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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 NCM 72 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 Micro-Plex technology found in all NSI products allows components of your lighting system to be interconnected by way of standard 3-conductor microphone cables or audio snakes. Up to 128 individual control signals may be transmitted to dimmer packs through a single microphone cable and the returned phantom power eliminates the need for AC power cords on NSI controllers. This makes the remote placement of the NCM 72 Series Lighting Console easy and convenient.

The NSI NCM 72 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!
Installation\Setup

Power Supply Requirements

The NCM 72 SERIES requires a source of 15 volts DC (600 ma) in order to operate satisfactorily. When used with NSI dimming equipment, power is provided through the Micro-plex microphone cord. Connect the console to at least two or more operating NSI dimmer packs.

NOTE: It is recommended that when using satellite type Dimmer Packs, at least two(2) operational dimmer packs be used to power the 72 SERIES console. Using only one dimmer pack may result in insufficient power and erratic operation.

Long MICRO-PLEX control cable runs (50 ft.) of light gauge cable (less than 18ga.) may also require the addition of an external power supply near the console in-line with the control cable.

The NSI DMX-16 demultiplexer may be used as an external power supply or contact your dealer for alternative power supplies. When using the NCM 72 SERIES with alternate multiplex systems (AMX-192, DMX-512) an external power supply must be used since these other multiplex systems have no provision for phantom power.

Dimmer Equipment Connection

Connecting the NCM 72 SERIES to NSI dimming systems is very simple. You only need to connect a single 3 conductor audio cable (standard microphone cable with 3-pin XLR Equipment connectors) or equivalent shielded cable to the Microplex 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.

NOTE: 18ga. cable is highly recommended in the run between the console and the dimmers to prevent low DC power to the console. This heavy duty cable is required in runs over 50 ft. If the console's DC power drops below 13 volts, the LCD will display "CHECK POWER" and the console may operate unreliably.

If the NCM 72 SERIES is being connected to a DMX-512 or AMX-192 multiplex dimming system then a standard 5 pin "DIN" connector (ie. Switchcraft #05JL5M) must be wired to the multiplex cable to the dimming system as illustrated. Insert the multiplex cable into the MPX jack on the back of the console.

If an external power supply is used it should be located near the console and connected with a short "mic" cord to the remaining MICRO-PLEX jack on the back of the console.

Configuration

The first time the NCM 72 SERIES is used, the configuration parameters may need to be set, otherwise the unit may appear to be operating improperly. Please see reference part of manual on CONFIGURE MODE.

Trouble?

Please read through the trouble-shooting checklist at the end of this manual, prior to using this console, to help avoid common problems.
3 Quick Operation Guide

Short Cuts

It is advisable to read your owners manual completely in order to fully understand the capabilities of your new NSI 72 series console. However, if you need to operate the unit immediately, it can be quickly configured as a two scene controller by following these steps.

1. Connect the microphone cable from the dimmer packs.

2. LCD display will light and display name banner.

3. After a few seconds, either 2SC or STD will appear in upper right hand corner of display.
   - If 2SC is shown; two scene operation is locked on, so proceed to step 6.
   - Otherwise follow the next steps.

4. Press the CONF MODE button; LCD will prompt for configuration.

5. Press MEMORY SCENE #6 to set the console mode. The LCD display will indicate "STANDARD" mode.
   - Press MEMORY SCENE button #1 and the "TWO SCENE" mode should now appear in LCD.
   - Note that pressing MEMORY SCENE button #1 again will toggle the console back and forth between "STANDARD" and "TWO SCENE" mode.
   - Leave the console in the "TWO SCENE" mode and hit the B/O button.

6. The X-Y crossfaders are now assigned to SCN A and SCN B and function as follows:
   - Whenever both the X and Y CROSSFAADER controls are in the fully up position; SCN A slide controls will directly operate lights.
   - Whenever both CROSSFAADER controls are in the down position; SCN B will operate lights.
   - BUMP buttons will flash respective lighting channels.
   - The MASTER LEVEL control must be up for lights on stage to operate.
   - The B/O button will cause all stage lights to fade out at the set fade rate, and one or both of the X-Y CROSSFAADER LEDs will flash indicating a blackout condition. You can move the MASTER LEVEL to full down to reset the X-Y CROSSFAADER controls.

7. For more details see section on "Two Scene Operation".
The 72 SERIES console may be placed in a "two-scene" operating mode which simulates the operation of simple manual lighting controllers.

This operating mode is recommended for learning basic operation of the 72 SERIES. It is also useful for times when an operator is unfamiliar with the advanced features of the console and would feel more comfortable with two-scene control constantly available.

To place the console in the two-scene operating mode follow these steps.

1. Press CONF MODE button. The LCD will prompt for a configuration selection.
2. Press MEMORY SCENE #6 to access console mode configuration.
3. Press MEMORY SCENE #1 to toggle console operating mode until LCD display reads TWO-SCENE.
4. Press B/O button to leave configure mode.

The console will remain in the two-scene mode until either re-configured or power is removed.

NOTE: The console can be set to power-up in this or other operating mode by following directions listed under Installation Parameters located in the reference section of the manual.

The BUMP BUTTONS on the NCM 72 series console are used to force any lighting channels to full intensity regardless of other console settings. These buttons are useful for flashing lights, turning lights on momentarily, or "panic" buttons for when something unexpected happened that you were not set up for and you need to turn on some lights fast.

To demonstrate the function of the BUMP BUTTONS simply press one or any combination of BUMP BUTTONS and notice that the respective lights immediately come to full intensity.

A row of clear LEDS along the top of the NCM 72 series console is for displaying the relative lighting levels sent to stage. Note that the MASTER LEVEL control affects the stage lighting levels without affecting the LEDS.
Two Scene Operation

The following instructions will guide you through the simple procedures for basic creation and execution of lighting cues.

**NOTE:** This section assumes that the console is in the "TWO-SCENE" operating mode as outlined above.

The term "Two-Scene" refers to having two complete sets of identical controls (or "presets") for all lighting channels. These controls are used to create combinations or lighting levels for a particular "look" on stage (or "scene").

All lighting control output from the console is controlled by the MASTER LEVEL control. Each of the two sets of presets has a slide control which controls the overall intensity of each set of lighting levels called a crossfader. The crossfader control for SCENE A is at maximum when in the fully up position, while the crossfader control for SCENE B is at maximum when in the fully down position. This allows the two scenes to blend from one to another by moving both controls simultaneously up or down together, thereby "crossfading" from one scene to another.

While SCENE A is fully on (or "active") SCENE B can be reset to new lighting levels for the new cue. Then by moving both the crossfader controls, SCENE B is made active and SCENE A can be reset if desired. This type of operation allows easy composition and execution of lighting cues. To demonstrate TWO-SCENE operation:

1. First move the MASTER LEVEL slide control and both the X and CROSSFAADER controls to the fully down position.

2. Now, preset a lighting scene by moving several of the SCENE A slide controls to approximate desired lighting levels. Nothing will happen on stage at this point.

3. To bring up this scene, move both the X and Y CROSSFAADER controls to fully up and move the MASTER LEVEL control to fully up. Stage lights should now come up to levels preset on SCENE A slide controls.

4. Preset another lighting scene using SCENE B slide controls.

5. Slowly move both X and Y CROSSFAADER controls to the fully down position. Stage lights should gradually change to levels preset on SCENE B slide controls.

6. Preset another lighting scene using SCENE A slide controls.

7. Slowly move both X and Y CROSSFAADER controls to the fully up position. Stage lights should gradually change to levels preset on SCENE A slide controls.

8. Repeat steps 4 - 7 several times.
Blackout Button

The BLACK-OUT button on the NCM 72 Series consoles allows for a convenient method to cause all functions to gradually fade out or instantly go to black.

The BLACK-OUT button is "touch sensitive" in that a light tap will cause all lights to fade out at a setting determined by the fade rate control. While a press and hold motion will cause an instant blackout.

In order to blackout SCENE A and SCENE B presets, the X CROSSFADER must be moved fully down while the Y CROSSFADER must be moved fully up. Since the console cannot physically move the crossfader controls, in order to blackout the SCENE A and SCENE B presets, it must take over control of either or both of the crossfaders electronically. When this happens the LED below the crossfader control will flash quickly indicating the crossfader is temporarily inoperative. To regain control when needed you can do one of three things:

- Move the MASTER LEVEL control to the fully down position.
- Move the affected crossfader to the minimum position.
- Tap the LOAD BUTTON below the crossfader causing the scene affected to fade back on.

