



MC 6300

MEMORY LIGHTING CONTROLLER

Software Revision 1.00 and above

OPERATION MANUAL

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NSI CORPORATION
Wilsonville, OR

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1

Introduction

Welcome

You are entering a new era of microprocessor controlled stage lighting technology. The powerful NSI Micro-Plex designs involve the electrical marriage of microprocessor technology and digitally controlled multiplexing. The result is a control package with the flexibility for a variety of innovative applications.

The NSI MC 6300 Series Lighting Console features an advanced microprocessor based design containing many benefits found in today's personal computers. This technology provides for the option of adding programmable Memory Scene Masters and Chase effects to the simplicity of a familiar two scene console.

The NSI MC 6300 Series Lighting Console represents our continuing commitment of leading the industry in defining technological advances for stage lighting.

Welcome to the era of microprocessor controlled stage lighting!

2 Installation\Setup

Power Supply

The MC 6300 requires 12-15VDC to operate. This voltage can be either supplied by the dimmer packs when using NSI dimmers through the Micro-Plex cable or by using an external power supply connected to the power input jack when using non-NSI dimmers or the DMX 512 interface (power supply is provided with the DMX 512 option).

Micro-Plex runs of over 100 ft may require the use of the power supply. Micro-Plex and the power supply may be used simultaneously.

Connect the power supply to the DC power connector on the back of the MC 6300 and connect the other end to an 120V AC outlet. The console has no power switch.

Dimmer Connection

Micro-Plex

The MC 6300 consoles come standard from the factory with two Micro-Plex (3 pin XLR connectors) outputs. DMX 512 (5 pin XLR connector) dimmer control is optional.

Connecting the MC 6300 to NSI dimming systems is very simple. You need only connect a single 3 conductor audio cable (standard microphone cable with 3-pin XLR connectors) or equivalent shielded cable to the Micro-Plex output jack on the back of the console. The other end of the cable is then connected to the first NSI dimmer pack. Another 3 conductor cable is used to connect the first dimmer pack to the second dimmer pack. Additional NSI dimmer packs may be connected in the same manner.

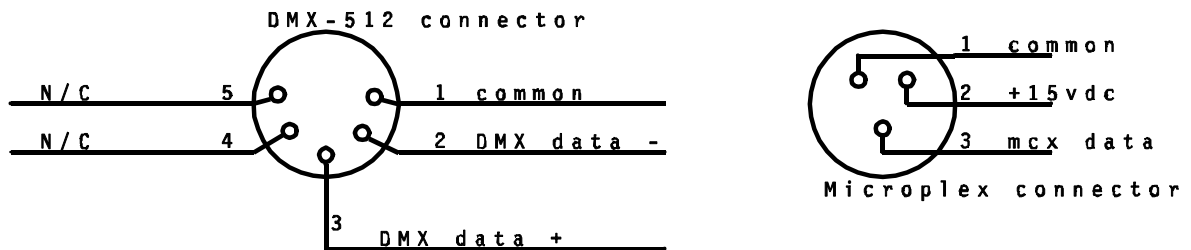


Fig. 1 Dimmer Output Connectors

NOTE: Minimum 20 gauge high quality shielded cable is recommended in the run between the console and the dimmers to prevent interference and dimmer flickering caused by noise. 18 gauge cable is recommended in runs over 100ft.

DMX 512

DMX 512 is a digital signal that provides the highest speed, precision, and noise immunity. Rules for connecting DMX 512 are more stringent:

- Use cable that is specified as RS-485 or RS-422 compatible (1 or 2 twisted pair w/ shield) and use largest gauge available (22 - 18 gauge is good for long runs of 1000ft).
- Daisy chain the cable only (no star or home runs) and terminate the end of the cable with a 120 ohm resistor. (See dimmer manual for proper terminating practice).

Connect the cable from the dimmers to the marked connector on the rear of the console.

