DE-ASSIGN all channels. Console channels are not assigned to any dimmer channels. This condition is useful as a starting point for assigning channels since it provides a known set of conditions. This function affects only the current patch page.

The PATCH 1 to 1 selection assigns a 1 to 1 patch between dimmer and console channels as described in the DEFAULT CHANNEL ASSIGNMENTS section of this manual. The assignment is only for the current patch page.

MANUAL OPERATION

MODES OF OPERATION

Manual operation of the TL-2448 includes two operating modes. These are referred to as the 2 X 24 and 1 X 48 mode. The mode may be switched by the 1 X 48 button located on the right side (slightly above center) of the console. The associated LED indicator is lighted in the 1 X 48 mode.

The TL2448 operates as follows in the two modes described above:

2 X 24 MODE: In this mode only channels 1 – 24 are accessible via the faders. You can create a manual scene with the X faders (upper row) and another with the Y faders (lower row). Once scenes are created you can use the X/Y CROSSFADE pair to control which row is active. The upper row of momentary buttons will flash the corresponding channel.

1 X 48 MODE: In this mode all 48 channels are accessible via the faders. The lower row is channels 25 – 48. This mode is useful for creating and saving preset scenes.

SCENE RECORDING AND PLAYBACK

Scenes in the TL-2448 are organized into 50 banks of 12 scenes each. You can create and store scenes using either the 2 x 24 mode or the 1 x 48 mode. All scenes are capable of recording all 48 channels. Scene banks are selected by the SUBMASTER BANK button. The current bank is shown on the LCD STATUS DISPLAY. Once scenes are recorded they may be played back via the SUBMASTER faders or their associated momentary buttons. Stored scenes are retained until overwritten or cleared. Scenes ARE NOT LOST when the console is turned off. Scenes ARE cleared by the ERASE ALL function in the SETUP menu.

RECORDING A SCENE

Make the desired bank current by pushing the SUBMASTER BANK button until the desired bank is shown on the LCD display or enter the desired bank number on the keypad and push the SUBMASTER BANK button.

1. Create the scene using the faders.
2. Push RECORD. (The LED indicators under the submaster faders will flash.)
3. Push the momentary button associated with the fader you want the scene recorded to.

The scene is now available to be activated anytime that bank is currently selected.

SCENE PLAYBACK

1. Make the desired bank current by pushing the SUBMASTER BANK button until the desired bank is shown on the LCD display.
2. You can activate the scene by its submaster fader. The scene will fade in and out as you raise and lower the fader. You can also activate the scene with the associated momentary button. In this case the scene will instantly come on at its recorded intensity and remain on until you release the momentary button.

Scenes are subject to the setting of the GRAND MASTER fader and are affected by BLACKOUT.

CHASE FUNCTIONS

The TL-2448 will record and playback 36 chase patterns. Each pattern is user programmable and may contain up to 40 steps. The overall brightness of a running chase is controlled by using the CHASE INTENSITY fader. The rate of chase step advance (chase rate) is user controllable. Chase rate is controlled by pushing the TAP button at the desired rate three or more times. The maximum chase step time is 999 seconds. The fade time of the chase steps is adjustable from 0–100% of the step duration. Chase fade time is controlled by the CHASE FADE fader.

The first 12 chase patterns are accessible for playback directly from the submaster momentary buttons if you first push the CHASE SELECT button. All 36 of the chase patterns are available via the keypad. The current chase rate and chase fade time is applied to all chase patterns. Chase patterns are affected by the GRAND MASTER fader and BLACKOUT. Chase operation is exclusive (only 1 chase may be active at a time).

CHASE RECORDING

Chase steps consist of scenes which have been previously recorded. When you record a chase step you are telling the TL-2448 to recall a specific scene from a specific bank.