The following steps demonstrate the use of the BLACKOUT BUTTON with the crossfader controls.

1. Move the MASTER LEVEL control to the fully up position.
2. Set up a scene on the SCENE A presets and crossfade to it by moving both crossfaders to the fully up position. The scene should now be on stage.
3. Move the fade rate slide control to about mid position. The LCD display will show the fade time in seconds from "F00" to "F99".
4. Tap the BLACKOUT button and the B/O LED should light and the stage lights along with the channel level LEDs should gradually fade out. The LOAD LED beneath the X CROSSFADER should start flashing, indicating that the console has taken over control of the crossfader.
5. Move the MASTER LEVEL control to the fully down position and notice that the LED stops flashing and the channel level LEDs will restore to previous levels. This is the usual procedure to follow after a blackout. Now you would normally set up the console for the next event and then raise the MASTER level control when ready.
6. Repeat steps 1 - 4 above and try moving the X crossfader fully down and then slowly raise it again.
7. Repeat steps 1 - 4 above and try tapping the LOAD button for the X crossfader to restore the scene.
Memory Scenes

The 72 series consoles have the ability to store scenes in digital memory for later recall. Scene memory may be either programmed from the setting of the SCENE A channel level slide controls or may be copied from an actual look on stage.

The memory of the console is divided up into 8 pages. A page is a collection of 16 or 32 scenes (depending on the capacity of the console). Once a page is selected, the scenes of 1/2 of the page are available for storage or recall at the touch of one of the MEMORY SCENE buttons. Whether the first half or second half of the page is available is dependent upon the setting of the SCENE SELECT button.

For Example:
- The NCM 7216 has 8 pages of 16 scenes each.
- Either scenes 1 - 8 or scenes 9 - 16 can be made available.
- The NCM 7232 has 8 pages of 32 scenes each.
- Either scenes 1 - 16 or scenes 17 - 32 can be made available.

Tapping the PROGRAM SCENE A button followed by tapping a MEMORY SCENE button will store the settings of the SCENE A channel level controls into memory at a location determined by the MEMORY SCENE button pressed and the current page and SCENE SELECT settings. This is called "blind" programming because the lighting levels are not presented on stage.

Tapping the PROGRAM STAGE button follow by tapping an appropriate MEMORY SCENE button will store the stage levels regardless of the setting of the MASTER LEVEL control) into a specific memory location: This is called "live" programming because lighting levels programmed are the actual levels on stage.

To recall a memory scene: Tap the desired MEMORY SCENE button by itself (make sure neither of the PROGRAM leds are fit). The green led above the button will light and the scene stored at the selected memory location will fade on at the fade rate set by the FADE RATE control. If the same MEMORY SCENE button is tapped again the green led will extinguish and the scene will fade out. If the MEMORY SCENE button is held down when recalling a scene, the scene will fade up quickly, after a .2 second delay.

When the scene fades up it will add to any other scenes activated on the console (including manual scenes). If the SCENE SPLIT is off, any previous memory scene will be deactivated and will fade out at the set rate. If SCENE SPLIT is on then only the memory scenes on the same side of the split will be canceled.

The following steps demonstrate blind programming and recalling of memory scenes:

1. First press and hold down B/O to blackout any manual and memory scenes currently active. Do not reset the manual X-Y crossfaders.
2. Now using the SCENE A slide controls, create a lighting scene by moving the controls to desired levels.
3. Make sure that the SCENE SELECT button is in either the 1-8 or 1-16 position. Tap the button to set the correct mode.
4. Tap the SCENE A PROGRAM button and the LCD will prompt for scene to program.
5. Tap a desired MEMORY SCENE button and the channel level settings of SCENE A will be stored in memory.
6. Now by setting the FADE RATE control to a 5 - 10 second fade time and then tapping the same MEMORY SCENE button, the programmed memory scene should fade up.

Note: lower right hand corner of LCD indicates progress of fade up or fade down.
7. Repeat the above steps several times using different settings of the SCENE A controls and different MEMORY SCENE buttons.

8. After several Memory Scenes have been programmed, repeat just step #6 above several times to show that scenes remain in memory.

The following steps demonstrate live programming and recalling of memory scenes:

1. First press and hold down B/O to blackout any manual and memory scenes currently active.

2. Use the TWO-SCENE operation, as discussed previously, and create a lighting scene on stage.

3. Make sure that the SCENE SELECT button is in either the 1-8 or 1-16 position. Tap the button to set the correct mode.

4. Tap the STAGE PROGRAM button and the LCD will prompt for scene to program.

5. Tap a desired MEMORY SCENE button and the channel level settings of the stage will be stored in memory.

6. Black Out the console and set the FADE RATE control to a 5 - 10 second fade time and then tap the same MEMORY SCENE button. The programmed memory scene should now fade up.

7. Repeat the above steps several times using different scenes on stage and different MEMORY SCENE buttons. You can even use previously programmed memory scenes to create your scene on stage.

The following steps demonstrate programming and recalling of memory scenes from the other half of the memory page:

1. Program a memory scene using any method discussed previously.

2. Press the SCENE SELECT button to select memory scenes 9-16 or 17-32. Now the MEMORY SCENE buttons will correspond to memory scenes 9 - 16 or 17 - 32.

3. Now program a new memory scene using a different memory scene button.

4. Change the SCENE SELECT button to either the 1-8 or 1-16 position.

5. Set the FADE RATE control to a 5 - 10 second fade time and then tap the MEMORY SCENE button used in step #1. Notice that the first programmed memory scene should fade up.

6. Change the SCENE SELECT button to either the 9-16 or 17-32 position.

7. Tap the MEMORY SCENE button from step #3. Notice that the next programmed memory scene should fade up.

8. Repeat the above steps, this time using the same MEMORY SCENE button for both steps #1 and #3. Notice that the same memory scene buttons are actually different memory locations when the SCENE SELECT is changed.
The following steps demonstrates programming and recalling of memory scenes from different memory pages:

1. Program a memory scene using any method discuss previously.
2. Hold down the PAGE button and tap the SCENE SELECT button until the LCD indicates AUTO page 2.
3. Now program a new memory scene using a different memory scene button.
4. HOLD down the PAGE button and tap the SCENE SELECT button until the LCD indicated AUTO page 1.
5. Now tap the MEMORY SCENE button used in step #1, notice that the first programmed memory scene should fade up.
6. Hold down the PAGE button and tap the SCENE SELECT button until the LCD indicates AUTO page 2.
7. Tap the MEMORY SCENE button from step #3 notice that the next programmed memory scene should fade up.
8. Repeat the above steps, this time using the same MEMORY SCENE button for both steps #1 and #3. Notice that the same memory scene buttons are actually different memory locations when the PAGE is changed.

Chases

The NSI 72 series consoles have a tremendous capability for designing, programming and executing chases. A chase is a sequence of lighting changes which continuously repeats over and over. A total of 16 separate chases can be programmed into the console's non-volatile memory. Eight of the chases are programmable in steps consisting of a combination of any control channels at either full-on or fun-off. The other eight chases are scene chases and are programmed in steps consisting of any scene stored in scene memory. Scenes programmed into a scene chase can be from any page in memory. If a memory scene is reprogrammed afterwards, any scene chase utilizing that scene is also affected. All chases can have as few as two, and as many as 32 steps.

Normal chases can be activated using the CHASE SELECT and MEMORY SCENE buttons #1 - #8. Scene chases can be activated using the CHASE SELECT, SCENE SELECT and MEMORY SCENE buttons #1 - #8. Once activated, the chase will fade on at the rate determined by the fade rate control, while any previous chase selected will fade out at the save rate. If the MEMORY SCENE button used to select the chase is held down, the chase will quickly fade on. The rate at which the chase sequences is set by the CHASE RATE control or by tapping the chase sync button at the rate desired. A chase can be manually sequenced or momentarily stopped by using the CHASE button or by supplying an audio signal to the console and activating the AUDIO button.

Chases are programmed by first selecting and activating the desired chase. Then press the SCENE A PROGRAM button followed by pressing the CHASE button. If a normal chase is being programmed, just set the desired channel level controls of SCENE A to full on, with the other channel level controls to full off. If a scene chase is being programmed, select the desired memory scene using the MEMORY SCENE buttons. Now by pressing the CHASE button, the step is stored in memory and the sequence number is advanced to the next step.

On the NCM 7232 console only, chases may also be stored in the AUXILIARY SUB MASTERS This gives full level control to selected chases and allows multiple chases to be activated simultaneously. See the following section on AUXILIARY SUBMASTERS.
The following procedure demonstrates programming and activating a normal chase as well as a operating the other chase functions.