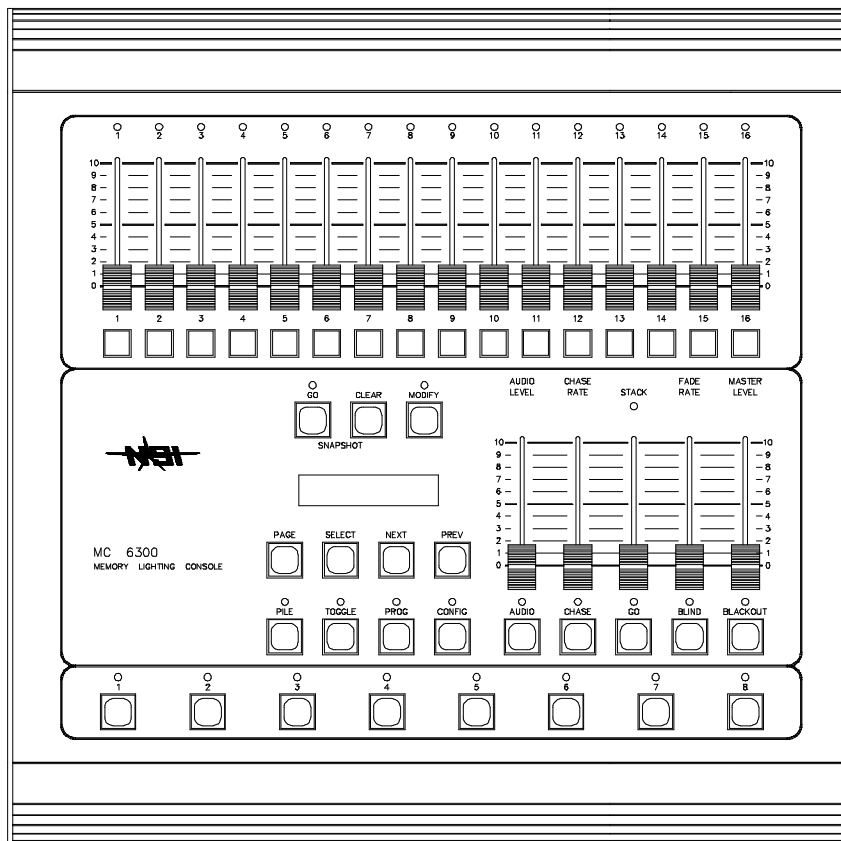
Configuration

The first time the MC 6300 is used, the configuration parameters may need to be set, otherwise the unit may appear to be operating improperly. Please see the chapter, Configuration Guide, in this manual for further details.

3 Overview

Front Panel

1. *Channel Level Slide Controls* The Channel Level Slide Controls are used to vary the output levels of the 16 individual control channels. These levels can be used in programming memory scenes or chase steps. They can also be used to directly control the channel's output to stage.
2. *Master Level* Overall light intensity to the stage is controlled by the Master Level slide control. While the Master Level is usually kept in the maximum position (fully up), all light levels, except those from the channel bump buttons, can be increased or decreased proportionally by adjusting this slide control. It should be noted that the Master Level control only affects the output levels and has no effect on the LED channel level indicators.
3. *Audio*



The Audio slide control adjusts the input sensitivity of the audio circuitry. Adjust the audio sensitivity by starting this slide control at minimum and increasing until the desired effects have been achieved.

4. *Chase Rate* The Chase Rate slide control adjusts the step rate of the chase effect. The step rate is indicated by the red LED located directly below the Chase Rate slide control. This LED will flash every time the chase is sequenced.
5. *Fade Rate* The MC 6300 has an autofader to provide automatic dipless crossfades from one scene to another. The Fade Rate slide control determines the speed at which the fade will occur. The fade will happen instantly when this control is in the fully down position and causes increasingly slower fades as the control is raised.

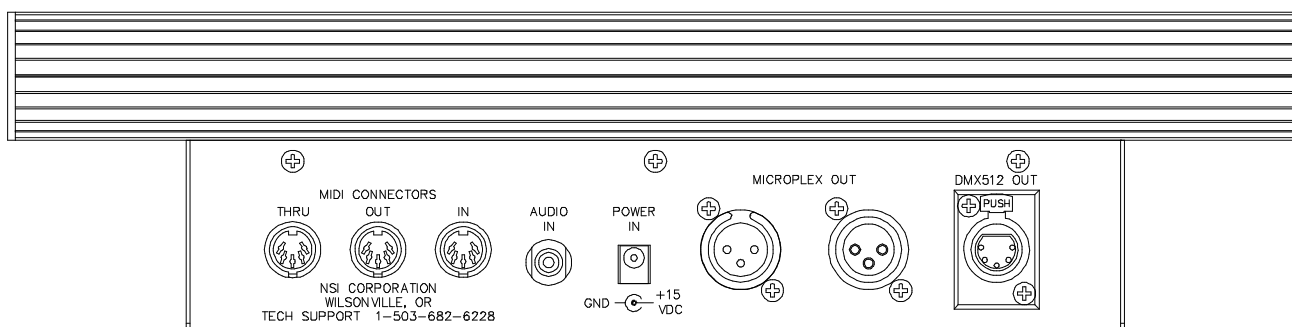
6. *Stack* A Stack crossfade slide control is provided to allow manual crossfades between Stack steps to be performed by the operator. The Stack allows memory scenes to be executed sequentially.
7. *Channel Output LED's* The 16 LED's above the channel sliders are variable in intensity and give a relative indication of the current output level of that channel.
8. *Channel Bumps* Channel Bump buttons allow individual channels to change quickly to full intensity.
9. *Toggle* Activating the Toggle function will cause the Channel Bump buttons to toggle on or off with each press.
10. *Page* The MC 6300 memory scenes are structured into 16 pages. Each page contains 8 memory scenes that can be accessed with the 8 scene select buttons. Pages are selected by using the Page button. Each tap of the Page button sequences to the next page. The active page is indicated on the LCD display. While holding the Page button down, the Next and Previous buttons can be used to increment or decrement the page.
11. *Program* The Program button is used to program Memory Scenes, the Stack, Chases and Audio trigger effects. Simply press the Program button followed by the function desired to initiate programming.
12. *Pile* Pile allows scenes to be brought up on top of each other. This feature can be used as many times as wished, so to allow as many scenes to be piled on as desired.
13. *Modify* Lighting channels can be controlled individually on stage by activating the Modify function.
14. *Snapshot Go* The Snapshot Go button can be used to create scenes on the fly. When the Go button is pressed, a snapshot of the channel slide controls is placed into an autofader and faded to at the current fade rate.
15. *Snapshot Clear* The Snapshot Clear button is used to blackout the Snapshot at the current fade rate.
16. *Blind* The Blind button allows previewing and programming of memory without affecting the stage levels.
17. *Blackout* Pressing the Blackout button will cause one of two things to happen. If a chase is active, tapping Blackout will cause the chase to fade out at the current autofade rate. If no chase is active, or has just been deactivated, a tap of the Blackout button will cause all stage levels to fade out at the current autofade rate.
18. *Configuration* Changes to the MC 6300 configuration modes are initiated with the Configuration button. Configuration modes include such things as number of dimmers output and softpatch.
19. *LCD display* The LCD display is located at the center of the console's front panel. When no special functions are active, this display shows the current memory page number, active chase number, chase rate, fade rate, current stack step and next stack step.
20. *Select* The Select button is used to Select an item for modification on the LCD display during configuration or Stack programming. The item is selected if it is underlined.
21. *Next* The Next button will increment the stack step if no special function is selected. If the console is in Configuration mode, the Next button is used to sequence through various modes or to modify an item.
22. *Previous* The Previous button will decrement the stack step if no special function is selected. If the console is in Configuration mode, the Previous button is used to sequence through various modes or to modify an item.