A chase must be active before it can be programmed from the chaser menu. You can do this from the normal STATUS DISPLAY. Enter the chase number on the keypad and push *****. If you want to program one of the first 12 chase patterns, you can also make it active by pushing the CHASE SELECT button. The LED indicators under the submaster faders will flash. Push a submaster momentary button to activate any one of the 12 chase patterns. Note that in either case, the lower left of the display shows the currently active chase and step number.

Chase pattern recording is done from the CHASER menu which is accessed from the main menu after you have made the chase active. You can also look at and change the existing chaser assignments from this menu.

CHASER MENU

ST01	CS01-01	MS01-01
Chase-01	NextItem	

The upper display row shows the current chase step number, the conventional bank-scene number assigned to the step, and the moving light bank-scene number assigned to the step. The lower left of the display shows the current chase number. The current chase number cannot be changed from this menu.

The bottom right of the CHASER menu indicates how the **←** and **→** buttons on the keypad may be used inside the CHASER menu. When "NextItem" is visible, the **←** and **→** buttons will move you to the next or previous menu item. You may change this action by pushing the MENU button. If you do this the display will show "**←Alter→**" and you can use the **←** and **→** buttons to alter the value (up or down) of the currently flashing menu item. For instance – when the step number is flashing and "**←Alter→**" is displayed you can look at the next or previous step assignments by pushing **←** or **→**.

ASSIGNING SCENES TO CHASE STEPS:

The steps below are used if the menu shows "NextItem" in the lower left display corner.

1. Push **←** or **→** until the step number flashes. Enter the step number on the keypad and push **#**.
2. Push **→** to advance to the conventional scene bank number. Enter the bank number and push **#**.
3. Push **→** to advance to the conventional scene number. Enter the scene number and push **#**.

If you want to include a moving light scene in the chase step:

4. Push **→** to advance to the moving light scene bank number. Enter the bank number and push **#**.
5. Push **→** to advance to the moving light scene number. Enter the scene number and push **#**.

To end the chase recording process push **←** or **→** (while "NextItem" is visible) until a flashing "EXIT" appears in the display lower right corner. Then push MENU.

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CHASE PLAYBACK

The current chase pattern number and step number are always shown on the STATUS DISPLAY lower left.

The first 12 chase patterns can be quickly activated by pushing the CHASE SELECT button. The LED indicators under the submaster faders will flash. Push a submaster momentary button to activate any of the 12 chase patterns.

To activate ANY chase pattern: Enter its number on the keypad – then push the * key.

Adjust the brightness of the chase using the CHASE INTENSITY fader.

Adjust the chase rate with the TAP button and adjust the chase fade time using the CHASE FADE fader. The chase fade will adjust the fade time to anywhere between 0 and 100% of the step time.

It is not necessary to set these chase controls before activating a chase but if you set them first – the chase will begin at your approximate desired settings.

USING CUE LISTS

After you have created and saved scenes in the TL-2448, you can put them into a scene cue list. Once the cue list has been created, you can “play” the list by pushing the GO button. Pushing this button causes the current cue scene to fade out and the next scene to fade in. Each entry in the cue list contains the bank number of a scene, the scene number within that bank, a “fade in” time, and a “fade out” time. The “fade out” time is the number of seconds the PREVIOUS cue scene will take to fade out as the current cue scene fades in. You can adjust both of these times to obtain various effects. Fade times can range from 0 to 999 seconds. The overall brightness of cues is controlled by the CUE MASTER fader. Cues are affected by the BLACKOUT function and the GRAND MASTER fader. Cue number 0 is reserved as a blackout and is not programmable.

The LCD STATUS DISPLAY always shows the current cue number in the upper right section and the next cue number in the lower right. Cues normally proceed in a sequential manner (cue 2 follows cue 1... etc.). You can alter the order of cue playback using the keypad. If you enter a cue number and push ENTER (#), the display will indicate your entry as the next cue to be activated. When you push GO – this cue will fade in.