1. Press the B/O button to clear any active console functions.

2. Press the CHASE SELECT button and the LCD will prompt for the chase number.

3. Press the MEMORY SCENE #1 button to select normal chase number 1. The LCD will indicate the selected normal chase (CN1).

4. Press the PROGRAM SCENE A button followed by pressing the CHASE button. The LCD will now show the chase being programmed and the current step number.

5. Select the lighting channels to be on for this step of the chase by moving the associated SCENE A channel level slide controls to their full on position. Move the remaining SCENE A channel level slide controls all the way down. The channel level LEDs will indicate the selected channels.

6. Now press the CHASE button to store the step in non-volatile memory. The LCD display will now indicate the next step to be programmed.

7. Repeat step 5 and 6 several times to store some more steps in memory. When done press the B/O button twice to terminate the chase program mode. Chase #1 has now been programmed.

8. To recall and activate chase #1; set the FADE RATE control for a setting of 4-5 seconds and set the CHASE RATE control for 100-200 beats per minute.

9. Press the CHASE SELECT button and the LCD will prompt for the chase number.

10. Tap the SCENE MEMORY #1 button the activate the chase. The chase previously programmed should now fade in and continue sequencing.

11. Tap the CHASE SYNC button 3 times rapidly. Notice how the chase rate changes to match your taps. Repeat this step a few times.

12. Press and hold the CHASE button down for a few seconds and notice how the chase sequence stops while the button is being held down.

13. Move the CHASE RATE control to it's minimum (full down) position the chase sequencing should come to complete halt.

14. Tap the CHASE button several times and notice that the chase will single step on each tap. Move the CHASE RATE control back to it's original position.

15. To deactivate the chase press the CHASE SELECT button followed by tapping the B/O button. The chase will now fade out at the set fade rate.
The following procedure demonstrates programming and activating a scene chase. This procedure requires that several memory scenes be programmed. If you have not yet done this, go back to the section on memory scenes and program some scenes.

1. Press the B/O button to clear any active console functions.

2. Press the CHASE SELECT button followed by the SCENE SELECT button and the LCD will prompt for the scene chase number.

3. Press the MEMORY SCENE #1 button to select scene chase number 1. LCD will indicate scene chase number (CS1).

4. Press the PROGRAM SCENE A button followed by pressing the CHASE button. The LCD will now show the scene chase being programmed and the current step number.

5. Select the memory scene to use for this step of the chase by pressing the desired MEMORY SCENE button. The channel level LEDs will indicate the selected memory's channel levels.

6. Now press the CHASE button to store the step in non-volatile memory. The LCD display will now indicate the next step to be programmed.

7. Repeat step 5 and 6 several times to store some more steps in memory. When done press the B/O button twice to terminate the chase program mode. Scene chase #1 has now been programmed.

8. To recall and activate scene chase #1; set the FADE RATE control for a setting of 4-5 seconds and set the CHASE RATE control for 100-200 beats per minute.

9. Press the CHASE SELECT button followed by the SCENE SELECT button and the LCD will prompt for the scene chase number.

10. Tap the SCENE MEMORY #1 button the activate the chase. The chase previously programmed should now fade in and continue sequencing.

11. To cancel the chase; press the CHASE SELECT button again followed by tapping the B/O button.

Try repeating these procedures with different chase numbers by using different MEMORY SCENE buttons to select the chases. Try programming the maximum of thirty-two steps for a chase, and fading from one chase to another.
Auxiliary Submasters

(This feature is present on NCM 7232 only). The auxiliary submasters can be programmed with scene levels and / or chases. The slide controls vary the overall intensity of the channel levels programmed into the submasters. These levels will add to the other submasters levels and any other levels from other console functions which are currently active.

The auxiliary submaster BUMP buttons will cause the programmed channel levels to come to full relative intensity, and can be configured for momentary or push-on push-off operation using the configuration mode. The auxiliary submaster BUMP buttons are also used for programming the submasters by pressing either the SCENE A PROGRAM or the STAGE PROGRAM button followed by the desired BUMP button.

After pressing B/O, if an auxiliary submaster level control is above minimum, the submaster may automatically fade out and the LED above the associated BUMP button will flash. To regain control of the auxiliary submaster; either move the submaster control to fully down or move the MASTER LEVEL slide control to minimum. The LED will go out when control is regained. To demonstrate programming the auxiliary submasters with a simple scene; follow this procedure.

1. Press the B/O button to clear any active functions.
2. Setup desired channel levels on the SCENE A slide controls.
3. Press the SCENE A PROGRAM button followed by pressing the BUMP button of the desired auxiliary submaster.
4. Move the selected auxiliary submaster slide control up and down to demonstrate the programming.

To demonstrate programming the auxiliary submasters with a chase; follow this procedure.

1. Press the B/O button to clear any active functions.
2. Select a previously programmed chase using the CHASE SELECT button. Set the chase rate control for 100-200 BPM.
3. Press the STAGE PROGRAM button followed by pressing the BUMP button of the desired auxiliary submaster.
4. Move the selected auxiliary submaster slide control up and down to demonstrate the programming.
Scene Master Operating Mode

Software release 1.43 and after have added a new operational mode to the current Two Scene and Standard modes, called the Scene Master mode. This new mode causes the X-crossfader to be permanently loaded with Scene A and the Y-crossfader to be permanently loaded with Submaster Group B.

As in the Two Scene mode, the Scene A Select, Scene B Select, Submaster A, Load X, and Load Y buttons do not function. However, the Submaster B button does function. Its use is limited, however, to the Scene B bump buttons. When the mode invoked, the Submaster B LED is lit and the bump buttons act as scene bumps. Pressing the Submaster B button will toggle the LED off to allow single channel bumping.

It should be noted that the Y-crossfader continues to be loaded with Submaster Group B and that the Submaster Group B sliders are active even though the Submaster B LED is not lit. In this way, the bump buttons can be available for channel bumping at the same time that the Submaster Group B sliders are active with scenes.

The LCD display will read "SMR" in the upper right-hand corner whenever the console is in the Scene Master mode.

To activate the Scene Master mode, do the following steps:

1. Tap the "CONF MODE" button.
2. Tap Memory Scene 6. The LCD display should read "CONSOLE MODE" on the first line and the current mode on the second line.
3. Tap Memory Scene 1 until the second line of the LCD display reads "SCENE MASTER".
4. Tap the Blackout button to exit.

At this point the console will operate in the Scene Master mode until it is powered down. When powered up, the old mode will be active.

To program a scene into Submaster Group B:

1. Set up lighting scene on Scene A faders, or on stage using any combination of levels.
2. Press either the SCENE A PROGRAM or STAGE PROGRAM button.
3. Press the BUMP button under the respective Submaster Group B fader.

To cause the console to power up in Scene Master mode, do the following:

1. The console should first be in the Scene Master mode. If not, follow the above steps first.
2. Tap the "CONF MODE" button.
3. Tap Memory Scene 8. The LCD display will prompt for a key-code.
4. Enter the code 2-3-2-7 using the Memory Scene buttons. The LCD display will read "MAX DIM:"
5. Using the Scene Select button cycle through the installation modes until the LCD display reads "POWER UP INIT".
6. Tap Memory Scene 1.
7. After about 2 seconds, tap the Blackout button. The console will now power up in the Scene Master mode.
Slide Controls

Grand Master

This slider continuously controls the output level of the console to the dimmers. The LED Control display of stage levels is not affected. If this control is set to minimum when the BLACKOUT button is pressed then autofading of the X-Y CROSSFADERS and SUBMASTERS is prevented.

X/Y Crossfaders

The slide controls can be loaded with any manual scene or memory scene (except in two scene mode) and used to facilitate manual fades from one scene to another. Any scene loaded into the X crossfader will be at maximum when the control is at its top position. Any scene loaded into the Y crossfader will be at maximum when the control is at the bottom position. If a crossfader was not set at minimum when a scene is to be loaded, then the led above the respective load button will blink and the crossfader will have no effect on the scene. At this point the user has two options: The load button can be pressed a second time, causing the scene to fade to the crossfader setting at a rate determined by the fade rate control, or the crossfader can be moved to a level matching the loaded scene. The led will go out when the scene level matches the crossfader setting, and the crossfader will then have full control over the overall intensity of that scene.