NOTE: Touch Sensitive Buttons

All of the buttons on the MC 6300 that initiate or deactivate scenes operate such that tapping the button will cause fading to occur at the current fade rate determined by the Fade Rate slide control. Pressing and holding the button will override the fade control and cause an instant fade.

Rear Panel

1. *Power In* If the console is not being used with NSI dimmers operating with Micro-Plex., the Power In connector provides for connection to a power supply that is appropriate for the country that the console is used in. (See dealer for information on proper supply)
2. *Micro-Plex Outputs* These 2 outputs provide NSI's microphone dimmer connection via a 3 pin XLR type connector.
3. *DMX 512* This optional output provides control information to dimmers or devices using this protocol. It's 5 pin XLR connector conforms to the USITT standard.
4. *MIDI In/Out/Thru* These connectors are for connecting to a MIDI sequencer or disk drive.
5. *Audio input* This phono jack will accept audio signals for controlling some console functions.



4 Operation Guide

General

The MC 6300 Memory Lighting Console provides 128 memory scenes which can be accessed at random by the user, 8 chase effects and a Stack processor which allows memory scenes to played back in any order with preprogrammed fade times. In addition, the console provides manual operation through the use of Snapshot, Modify and Channel Bump buttons.

To give the user channel intensity feedback, channel output LED's are provided above the channel slide controls. These LED's show the relative intensities from all console functions and are not affected by the Master.

Operation

Memory Scenes

The MC 6300 is capable of storing 128 scenes in internal memory. These scenes are completely user programmable and may be reprogrammed at any time. The memory scenes are organized into 16 pages of 8. Eight memory scene access buttons are available on the controller to bring up any of the 8 scenes within the page indicated on the LCD display.

Scenes that have been programmed can be recalled at any time by pressing the desired Memory Scene button when the proper Page is active. Pressing the button a second time will cause the scene to fade out.

Only one memory scene can be active on an autofader at a time. Therefore, if one Memory Scene button is already active and another is pressed, a fade will occur from the first to the second. The green LED above each Scene Select button indicates which scene is presently active. It should be noted that memory scenes that are piled-on are not affected by this process and will remain on when changing Memory Scene buttons.

The MC 6300 has two autofaders available to the Memory Scene buttons. This allows the user to have two scenes from the Memory Scene buttons active at the same time. For example, specials can be brought up and changed on one autofader while general lighting can remain on or be changed independently. The split where one autofader begins and the other ends is determined with a Configuration mode. To configure the Memory Scene buttons see the chapter Configuration Guide.

Chase Effects

There are 8 programmable chase effects available on the MC 6300. Each Chase is programmable to 32 steps. Each step may have any combination of channels each at any level.

To activate a chase, first move the Chase Rate control slider to the desired step rate. The rate is shown, in beats per minute (BPM), on the LCD display in the upper right hand corner right after the active chase number. For example, if Chase 5 is active at a rate of 120 BPM, the LCD display will read "C:5>120". An asterisks in the chase number position indicates that no chases are active. You can then activate a chase by holding down the Chase button and tapping the corresponding Memory Scene button.

Once the chase is activated, the LED above the Chase button will flash with each chase step. The user can change the rate with the Chase Rate slide control. If the slide control is brought to the fully down position, the chase will stop sequencing until the slide control is raised again.

The Chase button has three different uses while a chase is active. If the Chase Rate slider is in the fully down position, the Chase button can be used to sequence the chase one step at a time by simply tapping it. If the Chase Rate slide control is not fully down, the Chase button can be used to halt the chase sequencing until the button is released. Finally, the Chase button can be used to crossfade to another chase by simply repeating the above chase activation procedure.