CUE LIST RECORDING

INITIAL CUE LIST ASSIGNMENTS

The TL-2448 is provided with factory supplied cue list assignments (default cue list). This initial assignment will be invoked any time the ERASE ALL function is executed from the SETUP menu. The default cue list assignments are arranged in 12 groups of 48 cues each. The first group is assigned as follows:

CUE	BANK	SCENE
01 – 12	1	1 thru 12
13 – 24	2	1 thru 12
25 – 36	3	1 thru 12
37 – 48	4	1 thru 12

This assignment is repeated for the next group (beginning at cue 49). The result is that cue 49 will have the same assignments as cue 1. This sequence is repeated for each following group of 48 cues.

VIEWING AND EDITING THE CUE LIST

You can look at and change the current cue assignments from the Q-EDIT menu which is accessed by selecting it from the main menu. The menu is shown here.

Q001	CS01-1	MS01-01
F0001	FI001	NextItem

The cue number will be shown flashing in the upper left menu corner. The rest of the menu will show the settings for that cue. The top center shows the bank and scene number of the conventional scene for that cue. The top right shows the same information for the moving light scene for that cue. The bottom row shows the fade out and fade in times (seconds) for the cue.

The bottom right of the Q-Edit menu indicates how the ← and → buttons on the keypad may be used inside the Q-EDIT menu. When "NextItem" is visible, the ← and → buttons will move you to the next or previous menu item. You may change this action by pushing the MENU button. If you do this the display will show "←Alter→" and you can use the ← and → buttons to alter the value (up or down) of the currently flashing menu item. For instance – when the cue number is flashing and "←Alter→" is displayed you can look at the next or previous cue assignments by pushing ← or →. This a quick method to review cue settings.

TO ASSIGN SCENES TO A CUE:

The steps below are used if the menu shows "NextItem" in the lower left display corner.

1. Push ← or → until the cue number flashes. Enter a cue number on the keypad and push #.
2. Push → to advance to the conventional scene bank number. Enter the bank number and push #.
3. Push → to advance to the conventional scene number. Enter the scene number and push #.

If you want to include a moving light scene in the cue:

4. Push → to advance to the moving light scene bank number. Enter the bank number and push #.
5. Push → to advance to the moving light scene number. Enter the scene number and push #.
6. Push → to advance to fade out time. Enter the fadeout time on the keypad and push #.
7. Push → to advance to fade in time. Enter the fade in time on the keypad and push #.

You can sequentially scan through the cues in consecutive order when the cue number is flashing and "←Alter→" is displayed, by using the ← and → buttons.

To end the cue recording process Push ← or → (while "NextItem" is visible) until flashing "EXIT" appears in the display lower right corner. Then push MENU.

CUE LIST PLAYBACK

Playing the cue list is a simple matter of pushing the GO button. The GO button activates the next consecutive cue. The current cue's scene will fade out and the scene for the next cue will fade in. The normal STATUS DISPLAY always shows the current cue and the next cue to keep you aware of the cue sequence. The overall intensity of cue list scenes is controlled by the CUE MASTER fader.

You can change the order of cue list playback during normal operation by using the keypad. To choose a specific cue to be activated – enter its number on the keypad and push #. This assigns that cue to be next and its number will show in the lower right corner of the STATUS DISPLAY. When you push GO - This cue will be invoked.

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There is a cue number 0 which is not programmable. This cue contains a blackout. You can invoke this cue during normal operation by using the keypad as described above.

CONTROLLING MOVING LIGHTS

The TL-2448 Console has a dedicated set of functions to control moving lights. Moving light fixtures and conventional lighting may be operated simultaneously. There are provisions to control up to 8 moving light fixtures with 12 channels for each fixture. The TL-2448 has 600 scenes (arranged as 50 banks of 12 scenes each) which are dedicated moving light scenes. Moving light scenes may be used in the cue list and chases.