Auxiliary Submaster Level Controls

These four sliders are present only on the NCM 7232. Four independent scenes may be programmed into these submasters using either the STAGE PROGRAM or SCENE A PROGRAM buttons. Lighting levels stored in each submaster will combine with any other current lighting levels with the highest level having precedence, when the submaster control is set above minimum. Chases may also be programmed in the auxiliary submasters by programming the submaster using the stage program pushbutton while a chase is active and on stage. Intensity levels of the chase will be continuously controlled by the appropriate submaster control. Four different submaster chases plus the normal chase may be active at the same time.

Scene Channel / Submaster Level Controls

CHANNEL MODE: When the Submaster mode is inactive for manual scene A or B (submaster button led is off) the 16 or 32 manual scene slide controls correspond to individual lighting channel levels. If a manual scene is activated, then the stage lighting levels will crossfade to the levels set by the manual scene slide controls. Some real time control of lighting levels is available using these slide controls—at this time, but full control will not be realized until the crossfade is complete (X or Y level is 100%).

Slide controls of the manual scene A can also be used for blind programming of any memory scene or submaster. This is accomplished by pressing the SCENE A PROGRAM BUTTON and then pressing the button of the desired memory scene or submaster. For blind programming this must be done when the manual scene A is not active.

SUBMASTER MODE: (Not available in 2 SCN mode). The slide controls for manual scene A or B can also function as submasters for scenes stored in memory. This can be done by first making sure that the manual scene to be used as a submaster group is inactive and completely faded out. Then the desired memory page to use as a submaster group can be selected by holding down the PAGE button while tapping the SUBMASTER MODE button of the desired memory scene.

Now the submaster group mode can be activated by pressing the SUBMASTER mode button of the desired memory scene, and the led above the button will light. The individual sliders will now control the levels of each of the memory scenes stored in the page of memory. The manual scene can then be crossfaded in the same manner as when it was in the channel mode.
Chase Rate: This slider controls the rate at which a selected chase will sequence unless C14ASE SYNC is used to establish the chase rate. When the chase rate control is at the minimum position, the chase will stop and can be manually sequenced with the CHASE button.

Audio Level: This slider controls the sensitivity of the audio input signal. This control should be adjusted at the minimum level required to obtain the desired effect.

Fade Rate: This control continuously varies the rate at which any scene autofades. The fade rate is displayed on the LCD display in seconds. If a particular scene’s button is pressed and held down, the fade rate will be overridden and the scene will fade instantly. This control also serves as a “data entry” control in some configuration modes.

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Pushbuttons

Blackout: The BLACKOUT button is designed to allow a complete and automatic fadeout of all functions of the console with a single press. Pressing the BLACKOUT button by itself will cause several events to take place:
- The Blackout Led will light and any autofade memory scene will be released and will fade out.
- Any piled-on scene will be released and will fade out.
- If either of the X-Y crossfaders, and the master level control is set above minimum, the LOAD led will flash and the crossfader will start an automatic fadeout.
- If any of the Auxiliary Submaster controls, and then master level control is set above minimum, the associated submaster led will flash and the Auxiliary submaster will start an automatic fadeout.
- All fades will take place at the rate determined by the fade rate control unless the BLACKOUT button is held down, which will cause a quick fadeout.
- The BLACKOUT button can also be used in conjunction with the PILE, CHASE, and LOAD buttons to cancel or blackout individual functions.

X and Y Load: (Not available in 2 SCN mode.) The X - Y LOAD buttons are used to load scenes into either crossfade slide control. This will give manual control to the overall level of the scene loaded. Once a LOAD button is tapped the LED above it will light steadily indicating that it is ready to accept a memory scene or manual scene. To cancel a load operation, simply tap the LOAD button again. Once the desired scene has been selected for loading, the LED will either flash quickly indicating a control level mismatch or the LED will extinguish, indicating a scene has been loaded.

Loading Scenes into Manual Crossfaders: Memory scenes and the A and B manual scenes can be loaded into either manual crossfader. This can be accomplished by pressing the X or Y LOAD button, then pressing the select button of either a memory scene, or one of the A or B manual scenes. If the position of the manual crossfader control to be loaded is not set at minimum level (X : full downward, Y : full upward) then the led above the respective load button will flash quickly and the crossfader control will have no effect on scene levels.

The operator then has two choices. The operator can choose to force the new scene levels to fade to the current settings of the manual crossfaders by pressing the LOAD button a second time. Any previously loaded scene levels will fade out at the set fade rate. Otherwise the manual crossfader control can be moved to the minimum setting at which point the led will go out and manual control of the scene will be obtained.
Clearing Manual Crossfaders: The manual crossfaders may be cleared by first pressing the LOAD button of the appropriate crossfader to clear, and then by pressing the B/O button. If the crossfader was not set at minimum (X: fully down, Y: fully up), and the master level control is set above minimum, the LED above the LOAD button will start flashing quickly. You may then tap the same LOAD button again to start a fade out of the previous scene loaded in the crossfader at the current fade rate or move the crossfader control to minimum.

Scene A and Scene B Select: (Not available in 2SC mode)

USE WITH AUTOFADE: To use SCENE A or SCENE B with the autofader, set the desired fade rate with the fade rate control. Then adjust the SCENE A or SCENE B slide controls to the desired levels. Tapping the SELECT button of the desired SCENE will then initiate the fade of stage levels to the slide control settings. A press and hold of the SELECT button will cause the fade to happen instantly.

USE WITH MANUAL CROSSFADERS: Either SCENE A or SCENE B can be loaded into a manual crossfader by first pressing the X or Y LOAD button under the crossfaders and then pressing the SELECT button for the desired scene. It should be noted that the crossfader should be set to minimum before loading, else the LED above the LOAD button will flash quickly and the crossfader will have no effect on the scene. The previous discussion on crossfaders describe the options available at this point.

USE WITH PILE-ON: The manual scene can be used independently in "real-time" by first tapping the PILE-ON SCENE button and then the SELECT button of the desired manual scene. This will cause the manual scene to fade up at the current autofade rate. Once selected, the LED above the SELECT button will flash and the manual scene will stay active regardless of any proceeding auto or manual crossfades. To cancel the pile-on, simple tap the SELECT button again or use the BLACKOUT button. This will cause the scene to fade out at the current autofade rate.

Scene A and Scene B Submaster Mode: The SUBMASTER MODE A or B button will cause the slide controls to change their function from controlling individual channel levels to controlling entire memory scene levels. Any of the above manual scene functions will operate normally except that the manual scene will consist of a group of submaster levels instead of individual channel levels.

To change a manual scene to a subgroup, first make sure the LED above the SELECT button is off. Then move all the manual scene slide controls to minimum. Now select the page of memory to be assigned to the subgroup. At this point tap the SUBGROUP making sure the LED above it is lit. The slide controls will now correspond to memory scenes from the selected page and can be crossfaded and piled-on in the same manner as the manual scene.

To cancel the subgroup mode and return the slide controls to individual channel control, repeat the above operations, with the exception that the subgroup LED should now be extinguished.

Bump Buttons: Depending on the setting of the SUBMASTER MODE button of SCENE B, the BUMP buttons can be used for bumping (flashing) either individual channel levels or entire memory scenes of the page assigned to SCENE B. The SELECT button does not need to be active for scene B.

When scene B is in the subgroup mode the BUMP buttons can be used to reprogram the memory scenes in the page currently assigned to scene B. To reprogram a memory scene, either tap STAGE PROGRAM to copy stage levels or SCENE A PROGRAM to copy the levels of scene A into memory. Then tap the BUMP button corresponding to the desired memory scene.
**Memory Scene Buttons:** The memory scene buttons correspond to either scenes 1 - 16 (NCM 7216: 1 - 8) or scenes 17 - 32 (NCM 7216: 9 - 16) of the current memory page displayed in the LCD, depending upon the mode of the SCENE SELECT button.

These buttons can be used for autofading memory scenes by tapping the desired MEMORY SCENE button. This will cause the memory scene to fade in at the current autofade rate. A press and hold will cause an instant fade. Any current memory scene or manual scene not piled-on will fade out at the current autofade rate.

A split may be programmed into the MEMORY SCENE buttons causing the right half of the split to operate independently of the left half. This may be accomplished by following the instructions under CONFIGURATION MODE. If a Memory Scene is active on the right side of the split, it will not be affected by pressing a MEMORY SCENE button on the left side and visa versa.

Memory scenes may be piled-on by first tapping the PILE-ON button and then tapping the desired memory scene. The memory scene will fade in at the current autofade rate and the LED above the PILE-ON button will light until the pile-on has been released. Other scenes can be added in the same manner. To release all memory scene pile-ons, tap the PILE-ON button followed by tapping the B/O button which will cause the pile-on to fade out at the current autofade rate.