Cue Stack

The Cue Stack feature allows combinations of Memory Scenes already stored in memory to be arranged as steps in the Stack.

The LCD displays the Stack information as follows:

Next Step >Current Step

An asterisks in both step fields indicate that the Stack is empty and not programmed. An asterisks in the Next Step field only indicates that the Stack will be cleared the next time the Go button is pressed. An asterisks in the Current Step field only indicates that the Stack is presently cleared.

The Stack always executes steps in numerical order from the first or selected step, starting over when the blackout step (asterisks) has been reached. Any step may be directly accessed by using the Next or Previous buttons.

Pressing the Stack Go button will cause the current step to fade out and the next step to fade in at the preprogrammed fade rate.

Steps may be executed manually by moving the Stack Fade Crossfader control up and down. Each time the control reaches the end of movement, the step will be advanced.

→ *EXAMPLE: Select and execute the Stack starting at step 1*
→ *Press the Next or Previous button until 1 is displayed as the next step*
→ *Press Stack Fade GO Button (current now 1, next now 2)*
→ *Press Stack Fade GO Button (current now 2, next now 3)*
→ *Press Stack Fade GO Button (current now 3, next now 4)*
→ *etc.*

→ *EXAMPLE: Clear the Stack assuming a step is active and the next step is not blackout*
→ *Press the Next or Previous button until the next step shows an asterisks*
→ *Press Stack Fade Go button*

Audio Sync

An audio signal may be supplied to the console for causing the chase to synchronize to the beat of the audio and to affect the intensity of predetermined channels.

To synchronize chase activate the audio mode by tapping the audio button until the LED below it lights. Now activate a chase and move the Chase Rate control to the minimum position. Move the Audio Sensitivity slide control slowly up until the desired affect is achieved.

To effect channel intensities select the channels to be affected by audio. Move the corresponding channel sliders to maximum, while moving all other channel slide controls to minimum. Press the Program button followed by the Audio button. Now when audio mode is active, the selected channels will vary intensity to audio level.

Snapshot

The Snapshot Go button can be used to create scenes on the fly. When the Go button is pressed, a snapshot of the channel slide controls is placed into an autofader and faded to the current fade rate. The channel sliders can then be moved without effecting the stage levels. Pressing the Snapshot Go button will then cause the levels generated by the first press of the Go button to fade to the levels generated by the second press. This process gives the console a 2 scene type operation. The Snapshot Go LED will be lit whenever this function is active.

The Snapshot Clear button is used to blackout the Snapshot buffer at the current fade rate setting. Tapping Blackout will also clear the Snapshot unless a Chase is active, in which case only the Chase will Canceled.

Modify

Lighting channels can be controlled individually on stage by activating the Modify function. This allows for scene modification during an actual production. When active, each channel slide control can be used to gain control of the level of that channel by moving it to the current level indicated by the LED directly above it. The output LED will blink whenever a channel slider has control of it.

Tap the Modify again to release control of the channels. The channels will fade to their original levels at the current fade rate setting.

Note: Whenever Modify has control of a channel, it is forced to that level. Even if a scene is active with a higher level, the channel will stay at the lower modified level. This is very useful in editing memory scenes, since a channel of a scene can be reduced and then reprogrammed over itself.

Pile On Scenes

Using the Pile On button allows memory scenes to be added to present stage lighting without being affected by proceeding autofades. To initiate a Pile On tap the Pile On button and the LED above it will lite. Now select a memory scene by tapping the respective memory scene button. The scene selected will fade up at the set fade rate and the LED above the Pile On button will stay lit indicating that a Pile On is active. More scenes can be added by repeating the above procedure.

Pressing the Blackout button will clear the Pile On function. If a Memory Scene, Chase, Stack, etc is active, the Pile On may be selectively cleared by first pressing the Pile button, followed by the Blackout button.

Channel Bump Buttons

Each channel may be "bumped" to full intensity with the button directly below each channel slider. The channel will only be effected while the button is pressed unless the Toggle function is active, in which case the channel will toggle on or off with each press. The Grand Master and Blackout button will not affect the Bump levels.

Blind

It is sometimes desired to reprogram or preview during a live production. Using the Blind button causes the current stage levels, including chase effects, to be locked on stage. Any changes on the MC 6300 will not affect stage levels. It should be noted that exiting the Blind mode will instantly change stage levels to controller levels. If this is not desired, it is necessary to return the controller to the same setting as the stage levels.

5 Programming Guide

General

To initiate programming, first tap the Program button. This will lite the Program LED indicating that the program mode is active. Also, the LCD display will prompt to select an item to program. Tap the function button to be programmed (Memory Scene, Chase, Stack Go or Audio). All programming is stored in non-volatile memory which retains information for at least 10 years, even when power is removed.

Programming

Programming Memory Scenes

To program a Memory Scene, first use the Page button to select the desired page. The channel level slide controls can then be moved to create the scene. To view the levels on stage, activate the Modify button before setting levels. Once the scene is complete activate the Programming mode by pressing the Program button. The LCD display will prompt to select an item to program. Then press any of the 8 Memory Scene buttons to indicate which scene is to be programmed.