Moving light control using the TL-2448 is designed to operate on a "scene" basis. The overall approach to setting up a moving light consists of:

1. Setting the DMX address on the moving light fixture to the desired DMX start channel.
2. Soft-patching a set of TL-2448 console channels to correspond to the desired fixture/channel block.
3. Creating and storing as many basic scenes as desired to operate the fixture.
4. Setting the fade controls for the scenes.

The scenes you create can then be activated from the TL-2448 SUBMASTER momentary buttons, entered into the cue list, or included in chases.

SOFT-PATCHING MOVING LIGHT CHANNELS

DEFAULT MOVING LIGHT CHANNEL ASSIGNMENTS

The TL-2448 is provided with default channel address assignments. You normally will not have to change these assignments for moving light control.

The default patch configuration for the TL-2448 assigns dimmer channels 1 - 256 as conventional lighting channels. Dimmer channel 257 is assigned to moving light Fixture 1/Channel 1. Channel 258 is Fixture 1/Channel 2. The remaining 10 channels of Fixture 1 are assigned consecutively. The next available dimmer channel (269) is assigned to Fixture 2/Channel 1. The assignments then proceed consecutively through Fixture 2/Channel 12. These assignments continue through Fixture 8/Channel 12. A table of default channel assignments is shown below.

DEFAULT MOVING LIGHT CHANNELS

Fixture #	DMX Start Channel	Fixture #	DMX Start Channel
1	257	5	305
2	269	6	317
3	281	7	329
4	293	8	341

1. Proceed to the SFTPTCH menu and select REPATCH. The menu shows the current channel assignments.

```
Patch Dimmers    0000
DIM→000*      CON=  00#
```

2. Select a dimmer channel (1 - 512). Enter the number on the keypad and push the *key OR use the ← and → keys to cycle through the dimmer channels. The dimmer channel will be shown on the display lower left and it's assigned console channel will be shown on the lower right.

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- To change the assigned console channel, enter a valid console channel number and push the # key. If you enter a 2 digit number 1 - 48 (or 99, for the house master) then your entry will be accepted as a conventional lighting channel. If you enter a 4 digit number then the entry will be assigned as a moving light fixture and channel. The left 2 digits are 1 - 8 for the fixture number and the right 2 digits are 1 - 12 for the channel number within the fixture.

As an example: An assignment of dimmer channel 259 to channel 3 of moving light fixture 2 will appear on the display as show here.

Patch Dimmers	0203
DIM→259*	CON=02-03#

CREATING MOVING LIGHT SCENES

SETTING BASIC SCENE CONDITIONS

- To create a moving light scene you must first select the fixture: Push PROGRAM MOVING LIGHTS then push the SUBMASTER momentary button corresponding to the fixture number (1 - 8). Fixture number 1 is on the left. You can select more than one fixture at a time by selecting more than one SUBMASTER momentary button.
- At this point you can control the moving light fixture from the SUBMASTER faders. Each of the faders controls one of the fixture functions. For instance fader 1 may control pan and fader 2 control tilt. The function of each fader depends on the particular fixture model so you will need to consult the manual for the fixture to determine which channel controls which fixture function.

USE CAUTION WHEN MOVING FADERS. YOU COULD CAUSE THE FIXTURE TO MOVE IN UNEXPECTED WAYS IF YOU ARE NOT FAMILIAR WITH ITS OPERATION. THIS CAN BE A DANGER TO PERSONS NEAR THE FIXTURE. IT MAY ALSO BE POSSIBLE TO DAMAGE THE FIXTURE.