Memory scenes can also be loaded into the manual crossfader or reprogrammed using these buttons as outlined in the appropriate section.

**Memory Scene Select:** This button determines which half of a memory page the MEMORY SCENE buttons will access. The two LEDs above the SCENE SELECT button will toggle with each tap of the button, indicating the half of the memory page active to the MEMORY SCENE buttons.

**Auxiliary Submaster Bump / Prog Buttons:** These buttons are only available on the NCM 7232. Submaster scenes may be programmed by tapping either the STAGE PROGRAM button or SCENE A PROGRAM button, and then the desired submaster BUMP/SELECT button. The BUMP/SELECT buttons used by themselves operate as bumps (flashes) for the overall corresponding submaster levels programmed.

**Chase:** The CHASE button can be used to manually sequence all chases with individual taps of the button if the chase rate control slider is at its minimum setting. Pressing the CHASE button will also stop sequencing of all chases until the CHASE button is released. The last chase selected by the CHASE SELECT button can be reactivated by pressing the CHASE SELECT button followed by pressing the CHASE button.

**Audio:** The AUDIO button toggles the audio mode. The LED lit indicates that the audio mode is on. The audio mode affects all chases when active. When the chase rate control is in the minimum position, the chases will sequence with the audio input low frequency. The AUDIO button can also be programmed to cause the audio signal to effect the intensity of certain lighting channels. This can be done selecting the channels to be affected using the SCENE A slide controls. Press the SCENE A PROGRAM button followed by the AUDIO button.

**Solo:** The SOLO mode is activated by pressing the SOLO button. The next memory scene or manual button pressed will cause all lights to fade out at the set fade rate and the selected scene will fade on. Another scene may replace the previous solo’d scene by repeating the above procedure. SOLO is canceled by selecting a scene without first tapping the solo button or by B/O.

**Chase Sync:** If a chase is to be synchronized with an event on stage, simply tap the CHASE SYNC button in step with the event either just before or after the chase is activated. Two taps are required for the CHASE SYNC to operate, tapping it once may just stop or slow the chase. Any change in the chase rate control fader will take over chase sequencing rate. The Chase Rate is indicated on the LCD display in beats per minute.
Chase Select: The 72 Series consoles have the capacity for 16 programmable chases comprised of the following.

- 8 Standard Chases which can be programmed for 32 steps each. Each step consists of any combination of all of the control channels, either full on or full off.
- 8 Scene Chases which can be programmed for a sequence of 32 different lighting scenes already stored in memory.

The CHASE SELECT button is used to initiate one of the 8 standard chases by first tapping the C14ASE SELECT button. Then MEMORY SCENE buttons 1 - 8 are then used to select the desired chase by simply tapping the corresponding button. The chosen chase number will be displayed on the LCD and the chase will fade in at the set fade rate while a previous chase will fade out.

To select one of the 8 Scene Chases, first tap the C14ASE SELECT button followed by tapping the SCENE SELECT button. Now by pressing one of the MEMORY BUTTONS 1 - 8 a preprogrammed scene sequence will activated and the sequence number will be displayed on the LCD display.

Memory Page: The MEMORY PAGE button selects memory pages for scene storage and recall. Separate pages may be selected for the autofaders (MEMORY SCENE buttons), and submaster modes for manual SCENE A and B. To display or select which of the 8 pages of memory are to be used, hold down the PAGE button. The LCD display will show the current page settings. Now pressing either the SCENE SELECT button, or one of the SUBMASTER MODE buttons for manual scene A or B, will change pages for the autofaders, submaster scene A, or submaster scene B respectively.

Stage Program: The STAGE PROGRAM button can be used to copy stage levels to any desired memory scene or function. Stage levels copied are represented by the CHANNEL LEVEL leds are not affected by the master level control. When the STAGE PROGRAM button is tapped the LED above it will light until the desired function is selected. To cancel the STAGE PROGRAM function simply press it again.

AUX SUBMASTER STAGE / CHASE PROGRAMMING: The STAGE PROGRAM button can be used to program stage levels and/or chases into the auxiliary submasters. Setup a scene on stage and/or select and activated a chase. Press the STAGE PROGRAM button followed by the desired auxiliary submaster bump button.

Scene A Program: The SCENE A PROGRAM button can be used to copy the channel levels represented be the manual scene A slide controls to any desired memory scene or function, regardless of manual SCENE A SELECT or SUBMASTER MODE status. When the button is tapped the LED above it will light until the desired function has been selected.

CHASE PROGRAMMING: The SCENE A PROGRAM button can also be used to program a normal chase sequence or a scene chase sequence.

First, using the CHASE SELECT button, select a chase number to program. This number should now appear in the LCD display area. Now press SCENE A PROGRAM followed by pressing the CHASE button. The LCD will now display the chase number and the step being programmed.

If you have selected a normal chase to program; move the channel level slide controls of Scene A to desired full on or full off settings. Then press the CHASE button to store that step and begin programming the next step.

If you have selected a scene chase to program; simply select any memory scene using the MEMORY SCENE buttons from any pages in memory. The channel level leds will immediately display the contents of the memory scene selected. Then press the CHASE button to store that scene and begin programming the next step.

The maximum number of steps that can be programmed in any chase is 32. When finished programming, press the B/O button to leave the chase programming mode.
AUDIO PROGRAMMING: To program channels to be affected by audio level when the AUDIO button is activated: Use the SCENE A slide control to select the channels and move the other SCENE A controls fully down. Then press the SCENE A PROGRAM button followed by the AUDIO button. Only the selected channels will now be affected by audio level.

AUX SUBMASTER SCENE A PROGRAMMING: To program simple channel levels into the auxiliary submasters; set the levels on SCENE A slide controls, press the SCENE A PROGRAM button followed by pressing the bump button of the desired submaster.

Pile-on Scenes: Using the PILE-ON SCENE button allows memory or manual scenes to be added in addition to the present stage lighting without being affected by proceeding autofades or manual crossfades. To initiate a pile-on tap the PILE-ON button and the LED above it will light. Now select a manual scene or memory scene by tapping the appropriate button. The LED above the PILE-ON button will stay lit indicating it is in the pile-on mode. If a manual scene was selected, then the led above the SELECT button will also flash. To release a piled-on scene simply tap the respective button or using the BLACKOUT button.

Blind Mode: Tapping the BLIND button will light the led above the blind button and prevent the console from changing the scene which is on stage. Fades will stop but chases will continue to sequence. The Channel level LEDs will continue to display any console changes, but they will not represent stage levels. Any further operations on the console will only affect the LED display and not the stage. To exit the blind mode, just press the BLIND button again and the stage lighting will immediately change to any new console settings.

Modify Scene: When activated, the MODIFY SCENE button allows the Channel Level slide controls of Scene A to capture and control individual channels. This is useful for adding or removing a lighting channel manually or for making "five" modifications to memory.

To use, first make sure the LED above the SELECT button for manual scene A is not lit, then tap the MODIFY SCENE button and the led above it should light. Now Manual Scene A slide controls can be used to change the channel levels by first moving a slide control to the current level indicated by the LED. At this point the slide control will take over control of the level and the Channel Level Led for that channel will start to blink. You now have full control of that channel regardless of any other changes to the console.

To exit modify mode, press the MODIFY SCENE button again and the captured channel levels will fade back to current levels. If memory scene was active prior to modifying, then modifications will be made live and can be restored back in that memory location by using the STAGE program button to save the new levels in memory.

Config Mode: The CONFIG MODE button can be used to change the console configuration functions, such as expansion mode, softpatch modification, audio function, manual mode, number of dimmers, multiplex mode. The following section describes the various configurations.
Configuration

To activate the configuration mode tap the CONFIG MODE button until the LCD display indicates the configuration mode. Now, a specific configuration function can be selected by tapping the appropriate MEMORY SCENE button as listed below:

- **MEMORY SCENE button #1: SCENE SPLIT**

  Tapping this button will cause the LCD display to prompt for a Scene Split. A Scene Split is a method of dividing the physical memory scene buttons into two 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 button which will define the start of the right side of the split. The console will then exit the Configuration mode and the LCD display will indicate the new scene split.

  To deactivate Scene Split, repeat the procedure, but instead tap the MEMORY SCENE #1 button which will define the left side split to start at #1 which removes the right side split entirely.

  Scene split is not stored in non-volatile memory and will revert back to previous setting on powerup unless saved in the INSTALL procedure.