- *EXAMPLE: Program Memory Scene 7 of Page 2 with channels 1 and 6 at full and 7 and 8 at 50%*
- *Lower all channel slide controls to minimum.*
- *Raise channel slide controls 1 and 6 to maximum.*
- *Raise channel slide controls 7 and 8 to 50%.*
- *Select Page 2 by tapping the Page button until the LCD display shows P:2.*
- *Tap the Program button. The Program LED should now be lit.*
- *Tap Memory Scene 7..*
- *Lower all channel slide controls.*
- *Tap Memory Scene 7 to see scene programmed.*

If the Memory Scene is recorded while the scene is active, the previous levels will remain. The new scene programmed can be viewed by simply tapping the Memory Scene button.

Programming Chases

Chases may be recorded in memory as a sequence of steps of different channel levels. When a chase is played back, the channel levels of each step will appear on stage sequentially with the rate of each step change set by the Chase Rate control slider. At the end of the recorded sequence, the sequence repeats.

Chases can be programmed by first entering the Chase Program mode by pressing the Program button followed by the Chase button. At this point the LCD display will prompt for the desired chase to program. Use a Memory Scene button corresponding to the chase number you desire to program. The display will show the chase number selected and the step currently being programmed.

Select the channel levels for the step by moving the channel level slide controls to the corresponding position. Then tap the chase button to place the channels in memory. The LCD display will now show the number of the next step to be programmed.

Repeat the above paragraph until the desired number of steps have been programmed, up to 32, then tap the Blackout button to exit the chase programming mode.

- *EXAMPLE: Program a 3 step chase consisting of channels 1 - 3 into Chase 2.*
- *Tap the Program button. The Program LED should now be lit.*
- *Tap the Chase button.*
- *Select chase number 2 by tapping Memory Scene 2.*

- *Move all channel slide controls to minimum.*
- *Raise channel slider 1 to maximum.*
- *Tap Chase button.*
- *Lower channel slider 1 to minimum and 2 to maximum.*
- *Tap Chase button.*
- *Lower channel slider 2 to minimum and 3 to maximum.*
- *Tap Chase button.*
- *Tap the Blackout button.*

Programming the Stack

The Cue Stack is a collection of Memory Scenes that are already programmed in memory. Each step of the stack may consist of a scene from any page in memory. Precise fade times in tenths of second may be programmed into each step. Each step is played back using the Stack Go button or manually crossfaded by using the Stack fader.

To program the Stack press the Program button followed by the Stack Go button. If the Stack memory is not empty, the Stack Programming will automatically allow for editing of the programmed steps and the top line of LCD will display "Edit Step" followed by the step number. If the step is a new step, the LCD display will show "New Step" followed by the step number.

Three different items can be programmed into each step; the fade time, the page and the scene number. Use the Select button to underline the item and the Next and Previous buttons to modify the item. Memory Scenes can also be selected with the Memory Scene buttons and the Page number can be selected with the Page button. Using the Page button during Stack programming will not change the Memory Page nor will tapping a Memory Scene button activate a Memory Scene.

Setting fade time for each step is done by selecting the field with the Select button and modifying the fade with the Next and Previous buttons.

Record the step by tapping the Stack Go button. The step number will advance to the next step. Continue to record more steps by following the above procedure.

To end the Stack programming, press the Program or Blackout button. The maximum number of steps that may be recorded is 128.

- *EXAMPLE: Program the Stack with 4 steps using the first 4 Memory Scenes of Page 1 with a fade time of 1.5 seconds.*
- *Tap the Program button so that it's LED is lit.*
- *Tap the Stack Go button.*
- *Use the Select button to underline the fade time.*
- *Use the Next or Previous buttons to set the time to 1.5.*
- *Use the Page button to select page 1.*
- *Tap Memory Scene 1.*
- *Tap the Stack Go button to record step 1.*
- *Tap Memory Scene 2.*
- *Tap the Stack Go button to record step 2.*
- *Tap Memory Scene 3.*
- *Tap the Stack Go button to record step 3.*
- *Tap Memory Scene 4.*

→ *Tap the Stack Go button to record step 4.*

→ *Tap the Blackout button.*

The "ID" in the lower left hand corner stands for Insert and Delete. Tapping the Next or Previous buttons while either the "I" or the "D" is underlined causes a step to be either inserted before the currently displayed step or deleted.

6 Configuration Guide

General

The Configure mode can be used to change the console's configurable functions such as scene split, memory lock, softpatch and number of dimmers.

To activate the configuration mode, tap the Configuration button. The first configuration mode, Scene Split, will be shown on the display. To change to another mode, use the Next and Previous buttons. Tapping the Blackout or the Configuration button again will exit the configuration mode and save all changes to non-volatile memory.

Configuring

Scene Split

A Scene Split is a method of dividing the Memory Scene buttons into two independent sections, each with its own autofader. This allows the operator to reserve a set of Memory Scene buttons for special lighting scenes which can be used independently.