RECORDING THE SCENE

Once you have adjusted all the fixture functions the moving light scene is ready for recording. It can be stored in one of the 12 scenes available in any of the moving light scene banks (1-50). To record the scene:

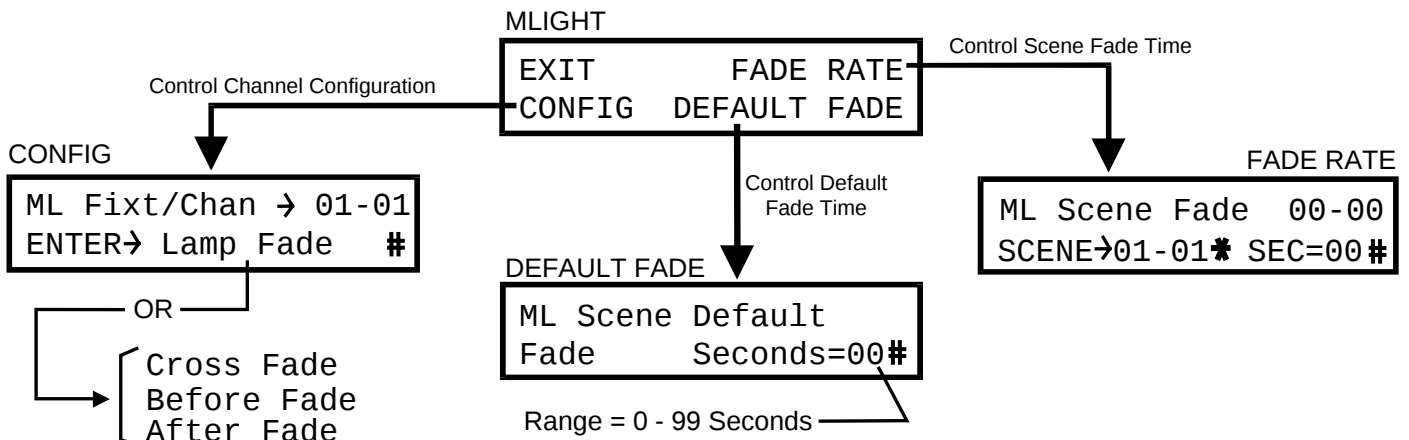
- The display shows the current moving light scene bank in the upper left section as BNKM-nn, where nn is the bank number. Select the desired bank by pushing the SUBMASTER BANK button (which will cycle through the banks) OR enter the bank number on the keypad and then push the SUBMASTER BANK button.
- Push the RECORD button. The RECORD light and 12 SUBMASTER momentary lights will flash.
- Push the SUBMASTER momentary button that corresponds to the scene number (1-12) where you want the scene stored.

At this point the scene is stored in the selected bank and scene number with the DEFAULT scene fade rate applied. This fade rate may be later altered from the menu system.

APPLYING SCENE FADE CONTROLS

A moving light scene describes multiple functions for a fixture and some of them are associated with a fade rate. You can control the overall scene fade rate. You can also control the time which certain functions will occur during scene activation. For instance you may want the pan and tilt to move to their new positions before the intensity or color change occurs.

These controls are set using the TL-2448 menu system. The MLIGHT menu has 3 submenus which enable control of scene fade functions. A diagram of the moving lights menus is shown below. You can alter any of these settings at any time.



CHANNEL CONFIGURATIONS

The TL-2448 can be set to control when and how each fixture function is applied to a scene. There are 4 conditions which can be applied:

LAMP FADE - Causes that function to proceed to its new value at the scene fade rate. Additionally, the position of the GRAND MASTER fader is applied to the scene and the condition of the BLACKOUT button is applied.

CROSS FADE - Also causes that function to proceed to its new value at the scene fade rate. The GRAND MASTER and BLACKOUT controls have no effect.

BEFORE FADE - Causes that function to ignore fade rates and proceed to the new value before any fade rate is applied to the scene.

AFTER FADE - Causes that function to ignore fade rates and proceed to the new value after any fade rate applied to the scene has completed its transition.

CONFIG - SETTING THE CHANNEL CONFIGURATION

Each function of each fixture may be set using the CONFIG menu. Use the → and ← keys to cycle through the available fixture/channel selections or enter the fixture/channel number on the keypad as a 4 digit number and push the # key. The settings for the function are shown on the lower row on the display. Use the # key to cycle through the available selections (LAMP FADE, CROSS FADE, BEFORE FADE, and AFTER FADE.).