- **MEMORY SCENE button #2: SUBMASTER TOGGLE (7232 only)**

  Submaster BUMP buttons can be set for momentary or a "push-on, push-off" toggle type of operation. This button will cause the current mode to be displayed on the LCD display. To change modes just tap the MEMORY SCENE button #1. When done selecting modes tap B/O to exit Configuration Mode.

- **MEMORY SCENE button #3: MEMORY LOCK**

  Chase and Scene memory can be locked to prevent any unauthorized modifications by tapping this button. The LCD display will prompt for the KEY-CODE. By using the MEMORY SCENE 1 - 8 buttons, enter the KEY-CODE 6682. The status of the the lock will then be displayed on the LCD display and can be changed by tapping the MEMORY SCENE #1 button.

- **MEMORY SCENE button #4: RESERVED**

  The 72 Series console’s memory can contain two complete Softpatch setups. This feature can be helpful to reconfigure a complete stage setup at the push of a button. Also, different lighting instruments may be swapped in and out of the same control channels. After selecting this mode, tap Memory scene #1 to toggle to the secondary Softpatch.

- **MEMORY SCENE button #5: RESERVED**

- **MEMORY SCENE button #6: OPERATING MODE.**

  This button is used to change the state of the Two-scene, Scene Master or Standard mode. The console can be locked into a two-scene or Scene-master configuration which is useful for learning the basic console functions or for new operators to feel more comfortable with. The current status of the operating mode is displayed on the LCD after pressing this button. To change status; tap the MEMORY SCENE #1 key and tap B/O to exit the configuration mode.

- **MEMORY SCENE button #7: MIDI PARAMETERS**

  This button causes the LCD to display the MIDI configuration menu. By tapping the SCENE SELECT button series of parameter settings will be displayed one by one. To change the setting of any of the parameters use the MEMORY SCENE #1 button to toggle or increment the setting, or use the MEMORY SCENE #2 button to decrement the setting. Once the desired settings have been selected and appear on the LCD display, either use the SCENE SELECT button to move on to the next parameter or tap B/O to exit the configuration mode.
MEMORY SCENE button #8: INSTALLATION PARAMETERS

This button causes the console to enter the installation mode. The parameters which make the 72 series console unique to a particular installation are stored here. When done setting these parameters be sure to press the B/O key to save the new settings in non-volatile memory.

A KEY-CODE is needed to access the installation parameters. When the LCD display prompts for the KEY-CODE, use the MEMORY SCENE buttons to enter: 2327. If the correct keycode has been entered, the LCD will display the installation menu. Press the SCENE SELECT button to sequence through the different items in the menu.

Maximum Number Of Dimmers: This parameter is used to set the maximum number of dimmers currently connected to the multiplex line. The minimum setting is 16, and the maximum setting is 128. Use the MEMORY SCENE #1 key to increment the setting, use the MEMORY SCENE #2 key to decrement the setting, or use the FADE RATE control to rapidly change the setting. Setting the maximum dimmers at a number that is lower than required will cause some of the dimmers to not function, while a number higher than required will cause unnecessary extra work for the console.

When done setting this parameter, press the B/O button to terminate the configuration mode and save the new parameters in non-volatile memory.

Softpatch: Any or all of the 128 possible dimmer channels may be reassigned to any or all of the 32 control channels using this parameter. To repatch the dimmers follow this procedure.

The console should be totally blacked out with the Master Level on, and the Modify Scene mode should be on if you desire to display the effects of the repatched dimmers on stage.

First select the Control Channel to reassign dimmers to by raising the respective Channel Level slider to maximum and moving all other Channel Level sliders to full off. The LCD display should now indicate the selection of that control channel.

Now move the Fade Rate control until the LCD displays a dimmer number close to the desired dimmer number to repatch. Using the MEMORY #1 and MEMORY #2 buttons, obtain the exact dimmer number on the LCD display. Use the MEMORY #3 button to toggle the dimmer assignment off or on as needed.

Then change dimmer or channel numbers and repeat the above procedure. When done enter B/O to terminate the function and save the softpatch in non-volatile memory.

Preheat: This parameter sets the minimum dimmer level. This is commonly used to preheat or warm the lamps and is usually set to a level which gives a slight orange glow to the stage lighting. The result is faster lamp response and possible longer lamp life. Preheating is also very useful in combating dimmer fuse and circuit breaker “nuisance tripping” when using many small wattage lamps with high inrush current.

This parameter is displayed in percent of maximum level. Use the MEMORY SCENE #1 button, MEMORY SCENE #2 button, or the FADE RATE control to alter this setting. The maximum preheat setting is 25% of maximum.

Multiplex Mode (MPX): This parameter set the type of MPX signal to be transmitted to the dimmers. To change settings use the MEMORY SCENE #1 button for selection of NSI Microplex, DMX 512, AMX 192, or a Special Microplex that may be modified by the user.

When using NSI dimmer packs and systems use the MICROPLEX setting. This is the microphone cord multiplex system which is used on all NSI products. When this mode is selected the output to the dimmers will be available at the MICROPLEX XLR connectors on the back of the unit.
The USITT AMX-192 and DMX-512 multiplex signals can be selected for interface to dimmer systems which utilize this type of interface. If these signals are selected then the dimmer output will be available at the MPX 5 pin din jack. A proper adapter will need to be constructed to adapt this output to the type of connector required.

The special, user definable Microplex is provided to increase the compatibility with other manufacturers products that use a similar multiplex system.

NOTE: NSI Corporation makes no claims that this product is compatible with other manufacturers products that use a multiplex system similar to Microplex.

When this mode is selected the console will display two parameters: A and B. By using the Memory #2 and #3 buttons, the user can change these parameters to modify the data and clock timing of the Microplex signal. Operate the channel controls while slowly increasing either the A or B number until satisfactory operation is achieved. Use the smallest numbers possible. The numbers will return to 0 if you pass 15. Press blackout when done.

**Expansion Mode:** This parameter enables the expansion port on the back of the 72 series which allows it to link to another 72 series console. A special cable is required to utilize this feature. Use the MEMORY SCENE #1 key to change the expansion mode, if desired, to one of the follow modes.

**MASTER:** When this mode is enabled, another 72 series console may be linked to this console.

If the other console of the same model is also in the master mode; then the consoles will completely mimic each other. Pressing any button on either console will be immediately reflected on the other console. This is useful for a remote control for the console which is connected to the dimmer system.

If the other console is in the slave mode then the other console will act as an extension of the control channels. If a 7216 is linked to a 7232 in this manner then the 7216 will act as control channels 33 - 48.

**SLAVE:** In this mode the console must be connected to another 72 series console which is operating in the master mode. The slave console will not respond to any of the controls or buttons, except that the channel level slide controls for SCENE A and SCENE B will act as additional control channels for the master.

NOTE: If the SLAVE MODE is set mistakenly, access to any console features will be disabled including the Configure Mode.

To escape from an inadvertent setting of the slave mode:

- Disconnect power to the console.
- Hold down all four buttons directly under the LCD display.
- Apply power while holding the buttons and wait 10 seconds.

**Memory Clear:** This function allows the operator to selectively clear all of the scene or Softpatch memory or to reset the Softpatch to the factory default of one to one.

Select SCN to clear all memory scenes. Select SP to clear the current Softpatch (Caution you must reprogram the Softpatch for the dimmers to operate.). Select DSP to clear the current Softpatch and reset it to a "one to one" setting. Press Blackout when done.
**Power Up Init:** This function can be used to store the COMPLETE console configuration in non-volatile memory. This includes all of the parameters set in Configuration modes #1 - #7. Installation parameters are stored in non-volatile memory automatically, and will not be affected by this function.

To save all configuration settings in non-volatile memory for power-up, simply press the MEMORY SCENE #1 button. Then after power is removed from the unit, the configuration parameters will remain in effect at the next power-up. Press B/O to exit the configuration mode and save the new parameters in non-volatile memory.

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**Full Console Initialization And Memory Clear:** This procedure will completely erase all non-volatile memory inside the console and restore ALL configurations to the factory defaults. This procedure may be used to reset the console to a "known" staring point when preparing to reprogram or to fix a console with corrupted memory. Indiscriminate use of this procedure will not damage to console or memory, but it will result in all memory being erased.

To Clear all memory and reset to factory defaults:

- Disconnect power to the console.
- Hold down all four buttons of the second row under the LCD display (SCN A PROG, STAGE PROG, PILE, and MODIFY).
- Apply power while holding the buttons and wait 10 seconds.