To activate or change Scene Split, tap the Memory Scene button which will define the start of the right side of the split or tap the Select button so that the current scene split assignment is underlined. The Next and Previous buttons can then be used to increment and decrement the split number.

Selecting Memory Scene 1 will define the right side split to start at Scene 1. Since this removes the left side split entirely, the Scene Split function is effectively turned off and is displayed as such on the LCD display.

Program Lock

All program functions can be locked to prevent unauthorized modifications. The LCD display will show the current state of the program lock. Tap the Select button so that the state (on or off) is underlined. The Next and Previous buttons can then be used to toggle the lock on or off.

Preheat

This mode is used to change the Preheat level. This is commonly used to preheat or warm the filaments of the lamps and is usually set to a level which gives a slight orange glow to the lamp filaments. The result is a faster lamp response and possible longer lamp life. Preheating is also useful in combating dimmer fuse and circuit breaker "nuisance tripping" when using lamps with high inrush current.

Tap the Select button so that the Preheat level is underlined. The Next and Previous buttons can then be used to increment or decrement the Preheat level. The value can be set from 0 to 50 which represents about 20% of the full 256 possible output levels.

Max Dimmers

This mode is used to set the maximum number of dimmer channels output on the multiplex signal line. The minimum setting is 16, and the maximum setting is 128. Tap the Select button so that the maximum dimmer number is underlined. The Next and Previous buttons can then be used to increment or decrement the dimmer number. Setting the maximum at a number lower than required will cause some of the dimmers not to function, while setting it higher than required will cause unnecessary extra work for the console which can affect console response.

Output Mode

The MC 6300 can simultaneously output both Micro-Plex and DMX 512 (optional). Both can be output at the same time, however DMX 512 offers a much faster refresh rate than Micro-Plex and will result in smoother dimming when a large number of dimmers are being addressed. Therefore, the output mode can be changed so that only DMX 512 is output. Tap the Select button so that the output mode is underlined. The Next and Previous buttons can then be used to toggle the output mode.

Edit Patch

The NSI MC 6300 console can actually control up to 128 dimmer channels through the use of Softpatch. Each of the 16 control channels can be assigned to any number of dimmer channels between 1 and 128. Any dimmer channels assigned to a particular control channel will change intensity with the control channel. This is called softpatching.

- *Some examples of Softpatching:*
- *Console channel 1 can control dimmer 16.*
- *Console channel 2 can control dimmers 5,6,8,9, & 20.*
- *Console channel 12 can control dimmers 12, 40, & 50.*
- *Console channel 16 can control dimmers 1 thru 12.*

- *Some examples of the use of Softpatch are:*
- *More than 16 dimmer channels are needed.*
- *The lighting system may need to be set-up differently but the operator would like to maintain the same control channel assignments.*
- *An installation with more than 16 individual light fixtures installed needs to be reconfigured often without rewiring.*
- *Only 12 light fixtures are connected and console channels 13 - 16 are used as submasters.*

In any of the above situations, Softpatch may be the answer.

To edit the Softpatch, use the Select button to underline the dimmer number to be modified. Once selected, tap the Next or Previous button to sequence to the desired dimmer number. Then use the Select button to underline the channel number. This number is the current channel that is patched to the selected dimmer. It can be changed with the Next or Previous buttons. Continue this process until all dimmers are patched as desired. A quicker method in patching a channel to a dimmer is to tap the bump button of the desired channel while leaving the cursor on the dimmer number.

*Softpatch
Default/Clear*

To return the Softpatch to default conditions (dimmer 1 patched to channel 1, dimmer 2 patched to channel 2, etc), use the Select button to underline the word Default on the LCD display. Press Next or Previous to execute the default patching. To completely clear a patch, use the Select button to underline Clear and tap either Next or Previous. **Note: When a patch is cleared, the console will not control any dimmer channels.**

MIDI store

The contents of the non-volatile memory of the MC 6300 can be output through the MIDI Out connector on the rear panel. The memory is output in the form of a MIDI system exclusive message. This message can be received and saved for later retrieval on a MIDI storage device such as a MIDI sequencer or NSI's DSU 350 MIDI Disk Storage unit. To send the memory to the MIDI device, first make sure the device is ready to accept the system exclusive message. Then use the Select button to underline Execute on the display and tap either the Next or Previous button to begin sending the message. The LCD display will change from Execute to Sending while the message is being sent. When Sending changes back to Execute, the message is complete.

To input the data back into the console, simply send the stored system exclusive message from the MIDI storage device back into the MC 6300 through the MIDI In connector. The console will accept the message at any time. No preparation is necessary on the MC 6300.

*MIDI Transmit and
Receive Channel*

MIDI Note On, Control Changes and Program Changes transmitted and received by the MC 6300 all use MIDI channels. MIDI channels allow a MIDI controller to send commands on different channels meant for different receivers. There are 16 MIDI channels. To change either the Transmit or Receive channel of the MC 6300, use the Select button to select either channel number on the display. Then use the Next or Previous buttons to change the number.