DEFAULT FADE - SETTING THE DEFAULT FADE TIME

This is the fade time which will be used when a scene is recorded. It is also applied when a scene is turned off if the scene was activated manually. The time is controlled from the DEFAULT FADE menu. Enter the time as a 2 digit number on the keypad and then push the # key. Scene fade times may be altered for individually scenes after recording the scene.

FADE RATE - SETTING THE SCENE FADE RATE

The default fade time applied to the scene when it was recorded can be altered using the FADE RATE menu.

Use the ← and → keys to cycle through the available bank/scene selections or enter the bank/scene number on the keypad as a 4 digit number and push the # key. The fade time is shown in the lower right of the display. To change the fade time - enter the time as a 2 digit number and push the # key. Remember that you are setting the rate for each scene independently.

ACTIVATING MOVING LIGHT SCENES

Once a scene has been recorded - it may be activated manually from the SUBMASTER momentary buttons. It may be also entered into the CUE list and may be used as a chase step.

MANUAL SCENE ACTIVATION

1. Push MOVING LIGHT SCENES to enable activation. Note that the display now shows the current scene bank for moving lights.
2. To activate a moving light scene you must first select the bank in which it is stored. The display shows the current moving light scene bank in the upper left section as BANKM-nn, where nn is the bank number.

Select the desired bank by pushing the SUBMASTER BANK button (which will cycle through the banks) OR enter the bank number on the keypad and then push the SUBMASTER BANK button.

3. Push the SUBMASTER momentary button that corresponds to the scene number (1-12) you want to activate. The scene will be activated using the settings which were selected for each channel of the fixture.

The SUBMASTER faders will still operate conventional scenes according to the conventional scene bank number. This means that you can activate conventional scenes simultaneously with the moving light scene.

If you push the MOVING LIGHT SCENES button after a moving light scene is turned on - the display will return to the current conventional scene bank. The moving light scene will remain active. You can now activate conventional scenes in other banks by selecting the desired bank and operate the scene using either the SUBMASTER faders or the SUBMASTER momentary buttons.

MOVING LIGHT SCENES IN CUE'S OR CHASES

The TL-2448 Cue List or any of the chases can use any of the moving light scenes in addition to conventional scenes. See the section of the TL-2448 manual which applies to using cue lists and chase functions.

TL-2448 WIRELESS OPTION

The TL-2448 can optionally be provided with an internal RF transmitter module which transmits the DMX-512 control signal. It can operate with multiple compatible wireless DMX dimmers and/or receivers. The receiver units get the the same information they would get using a cable connected to the TL-2448 DMX connector.

The wireless system uses the 2.45 GHz band and operates at low power (< 100mW). The operating range is approximately 1400 ft. indoors and about 4000 ft. for outdoor operation. This range could vary significantly depending on the surrounding conditions.

A link between a specific single wireless equipped TL-2448 and one or more compatible receiving units is invoked to enable wireless operation. The linking operation is performed at the TL-2448. Once linked, the receiver units can operate ONLY with that specific console. The link is retained even when the receiver and/or console are powered off. The receiver units may be released from the link either at the TL-2448 or at the receiver. If released at the console then ALL linked receivers will be released. If released at the receiver then ONLY that receiver will be released.

ANTENNA CONNECTION

Carefully thread the antenna to the gold antenna connector on back edge of the unit. It should be finger tight only. The connectors can be damaged or jammed if too tight. The antenna will swivel to a convenient orientation while connected.

OPERATION

A small pushbutton (Link Control Button) and a LED (Link Status Indicator) are located on the rear edge of the console. The button controls all wireless operation. The LED indicates wireless status.

LINK STATUS INDICATOR LED

The indicator shows wireless status as follows:

OFF	NO WIRELESS POWER
ON	TRANSMITTER OK
FLASH	LINKING IN PROGRESS or LINK RELEASE IN PROGRESS

LINK CONTROL BUTTON

This pushbutton switch is used to link all free receiver units within its range. It is also used to release the links with all receivers in its range which are linked to it.