The display will return to normal in 10 - 30 seconds and the memory will be clear. It is important to review all the settings in the CONFIGURATION section of this manual.
MIDI Implementation

Console Operation With MIDI: Using the NCM 72 Series console with a MIDI sequencer provides a completely automated lighting show. Since the MIDI data is in the same format as synthesizers, the NCM 72 Series 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:

- **Console Recording:** This is the standard method of operating the console's autofaders, chases, and bump buttons while the sequencer records all lighting changes for synchronized playback later. See the detailed explanation of this method.

- **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, 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 console's 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 CONFIGURE MODE#7. (See configuration section). Any data will be reloaded automatically and transparently when the sequence is played back.

Console Recording And Playback: The following paragraphs explain the recommended procedure for recording lighting information on 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 72 Series 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 commands. This way sequencer memory usage is slight. Also whenever a BUMP button or CHASE 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. SCENE A and B can also be used to record scene changes in the STD mode, by first setting the desired levels on SCENE A and then pressing the SCENE A button. The console will transmit these levels to the sequencer. Then set the levels of SCENE B and press the SCENE B button and SCENE B levels will be transmitted.

NOTE: Either SCENE A or B controls are moved while that scene is active (the green led above the button is lit), console will send out a stream of MIDI commands relating...
to changes of that control. While this will cause no harm, this may use up sequencer memory rapidly.

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 72 Series console, the previous lighting changes recorded may be played back while recording new changes.

The FADE RATE control should be adjusted to minimum to provide a quick lighting change, instead of holding a button down.

Bumps and Chase operations can be recorded next (submaster mode bumps cannot be recorded), 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 LEDs might not look too impressive on stage. Before recording Chase sequences, select an appropriate chase rate while your sequencer is playing into the 72 Series console. The chase rate will then be sync-locked to the MIDI clock, and will follow the tempo of the sequencer.
Transmitted MIDI Commands

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>HEX CODE</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note On</td>
<td>1001nnnn</td>
<td>N = Midi Channel Assignment 1-16 (0-15)</td>
</tr>
<tr>
<td></td>
<td>Okkkkkkk</td>
<td>K = Lighting Channel No. (32 - 95)</td>
</tr>
<tr>
<td></td>
<td>0vvvvv</td>
<td>V = Lighting Channel Intensity (0 - 127)</td>
</tr>
<tr>
<td>Control</td>
<td>1011nnnn</td>
<td>N = Midi Channel Assignment 1-16 (0-15)</td>
</tr>
<tr>
<td>Change</td>
<td>Okkkkkkk</td>
<td>K = Control Number (see Below)</td>
</tr>
<tr>
<td></td>
<td>0vvvvv</td>
<td>V = Control Value (see Below)</td>
</tr>
<tr>
<td>System</td>
<td>11110000</td>
<td>Start Of System Exclusive</td>
</tr>
<tr>
<td>Exclusive</td>
<td>11110111</td>
<td>End Of System Exclusive</td>
</tr>
</tbody>
</table>

CONTROL CHANGES TRANSMITTED

<table>
<thead>
<tr>
<th>CC NUMBER</th>
<th>VALUE RANGE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-127</td>
<td>Fade Rate (see Chart)</td>
</tr>
<tr>
<td>2</td>
<td>0 - 127</td>
<td>Chase Rate (see Chart)</td>
</tr>
<tr>
<td>60</td>
<td>0</td>
<td>Chase Off</td>
</tr>
<tr>
<td></td>
<td>1 - 8</td>
<td>Normal Chase 1 - 8</td>
</tr>
<tr>
<td></td>
<td>9 - 16</td>
<td>Scene Chase 1 - 8</td>
</tr>
<tr>
<td>70</td>
<td>0-2</td>
<td>Direct Dimmer Access Mode</td>
</tr>
<tr>
<td>64 Or 123</td>
<td>0</td>
<td>System Reset (depending On Config).</td>
</tr>
</tbody>
</table>

SYSTEM EXCLUSIVE FORMAT

<table>
<thead>
<tr>
<th>DATA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>11110000 (f0h)</td>
<td>Start Of System Exclusive</td>
</tr>
<tr>
<td>01110111 (77h)</td>
<td>Mfg Id</td>
</tr>
<tr>
<td>0-5</td>
<td>Type Of Dump</td>
</tr>
<tr>
<td>0</td>
<td>0 = Scene Memory</td>
</tr>
<tr>
<td>1</td>
<td>1 = Chase Memory</td>
</tr>
<tr>
<td>2</td>
<td>2 = Aux Submaster Memory</td>
</tr>
<tr>
<td>3</td>
<td>3 = Softpatch Table Memory</td>
</tr>
<tr>
<td>32</td>
<td>32 = Dump Request Scene Memory</td>
</tr>
<tr>
<td>33</td>
<td>33 = Dump Request Chase Memory</td>
</tr>
<tr>
<td>34</td>
<td>34 = Dump Request Aux Sub Memory</td>
</tr>
<tr>
<td>35</td>
<td>35 = Dump Request Softpatch</td>
</tr>
<tr>
<td>0000xxxx</td>
<td>X = Least Significant Next Memory Nibble</td>
</tr>
<tr>
<td>0xxxxx000</td>
<td>X = Most Significant Next Memory Nibble</td>
</tr>
<tr>
<td>(repeats Memory Data Until Dump Complete)</td>
<td></td>
</tr>
<tr>
<td>0-127</td>
<td>Checksum</td>
</tr>
<tr>
<td>11110111</td>
<td>(f7h) End Of System Exclusive</td>
</tr>
</tbody>
</table>

Note: Dump Will Start Immediately After Receiving Dump Request
### Events That Trigger MIDI Transmission

<table>
<thead>
<tr>
<th>Event</th>
<th>Transmitted</th>
<th>Commands</th>
<th>Hum &amp; Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autofades</strong></td>
<td>Faderate</td>
<td>Control Change: Bxh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control Number: 01h (modwheel)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rel. Faderate: 00h - 7fh (0 - 127)</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
<td>Note On Cmd: 9xh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td></td>
<td>Light Chan No.: 20h - 3fh (ch 1 - 32)</td>
<td></td>
</tr>
<tr>
<td>Level For</td>
<td></td>
<td>Intensity: 01h - 7fh (1 = Off)</td>
<td></td>
</tr>
<tr>
<td>Each Light</td>
<td></td>
<td>Note On Cmd: 9xh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td>Changed</td>
<td></td>
<td>Light Chan No.: 20h - 3fh (ch 1 - 32)</td>
<td></td>
</tr>
<tr>
<td>Note Off Value</td>
<td></td>
<td>00h (cls Note In Seqncr)</td>
<td></td>
</tr>
<tr>
<td><strong>Bump Buttons</strong></td>
<td>Light On</td>
<td>Note On Cmd: 9xh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Light Chan No.: 40h - 5fh (ch 1 - 32)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Full On Value: 7fh (127)</td>
<td></td>
</tr>
<tr>
<td>Light Off</td>
<td></td>
<td>Note On Cmd: 9xh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Light Chan No.: 40h - 5fh (ch 1 - 32)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note Off Value: 00h</td>
<td></td>
</tr>
<tr>
<td><strong>Chase Sel’d</strong></td>
<td>Faderate</td>
<td>Control Change: Bxh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control Number: 01h (modwheel)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rel Faderate: 00h - 7fh (min - Max)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chaserate</td>
<td>Control Change: Bxh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control Number: 02h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rel Chaserate: 00h - 7fh (min - Max)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chase Number: 3ch (60) Chs No: 00h - 10h (0 =off)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blackout</strong></td>
<td></td>
<td>(same As Autofade Unless Held Down)</td>
<td></td>
</tr>
<tr>
<td><strong>Blackout</strong></td>
<td></td>
<td>Controller Control Change: Bxh (x = Midi Chan.)</td>
<td></td>
</tr>
<tr>
<td><strong>Held Down</strong></td>
<td></td>
<td>Control Number: 40h Or 7bh (64 / 123)</td>
<td></td>
</tr>
<tr>
<td><strong>Reset</strong></td>
<td></td>
<td>Control Value: 00h</td>
<td></td>
</tr>
</tbody>
</table>