*MIDI Blackout
Command*

MIDI Control change #123 (all note off) is used to blackout the console. However, some sequencers send this command when it is inappropriate for a lighting console. Therefore, the MC 6300 can be configured to use Control Change #64 as the blackout command. This mode to allows selecting the desired Control Change. Use the Select button to select the current configuration and the Next or Previous button to toggle it.

*MIDI Transmit
Mode*

The MC 6300 can transmit Memory Scene MIDI commands in either Note number or Program Change Mode. Use the Select button to select the current configuration and the Next or Previous button to toggle it.

7

MIDI

Console Operation With MIDI

Using the MC 6300 console with a MIDI sequencer provides for a completely automated lighting show. Since the MIDI data is in the same format as synthesizers, the MC 6300 takes full advantage of overdubbing, editing, and auto-correcting features of your sequencer to produce very elaborate and complex lighting sequences.

Several methods of MIDI control are provided:

Note On Commands

This is the standard method of operating the console's Autofaders, Channel Sliders, Channel Bump buttons, Chases, and Stack while the sequencer records all lighting changes for synchronized play back later.

Program Changes

With this method a MIDI sequencer or advanced MIDI drum machine can be programmed to issue "Program Change" commands to activate Memory Scenes, Chases, Stack steps and Blackout at proper times. See the MIDI implementation chart for a list of accepted commands.

Direct Dimmer Access

For the experienced MIDI user, the capability to control any of the 128 possible dimmer channels is provided with the Direct Dimmer Access mode. See MIDI implementation chart for details.

Memory Dump

Various parts of the consoles memory such as scenes, chases, submasters, and patches may be dumped to a MIDI disk or MIDI sequencer for storage and later reloading. This is accomplished by setting the sequencer to accept a SYSTEM EXCLUSIVE dump and activating the console memory dump with the MIDI Store configuration mode. (see Configuration Guide). Any data will be reloaded automatically and transparently when the sequence is placed back.

Console Recording and Playback

The following paragraphs explain the recommended procedure for recording lighting information onto your sequencer.

First, record all musical parts (drums, bass, etc.) on your sequencer. Next, establish a MIDI channel number to be used for all lighting parts that is different from the channels used for musical parts. Make sure that the MC 6300 console is configured to send and receive on that MIDI channel number. It is also a good idea to record your lighting parts as separate sequences, if your sequencer has this capability, so that they can be edited or deleted individually without affecting anything else. Your sequences can then be merged later if required.

Whenever an auto-fader is activated, the console transmits the current fade rate and a "snap-shot" of the upcoming scene levels that have changed to the MIDI sequencer in the form of MIDI Note commands. This way sequencer memory usage is slight. Also whenever a Chase or Stack step is activated, the console sends a special command to the sequencer. Whenever these MIDI commands are played back to the console the original lighting changes will occur.

To record a Memory Scene change simply press the desired Memory Scene button while the sequencer is recording. This will cause the console to send the appropriate MIDI commands to the sequencer.

All main "wash" and flood light changes should be recorded first. You can record all flood light changes in one pass or work on them a few channels at a time by using the "overdub" capabilities of your sequencer.

When recording separate sequences or overdubbing, you must be certain to complete each pass with a tap of the Blackout button to turn off lights that were turned on by the sequencer or else they may appear to "stick on" until the Blackout button is pressed. If the sequencer output is connected to the MC 6300 console, the previous lighting changes recorded may be played back while recording new changes.

Note: The Fade Rate control should be adjusted to minimum to provide a quick lighting change instead of holding a button down.

Bump, Chase and Stack operations can be recorded next by activating the desired function while recording or overdubbing. When recording Bump buttons be sure to hold the button down long enough to allow the stage lights to reach full intensity, otherwise, what might look good on the channel level LED's might not look too impressive on stage. Before recording Chase sequences, select an appropriate chase rate while your sequencer is playing into the MC 6300 console. The chase rate will then be sync-locked to the MIDI clock and will follow the tempo of the sequencer.

When the console is in Program Change mode, activating a Memory Scene will output a MIDI Program Change instead of Note On commands. This uses very little sequencer memory, but is less versatile than the Note configuration.

The MC 6300 can be put in a mode that will receive MIDI Note commands and translate them directly to dimmer levels. This is called the Direct Dimmer Access mode. There is no fade capability, but the console will accept all 128 note numbers. To activate this mode, the sequencer needs to send a Control Change #70 to the MC 6300. A value of 0 will turn the Direct Dimmer Access mode off. A value of 1 will turn it on, but will ignore Note Off commands. A value of 2 will turn the mode on and will accept Note Off commands. **Note: Make sure the maximum number of dimmers is as large as the highest note number used.**