Links cannot not be made with receivers already linked to another transmitter unit.

You should begin by unlinking the receivers AT THE RECEIVERS you are going to use. They may be linked to other transmitters. If this is the case then they cannot be linked or released by the TL-2448 you want to use until they are released from the existing link.

LINKING RECEIVERS

Push the link control button once (do not hold down). The indicator LED will flash for about 10 seconds. It will then go to an ON state.

The link indicator on the receiver will also flash and may continue this for several more seconds after the console indicator goes back to ON. The link indicator on the receiver will go to an ON state when the link is stable.

RELEASING ALL RECEIVERS

This will release only receivers linked to the TL-2448 you are using.

Hold the link control button down for about 5 seconds.

The indicator LED will go to a flash state for about 10 seconds then return to ON. The link indicator on the receiver unit(s) will go OFF.

Link release for a single receiver unit can only be performed at the receiver unit. Performing this operation at the receiver unit will release it from any/all transmitters.

MAINTENANCE AND REPAIR

OWNER MAINTENANCE

The best way to prolong the life of your TL - 2448 is to keep it dry, cool, clean and COVERED when not in use.

The unit exterior may be cleaned using a soft cloth dampened with a mild detergent/water mixture or a mild spray-on type cleaner. DO NOT SPRAY ANY LIQUID directly on the unit. DO NOT IMMERSE the unit in any liquid or allow liquid to get into the controls. DO NOT USE any solvent based or abrasive cleaners on the unit.

There are no user serviceable parts in the unit. Service by other than Lightronics authorized agents will void your warranty.

TROUBLESHOOTING

Check that the multiplex cable or DMX cable is not defective (a very common source of problems!).

To simplify troubleshooting - set the unit to provide a known set of conditions. This may include resetting the unit or returning the patch setup to a 1 to 1 configuration.

Make sure that the dimmer address switches are set to the desired channels.

OPERATING AND MAINTENANCE ASSISTANCE

Dealer and Lightronics Factory personnel can help you with operation or maintenance problems. Please read the applicable parts of this manual before calling for assistance.

If service is required - contact the dealer from whom you purchased the unit or contact Lightronics, Service Dept., 509 Central Drive, Virginia Beach, VA 23454 TEL: (757) 486-3588.



All Lightronics products are warranted for a period of TWO/FIVE YEARS from the date of purchase against defects in materials and workmanship.

This warranty is subject to the following restrictions and conditions:

- A) If service is required, you may be asked to provide proof of purchase from an authorized Lightronics dealer.
- B) The FIVE YEAR WARRANTY is only valid if the warranty card is returned to Lightronics accompanied with a copy of the original receipt of purchase within 30 DAYS of the purchase date, if not then the TWO YEAR WARRANTY applies. Warranty is valid only for the original purchaser of the unit.
- C) This warranty does not apply to damage resulting from abuse, misuse, accidents, shipping, and repairs or modifications by anyone other than an authorized Lightronics service representative.
- D) This warranty is void if the serial number is removed, altered or defaced.
- E) This warranty does not cover loss or damage, direct or indirect arising from the use or inability to use this product.
- F) Lightronics reserves the right to make any changes, modifications, or updates as deemed appropriate by Lightronics to products returned for service. Such changes may be made without prior notification to the user and without incurring any responsibility or liability for modifications or changes to equipment previously supplied. Lightronics is not responsible for supplying new equipment in accordance with any earlier specifications.
- G) This warranty is the only warranty either expressed, implied, or statutory, upon which the equipment is purchased. No representatives, dealers or any of their agents are authorized to make any warranties, guarantees, or representations other than expressly stated herein.
- H) This warranty does not cover the cost of shipping products to or from Lightronics for service.
- I) Lightronics Inc. reserves the right to make changes as deemed necessary to this warranty without prior notification.