Midi Dump System Exclusive Memory Dump Sequence.
MIDI Commands Received

<table>
<thead>
<tr>
<th>Command</th>
<th>Hex Code</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note On</td>
<td>1001nnnn</td>
<td>N = Midi Channel Assignment 1-16 (0-15)</td>
</tr>
<tr>
<td></td>
<td>Okkkkkk</td>
<td>K = Lighting Channel No. (32 - 95)</td>
</tr>
<tr>
<td></td>
<td>0vvvvvvv</td>
<td>V = Lighting Channel Intensity (0 - 127)</td>
</tr>
<tr>
<td>Control</td>
<td>1011nnnn</td>
<td>N = Midi Ch Assignment 1-16 (0-15) Change</td>
</tr>
<tr>
<td></td>
<td>Okkkkkk</td>
<td>K = Control Number (see Below)</td>
</tr>
<tr>
<td></td>
<td>0vvvvvvv</td>
<td>V = Control Value (see Below)</td>
</tr>
<tr>
<td>Program</td>
<td>1100nnnn</td>
<td>N = Midi Ch Assignment 1-16 (0-15) Change</td>
</tr>
<tr>
<td></td>
<td>Okkkkkk</td>
<td>K = Program Number (see Below)</td>
</tr>
<tr>
<td>Midi Clock</td>
<td>11111000</td>
<td>Real Time Msg</td>
</tr>
<tr>
<td>System</td>
<td>11110000</td>
<td>Start Of System Exclusive</td>
</tr>
<tr>
<td>Exclusive</td>
<td>11110111</td>
<td>End Of System Exclusive</td>
</tr>
</tbody>
</table>

Control Changes Accepted

<table>
<thead>
<tr>
<th>Control No,</th>
<th>Control Value</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 - 127</td>
<td>(00h - 7fh) Sets Fade Rate For Proceeding Light Level Changes</td>
</tr>
<tr>
<td>2</td>
<td>0 - 127</td>
<td>(00h - 7fh) Sets Relative Chase Rate 0 = Stop, 127 = Max</td>
</tr>
<tr>
<td>60</td>
<td>0</td>
<td>(00h) Deactivates Chase.</td>
</tr>
<tr>
<td>1 - 8</td>
<td>(01h - 08h)</td>
<td>Normal Chase 1 - 8</td>
</tr>
<tr>
<td>9 - 16</td>
<td>(09h - 10h)</td>
<td>Scene Chase 1 - 8</td>
</tr>
<tr>
<td>64</td>
<td>0</td>
<td>(00h) Reset Console (if Conf.)</td>
</tr>
<tr>
<td>70</td>
<td>0</td>
<td>(00h) Direct Dimmer Access Off</td>
</tr>
<tr>
<td>1</td>
<td>(01h)</td>
<td>Direct Dimmer Access On Ignore Note Off Cmds</td>
</tr>
<tr>
<td>2</td>
<td>(02h)</td>
<td>Direct Dimmer Access On Note Off Cmds Accepted</td>
</tr>
<tr>
<td>123</td>
<td>0</td>
<td>(00h) Reset Console (if Conf.)</td>
</tr>
</tbody>
</table>

Real Time Msgs Accepted

<table>
<thead>
<tr>
<th>Message</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDI Clock</td>
<td>Syncronizes Chase Rate.</td>
</tr>
</tbody>
</table>


**Note Cmds Accepted**

<table>
<thead>
<tr>
<th>(DIRECT DIMMER ACCESS OFF)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cmd</strong></td>
</tr>
<tr>
<td>Note On</td>
</tr>
<tr>
<td>Note On</td>
</tr>
<tr>
<td>Note Off</td>
</tr>
<tr>
<td>Note On</td>
</tr>
<tr>
<td>Note On</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(DIRECT DIMMER ACCESS ON)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note On</strong></td>
</tr>
<tr>
<td><strong>Note On</strong></td>
</tr>
</tbody>
</table>

**PROGRAM CHANGES ACCEPTED**

<table>
<thead>
<tr>
<th>Program Number</th>
<th><strong>Action</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 31</td>
<td>Activates Memory Scene Of Current Page At Current Fade Rate Control Or Ctl Chg #1 Setting.</td>
</tr>
<tr>
<td>64 - 71</td>
<td>Changes Current Page Number 1 - 8</td>
</tr>
<tr>
<td>80</td>
<td>Deactivates Chase.</td>
</tr>
<tr>
<td>81 – 88</td>
<td>Activates Normal Chase Number 1 - 8 At Current Chase Rate Control Or Ctl Chg #2 Setting.</td>
</tr>
<tr>
<td>89 - 96</td>
<td>Activates Scene Chase 1 - 8 At Current Chase Rate Control Or Ctl Chg #2 Setting.</td>
</tr>
<tr>
<td>97</td>
<td>Activates Memory Scene Black - Out.</td>
</tr>
</tbody>
</table>
# Console Specifications

<table>
<thead>
<tr>
<th>Specifcations</th>
<th>7216: 16, 7232: 32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Channels</td>
<td></td>
</tr>
<tr>
<td>Dimmers</td>
<td>128</td>
</tr>
<tr>
<td>Scenes</td>
<td>7216: 128, 7232: 256</td>
</tr>
<tr>
<td>Chases</td>
<td>16 on/off chases, 16 scene chases, 32 steps, programmable.</td>
</tr>
<tr>
<td>Memory</td>
<td>Non-volatile EEPROM and Battery SRAM. (10 year retention)</td>
</tr>
<tr>
<td>Dimmer Outputs</td>
<td>NSI Micro-plex</td>
</tr>
<tr>
<td></td>
<td>DMX-512</td>
</tr>
<tr>
<td></td>
<td>AMX-192</td>
</tr>
<tr>
<td>Input Power</td>
<td>15 volts DC, 600ma</td>
</tr>
<tr>
<td>Dimensions</td>
<td>7216: 2 1/2&quot; x 16&quot; x 13 3/4&quot; HxWxD</td>
</tr>
<tr>
<td></td>
<td>7232: 2 1/2&quot; x 28&quot; x 13 3/4&quot; HxWxD</td>
</tr>
<tr>
<td>Weight</td>
<td>7216: 10 lbs.</td>
</tr>
<tr>
<td></td>
<td>7232: 15 lbs.</td>
</tr>
</tbody>
</table>
8 Troubleshooting

Checklist

A control channel brings up the LED on the console but the dimmer channel is the wrong one.

- The dimmers may be assigned to the wrong channels or the Soft-patch table in the memory of the console has been modified or is corrupted. Check the dimmers and try to correct or reset the softpatch table. See the section about Memory clear and softpatch reset on page 24.

Lights on stage do not come on at all even though Channel Level LED's do.

- Check that the Master slide control is not set at minimum and that at all the Blackout LED is not on. Check to make sure crossfaders are set correctly. Check control cable and connectors for loose connections. Check MPX mode. Softpatch table may have been cleared. See the section about Memory clear and softpatch reset on page 24.

Chase functions do not work.

- Make sure a rate has been established with the Tap Sync button or Chase rate control. The rate is indicated by the flashing LED located directly below the Chase Rate control.

Light on stage do not go all the way out or act erratically.

- Check the Preheat configuration. Too long of a Microplex Control cable run with light duty cable. Connect the console to the dimmers with a short cable to verify.

Dimmer levels are all on full.

- Bad control cable or connectors. Wrong MPX mode.

Dimmer levels intermittently flash to full while fader are being moved.

- Bad or dirty control. (Do not use "off the shelf" type cleaner sprays, Refer to professional service).

Chase rate or Fade rate indicators are unstable.

- Bad or dirty control. (Do not use "off the shelf" type cleaner sprays, Refer to professional service).

Some Memory Scene buttons and Blackout do not function.

- Button stuck down elsewhere.

Console appears normal but all controls and buttons have no effect.

- Console stuck in SLAVE MODE. See page 24.

Some console functions do not work or console behaves erratically or intermittently resets to blackout.

- Console power supply may be low because of long run of light duty control cable. Control cable or connectors may have poor connection. As last resort, try a full console initialization. (This will also clear all memory).
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.

The purchaser is responsible for completing and mailing to NSI, within 15 days of purchase, the warranty registration card enclosed with each product. NSI products that have been subject to accident, alteration, abuse, or defacing of the serial number are not covered by this warranty. The normal wear and tear of items such as knobs, jacks, and switches are not covered under this warranty.

If your NSI product requires service during the warranty period, NSI will repair or replace, at its option, defective materials provided you have identified yourself as the original owner of the product to NSI or any authorized NSI dealer. Transportation charges to and from an authorized dealer or the NSI factory for repair shall be the responsibility of the owner. All products returned to NSI must have factory authorization for return prior to shipping.

NSI Corporation is not liable for any incidental or consequential damages resulting from defect or failure other than repairs of the NSI product subject to the terms of this warranty. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. This warranty is expressly in lieu of all other agreements and warranties expressed or implied except as may be otherwise required by law.