8 MIDI Implementation

Commands Used

<i>Note On</i>	1001nnnn 0kkkkkkk 0vvvvvvv	n = MIDI channel assignment 1 - 16 (0-15) k = Lighting channel number (32-47, 64-79) v = Lighting channel intensity (0-127)
<i>Note Off</i>	1000nnnn 0kkkkkkk 0vvvvvvv	n = MIDI channel assignment 1 - 16 (0-15) k = Lighting channel number (32-47, 64-79) v = Lighting channel intensity (0-127)
<i>Control Change</i>	1001nnnn 0kkkkkkk 0vvvvvvv	n = MIDI channel assignment 1 - 16 (0-15) k = Control number (see below) v = Control value (see below)
<i>Program Change</i>	1001nnnn 0vvvvvvv	n = MIDI channel assignment 1 - 16 (0-15) v = Program Change number (see below)
<i>System Exclusive</i>	11110000 00000000 00000000 00111110 00010010 0xxxxxxx 0xxxxxxx 0xxxxxxx 11110111	Start of System Exclusive NSI Manufacture's ID MC 6300 identifier First data byte Last data byte Data checksum End of System Exclusive

Note Commands

Direct dimmer access off - Transmit and Receive

Command	Value	Action
<i>Note On 64 - 79</i>	1 -127	Causes channels 1 - 16 to fade to level represented by the value
<i>Note On 64 - 79</i>	0	Ignored (Note On with a value of 1 is as channel off)
<i>Note Off 64 - 79</i>	0 - 127	Ignored
<i>Note On 96 - 111</i>	1 - 127	Channel bumps to full on - Fade Rate has no effect
<i>Note On 96 - 111</i>	0	Channel bumps to full off - Fade Rate has no effect
<i>Note Off 96 - 111</i>	0 - 127	Channel bumps to full off - Fade Rate has no effect

Direct dimmer access on - Receive only

Command	Value	Action
<i>Note On 0 - 127</i>	1 -127	Causes dimmers 1 - 128 to instantly change to value level

<i>Note On 0 - 127</i>	0	Causes dimmers 1 - 128 to instantly turn off
<i>Note Off 0 - 127</i>	0 - 127	Causes dimmers 1 - 128 to instantly turn off

*Control
Changes*

Transmit and Receive

Command	Value	Action
<i>CC 1</i>	0 - 127	Fade Rate
<i>CC 2</i>	0 - 127	Chase Rate
<i>CC 16</i>	1	Stack number (always 1)
<i>CC 17</i>	0 - 1	Bit 8 of Stack step number (a step # of 255 clears the stack)
<i>CC 49</i>	0 - 127	Lower 7 bits of Stack step number
<i>CC 60</i>	0 1 - 8	Chase Off Chases 1 - 8
<i>CC 64 or 123</i>	0	Console Blackout

Receive Only

<i>CC 70</i>	0 1 2	Direct Dimmer Access off Direct Dimmer Access on - ignore Note Off commands Direct Dimmer Access on - Note Off commands accepted
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*Program
Changes*

Transmit and Receive

Command	Action
<i>PC 0 - 7</i>	Activates Memory Scenes 1 - 8 of the current page at the current Fade Rate
<i>PC 64 - 79</i>	Changes the current page to 1 - 16
<i>PC 80</i>	Clears Chase
<i>PC 81 - 88</i>	Activates Chases 1 - 8
<i>PC 97</i>	Blackout

9 Specifications

Console Specificati ons

Control Channels	16
Max. Dimmers	128
Memory Scenes	128
Pages	16
Chases	8 - maximum of 32 steps each
Memory	Non-volatile EEPROM (at least 10 year retention)
Dimmer Outputs	NSI Micro-Plex Optional DMX 512
MIDI	In/Out/Thru
Input Power	12-15 volts DC, 500 milliamp
Approx Dimensions (HxWxD)	4 x 15 1/4 x 15
Weight (lbs)	9

10 Trouble Shooting

Checklist

Chases do not work.

- Make sure a rate has been established with the chase rate slider. The rate is indicated by the flashing LED located directly above the Chase button.
- Make sure a chase is programmed.

Lights on stage do not operate even though Channel Level LED's do.

- Check that the Master slide control is not set at minimum and that the Blackout LED is not on.
- Make sure the Softpatch table is not cleared.
- Check the channel assignments of the dimmers.

Channel slide controls have no effect on channel levels.

- Make sure that the Modify function is active and that the channel slider has matched the channel's current level.
- Check the Softpatch table.
- Make sure the console is outputting the proper output protocol.

Stage lights are on, but will not respond or respond erratically.

- Check the channel assignments of the dimmers.
- Check for a bad control cable by replacing it. If the cable is longer than 100 feet, try a shorter one.
- Make sure the console is outputting the proper output protocol.
- The dimmer pack may be defective.

Program button inoperative.

- Locked. Check Configuration menu for Program lock.

Reset and Memory Clear

The following procedure causes the entire memory of the console to be cleared and factory default parameters to be installed. All programming and Softpatch will be lost. This procedure may be used to clear the console to a known starting point prior to new programming or rental.

1. Remove power.
2. Hold down the following buttons: Pile, Toggle, Program and Configuration
3. Turn power switch on while holding the buttons down.
4. Release buttons after 2 seconds.

Memory will be cleared after a few moments. A default softpatch will be installed.

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Warranty

*NSI
Corporation
Limited
Warranty*

NSI Corporation warrants new electronics products to be free from defective materials and workmanship for a period of one (1) year from the date of purchase to the original owner when purchased from an authorized NSI dealer.

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